



# News-Notes

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

## Commentary . . .

### Montana Changes a Name. Now It's: Ecosystems Management Section

The State of Montana has made some changes, as noted in the following article, from the July-August issue of *The Water Column*, the state's Water Quality Bureau newsletter:

*The Water Quality Management Section of the Water Quality Bureau is now the Ecosystems Management Section. The name of this section, which includes the Monitoring and Assessment, and Nonpoint Source Control Programs, was changed to better convey its distinct mission in water pollution control. That mission is: TO PROTECT AND RESTORE THE INTEGRITY, STABILITY, BEAUTY, AND BIOTIC DIVERSITY OF AQUATIC ECOSYSTEMS.*

*The name change also takes a cue from the EPA Science Advisory Board, which found "human health and welfare ultimately rely upon the life support systems and natural resources provided by healthy ecosystems." Healthy ecosystems generate good quality water for domestic, agricultural and industrial supplies. Healthy ecosystems are nature's water treatment plants. In turn, good quality water supports healthy aquatic ecosystems.*

*The change reflects an increased awareness of the importance of the "uneconomic" components of aquatic ecosystems—the nongame fish, invertebrates, plants and other "supporting actors." This awareness has prompted EPA and the state to use biological diversity as a criterion for judging water quality. In addition, it has prompted those involved in drafting a reauthorized version of the federal Clean Water Act to include language protecting "balanced indigenous populations" of aquatic organisms.*

We say these are all very good reasons for plain talk and the exercise of leadership. We salute the new Ecosystems Management Section and Montana's Water Quality Bureau. The name changing is a step forward in our view.

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## Miscellaneous Notes of Interest

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### *Update on Coastal Nonpoint Pollution Control Program Guidance*

EPA and NOAA are currently drafting *state program development and approval guidance* to assist states in developing the coastal nonpoint source control programs required by section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990. This guidance will assist states in implementing the *management measures* specified in the proposed guidance issued by EPA in June 1991 (see *NPS NEWS-NOTES* #13, June 1991). EPA and NOAA plan to make the guidance available for public comment by mid-September, 1991.

*[To request copies of the draft management measures guidance and to send comments and additional information, write to: Steve Dressing, Assessment and Watershed Protection Division (WH-553), U. S. EPA, 401 M Street, SW, Washington DC 20460. For information on the program guidance, contact: Ann Beier (same address), Phone (202) 260-7108.]*

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### *Soil and Water Conservation Society Meets*

Water pollution control, wetlands, riparian areas, restoration ecology, resource sustainability, and rural landscape revitalization were some of the issues discussed by more than 1,400 people attending the 46th annual meeting of the Soil and Water Conservation Society (SWCS). "Living With The Land" was the theme of this year's gathering, held in Lexington, Kentucky.

The program focused on the use and management of the land according to its carrying capacity, stated Richard Duesterhaus, SWCS President, in his welcoming address. "We'll learn how to direct our energies toward policies, systems, and attitudes that meet our natural resource needs without pushing the environment beyond its limits."

William Richards, Chief of the USDA Soil Conservation Service (SCS), told the professional society audience that they have an opportunity, under the 1985 and 1990 farm bills, to change the way this country is farmed. "Our most immediate opportunity—conservation compliance—is introducing farmers to new and better ways of doing things," Richards said. "Over the next three years, for example, compliance is going to double the acreage under conservation tillage." Richards emphasized the necessity of completing the compliance job by 1995. He said the SCS will expand its efforts to "promote holistic solutions to those problems that serve both agriculture and the larger society." He predicted that the SCS will be spending more time administering agriculture-related environmental programs in the future.

In another approach to environmental issues, Donald B. Meechan of Washington State University's Cooperative Extension Service, said that well-designed volunteer programs may be the answer to protecting the environment. The extension agent is working with a program started in the fall of 1989, "WSU Beach Watchers." The program trains volunteers to work with others in the community to help protect Puget Sound.

Participant interaction was encouraged on the meeting program by scheduling mobile workshops addressing soil erosion and water quality research, strip mine reclamation, limited-resource farming operations, and urban growth and stormwater management.

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### *Turning Off Stormwater Run-off to Puget Sound*

For years, stormwater management has meant controlling water *quantity*. Increased run-off is directly related to an increase in impervious surfaces (roads, parking lots and rooftops) which prevent water from soaking into the ground.

Today it is acknowledged that stormwater run-off also contributes to water *quality* problems. Stormwater running off construction sites, yards, parking lots, streets, and highways is increasingly recognized as a contributor to the degradation of Puget Sound's water quality.

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Together stormwater and highway run-off contribute 11 percent of the BOD, 20 percent of the copper, 62 percent of the lead, 29 percent of the zinc and 31 percent of the petroleum hydrocarbons entering the Sound.

The Washington State Department of Ecology (Ecology), under the direction of the 1991 Puget Sound Water Quality Management Plan, has developed guidance for stormwater management programs for both local jurisdictions and the Washington State Department of Transportation (WSDOT). The goal is improving the quality of stormwater run-off that enters streams, lakes, ground water and the Sound.

### **HIGHWAY RUN-OFF PROGRAM**

The Puget Sound Highway Runoff Program, to be implemented by the Washington State Department of Transportation (WSDOT), is one element of Ecology's overall effort to manage stormwater. Unfortunately, the state legislature failed to fund the highway program. The alternative now is to incorporate the various requirements for highways into NPDES permits.

Ecology worked with WSDOT, advisory groups, tribes and interested parties to develop the Puget Sound Highway Run-off Program. The program requires WSDOT to control the quality and quantity of highway run-off from state highways into the Puget Sound basin.

To comply with the new program WSDOT must:

- Adopt a stormwater management manual containing approved structural and nonstructural BMPs for improving water quality, such as grassy swales and retention basins.
- Develop a vegetation management program which protects water quality by using integrated pest management and de-emphasizing the use of pesticides.
- Incorporate BMPs for controlling water quality and quantity in new highway construction.
- Examine and rank existing state highways in the Puget Sound basin to determine where water quality BMPs need to be installed.
- Monitor the effectiveness of stormwater facilities in controlling water quality.

### **ECOLOGYS STORMWATER MANAGEMENT MANUAL**

To help local governments and WSDOT comply with the requirements and correct identified water quality problems, Ecology is also developing a technical manual addressing erosion and sedimentation control, runoff control, and control of pollution from urban land uses.

To develop the Puget Sound Stormwater Management Manual, Ecology has worked over the past two years with three separate Technical Advisory Groups (TAGs). The TAGs include representatives from local jurisdictions, industries, tribes and other state agencies.

Ecology and the TAGs worked hard to ensure the draft manual not only contains minimum technical standards which must be met by local governments and WSDOT, but also best management practices (BMPs), or guidance, on how those standards may be met.

The draft Puget Sound Stormwater Management Manual was available for public review through August. Once public comments are incorporated, the agency plans to have a final version available early next year.

*[For more information, contact Melany Vorass, Water Quality Program, Washington State Department of Ecology, Mail Stop PV-11, Olympia, WA 98050-8711 Phone:(206) 438-7058. For information on the Highway Run-off Program, contact Gary Kruger, same address as above. Phone: (206) 438-7529.]*

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## *EPA's Region I Pairs GIS with Risk Assessment*

"Making decisions using Geographic Information System (GIS) with a risk assessment matrix is a very effective and accurate way to identify high priority areas into which to direct our efforts," reported EPA Region I NPS Coordinator Nancy Sullivan. "Once we set it up, having GIS do it was really a snap."

The project involved selection of Merrimack River Basin communities for evaluation of existing stormwater best management practices (BMPs). Sullivan's aim was to "identify those communities with the greatest diversity of water resources which were at the greatest risk from storm-induced pollution."

To prioritize communities based on risks, Sullivan developed a decision matrix which was compatible with data in the region's GIS database.

Specifically, for each community, the surface area of each of the six pollution sources (agriculture, new construction, urban residential, urban commercial/industrial, landfills and highways) was compared to the surface areas of each resource (surface water supplies, groundwater supplies and a category called Clean Water Act Goals, which represented things like recreation and aquatic habitat). "For example," said Sullivan "We asked GIS how much of a wellhead protection area is in agricultural production? We did that for every resource area for every source." Only that surface area that fell within the river drainage area was used.

The comparison yielded percentages which were added together to give a final numerical rating for each community. Ratings over the twenty-one communities ranged from 24 for Dunstable to 190 for Newburyport. The numbers indicated that Newburyport had more nonpoint source risk to its water resources.

Sullivan called GIS "a very accurate tool" but said its use did force her to utilize broader categories than she would have liked. For instance, where the project would have benefitted from discrete categories for water recreation; and fish, shellfish and wildlife resources, GIS forced the use of a single category: Clean Water Act Goals. "We couldn't consider areas of significant importance or risk potential, such as habitat or wetlands," Sullivan noted.

Despite that drawback, Sullivan said she was impressed with GIS and, in fact, intends to use it in the third phase of the project. After reviewing stormwater BMPs within the four selected communities, the project will make stormwater management recommendations to the communities.

For Newburyport, the highest priority community, data from the National Wetlands Inventory map, National Heritage Program and current land use have been digitized into GIS. "What we'll be asking is: Is GIS an effective tool for developing recommendations for stormwater management? So far, I think it will be. Preliminary review of the GIS maps indicates that current land use information is a critical data layer," Sullivan said.

*[For more information, contact Nancy Sullivan, NPS Coordinator, U.S. EPA Region I, JFK Building, Boston, MA 02203. Phone: (617) 565-3546.]*

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## **Notes on the Clean Water Act Reauthorization**

*THE TIME FOR THE REAUTHORIZATION OF THE CLEAN WATER ACT IS DRAWING NEAR. DEBATE BEGINS. SENATE HOLDING HEARINGS.*

EDITOR'S NOTE: The Clean Water Act will be up for reauthorization in 1992. On the Senate side, a bill has been drafted and introduced by Senators Chafee and Baucus: S. 1081, the Water Pollution Prevention and Control Act of 1991. Senate hearings have begun. It is too early to definitively analyze this legislation. General directions can be identified, however. Proposed actions include:

- The authorization of increased funding levels for nonpoint source control. New controls and requirements over nutrient (commercial fertilizer) applications to agricultural cropland.

- The development of national program guidelines for nonpoint source controls which build upon those enacted in the Coastal Zone Management Act amendments passed in the fall of 1990.
- Provisions to improve the control of nonpoint sources on all lands owned or managed by the federal government.
- Strengthening the provisions of the act which require the establishment of Total Maximum Daily Loads (TMDLs) in nonpoint source situations.

S. 1081 also speaks to state NPS management programs "that assure the attainment and maintenance of water and *sediment* quality standards." This language introduces for the first time into the central, key requirements that drive performance under the act, the notion of the control of sediment to specified standards.

At this point, concepts and overall directions are being developed. Ideas are being honed. In this issue, the articles that follow contain two recently released, significant points of view on the CWA Reauthorization debate. *NEWS-NOTES* will relay important developments as they evolve.

## 35 National Agricultural Organizations Develop Policy Modifications To The Clean Water Act<sup>1</sup>

On July 22, 1991, the *AgriEnvironmental Working Group*, representing 35 agricultural organizations, issued its policy paper entitled *NONPOINT SOURCE POLLUTION PREVENTION*. Speaking for the group are the American Soybean Association, The National Association of Wheat Growers, the National Corn Growers Association and the National Cotton Council. Their transmittal of the policy said:

*As debate begins on the Clean Water Act, producers of food and fiber commodities recognize the need to continue to address agriculture nonpoint source pollution prevention in a cost efficient and environmentally conscious manner. That is why 35 national agricultural organizations have developed the attached policy paper recommending minor modifications to the Clean Water Act.*

The introduction to the Policy Statement observes:

*Producers of food and fiber commodities recognize the need to address agricultural nonpoint source pollution that may have adverse effects on the environment and human health. Agriculture operations, along with urban, construction, septic and natural sources, require a comprehensive and coordinated management strategy, much of which is already in place, but in many cases inadequately funded.*

The paper then reviews the five current agricultural water quality protection programs administered by U.S. Department of Agriculture (USDA):

### **THE PRESIDENT'S WATER QUALITY INITIATIVE**

Three components: education and tech assistance; research and development, data base development and evaluation.

- Goal: to provide farmers, ranchers and foresters with technical means to respond independently and voluntarily to "*on-farm environmental concerns and related State water quality requirements.*" Includes 24 water quality demonstration projects to facilitate adoption of water quality practices, and 275 nonpoint source hydrologic unit areas designed to restore water quality which has been impaired by agricultural practices.
- Projected FY 1992 funding: \$239.6 million.

<sup>1</sup> Policy supporting organizations: Alabama Farmers Federation, Alabama Peanut Producers Federation, American Beekeeping Federation, American Feed Industry Association, American Sheep Industry, American Society of Farm Managers and Rural Appraisers, American Soybean Association, American Sugarbeet Association, American Sugar Cane League, Georgia Peanut Commission, Hawaiian Sugar Planters Association, National AgriChemical Retailers Association, National Agricultural Chemicals Association, National Association of Wheat Growers, National Corn Growers Association, National Barley Growers Association, National Cotton Council, National Farmers Organization, National Farmers Union, National Grain Sorghum Producers Association, National Grange, National Oilseed Processors Association, National Pork Producers Council, National Sunflower Association, Southwest Peanut Growers Association, Rice Millers Federation, The Fertilizer Institute, United Egg Association, United Egg Producers, United Fresh Fruit and Vegetable Association, U.S. Chamber of Commerce, U.S. Canola Association, U.S. Rice Producers Legislative Group, Virginia & Carolinas Peanut Growers Association, Women Involved in Farm Economics.

### **THE RURAL CLEAN WATER PROGRAM (RCWP)**

- Established by the Federal Water Pollution Control Act Amendments of 1978 to promote the farm-by-farm installation of best management practices to curb nonpoint pollution.
- \$70 million provided in 1980 and demonstration program developed in 20 rural watersheds to reduce sedimentation, nutrient loadings and other agricultural pollutants. Now in its final phase.
- Policy statement suggests that "A major national program based on the results of the RCWP should be developed and funded to address critical water quality problems nationwide."

### **AGRICULTURAL WATER QUALITY PROTECTION PROGRAM**

- Authorized in the 1990 Farm Bill to assist farmers in developing and implementing on-farm water quality protection plans to reduce the movement of potential nonpoint source contaminants to surface and subsurface waters. Provides incentive payments and technical assistance for individual farmers that participate.
- 10 million acres of farm land projected to be benefitted.
- To be successfully implemented, needs adequate funding in FY 1992.

### **CONSERVATION RESERVE PROGRAM (CRP)**

- Established in the 1985 Farm Bill, it has taken nearly 34 million acres of highly erodible cropland out of production. 1990 Farm Bill mandates 40 million acres for the CRP.
- Expanded in 1990 Farm Bill to focus on water quality considerations such as wellhead protection and the establishment and maintenance of filter strips.

### **THE GREAT PLAINS CONSERVATION PROGRAM**

Targeted at farms or ranch units with the most severe soil and water resource problems in the ten great plains states.

- Funded at \$20 million annually.
- Over 144 million acres have been treated under the program to date. Contracts to protect over 30,000 acres written in 1990.
- Special water quality projects are being sponsored under the program, including irrigation water management and pest management contracts.

The policy statement also points out that current farm law also requires implementation of conservation plans on lands placed in the CRP, which plans provide for "...agronomic practices needed to achieve substantial reductions in soil erosion, improve water quality and protect soil and water resources."

Finally, the policy paper makes specific recommendations regarding the Clean Water Act, stating:

### **SECTION 208 OF THE CLEAN WATER ACT**

*Section 208 of the 1972 Clean Water Act (CWA) provided that States prepare statewide and regional plans, based on watersheds, for the prevention of both point and nonpoint source pollution. Rural nonpoint source pollution was addressed through the establishment of the RCWP as a parallel effort complementing the funding of municipal sewage districts. The RCWP was finally funded in 1980, and projects in 20 agricultural watersheds are currently in place.*

*Our organizations believe additional rural watersheds should be brought under the program through a long term commitment under Section 208. Long term funding must also be dedicated to the program.*

## **SECTION 319 OF THE CLEAN WATER ACT**

*CWA amendments of 1991 should continue to focus on the 319 program as the means for States to identify nonpoint sources in critical areas, and to develop management programs to control discharge. Our organizations believe the following improvements should be made in the Section 319 program:*

- Increase federal funding and technical support for State management programs and local government implementation.
- Strengthen the role of the U.S. Department of Agriculture in the formulation and communication of technology-based best management practices in agriculture.
- Coordinate Section 319 programs with technology-based conservation measures adopted in the 1985 and 1990 Farm Bills, FIFRA pesticide regulations, wetlands protection, public lands management, and EPA groundwater policies.
- Direct studies and questions pertaining to nonpoint pollution and control measures, including:
  - *Relative contributions of various urban, rural and other sources and practices to nonpoint contamination.*
  - *Identification of nonpoint pollution sources.*
  - *Technically and economically effective strategies in agrichemical and agricultural practices.*
  - *Measurement of the effectiveness of different best management practices for all pollution sources.*
  - *Relationship between nonpoint pollution control and existing water quality standards.*
  - *Impact assessment on local economies from different approaches to nonpoint pollution control.*
- Coordinate the activities in nonpoint pollution control of EPA, USDA, NOAA, DOI, and other federal agencies and departments.
- Require state plans to be periodically reviewed.

*[For more information contact: National Association of Wheat Growers, 415 2nd Street, NE, Suite 300, Washington DC 20002. Phone (202) 547-7800. National Cotton Council, 1110 Vermont Avenue, NW, Suite 430, Washington DC 20005. Phone: (202) 833-2943. American Soybean Association 1300 L Street, NW, Suite 950, Washington DC 20005. Phone: (202) 371-5511. National Corn Growers Association, 201 Massachusetts Avenue, NE, Suite C-4, Washington DC 20002. Phone: (202) 546-7611.]*

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### *Senator Dave Durenberger Expresses His Views on . . . What the Clean Water Act Needs at This Point*

Statement of Senator Dave Durenberger [Minnesota] on the Water Pollution Prevention and Control Act of 1991 before the Subcommittee on Environmental Protection, of the Committee on Environment and Public Works, United States Senate, July 17, 1991.

*Mr. Chairman, I have been waiting a very long time to say "I told you so." On September 21, 1983, this Subcommittee held a markup session on amendments to the Clean Water Act. I was prepared at that markup to offer an amendment to require the implementation of best management practices to control sources of nonpoint pollution in watersheds that failed to meet water quality standards.*

*I did not offer the amendment because I did not have the votes. Instead we developed a voluntary program to be run by the States. I doubted the efficacy of that approach even as it*

was finally enacted in the early days of 1987 and said at the time that our first question at the beginning of the next reauthorization cycle would be whether section 319 had any impact on water quality. Our purpose here is not to collect assessments or to finance plans, but to improve water quality.

Has section 319 improved water quality by controlling nonpoint source pollution? There is absolutely no evidence that it has. Some will discount the lessons we should draw from the 319 experience. Some will say it was never funded and that a large commitment of federal dollars will turn the corner on the problem. Some will say that the new Coastal Zone Management amendments will provide the tools to make it work. Some will say that another round of voluntary programs based on the 1990 farm bill should be given a chance.

Well, all of that speculation on what might be should not obscure the lesson to be learned. Section 319 has not improved water quality one iota. And I told you it wouldn't way back when.

We have had any number of voluntary planning programs since the founding of the Soil Conservation Service in 1935. We have spent more than \$30 billion on voluntary cost share programs and water quality planning over that 50-year history only to find today that nonpoint source pollution, principally from agriculture, remains our biggest water quality problem.

So what do we do now? My recommendation would be that we go back to the fundamentals of the Clean Water Act. We need criteria documents that focus on the nonpoint problem. We need State standards and monitoring programs that are intended to measure nonpoint, rather the point source, impacts. We need watershed plans under section 303 [The TMDL section — Ed.] that carefully define the load reductions necessary to meet water quality standards. We need enforceable requirements applicable to private business entities and municipal activities that are polluting the waters that belong to all of the people of the United States.

In 1983 I was new to this Committee. Now after years of dealing with these issues, I have a somewhat different view of the nonpoint problem. We can't just throw away the fundamental tools of the Clean Water Act and expect to solve the nonpoint problem. We don't need a new program or a different approach. We just need a commitment to carry out the requirements of the Clean Water Act for all sources of pollution.

"Publish" and "promulgate" and "fund" are not the verbs that are going to solve the nonpoint problem. We need to "monitor", "identify", "allocate", "specify", "implement" and "enforce" if we are to solve this problem. The solutions are site-specific, water quality-related and in need of constant maintenance and adjustment. If we still don't have the political will to carry out that kind of effort, we ought to just acknowledge it and put our scarce resources into some other human problem more easily solved.

Thank you, Mr. Chairman.

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## **Reclaiming Two Watersheds**

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*Rock Creek, Idaho, After Ten Years: RCWP Achieves On-farm Success but Off-site Benefits Marginal.*

### **STREAMBANK EROSION REMAINS MAJOR IMPEDIMENT**

In Twin Falls County, Idaho, the Rock Creek watershed covers 198,400 acres of irrigated pasture and cropland, rangeland, woodland, and urban area. While point source pollution was virtually eliminated by the end of the 1970s, Rock Creek still carried loads of sediment and agricultural pollution. Since 1980, the watershed has been the subject of an intensive Rural Clean Water Program project, one of twenty selected in the nation. Additionally, the project was one of five funded for comprehensive water quality monitoring and economic evaluation.



A ten year findings and recommendations project report, indicating what does and doesn't work, has been prepared.

Terry Maret of Idaho's Division of Environmental Quality, Water Quality Bureau, recently prepared a summary report on the effects of the project on the cold-water fishery in Rock Creek. He noted that although sediment loadings at the lower end of Rock Creek have shown up to 78 percent reduction during the irrigation season,

*Recent monitoring and evaluation of data have provided insight to the effectiveness of cropland best management practices (BMPs) in restoring cold-water habitat in Rock Creek, a stream that once provided spawning and rearing habitat for ocean run chinook salmon and steelhead.*

*Today this stream ... is home to brown, rainbow, and brook trout. These species are of particular concern because of their sensitivity to pollution and their value as a recreation resource.*

*Rock Creek can support adult and juvenile trout introduced by stocking and escapement from nearby hatcheries, but the creek continues to have an impaired trout spawning habitat ... a result of sedimentation in which finer sediment is deposited on the bottom, destroying spawning areas.*

### **THE AGRICULTURE/FARMER COMPONENT**

The highly productive but highly erosive soils within the project area lie on gently sloping plains. The climate is semi-arid with annual precipitation averaging only about nine inches. The growing season averages 120 days. Almost 25 miles of Rock Creek, which flows northwest about 42 miles to the Snake River confluence, were involved in the project.

The goals of the Rock Creek Project were to significantly reduce the amount of sediment, sediment-related pollutants, and animal waste entering Rock Creek. These goals were met.

USDA's Agricultural Stabilization and Conservation Service (ASCS) — coordinating closely with Twin Falls and Snake River Soil Conservation Districts (SCD) — administered the project. A total of \$1,523,363 of cost-share assistance has been earned by the participant farmers/ranchers with another \$422,000 obligated to fulfill remaining contracts.

At the end of the contracting period in 1986, 182 contracts covering 21,147 acres had been written and approved. Acreages considered most critically erosive were steep slopes, rented land, intensively cropped land, and land with few irrigation improvements. Ten Best Management Practices (BMPs) were proposed for use in the project: permanent vegetative cover; animal waste control system; conservation tillage; stream protection system; critical area vegetative cover; sediment retention, erosion or water control structures; irrigation system improvement; fertilizer management; and pesticide management.

Water quality monitoring was, and is, being carried out by the Idaho Department of Health and Welfare, Division of Environmental Quality. Results through 1990 show that BMPs have reduced sediment and other pollutants to the agricultural drains studied. Suspended sediment and total phosphorus loadings during the irrigation season decreased in most sub-basin drains receiving treatment between 1982 and 1990. Rock Creek contributions to the Snake River showed a 75 percent decrease in sediment loading and a 68 percent decrease in total phosphorus loading.

### **THE STREAM PROTECTION COMPONENT**

However, in-stream beneficial uses including salmonid spawning and primary contact recreation, as set forth in Idaho's water quality standards for the lower reaches of Rock Creek, remain impaired. To put it differently, beneficial uses of the stream are not being supported by the water quality of Rock Creek.

The RCWP project findings and recommendations note that nutrient levels in Rock Creek for both phosphorus and nitrogen generally remain higher than recommended criteria for protection of cold water biota. Two additional significant findings are noted:

1) Substrate analysis using percent composition, embeddedness, habitat evaluation procedures, and artificial egg pocket and intragravel dissolved oxygen methods in Rock Creek reveals that all stations remain impacted by fine sediment. Fine sediment increases from the headwaters to lower reaches and in areas of active bank erosion. Some intragravel dissolved oxygen levels measured at lower Rock Creek stations fell below levels required for survival of trout embryos.

2) Streambank erosion continues to be the major source of sediment reaching Rock Creek. Sediment lost from this source has been estimated to be from two to over five times the amount originating from cropland during the irrigation season. This problem will continue to mask in-stream benefits which would be realized by land treatment activities funded in the project area. Measures should be taken to address this problem. Other sources of pollutants including stream alterations, fish hatcheries and rangeland runoff may be negating instream improvements resulting from (on-farm) BMPs implementation.

There are eighteen BMPs developed by the Soil Conservation Service and recommended for use in RCWP projects. As noted, ten BMPs were recommended for utilization, on-farm, in the Rock Creek Project. BMP 10, Stream Protection System, apparently was not as effectively implemented as other BMPs. Component actions of BMP 10 include: channel vegetation, fencing, filter strips, streambank protection and tree planting. The project's final findings and recommendations has this to say on the subject:

*Alternatives to provide more incentives for the use of BMP 10 (stream protection) should be developed. Other agencies — for example, state departments of fish and game — might be willing to contribute funds, thus making BMP 10 more economically feasible. Demonstrations might be effective in making streambank protection more appealing to farmers.*

EDITOR'S NOTE AND COMMENT: In short, the report indicates that BMP 10 was not implemented because it was *not appealing to farmers*. It needs to be made *more economically feasible*. Furthermore, it was probably not implemented because the benefits from implementing BMP 10 derived more to society at large rather than to individual farmers/ranchers.

In the future, a broader, resource-based, watershed conception of such projects must be accomplished at the outset. Full partnership of all state resource agencies at the planning, as well as implementation, monitoring and evaluation stages, is certainly indicated. This means going beyond ASCS and local SCDs for project conception and management. This means including state water quality, fish and game, public health, agriculture etc., agencies in the project. The ways and means of attaining and maintaining state water quality standards and support of designated surface water beneficial uses must be built into the project at the outset, even if it is initiated through USDA program sponsorship.

In any event, Idaho is now going to have to find ways to deal with streambank erosion if beneficial uses are to be restored in the lower part of the Rock Creek watershed.

[For further information contact: Terry Maret, Water Quality Bureau, Idaho Division of Environmental Quality, 1410 N.Hilton, Boise, ID 83706. Phone: (208) 334-5860. FAX: (208) 334-0417.]

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## *In Montana 319 Demo Project Tackles Streambank Erosion To Restore Fishery*

EDITOR'S NOTE AND COMMENT, (continued): The following is adapted from a story in the July-August, 1991 issue of *The Water Column*, the newsletter of Montana's Water Quality Bureau. The fishery in Ninemile Creek faces similar problems as those in Idaho's Rock Creek, reported above. Another watershed. Familiar, but somewhat different solutions. The upfront statement of problems to be solved and Forest Service involvement should help. Clearly, water of a high enough quality to support the trout fishery of Ninemile Creek and Clark Fork River is recognized at the outset. (Under Montana's Water Quality Standards, the fishery is the beneficial use. Heavy sediment loading in the spawning areas violates the clean water criteria necessary to protect that use.) The extended period of monitoring is a plus.

Ninemile Creek, located about 20 miles west of Missoula, is a critical spawning tributary to the Clark Fork River. There are only three of these primary tributaries in the lower section of the

river. Fish population studies conducted by the Department of Fish, Wildlife and Parks (DFWP) show that trout in the Clark Fork River migrate to Ninemile Creek to spawn from as far away as Quinn Hot Springs. The Springs are more than 80 miles downstream.

Heavy sediment loading, particularly in the lower three miles of the creek, has severely impacted water quality, reducing the trout fishery in the stream and in an extensive stretch of the Clark Fork. Accumulated sediment on the stream bottom often results in smothered fish eggs and emerging fry. Redd counts conducted by DFWP average 130 per mile in the upper 26 miles of the drainage but only 11 per mile in the bottom section. (Redds are trout spawning grounds or nests. - Ed.)

Because of Ninemile Creek's level of impairment, and the spirit of cooperation expressed by Ninemile landowners, it was chosen by the State Water Quality Bureau as a demonstration site for the nonpoint source pollution control program. Missoula County Conservation District (CD) is the sponsor for the demonstration project. Working with local volunteer landowners, the CD with the aid of the Soil Conservation Service, provides technical assistance in the development and implementation of best management practices (BMPs). These practices will improve water quality and restore the fishery and associated aquatic resources. Missoula Conservation District will receive \$94,600 over the next two years from the Water Quality Bureau to provide financial assistance to involved landowners to implement these BMPs.

Streambank erosion, headcutting and mass slumping of clay deposits are the major water quality impairment in the primary treatment area. Areas upstream and downstream from this critical region have been influenced by timber harvest, placer mining and grazing. These areas are also being addressed by the project.

The U.S. Forest Service is a cooperator in the demonstration project. The Ninemile Ranger Station is located within the project boundaries of the primary treatment area. The agency has been actively working with the Conservation District on implementation of several management changes on their lands to reduce the sediment pollution to Ninemile Creek. In addition, the Forest Service has taken the lead in monitoring the creek to evaluate the effectiveness of the BMPs applied. Sediment monitoring equipment has been provided by the Soil Conservation Service.

The application of the BMPs in this cooperative effort will continue over the next two to three years. The monitoring program, however, will extend for three to five years beyond the implementation phase. By continuing the monitoring, it will be possible to assess whether the practices installed are meeting the objective of improving water quality in this important western Montana stream.

*[For more information contact: Tara Comfort, Soil Conservationist, Missoula County Conservation District, 5115 Highway 93 South, Missoula, MT 59801. Phone: (406) 251-4826.]*

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## **Agricultural Notes**

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### *Poultry Industry Teams Up With Feds*

The Southeastern Poultry and Egg Association is teaming up with governmental agencies, including EPA, to advance the adoption of emerging technology for the environmentally prudent disposal of poultry wastes. Heading up the program is Ed M. Schwille, who has training and experience in poultry husbandry and water quality. Schwille will be based in the Chattanooga office of the Tennessee Valley Authority (TVA).

Schwille, in this newly created position, brings to the poultry industry a knowledge of USDA's programs, technical experience in water quality and issues confronting the agriculture community, and a keen awareness of EPA and TVA programs.

Schwille's appointment as interagency liaison representative was announced July 18 by the USDA Soil Conservation Service (SCS), EPA, TVA and Southeastern Poultry and Egg Association.

"Mr. Schwille has expertise in critical areas involving the environment, and he will serve as a communication bridge so that the poultry industry can work more closely with the government in finding solutions to water resource problems," said Southeastern's president J.B. Barnes.

The appointment of a liaison representative to work between the poultry industry and the government agencies is a new venture that reflects a new commitment on the part of poultry producers and integrators. The poultry industry wants to do everything possible to protect natural resources and use poultry manure as a resource rather than let it become a pollution source, according to Barnes. Through new technology, they wish to gain knowledge of the beneficial uses of poultry by-products.

Dead bird and litter disposal is expected to escalate water quality problems in areas where new poultry operations are concentrated. The accelerated growth rate in poultry production operations also lends emphasis to the critical need for developing new, improved technologies in poultry waste storage, utilization, and land application.

In those areas, the installation of waste management plans has reduced water quality problems. Targeting these areas will be one of Schwille's activities, which include assisting with the coordination of water quality demonstration project sites.

Other activities for Schwille are:

- Meeting with state organizations of Conservation Districts, poultry producers and agency representatives to present long range plans.
- Developing an exhibit for the 1992 International Poultry Exposition.
- Assisting TVA, SCS, EPA and Southeastern in workshops for interested poultry integrators and producers.

SCS is lending administrative and technical support to Schwille, while EPA provides guidance regarding the Clean Water Act requirements and EPA policy. In addition to an office, TVA provides the water quality specialist with guidance and information on poultry waste technology. Southeastern will provide both the vital link to industry and the sharing of their own research activities. EPA, USDA, TVA and Southeastern are all contributing funds to the program.

Schwille, in discussing his new assignment, said, "This is going to be a job that may eventually be a nationwide endeavor." He further stated that awareness of water quality concerns is growing in the poultry industry, and producers are interested in protecting natural resources.

*[For more information contact Ed M. Schwille, TVA-Haney Bldg, 2C, 1101 Market Street, Chattanooga, TN 37402-2801. Phone: (615)751-7297. FAX (615) 751-7479.]*

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## *Delaware's Inland Bays Recovery Initiative Announces That Perdue Farms Joins State in Urging Dead Bird Composting*

John Hughes, Director, Soil and Water Division, Delaware Department of Natural Resources & Environmental Control issued the following news release on July 31, 1991. Hughes also acts as a leader of the Delaware Inland Bays Recovery Initiative group.

### *Inland Bays Recovery Initiative Update*

*Perdue Farms, Incorporated, has joined the state of Delaware in recommending composting as its preferred form of dead bird disposal.*

Poultry growers face the constant challenge of disposing of dead birds. Past disposal practices, including burying birds in large pits have been found to contribute to the amount of nutrients that wash into the inland bays. High nutrient loadings can lead to increased algal growth which can "shade out" more desirable underwater vegetation and cause low oxygen levels.

In a letter to John Hughes, . . . Larry Winslow, Vice President for Fresh Poultry Operations, noted his company's "desire to begin a transition to composting as a more environmentally sound approach to dead bird disposal."

"Perdue Farms is taking a leadership role in the poultry industry," said Hughes. "Reversing negative environmental impacts on the inland bays is going to take changes and decisions from all of us. It is easier if we work together, as the people of Perdue Farms will work together, to make the changes that will help the bays."

Perdue Farms has pledged to take a three-pronged approach to making the transition to composting:

- Begin installing composting equipment in all new poultry houses.
- Send a communication to all Perdue producers supporting composting.
- Provide education in composting for all service staff.

Perdue Farms works with more than 200 poultry producers in Sussex County, Delaware.

[For more information contact: Mike Mahaffie, Delaware Department of Natural Resources and Environmental Control, Office of Information and Education, P.O. Box 1401, Dover, DE 19903. Phone (302) 739-4506.]

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## USDA Liaison to EPA Outlines Critical NPS Issues For Conservation Districts

On August 14, 1991, Barbara T. Osgood, USDA Liaison to EPA, spoke to the Northeastern Regional Meeting, National Association of Conservation Districts, in Salisbury, Maryland. Her subject was *Critical Nonpoint Issues for Conservation Districts in the Nineties*.

In opening her remarks Osgood outlined her liaison assignment at EPA:

*I work with key USDA and EPA personnel in the formulation of natural resource and environmental policy — particularly the reauthorization of the Clean Water Act and other significant issues such as coastal zone management and agricultural chemical use. My major role is to facilitate communication between USDA and EPA regarding USDA policies, programs and activities. As you can imagine, I will be deeply involved with nonpoint source pollution issues as a part of these responsibilities.*

She commented that " . . .the first issue that should capture the attention of conservation districts is the shift in focus at the national level from point source to nonpoint source pollution."

She then said: "The focus on nonpoint source pollution has been narrowed even further to highlight agriculture, since agriculture is a significant source of NPS through soil erosion, animal waste runoff, irrigation water return flows and other sources."

She noted that conservation districts were in a unique position, because of proven abilities, to "bridge the gap" between the federal government and federal programs, and the local community. She said:

*An example might be input from districts on how to provide for better coordination of conservation compliance plans and the 319 program to achieve water quality goals.*

Her second significant issue dealt with EPA's current emphasis on pollution prevention. She observed:

*The issue of pollution prevention is "tailor-made" for conservation districts. This kind of proactive approach to agriculture nonpoint source pollution is consistent with the role that districts have played since their formation in the 1930s.*

She then focused on Incentives vs. Regulations. Osgood made the following points on the subject.

*I think that it is safe to say that there is general agreement in both EPA and USDA that regulations are not the way to control agricultural nonpoint source pollution except in certain special situations, such as large animal holding facilities (which, by the way, are already regulated). However, it is also safe to say that there will be growing pressure for regulation if voluntary programs fail to demonstrate the ability to solve pollution problems.*

In conclusion, she called for a "sense of urgency," saying,

*We can no longer take a relaxed approach to resource conservation. We can't wait for the "ready, willing and able" to come to us...We must be constantly proactive, finding out where the problems are before they come to us, setting goals and making sure we achieve them...*

*My challenge to you is that you listen and learn more about what is happening with the Clean Water Act, the Coastal Zone Management regulations, the 319 program and other state and local activities that impact nonpoint source pollution. Make it your business to be informed, to know what your local needs are, and to take advantage of opportunities for funding and other resources.*

*Conservation districts are significant links in the chain of agencies and programs from federal to state to local level. We need you, and you have important work to do.*

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## Notes on NPS Technology

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### State Management of Stream Impacts from Channelization and Streambank Modification

#### **MISSOURI RAISES SOME WATER QUALITY PROTECTION QUESTIONS**

Dan Dickneite, of the Missouri Department of Conservation (fish and game) in Jefferson City recently used THE COUPON to express his agency's frustrations in protecting stream water quality from various land disturbance activities and ask for information and help. He said:

*We have begun an extensive stream protection/management program. As we get more into stream problems, we are becoming increasingly frustrated with the lack of protection of stream water quality on land disturbance activities (in particular channel modification and channelization, but also dredging and land development). All water quality parameters in this State dealing with sedimentation (turbidity, suspended solids, etc.) are narrative in our Water Quality Standards. Our narrative criteria are unenforceable, according to our Department of Natural Resources. Another difficulty is the lack of Section 401 enforcement for activities such as channelization.*

The following questions raised by Dickneite have also been raised by other state agency personnel.

- Do other states use federal or state regulations to address channelization, instream dredging and other stream modification activities?
- How can states demonstrate water quality standards violations? Are other states enforcing narrative criteria?
- How can states establish and enforce water quality criteria (narrative or numeric) for sedimentation, turbidity, etc.?
- What can natural resources, fish and wildlife, and conservation agencies like ourselves do to make an impact?
- What is EPA's role in assuring enforcement of water quality standards via section 401?

*[For more information on the Missouri questions, contact Dan F. Dickneite, Missouri Department of Conservation, PO Box 180, Jefferson City, MO 65102. Phone: (314) 751-4115. FAX: (314) 893-6079.]*

## **DIFFERENT STATE APPROACHES**

To respond to these questions, the editors looked for information on state programs that are addressing channelization, streambank modification and related issues. While we are unable at this time to provide direct answers to all of these questions, the information presented below does indicate some of the directions and approaches that are being taken.

(Perhaps other states have had additional experiences that can contribute to this dialogue. Let us hear from you. Use THE COUPON. We'll pass your experiences along. — *The editor.*)

### **RHODE ISLAND**

In the April-May (#12) issue of *NEWS-NOTES* we reported on the Rhode Island experience and how that state is now using section 401, State Water Quality Certification.<sup>1</sup> In that story, Susan C. Adamowicz, Principal Natural Resource Specialist, Division of Water Resources of the state's Department of Environmental Management, made the convincing point that: "...State Water Quality Certification is only as strong as the state's regulations on water pollution control and the state's administration of its own permit program."

In the Rhode Island case, its 401 certification process involves such contemporary water quality issues as anti-degradation, wetlands protection, and nonpoint source management. The state reported that certification can be issued with limited or extensive stipulations to be incorporated into final permits, or it can be withheld, preventing permit issuance. Adamowicz summed up her own experiences concerning state use of the certification process as follows:

*Coordination of the state's permitting agencies with the Division of Water Resources has provided a comprehensive tool for addressing a wide variety of water quality concerns. The state's anti-degradation regulations and rules prohibiting the further degradation of waters not meeting state water quality criteria create a two-edged sword for tackling unusual discharges into the state's waters. Water Quality Certification could be one of the best agents for addressing some of the pressing issues of the 90s.*

*NEWS-NOTES* issue #12 reports on two case studies illustrating the application of these processes in Rhode Island. The story is available on the NPS/BBS . Or, use THE COUPON to ask us for a copy.

*[For more information contact: Susan C. Adamowicz, Division of Water Resources, Dept. of Environmental Management, State of Rhode Island, 291 Promenade Street, Providence, RI 02908-5767. Phone: (401) 277-3961.]*

### **A CALIFORNIA EXAMPLE**

It should be added here that if, in the view of the state, an activity has a potentially adverse effect on the water quality of the state's receiving waters, and its does not require a federal license or permit, the state has every right to require a state permit under state law or regulation if it so chooses. A state's ability to enact more extensive state laws and regulations is protected in Clean Water Act (CWA) section 510.

For example, the CWA contains an explicit provision [CWA sec. 502 (14)] that exempts return flows from irrigated agriculture from the definition of "point sources" and, thus, from NPDES requirements. In setting up its permit program, the state of California, under its *Porter-Cologne Water Quality Control Act*, chose to require permits for *any* flows to receiving waters that would threaten the attainment or maintenance of state water quality standards.

Thus, in one California case, agricultural return flows (managed in this case by the Department of Interior's Bureau of Reclamation) entering the Kesterson Wildlife Refuge (managed by Interior's Fish and Wildlife Service) became the subject of a state-issued permit — not withstanding that the waters were irrigation return flows or that the permittee was a federal agency or that the receiving waters were on federal lands. State law prevailed in the matter of the application of state water quality standards in the protection of the state's waters.

*[For further information contact: Dennis Wescott, Senior Land and Water Use Analyst, California Regional Water Quality Control Board - Central Valley Region, 3443 Routier Road, Sacramento, CA 95827. Phone: (916) 361-5688.]*

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<sup>1</sup> Section 401 of the CWA requires a state to certify that proposed project developments requiring a federal permit (e.g., under 404 of the CWA) or license (e.g., under the jurisdiction of the Federal Energy Regulatory Commission), will meet applicable state water quality laws and regulations regarding discharges into waters of the state. EPA has published guidance entitled *Wetlands and 401 Certification, Opportunities and Guidelines for States and Eligible Indian Tribes* (April 1989). Copies may be obtained by writing: Wetlands Div., OWOW (A-104F), US EPA, 401 M St., SW, Washington DC 20460.

## **OHIO**

In the state of Ohio, the 401 permit (the water quality certification) requires attainment of the state's Water Quality Standards, including biological criteria.

Ohio is therefore able to control land disturbance activities directly through its Water Quality Standards, which include numeric biological criteria. Dredging and filling activities also may not violate the state's Water Quality Standards.

However, relatively small projects are often allowed to proceed as long as some protective measures, e.g., habitat protection, are in place.

*[For further information contact: Colleen Cook, Ohio Environmental Protection Agency, Water Quality Planning and Assessment, P.O. Box 1049, Columbus, OH 43266-0149. Phone: (614) 644-3076.]*

## **MARYLAND**

As in Ohio, Maryland's 401 certification program focuses on ensuring that proposed land disturbance activities do not result in the violation of the state's Water Quality Standards. While Maryland's standards include both narrative and numeric criteria for turbidity, they do not include biological criteria.

In addition to ensuring attainment of Water Quality Standards, Maryland also requires land disturbance projects to have a Grading and Sediment Control Plan which has been approved by the Soil Conservation District.

*[For further information contact: Mary Jo Garreis, Water Management, Maryland Department of the Environment, 2500 Broening Highway, Baltimore, MD 21224. Phone: (301) 631-3902, and Molly Cannon, Sediment and Stormwater Administration, same address as above. Phone (301) 631-3543.]*

## **IDAHO**

The state of Idaho's State Stream Channel Protection Act, adopted by the state's Water Resources Board, includes rules and regulations to protect the stream channels of the State and their environs from alterations which would adversely affect fish and wildlife habitat, aquatic life, recreation, aesthetic beauty or water quality. The Act requires a permit for most stream alterations; approximately 300 stream channel alteration permits are processed yearly by the Department of Water Resources. Further, the Act also requires "approved BMPs" for nonpoint sources in the State Water Quality Standards.

The state's minimum standards describe construction procedures and designs for riprap, dikes, levees, jetties, culverts, bridges, pilings, and pipe crossings. They also specify methods for removal of sand and gravel deposits, and requirements for operating suction dredges.

No numeric biological criteria are mentioned in the Idaho regulatory programs.

*[For more information contact: Erv Ballou, Idaho Department of Water Resources, 1301 N. Orchard, Boise, ID 83706. Phone: (208) 327-7900.]*

## **EPA PROGRAMS**

EPA's policies and programs relating to channelization and streambank modification have been evolving in recent years. We provide information below on these policy developments that we believe will lead to more widespread attention to water quality impacts resulting from channelization and streambank modification.

## **GEOGRAPHIC TARGETING AND RESOURCE-BASED PROGRAMS**

Until relatively recently, the EPA has been basing its regulatory actions primarily on controlling chemicals from point sources of pollution (e.g., through the NPDES permitting program). Through these efforts, tremendous progress has been made in eliminating point source pollution problems. Other problems have become more apparent such as nonpoint sources, Combined Sewer Overflows (CSOs), stormwater, habitat alteration, and the like. It is critically important to address cumulative impacts from all sources of pollution in a comprehensive manner.



To respond to these needs, EPA is working to expand federal and state approaches to water quality management to include resource-based (holistic) strategies.

For example, programs such as the National Estuary Program (NEP), the Near Coastal Waters Program (NCWP), and the more recent Watershed Protection Initiative (WPI) all focus on the protection of the water quality of a particular targeted geographic area. Instead of a point source-by-point source solution, an integrated geographic approach will focus on the entire water resource.

### **IMPROVED WATER QUALITY STANDARDS**

In addition to developing new programs which encourage a resource-based approach to water quality management, EPA is also broadening requirements for State Water Quality Standards. EPA and the states are currently working to integrate new criteria related to nontraditional sources of pollution into State Water Quality Standards. Biological criteria and habitat criteria will enable EPA and the states to better use the existing CWA statutory framework to address issues such as channelization.

### **TOTAL MAXIMUM DAILY LOADS (TMDLs)**

EPA has taken several steps to fully implement the TMDL process under CWA section 303(d). The TMDL process provides a mechanism for assessing water quality impairments, determining the types of pollution load causing the impairments, and developing control measures that will meet applicable water quality standards. The traditional, chemical contaminant approach (e.g., nutrients, biochemical oxygen demand, metals) will not lead to attainment of designated uses (water quality standards) in many cases. In these cases, designated uses can only be attained if non-chemical factors such as hydrology, channel morphology and habitat are also considered and addressed. EPA policy now recognizes that it is appropriate to use the TMDL process to establish control measures for quantifiable non-chemical parameters that prevent the attainment of water quality standards. Control measures may be developed and implemented in ways similar to chemical loads to meet a TMDL that addresses non-chemical waterbody stressors. As methods are developed to deal with these non-chemical stressors, EPA and the states should incorporate them into the TMDL process. In this way, increased use of the TMDL process provides states with the opportunity and tools to begin to address the wide range of water quality problems found in the nation's waters.

[For more information on EPA's role contact: Bruce Newton, Chief, Watershed Branch, Assessment and Watershed Protection Division, OWOW. U.S. EPA, 401 M Street SW, Washington DC 20460. Phone (202) 260-7076.]

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## *Managing Fisheries and Wildlife on Rangelands Grazed by Livestock— Guidance and Reference Document For Biologists — A REVIEW*

William S. Platts, a retired U.S. Forest Service fisheries biologist, has written THE definitive guidance document on *Managing Fisheries and Wildlife on Rangelands Grazed by Livestock*. Prepared for the Nevada Department of Wildlife, Fisheries Division, its stated purpose "...is to allow biologists to more effectively participate in the management of rangeland resources."

In the *Commentary* at the outset of the last issue of *NPS NEWS-NOTES* (#14) we quoted a bit from Bill Platts, detailing some of the points he makes in formulating cattle grazing strategies that are compatible with essential environmental values and constraints.

At that time we cited Platts as saying:

*Today's range and fisheries specialists must tailor grazing to fit the needs of streambanks, stream channels, water quality and streamside vegetation....In formulating and evaluating a grazing strategy, many environmental conditions must be considered.*

We review his full report here. This is a practical, thorough-going work written by one who, obviously, has had a lifetime of hands-on experience with all aspects of his subject, and one

who does not hesitate to forthrightly express an informed opinion. As he indicates in his introduction:

*There is only one thing worse than a biologist who is not getting "dirty" on the ground with those people he or she must work with. This is the biologist who is so busy in the office he cannot get out and live with a cutthroat trout or a great horned owl.*

*You must continue to have the feel for slime, scales and feathers. If you do not, it puts you in the same category as a livestock operator who no longer deals in manure, dust, rain and cold. If livestock operators hadn't lived in the field they would no longer be in business.*

The opening sentence states: "The purpose of this Guidance and Reference Document is to allow biologists to more effectively participate in the management of rangeland resources." In carrying out this charge, Platts deals in detail with key areas where there is need for information and knowledge on alternatives, options, and/or constraints on management actions:

- Livestock impacts on vegetation, streambanks, and fisheries habitat.
- The scope of the issue at hand, historically, at present, and in the future.
- Riverine-riparian ecology: riverine structure and function, pools, riffles, bed material, streambanks, temperature, bank stability and floodplains.
- The legal mandates: some twelve federal laws dealing with livestock grazing, public lands, management and environmental matters, including the Clean Water Act.
- Grazing strategy definitions and interpretations.
- Grazing strategy development.
- Grazing strategy compatibility with riverine-riparian ecosystems; problems and solutions.
- Procedures for working with federal agencies and programs: the Forest Service, Bureau of Land Management and EPA.
- Working with ranchers.

Following this collection of detailed and easy-to-follow road maps, guidance and instructions, come eleven case studies outlining results obtained from the application of techniques and remedies.

The guidance document then turns to a discussion of techniques and aids to doing the job:

- The classification of riverine-riparian habitats in the context of their surroundings, which Platts indicates " ... provides an effective basis for resource assessment and management."
- A summary of inventory and monitoring principles and measures, covering:
  - Streambank stability indicators
  - Changes in bank morphology
  - Streambank changes associated with timing of flow
  - Water quality.
- A final section dealing with Streamflow Determination and Evaluation, states at the outset:

*Understanding flow effects or how to mitigate for effects in flow-altered streams is complicated, because of the high variation in geology, climate, terrain, hydrology, and disturbances by man. Such constraints necessitate detailed understanding of the natural functioning of ecological systems, their probable behavior under various resource development programs, and their ability to function indefinitely under whatever management scenarios are employed.*

Through it all, Platts is writing at the people level, in practical terms. He says:

*If I were just starting out again in riverine-riparian management, the first thing I would do is to go completely through the Glossary. You will never work successfully with people until you can understand and talk their language. The Glossary will allow you to do this, especially if you go out and practice this language on your colleagues. Nothing stirs up interest more than being able to talk intelligently about the "bucking pasture," or the use of "feeding supplements" to gain better control over livestock distribution.*

Of course, he knows his subject intimately and communicates this knowledge with an low-key enthusiasm that has to rub off on the reader. Consider his discussion of streambanks:

*Livestock grazing effects on streambanks occur mainly in two related categories - the removal of bank vegetation or change in species composition, or trampling and shearing banks themselves. As discussed in the section on vegetation, the roots stabilize streambank soils and the above-ground stems and leaves dissipate the energies of water, ice, and wind, to reduce streambank erosion.*

### **AVAILABILITY OF COPIES**

The bad news is that the state of Nevada does not have copies of this monumental work available for general distribution. The sort of good news is that in our discussions with Platts and LeRoy McLelland of the Fisheries Division of the Nevada Department of Wildlife, it developed that Nevada would be willing to discuss with interested state departments of fish and game, the possibility of making available to them sets of reproducible originals at their cost. Such departments could then produce limited printing for distribution within their own states. The idea is certainly worth exploring. As Platts says in his introduction:

*While the scope of this document is keyed mainly to the great basin of Nevada, much of the contents has application to the western United States, and many areas of the world. The document is large and cumbersome. Don't waste valuable time reading the complete document. It is designed so the reader does not have to spend hours reading or understanding dull models, methods, or historic accounts to make a good contribution to rangeland management. The format allows fast, easy retrieval of information needed for interpretation or decision making. Use it like a dictionary to get needed information quickly.*

[For more information contact: LeRoy McLelland, Nevada Department of Wildlife, Fisheries Division, PO Box 10678, Reno, NV 89520, Phone: (702) 688-1532; or Bill Platts, Don Chapman Consultants, Inc., 3180 Airport Way, Boise, ID 83705. Phone: (208) 383-3401.]

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## *Development in the Watershed Subject of Fisheries Management Symposium*

*Dealing With Development in the Watershed* is the theme of a fisheries management symposium sponsored by the Northern Division of the American Fisheries Society, to be held in Newport, Rhode Island, November 12-15, 1991. (For location and registration details see the Datebook in this issue.)

The five plenary sessions will deal with significant aspects of the symposium theme:

**1. Overview - What is the role of fisheries management and the fisheries manager?**

**2. Evaluation Techniques in Relation to Fisheries Management of Watersheds**

- What are the appropriate diagnostic tools available for evaluating impacts of development on fisheries resources? Under what conditions are the methods appropriate?
- What are the limits of the current, commonly accepted methods?
- How do recently introduced methods for habitat evaluation stack up against other available methods?

**3. Prevention vs Mitigation - prevention of development in a sensitive watershed versus allowing the development to proceed with mitigation for the impacted resources.**

**4. Developing Realistic Management Goals, Objectives, and Standards (G-O-S) - Case studies of nationally known watershed projects will be used:**

- Basis for the management G-O-S.
- Impacts of the management G-O-S on other water uses.
- Who develops fisheries management G-O-S?
- How did fisheries management G-O-S get inserted into the watershed planning process?
- The relationship between fisheries management G-O-S and public policy.

**5. Public Education and Involvement - ways in which public education and involvement affect fisheries management of watersheds. Riverkeeper programs, citizen monitoring and citizen enhancement programs, and the role of special interest groups in the legislative and public policy process.**

*[For more information on the program contact: John Boreman, U Mass/NOAA CMER Program, Blaisdell House, Univ. of Massachusetts, Amherst, MA 01003-0040. Phone: (413) 545-2842.]*

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## *New Software Version Developed for Reporting State NPS Monitoring Program Project Actions*

The Nonpoint Source Management System (NPSMS) software has been upgraded to provide greater capabilities and improved usability. NPSMS was designed to be used as a tool to assist states, EPA regions and headquarters in tracking monitoring projects funded under Section 319 of the Clean Water Act. The software and optional data entry forms are based on draft EPA guidance entitled *Watershed Monitoring and Reporting for Section 319 National Monitoring Program Projects*.

The new Version 3.0 has many new features including expanded reports, PC-based graphics, word processing capabilities, and the ability to enter biological and habitat monitoring data. Many enhancements were also made to improve the user interface including pull-down menus, data validation, look-up tables, variable length notes fields, and context-sensitive help.

NPSMS is a PC-based application developed to facilitate data input and assist in the generation of the annual reports submitted to EPA headquarters under section 319. The NPSMS software is written in Clipper, Microsoft C, and assembly language. It is designed to provide management of monitoring data for a single state, a region containing several states, or a headquarters office with data for any number of states. The database design of NPSMS is such that even with large amounts of data, negligible speed degradation would be noticed while performing tasks such as data entry, searching, or reporting.

The NPSMS Version 3.0 menus are greatly enhanced with a pull-down main menu, 1-2-3 type menus, and pop-up menus. Additionally, data entry screens have been standardized and two types of help functions make the system easier to learn and use. Look-up tables have also been added to validate, simplify and automate data entry.

A new graphics module has been added to NPSMS to illustrate differences and trends in monitoring data entered into the system. The high-resolution graphics are displayed on the PC's EGA or VGA monitor with no additional hardware required. Currently, five graphs are available, including plots and bar charts of pollutant contributions, water quality parameter trends, biological versus habitat comparisons, and project funding information. The graphic screens can be printed on a laser printer, dot-matrix printer, or HP plotter. The graphic images can also be saved to a disk file and imported into a word processor or graphics program.

NPSMS now provides the capability of handling biological and habitat monitoring data as well as chemical and physical data. Explanatory variables (co-variates) can be entered for different types of data, and chemical parameters can be included as explanatory variables in a biological/habitat monitoring plan. Three types of monitoring protocols are supported in NPSMS:

- 1) upstream-downstream study
- 2) paired-watershed study
- 3) single station study.

An unlimited number of parameters can be monitored for each STORET station in the study.

The NPSMS software allows for annual reporting of: 1) water quality data, 2) implementation data to track the progress of the project, and 3) narrative information to help explain the project and the annual report. The narrative information can be entered into the NPSMS note fields which provide word processor-like capabilities. NPSMS also provides the ability to export the annual report data to a diskette which can then be submitted to EPA.

If a computer is not available for use, the NPSMS package includes manual data entry forms that can be used to record the same information as the software. The manual data entry forms are organized much like the NPSMS data entry screens and include the same look-up table information to help enter field names.

[For more information or to request copies of the draft documents and software, contact: Steve Dressing, Assessment and Watershed Protection Division (WH-553), U.S. EPA, 401 M Street, SW, Washington DC 20460. Phone: (202) 260-7110; or Tom Hart, Horizon Systems Corporation, 423 Carlisle Drive, Herndon, VA 22070. Phone: (703) 471-0480.]

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## *New Wetlands, Stormwater, NPS Control Bibliography Is Available*

Under a headline saying *Goldmine For Sale* Washington State Department of Ecology's *Sources*, the quarterly bulletin on financial and technical help for environmental problems, awards, achievements, availabilities, reported as follows (herewith reprinted, with permission):

Erik Stockdale's long-awaited *Freshwater Wetlands, Urban Stormwater, and Nonpoint Pollution Control: A Literature Review and Annotated Bibliography* is now available. Stockdale received grants for his work from a number of sources including (the state of Washington's) Centennial Clean Water Fund, 205(j) federal grants, Coastal Zone Management and the Environmental Protection Agency.

"Orders are flooding in from all over the country for this technical goldmine," says Ecology project manager Janie Civile. "It's the most exhaustive annotated bibliography of published storm water and wetlands research I've seen."

To order the 267-page report, send \$21 to King County Resource Planning, Environmental Division, 3600 136th Place S.E., Bellevue, WA 98006, attention Beryl Olson.

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## **What's New On the Nonpoint Source Electronic Bulletin Board (NPS/BBS)**

### *HOW TO ACCESS THE NPS/BBS*

To access the NPS/BBS, you will need a PC or terminal, telecommunications software (such as CrossTalk or ProComm), a modem (1200 or 2400 baud), and a phone line that will handle modem communications.

The telecommunications parameters are: no parity, 8 bits, 1 stop-bit (on some systems you might only need to type the commands N-8-1) and full duplex or no local echo. IBM-compatible PC users should select VT100 or ANSI-BBS terminal emulation if your system permits.

The NPS/BBS phone number is: (301) 589-0205.

For further assistance in accessing the NPS/BBS refer to your computer and modem user's manuals, or write to NEWS-NOTES for a copy of the complete user's manual. (Use THE COUPON inside the back cover.)

When you first access the BBS, you will be asked to register and create a password. Write down this password as you will need to use it every time you access the BBS.

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## Now Online—A Searchable Database For Individual NPS NEWS-NOTES Articles

An online database of *News-Notes* articles is now maintained on the NPS BBS. The *News-Notes* article database is accessible through a door on the NPS BBS. To use it, type OPEN from the "Main Board Command" prompt and then choose the option for the *News-Notes* database.

To see a complete set of instructions on using the *News-Notes* Articles Database, read Bulletin #5 online. (The entire text of each issue of *News-Notes* can still be downloaded in File Area 1 of the NPS BBS Main Board.)

### **TIPS ON USING THE NEWS-NOTES DATABASE**

When you use the *News-Notes* door on the BBS, a program called TextBase will manage your access to the *News-Notes* database. You do not need to be a sophisticated computer user to view articles in the *News-Notes* database. TextBase will present easy-to-follow menus and prompts. If at any prompt you are unsure what to do, you can enter a question mark to get more information about that step.

The *News-Notes* database consists of four distinct fields:

1. Issue number, date, and the sequential number of the article.
2. Title
3. Text (contains the full text of the article).
4. Keywords (contains selected keywords assigned to assist in locating individual articles or groups of articles on particular subjects.)

You may search for *News-Notes* articles containing any words you specify. The main menu allows you to choose whether you want to search in the article number, title, text, keywords, or all four fields. If you know a word or words from the title, use the Title Search option. If you want to search subject words, it is best select All Fields. TextBase allows you to select articles for display by performing a 'search'. A search means finding articles that contain the words you specify. You may enter as many lines of words as you wish for a search. Each word you add on a new line further narrows the number of records that TextBase will select (i.e., a logical AND operation).

To search for articles containing any of several words, separate each word by a comma:

— *Cincinnati, Chicago, Washington*

In this example, TextBase locates articles containing ANY one of the three words: "Cincinnati," "Chicago," or "Washington."

To search for articles containing all of several words, place each word on a separate line:

— *pesticides*  
— *groundwater*

In this example, TextBase locates only those articles that contain both words: "pesticides" and "groundwater."

To truncate a search word at the end of a string, use the asterisk (\*) to indicate that you wish to search any ending after the asterisk. For example:

— *toxic\**

retrieves "toxics," "toxicity," "toxicology," or "toxic."

After each search statement, TextBase tells you how many articles matched your search criteria and allows you to narrow your search criteria before displaying the results of your search.

When you end your search, TextBase presents the Report Menu. At this point you can select what kind of report you want—just the article numbers, numbers and titles, or number, title, and the entire text of the article. If you want to capture the report to your disk or printer, you must follow the procedures in your communications program to begin the capture (or log).

We hope this additional service will increase the value of both *NEWS-NOTES* and the *BBS* to our readers. Happy searching.

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## **Video Reviews**

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### *Lines on the Land*

A new video tape, *Lines on the Land*, designed for children in sixth through eighth grades, is now available from the National Association of Conservation Districts. The material helps people unfamiliar with conservation practices understand the relationship between agriculture and water quality. In the video different methods of tillage are related to different kinds of lines.

Lines made by different agricultural practices are compared to objects familiar to children; a grassed waterway is compared to a water slide, crop rotation to a quilt, contour strip cropping to an American flag waving in the wind, terracing to stair-steps, and conservation tillage to a double cheese pizza. The narrator names the method of tillage and explains how each method conserves topsoil. For instance, the tape explains that contour farming creates a series of small dams that hold water on the slope and prevent erosion. There is footage of filter strips and sediment control basins that filter sediment and other pollutants from runoff water before water enters streams, lakes or reservoirs. Likewise, rows of shrubs and trees are shown planted at right angles to prevailing winds to lift the wind above the fields and reduce wind erosion. The videotape and the accompanying brochure also point out other ecological benefits of windbreaks: energy savings and food and shelter for wildlife.

This tape might be useful in the schoolroom to illustrate agricultural conservation methods in a geography class or an earth science class. Students are shown making models of field erosion in small flat pans, an activity that classroom teachers might initiate. The tape might conceivably be used as an illustration in a discussion of lines in math class. In addition, 4-H leaders should find that the tape fits in well with other agricultural and natural resources material.

Information is presented in a straightforward, factual manner. There are no gimmicks, "talking down" or "cuteness" that might be offensive or too exciting for some students of the target age group. The introductory music is bouncy but not distracting, and nothing in the tape would be "dated" in the near future except possibly the farm machinery shown tilling and harvesting crops.

This package was produced by the Iowa Association of Soil and Water Conservation District Commissioners, USDA Soil Conservation Service, Division of Soil Conservation of the Iowa Department of Agriculture and Land Stewardship, and Institute for Environmental Education at the University of Northern Iowa. The \$26-package includes 16 lesson plans with fun, hands-on activities (not seen by this reviewer), a full-color brochure for use by the teacher, and a ten-minute video.

To order, call the NACD Service Center at 1-800-825-5547.

[The reviewer, Carol Forshee, is a retired science, social studies, and math teacher with 15 years of classroom experience—as well as being a News-Notes staffer.]

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## Iowa Releases a Videotape on Lake Restoration

A new videotape on how to improve water quality and recreation in Iowa lakes is now available for public use from the Iowa Department of Natural Resources (DNR). "Lake Restoration: An Investment That Pays Off" is a 20-minute videotape that identifies the major problems affecting lakes and describes costs and benefits of maintaining and improving lake water quality and recreation.

"Soil erosion is the major source of pollution of Iowa's lakes," said Allen Farris, administrator of the DNR's fish and wildlife division. "Lakes can be improved and restored, but reduced sedimentation and turbidity are the key factors which determine lake life and quality of recreation."

The video features examples of restoration at several Iowa lakes. These examples include restoration methods and costs of restoration, which are weighed against the economic benefits of improved water quality and recreation. Farris feels education of Iowans in controlling and preventing nonpoint source pollution of lakes is critical.

The video is available for groups interested in improving a public or private lake. It can be used as an educational tool for high school students and adults. The tape was produced by the Iowa DNR in cooperation with the U.S. Environmental Protection Agency and the Carroll County Conservation Board.

[For more information, contact Ross Harrison, Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, IA 50319-0034. Phone: (515) 281-8395]

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## OWOW Newsletters Available

### Companion OWOW Newsletters Available For The Asking

It was never intended to be a well kept secret, or even a secret at all. The fact is that the Office of Wetlands, Oceans and Watersheds (OWOW) is home to two newsletters, companions to this occasionally published bulletin: *Nonpoint Source NEWS-NOTES*. Here are the facts as provided to *NEWS-NOTES* by those who put these other outstanding publications together.

- *The Water Monitor*, previously called the *Surface Water Assessment Program Status Report*, is issued monthly by the Assessment Branch, Assessment and Watershed Protection Division, OWOW. This report allows surface water monitoring staff in the states, EPA Regions, and EPA Headquarters to exchange information on their programs and activities. Among material included in *The Water Monitor* are highlights of water monitoring activities in the states and regions; summaries and announcements of meetings and publications; and updates on innovative research and program developments. Articles are submitted by Regional Monitoring and Total Maximum Daily Load (TMDL) Coordinators, the states, and the three divisions within OWOW.

To be placed on the mailing list for *The Water Monitor*, contact Nina Harlee, Editor, at (202) 260-7017 or U.S. EPA, Assessment and Watershed Protection Division (WH-553), 401 M Street, SW, Washington DC 20460. There is no charge.



- *Coastlines* is published periodically to provide information on estuaries and near coastal waters to local, state and federal officials and citizens groups who are interested in the National Estuary Program and other coastal initiatives. It is produced by the Alliance for the Chesapeake Bay in cooperation with EPA and OWOW.

People who want to receive *Coastlines* should contact the Alliance for the Chesapeake Bay, 6600 York Road, Baltimore, MD 21212. The Alliance phone number is (301) 377-6270.

The editors of *NEWS-NOTES* feel that all three publications compliment each other nicely and recommend that *NEWS-NOTES* readers who want to keep up on OWOW's broad range of clean water activities would do well to take the necessary steps to be put on the mailing lists for *The Water Monitor* and *Coastlines*.

## **Datebook**

This DATEBOOK has been assembled with the cooperation of our readers and *Conservation Impact*, newsletter of the Conservation Technology Information Center (1220 Potter Drive, Room 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.

**1991**

### **September**

### **Meetings and Events**

- 5-6 *Eighth Annual Fall Field Days*. The Thompson Farm, Boone, IA. Contact: Thompson Field Days, c/o Skip Kauffman, Rodale Institute, 222 Main St., Emmaus, PA 18098. Phone: (215) 683-6383. Or contact Thompson Farm, Rt. 2, Box 132, Boone, IA 50036. Phone (515) 432-1560. Demonstrations on rotational grazing, walk-through fly trap, raising your own cover crop, 7-year cash-grain rotation, farrow-to-finish hogs without antibiotics.
- 5-6 *EPA Training Workshop: Methods for Estimating NPS Contaminated Groundwater Discharge to Surface Water*. Embassy Suites Hotel-O'Hare. Rosemont, IL. Contact: ICF, Inc., 1 East Wacker Dr., Suite 2700, Chicago, IL 60601, Attn: Groundwater Training Workshop. Hotel reservation: Phone (708) 699-6300. For water quality managers and environmental planners. Introduction to low-resource methods for estimating movement of contaminants through groundwater to surface water: hydrograph separation and analytical groundwater flow estimates. No fee.
- 7-8 *Introduction to Geographic Information Systems (GIS) for Water Resources Applications*. Baton Rouge, LA. Contact: Michael C. Fink, AWRA Meetings Manager, 5410 Grosvenor Lane, Bethesda, MD 20814. (301) 493-8600. For middle management-supervisory personnel.
- 8-13 *Water Management of River Systems and Resource Development of the Lower Mississippi River, AWRA 27th Annual Conference and Symposium*. New Orleans, LA. Contact: The American Water Resources Assoc., 5410 Grosvenor Lane, Bethesda, MD 20814-2192. (301) 493-8600. Conference: Water Management of River Systems, Symposium: Resource Development of the Lower Mississippi River.
- 11-12 *Sixth Annual Groundwater Protection Seminar*. San Antonio Convention Center, TX. Contact: Texas Water Commission, Ground Water Section, PO Box 13087, Austin, Texas 78711. (512) 371-6319. Protecting groundwater supplies from contaminants. Wellhead protection, NPS contamination, local emergency spill response, and groundwater protection strategy.
- 11-13 *Regulation of Altered, Artificial and Managed Wetlands: Assoc of State Wetland Managers*, Chicago, IL. Contact: Association of Wetland Managers, Box 2453, Berne, NY 12023-9746.
- 11-13 *Water Systems Modernization Symposium for STORET, BIOS, ODES*. Sheraton Park Central, Dallas, TX. Sponsored by EPA, Office of Information Resources Management. Contact: Irv Weiss, U.S. EPA, ORIM PM-218B, 401 M St. SW, Washington DC, 20460. Phone: (202) 260-6991 Email EPA 3754. OR Sandra Gehring-Ken Green, ViGYAN, Inc., 5203 Leesburg Pike, Suite 900, Falls Church, VA 22041. Phone: (703) 931-1100. FAX (703) 820-4332.

Datebook (continued)

15-18 *Integrating Geographic Information Systems and Environmental Monitoring* Boulder, CO. Contact: GIS/Modeling Conference Secretariat NCGIA, University of California, Santa Barbara, CA 93106 (805) 893-8224.

26-27 *Nonpoint Source Water Quality Conference—Coalition for Building NPS Problem-Solving* Park City, UT. Contact: Jim Paraskeva (801) 538-7172. Make hotel reservations directly at Prospector Square Hotel (800) 453-3812. Twelve presentations on NPS topics, including: prevention of groundwater contamination, irrigation systems analysis, stream restoration, education, sediment and erosion control. Case studies of ongoing NPS projects will be used to facilitate an exchange of information and ideas.

**October**

1-3 *No-Till in the 90s* Allentown, PA (October 1); Phillipsburg, PA (October 2); Butler, PA (October 3). Contact: Lynn Hoffman, (814) 692-7955 or Joel Myers (717) 782-4403. Three one-day workshops with emphasis on the water quality aspects of no-till rotations.

7-10 *64th Annual Conference and Exposition of the Water Pollution Control Federation* Toronto, Canada. Contact: Nannette Tucker (703) 684-2443. Toxicity testing and bio-monitoring, water re-use projects, surface water quality management, ecosystem assessment for water quality.

15-17 *Riparian Management Workshop* (NOTE NEW DATE) Howard Johnson Motel, Rapid City, SD. Contact: Angela Ehlers, SDACD, 116 N.Euclid, Pierre, SD 57501. Phone: (605) 224-0361. Sponsored by South Dakota Association of Conservation Districts. To provide interaction between local watershed managers, governmental agencies and experts in riparian management. Topics include: SD Perspectives on Riparian Management, Coordinated Resource Management, Grazing Systems for Watershed Management, Water Quality Impacts from Riparian Management, Uses of a Riparian Association, Designing Improvement Projects for Public Benefits. Field tour after workshop.

21-24 *The International Wetlands Symposium*, Pensacola, FL. Contact: G.A. Moshiri/C.D. Martin, University of West Florida, 11000 University Parkway, Pensacola, FL 32514. (904) 474-2754. (904) 474-2052.

**November**

*Fisheries Management: Dealing with Development in the Watershed*, Newport, RI. Contact John Boreman, U of Mass/NOAA CMER Program, Blaisdell House, U of Mass, Amherst, MA 01003-0040. (413) 545-2842. Individuals must make their own hotel reservations at (401) 849-2600, ext 2330. Topics: the fisheries manager and watershed development, assessing impacts of development, prevention vs mitigation, realistic management, outreach activities.

**December**

4-6 *3rd Conference on Hydrology, Ecology, Monitoring and Management of Groundwater in Karst Terrains*. Nashville, TN. Contact: Karst Conference, Nat'l Well Water Assoc., P.O. Box 182039, Dept.017, Columbus, OH 43218. (614) 761-1711.

8-11 *Coastal Depositional Systems in the Gulf of Mexico: Quaternary Framework and Environmental Issues*, Houston, TX. Contact: Shea Penland, LA Geological Survey, University Station, Baton Rouge, LA 70893. Issues covered might include coastal erosion and wetlands loss, global climate change impacts, sediment geochemistry and pollution, human impacts on coral reefs, oil spills.

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**January**

28-30 *Montana Water Quality Conference*. Butte, Montana. To provide landowners, managers, educators, cooperators, and the general public with up-to-date water quality information. DATEBOOK will publish details as they become available.

**April**

27-29 *International Conference on Groundwater Ecology*. Tampa, FL. Contact: John Simons, U.S. EPA, Groundwater Protection Division, WH550G, 401 M St., SW, Washington, DC 20460. Phone: (202) 260-7091. Topics include basic research needs related to groundwater ecology, effects of pollutants on groundwater organisms, biomonitoring using groundwater organisms, watershed planning considerations, bioremediation of contaminated groundwater.



**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 diffuse 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.

**NPS NEWS-NOTES**, is published under the authority of section 319(l) of the Clean Water Act by the Nonpoint Source Information Exchange, (WH-553), Assessment and Watershed Protection Division, Office of Wetlands, Oceans and Watersheds, Office of Water, U.S. Environmental Protection Agency, 401 M St. SW, Washington DC 20460. FAX # (FTS/202) 260-1517. Hal Wise, Editor; Elaine Bloom, Associate Editor. Corresponding Editors: Margherita Pryor, Oceans and Coastal Protection Division, OWOW and John Reeder, Office of Ground Water and Drinking Water. For inquiries on editorial matters call (FTS/202) 260-3665. Produced and distributed by The Terrene Institute under EPA grant # X-817133.

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