

ANNUAL WATER QUALITY REPORT

Reporting Year 2024



Presented By
Lorain Utilities

Introduction

The City of Lorain Public Water System (PWS) has prepared the following report to provide information to you, the consumer, on the quality of our drinking water in 2024. Included in this report are general health information, water quality test results, and how to participate in decisions concerning your drinking water. Our constant goal is to provide you with a safe and dependable supply of drinking water, and we are pleased to announce that your drinking water met all Ohio Environmental Protection Agency (EPA) water quality standards in 2024.

Count on Us

Delivering high-quality drinking water to our customers involves far more than just pushing water through pipes. Water treatment is a complex, time-consuming process. Because tap water is highly regulated by state and federal laws, water treatment plant and system operators must be licensed and are required to commit to long-term, on-the-job training before becoming fully qualified. Our licensed water professionals have a basic understanding of a wide range of subjects, including mathematics, biology, chemistry, and physics. Some of the tasks they complete on a regular basis include:

- Operating and maintaining equipment to purify and clarify water.
- Monitoring and inspecting machinery, meters, gauges, and operating conditions.
- Conducting tests and inspections on water and evaluating the results.
- Maintaining optimal water chemistry.
- Applying data to formulas that determine treatment requirements, flow levels, and concentration levels.
- Documenting and reporting test results and system operations to regulatory agencies.
- Serving our community through customer support, education, and outreach.

So the next time you turn on your faucet, think of the skilled professionals who stand behind each drop.

Who Needs To Take Special Precautions?

Some people may be more vulnerable to contaminants in drinking water than 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, some elderly, and infants can be particularly at risk from infection. These people should seek advice about drinking water from their health-care providers. U.S. EPA/Centers for Disease Control and Prevention (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.



Source Water Assessment

For the purposes of source water assessments, all surface waters are considered to be susceptible to contamination. By their nature, surface waters are accessible and can be easily contaminated by chemicals and pathogens. Compared to groundwater, contaminants in surface water tend to move swiftly, so an upstream spill may rapidly arrive at the public drinking water intake with little warning or time to prepare. Although the City of Lorain's intake is located offshore in Lake Erie, the proximity of the Black River increases the susceptibility of the source water to contamination.

The City of Lorain's drinking water source protection area contains a moderate number of potential contaminant sources, which includes accidental spills and releases associated with commercial shipping and recreational boating, air contaminant deposition, contaminants from industries and agricultural runoff along the shore and along streams that empty into the lake, contaminants associated with oil and gas production and transportation, sediments from river dredging and disposal operations, natural erosional processes, contaminated stormwater runoff from urban areas, municipal and home sewerage treatment system discharges, and combined sewer overflows.

Lorain PWS treats the water to meet drinking water quality standards, but no single treatment technique can address all potential contaminants. The potential for water quality impacts can be further decreased by implementing measures to protect Lake Erie and the Black River watershed.

Copies of the source water assessment report prepared for Lorain PWS are available by contacting Avery Brown, Lorain Water Treatment Plant Superintendent, at (440) 204-2280.

MORE INFORMATION

We are always available should you ever have questions or concerns about your water. For more information about this report, or for any questions relating to your drinking water, please call Avery Brown, Superintendent, or Lacy Hepp, Chemist, at (440) 204-2280.

Water Treatment Process

The treatment process used at the Lorain water treatment plant consists of four stages: coagulation, flocculation, sedimentation, and filtration. Water drawn from Lake Erie is treated with potassium permanganate as it enters the intake for zebra mussel control. Large debris is screened from the water before it enters the plant. Chlorine is added as water enters the plant to assist with the treatment process and disinfection. Liquid alum is added to allow particles to adhere to each other (coagulation). Mixing occurs immediately after coagulation to promote particle collisions, resulting in the formation of heavier floc material (flocculation). Caustic soda (for pH and corrosion control) and powder activated carbon (as an adsorbent to remove small contaminants) are added during the mixing process. After flocculation, water flows to large basins designed to slow its velocity, which allows floc material to settle (sedimentation). Settled floc material forms sludge and is then removed from these basins. After sedimentation, the settled water flows through filter media (filtration) composed of granular activated carbon, sand, and gravel. This is the final stage of the physical removal of contaminants. After filtration, fluoride (for dental health), chlorine (for disinfection), and orthophosphate (for corrosion control) are added before water is pumped to our customers.

Source Water Information

The City of Lorain uses surface water drawn from an intake in Lake Erie as the source of our drinking water. The intake is located in the central basin of Lake Erie, west of the Black River Harbor at a depth of approximately 20 feet.

Ninety-five percent of Lake Erie's total inflow of water comes via the Detroit River from all the upper lakes -- Superior, Michigan, and Huron -- the St. Clair River, Lake St. Clair, and numerous tributaries. The rest comes from precipitation. Lake Erie is the shallowest of the Great Lakes and especially vulnerable to fluctuating water levels. The average depth of Lake Erie is only about 62 feet (210 feet maximum). It therefore warms rapidly in the spring and summer and frequently freezes over in winter. Lake Erie is the 11th-largest lake in the world (by surface area), the 4th largest of the Great Lakes in surface area, and the smallest by volume. This lake measures 241 miles across and 57 miles from north to south. The lake's surface is just under 10,000 square miles, with 871 miles of shoreline. The central basin averages 60 feet in depth and provides some protection from algal blooms and runoff. In contrast, the western basin averages only 24 feet, leading to higher concentrations of organics.

The Lorain PWS has emergency connections with Vermilion PWS, Amherst PWS, and Sheffield Lake PWS. These systems also use Lake Erie as their water source and are supplied by Elyria PWS and Avon Lake PWS. These interconnects are seldom used, only during emergency scenarios or planned projects that may impact the distribution system. No water was supplied to the Lorain PWS from interconnected systems in 2024.

What Are Sources of Contamination to 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: (A) Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; (B) 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; (C) Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; (D) 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 stormwater runoff, and septic systems; (E) Radioactive Contaminants, which can be naturally occurring or the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, U.S. 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.

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 mean that water poses a health risk. More information about contaminants and potential health effects can be obtained by contacting the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. City council meets the first and third Monday of each month at 6:00 p.m. at City Hall, 200 West Erie Avenue. You are also invited to participate in City of Lorain Sewer and Water Advisory Board (SWAB) meetings at the same address. SWAB meetings are not conducted on a recurring schedule, but dates and times can be found at cityoflorain.org.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule, and the water we deliver must meet specific health standards. We only show those substances that were detected in our water in the table below. A complete list of all our analytical results is available upon request. Remember that detecting a substance does not mean the water is unsafe to drink; our treatment goal is to keep all detections below their respective maximum allowed levels.

Note that we have a current, unconditioned license to operate our water system.

The state recommends monitoring for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data is included, along with the year in which the sample was taken.

Regulated Substances								
Substance (Unit of Measure)	Year Sampled	MCL [MRDL]	MCLG [MRDLG]	Amount Detected	Range Low-High	Violation	Typical Source	
Barium (ppm)	2024	2	2	0.017	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits	
Chlorine (ppm)	2024	[4]	[4]	1.48	1.3–1.6	No	Water additive used to control microbes	
Fluoride (ppm)	2024	4	4	1.01	0.6–1.14	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories	
Haloacetic Acids [HAAs] (ppb)	2024	60	NA	24.3	7–24.9	No	By-product of drinking water disinfection	
Nitrate (ppm)	2024	10	10	1.35	ND–1.35	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	
Orthophosphate (ppm)	2024	NA	NA	0.94	0.66–1.32	No	Manufactured for corrosion control	
TTHMs [total trihalomethanes] (ppb)	2024	80	NA	51.4	20.1–62.4	No	By-product of drinking water disinfection	
Total Organic Carbon [TOC] (removal ratio)	2024	TT ¹	NA	1.37	1.0–2.14	No	Naturally present in the environment	
Turbidity ² (NTU)	2024	TT	NA	0.26	NA	No	Soil runoff	
Turbidity (lowest monthly percent of samples meeting limit)	2024	TT = 95% of samples meet the limit	NA	100	NA	No	Soil runoff	
Tap water samples were collected for lead and copper analyses from sample sites throughout the community								
Substance (Unit of Measure)	Year Sampled	AL	MCLG	Amount Detected (90th %ile)	Range Low-High	Sites Above AL/Total Sites	Violation	Typical Source
Copper (ppm)	2022	1.3	1.3	0.067	NA	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2022	15	0	ND	NA	1/30 ³	No	Corrosion of household plumbing systems; Erosion of natural deposits

¹The value reported under Amount Detected for TOC is the lowest ratio of percentage of TOC actually removed to the percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

²Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system. The turbidity limit set by the U.S. EPA is 0.3 NTU in 95% of the samples analyzed each month, not to exceed 1 NTU at any time. As reported, the Lorain PWS's highest recorded turbidity result for 2024 was 0.26 NTU, and the lowest monthly percentage of samples meeting the turbidity limits was 100.

³One sample contained lead above the AL: 34 ppb at Site LC235.

Definitions

90th %ile: The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90% of our lead and copper detections.

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

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 a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level): The highest level of a 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. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable.

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

Removal ratio: A ratio between the percentage of a substance actually removed to the percentage of the substance required to be removed.

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

Table Talk

Get the most out of the Testing Results data table with these simple suggestions. In less than a minute, you will know all there is to know about your water.

For each substance listed, compare the value in the Amount Detected column against the value in the MCL (or AL or SMCL) column. If the Amount Detected value is smaller, your water meets the health and safety standards set for the substance.

Other Table Information Worth Noting

Verify that there were no violations of the state or federal standards in the Violation column. If there was a violation, you will see a detailed description of the event in this report.

If there is an ND or a less-than symbol (<), that means that the substance was not detected (i.e., below the detectable limits of the testing equipment).

The Range column displays the lowest and highest sample readings. NA means only a single sample was taken to test for the substance (assuming there is a reported value in the Amount Detected column).

If there is sufficient evidence to indicate from where the substance originates, it will be listed under Typical Source.

Unregulated Contaminant Monitoring

Unregulated contaminants are those for which U.S. EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist U.S. EPA in determining the occurrence of these contaminants in drinking water and whether future regulation is warranted. In 2024 the Lorain PWS participated in the fifth round of the Unregulated Contaminant Monitoring Rule (UCMR 5). This round tested for the presence of 29 per- and polyfluoroalkyl substances (PFAS) as well as lithium. All Lorain PWS UCMR5 test results were below the detection limits. If you would like a copy of these results, feel free to contact Avery Brown, Superintendent, or Lacy Hepp, Chemist, at (440) 204-2280.

Lead Educational Information

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 Lorain PWS 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, 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 epa.gov/safewater/lead.



Per the Lead and Copper Rule, public water systems were required to develop and maintain a service line inventory. A service line is the underground pipe that supplies your home or building with water. To view the service line inventory, which lists the material types for your location, you can visit gis.cityoflorain.org/portal/apps/sites/#/public/app/15875af8be18476891c2b00a8cae87.

Additional Information

The 2023 Water Quality Report contained 5 errors in the values for total trihalomethanes (TTHM) and haloacetic acids (HAA). The low end of the range for TTHM was reported as 11.9 parts per billion (ppb) but was actually 19.1 ppb. The low end of the range for HAA was reported as below the detection limit (ND) but was actually 10.3 ppb.

— BY THE NUMBERS —

 **5.1**
TRILLION

The dollar value needed to keep water, wastewater, and stormwater systems in good repair.

 **12**
THOUSAND

The average amount in gallons of water used to produce one megawatt-hour of electricity.

 **47.5**
TRILLION

The amount in gallons of water used to meet U.S. electric power needs in 2020.

 **1.7**
TRILLION

The gallons of drinking water lost each year to faulty, aging, or leaky pipes.

 **33%**

The percentage of water sector employees who will be eligible to retire by 2033.

 **2**

How often in minutes a water main breaks.