

2015 Drinking Water Quality Report

MARCH 2016

Did You Know?

Water is known as the Universal Solvent because more substances dissolve in water than in any other chemical.

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. The Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection.

There's Something about the Water

It is a fact that 97 percent of all the water on earth is salt water and undrinkable. And that 2 percent is frozen in the polar caps. That leaves only one percent as freshwater. But just because its not salty or frozen doesn't mean that it's safe.

Some contaminants that might be found in untreated water include microbes like viruses and bacteria and inorganic contaminants such as salts and metals. Pesticides and herbicides, organic chemical contaminants, and radioactive substances could also be present.

Marion is very fortunate to have two sources of freshwater - the Middle Fork Holston

River and a high production spring, but still we perform more than 2000 tests for approximately 80 contaminants on our drinking water. Many of these tests are conducted multiple times a day at the water treatment plant.

As a minimum, drinking water quality must meet state and federal requirements, but we

consistently exceed minimum standards. Keeping our water clean is our top priority and

we should settle for nothing but the best. It is a lot of responsibility. And we are grateful for everyone's help.

In this report, we share our findings for the regulated contaminants that were detected during

2015 along with the radiological test results from 2009.



Water Treatment Plant on Middle Fork.

Why Should I be Concerned?

While the presence of contaminants does not necessarily indicate that water poses a health risk, 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 having 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 at (800)-426-4791.

2015 Drinking Water

Where Does Our Water Come From?



Middle Fork Intake Pump Station

Marion has two main sources of drinking water. The water treatment plant pumps surface water from the Middle Fork Holston River to be treated at the plant. The water plant adds chemicals to remove contaminants and disinfect the water, then pumps it to the “Hot and Cold” tanks. Then, water gets distributed to other tanks throughout the system. Also, water is withdrawn from four groundwater springs on the south end of town. The spring water is treated on site and flows into the system without the aid of pumps.



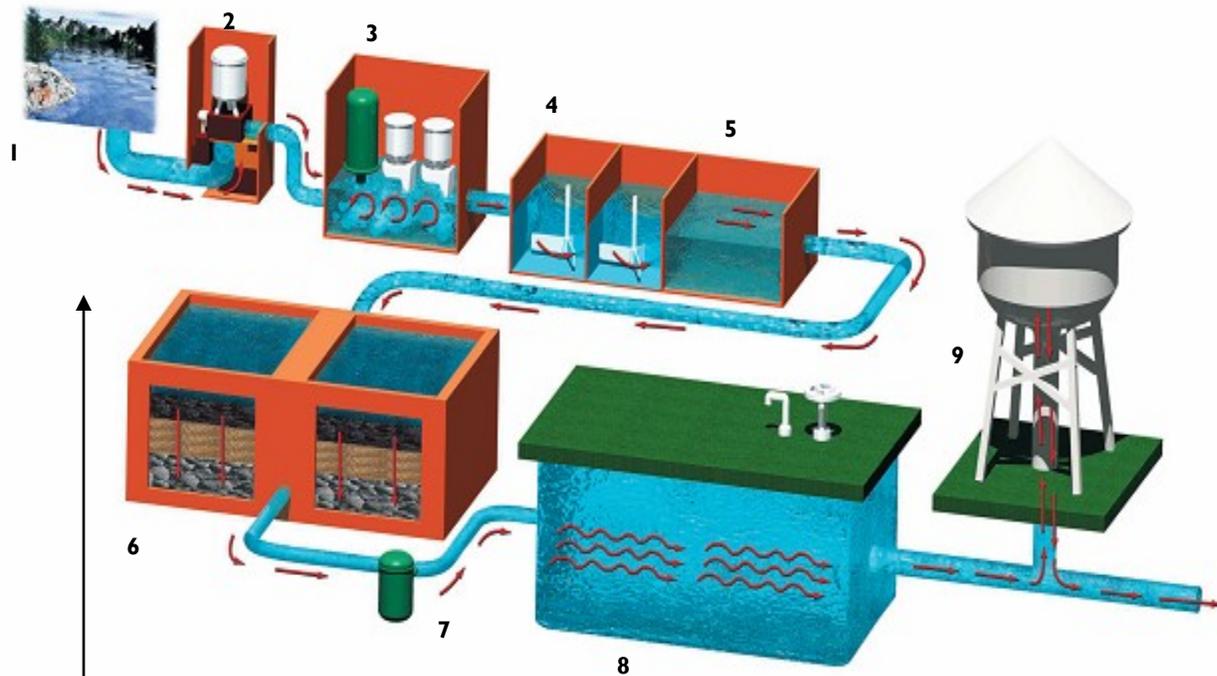
The water storage tanks not only provide an adequate reserve of water for drinking, domestic use and fire suppression but their elevations provide pressure to deliver the water to our homes and businesses.

Water Storage Tanks



How Is Our Water Treated?

Making drinking water from river water involves nine primary processes. Our lab tests the water through every stage of treatment.



Let's look at the treatment process!

1. Water is pumped from the river.
2. Coagulant and chlorine are injected
3. The chemicals are mixed rapidly into the water,
4. Then mixed slowly to allow large particles to form into "floc".
5. Water is slowed to allow particulates to settle.
6. Multimedia filtration.
7. Final Chlorination.
8. Detention and Contact Time in large clearwell.
9. Finished water is pumped to tanks and distribution system.

Terminology Used in This Report

MARCH 2016

Contaminants in your drinking water are routinely monitored according to Federal and State regulations. The table on the next page shows the results of our monitoring for the period of January 1st to December 31st, 2015. In the table 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:

DEFINITIONS:

Maximum Contaminant Level, or MCL - the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal, or 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.

Non-detects (ND) - lab analysis indicates that the contaminant is not present

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

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

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

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

Action Level - 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.

Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity, or cloudiness, of water. Turbidity in excess of 5 NTU is just noticeable to the average person. Turbidity is monitored because it is a good indicator of the effectiveness of our filtration system.

Maximum Residual Disinfectant Level Goal or MRDLG – the level of drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

How Much of What is in Our Water?

Contaminant (units)	MCLG	MCL	Level De- tected	Violation (Y/N)	Range	Date of Sample	Typical Source of Contamination
Nitrate (ppm)	10	10	0.78	N	0.12-0.78	2015	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Fluoride (ppm)	4	4	0.58	N	Nd—0.58	2015	Water additive which promotes strong teeth
Barium (ppm)	2	2	0.035	N	0.020—0.035	2015	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Alpha Emitters (pCi/l)	0	15	0.2	N	0.1 – 0.2	2009	Erosion of Natural Deposits
Combined Radium (pCi/l)	0	5	1.0	N	0.5 – 1.0	2009	Erosion of Natural Deposits
Chlorine (ppm)	MRDLG = 4	MRDL = 4	1.52	N	0.60 - 1.80	2015	Water additive used to control microbes
Total Organic Carbon	NA	TT, met when ≥ 1	1.00	N	1.00-1.47	2015	Naturally present in the environment
Haloacetic Acids (ppb)	NA	60	7	N	ND – 15	2015	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)	NA	80	8	N	ND – 17	2015	By-product of drinking water disinfection
Turbidity (NTU)	NA	TT, 1 NTU Max	0.08	N	0.02 – 0.10	2015	Soil runoff
		TT, ≤ 0.3 NTU 95% of the time	100%	N	NA		

Contaminant (units)	MCLG	Action Level	90th Percentile	Sample Date	# of samples exceeding Action Level	Typical Source of Contamination
Copper (ppm)	1.3	AL = 1.3	0.3	2015	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppm)	0	AL = 15	4.12	2012	1	Corrosion of household plumbing systems; Erosion of natural deposits

Most of the water quality results in the above table are from testing done in 2014. However, the state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though accurate, is more than one year old.

Additional Health Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The **Town of Marion** 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 15 to 30 seconds or until it becomes cold or reaches a steady temperature before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

“...you can minimize the potential for lead exposure by flushing your tap for 15 to 30 seconds...”

Is Turbidity a “Dirty” Word?



Decreasing Turbidity From Left to Right

Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. We measure turbidity in each stage of the treatment process. We want as little of it as possible because it can act as a shield for bacteria to hide from our disinfectant.

MCL's are set at very stringent levels by the U.S. Environmental Protection Agency. In developing the standards EPA assumes that the average adult drinks 2 liters of water each day throughout a 70-year life span. EPA generally sets MCLs at levels that will result in no adverse health effects for some contaminants or a one-in-ten-thousand to one-in-a-million chance of having the described health effect for other contaminants.

The Bottom Line

Your water system did not have any Maximum Contaminant Level or Treatment Technique violations during 2015.

Your water system did not have any monitoring violations during 2015.

Into the Future

A source water assessment of our system was conducted in 2001 by the Virginia Department of Health. The Town Springs and Middle Fork of the Holston River sources were determined to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program.

The 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 report is available by contacting the water treatment plant at 276-783-5950 or by visiting our website at www.marionva.org

We understand that an ounce of prevention is worth a pound of cure and plan to continue our prevention efforts through the summer of 2015 by developing a "Source Water Protection Plan", based on what we determine to be the major risks to our sources of drinking water. This is where you can help in preventing pollution and contaminants from entering the watershed. A committee was formed in December 2013 to pursue this endeavor. Expect to hear more about this program as the plan progresses.

This Annual Drinking Water Quality Report for calendar year 2015 was designed to inform you about your drinking water quality. Our goal is to provide you with a safe and dependable supply of drinking water, and we want you to understand the efforts we make to protect your water supply. The quality of your drinking water must meet state and federal requirements administered by the Virginia Department of Health (VDH).

How To Stay In Touch With Us

Town of Marion

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The times and location of regularly scheduled board meetings are as follows:

Marion Town Council meets the 1st and 3rd Mondays of each month at 5:30 p.m. in the Municipal Building located at 138 East Main Street, Marion, Virginia. Please call 783-4113 for advance copy of agenda, or to be included on the agenda. Regular Council meetings which fall on a holiday are held on Tuesday of that week.

If you have questions about this report, please contact:

Donald R. Coley; Town of Marion; P.O. Box 1005; Marion, Virginia

WE'RE ON THE WEB!

WWW.MARIONVA.ORG/WATER-TREATMENT