Shenandoah Valley LANDOWNERS

FREE
WATERSHED MAP INSIDE

Our Unique Water Resources

• Springs • Sinkholes • Limestone Outcroppings
• Mountain Streams • Waterfalls
• Aquifers • Groundwater

Is This Your Shenandoah Dream Land?

Beautiful views, charming older farmhouse with well and septic in farming community. Grazing land slopes down to a wet weather stream. Lovely rock out croppings!

How clean is your water?

On the Back... Who To Contact ! What You Can Do!

Shenandoah Ri

A Healthy Ecosystem

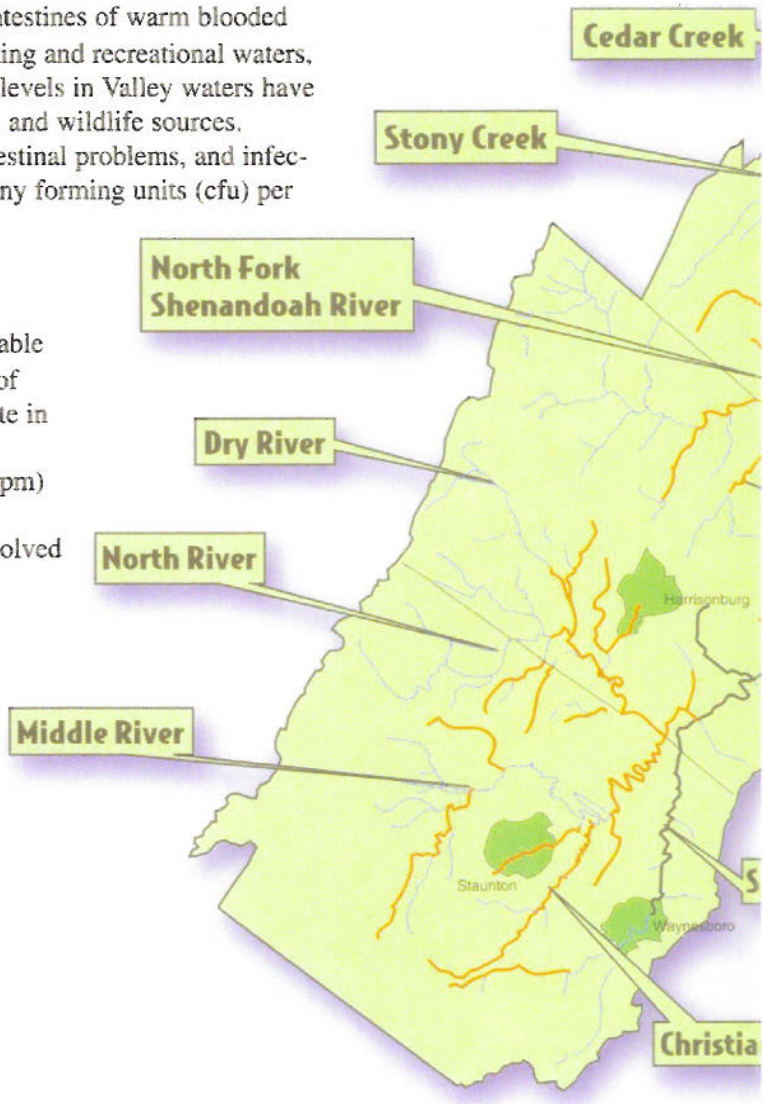
The fabled Shenandoah River watershed has played an important role in American history. Used for food resources, water consumption, and transportation by Native Americans and European settlers, it now serves Valley residents for agriculture, recreation, wastewater assimilation, water supply, and industry. Because this watershed is critical to human and economic needs, it is important to keep it healthy. Chemical, biological, and physical aspects must be kept in balance to conserve our Shenandoah River ecosystem. Some important environmental parameters are discussed on this map. Can you find your watershed address? Is your stream impaired?

BACTERIA – Fecal coliform bacteria live in the intestines of warm blooded animals. When human and animal wastes enter our drinking and recreational waters, bacteria can pose human health problems. High bacteria levels in Valley waters have been linked to livestock, avian, human, domestic animal, and wildlife sources. Waterborne bacteria can cause dysentery, other gastrointestinal problems, and infection. When *E. coli* levels are consistently above 126 colony forming units (cfu) per 100 ml water, human health issues come into play.

NITRATE – This nutrient is often found at undesirable levels in our groundwater and surface waters as a result of excessive land applications of fertilizers. Too much nitrate in drinking water can cause human health problems. In our rivers, persistent nitrate levels of 1-2 parts per million (ppm) contribute to excessive growth of aquatic vegetation and depressed levels of dissolved oxygen. Low levels of dissolved oxygen can lead to fish kills.

Redbreast Sunfish

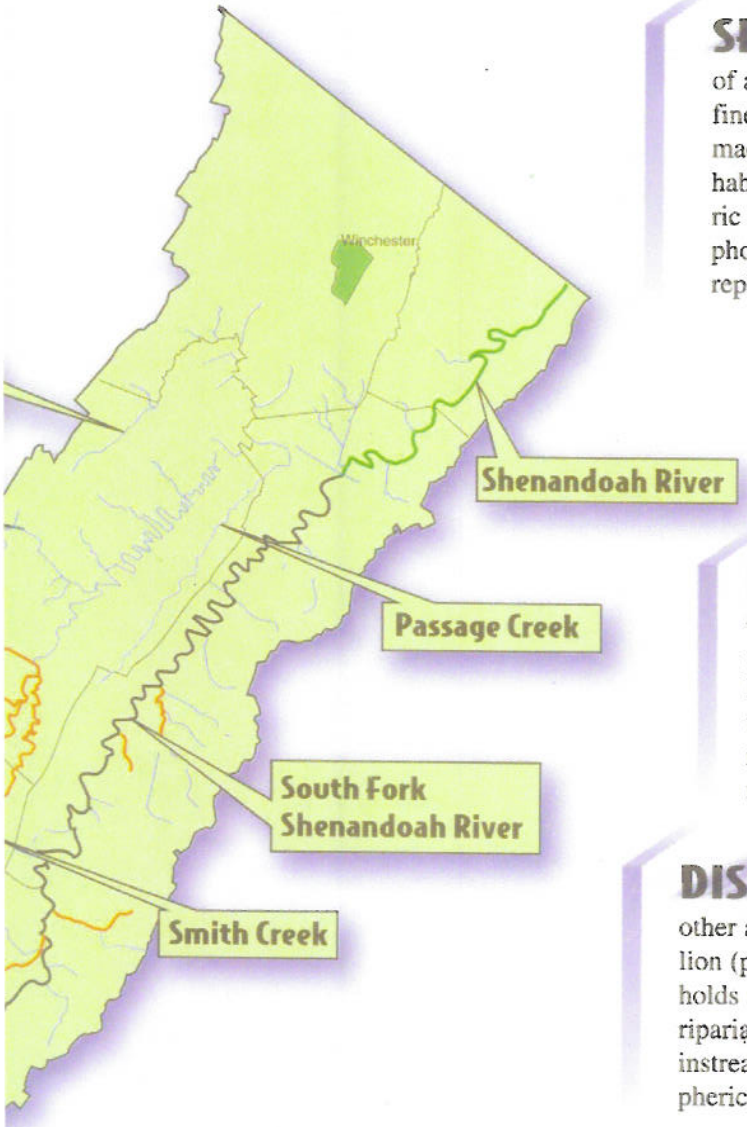
ACID RAIN – Normal rainfall is slightly acidic due to the presence of carbon dioxide in the atmosphere. However, today's precipitation over the Valley is now 10 times more acidic than that of 100 years ago. The additional acidity is due to high levels of airborne sulphur dioxide and nitrogen oxides. Many of our mountain streams in the region experience low pH levels and high aluminum levels, creating a lethal environment for fish and invertebrate populations. The desired pH range for most aquatic life is between 6 and 9.



Red = Impaired Stream - VA Dept. of Environmental Quality
Black = Mercury Advisory - Virginia Department of Health
Green = PCB Advisory - Virginia Department of Health

iver Watershed

= Good Water Quality



SEDIMENT

– Rapidly eroding banks are often the result of a lack of rooted vegetation in the stream corridor. Too much fine sediment in a stream can cover fish eggs, smother macroinvertebrates, impede fish feeding, and fill in bottom habitat. Turbid waters, those consistently above 5 nephelometric turbidity units (NTU) during normal flow, can also impede photosynthesis, keeping aquatic weeds from growing and replacing oxygen in our rivers.

Smallmouth Bass

PHOSPHATE

– An essential nutrient in any aquatic ecosystem, a little phosphate goes a long way. Phosphate finds its way to our streams by binding with soil particles and travelling over land during rain events. Phosphate loading can occur from wastewater, lawn and farm fertilizers, and industry. In rivers, phosphate contributes to the same negative effects as nitrogen when levels persistently remain over 0.1 ppm.

DISSOLVED OXYGEN

– Most fish species and many other aquatic organisms need a minimum level of 5.0 parts per million (ppm) of dissolved oxygen to survive. Because cold water holds more dissolved oxygen than warm water, springs and shady riparian areas are critical for river health during the summer. Good instream habitat includes riffles, rapids, and falls that mix atmospheric oxygen with stream water.

KARST

– The word "karst" originates from the like-named region found in the European country of Slovenia. Karst geology is typified by calcium carbonate rock or limestone. Much of the Valley floor is underlain with this type of rock, which is susceptible to rapid dissolution by water. Springs, caves, and sinkholes typify karst areas. Since surface water can easily mix with groundwater in karst, it is critical that interaction of fertilizers, pesticides, and organic waste be minimized in these sensitive areas.

Channel Catfish

10 0 10 20 Miles

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Map Sources: USGS • DGIF

VDGIF - Fisheries Division - LFH & PEB 7/02

A Better Way

For Quality Living Through Good Stewardship

Improving water quality is up to us!

✓TAKE SOME TIME TO GET OUTDOORS

The Shenandoah watershed supports a diverse array of recreational opportunities and wildlife. Good land use planning helps protect these treasures. Get involved with volunteer water monitoring.

✓CHECK SOIL QUALITY

Have your soil tested before fertilizing the lawn. Too much of a good thing can be detrimental to nearby aquatic life! Excess nutrients run off into creeks, depleting oxygen and aquatic habitat.

✓PROTECT GROUNDWATER

Never dump hazardous chemicals onto the ground where they can seep into our groundwater. Recycle and dispose of these materials properly. Take care of those sinkholes.

✓PUMP YOUR SEPTIC SYSTEM

If your home has a septic system, remember to schedule a pump out every 3-5 years. Leaky septic systems can pollute the surrounding groundwater and wells.

✓LIMIT LIVESTOCK ACCESS TO STREAMS

Fencing livestock away from streams, and providing alternative water sources and shade is healthier for them. It also keeps the bacteria and sediment out of our watershed, and allows trees to grow along river banks.

✓RESTORE RIPARIAN BUFFERS

Plant native trees and shrubs along your stream. These plants act as a wildlife corridor and also serve to soak up excess nutrients and sediments before they can pollute the waterway. Shade cools the water and increases dissolved oxygen levels.

✓USE BEST MANAGEMENT PRACTICES

The Valley boasts rich farming land. Install BMP's on your farm to conserve and protect your soil and water. Both your livestock and water quality in general will be the beneficiaries. Call your local Soil and Water Conservation District for assistance.

✓PRACTICE WATER CONSERVATION

Avoid wasting precious water by fixing leaky faucets and taking shorter showers. Leaving a faucet running while brushing your teeth can waste 2 gallons a minute!Take short showers. An 8 minute shower uses 40 gallons of water.

✓CONSIDER CONSERVATION LANDSCAPING

Think about what you plant and how you alter your property before digging begins. Use native vegetation that will hold soil in place and attract wildlife.

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For more information on conservation in the Shenandoah Valley, please call your local Soil & Water Conservation District Office:

Frederick, Clarke, Warren, Shenandoah Counties and Winchester contact Lord Fairfax SWCD	540-868-1130 ext. 3
Rockingham and Page Counties and Harrisonburg contact Shenandoah Valley SWCD	540-433-2853 ext. 3
Augusta County, Staunton and Waynesboro contact Headwaters SWCD	540-248-4328 ext. 3

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