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## The Potomac Watershed Partnership

*Charting a Course for Restoring the Nation's River*

2002 Annual Report

(INSIDE FRONT COVER)

(LOGO)

The **Potomac Watershed Partnership** is a large-scale restoration and stewardship project. Its mission is to create a collaborative effort among federal, state, and local partners to restore the health of the land and waters of the Potomac River Basin, thereby enhancing the quality of life and overall health of the Chesapeake Bay.

### **Primary Partners**

In addition to hundreds of local organizations and citizens, the Partnership brings together the strengths of six primary organizations—the U.S.D.A. Forest Service, the Virginia Department of Forestry, the Maryland Department of Natural Resources - Forest Service, the Pennsylvania Department of Environmental Protection, Ducks Unlimited, and the Potomac Conservancy—to protect and restore the land and waters of this important watershed.

#### ***The USDA Forest Service***

The National Forest is the largest land manager in the Potomac Watershed. By working together with Northeastern Area State and Private Forestry and Research, and the George Washington-Jefferson National Forest, the agency offers technical and financial assistance and coordination and outreach services to other partners, with a special focus on urban and rural forest stewardship.

#### ***Ducks Unlimited***

Ducks Unlimited has a long history of working with local, state, and federal conservation partners to restore wetland, riparian, and uplands habitats in the greater Potomac River watershed. The organization provides landowner outreach, site evaluation, technical assistance for wetland and riparian parcels, wetland restoration through CREP, and technical assistance.

#### ***The Virginia Department of Forestry***

The Virginia Department of Forestry is the lead state agency in charge of creating and restoring riparian forest buffers, with a focus on the Shenandoah Valley watershed. In addition to providing technical expertise, landowner assistance, financial support, and outreach, the department aims to improve wildlife habitat, water quality, livable communities, and public awareness.

#### ***The Potomac Conservancy***

The Potomac Conservancy is a regional land and water conservation organization dedicated to permanent land protection in the Potomac River watershed, with a focus on protecting the region's national, scenic, and historic qualities. The Conservancy hosts the Potomac Watershed Partnership coordinator and provides landowner education on riparian protection and other land-use issues.

***The Maryland Department of Natural Resources - Forest Service***

The Maryland Department of Natural Resources - Forest Service is dedicated to creating riparian buffers through the Conservation Reserve Enhancement Program and other programs. Focused primarily on the Monocacy, Antietam, and Catoctin watersheds, the department provides technical and financial assistance, landowner guidance, and outreach, with a focus on reducing forest fragmentation and fire risk while enhancing wildlife habitat and water quality.

***The Pennsylvania Department of Environmental Protection***

The Department of Environmental Protection's mission is to protect Pennsylvania's air, land, and water from pollution and to provide for the health and safety of its citizens through a cleaner environment. The department regularly works as partners with individuals, organizations, governments, and businesses to prevent pollution and restore natural resources.

## **INTRODUCTION**

To some extent, all land use activities in the mid-Atlantic region affect the Potomac River and its surrounding watershed.

The Potomac River is the second largest contributor of fresh water to the Chesapeake Bay and is one of the nation's most geologically and ecologically distinct river basins. The Bay watershed is home to nearly 15 million people and is characterized by many as the heart of the Mid-Atlantic region.

Yet unsustainable agricultural, forestry, and industrial practices, compounded by explosive population growth and urban sprawl, have exacted a critical toll on the watershed. Agricultural practices have degraded wetland and riparian areas and reduced water quality because of pollution from high nutrient and sediment run-off, while urban development has resulted in massive loss of open space and natural habitats throughout the watershed.

### **Leveraging Partners**

In response to these challenges, the Potomac Watershed Partnership was formed in 2000 as a multi-partner collaboration dedicated to restoring the health of the land and waters of the Potomac River Basin, with the ultimate goal of enhancing the overall health of the Chesapeake Bay. The Partnership serves as a catalyst for expanded, on-the-ground partnerships that address the wide variety of issues affecting the watershed's health, with a special focus on trees and forests.

The Partnership's efforts are designed to effect lasting economic and ecological benefits for the entire Potomac River Basin, as well as the larger Chesapeake Bay watershed. These include reducing the costly need to heavily treat drinking water, increasing flood control, improving water quality and expanding wildlife habitat, and restoring riparian and wetland areas.

To do this, the Partnership leverages the unique skills of all partner organizations to provide technical assistance for restoration efforts, while helping them to expand their own outreach in the Potomac Watershed. The Partnership includes a National Forest commitment to a large-scale watershed approach to improving water quality.

As it has for the last year, this collaborative effort will continue to increase public awareness and understanding of the link between land and water.

### ***Growing Native* and other team efforts**

In 2001-2002, the Partnership made groundbreaking strides toward permanent land conservation, riparian restoration, forest stewardship, livable communities, and increasing partnerships and awareness about the watershed. In most cases, Partners worked toward several of these goals at once.

The Partnership launched its flagship program *Growing Native*, a watershed-wide educational and restoration event in which families and children worked with foresters to collect native hardwood acorns and seeds, which were then sent to state nurseries and grown into seedlings to support future watershed restoration projects.

Although this report highlights each Partner as it worked toward one of the Partnership's six guiding goals, it should be noted that every Partner, in diverse ways, worked to advance all of the restoration and education goals of the Partnership.

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## **GOAL 1: Increase and Spread Knowledge through Assessment, Monitoring, and Education**

*The essential first step toward ultimate protection of the Potomac River is knowledge and understanding of the watershed, its problems, and the value of restoration and stewardship actions. This effort also involves communicating this information to the general public and engaging their involvement in restoration activities.*

### **Showcase Partner: Maryland Department of Natural Resources – Forest Service**

Several different types of information are needed to understand the conditions and trends within the Potomac Watershed. Such measurements that help illuminate the condition of the watershed are called indicators. In the last year, Maryland's Department of Natural Resources (DNR) – Forest Service has launched a groundbreaking watershed monitoring program that has collected information on a variety of indicators. The study focused on the Monocacy and Antietam watersheds.

Indicators are broken into three basic categories: lag indicators, which measure existing conditions that reflect past pressures; lead indicators, those pressures that might predict or cause future conditions; and response indicators, which measure actions taken to create the desired conditions, whether it is improvement of degraded resources or prevention of degradation in the future.

Many human actions have had major impacts on watershed characteristics. For example, development creates impervious surfaces, which increase the proportion of precipitation reaching streams and speed travel to the channels. Too much sediment buries current streambeds and creates conditions for later gullying. A lack of the usual types of sediment being supplied to streams can trigger downward erosion and loss of spawning gravels and healthy stream bottoms.

Areas of probable highest forest loss over the next 20 years included south and east of Frederick, north and south of Hagerstown, and northwest of Taneytown. The Monocacy/Antietam area is not nearly as densely populated as the Baltimore-Washington corridor to the east, but development has dramatically changed the face of many communities. Streams run through many land uses, creating a patchwork of buffer characteristics and showing where some buffers could be restored with streamside forests.

Continued watershed monitoring efforts will increasingly point to restoration solutions for these focus watersheds. Forest buffers have the greatest ability to influence stream character along the smaller streams, where streamside trees can shade most of the water and shape the food sources that fuel the aquatic community.

### **Other 2002 Achievements:**

- \* Developed and reassessed Strategic Goals and Objectives to drive project management.
- \* Served as technical leader for forest analysis working with the Chesapeake Bay Program "Resource Lands Assessment."

- \* Identified high risk and priority urban areas in the Monocacy/Antietam Watershed through Space Imaging data, which will allow the creation of tree canopy mask for urban canopy evaluation.
- \* Established a GIS database accessible to PWP Partners and integrated with regional efforts through the Chesapeake Bay Program Office.
- \* Compiled a riparian restoration database to facilitate reporting and analysis of success.
- \* Established standard monitoring protocol for riparian planting evaluation, refined year 2002.
- \* Established 29 of 30 targeted monitoring sites on riparian planting sites and an additional 8 sites on projects located on federal lands.
- \* Compiled annual report of monitoring data for analysis to be published in fall 2002.
- \* Monitored eight federal allotment sites = 155 acres.
- \* Monitored 185 miles of rivers/streams for water quality and conducted stream surveys on 100 miles.
- \* Sponsored major educational events: 2002 National Envirothon; Growing Native; Riparian & Wetland Restoration Conference; Quality Hardwoods, Quality Water Conference; and Potomac Sojourn.
- \* Participated in Modeling Workshop at Frostburg University with other federal and state agencies and academic institutions.
- \* Produced education and marketing materials, including WATER, Land Protection Brochure, Estate Planners Brochure, rain garden signage, rain garden brochures, riparian buffer signs, *What is a Watershed* flyers.
- \* Generated 19 media stories/ads/exposure.
- \* Worked with regional research organizations to develop integrated and compatible models to evaluate conditions and trends in the Potomac Watershed.

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## **GOAL 2: Accelerate Riparian and Wetland Restoration**

*The Partnership places a major emphasis on restoring riparian forests, wetlands, and watersheds. These efforts improve water quality, fish and wildlife habitat, the drinking water supply, and river-based recreation.*

### **Showcase Partner: Ducks Unlimited**

Ducks Unlimited (DU) has made great strides in restoring wetland habitats in the Shenandoah Watershed in the last year. Landowners are becoming increasingly interested in DU's wetland restoration program, and more than 27 acres of much-needed wetland habitat are enrolled for restoration through the DU Habitat Stewardship program this year in the Shenandoah. In June, for example, DU completed a four-acre project outside of Winchester on the floodplain of Hogue Creek that involved pothole development for waterfowl habitat.

The project, located on a property owned by Dennis Seabright, involved the excavation of potholes with water depths ranging from 6 to 24 inches. Seabright will manage the potholes as moist soil wetlands through the water control structures installed on the site, which mimic the natural hydrology of riparian wetland systems. The water control structures allow the landowner to draw the water levels down to promote variation of habitat types for waterfowl and shorebirds during different times of the migration season. By drying out the sites in the summer, native wetland plants are allowed to grow and seed out. During the winter, these plants are flooded by water and provide native food sources and loafing areas for waterfowl during their migrations.

In addition to pothole development projects, DU has also continued installing traditional ditch plugs on the flood plains. Years ago, these areas were ditched to drain the water from the area so it could be used for agricultural purposes. Now, DU has gone back and plugged these ditches and created water control structures to manage the sites as moist soil wetlands.

DU is also working with Bill King, who owns property near New Market, Virginia, to complete a "full farm" approach to restoration and conservation. DU is helping King to enlarge an existing wetland and plant native warm season grasses on his property, making it beneficial for waterfowl such as quail.

DU continues to make itself available to landowners with technical assistance and cost share for these types of projects in the Shenandoah Watershed, filling a niche that has kept many landowners from restoring wetlands on their property in the past.

### **Other 2002 Achievements:**

- Worked on 107 riparian and wetland projects, with an additional 27 technical assistance projects resulting in BMP implementation/education.
- Participated in seven "multi-layered" projects incorporating a number of different PWP services.
- Served three new previously "non-participating" audiences.
- Afforested a total of 2,428.43 acres in 2002.
- Restored 265 miles of riparian buffers – 71 percent of the five-year target goal.

- Restored 211 wetland acres in the Potomac watershed – 70 percent of the five-year target goal.
- Restored or improved 1,015 acres of habitat on federal lands.
- Restored 19 miles of stream habitat and 112 acres of lakes on national forest/federal lands.
- Implemented restoration and erosion control measures on 12 sites and 19.37 miles of stream banks and/or riparian areas.
- Fenced 21 acres of riparian and 1 acre of wetland and 92.73 linear stream miles to prevent erosion from cattle along riparian corridors.
- Planted more than 400,000 native trees and shrubs.

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### **GOAL 3: Promote Land Protection and Stewardship**

*One of the key ingredients of the Partnership's success is its land protection and resource management programs. These activities reduce or mitigate the loss and fragmentation of forest habitats and working forests due to urban sprawl.*

#### **Showcase Partner: Potomac Conservancy**

The Potomac Conservancy's unique landowner services are now available to residents of Frederick, Clarke, Warren, and Shenandoah counties of Virginia with the opening of the Potomac Conservancy's Shenandoah Resource Center in June 2002. The Shenandoah Resource Center will ensure that federal, state, and private dollars spent on restoration will have a long-lasting impact on water quality and wildlife habitat by helping landowners to voluntarily and permanently protect large blocks of forest, farmland, and riparian corridors.

"By helping landowners protect their restored land with conservation easements, we aim to make every dollar invested in restoration go a lot further, by ensuring that restoration efforts are preserved in perpetuity," says Matthew Logan, President of the Potomac Conservancy.

The Shenandoah Resource Center's landowner services include assisting landowners in finding resources for riparian forest and streambank restoration, in establishing rain gardens for habitat and pollutant filtration, and in taking advantage of unique tax and financial tools to permanently protect farm, forest, and riparian lands. Local conservation groups are using the Shenandoah Resource Center as a central meeting place and as a conduit for raising public awareness about water quality and wildlife habitat.

The Shenandoah Resource Center will also foster partnerships among the northern Shenandoah region's many watershed and land protection groups by hosting jointly sponsored workshops, events, and educational opportunities.

Two landowners, Bill and Ginny King, are hoping to capitalize on the Conservancy's landowner services to make conservation enhancements on their 58-acre farm in New Market. The King project is one of the first conservation programs undertaken by the Resource Center.

Working with the Resource Center, as well as Ducks Unlimited and the Virginia Department of Forestry, the Kings have committed to enhancements such as wetland restoration, streambank stabilization, the replanting of native trees and warm season grasses, and the restoration of bobwhite quail habitat. The Kings had already enlisted in the state's Conservation Reserve Enhancement Program (CREP) and the federal Wildlife Habitat Incentives Program (WHIP).

"It was a golden opportunity here with a 58-acre parcel and three-quarter-mile frontage in a highly degraded watershed," says Jim Lawrence, conservation manager for the Shenandoah Resource Center. "I knew that Partnership resources would be available to assist on the ground."

CREP provides extensive resources for private landowners through rental payments and cost-share funds to restore riparian areas and wetlands. Virginia also offers

landowners the option to sell a conservation easement on riparian areas restored through the CREP program. Similarly, under the auspices of the U.S. Department of Agriculture's Natural Resources Conservation Service, WHIP provides both technical assistance and cost-share payments to help people establish and improve fish and wildlife habitat.

**Other 2002 Achievements:**

- Protected 1,106.74 acres of protected lands, estimated at more than \$1.24 million.
- Provided funding for and established Shenandoah Resource Center and Conservation manager position.
- Provided funding for the VA United Land Trust Conservation Planning effort.
- Provided funding for the Cacapon/Lost River Land Trust work.
- Conducted seven workshops, with more than 200 attendees
- Completed and printed land protection brochure, *Conserving Land for the Next Generation*, for PWP field staff to use for landowner outreach and education.

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#### **GOAL 4: Enhance Forest Stewardship and Reduce Wildfire Risk**

*Forest stewardship is vital to increasing the health of critical watersheds. The ongoing program to protect communities from the threat of wildfire goes hand in hand with stewardship efforts.*

##### **Showcase Partner: Virginia Department of Forestry**

With fire danger extremely high in Virginia and West Virginia, the Virginia Department of Forestry developed the Shenandoah Valley Fire Prevention Team to address the watershed's fire prevention needs. The team was so successful that it recently won the USDA Forest Service's annual Robert E. Browning, Jr., award, which recognizes excellence in fire prevention programs. The interagency team includes staff from the Virginia Department of Forestry, George Washington-Jefferson National Forests (GWJNFs), and the National Park Service.

Specific goals include making people aware of the open-air burning ban; reducing the number of fires on federal, state and private lands; enlisting residents' help in reporting arson and suspicious activities; and educating residents about woodland home forest fire protection strategies. Since the creation of the team, the state of Virginia has had fewer fire starts than other adjoining states with similar fire danger.

"The USDA Forest Service, Virginia Department of Forestry and the National Park Service saw an opportunity to pull together with a common goal to protect lives and property and promote homeowner responsibility in regards to making their homes fire safe," says Stephanie Bushong, Interpretive Specialist for GWJNFs.

The team employed a wide range of informational tactics to educate residents in a seven-county area about fire prevention, including: press releases, electronic media, door-to-door contacts, posters, tri-lingual flyers (Russian, Spanish, and English), Smokey Bear appearances and hand-outs, hunter contacts, and arson education. The team has also been involved in training workshops and plans to continue working with volunteers throughout the watershed to prevent forest fires.

"We knew we made a difference when we saw a drop in human caused fires," Bushong says, "but the award showed us that our hard work, long hours, teamwork, and creativity were recognized as being important to the Forest Service. The Robert Browning Award, named after a fallen firefighter, is special because every fire we prevent keeps other firefighters out of harm's way."

##### **Other 2002 Achievements:**

- \* Initiated the Fire Danger Rating Sign Project with the VA Professional Paddlesports Association, installing fire dangers signs at Shenandoah River paddlesport businesses.
- \* Completed Phase One of the Luray Greenway Planting project.
  - Protected 105 acres of critical trout and eel habitat on or adjacent to federal lands.
  - Conducted prescribed burns on 400 acres.
- \* Conducted insect treatment on 40 acres of land and implemented three research projects.

- \* Installed six dry hydrants.
- \* Created 32 forest management plans on 286.83 acres.
- \* Completed a fire risk analysis for the seven counties in the Shenandoah project area.
- \* Recruited and trained two wildfire prevention and education teams in the Shenandoah Valley.
- \* Conducted three-day Stream Restoration Workshop.
- \* Cosponsored Rain Garden Workshop with the Virginia Federation of Garden Clubs and the National Garden Clubs and worked on the state's Department of Environmental Quality rain garden.
- \* Held a CREP Maintenance Workshop in which landowners enrolled in the CREP program learned how they can meet their land conservation objectives.
- \* Hosted 60 loggers and foresters for Alternative Logging Systems for Steep Slopes Workshop.
- \* Held the Wildland Fire Weekend Academy in Orkney Springs, Virginia, training more than 100 fire fighters.
- \* Delivered ongoing educational programs on fire prevention, riparian forest buffers, and urban forestry.
- \* Presented a program to the Virginia Association of Zoning Officials on Firewise Communities.
- \* Taught at Fort Picket Wildland Fire Academy on Structure Triage for Engine Operation in the Urban Interface.
- \* Conducted 15 FireWise educational events for almost 600 residents.
- \* Held four FireWise educational events for approximately 600 kids.
- \* Generated seven media stories calling attention to urban/wildland interfaces.
- \* Created the Smokey Bear Jeep Playground Equipment.

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**At Work in The Potomac Watershed – 2002**

(Map of Watershed with highlighted accomplishments)

## **GOAL 5: Create More Livable Communities**

*The creation and expansion of “green infrastructure” are important elements that enhance the quality of life for communities and the health of urban watersheds. Green infrastructure includes the creation of trails and bike paths, parks, and pedestrian-oriented facilities and community centers.*

### **Showcase Partner: Pennsylvania Department of Environmental Protection**

For too long, the Mason-Dixon line has acted as a barrier to environmental cooperation. But this year, the Pennsylvania Department of Environmental Protection (DEP), the newest addition to the Partnership, is working to change that.

This year, the DEP partnered with Community Commons in the Monocacy watershed to bridge the Mason-Dixon line, by helping to organize the Monocacy River Paddle 2002. This event ran from the headwaters of the Monocacy River in Adams County, Pennsylvania, to the confluence of the Potomac River at the Mason-Dixon line. This event featured the first Pass-the-Paddle ceremony between Pennsylvania and Maryland, recognizing the importance of the shared watershed resources between the two states in the Potomac River Basin.

This year, Pennsylvania DEP Secretary David Hess was scheduled to pass the paddle to Robert Summers, Director of Water Management, Maryland Department of the Environment. Maryland will host and display the paddle until 2003, when it will be presented back to Pennsylvania at the historic Mason-Dixon line.

The Mason-Dixon Presentation Paddle is a “Beavertail” canoe paddle handcrafted from one piece of solid native ash from a tree felled near West Chester, Pennsylvania. Al Bratton, owner of the Woodstrip Watercraft Company located in Gilbertsville, Pennsylvania, made the paddle on request by the Watershed Alliance of Adams County. Bratton has been making canoe and kayak paddles since 1989, and specializes in traditional paddles based on ancient Native American designs.

The Mason-Dixon Presentation Paddle is based on a traditional Northeast paddle design and is suited for use on shallow rivers and moving water. The 6 ¼ inch wide blade measures 28 inches long with an approximate 60 inch overall paddle length.

This annual event will help raise awareness of the fact that watersheds do not recognize political boundaries, while offering organizations opportunities to work together across geopolitical lines.

### **Other 2002 Achievements:**

- \* Continued to act as a key partner in Pennsylvania’s CREP program, offering technical support and financial assistance, primarily through the state’s Growing Greener Grant Program.
- \* Created 7.5 acres of new greenway with technical assistance provided to 10 projects.
- \* Hosted 15 volunteer tree-planting events with a total of 3,436 trees planted.
- \* Held 12 rain garden workshops and educated 305 citizens on the benefits of rain gardens for the treatment of stormwater runoff.

- \* Installed nine permanent rain gardens to treat stormwater runoff.
- \* Developed watershed activities to encourage restoration (WATER) tools and outreach for focus watersheds in Maryland.
- \* Recruited 108 organizations to assist in collecting 11,000 pounds of much-needed native hardwood seeds for state nurseries and expanded the Growing Native program to include more than 20 species and sites throughout the Chesapeake Bay Watershed.
- \* Installed facilities for public use in high-demand recreation areas on federal lands to facilitate their use and enjoyment by the public.

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## **GOAL 6: Sustain and Expand Partnerships**

*In addition to on-the-ground restoration work, the Partnership is continually leveraging the skills and resources of Partners, other organizations, and citizens to expand and sustain and network of conservation activities in the Potomac Watershed.*

### **Showcase Partner: USDA Forest Service**

The USDA Forest Service has worked on many fronts to build additional partnerships to advance PWP goals. Such efforts include national promotion and coordination of large-scale watershed efforts with other prominent partnerships around the country. Regional coordination with other federal agencies and important groups such as the Chesapeake Bay Program and American Heritage Rivers has been especially important.

The Forest Service has also fostered state-level partnerships for improving private land stewardship, enhancing urban forests, and informing and educating watershed citizens through its cooperative forestry programs. Collaboration between the George Washington-Jefferson National Forest and Virginia has improved fire prevention, monitoring, and forest management in the Shenandoah. At the project level, the Forest Service shares its technical expertise with states, communities, and nonprofit groups to undertake watershed restoration and protection projects.

In the last year, the Forest Service achieved success in expanding support for PWP goals in the watershed by working through the Chesapeake Bay Small Watershed Grants Program. Teaming up with the National Fish and Wildlife Foundation (NFWF) and other federal agencies such as the EPA, NOAA, and NRCS, the Forest Service was able to offer competitive specific grants to local communities and conservation groups in the Potomac Watershed. The Forest Service worked with NFWF to design the program's request for proposals and review applications, and to select projects that addressed forest stewardship needs and supported PWP goals.

Using an investment of \$300,000 in Forest Service funds, a total of \$559,000 in grants were provided to 14 groups in the Potomac. Twelve of these groups represent new on-the-ground partners working to support PWP objectives. By leveraging support with others through this Chesapeake Bay Program effort, our investment was matched by nearly \$700,000 in private funds.

“This is a great example of combining grant efforts into more of a one-stop shopping for local watershed support,” says Al Todd, Watershed Program Leader for the Forest Service, “which eliminates the need for multiple and sometimes confusing grant processes.”

### **Other 2002 Achievements:**

- \* Added the Pennsylvania Department of Environmental Protection to the Partnership to ensure restoration in all areas of the Potomac watershed.
- \* Completed and launched PWP website at [www.potomacwatershed.net](http://www.potomacwatershed.net).

- \* Integrated PWP information on the Chesapeake Bay Program web site's "Watershed Profiles."
- \* Working with Regional Research Organizations to develop integrated and compatible watershed models that can be used to evaluate conditions and trends in the Potomac Watershed
- \* Launched Watershed Network News Initiative in the D.C. area for the Bay and Potomac watersheds
- \* Worked with the National Fish and Wildlife Foundation to target an additional \$200,000 in grant funds to Potomac priority watersheds.
- \* Funded 13 PWP projects through sources such as grants, foundations, or sponsorships.
- \* Gave out 9 grants totaling \$648,500 to 17 local nonprofit groups for total of an additional \$1.51 million of investment in the Potomac Watershed.

## 2002 Financial Report and Cost-Benefit Analysis

The past year has been one of unprecedented financial investment in ensuring the long-term health of the Potomac River and the Chesapeake Bay watershed. Partner contributions to watershed protection efforts are illustrated below.

### [SUE, INCLUDE FINANCIAL GRAPHS HERE]

In 2002, the Potomac Watershed Partnership also worked to ensure that its costs were far outweighed by the benefits to the watershed. These benefits can be measured in terms of the value they hold for different stakeholders. The term value can have different meanings to different audiences. To a hydrologist, the value of trees growing in the watershed relates to water flow, temperature, and quality. To a forester, the value may be in harvestable trees. To a homeowner, it may be in calming aesthetics or a place to play outdoors. But, for an economist, the term has a precise definition – it the price that individuals are willing to pay to obtain a good, service, or preferred benefit.

We can evaluate the costs and the measurable benefits to decide if a project is worth pursuing and if it provides net economic gain to society. Below is an analysis, using only achievements realized in the last year, to illustrate the impact of the investment in the PWP for 2002.

### *BENEFITS*

#### **ISSUE – Improved Water Quality**

- Nutrient Removed \$3,839,615  
1 mile of riparian forest reduces 140lbs N/year; 21lbs P/year; 2 tons sediment/year
- Treatment Costs Avoided \$2,036,700  
The Potomac River feeds the DC water supply to almost 1 million people.

#### ***ISSUE – Restored Vital Habitat***

- Riparian Habitat \$155,547  
1 mile of riparian forest equals 12 acres of habitat for consumptive and non-consumptive use such as hunting and hiking
- Wetland Habitat \$31,650,000  
Wetlands provide pollution treatment and act as nurseries to fish and shellfish
- Stream Temperature Reduction \$3,692,775  
Fishers produce over \$13,000 of economic return per stream mile

#### ***ISSUE – Improved Forest Health and Productivity***

- Timber Return in the Future \$25,498  
Future harvests produce attractive annual equivalent returns. This return assumes a harvesting rate of 25% of land afforested
- Fire Risk Reduction \$4,506,000  
Property is protected and insurance premiums decline

***ISSUE – Protected and Enhanced Quality of Life***

- Reduced Air Pollution \$8,452,353  
An average tree takes up 3.7 lbs of pollutants and sequesters 336 lbs of CO2 annually
- Returned Aesthetic Amenity \$8,256,662  
Every tree produces \$17 of homeowner enjoyment and reduces energy use. An average urban tree saves homeowners 122 kwh every year, and increases property values.

<b><i>Total Benefits</i></b>	<b><i>\$62,615,150</i></b>
• A discount rate of 8% was used for the analysis	5,009,212
<b><i>Total Benefit Value</i></b>	<b><i>\$57,605,938</i></b>

**COSTS**

<b>Project Investment (US Forest Services and Partner Contributions)</b>	<b>\$2,610,000</b>
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- All values were related to acres or miles of restoration achieved during 2002.

**Looking Ahead**

As the Potomac Watershed Partnership looks ahead to 2003, it will continue to initiate on-the-ground restoration activities, while fostering awareness about the intrinsic link between land and water. The Partnership will continue its ongoing communications program to reach decision-makers and stakeholders at all levels, focused on the following themes:

- Protection and stewardship of forests throughout the watershed are essential to ensuring the quality of our communities and our watershed.
- Riparian forests and wetlands along the Potomac River and its tributaries must be restored to ensure the health of the watershed.
- It is important to monitor the health of the watershed and to determine how well restoration activities are working.
- Citizens must play a significant role in the future protection and restoration of the Potomac Watershed.

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**Table of Achievements**

Restoration Action	Yr 01	Yr 02	Total	Year 5 Goal
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**Goal 1: Knowledge and Education**

Baseline Monitoring Sites	16	13	29	30
Educational Seminars	22	43	65	75

**Goal 2: Riparian and Wetland Restoration**

Riparian Miles	93.6	265	358.6	500
Wetland Acres	71	211	282	400
Miles of Road Rehabilitated	45.5			90
Native Grassland Restored	300	0	300	600
Fencing of Streambanks (feet)	15,000	5000	20,000	20,000
Forest Management Plans	18	32	40	
Miles of Streambank stabilized		19.37		
Acres of Afforested Land		2,428.43		

**Goal 3: Land Protection and Stewardship**

Permanently Protected Lands (acres)	586.5	1,106.74	1,693.24	
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**Goal 4: Forest Stewardship and Fire Risk Reduction**

Dry Hydrants	2	6	8	5
Community Education	4	8	12	16

Prescribed Burns (acres)		400		
Acres treated for insects/disease		40		

Goal 5: Livable Communities

Rain Garden Installations	4	9	13	5
Greenway Projects	2	2	4	15
Tree planting events	10	16	26	n/a

Goal 6: Partnerships

Increased Participation in Growing Native (# of groups)	108	225	335	n/a
Increased investment in Potomac Watershed Restoration	\$156K	\$225K	\$381K	n/a
Leveraged \$	n/a	\$2.145 million		n/a

(BACK COVER)

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