

SHELBYVILLE FLAT CREEK WATER SYSTEM

2019 WATER QUALITY REPORT

UTILITY INFORMATION

The Shelbyville Flat Creek Water System distributes drinking water supplied by the Duck River Utility Commission through the Tullahoma Utilities Board. The DRUC is a regional water authority that provides ultra-pure and plentiful water to over 66,000 people in several Middle Tennessee counties. The DRUC is a government agency formed in 1976 and operates a state-of-the-art water filtration plant and other water supply facilities. The DRUC system is operated twenty-four hours a day by State certified personnel producing up to twelve million gallons of pure water each day. Certified employees of the SFCWS operate and maintain the distribution system.

WATER SOURCE

The DRUC water treatment plant withdraws surface water from Normandy Reservoir, constructed by TVA in 1976, which is filled by flow from the Duck River. The DRUC, TVA and the Tennessee Department of Environment and Conservation (TDEC) are actively working to protect the reservoir from sources of pollution and assess vulnerability to potential contamination. The DRUC has prepared a Source Water Assessment Program (SWAP) report that assesses the susceptibility of Normandy Reservoir to *potential* contamination and it has been rated as reasonably susceptible (moderate) based on geological factors and human activities in the vicinity of the reservoir. An explanation of Tennessee's Source Water Assessment Program, the Source Water Assessment summaries, susceptibility scoring and the overall TDEC report to the USEPA can be viewed online at www.state.tn.us/environment/dws/dwassess.shtml or you may contact the DRUC or TDEC at 1-888-891-TDEC to obtain copies of specific assessments. In addition, the DRUC has implemented a number of security measures, including 24-hour surveillance and alarms at our facilities to protect against vandalism and other forms of attack.

THE TREATMENT PROCESS

The DRUC water treatment plant utilizes advanced water treatment technology to remove both particulate matter and dissolved compounds from the water before it is disinfected and pumped to the SFCWS distribution system. The reservoir water entering the facility is first oxidized and disinfected by the injection of chlorine dioxide. Traditional pretreatment with gaseous chlorine was discontinued in 1988 in favor of chlorine dioxide that does **NOT** create certain regulated byproducts. After oxidation and disinfection, particulate matter is coagulated using polyaluminum chloride. The coagulant causes the particles in the water to stick to each other, increasing the overall size and weight of the particles. The water then moves into settling basins where these new larger particles sink to the bottom and are removed. The clarified water then travels into the filtration building where the water is vacuumed through hollow fiber ultrafiltration membranes and then flows through eight huge granular activated carbon contactors. These new filters are designed to remove any remaining particulate matter, even particles smaller than bacteria or viruses. The GAC contactors adsorb any remaining organic compounds that could cause objectionable tastes and odors. After charcoal filtration, the water is pH neutralized and a disinfectant residual is added before the water is pumped to the community. Fluoride is also added to prevent tooth decay at the CDC/ADA recommended level of 0.7 parts per million.

CUSTOMER COMMITMENT

The SFCWS, TUA and DRUC are committed to producing safe and reliable water for all of our customers' water needs. The SFCWS, TUA and DRUC are proud to report that the water produced by the DRUC filtration plant met all federal and state standards for drinking water during 2018. In fact, the DRUC has never exceeded any USEPA or State standard or regulation since it was formed in 1976.

The Commission is also very proud of the 99.5% average score achieved on inspections by the Tennessee Division of Water Resources over the last 25 years. The SFCWS and DRUC both employ a full-time staff to manage, operate and monitor both source and product water quality including environmental engineers, biologists/chemists and certified water treatment plant and distribution system operators. Thousands of tests are conducted each month on water samples at the treatment plant and throughout the distribution systems to ensure that the water remains safe and pure at all times. Over the last thirty years, the DRUC has invested over \$17,000,000 in state-of-the-art technology and upgrades to the treatment facilities, improving both water quality and reliability. The DRUC also operates a USEPA and State certified laboratory at the water treatment plant, analyzing water samples for the utilities as well as the general public.

REQUIRED INFORMATION FROM THE US EPA

All 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 (800-426-4791). The sources of drinking water (both bottled water and tap water) include rivers, lakes, streams, reservoirs, ponds, 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, 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 chemicals, which are byproducts of industrial processes and petroleum production, and also come from gas stations, urban stormwater runoff and septic tanks. Radioactive contaminants, which can be naturally-occurring or the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA and the Tennessee Department of Environment and Conservation prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

VULNERABLE POPULATIONS

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 food preparation, sanitation and handling of infants or pets as well as 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 toll free at (800-426-4791) or on the Internet at www.epa.gov/ogwdw.

INFORMATION AND INVOLVEMENT

For more information about this report or other water quality questions, contact the Shelbyville Water System at (931)684-7171 or DRUC at (931) 455-6458 or on the Internet at www.druc.org or by email at manager@druc.org. The Shelbyville Water Board meets the 4th Tuesday each month at 308 South Main Street, Shelbyville at 5:00 PM. The public is always welcome to participate.

ATENCIÓN

Este informe contiene información muy importante. Tradúzcalo o hable con alguien que lo entienda bien.

TULLAHOMA UTILITIES AUTHORITY

2018 WATER QUALITY DATA

QUALITY ASSURANCE

In order to ensure that tap water is safe, the U.S. Environmental Protection Agency prescribes regulations that require utilities to monitor regularly for numerous substances in the water it produces. An independent laboratory certified by the EPA and the State of Tennessee performs this testing. All testing is conducted in compliance with current regulations. **The water supplied to TUA from DRUC has never exceeded the limits for any regulated compound or substance as established by the State of Tennessee or U. S. EPA.**

TEST RESULTS – NONE DETECTED: Analysis is routinely performed for the following list of substances. **NONE** were detected in the water.

PRIMARY ORGANICS	VOLATILE ORGANICS	VOLATILE ORGANICS	INORGANICS	SYNTHETIC ORGANICS	SYNTHETIC ORGANICS
Alachlor	Bromobenzene	Dichloropropane	Arsenic	Carbofuran	Metolachlor
Aldicarb	Bromochloromethane	Dichloropropene	Antimony	Chlordane	Metribuzin
Benzene	Bromodichloromethane	Ethylbenzene	Beryllium	Dalapon	Oxamyl
CarbonTetrachloride	Bromomethane	Fluorotrichloromethane	Cadmium	Dicamba	PCB 1016
Dichloroethane	Butylbenzene	Hexachloro-1,3-butadiene	Chromium	Dieldrin	PCB 1221
Dichloroethylene	Chlorobenzene	Isopropylbenzene	Cyanide	Dinoseb	PCB 1232
Endrin	Chlorodibromomethane	p-Isopropyltoluene	Mercury	Di(2-ethylhexyl)adipate	PCB 1242
Lindane	Chloroethane	Naphthalene	Nickel	Di(2-ethylhexyl)phthalate	PCB 1248
Methoxychlor	Chloromethane	n-Propylbenzene	Selenium	2,3,7,8-TCDD (Dioxin)	PCB 1254
Paradichlorobenzene	o-Chlorotoluene	Styrene	Thallium	Endothall	PCB 1260
Toxaphene	p-Chlorotoluene	Tetrachloroethane			
Trichloroethane	Dibromomethane	Tetrachloroethylene	SYNTHETIC ORGANICS	Ethylene dibromide	Pentachlorophenol
Trichloroethylene	m-Dichlorobenzene	Toluene	Aldicarb	Glyphosate	Picloram
VinylChloride	o-Dichlorobenzene	Trichlorobenzene	Aldicarb Sulfone	Heptachlor	Propachlor
2,4-D	Dichlorodifluoromethane	Trichloroethane	Aldicarb Sulfoxide	Heptachlorepoxide	Simazine
2,4,5-TP (Silvex)	Dichloroethane	Trichloropropane	Aldrin	Hexachlorobenzene	RADIONUCLIDES
	Dichloroethylene	Trimethylbenzene	Butachlor	Hexachlorocyclopentadiene	Gross Alpha
ASBESTOS	Dichloromethane	Xylene	Benzo(a)pyrene	3-Hydroxycarbofuran	Radium 226
Asbestos Fibers			Carbaryl	Methomyl	

TEST RESULTS – REQUIRED REPORTING OR DETECTED COMPOUNDS

The following water quality analysis and testing information is required reporting or are substances that were detected in the drinking water. All of the substances that were detected are present at levels well below the U. S. EPA limits and do not pose a health risk to the general public.

Substance (units)	EPA Limit (MCL)	TUA Maximum	TUA Range	EPA Goal (MCLG)	Possible Source of the Contaminant
Microbial -Total Coliform	TT*	None	None	N/A	Naturally present in the environment
During the past year the Tullahoma Utilities Authority met all treatment technique and monitoring and reporting requirements. No assessments or corrective action were required.					
Fecal Coliform & E. Coli (# Positive)	0	0	0	0	Human and animal fecal waste
Total Organic Carbon (ppm)*	TT*	2.1	0.0 - 2.1	N/A	Naturally present in the environment
Turbidity (NTU)*	TT*	0.09	0.01 - 0.09	N/A	Turbidity does not present any risk to your health and is measured to assess the effectiveness of the filtration system.
* The Treatment Technique requirements for both Turbidity and Total Organic Carbon were met throughout the year.					
Inorganic Compounds					Substances of mineral origin
Chlorine (ppm)	MRDL = 4	1.85	0.65 - 1.85	MRDLG = 4	Water additive used to control microbes
Chlorine Dioxide (ppb)	800	24	1 - 24	800	Water additive used to control microbes
Chlorite (ppm)	1	0.97	0.00 - 0.97	0.80	Byproduct of drinking water chlorination
Fluoride (ppm)	4	0.89	0.52 - 0.89	4	Added to prevent tooth decay, natural erosion
Nitrate (ppm)	10	0.3	0.3	10	Agricultural runoff, natural erosion, sewage discharge
Sodium (ppm)	N/A	5.0	5.0	N/A	Natural erosion, component of water additives
Copper (ppm)	AL (Action Limit) = 1.3	0.16	None of 30 samples exceeded the action limit	1.3	Corrosion of household plumbing, - 2017 Data
Lead (ppb)	AL (Action Limit) = 15	2	None of 30 samples exceeded the action limit	0	Corrosion of household plumbing, - 2017 Data
Organic Compounds					Natural or synthetic carbon-based compounds
Haloacetic Acids Total (ppb)	60	39	6 - 49	0	Byproduct of drinking water disinfection
Trihalomethanes Total (ppb)	80	49	10 - 45	0	Byproduct of drinking water disinfection

DEFINITIONS: **MCL:** Maximum Contaminant Level, or 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, or 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, or the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for the control of microbial contaminants. **MRDLG:** Maximum Residual Disinfectant 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 the disinfectants to control microbial contaminants. **AL:** Action Level, or the concentration of a contaminant which, if exceeded, triggers treatment or other requirement which a water system must follow. **TT:** Treatment Technique, or a required process intended to reduce the level of a contaminant in drinking water. **BDL:** Below the Detection Limit. **ppb:** Parts per billion or micrograms per liter (explained in terms of money as one penny in \$10,000,000.00). **ppm:** parts per million or milligrams per liter (explained in terms of money as one penny in \$10,000.00). **pci/L:** picocuries per liter. **NTU:** Nephelometric Turbidity Unit; Turbidity is a measure of the clarity of the water. Turbidity in excess of 5 NTU becomes just noticeable to the average person. **LEVEL 1 ASSESSMENT:** A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

USEPA NOTICE ON HEALTH EFFECTS: COLIFORMS are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliform indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments. **LEAD:** 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. TUA 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, test methods and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead. No lead has ever been detected in samples of the water from the Reservoir or leaving the DRUC Water Filtration Plant.

SOURCE WATER MONITORING TEST RESULTS: The DRUC water source, Normandy Reservoir, is very clean and the DRUC encounters no difficulty in treating the water to EPA and State of Tennessee standards. The DRUC routinely monitors the reservoir water for various contaminants and any indication of potential pollution. Prevention of pollution of our water source is one of our highest priorities. Below is a summary of recent source water testing in cooperation with other agencies including the USEPA, State of Tennessee and Tennessee Valley Authority. **NONE** of these contaminants have ever been found in the water distributed to customers.

CRYPTOSPORIDIUM OOCYSTS: From 2014 thru 2016, the DRUC completed testing on **reservoir water** for this common organism found in nature, mostly as a result of the presence of wildlife and livestock animals. These monthly sampling events did **not** detect any oocysts. These test results are excellent and indicate that there is **no** contamination of the reservoir from livestock or wildlife.

NOTE: Federal regulations now require all surface water systems serving more than 10,000 people to sample for Cryptosporidium. The DRUC previously completed this required testing in 2004 thru 2006, and 2014 thru 2016. Cryptosporidium is a microbial parasite which is found in surface waters throughout the United States. **No cryptosporidium oocysts were ever detected in any drinking water samples.** Cryptosporidium is effectively removed by filtration and the DRUC system currently provides treatment which is designed to remove cryptosporidium. The USEPA has determined that the presence of cryptosporidium at the concentration level reported in our source water is insignificant, based on the level of treatment we currently provide. Symptoms of cryptosporidium infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immune-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. For more information on Cryptosporidium, contact the Safe Drinking Water Hotline (800-426-4791).