WATER QUALITY REPORT 2023

*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 where your water comes, what it contains, and how it compares to standards set by regulatory agencies. Our 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.*

Drinking water (tap & bottled) sources include rivers, reservoirs, springs & wells. As water travels over land surface or through the ground, it is dissolving naturally occurring minerals & sometimes radioactive material. It can pick up substances left by animal or human activity. Source water contaminants may include microbial (viruses & bacteria) which may come from sewage treatment plants, septic systems & wildlife; inorganics-salts & metals occurring naturally or resulting from storm water runoff, wastewater discharges; pesticides & herbicides, which may come from storm water runoff, or residential uses; organic chemical (synthetic & volatile) are by-products of petroleum production, gas stations, storm water runoff & septic systems; radioactive, naturally occurring or resulting from oil & gas production & mining activities.

To ensure safe drinking water, EPA has regulations limiting the amount of certain contaminants in water from public water systems. FDA regulates limits for contaminants in bottled water which must provide the same protection for public health.

CONTACTS FOR OPERATIONS DEPT.
Director,
Mark Meyer 910-713-0916

Chief Water Plant Operator ORC
Shawn Thomas 910-782-9491

PWSID#04-65-015

Source Water Assessment Program (SWAP) Results

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 Carolina Beach 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 to the right:

Source Name	Susceptibility Rating	Date
Well #1	Lower	September 2020
Well #2	Moderate	September 2020
Well #3	Moderate	September 2020
Well #5	Moderate	September 2020
Well #6	Lower	September 2020
Well #7	Lower	September 2020
Well #8	Moderate	September 2020
Well #9	Moderate	September 2020
Well #10	Lower	September 2020
Well #11	Moderate	September 2020
Well #12	Moderate	September 2020
Well #13	Moderate	September 2020
Well #14	Moderate	September 2020

The complete SWAP Assessment report for Town of Carolina Beach may be viewed on the Web at: https://www.ncwater.org/SWAP_Reports/NC0465015_SWAP_Report-20200909.pdf. 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 CCR 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 email request to swap@ncmail.net. Please indicate your system name (Town of Carolina Beach), PWSID (04-65-015), and provide your name, mailing address and phone number. If you have any questions about the SWAP report please contact Source Water Assessment staff at 919-715-2633. It is important to understand that susceptibility rating of *higher* does not imply poor water quality, only the systems potential to become contaminated by PCS's in the assessment area.

Source of Drinking Water: Our water is ground water withdrawn from the Castle Hayne and the Pee Dee Aquifers. The Town has 14 wells, two water treatment plants, two, 500,000 gallon elevated water storage tanks, and one, 1,000,000 gallon ground level reservoir.

Water Quality Data Table of Detected Contaminants

We routinely monitor for over 150 contaminants in your drinking water according to Federal and State laws. The table below lists all the drinking water contaminants that we detected in the last round of sampling for the particular contaminant group. The presence of contaminants does not necessarily indicate that water poses a health risk. **Unless otherwise noted, the data presented in this table is from testing done January 1 through December 31, 2022.** The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, is more than one year old.

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)

Important Definitions

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.

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.

Parts per million (ppm) or Milligrams per liter (mg/L) - One part per million corresponds to one minute in two years or a single penny in $10,000.

Parts per billion (ppb) or Micrograms per liter (ug/L) - One part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

Parts per trillion (ppt) or Nanograms per liter (nanograms/L) - One part per trillion corresponds to one minute in 2,000,000 years, or a single penny in $10,000,000,000.

Picocuries per liter (pCi/L) - Picocuries per liter is a measure of the radioactivity in water.

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

Action Level (AL) - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Residual Disinfection Level Goal (MRDLG) * 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.

Maximum Residual Disinfection Level (MRDL) *** 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.

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.

(HAA5)- Haloacetic Acids - include Monochloroacetic Acid, Dichloroacetic Acid, Trichloroacetic Acid, Monobromoacetic Acid, Dibromoacetic Acid. ***(TTHM) - Total Trihalomethanes*** - include Chloroform, Bromoform, Bromodichloromethane, and Dibromochloromethane

(SOC) – Synthetic Organic Chemicals/Pesticides – include 2,4-D, 2,4,5-TP (Silvex), Alachlor, Atrazine, Benzo(a)pyrene, Carbofuran, Chlordane, Dalapon, Di(2-ethylhexyl)adipate, Di(2-ethylhexyl)phthalate, Dibromochloropropane (DBCP), Dinoseb, Endrin, Ethylene dibromide (EDB), Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, Lindane, Methoxychlor, Oxamyl(vydate), PCBs, Pentachlorophenol, Picloram, Simazine, Toxaphene.

Non-Detects (ND) - Laboratory analysis indicates that the contaminant is not present at the level of detection set for the particular methodology used.

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 Town of Carolina Beach 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 the tap for 30 seconds up to two minutes before using the 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 .

Lead & Copper Contaminants January-December 2023 (One Compliance period)

Contaminant (units)	Sample Date	Your Water Low / High	#of sites found above the AL	MCLG	MCL	Likely Source of Contamination
Copper (ppb) (90^{th} percentile)	June-September	0/56.0	0	1.3	AL=1300	Corrosion of household plumbing, erosion of natural deposits, leaching from wood preservatives
Lead (ppb) (90^{th} percentile)	June-September	0/178	2	0	AL=15.0	Corrosion of household plumbing, erosion of natural deposits

Microbiological Contaminants 2022

Contaminant (units)	MCL Violation Y/N	Your Water	MCLG	MCL	Likely Source of Contamination
Total Coliform Bacteria (presence or absence)	Y	1	0	one positive monthly sample	Naturally present in the environment
Fecal Coliform or E. coli (presence or absence)	N	0	0	0	Human and animal fecal waste

Inorganic Contaminants

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low	Range High	MCLG	MCL	Likely Source of Contamination
Antimony (ppb)	10-25-2022	N	<0.003	ND		6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic (ppb)	10-25-2022	N	<0.005	ND		0	10	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium (ppm)	10-25-2022	N	<0.400	ND		2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Beryllium (ppb)	10-25-2022	N	<0.002	ND		4	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Cadmium (ppb)	10-25-2022	N	<0.001	ND		5	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium (ppb)	10-25-2022	N	<0.020	ND		100	100	Discharge from steel and pulp mills; erosion of natural deposits
Cyanide (ppb)	10-25-2022	N	<0.050	ND		200	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
Fluoride (ppm)	10-25-2022	N	.1	ND		4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Mercury (inorganic) (ppb)	10-25-2022	N	<0.0004	ND		2	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Selenium (ppb)	10-25-2022	N	<0.010	ND		50	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Thallium (ppb)	10-25-2022	N	<0.001	ND		0.5	2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories

Nitrate/Nitrite April 2023

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low / High	MCLG	MCL	Likely Source of Contamination
Nitrate (ppm)	09/28/2022	N	>1.0 mg/L	ND	10	10	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrite (ppm)	09/28/2022	N	>0.1 mg/L	ND	1	1	Ground water containing natural deposits of soluble iron

Volatile Organic Chemical (VOC) Contaminants October 2022

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Likely Source of Contamination
Benzene (ppb)	10-25-2022	N	<.0005		0	5	Discharge from factories; leaching from gas storage tanks and landfills
Carbon tetrachloride (ppb)	10-25-2022	N	<.0005		0	5	Discharge from chemical plants and other industrial activities
Chlorobenzene (ppb)	10-25-2022	N	<.0005		100	100	Discharge from chemical and agricultural chemical factories
o-Dichlorobenzene (ppb)	10-25-2022	N	<.0005		600	600	Discharge from industrial chemical factories
p-Dichlorobenzene (ppb)	10-25-2022	N	<.0005		75	75	Discharge from industrial chemical factories
1,2 – Dichloroethane (ppb)	10-25-2022	N	<.0005		0	5	Discharge from industrial chemical factories
1,1 – Dichloroethylene (ppb)	10-25-2022	N	<.0005		7	7	Discharge from industrial chemical factories
cis-1,2-Dichloroethylene (ppb)	10-25-2022	N	<.0005		70	70	Discharge from industrial chemical factories
trans-1,2-Dichloroethylene (ppb)	10-25-2022	N	<.0005		100	100	Discharge from industrial chemical factories

Dichloromethane (ppb)	10-25-2022	N	<.0005		0	5	Discharge from pharmaceutical and chemical factories
1,2-Dichloropropane (ppb)	10-25-2022	N	<.0005		0	5	Discharge from industrial chemical factories
Ethylbenzene (ppb)	10-25-2022	N	<.0005		700	700	Discharge from petroleum refineries
Styrene (ppb)	10-25-2022	N	<.0005		100	100	Discharge from rubber and plastic factories; leaching from landfills
Tetrachloroethylene (ppb)	10-25-2022	N	<.0005		0	5	Discharge from factories and dry cleaners
1,2,4 –Trichlorobenzene (ppb)	10-25-2022	N	<.0005		70	70	Discharge from textile-finishing factories
1,1,1 – Trichloroethane (ppb)	10-25-2022	N	<.0005		200	200	Discharge from metal degreasing sites and other factories
1,1,2 –Trichloroethane (ppb)	10-25-2022	N	<.0005		3	5	Discharge from industrial chemical factories
Trichloroethylene (ppb)	10-25-2022	N	<.0005		0	5	Discharge from metal degreasing sites and other factories
Toluene (ppm)	10-25-2022	N	<.0005		1	1	Discharge from petroleum factories
Vinyl Chloride (ppb)	10-25-2022	N	<.0005		0	2	Leaching from PVC piping; discharge from plastics factories
Xylenes (Total) (ppm)	10-25-2022	N	<.0005		10	10	Discharge from petroleum factories; discharge from chemical factories

Asbestos Contaminant

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low/High	MCLG	MCL	Likely Source of Contamination
Total Asbestos (MFL)	12/08/2022	N	<0.01		7	7	Decay of asbestos cement water mains; erosion of natural deposits

Disinfectants and Disinfection Byproducts Contaminants January-December 2023 (Four quarters)

Contaminant (units)	MCL/MRDL Violation Y/N	Your Water (AVG)	Range Low/High	MCLG	MCL	Likely Source of Contamination
TTHM (ppb) [Total Trihalomethanes]	N	45.0	12.0/69.0	N/A	80.0	By-product of drinking water chlorination
HAA5 (ppb) [Total Haloacetic Acids]	N	13.0	2.0/18.0	N/A	60.0	By-product of drinking water disinfection
Chlorine (ppm)	N	0.56	0.2\0.9	MRDLG = 4	MRDL = 4	Water additive used to control microbes

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 risk of getting cancer

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water AVG.	MCLG	MCL	Likely Source of Contamination

Alpha emitters (pCi/l)	2009	N	0.75 pCi/L	0	15	Erosion of natural deposits
Beta/photon emitters (pCil)	2009	N	20.8 pCi/L	0	50	Decal of natural & man-made deposits
Combined Radium (pCi/l)	2013	N	0.3 pCi/L	0	5	Erosion of natural deposits
Uranium (pCi/l)	2009	N	ND	0	20.1	Erosion of natural deposits

Radiological Contaminants 2009

Synthetic Organic Chemical (SOC) Contaminants Including Pesticides and Herbicides

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low	Range High	MCLG	MCL	Likely Source of Contamination
2,4-D (ppb)	10/25/2022	N	ND	ND		70	70	Runoff from herbicide used on row crops
2,4,5-TP (Silvex) (ppb)	10/25/2022	N	ND	ND		50	50	Residue of banned herbicide
Alachlor (ppb)	10/25/2022	N	ND	ND		0	2	Runoff from herbicide used on row crops
Atrazine (ppb)	10/25/2022	N	ND	ND		3	3	Runoff from herbicide used on row crops
Benzo(a)pyrene (PAH) (ppt)	10/25/2022	N	ND	ND		0	200	Leaching from linings of water storage tanks and distribution lines
Carbofuran (ppb)	10/25/2022	N	ND	ND		40	40	Leaching of soil fumigant used on rice and alfalfa
Chlordane (ppb)	10/25/2022	N	ND	ND		0	2	Residue of banned termiticide
Dalapon (ppb)	10/25/2022	N	ND	ND		200	200	Runoff from herbicide used on rights of way
Di(2-ethylhexyl) adipate (ppb)	10/25/2022	N	ND	ND		400	400	Discharge from chemical factories
Di(2-ethylhexyl) phthalate (ppb)	10/25/2022	N	ND	ND		0	6	Discharge from rubber and chemical factories
DBCP [Dibromochloropropane] (ppt)	10/25/2022	N	ND	ND		0	200	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
Dinoseb (ppb)	10/25/2022	N	ND	ND		7	7	Runoff from herbicide used on soybeans and vegetables
Endrin (ppb)	10/25/2022	N	ND	ND		2	2	Residue of banned insecticide
EDB [Ethylene dibromide] (ppt)	10/25/2022	N	ND	ND		0	50	Discharge from petroleum refineries
Heptachlor (ppt)	10/25/2022	N	ND	ND		0	400	Residue of banned pesticide
Heptachlor epoxide (ppt)	10/25/2022	N	ND	ND		0	200	Breakdown of heptachlor
Hexachlorobenzene (ppb)	10/25/2022	N	ND	ND		0	1	Discharge from metal refineries and agricultural chemical factories
Hexachlorocyclo-pentadiene (ppb)	10/25/2022	N	ND	ND		50	50	Discharge from chemical factories
Lindane (ppt)	10/25/2022	N	ND	ND		200	200	Runoff/leaching from insecticide used on cattle, lumber, gardens
Methoxychlor (ppb)	10/25/2022	N	ND	ND		40	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Oxamyl [Vydate] (ppb)	10/25/2022	N	ND	ND		200	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
PCBs [Polychlorinated biphenyls] (ppt)	10/25/2022	N	ND	ND		0	500	Runoff from landfills; discharge of waste chemicals
Pentachlorophenol (ppb)	10/25/2022	N	ND	ND		0	1	Discharge from wood preserving factories
Picloram (ppb)	10/25/2022	N	ND	ND		500	500	Herbicide runoff
Simazine (ppb)	10/25/2022	N	ND	ND		4	4	Herbicide runoff
Toxaphene (ppb)	10/25/2022	N	ND	ND		0	3	Runoff/leaching from insecticide used on cotton and cattle

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.	40 CFR 141.153(h)(7)(i)(A)

During the past year we were required to conduct a LEVEL 1 ASSESSMENT. The Level 1 assessment(s) was conducted with regards to our total coliform bacteria sampling. After completion, distribution and raw water wells were disinfected. All source water was tested for Microbiological Contaminants and tested negative.	40 CFR 141.153(h)(7)(i)(B)

NOTICE TO THE PUBLIC

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Violation Awareness Date: _____

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. During the compliance period specified in the table below, we did not complete all monitoring requirements for the contaminants listed and therefore cannot be sure of the quality of your drinking water during that time.

CONTAMINANT GROUP**	FACILITY ID NO./ SAMPLE POINT ID	COMPLIANCE PERIOD BEGIN DATE	NUMBER OF SAMPLES/ SAMPLING FREQUENCY	WHEN SAMPLES WERE TAKEN (Returned to Compliance)
SOC	P01	01-01-2020	2/3Y	01-18-2023 AND 5-11-2023
SOC	P02	01-01-2020	2/3Y	01-18-2023 AND 5-11-2023
SOC	P03	01-01-2020	2/3Y	01-18-2023 AND 5-11-2023
SOC	P09	01-01-2020	2/3Y	01-18-2023 AND 5-11-2023
SOC	P10	01-01-2020	2/3Y	01-18-2023 AND 5-11-2023
SOC	P11	01-01-2020	2/3Y	01-18-2023 AND 5-11-2023
SOC	SS1	01-01-2020	2/3Y	01-18-2023 AND 5-11-2023
SOC	SS2	01-01-2020	2/3Y	01-18-2023 AND 5-11-2023

(SOC) – Synthetic Organic Chemicals/Pesticides – include 2,4-D, 2,4,5-TP (Silvex), Alachlor, Atrazine, Benzo(a)pyrene, Carbofuran, Chlordane, Dalapon, Di(2-ethylhexyl)adipate, Di(2-ethylhexyl)phthalate, Dibromochloropropane (DBCP), Dinoseb, Endrin, Ethylene dibromide (EDB), Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, Lindane, Methoxychlor, Oxamyl(vydate), PCBs, Pentachlorophenol, Picloram, Simazine, Toxaphene.

What should I do? There is nothing you need to do at this time**.**

What is being done? Samples were pulled in January and April of 2023.

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 about this violation, please contact the responsible person listed in the first paragraph of this report.