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#61

Nonpoint Source News-Notes

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Special Focus: Forestry Management

Forest Service Proposes Road Policy Changes

The Changing Dynamics of Forest Road Use

With ever-increasing public use of national forests, the Forest Service road system must be managed effectively. An estimated 1.7 million recreational vehicles and 150,000 logging trucks and industry vehicles drive on the estimated 380,000 miles of road in the Forest Service road system each day — an intensity that is eight times the volume of the interstate highway system. During the summer, recreational use of the Forest Service road system jumps up to more than 13 million recreational vehicles per day. Because the budget for road construction, maintenance, and decommissioning has been cut from $297 million in 1988 to $187 million in 1998, the Forest Service has had to manage the largest road system in the United States with, according to the Forest Service, inadequate funding.

The CWAP logo denotes articles related to action items called for in the President's Clean Water Action Plan. See News-Notes #51 and #52 for more information on the plan.

Forest roads can provide access to some of the most spectacular scenery in the country. However, heavy traffic and improper construction and management of forest roads damages that scenery and degrades water quality and habitats. For example, substandard roads contribute to soil erosion and sedimentation of waterways, adversely affecting fish populations, riparian zones, and wetland habitats for many animal species. Forest roads also fragment habitat for wildlife and create corridors for exotic species to thrive.

Proposed Policy Changes

Currently, the Forest Service estimates that 60,000 miles of unauthorized, unplanned, and temporary roads are present on National Forests and Grasslands. These user-created "ghost roads" contribute significantly to habitat degradation and water pollution. Artifacts of frequently used and

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engineering, design, and maintenance needed to create environmentally friendly roads. To address these and other issues the Forest Service has proposed policies for each of the following categories:

- Planning Criteria (Proposed Planning Rule)
- Road Management and Construction (Proposed Road Policy)
- Keeping Areas Roadless (Roadless Area Proposal)

These three separate and distinct Forest Service proposals form a coherent overall strategy for managing forestlands and the National Forest Service road system. The time line below shows the expected completion dates of the three area proposals. Both proposals will be finalized by the end of the year.

Planning Rule

The Forest Service first proposed changes to planning regulations in the late 1980s. Ten years later that proposal was overhauled by a government-selected committee of scientists experienced in forest planning. The planning rule provides a definition of roadless areas that will be the foundation on which both the proposed road management policy and the roadless area proposal will base their future management approaches. The planning rule also would:

- base forest and grassland planning on the principles of ecological, economic, and social stability;
- require the Forest Service to actively engage the public and other federal, state, tribal, and local partners in the management of our National Forests and Grasslands;
- integrate science and scientists into the planning process, with a focus on managing entire ecosystems rather than individual species; and
- integrate planning and management activities more closely so that the Forest Service can respond to new information and opportunities in a timely manner.

Road Management Policy

The Proposed Road Management Policy creates a framework that allows for more informed decisions about the Forest Service's transportation system. On January 28, 1998, the Forest Service announced its intentions to revise regulations concerning management of all national forest roads. These roads range from permanent, double-lane paved highways to single-lane, low-standard roads (roads not made to handle heavy traffic) intended for high-clearance vehicles. To provide time to draft a new road management policy, the Forest Service initiated an 18-month moratorium on road construction and reconstruction (see *News-Notes* Issue #52).

U.S. Forest Service Road Facts

- ✓ The National Forest road system consists of more than 380,000 miles of roads.
- ✓ Currently, the Forest Service's road maintenance and reconstruction backlog is $8.4 billion.
- ✓ The National Forest system includes 192 million acres of forest and grasslands.
- ✓ The inventoried roadless areas in the National Forest system total more than 54 million acres in 46 states.

The proposed road management plan examines the administration of the current road system. This system includes roads that have been built within budgetary and environmental constraints. The policy will reflect the public demand for changes in the way National Forest resources are used.

By prioritizing both present and future management objectives, the policy will help ensure that (1) areas disturbed by past road construction will be rehabilitated; (2) Forest Service roads will be constructed and maintained efficiently; (3) the construction of new roads will be limited to those necessary for the National Forest system's resource management objectives; and (4) future construction, restoration, and maintenance of roads will have minimal long-term adverse environmental impacts.

According to Cindy Chojnacky of the Forest Service, "The proposed road management policy will address a provision for local decommissioning of unaffordable, unneeded, and environmentally damaging roads at the forest level. I think the road management policy actually could be more controversial locally than the roadless proposal, which would not necessarily involve closing existing roads." The controversy might come from people who use the roads regularly. Even though most of these typically substandard roads are called "ghost roads" because they were developed anonymously by forest users and the recreating public, some forest users such as local hunters, anglers, and off-road vehicle enthusiasts, consider them important. There

Forest Service Proposes Road Policy Changes (continued)

are not enough law enforcement officials to regulate road use on the ghost roads throughout the National Forest system, and therefore road closure is considered an environmentally and economically viable option.

Roadless Area Proposal

Roadless areas on National Forests provide vast tracts of undeveloped land. The Forest Service set a moratorium on road building in these areas in 1998. On October 13, 1999, the President asked the Forest Service to prepare regulations addressing various forest activities such as new road construction in roadless areas. Acting on this request, on October 19, 1999 the Forest Service released a notice of intent (NOI) to prepare an environmental impact statement (EIS) The EIS will evaluate possible regulations and is being done as a two-part process. Part 1 considers several management strategies that prohibit road construction and reconstruction and might preclude resource management activities such as logging. Part 2 considers alternative sets of procedures local managers can use during planning to protect the unroaded portions of inventoried roadless areas.

On December 20, 1999, the Forest Service concluded a comment period on the scope of the proposal with national meetings and meetings on every National Forest and Grassland. Comments collected during this period have been used to shape the Proposed Rule and Draft EIS, which was released in May. The final EIS will be accompanied by a notice of availability (NOA) and sent to Congress for a 30-day review. The Final EIS and Rule should be completed by the end of 2000. The Rule will be implemented mostly at the National Forest level through forest and project planning.

There is a strong need to come to an agreement on the future management and protection of our Forest Service lands. As Gifford Pinchot, founder of the Forest Service and father of modern-day forestry, said nearly a century ago, "National forests are made for and owned by the people. They should also be managed by the people. This means that if national forests are going to accomplish anything worthwhile, the people must know all about them and must take an active part in their management."

[For more information on the Roadless Area Proposal visit the Forest Service's web site at roadless.fs.fed.us/index.html. For more information on the Road Management Policy visit www.fs.fed.us/news/roads.]

Time Line of Forest Service Policy Proposals		
1998	1999	2000
ROAD POLICY PROPOSAL		
On January 28 the Forest Service published an Advance Notice of Proposed Rulemaking, giving notice of its intention to revise its regulations for managing roads within the National Forest Service road system. This initiated an 18-month moratorium on road construction and reconstruction.	On March 2 the Forest Service released the proposed road policy. On March 18 the Forest Service temporarily suspended forest road construction, and this suspension will expire upon the adoption of the revised road management policy or in 18 months, whichever is sooner.	On May 2 all comments on the proposed road policy were due. By fall 2000 the Road Policy will be finalized.
ROADLESS AREA PROPOSAL		
	On October 13 President Clinton initiated the proposal for protection of forest roadless areas. On October 19 the Forest Service released a preliminary draft EIS and proposed rule addressing President Clinton's request, with a 60-day public comment period.	After addressing public comments, a draft EIS and proposed rule was released in May 2000 for public comment. Public comments are due by July 17. The final EIS and regulation on roadless areas will be out by the end of 2000.
PROPOSED PLANNING RULE		
	On October 5 the 90-day comment period began.	The comment period was extended to February 10, 2000. More than 10,000 comments were received. The final rule will be published in the *Federal Register* by the end of the summer.

Forest Service Invests Millions in Watershed Projects

The Forest Service is investing an additional $11.8 million to help restore 12 large watersheds nationwide. This additional funding supplements about $6.7 million from local Forest Service funds and up to $18 million from partner organizations. The total investment in the 12 watershed restoration projects will be about $36 million in fiscal 2000.

This renewed commitment to watershed protection builds on the Forest Service's Natural Resource Agenda for the 21st Century, unveiled in a speech by Forest Service Chief Mike Dombeck in March of 1998. The agenda serves as the Chief's statement of commitment especially to watershed health improvements, sustainable forest management, outdoor recreation, and a science-based forest road policy that meets the needs of Americans and protects the environment.

"Watershed maintenance and restoration are the oldest and highest callings of the Forest Service," said Dombeck. " The agency is, and always will be, bound to them by tradition, law, and science. With 80 percent of the nation's freshwater sources originating on National Forest system lands, in a very real sense the National Forests are the headwaters of the nation," he said. "Our first priority is to maintain and restore the health of our ecosystems and watersheds. We must protect our healthiest watersheds and restore those that are degraded." In fact, Dombeck listed watershed health improvements, as the Forest Service's first priority. Sustainable forest management, outdoor recreation, and timber harvesting were listed as the second, third and fourth priorities.

> "How we manage our forests has a profound effect on the quality of our drinking water and the ability of our watersheds to perform their most basic functions."
>
> —USDA Forest Service Chief Mike Dombeck

The projects selected to receive the new funding demonstrate diversity in project scope and location. The Forest Service evaluated the projects based on their location and purpose, partnerships, feasibility, and innovation. More than 60 project proposals were submitted. Collaborative partners include conservation, wildlife, and forest management groups; American Indian tribes; state and local governments; and community organizations.

The watershed restoration projects are:

The New York City Watershed Study. The New York City Watershed Study will evaluate technology used for absorbing water pollutants in municipal watersheds and potential markets for forest byproducts or waste. Testing and evaluation will be done in the Catskill/Delaware watershed, which provides almost 90 percent of New York City's water supply.

Chesapeake Bay Watershed. The Chesapeake Bay Watershed project will integrate riparian and wetland research and restoration work at the headwaters of the Chesapeake Bay. Key watersheds include the Monocacy and Antietam watersheds, and the North Fork of the Shenandoah River watershed.

Chattooga River. The Chattooga River restoration project will focus on reducing sediment from roads, trails, and construction and cultivation areas. The project will improve water quality and aquatic habitats by relocating and improving recreation facilities, roads, and trails and by offering conservation education programs. This watershed project is near the cities of Atlanta, Georgia, Greenville, South Carolina, and Charlotte and Asheville, North Carolina.

Conasauga River. This watershed improvement project will match funding with the Conasauga River Alliance for ongoing watershed and riparian restoration work. This watershed is approximately 20 percent National Forest System land, which includes the Cherokee National Forest in Tennessee and the Chattahoochee National Forest in Georgia. Work on the project includes sediment reduction, recovery planning for endangered and threatened species, research studies, urban forestry, conservation education, and road reconstruction and relocation.

Rio Penasco. The Rio Penasco River restoration project will restore drainage patterns and water quality on more than 120,000 acres of watershed in New Mexico by reducing wildfire fuels and improving range conditions, water quality, riparian areas, and springs.

Forest Service Invests Millions in Watershed Projects (continued)

Upper Sevier River. The Upper Sevier River watershed restoration project will improve forest health, range, and riparian restoration activities along the headwaters of the river in the Dixie National Forest in Utah.

Upper South Platte. The Upper South Platte project is designed to restore this Denver-area watershed following recent multiple wildfires and flooding. The project will also improve forested areas in the watershed to reduce risks from insects, disease, and wildfire.

Warner Mountain/Hackamore. The Warner Mountain/Hackamore project in the Modoc National Forest in northeastern California will accelerate riparian, wetland, forest, and rangeland restoration activities on the 510,000 acres that form the headwaters of the Pit River. Twenty percent of the total runoff into the Sacramento River flows from the Pit.

White River. The White River project is designed to restore riparian and aquatic habitats and water quality on a large watershed that serves more than 20 towns in central Vermont. Work includes watershed planning, conservation education, and riverbank restoration and stabilization.

Pacific Coastal Watersheds. The Pacific Coastal Watersheds project initiates a partnership among local, state, and federal governments; conservation organizations; and other nongovernment organizations to address watershed restoration. This project focuses on opportunities for restoring watershed health along the Pacific Coast on the South Fork Coquille River, the Sandy River Delta, and the Siuslaw River.

Blue Mountains Province. The Blue Mountains Province project will improve watershed conditions, contributing to the long-term recovery of Northwest salmon populations and the forest health of areas at risk of damage from insects, disease, and/or catastrophic fire within the Grand-Ronde Wallowa and John Day River watersheds in eastern Oregon.

Lower Mississippi Valley. The Lower Mississippi Valley project will accelerate a "bottomland hardwoods" restoration effort on the lower Mississippi River to restore wildlife habitat and wetlands and to provide economic return for landowners.

[For more information, contact Karen Solari, U.S. Forest Service; Phone: (202) 205-0879; E-mail: ksolari@fs.fed.us.]

An Example to Follow — Forestry BMPs in the Upper Peninsula of Michigan

Since settlement in the late 1800s, mining and timber extraction in the Upper Peninsula of Michigan have had a considerable effect on the natural landscape. Small holding dams used by loggers, wooden deflection structures and jetties, and riprap along the bends have modified streams in the 47,350-acre Pine Creek watershed in south-central Dickinson County. Ongoing timber harvesting compounds the stream sedimentation and erosion problems caused by past resource extraction, and recreational activities and agricultural operations continue to add insult to injury.

The terrain in the area is marked by numerous ephemeral gullies, as well as streams, lakes, and wetlands. In parts, rocky outcrops and bluffs are prominent. Over such land cover, the practice of forest harvesting has to be tempered with conservation measures to prevent further degradation. The Pine Creek Watershed Project is administered by the Dickinson Conservation District and is funded through a section 319 grant. Its aim is to protect the top-quality trout streams of the area and to promote conservation measures by foresters, landowners, and loggers.

The project's salient feature has been the development of four exemplary sites that demonstrate the BMPs in forestry operations, which are still voluntary in the state of Michigan. The sites were chosen because they represented some of the most difficult terrain — rocky, uneven wet areas — for loggers to manage in terms of erosion control. Contractors hired by the Dickinson Conservation District received input from the program's partners, including the Michigan Department of Environmental Quality, the Michigan Department of Natural Resources, the Michigan State University Extension, the Sustainable Forestry Initiative, and other loggers to create the demonstration sites. Every aspect of the process — from site preparation, road construction, buffer strips, erosion control, winter harvesting, skid trails, and landings to forest preparation — was examined.

Forestry BMPs in the Upper Peninsula of Michigan (continued)

The Conservation District reimbursed the contractor for the cost of the site preparation once the voluntary BMPs were satisfactorily in place. Because contractors believe one of the principal constraints on following BMP guidelines is their cost, the Dickinson Conservation District continues to be committed to finding ways to help them offset these costs.

In addition to forestry, the project addresses the offshoots of resource extraction, including tailings, land erosion, road crossings, domestic animal access to streams, and dams. Supplementary projects have included stabilizing culverts and drainages to prevent sediment loss from roads, erecting livestock exclusion fencing, and planting soil-stabilizing vegetation in highly erodible areas. Grade stabilization, sediment basin construction, and diversions (earth structures that divert excess water to safe disposal sites) are also part of the engineering solutions overseen by the project.

In addition to demonstrating practicable BMP options, the sites serve an important role in giving loggers ownership of conservation practices. As loggers become "participant educators," conservation measures become a reality and move beyond simple government regulation and direction. Promoting awareness is the most effective way of making users of resources active players in watershed protection.

[Numerous pictures and descriptions of the work that has been accomplished in the Pine Creek Watershed Project are available on the project's web site at www.dickinsoncd.org/pinecreek/. For more information, contact Melissa Halstead, Project Manager, Dickinson Conservation District, 102 North Hooper Street, Kingsford, MI 49802. Phone: (906) 774-8441 or (906) 774-1550; fax: (906) 774-0177; e-mail: Dcdbill@up.net.]

Millennium Green Sets Stewardship Example for Generations to Come

When most people dream about the future and the next millenium, they think about faster Internet access or visiting Mars. But a new movement launched by the White House is asking people to think Green. Millennium Green, launched on December 15, 1999, announced the start of a nationwide program that encourages all citizens to promote and create more livable community environments for the new millennium.

Created by President Clinton and the First Lady and led by the White House Millennium Council and the Department of Agriculture, Millennium Green is a tool to get every citizen involved in environmental protection and enhancement. This involvement includes "hands on" community activities such as planting trees along urban streets and as riparian buffers, adopting forests, creating or preserving open green spaces, and protecting natural resource treasures such as wetlands and wildlife habitats. To date, 38 states are committed to "hands on" stewardship through numerous public agencies, corporations, private organizations, and individuals who are participating in the project. "So far, the Governors of Ohio and Nevada have committed their states to plant a tree for every resident in their state and California has dedicated planting 20 million trees," said Jake Kutiwaard of Millennium Green. That will mean 33,065,908 trees planted in those three states alone.

Goals of Millenium Green

For every person to plant and/or adopt a tree or a garden for the new millennium.

For every community to identify and protect a heritage tree, grove, or natural wonder or treasure of special significance.

For every business or corporation to plant and/or adopt a tree or garden or protect a natural resource wonder or treasure for the new millennium on behalf of every employee or client, working through national, state, and local nonprofit tree planting, garden, and conservation programs.

Trees contributed by American Forests and other volunteer and private organizations will be planted in "Millennium Groves" throughout the country. These groves will enhance the environment and also will act as educational tools, stressing the importance of environmental protection for the future. In addition, Millennium Green has a nationwide goal to have a garden planted at every school. The gardens will teach students important lessons not only on how plants produce food but also on how they contribute to the health of the environment and how the fate of each plant can depend on our direct actions, through positive or negative management.

Millennium Green Sets Stewardship Example for Generations to Come (continued)

Perhaps most importantly, Millennium Green's programs protect water and other natural resources and teach the public the importance of green space. Trees that act as buffer strips, slowing down and filtering water runoff, can help a community save money by reducing the costs of managing storm water. Additionally, trees in and around overheated urban centers and near homes can act as cooling agents during the summer months. During the winter months, mature trees can act as wind breaks and insulation for homes, again reducing energy costs. Millennium Green also encourages the use of native species where possible.

Millennium Green will showcase environmental endeavors by groups or individuals from across the country, through an online registration process. For each project registered, a certificate of appreciation will be sent as an expression of gratitude. Historic farms 100 years old and up also are encouraged to register with Millennium Green. This is a wonderful opportunity for America to highlight and celebrate those areas of green space that have lasted through the urban sprawl.

How Can You Get Involved?

Every citizen can participate in Millennium Green — through organizations, businesses, civic organizations, foundations, community centers, corporate office locations, etc. If there isn't already a Millennium Green effort in your community, volunteer to start a program in your area and become a partner in Millennium Green.

For more information and technical advice on how to properly plant trees and gardens or protect water resources in your area, contact your local Extension office, State Forester, Natural Resources Conservation Service office, or visit the Millennium Green web site at www.millenniumgreen.usda.gov. The web site also has a page just for kids and a listing of the agencies, corporations, and industries already committed to Millennium Green. Corporations can find out how to be involved on a national scale by calling (800) 553-3557.

[For further information, contact Jake Kuitwaard of Millennium Green at (202) 720-2593.]

Innovations: Banking on the Forest

by Kent Gilges, Forest Bank Director

Since 1951 The Nature Conservancy (TNC) has pursued a mission of preserving the plants, animals, and natural communities that represent the biological diversity of life on earth by protecting the lands and waters they need to survive. TNC has pursued this mission through a range of protection strategies — including ownership, conservation easements, and related management agreements — that ensure conservation-oriented stewardship of ecologically sensitive places.

In 1995 TNC created a special operating unit called the Center for Compatible Economic Development (CCED) as an incubator for new ideas and strategies for achieving conservation goals by developing land uses, businesses, and products that protect important ecosystems while enhancing local economics and achieving community goals. CCED began collaborating with local TNC staff in a handful of locations to plan and execute initiatives that will simultaneously accomplish conservation and development goals.

Protecting Clinch Valley Resources

For the past several years, CCED has been exploring new ways to conserve the immense biological wealth of Central Appalachia's Clinch River Valley. The valley is home to one of the highest concentrations of rare and endangered species in the United States — 30 federally listed species, including 18 mussels and 4 fish.

The continued survival of these species depends on a healthy habitat. Like much of Appalachia, the Clinch Valley has a vibrant forest ecosystem, with a wide assortment of hardwoods covering 75 percent of the region. Unfortunately, like other rural areas rich in timber resources but comparatively poor economically, the Clinch Valley is vulnerable to reckless and unsustainable harvesting of its timber resources. In fact, a 1997 field audit found that 92 percent of the logging sites assessed there were not in compliance with BMPs recommended by the State of Virginia. As the intensity of human use of the forest increases, the size of the conservation buffer provided by

the forest decreases. Threats such as fragmentation, erosion, sedimentation, and unsound harvest practices can affect many aspects of the forest, endangering the forest's viability for forest species and negatively affecting watersheds and aquatic health.

Around the country, demand for domestic forest supplies is expected to outstrip supply in the coming decades, particularly given severe cutbacks in production from the Pacific Northwest and the national forests. Demand for wood products is driving prices up, often tempting nonindustrial private landowners to cash in their timber resources. This potential increase in harvests could lead to a large loss of forestland, considering that nonindustrial private forests account for just under half of all forestland in the United States. The situation in the Clinch Valley of Virginia is no different — more than 80 percent of the forests are in the hands of private, nonindustrial forest landowners. It is also worthwhile to note that 90 percent of forest owners nationwide have holdings of 100 acres or less.

Choices regarding harvest and development of such forestland are often made not for reasons connected to ecological concerns, but by need to convert the asset to quick cash. When this happens, the resource usually suffers and conservation values are compromised. For example, the need to finance estate, education, or medical needs might cause a landowner to liquidate his or her forest assets. Often, the landowner does not have the knowledge or time to monitor the timber harvest to ensure it is done in a sustainable way. As a result, the landowner delegates this responsibility to the harvester or forest products company. Although the majority of these agents are experienced foresters and operators who conduct forestry activities that result in the implementation of BMPs that adequately protect water quality, other agents may be influenced by incentives and volume requirements that may result in the use of less environmentally protective practices, e.g., overharvesting in streamside management zones. Commissions based on a percentage of the harvest may also lead to overcutting.

Private landowners typically do not have a long-term planning horizon for making the decisions regarding when and how much timber to harvest. As a result, many of the harvests that occur on these small land areas are scattered, intermittent, and much more difficult to manage from the state or local perspective. Tracking, monitoring, and keeping abreast of these activities is problematic for the administering agency. To avoid these problems, TNC is promoting an alternative way of ensuring landowners that their forestry resources will be sustainably harvested with minimal or reduced impacts to the environment

The Solution — Forest Banking

As CCED and TNC's Virginia Chapter staff developed ideas for promoting sustainable forestry practices in the Clinch Valley region, they drew on a combination of TNC's proven land protection strategies and current forest management and marketing ideas. The result was the Forest Bank, which is designed to offer private, nonindustrial landowners a new option that gives them the financial liquidity they need in the short term while managing the resource sustainably over the long term. By making a voluntary "deposit" or transfer to the Forest Bank of the right to grow, manage, and harvest trees while retaining fee simple ownership of the underlying land, participating landowners receive the following services and guarantees:

- An ironclad promise that the deposited forest will remain forest forever and will henceforth be managed sustainably to contribute functionally to the ecosystem of which it is a part.
- A modest, regular financial return, or "dividend payment," calculated on the basis of the deposited timber's appraised value, like a savings bank dividend.
- The option, when facing financial need, of "withdrawing" the deposit by obtaining the cash value of the timber without having the trees cleared off their land. The right to withdraw will be made available with certain restrictions, similar to those accompanying familiar commercial bank certificates of deposit, such as "substantial penalty for early withdrawal."

To analyze the Forest Bank's feasibility, TNC conducted one-on-one interviews with private landowners in the Clinch Valley who fit the profile of the target market. In aggregate, these landowners controlled about 4,500 acres — a mere fraction of the watershed but nonetheless a

Core Principles of TNC's Forest Bank

- ✓ Maintain and enhance the health of the forest and plants and animals that depend on it.
- ✓ Optimize the sustainable return to our depositors and manage each forest deposit in an exemplary way.
- ✓ Protect the forestland soil productivity and the water quality of streams, rivers, and wetlands.
- ✓ Create economic value from the forest resources by pursuing premium markets for our products.
- ✓ Manage native forest systems to produce high-quality timber over the long term.
- ✓ Emulate the natural processes and patterns of the forest and minimize the negative impacts of our harvests.
- ✓ Conduct the Forest Bank with financial and biological integrity beyond reproach.
- ✓ Continually reassess our methods and operations and look for ways to improve the Forest Bank.

representative sample of the region. About 70 percent expressed a direct personal interest in the Forest Bank. Furthermore, nearly all believed the idea would appeal to other landowners in the region. As of June 1, 2000, one landowner had deposited land in the Clinch Valley Forest Bank and six more were discussing potential deposits with TNC. At the same time, a similar TNC Forest Bank being formed in Indiana had a handful of landowners prepared to make deposits as soon as agreements are finalized.

To secure the Forest Bank, TNC must have access to substantial capital. Although sufficient funds have been secured from philanthropic sources to support beginning operations in the Clinch Valley project, the long-term plan of expanding nationwide will require much more funding. For instance, the 10-year goal of the Clinch Valley pilot alone is to enroll 60,000 acres, which would create a liability in potential withdrawals of $30 million. To access low-cost capital, TNC is pursuing options such as combining the Forest Bank with federal conservation programs and obtaining tax-exempt financing.

The Forest Bank model is intended to be fully and broadly developed as a tool for forest conservation. Although the initial handful of pilots like the Clinch Valley bank will be dealing in tens of thousands of acres, the eventual impact, in terms of replication and results, is expected to be significantly greater.

[For more information, contact Kent Gilges, Director, The Forest Bank, 339 East Avenue, Suite 300, Rochester, NY 14604. Phone: (716) 232-3530; e-mail: kgilges@tnc.org.]

Karuk Tribe of California Preserves Its Water Resources, Creates Jobs

For years, the tribal lands of the Karuk Tribe of California, located in Northern California near the Oregon state line, have been honeycombed with roads for mining (gold, gravel, and quartz) and timber harvesting. Now that many of these mines and forests — and associated jobs — are nearly depleted, the Karuk people are finding themselves in a critical situation — out of work and left with a severely degraded watershed that was once their livelihood. Showing remarkable resilience, however, the Karak people have devised a plan that will restore the integrity of their sacred lands, as well as their economy.

Socioeconomic Concerns

Today the Karuk Tribe consists of dispersed communities whose economic and cultural lifestyle depends on the natural resources of their watersheds. A 72 percent decline in timber harvesting between 1989 and 1997 has devastated the economy of the mid-Klamath River region. Today the Karuk Tribe faces an unemployment rate of 87 percent among Native Americans alone and 67 percent across the region. The average annual income in the Native American community is only $3,089. Many tribal members who once worked for logging operations or mining companies are now unemployed. To make matters worse, last year the Klamath National Forest lost 20 natural resource staff positions and the Six Rivers National Forest lost 27. As the two largest employers in the mid-Klamath River region, this downsizing has had a great impact on the local economy, and upon the Karuk Tribe.

In addition to being economically valuable to the Karuk Tribe, the region is also culturally significant. This forested, steeply mountainous country through which the Klamath and Salmon rivers flow has been the home of Karuk people for thousands of years. Karuk sacred salmon fishing and hunting grounds spanned more than a million acres throughout the northwestern region of California. The lands were once home to Karuk sacred ceremonial activities and the Tribe is strongly committed to revitalizing their cultural traditions. Today, 98 percent of that land is located in the Klamath and Six Rivers National Forests.

Turning Point

A blessing in disguise, the overlap of the Karuk's tribal ancestral lands and the two National Forests paved the way for a government-to-government protocol agreement in 1994 for protecting and restoring the land. The partnership between the Forest Service and the Karuk Tribe has proved to be a win-win situation, expediting the watershed restoration and economic development objectives of each partner.

With assistance from the Northern California Indian Council, the tribe secured, in two years, more than $1 million of funding from seven different funding sources outside the Forest Service. The money has allowed the tribe to initiate a Comprehensive Watershed Restoration Training and Implementation Program for tribal members and staff. The training program, developed by TerraWave Systems, Inc., gives participants a thorough foundation in the technicalities underlying watershed restoration. The goal is to develop a Tribal Restoration Division that will help restore the Karuks' natural environment and create life-long careers for tribal members as watershed restoration specialists at the same time. All trainees serve an on-the-job apprenticeship in completing critical restoration work on projects throughout the Karuk lands. The program has created a highly skilled local workforce that has a vested interest in protecting water quality and other natural resources while earning the family's wages.

In 1998 the Karuk Tribe entered into a Memorandum of Understanding (MOU) with the Klamath National Forest that calls for the sharing of resources, funding, and staff to continue to decommission Steniacher Road, an old logging road that is one of biggest problems in the Klamath River's battle with siltation. The tribe's new Tribal Restoration Division, created in 1999, secured funds from EPA's Nonpoint Source Program to provide storm-proofing (making grooves in roadways to direct runoff) and prescription planning until significant restoration funds were secured for the remainder of the decommissioning. Then in 1999 the tribe began its first restoration training program on the river.

In January 2000 another MOU was signed with the Six Rivers National Forest and the Karuk Tribe to continue the completion of the Steinacher Road project when funding becomes available. Project organizers estimate that it will cost $1.9 million and take three project teams two years to complete. In April EPA allocated $150,000 in FY 2000 section 319 funds to the Karuk Tribe for the project.

Since the Tribal Restoration Division was established, 16 tribal members have been trained in heavy equipment application, prescription planning and surveying, and supervision of project sites. The new watershed restoration specialists have also removed approximately 58,000 cubic yards of sediment to stable locations and reestablished the natural drainage for two major streams that cross the abandoned Steinacher Road. So far, 2.2 miles of the 7.3 miles of the road have been decommissioned.

Improved water quality and fisheries are seen as a significant component of rebuilding the economy of the region. Watershed restoration represents an opportunity for long-term, stable employment based on non-resource extraction ecosystem management and a stable, fully functioning ecosystem. Building the Tribe's capacity to play an appropriate role in ecosystem management is the only means by which ecosystem restoration, cultural survival, and community prosperity will be achieved.

Over the long term, more than 2,000 miles of road throughout the Karuks' ancestral territory need decommissioning or significant upgrading and remediation of mining impacts. These projects will take 12 project teams 25 to 30 years to complete. At a minimum this program requires $3 million per year above the current forest watershed budget for planning, inspection, administration, and logistical support so the program can continue. If funding can be secured, the partnership created between the Karuk Tribe and the Forest Service will continue to serve as a model for a systematic approach to long-term salmon recovery efforts on the Klamath River.

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*Forest*A*Syst Helps Forest Landowners Protect Water Quality*

State forestry agencies now have a new tool to involve private landowners in the fight to protect water quality and forest health. *Forest*A*Syst*, a new national forestry guidance document for states to shape and mold for their specific land management needs, was released in May 1999 by North Carolina State University's Department of Forestry. Forest*A*Syst is based on the widely popular Home*A*Syst and Farm*A*Syst programs (see *News-Notes* # 23, #44, #50), which focus on water pollution prevention from household activities and farms and ranches, respectively. All three programs are voluntary partnerships between state government agencies and private landowners that enable individuals to take an active role in preventing pollution in and on their own farms, ranches, homes, and forests using confidential environmental assessments. Like Home*A*Syst and Farm*A*Syst, Forest*A*Syst is seen as a tool to help landowners create forest management plans.

The Forest*A*Syst guidance, developed by Rick Hamilton, an Extension Forest Specialist with the Department of Forestry at NCSU, is designed to be tailored for each state's specific management activities or techniques. For example, where a Forest*A*Syst program created for a midwestern state might call for prescribed or controlled burning to reduce invasive plant species, a Forest*A*Syst program for New York would not include burning because of air quality issues. To further customize a Forest*A*Syst program, each state will add tables, figures, and pictures of local tree and wildlife species, as well as BMPs used to meet state forest management guidelines.

Typical Questions Asked During a Forest*A*Syst Assessment

- ✓ Do you install road stabilization practices?
- ✓ Do you carefully plan and select BMPs before site disturbance?
- ✓ Do you leave protective buffer strips next to streams and water bodies?
- ✓ Do you establish vegetative cover on bare areas?
- ✓ Do you restrict cattle from woodlots and streamside areas?
- ✓ Do you test your soil to determine fertilizer rates?
- ✓ Do you protect water quality when constructing stream crossings?
- ✓ Do you routinely inspect roads, stream crossings, and BMPs?

Forest*A*Syst is targeted primarily for private forest landowners who manage their property for timber, wildlife, recreation, aesthetics, or water quality. The program encourages landowners to consult privately, without the threat of regulation or fines, with a natural resource professional who can help them enhance the forest's potential productivity, beauty, variety, and environmental quality. According to Hamilton, "Landowners who draw up their management plans with a natural resource professional not only make more money from their timber harvest, but there is the added benefit of protecting water quality."

Consultation with a natural resource professional can take place through the USDA's Cooperative Extension Service, USDA's Natural Resources Conservation Service, a state forester, or the American Tree Farm System, an organization that has 8,000 volunteer foresters who donate their time to assist private landowners in developing forest management plans based on strict water quality standards and guidelines.

Forest*A*Syst layers information in a logical progression designed to mold each decision-making step using a series of questions to be answered by the landowner on the types of practices conducted on the forested land. These questions are tailored to meet the site-specific purposes of each landowner. For example, a table at the beginning of the water quality section is used to assess which BMPs for forest-disturbing activities, with an emphasis on timber management, would be appropriate for each landowner. Each phase of timber management carried out in the forest is rated as being either most desirable, desirable, or least desirable. For example, for roads, trails, and firelines, the least desirable option occurs when "advice from a natural resources professional is not sought. BMPs are not used in installing new roads and trails, firelines are eroding, and there is no inspection or maintenance." Whereas the most desirable option is to seek advice from a natural resources professional on the most appropriate BMPs to install and how to maintain those BMPs. These insights allow landowners to find out if their current practices are detrimental to water quality.

Then the program helps provide the landowners with the technical resources needed to change their practices. Information and figures such as those that demonstrate BMPs that can be used to filter water runoff before it goes into a stream, help the landowner convert to more sustainable forest practices.

*Forest*A*Syst Helps Forest Landowners Protect Water Quality (continued)*

Since the publication of *Forest*A*Syst*, several states have begun the process of customizing the program to fit their needs, including Hawaii, Georgia, Kentucky, and Alabama; Mississippi is planning to follow suit.

Through years of experience, state forestry agencies have learned that sound forestry practices are critical in the fight to protect water quality. Now, the new Forest*A*Syst template will help state foresters transfer this important knowledge more easily to the private landowner on a voluntary basis.

[For more information, contact Rick Hamilton, Extension Forestry Specialist, Department of Forestry, North Carolina State University, Campus Box 8003, Room 3028D, Biltmore Hall, Raleigh, NC 27695-8003. Phone: (919) 515-5574; e-mail: rick_hamilton@ncsu.edu. For more information on the American Tree Farm System, visit the web site at www.treefarmsystem.org.]

Notes on the National Scene

New Report Says Clean Water Is Important to the Economy

As Americans plan their vacations this summer, most of them select vacation spots near water. On June 2 EPA Administrator Carol M. Browner released, *Liquid Assets 2000: America's Water Resources at a Turning Point*, a new report that shows how these vacations and hundreds of other water uses depend on clean water. At the same time, the Agency warns that to provide the powerful boost clean water gives the economy, the U.S. faces significant challenges in cleaning up the nation's remaining polluted waterways. “Americans care deeply about their rivers, lakes and shorelines,” said Browner. “A third of all Americans visit coastal areas each year, generating new jobs and billions of dollars for our economy. However, our summertime traditions continue to be affected by closed beaches and fish advisories, resulting in lost revenues and public health hazards.

“Although the United States has made tremendous progress cleaning up its water by removing billions of pounds of pollutants and doubling the number of waterways safe for fishing and swimming, a majority of Americans live within 10 miles of a polluted lake, river, stream or coastal area,” said Browner. “The Clinton/Gore Administration will soon issue an important new standard to help states clean up remaining polluted waters across the country.” In *Liquid Assets 2000*, EPA reports:

- A third of all Americans visit coastal areas each year, making a total of 910 million trips while spending about $44 billion. Each year, millions of additional dollars go to non-coastal recreational waterways.
- Water used for irrigating crops and raising livestock helps American farmers produce and sell $197 billion worth of food and fiber each year;
- Manufacturers use more than nine trillion gallons of fresh water every year;

Atlas of America's Polluted Waters

EPA has recently published the *Atlas of America's Polluted Waters*, EPA 840-B-00-002, which include maps showing waters within each state that do not meet state water quality standards. States listed these waters in their most recent submission to EPA (generally in 1998) as required by section 303(d) of the Clean Water Act. This provision of the Clean Water Act requires a “total maximum daily load” or TMDL for each listed water. Over 20,000 waterbodies across the country are identified as not meeting water quality standards. These waterbodies include more than 300,000 miles of rivers and streams and more than 5 million lake acres. The overwhelming majority of Americans — 218 million — live within 10 miles of a polluted waterbody. A key feature of the 1998 list of polluted waters is that, for the first time, all states provided computer-based “geo-referencing” data that allow consistent mapping of these polluted waters. In order to better illustrate the extent and seriousness of water pollution problems around the country, EPA prepared an atlas of state maps that identifies the polluted waters in each state. The maps are color coded to indicate the type of pollutant causing the pollution problem. Bar charts show the types of pollutants impairing stream, river, and coastal miles, and lakes, estuary, and wetland acres.

[Copies of the document are available at no charge from the National Service Center for Environmental Publications, P.O. Box 42419, Cincinnati, Ohio 45242-2419. Phone: (800) 490-9198 or (513) 489-8190; fax: (513) 489-8695. A copy of the Atlas has also been posted on EPA's TMDL web site for browsing and downloading at www.epa.gov/owow/tmdl/atlas/index.html.]

New Report Says Clean Water Is Important to the Economy (continued)

- Every year, the Great Lakes, Gulf of Mexico and coastal areas produce more than 10 billion pounds of fish and shellfish;
- States have identified almost 300,000 miles of rivers and streams and more than five million acres of lakes that do not meet state water quality goals;
- In l998, about one-third of the 1,062 beaches reporting to EPA had at least one health advisory or closing; more than 2,500 fish consumption advisories or bans were issued by states in areas where fish were too contaminated to eat.

[Copies of Liquid Assets 2000: America's Water Resources at a Turning Point*, EPA 840-B-00-00, are available on EPA's web site at www.epa.gov/ow/liquidassets or by calling EPA's Office of Wetlands, Oceans and Watersheds at (202) 260-7040.]*

National Watershed Outreach Conference Hits the Target!

A year of careful planning and scouring the country for innovative, dynamic presenters proved worth the effort as the National Watershed Outreach Conference was held April 17-19 in San Diego, California, to rave reviews and an enthusiastic reception from more than 240 participants. Presentations at the conference covered a diverse spectrum of approaches and addressed every aspect of local outreach — from theory and planning to production, distribution, and evaluation. The event provided an excellent opportunity for environmental educators, watershed project coordinators, and federal, state, and local agency staff from across the nation to learn what works and what doesn't in the world of watershed outreach.

The conference was a collaborative effort of EPA's Office of Wetlands, Oceans, and Watersheds and Office of Ground Water and Drinking Water, the Aquatic Outreach Institute (Richmond, California), the University of California Cooperative Extension/Sea Grant Extension Program, and the County of San Diego Watershed Working Group. It aimed to provide a forum for a variety of stakeholders to share varied outreach techniques related to a wide range of watershed issues and motivated attendees to explore both traditional and nontraditional outreach techniques. And hit the target it did!

As a prelude to the conference, the San Diego Watershed Working Group convened the "San Diego County Watershed Forum 2000" on the morning of April 17. The Forum highlighted new regional resources for watershed managers, sponsored discussion on how the constituent organizations which make up the Working Group might cooperate for mutual benefit, and provided an opportunity to explore new ways to improve regional watershed management in San Diego. The Forum established a local focus for the conference and engaged local watershed managers who otherwise might not have participated in the National Watershed Outreach Conference.

The Forum was followed by several preconference workshops held on Monday afternoon which provided opportunities for getting specific hands-on information about applying for and obtaining grants, initiating and developing an outreach program, educating local officials and decisionmakers about nonpoint source pollution, and developing drinking water source assessments. In perhaps the most lively workshop, "Get That Grant," Andy Robinson used small group discussions and mini-projects to demonstrate how to design fundable projects, conduct grants research, develop relationships with grant officers, and in general become more successful at obtaining grant funding. Robinson is a grants trainer who has helped to raise more than $4 million in grants and donations.

Bill Hammond, an assistant professor in environmental and interdisciplinary studies of Florida Gulf Coast University, gave an animated keynote address on public outreach tactics.

On Tuesday morning the conference proper started with a bang. Bill Hammond, an assistant professor in environmental and interdisciplinary studies at Florida Gulf Coast University, launched the conference with an animated discussion of the lessons about environmental education he has learned during his many years as a teacher, author, trainer, and general jack-of-all-trades. His creative and engaging approach to environmental education gave conference participants a renewed zest and energy for educating the public on watershed issues in a way that would stir them to action. He emphasized that change can happen only when the broad community itself gets involved and is committed to the goals and process. He ended his address with a compelling video clip from the *Power of One*, a poignant film that affirms how each of us *can* and *does* make a difference when we become engaged and involved.

National Watershed Outreach Conference Hits the Target! (continued)

Many of the presentations during the 3-day conference touched on nonpoint source education and outreach. For example, Chris Swann, a watershed planner for the Center for Watershed Protection, presented the results of the Center's Survey of Resident Nutrient Behavior in the Chesapeake Bay Watershed. Using the survey, the Center determined which outreach techniques appear most effective in influencing watershed behavior. One conference attendee mentioned that Swann's talk "will be useful to convince our communities and more technical folks that too often our reports are too 'techy,' 'jargony,' and bureaucratic!" Another attendee remarked that Swann's research "is key to our challenges in getting money for effective work."

Susan Beran, a former education specialist for the Redwood-Cottonwood Rivers Control Area, a rural watershed association in Minnesota, talked about how enticing local residents with coffee and rolls in an informal setting — a local neighborhood restaurant — had proved to be an effective method for getting them to attend watershed meetings. These "Coffee on the Project" meetings have helped the watershed group identify the community's real priorities, as well as key people who had a real interest in water quality. "By keeping the event local, residents feel very comfortable saying what is on their minds," said Beran. Maggie Skenderian, a community relations specialist from the Bureau of Environmental Services in Portland, Oregon, who attended Beran's session, commented, "I took notes madly and got some great ideas for things I can replicate at home."

Outreach and education continue to be essential components in the fight for watershed protection and restoration. Without them, even the best technical and well-funded plans will fail for the lack of broadly based community support. The awareness and support of all elements of the community alone can sustain the long-term efforts needed to turn watersheds around and keep them permanently protected. Stu Tuller, of EPA's Nonpoint Source Control Branch, which provided seed money for the Conference and oversaw the planning, commented, "From the outset we aimed at providing a conference which would stimulate the state and local practitioners of watershed protection, the folks who make things happen on the ground. Judging from the energy level in San Diego and the unsolicited comments we received both during the Conference and since, we hit the target dead center." The National Watershed Outreach Conference itself was perhaps the most successful example of outreach as it brought together more than 200 watershed professionals and weekend warriors from across the country to share the many ways in which they are tackling and solving problems in their own backyards.

[For more information, contact Stacie Craddock, Office of Wetlands, Oceans, and Watersheds, U.S. EPA, 1200 Pennsylvania Avenue, N.W., Washington, DC 20460. Phone: (202) 260-3788; fax: (202) 260-1977; e-mail: craddock.stacie@epa.gov.]

News From the States, Tribes, and Localities

Love and Money: NPS Funds Restore Spawning Habitat (and other good stuff) for New York State Fish

by Elaine Bloom and Nancy Steubner, New York State Department of Environmental Conservation

A slender brook trout swims against the fall current. The brookie population in this western New York stream is recovering after years of low reproduction, but this female still has difficulty locating a mate. Eventually, a small male appears. Once his size would have prevented him from competing with larger rivals, but for now this reach is his alone.

Until measures were taken recently to reduce erosion from nearby roads and ditches, trout reproduction in the stream had been impaired by sedimentation for many years. Now, the streamflow is starting to wash away the silt that covers much of the gravel streambed needed for spawning. The female digs a shallow nest in a small section of exposed gravel and releases her eggs. Her mate flicks by above and fertilizes them. In a moment, both fish are gone, leaving the eggs to develop on their own.

It's 8 p.m., hours after the most of the staff at New York State's Department of Environmental Conservation have gone home. Down one shadowy hallway, however, people are hunched around a conference table. They've been assembled since 8 o'clock in the morning, and their faces show it.

Love and Money: NPS Funds Restore Spawning Habitat (continued)

Fluorescent lights, scribbled notes, half-empty cartons of lo mein, and a bunch of weary bureaucrats seem a far cry from an aquatic tryst 200 miles away, but the connection is closer than one might think.

The group is weighing the merits of funding various local water quality projects. Today alone, they've evaluated over 30 of the more than 800 project applications received in 1999, two-thirds of them for NPS abatement or aquatic habitat restoration. Flip chart pages festoon the room's walls, recording the group's often spirited deliberations.

Funded Projects

NPS implementation projects that have received funding in previous years include

- Capturing sediment and floatable debris from New Rochelle storm water outlets. (Long Island Sound Comprehensive Conservation Management Plan)
- Restoring wetlands that have historically provided an important fish and wildlife habitat in the Niagara River watershed. (Great Lakes Management Plan)
- Implementing improved agricultural management techniques at 26 dairies and installing six barnyard wastewater management systems to protect the Wallkill River watershed. (Hudson River Management Plan)
- Removing a dike and restoring a sensitive salt marsh in Saw Mill Creek Park on Staten Island. (New York/New Jersey Harbor Comprehensive Conservation and Management Plan)
- Stabilizing the streambank on the Adirondacks' Ausable River to improve the habitat for fish and aquatic insects. (Lake Champlain Management Plan)
- Reducing nutrients entering Hector Falls Creek and the Seneca Lake watershed by constructing a concrete manure storage system. (There is currently no comprehensive management plan for the Finger Lakes and, as a result, Bond Act projects in this area must be approved by the Commissioner of Environmental Conservation or the Secretary of State and must be reviewed by the Finger Lakes Water Quality Review Committee.)
- Mitigating storm water runoff from highways in Suffolk County that are threatening sensitive shellfish habitats. (Peconic and South Shore Estuaries)
- Restoring wetland and aquatic habitats at Ocean View Park and the Tobay/John F. Kennedy Sanctuary (South Shore Estuary)

Planning, technical assistance, and educational projects recently receiving funding include

- Establishing a statewide training program on on-site wastewater treatment systems for local code enforcement officers, designers and installers, community planners, conservation districts, and state agencies.
- Providing statewide technical and programmatic support for communities developing stormwater management and erosion and sediment control plans.
- Providing technical training in stream corridor and wetlands restoration.Technical assistance and training in developing comprehensive nutrient management plans on farms.
- Providing the University of Connecticut Cooperative Extension's Nonpoint Source Education for Municipal Officials (NEMO) workshops to communities on Long Island.

To fund NPS projects such as those that stop sediment loading to trout streams, the state has stirred together a creative blend of monies. The main "ingredients" in the funding pot are New York's Environmental Protection Fund (EPF) and Clean Water/Clean Air Bond Act and the incremental section 319 funds awarded as part of an EPA Performance Partnership Grant (PPG).

The Bond Act has been the largest source of grants for NPS and aquatic habitat restoration projects since the law was passed in November 1996. Out of a total of $1.75 billion allocated for environmental projects, $420 million is split between NPS abatement and control, aquatic habitat restoration, and wastewater treatment.

The state legislature established the Environmental Protection Fund in 1993, and it is primarily replenished by taxes on land sales, revenues from sales of state lands, and sale of the state bluebird license plate. Out of an annual pot of about $100 million, approximately $6 million pays for NPS planning and implementation projects. Since 1996 a total of $22 million of Bond Act and EPF grants have been committed to NPS implementation or aquatic habitat restoration projects. Funds come from EPA through a Performance Partnership Grant. To receive these funds, New York entered into an Environmental Performance Partnership Agreement with EPA. About $2 million in incremental section 319 funds was used to implement NPS management measures in more than 20 NPS projects in 1998 and 1999.

To put the money from each source to its best use, the state issues an annual call for projects to be considered for funding. Weeks before the application deadline, applications from conservation districts and municipalities begin to filter into DEC's Division of Water — a tiny rivulet at first, but building to a torrent in the last frantic days. In 1999 DEC received more than 400 new applications and considered an additional 450 revised applications. Paper quickly fills the "War Room. " Staplers, colored pens, and hole punches mysteriously disappear from desks in the vicinity,

drafted into service for processing applications. Staff from other divisions and field offices drop by to lend a hand. The copier hums constantly. Finally — sorted, prescreened, coded, photocopied, stapled, and stacked — the applications are shipped off to DEC field offices for a preliminary review before the scoring sessions start.

And that is just the beginning. What follows are weeks of meetings with DEC Division of Water central and regional staff and other divisions with a stake in clean water projects. Two other state agencies, the Department of State and the Department of Agriculture and Markets, play a part in evaluating and scoring the applications.

Each project is reviewed, evaluated, scored, and ranked, with four major aspects considered:

1. ***How severe is the problem being addressed?*** Projects that address the worst water resource problems are the highest priority.
2. ***How likely is this project to improve conditions?*** Projects must significantly improve water quality or aquatic habitat.
3. ***What's the return on the investment?*** Projects should implement economical, technically viable, and cost — effective solutions and reflect a community's comprehensive and coordinated approach to solving water quality problems.
4. ***How well does it fit with the priorities of the management plan for the area?*** Management plans, such as those developed under the National Estuary Program or the Great Lakes Water Quality Agreement, have been written for seven areas in the state that together cover more than 50 percent of New York's land. The management plans identify the environmental priorities for each waterbody protected within them.

After determining whether a project merits financial support, the next task is matching it with an appropriate funding vehicle. Each funding source has its own specific criteria to determine a project's eligiblity. For example, only projects that implement practices identified in New York's NPS Management Practices Catalog and that address management plan priorities are eligible for Bond Act monies, and PPG funds can be used only in areas identified as needing restoration through the state's Unified Watershed Assessment.

The different restrictions on spending the funds from each source are somewhat daunting. "It's a complicated process," acknowledges Phil DeGaetano, Assistant Director of the Division of Water, "but we've eliminated the need for applicants to try to sift through the various restrictions. We know how to mix and match funding sources so that the best projects get funded while meeting the criteria for each funding source."

Another funding source for NPS projects is the Clean Water State Revolving Loan Fund (CWSRF) administered by the New York State Environmental Facilities Corporation, which has provided $447.5 million for projects like landfill leachate collection, storage facilities for highway deicing materials, and streambank stabilization.

Education, information, training, and technical assistance that provide a foundation for on-the-ground projects are another vital part of the NPS picture. Both EPF funds and a certain proportion of PPG dollars can be used to support NPS planning and educational initiatives, many of which are proposed by the state's Nonpoint Source Workgroups.

Throughout New York State, this integrated funding mix makes the good things in life possible — for people and for aquatic creatures. For humans, it could be a leisurely float on a mountain pond, a full creel, or paddling a sparkling river. For trout, it's cool, oxygenated water, a smorgasbord of macroinvertebrates, and good spawning habitat. That is the vision that lies dormant between the lines of every funding application and that energizes the debates about which projects to fund. New York's diversity of funding sources help bring it to life.

[For more information, contact Gerry Chartier, New York State Department of Environmental Conservation, Division of Water, 50 Wolf Road, Albany, NY 12233-3502. E-mail: grcharti@gw.dec.state.ny.us.]

Tribal Watershed Analysis and Management Pilot Project

Four Indian tribes with very different ecosystems are piloting a new method for analyzing and managing their watersheds. The method uses a series of steps and modules to help a community analyze and develop the best management approach for its watershed. The approach provides a unique and effective way to assess the environment, identify problems, establish priorities for preservation or remedial actions, and implement solutions.

EPA's Office of Wetlands, Oceans, and Watersheds and the American Indian Environmental Office (AIEO) have collaborated on the project to develop a comprehensive Watershed Analysis and Management (WAM) methodology that addresses tribal watershed management issues. The objective is to produce a custom-tailored watershed analysis and management framework that includes geographically specific analytical assessment methods and application techniques for addressing a wide range of tribal environmental issues. The goal is to develop a well-defined process which recognizes the explicit objectives of multiple stakeholders and results in watershed management plans that reflect cultural values, economic impacts, and critical environmental resources. WAM analyses examine the impacts of existing and proposed land management activities such as timber harvest, agriculture, and development on valued resources like water quality and sensitive species.

Four tribes were selected to pilot the methodology: Penobscot Nation in Maine, Prairie Band of Potawatomi in Kansas, White Mountain Apache Tribe in Arizona, and Quinault Indian Nation in Washington. Each tribal pilot is implementing a WAM development addressing issues within its watershed with a level of analysis appropriate to its task and the resources available. The development of WAM and pilot applications began in 1997 and will be completed this month. Currently, the pilot method is in use by the tribes and has led to specific restoration and environmental protection projects.

The WAM program involves a series of steps and modules that call for input and analysis from the tribe or community affected. Thus, the program reflects the community's concerns and particular situations that occur at the specific location. Jonathan Long, coordinator of the White Mountain Apache Tribe's effort, noted, "WAM is a framework for collecting and organizing information that helps you see connections that you would miss through inventory alone." Tammis Coffin, project leader for the Penobscot Nation added, "WAM is a system of logic for looking at the watershed in a holistic way."

WAM involves the following five steps:

1. Scoping (identify stakeholders, issues)
2. Assessment (acquire date, analyze)
3. Synthesis (integrate the assessments)
4. Prescriptions (develop solutions)
5. Adaptive Management (monitor, modify)

To accommodate a wide range of problems, the process can be carried out at two levels of detail. The first level, called the characterization level, relies primarily on existing information without supplementary field data. This level of analysis provides a rapid means of assessing a watershed and establishing priorities using the five steps. For example, level 1 provides effective ways to address Unified Watershed Assessments (UWAs) under the Clean Water Action Plan.

Level 2 requires more quantitative assessments in each of the five steps. It involves acquisition of supplemental field data and use of detailed analysis modules. This is the level used for comprehensive analysis of a watershed where major economic and/or environmental issues are at stake. Level 2 is also the level appropriate for developing TMDLs. A series of Process Modules (Erosion, Channel, Hydrology, and Vegetation) and Resource Modules (Water Quality, Aquatic, and Community (Cultural) Resources) assist in the analysis. The Community Resources Module is modified for state and nontribal applications; all other modules remain the same.

Tribal Watershed Analysis and Management Pilot Project (continued)

The WAM team assisted in development and training for the Clean Water Action Plan, UWA Nationwide Tribal Workshops held in 1999. More comprehensive tribal WAM workshops are planned for the future that will use the WAM framework and provide hands-on guidance to address tribal environmental problems and to acquire funding from a variety of sources, such as EPA, the Natural Resources Conservation Service, and the Bureau of Indian Affairs. Workshops will focus on specific tribal environmental problems and practical applications appropriate the tribal resources and needs. The WAM tribal pilots will provide leadership for the workshops.

A related effort, The Watershed Approach to Tribal TMDLs (Total Maximum Daily Loads), is being undertaken with the Navajo Nation, Window Rock, Arizona. This effort provides a new capability to integrate the TMDL process into the watershed approach and will facilitate tribal preparation of TMDLs, an emerging tribal requirement.

[For more information, contact Martin Brossman, Office of Wetlands, Oceans, and Watersheds (4503F), U.S. EPA, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Phone: (202) 260-7023; e-mail: brossman.martin@epa.gov.]

League of Women Voters Flood the Market with NPS Education in Colorado

The pure mountain streams everyone thinks of as being synonymous with Colorado have gained a powerful ally. The League of Women Voters (LWV) of Colorado Education Fund, which is funded by the Colorado Department of Public Health and Environment through an EPA grant, is blitzing the state with information on how Coloradans unknowingly contribute to water pollution, reminding them that it is up to them to help protect their water resources. Project organizers felt that the time was right to educate the residential audience of Colorado to help prevent the serious water pollution problems that other states are already facing.

Under the guise of the Colorado Water Protection Project (CWPP), which LWV established to implement the project, LWV barraged Coloradan couch potatoes in the Spring of 1999 with a 30-second television ad explaining the problem. The ad aired repeatedly over a 10-day period, reaching approximately 90 percent of adult viewers in the Colorado area. A simultaneous public relations campaign supported the effort; Governor Bill Owens even designated the week as polluted runoff prevention week.

The ad and the proclamation served as a hook to get press coverage in both of the state's large daily newspapers. The *Denver Post* ran an educational editorial titled "The Enemy Within," which spelled out the problem and the solution; another article, "Household Pollution Finally Gaining Notice," appeared in the *Rocky Mountain News*.

Meanwhile project spokespeople were interviewed on TV stations around the state, and thousands of metro Denver residents read ads on the outside of buses cleverly showing how motor oil, fertilizer, and pet waste affect water quality. LWV also developed a flyer and a series of articles explaining the role of residents in preventing NPS pollution for companies like Coors and U.S. West to distribute to their employees.

All over the state, local branches of LWV manned booths at Earth Day celebrations and county fairs to answer questions and hand out educational materials on NPS issues. LWV also worked with local utility companies to include flyers in their monthly utility bill mailouts.

Success Realized

Based on about 600 random phone surveys of Coloradans before and after the attention-grabbing media and PR blitz, two of the three goals were deemed successful. Residents who recalled receiving information about household-generated polluted runoff were more aware about what runoff is and what they can do to prevent pollution. However, respondents did not fully understand how polluted runoff enters local rivers, lakes, and streams.

A dramatic increase in the number of hits on the CWPP web site (www.ourwater.org) and a corresponding spike in the number of phone calls to the toll-free information clearinghouse, where

League of Women Voters Flood the Market with NPS Education in Coloradot (continued)

a newly developed database lists additional resources, proved that the media blitz achieved its goal. "It was exciting and gratifying to see that the conclusions of the survey quantified the results of the effort that had been put into the project," said project manager Cynthia Peterson.

The project was funded by grants from EPA, but because the budget was limited for such a large-scale project, a Denver advertising firm agreed to design and develop the television ad pro bono. The ads ran again this past April, and League members across the state once again planned local supporting activities to reinforce the project message: "It's our water, Colorado. Let's be careful what we put into it." The year 2000 advertising campaign ran for two weeks and included emphasis on LWV's third goal — how polluted runoff enters local rivers, lakes, and streams.

[For more information, contact Cynthia Peterson, Project Manager, Colorado Water Protection Project, The League of Women Voters of Colorado Education Fund, 1410 Grant Street, Suite B204, Denver, CO 80203. Phone: (303) 861-5195; e-mail: cwpp2@aol.com, web site: www.cwpp.org.]

Notes on Watershed Management

Nonpoint Source Pollution Abatement Programs — Are They Good Enough?

Are existing nonpoint source pollution abatement finance programs adequate to address NPS pollution problems in the United States? The Northeast-Midwest (NEMW) Institute in Washington, DC, and the Marine Studies Consortium (MSC) in Needham, Massachusetts, believe that more could be done to improve the efficiency, effectiveness, and integration of the nearly $2 billion in annual federal expenditures for NPS abatement.

The two organizations conducted the Nonpoint Finance Project to investigate how NPS programs might be improved. The project, funded by the Joyce Foundation, centered on two forums — one in Chicago, Illinois, in October 1999 and one in Baltimore, Maryland, in January 2000. The forums brought diverse stakeholders together, including representatives from the regulated community, government entities, and environmental and agricultural organizations, as well as funding program managers, finance experts, and academic authorities. At each forum, the stakeholders debated and discussed current NPS programs and funding sources.

Project managers developed a report (available on the Internet at www.nemw.org) that outlines the recommendations put forth by forum participants and other stakeholders. They anticipate that the project could influence changes in law, regulation, finance mechanisms, and technical assistance programs. "The report is a menu of what to try and not to try at the state level. Many people just don't understand the possibilities that are available," explained Roger Stern, executive director of the Marine Studies Consortium.

Innovative Financing Mechanisms Considered by the Nonpoint Finance Project Forums

The project report outlines various innovative financing mechanisms considered by the forum participants. It details discussion points for each mechanism, including validity, barriers to implementation, and potential landowner acceptance or adoption. Please consult the final report for more information about each of the following mechanisms:

Leverage Federal Land Retirement Programs to Acquire Permanent Easements. Leverage funds from programs such as the Conservation Reserve Program (CRP) to purchase easements to permanently remove environmentally sensitive land from production, instead of relying solely on transitory 10- to 15-year CRP contracts. "Although an easement purchase would require a 20 to 30 percent state-funded premium on top of the federal CRP payment, the conservation benefits would be permanent instead of temporary," noted Stern. "The absence of permanent conservation benefits from the $1.3 billion annual CRP outlays is the largest inefficiency in any federal environmental spending program."

Use Revenue Bonds and Up-Front, Lump-Sum Payments to Promote Permanent Easements. Upon enrollment in the CRP, a landowner removes environmentally sensitive land from production for

10 to 15 years in exchange for annual rental payments from the federal government. In this mechanism, the landowner receives an up-front, lump-sum CRP payment in exchange for selling a permanent easement. Because the federal government cannot provide this option, a state would have to grant bonding authority to a third party (such as a non-profit) or contract with an organization that already has bonding authority. A private corporation could also initiate a bond program. The third party would issue a revenue bond to fund the landowner's up-front payment. The state or the third party would hold the easement. The bond would be retired by the CRP payments the farmer had exchanged.

Create a Nonprofit River/Wetland Restoration Project. Create a nonprofit organizations to direct a unified approach to NPS pollution, helping to focus local, state, and federal efforts.

Use Nonprofits as a Source of Financing and Promoting NPS Abatement. Encourage nonprofit organizations to help fund NPS abatement efforts.

Provide State Revolving Fund (SRF) Loans Through Local Banks. Allow landowners to get SRF-backed loans from banks to help them fund their cost-share requirements under various federal NPS programs.

Offer Insurance to Protect Farmers from Perceived Risks of BMPs. Offer farmers BMP insurance to reduce the incentive to overapply chemicals and reduce the risk associated with implementing a BMP. For example, farmers without BMP insurance might not implement a nutrient BMP if they are afraid it might reduce their crop yields. (See *News-Notes* Issue #58 for more information on BMP insurance.)

Use Water and Sewer Authorities as a Source of NPS Funding. Encourage municipalities to fund NPS abatement efforts within their watershed to avoid costlier drinking water or wastewater infrastructure.

Offer Bonus Payments to Encourage Implementation of BMPs. State NPS agencies could offer bonus payments when certain NPS abatement participation goals are met, thereby increasing awareness of and participation in abatement efforts.

Allow State Revolving Fund Arbitrage to Finance NPS Abatement Efforts. Federal law should be amended to allow states to realize arbitrage earnings on collateral reserves. The earnings from limited arbitrage would provide additional funds for NPS abatement efforts.

Leverage CRP Land to Promote BMPs via Drought Risk Management. Include a provision in CRP contracts on nonriparian, less erodible land that allows limited access for forage in times of severe drought. This provision would allow neighboring landowners who implement BMPs on their land to mow or graze the fallow CRP land when a drought reduces foraging capacity of their existing pastures. The risks posed by cattle on CRP land might be acceptable when compared to the benefits of enticing neighboring landowners to implement BMPs.

Carbon Sequestration by Utilities. Pass legislation that will provide industries "carbon credits" for reducing emissions of greenhouse gases. Encourage utilities to obtain credits by paying landowners to plant trees that will sequester carbon.

What Should Be Done First?

During the forums' discussion about potential finance mechanisms, project managers also identified several recurring themes that impede NPS abatement efforts. In response, the managers put forth three proposals in the report that build on the innovative mechanisms discussed and fill current voids that exist in BMP financing method availability and landowner incentive opportunities.

First, forum discussions frequently centered around third parties, such as water utilities, that have a vested interest in promoting water quality but are largely untapped as financial resources for NPS abatement efforts. Project managers suggest that changes to the Farm Bill be considered that allow water utilities to enter into enhanced CRP (Conservation Reserve Program) land retirement program agreements with the federal government to protect their water quality. Current law requires that utilities gain approval from the state legislature, a barrier that deters many utilities from using CREP as an NPS pollution abatement tool.

Second, managers learned that landowners will be more willing to use sensitive riparian land in an environmentally sound way if owners can continue to earn some economic benefit from the land. As a result, project managers propose that the federal government should fund a comprehensive study of potential economic uses for retired land. Income options on environmentally sensitive land will make landowners more likely to implement BMPs.

Third, managers learned that national NPS abatement suffers from the lack of a unified effort to reduce nonpoint source pollution. To achieve this unified approach, project managers proposed creation of a nonprofit organization to promote land retirement/easement acquisition programs among states, educate stakeholders about the innovative finance mechanisms, and engage in limited restoration efforts on riparian land.

Long-term Goals

Although the MSC and NEMW are seeking funds to continue their NPS finance work, the current report is a good first step. Project managers hope that cooperating organizations will use the report to stimulate change by educating and gaining the support of state technical committees, federal agencies, and the agricultural and environmental communities. Project managers anticipate that the report's recommendations could influence changes in law, regulation, finance mechanisms, and technical assistance programs. Because the recommendations will have been made by a representative crosssection of stakeholders, project cooperators hope that changes not only will improve the efficiency, effectiveness, and integration of NPS finance programs, but also will meet the needs of the majority.

[For more information, contact Roger Stern, Executive Director, Marine Studies Consortium, 83 Chapel Street, Needham, MA 02492. Phone: (781) 444-3643; e-mail: rjstern@earthlink.net.]

Innovative Financing Training Available

The Environmental Finance Center (EFC) at the University of Maryland offers training workshops that focus on combining financial and technical assistance programs with innovative financing techniques to support watershed management. The EFC believes that watershed management presents a unique opportunity to leverage the resources of one public or private organization with another in the interest of holistic environmental management. Training course information is located on the Internet at the address noted below.

With support from EPA and the University of Maryland Sea Grant College, the EFC was established to help local communities find creative ways to pay for environmental projects. The EFC promotes alternative and innovative ways to manage the cost of environmental activities, provides training and development opportunities in environmental management, and works to increase the public and private sector's awareness of the benefits associated with sound environmental management policies.

[For more information, please contact Elizabeth Hickey, Coordinator, Environmental Finance Center, University of Maryland, 0112 Skinner Hall, College Park, MD 20742. Phone: (301) 405-6383; E-mail: efc@mdsg.umces.edu; Internet: ttp://mdsg.umd.edu/EFC/)

A Survey of Residential Nutrient Behavior

by Heather Holland, Center for Watershed Protection

Educational efforts to increase awareness of nutrient management strategies to protect water quality are relatively new, but anecdotal evidence suggests that such prevention programs are the most cost-effective nutrient reduction strategies in developed and developing urban areas. Several communities in the Chesapeake Bay region have implemented nutrient education programs to protect water resources from excessive nutrient loading. In particular, many of the tributary strategies developed for the Chesapeake Bay emphasize some form of urban nutrient management education. These education programs are still in their infancy, however, and not much is known about their effectiveness in actually reducing nutrient loads.

As a means of assessing the effectiveness of current educational efforts in the Chesapeake Bay region, the Center for Watershed Protection (CWP) recently completed an analysis of existing

A Survey of Residential Nutrient Behavior (continued)

nutrient education programs and their ability to change the nutrient behaviors of the average resident. More than 700 Chesapeake Bay residents were surveyed concerning their nutrient practices in three areas (lawn care, septic system maintenance, and pet waste disposal) that contribute pollutants to local waters. Through this survey, CWP gauged the knowledge of Bay area residents regarding practices to control nutrient runoff in stormwater, determined which outreach methods work best at attracting residents' attention, assessed the effectiveness of current efforts to spread the nutrient management message, and established recommendations for creating better, more effective nutrient education programs.

And indeed, the survey provided revealing insights on residents' behaviors and attitudes toward nutrient management. Regarding lawn care, the survey discovered that althought 91 percent of residents with yards maintained their own lawns or yards, 64 percent indicated that they had not obtained advice or information on lawn management issues such as watering, fertilizing, composting, or establishing turf. Residents generally overfertilized; most residents who fertilized simply consulted the fertilizer product label to determine the proper application level for their lawn or, worse, decided for themselves how much fertilizer was needed. Despite the value of testing in determining the appropriate amount of fertilizer needed, 84 percent of respondents *had not* received or performed a soil nutrient test on their lawns in the last three years.

The survey also indicated that a significant number of Bay area residents do not fully understand the relationship between a properly maintained septic system and the water quality of the Chesapeake Bay is not fully understood by. A full 50 percent of those surveyed who used on-site disposal systems had not had their systems inspected in the last three years, and 46 percent of those surveyed had not had the system cleaned in the last three years. The low number of septic owners seeking advice on septic maintenance indicates that they know very little about the link between water quality and septic failure. The absence of interest in septic system impacts might be caused by the perception that maintenance procedures for septic systems are too expensive or are not necessary on a regular basis for the system to function properly. In fact, the phone survey responses indicate a general lack of understanding of the maintenance required to ensure a properly functioning septic system.

Where pet waste is concerned, the biggest problem revealed by the survey is that many residents do not perceive dog droppings as a water quality issue. Of Bay area dog owners, 56 percent personally walked their own dog, and less than half of them claimed to pick up after their dog all the time. A full 34 percent of dog walkers admitted that they rarely or never picked up after their dog or refused to answer the question entirely. More tellingly, 37 percent of dog walkers did not agree or expressed no knowledge when asked if pet waste could contribute nutrients to local water bodies. Obviously, a stronger connection between pet waste and water quality needs to be established before nutrient education efforts can hope to change deeply rooted behaviors like refusing to clean up after one's dog.

A major goal of the study was to gauge residents' attitudes toward current outreach methods. Unfortunately, sharp differences exist between the outreach techniques that residents hear and respond to and the outreach techniques program managers actually use. Of the 14 techniques from which residents could choose, television-related outreach occupied three of the top seven spots. Newspaper columns or advertisements were also effective, as were community or city newsletters. Outreach techniques that required more particpatory effort seemed to be popular with a small segment of the local residents, but of little or no interest to a much larger portion of the population.

However, although television and television advertisements were consistently rated as the most popular techniques for receiving water quality messages, television outreach was one of the least used outreach techniques, according to program managers. One explanation is that limited budget resources prevent most programs from using television. Brochures/flyers and training workshops because they are relatively inexpensive to produce when compared to purchasing advertising space or producing videos.

Although Marylanders consider themselves to be more environmentally aware than ever, many people don't fully understand the hydrologic connection between their yard, the street, the storm sewer, and streams: people who wouldn't dream of tossing a bottle out the car window don't think

A Survey of Residential Nutrient Behavior (continued)

twice about hosing grease off their cars into the street. And although these actions may seem fairly inconsequential by themselves, they add up. CWP's conservative estimations of residential polluters in Maryland place the number of households guilty of overfertilizing at 1.7 million. Add in approximately 760,000 bad dog-walkers, 1.3 million chronic car washers, 2 million pesticide sprayers, and another 760,000 septic slackers, and it's easy to see how our waters get so dirty.

[For more information, contact the Center for Watershed Protection, 8391 Main Street, Ellicott City, MD 21043. Phone: (410) 461-8323; fax: (410) 461-8324; e-mail: center@cwp.org or visit the CWP web site at www.cwp.org for condensed summaries of this and other publications.]

National Effluent Guidelines for the Construction and Development Industry in the Works

EPA is planning to identify minimum requirements for erosion and sediment control and stormwater runoff best management practices employed by land developers, home builders, builders of commercial and industrial property, and other private and public construction site owners and operators. The construction and development (C&D) industry is subject to widely varying requirements in different state and local jurisdictions. If adequate runoff controls are not in place, construction sites can discharge large amounts of sediment, nutrients, and associated pollutants to receiving waters.

The new regulations, known as "effluent guidelines," will apply to construction activities associated with new development and redevelopment activities. The regulations will address stormwater runoff from construction sites during the active phase of construction, as well as postconstruction runoff.

Impacts of Stormwater Runoff

Water quality problems that are the result of construction and development activities are the impetus for the new guidelines. Sediment loadings from construction sites can be orders of magnitude higher than those associated with undisturbed areas. Construction and development runoff can also result in discharges of nutrients, metals, and other pollutants that can contribute to water quality degradation. In addition to contributing pollutants, the increased runoff volumes and flow rates produced as a result of development can cause significant degradation of receiving stream quality. Impacts include streambed scouring and habitat degradation, shoreline erosion and stream bank widening, thermal impacts, loss of fish populations and sensitive aquatic species, increased frequency of downstream flooding, and aesthetic degradation.

Effluent Guidelines Background

Effluent guidelines are national technology-based standards for categories of point source dischargers. EPA develops the regulations pursuant to Title III of the Clean Water Act, and the standards are implemented in National Pollutant Discharge Elimination System (NPDES) permits. The standards are based on the performance of control and treatment technologies, with consideration of the costs associated with implementing the technologies. The effluent guidelines will complement the existing NPDES Phase I and II stormwater permit regulations, and they will typically be incorporated into the construction general permits issued by states and EPA regional offices.

Best Management Practices and Relationship to NPDES Regulations

EPA intends to evaluate the inclusion of design and maintenance criteria as minimum requirements for a variety of BMPs used at construction sites to prevent or mitigate the impacts of storm water runoff on surface water quality. Current requirements for construction site BMPs vary around the United States. The range from local erosion and sediment control programs that require detailed site plans and BMP specifications to few or no requirements.

EPA also intends to develop effectiveness and applicability criteria for BMPs used to manage postconstruction runoff. By incorporating more site designs that are more protective of water quality during the planning phase of projects, postconstruction runoff impacts can be minimized substantially.

National Effluent Guidelines for the Construction and Development Industry in the Works (continued)

BMPs used during C&D activities include temporary control measures, permanent control measures, and low-impact land use practices. Temporary control measures include sediment trapping devices such as silt fences, vegetated filter strips, and sediment basins, and erosion control devices such as mulching, temporary revegetation, and the application of erosion control mats and blankets. These measures are used primarily to prevent the loss of soil during the active phase of construction. Permanent measures that remain in place to manage runoff after construction activities have ended include structural BMPs such as extended detention wet ponds, constructed wetland systems, and sand filters. Low-impact development practices can be incorporated into a site design during the planning phase of the project. Examples include limiting the amounts of impervious surfaces created, preserving stream buffers and sensitive areas such as natural wetlands and riparian corridors, limiting disturbance of soil and vegetation, and maintaining the natural infiltrative capacity of an area through the use of biofiltration.

EPA intends to consider the merits and performance of all appropriate management measures that can be used to reduce impacts from C&D activities. The Agency does not intend to require use of particular BMPs at specific sites, but plans to assist builders in selecting BMPs by publishing data on the performance to be expected of various BMP types. The new guideline will build on the successes of some of the effective state and local programs currently in place around the country and will establish nationwide criteria to drive BMP selection, design, implementation, and maintenance. They will enhance the menu of BMPs scheduled for release by EPA under the NPDES Phase II storm water rule in October 2000.

Relationship to Existing Permit Requirements

Many construction sites are currently subject to NPDES permit requirements. Under the NPDES Phase I storm water rule (promulgated in 1990), construction sites of five or more acres must be covered by either a general permit or an individual permit. Permittees are required to develop storm water pollution prevention plans that include descriptions of BMPs employed, although actual BMP selection and design are at the discretion of permittees (in conformance with applicable state or local requirements). EPA recently extended the permit coverage to sites from one to five acres under the new Phase II rule.

Stakeholder Involvement

EPA relies extensively on the participation of stakeholders as it develops effluent guidelines. The Agency is currently gathering a wide range of technical, economic, and environmental impact information for the development of the rule and is actively working with industry, citizen groups, state and local governments, other federal agencies, and researchers.

EPA welcomes suggestions on the development of the new effluent guidelines and is particularly interested in receiving data and information on the performance of erosion and sediment control programs and BMPs. The schedule for release of the new guideline has not been set. However, information on the schedule and other aspects of the C&D project is available on the Internet at www.epa.gov/OST/guide/construction.

[For additional background on BMPs, see EPA's Preliminary Data Summary on Urban Storm Water Best Management Practices, EPA-821-R-99-012, which is available on EPA's web site at www.epa.gov/OST/stormwater. For further information or to submit comments on the Construction and Development effluent guidelines, contact Eric Strassler, Project Manager, Engineering and Analysis Division (4303), 1200 Pennsylvania Avenue, Washington, DC 20460. Phone: (202) 260-7150; e-mail: strassler.eric@epa.gov.]

Notes on Education

"Pipes to Ponds" Curriculum Brings Local Water Issues Home

When Haily Summerford researched the science curricula of schools in Fort Worth, Texas, she found syllabus topics on water quality in locations as far away as Panama. However, none of the textbooks or case studies mentioned the much-debated issues of supply, quality, and management of the water running into students' homes and schools. This gap, she decided, was the opportune

"Pipes to Ponds" Curriculum Brings Local Water Issues Home (continued)

place to insert an educational component on the EPA Storm Water Permit to be administered in their city. With funding from EPA, she and four local teachers authored a curricular module called "Pipes to Ponds" for general high school science and social studies/geography classes.

The module is designed so that students make the important leap from the academic to the local and immediate. They study issues that water managers in their city have to deal with and, like them, have to develop contested but workable solutions. In four consecutive units, each with its own lab and extension work, the module addresses a range of state-mandated curricular goals, including science lab work, writing skills, oral presentations, investigative and book research, critical thinking, and collaborative problem solving.

Students start off learning differences in the infrastructure of waste and storm water management and then work with topographical maps to delineate watersheds. With a sense of both the natural and man-made movement of water, students proceed to the impact of pollution on water. In a unit called "But the Fish Don't Look That Bad!" they study local Lake Como, which currently has a fishing ban in effect because of elevated toxic organics from polluted runoff. Through exercises that look at the spatial location of and impacts from storm drains, research using water quality documents, and lab sampling to identify macroinvertebrates and dissolved organics, students develop a picture of the complex way in which water pollution has become a problem for their lake. For example, the storm drain exercises evoke in students the multifaceted nature of nonpoint source pollution. In particular, they learn how individual actions or negligence all over city neighborhoods can cumulatively lead to pollution of Lake Como.

As the culmination of their study of water systems, students prepare a panel meeting similar to a local public hearing on supply management. Fort Worth's prospects of water scarcity loom large in their future, and resolving water allocation issues is an imaginative but realistic forum to develop students' awareness. Students role-play issues and concerns from manufacturers, farmers, government officials, and citizens. City council members (also played by students) listen to the debate and then vote on the issue at hand. The exercise propels the students to weigh the importance and relevance of the various actors tugging at a limited resource and, further, invites their reflection on how they, and their immediate society, use it up.

The program is in its pilot phase and is awaiting both student and teacher evaluations. By next fall it should be a full-fledged part of the curriculum in the 14 Fort Worth high schools. So, Fort Worth city water managers should be listening: your high school students might come up with some creative solutions to your city's water issues.

[For more information contact Haily Summerford, City of Fort Worth, Department of Environmental Management, 1000 Throckmorton Street, Fort Worth, TX 76102. Phone: (817) 871-8570; fax: (817) 871-6359; e-mail: summerh@ci.fort-worth.tx.us.]

Cooperative Extension Educates Suburbanites on Lawns and Landscapes

Spring Fling doesn't mean "time to fling the fertilizer." That is just one of the things the Prince William Unit of the Virginia Cooperative Extension taught homeowners at their "Spring Fling 2000, Lawn and Landscape Extravaganza." The Extravaganza, held at the Prince William County Fairgrounds on April 29, focused on environmentally friendly ways to care for the home landscape.

Prince William County is a rapidly growing suburb of Washington, DC. The county population, estimated to be 275,000 in 1999, has almost doubled since 1980 and is predicted to grow by another 50 percent by 2020. Once primarily an agricultural county, the area has been converted to the typical suburban landscapes rapidly expanding from most of our large metropolitan areas. Accordingly, the Cooperative Extension has had to slowly change its nonpoint source pollution prevention focus from agricultural fields to residential lawns and parking lots.

Luckily, the citizens of Prince William County are eager to learn how to improve their lawns and landscapes. "People in our community are hungry for information," notes Susan DeBolt, Extension Agent. "We weren't able to teach enough classes to satisfy the need last year." In fact, the Spring

Fling grew out of the success of a turf management workshop the Cooperative Extension held last fall. "Over a hundred people attended, which was many more than we expected. We received quite a bit of positive feedback. After that, the Spring Fling was just waiting to happen."

Diverse Educational Topics Offered

The Extravaganza focused on educating homeowners about how they can improve their lawn and landscape environment. By reducing the amount of chemicals applied and incorporating groundcovers and other alternative vegetation, homeowners will find that they'll not only attract birds and wildlife, but will also be able to save money by reducing the amount of water, fertilizers, and pesticides they apply each year.

More than 40 educational exhibitors offered information on topics ranging from water gardens to the use of BMPs such as integrated pest management (IPM) techniques. Master Gardeners was on hand to demonstrate how to incorporate native plants, ornamental grasses, herbs, groundcovers, and drought-tolerant plantings into the landscape. They also offered an all-day plant clinic for the public to bring in samples of their ailing plants for diagnosis and treatment suggestions. Organizations such as the Virginia Department of Game and Inland Fisheries and the National Wildlife Federation explained how using alternative planting can increase visiting wildlife. Other exhibits included tips on amending soil, caring for a lawn, using BMPs on a lawn, identifying weeds; proper tree-planting techniques; and instruction on grafting.

The Extravaganza offers education and enjoyment for outdoor enthusiasts of all ages. "We have had nine different educational activities for children, plus some that both kids and adults liked," explained Ms. DeBolt. A couple of exhibits focused on children's fascination with insects. One exhibit, targeted at both children and parents, introduced the difference between beneficial and pest insects and provide nontoxic ways to deal with them. Next, children and parents both jumped when they saw the hissing cockroach and other bug pets presented by the Bug Box, a local environmentally concerned exterminator. Other activities included investigating compost at "Wally Worm's Playground" and learning about vascular and nonvascular plants.

Ann Bell, a Prince William County resident who attended the event, said, "'We had a great time! I appreciated the accessibility of the Master Gardeners. They offered several suggestions for a number of problems that I face in my own home landscape, and I learned quite a bit about horticulture and alternative landscaping that I didn't know before. They inspired me to try to reduce the amount of grass in my yard!"

Planning the Event

The Extravaganza serves as a model for similar efforts in other suburban areas throughout the country. Ms. DeBolt emphasized that although coordination and persistence have been necessary, planning the event hasn't been overwhelming. "We put this together in a relatively short period of time — we didn't even start planning until November. It has not seemed too difficult because it has been such a team effort, with every team member shouldering some of the work."

The exhibitors were drawn primarily through direct contact and word of mouth. "Our Master Gardeners enthusiastically joined in. Also, we had our friends contact their friends," noted Ms. DeBolt. To get the interest of the public, the Cooperative Extension issued a press release that was featured in many local papers. Signs were also posted in locations around the communities. "Public interest was tremendous. We had more than 1,200 adults and 300 children. We were tickled!" said Ms. DeBolt.

The cost of the Extravaganza is largely offset by local donations and volunteers. Partial support is provided by the Prince William County Department of Public Works and the Virginia Department of Conservation and Recreation. "They see a great potential for outreach through this event," explained Ms. DeBolt. Any additional costs incurred were funded by vendors, who were asked to pay a $25 fee to participate. Vendors were invited to sell plants and other landscaping materials, showcase their landscaping tools, or sell food and beverages. To attract vendors, the Cooperative Extension sent out more than 200 letters and followed up with personal phone calls or visits. Between 20 and 30 vendors participated.

Cooperative Extension Educates Suburbanites on Lawns and Landscapes (continued)

As Prince William County continues to grow, more land is being converted from forestland or agricultural land to manicured landscape or impervious surface. The Cooperative Extension continually strives to address the resulting environmental problems, including increased nonpoint source runoff and loss of plant and animal communities. The "Spring Fling 2000, Lawn and Landscape Extravaganza" is an efficient, entertaining way to reach out to the ever-expanding community and help many citizens make their landscape more beautiful and environmentally friendly.

[For more information, contact Susan DeBolt, Extension Agent, Virginia Cooperative Extension, Prince WIlliam County Office, 8033 Ashton Avenue, Suite 105, Manassas, VA 20109-8202. Phone: (703) 792-6285; e-mail: sdebolt@pwcgov.org.]

Reviews and Announcements

What's a Billabong? Find the Answer in This Fun Lake Guide

Whether you're trying to figure out what makes your lake stink or what TDS means, you'll find the answer in *The Lake Pocket Book*, a new science-for-the-citizen book from the Terrene Institute. Laugh at the cartoons as you enjoy the book's plain English explanations of aquatic chemistry, the Five Kingdoms, your lake's biotic zones, trophic states, and more.

Recognizing that "people, not science alone, determine the ultimate fate of your lake," scientists Martin Kelly of the South Florida Water Management District and Nancy Phillips of the University of New Hampshire collaborated with a journalist and an editor to write this fun-to-read 116-page guide to understanding and managing your lake. And you'll find a bonus at the end with a reprint of the acclaimed *Organizing a Lake Association*, Terrene's practical guide to working with your neighbors to protect your lake.

"Take it with you, tuck it in your pocket," advises Jo Lynn Traub, director of EPA Region 5's Water Division, which helped produce the *Pocket Book*. You'll pull it out to find answers to just about anything that puzzles you about your lake.

[The Lake Pocket Book is $14.95 (plus $4.50 shipping and handling) from the Terrene Institute, terrinst@aol.com or (800) 726-5253; 4 Herbert St., Alexandria, VA 22305; www.terrene.org.]

Building Blocks for Emerging Environmental Non-Profit Organizations: Lessons from the Chesapeake Bay Foundation

The Chesapeake Bay Foundation recently released this exciting new grassroots training manual containing valuable information on citizen involvement in habitat restoration and lobbying, fundraising for conservation, and techniques used by the Foundation's award-winning environmental education program. According to coauthor Jay Sherman, "This book helps nonprofit conservation organizations be more effective in their communities. It contains proven methods that can help any group."

Directory of Funding Sources for Grassroots River and Watershed Conservation Groups in New England and New York 1999-2000

This directory is now available from River Network's web site at www.rivernetwork.org/nedirect. Designed expressly for members of the river and watershed conservation community in New England and New York, it includes profiles of foundations, corporations, state and federal agencies, and other nonprofits that support small, nonprofit watershed groups.

Two New Low-Impact Development Manuals

Low-Impact Development: An Integrated Design Approach

(Prince George's County, Maryland, Department of Environmental Resources, Programs and Planning Division, EPA 841-B-00-003, January 2000) This guidance manual was prepared for local planners, engineers, developers, and officials to describe how to develop and implement LID methods

The LID principles discussed address runoff issues associated with new residential, commercial, and industrial suburban development in Prince George's County, Maryland. The manual describes how LID can achieve stormwater control through the creation of hydrologically functional landscape that mimics the natural hydrologic regime.

Low-Impact Development Hydrologic Analysis

(Prince George's County, Maryland, Department of Environmental Resources, Programs and Planning Division, EPA 841-B-00-002, January 2000) This manual, the companion document to the LID design manual, contains a methodology that can be used to estimate changes in site hydrology due to new development and also to design appropriate treatment systems to maintain the predevelopment hydrology of the site. It also provides computational procedures used to determine low-impact development stormwater management requirements.

[To order either document, contact the National Service Center for Environmental Publications, P.O. Box 42419, Cincinnati, OH 45242 — 2419. Phone: (800) 490 — 9198; fax: (513) 489 — 8695; web site: www.epa.gov/ncepihom/index.html.]

Recipes for Clean Water: A Homeowner's Stormwater Survival Guide

Published by the Clean Water Task Force in Minneapolis, Minnesota, this cookbook of recipes for cleaning up stormwater was presented to the homeowners of Minneapolis, "where property values depend on the maintenance of recreational water quality." Chapters with catchy titles like "The End of Lawns as We Mow Them: Landscaping to Eliminate Runoff" and "Pet Peeves - See Spot Spot" explain the impacts of nonpoint source pollution from our homes and yards and provide valuable tips on how to reduce them Although the book was originally targeted for residents in the neighborhoods surrounding the Minneapolis Chain of Lakes, its recipes can be used anywhere. In the chapter titled "BMPs - Home Recipes for Clean Water," you'll find a great recipe for Stormwater Supreme. It calls for 1 quart BMPs, natural household cleaners, one 5-ft by 5-ft compost heap, 1/3 gallon paint savvy, 1 cup construction precaution, and a dash of reduce, reuse, repair, and recycle.

[For a copy, contact author Bill Boudreau (612) 825-0979 or Boudreau@worldnet.att.net.]

Assessment and Control of Nonpoint Source Pollution of Aquatic Ecosystems: A Practical Approach

This publication is designed to review current knowledge and experience regarding the assessment and control of NPS pollution, and bring this knowledge together in a form that is useful for both scientific and management purposes. The focus of the book is primarily on NPS pollution from agriculture, urban construction, and forested areas, including the health of aquatic ecosystems and human use of water resources. It was published as part of the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) Man and the Biosphere Series. For a copy, contact Parthenon Publishing Group Inc., One Blue Hill Plaza, P.O. Box 1564, Pearl River, NY 10965; fax: (914) 7351385. It can also be ordered online at UNESCO's web site at www.unesco.org.

Web Sites Worth a Bookmark

www.bmpdatabase.org This database provides access to stormwater BMP performance data in a standardized format for more than 70 BMP studies conducted over the past 15 years. It is also available on CD — ROM. The Urban Water Resources Research Council (UWRRC) of the American Society of Civil Engineers developed the database under a cooperative agreement with EPA.

www.americanforests.org American Forests is the nation's oldest nonprofit citizen conservation organization. Its mission is to ensure a sustainable future for our nation's forests — both urban and rural — through national and international tree planting, forest policy, urban forestry, and popular programs such as The National Register of Big Trees and Famous & Historic Trees.

www.afandpa.org The American Forest & Paper Association (AF&PA) is the national trade association of the forest, paper, and wood products industries. AF&PA is actively committed to preserving the environment through such innovative programs as the 50% Recycling Goal, the Sustainable Forestry Initiative program, and the Environment Health & Safety Principles, while promoting a sound business climate that maintains the industry's competitiveness. This web site will soon provide the latest facts and figures about forests nationwide, as well as forest history.

Datebook

DATEBOOK is prepared with the cooperation of our readers. If you would like a meeting or event placed in the DATEBOOK, contact the NPS News-Notes editors. Notices should be in our hands at least two months in advance to ensure timely publication.

Meetings and Events

July 2000

9-12 *Coasts at the Millennium*, Portland, OR. Contact Laurie Jodice, The Coastal Society 17 Office, c/o MRM College of Oceanic & Atmospheric Sciences, Oregon State University, 104 Ocean Admin Building, Corvallis, OR 97331-5503. Phone: (541) 737-2064; e-mail jodicel@oce.orst.edu.

9-12 *WATERSHED 2000*, Vancouver, British Columbia. Contact The Water Environment Federation Member Services Center at 1-800-666-0206 or (703) 684-2452. e-mail: msc@wef.org.

10-14 *The Groundwater Pollution and Hydrology Course*, Orlando, FL. For application contact Princeton Groundwater P.O. Box 273776, Tampa, FL 33688; Phone: (813) 964-0800; Fax: (813) 964-0900; e-mail: Info@princeton-groundwater.com; web site: www.princeton-groundwater.com.

15-27 *Grand River Expedition 2000.* Grand River, MI. Contact Mike Smith, E-mail: mjsmith@power- net.net; web site: www.grand-river2000.org.

17-21 *North Dakota Summer Institute on Water Resources.* Western 4-H Camp, Washburn, ND. For more information contact Bill Sharff. Phone: (701) 328-4833.

July 31-August 4 *Living Downstream in the Next Millennium: Reconciling Watershed Concerns with Basin Management.* New Orleans, LA. Contact Jeffery A. Ballweber, Water Resources Policy Analyst, Water Resources Research Institute, P.O. Boxx AD, Mississippi State, MS 39762. Phone: (662) 325-3620; fax: (662) 325-3621; e-mail: ballweber@engr.msstate.edu.

July 31-August 5 *Environmental Training Institute for Small Communities.* This workshop at West Virginia University in Morgantown offers courses on managing wastewater, drinking water and sold waste services. Sponsored by the National Training Center for Small Communities. Contact: 800-624-8301 or (304) 293-4191 ext. 5582 or ext. 5799; web site www.netc.wvu.edu.

August 2000

7-11 *11th Annual Tri-Regional Nonpoint Source Meeting, Ardmore*, OK. Contact Tommy Perry, Cherokee County Conservation District, 1009 S. Muskogee Avenue, Tahlequah, OK 74464-4733. Phone: (918) 456-1919.

27-31 *International Conference on Riparian Ecology and Management in Multi-Land Use Watersheds.* Portland, OR. Contact Mike Kowalski, American Water Resources Association (AWRA) Director of Operations, 4 West Federal Street, P.O. Box 1626, Middleburg, VA 20118-1626. Phone: (540) 686-8390, fax: (540) 687-8395; e-mail: mikw@awra.org; web site: www.awra.org/meetings/Portland/Portland.html.

September 2000

5 *Teach Students About Bay Issues.* The Maryland Department of Natural Resources is recruiting volunteers for Teaching Environmental Awareness in Maryland (TEAM). No experience necessary; the DNR will provide training starting Sept. 5 on the Western Shore. Contact Matthew Chasse at (410) 260-8828; e-mail: mchasse@dnr.state.md.us; web site: www.dnr.state.md.us/volunteers/teamdnr.

11-14 *8th National Nonpoint Source Monitoring Workshop: Monitoring and Modeling Nonpoint Source Pollution in the Rural-Urban Interface*. Hartford, CT. Contact John Clausen, University of Connecticut, Department of Natural Resources Management & Engineering, 1376 Storrs Rd, U-4087, Storrs, CT 06269-4087. Phone:(860) 486-2840, fax: (860) 486-5408; e-mail: jclausen@canr.uconn.edu; web site: www.ce.uconn.edu/nps.html.

September 2000

18-20 *Coastal Environment 2000*: *Environmental Problems in Coastal Regions, Third International Conference*. Las Palmas de Gran Canaria, Spain. Contact Sally Walsh, Conference Secretariat, Wessex Institute of Technology, Ashurst Lodge, Ashurst Southampton, SO40 7AA, UK. Phone: +44 (0) 238 029 3223; fax: +44 (0) 238 029 2853; e-mail: slwalsh@wessex.ac.uk.

22-24 *Environmental Problem Solving with GIS*, Cincinnati, OH. Contact Lisa Enderle, (412) 741-5462, e-mail: lisa.e.enderle@cpmx.saic.com; web site: www.epa.gov/ttbnrmrl/.

27-29 *Alliance for Environmental Conservation: A Comprehensive Approach to Nutrient Management*, St. Louis, MO. Contact Wanda Linker, (334) 265-2732; e-mail: wanda@apea.the-link.net; web site: www.inform.umd.edu/manurenet.workshops/workshop.htm.

October 2000

12-15 *National Small Farm Conference*, St. Louis, MO. Contact Dyremple Marsh, (573) 682-5550.

17-20 *Wetland Training Institute's Wetland Construction and Restoration Course*. Hastings, MI. Taught by G. Pierce and C. Newling. For more information, contact the Wetland Training Institute, P.O. Box 31, Glenwood, NM 88039; phone/fax: (877) 792-6482; e-mail: getinfo@wetlandtraining.com; web site: www.wetlandtraining.com.

17-21 *Spanning Cultural and Ecological Diversity Through Environmental Education*, The 29th Annual Conference of the North American Association for Environmental Education, South Padre Island, TX. Visit www.naaee.org for more information.

24-26 *Conference 2000*, University of Delaware, Newark, DE. The conference will focus on erosion, sediment, and storm water management. Early registration fee is $195 and $235 after September 15, 20000. Contact Jeanne Feurer, Conference Coordinator, Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation, 89 Kings Highway, Dover, DE 19901. Phone: (302) 739-4411; fax: (302) 739-6724; e-mail: jfeurer@dnrec.state.de.us.

30 *Healthy Watersheds: Community Based Partnerships for Environmental Decision-making*. Aurora, CO. Contact Phyllis O'Meara, phone: (303) 671-1034, e-mail: paomeara@opm.gov.

December 2000

1-4 *North American Lake Management Society's Symposium 99*, Reno, NV. Contact Terry Thiesen, (608) 233-2836; e-mail: thiesen@nalms.org; web site: www.nalms.org.

4-9 *Watershed Management to Protect Declining Species*, Seattle, WA. Contact AWRA, (703) 904-1225; e-mail: awrahq@aol.com; web site: www.awra.org.

5-8 *National Conference of Grazing Lands*, Las Vegas, NV. Contact Terry Lynott, (303) 988-0520; e-mail: tplynott@aol.com.

13-16 *Ground Water: A Transboundary, Strategic and Geopolitical Resource*. Las Vegas, NE. Sponsored by the Association of Ground Water Scientists & Engineers Technical Program. Contact Michael E. Campana, Chair, Phone: (505) 277-3269; fax: (505) 277-3269; e-mail: aquadoc@umn.edu; web site: www.ngwa.org.

14 *Agricultural TMDLs Workshop*, New Orleans, LA. Contact CTIC, (765) 494-9555; e-mail: ctic@ctic.purdue.edu;web site: www.ctic.purdue.edu.

15-17 *Conservation 2000*, New Orleans, LA. Contact CTIC, (765) 494-9555; e-mail: ctic@ctic.purdue.edu;web site: www.ctic.purdue.edu.

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