THE CITY OF NORFOLK
DEPARTMENT OF UTILITIES

CELEBRATING 150 YEARS

2023 WATER QUALITY REPORT

BASED ON DATA COLLECTED IN 2022

THE CITY OF NORFOLK
DEPARTMENT OF UTILITIES

A MESSAGE FROM YOUR PUBLIC WATER UTILITY

The City of Norfolk Department of Utilities is committed to providing our customers with quality water service. As a proud Norfolk resident and water service consumer like you, I can personally speak to the importance of access to safe and reliable drinking water as part of our daily lives. It's an honor to be part of the team that delivers this service while leading the way in the Commonwealth of Virginia for best tasting water. In the following pages, we will provide the state of your drinking water as well as a number of noteworthy achievements our staff have accomplished this past year.

In 2022, Norfolk water continued to meet all federal and state requirements, as it has in past years. This is made possible due to the unparalleled dedication of nearly 400 staff members who tirelessly work 24/7 to ensure our customers have access to top-tier water. This Water Quality Report is distributed annually to inform our customers that we are meeting all water quality guidelines set forth by the Environmental Protection Agency and its affiliate regulatory agencies.

All the Best,

D J Beaver

Douglas J. Beaver
City of Norfolk,
Director of Utilities


MOORES BRIDGES WATER TREATMENT PLANT (MBWTP)

SHARING THIS REPORT

The City of Norfolk shares the Consumer Confidence Report (CCR) with all people who drink our water. We do this by posting the CCR in a public place, distributing copies by hand or mail, and providing a direct URL via the water bill. To receive a printed copy of this report, please call the Utilities Public Information Office at (757) 664-6730, or email UTpublicinfo@norfolk.gov.

PEOPLE WITH SPECIAL HEALTH CONCERNS

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons, such as persons with cancer undergoing chemotherapy, persons who have had organ transplants, people with HIV/AIDS and other immune system disorders, some elderly and infants can be particularly at risk from infections. These individuals should seek advice about drinking water from their health care providers. U.S. Environmental Protection Agency (EPA)/Centers for Disease Control (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: (800) 426-4791.

QUESTIONS?

For questions regarding this report, contact the Norfolk Water Quality Lab at (757) 441-5678. For more information about decisions affecting your drinking water quality, you may attend Norfolk City Council meetings when items of interest are on the agenda. For times and agendas, call the City Clerk's Office at (757) 664-4253, or visit www.norfolk.gov.

Este informe contiene información muy importante sobre el agua potable que consume. Si tiene alguna pregunta sobre este informe, comuníquese con el Departamento de Servicios Públicos al (757) 441-5678.

NORFOLK'S DRINKING WATER SOURCES

Norfolk obtains its raw (untreated) water from eight reservoirs, two rivers, and four deep wells. The map below shows the location of each of your water sources. From these sources, raw water is pumped to one of the Department of Utilities' two water treatment plants, where it is filtered and disinfected. Once tested to meet water quality standards, Norfolk drinking water is pumped on demand to your tap.

SAFEGUARDING THE WATER YOU DRINK

The protection of our water resources, including our drinking water reservoirs, is directly related to how we manage and protect the land around them. The water in the reservoirs comes from the water that falls in the drainage area or watershed. This water flows across streets, driveways, rooftops, lawns, gardens, and may finally enter the reservoir or lake through a storm pipe or ditch. As water travels across all of these areas, it picks up pollutants, such as fertilizers, oil, gasoline, soda cans, paper cups, pet waste. Each of these pollutants can have a negative impact on the water, from something as simple as floating litter, to more complicated issues that affect wildlife and water quality. The land the water flows across on this journey and the waterways that receive it are called a watershed.

BEST TASTING TAP WATER IN VIRGINIA

Norfolk Utilities has done it again! For the second consecutive year, the department's drinking water was judged by an expert panel at the Virginia Section of the American Water Works Association's (AWWA) 2022 Water Distribution Seminar and Utilities Rodeo in Midlothian, and was rated best in the Commonwealth of Virginia!

Water samples from across the Commonwealth were judged in four categories—clarity, odor, flavor, and after taste. As winner of the statewide competition, Norfolk Utilities is eligible for, and will compete in the AWWA Annual Conference & Exposition (ACE) held in Toronto Summer 2023. What's more, is that the samples rated in the competition were drawn from Norfolk's water distribution lines, attesting to the genuinely best-tasting tap water that our residents and customers enjoy. "The water left the treatment plant and went into the distribution system before we pulled samples for the competition." explained Utilities Superintendent Sid Lowe.

To commemorate this tremendous achievement, the entirety of the Utilities staff was invited to gather at MBWTP to participate in the celebration of this shared departmental accolade. "We provide water to nearly a million consumers every day. To do this and be rated so highly amidst our colleague public utilities is monumental, but it could not have been done without every member of the team!" praised Doug Beaver.

LEAD SERVICE LINES

HOW WE MANAGE LEAD

Our chemists continuously monitor drinking water to ensure our treatment helps keep lead out of water in buildings with lead plumbing. The water production team utilizes a corrosion control treatment, which coats the lining of service lines, indoor pipes, fixtures, and solder, to reduce lead seepage into the distribution system. This corrosion control treatment, which is required by federal law under the Lead and Copper Rule (LCR) and its recent revisions (LCRR), has been in place for over three decades. To date, sampling results indicate that our treatment is effective.

LEAD TESTING

The Norfolk Department of Utilities conducted a regulatory lead testing program from June through September 2020. Results from this round of testing show Norfolk complies with the federal LCR and can be found in the table on page 7.

CONCERNED ABOUT LEAD IN YOUR PIPES?

If you are concerned about lead in your drinking water, you are encouraged to have your water and service lines tested. For water testing, you can contact the Water Quality Lab for a sampling kit by calling (757) 441-5678. Visit www.norfolk.gov/waterquality for more information.

For service line testing, contact a qualified plumber. You can also purchase lead testing swabs to test your service lines yourself.

LEAD SERVICE LINE RESOURCES

Safe Drinking Water Hotline: (800) 426-4791
- EPA: www.epa.gov/safewater/lead
- Ask HR Green: www.askhrgreen.org/leadpipes
- Norfolk Utilities: www.norfolk.gov/leadpipes

MONITORING WATER QUALITY: WHAT WE LOOK FOR

Drinking water sources (both tap 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. It can also pick up substance resulting from the presence of animals or human activity.

Contaminants that may be present under source (raw) water:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm water 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 storm water runoff, and residential uses.
- Radioactive contaminants, which can be naturally occurring or be the result of gas production and mining activities:

In 2001 the Hampton Roads Planning District Commission (HRPDC), our regional government entity, conducted a study on all the raw water sources in the area, including Norfolk's, to determine the susceptibility of reservoirs, rivers, and wells to contamination. Norfolk's susceptibility has been rated high. Norfolk's water treatment process ensures you receive high-quality treated tap water that meets all Federal Safe Drinking Water Act requirements. For a copy of this study, contact Norfolk's Water Quality Lab at (757) 441-5678.

To ensure that tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limitations for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably contain trace amounts of some contaminants, but their presence does not necessarily indicate a health risk is present.

YOUR WATER MEETS ALL STANDARDS

The EPA and Virginia Department of Health (VDH) water quality standards guide the craftsmanship of Norfolk tap water. And once again in 2022, Norfolk tap water met or exceeded those standards. Nearly 87,000 annual water quality tests were conducted at reservoirs, treatment plants, homes and throughout the distribution system. None of these tests reported elevated levels of substances identified by drinking water standards as potentially harmful to public health.

0 Health and quality violations

12 Substances detected but within limits

120 Additional substances tested for but not found

THE CITY OF NORFOLK
DEPARTMENT OF UTILITIES

CY 2022 CONSUMER CONFIDENCE REPORT DATA

REGULATED SUBSTANCES

Substance	Likely Source	Norfolk's Measured Range	Norfolk's Highest Level	Norfolk's Average Level	National MCL	National MCLG	Unit	Meets EPA Standards
Barium	Erosion of natural deposits	0.02—0.04	0.04	0.03	2	2	ppm	✓
Chloramine	Drinking water disinfectant	1.7—4.9	3.5[1]	3.5	4[2]	4[3]	ppm	✓
Fluoride	Added to prevent tooth decay	0.1—0.9	0.9[4]	0.6	4.0	4.0	ppm	✓
Nitrate as Nitrogen	Erosion of natural deposits, runoff	ND—0.24	0.24	0.11	10	10	ppm	✓

[1] Highest quarterly average for calendar year [2] MRDL [3] MRDLG [4] Highest monthly average for calendar year

Substance	Likely Source	Percent Removal[1]	Range	National MCL	National MCLG	Unit	Meets EPA Standards
Total Organic Carbon	Occurs naturally in the environment	56% removal (45% is required)	50%-70% removal	TT	n/a	%	✓

[1] Running Annual Average, calculated quarterly

Substance	Likely Source	Norfolk's Measured Range	Norfolk's Average Level	Norfolk's Highest Quarterly Locational Running Annual Average	Quarterly Running Annual Average		Unit	Meets EPA Standards
		(Individual Results)			National MCL	National MCLG		
Haloacetic Acids (HAA5)	Byproduct of disinfection process	11 – 34	21	30	60	0	ppb	✓
Trihalomethanes (TTHM)	Byproduct of disinfection process	18 – 51	36	44	80	0	ppb	✓

Substance	Likely Source	Norfolk's Lowest Monthly % of Samples Meeting Limit	Norfolk's Highest Level (NTUs)	National MCL	National MCLG	Unit	Meets EPA Standards
Turbidity	Soil runoff	100%	0.26	<1.0 maximum, and ≤0.3 95% of the time	n/a	NTU	✓

Lead and Copper in Customers' Homes (data from 2020 triennial sampling)

Norfolk has extremely low lead levels in its drinking water system. Because of this, the EPA has placed Norfolk on a reduced monitoring schedule. No lead was detected at the monitoring level during this monitoring period.[1]

Substance	Likely Source	Norfolk's Results[1]	Norfolk Homes Exceeding Action Level	National Action Level	Unit	National MCLG	Meets EPA Standards
Lead	Household plumbing corrosion	< 2.5	0	15	ppb	0	✓
Copper	Household plumbing corrosion	0.09	0	1.3	ppm	1.3	✓

[1]Lead and copper compliance is measured at the 90th percentile of all samples taken during the triennial sampling period

CONTINUED

NOTE

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 Norfolk Department of Utilities 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 3 to 5 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 Safe Drinking Water Hotline (800) 426-4791 or at http://www.epa.gov/safewater/lead.

SECONDARY AND UNREGULATED MONITORED SUBSTANCES

Substance	Likely Source	Norfolk's Range	Norfolk's Highest Level	Norfolk's Average Level	National SMCL	Unit
Aluminum	Erosion of natural deposits; also, from use of chemicals at water treatment plant	ND – 0.05	0.05	0.02	0.20	ppm
Boron	Natural in environment and manmade origins	ND – 0.06	0.06	0.06	n/a	ppm
Chloride	Natural in environment	12 – 18	18	16	250	ppm
Iron	Natural in environment	ND – 0.05	0.05	ND	0.3	ppm
Manganese	Natural in environment	ND – 0.006	0.006	ND	0.05	ppm
Nickel	Corrosion of plumbing materials	ND – 0.003	0.003	ND	n/a	ppm
pH	Adjusted during water treatment process	7.4 – 8.1	7.7[1]	7.7	6.5 – 8.5	pH units
Sodium	Natural in environment; also, from use of chemicals at water treatment plant	12 – 29	29	19	n/a[2]	ppm
Sulfate	Natural in environment; also, from use of chemicals at water treatment plant	17 – 40	40	31	250	ppm
Total Dissolved Solids	Natural in environment	85 – 132	132	111	500	ppm
Zinc	Natural in environment; also, from use of chemicals at water treatment plant	0.04 – 0.29	0.29	0.20	5	ppm

[1] Highest monthly average for calendar year [2] For physician-prescribed "no salt diets," a limit of 20 ppm is suggested

Substance	Norfolk's Range	Norfolk's Average Level	Unit
Alkalinity	24 – 47	34	ppm
Ammonia	ND – 0.2	0.1	ppm
Hardness	31 – 67	49[1]	ppm
Silica	2 – 10	6	ppm

[1] Norfolk's water averages in the range between soft and slightly hard. This means there is enough hardness for soaps and detergents to work properly, yet not too much to interfere with most industrial applications. To find grains per gallon, divide ppm value by 17.

This report and more are available at www.norfolk.gov/waterquality. Visit the URL or scan the QR code for more information!

PHARMACEUTICALS AND SOURCE WATER

Pharmaceuticals can enter the waterways through excretion from the body and the practice of improper disposal methods, such as flushing unused or expired medications down the toilet. Everyone can help keep unused pharmaceuticals out of the water supply by properly disposing of unused medications. A permanent drug drop-off location is Norfolk's Public Safety Building, 811 E. City Hall Avenue, Norfolk, VA 23510. If disposing at home, discard with the trash. Always remove personal information, seal in a container, and disguise contents by mixing with coffee grounds or kitty litter.

PER AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Per and polyfluoroalkyl substances (PFAS) are a group of human-made chemicals. PFAS have been used in a variety of industries and consumer goods. Research suggests that exposure to PFAS may lead to human health concerns. Federal maximum drinking water contaminant levels for PFAS are under development and may be finalized by the end of 2023. Currently, we are sampling and testing for PFAS under the Unregulated Contaminant Monitoring Rule (UCMR5). Results will be published in next year's Consumer Confidence Report.

To find out more about PFAS, visit www.norfolk.gov/PFAS.


KRISTEN M. LENTZ WATER TREATMENT PLANT

Important Contact Information

Customer Service
(757) 664-6700
www.norfolk.gov/utilities

Public Information
(757) 664-6730
www.norfolk.gov/UTpublicinfo

Water Quality
(757) 441-5678
www.norfolk.gov/waterquality

Water/Sewer Main Breaks & Emergencies
(757) 823-1000
www.norfolk.gov/4759/Report-a-Problem

Reservoir Management (Boating)
(757) 441-5678 ext. 253
www.norfolk.gov/reservoir

Storm Water
(757) 823-4000
www.norfolk.gov/stormwater

Keep Norfolk Beautiful
(757) 441-1347
www.norfolk.gov/KNB

150 Years of Water Treatment

Moores Bridges WTP turns 150 years old this year! The facility was constructed in 1873, making it one of the oldest water treatment plants in the country. The photo below is the oldest historical photo on record for Moores Bridges.

Want to learn more about the history of Norfolk Utilities? Check out www.norfolk.gov/UThistory.

Want Utilities at Your Next Event?

The department's office of public information is available by request to attend your next outreach event! We staff school and community engagement events, and more. For information, and to request Norfolk Utilities at your next event, visit www.norfolk.gov/UTpublicinfo, or send an email to the Utilities Public Information Office at UTpublicinfo@norfolk.gov.

GLOSSARY:

Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow. The action level is not based on one sample; instead, it is based on many samples.

Alkalinity: A measure of the water's ability to resist changes in the pH level and a good indicator of overall water quality. Although there is no health risk from alkalinity, we monitor it to check our treatment processes.

E. coli (Escherichia coli): A type of coliform bacteria that is associated with human and animal fecal waste.

gpg (grains per gallon): A unit of water hardness. One grain per gallon is equal to 17.1 parts per million.

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.

mg/L (Milligrams per liter): One milligram per liter is equal to one part per million.

MRDL (Maximum Residual Disinfection Level): The highest level of disinfectant that is allowed in drinking water. The addition of a disinfectant is necessary for the control of microbial contaminants.

MRDLG (Maximum Residual Disinfection Level Goal): The level of a disinfectant in drinking water 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.

Minimum Residual Disinfectant Level: The minimum level of residual disinfectant required at the entry point to the distribution system.

ND: Not Detected in the water

NTU (nephelometric turbidity units): Turbidity is measured with an instrument called a nephelometer. Measurements are given in nephelometric turbidity units.

Pathogens: Bacteria, virus, or other microorganisms that can cause disease.

pCi/L (Picocuries per liter): A measure of radioactivity.

ppm (parts per million): Denotes 1 part per 1,000,000 parts, which is equivalent to two-thirds of a gallon in an Olympic- sized swimming pool.

ppb (parts per billion): Denotes 1 part per 1,000,000,000 parts, which is equivalent to half a teaspoon in an Olympic-sized swimming pool.

µg/L (Microgram per liter): One microgram per liter is equal to one part per billion.

ppt (parts per trillion): Denotes 1 part per 1,000,000,000,000 parts, which is equivalent to one drop in 20 Olympic- sized swimming pools.

Total Coliform: Coliforms are bacteria that are naturally present in the environment. Their presence in drinking water may indicate that other potentially harmful bacteria are also present.

HAAs (Haloacetic Acids): A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

TOC (Total Organic Carbon): A measure of the carbon content of organic matter. This measure is used to indicate the amount of organic material in the water that could potentially react with a disinfectant to form disinfection byproducts.

TTHMs (Total Trihalomethanes): A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

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

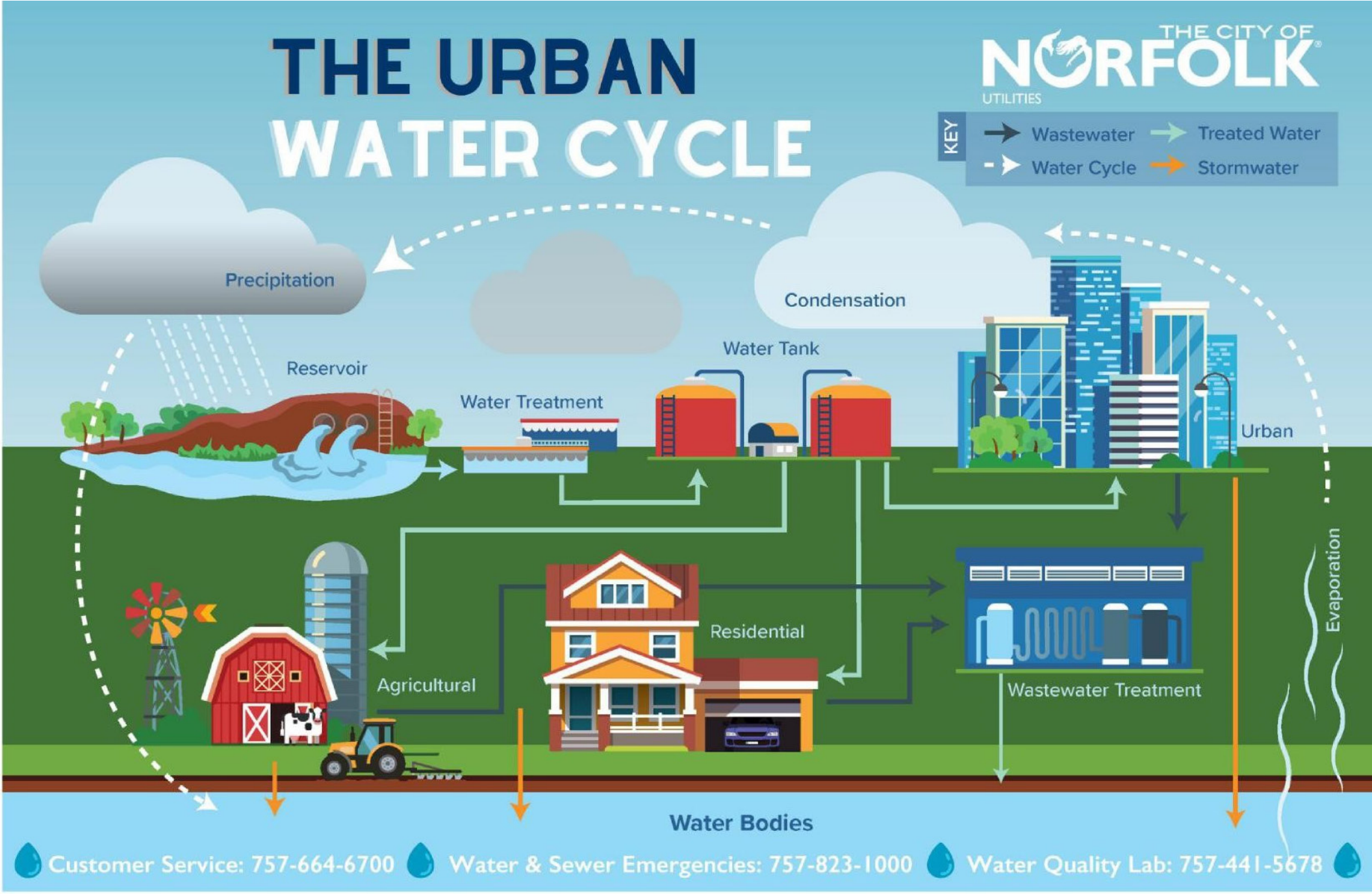
Turbidity: A measure of the clarity of water related to its particle content. Turbidity serves as an indicator for the effectiveness of the water treatment process. Low turbidity measurements, such as ours, show the significant removal of particles that are much smaller than can be seen by the naked eye.

WTP: Water Treatment Plant

THE URBAN WATER CYCLE

THE CITY OF NORFOLK UTILITIES

KEY
- Wastewater
- Treated Water
- Water Cycle
- Stormwater



Customer Service: 757-664-6700 | Water & Sewer Emergencies: 757-823-1000 | Water Quality Lab: 757-441-5678