

**Test results and analysis
from calendar year 2018**

City of Williamsburg, Virginia Water Quality Report

This Water Quality Report describes the City of Williamsburg's water sources, the treatment provided, the results of laboratory testing performed on the treated water, and a description of the risks that the treatment and testing are designed to prevent.

The 2018 Water Quality Table on page 5 shows only the substances found for which the Health Department and USEPA have established Maximum Contaminant Levels (MCLs), Treatment Techniques, or Action Levels. This table represents only a fraction of the many tests conducted during 2018.

Testing in which the target parameter was not found is not included in the Water Quality Table, and the City's water was tested for many more compounds throughout the year, with frequency ranging from continuously to once every nine years. When testing was done in a year other than 2018, that year is indicated in the table.

Test results from 2018 show that the City's water was in compliance with all Virginia Department of Health and U.S. Environmental Protection Agency (EPA) regulations. In other words, there were no violations of any state or federal regulations.

Please take a few moments to review this report. We can provide further information upon request by contacting the City's Public Works and Utilities Department. Printed copies of this report are available at the City's Public Works and Utilities Department at 401 Lafayette Street and online at www.williamsburgva.gov/wqr.



CITY OF WILLIAMSBURG, VIRGINIA

This annual water quality report is available online at www.williamsburgva.gov/wqr. Printed copies are available at the Department of Public Works and Utilities located in the Municipal Building (2nd floor) 401 Lafayette Street, Williamsburg, Virginia.

Monitoring - why we test and monitor the water

As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or from human activity. Substances found in source water may come from agricultural and farming activities, urban stormwater runoff, residential uses, septic systems, discharges from domestic or industrial wastewater treatment facilities, and many other types of activities. Water from surface sources is treated to make it drinkable while groundwater may or may not need any treatment.

All 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 water poses a health risk. To ensure that the water provided to you is safe to drink, the Virginia Department of Health and the EPA set limits on the amounts of certain substances in water provided

by public water systems. The Food and Drug Administration is responsible for setting these limits on bottled water.

The following substances may be present in source water (these are only possible sources of contamination and do not imply that the City's water is susceptible to the sources listed):

Microbial substances such as viruses and bacteria, which may come from sewage treatment plants, septic systems, livestock and wildlife;

Inorganic substances, such as salts and metals, which may be naturally occurring, or result from urban stormwater runoff or industrial or domestic wastewater discharges;

Pesticides & herbicides, which may come from residential or agricultural runoff;

Organic chemicals, including synthetic and volatile organic chemicals, which may come from industrial discharge, runoff from

urban areas, and septic systems; and,

Radioactive contaminants, which may be naturally occurring or the result of oil and gas production and mining activities.

Some people may be more vulnerable to contaminants in drinking water than 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.

Environmental Protection Agency/ Centers 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** at (800) 426-4791.

Important Information about Lead in Water

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.

The Williamsburg Department of Public Works and Utilities is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components.

If your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 15 to 30 seconds or until it becomes cold or reaches a steady temperature before using water for drinking or cooking. Avoid using water from the hot water tap 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 (800) 426-4791.

Your Water - source water, treatment & “good to know” information

Waller Mill Reservoir is the main water source for the City of Williamsburg. The 350-acre lake holding 1.5 billion gallons of water has been in operation since 1945. The City owns a large percentage of the surrounding watershed. During drought, this source may be supplemented by groundwater from a well at Waller Mill Park and raw water available from Newport News Waterworks under a long-term agreement.

In addition, the City is included in the Hampton Roads Regional Source Water Protection Plan (SWPP) prepared by the

Hampton Roads Planning District Commission (HRPDC) in January, 2017. The Plan summarizes risks to municipal source water and identifies existing and potential strategies to manage and minimize current and future risks. According to the Plan, Waller Mill Reservoir is rated as relatively high in susceptibility to contamination (as were all of the reservoirs in the area, which is one reason why water treatment is so important), while our deep well used to supplement the reservoir is rated as low in susceptibility. These ratings were confirmed by the Virginia Department of Health in its Source Water

Assessment Report. The SWPP includes maps showing the source water assessment area, an inventory of known land-use activities, a susceptibility explanation chart, and definitions of key terms. The document is available [online](#), and at the HRPDC in Chesapeake (757-420-8300) or the City of Williamsburg Department of Public Works (401 Lafayette Street). The City continues as it has always done, to aggressively pursue purchases of land within the watershed and to regularly check the area for erosion and improper activity.

Our Treatment Process

- Aluminum sulfate coagulation and filtration removes turbidity and organisms such as giardia and cryptosporidium.
- Chlorine dioxide is a disinfectant which also oxidizes iron and manganese so that it is able to be removed by coagulation and filtration.
- Chlorine disinfection provides additional protection from bacteria and viruses.
- Fluoride helps prevent tooth decay in children.
- Activated carbon helps prevent taste and odor issues.
- pH adjustment and a corrosion inhibitor helps protect water mains and household plumbing.

Good to know:

Sodium level	For the benefit of those persons who are restricting their sodium intake, lab testing indicates a sodium level of 16.7 ppm. A “severely restricted” sodium diet allows consumption of water with 20 ppm sodium, and a “low” sodium diet allows 270 ppm. If you have questions or concerns about your sodium intake and your tap water, please contact your primary care physician.
Hardness	There is no MCL (maximum contaminant level) for hardness, but we include this data because there is interest. The City’s water supply is classified as moderately hard. This hardness is predominantly calcium carbonate. Although water hardness does have some effects such as spotting on dishes and fixtures and the need for more soap or detergent, it is also an excellent supply of calcium, a critical nutrient. Lab testing indicated a hardness value of 121 ppm (or 7.1 grains per gallon).

Key Terms - to help you understand the test results

Here are some **definitions and terms** that will help you understand the information contained in the annual water quality table on the next page. If there are any terms or explanations that aren't clear, please contact the Public Works Department, and we'll be happy to assist you:

MCLG (maximum contaminant level goal): The level of a contaminant in drinking water below which there is no known or expected risk to health according to the EPA. MCLG's allow for a margin of safety.

MCL (maximum contaminant level): The highest level of a contaminant allowed in drinking water, MCL's are set as close to the MCLG's as feasible using the best treatment methods available.

MRDLG (maximum residual disinfectant level goal): 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.

MRDL (maximum residual disinfectant level): 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.

ppm (one part per million): A unit of concentration; e.g. equivalent to one penny in \$10,000.00 (10 thousand dollars).

ppb (one part per billion): A unit of concentration; e.g. equivalent to one penny in \$10,000,000.00 (10

million dollars).

pCi/L (picocurie per liter): A unit of radioactivity.

mrem/year (millirem/year): A unit of radiation.

TT (treatment technique): A specific method of treatment mandated by State and/or EPA regulations.

AL (action level): A concentration of a contaminant, which triggers specific requirements if exceeded.

NTU (nephelometric turbidity unit): A measure of the turbidity (cloudiness) of water.

Range: The highest and lowest values obtained from testing. No range is listed for substances for which testing is done annually.

ND: non detectible.

NA: not applicable.

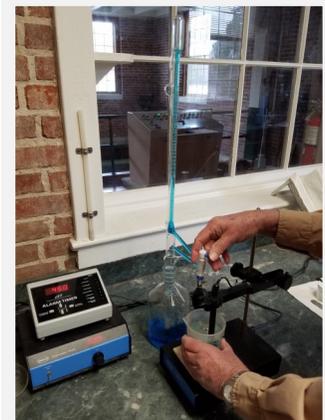


Results - from water quality testing in 2018 (unless otherwise specified)

PARAMETER	YEAR TESTED	UNIT	MCL, TT, AL or MRDL	MCLG MRDLG	YOUR WATER	RANGE LOW - HIGH	PROBABLE SOURCE
INORGANIC							
Lead	2017	ppb	AL = 15	0	1.5	ND - 2.9	Household plumbing
Copper	2017	ppm	AL = 1.3	1.3	0.11	0.01 - 0.17	Household plumbing
<i>All samples were below the lead action level of 15 ppb. All samples were below the copper action level of 1.3 ppm. Our lead and copper test results are so low that we are only required to test every three years. 2017 was our testing year. The next test will be in 2020.</i>							
Fluoride	2018	ppm	4.0	4.0	0.76	0.64 - 0.78	Additive for dental health
Chlorine (as Cl ₂)	2018	ppm	4 (MRDL)	<4 (MRDLG)	1.4	0.2 - 2.1	Additive to deactivate microorganisms
Barium	2018	ppm	2	2	0.018	N/A	Erosion of natural deposits
MICROBIOLOGICAL							
Turbidity	2018	NTU	TT	NA	0.04	0.01 - 0.08	Organic matter from reservoir
<i>Turbidity is a measure of the cloudiness of water. The treatment technique used to control turbidity is coagulation and filtration, and the turbidity measurements are an important tool in optimizing these processes. All turbidity samples met the Virginia Department of Health and USEPA regulations indicating compliance with the treatment technique requiring that 95% of samples be below .3 NTU each month. Turbidity readings are recorded every 10 minutes. The range is the lowest and highest of these readings. "Your Water" value is the number below which 95% of the readings fall.</i>							
DISINFECTION BY-PRODUCTS							
Total Trihalomethanes (TTHMs)	2018	ppb	80 (4 quarter running average)	NA	70	14 - 105	By-product of disinfection
Haloacetic Acids (HAA5)	2018	ppb	60 (4 quarter running average)	NA	42	22 - 58	By-product of disinfection
Chlorite	2018	ppm	1.0	0.8	0.17	0.00 - 0.20	By-product of disinfection
Total Organic Carbon	2018	removal ratio*	TT	NA	1.51	1.09 - 1.92	Naturally present in the environment
<i>*This treatment technique requires a precursor removal ratio of 1.0 or greater (removal ratio = removal achieved / removal required), based on a quarterly annual average. The actual % removal required is calculated based on formulas set forth by the USEPA and is dependent on raw water data for total organic carbon and alkalinity.</i>							



Water is tested at the Waller Mill Water Treatment Plant by highly-trained, certified technicians. The plant is staffed 24-hours a day and a variety of tests are performed on both untreated and treated water every day of the year.



Public engagement and contact information

We welcome your input!

When it comes to drinking water and water supply, **we welcome your feedback**. Major decisions about your drinking water are made by Williamsburg City Council. You are encouraged to share your thoughts with Council at their regular meetings on the second Thursday of each month at 2:00 p.m., in the Stryker Center located at 412 N. Boundary Street. Meetings are open to the public, streamed live on Facebook and the City's website and televised on WMSBG Cable Channel 48.

Stay Informed!

Follow us on Twitter [WilliamsburgGov](#) Like us on Facebook [williamsburg.virginia](#)

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- Dispose of chemicals properly; take used motor oil to a recycling center. The Virginia Peninsula Public Service Authority (VPPSA) has several household chemical collection events scheduled for the Williamsburg area annually. Visit their website for details <http://vppsa.org/hhc.htm>.
- Since most litter ends up in a waterway somewhere, why not organize a litter pick-up in the community? The City's Public Works and Utilities Department will help you find a location and will provide your group with a "litter pick-up kit" consisting of trash bags, grippers, safety vests, and gloves.
- Learn more about drinking water, water systems, water efficiency, source water protection and a host of other good to know environmental programs and projects at www.askrgreen.org.



City of Williamsburg - Public Works and Utilities Department

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