

NEWS FROM THE MID-ATLANTIC HIGHLANDS

ECHO

Valley Conservation Council

Learning to use GIS to conserve today and plan for tomorrow

Like many organizations trying to protect our natural and cultural heritage, Virginia's Valley Conservation Council is working with CVI to integrate high-technology tools into its day-to-day operations. The Valley Conservation Council (VCC) is supported by about 1,000 members from 11 counties in the Shenandoah Valley region of Virginia, encompassing much of the Shenandoah and Upper James River watersheds. Valley Conservation Council works to promote land use that sustains the farms, forests, open space, and cultural heritage of the region, which is fast transforming from a rural area to a set of high-growth counties. Keeping up with land use changes is a challenge for local government and small nonprofits alike.

VCC's recent research report, the *State of the Valley* (2003), points out that of all the land ever developed in this area, one-third has been developed in just the last 15 to 20 years, and the pace seems to be quickening. Growth is spilling out of the Washington, DC area into the northern Valley and also creeping north from Roanoke into Botetourt County. Estimates show that 93% of the new housing in the region will be in the counties, not within the cities of Winchester, Staunton, Waynesboro, Harrisonburg, Lexington, or Covington.



Valley Conservation Council works to promote land use that sustains the farms, forests, open space, and cultural heritage of the Shenandoah Valley region. The group is working with CVI to integrate high-technology tools into its day-to-day operations.

Scenic and economically vibrant areas in the central valley are booming with newcomers. Rockingham, Augusta, and Shenandoah Counties, along the I-81 corridor, are Virginia's top three agricultural counties in terms of gross receipts. As farmers are aging and the price of land is skyrocketing, the rural landscapes and agricultural economies of this region are threatened by inefficient and sprawling development. To complicate matters, the Valley floor is predominantly limestone and is riddled with caves and sinkholes, creating difficult groundwater issues exacerbated by wells, septic fields, and increased impervious surface. Even the less populated mountainous counties are beginning to feel pressure from development, which is straining the capacity of local governments to keep up with the pace of change.

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In the midst of this growth boom, VCC works on two fronts: assisting landowners with voluntary land protection tools, such as perpetual conservation easements and agricultural and forest districts; and encouraging sensible land use policies that protect natural and scenic assets through more compact and well-planned growth strategies.

Geographic information systems (GIS) can help to accomplish both of these objectives. VCC's executive director, John Eckman, hopes to build the organization's capacity to make use of this technology. "Everything we do is related to land, to geography. GIS is a great tool for land trusts working to plan effective land conservation and hoping to get the most out of limited resources. We've seen what a great help CVI's GIS assistance has been for other land trusts in the area, and we'd like to apply this on both a local and regional scale."

VCC works closely with farm bureaus, local governments, developers, other land trusts, citizen groups, and government agencies across the region. The organization doesn't need to build a large technical staff to accomplish its goals. "We are looking to build partnerships that connect our unique web of relationships and knowledge with the great GIS resources already out there at local universities, planning departments, and agencies," Eckman explains. "We don't want to be GIS experts, but we do need to understand enough to ask the right questions and produce useful maps and analysis."

Together with its partners, the Virginia Outdoors Foundation and local soil and water conservation districts, VCC has legal responsibilities for easements on over 3,300 acres of privately owned conservation property. This is part of a network of over 42,000 acres of private land that VCC and others have protected in the region. VCC's Headwaters Riparian Protection program involves 30 easements protecting stream and river properties. GIS technology is important to land conservation efforts: by determining where factors like particular soil types, parcel size, land uses, zoning, and the availabil-

ity of funding overlap enables the most suitable areas to be targeted.

VCC had already made a substantial investment in geographic information system and geographic positioning system (GPS) equipment when its riparian easement program had been very active in the past. With recent changes in staff and programs, the equipment was being used less often. However, several interns are forming the core of a new GIS team at VCC, and with the potential for new riparian protection funding on the horizon, the organization wants to be ready to map out easements in the field.

VCC contacted Canaan Valley Institute for technical assistance to strengthen its capabilities. In April, Janette Bennett and Corey Anderson, two GIS analysts from CVI, held a workshop for the organization at the GIS lab at James Madison University. Staff and members of VCC received instruction in the use of GIS and GPS tools and are excited about the important resources this technology provides for acquiring, recording, and producing data. "It was a real eye-opener," Eckman commented. "Janette and Corey helped us realize that while deeper analysis with GIS can be very complex, the needs we have are really pretty simple. Now we know enough to ask the right questions."

Working with an initial focus on Rockingham County, VCC has attained parcel data and other valuable information from the county planning depart-



CVI's Janette Bennett (center) with Nan Feibig and Cathy Wright, interns on the Valley Conservation Council's newly-formed GIS team. CVI staff helped the organization strengthen its GIS capabilities.

ment. Soils, hydrology, National Park and National Forest boundaries, agricultural and forest districts, zoning, base imagery, and other data layers recommended by CVI have also been obtained. The group will also use the latest conservation easement dataset from the Virginia Outdoors Foundation, and an original dataset created by VCC that maps its riparian easements. Janette reviewed the data and set up sample GIS queries that will help the VCC's GIS team develop its skills.

The VCC's project will complement the work that Canaan Valley Institute is doing in Virginia through its Highlands Action Program. Like CVI's Highlands Action Program, VCC includes environmental, social, and economic factors in its work.

The VCC hopes its GIS and GPS training will help it to achieve several of its goals:

- Query certain parcel-level attributes to identify landowners who qualify for various easement purchase programs.
- Use GPS units to map easement points from the field.
- Revive its riparian easement program as state funds become available, and work with interns to assist with mapping.
- Add other data layers that involve cultural and historic layers—battlefields and historic districts for example, or National Register sites and archaeological sites needing protection.
- Use data layers from other agencies to produce customized maps for use in public education programs.
- With the help of partnerships with planning district commissions and others, work toward ways of integrating "green infrastructure" planning with traditional comprehensive planning at the county level.

For copies of the Valley Conservation Council's publications or for more information about its work, contact John Eckman at 877/216-1782, john@valleyconservation.org, or visit www.valleyconservation.org.

West Virginia Farmland Protection Conference 2005

In 2000, the West Virginia Legislature passed the West Virginia Voluntary Farmland Protection Act, empowering counties to create and fund Farmland Protection Programs. In order to support the creation of county programs, Canaan Valley Institute and the Natural Resources Conservation Service (NRCS) developed the West Virginia Farmland Protection Assistance Program in 2004. By early 2005, sixteen counties had taken advantage of the enabling legislation and created local farmland protection boards, and at least another nine counties had begun the process of board formation.

In early May of this year, during a classic Canaan Valley spring snowstorm, the second West Virginia Farmland Protection Conference was held at Canaan Valley State Park. Jointly sponsored by the newly-formed Association of Farmland Protection Boards and several other agencies and organizations, the conference provided focused workshops on specific topics related to farmland protection in West Virginia.

Congressman Alan B. Mollohan opened the conference by sharing his perspectives on the importance of protecting farms and the value of conservation projects throughout the state. Canaan Valley Institute's Executive Director Kiena Smith, Deputy Commissioner of Agriculture Steve Hannah, and the new State Conservationist for the Natural Resources Conservation Service, Ron Hilliard, all spoke on behalf of their organizations and the support they were willing to offer county farmland protection efforts.

Workshops were targeted to either existing county farmland protection board members or to county representatives who were in the process of creating new programs. The sessions addressed specific requests for information and concerns heard from counties over the past two years. Sessions included "Starting a Farmland Protection Program," "Baseline Documentation," "Tax Deductions and Conservation Donations," and "Right-to-Farm Models from Other States," among many others. Speakers represented land trusts, local lending institutions, state and federal agencies, and the West Virginia University College of Law.

In part as a result of the first state farmland protection conference in

2004, the Association of Farmland Protection Boards was formed to better serve the interests and needs of counties. The West Virginia Farmland Protection Assistance Program (a cooperative program of Canaan Valley Institute and the NRCS) provided facilitation and organizational assistance to the budding association throughout the year. Just prior to the start of the 2005 conference, association officers were elected and bylaws were ratified. (Officers are Jane Tabb, Jefferson County FPB, Chair; Bill Shockey, Preston County FPB, Vice-Chair; Deb Bishop, Hardy County FPB, Treasurer; and Peter Fricke, Jefferson County FPB, Secretary.)

Since the passage of the enabling legislation, 32 farmland protection easements have been closed in West

Virginia, protecting 3,800 acres. Several more easements have been funded and are in the process of being closed. State-wide, protection programs have generated over \$9.4 million in local and federal funding for the purchase of easements.

Evaluations from this year's conference affirm that the participants (totaling about 70) garnered information that will be valuable to them as they continue to develop county farmland protection programs across the state.

Sponsors of this year's conference included the WV Association of Farmland Protection Boards, the WV Department of Agriculture, the Coalition of WV Land Trusts, the West Virginia University College of Law, USDA Natural Resources Conservation Service, and Canaan Valley Institute.

Participants at the 2005 West Virginia Farmland Protection Conference. Seated in the center (in hat) is Ron Hilliard, the NRCS State Conservationist for West Virginia. The conference was co-sponsored by the newly-formed Association of Farmland Protection Boards.



CVI's Spring 2005 Rosgen Workshops

CVI's fourth annual Applied Fluvial Geomorphology workshop (also known as Rosgen One) was held during April 2005 at Blackwater Falls State Park near Davis, West Virginia. This one-week course is designed to familiarize students with the fundamentals of river behavior, the general principles of fluvial geomorphology, sedimentation, hydraulics, restoration, fish habitat improvement, riparian grazing management, and streambank erosion.

Two other Rosgen workshops were presented this spring. Fluvial Geomorphology for Engineers was held during May in Canaan Valley, West Virginia, and River Morphology and Applications (also known as Rosgen Two) took place in June at Cacapon State Park in eastern West Virginia.

Courses were taught by Dave Rosgen, principal hydrologist of Wildland Hydrology Consultants. Dave designs, supervises, contracts, and monitors a variety of large-scale river restoration projects throughout the United States. Dave is the author of *Applied River Morphology*. For additional information on Wildland Hydrology, visit www.wildlandhydrology.com.

For more information about CVI's training in stream restoration, visit CVI's website, or email Paula Worden at paula.worden@canaanvi.org.



Students in the Applied Fluvial Geomorphology workshop, offered by CVI this Spring, measure a stream cross-section using a laser level. The stream is Devil's Run, a tributary of the Blackwater River upstream of Davis, West Virginia.



Dave Rosgen stands in Devil's Run while he discusses stream morphology with students from the Applied Fluvial Geomorphology workshop earlier this year

The **Watershed Cooperative Agreement Program** (WCAP) was created in 1988 in response to the need expressed by watershed groups for financial assistance to conduct acid mine drainage cleanup projects. The program provides matching funds to nonprofit organizations to assist in the cleanup of mine drainage from old and abandoned coal mining operations. Funding for WCAP projects comes from the Abandoned Mine Reclamation Fund (the AML fund), and the program is administered by the Office of Surface Mining (OSM).

The Abandoned Mine Reclamation Fund was created in 1977 to fund cleanup and reclamation of coal mines abandoned prior to 1977. Revenue for the fund comes from a fee assessed for each ton of coal currently being mined. The AML fund was originally designed to be in effect for 15 years (until 1992), but was extended by Congress until September 30, 2004. Prior to the fund expiring last fall, Congress extended the program for another six months ending June 2005, and just extended it again through September 30, 2005. (This most recent extension became law through passage of the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief.) Without additional extensions or reauthorization, collection of fees for the AML fund will cease this fall.

As of September 2004, the Office of Surface Mining had awarded 108 Watershed Cooperative Agreement Program projects to 46 sponsoring organizations throughout the Appalachian region. However, only five watershed groups from West Virginia had requested funding. Both Canaan Valley Institute and OSM shared the concern that WCAP funding was not being utilized in West Virginia as it

U.S. Office of Surface Mining Regional Director Brent Wahlquist, left, presents a symbolic check in the amount of \$99,386 to G. Paul Richter of the Buckhannon River Watershed Association for cleanup of acid mine drainage on Mudlick Run in Upshur County, WV.

was in neighboring states. With the extension of the AML fund in question and an extensive need in West Virginia for cleanup of acid mine drainage, CVI and OSM teamed up to concentrate the efforts of one staff person on helping West Virginia watershed groups address this problem.

CVI entered into an interagency agreement with the Office of Surface Mining, and in January 2005, Nancy Roberts, an OSM watershed specialist, began working with CVI on a one-year commitment to provide technical and administrative assistance to groups addressing abandoned mine land problems related to mine drainage. Nancy has a wide range of experience in environmental management.

Many of the state's groups were anxious to receive assistance, and CVI is currently working on developing WCAP projects with eight watershed groups on over a dozen sites. Results from the cooperative effort were first realized this spring. In April 2005, Brent Wahlquist, Regional Director for OSM's Appalachian Region, awarded Watershed Cooperative Agreement funds for \$99,386 to the Buckhannon

River Watershed Association (BRWA) for AMD cleanup. The BRWA partnered with OSM; the West Virginia Department of Environmental Protection's (WVDEP) Division of Water and Waste Management; the WVDEP's Division of Land Restoration, Office of Abandoned Mine Lands; and CVI to reclaim and restore an abandoned toxic refuse pile adjacent to Mudlick Run.

OSM has submitted a budget for \$2 million to fund WCAP projects for 2006, and it hopes to maintain that level of funding for the next couple of years. This would require the reauthorization of the program past the current deadline of September 30, 2005. Watershed groups in West Virginia are learning the process of requesting funding and implementing projects. With continued funding and active participation from local groups, acid mine drainage problems in West Virginia will continue to improve. For more information about WCAP funding and available assistance, contact Nancy Roberts at nroberts@osmre.gov or 304/347-7158.

Cooperative Effort between CVI and Office of Surface Mining will help West Virginia Watershed Groups with AMD Mitigation



Located in the Potomac Highlands of north-central West Virginia, mostly rural Tucker County lies along the route of the proposed Corridor H Appalachian Highway, which would connect I-79 to I-81 and make the county much more accessible from the Washington, DC area and the Mid-Atlantic region. The completion of Corridor H may have important consequences for Tucker County, where there are many different viewpoints about land use and economic development. While a decline in the coal and timber industries has forced many people to find work elsewhere and leave, others have been drawn to Tucker County by its scenic beauty, relative isolation and rural nature, recreational opportunities, and pleasant climate.

Tucker County's natural amenities have fueled extensive tourism development, mainly in the Canaan Valley where vacation homes generate a major part of the county's tax revenue. However, the economic shift from resource extraction and manufacturing to tourism and related services has been difficult for many people to accept, who say that tourism offers mostly lower-paying jobs with few benefits and little stability. Furthermore, the public lands that cover almost 50% of the county are said to limit the amount of land available for development and not contribute enough to the county's tax base. On private lands, development may be limited by steep slopes, valley floodplains, and lack of infrastructure and interstate access.

Delivering public services and infrastructure to dispersed populations and resort communities has been a struggle, especially as the overall decrease in population has reduced some state funding allocations as well as the customer base. To attract industries, better jobs, and additional tax revenue, the county is in the final stages

of completing an industrial park, but it has been difficult to recruit tenants.

Completion of the Corridor H highway will make the county more accessible to tourists, commercial development, and industries, and this raises some critical questions. What kind of development do Tucker County's citi-

Commission is updating its Tucker County Comprehensive Plan. According to West Virginia state law, comprehensive plans assess current conditions and public goals regarding topics like population, economy, land use and development patterns, housing, transportation, community facili-

Comprehensive Planning Helps a Rural County Prepare for the Future



Tucker County, in rural north-central West Virginia, is updating its county comprehensive plan, which raises some critical questions about future land use and development.

zens want? Will the county be able to support additional development and provide good jobs while safeguarding the environmental amenities that so many enjoy? Will Corridor H lead to growth and will growth occur in patterns that enable cost-effective delivery of services and infrastructure? Where should development occur, and how should it look? How can residents guide development so that it meets their needs and goals?

To begin to answer these questions, the Tucker County Planning

ties, and public services within the county. With this information, comprehensive plans designate preferred areas for development or restoration, recommend land use policies to meet public goals, and create action plans with budget estimates. Comprehensive plans also provide the basis for any land use management techniques, regulations, or incentive programs that counties wish to enact.

The Tucker County Planning Commission has asked Canaan Valley

—See **Comprehensive Planning** on page 7

Institute to help with the process of updating its plan. CVI is assisting the planning commission by compiling geographic information, as well as interviewing stakeholders regarding comprehensive planning topics, and will summarize this information in a final report. CVI is also preparing maps to illustrate several factors that could affect development, such as

What kind of development do Tucker County's citizens want? Where should development occur, and how should it look? How can residents guide development so that it meets their needs and goals?

slopes, floodplains, wetlands, public lands, and the extent of municipalities, roads, and utility lines. This information will be particularly useful in selecting preferred areas for development. CVI staff are currently working with Mike Strager, a West Virginia University faculty member, to create a planning tool that enables stakeholders to choose suitable sites for development by combining and prioritizing different sets of geographic information.

Public participation will be key in updating the Tucker County Comprehensive Plan. Comprehensive planning is a good opportunity for county residents to come together, plan solutions to the problems they already face, and look ahead to consider the issues they may be facing in the future. This is especially important in times of transition, when divisions between people are sometimes more apparent than the common ground they share.

For more information about the comprehensive plan update, contact Todd Miller in CVI's Thomas, WV office or email him at todd.miller@canaanvi.org.

NASA Computer Program is 'Hot Download' on the Internet

A NASA computer program that is able to zoom in from satellite altitude into any place on Earth to reveal regional 3D pictures of climate, elevation, vegetation and cities by population, has become a 'hot download' on the Internet. Using Landsat satellite imagery and Shuttle Radar Topography Mission data, **World Wind** lets you experience Earth terrain in visually rich 3D, just as if you were really there, and virtually visit any place in the world. Look across the Andes, into the Grand Canyon, over the Alps, or along the African Sahara.

Available free of charge, the PC-compatible program was developed by NASA Learning Technologies and makes available the millions of images acquired by Landsat satellites during more than 30 years of flight. In addition to NASA data, World Wind is able to access public domain United States Geological Survey (USGS) aerial photography and topographic maps. There are an estimated 10,000 daily users



Screenshot of Washington D.C. Image courtesy: NASA.

of World Wind. To download World Wind, visit <http://learn.arc.nasa.gov/worldwind/>.

NASA Learning Technologies is a NASA Research & Development effort for the engineering of teaching tools that deliver NASA content in the most engaging and dynamic manner possible. NASA Learning Technologies builds the pipeline and the delivery point for unencumbered access to the best data NASA has to provide.

West Virginia Watershed Celebration Day, Saturday, September 24, 2005 in Elkins, WV

The West Virginia Watershed Network is an informal association of interests with a mission to collaboratively support efforts and provide resources necessary to empower local residents to make decisions for sustainable management of their watersheds. One of the annual projects of the Network is the Watershed Celebration Day, a one-day event that focuses on recognizing the efforts of volunteers working to create and build watershed associations throughout the state.

The 2005 West Virginia Watershed Celebration Day will be held on Saturday, September 24, 2005, at Davis & Elkins College in Elkins, West Virginia. Each watershed organization is asked to submit a short description of its organization and activities. Awards are based on criteria such as innovation and sustainability of projects, quantity of work, applicability to other watersheds, and scientific rigor. Watershed organizations will be recognized in the following categories: Watershed Asso-

ciation of the Year, Guiding Light (to an individual who has promoted the grassroots approach to problem-solving), Water Quality Monitoring, Outreach and Education, Recreation, Stream Partners, Flood Mitigation, Polluted Coal Mine Drainage, Agriculture, Habitat, Urban Work, New Watershed of the Year, Solid Waste, Forestry, and Nonpoint Source Pollution.

This year's celebration will offer several morning workshops. A scavenger hunt using global positioning systems (GPS) will be sponsored by the West Virginia Department of Environmental Protection. Angela Jessup, a stream restoration specialist with CVI, will present on Natural Stream Channel Design, and the West Virginia Conservation Agency will provide a workshop on financial management. For more information about the Watershed Celebration Day, contact Jami R. Thompson at jthompson@wvca.us.

The year 2004 will be remembered as the “Year of the Hurricanes” as Francis, Jeanne, and Ivan dropped torrential rains across the Mid-Atlantic Highlands. Many streams overflowed and rivers ran muddy with sedimentation from eroding streambanks. However, one site in central Pennsylvania, on the Bennett Branch of the Sinnemahoning Creek, did not contribute sedimentation as it had in the past. A natural stream channel design demonstration was built there in 2001 and has been proved a success.

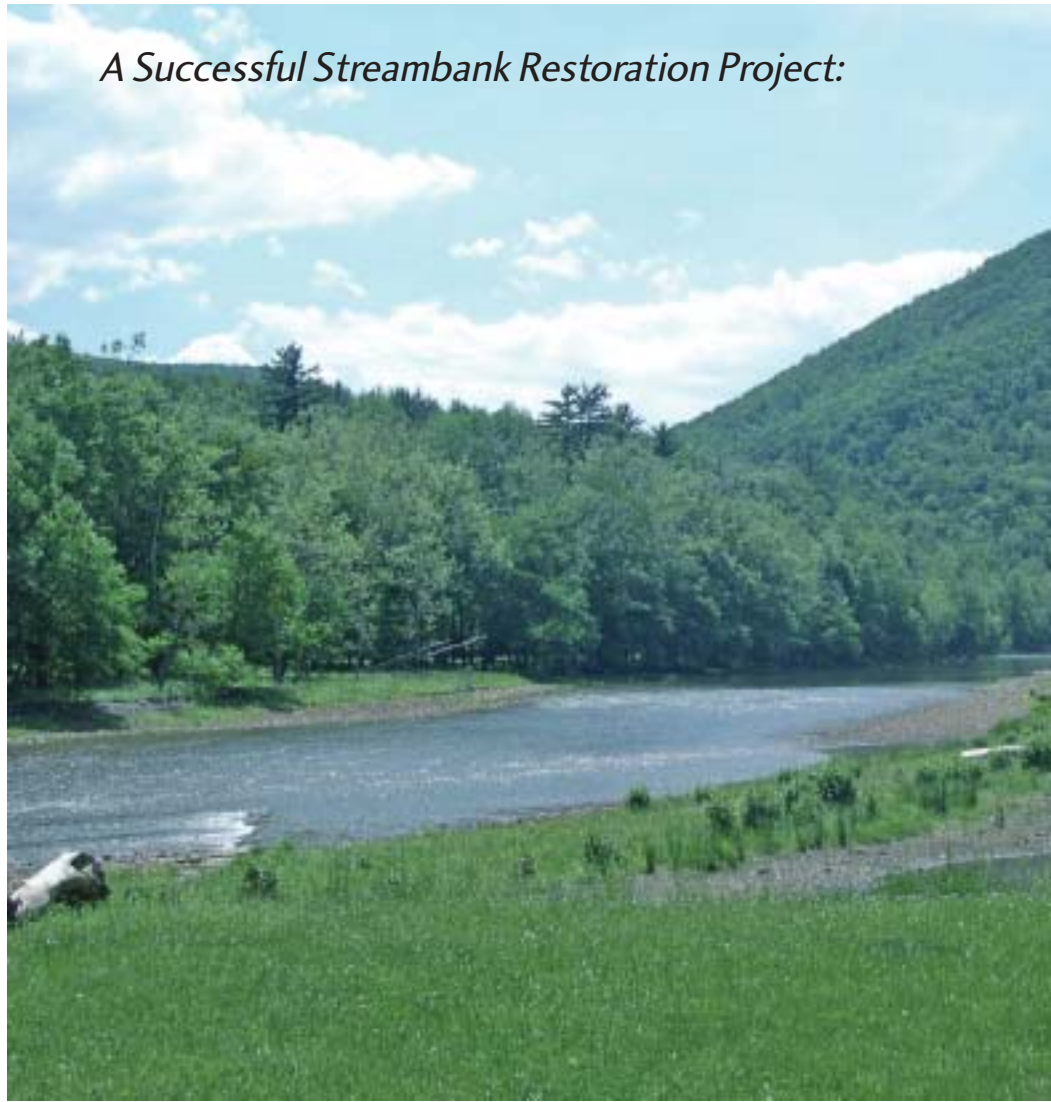
The Bennett Branch watershed begins in Clearfield County and flows 34.5 miles northwest, mostly through Elk County, to the village of Driftwood in Cameron County in north-central Pennsylvania. Here the Bennett Branch joins the Driftwood Branch to form Sinnemahoning Creek, a major subbasin of the West Branch of the Susquehanna River. The watershed can be characterized as rural, with 88% of the area forested and 48% of the forestland under public ownership.

Classified as Unglaciaded Allegheny High Plateau, the watershed is a deeply dissected, rugged highland with rounded hills, low mountains, and narrow valleys. It is further characterized by nutrient-poor soils, steep hill slopes, and high-gradient streams. Apparent problems in the watershed are sedimentation due to severe streambank erosion and lack of buffering due to low alkalinity in better quality streams.

The main stem, from its source to Mill Run, is designated as a coldwater fishery (under Chapter 93 Water Quality Standards, Pennsylvania Code, Title 25 Environmental Protection). From Mill Run to its confluence with Driftwood Branch, however, the stream is designated as a warm-water fishery.

In April of 1999, members of the Bennett Branch Watershed Association, along with the Cameron County Conservation District, Natural Resources Conservation Service, Canaan Valley Institute, and the Department of Environmental Protection toured the water-

A Successful Streambank Restoration Project:



Bennett Branch Withstands

shed to conduct an initial inventory and to document streambank erosion. The inventory process continued as watershed association members located erosion sites, documented their locations with GPS units, and measured the lengths of eroded areas.

In addition, as part of this assessment, the PA Fish and Boat Commission completed a biological and habitat survey of five points along the main stem. At the survey station closest to the future natural stream channel design demonstration site, bank stability scored only 4 out of a possible 20 points, and the riparian vegetative zone

scored 8 out of 20. The survey also stated that bank stability was extremely unstable with 60 to 100% of the bank in the reach having areas of erosion and high potential for erosion during flooding. Results from sampling of aquatic insects showed lack of diversity and reduced numbers.

In 2000, Canaan Valley Institute worked with the Bennett Branch Watershed Association to secure \$225,000 from the state's 'Growing Greener' program to initiate the demonstration project, which was completed in the Fall of 2001. Additional financial support in the amount of \$15,310 was provided by CVI to provide for data



Right: Bennett Branch before construction of the stream restoration project.

Below left: Severe streambank erosion unearthed a gas pipeline at the site.

Below right: In 2001, eroded streambanks were regraded and seeded. Stone deflectors divert water from the streambanks back to mid-channel.



Left: In 2005 vegetation is taking hold. The constructed oxbow is working as designed to catch sediment during times of high flow.

Three Hurricanes

acquisition and engineering for the site design.

Factors that were considered when selecting the demonstration site were the amount of soil loss, landowner cooperation, visibility, and access. The project site was approximately 1,700 feet in length with 8-foot vertical, highly eroded banks. The stream was overly wide in this area, which was causing a mid-channel gravel bar to form. The formation of this bar was causing the outside streambank to erode. The amount of sediment lost at this site alone was estimated to be approximately 573 tons each year.

The goal of the restoration project was to return the stream section to its natural width, depth, and meander pattern. The gravel island in the middle of the stream that was causing the water to wash out the bank was removed, and the material was used to regrade the stream bank. The stream banks were sloped, and rock structures were installed to divert water away from the eroded areas and stabilize the stream. An oxbow was constructed to capture sediment during times of high flow, and a floodplain wetland was created for additional wildlife habitat.

The US Fish & Wildlife Service and Gannett Fleming Consultants designed the project. Bennett Branch Watershed Association recruited volunteers to help with the riparian planting for final stabilization of the site. Since construction was completed in 2001, the Bennett Branch streambank restoration project—the first project of this kind in the north-central region of Pennsylvania—has served as a valuable demonstration site for alternative ways of restoring eroding streambanks.

The Rivanna Conservation Society works toward re-establishing migratory fish species in the Rivanna River



Removing part of the long-neglected Woolen Mills Dam would reopen over 20 miles of the Rivanna River to migratory fish. Photo courtesy of Jason Halbert.

As one of the partners of the Chesapeake Bay Agreement, the state of Virginia supports the goal of restoring migratory fish passage up its inland rivers so that native species can spawn and their populations can recover. The American shad was once an important part of central Virginia's river ecosystems—and in the ocean, shad fisheries were economically important—but the species has declined drastically due to overfishing, poor water quality, and the construction of dams.

The Rivanna River flowed freely southward into the James River until the early 1800s, when a series of dams, including the Woolen Mills Dam, was built to power mills and provide for navigation, thereby blocking the migration of native fish species like the American shad. Breaching or removing

part of the long-neglected dam would reopen over twenty miles of river to migratory fish.

The Rivanna Conservation Society (RCS) and its many partners are engaged in an effort to partially breach the Woolen Mills Dam and to help fulfill the Chesapeake Bay Agreement's goals. Since there is public money available to remove dams, but not for feasibility studies, private and foundation money was leveraged to fund a comprehensive engineering study and examine the possibility of removing the dam. Canaan Valley Institute contributed \$6,500 towards the cost of the engineering feasibility study through its Small Grants Program.

The RCS held several public meetings that were attended by a variety of

stakeholders—from historical societies to environmental groups—to hear and address concerns about removing the dam, which is located on private property. Some of the issues that were raised included the historical value of the dam, safety (lives have been lost at the dam), flooding, recreation, aesthetics, and habitat. Other issues addressed in the engineering study were hydrology, sediment conveyance, and removal designs.

In the end, the benefits of removing the dam were found to be substantial: restoration of migratory fish passage, improved river access for recreation, public safety, reduction of flooding, opportunities for public education, elimination of owner liability and regulatory inspection requirements, riparian trails, and enhanced habitat. The recommendation from the study was to partially breach the dam, which would retain enough of the ramparts for historic interpretation but would not interfere with the free flow of the river.

Consensus has been reached by all of the affected parties, including the owner, that the dam should be removed. The last hurdles are technical: dismantling the old dam while preserving the materials and securing of the necessary permits. The projected timeline for the dam removal is late 2005 or late 2006, to avoid prime migration and spawning periods in spring and summer. This April, the Virginia Department of Game and Inland Fisheries and the Rivanna Conservation Society together released more than 400,000 young shad fry into the Rivanna River at Charlottesville to swim downstream to the Atlantic Ocean. There they will mature and in a few years will swim back up the James River and enter the Rivanna to spawn. More than 100 school children and local citizens gathered to participate in releasing the shad fry, with the hope that by the time the fish make it back up to Charlottesville, the way will be clear.

The American shad was once an important part of central Virginia's river ecosystems, but the species has declined drastically due to overfishing, poor water quality, and the construction of dams.



Several decades of work and millions of dollars have gone into cleaning up the Stonycreek River and its tributaries from the legacy of their coal mining past. Regular water releases from the Quemahoning Reservoir could turn the Stonycreek Canyon (left) into a year-round whitewater attraction. Photo courtesy of Clark Fisher/Bens Creek Canoe Club.

For the first quarter of the twentieth century, the Stonycreek River basin in southwestern Pennsylvania was a leading coal-producing area in one of the leading coal-producing states. Several decades of work and millions of dollars have gone into cleaning up the Stonycreek River and its tributaries from the legacy of its coal mining past—abandoned mine drainage (AMD). As a result, this Allegheny mountain stream now supports 22 species of fish and healthy aquatic ecosystems to sustain them, according to sampling done in 2000 by the Pennsylvania Fish and Boat Commission.

The Stonycreek-Quemahoning Initiative is a diverse partnership made up of dozens of member organizations and coordinated by the Conemaugh Valley Conservancy. The purpose of the initiative is to conserve and enhance the natural and cultural heritage of the Stonycreek River corridor. Partners include communities along the river, businesses, recreational outfitters, economic development agencies, environmental groups, state and federal agencies, and local planning commissions. While the initiative is still tackling sources of AMD, other projects are in the works to move beyond cleanup and create brand new opportunities for the area.

Sections of the Stonycreek River feature outstanding Class III-IV whitewater that is prized by kayakers, canoeists, and rafters. Regular water releases from the Quemahoning Reservoir (formerly used by Bethlehem Steel for steel production) could turn the Stonycreek Canyon below into a year-round whitewater attraction. In 1998, the Quemahoning Reservoir, four other impoundments, and 5,000 acres of land were purchased from Bethlehem Steel by the Cambria Somerset Authority to be used for public access and recreational enhancement of the Stonycreek River Canyon.

The Stonycreek-Quemahoning Initiative has completed the first phase of a feasibility study for the enhancement of boating and fishing opportunities on the river. Goals include developing river access areas at various locations, as well as a whitewater park. The riverside park would provide a year-round whitewater course where paddlers could practice rolls and flips, events such as kayak

rodeos could be held, and emergency rescue personnel could be trained. Only 20 of these parks exist nationally. However, one of the missing links identified in the feasibility study is an analysis of the economic impacts associated with acid mine drainage cleanup and the planned recreational enhancements. Both public funding sources and major foundations have expressed an interest in seeing this component added to the study.

Andrea Foessel, a watershed resource economist with Canaan Valley Institute, is assisting with the second phase of the feasibility study, which will help to complete a pending application by the Stonycreek-Quemahoning Initiative to the USDA Rural Development-Rural Business Opportunities Grant program. Andrea's work includes quantifying user rates at the whitewater facility, examining community infrastructure needs, and developing a business plan for community renewal that would cre-

The Stonycreek-Quemahoning Initiative

Community revitalization is linked to activity on the river

ate additional business opportunities through sustainable use of the area's natural resource base.

In addition to its work on the economic impact analysis, Canaan Valley Institute was invited in September of 2004 to assist the Stonycreek-Quemahoning Initiative with a community design workshop for a major river-access area known as Hollsopple/Benson Borough. The workshop was led by the Pennsylvania Environmental Council, working with the landscape architecture department at Ball State University. To prepare for the workshop, area residents were equipped with cameras and asked to take photos throughout their community, which were then used for an assessment of community needs. Students from Ball State captured residents' visions for community revitalization with sketches that portrayed the transformation of a dilapidated old mining town into an inviting tourist destination point. Included in the sketches are a farmers market, an ice cream parlor, a whitewater outfitter, quaint eating establishments, and a new playground.

"It means complete economic revitalization," said Mike Quinn of the Conemaugh Valley Conservancy, the group that coordinates the Stonycreek-Quemahoning Initiative. According to Darrell Clapper with USDA Rural Development, the outcomes from this visioning workshop—as well as CVI's assistance with the second phase of the feasibility study—have increased the chances for the initiative to receive the rural business opportunities grant, which would help local communities capitalize on the Stonycreek River's appeal to paddlers and other tourists.

Most of rural Virginia relies on onsite wastewater treatment systems—primarily traditional septic tanks. And the number of onsite systems continues to increase. The Virginia Department of Health (VDH) receives over 40,000 new onsite system permit applications each year.

Unfortunately, owners of these systems do not always maintain them. According to the Virginia Department of Environmental Quality (VA-DEQ), the leading cause of impairment of water quality in Virginia's rivers and streams is violation of bacteria standards and high levels of fecal coliform bacteria. "Failing septic tanks" were reported as a significant contributing source for water quality problems. In addition to failing septic systems, there is the problem of lack of any kind of system. According to a 1995 report from the Rural Community Assistance Partnership, about 30,000 households in Virginia lacked complete indoor plumbing.

Groundwater and surface water contamination from failing onsite systems (or lack of any system) is rooted in poverty, poor soils, and inappropriate housing locations. Many homeowners look to the day when the public sewer will finally come along and their problems will be over. However, this solution is often unrealistic. Today there are many other options available in the form of managed decentralized wastewater treatment systems.

A decentralized wastewater system is a planned, operated, and managed wastewater infrastructure serving a defined geographic area. The decentralized concept is based on the idea that wastewater should be treated—and beneficially reused, when possible—as close to where it is generated as practical in order to eliminate a costly pipe network. Generally, septic tanks are used to intercept the flow from each household at its source, but the effluent from these tanks is routed to further treatment processes prior to

dispersal or discharge. Advanced treatment and dispersal technology might be installed for each house, for each block of houses, for a whole subdivision, or for an entire community.

About 40% of households in Virginia use onsite systems, but there are

rural developments with smaller lot sizes.

In 2002, Canaan Valley Institute began to promote the use of managed decentralized (also known as 'cluster') wastewater treatment systems as an option to conventional central sewer

The Virginia Sewage Summit: Raising awareness of wastewater options for rural areas



The exhibit rooms at the conference were full of vendors displaying several types of advanced treatment technologies. Thirty-seven private engineering firms and consultants exhibited products and services

very few decentralized systems that employ advanced treatment technologies. According to Don Alexander of the VDH, only about one-third of the state's households should be on a central sewer. Less than one-third should have a traditional onsite system, and over half should be part of a managed decentralized system. This makes economic sense—central sewer is appropriate for high-density urban situations. However, for rural areas, while traditional onsite systems may be suitable for large lots where soils have a high carrying capacity, decentralized systems will be necessary for challenging site situations or for new

systems. In October 2003, CVI held its first "Sewage Summit" in Morgantown, West Virginia in conjunction with The National Environmental Services Center (NESC). The Sewage Summit came to Roanoke, Virginia in March 2005 as CVI sponsored its second summit. The purposes of the summit were to raise awareness of rural wastewater issues in Virginia; to bring together key state agency staff, local citizens, developers, realtors, and county commissioners; to create greater awareness and acceptance of decentralized methods; to share information about funding and other re-

Participants at the conference agreed that perhaps the term “managed decentralized wastewater treatment system” sounds too institutional, too impersonal, and not intuitive. ‘Neighborhood community wastewater system’ and ‘small community sewer’ were suggested as two possible replacements with greater appeal to the public’s sensibilities.

sources; and to explore management options for decentralized systems.

The summit’s planning team consisted of representatives from CVI, NESC, the Virginia Department of Health, the Virginia Department of Housing and Community Development, the Virginia Onsite Wastewater Recycling Association (VOWRA), and Charles City County, Virginia. The summit audience included private engineering firms, public sanitarians, public works directors, planning & zoning directors, county administrators, planning district commissioners, developers and realtors, management contractors, and staff from the VDH and VA-DEQ.

Over 400 participants attended the entire summit. Thirty-seven private engineering firms and consultants exhibited products and services. On the first day, Anish Jantrania from the VDH led one-hundred and twenty participants through a workshop at Explore Park to view an alternative wastewater treatment system. In addition to the field trip, the agenda included a VOWRA board meeting and a National Sanitation Foundation workshop.

The second day of the summit began with an overview of managed decentralized systems; the status of their use in Virginia; challenges and barriers to their use; and technical and regulatory solutions. The morning ended with a case study that examined a working managed system in Charles City County. The afternoon began with a moderated question-and-answer session, followed by a “tutorial” on the four elements of success when considering decentralized systems: (a) technology, (b) financing, (c) management, and (d) community process. This session also ended with a case study of a system in Imboden, Virginia. The final day began with a series of case studies and

lessons learned that concentrated on improving failed existing systems and on the use of decentralized systems for new developments in rural areas. The conference ended with a dialogue with the audience that identified important obstacles to the use of man-



The Virginia Sewage Summit was a highly interactive conference, and input from the audience was an important part of the event.

aged decentralized systems, and laid out a strategy for moving forward—the creation of a task force with education of the public as its primary goal.

“When I used to issue a permit for a septic or try to work on a failing septic, my only advice was ‘Wait till public sewer comes along,’” said Bob Hicks of the Virginia Department of Health. “That is less and less realistic now, and too expensive. Now we’re coming up with some other solutions.” Lack of the proper technology is no longer a barrier to the use of decentralized systems. The exhibit rooms at the conference were full of vendors who were displaying several types of advanced treatment units and methods for effluent dispersal. Funding assistance for use of these technologies is available from several grant and loan programs, which were described during conference sessions.

The biggest hurdle is the lack of a working model, including the lack of good management models. Who will operate and maintain the system once

it is installed? The EPA has developed a voluntary management structure that consists of five management levels for decentralized systems, ranging from homeowner awareness at one end of the scale to third-party ownership and operation at the other extreme. However, there is currently no program in Virginia that provides training for what are known as “Responsible Management Entities,” or RMEs, the most intensive class of management in the EPA’s scheme. As Don Alexander of the VDH explains, “Decentralized does not equal onsite. ‘Managed’ is part of the definition.” State agencies are reluctant to permit systems that lack management plans. “Management is the key; without good management the best system to go into the ground will ultimately fail,” concluded Steve Tally of CVI.

The public’s perceptions can also be a barrier to acceptance. With a managed decentralized system, households may have a monthly bill to cover the costs of operation and maintenance by a third-party management entity, or RME; in contrast, traditional onsite septic systems are perceived to be free, since the homeowner controls if and when maintenance is performed. So to the public, decentralized looks like onsite—but acts like central sewer.

Finally, participants at the conference agreed that perhaps the term itself, “managed decentralized wastewater treatment system” sounds too institutional, too impersonal, and not intuitive. ‘Neighborhood community wastewater system’ and ‘small community sewer’ were suggested as two possible replacements with greater appeal to the public’s sensibilities. For more information about the wastewater task force that has grown out of the Virginia Sewage Summit, contact Steve Talley in CVI’s Staunton office, or email steve.talley@canaanvi.org.

Update: Canaan Valley Institute's Property and Proposed Headquarters & Education Facility

Canaan Valley Institute's Trail System

Partnering with local businesses, organizations, and interested community members, Canaan Valley Institute is developing a multiuse trail system on 740 acres of the CVI property north of the Blackwater River. The trail project and partnership originated because of the potential for a recreational trail system on CVI's property to contribute to the local community. There is also the possibility of connecting the system with already-established trails on adjacent properties, with the potential to eventually create a countywide trail system.

A Trail System Advisory Committee has been formed to help facilitate the planning and implementation of the trail system. The Advisory Committee includes representatives from CVI, Tucker County Trails (a community group that promotes local recreational trails), Blackwater Bikes, the West Virginia Mountain Bike Association, Granny Gear Productions, and local equestrian enthusiasts. The Advisory Committee has completed the first phase of the project—the development of a conceptual design that will serve as a planning tool to assist in actual design, funding, management, and maintenance of the trail system. Many hours have been spent collecting GPS data, conducting a trail inventory, researching trail standards, and developing a mission statement.

Plans are for the rehabilitation and construction of 7 to 10 miles of trails using state-of-the-art, sustainable construction techniques, which will serve as a demonstration area. Work will focus at first on rehabilitating heavily impacted trail sections, correcting safety hazards, connecting trails, and signing and marking existing routes.



Members of the Trail System Advisory Committee conduct a trail assessment on CVI's property, in order to identify areas that need to be rehabilitated. The trail project will involve rehabilitation and construction of seven to ten miles of trail, and will use state-of-the-art trail building techniques.

Partners on this project are committed to the following goals:

- Developing a trail system that will meet the needs of different types of trail users.
- Providing the community with a resource that will generate economic activity and recreational opportunities.
- Forming connections with adjacent properties and trail systems across the county.
- Using sustainable trail-building techniques and using the trail system as an educational resource and demonstration area.

The next step for the Trail System Advisory Committee is to prioritize trail work and to develop a long-range work plan. Several local organizations will provide volunteer hours over the summer and fall, repairing trails and creating trail signage.

Bald Eagles Spotted on CVI's Property

Bald eagles have been sighted on CVI's property! The eagles were seen on February 20th along the Camp 70 Road by CVI Land Manager Ken Dzaack and his family. Two adults and two juvenile bald eagles were on the south side of the Blackwater River, between Campsites 7 and 8. Two adult eagles were seen again on February 22nd by several members of a group that was touring the Yellow Creek building site. The eagles were most likely migrating north and stopped to rest and feed on the property. Eagle sightings, both bald and golden, are not unusual in this area, and confirmed or reported nest sites are reasonably close by.

Small Grants Program

The New Forest Society: Helping farmers protect riparian buffers with native trees

The New Forest Society (NFS) formed and incorporated as a nonprofit organization in 2000, with the intention of providing replacement trees to farmers in the CREP* program who had experienced damage to their riparian buffer plantings. Since its formation, the group has expanded its scope, and the NFS now focuses on many watershed-wide issues in the Tom's Creek and Hunting Creek sub-watersheds of the Upper Monocacy River Basin in northern Frederick County, Maryland.

The group's partners include local and state government and nonprofit agencies such as the Emmitsburg town council, the Thorpewood Foundation, Community Commons, Maryland Department of Natural Resources, and the Interstate Commission on the Potomac River Basin.

NFS, in conjunction with its partners, has provided thousands of trees and hundreds of hours of educational programs concerning the value of trees and forests—especially the damage caused by widespread loss of forested

riparian buffers—to CREP participants, school groups, and community organizations throughout Frederick County.

The New Forest Society contacted Canaan Valley Institute in February 2004 for assistance with board development and educational workshops. CVI has since worked with the group to increase its organizational capacity through board and committee development and strategic planning. Additionally, NFS was awarded a grant through CVI's Small Grants Program in October 2004, for the purchase of 2,000 seedlings and the establishment of a grow-out station where the group can produce native trees for distribution year after year.

**An offspring of the Conservation Reserve Program (CRP), CREP is a voluntary program for agricultural landowners. Unique state and federal*



Elizabeth Prongas tends to the New Forest Society's grow-out station in Rocky Ridge, Maryland. The organization was awarded a grant through CVI's Small Grants Program to establish a nursery, where native trees are produced and used for riparian buffer plantings.

partnerships allow farmers to receive incentive payments for installing specific conservation practices. Through the CREP, farmers can receive annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible land.

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CVI Grants Awarded Fourth Quarter 2004

Canaan Valley Institute awarded the following grants for the fourth grant period of 2004. To find out more about CVI's grant program, visit the Institute's website at www.canaanvi.org or call toll free 800/922-3601.

Boxerwood Education Association, Rockbridge County, VA.

\$5,000 to develop and implement a high-quality, science-based interpretation program to complement and support their waste treatment system NEWTS (Nature-Emulating Waste Treatment System) newly installed at Boxerwood Gardens.

Upper Guyandotte Watershed Association, Wyoming County, WV.

\$4,873 for a variety of outreach activities including public meetings, a brochure, a newsletter, an informational display, and a website to educate communities within their watershed about the problems associated with raw sewage contamination of rivers and to build a community-based coalition to address this issue.

The Second Maryland Streams Symposium, August 10-13, 2005

Carroll Community College, Westminster, Maryland

sponsored by the Maryland Department of Natural Resources

For the past 10 years, the Maryland Biological Stream Survey (MBSS) and a number of local government agencies have been documenting the quality of Maryland streams using state-of-the-art physical, chemical, and biological indicators. Their programs have been described by US EPA as some of the best in the nation and are serving as models for other states. The focus of the second Maryland Streams Symposium was expanded to embrace new developments in watershed management and stream restoration at all governmental levels.

The symposium included four days of informative presentations on Maryland streams, interactive workshops, plenty of time for networking and socializing, and a special day for citizen involvement on Saturday, August 13th.

The goals of the symposium were to

- communicate the results of stream monitoring, restoration, and protection programs to policymakers, scientists, educators and stakeholders;
- encourage use of stream health assessment data in land management decisions;

- provide a forum for information exchange about streams and watersheds;
- engage participants through hands-on workshops and field excursions; and to
- celebrate 10 years of one of the country's best statewide freshwater stream surveys.

The symposium featured a half-day plenary session, 13 sessions for platform presentations, a session for poster presentations, 11 different laboratory-based workshops, 10 field trips, and ongoing exhibits. All activities were related to one or more aspects of Maryland streams, with presenta-

tions by experts from Maryland, the Mid-Atlantic region, and elsewhere. In all, more than 100 presentations were given. Well over 50 federal, state, and local agencies, universities, and colleges, nongovernmental organizations, and businesses presented information. Visit the symposium's website at www.dnr.state.md.us/streams/mbss/symposium.html, where you can find complete details about the event.

Carroll Community College, Canaan Valley Institute, the Maryland Water Monitoring Council, and the U.S. Geological Survey's National Biological Information Infrastructure Program co-sponsored the symposium with the Maryland DNR.



VISIT CVI'S WEBSITE AT WWW.CANAANVI.ORG FOR MORE DETAILS ABOUT CVI'S SERVICE AREA AND MISSION



Canaan Valley Institute

WORKING FOR THE SUSTAINABILITY OF THE MID-ATLANTIC HIGHLANDS SINCE 1995

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