

USDA/NRCS
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Harrisonburg, VA 22801



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We work with the people who work the land.

For More Information

Soil & Water Conservation District Offices (SWCD):

Shenandoah Valley SWCD: (540) 433-2853 (Rockingham County)

Lord Fairfax SWCD: (540) 465-2424 (Shenandoah County)

NRCS Field Offices:

Harrisonburg (540) 433-2853 (Rockingham County citizens)

Strasburg (540) 465-2424 (Shenandoah County citizens)

The NRCS/USDA Smith Creek "Showcase" activities and the work of our partners within the watershed can be accessed at: www.SmithCreekWatershed.com or by contacting your local NRCS or SWCD office.

Smith Creek Coordinator:

Kathy Holm (540) 434-1404 Ext. 114

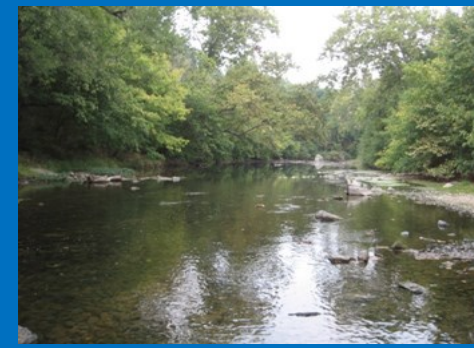
If you find this newsletter informative, we would like to hear about it!!!

Let us know at (540) 433-2853 ext. 119 or megen.dalton@svswcd.org

Have you been contacted by our conservation team?

One of the main goals of the Smith Creek Showcase watershed project is outreach. The Natural Resources Conservation Service (NRCS) and the Shenandoah Valley SWCD are currently working to contact every agricultural landowner within the Smith Creek watershed. This effort is designed to offer landowners the opportunity to learn more about technical and financial assistance and education opportunities available to Smith Creek residents. During our visit we also hope to learn more about your farming operation. The expectation is that by gathering information from landowners we can gain a more complete picture of the what is going on in the watershed.

If you are a Smith Creek agricultural landowner and haven't met with anyone to learn about opportunities and share information, please call to schedule a visit!



Smith Creek Connection

The connection to your watershed

August 2013

Mountain Run, War Branch, Dry Fork and Gap Creek Subwatersheds

Sinkholes –Doorway to our Drinking Water

Sinkholes come in various shapes and sizes but share a common feature: they may be the doorway to our home and community drinking water. The best way to protect drinking water sources and to keep springs and streams clean is to protect sinkholes from pollution. In the Smith Creek watershed, there are 329 sinkholes and 35 caves.

Sinkholes are a feature of karst terrain, which is the landscape that predominates in the Shenandoah Valley. Karst forms on top of soluble limestone and dolomite bedrock. Sinkholes are inlets to an underground drainage system which supplies water flow to local streams and creeks. Other familiar features of karst topography are springs, caves and sinking streams (sinking streams are those that lose surface water directly to groundwater). Sinkholes are so common in this region that you may be able to see one from your back door.

Sinkholes are a natural and interesting feature of our karst landscape. They are an essential part of our groundwater system, but present a great risk for contamination. Sinkholes are terrible places to dump trash, waste oils and other chemicals. Sinkholes are connected to springs, which sustain the flow of the Valley's rivers, especially in dry times. Polluted groundwater flowing from springs can affect fishing and swimming in our streams and rivers.

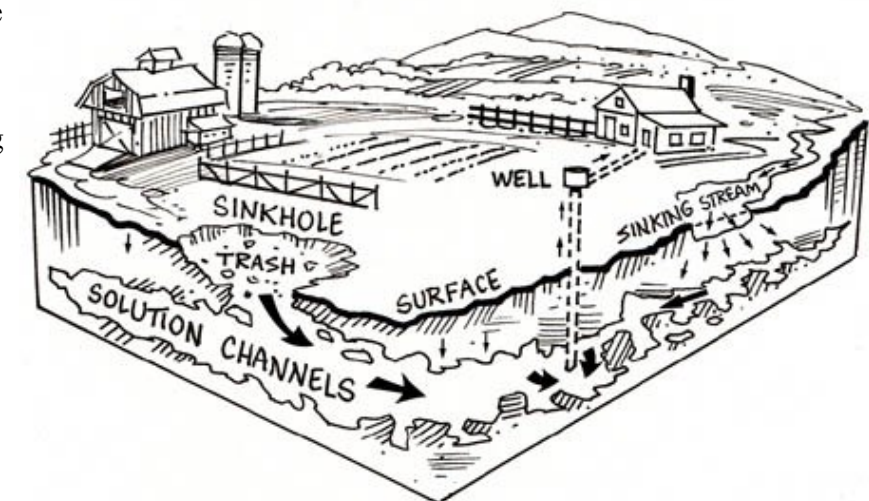
Follow these tips to prevent pollution from entering sinkholes by:

- Leaving a vegetated buffer area around sinkholes to filter out sediment and pollutants that might be washed into the sinkhole.
- Being careful about applying fertilizers or pesticides where they may be flushed into a sinkhole with the next rain.
- Avoid plugging sinkholes as this can cause flooding on adjacent property and reduces the rate at which groundwater is replenished. Plugged sinkholes can also lead to increased surface runoff.
- Reducing or eliminating livestock access to sinkholes as they can introduce nutrients into the groundwater system.

If you are an agricultural producer and have a sinkhole on your property that you would like to protect, consider contacting the local Soil and Water Conservation District for more information about cost share assistance. (See back panel of this newsletter for contact information.)

Funding is available to remove and properly dispose of foreign materials and debris dumped in and around sinkholes, for fencing to exclude livestock and for establishing adequate vegetation for filtering and trapping sediment from surface runoff.

Protecting sinkholes can improve groundwater quality as well as local springs, streams and creeks. Prevent pollution from entering Smith Creek by protecting sinkholes on your property.

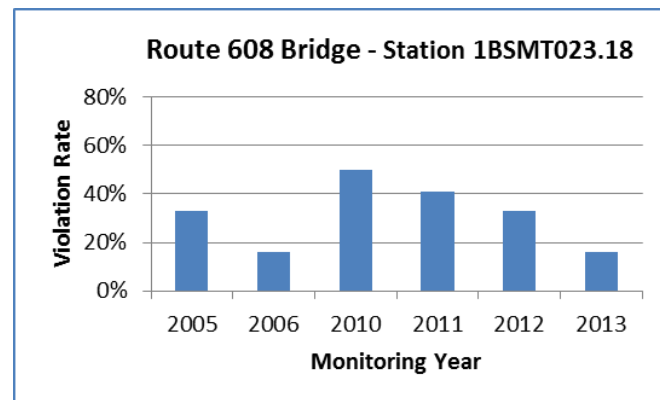
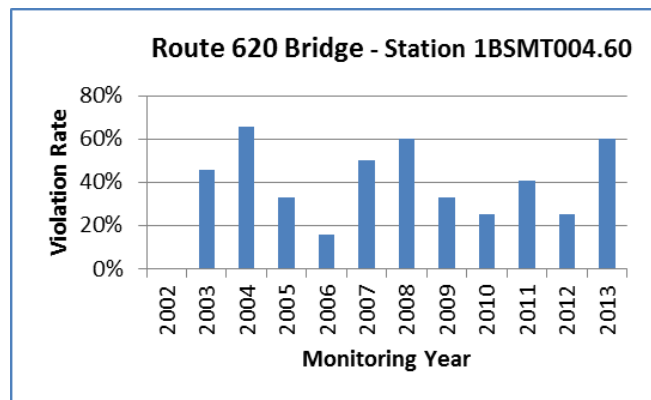


Water Quality Monitoring in Smith Creek

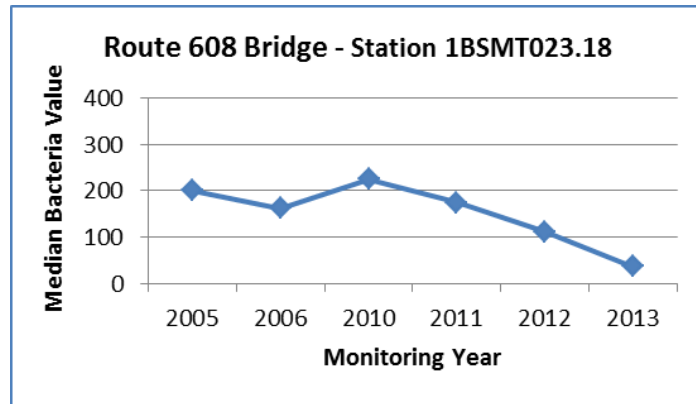
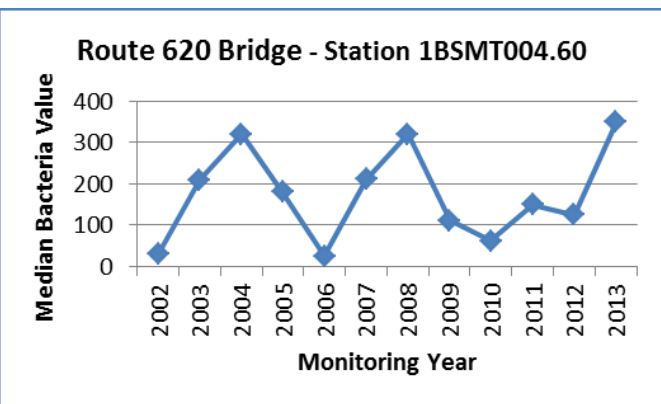
What do the data say?

The Virginia Department of Environmental Quality as part of the Smith Creek TMDL Implementation Plan continues to monitor five ambient and one biological site in the Smith Creek watershed. Two ambient sites and the biological site are located on Smith Creek with additional ambient sites on Dry Fork, Mountain Run and War Branch. A water quality study in 2004 found that Smith Creek was not as safe and healthy as it should be according to Virginia’s Water Quality Standards and recommended reducing bacteria and sediment. The monitoring data from these sites are used to determine if progress is being made in achieving the Smith Creek bacteria and sediment “pollution diet” (also known as Total Maximum Daily Loads). In addition, these data are evaluated every other year for inclusion in Virginia’s Integrated Report on Water Quality which is a requirement of the federal Clean Water Act. For the purposes of this article, available data were reviewed from all six of these monitoring sites from 2001 to the present on a yearly basis.

One of the first factors reviewed when analyzing bacteria concentrations is the violation rate. When more than 10.5% of the samples violate the water quality standard of 235 cfu (colony forming unit)/100 ml, the water is listed as impaired. As selected graphs show, violation rates continue to exceed the water quality standard above 10.5%. However, a decline in the violation rate is present at three of the sites; Dry Fork from 2011 – 2013; Upper Smith Creek (Route 608 Bridge at stream mile 23.18) from 2010 – 2013 and War Branch from 2005 – 2013. The authors caution that the 2013 yearly values may change as data are collected through the summer months when levels of bacteria can rise due to storm activity and activity on the land. However, to date (through June) these three stations are showing a declining violation rate. The other two stations on Lower Smith Creek (Route 620 Bridge at stream mile 4.60) and Mountain Run are fluctuating too much to draw conclusions. These rates fluctuate from year to year and can be influenced by weather, yearly land use changes etc.



The second factor reviewed is the actual raw sample values to determine if the concentrations of bacteria at a certain site are declining. From the graph, you can see that this tracks fairly consistently with the reduction in the violation rate with the median value at Upper Smith Creek (at stream mile 23.18) War Branch and Dry Fork are also showing declines. This would indicate that the loads of bacteria entering the stream are declining. The overall conclusion regarding bacteria and the answer to the question “What do the data say?” would be a mixed result. Data would indicate that bacteria loads in two of the tributaries of Smith Creek along with upper Smith Creek are showing possible declines in bacteria over the past several years while lower Smith Creek and the other tributary continue to be impacted. The authors stress that the data for 2013 can change as it only includes the first half of the monitoring year and bacteria levels can be influenced negatively by weather and land use.



Groundwater Contamination and Your Septic System

Information from Virginia Department of Health

Septic systems, groundwater and wells.

Many people living in rural areas have a well and septic system. These are excellent substitutes for public utilities. Maintenance costs are low and the systems are dependable. Best of all there are no monthly bills. However, neither a well nor a septic system is foolproof. If they are not working correctly they can contaminate groundwater, which can spread to nearby wells.

So how does a septic system work?

A septic system has two main parts. Wastewater first passes through a septic tank where solids are removed. The liquid waste is then piped into a drainfield. The drainfield is a series of gravel filled trenches with pipes that carry wastewater. In the drainfield, the partially treated wastewater is released into the soil. The soil and naturally occurring bacteria cleanse the wastewater. The cleansed water is then returned to the environment. The septic system does an outstanding job of treating organisms found in sewage. That’s what it was designed to do and it does it well.

So what’s the problem?

The problem occurs when septic systems are neglected or abused or when chemicals are introduced into the system. A septic system must be maintained regularly to function properly. Accumulated solids in the bottom of the septic tank should be pumped out every three to five years to prolong the life of your system. Chemicals such as engine oil, gasoline, pesticides, paints, and solvents, should not be introduced into your system. In addition, bleach, disinfectants, and drain/toilet bowl cleaners should be used sparingly as they can affect the naturally occurring bacteria that make your system work. Pharmaceutical products should never be put into your system either as they can not only affect the biology in your septic system but can also affect local water bodies and aquatic life.

But I thought my septic system treated my waste.

It will, but only the parts that are biodegradable. The septic system is a biological system and uses bacteria to digest the waste. Many chemicals can’t be digested by naturally occurring bacteria and may even kill them. This will actually reduce your system’s ability to treat sewage wastes. Manufactured chemicals travel through the septic system and leave just as they entered. After they pass through the drainfield they enter the groundwater supply.

So what can I do?

Don’t use toilets or drains as a trash can by dumping nondegradables into them. Don’t poison your septic system and the groundwater by introducing harmful chemicals or pharmaceuticals that can kill the beneficial bacteria that treat your wastewater. Don’t use commercial septic tank additives. These products usually don’t help and some may hurt your system in the long run. Don’t allow anyone to drive or park over any part of the system. Learn the location of your septic system and drainfield. Have your tank pumped and the system inspected every 3 to 5 years by a licensed septic contractor. Practice water conservation to reduce the amount of unnecessary water entering your system.



Special funding is still available for Septic BMPs in the Smith Creek watershed!

Through the District’s TMDL (Total Maximum Daily Load) Program, targeted financial assistance is available to residential landowners in all four subwatersheds of Smith Creek.

The Residential Cost Share Program provides financial assistance to residents to repair or replace failing septic systems or to install a septic system to replace a straight pipe. The Program also offers financial assistance for septic system pumpouts. Watershed residents are eligible to receive at least 50% cost share/reimbursement for completion of specific septic practices.

If you are located in one of the 4 subwatersheds of Smith Creek (Dry Fork, Mountain Run, War Branch or Gap Creek) and would like more information about this program, contact Megan O’Gorek at the Shenandoah Valley Soil and Water Conservation District at

(540) 433-2853 ext. 120 or megan.ogorek@svswcd.org.