2023 Annual Drinking Water Quality Report
Town of Jefferson

Water System Number: NC 01-05-015

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 your source(s) of water, 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 because informed customers are our best allies. **If you have any questions about this report or concerning your water, please contact Town of Jefferson at 336-246-2165.**

What 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 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 microbial 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. Town of Jefferson 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 stormwater 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 stormwater 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 stormwater 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.

When You Turn on Your Tap, Consider the Source

In 2023, approximately 50% of Jefferson's water came from the South Fork of the New River. We are fortunate to have such an abundant source of high quality raw water supply. The town operates a raw water pump station just off the Joe Little Road. From this station the water is pumped to the treatment plant located at 879 Don Walters Road.

Within the water treatment facility four main steps occur: Disinfection, Coagulation, Sedimentation and Filtration. First, Chlorine is introduced to the raw water to disinfect it, which eliminates all harmful bacteria in the water. Second, chemicals are mixed into the water and cause small particles in the water to attract to each other and form heavier particles. These particles are allowed to settle to the bottom of large tanks. The water then flows through multi-media filters composed of gravel, sand and anthracite to remove any remaining particles. Finally, phosphate and sodium carbonate are added to the finished water to prevent corrosion of pipes in the distribution system.

SURFACE WATER TREATMENT *Chemical Dosage Rates*

Poly Aluminum Chloride (coagulant)…….5 to 20 ppm
Sodium carbonate (pH adjustment)…….10 to 25 ppm
Chlorine (disinfectant)…….>3 ppm
Orthophosphate (corrosion inhibitor)……..1 to 3 ppm
Polymer (coagulant aid)……...0.1 ppm

The balance of Jefferson's water, about 50%, is provided by three deep wells which supply an average yield of 250 gallons per minute collectively. Each of these wells are chlorinated to ensure adequate disinfection is maintained throughout the distribution system. If you have questions about this report or your water utility, please contact Tim Church at 246-2165. We want our valued customers to be informed about their water utility. If you want to learn more, please attend one of the regularly scheduled Board of Aldermen meetings at Jefferson Town Hall, 302 East Main Street on the fourth Monday of each month.

Source Water Assessment Program (SWAP) Results

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 Town of Jefferson 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 below:

Susceptibility of Sources to Potential Contaminant Sources (PCSs)

Source Name	Susceptibility Rating	SWAP Report Date	Inherent Vulnerability Rating	Contaminant Rating
Well # 6 Waugh	Moderate	September 2021	Moderate	Lower
Well #7 Tyson	Moderate	September 2021	Moderate	Lower
Well #8 Woodcroft	Lower	September 2021	Lower	Lower
South Fork New River	Moderate	September 2021	Higher	Lower

The complete SWAP Assessment report for Town of Jefferson may be viewed on the Web at: https://www.ncwater.org/?page=600 Note that because SWAP results and reports are periodically updated by the PWS Section, the results available on this web site may differ from the results that were available at the time this CCR was prepared. If you are unable to access your SWAP report on the web, you may mail a written request for a printed copy to: Source Water Assessment Program – Report Request, 1634 Mail Service Center, Raleigh, NC 27699-1634, or email requests to swap@ncdenr.gov. Please indicate your system name, number, 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 system's potential to become contaminated by PCSs in the assessment area.

NOTICE TO THE PUBLIC

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

TOWN OF JEFFERSON HAS NOT MET MONITORING REQUIRMENTS

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.

During 2023, or during any compliance period that ended in 2023, we received a monitoring violation that covered the time period of September 20 – October 11, 2023. We have installed a new turbidimeter to assure this does not happen again.

CONTAMINANT GROUP**	FACILITY ID NO./ SAMPLE POINT ID	COMPLIANCE PERIOD BEGIN DATE	NUMBER OF SAMPLES/ SAMPLING FREQUENCY	WHEN SAMPLES WERE TAKEN (Returned to Compliance)
TURBIDITY (INDIVIDUAL FILTER EFFLUENT)	WP1 / EO1	SEPTEMBER 2023	CONTINUOUS MONITORING	OCTOBER 26, 2023

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

What is being done? While our turbidimeter was down, grab samples were taken to ensure the filter effluent did not exceed drinking water standards. On October 26, 2023 a new turbidimeter was installed on filter number 2 and continuous monitoring continued.

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, please contact:

Responsible Person	System Name	System Address (Street)
David Webb	Town of Jefferson	879 Don Walters Rd.
Phone Number	System Number	System Address (City/State/Zip)
336-982-2828	01-05-015	Jefferson, NC 28640

Violation Awareness Date: October 18, 2023

Date Notice Distributed:_____ **Method of Distribution:** Consumer Confidence Report

Public Notification Certification:

The public water system named above hereby affirms that public notification has been provided to it consumers in accordance with all delivery, content, format, and deadline requirements specified in 15A NCAC 18C.1523.

Owner/Operator: Tim Church (Signature) Tim Church (Print Name) 5/14/2024 (Date)

01/2023

05/2024

Contaminant Group List

(AS) Asbestos - includes testing for Chrysotile, Amphibole and Total Asbestos.
(BA) Total Coliform Bacteria – includes testing for Total Coliform bacteria and Fecal/*E.coli* bacteria. Testing for Fecal/*E.coli* bacteria is required if total coliform is present in the sample.
(BB) Bromate/Bromide – includes testing for Bromate and/or Bromide.
(CD) Chlorine Dioxide/Chlorite – includes testing for Chlorine Dioxide and/or Chlorite.
(DI) Disinfectant Residual must be tested with the collection of each compliance bacteriological sample, at the same time and site.
Fecal Indicators – includes *E.coli*, enterococci or coliphage.
(HAA5)- Haloacetic Acids - include Monochloroacetic Acid, Dichloroacetic Acid, Trichloroacetic Acid, Monobromoacetic Acid, Dibromoacetic Acid.
(IOC) Inorganic chemicals - include Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Fluoride, Iron, Manganese, Mercury, Nickel, pH, Selenium, Sodium, Sulfate, and Thallium.
(LC) Lead and Copper are tested by collecting the required number of samples and testing each of the samples for both lead and copper.
(NT) Nitrate/ (NI) Nitrite – includes testing for nitrate and/or nitrite.
(RA) Radionuclides - includes Gross Alpha, Radon, Uranium, Combined Radium, Radium 226, Radium 228, Potassium 40 (Total), Gross Beta, Tritium, Strontium 89, Strontium 90, Iodine 131, and Cesium 134.
(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.
(TOC) - Total Organic Carbon - includes testing for Alkalinity, Dissolved Organic Carbon (DOC), Total Organic Carbon (TOC) and Ultraviolet Absorption 254 (UV254). Source water samples must be tested for both TOC and Alkalinity. Treated water samples must be tested for TOC. Source water samples and treated water samples must be collected on the same day.
(TTHM) - Total Trihalomethanes - include Chloroform, Bromoform, Bromodichloromethane, and Dibromochloromethane.
(VOC) - Volatile Organic Chemicals - include 1,2,4-Trichlorobenzene, Cis-1,2-Dichloroethylene, Xylenes (Total), Dichloromethane, o-Dichlorobenzene, p-Dichlorobenzene, Vinyl Chloride, 1,1,-Dichloroethylene, Trans-1,2,-Dichloroethylene, 1,2-Dichloroethane, 1,1,1-Trichloroethane, Carbon Tetrachloride, 1,2-Dichloropropane, Trichloroethylene, 1,1,2-Trichloroethane, Tetrachloroethylene, Chlorobenzene, Benzene, Toluene, Ethylbenzene, and Styrene.
(WQP) Water Quality Parameters (for Lead and Copper Rule) - includes Calcium, Orthophosphate (as PO_4), Silica, Conductivity, pH, Alkalinity and Water Temperature.

Important Drinking Water Definitions:

- ***Not-Applicable (N/A)*** – Information not applicable/not required for that particular water system or for that particular rule.
- ***Non-Detects (ND)*** - Laboratory analysis indicates that the contaminant is not present at the level of detection set for the particular methodology used.
- ***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.
- ***Parts per quadrillion (ppq) or Picograms per liter (picograms/L)*** - One part per quadrillion corresponds to one minute in 2,000,000,000 years or one penny in $10,000,000,000,000.
- ***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.
- ***Nephelometric Turbidity Unit (NTU)*** - Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

- ***Variances and Exceptions*** – State or EPA permission not to meet an MCL or Treatment Technique under certain conditions.
- ***Action Level (AL)*** - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- ***Treatment Technique (TT)*** - A required process intended to reduce the level of a contaminant in drinking water.
- ***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.
- ***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.
- ***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.
- ***Running Annual Average (RAA)*** – The average of sample analytical results for samples taken during the previous four calendar quarters.
- ***Level 1 Assessment - A*** *Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.*
- ***Level 2 Assessment -*** *A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.*

- ***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.

Water Quality Data Tables of Detected Contaminants

We routinely monitor for over 150 contaminants in your drinking water according to Federal and State laws. The tables below list all the drinking water contaminants that we detected in the last round of sampling for each 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, 2023.** The EPA and the State allow 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.

Tables of Detected Contaminants

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	.3 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.

Lead and Copper Contaminants

Contaminant (units)	Sample Date	Your Water	Number of sites found above the AL	MCLG	AL	Likely Source of Contamination
Copper (ppm) (90^{th} percentile)	9-8-2021	0.407	0	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb) (90^{th} percentile)	9-8-2021	<0.007	0	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits

Total Organic Carbon (TOC)

Contaminant (units)	Year Sampled	TT Violation Y/N	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low - High	MCLG	TT	Likely Source of Contamination	Compliance Method (Step 1 or ACC#__)
Total Organic Carbon (removal ratio) (TOC)-TREATED	2023	N	1.01	1.00 – 1.04	N/A	TT	Naturally present in the environment	

Total Organic Carbon (TOC) provides a medium for the formation of disinfection by-products (DPB's) including Total Trihalomethanes (TTHM) and Haloacetic Acids (HAA5). To comply with the requirements of the EPA Disinfection & Disinfection By-Products Rule, Stage 1, the Town of Jefferson performs testing on paired samples of "source" water and "finished" water for TOCs on a quarterly basis.

Stage 2 Disinfection Byproduct Compliance - Based upon Locational Running Annual Average (LRAA)

Disinfection Byproduct	Year Sampled	MCL Violation Y/N	Your Water (highest LRAA)	Range Low High	MCLG	MCL	Likely Source of Contamination
TTHM (ppb)					N/A	80	Byproduct of drinking water disinfection
Location (B01)	2023	N	.013	ND - 0.017			
HAA5 (ppb)					N/A	60	Byproduct of drinking water disinfection
Location (B02)	2023	N	0.005	ND – 0.005			

The PWS Section requires monitoring for other misc. contaminants, some for which the EPA has set national secondary drinking water standards (SMCLs) because they may cause cosmetic effects 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**.**

Other Miscellaneous Water Charateristics Contaminants

Contaminant (units)	Sample Date	Your Water	Range Low High	SMCL
Sodium (ppm)	5-16-23	7.65	N/A	N/A
Iron	5-16-23	0.063	N/A	0.3 mg/L
pH	5-16-23	7.5	N/A	6.5-8.5

Physical and Mineral Characteristics for 2023 calendar year

Annual analysis of finished water revealed that the following constituents were **not detected:** Arsenic, Barium, Cadmium, Chromium, Cyanide, Fluoride, Manganese, Mercury, Nickel, Selenium, Slufate, Antimony, Beryllium, Thallium.

Nitrate/Nitrite Contaminants

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Likely Source of Contamination
Nitrate (as Nitrogen) (ppm)	5-16-23	N	N/A	N/A	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (as Nitrogen) (ppm)	5-16-23	N	N/A	N/A	1	1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

Asbestos Contaminant

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Likely Source of Contamination
Total Asbestos (MFL)	6-23-20	N	N/A		7	7	Decay of asbestos cement water mains; erosion of natural deposits

Disinfectant Residuals Summary

	Year Sampled	MRDL Violation Y/N	Your Water (highest RAA)	Range Low	Range High	MRDLG	MRDL	Likely Source of Contamination
Chlorine (ppm)	2023	N	0.37	0.23	0.79	4	4.0	Water additive used to control microbes

Chlorine is added to your water as a disinfectant. It is measured continually during water plant operation. The typical range for chlorine residual in our finished water at the water plant is .8 mg/l to 2.5 mg/l. pH of finished water is measured at least daily with a typical range of 6.7 to 7.8 standard units.

Distribution System

The distribution system is checked at least weekly to maintain a chlorine residual of at least 0.2 mg/l. Samples are taken at various sites on a rotating basis. To ensure that bacteria and other harmful organisms are removed by the treatment process and no contamination has entered the distribution system, samples are also checked for Total Coliform and e. coli bacteria.

All 2023 samples met compliance and were negative for coliform bacteria.