

2017 Drinking Water Quality Report

City of Rochester Municipal Water System

We are pleased to present this year's Annual Water Quality Report. This report is designed to inform you about the quality of your drinking water for the 2017 calendar year. Our goal is to provide you with a safe and dependable supply of drinking water. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and state standards for drinking water quality. The City of Rochester and the Great Lakes Water Authority (GLWA) are committed to meeting state and federal water quality standards including the Lead and Copper Rule. We are happy to report that our drinking water is safe and meets or exceeds federal and state requirements.

The City of Rochester has two different sources of water. The western portion of the City of Rochester, west of the water tower, is supplied by the groundwater system. The eastern portion of the City of Rochester, east of the water tower, is supplied by the GLWA. Water quality information on both is included in this Report.

GLWA

The water supply is drawn through the GLWA Lake Huron Water Treatment Plant, located off the shore of Lake Huron. Your source water comes from the lower Lake Huron watershed. The watershed includes numerous short, seasonal streams that drain to Lake Huron. The Michigan Department of Environmental Quality in partnership with the U.S. Geological Survey, the Detroit Water and Sewerage Department, and the Michigan Public Health Institute performed a source water assessment in 2004 to determine the susceptibility of potential contamination. The susceptibility rating is a seven-tiered scale ranging from "very low" to "very high" based primarily on geologic sensitivity, water chemistry, and contaminant sources. The Lake Huron source water intake is categorized as having a moderately low susceptibility to potential contaminant sources. The Lake Huron water treatment plant has historically provided satisfactory treatment of this source water to meet drinking water standards.

In 2015, GLWA received a grant from the Michigan Department of Environmental Quality to develop a source water protection program for the Lake Huron water treatment plant intake. The program includes seven elements that include the following: roles and duties of government units and water supply agencies, delineation of a source water protection area, identification of potential of source water protection area, management approaches for protection, contingency plans, siting of new sources and public participation and education.

Groundwater Wells

For the portion of the City receiving groundwater, the water comes from five (5) groundwater wells, each over 100 feet in depth, in a glacial groundwater aquifer. The State performed an assessment of our source water to determine the susceptibility or the relative potential of contamination. The susceptibility rating is on a seven-tiered scale from "very-low" to "very-high" based on geologic sensitivity, well construction, water chemistry and contamination sources. The susceptibility of our sources ranges from medium to high.

If you would like to know more information about the Source Water Assessment reports, please contact the Rochester DPW at **(248)-651-5165** or visit the Great Lakes Water Authority's website at www.glwwater.org.

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)**.

Sources of drinking 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 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.

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 are naturally occurring or be the result of oil and gas production and mining activities.

Vulnerability of some populations to contaminants in drinking water: Some people may be more vulnerable to contaminants in drinking water than is 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 **(800-426-4791)**.

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. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which provide the same protection for public health.

While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

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 Rochester 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 at **(800-426-4791)** or at <http://water.epa.gov/safewater/lead>.

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. Beginning in July of 2008 - April 2009, the Detroit Water and Sewerage Department (DWSD) began monitoring quarterly for unregulated contaminants under the Unregulated Contaminant Monitoring Rule 2 (UCMR2.) All the UCMR2 contaminants monitored on List 1 and List 2 in 2008-2009 were undetected.

Water Quality Data

The table below lists all the drinking water contaminants that we detected during the 2017 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, 2017. 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.

As you can see, our system had no violations. We're proud that your drinking water meets or exceeds all Federal and State requirements. The EPA has determined that your water is SAFE at these levels. For more information about safe drinking water, visit the U S Environmental Protection Agency at www.epa.gov/safewater.

We want our customers to be informed about their water utility. We will update this report annually and will keep you informed of any problems that may occur throughout the year, as they happen. If you have any questions about this report or concerning your water utility, please contact the City of Rochester DPW at 248-651-5165.

***PLEASE NOTE* that this report will not be mailed to each customer in the City of Rochester. Copies of this report are available at <http://www.rochestermi.org/234/Water-Quality-Report> and at Rochester City Hall, 400 Sixth Street, upon request.**

Rochester Groundwater Information

2017 Water Quality Data

Regulated Contaminant	MCL	MCL G	Your Water	Range	Sample Date	Violation Yes/No	Typical Source of Contaminant
Fluoride (ppm)	4	4	0.45	NA	7-11-17	No	Erosion of natural deposits; Discharge from fertilizer and aluminum factories.
Total Trihalomethanes (TTHM)(ppb)	80	N/A	20	NA	7-13-17	No	Byproduct of drinking water disinfection.
Haloacetic Acids (HAA5) (ppb)	60	N/A	3.6	NA	7-13-17	No	Byproduct of drinking water disinfection.
Combined Radium Radium 226 & 228 (pCi/L)	5	0	1.76	NA	8-5-14	No	Erosion of natural deposits.
Gross Alpha (pCi/L)	15	0	5.8	NA	8-5-14	No	Erosion of natural deposits
Nitrate (ppm)	10	10	.10	NA	7-11-17	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Chlorine (ppm)	MRDL	MRDLG	.31	.06-.55	Jan – Dec 2017	No	Water Additive used to control microbes.
	4	4					
Special Monitoring and unregulated contaminant*			Your Water	Range	Sample Date	Typical Source of Contaminant	
Sodium (ppm)			25	NA	7-14-17	Erosion of natural deposits;	
Contaminant Subject to AL	Action Level	MCL G	90% of Samples ≤ this Level	Sample Date	Number Of Samples Above AL	Violation Yes/No	Typical Source of Contaminant
Lead (ppb)	15	0	3.9	2017	0	No	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	1.3	1.3	.2	2017	0	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

* 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.

**Lake Huron Water Treatment Plant- Rochester East
2017 Regulated Detected Contaminants Tables**

2017 Inorganic Chemicals – Monitoring at the Plant Finished Water Tap

Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Allowed Level MCL	Highest Level Detected	Range of Detection	Violation yes/no	Major Sources in Drinking Water
Fluoride	5-16-2017	ppm	4	4	0.72	n/a	no	Erosion of natural deposits; Water additive, which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate	5-16-2017	ppm	10	10	0.34	n/a	no	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Barium	5-16-2017	ppm	2	2	0.01	n/a	no	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits

2017 Disinfection By-Products – Monitoring in Distribution System, Stage 2 Disinfection By-Products

Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Allowed Level MCL	Highest LRAA	Range of Detection	Violation yes/no	Major Sources in Drinking Water
Total Trihalomethanes (TTHM)	8/14/17	ppb	n/a	80	18	n/a	no	By-product of drinking water chlorination
Haloacetic Acids (HAA5)	8/13/17	ppb	n/a	60	20	n/a	no	By-product of drinking water disinfection

Regulated Contaminant	Test Date	Unit	Health Goal MRDLG	Allowed Level MRDL	Highest RAA	Quarterly Range of Detection	Violation yes/no	Major Sources in Drinking Water
Total Chlorine Residual	Jan-Dec 2017	ppm	4	4	0.75	0.65-0.80	no	Water additive used to control microbes

2017 Turbidity – Monitored every 4 hours at Plant Finished Water

Highest Single Measurement Cannot exceed 1 NTU	Lowest Monthly % of Samples Meeting Turbidity Limit of 0.3 NTU (minimum 95%)	Violation yes/no	Major Sources in Drinking Water
0.29 NTU	100 %	no	Soil Runoff

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.

2017 Lead and Copper Monitoring at Customers' Tap

Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Action Level AL	90 th Percentile Value*	Number of Samples over AL	Violation yes/no	Major Sources in Drinking Water
Lead	2017	ppb	0	15	0	0	no	Corrosion of household plumbing system; Erosion of natural deposits.
Copper	2017	ppm	1.3	1.3	.1	0	no	Corrosion of household plumbing system; Erosion of natural deposits; Leaching from wood preservatives.

*The 90th percentile value means 90 percent of the homes tested have lead and copper levels below the given 90th percentile value. If the 90th percentile value is above the AL additional requirements must be met.

Regulated Contaminant	Treatment Technique 2017	Typical Source of Contaminant
Total Organic Carbon (ppm)	The Total Organic Carbon (TOC) removal ratio is calculated as the ratio between the actual TOC removal and the TOC removal requirements. The TOC was measured each quarter and because the level was low, there is no TOC removal requirement	Erosion of natural deposits

Radionuclides 2014							
Regulated contaminant	Test date	Unit	Health Goal MCLG	Allowed Level	Level detected	Violation Yes/no	Major Sources in Drinking water
Combined Radium 226 and 228	5-13-14	pCi/L	0	5	0.86 + or - 0.55	no	Erosion of natural deposits

Contaminant	MCLG	MCL	Level Detected 2017	Source of Contamination
Sodium (ppm)	n/a	n/a	4.46	Erosion of natural deposits

Collection, sampling result information and table provided by GLWA Water Quality Division, ML Semegen

Key to the Detected Contaminants Table

Symbol	Abbreviation	Definition/Explanation
>	Greater than	
°C	Celsius	A scale of temperature in which water freezes at 0° and boils at 100° under standard conditions.
AL	Action Level	The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements which a water system must follow.
HAA5	Haloacetic Acids	HAA5 is the total of bromoacetic, chloroacetic, dibromoacetic, dichloroacetic, and trichloroacetic acids. Compliance is based on the total.
LRAA	Locational Running Annual Average	The average of analytical results for samples at a particular monitoring location during the previous four quarters.
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 contaminant in drinking water below which there is no known or expected risk to health.
MRDL	Maximum Residual Disinfectant Level	The highest level of 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. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
n/a	not applicable	
ND	Not Detected	

NTU	Nephelometric Turbidity Units	Measures the cloudiness of water.
pCi/L	Picocuries Per Liter	A measure of radioactivity
ppb	Parts Per Billion (one in one billion)	The ppb is equivalent to micrograms per liter. A microgram = 1/1000 milligram.
ppm	Parts Per Million (one in one million)	The ppm is equivalent to milligrams per liter. A milligram = 1/1000 gram.
RAA	Running Annual Average	The average of analytical results for all samples during the previous four quarters.
TT	Treatment Technique	A required process intended to reduce the level of a contaminant in drinking water.
TTHM	Total Trihalomethanes	Total Trihalomethanes is the sum of chloroform, bromodichloromethane, dibromochloromethane and bromoform. Compliance is based on the total.
μmhos	Micromhos	Measure of electrical conductance of water