

# People, land, and water of the Upper Thornton River Watershed:

## A model for countywide watershed management planning

Final Report to the National Fish and Wildlife Foundation

RappFLOW Grant #2005-0001-039

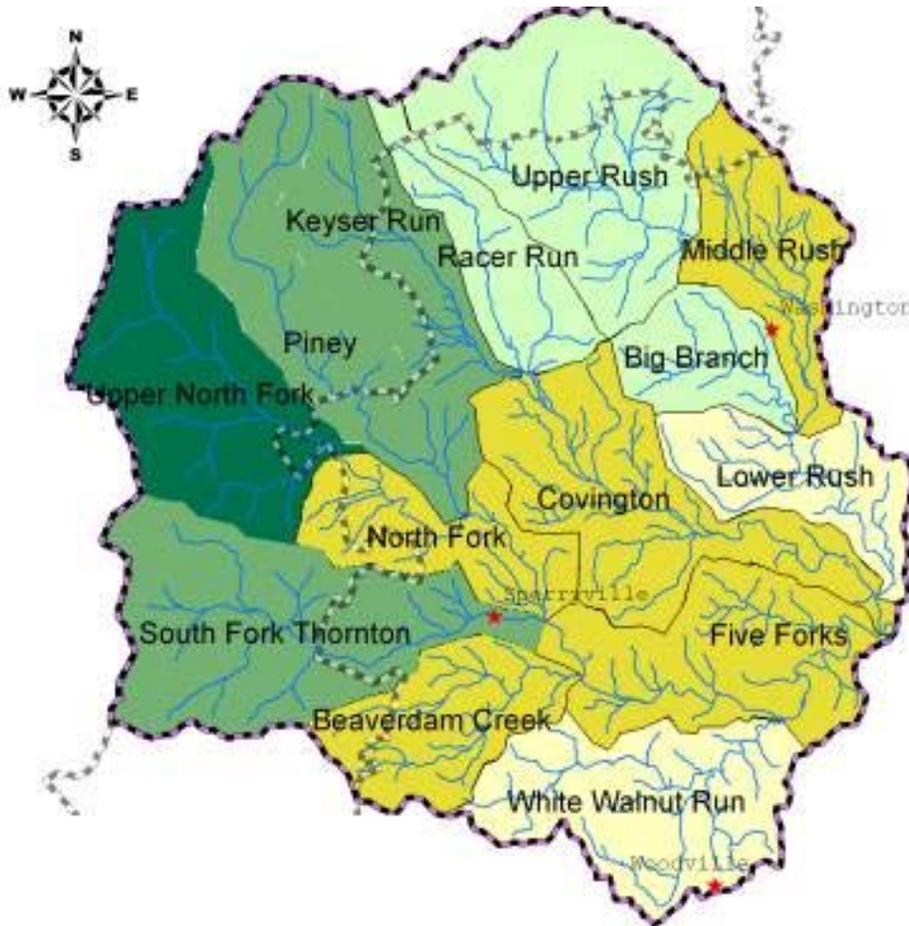
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This report is available in pdf format from [www.rappflow.org](http://www.rappflow.org)

November 29, 2006



## ***Introduction***

Rappahannock Friends and Lovers of Our Watershed (RappFLOW) is a group of volunteers founded in the summer of 2002. We work with many partner organizations as well as local leaders, landowners, and other stakeholders to help preserve, protect and restore the watersheds and water quality in Rappahannock County, Virginia. In this report, we provide highlights of the results, lessons learned and progress made from March 2005 through November 2006 in the project “People, land, and water of the Upper Thornton River Watershed: A model for countywide watershed management planning.” This project was funded in part by the National Fish and Wildlife Foundation, the Virginia Department of Conservation and Recreation, the County of Rappahannock, nonprofit organizations, and private donors. Several state agencies provided technical assistance and training.

Rappahannock County is a rural, scenic county with a population of about 7,000 at the headwaters of the Rappahannock River Basin. Seven hundred and fifty-five (755) stream miles in 1,010 stream segments (National Hydrology Database 2005), many on steep slopes, crisscross our land area of about 267 square miles. The northwestern boundary is in the Blue Ridge Mountains, in Shenandoah National Park. The Rappahannock River forms the northeastern boundary with Fauquier County. Altitudes range from about 3,700 feet above sea level in the Blue Ridge, to the lowest point at 360 feet near the Culpeper County border. Including the Shenandoah National Park (SNP), which represents 31,700 acres of the county’s land area, nearly 69 percent of land cover is deciduous, mixed, or evergreen forest. About 74,000 acres are in commercial forestland. Pasture, hay, and crops account for nearly 30 percent of land cover, and less than one percent of land cover is low density residential.

**Purpose of this project.** At the outset of this project, we stated the following objectives:

- Integrate scientific, social, educational, economic, engineering, and political aspects of watershed management in ways that work for our people, topography, geology, cultures, land uses, land cover, economy and political processes;
- Utilize a rigorous scientific method by which we evaluate geospatial, biological, chemical, and physical data to characterize a subwatershed and determine its relative health or vulnerability;
- Engage the full range of stakeholders, with support of local, state and regional government and other organizations;
- Train volunteers to conduct assessments of watersheds and water quality;
- Work with landowners to analyze and understand the health and vulnerabilities in small watershed areas, present information to landowners/ stakeholders in ways useful for decision-making; and help landowners to decide upon and implement best management practices for improving our watersheds;
- Work with Rappahannock County’s governing bodies to help understand public policies and tools best suited to addressing our watershed’s vulnerabilities; and
- Evaluate the environmental, economic, and political effectiveness of our model approach.

In our proposal to NFWF in January 2005, we said: “What we learn from this project will greatly enhance our community’s ability to develop an effective county-wide watershed management plan over the next five years. At the same time, we intend for our model to be useful to other similar localities in rural Virginia.”

**Why the Upper Thornton?** In the winter of 2005, RappFLOW chose the Upper Thornton River watershed (E05), an area of approximately 93 square miles or about a third of the county area, as its main study area for this project. The following criteria helped select that area:

- Includes properties owned by large land owners and is undergoing changes in land use
- Represents a mix of land uses typical of our county
- Includes two of Rappahannock’s designated 303d impaired water segments
- Contains some growth areas with planned future residential and commercial growth
- Includes examples of CREP implementation and several examples of BMPs
- Begins in the upper reaches of the Rappahannock River watershed and lies entirely within Rappahannock County
- Includes the Shenandoah National Park, one of our key watershed protection assets
- Represents a topographic mix from steep slopes to flood plains.

The Upper Thornton River watershed also was represented on the Board of Supervisors by then-current Chairman and Vice-Chairman. The watershed includes implementations of CREP and some Virginia cost-sharing BMPs; two of the County’s major growth areas, the Town of Washington and the village of Sperryville. Sperryville has the county’s only sewage treatment plant (in addition to one in the SNP) and Washington is planning to build a new sewage treatment plant.

## **Results**

A book published in 2004 by the VA Department of Conservation and Recreation, entitled *Local Watershed Management Planning in Virginia: A Community Water Quality Approach*, provides the guiding framework for RappFLOW’s goals, strategies, and activities in watershed management planning. Below, Table 1: “Project accomplishments in context of DCR local watershed management planning framework” shows the eight components of an effective watershed planning process according to that framework.

The main accomplishments and products from our project are listed in the table, in context of these eight components of watershed management planning. The products themselves are available on the RappFLOW web site [www.rappflow.org](http://www.rappflow.org), as shown in the URL’s embedded in Table 1 and throughout this report.

Further details are also provided in response to the National Fish and Wildlife Foundation Project Evaluation Form shown in Attachment B to this report.

<b>DCR Framework Watershed Plan Component</b>	<b>People, Land, and Water of the Upper Thornton River Watershed 2005 – 2006 Major Accomplishments and Products of this Project and Related Partner Activities</b>
<b>1) Identify and involve stakeholder s</b>	<p>a) Built working partnerships with 22 state, local, and regional agencies and nonprofit organizations (see Attachment A).</p> <p>b) Conducted research to help inform landowners and other stakeholders regarding watershed protection issues of their concern, including:</p> <ul style="list-style-type: none"> <li>• Hazel River Tier III Exceptional State Waters designation <a href="http://www.rappflow.org/hazel-river/tier3greenlight_jun06.html">http://www.rappflow.org/hazel-river/tier3greenlight_jun06.html</a> ;</li> <li>• Town of Washington Sewage Treatment Plant permit for discharge of effluent to Rush River <a href="http://www.rappflow.org/rush-river/index.html">http://www.rappflow.org/rush-river/index.html</a> ;</li> <li>• VA DEQ TMDL study <a href="http://www.timescommunity.com/site/index.cfm?newsid=17353075&amp;BRD=2553&amp;PAG=461&amp;dept_id=576934&amp;rfi=8">http://www.timescommunity.com/site/index.cfm?newsid=17353075&amp;BRD=2553&amp;PAG=461&amp;dept_id=576934&amp;rfi=8</a> ;</li> <li>• sludge ordinance development <a href="http://www.timescommunity.com/site/index.cfm?newsid=17321513&amp;BRD=2553&amp;PAG=461&amp;dept_id=576934&amp;rfi=8">http://www.timescommunity.com/site/index.cfm?newsid=17321513&amp;BRD=2553&amp;PAG=461&amp;dept_id=576934&amp;rfi=8</a></li> <li>• Please see other articles in the Press section of <a href="http://www.rappflow.org">www.rappflow.org</a> .</li> </ul> <p>c) Community participation in public meetings on watershed and water quality issues (approximate): Three Saturday morning meetings at local library, about 50 people, to discuss and Rush River impairments, Town of Washington sewage problems, draft DEQ permit for discharge of sewage effluent to Rush River, and alternative uses of sewage treatment plant effluent; 150 attendees at Public Comment meeting on March 28, 2006 at high school auditorium, with 60 citizens speaking for the record. Public information meeting at public library in October 2006 on DEQ TMDL study, over 30 attendees. Standing-room only crowd at BOS public meeting to discuss sludge ordinance.</p> <p>d) Analyzed values and concerns of 165 landowners who responded to RappFLOW survey. <a href="http://www.rappflow.org/PDF/highlights_upperthornton_survey_july2006.pdf">http://www.rappflow.org/PDF/highlights_upperthornton_survey_july2006.pdf</a></p> <p>e) For more than 100 landowners, produced maps showing streams, roads, and aerial photos of their individual properties.</p> <p>f) Developed and conducted more than 25 training sessions and field activities, in which over 60 persons learned technical and scientific methods for mapping watersheds, monitoring water quality, assessing riparian buffer vegetation, or assessing macroinvertebrate populations in streams.</p> <p>g) Helped to establish, and participated in, the Water Quality Advisory Committee that reports to the county board of supervisors. <a href="http://www.rappflow.org/wqac/index.html">http://www.rappflow.org/wqac/index.html</a></p> <p>h) Cost-sharing contributions to this project from partners and individuals totaled <b>\$91,344</b>, indicating strong commitment to this work by many groups and individuals.</p>

	<p>i) Developed volunteer management system for recruiting, training, and coordinating volunteer work. Publicized volunteer work through local newspaper and web site.</p> <p>j) See Question 3 in Attachment B: NFWF Evaluation Form for more details.</p>
<b>2) Establish vision &amp; goals</b>	<p>a) Developed survey instrument to assess landowner and resident land uses, values, priorities, concerns, and interests related to their subwatershed and water quality. <a href="http://www.rappflow.org/PDF/Watershed%20Questionnaire%20Dec%2029.pdf">http://www.rappflow.org/PDF/Watershed%20Questionnaire%20Dec%2029.pdf</a></p> <p>b) Identified landowner values, concerns, interests <a href="http://www.rappflow.org/PDF/highlights_upperthornton_survey_july2006.pdf">http://www.rappflow.org/PDF/highlights_upperthornton_survey_july2006.pdf</a></p>
<b>3) Assess watershed &amp; identify critical concerns</b>	<p>a) Designed, implemented, and evaluated a model for watershed assessment, tailored to our locality from methodology developed by the Center for Watershed Protection. (See Upper Thornton Study report on website)</p> <p>b) Delineated 13 subwatersheds within the Upper Thornton River watershed using GIS, based on topography. <a href="http://www.rappflow.org/my_watershed/upp_thornton/index.html">http://www.rappflow.org/my_watershed/upp_thornton/index.html</a></p> <p>c) Built and updated a comprehensive geographic information system (GIS) database for the county.</p> <p>d) Applied the data to Upper Thornton River watershed assessment and public information activities.</p> <p>e) Built “My Watershed” web site to make local subwatershed information accessible to public. <a href="http://www.rappflow.org/my_watershed/index.html">http://www.rappflow.org/my_watershed/index.html</a></p> <p>f) Developed, tested, and revised protocols and field manuals for monitoring water quality. <a href="http://www.rappflow.org/pdf/wqm-handbook2006.pdf">http://www.rappflow.org/pdf/wqm-handbook2006.pdf</a></p> <p>g) Developed, tested, and revised protocols and field manuals assessing riparian buffer vegetation. (URL buffer evaluation materials)</p> <p>h) Conducted field studies of streams, water quality, riparian buffers, and macroinvertebrates in two subwatersheds. <a href="http://www.rappflow.org/PDF/pilot_study_sharable_V9.pdf">http://www.rappflow.org/PDF/pilot_study_sharable_V9.pdf</a> ; <a href="http://www.rappflow.org/PDF/LowerRush_subwatershed_analysis_sept06.pdf">http://www.rappflow.org/PDF/LowerRush_subwatershed_analysis_sept06.pdf</a> ; <a href="http://www.rappflow.org/pdf/wqm-summary2006.pdf">http://www.rappflow.org/pdf/wqm-summary2006.pdf</a> ; <a href="http://www.rappflow.org/rush-river/rush_river_studies2006.html">http://www.rappflow.org/rush-river/rush_river_studies2006.html</a> WQ monitoring report)</p>
<b>4) Institutional &amp; regulatory framework</b>	<p>Identified and provided to stakeholders via email, articles, web, and meetings, information on:</p> <ul style="list-style-type: none"> <li>• Rappahannock River Basin Tributary Strategy;</li> <li>• Virginia Water Quality Improvement Fund;</li> <li>• DEQ permitting processes for sewage treatment plant discharge to streams;</li> <li>• Alternative uses for sewage treatment plant effluent;</li> <li>• DEQ water quality monitoring quality assurance requirements;</li> <li>• Tier III Exceptional State Waters;</li> <li>• TMDL studies;</li> <li>• E&amp;S ordinances,</li> <li>• Virginia cost-sharing BMP’s; conservation easements;</li> <li>• purchase of development rights;</li> </ul>

	<ul style="list-style-type: none"> <li>• input to sludge ordinance.</li> </ul>
<b>5) Set goals</b>	<ol style="list-style-type: none"> <li>a) Quantified goals for next phase of watershed protection efforts using Rappahannock River Basin Tributary Strategy input deck for 2010.</li> <li>b) Drafted goals and strategies for one selected subwatershed, the Lower Rush; continue to obtain landowner feedback and revise. <a href="http://www.rappflow.org/PDF/LowerRush_subwatershed_analysis_sept06.pdf">http://www.rappflow.org/PDF/LowerRush_subwatershed_analysis_sept06.pdf</a></li> </ol>
<b>6) Identify strategies, action plans</b>	<ol style="list-style-type: none"> <li>a) Coordinated with the CSWCD and NRCS for agricultural landowner outreach regarding BMP cost-sharing program participation.</li> <li>b) Coordinated with the CSWCD and county administrator to develop strategies and action plans. Rappahannock County will develop a local stormwater ordinance, enhance its erosion and sediment control program and identify county code changes that would support conservation efforts. Homeowners will be offered 50% matching funds for septic system clean out and repair and the public will be educated about septic system maintenance. Three areas of TMDL impairment will be targeted for the septic grants.</li> <li>c) Developed strategies for engaging non-agricultural landowners in best management practices to protect and restore vegetative riparian buffers. This program will be developed and implemented in the next phase of work.</li> <li>d) Developed plan for next phase of RappFLOW's strategic plan, which has been awarded a small watershed grant from the National Fish &amp; Wildlife Foundation.</li> </ol>
<b>7) Identify resource needs</b>	<ol style="list-style-type: none"> <li>a) Identified needs for monitoring water quality and stream flow.</li> <li>b) Worked with County to identify needs for building local government capacity for watershed protection.</li> <li>c) Identified data needs and sources for ongoing update of geospatial and other data relevant to watershed assessment, e.g. water quality, BMP implementations, conservation easements.</li> </ol>
<b>8) Provide progress benchmarks</b>	<ol style="list-style-type: none"> <li>a) Established baseline information on riparian buffer vegetation in Upper Thornton Watershed.</li> <li>b) Increase in best management practice acreage from 2004 to 2005 to 2006. In FY 04-05, the CSWCD recorded 1 new and 29 continuing CREP contracts protecting a total of 570.6 acres. In FY 05-06, the CSWCD recorded 5 new and 34 continuing CREP contracts protecting a total of 702.1 acres. As of early 2006, there were only 86 acres of stream buffers in the Lower Rush subwatershed protected through agricultural Best Management Practices implemented with support of the CREP program administered by the US Department of Agriculture. In the summer of 2006, Robert Haskell, owner of Pleasant View Farm in the Lower Rush subwatershed, began the implementation of BMP's funded through a combination of CREP and Virginia incentive programs. The farm is building 16,700 feet of fencing along the Rush River and its tributaries, and planting trees in 42 acres of riparian buffer area. This single project increases the percentage of forested stream buffer by about 12 percent in this subwatershed.</li> <li>c) The number of acres protected by conservation easements in Rappahannock County through the Virginia Outdoors Foundation increased from 21,619 at the end of 2004 to 24,659.5 at the end of 2005. We await the results for 2006 and expect there to be significant increase in 2006.</li> </ol>

Table 1: Project accomplishments in context of DCR local watershed management planning framework.

## **Lessons Learned**

Our primary intent in this project was to *“Integrate scientific, social, educational, economic, engineering, regulatory and political aspects of watershed management in ways that work for our people, topography, geology, cultures, land uses, land cover, economy and political processes; and utilize a rigorous scientific method which evaluates geospatial, biological, chemical, and physical data to characterize a stream and its subwatershed, then determines its vulnerability.”*

During this project we learned about, and made progress in documenting, separate dimensions of watershed assessment and management. We assembled and analyzed scientific data regarding our watersheds, and implemented a model for comparative assessment of the health of subwatersheds. We learned about the regulatory environments in which our locality and individual landowners operate. We identified metrics we can use to assess progress over time. We learned about values and understandings of our citizens and leaders.

We have just begun learning how to integrate these separate dimensions in ways that work for our situation in Rappahannock County at the headwaters of the Rappahannock River Basin.

One of the biggest challenges is to be prepared to address political, educational, and economic factors and opportunities as they arise, often with little advance warning. Issues of public interest related to watershed protection surface for varieties of reasons at times not adequately predicted or prepared for. Here are several examples of opportunities for watershed protection and community education that arose during the period of this project:

- The DEQ-led TMDL study for our 303d “impaired” streams was initiated by the agency in summer 2006;
- A Tier III exceptional waters proposal was initiated by a landowner in Culpeper County and that process took place over several months during 2005 and 2006;
- DEQ consideration of the Town of Washington’s application for permit to discharge effluent into an impaired stream from a proposed sewage treatment plant took place between late 2005 and into summer of 2006;
- An application by a biosolids corporation to apply sludge on a farm in the county arose without warning in fall 2006 after a Virginia state court decided in another case that a locality cannot ban sludge application;
- A county initiative to apply a small real estate tax to the purchase of development rights for conservation purposes was announced at the same time as greatly increased property value assessments were released and the public was up in arms about increases in property taxes.

The active, primarily conservation-minded public in our community quickly rose to each of these occasions and conducted research on the issues, attended meetings, and helped to educate others. Our Water Quality Advisory Committee becomes increasingly important in this self-education process. As we continue to apply and build upon the results of the current project county-wide, we seek additional ways to “be prepared” to make essential information and research readily accessible to the stakeholders who need the information in a timely, understandable and succinct way.

## ***Future Prospects for Watershed Protection and Improvement***

The overall outcomes in terms of future watershed protection are a combined function of the work of many organizations and individuals, in conjunction with state and federal legal and regulatory environment, and global and national economic environment.

- A very important factor in our watershed protection capability is local land use taxation. This policy contributes to maintenance of large parcels and slows down subdivision and development. Whether this local policy can be sustained politically will be greatly affected by our local options for seeking alternatives to real estate taxes as sources of local government income, which in turn is controlled by state policies and politics.
- The CREP (Conservation Resource Enhancement Program) administered by the NRCS is by far our most effective incentive for agricultural landowners applying best management practices on agricultural land. The future of that program is in the hands of the U.S. Congress in the national farm bill, and its future is unknown.

A critical test of our community's will to advance watershed health will come when the citizens and leaders must decide whether to implement the TMDL Implementation Plan that will be developed over the coming year.

Another test of our local community's commitment to public support for watershed protection will unfold as new and revised ordinances are proposed for stormwater management and protection of riparian buffer zones.

## ***Attachment A: Partner Organizations***

The following organizations supported this project (and watershed protection more generally) by providing technical assistance, training, data, financial support, physical facilities, equipment, GIS mapping, and other activities and resources.

- County of Rappahannock (John McCarthy, County Administrator)
- Culpeper Soil and Water Conservation District (Greg Wichelns, Manager; Monira Rifaat; Chairman of Board)
- Friends of the Rush River (Monira Rifaat, Elizabeth Haskell, Paul Farmer, Bev Hunter)
- Hazel River Task Force (Sally Mello)
- Master Naturalists (Jack and Sally Price)
- Mount Vernon Farm (Cliff Miller)
- Piedmont Environmental Council (PEC) (Don Loock, Chris Miller, Director)
- Piedmont Research Institute (Beverly Hunter)
- Rapp. County Conservation Alliance (RCCA)\* (Sharon Pierce, President)
- Rappahannock County Health Department (Medge Carter)
- Rappahannock County High School (Roger Mello, Principal; Ron Vickers, Teacher)
- Rappahannock County Planning Commission (Charley Strittmatter, Chairman)
- Rappahannock County Water Quality Advisory Committee (Reid Folsom, Chairman)
- Rappahannock League for Environmental Protection (RLEP) (Paul Farmer, President; Pam Owen, Biodiversity Task Force)
- Rappahannock Nonprofit Support Center (Melanie Jopanski, Executive Director)
- Rappahannock-Rapidan Regional Commission (Jeff Walker, Executive Director)
- Shenandoah National Park (James Atkinson, biologist; Dan Hurlbert, GIS director)
- Virginia Cooperative Extension (Kenner Love)
- Virginia DCR (Matt Criblez; May Sligh; Gina Beale)
- Virginia DEQ (James Beckley; Tom Faha; Tom Bryant)
- Virginia Department of Forestry (Mike Santucci, Madison office)
- Virginia Save Our Streams (VASOS)
- Virginia Water Resources Research Center, VA Tech Univ. (Alan Raflo)

## **Attachment B: Project Evaluation Form**

### **National Fish and Wildlife Foundation Project Evaluation Form**

Project Name and Number: People, land, and streams of the Upper Thornton River Watershed #2005-0001-039

Recipient: Rappahannock Friends and Lovers of Our Watershed (RappFLOW)

Project Location: Rappahannock County

#### **1) Were the specific objectives as outlined in your application and grant agreement successfully implemented and accomplished? Explain.**

Goals we stated in our proposal included the following:

- *Preserve, protect and restore the water quality in the Upper Thornton River subwatershed.* The project is contributing to this goal, which will be an ongoing effort.

- *Create, test, and evaluate an approach to community-based watershed assessment and planning for Rappahannock County that is applicable elsewhere in the Upper Rappahannock watershed.*

Several components of our approach and model assessment will next be applied county-wide.

- *Use the project findings to develop a management plan in one subwatershed of the Upper Thornton subwatershed;*

Landowners in the Lower Rush subwatershed, and other partners, are providing feedback on draft plan for that subwatershed, and the plan will be modified based on further feedback and disseminated over the next six months.

- *Design Phase III to complete assessments/management plans in other areas of Rappahannock County.*

With our partners, we designed the next phase (phase III) of work within our strategic plan and will be receiving partial support from the NFWF and fifteen partners.

- *Support local decision making regarding watershed protection for riparian lands.* This effort is now formalized in a project managed by the County government, and funded by Virginia's Water Quality Improvement Fund. RappFLOW assisted the county in writing the proposal for that project, named "Rappahannock Clean Streams."

This project also contributed to the formation of the County's Water Quality Advisory Committee, which plays an increasingly valued role in sharing information and informing issues of current concern to the county government.

- *Help citizens prepare for 1) future TMDL implementation processes in areas surrounding the five category 5 impaired stream segments identified by the Virginia Department of*

*Environmental Quality; 2) meeting goals in the Rappahannock Tributary Strategy; and 3) meeting the goals of the Chesapeake Bay 2000 agreement.*

All of these activities are underway at this time. Several local stakeholders are participating members of the TMDL Technical Advisory Committee. In addition, our work in this project is helping to inform the TMDL study.

*The objectives of the project were stated in our proposal to NFWF as follows:*

- *Integrate scientific, social, educational, economic, engineering, and political aspects of watershed management in ways that work for our people, topography, geology, cultures, land uses, land cover, economy and political processes; and utilize a rigorous scientific method which evaluates geospatial, biological, chemical, and physical data to characterize a stream and its subwatershed, then determines its vulnerability;*

This project addressed all these dimensions, and integrates them to varying degrees.

One of the biggest challenges is to establish capacity to address political, educational, and economic factors and opportunities as they arise, often with little advance warning. Issues of public interest related to watershed protection surface for varieties of reasons at times not predicted or prepared for. For example, the DEQ-led TMDL study for our impaired streams was initiated by the agency sooner than we expected; the Tier III exceptional waters proposal was initiated by a landowner in Culpeper County and the timetable for that process was controlled by the State Water Control Board; the timing of DEQ processing of the Town of Washington application for permit to discharge effluent from a sewage treatment plant is controlled by the DEQ; an application by a biosolids corporation to apply sludge on a farm in the county arose without warning after a Virginia state court decided in another case that a locality cannot ban sludge application; a county initiative to apply a small amount of real estate tax to the purchase of development rights for conservation purposes was announced at the same time as greatly increased property value assessments were released and the public was up in arms about increases in property taxes.

As we continue to apply and build upon the results of the current project county-wide, we seek additional ways to make essential information and research readily accessible to the stakeholders who need the information in a timely and succinct way.

- *Engage the full range of stakeholders, with support of local, state and regional government and other organizations;*

The high level of participation of a wide range of stakeholders in this county in watershed protection and conservation issues is remarkable, and has been noted, for example by the state water control board and other state agencies familiar with localities around the commonwealth. However the mechanisms for ongoing education of the public regarding these complex issues are limited, given only a weekly local newspaper, and no local radio or television stations to inform the public on a broad basis.

- *Train volunteers in scientifically rigorous methods of conducting assessments;*

The project partners developed and revised training materials and methods, recruited volunteers, researched and acquired equipment and supplies, organized training activities, and conducted training and practice and field activities. Topics of these trainings and approximate number of persons who participated in one or more of the sessions within each topic include the following:

1. Rapid watershed assessment (Center for Watershed Protection): 3 leaders  
[http://www.rappflow.org/press/press\\_wpi2005.html](http://www.rappflow.org/press/press_wpi2005.html)
2. GIS watershed mapping and spatial analysis (Piedmont Research Institute, RappFLOW, and Rappahannock County High School): 2 leaders; 2 interns; 8 high school students.
3. Stream and vegetative buffer assessment (Culpeper Soil & Water Conservation District and RappFLOW): 10 adults; 1 intern; 8 high school students.  
[http://www.rappflow.org/rush-river/rush\\_river\\_studies2006.html](http://www.rappflow.org/rush-river/rush_river_studies2006.html)
4. Macroinvertebrate monitoring (Culpeper Soil & Water Conservation District, VA Save Our Streams, and RappFLOW): 3 leaders; 30 adults
5. Water Quality Monitoring (VA DEQ, RappFLOW): 5 leaders; 10 other adults
6. May 31, 2005. Representatives from the Virginia Dept of Game & Inland Fisheries, the Shenandoah National Park, and volunteers from RappFLOW conducted a fish survey along the upper Thornton River. [Click here](#) for a photograph of this successful event!  
[Rappahannock News article 7/7/05](#)

- *Work with landowners/other stakeholders to analyze and understand the health and vulnerabilities in small watershed areas; present information to landowners/ stakeholders in ways useful for decision-making; and help landowners to decide upon and implement best management practices for improving our watersheds;*

During this project, we discovered several ways of accomplishing this objective. Primarily, we (RappFLOW and its partner organizations) get opportunities to work with landowners and stakeholders at times when they become actively engaged in an issue that involves or threatens their own interests. This has been the case with respect to 303d impaired streams, Hazel River nomination for Tier III exceptional waters protection, Rush River sewage discharge permit, sludge application ordinance, and the TMDL study.

In the next phase of work, we will be pro-actively reaching out to agricultural landowners through the soil & water district staff, to non-agricultural landowners through a riparian buffers assessment and protection initiative involving several partners, and with several partners continuing work to support landowners' decision to put their land in conservation easement.

- *Help Rappahannock County's governing bodies understand public policies and tools best suited to addressing our watershed's vulnerabilities;*
  - RappFLOW leaders and students made presentations to the County Board of Supervisors and the Planning Commission to report on findings and results of the Upper Thornton Watershed assessment and the survey of landowners.  
[http://www.rappflow.org/press/press\\_sept2005 airing\\_dirty\\_water.html](http://www.rappflow.org/press/press_sept2005 airing_dirty_water.html)
  - The county Water Quality Advisory Committee is another venue we use to learn and exchange information with county leaders involved in water and related watershed issues. (See link to the WQAC minutes on [www.rappflow.org](http://www.rappflow.org) )
  - With the county administrator, health department, and the CSWCD, we developed a plan to build county government's capacity to enforce erosion & sedimentation ordinances, draft a stormwater management ordinance, and several other initiatives, funded in part by the VA Water Quality Improvement Fund.

- *Evaluate the environmental, economic, and political effectiveness of our model approach.* Throughout this project, in coordination with several partners, we are creating quantitative baseline measures from which progress will be monitored in future years. These will include as a beginning, the following measures:
  - number of acres protected from subdivision and development through conservation easement;
  - number of riparian acres protected through cost-sharing best management practices;
  - water quality monitoring;
  - quantification of erosion and sedimentation control enforcement.
  - Ideas for additional measures are in various stages of development.

The number of acres protected by conservation easements in Rappahannock County through the Virginia Outdoors Foundation increased from 21,619 at the end of 2004 to 24,659.5 at the end of 2005. We await the results for 2006 and expect there to be significant increase in 2006.

Increase in best management practice acreage. In FY 04-05, the CSWCD recorded 1 new and 29 continuing CREP contracts protecting a total of 570.6 acres. In FY 05-06, the CSWCD recorded 5 new and 34 continuing CREP contracts protecting a total of 702.1 acres. As of early 2006, there were only 86 acres of stream buffers in the Lower Rush subwatershed protected through agricultural Best Management Practices implemented with support of the CREP program administered by the US Department of Agriculture. In the summer of 2006, Robert Haskell, owner of Pleasant View Farm in the Lower Rush subwatershed, began the implementation of BMP's funded through a combination of CREP and Virginia incentive programs. The farm is building 16,700 feet of fencing along the Rush River and its tributaries, and planting trees in 42 acres of riparian buffer area. This single project increases the percentage of forested stream buffer by about 12 percent in this subwatershed.

**2) Please assess project accomplishments as quantitatively as possible.**

Please see answers to evaluation questions 1 and 3, and also *Table 1: Project accomplishments in context of DCR local watershed management planning framework.*

**3) Assess the number of people reached through your work (e.g., landowners, students, organizations, agencies).**

- Organizations: Please see Attachment A to this report.
- Students: 30 high school students trained in GPS and GIS and 10 high school students additionally trained in stream and stream buffer observation and mapping of watershed.
- Landowners:
  - a. 165 landowners participated in project survey of their values, concerns and interests related to watershed protection.

- b. The project created for over 100 individual landowners, maps of their property and local watershed.
  - c. Three major landowners in three different subwatersheds have taken proactive role in assisting other neighboring large landowners in decisionmaking regarding best management practices.
  - d. Other indicators of landowner engagement are provided in the main section of this report, *Table 1: Project accomplishments in context of DCR local watershed management planning framework*.
- Volunteers: Over 150 volunteers contributed to this work through their involvement in monthly RappFLOW meetings, work sessions, trainings, field activities, issue-specific public participation, and other aspects of the work. Each of our nonprofit partner organizations, such as RLEP, RCCA, Krebsner Fund, PEC, involves many additional volunteers in various aspects of the watershed protection and conservation work.
  - Leaders: through presentations and briefings we reached the following community and conservation leaders (in addition to coordination with the leaders of our partner organizations.) 10 Directors of the 5-county Soil and Water Conservation District; 5 members of the county Board of Supervisors; 6 members of the Planning Commission;

**4) Were any surveys or interviews conducted with partners to help gauge the success of your efforts?**

Midway through this project, the project leaders discussed with a representative of each partner organization the future direction of this work and our respective roles in it. The outcome of those discussions took the form of letters of commitment from each partner regarding their roles for the next phase of work in this 5-year strategic planning effort.

**5) How will the project be evaluated in terms of monitoring or assessment of cause-and-effect response? Describe the evaluation timescale (e.g., one year, five years, ten years). How will monitoring results be reported?**

Please see the last item in our response to question 1 above.

The overall outcomes in terms of future watershed protection are a combined function of the work of many organizations and individuals, in conjunction with state and federal legal and regulatory environment, and global and national economic environment. Here are two examples:

- A very important factor in our watershed protection capability is local land use taxation which contributes to maintenance of large parcels and slows down subdivision and development. Whether this local policy can be sustained politically will be greatly affected by our local options for seeking alternatives to real estate taxes as sources of local government income, which in turn is controlled by state policies and politics.

- The CREP (Conservation Resource Enhancement Program) administered by the NRCS is our most effective incentive for agricultural landowners applying best management practices on our agricultural land. The future of that program is in the hands of the U.S. Congress in the national farm bill, and its future is unknown.
- 6) Does this project fit into a larger program, spatially or temporally? If so, how has that program benefited from your work? (For example, an easement or on-the-ground work that connects or benefits other protected properties.)**
- a) This project focuses primarily on the Upper Thornton River watershed, an area that represents about one third of the overall county area. The methods, models, and data used for this project we will apply to the entire county in the next phase of our work.
  - b) This project represents the second phase within a five-year strategic plan and watershed management planning process. The outcomes, products, and lessons learned from this project feed directly into the next phase of work. In the next phase, we will refine the watershed assessment model and apply it county-wide. We will apply metrics for measuring on-the-ground progress in protecting and restoring vegetative stream buffers and advancing the goals of the Rappahannock River Basin tributary strategy. We will contribute to development of strengthened language in the next revision of the County Comprehensive plan, and contribute to draft ordinances for protection of riparian buffer zones.
- 7) Does the project incorporate an adaptive management component? If so, please explain. Any lessons learned that will guide future implementation of this, or similar, projects?**

During the period of this project, several issues of major public interest provided unexpected opportunities to advance the overall mission of watershed protection. At first, we tended to view these events as “distractions” from our original plan of work and as challenges to our capacity to do our work. However, we soon adapted to a “strike while the iron is hot” approach. We now use these issues-driven situations (e.g. Tier III designation; sewage treatment plant permit; TMDL; sludge) to do the following:

- Learn about the issue and its potential significance to the public, through our participation on the county Water Quality Advisory Committee.
- Identify stakeholders in the issue.
- Engage and offer support to stakeholders who are willing to research the issues and produce information needed for public education and discourse.
- Join with partners to facilitate public awareness and education on the issues (regulatory, legal, scientific, technical).
- Prepare data, maps, briefings, news articles, updates on our web site, and other educational materials in response to stakeholders’ questions and concerns.

- Serve as a resource to the community by providing these materials in timely and relevant venues. Establish a section on rappflow's web site to make materials accessible to all parties.
- Recruit future volunteers from the pool of concerned citizens and landowners.

In the case of the Washington sewage treatment permit, we used the above process and learning to drive our subsequent subwatershed assessment in the Lower Rush subwatershed. (URL for draft report here)

In the case of the sludge issue, a RappFLOW volunteer who is an expert in watershed modeling is serving on the county's committee to write a sludge ordinance that will provide as rigorous of protection for water quality as the state will allow.

In the case of the TMDL study, six leaders among RappFLOW and partner organizations are serving on the Technical Advisory Committee established by the VA DEQ.

Except in the case of the Tier III protection for Exceptional State Waters issue, RappFLOW has not taken advocacy positions on issues of public debate. Rather, we play a scientific and educational role to help inform all involved. In the case of Tier III designation, RappFLOW volunteers unanimously decided that our mission requires us to publicly support such protective measures for our streams.

**8) Was there a local/regional/national response? Any media/press involvement?**

RappFLOW received a statewide award from Scenic Virginia for "Best Preservation of a Scenic River Corridor." 2005 [http://www.rappflow.org/about/scenic\\_virginia\\_award.html](http://www.rappflow.org/about/scenic_virginia_award.html)

Presentations made at the Virginia Natural Resources Leadership Institute in 2005

Six RappFLOW volunteers have coordinated with other watershed protection groups in the region through meetings of the Virginia Citizens for Water Quality (VCWQ) and Citizen Monitoring in the Mid-Atlantic.

[http://www.rappflow.org/about/meeting\\_vcwq.html](http://www.rappflow.org/about/meeting_vcwq.html)

State agencies including the DEQ, DCR, DOF, VOF, Ag Extension, and the Rappahannock-Rapidan Regional Consortium have provided many kinds of guidance, information, technical support, financial support, training, data, and materials.

RappFLOW is a member of the Orion Grassroots Network and the VA Citizens for Water Quality. The project director serves on the Forest Issues Working Group of the Virginia Conservation Network (VCN).

Please see (URL) for press articles related to this project and watershed protection in Rappahannock County.

**9) To what degree has this project contributed to the conservation community as a whole?**

It is too soon to make that evaluation. The intent is to achieve greater synergies from the numerous separate conservation efforts underway, through a shared focus on watersheds and by providing an integrative watershed-based framework for all conservation efforts.

**10) Did your work bring in additional partners, more landowners, et cetera, who would be interested in doing similar work on their land in the future? If so, please describe.**

Yes. See responses to other questions for examples.

**11) Do you have any suggestions for NFWF to guide improvement of our project administration?**

Require fewer, less complicated reports and forms.  
Acknowledge receipt of reports and correspondence.