



County of Brunswick Water Quality Report–2015

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)

SOURCE WATER ASSESSMENT
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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.

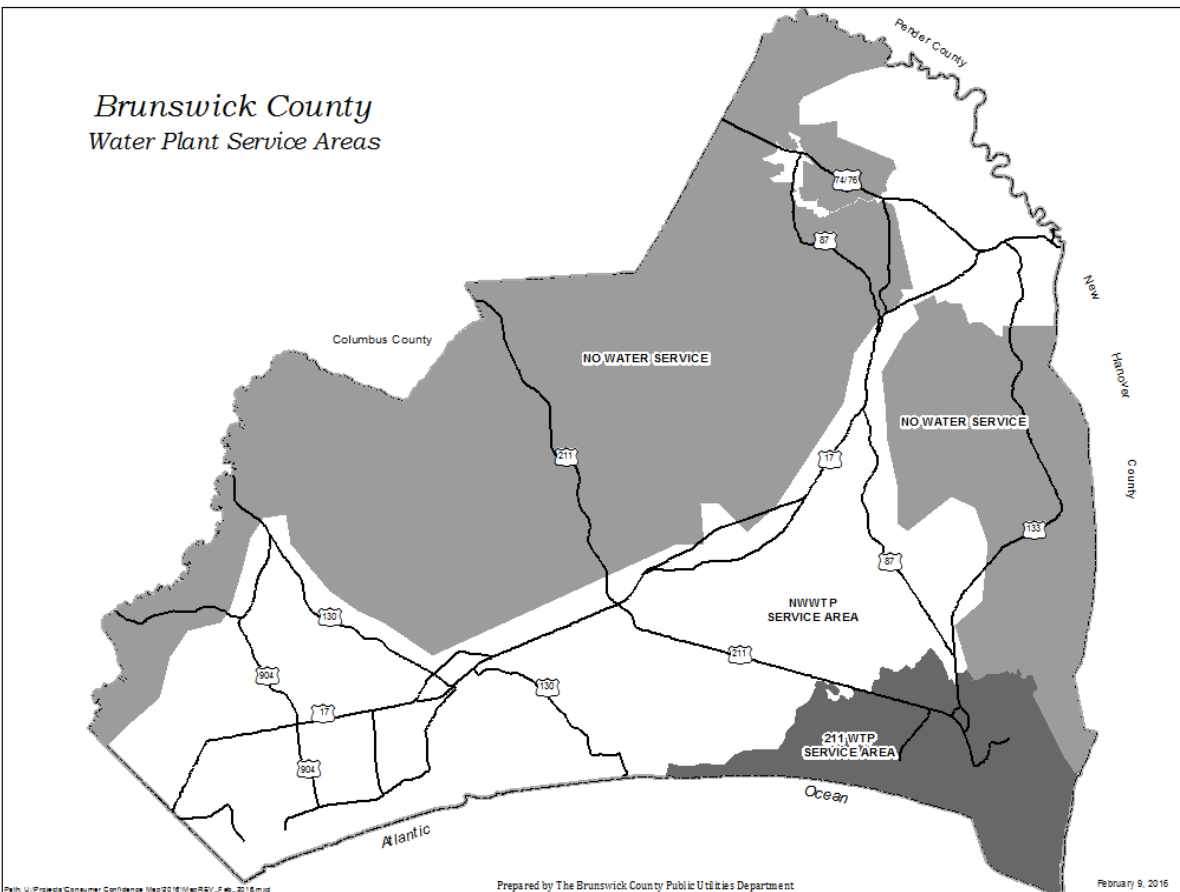
Interesting Facts:

Total Brunswick County Water System Capacity: 30 MGD

The Greatest One Day System Demand of the Year for 2015 was 26.52 million gallons (MGD) on July 11, 2015.

Find Your Service Area

This year we have three data tables on pages 3, 4, & 5, each of which represents the water quality coming from our two water treatment plants and the distribution system. Citizens in Northwest and 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 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 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: 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 operator Jonathan Addler for attaining his B-surface water treatment license. This facility is currently under construction for a new finished water pump station, filter basin rehabilitation, and renovation of the administration spaces with our local branch of HDR Engineering. Completion is set for June of 2016.



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 design for an additional one million gallon clearwell and sludge handling facilities.



Customer Input

Our Utility Board meets on the second Monday of each quarter at 5:30 p.m. in the Brunswick County Public Utilities Operations Center at 250 Grey Water Road, Supply. Please feel free to participate in these meetings.

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.
- **N/A:** not applicable • **ntu:** nephelometric turbidity (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 2015

Listed below are the results of water quality sampling performed from January 1, 2015, to December 31, 2015.

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 0.05 ntu	% of samples ≤ 0.3 ntu	N	Soil Runoff
			Maximum 0.210 ntu	100%		
Raw Water TOC	Treatment Technique 45% Removal Efficiency	N/A	Average 7.28 ppm	6.1 10.8	N	Naturally Present in the Environment
Finish Water TOC		N/A	Average 3.11 ppm	2.3 4.2		
Total Organic Carbon (TOC)	Treatment Technique	N/A	Removal Efficiency Average 56.5%	43% - 68%	N	
pH	6.8 - 8.5	N/A	7.22	6.99 - 9	N	By-Product of Caustic Addition
REGULATED INORGANIC CHEMICALS						
Chlorite	1.0 ppm	0.8 ppm	Average 0.54 ppm	0.48 0.73	N	By-Product of Disinfection
Chlorine Dioxide	0.8 ppm	0.8 ppm	Average < 0.1 ppm	0.0 0.28	N	Water Additive Used to Control Microbes
Fluoride	4 ppm	4 ppm	Average 0.58 ppm	0.0 0.92	N	Water Additive which Promotes Strong Teeth
Orthophosphate	17 ppm	N/A	Average 1.61 ppm	1.5 2.0	N	Water Additive Used to Control Corrosion
Total Chlorine	4 ppm	4 ppm	Average Minimum 2.95 ppm	2.0 3.30	N	Water Additive Used to Control Microbes
Monochloramine Disinfectant Residual	4 ppm	4 ppm	2.91 ppm	0.0 3.26	N	Water Additive Used to Control Microbes
UNREGULATED SUBSTANCES						
Hardness	Non Regulated	N/A	Average 26.3 ppm	23 41	N	Part of the Treatment Process, Erosion of Natural Deposits
Iron	Non Regulated	N/A	Average 0.026 ppm	0 0.17	N	Part of the Treatment Process, Erosion of Natural Deposits
Manganese	Non Regulated	N/A	0.017 ppm	0 0.06	N	Part of the Treatment Process, Erosion of Natural Deposits
Free Ammonia	Non Regulated	N/A	0.135 ppm	0.0 0.31	N	Water Additive Used to Control Microbes
Sodium	Non Regulated	N/A	28 ppm	N/A	N	Part of the Treatment Process, Erosion of Natural Deposits
CRYPTOSPORIDIUM - Cape Fear River 2015		N/A	0.0 oocyst	0.0 0.0	N	Naturally Present in the Environment

Northwest WTP is monitoring for Cryptosporidium (a protozoan) monthly and has not detected any oocysts (egg-like structure) in the Cape Fear River raw water supply for 2015. 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.

ADDITIONAL MONITORING RESULTS FOR THE NORTHWEST WATER TREATMENT PLANT						
EPA Required - Unregulated Contaminants (UCMR-3)	EPA's MCL	EPA's MCLG	Brunswick County Amount Detected	Range Low High	Violation Y/N	Source of Contaminant
Perfluoroheptanoic acid	Non Regulated	N/A	0.022 ug/L	N/A	N	Manmade Chemical, Used in Products to Make Them Stain, Grease, Heat, and Water Resistant
Perfluorohexanesulfonic acid	Non Regulated	N/A	0.01 ug/L	N/A	N	Manmade Chemical, Used in Products to Make Them Stain, Grease, Heat, and Water Resistant
Perfluorononanoic acid	Non Regulated	N/A	0.0068 ug/L	N/A	N	Manmade Chemical, Used in Products to Make Them Stain, Grease, Heat, and Water Resistant
Perfluorooctanesulfonic acid	Non Regulated	N/A	0.0235 ug/L	N/A	N	Fire Fighting Foam Agent, Surfactant on Furniture and Carpets
Perfluorooctanoic acid	Non Regulated	N/A	0.0162 ug/L	N/A	N	Emulsifier, Fire Fighting Foam Agent, Used in Cleaners, Cosmetics, Grease, Paint, Adhesives, and Film
Chromium, Hexavalent	Non Regulated	N/A	0.277 ug/L	N/A	N	Naturally Occurring Element, Used for Chrome Plating, Dyes, Tanning, Wood Preservation
Chromium	Non Regulated	N/A	0.18 ug/L	N/A	N	Discharge from Steel and Pulp Mills, Erosion of Natural Deposits
Molybdenum	Non Regulated	N/A	0.903 ug/L	N/A	N	Naturally Occurring Element, Chemical Reagent
Strontium	Non Regulated	N/A	43.8 ug/L	N/A	N	Naturally Occurring Element, Used to Faceplate Glass of Cathode Ray Tube TVs
Vanadium	Non Regulated	N/A	0.53 ug/L	N/A	N	Naturally Occurring Elemental Metal, Chemical Intermediate and a Catalyst
Chlorate	Non Regulated	N/A	147 ug/L	N/A	N	Ag Defoliant, Desiccant, By-Product of Disinfection
1,4-Dioxane	Non Regulated	N/A	3.2 ug/L	N/A	N	Solvent and/or Stabilizer in Several Manufacturing Processes

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
REGULATED INORGANIC CHEMICALS						
Fluoride	4 ppm	4 ppm	0.76 ppm	0.4 1.2	N	Water Additive Used to Promote Strong Teeth
Orthophosphate	17 ppm	N/A	0.97 ppm	0.5 3.6	N	Water Additive Used to Control Corrosion
Total Chlorine	4 ppm	4 ppm	2.51 ppm	1.1 3.6	N	Water Additive Used to Control Microbes
Monochloramine	4 ppm	4 ppm	2.76 ppm	1.3 3.6	N	Water Additive Used to Control Microbes
UNREGULATED SUBSTANCES						
Turbidity	Non Regulated	N/A	Average 0.44 ntu	0.1 7.9	N	Part of the Treatment Process, Erosion of Natural Deposits
pH	Non Regulated	N/A	-----	6.6 8.8	N	Part of the Treatment Process
CO2	Non Regulated	N/A	10.1 ppm	7 14.3	N	Part of the Treatment Process
Alkalinity	Non Regulated	N/A	36.8 ppm	21 161	N	Part of the Treatment Process, Erosion of Natural Deposits
Hardness	Non Regulated	N/A	89.5 ppm	70 164	N	Part of the Treatment Process, Erosion of Natural Deposits
Iron	Non Regulated	N/A	0.06 ppm	0 0.34	N	Part of the Treatment Process, Erosion of Natural Deposits
Chloride	Non Regulated	N/A	21.5 ppm	10 34	N	Part of the Treatment Process, Erosion of Natural Deposits
Free Ammonia	Non Regulated	N/A	0.07 ppm	0 0.25	N	Water Additive Used to Control Microbes
EPA Required - Unregulated Contaminants (UCMR-3)						
Chromium, Hexavalent	Non Regulated	N/A	0.16 ug/L	N/A	N	Naturally Occurring Element, Used for Chrome Plating, Dyes, Tanning, Wood Preservation
Chromium	Non Regulated	N/A	0.26 ug/L	N/A	N	Discharge from Steel and Pulp Mills, Erosion of Natural Deposits
Strontium	Non Regulated	N/A	292 ug/L	N/A	N	Naturally Occurring Element, Used to Faceplate Glass of Cathode Ray Tube TVs
Molybdenum	Non Regulated	N/A	0.34 ug/L	N/A	N	Naturally Occurring Element, Chemical Reagent
1,4-Dioxane	Non Regulated	N/A	0.04 ug/L	N/A	N	Solvent and/or Stabilizer in Several Manufacturing Processes
Vanadium	Non Regulated	N/A	0.41 ug/L	N/A	N	Naturally Occurring Elemental Metal, Chemical Intermediate and a Catalyst

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	1.3 ppm	1.3 ppm	100% of samples are ≤0.139 ppm	0	N	Corrosion of Household Plumbing
Lead 90th percentile 6/4/14 - 6/27/14	0.015 ppm	0 ppm	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 80 ppb	N/A	Average Max 37.8 ppb	4.0 77.0	N	By-Product of Disinfection
Total Haloacetic Acids Stage 2	Avg of individual sites 60 ppb	N/A	Average Max 26.0 ppb	16.0 29.0	N	By-Product of Disinfection
REGULATED INORGANIC CHEMICALS						
Chlorite	1.0 ppm	0.8 ppm	Average 0.52 ppm	0.42 0.70	N	By-Product of Disinfection
Nitrate	10 ppm	10 ppm	1.46 ppm	N/A	N	By-Product of Disinfection
PESTICIDES, VOLATILE, & SYNTHETIC ORGANIC CHEMICALS	There Were No Regulated Pesticides, Volatile or Synthetic Organic Chemicals Detected in the Distribution System (beyond those listed above) for the 2015 Sample Period					
EPA Required - Unregulated Contaminants (UCMR-3)						
Chromium, Hexavalent	Non Regulated	N/A	0.116 ug/L	N/A	N	Naturally Occurring Element, Used for Chrome Plating, Dyes, Tanning, Wood Preservation
Chromium	Non Regulated	N/A	0.24 ug/L	N/A	N	Discharge from Steel and Pulp Mills, Erosion of Natural Deposits
Strontium	Non Regulated	N/A	121 ug/L	N/A	N	Naturally Occurring Element, Used to Faceplate Glass of Cathode Ray Tube TVs
Vanadium	Non Regulated	N/A	0.5 ug/L	N/A	N	Naturally Occurring Elemental Metal, Chemical Intermediate and a Catalyst
Chlorate	Non Regulated	N/A	154 ug/L	N/A	N	By-Product of Disinfection

Did You Know?

What is Unregulated Contaminant Monitoring (UCMR-3)?

The 1996 amendments to the Safe Drinking Water Act (SDWA) require that once every five years, the U.S. Environmental Protection Agency (EPA) issue a new list of no more than 30 unregulated contaminants to be monitored by public water systems (PWSs). The Unregulated Contaminant Monitoring Rule (UCMR) provides EPA and other interested parties with scientifically valid data on the occurrence of contaminants in drinking water. These data serve as a primary source of occurrence and exposure information that the agency uses to develop regulatory decisions. They require water systems all across the country to submit water samples for testing four times per year or quarterly. The contaminants for 2015 that were found in Brunswick County's water are listed above. More information may be found on the EPA's Web site:

https://www.epa.gov/sites/production/files/2015-10/documents/ucmr3_factsheet_general.pdf



Brunswick County Water Quality Report 2015 Continued:

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>.

- **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).

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.

