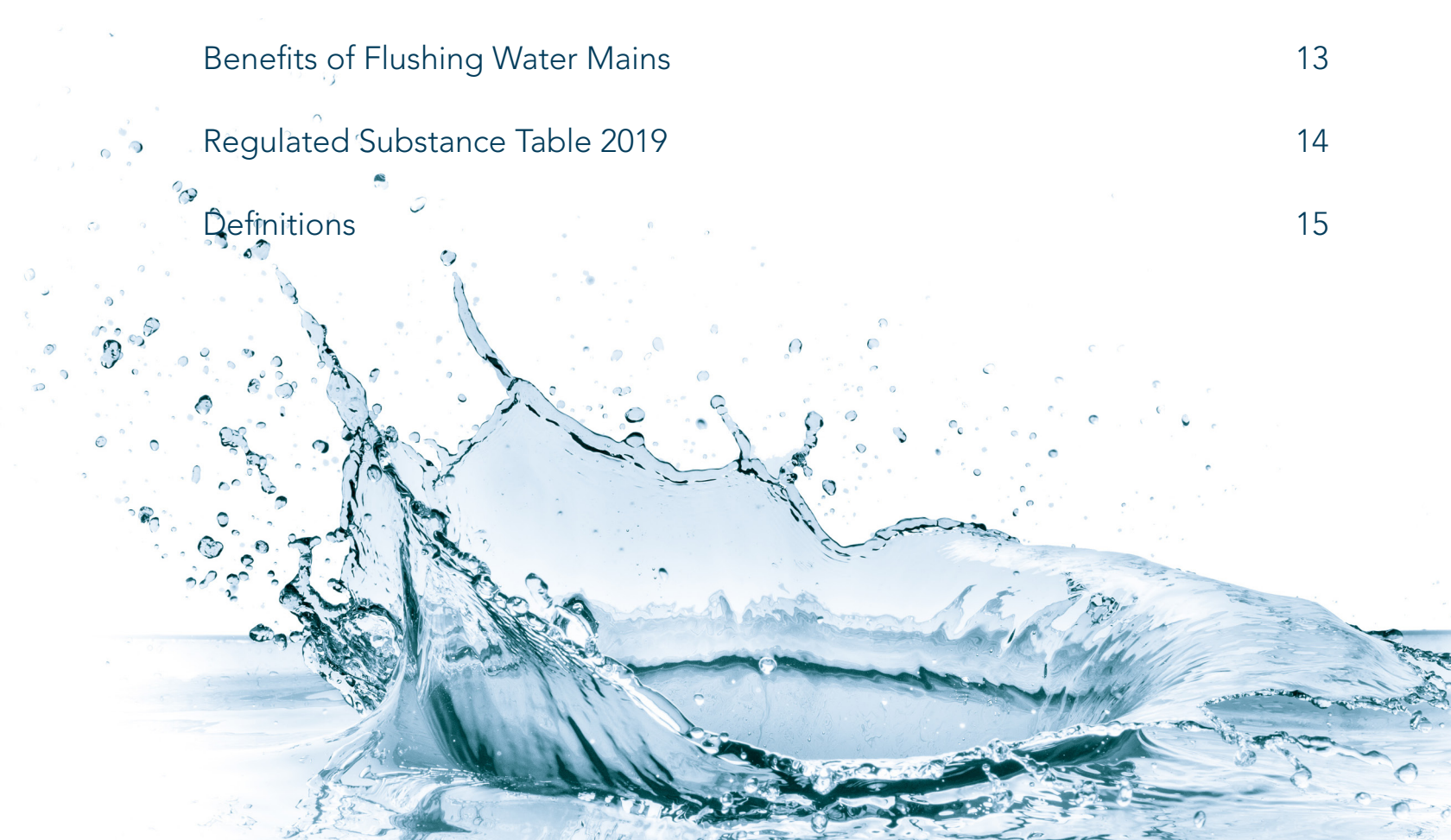


2020

In 2020, your drinking water quality met every state and federal requirement that safeguards public health.

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MESSAGE FROM THE DIRECTOR

Dear Customers:

As the nation responded to the coronavirus pandemic, Stafford's Department of Public Works worked around-the-clock to maintain the infrastructure that keeps this County thriving and that provides clean, safe water to all residents.

The health and safety of our customers is our number one priority. The information in this report summarizes the results of hundreds of tests taken during the 2020 calendar year, ensuring the water we provide to you meets all requirements of the Virginia Department of Health (VDH) and the Environmental Protection Agency (EPA).

Stafford's water system is monitored 24/7 and maintained by our team of highly skilled operators, engineers, technical experts and administrative staff to ensure our drinking water meets or exceeds the U.S. Environmental Protection Agency's safe drinking water requirements.

These accomplishments highlight the integrated approach we take every day to protect public health by effectively managing our water resources, raising awareness about important water-related issues, and providing exceptional customer service.

Our commitment to you, our customer, and the community is evident with every call we take and the hundreds of tests we perform annually. We drink the same water you drink and we are committed to ensuring that high-quality water is available every time you reach for your tap.



CHRIS EDWARDS, P.E.

Director of Utilities

una versión en español de este informe está disponible en nuestro sitio web:
www.staffordcountyva.gov/waterqualityreport



COMMUNITY PARTICIPATION

Today, we face many water-related issues including the protection of our water resources, timely renewal and replacement of aging pipes, planning to meet current and future water needs and treatment facilities upgrades that meet increasingly stringent water quality requirements. We ask for and value your input as these issues are discussed. The Stafford County Board of Supervisors meet on the first and third Tuesdays and the Utilities Commission meets the second Tuesday of each month in the Board Chambers located at 1300 Courthouse Road, Stafford, VA. Please call (540) 658-8630 or visit the County website at www.staffordcountyva.gov/ for a schedule of meeting dates and times.

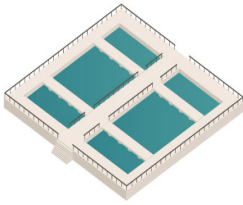


WHERE DOES MY WATER COME FROM?

Stafford County has three surface water sources for its supply. The Smith Lake Water Treatment Plant draws water from the Smith Lake reservoir, pictured above. The Lake Mooney Treatment Plant draws water from the Lake Mooney reservoir as well as by pumping water from the Rappahannock River. Combined, our treatment facilities provide roughly 3.1 billion gallons of clean drinking water every year.

HOW YOUR WATER IS TREATED

To ensure that high-quality, clean drinking water is available to you every time you reach for your tap, Stafford County uses advanced technologies and practices in the drinking-water treatment process.



01

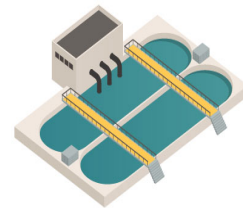
COAGULATION

A chemical that causes particles to bind together is added to the water.

FLOCCULATION

As the particles combine they form larger, heavier particles called floc.

02



03

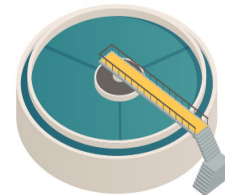
SEDIMENTATION

The floc settles to the bottom of the basin allowing the clean water at the top of the basin to flow into another tank for further treatment.

DISINFECTION

Chlorine is added to the water to destroy bacteria, viruses and other microorganisms.

04



05

FILTRATION

Multiple filtration technologies including advanced microfiltration technology with filters made up of thousands of porous fibers are used to remove any remaining particles and impurities found in the water.

SECONDARY DISINFECTION

Chlorine is added again to the filtered water to ensure disinfection.

06

HOW MUCH WATER DO YOU USE?

The average family in Stafford County uses approximately 6,000 gallons of water each month. The first step in changing the way you use water in the future is by understanding how much water you use today. An easy way to understand individual water use is to look at your water bill.



Toilet:
1.6 gallons per flush



Shower:
2.5 gallons per minute



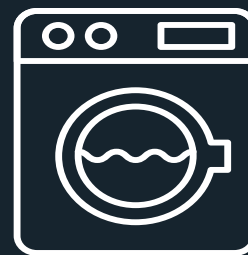
Dishwasher:
12 gallons per load



Water Faucets:
5 gallons per minute



Garden Hose:
9-17 gallons per minute



Washing Machine:
40 gallons per load

Source: United States Environmental Protection Agency, WaterSense

SUBSTANCES IN WATER

POTENTIAL SOURCES OF WATER CONTAMINANTS



- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wild-life
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses
- Inorganic contaminants such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharge, oil and gas production, mining or farming
- Organic chemical contaminants including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations and urban storm water runoff septic systems

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

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)



SOURCE WATER ASSESSMENT

In 2002, the Virginia Department of Health (VDH) conducted an assessment of our water reservoir at Smith Lake to determine how susceptible it is to contamination. An assessment of Lake Mooney and the Rappahannock River was completed in early 2019. Since there are industrial, commercial, agricultural and residential land uses in our watersheds and our sources are open to the environment, they are susceptible to contamination. We operate state-of-the-art treatment

facilities to a standard that ensures protection of public health. We also ask for your help to properly dispose of trash, waste oil, antifreeze, and other hazardous materials and minimize application of fertilizer and pesticides so that they do not enter streams, storm drains and other water bodies. You can report illegal dumping to the Stafford County Sheriff's Office at (540)-658-4400. A copy of the Smith Lake and the Lake Mooney assessment is available by calling us at (540) 658-8600.



LEAD IN HOME PLUMBING

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. The Stafford County Department of Public Works is responsible for providing high quality drinking water and follows all EPA corrosion inhibitor treatment guidelines, but cannot control the variety of materials and components associated with service lines and home plumbing. 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 two minutes before using 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 EPA's Safe Drinking Water Hotline at 1-800-426-4791 (TTY 711) or at www.epa.gov/safewater/lead.



IMPORTANT HEALTH INFORMATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised individuals, such as those undergoing chemotherapy, organ transplant recipients, those with HIV/AIDS or other immune system disorders, and some elderly people and infants can be particularly at risk from infections. If you feel you are at risk, please seek advice about drinking tap water from your health care providers. EPA/CDC 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.

FATS,OILS,GREASE (FOG)

When fats, oils, grease (FOG), wipes and other foreign items go down the pipes in your home, they cause expensive plumbing problems. The sanitary sewer system is designed to carry wastewater away from your home to the Wastewater Treatment Facilities where it is safely and effectively cleaned. As fats, oils and grease cool, they thicken and remain sticky, collecting all other items, such as wipes, that pass through your pipes creating one massive blockage and preventing the water from reaching the treatment facilities.

The cleanup of sewer backups and the additional maintenance required to reverse the damage caused by the improper disposal of these items leads to higher utility bills, costly home plumber visits and expensive pipe replacement. Sewer overflows and backups can also cause health hazards. Sewage is full of bacteria and contaminants that pose a serious threat to people and their pets.



The annual cost to
remove Fats, Oils and
Grease from Stafford
sewer pipes is:

\$1,634,900



BENEFITS OF FLUSHING WATER MAINS

Public Works crews conduct hydrant flushing on a rotating basis throughout Stafford County in order to ensure that high-quality water is available to residents, firefighters and Stafford businesses.

The flushing process cleans the water system by opening the fire hydrants to increase water flows, allowing crews to "flush" any minerals and sediment that naturally accumulates in water mains over the course of the year. By testing each of the 6,000 hydrants in Stafford County, Public Works crews can check and record water pressure to ensure each hydrant is properly maintained and available for use in the event of a fire.

For more information and tips for minimizing water discoloration during hydrant flushing, please visit www.staffordcountyva.gov/flushing

Stafford County
Table of Detected Contaminants

Regulated Contaminants (samples taken from the water distribution system)							
Parameter	Average Results	Range of Results	Units	MCL	MCLG	In Compliance? Yes / No	Source
Haloacetic Acids (HAA5s)	33 (highest 4-qtr. compliance avg.)	11 - 43 (for individual sample sites)	ppb	Average of last 4 quarters less than or equal to 60 ppb	None	Yes	Byproduct of drinking water disinfection
Trihalomethanes (TTHMs)	47 (highest 4-qtr. compliance avg.)	26 - 69 (for individual sample sites)	ppb	Average of last 4 quarters less than or equal to 80 ppb	None	Yes	Byproduct of drinking water disinfection
Fluoride	0.72	0.65 - 0.72	ppm	4	4	Yes	Added to water to promote strong teeth
Barium	0.013	ND - 0.013	ppm	2	2	Yes	Erosion of natural deposits
Total Organic Carbon (TOC)	The running annual average of quarterly TOC percent removals ranged from 1.33 to 1.64		None	Treatment Technique: Running annual avg. of quarterly TOC % removals must be >/= 1.0		Yes	Naturally present in the environment
Secondary / Unregulated Contaminants							
Parameter	Average Results	Range of Results (individual sites)	Units	SMCL	N/A	In Compliance? Yes / No	Source
Orthophosphate	0.5	0.35 - 0.62	ppm	N/A	N/A	N/A	Added as corrosion inhibitor
Sodium	21.2	18.5 - 23.9	ppm	N/A	N/A	N/A	Erosion of natural deposits
Sulfate	30.3	28.4 - 32.1	ppm	250.0	N/A	N/A	Erosion of natural deposits, fertilizer runoff
Chloride	13.0	11.3 - 14.6	ppm	250.0	N/A	N/A	Erosion of natural deposits
Chlorine (samples taken from the water distribution system)							
Parameter	Highest 12-Month Running Annual Average	Range of Results (individual sites)	Units	MRDL	MRDLG	In Compliance? Yes / No	Source
Chloramines	3.2	0.1 - 3.7	ppm	4.0	4.0	Yes	Added as water disinfectant
Metals (samples taken from the customer's tap)							
Parameter	Action Level	MCLG	Test Results	Number of sampling locations above the EPA Action Level	In Compliance? Yes / No	Source	
Lead	90% of all test results must be 15 ppb or less	15 ppb	Results from 2018 <QL to 3.0 ppb; 100% of the 51 samples taken were 15 ppb or less	0	Yes	Corrosion in household plumbing systems	
Copper	90% of all test results must be 1.3 ppm or less	1.3 ppm	Results from 2018 <QL to 0.17 mg/l 100% of the 51 samples 1.3 ppm or less	0	Yes	Corrosion in household plumbing systems	
Turbidity (samples taken from filtered water at the treatment facility)							
Parameter	MCL		Units	Max. Detected	Lowest Percentage of Monthly Samples Meeting Limit	In Compliance? Yes / No	Source
Turbidity	Treatment Technique (TT) - at least 95% of all samples taken each month must be 0.3 NTU or less; 1 NTU maximum		NTU	0.23	100% of all samples taken were 0.3 NTU or less	Yes	Soil erosion from runoff

1. Tests were performed for an additional 104 possible contaminants which were NOT DETECTED.
2. Lead, copper, and total coliforms are reported to Health Dept. on a County-wide basis. Levels in the table are County-wide (not each service area).
3. Lead and copper test results are from 2018 - testing not required again until 2021.

DEFINITIONS

AL, Action Level: the concentration of a contaminant that, if exceeded triggers treatment or other requirements that an owner shall follow.

Level 1 assessment - a study of the waterworks to identify potential problems and determine, if possible, why total coliform bacteria have been found in our waterworks.

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.

NTU, Nephelometric Turbidity Units: a measurement of the clarity of water.

pCi/L, Picocuries per liter: measure of radio activity
ppm, Parts per million: measure of concentration equal to 1 cent in \$10,000 or about 1 minute in 694 days.

ppb, Parts per billion: measure of concentration equal to 1 cent in \$10 million or about 1 minute in 1,902 years.

ppm, Parts per million

QL, Quantification Limit: the lowest level at which a test method can be accurately reported.

SMCL, Secondary Maximum Contaminant Level: non health based standards established for contaminants that can adversely affect the taste, odor, or appearance of water.

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





2020

**WATER QUALITY
REPORT**

STAFFORD COUNTY DEPARTMENT OF PUBLIC WORKS

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