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The Worth of Water

A Southern Professor

Is Working To Find

Answers So The

"Well Never Goes Dry"

by Stacey Vinson

It is perhaps fitting that on a visit to Benedykt Dziegielewski's office, which is filled with water usage reports and maps of watersheds (drainage areas for rivers) and aquifers (ground-water sources), droplets of rainwater ping on the windows of Faner Hall. There's a Scottish proverb that says: *We'll never know the worth of water 'til the well goes dry.*

Dziegielewski is working hard to make sure that never happens.

Water, specifically how much will be needed in the future, is what Dziegielewski knows best. The 1983 Southern Illinois University graduate specializes in water resources management, urban water supply and conservation planning, water resources hydrology, studies of water use, and water demand forecasting. He teaches courses in these subjects in Southern's Department of Geography and Environmental Resources as well as conducting research on water demand management, modeling of water use, and drought management.

Dziegielewski is currently involved in a study mandated by Gov. Rod Blagojevich, requiring the definition of a comprehensive water-supply planning program for Illinois. "It is critical for Illinois to get ahead of the curve when it comes to water supply planning," Blagojevich notes in a statement on the Illinois government's Web site. "Last summer's drought demonstrated to us that careful management of our water must be a priority so we always have enough supply for people to drink and use, for our industries like agriculture, and for our fish and wildlife habitats."

The study involves two pilot areas: Chicago and its collar counties and East-Central Illinois, which includes a stretch of land from Peoria to Champaign, home to much of the state's agriculture. "It's important for the University to be supportive of the region and state," Dziegielewski says. "There are a lot of SIU alumni throughout

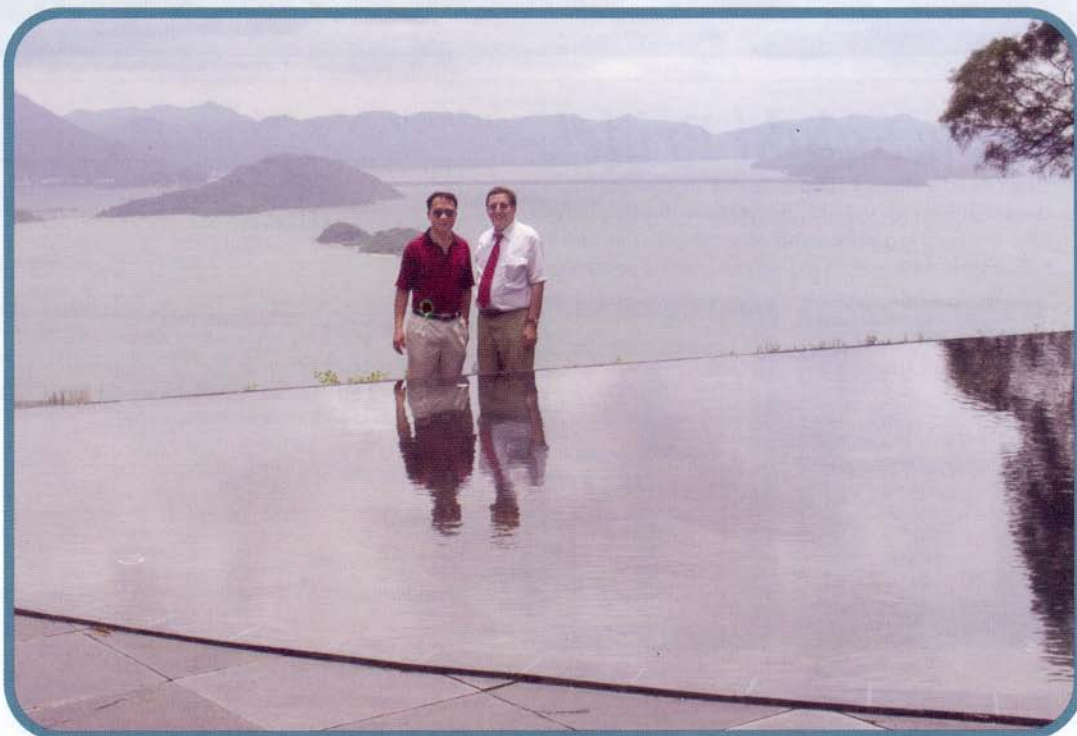
Having A Plan For Water

While Illinois is not usually the first state that comes to mind when water shortages are mentioned, the state has a growing population, large areas of cropland, and industry that uses large amounts of water. Water use and availability know no city, county, or state lines, and the plan will aid in planning water usage across such artificial boundaries.

Dziegielewski says the study specifically looks at the sustainability of the water supply. Now there is enough water, but in the future, he asks, "Will the wells still be there?"

The northern Illinois area is faced with a population that is moving to the collar communities around Cook County. Chicago's public water supply primarily comes from Lake Michigan, and the Chicago River is used by industry. More and more of that water is being needed further west in those collar counties, and the cost of transporting it becoming a factor.

Dziegielewski says the Great Lakes are experiencing low water levels and there is a government-imposed limit on the amounts those counties are allowed to use. He adds that a study of water usage involving all of the Great Lakes is a real possibility in the near future; the outcome would impact the states and parts of Canada that border the lakes.



Support And Planning

The professor's research is applied, meaning that the outcome of the research is used to support planning and policy decisions. Although the primary mission of the department is to teach students, Dziegielewski says there might be the possibility of a center or institute on water research in the future: "That's why we're here: to provide data and to become a resource."

Dziegielewski emigrated from Poland 28 years ago, where he earned his bachelor's and master's degrees in environmental engineering from the Wroclaw Polytechnic University. Although much of his research involves the United States, he has participated in studies of water usage in places such as Jordan, South Africa, and Central America.

He says increasing population and industry needs are the two major factors in the nation's water supply and demand but warns that "climate change is a new concern." In his 2007 study prepared for the Institute for Water Resources of the U.S. Army Corps of Engineers,

Dziegielewski wrote: "Global warming and climate change have the highest uncertainty and have the potential for the strongest impacts on the future water supply and demand situation. The greatest threat from climate change will most likely come from climatic extremes, especially severe sustained drought."

In addition, according to the study, much of the population growth in the U.S. through 2030 will occur in Florida, California, and Texas, where water shortages are already occurring.

ALTERNATE FUEL SOURCES A FACTOR

A perhaps unrecognized and surprising drain on the water supply is the production of alternate fuels. According to Dziegielewski, it takes three to four gallons of water to produce one gallon of ethanol. It also requires the irrigation to grow the corn and sugar cane used in ethanol and other biofuels. His study points out that ethanol plants can use several hundred thousand gallons of water per day, which impacts groundwa-

ter and city water supplies.

There are 120 ethanol plants in the U.S., according to Dziegielewski, with more under construction – most in the Midwest. He says if industry taps too much of the water table (the depth at which underground water is first encountered) in a given area, wells that serve communities and families have the potential to run dry.

"Individual consumption of water is on a downward curve," he says, noting that a new emphasis on conservation is at least partly responsible for the change. In his 2007 study, Dziegielewski says that there are also innovative new developments in water management and efficiency, including the use of a proactive approach to water management, such as federal and state collaborative planning on water reallocation. This effort would address water storage for times of drought and an investment in infrastructure to transport water.

More information about the SIU Department of Geography is located at the Web site www.geography.siu.edu. To contact Dziegielewski, e-mail him at benedykt@siu.edu.

