



City of Grand Ledge 2021 Annual Drinking Water Quality Report



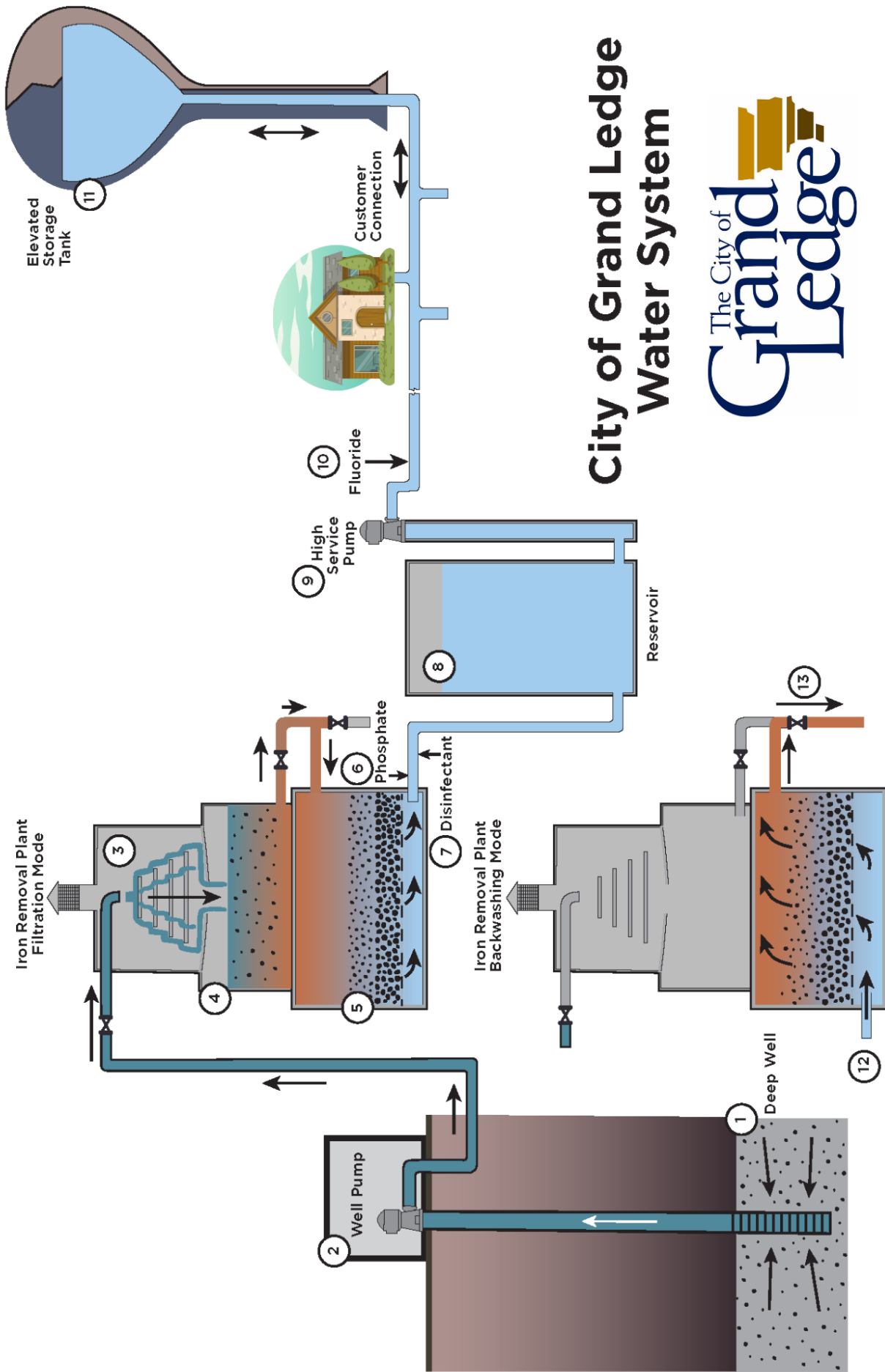
The City of Grand Ledge is pleased to present the Annual Drinking Water Quality Report for 2021. This report is provided to inform water customers about the quality of drinking water they were provided during the past year. The Safe Drinking Water Act requires this report to be updated and published annually.

The City's goal is to provide its residents with a safe and dependable supply of drinking water and is committed to providing the highest quality water possible. As this 2021 report details, the City was successful in achieving this goal by meeting or exceeding all water quality standards issued by the United States Environmental Protection Agency (US EPA) and the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

If you should experience a service interruption or unexplained change in water quality, please notify the Grand Ledge Public Services Department at 517-627-2144. During evenings and weekends, on-call Public Services Department personnel may be reached at 877-361-1903.

Water System Improvements

The City of Grand Ledge is committed to maintaining a safe, dependable water supply through continually improving the water distribution system to meet the needs of our growing community and providing improved fire protection. Of the 47 miles of water mains that make up the City's water system, almost 12 miles of that total has been constructed or replaced since the year 2000. In 2021, 295' of ductile watermain was installed at Fitzgerald Park under the railroad crossing. This pipe replaced a 4" cast iron main installed in 1933. Once additional pipe is bored and jacked under the Grand River, and connects to West Main Street, the connection is anticipated to become a third loop in the drinking water system tying into the Northside of the City. Additionally, 1071' of 8" ductile iron water main was installed on Orchard Street between North Clinton and Morley Streets in 2021. This new pipe replaced the inadequate water main that was established pre-1914. The 100,000-gallon elevated tank on West Front Street was drained for the welders and painting contractors to perform the tank rehabilitation and paintwork. Following restoration, the tank was chlorinated, sampled for EGLE water quality compliance, and put back into service. The water tower located on M-43 was renovated in 2018, but this year it was cleaned after normal wear and condensation build up accumulated.



City of Grand Ledge Water System



1. Water is obtained from a bedrock aquifer.
2. The raw water is pumped from the wells to the iron filtration plant.
3. The raw water cascades over a series of trays while fresh air is drawn into the chamber. This causes the iron and manganese to begin to oxidize.
4. A detention tank provides sufficient time for the oxidation reactions to occur.
5. The water is filtered through a particulate media (similar to sand) to remove the oxidized iron and manganese particles.
6. Phosphate is added to mitigate naturally corrosive effects of water on plumbing.
7. A small amount of disinfectant is added to the water to assure that a safe supply is delivered to the customers.
8. The reservoir provides contact time for disinfection and provides storage for treated water.
9. High service pumps convey the water into the distribution system.
10. A small amount of fluoride is added to aid in dental health.
11. The elevated storage tank provides stable pressure for the distribution piping system and storage for fire protection and other emergencies.
12. In the backwashing mode, clean water is used to fluidize the filter media loosening the iron and manganese oxide particles to clean the media for the next filtration cycle.
13. The backwash water is discharged to waste.

Water Quality

According to Federal and State laws, the City of Grand Ledge routinely monitors for contaminants in drinking water and, as stated previously, met or exceeded all US EPA and MDEQ regulatory requirements. The water the City delivers is safe to consume as determined by all current standards, with no need for customers to purchase expensive "on-site" treatment systems or bottled water.

The following tables indicate the City's monitoring results for the period of January 1, 2021, through December 31, 2021. Annual testing is not required for many potential contaminants since concentrations are not expected to vary significantly from year to year. The year of the most recent testing is included in the table.

In this table, you will find many terms and abbreviations you might not be familiar with. The following definitions are provided to make these drinking water terms and abbreviations more understandable:

Terms	Definitions
ND	Non-Detect - laboratory analysis indicates that the contaminant is not present at a detectable level
PPM	Parts per Million or Milligrams per Liter (mg/l) - one part per million corresponds to one minute in two years or a single penny in \$10,000
PPB	Parts per Billion or Micrograms per Liter - one part per billion corresponds to one minute in 2,000 years or a single penny in \$10,000,000
PPT	Parts per Trillion or Nanograms per Liter - one part per trillion corresponds to one minute in 2,000,000 years or a single penny in \$10,000,000,000
AL	Action Level - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow
LHA	Lifetime Health Advisory - A level set forth by US EPA in drinking water for two PFAS: perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). LHA is the level, or amount, below which no harm is expected from these chemicals.
MCL	Maximum Contaminant Level - the "Maximum Allowed," 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 "Goal" (MCLG) is 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 the addition of a disinfectant is necessary for the 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.
TT	Treatment Technique – A required process intended to reduce the level of contaminant in drinking water.
pCi	PicoCuries per Liter (pCi/L) – A curie is a unit of radioactivity equal to 1 gram of radium. The prefix "pico" means a trillionth.

2021 TEST RESULTS

Regulated Compounds - Detected

The following table includes test results for regulated compounds detected in the City's drinking water. Regulated compounds include any compounds for which limits in drinking water have been established. The City's drinking water was tested for many other regulated compounds that were not detected at any level. A list of these compounds is available from the Public Service Department. The State allows us to monitor for specific contaminants less than once per year because these contaminants' concentrations are not expected to vary significantly from year to year. All the data is representative of water quality, but some are more than one year old.

Contaminant	Violation Y/N	MCL/MRDL/TT	MCLG/MRDLG	Highest Level	Range of Detected Levels	Unit Measurement	Test Year	Contaminant Source
Microbial Contaminants								
Total Coliform Bacteria	N	TT Presence of coliform bacteria in 5% of monthly samples	N/A	N/A	N/A	N/A	2021	Naturally present in the environment.
E. Coli in the distribution system (positive samples)		See E. Coli Note [1]	0		N/A			Human and animal fecal waste.
Fecal Indicator – E. Coli at the source (positive samples)		TT	N/A		N/A			Human and animal fecal waste.
<i>E. coli MCL violation occurs if: (1) routine and repeat samples are total coliform-positive and either is E. coli-positive, or (2) the supply fails to take all required repeat samples following E. coli-positive routine sample, or (3) the supply fails to analyze total coliform-positive repeat sample for E. coli.</i>								
Inorganic Contaminants								
Barium	N	2	2	0.14	0.14	PPM	2019	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
Fluoride	N	4	4	0.6	0.20-0.60	PPM	2021	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.
Arsenic	N	10	10	3	3	PPB	2019	Natural deposits in the earth or from industrial and agricultural pollution.
Radioactive Contaminants								
Alpha Emitters	N	15	0	6.8±1.9	5.7-6.8±2.0	pCi/L	2020	Erosion of natural deposits.
Combined Radium	N	5	0	1.84±0.56	N/A	pCi/L	2019	Erosion of natural deposits.
Gross Alpha	N	15	0	6.8	5.7-6.8	pCi/L	2020	Erosion of natural deposits.
Disinfection By-Products								
Chlorine	N	4	4	1.44	0.18-1.44	PPM	2021	Disinfectant applied at plant tap.
Haloacetic Acids	N	60	N/A	3	3	PPB	2021	By-product of drinking water chlorination.
Total Trihalomethanes	N	80	N/A	44.8	44.8	PPB	2021	By-product of drinking water chlorination.

Lead and Copper

Lead and copper, two additional regulated inorganic contaminants, were **not detected** in the City's source water but have been detected through testing of individual customer taps. Our water supply does not have any known lead service lines and 1,901 service lines or unknown material out of a total of 2,924 service lines. 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 Grand Ledge is responsible for providing high-quality drinking water but cannot control the variety of materials used in household 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 drinking 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

<https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>.

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 this water over many years could develop kidney problems or high blood pressure.

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

Contaminant	AL	MCLG	90th Percentile	Range of Detected Levels	Unit Measurement	Test Year	Major Sources in Drinking Water
2021 Lead and Copper Results							
Copper	1.3	1.3	0.4	0-0.7	PPM	Jan - Jun 2021	Corrosion of household plumbing; erosion of natural deposits.
Lead	15	0	2	<1-3	PPB	Jan - Jun 2021	Lead service lines, corrosion of household plumbing, including fittings and fixtures, erosion of natural deposits.

Please note; the 90th percentile values for lead and copper are correct, but they were not reported in the same units as the action levels (AL). The AL for lead should be 15 parts per billion (ppb), and the AL for copper should be 1.3 parts per million (ppm).

Un-regulated Compounds

Un-regulated contaminants are those for which EPA has not established drinking water standards. Monitoring helps EPA to determine where these contaminants occur and whether it needs to regulate those contaminants.

Compound	Violation Y/N	Average Level Detected	Range of Levels Detected	Unit Measurement	Test Year	Potential Source
Chloride	N	48.5	13-84	PPM	2021	Erosion of natural deposits.
Calcium Carbonate	N	399	332-465	PPM	2021	Erosion of natural deposits.
Iron	N	0.36	0.16-0.55	PPM	2021	Erosion of natural deposits.
Sodium	N	36	31-40	PPM	2021	Erosion of natural deposits.
Sulfate	N	77	57-97	PPM	2021	Erosion of natural deposits.



Per- and Polyfluoroalkyl Substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS), sometimes called PFCs, are a group of chemicals that are resistant to heat, water, and oil. The amount of PFOA and PFOS combined were **not detected** (ND) in the sample collected from our Iron Removal Plant Tap (TP001) location and Public Well #2 during the 2020 sampling period. For information on PFOA, PFOS, and other PFAS, including possible health outcomes, you may visit these websites: <https://www.epa.gov/pfas>; <https://www.atsdr.cdc.gov/pfas/>; or <http://www.michigan.gov/pfasresponse>.

Regulated Compound	Violation Y/N	MCL, TT, or MRDL	MCLG or MRDLG	Level Detected	Range	Year Sampled	Typical Source of Contaminant
Hexafluoropropylene oxide dimer acid (HFPO-DA) (ppt)	N	370	N/A	ND	N/A	2021	Discharge and waste from industrial facilities utilizing the Gex X chemical process
Perfluorobutane sulfonic acid (PFBS) (ppt)	N	420	N/A	ND	N/A	2021	Discharge and waste from industrial facilities; Stain-resistant treatments
Perfluorohexane sulfonic acid (PFHxS) (ppt)	N	51	N/A	ND	N/A	2021	Firefighting foam; Discharge and waste from industrial facilities
Perfluorohexanoic acid (PFHxA) (ppt)	N	400,000	N/A	ND	N/A	2021	Firefighting foam; Discharge and waste from industrial facilities
Perfluorononanoic acid (PFNA) (ppt)	N	6	N/A	ND	N/A	2021	Discharge and waste from industrial facilities; Breakdown of precursor compounds
Perfluorooctane sulfonic acid (PFOS) (ppt)	N	16	N/A	ND	N/A	2021	Firefighting foam; Discharge from electroplating facilities; Discharge and waste from industrial facilities
Perfluorooctanoic acid (PFOA) (ppt)	N	8	N/A	ND	N/A	2021	Discharge and waste from industrial facilities; Stain-resistant treatments

Important Information about Your Drinking Water

Monitoring requirements not met for the City of Grand Ledge: We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During the period from January 1, 2020, and September 30, 2020, we did not monitor for Gross Alpha. However, this violation **does not** pose a threat to your supply's water quality.

What Should I Do? There is nothing you need to do at this time. This is not an emergency. You do not need to boil water or use an alternative source of water. Even though this is not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation. The table below lists the contaminant we did not properly test for, how often we are supposed to sample for this contaminant, how many samples we are supposed to take, how many samples we took, when samples should have been taken, and the date we collected follow-up samples.

The Fourth Unregulated Contaminant Monitoring Rule (UCMR 4)

The fourth Unregulated Contaminant Monitoring Rule (UCMR 4) was published in the Federal Register on December 20, 2016. UCMR 4 monitoring provides a basis for future regulatory actions to protect public health. For more information on UCMR4, you may visit:

<https://www.epa.gov/sites/production/files/2017-03/documents/ucmr4-fact-sheet-general.pdf>

The City's drinking water was tested for many other compounds that were not detected at any level.

Contaminant	Violation Y/N	Average Level Detected	Range of Detected Levels	Unit Measurement	Test Year
Bromide	N	53.07	47-68	PPB	2018
HAA5	N	10.2	8.8-11.6	PPB	2018
HAA6Br	N	11.04	9.4-12.7	PPB	2018
HAA9	N	19.71	17.1-22.3	PPB	2018
Manganese	N	16.94	15.5-18.9	PPB	2018
Total Organic Carbon	N	1407.67	1165-1659	PPB	2018

General Health 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 EPA's Safe Drinking Water Hotline (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:

- Microbial contaminants, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, 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 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.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. To ensure tap water is safe to drink, EPA prescribes regulations that limit the number of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which must provide the same protections for public health.

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 guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

The City of Grand Ledge encourages public interest and participation in decisions affecting drinking water. The Grand Ledge City Council meets the second and fourth Monday of each month at 7:30 p.m. in the Grand Ledge City Hall, 310 Greenwood Street, Grand Ledge, Michigan 48837. Specific questions regarding water and water quality or any other information provided in this report should be directed to the Public Works Superintendent, Kurt Ristow, at 517-627-2149.