

People, Land and Streams in the Upper Thornton River Watershed

Project Brief August 6, 2005

The National Fish and Wildlife Foundation (NFWF) announced award of a small watershed protection grant to RappFLOW (Rappahannock Friends and Lovers of Our Watershed), a grassroots watershed group in Rappahannock County, Virginia. The grant will help the Rappahannock community to develop and implement a model watershed management plan. The project combines analytic and scientific methods with broad stakeholder participation, individual landowner responsibility for land management, and close coordination with local government and other natural resources agencies. The grant from NFWF will help our community to improve water quality protection tools to meet the goals of the Rappahannock Tributary Strategy and the local County Comprehensive Plan. We will leverage financial and in-kind support from thirteen organizations and many individuals to complete a pilot watershed plan. Our methodology and model will provide the foundation for watershed planning not just for Rappahannock County, but for partner groups working across the upper Rappahannock watershed. 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.

Final products – Outcomes to be achieved by October 2006 will include the following:

- a comprehensive geographic information system database for the Upper Thornton River watershed;
- field and desktop assessments of the current and future vulnerability of subwatersheds, using methodology from the Center for Watershed Protection;
- in-depth assessment of one or two subwatersheds for a pilot project;
- a management plan for the selected subwatersheds including land owner decisions;
- a community-based, volunteer-driven assessment process;
- training of volunteers who learn the scientific methodology to support the first and subsequent assessments in the County and surrounding areas;
- small, neighborhood stakeholder meetings to obtain local knowledge and interests;
- two education and outreach events for the general public in Rappahannock and surrounding counties;
- at least three projects that protect or enhance water quality through voluntary landowner actions;
- coordination through Rappahannock County's Water Quality Advisory Committee;
- a plan for evaluating final outcomes;
- a plan for county-wide watershed assessment in the next phase of this work; and
- dissemination of the model to local community, partners, and agencies and watershed protection groups in the Upper Rappahannock watershed.

Need

In 2004, community members identified the following issues as central to future watershed management and water quality protection:

- Lack of detailed data on water quality and related land cover/land use in a usable form to support landowner/local leader decision-making on watershed assessment and water-related priorities.
- Increasing fragmentation of land holdings, land cover and land use due to development, gentrification, and shifts in agricultural economics and practices.
- Need for additional landowner awareness and education regarding best management practices and associated cost sharing programs such as CREP.
- Need for deeper awareness/understanding among citizens and civic leaders of watershed and water quality concepts, facts, and issues. "People see our streams as clean and plentiful."
- Need for stronger and more detailed implementation of the policies and principles of the Rappahannock County Comprehensive Plan and enforcement of existing ordinances.

RappFLOW organizers worked in the fall and winter of 2004 to prioritize and decide how to meet these needs. We undertook a Pilot Study in spring 2005 of a small area just below Sperryville. We tested watershed assessment procedures while investigating the sources of stream impairment that the Virginia Department of Environmental Quality had identified on the Thornton River. That pilot study culminated in the identification of key land owners, and ongoing discussions between those land owners and the National Resource Conservation Services (NRCS) concerning best management practices and cost-sharing programs to assist in implementing those practices.

Goals and Objectives

The long-term goals of this work are broad public awareness and understanding of watershed protection needs and opportunities; and the incorporation of watershed management plans in the 2009 revision of the County's Comprehensive Plan. In addition, the project will address the goals of the Rappahannock Tributary Strategy. The Rappahannock River Basin Commission recognizes that although the river was long considered one of the cleanest rivers on the East Coast, it now suffers from significant degradations in water quality. From a biological standpoint, the Rappahannock River is now considered the most degraded of the three lower Chesapeake Bay tributaries. Steep slopes in the upper basin make soil and nutrients susceptible to erosion. Among the Rappahannock Tributary Strategy goals for improving water quality and habitat by the year 2010 are:

- reduction in nutrient and sediment loading,
- addressing chronic erosion and stream bank instability and
- implementing the Conservation Reserve Enhancement Program (CREP) basin-wide.

Our goals for this current project are to:

- Preserve, protect and restore the water quality in the Upper Thornton River watershed.
- 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.
- Use the project findings to develop a management plan in selected subwatersheds of the Upper Thornton subwatershed;
- Design assessments/management plans in other areas of Rappahannock County.
- Support local decision making regarding watershed protection for riparian lands.
- Help citizens prepare for future TMDL implementation processes in areas surrounding the category 5 impaired stream segments identified by the Virginia Department of Environmental Quality
- 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
- Engage the full range of stakeholders, with support of local, state and regional government and other organizations; and train volunteers in scientifically rigorous methods of conducting such assessments;
- 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;
- Help Rappahannock County's governing bodies understand public policies and tools best suited to addressing our watershed's vulnerabilities; and
- Evaluate the environmental, economic, and political effectiveness of our approach.

The project will address specific commitments in the *Chesapeake 2000 Agreement*:

- 1) Preserve, protect, and restore those habitats and natural areas that are vital to the survival and diversity of the living resources of the Bay and its rivers;
- 2) Achieve and maintain the water quality necessary to support the aquatic living resources of the Bay and its tributaries and to protect human health;
- 3) Develop, promote, and achieve sound land use practices which protect and restore watershed resources and water quality, maintain reduced pollutant loadings for the Bay and its tributaries, and restore and

preserve aquatic living resources; and

4) Promote individual stewardship and assist individuals, community-based organizations, businesses, local governments, and schools to undertake initiatives to achieve the goals and commitments of the agreement.

Criteria for Choosing the Upper Thornton River watershed for Study in Phase II

In the winter of 2004, RappFLOW chose the Upper Thornton River watershed (hydrologic unit), an area of approximately 93 square miles, as its main study area for the project. The following criteria helped identify that area:

- Includes properties owned by large land owners and is undergoing changes in land use
- Represents a mix of land uses (varied vegetative cover types, forestal, agriculture, residential, commercial)
- Includes two Rappahannock County impaired water segments as designated by the VA Department of Environmental Quality (DEQ)
- Contains 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 (helpful for management planning)
- Includes the Shenandoah National Park, one of our key watershed protection assets
- Represents a topographic mix from steep slopes to flood plains.
- Includes the Sperryville sewage treatment plant and a planned sewage treatment facility for the town of Washington

Methodology

We are following guidance for education, outreach and community involvement from the book published in 2004 by VA-DCR entitled *Local Watershed Management Planning in Virginia: A Community Water Quality Approach*. For the environmental inventory, data analysis, and goal setting, we will adapt, test, and evaluate methodologies that have been previously tested and documented by the Center for Watershed Protection (CWP). The following are the major tasks to be accomplished.

Task 1. Upper Thornton watershed analysis to determine which subwatersheds are most at risk. We apply computer-based spatial analysis techniques using digital data for our study area to quantify factors such as streamside vegetative buffers and topography. We prepare maps to communicate these factors to study participants and general public. We delineate subwatershed areas; characterize the biological, chemical, and physical environment using indicators such as: stream flow; current and future stream quality from a water chemistry profile; composition and diversity of aquatic community; streamside vegetative community (canopy cover); erosion potential; percent forest cover percentages; habitat potential; rare, threatened or endangered species; estimates of future impervious and erosion-prone surfaces such as new roads due to development build-out under current zoning; topography; and wetland types and approximate acreage.

We will use this information to rank the subwatersheds. The ranking system will assign favorable points based on a high fraction of forest cover, high coverage of land protected by the Shenandoah National Park and conservation easements, extensive streamside forest cover, and large parcel sizes. Unfavorable points are based on designated impaired waters, water quality violations, unusual non-point source areas, septic and animal density, bacteria level, and high animal bacteria density. We will use the net favorable point score to determine the Subwatershed Risk Point total for each subwatershed and to identify most vulnerable areas for more detailed study.

Task 2. Engage Key Watershed Stakeholders

Local landowners in the selected subwatersheds will be encouraged to participate by providing their local knowledge of the streams and land uses. The Culpeper Soil & Water Conservation District and the USDA NRCS will provide expert staff at small local group meetings. The group will solicit public input to select subwatersheds for the demonstration management plan. This process will be driven by DCR's *Local Watershed Management Guide* referenced above.

Task 3. Assess Current Watershed Protection Capability in Rappahannock County

The study team will review current land use planning, land conservation, buffers, better site design, erosion and sediment control, storm water management, non-storm water discharges and watershed education, and conduct a critical review of these programs in conjunction with county officials and the Water Quality Advisory Committee.

Task 4. Watershed Analysis in Priority Subwatershed(s)

RappFLOW and the land owners and other stakeholders in selected subwatershed areas will undertake a detailed assessment of land use, land cover, stream conditions, point sources, and priority conservation areas. In addition to expert partners and trained volunteers, students from public, private schools, and home-schooled students and teachers will participate. This will include: 1) a conservation area assessment to inventory/map major conservation areas; 2) build-out analysis based on current zoning, with scenarios based on alternative future land use change and especially construction of new private roads; 3) a Stream Assessment, to include a survey of the headwater streams using the Rapid Stream Assessment Technique (RSAT) to measure factors that can help to identify locations and designs for riparian reforestation, stream restoration, and bank stabilization; and 4) create a report and maps documenting results and assessments.

Task 5. Conduct Small Watershed Planning in Priority Subwatersheds

We will lead the community through the development of the plan, in consultation with local government and agencies, and with the participation of land owners and other watershed stakeholders. CSWCD and NRCS staff will work individually with landowners. The plan will include a map that illustrates to the extent that it is economically/politically feasible the proposed land use plan for the subwatershed, conservation areas boundaries, stream buffers, reforestation areas, and other management actions. Recommendations will be made with respect to more protective criteria including land conservation, better site design, erosion/sediment control, storm water treatment practices, septic systems and landowner stewardship. The plan will include draft overlay districts and ordinances.

Task 6: Evaluation

Results will be measured in the following ways:

- Quantitative evaluation, including: number of acres of riparian lands protected, through implementation of BMPs, conservation easements, etc.; number of landowners participating in open meetings at the subhydrogeologic unit level; number of landowners initiating contact with RappFLOW and its partner organizations; number of public meetings in Rappahannock County held to discuss water quality issues; number of citizens attending RappFLOW community events.
- Plans for ongoing monitoring and evaluation of water quality changes in the study area.
- We will consider whether final products/outcomes are completed, including all those mentioned in the abstract of this proposal.
- Because this is a community-based project, we will provide an open forum for the citizens of Rappahannock to provide feedback. We will publicize this opportunity county-wide. RappFLOW's website will provide an ideal spot to collect information in the form of general e-mail, or use of a standardized feedback form. This feedback opportunity will be publicized at each event, training, or gathering. It will also be publicized in articles submitted by RappFLOW to the local media.
- Because this is a long-term, volunteer-based effort, we will want to hear from volunteers about how well they are trained, and whether the training excited them about participation in the planning process. RappFLOW will develop a questionnaire for volunteers to glean feedback after trainings, and will use information gained to assess how volunteers are recruited, and how they are trained. Coordinators will produce a similar questionnaire for use following volunteer work in the field.

Task 7: Dissemination –We will do the following from the beginning of the project:

- establish a formal advisory committee that represents diverse interests and knowledge;
- expand and maintain current website and publish all materials/data;
- provide quarterly updates of progress to the Board of Supervisors and/or Planning Commission;

- provide status reports at each meeting of the county's Water Quality Advisory Committee;
- submit articles on water issues and assessment findings to the press to help shape discussion;
- involve the community in assessment/demonstration plan development;
- invite representatives of groups in Rappahannock and surrounding counties with a stake in watershed protection to participate in trainings/outreach events;
- complete/distribute summary of project findings/methodology/replicability for partners and other groups in surrounding areas.

Challenges

Based on experience to date, we expect the following to be major challenges in conducting this project:

- Recruiting and coordinating the work of volunteers. This community has amazingly talented and generous people who will contribute ideas and time to the project. It is a full time job to recruit, train, sustain, and coordinate their efforts.
- Supporting land owner decision making over time. Land owners and land managers take into account many factors in deciding to make changes in their land use and management. This process must be supported and sustained over time through efforts of specially qualified individuals.
- Facilitating public understanding in which all stakeholders listen to and learn from others' interests and perspectives in a spirit of mutual problem solving to create "higher ground" solutions.
- Understanding and taking into account the federal, state, and regional regulatory and strategy requirements and funding possibilities that affect local planning and decision making.

Partners

The following organizations and individuals provided written commitments of support for this project:

RappFLOW with the County as fiscal agent. **Hearthstone School, Rappahannock High School.**

Participation in field assessments, coordinated by Jill Keihn. See letters from Hearthstone and Beth Gall, Rappahannock High School Environmental Science Teacher. Beverly Hunter helped establish a new GIS class at Rappahannock High School, GIS students gather and map field data.

Shenandoah National Park - will share data with RappFLOW and provide peer review.

Rappahannock County Health Department - involvement in events as they relate to public health, volunteer support. **Culpeper Soil and Water Conservation District**- project peer review, support for CREP and BMP consultation and implementation, assistance in education and outreach, and consultation for leadership and direction. **USDA Natural Resource Conservation Service**- project peer review, support for CREP and BMP consultation and implementation for farmers, assistance in education and outreach, and consultation for leadership and direction. **Virginia Department of Forestry** - education and outreach, expertise and consultation in forest management planning. **Virginia DCR –minigrant funding**; education and outreach, peer review, and guidance on watershed management planning. **Virginia Agricultural Extension (local office)** – guidance on targeted landowner outreach, particularly in agriculture.

Rappahannock-Rapidan Regional Commission - funding support and consultation for leadership and direction. **Piedmont Environmental Council (PEC)** - core volunteers, communications, conservation outreach, and expertise from watershed management planning. **Piedmont Research Institute** - core volunteer support, mapping, GIS assessment and analysis, and website development. **Rappahannock League for Environmental Protection (RLEP)** - *cash cost sharing*, core volunteers, event planning. **Targeted Learning Corporation; Mount Vernon Farm; Krebsler Fund; Rural Madison; Rappahannock County Conservation Alliance (RCCA).**

For more information about this work, please visit www.rappflow.org or contact mail@rappflow.org or Beverly Hunter at (540) 937-4038.