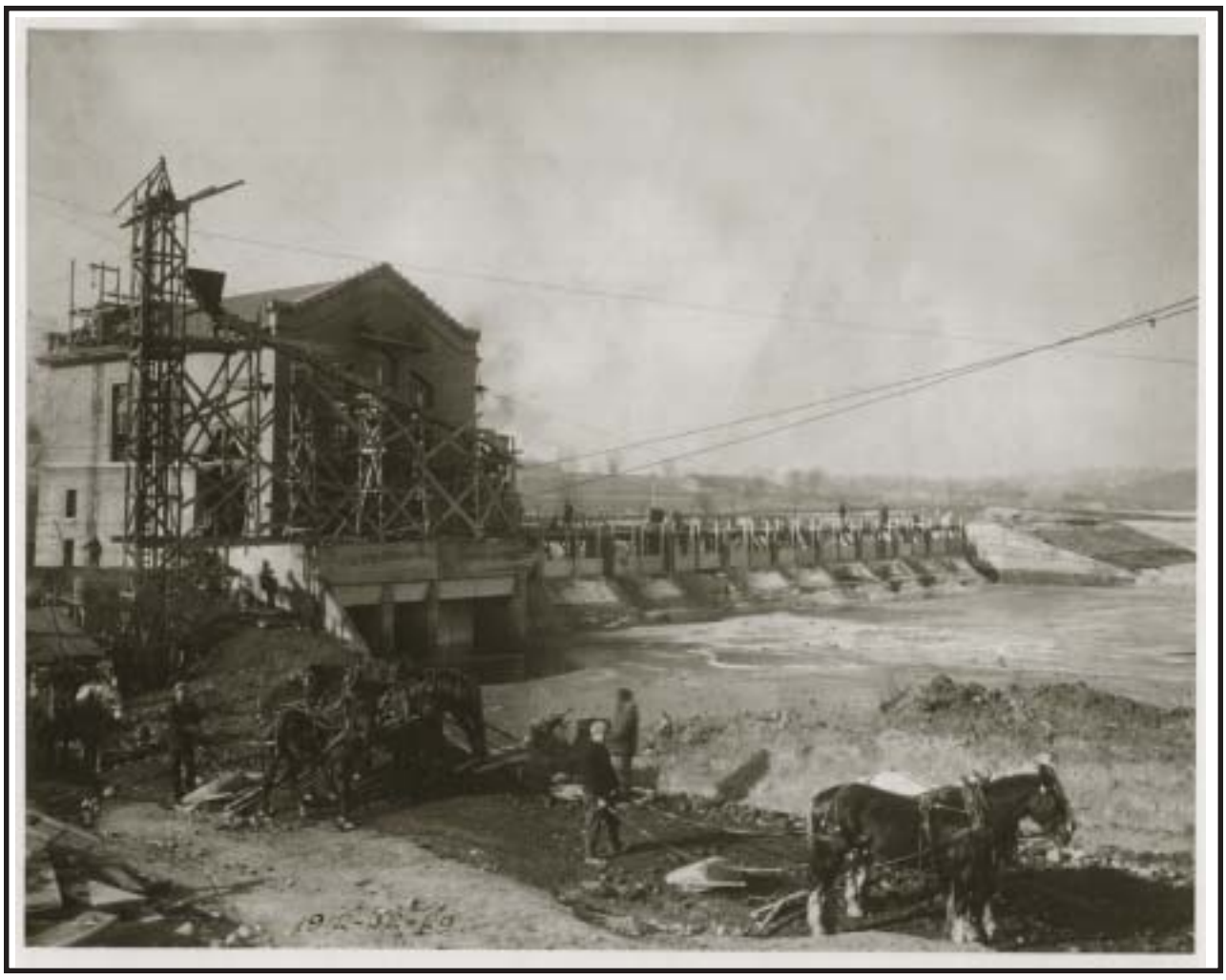
2008 Drinking Water Quality Report

Ann Arbor Public Services 2008
Annual Report on Drinking Water



Construction of Barton Dam - 1927

http://www.a2gov.org/government/publicservices

The staff of Ann Arbor Public Services is strongly committed to bringing you the best drinking water possible. We take pride in not only meeting all federal and state drinking water regulations, but in reaching higher goals. We participate in voluntary programs which improve our organization and establish more stringent water quality goals. Our monitoring programs far exceed those required to assure the quality of your drinking water. The USEPA requires water utilities provide the following information to their customers as part of their Annual Water Quality Report. This information is generic and may or may not apply to Ann Arbor drinking water. If you have any questions on this language, you may contact the USEPA Safe Drinking Water Hotline at (800) 426-4791.

Water Supply and Treatment

The Ann Arbor water supply is comprised of both surface and ground water sources. About 85% of the water supply comes from the Huron River. The remaining 15% comes from multiple wells located south of Ann Arbor. The water from both the sources is blended at the water treatment plant. Since we use a surface water supply, (Huron River water), the United States Environmental Protection Agency (USEPA) and the Michigan Department of Environmental Quality (MDEQ) regulations require it to be treated, filtered and disinfected to ensure that any harmful substances are removed. When treatment is complete, the water is pumped to homes, schools and businesses in Ann Arbor as well as to Ann Arbor and Scio townships for resale to their customers.

The following is the official USEPA language on Cryptosporidium: *Cryptosporidium is a protozoan parasite that is too small to be seen without a microscope. It is sometimes found in some surface waters, especially when the waters contain a high amount of fecal waste from run-off or other activities. Those who are infected with this parasite can experience gastrointestinal illness.*

USEPA and the Centers for Disease Control have published guidelines on ways to reduce the risk of Cryptosporidium infection. The guidelines are available from the Safe Drinking Water Hotline at (800) 426-4791.

Samples have been collected from the source and no detectable levels of Cryptosporidium were found.

The following is the official USEPA language on contaminants that may be in untreated water: *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 and through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or from human activity.*

Contaminants that might be expected to be in source water - untreated water - include: microbial contaminants, such as viruses and bacteria; inorganic contaminants, such as salts and metals; pesticides and herbicides; organic chemical contaminants; including synthetic and volatile organic chemicals; and radioactive contaminants, which can be naturally occurring.

In order to ensure tap water is safe to drink, the EPA prescribes regulations which 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 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 Safe Drinking Water Hotline at (800) 426-4791.

The following is the official USEPA language on low resistance to infection: *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 from their health care providers. Environmental Protection Agency / Centers for Disease Control guidelines on appropriate means to lessen the risk of infection from Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.*

Spotlight on Water Emergencies

Q: How will I know if my water isn't safe to drink?
A: If there is a chance your water may not be safe to drink, you will be notified by newspaper, mail, radio, TV, or hand-delivery. The notice will describe any precautions you need to take, such as boiling your water. There are 4 possible types of emergency notifications: Boil Water Advisory, Boil Water Notice, Do Not Drink Notice and Do Not Use Notice.

To receive free emergency notifications from the City of Ann Arbor, sign up for the free CodeRed phone alert service, as posted on the city's front Web page at www.a2gov.org. You can also sign up for emergency e-mail updates through the "red envelope" option on the city's front Web page.

Q: What is a Boil Water Advisory? Is it the same as a Boil Water Notice?
A: A Boil Water Advisory is a public statement advising customers to boil tap water before consuming it. Advisories are issued when an event occurs that may cause the water distribution system to become contaminated, such as a loss of pressure from a water main break or back siphonage event. An advisory does not mean that the water is contaminated, but that there is a chance contamination has occurred. Customers should take appropriate precautions until water quality can be determined. An advisory is different from a Boil Water Notice, which is issued when contamination is confirmed in the water system.

Q: What should I do during a Boil Water Advisory or Notice?
A: You should boil tap water vigorously for at least one minute (the minute starts when the water begins to bubble). Wait for the water to cool before using it. This includes water used for brushing teeth, making ice, washing raw foods, preparation of drinks, and water for pets. If preferred. customers can use bottled water. You may store boiled water in the refrigerator in a clean container. Boiling removes harmful bacteria in the water that may cause illness. You should throw away ice made during the time the advisory or notice was issued, as freezing does not kill bacteria.

You should flush the piping inside your home once the advisory or notice has been lifted. Follow these guidelines for flushing:

" Run all cold water faucets in your home for one minute
" To flush automatic ice makers, make and discard several batches of ice
" Run drinking water fountains for one minute

Q: Do I still need to boil my water if I have a filter system on my faucet or refrigerator?
A: Most point-of-use filters are designed to improve the taste and odor of water and will not remove harmful bacteria. Thus, it is recommend that you boil your water or use bottled water even if you have a filtering system. You can learn about the capability of your filter by contacting the manufacturer or NSF International, an independent testing group located in Ann Arbor (734-769-8010).

Q: Is the water safe for washing dishes, laundry , and bathing during a Boil Water Advisory or Notice?
A: The water is safe for washing dishes, but you should use hot, soapy water (you may add one tablespoon of bleach per gallon as a precaution) and rinse dishes in boiled water. There are no restrictions on doing laundry or bathing.

Q: How long must a Boil Water Advisory or Notice be in effect?
A: An advisory or notice will remain in effect until test samples show the water is safe to drink. Testing for bacteria requires 24 hours to complete. As a result, advisories and notices will be in effect for at least 24 hours.

Q: What are total coliform bacteria?
A: Total coliform bacteria are a collection of microorganisms that are naturally present in the environment. Coliform bacteria are found in soil, water and the intestines of warm blooded animals. Coliform bacteria are not harmful themselves, but are used as an indicator that other, potential disease causing organisms may be present. The water treatment process effectively kills coliform bacteria. However, events such as a water main break or a loss of pressure in the water distribution system may allow these bacteria to enter water lines through cracks in pipes or back-siphoning from a residential plumbing system. Boiling water vigorously for one minute will kill these bacteria and make water safe to drink.

Q: What is a Do Not Drink Notice?
A: A Do Not Drink Notice will be issued when the water contains a chemical contaminant that cannot be removed by boiling. In this case, bottled water should be used for drinking or cooking.

Q: What is a Do Not Use Notice?
A: A Do Not Use Notice will be issued if there is a contaminant in the water that may be inhaled or otherwise harmful on contact. In this case, bottled water should be used for all water consumption, including bathing, cooking and laundry.

Pharmaceuticals in Drinking Water?

Q: Has the city of Ann Arbor ever tested our water for pharmaceuticals and personal care products (PPCP)?
A: Yes. Through grants from the Michigan Department of Environmental Quality (MDEQ) in 2004 and 2005, the City completed studies to determine if these contaminants were present in our water. We tested both our source water and finished drinking water for the presence of 33 pharmaceutical and personal care products (PPCP). Of the 33 contaminants, 12 were detected in finished water. All results were in the parts per trillion range.

In 2008, the City of Ann Arbor tested the finished drinking for 8 endocrine disrupting compounds, including Bisphenol A (BPA). None of these compounds were found to be present in the drinking water.

To read the City's PPCP study reports or to see the 2008 endocrine disrupting chemical test results, please visit our webpage:
http://www.a2gov.org/government/publicservices/water_treatment/Pages/default.aspx

To help prevent PPCPs from entering the drinking water supply, never flush any drugs down the toilet. Take unused over the counter and prescription medications back to participating pharmacies for disposal, or wrap medication in in plasitc bags, seal with duct tape and then dispose in the trash. For information about proper disposal, visit www.dontflushdrugs.com

Source Water Assessment and Protection Plan

The City of Ann Arbor has completed a Source Water Assessment and Protection Plan. This plan determines the protection areas for all of our sources of supply, assesses the potential for contamination and develops plans for improving protection of those areas. The assessments for both the river and groundwater supplies included determining the susceptibility, or relative potential of contamination impacting each source of supply. A six-tiered scale was used to rate the potential for contamination. The scale ranges from “very low” to “high”.. The susceptibility rating is based on the geologic sensitivity and the number and types of potential contaminant sources located within our source water protection areas. The susceptibility of the Huron River supply was rated “high” and the wells were rated “moderate”.

New Process at the Ann Arbor Water Treatment Plant

On June 8, 2001, the United States Environmental Protection Agency (USEPA) published the Filter Backwash Recycle Rule (FBRR). This rule regulates the point at which water can be reused and added to the treatment process at water treatment plants. The intent of this rule is to reduce the potential of passing Cryptosporidium oocysts and other biological pathogens such as bacteria and viruses into the finished drinking water.

The City of Ann Arbor uses filters in its treatment process to remove micron size contaminants from its raw water sources. These filters must be cleaned every few days by backwashing-or running water through the filters in reverse at a high rate to remove embedded particles and biological pathogens. This backwash water contains concentrated contaminants that, prior to this rule and the subsequent improvements made at the Ann Arbor Water Treatment Plant, were recycled to the front end of the plant and mixed with the water coming from the city's wells and the Huron River. This water is then treated with the raw water prior to distribution with the treated drinking water. Because the backwashing process is at such a high rate, this causes surges in the flow through the plant when filters are washed. These surges can create a situation of inconsistencies in the treatment process and potentially lead to contaminants making it through the treatment process into the finished drinking water.

The FBRR rule required Ann Arbor to add a new process to the Water Treatment Plant to address this surging of flow caused by backwashing filters. The city was required to add a 750,000 gallon concrete tank and associated pump station to hold the backwash water before it is pumped back into the plant for treatment at a low controlled rate. This new process was completed and put on line in the end of 2008. This process has resulted in more reliable treatment of the city's drinking water and better water quality.

Water Quality Test Results

The following regulated substances were detected in some samples.

Please note that some substances, such as monochloramine and fluoride, are added to the water to improve health. All the detected substances are well within stringent Federal and State limits.

Definitions: The following tables contain scientific terms and measures, some of which may require explanation.

- **Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the Maximum Contaminant Level Goal as feasible using the best available treatment technology.
- **Maximum Contaminant Level Goal (MCLG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.
- **mg/l:** milligrams per liter or parts per million - or one ounce in 7,350 gallons of water
- **µg/l:** micrograms per liter or parts per billion - or one ounce in 7,350,000 gallons of water
- **na:** not applicable
- **Avg:** Regulatory compliance with some MCLs are based on running annual average of monthly or quarterly samples.
- **ND:** Non detectable

Regulated at the Water Treatment Plant

Regulated Substance	Highest Level Detected	Range of Individual Samples	MCL	MCLG	Source of Contamination
Fluoride	1.26 mg/l	ND – 1.26 mg/l	4 mg/l	4 mg/l	Added to water to promote strong teeth. Erosion of natural deposits. Discharge from fertilizer factories.
Nitrate	0.5 mg/l	0.34 – 0.5 mg/l	10 mg/l	10 mg/l	Run-off from fertilizer use. Leaching from septic tanks and sewage. Erosion of natural deposits.
Bromate	2 µg/l avg	ND – 6 µg/l	10 µg/l	0 µg/l	By-product of ozone disinfection of drinking water.
Total Organic Carbon	30.1% Removal[1]	30.1–72.6% Removal	<25% Removal	na	Naturally occurring
Barium	19 µg/l	na	2000 µg/l	2000 µg/l	Erosion of natural deposits
Chromium	2.1 µg/l	na	100 µg/l	100 µg/l	Erosion of natural deposits

[1] Poorest removal corresponds to highest concentration

Monochloramine - Regulated at the Distribution System

Definitions:

- **Maximum Residual Disinfectant Level (MRDL):** The highest level of disinfectant allowed in drinking water.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** The level of disinfectant in drinking water below which there is no known or expected risk to health. MRDLG's allow for a margin of safety.

Regulated Substance	Highest Level Detected	Range of Individual Samples	MRDL	MRDLG	Source of Contamination
Monochloramine	2.7 mg/l avg	2.4 –2.9 mg/l	4 mg/l	4 mg/l	Disinfectant added at Water Plant

Turbidity - Regulated at the Water Treatment Plant

Definitions:

- **Turbidity:** A measure of cloudiness of water. The Ann Arbor Water Treatment staff monitors it because it is a good indicator of the effectiveness of the filtration system. Turbidity must be less than 0.3 NTU in at least 95% of the measurements taken throughout each month. It must never exceed 1.0 NTU.
- **Nephelometric Turbidity Unit (NTU):** A measure of light scattered from particles in the water.
- **Treatment Technique (TT):** A process intended to reduce the level of a contaminant in drinking water.

Regulated Element	95th Percentile TT achieved (max)	95th Percentile TT required	95th Percentile TT voluntary goal	Lowest % of samples within requirements	Single highest measurement	Source of Contamination
Turbidity	0.17 NTU	0.3 NTU	0.1 NTU	0	0.35 NTU	Soil Runoff

Water Quality Test Results

The following regulated substances were detected in some samples.

Copper and Lead - Regulated at the Customer's Tap - All samples collected and analyzed were well within the strict Federal and State limits. The data is from the 2008 testing conducted in accordance with regulations. 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. 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. The City of Ann Arbor sampled 54 homes and 2 of these homes exceeded the action level for lead.

Definitions:

- **Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Action Level Goal (ALG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. ALG's allow for a margin of safety.

Regulated Substance	Detection Level at the 96th Percentile	AL	ALG	Source of Contamination
Lead - 2008 Customers plumbing	8 µg/l	15 µg/l	0 µg/l	Corrosion of household plumbing systems Erosion of natural deposits

Regulated in the Distribution System

Regulated Substance	Highest Level Detected	Range of Individual Samples	MCL	MCLG	Source of Contamination
Total Coliform	Detected in 1.43% of all samples taken in August	ND – 1.43%	Detected in not more than 5% of samples taken monthly	0	Naturally occurring in the environment
Total Trihalomethanes	[1] 17.8 µg/l avg	0.76– 6.8 µg/l	80 µg/l	0 µg/l	By-product of drinking water disinfection
Total Haloacetic Acids	[1] 11 µg/l avg	1.1 – 9 µg/l	60 µg/l	0 µg/l	By-product of drinking water disinfection

[1] Highest running annual average of last four quarters include sample results from 2007

These tests also showed the following characteristics in our water. Federal and State standards have yet to be established and all results are within limits accepted by most public health officials.

Non-regulated Substance	Average	Range of Individual Samples	Source of Contamination
Hardness	142 mg/l	99 – 200 mg/l	Naturally occurring minerals; controlled by water treatment process
pH	9.3	9.1 – 9.5	Controlled by water treatment process
Aldehydes	8 µg/l	ND – 33 µg/l	By-product of drinking water ozonation
1,4-Dioxane	ND	ND	Groundwater contamination from manufacturing process and landfills
Perchlorate	0.08 µg/l	na	Groundwater contamination from manufacturing process
Sodium	55 mg/l	42–72 mg/l	Naturally occurring minerals; run-off of road salt into surface water; caustic soda used in water treatment process; bleach used in water treatment process

Notice of Violations

We are required to monitor your drinking water for specific contaminants on a regular basis as required by USEPA and MDEQ. In addition to all required testing, we voluntarily monitor more frequently and for many additional potential contaminants. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During 2008 we did not monitor or test for endothall during the required sampling period. Additionally, we did not monitor our wells in the first quarter for Volatile Organic chemicals (VOCs) and we also failed to monitor one of the four wells in the third quarter for VOCs. These violations **do not** pose a threat to the quality of the city's water. The table below lists the contaminants we did not properly test for during 2008:

Contaminant	Required sampling frequency	Number of taken samples	When all samples should have been taken	Date sample was taken
Endothall	1 / year	0	4/1/2008 - 9/30/2008	11/17/2008
VOCs	4 / quarter	0	1/1/2008 - 3/31/08	4/18/2008
VOCs	4 / quarter	3	7/31/2008 - 9/30/08	10/16/2008

On January 8, 2008, one of the 26 water filters unexpectedly discharged water with high turbidity into one of the water treatment plant's two filtered water chambers. Turbidity standards were exceeded at the water treatment plant for 42 minutes. Bacteriological testing of water samples indicated that the safety of the city's drinking water was not jeopardized during the event. A notice of the incidence was mailed to customers on January 28, 2008.

Additional Information & Contacts

The City of Ann Arbor Water Treatment Plant conducts extensive routine monitoring of water quality. Our testing program far exceeds current regulatory requirements and we are vigilant against potential threats to our water system.

The Public Services Area Administrator attends the Ann Arbor City Council meetings to provide information on the water system. All Council general sessions, the first and third Monday of each month, are open to the public. Unless announced otherwise, the meetings are at 7:00 PM in Council Chambers at City Hall, 100 North Fifth Avenue. Council meetings are also broadcast on cable channel 16, CTN. In addition, targeted public meetings are periodically held to discuss improvements and to listen to our citizens' and customers' concerns.

Customer Service and Billing Information:
Customer Service Center
100 North Fifth Avenue
Ann Arbor, Michigan 48107
(734) 794-6320

Water Quality and Treatment:
Water Treatment Services
919 Sunset Road
Ann Arbor, Michigan 48103
(734) 794-6426

email: water@a2gov.org
http://www.a2gov.org/government/publicservices

AFTER HOURS EMERGENCY: (734) 994-2840

The Water Treatment Services Unit is staffed 24 hours per day. In the event of emergencies such as water main breaks, emergency water turn-offs and sanitary or storm sewer back-ups, please call the City of Ann Arbor Water Treatment Services Unit.

City of Ann Arbor
Water Treatment Services

919 Sunset Rd.
Ann Arbor, MI 48103
(734) 794-6426

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