

Keeping you up to date on South River Science Team activities

Winter 2004

## At A Glance:

### Science Team Expands Public Awareness Campaign

The South River Science Team has been working since its inception to ensure that the public is aware of the fish consumption advisory in the South River and South Fork Shenandoah River. This newsletter is just one of the team's many efforts to achieve this communication goal. More recent efforts by the team have focused communication efforts on the Spanish-speaking population in the area. To this end, the Virginia Department of Health (VDH) has translated the fish consumption advisory signs into Spanish and has posted these new signs alongside the English signs. In addition to the signs at the boat

launch parking areas, signs have also been posted closer to the river. The team also worked with James Madison University (JMU) resources to develop a public service announcement that aired on Spanish radio stations in the area. In addition, a brochure detailing the fish consumption advisory and general information about mercury is being developed in both English and Spanish. This brochure will be broadly available to the public at places such as grocery stores, tackle shops, and medical offices.

Beginning in 2005, the Virginia Department of Game and Inland Fisheries (DGIF) will administer

a field survey to fishermen. A portion of the survey questions and results will be used to evaluate the public's awareness and compliance with the consumption advisories.

With all of this discussion about advisories, it's appropriate to include the map detailing the mercury and polychlorinated biphenyl (PCB) fish consumption advisory in this newsletter (see "Tech Corner" article).

### In This Issue...

#### At A Glance:

Science Team Expands Public Awareness Campaign

#### Tech Corner:

Mercury & PCB Fishing Consumption Advisories

#### From the Team...

DuPont and JMU Conduct Vegetable Garden Study

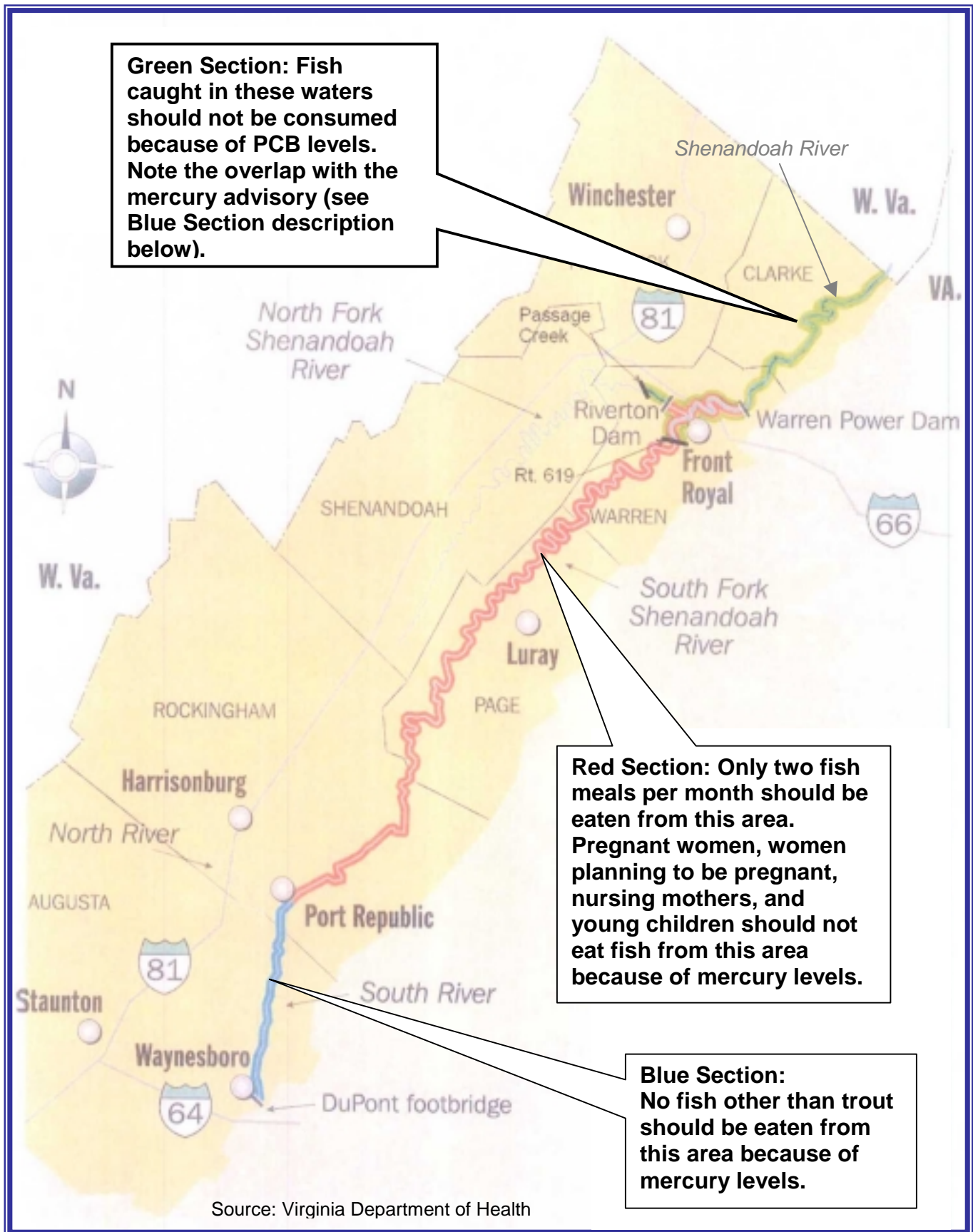
#### Did You Know?

Former McGayessville Dam Removed

### About this Newsletter...

In the Fall 2000, the South River Science Team was formed to serve as a focal point for technical issues concerning mercury in the South River and downstream waterways. The Science Team is a cooperative effort between the Virginia Department of Environmental Quality, Department of Health, and the Department of Game and Inland Fisheries and representatives from academia, citizens groups, the Environmental Protection Agency, and DuPont. The Science Team provides technical direction for the mercury monitoring program and ensures that there is effective communication provided to the users of the river. The Science Team's goal is to understand why mercury in South River fish has not decreased over time and to identify potential solutions to improve the situation.

# TechCorner: Mercury and PCB Fish Consumption Advisories



## From the Team...

### DuPont and JMU Conduct Vegetable Garden Study

In the summers of 2003 and 2004, the science team conducted a vegetable garden study to determine if mercury in soil is taken up by vegetables at concentrations sufficient to be a health risk. The study simulated a homeowner's vegetable garden in garden plots at the Augusta Virginia Forestry Center

in Crimora, Virginia. Dr. Dean Cocking (JMU) and Dr. William Berti (DuPont) designed the study. These folks, Ms. Lydia Cabbage (JMU student intern sponsored by the DEQ in 2003), Ms. Allison Kelley (JMU student intern sponsored by DuPont in 2004), and members of the science team planted the seeds and bedding plants, weeded and watered the gardens, picked and prepared the vegetables, and collected soil samples for mercury analysis. For each study, two gardens were planted: one in an area of the floodplain with elevated mercury soils

and one in an area of low mercury soils. All samples were prepared for eating as if they were from a home garden. The specific goal was to determine the difference, if any, between the mercury content of vegetables grown at the two locations.

In June 2003, several tomato, onion, cabbage, green pepper, and squash plants were transplanted into both gardens. Carrots, spinach, and sweet corn were planted from seed. At the end of September 2003, lettuce, radish, and spinach were planted for a fall crop. Fully grown, edible portions of lettuce, squash, cabbage, green pepper, spinach, tomato, sweet corn, onion, radish, and carrot were harvested in Summer and Fall 2003. Some vegetables in the gardens did not produce sufficient harvestable or edible crop because of the late planting as well as flood conditions due to Hurricane Isabel. Nonetheless, all harvested vegetables were analyzed for mercury.

The results show that levels of mercury in both gardens were below the levels that could be detected or quantified by the laboratory. These low levels are consistent with what has been previously observed for crops grown in soils with mercury. At these low levels, potential health issues are not a concern.



Garden located on 50-year floodplain with elevated mercury soil (June 2004).



Garden located on 50-year floodplain following flooding due to Hurricane Isabel (June 2003). The South River can be seen in the background.

Duplicate gardens also were planted in 2004. This time, the specific goals were to validate the plant mercury analysis method and determine if the low levels were reproducible. In addition to all of the vegetables grown in 2003, beans, beets, peas, potatoes, and turnips were also planted, harvested, and analyzed for mercury. Sweet corn was not planted in 2004 to make room for the additional crops. The 2004 results confirm previous 2003 results. Further, trace levels of mercury estimated (because levels were below the levels that could be detected or

quantified by the laboratory) in the vegetables in both gardens are not present at sufficient concentrations to be a health concern. The future plans for the gardens are as follows:

- Harvesting and analyzing fall crops planted in August 2004 (radish, carrots, lettuce, spinach, turnips, and beets)
- Collecting garden soil samples from both gardens for mercury analysis
- In collaboration with the EPA and the VDH, continuing to evaluate the 2004 results to confirm findings
- Planning potential additional gardens in 2005
- Publishing results in technical journals

For more information about this study, contact Dr. Bill Berti (302) 366-6762 or Dr. Dean Cocking at (540) 568-6566.

## Did You Know?


### Former McGaheysville Dam Removed

Interior Secretary Bruce Babbitt once said, “Dams are not America’s answer to the pyramids of Egypt. We did not build them for religious purposes and they do not consecrate our values . . . Dams do, in fact, outlive their function. When they do, some should go.” The City of Harrisonburg, Virginia, and many other organizations agreed and demolished the former McGaheysville Dam to clear the way for the South Fork Shenandoah River to become more like it was back in the early 1900s. The goals of the project are to (1) enhance aesthetics, (2) restore flows for fish and wildlife, (3) reinstate natural sediment and nutrient flow, (4) eliminate safety risks, and (5) restore opportunities for recreation. How will all of these goals be achieved just by removing the dam? By opening water flows again, plants and nutrients can flourish throughout the river, fish and other wildlife can migrate freely, and people can use the waterway more safely for recreational activities.

The concrete dam that stood until a couple of months ago was built as a replacement for a wooden dam that was partially washed away in a flood in 1919. The original wooden structure was part of the Ammon Mill that was bought by the City of Harrisonburg to expand its electric service. In 1955, Hurricane Hazel hit, and a large section of the concrete dam was destroyed. Repairs were not economically feasible and the damaged dam remained in the river. Now, the large concrete blocks and submerged wall have been reduced to manageable sizes and are placed in strategic locations to provide embankment protection. The cost of the project totaled approximately \$352,000.



Dam demolition in September 2004.

 Printed on recycled paper

To be added or deleted from our distribution list, contact Kathy Adams at (302) 892-8301.

South River Science Team  
Attn: Kathy Adams, Technical Writer  
P.O. Box 80027 (Bldg. 27/1231)  
Wilmington, DE 19880-27

#### CONTACTS:

*Virginia Dept. of Environmental Quality*  
Don Kain, (540) 574-7815  
dgkain@deq.state.va.us

*Virginia Dept. of Game and Inland Fisheries*  
Paul Bugas, (540) 248-9360  
pbugas@dgif.state.va.us

*Virginia Dept. of Health*  
Doug Larsen, (540) 332-7712  
douglas.larsen@vdh.virginia.gov

*DuPont*  
Mike Liberati, (302) 892-7421  
michael.r.liberati@usa.dupont.com