



* THE STAR OF SOUTHWESTERN MICHIGAN *

ANNUAL Water Quality Report for 2013

JUNE 2014

The purpose of this report is to provide you with information on the quality of the drinking water produced by the Benton Charter Water Treatment Plant during the 2013 calendar year. The federal government established the requirement for this Water Quality Report, more formally known as a Consumer Confidence Report, in 1998. We welcome this opportunity to provide you with details of where your water comes from, what it contains, and how it compares to Environmental

Protection Agency (EPA) and Michigan Department of Environmental Quality (MDEQ) Standards. In addition to the required information, this report includes articles on the construction and treatment process of the new plant.

Questions regarding this report can be directed to Kyle Tryan, Water Plant Superintendent. *

Water treatment plant and system improvements Benton Charter Township, Berrien County, Michigan

Benton Charter Township (the Township) is located in Southwestern Michigan and has a population of approximately 15,000. The Township is home to a variety of land uses, including residential, agribusinesses, highway retail, shopping centers, light industrial and manufacturing (tool and die shops, mold makers, auto industry suppliers, among others) and medium to large corporations

(Whirlpool Corporation, Gast Manufacturing, Inc., Atlantic Automotive Components).

Since the early 1960's the Township purchased its drinking water from

the City of Benton Harbor (the City), establishing a formal agreement in 1968. Service was provided through a system of interconnecting water mains along the common border of the two municipalities. The Township

supply. When those efforts failed, the Township determined the best course of action for their water customers was to construct the Township's own water plant.

In August of 2009, Benton



Raw Water Pump Station



Water Treatment Plant

eventually became the consumer of 40-50% of the water produced by the City. At that point, efforts were made to establish a shared ownership or joint authority to oversee the water

Charter Township contracted with Merritt Engineering, Inc. (MEI) to design and oversee construction of a three million gallon per day (MGD) water treatment plant and



CONTINUED ON PAGE 7

General Information

Contaminants and their presence in water:

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of 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. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS 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 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 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 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 are naturally occurring or 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 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. Many water suppliers add a disinfectant to drinking water to kill germs such as giardia and E. coli especially after heavy rainstorms. Your water system may add more disinfectant to guarantee that these germs are killed. ★

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.

There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

million or milligrams 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. ★

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 Goal (MRDLG): means 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.

* EPA considers 50 pCi/l to be the level of concern for beta particles.

Maximum Residual Disinfectant Level (MRDL):

means the highest level of a disinfectant allowed in drinking water.

N/A: Not applicable ND: not detectable at testing limit ppb: parts per billion or micrograms per liter ppm: parts per

** Unregulated contaminants are those for which EPA has not established drinking water standards. Monitoring helps EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants.



Water Quality Data

The table below lists all the drinking water contaminants that we detected during the 2013 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, 2013. 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 of the data is representative of the water quality, but some are more than one year old. Chlorine, HAA5 and TTHM results are reported as “Running Annual Averages” (RAAs). ★

Regulated Contaminant	MCL	MCLG	Your Water	Range	SAMPLE DATE	VIOLATION YES/NO	TYPICAL SOURCE OF CONTAMINANT
Fluoride (ppm)	4	4	.89	0.61 to 1.03	2013	No	Water additives to protect teeth.
Nitrate (mg/L)	10	10	0.5	N/A	2013	No	Erosion of natural deposits; leaching from septic tanks and sewage.
TTHM - Total Trihalomethanes (ppb)	80	N/A	41	19 to 68.0	2013	No	Byproduct of drinking water disinfection.
HAA5 Haloacetic Acids (ppb)	60	N/A	20.0	2 to 19	2013	No	Byproduct of drinking water disinfection.
Chlorine (ppm)	4	4	0.99	0.79 to 1.20	Daily	No	Water additive used to control microbes.
Radiological Contaminants	MCL	MCLG	Your Water	Range	SAMPLE DATE	VIOLATION YES/NO	TYPICAL SOURCE OF CONTAMINANT
Combined radium (pCi/L)	5	0	1	N/A	2012	No	Erosion of natural deposits.
Barium (mg/L)	2	2	0.03	N/A	4/3/2013	No	Industrial discharge and erosion of natural deposits.
Special Monitoring and Unregulated Contaminant **			Your Water	Range	SAMPLE DATE	TYPICAL SOURCE OF CONTAMINANT	
Sulfate (ppm)			20	N/A	2013	Treatment process additive to help remove suspended particles in water & erosion of natural deposits.	
Sodium (ppm)			11	N/A	2013	Erosion of natural deposits.	
Contaminant Subject to AL	Action Level	MCLG	90% OF SAMPLES < THIS LEVEL	SAMPLE DATE		NUMBER OF SAMPLES ABOVE AL	TYPICAL SOURCE OF CONTAMINANT
Lead (ppb)	15	0	1.8	9/17/2013		1	Corrosion of household plumbing systems.
Copper (ppb)	1300	1300	129	9/17/2013		0	Corrosion of household plumbing systems.



Microbial Contaminants	MCL	MCLG	Number Detected	Violation Yes / No	Typical Source of Contaminant	
Total Coliform Bacteria	>1 positive monthly sample (>5% of monthly samples positive)	0	1	No	Naturally present in the environment	
Fecal Coliform and E. coli	Routine and repeat sample total coliform positive, and one is also fecal or E. coli positive	0	0	No	Human and animal fecal waste	
Substance (units)	MCL	MCLG	Highest Level Detected	Range of Detection	Violation Yes/No	Typical Source of Contaminant
Turbidity (NTU)	TT= 1 NTU TT=percentage of samples equal to or below 0.3 NTU	N/A	0.09	0.03 - 0.09	No	Soil Runoff

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 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 or at <http://www.epa.gov/safewater/lead>.

Turbidity is a measure of the cloudiness of water. We monitor it because it is a good indicator of the effectiveness of our filtration system. Nephelometric Turbidity Units (NTU) is a measure of the clarity of water.

What are PPM and PPB?

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

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

- One drop of gas in the gas tank of a mid-sized car
- One second in 11 days; one minute in two years
- One car in bumper-to-bumper traffic from St. Joseph to Cleveland
- One penny in \$10,000
- One dollar bill in a stack of new dollar bills 250 feet high

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

- One drop in a railroad tanker car
- One second in 32 years; one minute in 1900 years
- One four-inch hamburger in a chain of hamburgers circling the earth at the equator 2.5 times
- One inch in the distance from St. Joseph to Hong Kong and back
- One silver dollar in a roll of silver dollars from Detroit to Salt Lake City ★

Medical Benefits of Water

Without water, no living thing can survive. The human body itself is composed of about 72 percent water, according to the Argonne National Laboratory, part of the U.S. Department of Energy. Drinking enough water on a daily basis is a necessary part of life and an essential part to maintaining proper health.

Water is essential to maintaining optimal health and provides a wide range of health benefits. The Mayo Clinic reports that water performs such vital functions as protecting your organs and tissues, regulates your body temperature, dissolves nutrients to allow your body to use them and carries nutrients and oxygen to your cells. Water's other benefits include moistening the eyes, nose and throat, helping prevent constipation, lubricating joints and flushing waste products from your body.

Dehydration

Dehydration comes when you don't get enough water and can cause serious health problems. Mild to moderate dehydration can cause health effects such as dry mouth, sleepiness, dry skin, headache and dizziness or light-headedness, according to the Mayo Clinic. In severe cases of dehydration, people experience sunken eyes, low blood pressure, rapid heartbeat, loss of the ability to create sweat, delirium, unconsciousness and even death.

Getting Clean Water

While it's vital to get enough water every day, getting the right kinds of water is key. You can get a lot of water by eating foods that contain it, such as fruits, vegetables and most other non-dehydrated foods. Purified and treated water, such as bottled water and tap water, has gone through a process that removes harmful pathogens and contaminants. According to the Centers for Disease Control and prevention, for example, treated tap water has decreased the number of typhoid fever incidents in the United States from about 45 per year in the early 1920s, to zero by 1960.

Getting Enough Water

You constantly use water, expelling it through perspiration, breathing and excreting it through your waste. The average person, according to the Mayo Clinic, needs about 8 or 9 cups of water per day, but this is from all sources, including food. You get about 20 percent of your daily water requirements from the food you eat, and the rest from the fluid you drink. While the "8 glasses of water per day" rule is widely known, it isn't supported by scientific evidence. In general you should drink enough so that you are not thirsty.



Read more: <http://www.livestrong.com/article/457882-medical-benefits-of-drinking-water/#ixzz2WbVyds5w>

Contamination from Cross-Connections

Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment systems containing chemicals (air conditioning systems, fire sprinkling systems, irrigation systems) or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to main breaks

causing contaminants to be siphoned out from the equipment and into the drinking water line (backsiphonage).

The most common sources of cross-connection contamination at home is outside water taps and garden hoses. Garden hoses create hazards when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools or garden chemicals. Improperly installed valves in your toilet could be a source of cross-connection contamination. Community water supplies are

continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention assemblies, are installed and maintained. We continually survey all commercial and institutional facilities in our service area to make sure that all potential cross-connections are identified and eliminated or protected by a backflow preventer.

For more information, you can call the Safe Drinking Water Hotline at (800) 426-4791 or review the Cross-Connection Control Manual at the U.S. EPA's website: www.epa.gov/safewater/crossconnection.html. ★

Water Conservation Tips for Consumers

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference-try one today and soon it will become second nature.

Take short showers- A 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.

Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.

Use water-efficient showerhead. They are inexpensive, easy to install, and can save you up to 750 gallons a month.

Water plants only when necessary.

Fix leaking toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.

Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.

Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!

Visit www.epa.gov/watersense for more information. ★



appurtenant system improvements. MEI developed plans for a state-of-art micro-filtration treatment system, housed in a 10,000 square foot building. The building would allow immediate expansion to eight MGD and a future capacity of 12 MGD with building expansion. Additional system improvements include two major transmission lines (16-inch and 20-inch diameters) totaling 7,400 feet; over six miles of miscellaneous sized pipe lines along the municipal border to facilitate separation from the City system; over 4,000 feet of 36-inch raw water intake pipe extending into Lake Michigan; a raw water pumping station; a new 1.0 million gallon finished water storage reservoir; improvements to an existing booster station and an existing 4.0 million gallon stand pipe and booster station. From the August 2009 start, MEI completed all field work, designed the improvements, applied for and received 16 federal, state and local permits, bid and awarded 13 construction contracts, all in approximately 11 months.

The first ground was broken in September 2010. Residents began drinking Benton Charter Township produced water in mid-October 2011.

Special construction methods and issues faced in this project included a 3,300 foot, directionally drilled, 18-inch diameter polyethylene pipe under the environmentally sensitive Paw Paw River and adjoining wetlands; a concrete 20 foot diameter, 50 foot-deep shorewell constructed in five foot vertical sections poured from the top down; converting an existing 4 million gallon storage tank to act as an elevated storage facility, and installing 4,000 feet of intake pipe while working around the usual Spring perch spawning season and the usual wind and waves found on Lake Michigan.

The project was completed for approximately \$22 million. In



The Lake Michigan Intake and Raw Water Pump Station Provided Unique Challenges

comparison to other recently built plants in Michigan, the Benton Charter Township Water Plant and other system improvements were constructed at a most reasonable cost.

Attorney and Chief Building Official and the Berrien County Board of Public Works. We would also like to thank the residents of Benton Charter Township for their support. ★

As always, the success of a project of this nature depends on the teamwork of many. Our team included Brooks Architectural and Fujawa Structural Engineering, as well as the Benton Charter Township Board of Trustees, Comptroller,



* THE STAR OF SOUTHWESTERN MICHIGAN *

1725 Territorial Road
Benton Harbor, MI 49022

PRST STD
US Postage
PAID
St. Joseph, MI
Permit No.1

Contact Information:

Water Plant Superintendent: Kyle Tryan
Email: ktryan@bentonchartertownship-mi.gov
waterplant@bentonchartertownship-mi.gov

Water Plant Operators: Loren Johnson, Brian Schmidt, Wally Miel

Water Treatment Plant Phone: 269-925-4057