

# 2023 Water Quality Report

Produced by Winston-Salem/Forsyth County Utilities | P.O. Box 2511 Winston-Salem, NC 27102 | CityLink 311 or 336-727-8000

## Winston-Salem/Forsyth County Utilities drinking water meets all water quality standards

Winston-Salem/Forsyth County Utilities operates three water treatment facilities drawing water from both the Yadkin River and Salem Lake. Together, these water treatment facilities can produce up to 91 million gallons of drinking water per day. The Neilson and Swann Water Treatment Plants can treat 48 and 25 million gallons per day, respectively, from the Yadkin River. The Thomas Water Treatment Plant can treat 18 million gallons per day from Salem Lake and the Yadkin River.

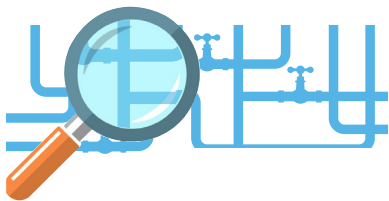
For 2023, as in previous years, these treatment facilities have met or surpassed all state and federal standards for drinking water quality. This accomplishment reflects the quality and dedication of the employees who work year-round to provide adequate supplies of safe drinking water.

This report includes details about the sources of your drinking water, how it is treated, what it contains and exactly how it compares to state and federal standards. We provide this updated information annually because we are committed to delivering top-quality drinking water to our customers.



Salem Lake Dam

## Help Us Get the Lead Out!



The EPA is requiring every water utility in the nation to identify underground lead pipes. There's no way we can do this alone! We need your help with the service line **on your private property**. That's the pipe between our meter & the shutoff valve for your home or business.



Use this QR Code or go to [cityofws.org/pipes](https://cityofws.org/pipes) on your smart phone. Follow the steps (in English y español) to determine your service line material & report your findings.

For printed instructions, contact CityLink at 336-727-8000 or via [cityofws.org/citylink](https://cityofws.org/citylink).

**Why do I need to do this?** For more than 20 years, our water has met or surpassed all federal water quality standards, including lead. This is a new EPA rule. We can't enter your private property, so we really need your help!

**When should I do this?** Now! It should take less than 15 minutes, so grab your smart phone, a magnet and a coin to get started. Or schedule a reminder for later. Get your kids involved & make it a science project!

More info at 336-946-2524 or [waterqualityline@cityofws.org](mailto:waterqualityline@cityofws.org).



Ninth Street Water Tank





Sides Road Water Tank

## Protecting Our Water Sources

Sources of both tap and bottled drinking water include rivers, lakes, 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. Water can also pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from wastewater treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban storm water runoff, industrial or wastewater discharges, oil and gas productions, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and can come from gas stations, urban storm water runoff and septic systems.
- Radioactive contaminants which can occur naturally or as a result of oil and gas production and mining activities.

To ensure that tap water is safe to drink, the Environmental Protection Agency limits 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.

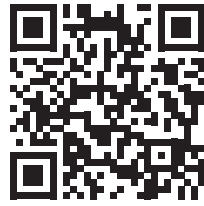
Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by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

## R.W. Neilson Water Treatment Plant Modernization Project

In late 2021, construction began on a major project at Neilson Water Treatment Plant. It is the largest in the WSFC Utilities system with a treatment capacity of 48-million gallons per day (MGD). Since the original plant was built in 1964 the facility has undergone two capacity expansions of 12 MGD each in 1984 and 1988. This upgrade will address aging infrastructure by replacing obsolete and failing equipment and make process improvements to increase the reliability and redundancy of this critical facility.



R.W. Neilson Water Treatment Plant



In the fall of 2020, Winston-Salem/Forsyth County Utilities launched a water meter upgrade program called WaterSavvy. Thousands of new meters have already been installed and over the next few years we'll upgrade all 130,000 residential and commercial meters in our service area.

Once the new system is activated, modern smart meters will securely transmit usage information and alerts in real time. This will help us monitor flow, quickly detect leaks and reduce our visits to your home or business – all while keeping your data safe.

WaterSavvy also means better service! We're creating a superior online customer portal where you can easily manage your bills, track your usage to conserve water and set up alerts for leaks. Best of all, there will be no charge on your bill for these improvements.

Modern meters, convenient access to information, better service – that's WaterSavvy, smart with every drop.

Learn more and watch our video at [cityofws.org/watersavvy](http://cityofws.org/watersavvy).

## North Carolina Source Water Assessment

The North Carolina Department of Environmental Quality (DEQ), Public Water Supply (PWS) Section, Source Water Assessment Program (SWAP) conducted assessments for all drinking water sources across North Carolina. The purpose of the assessments was to determine the susceptibility of each drinking water source (well or surface water intake) to Potential Contaminant Sources (PCSs). The results of the assessment are available in SWAP Assessment Reports that include maps, background information and a relative susceptibility rating of Higher, Moderate or Lower.

The relative susceptibility rating of each source for the City of Winston-Salem (PWSID 0234010) was determined by combining the contaminant rating (number and location of PCSs within the assessment area) and the inherent vulnerability rating (i.e., characteristics or existing conditions of the well or watershed and its delineated assessment area). The assessment findings are summarized in the table below.

The complete SWAP Assessment report for the City of Winston-Salem may be viewed on the Web at: [ncwater.org/?page=600](http://ncwater.org/?page=600). Please indicate your system name (Winston-Salem, City of) or number (0234010).

Note that because SWAP results and reports are periodically updated by the PWS Section, the results available on this web site may differ from the results that were available at the time this report was prepared.

If you are unable to access your SWAP report on the web, you may mail a written request for a printed copy to:  
Source Water Assessment Program – Report Request, 1634 Mail Service Center, Raleigh, NC 27699-1634, or email requests to [swap@ncdenr.gov](mailto:swap@ncdenr.gov).

Please indicate your system name (Winston-Salem, City of), number (0234010), and provide your name, mailing address and phone number.

If you have any questions about the SWAP report please contact the Source Water Assessment staff by phone at 919-707-9098.

It is important to understand that a susceptibility rating of “higher” does not imply poor water quality, only the system’s potential to become contaminated by PCSs in the assessment area.



P.W. Swann Water Treatment Plant

Source Water Assessment Program Results Summary			
Source Name	Inherent Vulnerability Rating	Containment Rating	Susceptibility Rating
Salem Lake	Moderate	Higher	Higher
Yadkin River (Idols Dam)	Higher	Moderate	Higher
Yadkin River (PW Swann WTP)	Higher	Lower	Moderate



# Water Quality

The following substances were detected in Winston-Salem/Forsyth County public water supply during the 2023 calendar year.

Regulated at the Treatment Plant					
Substance	Highest Level Allowed (EPA's MCL <sup>1</sup> )	Ideal Goal (EPA MCLG <sup>2</sup> )	Range of Detections	Average Level Detected	Source
Fluoride, ppm <sup>5</sup>	4.0 <sup>6</sup>	4.0	0.001 - 1.215	0.799	Erosion of natural deposits; Water additive, promotes strong teeth
Orthophosphate, ppm	NA	1.0	0.60 - 1.10 <sup>11</sup>	0.88	Water treatment additive to prevent pipe corrosion
Total Organic Carbon, ppm	Treatment Technique <sup>7</sup>	n/a	0.90 - 2.17	1.37	Naturally present in the environment
Turbidity, NTU <sup>8</sup>	Treatment Technique <sup>9</sup>	n/a	0.02 - 0.19	0.04	Soil erosion
Regulated in the Distribution System					
Total Trihalomethanes, ppb <sup>4</sup>	80 LRAA <sup>10</sup>	0.0	18.8 - 104.0	49.3	Byproducts of drinking water disinfection
Total Haloacetic Acids (5), ppb	60 LRAA <sup>10</sup>	0.0	17.7 - 49.90	32.5	Byproducts of drinking water disinfection
Chlorine, ppm	4.0	4.0	0.72 - 2.11	1.45	Water treatment additive for disinfection
Total Coliforms	Less than 5% positive	0.0	ND - 1.61% <sup>13</sup>	0.18%	Naturally present in the environment
Unregulated Substances at the Treatment Plant - Point of Entry <sup>14</sup>					
Geosmin, ppt <sup>3</sup>	Not Regulated	Not Regulated	1.15 - 5.37	4.21	Byproduct of algae growth <sup>12</sup>
2-methylisoborneol, ppt	Not Regulated	Not Regulated	ND - 5.06	1.60	Byproduct of algae growth <sup>12</sup>
Unregulated Substances at the Treatment Plant - Source Water <sup>14</sup>					
Geosmin, ppt	Not Regulated	Not Regulated	ND - 9.23	1.93	Byproduct of algae growth <sup>12</sup>
2-methylisoborneol, ppt	Not Regulated	Not Regulated	1.09 - 34.70	5.27	Byproduct of algae growth <sup>12</sup>

As part of the Unregulated Contaminant Monitoring Rule 5, WSFC Utilities is voluntarily sampling for 29 per-and polyfluoroalkyl substances and lithium. Since we began this effort, all results have been non-detectable.

## DEFINITIONS:

<sup>1</sup> Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water.

<sup>2</sup> Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health.

<sup>3</sup> ppt - One part per trillion. - (For example, one penny in \$10,000,000,000.)

<sup>4</sup> ppb - One part per billion. - (For example, one penny in \$10,000,000.)

<sup>5</sup> ppm - One part per million. - (For example, one penny in \$10,000.)

<sup>6</sup> The EPA's maximum contaminant level for fluoride is 4.0 mg/L, however the State of North Carolina has established a maximum contaminant level of 2.0 mg/L.

<sup>7</sup> Treatment technique for total organic carbon was complied with throughout 2023.

<sup>8</sup> NTU - nephelometric turbidity unit, a measure of the cloudiness of water.

<sup>9</sup> 95% of the measurements taken in one month must be below 0.3 NTU. Turbidity treatment technique was complied with throughout 2023.

<sup>10</sup> Locational running annual average - average of last four quarters of samples collected at each location at 12 monitoring sites.

<sup>11</sup> A corrosion study was conducted that determined the ideal orthophosphate range for reducing lead and copper corrosion in our system was between 0.50 – 5.00 ppm.

<sup>12</sup> These compounds are created by algae in raw water that can cause an earthy/musty taste or odor in drinking water. While some people may find this unpleasant, there are no known negative health impacts associated with their consumption.

<sup>13</sup> 3 positive TC samples in May 2023 out of 186 samples. 1 positive TC sample in November 2023 out of 185 samples.

<sup>14</sup> Unregulated substances 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 its occurrence in drinking water and whether future regulation is warranted.

ND = not detected

# Physical & Mineral Characteristics Calendar Year 2023

Constituent	Annual Range Detected	Annual Average
Alkalinity, ppm	14.0 - 32.0	23.7
Calcium, ppm	3.19 - 3.63	3.46
Carbon Dioxide, ppm	1.5 - 8.1	6.0
Chlorine, ppm	0.92 - 2.02	1.43
Conductivity, micromhos/cm	86.0 - 139.0	107
Hardness, ppm	10.0 - 29.0	19.9
Magnesium, ppm	1.47 - 1.82	1.66
Manganese, ppm	ND - 0.019	0.003
pH, Standard Units	6.60 - 8.10	7.5
Phosphate, ppm	0.55 - 1.13	0.89
Potassium, ppm	1.61 - 2.26	1.94
Silica, ppm	5.8 - 13.9	10.0
Sodium, ppm	8.62 - 15.90	11.3
Temperature, Deg. C	5.5 - 30.6	17.97
Zinc, ppm	0.16 - 0.31	0.23

ND = not detected

**Cryptosporidium sp.** This is a microscopic organism that, when ingested, can cause diarrhea, fever and other gastrointestinal symptoms. The organism occurs naturally in surface waters (lakes & streams) and comes from animal waste. *Cryptosporidium sp.* is eliminated by an effective treatment combination of coagulation, sedimentation, filtration and disinfection.

We have completed two rounds of 24-month sampling at all of our water sources and have not detected any *cryptosporidium*. In addition, *Cryptosporidium sp.* has never been detected in our treated drinking water.

**Special Concerns** Some people may be more vulnerable to contaminants in drinking water than the general population. People whose immune systems have been compromised – such as people 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 for infections.

These people should seek advice about drinking water from their health care providers. Environmental Protection Agency and Centers for Disease Control guidelines on appropriate means to lessen risk of infection by *Cryptosporidium sp.* and other microbiological contaminants are available from the Safe Drinking Water Hotline at 800-426-4791.

**En Español** Si desea recibir una copia de este reporte en Español o si tiene preguntas con respecto a la calidad del agua que consume, por favor comuníquese con el departamento de servicios públicos durante las horas de trabajo, el teléfono es 336-727-8000 o visite [cityofws.org/wqr2023](http://cityofws.org/wqr2023). Para obtener más traducciones que no estén en inglés, haga clic en el botón Select Language en la parte inferior izquierda.



R.A. Thomas Water Treatment Plant

## Lead Exposure from Water

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.

Winston-Salem/Forsyth County Utilities is responsible for providing high quality drinking water and removing lead pipes, but cannot control the variety of materials used in plumbing components in your home. You share the responsibility for protecting yourself and your family from the lead in your home plumbing. You can take responsibility by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk.

Before drinking tap water, flush your pipes for several minutes by running your tap, taking a shower, doing laundry or a load of dishes. You can also use a filter certified by an American National Standards Institute accredited certifier to reduce lead in drinking water.

If you are concerned about lead in your water and wish to have your water tested, contact Winston-Salem/Forsyth County Utilities at 336-727-8000 or [citylink@cityofws.org](mailto:citylink@cityofws.org). Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at [epa.gov/safewater/lead](http://epa.gov/safewater/lead).



Regulated at the Consumers Tap - 2022 Compliance Samples					
Substance	EPA Action Level <sup>1</sup>	EPA Ideal Goal <sup>2</sup>	Number of Sites Sampled	Number of Sites Above the Action Level	90th Percentile Concentration, ppb
Lead, ppb <sup>3</sup>	15.0	0.0	52	1	ND
Copper, ppb	1300.0	1300.0	52	0	ND
Unregulated at the Consumers Tap - 2023 Customer Samples					
Lead, ppb	15.0	0.0	14	0	3.0
Copper, ppb	1300.0	1300.0	15	0	86.0

### Source (both lead and copper)

Corrosion of household plumbing. Erosion of natural deposits.

### DEFINITIONS:

<sup>1</sup> Action Level - The concentration of a contaminant that triggers treatment or other requirement that a water system must follow. Action levels are reported as the 90th percentile, which is the concentration that 90 percent of the locations sampled falls below. Compliance sampling is required every three years. In 2022, our 90th percentile values for lead and copper were non-detectable.

<sup>2</sup> Ideal Goal - The level of a contaminant in drinking water below which there is no known or expected risk to health.

<sup>3</sup> ppb - One part per billion. - (For example, one penny in \$10,000,000.)

ND = not detected





R.A. Thomas Water Treatment Plant (1951)

## Lead Compliance Program

For more than 20 years, Winston-Salem/Forsyth County Utilities has met or surpassed all federal water quality standards. This includes testing for lead to ensure our water is safe to drink. We are happy to report that our water distribution system remains in full compliance with the EPA's current regulations.

However, lead water pipes may still be found in our system, particularly on private property with older homes and businesses. Because of health hazards associated with lead pipes, the EPA recently directed all public utilities in the United States to inventory service line pipes extending from our water main all the way to each customer's home or business.

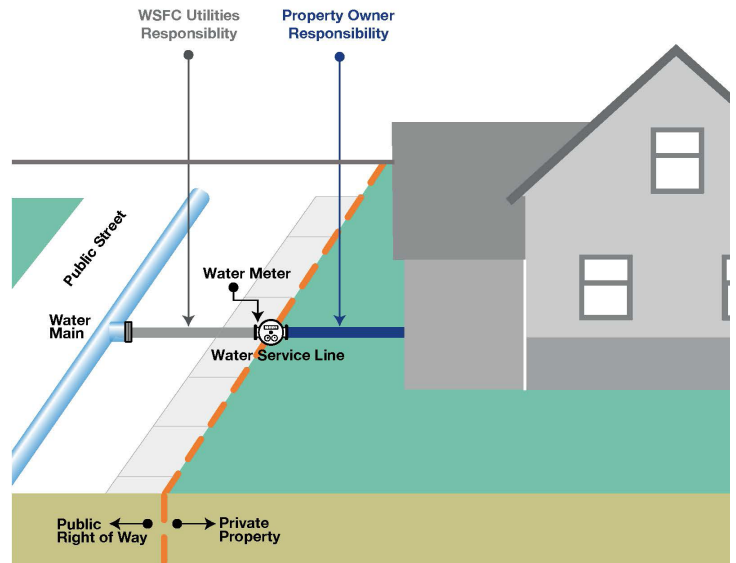
Visit [cityofws.org/pipes](http://cityofws.org/pipes) for more information and complete our online Water Service Line Inventory with easy-to-follow instructions to identify your service line material. You will be able to report your findings and follow the steps provided if you discover lead or potential lead.

Your safety is our number-one priority and this inventory is just one aspect of our Lead Compliance Program. The program includes other activities the EPA is requiring of all utilities to ensure there is no lead in water supplies throughout the nation.



If you're on [wsfutilities.org](http://wsfutilities.org), click the pipe icon and check out our FAQs. If you have questions, contact CityLink at 336-727-8000 or use any method at [cityofws.org/citylink](http://cityofws.org/citylink).

**Note:** For some properties, the exact location where water service line responsibility shifts from WSFC Utilities to the property owner may be different.



Sample Service Line Materials:  
lead, copper, galvanized steel, PVC/plastic

Winston-Salem/Forsyth County Utilities is governed by the WSFC Utility Commission, which meets on the second Monday of each month. Meeting details at [cityofws.org/utilitycommission](http://cityofws.org/utilitycommission). For questions about this report or the quality of our drinking water, call CityLink 311 or 336-727-8000.

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For translations, click Select Language at the bottom left of the webpage.

