

Unregulated Contaminant Monitoring Rule (UCMR4) Sampling

Unregulated contaminants are those for which the EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the EPA in determining the occurrence of unregulated contaminants in drinking water and if future regulation is required. The UCMR4 results are a primary source of information on occurrence and levels of contaminant exposure that the EPA uses to develop regulatory decisions for contaminants in the public drinking water supply.

As part of the rule, in February 2019 the City of Charlottesville began sampling for these contaminants, including haloacetic acids and various metals, pesticides, and alcohols. Sampling for cyanotoxins began in June of 2020 and is reported in this year's Consumer Confidence Report.

For more information regarding the UCMR4 program, please visit the EPA's website to learn more (<https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule>).



What if I am immuno-compromised?

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 healthcare providers. USEPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from EPA's Safe Drinking Water Hotline (800-426-4791) or visit their website (www.epa.gov/safewater).

Continuing our Commitment

Rivanna Water and Sewer Authority (RWSA), and the City of Charlottesville (City), in partnership with the Virginia Department of Health (VDH), work to ensure that you receive a safe and reliable supply of drinking water. As part of that ongoing commitment, we are providing you with this report on the quality of your drinking water. While this annual report is currently required by the United States Environmental Protection Agency (US EPA), we wish to use this opportunity to assure you that **the quality of your drinking water meets and exceeds all regulatory requirements** and your expectations for safety, reliability, and quality. RWSA collects, stores, and treats the water; then the City buys the treated water from RWSA and distributes it to you through the distribution system.



For the Spanish-speaking members of our community: Este Informe contiene información muy importante. Tradúzcalo o hable con un amigo quien lo entienda bien.

What standards does my water have to meet?

The information in this report has been collected and reported in accordance with the drinking water standards established by the USEPA and the VDH. In 2021, RWSA collected and tested hundreds of hourly, daily, weekly, monthly, quarterly, and annual samples to ensure the quality of your water. Sample sources included the rivers and reservoirs from which the WTPs draw water, the WTPs themselves, and numerous locations in the City's distribution system.

The sources of drinking water may 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, as well as substances resulting from the presence of animals or human activity. 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 EPA's Safe Drinking Water Hotline (800-426-4791) or visit their website (www.epa.gov/safewater).

CRYPTOSPORIDIUM IN DRINKING WATER

Cryptosporidium is a microbial pathogen found in surface waters throughout the United States. Ingestion of *Cryptosporidium* may cause an abdominal infection characterized by nausea, diarrhea, and abdominal cramps that healthy individuals can overcome within a few weeks. However immuno-compromised people are at risk of developing a potentially life-threatening illness. In November 2003, RWSA began a two year study to determine the occurrence of this parasite in the raw sources of each of the three Urban Area WTPs. Results of that monitoring do reveal its occasional presence in very small concentrations (< 0.05 organisms per liter) in our reservoirs. Although filtration removes *Cryptosporidium*, the most commonly used filtration methods cannot guarantee 100% removal. The RWSA makes every effort to optimize the filtration processes at all of the WTPs to ensure the greatest degree of *Cryptosporidium* removal. Based on the results of this study, RWSA have been placed in the lowest risk category for exposure to *Cryptosporidium*. Sampling was conducted monthly between 2015 – 2017; to date no *Cryptosporidium* has been detected in any of the urban source waters as part of that monitoring program.

What is Water Hardness?

If substantial amounts of either calcium or magnesium (both nontoxic minerals) are present in drinking water, the water is said to be hard. The hardness of finished water in the City water system averages 33 mg/L which is equivalent to 1.93 grains per gallon. This is mainly calcium. The water may be described as soft to slightly hard.



How do I get more information?

The City of Charlottesville and the Rivanna Water & Sewer Authority are committed to providing you, the customer, with this information because informed customers are our best allies. We hope that this report was easy to read and easy to understand. We encourage you to contact us and let us know what you think about your Consumer Confidence Report (CCR). Suggestions on how to make your CCR better are welcomed. For more information about your water and for any comments, you can contact Lauren Hildebrand at (434) 970-3800 or at Hildebrand@charlottesville.gov.

Where does my water come from?

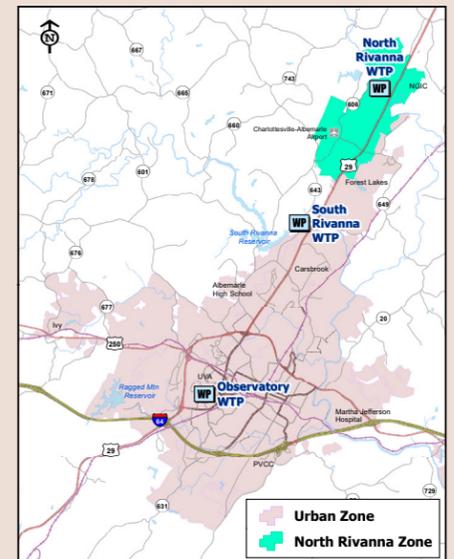
RWSA operates two water treatment plants (WTP) that provide water to the City of Charlottesville. The plants are the South Rivanna WTP and the Observatory WTP. Each plant employs both chemical and physical treatment processes before releasing water into the distribution system. Sodium hypochlorite is used at both South Rivanna and Observatory for disinfection. Fluoride is added at all treatment plants to promote good dental health. The water treatment plant that provides water to your tap may vary from day to day



depending on the daily production of water at each plant, the level of storage in the system and your location. The South Rivanna WTP draws water from the South Fork Rivanna Reservoir. The Observatory WTP draws water from both the Ragged Mountain and Sugar Hollow Reservoirs.

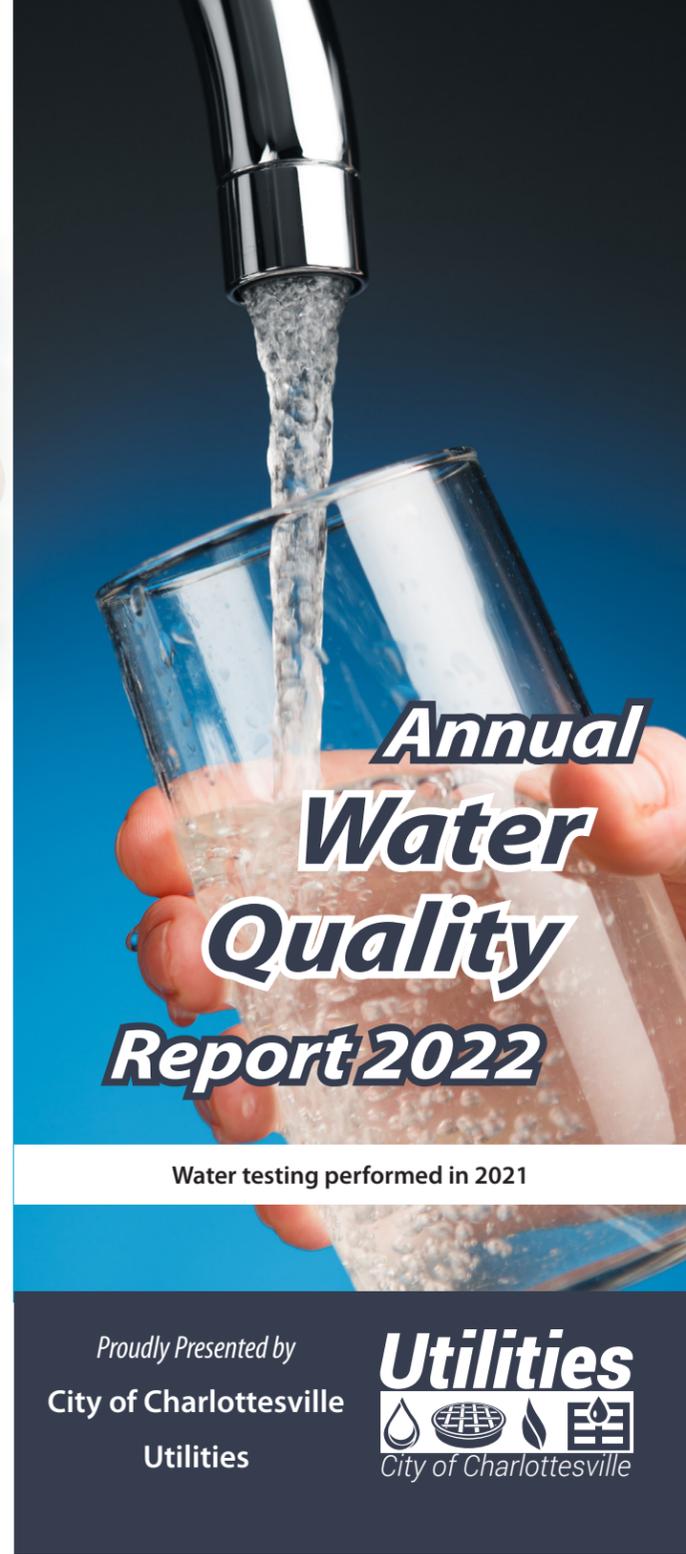
Under a program developed by VDH, multiple source water assessments for the Albemarle/Charlottesville Urban Area were completed by the VDH. The Observatory WTP received an assessment in 2018,

and South Rivanna WTP in 2020. These assessments determined that the raw water sources named above may be susceptible to contamination. All surface water sources are exposed to a wide array of contaminants at varying concentrations and changing hydrologic, hydraulic and atmospheric conditions that promote migration of contaminants from land use activities of concern within the assessment area. More specific information may be obtained by contacting the water system representative listed at the end of this insert.



Rivanna Water & Sewer Authority Board of Directors holds a monthly virtual meeting in which there is a public comment period. These meetings are held every fourth Tuesday at 2:15pm. Contact (434) 977-2970 for information regarding dates and access to the virtual meetings.

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What were the results from last year's testing?

CONTAMINANTS DETECTED	MCLG	MCL	CITY WATER RESULTS	# OF SAMPLES > AL	RANGE OF DETECTIONS	VIOLATION?	TYPICAL SOURCE OF CONTAMINANT
MICROBIOLOGICAL COMPOUNDS							
Fecal Coliform Bacteria (as <i>E. coli</i>) ¹	0	² See footnote	0	n/a	n/a	No	Human and animal fecal waste
Turbidity (Maximum single value)	n/a	1 ³	0.17 NTU	n/a	n/a	No	Soil runoff
Turbidity (% of monthly samples below 0.3 NTU)	n/a	95%	100%	n/a	100%	No	Soil runoff
RADIOACTIVE CONTAMINANTS							
Combined Radium ⁴	0 pCi/L	5 pCi/L	0.9 pCi/L	n/a	0.5 - 0.9 pCi/L	No	Erosion of natural deposits
Gross Beta ^{4,5}	0 pCi/L	50 pCi/L	1.7 pCi/L	n/a	1.1 - 1.7 pCi/L	No	Erosion of natural deposits
INORGANIC COMPOUNDS							
Copper ⁶	1.3 ppm	1.3 ppm (AL)	0.044 ppm ⁷	0	0 exceeded Action Level	No	Corrosion of household plumbing systems, erosion of natural deposits
Lead ⁶	0 ppb	15 ppb (AL)	< 2.00 ppb ⁷	0	0 exceeded Action Level	No	Corrosion of household plumbing systems, erosion of natural deposits
Fluoride ⁸	4 ppm	4 ppm	0.75 ppm	n/a	0.64 - 0.79 ppm	No	Water additive that promotes strong teeth
Barium	2 ppm	2 ppm	0.014 ppm	n/a	ND - 0.36 ppm	No	Discharge from drilling wastes; discharge from metal refineries; erosion of natural deposits
Nitrate	10 ppm	10 ppm	0.36 ppm	n/a	ND - 0.36 ppm	No	Runoff from fertilizer use, leaching from septic tanks, sewage
CYANOTOXINS⁹ (data from 2019)							
Total Microcystins	n/a	ND	ND	n/a	ND	No	A derivative of cyanobacteria, commonly known as blue-green algae
Anatoxin - A	n/a	ND	ND	n/a	ND	No	
Cylindrospermopsin	n/a	ND	ND	n/a	ND	No	

¹ Unit of measurement for total coliform bacteria and *E. coli* is the presence or absence of bacteria in a 100 mL sample.
² *E. coli* MCL: A routine sample and a repeat sample are total coliform positive, and at least one is also *E. coli* positive.
³ The MCL for turbidity is for no single measurement to exceed 1 NTU, and for 95% of all measurements to be below 0.3 NTU.
⁴ Sampled at all urban treatment plants in 2017, and sampling not required annually.
⁵ EPA considers 50 pCi/L to be the level of concern for beta particles.
⁶ Sampled in 2021 from select, relatively high-risk residences.
⁷ The value reported is the 90th percentile of all data collected.
⁸ Compliance results for fluoride are from the annual inorganics sample. Range of results includes monthly split sample lab results.
⁹ Unregulated contaminant monitoring helps EPA to determine where certain contaminants occur and whether the EPA should consider regulating those contaminants in the future. For more information regarding the UCMR4 program, please visit the EPA website at <https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule>.

What are these contaminants and their potential health risks?

TURBIDITY is a measure of the clarity of the water and has no health effects. However, turbidity can interfere with disinfection and may provide a medium for microbial growth. Elevated turbidity may indicate the presence of disease-causing organisms.

TOTAL COLIFORM AND E. COLI BACTERIA. Fecal coliforms and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

COMBINED RADIUM, AND ALPHA AND BETA PARTICLES are naturally occurring. Certain minerals are radioactive and may emit forms of radiation. When these minerals are eroded into the source water, testing may indicate their presence. Some people who drink water containing radium, or alpha or beta emitters, over many years may have an increased risk of getting cancer.

BARIUM is a metal that is naturally-occurring in rock and the soil. Some people who drink water containing barium in excess of the MCL over many years may experience an increase in their blood pressure.

FLUORIDE is added at the water treatment plant to promote strong teeth. Some people who drink water containing fluoride in excess of the MCL over many years could develop bone disease with pain and tenderness of the bones.

The 1994 Federal **LEAD** and **COPPER** Rule mandates a household testing program for these substances. The values reported above are from this household-testing program. No lead or copper was found in the drinking water at the WTPs.

- **LEAD** Infants and children who drink water containing lead in excess of the Action Level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults over many years could possibly develop kidney problems or high blood pressure.
- **COPPER** Copper is an essential nutrient, but some people who drink water containing copper in excess of the Action Level over a relatively short period of time could experience gastrointestinal distress. People with Wilson's Disease should consult their doctor.

NITRATE is an inorganic form of nitrogen found primarily in fertilizers, sewage, and runoff from natural deposits. Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and "blue baby" syndrome.

CHLORINE is a water additive used to control disease-causing microbes. Some people who use water containing chlorine well in excess of the MRDL could experience irritation effects to their eyes, skin, nose, as well as stomach discomfort.

CYANOTOXINS are a group of toxins produced by cyanobacteria, which are more commonly known as blue-green algae. They often accumulate in lakes, ponds, streams, and other surface waters where currents do not disturb them.

The table in this report shows which contaminants were detected in your drinking water. Before trying to read and understand the table, there are a few terms which need to be defined.

MAXIMUM CONTAMINANT LEVEL GOAL (MCLG): The level of a contaminant in drinking water below which there is no known or expected health risk. MCLGs allow for a margin of safety.

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 possible using the best available treatment technology.

MAXIMUM RESIDUAL DISINFECTANT LEVEL (MRDL): The highest level of a disinfectant allowed in drinking water. There is growing 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.

PPB: Parts per billion, or micrograms per liter (µg/L). One part substance per billion parts of solution.

PPM: Parts per million, or milligrams per liter (mg/L). One part substance per million parts of solution.

pCi/L: Picocuries per liter. This is a measure of radioactivity.

N/A: Not applicable.

NEPHELOMETRIC TURBIDITY UNIT (NTU): Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

ACTION LEVEL (AL): The concentration of a contaminant, which, if exceeded, triggers treatment or other actions by the water provider.

TREATMENT TECHNIQUE (TT): A required process intended to reduce the level of a contaminant in drinking water.

NON DETECT (ND): Test result below the method detection limit.

What do all these numbers mean?

Most importantly, this information shows that your drinking water met and exceeded all regulatory requirements during 2021. We are fortunate to have reliable sources for our drinking water needs and well-operated treatment facilities. Additional information is provided below that will give you more details on each contaminant detected in your drinking water. For information on the health risks associated with long term exposure to these contaminants at levels in excess of the MCL, please visit www.charlottesville.gov/waterquality.

Charlottesville's Commitment to Water Quality

2021 – 2022 Corrosion Control Program

It is standard practice that a phosphate chemical be added to drinking water supplies during treatment in order to reduce corrosion of the metal pipes in the distribution system and in customer plumbing. The chemical forms a protective layer on the inside of the pipes, reducing corrosion, and thus reducing the possibility of lead and copper entering the water. As a purely proactive measure, the City of Charlottesville, working with RWSA, has decided to upgrade its corrosion inhibitor to ensure the highest level of current water treatment technology is being utilized to protect the public.

To confirm there won't be any adverse effects from the transition to the new corrosion inhibitor, RWSA has completed extensive testing to verify the new product will be more effective and will not impact customers. The transition in the Urban area system is ongoing and will continue through 2022. RWSA has developed a Q&A to answer any questions related to the new water treatment program. It can be found at: <https://www.rivanna.org/rwsa-projects-map/corrosion-control-program/>. If you wish to speak to a City representative directly, please contact Anthony Allard at (434) 970-3805.

Granular Activated Carbon (GAC) Treatment



Beginning in 2012 a joint effort between the City of Charlottesville, Albemarle County Sewer Authority, and Rivanna Water & Sewer Authority led to the installation of granular activated carbon systems in the water treatment process.

Above: In total, there are 10 GAC contactors that serve the City- eight at the South Rivanna Water Treatment Plant (shown) and two at the Observatory Water Treatment Plant for a total treatment capacity of 10 million gallons of water per day.

This dramatic investment to water quality has showcased that the City is diligent in investing in our water system through capital improvement programs. Cost-prohibitive to many cities of our size, the City of Charlottesville has committed to being a leader in providing the best-in-class water treatment technologies.

GAC is a proven design that is extremely effective in improving water quality in distribution systems. The decision to upgrade the treatment process was made to aid in the additional removal of organics, when combined with chlorine, create disinfection byproducts (DBPs) that are regulated by the EPA. As an additional benefit to our customers, GAC is proven to be highly effective at removing man-made and naturally occurring contaminants that can impact taste and odor in the finished water.

The GAC treatment system was completed in 2018 and the reduction of DBPs has been dramatic. The success of this program was a direct result of collaboration between the agencies that treat and distribute water to our customers. We hope that with this investment in our community, the City will continue to provide superb drinking water quality now and for years to come.

Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. RWSA and the City are responsible for providing high quality drinking water by using corrosion inhibitors added to the water to coat the pipes and having only lead-free pipes installed to carry drinking water; however, we cannot control the variety of materials used in plumbing components of homes and businesses. 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 water for drinking or cooking. Also, use cold water and not hot water for drinking and cooking. If you are concerned about lead in your water, you may wish to have your water tested. The periodic lead and copper testing at select, high-risk households took place in the summer of 2021. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (800-426-4791) or at <http://www.epa.gov/safewater/lead>.

Fluoride

Fluoridated water is highly supported by the Virginia Department of Health, the American Medical Association, American Dental Association, Centers for Disease Control (CDC), and the majority of health professionals in the U.S. Please visit www.cdc.gov/fluoridation if you would like further information on the health impacts of fluoridated water.