THE EAST LANSING—MERIDIAN WATER & SEWER AUTHORITY

2022 Drinking Water Quality Report for The City of East Lansing & Meridian Township

Why you should read this report!

This report presents important information on the quality of your drinking water. It also discusses where the water originates, and how it's made consistently plentiful, reliable and pleasant, and then provided to your tap every day.

While much of the content of this report is required by regulation, the East Lansing—Meridian Water and Sewer Authority ("Authority") has included other important information about this critical resource that may be of interest to you. The Authority supports and encourages your understanding about our water quality and, in this report, is attempting to convey this information in a clear and useful format. We also want to enlist your help in protecting and preserving this precious resource, now and in to the future.

From a regulatory standpoint, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and US Environmental Protection Agency (EPA) oversee the quality and availability of the drinking water that is produced by the Authority. In calendar year 2022, the drinking water produced by the Authority was in compliance with all State and Federal regulations. There were no violations of water quality standards.

To help ensure the water supply is reliable and adequate, the Authority employs operations and maintenance staff that maintain proficiency through continuous training and education programs and EGLE certification. Through this process, the staff stays current with the best practices and evolving regulations governing your tap water.

We encourage public interest and participation in decisions affecting your drinking water. Regular Authority Board meetings normally occur at 11:00 a.m. on the third Thursday of each month. These meetings are normally held at the Water Conditioning Plant at 2470 Burcham Drive, East Lansing, MI 48823. The public is welcome. For current information on meeting dates and location call (517) 337-7535.

Softening Clarifier at ELMWSA

In This Report

The tables on pages 3 and 4 list some parameters that were detected, and show what the regulatory limits are. No contaminant concentration exceeds regulatory limits.

Note: The Authority purchases water from the Lansing Board of Water and Light (LBWL) to supply the southern portion of Meridian Township. Water quality data for the LBWL is included in this report. LBWL's CCR can be found at WWW.LBWL.COM

WHERE DOES OUR WATER COME FROM?

The Authority was formed as a joint venture of the City and Township to address the water supply and quality needs for both communities. In 1972, the Water Conditioning Plant was placed in service and has provided softened water to both systems since then. Each community owns and operates its separate water distribution utility.

Groundwater is pumped to the conditioning plant from 28 wells that are approximately 400 feet deep. Lime is added to the water to remove excess hardness, and Ferric Chloride is added to treat very fine particulates. The water then passes through sand filters to remove any cloudiness that was not taken out during the chemical treatment part of the process. Through this method, the excess hardness is removed and recycled for agricultural soil amendment or other beneficent uses. It is not disposed of into the sewer or drain as is commonly done with in-home water softeners.

Although the source-water is very pure, we add Chloramine to ensure the water is thoroughly disinfected and stays fresh, as it is delivered to your home or business. We also add Fluoride for the prevention of tooth decay, especially for children.

In 2022, the Authority processed and pumped 2.0 billion gallons of treated water to the two communities. In the water production process, our operators run numerous routine chemical analyses to ensure the water stays fresh and pleasant tasting. Other more sophisticated testing is performed by us using outside labs, for a wide range of regulated and unregulated contaminants. Through this testing we verify that the water consistently meets state and federal drinking water standards.

Vulnerability of sub-populations:

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 (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline (800-426-4791).

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 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 farming, storm water runoff, residential or business.
- *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 may 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.

WATER QUALITY DATA

The US EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. The tables on pages 3 & 4 list all of the drinking water contaminants that we detected during the 2021 calendar year. Although we routinely test for more than 140 different contaminants, only those contaminants listed were found in your water.

All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels.

Unless otherwise noted, the data presented in these tables is from testing done January 1 - December 31, 2022. The EPA or the State allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old.

In these tables you will find terms and abbreviations that might not be familiar to you. To help you better understand the information, please refer to the definitions of terms used in the data tables.

DEFINITIONS

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

Level 1 Assessment: A study of the water supply to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment: A very detailed study of the water supply to identify potential problems and determine (if possible) why an E-coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

Maximum Contaminant Level (MCL): 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.

Maximum Contaminant Level Goal (MCLG): 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.

Maximum Residual Disinfectant Level (MRDL): 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.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of 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.

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

Note: There is a Key to terms or units used in the Table located on Page 4 of this report.

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Water Quality Data and Test Results

Contaminants		Last Tested	Unit	MCL , TT or MRDL	MCLG or MRDLG	Detected In Your Water	Range (2022)	Violation No/Yes	Typical Source of Contamination
Disinfectants and Disinfection By-Products									
Chloramines (as Cl_2) -Plant tap		12/31/22	ppm	MRDL = 4	MRDLG = 4	HRAA = 1.36	1.06—1.76	No	Water additive used to control microbes
Chloramines (as Cl_2) -Distribution		12/21/22	ppm	MRDL = 4	MRDLG = 4	HRAA = 0.55	0.03 - 2.13	No	
Chloramine was calculated using the highest quarterly running annual average (RAA), which includes data from 2021. The Range represents individual measurements taken during 2022. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.									
Haloacetic Acids (HAA5)		10/5/22	ppb	60	NA	Highest LRAA = 3.5	ND - 5.0	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes]		10/5/22	ppb	80	NA	Highest LRAA = 14.9	5.0—15.0	No	By-product of drinking water disinfection
The MCL for haloacetic acids is the sum of the concentrations of the individual haloacetic acids.									
The MCL for total trihalomethanes is the sum of the concentrations of the individual trihalomethanes.									
Inorganic Contaminants						**Highest Value**	**Range**		
Barium	ELMWSA	9/10/15	ppm	2	2	0.07	0.07	No	Erosion of natural deposits
	LBWL	7/30/21	ppm	2	2	0.030	.030	No	
Fluoride	ELMWSA	12/31/22	ppm	4.0	4.0	0.71	0.46- 0.71	No	Erosion of natural deposits, water additive that promotes strong teeth
	LBWL	7/27/21	ppm	4.0	4.0	0.62	0.20 - 0.62	No	
The Authority strives to maintain an optimum Fluoride level of 0.6 - 0.7 ppm in the distribution system.									
Radiological Contaminants						**Value**	**Range**		
Radium 226 & 228	ELMWSA	9/1/20	pCi/L	5	0	2.01 ± 0.77	2.01 ± 0.77	No	Erosion of natural deposits
	LBWL (Wise Rd.)	7/7/16	pCi/L	5	0	1.95 ± 0.44	0.84 ± 0.51 to 1.95 ± 0.44	No	
LBWL Dye plant was tested 7/2022 Result was ND									

Turbidity	Sample Date	MCL	MCLG	Detected In Your Water	Range	Violation No/Yes	Typical Source of Contaminant
	12/31/22	TT = 1.0 NTU	N/A	0.05 NTU	0.04 — 0.09	No	
Turbidity	12/31/22	TT = <95% of samples below 0.3 NTU	0	100% of samples below 0.3 NTU	NA	No	Soil runoff, water softening process

At least 95% of combined filter effluent turbidity samples taken each month must be below the Treatment Technique (TT) limit of 0.3 NTU. Also, any measurement in excess of 1.0 NTU would be a Treatment Technique violation. In 2021, 100% of the samples were below the Treatment Technique (TT) limit of 0.3 NTU.

Microbial Contaminants	Last Tested	MCL or TT	MCLG	Highest % Detected	Violation: No/Yes	Typical Source of Contaminant
Total Coliform Bacteria	12/21/22	TT	N/A	0 *	No	Naturally present in the environment
E. coli in the distribution system (positive samples)	12/21/22	0**	0	0	No	Human and animal fecal waste

* Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. If the presence of coliforms are confirmed, it would indicate the need to look for potential problems in water treatment or distribution, in which case we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments. During 2022, we had no MCL exceedances and were not required to conduct any Level 1 or Level 2 assessments for our water system.

** An E. coli violation occurs if: (1) routine or repeat samples are total coliform-positive and either is E. coli-positive, or (2) the system fails to take all required repeat samples following an E. coli-positive routine sample, or (3) the system fails to analyze total coliform-positive repeat sample for E.coli. During 2022, no E. coli violation occurred on our system.

Inorganics Subject to Action Levels (Values measured at customer's taps)		Unit	AL	MCLG	Your Water	Range of Results	Test Period	# Samples Above AL	Violation No/Yes	Typical Source of Contamination
Lead	City of East Lansing	ppb	15	0	0	0 — 0	Jun—Sept 2022	0	No	Lead service lines*, corrosion of household plumbing including fittings and fixtures;
	Meridian Township	ppb	15	0	0	0 — 2	Jun—Sept 2022	0	No	Erosion of natural deposits
Copper	City of East Lansing	ppm	1.3	1.3	0.1	0.0 — 0.1	Jun—Sept 2022	0	No	Corrosion of household plumbing systems;
	Meridian Township	ppm	1.3	1.3	0.0	0.0 — 0.0	Jun—Sept 2022	0	No	Erosion of natural deposits

* See information on Lead in drinking water and lead service line materials on page 5 of this report.

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Special Monitoring and Unregulated Contaminant Monitoring

As part of an on-going evaluation program the EPA has required us to monitor some additional contaminants/chemicals. Information collected through the monitoring of these contaminants/chemicals will help to ensure that future decisions on drinking water standards are based on sound science.

Unregulated Contaminant	Last Tested	Unit	Reported Level	Range	
				Low	High
The following unregulated contaminants were detected by ELMWSA					
Sodium (erosion of natural deposits)	9/7/21	ppm	25	25	25
HAA5	7/8/20	ppb	4.20	1.94	6.35
HAA6Br	7/8/20	ppb	2.95	0.84	4.60
HAA9	7/8/20	ppb	6.64	2.78	9.43
Manganese	7/7/20	ppb	1.16	1.04	1.27
The following unregulated contaminants were detected by LBWL					
Sodium (erosion of natural deposits)	7/9/20	ppm	100	99	100
Manganese	8/2020	ppb	0.54	0.44	0.67
HAA5	8/2020	ppb	2.25	1.74	3.13
HAA6	8/2020	ppb	0.31	0.00	0.46
HAA9	8/2020	ppb	2.56	2.20	3.46
1,4-Dioxane	8/2015	ppb	0.14	0.14	0.14

The LBWL monitored for 1,4-Dioxane, at the entry point to the distribution system in 2015 and it was detected at trace levels at the Dye Water Conditioning Plant (less than 0.2 ppb). The EPA has established a lifetime health advisory level of 200 ug/L (or ppb), and the EGLE established an action level of 7.2 ppb (consistent with the Part 201 Residential Drinking Water Cleanup Criterion). The BWL continues to monitor 1,4-Dioxane quarterly at the Dye Water Conditioning Plant so they can respond accordingly if needed. Data is available on the BWL's website at lbwl.com.

Monitoring and Reporting Requirements:

The State and EPA require us to test our water on a regular basis to ensure its safety. We met all monitoring and reporting requirements for 2022. We will update this report annually and will keep you informed of any problems that may occur throughout the year, as they happen. This Drinking Water Quality Report (also referred to as a "Consumer Confidence Report") will not be sent to you unless you contact us and request one. Copies are available at the Water Conditioning Plant, or by calling (517) 337-7535, or at https://www.cityofeastlansing.com/600/Annual-Water-Quality-Report.

The LBWL 2022 CCR can be found at the following web address.

https://www.lbwl.com/sites/default/files/documents/WQR2023%20-%20final_2.pdf

KEY to Water Quality Table

AL	= Action Level
ELMWSA	= East Lansing-Meridian Water & Sewer Authority
HRAA	= Highest Running Annual Average (Includes data from prior year)
LBWL	= Lansing Board of Water and Light
LRAA	= Locational Running Annual Average (Includes data from prior year)
MCL	= Maximum Contaminant Level
MCLG	= Maximum Contaminant Level Goal
MRDL	= Maximum Residual Disinfectant Level
MRDLG	= Maximum Residual Disinfectant Level Goal
NA	= Not Applicable
ND	= Not Detected
NR	= Not Regulated
NTU	= Nephelometric Turbidity Unit
pCi/L	= Picocuries per Liter
ppb	= parts per billion, or micrograms per liter (µg/L)
ppm	= parts per million, or milligrams per liter (mg/L)
ppt	= parts per trillion, or nanograms per liter (ng/L)
RAA	= Running Annual Average (Includes data from prior year)
TT	= Treatment Technique

This is a general analysis of the water in the East Lansing and Meridian Township water distribution systems:

Total Hardness..... 120 - 125 ppm
Total Alkalinity ..... 60 - 70 ppm
Calcium Hardness..... 65 - 80 ppm
Magnesium Hardness ..... 50 - 60 ppm
Total Chlorine Residual ..... 1.0 - 1. 4 ppm*
Sodium ..... 25 - 50 ppm
Fluoride..... 0.6 – 0.7 ppm
Nitrate ..... Not Detected
pH..... 8.8 - 9.2
Chloride..... 50 - 70 ppm
Iron..... 0.02 - 0.10 ppm
Total Dissolved Solids ..... 250 - 300 ppm
Total Coliform ..... Not Detected

* Levels of Chlorine will vary in the distribution system depending on proximity to the Water Treatment Plant. Homes closer to the Water Treatment Plant would normally receive a higher concentration of chlorine in the tap water than a home that is located farther from the Treatment Plant. The maximum chlorine level in the distribution system is typically below 1.2 ppm.

All hardness and alkalinity values are expressed as Calcium Carbonate equivalent.

Information Regarding Lead in Drinking Water:

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 Authority, the City of East Lansing and Meridian Township are 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, galvanized previously connected to lead, or unknown but likely to be lead, 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 at 1-800-426-4791 or at http://www.epa.gov/safewater/lead.

Infants and children who drink water containing lead could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink water over many years could develop kidney problems or high blood pressure.

This report includes information for the City of East Lansing's and for Meridian Township's water distribution systems. The following table shows the service line materials information for both East Lansing and for Meridian Township.

Water System	Effective Date	Number of known lead service lines	Number of services of unknown material	Total Number of Services
City of East Lansing	12/31/2022	105	3585 *	7935
Meridian Township	12/31/2022	0	0	11,852

* The City of East Lansing is seeking to identify the location of any lead components in it's system. East Lansing customers can participate in a survey at https://www.cityofeastlansing.com/watersurvey, to help identify these components.

INFORMATION ON PFAS IN DRINKING WATER

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) had a statewide initiative to test drinking water from all schools that use well water and community water supplies. The test was looking for a group of manmade chemicals called per-and polyfluoroalkyl substances (PFAS). EGLE took this precautionary step of testing these drinking water sources to determine if public health actions were needed.

The Authority's tap water was tested by AECOM, EGLE's contractor, on July 12, 2018. The test results can be found on the Michigan PFAS Action Response Team website, https://www.michigan.gov/pfasresponse/0,9038,7-365-86510_88061_92549_92526-495899--,00.html. The results show that of the PFOA and PFOS tested, no detectable levels were found in the water.

In October 2019, on the recommendation of the Michigan PFAS Action Response Team (MPART), the Michigan Department of Environment, Great Lakes, and Energy (EGLE) provided a draft rule to Governor Whitmer for regulating PFAS in drinking water. The purpose of the rule is to establish maximum contaminant levels (MCLs) for seven PFAS compounds in approximately 2,700 water supplies in Michigan. In accordance with the regulatory process, the rule was adopted and became effective on August 3, 2020. Following adoption of the PFAS Rule, additional samples were taken by the Authority on December 11, 2020, September 7, 2021 and September 15, 2022 for 16 PFAS compounds, including the 7 newly regulated compounds. Again, no detectable levels were found in the water.

The Authority is committed to providing our customers with quality drinking water. As your water supplier, we are working closely with EGLE to maintain the quality of your water. For health related questions, contact the Michigan Department of Health and Human Services (MDHHS) at 1-800-648-6942 or visit one of the websites below.

FOR INFORMATION ON PFAS INCLUDING POSSIBLE HEALTH OUTCOMES, VISIT THESE WEBSITES

State of Michigan PFAS Action Response Team (MPART) website, serving as the main resource for public information on PFAS contamination in Michigan: www.michigan.gov/pfasresponse

Agency for Toxic Substances and Disease Registry (ASTDR) website, including health information, exposure, and links to additional resources: www.atsdr.cdc.gov/pfas

United States Environmental Protection Agency (U.S. EPA) website, including basic information, U.S. EPA actions, and links to informational resources: www.epa.gov/pfas

You Can Help Protect the Water Supply for Our Communities!

Where Does Our Water Come From?

Every day we turn on our faucets, showers, dishwashers, laundry machines, and countless other water-dependent conveniences without stopping to consider: where does all that water come from?

For the tri-county region of Clinton, Eaton, and Ingham counties, 100% of our water comes from below ground. Through a private well or a public utility, we all rely heavily on groundwater. This is the water that soaks into the ground as rain, melting snow, sprinkler spray, or from any other outlet. Thanks to gravity, water seeps through the different layers of soil and rock until it reaches a layer it can no longer pass through. From there, it will begin to pool and grow in size until it becomes an aquifer.

An aquifer is an underground layer where all space between rocks and soil is filled by water. The top of the aquifer, where the water only fills some space between rocks and soil, is referred to as the water table. The water table level can change throughout the year, or over the course of many years, depending on a variety of things like the demand for water pumped from wells, droughts, heavy rainfall, flooding events, or warm winters, just to name a few.

The water source for our communities is entirely groundwater, and it is drawn from deep wells drilled several hundred feet into the local aquifer underlying the greater Lansing area. The aquifer is contained within a sandstone geologic formation known as the Saginaw Formation. Due to the ability of the formation to allow water to flow relatively freely to the wells, we maintain a plentiful supply of clean drinking water.

In order to protect and manage this water supply, the City of East Lansing and Meridian Township both support the local Groundwater Management Board (GMB). The GMB provides a forum for the coordination of groundwater matters for all communities in the tri-county region, and reviews and comments on land use and/or water development projects that may have a potential impact on groundwater management. It is composed of representatives from Michigan State University and governmental units from Clinton, Eaton, and Ingham counties, and was designated by the State of Michigan as the local Large Water Users Group. Should there be a water use dispute, the GMB acts as the organizing body for discussion and mediation.

Protecting the Water Supply From Contamination

In 2003, the Authority participated in a source water assessment performed by the Michigan Department of Environmental Quality to determine the aquifer's susceptibility to contamination. The susceptibility rating is on a seven-tiered scale from "very low" to "very high" based primarily on geologic sensitivity, well construction, water chemistry and contamination sources. The susceptibility rating of our source is "high" which means ***"substances may easily pass through the soil in groundwater recharge areas and contaminate our drinking water source".***

To help protect this vital resource, the City of East Lansing and Meridian Township are participating in Michigan's Wellhead Protection Program. Wellhead protection is a set of activities and management practices to identify recharge areas and protect the public groundwater supplies from contamination. The City and Township have had an active State approved wellhead protection plan since 2000, most recently updated in September of 2018.

The two communities have also been involved in undertaking a program to protect the groundwater in the area by identifying and properly sealing abandoned or unused private wells. If you would like to know more about the wellhead protection plan or protective methods for well abandonment, contact Joel Martinez at (517) 337-7535.

Wetland in Meridian Township

Ultimately, the responsibility for protecting this vital resource of clean fresh water rests with all of us!

So, what can "I" do, that will actually make a difference:

- Properly recycle or dispose of wastes and don't let them get into the water, especially pharmaceuticals or liquids like solvents, oils or fuels.
- Treat all land, lawns and flower beds as if they were your garden. Use only treatments that are essential, using them prudently and sparingly. Otherwise, they may enter your food or water supply.
- Report all spills so they can be properly cleaned up before they enter lakes, streams or the groundwater.
- Identify any abandoned wells so they can be removed and properly sealed.
- Support community efforts in proper urban planning and development controls, so groundwater recharge areas are preserved and protected.

For additional information, or for a paper copy of this Drinking Water Quality Report, contact Joel Martinez at (517) 337-7535.

ELMWSA Lagoons