

New Jersey's Rain Garden Portal

As the Water Resources Program's Stormwater Management in Your Backyard program becomes increasingly popular, the need to have rain garden information readily available to homeowners has become a necessity. As such, the Water Resources Program has revamped its Rain Garden web page to include rain garden information, such as fact sheets, presentations and manuals, as well as site-specific information regarding each of New Jersey's demonstration rain gardens developed as part of the Stormwater Management in Your Backyard program. If you have any questions regarding rain gardens, feel free to contact a member of the Rain Garden Team, Chris, Greg, Amy and Jillian, who are also featured on the revamped Rain Garden web page. The Rain Garden Team encourages you to save some money on gas this year by checking out the Rain Garden web page and taking a virtual tour of some of New Jersey's most popular demonstration rain gardens. Visit us at www.water.rutgers.edu



National Fish & Wildlife Foundation Grant

In January 2008, the Rutgers Cooperative Extension Water Resources Program (RCE WRP) received a grant from the National Fish and Wildlife Foundation (NFWF) to prepare a watershed restoration plan and install stormwater improvement demonstration projects for the Oldmans Creek Watershed. The South Jersey Land Water Trust (SJLWT), a project partner, will be responsible for assisting with field services and coordinating an outreach education campaign to the public. RCE WRP and SJLWT began working together in 2006 through Restore-a-Waterway, a RCE WRP initiative co-sponsored by the Rutgers New Jersey Agricultural Experiment Station (NJAES), New Jersey Sea Grant and the United States Department of Agriculture (USDA). Restore-a-Waterway is a technical-service-provider program that focuses on working directly with citizen action groups like SJLWT to address their specific needs. In the case of SJLWT, RCE WRP assisted with training and oversight of Stream Visual Assessment Protocol (SVAP) projects for

Gloucester County waterways. The SVAP data collected in 2006 and 2007 provided a baseline of knowledge to support the NFWF-sponsored project.

SVAP was originally developed by the USDA and modified for New Jersey streams by Omni Environmental Corporation (Princeton, NJ) and the RCE WRP. The SVAP tool assigns a numeric value to stream conditions such as channel stability, riparian health, water appearance, nutrient enrichment, and access to floodplain. The information is useful in prioritizing streams for restoration, trash pick-ups, educational and awareness campaigns, and re-vegetation efforts. Approximately 700 stream reaches have been evaluated with SVAP. The organization of SVAP data has been made easier with an online data entry system developed by RCE WRP that can be imported to ArcGIS. This allows for spatial display and data analysis of the SVAP data.

New Jersey's Water Conservation Program Update

The Rutgers Cooperative Extension (RCE) Water Resources Program, in partnership with the New Jersey Department of Environmental Protection (NJDEP), received a grant from the U.S. Environmental Protection Agency to develop a model community based water conservation education program.

As shared previously, this three-year pilot program will promote a responsible water-use ethic in both the private and public sectors and reduce overall water waste. The Water Conservation Program for New Jersey will serve as a clearinghouse for exchanging information on water-wise practices and is targeting a 10% reduction in residential water use. This comprehensive educational program will involve informational seminars, in-classroom exercises, demonstrations, media relations, advertising, as well as continuing education opportunities for professional groups.

We have selected five municipalities across the state (i.e., Belmar, East Greenwich, Egg Harbor Twp., Livingston, and City of Rahway). To test various aspects of this program, the NJDEP and the RCE Water Resources Program have worked closely to develop an application process for municipalities and have conducted in-person interviews with all of the selected municipalities. A site visit has been conducted in each of the recruited municipalities and a planning session has been scheduled for September for municipal decision makers.

As New Jersey's population continues to grow and water sources are further constrained, more must be done to safeguard a sustainable water supply. This program is very important for New Jersey's most precious resource. Conservation can save water utilities and the State's considerable capital expenditures over the long term by delaying or even eliminating the need to develop new or expanded water supply systems and wastewater treatment plants. If you have any questions regarding this program, please contact Elaine Rossi, Program Coordinator at 732-932-9800 x 6129 or by e-mail at erossi@aesop.rutgers.edu.

WRP Hire Program Associates



Jillian Thompson

Jillian Thompson, Program Associate, graduated from Rutgers University with a B.S. in Bioenvironmental Engineering. As an undergraduate student, she conducted research at the University under Dr. Donna Fennell with a focus on heavy metals and the bioremediation of groundwater. She also interned with a private consulting firm and assisted with the marketing and sales of natural gas vehicles, two of which were purchased by Rutgers! As an intern with the Water Resources Program during the summer of 2007, Jillian assisted with surface water sampling and stream assessments mandated by NJDEP Watershed Restoration Plans. She also completed environmental modeling and assessment for a project involving the conversion of a historical wastewater treatment plant, located along the Hackensack River, into a museum. Jillian plans on earning her M.S. degree as a part-time graduate student at Rutgers.

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WATER RESOURCES PROGRAM

<http://www.water.rutgers.edu>

Amy Boyajian



Amy Boyajian, Program Associate, graduated with a B.S. in Environmental Science from Rutgers, The State University of New Jersey, in January 2007. She is continuing her education as a Graduate Student at Rutgers University on a part-time basis. As an undergraduate student, Amy collaborated with Madeline DiNardo, Union County Agricultural Agent, to develop and implement rain garden educational programs for children and adults in Union County. Additionally, Amy collaborated with Mary Cummings, Gloucester County Program Associate, to coordinate a rain garden teacher in-service, which provided the foundation for rain garden educational programs for children and adults in Gloucester County. Amy also worked for the Water Resources Program as an undergraduate student, where she assisted the Water Resources Program staff by conducting water quality sampling, flow monitoring, site investigations, and stream visual assessments. Prior to joining the Water Resources Program in June 2008, Amy worked as an environmental consultant at a private engineering consulting firm. As an environmental consultant, Amy specialized in a wide range of environmental and industrial hygiene related projects. Amy performed field work and oversight for environmental health and safety projects, as well as prepared technical reports detailing site investigations, specifications, and

environmental assessments. As a Program Associate with the Water Resources Program, Amy's primary role will be to work with the Extension Specialist in Water Resources to help design and implement extension programming to address water resources issues in New Jersey.

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As part of the Oldmans Creek Watershed project, faculty, staff and volunteers from RCE WRP and SJLWT will:

- Prepare a Geographic Information System project with SVAP data plus existing physical, chemical and biological data and geospatial layers that can be used to characterize the watershed;
- Conduct further reconnaissance and stream visual assessments throughout the watershed to identify potential problem areas and pollutant sources;
- Initiate a watershed-based education and outreach effort that will help disseminate watershed-related information and generate stakeholder participation and support in the development of the watershed restoration and protection plan;
- Analyze new and existing data to identify problem areas, prioritize these sources for best management practices (BMPs) and estimate the potential improvement of water quality and stream habitat;
- Prepare designs for and install three demonstration BMP projects that will serve as examples to the community and neighboring municipalities about how to implement waterway restoration and protection plans.

In addition to funding from NFWF, in-kind support in the form of cash and volunteer labor will be provided by the Rutgers NJAES and SJLWT.

Rutgers Cooperative Extension Water Resources Program Hosts Passaic Trading Symposium

On July 15, 2008 the Rutgers Cooperative Extension Water Resources Program hosted the Passaic Trading Symposium at the Heldrich Center in downtown New Brunswick. Over 25 project partners from the United States Environmental Protection Agency (USEPA), New Jersey Department of Environmental Protection (NJDEP), Passaic River Basin Alliance, New Jersey Association of Environmental Authorities, and research collaborators from the Rutgers University Department of Environmental Sciences and the Cornell University Department of Applied Economics and Management participated in the day-long meeting.

The symposium was organized to present the results of over three years of multi-disciplinary research between Rutgers and Cornell faculty. The research team, headed by principal investigator Dr. Christopher Obropta, received a 2005 Targeted Watershed Grant from USEPA to develop a water quality trading program for the Non-Tidal Passaic River Basin (NTPRB). The NTPRB is affected by high levels of phosphorus, which can stimulate algal blooms at critical locations such as the Wanaque Reservoir, New Jersey's largest drinking water reservoir. NJDEP recently adopted a Total Maximum Daily Load (TMDL) which called for a reduction in the discharge of total phosphorus from point and nonpoint sources in the NTPRB.

The Rutgers and Cornell research team investigated the potential of water quality trading to be a cost-effective method to implement the TMDL. Water quality trading is a watershed-based and market-based approach to meeting and exceeding water quality goals. Trading is based on the premise that sources in a watershed can face very different costs to control the same pollutant, which in this case is total phosphorus. The sources can either discharge under their limit and sell their 'allowances,' or discharge over their limit and purchase 'allowances.' The net effect will be to improve water quality in the watershed, at a lower cost than making each individual discharger upgrade its facility to comply.

At the symposium, Dr. Obropta and graduate student Josef Kardos presented a framework and system of trading ratios designed so that trades of total phosphorus would achieve the TMDL goals for water quality at key locations. Dr. Greg Poe from Cornell University then

presented the economic case for water quality trading, illustrating how trades of total phosphorus between wastewater treatment plants in the NTPRB could save up to 18% compared to an approach without trading. The Passaic Trading Symposium was very successful in communicating a complex issue to a wide range of stakeholders. Participants left the meeting feeling very enthusiastic about the prospects for water quality trading in the Non-Tidal Passaic River Basin. The next step will be to support NJDEP and USEPA in implementation of the water quality trading program, the first of its kind in New Jersey. Find out more at <http://water.rutgers.edu/Projects/trading/Passaic.htm>. For more information, please contact Christopher Obropta at 732-932-9800 x 6209 or at obropta@envsci.rutgers.edu. Josef Kardos, Graduate Student

Microbial Source Tracking

One of the critical challenges in protecting New Jersey's drinking and recreational waters is to identify the specific sources of pollution. This is especially true for non-point source fecal contamination. Common sources of contamination include: leaking sewers, agricultural runoff, malfunctioning septic tanks, wildlife and others. The type of contamination dictates what actions, if any, need to be taken.

Dr. Craig Phelps and his staff are beginning to answer this challenge and provide the information that watershed managers need. They are working with a promising new microbial source tracking (MST) technique that uses advanced DNA technology to identify the sources of fecal contamination. The technique uses quantitative PCR to measure the amounts of different types of a group of bacteria called Bacteroides in a contaminated water sample. In this way it is possible to determine what species the feces came from. They have had great success tracking both human and bovine contamination with this method.

Dr. Phelps is happy to announce the hiring of a new full-time technician, Catherine Goodman. With Catherine's help he plans to expand the MST technique to include tests for waterfowl, horses and more.

