



Federal Funding Still Uncertain

George O'Connor echoes the lament of many research agencies when he calls the federal funding outlook "dismal." O'Connor, acting director of the New Mexico Water Resources Research Institute, like the directors of the 53 other state institutes, is left wondering how to replace the federal funds that went down with the now defunct Office of Water Research and Technology.

Congress has passed a continuing resolution which would have continued federal support at the same level as last year through Dec. 17. However, the Office of Management and Budget (OMB) has delayed the legislation for 45 days until Congress returns after the election.

O'Connor says the OMB took this action because it doesn't want water research legislation to be patched up with quick "band-aid" remedies. "What the OMB is looking for is a whole new program to revive water research," he says.

In the meantime O'Connor says the institute will have to function on state appropriations and existing contracts. "The state appropriations are already committed and we aren't in a position to fund any new projects now," he says.

There is a substantial congressional sentiment for water resources legislation that would maintain some sort of institute program. Legislation introduced by Sen. James Abdnor, R-S.D., which passed the Senate in June, would authorize \$8.1 million a year in fiscal years 1983 through 1987 for the 54 water research institutes.

In turn, the institutes would be required to match those federal dollars one-to-one with nonfederal money in 1983 and 1984. In 1985 and 1986, the states would begin to assume a larger role with a nonfederal/federal 2:2 match, and by 1987 take on a 5:2 matching responsibility.

The bill also would make \$13 million available to institute and noninstitute participants on a one-to-one match. This funding is designed to encourage private organizations, educational institutions and local or state governments to participate in water research.

State Increase Needed

The newly formed Office of Water Policy is encouraging states to take a more active role in water research. Thomas Bahr, OWP head, told a recent meeting of the Universities Council on Water Resources that local research likely will not receive OWP funds if it is not part of a regional water research effort.

But garnering state funding support is not an easy task, according to O'Connor. "We are requesting that the New Mexico legislature increase state funding to the institute. But preliminary BEF (Board of Educational Finance) recommendations hold the increase to five percent across the board," he said. O'Connor is hopeful that the BEF's original recommendation will be changed to significantly increase institute funding.

O'Connor says because of past support from the state, New Mexico's institute has fared better than those in most other states. However, he says the competition for existing state funds in next year's annual allotment program will be keen.

SYMPOSIUM

COPING WITH FEDERAL WATER POLICY CHANGES

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Training Student Scier

When the institute outlined its objectives early in 1967, one of them was to "encourage and assist scientists to enter water resources research" by establishing student positions in research, investigations and experiments.

Although objectives are easier to write than accomplish, the institute had no problem with this one. Over the last 10 years, for example, about 90 students a year have worked in WRRRI sponsored research. This year, 123 undergraduate and graduate students from three universities are participating in WRRRI projects.

Most of the students are in graduate school and plan careers in research or industry. They work in fields, in labs, with petri dishes and computers. They study civil engineering, agronomy, biology, marketing and law. And they mostly come from outside New Mexico.

Roberta Barrio, who does triple duty as a housewife, mother and student, takes a no-nonsense approach to her job as a research assistant. She commutes daily from her home in El Paso to New Mexico State University where she puts in a full day's work in class and in the biology lab.

She is working on the effects of chemical oxidants on viral nucleic acid — a component of a larger project on disinfecting wastewater. "The project teaches me the techniques of research and also allows me to use my time here to its best advantage," she says.

Barrio is one of dozens of graduate students who have worked under biology department chairman Bob O'Brien in his 17 years at NMSU. In his experience, he says a student's contribution to research is knowing how to put known scientific knowledge to work in developing new ideas.

NMSU agronomist David Lugg says training graduate students is one of this main

roles as a professor. "I can use the students to provide research data, but I also see research as a tool for training them," he says.

Graduate students Winston Comer and Aliene Sadler fill both bills. They are collecting the research information Lugg needs on his project involving irrigating salt grass with saline water and they are acquiring the scientific tools of the trade.

Comer, a retired army officer, is as enthusiastic about the project as any new graduate student. He says he is fascinated by the number of things he has been taught during his "ground-level lessons." One of those lessons is analyzing salt grass samples for their value as a forage crop.

Working Hands-on

Sadler, a farmer's daughter from Iowa, says she decided to take her graduate degree in New Mexico because there is more opportunity here of "hands on work." Hands-on can mean everything from access to computers and labs to teaming up with Comer in cutting and weighing salt grass samples.

"I like being outside, and I like research," she says. She divides her weekly 20 hours of research between field and laboratory work, depending on the season.

Hydrologist Dan Stephens believes in giving his graduate students at New Mexico Institute of Mining and Technology the opportunity to "dig into the heart of a project." The project he is talking about concerns soil permeability tests in which carbon dioxide is used to dispel air trapped in soil. Stephens says

after he designed the project, he let the students execute the plan. "The students are always more productive if they are enthused about the work," he says.

Two of those students have continued in research after graduating from Tech and the WRRRI project. Scott Yates is working on his Ph.D. at the University of Arizona and Scott Tyler is a research hydrologist with Battelle Northwest Labs in Richland, Wash.

David Watson, one of three students left on the project, is an example of the enthusiasm Stephens mentioned. "I like to watch things change and try and figure out what's going on. I've learned as much from the research as I have from class," he says.

Watson, who is from Burlington, Vt., says he enjoys the challenge of working on research like the carbon dioxide project that is relatively new in the field of ground water hydrology.

Civil engineer Willie Issacs used both the brains and the brawn of three NMSU graduate students to help him build his research project — a demonstration anaerobic digester for a wastewater treatment plant.

Designing the building the plant was not small feat. When the plant goes into operation sometime in January, it will have the capability of treating wastewater from a community of 5,000 people.

Adviser as Guide

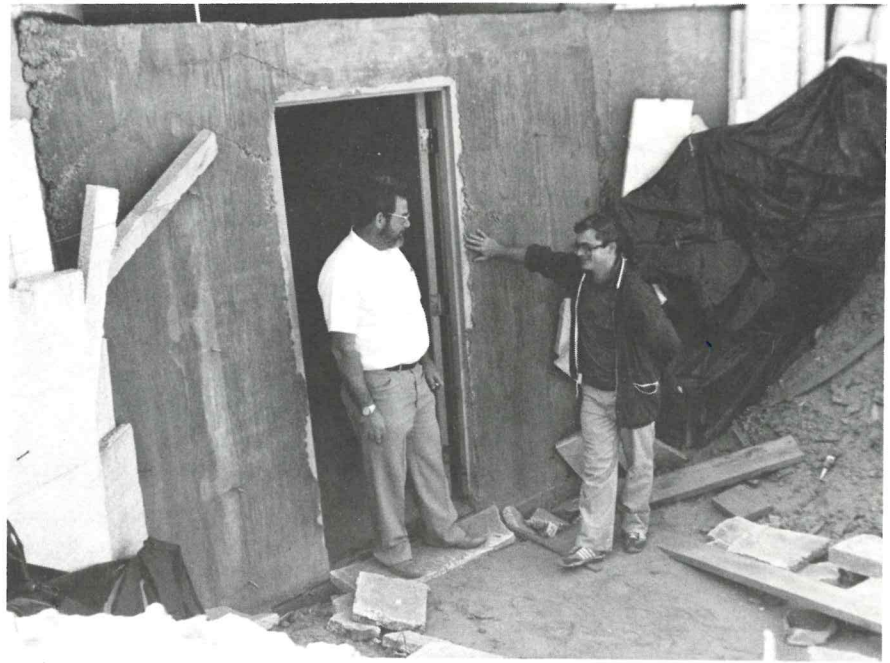
In projects such as this that takes a long time from conception to conclusion, the research adviser provides the continuity. "I begin by setting research objectives and then letting the students carry them out. I know where we want to go next," Issacs says.

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The thesis or dissertation resulting from a research project also offers the continuity necessary to a lengthy project. "Some of the graduate students who worked on this project have gone to work for consulting firms as specialists in anaerobic digestion," he says.

Others like Russian born Aleksander Drohobyczer, plan to teach. Drohobyczer, who came to NMSU by way of American University in Istanbul, Turkey, has had an active part in the project. "I helped design the plant, build the forms and pour the concrete," he says.

Drohobyczer considers the year he devoted to construction well spent. "A lot of engineers never get this kind of practical experience. What we were having to do in six-inch columns in the lab can now be done in eight and 16-foot concrete tanks." he says.



Civil engineer Willie Issacs and graduate student Aleksander Drohobyczer inspect the nearly completed demonstration wastewater treatment plant.



Roberta Barrio, in her home away from home, counts out liquid measures at the NMSU biology lab.



Agronomy graduate students Winston Comer and Ailene Sadler hand cut plots of salt grass in an end-of-season harvest.

The books listed below are just a few of the recent additions to the WRRI library.

Jensen, M.E. 1981. *Design and Operation of Farm Irrigation Systems*. American Society of Agricultural Engineers, St. Joseph, Mich.

Irrigation Scheduling for Water and Energy Conservation in the 80s. 1981. Proceedings of the ASAE Irrigation Scheduling Conference, Dec. 14-15, 1981, Chicago. ASAE, St. Joseph, Mich.

Hutchins, Wells A. 1977. *Water Rights Laws in the Nineteen Western States*, Vols. II, III. Misc. Publication No. 1206, USDA, Washington, D.C.

Perry, Eugene C. Jr., and Montgomery, Carla W., eds. 1980. *Isotope Studies of Hydrologic Processes*. Northern Illinois University Press, DeKalb, Ill.

A Water Quality Modeling short course will be held in Las Vegas, Nev., Jan. 10-14, 1983. The course is designed to aid managers, technicians, regulatory personnel and others who are actively involved in the decision making process regarding water quality control. Participants will learn the principles of modeling techniques, their limitations and their application to chemical, biological and physical processes. For more information contact the Water Resources Center, Desert Research Institute, P.O. Box 60220, Reno, NV 89506.



The National Center for Ground Water Research is seeking a temporary full-time research associate to develop and evaluate mathematical models for the transport of water and chemical substance through soils and ground-water systems. Applicants with a master of science and doctoral degree with course work or experience in flow and mass transport in porous media and applied numerical methods will be considered. Send resume, transcripts and three references to Jan Wagner, School of Chemical Engineering, Oklahoma State University, Stillwater, OK 74078. Position will be available Nov. 1, 1982.

As the El Paso - New Mexico legal battle passes its second year mark, the basic question remains — is underground water an article of commerce?

Both sides narrowed their focus at a second hearing before Judge Howard Bratton Sept. 13 in Albuquerque. Witnesses for New Mexico testified that the state's export ban is necessary to protect the "public health and welfare." In New Mexico, protecting the public health and welfare means ensuring a sufficient water supply to provide employment and to continue agricultural production.

El Paso's definition encompasses only the public health which involves water needed for basic uses such as drinking, cooking, sanitation and firefighting.

The two sides also differed in their definition of a free market. New Mexico lawyer Stephen Hubert said that while El Paso wants the exported water to expand its economic growth, the Texas city expects New Mexico to get by as a "third world society" with subsistence resources.

El Paso lawyer Harry Reasoner pointed out that New Mexico has no policy reserving water for future use. Even if El Paso remains blocked from using the water, New Mexicans can put it to immediate use. He said this shows New Mexico has a "free market" in water. "They just don't want the free market to include Texas."

Bratton is expected to rule sometime in November after receiving post-hearing briefs.

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