

A tall, blue water tower with a black sunburst logo on top. The words "BATTLE CREEK" are written in black capital letters on the upper part of the tower. The tower is set against a clear blue sky with some bare trees in the foreground.

BATTLE CREEK

Annual Water Quality Report

City of Battle Creek | Reporting year 2021

**PREPARED AND
PRESENTED BY**

City of Battle Creek
PWS ID# 0000450



City of Battle Creek water

Top service continues

AHOJ
TERE
IHOLA
HELLO
MERHABA
KUMUSTA
BONJOUR

For help in another language, please call the Department of Public Works at 269-966-3343. The city will provide interpretation at no cost to the caller.

Por consultas o asistencia en español, por favor comuníquese con el Departamento de Obras Públicas al (269) 966-3343. Se le conseguirá un intérprete de forma gratuita.

အကယ်၍ အခြားဘာသာစကားဖြင့် အကူအညီလိုပါက Department of Public Works ဖုန်း (၂၆၉) ၉၆၆ ၃၃၄၃ သို့ ခေါ်ဆိုနိုင်ပါသည်။ စကားပြန်ကို အခမဲ့စီစဉ်ပေးပါမည်။

The City of Battle Creek is pleased to present our annual water quality report, with testing completed between Jan. 1 and Dec. 31, 2021.

We continue to dedicate ourselves to producing drinking water that meets all state and federal standards. We always look for, and use, new methods to deliver the best quality drinking water to you, our customers.

In 2021 we worked on the following projects, helping us meet the needs of our water customers:

- We continued planning and preparation to install two 36-inch water meters at our Verona Pumping Station. They will more accurately measure the water we produce, improve data on water loss, and help us comply with regulations.
- We improved the two water tanks on Eldred Street to better protect the drinking water, give better access control, and improve safety features on the five million and 3.8 million gallon tanks. We also painted and updated corrosion control on the 3.8 million gallon tank.
- We replaced 227 lead water service lines, toward the goal of removing all of those in our system. We coordinate replacements with our street improvement projects.

For more information about this report, or for other questions about your drinking water, within Battle Creek city limits, call Utility Administrator Perry Hart, 269-966-3481.

If you live in the City of Springfield, call 269-965-2354.

If you live in Emmett Township, call 269-968-0241.

Sign up for Water Information System text and/or email notifications at battlecreekmi.gov/notifyme.

Have a water concern after hours, on weekends, or holidays? Call 269-966-3493.

The City Commission invites neighbors to give public comment during regular meetings, typically at 7 p.m. the first and third Tuesdays of each month at City Hall, 10 N. Division St. For agendas and more information, visit battlecreekmi.gov or call 269-966-3311.

Meetings stream live on the city's YouTube channel, on AccessVision cable, and under Live 17 at accessvision.tv.

Perry Hart
City Utility Administrator



IMPORTANT HEALTH INFORMATION



Some people may be more vulnerable to contaminants in drinking water than the general population.

Immunocompromised people, 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. Environmental Protection Agency and 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 water.epa.gov/drink/hotline.

Infants and children who drink water containing lead could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities.

Adults who drink this water over many years could develop kidney problems or high blood pressure.

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level, over a relatively short amount of time, could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level, over many years, could suffer liver or kidney damage.

People with Wilson's Disease should consult their personal doctor.

Treating our water

The treatment process of our drinking water has a series of steps at our Verona facility on Brigden Drive.

First, we draw water from the groundwater aquifer, and send it to our Radon, Iron, and Manganese removal plant (we call this the RIM Plant). Once there, we add air through an aeration process that removes radon and oxidizes iron and manganese. These two processes help remove iron and manganese later in the treatment process. Aeration (adding air to the water) also makes the iron and manganese form larger particles, which are easier to remove.

Next, we filter the water to remove the iron and manganese through dual-media, rapid sand filters. After filtration, we add a small amount of phosphate product, to keep the water from corroding our system's pipes and plumbing, which benefits lead and copper control.

Next, we send the water to an underground reservoir. Finally, we add low doses of fluoride (for dental health) and chlorine (to disinfect), and we pump the water to our water towers, and into your homes and businesses.

Meet the team

Meet Kim Walden and Tara Reniger! You are likely to speak to them when you call the water team at 269-966-3506 with your needs and questions. They can take your call 7:30 a.m.-4 p.m. Monday through Friday.



Where does my water come from?

The City of Battle Creek uses groundwater from the **Marshall Sandstone Aquifer**, drawn from the **Verona Well Field** in the northeast section of the city. This is our sole source of drinking water.

We constructed wells in the sandstone formation to collect the water stored there.



What is groundwater?

Groundwater is water beneath the surface of the earth that fills openings, known as pore spaces, in sand, gravel, or fractured rock. Groundwater begins as precipitation from snow or rain, which passes through the soil and accumulates in the pore spaces.

What is an aquifer?

When enough water accumulates to supply a well, it is considered an aquifer. The City of Battle Creek gets its water from a bedrock aquifer. We pump the water from 22 wells, with depths ranging from 100-150 feet.

A well house in the Verona Well Field, on the site of our Verona water production facility, on Brigden Drive in Battle Creek.

Substances that could be in the water

To make sure tap water is safe to drink, the U.S. Environmental Protection Agency 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, which must provide the same protection for public health. One can reasonably expect drinking water, including bottled water, to contain at least small amounts of contaminants. The presence of these contaminants does not necessarily indicate the water poses a health risk.

The sources of drinking water - both tap and bottled - 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 from animals, or human activity.

Substances that may be 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 result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides/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 compounds, 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**: 800-426-4791.

Check out our historic display valves

Sometimes it is hard to imagine what our water infrastructure looks like, because the maze of pipes, valves, service lines, and fire hydrants exist mostly underground. But after a 2018 project to improve the water transmission mains at our Verona Pumping Station, we have two huge water valves on display for you to see and appreciate with us.

One sits at our Department of Public Works, 150 S. Kendall St. It is a 30-inch Eddy valve with a casting date of 1957. The Eddy Valve Co. was in Waterford, New York.

A smaller valve on the left side of the main valve casing is a bypass valve that allows pressure to equalize on both sides. Without this, the pressure on one side of the closed valve could be so great that it is difficult to open the valve, and can cause damage to it.

A large gear box on top of the valve made it possible to operate the valve by hand. Opening or closing this valve would take more than 150 turns of the operating nut.

The second valve sits at the Verona Pumping Station, 250 Brigden Drive. This one is a 30-inch Darling valve, also cast in 1957. The Darling Valve Co. was in Williamsport, Pennsylvania.

We could operate this valve mechanically with a horizontal or vertical valve wrench. It was installed in a vault, we used an electric actuator (a machine part that creates movement) to operate the valve.

The city installed both of these in the late 1950s, along with the original pumping station. Recently, the valves were no longer operable, and we installed new transmission lines in 2018, as part of a larger project improving operations and saving energy.

Special thanks to our Water and Waste Water teams, Andrew Matthews and Ben Blaniar for painting the city logo, Steve Skowron for fabrication work, J&H Engineering for design help, EJ for the manhole covers, and Davis Construction for helping sandblast and paint the valves.

Source water assessment

The state assessed our Columbia and Verona well field source water in 2003 to determine their relative potential for contamination. The susceptibility rating is on a seven-tier scale, from very low to very high, based primarily on geologic sensitivity, water chemistry, and contaminant sources.

The susceptibility rating for Verona is high, and the rating for Columbia is moderately high. It is important to understand these ratings do not imply poor water quality, only the systems' potential to become contaminated in the assessment areas.

There are remedies in place for known contamination sources for Verona, to prevent municipal well contamination. The City of Battle Creek has not used the Columbia Well Field since 2003.

To further protect our drinking water sources, we developed a wellhead protection plan for both well fields. For more information, see battlecreekmi.gov/publicworks and click Environmental Services, or call Utility Administrator Perry Hart at 269-966-3481.



Verona improvements win award

We were thrilled to celebrate in 2021, winning the American Public Works Association Project of the Year Award for an environmental project less than \$1 million: our Verona Pumping Station improvements.

One of our six pumps that send drinking water out into the community was not operating. All six were single-speed pumps, which was wasting energy during peak energy demand times of day. We decided to replace the inoperable sixth pump with a larger, variable-speed pump, and let the single-speed pumps work overnight, when energy costs are lower. We calculated a savings of up to \$60,000 with these improvements.

We also needed to fix the "Verona Triangle," a mess of inefficient and redundant piping and valves in the transmission mains leaving the Verona Pumping Station. The mess was caused over decades of system repairs and adjustments that connected old and new pipes, to lessen service interruptions. We decided to simplify and realign the pipes in the field, to make this system run smoother, and allow our team to operate it better. We were able to remove 275 feet of unnecessary piping!

We completed the project in July 2020, at a cost of \$866,237.



Winning the 2021 APWA Award, from left: APWA MI Chapter President Duane Poole; city Utility Administrator Perry Hart; city Engineering Administrator Kurt Tribbett; Bret Eckhart of contractor L.D. Docsa Associates; Aaron Davenport, Senior Vice President, Kalamazoo Office Director of Jones & Henry Engineering

Water testing results (table next page)

We monitor our water for many different substances, on a strict sampling schedule. The water we deliver also must meet specific health standards.

The table on the next page shows those substances we detected in our water. You can request a complete list of our analytical results by calling 269-966-3481.

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 those substances do not change frequently. In these cases, we show the most recent sample data, along with the year we collected it.



Regulated substances															
				City of Battle Creek			Emmett Township			City of Springfield					
Substance (Unit of Measure)	Year sampled	MCL [MRDL]	MCGL [MRDLG]	Amount detected	Range: low-high	Violation	Amount detected	Range: low-high	Violation	Amount detected	Range: low-high	Violation	Typical source		
Chlorine (ppm)	2021	[4]	[4]	0.81	.20 - 1.38	No	0.78	.37 - 1.32	No	0.65	.20 - 1.21	No	Water additive used to control microbes		
Fluoride (ppm)	2021	4	4	0.73	.51 - .94	No	0.7	.54 - .86	No	0.69	.55 - .83	No	Erosion of natural deposits; water additive to promote strong teeth; discharge from fertilizer and aluminum factories		
TTHMs (ppb)	2021	80	0	Highest LRAA 41.6	28.3 - 67.0	No	61.8	NA	No	28.1	NA	No	By-product of drinking water chlorination		
HAA5 (ppb)	2021	60	0	Highest LRAA 9.8	7.0 - 15	No	12	NA	No	1	NA	No	By-product of drinking water chlorination		
Total Coliform Bacteria (% positive samples)	2021	5%	0	0	NA	No	0	NA	No	0	NA	No	Naturally present in the environment		
Tap water samples were collected for lead and copper analyses from sample sites throughout Battle Creek, Emmett, and Springfield															
Substance (Unit of Measure)	Year sampled	AL	MCGL [MRDLG]	90% Percentile Value	Range: low-high	Sites above AL/Total sites	Violation	90% Percentile Value	Range: low-high	Sites above AL/Total sites	Violation	90% Percentile Value	Range: low-high	Sites above AL/Total sites	Typical source
Lead (ppb)	2021	15	0	3	0-6	0/30	No	1	0-1	0/10	No	1	0-2	0/20	Corrosion of household plumbing systems; erosion of natural deposits
Copper (ppm)	2021	1.3	1.3	0.6	0.0-1.0	0/30	No	0.7	0.0-1.0	0/10	No	0.5	0.0-0.7	0/20	Corrosion of household plumbing systems; erosion of natural deposits
Secondary Substances (City of Battle Creek)										Additional secondary substances					
Substance (Unit of Measure)	Year sampled	AL	MCGL [MRDLG]	Amount detected	Range: low-high	Violation	Typical source	Substance (all ppt)	Date sampled	AL	Amount detected	MCGL [MRDLG]	Typical source		
Sodium (ppm)	2021	NA	NA	22	17-22	No	Naturally present in the environment; road salting; septic systems	HFPO-DA	2021	370	Non-detect <2.0	0	Per- and polyfluoroalkyl substances (PFAS) are a large group of man-made chemicals that include perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). PFAS have been used globally during the last century in manufacturing, firefighting, and thousands of common household and other consumer products. These chemicals are persistent in the environment and in the human body – meaning they don't break down – and they can accumulate over time. In recent years, experts have become increasingly concerned by the potential effects of high concentrations of PFAS on human health.		
Sulfate (ppm)	2021	NA	NA	57	48-67	No	Runoff/leaching from natural deposits; industrial wastes	PFBS	2021	420	Non Detect <2.0	0			
Chloride (ppm)	2021	NA	NA	59	50-65	No	Runoff/leaching from natural deposits	PFHxA	2021	400000	Non-detect <2.0	0			
Gross Alpha (pCi/L)	2021	15	NA	1.2	.5-1.9	No	Erosion of natural deposits.	PFHxS	2021	51	Non Detect <2.0	0			
Gross Beta (pCi/L)	2015	50	NA	4.4	5.3 - 2.0	No	Decay of natural and man-made deposits	PFNA	2015	6	Non-detect <2.0	0			
Radium-226 (pCi/L)	2021	NA	NA	0.6	.4-.8	No	Erosion of natural deposits.	PFOA	2021	8	Non Detect <2.0	0	The Safe Drinking Water Act defines PFAS as per- and polyfluoroalkyl substances.		
Radium-228 (pCi/L)	2021	NA	NA	1.1	4-1.8	No	Erosion of natural deposits.	PFOS	2021	16	Non-detect <2.0	0			
Combined Radium (pCi/L)	2021	5	NA	1.7	1.0-2.4	No	Erosion of natural deposits.	Information on PFAS is available on the State of Michigan website at michigan.gov/pfasresponse/drinking-water/statewide-survey							

Combined Radium is a summary of Radium-226 and Radium-228.

DEFINITIONS

- **90th %ile:** The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. It 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 a water system must follow.
- **HAA5:** Haloacetic Acids
- **LRAA:** Locational Running Annual Average
- **MCL: Maximum Contaminant Level.** The highest level of a contaminant allowed in drinking water. They are set as close as possible to MCLGs, 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 health risk. They allow for a margin of safety.
- **MRDL: Maximum Residual Disinfectant Level.** The highest level of a disinfectant allowed in drinking water. Convincing evidence shows adding a disinfectant is necessary to control microbial contaminants.
- **MRDLG: Maximum Residual Disinfectant Level Goal.** The level of a drinking water disinfectant below which there is no known or expected health risk. MRDLGs do not reflect the benefits of using disinfectants to control microbial contaminants.
- **NA:** Not applicable
- **pCi/L: Picocuries per liter.** A measure of radioactivity.
- **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.** Standards developed to protect aesthetic qualities of drinking water, which are not health-based.
- **TTHMs:** Total trihalomethanes

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, previously connected to lead, or unknown but likely to be lead, we recommend that you run your water for at least five 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**, water.epa.gov/drink/info/lead.

Water system by the numbers

City of Battle Creek

19,531 total water services
4,305 known lead services
14,765 services of unknown material - unlikely to contain lead
461 services of unknown material

City of Springfield

1,734 total water services
2 known lead services
7 services of known material - no lead
73 services of unknown material - unlikely to contain lead
1,652 services of unknown material

Emmett Township

929 total water services
2 known lead services
322 services of known material - no lead
605 services of unknown material - unlikely to contain lead



City of Battle Creek
Department of Public Works - Water
150 S. Kendall St.
Battle Creek, MI 49037