United States
Environmental Protection
Agency

Office of Water (WH-553)
Washington, DC 20460

EPA-841-N-92-009
November–December 1992
#25

EPA News-Notes

A Water Quality Note

Twenty-Year-Old Clean Water Act Sees Accomplishments, New Challenges — A Commentary by the Editors

Twenty years ago, our nation's waters were in trouble. Americans were dumping untreated sewage into Boston Harbor, and sewage floated on the San Francisco Bay. Industrial wastes poured into the Mississippi and Ohio rivers — the Cuyahoga River actually caught fire from time to time. Massive algae tides had almost completely strangled Lake Erie, and some joked grimly that it would soon be so full of pollution that you could walk across it. Fish and shellfish numbers in the Chesapeake Bay plummeted. There were no national water quality standards and no strategy to stem the flow of industrial and municipal wastes a vigorous young industrial power produced.

The final straw was the dishonor of an historic body of water in Washington, D.C., in the late 1960s. Algae had fouled the Potomac River, killing its fish and plants and threatening human health. Swimmers were told to get hepatitis shots. As Americans mourned the demise of a once-beautiful national treasure, President Lyndon Johnson declared the Potomac a "national disgrace." Many point to the river's sad condition, clearly visible to the nation's lawmakers, as the driving force behind strengthened water quality laws.

Although this country began regulating water pollution in 1899, those first controls were primitive by today's standards. Laws in succeeding decades made improvements, but it was not until 1972 that Congress adopted a national goal to "restore and maintain the chemical, physical, and biological integrity of our nation's waters" by eliminating "the discharge of pollutants." The Federal Water Pollution Control Act required water quality that "provides for the protection and propagation of fish, shellfish, and wildlife and . . . recreation in and on the water."

Amended in 1977 and renamed the Clean Water Act, the law instituted National Pollutant Discharge Elimination System (NPDES) permits, limiting the amount of gross pollution that factories and municipal sewage treatment plants could release. Nearly 65,000 of these point sources have since received state permits written to federal standards, and many have reduced pollution 90 percent.

In the 1980s, we established new standards for 65 categories of toxic pollutants, including heavy metals (such as copper and lead) and organic pollutants (such as dioxins and polychlorinated

INSIDE THIS ISSUE

Twenty-Year Old Clean Water Act (continued)

biphenyls [PCBs]). The result was significantly reduced pollution, improved chemical balance, and lowered biological oxygen demand in our waters. More than 80 percent of U.S. factories and 1,500 municipalities now pretreat noxious wastes to make them safer.

The Clean Water Act also provided substantial funding for municipal waste water treatment plants. Between 1972 and 1988, the federal government dispensed $58 billion in construction grants, added to the $17 billion that state and local governments spent. Of the nation's 15,591 municipal waste water plants, more than 80 percent can provide at least secondary treatment quality now, and secondary or higher levels of sewage treatment serve more than 144 million people in this country, up from 85 million in 1972.

Today we have much to be proud of. Rivers no longer catch fire. Lake Erie is recovering. People swim and wind surf in the Potomac without risking a visit to the doctor. President Bush — the first president to fish the river since Teddy Roosevelt — caught a three-pound bass in the Potomac last year. States now tell EPA that 70 percent of the river miles they've sampled nationally fully meet their water quality standards, compared to an estimated 36 percent in 1974. Sixty percent of sampled lake and reservoir acres meet standards today, as do 67 percent of tested estuary square miles. This improvement comes despite continually toughened standards and increased measurement capability.

However, there are new challenges. Our progress and increasing sophistication during the last two decades has shown us more subtle and complex problems, including the interrelationships between ecosystems and human behavior. As point sources of pollution come under control, our waters face bigger and more diverse threats. Rain and melted snow flowing across the ground carry soil, pesticides, fertilizers, bacteria, oil, and medical waste into America's waters. This wet-weather runoff, including nonpoint source pollution, storm water runoff, and combined sewer overflows, imperils our waters today.

Meeting these new challenges will require new ways of thinking from each of us and our personal involvement in preventing pollution. Our reward will be cleaner waters and improved stewardship of the Earth. As President Bush has said, "Through millions of individual decisions — simple, everyday, personal choices — we are determining the fate of the Earth . . . environmental stewardship must flow from action by all Americans . . ." Our 20-year record of accomplishments and our pride in a clean environment indicate that Americans will meet that challenge.

Notes on Water Quality Management

Protecting New Mexico's Streams with Section 404 Permits (A message to New Mexicans — shared here with News-Notes readers)

EDITOR'S NOTE: This article originally appeared in *Clearing the Waters*, the nonpoint source pollution newsletter published for New Mexicans by the New Mexico Environment Department. It was written by David Coss of that department. There are, of course, clear linkages between the use and condition of wetlands and riparian areas, hydrologic modification, the condition of habitat, and the integrity of surface and groundwaters. We discussed with Jim Piatt, chief of the New Mexico's Surface Water Quality Bureau, the matter of water quality and this logical but creative use of §404 to enforce the state's water quality standards and to thereby ensure water quality. Thanks, Jim, on behalf of other states that will benefit by this bit of technology transfer.

It's a Federal-State-Citizen Partnership Thing

One of the most promising areas of cooperation between federal and state agencies and the general public in the protection of New Mexico surface waters is the Clean Water Act section 404 program. This permit program prevents water pollution by regulating the placement of dredged or fill materials into our waters during such activities as river crossings of utility pipelines, bridge building, bank stabilization, and dam and levee building.

Historically, such activities have been a major cause of impacts to our waters because of damage done to riparian zones, streamside erosion, and stream flow and habitat alteration. Under the section 404 program, the New Mexico Environment Department (NMED) and the U.S. Army Corps of Engineers are working hard to eliminate such practices as a source of water quality damage in New Mexico, while allowing necessary construction or land management activities to continue. The results since the section 404 program became part of New Mexico's Nonpoint Source Management Program are encouraging.

Do You Live By or Work Near a River, Lake, or Wetland?

If your answer to this question is yes, you should find out about the section 404 program and its requirements. Under U.S. Army Corps of Engineers regulations and state water quality

protection requirements, most activities that would require construction in such a waterbody must have a permit. The Surface Water Quality Bureau of the New Mexico Environment Department reviews all permit applications to ensure that water quality will be protected during the proposed activity.

Depending on your project, you may do work in rivers under a nationwide permit or an individual permit. Under either type of permit, you must have approval of plans describing how water quality will be protected during and after the project from the Surface Water Quality Bureau of the New Mexico Environment Department before you begin work.

NMED and U.S. Army Corps of Engineers staff will be glad to assist you in completing your permit application. In most cases, they can either give you advice on proper practices to use or refer you to someone who can. Experience in this program has shown that citizens, agencies, and corporations that follow the permit process have been able to do the work necessary without harm to the river in which they are working. Experience also shows that those who ignore the permitting process often waste their money on projects that won't work, in addition to harming the river and violating the law.

Success Stories Large and Small

El Paso Natural Gas Company and Enron Corporation proposed to lay one 42-inch and one 36-inch gas pipeline, respectively, across the San Juan River near Bloomfield this past winter. Upon learning of the proposed crossings, a number of agencies expressed concern that these activities would further pollute an already impaired river. Both companies worked closely with NMED, the U.S. Fish and Wildlife Service, the NM Department of Game and Fish, the U.S. Environmental Protection Agency, and the Army Corps of Engineers to prevent additional water pollution.

The final work plans for both crossings called for using a new technology — water bags. Manufactured by Water Structures Unlimited, the bags were used to divert the river so that pipeline trenches could be dug and the pipes laid. It was the first time the bags had been used in a river as fast and deep as the San Juan. With some trial and error, however, the companies had good success in using the bags to divert the river and prevent discharges of turbid waters. Both river crossings were thus completed without damage to the San Juan River.

Pecos River bank stabilization projects being conducted by private landowners in San Miguel County are at the other end of the size scale from the large gas pipeline projects on the San Juan River. The Pecos River experienced a 50-year flood in 1991 that, along with other problems in the watershed, resulted in massive bank erosion along numerous reaches of the river.

Under new state requirements for 404 activities, landowners wishing to place fill into a perennial river or wetland as part of a bank stabilization project must receive NMED approval before beginning work. This spring, 12 landowners along the Pecos River received permission to perform bank stabilization projects. Landowners were encouraged to use logs or rocks against eroding banks and to plant riparian vegetation for more permanent bank stabilization. Bulldozing riverbeds and channelizing streams away from eroding banks were not allowed.

In June, bank stabilization projects on the Pecos River were reviewed. Where landowners had worked with NMED and the Corps, projects were completed that not only protected the landowner's properties, but they also benefitted the river through erosion control and habitat enhancement.

Unfortunately, two landowners channelized the river next to their properties without talking to NMED or the Corps. These illegal projects are now eroding into the river, causing hydrologic problems downstream, and have subjected the landowners to enforcement action from the Corps of Engineers. In addition, the money spent to do these projects will be wasted as the berms created by the projects wash away. A similar amount of money could have provided long-term bank stabilization for their properties without harming the river or downstream neighbors.

All in all, NMED is pleased with progress in the 404 program. By working with resource agency staff and following permit requirements, individuals and companies can complete necessary projects while still protecting New Mexico's rivers.

[For more information, contact: Jim Piatt, Chief, Surface Water Quality Bureau, NM Environment Department, P.O. Box 26110, Santa Fe, NM 87502. Phone: (505) 827-2836.]

Austin Voters Win One for Barton Springs

EDITOR'S NOTE: *NPS News-Notes* #20 reported in April on the fight being waged by Austin, Texas, citizens to protect their clean water resources. From the front lines, Lauren Ross, a civil engineer who has worked with the SOS Coalition, recounts a victory. Thank you, Lauren, and congratulations. We need more folks like the citizens of Austin.

Voters of Austin, Texas, gave a sweet victory to the environmental movement on August 8, 1992, when they passed a citizen's initiative water quality ordinance by a margin of two to one. In the same election, they also approved $20 million for wilderness park land acquisition and $22 million for endangered species habitat purchases. The voters rejected, by a large margin, the do-nothing water quality ordinance proposed by the Austin City Council as an alternative to the stronger one drafted by an environmental coalition. Success was all the sweeter because the road to victory had been a rocky one.

The citizen's initiative process began in October 1991, when the Austin City Council passed a weak and flawed "non-degradation" ordinance in response to demands from the citizens to protect water quality in the creeks and limestone aquifer that feed Barton Springs. Barton Springs, just three miles from the Texas State Capital in the heart of Austin, has been valued by local residents for its clear, cold water for centuries.

After the Austin City Council opted for the clearly inadequate ordinance, local environmental groups came together under the banner of the Save Our Springs (SOS) Coalition. With the goal of protecting creek, aquifer, and spring water quality, SOS drafted its own ordinance. The SOS ordinance did three things the city council had refused to do. First, it lowered allowable development intensity. The Council's ordinance allowed up to 70 percent impervious cover. The SOS ordinance lowers these limits to 15, 20, and 25 percent, depending on location within the aquifer recharge or contributing zone. Second, the SOS ordinance established a pollution prevention standard that allows no increases in the average annual loads of 13 constituents, including sediment, nutrients, pathogens, heavy metals, organic compounds, pesticides, and herbicides in post-development runoff.

Third, and most importantly, the SOS ordinance has the broadest possible applicability, so that every development has to comply with its provisions, within the restrictions of state and federal law. The sad history of Austin water quality ordinances has been to enact strict regulations and then give almost all development an exemption, variance, or waiver.

Writing the SOS ordinance took careful thought and the help of good legal and technical minds. Collecting 35,000 signatures to get the ordinance on the ballot took five months and hundreds of volunteer hours. But the battle really escalated after the signatures had been validated, and it was time to put the ordinance on the ballot and give the citizens their say. As reported previously, the Austin City Council defied a state judicial order to hold the election on May 2, violating the city charter and delaying the election until August 8.

The delay gave development interests time to organize and wage an expensive, but ultimately ineffective, "misinformation" campaign. The delay also allowed 248 development applications (compared to 29 in the preceding five months) to be filed with the city during the interim period between the two election dates. The massive developments proposed in these applications present a significant threat to water quality if significant numbers of them are not required to meet the provisions of the SOS ordinance.

Even with the clear mandate of the Austin voters, there is work to be done. City of Austin staff must develop strict and fair rules to govern the day-to-day implementation of the ordinance provisions. City staff, boards, commissions, and the Council may also extend existing site plans that would otherwise expire and allow development that does not meet the new ordinance requirements.

Governmental bodies other than the city will also play a role in applying the SOS ordinance. The Texas Water Commission will rule as to whether the ordinance is technically sound and appropriate to its water quality objectives. Landowners have also threatened to take the city to court to defend their property rights against what they perceive to be an illegal "taking." The right of Austin to protect its water supply quality may also be attacked in the Texas Legislature, where the developers' lobby has a history of successfully limiting the environmental protection options of Texas cities.

Clearly, the vote on August 8 is an environmental victory, but only one step toward achieving water quality protection for Barton Springs. Members of the SOS Coalition will follow the

Barton Springs Update (continued)

process through the city, the courts, the water commission, and the Texas Legislature to ensure that the ordinance chosen by the voters is ultimately implemented.

[For more information, contact: D. Lauren Ross, P.E., 1912 East Side Dr., Austin, TX 78704. Phone: (512) 448-2033. Or contact: George Cofer, Save Barton Creek Association, PO Box 5923, Austin, TX 78763. Phone: (512) 480-0055.]

News From The States

In Colorado, Memo of Understanding Clarifies CERCLA Liabilities in State 319 Mining Cleanups

At Issue, the Reclamation of Abandoned Mine Lands

Acid mine drainage and other pollutants (heavy metals, etc.) from inactive and abandoned mine sites are some of Colorado's most difficult nonpoint source problems. Much of this pollution occurs in the tributaries and headwaters of prime Rocky Mountain streams, highly desirable sites for recreation, including hunting and sport fishing. These are also the sites of domestic drinking water supplies. Often the condition of the streams threatens or precludes these highly desirable and beneficial uses.[1]

When §319 mining site reclamation projects have been developed, the required 40 percent state match has been obtained on a project-by-project basis. Match funds come from a variety of public and private sources, often including monitoring from the Colorado Division of Wildlife, heavy equipment from cities or counties, labor from local volunteers, and cash or services from private organizations and industry.

For example, in reporting on the St. Elmo project, *News-Notes* observed:

> *Total project costs have come to $400,000, including post-reclamation water quality monitoring. The Nonpoint Source Program of the Water Quality Control Division, Colorado Department of Health, authorized the project. Nonpoint source control funding was provided under section 201(g)(1)(B) [construction grant money authorized for nonpoint source purposes — eds.] of the Clean Water Act in the amount of $76,800.*
>
> *Additional funding and/or "in-kind" contributions to make up the project costs have been provided by Chaffee County; Colorado Division of Wildlife; Colorado Mined Land Reclamation Division; Colorado Soil Conservation Board; Coors Pure Water 2000; Cypress Minerals Company; Kaess Contracting, Inc.; T.H.E. Consultants; Volunteers for Outdoor Colorado; and the following federal agencies: Bureau of Reclamation, Bureau of Mines, Forest Service, Soil Conservation Service, and the U.S. EPA Office of Solid Waste.*

CERCLA Liability Threat Stalls Projects

Early in 1992, these kinds of creative partnerships became stalled as existing and potential cooperators were advised to avoid involvement in cleanup of abandoned or inactive mines under §319 of the Clean Water Act (CWA) because of potential grave financial liability that might arise under federal law contained in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

Since EPA is the federal agency that administers both CWA and CERCLA, EPA's Denver regional office (Region VIII) set about devising the ways and the means for the provisions of both acts to be satisfied and to eliminate the threat of potential liability under CERCLA. Furthermore, all of this had to be reduced to writing and made understandable to all parties, both public and private, including potential cooperators and their legal counsel. Suffice it to say that procedures were developed, and a memorandum of understanding (MOU) setting forth those procedures was signed on June 3, 1992, between the Colorado Department of Health, the Colorado Mined Land Reclamation Division, and the U.S. EPA.

The Procedures

The MOU sets forth detailed steps to be taken by the state and the EPA to comply with both laws. Briefly, these steps include the following:

[1] For a description of two such sites and the reclamation efforts of Colorado, see *NPS News-Notes* Issues #9 (December 1990) and #17 (December 1991) dealing with the headwaters of the Arkansas River and the St. Elmo reclamation project (Chalk Creek).

In Colorado, MOU Clarifies CERCLA Liability in 319 Mining Cleanup (continued)

- The state will appoint a state project officer whose responsibilities are described in the MOU, including a site evaluation and a determination that a section 319 action is appropriate. Factors that will be considered in determining the appropriateness of taking action are listed in the MOU.
- A Project Implementation Plan (PIP) that follows EPA Region VIII PIP guidance for watershed projects is then developed. A cover letter attached to the PIP supplies the information and format prescribed by the Superfund Removal Procedures/Action Memorandum Guidance.
- An EPA on-site coordinator in the EPA Hazardous Waste Division will review the state's PIP for EPA hazardous waste approval. The PIP is also reviewed for approval by the state EPA project officer in the Water Division. Both approvals are required before work on the project begins.

In essence, that is the story. The MOU specifically says that its purpose is to implement a procedure by which the state and its agents (i.e., the cooperators) would receive protection from liability from CERCLA, as amended by SARA, while engaged in cleanup of abandoned or inactive mines under §319 of CWA.

Significance

Karen Hamilton, Region VIII Water Division's lead in the development of the MOU, told *News-Notes*:

> *No such agreement has been produced in the nation before now. This MOU has generated considerable interest in states that have water quality problems stemming from inactive mine sites. The MOU will encourage participation in inactive mine site remediation by industry, local government, and volunteers through a program that builds partnerships and public ownership of solutions, free from confrontation and litigation.*

[For more information, contact: Karen Hamilton, Watershed Section, Water Quality Branch, U.S. EPA Region VIII (8WM-WQ), 999 18th St., Denver, CO 80202-2466. Phone: (303) 293-1576. FAX: (303) 294-1386.]

In Texas, Clean Rivers Act of 1991 Calls for Statewide Watershed Assessments Supported by Water Users and Wastewater Dischargers Fees

The 72nd session of the Texas Legislature passed an innovative and far-reaching new water management law. Senate Bill 818, the Texas Clean Rivers Act of 1991, was enacted in response to the high priority placed on the continued availability of a sufficient supply of clean water for Texas now and in the future.

The statute provides for the following:

- The Texas Water Commission to establish a partnership with regional water resource entities, such as river authorities, to coordinate a combined water quality assessment and management effort of all appropriate agencies;
- Comprehensive water quality assessments to be performed in all watersheds and river basins in the state;
- The formation of "steering committees" to support and guide the assessment process in each watershed; and
- The preparation of biennial reports to the Governor, Texas Parks and Wildlife Department, and the legislature summarizing the results of the watershed/basin assessments, actions taken to address water quality, and local recommendations on the Texas Water Commission's (TWC's) regional water quality management plans.

The comprehensive water quality assessments will identify and prioritize water quality problems for the development of solutions. The statute also provides a state-level process for levying fees against wastewater discharge and water rights permit holders to support the program established by S.B. 818.

The Water Situation in Texas

The Clean Rivers legislation was enacted by the legislature against some stern facts. Consider these elements of the water scenario:

Texas, true to its image, encompasses a large geographic area and contains a correspondingly diverse range of environmental settings within its boundaries. Texas also supports a large and

In Texas, Clean Rivers Act of 1991 Calls for Statewide Watershed Assessments (continued)

growing population and associated economy. Water resources in Texas currently serve a population of 17.5 million. The population is expected to reach 30 million by the year 2040. The current demand for water is considered to be at about 75 percent of existing capacity. Clearly, proper management of the state's water resources is of high priority for the future of Texas. The task is a formidable one.

Texas contains over 190,000 miles of streams and rivers, more than 3 million acres of constructed reservoirs, almost 2,000 square miles of coastal bays, 3,800 square miles of Gulf of Mexico waters, and almost 8 million acres of wetland waters. Seven major and 17 minor groundwater aquifers with a total storage capacity estimated to be approximately nine billion acre-feet of potable water have been delineated in Texas.

Twelve ecoregions have been identified in Texas. They range from the southwestern deserts characterized by dry climatic conditions and sparse vegetation through the semi-tropical conditions of the southern Texas plains to the southern pine forests of the western Gulf coastal plain. Water use planning must be accomplished holistically, framed by the ecosystems found within the state's ecoregions.

It is against this backdrop that the regional watershed assessments and plans will be constructed.

The Assessments

The Texas Clean Rivers Act requires the TWC to ensure that comprehensive regional water quality assessments are performed in each river basin in the state. Further, the basin assessments will include assessments for all watersheds within the basin. TWC will either contract with appropriate regional, intergovernmental entities, such as river authorities, councils of governments, or special districts, or the TWC itself will conduct the assessment in basins when no other entity is able to do so.[1]

Rules promulgated by TWC define "assessment report" to mean:

> *A comprehensive record of historical, existing, and projected water quality conditions of a watershed.*

The statute states that the purpose of the assessments is to identify significant issues and to provide sufficient information for taking corrective actions necessary to maintain and improve water quality.

The rules expand on the purpose of the assessments:

> *The intent of developing water quality assessments in each watershed is to identify water quality problem areas and to focus resources and future studies on these areas.*

Thus the assessments are to perform a targeting and priority setting function.

The statute specifically requires that nonpoint sources of pollution, nutrient loadings, toxic materials, and health of aquatic life be addressed by the assessments.

According to the law, the assessments must identify significant nonpoint sources of pollution. They are to be discussed and depicted on a map. Land use maps are to be developed for areas where nonpoint source pollution has been identified as a threat to water quality. The SB 818 assessments are considered to be the appropriate vehicle to update the state's Nonpoint Source Water Quality Assessment report as required under §319 of the Clean Water Act and its biennial §305(b) water quality inventory.

The statute and TWC rules stress that these assessment undertakings and the resultant corrective or pollution prevention actions are to be truly cooperative intergovernmental undertakings. As the rules indicate:

> *. . . the assessments will be the result of a cooperative partnership between river authorities, designated local governments, other political subdivisions, other state agencies, and the Texas Water Commission. The assessments will be conducted in such a manner which avoids, as much as possible, duplication of effort . . .*

Each of the regional entities performing assessments must convene a watershed steering committee composed of representatives of appropriate governmental bodies to

- support and guide the assessment process,
- identify water quality issues,

[1] Assessment reports are to be organized and evaluated by stream segments, which are subsets of watersheds. TWC directives indicate that segments are surface waters exhibiting common biological, chemical, hydrological, natural, and physical characteristics and processes. Segments will normally exhibit common reactions to external stresses.

In Texas, Clean Rivers Act of 1991 Calls for Statewide Watershed Assessments (continued)

- make relevant data available, and
- provide for public input.

The Texas Water Code was amended so that all wastewater discharge permits within a single watershed will have the same expiration date.

Fiscal year 1992 was the first year for SB 818 assessments in Texas. The first year tasks consisted of convening the steering committees and compiling existing water quality data and information into consistent formats to permit meaningful comprehensive evaluations. The first year assessment reports were due from 16 river basins in October 1992.

The Fee Structure

The water law requires TWC to assess reasonable and proportional annual fees from all users of water rights and wastewater discharge permit holders to recover the costs of the watershed assessment program. In the fall of 1991, TWC set up a task force to assist in determining the funding amounts and formulas to be used to assess the fees. The task force was comprised of representatives of industries, utilities, river authorities, municipalities, environmental groups, and agricultural interests.

TWC decided to assess fees for discharge permit holders on the basis of flow volumes and pollutant loadings up to a maximum of $35,000 per permit. Fees for water rights permit holders are based on the right to appropriate water under a permit issued with differentiations made between consumptive uses, nonconsumptive uses, and irrigation uses. Entities possessing both wastewater and water rights permits were assessed fees only on the basis of the wastewater permit.

On this basis, TWC billed $4.6 million and allocated it to 16 river authorities and other entities to perform the assessments in 15 identified river basins. TWC staff members are doing the sixteenth assessment in the Rio Grande River basin along the international border with Mexico.

The First Year Is the Beginning . . .

"The goal of the watershed assessment program in the state of Texas is to establish partnerships between the TWC, appropriate regional water management agencies, and local governments and interests to manage water quality on a watershed basis," commented Arthur Talley, P.E. of the TWC staff. "We've made a lot of progress toward that goal during our first year. We're still breaking new ground and installing new ways of doing things, but we are sure we're headed in the right direction," he concluded.

Based on the 16 regional assessments, the commission is preparing its first biennial summary report on the watersheds of Texas. The Governor, Lt. Governor, Speaker of the House, and the Parks and Wildlife Department should receive the summary December 1, 1992.

[For further information, contact Linda Brookins, Watershed Assessment Team, Texas Water Commission, P.O. Box 13087, Austin, TX 78711-3087. Phone: (512) 463-8443. FAX: (512) 463-8439.]

Mississippi Develops Groundwater Outreach and Private Well Protection Program w/NPS Funds

EDITOR'S NOTE: The following article was developed from information provided to *News-Notes* by Laura Cook Beiser of the Mississippi Department of Environmental Quality, including an article written by student intern Tim Phillips for the Department's *Enivronmental News*, May 1992 issue. Thank you, Laura.

Mississippi's Groundwater Education and Private Well Protection Project was made possible by a §319 NPS grant through the state's Department of Environmental Quality, Office of Pollution Control. The program is designed to increase the public's awareness of the potentially adverse impacts on water quality that can result from land use activities. Using a hands-on, person-to-person approach, the program enabled several state and federal agencies and organizations to cooperatively accomplish a set of broad-based educational and outreach public health goals.

The program allows rural homeowners in selected counties to have their private drinking-water wells tested at little cost. To participate, private well owners purchase a $5 sample container in which to collect a water sample from their well. The state chemical lab at Mississippi State University then tests the samples for ammonium, calcium, chloride, fluoride, hardness, lead, magnesium, nitrate, nitrite, pH, phosphate, potassium, sodium, specific

Mississippi Develops Groundwater Outreach and Private Well Protection Program w/NPS Funds (continued)

conductance, and sulfate. The well owner has the option of having the water analyzed for pesticides and other agricultural chemicals for a slight additional charge. The EPA grant funded the purchase of a chromatograph to increase the speed of the testing procedure at the state lab.

Fifteen counties were selected to participate in the program based on

- the number of private drinking water wells in the county,
- the level of community interest in the program, and
- the potential for groundwater contamination.

In each county, a public meeting for participating well owners covered sources of water, best management practices for well head and groundwater protection, and methods of storing, mixing, and rinsing agricultural and lawn chemical containers to prevent groundwater contamination. At each meeting, an aquifer model demonstration depicted storage of groundwater and groundwater contamination routes.

Results from analysis of the water samples benefit the participating agencies by providing an indication of the overall impact of land use on aquifer quality across the state. Follow-up information was provided by the Mississippi Extension Service to individuals who own wells with water quality problems.

Taking part in the project were each county's Soil and Water Conservation District and Farm Bureau, the Mississippi Department of Environmental Quality, the state's Soil and Water Conservation Commission, the Mississippi Farm Bureau, Mississippi Cooperative Extension Service, Bureau of Plant Industries, and the state Chemical Laboratory at Mississippi State University.

There was a major side benefit to this program. Laura Cook Beiser, an environemental scientist and NPS staff member in Mississippi, told *News-Notes*:

> *All agencies actively participated . . . and . . . had several representatives on a steering committee to coordinate the program agenda. This was an excellent opportunity for NPS staff to learn about the role of other agencies in the state, to share information, and to meet contact people who can help with the planning of future programs. We consider this program to be a great success and to be important in contributing to a groundwater database concerning surface activities and their effects on groundwater.*

[For more information, contact Laura Cook Beiser, Mississippi Department of Environmental Quality, P.O. Box 10385, Jackson, MS 39289-0385. Phone: (601) 961-5373. FAX: (601) 354-6612.]

Washington State Commits FY 93 Revolving Loan Funds to Five Facility and Eight Nonpoint Source Projects

Washington State Department of Ecology's FY 93 Intended Use Plan for its State Revolving Fund (SRF) contains eight nonpoint source control projects totalling approximately $3.2 million.

Five of the eight nonpoint loan projects will establish local loan funds — four at the county level and one at a conservation district level. Low-interest loans can be made to individuals from these funds to help meet nonpoint pollution abatement requirements. Three of these funds will be used for septic system repair and two for implementing best management practices on dairy farms.

Additional projects include a $1.6 million loan to the city of Olympia for construction of a stormwater management facility, a loan to a county to cover matching funds for groundwater monitoring, and a loan to the Washington State Conservation Commission to assist in developing a nonprofit plant materials nursery for nonpoint pollution control projects located statewide.

Washington State has pioneered the use of SRF funds for nonpoint pollution control projects. Nonpoint projects have been included in each of the three years of the fund's existence.

The plan also contains five local treatment plant construction projects totalling approximately $38.3 million.

[For more information, contact: Bryan Howard, Department of Ecology, Water Quality Assistance Program, P.O. Box 47600, Olympia, WA 98504-7600. Phone: (206) 438-7515.]

Agricultural Notes

New Farm Computer Program Reveals Potential for Nitrogen Leaching and Surface Runoff

A field test of PLANETOR, the new Extension Service farm decision support computer program, revealed a Delaware farm's potential for nitrogen leaching, surface water runoff, and other environmental risks, reported University of Delaware Farm Management Specialist H. Don Tilmon. The computer program guides farmers in analyzing their crop and livestock enterprises and production practices, while helping them eliminate or control water pollution and other environmental problems.

News-Notes first reported on PLANETOR in August 1990 (issue #7), when the program was in an early operational stage. Since that time, databases of local information essential to PLANETOR analysis have been constructed in cooperating states and farmers enlisted to test the program.

Tilmon, one of 230 agricultural professionals in 15 states who helped test the program, said PLANETOR showed that current practices on the Delaware crop and livestock farm had a medium potentials for both soil erosion and nitrogen leaching, while the potential for pesticide leaching and surface runoff was much greater.

Based on the PLANETOR analysis, a revised farm plan called for the use of reduced herbicide rates and a single cultivation (if necessary). The other pesticide application rates, however, were unchanged. This area is a weak link in the PLANETOR program and will be addressed in later versions of the program, said Tilmon.

According to the new plan, broiler manure would be tested and applied in quantities that would furnish 60 pounds of nitrogen in year one (based on mineralization rates). One hundred feeder pigs were added under the revised plan, bringing the total to 300, while the broiler chicken operation was left unchanged.

PLANETOR projected reduced erosion and nitrogen leaching under the revised plan. Tilmon added that more work is being done in the "soils-chemical" area in the next version of the program model. The next version of the program will also calculate phosphorus application rates to address the problem of overapplication of this nutrient.

In the new farm plan, water control structures in the drainage ditches will have a dual role controlling runoff and subsurface irrigating the crop. Net farm income from the revised plan was slightly lower but not significantly so, reported Tilmon.

The farm owner indicated that he looked to Extension Service and Soil Conservation Service staffs to furnish scientific information on rotations and pesticide use. He said he was willing to change any of his practices if he could see research-based data indicating that he should make a change and how much the change would cost him.

The Center for Farm Financial Management, University of Minnesota Cooperative Extension Service conducted the programming on PLANETOR in cooperation with a national Low Input Sustainable Agriculture (LISA) project by University of Missouri Extension. Version II of PLANETOR, currently being programmed at the Center for Farm Financial Management at the University of Minnesota, is expected to be ready for general distribution and use in late fall or early winter 1992-93, according to Tilmon.

[For additional information, contact: the Center for Farm Financial Management, University of Minnesota Extension Service, 249 Classroom Office Bldg., 1994 Buford Ave., St. Paul, MN 55108. Phone: (612) 625-1964. Or, contact: H. Don Tilmon, University of Delaware Farm Management Specialist, 129 Townsend Hall, Newark, DE 19717-1303. Phone: (302) 831-1325. FAX: (302) 831-3651.]

"Alliance for Residue Management" — USDA's Three-Year Action Plan

Nearly 75 percent of the 135 million acres of highly erodible land on the nation's farms will be under some kind of conservation residue management in order for farmers to meet the conservation compliance requirements of the 1985 and 1990 farm bills, according to SCS National Agronomist David L. Schertz. USDA has developed a three-year Crop Residue Management Action Plan (CRMAP) to assist farmers in implementing their conservation plans.

"Alliance for Residue Management" — USDA's Three-Year Action Plan (continued)

Schertz said in a speech at the 1992 national meeting of the Soil and Water Conservation Society that one of the most important aspects of the CRM initiative is building Crop Residue Management alliances. By involving key entities in American agriculture, commonality of information can be delivered to farmers.

Schertz said a national alliance has been formed that includes government agencies, industry, farm media, commodity groups, and grower associations. The USDA-coordinated initiative involves the Soil Conservation Service, Extension Service, Agricultural Stabilization and Conservation Service, Agricultural Research Service, Economic Research Service, Farmers' Home Administration, Federal Crop Insurance Corp., National Agricultural Stastics Service, and the Cooperative State Research Service. This cooperative initiative is considered a landmark because of the close USDA agency coordination through the three-year Action Plan.

The objectives of the Action Plan are to

- develop a coordinated initiative between government agencies, agribusiness, and organizations,
- increase information delivery to the farming community, particularly through local agricultural dealers,
- increase technical training among local personnel, and
- increase technical assistance to farmers to help them implement their conservation plans.

With the help of the broad agricultural alliance, voluntary compliance with the farm bills can be achieved by 1995, Schertz told the conferees. States are encouraged to seek counsel of their state and local leaders, using their existing Food and Agriculture Council Committees. States and localities also need to identify challenges and opportunities for implementing CRM and work together to persuade industry and state organizations to become active participants in already existing government alliances.

SCS Changes a Term

Schertz explains that SCS has changed a philosophy regarding the use of the term "conservation tillage." SCS is placing less emphasis on that term and more on "crop residue management." The main reason for the change, according to Schertz, is that many individuals, including agribusiness and other agencies, felt that "conservation tillage" identified only no-till. Although no-till may provide a very high level of erosion reduction, there are other tillage types, such as mulch-till and ridge-till, that leave sufficient amounts of crop residue on the soil surface to achieve significant erosion reduction.

[For more information, contact: David L. Schertz, National Agronomist, Ecological Sciences Division, USDA-SCS, P.O. Box 2890, Washington, D.C. 20013. Phone: (202) 720-3783. FAX: (202) 720-2646. Or, Jim L. Bushnell, National Program Leader-Agronomy, USDA-ES, Rm. 3341 South Bldg., Washington, D.C. Phone: (202) 720-4341. FAX: (202) 720-4924.]

Notes on The Coastal Environment

CCMP for Buzzards Bay Signed

EPA Administrator Bill Reilly presented the signed Buzzards Bay Comprehensive Conservation Management Plan (CCMP) approval letters to the Buzzards Bay staff at a meeting in Boston April 20. Buzzards Bay, located between Cape Cod and the southern coast of mainland Massachusetts, is the second National Estuary Program (NEP) to complete its CCMP. Puget Sound, located off the coast of Washington, was the first to complete its CCMP, which was signed in the fall of 1991.

The CCMP identifies three priority problems for Buzzards Bay, including:

1. Pathogens associated with the improper treatment or disposal of human wastes and the subsequent health risks and closures of shellfish beds;
2. Excessive nutrient inputs to the bay and their potential for degrading water quality and causing loss of habitat; and

CCMP for Buzzards Bay Signed (continued)

3. Contamination of fish, shellfish, and lobsters by toxic substances.

Development of this CCMP has resulted in some major accomplishments, including creation and adoption of the country's first zoning overlay protection district specifically intended to limit nitrogen entering marine waters; creation of the Buzzards Bay Action Committee to exchange innovative approaches and strategies among 13 municipalities and develop regional solutions (this is the first regional organization of its type in Buzzards Bay); and incorporation of enforceable CCMP elements into the Massachusetts Coastal Zone Management Program, thus ensuring long-term commitment to implementation from state agencies.

In addition to the Buzzards Bay Project staff, the meeting was attended by Julie Belaga, Region I administrator, and Jeff Benoit, director of Massachusetts Coastal Zone Management Program.

[For more information, contact: Joe Costa, Buzzards Bay Project, 2 Spring St., Marion, MA 02378. Phone: (508) 748-3600.]

NEP and CZM Programs Different But Complementary

Coastal Zone Management Program

- Plans govern activities along the entire length of the state's coast (the coastal zone includes the territorial sea and coastal lands as determined necessary by the state to protect coastal resources).
- Plans are developed by the states, with public hearings in affected coastal areas.
- Plans are approved by NOAA and must be based on "enforceable policies."
- CZMA provides both program development and administration grants to states.
- CZMA provides for a periodic federal review and evaluation of approved coastal programs, and NOAA has the authority to impose monetary sanctions or decertify a state program in the event of serious state deviation from the approved program.
- States with approved coastal management programs are authorized to review federal activities, licenses, and permits for consistency with the enforceable policies of the state program. Federal licenses and permits may not be issued if they are inconsistent with the state's coastal program.

National Estuary Program

- Plans are designed to protect resources of specific estuarine watersheds nominated by governors and selected by EPA.
- Plans are developed by a Management Conference composed of affected federal, state, and local agencies and representatives of industry, the scientific community, and the general public.
- Plans are approved by EPA and must contain "recommended priority corrective actions," but these recommendations are not required to be enforceable.
- NEP grants are authorized only for development of the management plan. Implementation of the plans is to be funded through other sections of the Clean Water Act (e.g., section 319 NPS grants, SRF loans under Title VI) and by state and local participants.
- After approval of the plan, EPA has a responsibility to monitor implementation of the plan but has no formal mechanism for ensuring implementation.
- NEP management conferences are responsible for reviewing federal financial assistance and development projects (not federal licenses and permits) for consistency with the plan. Federal agencies are required only to "accomodate or explain" in response to comments received through the state clearinghouse process.

Notes on Riparian & Watershed Management

Restoration of Florida's Upper St. Johns River Basin Helps Heal Headwater Marshes

EDITOR'S NOTE: This is a report on the upper St. Johns River in east-central Florida and the major restoration work going on there these days. A century ago, the vast marshes of central and south Florida were drained in the name of progress. Cities, towns, farms, and citrus groves sprang up where wetlands had formed the headwaters of the two major river systems in Florida — the St. Johns River flowing north and the Kissimmee-Okeechobee chain flowing south to the Everglades. Restoration efforts to repair the unintended effects to the environment are underway on both river systems. We reported on the restoration plans on the Kissimmee in *News-Notes*, Issue #18 (Jan-Feb '92), which is available on the *NPS BBS News-Notes* database. We now report on the St. Johns.

The large and significant part of this story lies in the lessons learned from the fact that construction of the original St. Johns project was stopped in its tracks when a 1970 Environment Impact Statement revealed that serious environmental destruction would result from carrying out the single-purpose flood control project. The totally redesigned project now under construction is the result of a wholly different understanding. A river system — a watershed, if you please — cannot be treated for a single purpose like flood control or agricultural irrigation; it must be treated as a sum of all of its uses and functions, holistically, including its support of living things. If you have to deal with flood control or irrigation, you have to be sure that the critters that live there can survive and that water quality is assured for man and beast alike. That's quite a lesson to learn.

We first discussed the St. Johns project with Carol Fall at the recent national Rural Clean Water Project symposium held in Orlando, FL. Carol is an environmental specialist working on the project. She followed up our talks by sending us a lot of informative material on the St. Johns River Management District and the project. The story that follows has been adapted from that material. Thanks, Carol, for your willing and enthusiastic help. — *Hal Wise, Editor*

The District and Its Setting

The St. Johns River Water Management District (SJRWMD), one of five regional districts in Florida, covers 21 percent of the state's total area. Through research, planning, and regulation, the District is responsible for managing all the groundwater and surface water resources within its 19-county area of northeast and east-central Florida.

The SJRWMD area is rich in water resources, including rivers, creeks, lakes, lagoons, marshes, and other wetlands. So rich, in fact, that much of the resource has been destroyed or seriously impaired over the years by attempts to "control" the water and develop incompatible land uses. Whole ecosystems have been seriously altered or wiped out with the concomitant loss in fish and wildlife resources and the degradation of water resources. Resource restoration and reclamation is therefore one of the principal missions of SJRWMD.

Within the District is the Indian River lagoon system, which stretches 155 miles along the Atlantic Ocean from New Smyrna Beach south to Jupiter Inlet, making up 40 percent of Florida's east coast. Six federal parks, two wildlife refuges, and a national seashore are located within the lagoon system.

The lagoon acts as a breeding ground and nursery for aquatic animals. It has the highest species diversity of any estuary (where salt- and freshwater mix) in North America, with more than 4,300 species of animals and plants. Among that number are 35 rare and endangered species.

The St. Johns River is a major resource in the District. It is the only major river in the United States entirely in one state that flows in a northerly direction for the greater part of its length. It begins in the broad marshes west of Vero Beach and meanders 310 miles northward before it meets the Atlantic Ocean at Mayport. The St. Johns River has been key to northeast Florida's development and economy since the 1500s. As a major deepwater port for international shipping, it is also home to the second largest U.S. Navy base on the east coast. The city of Jacksonville is located on the lower St.Johns River.

Along the way, the St. Johns River drains 9,169 square miles — about one-sixth of the state. The river's combined sport and commercial fishing industry's economic impact is more than $100 million per year.

Governor Lawton Chiles has petitioned EPA to designate the last 100 miles of the St. Johns as an estuary of national significance. This lower section of the river drains 2,777 square miles in six counties. Chiles commented, "The St. Johns River is truly a unique and irreplaceable natural and economic resource. It is our responsibility and obligation to do all within our power to protect and restore the river."

Upper St. Johns River Basin Project

Chronology of the Upper St. Johns Project:

- **1954** — Congress authorizes flood control works in the upper St. Johns River Basin.
- **1957** — Initial project design completed by the U.S. Army Corps of Engineers. Design includes large upland reservoirs to store water and canals to move flood waters to the Indian River Lagoon.
- **1966** — Construction begins.
- **1970** — Environmental impact study begins.
- **1972** — Construction halted while additional environmental assessments are conducted.
- **1974** — Project deemed unacceptable for environmental reasons.
- **1977** — Project sponsorship transferred to SJRWMD; major replanning begins.
- **1980** — Basic project design concept design adopted by SJRWMD favors replacing flood storage in the historic river basin.
- **1982** — Corps of Engineers determines project design is economically feasible and warrants federal participation.
- **1986** — Current project design approved based on "semi-structural" water management concept.
- **1988** — Construction begins.
- **1992** — Several major water control structures and project levees completed; major parts of project now operational.
- **1995** — Construction expected to be completed.

In the Beginning

In the early 1900s, the steam shovel opened Florida's watery interior for "reclamation." Grand water management schemes — often supported by the government — included plans to drain extensive areas of marshlands for agricultural production and private development.

A network of private canals was constructed across the marshes. Some cut through a low-land ridge separating waters in the upper St. Johns marsh from the Indian River. Through these canals, large amounts of freshwater were diverted from the St. Johns River Basin to the Indian River Lagoon and the Atlantic Ocean. As dikes were constructed and pumps installed to meet private flood protection needs, thousands of acres of nutrient-rich floodplains were opened for citrus, cattle, and row crops.

Over the past several decades, a significant loss of historical floodplain marsh in the upper St. Johns River basin resulted in major flooding and water quality problems. Loss of wetland habitat resulting from floodplain encroachment practices has severely altered the natural hydrologic regime of the marsh ecosystem. The impacts of lost floodplain storage was especially acute after major hurricanes in the 1920s and 1940s resulted in devastating floods in the central and southern parts of Florida.

Congress authorized federal flood control action in the upper St. Johns River basin in 1954. The Corps of Engineers completed initial project designs in 1957 and 1962. Construction started in 1966.

Under the 1960s plan, flood stages would be reduced in the upper reaches of the basin by diverting large amounts of water from the St. Johns River to the Indian River Lagoon during major storm events. Downstream flood stages would be attenuated by detention and storage of runoff in large reservoirs west of the river valley. By 1970, the diversion canal system to Indian River Lagoon was fully operational and the reservoir system was near completion.

Environmental Impact Statement Prepared

In 1970, the Corps began preparation of an Environmental Impact Statement (EIS) as required by the then-new National Environmental Policy Act of 1969. In 1972, construction within the upper St. Johns basin was halted pending completion of a more comprehensive EIS. After a technical evaluation of the EIS in 1974, the state of Florida determined that the project was

unacceptable for several environmental reasons. Environmental concerns included the potential adverse impacts of freshwater discharges into the Indian River Lagoon and the potential for severe water quality and habitat degradation of the natural upland drainage systems. As a result, project construction was indefinitely suspended.

In 1974, local sponsorship of the project was transferred from the Central and Southern Florida Flood Control District to SJRWMD, which was created by the legislature in 1972. The SJRWMD conducted an extensive study resulting in a major reconnaissance report in 1980. The report described basin conditions. A citizens advisory committee, whose membership was representative of basin interests, worked with SJRWMD staff to develop the Basic Design Concept (BDC) that the SJRWMD governing board adopted in November 1980.

The BDC called for plugging the canals to the Indian River Lagoon and replacing flood water storage structures in the basin with the use of reclaimed marshland for flood control. Water quality was to be improved by keeping agricultural runoff from entering the river.

In 1982, the Corps determined that a plan consistent with the BDC would be economically justifiable and warrant federal participation. The Corps presented several alternative plans consistent with the BDC. The SJRWMD governing board approved a recommended plan, which has a 1.7 benefit/cost ratio, in February 1983. The current plans, including the EIS, were released in June 1985 .

Project Description

The project is situated in east-central Florida just southwest of Melbourne in Brevard, Indian River, and Osceola counties.

The upper St. Johns river basin drains a watershed of some 2,000 square miles, an area larger than the state of Delaware. The project will more than double the functional wetlands in the river's headwaters region. When finished in 1995, the project will have restored more than 125,000 acres of marshlands to hold water for fish and wildlife and to feed the river in dry seasons.

The project plan revitalizes the river's flow by restoring drained marshlands, plugging canals, and building reservoirs to store and reuse agricultural runoff. As a part of the plan, several water control structures will allow water to "sheet flow" unimpeded through the river's marshes. Thus, the project is "semi-structural" in design and function. It relies more on restored wetlands to hold and release flood waters, rather than dams, which are common with more traditional water projects. Under maximum storm conditions, the project will hold 500,000 acre-feet of water — enough water to cover an 85-square-mile area 10 feet deep. Agricultural drainage will be separated from existing marshes to improve water quality in the river. Water levels throughout the project areas will be managed to simulate natural marsh conditions to improve fish and wildlife habitat.

Costs for this $165 million project are being shared by the SJRWMD and the U.S. Army Corps of Engineers. Current project costs have been estimated as follows:

Flood Damage Reduction	$46.5 m
Recreation Construction	4.7 m
Engineering & Design	9.9 m
Project Lands & Right of Way	87.3 m
Relocation	11.3 m
Construction Management	5.7 m
Total	**$165.4 m**

All construction costs are paid by the federal government. The SJRWMD is responsible for acquiring lands needed to build and operate the project. Land costs are funded primarily through property taxes levied by the District and Florida's Save Our Rivers Trust Fund. Recreation development costs are shared equally between the Corps of Engineers and the District.

The multiple benefits include

- reducing damages from floods,
- improving water quality,
- curtailing freshwater flows to the Indian River Lagoon,
- restoring fish and wildlife habitat, and
- increasing public recreational opportunities.

Restoration of Florida's Upper St. Johns River Basin Helps Heal Headwater Marshes (continued)

Much of the project area is operated as a wildlife management area in cooperation with the Florida Game and Fresh Water Fish Commission. The project will also support a broad range of active and passive recreational activities, including fishing, hunting, boating, nature study, hiking, and camping. An outstanding recreational feature of the project is the 20,000-acre Ft. Drum Conservation Area in southwest Indian River County. The Blue Cypress Marsh Conservation Area includes 29,500 acres also in Indian River County. Blue Cypress Lake and the surrounding marsh, now one of the top sport fisheries in the state, lie within the conservation area.

The project will serve as a national model of floodplain management, according to Maurice Sterling, assistant director of engineering for the water management district, who heads the Upper St. Johns Project.

In a summary report prepared on the project, the District wrote:

> *Water managers acknowledge that at best, their efforts are corrective surgery to restore the river to functional — not prime — conditions. But the project will help balance the special needs of the river with those of the people and creatures who will depend on it for many years to come.*

[For more information, contact Maurice Sterling, Projects Coordinator, Upper St. Johns River Basin Project, SJRWMD, P.O. Box 1429, Palatka, FL 32178-1429. Phone: (904) 329-4500.]

In Michigan, Outreach and Partnerships Key To Protection of Grand Traverse Bay

EDITOR'S NOTE: This article was submitted by Mark Breederland (currently on leave from the Northwest Michigan Council of Governments to the International Joint Commission), P.O. Box 32869, Detroit MI 48232. (313) 226-2170. Thank you, Mark.

Over 40 local governments in the Grand Traverse Bay watershed of Lake Michigan have mobilized an impressesive public education effort aimed at preserving and protecting the bay's water quality. The keystone of the effort was an international conference hosted by the community. The conference brought 1500 scientists, citizens, and policy makers to the shores of Grand Traverse Bay and focused public attention on the bay's resources and the need to preserve them.

Located on the northwest side of Michagan's lower peninsula, Grand Traverse Bay is key to the quality of life of the watershed's 100,000 year-round residents and numerous visitors. Protection of the area is imperative if the watershed is to sustain the area's tourism- and recreation-based economy. The bay, a deep coldwater inlet, is distinctive for its oligotrophic water quality, and area residents are vividly aware of its beauty and fragility.

In the late 1980s, small localized *Cladophora* algae growths began to signal degradation of bay water quality. Recognizing the all-too-rare opportunity to protect a resource before serious water quality problems occurred, a committed core of citizens and local agnecies banded together to begin a multi-year initiative protection effort. A 319 grant through the Michigan Department of Natural Resources (DNR) was instrumental in starting this process.

Most important was coordinating the basin's many local governmental jurisdictions, each of which manages its own land-use planning and zoning as permitted under Michigan law. Coordination among these various entities is essential for adequate management of the 973-square-mile watershed, particularly as development pressures increase. A long-term management team that included state, local, citizen and business members was jointly facilitated through the regional multi-county agencies — the Northwest Michigan Council of Governments (NWMCOG) and the Northwest Michigan Resource Conservation & Development Council (RC&D).

Seeking a way to highlight the bay's uniqueness in the Great Lakes basin and the need for proactive measures, the team invited the International Joint Commission (IJC) to hold its 1991 biennial meeting in Traverse City. (The IJC is a treaty organization between the United States and Canada charged with overseeing the Great Lakes Water Quality Agreement signed between the two countries in 1972.) The whole community was excited to find out in June 1990 that the IJC's international conference would be held near the shores of Grand Traverse Bay.

Watershed-wide plans began immediately. The management team enlisted an enthusiastic group of teachers, citizens, and business people to begin working on creative ways to reach out and involve the local community in an educational celebration of water quality during the IJC event. The team's key motivating factor was the unique opportunity for long-term impact on

In Michigan, Outreach and Partnerships Key To Protection of Grand Traverse Bay (continued)

local residents. Several months before the meeting, the daily newspaper began to work on a series of stories about the Grand Traverse Bay.

The IJC Biennial Meeting in October 1991 was a huge outreach success in the Grand Traverse region. Four high school coed track teams from throughout the watershed did a "Run For The Bay" and were greeted by IJC Commissioners and the Lt. Governor. A special Great Lakes museum display from the Chicago Academy of Sciences was brought in and opened to school groups and the public for three weeks. A street theater group, Trinity Theatre of Toronto, produced sketches related to water quality and growth management issues that were performed by local elementary and secondary school students. Great Lakes research vessels, including the Lake Guardian, docked and gave tours. A special dinner presentation about the bay was given to over 400 guests at the conference.

Electronic and print media coverage was extensive, including a tremendous series of articles that ran for six days in the *Traverse City Record-Eagle*. The compilation of these articles won several press awards, including an environmental award from the American Planning Association.

After the conference, the long-term management team recognized the need to solidify partnerships. NWMCOG and RC&D drafted a generalized partnership agreement. This non-legal binding partnership agreement focuses on the mission statement: "The ecological integrity of the Grand Traverse Bay Watershed will be sustained or restored to ensure regional economic viability and quality use by future generations." More than 80 organizations representing agriculture; economic development; education; local, state, and federal government; and environmental and non-profit groups (such as land conservancies) have signed this agreement and send one representative to quarterly partnership meetings. The partnership committee is currently forming specific target committees (i.e. education, water quality modeling, land protection) for coordinating efforts.

Fostering additional excitement in the community is an innovative educational program that began in 1989. The Inland Seas Education Association (ISEA) takes students out on the Grand Traverse Bay aboard a Great Lakes schooner, teaching ecological and maritime concepts. This program is highly visible in the local media and was also featured in a 1991 National Geographic special on the Great Lakes. Over 6,000 students from the Great Lakes region have now had this learning experience, and ISEA is in process of building its own "science ship" schooner to further expand their outreach.

Current initiative work includes an institutional analysis funded through CWA §604(b) to explore options for long-term management structures such as watershed councils. An EPA-funded watershed demonstration project for wetlands in partnership with the Michigan DNR is in the works, and EPA recently awarded environmental education money to get children involved in a water quality sampling project.

Scientific information about the bay is still needed. Grand Traverse Bay was the study site of a large Sea Grant-funded program in the early 1970s, but little data has been gathered in well over a decade. NWMCOG has secured 319 funding through the Michigan DNR for a year study to begin this effort by compiling historical data and gathering select nutrient runoff data completed in 1991.

The Grand Traverse Bay Watershed Initiative began through local recognition of the value of clean water and was launched into the the community's mainstream through creative use of a large water quality conference and outstanding local media coverage.

The partnership agreement to involve the many stakeholders from early on will help ensure that needed protective actions are taken by all sectors. The Initiative is seeking resources to provide scientific information to local land use decision-makers and encourage watershed planning. According to the IJC Sixth Biennial Report on Great Lakes Water Quality, the IJC was "extremely impressed by the community's commitment to develop a model program and support its desire to be the first area designated as a high-quality or sustainable development area worthy of long-term protection." Given the motivated citizens of the region and the committed partnerships that have been formed, the Grand Travis Bay is off to a good start in a long-term process!

[For further information on the Grand Traverse Bay Watershed Initiative, contact: Amy Johnson, Northwest Michigan RC&D Council, (616) 946-6817); or, Amy Pflughoeft, NWMCOG, P.O. Box 506, Traverse City MI 49685. Phone: (616) 929-5000. For more information on the Inland Seas Education Association, contact: Tom Kelly, Director, Inland Seas Education Association, P.O. Box 4223, Traverse City MI 49685. Phone: (616) 271-3077.]

Notes on Atrazine

What Is Atrazine? An Editor's Note.

Atrazine is the most widely used herbicide in U. S. corn and sorghum production. It was first marketed to U.S. farmers in 1959. In 1991, 51 million pounds of active ingredient of atrazine were applied to 40 million corn acres (62 percent of the U.S. crop). The average application rate was 1.3 pounds per acre. Approximately 4.1 million pounds of atrazine were applied to 67 percent of the 3.8 million sorghum acres in a Midwest study area.

Atrazine has been identified as a potential pollutant of surface water in the Midwest. A U.S. Geological Survey study of 122 river basins in 12 midwestern states found that transient atrazine concentrations exceeded EPA's maximum contaminant level of 3 parts per billion in 27 percent of raw water samples. As a result, EPA might restrict or ban the use of atrazine in the affected areas. EPA currently classifies atrazine as a potential human carcinogen.

We realize that there are many sides to the atrazine issue. This series is not intended to be an exhaustive treatment of the subject, nor is it meant to promote the particular viewpoint of any of the actors. The articles that follow summarize recent reports on the atrazine-related events. Readers wishing to explore atrazine issues in greater depth are encouraged to obtain the documents cited or contact the people listed at the end of each artcile. Some of these documents may be available on the *NPS BBS*. See *News-Notes* #5 (June 1990) and #21 (May 1992) for other atrazine-related stories.

USGS Survey Finds Atrazine in the Mississippi River and Tributaries

Atrazine was detected in each of 146 water samples collected from eight sites on the Mississippi, Ohio, and Missouri rivers and on three smaller tributaries in April, May, and June 1991 by the U. S. Geological Survey (USGS). The results from the first three months of the year-long study were released in November 1991 in a report, *Distribution of Selected Herbicides and Nitrate in the Mississippi River and its Major Tributaries.*

The report's senior author, Hydrologist Don Goolsby, said, "One of the significant findings of the study is that atrazine concentrations were found to exceed EPA's maximum contaminant level (MCL) continuously for several weeks in rivers as large as the Missouri and Mississippi. These rivers drain areas of more than half a million square miles." The report said the concentration of atrazine exceeded the MCL for drinking water, 3 µg/L or 3 ppb, in 27 percent of the samples and at six of the eight sampling sites.[1] One site near St. Louis, Missouri, showed atrazine concentration exceeding the MCL 35 percent of the time between May 1 and July 28, 1991.

The study found that atrazine concentrations increased in early May in response to rainfall that occurred after herbicide application and then began to decrease in early to mid-June. Herbicide concentrations in the smaller tributaries began to increase in early to mid-May and were generally were highest between early May and early June, according to the USGS report. Increases in concentrations were smaller and more gradual in the larger tributaries and rivers, where peak concentrations also occurred later.

According to the report, the median concentrations of atrazine ranged from 0.29 micrograms per liter (µg/L) in the Mississippi River at Clinton, Iowa, to 3.2 µg/L in the White River at Hazelton, Indiana. Maximum concentrations measured for atrazine were 6.3 to 10 µg/L for the smaller tributaries and 3.7 to 5.7 µg/L in samples from the lower Mississippi and Missouri rivers.

The USGS report included the results of mass-transport calculations for atrazine to determine the predominant source area. These calculations indicate that about 37 percent of the atrazine discharged from the Mississippi River into the Gulf of Mexico entered the river from streams draining Iowa and Illinois. The second largest source area was the Missouri River basin.

[1] The data in the report are for untreated river water; MCLs apply to water supplied to the user after treatment. However, conventional treatment processes generally do not remove these herbicides.

USGS Survey Finds Atrazine in the Mississippi River and Tributaries (continued)

Besides atrazine, the study also looked at four other herbicides (alachlor, cyanazine, metolachlor, and simazine) and nitrate-nitrogen. Alachlor exceeded the MCL of 2 µg/L in 4 percent of the samples.

[For more information or to obtain single copies of the report, Distribution of Selected Herbicides and Nitrate in the Mississippi River and Its Major Tributaries, Water-Resources Investigations Report 91-4163, contact: Donald A. Goolsby, U.S. Geological Survey, Water Resources Division, Box 25046, MS 406, Denver Federal Center, Denver, CO 80225. Phone: (303) 236-5937. To order more than one copy, contact: USGS, Books and Open-File Reports, Federal Center, Box 25046, Denver, CO 80225. Phone: (303) 236-7476.]

Economic Assessment of Restricting or Banning Atrazine

In response to concerns about atrazine as a contaminant of ground and surface water, the U.S. Department of Agriculture and state land grant universities, under the National Agricultural Pesticide Impact Assessment Program (NAPIAP), assessed the economic impacts of potential restrictions on atrazine and other triazine herbicide use. The assessment focused on corn and sorghum because they are the major crops for which atrazine is used in the study area, which includes Corn Belt, Lake, and Northern Plains states and Kentucky.

The report was based on statistics of current product use and on the expert opinions of weed scientists in the major corn- and sorghum-producing states of the Midwest.

Report Claims Atrazine Restrictive Actions Cause Economic Losses

According to the NAPIAP summary report, *The Effects of Restricting or Banning Atrazine Use to Reduce Surface Water Contamination in the Upper Mississippi River Basin*, restrictions on the use of atrazine could be economically damaging. NAPIAP used the following four levels of restriction to calculate economic loss:

- **Limit 1.** Restriction of atrazine application rates to 1.5 pounds of a.i. per acre on preemergence applications and to 1 pound per acre on postemergence applications.
- **Limit 2.** Restriction of atrazine application rates to 1 pound a.i. per acre on postemergence applications and ban all other atrazine applications.
- **Limit 3.** Banning the use of atrazine.
- **Limit 4.** Banning the use of atrazine and all other triazines (including ametryn, cyanazine, metribuzin, and simazine).

NAPIAP found that economic loss, measured by the sum of producer plus consumer losses, increased as the limits became more restrictive. The least restrictive limit, Limit 1, would result in an annual loss of $80 million, while Limit 4 would cause $1.2 billion to be lost annually, the report said.

The report said data indicated that limits would become less cost-effective in reducing atrazine use as they become more restrictive. Each pound of atrazine a.i. eliminated under Limit 1 would cost producers and consumers $8. The average economic loss of eliminating all triazines would be about $16 per pound.

The report said that the restrictions in the study region would increase corn prices between one and four percent and that sorghum prices would increase 3 percent.

Report Predicts Restriction Will Increase Use of Other Herbicides

According to NAPIAP, restrictions on atrazine or triazines could increase the use of other herbicides and cultivation. Some of the other triazines replacing atrazine could need to be used at higher rates. The quantity of herbicides in pounds a.i. would only decrease, the report said, if all triazines were banned. NAPIAP reported that if triazines were banned, farmers would rely more on postemergence herbicides with lower application rates. "Although total treatments with herbicides would not decrease," the report continued, "chemical use on triazine acres, as measured by pounds a.i., would decrease 36 percent of trianzine weight."

The report pointed out that increased cultivation resulting from restricting triazines could potentially increase sedimentation and soil erosion.

The report noted that development of herbicide-resistant corn could result in weed management strategies that could reduce surface runoff and hence water contamination.

Economic Assessment of Restricting or Banning Atrazine (continued)

However, the report said, the practices are not currently available to farmers, and no data are available on the ramifications of their use, so they were not considered in the assessment.

The report concluded:

> *This study did not estimate the effect that the restrictions would have on the contamination of surface water with atrazine, other triazines, other pesticides, or sediments.*

NAPIAP recommended that the potential impacts of increased use of alternative chemicals and cultivation on health or the environment be evaluated before banning or restricting atrazine or triazine use.

A limited quantity of the NAPIAP summary report is available from the office of Nancy Ragsdale, Director, NAPIAP, Rm. 321-A, USDA Administration Bldg., 14th and Independence Ave., SW, Washington, DC 20250.

[For additional information contact: David R. Pike, Weed Scientist, NAPIAP Chairman, Dept. of Agronomy, University of Illinois, Turner Hall, 1102 S. Goodwin Ave., Urbana, IL 61801. Phone: (217) 333-4424.]

USDA Response to Atrazine in Surface Waters

A report entitled *Atrazine in Surface Waters* was released in May 1992 by USDA's Working Group on Water Quality (WGWQ). The report was produced by an ad hoc, interagency (USDA, USGS, and EPA) task group to the WGWQ. The report is a response to the USGS-documented presence of atrazine in surface waters. (See the lead article in this *Notes on Atrazine* section, above.) The report describes what the cooperating agencies are doing and recommends actions to be taken.

The WGWQ response is based on EPA's current established Maximum Contaminant Level (MCL) of 3 parts per billion (ppb) and the presence of atrazine spikes in the Mississippi River and some of its tributaries. It takes into consideration the implications of the seasonal variations of atrazine levels, the ability of public water suppliers to comply with the Safe Drinking Water Act (SDWA), and the perceptions and concerns of the general public. The study area of the ad hoc task group includes Nebraska, Kansas, Missouri, Illinois, Iowa, and Indiana.

The report indicates concerns of the American Water Works Association (AWWA) about

- the expense of compliance with the Safe Drinking Water Act regulations,
- possible public anger over higher water costs, and
- negative public reactions should even temporary non-compliance occur.

The Ciba-Geigy Corp., the principal manufacturer of atrazine, is naturally concerned about undesirable publicity and possible restrictions on atrazine use. It contends that the use of appropriate BMPs by farmers will keep atrazine levels in drinking water low enough to meet the SDWA requirements for nearly all water treatment facilities, and Ciba-Geigy supports the establishment of atrazine management areas under state authority for those areas where BMPs are insufficient. In addition, Ciba-Geigy has voluntarily withdrawn atrazine as an industrial weed control and has made label changes that reduce application rates, eliminate fall application, and designate atrazine as a restricted-use pesticide. Additional label changes to deal with surface water concerns have been accepted by EPA and will become effective for the 1993 planting season.

Federal agency actions reported include the following:

- EPA indicates that there is a strong possibility that additional regulatory actions will be taken on atrazine registrations. The agency is concerned that USDA programs do not recognize or adequately address the problem of atrazine in surface waters used as public water supplies.
- USGS has continued to monitor water quality in the Mississippi River and its tributaries and will continue to interpret and report the data to provide a estimate of average annual concentrations of atrazine in those surface waters.
- USDA has coordinated its response process to assess the need for its agencies to redirect water quality programs or activities to further address the issue of pesticides in surface water.

Current programs and projects of the USDA, USGS, and EPA are already addressing many aspects of pesticide management. The USDA has a number of ongoing programs, including

USDA Response to Atrazine in Surface Waters (continued)

Integrated Pest Management, Pesticide Applicator Training, and Integrated Crop Management, that address aspects of water quality. Others include farm management practices that reduce surface runoff and the Conservation Reserve Program that has removed an estimated 8.8 million acres of highly erodible lands from crop production. USDA has begun 16 demonstration projects under the President's Water Quality Initiative, and it has started projects in 74 USDA Hydrologic Unit Areas.

The report's *Plan of Action* concludes with this paragraph:

> *This coordinated response will ensure that the states give appropriate attention to atrazine and other agricultural chemicals, that the best technology is readily available to farmers, and that informed and considered decisions are made in the adoption of management practices. It will also build greater awareness of environmental considerations in the use of agricultural chemicals and in farm management and will contribute to the intent of the President's Initiative.*

[For additional information contact: Fred N. Swader, Executive Secretary, WGWQ, USDA-OSEC, 324-A Administration Building, Washington, D.C. 20250-0100. Phone: (202) 720-4751.]

Farmers Voluntarily Reduce Atrazine Use in Iowa Watershed

During 1991 and early 1992, atrazine levels in drinking water from West Lake in Osceola, Iowa, exceeded EPA's maximum contaminant level (MCL) of 3 parts per billion. For the 1992 cropping season, farmers in the lake's 6,340-acre watershed dramatically reduced their atrazine use from an estimated 440 gallons in 1990 to only eight gallons in 1992, reported Alan Teel, Extension Service field specialist in integrated crop management. This reduction appears to have significantly reduced the atrazine levels in water treated for drinking.

The atrazine problem is one of several being addressed by an ongoing project to implement agricultural BMPs to protect the lake. The 325-acre West Lake is the source of drinking water for the cities of Osceola and Woodburn and for about 500 rural water users. The lake's water quality is impacted by runoff from its agricultural watershed. Sediment, nutrients, and pesticides are major concerns.

Eleven of 13 water samples taken from West Lake by Osceola Municipal Water Department and the Iowa Department of Natural Resources between June 1990 and April 1992 exceeded EPA's MCL for atrazine. In contrast, following the drastic reduction in atrazine use in the watershed, only one of the samples collected has exceeded the MCL. However, monitoring over a longer period will be necessary to determine if atrazine levels remain this low.

To protect the lake, a comprehensive nonpoint pollution control project emphasizes education, information, and voluntary adoption of BMPs by farmers. The project also offers financial incentives for implementing BMPs, such as residue management and other soil conservation practices on the land, according to Lisa Cooper, SCS district conservationist in Osceola. The project has already cut soil loss on cropland from an estimated 11.8 tons per acre in 1990 to 7.7 tons per acre in 1992. The project is receiving EPA section 319 funds as well as state funds, according to Julie Elfving, NPS coordinator, EPA Region VII.

To address the atrazine problem, farmers in the watershed, a farmer advisory board, the Osceola water board, the Cooperative Extension Service, the Clarke County Soil and Water Conservation District, local agricultural chemical dealers, and chemical companies held several meetings. The group reached a consensus to greatly reduce the use of atrazine and cyanazine in the watershed for the 1992 cropping season. More than 90 percent of the watershed's farmers voluntarily agreed to reduce or eliminate use of these products in 1992.

Teel said that he is doubtful that farmers will continue to restrict their use of atrazine to 1992 levels in the future. Unfortunately, economics are forcing Osceola's farmers to again consider using atrazine. Participating farmers said that using alternative herbicides increased costs about $10 an acre, while corn prices fell to $1.85 a bushel.

[For more information, contact: Alan Teel, Field Specialist/Integrated Crop Management, Extension Service, 1171/2 S. Main, Osceola, IA 50213. Phone: (515) 342-3316. FAX: same. Or, Lisa Cooper, District Conservationist, 709 Furas, Suite 3, Osecola, IA 50213. Phone: (515) 342-2917.]

Reviews

Water Environment Federation Publishes Annual Literature Review

The June 1992 issue of *Water Environment Research* is devoted to the journal's annual literature review. This impressive reference compendium starts out as follows:

> *As with its 63 predecessors, this annual Literature Review Issue of Water Environment Research again provides a remarkable compilation of last year's important water-related environmental engineering literature. Forty-four reviews are included, covering the gamut of natural and human interactions associated with our planet's vital aqueous resources.*

Four articles that deal with specific categories of information are of particular interest to readers of *News-Notes*: "Nonpoint Sources" by Jean Spooner et al. (243 references); "Lake and Reservoir Management" by Harvey Olem et al. (170 references); "Groundwater" by Alex S. Mayer et al. (626 references); and "Biomonitoring" by Billy G. Isom (39 references). Between its covers, the volume shelters a world of information on the technical side of the water-related environment.

[Single copies of the June 1992 Literature Review issue of Water Environment Research are available at $40 for nonmembers of the Water Environment Federation. Write to Water Environment Federation, 601 Wythe St., Alexandria, VA 22314-1994. Annual membership costs $30.]

Soil Conservation Service Revises Its Guidelines on Wetlands

(Based on a review in *Soil and Water Conservation News*, September-October, 1992, published by SCS, USDA.)

There's good news for farmers who want to restore or create a wetland. The Soil Conservation Service has revised its national *Engineering Field Handbook* chapter on wetlands. The agency's conservation planners can now provide farmers with more effective assistance concerning wetland development and management.

The new chapter, entitled "Wetland Restoration, Enhancement, or Creation," describes the planning, design, implementation, maintenance, and monitoring phases of wetland projects of all sizes. The six major kinds of wetlands discussed are: leveed, pothole, floodplain, freshwater, riparian, and depressional.

The handbook does not address constructing wetlands for wastewater treatment but focuses on planning projects that would restore, create, or enhance ecologically, biologically, and hydrologically functioning systems. A key factor in the prescribed approach is planning and design of wetlands that are part of an interconnected landscape of ecosystems of which humans are an integral component. The earlier wetland guidelines were over 20 years old. Changes in SCS priorities, approaches, and applications are reflected in this 1992 revision.

The Corps of Engineers, Fish and Wildlife Service, Environmental Protection Agency, Tennessee Valley Authority, Office of Surface Mining, Forest Service, and SCS as well as state and private sources contributed to the development of the guidance. EPA's contribution was provided by Research and Wetland ecologists from EPA's Environmental Research Laboratory at Corvallis, Oregon. This is a comprehensive and useful treatment of the subject.

[For more information, contact Ron Marlow, SCS Water Management Engineer, at (202) 720-8723.]

NPS Electronic Bulletin Board (BBS) News

Nonpoint Source Electronic Bulletin Board System — (NPS BBS). 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 (mini-bulletin boards) are dedicated to specific topics and have all of the features of the main *BBS*. The service is free except for any long-distance phone charges incurred by the user.

To access the *NPS BBS*, you will need • a PC or terminal • telecommunications software (such as Crosstalk or ProComm) • a modem (1200 or 2400 baud) • a phone line. The *NPS BBS* phone number is (301) 589-0205.

For a copy of the user's manual, complete *THE COUPON* on page 27 and mail or fax it in.

Educational Materials Database Being Tested Online!

EPA has developed the Educational Materials Database as part of an ongoing effort to foster information-sharing among all who develop educational water quality and resource materials. The database contains information on

- outreach activities,
- public education programs,
- communication techniques, and
- public involvement projects.

There are almost 700 separate educational items described in the database. The database is easy to use and very fast! We are currently beta-testing this vital resource online. Please take a look at the database and let the BBS's Content Editor, Judy Trimarchi, know if you encounter any errors, inconsistencies, or problems with the database software.

Developing the Catalog and Database

In 1990, *News-Notes* began an educational materials survey to collect information about outreach materials used by states and local governments to support their nonpoint source programs. *News-Notes* distributed a survey asking readers to provide examples of the outreach materials and activities that have worked in state and local programs. States and localities across the nation responded with more than 500 projects, videos, pamphlets, posters, etc. In 1992, the Alliance for Environmental Education received a grant from EPA to update the index and produce a limited number of printed copies. EPA's Office of Wetlands, Oceans, and Watersheds' Lakes, Grants, and Outreach Section produced the online database.

Accessing the Database

To get to the Educational Materials Database from the 'Main Board Command' prompt, type **open** and press <ENTER>. You will see a list of *NPS BBS* Doors. Then select number 4. It's just that simple!

Once you get into the database for the first time, you should read the screens in the section called "About the Educational Materials Database" to learn how to conduct a search. The format is very similar to that of the online *News-Notes* Database.

Categorization of the Information

The entries are divided into the following three major subject categories:

- INSTITUTIONS, EDUCATION, PUBLIC INVOLVEMENT;
- POLLUTANTS; and
- RESOURCES.

Each entry contains information about a particular educational item. For most entries this information includes

- subject area (eg. forests, auto care, groundwater, etc.),
- document type (eg. general, high tech, etc.),
- medium (eg. brochure, videotape, etc.),
- pollution categories (agriculture, construction, etc.), and
- target audience (land users, elementary school, etc.).

All contain contact information and an abstract.

If you would like to share your agency's or organization's latest water-related educational gem, send examples of educational materials to: Alliance for Environmental Education, Thomas Benjamin, 51 Main Street, P.O. Box 368, The Plains, VA 22171. Phone: (703) 253-5812.

Or, leave descriptions of the materials on the NPS BBS message system. Address the message to: The Alliance (Press **E** at the Main Board Command? prompt and enter **The** for the first name and **Alliance** for the last name.)

Watershed Restoration Network Opens (Finally!!!!)

The *BBS's* fifth Special Interest Group (SIG) Forum is open. To whet your appetite, here's a partial listing of the Bulletins available on this dynamic new SIG:

- Restoring wildland roads . . . a one-time opportunity
- Watershed restoration at Lake Tahoe
- The Wolf Creek Project

Watershed Restoration Network Opens (Finally!!!!) (continued)

- A watershed approach to fisheries restoration on the Kalmath River
- Monitoring erosion control success in stream zones
- Guidelines for collection of cuttings to maintain genetic diversity
- Why restore roads?
- The Watershed Restoration Network: combining new movements with new technology
- Revegetation observations and anecdotes
- A 319 project to save a species threatened by nonpoint source pollution
- Kissimmee River restoration in Florida
- Is riparian restoration a viable mitigation tool?

Watershed Restoration Network Technical Monitor Mike Furniss has uploaded files for your perusal, too. Currently available on the SIG are

- **ROADOBLT.ZIP** — a survey and design program for road obliteration and restoration, and
- **STREAM.ZIP** — a survey and design program for removal of road stream crossings.

Mike will continue to add messages, files, and bulletins, and he invites users to upload their own files on watershed restoration, including articles from newsletters. Mike also invites online questions, comments, and discussion. Mike is a hydrologist with the Forest Service and a member of the Watershed Management Council, a nonprofit organization that sponsors the SIG.

To get to any of the SIGs from the Main Board, type j (for "join"), press <ENTER>, then select the number of the SIG you wish to enter.

Announcements

Nature Conservancy Needs a Hydrologist/Water Quality Specialist

Hydrologist/Water Quality Specialist needed to help identify water quantity/quality threats to natural areas and to implement programs for ameliorating these threats in surface and groundwater systems. Will assist in bioreserve design and management planning, form partnerships with other agencies, and provide training to other staff. Will work in the northeastern United States. Expertise in water quality, groundwater, modelling, and effective nonpoint source pollution control is highly desirable. For a copy of job description, please write: Brian Richter, National Hydrologist, The Nature Conservancy, 2060 Broadway, Suite 230, Boulder, CO 80302.

Catalog on Water-related GISs on the U.S.-Mexico Border Area

If you operate or know of publicly owned geographic information systems (GISs) on water-related activities along the U.S.-Mexican border, contact the EPA's Municipal Support Division, Office of Water (WH-547). They are developing a catalog. The catalog is part of an effort by governments and communities on both sides of the U.S.-Mexican border to better manage their water resources as called for by the international *Integrated Border Environmental Plan for the Mexican-U.S. Border Area*. System descriptions will come from materials provided by federal, state, and local organizations within about 62 miles of the border that maintain GIS databases.

[Organizations who would like their systems listed in the catalog should contact Eliot Tucker, Municipal Support Division, (WH-547), U.S. EPA, Washington DC 20460. Phone: (202) 260-5842; or Betty B. Ford, same address. Phone: (202) 260-8510.]

Rangeland Water Quality Coordinator in California

The California Association of Resource Conservation Districts is looking for a person to prepare a plan for implementing management measures on private rangelands. Responsibilities include working with advisory groups to review technical materials; to identify additional funding, assistance, and policy needs; and to recommend a monitoring program. The final document will be submitted to the California State Water Resources Control Board. The position is half-time for two years and will be located in the Sacramento/Davis area. For more information, call Julie Spezia at (916) 739-6251.

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. Because of an irregular printing schedule, notices should be in our hands at least two months in advance to ensure timely publication. A more complete and current listing can be found on the *NPS BBS*.

Meetings and Events

1992

December

10-12 — *Gulf of Mexico Symposium, "America's Sea—Keep It Shining"*, Tarpon Springs, FL. Contact: Paul Fulham, Symposium Coordinator, (800) 538-GULF. Purpose of symposium is to outline the environmental and economic status of the Gulf, address resource use and management issues, improve communications among groups, and develop strategies for marine debris, toxics, habitat, nutrients, erosion, etc.

14-15 — *6th National Drainage Symposium*, Nashville, TN. Contact: ASAE, 2950 Niles Rd, St Joseph, MI 49085-9659.

14-16 — *Region VII Nonpoint Source Program Workshop*, Kansas City, MO. Contact: Lisa Grayson, Region VII NPS Workshop, c/o Terrene Institute, 1000 Connecticut Ave., NW, Ste. 802, Washington, DC 20036. (202) 726-4853.

1993

January

7-8 — *Bear River Water Quality Symposium*, Logan, UT. Contact: Craig Thomas, Bear Lake Regional Commission, PO Box 26, Fish Haven, ID 83287. (208) 945-2333. Symposium is a cooperative effort of RC&D, Bear Lake Regional Commission, and the Ecosystem Research Institute.

10-13 — *The Development of Soil and Groundwater Cleanup Standards for Contaminated Sites*, Washington, DC. Contact: Dr. Eileen O'Neill, Water Environment Federation, 601 Wythe St., Alexandria, VA 22314-1992. (703) 684-2400. FAX: 684-2492.

19-20 — *Stormwater Management and Combined Sewer Overflow Technology Transfer Seminar*. Contact: Ms. B. Pasian, Conference Secretary, Wastewater Technology Center, PO Box 5068, Burlington, Ontario L7R 4L7. (416) 336-4588. FAX: 336-4765.

February

4-6 — *Managing Riparian Areas: Common Threads and Shared Benefits*, Albuquerque, NM. Contact: Water Resources Center, University of Arizona, 350 N. Campbell Ave., Tucson, AZ 85721. (602) 792-9591. Cosponsored by USFS, SCS, American Rivers, EPA, Council of Energy Resource Tribes, Bureau of Reclamation, BLM, and University of Arizona.

8-11 — *Geologic Remote Sensing: Exploration, Environment, and Engineering*, Pasadena, CA. Contact: Dr. Robert Rogers, ERIM, Box 134001, Ann Arbor, MI 48113-4001. (313) 994-1200. FAX: 994-5123. Topics: Oil Spill Detection and Monitoring, Environmental Remote Sensing, Remote Sensing in Marine Environments, Engineering, and Hydrology.

14-19 — *Expanding Partnerships and Continuing Successes: 46th Annual Meeting of the Society for Range Management*, Albuquerque, NM. Contact: Jerry Schwein, SRM, 1839 York St., CO 80206. (303) 355-7070.

23-26 — *International Erosion Control Association 24th Annual Conference and Trade Exposition*, Indianapolis, IN. Contact: IECA, PO Box 4904, Steamboat Springs, CO 80477-4904. (303) 879-3010. FAX: 879-8563.

24-26 — *Western Water Law and Policy—Implications for Wetland and Riparian Ecosystems*, Lakewood, CO. Contact: Douglass Owen, U.S. Geological Survey, MS 939 DFC, Denver, CO 80225-0046. (303) 236-1533. Sponsored by the Rocky Mountain Chapter of the Society of Wetland Scientists.

26-27 — *Sustainable Agriculture Conference*, Greeley, CO. Contact: Sustainable Agriculture Conf., Central CO Water Conservancy, 3209 West 28th St., Greeley, CO 80631. (303) 330-4540. Topics: federal regulations, survival of conventional farming, reducing chemical use and still making a profit, farm economics, and farm wives' perspectives.

March

9-11 — *Implementing Integrated Environmental Management*, Blacksburg, VA. Contact: John Cairns, Jr., Virginia Polytechnic Institute and State University. (703) 231-5538. Case studies of integrated environmental management followed by panel discussions will cover practical applications and present lessons for environmental science, education, laws, regulations, planning, and management. Registration: $150.

11-13 — *NALMS 2nd Annual Southeastern Lakes Management Conference: Forging Partnerships for Lake and Watershed Management*, Chattanooga, TN. Contact: NALMS, 1 Progress Blvd., Box 27, Alachua, FL 32615-9536. (904) 462-2554. Organized by North American Lake Management Society; cosponsored by U.S. EPA and Tennessee Valley Authority. Objectives are to: exchange ideas, promote local action, and improve communication between management agencies and lake/reservoir users.

1993

March

14-16 *The Next Generation of U.S. Agricultural Conservation Policy*, Kansas City, MO. Contact: SWCS, 7515 Northeast Ankeny Rd., Ankeny, IA 50021-9764. (800) THE SOIL. Supporting the conference are USDA SCS, Extension Service, and Economic Research Service; USFWS; EPA; Pioneer Hi-Bred Int'l; Deere and Company; Monsanto Co.

14-18 *Symposium on Geographic Information Systems and Water Resources*, Mobile, AL. Contact: AWRA, 5410 Grosvenor Lane, Suite 220, Bethesda, MD 20814-2192. (301) 493-8600.

15-18 *Riparian Ecosystems in the Humid U.S.: Functions, Values, and Management*, Atlanta, GA. Contact: Nancy Barron, Riparian Ecosystems Conf., U.S. EPA, 345 Cortland St., NE, Atlanta, GA 30365. (404) 347-2126. FAX: 347-3269. Sponsored by EPA Region IV, USDA-SCS, USFS, NACD, the Agricultural Research Service, and other agencies.

17-19 *Rural Nonpoint Source Pollution in the Upper Midwest: Exploring Local-Level Initiatives and Effective Partnerships*, La Crosse, WI. Contact: Linda Schroeder, Conf. Manager, Nonpoint Source Conference, 282 77th St., SE, Delano, MN 55328. (612) 972-3908. Sponsored by the Zumbro/Root Rivers Joint Powers Board, EPA Region V, SCS, MN Pollution Control, MN Dept. Agriculture, MN Extension Service, IA State Univ. Extension, Univ. Wisconsion Extension, WI DNR, and WI Dept. Agriculture, Trade, & Consumer Protection.

April

4-8 *25th International Symposium on Remote Sensing and Global Environment Change*, Graz, Austria. Contact: Nancy Wallman, ERIM, Box 134001, Ann Arbor, MI 48113-4001. (313) 994-1200. FAX: 994-5123. Sponsored by Consortium for International Earth Science Information Network, Environmental Research Institute of Michigan (ERIM), and Joanneum Research.

20-22 *National Agriculture Nutrient Management Conference*, St. Louis, MO. Contact: Lyn Kirschner, CTIC, 1220 Potter Dr., Room 170, West Lafayette, IN 47006-1383. (317) 494-9555. Plenary sessions will lay groundwork for nutrient management; concurrent sessions on program and technology aspects; workshop on nutrient management plans. Sponsored by the Conservation Technology Information Center with U.S. EPA and USDA SCS.

May

15-21 *2nd USA/CIS Joint Conference on Environmental Hydrology and Hydrogeology*, Arlington, VA. Contact: Helen Klose, American Inst. of Hydrology, 3416 University Ave., SE, Minneapolis, MN 55414-3328. (612) 379-1030.

August

9-13 *Prairie Ecosystems: Wetland Ecology, Management, and Restoration*, Jamestown, ND. Contact: Dr. Ned Euliss, U.S. Fish and Wildlife Service, Northern Prairie Res. Center, RR 1, Box 96C, Jamestown, ND 58401.

22-25 *Association of State and Interstate Water Pollution Control Administrators Annual Meeting*, Des Moines, IA. Contact: ASWIPCA, 750 First St., NE, Ste. 910, Washington, DC 20002. (202) 898-0905.

September

20-24 *First International IAWPRC Specialized Conference on Diffuse (Nonpoint Source) 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: 288-7082.

Calls For Papers — DEADLINES

1993

January

1 *Prairie Ecosystems: Wetland Ecology, Management, and Restoration*, August 9-13, 1993, Jamestown, ND. Contact: Dr. Ned Euliss, U.S. Fish and Wildlife Service, Northern Prairie Res. Center, RR 1, Box 96C, Jamestown, ND 58401.

1 *The Next Generation of U.S. Agricultural Conservation Policy*, March 14-16, 1993, Kansas City, MO. Contact: SWCS, 7515 Northeast Ankeny Rd., Ankeny, IA 50021-9764. (800) THE SOIL. Purpose: to assess how current agricultural conservation policies are working and to identify what additional policies might be incorporated into future legislation, including the 1995 farm bill.

8 *Surface Water Quality and Ecology Symposium*, October 2-7, 1993, Anaheim, CA. Contact: Maureen Novotne, Water Environment Federation, 601 Wythe St., Alexandria, VA 22314-1994. (703) 684-2400, ext. 7450.

February

1 *4th National Pesticide Conference: New Directions in Pesticide Research, Development, Management, and Policy*, November 1-3, 1993, Richmond, VA. Contact: Dr. Diana Weigmann, VA Polytech, VA Water Resources Res. Center, 617 North Main St., Blacksburg, VA 24060-3397. (703) 231-5624. Sponsored by the VA Water Resources Research Center, Research Division of VA Polytechnic Institute, and 17 cosponsors.

The Coupon

Nonpoint Source Information Exchange Coupon #25

(Mail or FAX this coupon to us)

Our Mailing Address: **NPS News-Notes (WH-553),** Assessment and Watershed Protection Division U.S. EPA, 401 M Street, S.W., Washington, D.C. 20460

Our Fax Number: **NPS News-Notes** (202) 260-1517

Use this Coupon to: (check one or more)

- ❑ *Share your Clean Water Experiences, OR*
- ❑ *Ask for Information, OR*
- ❑ *Make a Suggestion*

Write your story, ask your question, or make your suggestions here:

Attach additional pages if necessary.

- ❑ *I want the NPS BBS Users' Manual. Please send me a copy.*
- ❑ *Please add my name to the mailing list to receive News-Notes.*

Your Name: _____

Organization: _____

Address: _____

City/State: _____ **Zip:** _____

Phone: _____ **Fax:** _____

Nonpoint Source NEWS-NOTES is an occasional bulletin dealing with the condition of the environment and the control of nonpoint sources of water pollution. NPS pollution comes from many sources and is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural pollutants and pollutants resulting from human activity, finally depositing them into lakes, rivers, wetlands, coastal waters, and groundwater. NPS pollution is normally associated with agricultural, silvicultural, mining, and urban runoff. Hydrologic modification is a form of NPS pollution that often adversely affects the biological integrity of surface waters.

NPS NEWS-NOTES is published under the authority of section 319(l) of the Clean Water Act by the Nonpoint Source Information Exchange, (WH-553), Assessment and Watershed Protection Division, OWOW, U.S. Environmental Protection Agency, 401 M St., SW, Washington, DC 20460. FAX (FTS/202) 260-1517. Hal Wise (Terrene Institute grantee), Editor; Elaine Bloom (TetraTech contractor), Associate Editor; Susan V. Alexander (EPA Region VI) and Anne Weinberg (EPA Assessment and Watershed Protection Division), Contributing Editors. Corresponding Editors: Margherita Pryor (EPA Oceans and Coastal Protection Division), Sherri Fields (EPA Wetlands Division), and John Reeder (EPA Office of Ground Water and Drinking Water); Paula Monroe, Publisher. Unless otherwise attributed, all material in this bulletin has been prepared by the editors and the views expressed are not statements of EPA policy unless specifically indentified as such and do not necessarily reflect the views of EPA. Mention of commercial products or publications does not constitute endorsement, or recommendation for use, by EPA. For inquiries on editorial matters, call (FTS/202) 260-3665 or FAX (FTS/202) 260-1517. For additions or changes to the mailing list, please use the COUPON on page 27 and mail or FAX it in. We are not equipped to accept mailing list additions or changes over the phone.

★ 1992 ★
THE YEAR OF
CLEAN WATER
Celebration & Commitment

Recycled/Recyclable
Printed with Soy/Canola Ink on paper that contains at least 50% recycled fiber

EPA
United States
Environmental Protection
Agency
NPS News-Notes (WH-553)
Assessment and Watershed Protection Division
Washington, DC 20460

Official Business
Penalty for Private Use
$300

PRESORTED FIRST CLASS MAIL
Postage and Fees Paid
EPA
G-35