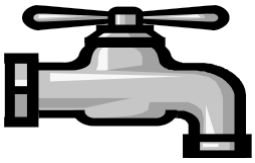


The Roseville Water and Sewerage Department
2016 Consumers Annual Report
on Water Quality

ATTENTION: THIS IS AN IMPORTANT REPORT ON WATER QUALITY AND SAFETY

The City of Roseville Water and Sewerage Department wants you to know your tap water is safe to drink and that it meets or surpasses all federal and state standards for quality and safety.

The Roseville Water and Sewerage Department is proud of the fine drinking water it supplies and is honored to provide this report to you. The 2016 Consumers Annual Report on Water Quality shows the sources of our water, lists the results of our tests, and contains important information about water and health. The Roseville Water and Sewerage Department will notify you immediately if there is ever any reason for concern about our water. We are pleased to show you how we have surpassed water quality standards as mandated by the Environmental Protection Agency (EPA) and the State of Michigan Department of the Environmental Quality (MDEQ).

If you have not had your meter changed to the new digital meter, please contact us at 586-445-5466 to schedule a meter change appointment.

How Do We Know The Water is Safe to Drink?

The Great Lakes Water Authority's treatment facilities operate 24 hours a day, seven days a week. The treatment process begins with disinfecting the source water with chlorine to kill harmful microorganisms that can cause illness. Next, a chemical called Alum is mixed with the water to remove the fine particles that make the water cloudy or turbid. Alum causes the particle to clump together and settle to the bottom. Fluoride is also added to protect our teeth from cavities and decay. The water then flows through fine sand filters called beds. These filters remove even more particles and certain microorganisms that are resistant to chlorine. Finally, a small amount of phosphoric acid and chlorine are added to the treated water just before it leaves the treatment plant. The phosphoric acid helps control the lead that may dissolve in water from household plumbing systems. The chlorine keeps the water disinfected as it travels through water mains to reach your home.

In addition to a carefully controlled and monitored treatment process, the water is tested for a variety of substances before treatment, during various stages of treatment, and throughout the distribution system. Hundreds of samples are tested each week in their certified laboratories by highly qualified, trained, staff. GLWA water not only meets safety and health standards, but also ranks among the top 10 in the country for quality and value.

People With Special Health Concerns

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).**

Monitoring Contaminants

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.

Detected Contaminants Tables

These tables are based on tests conducted by DWSD for the Roseville W ater and Sewerage Department in the year 2016 and within the last five (5) calendar years. **We conduct many tests throughout the year however, only tests that show the presence of a contaminant are shown here.** The table on this page is a key to the terms used in the tables.

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. MRLDG'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, dibromoochloromethane and bromoform. Compliance is based on the total.
µmhos	Micromhos	Measure of electrical conductance of water

Lake Huron and Northeast Water Treatment Plant

2016 Regulated Detected Contaminants Tables

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	5-10-16	ppm	**4**	**4**	0.50	n/a	no	Erosion of natural deposits; Water additive, which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate	5-10-16	ppm	**10**	**10**	0.48	n/a	no	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.

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)	2016	**ppb**	n/a	**80**	25.1	13.4-34.8	no	By-product of drinking water chlorination
Haloacetic Acids (HAA5)	2016	**ppb**	n/a	**60**	14.0	8.0-21.0	no	By-product of drinking water disinfection

Disinfectant Residuals – Monitoring in Distribution System by Treatment Plant

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 2016	**ppm**	**4**	**4**	0.79	0.71-0.85	no	Water additive used to control microbes

2016 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
0.28 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.			

2016 Microbiological Contaminants – Monthly Monitoring in Distribution System

Regulated Contaminant	MCLG	MCL	Highest Number Detected	Violation yes/no	Major Sources in Drinking Water
Total Coliform Bacteria	0	Presence of Coliform bacteria > 5% of monthly samples	0.0	no	Naturally present in the environment
***E. coli* Bacteria**	0	A routine sample and a repeat sample are total coliform positive, and one is also fecal or E.coli positive.	0.0	no	Human waste and animal fecal waste.

Lake Huron and Northeast Water Treatment Plant

2014 Lead and Copper Monitoring at Customer Tap								
Regulated Contaminant	**Test Date**	**Unit**	**Health Goal MCLG**	**Action Level AL**	**90th Percentile Value***	**Number of Samples over AL**	**Violation yes/no**	**Major Sources in Drinking Water**
Lead	2014	**ppb**	**0**	**15**	0ppb	0	no	Corrosion of household plumbing system; Erosion of natural deposits.
Copper	2014	**ppb**	**1.3**	**1.3**	28ppb	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	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	Source of Contamination
Sodium (ppm)	n/a	n/a	4.00	Erosion of natural deposits

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. City of Roseville 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 http://www.epa.gov/safewater/lead

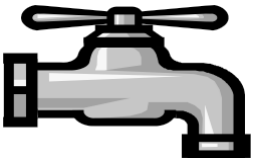
Other Monitoring

In addition to testing, the Great Lakes Water Authority (GLWA) is required to perform water system voluntarily tests for hundreds of additional substances and microscopic organisms to make certain that the water is safe and of the highest quality. If you are interested in a more detailed report, contact the Water Quality Division at (313) 267-3629.

Tours of Water Treatment Plants can be arranged. Please contact the Roseville Water Department at (586) 445-5466 for additional information.

Special Monitoring and Unregulated Contaminant***	Unit	Average Level Detected	Range	Year Sampled	Comments
Hexavelent Chromium	ppb	0.093	.083-.10	2014	Results of monitoring are available upon request
Chromium Total	ppb	0.26	.21-.37	2014	Results of monitoring are available upon request
Stontium Total	ppb	98.7	94.25-102	2014	Results of monitoring are available upon request
1-2 Dichlorobenene	ppb	110	106-118	2014	Results of monitoring are available upon request
4 Bromofluorobenze	ppb	96.8	92.6-102	2014	Results of monitoring are available upon request
Methyl=Butyl ether-d3	ppb	103	86-115	2014	Results of monitoring are available upon request
1,4 Dioxane-d8	ppb	91.6	79.9-108	2014	Results of monitoring are available upon request

***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.



Special Note to Our Residents:

If you should experience sanitary sewer problems in your home, the City of Roseville Water & Sewerage Department can help you determine what needs to be done to correct the situation. Please contact our department at (586) 445-5466, Monday through Friday, between 7:30 a.m. and 4:00 p.m. Remember, we are here to assist you whenever possible.

ALWAYS GET A SECOND OPINION BEFORE YOU HAVE YOUR SEWER EXCAVATED.

Public Act 222

If you experience an overflow or backup of the sewage disposal system or storm water system, **you must file a written claim** with the City of Roseville, within 45 days after the overflow or backup is discovered. Notice should be mailed to the Insurance Department at P.O. Box 290, Roseville, MI 48066. The Insurance Department phone number is (586) 445-5425. **Failure to provide the required notice will prevent recovery of damages.** Contact the Roseville Water and Sewer Department immediately upon discovery of an overflow or backup at (586) 445-5466.

About Our System

The Roseville Water and Sewerage Department purchases water from the Great Lakes Water Authority. They provide drinking water to approximately 4.2 million people in 126 southeastern Michigan communities. The system uses surface water drawn from the Detroit River, situated within Lake St. Clair, Clinton River, Detroit River, Rouge River, Ecorse River, in the U.S. and parts of the Thames River, Little River, Turkey Creek and Sydenham watersheds in Canada. The water is directed to four (4) large water treatment plants for processing. A fifth water treatment plant, located in St. Clair County, uses surface water from Lake Huron watershed. The watershed includes numerous short, seasonal streams that drain to Lake Huron. The City of Roseville's water is treated at the Lake Huron and the Northeast Water Treatment Plants. The Michigan Department of Environmental Quality in partnership with the U.S. Geological Survey, the Great Lakes Water Authority and the Michigan Public Health Institute performed a source water assessment to determine the susceptibility of potential contamination. The susceptibility rating is on a seven- tiered scale from very low to high based primarily on geologic sensitivity, water chemistry, and contaminant sources. The susceptibility of our Detroit River source water intakes were determined to be highly susceptible to potential contamination. The Lake Huron source water intake is categorized as having a moderately low susceptibility to potential contaminant sources. Historically, all five water treatment plants have provided satisfactory treatment of this source water to meet drinking water standards. Please contact the Great Lakes Water Authority or the City of Roseville Water Department if you would like more information.

GLWA has initiated source-water protection activities that include chemical containment, spill response, and a mercury reduction program. GLWA participates in a National Pollutant Discharge Elimination System permit discharge program and has an emergency response management plan. If you would like to know more information about this report or a complete copy of this report, please contact the Roseville Water Department at (586) 445-5466.

Your source water comes from the Detroit River, situated within the Lake St. Clair, and several watersheds within U.S. and Canada. The Michigan Department of Environmental Quality in partnership the Detroit Water and Sewerage Department and several other governmental agencies performed a source water assessment in 2004 to determine the susceptibility or relative potential of contamination. The susceptibility rating is on a seven-tiered scale from "very low" to "very high" based primarily on geologic sensitivity, water chemistry, and contamination sources. The susceptibility of our Detroit River source water intakes were determined to be highly susceptible to potential contamination. However, all four Detroit water treatment plants that use source water from Detroit River have historically provided satisfactory treatment of this source water to meet drinking water standards.

GLWA initiated source-water protection activities that include chemical containment, spill response, and a mercury reduction program. GLWA participates in a National Pollutant Discharge Elimination System permit discharge program and has an emergency response management plan. GLWA voluntarily developed and receive approval in 2016 for a source water protection program (SWIPP) for the Detroit River intakes. The programs 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. If you would like to know more information about the Source Water Assessment or SWIPP, contact your water department (586)445-5466.

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 the Detroit Water and Sewerage Department and several other governmental agencies performed a source water assessment in 2004 to determine the susceptibility or relative potential of contamination. The susceptibility rating is on a seven-tiered scale ranging from "very low" to "very high" based primarily on geologic sensitivity, water chemistry, and contamination 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.

GLWA voluntarily developed and received approval in 2016 for a source water protection program (SWIPP) 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. If you would like to know more information about the Source Water Assessment or the SWIPP please, contact your water department (586)445-5466.

This report contains important information about your drinking water. Have someone translate if for you, or speak with someone who understands it.

Opportunities for Public Participation

The GLWA Board meets the fourth Thursday of each month. There are also public hearings and meetings open to the public.
To confirm dates and times or for information on other activities happening in the Authority, please contact their General Information number 844-445-GLWA(4592).
We welcome your comments and opinions about this report and will be happy to answer any questions you may have. Please direct your comments or questions to the Roseville Water Department Director at (586) 445-5466.

Additional Information

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 Environmental Protection Agency's Safe Drinking Water Hotline at (800-426-4791).

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Our water comes [Lake Huron and/or Detroit River as appropriate]. 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, urban storm run-off, and residential uses.

Organic chemical contaminants, including synthetic and volatile organics, 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.

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 must provide the same protection for public health.

Warning about the vulnerability of some populations to contaminants in drinking water. (§151.154(a)).

Some people may be more vulnerable to contaminants in drinking water than is the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, come 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).

IMPORTANT NOTICE

The City of Roseville Water Department is asking your help in reducing our water usage in the city. This will assist us in maintaining the lowest possible charges from the Great Lakes Water Authority, (GLWA).

One of the largest costs incurred from GLWA related to producing potable water is the energy used during peak hours. We as a community can help keep costs down by doing our part in reducing our peak hour consumption. Our City Council like many others, recently adopted a change in our Water Ordinance requiring all residential and commercial customers to observe **mandatory odd/even** outdoor water use restrictions (based on your property address) from May 15th thru October 1st. Along with this new restriction you can also help reduce costs by setting your irrigation systems timers to water **between the hours of 11:00 p.m. and 5:00 a.m. (off peak hours)**, thus reducing the impact of our community on GLWA's production. We ask that you voluntarily run your irrigation systems during these times (on odd/even days correlating with your address) to help lessen future water cost increases.

Should you have any questions or concerns, please feel free to contact our department at (586) 445-5466 Monday thru Friday 7:30 a.m. – 4:00 p.m. For further water conservation tips, please visit the City's website at www.roseville-mi.gov, and click on *General Information Sheet* found under the Water and Sewage Department link.