

## For Your Information ...

### Utility Information

The MWSD distributes drinking water supplied by the Duck River Utility Commission. The DRUC is a government agency formed in 1976 by the cities of Manchester and Tullahoma to operate a potable water filtration plant on Normandy Reservoir. The DRUC system is operated twenty-four hours a day by State certified personnel and can produce up to ten million gallons of ultra pure drinking water each day. Certified employees of the MWSD operate and maintain the water distribution.

### 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 the SWAP, the SWAP summaries, susceptibility scoring, and the overall TDEC report to the U.S. EPA can be viewed online at [www.state.tn.us/environment/dws/dwasses.shtml](http://www.state.tn.us/environment/dws/dwasses.shtml) or you may contact the DRUC or the TDEC (888-891-TDEC). The DRUC has implemented a number of security measures, including 24-hour surveillance and alarms at their 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 contaminants before it is disinfected and pumped to the MWSD distribution system. Reservoir water is first oxidized and disinfected by the injection of chlorine dioxide. After oxidation and disinfection, particulate matter is coagulated using polyaluminum chloride. The coagulant causes the particulates in the water to stick to each other, increasing the overall size and weight of the particulates. The water then moves into settling basins where the new larger particulates sink to the bottom and are removed. The clarified water then travels into the filtration building where the water is vacuumed through hollow fiber ultra-filtration membranes and then through eight 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 absorb any remaining organic compounds that could cause objectionable taste and odors. Then, the water is pH neutralized and a chlorine disinfectant residual is added before the water is pumped to the distribution system. Fluoride is also added to help prevent tooth decay at the State required level of one part per million

### ATTENCION

*Este informe contiene informacion muy importante. Traduscalo o hable con alguien que lo entienda bien.*

### 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. This presence does not necessarily imply that the 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). Sources of both tap water and bottled water include rivers, lakes, streams, reservoirs, ponds, springs, and wells. As water travels over the surface of the land and 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 and/or human activity.

Contaminants that may be present in source water: Microbiological contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife. Inorganic compounds such as salts and metals, which may be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming. Pesticides and herbicides may come from a variety of sources such as agriculture, urban stormwater runoff, and septic tanks. Radioactive contaminants can be naturally occurring and/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 TDEC 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 is the general population. Immuno-compromised persons, such as persons with cancer who are 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 toll free at 1-800-426-4791, or on the Internet at [www.epa.gov/ogwdw](http://www.epa.gov/ogwdw).

### Information and Involvement

The Manchester Water Department encourages public participation in our decisions. Regular board meetings are held at 3 p.m. on the first Thursday following the first Tuesday of each month at 736 W. High St. Manchester, TN. For more information on water quality call the Manchester Water Department at 931-728-1273 or the DRUC at 931-455-6458 or on the internet at [www.druc.org](http://www.druc.org) or by email at [manager@druc.org](mailto:manager@druc.org).

Manchester Water Department  
200 W. Fort St.  
Manchester, TN. 37355

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US Postage Paid  
Manchester, TN  
37355  
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# 2016 Water Quality Report



### Is the water safe to drink?

Absolutely! Drinking water provided to you by the Manchester Water and Sewer Department (MWSD) meets or surpasses all federal and state drinking-water standards. Included in this report is the source of the water and the results of our tests, along with facts about water & health.

### Customer Commitment

The MWSD and the DRUC are committed to providing safe and reliable water for all our customers' needs. We are proud to report that the water produced by the filtration plant met or exceeded all federal and state standards for drinking water during 2015. In fact, we have never violated any EPA or State drinking water standard or regulation. We are proud to report that the DRUC scored an average of **99.6%** on inspections by the Tennessee Division of Water Supply over the last 20 years. The DRUC and MWSD both employ a full time staff to manage, operate, and monitor water quality and the distribution system, including environmental engineers, biologists, chemists, and certified system and plant operators. Thousands of tests are performed each month on water samples. Over the past twenty years, over **\$16,000,000.00** has been invested in upgrades to the treatment facilities

Manchester  
Water Department  
200 W. Fort St.  
Manchester  
931-728-7171

[www.cityofmanchestertn.com](http://www.cityofmanchestertn.com)

# Key to understanding this table

## 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 State of Tennessee performs this testing. All testing is conducted in compliance with current regulations. *The water provided to the MWSD by the DRUC has never exceeded the limits for any regulated compound or substance as established by the State of Tennessee or U.S. EPA.*

## DEFINITIONS

- **MCL:** Maximum Contaminant Level, The highest level of a contaminant that is allowed in drinking water.
  - **MCLG:** Maximum Contaminant Level Goal, The level of a contaminant in drinking water below which there is no known or expected link to health. MCLGs allow for a margin of safety.
  - **AL:** Action Level, The concentration of a contaminant which, if exceeded, triggers a treatment or other requirement which a water system must follow.
  - **ppm:** Parts per million, or milligrams per liter.
  - **ppb:** Parts per billion, or micrograms per liter.
  - **N/A:** Not applicable.
  - **NTU:** Nephelometric Turbidity Unit: a measure of particles in the water.
  - **TT:** Treatment Technique, or required process intended to reduce the level of a contaminant in drinking water. \* The treatment technique requirements for both Turbidity and Total Organic Carbon were met throughout the year.
  - **MRDL:** Maximum Residual Disinfectant Level, or the highest level of disinfectant allowable in 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.
  - **BDL:** Below the Detection Limit.
  - **pCi/L:** picocuries per liter.
- \* The treatment technique requirements for both turbidity and Total Organic Carbon were met throughout the year.

**TEST RESULTS-SOURCE WATER MONITORING:** Prevention of pollution of our water source is one of the highest priorities. Listed on this page is a summary of recent source water testing in cooperation with other agencies, including the USEPA, State of TN, and TVA. None of these contaminants have ever been found in the treated water. These test results are strictly results on raw untreated water from Normandy Reservoir.

## 2015 Test Results — Required Reporting and 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 population.

Substance (units)	EPA Limit (MCL)	MWSD Maximum	MWSD Range	EPA Goal (MCLG)	Possible sources of the contaminant
<b>Microbial Contaminants</b> Total Coliform (# Positive) Fecal Coliform & E. Coli (# Positive) Total Organic Carbon (ppm) Turbidity (NTU)	<2 0 TT* TT*	1 0 1.8 0.07	0-1 0 1.4 - 1.8 0.01- 0.07	0 0 N/A N/A	<b>Very small organisms such as bacteria</b> Naturally present in the environment Human and animal fecal waste Naturally present in environment Turbidity does not present any risk to your health and is measured to assess the effectiveness of the filtration system.
<b>Inorganic Compounds</b> Chlorine (ppm) Chlorine Dioxide (ppb) Chlorite (ppm) Fluoride (ppm) Nitrate (ppm) Sodium (ppm) Copper (ppm) None of 30 samples exceeded action level Lead (ppb) Three of 30 samples exceeded action level	MRDL=4 800 1.0 4.0 10.0 N/A AL=1.3 AL=15.0	1.89 140 .12 .64 0.8 3.3 0.30 15	0.73-1.89 0 - 140 0.00-0.12 0.55—0.64 0.8 3.3 0.01-0.58 0.0-44	MRDLG=4 800 0.80 4 10.0 N/A 1.3 0	<b>Substances of mineral origin</b> Water additive used to control microbes Water additive used to control microbes Byproduct of drinking water chlorination Added to prevent tooth decay, natural erosion Agricultural runoff, natural erosion, sewage discharge Natural erosion, component of water additives Corrosion of household plumbing, erosion —2014 data Corrosion of household plumbing, erosion —2014 data
<b>Organic Compounds</b> Haloacetic Acids Total (ppb) Trihalomethanes Total (ppb)	60 80	40 42	12 - 59 19 - 51	0 0	<b>Natural or synthetic carbon-based compounds</b> Byproduct of drinking water disinfection Byproduct of drinking water disinfection
<b>Unregulated Contaminant Monitoring</b> Chlorate (ppm) Chromium 6+ (ppm) Strontium (ppm) Vanadium (ppm)	<b>Average</b> 47 0.0030 37 0.21	<b>Range</b> 26 - 80 0 - 0.053 33 - 43 0.0 - 0.33			<b>Testing Required by EPA for Research Purposes</b> Byproduct of drinking water disinfection Natural erosion, corrosion, point source discharge. Natural erosion, corrosion, point source discharge. Natural erosion, corrosion, point source discharge.

Unregulated contaminants are those for which the 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

## Test Results — None Detected

**Primary Organics:** Alachlor, Aldicarb, Benzene, Carbon Tetrachloride, Dichloroethane, Dichloroethylene, Endrin, Lindane, Methoxychlor, Paradichlorobenzene, Toxaphene, Trichloroethane, Trichloroethylene, Vinylchloride, 2,4-D, 2,4,5-TP (Silvex).  
**Asbestos:** Asbestos Fibers.  
**Volatile Organics:** Bromobenzene, Bromochloromethane, Bromodichloromethane, Bromomethane, Butylbenzene, Chlorobenzene, Chloroethane, Chlorodibromomethane, Chloromethane, o-Chlorotoluene, p-Chlorotoluene, Dibromomethane, m-Dichlorobenzene, o-Dichlorobenzene, Dichlorodifluoromethane, Dichloroethane,

**Volatile Organics continued:** Dichloroethylene, Dichloromethane, Dichloropropane, Dichloropropene, Ethylbenzene, Fluorotrichloromethane, Hexachloro-1,3-butadiene, Isopropylbenzene, p-Isopropyltoluene, Naphthalene, n-Propylbenzene, Styrene, Tetrachloroethane, Tetrachloroethylene, Toluene, Trichlorobenzene, Trichloroethane, Trichloropropane, Trimethylbenzene, Xylene.  
**Inorganics:** Arsenic, Antimony, Beryllium, Cadmium, Chromium, Cyanide, Mercury, Nickel, Selenium, Thallium  
**Radionuclides:** Gross Alpha, Radium 226, Radium 228

**Synthetic Organics:** Aldicarb, Aldicarb Sulfone, Aldicarb Sulfoxide, Aldrin, Butachlor, Benzo(a)pyrene, Carbaryl, Carbofuran, Chlordane, Dalapon, Dicamba, Dieldrin, Dinoseb, Di(2-ethylhexyl)adipate, Di(2-ethylhexyl)phthalate, 2,3,7,8-TCDD (Dioxin), Endothal, Ethylene dibromide, Glyphosate, Heptachlor, Heptachlorepoxyde, Heptachlorobenzene, Hexachlorocyclopentadiene, 3-Hydroxycarbofuran, Methomyl, Metolachlor, Metribuzin, Oxamyl, PCB 1016, PCB 1221, PCB 1232, PCB 1242, PCB 1248, PCB 1254, PCB 1260, Pentachlorophenol, Picloram, Propachlor, Simazine

**SOURCE WATER MONITORING TESTING 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 TN standards. The DRUC routinely monitors the reservoir water for various contaminants and any indication of potential pollution. Below is a summary of recent source water testing. None of the contaminants were ever found in the treated water distributed to customers. These tests are strictly the results of testing raw untreated water from Normandy Reservoir.

**Cryptosporidium Oocyst:** During 2014, the DRUC initiated 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. Testing will continue through 2015 and part of 2016. The test results are good and indicate very little contamination of the reservoir from livestock or wildlife. **NOTE:** Federal regulations now require all surface water systems serving < 10,000 people to sample for Cryptosporidium. The DRUC previously completed this required testing in 2004 - 2006. 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 sample.** Cryptosporidium is effectively removed by filtration and the DRUC system currently provides treatment designed to remove cryptosporidium. The USEPA has determined the presence of cryptosporidium at the concentration 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, immunocompromised people have more difficulty and are at a greater risk developing severe, life threatening illness. Immunocompromised 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).

**USEPA NOTICE OF 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. MWSD through DRUC 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 the 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](http://www.epa.gov/safewater/lead).