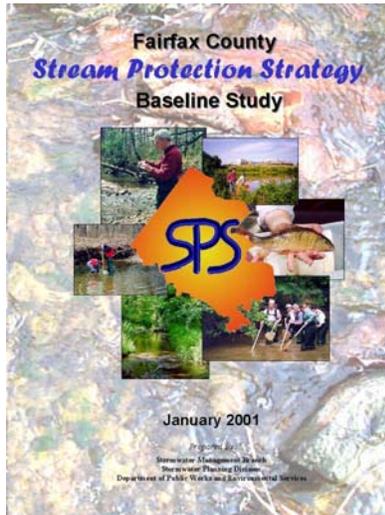


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monitoring was instituted in the spring of 1999. The results from the original baseline assessment (completed in 2000) were used to identify, rank and prioritize County streams, and broad management categories and strategies were subsequently developed for future restoration and/or preservation efforts on a sub-watershed basis. The baseline data is being used as part of a long-term database as well as to guide future management activities, especially as they relate to the development and implementation of Watershed Management Plans. Publication of the baseline report occurred in January 2001, and the entire document was subsequently made available to the public on the County's web site.



http://www.fairfaxcounty.gov/DPWES/environmental/SPS_Main.htm

For much of 2003, the SPS Program and its team members were involved extensively in the surveying and mapping of all perennial streams in Fairfax County as a part of the effort to comply with the new Chesapeake Bay Regulations regarding streams with perennial flow. With the aid of two outside, consultant groups as well as FCPA staff, the team was able to complete all field mapping by the end of October, 2003. During the next month, the team was entering all field data into the database and creating the maps which would ultimately be used as the Chesapeake Bay Preservation Area Guidance Maps. Because of this special project, biological monitoring only occurred on a reduced scale during 2003. However, sampling of benthic macroinvertebrate of reference sites in Prince William Forest National Park was completed. In addition, benthic sampling in the Popes Head Creek watershed was also completed as part of an effort to establish a baseline for benthic macroinvertebrates in this area. This was initiated because stream segments of this watershed are listed on the TMDL List for Benthic Impairment.

A program of long-term monitoring now samples approximately 20% of the County annually. Sampling efforts at all locations are identical to those made during the baseline study, and involve detailed field and laboratory examinations of living stream communities (benthic macroinvertebrates and fish), an assessment of in-stream and riparian zone habitat characteristics, and spatial analyses of land use patterns countywide.

Other ongoing SPS program activities include:



Figure 32. SPS Team sorting benthic macroinvertebrate samples in the field.

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- Conducting a quality assurance/quality control (QA/QC) survey on the perennial stream data and then updating the maps with any necessary changes.
- Collaborating with George Mason University in an US-EPA jointly-funded assessment of wetlands within Fairfax County, with a special emphasis on their relative degree of correspondence with National Wetland Inventory (NWI) maps.
- Assisting U.S. Geologic Service staff in sample collection and discharge assessment in an ongoing fecal coliform source tracking study within the Accotink Creek watershed.
- Cooperation with citizen groups such as Audubon Naturalist Society and the Northern Virginia Soil and Water Conservation District in training and educating citizens in volunteer stream monitoring and the subsequent incorporation of this data into the County database on results of stream assessments.

In an effort to better integrate County stream monitoring efforts, the water quality assessment program previously directed by the Health Department was transferred to SWPD in 2003. The transfer of responsibilities allows for a more efficient use of County resources, as well as better integration of watershed management decisions and recommendations. The information collected will be made available to Health Department staff for inclusion in their own annual reports on stream quality as it relates to human health.

a.12.f) Floatable Monitoring Program

Fairfax County's Floatable Monitoring Program has in the past been met through the Adopt-A-Stream Program. The County's Adopt-A Stream program promotes stream awareness and public reporting of illicit discharges and was until July 2003 administered through the Health Department. DPWES is currently answering stream related inquiries that deal with watershed problems and specific question about the SPS program and perennial stream study. Inquiries regarding sanitary sewer breaks, fish kills and hazardous material discharges are referred to other county agencies.

The County is an active participant in Virginia's DCR Adopt-A-Stream Program through which County's Stormwater Management Branch (DPWES) has adopted a 1.5 mile section of stream in the headwaters of Difficult Run, which they have been cleaning up since the fall of 1999.

During 2003 the program expanded to include the determination of the quantity of floatables collected by the numerous clean-up groups within the County. A list of all the DCR sponsored Adopt-A-Stream organizations in Fairfax County was obtained from DCR, a survey questionnaire was developed and contact was made with all the organizations collecting the following information: Organization name and contact; Stream name and location; Clean-up dates; and Quantity and description of floatables collected. This information was put into a database. The draft floatables study is presented in *Appendix T.*

a.13) Other Monitoring Activities

Northern Virginia Soil and Water Conservation District Volunteer Stream Monitoring Program

Across Fairfax County, Northern Virginia Soil and Water Conservation District's (NVSWCD) trained volunteers assess the ecological health of streams. This Volunteer Stream Monitoring Program provides training, equipment, support, data processing, and quality control (See Program Overview, [*Appendix U*](#)). Monitoring includes biological and chemical aspects, and a habitat assessment. Volunteers are trained to assess ecological conditions in streams, based on the diversity and composition of benthic macroinvertebrates (stream insects). They conduct biological monitoring following the modified Save Our Streams Protocol. Volunteers also conduct chemical analysis of turbidity and nitrate/nitrite and make physical observations. Training includes indoor and field workshops and mentoring by experienced monitors. Volunteers commit to monitoring their chosen stream four times a year or assist other monitors at their sites. Sites are located throughout the County and in the City of Fairfax. Certified data is forwarded to Fairfax County, Department of Environmental Quality, Virginia Save Our Streams, and interested organizations or individuals. In addition to learning about stream monitoring, many volunteers also become involved in watershed groups, clean-up programs, and educational programs. NVSWCD works with many organizations to coordinate and lead additional watershed-based learning opportunities for citizens and students to help them become better environmental stewards. NVSWCD also provides guidance for science projects and internships.

NVSWCD's Volunteer Stream Monitoring Program supplements the SPS program as well as provides other services to the environmental community in Fairfax County. In addition to providing monitoring data, NVSWCD also provides training sessions for monitors, conducts special programs at schools, makes presentations at environmental conferences and for civic associations, sponsors tours, hosts a list serve, and publishes a newsletter. Many programs are enhanced by partnerships with other groups in the County government and private environmental organizations. NVSWCD staff assists a variety of citizen watershed groups by providing administrative and technical support. These groups include: Difficult Run Community Conservancy, Friends of Little Rocky Run, Fairfax Trails and Streams, Friends of Cub Run, and Friends of Sugarland Run.

In 2003, NVSWCD led fifty-four stream monitoring training sessions or watershed programs, with over 1700 participants. (Note: The same person can attend multiple programs and therefore is counted multiple times. 1700 accounts for each attendee not for 1700 different individuals). Watershed programs include: indoor stream ecology program at schools, presentations to civic groups, table displays at environmental programs, tours of water and sewage treatment plants, watershed walks, and stream clean-ups.

The numbers of active monitors is steadily increasing. In 2003, 30 sites were monitored in the winter, 35 were monitored in the spring, 55 sites were monitored in the summer, and 38 sites were monitored in the fall. 65 monitors collected winter data, 95 monitors collected spring data, 107 monitors collected summer data, and 127 monitors collected fall data. Approximately 225 students were introduced to stream monitoring through indoor workshops at schools, outdoor special programs, and science fair projects. During 2003, volunteers logged over 3705 Earth Team hours. The Earth Team is a national program of the Natural Resources Conservation Service. It tracks volunteer time.

The Northern Virginia Soil and Water Conservation District sponsored teams from James Madison High School and Hidden Pond Nature Center in the Virginia Envirothon, a natural resources competition for high school students. Participants learn about stewardship and management concepts and work to solve

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real and hypothetical environmental problems. The program is field-oriented and gives students an opportunity to work with natural resource professionals in the areas of aquatics, forestry, soils, and wildlife.

Newsletters and calendars are sent to about 500 people and forwarded to hundreds more, a very effective way to reach large numbers of existing and potential monitors. Several newsletters are available for downloading from the monitoring websites. The monitoring web addresses are below:

<http://www.fairfaxcounty.gov/nvswcd/monitoring.htm>

<http://mason.gmu.edu/%7Ejarcisze/StreamMonitoring/index.html>

In 2003, partners included: George Mason University's New Century College, Arlington County's Environmental Services Department, Reston Association, Stream Protection Strategy – Department of Environmental Services and Public Works, Lake Accotink Park – Upper Accotink Creek Watershed Education Program, Riverbend Park, National Park Service - George Washington Memorial Parkway, Alexandria Seaport Foundation, Eleanor C. Lawrence Park, George Mason University's Hemlock Overlook Center for Outdoor Education, and Hidden Oaks Nature Center. The Stream Monitoring Program worked with the following schools: Woodson High School, Lee High School, G.C. Marshall High School, Fairfax High School, T.C. Williams High School, Robinson High School, and Flint Hill School – Upper School. In 2003, NVSWCD continued its strong partnership with GMU's New Century College, introducing over 150 college students to monitoring, and involving them in stream restoration and clean-up projects.

NVSWCD continues to distribute *A Volunteer Partnership, Working with Citizens to Improve our Streams*. The brochure was developed by DPWES and NVSWCD to inform citizens about the Stream Protection Strategy study and ways they can become involved through stream monitoring and adopt-a-stream programs.

The Potomac Conservancy

The Potomac Conservancy has an active program of visually monitoring the Potomac River, including monitoring by volunteers in canoes and small boats and sponsors cleanups of stream segments in Difficult Run, Sugarland Run, Pimmit Run, and the Potomac River. More information is available at their web address:

<http://www.potomac.org>

Fairfax Trails & Streams

In 2003, Fairfax Trails & Streams, a volunteer group formed primarily to work on the Pimmit Run and Cross-County Trails, conducted their annual spring clean-up of Pimmit Run, continue to lobby against inappropriate development in the Pimmit watershed, publicize guidance for homeowners on proper stewardship of backyard streambanks, and direct press attention to discharge of toxic material into a Pimmit tributary. In 2002 they published a historical/environmental map of the Pimmit Run watershed. More information is available at their web address:

<http://www.fairfaxtrails.org>

a.14) Other Water Quality Enhancement Measures

South Van Dorn Street Extension

Fairfax County has acquired approximately 102 acres of undeveloped land between Hayfield Farm subdivision and Dogue Creek. This is one of the conditions of the U. S. Army Corps of Engineers permit to allow the extension of South Van Dorn Street to Telegraph Road. The construction of South Van Dorn Street will disturb existing wetlands which are under Corps of Engineers jurisdiction. The acquisition of the 102 acres will partially compensate for the loss of wetlands caused by the South Van Dorn Street construction by preserving the 102 acres in its natural state in perpetuity. The 102 acres is composed of approximately 59 acres of natural wetlands and 90 acres of floodplain. There are also about 12 acres of property above the floodplain, some of which could have been developed. The developable property would have been accessed off the end of Helmsdale Lane. This threat of development has been eliminated by the County's acquisition of the 102 acres. The property will be transferred over to the Fairfax County Park Authority to be added to Huntley Meadows Park.

Water quality improvements were also provided as part of the permit conditions. Improvements were made to six stormwater management ponds on Greendale Golf Course by dredging to extend the capacity and providing new outlet structures. A new extended dry pond, DC 106 was constructed adjacent to South Van Dorn Street. The stormwater management improvements were designed to provide an annual phosphorus removal efficiency of 50%. A monitoring and maintenance program is being provided for a period of ten years.

Roadway construction on the extension of South Van Dorn Street is by the developer of Kingstowne and started in September 2002. Construction was delayed due to wet weather during 2003. Completion is anticipated in summer 2004.

Fairfax County Park Authority

Fairfax County Park Authority (FCPA) sponsored and organized clean up days in Stream Valley Parks, drawing many citizens into the creeks and woods and providing excellent learning opportunities as well as removing over 60 bags of trash. FCPS cooperated with citizen groups looking for places to plant or enhance riparian buffers.

The silted in stock pond at Mason District Park was converted into a half acre Best Management Practice facility with the capacity to control the 1.5 year storm event runoff from the densely developed 60+ acre watershed. This facility includes vegetated wetland benches along the pond edges and along the inflow channel, a forebay to remove sedimentation and road sand. In addition educational displays are planned for installation along the boardwalk and trails surrounding this functional amenity. FCPA supplied the following photos in **Figures 33 to 37**. A number of FCPA construction projects included the use of innovative Storm Water Management (SWM) practices such as raingardens, wetlands, Delaware Sand filters and the creation of a Conservation Easements.

Several Resource Management sites participate in the county stream quality monitoring program directly, as well as through training and sponsoring citizen volunteer monitors. FCPA staff also participated in the Resource Protection Area mapping project related to the revised Chapter 118 regulations.



Figure 33. Old Park Authority Property Pond which was silted in, full of debris, and causing erosion downstream



Figure 34. Up close photo of the old pond, notice the bank erosion, trash, and overall, unattractive appearance.



Figure 35. New Forebay Area containing recently planted trees. A forebay traps litter and sediments before they reach the pond.



Figure 36. New boardwalk that crosses channel from forebay to pond to allow visitors to cross channel without getting wet.



Figure 37. New Pond with graded banks, as seen on Sept. 5, 2003. At this point, the crews have graded about $\frac{3}{4}$ of the pond's edge.

Northern Virginia Soil and Water Conservation District

The old farm pond at Mason District Park on Columbia Pike is getting a major face lift. Construction began in January 2003. The new pond design will help control stormwater runoff from the 56 acres of drainage area above it, resulting in reduced pollution and downstream erosion. In 1998 the voters of Fairfax County approved a Park Authority Bond Referendum that included a pond renovation project for the Mason District Park. The goals of this project were to replace the existing pond outlet structure and

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construct amenities to compliment the pond, making it more of a focal point for the park. Further scrutiny of the pond by the Park Authority found that the dam and outlet structure needed significant structural repairs beyond those originally anticipated. When funds originally allocated for an erosion control project became available, there was a sufficient amount to reconstruct the dam and outlet structure, convert the pond into a BMP facility, and still beautify the pond area. NVSWCD is documenting the project for the Fairfax County Park Authority and the Mason District. An article about the project and pictures of the step-by-step construction can be viewed at the following web sites:

<http://www.fairfaxcounty.gov/nvswcd/newsletter/masonpark.htm>

<http://www.fairfaxcounty.gov/nvswcd/newsletter/masonpond1.htm>

NVSWCD's annual seedling program emphasizes the role of vegetation in preventing erosion, conserving energy, and decreasing and filtering stormwater runoff. Besides being aesthetically pleasing, trees and shrubs, particularly those planted in and near riparian areas, help to protect stream water quality and channel stability. In 2003, 6,068 tree and shrub native plant seedlings, mostly in 412 packages of 14 seedlings each, were sold to citizens at a small cost.

NVSWCD continues to expand its reach with a home page that is part of Fairfax County's Internet site. The site gets 5,000-6,000 visitors each month and is credited with increasing the county's environmental presence on the web. By the end of 2003 there were 156 "pages" online. NVSWCD is a member of the DPWES web team and participated in the creation of an Environmental Channels page to enable citizens to find environmental services and resources more easily. NVSWCD web address is as follows:

<http://www.fairfaxcounty.gov/nvswcd>

NVSWCD published and circulated *Conservation Currents*, an eight-page newsletter, five times in 2003. In addition to the printed newsletter, NVSWCD distributes the newsletter via e-mail upon request and posts the articles on its web page. The most visited articles on the web included: Building a Farm or Amenity Pond; Green Roof at Yorktowne Square; Stormwater Pond Construction at Mason District Park; Looking Out for Poison Ivy, and Controlling English Ivy. Other topics included Perennial Stream Mapping, Fall Lawn Care, Identifying and Preventing Nonpoint Source Pollution; Managing Soil, Not Turf; Polymers as Erosion and Sediment Control Tools; and the Fairfax County Soil Survey. See **Appendix V** for the 2003 *Conservation Currents* issues.

In 2003, the NVSWCD web site and the *Conservation Currents* newsletter each won a first place award in the National Association of Conservation Districts Outreach Awards program. There are 3,000 conservation districts nation-wide.

More than 3705 Earth Team volunteer hours were logged by citizens doing stream monitoring, tree plantings, and stream cleanups, participating in a program to control the geese population, helping with seedling programs and seminars, and engaging in regional and state environmental efforts. Earth Team is a USDA-Natural Resources Conservation Service program coordinated by NVSWCD.

The Virginia Agricultural BMP Cost-Share program, administered locally by NVSWCD, provides up to 75% of the funding for approved agricultural practices that protect and improve water quality. In 2003, one manure waste storage structure was installed for a horse-keeping operation. This will prevent the manure from becoming part of stormwater runoff to nearby streams and the composted material will be used to help improve pastures. The landowner received \$5,890 to install this structure.

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Yorktowne Square, a condominium community in Fairfax County, in partnership with Eco-Stewards Alliance, has installed a green roof. This vegetated roofing system demonstrates an innovative way of managing stormwater runoff. Instead of increasing impervious surface like a conventional roof, a “green” roof can absorb up to 70% of stormwater, which is similar to the absorption rate of a healthy, aerated lawn. The 4,200 square foot roof is planted with three varieties of sedum plugs, all common to the mid-Atlantic region. The plants intercept and delay rainfall runoff and the peak flow rate, reducing the erosive potential of stormwater and eventually returning water to the surrounding atmosphere by evaporation and transpiration. Two grants, from the Virginia Department of Conservation and Recreation and the National Fish and Wildlife Foundation, helped to fund this project.

Virginia Department of Forestry

The Virginia Department of Forestry (VDOF) in 2003 worked with volunteers from organizations such as the Chesapeake Bay Foundation, Difficult Run Community Conservancy, 4-H Clubs and Potomac Conservancy, to plant approximately 2000 seedlings along 1300 linear feet of stream corridors. The protection of forest cover and water quality are both promoted in the Agricultural and Forestal management plans.

Stream bank stabilization projects took place in Difficult Run watershed on the Difficult Run mainstem in Oakton and Snake Den Branch in Reston. For the two stream bank stabilization projects VDOF partnered with Fairfax County Department of Public Works-Stormwater Management Division and Northern Virginia Soil and Water Conservation District. The purpose of the projects was the reduction of erosion for the protection of infrastructure and sediment reduction for the Chesapeake Bay watershed. Approximately 1000 linear feet of stream bank was stabilized using natural materials: root wads, coconut fiber matting, and vegetation and instream structures.

The Virginia Department of Forestry assists Fairfax County with the Agricultural and Forestal District Program. This program is aimed at tax incentives for landowners with 20 acres or more of land in agricultural and forest management. Stream management zones are particularly noted on these plans and efforts are made to include buffers from the agricultural uses. The protection of forest cover and water quality are both promoted in the Agricultural and Forestal management plans. Each year DOF personnel review approximately 12 such plans.

Reston Association

The Reston Association (RA), the homeowners association for the large, planned community of Reston, has an active watershed and lakes management program that focuses on the monitoring and improvement of water quality in its streams, lakes and ponds, public education, and innovative approaches to erosion and drainage control. Reston has an active citizens stakeholders group, the Reston Watershed Action Group (ResWAG) that provides a grass-roots link to the community for the Association’s resource management staff.

In 2003, RA began implementation of their Watershed Plan. A 1000-ft stream restoration project was conducted in the headwater section of Snakeden Branch. The upper 200-ft section was completed as a partnership project, conducted by the RA, between Northern Virginia Soil & Water Conservation District, Virginia Department of Forestry, and the Fairfax County Department of Public Works and Environmental Services. The lower 800-ft was completed by RA working with private consulting firms. RA received grant and mitigation funding to support the project.