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Nonpoint Source News-Notes

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Reauthorizing the Clean Water Act

Baucus and Chafee Introduce S. 1114 To Amend and Reauthorize the Clean Water Act; Other Legislation Addresses Nonpoint Sources, Lakes, Coasts

Reauthorization On the Senate Side

On June 15, 1993, Senators Max Baucus (D-Montana) and John Chafee (R-Rhode Island) introduced S. 1114, the Water Pollution Prevention and Control Act of 1993, a bill to amend and reauthorize the Federal Water Pollution Control Act (the Clean Water Act).

In his introductory statement on the Senate floor, Senator Baucus said:

> *The bill is intended to provide a solid, bipartisan starting point for hearings and committee deliberation as we begin our effort to bring a Clean Water Act reauthorization to the Senate floor later this year.*
>
> *Our goal is simple. We want to improve the Clean Water Act. We want to achieve environmental progress. We want to restore the quality of all of our Nation's waters. . . . We want to achieve environmental progress through the use of sound science and sound economics, and we want to give state and local governments the resources to match their responsibilities.*
>
> *To accomplish this, our bill, . . . would increase the federal contribution to the state . . . [revolving] loan funds, expand the projects eligible for loans, and improve the allocation formula. It would encourage pollution prevention planning and impose tighter limits on toxic pollution. It would establish new programs for controlling nonpoint source pollution and watershed planning. It would improve programs for controlling municipal pollution from combined sewer overflows and stormwater discharges. And it would establish tougher enforcement provisions and otherwise improve the operation of the water pollution control program.*

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Key Provisions of the Senate Bill

- Existing state nonpoint pollution control plans are to be revised and upgraded to address new activities causing water pollution, to prescribe best management practices for new uses, and to implement site-specific management plans for existing agriculture sources in impaired watersheds. Funding for nonpoint programs is increased substantially, and 50 percent of these funds are made available as cost-share grants to implement site-specific water quality plans.
- A new initiative is introduced for voluntary watershed planning to correct pollution in impaired watersheds. States may identify impaired waters and watersheds and develop watershed plans to assure that water quality goals are met. Significant percentages of loan funds are reserved for projects in watershed areas, and watershed plans allow the adjustment of pollution requirements and nonpoint sources.
- Authorized level of appropriations to the state revolving loan funds is increased to $2.5 billion in 1994. Thereafter, the level will increase $500 million per year to 2000, when the authorization will be $5 billion.
- The list of projects eligible for state revolving funds is expanded to include combined sewer overflows, stormwater, nonpoint pollution, animal waste management, and subsurface sewage disposal.
- A new pollution prevention planning initiative is established. EPA is required to identify 20 chemicals warranting intensive pollution prevention efforts.
- EPA is also required to develop a list of highly bioaccumulative and toxic pollutants. Discharges of the pollutants on the list are to be phased out over a five-year period, unless safe substitutes or treatments are not available.
- The bill adopts the EPA draft policy for control of overflows from combined storm and sanitary sewers. Long-range deadlines up to 15 years are authorized for complying with water quality standards.
- Stormwater permits will be developed for large and mid-sized communities beginning 3 years after adoption of the bill to assure compliance with national guidance on management measures and water quality standards.

Nonpoint Source Pollution Prevention On the House Side

On June 28, Representative James Oberstar (D-Minnesota) introduced H.R. 2543, the Nonpoint Source Water Pollution Prevention Act of 1993. This bill does not address the comprehensive reauthorization of the Clean Water Act, but looks exclusively at the improvement of the nonpoint source control provisions contained in section 319. Oberstar indicated that he hoped his legislation would be included in reauthorization legislation passed by Congress this year.

The "findings" provision at the outset of the measure contains the following language:

> *Section 319 of the Federal Water Pollution Control Act, the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), and the water quality programs of the Department of Agriculture have laid the basis for and offer the supporting means to control and prevent nonpoint sources of pollution. Further legislation and resources are necessary to complete the task in a timely fashion.*

In his remarks on the introduction of his bill, Oberstar said:

> *The bill's goal is full restoration and protection of the nation's waters, defined as the attainment and maintenance of water quality standards; the protection and propagation of a balanced, indigenous population of aquatic and aquatic-dependent species, aquatic ecosystem biodiversity, and habitat restoration and maintenance; protection of public health; restoration and maintenance of recreational activities in and on the water; and protection of underwater sediments through pollution prevention activities.*

The bill focuses on watersheds. Watershed implementation programs (WIPs) will begin with a watershed conference called by the WIP's state governor. All stakeholders in the watershed will have an active part: nonpoint sources, point sources, and all water users, including drinking

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water suppliers, federal, state and local governments and nongovernmental agencies. From the management conference would come an understanding of the problem, agreement on the causes, and on who is responsible and who should clean up.

The bill encourages "good actors," those who comply to carry out site-level clean-up plans, and requires states to have fall-back enforcement legislation for "bad actors," those who "refuse to clean up and who try to profit while the good actor competitors comply."

Oberstar continued:

> *Those landowners and operators participating in the WIP would develop and implement site-level plans under state, not EPA, guidance. Those already implementing site-level programs under the Conservation Reserve Program, the Water Quality Incentives Program, the Integrated Farm Management Program Option or the Organic Certification Program, and under CZARA, would automatically be in compliance with this bill, at least for those pollutants and areas included in the plans. Technical and financial assistance would be provided by the Soil Conservation Service, and other available federal, state and local programs. Land owners/operators working under CZARA would also be in compliance with my bill.*

The bill authorizes $500 million per year and sets aside from each state's apportionment 20 percent or $200,000 . . . (whichever is greater), for state administrative costs.

The bill also establishes, directly under the President, a program for the control of nonpoint sources on federal lands.

Lakes Protection Act

On July 1, Senator George Mitchell (D-Maine) introduced S. 1198, the Lakes Assessment and Protection Act of 1993.

Mitchell's remarks on the proposed legislation made these principal points:

- Research on lake pollution problems has lagged behind research on other types of waterbodies. The bill provides authority for research on lake processes, lake monitoring methods, special vulnerabilities of lakes, and pollution control problems common to lakes, such as nuisance vegetation.
- The bill provides a process to ensure that lake water quality is protected by water quality standards to the same extent that rivers and streams are protected.
- The existing grant program is expanded from $30 to $50 million per year. The authorization for assessment and protection programs is increased, and new authorization for statewide lake protection efforts is provided.
- The sale of laundry detergents containing phosphates is prohibited.

Mitchell concluded his introductory remarks by saying:

> *Another important provision of the bill would focus existing agricultural land management, and grant assistance programs of the Department of Agriculture on watersheds of lakes which are found by states to have water quality problems. Programs covered by this provision include the Conservation Reserve Program, the Water Quality Incentives Program, and the Environment Easement Program.*
>
> *The bill includes new authority for the Environmental Protection Agency to take the lead role in fostering public involvement in lake protection and assessment. EPA is to recognize and support citizen groups through a Lake Watch Program, develop publications and handbooks to support volunteer efforts for lake monitoring and assessment, and provide awards for outstanding lake protection efforts by citizen groups.*

Coastal Protection Act of 1993

Also on July 1, 1993, Senator Mitchell introduced S. 1199, his Coastal Protection Act of 1993. This bill would amend the Clean Water Act to add certain new features related to the marine environment.

Its opening policy statement says:

> *It is the policy of the United States to restore, maintain, and protect the integrity of the marine environment to ensure that the ecological, commercial and recreational values of these resources are not impaired by pollution.*

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The bill has five principal features:

- A new initiative to foster public understanding of coastal water pollution and the measures and practices owners of land adjacent to coastal waters can take to prevent water pollution and conserve ecological characteristics.
- Expansion of current authority for control of sewage from vessels.
- A requirement that EPA develop a plan for review and revision of criteria for pollutants found in marine waters.
- New authority for the Army Corps of Engineers to assist coastal communities in the implementation of projects to control overflows of raw sewage from combined storm and sanitary sewers.
- A requirement that EPA use information from toxic release inventory reports to improve the focus of water quality programs, better define the roles of federal agencies in protecting coastal environments, and provide studies of several marine pollution issues.

EDITOR'S NOTE: Thus are introduced four important bills dealing with water quality management. At this writing, committee hearings have been set only for S. 1114, the bill that deals comprehensively with reauthorization of the Clean Water Act. The other bills deal with selected aspects of water quality management. In whole or part, these bills could very well find their way into the final reauthorization bill when the House-Senate conference committee marks up the final legislation after the respective houses have passed their initial legislation. Watch this space and your daily newspapers for further developments.

[For information on the status or progress of these measures, contact your senator at U.S. Senate Office Building, Washington D.C. 20510. Phone: (202) 224-3121. Or contact your congressman at U.S. House of Representatives, Washington DC 20515. Phone: (202) 224-3121.]

Hearings on S. 1114 Begin; EPA Endorses Watershed Framework

Calling for the provision of a stronger watershed framework as basic to reauthorization of the Clean Water Act, Geoffrey Grubbs testified for EPA on S. 1114, the reauthorization bill. Grubbs is director of the Office of Water's Assessment and Watershed Protection Division. The testimony was given on July 14.

He began his testimony by noting that EPA Administrator Carol Browner a few days earlier had told the Committee: ". . . if we collectively assure better nonpoint source management through a reauthorized Clean Water Act (CWA), the legislation will be a success."

Grubbs also noted at the outset that

> *. . . many aspects of the CWA and of S. 1114 relate directly or indirectly to nonpoint source management. Funding, watershed planning, pollution prevention, and stormwater controls are all relevant here, and we should take care that approaches in these related areas complement and reinforce any new nonpoint source directions.*

Turning to the agency's experiences in managing the nonpoint source section (§ 319) added by the 1987 CWA amendments, he indicated that

> *State 319 programs have demonstrated the effectiveness of a variety of innovative management practices, established viable institutional arrangements, and implemented some watershed projects. States have also worked with other federal agencies to better use the existing array of natural resource programs to support nonpoint source management. Support from the USDA, the U.S. Department of Interior and NOAA has helped EPA do its job, buttressed state nonpoint source programs, and led to many localized watershed improvements.*

Despite progress, Grubbs indicated that the Act's "basic framework" needs to be upgraded. In addition to a stronger watershed framework, he outlined five other basic principles to guide reauthorization:

- continue to focus on voluntary, targeted approaches, but supplement them by enforceable requirements that can be triggered as necessary;
- establish clearer performance expectations and technical baselines;

- focus water quality programs on aquatic ecosystem protection, not just on the water column;
- stress pollution prevention; and,
- work with other federal agencies to provide for implementation through their stewardship of federal lands.

Grubbs spoke about the necessity of strengthening state nonpoint management plans and updating their nonpoint assessments and how the watershed approach would be applied. He said:

> *For example, states do not share an understanding of the baseline management measures that are available, and there is no generally agreed upon schedule to guide state progress. There is no basis in section 319 for gauging the success of state nonpoint source programs or for EPA to step in where states fail to act, no matter how severe the water quality problem may be.*
>
> *Section 319 should be amended to bolster state nonpoint source programs in concert with a watershed protection approach. As a part of a watershed protection approach, states should specifically identify those waterbodies and their watersheds that are impaired or threatened by nonpoint sources.*

Funding and financing of nonpoint source management were addressed, noting the contributions of other federal agencies. In addition to the $50 million per year currently appropriated for nonpoint source grants, President Clinton has called for an additional $180 million to invest in nonpoint source grants from FY 1994 through FY 1997, Grubbs said.

Grubbs called for raising the one-third-of-one-percent CWA cap on 319 grants to tribes, saying that this limitation "is hindering our ability to assist tribes in developing and implementing their nonpoint sources programs."

He discussed the use of state revolving loan funds for nonpoint source pollution and voiced encouragement for states to use this mode of financing "to support their priority nonpoint source projects." He also said:

> *. . . as more states begin to use their revolving funds for nonpoint sources, other public entities not traditionally involved in providing municipal pollution control will necessarily need to participate in this loan program. We should explicitly recognize these entities, including conservation districts.*

Grubbs noted that 29 percent of the nation's land (701 million acres) is public land, administered for various purposes by federal agencies. He stated:

> *We believe the current consistency provision in section 319 should be strengthened by requiring states to identify, for their priority watersheds or their threatened or impaired waters, the federal lands and federal activities that are inconsistent with the state nonpoint source management program. Federal departments and agencies should achieve consistency with state programs in these areas to the same extent as non-federal entities are required to do. As a minimum, federal agencies should comply with management measures in watersheds to the same extent as non-federal entities in those watersheds.*

He concluded his presentation with these words:

> *Polluted runoff poses a challenge that federal agencies, states, local governments, and the private sector must meet if we are ever to realize the full promise of the CWA. The problems are different and more subtle than those of the past, but they are not insurmountable. Public education, clear definition of good practices, and a commitment by state and federal agencies to water quality values will carry us a long way. We thank Senators Baucus and Chafee for the thoughtful approach reflected in S. 1114, and we hope our suggestions will help to strengthen that approach while remaining generally compatible with it.*

The hearing was held by the Senate's Subcommittee on Clean Water, Fisheries and Wildlife of the Committee on Environment and Public Works, chaired by Senator Bob Graham (D-Florida).

Among other interests giving testimony on July 14 were the American Forest and Paper Association, Coastal States Organization, National Association of Conservation Districts, National Association of Wheat Growers, Natural Resources Defense Council, and the National Association of Flood and Stormwater Management Agencies. All of the testimony is available on the *Nonpoint Source Electronic Bulletin Board System*. See page 26 for more information on the *NPS BBS*.

ENTERING THE WATERSHED: An Action Plan to Protect and Restore River Ecosystems, A Report to Congress

by Hal Wise, Editor

The Pacific Rivers Council has produced a remarkable document entitled *Entering The Watershed: An Action Plan to Protect and Restore America's River Ecosystems and Biodiversity, A Report to Congress.*

Perhaps one of the most important aspects of the report is that it notes our tendency to tackle the worst problem areas first. The report argues that this approach, from an ecosystem point-of-view, is backwards. On the contrary, it says, we should preserve and save the high-quality, at-risk waters and other elements of the ecosystem first, so that riverine system restoration efforts will have something positive and stable to build upon. Watershed restoration then becomes an extension of that part of the ecosystem that is working. This recommendation is contrary to the Clean Water Act's historic approach of "let's focus on the degraded water." Congressional debate on this approach should be quite educational.

The report considers rivers as holistic ecological systems, with the mainstem, tributaries, riparian areas and floodplains as interdependent parts. The principal recommendation of the report is the enactment of legislation which would establish a national watershed restoration program.[1]

The goal of the Clean Water Act itself would be expanded to read:

> To restore and maintain the chemical, physical and biological integrity of the nation's waters *and the natural ecological integrity of riverine-riparian ecosystems and biodiversity.* (Proposed new language in italics.)

Ecological Problems

This thoughtful document begins by detailing the degradation of America's riverine system and the steady narrowing of its range of biodiversity.

The term *ecosystem simplification* characterizes a river system's reduced ability to repair itself and its weakened biological integrity. The causes of ecosystem simplification are well known to watershed managers:

- changes in hydrologic regime,
- hydromodification,
- nonpoint source pollution,
- loss of substrate quality and stability,
- point source contamination,
- overharvest or removal of native species, and
- introduction of exotic species.

These problems have resulted from decades of mismanagement and piece-meal attempts at restoration that largely failed because they neglected to understand and heal the riverine system ecology.

According to the Council, ". . . almost all watersheds nationwide are already highly degraded and fragmented."

Policy Problems

The Council points out that the failure to stem the degradation of America's riverine systems is a failure at all levels of government:

> *The few riverine protection policies that exist, such as the Wild and Scenic Rivers Act, focus on discrete stream segments, not ecosystems, an approach that fails to address the actual processes and functions of riverine systems. The restoration policies that exist generally focus on single species (usually game fish), the most degraded stream segments, or on the chemical aspects of water quality.*

[1] The Council's current plan is to seek introduction, debate and adoption of this conservation act by Congress in 1994. It would then become an extension to the Clean Water Act after its reauthorization.

ENTERING THE WATERSHED: An Action Plan to Protect and Restore River Ecosystems, A Report to Congress (continued)

Existing protection and restoration strategies and policies at all levels of government are fragmented, extremely limited in scope, and generally ineffective. More effective tools and policies are needed in the national riverine protection and restoration tool box.

The Watershed Ecosystem: A Dynamic System

The report emphasizes the complexity of river systems and their inseparable relationship to their watersheds, principles that must be reflected in restoration policies.

> *Watersheds are ecosystems composed of a mosaic of different land or terrestrial "patches" that are connected by (drained by) a network of streams. In turn, the flowing water environment is composed of a mosaic of habitats in which materials and energy are transferred, and therefore connected, through biologically diverse food webs. Human activities can therefore fragment and disconnect the habitat patches if management is not planned and implemented from an ecosystem and watershed perspective.*
>
> *In-stream conditions, then, are largely determined by the processes occurring within the watershed and cannot be isolated from or manipulated independent of this context. . . . Management and conservation activities absent from the watershed context run the risk of being ineffective at best and can be counterproductive at worst.*

Sensitive Areas

In a degraded riverine system, according to the report, a few critical areas may remain healthy. These areas "play a vital role in supporting existing levels of health for the systems, and anchoring potential recovery efforts."

> *The small streams at the **HEADWATERS** of riverine systems are the most vulnerable to human disturbance (especially timber harvesting, road building, grazing, and related activities) because they respond dramatically and rapidly to disturbance to their riparian areas.*
>
> ***BIOTIC REFUGES** . . . are discrete riverine areas which maintain habitat conditions conducive to at-risk biodiversity.*
>
> *The remaining undisturbed **HEADWATER STREAMS** also constitute many of the remaining benchmark streams with which to compare and monitor stream ecosystems over time.*
>
> ***RIPARIAN AREAS AND FLOODPLAINS** play a critical role in maintaining ecosystem health throughout the system, not just in headwater areas.*
>
> ***BIOLOGICAL HOT SPOTS** . . . [are] smaller, intact riverine habitat patches that provide a critical function for the stream.*

The protection of these areas is targeted as the crucial first step in restoration. In fact, restoration resources should aim at "securing" the remaining healthier areas before being applied elsewhere.

Recommendations: A New Approach

The new approach, "simple in concept and pragmatic in application," to protecting and restoring America's riverine systems is based on the principles of watershed dynamics, ecosystem function, and conservation biology.

The approach involves three interconnected components:

> ***IDENTIFICATION AND PROTECTION of the remaining relatively healthy headwaters, biotic refuges, riparian areas, floodplains, and . . . biological hot spots.** This places the emphasis on preventing impacts rather than on attempting to control or repair them after they occur. Prevention is more cost-efficient than control measures, which have failed in most cases.*
>
> ***RESTORATION** . . . [focusing] on providing better management between the protected areas and eventually linking and expanding the healthy areas . . . [differing] considerably from the traditional restoration strategies that apply almost all resources to restoring the most degraded river reaches, single species, or to improving water quality with little awareness of the needs of the overall ecosystem or of the opportunities for cost-effective rapid biotic recovery.*
>
> ***PARTICIPATION OF LOCAL COMMUNITIES AND CITIZENS** . . . local jobs in restoration technologies, community revitalization projects and economic conversions such as changes in agricultural crops that are less water- and energy-intensive must be created. Open space preservation such as the protection of undeveloped floodplains must also be encouraged. Incentives and technical assistance must be provided to encourage local involvement in taking these steps and in designing and implementing watershed restoration action plans.*

ENTERING THE WATERSHED: An Action Plan to Protect and Restore River Ecosystems, A Report to Congress (continued)

Implementation Steps and Policies

The report outlines a series of necessary federal actions to begin the ecological and riverine preservation and restoration. It calls for protection and restoration strategies for both federal lands and private lands.

The long-term policy solution envisioned by the Council is the enactment of a National Riverine and Riparian Conservation Act. According to the report, the Act would,

> *". . . combine regulatory and non-regulatory approaches to protect and restore every riverine system, regardless of land ownership."*

In this effort, the new Act would not parallel the Clean Water Act, but extend it and establish an EPA program to "administer state programs, distribute grants and funding, and establish standards and criteria." Such a program would require substantial participation of other federal agencies, and major leadership roles lodged at the state and local levels.

Under the proposed legislation, watershed interests and affected groups and citizens would be brought together through watershed councils to plan and implement Watershed Restoration Action Plans (WRAPs). Such plans would initially focus on the protection and restoration of riparian areas, floodplains, and biological hot spots. Dams, dikes, levees, and channelizations would be retired or modified, and sedimentation and runoff reduction strategies would be implemented.

The plan would provide for coordination and integration of all state and federally funded activities in the watershed.

The Imperative of Change

In concluding the report, the authors outline ten key issues that must be addressed:

- *First, we must fully acknowledge the severely degraded state of riverine systems and biodiversity nationwide, and make a national commitment to change this.*
- *Riverine systems must no longer be defined as "renewable" energy and water resources.*
- *Larger numbers of riverine systems must be addressed simultaneously and comprehensively.*
- *Current assumptions, strategies and policies must be redesigned from the stream-segment and single-species focus to the watershed (landscape), ecosystem and biodiversity perspective.*
- *Local investment in river conservation must be encouraged.*
- *Long-term funding must be provided.*
- *Accounting procedures must be expanded to fully account for external costs of proposed riverine developments.*
- *The terms "sustainability" and "restoration" must be clearly defined.*
- *A commitment to prevention rather than repair or control is required.*
- *Finally, and most importantly, we must rapidly implement the comprehensive protective measures described in this report, along with the separate but connected set of recovery actions.*

It is in our self-interest to protect and restore America's riverine systems and biodiversity. It is also our moral responsibility.

The authors have made a compelling case. This book is worth reading and pondering over. It is a very valuable addition to the literature and to the understanding of the riverine environment as the product of its watershed, as an unified whole, an interdependent ecosystem.

The appendices to the book are a whopping bonus. They are an assessment of the nation's existing riverine policies and programs in four parts: Riverine Management of Federal Lands Under Existing Resource Protection Statutes; Riverine System and Biodiversity Management by the Federal Land Management Agencies; Federal Policies and Programs Affecting Rivers that Flow Through Private Lands; State and Local Riverine Management Policies. Each of these sections are packed full of important information for understanding where we are now, policy- and management-wise.

The Council is a regional and national conservation organization focused on restoring America's riverine systems and biodiversity, with offices in Oregon and Washington, D.C. The

ENTERING THE WATERSHED: An Action Plan to Protect and Restore River Ecosystems, A Report to Congress (continued)

report was prepared by the Council staff and consulting scientists, assisted by a host of volunteer scientists from various universities around the country and public policy specialists. The report was developed over two-and-a-half years and included several field workshops and meetings with scientists and other groups nationwide.

Financial support for the project was provided by the Ittelson Foundation, the Maki Foundation, the C. S. Mott Foundation, the Murdock Charitable Trust, the Compton Foundation and the James Ford Bell Foundation.

[For more information, contact Bob Doppelt, Executive Director, Pacific Rivers Council, P.O. Box 309, Eugene, OR 97440. Phone: (503) 345-0119. FAX (503) 345-0710. The book is being published by Island Press and should be available by early fall. Orders are being taken now. For information or to place orders, call (800) 828-1302.]

EDITOR'S NOTE: EPA staffers returning from seven weeks of detail in Portland, Oregon, where they participated with the interagency task force that worked on President Clinton's proposal to resolve the Pacific Northwest forest issues, reported that their analysis and final recommendations were built on many, if not most, of the proposals in this book. Pacific Rivers Council Executive Director Bob Doppelt made the same observation to *News-Notes*. He said: "A huge precedent has already been set. We feel that the reason for this is that these proposals are really just the best science available, put into policy form for the first time."

Region VIII Project To Use EMAP To Assess Rocky Mountains Headwaters Streams

EPA's Region VIII is initiating a project that will use the EMAP environmental monitoring approach to assess the condition of and risk to headwater streams in the mineralized area of the Southern Rocky Mountains ecoregion of Colorado, Wyoming, and New Mexico. Questions to be answered by this project include the following:

- What is the current condition of these headwater streams within the ecoregion and what proportion of subnominal streams can be linked to high metal loadings?
- What are the appropriate environmental indicators for assessing ecological condition and risk?
- What are the appropriate reference conditions against which to judge conditions and trends for this subset of water resources?
- Will a high-resolution, probabilistic survey allow targeting and problem analysis at the needed level of detail? (For example, can the EMAP sampling design be appropriately adjusted to answer questions on an ecoregional scale?)

A workshop was recently held outlining details of this project. Continuing sessions of this workshop will also serve as a forum for interaction with the scientific community, to ensure critical review of the proposed experimental design and environmental indicators. Field work is planned for September 1993, with full implementation of the project in 1994 and 1995.

[For additional information, contact Phil Johnson at U.S. EPA, Region VIII (8WM-WQ), 999 18th St., Suite 500, Denver, CO 80202]

USDA's Forest Stewardship and Stewardship Incentive Program Establishes New Cost Sharing Programs for Forest Lands

Three water-environment management practices (soil and water protection and improvement, riparian and wetland protection and improvement, and fisheries habitat enhancement) are eligible for federal-state cost sharing under a major new environmental management program established by the Food, Agriculture, Conservation and Trade Act of 1990. The practices must, however, be included in management plans on Nonindustrial Private Forest (NIPF) lands.

The Act created two programs to promote multi-resource management on these private forest lands. The planning phase, the Forest Stewardship Program, develops a written forest

USDA's Forest Stewardship and Stewardship Incentive Program Establishes New Cost Sharing Programs for Forest Lands (continued)

stewardship plan for the landowner that provides and documents resource management direction and practices. The Stewardship Incentive Program (SIP) assists landowners to implement the plan by providing cost share funding for a broad range of practices that benefit the landowner and society by improving habitats for fish and wildlife, aesthetics, recreational opportunities, timber supplies, and other products.

Approximately 57 percent of the nation's forest land is privately owned by nearly 8 million nonindustrial owners. Traditional efforts to provide professional technical assistance have reached only an estimated 10 percent of private landowners.

The goal of the Forest Stewardship Program is to assist private forest landowners to more actively manage their forest and related resources; to keep these lands in a productive and healthy condition for present and future owners; and to increase the social, economic and environmental benefits of these lands.

These programs recognize the important contributions NIPF lands make to environmental quality and raw material requirements of the nation. Growing pressures for public land policy have focused on the need for more intensive management of natural resources on private lands.

Funding of the programs has been as follows:

	FORESTRY STEWARDSHIP	FORESTRY INCENTIVE
FY 91	$12.4 million	$19.9 million
FY 92	13.3 million	.7 million
FY 93	14.873 million	17.847 million
FY 94 (rec)	24.462 million	25.932 million

USDA Forest Service and state foresters have leadership responsibilities for SIP at the national and state level, respectively. State foresters, in consultation with the State Forest Stewardship Committee, determine cost-share levels, practice priorities, and minimum acreage requirements. The Agricultural Stabilization and Conservation Service provides administrative assistance by accepting applications and arranging for disbursed payments. Technical standards for SIP practices are coordinated with the Soil Conservation Service's technical guide.

States are using a variety of innovative approaches to implement the program:

- Maine uses the private sector to help implement the program. Private forestry consultants write the plans and refer landowners to the appropriate source of technical assistance to meet their goals. If the goal is outside the scope of SIP, such as the construction of small ponds, landowners are referred to the Soil Conservation Service for help.
- Montana has empowered landowners to write their own plans. Beginning in 1991, workshops were set up for teaching these landowners about stewardship management principals. Natural resource professionals representing forestry, wildlife, range, soils, and agriculture provide the training. These trainers also visit the property while the plan is being written. Over 400 landowners completed the training during the first two years.
- Several southern states, including Florida, Georgia, Kentucky, North Carolina, South Carolina, and Texas, have set up partnerships between their forestry and wildlife agencies to involve wildlife biologists. These states have one or more full-time wildlife biologists working in the Forest Stewardship Program.

National SIP Practices

Nine SIP practices have been approved nationally for cost share assistance. Each practice allows for specific technical practices to be considered for state programs. Practices approved in individual states may vary. The purpose of each SIP practice is as follows:

1. **Management Plan Development** —

   Document NIPF landowner objectives and management decisions.

   Recommend resource management practices to provide an action-oriented forest stewardship plan.

USDA's Forest Stewardship and Stewardship Incentive Program Establishes New Cost Sharing Programs for

2. **Reforestation and Afforestation —**
   Establish or reestablish diverse stands of forest trees through natural regeneration, planting, or direct seeding for conservation purposes and sustainable timber production.
3. **Forest and Agroforest Improvement —**
   Improve forest stand productivity, stand vigor, forest health, and the value and quality of wood products.
4. **Windbreak and Hedgerow Establishment, Maintenance, and Renovation —**
   Establish, maintain, and renovate windbreaks and hedgerows to conserve energy; protect farmsteads, livestock, and crops; and reduce soil erosion.
5. **Soil and Water Protection and Improvement —**
   Maintain or improve water quality and soil productively on forest lands.
6. **Riparian and Wetland Protection and Improvement —**
   Protect, restore, and improve wetlands and riparian areas to maintain water quality and enhance habitat.
7. **Fisheries Habitat Enhancement —**
   Protect and enhance habitat for native fisheries including resident and anadromous species.
8. **Wildlife Habitat Enhancement —**
   Establish and enhance permanent habitat for game and nongame wildlife species.
9. **Forest Recreation Enhancement —**
   Establish and enhance outdoor recreation activities.

[For additional information, contact your state forester or Bruce Baldwin, National Program Manager for the Forest Stewardship Program, USDA Forest Service, Cooperative Forestry, P.O. Box 96090, Washington DC 20090-6090. Phone: (202) 205-1382.]

EDITOR'S NOTE: The above story was suggested by *News-Notes* reader Virginia Anderson, chief of conservation education, Vermont Department of Forests, Parks & Recreation. Thanks, Virginia. It's this kind of help and suggestions from interested readers that keeps our bulletin informative, timely, and lively.

Farmers in Rural Wisconsin Keep Cows Out of the Creek and Fish Return

EDITOR'S NOTE: This story appeared in *Fields and Streets*, the newsletter for Wisconsin's nonpoint source pollution abatement program. The story's headline was "Signs of Success — A scenic stream in the Waumandee Creek Watershed shows how small changes can add up to cleaner water." For more information about *Fields & Streets*, contact Carol Holden, Wisconsin Department of Natural Resources, (608) 266-0140. Thanks, Carol.

When is a trout stream not a trout stream? Eagle Creek in Buffalo County provides one answer.

Winding through a steep valley in western Wisconsin's coulee[1] country, Eagle Creek is classified as a trout stream. But in recent years, cattle traffic has broken down the banks and destroyed streambank habitat. Silt from the eroding banks and churned-up bottom has clouded the water, filled the deep pools and covered the gravel bottom that trout need for spawning. While Eagle Creek has remained a trout stream on paper, in reality trout have become scarce, and forage fish such as white suckers and creek chubs have multiplied.

Now, however, the creek is taking a turn for the better, thanks to landowners like Russell Fetting, who is participating in the Waumandee Creek Watershed Project. Fetting operates his dairy farm along Eagle Creek. Last year, with cost-sharing from the watershed project, he installed a cattle crossing and restricted cattle access to about 250 yards of the creek with an inexpensive, single-wire electric fence.

[1] Coulee — chiefly in the west (a) a small stream; (b) a dry creek bed; (c) a steep-walled valley or ravine. *Webster's New Collegiate Dictionary.*

Farmers in Rural Wisconsin Keep Cows Out of the Creek and Fish Return (continued)

The results were dramatic. A few months after the fencing, state biologists saw substantial reductions in bank erosion, renewed growth of streambank vegetation, and reestablishment of the creek's gravel bottom.

Fish counts taken after the banks were fenced show that the creek is headed in a healthier direction. Researchers noted a doubling in the total fish population and, more important, the presence of fish typically found in good trout streams. The overall increase in fish numbers largely reflects an increase in the bigmouth shiner, a fish that thrives on aquatic insects found on the rocky bottoms of clear, quick-flowing streams. Biologists also noted the presence of central stonerollers. These small fish consume algae that grow on stream-bottom rocks and are not commonly found in creeks with sandy or silt-covered bottoms.

Russell Fetting's positive efforts will soon be reinforced by four neighbors. County Conservationist Dale Olson and his staff have made special efforts to encourage other Eagle Valley landowners to participate in the watershed project, and the county has provided additional cost-sharing money. As a result, more than 80 percent of the creek will be protected from cattle-related damage. Staff from the state natural resource department and the county land conservation department are optimistic that with the streambank protection and other planned conservation practices, Eagle Creek will once again be a trout stream in reality, as well as on paper.

Biologists continue to monitor habitat improvement, fish populations, other biological indicators and water chemistry in Eagle Creek.

[For more information about this project, contact Tim Simonson, Wisconsin DNR, 608/221-6335, or Dale Olson, Buffalo County Land Conservation Department, (608) 685-6260.]

News From the States and Localities, Where the Action Is

A Holistic Approach to Managing Water Resources in Thurston County, Washington

"The kinds of water-related problems our citizens face in Thurston County are many," Linda Hoffman, a county administrator, told the recent American Water Resources Association Conference in Bellevue, Washington. "[They] include closure of shellfish beds due to bacterial contamination, groundwater pollution, life and property-threatening flooding and erosion, and the eutrophication of many of our lakes. We further face the need to provide adequate supplies of clean drinking water and sewage treatment for a growing population."

The problems are not unique; they are shared by many American cities. What is unique is the way Thurston County deals with them. Hoffman explained, "We found . . . that to solve our water-related problems, we had to re-think the very way we do business."

"When a citizen calls with a concern about flooding and someone tells them, 'That's not my job; my focus is groundwater,' the citizen is likely to say, 'Well, I thought you might want to know that the flooding just blew out my septic system and contaminated my neighbor's well, so don't tell me flooding and groundwater don't relate,' " Hoffman added.

Thurston County's integrated, five-point water management approach challenges both traditional government organization and funding mechanisms.

Thurston County has built its program on five major principles:

1. **Water resources as *systems.*** Hoffman described how county watershed projects recognize "the interconnectedness of waterbodies" and how they are "developing programs and actions that cut across jurisdictional boundaries and focus on systems as a whole." The plans cross city and county boundaries and involve tribes, conservation districts, state, and citizen interests.

2. **Roles, functions and solutions defined comprehensively and carried out in an integrated fashion.** "We no longer think in terms of traditional utility, land use, or health solutions to problems. Rather, we identify a *package* of actions for any particular area that may include elements of learning, planning, involving and educating people, regulating and enforcing, developing and operating facilities, and

restoring natural systems," said Hoffman. The package adopted by the county for the McAllister Springs Geologically Sensitive Area included regulatory actions affecting land uses, densities, and on-site sewage disposal. Education, water quality monitoring, farm management and stormwater basin planning were also part of the package.

3. **Holistic program management.** "We develop ways to manage and coordinate programs that are cross-disciplinary and reflect the holistic nature of the problems and solutions," Hoffman told conference participants. She listed four management techniques:
   - Interdisciplinary staff teams that develop plans and regulations, develop and carry out policies, and educate citizens.
   - Umbrella coordination and management office for water programs.
   - Cross-jurisdictional staff committees.
   - County water quality team that shares ideas, programs, and problem-solving.
4. **Collaborative efforts among interests.** Hoffman described how the county includes all community and governmental interests in planning and implementation. For example, she said, "Local printers have proven invaluable in shaping the details of a technical assistance program that will help other printers safely manage hazardous wastes and comply with new regulations. Stream restoration projects have also involved property owners, school kids, businesses, tribal members, and government agencies."
5. **Comprehensive, ongoing funding support for programs and services.** "We have established some funding in the form of a stormwater utility, conservation district assessment, and lake management districts that we use directly and as leverage for grants. We are working with three of our cities to develop a proposal for an aquifer protection area funding mechanism. Finally, we have been persistent in our pursuit of more unified sources of funds with fewer constraints on activities — both grant programs and state authority to develop an umbrella local funding mechanism. We have continued to seek alternatives to the web of funding sources available — alternatives that *enable* holistic approaches rather than *constrain* them," said Hoffman.

Hoffman closed by reminding the audience,

> *The challenge to all of us . . . is to open up our perspectives — to view problems as they are, in their totality, as our citizens experience them. I believe that in responding to this challenge, we will see emerge new institutional relationships, creative funding tools, and new ways of collaboratively solving problems.*
>
> *So, can I give you a holistic, integrated organizational chart, or a unified funding mechanism? Can I hand you a guidebook or a written strategy? No — there is no magic recipe. What is really at the heart of our approach — and the key to whatever successes we've achieved — is a mindset, a perspective on water resources and resource protection in general. That perspective allows us to break away from rigid institutional and management structures that dictate the way we identify problems and solutions. This broadened perspective enables us to collectively commit to a vision and to rely on teamwork rather than authority to carry it out.*

[For more information, contact Linda Hoffman, Assistant Chief Administrative Officer, Thurston County Board of Commissioners, 2000 Lakeridge Dr. SW, Olympia, WA 98502-6045. Phone: (206) 754-4111. FAX: (206) 786-5582.]

Colorado Department of Transportation Addresses the NPDES Stormwater Regulation

by Philipp Sieber, Colorado Department of Transportation

Introduction

On November 16, 1990, the Environmental Protection Agency (EPA) published in the Federal Register the National Pollutant Discharge Elimination System (NPDES) regulations for stormwater discharges.

Since the publication of the NPDES stormwater regulations, the Colorado Department of Transportation (CDOT) has been involved in evaluating how these regulations affect CDOT's

Colorado Department of Transportation Addresses the NPDES Stormwater Regulation (continued)

day-to-day operations, and in developing a compliance program. Because Colorado is an NPDES state, the implementation and enforcement of the NPDES stormwater regulations within the state of Colorado is delegated to the Colorado Department of Health (CDH). CDOT has therefore been in contact with CDH to ensure that CDOT's compliance program was developed in accordance with federal and state law. In addition, CDOT has participated with CDH in training and education activities.

CDOT also maintained contact with other state transportation agencies to monitor development of stormwater programs throughout the United States and ensure that CDOT's program was taking the right direction.

Following is a description of the stormwater program currently being implemented by CDOT to comply with the EPA's NPDES stormwater regulations.

Municipal NPDES Permit

In Colorado, cities required to apply for a municipal NPDES permit are Denver, Lakewood, Aurora, and Colorado Springs.

CDOT's storm drain system is interconnected with that of the cities; therefore, CDOT's highway drainage is categorized as an "interrelated discharge" that must be covered by a municipal NPDES permit. For this reason, CDOT is required to obtain a municipal permit for the highway system located within the cities.

CDH's guideline was to prepare municipal permit applications following the requirements described in the November 16, 1990, Federal Register. CDOT evaluated these requirements and prepared and submitted the Part 1 application, which for CDOT was due on May 15, 1992. Part 2 of the application was due May 17, 1993. The major points of CDOT's municipal permit application are these:

1. Municipalities need to identify pollutant loads from different land uses, such as residential, commercial and industrial. For CDOT, there is only one land use: highways. Therefore, a great number of monitoring sites will not be required.
2. The Federal Highway Administration (FHWA) sponsored several studies intended to identify pollutant quantities and loads from highway stormwater runoff. This further reduces the necessity for monitoring sites. The studies included monitoring data from 993 separate storm events taken from 31 sites located in 11 states and data from one monitoring site located in the city of Denver. The FHWA studies are as follows:
   a) "Pollutant Loadings and Impacts from Highway Stormwater Runoff," 4 vol. 1990. FHWA-RD88.
   b) "Effects of Highway Runoff on Receiving Waters," 5 Vol. FHWA-RD84.
   c) "Constituents of Highway Runoff," 6 Vol. FHWA-RD81.
   d) "Sources and Migration of Highway Runoff Pollutants," 4 vol. 1984. FHWA-RD84.
3. CDOT is implementing a Geographic Information System (GIS) that will show identified outfalls to receiving waters that directly discharge highway stormwater runoff. Location of outfalls has been obtained using Global Positioning System (GPS) techniques.

Industrial NPDES Permit — Construction Activities

In July 1991, CDOT implemented a task force to evaluate NPDES requirements concerning construction activities. This task force includes members from different organizations within CDOT and one member from FHWA. The task force determined that 30 to 40 percent of CDOT's projects would be affected by the stormwater regulation. The 30 to 40 percent is for CDOT projects that have over five acres of earth disturbance.

CDH issued a Colorado Discharge Permit System (CDPS) general permit for stormwater discharges associated with construction activities. For every construction project that needs to be covered by a permit for stormwater discharges, the CDPS general permit requires the submittal of a permit application and the preparation of a Stormwater Management Plan (SWMP). At this time, CDH requires permits for all construction projects except those with an earth disturbance less than five acres that are not part of a larger common plan.

The strategy developed by the task force to comply with the regulations for stormwater discharges associated with construction activities can be summarized as follows:

Colorado Department of Transportation Addresses The NPDES Stormwater Regulation (continued)

1. CDOT is negotiating with CDH a statewide general permit for CDOT construction activities. In the meantime, for construction projects that require a stormwater permit, CDOT is applying for coverage under the CDPS general permit. A permit application exclusively for CDOT was prepared.
2. The SWMP is being prepared by CDOT (or a consultant) prior to advertisement, and is being included in the bidding documents.
3. Best Management Practices (BMPs) for erosion control and stormwater quality management are being identified and designed during the design phase of the project. BMP details, location, and pay items are included in the bidding documents.
4. CDOT is identifying appropriate BMPs for all CDOT construction projects, regardless of the area of disturbance; however, permit applications are only submitted for those projects with an earth disturbance greater than five acres.
5. Other portions of the SWMP are being included in CDOT's "Standard Specifications for Road and Bridge Construction." The 107.25 Water Quality specification is being revised and a new 208 Erosion Control specification is being introduced.
6. The 1978 version of CDOT's "Erosion Control Manual" is being revised, and a new document is being created as a result of this revision. The new document is entitled "Erosion Control and Stormwater Quality Guide."

The strategy described above is in accordance with guidelines published in 1992.

Industrial NPDES Permit — Industrial Activities

CDOT activities identified by CDH as needing an NPDES permit for stormwater discharges associated with industrial activities are sand and gravel pits for which CDOT holds the Mined Land Reclamation Board (MLRB) permit. For these pits, CDOT applied for coverage under the CDPS general permit for stormwater discharges associated with sand and gravel mining and processing issued by CDH. This CDPS general permit also requires the submittal of permit applications and the preparation of a SWMP.

CDOT submitted about 70 applications and is now in the process of developing a general SWMP for all pits for which applications were submitted.

Problem Statement

The NPDES municipal permit requires applicants to perform water quality monitoring, and to include the data obtained in Part 2 of the permit application. In addition, as a condition of the permit, permittees must perform water quality monitoring during the five year duration of the permit. Independent implementation of these monitoring requirements by individual municipalities and state highway agencies will result in excessive costs. This is particularly relevant for state highway agencies since the water quality data obtained will be of little use and will duplicate prior findings by FHWA and other agencies.

It is hoped that the EPA will take the above into consideration when issuing regulations for municipalities with populations under 100,000 which, at this time, are not covered by the November 16 regulation.

Conclusion

The NPDES stormwater regulations have forced state highway agencies to take a closer look at highway stormwater runoff and construction practices. In this regard, CDOT took the regulations very seriously and developed a stormwater program in accordance with both federal and state laws.

CDOT has taken a proactive approach in providing guidance and education not only to CDOT personnel but to outside agencies as well. CDOT also participates on several task forces and committees whose purpose is to study issues related to stormwater and nonpoint source population.

It is also relevant to point out that the understanding and collaborative approach taken by CDH has made the implementation of the NPDES stormwater regulation a lot easier task to undertake. With few resources and little guidance, CDH has managed to implement and enforce the stormwater regulation; at the same time, CDH listens to the concerns raised by municipalities, private entities, and state agencies such as CDOT, and has acted upon those concerns. This approach taken by CDH has allowed entities such as CDOT to implement the

Colorado Department of Transportation Addresses The NPDES Stormwater Regulation (continued)

NPDES stormwater regulation with minimum administrative burden and, therefore, lower costs; it has also helped those entities, including CDOT, that are taking proactive steps which are much more effective in treating stormwater and nonpoint sources.

By complying with the regulation in a timely manner and taking a proactive approach in guidance and education, CDOT hopes to take an important role in the nationwide effort to control and reduce water population caused by stormwater and nonpoint sources.

[For more information, contact Philipp Sieber, Colorado Department of Transportation, 4201 East Arkansas, Room 309, Denver, CO 80222. Phone: (303) 757-9343. FAX: (303) 757-9868.]

Maine Recommends a Surface Water Ambient Toxics Monitoring Program

By Barry Mower, biologist, Maine Department of Environmental Protection

EDITOR'S NOTE: This article appeared in *Nonpoint Source Times*, a newsletter published by Maine's Department of Environmental Protection. Thanks, Editor Kathy Hoppe.

- Studies of Maine's eagle population by the Maine Department of Inland Fisheries and Wildlife and the U.S. Fish and Wildlife Service have found that the reproduction rates of eagles are 15 to 40 percent less than other U.S. populations. Preliminary results show that some of the highest levels of mercury ever reported — near levels associated with reproductive failure — were found in some eagle nestling populations in northern Maine.
- Many emaciated loon carcasses submitted for postmortem examination are thought to be a result of exposure to mercury and lead as documented by elevated body burden.
- Fish consumption advisories have been established by the Department of Human Services for the Androscoggin River, Kennebec River, and Penobscot River due to contamination with dioxin.
- Levels of mercury in about 25 percent of fish sampled by DEP exceeded the U.S. Food and Drug action level.

These findings concern the people of Maine. Of even greater concern is the fact that many similar environmental problems may exist that are as yet undiscovered. For this reason, in 1992, the Maine legislature enacted L.D. 2237, Act to Implement a Comprehensive Ambient Toxics Monitoring Program.

L.D. 2237 requires the DEP Commissioner to examine how much is known about toxic contamination in Maine's waters and whether the state has an adequate program to monitor the presence of toxic substances in our surface waters. Such a study would (a) list current data collection efforts, (b) describe the source and level of funding of these efforts, (c) summarize the results of these collection efforts, (d) make a finding of whether or not these efforts constitute a scientifically valid toxic monitoring program, and (e) if such a program does not exist, make recommendations of the appropriate design and necessary components for such a program. In conducting this study, the commissioner consulted with an advisory group (Surface Water Ambient Toxics Technical Advisory Committee) composed of affected and interested parties. The committee met seven times and was integral in developing findings and recommendations published in a report available from the state water bureau.

Findings

- Limited current data document that toxic contamination is present in some surface waters in Maine.
- The state does not have a comprehensive ambient surface water toxic monitoring program to assess contamination.
- Limited current and past programs have been shown to be capable of providing important information for specific policy decisions.
- The present monitoring lacks geographic scope and a balanced investigation of all water resource types.

Maine Recommends a Surface Water Ambient Toxics Monitoring Program (continued)

- The present monitoring analyzes for few of the potential contaminants that could be of concern to human health or ecological health.
- The present monitoring lacks the repetition and continuity needed to assess trends.
- Ambient toxic monitoring is in decline due to termination of programs, conflicting needs, budget cuts.

Recommendations

The Commissioner recommended that the state legislature authorize an ambient surface water toxic monitoring program that would

- be a scientifically valid test for the presence of toxic substances in the state's freshwater and marine environments;
- provide for testing of tissue, sediment, and water for priority pollutants and other suspected toxics;
- include the use of biomonitoring to detect toxic effects in aquatic communities;
- direct the Maine Department of Environmental Protection to conduct the program in cooperation with other state and federal agencies and private entities;
- require that the Surface Water Ambient Toxics Technical Advisory Committee be continued to advise the department on its work plans to ensure that the objectives of the program are achieved and that resources are used efficiently; and
- provide a secure source of funding to achieve the objectives of the program.

[For more information, contact: Barry Mower, Maine Department of Environmental Protection, State House Station 17, Augusta, ME 04333. Phone: (207) 287-3901.]

The West Eugene, Oregon, Wetlands Plan: An Update

EDITOR'S NOTE: *News-Notes* first covered the West Eugene wetlands story in issue 8, October 1990. We thank Tracy Brown, an assistant planner for the Lane Council of Governments, for the update.

A study begun four years ago in Eugene, Oregon has evolved from a narrowly focused, "solve-the-wetlands-problem" issue into a comprehensive, multiple-objective wetlands management plan. Adopted by both the Eugene city council and Lane County Board of Commissioners in August 1992, the West Eugene Wetlands Plan is a model for other similar communities across the nation. The plan's comprehensive approach provides solutions to many issues facing the Eugene community—economic development, natural resource protection, flood control, water quality, recreation, education, research and development, maintenance, and financial issues.

The 1987 "discovery" of a significant cluster of wetlands in the heart of the city's major industrial area, where roads and sewers had already been built, prompted a debate between those who wanted to protect the area and those wishing to develop it. The challenge for the city was to balance the two interests in a comprehensive wetlands plan. The city contracted with the Lane Council of Governments (LCOG) to do the plan, which has four major objectives:

1. to use the best information available to help the community understand its choices,
2. to find a balance between environmental protection and sound urban development that meets state and federal laws and regulations,
3. to provide opportunities for involving all segments of the community in the development of the plan, and
4. to turn a perceived "wetlands problem" into a "wetlands opportunity" for the community.

The plan covers 8,000 acres in the Amazon Creek drainage basin in west Eugene. Out of 1,307 acres of jurisdictional wetlands identified, the plan recommends protecting 1,019 acres, and allowing development on the remaining 288 acres. It also identifies upland areas that connect the wetland system and buffer wetlands from impacts.

The West Eugene, Oregon, Wetlands Plan: An Update (continued)

The conceptual plan provides a vision of the ultimate wetland system as it will be after it is fully restored and protected. It will be refined as more information is gathered about restoration sites, public facility design, and habitat suitability.

BLM and Nature Conservancy Acquiring Acreage

The plan relies on protection and enhancement of existing wetlands and strategic mitigation of wetlands designated for development. Protection will be accomplished through a variety of methods, such as land acquisition and regulation. The Bureau of Land Management, which has received about $3 million of Land and Water Conservation funds through congressional appropriations, has so far purchased 18 acres in the Amazon Creek basin and has made offers on another 200 acres. The BLM has requested $3.4 million for fiscal year 1994 to continue buying important wetlands for protection and restoration.

The Nature Conservancy is also participating in the land acquisition effort; it has purchased and leased about 360 acres in the Willow Creek Natural Area where several species of rare plants and a rare insect are known to exist.

A major task will be the restoration of the Amazon Creek and Willow Creek drainage basins to their historic wetland types. Since much of this area has been highly disturbed by agriculture or urban development, LCOG did extensive research using early aerial photos and reviewing the original land surveyor's notes from the 1850s to determine historic wetland types in the area. It discovered that much of west Eugene (actually large expanses of the Willamette Valley) had been wet prairie grasslands maintained by Native Americans through burning. Wet prairie grasslands are dominated by tufted hairgrass (*Deschampsia cespitosa*) and contain several listed rare plant species, including the Willamette daisy (*Erigeron decumbens var. decumbens*) white top aster (*Aster curtus*), and Bradshaw's lomatium (*Lomatium bradshawii*).

The Nature Conservancy has already begun restoring the acreage it manages, using controlled burns to remove woody plants, removal of invasive species, and reseeding native grasses. A specific restoration plan for other acreage in the basin is on the agenda.

Public education and input were major components in the development of the West Eugene Wetlands Plan. Seven citizen workshops were held to assist the community in understanding the functions and values of wetlands, evaluating alternatives, and developing a final set of recommendations. A mailing list of affected property owners; environmental, development, and community organizations; and interested citizens grew from 250 to about 1,000 addresses in three years. LCOG and city staff made presentations and conducted field trips into the wetlands area. People can also take their own tour of the wetlands guided by a brochure. Funding is being sought to establish a wetlands interpretive center in west Eugene.

Funding and Administration Involves a Broad Partnership

Partnerships involving federal, state, and local agencies and nonprofit organizations provided the backbone for solving the various pieces of the wetlands puzzle. A technical advisory committee consisting of representatives from the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. EPA, Oregon Department of Environmental Quality, and Division of State Lands provided guidance in the plan's development. As the plan moves into implementation, a wetlands administrative group made up of representatives from the city, county, Bureau of Land Management, and The Nature Conservancy will provide policy and fiscal oversight.

A combination of in-kind staff contributions, nonprofit donations, grants, and state and federal appropriations fund the project. The plan's development was funded about forty percent by EPA grants and sixty percent by general city and sewer funds. LCOG received a $100,000 EPA grant to package the multiple-objective plan as a model for other urban wetland situations, including the production of a video describing the wetlands planning process.

LCOG is currently assisting the city in developing a comprehensive stormwater management plan to address citywide stormwater issues, including the wetlands in west Eugene. Work will continue on the joint wetlands management, including the establishment of a regional mitigation bank linked to restoration of wetlands.

[For further information, contact Steve Gordon, Tim Bingham, or Tracy Brown, LCOG, 125 E. 8th Ave., Eugene, OR 97401 (503) 687-4283. Copies of the plan are available at the LCOG office for $15.25 or by mail for $18.50, Attn: Caroline Henderson.]

News of the Coastal Nonpoint Pollution Control Program

EPA Sponsors Electronic Forum for Discussion of Coastal NPS Control Issues

EPA's Nonpoint Source Control Branch is sponsoring a Special Interest Group (SIG) forum on the *NPS Electronic Bulletin Board System.* The new SIG covers the Coastal Nonpoint Pollution Control Programs to be developed and implemented by states pursuant to Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990. It will provide information to state coastal zone and nonpoint source contacts and other people interested in protecting our coastal waters from nonpoint source pollution.

The SIG includes the following features:

> ***BULLETINS.*** A library of short text files that can be read online. Some of these bulletins are fact sheets on each category of coastal NPS management measures.
>
> ***FILES.*** Libraries of large text files, program files, and free software for downloading (transferring to your computer). The technical library contains chapters from EPA's *Guidance Specifying Management Measures For Sources of Nonpoint Pollution in Coastal Waters.* The program library contains the *Coastal NPS Program Guidance.* Users can upload to the "public files" area.
>
> ***MESSAGES.*** An electronic mail system you can use to post announcements, send private messages and files, or ask questions.

Other resources on the SIG are directories of contacts and commonly asked questions and answers. News flashes keep users up to date on the latest developments in the program. More information will be added as the SIG grows.

The Coastal Nonpoint Pollution SIG is comanaged by EPA and NOAA's Office of Ocean and Coastal Resource Management, which jointly administer Section 6217. The technical monitor is John Kosco of EPA's Nonpoint Source Control Branch.

The *NPS BBS* is a free service of the U.S. Environmental Protection Agency's Assessment and Watershed Protection Division. See page 26 in this issue of *News-Notes* for log-on information and to obtain a *NPS BBS* User's Manual. Once you have logged on, you may access the Coastal NPS SIG or other SIGs by typing J at the "Main Board Command?" prompt.

Notes on the Agricultural Environment

Agriculture's Role in Water Quality; Report of the Council for Agricultural Science and Technology

The Council for Agricultural Science and Technology (CAST) describes itself as

> *. . . a nonprofit educational organization comprised of 29 member scientific societies and many individual, company, nonprofit and associate society members. CAST's Board of Directors is composed of 46 representatives of the scientific societies and individual members, and an executive committee. CAST provides scientific information on key national issues in food and agriculture to policymakers, the news media, and the public.*

Through a task force of its members, CAST has produced a comprehensive, straightforward, reasoned, and well-documented statement entitled *Water Quality: Agriculture's Role.*

The foreword notes,

> *This report is being distributed to members of Congress, the U.S. Department of Agriculture, the Environmental Protection Agency, the Food and Drug Administration, the Agency for International Development, Office of Technology Assessment, Office of Management and Budget, media personnel, and the institutional members of CAST.*

Agriculture's Role in Water Quality; Report of the Council for Agricultural Science and Technology (continued)

This document is a textbook on national water policy and agriculture's place in that policy and could very well provide a reference as the inquiry proceeds on the reauthorization of the Clean Water Act during the current session of Congress.

The book's seven chapters report on the current agricultural-environmental context, how it is evolving, and gives a glimpse of the probable future.

"Agricultural Production and its Impact on the Environment," deals with science and agriculture, the rise in production and drop in farm population, the development of agricultural and environmental policies, and the detection and assessment of agricultural contaminants.

"Water Quality: A Public Policy Perspective" traces the evolution of today's national water quality policies and laws.

"Agriculture and Water Quality" covers fertilizers, manures, salinity, contaminants, and pollution prevention.

"Risk/Benefit Considerations: Health, Environment, and Economic" deals with the perception of risk and the historical perception of agriculture.

"Current Approaches to Protecting Water Quality from Agricultural Contaminants" treats nonregulatory, or voluntary protection, regulations, liability, and comprehensive protection.

The sixth chapter, "Future Water Quality Programming," deals with the findings and recommendation of the General Accounting Office's report to the Congress, *Water Pollution: Greater EPA Leadership Needed to Reduce Nonpoint Source Pollution* (U.S. General Accounting Office, 1990) and includes a section on EPA options to improve the nonpoint source program.

The final chapter, "Toward a New Agricultural Ethic," begins with these words:

> *The traditional responsibility of agriculture to produce food and fiber is being expanded to include protection of environmental quality. New perspectives, new policies, new programs, new regulations, and, in some cases, new ways of farming are being established. Already, some positive actions have been taken toward a new agricultural ethic that places increasing emphasis on environmental quality.*

The report argues,

> *Farmers are dependent upon high environmental quality for both production and their own well being. Farmers are the first to be affected by poor surface water and well water. Farmers will make productive partners in national and local pollution control programs because they are affected first by the problems and are the key for effective solutions. Therefore, it is most important to provide farmers with adequate education, technical assistance, and incentives so that they can implement practices to protect environmental quality.*

[The task force report, Water Quality: Agriculture's Role, is available for $15.00 from CAST, 137 Lynn Avenue, Ames, IA 50010-7197. Phone: (515) 292-2125. A 12-page summary is $2.50. Discounts are available for quantity purchases: 6-99 copies, 25% discount, 100 or more copies, 35% discount.]

The member societies of CAST include the American Academy of Veterinary and Comparative Toxicology, American Association of Cereal Chemists, American Dairy Science Association, American Forage and Grassland Council, American Meat Science Association, American Meteorological Society, American Peanut Research and Education Society, American Phytopathological Society, American Society for Horticultural Science, American Society of Agricultural Engineers, American Society of Agronomy, American Society of Animal Science, American Veterinary Medical Association, Aquatic Plant Management Society, Association of Official Seed Analysts, Crop Science Society of America, Institute of Food Technologists, International Society of Regulatory Toxicology and Pharmacology, North Central Weed Science Society, Northeastern Weed Science Society, Plant Growth Regulator Society of America, Poultry Science Association, Rural Sociological Society, Society of Nematologists, Soil Science Society of America, Southern Weed Science Society, Weed Science of America, Western Society of Weed Science.

Membership also includes associate societies, individual members, sustaining members, including companies, cooperatives, and nonprofit associations.

Dramatic Increase in Use of Residue Management

Farmers are now using crop residue management to protect a record 57 percent of U.S. cropland from erosion. Farm acreage under this soil-conserving system has increased by nearly 20 million acres in three years. In 1992, U.S. farmers used some form of residue management on a record

Dramatic Increase in Use of Residue Management (continued)

161.7 million acres, while in 1989, only 142.4 million acres were under residue management. The encouraging statistics are the result of the Conservation Technology Information Center's (CTIC) national crop residue management survey of the nation's 283 million planted acres. According to CTIC, the trend demonstrates the growing popularity of this environmentally sound and economical practice.

Under the most protective form of residue management, conservation tillage, farmers last year left the soil surface covered with stalks or stubble from their previous crop when they planted 88.7 million acres. An additional 73 million acres were farmed with a more limited form of residue management, according to CTIC Executive Director Jerry Hytry.

CTIC said that farmers who practice crop residue management save on fuel and labor costs. "It's obvious that an increasing number of U.S. growers are recognizing the economic value of leaving plant residue from the previous crop on the soil surface," said Hytry. However, residue management makes environmental sense as well; it contributes to water quality by reducing sediment loading to waterbodies.

No-till Makes Dramatic Increase

No-till leaped from 20.6 million acres in 1991 to 28.1 million acres in 1992, an increase of more than 30 percent. Illinois farmers continue to lead the way with 4.7 million no-till acres. According to the CTIC survey, though, it was the Iowa farmers who posted the big jump in this category, going from seventh nationally (with 972,000 acres) in 1991 to second (with 2.7 million acres) last year. Indiana ranked third with 2.6 million acres, followed by Ohio with 2.4 million and Missouri with 1.9 million.

Among crops, double-cropped soybeans led with 52.3 percent of the acreage planted in soil undisturbed except for seed and nutrients "knifed in." In the full-season crops category, corn was the winner, planted the no-till way on 10.6 million acres. Full-season soybeans are currently second with a total of 8.2 million acres.

Mulch-till Leads

Mulch-till remains the leader among the conservation tillage systems, accounting for 64.6 percent of all conservation tillage acres planted, according to CTIC Field Specialist Dan McCain, the survey coordinator. Last year, U.S. farmers added 2 million mulch-till acres for the third consecutive year for a total of 57.3 million.

What is Crop Residue Management?

Crop residue management is a system that leaves the stalks and stubble from harvest on the soil to protect it from being eroded by rainfall, snowmelt, or irrigation.

Conservation tillage is a highly protective form of crop residue management that maintains at least 30 percent of the soil surface covered by residue after planting to reduce soil erosion by water.

A limited system of crop residue management that leaves 15 to 30 percent residue after planting does not meet the Soil Conservation Service requirements for conservation tillage, although it does provide a level of erosion control and water quality benefits.

Types of Conservation Tillage

1. No-till — The soil and crop residue are left undisturbed from harvest to planting except for nutrient injection. Planting is accomplished in a narrow seedbed or slot created by specialized equipment. Weeds are controlled with herbicides.
2. Ridge-till — The soil is left undisturbed from harvest to planting except for nutrient injection. Residue is left on the surface between ridges and planting is done in a seedbed prepared on ridges with specialized equipment. Weeds are controlled with herbicides and/or cultivation. When cultivation is used, the ridges are rebuilt.
3. Mulch-till — The soil is tilled prior to planting, leaving 30 percent of the surface covered with residue after planting. Weed control is done with herbicides and/or cultivation.

Dramatic Increase in Use of Residue Management (continued)

Iowa farmers currently lead the pack in mulch-till acres with 6.7 million acres, followed closely by Illinois with 6.3 million acres. Rounding out the top six mulch-tillage states were Nebraska, Kansas, North Dakota and Texas.

Ridge-till Still Growing After All These Years

A third conservation tillage system, ridge-till, increased in acreage for the eleventh year in a row. U.S. farmers added 200,000 acres of ridge-tilled crops in 1992, bringing the total to 3.4 million acres. The Western Corn Belt and Northern Plains states have readily adopted ridge-till, which is a favored conservation tillage system among farmers who use furrow irrigation. Nebraska is the leading ridge-till state with 1.3 million acres, followed by Minnesota with 573,000 acres.

CTIC can prepare county summaries of the 1992 residue management survey data for any state. Contact CTIC for information on format and costs.

[For more information, contact Jerry Hytry, Executive Director, or Dan McCain, Field Specialist, CTIC, 1220 Potter Drive, Rm. 170, West Lafayette, ID 47906-1383. Phone: (317)494-9555. FAX: (317) 494-5969.]

In Future, "Prescription Farming" May Lessen Nutrient Runoff

In southeast Missouri, farmers are helping to develop a high tech method to vary fertilizer application to different areas within a field. The "prescriptions" for nutrient application rates are based on the specific soil needs of small plots within a larger field. According to Bill Holmes, the project's key participant, the technology will result in a different kind of management and better decisions that will ensure that inputs will be used by the crop, and "not be out in the environment causing problems."

While farmers usually fertilize with an application rate based on the average soil fertility of the entire field, the new technology will enable growers to apply agrichemicals only in the amounts and locations needed. This could maximize production efficiency and minimize the runoff of surplus nutrients not used by crops.

Fertilizer Application Automatically Varied

Holmes inputs soil test results for each field into a computer model, along with soil type boundaries and soil fertility information. Soil mapping identifies areas in fields that have significant differences in soil type and texture, organic matter, fertility levels, and water-holding capacity. Using this information, a fertilizer truck with an on-board computer automatically tailors the fertilizer prescription for each location in the field.

The Missouri Agriculture Water Quality and Precision Application Project works with the state natural resources department's Water Pollution Control Program in the trial. Known as variable rate technology (VRT), the system is currently oriented toward broadcast fertilizer applications, but could be expanded to other application methods in the future.

As of February, grid sampling had been completed on 10,000 acres. Over 4,000 acres have had fertilizer applied. Much has been learned in the project's initial three years. Holmes applied the system to 700 acres planted to corn in the spring of 1990. He estimated that he reduced inputs by more than 20 percent without sacrificing yields. Holmes discovered that, by testing the soil in two-and-a-half-acre grids, the phosphate needed for his yield goal ranged from 0 to 85 pounds per acre in one 170-acre field. Previously, Holmes would have applied 40 pounds of phosphate per acre over the entire field. In the same field, he saved 30 to 80 pounds of potash per acre using the computer's prescription.

Prescribing nitrogen is more complicated because the largest factor in deciding how much nitrogen to apply is the yield goal. Holmes described several situations that could be detected by the technology, each resulting in adjustments that would allow nitrogen to be effectively used by the crops rather than running or leaching off. According to Holmes, plans are to collect yield data on most 1993 crops. As more data about yields and yield potential is gathered and understood, a reduction or redirection of nitrogen in the range of 25 percent will be a reasonable expectation.

Widespread Use Predicted

One of the big problems in VRT is managing the massive amounts of data generated, according to Holmes. In the future, data may be collected passively from sensors on farm equipment for

In Future, "Prescription Farming" May Lessen Nutrient Runoff (continued)

automated input into decision aid systems. Project officials also hope that data routinely collected by USDA and other government agencies can be used by a compatible GIS, reducing the cost and making the technology available to more producers.

The system is expensive. The soil sampling, analysis, and computerized mapping can cost up to $9 per acre. Applying the fertilizer with specialized machinery is another $6.50 per acre. And in some fields, there is not sufficient difference to justify the cost of sampling. As the technology is refined, however, Holmes predicts that its use will become widespread, smaller farms accessing it through custom applicators and private consultants.

The project is sponsored by the Bootheel Resource Conservation and Development Council. Funding for the pilot was provided cooperatively from local farmer cooperatives and the Missouri Department of Natural Resources section 319 funds. Forty farmers paid $2 per acre for sampling, and the University of Missouri and SCS provided research and technical assistance.

[For additional information, contact Bill Holmes, RR# 2, Oran, MO 63771. Phone: (314) 262-3474. Or contact Mike Mick, Coordinator, Bootheel RC&D, #7 Market Street, Dexter, MO 63841. Phone: (314) 624-7402.]

Missouri City Monitors Atrazine in Local Reservoirs; Farmers to Cooperate on Project

[**EDITOR'S NOTE:** See *News-Notes* #21 and #25 for more on the herbicide atrazine.]

The city of Cameron, Missouri, is conducting a two-year atrazine monitoring study. Later, local farmers will be cooperating in a watershed project to see if they can reduce atrazine in three interconnected reservoirs, which are the sources of drinking water for both city and farm families. According to Tom Lorenz of EPA Region 7, the main objective of the project is to find out which method is more cost-effective—applying BMPs in the watershed or atrazine removal at the drinking water plant.

Cameron City Manager Phil Lammers said that the herbicide was detected in water samples taken in 1991 from the reservoir closest to the treatment plant. These early tests ranged up to 7 parts per billion (ppb). The Maximum Contaminant Level for drinking water is 3 ppb, based on an average of four quarterly samples of finished drinking water. Since the city's water plant does not remove atrazine, these results led the city government to request and receive a federal grant for ongoing atrazine testing.

Applied in the spring, atrazine levels are typically highest at that time of the year, when heavy rainfall washes it off fields. In Cameron this spring, atrazine levels prior to planting were very low but following the rains, tests again revealed higher concentrations at specific sites draining into the reservoirs, according to Lammers.

Lammers commented, "Because of inordinate amounts of rain this year and the lack of intensive testing data from previous years, the significance of these numbers is not clear." Lammers added that this year's data could be considered a worst-case scenario, because of the extremely wet weather. According to city staff, the low levels expected in the rest of the year's samples will lower the yearly average and probably allow Cameron to meet the standard.

Cameron is receiving EPA funding to support the atrazine monitoring study through the Missouri Department of Natural Resources. The USDA-ASCS is supporting the Cameron water quality program by providing financial incentives to cooperating farmers in the watersheds who apply BMPs under the Water Quality Incentive Project (WQIP) program. SCS District Conservationist Montie Hawks said, "Although the reduction of atrazine is one of the major objectives of the WQIP program, its goal also includes the source reduction of other nonpoint source agricultural pollutants such as pesticides, nutrients, livestock wastes, and soil erosion."

The SCS will assist cooperating farmers in the watershed to develop Water Quality Resource Management Plans that use a combination of BMPs to address their individual water quality problems. A typical BMP used in the watershed will be Integrated Crop Management, which is a combination of nutrient management, pest management, waste utilization, crop rotations, and conservation cover. Other BMPs for Cameron farms include conservation tillage, contouring, Critical Area Treatment, filter strips, strip cropping, and waste management systems.

Hawks also said he is encouraging farmers to reduce the application rates of atrazine below that allowed by the product label. Twenty-five landowners, whose holdings in the basin total 3,200

Missouri City Monitors Atrazine In Local (continued)

acres, met in early April with Lammers, Hawks, Cooperative Extension Service agent Bob Rudolph, and a representative of the chemical manufacturer. They discussed the water test findings, the use of atrazine, alternate chemicals, and land use strategies.

[For additional information, contact Tom Lorenz, U.S. EPA Region VII, 726 Minnesota Avenue, Kansas City, KS 66101. Phone: (913) 551-7292; or Phil Lammers, City Manager, 205 Main, Cameron, MO 64429. Phone: (816) 632-2177.]

Manure Application Planner Software

The new Manure Application Planner (MAP) helps Minnesota Extension Service, SCS and state water quality agency staff advise farmers on manure application. The program determines the cost-effective and environmentally acceptable mix of manure and commercial fertilizer for each field. Data input to the program includes annually available quantity of manure, nutrient analysis of manure, and the nutrient requirements of crops grown in each field.

MAP was developed by the Minnesota Extension Service, the Minnesota Pollution Control Agency, and the Minnesota Soil Conservation Service.

It requires an IBM-PC or compatible with at least 640K RAM and a hard disk. The hard disk should have at least 1 megabyte of free space and the computer should be running DOS 3.0 or higher.

The cost of MAP software is $120. The program is accompanied by a user's manual, a videotape demonstrating software use, fact sheets on use of manure as fertilizer, and a toll-free phone number for technical support. Order from: Center for Farm Financial Management, University of Minnesota, 1994 Buford Ave.-249 COB, St. Paul, MN 55108.

[For additional information, contact Wynn Richardson, University of Minnesota, 1994 Buford Ave -249 COB, St. Paul, MN 55108. Phone: (612) 625-1964. FAX: (612) 625-6245.]

Notes on Environmental Education
(and having fun at the same time)

A Flood of Children's Water Festivals

EDITOR'S NOTE: More and more environmental education is taking place at festivals designed to educate today's children for tomorrow's decisions. Nebraska's water festival is in its fourth year now, and since our report to you on the Central Colorado Water Conservancy District's first annual water festival, (*News-Notes* issue #14, July-August 1991), the District has hosted two more. In addition, eight other festivals were held in Colorado, and several other states have taken the plunge. Here's a report on some of this activity.

Nebraska

Susan Seacrest, founder and president of the Nebraska Groundwater Foundation, organized one of the country's first children's water festivals in 1989. Nebraska's festival focuses on groundwater, and its fifth festival was celebrated in March 1993 in Grand Island. The annual festival has grown steadily from 1,700 student participants in 1989 to more than 3,000 this year. Already, 5,000 are on the waiting list for 1994.

According to the Foundation, the festival's goals are to create an entertaining atmosphere for fourth through sixth grade students to learn about groundwater and related resources through hands-on activities; and to bring together natural resources professionals from government, higher education, and private business to teach children.

At the festival, approximately 250 presenters led activities, staffed displays, and put on shows. An equal number of volunteers were on hand to guide students, provide assistance to organizers, decorate, and help out in countless other ways. The more than 80 activities ran the gamut from the popular tournament, "Where in Nebraska is Carmen San Diego?" to a puppet show, a magic show, and a musical stage presentation, "Excuse Me Sir, That's My Aquifer."

Nebraska Senator Bob Kerrey spoke to the children at the festival via satellite from Washington, D.C., while Governor Ben Nelson hosted special guests of the festival at a luncheon and seminar. Visitors attended from the U.S. Geological Survey, the Groundwater Education Consortium, and natural resources departments from several states.

The Foundation produced an outreach package for children not able to attend the festival. It includes videos and other teaching materials for a minimal fee. The Nebraska Groundwater Foundation is also publishing a booklet, *Making Waves: How to Put on a Water Festival,* to help others put on their own water festivals.

The festival was sponsored by U.S. EPA Office of Water, U.S. Geological Survey, and Central Nebraska Public Power and Irrigation District.

[For more information, contact Amy Killham, Program Director, Nebraska Groundwater Foundation, PO Box 22558 Lincoln, NE 68542-2558. Phone: (402) 434-2740.]

Colorado

The Central Colorado Water Conservancy District festivals have become so popular that 2,000 fourth and fifth grade students registered for this year's festival the week it was announced. Children attended from across northeastern Colorado.

The festival included nearly 50 presentations on water and involved children in gold panning, water quality testing, giant bubbles, hydrology studies, groundwater flow models, storytelling, water chemistry activities, water trivia contests, and even a water court trial. Local radio stations interviewed students at the festival from remote broadcast booths.

Denver TV weatherman Mike Nelson hosted the immensely popular Water Wizards competition. Water Wizards is a College Bowl-type quiz show in which four students are selected from each school to compete with teams from other schools. They race to answer questions while their classmates scream advice from the peanut gallery. Students practice for months to be selected to represent their schools. Central Colorado Water Conservancy District Executive Director Tom Cech reports an amazing change in water awareness over the past three years, since the beginning of the Children's Water Festival.

What is the purpose of a children's water festival? Cech said, "Most residents in our area have very little knowledge of water. Most do not know that Greeley only receives 12 to 14 inches of precipitation per year. That's only 4 inches a year more than Phoenix, Arizona. Most residents don't know that we drink melted snow water from the Big Thompson or Cache la Poudre rivers. And most residents do not understand basic water rights concepts in our state. It's important that Colorado's citizens become more educated regarding water because the 21st century will bring important choices for our residents regarding the future of our water resources."

[For more information, contact Tom Cech, Executive Director, Central Colorado Water Conservancy District, 3209 West 28th Street, Greeley, Colorado 80631. Phone: (303) 330-4540.]

Utah

Water was a popular subject at two other festivals with broader environmental themes held in Utah. Utah's first Earth Festival, in the fall of 1991 at Utah Valley Community College in Orem, attracted 900. A second in the spring of 1992 at the University of Utah in Salt Lake City brought another 500 participants. Schools were so interested in sending their children to the festivals that they bused them across the state. The festivals were sponsored by the Utah Department of Environmental Quality with assistance from the Utah Society for Environmental Education and a grant from U.S. EPA.

Ten different programs were planned with each group of children participating in six half-day sessions. One group attended in the morning and another in the afternoon. Some programs were "hands-on" events while others were demonstrations. Topics included a natural gas car, biodiversity, web of life, and household hazardous wastes. A favorite with students was a water education class in which, for incorrect answers, water from a special helmet dribbled over the student.

A prefestival feature was an environmental quality poetry contest about the Earth.

Two more festivals are planned for fall 1993: September 7 at College of Eastern Utah at Price, and September 22 at Weber State University in Ogden.

[For more information, contact Sonja Wallace, Utah Department of Environmental Quality, PO Box 144810, Salt Lake City, Utah 84114-4810. Phone: (801) 536-4400; or Vern Fridley, Utah Society for Environmental Education, 230 South 500 East, Suite 280, Salt Lake City, Utah 84102. Phone: (801) 328-1549.]

Rhode Island Conservation District Develops Watershed Education Curriculum

People in Rhode Island's Pawcatuck watershed derive 100 percent of their drinking water from groundwater, so it is critical for the community to preserve the purity of that resource. As a "sole source aquifer," the watershed was chosen as one of 37 nationwide to receive special funding from the USDA to help protect the ground and surface water from nonpoint pollution. Education plays a central role in this effort. The Southern Rhode Island Conservation District, realizing that concepts taught to school children percolate through communities to reach adults as well, developed a watershed curriculum guide for sixth grade students.

It was written specifically for the Pawcatuck watershed, but a soon-to-be-completed appendix will give details on adapting the guide to any other watershed. The Pawcatuck Watershed Education Program is a comprehensive, interdisciplinary learning experience in which students apply science, math, social studies, and language arts. The curriculum ties concepts learned in the classroom to real-life experiences, and activities build on each other until the program culminates in a mock hearing where students debate proposed development.

Learning segments range from teacher demonstrations and guided imagery through hands-on activities such as building and working with models, role playing, studying maps, reading graphs, doing math, and analyzing soil, to personal interviews in the community and field trips.

The activities encourage students to develop thinking skills by introducing basic information, then asking students to make predictions or solve problems. The use of many new words helps develop a vocabulary for watershed conservation.

The 325-page, 12-unit curriculum contains over 100 activities. It was developed by Southern Rhode Island Conservation District in cooperation with the University of Rhode Island Cooperative Extension, the SCS, and the ASCS. Martha S. Cheo wrote most of the curriculum guide as part of her Master's degree program requirements in the Department of Natural Resources Science, University of Rhode Island.

Cheo said, "The goal of the program is to provide students with a relevant and empowering education experience about an aspect of the environment. . . . Learning about the watershed in which they live gives students a sense of place, pride, and ownership."

[For more information contact: Vicky J. O'Neal, District Conservationist, SRICD, R.I. Soil Conservation Service, 5 Mechanic Street, Hope Valley, RI 02832. Phone (401) 539-7767. The Curriculum Guide for the Pawcatuck Watershed Education Program may be ordered for $30 per copy, $5 shipping and handling.]

NPS Electronic Bulletin Board (BBS) News

Nonpoint Source Electronic Bulletin Board System. *The NPS BBS, through the user's personal computer, provides timely, relevant NPS information, a nationwide forum for open discussion, and the ability to exchange computer text and program files.*

Special Interest Group Forums (SIGs or mini-bulletin boards) are dedicated to specific topics and have all of the features of the main *BBS*. Currently, there are eight SIGs on the NPS BBS: Watershed Restoration, Agriculture, Fish Consumption Risk Management, TMDLs, Waterbody System Support, NPS Research, Volunteer Monitoring, and Coastal NPS.

To access the *NPS BBS*, you will need • A PC or terminal • Telecommunications software (such as Crosstalk or ProComm) • A modem (1200, 2400 or 9600 baud) • A phone line.

The *NPS BBS* phone number is (301) 589-0205. Parameters are N-8-1.

A manual is available: *U.S. EPA Nonpoint Source Information Exchange Computer Bulletin Board System User's Manual* (Publication Number EPA 503/8-92/002.) Copies may be ordered by mail or FAX from NCEPI, 11029 Kenwood Road, Bldg 5, Cincinnati, OH 45242. FAX: (513) 891-6685. There is no cost. (Be sure to include both the title and the publication number in orders sent to NCEPI.)

EDITOR'S NOTE: This portion of *News-Notes* is prepared by Elaine Bloom, (Tetra Tech) for the benefit of the ever-increasing numbers of *News-Notes* readers who are regular users of U.S. EPA's *NPS BBS*. (Tetra Tech is the contractor for the operation and content of the *NPS BBS*.)

CWA Reauthorization Library Available on Nonpoint Source Electronic Bulletin Board

In order to keep users of the *Nonpoint Source Electronic Bulletin Board* up to date on the progress of the reauthorization of the Clean Water Act, a new library of downloadable files has been created on the *BBS*. It contains transcripts of testimony presented by several agencies and organizations before the Senate Subcommitee on Clean Water, Fisheries, and Wildlife of the Environment and Public Works Committee of the U.S. Senate.

It also contains articles from *NPS News-Notes* and other sources on the reauthorization process. We will add to and update this library as information becomes available. Please feel free to download and read the files, use the BBS's message system to ask questions or comment, and upload relevent text files of your own.

To get to the CWA library, type F at the "Main Board Command?" prompt. You will see a list of the various libraries or file areas available on the *BBS*. Type the number that corresponds to the library you wish to access.

Note: Files are a resource that can be read only after downloading. All files are in a generic ASCII format so that they may be read regardless what type of word processing software is used. Files may be "zipped"; they can be unzipped using the PKZIP utility also available through the *BBS*.

Announcements

International Conference on Urban Storm Drainage to Take Place in Niagara Falls, Canada

Representatives from over 25 countries will be meeting in Niagara Falls, Canada, September 12-17, 1993, to present and discuss the most up-to-date information dealing with urban storm drainage. This event is one of a series of triennial international conferences focused on all aspects of urban storm drainage. The conferences bring together practicing engineers and researchers who have been developing and applying new or traditional techniques for the planning, analysis, design, construction, operation, and maintenance of urban drainage systems.

The following key topics will be addressed at the conference: urban hydrologic processes, water quality (storm and combined sewer overflows), urban runoff management (BMPs) and CSO controls, comprehensive computer modeling of drainage systems, the impact of CSO's on treatment plant performance, the effectiveness of storm and combined sewer regulatory programs, and the role of stormwater management in sustainable urban development.

This event is the sixth of a series sponsored by the Joint Committee on Urban Storm Drainage of the International Association for Hydraulic Research and the International Association on Water Quality.

[For more information on the program or the accompanying exhibition, contact the conference chairman, Jiri Marsalek, National Water Research Institute, 867 Lakeshore Road, PO Box 5050, Burlington, Ontario, Canada, L7R 4A6 Phone: (416) 336-4899; FAX: (416) 336-4989.]

Guide to Federal Water Quality Programs and Information

In a joint effort, 17 federal agencies have developed a new guide to federal water quality programs. The guide, prepared by an interagency work group chaired by the Environmental Protection Agency, is designed to help locate data and information available from federal water quality programs. The guide does not contain the actual data, but describes the federal programs, lists key publications and gives contacts for programs and available databases. The guide describes information needed for water quality assessment, including (1) underlying demographic pressures; (2) the use of land, water, and resources; (3) pollutant loadings; (4) ambient water quality; (5) other effects of water pollution; and (6) programs established to establish to preserve, protect and restore water quality.

[A limited number of courtesy copies of the Guide to Federal Water Quality Programs and Information, (EPA-230-B-93-001, ISDN 0-16-041708-2), are available from the Public Information Center (PIC), U.S. EPA, 401 M Street, SW, Washington, DC 20460. The guide is also for sale by the U.S. Government Printing Office, Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328.]

A National Nonpoint Source Organization Forming

Corporate, environmental, governmental and grassroots interests are beginning to join the National NonPoint Source Federation.

The Federation's growing membership reflects the organization's primary goal: to bring together all organizations and individuals concerned with nonpoint source pollution, regardless of their viewpoints.

Headquartered in Kansas City, the Federation has been created as a "watershed information network," to establish a central, comprehensive, accurate information base for nonpoint source pollution and watershed issues.

[For a copy of the Federation's newsletter, the Runoff Report, contact the Federation at (800) 795-3634, or P.O. Box 30101, Kansas City, MO 64112.]

New EPA Publications Cover Fisheries, Funding, Geographic Targeting

The U.S. Environmental Protection Agency's Assessment and Watershed Protection Division recently released three new documents.

Fish and Fisheries Management in Lakes and Reservoirs (EPA-841-R-93-002) contains information on developing comprehensive lake management plans that integrate fisheries and water quality management. For copies of this manual, please contact Susan Ratcliffe at (202) 260-5404 or FAX (202) 260-7024; U.S. EPA, Clean Lakes Program (WH-553), 401 M St., SW Washington, DC 20460.

State and Local Funding of Nonpoint Source Control Programs (EPA 841-R-92-003) describes effective state and local approaches to funding, and will help other jurisdictions develop their own NPS programs. It is available by writing to NPS Control Branch (WH-553), U.S. EPA, 401 M St., SW, Washington, DC 20460; or by FAXing your request to (202) 260-7024.

Geographic Targeting: Selected State Examples facilitates a watershed-based water quality approach. To obtain a copy, write to Peggy Michell, Watershed Branch, Assessment and Watershed Protection Division (WH-553), U.S. EPA, 401 M St., SW, Washington, DC 20460.

Datebook

This DATEBOOK has been assembled with the cooperation of our readers. If there is a meeting or event that you would like placed in the DATEBOOK, contact the *NPS News-Notes* editors. Due to an irregular printing schedule, notices should be in our hands at least two months in advance to ensure timely publication. A more complete listing can be found on the *NPS BBS*.

Meetings and Events

1993

September

9-11 *Western Wetlands and Riparian Areas — Public/Private Efforts in Recovery, Management, and Education,* Salt Lake City, UT. Contact: Susan Foster, Thorne Ecological Institute, 5398 Manhattan Circle, Suite 120, Boulder, CO 80303. (303) 499-3647. FAX: (303) 499-8340.

10-12 *Building an Alliance for the Future: Linking Seniors to Environmental Action,* Washington, DC. Contact: EASI, 51 Main Street, P.O. Box 368, The Plains, VA 22171. (703) 253-5821. FAX: (703) 253-5811.

12-17 *ICUSD '93 - 6th International Conference on Urban Storm Drainage,* Niagara Falls, Ontario, Contact: Jiri Marsalek, 6th ICUSD, National Water Research Instit., P.O. Box 5050, Burlington, Ontario, Canada, L7R 4A6. (416) 336-4899. FAX: (416) 336-4989.

13-16 *Nonpoint Source Watershed Project Workshop — Working Toward Measurable Success,* Charlotte, NC. Contact: NCSU, Water Quality Group, (919) 515-3723. FAX: (919) 515-7448. A forum for federal, state, and local project managers to share expertise on implementing and evaluating successful nonpoint source control watershed projects. Sessions include planning; land treatment implementation; monitoring/tracking; water quality and land treatment data storage, reporting, and evaluation; groundwater sampling for documenting success; and stormwater sampling for documenting success.

14-15 *Texas Water Commission 8th Annual Groundwater Protection Seminar,* San Antonio, TX. Contact: Brad Cross, Community Support Section, TWC, P.O. Box 13087, Austin, TX 78711-3087. (512) 475-4594.

19-21 *A New Era for the Western Public Lands,* Boulder, CO. Contact: Katherine Taylor, Campus Box 401, Boulder, CO 80309-0401. (303) 492-1288. FAX: (303) 492-1297.

1993

September

19-24 — *1st International IAWPRC Conference on Diffuse (NPS) Pollution: Sources, Prevention, Impact and Abatement,* Chicago, IL. Contact: Dr. Vladimir Novotny, IAWPRC Conference, Dept.Civil & Envir. Engineering, Marquette University, 1515 West Wisconsin Ave., Milwaukee, WI 53223. (414) 288-3524. FAX: (414) 288-7082.

23-24 — *4th Annual Utah Nonpoint Source Water Quality Conference,* Logan, UT. Contact: Denise Stewardson, Conference & Institute Div., Utah State University, Logan, UT 84322-5005. (801) 750-1713.

23-24 — *6th Annual Symposium of the Arizona Hydrological Society: Emerging Critical Issues in Water Resources of Arizona and the Southwest,* Casa Grande, AZ. Contact: Peter Livingston, CH2M Hill, Inc., 5210 E. Williams Circle, Suite 550, Tucson, AZ 85711-4486. (602) 748-9144. FAX: (602) 748-1316.

28-29 — *Symposium on Agricultural Nonpoint Sources of Contaminants: Focus on Herbicides,* Lawrence, KS. Contact: Larry Fergusun, U.S. EPA, 726 Minnesota Ave., Kansas City, KS 66101. (913) 551-7447. Sponsored by EPA and USGS.

29-10/1 — *Colorado Riparian Association Annual Conference: A Riparian Area Runs Through It,* Boulder, CO. Contact: Laurie Rink, Aquatic and Wetland Consultants, 2060 Broadway, Ste. 255, Boulder, CO 80302. Topics: Boulder Creek restoration, riparian areas in city planning, land management and riparian areas, riparian classification.

October

2-7 — *1993 Water Environment Federation Annual Conference,* Anaheim, CA. Contact: Maureen Novotne, WEF, Technical & Educational Serv., 601 Wythe St., Alexandria, VA 22314-1994. (703) 684-2400.

2 — *Publicizing the Management and Permitting Issues for Urban Planning and Stormwater,* Anaheim, CA. Contact: Christine McKallip, WEF, 601 Wythe Street, Alexandria, VA 22314-1994. (703) 684-2400. FAX: (703) 684-2492.

3 — *Marine Water Quality Monitoring,* Anaheim, CA. Contact: Christine McKallip, WEF, 601 Wythe Street, Alexandria, VA 22314-1994. (703) 684-2400. FAX: (703) 684-2492.

4-5 — *1st Annual Virgin Islands Conference of Nonpoint Source Pollution: Problems and Solutions.* Contact: Janice D. Hodge, Dept. of Planning and Natural Resources, Nisky Center, Ste. 231, St. Thomas, VI 00802. (809) 774-3320. FAX: (809) 775-5706.

4-8 — *International Symposium on the Ecological Effects of Arctic Airborne Contaminants,* Reykjavik, Iceland. Contact: Debra Steward, Technical Resources, Inc., 3202 Tower Oaks Blvd., Suite 200, Rockville, MD 20852.

10-13 — *47th Annual Conference of the Southeastern Association of Fish and Wildlife Agencies,* Atlanta, GA. Contact: Tim Hess, Wildlife Resources Division, 2070 U.S. Highway 278, S.E., Social Circle, GA 30279. FAX: (706) 557-3030. Theme: The Ecology of Growth and Development.

21-22 — *Mid-Atlantic District American Water Resources Association Conference: Instream Flow Management and the Clean Water Act,* Clinton, NJ. Contact: Bill Bauersfeld, AWRA, (609) 771-3980 or Greg Westfall (908) 246-1977 ext.133. Sponsored by the NJ, NY, and PA Sections AWRA and the Delaware River Basin Commission.

27-29 — *1993 Rocky Mountain Groundwater Conference,* Albuquerque, MN. Contact: Michael E. Campana, Dept. of Earth & Planetary Sci, University of New Mexico, Albuquerque, NM 87131-1116. (505) 277-3269. FAX: (505) 277-8843.

November

1-3 — *4th National Pesticide Conference: New Directions in Pesticide Research, Development, Management, and Policy,* Richmond, VA. Contact: Dr. Diana Weigmann, VA Polytech, VA Water Resources Res. Center, 617 North Main St., Blacksburg, VA 24060-3397. (703) 231-5624 or 231-6673.

4-7 — *The Future of America's Rivers: A Celebration of the 25th Anniversary of the National Wild and Scenic Rivers Act,* Arlington, VA. Contact: Jennifer Paugh, JT&A, 1000 Connecticut Ave., NW, Ste. 802, Washington, DC 20036. (202) 833-3380 FAX: (202) 466-8554. Sponsored by American Rivers Association with BLM, Bureau of Reclamation, U.S. EPA, USFWS, USFS, National Park Service, and the River Network. Topics include national river protection, river science and technology, grassroots advocacy and education, new coalitions for rivers, future directions in river conservation.

7-10 — *NACD Urban and Community Conservation Symposium: Partnerships for Livable Communities,* Minneapolis, MN. Contact: Debra A. Bogar, National Association of Conservation Districts, Northeastern Region, P.O. Box 320, Leeds, MA 01053. (413) 585-8895. FAX: (413) 585-8897.

19 — *Wetland Issues in Resources Development in the Western U.S.,* Denver, CO. Contact: Mark Holland, Rocky Mountain Mineral Law Foundation, Porter Administration Bldg. 7039 East 18th Ave., Denver, CO, 80220. (303) 321-8100. Sponsored by RMMLF and the American Bar Association.

December

6-8 — *Marina and Boating Environment Conference and Trade Show,* Atlanta, GA. Contact: Susan Santoro, International Marina Institute, 35 Steamboat Avenue, Wickford, RI 02852. (401) 294-9558. FAX: (401) 294-1630. Sponsored by the International Marina Institute with the Clean Marina Program Consortium. Conference issues: marina and boatyard facility siting and design; environmental regulation and law; boat sewage and wastewater; fuel, oil and hydrocarbons; stormwater and nonpoint pollution runoff; hazardous materials, trash and recycling; boat repair and maintenance; dredging and beneficial uses of marina bottom soils; boat usage, cleaning, and maintenance; and marina and boater education.

9 — *2nd Annual Fertilizer Research and Education Conference,* Davis, CA. Main topic will be efforts in the public and private sectors to reduce nitrate groundwater contamination in several areas of California. Contact:

1993

December

Jacques Franco, CDFA, 1220 N St., PO Box 94281, Sacramento, CA 94271-0001. Targeted at growers, farm advisors, researchers, public officials, and agricultural service and supply organizations. Cosponsored by California Department of Food and Agriculture's Fertilizer Research and Education Program, California Fertilizer Association, and University of California-Davis Public Service Research Program.

11-15 — *55th Midwest Fish & Wildlife Conference — New Agendas in Fish and Wildlife Management: Approaching the Next Millennium*, St. Louis, MO. Contact: Wayne Porath, MO Dept. of Conservation, 1110 S. College Avenue, Columbia, MO 65201. (314) 882-9880.

13-14 — *Integrated Resource Management and Landscape Modification for Environmental Protection*, Chicago, IL. Contact: ASAE, 2950 Niles Road, St. Joseph, MI 49085-9659. (616) 429-0300.

1994

January

31-2/2 — *Second Thematic Conference on Remote Sensing for Marine and Coastal Environments: Needs, Solutions, and Applications*, New Orleans, LA. Contact: ERIM, Marine Management Conference, P.O. Box 134001, Ann Arbor, MI 48113-4001. (313) 994-1200 ext. 3234. FAX: (313) 994-5123. Topics: emergency response and monitoring, natural resource management, marine and coastal operations, water quality, environmental monitoring, and sensor and systems technologies. Focuses on applying remote sensing technologies and geographic information systems to solve real-world problems in marine and coastal environments.

February

15-18 — *The International Erosion Control Association 25th Annual Conference and Trade Exposition*, Reno, NV. Contact: IECA, P.O. Box 4904, Lincoln Avenue, Suite 103B, Steamboat Springs, CO 80477-4904. (303) 879-3010. FAX: (303) 879-8563. Topics include innovative applications for solving erosion control problems; soil bioengineering methods and techniques; wind erosion in arid environments; erosion control for urban construction sites; streambank and shoreline stabilization; steep slope stabilization; how to meet permit requirements; erosion control in the third world; and research and development.

March

1 — *Remediating Hazardous Waste and Groundwater Contamination Sites: New Approaches*, Miami, FL. Contact: Libby Strickland, Water Environment Federation, 601 Wythe Street, Alexandria, VA 22314-1994. (703) 684-2400. FAX: (703) 684-2475. Topics include policy issues, management strategies, research on remediation technologies, risk evaluation of alternative technologies, results of demonstration projects, effectiveness of groundwater pump-and-treat systems, and local issues. Sponsored by the Water Environment Federation's Hazardous Wastes and Groundwater Contamination Committees.

27-30 — *Second International Conference on Groundwater Ecology*, Atlanta, GA. Contact: John Simons, General Chairperson, USEPA, Ground Water Protection Div, Mail Code WH-550G, 401 M Street, SW, Washington, DC 20460. (202) 260-7091. Sponsored by USEPA, USGS, AWRA, Ecological Society of America, American Society of Limnology and Oceanography, IAHS, and ASAE.

Calls For Papers — Deadlines

September

9 — *10th Thematic Conference on Geologic Remote Sensing*, San Antonio, TX, May 9-12, 1994. Contact: Nancy Wallman, ERIM Conferences, P.O. Box 134001, Ann Arbor, MI 48113-4001. (313) 994-1200) ext. 3234. FAX: (313) 994-5123. Sponsored by the Environmental Research Institute of Michigan. Focuses on geologic remote sensing and GIS with special emphasis on mineral and hydrocarbon exploration, and environmental and engineering applications.

10 — *2nd Environmentally Sound Agriculture Conference*, Orlando, FL, April 20-22, 1994 Contact: Wendy Graham, University of Florida, P.O. Box 110570, Gainesville, FL 32611-0570. (904) 392-9113. FAX: (904) 392-4092. E-Mail: graham@agen.ufl.edu. Sponsored by the Institute of Food and Agricultural Sciences at the University of Florida. Topics: surface and groundwater management, wildlife and habitat preservation, air pollution, and the urban/agriculture relationship.

November

1 — *Responses to Changing Multiple-Use Demands: New Directions for Resources Planning and Management*, Nashville, TN, April 17, 1994. Contact: Ralph H. Brooks, General Chairperson, Tennessee Valley Authority, Water Management, Evans Bldg., Rm. 1W 141, Knoxville, TN 37902. (615) 632-6770. American Water Resources Association Annual Spring Symposium. Topics will include water use trends, water-resources forecasting, hydrologic modeling, GIS tools, water pricing policies, water allocation, water law, BMPs, environmental impact mitigation, reservoirs, and hydropower licensing.

16 — *Second International Conference on Groundwater Ecology*, Atlanta, GA, March 27-30, 1994. Contact: John Simons, General Chairperson, USEPA, Ground Water Protection Div, Mail Code WH-550G, 401 M Street, SW, Washington, DC 20460. (202) 260-7091. Sponsored by USEPA, USGS, AWRA, Ecological Society of America, American Society of Limnology and Oceanography, IAHS, and ASAE. Objective: focus attention on the need to increase knowledge of groundwater ecology and to explore ways for applying this knowledge to groundwater protection efforts. Conference will highlight emerging scientific studies, facilitate communication among researchers and water managers, and sponsor panel discussions on applying knowledge of groundwater ecology to groundwater protection policy.

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