

WATER NEWS

UNIVERSITY OF
DELAWARE

Fall 2006 – Spring 2007
Volume 7 Issue 2

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The DWRC is pleased to co-sponsor the upcoming:

Register Today!

**2007 American Water Resources Association
Mid-Atlantic Conference**

Delaware, New Jersey, Pennsylvania,
and
Philadelphia Sections

September 19-21, 2007

Clayton Hall Conference Center
University of Delaware
Newark, Delaware

Green Opportunities for a Blue Resource:



An Economic Perspective

DE AWRA Hosts Mid-Atlantic Sections' Conference Green Opportunities for a Blue Resource: An Economic Perspective

PRELIMINARY AGENDA

WEDNESDAY

12:00 p.m. – 2:30 p.m. Registration, Poster Session, Exhibitors
2:30 p.m. – 4:30 p.m. Session 1: Economics and Water Resources: Nonprofit, Government, Industrial, and Water Supplier Perspectives
5:30 p.m. – 7:30 p.m. Dinner, Keynote Presentation by Dr. David Tilley, Assistant Professor, Natural Resources Management Program, Department of Environmental Science and Technology, University of Maryland
7:30 p.m. – 8:30 p.m. Session 2: Mid-Atlantic Chapters Meeting

THURSDAY

8:30 a.m. – 9:30 a.m. Opening Remarks, Welcome Presentation, Conference Goals
Laura Boyer, President, DE AWRA
Jane Rowan, President-Elect, AWRA
9:30 a.m. – 10:00 a.m. Break, Poster Session, Exhibitors
10:00 a.m. – 12:30 p.m. Session 3: Concurrent Sessions
12:30 p.m. – 2:00 p.m. Lunch, Peter Mitchell, Chairman and Chief Creative Officer, Marketing for Change, Washington, D.C.
2:00 p.m. – 2:30 p.m. Break, Poster Session, Exhibitors
2:30 p.m. – 5:00 p.m. Session 4: Concurrent Sessions
6:30 p.m. – 9:00 p.m. Dinner at Local Venue

FRIDAY

10:00 a.m. – 1:00 p.m. Session 5: Fieldtrips

Early registration	June 29th	\$150
Regular registration	June 30th - August 19th	\$175
Late registration	August 20th - August 31st	\$200
Student registration		\$50

For more information on the final program and registration, visit www.deawra.org. Information courtesy of Martha Corrozi of the Institute for Public Administration-Water Resources Agency, University of Delaware, DGS Annex Building, Newark, DE 19716; 302-831-4931.

Thanks – to Amy Boyd – DWRC Program Coordinator from 2001 to 2006!

One of the greatest strengths of Delaware's "water community" is the level of commitment and dedication shared by all to the preservation and improvement of Delaware's water resources. Amy Boyd made these qualities the hallmark of her tenure as Program Coordinator for the DWRC for the past five years. All who worked with Amy, both at the DWRC as well as the many individuals and groups that we interact with on a regular basis, know that she truly cared about our programs and worked very hard to make them the highest quality possible. Amy was a wonderful mentor to our undergraduate interns, a creative leader in our youth education programs, a fine writer and editor for our newsletters, and someone who always put in the extra effort needed to help our joint programs with other water groups be very successful. We all wish Amy the very best in her new position at the Nature Conservancy and thank her for five wonderful years of service to Delaware's water community!



Delaware River Focus of 6th Statewide Water Forum

The Delaware River, in its roles as both a working river and an environmental river, was the focus of the Delaware Water Policy forum, held in October 2006 at University of Delaware's Clayton Hall.

"This forum, the sixth in an annual series that examines statewide water policy issues, was designed to explore the Delaware River and the competing environmental, industrial and economic issues in the basin," says Gerald Kauffman, director of the Water Resources Agency in UD's Institute for Public Administration.

"The Delaware Basin covers 13,000 square miles in Delaware, New Jersey, New York and Pennsylvania," notes Kauffman. "Since September 2005, the water resources institutes at Cornell, Delaware, Rutgers and Penn State have been collaborating to collect water resource data and land use and socio-economic information on a watershed basis to prepare a State of the Basin Report Card. This forum examined some of the information collected thus far."



(Map taken from a presentation at the Delaware Water Policy forum by Jessica Rittler Sanchez of the Delaware River Basin Commission, October 16, 2006)

The keynote speaker of the forum was Robert Molzahn, president of the Water Resources Association of the Delaware River Basin, who presented an overview of the environmental, industrial and economic issues in the Delaware River Basin. Molzahn noted that the Delaware River is the longest undammed river east of the Mississippi; it extends 330 miles from its headwaters to its mouth where it enters the Atlantic.

The Delaware supplies drinking water to about five percent of the nation's population and its water is used for agriculture, mining, oil refineries, and electric power production facilities. The ports in Philadelphia and Wilmington comprise the largest freshwater port complex in the world.

(continued on page 4)

(continued from page 3) But, despite the working nature of the Delaware, three-quarters of the non-tidal river is included in the National Wild and Scenic Rivers system. One of the largest heron rookeries on the East Coast is on Pea Patch Island and riverfront restoration projects on the Philadelphia, Camden, Chester and Wilmington waterfronts provide tourism and recreation.

Molzhan identified specific challenges and opportunities, including: the Delaware, New Jersey and Pennsylvania borders in the river and their governance; dredging of the shipping channel and location of dredge spoils; developing pollutant trading policies; managing droughts and floods; sustaining fisheries resources; and developing a comprehensive water use and supply database in all four Basin states.

A well-received feature of the forum was a roundtable panel discussion, according to Martha Corrozi, a watershed analyst for the Delaware Water Resources Agency. Members of the panel included: Kevin Donnelly, director of Delaware's Division of Water Resources; Mike Arabatzis, of the US Army Corps of Engineers; Gerald Conrad of the US Coast Guard; Christopher Crockett of the Philadelphia Water Department; Dennis Rochford, Maritime Exchange for the Delaware River and Bay; and Marc Gold, an attorney with Manko Gold Katcher and Fox.

Corrozi said that lively discussion touched on such topics as water supply and water quality concerns, regulatory initiatives, maritime issues, industry perspectives, emergency response, and maintaining the river.

A one-hour session that focused on environmental issues also featured a panel format. Speakers on this panel included: Jessica Rittler Sanchez with the Delaware River Basin Commission; Kathy Klein, executive director of the Partnership for the Delaware Estuary; Roy Miller, with Delaware's Division of Fish and Wildlife; and John Kraeuter, Haskin Shellfish Laboratory at Rutgers.

The flora and fauna of the estuary and restoring oysters in Delaware Bay were discussed. Fish and shellfish restoration also was highlighted, including what Miller called "the most shining of these success stories...the restoration of the striped bass to the Delaware Estuary."

Miller added that on the whole there is reason for optimism concerning fish stocks in the Delaware Estuary but continued vigilance is necessary.

The audience was given an opportunity for feedback and discussion during a 45-minute session held before a buffet lunch. The primary focus of the afternoon was water law, including recent developments that may have possible effects within the Delaware River Basin. Attorneys moderating and presenting during this workshop were Robert Collings, Kenneth Warren and Timothy Weston.

The forum was jointly sponsored by the Water Resources Association of the Delaware River Basin, UD's Institute for Public Administration, the Water Resources Agency, the Delaware Water Resources Center, the Delaware section of the American Water Resources Association, and the Delaware Department of Natural Resources and Environmental Control. The 2007 Delaware Water Policy Forum will be held in conjunction with the American Water Resources Association Mid-Atlantic Sections' Conference in September 2007. (See related announcement on page 2.)

DWRC Spotlight on Undergraduate Internships

Here is what some of our 2006-07 interns and their advisors had to say about their DWRC experience:

Garrett Peters, College of Marine and Earth Studies – “The focus of the internship was to compare... several methods currently used for measuring ground water flow in coastal areas. We wanted to observe and quantify the vertical velocity of the flow in these regions. The methods we tested were conducted using hydraulic head measurements, seepage meters, and temperature logging. Our results showed that the hydraulic head and temperature logging methods were consistent with each other, both showing maximum vertical flow at low tide, while the seepage meters showed a maximum vertical flow at high tide... I found the internship extremely valuable because I was able to see first hand how research is conducted and it allowed me to develop skills necessary for my future - both as a student and an engineer.” Advisor Dr. Bill Ullman added, “...Garrett's work documented the behavior of one groundwater discharge site to Delaware Bay near Roosevelt Inlet in Lewes... Garrett found, unexpectedly, that fresh and total groundwater discharge, as measured by seepage meters, was highest during rising and high tides. Garrett used vertically arrayed thermal sensors to document subsurface flows at this site to find that this counter-intuitive result was due to the focusing of groundwater discharge to a narrowing seepage face by the migrating saline wedge during rising tides... Garrett's work has identified two new environmental controls on direct groundwater discharge to the coastal zone. which may help to better estimate estuarine nutrient fluxes.”

Advisor Dr. Jack Gingrich commented, “Sarah Sturtz came to the Entomology and Wildlife Ecology Department with a major in Biology, but very little macroorganismic experience... we trained her on identification of aquatic plants, invertebrate predators, and over 30 different species of mosquitoes found in our stormwater ponds. Sarah was responsible for 13 (and often more) ponds that had to have a complete biological assessment every two weeks from early June until the start of school. She needed to identify and quantify all the mosquitoes, all the predators, and many of the plants at the periphery of each pond. She also was responsible for water quality sampling and their analyses in the lab. She turned out to have a keen eye for observation, and reported everything accurately and in great detail... Another responsibility was treatment of ponds with aluminum sulfate, which requires some physical strength and endurance during the many hot days we had in 2006.”



Dr. Diane Herson, UD Biological Sciences, said that intern Samantha Smith has indicated to her that as an undergraduate she found it empowering to have major input into a research project. Her commitment to lab work, in addition to many other academic and non-academic activities, has helped her hone her time management skills. Samantha's research results will allow for a more rapid detection of *Salmonella* in biosolids.



Elizabeth Wolff, Delaware Geological Survey – “... I conducted over 50 single-well aquifer, or slug, tests in monitoring wells throughout the southern portion of New Castle County. The data collected was used to calculate hydraulic conductivity (K), or the ability of an aquifer to transmit water through a geologic material. In many hydrologic studies, hydraulic testing is required to determine rates of recharge, groundwater flow, and contaminant transport... My experience this past summer was quite enriching. I learned a great deal about the process of data collection, interpretation, and analysis. Advisor A. Scott Andres added, “Her work has been incorporated into Delaware's library of aquifer hydraulics data and she will be a co-author on an upcoming DGS report that includes her work.”

DWRC Announces Two New Graduate Fellowships

The **DWRC** is pleased to announce the award of the following two graduate student fellowships:

“Modeling Hydrologic and Geochemical Effects of Land-based Wastewater Disposal”

Faculty Advisors: Mr. Scott Andres, Delaware Geological Survey and Dr. Paul Imhoff, UD Civil and Environmental Engineering

Ph.D. Candidate: Mr. Babak Shafei, UD Civil and Environmental Engineering, starting in Fall 2007

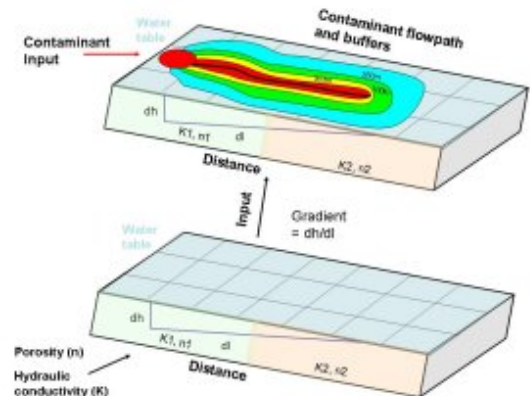
“Hydrogeologic Characterization of the Potomac Aquifer, Delaware”

Faculty Advisors: Dr. Susan McGeary, UD Geological Sciences and Dr. Peter McLaughlin, Delaware Geological Survey

Ph.D. Candidate: Ms. Claudia Velez, UD Geological Sciences, starting in Summer 2007

Delaware Geological Survey Completes Report on Domestic Well Water Quality by Scott Andres, DGS

In response to concerns of increased cancer risks to people using water from shallow domestic water wells, the Delaware Geological Survey (DGS) has completed a survey of water quality in shallow domestic water wells. In doing this work, DGS staff members A. Scott Andres, Mark Neimeister, Vince Pellerito, and Liz Wolff reviewed existing water quality data from several state and federal agencies, assessed the relationship between known sources of contamination and domestic wells, and evaluated risk of contamination to domestic wells from known and potential sources of groundwater contaminants. This work was funded by the Delaware Cancer Consortium and the Delaware Office of Drinking Water.



The major findings of the study were that contaminants are frequently found in shallow domestic wells throughout the state; however, the contaminant concentrations rarely exceed any maximum contaminant level (MCL) or health based screening level. The one exception is nitrate which exceeded the MCL in about 18 percent of wells. In addition to nitrate the most commonly occurring contaminants are volatile organic compounds (VOCs) and pesticides. The most commonly occurring VOCs are gasoline components; the most frequently occurring pesticides are atrazine and alachlor. The risk assessment found that fewer than two percent of domestic wells are located in areas that would be considered at risk from known sites of ground-water contamination. There are several state programs that manage these sites and the at-risk wells.

The complete text of the report and appendices can be downloaded from www.udel.edu/dgs/ftp/dcc. The Delaware Cancer Consortium has added the report document to their website, www.delawarecancerconsortium.org/.

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DWRC Spotlight on Graduate Research

Former DWRC graduate fellow Jennifer (Jennings) Volk, along with co-authors K.B. Savidge, J.R. Scudlark, A.S. Andres, and W.J. Ullman, had the following article published in the *Journal of Environmental Quality*, 2006, Vol. 35, p. 1742-1755: **Nitrogen loads through baseflow, stormflow, and underflow to Rehoboth Bay, Delaware.**



The Pennsylvania Water Environment Association named current DWRC graduate fellow Liping Zhang a Student Research Award Recipient. She presented her paper, **Removal and inactivation of waterborne viruses using elemental iron**, as both podium and poster presentations at PennTec 2007 on June 4, 2007. Ms. Zhang attended the awards luncheon and received a plaque and \$250 check.



DWRC Notices and Calendar

UPCOMING MEETINGS

Jul. 24-26, 2007 - Universities Councils on Water Resources (UCOWR)/NIWR Hazards in Water Resources Conference, Boise, ID. Visit www.ucowr.siu.edu.

Sep. 30-Oct. 5, 2007 – US Committee on Irrigation and Drainage (USCID) 4th International Conference on Irrigation and Drainage: Role of Irrigation and Drainage in a Sustainable Future, Sacramento, CA. Visit www.uscid.org/.

Nov. 7-9, 2007 – National Water Resources Association (NWRA) Annual Conference, Albuquerque, NM. Visit www.nwra.org.



Visitors, especially children, to the UD College of Agriculture and Natural Resources' Ag Day in April 2007 were able to visualize non-point source water pollution, along with remediation practices, with the help of DWRC personnel and a newly purchased EnviroScape® model.



The DWRC plans a fall offering of undergraduate internships, where students would work from Oct. 2007 through Feb. 2008. Look for details later this summer at ag.udel.edu/dwrc/

Delaware Water Resources Center Advisory Panel

The Delaware Water Resources Center

The Delaware Water Resources Center (DWRC), established in 1965, is part of a network of 54 Water Resources Research Institutes throughout the nation. The DWRC receives funding through Section 104 of the Water Resources Research Act of 1984. The US Geological Survey administers the provisions of the Act and provides oversight of the nation's Water Resources Centers. The primary goals of the DWRC are: to support research that will provide solutions to Delaware's priority water problems, to promote the training and education of future water scientists, engineers, and policymakers, and to disseminate research results to water managers and the public. For more information, visit our website: <http://ag.udel.edu/dwrc/>

WATER NEWS is published biannually by the Delaware Water Resources Center, Dr. J. Thomas Sims, Director. Maria Pautler, Editor, welcomes materials for publication, including news articles and letters to the Editor. To submit material or request future issues, please address your correspondence to the address below or contact the Editor at mpautler@udel.edu or 302-831-0847.

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