CITY OF ANN ARBOR

2019 Water Quality Report

A²H₂O Quality Water Matters

PARTNERSHIP FOR SAFE WATER

WHAT'S INSIDE:

A MESSAGE TO OUR CUSTOMERS

Summarizing 2019 Water Quality Test Results

Protecting Safe Drinking Water: Keeping Our Customers Informed

To Our Customers:
We, at the City of Ann Arbor Water Treatment Services Unit, are pleased to share with you our annual drinking water quality report. The U.S. Environmental Protection Agency (EPA) and Michigan Department of the Environment, Great Lakes, and Energy (EGLE) require that all water suppliers produce an annual report to inform customers about the quality of their drinking water. This report explains where your drinking water comes from, what is in it and how we keep it safe.

Last year, I took this opportunity to inform you about our new customer engagement strategy as well as provide an update on several Water Treatment Plant (WTP) capital initiatives. WTP staff continue to issue regular water quality reports and updates as part of our monthly newsletter, Quality Water Matters. Current and past issues are online at www.QualityWaterMatters.org. You can also subscribe to get updates via email with each newly released issue.

In 2019, the water system completed approximately $13 million in capital reinvestment. There were 12 active watermain projects in design and/or construction, and six active construction projects at the WTP. One of the projects that I highlighted in 2018, which is well underway and scheduled to be completed this summer, is the ultraviolet light disinfection project at the WTP, which will enable the city to remove an emerging pathogen, *Cryptosporidium*, that inhabits the city's surface water supply in the Huron River. We also completed replacement of all the granular activated carbon in our filters to improve perfluoroalkyl substances (PFAS) removal at a cost of nearly $1 million. Eighty percent of this project was funded through a State of Michigan grant. Since the completion of this work, the city's drinking water has consistently exceeded its finished water quality goal of less than 10 ppt combined of PFOS and PFOA.

As the State of Michigan prepares to regulate seven PFAS chemicals in drinking water during the coming year, the improvements we have made position us well to meet these new regulatory standards. In fact, we established our own water quality goals that exceed those standards proposed by the State of Michigan and any other state in the United States that is considering regulating PFAS. While we have taken steps to remove PFAS from our source water, the most effective strategy to remove these contaminants is at their source. For this reason, we continue to lobby the state to address PFAS in the watershed by incentivizing removal, including those PFAS chemicals that are not yet regulated.

Because the federal government has been slow to act on regulating emerging water quality contaminants, such as PFAS, we believe that the city cannot wait on federal regulation to protect public health. For this reason, we have taken an active role in researching water treatment solutions to emerging water quality issues. We are currently working in partnership with the University of Michigan to evaluate treatment for microbial pathogens focusing on nontuberculous mycobacteria (NTM), and with North Carolina State and the Colorado School of Mines to evaluate treatment alternatives for short-chain PFAS. These research efforts, funded by grants, positions us well for the future.

While water system staff at the city discuss and evaluate water quality issues every day, it is important to us that our customers stay engaged and are aware of the quality of the water that they consume and provide to their families. For this reason, we encourage you to follow us on social media and via our website www.QualityWaterMatters.org to obtain current information about your water – directly from the source.

If you have the opportunity, I encourage you to visit us at our annual open house Saturday, May 9, 10 a.m.–2 p.m. This is a family-friendly and free event that is open to the public. It's also a great opportunity to learn even more about your drinking water and talk directly to the professionals who are responsible for treating and delivering water to your homes and businesses every day.

If you have questions about this report or water quality in the City of Ann Arbor, please call 734.794.6426, email water@a2gov.org or visit www.QualityWaterMatters.org.
Sincerely,

Brian Steglitz

Brian Steglitz, PE, Manager of Water Treatment Services, F-1 Licensed Operator

ABOUT THIS REPORT

In the following pages, you will find an overview of the required and voluntary water testing programs that protect our drinking water system. In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which 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 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 at 800.426.4791.

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, urban storm water runoff, and residential uses

- 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

- Radioactive contaminants which can be naturally occurring or be the result of oil and gas production and mining activities

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 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.

Source Water Assessment Program:
Federal regulations require states to develop and implement Source Water Assessment Programs (SWAP) to compile information about potential sources of contamination to their source water supplies. This information allows us to better protect our drinking water sources. In 2004, MDEQ performed a Source Water Assessment on the city's system. To obtain a copy of the assessment, request one by calling 734.794.6320.

In 2017, the city completed a Surface Water Intake Protection Plan (SWIPP). Implementation of this plan continues through system-wide data collection and monitoring, community staff training, contingency planning, public outreach, and vegetation management. If you have further questions about the city's SWIPP, please visit the city's website at: **www.a2gov.org/departments/systems-planning/programs/Pages/SWIPP.aspx**

The City of Ann Arbor's source water is comprised of both surface and ground water sources. About 85% of the water supply comes from the Huron River with the remaining 15% provided by multiple wells. The water from both sources is blended at the Water Treatment Plant.

WATER QUALITY DATA

The City of Ann Arbor is committed to providing exceptional water quality. We routinely monitor for contaminants in your drinking water according to federal and state standards. Many additional parameters were tested, but not detected, and are not included in this report. This report includes information on all regulated drinking water parameters detected during calendar year 2019. We are required to monitor for certain contaminants less than once per year because the concentration of these contaminants are not expected to vary significantly from year to year.

Regulated Contaminants Detected (abbreviations and definitions on page 7)

Parameter Detected	Your Water Results		Regulatory Requirements		Likely Source
	Highest Level Detected	Results Range	EPA LIMIT	EPA GOAL	
			MCL, TT, or MRDL	MCLG or MRDLG	
Disinfection Byproducts, Disinfectant Residuals, and Disinfection Byproduct Precursors					
Bromate	4.6 ppb [1]	<1.0 – 10.0 ppb	10	0	Byproduct of ozone disinfection
Chloramines [3]	2.5 ppm [1]	0.30 – 3.2 ppm	MRDL: 4	MRDLG: 4	Disinfectant added at Water Plant
Haloacetic Acids (HAA5) [3]	7.4 ppb [2]	2.4 – 11.5 ppb	60	N/A	Byproduct of disinfection
Total Organic Carbon (TOC)	53% removed [1]	31 – 63% removed	TT: 25% minimum removal	N/A	Naturally present in the environment
Total Trihalomethanes (TTHM) [3]	3.6 ppb [2]	0.8 – 7.4 ppb	80	N/A	Byproduct of disinfection
Radiochemical Contaminants (tested in 2017)					
Gross Alpha	0.817 ± 1.35 pCi/L	N/A	15	0	Erosion of natural deposits
Radium 226 and 228	1.39 ±0.91 pCi/L	N/A	5	0	Erosion of natural deposits
Inorganic Contaminants					
Arsenic	<0.5 ppb	N/A	10	0	Erosion of natural deposits
Barium	21 ppb	N/A	2000	2000	Erosion of natural deposits
Chromium (total)	<0.5 ppb	N/A	100	100	Discharge from steel and pulp mills; erosion of natural deposits
Fluoride	0.61 ppm	0.54 – 0.67 ppm	4	4	Erosion of natural deposits; water additive which promotes strong teeth
Nitrate	0.4 ppm	0.3 – 0.8 ppm	10	10	Runoff from fertilizer use; leaching from septic tanks and sewage
Nitrite	0.03 ppm	<0.025 – 0.09 ppm	1	1	Runoff from fertilizer use; leaching from septic tanks and sewage
Microbiological Contaminants					
Total Coliform [3]	1 positive out of 137 tested in Apr.	0 – 0.7%	TT: ≤ 5% positive per month	N/A	Naturally present in the environment
Turbidity	0.23 NTU	100% of samples ≤0.3 NTU	1 NTU and 95% of samples ≤0.3 NTU	N/A	Naturally present in the environment
2017 Lead and Copper Results from Customer Faucets					
Copper [4]	100 ppb (90% of samples ≤ this level)	0 out of 62 (number of sites above action level)	1300	1300	Corrosion of household plumbing
Lead [4]	3 ppb (90% of samples ≤ this level)	0 out of 62 (number of sites above action level)	15	0	Corrosion of household plumbing

[1] highest running annual average [2] highest locational running annual average [3] measured in the distribution system
[4] Lead and Copper are regulated by action levels

WATER QUALITY DATA

2019 Special Monitoring

[1] EPA health advisory level for PFOS and PFOA combined is 0.07 ppb

Parameter Detected (units)	Your Water Results		Likely Source
	Average level detected	Range	
1,4-Dioxane (ppb)	<0.029	<0.029-0.030J	Groundwater contamination from manufacturing process and landfills
N-Nitrosodimethylamine (NDMA) (ppb) (2018)	<0.48	N/A	Byproduct of disinfection
Perchlorate (ppb)	<0.30	N/A	Nitrate fertilizer runoff; contamination from industrial manufacturing process
Sodium (ppm)	67	53-81	Erosion of natural deposits; road salt and water softeners
Perfluorooctanesulfonic Acid (PFOS) (ppt) [1]	ND	ND – 3.5	Consumer products such as Teflon, Scotch Guard, Stain Master, and firefighting foam.
Perfluorooctanoic Acid (PFOA) (ppt) [1]	ND	ND – 1.0J	Consumer products such as Teflon, Scotch Guard, Stain Master, and firefighting foam.
Total PFAS-(24 compounds) (ppt) [1]	18	2.0-30	Consumer products such as Teflon, Scotch Guard, Stain Master, and firefighting foam.

Other Water Quality Parameters of Interest

Parameter Detected (units)	Your Water Results	
	Average level detected	Range
Alkalinity, total (ppm as $CaCO_3$)	60	34 – 112
Aluminum (ppm)	0.020	N/A
Ammonia as N (ppm)	<0.10	<0.10 – 0.43
Arsenic (ppb)	<0.5	N/A
Calcium (ppm	30	20 – 40
Chloride (ppm)	114	95 – 141
Conductivity (µmhos/cm)	612	503 – 790
Hardness ($CaCO_3$) (ppm)	130	96 – 170
Hardness ($CaCO_3$) (gpg)	7.6	5.6-9.9
Iron (ppm)	<0.040	N/A
Lead (ppb) (at Water Treatment Plant tap)	<1.0	N/A

Parameter Detected (units)	Your Water Results	
	Average level detected	Range
Magnesium (ppm)	13	8 – 19
Manganese (ppb)	0.6	<0.42-5.1
Mercury (ppb)	<0.20	N/A
Non-Carbonate Hardness (ppm)	70	32 – 122
pH (S.U.)	9.3	9.0 – 9.7
Phosphorus, total (ppm)	0.27	0.08 – 0.60
Potassium (ppm)	4.4	N/A
Sulfate (ppm)	49	33 – 81
Temperature (° Celsius)	14.9	3.7 – 25.0
Total solids (ppm)	357	308 – 400
Zinc (ppb)	<4.3	N/A
Nitrite in distribution (ppm)	0.051	<0.025-0.210

DO I NEED TO TAKE ANY SPECIAL PRECAUTIONS?

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.

EPA/CDC guidelines on appropriate means to lessen the risk of infection by microbial contaminants are available from the Safe Drinking Water Hotline at: 800.426.4791.

CONTAMINANTS OF CONCERN

PFAS

Per- and polyfluoroalkyl substances (PFAS), are a group of chemicals that have been classified by the EPA as emerging contaminants. PFAS have been around since the 1950s, but we didn't know much about their effects until the early 2000s, when scientists began releasing data on PFAS health impacts and their persistence in the environment. For decades, they have been used in many industrial applications and consumer products such as carpeting, waterproof clothing, upholstery, food paper wrappings, firefighting foams, and metal plating. They are still widely used today. PFAS have been found at low levels both in the environment and in blood samples of the general U.S. population. PFAS 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.

Samples collected by the city and analyzed by an independent lab each month have shown PFAS in Ann Arbor drinking water at levels significantly below the Health Advisory Level established by the EPA and adopted by the State of Michigan and below the proposed Maximum Contaminant Levels (MCLs) that the State of Michigan is currently considering. The city continues to monitor for PFAS compounds and remains committed to providing safe drinking water that complies with or exceeds all regulatory guidelines.

Currently, granular activated carbon (GAC) filtration is the best available technology for removing PFAS in drinking water. The city has GAC filters, and has been piloting a new type of carbon in several of its filters since November 2017. Due to the success of this pilot, in September 2018, City Council approved a proposal to replace all of the older carbon in the City's filters with the new type of carbon in fiscal year 2019. Since completion of this project, concentrations of PFOS and PFOA have been below quantification limits and far below the city's target of less than 10 ppt, more restrictive than the most stringent water quality levels established in the US or around the world. Additional information and PFAS results are online at www.a2gov.org/PFAS.

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 City of Ann Arbor is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

In 2017, Michigan enacted a revised Lead and Copper Rule. To meet these new requirements, the city developed a preliminary service line materials inventory that was finalized in January 2020. Over the next three years, the city will be developing a confirmed service line material inventory, which involves physical verification in every customer home. This verification will be done in conjunction with the city-wide water meter replacement project. More information about lead in drinking water and this project is online at www.a2gov.org/LCR.

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 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 via the Safe Drinking Water Hotline at 1-800.426.4791 or on the USEPA Web site (http://water.epa.gov/drink/info/lead/index.cfm).

1,4-DIOXANE

Gelman Sciences polluted groundwater in parts of Washtenaw County, including parts of the city as well as Ann Arbor and Scio Townships, when it improperly disposed of industrial solvents containing 1,4-dioxane between 1966 and 1986. That pollution has since spread through the aquifer. The city is engaged with neighboring communities and the state to push Gelman to delineate, contain and clean up its pollution among other things. To that end, the city has, for example, intervened in litigation in Washtenaw County Circuit Court brought by the state against Gelman.
In February 2019, due to decreases in the detection limit provided by the city's contract analytical laboratory, 1,4-dioxane was detected in the drinking water at 0.030 ppb, a concentration much lower than any EPA risk levels. Additional information and analytical test results are posted on our website: www.A2gov.org/A2H2O.

..... see the next page for additional information.

CONTAMINANTS OF CONCERN

CRYPTOSPORIDIUM

Cryptosporidium is a microbial pathogen found in surface water throughout the United States. Although filtration removes *Cryptosporidium*, the most commonly used filtration methods cannot guarantee 100% removal. Our testing indicates the presence of these organisms in our source water, but not in the finished water. Current test methods do not allow us to determine if the detected organisms are capable of causing disease or if they are dead. Ingestion of *Cryptosporidium* may cause cryptosporidiosis, an abdominal infection. Most healthy individuals can overcome the disease within a few weeks. *Cryptosporidium* must be ingested to cause disease and it may be spread through means other than drinking water.

To respond to recent increases in concentrations of *Cryptosporidium* in the Huron River, the city is adding ultraviolet light (UV) disinfection to the water treatment process. The new treatment technology will be operational this summer.

ABBREVIATIONS/DEFINITIONS & MORE INFORMATION

ABBREVIATIONS & DEFINITIONS:

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

$CaCO_3$: Calcium carbonate

Gpg-Grains per Gallon: A unit of water hardness defined as 1 grain (64.8 milligrams) of calcium carbonated dissolved in one gallon of water.

J: Estimated concentration above the method detection limit and below the reporting limit.

MCL-Maximum Contaminant Level: The level of a contaminant that is allowed in drinking water. They are set as close to the MCLGs as feasible.

MCLG-Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health.

MRDL-Maximum Residual Disinfectant Level: The highest level of a disinfectant allowed in drinking water.

MRDLG-Maximum Residual Disinfectant Level Goal: The level of a drinking water disinfectant below which there is no known or expected risk to health.

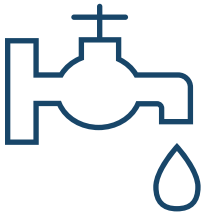
ND: Not Detected

NTU-Nephelometric Turbidity Units: A measure of cloudiness in the water

pCi/L: picocuries per liter | **ppm:** parts per million | **ppb:** parts per billion

ppt: parts per trillion | **S.U.:** Standard Units

TT-Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water



DID YOU KNOW?

The average cost of **ONE** gallon of drinking water for Ann Arbor customers is less than **$0.01** and includes delivery to your home or business.

Printed copies of this report are available. Please share this report with all people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand and mail.

To receive a printed copy of this report please call 734.794.6320.

KIDS' ACTIVITIES

Every Drop Counts!

See what can happen when you cut your shower time by just one minute (or more if you're feeling ambitious) by filling in the blanks below. If you don't know how much time you spend in the shower, just use the average person's time of eight minutes.

1. **How long do you spend in each shower?** =_____ **minutes**
2. **Multiply that by the average shower flow:** **x 2.2 gallons a minute =**_____
3. **Multiply your answer for #2 by the number of times you shower every week:** =_____ **gallons per week**
4. **Multiply your answer for #3 by 52 weeks** =_____ **gallons per year**
5. **Subtract one minute from your regular shower time.** =_____ **minutes**
6. **Multiply that by the average shower flow:** **x 2.2 gallons a minute =**_____
7. **Multiply your answer for #6 by the number of times you shower every week:** =_____ **gallons per week**
8. **Multiply your answer for #7 by 52 weeks** =_____ **gallons per year**
9. **Subtract your answer for #4 from your answer for #8** =_____ **gallons saved per year!**

Bonus: WaterSense labeled showerheads use less water but still have power. Estimate how much water they save by recalculating numbers 6 through 9 above using a shower flow of 2.0 gallons per minute. Show your parents how much water you can save by looking for WaterSense when shopping for a showerhead.

Use Your WaterSense

Below are 13 hidden vertical, horizontal, and backwards words related to saving water and energy. How many words can you find?

A	L	P	L	U	G	V	J	S	X	S	Q	Q	T	G
G	A	C	F	K	E	Y	P	X	Q	G	G	A	M	Y
B	B	J	Q	R	N	T	Q	B	F	N	B	E	J	E
I	E	Y	E	K	V	U	X	E	T	I	E	S	K	I
I	L	G	H	E	I	W	K	D	E	V	L	N	E	H
Y	P	R	A	C	R	A	W	C	T	A	E	E	J	D
X	E	E	V	R	O	T	P	F	R	S	C	S	G	G
Q	X	N	E	U	N	T	N	G	W	A	T	R	A	A
J	D	E	R	O	M	S	C	J	O	S	R	E	U	L
O	N	M	A	S	E	H	J	C	L	M	I	T	Z	L
G	P	V	G	E	N	D	O	L	F	J	C	A	Y	O
O	M	I	E	R	T	E	P	R	F	F	I	W	U	N
U	D	A	E	H	R	E	W	O	H	S	T	U	S	E
H	G	G	Z	Q	P	Y	X	Z	S	A	Y	H	M	U
D	R	O	P	S	M	W	J	P	B	Y	Y	T	H	I

AVERAGE
DROPS
ELECTRICITY
ENERGY
ENVIRONMENT
FLOW
GALLON
LABEL
RESOURCE
SAVINGS
SHOWERHEAD
WATERSENSE
WATTS

- There are more than 300 million people in the United States. If each person reduced his or her shower time by one minute, we could save a com bined 165 billion gallons each year!

look for WaterSense Meets EPA Criteria

- Energy we use at home is measured in something called kilowatt hours, or kWh. On aver age, your home's television uses 26 kWh of electricity per month. If your family uses WaterSense labeled showerheads, you save more than 370 kWh of electricity per year. With the energy you're saving, you could you watch 14 months of television!

For more information, visit the WaterSense Kids' website at www.epa.gov/watersense/kids.