



2017 Annual Drinking Water Quality Report

Johnston County Public Utilities

PWS # 40-51-018 EAST

PWS # 03-51-070 WEST



We are pleased to present to you this year's Annual Drinking Water Quality Report. This report is a snapshot of last year's water quality. Included are details about from where your water comes, what it contains, and how it compares to standards set by regulatory agencies. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water and to providing you with this information.

Este informe contiene información muy importante sobre la calidad de su agua potable. Una copia de este reporte en español está disponible en la Oficina de Servicio Público en el Centro de Land Use.

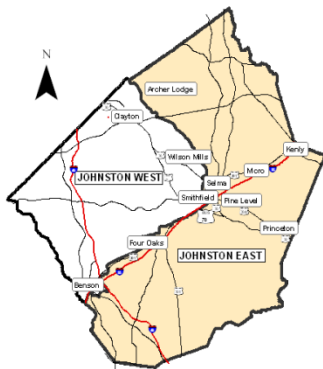
The Johnston County water system has two service areas called **Johnston East** and **Johnston West**. The Johnston East service area is generally described as the area east of the Neuse River and south of I-95. The Johnston West service area is the area west of the Neuse River and north of I-95. Please refer to the map. Water supplied to the Johnston East service area has free chlorine as a secondary disinfectant since April 2011. Water supplied to the Johnston West service area has chloramines (a combination of chlorine and ammonia) as a secondary disinfectant. The quality data for both service areas are provided to all customers.

We provide service for communities, towns and cities throughout our county including most unincorporated parts of the county and the towns of Archer Lodge, Four Oaks, Princeton, Kenly, Clayton, and Wilson's Mills. The County system also supplements the towns of Micro, Benson, Pine Level, Smithfield, Selma, and Fuquay Varina with additional water.

In 2016 our water department produced and provided approximately 2.6 billion gallons of water to our customers. Our water source is surface water from the Neuse River, which forms just above Durham where the Eno and Flat Rivers converge. The Neuse River flows approximately 190 miles through eastern North Carolina to the Pamlico Sound. Our intake and treatment facility are located one half mile east of Wilson's Mills, N.C. There are two reservoirs on site. Each reservoir contains 35 million gallons. The treatment system has five main steps to remove or reduce harmful contaminants: presedimentation, coagulation, clarification, filtration by multimedia high rate filters, and disinfection. Once treatment is complete, water is pumped into elevated storage tanks for distribution throughout the water system. Johnston County also purchases water from the Town of Smithfield and Harnett County on a bulk basis. The source of the Smithfield supply is the Neuse River and Harnett County supply is the Cape Fear River. The treatment processes are similar to the county's. Water purchased from Smithfield and Harnett County mixes with water produced by the county in the distribution system.

The U.S. Environmental Protection Agency (EPA) wants you to know:

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 (EPA) Safe Drinking Water Hotline (800-426-4791). 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 that 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.



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 microbial contaminants are available from the Safe Water Drinking 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. Johnston County Public 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 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 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 assessments 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 the source for Johnston County Public Utilities was determined by combining the contaminant rating (number and location of PCSs within watershed) and the inherent vulnerability rating (i.e., characteristics or existing conditions of the watershed and its delineated assessment area). 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. The assessment findings are summarized in the table below:

Susceptibility of Sources to Potential Contaminant Sources (PCSs)		
Source Name	Susceptibility Rating	SWAP Report Date
Neuse River	Higher	September 2017

HAA5	ppb	N/A	60	38		2017	No	Byproduct of drinking water chlorination
B01					15 - 30			
B02					15 - 51			
B03					10 - 31			
B04					13 - 27			
B05					14 - 33			
B06					24 - 30			
B07					20 - 25			
B08					29 - 52			

For TTHM: 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.

For HAA5: Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased chance of getting cancer

Inorganic Contaminants

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
Fluoride (ppm)	March 2017	N	0.26	N/A		4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories

Contaminant (units)	Treatment Technique (TT) Violation Y/N	Your Water	MCLG	Treatment Technique (TT) Violation if:	Likely Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement	N	0.169 NTU	N/A	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	N	100 %	N/A	Less than 95% of monthly turbidity measurements are ≤ 0.3 NTU	

*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.

Synthetic Organic Chemical (SOC) Contaminants including Pesticides and Herbicides

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
Simazine (ppb)	2017	N	0.2	NA		4	4	Herbicide runoff

Lead and Copper Contaminants: Pregnant women, infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

Contaminant	Units	Sample Date	Your Water	# of sites found above the AL	MCLG	MCL	Likely Source of Contamination
Copper (90 th percentile)	ppm	July 2015	0.077	0	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (90 th percentile)	ppb	July 2015	0	0	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits

Radiological Contaminants						
Contaminant (units)	Sample Date	MCL Violation Yes/No	Your Water (RAA)	MCLG	MCL	Likely Source of Contamination
Alpha emitters (pCi/L)	2007	No	0.13	0	15	Erosion of natural deposits
Beta/photon emitters (pCi/L)	2007	No	1.57	0	50*	Decay of natural and man-made deposits
Combined radium (pCi/L)	2007	No	0.05	0	5	Erosion of natural deposits

*Note: The MCL for beta particles is 4 mrem/year. EPA considers 50 pCi/L to be the level of concern for beta particles

Total Organic Carbon (TOC): Depending on the TOC in our source water, the system MUST have a certain % removal of TOC or must achieve alternative compliance criteria. If we do not achieve that % removal, there is an alternative % removal. If we fail to meet the alternative % removal, we are in violation of a Treatment Technique. (2017)							
Contaminant (units)	TT Violation Yes/No	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low - High	MCLG	MCL	Likely Source of Contamination	Compliance Method (Step 1 or ACC#_)
Total Organic Carbon (removal ratio) (TOC)-TREATED	No	1.36	1.28 - 1.48	N/A	TT	Naturally present in the environment	Step 1

Water Characteristics Contaminants: The PWS section requires monitoring of other misc contaminants, some for which the EPA has set national secondary drinking water standards (SMCLs) because they may cause cosmetic or aesthetic effects (such as taste, odor, and or color) in drinking water. The contaminants with SMCLs normally do not have any health effects and normally do not affect the safety of your water.				
Contaminant (units)	Sample Date	Your Water	Range Low High	Secondary MCL
Sodium (ppm)	March 2017	39.1	N/A	N/A
pH	March 2017	6.1	N/A	6.5 to 8.5

Step 1 TOC Removal Requirements (%)			
Source Water TOC (mg/L)	Source Water Alkalinity Mg/L as CaCO3 (in percentages)		
	0 - 60	> 60 - 120	> 120
> 2.0 - 4.0	35.0	25.0	15.0
> 4.0 - 8.0	45.0	35.0	25.0
> 8.0	50.0	40.0	30.0

Water Quality Data Table(s) Town of Smithfield Water Treatment Plant:

Town of Smithfield Water Treatment Plant 2016 Data				
Contaminant	Units	Level Detected	Range Low High	Sample Date
Haloacetic Acids (Haa5)	ppb	53.0 (AVG)	24.8 - 51.8	2016
Total Trihalomethanes (TTHMs)	ppb	49.0 (AVG)	24.0 - 65.0	2016
Chloramines	ppm	2.71	0 - 3.4	2016
Chlorine	ppm	0.98	0.98 - 1.55	2016
Fluoride	ppm	0.48	N/A	2016
Turbidity	NTU	0.17 (highest)	100% of samples below limit	2016

Smithfield Water Treatment Plant 2016 Data		
Susceptibility of Sources to Potential Contaminant Sources (PCS)		
Source Name	Susceptibility Rating	SWAP Report Date
Neuse River	Higher	June 2014

Step 1 TOC Removal Requirements (%)			
Source Water TOC (mg/L)	Source Water Alkalinity Mg/L as CaCO3 (in percentages)		
	0 - 60	> 60 - 120	> 120

Town of Smithfield Water Treatment Plant Disinfection Byproduct Precursors Contaminants 2016 Data								
Contaminant (units)	TT Violation Yes/No	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low - High	MCLG	MCL	Likely Source of Contamination	Compliance Method (Step 1 or ACC#_)	
Lead	No	1.16	1.06 - 1.45	N/A	TT	Naturally present in the environment	Step 1 and ACC#4	
Sulfate								
pH								
Sodium								
Simazine	ppb	0.2	0.0 - 2.4					

Water Quality Data Table(s) Johnston County East PWS# 40-51-018 : 2017

Stage 2 Disinfectant Byproduct Compliance- Based on Locational Running Average (LRAA)								
Disinfection Byproduct	Units	MCLG	MCL	Your Water (highest LRAA)	Range Low High	Year Sampled	MCL/ Violation (Yes / No)	Likely Source of Contamination
TTHM	ppb	N/A	80	55		2017	No	Byproduct of drinking water disinfection
B01					13 - 69			
B02					34 - 77			
B03					31 - 81			
B04					10 - 97			
HAA5	ppb	N/A	60	32		2017	No	Byproduct of drinking water chlorination
B01					17 - 35			
B02					22 - 44			
B03					28 - 30			
B04					7 - 31			
Inorganic Contaminants								
Fluoride	ppm	4	4	0.18	N/A	2017	No	Erosion of natural deposits; Water additive which promote strong teeth; discharge from fertilizer and aluminum factories
<p>For TTHM: 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.</p> <p>For HAA5: Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased chance of getting cancer.</p>								

Lead and Copper Contaminants: Pregnant women, infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

Contaminant	Units	Sample Date	Your Water	Number of sites found above the AL	MCLG	MCL	Likely Source of Contamination
Copper (90 th percentile)	ppm	July 2017	0.14	0	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (90 th percentile)	ppb	July 2017	0	0	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits

Disinfectant Residuals Summary							
Contaminant (units)	Year Sampled	MRDL Violation Y/N	Your Water (highest RAA)	Range Low High	MRDLG	MRDL	Likely Source of Contamination
Chlorine (ppm)	2017	N	1.49	0.21 – 3.66	4	4.0	Water additive used to control microbes

Turbidity* Contaminant (units)	Treatment Technique (TT) Violation Y/N	Your Water	MCLG	Treatment Technique (TT) Violation if:	Likely Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement	N	0.206 NTU	N/A	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	N	100 %	N/A	Less than 95% of monthly turbidity measurements are ≤ 0.3 NTU	

*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.

Total Organic Carbon (TOC): Depending on the TOC in our source water, the system MUST have a certain % removal of TOC or must achieve alternative compliance criteria. If we do not achieve that % removal, there is an alternative % removal. If we fail to meet the alternative % removal, we are in violation of a Treatment Technique. (2017)							
Contaminant (units)	TT Violation Yes/No	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low - High	MCLG	MCL	Likely Source of Contamination	Compliance Method (Step 1 or ACC#_)
Total Organic Carbon (removal ratio) (TOC)-TREATED	No	1.45	1.21 - 1.64	N/A	TT	Naturally present in the environment	Step 1

Step 1 TOC Removal Requirements (%)			
Source Water TOC (mg/L)	Source Water Alkalinity Mg/L as CaCO3 (in percentages)		
	0 - 60	> 60 - 120	> 120
> 2.0 - 4.0	35.0	25.0	15.0
> 4.0 - 8.0	45.0	35.0	25.0
> 8.0	50.0	40.0	30.0

Water Characteristics Contaminants: The PWS section requires monitoring of other misc contaminants, some for which the EPA has set national secondary drinking water standards (SMCLs) because they may cause cosmetic or aesthetic effects (such as taste, odor, and or color) in drinking water. The contaminants with SMCLs normally do not have any health effects and normally do not affect the safety of your water.				
Contaminant (units)	Sample Date	Your Water	Range Low High	Secondary MCL
Sodium (ppm)	April 2017	47.5	N/A	N/A
pH	April 2017	7.4	N/A	6.5 to 8.5

Synthetic Organic Chemical (SOC) Contaminants including Pesticides and Herbicides								
Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
Simazine (ppb)	2017	N	0.125	0.09	0.16	4	4	Herbicide runoff

Water Quality Data Table(s) Harnett County Water Treatment Plant :

Harnett County Water Treatment Plant 2016 Data				
Contaminant	Units	Level Detected	Range Low High	Sample Date
Haloacetic Acids (Haa5)	ppb	29 (AVG)	8.5 - 24.6	2016
Total Trihalomethanes (TTHMs)	ppb	35.0 (AVG)	11 - 52	2016
Chloramines	ppm	3.04	1.08 - 3.98	2016
Chlorine(only month of March)	ppm	2.43	0.71 - 3.80	2016
Fluoride	ppm	0.60	N/A	2016
Turbidity	NTU	0.09 (highest)	100% of samples below limit	2016
Copper	ppm	0.155 (90 th percentile)	N/A	2016
Lead	ppb	0 (90 th percentile)	N/A	2016
Sulfate	ppm	46.6	N/A	2016
pH	N/A	6.9	N/A	2016
Sodium	ppm	25.09	N/A	2016
Chlorite(Distribution)	ppm	0.240	0.14 - 0.350	2016
Chlorine Dioxide	ppb	76	0 - 488	2016

Step 1 TOC Removal Requirements (%)			
Source Water TOC (mg/L)	Source Water Alkalinity Mg/L as CaCO3 (in percentages)		
	0 - 60	> 60 - 120	> 120
> 2.0 - 4.0	35.0	25.0	15.0
> 4.0 - 8.0	45.0	35.0	25.0
> 8.0	50.0	40.0	30.0

SWAP Result Summary Harnett County 2016			
Source Name	Inherent Vulnerability Rating	Contaminant Rating	Susceptibility Rating
Cape Fear River	Higher	Moderate	Higher

Harnett County Water Treatment Plant Disinfection Byproduct Precursors Contaminants 2016 Data							
Contaminant (units)	TT Violation Yes/No	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low - High	MCLG	MCL	Likely Source of Contamination	Compliance Method (Step 1 or ACC#_)
Total Organic Carbon (removal ratio)	No	1.45	1.33 - 1.56	N/A	TT	Naturally present in the environment	Step 1

Asbestos Contaminant Harnett County								
Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
Total Asbestos(MFL)	1/13/11	N	ND	N/A		7	7	Decay of asbestos cement water remains; erosion of natural deposits.

Harnett County Water Treatment Plant Microbiological Contaminants					
Contaminant (units)	MCL Violation Y/N	Your Water	MCLG	MCL	Likely Source of Contamination
Total Coliform Bacteria (presence or absence)	N	5.6%	0	>5% triggers level 1 assessment	Naturally present in the environment
Fecal Coliform or <i>E. coli</i> (presence or absence)	N	0%	0	0	Human and animal fecal waste

(MFL)- Million fibers per Liter- a measurement of the presence of asbestos fibers that are longer than 10 micrometers.

In 2017, our system performed monthly source water monitoring for *Cryptosporidium* to satisfy the EPA Long Term 2 Enhanced Surface Water Treatment Rule. A level of 0.09 cysts/Liter was found in our source water (prior to treatment) for the month of January 2017.

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. 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, and 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 spread through means other than drinking water.

In our continuing efforts to maintain a safe and dependable water supply it may be necessary to make improvements in the water system. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements.

Our staff in the Johnston County Utility Department work around the clock to provide top quality water to every tap. We ask that all our customers help us protect our water sources, which are the heart of our community, our way of life and our children's future.

This institution is an equal opportunity provider and employer. Discrimination is prohibited by Federal Law. To file a complaint of discrimination, write USDA, Assistant Secretary for Civil Rights, 1400 Independence Avenue SW, Stop 9410, Washington, DC 20250-9410 or call toll-free at (866) 632-9992 (English) or (800) 877-8339 (TDD) or (866) 377-8642 (English Federal-relay) or (800) 845-6136 (Spanish Federal-relay).

