

# Water Matters

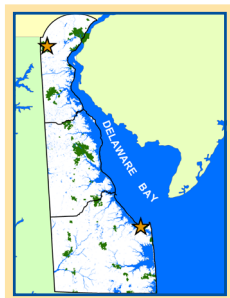


ISSUE 1

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## Dear Friends:

In Delaware water has always been in the news. Most of our state is on an island. Our towns were founded beside the water. Our state and the river share the same name. Over the past decade, we've had three droughts and three 100-year floods. At the coast, on the farm, and in our back yard, clean and plentiful water supplies are necessary to sustain our economy and the environment.



At the Water Resources Agency (IPA-WRA), water has always been our first name. Our work supporting the public service, education, and research land-grant mission of the University of Delaware is funded by

you—the public—and the governments that you elect. On campus we provide assistance to governments in Delaware and the Delaware Valley based on sound science and public policy ideals.

Today, in the first of a series of newsletters, we'd like to introduce our staff and students to you. They have experience in many areas—planning, GIS, natural resources, policy, and engineering. So stop by to see us in Newark or Lewes. Or just call us...IPA-WRA.

Warmly,  
Jerry Kauffman

## LET'S CELEBRATE RAIN, NOT RUN IT OFF

By Elaine Grebl

Replacing native landscapes with buildings, driveways, or other hard, impervious surfaces inhibits stormwater infiltration and groundwater recharge by increasing runoff. More runoff means more contamination of streams and ponds, increased erosion, and decreasing supplies of underground drinking water. One method to control this problem is to encourage infiltration of water underground, which lessens the volume of surface runoff while also filtering and replenishing potable groundwater. Installation of a rain garden, for example, is a way that anyone, from homeowners to city officials to business owners, can protect and enhance the quality of our water now and into the future. A rain garden is simply a landscaped garden located in a small, shallow depression that receives water runoff from surrounding impervious surfaces. Unlike a wetland or water garden, in which standing water persists, a rain garden is designed so any runoff collected will evaporate, infiltrate, or be taken up by plants within four days. Successful design

must therefore consider soil types, infiltration rates, plant selection, and size and depth of the garden area.

Water is our greatest natural resource. How we handle it today influences its quality and quantity in the future. We can enhance the health of our water through thoughtful planning of public horticulture. Rain gardens are an attractive way to incorporate gardening—one of Americans' favorite hobbies—with water conservation and environmentally sustainable land management.

*Elaine Grebl, MS in Public Horticulture '05 from the Longwood Graduate Program at the University of Delaware, designed and implemented a rain garden in front of the Water Resources Agency on campus. Grants awarded by the Christina Basin Clean Water Strategy, and the Mid-Atlantic Water Quality Program and its subcommittee, the Residential Environmental Landscape Management team, funded the project implementation. Coordination assistance and partnerships included the University of Delaware Landscape Architect, Grounds Department, Plumbing Department, and Cooperative Extension as well as the Delaware Geological Survey, Water Resources Agency, and the City of Newark. Other sources of expertise included an Associate Professor of Landscape Architecture and a Professor of Environmental Engineering and Watershed Management at the University of Delaware. The rain garden is a work in progress as we continue to address infiltration issues, install additional native plants, and enhance the educational aspects of the site.*

## ANNOUNCEMENTS

**Kash Srinivasan** received the Samuel S. Baxter Memorial Award at the Water Resources Association of the Delaware River Basin 23rd Annual Recognition Dinner. Kash received this award for his leadership as Commissioner of the Department of Public Works for the City of Wilmington, Delaware, and for his contribution to sound water resources management to the standards exemplified by former Philadelphia Water Commissioner Samuel S. Baxter.

Water resources students and professionals from many disciplinary fields throughout the state of Delaware have formed the **Delaware Section of the American Water Resources Association (DE AWRA)**. If you are interested in joining the section please contact DE AWRA President Martha B. Corrozi at [mcorrozi@udel.edu](mailto:mcorrozi@udel.edu) or 302-831-4931.

## THE SEVENTH REPORT TO THE GOVERNOR AND GENERAL ASSEMBLY

By Martha Corrozi

The *Seventh Report to the Governor and the General Assembly*, detailing the progress of the Delaware Water Supply Coordinating Council (WSCC), is finalized and has been distributed to the Governor and General Assembly and members of the WSCC, which includes water purveyors and government entities. Delaware Department of Environmental Control and Natural Resources (DNREC), Delaware Geological Survey (DGS), and IPA-WRA authored this report on behalf of the WSCC.

The report reviews the role of the State Water Coordinator and Water Supply Coordinating Council, summarizes water conditions within the state during 2004 and 2005, and provides updates on activities and projects of WSCC members. One of the WSCC's major projects, identifying additional water supply and storage in northern Delaware, is described in this report. The water purveyors have made progress on developing one billion gallons of additional water supply and storage in northern Delaware during 2004. As of June 2005, purveyors have developed 1,014 million gallons of the originally projected deficit of 1,020 million gallons. The report also details projects that address self-sufficiency during drought by 2010 and the development of a Drought Operating Plan (DOP) for water purveyors in northern Delaware.

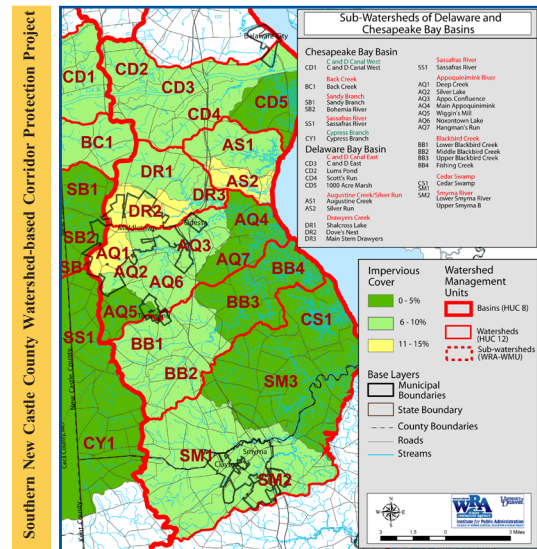
This document is the seventh report of a series; this report and previous reports are available online at [www.wr.udel.edu](http://www.wr.udel.edu).

## SOUTHERN NEW CASTLE COUNTY WATERSHED STRATEGY

By Lori Schnick

The Southern New Castle County Watershed Strategy project consists of the delineation and environmental analysis of 31 manageably sized sub-basins. Delineation of the sub-basin is from digital topographic data and known locations of monitoring stations managed by DNREC or the USGS. Analysis consists of calculation of impervious cover, future impervious cover based on existing zoning, inventory of natural resources, and calculation of future impervious cover resulting from protection of environmental standards under the Unified Development Code (UDC). The purpose of the analysis is to test the effectiveness of the UDC in maintaining an impervious threshold of less than 15 percent and to select a "preferred" watershed. A "preferred" watershed contains low-percentage amounts of impervious cover and a considerable amount of natural resources such as forest and wetlands. The GIS analysis is being accomplished for the purpose of calculating impervious cover, modeling various land use scenarios, and selecting "preferred" watersheds. The "preferred" watersheds will be those that may require further land use restrictions to prevent degradation of the sub-basin. Five maps are being created to present to the New Castle County Planning Department and the public. The next step is

to use GIS and a literature review to determine the range of values to attribute to watershed characteristics that will be used to determine which sub-basins will be deemed "preferred."



## SOURCE WATER PROTECTION GUIDANCE MANUAL

By Martha Corrozi

The *Source Water Protection Guidance Manual for the Local Governments of Delaware: "A Toolbox for the Protection of Public Drinking Water Supplies in Delaware"* was revised and finalized in May 2005. IPA-WRA prepared the manual for DNREC, with substantial input from the Source Water Protection Citizen and Technical Advisory Committee (CTAC) and the public.

This manual is an important component of the State of Delaware Source Water Protection Law of 2001 and has been completed as required by Chapter 60 Section 6082(a) and House Concurrent Resolution 32 dated January 2004. This manual is considered a toolbox for citizens and county and local governments.

The manual provides information to local governments and the public on various measures that communities in Delaware and throughout the nation are using to protect their drinking-water resources. The manual provides background on the Source Water Protection program, details various successful source water protection practices, and provides implementation strategies. The manual is not intended to be adopted in total but is intended to be used as a toolbox for local communities for the long-term protection of the quality and quantity of sources of drinking water.

A copy of the final document can be found on IPA-WRA's Source Water Assessment and Protection Program website at [www.wr.udel.edu/swap/home/phase2/Publications/publications2.html](http://www.wr.udel.edu/swap/home/phase2/Publications/publications2.html).



**Jerome R. Lewis**  
Director of IPA and  
Associate Professor

PhD, New York University 1968, Public Administration (comparative public administration and urban economics) and Political Science

MPA, New York University 1966, Public Administration (housing and metropolitan development)

BA, University of Minnesota 1962, Sociology

Jerome is the first director of the IPA at the University of Delaware.



**Andrew R. Homsey**  
Assistant Policy Scientist  
(GIS Research Analyst)

BA, University of Delaware 1987, Geography

Andrew is the GIS Services Manager for IPA-WRA, and when not occupied with other matters can sometimes be found conducting bird counts in our rain garden.



**Gerald J. Kauffman**  
State Water Coordinator  
and Director of Watershed  
Policy

MPA, University of Delaware 2003, Water Resources Policy

Certified Public Manager, Level III, Rutgers University 1988, Graduate Programs in Public Administration

BSCE, Rutgers University 1981, Civil and Environmental Engineering (water resources)

Jerry is a future reality-show contestant.



**Nicole M. Minni**  
GIS/ Graphics Specialist

Currently enrolled in Parallel Program, University of Delaware, Terry Campus

Community College of Baltimore County (CCBC), Concentration in Advertising Design and Graphics

Nicole loves the art of cartography and believes as Gilbert Grosvenor, *National Geographic* editor once said, "A map is the greatest of all epic poems. Its lines and colors show the realization of great dreams."



**Martha B. Corrozi**  
Watershed Analyst

MPA, University of Delaware 2002, Water Resources Policy

BS, Lehigh University 1998, Biology

Martha loves adventure and travel, hates sitting still, and has carried out a variety of water-related tasks as both a student and full-time staff member at IPA-WRA.



**Lori H. Schnick**  
Policy Specialist

MS, University of Delaware 2005, Geology

BS, University of Delaware 2001, Environmental Science, Minor in Geology

Lori brings experience in geology and hydrology, modeling, and research to the GIS group.



**Bernard L. Dworsky**  
Assistant Professor and Senior  
Policy Advisor

MA, University of Delaware 1971, Political Science

BA, University of Delaware 1968, Education

Bernie is still staying afloat!



**Kevin J. Vonck**  
Graduate Research  
Assistant

Currently enrolled in PhD program in Urban Affairs and Public Policy, University of Delaware

MPA, University of Delaware 2003, Environmental Policy and Administration

BA, University of Wisconsin 2001, Geography, History, Certificate in Environmental Studies

Kevin's flippin' sweet skills include fighting impervious cover warriors, grilling Wisconsin-style bratwurst, and riding a sweet bike.



**Elaine J. Grehl**  
Graduate Research Assistant

MS, University of Delaware 2005, Public Horticulture Administration, Longwood Graduate Program

BS, Michigan State University 1995, Landscape Horticulture

Elaine is odd yet passionate, enjoys trivia, needs improvement in returning messages, and strongly dislikes onions.



**Martin W. Wollaston**  
Senior Planner

MPA, University of Delaware 1983, Environmental Management

BA, University of Delaware 1978, Economics/ Political Science

Martin has worked for WRA since he received his graduate degree from UD over 20 years ago, is a lifelong resident of Newark, and is a fervent fan of UD football.

Visit us at IPA-WRA's website: [www.wr.udel.edu](http://www.wr.udel.edu)

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## PUBLIC SERVICE

### *Delaware Water Supply Coordinating Council*

- Preparing draft report summarizing results of southern New Castle County Water Supply and Demand Study
- Finalized and distributed *Seventh Report to the Governor and General Assembly* regarding the progress of the Delaware WSCC, June 2005

### *Delaware Source Water Assessment and Protection Program (SWAPP)*

- Finalized and distributed Source Water Protection Manual for Local Governments in Delaware (SWAPP Phase III)
- Conceptualizing program within IPA planning team and Delaware Planning Office to write water resource protection ordinances for local governments in Delaware (SWAPP Phase IV)

### *Christina Basin Clean Water Partnership*

- Administering EPA Watershed Initiative Grant for Watershed Coordination and Rain Garden Stormwater Retrofit project in front of IPA-WRA
- Developing grant scope of work (\$30,000 to be awarded by DNREC Watershed Assessment Branch) for IPA-WRA to be coordinator of the Christina Basin Tributary Action Team public process to implement TMDLs in accordance with a watershed plan

### *Delaware River Basin Commission (DRBC)*

- Finalizing grant proposal (\$25,000+) for IPA-WRA and Delaware Water Resources Center (DWRC) to prepare a state-of-the-basin report card for DRBC in concert with land-grant universities, (Cornell, Penn State, and Rutgers) and with DRBC and the Delaware Estuary program

### *New Castle County (NCCo)*

- Finalizing mapping and GIS analysis for the Southern NCCo Preferred Watershed Strategy for presentation to NCCo
- Setting up database of recharge facilities as requested by the NCCo recharge-protection area technical advisory committee

### *City of Newark*

- Assisting the City of Newark on the Newark Reservoir project until completion in December 2005
- Reviewing updates to Newark's stormwater code
- Cooperating with USDA's Natural Resources Conservation Service on update to Newark's Upper Christina River 1993 Floodplain Management Plan
- Scanning 160 water-distribution system maps into GIS for the City of Newark Water Department

### *City of Wilmington*

- Serving on Hoopes Reserve Drought Operating Plan review committee, first meeting May 2, 2005
- Scanning water-distribution system maps into GIS for City of Wilmington Water Department

### *American Water Resources Association (AWRA)*

- Coordinating Delaware section (DE AWRA), organizing the annual meeting at James Farm Ecological Preserve on October 7, 2005
- Serving on planning committee for 2006 AWRA National Conference in Baltimore

## RESEARCH

- Manuscript, "Imperviousness: A Performance Evaluation of a Delaware Water Resource Protection Area Ordinance," approved for publishing in *Journal of the AWRA*
- Manuscript, "Ethics and Water Policy in Delaware," under review for chapter in book *Ethics and the Life Sciences* by University of Delaware Press
- Developing article, "Estimates of Impervious Cover Statewide by the Delaware Method"
- Developing article, "The Severity of the 2002 Drought based on Historic Mill Accounts and Tree Ring Records dating to 1730"
- Developing article, "The State of the Christina Basin Using a Report Card Approach" for *Water Resources Research*

## EDUCATION AND OUTREACH

### *University of Delaware Courses*

- UAPP 611-010: Regional Watershed Management
- CIEG 467-016: Watershed Engineering Planning & Design
- CIEG 440-010: Water Resources Engineering
- UAPP 667-014: GIS Applications in Public and Nonprofit Sectors
- UAPP 652-010: GIS in Public Policy

### *Annual Water Policy Forum*

- Planning the 5th Annual Water Policy Forum, "Water Friendly Landscape Design: A Prescription for Healthy Watersheds," Friday, October 21, 2005, at the University of Delaware's Clayton Hall Conference Center.