



Consumer Confidence Report

For more than 75 years, KUB has provided a safe, reliable, and abundant supply of high-quality drinking water to our community. We are proud of our history of service and our excellent water quality record, and we are committed to maintaining it.

KUB's state-of-the-art Water Quality Laboratory performs about 100,000 tests annually—many more than required by law—to ensure your water is safe. And we check for over 150 contaminants to help protect our drinking water and waterways.

We also focus on renewing more than 1,400 miles of pipe and dozens of pump stations and storage facilities that help deliver water to our community. Aging infrastructure is an issue for utilities across the nation, and KUB has successfully accelerated our rate of replacement for older pipes under Century II, our system replacement and maintenance program. KUB replaces 1 percent of our water system per year with pipe that has an average life of 100 years, which keeps us on a sustainable cycle.

Replacement projects are expensive, but the investment in our community's health and future is worth it. And KUB's water is still a great value at about one-half cent per gallon.

I hope you find this Water Quality Report useful. We want you to be confident you'll get a reliable supply of safe water every time you turn on your tap. If you have questions, please call KUB at 524-2911.

Thank you,

Mintha Roach
KUB Chief Executive Officer



Drinking Water Sources

Sources of drinking water (tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Our source is surface water from the Tennessee River, which supplies the Mark B. Whitaker Water Plant.

As water travels over land or through the ground, it dissolves naturally occurring minerals and, sometimes, radioactive material. It can pick up substances resulting from human activity or the presence of animals.

Contaminants that may be 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 occur naturally 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 by-products 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.

KUB works with the Tennessee Department of Environment and Conservation (TDEC) to protect our water from contaminants. TDEC has a Source Water Assessment Program (SWAP) Report that assesses the susceptibility of untreated water sources to potential contamination. The SWAP rates sources as reasonably susceptible (high), moderately susceptible (moderate), or slightly susceptible (low) based on geologic factors and human activities near the water source.

KUB's water source is rated reasonably susceptible to potential contamination. To ensure safe drinking water, all public water systems treat and routinely test their water. An explanation of the SWAP, Source Water Assessment summaries, susceptibility scorings, and the overall TDEC report to EPA can be viewed online at <https://www.tn.gov/environment/artide/wr-wq-source-water-assessment>, or you may contact KUB for copies of specific assessments.

Protecting Our Source Water

Each of us can add to source water pollution without even knowing it. Here are ways you can help protect our source water and the environment:

- Recycle unwanted automotive products, cleaning products, pesticides, paint, lawn chemicals, etc. Knoxville and Knox County residents can take waste to the Household Hazardous Waste Facility at 1033 Elm Street. Visit www.knoxvilletn.gov and search for the facility for more information.
- Never flush unused medicine down drains or toilets. Take them to collection sites or events or the permanent drop box at the Knoxville Police Department Safety Building, 800 Howard Baker Jr. Avenue. For more information, go to www.kub.org, and see the links under Water Quality.

Protecting Our Drinking Water

KUB operates a mandatory Cross-Connection Control Program (CCCP) to help protect our community's drinking water from possible contaminants.

Anything customers attach to plumbing that may introduce contaminants is a potential cross-connection. If water pipes lose pressure, water from homes or businesses with cross-connections may contaminate our drinking water.

To prevent that, all customers with potential cross-connections must install, test, and maintain backflow prevention devices. Customers may need a device if they use chemicals or processing equipment, have an alternative water source, or have irrigation systems or fire protection systems.

Unprotected cross-connections can introduce public health risks. Therefore, under state and federal regulations, KUB must terminate water service to properties with cross-connection risks that do not have properly working backflow devices.

For more information, visit www.kub.org. If you have questions or think that you may have a cross-connection, please call KUB at 524-2911.



Water Safety Regulations

To ensure tap water is safe to drink, EPA and the Tennessee Department of Environment and Conservation (TDEC) prescribe regulations that limit the amount of certain contaminants in water from public water systems. The U.S. Food and Drug Administration (FDA) establishes regulations and limits for contaminants in bottled water, which must provide the same level of 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. For more information about contaminants and potential health effects, call the EPA's Safe Drinking Water Hotline at 1-800-426-4791.

Information for Consumers at Risk

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised people, such as people with cancer undergoing chemotherapy, people 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. Those people should seek advice about drinking water from their health care providers.

EPA/Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the EPA's Safe Drinking Water Hotline, 1-800-426-4791.

Contact Information:

For more information about contaminants and potential health effects, call the EPA's Safe Drinking Water Hotline at 1-800-426-4791. If you have questions about KUB's water or this report, contact KUB at 524-2911 or visit our website at www.kub.org.

KUB's Board meets monthly in open public session. Please feel free to participate in the meetings. Information on regularly scheduled meetings can be obtained on our website or by calling KUB.

Información en Español:

Esta información es muy importante. Por favor tradúscalo o hable con alguien que lo entienda bien. Para más información en español, llame a KUB al número de teléfono 524-2911 y oprima el número 2.

Water Quality Summary Table

Inorganic and Disinfection By-Product Monitoring				
Parameter	Range or Level Detected	MCLG or MRDLG	MCL or MRDL	Likely Source in Drinking Water
Barium	28 ppb	N/A	2000 ppb	Discharge of drilling wastes and metal refineries; erosion of natural deposits
Nitrate	0.48 ppm	10 ppm	10 ppm	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Fluoride	0.45 - 0.79 ppm (avg. 0.57)	4 ppm	4 ppm	Erosion of natural deposits; water additive, which promotes strong teeth; discharge from fertilizer and aluminum factories
Sodium	11 ppm	N/A	N/A	Used in treatment process
Total Organic Carbon (Source) ¹	1.4 - 2.9 ppm (avg 1.9)	N/A	TT	Naturally present in the environment
Total Organic Carbon (Tap) ¹	0.9 - 1.5 ppm (avg 1.2)	N/A	TT	Naturally present in the environment
Total Trihalomethanes (THM)	Maximum LRAA: 53 ppb ² Individual site range: 19 to 93 ppb ³	N/A	80 ppb	Byproduct of drinking water chlorination
Haloacetic Acids (HAA)	Maximum LRAA: 40 ppb ² Individual site range: 4 to 50 ppb	N/A	60 ppb	Byproduct of drinking water chlorination
Chlorite	0.02 - 0.06 ppm (avg 0.03)	0.8 ppm	1 ppm	Byproduct of drinking water disinfection
Chlorine Dioxide	0.10 - 0.25 ppm (avg 0.10)	MRDLG = 0.8 ppm	MRDL = 0.8 ppm	Water additive used to control microbes
Chlorine	0.6 - 2.8 ppm (avg 1.6)	MRDLG = 4 ppm	MRDL = 4 ppm	Water additive used to control microbes
Microbial and Turbidity Monitoring				
Parameter	Range or Level Detected	MCLG	MCL	Likely Source in Drinking Water
Total Coliform ⁴	0%	0%	5%	Naturally present in the environment
Total Coliform (RTCR) ⁵	0 - 3%	0%	TT	Naturally present in the environment
Turbidity ⁶	0.02 - 0.18 NTU	N/A	TT	Soil Runoff
Lead and Copper Monitoring Results				
Parameter	Range or Level Detected	MCLG	MCL	Likely Source in Drinking Water
Copper	0.228 ppm	1.3 ppm	AL=1.3 ppm	Customer plumbing and service connection
Lead ⁷	1.6 ppb	0 ppb	AL=15 ppb	Customer plumbing and service connection

¹ KUB met the Treatment Technique requirement for Total Organic Carbon.

² Compliance is determined by calculating quarterly Locational Running Annual Averages (LRAAs) at all the required sampling sites. The range includes the highest and lowest results obtained from monitoring sites across our distribution system in 2016

³ 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.

⁴ Between January 1, 2016 and March 31, 2016 Total Coliform Rule establishes monthly MCL of 5% for total coliform.

⁵ Revised Total Coliform Rule (RTCR), in effect on April 1, 2016, establishes total coliform MCL as treatment technique. No microbiological violations were incurred during 2016; highest monthly percentage was 3% (August 2016, 4 of 150 samples taken).

⁶ No Turbidity violations were incurred during 2016. We 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 of the water. KUB monitors turbidity because it is a good indicator of the effectiveness of our filtration system.

⁷ One of 50 households sampled contained concentrations that exceeded the lead action level in 2016. **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. Knoxville Utilities Board 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 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 EPA Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

⁸ KUB's drinking water meets all existing standards for safe water. In addition to the required testing, KUB tests for over 80 additional parameters. Most of the substances tested for were not found in our water. This table includes the results for additional parameters that were detectable.

Additional Monitoring Data⁸

Parameter	Average Level Detected
Alkalinity	72 ppm
Aluminum	0.036 ppm
Calcium	25 ppm
Chloride	19 ppm
Cryptosporidium	0 (0o) cysts/L
Hardness	97 ppm
Iron	0.008 ppm
Manganese	0.001 ppm
Orthophosphate	0.9 ppm
pH	7.2 Standard Units
Sulfate	13 ppm
Total Dissolved Solids	140 ppm
Zinc	0.106 ppm

From Your Meter to Your Tap

Did you know your home's plumbing may affect the quality of water coming from your tap? Concerns about lead in drinking water primarily come from the corrosion, or wearing away, of materials in household plumbing that contain lead. Older homes (pre-1930) are more likely to have plumbing and fixtures containing lead. Even newer homes, however, can have lead solder or fixtures with lead. To control corrosion and reduce the risk of lead from customers' plumbing, KUB continues to use a safe corrosion inhibitor that meets strict standards for use in drinking water. KUB also routinely monitors water quality to ensure effective corrosion control. Those efforts greatly reduce corrosion and ensure that KUB's water will continue to comply with all regulatory standards for lead. For information on lead in drinking water, testing methods, and steps you can take to minimize exposure, call the EPA's Safe Drinking Water Hotline (1-800-426-4791) or KUB (524-2911).

Terms and Definitions

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

Below Detection Limit (BDL): means that laboratory analysis indicates the contaminant is not present above the method's detection capability.

Contaminant: any physical, chemical, biological, or radiological substance or matter in water, which may or may not be harmful depending on the concentration.

Cross Connection: a physical connection between the public water system and another water supply or service that could contaminate the public water supply.

Maximum Contaminant Level (MCL): 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.

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 adding a disinfectant is necessary for the control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): below this level of a drinking water disinfectant, there is no known or expected risk to health. MRDLGs do not reflect the benefits of using disinfectants to control microbial contaminants.

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

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

Note: To make the following common scientific measures of substances in water easier to understand, we have related them to examples.

Parts per million (ppm) or milligrams per liter (mg/l) One part per million is equivalent to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) or micrograms per liter (ug/l) One part per billion corresponds to one minute in 2,000 years or a single penny in \$10,000,000.

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KUB WATER QUALITY REPORT 2016

*Straight from
the tap to you:
Safe, affordable,
high-quality
water.*



**KUB: 524-2911 (Español oprima el numero 2)
www.kub.org**

