

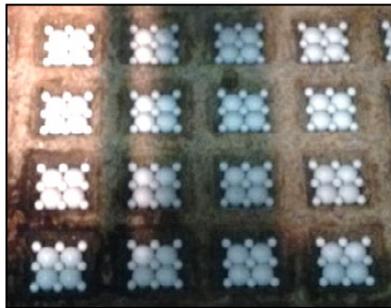


# PLANT FILTERS and REHAB

2017 City of Wilson  
Water Quality Report

# PLANT FILTERS and REHAB

The water treatment plants recently completed a filtration rehabilitation project. The filtration section of the treatment plants is but one part of the overall drinking water treatment process. Between the two treatment plants, there are over 4100 square feet of filtering area distributed through 14 filtering units. The construction of the first four very durable filtering units took place in 1939 and the last two were constructed in 1994. Most of the units are of the Wheeler Bottom design. These have many one foot square inverted pyramids at the bottom with varying size ceramic balls placed in them to distribute backwash water during the cleaning process. Normally water flows down through the filter by gravity. During backwash the flow is reversed by pumping clean water up through the filter, removing impurities trapped in the media so that it can be used over and over again.

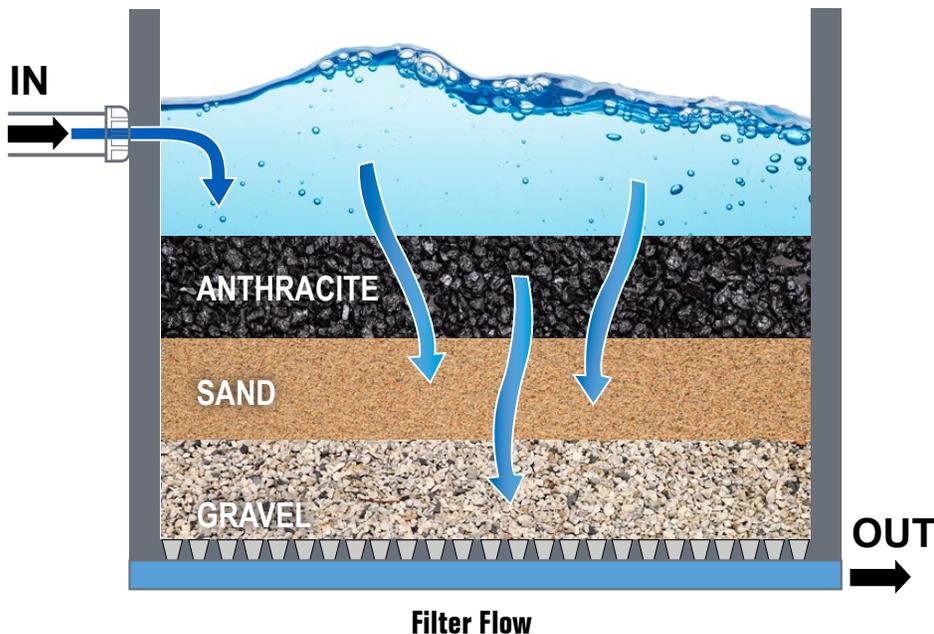


**Wheeler Bottom**



**Wheeler Cones**

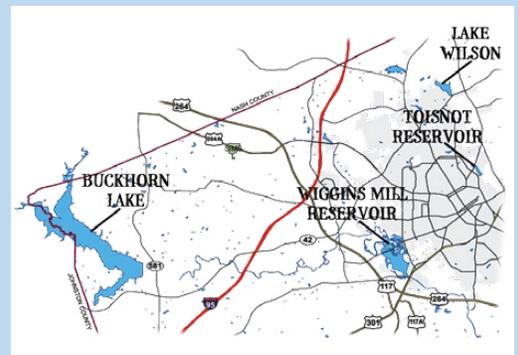
Above the Wheeler Bottom are the ceramic balls and four 3" layers of varying size gravel, again to help distribute the backwash water and to support the next layer. The next layer being 10" of sand. This sand layer works in conjunction with the 20" layer of anthracite on top. These two layers make up our 'dual media filter'. Our filtering media lasted us 23 years and was in need of replacement. This project took three months to complete.



## City of Wilson's Source Waters

### Cryptosporidium

Our system monitored for Cryptosporidium during 2017 and had detections in two samples at Wiggins Mill Reservoir for an average of 0.025 oocysts/Liter and detections in two samples at Toisnot Reservoir for an average of 0.016 oocysts/Liter. Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration removes Cryptosporidium, the most commonly-used filtration methods cannot guarantee 100 percent removal. Our monitoring indicates the presence of these organisms in our source water and/or finished water. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water.



The City of Wilson obtains its water supply from two sources. The first source is Contentnea Creek and consists of the Buckhorn Lake and the downstream Wiggins Mill Reservoir. Buckhorn Lake is the City's largest water supply reservoir and is an impoundment on the Contentnea Creek approximately 12 miles west of the city. Water is released from Buckhorn Lake into Contentnea Creek and is pumped from the downstream Wiggins Mill Reservoir to the Wiggins Mill Water Treatment Plant and to the Toisnot Water Treatment Plant. The other water supply source for the City is Toisnot Reservoir and consists of Lake Wilson and the downstream Toisnot Reservoir, which together provide water for the Toisnot Water Treatment Plant. A connection from the Tar River Reservoir to upstream of Lake Wilson is also available as a water supply during emergency conditions.

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).

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 health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

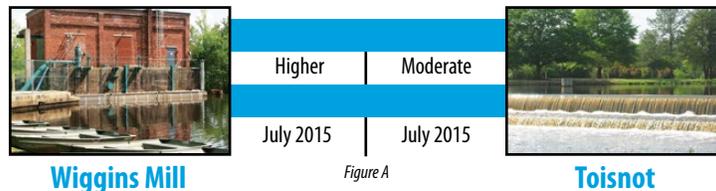
If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Wilson is responsible for providing high quality drinking 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 30 seconds to 2 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 or at <http://www.epa.gov/safewater/lead>.

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 and, in some cases, radioactive material, and can 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 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; 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, urban storm water runoff, and septic systems; and radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

### Source Water Assessment Program (SWAP)

The North Carolina Department of Environment and Natural Resources (DENR), 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 of the City of Wilson 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 Figure A.



The complete SWAP Assessment report for the City of Wilson may be viewed on the Web at <http://www.ncwater.org/pws/swap>. Please note that because SWAP results and reports are periodically updated by the PWS Section, the results available on this website may differ from the results that were available at the time this report was prepared. To obtain a printed copy of this report, please mail a written request to: Source Water Assessment Program – Report Request, 1634 Mail Service Center, Raleigh, NC 27699-1634, or e-mail request to [swap@ncdenr.gov](mailto:swap@ncdenr.gov). Please indicate your system name, PWSID, 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 systems’ potential to become contaminated by PCSs in the assessment area.

### For more water quality information:

#### City of Wilson Water Resources

Wiggins Mill Water Treatment Facility  
P.O. Box 10, Wilson, NC 27894  
Telephone: (252) 399-2378

#### North Carolina Department of Environmental Quality (NCDEQ)

512 North Salisbury Street  
P.O. Box 27687, Raleigh, NC 27611-7867  
Telephone: (919) 733-2321

#### Environmental Protection Agency (EPA)

401 M Street, SW, Washington, DC 20460  
Telephone: (202) 260-2090

#### Safe Drinking Water Hotline

Telephone: (800) 426-4791

#### American Water Works Association (AWWA)

6666 West Quincy Avenue Denver, CO 80235  
Telephone: (303) 794-7711

The City of Wilson Water Resources is affiliated with the following organizations: American Water Works Association, North Carolina Water Works Operators Association, North Carolina Rural Water Association, and Water Environment Federation

City Council Meetings are held on the third Thursday of each month. Your participation is welcome.

### How is the water treated?

Raw water is pumped from either Toisnot Reservoir or Wiggins Mill Reservoir to the treatment facilities. At certain times of the year, the lakes are treated with copper sulfate to limit algae growth which could cause bad tastes and odors. When raw water enters the facility, a substance commonly called ferric sulfate reacts with natural alkalinity, added lime, or sodium hydroxide to cause small particles to cling to one another after strong mixing. Powdered activated carbon is added to control taste and odor causing substances that occur naturally in the raw water. The water is then mixed slowly and another chemical called polymer is added. The particles are then much larger. The water then enters large tanks called settling basins where the heavy particles settle. Other chemicals are added to remove minerals in the filters. The water is then filtered through sand and anthracite to remove remaining fine particles. Chlorine is added to kill harmful bacteria, protozoans, and viruses. Lime or sodium hydroxide and a corrosion inhibitor are added to maintain pH and minimize the potential for corrosion in distribution lines and household plumbing. Fluoride is added to aid in the prevention of tooth decay. The water is then pumped into the distribution system for home, business, and industrial use.

**2017 Annual Consumer Confidence Report Information**  
**City of Wilson**  
**P.O. Box 10**  
**Wilson, NC 27894**

**City of Wilson's Water Treatment Facilities**

<b>Turbidity*</b>							
Contaminant (Units)	Treatment Technique (TT) Violation if:	MCLG	Your Water	Likely Source of Contamination	Treatment Technique (TT) Violation Y/N		
<b>Turbidity (NTU)</b> - Highest Single Turbidity Measurement	Turbidity >1 NTU	N/A	0.28 NTU	Soil runoff	<b>NO</b>		
<b>Turbidity (NTU)</b> - Lowest Monthly Percentage (%) of Samples Meeting Turbidity Limits	Less than 95% of Monthly Turbidity Measurements are ≤ 0.3 NTU	N/A	100%				
*Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. The turbidity rule requires that 95% or more of the monthly samples must be less than or equal to 0.3 NTU.							
<b>Inorganic Contaminants</b>							
Contaminant (Units)	Year Sampled	MCL	MCLG	Level Detected	Range Detected	Likely Source of Contamination	MCL Violation Y/N
<b>Fluoride (ppm)</b>	2017	4	4	0.67	0.58 - 0.77	Erosion of natural deposits; water additives which promotes strong teeth; discharge from fertilizer and aluminum factories	<b>NO</b>
<b>Disinfection By-Product Precursors Contaminants</b>							
Contaminant	TT	MCLG	Compliance Method (Step 1 or ACC#)	Level Detected (RAA Removal Ratio)	Range (Monthly Removal Ratio)	Likely Source of Contamination	MCL Violation Y/N
<b>Total Organic Carbon (TOC) (Removal Ratio) - Treated Water</b>	TT	N/A	Step 1	1.62	1.23 - 1.92	Naturally present in the environment	<b>NO</b>

**City of Wilson's Distribution System**

<b>Stage 2 Disinfection Byproduct Compliance-Based upon Locational Running Annual Average (LRAA)</b>							
Disinfection Byproducts	Year Sampled	MCL	MCLG	Your Water (Highest LRAA)	Range Detected	Likely Source of Contamination	MCL Violation Y/N
<b>TTHM (ppb)</b>	2017	80	N/A	71.3	12 - 85	By-product of drinking water disinfection	<b>NO</b>
<b>HAA5 (ppb)</b>	2017	60	N/A	51.0	30 - 54	By-product of drinking water disinfection	<b>NO</b>
Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer. Some people who drink water containing haloacetic acids in excess of the MCL over many years have an increased risk of getting cancer.							
<b>Disinfectant Residuals Summary</b>							
Contaminant (Units)	Year Sampled	MRDL	MRDLG	Your Water (Highest RAA)	Range Detected	Likely Source of Contamination	MRDL Violation Y/N
<b>Chlorine (ppm)</b>	2017	MRDL = 4.0	MRDLG = 4	0.78	0.20 - 1.53	Water additive used to control microbes	<b>NO</b>
<b>Regulated at the Tap - Lead and Copper Contaminants</b>							
Contaminant (Units)	Date Last Tested	AL	MCLG	Your Water	Number of Sites Found Above AL	Likely Source of Contamination	MCL Violation Y/N
<b>Lead (ppb) (90<sup>th</sup> Percentile)</b>	2016	AL = 15	0	None Detected (90th percentile)	2	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives	<b>NO</b>
<b>Copper (ppm) (90<sup>th</sup> Percentile)</b>	2016	AL = 1.3	1.3	0.281 (90th percentile)	0	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives	<b>NO</b>

**Table Definitions and Key**

<b>TT</b>	Treatment Technique- A required process intended to reduce the level of a contaminant in drinking water	<b>NA</b>	Not applicable- Information not applicable/not required for that particular water system or for that particular rule.
<b>AL</b>	Action Level- The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.	<b>NTU</b>	Nephelometric Turbidity Units- Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
<b>MCL</b>	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.	<b>ppm</b>	parts per million- One part per million corresponds to one penny in \$10,000 dollars.
<b>MCLG</b>	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.	<b>ppb</b>	parts per billion- One part per billion corresponds to one penny in \$10,000,000 dollars.
<b>MRDL</b>	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.	<b>ppt</b>	parts per trillion- One part per trillion would correspond to one ounce of water in Buckhorn Lake, which holds 7.5 billion gallons
<b>MRDLG</b>	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.	<b>LRAA</b>	Locational Running Annual Average-The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters under the Stage 2 Disinfectants and Disinfection Byproducts Rule.