Bedford Regional Water Authority

Annual Report &

Consumer Confidence Report

2017

Providing Quality Service For Everyone

www.brwa.com

A Note From the Executive Director, Brian Key

2017 was a great year for the Authority, in that we were able to make a number of significant improvements that allow us to provide better service to our customers. We completed the new Smith Mountain Lake Water Treatment Facility, and we interconnected the Lakes, Town, and Forest water systems; by doing so, we drastically improved our reliability for all three of these service areas while also reducing the water production and purchase costs. We were also pleased to perform all the work needed to transition from every-other-month billing to monthly billing. By reading the meters every month, we are now able to more quickly identify customer leaks; it also made the bills a little easier to pay, since the cost of the service is now split into 2 smaller bills instead of 1 larger bill.

We are going to continue making changes to benefit our customers; as you can see on the following pages, we still have a lot that needs to be done to ensure that we can provide our community with quality service. We plan to expand our projects to expedite replacing pipes that are failing, and we will begin planning for an expansion of our sewer capacity in Forest to take care of the customer growth. There is much to be done, and we appreciate your patience as we make the improvements to prepare for the future.

Mission Statement:

The Bedford Regional Water Authority exists to provide its customers with high quality water and wastewater services at rates that are reasonable and just. The Authority shall anticipate the needs of the greater community by continually maintaining responsive, reliable service and through systematic expansion whenever economically possible.

What to Expect From This Report

This report combines the Consumer Confidence Report with the Annual Report of the Authority for 2017. The desire with this report is not only to dispense the information required by law, but to also give customers a comprehensive look at what the Authority has been doing throughout the past year and what to expect from the organization in 2018.

The Consumer Confidence Reporting section of this document for calendar year 2017 is designed to inform customers about their drinking water quality. The goal is to provide customers with a safe and dependable supply of drinking water, and the Authority wants customers to understand the efforts made daily to protect the water supply. The quality of the drinking water must meet state and federal requirements administered by the Virginia Department of Health. The presence of a particular constituent does not mean that the water is unsafe to drink; however, if something is detected above the maximum level, the Public Water Systems ("PWS") must discuss the potential health effects and actions taken to correct the problem.

In the following pages you will learn:

- An explanation about why rates change every year
- Insight into the Capital Improvement Plan and new Capital Improvement Team
- An overview of the customer population of the Authority
- Information about the quality of your drinking water
- Information about the Board of Directors
- Who to contact with questions
- And much more!

Stoney Creek Reservoir in the fall

Why the Rate Change?

All of the money that is needed to run the Authority comes from payments from our customers; this means that the rates that are set are chosen to generate the needed revenue to pay for items like: replacement pipes, meters, salaries, utilities in buildings, equipment, construction, chemicals to treat water, vehicles, tools, and everything in between. Therefore, the total cost to run the Authority is funded by rates.

These rates allow us to provide quality service in the best manner possible. However, you don't see a lot of what we do since the majority of our assets are hidden underground. This also makes the majority of our assets very susceptible to degradation since our lines are literally buried in dirt. We now have great materials to choose from which have allowed us to install pipes that should last 60-80 years. They do, however, have a lifespan and not all of our pipes are made from these newer materials. Some of the pipes in the Town of Bedford date back to 1885 and are made of cast iron, galvanized steel, copper, non reinforced concrete, or clay; the pipes in the Forest and Smith Mountain Lake areas, on the other hand, are considerably newer.

The long term plan is to replace the pipelines that are old, degrading, continually breaking, or filled with roots. The reality is that replacing hundreds of miles of lines is a massive project that would costs millions of dollars. It is a long range plan that has to be split over decades, with a lot of incremental work done in the meantime to keep the water flowing and the pipes functioning.

There are also other projects that are essential to keep the Authority functioning at it's best; some examples include removing chlorine gas at our Central Wastewater Plant to make it safer for employees and the community, and expanding sewer in Forest. This is all outlined in our Capital Improvement Project, and a designated portion of the budget is allocated to projects like these each year as budget allows.

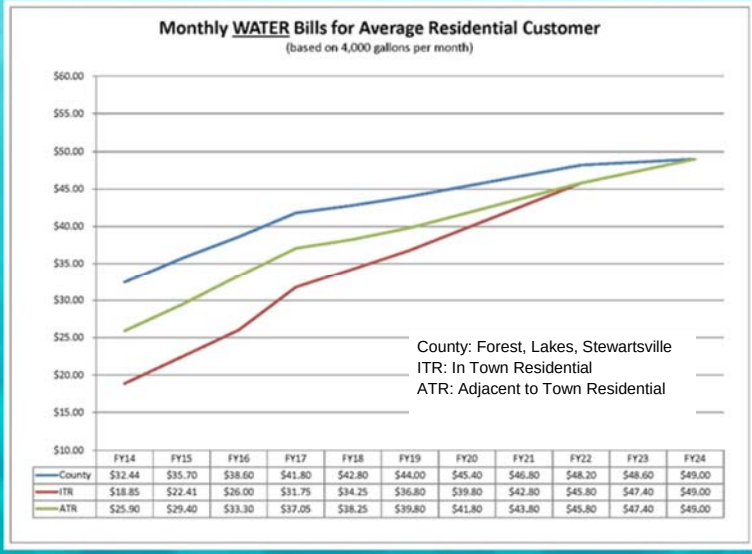
Just like with any business, our Board of Directors, Finance Committee, Finance Department, and managers comb through budgets, making adjustments and cuts, streamlining costs while also including new items that will make the Authority safer, more efficient, and improved. It is a balancing act with demands that always seem to be increasing on the Authority.

With these increasing costs to run the Authority in the best manner possible, rates must increase. We are working to do this slowly so that the increases are modest and affordable.

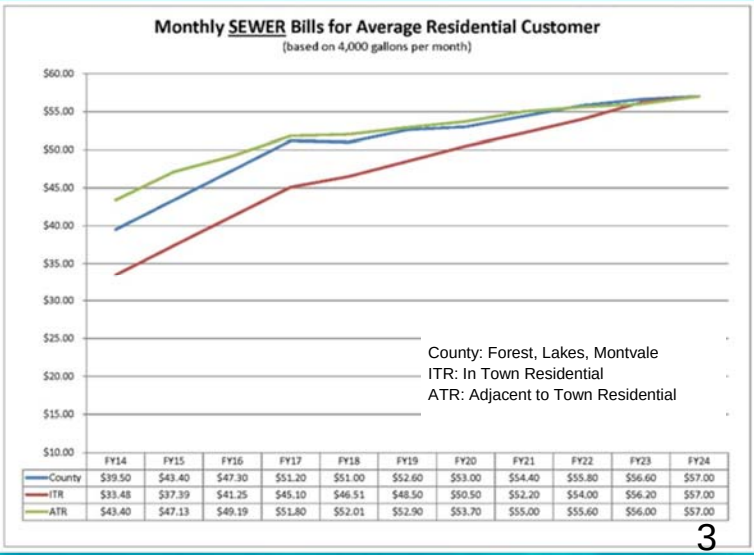
<u>Here is how rates are changing effective June 1, 2018:</u>

- On average, rates will go up $2.06 per month for water and $1.03 per month for sewer.
- Standard base fees will increase on average $1 for residential and commercial customers.
- Capital Recovery fees (facility fees) and tap fees (connection charges) will increase; the capital recovery fees have not increased in the County since 2008.

For more information about rates, please visit www.brwa.com



	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
County	$32.44	$35.70	$38.60	$41.80	$42.80	$44.00	$45.40	$46.80	$48.20	$48.60	$49.00
ITR	$18.85	$22.41	$26.00	$31.75	$34.25	$36.80	$39.80	$42.80	$45.80	$47.40	$49.00
ATR	$25.90	$29.40	$33.30	$37.05	$38.25	$39.80	$41.80	$43.80	$45.80	$47.40	$49.00



	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
County	$39.50	$43.40	$47.30	$51.20	$51.00	$52.60	$53.00	$54.40	$55.80	$56.60	$57.00
ITR	$33.48	$37.39	$41.25	$45.10	$46.51	$48.50	$50.50	$52.20	$54.00	$56.20	$57.00
ATR	$43.40	$47.13	$49.19	$51.80	$52.01	$52.90	$53.70	$55.00	$55.60	$56.00	$57.00

What is the Bedford Regional Water Authority?

The Bedford Regional Water Authority ("Authority") was created by the Bedford County Board of Supervisors ("Supervisors") by a resolution dated November 14, 2012 and by the Bedford City Council ("Council") by resolution dated November 27, 2012. The Bedford Regional Water Authority combined the former Bedford County Public Service Authority and the former City of Bedford Water and Sewer Department into a water authority that provides water and wastewater services for the Town of Bedford and Bedford County.

Three of the initial Board of Director members were appointed by the Supervisors on November 14, 2012, and three of the initial members were appointed by the Council on December 11, 2012; the seventh member was recommended by the Authority, and confirmed by the Council and the Supervisors. The State Corporation Commission approved the Articles of Incorporation on December 13, 2012. The first board meeting was held on December 18, 2012. You can view the current board of directors on the Authority's website (www.brwa.com).

Currently the Authority has 68 employees and operates 24 hours a day, 7 days a week, 365 days a year to provide customers with high quality water and wastewater services. Authority staff are constantly being trained on new technologies, safety issues, customer service protocol, and other related items to assist in achieving the organization's goal of providing the highest quality water and the best customer service possible.

Capital Improvement Plan and Team

Each year the Authority updates its Capital Improvement Plan ("CIP"). This plans consists of items or projects that are useful longer than one year and increase the value of an asset, enables new use of an asset, or lengthens the useful life of an asset.

This list currently includes around $68 million worth of projects, with about $1 million projected to be spent per year on projects at this time. The categories of the projects include:

- Multiple Water and Sewer Line replacements (there are some very old failing pipes in our systems)
- Ivy Creek Sewer to Lynchburg (replaces Lake Vista Lift Station with gravity sewer)
- System Loops for Stability
- Neighborhood Line Extensions (NLE)
- Replacement & Rehabilitation Projects for Structures & Tanks
- Facilities & Future Growth
- Large Purchases (includes equipment, vehicles, machinery, etc.)

This year, the Board of Directors decided that it is time for us to hire a Capital Improvement Team. This team's sole purpose is to work on the smaller CIP projects that can be done in house; they will be able to devote all their time to these projects. This will allow the Authority to complete more projects per year in a more cost effective manner and consistently devote time for just CIP projects (not getting sidetracked with repair jobs). Some of the larger projects will still have to be contracted out when the project requires large or specialized equipment that the Authority does not own.

The Authority Maintenance Department

This is an important step for the Authority to allow us to better maintain, update, and improve our aging system (as discussed on page 3). This is an essential part of planning for a successful Authority now and in the future.

Overview of Facilities

- 7 Water Treatment Plants
- 2 Water Intake Stations & 1 Reservoir
- 2 Water Booster Stations
- 12 Water Storage Tanks
- 3 Wastewater Treatment Plants
- 22 Sewer Lift Stations
- 2 Administrative Office Buildings & 1 Shop

The Environment and Bedford Water

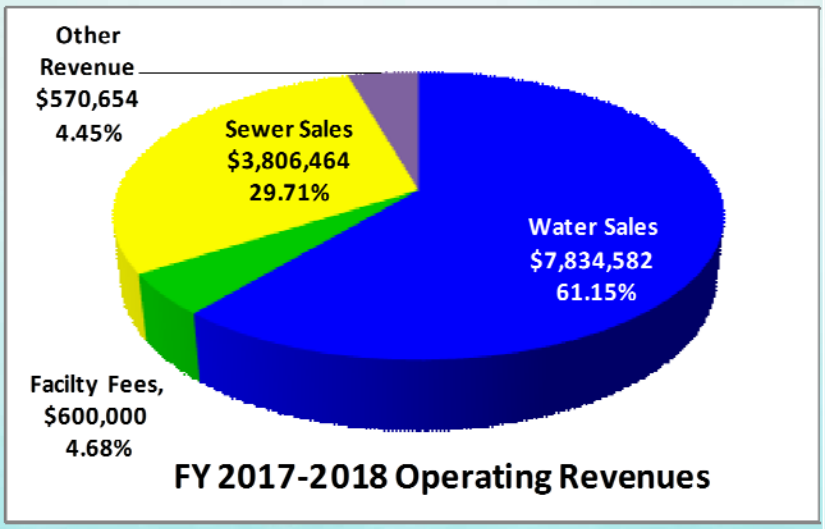
It is a well known fact that there is only so much water on this planet, and that we keep recycling it year after year. This means it is essential to care for our water and treat it so no harm comes to this valuable resource, the people who need it, or the natural ecosystems that surround us. The Authority recognizes the importance of this essential resource, and we are passionate about treating water in a safe way for both people and the environment. Below is a partial listing of how we play a part in keeping a clean, thriving environment and a healthy community.

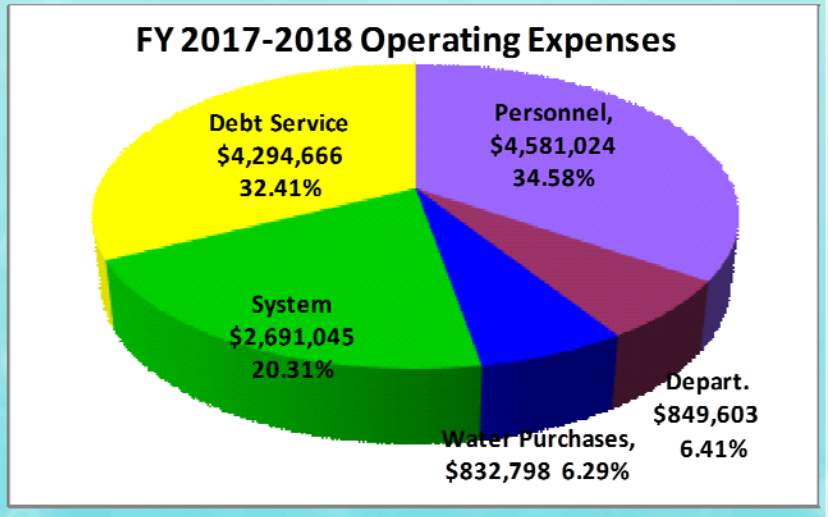
- The water we distribute to our customers goes through a filtration and treatment system and a disinfection process that makes the water safe and ready to drink.
- The water that we collect, treat, and put back into streams is actually cleaner than the water currently in the water source. This ensures the safety for the stream and all its organisms after it enters back into current.
- The Authority recognizes the importance of protecting our communities, not only through clean water and eco-friendly processes, but by also providing water to fire hydrants for emergencies as they arise.

2017 Financial Review

For the fiscal year ended June 30, 2017 the Authority experienced an increase in operating revenues of $1,203,720, compared to an increase of $1,081,266 from the previous year. Operating expenses decreased by $431,189 compared to an increase of $1,367,512 from the previous year. Factors that contributed to the revenue increase were increased facility fees, increased customers, and year five of the rate equalization process. Developer Dedications totaled $687,961 for FY 2017, compared to $288,690 in the previous year. Water system expenses decreased as a result of a new water purchase contract with the City of Lynchburg. Also, expenses were decreased from the previous year due to bond refunding costs from the previous year.

The FY 2017-2018 budget included the fifth year of the rate equalization process following consolidation and the rates used in this budget were determined through a study that was prepared by Draper Aden Associates in the spring of 2014. In January 2018 customers moved from bimonthly billing to monthly billing; to accomplish this two additional Customer Service Field Representatives and a Lead Customer Service Representative were added.





Certificate of Achievement for Excellence in Financial Reporting

The Authority's comprehensive annual financial report (CAFR) for the year ended June 30, 2017, was awarded the Certificate of Achievement for Excellence in Financial Reporting by the Government Finance Officers Association of the United States and Canada (GFOA). In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current comprehensive annual financial report continues to meet the Certificate of Achievement Program's requirements and we have submitted it to the GFOA to determine its eligibility for another certificate.

This is the fifth year that the BRWA has earned this certificate of achievement; however, the Bedford County Public Service Authority had received the award 17 consecutive years prior to consolidation.

The Authority proudly displays all of its GFOA awards.

Meet the Board of Directors

The Authority board hires the Executive Director, who is responsible for managing the Authority. The Authority is composed of managers and staff specializing in Administration, Customer Service, Engineering, Finance, Human Resources, Information Systems, Maintenance, and Operations.

The times and location of regularly scheduled board meetings are the third Tuesday of every month at 7:00 PM in the Bedford Regional Water Authority Board Meeting Room located at 1723 Falling Creek Road in Bedford.

Mr. Michael Moldenhauer

Term Expires
December 2019

Mr. Tom Segroves

Term Expires:
December 2019

Mr. Elmer Hodge

Term Expires:
December 2020

Mr. Walter Siehien

Term Expires:
December 2018

Mr. Robert Flynn

Term Expires:
December 2020

Mr. Carl Wells

Term Expires:
December 2020

Ms. Cynthia Gunnoe

Term Expires:
December 2020

Contact Us

Hours of Operation:

8:30 a.m. to 5:00 p.m.

Monday through Friday

Customer Service

540-586-7679, Extension 4

customerservice@brwa.com

- Water bills
- Rates and connection fees
- Signing up for service
- Disconnecting well service
- Reporting a leak or pressure problem during operating hours

Administration

540-586-7679, Extension 7

admin@brwa.com

- Board of Directors information
- Board and Committee meeting information

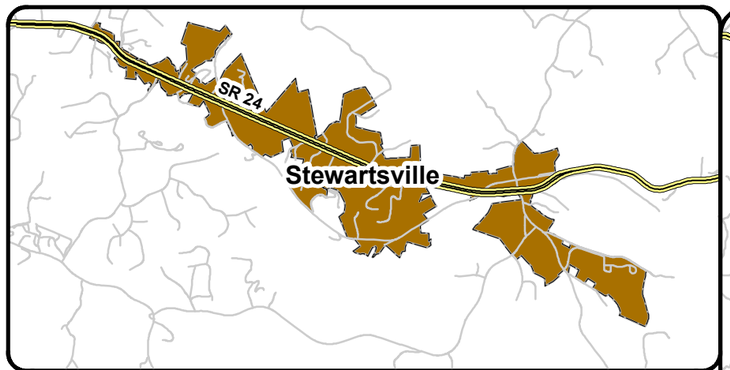
Emergency (Outside of operating hours)

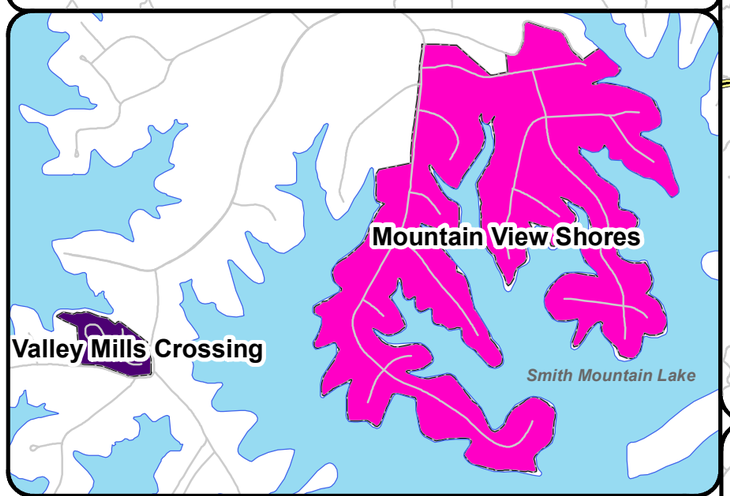
540-586-7679, Extension 9

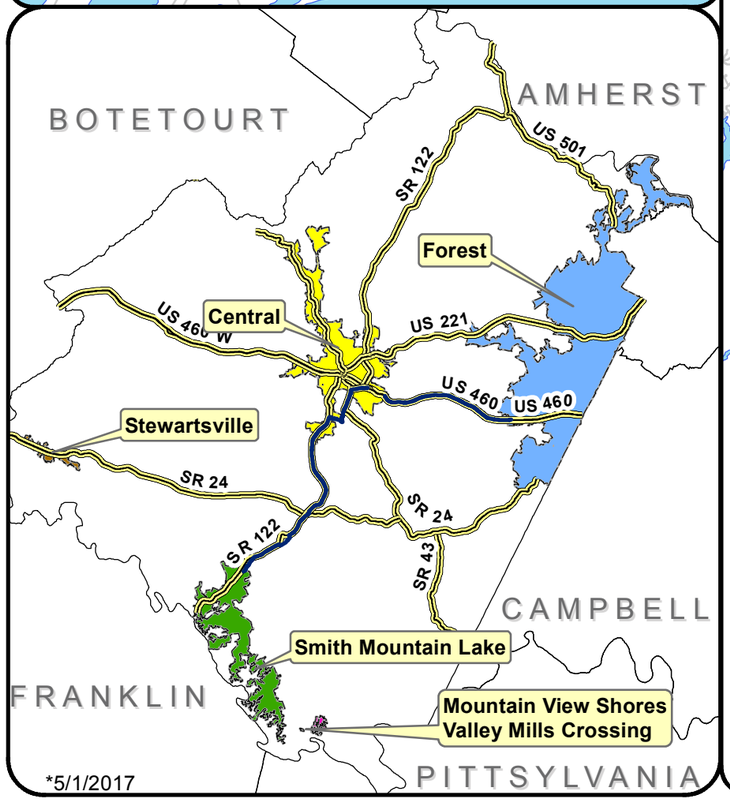
- Water outages
- Reporting a leak
- Sewer service disruptions

Website: www.brwa.com

If you have questions about this report or need any additional information about any aspect of your drinking water or want to participate in decisions that may affect the quality of your drinking water, please contact the Bedford Regional Water Authority at (540)-586-7679. Any other questions you may have concerning your water quality may be addressed via email at customerservice@brwa.com.







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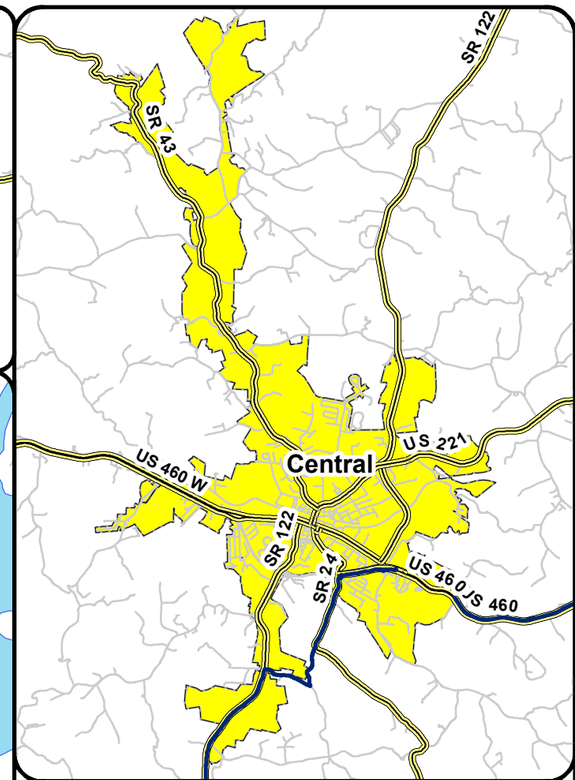
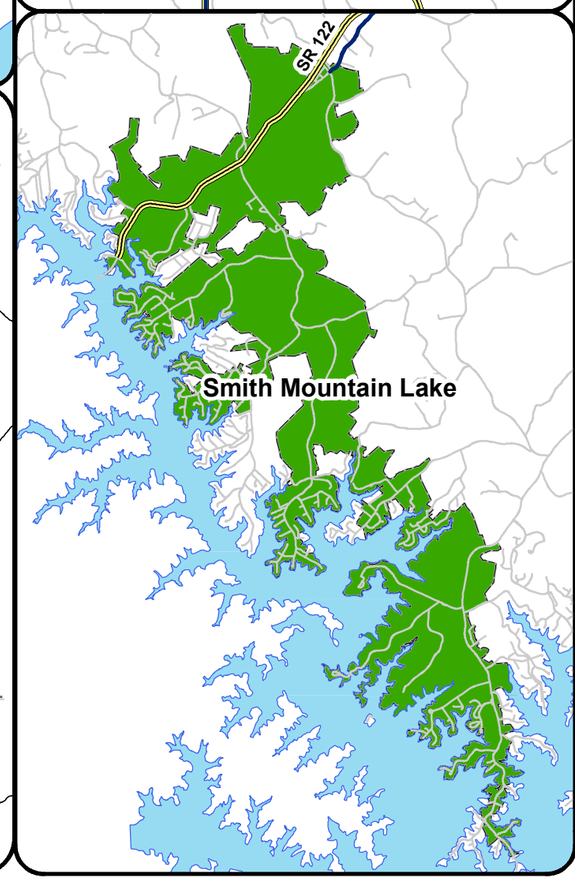
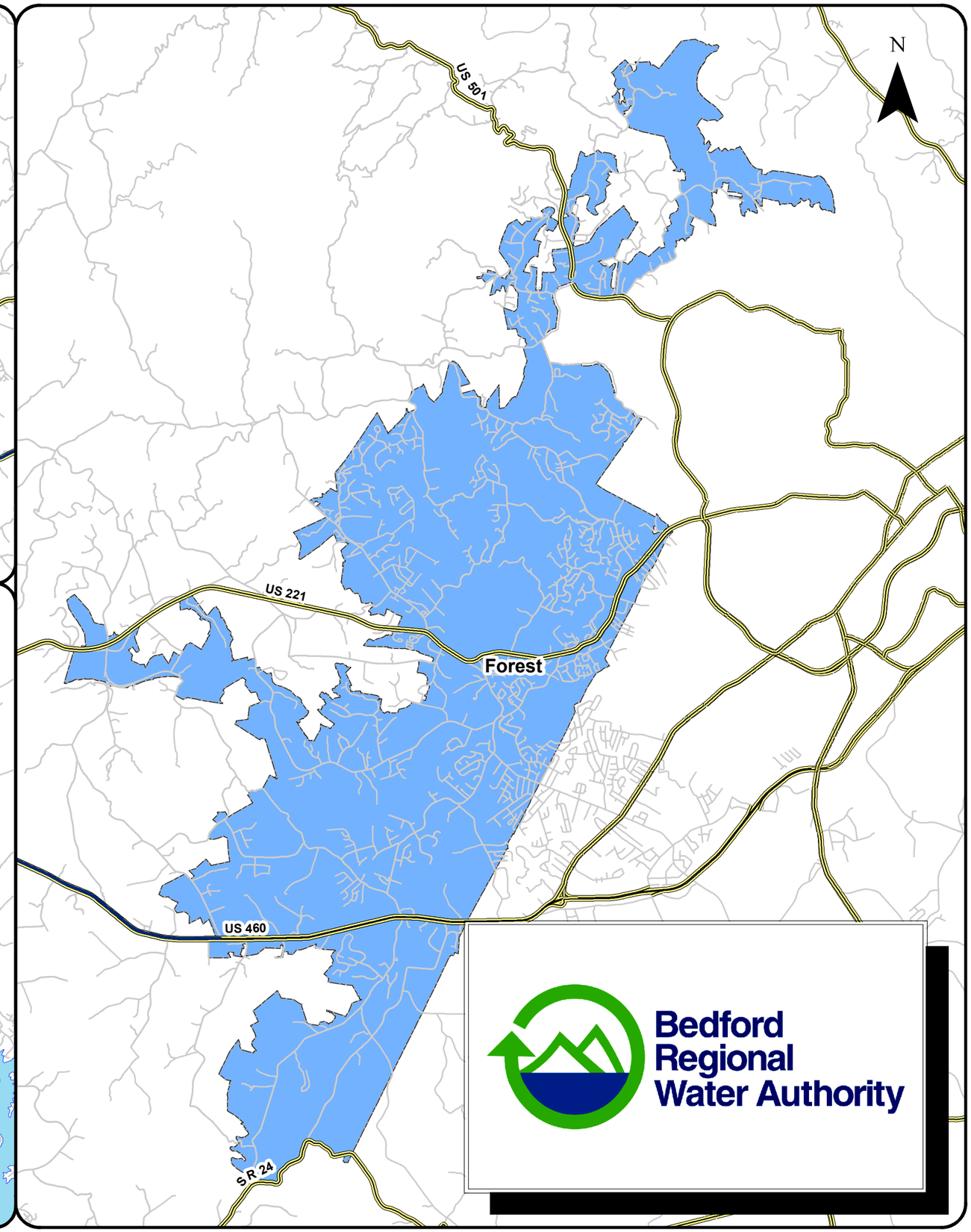






Bedford Regional Water Authority

Vulnerable Populations

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 C*ryptosporidium* and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Important Information About Lead and Copper

Lead (ppb) & Copper (ppm): 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 Authority is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water bas been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds 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.

Did You Know that in 2017 the Authority…

- Had 13,988 water customers.
- Had 5,218 sewer customers
- Employed 67 full time and 1 part time employee
- Produced 1,086,440,000 gallons of water
- Treated 470,931,000 gallons of wastewater
- Added 206 water connections
- Added 107 sewer connections
- Read 84,139 meters
- Installed or changed out 1,510 meters
- Processed 77,530 payment transactions
- Had 362 miles of water lines
- Had 141 miles of sewer lines

Customer service field representatives with their right hand drive Jeeps.

Sources of Your Drinking Water

The sources of drinking water (both tap 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 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 byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

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 and provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

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).

About the Sources

A source water assessment was conducted for Mountain View Shores, Forest Central Water System, Smith Mountain Lake Central Water System, Valley Mills Crossing, and the Town of Bedford in 2002 by the Virginia Department of Health. The wells and reservoirs were determined to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program.

Each Source Water Assessment report consists of maps showing the source water assessment area, an inventory of known land use activities of concern, and documentation of any known contamination within the last 5 years. The reports are available by contacting the Authority at the phone number or address given elsewhere in this drinking water quality report.

Mountain View Shores

The water in this subdivision is provided from a groundwater source accessed by three wells. Water from the three wells is filtered using greensand pressure filters and treated with chlorine, soda ash, permanganate, and a blended phosphate product before entering the distribution system.

Forest Central Water System

The Authority purchases most of the water for the Forest, New London, and Boonsboro areas from the City of Lynchburg. The primary source of water is the 125-acre Pedlar Reservoir (surface water source), located on approximately 500 acres; this water is transmitted to Lynchburg in a 21-mile pipeline from the mountain location in Amherst. When additional water is needed, it is withdrawn from the James River. The City treats the water at two water treatment plants: the College Hill Filtration Plant and the Abert Filtration Plant. The Authority also provides water from the Smith Mountain Lake Water Treatment Facility to its Forest customers.

About the Sources, Continued

Smith Mountain Lake Central Water System

The source for the Lakes service area is Smith Mountain Lake (picture on left), a reservoir maintained by American Electric Power for generation of hydroelectric power. In calendar year 2017, over 50% of the water was primarily treated at the Smith Mountain Lake Water Treatment Facility. This facility is one of the few membrane filtration plants in the state designed to treat surface water in accordance with the Safe Drinking Water Act and all other Virginia Department of Health guidelines. The filtration process requires no chemical addition and instead uses water being pressurized through filtration membranes, with chlorine being added after filtration for disinfection in the distribution system to meet requirements set by the regulatory agencies. This system also provides water to customers in the Town of Bedford and Forest Central.

Valley Mills Crossing

Valley Mills Crossing is a small subdivision at Smith Mountain Lake. The source of this drinking water is groundwater provided by one well; the water is treated with chlorine before entering the distribution system.

The Town of Bedford

The primary water source for the Central Service Area is the Stoney Creek Reservoir (picture on right) located near the Peaks of Otter in Bedford County; it is a surface water source. The water from the reservoir is fed through a combination of 10” and 12” waterlines to the Central Water Treatment Plant on Turkey Mountain where it is treated using a conventional sand filtration system. The Authority has a few supplemental sources that can also provide water to the Central Water Treatment Plant; they include the Big Otter river intake and five drilled wells near the river intake on the Big Otter river. The Authority also supplies customers in the Town with water from the Smith Mountain Lake Water Treatment Facility.

Stewartsville

The Authority purchases the water for Stewartsville from the Western Virginia Water Authority (“WVWA”). The primary source of the drinking water is provided by 21-acre Falling Creek Reservoir, a surface water source located in Bedford County east of Vinton. The treatment process is a conventional sand filter, with a capacity of 1.5 million gallons a day. WVWA can also supply water to the Authority for Stewartsville from their Crystal Springs, Carvins Cove, and Spring Hollow water supplies. For more information about this source contact the Western Virginia Water Authority’s Water Division at (540) 853-5700.

Facility maintenance workers replacing a light on the New London tank.

Definitions

Contaminants in your drinking water are routinely monitored according to federal and state regulations. In the following tables and elsewhere in this report you will find many terms and abbreviations you might not be familiar with. The following definitions are provided to help you better understand these terms:

BDL: Below detection level.

Level 1 Assessment: a study of the waterworks to identify potential problems and determine, if possible, why total coliform bacteria have been found in our waterworks.

Level 2 Assessment: a very detailed study of the waterworks to identify potential problems and determine, if possible, why an E. coli PMCL violation has occurred and why total coliform bacteria have been found in our waterworks on multiple occasions.

Non-detects (ND): Lab analysis indicates that the contaminant is not detectable, based on the limits of the analytical equipment used.

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

Parts per billion (ppb) or Micrograms per liter (mg/l): One part per billion corresponds to one minute in 2,000 years, or one penny in $10,000,000.

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

Nephelometric Turbidity Unit (NTU): Nephelometric turbidity unit is a measure of the cloudiness of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

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 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.

Variances and exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

Maximum Residual Disinfectant Level Goal (MRDLG): The maximum level of a disinfectant added for water treatment, 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 Disinfectant Level (MRDL): The maximum level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Secondary Maximum Contaminant Level (SMCL): The highest level recommended for a contaminant in drinking water, based on aesthetic considerations.

Running Annual Average (RAA)—Running annual average based on 4 quarters of analysis results.

Total Trihalomethanes (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.

Haloacetic Acids (HAA5): The five haloacetic acid constituents are monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, and dibromoacetic acid. The MCL for HAA5 is 0.060 mg/L. This MCL is based on the sum of the concentrations of the five constituents. There is no MCLG for HAA5 as a group; however, two of the five constituents, dichloroacetic acid and trichloroacetic acid, have individual MCLGs of zero and 0.3 mg/L, respectively.

Water Quality Results: Forest Central Water System (PWSID # 5019315) (1 of 2)

Constituents/ Unit of Measure	Violation	Level Detected: Water from Abert Filtration Plant	Level Detected: Water from College Hill Filtration Plant	AL	MCLG	MCL	MDRL	Likely Source of Contamination
Inorganic Contaminants								
Chlorine, ppm	NO	Range: 0.08-2.18		____	____	____	4	Water additive to control microbes
Nitrate + Nitrite (as Nitrogen), ppm	NO	0.07	0.07	____	10	10	___	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Fluoride, ppm	NO	Average: 0.69 Range: 0.32-0.89	Average: 0.68 Range: 0.22-0.85	____	4	4	___	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Lead, ppb (data from 2015)	NO	90th percentile value = 1 0 above action limit		15	0	____	___	Corrosion of household plumbing systems, erosion of natural deposits
Copper, ppm (data from 2015)	NO	90th percentile value = 0.06 0 above action limit		1.3	1.3	____	___	Corrosion of household plumbing systems, erosion of natural deposits
Barium, ppm	NO	Abert 0.011	CH0.01	____	2	2	____	Discharge of drilling wastes; discharge from metal refineries; erosion of natural-deposits
Microbiological Contaminants								
Turbidity, NTU	NO	0.14 (highest level) 100% <0.3	0.10 (highest level) 100% <0.3	____	n/a	TT	___	Soil runoff
No single sample can be greater than 1 NTU. At least 95% of the samples taken every month must be less than 0.3 NTU								
Volatile Organic Contaminants								
Trihalomethanes (TTHM), ppb	NO	16.2-65.6 (range) 50.7 (highest		____	0	80	___	By-product of drinking water disinfection
Haloacetic Acids (HAA5), ppb	NO	14-63 (range) 34 (highest average)		____	0	60	___	By-product of drinking water disinfection
Radioactive Contaminants								
Radium-228, pCi/L (data from 2015)	NO	0.6	ND	____	0	5	___	Erosion of natural deposits
Disinfection By-Product Precursors								
Total Organic Carbon, ppm (TOC) Raw water, ppm	NO	Highest Avg.= 2.13 Range= 1.28-3.61	Highest Avg.=2.16 Range= 1.35-3.84	____	N/A	TT	___	Naturally present in the environment
Total Organic Carbon, ppm (TOC) Treated, water ppm	NO	Highest Avg.= 1.03 Range= 0.69-1.92	Highest Avg.=1.05 Range= 0.67-1.98	____	N/A	TT	___	Naturally present in the environment

Cryptosporidium:

In 2015, the City of Lynchburg analyzed six samples of source water for cryptosporidium. These water samples were collected before any treatment had been applied at our water filtration plant. One of these samples contained a very small amount of cryptosporidium (0.1 oocyst/ Liter). Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water. The City of Lynchburg utilizes filtration to treat drinking water which removes cryptosporidium, but filtration methods cannot guarantee 100 percent removal. The City of Lynchburg, Department of Water resources works diligently to optimize the filtration process in order to ensure the greatest cryptosporidium removal.

Presence of Coliforms

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 assessments to identity problems and to correct any problems that are found.

Water Quality Results: Forest Central Water System (PWSID # 5019315) (2 of 2)

Constituents (Unit of measure)	Violation	Level Found (range)	AL	MCLG	MCL	Date of Sample	Likely Source of Contamination
The following data was collected by the Bedford Regional Water Authority							
Disinfection By-Products, Precursors, and Residuals							
Trihalomethanes (TTHM), ppb	NO	52 highest quarterly average 17-47	——	NA	80	Quarterly Jan-Sept 2017	By-product of drinking water chlorination disinfection
Haloacetic Acids (HAA5), ppb	NO	31 highest quarterly average 20-34	——	NA	60	Quarterly Jan-Sept	By-product of drinking water chlorination disinfection
Chlorine, ppm	NO	.8 Average ..5-1.4	——	MRDLG-4	MRDL=4	Monthly	Water additive used to control microbes
Lead and Copper							
Lead, ppb	NO	90th percentile value = 1.3 Of 31 samples none above AL	15	0	——	August 2017	Corrosion of household plumbing systems; erosion of natural deposits
Copper ,ppm	NO	90th percentile value =0.038 of 31 samples one above AL	1.3	1.3	——	August 2017	Corrosion of household plumbing systems; erosion of natural deposits

In 2014, the Authority participated in the third Unregulated Contaminant Monitoring Rule (UCMR3) monitoring. Unregulated contaminants are those that don't yet have a drinking water standard set by EPA. The purpose for these contaminants is to help USEPA decide whether the Contaminants should have a standard. As such, there is no MCLG or MCL established for the following unregulated contaminants.

Unregulated Contaminants							
Vanadium , ppb	N/A	0.3 Range.02-.6	——	N/A	N/A	February—August 2015 at entry point and distribu-	Naturally present in the environment
Strontium, ppb	NA	20 Range 17-27	——	N/A	N/A	February–August 2015 at entry point and distribu-	Naturally present in the environment
Chromium-6, ppb	NA	0.16 Range .03-.5	——	N/A	N/A	February—August 2015 at entry point and distribu-	Naturally present in the environment
Chlorate, ppb	NA	420 Range 290-640	——	N/A	N/A	February–August 2015 at entry point and distribu-	Naturally present in the environment

Activity Associated with a Level 1 Assessment

During the past year, we were required to conduct one Level 1 assessment. One Level 1 assessment was completed. In addition, we were required to take one corrective action and we completed one of these actions.

Water Quality Results: Combined Systems-Central Water, Forest Central, Smith Mountain Lake Water Treatment Facility (PWSID# 5019052)

Contaminant Unit of Measurement	Violation Y/N	Level Detected/ Range	Sample Date	AL	MCLG	MCL	Likely Source of Contamination
Microbiological Contaminants							
Central Water Turbidity/NTU	N	0.24 highest level	Daily		NA	Max TT	Soil runoff
Smith Mtn. Lake Water Treatment Facility Turbidity/NTU	N	0.46 highest level	Daily		NA	Max TT	Soil runoff
Inorganic Contaminants							
Lead, ppb	N	90th percentile value - 4.3 of 60 samples collected two exceeded the action level	June – September 2017	15	0		Corrosion of household plumbing systems; erosion of natural deposits
Copper, ppm	N	90th percentile value -.37 of 60 samples collected two exceeded the action level		1.3	1.3		Corrosion of household plumbing systems; erosion of natural deposits
Central Water/ Barium, ppm	N	0.01	March 2017		2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Smith Mountain Lake Water/ Barium, ppm	N	0.029 mg/L	August 2017		2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Smith Mountain Lake Water/ Nitrate, ppm	N	0.18	August 2017		10	10	Runoff from fertilizer use. Leaching from septic tanks sewerage; erosion of natural deposits
Disinfection Byproducts							
Chlorine, ppm	N	Average 1.3 Range .01-1.2	Monthly		MRDLG=4	MRDL=4.0	Chlorine is added to insure that water is disinfected
Trihalomethanes (TTHM), ppb		Highest quarterly average 69 Range-23-104	1st and 2nd Quarter 2017		NA	80	By- product of drinking water chlorination
Haloacetic Acids (HAA5), ppb		Highest quarterly average 83 Range-24-107	1st and 2nd Quarterly 2017		NA	60	By-product of drinking water chlorination
Radioactive Contaminants							
Central Water/ Gross Alpha	N	0.60	March 2017		MCLG-0	MCL 15 pCi/L	Erosion of Natural Deposits

Fluoride: Central Water ceased fluoride addition in January 2017 by resolution 2017-01-01 from the Board of Directors of the Authority.

Violations: We received Notices of Violations during the 1st quarter through 3rd quarter 2017 in the Town of Bedford Service Area for exceeding the PMCL for Total Haloacetic Acids. Some people who drink water containing HAA5 in excess of the MCL over many years may have an increased risk of getting cancer. We started feeding the Town of Bedford Service Area with water from Smith Mountain Lake WTF beginning in the Summer 2017 and hope that this helps reduce HAA5 concentrations throughout the distribution.

Water Quality Results: Mountain View Shores (PWSID #5019685)

Contaminant (unit of measure)	MCLG	MCL	Level Found	Range	Violation	Date of Sample	Typical Source of Contamination
Lead and Copper							
Copper, ppm	1.3	AL = 1.3	0.8 (90th percentile)	Range: 0.02-0.93 Of ten samples collected none were above AL	No	March-June 2015	Corrosion of household plumbing systems; erosion of natural deposits
Lead, ppb	0	AL = 15	0. 8 90th percentile	Range: 0.3-0.9 Of ten samples collected none were above AL	No	March-June 2015	Corrosion of household plumbing systems; erosion of natural deposits
Inorganic Contaminants							
Fluoride, ppm	4	4	0.09	NA	No	July 2016	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Barium, ppm	2	2	0.0174	NA	No	July 2016	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Nitrite/-Nitrate, ppm	10	10	.11	NA	No	July 2017	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Radioactive Contaminants							
Alpha emitters, pCi/L	0	15	0.36	Range:ND-3.6	No	February 2012	Erosion of natural deposits
Combined Radium, pCi/L	0	5	0.04	Range:0.04-0.46	No	February 2012	Erosion of natural deposits
Disinfection By-Products, Precursors, and Residuals							
Trihalomethanes (TTHM)	**ppb**	80	6.2	NA	No	October 2016	By-product of drinking water disinfection.
Haloacetic Acids (HAA5), ppb	0	60	2.0	NA	No	October 2016	By-product of drinking water disinfection.
Chlorine, ppm	MRDLG=4	MRDL-4	.9	.2-1.8	No	Monthly 2017	Water additive used to control microbes
Unregulated Contaminants							
Hardness, ppm	n/a	n/a	51	32-102	No	Monthly	Measurement of naturally occurring hardness metals
pH, (pH units)	n/a	6.5-8.5	7.2	6.5-9.5	No	Daily	Acidity or basicity of water

A sample collected in July 2016 indicated the sodium in the treated water is 61mg/L. This is above the EPA recommended optimal level of less than 20 mg/L for sodium in drinking water, which is established for those individuals on a “strict” sodium intake diet.

Water Quality Results: Smith Mountain Lake Central Water System (PWSID #5019400)

Contaminant (Unit of Measure)	MCLG	MCL	Level Found	Range	Violation	Date of Sample	Typical Source of
Microbiological Contaminants							
Turbidity (NTU)	n/a	TT	0.069 100% < 0.5	n/a	No	Continuously monitored	Soil runoff
Disinfection By– Products, Precursors, and Residuals							
Trihalomethanes (TTHM), ppb	NA	80	54	36-60	No	Quarterly	By-product of drinking water disinfection
Haloacetic Acids (HAA5), ppb	NA	60	83 exceeded 3rd quarter	24-83	Yes	Quarterly	By-product of drinking water disinfection
Chlorine, ppm	MRDLG=4	MRDL=4	.5	.2-1.2	No	Monthly 2017	Water additive used to control
Radioactive Contaminants							
Gross Alpha	0	15 pCi/L	.28	n/a	No	July 2015	Erosion of Natural Deposits
Combined Radium	0	5 pCi/L	.58	n/a	No	July 2015	Erosion of Natural Deposits
Inorganic Contaminants							
Nitrate, ppm	10	10	0.18	n/a	No	Aug 2017	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Barium, ppm	2	2	.02	n/a	No	Aug. 2017	Discharge of drilling waste; Discharge from metal refineries; Erosion of natural deposits
Unregulated Contaminants							
pH (pH units)	n/a	SMCL 6.5-8.5, as shown on the Hill-	7.6 Average	7.1-8.9	No	Daily	Acidity or basicity of water
Hardness, ppm	n/a	n/a	93 average	69-142	No	Daily	Measurement of naturally occurring hardness metals
Iron, ppm	n/a	SMCL 0.3	.01	0-.07	No	Daily	Rusty color, sediment, metallic taste, reddish or orange staining.
Alkalinity, ppm	n/a	n/a	88	40-143	No	Daily	
Manganese, ppm	n/a	SMCL 0.05	0.002	0-.-.030	No	Daily	Black to brown color, black staining, bitter metallic taste

Water Quality Results: Stewartsville Consecutive (PWSID #5019795) (1 of 2)

The following data was collected by the Western Virginia Water Authority.

	Spring Hollow			Carvins Cove			Falling Creek			Crystal Spring		
Parameter	Min	Max	AVG	Min	Max	AVG	Min	Max	AVG	Min	Max	AVG
Coliform Total			0			0			0			0
E. coli			0			0			0			0
pH	7.6	7.8	7.7	7.3	7.9	7.7	7.0	8.1	7.5	7.4	7.8	7.6
Alkalinity Total ppm	130	142	135	36	44	41	15	18	17			130
Chlorate, ppm	ND	0.520	0.099	0.018	0.15	0.071						
Chloride, ppm			8.87			4.11			4.99			8.26
Chlorine, ppm	1.2	1.2	1.2	1.2	2.4	1.4	1.3	1.7	1.5	1.1	1.1	1.1
Chlorite, ppm	ND	0.080	0.013	ND	0.087	0.024						
Color, pcu TRUE			ND			ND			ND			ND
Conductance umhos/cm			276			106			63.8			257
Corrosion Index (Langelier)			-0.28			-1.52			-1.53			-0.38
Fluoride, ppm	0.7	0.9	0.7	0.7	1	0.8	0.4	0.7	0.5	0.6	0.7	0.7
Hardness, Calcium, ppm			84			34			10			80
Hardness Total, ppm	150	164	157	42	60	50	16	20	18	136	154	143
Ortho Phosphate as P, ppm			ND	0.23	0.36	0.31	0.14	0.19	0.17			ND
Sulfate, ppm			16.1			12.4			9.07			2.94
Turbidity, NTU	0.06	0.12	0.08	0.06	0.3	0.17	0.14	0.26	0.19			0.097
TDS ppm			204			113			97			208
TOC ppm	0.98	1.46	1.16	1.64	2.14	1.84	0.83	1.42	1.19			
Nitrate/Nitrite		0.28			ND			ND			0.77	
0=NON DETECT												
Cyanide, ppm			ND			0.008			ND			ND
Aluminum, ppm			0.00253			0.00251			0.00677			0.00081
Antimony, ppm			ND			ND			0.000125			ND
Arsenic, ppm			0.00013			ND			ND			ND
Barium, ppm			0.0330			0.0515			0.0161			0.0358
Beryllium, ppm			ND			ND			ND			ND
Cadmium, ppm			ND			ND			ND			ND
Chromium, ppm			0.000339			ND			ND			0.00045
Copper, ppm			0.00291			0.0028			0.00485			0.00267
Iron, ppm			ND	0.03	0.11	0.05	ND	0.03	0.02			ND
Lead, ppm			0.0001			0.0001			0.000145			0.00016
Manganese, ppm			0.00043	0.001	0.04	0.02	0.002	0.006	0.004			ND
Mercury, ppm			ND			ND			ND			ND
Nickel, ppm			ND			0.000531			ND			ND
Selenium, ppm			ND			ND			ND			ND
Silver, ppm			ND			ND			0.00188			ND
Sodium, ppm			4.98			4.49			9.84			3.63
Thallium, ppm			0.00001			0.000009			0.00001			0.000007
Zinc, ppm			ND			0.00252			0.145			0.00486
Gross Alpha		<0.9			0.7			<0.5			1.1	
Gross Beta		2.4			1.7			1.8			1.8	
Radium 226												
Radium 228		<0.6			<0.35			<0.6			0.8	
Combined Radium												
Trihalomethanes(TTHM), ppb	SITE(2.8-110) LRAA 27-66			SITE(2.8-110) LRAA 27-66			SITE(2.8-110) LRAA 27-66			SITE(2.8-110) LRAA 27-66		
Haloacetic Acids (HAA5), ppb	SITE(ND-82) LRAA 4-62			SITE(ND-82) LRAA 4-62			SITE(ND-82) LRAA 4-62 3rd Quarter violation in the Parkway Tank Service area			SITE(ND-82) LRAA 4-62		
SOC												
Pesticides & PCB's	ND			ND			ND			ND		
Herbicides												
CRYPTO oocysts/L (Raw water- this does not apply to treated water)				0.1 (JAN 2016) - 0.1 (FEB 2016)								
GIARDIA cysts/L (Raw water- this does not apply to treated water)				0.1(2015)			0.2 (MAR 2016) - 8 (JUNE 2017)					
Lead, ppb	2016 51 SAMPLES, 90th percentile 2.7 ppb, 1 sample exceeded AL											
Copper, ppm	2016 51 SAMPLES, 90th percentile 0.46 ppm, 0 samples exceeded AL											

Water Quality Results: Stewartsville Consecutive (PWSID #5019795) (2 of 2)

Constituents (Unit of measure)	Violation	Level Found (range)	MCLG	MCL	Date of Sample	Typical Source of Contamination
The following data was collected by the Bedford Regional Water Authority.						
Disinfection By-Products Precursors and Residuals						
Haloacetic Acids (HAA5), ppb	no	7 highest quarterly average Range: 1.8-6	NA	60	Quarterly 2017	By-product of drinking water chlorination disinfection
Trihalome-thanes (TTHM), ppb	No	79 highest quarterly average Range: 28-90	NA	80	Quarterly 2017	By-product of drinking water chlorination disinfection
Chlorine, ppm	no	.3 average Range: 0.2—1..2	MRDLG= 4	MRDL=4	Monthly	Water additive used to control microbes
Lead and Copper						
Lead, ppb	No	90th percentile value = 0.9 Of five samples collected none exceeded the AL Range– 0.4-1 ppb	0	Al=15	August 20017	Corrosion of household plumbing sys-tems; erosion of natural deposits
Copper, ppm	no	90th percentile value = 0..04 Of five samples collected none exceeded AL	1.3	AL=1.3	August 2017	Corrosion of household plumbing sys-tems; erosion of natural deposits

Smith Mountain Lake

Water Quality Results: Valley Mills Crossing (PWSID #5019875)

Contaminant (unit of meas-	MCLG	MCL	Level Found	Range	Violation	Date of Sample	Typical Source of Contamination
Lead and Copper							
Copper, ppm	1.3	AL=1.3	1.33 (90th percentile)	Range: 0.672-2.05 of six samples collect-ed one exceed-ed the AL	No	August– September 2017	Corrosion of household plumbing systems; erosion of natural deposits
Lead, ppb	0	AL=15	13 (90th percen-tile)	Range: 1.1-16.8 of six samples collected one exceeded the AL	No	August-September 2017	Corrosion of household plumbing systems; erosion of natural deposits
Inorganic Contaminants							
Nitrate, ppm	10	10	1.4	_____	No	October 2017	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Barium, ppm	2	2	0.0115	N/A	No	April 2015	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Antimony , ppb	6	6	0.2	NA	No	April 2015	Discharge from petroleum refineries; fire retardants; ceramics electronics; solder
Fluo-ride,,ppm	4	4	0.05	NA	No	August 2016	Erosion of natural deposits; water additive that pro-motes strong teeth; discharge from fertilizer and alu-minum factories.
Radioactive Contaminants							
Alpha emit-ters, pCi/L	0	15	.18	n/a	No	April 2017	Erosion of natural deposits
Combined radium, pCi/L	0	5	1.2	n/a	No	April 2017	Erosion of natural deposits
Disinfection By-Products, Precursors, and Residuals							
Trihalome-thanes	NA	80	2.0	N/A	No	August 2016	By-product of drinking water disinfection
Haloacetic Acids (HAA5), ppb acids	NA	60	5.08	n/a	No	August 2016	By-product of drinking water disinfection
Chlorine, pm	MRDLG=4	MRDL=4	.7	.5-1.0	No	Monthly 2017	Water additive used to control microbes
Volatile Organic Contaminants							
Xylene, ppm	10	10	0.0471	N/A	No	October 2017	Discharge from petroleum factories ;Discharge from chemical factories
Ethylbenzene	700	700	5.5	N/A	No	October 2017	Discharge from petroleum refineries
Toluene	1	1	0.033	N/A	No	October 2017	Discharge from petroleum factories
Unregulated Contaminants							
pH (pH Units)	n/a	6.5-8.5 SMCL	6.8 average	6.2-7.9 range	No	Daily	Acidity or basicity of water
Hardness, ppm	n/a	n/a	57 average	25-89 range	No	Monthly	Measurement of naturally occurring hardness metals

Water Quality Results: Town Central PWSID#5515050 (Page 1 of 2)

TEST RESULTS						
Contaminant / unit of measurement	Viola-tion Y/N	Level Detect-ed/**Range**	Sample Date	MCL G	MCL	Likely Source of Contamination
Microbiological Contaminants (ND)						
Turbidity / NTU	N	0.24 (highest level)100 % < 0.3	Daily	NA	Max TT 0.3 in 95 % of monthly samples	Soil runoff
Inorganic Contaminants						
Nitrate – Nitrite, ppm	N	ND	2017	10	10	Runoff from fertilizer use, leaching from septic tanks, sewerage; erosion of natural deposits
Barium, ppm	N	0.01	2017	2	2	Discharge of drilling waste. Discharge from metal refineries; Erosion of natural deposits
Radioactive Contaminants						
Gross Alpha, pCi/L	N	0.60	March 2014	0	15	Erosion of natural deposits
Combined Radi-um, pCi/L	N	0.97	March 2014	0	5	Erosion of natural deposits
Disinfection Byproducts						
Chlorine, ppm	N	Average=.1.0 Range:.6-1.4	Monthly at eight sample sites	MRDL G=4	MRDL=4.0	Chlorine is added to insure that water is disinfected
Trihalomethanes (TTHM)	N	65 highest quarterly average Range: 59-93	Oct 2016-Sept 2017l	N/A	80	By-product of drinking water chlorination
Haloacetic Acids (HAA5), ppb	Y	67 highest quarterly average Range: 40 -67	Oct 2016-Sept 2017	N/A	60	By-product of drinking water chlorination
Total Organic Carbon (TOC), Removal ratio	N	Ave. Ratio: .1.00 Range: 1.00 to 1.00	Monthly	NA	TT- TOC Removal Ratio greater than or equal to 1	Naturally present in the source water

Central Water ceased fluoride addition in January 2017 by resolution 2017-01-01 from the Board of Directors of the Authority

Physical and Mineral Characteristics for calendar year 2017:

In addition to the required analysis that is mainly completed by independent labs we also conduct over 4,000 individual operational tests on your water during the year. The following constituents analyzed in your water on a daily basis are indicators of the appearance, taste and mineral content of the drinking water delivered to your tap.

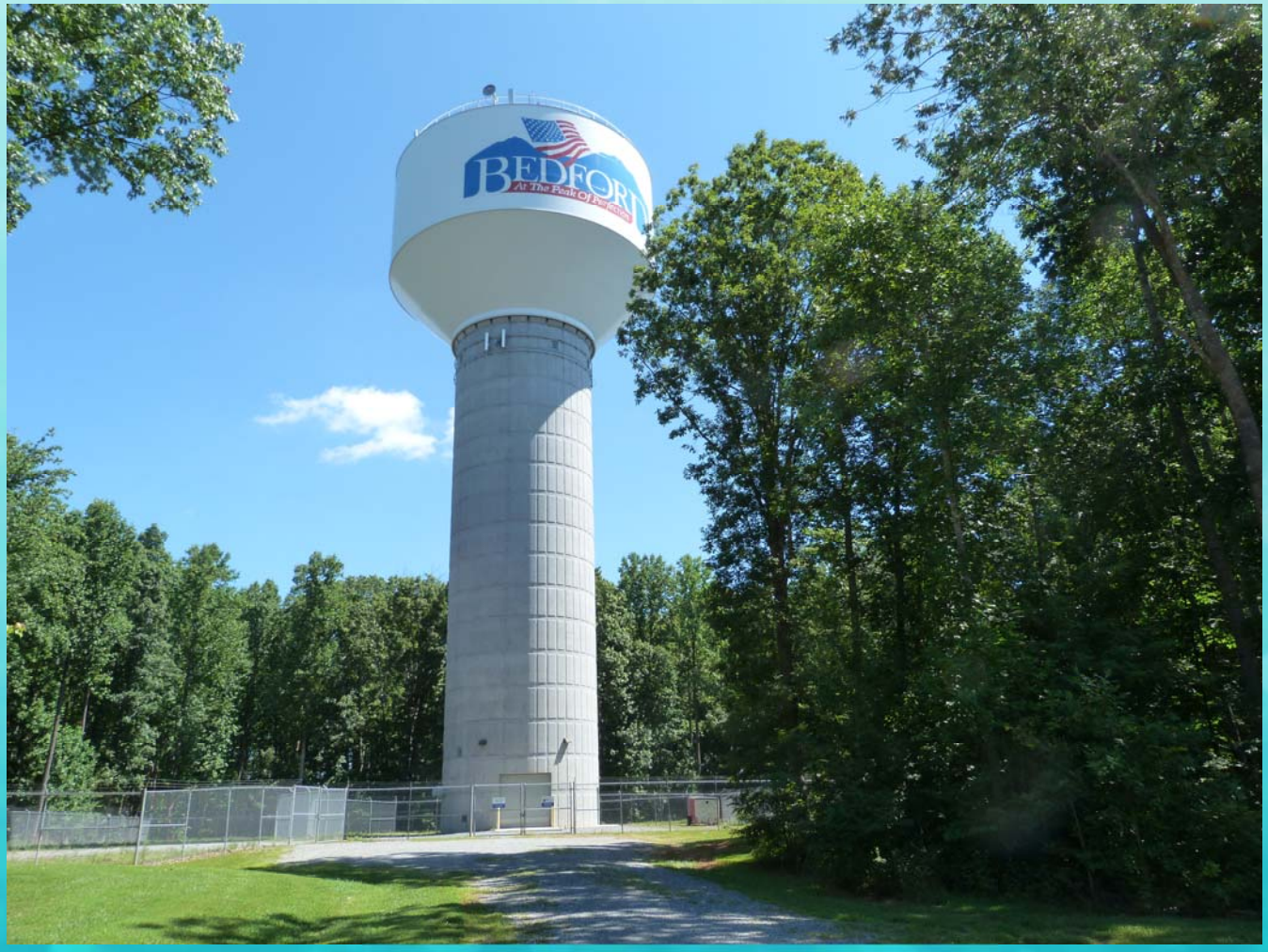
Constituent (w/unit of measurement)	Frequency	Annual Average
pH, standard units	Every 4 hours	7.5
Alkalinity, ppm	Every 4 hours	25
Total Hardness, ppm	Once per day	28
Calcium Hardness, ppm	Once per day	25
CO2, ppm	Once per day	5
Iron, ppm	Once per day	0.01
Manganese, ppm	Once per day	0.08
Temperature, Celsius	Every 4 hours	14
Free Chlorine, ppm	Continuous monitor in addition to every 4 hours	1.5

The management staff at the Authority.

Bedford Regional Water Authority

1723 Falling Creek Road

Bedford, VA 24523



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