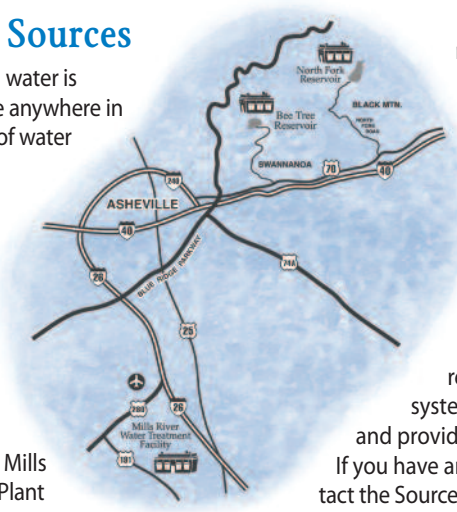
Quality Begins At Our Sources



It's very easy to see why our drinking water is considered some of the finest available anywhere in the United States. Our primary source of water is located in Black Mountain in eastern Buncombe County where the water flows from pure mountain springs and streams into lakes known as the North Fork and Bee Tree Reservoirs. They are located in Black Mountain and Swannanoa, respectively. These pristine lakes are surrounded by 20,000 acres of highly protected mountain forests owned by the City of Asheville.

Our secondary source of water is the Mills River. The Mills River Water Treatment Plant was put into operation in late 1999. The Mills River Watershed is very different from our watershed in the east; however, it still provides an excellent source of water. The watershed covers 47,440 acres in Henderson and Transylvania Counties, with approximately 75 percent of the watershed being in the Pisgah National Forest. It is a mixture of forest, farmland, and low density development. Although the Mills River is not pristine, it has the advantage of providing our region with a natural resource that has multiple uses, including being an invaluable drinking water source, trout fishery, fish and wildlife habitat, and recreational resource. During extreme drought conditions, water may be taken from the French Broad River.

Source Water Assessment Program (SWAP) Results

North Carolina Department of Environmental Quality, Public Water Supply Section, Source Water Assessment Program (SWAP) conducted an assessment of the drinking water sources across North Carolina. The purpose of the assessment was to determine the susceptibility of each drinking water source 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 City of Asheville is determined by combining the contaminant rating (number and location of PCSs within the watershed) and the inherent vulnerability rating (geologic characteristics of the surface water source and the watershed area). The assessment findings are summarized below.

It is important to understand that a susceptibility rating of Moderate or Higher does not imply poor water quality, only the systems' potential to become contaminated by PCS's in the assessment area. The complete SWAP Assessment report for the City of Asheville Water Resources Department may be viewed on the Web at: www.ncwater.org/pws/ swap.

To obtain a printed copy of this report, please mail a written request to: Source Water Assessment Program – Report Request, 1634 Mail Center, Raleigh NC 27699-1634, or email request to swap@ncdenr. gov. Please indicate the system name (City of Asheville), PWSID (01-11-010), 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.

Susceptibility of Sources to Potential Contaminant Sources (PCSs)

Source Name	Susceptibility Rating
North Fork Reservoir	Higher
Mills River	Moderate
Bee Tree Reservoir	Lower
French Broad River*	Higher

(Found in SWAP Report Table 2, dated July 3, 2015)
*French Broad River Intake is only used during extreme drought conditions.

We Optimize Quality With Careful Treatment

We are proud of the exceptional quality of water that flows through our system to your household or business daily. We treat it very carefully at our state-of-the-art water treatment plants to enhance its quality. The North Fork Water Treatment Plant built in 1978 and later expanded to a current capacity of 31 million gallons per day, or mgd, operates using a direct filtration process. Lake water from the pristine North Fork Reservoir is pre-chlorinated and mixed with aluminum sulfate to coagulate suspended particles that come from the lake. After mixing, the water flows through the filters, which remove coagulated particles. Following filtration, the pH is adjusted, fluoride is added for dental health purposes, corrosion inhibitors zinc ortho-phosphate and sodium bicarbonate are added, and the water is once again chlorinated for further disinfection.

The William DeBruhl Water Treatment Plant located at Bee Tree Lake operates using the same process as the North Fork Water Treatment Plant. The current capacity is five mgd.

The 7 mgd Mills River Water Treatment Plant was designed to produce drinking water that is comparable to the high quality water that comes from our North Fork Reservoir. The treatment process is more complex than at the North Fork facility; and it includes ozone treatment for disinfection. Water is taken from the Mills River and pumped first to an untreated water storage reservoir where suspended materials are settled out. The settled water is pumped to the pre-ozonation system to begin disinfection; it flows to the rapid mixers where chemicals are added to produce suspended particles; it moves into settling basins where the heavy particles settle out; and it travels back to the ozonation system for further disinfection. It then passes through filters containing granular activated carbon, the pH is adjusted, and fluoride is added. Finally, corrosion inhibitors and chlorine are added to enhance water quality in the distribution system.

After treatment, the water travels through over 1,681 miles of water lines and is stored in 32 reservoirs located throughout the distribution system. Each day, our water system delivers an average of 20.7 million gallons of water to over 125,000 people in Asheville, Buncombe County, and Henderson County. The rainfall total for 2015 was 60.98 inches: the highest month was December with 12.26 inches and the highest day was December 24th with 3.23 inches.

Regardless of the source of water or treatment facility processing the water, you can be sure that the product delivered to your tap surpasses all Safe Drinking Water Standards set by the EPA. The employees of the Water Resources Department are committed to treating your water with extraordinary care by perfectly blending science and nature. The result for you is the clear, pure water you receive at your tap.

Lead And Copper

The primary source of lead and copper in tap water is in a customer's home plumbing system. These elements can leach (dissolve) into the water from a building's plumbing through corrosion if the water has been standing in the pipes for several hours. To prevent corrosion from occurring, the City of Asheville has effectively implemented a system-wide corrosion control treatment. At the treatment plants, sodium hydroxide is added to increase the water's natural pH; sodium bicarbonate is added to increase alkalinity; and zinc ortho-phosphate is added as a corrosion inhibitor. This treatment minimizes corrosion of the pipes. Buildings at risk for lead or copper in the water are those that have lead service lines or that have lead solder in copper pipes. Many

(continued inside)

Our Commitment To Quality

We are pleased to present to you this year's Annual Water Quality Report for the City of Asheville Water Resources Department. This report is a snapshot of last year's water quality. Congress and the EPA have mandated this report and to a large extent its format and content. The EPA wants to be sure every community knows what is in their drinking water. We agree. Water Quality is never taken for granted by our customers or by those of us who work everyday to ensure the best quality of water possible. Our charge is to present this information in a way that is understandable and gives you confidence in the quality of water supplied to your home or place of business.

This Annual Water Quality Report provides details about the quality of your water, where it comes from, how it is treated, and how you can conserve this precious resource. You may expect an update of this report each year.

The City of Asheville Water Resources Department is required to test for over 150 constituents (substances) to make sure that the water you drink is safe. In 2015, only 13 of these substances were detected and they were well within safe levels – making our drinking water one of the best sources of water in the country. The table on the following page lists these 13 substances.

Customer Input Welcome

We invite our customers to learn more about the City of Asheville and the Water Resources Department. Customers are welcome to attend regular meetings of the Asheville City Council in the City Council Chamber located on the second floor of the City Hall Building at 70 Court Plaza. Formal meetings are held on the second and fourth Tuesday of every month beginning at 5:00 pm. The public is invited to attend. Replays of City Council meetings may be viewed on Charter Channel 193 on Wednesdays and Fridays at 6:00 pm and Saturdays and Sundays at 9:00 am. Questions regarding water quality, water bills, or any other questions can be answered by calling the City's Customer Services Division at 828-251-1122. You can also explore our web page on the Internet at **www.ashevillenc.gov/water**.

ISO 14001: Our Commitment to the Environment

The Water Resources Department is ISO 14001 registered by the National Sanitation Foundation (NSF) proving that we have implemented practices and procedures to do our part to protect the environment. We are committed to ensuring environmental quality through:

- Continuous Improvement in our product, systems, and processes to maximize customer satisfaction;
- Communication among and between our staff, customers, vendors, contractors, and governing board;
- Compliance with relevant federal, state, and local environmental regulations; and
- Commitment to a clean, healthy environment through prevention of pollution.

The City of Asheville Water Resources Department
PO Box 7148, Asheville, NC 28802
(828) 251-1122

Printed: March 7, 2016

2015 ANNUAL WATER QUALITY REPORT

En Espanol: Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Our Water Quality Surpasses All Requirements

Out of more than 150 possible substances tested only 13 were detected – making our drinking water one of the best sources of water in the country. The following regulated substances were detected (within very safe limits) in our "finished" drinking water as analyzed between January 1 and December 31, 2015. "Finished" water is the water that leaves our treatment plant and is distributed throughout the system.

Substance and Unit of Measurement	Ideal Goal– MCLG	Highest Level Allowed – MCL	Sample Date	EPA Definition of Potential Source(s) of Substance	Results	Individual Plant Results
REGULATED AT THE TREATMENT PLANT						
Fluoride, ppm	4	4	1/5/2015	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories.	High 0.63 Range: (0.55 - 0.63)	Mills River (MR) = 0.62 North Fork (NF) = 0.63 William DeBruhl (WD) = 0.55
Turbidity, NTU	N/A	TT = 1 NTU Maximum limit for any measurement	7/7/15 & 9/22/15	The likely source is soil runoff. Monitoring turbidity (cloudiness of water) ensures the effectiveness of our filtration system.	High 1.00	MR = 0.16 NF = 1.00 WD = 0.19
	N/A	TT = 95% of samples <0.3 NTU	7/7/15 & 9/22/15		98.8% of samples <0.3 NTU	MR = 100% NF = 98.8% WD = 100%
Total Organic Carbon (Source), ppm	N/A	TT	NF, WD, MR Quarterly	Naturally present in the environment.	Average = 0.43 Range: (ND - 1.9)	MR = ND - 1.9 NF = ND - 1.0 WD = ND Compliance Method Alt #2
Total Organic Carbon (Treated), ppm	N/A	TT	NF, WD, MR Quarterly	Naturally present in the environment.	Average = ND Range: (ND - ND)	MR = ND NF = ND WD = ND Compliance Method Alt #2
Heptachlor, ppt	0	400	4/8/15	Breakdown of Heptachlor	50	MR = ND NF = 50 WD = ND
UNREGULATED AT THE TREATMENT PLANT						
Strontium, ppb	N/A	N/A	1/14/15, 4/16/15, 7/17/15, 11/15/15	Naturally-occurring element; historically, commercial use of strontium has been in the faceplate glass of cathode-ray tube televisions to block x-ray emissions.	Average = 11 Range: (6 -16)	MR = 6 - 10 NF = 6 - 16 WD = 13 - 16
Chlorate, ppb	N/A	N/A	1/14/15, 4/16/15, 7/17/15, 11/15/15	Agricultural defoliant or desiccant; used in production of chlorine dioxide	Average = 122 Range: (21 - 260)	MR = 53 - 190 NF = 73 - 260 WD = 21 - 200
Hexavalent Chromium, ppb	N/A	N/A	1/14/15, 4/16/15, 7/17/15, 11/15/15	Naturally-occurring element; used in making steel and other alloys. Chromium-6 is used for chrome plating, dyes and pigments, leather tanning, and wood preservation.	Average = 0.05 Range: (ND - 0.08)	MR = 0.05 - 0.08 NF = 0.03 - 0.07 WD = ND - ND
Vanadium, ppb	N/A	N/A	1/14/15, 4/16/15, 7/17/15, 11/15/15	Naturally-occurring elemental metal; used as vanadium pentoxide which is a chemical intermediate and a catalyst.	Average = 0.2 Range: (ND - 0.3)	MR = ND - 0.3 NF = ND - ND WD = ND - ND
REGULATED AT THE CUSTOMER'S TAP						
Copper, ppm	1.3	AL = 1.3	Jun - Sept 2015	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.	<0.050 at 90th percentile	None of the 50 targeted sampling sites exceeded the Action Level.
Lead, ppb	0	AL = 15	Jun - Sept 2015	Corrosion of household plumbing systems; erosion of natural deposits.	< 3 at 90th percentile	One of the 50 targeted sampling sites exceeded the Action Level.
REGULATED IN THE DISTRIBUTION SYSTEM						
Total Coliform Bacteria (presence or absence)	0	5% positive samples	6/23/15, 7/6/15, 8/17/15, 11/11/15	Naturally occurring in the environment.	1%	Four positive samples for the year. Upon rechecking site, upstream & downstream, all samples showed no Total Coliform bacteria.
Fecal Coliform or E. Coli (presence or absence)	0	0	N/A	Human or animal fecal waste	0%	No positive samples for 2015
						Individual Site Ranges*
Total Trihalomethanes, ppb	0	80	2/3/15, 5/12/15, 8/5/15, 11/3/15	By-product of drinking water chlorination.	56.0 (RAA) Range: (10.0-75.0)	B01 - (36 - 75) B02 - (24 - 35) B03 - (10 - 24) B04 - (20 - 43) B05 - (26 - 45) B06 - (19 - 40) B07 - (25 - 29) B08 - (24 - 47)
Total Haloacetic Acid HAA5, ppb	0	60		Total Haloacetic Acid - By-product of drinking water chlorination.	39.0 (RAA) Range: (18.0-52.0)	B01 - (35 - 38) B02 - (25 - 30) B03 - (18 - 48) B04 - (20 - 43) B05 - (22 - 42) B06 - (24 - 52) B07 - (31 - 49) B08 - (24 - 47)
Chlorine, ppm	MRDLG = 4	MRDL = 4	Daily	Water additive used to control microbes.	System Average 1.16 Range (0.21 - 1.80)	Sampled in Distribution
UNREGULATED IN THE DISTRIBUTION SYSTEM						
Strontium, ppb	N/A	N/A	1/14/15, 4/16/15, 7/17/15, 11/15/15	Naturally-occurring element; historically, commercial use of strontium has been in the faceplate glass of cathode-ray tube televisions to block x-ray emissions.	Average = 13 Range: (11 - 16)	D42 (Fairview Downs) = 11-14 E08 (Pisgah Elementary) = 11 - 14 BT1 (Bee Tree Junction) = 13 - 16
Chlorate, ppb	N/A	N/A	1/14/15, 4/16/15, 7/17/15, 11/15/15	Agricultural defoliant or desiccant; used in production of chlorine dioxide	Average = 106 Range: (21 - 210)	D42 = 58 - 150 E08 = 52 - 190 BT1 = 21 - 210
Hexavalent Chromium, ppb	N/A	N/A	1/14/15, 4/16/15, 7/17/15, 11/15/15	Naturally-occurring element; used in making steel and other alloys. Chromium-6 is used for chrome plating, dyes and pigments, leather tanning, and wood preservation.	Average = 0.05 Range: (ND - 0.07)	D42 = 0.04 - 0.06 E08 = 0.03 - 0.07 BT1 = ND - ND

B01 - Pisgah Elementary
B02 - Fairview Downs
B03 - Bee Tree Junction
B04 - Crowning Way
B05 - CTS Exxon Mills Gap Rd
B06 - Challedon Subdivision
B07 - Town Mountain Rd
B08 - Fairview Fire Dept

This table summarizes results for calendar year 2015.

2015 PHYSICAL AND MINERAL CHARACTERISTICS

The following constituents analyzed in your water are indicators of the appearance, taste, and mineral content of the drinking water delivered to your tap.

Constituent	Annual Average
pH, standard units	7.59
Alkalinity, mg/l	25.04
Hardness, mg/l	4.88
Sodium, mg/l	12.7

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

KEY TO UNIT ABBREVIATIONS

- AL = Action Level; the concentration of a contaminant that triggers treatment or other requirements that a water system must follow. Action Levels are reported at the 90th percentile for homes at greatest risk.
- MCL = Maximum Contaminant Level; the highest level of a contaminant that is allowed in drinking water.
- MCLG = Maximum Contaminant Level Goal; the level of a contaminant in drinking water below which there is no known or expected risk to health.
- MRDLG = Maximum Residual Disinfectant Level Goal; the level of a drinking water disinfectant below which there is no known or expected risk to health.
- MRDL = Maximum Residual Disinfectant Level; the highest level of a disinfectant allowed in drinking water.
- N/A = Not Applicable.
- ND = Not Detected.
- NR = Not Regulated.
- NTU = Nephelometric Turbidity Unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is noticeable to the average person.
- ppb = Parts per billion or micrograms per liter.
- ppm = Parts per million or milligrams per liter.
- ppt = Parts per trillion or nanograms per liter.
- RAA = Running Annual Average.
- TT = Treatment Technique; a required process intended to reduce the level of a contaminant in drinking water.
- < = Less than.

homes built before 1986 were built with plumbing systems that contained lead solder in the copper pipes. The Water Resources Department was the first water utility in NC to start installing lead free brass fittings.

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 City of Asheville 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 at 800-426-4791 or this website at http://www.epa.gov/safewater/lead.

What EPA Wants You To Know

EPA requires us to inform you that 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 under-gone 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 from their health care providers about drinking water. 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 at 800-426-4791.

The EPA also requires us to tell you that 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 may pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water before it is treated include microbial contaminants, inorganic contaminants, pesticides and herbicides, radioactive contaminants, and organic chemical contaminants. The City of Asheville has one of the purest sources of water in the country, thus minimizing any chance of contamination.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. It is important to remember that the presence of contaminants does not necessarily indicate that water poses a health risk. In order to ensure that your tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants. The Food & Drug Administration established limits for contaminants in bottled water which must provide the same level of protection. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 800-426-4791.

2015 Achievements

- An employee in the Water Maintenance Division received the 2015 NC American Water Works Association and the NC Water Environment Association (NC AWWA-WEA) National Operator's Meritorious Service Award.
- Completed the Summer 2013 Neighborhood Enhancement Project, which included the installation of approximately 6,300 Linear Feet of new 8-inch and 6-inch waterlines in various areas of the water system.
- Completed Phase I of the Zone Metering and Large Meter Replacement project. The project replaced 3" and larger meters with new electromagnetic meters and upgraded the associated vaults at 11 locations to improve safety and metering accuracy. The project also included the installation of new electromagnetic meters and associated infrastructure at 27 existing pump stations in order to track water being delivered into pumped zones.
- The Water Engineering Division provided contract administration for a $3 million water system improvement project that provided City of Asheville water service to approximately 130 homes whose water supply was compromised by ground water contamination in southern Buncombe County. The CTS Water Line project, started in March 2014, was an important project where the City partnered with Buncombe County to provide safe and reliable public drinking water to an area of rural Buncombe County within a one mile radius of the old CTS manufacturing facility. The project was completed in the spring of 2015 and the installation of approximately 1,520 Linear Feet of new 8-inch and 6-inch waterlines with 141 new service connections.
- Schnabel Engineering's evaluation of the North Fork Water Treatment Plant's dams and tunnel continues. The scope of the project includes spillway alternatives, conduit and gate evaluations, evaluation of the Emergency Action Plan, and subsurface investigations and will involve two phases. Phase I construction for the Dam Intake Tower and Conduit Repairs is nearing completion. Phase II work is scheduled to be bid in spring/summer 2016. The estimated cost of both phases is $25 million.
- Continued the Horizon Hill Waterline Improvement project to install approximately 15,000 Linear Feet of new 8-inch and 6-inch Ductile Iron Pipe in a north Asheville community with old, undersized waterlines. The project was near 90% completion at the end of 2015.