



2017 Water Quality Report

Safe • Affordable • Reliable



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A Message 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 Environmental Quality (MDEQ) require that all water suppliers produce an annual report that informs its 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 wrote about our long term infrastructure needs. This continues to be a focus for the utility. In order to prepare for future capital investment, the City has recently completed a study that reviewed the water and sewer rate structures to ensure that all of our customers are being charged for the services that the utility provides, and that future rate adjustments will be sufficient to finance our capital improvement plans. In the Spring of 2018, this revised rate structure will be presented to City Council for their consideration and adoption. Examples of future capital projects include replacing water mains in areas that experience a large number of main breaks and/or water quality problems, as well as replacing parts of the Water Treatment Plant that date back to 1938.

As you may remember, the City of Ann Arbor won the Best Tasting Water in Michigan in 2016 and was fortunate enough to repeat as the winner in 2017. The City is the only utility in Michigan to have won this award three times since its inception in 1985. In June of 2017, at the American Water Works Association Conference in Philadelphia, the City competed against over 40 utilities from around the country and Canada (winners from many of the states and several Canadian provinces) and finished in 4th place, which is the closest that a Michigan utility has ever come to winning this event.

While it is an honor to be known for great tasting water, it is more important that the water delivered every day to our customers is of the highest quality. In order to meet this standard the City performs over 145,000 water quality tests every year, and staff continually work to ensure safe, reliable water is delivered to your home or business every day. The City also participates in the Partnership for Safe Water Program which is a voluntary program that sets more stringent water quality goals than required by both the State of Michigan and EPA.



Eddy the Water Drop holding the 2017 Award for Best Tasting Water in Michigan

If you have the opportunity, please contact us for a group tour or attend our annual open house on May 5, 2018, which is free to the public. These are great opportunities to learn more about your drinking water.

If you have questions about this report, or water quality in the City of Ann Arbor, please contact us at (734) 794-6426 or email us at water@a2gov.org or visit us on the web at www.a2gov.org/a2h2o.

Sincerely,

Brian Steglitz, PE
Manager of Water Treatment Services



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.



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.

Photo of Barton Pond by Greg Croasdill

How Do Sources of Drinking Water Become Polluted?

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 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 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 can also come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

Source Water Assessment Program

Federal regulations require states to develop and implement Source Water Assessment Programs (SWAP) to compile information about any potential sources of contamination to their source water supplies. This information allows us to better protect our drinking water sources. In 2004, the MDEQ performed a Source Water Assessment on the City's system. To obtain a copy of the assessment, request one by calling (734) 794-6426.

In 2017, the City completed a Surface Water Intake Protection Plan (SWIPP), addressing an efficient and economical means of source water protection allowing the City to continue to produce high quality drinking water. 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 see the City's website at: www.a2gov.org/departments/systems-planning/programs/Pages/SWIPP.aspx

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 2017. 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	3.8 ppb ¹	ND – 10.6 ppb	10	0	Byproduct of ozone disinfection
Chloramines ³	2.4 ppm ¹	0.17 – 3.4 ppm	MRDL: 4	MRDLG: 4	Disinfectant added at Water Plant
Haloacetic Acids (HAA5) ³	5.0 ppb ²	ND – 8.0 ppb	60	N/A	Byproduct of disinfection
Total Organic Carbon (TOC)	57% removed ¹	49 – 64% removed	TT: 25% minimum removal	N/A	Naturally present in the environment
Total Trihalomethanes (TTHM) ³	3.9 ppb ²	1.4 – 4.7 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	1.1 ppb	N/A	10	0	Erosion of natural deposits
Barium	18.3 ppb	N/A	2000	2000	Erosion of natural deposits
Chromium (total)	<1 ppb	N/A	100	100	Discharge from steel and pulp mills; erosion of natural deposits
Fluoride	0.85 ppm	0.52 – 0.85 ppm	4	4	Erosion of natural deposits; water additive which promotes strong teeth
Nitrate	0.8 ppm	0.2 – 0.8 ppm	10	10	Runoff from fertilizer use; leaching from septic tanks and sewage
Nitrite	0.031 ppm	ND – 0.031 ppm	1	1	Runoff from fertilizer use; leaching from septic tanks and sewage
Microbiological Contaminants					
Total Coliform ³	6 positives out of 131 tested in Oct.	0 – 4.6%	TT: ≤ 5% positive per month	N/A	Naturally present in the environment
Turbidity	0.20 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

2017 Special Monitoring

Parameter Detected (units)	Your Water Results		Likely Source
	Average level detected	Range	
1,4-Dioxane (ppb) ¹	<0.07	N/A	Groundwater contamination from manufacturing process and landfills
N-Nitrosodimethylamine (NDMA) (ppb)	<0.48	N/A	Byproduct of disinfection
Perchlorate (ppb)	<0.54	N/A	Nitrate fertilizer runoff; contamination from industrial manufacturing process
Sodium (ppm)	62	47-73	Erosion of natural deposits; road salt and water softeners
Perfluorooctanesulfonic Acid (PFOS) (ppb) ²	0.0029	ND – 0.0079	Consumer products such as Teflon, Scotch Guard, Stain Master, and firefighting foam.
Perfluorooctanoic Acid (PFOA) (ppb) ²	0.0012	ND – 0.0036	Consumer products such as Teflon, Scotch Guard, Stain Master, and firefighting foam.

¹To date, no 1,4-Dioxane has ever been detected in the municipal drinking supply. Additional information can be found at Michigan.gov/deq

² EPA health advisory level for PFOS and PFOA combined is 0.07 ppb

PFOS & PFOA

Perfluoroalkyl substances (PFAS) have been widely used in manufacturing cookware, food packaging, clothing, carpeting, personal care products, firefighting foams, and other applications. Once introduced into the environment, PFAS are highly persistent and may be linked to adverse human health effects. In Michigan, the issue has been highlighted in the news because there are several communities where these compounds were detected in drinking water at low levels.

The Environmental Protection Agency (EPA) has required the City of Ann Arbor to test for PFAS as part of an unregulated contaminant monitoring rule. In 2016 the EPA issued a health advisory level of 0.07 parts per billion (ppb) for the combined amount of two PFAS compounds, perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA). All the City's results in treated water for these compounds are below the EPA health advisory level. The City is investigating alternate methods of removing PFAS using activated carbon should additional treatment be required.



Other Water Quality Parameters of Interest

Parameter Detected (units)	Your Water Results		Parameter Detected (units)	Your Water Results	
	Average level detected	Range		Average level detected	Range
Alkalinity, total (ppm as CaCO ₃)	63	40 – 125	Magnesium (ppm)	14	10 – 20
Aluminum (ppm)	0.012	N/A	Manganese (ppb)	1.0	N/A
Ammonia as N (ppm)	<0.10	<0.10 – 0.18	Mercury (ppb)	<0.20	N/A
Arsenic (ppb)	1.1	N/A	Non-Carbonate Hardness (ppm)	74	26 – 117
Calcium (ppm)	34	19 – 69	pH (S.U.)	9.3	8.9 – 9.5
Chloride (ppm)	111	75 – 148	Phosphorus, total (ppm)	0.25	0.10 – 0.43
Conductivity (µmhos/cm)	611	479 – 749	Potassium (ppm)	2.6	N/A
Hardness (CaCO ₃) (ppm)	137	96 – 210	Sulfate (ppm)	54	37 – 73
Hardness (CaCO ₃) (gpg)	8.0	5.6-12.3	Temperature (° Celsius)	15.5	7.0 – 26.6
Iron (ppm)	<0.1	N/A	Total solids (ppm)	355	286 – 418
Lead (ppb) (at Water Treatment Plant tap)	<1.0	N/A	Zinc (ppb)	<5.0	N/A
			¹ Nitrite in distribution (ppm)	0.013	ND- 0.28

¹ Nitrite in the distribution system comes from the decomposition of the chloramine disinfectant. Its concentration is a function water age and increased temperature. Levels are highest in August and September in places far from the plant where the flow is low.

The table above contains both regulated and unregulated contaminants. 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.

Contaminants of Concern

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, the City completed a project to remove the last remaining lead components of City-owned service lines.

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 for the Safe Drinking Water Hotline at (800) 426-4791 or on the EPA Web site: (<http://water.epa.gov/drink/info/lead/index.cfm>)



Cryptosporidium

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. 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.



1,4-Dioxane

Groundwater in parts of Washtenaw County, including some areas under the City of Ann Arbor and Scio and Ann Arbor Townships, is polluted with the industrial solvent 1,4-Dioxane. This is due to Gelman Sciences' (now Danaher Corporation) improper disposal of wastewater containing the chemical between 1966 and 1986. As a result of their actions, the chemical seeped through soil and rock layers into the groundwater and has since spread. It is important to note, however, that Ann Arbor's drinking water is safe. **To date, no 1,4-Dioxane has ever been detected in the municipal drinking water supply.** Additional information can be found at Michigan.gov/deq.

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 Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

Definitions and More Information

Abbreviations and Definitions

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

CaCO₃: Calcium carbonate

gpg (Grains per Gallon): A unit of water hardness defined as 1 grain (64.8 milligrams) of calcium carbonate dissolved in one US gallon of water (3.785 L). This is a term often used by appliance manufacturers.

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.

N/A: Not Applicable

ND: Not detected at or above the minimum reporting level - laboratory analysis indicates that the constituent is not present.

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

pCi/L: picocuries per liter (a measure of radioactivity).

ppm (1 part per million) or mg/L (milligrams per liter): corresponds to one minute in two years or a single penny in \$10,000. 1 ppm = 1000 ppb.

ppb (1 part per billion) or µg/L (micrograms per liter): corresponds to one minute in 2,000 years, or a single penny in \$10,000,000

S.U.: Standard Units

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

We invite public participation in decisions that affect drinking water quality!

Attend a City Council meeting if you would like to learn more about issues affecting our community. City Council meets at 7:00 p.m. on the 1st and 3rd Monday of every month in the City Hall Council Chambers, 2nd floor of Larcom City Hall, 301 East Huron Street.

A full calendar of events is available at a2gov.org.

Water By the Numbers

The Water Treatment Plant runs **24/7/365!**

At the Water Treatment Plant, about **5 billion gallons** of water are processed annually, over **145,000 tests** are run each year, and over **125,000 people** rely on the water that is processed at the City of Ann Arbor Water Treatment Plant.

City of Ann Arbor Public Works maintains approximately **500 miles** of water distribution pipes.



Printed copies 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) 994-2700.

H2O WORD SEARCH

T U P N O L L A G E N K R H F
 P N B B M V D G B W N S N A H
 S I E Y R T S I M E H C U I W
 W K P M A E W M Q T H C U A S
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CALCIUM
 CHEMISTRY
 CLEAN
 DRINKING
 FAUCET
 FILTER
 GALLON
 HURON
 LIME
 LITER
 MONITOR
 OZONE
 PIPES
 QUALITY
 RIVER
 SINK
 TESTING
 TREATMENT
 WATER
 WELL



May is Water Month!

- May 5: Water Treatment Plant Open House
- May 6-12: Water Week
- May 14-21: Infrastructure Week
- May 20: Huron River Day
- May 20-26: Public Works Week

Drinking Water Week | May 6-12, 2018

