

Annual Drinking Water Quality Report
Brookneal Water Treatment Facility

PWSID # 5031175

2017

INTRODUCTION

We're very pleased to provide you with the 2017 Annual Water Quality Report. We want to keep you informed about the excellent water and services we have delivered to you over the past year. Our goal is and always has been, to provide to you a safe and dependable supply of drinking water. The quality of your drinking water must meet state and federal requirements administered by the Virginia Department of Health (VDH).

I'm pleased to report that our drinking water is safe and meets federal and state requirements; except as outlined here in.

If you have any questions about this report or concerning your water utility, please contact **J. Michael Crews**, Director of Public Works, at telephone number (434) 376-3124. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled meetings. They are held on the second Tuesday of each month in the town hall.

GENERAL INFORMATION

See Attached sheet with 3 paragraphs entitled Educational Info.

The Brookneal Water Treatment Plant routinely monitors for constituents in your drinking water according to Federal and State laws. The water is surface water and comes from the Phelps Creek Reservoir. The water is treated by coagulation, filtration and disinfection. A source water assessment of our system was conducted in 2002 by the Virginia Department of Health. The source was determined to be of high susceptibility to contamination using the criteria developed by the State in its approved Source Water Assessment Program. The assessment report consists of maps showing the source water assessment area, an inventory of known land use activities of concern, and documentation of any known contamination within the last 5 years. The report is available by contacting your water system representative at the phone number given elsewhere in this drinking water quality report. This table shows the results of our monitoring for the period of January 1st to December 31st, 2017. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It's important to remember that the presence of these constituents does not necessarily pose a health risk.

LEAD & COPPER

The lead 90th percentile concentration of 0.002 mg/L is below the action level of 0.015 mg/L. The copper 90th percentile concentration of 0.079 mg/L is below the action level of 1.3 mg/L. The waterworks continues to demonstrate optimized control treatment.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking is primarily from materials and components associated with service lines and home plumbing. The Town of Brookneal 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 by flushing your tap for 15 to 30 seconds or until it becomes cold and reaches a steady temperature 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 at <http://www.epa.gov/safewater/lead>.

Disinfection By-Products: Trihalomethane (TTHM) and Haloacetic acid (HAA5). The town collects TTHM and HAA5 samples from two separate, compliance sample sites. The town collects TTHM and HAA5 from a special site and a control site.

The levels of total trihalomethanes (TTHMs) in samples collected from the compliance sites during 2017 were less than the MCL of 80 (ug/L or ppb) and there were no violation of the drinking water standard. Compliance with the MCL is based on a running annual average (4 quarters) of the quarterly samples collected and the water supply did not exceed the drinking water limits on this basis. TTHMs are formed when trace amounts of naturally occurring organic compounds in the raw water source combine with chlorine that is used to disinfect the treated water. All locations do not have the same levels of TTHMs. Higher levels are expected in the areas with highest residence time (generally the furthest points in the system) and during the warmer months or the year. Some people who drink water containing TTHMs in excess of the MCL over many years could experience problems with their liver, kidneys or central nervous system and may have increased risk of cancer. This water system will continue to be monitored for TTHMs. None of the individual HAA5 results or the quarterly running annual average compliance results from the compliance site exceed the PMCL of 60 ppb for HAA5. We intend to maintain compliance with the drinking water contaminants.

The TTHM and HAA5 results from the special site are used as part of the on-going study of methods to reduce TTHMs in the distribution system. In 2017 only individual quarterly TTHM result and two quarterly running annual average compliance results from the special sampling site exceed the MCL for TTHM. Two quarterly HAA5 results from the special sampling site exceed the PMCL for HAA5, but all of the 4 quarterly running annual average results are below the MCL for HAA5.

DEFINITIONS

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

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 - 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) - Picocuries per liter is a measure of the radioactivity in water.

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

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

Treatment Technique (TT) - a treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal - The "Goal" (MCLG) is 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 Goal or 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 Disinfectant Level or 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.

TTHM – Total Trihalomethane (TTHM)--compounds formed during disinfection/using chlorine

HAA5 – Haloacetic Acid (HAA5) – compounds formed during disinfection/using chlorine

WHAT DOES THIS MEAN?

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 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 storm water runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can, also, come from gas stations, urban storm water runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.
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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 regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

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 the 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 at 1-800-426-4791.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

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. 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 (800-426-4791).

Please call our office if you have questions.

We at the Brookneal Water Treatment Plant work to provide top quality water to every tap. 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.

WATER QUALITY RESULTS

INORGANIC CONTAMINANTS

| Contaminant/Unit of Measurement | MCLG | MCL | Level Found | Violation Y/N | Date of Sample | Likely Source of Contamination |
|---------------------------------|------|-----|-------------|---------------|----------------|---|
| Nitrate Nitrite | 10 | 10 | 0.26 mg/l | No | May 23, 2017 | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits |
| Barium ppm | 2 | 2 | 0.0261 mg/l | No | 23-May-17 | Erosion of natural deposits, discharge of drilling wastes |

MICROBIOLOGICAL CONTAMINANTS

| Contaminant/Unit of Measurement | MCLG | MCL | Level Found | Violation Y/N | Date of Sample | Likely Source of Contamination |
|-----------------------------------|------|--|---|---------------|---------------------------|--|
| Fecal Coliform and E. Coli (RTCR) | 0 | a routine sample and a repeat sample are total coliform positive, and one is fecal coliform or E. Coli | 0 | No | N/A | Human and animal feces |
| Total Coliform Bacteria (TCR) | 0 | 1 positive monthly sample | 0 (Range N/A) | No | Monthly | Naturally present in the environment |
| Turbidity (NTU) | N/A | Max 1.0 at least 95% of samples must be less than 0.3 NTU | 0.07 (100% of samples were less than 0.3 NTU) | No | January - December 2017 | Soil runoff |
| Fluoride (ppm) | 4 | 4 | Avg. = 0.68 Range 0.42 to 1.11 | No | Daily See foot note below | Water additive which promotes strong teeth |

RADIOLOGICAL CONTAMINANTS

| Contaminant/Unit of Measurement | MCLG | MCL | Level Found | Violation Y/N | Date of Sample | Likely Source of Contamination |
|---------------------------------|------|-----|-------------|---------------|----------------|--------------------------------|
| Alpha emitters pCi/L | 0 | 15 | 0.3 | No | 12-May-15 | Erosion of natural deposits |
| Combined radium pCi/L | 0 | 5 | 0.7 | No | 12-May-15 | Erosion of natural deposits |

LEAD & COPPER

| Contaminant/Unit of Measurement | MCLG | MCL | Level Found/Range | Violation Y/N | Date of Sample | Likely Source of Contamination |
|---------------------------------|------|--------|---|---------------|----------------|--|
| Copper ppm | 1.3 | AL=1.3 | 0.078 (90th percentile) Range less than 0.01 to 0.28 none of the samples exceeded the AL. | No | 22-Sept 2016 | Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives |
| Lead ppb | 0 | AL=15 | 2.5 (90th percentile) Range 0.3 to 60.5 of the samples collected only one exceeded the AL | No | 22-Sept 2016 | Corrosion of household plumbing systems; erosion of natural deposits |

DISINFECTION BYPRODUCTS

| Contaminant/Unit of Measurement | MCLG | MCL | Level Found/Range | Violation Y/N | Date of Sample | Likely Source of Contamination |
|---|------------|--|-------------------------------------|---------------|---------------------------------------|--|
| HAA5s (Total Haloacetic Acids) Ppb (Routine) | N/A | 60 | Max 4 qtr Avg. 63 (Range 43-62) | No | Four quarter average 2017 (Quarterly) | By-product of drinking water disinfection |
| THMs (Total Trihalomethanes) ppb (Routine) | N/A | 80 | Max qtr Avg 69 (Range 47-63) | No | Four quarter average 2017 (Quarterly) | By-product of drinking water disinfection |
| TOC (Total Organic Carbon) ppm | N/A | TT-TOC removal ratio greater than or equal to 1.00, 50% alternate compliance | 1.26 lowest ratio (Range 1.26-1.86) | No | Monthly (2017) | Naturally present in the environment |
| Chlorine ppm | MRDL=4 | MRDLG=4 | Max 2.20 (Range 0.38-2.20) | No | 2/ Month | Water additive used to control microbes |
| | Foot note. | | | | | fluoride fed January and October December, 2014 chemical feed equipment replacement (applicable) |
| HAA5s (Total Haloacetic Acids) Ppb (Special Site) | N/A | 60 | Max 4 qtr Avg 58 (Range 32-77) | NO | | By-product of drinking water disinfection |
| THMs (Total Trihalomethanes) ppb (Special Site) | N/A | 80 | Max 4 qtr Avg 94 (Range 45-140) | NO | | By-product of drinking water disinfection |