



2017 Annual Water Report

Drinking Water Quality Report

Town of Spruce Pine PWS ID #01-61-010

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The Town of Spruce Pine is 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, because informed customers are our best allies.

The Town of Spruce Pine Water Treatment Facility is operated within the rules of the EPA and North Carolina Department of Natural Resources and Environmental Health. The State of North Carolina certifies all operators.

The 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 microbiological contaminants are available from the 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, 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 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.

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source(s) in several ways: dispose of chemicals properly; take used motor oil to a recycling center; volunteer in your community to participate in group efforts to protect your source; etc.

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

Beaver Creek Reservoir is the primary water source for the town and is located at the headwaters of Beaver Creek. This reservoir is classified as WSI surface water supply. WSI is a protected area where laws prevent contamination from an outside source.

North Toe River supplies additional water through an intake located just upstream of the US19E bridge in Avery County. The Toe River is classified as a WSIV stream. WSIV indicates an easily accessible location that is subject to easy contamination.

Carters Ridge Wells are sources of ground water available to the Town of Spruce Pine used during times of high consumption. These wells are located on Carters Ridge Road and are not classified by the state, however they are subject to the same stringent testing as all other sources.

Source Water Assessment (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 the Town of Spruce Pine 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 Reporting Date
Beaver Creek	Moderate	March 31, 2005
Toe River	Moderate	March 31, 2005
Carters Ridge Wells	Moderate	March 31, 2005

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 potential contaminant sources in the assessment area.

The complete SWAP Assessment report for the Town of Spruce Pine may be viewed on the Web at: <http://www.deh.enr.state.nc.us/pws/swap/> Please 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. 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, PWSID (located on the cover of this report) 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 919-715-2633.

Water Quality Tables of Detected Contaminants

The Town of Spruce Pine routinely monitors for over 150 contaminants on your drinking water according to Federal and State laws. The following tables 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, 2017.** The EPA or 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.

Our water system went from the total coliform rule to the revised total coliform rule 4/01/16. We relooked at all sample locations. We designated locations for all sample sites up and down stream. This was a part of the rule in case of bad samples that required resampling. We had no bad samples in 2016. We ran 84 samples.

Microbiological Contaminants in the Distribution System

Contaminant (Units)	MCL Violation	Your Water	MCLG	MCL	Likely Source of Contamination
Total Coliform Bacteria	N	ND	0	One positive monthly sample.	Naturally present in the environment
Fecal Coliform or E coli (presence or absence)	N	ND	0	(Note: If either an original or routine sample and/or its repeat samples are fecal coliform or E Coli positive, a Tier 1 violation exists.)	Human and animal fecal waste

Contaminant (Units)	Sample Date	Violation?	Your Water	Range	MCLG	MCL	Likely Source of Contamination
Turbidity							
Turbidity (NTU) Lowest monthly %	N/A	N	0.04 NTU 100%	N/A	N/A	TT= >1 NTU 95% < or - .3 NTU	Soil runoff
Disinfection By-Product Precursors Contaminants							
Total Organic Carbon (ppm)	02/07/17 05/02/17 08/01/17 11/14/17	N N N N	ND ND ND ND	0 to 3.8	N/A	TT	Naturally present in the environment
Disinfection By-Product Contaminants							
TTHM (ppm) [Total Trihalomethanes]	02/07/17 05/02/17 08/01/17 11/14/17	N N N N	.014 .025 .040 .021	.014 LOW .040 HIGH	0.000 0.000	.080	By-product of drinking water chlorination
HAA5 (ppm) [Total Haloacetic Acids]	02/07/17 05/02/17 08/01/17 11/14/17	N N N N	.018 .030 .042 .027	.018 LOW .042 HIGH	0.000 0.000	.060	By-product of drinking water chlorination
Chlorine (ppm)	Annual Avg.	N	1.55		MRDL=4	MRDL=4	Water additive used to control microbes

Water Quality Tables of Detected Contaminants—continued

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		MCLG	MCL	Likely Source of Contamination
				Low	High			
TTHM (ppm)						N/A	.08	Byproduct of drinking water disinfection
Mayland B01	2017	N	.027	.017	.041			
Unimin B02	2017	N	.022	.011	.039			
HAA5 (ppm)						N/A	.06	Byproduct of drinking water disinfection
Mayland B01	2017	N	.031	.021	.045			
Unimin B02	2017	N	.028	.015	.039			
Chlorine (ppm)	2017	N	1.55	.89	2.90	MLRD=4	MLRD=4	Water additive used to control microbes.

Synthetic Organic Chemicals were tested for on 02/07/17 and 05/02/17 at P01 Water Plant and P02 Wells. All were non-detected.

In 2016 the lead and copper plan was updated entirely. 40 sample sites were validated to be in the EPA criteria for years of construction and plumbing materials. Our water system has reduced monitoring. So we ran 21 sample sites. Lead was not detected in any sample. Copper was detected in 7 out of 21 samples but none were over the action level. The result in the below table under “your water” is the average of

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)	7/29-8/6 2016	.163	none	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb) (90 th percentile)	7/29-8/6 2016	Non detected	none	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits

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).

What If I Have Any Questions or Would Like to Become More Involved?

Operation of the Town of Spruce Pine Water Treatment Plant is contracted to American Water Services. Questions concerning this report, water treatment or water quality should be directed to Russell Lankford at 828-765-3011.

Citizens who are interested in learning more about the operation of the town or water system are invited to attend regular Town Council meetings at the Town Hall on the second and fourth Mondays of each month at 5:30 pm.

Este informe contiene informacion sobre su agua beber. Traduzcalo o' hable con alguien que lo entienda bien.

Inorganic Water Characteristics Contaminants—Water Plant Effluent				
Contaminant (Units)	Sample Date	Your Water	Range Low/High	Secondary MCL
Iron (ppm)	02/07/17	Non-Detected	N/A	0.300
Manganese (ppm)	02/07/17	Non-Detected	N/A	0.050
Nickel (ppm)	02/07/17	Non-Detected	N/A	0.100
Sodium (ppm)	02/07/17	6.8	N/A	N/A
pH	02/07/17	7.2	N/A	6.5 to 8.5

Inorganic Contaminants P01 Water Plant

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
Antimony (ppm)	02/07/17	N	ND			6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic (ppm)	02/07/17	N	ND			0	10	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium (ppm)	02/07/17	N	ND			2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Beryllium (ppm)	02/07/17	N	ND			4	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Cadmium (ppm)	02/07/17	N	ND			5	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium (ppm)	02/07/17	N	ND			100	100	Discharge from steel and pulp mills; erosion of natural deposits
Cyanide (ppm)	02/07/17	N	ND			200	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
Fluoride (ppm)	02/07/17	N	ND			4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Mercury (inorganic) (ppm)	02/07/17	N	ND			2	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Selenium (ppm)	02/07/17	N	ND			50	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Thallium (ppm)	02/07/17	N	ND			0.5	2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories

Nitrate/Nitrite Contaminants - Water Plant and Wells P01 and P02

Contaminant Units	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Likely Source of Contamination
Nitrate (as Nitrogen) (ppm)	02/07/17	N	ND	N/A	10	10	Runoff from fertilizer use/ leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (as Nitrogen) (ppm)	02/07/17	N	ND	N/A	1	1	Runoff from fertilizer use/ leaching from septic tanks, sewage; erosion of natural deposits

E. coli is a type of fecal coliform bacteria commonly found in the intestines of animals and humans. E. coli Analysis for the Long Term 2 Enhanced Surface Water Treatment Rule was begun in 2017. We started these raw water samples on Beaver Creek and North Toe River on 10/03/17. We will catch these samples every other week until 09/18/18. The results are below.

E Coli Analysis		
	Beaver Creek	North Toe River
	E. coli per 100 ml	E. coli per 100 ml
10/03/17	8.5	15.8
10/17/17	22.6	24.6
10/31/17	43.5	14.6
11/14/17	1.0	10.9
11/28/17	1.0	10.9
12/12/17	>1.0	14.8
12/27/17	7.4	7.5

P01 Water Plant Volatile Organic Chemicals 2017 - All Volatile Organic Chemicals were tested on 2/07/17 and were non-detected.

Important Drinking Water Definitions

- *Non-Applicable (N/A)*- Information not applicable or required for this water system or this particular rule.
- *Parts per Million (ppm)* - corresponds to one minute in two years or a single penny in \$10,000.
- *Parts per Billion (ppb)* - corresponds to one minute in 2,000 years or a single penny in \$10,000,000..
- *Nephelometric Turbidity Unit (NTU)* - a measure of clarity of water. Turbidity in excess of 5NTU is just noticeable to the average person.
- *Treatment Technique (TT)* - required process intended to reduce the level of contaminant in drinking water
- *Action Level (AL)*- The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a
- *Maximum Residual Disinfection Level* - The “Highest Level” (MRDL) of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary control of microbial contaminants.
- *Maximum Contaminant level* - The “Maximum Allowed” (MCL) is the highest level of a contaminant that is allowed in drinking water. MCL’s are set as close to the MCLGs as feasible using the best available treatment technology.
- *Maximum Contaminant Level Goal* - The “Goal” (MCLG) is the level of contaminant in drinking water below which there is no known or expected health risk. MCLGs allow for a margin of safety.
- *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.
- *Level 1 Assessment*—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 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.