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Issue I 2012

FRIENDS OF THE SHENANDOAH RIVER
We All Live Downstream

FOSR Laboratory
1460 University Drive
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Winchester, VA 22601

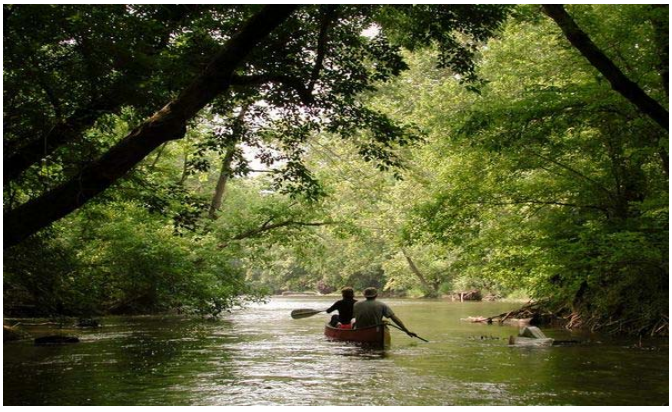
Message from the President,

I wanted to remind everyone to get out and enjoy the Shenandoah River during this summer season. The river isn't in great shape; but it's still a wonderful place to be. There are eagles raising babies along the river, there are good-sized smallmouth spawning in the river, and there is plenty of small mammal activity on the banks. If you have the opportunity to spend a quiet afternoon by the river, with either a fishing rod or a camera; it's a very relaxing thing to do.

There's something meditative about watching the water flow by. If you can get comfortable and gradually become part of the river system, you'll be amazed at the things you see, and also where your mind will wander. Hopefully it won't wander far enough away that you forget your own commitment to the Shenandoah, but the time you spend out there will re-energize you to be a river advocate.

You can always talk to your neighbors about the things they can do in their backyard to enhance water quality. Remember to use as little fertilizer as possible, keep as big a buffer as possible, and if you have to wash your car, please use bio-degradable soap. It's the small things we can all do that will collectively help the Shenandoah, but above all get out there and enjoy yourself and the river; it is truly a wonderful resource.

George L. Ohrstrom, II



Treasurer's Report, *Bernard C. Nagelvoort*

As of December 31, 2011, the Friends of the Shenandoah River's cash position was $102, 356, a decline of $14,813 from its position on December 31, 2010. Total income for the year 2011 was $106,475 versus $162,300 in 2010 with expenses of $121,661 in 2011 versus $108,823 in 2010.

The major difference in income for 2011 from 2010 was the sale of 10 acres of land for just under $75,000 in 2010, land donated to the organization in 2009. The increase in expenses in 2011 was substantially the result of a decision of the Board of Directors to add total nitrogen and total phosphorus to its laboratory measuring capabilities at a cost of about $11,000. This decision was based on the Chesapeake Bay TMDL where Bay water quality improvement objectives are measured in total nitrogen and total phosphorus reductions (along with sediment) rather than the less costly measurements for nitrate nitrogen and orthophosphate which FOSR has performed historically in its lab operations.

Entering 2012 the Friends has undertaken a major fundraising effort to allow us to add the additional expense of this upgrade in our lab operations. At the same time we plan to expand our efforts to communicate our data to the public and to local governmental units facing increased responsibility for helping Virginia meet its obligations related to the Chesapeake Bay TMDL. We are also exploring the establishment of a program that will hopefully allow us to quantify the amount of nitrogen and phosphorus being carried in the Shenandoah River into the Potomac and on into the Bay in a process that will help identify the source of such pollutants.

The complete 2011 financial statements are available at the FOSR's website at www.fosr.org.

(The letter below was submitted to Virginia Department of Conservation and Recreation during the public comment period for the VA Chesapeake Bay TMDL WIP Phase II by Joe McCue, a FOSR volunteer water monitor and a supporter of the FOSR for over 10 years.)

Dear DCR,

I am writing regarding a comment I would like to make after having attended the TMDL WIP meeting at James Madison University this morning.

One of the themes running through the meeting was the important role played by local agencies throughout the watershed to gather information about past, present and future BMPs as well as identifying strategies to increase participation in BMPs.

Another theme, expressed by several in the audience, was that much of the data that was/is used to create the Model is outdated and, in some cases, grossly incorrect.

Therefore, if local agencies are so important to this overall plan and execution, and much of the data is not valid, then why does DCR, DEQ and EPA not utilize local, scientific based data to help create a more accurate TMDL Model?

The Friends of the Shenandoah River (FOSR) conducts water quality chemical monitoring throughout the Shenandoah River. FOSR's volunteers collect samples twice a month. The samples are analyzed at FOSR's lab in Winchester. That lab is accredited by the State of Virginia. DEQ accepts the data from FOSR. FOSR's data goes back many years. The staff at FOSR really know what they are doing.

So, if this local, scientific based data already exists, and it's from an accredited source, why not consider using it to help tweak the TMDL for the Model? The primary result would be an efficiency and precision that does not exist now. Local stakeholders, who already have a vested interest in helping achieve the results you want, would now feel involved as partners. The work has been done for you and will continue to be done by local citizens interested in the same thing as you. It is a resource that could be very valuable, and it is already sitting in your lap.

DCR and EPA have been criticized because many aspects of the Model are based on data that is questionable to the various interests that are affected by the TMDL. This would be one small way to counter that criticism.

This morning James Davis-Martin led me to believe that DCR would continue to analyze strategies, resources and data to continue to make the Bay TMDL more efficient over time. Utilization of FOSR's data would add credibility to the Bay TMDL.

Please give this serious consideration. Karen Andersen, the Executive Director of FOSR and head of the lab there would have much more insight into this than I do.

Regards,
Joe McCue
Verona, VA

If you would like to join the team of volunteer water monitors, assist in the lab or in another way please contact Karen Andersen at friendsofshenandoahriver@gmail.com or (540) 665-1286.

To support the Friends of the Shenandoah River in their efforts including the long-term volunteer water quality monitoring program, please send donations to: Friends of the Shenandoah River
Attention: Karen Andersen
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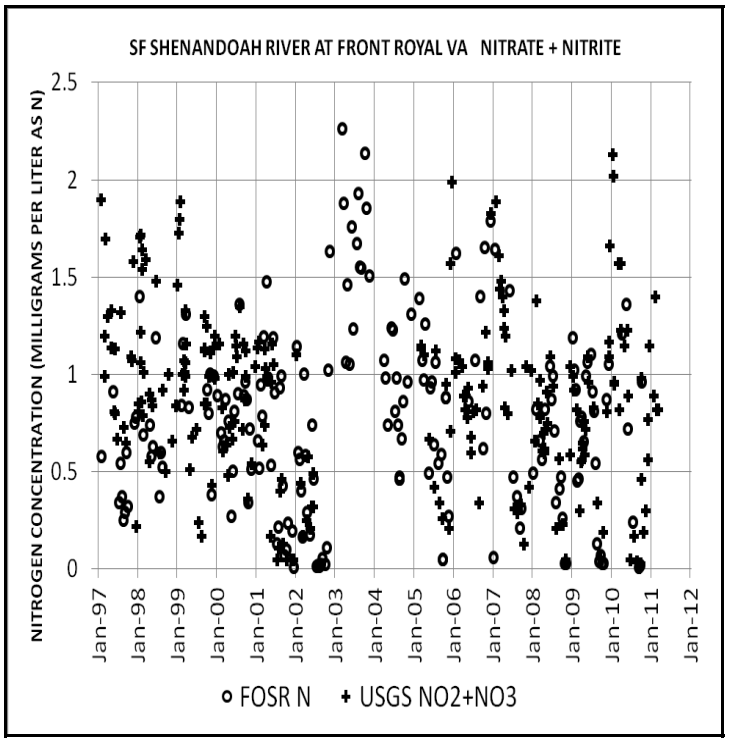
WE ALL LIVE DOWNSTREAM

See it Believe it Be proud

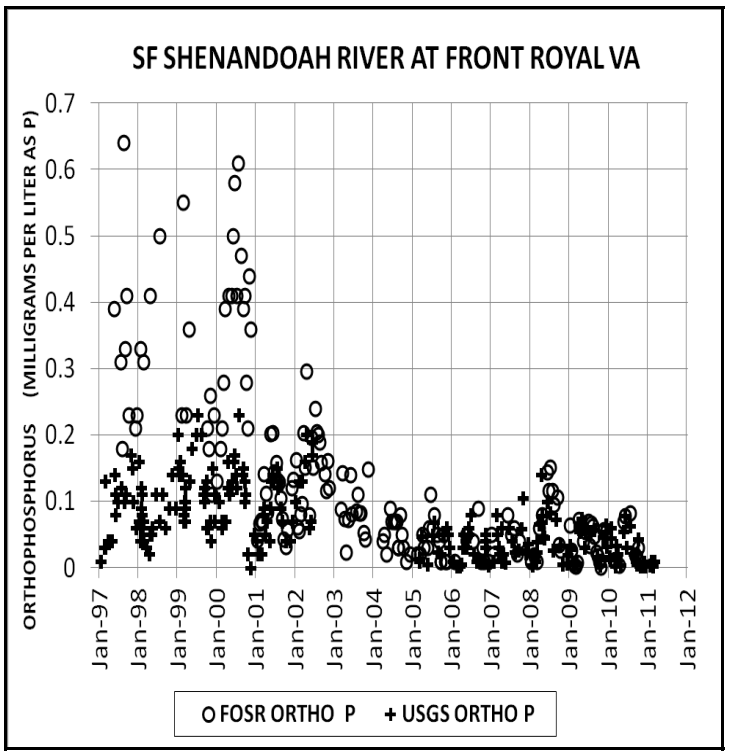
Are the FOSR monitoring data accurate? *by Wayne Webb*

The Friends of the Shenandoah River (FOSR) water-chemistry lab operations are regularly submitted to examination by Virginia Department of Environmental Quality (VA DEQ) quality assurance/quality control program personnel. We are accredited by these examinations to produce data of adequate quality to be used by the EPA and the VA DEQ As a second check on how our results compare with other accredited labs we are presenting here a comparison with USGS data from the same time period and from the same places in the Shenandoah River. Both organizations collected data on nitrate-nitrite and ortho-phosphorus at the same two sites and with the same frequency (twice a month). One pair of sites is on the South Fork near Front Royal (FOSR site FW14 and USGS site 1631000. The other pair is on the North Fork near Strasburg (FOSR NS15 and USGS 01634000).



Results of the Comparison

For nitrogen and phosphorus, the South Fork and North Fork data on nitrate-nitrite and ortho-phosphorus collected by the FOSR and USGS data are visually comparable. As shown by the graphs, the two parameters are in the same range and show similar trends. The FOSR ortho-phosphorus data prior to January 2001 are higher than USGS data. FOSR changed methods in January 2001. After the FOSR method change the ortho-phosphorus data are in the same range and show similar trends as do the USGS data (The available space available in this newsletter limits us to showing only the results for the South Fork).



These data are valuable quality assurances for both organizations. For FOSR the agreement between the data sets provides additional assurance that FOSR data trends are real and the data can be used with confidence: For the USGS and cooperating agencies the close agreement in the data sets provides the opportunity to use FOSR nitrogen and ortho-phosphorus data for assessments and as a relatively dense surface water data sampling network for the Shenandoah Valley.

The FOSR data quality is directly attributable to the dedication and consistent quality work of the FOSR volunteer monitors and laboratory staff. All the FOSR data are available at http://www.fosr.org/

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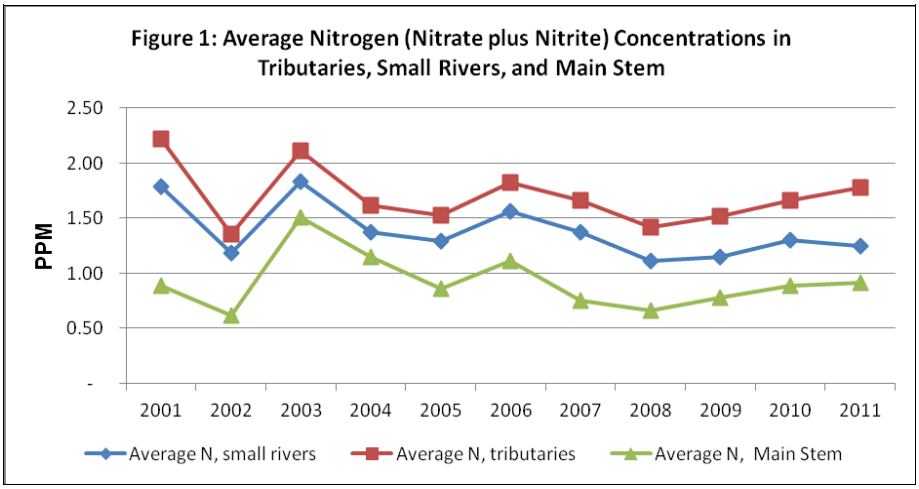
Status of Water Quality in the Rivers and Tributaries in The Shenandoah River Basin

by Charles Vandervoort

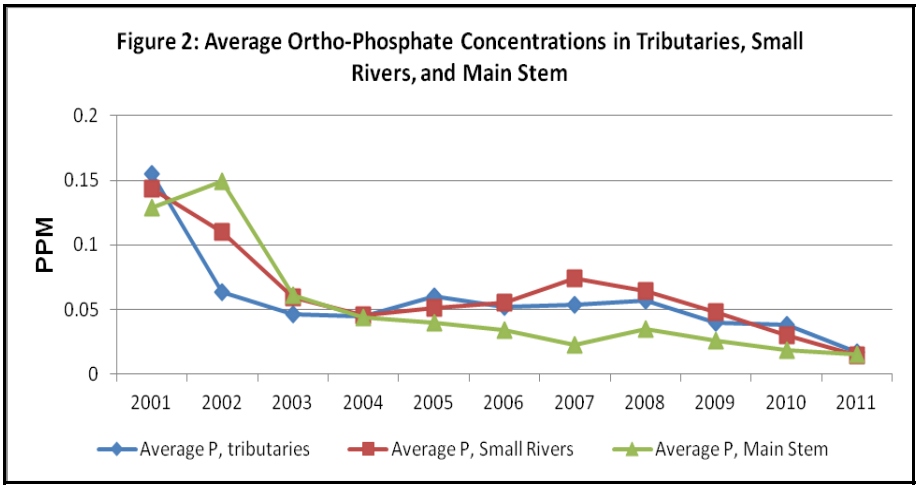
Average concentration of nitrogen (N as nitrate plus nitrite) in streams of the Shenandoah River Basin did not change much during the 2001 – 2011 time period (Figure 1) We grouped the streams into three categories: (1) the 42 tributaries monitored every two weeks since 1997; (2) small rivers (North Fork, South Fork, Middle River, North River and South River); and (3) the Main Stem (from the confluence of the South Fork and North Fork rivers near Front Royal to the FOSR monitoring site under the Route 7 bridge over the Shenandoah River)

Figure 1 shows that the average concentrations for the tributaries were higher than for the small rivers, and the concentrations small rivers were higher than those for the Main Stem.



Concentrations for nitrogen in tributaries, small streams, and Main Stem averaged at about 1.70, 1.50, and 1.00 PPM respectively. This pattern, as shown later in Figures 2 and 3 is repeated for phosphorus and turbidity. Part of the reason for this hierarchy could be that the smaller streams are located in areas with high production of cattle, poultry and pigs. These activities are often mentioned producing high runoffs of nitrogen and other pollutants.[1]

As shown in figure 2 phosphorus (ortho-phosphate) concentrations start at a very high level of about 0.15 PPM in 2001, but then decline to a flat base of about 0.04 PPM in 2004. From that date on the concentrations show a slight downward trend and level off at the unimpaired level (according to the Environmental Protection Agency) of 0.03 PPM.



A possible explanation for the drop may be that in addition to the implementation of BMPs, legislation was passed more than ten years ago banning phosphorus in laundry detergent and thereby limiting the amount of phosphorus ending up in waste water dumped into streams.

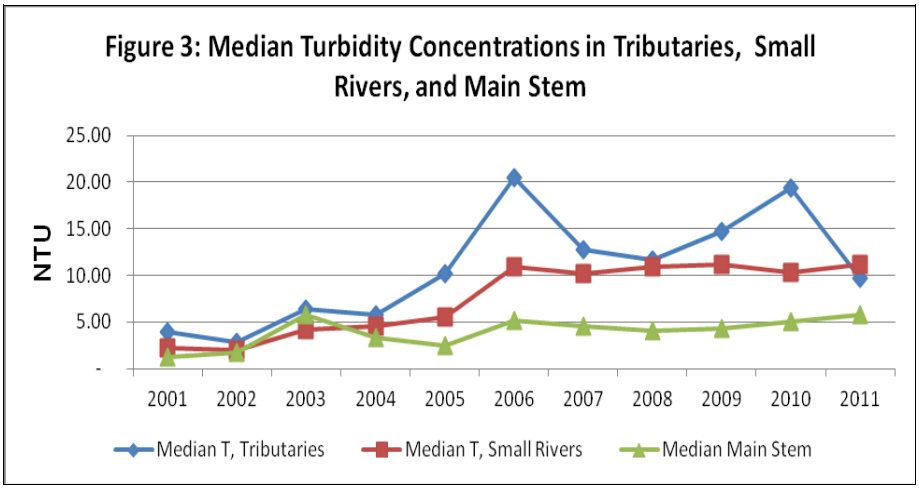
Major upgrades of wastewater treatment facilities also played an important role in reducing phosphorus and nitrogen. For example, the major upgrades of the Harrisonburg Regional facility and the Timberville facility both affected dramatic reductions in phosphorus and nitrogen formerly coming from the poultry processing facility at Broadway and turkey processing facility at Timberville.

[1]Chesapeake Bay Foundation, Manure's Impact on Rivers, Streams and the Chesapeake Bay: Improving manure management to benefit the Chesapeake Bay, Its Rivers, Streams, and the Watershed's Farmers, July 28, 2004).

Continued on page 5)

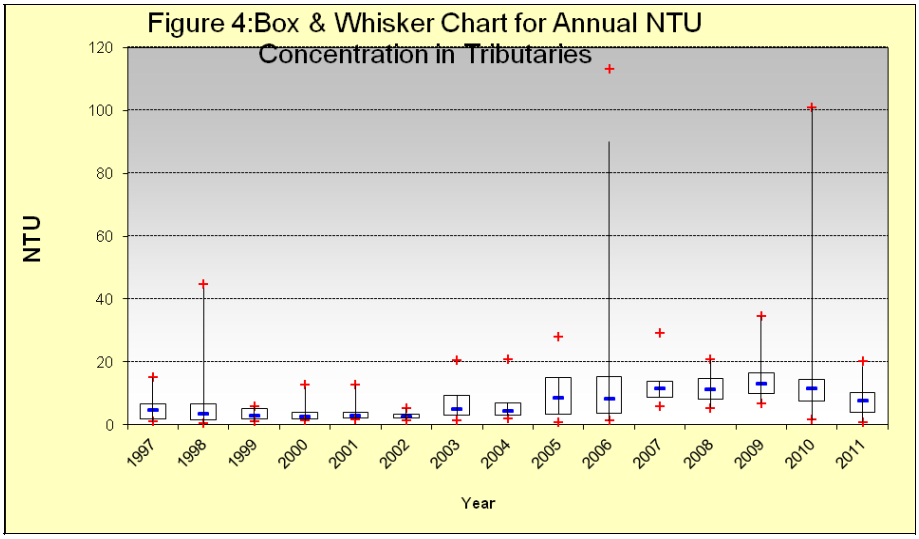
(Continued from page 4)

Turbidity, as shown in figure 3, is increasing in all of the streams. From a relatively low and unimpaired level of around 3.00 nephelometric turbidity units (NTU) in 2001 the concentration steadily rose to 5 NTU in the Main Stem and to 10 NTU in the smaller streams. This rise in turbidity is one of the more serious problems with water pollution in the Shenandoah River Basin.



Note that the concentrations for nitrogen, phosphorus, and turbidity are averages, and hide the very large variations (or scatter) in the concentrations for each year. And it is well known that averages can be misleading. For example, as the old saying goes, "If you cannot swim, do not wade across a river with an average depth of only 3 feet."

The Box &Whiskers graph below illustrates the variability in concentration for the turbidity in the small streams, especially for the years 2006 and 2010. The blue tick marks the median value (50 percentile, half of the values are below and half above 50%), the bottom and top of each box mark the 25% and 75% limits (25% and 75% respectively are below that value, i.e., 50% of the values are within the box).



For example, for the year 2010, the maximum turbidity recorded was 100.78 NTU, the minimum turbidity was recorded as 1.7 NTU. The top of the box marking the 75% point is 14.5 NTU, the bottom marks the 25% point at 7.7 NTU; half the concentrations fell between 7.7 and 14.5 NTU.

Hot spots: Because the large variability in the data may hide serious problems existing with nitrogen and turbidity concentrations at some of our monitoring sites, we always examine in detail the concentrations in "hot spots": these are the ten monitoring sites with highest average concentrations of nitrogen and turbidity. Over the 1997 to 2011 time period, the members in the hotspot family remained remarkably constant. For example, Muddy Creek (JR01) in Rockingham County close to Mount Clinton remained a hot spot since FOSR monitoring started. More detail on the extent and trends of concentrations of nitrogen and turbidity in the hot spots will be presented in the next newsletter.

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UP COMING EVENTS

Announcement from the Friends of the Shenandoah River Laboratory

Beginning in July of this year, the FOSR lab will be implementing the analysis of Total Nitrogen and Total Phosphorous. This additional water quality monitoring initiative will start at selected sites in the Shenandoah River watershed. The FOSR Science Committee will be correlating the TN and TP data with flow data to extrapolate loading trends.

The Harpers Ferry Outdoor Festival Saturday, June 16, 2012 @ **The Blue Ridge Center for Environmental Stewardship**

The Harpers Ferry Outdoor Festival is an event held to raise money for river and environmental conservation and awareness. Money raised through the events is donated to river and environmental conservation charities including the Friends of the Shenandoah River to support their ongoing conservation work and research.

Come Out with the Family to Enjoy a Day of fun, river races, music and great food!

http://harpersferryoutdoorfestival.org/

SHENANDOAH RIVERSIDE FESTIVAL 2012

June 15 & 16 @ Watermelon Park, Berryville VA

Earth Korps invites you and your family to come out to Watermelon Park for **Shenandoah Riverside Festival**, a 2 day celebration and fund-raiser for Earth Korps, a conservation organization working to protect the State Scenic Shenandoah River.

We will be featuring some of the very best live music, great food, camping, local artisans and educational river conservation programs.

For festival information: http://www.shenandoahriversidefestival.webs.com/

If you would like to join the team of volunteer water monitors, assist in the lab or in another way please contact Karen Andersen at friendsofshenandoahriver@gmail.com or (540) 665-1286.

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Attention: Karen Andersen

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JOIN THE FRIENDS OF THE SHENANDOAH RIVER IN THEIR MISSION

"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)

___ $20 Supporter

___ $35 Friends & Family

___ $50 Patron

___ $75 Guardian

___ $100 Steward

___ Other/Donation

NAME_____

ADDRESS_____

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Telephone_____

E-mail:_____

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 ☐