

Dear Water Customer,

I am happy to report that the City of Livonia Calendar Year 2020 Water Quality Report shows, once again, that Livonia's drinking water has met or exceeded all government standards set for water quality and safety.

We are proud of that.

This report was developed to bring you important information about your drinking water, in compliance with Federal requirements of the Safe Drinking Water Act.

Knowledge is power, and this document was designed to bring you the knowledge you need about the water you drink every day. You will learn about the quality of your water, the source of your drinking water, how we manage risks to our water supply, and the water treatment process. The Michigan Department of Environment, Great Lakes & Energy (formerly the Department of Environmental Quality), is responsible for overseeing the operation of municipal water systems.

At the same time, Livonia employees work hard every day to continue delivering the safest and highest quality water to all our customers, in conjunction with our supplier, the Great Lakes Water Authority.

Thank you for reading this report. If you have any questions, please contact Thomas Wilson, Water Supervisor of Public Works, at (734) 466-2632.

Sincerely,

A handwritten signature in black ink that reads "Maureen Miller Prosser".

Mayor, City of Livonia

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## Safe Drinking Water Act

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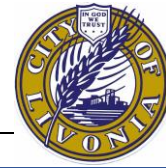
Under the Safe Drinking Water Act (SDWA), the United States Environmental Protection Agency (USEPA) is responsible for setting national limits for hundreds of substances in drinking water and also specified various treatments that water systems must use to remove these substances. Similarly, Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Each agency continually monitors for these substances and reports directly to the USEPA if they were detected in the drinking water. USEPA uses this data to ensure that consumers are receiving clean water and verify that states are enforcing the laws that regulate drinking water.

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## How Will I Know If There Is A Problem With My Water?

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If the amount of a contaminant exceeds a predetermined safe level in your drinking water (MCL, Action Level, etc.) the City of Livonia Department of Public Works will notify you via newspapers, radio, TV and other means as soon as possible. With the notification, you will be instructed on what appropriate actions you can take to protect you and your family's health. **For information on the City of Livonia notifications via Nixle and social media sites go to the City's website <https://livonia.gov/1696/Social-Media>.**



## Substances Expected To Be In Drinking 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 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. 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 organics, which are byproducts 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.

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.

## 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).

## Naturally Occurring Bacteria

The simple fact is, bacteria and other microorganisms inhabit our world. They can be found all around us; in our food; on our skin; in our bodies; and in the air, soil and water. Some are harmful to us and some are not. Coliform bacteria are common in the environment and are generally not harmful themselves. The presence of this bacterial form in drinking water is a concern because they indicate that the water may be contaminated with other organisms that can cause disease. Throughout 2020, the City of Livonia tested 480w samples (40 samples every month) for coliform bacteria. In the entire year, there were no samples found to contain these nuisance bacteria.



## Cryptosporidium

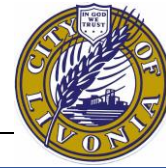
GLWA voluntarily monitors our source water for the presence of Cryptosporidium and Giardia. In 2020, the presence of Cryptosporidium and Giardia were detected in the source water at the Belle Isle Detroit River Intake serving Water Works Park, Springwells and the Northeast treatment plants. Cryptosporidium was detected once in March and Giardia once in April. All other samples monitored in 2020 were absent for the presence of Cryptosporidium and Giardia. Current test methods do not enable us to determine if these organisms are dead or if they are capable of causing disease. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immuno-compromised people have more difficulty and are at greater risk of developing severe, life threatening illness. Immuno-compromised individuals are encouraged to consult their doctor regarding appropriate precautions to take to prevent infection. Cryptosporidium must be ingested for it to cause disease and may be passed through other means than drinking water. Surface water treatment systems like GLWA must provide treatment so that 99.9% Giardia is removed or inactivated.

## 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 Livonia 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 have a lead service line it is recommended that you run your water for at least 5 minutes to flush water from both your home plumbing and the lead service line. 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 (800) 426-4791 or at <http://www.epa.gov/drink/info/lead>. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure. Drinking water quality is important to our community and the region. The City of Livonia and the GLWA are committed to meeting state and federal water quality standards including the Lead and Copper Rule. With the Great Lakes as our water source and proven treatment technologies, the GLWA consistently delivers safe drinking water to our community. The City of Livonia operates the system of water mains that carry this water to your home’s service line. This year’s Water Quality Report highlights the performance of the GLWA and City of Livonia water professionals in delivering some of the nation’s best drinking water. Together, we remain committed to protecting public health and maintaining open communication with the public about our drinking water.

The City of Livonia is in the process of performing a material inventory of water service lines. A service line includes any section of pipe, both public and private, from the water main to the building plumbing at the water meter or 18 inches inside the building, whichever is shorter. The City did not historically record the materials used on the privately-owned pipe segments of service lines. The process of collecting data to update the service line material inventory is ongoing.

Water Service Line Inventory Status 2020		
Lead Service Lines	Lines of Unknown Material	Total Number of Service Lines
106	25,060	38,526



## Information on Source Water

Your source water comes from the Detroit River, situated within the 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 Michigan Department of Environmental Quality in partnership with the U.S. Geological Survey, the Great Lakes Water Authority (GLWA), and the Michigan Public Health Institute performed a source water assessment in 2004 to determine the susceptibility of potential contamination. The susceptibility rating is on a seven-tiered scale from very low to very 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. However, all four Detroit water treatment plants that use source water from the Detroit River have historically provided satisfactory treatment of this source water to meet drinking water standards.

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.

In 2016, the Michigan Department of Environmental, Great Lakes and Energy approved GLWA's Surface Water Intake Protection plan for the Belle Isle intake. The plan has seven elements that include: roles and duties of government units and water supply agencies, delineation of a source water protection areas, identification of potential sources of contamination, management approaches for protection, contingency plans, siting of new water sources, public participation and public education activities. GLWA is in the process of updating the plan which should be completed by September 2021. If you would like to know more information about the Source Water Assessment Report please, contact GLWA at (313 926-8102).

## How is The Water Treated?

The treatment plant operates 24 hours a day, seven days a week. The treatment process begins with disinfecting the source water with Chlorine to kill 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 particles 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 any 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 homes. 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 the samples per month are taken from atony (40 GLWA's certified labor various locations in the Livonia distribution system). In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations, which limit the amount of certain contaminants in water provided by public water systems.



## What's In My Water?

The State and EPA require that water be tested on a regular basis to ensure its safety. We have met all monitoring and reporting requirements for 2020. We are also pleased to report that during the past year, the water delivered to your homes or businesses complied with, or did better than, all State and Federal drinking water requirements. For your information, we have compiled a list in the table below showing what substances were detected in our drinking water and the last year in which the test was conducted. Although all of the substances listed below are under the Maximum Contaminant Level (MCL) set by U.S. EPA, and therefore not expected to cause any health risks, we feel it is important that you know exactly what was detected and how much of each substance was present in the water.

## Outdoor Water Use Guidelines

You can help reduce instances of low water pressure by following these voluntary guidelines:

- Program automatic sprinkler systems to water between 11:00 pm and 5:00 am.
- Avoid outdoor water use altogether between the hours of 5:00am –9:00am and 5:00pm-9:00pm

The amount of water that is used during summer peak demand hours is the one significant factor that can be controlled by Livonia water customers. You can help minimize annual rate increases by managing water purchases during peak summer demand hours.

### Interesting Facts According to the EPA:

- The average garden hose dispenses 4 gallons a minute, or 240 gallons an hour.
- Each American uses an average of 82 gallons of water a day at home.
- It takes 70 gallons of water to fill an average bathtub.
- The average family can waste 180 gallons per week, or 9,400 gallons of water annually just from household leaks.
- A leaky faucet that drips at the rate of one drip per second can waste more than 3,000 gallons per year alone.



## For More Information

For information about this report, or for questions relating to your drinking water, please contact Tom Wilson, Water Supervisor of Public Works at [twilson@ci.livonia.mi.us](mailto:twilson@ci.livonia.mi.us) or (734) 466-2632. Information regarding water treatment and regulations is available at the USEPA web site at [www.epa.gov](http://www.epa.gov), or by calling their Safe Drinking Water Hotline at 1-800-426-4791.



## 2020 Springwells Regulated Detected Contaminants Table

2020 Inorganic Chemicals - Annual Monitoring at Plant Finished Tap								
Regulated Contaminant	Test Date	Unit	Health Goal <b>MCLG</b>	Allowed Level <b>MCL</b>	Highest Level Detected	Range of Detection	Violation	Major Sources in Drinking Water
Fluoride	3-10-2020	ppm	4	4	0.63	n/a	no	Erosion of natural deposit; Water additive, which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate	3-10-2020	ppm	10	10	0.37	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.

2020 Disinfection Residual - Monitoring in the Distribution System								
Regulated Contaminant	Test Date	Unit	Health Goal <b>MRDLG</b>	Allowed Level <b>MRDL</b>	Highest Level RAA	Range of Quarterly Results	Violation	Major Sources in Drinking Water
Total Chlorine Residual	2020	ppm	4	4	0.70	0.60-0.79	no	Water additive used to control microbes

2020 Disinfection By-Products - Stage 2 Disinfection By-Products Monitoring in the Distribution System								
Regulated Contaminant	Test Date	Unit	Health Goal <b>MCLG</b>	Allowed Level <b>MCL</b>	Highest Level LRAA	Range of Quarterly Results	Violation	Major Sources in Drinking Water
(TTHM) Total Trihalomethanes	2020	ppb	n/a	80	38.0	15-56	no	By-product of drinking water chlorination
(HAA5) Haloacetic Acids	2020	ppb	n/a	60	22.25	<1 -31	no	By-product of drinking water chlorination



## 2020 Turbidity - Monitored Every 4 Hours at the Plant Finished Water Tap

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

Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

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 is measured each quarter and because the level is low, there is no requirement for TOC removal.	Erosion of natural deposits

## Lead and Copper Monitoring at the Customer's Tap in 2020

Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Action Level AL	90 <sup>th</sup> Percentile Value*	Number of Samples Over AL	Range of Individual Samples Results	Violation	Major Sources in Drinking Water
Lead	2020	ppb	0	15	10	1	0-19	no	Lead services lines, corrosion of household, plumbing including fittings and fixtures; erosion of natural deposits"
Copper	2020	ppm	1.3	1.3	0.1	0	0-0.3	no	Corrosion of household plumbing system; Erosion of natural deposits; leaching from wood preservatives.

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

## 2020 Special Monitoring

Contaminant	Test Date	Unit	MCLG	MCL	Highest Level Detected	Source of Contaminant
Sodium	3-10-2020	ppm	n/a	n/a	5.37	Erosion of natural deposits

These tables are based on tests conducted by GLWA in the year 2020 or the most recent testing done within the last five calendar years. GLWA conducts tests throughout the year only tests that show the presence of a substance or require special monitoring are presented in these tables. 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.





## 2020 Springwells Mineral Analysis

Parameter	Units	Max.	Min.	Avg.
Turbidity	NTU	0.19	0.03	0.08
Total Solids	ppm	165	76	136
Total Dissolved Solids	ppm	140	98	121
Aluminum	ppm	0.106	0.014	0.045
Iron	ppm	0.177	ND	0.110
Copper	ppm	0.008	ND	0.001
Magnesium	ppm	7.82	5.93	7.32
Calcium	ppm	31.2	23.5	27.3
Sodium	ppm	5.94	4.51	5.01
Potassium	ppm	1.06	0.89	0.98
Manganese	ppm	ND	ND	ND
Lead	ppm	ND	ND	ND
Zinc	ppm	ND	ND	ND
Silica	ppm	2.4	ND	1.8
Sulfate	ppm	31.8	21.9	25.9
Chloride	ppm	11.6	8.5	9.8
Phosphorus	ppm	1.17	0.16	0.53
Free Carbon Dioxide	ppm	10.4	5.7	7.4
Total Hardness	ppm	108	98	102
Total Alkalinity	ppm	74	66	70
Carbonate Alkalinity	ppm	ND	ND	ND
Bi-Carbonate Alkalinity	ppm	74	66	70
Non-Carbonate Hardness	ppm	39	26	32
Chemical Oxygen Demand	ppm	13.5	ND	2.8
Dissolved Oxygen	ppm	13.8	8.8	11.1
Nitrite Nitrogen	ppm	ND	ND	ND
Fluoride	ppm	0.77	0.49	0.62
pH		7.41	7.12	7.29
Specific Conductance @ 25 °C.	µohms	243	213	224
Temperature	°C	24.6	3.5	13.4





## Key to the Detected Contaminants Table

Symbol	Abbreviation	Definition/Explanation
AL	Action Level	The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
°C	Celsius	A scale of temperature in which water freezes at 0° and boils at 100° under standard conditions.
>	Greater than	
HAA5	Haloacetic Acids	HAA5 is the total of bromoacetic, chloroacetic, di-bromoacetic, dichloroacetic, and trichloroacetic acids. Compliance is based on the total.
Level 1	Level 1 Assessment	A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our system.
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. MCLGs allow a margin of safety.
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 all analytical results for all samples during the previous four quarters.
SMCL	Secondary Maximum Contaminant Level	
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.
μohms	Microohms	Measure of electrical conductance of water