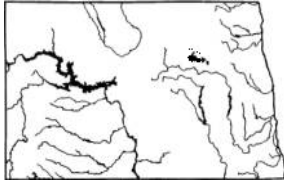


# NORTH DAKOTA WATER RESOURCES RESEARCH INSTITUTE

## North Dakota State University



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### THE INSTITUTE

The Institute was founded in 1965 by authority of Congress as one of the 54 Institutes throughout the nation and is administered through the United States Geological Survey. The NDWRRI receives funding through section 104 of the *Water Resources Research Act of 1984* and it applies its Federal allotment funds to research that fosters: (A) the entry of new research scientists into the water resources field, (B) training and education of future water resources scientists, engineers, and technicians; (C) the preliminary exploration of new ideas that address water problems or that expand understanding of water and water-related phenomena; and (D) the dissemination of research results to water managers and the public. The Institute has a State Advisory Committee consisting of three members representing the three principal agencies dealing with water issues – State Water Commission, State Health Department, and the USGS - and a Technical Advisory Committee consisting of faculty from NDSU and UND. The North Dakota State University and the University of North Dakota administrations consider the Institute's activities important and are supportive of its efforts. The Institute's core funding comes from annual appropriation granted under the authority of Section 104 of the Federal Water Resources Research Act by the US Geological Survey. Though modest, the Section 104 program has provided crucial seed funding for research, education, and information dissemination activities of the Institute drawing on the water expertise of the two universities of the State – North Dakota State University, Fargo and University of North Dakota, Grand Forks.

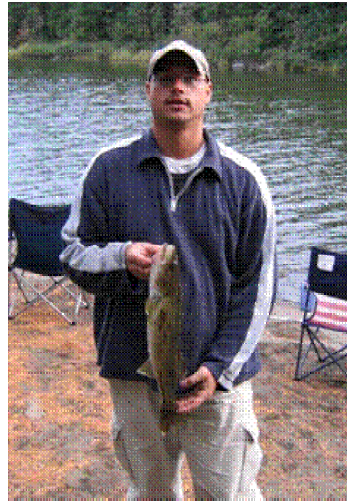
### ACTIVITIES

The NDWRRI continues to meet its mission by dedicating most of the Federal allotment funds toward competitive graduate student research fellowships. Each of the Fellowship is also a research project that will result in a master's thesis or doctoral dissertation. Faculty advisors find matching or co-funding for the research through the university, or grants from local, county, state or federal agencies, foundations, or industry. Also, the Institute co-sponsors seminars and conferences on water themes. A newsletter is published annually.

### RESEARCH

#### NDWRRI awarded nine Fellowships for the year 2005-06

- William Lenarz, University of North Dakota, "Effect of flow path processes on the geochemistry and quality of water discharged along the seepage face at Pigeon Point, Sheyenne Delta aquifer, Ransom County, North Dakota"
- Chistina Melaas, North Dakota State University, "Evaluation of an Index of Plant Community Integrity for Assessing Wetland Plant Communities in the Prairie Pothole Region"
- Michael Newbrey, North Dakota State University, "Evolution of Fish Growth and its Response to Climate"
- Jennifer Newbrey, North Dakota State University, "Effects of West Nile Virus Infection, Immune Function, and Age on Female Yellow-headed Blackbird"
- Dan McEwen, North Dakota State University, "Benthic macroinvertebrate stoichiometric implications for North Dakota and Minnesota fisheries"
- Ali Gene Tackett, North Dakota State University, "Molecular Phylogeography of *Etheostoma nigrum* (Rafinesque) in the Upper Midwest"
- Brajesh Gautam, North Dakota State University, "Analysis and Model Simulation of Storm Water Runoff - A Study of Land Use and System Design on Discharge and Water Quality"
- Tedros Tesfay, University of North Dakota, "Modeling Groundwater Denitrification by Ferrous Iron with PHREEQC"
- Kendall Goltz, North Dakota State University, "The Impact of Wetlands and Wetland Easements on North Dakota Land Values"



**NDWRRI affiliate faculty received two out of eight grants awarded nationally in a competitive program administered by the USGS and National Institute of Water Resources to study water issues in North Dakota and Minnesota.**

- Robert Hearne, Assistant Professor, Agribusiness and Applied Economics, North Dakota State University, “Assessing the Effectiveness of Local Water Institutions in Water Quality Protection”
- Steven Shultz, Associate Professor, Natural Resource Economics and Jay Leitch, Professor, college of Business Administration, North Dakota State University, “The Impact of Rural Water Supply Systems on Property Values”

Hearne’s study will focus on the Red River Basin in Minnesota and North Dakota, examining how governmental and non-governmental institutions effectively resolve water issues. The basin has to deal with three different sets of water law. Schultz and Leitch will estimate the impacts of three recent and pending rural water supply systems on agricultural and rural-residential property values across North Dakota.

**NDWRRI thanks the North Dakota State Water Commission for its generous support of the Fellowship program. The support, fifteen percent of the annual base grant, will be continued subject to year-by year approval.**

### **NDWRRI researcher wins CAREER award from NSF**

Eakalak Khan, Assistant Professor in Civil Engineering and an institute faculty, received the Faculty Early Career Development (CAREER) Award from the Bioengineering and Environmental Systems Division of National Science Foundation in support of a five-year project "Integrated Interdisciplinary Nanotechnology Research and Education on Fundamentals and Applications of Cell Entrapment for Water Pollution Control" to study the effects of entrapment on cell characteristics and activities of microbial cultures typically encountered in wastewater treatment systems using molecular biology and nanoscopic techniques. The goal of Khan’s research is to advance fundamental understanding on the use of cell entrapment in wastewater treatment. Khan will investigate the effects of entrapped bacteria on growth rate, metabolic activity, cell morphology, cell surface properties, genetic material quantity and stress of three pure cultures encountered in activated sludge.

