



City of Fredericksburg
Water Distribution System
2016 Annual Water Quality Report

INTRODUCTION

This annual report for calendar year 2016 is designed to inform you about your drinking water quality. Our goal is to provide you with a safe and dependable supply of drinking water and help you understand the efforts that are made to protect your water supply. The quality of your drinking water must meet state and federal requirements administered by the Virginia Department of Health (VDH).

If you have any questions about this report or want to request any additional information concerning your drinking water, please contact: Martin M. Schlesinger, Assistant Director of Public Works – Utilities at (540) 372-1023.

The City's water system is operated under the authority of the Fredericksburg City Council. The City Council meets the second and fourth Tuesday of every month at 7:30 pm in the Council Chambers at City Hall, 715 Princess Anne St.

GENERAL INFORMATION (Substances that may be in drinking water)

The sources of drinking water (both tap water 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.

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 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. FDA regulations establish limits for contaminants in bottled water which must provide the same 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. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791). The U. S. Office of Water (www.epa.gov/watrhome) and the Centers for Disease Control and Prevention (www.cdc.gov) web sites provide a substantial amount of information on many issues relating to water resources, water conservation and public health. Also, the Virginia Office of Drinking Water has a web site (<http://www.vdh.virginia.gov/ODW>) that provides complete and current information on water issues in our own state.

SPECIAL HEALTH INFORMATION

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 (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).

SOURCE AND TREATMENT OF YOUR DRINKING WATER

The source of your drinking water is surface water collected and treated at the sites listed below:

Rappahannock River @ Motts Run Water Treatment Plant – Spotsylvania County
Motts Run Reservoir @ Motts Run Water Treatment Plant – Spotsylvania County
Ni Reservoir @ Ni River Water Treatment Plant – Spotsylvania County (Approximately 95% of water received is from the Motts Run Water Treatment Plant)

A source water assessment of our system was conducted by the Virginia Department of Health. Based on the criteria developed by the state in its approved Source Water Assessment Program, the river and reservoirs were determined to be highly susceptible to contamination. Feel free to contact us if you would like additional information about this assessment or want to obtain a copy.

LEAD IN DRINKING WATER

Lead is a naturally occurring element in our environment and all kinds of water may contain some amount of lead. Consequently, the city's water supply may contain small, undetectable amounts of lead. EPA estimates that more than 40 million U.S. residents use water that can contain lead in excess of EPA's Action Level of 15 ppb. Hot water is likely to contain higher levels of 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. Fredericksburg is responsible for providing high quality drinking water, but cannot control the variety of materials used in home plumbing components. When 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. 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 at <http://www.epa.gov/safewater/lead>.

The city's drinking water supply is maintained at an optimum pH and mineral content level to prevent corrosion in your home's water piping.

Also, for more information, please contact National Lead Information Center (800-424-LEAD) and the Safe Drinking Water Hotline (800-426-4791).

WATER CONSERVATION TIPS

Water conservation measures are an important first step in protecting our water supply. Such measures not only save the supply of our water source, but can also save you money by reducing your water bill. Listed below are some conservation suggestions:

Repair any leaking faucets, pipes, toilets, etc.; Replace old fixtures; install water-saving devices in faucets, toilets and appliances; Wash only full loads of laundry; Take shorter showers; Do not let the water run while shaving or brushing teeth; Soak dishes before washing; Run the dishwasher only when full; Water lawns and gardens in early morning or late evening; Use mulch around plants and shrubs; Use water saving nozzles; Use water from bucket to wash your vehicle and save the hose for rinsing.

FATS, OILS and GREASE (FOG)

You may not be aware of it, but every time you pour fat, oil, or grease (FOG) down your sink (e.g., bacon grease), you are contributing to a costly problem in the sewer collection system. FOG coats the inner walls of the plumbing in your house as well as the walls of underground piping throughout the community.

Over time, these greasy materials build up and form blockages in pipes, which can lead to wastewater backing up into parks, yards, streets, and storm drains. These backups allow FOG to contaminate local waters, including drinking water. Exposure to untreated wastewater is a public health hazard. FOG discharged into septic systems and drain fields can also cause malfunctions, resulting in more frequent tank pump-outs and other expenses.

Communities spend billions of dollars every year to unplug or replace grease-blocked pipes, repair pump stations, and clean up costly and illegal wastewater spills. Here are some tips that you and your family can follow to help maintain a well-run system now and in the future:

NEVER:

- Pour fats, oil, or grease down the house or storm drains.
- Dispose of food scraps by flushing them.
- Use the toilet as a waste basket.

ALWAYS:

- Scrape and collect fat, oil, and grease into a waste container such as an empty coffee can, and dispose of it with your garbage.
- Place food scraps in waste containers or garbage bags for disposal with solid wastes.
- Place a wastebasket in each bathroom for solid wastes like disposable diapers, creams and lotions,

and personal hygiene products including non-biodegradable wipes.

STORMWATER

Storm water runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground. As the runoff flows over the land or impervious surfaces (paved streets, parking lots, and building rooftops), it accumulates debris, chemicals, sediment or other pollutants that could adversely affect water quality if the runoff is discharged untreated. Storm water runoff from all uses of our land is our most common cause of water pollution.

The National Pollutant Discharge Elimination System (NPDES) Storm water Program regulates storm water discharges from three potential sources: municipal separate storm sewer systems (MS4s), construction activities, and industrial activities. Operators of these sources may be required to receive an NPDES permit before they can discharge. This permitting mechanism is designed to prevent storm water runoff from washing harmful pollutants into local surface waters such as streams, rivers, lakes or coastal waters.

Visit the City's website for additional information on stormwater and the NPDES Program at:

<http://www.fredericksburgva.gov/index.aspx?nid=476>

To report storm water violations such as illegal dumping of motor oil or antifreeze in storm drains, or for storm water related questions and concerns, please call the Dept. of Public Works at 540.372.1023 or the Dept. of Community Planning and Building at 540.372.1080

TESTING & MONITORING

Contaminants in your drinking water are routinely monitored according to Federal and State regulations. The table on the next few pages shows the most recent results of our monitoring.

DEFINITIONS

The following definitions for possible unfamiliar terms and abbreviations are provided:

Non-detects (ND) - indicates that the substance was not found by laboratory analysis.

Parts per million (ppm) – equal to 1mg/L; one part per million corresponds to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) - equal to 0.001mg/L; one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

Parts per trillion (ppt) - one part per trillion corresponds to one minute in 2,000,000 years, or a single penny in \$10,000,000,000.

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 or cloudiness of water. Turbidity in excess of 5 NTU is just noticeable to the average person. Turbidity is

monitored because it is a good indicator of the effectiveness of our filtration system.

Action level - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

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

Maximum Contaminant Level (MCL) - the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs (see definition below) 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 (MRDL) – the highest level of disinfectant allowed in drinking water. There is convincing evidence that the addition of a disinfectant is necessary for control of microbial contaminants.

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

2016 CITY of FREDERICKSBURG WATER QUALITY RESULTS

I. Lead and Copper Substances:

Substance	Units of Measurement	Action Level	MCLG	Results of samples for the 90th Percentile Value	Action Level Exceedance (Y/N)	Sampling Year	# of sampling sites exceeding action level	Typical Source
Lead	ppb	15	0	0.002	NO	2016	1	Corrosion of household plumbing systems, erosion of natural deposits
Copper	ppm	1.3	1.3	0.067	NO	2016	NONE	Corrosion of household plumbing systems, erosion of natural deposits

II. Turbidity

Substance	Treatment Technique Limits	Amount Detected	Range		Violation (Y/N)	Sampling Year	Typical Source
			low	high			
Turbidity	1. 1 NTU maximum 2. <0.3 NTU 95% of the time	0.20 95	0.03	0.20	NO	2015	Soil runoff

III. Disinfection Byproducts

Substance	Units of Measurement	Action Level	MCLG MRDLG	MCL MRDL	Level Detected	Violation (Y/N)	Range of detection at Sampling Points	Sampling Year	Typical Source
TTHMs	ppb	N/A	N/A	80	38	NO	9.5-38	2015	By-product of drinking water chlorination
HAA5s	ppb	N/A	N/A	60	25	NO	1.0-25	2015	By-product of drinking water disinfection

IV. Other Regulated Substances

Substance	Units of Measurement	MCLG	MCL	Level Detected	Violation (Y/N)	Range of detection at Sampling Points		Sampling Year	Typical Source
						LOW	HIGH		
Fluoride	ppm	4	4	1.05	NO	ND	0.79	2015	Water additive which promotes strong teeth
Nitrate	ppm	10	10	0.5	NO	0.09	0.1	2015	Runoff from fertilizer use, leaching from septic tanks, sewage, and erosion of natural deposits.
Total Organic Carbon*	N/A	N/A	TT	N/A	NO	N/A	N/A	2015	Naturally present in environment
Barium	ppm	2	2	0.018	NO	0.015	0.016	2015	Discharge of drilling waste; Discharge from metal refineries; Erosion of natural deposits
Chlorine/Chloramines	ppm	4	4	2.50	NO	0.07	3.9	2015	Water additive used to control microbes

*Footnote for TOC. Compliance is based on a running four-quarter average.

The range is the individual monthly ratio from Motts Run and Ni River treatment facilities.

V. Microbiological Contaminants

Contaminant	MCLG	MCL	Number of Positive Samples	Violation (Y/N)	Sampling Year	Typical Source
Total Coliform Bacteria	0 positive samples	No more than 1 positive sample in 30 day period	0 within a 30 day period (June 2014)	N (repeat samples were absent)	2015	Naturally present in the environment

We regularly monitor for various substances in the water supply to meet all regulatory requirements. The tables list only those substances that had some level of detection. Many other substances have been analyzed but were not present or were below the detection limits of the lab equipment. Much of our water quality data is from testing done in 2014. However, the state allows us to monitor for some substances less than once per year because the concentrations of these substances do not change frequently. Even though some of our data may be more than one year old, it is accurate.

Maximum Contaminant Level's 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 health effects for some substances or a one-in-ten-thousand to one-in-a-million chance of having the described health effect for other substances.

VIOLATION INFORMATION: The Fredericksburg Water Distribution System had no violations for contaminants in calendar year 2014.

This Drinking Water Quality report was prepared by: Dave King, Assistant Director of Public Works