

## HURRICANE SANDY AND MY RAIN BARREL, PERFECT TOGETHER.

by Christopher C. Obropta, Ph.D., P.E., November 1, 2012

I know the rain barrel is just a 55 gallon drum and does not collect enough rain water to really make a difference in flooding from a hurricane, but I am here to tell you that my rain barrel made a big difference these last four days. Hurricane Sandy swept into New Jersey on Sunday, and by Monday at 5 pm, my power was out (like much of New Jersey) and my power is still out at noon on Thursday. Now this shouldn't be a big deal for an Eagle Scout like me and my three Boy Scout sons. We are used to roughing it except that my house is on well water which means that when the power is out, the well pump doesn't pump - no water. With a full rain barrel (55 gallons of water) and one to two gallons per flush, I am able to flush my toilet about 35 times over a four day period. Thank God for my rain barrel!

I hope you all kept safe during the storm. Just think with the climate changing, we will experience a higher frequency in storms like Sandy. I always liked the name Sandy ever since I saw the movie Grease; I'm not so sure anymore.

As your communities begin rebuilding after the storm, please remember the RCE Water Resources Program is here to help. Let us help you become a flood resilient community.

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## STORMWATER MANAGEMENT IN HAMILTON TOWNSHIP

~ Municipal Technical Assistance Program for the RCE  
Water Resources Program

In Spring 2011, Hamilton Township in Mercer County contacted the Rutgers Cooperative Extension Water Resources Program requesting assistance in evaluating water resources issues in the community. The Township, along with many other communities throughout New Jersey, is struggling to maintain aging infrastructure, address frequent flooding of local streets and properties, and understand the community-wide impacts of stormwater management strategies.

Beginning in June 2011, the Rutgers Cooperative Extension (RCE) Water Resources Program partnered with the Township to evaluate watershed and stormwater management issues and develop recommendations for improving and protecting water resources throughout the community. This partnership resulted in the completion of a Township-wide evaluation of water resource management needs and set forth priorities and recommendations for actions needed to address key hydrologic issues. These actions support a series of goals established for Hamilton Township in its

ongoing efforts to improve and protect water resources. These goals include engage the community in water resource protection, manage water quality, minimize localized flooding, implement Phase II stormwater controls, and improve stormwater facility maintenance.



In January 2012, the RCE Water Resources Program presented the study findings along with recommended actions the Township can take to better protect critical water resources throughout the community. After the successful completion of this evaluation, the Township has chosen to move forward with the first phase of recommended actions. In 2012, through an ongoing partnership with the RCE Water Resources Program, the Township is moving forward to implement a community-wide detention basin assessment program, develop a hydrologic modeling tool to better understand flooding potential in the community, continue compiling and improving geographic information system data of the existing stormwater infrastructure network, implement a rain garden demonstration project and educational program, and implement a detention basin maintenance training, inspection, and monitoring program for municipal staff.

With staff and students, the RCE Water Resources Program has already assessed more than 100 stormwater management basins in the Township and is preparing plans for the rain garden demonstration project. With ongoing support from the Township, these and other recommended actions will continue to be developed. The first phase of this implementation program is targeted for completion in June 2013. For more information on the program and to see copies of the completed reports prepared by the RCE Water Resources Program, please visit our website at:

<http://water.rutgers.edu/Projects/Hamilton/Hamilton.html>.

If you are interested in learning more about how the RCE Water Resources Program can assist your municipality in evaluating water resources issues, contact Jeremiah Bergstrom ([jbergstrom@envsci.rutgers.edu](mailto:jbergstrom@envsci.rutgers.edu)) or Steve Yergeau ([syergeau@envsci.rutgers.edu](mailto:syergeau@envsci.rutgers.edu)).

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## Water Resources Program

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## ENVIRONMENTAL COUNTY AGENT PILOT PROGRAM

### ~ A Critical Review



Four years ago, an Environmental County Agent Pilot Program for Rutgers Cooperative Extension was created to 1) provide local leadership in implementing environmental plans and initiatives, 2) develop educational programs that

focus on changing the behavior of residents to achieve environmental improvements, 3) implement on-the-ground environmental restoration projects, and 4) serve as the node where all environmental activities can be brought together. Five Environmental County Agents were hired as part of this program, and they are currently working at Rutgers serving ten counties:

- Amy Rowe (Essex and Passaic Counties),
- Michele Bakacs (Union and Middlesex Counties),
- Michael Haberland (Camden and Burlington Counties)
- Salvatore Mangiafico (Salem and Cumberland Counties)
- Patricia Rector (Morris and Somerset Counties)

The five Agents have provided local leadership in implementing environmental initiatives. Within the first six to 12 months of starting, the Agents identified local partners and established a network of stakeholders to collaborate with on implementing environmental projects and educational programs. As projects have been successfully implemented and the impact of educational programs has been documented, this network of stakeholders has continued to grow and attract funding. The stakeholders have expanded beyond the farm community to improve the quality of life of rural, suburban and urban residents. Municipalities, whether through the township committees, planning boards, environmental commissions or Sustainable Jersey Green Teams, have sought assistance from the five Agents. Additionally, non-governmental organizations (NGOs) such as watershed associations, faith-based groups, and community organizations, have partnered with the Agents to conduct environmental educational programs and implement environmental projects. Finally, schools have been a great partner for many of the Agents. Rain barrel and rain garden programs have been a special interest of youth audiences. The Agents have been able to reach beyond Rutgers Cooperative Extension's traditional youth audience of 4-H and have brought these programs into the classrooms of public and private schools.

The Agents have done an excellent job at developing educational programs to address the immediate problems that the residents of New Jersey are facing. Due to the need to be unique in the eyes of the Rutgers University promotion and tenure system, each Agent has focused on developing two to three *unique* extension programs that incorporated research, education and outreach components.

The Agents have done an outstanding job at implementing on-the-ground restoration projects. Rutgers Cooperative Extension always has been about delivering solutions to the stakeholders. With regard to water resources issues, most solutions need to be delivered at the local level. The Agents have helped to foster these actions at the local level by implementing watershed restoration plans that have been prepared for waterways in their counties.

The Agents have served as a node for bringing stakeholders together around common environmental problems. The unbiased aspect of Rutgers Cooperative Extension with science-based educational programs, coupled with the trust that the Agents have gained among their stakeholders, has allowed their programs to be successful. It has allowed Rutgers Cooperative Extension to reach out to new audiences, expanding the reach of the university into many more lives across the state.

The creation of an Environmental County Agent Pilot Program, that consisted of hiring five Agents to service ten counties, has been greatly successful. The program should be expanded beyond these ten counties, ideally with one Agent in each of the 21 counties of New Jersey. Complimenting Rutgers Cooperative Extension's service to the agricultural community with outreach to all communities throughout the state would greatly improve the quality of life of all New Jersey's residents and make great steps toward restoring our state's environment for future generations.

To learn more about what the five Agents have been up to, check out [The Green Knight](http://saalem.njaes.rutgers.edu/greenknight/) newsletter at <http://saalem.njaes.rutgers.edu/greenknight/>. The Green Knight provides news of environmental and resource management issues and events from throughout New Jersey.



## NEW JERSEY WATER SAVERS GOES CORPORATE!



New Jersey Water Savers is proud to announce a new partnership with the New Jersey Water Supply Authority's River-

Friendly Business Certification Program. There are four categories in the River-Friendly Business Certification Program: Water Quality Management, Water Conservation Techniques, Wildlife and Habitat Enhancement, and Education and Outreach. To receive certification, businesses must complete the goals and actions for each of the four categories under the program. New Jersey Water Savers will provide ongoing technical expertise, support, and guidance for two (2) New Jersey businesses interested in implementing the goals and actions from the Water Conservation Techniques and Education and Outreach categories of the program over the next several months.

Suggested water conservation techniques include:

- using native vegetation
- increasing irrigation efficiency
- reducing irrigated acreage
- capturing and reusing water
- reviewing and updating stormwater management practices

Suggested education and outreach techniques include:

- displaying educational signage on site
- hosting lunchtime work place workshops to educate personnel
- hosting work place weekend workshops to educate employee families, the local community, and local officials

The River-Friendly Business Certification Program is designed to help New Jersey businesses take a leading role in preserving the community's environmental health. This program allows businesses to demonstrate a commitment to the environment and the local economy. Through certification, businesses can help create a healthy, natural work setting that enhances employee morale and well-being, while preserving and enhancing the local environment.



For more information regarding the River-Friendly Business Certification Program or other River-Friendly Programs, please contact New Jersey Water Supply Authority at [www.njwsa.org/wpu](http://www.njwsa.org/wpu).

For more information regarding **New Jersey Water Savers Goes Corporate**, contact Elaine Rossi-Griffin ([erossi@envsci.rutgers.edu](mailto:erossi@envsci.rutgers.edu)) and Sara Mellor ([saramellor@envsci.rutgers.edu](mailto:saramellor@envsci.rutgers.edu)) or visit New Jersey Water Savers at <http://www.njwatersavers.rutgers.edu/>.

## DID YOU HEAR?

Rutgers Cooperative Extension recently published a bulletin on **Landscaping for Water Conservation**. This publication provides guidance for homeowners on how to decrease outdoor water use by planting drought-tolerant landscaping, information on irrigation systems that utilize the latest technology as well as information on the use of stone and mulch to conserve water. To download a copy of the publication visit: <http://www.njaes.rutgers.edu/pubs/publication.asp?pid=E341>.



*Black-eyed Susans and purple coneflowers, two drought-tolerant native flowers. Photo credit: Don Knezick, Pinelands Nursery & Supply, Columbus, NJ.*

## DID YOU KNOW?

**The Green Education Foundation's (GEF) Sustainable Water Challenge** aims to educate schools and groups on the current issues in water sustainability and the steps we need to take to help conserve water. Through GEF's resources, K-12 students and educators can learn the basic properties of water, water pollution and depletion as well as methods for water conservation.

To learn more about successful water conservation educational projects, tools, and programs for youth, check out the New Jersey Water Savers "Educators" page at <http://www.njwatersavers.rutgers.edu/>.

## BECOME A PARAPROFESSIONAL WITH THE RUTGERS COOPERATIVE EXTENSION WATER RESOURCES PROGRAM

### ~ Saving the Planet One Watershed At A Time

#### Short Course on Collecting Data for Watershed Restoration Planning

The goal of this short course is to train paraprofessionals to assist with the collection of data needed to complete a watershed restoration plan. The course will train paraprofessionals to conduct watershed surveys and to identify potential pollution sources and opportunities to remediate these sources. The trained paraprofessionals will be expected to apply their newly developed skills to several local watersheds. During this process, they will be working closely with engineers and scientists from the Rutgers Cooperative Extension (RCE) Water Resources Program. The short course consists of four classes as described below.

#### **Class 1 (1/2 day): Introduction to Stormwater Management.**

This will be a 1/2 day classroom session. The participants will gain a clear understanding of the issues associated with stormwater runoff and the various management practices that can be used to treat runoff problems. The class will focus on identifying sources and determine the most appropriate management practice for eliminating or treating these sources. A significant portion of this class will be dedicated to discussing the concepts associated with "disconnection" of impervious surfaces. The participants will participate in an in-class design exercise.



**Class 2 (1/2 day): Site Selection and Tools Workshop.** This will be a 1/2 day classroom session to discuss project site goals, site constraints, and data to be collected. The participants will be taught how to interpret data gathered from available tools and resources, such as Google Maps and Bing Imagery. Participants will need to gain a full understanding of the data available to them and how to use the data to identify potential sources and sites for best management practices (BMPs). The students will work through real-world examples.

**Class 3 (full day): Watershed Survey.** This will be a full day starting in the classroom reviewing site selection data and quickly moving into the field to conduct a watershed survey. The

participants will work alongside seasoned professionals to tour a watershed to identify potential pollutant sources and possible BMP locations. The participants will work with the professionals to identify the most appropriate BMP for each situation. Participants will learn how to complete data sheets and photo-document sites.

*Upon the completion of Class 3, the newly trained participants will be expected to work in teams to conduct surveys of local watersheds. This work will be conducted under the guidance of the RCE Water Resources Program. All data collected will be used by the RCE Water Resources Program to develop watershed restoration plans.*

**Class 4 (1/2 day): Data Usage and Program Evaluation.** This will be a 1/2 day classroom session to evaluate the program and provide the participants additional training on how the data are used in a watershed restoration plan. This will provide an opportunity for participants to become more involved in the preparation of watershed restoration plans and the implementation of recommended management practices.

**All participants will be provided with a certificate of completion.**

This new Certificate program will provide some important skills to people looking for jobs in the environmental field. All the data collected will be used by the RCE Water Resources Program to develop watershed restoration plans, which serve as a blueprint for solving local water quality and flooding problems.

Please contact Jess Brown at [jess@envsci.rutgers.edu](mailto:jess@envsci.rutgers.edu) if you are interested in participating in this training program.

**Paraprofessional** is a job title given to persons in various occupational fields, such as education, healthcare, engineering and law, who are trained to assist professionals but do not themselves have professional licensure. The Greek prefix "para" as used here indicates *beside* or *side by side* (as in "parallel"); hence, a paraprofessional is one who works *alongside* a professional.

The paraprofessional is able to perform tasks requiring significant knowledge in the field, and may even function independently of direct professional supervision, but lacks the official authority of the professional. Some paraprofessional occupations require special testing or certification in the field, while others require only a certain level of education.

**A GREAT GROUP OF SUMMER INTERNS  
Having Fun and Getting Things Done**

For the summer of 2012 the Rutgers Cooperative Extension (RCE) Water Resources Program was fortunate enough to hire six student interns for a busy summer of design, implementation, construction, and maintenance! Returning to the Program for a second and third summer was Kyle Gourley (second), Nicole Del Monaco (second), and Claude Wallace (third), and joining us for their first summer was Dillon Swiderski Soto, Meg Morris, and Farielle Brazier.

A new component was added to our intern program this summer. Each intern selected a focus area to work on over the summer. Focus area choices included: 1) *Wet Pond and Detention Basin Assessment and Retrofit*, 2) *Rain Garden Maintenance Assessment*, 3) *Gravel Wetland Design and Functionality*, and 4) *Climate Change, Land Use Change, and Stormwater Management*.

Dillon and Kyle selected *Wet Pond and Detention Basin Assessment and Retrofits*. They assessed over 78 basins in Hamilton Township by conducting visual assessments and collecting qualitative data about the function and maintenance of each system. Dillon focused on the specific maintenance components of these systems and how functionality can be increased by simply retrofitting how some of the systems are maintained. Kyle examined three detention basins within Hamilton Township as a case study and specified retrofit designs for those basins.



Claude selected *Rain Garden Maintenance Assessment*. A maintenance assessment is conducted on all RCE Water Resources Program rain gardens, and fifty of those rain gardens were assessed this summer under the direction of Claude. In addition, the RCE Water Resources Program is currently developing a Rain Garden Maintenance Rating System, and Claude led a team this summer to collect the necessary data to be included in this rating system. Claude also initiated the development of a GIS database to include the rain garden data collected over the summer.

Farielle and Meg, chose *Gravel Wetland Design and Functionality*, a relatively new stormwater best management practice (BMP). Farielle looked at the nutrient processing within the BMP and conducted a literature review on what structural design components affect nutrient loading and removal within a gravel wetland. Farielle also created a great ACAD standard detail of a gravel wetland. Meg chose to look at nutrient uptake by plants in a gravel wetland. The RCE Water Resources Program is very interested in what portion of the nutrient removal within a gravel wetland BMP can be attributed to plant uptake.



In addition to working on their focus areas, our student interns were busy this summer helping with various projects to include cleaning and preparing rain barrels, assisting with rain barrel workshops throughout New Jersey, and maintaining rain gardens constructed in previous years. Also, the student interns had the opportunity to be involved in the design, the construction, the implementation, and the first maintenance of several rain gardens. This was an excellent opportunity for the student interns to ask questions of the “client,” learn about design modifications based on several storm events on site, and implementation in a field setting.



## THE DEATH OF TWO NATIONAL NETWORKS

Chris Obropta's Blog, Thursday, October 4, 2012 <http://rutgerswaterresources.blogspot.com/>

This year I attended two funerals that showed me how unimportant water has become to our federal government. The week of May 21, 2012 I attended the USDA National Water Program Conference in Portland, Oregon, and the week of October 1, 2012 I attended NEMO University 8 in Duluth, Minnesota. This is where I witnessed the last gasp from two programs that died too early in life.



The [USDA National Water Program](#) consisted of a network of eight regional projects with water quality coordinators for each state and territory of our nation. This program was created twelve years ago to bring together water professionals that are responsible for developing education and outreach program to help address the nation's water quality problems. It was built on the National Land Grant Universities,

and while it focused greatly on agriculturally dominated areas, it also worked in urban communities. The Program was run by a committee of shared leadership with university faculty from each of the Land Grant Universities in each of the ten EPA Regions, USDA program leaders, and representatives from the tribal colleges and the traditionally black land grant universities. Every year the National Water Program had an annual conference where people would gather and share ideas. There were workshops where people could learn about the latest research and how to incorporate this research into their outreach programs. There were posters and oral presentations where water professionals would encourage participants to take the program back to their state and try it out. This was the only forum where Extension faculty and staff that are working in water resources could network, share their ideas, and collaborate on adapting programs from one state to the next.



The [National NEMO Network](#) focused on educating municipal officials about the link between land use decisions and water quality. There are over 30 states that are part of the NEMO Network and other states like New Jersey that are not official members but participate all the same. The National NEMO Network has been around a little longer than the USDA National Water Program. It too had regular conferences that they called "Universities" because this is where its members were educated and where great partnerships and ideas were formed. Yesterday ended their eighth annual conference, and it was a great experience for me to be able to participate.

Both of these networks were funded in part by the USDA 406 Integrated Water Quality Program. While some may look at these federally funded programs as just giving handouts to the folks in these networks, the funding was always a great investment because the small amount of funding provided to these networks resulted in people across the country working with local stakeholders to solve their water problems. These funds were leveraged tenfold to expand the reach of the water resources professionals. Through the network, educators didn't have to reinvent the wheel each time to develop a new program because they had access to their colleagues within the network. Ideas and programs were shared; water problems were fixed.

The funding is gone now, and the dirt is being shoveled on the coffins of these two great networks. Many educators across the nation are weeping as they go back to focusing on their own little part of the nation, longing for an opportunity to share their great new program with a colleague across the nation while looking to steal programming from others. I'd like to thank USDA for funding these networks for as long as they did. I only wish USDA had the vision to keep them going.

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County Boards of Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.

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