



# County of Brunswick Water Quality Report–2016

## IMPORTANT PHONE NUMBERS

**BILLING QUESTIONS**  
[\(910\) 253-2655](tel:(910)253-2655)

## WATER EMERGENCIES

8:00 a.m. to 4:30 p.m.  
[\(910\) 253-2657](tel:(910)253-2657)

## AFTER HOURS

4:30 p.m. to 8:00 a.m.  
Northwest WTP  
[\(910\) 371-3490](tel:(910)371-3490)

211 WTP  
[\(910\) 454-0512](tel:(910)454-0512)

EPA SAFE DRINKING WATER HOTLINE  
[1-800-426-4791](tel:1-800-426-4791)

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## FROM THE DIRECTOR

The Public Utilities Water Distribution Division would like to let you know that we are here to serve you with any of your water needs 24 hours a day. If you plan to dig and are not sure who to call, we can help. We have all the numbers you will need to contact other utilities for locates. If you have any water quality issues or feel that your meter is not working, please contact our office at (910) 253-2657; we will be glad to work with you to solve any water issues. If you have questions about your backflow device or need it inspected, we can help – please call (910) 253-2683.

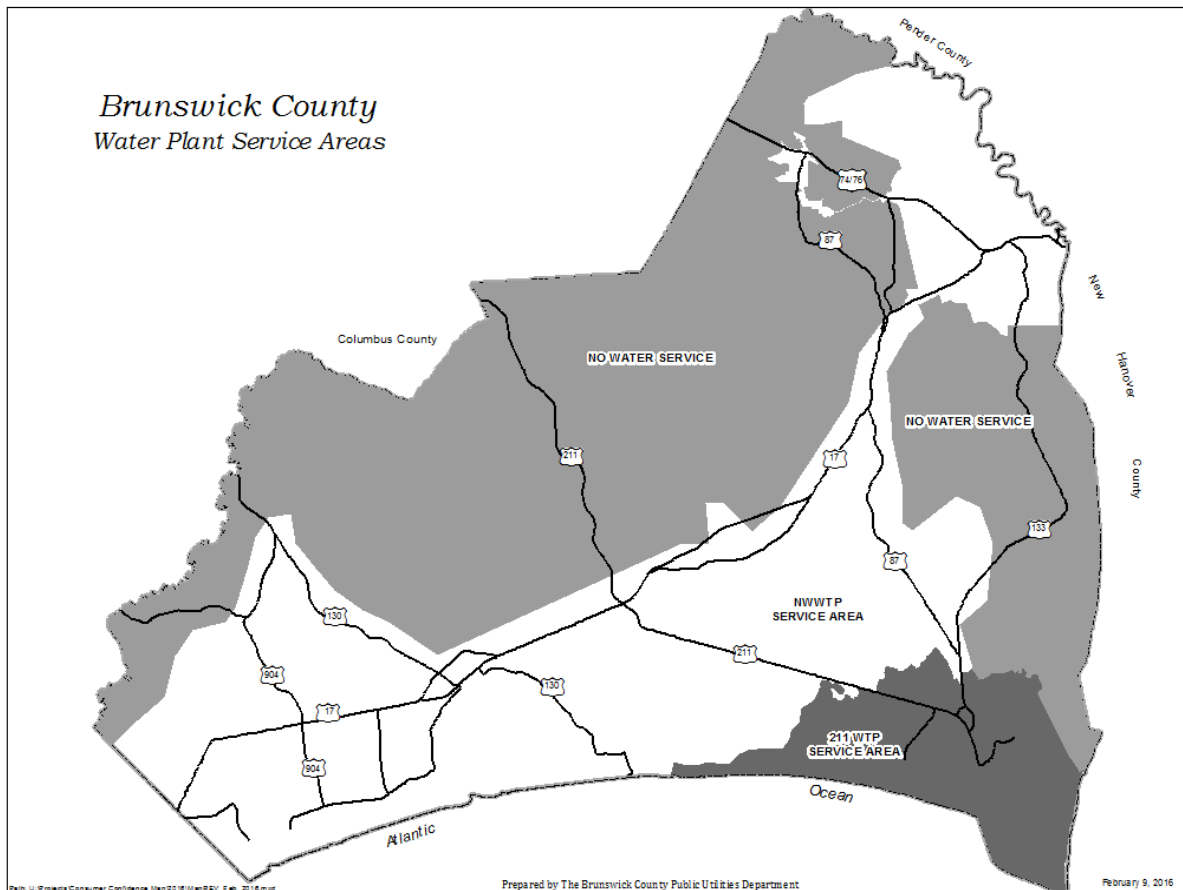
### Interesting Facts:

Total Brunswick County Water System Capacity: 30 MGD

The Greatest One Day System Demand of the Year for 2016 was 24.65 million gallons (MGD) on July 29, 2016.

## Find Your Service Area

This year we have three data tables on pages 3 & 4, each of which represents the water quality coming from our two water treatment plants and the distribution system. Citizens in Northwest, Leland, and all the way down HWY 17 to Carolina Shores receive water from the Northwest WTP (NWWTP) and citizens in the area of HWY 211 near the towns of St. James, Southport, and Oak Island primarily receive water from the 211 WTP.



## Sources of Drinking Water

**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. 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.

### The NC Source Water Assessment Program (SWAP)

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 Brunswick County 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 as of June 2015 are summarized in the table below.

**Susceptibility of Sources to Potential Contaminant Sources (PCSs)**

Source Name	Susceptibility Rating
CAPE FEAR RIVER	Moderate
WELL #1, 2, 15, 16, & 17	Lower
WELL # 3, 8, 11, 12, 12A, 18, & 19	Moderate
WELL # 5, 6A, & 7	Higher

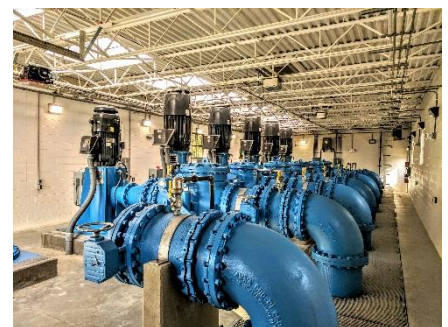
The complete SWAP Assessment Report for the Brunswick County Water System may be viewed on the Web by typing the following address into your browser: [http://www.ncwater.org/files/swap/SWAP\\_Reports/0410045\\_8\\_26\\_2015\\_17\\_22.pdf](http://www.ncwater.org/files/swap/SWAP_Reports/0410045_8_26_2015_17_22.pdf) To obtain a printed copy of this 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.

## Water Treatment Division

Our water comes from two sources, the Cape Fear River, which is pumped to us by the Lower Cape Fear Water and Sewer Authority, and groundwater from the Castle Hayne Aquifer. The Northwest Water Treatment Plant in the Leland area treats the water from the Cape Fear River and our second source is utilized by the 211 Water Treatment Plant in Southport. Fourteen (14) different groundwater wells are tapped into the Castle Hayne Aquifer approximately 175 ft. below the ground’s surface.

### Northwest Water Treatment Plant

Northwest WTP congratulates operators Phillip McCulloch and Jonathan Addler for attaining their A-surface water treatment license. Our facility completed construction of the finished water pump station, filter basin rehabilitation, and renovation of the administration spaces with our local branch of HDR Engineering.



### 211 Water Treatment Plant

The 211 Water Treatment Plant staff continues to provide quality water service to the areas of Southport, Oak Island, and St. James Plantation. The 211 WTP is currently under construction for an additional one million gallon clearwell and sludge handling facilities.



# Brunswick County Water Quality Report 2016 Continued:

## Customer Input

**Our Utility Board may meet on the second Monday of the quarter in the Brunswick County Public Utilities Operations Center at 250 Grey Water Road, Supply. Please check with the Engineering Dept. 910-253-2500 for more information.**

### Terms & abbreviations used in the table below:

- **Maximum Contaminant Level Goal (MCLG):** 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.
- **Maximum Contaminant Level (MCL):** 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.
- **Action Level (AL):** the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow.
- **Locational Running Annual Average (LRAA) –** 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.
- **N/A:** not applicable • **ntu:** nephelometric turbidity unit (cloudiness) • **ppb-ug/L:** parts per billion or micrograms per liter • **ppm-mg/L:** parts per million or milligrams per liter • **pCi/l:** Pico-curies per liter (a measure of radiation) • **MGD:** million gallons a day

Water Quality Results For 2016						
Listed below are the results of water quality sampling performed from January 1, 2016, to December 31, 2016.						
Questions and Comments: Contact Glenn Walker, Water Treatment Plant Superintendent, 910-371-3490 or glenn.walker@brunswickcountync.gov						
Northwest Water Treatment Plant Analysis						
REGULATED ORGANIC CHEMICALS	EPA's MCL	EPA's MCLG	Brunswick County Amount Detected	Range Low High	Violation Y/N	Source of Contaminant
Turbidity	Treatment Technique Limit of 1.0 ntu	N/A	Average 0.039 ntu	% of samples ≤ 0.3 ntu 99.8%	Y	Soil Runoff
			Maximum 1.822 ntu			
Raw Water TOC	Treatment Technique 45% Removal Efficiency	N/A	Average 8.125 ppm	4.9 14.2	N	Naturally Present in the Environment
Finish Water TOC		N/A	Average 3.092 ppm	2.6 4.0		
Total Organic Carbon (TOC)	Treatment Technique	N/A	Removal Efficiency Average 59.9%	43% - 74%	N	
pH	6.8 - 8.5	N/A	7.09	6.99 - 7.29	N	By-Product of Caustic Addition
REGULATED INORGANIC CHEMICALS						
Chlorite	1.0 ppm	0.8 ppm	Average 0.72 ppm	0.61 1.07	N	By-Product of Disinfection
Chlorine Dioxide	0.8 ppm	0.8 ppm	Average 0.16 ppm	0.08 0.36	N	Water Additive Used to Control Microbes
Fluoride	4 ppm	4 ppm	Average 0.55 ppm	0.0 0.71	N	Water Additive Which Promotes Strong Teeth
Orthophosphate	17 ppm	N/A	Average 1.67 ppm	1.5 1.9	N	Water Additive Used to Control Corrosion
Total Chlorine	4 ppm	4 ppm	Average Minimum 2.25 ppm	1.0 2.8	N	Water Additive Used to Control Microbes
Monochloramine Disinfectant Residual	4 ppm	4 ppm	2.91 ppm	0.0 2.76	N	Water Additive Used to Control Microbes
UNREGULATED SUBSTANCES						
Hardness	Non-Regulated	N/A	Average 22.5 ppm	23 41	N	Part of the Treatment Process, Erosion of Natural Deposits
Iron	Non-Regulated	N/A	Average 0.031 ppm	0.01 0.12	N	Part of the Treatment Process, Erosion of Natural Deposits
Manganese	Non-Regulated	N/A	0.013 ppm	0 0.03	N	Part of the Treatment Process, Erosion of Natural Deposits
Free Ammonia	Non-Regulated	N/A	0.035 ppm	0.0 0.08	N	Water Additive Used to Control Microbes
Sodium	Non-Regulated	N/A	26 ppm	N/A	N	Part of the Treatment Process, Erosion of Natural Deposits
<b>CRYPTOSPORIDIUM - Cape Fear River 2016</b>		N/A	0.2 oocyst	0.0 0.2	N	Naturally Present in the Environment



# Brunswick County Water Quality Report 2016 Continued:

**Northwest WTP is monitoring for Cryptosporidium** (a protozoan) monthly and has detected oocysts (egg-like structure) in the Cape Fear River raw water supply for 2016. Cryptosporidium is a microbial parasite which is found in surface water throughout the U.S. Although Cryptosporidium can be removed by filtration, the most commonly used filtration methods cannot guarantee 100 percent removal. Our monitoring of the source water indicates the presence of these organisms. Current test methods do not enable us to determine if the organisms are dead or if they are capable of causing disease. The Northwest WTP takes precautions to kill and remove Cryptosporidium oocysts by using Chlorine Dioxide as a pre-oxidant disinfectant in our raw water supply line and then again applying Chlorine Dioxide just after filtration. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immunocompromised people have more difficulty and are at greater risk of developing severe, life-threatening illness. Immunocompromised individuals are encouraged to consult their doctor regarding appropriate precautions to take to prevent infection. Cryptosporidium must be ingested for it to cause disease, and it may be spread through means other than drinking water.

HWY 211 Groundwater Treatment Plant Analysis							
Questions and Comments: Contact Jeremy Sexton, Water Treatment Plant Superintendent, 910-454-0512 or jeremy.sexton@brunswickcountync.gov							
	EPA's MCL	EPA's MCLG	Brunswick County Amount Detected	Range Low	High	Violation Y/N	Source of Contaminant
<b>UNREGULATED SUBSTANCES</b>							
Turbidity	Non-Regulated	N/A	Average 0.67 ntu	0.2	2.6	N	Part of the Treatment Process, Erosion of Natural Deposits
pH	Non-Regulated	N/A	-----	6.7	8.0	N	Part of the Treatment Process
CO2	Non-Regulated	N/A	7.5	4	13	N	Part of the Treatment Process
Alkalinity	Non-Regulated	N/A	33	18	186	N	Part of the Treatment Process, Erosion of Natural Deposits
Hardness	Non-Regulated	N/A	109	68	241	N	Part of the Treatment Process, Erosion of Natural Deposits
Iron	Non-Regulated	N/A	0.06	0	0.4	N	Part of the Treatment Process, Erosion of Natural Deposits
Chloride	Non-Regulated	N/A	22	9	29	N	Part of the Treatment Process, Erosion of Natural Deposits
Free Ammonia	Non-Regulated	N/A	0.03	0	0.31	N	Water Additive Used to Control Microbes
<b>REGULATED INORGANIC CHEMICALS</b>			Brunswick County Amount Detected	Range Low	High	Violation Y/N	Source of Contaminant
Fluoride	4ppm	4ppm	0.57	.13	1.4	N	Water Additive Used to Promote Strong Teeth
Orthophosphate	17ppm	N/A	1.45	1.0	2.6	N	Water Additive Used to Control Corrosion
Total Chlorine	4ppm	4ppm	2.4	.7	3.7	N	Water Additive Used to Control Microbes
Monochloramine	4ppm	4ppm	2.6	.13	3.8	N	Water Additive Used to Control Microbes

Distribution System Analysis							
Questions and Comments: Contact Bob Tweedy, Water Distribution Superintendent, 910-253-2680 or bob.tweedy@brunswickcountync.gov							
LEAD AND COPPER	Action Level (AL)	MCLG	Brunswick County Amount Detected	# of Samples above the AL	Exceedence of the Action Level? Y/N		
Copper 90th percentile 6/4/14 - 6/27/14	1.3ppm	1.3ppm	100% of samples are ≤0.139 ppm	0	N	Corrosion of Household Plumbing	
Lead 90th percentile 6/4/14 - 6/27/14	0.015ppm	0ppm	100% of samples are ≤0.003 ppm	0	N	Corrosion of Household Plumbing	
ORGANIC CHEMICALS	EPA's MCL	EPA's MCLG	Brunswick County Amount Detected	Range Low	High	Violation Y/N	
Total Trihalomethanes Stage 2	Avg. of individual sites 80ppb	N/A	Average Max 24.5 ppb	8.0	38	N	By-product of Disinfection
Total Haloacetic Acids Stage 2	Avg. of individual sites 60ppb	N/A	Average Max 20.3 ppb	12.0	23.0	N	By-product of Disinfection
REGULATED INORGANIC CHEMICALS							
Chlorite	1.0ppm	0.8ppm	Average 0.64 ppm	0.48	1.01	N	By-product of Disinfection
Nitrate	10ppm	10ppm	<1.0 ppm	N/A		N	By-product of Disinfection
<b>PESTICIDES, VOLATILE, &amp; SYNTHETIC ORGANIC CHEMICALS</b>			There Were No Regulated Pesticides, Volatile or Synthetic Organic Chemicals Detected in the Distribution System (Beyond those listed above) for the 2016 Sample Period				



# Brunswick County Water Quality Report 2016 Continued:

## NOTICE TO THE PUBLIC -TIER III

**We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. In April 2016, we did not complete all monitoring for Chlorine Dioxide/Chlorite and therefore cannot be sure of the quality of our drinking water during that time.**

Chlorine Dioxide, a disinfectant, was monitored but Chlorite, a by-product of Chlorine Dioxide, was not monitored for as required by the NC Public Water Supply Section. There is nothing that you need to do at this time. All sample results before and after the missed samples were reported to be in compliance with state health standards. The water system returned to compliance on May 1, 2016, and has no reason to believe the water quality was ever out of compliance. New staff and calendar reviews should help remove sampling irregularities. (CD) Chlorine Dioxide/Chlorite – includes testing for Chlorine Dioxide and/or Chlorite.

**We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. In July and August 2016, we did not complete all monitoring for turbidity and residual chlorine and therefore cannot be sure of the quality of our drinking water during that time.**

On July 12, 2016, the water treatment plant took a direct lightning strike that affected several computer systems that record turbidity results and chlorine residuals. The treatment process never failed and your water quality was never compromised; however, the computers that record the sampling results did fail for an extended period of time and that is what this violation is about. Portions of the computer system were restored on July 13 and August 6, 2016, and have since been replaced with additional historical backup systems.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

For more information on this PN please contact: Glenn Walker, Water Resources Superintendent at P. O. Box 249, Bolivia, NC 28422 or at 910-371-3490.

**The LCFWASA Water Line Break Update:** Now that repairs are complete on the 48" raw water supply line, Brunswick County and LCFWASA are taking a proactive approach to see if there may be other significant leaks on the pipe by using Smart Ball technology (sensors within a sphere) that will travel inside the piping listening for leaks. We anticipate that being proactive and finding leaks before they become a major problem will ensure that we can be better prepared to deal with air-related water treatment issues like the one we had back in October that caused the treatment technique NOV.

## Did You Know?

### **The EPA and Brunswick County Want You to Know About Potential Household Lead Contamination**

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 building materials and components associated with service lines and home plumbing. Brunswick 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 (800-426-4791) or at <http://www.epa.gov/safewater/lead>.



# Brunswick County Water Quality Report 2016 Continued:

- **How Does Brunswick County prevent and monitor for lead in our drinking water so we don't end up with lead contamination like the city of Flint Michigan?**
  - We don't use lead service lines between the distribution pipes and our water meters.
  - We have an active corrosion control and prevention plan that requires us to feed a corrosion inhibitor (orthophosphate) and to monitor the residual daily at the water plants and weekly in the distribution system.
  - We monitor for lead and copper at homes that may be at higher risk for exposure due to susceptible plumbing materials (copper pipe with lead solder joints) at least every three years.

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.

Immunocompromised 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).

## Water Quality in the Home

**Remove and flush faucet aerators regularly.** This helps to keep debris such as pipe solder and sediment from clogging aerator screens, as well as provide the best quality water possible.

## Ways You Can Conserve Water!

Brunswick County Public Utilities asks that you use water wisely. By following the recommendations outlined below, you may be able to reduce the amount of water you use.

- **IRRIGATE DURING OFF PEAK HOURS**  
Peak demand for water is between 5:00 a.m. to 10:00 a.m. and 4:00 p.m. to 7:00 p.m. If irrigation is necessary, irrigate during off peak times. This will help to ensure proper water pressure for more efficient irrigating.
- **REDUCE IRRIGATION FREQUENCY**  
For established lawns, daily irrigation is not required. Irrigate only when there is no moisture in the root zone.
- **WHEN PURCHASING NEW OR REPLACEMENT APPLIANCES AND FAUCETS**  
Look for the Energy Star compliant symbol and the EPA's Water Wise symbol. These ensure the appliances are both energy and water efficient.

