ANNUAL WATER QUALITY REPORT

Reporting Year 2021

Presented By
City of Manassas
Where Does My Water Come From?

The City of Manassas has two reliable water supply sources. The primary source is the City of Manassas Water Treatment Plant, which draws water from Lake Manassas, an impoundment on Broad Run in Western Prince William County. The watershed for Lake Manassas covers approximately 74.5 square miles, with the reservoir covering over 880 acres. If needed during peak consumption periods or emergencies, water may be supplied from a second source, the Prince William County Service Authority (PWCSA). Water from the PWCSA is treated at Fairfax Water’s Northern Treatment Facility, the James J. Corbalis Plant, which withdraws water from the Potomac River. To learn more about our watershed, go to the U.S. EPA’s Search Your Watershed at www.epa.gov/waterdata/hows-my-waterway.

Water Main Flushing

Distribution mains (pipes) convey water to homes, businesses, and hydrants in your neighborhood. The water entering distribution mains is of very high quality; however, water quality can deteriorate in areas of the distribution mains over time. Water main flushing is the process of cleaning the interior of water distribution mains by sending a rapid flow of water through the mains.

Flushing maintains water quality in several ways. For example, flushing removes sediments like iron and manganese. Although iron and manganese do not themselves pose health concerns, they can affect the taste, clarity, and color of the water. Additionally, sediments can shield microorganisms from the disinfecting power of chlorine, contributing to the growth of microorganisms within distribution mains. Flushing helps remove stale water and ensures the presence of fresh water with sufficient dissolved oxygen and disinfectant levels, and an acceptable taste and smell.

During flushing operations in your neighborhood, some short-term deterioration of water quality, though uncommon, is possible. You should avoid tap water for household uses at such times. If you do use the tap, allow your cold water to run for a few minutes at full velocity before use, and avoid using hot water, to prevent sediment accumulation in your hot water tank.

Please contact us if you have any questions or if you would like more information on our water main flushing schedule.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno compromised persons such as those with cancer undergoing chemotherapy, those 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. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or http://water.epa.gov/drink/hotline.

Questions?

For more information about this report, or for any questions relating to your drinking water, please call the City Water Compliance Officer at (703) 257-8477.

Community Participation

You are invited to participate in our Utility Commission meetings and address any questions or concerns about your drinking water. The Utility Commission meets on the second Thursday of each month, at 5:30 p.m., at the City of Manassas Public Works Building. If you would like to attend, please contact the Utility Department at (703) 257-8351.
Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

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, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances 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.

For more information about contaminants and potential health effects, call the U.S. EPA’s Safe Drinking Water Hotline at (800) 426-4791.

Naturally Occurring Bacteria

The simple fact is, bacteria and other microorganisms inhabit our world. They can be found all around us: in our food; on our skin; in our bodies; and in the air, soil, and water. Some are harmful to us and some are not. Coliform bacteria are common in the environment and are generally not harmful themselves. The presence of this bacterial form in drinking water is a concern because it indicates that the water may be contaminated with other organisms that can cause disease. Throughout the year, we tested many water samples for coliform bacteria. In that time, none of the samples came back positive for the bacteria.

Federal regulations require that public water that tests positive for coliform bacteria must be further analyzed for fecal coliform bacteria. Fecal coliform are present only in human and animal waste. Because these bacteria can cause illness, it is unacceptable for fecal coliform to be present in water at any concentration. Our tests indicate no fecal coliform is present in our water.

Table Talk

Get the most out of the Testing Results data table with this simple suggestion. In less than a minute, you will know all there is to know about your water:

- For each substance listed, compare the value in the Amount Detected column against the value in the MCL (or AL, SMCL) column. If the Amount Detected value is smaller, your water meets the health and safety standards set for the substance.

Other Table Information Worth Noting

- Verify that there were no violations of the state and/or federal standards in the Violation column. If there was a violation, you will see a detailed description of the event in this report.
- If there is an ND or a less-than symbol (<), that means that the substance was not detected (i.e., below the detectable limits of the testing equipment).
- The Range column displays the lowest and highest sample readings. If there is an NA showing, that means only a single sample was taken to test for the substance (assuming there is a reported value in the Amount Detected column).
- If there is sufficient evidence to indicate from where the substance originates, it will be listed under Typical Source.

Source Water Assessment

Under provisions of the Safe Drinking Water Act, states are required to develop comprehensive Source Water Assessment Programs to identify the watersheds that supply public tap water and to provide an inventory of contaminants present in the watershed. The Virginia Department of Health (VDH) conducted a Source Water Assessment of Lake Manassas in 2020 and found high susceptibility to contamination using the state’s criteria in its approved Source Water Assessment Program. The VDH report consists of maps showing the source water assessment area, an inventory of known land use activities of concern in Prince William County, and documentation of any known contamination in the last five years. The report is available by contacting the City’s Water Compliance Officer at (703) 257-8477.
Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. Also, the water we deliver must meet specific health standards. Here, we show only those substances that were detected in our water. (A complete list of all our analytical results is available upon request.) Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

### REGULATED SUBSTANCES

<table>
<thead>
<tr>
<th>SUBSTANCE (UNIT OF MEASURE)</th>
<th>YEAR SAMPLED</th>
<th>MCL [MRDL]</th>
<th>MCLG [MRDLG]</th>
<th>AMOUNT DETECTED</th>
<th>RANGE LOW-HIGH</th>
<th>VIOLATION</th>
<th>TYPICAL SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorine (ppm)</td>
<td>2021</td>
<td>4</td>
<td>4</td>
<td>3.03</td>
<td>0.27–4.00</td>
<td>No</td>
<td>Water additive used to control microbes</td>
</tr>
<tr>
<td>Fluoride (ppm)</td>
<td>2021</td>
<td>4</td>
<td>4</td>
<td>0.6</td>
<td>0.44–0.64</td>
<td>No</td>
<td>Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories</td>
</tr>
<tr>
<td>Halocetic Acids [HAAs]–Stage 2 (ppb)</td>
<td>2021</td>
<td>60</td>
<td>NA</td>
<td>30</td>
<td>11–30</td>
<td>No</td>
<td>By-product of drinking water disinfection</td>
</tr>
<tr>
<td>TTHMs [Total Trihalomethanes]–Stage 2 (ppb)</td>
<td>2021</td>
<td>80</td>
<td>NA</td>
<td>42</td>
<td>19–55</td>
<td>No</td>
<td>By-product of drinking water disinfection</td>
</tr>
<tr>
<td>Total Coliform Bacteria (% Positive samples)</td>
<td>2021</td>
<td>TT</td>
<td>NA</td>
<td>1.9</td>
<td>NA</td>
<td>No</td>
<td>Naturally present in the environment</td>
</tr>
<tr>
<td>Total Organic Carbon (removal ratio)</td>
<td>2021</td>
<td>TT</td>
<td>NA</td>
<td>1.48</td>
<td>1.48–1.50</td>
<td>No</td>
<td>Naturally present in the environment</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>2021</td>
<td>TT</td>
<td>NA</td>
<td>0.131</td>
<td>0.03–0.131</td>
<td>No</td>
<td>Soil runoff</td>
</tr>
</tbody>
</table>

*Turbidity (Lowest monthly percent of samples meeting limit): TT = 95% of samples meet the limit*  

### Tap water samples were collected for lead and copper analyses from sample sites throughout the community.

<table>
<thead>
<tr>
<th>SUBSTANCE (UNIT OF MEASURE)</th>
<th>YEAR SAMPLED</th>
<th>AL</th>
<th>MCL</th>
<th>AMOUNT DETECTED (90TH %ILE)</th>
<th>SITES ABOVE AL/ TOTAL SITES</th>
<th>VIOLATION</th>
<th>TYPICAL SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper (ppm)</td>
<td>2021</td>
<td>1.3</td>
<td>1.3</td>
<td>0.136</td>
<td>0/30</td>
<td>No</td>
<td>Corrosion of household plumbing systems; Erosion of natural deposits</td>
</tr>
<tr>
<td>Lead (ppb)</td>
<td>2021</td>
<td>15</td>
<td>0</td>
<td>4</td>
<td>1/30</td>
<td>No</td>
<td>Lead services lines; Corrosion of household plumbing systems including fittings and fixtures; Erosion of natural deposits</td>
</tr>
</tbody>
</table>

### UNREGULATED AND OTHER SUBSTANCES

<table>
<thead>
<tr>
<th>SUBSTANCE (UNIT OF MEASURE)</th>
<th>YEAR SAMPLED</th>
<th>AMOUNT DETECTED</th>
<th>RANGE LOW-HIGH</th>
<th>TYPICAL SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perchlorate (ppb)</td>
<td>2021</td>
<td>0.259</td>
<td>NA</td>
<td>Naturally occurring element; used in fireworks, road flares, explosives and rocket fuel.</td>
</tr>
<tr>
<td>Sodium (ppm)</td>
<td>2021</td>
<td>26.1</td>
<td>NA</td>
<td>Naturally occurring; Road salt; Water softeners</td>
</tr>
<tr>
<td>Total Hardness (ppm)</td>
<td>2021</td>
<td>54</td>
<td>NA</td>
<td>Measure of the amount of calcium and magnesium in the water. Hard water can cause mineral buildup in plumbing. Hardness contributes to the effectiveness of soaps and detergents.</td>
</tr>
</tbody>
</table>

### UNREGULATED CONTAMINANT MONITORING RULE - PART 4 (UCMR4)

<table>
<thead>
<tr>
<th>SUBSTANCE (UNIT OF MEASURE)</th>
<th>YEAR SAMPLED</th>
<th>AMOUNT DETECTED</th>
<th>RANGE LOW-HIGH</th>
<th>TYPICAL SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAA6Br (ppb)</td>
<td>2020</td>
<td>4.9</td>
<td>4.0–5.9</td>
<td>By-product of drinking water disinfection</td>
</tr>
<tr>
<td>HAA9 (ppb)</td>
<td>2020</td>
<td>29.7</td>
<td>18.4–41.7</td>
<td>By-product of drinking water disinfection</td>
</tr>
<tr>
<td>Manganese (ppb)</td>
<td>2020</td>
<td>0.2</td>
<td>ND–0.4</td>
<td>Naturally occurring element; used in steel production, fertilizer, batteries and fireworks; drinking water and wastewater treatment chemical; essential nutrient</td>
</tr>
</tbody>
</table>

1 The value reported under Amount Detected for TOC is the lowest ratio between the percentage of TOC actually removed to the percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

2 Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.
90th %ile: The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90% of our lead and copper detections.

AL (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 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 contaminants.

NA: Not applicable

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

removal ratio: A ratio between the percentage of a substance actually removed to the percentage of the substance required to be removed.

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

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**BY THE NUMBERS**

The number of Americans who receive water from a public water system: **300 MILLION**

The number of miles of drinking water distribution mains in the U.S.: **1 MILLION**

The number of gallons of water produced daily by public water systems in the U.S.: **34 BILLION**

The amount of money spent annually on maintaining the public water infrastructure in the U.S.: **135 BILLION**

The number of active public water systems in the U.S.: **151 THOUSAND**

The number of highly trained and licensed water professionals serving in the U.S.: **199 THOUSAND**

The age in years of the world’s oldest water, found in a mine at a depth of nearly two miles: **2 BILLION**