Murfreesboro Water and Sewer Department
2012 Annual Water Quality Report

January 1, 2012 – December 31, 2012

The purpose of this water quality report is to provide you with information regarding your drinking water. We want to keep you informed about the water and services that we have delivered to you over the past year and we are pleased to provide you with this year's Annual Water Quality Report. The most important part is to let you know that your water is safe for drinking. We also want to take this opportunity to give you a little more background on your water system.

East Fork Stones River

Your water comes from two surface water locations. One water source is the East Fork of the Stones River and the other source is the J. Percy Priest Lake. Our goal is to protect our water from contaminants based on geologic factors and human activities in the vicinity of the water source. We continue to work with the State to determine the vulnerability of our water supply to contamination. The Tennessee Department of Environment and Conservation (TDEC) prepared a Source Water Assessment Program (SWAP) Report, which was completed in August 2003, for the water supplies serving Murfreesboro Water and Sewer Department (MWSD). The SWAP Report assesses the susceptibility of public water supplies to potential contamination. Water sources are rated as "reasonably susceptible", "moderately susceptible" or "slightly susceptible" based on geologic factors and human activities in the vicinity of the water source. The MWSD conducted a SWAP update in November 2010 that was approved by the TDEC. Both MWSD sources continue to be rated "moderately susceptible" to potential contamination.[1]

The MWSD serves more than 35,000 water customers with a population of over 96,000 using more than 430 miles of water lines. The water treatment plant operates continuously and has an average production of over 10 million gallons per day (MGD) of potable water. Our goal is to provide you a safe and dependable supply of drinking water.

Pure water does not occur naturally. In nature, all water contains some impurities. These impurities are referred to as contaminants. Drinking water, including bottled drinking water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800) 426-4791.

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

[1] An explanation of Tennessee's Source Water Assessment Program, the Source Water Assessment summaries, susceptibility scorings and the overall TDEC report to EPA can be viewed online at www.state.tn.us/environment/dws/dwassess.shtml or you may contact the Water System or TDEC at 1-888-891-TDEC to obtain copies of specific assessments.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. Help protect your source water by properly disposing of your automotive products, lawn and garden products, and household cleaners. To properly dispose of them contact Rutherford County Environmental Education at (615) 542-4633.

As water travels over the surface of the land or through the ground it dissolves naturally-occurring minerals and in some cases naturally-occurring 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 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, come from gas stations, urban stormwater runoff, and septic systems.
- ✓ Radioactive contaminants which can be naturally-occurring or which can be the result from 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.

Cryptosporidium is a microbial parasite which is found in surface water throughout the United States. Symptoms of Cryptosporidium infection include nausea, diarrhea, and abdominal cramps. 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. Although Cryptosporidium can be removed by filtration, the most commonly used filtration methods cannot guarantee 100 percent removal. Monitoring of the East Fork Stones River and J. Percy Priest Lake, between 2005 and 2007 as part of the Long Term 2 Enhanced Surface Water Treatment Rule, indicated the presence of Cryptosporidium in seven out of forty-eight samples tested. No Cryptosporidium were detected in the MWSD finished water samples. The MWSD meets the treatment standard for Cryptosporidium therefore no additional treatment is required at this time. Membrane filtration was added as part of the last upgrades at the water treatment plant and will remove 100% of Cryptosporidium. The new membrane filters remove all particles greater than 0.1 microns. The size of Cryptosporidium is between 3.0 and 7.0 microns. The new membrane filters were placed into service during December 2008 after the testing described above. For more information on cryptosporidium contact the Safe Drinking Water Hotline (800) 426-4791.

Membrane Filters

Elevated levels of lead, if present, can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The MWSD 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 running your tap and thus ñflushingò the water line for 30 seconds to two 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 or on the internet located at http://www.epa.gov/safewater/lead.

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 persons, 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 microbiological contaminants are available from the Safe Drinking Water Hotline (800) 426-4791.

Although we anticipate being able to meet all of our customersôneeds, we urge you to conserve water by promptly repairing leaks within your plumbing system. This not only helps us to keep down production costs, it provides savings on your monthly billings. Even as we encourage conservation, we understand the seasonal need to replenish pools and to water landscaped areas. An automatic sewer adjustment is made during the months of April through October whenever the usage of water during these months exceeds the average winter usage by twenty percent.

The MWSD routinely monitors contaminants in your drinking water in accordance with Federal and State laws. We have learned through our monitoring that some contaminants have been detected. The Water Quality Data Table located in this report shows the contaminants that were detected for the period from January 1 to December 31, 2012, or the last time they were required to be monitored based upon regulatory requirements. We are proud that your drinking water meets or exceeds all Federal and State requirements.

We urge our customers to be on guard against cross-connections that might contaminate our water supply. A cross-connection is a link between an approved drinking water supply and any system other than an approved drinking water supply. If your irrigation system is supplied by a well or stream, the system must be totally segregated from the public water supply. Our City ordinance provides safeguards against cross-connections in industrial, commercial and residential settings. MWSD has full time employees whose sole function is to guard against these types of cross-connections. The risk from residential cross-connections is less than that from industrial and commercial applications, but is very real. Cross-connections can occur in private residences when garden hoses are left submerged in pools, when they lay in elevated positions above the hose bib, or when chemical sprayers are attached to hoses to spray pesticides. Hoses should be disconnected promptly after use, and the installation of hose bib vacuum breakers is strongly recommended. This is a simple device that is available at most hardware and plumbing supply stores.

WATER QUALITY DATA TABLE

Contaminant	MCL	MCLG	Level Found	Range of Detection	Violation Yes/No	Date of Sample	Typical Source of Contaminant
Microbiological Contaminants							
Total Coliform (%)	Greater than 5% of monthly samples are positive	0	3	0-3	No	2012	Naturally present in the environment
TOC (ppm) Total Organic Carbon	TT(1)	N/A	13%-58% removal (15% required) (1)	1.0-2.43	No	2012	Naturally present in the environment
Turbidity (NTU)	TT(2)	N/A	0.24	0.02 - 0.24	No	2012	Soil runoff
Inorganic Contaminants							
Barium (ppb)	2,000	N/A	14	N/A	No	02/09/12	Discharge of drilling wastes; Discharge from metal refineries; Erosion from natural deposits
Copper (ppb)	AL=1,300	1,300	87.2(3)	N/A	No	06/24/11	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Fluoride (ppb)	4,000	4,000	730	600 ï 1,060	No	2012	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Lead (ppb)	AL=15	0	ND(3)	N/A	No	06/24/11	Corrosion of household plumbing systems; Erosion of natural deposits
Nitrate (ppb)	10,000	10,000	271	N/A	No	05/07/12	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Sodium (ppm)	N/A	N/A	9.4	N/A	No	02/06/12	Erosion of natural deposits
Volatile Organic Contaminants							
Chlorine (ppm)	MRDL=4	MRDL=4	3.8	1.1 ï 3.8	No	2012	Water additive used to control microbes
HAAs (ppb) Haloacetic Acids	60	N/A	45	11 ï 109	No	2012	By-product of drinking water chlorination
TTHMs (ppb) Total trihalomethanes	80	N/A	61	22 ï 120(4)	No	2012	By-product of drinking water chlorination

(1) MWSD met the treatment technique requirements for total organic carbon in 2012. The percent (%) removed is determined from the amount of TOC removed from the raw water during the treatment process and the amount of TOC that is remaining in the finished water. The % required is the % removal required by regulation based upon treatment technique. The % removed must be equal to or greater than the % required unless alternative compliance criteria are used.

(2) MWSD met the treatment technique for turbidity with 100% of monthly samples below the turbidity limit of 0.3 NTU. Turbidity is a measure of the cloudiness or clarity of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

(3) Lead and copper values are 90th percentile values. During the most recent round of lead and copper testing, 0 out of 30 households sampled exceeded the action level. Non-detect (ND) means that the contaminant was not detected above the method detection limit (MDL).

(4) 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.

TERMS AND ABBREVIATIONS FOR TABLE

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

✓ **Below Detection Level (BDL):**
The concentration of a contaminant is below the minimum level that the instrument is capable of detecting.

✓ **Maximum Contaminant Level (MCL):**
The highest level that a contaminant 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 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 contamination.

✓ **Method Detection Limit (MDL):**
The lowest concentration (greater than zero) of the substance tested that can be measured and reported with 99 percent confidence.

✓ **Nephelometric Turbidity Unit (NTU):**
The measure of clarity in the water. Turbidity in excess of 5 NTU is just noticeable to the average person.

✓ **Parts per billion (ppb) or micrograms per liter (µg/L):**
One part per billion or one microgram per liter corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

✓ **Parts per million (ppm) or milligram per liter (mg/L):**
One part per billion or one milligram per liter corresponds to one minute in two years, or a single penny in $10,000.

✓ **N/A:**
Not applicable.

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

The MWSD is owned and operated by the City of Murfreesboro. We receive no tax revenue from City, State or Federal governments, but rely solely upon our rates and fees for operational funding. MWSD reads every water meter and bills each customer every month. In the event of an abnormally high meter reading, we will attempt to alert the customer. Payment may be made at our drive-up window, walk-in service counter, night depository; by mail, bank draft or online using a major credit card at http://www.murfreesborotn.gov.

The MWSD works around the clock to provide top quality water to every tap. We ask that all of our customers help us protect our water sources which are essential to our community. You can do so by ensuring that you properly dispose of pharmaceuticals and personal care products. Improper disposal of these products by pouring them down the sink or by flushing them down the toilet will lead to harming the environment and the water source for our community. For proper disposal visit the Rutherford County Environmental Educationôs website located at http://www.rutherfordcountytn.gov/environmental or call (615) 542-4633.

Stones River Water Treatment Plant

An upgrade of the Stones River Water Treatment Plant was completed in 2010 with an expansion of its treatment capacity from 15.7 million gallons per day to 20 million gallons per day. The additions of membrane filtration, standby power generation, sodium hypochlorite disinfection system, along with the renovation of the water quality laboratory, were included in the expansion. The Stones River Water Treatment Plant now operates granular activated carbon beds for removal of taste, odor and disinfection byproducts. All of these improvements by the MWSD are directed at continually ensuring that you are receiving the highest quality of water.

In 2010, the Stones River Water Treatment Plant was recognized with two prestigious awards. The 2010 Engineering Excellence Grand Award from the American Council of Engineering Companies of Tennessee and the Award of Excellence for Plant Operations in the 10 million gallons per day and above category from the Kentucky-Tennessee Section American Water Works Association.

If you have any questions about this report please contact Alan Cranford at (615) 848-3222 between 7:00 a.m. and 3:00 p.m. Monday through Friday. For water quality concerns please call (615) 848-3222, 24-hours per day 7 days per week. We conduct multiple tests daily on the quality of the source water, the water as it is passing through the treatment process and the finished water before it is sent to the distribution system. In addition, our water quality laboratory conducts tests throughout the week on samples collected at residences, schools and businesses throughout the distribution system. All of our personnel have MWSD issued identification and at no time do we contract out the collection of samples from residences. Please feel free to ask for identification if anyone asks to collect a water sample from your home or business. If they cannot produce the identification, please contact the MWSD at (615) 848-3222.

General information and services are available from our administrative offices at 890-0862 from 8:00 a.m. to 4:30 p.m. Monday through Friday. TTY services are available at (615) 848-3214. Customer Service questions may be directed to Sharon Seibert at sseibert@murfreesborotn.gov. Our emergency after-hours phone number is (615) 893-1223.

Our regularly scheduled Water and Sewer Board meetings are held on the fourth Tuesday of each month at 3:30 p.m. Meetings will be at the location advertised in the Murfreesboro Post and on the Cityôs website http://www.murfreesborotn.gov. Please feel free to attend these meetings.