



2018

ANNUAL WATER QUALITY REPORT

Fairfax Water

Letter from the Chairman

My Fellow Customers:

One of my favorite aspects of serving on the Fairfax Water Board of Directors is the ability to shape the course of one of the region's most impactful organizations. What Fairfax Water does today ripples ahead to future generations. We members of the Fairfax Water Board work with the extremely talented employees of this organization to ensure that today's ripples transform into waves of benefits tomorrow. In this report, you will see the impact of our employees' hard work in delivering high-quality water to your home. To maintain our successful record, we have planned several capital improvement projects for 2018 and beyond.

As I write this letter, Fairfax Water has either finalized plans for or begun construction of several key infrastructure projects designed to improve service quality and efficiency. These programs include improvement or replacement of water-storage tanks in the Cities of Fairfax and Falls Church, as well as southern parts of Fairfax County. We are also hard at work improving water pressure and service throughout our system. Proactive measures to locate and replace aging infrastructure help us maintain reliable delivery of excellent-quality water to our customers. It also minimizes inconvenient outages and costly repairs over the long term.

The improvements we are pursuing will benefit our customers today and decades into the future. It is gratifying for us as members of the Board to see this success develop in real time but, as customers, parents, and grandparents, it is even more gratifying to know we are building something in which future generations can take great pride.



Philip W. Allin
Chairman
Fairfax Water Board of Directors



Letter from the General Manager

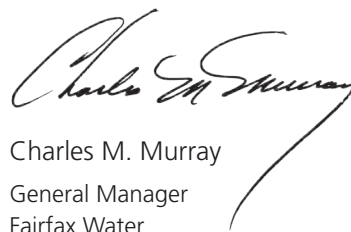
Dear Fairfax Water Customers:

It is time again to report on the quality of your water. Once again, the quality of your water is excellent. We are happy to report that our customers enjoy some of the best-quality water in the region. Drinking-water providers are regulated by the states and EPA and must meet water-quality standards established by these regulations under the Safe Drinking Water Act. Fairfax Water has always met these water quality standards and this report is how we share such information with our customers.

We are proud of our world-class team of water treatment professionals who quietly analyze, treat, and distribute this most precious resource to nearly two million people in Northern Virginia. Many of you have had direct experience with one or more members of our team as they answered questions, established or restored service, or built the infrastructure that will provide service now and into the future.

You may have seen our dedicated crews working this past winter during the record-breaking cold snap. Our team of field service technicians, main break technicians, and customer service representatives pushed themselves to near exhaustion to restore service to the approximately two percent of our customers who lost service due to extreme and sustained cold weather. Two percent may sound small, but that number translates to approximately 5,200 customers with frozen meters, with more than 1,000 emergency work orders over a period of 15 days between December 27 and January 10. We are proud of our dedicated team for their hard work and sacrifice and thank our customers for their patience and understanding.

We look forward to reporting another successful year in 2019.



Charles M. Murray
General Manager
Fairfax Water





VOCATION OF DISTINCTION

“We are, all of us, water beings on a water planet. Water is life. Without it, all living things die. Our dependence on water is absolute; our psyches know this and signal us in myriad ways of water’s elemental importance and significance. That is why we love the water and remember experiences associated with it.

Of the earth’s vast resources of water, only a small fraction is fresh and drinkable. A few people among the globe’s billions have been charged with the task of ensuring everyone else has a reliable supply of safe water.

Supplying potable water is an essential human activity, a great responsibility, and a vocation of distinction.”

J.B. Mannion
1931-2009
Former Executive Director
American Water Works Association

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This report contains very important information about your drinking water. Please translate it or speak with someone who understands it. If you are a landlord, please share a copy of this report with your tenants.

이 보고서에는 귀하가 거주하는 지역의 수질에 관한 중요한 정보가 들어 있습니다. 이것을 번역하거나 충분히 이해하시는 친구와 상의하십시오.

Bản báo cáo có ghi những chi tiết quan trọng về phẩm chất nước trong cộng đồng quý vị. Hãy nhờ người thông dịch, hoặc hỏi một người bạn biết rõ về vấn đề này.

El informe contiene información importante sobre la calidad del agua en su comunidad. Tradúzcalo o hable con alguien que lo entienda bien.



UNDERSTANDING YOUR WATER QUALITY

HOW IS MY WATER QUALITY?

Your water quality is excellent. As a Fairfax Water customer, you drink water that consistently surpasses all federal and state standards. Of the 173 compounds for which we tested, very few were found in our drinking water. Those we found were in negligible amounts well below the EPA's maximum contaminant levels.

HOW IS THE WATER TESTED AND BY WHOM?

Fairfax Water's state-certified Water Quality Laboratory performs or manages the testing required by federal and state regulations. In addition to regulatory testing, many other analyses are performed to monitor the quality of Fairfax Water's raw water sources, water within the treatment process, and water within the distribution system. Water undergoing the treatment process is continuously monitored for pH, turbidity, coagulation efficiency, and disinfectant residuals using technically advanced online monitoring systems. Chlorine, pH, and temperature testing is also performed at sample location sites throughout the system using portable instrumentation. The results for much of the 2017 testing are included in the tables on pages 14 -25 of this report. For additional analytical reports, visit www.fairfaxwater.org or call 703-698-5600, TTY 711.

HOW IS OUR WATER TREATED?

Fairfax Water provides water treated at four treatment plants. The James J. Corbalis Jr. and the Frederick P. Griffith Jr. Treatment Plants are owned and operated by Fairfax Water. The Dalecarlia and McMillan Treatment Plants, part of the Washington Aqueduct, are owned and operated by the U.S. Army Corps of Engineers. All four locations use advanced technologies and practices in drinking-water treatment, which is the process of cleaning raw water to make it safe for you to drink. When untreated water enters the treatment plant, coagulants are added to cause small particles to adhere to one another, become heavy, and settle in a sedimentation basin. The water is then filtered through activated carbon and sand to remove remaining fine particles. It is disinfected with chlorine to kill harmful bacteria and viruses. A corrosion inhibitor is added to help prevent leaching of lead and copper that might be in household plumbing. Fluoride is added to protect teeth. Powdered activated carbon and potassium permanganate may also be added to the treatment process to remove taste or odor-causing compounds. In addition to these treatment steps, the Corbalis and Griffith plants use ozone to further reduce odors and organic material.

Throughout this report, you will find many references to water in different stages of the treatment process. To help clarify these references, here is the scoop on water terminology:



Raw Water Source

Water in its natural state that feeds into our treatment plants.



Process

Water at various points during the treatment process.



Finished Water

Water leaving the treatment plant for distribution or storage.



Distribution

Treated water piped from our facilities to your home or business.

Fairfax Water's Board of Directors typically meets the first and third Thursday of each month at 6:30 p.m. in the Boardroom of the Fairfax Water offices at 8570 Executive Park Avenue in Fairfax. Notices of public hearings and other opportunities for public participation are posted in the lobby and on the website at www.fairfaxwater.org. If you plan to attend a meeting or need more information, contact Fairfax Water at 703-289-6017, TTY 711, to confirm the date and time for the meeting.

FINDING YOUR WATER QUALITY

This water quality report provides information for all customers whose drinking water is provided by Fairfax Water. Our raw water comes from two sources and is treated at four treatment plants. You can use the map shown here to determine where your water comes from and what water quality data applies to your drinking water.

Note the color of the map in the area where you live. Use this color coding throughout the report to identify the information that relates to your drinking water. If you are still uncertain which service area is yours or if you have additional questions, visit www.fairfaxwater.org or call 703-698-5800, TTY 711.



Customers in this service area receive water from the Potomac River and Occoquan Reservoir that is treated at the James J. Corbalis Jr. or Frederick P. Griffith Jr. treatment plants, owned and operated by Fairfax Water.

See report on page 14.

Customers in this service area receive water from the Potomac River that is treated at the McMillan and Dalecarlia water treatment plants, part of the Washington Aqueduct system, owned and operated by the U.S. Army Corps of Engineers.

See report on page 18.

Customers in this service area receive water from the Potomac River that is treated at the Dalecarlia water treatment plant, part of the Washington Aqueduct system, owned and operated by the U.S. Army Corps of Engineers.

See report on page 22.

INFORMATION ABOUT SOURCE (RAW) WATER

Sources of drinking water

The sources of all drinking water, both tap water and bottled water, include rivers, lakes, streams, ponds, reservoirs, springs, and ground water. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material. It can also pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

1. Microbial contaminants, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
2. Inorganic contaminants, such as salts and metals, that can be naturally occurring or can result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
3. Pesticides and herbicides, which may come from a variety of sources such as agriculture or residential uses and urban stormwater run-off.
4. Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and also come from gas stations, urban stormwater runoff, septic systems, and decaying plants.
5. Radioactive contaminants that can be naturally occurring or can be the result of oil and gas production or mining activities

Fairfax Water's sources

Fairfax Water draws raw water from two primary sources: the Potomac River and the Occoquan Reservoir, which is fed by the Occoquan River. The four facilities that treat your water feed an interconnected distribution system. The Corbalis Treatment Plant and the Dalecarlia and McMillan Treatment Plants treat water from the Potomac River. The Frederick P. Griffith Jr. Treatment Plant treats water from the Occoquan Reservoir.

Source water assessment and protection

Under the provisions of the federal Safe Drinking Water Act, states are required to develop comprehensive source-water assessment programs that meet the following requirements:

- Identify the watersheds that supply public tap water.
- Provide an inventory of contaminants present in the watershed.
- Assess susceptibility to contamination in the watershed.

Source-water assessments for the watersheds are conducted by the Virginia Department of Health (VDH). The assessment consists of maps of the evaluated watershed area, an inventory of known land-use activities, and documentation of any known source-water contamination within the last five years. Based on the criteria developed by the VDH, the Potomac River and the Occoquan Reservoir were determined to be of high susceptibility to contamination. This determination is consistent with the state's finding for other surface waters, such as rivers, lakes, and streams, throughout Virginia. A secure version of the assessment report is available by visiting our website at www.fairfaxwater.org or by calling Fairfax Water at 703-698-5600, TTY 711.

Contaminants in drinking water

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, TTY 711).



REDUCING EXPOSURE TO LEAD

Fairfax Water's distribution system does not contain lead pipe, as we have made an extensive effort to identify and replace any lead service connections in the older areas of our system. Depending on when it was constructed, your home's plumbing may contain lead. The level of lead in water can increase when the water stands in contact with lead-based plumbing. Keep reading for important information about safe lead levels and how to reduce your exposure to lead.

What is the EPA standard for lead in drinking water?

The EPA has established an Action Level for lead in water of 15 parts per billion (ppb). When lead testing is performed as required by the EPA, 90 percent of the samples must contain less than 15 ppb. This is usually referred to as the 90th percentile results being less than 15 ppb.

The Action Level was not designed to measure health risks from water represented by individual samples. Rather, it is a statistical trigger value that, if exceeded, may require more treatment, public education, and possibly lead-service-line replacement where such lines exist. Fairfax Water does not have any lead service lines in its system.

Fairfax Water has been testing for lead in accordance with the EPA's Lead and Copper Rule (LCR) since 1992 and has consistently tested below the Action Level established in the LCR. In the most recent tests performed as required by the EPA, all Fairfax Water samples were well below the Action Level of 15 ppb. The next EPA-required monitoring will be conducted in 2018 for Arlington Special service area and 2020 for the remaining service areas.

Where does lead in drinking water come from?

The Potomac River and the Occoquan Reservoir - Fairfax Water's sources - do not contain lead. In 1986, lead was banned from use in pipe and solder in home construction. In older homes where lead is present in pipe and solder connections, it may dissolve into the water after the water sits for long periods. Some household plumbing components may contain a small amount of lead and can contribute to lead concentrations at the tap. Fairfax Water adds a phosphate-based corrosion inhibitor during the treatment process to slow this dissolution process. For more information on lead in your water, visit our website: www.fairfaxwater.org.

What can I do in my home to reduce exposure to lead in the drinking water?

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. Fairfax Water is responsible for providing high-quality drinking water but cannot control the materials used in plumbing components in home construction.

If you are concerned about lead in your water, following these tips can help minimize the potential for lead exposure:

1. Use only fresh, cold water for cooking and making baby formula.
2. When your water has been sitting for several hours, flush your tap for 30 seconds to 2 minutes until the water becomes cold or until it reaches a steady temperature before using the water for drinking or cooking.
3. Do not boil water to remove lead. Boiling water will not reduce lead.
4. Some people choose to install a filter in their home. If you choose a water filter, follow these three rules:
 - Choose a filter designed for the specific filtration desired (chlorine, lead, *Cryptosporidium*, etc.).
 - Make sure the filter is approved by NSF International (www.nsf.org).
 - Maintain the filter as directed.
5. Test your water for lead. For information about lead-level testing, call the Fairfax Water Customer Service Department at 703-698-5800, TTY 711.
6. Regularly clean your faucet aerator. This removes particles from your household plumbing that may contain lead.
7. Consider buying low-lead fixtures. Look for fixtures with the lowest lead content. Visit www.nsf.org to learn more.

For more information:

In addition to the tips above, information about lead in drinking water, testing methods, and steps you can take to minimize exposure can be found at www.epa.gov/safewater/lead or by calling the Safe Drinking Water Hotline at 800-426-4791, TTY 711.

UNDERSTANDING THE WATER QUALITY TEST RESULTS

In general, drinking water standards are regulated by a maximum contaminant level (MCL) or a treatment technique (TT). For parameters with a MCL, the utility must sample at the required frequency and results must be below the MCL. Depending on the parameter, the MCL may apply to individual results, an average of all results in a calendar year, or an average of all results in a calendar year for a specific site.

For parameters with a TT, the utility must sample at the required frequency and is required to take action (such as a change in treatment) if specified conditions are not met. Specified conditions vary per regulation. For instance, the TT for turbidity requires action to be taken if the percentage of filtered water turbidity results less than 0.3 Nephelometric Turbidity Units (NTU) falls below 95%. If the percentage of filtered water turbidity results less than 0.3 NTU falls below 95%, the utility must perform corrective action until the specified conditions are met.

In the water quality test results on pages 14 - 25 and elsewhere in this report, you may find terms and abbreviations with which you are not familiar. On the next page is a quick reference guide to help you better understand unfamiliar terms and abbreviations.

IMPORTANT INFORMATION FROM THE ENVIRONMENTAL PROTECTION AGENCY

Drinking Water and People with Weakened Immune Systems

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those with cancer who are undergoing chemotherapy, those who have undergone organ transplants, those with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. If you are in this at-risk group, you should seek advice about drinking water from your health care provider. The Environmental Protection Agency (EPA) and Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection from *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.

KEY TERMINOLOGY AND ABBREVIATIONS

AL or Action Level - The concentration of a contaminant that, if exceeded, requires a water system to carry out an additional treatment or other action.

LRAA or Locational Running Annual Average – An ongoing annual average calculation of data at 1 specific location; not based on individual result.

MCL or Maximum Contaminant Level - 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.

MCLG or Maximum Contaminant Level Goal - 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.

MRDL or Maximum Residual Disinfectant Level – The highest level of a disinfectant allowed in drinking water.

MRDLG or Maximum Residual Disinfectant Level Goal – The level of a disinfectant in drinking water below which there is no known or expected risk to health.

N/A or Not Applicable – Does not apply to this subject or in this scenario.

ND or Non-detect – A level at which there is an inability to detect an analyte because it is indistinguishable from the background signal.

90th Percentile - Represents the highest value found out of 90 percent of the samples taken in a representative group. If the 90th percentile is greater than the action level, it will trigger a treatment or other requirements that a water system must follow.

NTU or Nephelometric Turbidity Units - A measure of cloudiness or haziness of water.

pCi/L or Picocuries per liter - Radioactivity concentration unit.

ppb or parts per billion – One ppb corresponds to one penny in \$10,000,000.

ppm or parts per million – One ppm corresponds to one penny in \$10,000.

QRAA or Quarterly Running Annual Average – An ongoing annual average calculation of data from the most recent four quarters.

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

2017 WATER QUALITY TABLES

FAIRFAX WATER CUSTOMERS IN THE LEGACY AND CITY OF FAIRFAX SERVICE AREAS

The Water Quality Laboratory at Fairfax Water monitors for more than 173 different parameters - from alkalinity to zinc! Some of the monitoring is required for regulatory purposes, some for process and emerging technology, and even more for customer information. In 2017, some 52,000 data points were gathered from 15,000 samples of water for these 173 parameters. The tables on pages 14 - 17 show the results of the monitoring that is required by state and federal regulations. The monitoring was conducted for the Griffith and Corbalis water treatment plants between January 1 and December 31, 2017, unless otherwise noted.

For more water quality information, visit the Fairfax Water website at www.fairfaxwater.org/water-quality.

SUMMARY OF FINISHED WATER CHARACTERISTICS

| Components | Ideal Goal (EPA MCLG*) | Highest Level Allowed (EPA MCL*) | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|-----------------------------------------------|------------------------|----------------------------------|----------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| Alpha Emitters (pCi/L) ¹ | 0 | 15 | ND - 3.01 | No | Decay of natural and man-made deposits |
| Barium (ppm) | 2 | 2 | ND - 0.053 | No | Discharge of drilling wastes; discharge from metal refineries; erosion from natural deposits |
| Beta/photon particles (pCi/L) ^{1, 2} | 0 | 50 | ND - 3.82 | No | Decay of natural and man-made deposits |
| Fluoride (ppm) | 4 | 4 | ND - 0.8 | No | Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories |
| Nitrate [as Nitrogen] (ppm) | 10 | 10 | 0.76 - 1.69 | No | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |
| Nitrite [as Nitrogen] (ppm) | 1 | 1 | ND - 0.02 | No | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |
| Radium 226 (pCi/L) ¹ | 0 | 5 | ND - 0.691 | No | Decay of natural and man-made deposits |

* Unless otherwise specified, MCLG and MCL apply to an individual result.

¹ As granted by the state, Fairfax Water is on reduced monitoring for this parameter based upon historical results. The results above for Alpha Emitters, Radium 226 are derived from the last monitoring period of 2014 for the Corbalis plant and 2013 for the Griffith plant. The results above for Beta/photon particles are derived from Griffith 2013 data and Corbalis 2017 data

² The MCL for the Beta particles is written as 4 mrem/year. EPA considers 50 pCi/L to be the level of concern for Beta particles.

SUMMARY OF PROCESS WATER CHARACTERISTICS

| Bromate (ppb) | Ideal Goal (EPA MCLG*) | Highest Level Allowed (EPA MCL*) ³ | Highest QRAA | Range (QRAA) | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|---------------|------------------------|-----------------------------------------------|--------------|--------------|----------------------------|-----------|-------------------------------------------|
| | 0 | QRAA = 10 | 0.5 | ND - 0.5 | ND - 10 | No | By-product of drinking water disinfection |

* Unless otherwise specified, MCLG and MCL apply to an individual result.

³ Compliance is based upon a Quarterly Running Annual Average (QRAA) of all the regulatory bromate results in a calendar year (not based on an individual result).

| Total Organic Carbon | Treatment Technique (TT) ⁴ | Range (Monthly Ratio QRAA) | Violation | Common Sources in Drinking Water |
|----------------------|---------------------------------------|----------------------------|-----------|--------------------------------------|
| | Monthly Ratio QRAA ≥ 1 | 1.2 - 1.4 | No | Naturally present in the environment |

Total Organic Carbon (TOC) has no health effects; however it provides a medium for the formation of disinfection by-products. These by-products include trihalomethanes and haloacetic acids.

⁴ Compliance is based upon a Quarterly Running Annual Average (QRAA) of the monthly ratios of actual Total Organic Carbon removal between the source water and the treated water in a calendar year (not based on an individual result). The QRAA ratio must be ≥ 1.

| Turbidity | Highest Level Allowed (EPA MCL*) | Highest Individual Result for Year | Violation | Common Sources in Drinking Water |
|-----------|---------------------------------------------------------------------|----------------------------------------------------|-----------|----------------------------------|
| | 1 NTU | 0.80 NTU | No | Soil runoff |
| | Treatment Technique (TT) | Lowest Monthly % of Samples Meeting ≤0.3 NTU Limit | Violation | Common Sources in Drinking Water |
| | Turbidity of filtered water must be ≤0.3 NTU in 95% or more samples | 99.99% | No | Soil runoff |

Turbidity levels are measured during the treatment process after the water has been filtered, but before disinfection.

* Unless otherwise specified, MCL applies to an individual result.

SUMMARY OF DISTRIBUTION SYSTEM WATER QUALITY

| | Ideal Goal (EPA MCLG) | Highest Level Allowed (EPA MCL)* | # of Positive <i>E.coli</i> samples this year | Violation | Assessment Required ⁵ | Common Sources in Drinking Water |
|----------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------|----------------------------------|----------------------------------|
| <i>E. coli</i> | 0 | Repeat sample is <i>E.coli</i> positive OR Routine sample is <i>E.coli</i> positive followed by Repeat sample that is Total Coliform positive OR System fails to take all required repeat samples following <i>E.coli</i> positive routine sample OR System fails to analyze for <i>E.coli</i> when any repeat sample tested positive for Total Coliform | Routine = 0 Repeat = 0 | No | No | Human and animal fecal waste |

* Unless otherwise specified, MCLG and MCL apply to an individual result.

⁵ If an *E. coli* MCL violation occurs, an assessment to determine the cause would be performed and corrective action taken.



Fairfax Water's Frederick P. Griffith Jr. Water Treatment Plant

SUMMARY OF DISTRIBUTION SYSTEM WATER QUALITY

| Metals | Action Level [§] | 90th Percentile Result [§] | Number of Sites Above Action Level [§] | Violation | Common Sources in Drinking Water |
|---------------------------|---------------------------|-------------------------------------|-------------------------------------------------|-----------|----------------------------------------------------------------------|
| Copper (ppm) ⁶ | 1.3 | 0.110 | 0 | No | Corrosion of household plumbing systems; erosion of natural deposits |
| Lead (ppb) ⁶ | 15 | 0.63 | 0 | No | Corrosion of household plumbing systems; erosion of natural deposits |

[§] Refer to definitions for full description of terms

⁶ As granted by the State, Fairfax Water is on reduced monitoring for these parameters based upon historical results. The results above are taken from the most recent monitoring period in 2017.

| Disinfection By-products | Ideal Goal (EPA MCLG*) | Highest Level Allowed (EPA MCL*) ⁷ | Highest LRAA for all sites | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|---------------------------------|------------------------|-----------------------------------------------|----------------------------|----------------------------|-----------|-------------------------------------------|
| Total Trihalomethanes (ppb) | 0 | LRAA = 80 | 51.5 | 8.3 – 83.6 | No | By-product of drinking water disinfection |
| Haloacetic Acids 5 (HAA5) (ppb) | 0 | LRAA = 60 | 24.9 | ND – 54.5 | No | By-product of drinking water disinfection |

* Unless otherwise specified, MCLG and MCL apply to an individual result.

⁷ Compliance is based upon site-specific Locational Running Annual Averages (LRAAs) (not based upon an individual result).

| Total Chlorine (ppm) | Ideal Goal (EPA MRDLG*) | Highest Level Allowed (EPA MRDL*) ⁸ | Highest QRAA | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|----------------------|-------------------------|------------------------------------------------|--------------|----------------------------|-----------|-----------------------------------------|
| | 4 | QRAA = 4 | 2.7 | 1.0 – 3.9 | No | Water additive used to control microbes |

* Unless otherwise specified, MRDLG and MRDL apply to an individual result.

⁸ Compliance is based upon a Quarterly Running Annual Average (QRAA) of all the regulatory chlorine results in a calendar year (not based on an individual result).

2017 WATER QUALITY TABLES

FAIRFAX WATER CUSTOMERS IN THE CITY OF FALLS CHURCH SERVICE AREAS

Even though you are a Fairfax Water customer, your water is supplied by the Washington Aqueduct Division of the U.S. Army Corps of Engineers. The tables on pages 18 - 21 show the results of the monitoring that is performed by the Washington Aqueduct and Fairfax Water as required by state and federal regulations. Unless otherwise noted, the monitoring was conducted between January 1 and December 31, 2017.

For more information about your water quality, visit www.nab.usace.army.mil/Missions/Washington-Aqueduct/Water-Quality

SUMMARY OF FINISHED WATER CHARACTERISTICS

| Components | Ideal Goal (EPA MCLG*) | Highest Level Allowed (EPA MCL*) | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|-----------------------------------------------|------------------------|----------------------------------|----------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| Arsenic (ppb) | 0 | 10 | ND – 0.4 | No | Erosion of natural deposits; runoff from orchards, runoff from glass and electronics production wastes |
| Atrazine (ppb) | 3 | 3 | ND – 0.2 | No | Runoff from herbicide used on row crops |
| Barium (ppm) | 2 | 2 | 0.03 – 0.04 | No | Discharge of drilling wastes; discharge from metal refineries; erosion from natural deposits |
| Beta/photon particles ^{1,2} pCi/L | 0 | 50 | ND – 3.0 | No | Decay of natural and man-made deposits |
| Radium 226/228 ¹ pCi/L | 0 | 5 | ND – 2.0 | No | Decay of natural and man-made deposits |
| Fluoride (ppm) | 4 | 4 | 0.4 – 0.8 | No | Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories |
| Nitrate [as Nitrogen] (ppm) | 10 | 10 | 0.6 – 2.0 | No | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |

| Components | Ideal Goal (EPA MCLG*) | Highest Level Allowed (EPA MCL*) | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|-----------------------------|------------------------|----------------------------------|----------------------------|-----------|---------------------------------------------------------------------------------------------|
| Nitrite [as Nitrogen] (ppm) | 1 | 1 | ND – 0.01 | No | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |
| Simazine (ppb) ² | 4 | 4 | ND – 0.05 | No | Herbicide runoff |

* Unless otherwise specified, MCLG and MCL apply to an individual result.

¹ As granted by the EPA, Washington Aqueduct is on reduced monitoring for this parameter based upon historical results. The results above are taken from the last monitoring period in 2017.

² Detects for Beta/photon particles, and Simazine were below the minimum detection limits prescribed in the Consumer Confidence Rule as stated in 40 CFR 141.151 (d).

| Total Organic Carbon | Treatment Technique (TT) ³ | Range (QRAA of Monthly Ratio) | Violation | Common Sources in Drinking Water |
|----------------------|---------------------------------------|-------------------------------|-----------|--------------------------------------|
| | Monthly Ratio QRAA ≥ 1 | 1.3 - 1.4 | No | Naturally present in the environment |

Total Organic Carbon (TOC) has no health effects; however it provides a medium for the formation of disinfection by-products. These by-products include trihalomethanes and haloacetic acids.

³ Compliance is based upon a Quarterly Running Annual Average (QRAA) of the monthly ratios of actual Total Organic Carbon removal between the source water and the treated water in a calendar year (not based on an individual result). The QRAA ratio must be ≥ 1.

| Turbidity | Highest Level Allowed (EPA MCL*) | Highest Individual Result for Year | Violation | Common Sources in Drinking Water |
|-----------|---------------------------------------------------------------------|----------------------------------------------------|-----------|----------------------------------|
| | 1 NTU | 0.08 NTU | No | Soil runoff |
| Turbidity | Treatment Technique (TT) | Lowest Monthly % of Samples Meeting ≤0.3 NTU Limit | Violation | Common Sources in Drinking Water |
| | Turbidity of filtered water must be ≤0.3 NTU in 95% or more samples | 100% | No | Soil runoff |

* Unless otherwise specified, MCL applies to an individual result.

SUMMARY OF DISTRIBUTION SYSTEM WATER QUALITY

| E. coli | Ideal Goal (EPA MCLG) | Highest Level Allowed (EPA MCL)* | # of Positive E.coli samples this year | Violation | Assessment Required ⁴ | Common Sources in Drinking Water |
|---------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------|----------------------------------|----------------------------------|
| | 0 | Repeat sample is <i>E.coli</i> positive OR Routine sample is <i>E.coli</i> positive followed by Repeat sample that is Total Coliform positive OR System fails to take all required repeat samples following <i>E.coli</i> positive routine sample OR System fails to analyze for <i>E.coli</i> when any repeat sample tested positive for Total Coliform | Routine = 0 Repeat = 0 | No | No | Human and animal fecal waste |

* Unless otherwise specified, MCLG and MCL apply to an individual result.

⁴ If an *E. coli* MCL violation occurs, an assessment to determine the cause would be performed and corrective action taken.



Washington Aqueduct's Dalecarlia Water Treatment Plant

SUMMARY OF DISTRIBUTION SYSTEM WATER QUALITY

| Metals | Action Level [§] | 90th Percentile Result [§] | Number of Sites Above Action Level [§] | Violation | Common Sources in Drinking Water |
|---------------------------|---------------------------|-------------------------------------|-------------------------------------------------|-----------|----------------------------------------------------------------------|
| Copper (ppm) ⁵ | 1.3 | 0.110 | 0 | No | Corrosion of household plumbing systems; erosion of natural deposits |
| Lead (ppb) ⁵ | 15 | 0.63 | 0 | No | Corrosion of household plumbing systems; erosion of natural deposits |

§ Refer to definitions for full description of terms

⁵ As granted by the State, Fairfax Water is on reduced monitoring for these parameters based upon historical results. The results above are taken from the most recent monitoring period in 2017.

| Disinfection By-products | Ideal Goal (EPA MCLG*) | Highest Level Allowed (EPA MCL*) ⁶ | Highest LRAA for all sites | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|--------------------------------------------|------------------------|-----------------------------------------------|----------------------------|----------------------------|-----------|-------------------------------------------|
| Total Trihalomethanes (ppb) | 0 | LRAA = 80 | 51.5 | 8.3 – 83.6 | No | By-product of drinking water disinfection |
| Haloacetic Acids ⁵ (HAA5) (ppb) | 0 | LRAA = 60 | 24.9 | ND – 54.5 | No | By-product of drinking water disinfection |

* Unless otherwise specified, MCLG and MCL apply to an individual result.

⁶ Compliance is based upon site-specific Locational Running Annual Averages (LRAAs) (not based upon an individual result).

| Total Chlorine (ppm) | Ideal Goal (EPA MRDLG*) | Highest Level Allowed (EPA MRDL*) ⁷ | Highest QRAA | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|----------------------|-------------------------|------------------------------------------------|--------------|----------------------------|-----------|-----------------------------------------|
| | 4 | QRAA = 4 | 2.7 | 1.0 – 3.9 | No | Water additive used to control microbes |

* Unless otherwise specified, MRDLG and MRDL apply to an individual result.

⁷ Compliance is based upon a Quarterly Running Annual Average (QRAA) of all the regulatory chlorine results in a calendar year (not based on an individual result).

2017 WATER QUALITY TABLES

FAIRFAX WATER CUSTOMERS IN THE ARLINGTON SPECIAL SERVICE AREA

Even though you are a Fairfax Water customer, your water is supplied by the Washington Aqueduct Division of the U.S. Army Corps of Engineers. The tables on pages 22 - 25 show the results of the monitoring that is performed by the Washington Aqueduct and Fairfax Water as required by state and federal regulations. Unless otherwise noted, the monitoring was conducted between January 1 and December 31, 2017.

For more information about your water quality, visit www.nab.usace.army.mil/Missions/Washington-Aqueduct/Water-Quality

SUMMARY OF FINISHED WATER CHARACTERISTICS

| Components | Ideal Goal (EPA MCLG*) | Highest Level Allowed (EPA MCL*) | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|-----------------------------------------------|------------------------|----------------------------------|----------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| Arsenic (ppb) | 0 | 10 | ND – 0.4 | No | Erosion of natural deposits; runoff from orchards, runoff from glass and electronics production wastes |
| Atrazine (ppb) ¹ | 3 | 3 | ND – 0.09 | No | Runoff from herbicide used on row crops |
| Barium (ppm) | 2 | 2 | 0.03 – 0.04 | No | Discharge of drilling wastes; discharge from metal refineries; erosion from natural deposits |
| Beta/photon particles ^{1,2} pCi/L | 0 | 50 | ND – 3.0 | No | Decay of natural and man-made deposits |
| Radium 226/228 ² pCi/L | 0 | 5 | ND – 2.0 | No | Decay of natural and man-made deposits |
| Fluoride (ppm) | 4 | 4 | 0.6 – 0.8 | No | Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories |
| Nitrate [as Nitrogen] (ppm) | 10 | 10 | 0.6 – 2.0 | No | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |

| Components | Ideal Goal (EPA MCLG*) | Highest Level Allowed (EPA MCL*) | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|-----------------------------|------------------------|----------------------------------|----------------------------|-----------|---------------------------------------------------------------------------------------------|
| Nitrite [as Nitrogen] (ppm) | 1 | 1 | ND – 0.01 | No | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |

* Unless otherwise specified, MCLG and MCL apply to an individual result.

¹ Detects for Atrazine, and Beta/alpha particles, were below the minimum detection limits prescribed in the Consumer Confidence Rule as stated in 40 CFR 141.151 (d).

² As granted by the regulatory agency, Washington Aqueduct is on reduced monitoring for this parameter based upon historical results. The results above are taken from the last monitoring period in 2017.

| Total Organic Carbon | Treatment Technique (TT) ³ | Range (QRAA of Monthly Ratio) | Violation | Common Sources in Drinking Water |
|----------------------|---------------------------------------|-------------------------------|-----------|--------------------------------------|
| | Monthly Ratio QRAA ≥ 1 | 1.3 - 1.4 | No | Naturally present in the environment |

Total Organic Carbon (TOC) has no health effects; however it provides a medium for the formation of disinfection by-products. These by-products include trihalomethanes and haloacetic acids.

³ Compliance is based upon a Quarterly Running Annual Average (QRAA) of the monthly ratios of actual Total Organic Carbon removal between the source water and the treated water in a calendar year (not based on an individual result). The QRAA ratio must be ≥ 1.

| Turbidity | Highest Level Allowed (EPA MCL*) | Highest Individual Result for Year | Violation | Common Sources in Drinking Water |
|-----------|---------------------------------------------------------------------|----------------------------------------------------|-----------|----------------------------------|
| | 1 NTU | 0.08 NTU | No | Soil runoff |
| Turbidity | Treatment Technique (TT) | Lowest Monthly % of Samples Meeting ≤0.3 NTU Limit | Violation | Common Sources in Drinking Water |
| | Turbidity of filtered water must be ≤0.3 NTU in 95% or more samples | 100% | No | Soil runoff |

* Unless otherwise specified, MCL applies to an individual result.

SUMMARY OF DISTRIBUTION SYSTEM WATER QUALITY

| | Ideal Goal (EPA MCLG) | Highest Level Allowed (EPA MCL)* | # of Positive <i>E. coli</i> samples this year | Violation | Assessment Required ⁴ | Common Sources in Drinking Water |
|----------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-----------|----------------------------------|----------------------------------|
| <i>E. coli</i> | 0 | Repeat sample is <i>E. coli</i> positive OR Routine sample is <i>E. coli</i> positive followed by Repeat sample that is Total Coliform positive OR System fails to take all required repeat samples following <i>E. coli</i> positive routine sample OR System fails to analyze for <i>E. coli</i> when any repeat sample tested positive for Total Coliform | Routine = 0 Repeat = 0 | No | No | Human and animal fecal waste |

* Unless otherwise specified, MCLG and MCL apply to an individual result.

⁴ If an *E. coli* MCL violation occurs, an assessment to determine the cause would be performed and corrective action taken.

| The following language must be included in CCR due to triggered Level 1 Assessment: | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Terminology | Definition |
| Level 1 Assessment | A Level 1 assessment is a study of the waterworks to identify potential problems and determine, if possible, why total coliform bacteria have been found in our waterworks. |
| Health Effects Language - Presence of Coliforms | |
| Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that are found. | |
| Activity associated with a Level 1 Assessment | |
| During the past year, we were required to conduct one Level 1 assessment. One Level 1 assessment was completed. In addition, we were required to take one corrective action and we completed one of these actions | |

A Level 1 Assessment triggered by total coliform positive results, resulted in the discovery of premise plumbing cross connections, which were corrected by the property owner. The original total coliform positive results were invalidated by VDH due to the presence of a domestic or other non-distribution system plumbing problem.

SUMMARY OF DISTRIBUTION SYSTEM WATER QUALITY

| Metals | Action Level § | 90th Percentile Result § | Number of Sites Above Action Level § | Violation | Common Sources in Drinking Water |
|---------------------------|----------------|--------------------------|--------------------------------------|-----------|----------------------------------------------------------------------|
| Copper (ppm) ⁵ | 1.3 | 0.025 | 0 | No | Corrosion of household plumbing systems; erosion of natural deposits |
| Lead (ppb) ⁵ | 15 | <0.78 | 0 | No | Corrosion of household plumbing systems; erosion of natural deposits |

§ Refer to definitions for full description of terms

⁵ As granted by the State, Fairfax Water is on reduced monitoring for these parameters based upon historical results. The results above are taken from the most recent monitoring period in 2015.

| Disinfection By-products | Ideal Goal (EPA MCLG*) | Highest Level Allowed (EPA MCL*) ⁶ | Highest LRAA for all sites | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|---------------------------------|------------------------|-----------------------------------------------|----------------------------|----------------------------|-----------|-------------------------------------------|
| Total Trihalomethanes (ppb) | 0 | LRAA = 80 | 42.8 | 26.1 – 68.7 | No | By-product of drinking water disinfection |
| Haloacetic Acids 5 (HAA5) (ppb) | 0 | LRAA = 60 | 30.3 | 18.2 – 49.2 | No | By-product of drinking water disinfection |

* Unless otherwise specified, MCLG and MCL apply to an individual result.

⁶ Compliance is based upon site-specific Locational Running Annual Averages (LRAAs) (not based upon an individual result).

| Total Chlorine (ppm) | Ideal Goal (EPA MRDLG*) | Highest Level Allowed (EPA MRDL*) ⁷ | Highest QRAA | Range (Individual Results) | Violation | Common Sources in Drinking Water |
|----------------------|-------------------------|------------------------------------------------|--------------|----------------------------|-----------|-----------------------------------------|
| | 4 | QRAA = 4 | 2.5 | 1.5 – 3.2 | No | Water additive used to control microbes |

* Unless otherwise specified, MRDLG and MRDL apply to an individual result.

⁷ Compliance is based upon a Quarterly Running Annual Average (QRAA) of all the regulatory chlorine results in a calendar year (not based on an individual result).

2017 STATEMENT ON *CRYPTOSPORIDIUM* MONITORING

Cryptosporidium is a microbial pathogen sometimes found in surface water throughout the United States. Although filtration removes *Cryptosporidium*, the most commonly used filtration methods cannot guarantee 100 percent removal. Fairfax Water consistently maintains its filtration process in accordance with regulatory guidelines to maximize removal efficiency. Our monitoring indicates the occasional presence of these organisms in the source water. Current test methods do not allow us to determine whether the organisms are dead or if they are capable of causing disease.

Ingestion of *Cryptosporidium* may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection.

Cryptosporidium must be ingested in order to cause disease. It may be spread through means other than drinking water, such as other people, animals, water, swimming pools, fresh food, soils and any surface that has not been sanitized after exposure to feces.

Fairfax Water has completed monitoring the Potomac River and Occoquan Reservoir for compliance with Round 2 of the EPA Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR Round 2). The EPA created this rule to provide for increased protection against microbial pathogens, such as *Cryptosporidium*, in public water systems that use surface water sources. Fairfax Water's LT2ESWTR Round 2 monitoring program began in April 2015 and involved the collection of one sample from water treatment plant sources each month for a period of two years. Monitoring for compliance with the LT2ESWTR Round 2 was completed in March 2017.

Under the LT2ESWTR Round 2, the average *Cryptosporidium* concentration determines whether additional treatment measures are needed. A *Cryptosporidium* concentration of 0.075 oocysts/Liter triggers additional water treatment measures. Fairfax Water's raw water *Cryptosporidium* concentrations were below this threshold. Results for LT2ESWTR Round 2 monitoring for the period of 2015-2017 are as follows:

LEGACY AND CITY OF FAIRFAX SERVICE AREAS

| SOURCE (BEFORE TREATMENT) | MEAN <i>CRYPTOSPORIDIUM</i> CONCENTRATION (OOCYSTS/LITER) | FINAL BIN ASSIGNMENT UNDER LT2ESWTR ROUND 2 |
|---------------------------|-----------------------------------------------------------|---------------------------------------------|
| Potomac River | 0.000 | Bin 1 (no additional treatment required) |
| Occoquan Reservoir | 0.007 | Bin 1 (no additional treatment required) |

THE CITY OF FALLS CHURCH AND ARLINGTON SPECIAL SERVICE AREAS

Cryptosporidium was monitored in the source water monthly in 2017. *Cryptosporidium* oocysts were detected in six samples collected at the Little Falls and/or Great Falls Intakes in January, February, May, and October 2017 with concentrations ranging from 0.093 to 0.279 oocysts/L. No additional treatment measures were required at the Washington Aqueduct water treatment plants.



EMERGENCY PREPAREDNESS

In our area, severe weather and other emergencies can happen at any time. At Fairfax Water, we never stop preparing for these type of unexpected events. We do take all prudent measures to minimize the possibility of service interruption. Because we monitor the water system 24/7, we always have staff on site and ready to respond to an emergency, but we can't do it alone. We need your help to prepare your family for emergencies.

Having a supply of clean water is a top priority in an emergency situation. Even though Fairfax Water has more than one water treatment plant to provide back-up in emergencies, you could still temporarily lose access to clean water.

Take steps now to store emergency water supplies. Here are some helpful tips:

- Store at least one gallon of water per person per day for a minimum three-day supply.
- This means a family of four needs 12 gallons.
- Be sure to account for pets. Dogs and cats typically need one gallon each per day.
- Store water in a cool, dark place in your home, office, or car. Replace water every six months and be sure to check expiration dates on store-bought water.
- Use of food-grade water storage containers, such as those found at surplus or camping-supply stores, is recommended if you prepare stored water yourself.
- If you use your own containers for storing water, make sure to sanitize them first. To sanitize, wash containers with dishwashing soap and rinse with water. Sanitize by swishing a solution of one teaspoon of liquid household chlorine bleach to a quart of water on all interior surfaces of the container. Rinse thoroughly with clean water before use.
- Do not reuse containers that have ever held a toxic substance. Also, do not use containers that can break, like glass or those without a tight seal. Plastic milk bottles or waxy cartons can be difficult to clean and can break down over time.

For more information on preparing for an emergency, visit www.ReadyNOVA.org and complete your family preparedness plan. For business owners, www.ReadyNOVA.org has a business preparedness planner to help you stay in business during the next disaster.



ADDITIONAL RESOURCES

Fairfax Water Services

www.fairfaxwater.org

Questions about water service:

703-698-5800

After Hours/Emergencies:

703-698-5613

To report a water main break:

www.fwnotifications.org/public

watermainbreak@fairfaxwater.org

703-698-5613

Questions about billing:

703-698-5800

All other Fairfax Water departments:

703-698-5600

If you have comments or suggestions about this report, please contact us at:

pr@fairfaxwater.org

703-698-5600

Sewer Services

Fairfax County

Department of Public Works

703-323-1211

[www.fairfaxcounty.gov/
dpwes/wastewater](http://www.fairfaxcounty.gov/dpwes/wastewater)

City of Falls Church

Department of Public Works

703-248-5350

www.fallschurchva.gov

City of Fairfax

Department of Public Works

703-385-7810

www.fairfaxva.gov

Dig with C.A.R.E.

Call before you dig! 1-800-552-7001 or 811

<http://va811.com>