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From the Director...

1996-1997 FUNDING OPPORTUNITIES

Along with everyone else associated with the federal government, the WRI has been impacted by the budget quagmire in Washington. Our expectation is that our USGS dollars will be reduced 75%, in effect eliminating our in-state grants program. In its place, there will probably be a regional competition among the 14 states from Virginia to Maine (called the 'northeastern' states).

With Congress increasingly turning back responsibility to the states, it is inconsistent for them to mandate *regional* competitions on *national* priorities for water resources. The state programs have been making decisions about *local* water resources issues at the state level for 25 years. This congressional action may be designed to eliminate the Institutes program through attrition, assuming that some states will close their Institutes because of the budget reduction. The program cost a total of \$4.5 million last year, which was leveraged with cost-sharing to a total of \$50 million in projects. It is one of the best bargains in the federal budget, in my opinion. I will continue to tell our delegation that this new 'centralization' direction Congress has set for the program is a bad idea. I hope you will also. We need your help to reverse an idea in Congress that was the work of an aid to a single representative.

How will the 1996-97 research program be handled in the regional competition? The details are not final, but my best guess is that most of the program dollars available to Maine this year will be allocated to 3 or 4 projects. Each Institute will be allowed to submit only 5 or 6 proposals, with upper limits on the total funding request. I suggest that anyone with an especially exciting idea for a new project contact me to discuss the possibilities (581-3286 or kahl@maine.maine.edu). For updates on program details for 1996-97, or further information about eligibility and guidelines, see our home page on the Web at <http://WWW.ume.maine.edu/~wri> or access us through the UMaine home page under Research and Public Service.

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Derrill J. Cowing A USGS LEGEND

Derrill J. Cowing, District Chief of the Water Resources Division, U.S. Geological Survey (USGS) office in Augusta for the past 15 years, will be transferring to take the District Chief position with the USGS in Boise, Idaho in early March.

A native of Lagrange, Maine, Derrill graduated with a bachelors degree in Civil Engineering from the University of Maine at Orono in 1968. He immediately began work with the U.S. Geological Survey, Water Resources Division in the District office in Boston as a Civil Engineer. He spent his early years working on a water-quality monitoring project. Like most students fresh out of college, Derrill arrived at his first job with a great attitude, tons of ambition, and no money. It having never occurred to Derrill that it would be a few weeks until he received his first pay check, Derrill had nothing to live on until the District Chief, Charley Knox, opened his wallet and offered Derrill a personnel loan. Charley was no fool, however, and won his money back and more playing poker with his young new engineer.

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WETLANDS ROLE IN POLLUTION EXPLORED

Maine's wetlands provide wildlife habitat and control floods, but UMaine researchers are exploring how wetlands react with water pollutants such as industrial compounds and pesticides. Work by Howard Patterson, Professor of Chemistry, and former graduate student Bruce MacDonald have demonstrated that the synthetic organic compound pyrene, a possible carcinogen identified by EPA as a "priority pollutant," can attach to natural organic matter found in wetlands. In binding to wetland materials, pyrene also takes on new characteristics. It dissolves more readily in water and, as a result, may be transported more easily to rivers and lakes. "We want to find out how natural organic matter reacts with these compounds," Patterson says. "Industry has created many new chemicals, but we want to use chemistry to enable us to have both industry and clean water."

"More pyrene tended to bind with samples from the wooded sites than with samples from other locations, and it also became more soluble," says Patterson. "In a sense, pyrene piggybacks on the organic matter which then helps to transport it through the water." Pyrene is one of a group of hydrocarbons present in coal, gasoline and oil and released to the environment by combustion.

Patterson intends to carry out similar investigations with Atrazine, an herbicide commonly used in Maine and corn growing areas of the United States. Patterson presented a paper on his findings in August at a national meeting of the American Chemical Society in Chicago. His work was supported by a grant from the USGS through the UMaine Water Research Institute.

(Contributed by Nick Houtman, UM Public Affairs)

RIVERFEST 1996

Jo Eaton, Director of Penobscot Riverkeepers 2000, announces the Fourth Annual Penobscot Riverkeepers Expedition, Riverfest 1996. This year's focus includes teacher workshops, from water quality monitoring to flood plain habitat, to networking teachers both in person and on Internet, and to have community members share local history with the Expedition Team during a series of Riverfest Campfires. The first expedition stop will be in Millinocket on May 14 and the last in Stonington on June 8. To find out your local contact or to get information, contact: Jo Eaton, 827-0369, or write 5764 Sawyer Environmental Research Lab., Orono, ME 04469-5764.

WASTEWATER IRRIGATION SYSTEMS & IMPACT ON GROUNDWATER

Spraying treated municipal wastewater over carefully prepared forested areas can have minimal impacts on groundwater and help reduce nutrient enrichment of surface waters, according to a recent report from the UMaine Water Research Institute. The study was conducted in Greenville, Dexter and the Sugarloaf Ski Area.

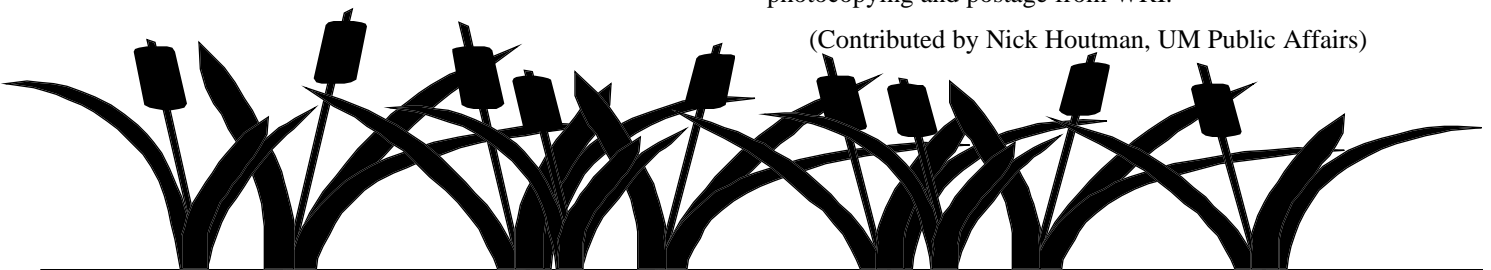
Cathy Anderson, a native of Milford, Michigan, completed the project for her masters degree and worked with Willem Brutsaert, Professor of Civil and Environmental Engineering, and research assistant John Burkhardt. Their report evaluates the design and performance of forest spray irrigation systems and suggests steps for improvement. "These forest spray systems are an emerging technology that is more popular in the South and the West where land is less expensive. But they are getting more widespread use in rural areas of the North," says Anderson.

A forest spray system uses a network of sprinklers to distribute wastewater after primary or secondary treatment. There are 22 such systems in Maine, about two-thirds of which are owned by industrial facilities; with three additional systems under construction. "When I found out that no one had ever reviewed the operation of existing systems in Maine, it made sense for me to take a closer look at them," says Anderson.

Anderson's report concludes that: groundwater at the Greenville and Sugarloaf sites has small increases in nitrate with mean concentrations well below national drinking water standards; groundwater at the Dexter site has significant increases in nitrate, chloride, total nitrogen, manganese and hardness. Mean concentrations of total nitrogen and nitrate; in some cases, exceeded national drinking water standards. Monitoring wells were poorly constructed and placed in depressions where wastewater collected resulting in wells that may have provided a direct conduit for wastewater into the groundwater. Communities considering forest spray systems should take several steps including: a two-year evaluation of groundwater levels and quality prior to system operation; the purchase of enough land to accommodate wastewater volumes generated by future population growth; a groundwater monitoring program consistent with efforts at other application sites in Maine.

Anderson worked for the Maine consulting firm of Woodard and Curran during her graduate studies and currently lives in Rhinelander, Wisconsin. The report is available for the cost of photocopying and postage from WRI.

(Contributed by Nick Houtman, UM Public Affairs)





Derrill Cowing - A USGS LEGEND *(Continued from Page 1)*

In July 1970, Derrill was drafted into the Army and left for Fort Dix, New Jersey. While in basic training, Derrill showed the skills which were to make him such a successful administrator when one day a sergeant asked if anyone could type. Derrill, a two fingered typist on his best days, immediately shot up his hand, and thus served out the remainder of his Army days as a clerk-typist in Ft. Polk, Louisiana and Oakdale, Pennsylvania.

In January 1972, Derrill returned to the USGS in Boston as a Hydraulic Engineer. He worked there until June 1974 on several water quality projects. He also took a one year leave of absence during this period to return to Orono to take course work toward a Masters degree in civil engineering (which he obtained in 1977). In June 1974, Derrill returned to his native Maine as a Hydrologist in the USGS office in Augusta. During this first tour of duty in Augusta, Derrill led projects on the hydrological, morphometric, and chemical characteristics of 43 lakes in Maine, and a suspended sediment study of the St. John River. In July 1978, Derrill transferred to the USGS office in Anchorage, Alaska, where he hunted and fished. In his spare time, he led the Anchorage Geohydrology Project and was the water-quality specialist.

In September 1981, Derrill returned to Maine as chief of the USGS office in Augusta. Over the past 15 years, he has guided the Maine office in all of its water related activities in the State. He has led the office through many changes and improvements, including the upgrading of the streamflow data program to real-time capability, the elevation of the office to District status in 1991, the protection of the cooperative data collection program through numerous funding difficulties, and oversight of the USGS response to the April 1987 flood.

He has also developed numerous cooperative projects in Maine, including the significant sand and gravel aquifer mapping project and a hydrologic assessment of the Little Androscoggin River Valley Aquifer with the Maine Geological Survey, an updated flood-flow frequency study and a highway runoff study with the Department of Transportation, and a comprehensive series of drainage area reports with the Department of Environmental Protection. Under his leadership, USGS has been an important partner with the University of Maine on the calibrated Bear Brook Watershed Project in eastern Maine, since 1987.

In addition to his work within the USGS, Derrill has served on a number of committees in the State, including the Land and Water Resources Council, The Land and Water Resources Institute Advisory Committee (currently the WRI), the Maine River Flow Advisory committee, the North Atlantic Hydrology Group, the Eastern Snow Conference, and the St. John River Hydrology Committee.

Derrill's leadership in the Maine District and in the entire Maine water resources community will be missed. We congratulate him on his new position and wish him the best in Idaho. Given Derrill's love of the woods and streams of Maine, however, we suspect that we have not seen the last of him.



Waterlines acknowledges Joseph P. Nielsen, P.E., Supervisory Hydrologist with the Maine District of the U.S. Geological Survey for his efforts in composing Derrill's biography.



From the Director . . . (Continued from Page 1)



Several other requests for proposals in water resources fields have been announced from EPA (deadlines: Mar.1 or 15):

- *Ecological Assessment - Climate Change* (Tel: 202-260-5779)
- *Analytical and Monitoring Methods* (Tel: 202-260-3535)
- *Fate and Transport of Toxic Materials and Wastes* (Tel: 202-260-5798)
- *Drinking Water* (Tel: 202-260-7334)
- *Exploratory Research* (Tel: 202-260-7445)
- *Environmental Justice Small Grants Program* (Tel: 617-565-9454)

In addition, DEP recently announced their RFP for Nonpoint Source Water Pollution Prevention Projects. These grants provide funds for implementation projects that address prevention, control, and abatement of NPS pollution. There are several 2 hour workshops to be held around the state in February to provide guidance for those interested in submitting a proposal:

- 2/7/96 10am DEP, 106 Hogan Rd, Bangor
- 2/8/96 10am DEP, 312 Canco Rd, Portland
- 2/13/96 10am DEP, Room LW4 Hospital St. Augusta
- 2/15/96 1 pm USDA Building, Houlton



PROJECT WET (WATER EDUCATION FOR TEACHERS)

Project WET is the newest sister to the internationally renowned environmental education Project Learning Tree (PLT) and Project WILD programs. Project WET utilizes the following strategies to educate youth about water resource issues:

- hands-on
- interdisciplinary
- concept-based
- activity-based
- non-biased
- incorporation of simulation models

Project WET emphasizes HOW to think not WHAT to think!

The following water resource management issues are covered in Project WET: protection, quality, development, quantity, conservation, and use.

The Project Wet Curriculum and Activity Guide, containing over 91 field tested, engaging activities, is disseminated at local, day long workshops. The guides are not for sale. The workshops goal is to engage educators first-hand so they will acquire experience in implementing the quality materials. State and local water related resources are also shared at WET workshops. To schedule a workshop for educators in your community (minimum: ten participants) or obtain further information contact:

Mary Ann McGarry
 Project WET, State Coordinator
 1-800-367-0223 (in state only)
 Email: Mary.Ann.McGarry@state.me.us



Project WET is making available at a reduced cost the Wonders of Wetlands (WOW) curriculum activity guide of \$13.00. Send check addressed to Maine Project WET to: Water Research Institute, UMaine, Sawyer Env. Res. Ctr., Orono, ME.

Maine Project WET sponsors are the UMaine Water Research Institute and the Maine Forest Service in the Department of Conservation. Maine Project WET is seeking regional, state and local sponsorship to make WET workshops available for all interested educators at no cost.

USGS - NATIONAL WATER QUALITY ASSESSMENT PROGRAM



In 1994, the U. S. Geological Survey began a National Water Quality Assessment Program (NAWQA) study in the Kennebec, Androscoggin, Saco, and Merrimack River Basins and smaller intervening coastal basins. The study area, called the Northern New England Basins (NNEB) Study Unit, is one of 60 study units planned for the National program, which began in 1991. The objectives of the NAWQA program are to describe the water quality of large, representative parts of the U.S. surface- and ground- water resources and to identify the primary natural and man-made factors that affect the quality of these resources. The NNEB investigation will consist of a 5 to 6-yr high-intensity data collection phase, followed by a 4-yr low-intensity phase. The high-intensity phase will include the evaluation of existing water-quality data and basin characteristics; the collection of data for the evaluation of surface-water and ground-water quality, river bed sediments, and aquatic organisms; and the preparation of technical and non-technical reports and papers describing study results.

Surface water will be sampled for major ions, trace elements, nutrients, and suspended sediment at 15 to 20 sites at weekly to monthly intervals during the high-intensity phase. The sites will represent environmental settings characteristic of the study unit. Bed sediment and fish tissues will be collected at 30 to 40 sites and analyzed for trace metals, pesticides, and other constituents. An ecological study will be conducted as well. Sites will be sampled less frequently during the low-intensity phase.

The ground-water study will include a sampling of ground water in various aquifers throughout the study unit for many constituents, including pesticides and VOCs. A separate survey will be conducted to assess the relation of the quality of recently recharged ground water to land use and geohydrologic setting, focusing on recently developed suburban areas.

Communication between the USGS and other scientific and water-management organizations is a critical component of the NAWQA program. A liaison committee consisting of representatives from Federal, State, and local agencies and universities, including WRI, and the private sector has been formed and conducts meetings open to any interested parties approximately twice a year. For further information on any aspect of the NAWQA program, contact Keith Robinson, Study Unit Chief, USGS, 525 Clinton St., Bow, NH 03304<kwrobins@usgs.gov>, or District Chief, USGS, 26 Ganneston Dr., Augusta, ME 04330 <dc_me@usgs.gov>.

Contributor: Martha Nielsen, USGS





The Water Research Institute at the University of Maine •

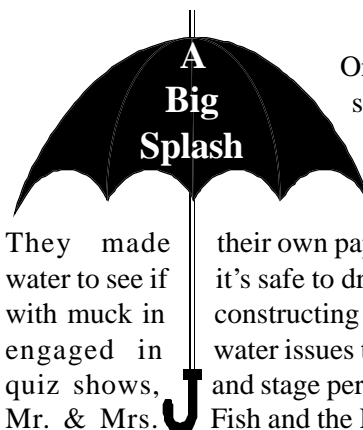


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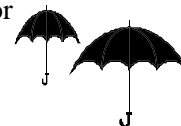
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On October 11, 1995, 800 school children in grades 4-6 got their hands wet learning about water and water issues at the University of Maine.

They made their own paper, polluted a well, tested water to see if it's safe to drink and got down and dirty with muck in constructing wetlands. The students were engaged in water issues through exhibits, classrooms, quiz shows, and stage performances by Mike Nobel, Mr. & Mrs. Fish and the Electric Eels. Thirty-six concurrent events used hands-on techniques to teach the children; everything from electrofishing to turbines, from wetlands to laboratories, and from bugs to aquifers. The students represented 44 classes, 17 schools and 6 counties. In addition, there were separate classes and resources for the 44 accompanying teachers.

The event was sponsored by the UMaine Water Research Institute and the Maine Department of Environmental Protection with financial assistance from Champion International, Great Northern Paper, Inc., James River Corp., WLBZ-TV, Poland Spring Bottling Co., Georgia Pacific and Webber Oil Company. Over 150 volunteers from 26 organizations helped staff and sponsor the festival. The Water Research Institute wishes to acknowledge the "spirit of volunteerism" that reigned at the 1996 Children's Water Festival. For additional information regarding 1997 participation or sponsorship, contact Betty Lee at the Water Research Institute, (581-3244) or Barbara Welch, DEP (287-7682).



Waterlines

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