



2016 Annual Water Quality Report

We are pleased to present this year's Annual Water Quality Report to our valued customers. This report, as required by the United States Environmental Protection Agency (EPA) under the Safe Drinking Water Act re-authorization, is designed to inform the consumer about where your water comes from, what it contains and how it compares to standards set forth by regulatory agencies. Our constant goal is to provide our customers with a safe and dependable drinking water supply. We continually strive to improve the water treatment process and distribution system. We appreciate the confidence our customers have placed in us and continually value your trust.

WHERE DOES YOUR WATER COME FROM?

Water is drawn via low service pumps from Lake Michigan primarily through a submerged intake that is connected to the water treatment plant by a 36-inch diameter pipe. A crib-style intake, attached to a 24-inch diameter pipe, is also used to supplement the buried intake capacity and functions as a backup. As the water enters the treatment plant it is pretreated with sodium hypochlorite (bleach) and other chemicals, such as alum to help remove impurities and destroy bad tastes and odors. Next, the water is then mixed gently in two large basins (clarifiers) so that the previously added alum can cling onto the impurities (coagulation) and cause them to form larger, heavier particles called floc. These larger particles settle to the bottom of the basin while the remaining water continues on its journey to the filters. The two (2) filters, consisting of layers of sand, gravel and hard coal (anthracite) are then used

to remove the remaining impurities/particles that are left in the water. After the filtration process (purification) free chlorine residual is maintained to keep the water from developing bacteria as it travels through the many miles of piping to you. In addition, fluoride is also added to the water at the treatment plant for the prevention of tooth decay.

DRINKING WATER QUALITY RESULTS

The City of Ludington's licensed water treatment operators routinely monitor for contaminants in your drinking water according to Federal and State laws. Results are gathered through our certified lab, as well as other independent laboratories including the Michigan Department of Environmental Quality (MDEQ) Drinking Water Laboratory. It is important to mention that not all contaminants are tested for every year because the concentrations of these contaminants are not expected to vary significantly from year to year as determined by our State regulatory agency (MDEQ). **We are proud of the fact that your drinking water met or surpassed all Federal and State water quality and safety standards for 2016.** However, should there ever be an immediate health threat due to a water contaminant problem or violation we would promptly notify you by the best means possible. We perform numerous tests each day to monitor our source water, various water treatment stages and of course, the tap. The table inside this report represents the substances that were detected in Ludington's water for the monitoring period of **January 1st to December 31st, 2016.**

SPECIAL INFORMATION

- The Michigan Department of Environmental Quality (MDEQ) completed a Source Water Assessment for the City of Ludington's water supply in 2003. This report is intended to encourage protection of water sources, provide information for water shed assessment and planning, direct additional water studies and improve land use planning. For more information concerning the Source Water Assessment contact the Ludington Water Treatment Plant at **(231)843-8830**.
- City staff is available 24-hrs. a day to provide quality water to its residents and customers. If you have any questions or comments, or would like to receive more specific information about Ludington's Water System, please feel free to call Kurt Malzahn, Water Plant Superintendent, at **(231)843-8830** from 8 am to 4 pm weekdays.
- Interested citizens are welcome to attend City Council meetings to hear more about current projects involving Ludington's water system. Meetings are held on the second and fourth Mondays of each month at 6:30 p.m. in the Ludington Municipal Complex, 400 S. Harrison Street.
- This report and other information is also available on the internet in the Water Treatment Plant section of the City's website at: <http://www.ludington.mi.us>

HEALTH & SAFETY INFORMATION

Drinking water, including bottled water, may be reasonably expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily pose a health risk. The sources of both tap and bottled drinking water include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive materials, and can also pick up substances resulting from animal or 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 and residential uses; **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, septic systems, and urban or agricultural runoff (i.e., pesticides and herbicides); or **Radioactive contaminants**, which can be naturally occurring or the result of oil and gas production and mining activities.

To ensure that tap water is safe, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Information for Vulnerable Populations: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons 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 from their health care providers.

More information on potential health effects of specific contaminants can be obtained by contacting the EPA's Safe Drinking Water Hotline at **1 (800) 426-4791** or their website at <http://www.epa.gov/safewater/dwhealth.html>.

Lead and 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 City of Ludington 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 **1 (800) 426-4791** or at <http://www.epa.gov/safewater/lead>.

DEFINITION KEY

Parts per million (ppm) and parts per billion (ppb) - One ppm can be equated to a single penny in \$10,000. One ppb is a single penny in \$10,000,000.

Maximum Contaminant Level Goal (MCLG) - The MCLG is the level of a contaminant in drinking water below, which there is no known or expected health risk. MCLGs provide a margin of safety.

Maximum Contaminant Level (MCL) - The MCL is the highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible, using the best available treatment technology. MCL's are set at very stringent levels by the State and Federal government. To understand the possible health effects, a person would have to drink about two liters (quarts) of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the associated health effect.

Maximum Residual Disinfection Level (MRDL) - The highest level of disinfectant allowed in drinking water.

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

Nephelometric Turbidity Unit (ntu) - Measurement of water clarity.

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

Not Applicable - (NA)

Listed in the table below are the contaminants/substances that were detected in the CITY OF Ludington's Water System for the year 2016.

ALL DETECTED CONTAMINATES/SUBSTANCES ARE BELOW ALLOWED LEVELS.

Not listed are the hundreds of other contaminants tested for, but not detected in the CITY OF Ludington's Water.

2016 WATER QUALITY RESULTS

Regulated Monitoring at the Treatment Plant

Substance	Units	Range Detected	Average	MCL	MCLG	Violations	Year Sampled	Possible Sources of Contaminate
Barium	ppm	NA	0.02	2	2	No	2016	Erosion of natural deposits.
Fluoride	ppm	0.59 - 0.77	0.70	4	4	No	2016	Water additive which promotes strong teeth.
Turbidity[1]	ntu	0.03 - 0.11	0.04	TT=1	NA	No	2016	Soil runoff, suspended matter in lake water.
Total Organic Carbon [2]	ppm	0.88 - 1.33	1.11	TT	NA	No	2016	Naturally present in the environment.

Regulated Monitoring in the Distribution System

Substance	Units	Range Detected	Average	MCL	MCLG	Violations	Year Sampled	Possible Sources of Contaminate
(HAA5) Haloacetic Acids [3]	ppb	9.0 - 15.0	13.0	60	0	No	2016	Formed when chlorine is added to water with naturally occurring organic material.
Free Chlorine Residual	ppm	1.42 - 1.51	1.43	MRDL=4	MRDLG=4	No	2016	Used to disinfect drinking water.
(TTHM)-Total Trihalomethanes [3]	ppb	24.6 - 35.2	30.2	80	0	No	2016	Formed when chlorine is added to water with naturally occurring organic material.

Regulated Monitoring at Customer's Tap (compliance is determined using the 90th percentile, where nine out of ten samples must be below the Action Level).

Substance	Units	90th Percentile	Action Level (AL)	Number of Samples Above (AL)	MCLG	Violations	Year Sampled	Possible Sources of Contaminate
Lead	ppb	0.0	15.0	0	0	No	2014	Corrosion of household plumbing system.
Copper	ppm	0.056	1.3	0	1.3	No	2014	Corrosion of household plumbing system.

Unregulated Monitoring

Substance	Units	Range Detected	Average	MCL	MCLG	Violations	Year Sampled	Possible Sources of Contaminate
Sodium	ppm	NA	10.0	NA	NA	No	2016	Erosion of natural deposits.

Footnotes:

- Turbidity is a measurement of water clarity. We monitor turbidity because it is a good indicator of our filtration process. The turbidity measurements must be less than or equal to 0.3 ntu in 95% of all samples taken each month and shall never exceed 1 ntu at any time.
- The average shown for Total Organic Carbon (TOC) is the running annual average calculated quarterly. All TOC removal requirements were achieved as determined by the State.
- The average shown for Total Trihalomethanes (TTHM) and Haloacetic Acids (HAA5) is the running annual average calculated quarterly.