

JUNE 2023

The purpose of this report is to provide you with information about the quality of the drinking water produced by the Benton Charter Township Water Treatment Plant during the 2022 calendar year. Included are details about where your water comes from, what it contains, and how it compares to standards set forth by the United States Environmental Protection Agency (U.S. EPA) and Michigan Department of Environment, Great Lakes and Energy (EGLE).

We welcome this opportunity to provide you with the information about your water in this report which is prepared and distributed annually. Questions regarding this report can be directed to the Benton Charter Township Water Plant.

Water source

Your water comes from Lake Michigan, an excellent raw water source. Lake Michigan water flows through an off shore intake structure and pipeline to a shore well pump station where the water is screened to remove the largest particles. Pumps at the shore well station transfer the untreated raw water to the treatment plant. At the treatment plant the raw water is filtered through



Benton Charter Township Raw Water Pump Station

membrane microfiltration units and sodium hypochlorite, which contains chlorine, is applied for disinfection. Chlorine is the most commonly used disinfectant because of its effectiveness, cost, and availability. Fluoride is also added for dental protection. After filtration, the treated water enters the storage reservoir from which another set of pumps transmits the finished tap water through the distribution system to the community.



Benton Charter Township Water Treatment Plant

WATER TREATMENT PLANT AND SYSTEM MAINTENANCE

Water treatment

The Township's Water Treatment Plant uses microfiltration to filter the water and sodium hypochlorite (bleach) as a disinfectant. The filter modules are capable of removing particles larger than 0.04 microns which includes *Cryptosporidium*, *Giardia* Cysts, bacteria, and many other microorganisms. In comparison, a human hair ranges in size from 17 – 181 microns. The sodium hypochlorite deactivates microorganisms that are small enough to pass through the filter pores.

Maintenance at the water plant is a continuous exercise. There are many parts, and pieces of equipment that make up the different processes. Individual parts and processes include things like: valves, valve actuators, chemical feed pumps, neutralization pumps, air compressors, and monitoring instruments like gauges and level indicators. All this equipment has an expected useful life which we try to prolong with preventive maintenance. Our Capital Improvement Plan guides us on when to repair/replace more expensive items and how to budget for them.

Distribution system

The Township has over 80 miles of water mains ranging in size from 4" to 20". There are 1,100 valves throughout the system and 704 fire hydrants. BCT serves over 2300 residential households and over 500 commercial customers with meter sizes ranging from ¾" to 8".

Also, the distribution system includes 3 water storage facilities. A 1 Million Gallon (MG) reservoir at the water plant, a 0.8MG reservoir in the northern part of the system, and the 4MG Euclid Standpipe.

Distribution system projects and maintenance

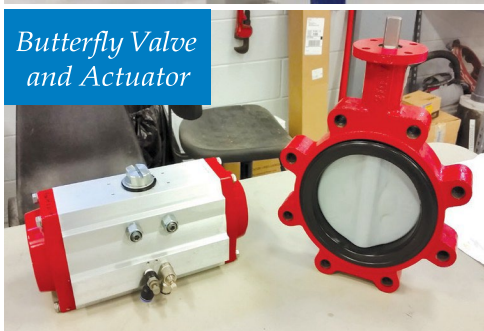
The Township is looking into the possibility of reconfiguring the water storage in the system with new water towers. The goal of this project would be to improve water quality and system reliability.

Benton Charter Township is fortunate to be in a position to continually make improvements to its critical water system infrastructure.

Filters at BCT water treatment plant



Butterfly Valve and Actuator



“ The BCT water treatment facility, built 13 years ago, was a big investment for the Township and we want to ensure its continued success for many decades to come through dedication and good stewardship.”

The staff overseeing the operations of the Benton Charter Township Water Treatment Plant take their responsibility to produce safe, pleasant drinking water very seriously.

Kyle Tryan, Benton Charter Township Water Treatment Plant Superintendent, holds a degree in water treatment and an F1 license for complete municipal water treatment — the highest level obtainable in Michigan.



LEAD IN DRINKING WATER

Information about lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. 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. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Benton Charter Township Water Treatment Plant 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 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.

How lead gets into drinking water

Lead is not present in the BCT Water Plant treated water when the water is pumped from the plant into the distribution system. Lead can enter drinking water, when plumbing materials that contain lead corrode, releasing the lead into the water. The most common source of lead in drinking water are lead pipes, brass or chrome-plated brass faucets and fixtures, and plumbing with lead solder. In homes with lead pipes that connect the home to the water main, also known as lead service lines, these pipes are typically the most significant source of lead in the water. Lead pipes are more likely

to be found in older communities. Among homes without lead service lines, the most common problem is with brass or chrome-plated brass faucets and plumbing with lead solder. Homes built before 1986 to 1988 are more likely to have pipes, plumbing fixtures, and solder containing lead than newer homes and homes with updated plumbing fixtures and piping.

In 2019 Benton Charter Township conducted a preliminary Distribution System Materials Inventory (DSMI) based on available information to ensure that distribution system components and service lines are properly identified and inventoried. A final DSMI will be completed by the end of 2024. As of March, 2023, there were 15 known lead service lines and 700 service lines of unknown material. The total number of service lines in the BCT distribution system is 2,877.

Monitoring and reporting to EGLE requirements

The State and EPA require us to test our water on a regular basis to ensure its safety. We will update this report annually and will keep you informed of any problems that may occur throughout the year, as they happen. Copies of this report are available at the Benton Charter Township Hall.

We invite public participation in decisions that affect drinking water quality. Benton Charter Township Board Meetings are held the 1st and 3rd Tuesday of each month at 5:30 pm. For more information about your water, or the contents of this report, contact the Benton Charter Township Water Treatment Plant at 269-925-4057.

For more information about safe drinking water, visit the U.S. Environmental Protection Agency website at www.epa.gov/safewater or the Michigan Department of Environment, Great Lakes, and Energy (EGLE) website at www.michigan.gov/egle.

TYPES OF WATER PIPES

GALVANIZED



Galvanized steel pipes are a dull, silver-gray color.

- Magnet test: a strong magnet will typically cling to galvanized pipes.
- Scratch test: scratching the surface with coin will not show a discernible change of color.

COPPER



Copper pipes are the color of a copper penny.

- Magnet test: a strong magnet will not cling to copper.
- Scratch test: scratching the surface will reveal a bright copper color, like a new penny.

PLASTIC



Typically white, a rigid plastic pipe that is joined to water supply piping with a clamp.

LEAD



A dull, silver-gray color that is easily scratched with a coin.

- Magnet test: a strong magnet will not cling to lead pipes.
- Scratch test: scratching the surface will reveal a shiny silver color.



FLUORIDE IN DRINKING WATER

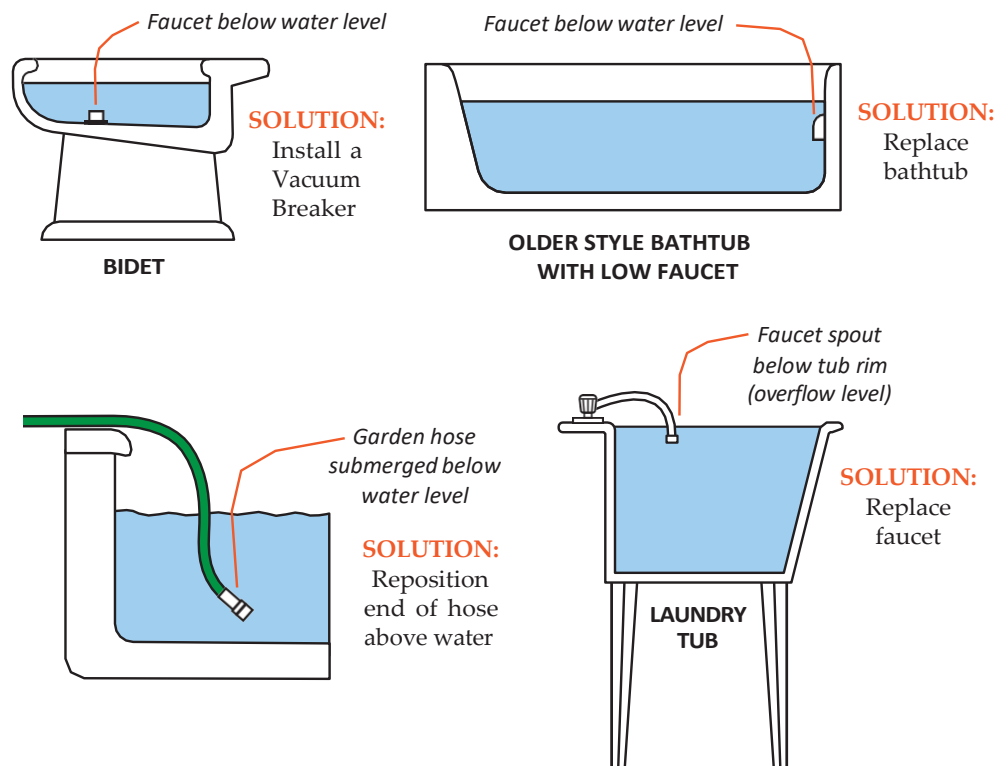
In 2023 the Michigan Department of Health and Human Services awarded Benton Charter Township a Water Fluoridation Quality Award from the U.S. Center for Disease Control and Prevention (CDC). Fluoridation is the adjustment of fluoride in the drinking water to a level that is effective for preventing tooth decay. The award recognizes those communities that achieved excellence in community water fluoridation by maintaining a consistent level of fluoride in drinking water throughout 2021.

According to the CDC, water fluoridation is one of the best investments that a community can make in maintaining oral health of its citizens. It is equally as effective in preventing cavities in children and adults. Fluoridation is also highly cost effective. Studies continue to show that for every dollar communities invest in water fluoridation, twenty dollars are saved in dental treatment cost.

CROSS CONNECTIONS AND BACKFLOWS

- A cross connection can be described as a connection or arrangement of piping through which backflow of non-potable water could enter directly into the public drinking water supply.
- Backflow is a reversal of flow in a public supply that allows water of questionable quality, contaminants, and wastes to enter the distribution system.
- There are two types of backflows: backsiphonage and backpressure.
 - Backsiphonage** can occur during water main breaks or during firefighting/hydrant flushing activities.
 - Backpressure** can occur if a pump starts and creates a higher pressure area than the downstream pressure.
- Both types of backflows are real concerns for water operators and can occur in commercial and residential plumbing.

Common cross connections resulting in backflow:



GENERAL INFORMATION

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 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 systems 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. EPA/CDC 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).

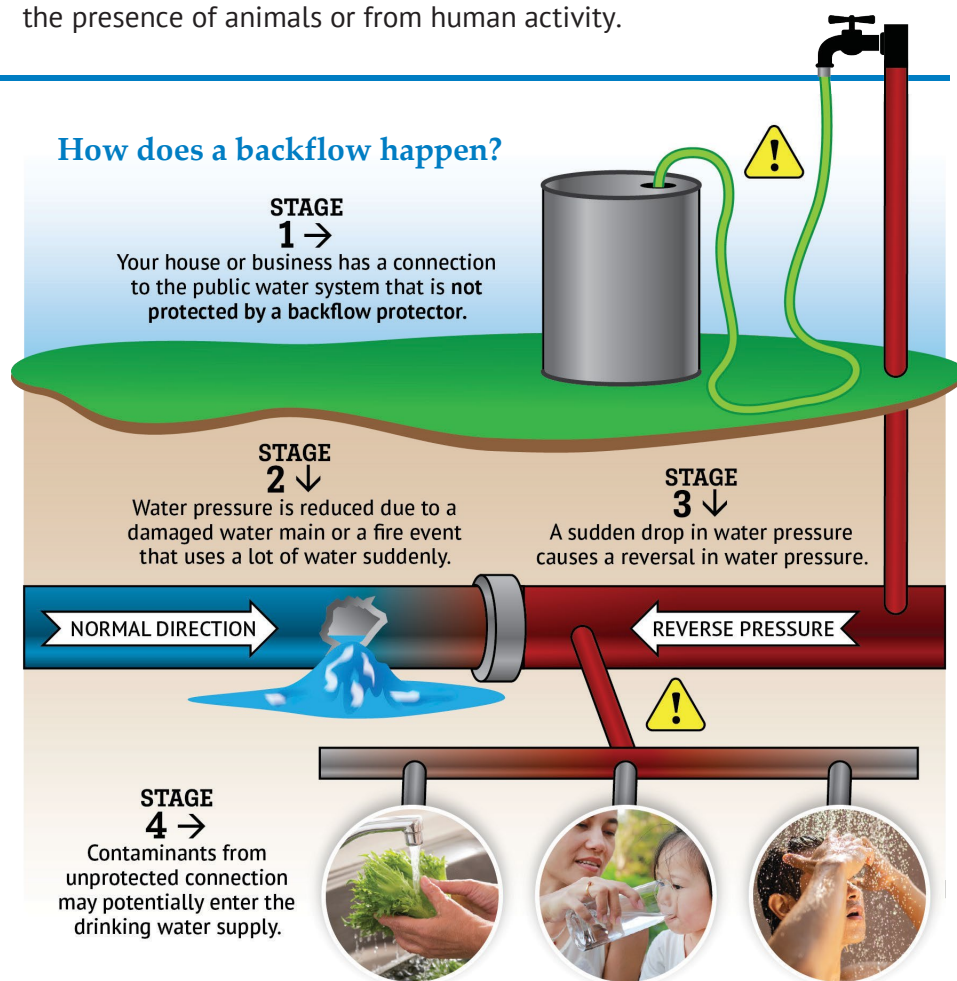
Sources of drinking water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Our water comes from Lake Michigan, a surface water. 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

- 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 storm water 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 storm water runoff, and septic systems.

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



WATER QUALITY DATA

The table on the facing page lists all the drinking water contaminants that were detected during the 2022 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 – December 31, 2022. The State allows the monitoring of certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. All of the data is representative of the water quality, but some are more than one year old. Chlorine is a monthly average. TTHM and HAA5 are sampled quarterly with the results reported as “Running Annual Averages” (RAA).

TERMS AND ABBREVIATIONS USED ON THE FACING PAGE

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.

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

PFAS IN DRINKING WATER

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 United States Environmental Protection Agency (U.S. 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 from 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.

Michigan Department of Environment, Great Lakes, and Energy (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 determine if public health actions are needed.

For 2022, PFOS was not detected and PFOA was detected at 2ng/L. The 2ng/L of PFOA is well below the limit of 8ng/L. 1ng/L is equal to 1 part per trillion.

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. Also available is the Michigan PFAS Action Response Team (MPART) website: www.michigan.gov/pfasresponse

BENTON CHARTER TOWNSHIP WATER DATA

Regulated Contaminant	MCL, TT, or MRDL	MCLG or MRDLG	Your Water	Range	Year Sampled	Violation Yes/No	Typical Source of Contaminant
INORGANIC CONTAMINANTS:							
Barium (ppm)	2	2	0.02	N/A	2022	No	Discharge of drilling wastes; Discharge of metal refineries; Erosion of natural deposits
Nitrate (ppm)	10	10	not detected	N/A	2022	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Fluoride (ppm)	4	4	0.71	N/A	2022	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Sodium ¹ (ppm)	N/A	N/A	11	N/A	2022	No	Erosion of natural deposits.
PFOA (ppt)	8	N/A	2	N/A	2022	No	Industrial discharge and/or pollution, firefighting foams, landfills, and chemical spills.
DISINFECTANTS & DISINFECTION BY-PRODUCTS:							
TTHM - Total Trihalomethanes (ppb)	80	N/A	71	8.3 - 80	2022	No	Byproduct of drinking water disinfection.
HAA5 Haloacetic Acids (ppb)	60	N/A	28.5	9.1 - 55.2	2022	No	Byproduct of drinking water disinfection.
Chlorine ² (ppm)	4	4	1.09	0.98 - 1.27	2022	No	Water additive used to control microbes.

Inorganic Contaminant Subject to AL	Action Level	MCLG	Your Water	Range of Results	Year Sampled	# of Sites Above AL	Typical Source of Contaminant
Lead ³ (ppb)	15 ppb	0 ppb	9 ppb	ND - 27 ppb	2021	1	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	1.3 ppm	1.3 ppm	0.2 ppm	ND - 0.2 ppm	2021	0	Corrosion of household plumbing systems; Erosion of natural deposits

Regulated Contaminant	MCL	MCLG	Your Water	Range	Year Sampled	Typical Source of Contaminant
MICROBIOLOGICAL CONTAMINANT SUBJECT TO TREATMENT TECHNIQUE:						
Turbidity (NTU)	TT= 1 NTU ⁴	0	0.05 NTU	0.02 - 0.05	2022	Soil Runoff
	TT=percentage of samples less than 0.3 NTU		100%	NA		
1 Sodium is not a regulated contaminant.						
2 The chlorine level detected, “Your Water”, was calculated using a running annual average. The RAA is calculated quarterly using monthly averages for the last 12 months.						
3 90 percent of the samples collected were at or below the level reported for your water.						
4 1 Nephelometric Turbidity Unit (NTU), and samples for turbidity must be less than or equal to 0.3 NTUs in at least 95 percent of the samples in any month. 100% of the samples were below the TT value of 1. A value less than 95% constitutes a TT violation. The highest single measurement was 0.07. Any measurement in excess of 5 is a violation.						

WHAT ARE PPM AND PPB?

Parts per million (ppm) and parts per billion are units used to measure the concentration of a substance in water. One part per million equals 1000 parts per billion. Following are some examples that illustrate how small a ppm and ppb actually are.

One part per million (ppm) is the same as:

- 1 inch in 16 miles
- One penny in \$10,000
- 32 seconds out of a year
- 1 drop of water in a washing machine

One part per billion (ppb) is the same as:

- 1 inch in 16,000 miles
- One penny in \$10,000,000
- 3.2 seconds out of 100 years
- 1 drop of water in a swimming pool



1725 Territorial Road
Benton Harbor, MI 49022

CONTACT INFORMATION

Benton Charter Township Water Plant

waterplant@bentonchartertownship-mi.gov
(269) 925-4057

Benton Charter Township Hall

General Water Service and Billing Information:

1725 Territorial Road | Benton Harbor, MI 49022
(269) 925-0616

Water Plant Operators:

NAME / CERTIFICATION

Kyle Tryan / F-1, S-4 • Jason Burkes / F-3
Loren Johnson / F-3 • Alex Lohraff / F-4P

Distribution System Operators:

NAME / CERTIFICATION

Mike Baldwin / S-1 • Chuck Wutzke / S-3
Brennan Bittner • Beau Wutzke

