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Issue II 2004

## FOSR Salutes Protectors of Environment

By Val Van Meter, The Winchester Star Monday May 3, 2004



Front Royal-Environmental guardians were honored last weekend at the 15th anniversary meeting of the Friends of the Shenandoah River.

The organization has been monitoring water quality in the Shenandoah River for 15 years checking nitrogen and phosphorus levels every two-weeks.

One of its staunchest advocates Dr. Tom Benzing, was presented with the Raymond R. 'Andy' Guest Jr. Conservation award -for creating the Shenandoah Basin Water Window Web site. An associate professor at James Madison University, Benzing spent two years building's geographic information system that uses the FOSR test data from all the monitored sites in the Shenandoah's watershed. Also honored at the ceremony was Kai Degner, who helped Benzing design the Water Window.

The \$1,000 William T. Hipple memorial Scholarship went to Breanna Jo Rau: of Midland. The scholarship is given each year to student attending Lord Fairfax Community College and studying environmental science agriculture, horticulture, wildlife; management, or forestry.

Two, members of the Friends organization who have served continuously for 15 years also were honored. Meryl Christiansen of Front Royal was a founding board member and continues to serve. Don Orr was a founding member and is in charge of volunteer monitors in the watershed.

Certificates were presented to Steve Sagar and John and Marjie Gibson, who helped organize the group in 1989.

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## THANK YOU FOR JOINING US IN CELEBRATING OUR 15<sup>TH</sup> ANNIVERSARY



### 15th Anniversary Membership & Awards Banquet Sponsors

Dawn Boyce, Lester & Cartherine McConville, George L. Ohrstrom, II, Nancy Bouse, Mary Sherman, Meryl & Shearin Christiansen, Cricket Meadows, Bill & Melba Trenary, Mary Scott Guest, Joy Shull, Tina Hobson, Jonathan Katz, John Simperts, Lennie Mather

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**A special Thanks to Mary Bailey of Mary B's Restaurant who helped to make this year's 15<sup>th</sup> Anniversary Banquet a great success!**

## Water educator asks: Do you know what you are drinking?

**WE ALL REALLY DO LIVE DOWNSTREAM** By Roger Bianchini, The Warren Sentinel

The importance of water to the maintenance of both the natural environment and the mechanics of economic growth is something that is too often either taken for granted or overlooked, according to one watershed educator who addressed Saturday's 15<sup>th</sup> Anniversary Banquet hosted by The Friends of the Shenandoah River. FOSR members and supporters heard a summary of disturbing trends on worldwide water issues generated by both Mother Nature and corporate byproducts and profiteering, as recounted by Rick Eades of the Mid-Atlantic based Canaan Valley Institute- who put a troubling face on a slogan the Friends of the Shenandoah River have made a part of the local vocabulary.

The fact that "we all live downstream" was illustrated by a litany of examples Eades presented on threats to the earth's freshwater supply from droughts, pollutants and corporate moves to gain control of national and regional water supplies- an industry for which the World Bank estimates revenues will climb from a current figure of \$200 billion to \$800 billion a year by 2010.

Trying to balance limited time to address his audience with a global perspective on water issues he termed as "a mushroom cloud" on the future health of the world's population. Eades asked whether his audience was aware of a number of worldwide phenomena concerning the planet's drinking water.

Perhaps the most important issue Eades addressed was one that has the most potential immediate impact on everyone- drinking water. He quizzed his audience on the major pollutant concern for water service companies today.

Answers ranging from septic- "That's a good answer because it touches a thousand things", Eades replied- to PCPs and mercury were all mentioned before Eades got the answer he was looking for: "pharmaceuticals." Pharmaceuticals- we are gobbling the drugs," Eades stated of both human drug use and human consumption of drug-treated animals. He estimated that 20 million pounds of drugs a year are used in the cattle industry alone.

Eades warned of a rising tide of health implications from the hormonal drugs in the food supply that are also being washed into drinking water supplies by animal waste. Such drugs, he said, "disrupt our endocrine system and change our hormonal response.

"We just got some terrible news on the south branch of the Potomac, which is a watershed not too dissimilar from yours," he told the FOSR Saturday. "The (male) small-mouth bass are producing eggs in their gonadal regions. We have seen fish changing sexes from Australia to Europe. In Minneapolis in 2000 they saw the population of fathead minnows morphing into females after birth- resulting in a 100 percent female population. Europeans are seeing (human) sperm count crashes. When the water is this bad it puts a premium on headwaters."

Eades then asserted the need for activities such as those sponsored by Friends of the Shenandoah River, including water conservation- which he pointed out is a major endeavor worldwide "except in the United States where we can't seem to conserve anything"- as well as rainwater collection, wastewater testing and headwater protection.

"These headwater springs are priceless," he said of areas above major sources of pollution. "But we've got to document what is in those head waters. We have got to find out what is in the water in order to make good decisions about what to do (about it)."

Thanked for imparting his wisdom on water issues by FOSR President Milton Boyce, Eades replied, "That wasn't wisdom. We have forgotten in our culture what wisdom is. What Milton and Meryl (Christiansen) bring to us is wisdom. Tonight I have just tried to pass on a little information."



**Friends of the Shenandoah River Celebrate 15 Years,  
Address Money Shortage**

By Roger Bianchini, The Warren Sentinel

Fifteen years ago, a group of Shenandoah Valley-based individuals who understood the importance of the water flowing into and from the Shenandoah River organized to preserve the integrity of the Shenandoah Valley watershed.

On Saturday those individuals and more who have since joined or taken an interest in the work of the Friends of the Shenandoah River (FOSR) gathered in the banquet room of Mary B's Restaurant in the Front Royal Quality Inn to celebrate an anniversary and the individual commitment that has been the hallmark of the private sector volunteer organization.

Prior to introducing guest speaker Rick Eades of Davis, W.Va. (see related stories), FOSR member Carol Quay commented on the age of many of FOSRs charter members.

"You may notice that some of us have a few years on us and I want to thank some of you younger members for your infusion of energy, talent and expertise," Quay said. "Money is nice and we certainly need that, but we are grateful that you have offered your talents to this organization."

After receiving the first of several awards handed out to members during the evening, FOSR Treasurer Bud Nagelvoort of Clarke County readdressed the organization's financial situation.

"While we have over 400 members our dues certainly don't provide enough to support all we undertake- the major problem is we don't have enough cash. We are looking for money all the time. So, I'll stand in the door if somebody has a hat big enough and I'll take whatever you can give."

Following Nagelvoort's recognition as Officer of the Year, other awards presented included:

Special Professional Services to Steve Reeser, Paul Bugas, Larry Mohn and Brad Trumbo, employees of the Virginia Department of Game and Inland Fisheries in Verona, for their "outstanding teamwork and leadership in supporting the marine environment of the Shenandoah Valley;"

Special Merit to Kai Degner, a graduate student at James Madison University in Harrisonburg, "exceptional skill and dedication in the development in the Shenandoah Basin Water Window;"

15-Year Charter Board Members to Steve Sagar of Front Royal and John and Marjie Gibson of Page County for their commitment "to the survival of the Shenandoah River;" to Don Orr of Front Royal for dedication and "continuing leadership to monitor and fight contamination of the river;" and to Meryl Christiansen of Warren County "in recognition of extraordinary commitment and leadership" in protecting the river.

The awards culminated with the presentation of the "Raymond R. 'Andy' Guest Jr. Conservation Award" to Dr. Tom Benzing, a professor at JMU, "for exemplary creative leadership in the development of the Shenandoah Basin Water Window."

Among the non-member guests was 26<sup>th</sup> District Virginia State Senator Mark Obenshain (R-Harrisonburg), who said he attended to learn more about the group's efforts and offer his support.

"The Shenandoah River is one thing that is common to just about my entire district and I want to work with organizations like the Friends of the Shenandoah that are committed to making sure we are good stewards of our natural resources," Obenshain said during Saturday's affair. "I own a family farm and have an aunt who runs a land trust down in the New River Valley. So, I'm keenly interested in what this and other similar organizations are working on."

Commenting on concerns about growth and the environment, Obenshain added, "It is a balance and we have to work hard to achieve that balance. If we wait until the balance is tipped one way or the other it becomes very difficult to rectify it. So, I applaud the efforts of The Friends of the Shenandoah and wanted to come and hear what they've been working on over the past year and meet more of the members."

**Potomac Conservancy presents a workshop!** Goods From the Woods: Making the Most of Your Woodlot



**Saturday, November 6, 2004**

**8:30am-4:30pm**

**Lord Fairfax Community College  
Middletown, VA**

If you are a woodlot owner you don't want to miss this one-day workshop!  
Join the Potomac Conservancy to learn about:

- Growing and tending a productive woodlot
- Alternative income options for your woodlot
- Woodlot stewardship and cooperative forestry
- Enhancing your forest to attract wildlife



All conference registrants will be invited to attend an evening reception at Belle Grove Plantation.

For more information, contact Liz Stoffel, Potomac Conservancy's Shenandoah Conservation Manager, at 540-667-3606 or [stoffel@potomac.org](mailto:stoffel@potomac.org).

**Fifteen Years and Counting-Where do we go from here?** *By Meryl Christiansen*

Our celebration of a decade and a half of following the original goals of FOSR was personally rewarding. We have been there and done that: namely; monitored the river basin and hopefully educated a lot of people to the importance of the river. We have documented many of the primary problems of the river, and because of our diligence the Shenandoah is listed as the most impaired major river system in the Commonwealth. Add to that the contribution of Dr. Tom Benzing and his James Madison University graduate students who combined the land use and other information in the Geologic Information System to FOSR water quality data to create the JMU Water Window on their Webb Site. Thus land use, be it row crop, forest, pasture urban developments or whatever as well as animal units per acre can be quantified as to what and where sediment, nutrients, and other pollution comes from. Those tributary watersheds that markedly contribute to poor water quality can be identified, and the specific source be it agriculture, industry, urban storm water, wastewater treatment plants, or rural septic fields. Clean up efforts such as the Commonwealth Tributary Strategy Program, the agricultural Best Management Practices of Soil and Water Districts, and other efforts of the Departments of Environmental Quality and Conservation can intelligently develop remediation programs.

So now FOSR can rest on their laurels, right? Wrong! Whatever is done to correct the water quality problems must be monitored to assure the effectiveness of agricultural BMPs, or retrofitting wastewater treatment plants. It is time to assure that nutrient management plans are followed and monitored, and regulations on animal waste application to fields are enforced. Likewise, construction and urban land development must adhere to the Erosion and Sedimentation control regulations of the Commonwealth and local jurisdictions must strongly enforce the local and Commonwealth codes. No longer can a contractor sally forth with a bulldozer and disturb soil with no efforts to keep the soil in place.

Our speaker for the annual banquet pointed out that many chemicals are polluting our surface and ground water. It no longer is sufficient to monitor for oxygen, sediment, nutrients, and pH. He spoke of how lucky that we live far upstream, and that the waters of the Potomac at Washington have heavy accumulations such things as prescription drugs which are not removed from sewage waste; and of the petroleum residues, industrial waste chemicals, and agricultural chemical pesticides that are not removed by water supply plants.

Perhaps FOSR should consider broaden the monitoring program to include some of the more common chemicals including heavy metals (mercury?), pesticides, petroleum products etc. or study the fate of marker dyes or uniquely labeled nutrients. Most certainly our site monitoring should be reviewed for identity of other tributaries presently not monitored.

**A Cleaner River By 2010** *By Milton Boyce, President*

Can we achieve the nitrogen, phosphorus and sediment reduction goal established by the EPA's Bay Program office by the year 2010? What will be our role and commitment to this important and ambitious task? You can bet, we will be asked and expected to do more to help clean up the Bay as we improve the water quality in the Shenandoah River.

Your support is critical to this effort. More monitoring is needed as best management practices are established. Community advocates are needed to inform others about the proper use of and fertilizer both on the farm crops and lawns. We need to evaluate our own behavior to ensure we are making every effort we can with our resources. Much teamwork is needed if we are to succeed. We look forward to your continuous support.

## **OUR CURRENT FINANCIAL STATUS**

*by Bud Nagelvoort, Treasurer*

I will spare you details, but this quarterly newsletter is timely to update FOSR members on the general financial status of this important and effective organization that performs much of its work on a volunteer basis, but requires professional staff and substantial laboratory expenses to carry out its mission.

In calendar 2003 (our business year) we incurred a \$23,000 deficit, the direct result of failure to secure a \$40,000 grant that had been anticipated. Our reserves were sufficient to carry us through the year without interrupting operations.

Prior to the beginning of our business year 2004, a series of joint budget meetings were held by our Finance Committee and Ways and Means Committee which resulted in a budget for 2004 providing for about \$73,000 in income and \$83,000 in expenditures. While it was our intent to find ways to raise additional funds to avoid a current year deficit, we also had sufficient reserves to allow us to get through the year if we were unable to do so. However, it was readily apparent that utilizing those reserves this year would leave us in a financially precarious position in the future. At the same time, we agreed to look for ways to cut costs to the absolute minimum to reduce the anticipated budgeted deficit.

Incidentally, only \$8,000 is anticipated in income from the roughly 400 individuals and families who pay membership dues to FOSR. While we constantly try to increase memberships to help cover our expenses, because of the expensive kind of technical service we provide in our water sampling and water quality analysis, membership dues, while very important to us, cannot begin to cover our costs.

Our expenses include salary and withholding taxes for our very capable laboratory director and general organization director, Karen Andersen. Most of the balance pays for direct monitoring expenses and laboratory operations. Without those expenditures we could not continue to provide the monitoring data essential to the long-term viability of the Shenandoah River as a valuable resource to the citizens of the Shenandoah Valley and the State of Virginia.

As of June 30th, with budgeted expenses of \$42,000, we have incurred actual expenses of \$35,000 during the first six months of the year. Our budgeted income for this period is \$46,000 and we have received \$39,000. We have not been able so far this year to reduce the projected deficit for the year.

We are initiating budgeted efforts to raise additional funds during the remainder of the year. We have grant requests outstanding and additional applications for grants in the works. We are preparing both a corporate and membership appeal for donations. ***The envelope attached to this newsletter is also an invitation for donations, which we hope you will take the time to consider.***

The bottom line is that the Friends of the Shenandoah River is dependent for its financial support on those who understand and appreciate the importance of its work. The Shenandoah River and its tributaries need us. Our current financial position, while not desperate, can only be described as one needing careful attention and major effort. Your Board and Committees are deeply committed to preserving the future of the Friends of the Shenandoah River.

## **Environmental Stewardship Awards**

RICHMOND, VA., June 29, 2004 - - - The 2004 Virginia Environmental Stewardship Award was presented today to the Friends of the Shenandoah River at a luncheon by Virginia's Secretary of Natural Resources, W. Tayloe Murphy, Jr. and Mike Ward, Executive Director, Virginia Petroleum Council.

The event marked the ninth year of the statewide environmental recognition program co-sponsored by the Virginia Petroleum Council and the Commonwealth. Nominations were received from throughout the State. Eight awards were presented in four categories: youth, adult, organization and communication/education.

The awards honor those individuals and organizations that demonstrate outstanding and innovative contributions to protect and enhance Virginia's natural resources. The awards program supports the Virginia Naturally statewide effort to promote lifelong learning about Virginia's environment and stewardship of the Commonwealth's natural resources.

Ward commented, "The Virginia Petroleum Council and our member companies are pleased to support these awards. The activities and programs represented by today's recipients should serve as an inspiration to all Virginians and remind us as to how we can all better protect our environment."

## **Recent South River Science Team Meetings** By *Bob Luce*

The South River Science Team was formed almost four years ago as a forum to provide technical guidance for mercury monitoring in the South River and to assess and disseminate information on the effects of mercury on the South and Shenandoah River environments. The SRST held daylong meetings on April 14 and June 15 at DEQ's Valley Regional Headquarters in Harrisonburg. About ten presentations on current and proposed studies were given each day before an audience of about 20 or more team members, mostly from state agencies, DuPont, and academic institutions. Lately, however, delegations from USEPA and the US Geological Survey have also participated. There appears to be an increasing interest in activities of the Team. For example, Jay Gilliam of the prominent citizens group Save Our Streams attended the June meeting and The News Leader of Staunton published a several page article about the SRST on March 28 as did the Page (County) News and Courier on July 22.

Most presentations are progress reports that give recent results with their implications. Continuing projects discussed in April and June include freshwater clam studies, crop uptake of mercury from floodplain soils, and the effect of re-suspension on release of mercury from sediments ("shake and bake" experiments).

A cooperative program between DEQ and the USGS to develop TMDL's for mercury and benthic impairments in the South River was outlined at the April meeting. Close contact with the SRST is expected for this program. An upcoming project of sampling floodplain sediments for mercury analysis was discussed in detail at both meetings.

Dr. Tom Benzing of JMU gave a well-received talk on the Shenandoah Water Window, a GIS model of the Shenandoah Valley that features FOSR water quality data as well as layered attributes such as topography and land use. The SRST intends to use FOSR data to chart changes in water quality parameters. The GIS model may be used to display fish advisories. Restrictions on eating fish caught in the South River and the Shenandoah River are still in effect and the SRST has promoted the design and posting of multilingual signs for the benefit of fishermen.

Finally, the SRST agreed to commission a geomorphologic study of the South River by Dr. Jim Pizzuto of the University of Delaware. His investigation of erosion and deposition processes is expected to dovetail with a future fate and transport modeling study. Together the studies should develop and refine a conceptual model that could be used to improve river conditions. Unfortunately, a two-year time frame is envisioned.



### **Tributary Strategies Released by DEQ** – Sierra Club's Newsletter for Virginia, May/June 2004

"In mid-April the Virginia Department of Environmental Quality released draft strategies for cleaning up the waters flowing into the Chesapeake Bay. These strategies are an outgrowth of the Chesapeake 2000 agreement by the Chesapeake Bay Commission, which set ambitious goals to clean up the Bay by 2010. Goals set in the 1980s to reduce nutrients by 40 percent by 2000 were nearly met, but have been found to be inadequate, and the quality of the Bay's water and marine life continues to decline. The oysters have been virtually gone for several years and now the crab harvests are at an all-time low, such that watermen can hardly survive. Many of the tributaries to the Bay have

impaired (polluted) waters and if progress on Bay cleanup has not been made by 2010, the Bay itself will be listed as impaired and a separate Bay cleanup strategy will have to be developed. The Chesapeake 2000 Agreement also called for new water quality criteria that will be used to judge the success of the collective strategies. These criteria are water clarity, dissolved oxygen and chlorophylla, a pigment of algae. The standards for Virginia tidal waters, based on these criteria, will be revised by the end of 2004.

The requirements for Baywide reductions were estimated to be 175 million pounds of nitrogen, 12.8 million pounds of phosphorus and 4.15 million pounds of sediments by 2010. Goals were also set for the addition of acreage of submerged aquatic vegetation, or SAV."

"DEQ established teams of stockholders in each basin who reviewed discharge data and model runs to help them develop a set of individual strategies. There were over a hundred different types broken down into three general areas: point sources (primarily sewage treatment plants), and non-point sources which was further divided into agricultural and urban sources. The information is very detailed and this can be found on the website:<http://www.naturalresources.virginia.gov/Initiatives/TributaryStrategies/index.cfm>. The resulting strategies were presented to the public for review and there are a large number of outstanding issues. "

**STATE OF THE RIVER** *By Charles Vandervoort*

The two tables below show the seven monitoring sites with the highest and lowest level of nitrogen pollution for the first quarter of 2004. We only show nitrogen pollution in this table since it gives a good indication of the general level of nutrient pollution.

The first table shows the usual culprits: the top five polluters (all in Rockingham County) of last year were again among the top five polluters this year. We have added two more “hot spots.” One of these new monitoring sites, the Willow Brook at the Mouth with the Shenandoah River in Warren County, is included in the Willow Brook – Crooked Run Watershed Initiative started by the FOSR. This initiative is discussed in the Winter 2003 newsletter. The other site, the Wheat Spring Branch in Clarke County was included because of its suspected, and later proved correct, high level of pollution. Both of these sites fell in the top seven worst polluters.

**The Six Worst Sites, First Quarter 2004**

Site ID	Nitrate PPM	Site Name
NR05	7.29	Cedar Run
JR07	6.99	Cooks Creek-North River
JR10	5.63	Pleasant Run-North River
JR01	4.26	Muddy Creek-North River
JR06	3.73	Long Glade Creek-North River
WB03	3.56	Willow Brook at Mouth Shenandoah River
FC32	3.55	Wheat Spring Branch

The next table shows the best sites in the Shenandoah River basin. They all have barely detectable levels on nitrogen pollution. The winners this time are three new monitoring sites which are part of the set included in the Willow Brook – Crooked Run Watershed Initiative. The only carry-over from last year is FP15, Overall Run in Page County.

**The Six Best Sites, First Quarter 2004**

Site ID	Nitrate PPM	Site Name
CRDR	0.03	Dry Run @ Rt. 637 Cauthorn Mill Road
CR01	0.04	Crooked Run @ Lake Frederick dam
CRMC02	0.06	Molly Camel, Reliance Road Bridge
FP15	0.08	Overall Run
NS53	0.09	Passage Creek @ Moreland Gap Road
GA22	0.10	Back Creek Route 624 bridge

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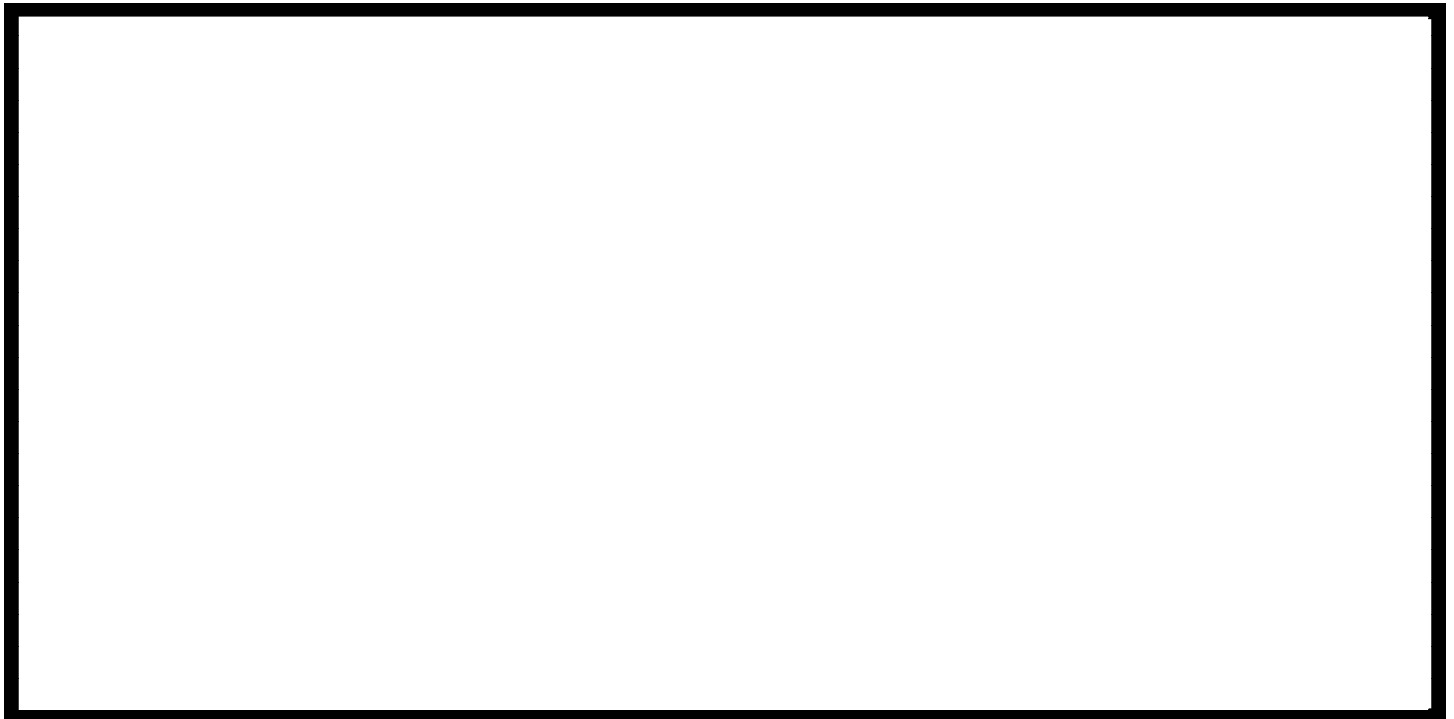
If we look at the trend in nitrogen pollution of the “hot spots”, it is clear, as shown in the bar-graph below, that the highly polluted sites have been getting worse over the years. (FC32 and WB03 are not included because there are too few data points to show a trend).

The graph shows the annual averages of pollution for each of the eight years of monitoring. Except for JR01 (Muddy Creek in Rockingham County) where the nitrogen pollution may have started to go down, all other sites show a steady increase in nitrogen pollution.

This, of course, is nothing new. Fortunately, the FOSR and others are making progress in making these adverse trends more generally known. Especially useful, of course, is the “Shenandoah Water Window” developed by Thomas Benzing of JMU. This program is discussed in last year’s newsletter.

The Water Window converts the rather abstract data in the FOSR database into easily understandable graphs and pictures, and provides, among other things, land use information to that shows insights into the reason for some of these adverse trends. Loss of forested area and growing urbanization for example are only two of the factors that can explain waster quality deterioration.

It is hoped that these and other efforts to “popularize” the data will lead to increased understanding by the public and governments of the need to reverse these trends, and on how to reverse these trends.



**You Can Help:**

*Join the many FOSR  
volunteers and do your part in restoring the health  
and beauty of the Shenandoah River  
watershed.*

*Contact Karen  
(540)665-1286  
fosr@fosrbeta.org*

## **Polluted Streams: DEQ: 11 area bodies of water impaired**

By James Heffernan, Northern Virginia Daily, March 30, 2004

Eleven area streams totaling 106 miles have been newly classified by the Virginia Department of Environmental Quality as impaired, or polluted.

The agency, which released its draft 2004 water quality report last week, identifies fecal coliform as the primary culprit.

The bacteria are present in both human and animal waste and can enter streams in a variety of ways, including leaky sewer connections, faulty septic systems, storm runoff and fields where livestock are allowed to roam.

In fact, the range of potential sources and more stringent testing standards by DEQ are precisely why fecal coliform colonies are becoming increasingly evident within the Shenandoah River basin and other waterways across the commonwealth, according to agency spokesman Bill Hayden.

"It's one of the most basic things we test for," Hayden said. "But over the last few years, our methods [of collection and analysis] have become more sophisticated."

Fecal coliform by themselves are indicator organisms and generally do not cause illness or disease in humans. However, in streams with high concentrations of the bacteria, pathogens can enter the body through the mouth, nose and ears, or through cuts in the skin, causing fever, nausea or stomach cramps.

<b>Polluted Streams in the Valley</b>		
<b>Water Body</b>	<b>City/County</b>	<b>Miles</b>
Babbs Run	Frederick	14.48
Lick Run	Clarke, Frederick	8.87
Redbud Run	Clarke, Frederick, Winchester	8.07
Flint Run	Warren	11.46
Happy Creek	Warren	8.44
Pughs Run	Shenandoah	5.88
Tumbling Run	Shenandoah	4.05
Passage Creek	Shenandoah, Warren	18.52
Manassas Run	Warren	14.73
Stephens Run	Frederick, Warren	7.88
Long Branch	Clarke	3.62

— Source; Virginia Dept of Environmental Quality

Ten of the 11 area streams were identified as being polluted by sources such as agricultural and urban runoff. The source of pollution in Lick Run in Clarke and Frederick counties is unknown, according to the report.

Bernard "Bud" Nagelvoort, with the Lord Fairfax Soil and Water Conservation District, said he is surprised that more waters in the rural Northern Shenandoah Valley aren't identified.

"I know of some streams that should be on that list," he said. Local monitoring groups such as Friends of the Shenandoah River conduct limited fecal coliform analysis, Nagelvoort said, but generally they are looking for more standard contaminants such as nitrates and ammonia.

Wellington Jones, director of the Frederick County Sanitation Authority, said failed septic systems may indeed contribute to water pollution in the northern valley. However, the fact that DEQ officials are regulating the issue more closely suggests that the problem is not getting any worse, he added.

The bulk of Virginia's streams and rivers - a little more than 37,000 miles - have not been monitored well enough to determine whether they are impaired, according to the DEQ report.

The report shows that about 6,900 miles of streams and rivers in Virginia are currently polluted, up from 4,400 miles in 2002.

The trend will likely continue, Hayden said. "It's one of the things we anticipated when we changed the method two years ago. We're working very hard to get around the state to test these waters, and I expect the list of polluted streams to increase."

>Contact James Heffernan at [jheffernan@nvdaily.com](mailto:jheffernan@nvdaily.com).

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“To protect and restore the aquatic environment of the Shenandoah River and its tributaries”

Yes, I would like to be a member of The Friends of the Shenandoah River (FOSR)

\_\_\_ \$10 Student

\*NAME \_\_\_\_\_

\_\_\_ \$20 Individual

ADDRESS \_\_\_\_\_

\_\_\_ \$30 Family

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One way you can help defray costs and conserve paper is to have the FOSR newsletter e-mailed to you.

\_\_\_ Other/Donation

Please make checks payable to: ***Friends of the Shenandoah River***  
and mail to:

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\*If you do not wish for the FOSR to exchange your info with other environmental groups, please check box