



2008 Annual Water Quality Report



Alexandria District

PWS ID: VA6510010

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Information on the Internet

Virginia American Water (www.vawc.com) provides water service to 25, 976 customers in the City of Alexandria. There is a total of 55,000 customers in Virginia including the Cities of Alexandria and Hopewell, and portions of Prince George, Westmoreland, Essex, King William, Lancaster, and Northumberland counties.

Founded in 1886, American Water is the largest investor-owned U.S. water and wastewater utility company. With headquarters in Voorhees, N.J., the company employs more than 7,000 dedicated professionals who provide drinking water, wastewater and other related services to approximately 15 million people in 32 states and Ontario, Canada.

The U.S. Environmental Protection Agency (USEPA) Office of Water

(www.epa.gov/safewater) 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 Department of Health and the Virginia Department of Environmental Quality have web sites that provide complete and current information on water issues in Virginia. These web sites are located at www.vdh.state.va.us and www.deq.state.va.us.

All these web sites have numerous links that will direct you to other professional organizations, public education and public health topics related to water.

What is a Water Quality Report?

To comply with Virginia Department of Health and USEPA regulations, Virginia American Water issues a report annually describing the quality of your drinking water. The purpose of this report is to provide you an overview of last year's (2008) drinking water quality. It includes details about where your water comes from and what it contains. We hope the report will raise your understanding of drinking water issues and awareness of the need to protect your drinking water sources.

Where Does My Water Come From?

Virginia American Water, Alexandria District is classified as a consecutive water system. Your drinking water comes from two surface water treatment plants owned and operated by Fairfax Water. The J. J. Corbais water treatment plant is located on the Potomac River. The Griffith plant is at the Occoquan Reservoir. To learn more about our watershed on the Internet, go to USEPA's Search Your Watershed at www.epa.gov/safewater.

Cryptosporidium Information for Potomac River and Occoquan Reservoir

Cryptosporidium information for Potomac River and Occoquan Reservoir

U.S. 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. Their monitoring indicates the presence of these organisms in the source water. Current test methods do not allow them to determine if 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, immunocompromised 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 to cause disease, and 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.



2223 Duke Street
Alexandria, VA 22314

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

This report contains important information about your drinking water. If you do not understand it, please have someone translate it for you.



Printed on recycled paper. Each ton of recycled paper saves 7,000 gallons of water.

Fairfax Water has completed monitoring of the Potomac River and Occoquan Reservoir for compliance with the USEPA's Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). The USEPA 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 monitoring program began in 2004, and involved the collection of two samples from water treatment plant sources each month for a period of two years. Once monitoring for compliance with the LT2ESWTR was complete, Fairfax Water continued to monitor for *Cryptosporidium* at water treatment plant sources. The data collected in 2008 is summarized below:

Source (before treatment)	Average Cryptosporidium Concentration (oocysts/Liter)
Potomac River	0.0675
Occoquan Reservoir	0

Under the LT2ESWTR, the average *Cryptosporidium* concentration determines if additional treatment measures are needed. A *Cryptosporidium* concentration of 0.075 oocysts/Liter will trigger additional water treatment measures. As noted in the table above, Fairfax Water's source water *Cryptosporidium* concentrations continue to be below this threshold in 2008.

NOTICE TO CUSTOMERS OF THE CITY OF ALEXANDRIA WATER SYSTEM

In keeping with National Primary Drinking Water Regulations, we are obliged to inform you that in June, 2008, we were in violation of state regulations regarding monitoring. We are required to monitor your drinking water for specific contaminants on a regular basis including time sensitive bacteriological tests. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During June 2008, a delay in sample delivery caused 25 samples to be invalid, which resulted in only 95 of the required 120 samples being valid for bacteriological tests. Consequently, the bacteriological quality of the 25 invalid samples is unknown, and therefore we cannot be sure of the quality of your drinking water during that time. However, disinfectant residual measurements, required at the same time as the collection of bacteriological samples, were analyzed for all 120 samples and were satisfactory and the absence of coliform bacteria.

What should you do?

There is nothing you need to do. You may continue to drink the water. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will announce any emergencies on TV and/or radio station when necessary. We will also post this information on our web site at www.amwater.com/vaaw/. **What is being done?** New measures were implemented to insure that the laboratory conducts the analyses within the required time period, according to the state drinking water regulations. For more information, please contact David Barney at 703-706-3885 or david.barney@amwater.com.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). Please post this notice in a public place or distribute copies by hand or mail.

Water Information Sources

- Virginia American Water www.vawc.com
- Virginia Department of Health www.vdh.state.va.us
- United States Environmental Protection Agency (USEPA) www.epa.gov/safewater
- Safe Drinking Water Hotline: (800) 426-4791
- Centers for Disease Control and Prevention www.cdc.gov
- American Water Works Association www.awwa.org
- National Library of Medicine/National Institute of Health www.nlm.nih.gov/medlineplus

Share This Report

Landlords, businesses, schools, hospitals and other groups are encouraged to share this important water quality information with water users at their location who are not billed customers of Virginia American Water and therefore do not receive this report directly.

Water Quality Statement

We are pleased to report that during the past year, the potable water delivered to your home or business complied with, or was better than, all state and federal drinking water requirements. For your information, we have compiled a list in the table, showing what substances were detected in your drinking water during 2008. We feel it is important that you know exactly what was detected and how much of the substance was present in the water.

Your Drinking Water Quality Meets State and Federal Requirements

Turbidity – A Measure of the Clarity of the Water at the Fairfax County J.J. Corbalis & Griffith Treatment Facilities							
Plants	Substance (units)	Year Sampled	MCL	Highest Single Measurement	Lowest % of Measurement Meeting TT	Compliance Achieved	Typical Source
Fairfax County	Turbidity (NTU)	2008	TT ¹	0.38	99.922	Yes	Soil runoff

¹ All turbidity readings were below the treatment technique requirements of not greater than 1 NTU for any single measurement and less than or equal to 0.3 NTU in 95% of all samples taken.

Total Organic Carbon Removal Measured at the Fairfax County J.J. Corbalis and Griffith Treatment Facilities							
Substance (units)	Year Sampled	MCL	% Removal Required	% Removal Achieved	Range % Removal Achieved, Low-High	Compliance Achieved	Typical Source
Total Organic Carbon (TOC) (% removal) ²	2008	TT	15 - 45 (average = 32.1)	average = 39.6%	18.8 – 63.0%	Yes	Naturally present in environment, also from decaying vegetation

² Total Organic Carbon has no health effects. However, it provides a medium for the formation of disinfection by-products. These by-products include trihalomethanes and haloacetic acids. Compliance with the treatment technique reduces the formation of these disinfection by-products. Compliance is based on an annual average of quarterly results.

Bacterial Results (Measured in the Alexandria Distribution Network)							
Substance (units)	Year Sampled	MCLG	MCL ³	Highest Percentage Detected	Compliance Achieved	Typical Source	
Total Coliform (% Positive samples)	2008	0	5 %	1	Yes	Bacteria naturally present in the environment	

³ No more than 5% of all the samples tested monthly can be positive.

Disinfection Levels (Measured in the Alexandria Distribution Network)							
Substance (units)	Year Sampled	MRDL	MCL	Highest Monthly Average	Range Low-High	Compliance Achieved	Typical Source
Chloramines (ppm) as (Cl ₂)	2008	4	NA	3.0	0.9 - 4.4	Yes	Disinfectant used to control microbes

Regulated Substances (Measured in the Alexandria Distribution System) - Disinfection By-products							
Substance (units)	Year Sampled	MCL	Average Amount Detected	Range Low-High	Compliance Achieved	Typical Source	
Total Trihalomethanes (TTHMs) (ppb) ⁴	2008	80	25	11 – 65	Yes	By-product of drinking water chlorination	
Total Haloacetic Acids (THAA5) (ppb) ⁴	2008	60	15	5 – 52	Yes	By-product of drinking water chlorination	

⁴ Results based on quarterly running annual average based on the 4 current compliance sample sites.

Tap Water Samples (from the Alexandria distribution system): Lead and Copper Results for May - September, 2008								
Substance (units)	Period of Year Sampled	MCLG	Action Level	Amount Detected 90th Percentile	Number of Samples	Homes Above Action Level	Compliance Achieved	Typical Source
Copper (ppm)	May - September	1.3	1.3	0.093	59	0	Yes	Corrosion of household plumbing
Lead (ppb)	May - September	0	15	< 1.0	59	1	Yes	Corrosion of household plumbing

Regulated Substances (Measured in the Water Entering the Alexandria Distribution Network by Fairfax Water from J.J. Corbalis, Griffith, Occoquan, & Lorton Treatment Facilities)							
Substance (units)	Year Sampled	MCLG	MCL	Average Amount Detected	Range Low-High	Compliance Achieved	Typical Source
Atrazine (ppb)	2008	3	3	0.03	ND to 0.06	Yes	Runoff from herbicide used on row crops
Barium (ppm)	2008	2	2	0.036	0.026 – 0.047	Yes	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Mercury (inorganic) (ppb)	2008	2	2	ND	ND - 0.55	Yes	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills and cropland
Beta/photon emitters ⁵ (pCi/L) ⁶	2007 & 2008	0	50	2.3	ND- 4.3	Yes	Decay of natural and man-made deposits
Alpha Emitters (pCi/L) ⁷	2003, 2007	0	15	0.6	0.2 - 1.4	Yes	Erosion of natural deposits
Radium 228 (pCi/L) ⁷	2003, 2007	0	5	0.6	0.2 - 1.2	Yes	Erosion of natural deposits
Fluoride (ppm)	2008	4	4	1.0	0.7 - 1.1	Yes	Erosion of natural deposits; Water additive which promotes strong teeth
Nitrate - as nitrogen (ppm)	2008	10	10	1.0	0.4 - 1.6	Yes	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite - as nitrogen (ppm)	2008	1	1	ND	ND to 0.02	Yes	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits

⁵ The MCL for the Beta particles is written as 4 mrem/year. USEPA considers 50 pCi/L to be the level of concern for Beta particles.

⁶ Results are an average of Corbalis 2008 and Griffith 2007 plant data points.

⁷ Testing performed in 2003 for Corbalis, Lorton, and River Station plants; 2007 for Griffith plant.

Unregulated Substances (Measured in the Water Entering the Alexandria Distribution Network by Fairfax Water from J.J. Corbalis and Griffith Treatment Facilities)							
Substances (units)	Year Sampled	MCLG	MCL	Average Amount Detected	Range Low-High	Compliance Achieved	Typical Source
Chloroform (ppb)	2008	NRL ⁸	NRL ⁸	6.2	2.1 – 7.6	NA	By-product of drinking water disinfection
Bromodichloromethane (ppb)	2008	NRL ⁸	NRL ⁸	6.9	2.4 – 8.4	NA	By-product of drinking water disinfection
Bromoform (ppb)	2008	NRL ⁸	NRL ⁸	0.5	ND	NA	By-product of drinking water disinfection
Chlorodibromomethane (ppb)	2008	NRL ⁸	NRL ⁸	5.2	1.9 – 6.1	NA	By-product of drinking water disinfection

⁸ NRL = No regulatory limit.

Unregulated Substances (Measured in the Alexandria Distribution System)							
Substances (units)	Year Sampled	MCLG	MCL	Average Amount Detected	Range Low-High	Compliance Achieved	Typical Source
Chloroform (ppb)	2008	NRL ⁸	NRL ⁸	15.1	3.7 – 50.4	NA	By-product of drinking water disinfection
Bromodichloromethane (ppb)	2008	NRL ⁸	NRL ⁸	6.3	3.6 - 11.5	NA	By-product of drinking water disinfection
Chlorodibromomethane (ppb)	2008	NRL ⁸	NRL ⁸	3.2	2.2 - 5.1	NA	By-product of drinking water disinfection

⁸ NRL = No regulatory limit.

Note on special perchlorate monitoring study done by Fairfax Water 2007/2008

Perchlorate is a naturally occurring as well as a man-made compound. Its presence in drinking water is currently unregulated and utilities are not required to monitor for it. In mid 2007, Fairfax Water began voluntarily participating in a 12-month non-regulatory perchlorate sampling project for the Potomac River funded by the USEPA. The USEPA has established a reference dose of 24.5 parts per billion (ppb) for perchlorate. A reference dose is a scientific estimate of a daily exposure level that is not expected to cause adverse health effects in humans. The reference dose will be used in USEPA's ongoing efforts to address perchlorate in drinking water.

The source and treated water samples collected in 2007 and 2008 from our Potomac River water filtration plant showed only trace amounts of perchlorate at levels less than 1.1 parts per billion (ppb), far below the USEPA reference dose level of 24.5 ppb. Based on USEPA's research, the levels of perchlorate observed in the Potomac plant waters are not considered to be a health concern. If you have special health concerns, you may want to get additional information from the USEPA at www.epa.gov/safewater/ccl/perchlorate/perchlorate.html or contact the USEPA's Safe Drinking Water Hotline at 800-426-4791, TTY 711.

How to Read the Data Tables

Virginia American Water conducts extensive monitoring to ensure that your water meets all water quality standards. The results of our monitoring are reported in the tables to the left. While most monitoring was conducted in 2008, certain substances are required to be monitored less than once per year and represent the most current results available. For help with interpreting this table, see the “Table Definitions” section.

Starting with a **Substance**, read across. **Year Sampled** is usually in 2008 or year prior. **MCL** shows the highest level of substance (contaminant) allowed. **MCLG** is the goal level for that substance (this may be lower than what is allowed). **Average Amount Detected** represents the measured amount (less is better). **Range** tells the highest and lowest amounts measured. A **Yes** under **Compliance Achieved** means the amount of the substance met government requirements. **Typical Source** tells where the substance usually originates.

Unregulated substances are measured, but maximum allowed contaminant levels have not been established by the government.

Table Definitions and Abbreviations

- Action Level:** The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.
- MCL (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 (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 (Maximum Residual Disinfectant Level):** The highest level of disinfectant routinely allowed in drinking water. Addition of a disinfectant is necessary for control of microbial contaminants.
- MRDLG (Maximum Residual Disinfectant Level Goal):** The level of 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 contamination.
- NA:** Not applicable
- ND:** Not detected
- NRL:** No regulatory limit
- NTU - Nephelometric Turbidity Units:** Measurement of the clarity, or turbidity, of water.
- pCi/L (picocuries per liter):** Measurement of the natural rate of disintegration of radioactive contaminants in water (also beta particles).
- ppm (parts per million):** One part substance per million parts water, or milligrams per liter.
- ppb (parts per billion):** One part substance per billion parts water, or micrograms per liter.
- TT (Treatment Technique):** A required process intended to reduce the level of a contaminant in drinking water.
- SS:** Single sample
- %:** - means percent.
- >:** - means greater than.
- <:** - means less than

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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the USEPA's Safe Drinking Water Hotline (800) 426-4791.

Lead in Drinking Water

Although we regularly test lead levels in your drinking water, it is possible that lead and/or copper levels at your home are higher because of materials used in your plumbing. If present, elevated levels of lead can cause serious 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. Virginia American Water is responsible or 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 and copper exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. You can also use cold water for cooking, drinking, or making baby formula; use low lead containing faucets; and when replacing or working on pipes, use lead-free solder. Virginia American Water remains in full compliance with all of the requirements dealing with lead in drinking water. If you are concerned about lead in your drinking 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 National Lead Information Center (800-LEAD-FYI) or the Safe Drinking Water Hotline at 1-800-426-4791 or at http://www.epa.gov/safewater/lead.

Substances Expected to be 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 call the U.S. Environmental Protection Agency's Safe Drinking Water Hotline (800) 426-4791.

The source of drinking water (both tap water and bottled water) includes 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, or wildlife.

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and may also come from gas stations, urban stormwater runoff, and septic systems.

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

Other Water Quality Parameters of Interest in Water, Not Regulated

What is the pH range of your water?

Water produced by Fairfax Water’s treatment facilities averaged 7.2 pH units in the Alexandria Distribution system. A pH of 7.0 is considered neutral, neither acidic or nor basic.

How hard is your water?

Total hardness is a measure of the concentration of two minerals naturally present in water: calcium and magnesium. High hardness levels cause soap not to foam as easily as it would at lower levels. Hardness levels averaged 94 parts per million or 5.5 grains per gallon which is considered to be moderately hard.

Fairfax Water Spring 2009 Statement on Emerging Water Quality Issues

Protecting the health of our customers is American Water’s and our provider, Fairfax Water’s, mission. An emerging water quality issue of particular interest this year in the media is a group of compounds including Pharmaceuticals and Personal Care Products (PPCP) and Endocrine Disrupting Compounds (EDC). While we understand that PPCP’s and EDC’s in source and drinking water have been a recent issue of national interest, to date research has not demonstrated an impact on human health from these compounds at the trace levels discovered in drinking water.

There are tens of thousands of compounds that are considered Endocrine Disrupting Compounds (EDCs) and Pharmaceuticals and Personal Care Products (PPCPs). In establishing a protocol for monitoring these type compounds Fairfax Water carefully considered the most prudent use of its resources in researching a suitable list of compounds to test for. They looked at influences in the Potomac and Occoquan River Watersheds (industrial, agricultural uses, etc.) to determine which compounds are most likely to be present. They then looked at their treatment process to determine which compounds would not be readily removed through treatment. Finally, they looked at which compounds could be measured in water. Fairfax Water chose 19 compounds to test for in the source and treated waters. Samples were sent to an independent laboratory proficient in this type of analysis.

To date, none of these compounds have been detected in the finished drinking water. As expected, they found very, very small amounts of a few compounds in the source waters, the Potomac River and Occoquan Reservoir. In addition to research and testing, Fairfax Water continually employs advanced water treatment technologies, ozonation and granular activated carbon (GAC). Ozone breaks down organic matter in the water into small particles that are then captured in the GAC filtration process. Research has shown that using the combination of ozone and GAC, which Fairfax Water uses to treat all of the water in its system, is highly effective in removing broad categories of PPCP’s and EDC’s.

Research shows that there is no indication of human health concern at the levels found in the source waters. To view the results from Fairfax Water’s monitoring of these compounds, and learn more about emerging water quality issues, visit the Fairfax Water Web site at www.fairfaxwater.org/current/special_statement_120408.htm or call 703 698 5600, TTY 711.