

Annual Drinking Water Quality Report

Carver Gardens YCDPW

INTRODUCTION

This Annual Drinking Water Quality Report for calendar year **2017** 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 we want you to understand the efforts we make 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 questions about this report, want additional information about any aspect of your drinking water, or want to know how to participate in decisions that may affect the quality of your drinking water, please contact:

Mr. Richard H. Sutton, Jr., Project Manager, Division of Utilities, Department of Environmental Services, York County, Virginia, at (757) 890-3771

GENERAL INFORMATION

Drinking water, including bottled drinking water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

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: (1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. (2) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or 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 agricultural, urban stormwater runoff, and residential uses. (4) 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. (5) Radioactive contaminants, which can be naturally occurring or be the results of oil and gas production and mining activities. To ensure that tap water is safe to drink, EPA prescribes regulations, which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

SOURCES AND TREATMENT OF YOUR DRINKING WATER

The sources of your drinking water are surface water groundwater as described below:

Newport News Waterworks supplies your drinking water, which comes from Lee Hall wells and Chickahominy River. The primary source of your drinking water is surface water. The water is pumped from the river to five reservoirs. From these storages, the water is transferred to Harwood's Mill and Lee Hall treatment plants. Water treatment includes chemical coagulation, clarification, filtration, pH control, fluoridation, corrosion control and chloramination.

Alum is added to help remove large particles from the water. Filtration is installed to remove small particles from the water. Ozone, chlorine, and ammonia are added to kill bacteria and viruses in the water. Lime is added to maintain a proper pH in the water. Fluoride is added to strengthen teeth and reduce tooth decay. Zinc orthophosphate is added to control corrosion in the distribution system piping.

The secondary source of your drinking water is deep wells. The brackish groundwater is treated by reverse osmosis process, and then blended together with the treated water surface water in the Lee Hall treatment plant. Finally, the finish water is piped from both Lee Hall and Harwood's Mill treatment plants to its distribution system, in which the Carver Gardens YCDPW waterworks is located.

Is there any retreatment of your drinking water supply? () Yes (X) No

As a first step toward protection of our sources of drinking water, the Virginia Department of Health (VDH) evaluated the susceptibility of Virginia's water supplies to contamination. Contamination sources and pathways were reviewed using maps, known and observed activities, water quality data and information about the water source. Using criteria developed by the State in its EPA-approved Source Water Assessment Program, the Hampton Roads Planning District Commission conducted a Source Water Assessment of the Newport News Waterworks in 2001 and 2002. It was determined that, on a relative basis, **the surface water sources for the waterworks were of relatively high in susceptibility to contamination; and the deep groundwater wells were of low in susceptibility to contamination.** The assessment report includes maps showing the source water assessment areas, an inventory of known land use activities, a susceptibility explanation chart, and definitions of key terms. A copy of the report can be obtained by contacting the Hampton Roads Planning District Commission at 757-420-8300 or the Newport News Waterworks at 757-926-1000. Your current water quality is described in the rest of this report.

DEFINITIONS

Contaminants in your drinking water are routinely monitored according to Federal and State regulations. The tables on the next few pages shows the results of our monitoring. In the table and elsewhere in this report you will find many terms and abbreviations you might not be familiar with. The following definitions are provided to help you better understand these terms:

Non-detect (ND) – lab analysis indicates that the contaminant is not present.

Parts per million (ppm) or Milligrams per liter (mg/l) - one part per million corresponds to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) or Micrograms per liter (µg/l) – one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

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

Maximum Contaminant Level (MCL) - 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.

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.

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

Nephelometric Turbidity Unit (NTU) - a measure of water clarity. Turbidity greater than five NTU is just noticeable to the average person.

Picocuries per liter (pCi/L) - picocuries per liter is a measure of the radioactivity in water.

Maximum Residual Disinfectant Level (MRDL) - the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

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

WATER QUALITY RESULTS OF CARVER GARDENS YCDPW WATERWORKS

REGULATED CONTAMINANTS

I. Microbiological Contaminants

Contaminant	MCLG	MCL	No. of Samples Indicating Presence of Bacteria	Violation (Y/N)	Month of Sampling	Typical Source of Contamination
Total Coliform Bacteria	0	Presence of coliform bacteria in more than one sample per month	0	Y	Aug. 2017	Naturally present in the environment

II. Lead and Copper Contaminants

Contaminants	Units of Measurements	Action Level	MCLG	Results of samples for the 90 th Percentile Value	Action Level Exceedance (Y/N)	Month of Sampling	Number of Sampling Sites Exceeding Action Level	Typical Source of Contamination
Copper	ppm	1.3	1.3	0.043	N	Sept. 2016	0	Corrosion of household plumbing systems; Erosion of natural deposits
Lead	ppb	15	0	Less than 2	N	Sept. 2016	0	Corrosion of household plumbing systems; Erosion of natural deposits

Lead Education Statement:

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. Carver Gardens YCDPW is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using the 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 (1-800-426-4791) or at <http://www.epa.gov/safewater/lead>.

III. Other Chemical Contaminants

Contaminant	Units of Measurement	MCL Goal	MCL	Level Detected	Violation (Y/N)	Range of Detection	Date of Sample	Typical Source of Contamination
Total Trihalomethanes (TTHM)	ppb	N/A	80	13	N	N/A	8/2/2017	By-product of drinking water chlorination.
Total Haloacetic Acid (HAA5)	ppb	N/A	60	6.9	N	N/A	8/2/2017	By-product of drinking water chlorination.

IV. Disinfectants

Disinfectant	Units of Measurement	MRDLG	MRDL	Level Detected (Running Annual Average from Apr. 2016 to Dec 2017)	Violation (Y/N)	Range of Detection at Sampling Points (Lowest and Highest in 2017)	Typical Source of Contamination
Chloramine	ppm	4	4	0.98	N	0.10 - 1.30	Water additive used to control microbes

We constantly monitor for various contaminants in the water supply to meet all regulatory requirements. The table lists only those contaminants that had some level of detection. Many other contaminants have been analyzed but were not present or were below the detection limits of the lab equipment.

The state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though accurate, is more than one year old.

MCL'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 contaminants or a one-in-ten-thousand to one-in-a-million chance of having the described health effect for other contaminants.

WATER QUALITY RESULTS OF NEWPORT NEWS WATERWORKS

REGULATED CONTAMINANTS

WATER QUALITY TESTING RESULTS							
REGULATED SUBSTANCES							
Contaminant	Unit	EPA's Ideal Goal (MCLG)	Highest EPA Allowed Level (MCL)	Highest Result (what we found)	Range of Test Results Low-High	Meets State & Federal Standards	Likely Source
INORGANICS							
Copper	ppm	0	AL = 1.3	0.071 ¹	0.009-0.088	YES	Corrosion of household plumbing
Lead	ppb	0	AL = 15	<1.0 ¹	<1.0-3.1	YES	Corrosion of household plumbing
Fluoride	ppm	4	4	0.89	0.84-0.89	YES	Added to promote strong teeth
Barium	ppm	2	2	0.022	0.019-0.022	YES	Erosion of natural deposits
Nitrate	ppm	10	10	0.111	0.044-0.111	YES	Erosion of natural deposits
Nitrite	ppm	1	1	0.001	0.001-0.001	YES	Erosion of natural deposits
DISINFECTION BY-PRODUCTS AND PRECURSORS							
Total Trihalomethanes (TTHM)	ppb	0	80	23 ²	7-33	YES	By-product of chlorination
Haloacetic Acids (HAA5)	ppb	0	60	25 ²	<2-33	YES	By-product of chlorination
Total Organic Carbon removal		none	TT	1.17 ³	1.08-1.55	YES	Naturally present in the environment
MICROBIOLOGICAL							
Turbidity	NTU	none	TT	0.14 ⁴	0.02-0.14	YES	Soil runoff
Free Chlorine (Chloramines)	ppm	MRDLG=4	MRDL=4	3.2 ⁵	<0.02 -5.2 ⁵	YES	Water additive used to control microbes
RADIOLOGICAL (from testing completed in 2016)							
Radium-228	pCi/L	0	5	0.6	<0.6-0.6	YES	Erosion of natural deposits
Beta emitters	pCi/L	0	4	2.5	1.4-2.5	YES	Decay of natural & man-made deposits

Footnotes:

All results reported in the table above are for samples taken in 2016-2017. Samples taken in 2016 are part of required four-quarter or annual running averages.

- (1) At least 90% of the samples were at or below this level. None of the individual samples exceeded the Action Level. Because our lead and copper levels are so low, we only have to test every three years. Lead and copper testing was completed in 2016. (2) The highest detected level of THM and HAA based on a specific location's four-quarter running average. The range numbers are the results from individual samples. The data in "Highest Result" column include samples from 2016. The range is for samples taken in 2017. (3) Compliance is based on a running four-quarter average. The range is the individual monthly ratio from both water treatment plants. TOC has no adverse health effects, but can be a critical component in the formation of disinfection by-products. The data in "Highest Result" column include samples from 2016. The range is for samples taken in 2017. (4) Turbidity is a measure of water cloudiness. It is a good indicator of the effectiveness of our filtration system. 100% of samples were within the turbidity limit. (5) For Chloramines, a system-wide annual running average is used. The range numbers are the results from individual samples. The data in "Highest Result" column include samples from 2016. The range is for samples taken in 2017.

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

Contaminant	Units of Measurement	MCLG (mg/L)	MCL	Highest Level Detected at Water Source	Range of Detection at Water Source	Sources of Contaminant in Drinking Water
Cryptosporidium*	Oocysts/L	N/A	TT	0.082	ND - 0.082	Human or animal fecal waste

* In the raw water—not in the finish water.

Cryptosporidium is a parasitic microbe found in surface waters throughout the U.S. Our monitoring indicates the presence of these organisms at very low levels in our source water but not in our treated water. Current test methods approved by the EPA do not allow us 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. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water. 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. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium are available from the Safe Drinking Water Hotline at 800-426-4791.

UNREGULATED CONTAMINANTS

Sodium - the EPA has not set a standard for sodium in drinking water. However, the recommended maximum contaminant level of sodium for persons on a "strict" sodium diet is 20 mg/L. Sodium levels in our treated water are usually low and unlikely to be a significant contribution to adverse health effects. The average level of sodium found in our treated water in 2017 was 14 mg/L, and the range was 10 mg/L – 23 mg/L. Should you have a health concern, please contact your health care provider.

WATER QUALITY TESTING RESULTS					
UNREGULATED SUBSTANCES					
Contaminant	Unit	MRL	Average	Range of Test Results (Low-High)	Likely Source
UNREGULATED ORGANICS - MONITORED AT THE TREATMENT PLANT					
Chloroform	ppb	n/a	4.3	2.6-6.0	By-product of chlorination
Dichloro-bromomethane	ppb	n/a	2.3	1.7-2.9	By-product of chlorination
Dibromo-chloromethane	ppb	n/a	0.6	0.6-0.7	By-product of chlorination
UNREGULATED CONTAMINANT MONITORING REGULATION (UCMR3)					
This monitoring provides a basis for future regulatory actions to protect public health.					
Chlorate	µg/L	20	177	ND-550	Agricultural defoliant or desiccant; disinfectant by-product; used in production of chlorine dioxide.
Total Chromium	µg/L	0.2	0.2	ND-0.74	Naturally occurring. Used in industry and can be discharged by industrial facilities. Total Chromium is the sum of chromium in all its valence states.
Hexavalent Chromium Cr-6 (dissolved)	µg/L	0.030	0.088	0.044-0.180	Naturally occurring. Used in making steel and other alloys. A new Environmental Protection Agency (EPA) risk assessment, not finalized yet, has raised concerns about the risk to human health.
Strontium (µg/L)	µg/L	0.3	130	90-200	Naturally occurring. Has been used commercially to produce color TV tubes. It also blocks x-ray emissions.
Vanadium (µg/L)	µg/L	0.2	0.71	0.49-1.00	Naturally occurring. Is used as an additive to steel to make engine parts and tools.

KEY TERMS

We've defined these water-quality terms, unique to the water industry, to help you better understand test results on the following pages.

AL: Action Level - The concentration of a contaminant which, 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 a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG: Maximum Residual Disinfectant Level Goal - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

MRL: Minimum Reporting Level - Estimate of the lowest concentration

of a compound that laboratories would report as a detection.

ND: Not detected. - Does not equate to zero, but refers to an amount below analytical reporting limits.

NTU: Nephelometric Turbidity Unit - A measure of water clarity. Turbidity greater than five NTU is just noticeable to the average person.

pCi/L: Picocuries per liter - A measure of radioactivity. EPA considers 50 pCi/L to be the level of concern for beta particles.

ppb: Parts per billion or micrograms per liter (µg/L). Equivalent to one penny in \$10 million.

ppm: Parts per million or milligrams per liter (mg/L). Equivalent to one penny in \$10 thousand.

ppt: Parts per trillion or nanograms per liter [ng/L]. Equivalent to one penny in \$10 billion.

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

Turbidity: A measure of water clarity, which serves as an indicator of the treatment facility's performance.

Additional information of interest can be found on the Newport News Waterworks website at <http://www.nnva.gov/waterqualityreport>.

VIOLATION INFORMATION

Did any monitoring, reporting, or other violations occur during the year? Yes No

Carver Gardens YCDPW waterworks received a notice of violation for failure to collect the required routine water sample for bacteriological examination during August 2017.

(Mountain Lake was in noncompliance with their water sampling, so when York County took the system over they were instantly hit with a violation for the lack of water sampling. York County Department of Public Works quickly got the system back into compliance and continues to monitor the water quarterly.)

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