



Nonpoint Source

News-Notes

Commentary and a Senator's Point of View. . .

As this issue of Nonpoint Source *NEWS-NOTES* is being prepared, State water quality agencies are in the process of:

- reexamining their NPS Assessment Reports to confirm significant NPS loadings and hot-spots;
- developing priorities;
- determining individual projects' readiness to proceed;
- calculating State "match" requirements and availability;
- determining public education needs, citizen involvement strategies and potential participation by conservation districts, environmental groups, and activities financed by the Department of Agriculture and other "non-water" agencies; and
- setting monitoring protocols to evaluate BMP effectiveness and water quality.

States are conducting all of this activity in the interest of compiling and submitting their first NPS grant applications under new Congressional funding of Section 319 of the Clean Water Act.

Most importantly amidst all of this effort, States will have to ascertain how new, Federally-funded activities will further their existing NPS control programs and longer-term NPS management strategies. The editors of *NEWS-NOTES* have been impressed with the extent of existing State NPS programs, much of it with Section 208 beginnings of fifteen years ago. The nonpoint source control programs of Section 319 are really the "new kids on the block." States now must integrate the new 319 requirements with their current and future NPS pollution control efforts. At the same time, States will have to determine how to use Federal nonpoint source dollars to move their programs forward in the most effective manner.

Furthermore, States can be assured that this FY 1990 funding cycle will not be the end of Congressional attention to the NPS program of the Clean Water Act. Evidence of this attention can be found in an October 30, 1989 letter written by Tennessee Senator Jim Sasser, Chairman of the Senate Budget Committee, to Commissioner J. W. Luna of the Tennessee Department of Health and Environment:

As you know, addressing the threat to water quality posed by nonpoint sources of pollution is one of the most pressing environmental problems facing our country today. EPA Director William Reilly recently noted that nonpoint pollution control has been one of the greatest failures of environmental policy in the United States. That comes as no surprise to us here in Tennessee where Federal, State and local officials have worked for several years to battle the problems connected with nonpoint source pollution.



Commentary and a
Senator's Point of View
(Continued)

Even in this time of tight Federal budgets, Congress has been able to provide \$40 million for nonpoint control for fiscal 1990. We all realize this is a very small step on a long road and I believe we in the Congress are in agreement that more will be needed in the coming years.

As for its current commitment to addressing NPS pollution, Congress has provided that State applications for FY 1990 funding should be filed by January 16, 1990 and that EPA awards should be made to the States no later than March 1, 1990.

Headquarters Notes

Volunteer Monitors Meet in New Orleans

One hundred volunteer water quality monitors and volunteer program managers, together with State and EPA water quality executives, met in New Orleans for the 2nd National Citizens Volunteer Monitoring Conference early in December.

The Conference was jointly sponsored by EPA's Office of Water Regulations and Standards, Office of Marine and Estuarine Protection, and Gulf of Mexico Program. It explored a wide range of topics, including methods of:

- forging links between State water quality agencies and voluntary monitoring organizations;
- establishing sound quality assurance/quality control plans for voluntary data collection; and
- organizing and implementing volunteer debris cleanup activities.

Participants at the conference praised the progress made so far in publicizing the contribution citizen volunteers can make to enhancing our knowledge of water quality conditions nationwide. A number of States already use volunteer data for such activities as preparing Section 305(b) reports and NPS assessments. In addition, several guidance documents are being prepared under grants from EPA to further encourage State use of volunteers to gather data. Yet, the message was also clear that much work remains to be done to gain wider acceptance of volunteer-collected data.

Recommendations to EPA included fostering improved communications within EPA, among Federal agencies, and with the States on the value of well-managed volunteer programs; inviting citizen volunteer groups to participate in different forums such as NPS meetings and conferences of the North American Lake Management Society (NALMS); and sponsoring smaller regional workshops—in addition to more national conferences—to allow citizens groups to share “nitty-gritty” details on how to plan, implement, and manage successful programs.

A number of such activities are already underway to promote citizen volunteer monitoring. EPA and the Alliance for the Chesapeake Bay are currently developing a handbook for State managers interested in setting up volunteer monitoring programs. EPA is also working with NALMS to develop a methods manual for lake volunteer monitoring. Citizen monitoring will also be a focus of activities to celebrate the 20th anniversary of Earth Day in April 1990.

Proceedings of the meeting and an updated Directory of National Citizens Volunteer Environmental Monitoring Programs are being prepared by EPA and Rhode Island Sea Grant, to be published in the near future. NPS NEWS-NOTES will let you know as soon as these and other citizens monitoring publications become available.

Volunteers
(Continued)

Volunteers Monitor Lakes in Illinois

A good example of volunteers in action is found in Illinois, where volunteers monitor lake water quality to furnish essential data and reports, according to Amy Burns, Coordinator of the Statewide Illinois EPA volunteer lake monitoring program. Initiated in 1981, the program is completing its ninth monitoring season with a total of nearly 175 lakes registered by 225 volunteers as of 1989. Data furnished by the volunteers are used in Section 305(b) biennial reports and in U.S. EPA Clean Lakes projects.

Volunteers measure lake water transparency or clarity by noting the depth to which a black and white Secchi disc is visible. Readings are taken twice monthly during late spring, summer, and early fall, and reported to the State EPA. Instructions to the volunteers recommend 12 reading reports during the season, although many monitors take more readings. These data are used in the State's statistical and lake trends reports.

In addition, volunteers collected water samples on 49 lakes that are analyzed in the Illinois EPA laboratory.

Data from the State volunteer lake monitoring program were used in developing trophic trend data for the Illinois 1986-87 water quality report.

[For more information on Illinois contact: Amy Burns, Statewide Volunteer Lake Monitoring Program Coordinator, Illinois EPA Division of Water Pollution Control, No. 15, 2200 Churchill Rd., P.O. Box 19276, Springfield, IL 62794-9276. For more information on EPA's citizen monitoring programs contact: Alice Mayo, Assessment and Watershed Protection Division (WH-553), U.S. EPA, 401 M St, S.W., Washington, DC 20460. Phone: (202/FTS) 382-7018.]

State Legislators Meet on State NPS Funding

The National Conference of State Legislatures (NCSL) held a workshop for State Legislators on *Financing Water Quality: Nonpoint Source Legislative Options* at the Grand Hyatt Hotel in Washington, DC on December 13, 1989.

Larry Morandi, NCSL's staff person for Energy, Science and Natural Resources, together with Tony Hutchison, staffer for Fiscal Affairs, and George Ames of the Council of Infrastructure Financing Authorities, led the discussion of State legislative options to finance NPS water pollution control programs. Topics covered included fees, dedicated taxes, revenue bond proceeds and State revolving funds.

Among the workshop highlights were presentations on creative and successful financing mechanisms for NPS programs across the country. The following are a few selected examples:

Cherry Creek Reservoir, Colorado

Morandi and Hutchison presented a case study involving the Cherry Creek reservoir in Colorado. A special district, the Cherry Creek Basin Water Quality Authority, was created to reduce water degradation in the reservoir, now primarily a recreational facility. The Authority has several revenue-raising tools: property tax assessments at 1/2 mill for all property within the boundaries of the Authority; developer impact fees assessed at the rate of \$280 per acre of graded land in the basin; and annual reservoir user fees at \$3.00 per vehicle. The control of septic tanks and the financing and management of nutrient runoff into the reservoir is a problem yet to be resolved.

Iowa Groundwater Protection Fund

Iowa's Representative Ralph Rosenberg presented legislation that created that State's Groundwater Protection Fund. Iowa sought an identifiable and dependable special fund to handle, on a long term basis, a variety of environmental management tasks. As created, the

State Legislators
(Continued)

fund undertakes environmental protection in areas of solid waste, underground storage tanks, agriculture chemical management, and household hazardous wastes.

Sources of fund income include: a per ton fee on solid wastes, ranging from \$1.50 per ton in FY 1989 to \$3.00 projected for FY 1992; an annual fee of \$25 per retailer of household hazardous products; a fee of \$0.75 per ton of nitrogen (based on an 82% solution); a pesticide registration fee of \$250-\$3,000, based on annual Iowa sales; an annual pesticide dealer's license also based on annual Iowa sales, with a minimum fee of \$25; and an annual underground storage tank fee of \$65 (FY 1990). These fees are supplemented by Iowa's Federal court-directed oil overcharge refunds which will be available for the next few years. The fund has been in existence for three fiscal years. Over that period it has had an income totalling \$26.3 million. FY 1990 income is projected, by fee source, as follows:

Storage Tanks	\$ 1,034,492
Household Hazardous Waste	300,000
Ag. Chemical Management	2,100,000
Solid Waste	2,937,972
Oil Overcharge Refunds	3,300,000
Beginning Balance	<u>6,159,158</u>
TOTAL	\$ 15,831,622

Florida Stormwater Management and Environmental Education Trust Fund

Florida Senator Tom McPherson reported on his State's stormwater management legislation, related water management districts, and legislation to "undo" the Corps of Engineers channelization of the Kissimmee River and return it to a more natural, grassy, meandering state. Such a change would filter out the wastes from large-scale agriculture (e.g., pesticides, fertilizers and soil sediments), protecting and restoring Lake Okeechobee, its fish and wildlife, and Everglades National Park.

He also described the establishment of an Environmental Education Trust Fund, financed by three new tax sources: 2.5% of salt water fishing licence fees earmarked for aquatic education; 50% of the manatee protection personalized license plates; and 25% of the interest earnings on the balance between \$30 million and \$50 million contained in the coastal protection trust fund for oil spill cleanup. These revenue sources are expected to yield between \$6-8 million per year. The revenue is to be used to make competitive grants to applicants proposing an environmental education project. The Florida Advisory Council on Environmental Education oversees the grant program.

Puget Sound, Washington NPS Financing and Guidebook

Laurel Andrews of Apogee Research, Inc., informed the group of the work her firm has done for the Puget Sound Water Quality Authority to provide for Nonpoint Program Finance for the Puget Sound Region of Washington State.

The 1989 Puget Sound Plan contains 13 programs to be implemented by State and local governments, including monitoring, research, education, nonpoint, stormwater, and point source management, as well as wetlands protection. The planning region includes all or part of twelve counties draining into Puget Sound.

The costs of implementation now and in the future are estimated to be:
(all values in 1989 dollars)

1989 Expenditures	\$ 15 million
1994 Expenditures	54 million
Fully Implemented Plan in 2005, annually - at least	\$109 million

State Legislators
(Continued)

Local government has a significant implementation role, responsible for 44% of program costs in 1994, and 70% of the fully implemented program's costs.

The Authority has prepared a *Local Government Water Quality Finance Guidebook* to assist local governments considering implementation and financing options.

The *Guidebook* recommends creating local public utilities to deal with new local management requirements: stormwater management, on-site system (septic tanks) maintenance, and certain other water quality functions. Such utilities can be operated either by local governments, or by special districts, and can levy taxes or other charges for services.

The other recommended methods for local financing of plan implementation are State and Federal grants and loans. Six other options are listed and examined in the *Guidebook*—bonds, permit fees, fines and penalties, special assessments, private expenditure in lieu of revenues, and local tax revenue.

At the opening of the Workshop, Geoffrey Grubbs, Director of EPA's Assessment and Watershed Protection Division, which administers the Federal NPS Management Program, urged States examining options for financing NPS control to:

look broadly at the total programs and resources within your State government now and see how these ongoing efforts can fit in with the control of nonpoint sources of water pollution and the protection of your wetlands, marshes, lakes and ground-water resources.

He referenced State programs for subdivision control, pesticide, fertilizer, solid and hazardous waste control and State agriculture's soil conservation and extension services as examples of potential NPS program integration. Grubbs also suggested the importance of State stormwater management legislation and the clear and conscious inclusion of NPS Management Program implementation into the State's revolving loan fund enabling legislation.

Workshop proceedings are being prepared. *NEWS-NOTES* will advise you of its availability in a future issue.

[For more information contact: Larry Morandi, National Conference of State Legislatures, 1050 17th Street, Suite 2100, Denver, CO 80265. Phone: (303) 623-7800.]

How USDA's Water Quality Initiative Helps State NPS Programs

Under the USDA Water Quality Initiative (*NEWS-NOTES*, December, 1989), three agencies are now targeting educational, technical and financial assistance efforts to address ground and surface water quality problems throughout the U.S.

Currently, the Cooperative Extension Service (CES) and the Soil Conservation Service (SCS) are developing demonstration projects in CA, FL, MD, MN, NE, NC, TX and WI. In addition, SCS is implementing 37 "Hydrologic Unit Area" project throughout the country. The Agricultural Stabilization and Conservation Service (ASCS) is providing cost-share funds for both of these projects and will also be providing financial assistance to farmers through other Water Quality Special Projects.

These efforts aim to demonstrate the water quality benefits of known best management practices (BMPs), provide incentives for their voluntary adoption by farmers to control NPS pollution, and further State efforts to meet water quality standards.

State water quality agencies can contact their State-level counterparts in CES, SCS, and ASCS to get involved and become familiar with these current water quality projects. "Many of the projects need a strong monitoring and evaluation component; therefore, States could provide

USDA's Water Quality (Continued) technical expertise and financial assistance to assure greater likelihood of success in achieving the projects' water quality objectives," said Catherine Long of EPA's Office of Policy, Planning and Evaluation.

In addition, in the next couple of months, the States are expected to work with CES, SCS and ASCS to select top priority watersheds for inclusion in the 1991 USDA water quality programs. Long noted that "active involvement by the State water quality agencies is crucial, not only to broaden State abilities to control agricultural NPS contamination, but also to avoid unnecessary duplication of effort and expenditure of scarce resources."

In addition to the USDA programs, many informational resources are available on agricultural BMPs that can be integrated into State NPS efforts. SCS recently completed a literature review on BMPs to control nutrient and pesticide contamination which it is using to develop State-level field office technical guides on agri-chemical practices. EPA also has published many useful manuals to assist States in establishing NPS priorities, developing incentive programs, and integrating with USDA conservation programs. These manuals include: *Setting Priorities: The Key to Nonpoint Source Control*; *Selecting Priority Nonpoint Source Projects: You Better Shop Around*; *Interfacing Nonpoint Source Programs with the Conservation Reserve: Guidance for Water Quality Managers*; and *Share the Costs—Share the Benefits* (draft), among others.

[For more information on USDA's Water Quality Initiative Programs and the referenced publications contact: Catherine Long, Water Quality Branch, OPPE (PM-221), U.S. EPA, 401 M St., S.W., Washington, DC 20460. Phone: (202/FTS) 382-2756. FAX: (202) 252-0780.]

USDA Initiates Integrated Crop Management

The Agricultural Stabilization and Conservation Service (ASCS) has initiated a new practice, SP53, Integrated Crop Management, under its Agricultural Conservation Program (ACP). This practice is aimed at demonstrating the use of crop management measures that minimize pesticides and nutrient use without reducing farm income. ASCS will administer the program with technical assistance from other USDA agencies and private consultants.

[For more information contact: ACP Coordinator in each State ASCS office or Mike Lingsenbigler, ASCS/USDA, (202) 447-6853. For more information within EPA contact: Dov Weitman, Acting Chief, Nonpoint Sources Control Branch, (202/FTS) 382-7085.]

Notes from EPA's Regions

Region VIII - Control of Agricultural Chemicals through Program Integration

State environmental managers interested in developing new approaches to controlling agricultural chemicals in EPA Region VIII met in Denver, Colorado on November 28-30. Discussions focused on EPA's requirement for the development of State Pesticide Management Plans and their support through State Ground Water Protection Strategies, Nonpoint Source Management Programs, Public Water Supply Programs, Wellhead Protection Programs, and Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) Programs.

In announcing the meeting, Max H. Dodson, Director, Region VIII Water Management Division, wrote:

A Region VIII Task Force on Agriculture Chemicals has been established under the direction of Jack McGraw, the Deputy Regional Administrator. This group has evolved from close internal coordination of past Regional meetings on Pesticides, Ground-Water and Nonpoint Sources, with close support from Drinking Water, Policy and Management, and USDA (through the SCS detailee). The current major

Region VIII initiative of the Task Force is to coordinate FY90 Grants related to Ag Chemicals to avoid potential duplication of effort and to assure coordination within each state.
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To inaugurate this initiative, the meeting included representatives from State departments of agriculture, health, water and natural resources in the six-State, high plains/Rocky Mountain area. Indian Tribes from the Region also took part, as did personnel from State Extension Services, the Soil Conservation Service, and units of local governments. On the Federal side were Region VIII and Headquarters officials from EPA's NPS water pollution control, ground water protection, and pesticides and toxic substances programs. USDA's Soil Conservation Service and Federal Extension Service also participated.

The States are currently developing grant applications for FY 1990 EPA funds in three distinct program areas: ground water, pesticides and NPS management (Section 319 funding). Region VIII officials are developing a common set of requirements to govern each of the three grants, relating to local government coordination, common data sources, schedules and milestones, reporting, public meetings, and the like. States will have to meet these criteria through integrated work programs.

Specific guidance has been developed for the Pesticides in Ground Water grants, which the other two programs propose to adapt for their own grant purposes. Following are two of the pesticides requirements considered for adaptation:

Establish a formal coordinating committee or use the *existing nonpoint source task force* to serve as the point of contact for the development of the (pesticides) management plan; as a minimum, representatives from the State NPS, ground water, and Cooperative Extension Service and Soil Conservation Service agencies should be included; and

Identify *existing data sources on important parameters*, such as pesticide usage, cropping practices, irrigated lands, location of monitoring wells, etc. Also identify legal and cooperative authorities necessary for the implementation of a management plan.

James J. Scherer, EPA Region VIII Administrator, told the group in concluding that State Departments of Agriculture and Health are discussing joint approaches to common problems, as are agriculturalists and environmentalists. He said he was looking forward to bringing other Federal agencies into the dialogue.

[For more information contact: Roger Dean, NPS Coordinator, U.S. EPA, Region VIII, 999 18th Street, Suite 500, Denver CO 80202-1603. Phone: (303) 293-1571, (FTS) 330-1471.]

Agricultural Policy Committee Established in Region IV

In June, 1989, Greer C. Tidwell, EPA Region IV Administrator, established the Regional Agricultural Policy Committee (RAPC) to address the need for increased technical and informational coordination between the Federal government and State/local agencies.

This Committee is charged with coordinating EPA agricultural water programs in the NPS, ground water, near coastal waters, wetlands, pesticides, drinking water, and other areas. RAPC will recommend to the Regional Administrator actions responsive to agriculture and the rural public on these issues.

On October 4-5, 1989, Mr. Tidwell sponsored a rural environmental issues forum in Atlanta, GA for EPA and USDA policy makers within the Region. This group of approximately 60 environmental and agricultural managers discussed the various roles and the relationships between the EPA and USDA agencies. The group agreed that additional environmental-agricultural coordination forums should be held for appropriate agencies in each Region IV State. Such forums allow EPA to lead greater agency/industry/public involvement in

Region IV
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conservation, environmental and agricultural issues, and also allow States to take charge of implementing important educational, health and environmental and agricultural issues, and also allow States to take charge of implementing important educational, health and natural resource programs. RAPC and the States will initiate these forums in early 1990.

[For more information contact: Beverly J. Ethridge, Regional NPS Coordinator and member of the Regional Agricultural Policy Committee. Phone: (404) 347-5242 or (FTS) 257-5242; or at EPA Region IV, 345 Courtland St. NE, Atlanta, GA 30365.]

Region VII - - Big Spring Basin Project Tracks Fate of Farm Chemicals

The Big Spring Basin Demonstration Project (BSBDP), located in northeast Iowa, is designed to track the fate of farm chemicals in a major ground-water basin and its watershed. Primarily, the project seeks to follow these chemicals, devising methods to prevent or reduce their movement to surface and ground water while still maintaining profitability for the farmer.

The basin is significant because it provides a natural field laboratory for the study of how surface activities, specifically farming, affect ground water. Nearly all of the ground water exits at Big Spring, enabling scientists easily to measure the effects of farming activities on ground water quality. In addition, agriculture is the only basin industry, simplifying the study of impacts to water quality. No cities, towns, manufacturing plants, commercial industries, nor municipal waste treatment facilities contribute contaminants.

Water quality monitoring data gathered as early as 1981 showed elevated levels of nitrate. In addition, collaborative analysis of water samples collected from wells in the basin suggested widespread nitrate contamination of ground water, according to the Iowa State University Extension Service. After many years of high nitrogen fertilizer applications, the nitrate moving into ground water was in relative equilibrium with the water flux: the more water that moved through the soil and into the ground water, the higher the nitrate content of the water. Prompted by these alarming data by 1983, local citizens groups joined existing organizations and agencies to establish a working task force known as the Iowa Consortium on Agriculture and Water Quality.

Pesticides first appeared in basin ground water samples in early spring 1982 and have appeared ever since. According to George R. Hallberg and others at the Iowa Department of Natural Resources, by 1986 only one insecticide, fonofos (counter) had been detected in the Big Spring Basin ground water. Between 1981-1985, however, numerous herbicides appeared at various concentrations. These included atrazine, alachlor, cyanazine, 2,4-D, metolachlor and metribuzin.

Through on-farm demonstrations the project illustrated the potential to reduce tillage and chemical use, improve nutrient and fertilizer management, improve pest management, reduce soil erosion, and reduce overall application costs. Between 1984 and 1987, fifty-two percent of farmers reported reducing nitrogen fertilizer, and twenty-three percent reduced pesticide use. Yet they also report higher crop yields, with application costs on the average farm in the area dropping some \$3,000 to \$4,000 per year.

Field days, special tours and the mass media have introduced over 3800 people to the project in eighteen months. Several State agencies, USDA, EPA, and others have provided funding for various aspects of the project.

The experiences of the BSBDP laid the groundwork for another series of projects in Iowa called the Integrated Farm Management Demonstration Program (IFMDP), funded by oil overcharge and oil stripper well funds through FY92. IFMDP focuses on disseminating and adopting statewide best available technologies for managing farm chemicals. Since project inception, energy efficiency and environmental improvement technologies have been demonstrated in every county in Iowa. (See "State Legislators Meet on State NPS Funding" earlier in this issue for details on the Iowa ag chemical funding.)

*Region VII
(Continued)* Another offshoot of the Big Spring Basin Project, the Model Farm Demonstration Program, was introduced in the last legislative session at the request of Iowa Governor Terry Branstad. This program, signed into law in May 1989, applies the objectives and principles of BSBDP to five other demonstration sites in Iowa. The legislation requires that the projects are to be designed to enhance the profitability and decrease the environmental impacts of row crop production.

[For more information contact: Program Administration, George R. Hallberg, Geologist, Department of Natural Resources, Geological Survey Bureau, 123 N. Capital St., Iowa City, IA 52242. Phone: (319) 335-1575; Gerald Miller, Extension Agronomist, Iowa State University, 2104 Agronomy Hall, Iowa State University, Ames, IA 50011. Phone: (515) 294-1923; Kathie Benley, Clayton County Extension Office, 133 So. Main St., Elkader, IA 52043. Phone: (319) 245-1451.]

Notes From The States

Pennsylvania Regulates Manure Management with General Permit Program

Pennsylvania regulates manure management of livestock, poultry, and other large and small animals by a general permit program, according to Glenn Rider, Program Specialist, Pennsylvania Department of Environmental Resources (DER), Bureau of Water Quality Management. In Pennsylvania, farms are not subject to the same permitting and inspection process common to industries and municipalities. Farmers still, however, must achieve environmentally sound manure management. Rules and regulations concerning animal manure storage facilities and land application were put in effect in October 1986.

The Commonwealth has promulgated general permit regulations under its Clean Streams Law. These regulations require livestock farmers who spread or store manure to adopt best nutrient management practices as described in Pennsylvania's manure management manuals, in lieu of securing an otherwise mandatory State water quality permit. If a farmer proposes to diverge from these practices, an approval or individual permit is necessary from DER.

A new general permit enforcement initiative in summer 1989 resulted in 58 inspections of farms with suspected problems. Enforcement is complaint driven. Since 1987 there have been 136 enforcement actions, for a total of \$22,000 in assessed penalties.

Overall, large amounts of manure are generated by the 24 million chickens, nearly 2 million cattle and calves, and nearly 1 million hogs on the 55,000 farms in the Commonwealth. Lancaster County alone generated more than 5 million tons of manure in 1983. Rider estimates that 344,000 acres of land would be needed for environmentally sound land application rates in that county. Only 274,000 acres of land are available there. This disparity has most likely grown even larger today.

Pennsylvania first addressed the manure disposal problem in 1975 with the publication and distribution of the manual, "Manure Management for Environmental Protection." This manual applied mainly to the dairy industry. In 1986, the manure management manual was revised into a series of eight manuals written in layman's terms. One contained general instructions, and seven provided manure management strategies for different types of farm animals. These manuals provide manure management BMPs forming the basis for the general permit program mentioned above.

A network of DER, Soil Conservation Service (SCS), County Conservation District (CCD) and Pennsylvania State University Agricultural Extension Service (CES) representatives distributed the manuals to farmers. More than 46,000 copies have been printed.

Distribution of the manure management manuals was accompanied by a Commonwealth-wide education program. CES, the Pennsylvania Farmers Association, DER and SCS met with

Pennsylvania
(Continued)

local officials, who then transferred the information and manuals to the farmers. In addition, a mobile nutrient laboratory demonstrated soil testing, manure, and water analyses in the Chesapeake Bay Drainage area.

Most recently, a nutrient management act has been drafted and introduced during the 1989 Pennsylvania legislative session.

Chesapeake Bay Foundation Assessment of Pennsylvania's Manure Management Regulations

The Chesapeake Bay Foundation has prepared its evaluation of Pennsylvania's manure management program. The Foundation's evaluation, made by monitoring Maryland's, Pennsylvania's, and Virginia's Bay restoration and agricultural nutrient reduction efforts, generally praised the Commonwealth's regulatory approach, calling the manure manuals "useful compilations of BMPs." Yet the Foundation expressed concern with the Commonwealth's lack of clear program goals, reluctance to embrace compulsory aspects of the regulations, reliance on exclusively complaint-based enforcement, and inadequate resource commitment to the program.

The Foundation then submitted the following recommendations:

- *Articulate Program Goals*—set expected outcomes clearly for all to see.
- *Resolve Program Emphasis*—affirm that the manure manual is a regulatory document, not just a voluntary guideline.
- *Increase and Target Enforcement Resources*—in addition to relying on complaints, actively seek out non-complying large farms or those farms with potential compliance problems as a more efficient use of scarce resources. Also devote more resources to ensure both proactive and reactive enforcement.
- *Offer Greater Outreach*—consider a direct mail campaign and other intensive outreach efforts, focusing on high priority watersheds and those farmers not routinely participating in other farm programs.
- *Provide Better Information*—determine what types of farms account for which manure-related nutrient loads, so that both outreach and compliance efforts will be enhanced. Enforcement actions also need to be carefully documented and compiled for overall evaluation.
- *Discuss Additional Practices*—add to the manure manual additional information on temporary storage, daily spreading, storage failures, manure excesses, and streamside fencing.

[For more information contact: Glenn Rider, Program Specialist, Department of Environmental Resources Bureau of Water Quality Management, P.O. Box 2063, Harrisburg, PA 17120. Phone: (717) 787-8184. Chesapeake Bay Foundation, 214 State Street Harrisburg, PA 17101. Phone: (717) 234-5550. Attn. Lamonte Garber and Patrick Gardner.]

West Virginia Tackles Acid Mine Drainage

Abandoned coal mine acid and alkaline drainage, with accompanying high metal loads, damages approximately one-third of the 314 identified watersheds in West Virginia, reported William D. Brannon of the West Virginia Department of Natural Resources as he addressed the Nonpoint Source Implementation Workshop in Nashville, Tennessee on October 29-31, 1989.

West Virginia
(Continued)

The State's Department of Energy supervises coal mining and reclamation in West Virginia. While successful use of best management practices has cleaned up many significant sites, according to Brannon, much remains to be done. According to Office of Surface Mining (US DOI) rules, available funds for abandoned mine reclamation go first to projects addressing the health, safety and property of citizens. Water quality concerns are sometimes included in these projects; however, reclamation for environmental purposes, which includes water quality, is presently a lower priority.

As the State's water quality agency (DNR) increases its involvement with the Department of Energy, "... the implementation of the State's nonpoint management program will provide us with a means to hopefully influence water quality considerations in a way that was not possible earlier," Brannon said.

West Virginia DNR expects the coal industry to meet its regulatory requirements, and expects the State Department of Energy to enforce the law, incorporating more water quality concerns into its reclamation projects. Still, DNR will continue to:

- Develop/update BMPs and evaluate their uses.
- Initiate projects which show the benefits of water quality considerations, for example acid mine drainage controls on reclamation projects.
- Use the results of these studies and projects to educate industry.

In closing, Mr. Brannon referred to the Fall 1989 issue of *Green Lands*, a publication of the West Virginia Mining and Reclamation Association, describing the dramatic rescue of the Tygart Valley River, a tributary of the Monongahela. The project involved the reclamation of abandoned mining waste piles. "Water draining through the piles was extremely acid," Brannon explained. "We suggested a technique called an alkaline leach bed to address the acid water. It involved constructing a channel, diverting the acid water through alkaline material (limestone) and retaining it until exposure to the limestone had a chance to reduce the acid load and drop out the metals." This technique significantly reduced the acid and metal load of the drainage water.

Green Lands reported that "the treatment worked, the acidity in the river decreased...[but] it is going to take three or four years for the river to get back to where it was." In the same issue several sites reclaimed under the Rural Abandoned Mine Program were also described.

[For more information contact: William D. Brannon, Branch Head, Planning, State of West Virginia Department of Natural Resources, Division of Water Resources, 1201 Greenbrier Street, Charleston, West Virginia 25311. For copies of the Fall 1989 *Green Lands* magazine contact: West Virginia Mining & Reclamation Association, 1624 Kanawha Boulevard, Charleston, WV 24311. Phone: (304) 346-5318.]

Wisconsin Farmers Join Together to Improve Water Quality

Farmers in the Hay River Watershed in Barron and Dunn counties, Wisconsin, have installed conservation and livestock management practices, achieving improved water quality along the Hay River and its tributaries. During the eight years of the project, a total of 150 farmers voluntarily installed pollution control practices such as fencing livestock out of streams, installing barnyard runoff controls, and changing their cropland management.

County staffs learned two lessons during the project which can apply to other watersheds. First, protecting streambanks, lands adjacent to wetlands, springs, and other pollution-sensitive areas had the most direct impact on water quality. Second, thorough communication with landowners was crucial. In a voluntary program such as this one, farmers need to be well

Wisconsin informed of their responsibilities, such as hiring and paying contractors, maintaining practices, and keeping accurate records.
(Continued)

While the project ran during a period of depressed agricultural prices, farmers in the watershed were sufficiently concerned about water quality to complete most of the agreed-to water pollution control practices.

As an example of one livestock practice, Wisconsin Department of Natural Resources fishery biologists reported that fencing livestock away from Vance creek (a tributary to the Hay) reduced sedimentation, improved fish habitat, and helped account for a substantial increase in the size and number of Brook and Brown trout.

[Adapted from "Field and Streets," the newsletter for Wisconsin Nonpoint Source Water Abatement Program: No. 3, April 1989. For more information contact: Dale Hanson, County Conservationist, Barron County Land Conservation Department, Agriculture Service Center, Barron, WI 54812. Phone: (715) 537-6315.]

South Dakota's Groundwater Research and Public Education Program Activated

NEWS-NOTES (October 1989) previously reported on the enactment of South Dakota's Centennial Environment Protection Act of 1989 which focuses on the development of alternative agricultural practices to assure an agriculture in South Dakota "that is economically, ecologically and socially maintainable over an extended period of time." The management of nonpoint sources of water pollution is of major concern in the implementation of the new legislation. The act also establishes the Groundwater Research and Public Education Program and the Groundwater Research and Information Advisory Group. These two features of the new program are now being activated, according to Barb Nielson, Groundwater Hydrologist with South Dakota's Department of Water and Natural Resources.

The Advisory Group consists of seven members, representing one or more of the following urban and rural interests: conservation districts, water development districts, boards of water management, the mining industry, water supply and wastewater management groups, and local wellhead protection task forces. This body has adopted guidelines for the direction of the Groundwater Research and Public Education Program, and drafted rules for the management of the Groundwater Protection Fund, whose revenue sources should yield some \$500,000 annually. The Board of Water and Natural Resources is in the process of adopting these rules, which will then enable the awarding of grants for ground water research and public education.

A factoring system is included in the rules to assist the Board in its decision making process. Points are awarded in five categories: need for the project, ability to meet the goals established in the legislation, ability to match funds, the technical merit of the project, and a program factor. Points awarded for program factor must consider the impact of the proposed project by evaluating the amount of applied research to be conducted and the practical use of the results to be achieved.

Proposed projects which meet the guidelines and are approved by the Board are eligible for funding. Applications will be submitted to the Board quarterly, on the first day of June, September, December and March. It is anticipated that the first grant funds will be available by April 1990.

[For further information contact: Barb Nielsen, Hydrologist, Groundwater Quality Program, Department of Water and Natural Resources, Joe Foss Building, 523 East Capitol Ave., Pierre, SD 57501. Phone: (605) 773-3296.]

Reviews - New and Available

EPA Nonpoint Source Report to Congress

The annual EPA Report to Congress: *Activities and Programs Implemented Under Section 319 of the Clean Water Act: Fiscal Year 1988*, as required by law, has now been published and is available free of charge. The report describes NPS activities and programs, and the progress made in reducing NPS pollution input to navigable waters, thereby improving their quality.

The report begins with the current assessment of national NPS problems, and describes in some detail the history of NPS control efforts in the United States. There is a listing of submitted State NPS Assessment Reports and Management Programs, and a description of EPA's review process and actions taken in response to the State submittals.

[For a copy of the report contact: NPS_NEWS-NOTES (WH-553), Assessment and Watershed Protection Division, U.S. EPA, 401 M Street, S.W., Washington, DC 20460.]

A Correction

The cost of a copy of the NCSL publication *Financing Water Quality: Nonpoint Source Legislative Options*, as reviewed in NEWS-NOTES, December, 1989, is \$5.00 prepaid (includes postage).

[For more information or to order the publication contact: Becky Duffield, National Conference of State Legislatures, 1050 17th Street, Suite 2100, Denver, CO 80226. Phone: (303) 623-7800.]

A Change

Our FAX number has changed !!! Please note. The new number is NPS NEWSNOTES: (202) 755-2517. Use it to contact us, to send in suggestions, and to ask questions.

A Coupon

Mail to: **NPS NEWS-NOTES (WH-553)**, Assessment and Watershed Protection Division
U.S. EPA, 401 M Street, S.W., Washington D.C. 20460

Here's my name (or a friend's name) for your mailing list to receive NPS NEWS-NOTES whenever it is published:

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Phone: _____

Additional Comments and/or Questions: _____

Datebook

This DATEBOOK has been assembled with the cooperation of: *Conservation Impact*, the newsletter of the Conservation Technology Information Center, 1220 Potter Drive, Room 170, West Lafayette, IN 47906-1334; and *NWQEP NOTES*, the newsletter of the National Water Quality Evaluation Project, North Carolina Agricultural Extension Service, North Carolina State University, 615 Oberlin Rd., Suite 100, Raleigh, NC 27605-1126. Their cooperation is appreciated. If you have a date you want placed in the DATEBOOK contact the editors of *NPS NEWS-NOTES*.

Meetings

February

- 4-8 *National Association of Conservation Districts 44th Annual Convention*, San Diego, CA. Contact: Robert Baum, NACD Pacific Regional Representative, Suite 207, 831 Lancaster Dr., Salem, OR 97301. Phone: (503) 363-0912.
- 12-13 *4th Annual National Ridge Till Conference*, Davenport, IA. Contact: NRTC, P.O. Box 848, Columbus, NE 68602-0848. Phone: (402) 564-3244.
- 13 *Colorado Conservation Tillage Association*, Sterling, CO. Contact: Ron Schierer, 4304 West 9th Street Rd., Greeley, CO 80634. Phone: (303) 356-7835.
- 13-15 *California Farm Equipment Show*, Tulare, CA. Contact: Gary Patton, P.O. Box 1475, Tulare, CA 93275. Phone: (209) 688-1751.
- 14-17 *Technology in Transition, the 21st Annual IECA Conference & Exposition*, Washington, DC. Contact: International Erosion Control Association, P.O. Box 4904, 1485 S. Lincoln, Steamboat Springs, CO 80477. Phone: (303) 879-3010.
- 20 *Iowa No-Till Conference*, Ames, IA. Contact: Iowa Soybean Association, 1200 35th Street, #502, West Des Moines, IA 50265. Phone: (515) 223-1423.
- 20-22 *Coastal Plains Farmer Show*, Lake City, SC. Contact: Jim Swindell, P.O. Box 95075, Raleigh, NC 27625. Phone: (919) 872-5040.
- 20-22 *Agricultural Impacts on Ground Water Quality*, Kansas City, MO. Topics include: effects of pesticide application, monitoring, nitrates, pesticide chemistry, practices to minimize ag impacts on ground water. Contact: Conference Coordinator, National Well Water Association, 6375 Riverside Dr., Dublin, OH 43017 (614) 761-1711. [NOTE: Conference will be held simultaneously under one roof with three other meetings: Ground Water Geochemistry, Ground Water Management and Wellhead Protection, and Environmental Site Assessments Case Studies and Strategies.]
- 25-28 *Reducing Pollution From Nonpoint Sources: The Chesapeake Experience*, The Williamsburg Lodge and Conference Center, Williamsburg, VA. Contact: Alliance for the Chesapeake Bay, Inc., 6600 York Road, Suite 100, Baltimore, MD 21212. Phone: (301) 377-6270.
- 26-28 *Idaho Water Quality Conference—Building on Idaho's Agricultural Water Quality Program*, Red Lion Riverside, Boise, Idaho. Sponsored by the Idaho Association of Soil Conservation Districts. Contact: Lynann Stewart, 3160 Elder Street, Suite A, Boise, Idaho 83705. Phone: (208) 334-2033.

March

- 1 *Northwest Iowa Conservation Tillage Expo*, Sheldon, IA. Contact: Bill Martin, 301 1/2 First Ave., Rock Rapids, IA 51246. Phone: (712) 472-2204 or Mike Webster, 306 Eleventh St., SW Plaza, Spencer, IA 51301. Phone: (712) 262-3432.

Datebook (Continued)

- 2-3 *Farming for Profit and Stewardship, A Pacific Northwest Symposium on Sustainable Agriculture*, Vancouver, WA. Contact: Daniel McGrath, OSU Extension, 3180 Center St. NE, Salem, OR 97301. Phone: (503) 588-5301; or Dr. Jack Waud, WSU Extension, 223 East 4th St., Port Angeles, WA 98362. Phone: (206) 452-7831.
- 6 *Franklin County Spring Tillage Fair*, Hampton, IA. Contact: Charles Klope, Franklin County Soil Conservation District, 115 Second Ave., NW, Hampton, IA 50441. Phone: (515) 456-3157.
- 8 *Annual Meeting of the Weed Science Society of North Carolina—"Groundwater: What is Our Role as Weed Scientists?"*, Raleigh, NC. Contact: Patrick Kennedy, 5605 Knollwood Drive, Raleigh, NC 27609. Phone: (919) 782-8331.
- 12-16 *Minimizing Risk to the Hydrologic Environment*, Las Vegas, Nevada. Topics include hydrogeologic site characterization, modeling of groundwater flow, and wellhead protection. Contact: American Institute of Hydrology, 3416 University Ave., SE, Minneapolis, MN 55414. Phone: (612) 379-1030.

April

- 22-25 *North Central Regional Water Quality Conference—Assessing Agricultural Impacts on Water Quality and Identifying Preventative Actions to Reduce Impacts*, Clarion Hotel, St. Louis, MO. For program information contact: Gary Jackson, Room 216, Agriculture Hall, 1450 Linden Drive, Madison, WI 53706. Phone: (608) 262-1916. For registration & exhibits information contact: CALS Conference Office, Jorns Hall, 650 Babcock Drive, Madison, WI 53706. Phone: (608) 263-1672.
- 26-27 *Stormwater and Water Quality Model Users Group Meeting*, Eatontown, New Jersey. Contact: Vajira Gunawardana, P.E. or Colleen Petty, Conference Coordinators, Najarian & Associates, Inc., One Industrial Way West, Eatontown, New Jersey 07724. Phone: (201) 389-0220. Registration Fee \$75 (\$50 for students).

May

- 16-18 *Innovations in River Basin Management* (Canadian Water Resources Association), Penticton, British Columbia. Topics include watershed water quality. Contact: Robin McNeil, Program Chairman, Ministry of Environment, Water Management Branch, Parliament Buildings, Victoria, B.C., Canada V8V 1X5.

June

- 18-21 *U.S./U.S.S.R. Joint Conference on Global Environmental Hydrology and Hydrogeology*, Leningrad, U.S.S.R. Invited paper topics include: factors affecting water quality (surface and ground), agricultural contamination, relationship of land use to groundwater quality, urban NPS contamination, and regional strategies to protect ground and surface water. Contact: American Institute of Hydrology, 3416 University Ave., SE, Minneapolis, MN 55414. Phone: (612) 379-1030.
- 24-25 *An Educational Partnership: Industry-University-Society* (1990 International Summer Meeting—Society of Agricultural Engineers), Columbus, Ohio. Sessions on water resource issues include: erosion/conservation, water management, and hydrologic systems and transport processes. Contact ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659. Phone: (616) 429-0300.

July

- 9-11 *1990 Watershed Symposium*, Durango, Colorado. Topics related to watershed processes, modeling of wind/water erosion, and application of planning and analysis tools in watershed management. Contact: Robert Riggins, USACERL, P.O. Box 4005, Champaign, IL 61824.

Datebook (Continued)

July

22-25 *Urban Non-Point Source Pollution and Stormwater Management Symposium*, University of Kentucky, Lexington, KY. Contact: Kentucky Water Resources Institute, 219 Anderson Hall, University of Kentucky, Lexington, KY 40506-0046.

29-Aug. 1 *Water Futures, 45th Annual Meeting of the Soil and Water Conservation Society*, Salt Lake City, UT. Contact: SWCS, 7515 Northeast Ankeny, IA 50021-9764. Phone: (515) 289-2331.

August

21-23 *Great Plains Conservation Tillage Symposium*, Bismarck, ND. Contact: Hunter Follett, Colorado State University, Plant Science Building, C-4, Fort Collins, CO 80526. Phone: (303) 491-6201; or Jim Stiegler, Oklahoma State University, Agronomy Dept., Room 363, N. Ag. Hall, Stillwater, OK 74078. Phone: (405) 744-6421.

November

4-9 *The Science of Water Resources: 1990 and Beyond*, Denver, Colorado. Topics include: hydrologic trends, legal issues, water resources development, and emerging issues (NPS pollution, urban impacts on water quality, water resources education, radon, hazardous wastes, biomonitoring). Contact: Jim Loftus, Colorado State University, Rm. 100, Engineering South, Ft. Collins, CO 80523. Phone: (303) 491-7923; or Bob Montgomery, Woodward-Clyde Consultants, 4582 Ulster Parkway, Suite 1000, Denver, CO 80237. Phone: (303) 694-2770.

NPS News-Notes
Nonpoint Source Information Exchange
Assessment and Watershed Protection Division
Office of Water (WH-553)
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460



Nonpoint Source Directory

EPA's Nonpoint Source Scientific Research Activities

Office of Research and Development

Introduction

As another user service of the NPS Information Exchange, this special *NEWS-NOTES Directory of EPA's Nonpoint Source Scientific Research Activities* provides useful details about the NPS research capabilities of EPA. It is prepared as a special pull-out insert of *NEWS-NOTES*, for desktop use and ready reference. State Nonpoint Source program managers should feel free to contact appropriate referenced persons for information assistance concerning ongoing research reported here and on related research needs.

There are 1800 Office of Research and Development (ORD) employees at EPA headquarters and twelve laboratories around the nation. Over half of the labs are directly involved in work related to NPS pollution research. The following descriptions of each lab's activities emphasize research into the causes, effects and remedies of NPS pollution. Each group doing this type of work has unique specialities, such as modeling or methods development, and each is available to cooperate in conducting or reviewing research projects with State governments, universities, or other organizations involved in NPS management. As an aid to answering questions and securing services from the ORD research and development community, relevant names, addresses and phone numbers are listed for each laboratory or activity.

[NEWS-NOTES thanks Burnell W. Vincent of the Regulatory Support Staff, Office of Technology Transfer, ORD, EPA Headquarters; and Jessica Barron of ORD Publications Office, Center for Environmental Research Information, Cincinnati, for their invaluable help in putting this NPS Research Directory together.]

The Office of Environmental Process and Effects Research (OEPER)

The OEPER labs include Environmental Research Laboratories (ERL) at Duluth and Athens, where NPS control programs have historically seen the most investigation, as well as Corvallis, Gulf Breeze, and Narragansett.

[For more information contact: Courtney Riordan, Director, OEPER (RD-682), U.S. EPA, 401 M Street, SW, Washington, DC 20460. Phone: (202/FTS) 382-5950.]

I. ERL-Gulf Breeze

The Gulf Breeze Laboratory's research is directed toward managing hazardous waste in coastal, estuarine, and marine environments. Its research emphasizes the following NPS pollution issues:

- A. Toxicity and ecological effects of toxic chemicals and pesticides on the marine environment. The lab can define and predict the effects of pollutants on organisms at the sub-cellular level. By using existing data and conducting toxicity tests, this laboratory can describe the toxicity of individual and mixed pollutants on marine organisms, and ecological effects in the field, as well as diagnose cause.

- B. Bioremediation of pesticides in the environment. This laboratory can apply bioregulation to (1) reduce the amount of pesticides applied in agriculture and (2) prevent or retard contamination of ground water with pesticides.
- C. Development of alternative, environmentally safe microbial pest control agents (MPCAs). This laboratory can develop test protocols and data to determine the safety of MPCAs, including genetically engineered microorganisms (GEMs), to the environment. This laboratory is developing a gene complex to prevent the spread of genetically engineered material into the environment.
- D. Application of microbes to bioremediate toxic chemicals in the environment.

[For more information contact: Ray Wilhour, Director, ERL/ORD, Sabine Island, Gulf Breeze, FL 32561. Phone: (FTS) 8/686-9011; (904) 932-5311.]

II. ERL-Duluth

This laboratory is EPA's center for freshwater aquatic toxicology and has been involved in the development of a five-year strategy for the control of nonpoint pollution sources. It is involved in the following NPS activities:

- A. Assessment projects. This laboratory is conducting a comprehensive study to define existing physical, chemical and biological conditions in the Minnesota River basin, including nonpoint source loadings.
- B. Field validation of protocols for assessing the effects of pesticides on ecosystems.
- C. Development of biocriteria for use in applying biological survey data. Data from spills and other episodic events are being analyzed so that design criteria for the Agency's effluent toxicity control program can be based on valid information.
- D. Methods to assess the effects of microbial control agents on ecosystems. This laboratory can develop acute and chronic laboratory tests that expose invertebrates and fish to bacteria used to kill insect pests that live in water. The long range goal is to understand how these populations and communities respond to the introduction of microorganisms.
- E. Development of sediment quality criteria for freshwater ecosystems. This laboratory is establishing safe sediment concentrations of chemicals or classes of chemicals by determining the sediment chemical concentration which will result in acceptable tissue residues in aquatic organisms.
- F. Development of ambient toxicity tests to assess toxicant impact. Laboratory ambient toxicity tests are being conducted using both overlying surface water and sediment pore waters from the Fox River/Green Bay watershed and the upper Illinois River watershed. Results from these laboratory tests will be compared to other instream biological results to determine levels of agreement on impaired reaches.
- G. Development of water quality criteria for wetlands. This laboratory is assessing: (1) the applicability of current aquatic life criteria to wetlands; (2) the effects of pollutants of concern on wetland "health"; and (3) the effects wetlands have on the water quality of aquatic resources down stream of the wetland.
- H. Development of a research approach for separating environmental nonpoint sources of pollution.
- I. Development of freshwater quality criteria.

[For more information contact: Gilman D. Veith, Director, ERL/ORD, 6201 Congdon Boulevard, Duluth, MN 55804. Phone: (FTS) 8/780-5549; (218) 720-5549.]

III. ERL-Athens

The Athens Environmental Research Laboratory is ORD's center for predicting and assessing the human and environmental exposures and risks associated with conventional and toxic pollutants in water. The following NPS-related issues constitute the major reason for the establishment of this laboratory:

- A. Model development and testing. ERL-Athens has developed the Pesticide Transport and Reaction (PTR) model, the Agricultural Runoff Management (ARM) model, the Nonpoint Source (NPS) model, the Watershed Erosion and Sediment Transport (WEST) model, and the Chemical Migration and Risk Assessment (CMRA) model. Many of the fundamental processes developed and tested in these models have been incorporated in the Hydrologic Simulation Program-FORTRAN (HSPF), which is used extensively. The EPA Region III Chesapeake Bay Program, for example, has applied this model to the entire Chesapeake Bay drainage system and is using the model to evaluate NPS control strategies in the region. Simpler NPS modeling procedures were incorporated in the Water Quality Assessment Methodology (WQAM), which has been adopted as part of the Office of Water's Wasteland Allocation Guidance Manual.
- B. Development of the Water Resources Evaluation for Silviculture (WRENS) manual and other models of silvicultural NPS impacts. The Athens Laboratory is also responsible for the Storm Water Management Model (SWMM).
- C. Data collection for model testing.

[For more information contact: Rosemarie Russo, Director, ERL/ORD, College Station Road, Athens, GA 30613. Phone: (FTS) 8/250-3134; (404) 546-3134.]

IV. ERL-Corvallis

Research at ERL-Corvallis is conducted on terrestrial and watershed ecology and on multimedia ecological effects of pollutants and other environmental stresses. Ongoing laboratory programs relevant to NPS control include a program to assess the effects of global climate change (warming) across all ecosystem types, and a research program to evaluate the effectiveness of mitigation practices on the establishment of created wetlands as replacements for altered wetlands.

ERL-Corvallis activities important to NPS research are as follows:

- A. Quantitative estimates or regional status and trends of various resources.
- B. Integrated, multimedia assessments. In the National Acid Precipitation Assessment Program (NAPAP), this laboratory conducts research on surface waters and forests. In wetlands research, a landscape perspective is adopted to assess the role of the mosaic of wetland types interacting with each other.
- C. Development of ecologically important endpoints. Surrogate endpoints, such as water chemistry (e.g., attainment of specific water quality criteria), have been the driving force for most of the history of EPA and State water pollution control efforts. In the surface water area, this laboratory has been developing ways to assess ecological health more directly by measuring success against achievable biological endpoints.
- D. Development of statistically sound, flexible survey designs for estimating the status of ecological resources quantitatively, with known confidence. The effort is presently to develop a broadly applicable design for the Environmental Monitoring and Assessment Program (EMAP) that will operate for wetlands, surface waters, agroecosystems, or forests.

[For more information contact: Thomas A. Murphy, Director, ERL/ORD, 200 S.W. 35th Street, Corvallis, OR 97333. Phone: (FTS) 8/420-4601; (503) 757-4601.]

V. ERL-Narragansett

The Narragansett Environmental Research Laboratory is the center for marine, coastal and estuarine water quality research. The activities currently relating to nonpoint pollution sources are:

- A. Development of marine sediment criteria.
- B. Development of water quality criteria including those for complex effluents.
- C. A report to Congress on atmospheric disposition. The report indicates that nitrogen deposition is the major NPS pollutant of coastal water systems.

[For more information contact: Norb Jaworski, Director, ERL/ORD, South Ferry Road, Narragansett, RI 02882. Phone: (FTS) 8/838-6001; (401) 565-6001.]

——— The Office of Modeling, Monitoring, and Quality Assurance (OMMSQA) ———

The OMMSQA labs include the Environmental Monitoring Systems Labs at Las Vegas and Cincinnati. OMMSQA is also directing the Environmental Monitoring and Assessment Program (EMAP), whose work is being undertaken at several ORD labs.

[For more information contact: Rick Linthurst, Director, OMMSQA, U.S. EPA (MD-680), 401 M Street, SW, Washington, DC 20460. (FTS) 8/283-5767; (202) 283-5767.]

I. EMSL-Las Vegas

- A. Advanced Monitoring Systems. This laboratory is a research and development center for advanced monitoring systems and environmental photography. The following projects are related to NPS pollution impact assessment and technology evaluation:
 - 1. Black Foot River, Montana. The laboratory is developing a Geographic Information System (GIS) for this watershed and plans to use it as a platform for integrating data sets (chronic toxicity bioassays, macroinvertebrate surveys, ambient water quality surveys). Remote sensing is being used to identify land cover across the study area.
 - 2. Lake Pend Oreille, Idaho. The laboratory is providing GIS support to this NPS investigation.
 - 3. Verde Valley, Arizona. This is a NPS pollution modeling project of a rangeland watershed, using GIS as a platform for data integration and display of results.
- B. Environmental Photographic Interpretation. The Environmental Photographic Interpretation Center (EPIC) provides a state-of-the-art capability, involving the application of GIS to watershed data and the collection of watershed data, including land use. This could be applied to both the classification and characterization of ecological resources associated with the analysis of ground-based or remote monitoring data.

[For more information contact: Robert N. Snelling, Director, EMSL/ORD, P.O. Box 93478, Las Vegas, NV 89193. Phone: (FTS) 8/545-2525; (702) 798-2525.]

II. EMSL-Cincinnati

Research activities at this laboratory support the Nonpoint Source Control Program in two critical areas: *standardized methodology* to identify and quantify the physical, chemical and biological properties of nonpoint source pollutants and the quality of receiving waters, and *reference materials* for routine quality control activities and determination of data quality. Recent, current and potential projects relevant to the NPS Control Program include the following:

A. Chemical Methods

1. Development and standardization of methods for volatile, semi-volatile, and non-volatile organic chemicals in ambient water, waste water, tissues, sludges, sediments, and other environmental samples.
2. Development and standardization of advanced methods for measurement of metals in environmental samples.

B. Microbiological Methods

1. Development of advanced methods for identification and quantification of pathogenic bacteria, viruses, and protozoa in environmental samples.
2. Development of microbiological methods for distinguishing between point and nonpoint sources of pollution for exposure assessment monitoring.
3. Development and evaluation of *in vitro* tests for detecting genotoxic substances (mutagens) in water, waste water, sludges, and other environmental samples.
4. Pathogen removal in sludge treatment prior to agricultural and residential land application.

C. Aquatic Biology Methods

1. Development and standardization of acute and chronic toxicity test methods for toxic pollutants, waste waters, and surface waters.
2. Development and standardization of methods to measure the direct and indirect effects of toxic pollutants and nutrients on the diversity and condition of populations of fish and aquatic life in inland and coastal waters.
3. Efficacy of toxicity removal by constructed wetlands.

D. Reference Materials and Data Quality

1. Reference materials currently maintained for use by the Office of Water include:
 - (a) Chemical Analyses, with 30 QC samples containing 160 analytes for drinking water, ambient water, and waste water monitoring, 20 QC samples containing 172 analytes for analysis of priority pollutants, hazardous wastes, and toxic chemicals, and a repository of 305 toxic and hazardous materials for instrument calibration purposes.
 - (b) Biological Analyses, with three reference toxicants, six indicator bacteria strains, six phytoplankton identification and quantification samples, and two chlorophyll samples.
2. Interlaboratory methods validation studies and laboratory performance evaluations are conducted periodically for drinking water, water pollution, NPDES permittee (DMR-QA), solid waste, and Superfund laboratories.

[For more information contact: Thomas Clark, Director, EMSL/ORD, 26 West Martin Luther King Drive, Cincinnati, OH 45268. Phone: (FTS) 8/684-7301; (513) 569-7301.]

III. Environmental Monitoring and Assessment Program.

ORD is designing and implementing the Environmental Monitoring and Assessment Program (EMAP) to address the following issues: acid deposition, eutrophication, habitat modification, contamination, cumulative impacts, and regional and national scale "stressors." The objectives of this program are to: (1) monitor current status, extent, changes and trends in indicators of the condition of ecological resources; (2) monitor indicators of pollutant exposure and habitat condition in order to seek correlative relationships between man-induced stressors and ecological condition; and (3) provide annual statistical summaries and periodic interpretive reports on status and trends.

EMAP ultimately will monitor conditions in all areas subject to NPS stresses including near-coastal systems, marine and fresh wetlands, and inland surface water. It will also monitor air and deposition chemistry and aspects of ground water discharges to surface water from nonpoint sources. It will provide regional scale information on such problems as declining shellfish harvests, blooms of toxic algae in near coastal systems, declining high-evaluation forests, diseased and cancerous fish in lakes, streams, and rivers, and loss of biodiversity.

For more information on the indicated specific aspects of EMAP contact the following Program Managers:

Indicator Development

Jay J. Messer
Atmospheric Research and Exposure Assessment Laboratory/ORD
Research Triangle Park, NC 27711
Phone: (FTS) 8/629-0150
(919) 541-0150.

Network Design

Daniel McKenzie
ERL/ORD
200 S.W. 35th Street
Corvallis, OR 97333
Phone: (FTS) 8/420-4666
(503) 757-4666.

Landscape Characterization

Bruce James
EMSL/ORD
P.O. Box 93478
Las Vegas, NV 89193
Phone: (FTS) 8/545-2671
(702) 798-2671.

Near-Coastal Demonstration Project

John Paul
ERL/ORD
South Ferry Road
Narragansett, RI 02882
Phone: (FTS) 8/838-6037
(401) 782-3037.

The Office of Environmental Engineering and Technology Demonstration (EETD)

The Office includes Risk Reduction Engineering Laboratories in Cincinnati, OH, Research Triangle Park, NC, and Edison, NJ. The nonpoint source research is conducted in the Edison laboratory, and it involves projects in stormwater and urban runoff.

Recognizing that sanitary or industrial cross-connections contribute significant pollution loadings, Congress, under the Clean Water Act, has established a legislative mandate for their control. Responding to this demand, a project is being conducted to develop a manual of practice for investigative techniques to assist local governments in identifying the magnitude and sources of cross-connections in their storm drainage systems.

Another research project underway is an investigation of opportunities to decrease the discharge of toxicants frequently found in urban, storm-induced discharges. More specifically the objectives of the project are to characterize the toxicants, identify toxicities, and investigate the partitioning of the toxic components found in these flows, especially as they relate to treatment methods to reduce toxicity.

For more information on EETD contact:

Alfred Lindsey
Director
EETD
U.S. EPA (RD-681)
401 M Street, SW
Washington, DC 20460
Phone: (FTS) 8/382-4800
(202) 382-4800

For more information on the cited research projects contact:

Richard Field
Chief
EPA Storm and Combined Sewer Research Program
U.S. EPA (MS-104)
Woodbridge Avenue
Edison, NJ 08837
Phone: (FTS) 8/340-6674
(201) 321-6674