Louisa County Water Authority

2017 Annual Drinking Water Quality Report for the Zion Crossroads System

We are pleased to present to you this year's Annual Drinking Water Quality Report which is designed to inform you about the quality water services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process, protect our water sources, and ensure the quality of your water. Our water source is a ground water system from a series of wells located in the Green Springs and Zion Crossroads areas of Louisa County. Sodium Hypochlorite is added to disinfect the water prior to distribution.

A source water assessment for Louisa County Water Authority was completed by the Virginia Department of Health on October 3, 2002. This assessment determined that the raw water sources (Zion Crossroads Well 1 & 2 Green Springs Wells 1, 2 & 3) may be highly susceptible to contamination. A source water assessment has not been completed for Spring Creek Well 3.

This report shows our water quality and what it means. If you have any questions about this report, please contact Pam Baughman, General Manager. If you want to learn more about the water treatment process, please attend any of our regularly scheduled Board of Director meetings. They are held on the second Wednesday of every month at 6:00 p.m. at the Authority's business office located at 23 Loudin Lane, Louisa, Virginia 23093. If you require further information please call our business office at 540-967-1122 during our regular office hours of 8:00 a.m. - 4:30 p.m. Monday – Friday.

Louisa County Water Authority routinely monitors for constituents in your drinking water according to Federal and State laws. The following tables show the highest results of our monitoring for each constituent and testing for the period of January 1 to December 31, 2017. Drinking water, including bottled drinking water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791). The sources of drinking water (both tap 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:

- microbial contaminants, such as viruses and bacteria that 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 storm water 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.

In order to ensure that tap water is safe to drink, EPA prescribes regulations that 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.

In this table you may find some terms and abbreviations with which you might not be familiar. To help you better understand these terms we've provided the following definitions:

Unit Description	
Term	**Definition**
Parts per million (ppm)	or milligrams per liter (mg/L) – 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 (µg/L) – one part per billion corresponds to one minute in 2,000 years or a single penny in $10,000,000

Picocuries per liter (pCi/L)	a measure of radioactivity in water.
Nephelometric Turbidity Units (NTU)	a measure of clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
positive samples/month	The number of sampler taken monthly that were found to be positive.
Not Applicable (NA)	Not applicable
Not Detected (ND)	Not detected. Laboratory analysis indicates that the constituent is not present in detectable amounts.
Not Regulated (NR)	Monitoring not required, but recommended.

Important Drinking Water Definitions	
Term	**Definition**
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 Contaminant Level (MCL)	The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology
Treatment Technique (TT)	A required process intended to reduce the level of a contaminant in drinking water.
Action Level (AL)	The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Variances & Exemptions (V&E)	State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
Maximum Residual Disinfection 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 contaminants.
Maximum Residual Disinfection 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.
Monitored Not Regulated (MNR)	Contaminants monitored in water systems that are not currently regulated.
Maximum Permissible Level (MPL).	State assigned maximum permissible level.
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 a water system.
Level 2 Assessment	A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an *E.coli* MCL violation has occurred and/or why total coliform bacteria have been found in a water system on multiple occasions.

We constantly monitor for various contaminants in the water supply to meet all regulatory requirements. The table lists only those contaminants that had some level of detection. Many other contaminants have been analyzed but were not present or were below the detection limits of the lab equipment.

Maximum Contaminant Levels (MCLs) are set at very stringent levels by the U.S. Environmental Protection Agency. In developing the standards EPA assumes that the average adult drinks 2 liters of water each day throughout a 70-year life span. EPA generally sets MCLs at levels that will result in no adverse effects for some contaminants or a one-in-ten thousand to one in a million chance of having the described health effect for other contaminants.

The state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data presented in the tables, although accurate, is more than one year old.

TEST RESULTS: Zion Crossroads Water System:

Contaminant	MCLG	MCL	Level Found	Range	Unit Measurement	Violation	Date of Sample	Typical Source of Contamination
Inorganic Contaminant								
Fluoride	**4**	**4**	0.43	0.33 – 0.43	**ppm**	No No No	2015 2016 2017	Erosion of natural deposits; water additive to promote strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate / Nitrite	**10**	**10**	0.48	No detect - 0.48	**ppm**	No	2017	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.

Barium	**2**	**2**	0.22	0.03 – 0.22	**ppm**	No No No	2015 2016 2017	Discharge of drilling wastes; discharge from metal refineries; Erosion of natural deposits.
Radiological Contaminant								
Beta Emitters	**0**	**50***	9.5*	3.1 – 10.3	**pCi/L**	No No	2013 2017	Decay of natural deposits. (*The MCL for Beta Emitters is 4 mrem/year (millirems per year) EPA considers 50 pCi/l to be the level of concern for Beta Emitters.)
Combined Radium	**0**	**5**	5.6*	0.8 – 5.9	**pCi/L**	No Yes	2013 2017	Erosion of natural deposits.
Alpha Emitters	**0**	**15**	5.8*	No detect – 7.6	**pCi/L**	No No	2013 2017	Erosion of natural deposits.

***Spring Creek Well #3 entry point was increased to quarterly monitoring after the August 2016 sample showed combined radium above the 5.0 pCi/L MCL. Compliance with the MCL's for radiological contaminants is based on an average of 4 consecutive quarterly sample results. Notice of Violation for exceeding the combined radium MCL was received in the 3rd quarter of 2017 and our customers received notification. Louisa County Water Authority has reduced the pumping of Spring Creek Well #3 and added a combined sample point that provides better representation of the water delivered to our customers tap. If further exceedances of the MCL for combined radium is received, our customers will be notified promptly. Some people who drink water containing radium-226 or radium-228 in excess of the MCL over many years may have an increased risk of getting cancer.**

TEST RESULTS: Zion Crossroads Water Distribution System:

Contaminant	MCLG	MCL	Level Found	Range	Unit Measurement	Violation	Date of Sample	Typical Source of Contamination
Total Trihalomethanes	**0**	**80**	11		**ppb**	No	2017	Byproduct of drinking water chlorination.
Highest Compliance Level: 6								
Total Haloacetic Acid	**0**	**60**	3		**ppb**	No	2017	Byproduct of drinking water chlorination.
Highest Compliance Level: 0								

Chlorine Residual Data: Zion Crossroads Water System:

Disinfectant	MRDLG	MRDL	Level Found	Range	Unit Measurement	Violation	Date of Sample (s)	Typical Source
Chlorine	4	4.0	0.45	0.20-1.00	mg/L	No	2017	Water additive used to control microbes.

Lead and Copper Water Quality Table: Zion Crossroads Water System (Most Recent Monitoring Period):

Contaminant	MCLG	Action Level	Level Found	Unit Measurement	AL Exceeded	Samples > AL	Date of Sample (s)	Typical Source of Contamination
Lead	0	15	< 5	ppb	No	0	2017	Corrosion of household plumbing systems; erosion of natural deposits.
Copper	1.3	1.3	< 0.05	ppm	No	0	2017	Corrosion of household plumbing systems; erosion of natural deposits.

Normal / Reduced Number of Sample Taps: 20 / 10

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. Louisa County Water Authority 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, testing methods, and steps you can tale to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Microbiological Water Quality Table: Zion Crossroads System:

Contaminant	MCLG	MCL	Level Found	Unit Measurement	Violation	Date of Sample	Typical Source of Contamination
E.coli bacteria	0	A routine sample and repeat sample are total coliform positive and one is also *E.coli* positive	0	Presence or Absence (PA)	No	2017, monthly	Human and animal fecal waste

There were no positive coliform or E.coli tests, excessive MCL results, improper treatment techniques, or monitoring and reporting violations during 2017.

Thank you for allowing us to continue providing your family with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for understanding.

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. Environmental Protection Agency/Center for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Louisa County Water Authority works to provide top quality water to every tap around the clock. 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.

Este informe contiene informacion muy importante sobre la calidad de su agua potable. Por favor lea este informe o comuniquese con alguien que pueda traducer la informacion.