

Village of Baroda

2021 Water Quality Report

Water Supply Serial Number: 00420

This report covers the drinking water quality for the Village of Baroda for the 2021 calendar year. This information is a snapshot of the quality of the water that we provided to you in 2021. Included are details about where your water comes from, what it contains, and how it compares to United States Environmental Protection Agency (U.S. EPA) and state standards.

Where does my water come from?

Your water is provided by the Lake Charter Township Water Treatment Plant (LCTWTP). Source water is pumped from Lake Michigan.

Source water assessment and its availability.

Your water comes from Lake Michigan. The State performed an assessment of our source water in 2003 to determine the susceptibility or the relative potential of contamination. The susceptibility rating is on a seven-tiered scale from "very-low" to "very-high" based primarily on land uses and potential contaminant sources within the source water area. The source water is categorized with moderately high susceptibility given land uses and sources of potential contaminants.

Contaminants and their presence in water.

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. More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline (800-426-4791).

Vulnerability of sub-populations.

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. U.S. EPA/Center for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Sources of drinking water: The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Our water comes from 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 activity.

Contaminants that may be present in source water include:

- **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 stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture and residential uses.

- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.



To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations that limit the levels of certain contaminants in water provided by public water systems. Federal Food and Drug Administration regulations establish limits for contaminants in bottled water which provide the same protection for public health.

Description of water treatment process.

Your water is treated at the Lake Charter Township water treatment plant in a “treatment train” (a series of processes applied in a sequence) that includes coagulation, flocculation, sedimentation, filtration, and disinfection. Coagulation removes dirt and other particles suspended in the source water by adding chemicals (coagulants) to form tiny sticky particles called “floc,” which attract the dirt particles. Flocculation (the formation of larger flocs from smaller flocs) is achieved using gentle, constant mixing. The heavy particles settle naturally out of the water in a sedimentation basin. The clear water then moves to the filtration process where the water passes through sand, gravel, charcoal, or other filters that remove even smaller particles. A small amount of chlorine or other disinfection method is used to kill bacteria and other microorganisms (viruses, cysts, etc.) that may be in the water before the water is stored and distributed to home and businesses in the community. The water quality is continuously monitored and ensured by hundreds of tests performed each day, every day of the year.

Water Quality Data

The table below lists all the drinking water contaminants that we detected during the 2021 calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done January 1 through December 31, 2021. The State allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. All the data is representative of the water quality, but some are more than one year old.

Terms and abbreviations used below:

- 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 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 using the best available treatment technology.
- 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 contaminants.
- Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.
- N/A: Not applicable
- ND: not detectable at testing limit
- ppm: parts per million or milligrams per liter
- ppb: parts per billion or micrograms per liter
- ppt: parts per trillion or nanograms per liter
- pCi/l: picocuries per liter (a measure of radioactivity)
- Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

LAKE CHARTER TOWNSHIP WATER TREATMENT PLANT

Regulated Contaminant	MCL, TT, or MRDL	MCLG or MRDLG	Level Detected	Range	Year Sampled	Violation Yes/No	Typical Source of Contaminant
Nitrate (ppm)	10	10	0.3	N/A	2021	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Fluoride (ppm)	4	4	0.1	N/A	2021	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Sodium ¹ (ppm)	N/A	N/A	14	N/A	2021	No	Erosion of natural deposits
Total Organic Carbon (% Removal)	N/A	TT	13.03%	N/A	2021	No	Naturally present in the environment

Per- and polyfluoroalkyl substances (PFAS)

Regulated Contaminant	MCL, TT, or MRDL	MCLG or MRDLG	Level Detected	Range	Year Sampled	Violation Yes/No	Typical Source of Contaminant
Hexafluoropropylene oxide dimer acid (HFPO-DA) (ppt)	370	N/A	ND	N/A	2021	No	Discharge and waste from industrial facilities utilizing the Gen X chemical process
Perfluorobutane sulfonic acid (PFBS) (ppt)	420	N/A	ND	N/A	2021	No	Discharge and waste from industrial facilities; stain-resistant treatments
Perfluorohexane sulfonic acid (PFHxS) (ppt)	51	N/A	ND	N/A	2021	No	Firefighting foam; discharge and waste from industrial facilities
Perfluorohexanoic acid (PFHxA) (ppt)	400,000	N/A	ND	N/A	2021	No	Firefighting foam; discharge and waste from industrial facilities
Perfluorononanoic acid (PFNA) (ppt)	6	N/A	ND	N/A	2021	No	Discharge and waste from industrial facilities; breakdown of precursor compounds
Perfluorooctane sulfonic acid (PFOS) (ppt)	16	N/A	2.8	2.1-2.8	2021	No	Firefighting foam; discharge from electroplating facilities; discharge and waste from industrial facilities
Perfluorooctanoic acid (PFOA) (ppt)	8	N/A	2.6	0-2.6	2021	No	Discharge and waste from industrial facilities; stain-resistant treatments

¹ Sodium is not a regulated contaminant.

Additional Monitoring

The Lake Charter Township water treatment plant also performed monitoring for some for which the U.S. EPA has not established drinking water standards.

LAKE CHARTER TOWNSHIP WATER TREATMENT PLANT					
Unregulated Contaminant Name	Average Level Detected	Range	Violation	Year Sampled	Comments
Chloride (ppm)	20	N/A	No	2021	Erosion of natural deposits
Hardness as CaCO ₃ (ppm)	137	N/A	No	2021	Erosion of natural deposits
Sulfate (ppm)	26	N/A	No	2021	Erosion of natural deposits
Iron (ppm)	0	N/A	No	2021	Erosion of natural deposits

Baroda's water distribution system

Once the drinking water is pumped from the Lake Township water plant to our distribution system, it is tested for chlorine residual and possible bacteriological contamination, as well as other contaminants.

VILLAGE OF BARODA WATER DISTRIBUTION SYSTEM							
Regulated Contaminant	MCL, TT, or MRDL	MCLG or MRDLG	Level Detected	Range	Year Sampled	Violation Yes/No	Typical Source of Contaminant
TTHM Total Trihalomethanes (ppb)	80	N/A	58.025	4.1 – 92	2021	No	Byproduct of drinking water disinfection
HAA5 Haloacetic Acids (ppb)	60	N/A	34.1	23 – 47.8	2021	No	Byproduct of drinking water disinfection
Chlorine ² (ppm)	4	4	1.14	0.86 – 1.37	2021	No	Water additive used to control microbes
Inorganic Contaminant Subject to Action Levels (AL)	Action Level	MCLG	Your Water ³	Range of Results	Year Sampled	Number of Samples Above AL	Typical Source of Contaminant
Lead (ppb)	15	0	6	2 - 6	2021	0	Lead service lines, corrosion of household plumbing including fittings and fixtures; Erosion of natural deposits
Copper (ppm)	1.3	1.3	0.11	0.06 - 0.11	2021	0	Corrosion of household plumbing systems; Erosion of natural deposits

² The chlorine "Level Detected" was calculated using a running annual average.

³ Ninety (90) percent of the samples collected were at or below the level reported for your water.

Information about lead: 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 Village of Baroda 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 have a lead service line it is recommended that you run your water for at least 5 minutes to flush water from both your home plumbing and the lead service line. 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>.

What are Per- and polyfluoroalkyl substances (PFAS) and why are they harmful?

Per- and polyfluoroalkyl substances (PFAS), sometimes called PFCs, are a group of chemicals that are resistant to heat, water, and oil. PFAS have been classified by the U.S. Environmental Protection Agency (EPA) as an emerging contaminant on the national landscape. For decades, they have been used in many industrial applications and consumer products such as carpeting, waterproof clothing, upholstery, food paper wrappings, fire-fighting foams, and metal plating. They are still used today. PFAS have been found at low levels both in the environment and in blood samples of the general U.S. population.

These chemicals are persistent, which means they do not break down in the environment. They also bioaccumulate, meaning the amount builds up over time in the blood and organs. Although our understanding of these emerging contaminants is constantly evolving, elevated levels of PFAS have the potential to cause increased cholesterol, changes in the body's hormones and immune system, decreased fertility, and increased risk of certain cancers. Links to these health effects in humans are supported by epidemiologic studies and by laboratory studies in animal models.

Are there health advisory levels?

The State of Michigan has mandated some of the strictest guidelines in the Nation regulating PFAS. The U.S. EPA has not established enforceable drinking water standards, called maximum contaminant levels, for these chemicals. However, the U.S. EPA has set a lifetime health advisory (LHA) level in drinking water for two PFAS: perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). The PFOA and PFOS LHA is the level, or amount, *below which no harm is expected from these chemicals*. The LHA level is 70 parts per trillion (ppt) for PFOA and 70 ppt for PFOS. If both PFOA and PFOS are present, the LHA is 70 ppt for the combined concentration. The amount of PFOA and PFOS combined in the sample collected from the LCTWTP ranged from 0 to 2.1 ppt (parts per trillion).

PPT (ng/L) Analogy

One part per trillion or nanogram per liter is an exceedingly small number. One drop of water in an Olympic size swimming pool equals approximately 1 ppt. The Olympic size swimming pool contains approximately 660,000 gallons of water which equates to approximately 10.5 million 8 oz. glasses of water. The highest LCTWTP test results from the effluent totaled 2.1 ppt which equates to 2.1 drops in 10.5 million 8 oz. glasses of water.

There are many other PFAS compounds that currently do not have LHA levels. For information on PFOA, PFOS, and other PFAS, including possible health outcomes, you may visit these websites:

<https://www.epa.gov/pfas>

<https://www.atsdr.cdc.gov/pfas>

<http://www.michigan.gov/pfasresponse>

Why was LCTWTP source water tested for PFAS?

The Michigan Department of Energy, Great Lakes and Environment (EGLE) has coordinated a statewide initiative to test drinking water from all schools that use well water and community water supplies for PFAS. EGLE is taking this precautionary step to testing these drinking water sources to determine if public health actions are needed.

Who can I call if I have questions about PFAS in my drinking water?

If any resident has additional questions regarding this issue, the State of Michigan Environmental Assistance Center can be contacted at 800-662-9278. Representatives may be reached to assist with your questions Monday through Friday, 8:00 AM to 4:30 PM.

How can PFAS affect people's health?

Some scientific studies suggest that certain PFAS may affect different systems in the body. The National Center for Environmental Health (NCEH)/Agency for Toxic Substances and Disease Registry (ATSDR) is working with various partners to better understand how exposure to PFAS might affect people's health.

If you are concerned about exposure to PFAS in your drinking water, please contact the Michigan Department of Health and Human Services Toxicology Hotline at 800-648-6942, or the Center for Disease Control and Prevention/ATSDR at <https://www.cdc.gov/cdc-info/> or 800-232-4636. Currently, scientists are still learning about the health effects of exposures to PFAS, including exposure to mixtures.

What other ways could I be exposed to PFOA, PFOS and other PFAS compounds?

PFAS are used in many consumer products. They are used in food packaging such as fast-food wrappers and microwave popcorn bags; waterproof and stain resistant fabrics such as outdoor clothing, upholstery, and carpeting; nonstick coatings on cookware; and cleaning supplies including some soaps and shampoos. People can be exposed to these chemicals in house dust, indoor and outdoor air, food, and drinking water. There is still uncertainty regarding these routes of exposure and more research is necessary.

What is being done about this issue?

State and local agencies are actively working to obtain more information about this situation as quickly as possible. Additional testing of the drinking water will be conducted to demonstrate that the PFAS levels are consistent and reliably below the existing LHA. Additional monitoring in and around our region and other affected areas will also be performed by EGLE, which will help us answer more questions and determine next steps.

How can I stay updated on the situation?

The state has created a website where you can find information about PFAS contamination and efforts to address it in Michigan. The site will be updated as more information becomes available. The website address is: <http://michigan.gov/pfasresponse>.

Monitoring and Reporting to the Department of Environment, Great Lakes, and Energy (EGLE) Requirements: The State of Michigan and the U.S. EPA require us to test our water on a regular basis to ensure its safety. We met all the monitoring and reporting requirements for 2021. We will update this report annually and will keep you informed of any problems that may occur throughout the year, as they happen.

Copies are available at the Village of Baroda Municipal Building, 9091 First Street, Baroda, MI 49101.

We invite public participation in decisions that affect drinking water quality. Village Council Meetings are held at 6:30 p.m. on the first Monday of each month at the Baroda Municipal Building. For more information about your water, or the contents of this report, contact AJ Mottl (269) 231-9084. For more information about safe drinking water, visit the U.S. EPA at <http://www.epa.gov/safewater>.