# Cleveland Water

## 2021 WATER QUALITY REPORT

Cleveland Water has a current, unconditional license to operate our public water system, the 10th largest in the United States.


Cleveland Water tiene actualmente una licencia incondicional para operar nuestro sistema público de agua, el décimo más grande de los Estados Unidos.

# 2021 CONTINUING OUR MISSION TO SERVE YOU

Cleveland Water is the 10th largest public water system in the United States, the largest system in Ohio and the largest system sourcing Lake Erie. Every day, we treat and deliver up to 300 million gallons of water to more than 1.45 million people and thousands of businesses, schools, churches and recreation centers through more than 442,000 customer accounts.

We've stated for decades that, the health and safety of our customers is our number one priority. We continued to prove that in 2021. Cleveland Water is committed to providing economical, high quality drinking water to all customers.

Our success is reflected in this 2021 Water Quality Report, which we've prepared to summarize information for you, our consumers. Cleveland Water is in compliance with all Maximum Contaminant Levels and Treatment Techniques for drinking water. Cleveland Water had a 2021 unconditioned license to operate our water system. The license is issued by the Ohio Environmental Protection Agency. Included within this report is general health information, water quality test results, how to participate in decisions concerning your drinking water and water system contacts.

**Martin J. Keane**
Director, Department of Public Utilities

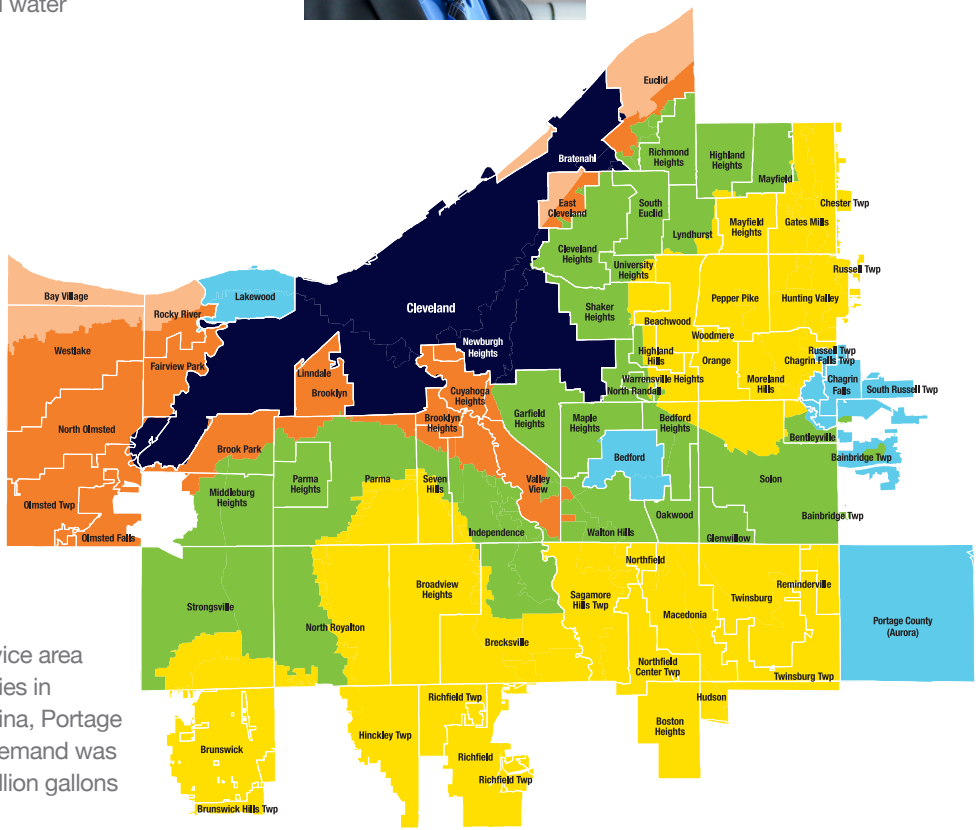
**Alex Margevicius**
Commissioner, Cleveland Water Department

## OUR SERVICE AREA

### LEGEND

**City & Suburbs**

- Low Service Suburbs
- 1st High Suburbs
- 2nd High Suburbs
- 3rd High Suburbs
- Cleveland
- Master Meter




We provide water to our 640-square mile service area through 5,375 miles of mains in 80 communities in Cuyahoga County and parts of Geauga, Medina, Portage and Summit counties. In 2021, our average demand was 209.7 million gallons per day, which is 76.5 billion gallons of water for the year.

## PUBLIC PARTICIPATION

Cleveland Water does not hold regular public meetings. However, the public may participate through attending Public Utilities Committee meetings of Cleveland City Council. At times, council may meet virtually in accordance with the city of Cleveland's emergency declaration and Ohio's Open Meetings Law under H.B. 404. Committee and council meetings are listed on the Cleveland City Council calendar which is linked at clevelandcitycouncil.org and can be watched live on TV20 and YouTube. For more information on your drinking water, contact us at 216-664-2639.

pH 7.3
at plant tap

hardness
6.6 grains/gallon
(113 ppm)

alkalinity
78 ppm as
calcium carbonate

**64,851 FEET**
new water pipe
installed in 2021
to replace aging
infrastructure

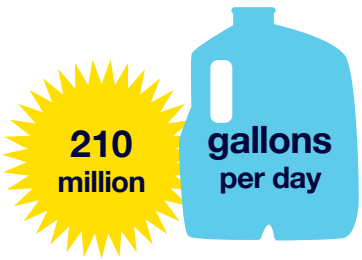
## TAP WATER IS THE $MART CHOICE

Cost of DRINKING ½ gallon per day for one year

TAP WATER
$0.87

PLASTIC WATER
$1,757

CWD makes an average




for our 1.45
million customers

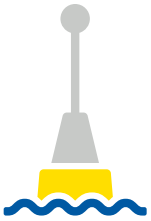
## Cleveland Water

- ✔ 2021 UNCONDITIONED LICENSE TO OPERATE
- ✔ ZERO VIOLATIONS
- ✔ SAFE FROM LEAD (ORTHOPHOSPHATE PROTECTION & PH CONTROL)
- ✔ ZERO PFAS DETECTIONS (280 SAMPLES FROM 2014-2021)

**$76.2 MILLION**
invested in infrastructure improvements in 2021 to our treatment plants, intakes, tanks, towers and water mains

With more than
**5,375**
miles of water mains in our 640 square mile service area, Cleveland Water is the 10th largest water system in the country. That's why we continually inspect, maintain, plan for and execute upgrades to our infrastructure to meet an ever increasing need for reliability.

**NOW COPPER**
1,646 lead service lines replaced with copper in 2021



4 buoys monitor
Lake Erie source water




4 intakes & 4 treatment plants make water safe

160,000 tests yearly in the plants to ensure proper treatment

35 pump stations, tanks & towers to maintain proper system pressure

> 5,000 water samples collected across our service area yearly to ensure safe water at your tap

**"In 2021, Cleveland Water celebrated 165 years of delivering water to customers. Throughout water's journey from the lake to your home, our staff goes above and beyond to ensure the quality and reliability of our services."**

**Alex Margevicius, P.E.**
**Commissioner**

**"The real-time water quality data from our buoys near each intake lets us know source water quality before that water enters our treatment plants. This knowledge helps us make more consistent water. Our goal is that no matter what Lake Erie throws at us, customers never notice a difference at their tap."**

**Scott Moegling, P.E.**
**Water Quality Manager**

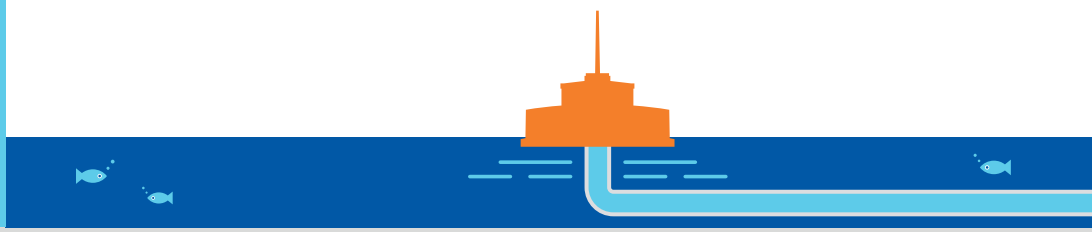
## LAKE ERIE – OUR SOURCE WATER

Cleveland draws source water from four intakes located far offshore in Lake Erie's Central Basin. These intakes are spread out over 15 miles and are each 3 to 5 miles offshore where the water is cleaner and has been minimally impacted from tributary runoff and coastal activities. Lake Erie is considered to be a surface water source. Cleveland Water also has interconnections with other area water systems, but these are for emergency use only. These interconnections are designed for Cleveland Water to assist other water systems if needed. We received no emergency water in 2021.

Water enters Lake Erie from precipitation over the lake and watershed. Precipitation on land runs off and flows down streams and rivers into our source water. About 90% of the water entering Lake Erie flows down the Detroit River from Lake St. Clair; another 4% drains from the Maumee River. Both rivers flow into the lake's shallow Western Basin. The remaining runoff drains through dozens of rivers and streams into the lake or off the land along the shore directly into the water. The actions of people on land in Lake Erie's 30,149 square mile watershed can impact the quality of water in Lake Erie. Protecting our drinking water source from contamination is the responsibility of all area residents.

The state of Ohio performed an assessment of our four source water intakes in the late 1990s. An updated Source Water Assessment and Protection Report as prepared by Cleveland Water and Ohio EPA in July 2021. 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 from an upstream spill. Because Cleveland Water's intakes are located a considerable distance offshore, potential contamination from the Cuyahoga River and nearshore sources is minimized to a great degree. As a result, Ohio EPA considers Cleveland Water's source water (Lake Erie) to have a low susceptibility to contamination due to the location of our intakes.

The Cleveland Water public water system treats the water to meet drinking water quality standards, but no single treatment technique can address all potential contaminants. To address this, Cleveland Water uses the multiple barrier approach for protecting and treating our source water. Protection of source water is one of the barriers we use. The potential for water quality impacts can be further decreased by implementing measures to protect Lake Erie. More detailed information is provided in the *Cleveland Water Drinking Water Source Assessment and Protection Report* which can be obtained by calling our Water Quality Section at 216-664-2639.



## WHAT TO EXPECT FROM PUBLIC WATER SYSTEMS IN THE UNITED STATES

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.

In order to ensure that tap water is safe to drink, USEPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

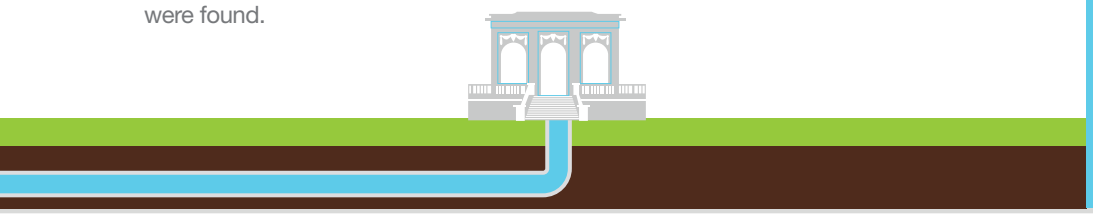
Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (1-800-426-4791).

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. 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 (1-800-426-4791).

### ABOUT YOUR DRINKING WATER

In 2021 we had an unconditioned license to operate our water system. For licensing, the EPA requires regular sampling to ensure drinking water safety. Cleveland Water conducted sampling for bacteria, and for inorganic, synthetic organic, and volatile organic contaminants during 2021. We were not required to monitor for radiological parameters in 2021.

Samples are analyzed for contaminants, most of which were not detected in the Cleveland Water supply. The Ohio EPA requires us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though accurate, are more than one year old. Listed in the table (pages 8-9) is information on those contaminants that were found.



**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 organic chemicals, 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

"Treatment plant staff control the process that takes water straight from Lake Erie, makes the water safe to drink, and then pumps it throughout the Cleveland Water System to your home. Water Plant Operators continue their training throughout their career to stay up-to-date on treatment practices and ensure the quality of water delivered to our customers."

**Maggie Rodgers**
**Manager of Plant Operations**

"Our 50-year plan for infrastructure maintenance and upgrades includes all parts of our system – from the lake intakes to treatment plants to service lines. When you see a water tower being painted or a main being replaced, that is our staff helping ensure delivery of safe water continues for generations."

**José N. Hernández, P.E.**
**Manager of Engineering**

## HOW WE MAKE THE WATER SAFE

**LOCAL** Water is pumped in from 3 miles or more offshore in Lake Erie and screened for twigs and other large debris before entering one of our four treatment plants.

**TREATED** In each plant we add potassium permanganate, powdered activated carbon and aluminum sulfate to make the tiny particles of mud and algae stick together. These clumps get larger until they are heavy enough to sink to the bottom of the sedimentation tank. This multi-step process is called coagulation, flocculation and sedimentation.

**FILTERED** The clear water on top of the sedimentation tank flows on to gravity filters that remove all particles larger than a single red blood cell, leaving the water crystal clear. Then we use a small amount of chlorine to kill harmful pathogens (viruses and bacteria) and disinfect the water. We add the minimum amount of fluoride required by the Environmental Protection Agency, which helps prevent tooth decay. We also add orthophosphate that helps prevent corrosion of service lines and home plumbing.

**TESTED** We test our water regularly before, during and after the treatment process to ensure our customers receive safe, good tasting drinking water. In total, 20,000 parameters in the treatment process are continuously monitored at each plant; 160,000 tests are performed yearly to ensure proper treatment; and 350 to 900 monthly samples are taken in the distribution system to ensure safe delivery.

**DELIVERED** Water reservoirs, pump stations, tanks and towers ensure water is continuously available at your tap with ample pressure. We deliver safe water to more than 442,000 customer accounts through 5,375 miles of water pipes. Our treatment plant staff and maintenance crews work 24-7 to ensure you have safe water at your tap.

### HOW CLEVELAND WATER COMPARES NATIONALLY

Cleveland Water has some of the safest and best tasting water. We hold ourselves to higher standards than what is set by the EPA. Each of our water treatment plants has achieved advanced levels in the national Partnership for Safe Water. The partnership is a voluntary effort between six prestigious drinking water organizations and more than 300 water utilities. The partnership's goal is to optimize treatment plant performance and distribution system operations beyond what regulations require. The result is the production and delivery of superior quality water to all users. Each of our plants go through annual re-certification based on performance and have achieved the highest levels of certification for more than 15 years.

## DEFINITIONS OF SOME TERMS CONTAINED WITHIN THIS REPORT

**Contaminant:** Anything in the water that is not a water molecule, including things that give water its natural flavor such as calcium and magnesium.

**Maximum Contaminant Level (MCL):** The highest level of 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 a 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. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

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

- For lead, the action level is exceeded if the concentration of lead in more than 10% of tap water samples collected during a monitoring period is greater than 0.015 ppm, i.e., if the 90th percentile lead levels is at or greater than 0.015 ppm.
- For copper, the action level is exceeded if the concentration of copper in more than 10% of the tap samples collected during a monitoring period is at or greater than 1.3 ppm.

**Lead Threshold Level (LTL):** The concentration of lead in an individual tap water sample that is at or greater than 0.015 ppm

**Master Meter:** A master meter is one that connects a wholesale public water system to consecutive public water system(s). This type of meter monitors the amount of water being sent to the consecutive system(s) and can also be used to determine the quality of water being delivered to the consecutive system(s).

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

**Turbidity:** A measure of the cloudiness of water and an indication of the effectiveness of our filtration system. The turbidity limit set by the EPA is 0.3 NTU in 95% of the monthly samples and shall not exceed 1 NTU at any time.

**Parts per Million (ppm) or milligrams per Liter (mg/L):** Units of measure for concentration of a contaminant. A part per million corresponds to one second in a little over 11.5 days.

**Parts per Billion (ppb) or micrograms per Liter (µg/L):** Units of measure for concentration of a contaminant. A part per billion corresponds to one second in 31.7 years.

**Parts per Trillion ppt (ppt) or nanograms per Liter (ng/L):** Units of measure for concentration of a contaminant. A part per trillion corresponds to one second in 31,500 years.

**PFAS: Per- and polyfluoroalkyl substances (PFAS):** are a group of man-made chemicals applied to many industrial, commercial and consumer products to make them waterproof, stain resistant, or nonstick. PFAS are also used in products like cosmetics, fast food packaging, and a type of firefighting foam called aqueous film forming foam (AFFF) which are used mainly on large spills of flammable liquids, such as jet fuel. PFAS are classified as contaminants of emerging concern, meaning that research into the harm they may cause to human health is still ongoing.

**The "<" symbol:** A symbol which means less than. A result of <5 means that the lowest level that could be detected was 5 and the contaminant in that sample was not detected.

**1 ppm = four drops of water in a 55 gallon rain barrel.**

**1 ppb = 1 drop in a 30-foot diameter 4-foot deep swimming pool (21,000 gallons)**

**1 ppt = 2.3 rain barels of water in all of Lake Erie's 127.7 trillion gallons.**

# TABLE OF DETECTED CONTAMINANTS

**How to Read the Water Quality Data Table:** EPA establishes the safe drinking water regulations that limit the amount of contaminants allowed in drinking water. The table shows the concentrations of detected substances in comparison to regulatory limits. Substances that were tested for, but not detected, are not included in this table. Listed below is information on those contaminants that were found in Cleveland Water's drinking water at each of our four treatment plants. The results in the table were either collected during 2021 or were used for compliance in 2021. Typical sources are shown for each contaminant. TTHMs, HAA5s, and TOC also include 9 months of 2020 data as required for the compliance calculations.

| | | | | CROWN | | | MORGAN | | |
|---|---|---|---|---|---|---|---|---|---|
| Contaminants (Units) - year sampled [Typical Sources of Contaminant in Drinking Water] | | MCLG | MCL | Level Found | Range of Detections | Violation | Level Found | Range of Detections | Violation |
| Microbiological | **Turbidity (NTU) - 2021** [Soil runoff] | n/a | TT* (< 1 NTU) | 0.06 | 0.03 - 0.06 | No | 0.11 | 0.03 - 0.11 | No |
| | **Turbidity (% meeting standard) - 2021** [Soil runoff] | n/a | TT* (%) | 100% compliant | n/a | No | 100% compliant | n/a | No |
| | **Total Coliform Bacteria++ - 2021** [Naturaly present in the environment] | n/a | > 5% are positive per month | 3.4% (2 of 59 samples 11/11/21) | 0% - 3.4% | No | 100% compliant | n/a | No |
| Inorganic | **Fluoride (ppm) - 2021** [Water additive which promotes strong teeth] | 4 | 4 | 0.94 | 0.83 - 1.06 | No | 0.98 | 0.81 - 1.18 | No |
| | **Nitrate as Nitrogen (ppm) - 2021** [Runoff from farm fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits] | 10 | 10 | 1.4 | ND - 1.4 | No | 1.08 | ND - 1.08 | No |
| Organic | **TTHMs (ppb)** - 2021** [Total Trihalomethanes are a byproduct of drinking water chlorination] | n/a | 80 | 31.65 | 1.1 - 52.5 | No | 31.65 | 1.1 - 52.5 | No |
| | **HAA5 (ppb)** - 2021** [Haloacetic Acids are a byproduct of drinking water chlorination] | n/a | 60 | 23.0 | 7.3 - 34.2 | No | 23.0 | 7.3 - 34.2 | No |
| | **Total Organic Carbon# - 2021** [Naturally present in the environment] | n/a | TT | 1.41 | 1.28 - 1.58 | No | 1.31 | 1.30 - 1.67 | No |
| Disinfectant | **Total Chlorine (ppm) - 2021** [Water additive used to control microbes] | MRDLG 4 | MRDL 4 | 1.15 | 1.09 - 1.17 | No | 1.15 | 1.11 - 1.17 | No |

* Turbidity is a measure of the cloudiness of water and an indication of the effectiveness of our filtration system. The turbidity limit set by the EPA is 0.3 NTU in 95% of the samples analyzed each month and shall not exceed 1 NTU at any time for each of our water treatment plants.

++ In November, two of the 59 samples taken in Crown's primary distribution area were positive. Repeat samples were safe. Over 600 samples in the Crown area were collected in 2021, and over 4,200 samples were taken in 2021 for the entire distribution system; these were the only two samples that tested positive.

** Cleveland Water has a combined distribution system. Data listed represents this and therefor is identical for each treatment plant.

# The value reported under "Level Found" for Total Organic Carbon (TOC) is the lowest running annual average ratio between the percent of TOC actually removed to the percent of TOC required to be removed. A value of greater than one (1) indicates compliance with TOC removal requirements. A value less than 1 indicates a violation of the TOC removal requirements. The values reported under the "Range of Detections" for TOC is the lowest monthly ratio to the highest monthly ratio.

| BALDWIN | | | NOTTINGHAM | | |
|---|---|---|---|---|---|
| Level Found | Range of Detections | Violation | Level Found | Range of Detections | Violation |
| 0.17 | 0.02 - 0.17 | No | 0.13 | 0.02 - 0.13 | No |
| 100% compliant | n/a | No | 100% compliant | n/a | No |
| 100% compliant | n/a | No | 100% compliant | n/a | No |
| 1.0 | 0.81 - 1.27 | No | 0.94 | 0.82 - 1.15 | No |
| 1.4 | ND - 1.4 | No | 1.3 | ND - 1.3 | No |
| 31.65 | 1.1 - 52.5 | No | 31.65 | 1.1 - 52.5 | No |
| 23.0 | 7.3 - 34.2 | No | 23.0 | 7.3 - 34.2 | No |
| 1.49 | 1.37 - 1.57 | No | 1.4 | 1.22 - 1.53 | No |
| 1.11 | 1.03 - 1.16 | No | 1.18 | 1.10 - 1.20 | No |

## ABBREVIATIONS BELOW APPLY TO ALL WATER QUALITY REPORTING TABLES

AL = Action Level

MCL = Maximum Contaminant Level

MCLG = Maximum Contaminant Level Goal

NTU = Nephelometric Turbidity Units

MRDL = Maximum Residual Disinfectant Level

MRDLG = Maximum Residual Disinfectant Level Goal

n/a = not applicable

ND = Not Detected

ppm = parts per million; milligrams per liter (mg/L)

ppb = parts per billion; or micrograms per liter (µg/L)

< = a symbol which means less than. A result of <5 means the lowest level that can be detected is 5 and the contaminant in that sample was not detected.

TT = Treatment Technique

## ADDITIONAL LEGEND FOR AVERAGE CHEMICAL VALUES TABLE (P 11)

NR = Not Regulated
NA = Not Applicable
NM = Not Monitored this Year

1. EPA considers 50 pCi/L to be the level of concern for beta emitters and an MCL of 4 mrems/year

2. Up to 5% monthly of all samples can be positive. 2 out of 4261 samples were positive in 2021

3. NTU – 95% of all samples taken must be less than 0.3 NTU, and no sample may be above 1 NTU

4. TT required rather than the necessity to meet a MCL. Required to be > 1.0

5. Based on first draw samples from customer taps. These are ALs rather than MCLs

6. Ohio EPA considers 0.05 ppm to be an aesthetic concern; 0.3 ppm to be a health concern to infants; and 0.3 ppm for 10 days or 1.0 ppm for one day to be a health concern for all people

Lake Erie raw sulfate ($SO_4$) level ~ 24 ppm; treated $SO_4$ ranges from 28-40 ppm, usually 35-40 ppm

# ADDITIONAL WATER QUALITY MONITORING

**Unregulated Contaminants** are substances for which USEPA has no established drinking water standards. USEPA requires public water systems to monitor these substances in order to determine where certain substances occur and whether the USEPA needs to regulate those substances in the future. Between December 2018 and September 2019, Cleveland Water participated in the fourth round of the Unregulated Contaminant Monitoring Rule (UCMR4). Contaminants in the table on this page were detected during UCMR4. Additional contaminants were monitored and not detected. For additional information on UCMR4 results, please call our Water Quality line at 216-664-2639. Information about UCMR monitoring requirements is found on the USEPA website: epa.gov/dwucmr.

## WHAT'S NOT IN YOUR WATER

Cleveland Water monitors drinking water for more than 200 regulated and unregulated contaminants. We perform thousands of tests each year to ensure drinking water quality. Many substances that we test for do not appear in this report because they are not found in your drinking water. We analyze your water regularly for the substances listed in the Average Chemical Values Table on page 11, the significant majority of which were not detected. Additionally, we have been monitoring for cyanotoxins in source and finished water since 2010. Cyanotoxins have never been detected in our finished water, therefore results are not included in this report.

We have tested for the six main PFAS chemicals in our source water (Lake Erie) and our finished drinking water as it leaves our treatment plants numerous times. There has not been a reportable detection level for any PFAS chemicals in nearly 300 tests of Cleveland Water. In 2020, our PWS was sampled as part of the State of Ohio's Drinking Water Per- and Polyfluoroalkyl Substances (PFAS) Sampling Initiative. Six PFAS compounds were sampled, and none were detected in our finished drinking water. For more information about PFAS, please visit pfas.ohio.gov.

If you have questions about our water quality monitoring parameters please call our Water Quality Line at 216-664-2639 or scan the QR code on page 15.

| | Contaminants (Units) [Typical Sources in Drinking Water] | Year(s) Sampled | MCLG | Level Found | Range of Detections | Sample Location |
|---|---|---|---|---|---|---|
| Unregulated Contaminant Monitoring Rule (UCMR4) | **Manganese (ppb)** [naturally occurring in water] | 2018-19 | n/a | 1.13 | ND - 3.8 | Raw |
| | **Germanium (ppb)** [naturally occurring in water] | 2018-19 | n/a | 0.073 | ND - 1.15 | Raw |
| | **Total Organic Carbon (ppb)** [naturally present in the environment] | 2018-19 | n/a | 2133 | 1860 - 2290 | Raw |
| | **Bromide (ppb)** [naturally occurring in water] | 2018-19 | n/a | 31.1 | 26.1 - 35.1 | Raw |
| | **Haloacetic Acids (HAA5) (ppb)** [byproducts of drinking water disinfection] | 2018-19 | n/a | 13.2 | 7.0 - 22.53 | Distribution |
| | **Haloacetic Acids (HAA9) (ppb)** [byproducts of drinking water disinfection] | 2018-19 | n/a | 20.49 | 11.99 - 32.63 | Distribution |
| | **Haloacetic Acids (HAA6Br) (ppb)** [byproducts of drinking water disinfection] | 2018-19 | n/a | 7.97 | 5.38 - 11.18 | Distribution |
| Unregulated Contaminants | **Bromodichloromethane (ppb)** [byproducts of drinking water disinfection] | 2021 | 0 | 3.0 | 2.0 - 4.7 | Entry Point |
| | **Chloroform (ppb)** [byproducts of drinking water disinfection] | 2021 | 70 | 3.3 | 1.3 - 8.2 | Entry Point |
| | **Dibromochloromethane (ppb)** [byproducts of drinking water disinfection] | 2021 | 60 | 1.9 | 1.4 - 1.9 | Entry Point |

# AVERAGE CHEMICAL VALUES (see key p9)

| Contaminant | MCL | Cleveland Water | Contaminant | MCL | Cleveland Water |
|---|---|---|---|---|---|
| **Volatile Organics** | | | **Synthetic Organics** | | |
| Benzene | 0.005 | ND | Alachlor | 0.002 | ND |
| Bromobenzene | NR | ND | Atrazine | 0.003 | ND |
| Bromochloromethane | NR | ND | Simazine | 0.004 | ND |
| Bromomethane | NR | ND | **Inorganics** | | |
| Carbon tetrachloride | 0.005 | ND | Aluminum (Secondary MCL) | 0.05 - 0.2 | ND |
| (mono) Chlorobenzene | 0.1 | ND | Antimony | 0.006 | ND |
| Chloroethane | NR | ND | Arsenic | 0.010 | ND |
| Chloromethane | NR | ND | Barium | 2 | ND |
| 2-Chlorotolulene | NR | ND | Berylium | 0.004 | ND |
| 4-Chlorotoluene | NR | ND | Cadmium | 0.005 | ND |
| Dibromomethane | NR | ND | Chromium | 0.1 | ND |
| 1,2-Dichlorobenzene (o-dichlorobenzene) | 0.6 | ND | Copper (90th percentile) - 5 | 1.3 | 0.10 |
| 1,3-Dichlorobenzene (m-dichlorobenzene) | NR | ND | Cyanide | 0.2 | ND |
| 1,4-Dichlorobenzene (p-dichlorobenzene) | 0.075 | ND | Fluoride | 4 | 0.99 |
| Dichlorodifluoromethane | NR | ND | Iron | NR | ND |
| 1,1-Dichloroethane | NR | ND | Lead (90th percentile) - 5 | 0.015 | 0.00228 |
| 1,2-Dichloroethane (-ethylene) | 0.005 | ND | Manganese - 6 | 0.05/0.3/1.0 | ND |
| 1,1-Dichloroethene (-ethylene) | 0.007 | ND | Mercury | 0.002 | ND |
| cis-1,2-Dichloroethene (-ethylene) | 0.07 | ND | Molybdenum | NR | NA |
| trans-1,2-Dichloroethene (-ethylene) | 0.1 | ND | Nickel | NR | ND |
| Dichloromethane | 0.005 | ND | Nitrate | 10 | 0.41 |
| 1,2-Dichloropropane | 0.005 | ND | Potassium | NR | NM |
| 1,3-Dichloropropane | NR | ND | Selenium | 0.05 | ND |
| 2,2-Dichloropropane | NR | ND | Silica | NR | NA |
| 1,1-Dichloropropene | NR | ND | Silver (Secondary MCL) | 0.1 | NA |
| 1,3-Dichloropropene | NR | NA | Sodium | NR | 8.4 |
| Ethylbenzene | 0.7 | ND | Strontium | NR | NA |
| Hexachlorobutadiene | NR | ND | Thallium | 0.002 | ND |
| Isopropylbenzene | NR | ND | Vanadium | NR | NM |
| 4-Isopropyltoluene | NR | ND | Zinc (Secondary MCL) | 5 | ND |
| Napthalene | NR | ND | **Miscellaneous** | | |
| n-Propylbenzene | NR | ND | Chloride | 250 | 13.3 |
| Styrene | 0.1 | ND | Total Dissolved Solids | 500 | 150 |
| 1,1,1,2-Tetrachloroethane | NR | ND | Odor (Threshold Odor No.) | 3 | NA |
| 1,1,2,2-Tetrachlorethane | NR | ND | Magnesium | NR | 7.8 |
| Toluene | 1 | ND | Calcium | NR | 32 |
| 1,1,1-Trichloroethane | 0.2 | ND | Total Organic Carbon - 4 | TT | 1.40 |
| Tetrachloroethene (-ethylene) | 0.005 | ND | pH | >7.0 | 7 - 7.7, ave. 7.29 |
| 1,2,3-Trichlorobenzene | NR | ND | Alkalinity | NR | 78 |
| 1,2,4-Trichlorobenzene | 0.07 | ND | Orthophosphate | >0.8 | 0.87 - 1.77, ave. 1.23 |
| Trichloroethene | 0.005 | ND | Hardness (as $CaCO_3$) | NR | 108 - 116, ave. 113 |
| 1,1,2-Trichloroethane | 0.005 | ND | Turbidity (NTU) - 3 | 0.3 | 0.045 |
| Trichlorofluoromethane | NR | ND | Total Coliform - 2 | <5% | 0.047% |
| 1,2,3-Trichloropropane | NR | ND | **Disinfection Byproducts** | | |
| Vinyl chloride | 0.002 | ND | Total Trihalomethanes | 0.08 | 0.022 |
| Xylenes, total | 10 | ND | Haloacetic Acids 5 | 0.06 | 0.018 |
| m-Xylene | NR | NA | **Radionuclides** | | |
| o-Xylene | NR | NA | Beta Emitters (pCi/L) - 1 | 50 | NM |
| p-Xylene | NR | NA | Alpha Emitters (pCi/L) | 15 | NM |
| Results and MCLs in ppm unless noted | | | Radium 226/228 (pCi/L) | 5 | NM |

## REMOVING LEAD LINES

For decades, Cleveland Water has been removing city-owned lead service lines during water main replacement projects and replacing them with copper. In 2018, we began tracking those replacements and replacing customer-owned lead service lines when disturbed during water main replacements projects and repairs. From October 2018 through Dec. 31, 2021, Cleveland Water replaced 4,937 lead service lines. These numbers include lead lines replaced by our Childcare Lead Service Line Removal Program, launched in 2021 with $1.5 million in state and federal funding.

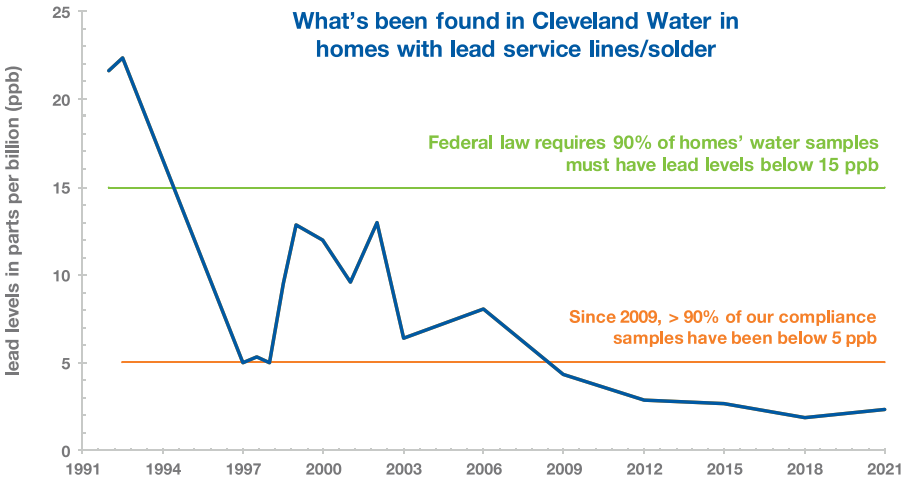
If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Cleveland Water is responsible for providing high quality drinking 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 800-426-4791 or at epa.gov/safewater/lead. A list of laboratories certified in the state of Ohio to test for lead can be found online by searching the words "Ohio EPA Certified Labs" or by calling 614-644-2752.

# LEAD AND COPPER MONITORING

Cleveland Water regularly monitors for lead and copper from homes in the Cleveland Water distribution system that meet Tier 1 requirements (i.e. have lead in their plumbing system). The results shown below are the most recent compliance results from water samples taken June - September 2021. There were no violations or lead or copper action level exceedances.

Cleveland Water's monitoring results have been lower than the federal action level for lead of 15 parts per billion (ppb) for more than 24 years. The low lead levels are a direct result of our water's consistency and successful implementation of treatment techniques to prevent corrosion. These optimizations include adding orthophosphate to finished water and keeping the pH of water above 7 at all times. The orthophosphate forms a thin coating on the inside of pipes which limits water's contact with metals.

The blue line on the graph below shows our lead compliance monitoring results since we began testing. The graph shows how lead levels dropped and stayed below the federal action level since we implemented our corrosion control treatment techniques.




**Cleveland Water's 2021 Lead and Copper Compliance Monitoring results are found in the table below.**

| YEAR Sampled - Contaminant (Units) [Typical Sources in Drinking Water] | | AL | Individual Results over AL | 90% of test levels were less than | Violation |
|---|---|---|---|---|---|
| Lead and Copper | 2021 - Copper (ppm) [Corrosion of household plumbing systems; Erosion of natural deposits] | 1.3 ppm | 0 | 0.10 ppm | No |
| | | 0 out of 58 samples had levels in excess of the copper action level of 1.3 ppm | | | |
| | 2021 - Lead (ppb) [Corrosion of household plumbing systems; Erosion of natural deposits] | 15 ppb | 0 | 2.28 ppb | No |
| | | 0 out of 58 samples had levels in excess of the lead action level of 15 ppb | | | |

# HOW TO DETERMINE IF YOUR PLUMBING HAS LEAD

Cleveland Water is virtually lead free when it leaves our treatment plants. Our water mains are not made from lead. Lead can be present in service lines and in customers' plumbing, faucets and fixtures.

Not all customers have lead in their service line or premise plumbing. To understand the potential of having lead in your system:

## CHECK

Check the type of material of your city-owned service line online at clevelandwater.com/lead

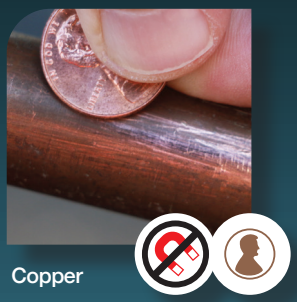
## TEST

Test your service line material. Our video shows you how: youtube.com/watch?v=AiU7GHzD_Ck. If a magnet sticks to the service line where it enters your home, it is galvanized steel. If you scratch the pipe with a penny and the metal is shiny like a penny, it is copper. If the scratched metal is shiny silver and flakes off, it is lead. You can record your results online, call us at 216-664-2882 or send an email to LeadLookup@ClevelandWater.com with pictures of your service line and we will record the results for you. If our records indicate you have a customer-owned lead service line, we may contact you for replacement if/when we receive grant funding for replacement projects.

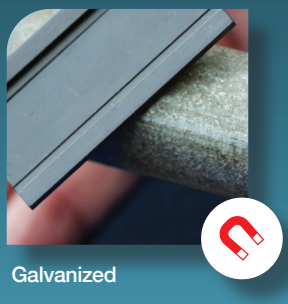
## DATE

Homes built after 1953 should not have a lead service line. Before 1986, the level of lead in solder used to join copper pipes was usually 50%. There was no regulation on the amount of lead used in faucets that pre-date 1986. In 1986, the allowable level of lead in solder was reduced to less than 0.2% and the allowable level of lead in potable water faucets was reduced to less than 8%. In 2014, the allowable level of lead used in new potable water faucets and fittings was reduced to less than 0.25%.

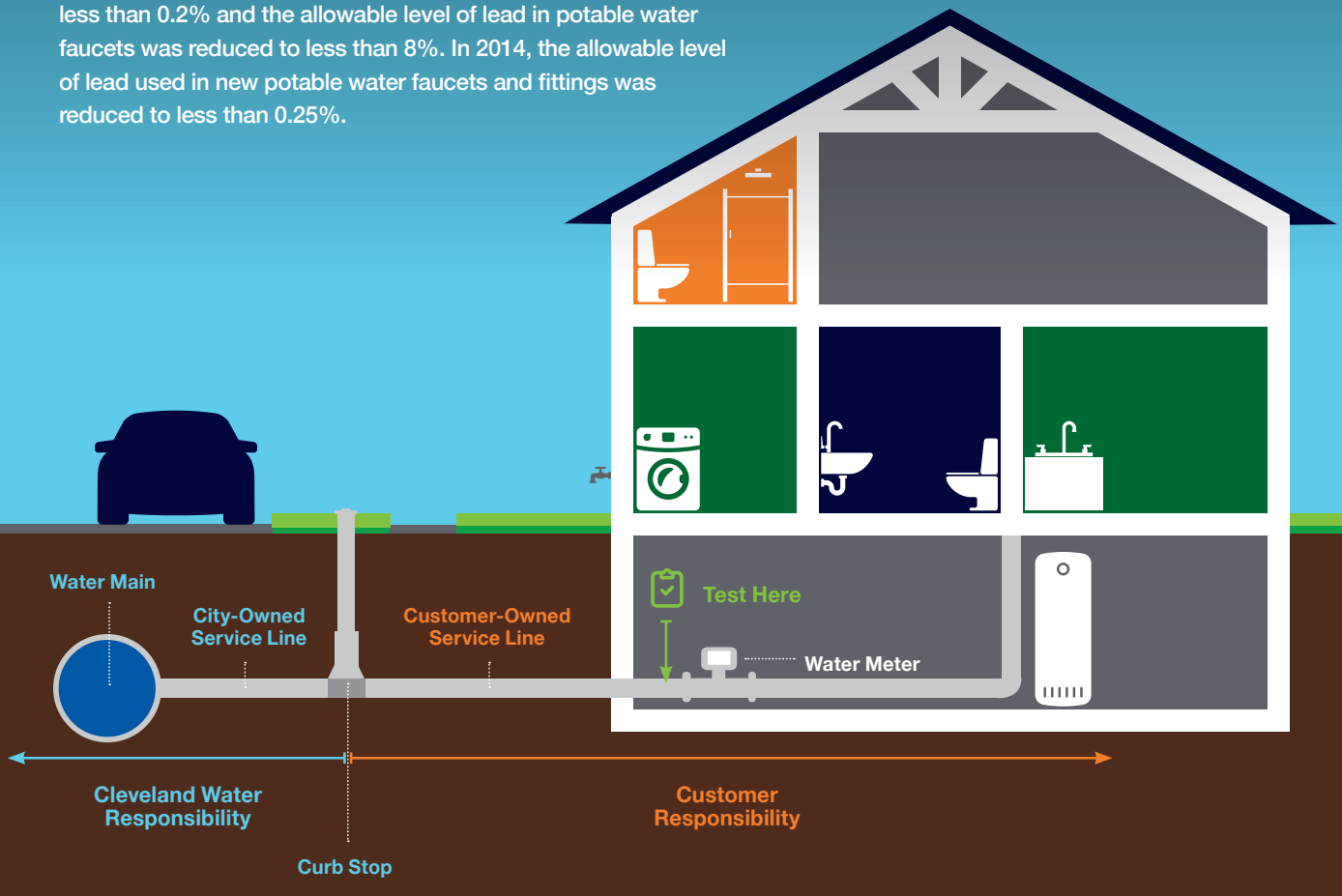
Lead



Copper



Galvanized



## ADDITIONAL ACTIONS TO ADDRESS LEAD IN SERVICE LINES & PLUMBING

**Replace lead service lines.**
They connect the water main in the street into your home/building. If you replace your customer-owned service line, Cleveland Water will replace our portion if it is lead.

**Identify and replace faucets containing lead.**
Faucets made before 1986 can have unlimited lead inside; those that were made between 1986 and 2014 can have up to 8% lead inside.

**Check your wiring.**
Have a licensed electrician check for connections between your electrical and plumbing systems. Electrified connections accelerate corrosion.

**Report your service line material and volunteer your home.**
Cleveland Water is actively seeking homeowners for future sampling and service line removal projects.
If you have a lead service line and/or would like to be considered for future sampling, send an email to LeadLookup@ClevelandWater.com with your full contact information and a picture of your service line where it enters your home.

**Boiling your water will NOT reduce lead.**
Boiling water is used to kill pathogens. If lead is present, water evaporated during boiling will concentrate metals such as lead.

**Learn more about our Lead Awareness Campaign.**
We teach about lead to meet a portion of the notification requirements in Ohio Administrative Code Rule 3745-83-02. Our education materials include brochures, flyers, videos, social media posts and graphics, and can be found at clevelandwater.com/lead or by calling our Lead Inquiry Line at 216-664-2882 to request printed copies and/or a group presentation.

# KEEP YOUR HOME'S WATER HEALTHY*

Clean, Flush and Consume Cold are the actions all customers should implement to help ensure the highest quality of water is coming out of your tap, especially if there is the possibility of lead in your plumbing system. In some situations, a water system repair/replacement may temporarily increase lead levels in water and/or cause discoloration. As a standard practice the USEPA recommends these actions (clean, flush, consume cold) which are important to take when water has been restored after a disruption of service.

## CLEAN

Clean your faucet aerator screens regularly. Small particles of solder and other material can accumulate in faucet aerators and in some circumstances can release lead into the water. Aerators should be cleaned at least twice a year, and more frequently after work is done to your plumbing system.

## FLUSH

Flush your cold water lines before consuming water when water has not been used for 6 or more hours. The goal is to have cold, fresh water from the main in the street come out of your tap before drinking the water. To flush the plumbing, run water until you feel a temperature change then run water for an additional 30 seconds to 3 minutes. The time depends on the length and diameter of your service line. The farther your home is from the street, the longer you need to flush. **When in doubt, flush it out.**

## CONSUME COLD

Always use cold water for cooking, drinking and preparing baby formula. Hot water corrodes pipes faster and is more likely to contain lead. If you need hot water for food or drinks, get water from the cold water tap then heat the water.

*As a standard practice the USEPA recommends these actions to reduce possible lead exposure in drinking water.

## CUSTOMER FAQS

**Q: What temperature is Cleveland Water?**

**A:** The temperature of the water coming into your home is about the same as Lake Erie, which varies throughout the year. Recent monthly average temperatures of Lake Erie are listed in the table. This is about the same temperature of the water coming out of your cold water tap. The hot water temperature is controlled by your water heater.

**Q: Is Cleveland Water safe from viruses such as the COVID-19 virus?**

**A:** Yes! Your water is safe from viruses and is safe to drink. Each plant's treatment process includes disinfection with chlorine. This is very highly effective at killing viruses, including coronaviruses. The U.S. EPA gives our treatment process credit for inactivating 99.99% of all viruses. Chlorine is added as the last step in the treatment process within a closed system. This means there is zero human interaction with water until it comes out of your faucet.

**Q: How long does it take water to reach my home?**

**A:** Water leaving our treatment plants reaches nearly all customers' service lines within 3 days. Once water enters your service line, the age and safety of the water becomes your responsibility. With regular daily water use, the safe water coming out of your tap is very fresh, which helps ensure safety.

**Q: How can I get my water tested?**

**A:** We maintain a database of people interested in having their water tested, including as part of our lead and copper monitoring program. We are actively seeking volunteer homes with customer-owned lead service lines for this program. To volunteer your single-family residential home, call 216-664-2639. Customers can also choose to have their water tested at their cost by a certified laboratory. The Ohio EPA maintains a list of certified laboratories which can be found online.

**Q: What can cause discolored water in homes/buildings?**

**A:** The most common cause of discolored water in premise plumbing is hydrant flushing, followed by water main breaks and valve operation. In these cases, iron sediment can be stirred into the water column. Discolored water can also be caused by premise plumbing that needs replaced, water that sits unused in plumbing for weeks to months, or rarely in summer elevated manganese for which we will issue a notification. Following the "Healthy Water Habits: Clean. Flush. Consume Cold." on page 14 and following building flushing steps found on our water quality webpage (scan QR code) will help restore and maintain the high quality of water in your home.

**Q: How can I keep from contaminating my home's water?**

**A:** Preventing cross connections can protect your home's water and the city water supply. A cross connection is when a drinking water pipe is physically joined to any source of potential contamination such as private wells, cisterns, lawn irrigation systems, swimming pools, hot tubs, boiler-radiator heating systems, fire suppression sprinklers, and hoses left in sinks, pools, buckets, puddles or chemical sprayers. Backflow can occur when the pressure in a water main drops lower than the customer's pressure (such as the result of a water main break), causing water to be siphoned backward from customer plumbing toward the water main. If a cross connection exists, contaminated water will flow backwards into your drinking water plumbing or even into our distribution main. We require the installation, testing and maintenance of backflow prevention devices on service line connections that present an actual or potential hazard to our distribution system, including on all commercial water service connections, and residential connections that have an irrigation system, fire sprinkler system or swimming pool/hot tub with an automatic fill valve. To learn more visit clevelandwater.com/construction/backflow-prevention.

| Month | Average Lake Erie temp in °F |
|---|---|
| January | 36.19 °F |
| February | 34.07 °F |
| March | 36.09 °F |
| April | 43.43 °F |
| May | 51.81 °F |
| June | 60.51 °F |
| July | 70.11 °F |
| August | 74.16 °F |
| September | 71.32 °F |
| October | 63.34 °F |
| November | 51.44 °F |
| December | 41.76 °F |

**Preventing Cross Connections Helps Keep Your Water Safe**

**DO'S AND DON'TS**

## QUESTIONS?
## WE'RE HERE TO HELP.

**IN 2021, CLEVELAND WATER SURPASSED ALL FEDERAL AND STATE STANDARDS FOR WATER QUALITY, THE DATA FOR WHICH IS PRESENTED IN THIS REPORT.**

Please share this information with all other people who drink Cleveland Water, especially those who may not have received this Water Quality Report directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting the report in a public place or distributing copies by hand or in the mail. This report is also available **online: clevelandwater.com/2021WQR**

Este informe contiene información importante sobre su agua potable. Si tiene preguntas o necesita este documento traducido, llámenos al 216-664-2639.

**General Information: 216-664-2444**

**Water Quality: 216-664-2639**
for answers to questions about the safety, quality and chemistry of your water and information in this report

**Lead Inquires: 216-664-2882**
for information about lead service line reporting and replacement, compliance monitoring levels, mapping and volunteering your home for sampling

**Permits and Sales: 216.664.6745**
for information about connecting to the system, community garden and temporary hydrant permits, backflow prevention permits, and replacing service lines

**Billing and Financial Assistance: 216-664-3130**
for information about your account and to apply for financial assistance

**Emergency: 216-664-3060**
for reporting for main breaks, leaks and service problems 24 hours a day, 7 days a week

**Education and Outreach: 216-664-3173**
requests for Cleveland Water to give presentations, participate in events, and for students who want to participate in our Student Technical Enrichment Program (STEP)

**All departments can be reached at:**
**websiteinquiries@clevelandwater.com**

***Cleveland Water***
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216.664.2444 | clevelandwater.com