

EPA News-Notes

The Condition of the Environment and The Control of Nonpoint Sources of Water Pollution

A Commentary . . .

Reflections on The Chesapeake Bay Program — April 1992

One of the wonderful things about the Chesapeake Bay Program is that it has a long, established track record of constantly renewing itself. The Program is not in a rut. It keeps learning, adjusting and improving. In the process, we're all being educated about what it is going to take to rescue, redirect and reestablish a major natural resource that was literally on its deathbed a scant sixteen years ago. At that time, Congress, under legislation sponsored by Maryland's Senator Charles Mathias, initially directed EPA to assess Bay water quality and to make recommendations to improve its management.

The latest evidence of renewal is the publication in February 1992 of the *Progress Report of the Baywide Nutrient Reduction Reevaluation*, that re-examines the year 2000 goal of 40 percent nutrient reduction set in 1987.

The political science of the Chesapeake Bay Program is remarkable, involving as it does a decision-making process composed of the executive and legislative branches of three sovereign states and the District of Columbia, in partnership with the federal government's Environmental Protection Agency. Numerous other federal agencies are also involved. This process is critically and regularly observed by the United States Congress. When you add to all of this a watchful and creative citizens' involvement in all of the jurisdictions, you can understand that the Chesapeake Bay Program is as thoroughly open a process as a downtown department store window.

It has to be that way. After more than 250 years of exploitation and no baywide public policy, finally in 1976, there were the first beginnings of official public concern about the condition of the Bay as a system. Today, there is public policy and public action. And that public policy is continuing to evolve as understanding evolves and matures.

There are hundreds and thousands of similar long-abused natural systems around the country. Major restoration efforts will take a long, long time, lots of patience, and the continuing application of creative political science and resources.

But for the hundreds and thousands of us who want to restore the nation's incredible, but abused, natural assets, we are thankful for the leadership and the experiences that is being

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shared out of the Chesapeake Bay Program. We'll get there sooner because of these pioneering efforts.

The Chesapeake Bay Program progress report is a fine technical overview dealing with what is involved in nutrient reduction and habitat restoration of the countless ecosystems that make up the Chesapeake Bay. The report is concerned with restoration of the Bay's living resources. It is worth reading.

[For copies of the report write to: Chesapeake Bay Program, 410 Severn Ave., Suite 109, Annapolis, MD 21403.]

Noteworthy Intergovernmental Happenings

Intergovernmental Task Force on Monitoring Water Quality Established

The newly formed Intergovernmental Task Force on Monitoring Water Quality (ITFM) held its first meeting January 29-30 of this year, in Alexandria, Virginia. The ITFM grew from a joint concern of USGS and EPA staff that water resource monitoring did not produce the data needed for many management decisions. The agencies felt that existing functions could in some cases be conducted more efficiently and with better coordination among the many federal, state, local, and private entities that perform monitoring. A new directive by the Office of Management and Budget to report on needed improvements in the nation's water quality monitoring activities by December 10, 1992, gave added impetus to the Task Force.

Chaired by EPA, with the vice-chair from USGS, the 16-person task force is composed of representatives from the following federal agencies: NOAA, COE, USDA, DOE, FWS, OMB,¹ and one representative each from seven states and one interstate organization, all from different geographical regions of the country.

Statements outlining ITFM's basic mission and scope were adopted at the meeting:

ITFM MISSION

In general, the mission of the ITFM is to develop an intergovernmental strategic plan for acquiring, managing, and presenting water quality information for decision-making. To the extent possible within the time and resources available, the ITFM will initiate implementation of some recommendations as well. Preparing the strategy requires developing a framework to:

- *Integrate monitoring efforts.*
- *Use resources more effectively.*
- *Obtain comparable data and consistent reporting of status and trends of water quality.*

SCOPE OF ITFM

The scope of the ITFM includes water-quality monitoring and the resulting collection, management, and use of water quality information for the purposes of:

- *Developing management and regulatory programs.*
- *Identifying emerging problems.*
- *Evaluating program effectiveness and compliance.*
- *Assessing status and trends.*
- *Wisely managing the use of environmental and economic resources.*

As noted, by December 1992, the ITFM is to submit a report of recommendations to OMB based on a nationwide review and evaluation of water quality monitoring activities. Within three years, it is to file a final report documenting its conclusions, recommendations, and implementation plan.

¹ Environmental Protection Agency, U.S. Geological Survey, National Oceanic and Atmospheric Administration, U.S. Army Corps of Engineers, U.S. Department of Agriculture, U.S. Department of Energy, U.S. Fish and Wildlife Service, Office of Management and Budget.

*Intergovernmental
Task Force on
Monitoring Water
Quality Established
(continued)*

At the organizational meeting, the task force set up four task groups, each with specific assignments and suggested products. The first of these is the Intergovernmental Framework Task Group, chaired by Bruce Baker, Director, Water Resources Management Bureau of Wisconsin. The task group's objective is "to better integrate diverse monitoring efforts nationwide."

Suggested products include:

- Information on organizations and water quality monitoring programs in the U.S.
- The questions national water resource monitoring must answer
- A conceptual model of a prototype monitoring program
- A strategic plan for an intergovernmental framework for improving the efficiency of existing programs and meeting defined information needs

The second is the Environmental Indicators Task Group, chaired by Lawrence Pugh, Director, National Ocean Pollution Program Staff, NOAA. The task group's objectives are "to recommend application of environmental indicators and standard descriptors of aquatic conditions which all agencies can use to measure and report national water quality conditions, trends and progress toward National goals, and also to recommend a process to improve reporting of the indicators over time."

The first year goals of this task group are:

- Outline the questions indicators must answer
- Outline existing indicator programs of agencies and groups
- Develop indicator selection criteria and protocols
- Identify gaps in existing knowledge

The third group is called the Data Collection Methods Task Group. The chair is Charles Facemire, Division of Environmental Contaminants, FWS. Its objective is "to develop a plan that will permit collecting and qualifying environmental data to allow merger of data from multiple sources into definable data sets to address varied needs of the user-community."

The final task group will deal with data management and information-sharing. The chair is Peter Rogers, Chief, Office of Drinking Water, California Department of Health Services. Its objective is "to develop mechanisms, consensus standards and quality assurance procedures to permit sharing of environmental data at defined levels of confidence from multiple sources."

Elizabeth Jester, Chief of EPA's Monitoring Branch, Assessment and Watershed Protection Division, has been named overall ITFM chair. She made these comments to *News-Notes* concerning the mission of the group:

Monitoring is complex, and coordination among the many entities involved is a tremendous task. I'm pleased that the initial meetings of the full ITFM and four task groups have been able to prioritize the issues and outline specific products that will carry us to realistic monitoring goals.

We need a common language and framework for action that will allow each individual monitoring agency to take advantage of the efforts of others, share its own products and enable us all to answer the basic questions — how healthy are our water resources and how well are our water management programs doing.

[For more information, contact: Elizabeth Jester, Chief, Monitoring Branch (WH-553), EPA, 401 M Street SW, Washington, DC 20460. Phone: (FTS/202) 260-7066. Or Nancy Lopez, Chief, Office of Water Data Coordination, USGS, 12201 Sunrise Valley Drive, Reston, VA 22092. Phone: (703) 648-5014.]

USGS & EPA Sign Formal Memorandum of Understanding To Coordinate Water Quality Monitoring and Assessment

On January 15, 1992, LaJuana S. Wilcher, Assistant Administrator, Office of Water and Erich W. Bretthauer, Assistant Administrator, Office of Research and Development (ORD), both on behalf of the Environmental Protection Agency, and Dallas L. Peck, Director, U.S. Geological Survey (USGS), executed a Memorandum of Understanding (MOU) pledging cooperation and collaboration on water quality monitoring and assessment activities. The MOU grew from a meeting between EPA (ORD Environmental Monitoring and Assessment Program [EMAP] and Office of Water's Monitoring Branch) and USGS's National Water Quality Assessment Program (NAWQA). Participants agreed that these programs need to closely coordinate their activities.

The Memorandum recites the respective missions of the two agencies that establish the need for their individual water quality monitoring and assessment operations:

The mission of the U.S. Geological Survey is to provide earth-science information needed to guide the wise use and management of the nation's mineral, energy, and water resources. The mission of the Environmental Protection Agency is to improve and preserve the quality of the environment and to protect human health and the biological integrity of natural resources on which all human activity depends.

Elizabeth Jester, Chief of EPA's Monitoring Branch, commented on the new MOU:

We feel it is imperative to coordinate EMAP, NAWQA and OWOW's monitoring programs, particularly in areas of biological protocols, landscape characterization, quality assurance/quality control, and data storage and retrieval.

We are working with USGS, seven other federal agencies, and states on the Intergovernmental Task Force on Monitoring Water Quality (ITFM) to accomplish similar aims, but that's longer range. This agreement is in effect now and will guide our present activities. We look forward to closely coordinated work on common aims.

The scope of work detailed in the agreement spells out an eight-point approach to planned collaboration:

As the combination of programs in EPA and USGS are more beneficial to the public interest than any one program alone, it is mutually agreed upon that collaboration between USGS and EPA programs will include:

- *Participation on program advisory committees that will be convened to make recommendations on:*
 - (1) *Information needed to address existing and emerging resource issues of regional and/or national concern.*
 - (2) *Aspects of the design of environmental assessment programs including environmental indicators and consistent minimum data sets, field and laboratory methods, monitoring guidelines and protocols, acquisition of land use and land cover data, quality-assurance procedures, and information management and accessibility.*
- *Coordination of methods development and methods testing activities for the field, laboratory, and interpretive aspects of environmental assessment programs.*
- *Coordination of monitoring guidelines and protocols each agency may issue for specific resource areas (e.g., lakes, streams, and groundwater) or ecological health (e.g., community and population monitoring).*
- *Joint development and implementation of efforts to provide and/or improve key supporting data needed by both agencies for assessment purposes. Examples of databases that may be considered include biology, land use and land cover, point source discharges, and fertilizer and pesticide use.*
- *Participation in the planning, conduct, and reporting of efforts focused on regional and national synthesis of information for environmental assessment programs.*
- *Coordination of quality assurance/quality control activities.*
- *Coordination of data acquisition, storage and retrieval for both primary and secondary data users.*
- *Development of joint assessment reports.*

In his letter transmitting the signed agreement to EPA, USGS Director Dallas Peck commented:

Both of our agencies have large and complimentary water quality efforts underway that are needed to fulfill our missions and responsibilities to the public and private sectors. There is much work to be done and many common areas of interest where collaboration will be mutually beneficial. We look forward to substantive progress in implementing this agreement.

[For further information, contact Hal Kibby, EMAP, Environmental Research Laboratory, 200 S.W. 35th St., Corvallis, OR 97333. Phone: (503) 757-4679; Elizabeth Jester, OWOW (WH-553) U.S. EPA, 401 M St., SW, Washington, DC 20460. Phone: (FTS/202) 260-7066; or Bill Wilber, USGS, NAWQA, 122-02 Sunrise Valley Drive, Reston, VA 22092. Phone: (703) 648-6878.]

Forest Service and EPA Meet For Technical Workshop on Sediment

On February 3-7, 1992, the Forest Service and EPA held a joint technical workshop in Corvallis, Oregon on sediment and water quality. This meeting was prompted by the increased and widespread recognition of "clean sediment" as a nonpoint source pollutant of significant ecological concern. Both agencies have increased their focus on the potential impacts of sediment production from forest management activities on water quality and aquatic life. Most notably, there have been increased efforts to understand the influences of forest management activities on impairment of salmonid habitat by sediment. (See *NPS News-Notes* issue #17, December, 1991 review of American Fisheries Society publication *Influences of Forest And Rangeland Management on Salmonid Fishes and Their Habitats*.) In response to these trends, EPA and the Forest Service are examining how these problems should be addressed under the Clean Water Act (particularly the TMDL process) and the technical basis for making water quality management decisions.

The Corvallis sediment workshop focused on the technical information and methodologies currently available that might be brought to bear on this subject. Workshop participants explored the development of a joint research program to investigate the impacts of sedimentation related to silvicultural activities on water quality.

Through an Memorandum of Understanding, the EPA and Forest Service have undertaken cooperative efforts on a number of programs and technical projects related to water quality. As an extension of these cooperative efforts, the workshop brought together the combined expertise of over 50 research scientists and water resource management specialists to address a subject of common concern.

The main objectives of the workshop were to review the results of existing research and to build on these previous efforts by identifying opportunities for technology transfer of existing tools and information and developing a research agenda that identifies needed research projects. The workshop featured panel discussions and workgroup sessions in four areas: (1) sediment production and transport processes from forest uses, (2) land and riparian zone interactions with sediment, (3) sediment production by activities related to forest uses, (4) sediment impacts on fish and other aquatic populations.

The purpose of the panels was to develop a partial summary of what is known today regarding forest sediment issues. Several papers were presented on the state of the science and current research. Breakout sessions built on these topics as the workgroups attempted to determine knowledge gaps and identify areas for potential research. They also addressed technology transfer opportunities.

Based on these efforts, the Forest Service and EPA are working toward the development of an interagency agreement that will serve as an action plan for technology transfer and cooperative research developed as a result of the workshop. The action plan will be based on an improved understanding of the existing knowledge and the identification and development of additional research projects involving sedimentation processes and effects on water quality. This effort is intended to allow input from program and management branches of EPA and the Forest Service on the needs for research to support program activities. A preliminary research agreement tentatively identifies these needs, which include criteria for determining attainment of designated uses, tools for monitoring and modeling, and BMP effectiveness information.

The proceedings document for the Corvallis sediment workshop is now being prepared. It will include the papers, highlights of each panel discussion, and the reports developed by the four workgroups. Availability of this report will be announced in *News-Notes*.

[Questions on the workshop or the follow-up projects can be addressed to Don Brady at (FTS/202) 260-5392 or John Cannell at (FTS/202) 260-7087.]

Notes on The Coastal Environment

Barrier Island Restoration & Coastal Wetland Creation On A Large Scale

EDITOR'S NOTE: This article was written by one of our regular contributors, Susan Alexander of Region 6, currently on detail to the Terrene Institute.

Can a small system of barrier islands that serves as a vital protective buffer to miles of Louisiana coastal wetlands be restored? They are part of a chain of islands that the U.S. Geological Survey and the Louisiana Geological Survey estimate will be submerged by the

year 2020. The rapid erosion of the islands' shorelines is a result of a combination of natural and human forces—most notably drilling, oil and gas exploration, and hydrologic modification.

In one of the most ambitious and creative projects to be implemented under the new Coastal Wetlands Planning, Protection and Restoration Act (part of PL 101-646), EPA, in cooperation with the state of Louisiana and the Terrebonne Parish consolidated government, will use dredged sediment to actually rebuild the two-mile-long Eastern Isle Dernieres and create at least 105 acres of new saline marsh.

The scale of this project is what sets it apart from previous beneficial-use-of-sediment projects, which generally have been constructed on small acreage. This project employs an integrated ecosystems approach to complete island restoration. Overwash sediments will be used to build up dunes to an eight-foot height on the seaward side of the island. An earthen retaining structure will be constructed on the leeward side. The dunes will be planted with native vegetation. These actions will seal all breaches along the two-mile stretch and will fill all man-made canals, which are contributing to the rapid loss of the islands.

Sediment from the bay behind the retaining structure will then be suction-dredged and used to hydraulically fill the area between the dunes and the earthen retaining structure. This area will be planted with native brackish marsh plant species and is expected to provide additional wildlife and fisheries habitat.

The progress of the restoration effort will be monitored in a variety of ways, including measurements of both the quality and the quantity of soil, vegetation, sediment, water, and fish and wildlife before, during and after the project. The project will be a success if a stable island environment supporting a variety of native plants, animals and aquatic organisms is reestablished. It is hoped that it will protect the adjacent coastal wetlands for the next 30 years.

At a cost of \$6,345,000, it is the third largest project to be funded from the \$50 million the 1991 Coastal Wetlands Planning, Protection and Restoration Act budget. These funds come from an 18 percent "set-aside" or transfer from the federal Sport Fish Restoration Fund, which is supported through small engine fuel taxes. The Act allocates 70 percent (\$34 million in FY 91) of this amount to be administered by the Corps of Engineers for use by the task force created by the Restoration Act. This task force directs priorities and selects projects for coastal wetlands protection.

Michael Mielke, executive director of the Coalition to Restore Coastal Louisiana and the chairman of the Citizens' Participation Group of the task force explains,

Our approach is three-phased: 1) implement relatively small scale projects that can be completed in the short term and offer the greatest potential return on investment, 2) concurrently develop a comprehensive plan with a long-term focus on achieving equilibrium in gains and losses of coastal wetlands, 3) execute the comprehensive plan and in so doing shift from short-term isolated actions to a long-term integrated approach.

In effect, our intention is to take advantage of the best opportunities available today to implement a delaying action (phase one) while we are developing a comprehensive plan (phase two) for sustained long-term action (phase three).

The first projects from the priority list include:

- marsh building with sediments from river water diversion
- water management
- hydrologic restoration
- marsh building with dredged sediments
- shoreline erosion control using vegetative or structural methods
- barrier island restoration with dredged sediment (the Eastern Isle Dernieres project).

Each project has an agency sponsor (from those agencies represented on the task force) and a local sponsor. Designated (by the Act) members of the task force include: the U.S. Department of the Army, the U.S. EPA, the U.S. Department of Commerce, the USDA, the U.S. Department of Interior, and the state of Louisiana.

Norm Thomas, chief of EPA Region 6 Federal Activities Branch and long time advocate of increased "on-the-ground" implementation of coastal wetlands protection measures, summed up the opportunities presented by this legislation well:

With cooperative efforts of local, state, and federal governments and the public, we now have a rare opportunity to achieve coastal wetlands protection and restoration immediately by

implementing the yearly priority projects. For the longer term, coastal wetland protection and restoration will occur through the development and implementation of the Comprehensive Restoration Plan. Success of these efforts will be measured in two ways: first by the benefits of our initial restoration and protection projects located in critical areas, and second, by what is hopefully, a continuing policy and financial commitment from Congress to maintain and restore our wetland resources.

[For more information, contact Michael Mielke, Coalition to Restore Coastal Louisiana, (504) 764-8394.]

Dredge Spoil Used to Restore Whooping Crane Habitat

When 60 whooping cranes returned to their winter home in Aransas National Wildlife refuge last fall, they found a bit more home than they had left the previous spring. Thirteen brand new acres of marshland had sprung up in Mesquite Bay, thanks to a cooperative effort of the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Texas General Land Office, EPA Region 6, Texas Parks and Wildlife, the Army Corps of Engineers (COE), and Mitchell Energy and Development Corporation.

The project actually began not with the endangered whooping cranes but with the practical question of what to do with 130,000 cubic yards of bay bottom. Mitchell Energy proposed to maintenance dredge existing channels between the Gulf Intracoastal Waterway (GIWW)¹ and three oil wells. To get a permit to maintenance dredge the channel through critical crane habitat, Mitchell had to have a plan for disposal of the spoil material. The designated COE areas for dredge dumping on the refuge are quickly nearing capacity. In the Mesquite Bay area, any other convenient sites are likely to be off-limits because they are whooping crane habitat or wetlands. Hauling the material away could have cost up to \$2.5 million.

So how do the whooping cranes figure into all this? Whooping cranes are never far from anyone's mind in Mesquite Bay. The population numbered a precarious 15 in 1941 and the whooping crane was one of the first species to come under the Endangered Species Act of 1966. Whooping crane numbers are now steadily increasing. But according to refuge biologist Tom Stehn, as the crane population has expanded, its habitat has shrunk. In the refuge alone, which is the winter home of the world's only wild breeding flock of whooping cranes, two to four acres of their habitat is lost every year to erosion, mostly from the wakes of boats and barges. Stehn figures that since construction of the GIWW half a century ago, the cranes have lost 1,485 acres of habitat in the 54,829-acre refuge.

That habitat consisted largely of shallow, vegetated marshes and tidal pools that nurture the invertebrates whooping cranes eat. As a trial project on beneficial use of dredge material, it was decided to use the material from the Mitchell project to replace some of this lost marshland. Working with the six agencies, Mitchell Energy's environmental engineering manager, David Templet, developed a detailed plan for building an artificial marsh.

According to COE's Bob Hamerick, the wetland enhancement project is located in an area of extremely eroded shoreline on the bayward side of Bludworth Island. In addition to providing high quality whooping crane habitat, the island's shoreline buffers the GIWW from the eroding waves of the open bay. Hamerick predicted that without mitigation, crucial sections of Bludworth Island would be lost within five to ten years.

Mitchell Energy's plan was extensively reviewed by biologists from the cooperating agencies and the refuge before being approved by the COE. The work was authorized under Section 10 of the Rivers and Harbors Act of 1899 and CWA Section 404. The approved plans defined the dimensions and exact location of the marsh and specified vegetation types to be planted. It also called for Mitchell Energy to monitor the project for three years and submit annual reports to the COE. Another condition, one common in permits issued for Mesquite Bay, is that work is only to be done from April to October, while the big birds are on their Canadian breeding grounds.

The project, for which Mitchell Energy has footed the entire \$750,000 bill, entailed using bottom soil from the site to build a rectangular levee to contain the dredge material. Interlocking concrete blocs were placed on the outside to protect the levee from erosion. The created marsh has both low and high areas that cause subtle differences in habitat and add to the wetland's diversity. In the spring, approximately half of the area will be planted with *Spartina alterniflora*. Sixteen percent of the area will be planted with intermediate-to-high

¹ The GIWW runs right through the refuge. It widens three feet a year, because of erosion from the wakes of boats and barges. When completed in 1941, it was 265 feet across at the surface. It is now more than 500 feet wide.

marsh species like *Batis*, *Salicornia*, *Distichlis*, *Spartina patens* and other species common to the area. The remaining 36 percent will be open water habitat, where seagrasses will be planted.

So who benefits from the project? The whooping cranes gained about 13 acres of habitat.² The USFWS is happy if the whooping cranes are happy. Mitchell Energy saved over \$1.75 million. The COE gained a buffer against the eroding wave action that threatened to breach Bludworth Island and swamp the GIWW with sediment. Even the NMFS, reluctant at first to lose open water habitat, gave the project its blessing after incorporating specific designs that benefit marine organisms as well as cranes.

The NMFS specified that breaks be cut in the levee surrounding the marsh to ensure the tidal exchange that allows detritus from decaying marsh vegetation to enter the food chain in the bay.

"We had some pretty tough demands," said Stehn. "We wanted the levees protected from erosion, and we ended up asking Mitchell for three or four times the amount of protection we originally demanded. Also, it would have been a lot cheaper to butt the marsh up against Bludworth Island. But whooping cranes often feed in that area. So the marsh was built about 300 feet away."

It was, according to Stehn, "pretty close to a miracle to get all the agencies to agree to this project. It was hard to work out because USFWS and NMFS don't want dumping in the open bay. They finally allowed it because it was mitigation for the whooping crane habitat that has been lost over the years."

The gradual loss of habitat makes a subtle yet important difference. Stehn explained: "When food supply is reduced, there's only so much food to go around. You don't find dead birds, but the birds' reproductive fitness is reduced. That makes a difference in the wild population. These birds are still struggling. There are only 131 in the wild. That's pretty rare. Last year is the first time in a long time that we've actually gained whooping crane habitat."

Overall success of the project will be determined by a census of whooping cranes using the artificial marsh. Ken Schwent, assistant manager at Aransas, said, "We hope it turns out to be beneficial. It'll take a few years to see because the vegetation needs to get established."

And Stehn pointed out, "Even this early in the project we're seeing that habitat has been enhanced; the strip of bay between the island and marsh is now protected from wave action that previously prevented seagrass from growing. The seagrass zone has expanded dramatically."

Tied in with the original permit is Phase 2, planned for 1993 when Mitchell will need to do further dredging. Phase 2 is the construction of a second marsh. It will be similar in cost, design and size to the first one.

Both the refuge and the COE foresee more projects like this one in the bay. USFWS's Stehn said, "Hopefully, COE will be doing replacement until we've regained all the wetlands lost to the GIWW. However, there is no guarantee that the COE will do this or be allowed to do it. Only time will tell."

Although in Aransas a particular set of circumstances allowed this project to address both habitat mitigation and dredge dumping issues at once, this is no cure-all. Hamerick noted that not all dredge material is suitable; in this case, the material was a sandy clay soil that stays in place—a silty soil would not have worked. Additionally, according to USFWS Fisheries Biologist Mary Ellen Vega, "The USFWS, as well as the other resource agencies, consistently recommends that open bay disposal of dredge material not be allowed. The disposal of dredge material into aquatic areas has numerous detrimental effects on the aquatic ecosystem, particularly if seagrasses are present. The project is considered an experimental stop-gap measure until a more environmentally sustainable solution to the erosion problem along the GIWW is identified." As far as using the dredged material to fill where mitigation is most needed—in the ever-widening waterway itself—that is currently under discussion.

A study is being conducted by the COE to identify long-term solutions. Said Hamerick, "Presently, we're looking at ways to reduce the effects of erosion, as well as the creation of additional whooping crane habitat using material excavated from the GIWW. Plans are underway to construct a demonstration project employing some of these concepts this summer, in conjunction with maintenance dredging in San Antonio Bay."

² Each whooping crane pair—mated for life—occupies a 230- to 1,000-acre territory.

*Dredge Spoils Used
to Restore Whooping
Crane Habitat
(continued)*

Meanwhile, the whooping cranes appear to be eyeing the newly created wetland with interest; a pair of cranes was spotted feeding there in January. Stehn, excited by the sightings, said it was an indication that the cranes would use what he calls "Whooper Hotel" when the flock returns to Aransas next winter.

[For more information, contact David Templet, Mitchell Energy and Development, P.O. Box 4000, Woodlands, TX, 77387-4000. Or contact Bob Hamerick, U.S. Army COE. Phone: (409) 766-3136. Or contact Tom Stehn, Aransas National Wildlife Refuge, FAX (512) 286-3722. Or contact Field Supervisor, USFWS, Ecological Services, 6300 Ocean Drive, Campus Box 338, Corpus Christi, TX 78412.]

NPS from Treated Wood Structures in the Coastal Environment

EDITOR'S NOTE: This article was prepared by Judith S. Weis, Dept. of Biological Sciences, Rutgers University, Newark, NJ 07102 and Peddrick Weis, Dept. of Anatomy, NJ Medical School, Newark, NJ 07103 (both at EPA Lab, Gulf Breeze, FL 32561, Spring 1992).

Background

People's awareness of nonpoint source pollution is generally restricted to runoff from agricultural and urban sources. Another generally ignored source is leaching from in-place structures in the aquatic environment itself. The unprecedented toxicity of tributyltin antifouling paints from boats was an example that received a considerable amount of attention and was the subject of specific legislation by the Congress.

Another example, about which much less is known, is leaching of chemicals from wooden structures placed into the aquatic environment, specifically, pressure-treated wood that goes by the trade name "Wolmanized" wood and is preserved with oxides of chromium, copper and arsenic, or CCA. Many houses have backyard decks made of this material.

The level of the three chemicals put into the wood for decks is 0.4 lbs/cubic foot of wood. On the other hand, wood designed for marine uses has 1.5 lbs/cubic foot, or in Florida, 2.5 lbs/cubic foot, which causes the wood to be quite green in color from having so much copper in it. The wood preservers claim that the wood is very leach-resistant and that negligible amounts of materials come out of it. This claim is made on the basis of very little weight loss after immersion. However, there need not be a large percent of leaching in order to have toxic effects, since these chemicals can be toxic at the parts-per-million level and are pressurized into the wood at the parts-per-hundred level.

Much coastal development involves construction of pilings, bulkheads, and docks. To prevent destruction by fungi and borers, the wood was previously treated with creosote or pentachlorophenol. However, concern over the health effects of these chemicals caused them to fall out of favor and be replaced by CCA. The three elements of CCA, however, are also toxic, and their harmful effects on aquatic organisms are well known to biologists. There has been considerable study of effects of each element individually on different species, but until recently, there has been very little scientific study of effects of the treated wood itself on the environment.

Research Results

Recent scientific studies, both in the laboratory and in the field, have begun to provide additional evidence for leaching of the chemicals from the wood and resulting toxic effects. Lab studies have shown that various organisms placed in aquaria with pieces of treated wood show adverse effects, ranging from minor growth reductions to death, depending on the amount of wood, the volume of water, and the sensitivity of the species. One interesting response was that of mud snails (*Nassarius obsoletus*), which ceased their activity, retracted into their shells, and lay on the bottom of the aquarium within a few minutes of exposure to wood leachate. They could recover if placed back in clean sea water, but if they remained in the leachate, they died within a few days. When we did experiments with separate chemicals, it turned out that this response resulted from copper alone. Additional effects noted in animals exposed to leachates from pieces of wood were retardation of limb regeneration in fiddler crabs (*Uca pugilator*), mortality in fish embryos (*Fundulus heteroclitus* and *Menidia berollina*), and reduced fertilization in sea urchins (*Arbacia punctulata*) after sperm exposure. When the green alga *Ulva lactuca* was exposed to leachates, the algae turned pale and lost chlorophyll (Weis et al. 1991, 1992).

A confined laboratory aquarium is not the same as the real world in which more dilution and washing away can occur. We have, therefore, followed up with field studies in areas where bulkheads were present in estuaries. If chemicals are leaching from these wooden structures, they might accumulate in nearby fine-grained sediments, since that is where many pollutants, including metals, tend to accumulate. We have looked for copper, chromium, and arsenic in the sediments adjacent to the wood structures and at varying distances away from the wood and are finding evidence that the closer to the wood, the greater the amounts of metals associated with the fine-grained sediments. Immediately by the bulkhead, those fine-grained sediments are relatively scarce, since currents move the sediments away, leaving mostly sand. More of the fine-grained sediments are found further away, in deeper water. But the fine-grained sediments right by the bulkheads had very high levels of the chemicals. The accumulation of metals in the sediments was greater in areas with less water movement, such as a confined marina and a residential canal, compared with more open water environments (Weis and Weis, in prep).

We have also sampled some benthic animals living in the sand by the bulkheads and found that fiddler crabs, both *Uca pugilator* from Long Island, NY, and *Uca panacea* from Pensacola Beach, FL, have elevated levels of the chemicals in their bodies, indicating that they are accumulating the chemicals from the sediments (Weis and Weis, in press).

Another place in which the chemicals leaching from the wood might accumulate is in the organisms that live directly on the wood itself. These organisms, sometimes referred to as a "fouling" community but more properly referred to as a hard-substrate, or "epibiotic," community, live attached to the wood. We have sampled algae growing on the wood and found that they had elevated levels of all three metals. When these algae (two species of green algae (*Ulva lactuca* and *Enteromorpha intestinalis*)) were fed to mud snails for a month, the snails either were retracted into their shells or were dead, while snails eating the same species of algae collected from nearby rocks were all alive and active. This indicates that the metals accumulated in the algae were toxic to grazers that fed on them (Weis and Weis, in press).

We have also collected oysters (*Crassostrea virginica*) from CCA-treated wood pilings in Pensacola Beach, Florida. Those from a single dock in an open water area had levels of the metals that were somewhat (significantly) higher than those in oysters collected from rocks. However, oysters growing on bulkheads inside a residential canal that was lined on both sides with treated wood and had relatively little flushing had very elevated concentrations, particularly of copper. Thus, hard substrate organisms living directly on the wood can accumulate high concentrations of the metals, especially in poorly flushed situations. The oysters are being examined for their tissue structure, physiological parameters, and indicators of stress.

Possible Solutions to the Problem

We have found that the toxicity of pieces of the wood decreased over time, so that after a piece had soaked for a number of weeks, it had much less of an effect in the laboratory (Weis et al, 1991). This means that one way to solve the problem would be for the wood preservers to let the wood soak out for two to three months on site before marketing it. That way, most of the leaching would have taken place and the wood would not be such an environmental problem. Another approach would be to replace the wood with another type of material altogether. One alternative construction material that we have looked at is a product made of recycled plastic. This "lumber" can be used for making bulkheads and has much lower toxicity to estuarine organisms. In addition, it would provide a market for recycled plastic, which in some places is collected from homeowners in the form of bottles and containers and which sits in the recycling center for a very long time because there is not much of a market for it. So, using recycled plastic would solve two problems at once—removing it from the waste stream and replacing a toxic construction material.

Our research indicates that leaching from CCA-treated wood can be a significant source of contamination in coastal areas that are otherwise relatively clean. The extent of coastal development using this wood as the material for docks, bulkheads, and pilings is major. Sources can be from marinas but also from individual homeowners with shoreline property, especially along residential canals. This is an environmental issue that has not received attention from EPA, and it could be remedied relatively easily.

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Notes on Local Riparian and Watershed Management

Bureau of Land Management Proclaims Federal Lands Riparian-Wetlands Initiative

An updated plan for managing riparian areas and wetlands on federally owned public lands was issued by the Department of Interior's Bureau of Land Management (BLM) on January 22, 1992.

Initially issued during September 1991, the plan is titled: *Riparian-Wetlands Initiative for the 1990's*. H. James Fox, Chief of BLM's Division of Rangeland Resources, said the plan,

... sets a series of goals and strategies to meet healthy conditions on the 23.7 million acres of riparian-wetlands managed by BLM.

The Initiative also summarizes the state of our efforts at managing these vital ribbons of green that are so valuable for fish, wildlife, livestock, water quality, recreation, and biodiversity.

The plan document set forth four national goals:

1. Restore and maintain riparian areas and wetlands so that 75 percent are in proper functioning condition¹ by 1997. The overall objective is to achieve an advanced ecological status, except where resource management objectives, including proper functioning condition, would require an earlier successional stage.
2. Protect riparian areas and wetland areas and associated uplands through proper land management, and avoid or mitigate negative impacts. Acquire and expand key areas to provide for their maximum public benefit, protection enhancement, and efficient management.
3. Ensure an aggressive riparian areas and wetlands education program, including providing training and research.
4. Improve partnerships and cooperative restoration and management efforts in implementing the initiative.

The development of state and district strategies for dealing with the national goals on a site-specific basis are underway. The plan ranks projects, locally, in priority order based on such factors as

... critical water quality problems, potential for improvement, risk of further degradation, threatened or endangered species habitat, fisheries, and recreation values...

Individual strategies for each state where there are BLM-managed lands include a logical sequence of riparian inventories and planning, project development and maintenance, and monitoring to determine if objectives are being met.

Among the stated national objectives on riparian area-wetland restoration and maintenance are:

- *Assure that all Resource Management Plans address riparian-wetland needs and that all plans are consistent with State Nonpoint Source (NPS) Management Plans.*
- *Inventory, prioritize, and initiate needed treatment on abandoned mines in riparian-wetland areas.*

The document also states:

Where permits under section 404 of the Clean Water Act are required, [BLM will] work with the Corps of Engineers, Environmental Protection Agency, Fish and Wildlife Service, and others to assure compliance with the law.

¹ The term *proper functioning condition* is defined in BLM's plan to mean: *The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation. Riparian-wetland areas are functioning properly when adequate vegetation is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity.*

Cooperative funding of projects involving landowners, other federal agencies and private groups is called for under the riparian-wetlands initiative. (An example of one such undertaking in Colorado has been reported in *News-Notes*.)² The plan document also states,

Organizations such as the Public Lands Restoration Task Force of the Izaak Walton League of America, Inc., Trout Unlimited, and others work with BLM's Volunteer Program to encourage and facilitate valuable volunteer assistance. Such volunteer assistance not only helps to complete projects and perform required maintenance, but it also heightens public appreciation of the value of riparian-wetland resources.

Copies of BLM's *Riparian-Wetland Initiative for the 1990s* as well as individual state riparian strategy plans can be obtained from the following Bureau of Land Management offices:

NOTE: In each case, add "Bureau of Land Management" to the addresses shown below.

Bureau of Land Management Offices		
<p>Headquarters Office (222) 1849 C Street NW Premier Bldg., Room 909 Washington DC 20240 (202) 653-9210</p> <p>Alaska State Office (930) 222 W. 7th Avenue #13 Anchorage, AK 99513-7599 (907) 271-3356</p> <p>Arizona State Office (932) 3707 N. 7th Street P.O. Box 16563 Phoenix, AZ 85011 (503) 280-7954</p> <p>California State Office (932) 2800 Cottage Way (E-2841) Sacramento, CA 95825-1889 (916) 978-4725</p>	<p>Colorado State Office (933) 2850 Youngfield Street Lakewood, CO 80215 (303) 239-3718</p> <p>Eastern States¹ Office (960) 350 S. Pickett Street Alexandria, VA 22304 (703) 461-1307</p> <p>Idaho State Office (931) 3383 Americana Terrace Boise, ID 83706 (208) 384-3066</p> <p>Montana² State Office (931) 222 N. 32nd Street P.O. Box 36800 Billings, MT 59107 (801) 539-4058</p> <p>Nevada State Office (931) 850 Harvard Way, P.O. Box 12000 Reno, NV 89520-0006 (702) 785-6473</p>	<p>New Mexico³ State Office (931) South Federal Place P.O. Box 1449 Santa Fe, NM 87504-1449 (505) 988-6231</p> <p>Oregon State Office (932) 1300 N.E. 44th Street P.O. Box 2965 Portland, OR 97213 (602) 640-5509</p> <p>Utah State Office (932) 324 South State Street, Suite 301 Salt Lake City UT 84111-2303 (406) 255-2928</p> <p>Wyoming⁴ State Office (932) P.O. Box 1828 Cheyenne, WY 82003 (307) 775-6256</p>

1 Includes all states east of a line approximating the 100th Meridian.
2 Includes lands in North Dakota and South Dakota.

3 Includes lands in Oklahoma and Kansas.
4 Includes lands in Nebraska.

[For further information contact Don Waite, Chief, Branch of Soil, Water and Air, BLM (W.O. 222) 1849 C Street, NW, Washington, DC 20240. Phone: (FTS/202) 653-9210.]

California's Tomki Watershed Project Enters Its Eleventh Year As A Local Landowner/Multi-Agency/State/Federal Undertaking

An EPA grant of \$182,000 made in December 1981 under §208 of the original 1972-passed Clean Water Act (CWA) is still paying off in California's north coast Mendocino County. The State Water Resources Control Board administered the grant which was made to the county's Resource Conservation District (RCD). Over the next two years, the District, an organization of landowners in the county, with the assistance of Mendocino County, the Soil Conservation Service (SCS), and a local citizens' advisory committee, developed the Tomki Creek Watershed Pilot Project Plan.

The same actors are involved today almost ten years later, with, if anything, more vigor than ever. EPA is participating now with Clean Water Act nonpoint source §319(h) funds enacted by the 1987 amendments to the CWA. State involvement has broadened through new cost-share programs. But the local program's purpose as originally planned with 208 funds remains the

² See Issue #16 (October-December 1991), which report that with EPA §319 money, the state of Colorado is participating with BLM and other state, federal and local agencies (including private owners) in the 135,000-acre Badger Creek project. That report states: *BLM has been testing intensive grazing in riparian areas to demonstrate that time controlled grazing can assist in streambank stabilization. Additionally, BLM has constructed erosion control dams, erected precipitation monitoring stations, and, with USGS, has installed automated measuring devices.*

same: basic watershed restoration. The plan hasn't changed. But involvement and participation has broadened under local initiative and leadership.

The 1983 plan called for treating sources of watershed instability and water quality problems caused by sediment from historic logging, grazing, and road building practices, as well as stabilizing these problems within the riverine system.

The 40,000-acre Tomki Creek watershed, with its tributary to the Eel River, is primarily privately owned upland forest and rangeland, with typical watershed problems common to the streams and rivers of the north coast of California.

The erosion inventory of the 1983 plan indicated that some 21,000 cubic yards of sediment was finding its way into Tomki Creek each year. Twenty-one thousand cubic yards would cover the city block on which the Mendocino County Courthouse sits with sediment fourteen feet deep, watershed planners said in 1983.

Heavy loadings of sediment, called "fines," have severely impaired the beneficial uses of the cold-water fishery in two ways. First, Chinook salmon spawning habitat has been seriously reduced by fines smothering spawning gravels. Second, steelhead rearing habitat has been severely limited as pools have become filled with sediment. Shallow pools hamper fish survival during critical low flow periods. Highly turbid water reduces feeding activity of steelhead, reducing their growth and value to downstream sport fishing. The losses have had serious economic impacts throughout the north coast.

The 20 sub-basins within the watershed have been ranked and prioritized for treatment as funding becomes available.¹ From 1983 to the present, the Mendocino RCD has received over \$650,000 in grants from the California Department of Fish and Game's Salmon and Steelhead Restoration Funds to implement erosion control practices described in the plan. Cost-share programs such as the Agricultural Conservation Program (ACP) and the California Forest Improvement Program (CFIP), along with funds from private land owners and road associations have brought in between \$100,000 and \$150,000 in private funds.²

These funds have been used to priority treat the sub-basins of Wheelbarrow Creek, Rocktree Creek and portions of Tomki Creek. The Mendocino RCD was awarded \$100,000 of FY 90 §319(h) funds to implement best management practices (BMPs) in the String and Tarter Creek sub-basins. The project focused on the String Creek sub-basin in the central portion of the Tomki drainage. Streambank, gully, and road sites (previously identified in the 1983 plan) in the mid- and lower portion of String Creek were treated. Treatments included: rock riprap; wing deflectors; revegetation with willow; poplar; and alder; brush mats; bank shaping to stable configurations; exclusionary fencing; seed and mulch; culverts and outlet dissipaters.

The primary emphasis was the "bioengineering approach." This practice incorporates and integrates rock and wood structures with living plants and root systems. Revegetation is seen as the most cost-effective long-term sediment control treatment, but in certain stream locations, it requires some structures to reduce velocities to levels tolerable for plant growth.

Landowner support for these types of projects is strong. Funds from landowners have been used to supplement the §319(h) money. The treatments dealing with raw and unstable streambanks, for example, will dramatically reduce sediment to a natural background rate. The upland treatments dealing with road erosion control will also reduce sediment delivery to background rates.

The Mendocino RCD was awarded two additional §319(h) grants in FY 91:

Tomki Creek Implementation Project, Phase II — \$30,000

- This project continues treatments in the next highest priority sub-basins in the Tomki Creek watershed: Cave, Little, Long Branch, and Noname creeks. These streams are tributaries to the main stem of Tomki Creek. Treatment in these upland areas should be completed before more work is undertaken downstream in Tomki Creek.
- The project plan includes a variety of BMPs using the bioengineering approach. All the proposed techniques were designed by the SCS and local bioengineering experts, with input from the California Department of Fish and Game.

1 Ranking is based on factors dealing with location, severity of sediment loading, and landowner cooperation within the sub-basin. Each factor is scored from 1 to 3, with the total rating combining all three factors to determine priority. EPA Region IX has informed *News-Notes* that this system has been used as a model throughout the state as an effective means for targeting watershed areas to be acted on as funding is available.

2 Road associations are road maintenance groups of local private landowners who pool together funds to maintain roads with common access.

"Watershed Restoration: How to Heal the Land," a public outreach video series — \$18,000

- Technology transfer has always been an ongoing feature of the Tomki Watershed Project, which has been the site of numerous tours and demonstrations of various sediment control techniques.
- The Mendocino RCD will produce a 20-minute public education and information video based on the work that has been done on the Tomki Creek watershed. The video will provide information on the basics of watershed planning, typical problems, and types of BMPs used to treat coastal range watersheds. It will also provide an understanding of the institutional arrangements and funding considerations for such projects. The video will be targeted for the general public, and college and high school audiences.

Tom Schott, long-time SCS District Conservationist with the Mendocino RCD, made this comment to *News-Notes* as he reviewed the highlights of the Tomki Creek project:

Water quality problems take many different forms beyond traditional agriculture. In the West, some very unique resources like salmon are at risk. I hope SCS can continue to recognize these resources and value them the same way the local RCD and Tomki landowners have.

[For more information, contact Tom Schott, District Conservationist, USDA/SCS (Mendocino RCD), 405 Orchard Avenue, Ukiah, CA 95482. Phone: (707) 468-9223. FAX: (707) 462-1165.]

In New Jersey, Wildflowers Used to Clean Up Stormwater Nonpoint Source Pollution

A friendly correspondent from the far reaches of Mercer County, New Jersey, sent in the following dispatch concerning some awesome uses of wildflowers in stormwater/NPS control that we are delighted to pass on to our readers.

The Mercer County (New Jersey) Soil Conservation District has just completed a nonpoint source study concerning the establishment of wildflower cover in stormwater detention basins. This low-input alternative to turf reduces potential nonpoint source pollutants, such as fertilizers, herbicides, and insecticides from being introduced to an area directly linked to the local watershed. In addition, wildflowers provide a seed source and habitat for native songbirds. They are aesthetically pleasing and require only one to two mowings per year, much less than the six or more mowings required for standard turf. This reduces fossil fuel use and noise pollution and significantly reduces the annual cost of maintaining these stormwater management structures.

The results of the study showed proper seed mixtures, seeding rates, planting techniques, and even wildflower maintenance strategies. The overall objective was to demonstrate an alternative to maintaining costly turf basins while improving water quality and providing much-needed meadow habitat in suburban areas.

The study was made possible by EPA CWA §205(j) matching grant funds provided by the state of New Jersey. Copies of the study are available for \$10.00, postage included, by contacting the address below.

[For further information, contact Bill Brash, Mercer County Soil Conservation District, Attention: Wildflower Study, 508 Hughes Drive, Hamilton Square, NJ 08690. Phone: (609) 586-9603. FAX: (609) 586-1117.]

Austin Voters Place Nonpoint Source Prevention On May Ballot

EDITOR'S NOTE: We asked Bill Bunch, attorney for the Save Our Springs Coalition in Austin, to send us this article on the grass-roots environmental action that Austin residents are taking.

In Austin, TX, the Save Our Springs Coalition recently gathered 35,000 voter signatures to place an ordinance to protect the Barton Springs watershed on the city ballot. The S.O.S. ordinance may well be the first effort in the nation to adopt a nonpoint source pollution control ordinance by citizens' initiative.

The S.O.S. Coalition formed around the issue of protecting Barton Springs. The source of the springs, the Barton Springs Edwards Aquifer, is an EPA-designated "sole source aquifer" for approximately 30,000 residents of southern Travis and northern Hays counties. Barton Springs

provide a significant source of drinking water for Austin. The springs also provide recreation for city residents as they pour out into a 900-foot swimming pool in Zilker Park, a short distance south of the State Capital Building.

In 1990, the Texas Water Commission identified the Barton Springs Edwards Aquifer as the major aquifer in Texas most vulnerable to pollution. The thin soils, patchy vegetation, and rocky slopes of the central Texas hill country provide little opportunity for natural pollutant assimilation on the surface. Rainfall runoff enters the limestone aquifer through faults, caves and sinkholes. The open-channel, high-velocity flow characteristic of limestone aquifers allows very little opportunity for natural filtration in the subsurface.

Austin residents have known for many years that the watersheds contributing to the aquifer should be protected. The "Austin Tomorrow" Comprehensive Plan adopted unanimously by two city councils and planning commissions in the 1970s called for directing urban growth east of both the recharge zone and the contributing streams for Barton Springs. A series of watershed protection ordinances enacted in the 1980s sought to implement the watershed protection and growth management goals of the Austin Tomorrow plan. Austin's 1986 Comprehensive Watersheds Ordinance has been cited by many as a model, "cutting-edge" effort by a city at the forefront of environmental protection.

As in many communities, Austin's nonpoint source pollution control and growth management control efforts have been undermined by the influence of development interests. Austin, perhaps more than any other community, was targeted for high-risk savings-and-loan-backed real estate development in the early and mid-1980s. Development interests were very successful in writing exemptions and other loopholes in Austin's watershed protection measures. In fact, an October 1991 memo by city staff revealed that even after the 1986 ordinance was adopted, 87 percent of all development projects located in the Barton Springs contributing watersheds were exempt from the ordinance. Many of the remaining projects were granted variances to allow high-intensity urban development on top of the state's most vulnerable aquifer.

Learning from a history of broken promises by elected officials, a coalition of environmental leaders formed to draft their own ordinance for a citizens' initiative. The ordinance combines a "pollution prevention" performance standard with a design standard limiting impervious cover. The pollution prevention, or nondegradation, standard requires that there be no increase from pre-development conditions in the annual average loadings of several pollutants commonly found in urban runoff. In addition, impervious cover in the Barton Springs recharge zone is limited to no more than 15 percent of "net site area," which includes only the relatively flat uplands of a development tract. Impervious cover limits in the upstream contributing zone are set at 20 percent of net site area. The strict impervious cover limits recognize that structural controls alone cannot maintain water quality.

Two other important provisions of the citizens' ordinance address cleanup of already-developed areas and risks of catastrophic events. The city recently embarked on an urban watershed retrofit program intended to reduce nonpoint source pollution from existing development. Environmental leaders are concerned that the cleanup program will focus on expensive engineered controls when less expensive measures such as education, xeriscape programs, and incentives for limiting use of pesticides and fertilizers could provide greater water quality benefits at lower costs. The proposed citizens' ordinance requires that any funds spent on remedying existing NPS problems be spent in the most cost-efficient manner.

The proposed citizens' ordinance also calls for the city to develop a plan for minimizing risks of catastrophic spills of hazardous pollutants into the city's waterways. At present, no such plan exists, though truck and train traffic, pipelines, and other activities pose significant risks of major accidents.

A four-member majority of the seven-member city council has strongly resisted the citizens' initiative ordinance. On March 17, a state district judge ordered the city to place the initiative ordinance on the May 2 ballot. On March 19, the city appealed the order in an emergency hearing before the court of civil appeals. The order for the May 2 election was upheld.

That evening, the four-member majority again refused to place the item on the ballot. As a result, the city council may be held in contempt of court and the judge forced to call the election. The city may decide to appeal to the Texas Supreme Court. Meanwhile, developers in the Barton Springs watershed as well as the S.O.S. Coalition are gearing up for the campaign.

[For more information on the citizens' initiative, contact William G. Bunch, attorney for S.O.S., at 1800 Guadalupe, Suite C, Austin, TX 78701. For information concerning the Barton Creek watershed, contact George Cofer, programs manager for another organization, the Save Barton Creek Association, at 3306 Gentry Dr., Austin, TX 78746-5507. Phone: (512) 328-2481.]

McKnight Foundation Initiates Restoration of Mississippi River

The McKnight Foundation of Minneapolis, Minnesota, announced on March 16, 1992, a five-year, \$9 million commitment to protect and restore the Mississippi River. This new program will award grants to stimulate local activities that protect specific areas along the river. Grants will also be awarded to build local and national networks linking those with a stake in the river in collaborative efforts to protect it. The Foundation has indicated that it hopes its program will focus increased public attention on the river and will attract the resources of other individuals and organizations for restoring the health of the Mississippi. According to Cynthia Boynton, Foundation president:

The Mississippi River, with its headwaters in Minnesota, is one of America's most valuable resources. The state of the environment along the Mississippi River directly affects the quality of life of millions of people living in Minnesota and the rest of middle America. Yet studies show that long stretches of the river are suffering serious degradation.

The McKnight Foundation's commitment to address environmental issues along the Mississippi River is tied to its primary mission, which is to expand opportunities for people who are poor or disadvantaged. Michael O'Keefe, executive vice president explained:

The poorest communities are those that most often are forced to suffer the consequences of other people's hazardous wastes and pollution. Residents of endangered riverside areas frequently lack the resources to identify and stop threats to their portions of the river, whether the pollution originates in their own community or has its source many miles upstream. This new Foundation program includes an emphasis on helping people whose capacity to deal with environmental problems is limited by poverty or prejudice.

Dozens of agencies and groups relate to small stretches of the river, yet no single organization or network deals with the entire river. The Foundation will therefore also encourage collaboration among people and organizations concerned with or affected by the health of the Mississippi. O'Keefe continued:

The Foundation believes much can be accomplished if people work across state and other boundaries for the good of the entire river.

A Foundation-funded report by the Center for Urban and Regional Affairs (CURA) at the Humphrey Institute, University of Minnesota documents the environmental problems of the Mississippi. Citing the report, Mr. O'Keefe noted that environmental threats to one stretch of the river also affect areas elsewhere. He observed:

The number of ducks, geese and other waterfowl that migrate to Minnesota every spring are reduced by wetland losses in Mississippi and Arkansas. The widespread use of farm chemicals in Illinois and Iowa affects the river quality in Louisiana.

Program Components

The McKnight Mississippi River program has three components.

- **Mississippi River Network Grants** will create and strengthen networks of organizations active in protecting the river, particularly citizens' groups.
- **Demonstration Projects**, for which priorities will be announced later in 1992, will be intensive efforts developed and overseen by the Foundation to address specific environmental issues in selected 50- to 150-mile reaches of the river.
- **General Grants**, of up to \$50,000, will support a range of innovative projects that protect and restore the health of the Mississippi River and river communities in the ten states bordering the Mississippi.

Planning Grants Awarded

Four organizations have been awarded planning grants to assist the Foundation in developing strategies for protecting and restoring the Mississippi. The Foundation will use the results of these exploratory efforts to develop the networking component of the program and to select specific areas for demonstration projects.

- The Sierra Club Foundation, Madison, Wisconsin, was awarded \$20,000 to convene Mississippi River conservation groups and environmental organizations to assess the feasibility of creating a river-long environmental coalition.

- With an \$18,000 grant, the Freshwater Foundation, Wayzata, Minnesota will identify ways to improve protection of the Mississippi in Minnesota.
- The Iowa Natural Heritage Foundation of Des Moines, with a \$7,500 grant, will evaluate ways to improve protection of the Upper Mississippi National Wildlife and Fish Refuge which stretches from Lake Pepin to the Quad Cities (Rock Island and Moline, Illinois; Bettendorf and Davenport, Iowa).
- The University of Minnesota's CURA was granted \$17,850 to develop a strategy for helping riverfront cities protect the Mississippi environment.

The McKnight Foundation

The McKnight Foundation is a private charitable foundation with primary interests in expanding opportunities for people who are poor or disadvantaged by enhancing their capacity for productive living. The Foundation also seeks to strengthen community and community institutions, to enrich people's lives through the arts and to encourage preservation of the natural environment. The Foundation's primary geographic focus in its human services and arts grant-making is the state of Minnesota. Founded in 1953 and endowed by William L. and Maude L. McKnight, the Foundation has assets of approximately \$1 billion, and it paid grants totalling \$46.6 million in 1991. Mr. McKnight was one of the founders of the 3M Company, although the Foundation is independent of that corporation.

[For further information and for guidelines for the program of general grants for the Mississippi program contact the McKnight Foundation, Suite 600, TFC Tower, 121 South Eighth Street, Minneapolis, MN 55402. Phone: (612) 333-4220. Daniel K. Ray is program officer for the environment.]

Report Documents Insults To The Mississippi River

A McKnight Foundation-funded report by the Humphrey Institute's Center for Urban and Regional Affairs (CURA), laid the groundwork for the Foundation's new \$9 million, five-year program to protect and restore the Mississippi River. (See the preceding story.)

The report documents three primary insults to the Mississippi River: farm runoff, toxic emissions, and the loss of wetlands.

Some of the report's findings are:

- **Spills into the river.** Between 1982 and 1986 an average 116 spills into the river were reported annually. From 1987 to 1991, the yearly average was 246 and by October 1991, 378 spills had already occurred that year. Most spills are oils and chemicals, but sewage and saltwater have been reported.
- **Industrial and farm chemicals.** In a single year (1990) farmers spread more than 21 billion pounds of chemical fertilizers and pesticides on croplands in the region, and industries in the Mississippi River basin released 2.3 billion pounds of toxins into the environment. Some pollutants were discharged directly into the Mississippi, but others were carried by wind and soil erosion through underground streams and surface tributaries into the river.
- **Wetlands.** Since the late 1700s, the Mississippi River basin has lost 66 million acres of wetlands (an area the size of Colorado) largely as a result of agricultural drainage. Minnesota, Illinois, Arkansas, Mississippi and Louisiana are the states with the largest number of wetland acres lost. Iowa, Missouri, Illinois, Indiana, Ohio and Kentucky all have lost 76 to 90 percent of their original wetland acres.
- **Erosion.** Wind and water erosion swept 1,080 million tons of soil off cropland in the Mississippi basin during 1987. Losses that exceed five tons per acre are considered more than can be replaced by soil-building activities. Iowa, Illinois, Missouri, Kentucky, Tennessee, and Mississippi were above the five-ton replacement threshold in 1987. In Minnesota, 57 million tons of soil were lost, an average of less than three tons per acre.

*[Copies of the report, *Environment and the River: Maps of the Mississippi* by William J. Craig and William S. Anderson, are available upon request from the Center for Urban and Regional Affairs (CURA), Hubert H. Humphrey Institute, 301 19th Avenue South, Minneapolis, MN 55417.]*

Lake County, Ohio Conservation District Tackles Phosphorus Reduction To Lake Erie

Early in March, John Niedzalek, District Conservationist with the Lake County Soil and Water Conservation District, submitted a progress report to the District's eighteen member Water Quality Steering Committee.¹

Lake County is on the shores of Lake Erie some thirty miles east of Cleveland. Its 118 commercial nurseries occupying 4,600 acres justifiably earn the county the title of the "nursery capitol of Ohio." The District is the recipient of two nonpoint source-related grants. One for \$4,400 is EPA §319 money through Ohio's Department of Natural Resources (ODNR). The other, \$6,000 of state money from ODNR, is to implement a Watershed Watch program through eight local schools to monitor water quality along the Grand River stream corridor. The health of aquatic insects is being used as an indicator.

The District has also received a grant from the Ohio Farm Bureau to develop two conservation displays for exhibit at MetroPark's heavily used 200-acre Farm Park in Lake County. The District has established a goal in Lake County to reduce phosphorus from agricultural sources moving into Lake Erie by 1.8 metric tons over the next five years.

Niedzalek's water quality report succinctly details what has happened:

Some time ago Lake SWCD had a series of water quality meetings to address nonpoint pollution, especially regarding phosphorus. A committee was formed and helped to develop a phosphorus reduction strategy.

Since that time some significant progress has occurred that I would like to bring you up to date on:

1. *Lake SWCD received a \$4,400 grant to implement a phosphorus reduction program.*
2. *The grant is being used for a three-year program addressing fertility management and erosion control on nurseryland and implementation of erosion control and stormwater practices on development sites. Progress to date:*
 - a. *A joint Lake SWCD-Cooperative Extension project initiated for phosphorus reduction from nurseryland.*
 - b. *A fertility survey was developed and sent to all nurseries and fertilizer distributors.*
 - c. *A phosphorus fact sheet was developed and will be used by Extension and Lake SWCD at workshops.*
 - d. *News articles and information letters were sent to nurseries regarding cost-sharing for erosion control practices.*
 - e. *More than 3,000 linear feet of filter strips have been installed by Lake County nurseries.*
 - f. *A nursery field day is planned for April 28, stressing fertility management and erosion control practices.*
 - g. *Signed a working agreement with the City of Mentor to review development plans.*
 - h. *Completed review of more than 30 development plans for the City of Mentor and the county stressing erosion control practices and stormwater management.*
 - i. *Conducted two workshops for government officials and contractors concerning the need for erosion and stormwater practices in Lake County; more than 100 in attendance.*
3. *Initiated a resolution to state soil and water commission to revise the Ohio Revised Code to allow stricter enforcement of installation of erosion control practices on development sites.*

¹ The committee is composed of representatives of the county extension service, utilities and planning commission; municipal waterworks; the Health District; the SWCD Board and SCS representative as well as several commercial nurseries and farms.

4. *With assistance from county commissioners, a full-time pollution abatement specialist is now on our staff.*
5. *Lake SWCD helped sponsor a volunteer lake monitoring program occurring at the Holden Arboretum.*
6. *Lake SWCD recently received another grant to implement a watershed watch program for the Grand River. This is for middle schoolers.*
7. *A grant was recently received from the Farm Bureau to construct a conservation practice display at the MetroPark's Farm Park.*

EDITOR'S NOTE: A \$4,400 §319 grant is certainly putting a lot of things in motion in Lake County, Ohio, proving once again that locally is where the real action is.

[For further information contact: John Niedzalek, District Conservationist, Lake County Soil and Water Conservation District, 125 E. Erie St., Painesville, OH 44077. Phone: (216) 357-2730.]

Integration of Water Quality Programs Urged by EPA Headquarters Managers

In a recent (March 5, 1992) internal memorandum, four EPA Headquarters program managers from water planning, standards, nonpoint source control and permits programs jointly encouraged their regional counterparts to join forces to improve coordination and collaboration in the implementation of water quality-based programs.

The memorandum discussed recent EPA steps to promote holistic water quality protection within geographically targeted areas and asked the regional program managers to take specific steps to advance collaborative efforts. They stated:

Priority-setting and targeting are elements in each of your programs. The first step toward full program collaboration is to target at least a portion of each program's activities on the same waterbodies. The second step is to reinforce critical elements of the water quality management process through each program. This would lead, for example, to §314 grants that require watershed plans and TMDLs, storm water permits that are developed along with NPS activities under §319, and TMDLs that incorporate multiple point source permits and NPS reductions.

The memorandum was signed by Russ Kinerson, Chief, Exposure Assessment Branch, Office of Science and Technology; Jim Pendergast, Acting Chief, Water Quality and Industrial Permits Branch, Office of Wastewater Enforcement and Compliance; Bruce Newton, Chief, Watershed Branch and Dov Weitman, Chief, Nonpoint Source Control Branch, both of the Office of Wetlands, Oceans and Watersheds.

EDITOR'S NOTE: We couldn't agree more. The holistic management of water means not only full consideration of fish and wildlife habitat as well as water chemistry and point and nonpoint sources of water pollution, but also the utilization of the many sections of the Clean Water Act, integrated and focused on priority watersheds. This is a step in the right direction.

NPS Electronic Bulletin Board (BBS) News

NPS Bulletin Board Goes Esoteric!

EDITOR'S NOTE: This article was contributed by Burnell Vincent of EPA's Office of Research and Development. Burnell is the Technical Monitor of the new Research SIG.

A new Special Interest Group (SIG) has been added to the NPS BBS. BBS users are now invited to share progress reports on their favorite research projects in the nonpoint source world. All BBS users will be able to join the Research SIG simply by entering J 4 at the main board prompt.

In the beginning, the messages, bulletins, and files in the Research SIG will be mostly EPA's research as reported in the sometimes-stodgy ORD weekly activity reports. However, telephone challenges and copies of this newsletter are being delivered to activists in ORD's nonpoint source community, and engineers and scientists are being urged to personally direct

their research reports towards the users of this SIG. We have challenged them to provide phone numbers, dates and locations of projects, and their objectives and constraints, in the parlance of NPS decision-makers.

But more than just ORD activities, we are hoping to make the SIG a forum of exchange for state and local NPS programs, universities, even consultants! We invite reports of NPS-related research from all sources, and solicit queries about who's doing what and why. We have posted notice of the SIG on USDA's Telemail system and in each of several other media that have come to mind, such as the *Econotes* newsletter. Look forward to seeing your peers' thoughts on the screen!

As always, browsers and grazers are welcome, and commenters and uploaders are avidly encouraged.

To access the BBS, use your telecommunications software and modem (1200 or 2400 baud) to dial (301) 589-0205. For more information, use the COUPON in the back of this *News-Notes* to write for the free NPS BBS users' manual.

The Watershed Restoration Network: Combining New Movements with New Technology

EDITOR'S NOTE: The following article was submitted by Debra Caldon, one of the technical monitors for the BBS's new Watershed Restoration Network and former NPS coordinator in EPA Region IX.

The first thing we learned from the salmon was the importance of the watershed as the unit of perception.

— Freeman House, member, Mattole Restoration Council

With the advent of electronic meeting technology, the thrust of civilization can now occur without the factor of proximity.

— Lawrence R. Brilliant in *Computer Conferencing: The Global Connection*

The Mattole River is a small river by California standards. It flows from the coastal range of northern California 64 miles to the Pacific, one of the few remaining rivers with a pure genetic stock of king salmon, albeit nearly extinct. Beyond diversity and extinction, the Mattole River reflects a new approach to environmental protection. The river and its watershed are championed by the Mattole Restoration Council, a group of citizens that have taken the health of their watershed beyond 'concern' to *environmental action*. For twelve years the council has planned and instituted the watershed's restoration.

The council represents a wave in a broader movement within the minds of the public and government agencies—a growing trend toward self-help for ecological restoration in rural America. But what is even more promising is that all along the coast of California and in watersheds throughout the west, there are numerous people—professionals, watershed associations, non-profit organizations—all with the same goal in mind: restoring the ecological balance of the watershed in which they live.

The biggest needs these groups have, besides funding, are information and an avenue that enables them to learn from one another. Because of their often-remote locations or lack of access to institutional networks, most groups are fairly isolated from the normal routes of technical information transfer.

Enter the Watershed Restoration Network

The *NPS Bulletin Board System* allows anyone, anywhere, with a modem and a computer to access all kinds of information about nonpoint source pollution. This concept excited Mike Furniss, a USFS hydrologist and member of the Watershed Restoration Council, a non-profit organization of watershed management professionals who are scattered in numerous agencies, institutions, and fields across the western states (see article on the Council in *News-Notes* issue #17, December 1991).

*The Watershed
Restoration Network:
Combining New
Movements with New
Technology
(continued)*

As editor of the Watershed Management Council's newsletter, Mike was alert to the need for broader information exchange among those involved in management and restoration projects. As a hydrologist implementing restoration projects in the Six Rivers National Forest, he was acutely aware of the pitfalls and hard lessons he and others, like the Mattole group, had learned from their projects. Mike felt a Special Interest Group (SIG) Forum on the *NPS BBS* would encourage the sharing of this type of information between professionals and lay people—hence the Watershed Restoration Network was conceived. EPA's Watershed Branch in Washington, D.C. shares this vision for promoting grass-roots restoration and provided financial support for the endeavor.

The Watershed Restoration Network (WRN) will be a feature of the *NPS BBS* dedicated to watershed management and restoration. Specific topic areas include: monitoring information, project summaries, fisheries improvement approaches, shareware programs for watershed applications, grants availability, and newsletters from restoration groups. The WRN will use the *BBS's* message and bulletin functions to enable interested folks to trade ideas, put out calls for assistance, and stay in touch with each other.

The WRN team will be developing a brochure to reach target groups—local watershed associations, nonprofit organizations, fisheries groups, etc.—who may be interested in using and sharing this information. We expect to beta-test the system sometime in early spring. If you are interested or have information to share, contact Mike Furniss through the *NPS BBS* (leave a message on line for Michael Furniss) or call him at (707) 441-3551. Or contact Debra Caldon (510) 843-5397.

Watch *News-Notes* and the *BBS* for announcement of WRN's official opening.

Fish Consumption Advisory SIG Reopens

The Fish Consumption Advisory Special Interest Group (SIG) established by EPA's Risk Assessment and Management Branch has reopened on the *NPS BBS*. All *BBS* users now have immediate access to the SIG (formerly, users wanting to join the SIG had to request membership). There is also a manual now available specifically for users of the Fish Consumption SIG.

The purpose of the Fish Advisory SIG is to promote the exchange of fish advisory information among federal agencies, state health departments, state fish and game services, state water pollution control agencies and the public.

The Fish Consumption SIG's primary feature is a database that contains a bibliography of fish advisory-related reports, a table of existing fish advisories/bans for each state, and the names and phone numbers of colleagues who can provide additional information.

The table of existing fish advisories contains the following information:

- chemical of concern
- nature of the advisory (for the general public, a subpopulation, or commercial)
- common name of the species of fish the advisory covers
- name of the waterbody
- geographical extent

The database of fish advisories and bans can be searched for specific information. One possible way to search the database is to request the number, location and type of fish advisories in a particular state. A second possibility includes the number and location of all the fish advisories that have been issued in the United States for a specific contaminant such as chlordane.

The bibliography can be searched by title, author, and keywords. When possible, contact names, phone numbers, and addresses are provided for the listed documents and advisories.

Messages, bulletins and news articles allow users to share fish advisory-related information and publicize fish advisory-related activities. Users can exchange computer files, including databases, electronic spreadsheets, word-processing files, and software.

To access the *NPS BBS*, you will need a personal computer, telecommunications software (such as Crosstalk or ProComm), a modem (1200 or 2400 baud) and a phone line that will handle modem communications. The phone number of the *BBS* is (301) 589-0205. The Fish Consumption SIG can be accessed by typing J 2 at the 'Main Board Command?' prompt. We invite everyone to take a look at the database and welcome any suggestions on how to improve its use.

A copy of the Fish Advisory SIG and database manual can be downloaded, or it can be mailed to you. If you would like a copy, or if you have information to contribute to the Fish Advisory SIG, contact Alison Greene at (FTS/202) 260-7053.

Right On, Kansas! A BBS First

EDITOR'S NOTE: We recently logged on to the *NPS BBS* Waterbody System Support SIG to find the following message from Bill Cooter of RTI, who is responsible for Waterbody System (the Reach file) user support.

Date: 04-06-92 (09:54)	Number: 178 of 181
To: ALL	Refer#: NONE
From: BILL COOTER	Read: (N/A)
Subj: RIGHT ON KANSAS!!	Status: PUBLIC MESSAGE
Conf: WATERBODY (3)	Read Type: GENERAL (+)

Congratulations to the State of Kansas! They recently used the BBS to upload the final versions of their PC WBS files to start the series of validation checks needed to add this new information to the national WBS database. Kansas broke the whole thundering herd of about 15 data files into three zipped files and one spillover file. They started all the upload filenames with a KS (e.g., KSWBS5.ZIP) and then notified us that the files were on the board. States uploading their WBS files should also mail or FAX us the submittal form, as we would like to leave a paper trail that we are, in fact, validating the set of files each State really wants us to work with. This system works very well. If other States want to use this technique — RIGHT ON! You can upload files to our WBS SIG or to the main *BBS* section (uploads to our own SIG preferred). Leave me a message telling me that you have uploaded the file. And once again, good work KANSAS!!!

[Jack Clifford of the Monitoring Branch has informed us that the necessary submittal form can be downloaded from the SIG, filled out, signed, and mailed or faxed in. —eds.]

Video Review

Drinking Water Video Now Available

A new 27-minute video on drinking water issues is available from the League of Women Voters of Michigan. "Drinking Water: Quality on Tap" comes with a 46-page study guide to help stimulate discussion and 100 informational brochures for handouts. The video program is ideal for libraries, schools, community groups, environmental organizations, water utilities, and government agencies—anyone who wants an easy-to-understand discussion of drinking water issues. Viewers learn where drinking water comes from, how it gets treated and delivered, how government regulates drinking water, what types of home water treatment devices are available, and how citizens can get involved. Gary Sandy from the television series "WKRP in Cincinnati" is host for the program.

The video arrives in time for National Drinking Water Week (May 3-9, 1992) and Clean Water Month (October 1992), great times to focus on the issue of safe drinking water.

Funding for production and promotion of "Drinking Water: Quality on Tap" was provided by the U.S. EPA and the W.K. Kellogg Foundation.

To order a copy of the video, with accompanying educational materials, send a \$40 check to: League of Women Voters of Michigan, 200 Museum Dr., Lansing, MI 48933.

[For more information, contact Cindy Sanford, LWVEF, 1730 M St., NW, Washington, DC 20036.]

Announcements

EPA Develops 319 Grant Tracking System

EPA's Assessment and Watershed Protection Division has recently developed a computer-based tracking system for regions and states to use for their 319(h) nonpoint source grants projects. The system tracks the essential programmatic, financial, task, and milestone information that managers need to determine a project's progress and effectiveness.

The system is located on the EPA mainframe and can be accessed via a PC with a modem. Users must have an approved user ID and account, which can be obtained by calling the NTIS/NCC coordinator at (703) 487-4808.

A unique feature of the system is the capability for any user to browse the database. This browse capability gives the system a technology transfer potential among regions and states.

A users' group consisting of regional and state representatives will monitor the system's performance, discuss and review proposed enhancements, and provide an ongoing framework for overall management of the system.

[For more information, contact Don Kunkowski, AWP, WH-553, U.S. EPA, 401 M St., SW, Washington, DC 20460.]

May Is American Wetlands Month

Following the success of the first American Wetlands Month in 1991, American Wetlands Month 1992 is the continuation of a long-term effort to support the nation's wetlands and the organizations that work year 'round to protect them. EPA and the Terrene Institute have formed a partnership to establish May as American Wetlands Month. Both organizations fully encourage this effort, but budget and staff limitations dictate that other organizations join in supporting the development of American Wetlands Month. Information packets have been sent to organizations across the country. The packets request sponsorship in exchange for the potential benefits the programs offer in terms of increasing public awareness and appreciation for the values and functions of wetlands.

[For more information, contact the Wetlands Hotline (800) 832-7828 or Jennifer Paugh, Terrene Institute, (202) 833-8317.]

319(h) Wetland/Riparian Projects Summary Issued

A brief (55-page) summary document of FY 1990 and 1991 section 319(h) projects that contain wetland or riparian components is now available. The report is organized into five sections: restoration and protection projects; project administration, education and technical training; constructed wetlands projects; and other projects of interest. To obtain a copy, please contact the U.S. EPA Wetlands Hotline at 1-800-832-7828.

Loren Eisley Author of The Starfish Parable

EDITOR'S NOTE: Roger Dean, NPS Coordinator in EPA's Region VIII, writes to inform us that the *Starfish Parable*, our Commentary for Issue #19 (March 1992) was originally published in Loren Eisley's book *The Star Thrower*. Thanks for the information, Roger.

Datebook

This DATEBOOK has been assembled with the cooperation of our readers and the Conservation Technology Information Center, 1220 Potter Dr., Rm. 170, West Lafayette, IN 47906-1334. If there is a meeting or event that you would like placed in the DATEBOOK, contact the *NPS NEWS-NOTES* editors. Due to an irregular printing schedule, notices should be in our hands at least two months in advance to ensure timely publication.

MEETINGS AND EVENTS

1992

April

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- 26-29 *1st International Conference on Groundwater Ecology*, Tampa, FL. Contact: American Water Resources Assoc., 5410 Grosvenor Lane, #200, Bethesda, MD 20814-2192. (301) 493-8600. FAX 493-5844. Sponsored by U.S. EPA, the American Water Resources Association, and the Ecological Society of America. Many registration options available; register by 3/27 for lowest cost. Call Sheraton Grand Hotel (813) 286-4400 for rooms. Sessions include: EPA's Perspective, Groundwater Ecology Overview, Demonstrating the Ecological Connectivity Between the Channel and the Floodplain Aquifers in Gravel-Bed Rivers, Groundwater Faunas at Riverine Sites Receiving Treated Sewage Effluent, etc.

May

-
- 6-8 *Enhancing the States' Lake Management Programs: Strengthening State and Local Interactions*, Chicago, IL. Contact: Bob Kirschner, Northeastern IL Planning Comm., Natural Resource Dept., 400 W. Madison St., Room 200, Chicago, IL 60606. (312) 454-0400. Topics planned include: Building links among state lake associations and environmental agencies, state lake association roles in developing state-sponsored lake programs, integrating state and local lake and watershed protection programs. Conference is sponsored by the U.S. EPA, Clean Lakes Program, Northeastern Illinois Planning Commission, and the North American Lake Management Society.
- 9-13 *Sixth National Outdoor Action Conference*, Las Vegas, NV. Contact: National Well Water Assoc., 6375 Riverside Dr., Dublin, OH 43107. (614) 761-1711.
- 19-22 *Successful Mine Reclamation: What Works*, Reno, NV. Contact: Reclamation Conference Chair, NV Mining Association, 5250 South Virginia St., Suite 220, Reno, NV 89502. (702) 829-2121. FAX 829-2148. Success stories, regulatory requirements, innovative field practices, research and development, post mining land uses, cyanide management, reclamation permitting, acid mine drainage, revegetation, post-mine hydrology, mine tours.
- 27-28 *West Virginia Clean Lakes Workshop*, Parkersburg, WV. Contact: Lisa Grayson, JT&A, 1000 Connecticut Ave., NW, Washington, DC 20036. (202) 833-3380. FAX 466-8554. The first day of the workshop will be held at the Holiday Inn in Parkersburg. On the second day, participants will be taken by bus to nearby Mountwood Park—the site of WV's first federally funded Clean Lakes Project. Session topics will include lake restoration techniques, watershed management, citizen participation, activities of the North American Lake Management Society, specific WV lake projects, and an overview of EPA's Clean Lakes Program. The workshop will also include exhibits featuring services and equipment available for lake projects.
- 27-29 *Forest Practices and Water Quality Workshop*, Green Bay, WI. Contact: Edward Eckert, Forest Resource Planner, Forest Management Division, MI Dept. of Natural Resources, PO Box 30028, Lansing, MI 48909. (517) 335-3351. Sponsored by the Lake States Forestry Alliance. Purpose: To develop ways of properly addressing the intent of the CWA as directed at timber harvesting and its effects on groundwater and surface water quality in MI, MN, WI.
- 28-30 *Clinch-Powell River Basins Conference*, Harrogate, TN. Contact: Andrew Barrass, TN NPS Program, 150 9th Ave. N, TERRA Bldg. 5th Floor, Nashville, TN 37243-1534. (615) 741-7883. FAX 741-4608. Bi-state conference (VA and TN) on protecting the natural resources of the area.

1992

May

- 31-6/3 *Control of Wet Weather Water Quality Problems*, Indianapolis, IN. Contact: James Courchaine, DEP, 1 Winter St., Boston, MA 02108. (617) 292-7528.

June

- 3-4 *Urban Runoff Training Workshop*, Chicago, IL. Contact: Lisa Grayson, / Harvey Olem, Terrene Institute, 1000 Connecticut Ave., Suite 802, Washington, DC 20036. (202) 833-3380. The purpose of this workshop is to address the widespread need for information and material on local stormwater quality program implementation. Topics will be resource protection, education and training efforts as program components, and urban runoff research. The material covered in this workshop will relate stormwater quality program implementation to §319 opportunities and NPDES. In addition, the material will help states develop their coastal NPS programs. The workshop is sponsored by EPA Region 5 Water Division, Terrene Institute and EPA's Center for Environmental Research Information.
- 15-17 *Remote Sensing for Marine and Coastal Environments*, New Orleans, LA. Contact: Nancy Wallman, ERIM/Marine Environment Conf., PO Box 134001, Ann Arbor, MI 48113-4001. (313) 994-1200. Theme: "Needs and Solutions for Pollution Monitoring, Control and Abatement."
- 15-17 *Uncovering the Hidden Resource: Groundwater Law, Hydrology, and Policy in the 1990s*, Boulder, CO. Contact: Katherine Taylor, Campus Box 401, Boulder, CO 80309-0401. (303) 492-1288. Meeting will be held in conjunction with the Rocky Mountain Groundwater Conference and will be addressed both legal and engineering issues.
- 24-26 *Partnerships Protecting Mississippi River Resources*, St. Peters, MO. Contact: Ross Braun, / Dave King, Soil and Water Conservation Society, West Northcentral Region, (314) 724-2237.
- 25-26 *Environmental Planning & Growth Management Symposium: "Environmental Issues and Policies in Coastal Georgia"*, St. Simons Island, GA. Contact: David Kylar, Coastal GA Regional Development Center, PO Box 1917, Brunswick, GA 31521. (912) 264-7363. FAX 262-2313. Rooms and meals available at nominal cost. Two-day symposium covering a wide variety of resources, programs, and issues: wetlands, water quality, endangered species, marshland protection, erosion control, environmental audits.
- 28-7/1 *Urban and Agricultural Water Reuse*, Orlando, FL. Contact: Salvadore D'Angelo, Boyle Engineering Corp., 320 East South St., Orlando, FL 32801. (407) 425-1100.
- 28-7/2 *National Forum on Water Management Policy*, Washington, DC. Contact: Martin Reuss, HQ, US Army Corps of Engineers, Office of History, Kingman Bldg., Fort Belvoir, VA 22060-5577. (703) 355-3560.

July

- 23 *12th Milan No-Till Field Day*, Milan, TN. Contact: John Bradley, Superintendent, Milan Experiment Station, 205 Ellington Dr., Milan, TN 38358. (901) 686-7362. The largest event of its kind. In 1991, 6,000 people from 31 states and 16 countries attended. Features tours, demonstrations, research reports, educational booths and equipment displays.

August

- 2-5 *Water Forum '92: Saving A Threatened Resource*, Baltimore, MD. Contact: ASCE Conference Dept, 345 E. 47 St, New York, NY 10017. (800) 548-ASCE.
- 9-12 *Resource Management in a Dynamic World: 47th Annual Meeting of the Soil and Water Conservation Society*, Baltimore, MD. Contact: Tony Vrana / Tim Kautza, SWCS, 7515 Northeast Ankeny Rd., Ankeny, IA 50021-9764. (515) 289-2331. Emphasizes the role human resources play in using and managing natural resources. Three sub-themes are: environmental values, economics, and policy.

1992

September

- 1-3 *3rd National Meeting: Water Quality Standards for the 21st Century, Las Vegas, NV. Contact: Patti Morris, Office of Science & Technology, U.S. EPA (WH-585), 401 M St., SW, Washington, DC 20460. (202) 260-9830. Theme: Fiscal Year 1994-1996 Water Quality Standards Priorities.*
- 13-17 *National RCWP Symposium: Ten Years of Controlling Agricultural Nonpoint Pollution: The RCWP Experience, Orlando, FL. Contact: Lisa Grayson, Terrene Institute, 1000 Connecticut Ave., NW, Suite 802, Washington, DC 20036. (202) 833-3380. Symposium offers the opportunity to present and discuss the outcome of projects related to the 10-year experimental Rural Clean Water Program. Hosted by the South Florida Water Management District with U.S.EPA, ASCS, SCS, and Extension Service.*
- 13-17 *The Year 2000: Will We Be Ready Technically? Socially? Politically? 1992 Annual Meeting of the American Fisheries Society, Rapid City, SD. Contact: Bud Griswold, National Sea Grant Program, 1335 East-West Highway, Room 5216, Silver Spring, MD 20910. (301) 427-2431.*
- 13-17 *Fourth International Wetlands Conference, Columbus, OH. Contact: William Mitsch, School of Natural Resources, OSU, 2021 Coffey Rd., Columbus, OH 53210. (614) 292-9774.*
- 20-24 *Surface Water Quality and Ecology: 1992 Annual Water Environment Federation Conference, New Orleans, LA. Contact: Maureen Novotne, WEF Technical Services, 601 Wythe St., Alexandria, VA 22314-1994. (703) 684-2400.*

October

- 1-2 *3rd Annual Utah Nonpoint Source Water Quality Conference, Ogden, UT. Contact: Jack Wilbur, Utah Dept. of Agriculture, Environmental Quality Section, 350 N. Redwood Rd., Salt Lake City, UT 84116. (801) 538-7098. Theme: Urban Runoff and Stormwater Management.*
- 17-22 *Interdisciplinary Approaches in Hydrology and Hydrogeology, Portland, OR. Contact: Helen Klose, American Instit. of Hydrology, 3416 University Ave., SW, Minneapolis, MN 55414-3328. (612) 379-1030.*

November

- 24-25 *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.*

December

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

Calls For Papers — Deadlines

1992

May

- 29 *Symposium on Geographic Information Systems and Water Resources, March 14-18, 1993, Mobile, AL. Contact: AWRA, 5410 Grosvenor Lane, Suite 220, Bethesda, MD 20814-2192. (301) 493-8600. Abstracts due by May 29, 1992.*

June

- 15 *First International IAWPRC Specialized Conference on Diffuse (Nonpoint Source) Pollution: Sources, Prevention, Impact and Abatement, September 20-24, 1993, 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. Submit abstracts by June 15, 1992. Topics: pollutant loads and impact of non-urban land use activities, atmospheric deposition and surface water, alternative policy instruments, etc. Call or write for complete list.*

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 ground waters. NPS pollution is normally associated with agricultural, silvicultural, mining and urban runoff. Hydrologic modification is a form of NPS pollution which often adversely affects the biological integrity of surface waters.

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