

City of Clarksville

Annual Drinking Water Quality Report

For Monitoring Period January 1, 2016 to December 31, 2016

IS MY DRINKING WATER SAFE?

Absolutely! The City of Clarksville Water Treatment Plant is proud to report that your drinking water meets or exceeds all federal and state drinking water standards set by the Environmental Protection Agency (EPA). The water is tested and checked continuously each day to make sure it is safe. Thousands of tests are performed each month on the water that leaves the treatment plant, as well as the water that travels through the distribution system to your homes, businesses, and industries.

As you will note from the chart in this brochure our system did not violate any EPA or state regulations for the monitoring period of January 1, 2016 to December 31, 2016. Although monitoring detected the presence of contaminants in small quantities, they tested well below the acceptable levels established by the EPA.

WHAT IS THE SOURCE OF MY 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. Your water, which is surface water, comes from the Cumberland River. 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, or wildlife.

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may 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 may also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

An explanation of Tennessee's Source Water Assessment Program, the Source Water Assessment summaries, susceptibility scorings and the overall Tennessee Department of Environment and Conservation (TDEC) report to EPA can be viewed online at the following web address <https://www.tn.gov/environment/article/wr-wq-source-water-assessment> or you may contact the Clarksville Water Treatment Plant to obtain copies of specific assessments.

Our goal is to protect our water from contaminants and we are working with the state to determine the vulnerability of our water source to potential contamination. TDEC has prepared a Source Water Assessment Program (SWAP) Report for the untreated water sources serving our water system. The SWAP Report assesses the susceptibility of untreated water sources to potential contamination. To ensure safe drinking water, all public water systems treat and routinely test their water. Water sources have been rated as reasonably susceptible (high), moderately susceptible (moderate) or slightly susceptible (low) based on geologic factors and human activities in the vicinity of the water source. The Clarksville Water Treatment Plant source is rated as reasonably susceptible to potential contamination.

WHY ARE THERE CONTAMINANTS IN MY WATER?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. In order to ensure that tap water is safe to drink, EPA and TDEC prescribe 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. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about the

contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at **800-426-4791**.

FACTS ABOUT LEAD IN DRINKING WATER

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Clarksville Gas and 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, testing methods and steps you can take to minimize exposure are available from the Safe Drinking Water Hotline at **800-426-4791** or <http://www.epa.gov/lead>.

In July 2015 Clarksville Water System (CWS) conducted EPA mandated lead and copper testing. All results were below the action level for lead and copper. See these test results in the chart on the following page.

IS OUR WATER SYSTEM MEETING OTHER RULES THAT GOVERN OUR OPERATIONS?

The state and EPA require us to test and report on our water on a regular basis to ensure its safety. We have met all of these requirements. We want you to know we take great pride in our water quality and treatment facility. We adhere to all applicable rules, regulations and guidelines in the water industry.

OTHER INFORMATION

All water contains dissolved contaminants. So, occasionally your water may exhibit slight discoloration or white deposits. We strive to maintain the standards to prevent this. We at the Clarksville Water Department work around the clock to provide top quality water to every tap. We ask that all our customers help us protect our water sources, which are the heart of our community, our way of life and our children's future.

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

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 at **800-426-4791**. *Cryptosporidium* is a microbial parasite, which is found in surface water throughout the U.S. Although *Cryptosporidium* can be removed by filtration, the most commonly used filtration methods cannot guarantee 100 percent removal.

Monitoring of our source water indicated the presence of *Cryptosporidium* in 2 out of 12 samples tested in 2016.* No *cryptosporidium* were detected in finished water samples. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immuno-compromised people have more difficulty and are at greater risk of developing severe, life threatening illness. Immuno-compromised individuals are encouraged to consult their doctor regarding appropriate precautions to take to prevent infection.

* In March of 2013, the Clarksville Water Treatment Plant switched from conventional gravity filtration to a new low pressure membrane microfiltration. Microfiltration utilizes hollow fiber membranes with a nominal pore size of 0.1 micron which is equivalent to 39,000 millionths of (1) inch. Microfiltration is a direct barrier and effectively filters particles in the *cryptosporidium* size range.

HOW CAN I GET INVOLVED?

Our city council meets on the first Thursday of every month at 7:00 p.m. in the City Hall council chambers at 108 Public Square.

For more information about your drinking water, please call Phillip Whittinghill, Water Plant Superintendent at 931-553-2440.

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

UNREGULATED CONTAMINANTS MONITORING RULE (UCMR3) RESULTS

(Data presented in this table is from testing done for UCMR3 between September 1, 2014 and December 31, 2015)

Contaminant	Average Detected	Range of Detections	Year Sampled	Unit of Measurement
Chromium		BDL	2014-2015	ppb
Cobalt		BDL	2014-2015	ppb
Molybdenum		BDL	2014-2015	ppb
Strontium	107.7	93-120	2014-2015	ppb
Vanadium	.15	BDL-.3	2014-2015	ppb
Chromium, Hexavalent	.06	.05-.07	2014-2015	ppb
Chlorate	82	39-130	2014-2015	ppb
1,4-Dioxane		BDL	2014-2015	ppb
Bromochloromethane		BDL	2014-2015	ppb
Bromomethane		BDL	2014-2015	ppb
1,3-Butadiene		BDL	2014-2015	ppb
Chlorodifluoromethane		BDL	2014-2015	ppb
Chloromethane		BDL	2014-2015	ppb
1,1-Dichloroethane		BDL	2014-2015	ppb
1,2,3-Trichloropropane		BDL	2014-2015	ppb
Perfluorobutanesulfonic Acid (PFBS)		BDL	2014-2015	ppb
Perfluoroheptanoic Acid (PFHpA)		BDL	2014-2015	ppb
Perfluorohexanesulfonic Acid (PFHxS)		BDL	2014-2015	ppb
Perfluorononanoic Acid (PFNA)		BDL	2014-2015	ppb
Perfluorooctane Sulfonate (PFOS)		BDL	2014-2015	ppb
Perfluorooctanoic Acid (PFOA)		BDL	2014-2015	ppb
4-Androstene-3,17-dione		BDL	2014-2015	ppb
Equilin		BDL	2014-2015	ppb
17beta-Estradiol		BDL	2014-2015	ppb
Estril		BDL	2014-2015	ppb
Estrone		BDL	2014-2015	ppb
17alpha-Ethynyl estradiol		BDL	2014-2015	ppb
Testosterone		BDL	2014-2015	ppb

Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. For additional information call the **Safe Drinking Water Hotline at (800) 426-4791**.

2016 WATER QUALITY DATA

DEFINITIONS AND ABBREVIATIONS

MCL: Maximum Contaminant Levels, or 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, or the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

MRDL: Maximum Residual Disinfection Level means a level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects.

MRDLG: Maximum Residual Disinfection Level Goal, or 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.

LRAA: Locational Running Annual Average is the locational average of four consecutive quarters. Used in determining compliance for the TTHM and HAA5.

Discretionary language regarding the use of averages to report levels of some contaminants.

AL - Action Level, or the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow.

Non-Detects (ND) - laboratory analysis indicates that the contaminant is not present.

Parts per million (ppm) or Milligrams per liter (mg/l) – explained as a relation to time and money as one part per million

corresponds to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) or Micrograms per liter - explained as a relation to time and money as one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

TT – Treatment Technique or a required process intended to reduce the level of a contaminant in drinking water.

BDL – Below Detection Limit

RTCR – Revised Total Coliform Rule. This rule went into effect on April 1, 2016 and replaces the MCL for total coliform with a Treatment Technique Trigger for a system assessment.

REGULATED CONTAMINANTS MONITORING RESULTS

(Most of the data presented in this table is from testing done between January and December of 2016, except in the case of substances for which annual testing is not required.)

Contaminant	Violation Y/N	Level Detected	Range of Detections	Year Sampled	Unit Measurement	MCLG	MCL	Likely Source of Contamination
Total Coliform Bacteria	N	0%	NA	2016	Presence/Absence	0	Presence of coliform bacteria in 5% of monthly samples	Naturally present in the environment
Total Coliform Bacteria (RTCR)	N	0	NA	2016	Presence/Absence	0	TT Trigger	Naturally present in the environment
E. coli Bacteria	N	0	NA	2016	Presence/Absence	0	See footnote *****	Human or animal wastes
Fecal Coliform and E.coli	N	0	NA	2016	NA	0	A routine sample and repeat sample are total coliform positive, and one is also fecal coliform or E.coli positive	Human and animal fecal waste
* Turbidity	N	0.06	0.03 - 0.06	2016	NTU	NA	TT 95%<0.30	Soil runoff
Copper	N	0.27 ppm 90th percentile	0.0065-0.33 0 of 50 Samples Above AL	2015	ppm	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Fluoride	N	0.47	0.44 - 0.51	2016	ppm	4.0	4.0	Erosion of natural deposits, water additive which promotes strong teeth, discharge from fertilizer and aluminum factories
Lead	N	1.5 ppb 90th percentile	BDL-3.9 0 of 50 Samples Above AL	2015	ppb	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits
Sodium	N	8.53	NA	2016	ppm	NA	NA	Erosion of natural deposits; used in water treatment
Nitrate	N	0.548	NA	2016	ppm	10	10	Fertilizer runoff, leaching from septic tanks, sewage, erosion of natural deposits
** TTHM (Total Trihalomethanes)	N	48***	18-70	2016	ppb	0	80	By-product of drinking water chlorination
HAA5 (Total Haloacetic Acids)	N	37***	18-45	2016	ppb	0	60	By-product of drinking water chlorination
**** TOC (Total Organic Carbon)	N	****	NA	2016	NA	NA	TT	Naturally present in the environment
Chlorine	N	4.3	1.4-4.3	2016	ppm	MRDLG 4.0	MRDL=4.0	Chlorination

* We met the treatment technique for turbidity with 95% or more of monthly samples below the turbidity limit of 0.30 NTU. Turbidity is a measure of the cloudiness of the water. Our monitor turbidity because it is a good indicator of the effectiveness of our filtration system.

** Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

*** Locational Running Annual Average (LRAA) during 2016 for TTHM and HAA5.

**** We met the treatment technique requirement for Total Organic Carbon in 2016.

***** E. coli: A system is in compliance with the MCL for E. coli for samples unless any of the conditions identified in parts 1 through 4 occur.

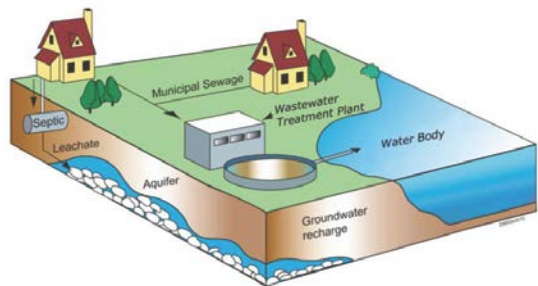
1. The system has an E. coli-positive repeat sample following a total coliform positive routine sample.
2. The system has a total coliform positive repeat sample following an E. coli-positive routine sample.
3. The system fails to take all required repeat samples following an E. coli-positive routine sample.
4. The system fails to test for E. coli when any repeat sample tests positive for total coliform.

THINK BEFORE YOU FLUSH!

Flushing unused or expired medicines can be harmful to your drinking water. Properly disposing of unused or expired medication helps protect you and the environment. Keep medications out of Tennessee's waterways by disposing in one of our permanent pharmaceutical take back bins.

There are nearly 100 take back bins located across the state, to find a convenient location please visit:

<http://tn.gov/environment/article/sp-unwanted-pharmaceuticals>.



THERMAL EXPANSION – WHAT IS IT?

Thermal expansion is an increase in water pressure due to heated water having nowhere to go in a closed system.

For example, when hot water from a water heater is used it's replaced with cold water. As the cold water is heated it expands and if the system is a closed system there will be little or no space for this expansion. The result is a potential increase in water pressure that may damage water heaters, plumbing systems and fixtures.

What can be done about thermal expansion?

Learn some of the signs of thermal expansion from the list below and call a plumbing professional if you notice any of the signs.

Some signs of thermal expansion:

- Relief valve on a water heater drips during the recovery cycle
- Sudden surge of water when a faucet is first turned on, then water pressure drops
- Premature failure of water heaters, plumbing and fixtures.
- Hot water in the cold water lines

More details may be viewed on the Clarksville Gas and Water website, www.clarksvillegw.com.



Clarksville Gas and Water Department

Water Treatment Plant

Clarksville, TN 37040

Ph. 931.553.2440

www.clarksvillegw.com

Mayor

The Honorable Kim McMillan

General Manager

Pat Hickey

Water/Wastewater Operations Manager

Chris Lambert

Water/Wastewater Operations Assistant Manager

Kevin Buchanan

Water Treatment Plant Superintendent

Phillip Whittinghill

IMPORTANT RESOURCES

EPA Safe Drinking Water Hotline

800-426-4791

Tennessee Source Water Assessment Program

<https://www.tn.gov/environment/article/wr-wq-source-water-assessment>

Tennessee Unwanted Pharmaceuticals

Take Back Program

<http://tn.gov/environment/article/sp-unwanted-pharmaceuticals>



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January 1, 2016 to December 31, 2016

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2215 Madison Street • Clarksville, TN 37043