

# ANNUAL WATER QUALITY REPORT

Reporting Year 2021

*Presented By*



**CITY OF  
CHARLEVOIX**

PWS ID#: 01330

## We've Come a Long Way

Once again, we are proud to present our annual water quality report covering the period between January 1 and December 31, 2021. In a matter of only a few decades, drinking water has become exponentially safer and more reliable than at any other point in human history. Our exceptional staff continues to work hard every day—at all hours—to deliver the highest-quality drinking water without interruption. Although the challenges ahead are many, we feel that by relentlessly investing in customer outreach and education, new treatment technologies, system upgrades, and training, the payoff will be reliable, high-quality tap water delivered to you and your family.

### Where Does My Water Come From?

Lake Michigan has provided the city with excellent, high-quality, very clean source water with limited vulnerability to spills and an unlimited capacity. The water treatment plant has a buried intake, which allows an extra layer of protection.

### Lead Service Lines

The City of Charlevoix water system includes a complex network of mains providing transmission and distribution to city customers. The service area covers approximately 2.5 square miles and is supplied through a water distribution network consisting of 37 miles of water mains ranging from 4 to 12 inches in diameter. The city conducted a preliminary distribution system materials inventory in 2019, which included 2,069 service lines. Of these service lines, 449 service connections contain neither lead nor galvanized iron previously connected to lead, 532 service connections contain materials unknown, 500 likely do not contain lead, 525 may contain lead, and 63 contain galvanized iron previously connected to lead.

### Lead in Home Plumbing

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. 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 have a service line that is lead, galvanized material previously connected to lead, or unknown but likely to be lead, 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 at (800) 426-4791, or on the U.S. EPA's website at <http://water.epa.gov/drink/info/lead>.

### Water Treatment Process

The City of Charlevoix operates a direct filtration water treatment facility that uses water from Lake Michigan. The water plant has a capacity of three million gallons per day. Storage includes a one-million-gallon aboveground reservoir at the plant and a 300,000-gallon elevated water tower on Charlevoix's north side. Present flow rates vary from 400,000 gallons per day to as much as 2.5 million gallons per day in the summer.

The facility is staffed by state-licensed operators. The water plant consists of many subsystems for ensuring high water quality and informing operators of plant efficiency.

The City of Charlevoix continues to make water plant improvements. In 2017 a 450 kW generator was installed to ensure operations in the event of a power outage. In 2018 Phase One of filter rehabilitation was completed. Phase Two of the filter rehabilitation project was completed in spring 2020; this will ensure high water quality for generations to come.

### Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.



**QUESTIONS?** For more information about this report, or for any questions relating to your drinking water, please contact Nicholas Hilling, Chief Water Operator, Charlevoix Water Treatment Plant, (231) 547-3256, or Pat Elliott, Charlevoix Water Department, (231) 547-3276.

## 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 SWAP, our water system had a susceptibility rating of moderate. If you would like to review the SWAP, please feel free to contact our office during regular office hours at the City of Charlevoix Water Treatment Plant.

## Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.



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, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances 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, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may 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, urban stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.



## Monitoring and Reporting Violations

As per Environment, Great Lakes & Energy (EGLE) requirements, the city is obligated to notify the residents of any violations through our CCR for the year 2021. The city has two violations to note.

1. The 90th-percentile copper value listed in the CCR for 2020 is incorrect. The 90th percentile for copper should be 0.1 part per million (ppm). The city inadvertently reported the copper results in parts per billion (ppb).
2. EGLE records show the city monitored for trihalomethanes (TTHM) and five haloacetic acids (HAA5) during April 2021. However, the month specified in the monitoring plan is July. Therefore, the samples taken in April cannot be counted for compliance. To return to compliance, the city will collect and analyze one TTHM sample and one HAA5 sample during the monitoring period of July 1, 2022, to July 31, 2022, and submit the results to EGLE.

## Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. Also, the water we deliver must meet specific health standards. Here, we show those substances that were detected in our water. (A complete list of all our analytical results is available upon request.) Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring 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)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2017	2	2	0.02	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2021	[4]	[4]	0.66	0.20–1.21	No	Water additive used to control microbes
Fluoride (ppm)	2021	4	4	0.48	NA	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAAs]–Stage 1 (ppb)	2021	60	NA	10	8–10	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes]–Stage 1 (ppb)	2021	80	NA	17.2	15.7–18.7	No	By-product of drinking water disinfection
Turbidity <sup>1</sup> (NTU)	2021	TT	NA	0.07	0.02–0.07	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2021	TT = 95% of samples meet the limit	NA	100	NA	No	Soil runoff
Xylenes <sup>2</sup> (ppm)	2021	10	10	0.6	NA	No	Discharge from petroleum factories; Discharge from chemical factories

Tap water samples were collected for lead and copper analyses from sample sites throughout the community.

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH %ILE)	RANGE LOW-HIGH	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2019	1.3	1.3	0.1	0–0.3	0/10	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2019	15	0	2	ND–3	0/10	No	Lead service lines; Corrosion of household plumbing systems, including fittings and fixtures; Erosion of natural deposits

## Definitions

**90th %ile:** The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90% of our lead and copper detections.

**AL (Action Level):** The concentration of a contaminant that, 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 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.

**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.

**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).

**SMCL (Secondary Maximum Contaminant Level):** These standards are developed to protect aesthetic qualities of drinking water and are not health based.

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

## SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
<b>Chloride</b> (ppm)	2021	250	NA	11	NA	No	Runoff/leaching from natural deposits
<b>Copper</b> (ppm)	2019	1.0	NA	0.1	ND-0.3	No	Corrosion of household plumbing systems; Erosion of natural deposits
<b>Sulfate</b> (ppm)	2021	250	NA	18	NA	No	Runoff/leaching from natural deposits; Industrial wastes

## UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
<b>Sodium</b> (ppm)	2021	7.4	NA	Naturally occurring
<b>Sulfate</b> (ppm)	2021	18	ND-18	Runoff/leaching from natural deposits
<b>Total Organic Carbon</b> [TOC] <sup>3</sup> (ppm)	2021	1.19	1.06-1.29	NA

<sup>1</sup> Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

<sup>2</sup> This was caused by painting the filters in our upgrade in 2020; a subsequent sample showed results below the detection limit.

<sup>3</sup> TOC is a nonspecific indicator of water quality.

