



# WATER PAGES

A Quarterly Newsletter Produced by the Rutgers Cooperative Extension  
Water Resources Program: Creating Solutions for Water Quality Issues in NJ

## Rain Barrel Workshops are Coming to New Jersey

Are you interested in low maintenance landscaping? How about water conservation? What about low impact development? Well, what combines all three while helping the environment? Rain barrels!

Rutgers Cooperative Extension is happy to announce that a series of "Build Your Own Rain Barrel" workshops are coming to New Jersey this summer. Rutgers Cooperative Extension faculty and staff have formed a statewide rain barrel working group, and they are currently working on customizing a series of rain barrel workshops specifically designed for New Jersey. The "Build Your Own Rain Barrel" workshops will be offered in counties throughout the State, starting with Burlington and Middlesex Counties in late July. Ocean and Passaic Counties plan on having this program in the fall. Details about this exciting workshop series and registration information will be available in the near future at [www.water.rutgers.edu](http://www.water.rutgers.edu)!

Please contact Amy Boyajian at 732-932-9800 x6164 or [Boyajian@envsci.rutgers.edu](mailto:Boyajian@envsci.rutgers.edu)

### Save the Dates

Rutgers Cooperative Extension of Middlesex County  
EARTH Center, Davidson's Mill Pond Park

Tuesday, July 28, 2009  
6:30pm to 8:30pm

42 Riva Avenue  
South Brunswick, NJ

Deadline for registration is Thursday, July 23rd. Register in advance at 732-398-5262. The workshop fee is \$40 for advanced registration and \$45 at the door.

Rutgers Cooperative Extension of Burlington County

Thursday, July 30, 2009  
10 am to 12 noon

2 Academy Drive  
Westampton, NJ

Registration is required. Please call Meredith Melendez at 609-265-5050 or email at [burlingtonmg@njaes.rutgers.edu](mailto:burlingtonmg@njaes.rutgers.edu) The workshop fee is \$40. Cash or Checks only.

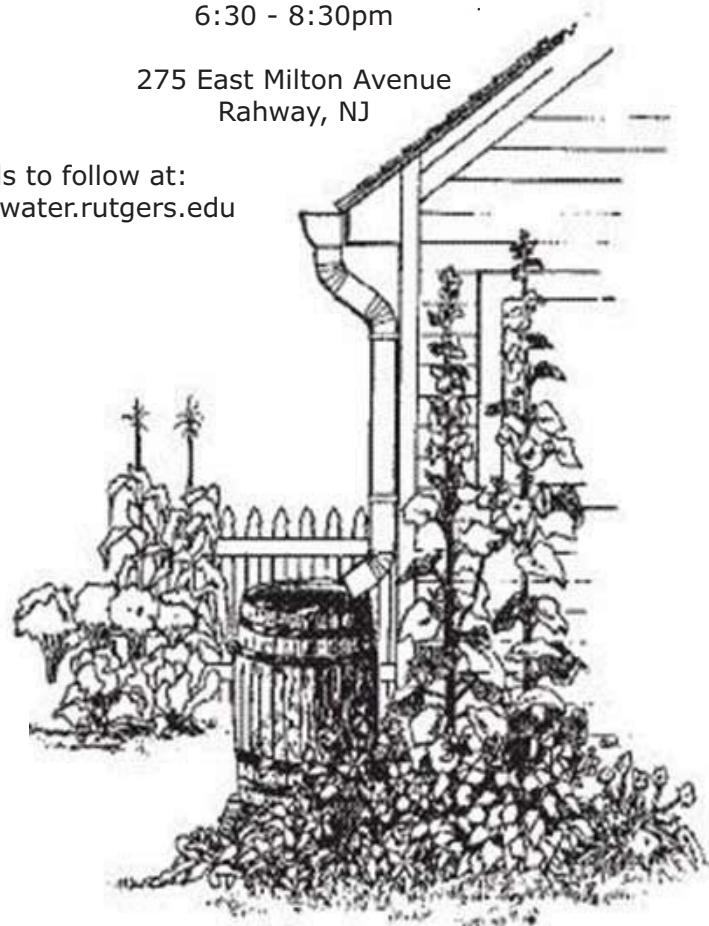
Please note: Barrels are 34" tall and 25" wide and can be placed lying down in the backseat of most vehicles to be transported home. Please make arrangements in advance to transport you and your barrel home.

Water Conservation Pilot Program for New Jersey  
Rahway Recreation Center

Thursday, August 13, 2009  
6:30 - 8:30pm

275 East Milton Avenue  
Rahway, NJ

Details to follow at:  
[www.water.rutgers.edu](http://www.water.rutgers.edu)



# Addressing Stormwater Issues at Municipal Public Works Yards

The New Jersey Department of Environmental Protection (NJDEP) has targeted Public Works Yards as a major concern when addressing municipal stormwater issues. As part of each town's municipal separate storm sewer system (MS4) permit, municipalities are required to implement good housekeeping practices at their public works yards to minimize the impact of stormwater runoff from these facilities. The NJDEP recognizes that many of these facilities are located near waterways and have very little, if any, stormwater controls in place. Most public works yards have large areas of impervious surfaces such as roof tops, buildings where equipment is stored and maintained, and paved parking lots for public works trucks and other heavy equipment. In many cases, controls can be put in place to manage stormwater runoff from these impervious surfaces.

For a small fee, the RCE Water Resources Program has been assessing public works yards to identify their potential environmental impacts and developing a plan to address these problem areas. This helps the municipality to better identify their liability related to the public works yard as associated with their MS4 permit and provides them a plan that they can slowly implement over time. Many of the fixes to the problems that are identified are relatively inexpensive and can be implemented by the public works department themselves. The key to this program is to provide the municipality with an inexpensive assessment that helps them prioritize installing cost-effective solutions, thereby limiting their liability in the MS4 permitting process.

We are currently working on completing an assessment for the public works yard in Parsippany-Troy Hills. Many of the problems we identified related to the large amount of uncontrolled impervious surfaces that are discharging directly to the Troy Brook. Some of the recommendations that will be made in the final plan include replacing a paved fire access road behind the main building with a Turfstone™ road that will provide infiltration of rooftop stormwater runoff, installing dry wells to manage rooftop runoff from the front of the main building, and installing a bioretention swale to capture, treat and infiltrate stormwater runoff from the parking area. Even though all of these controls can be installed by the public works department, the Troy Brook Regional Stormwater Implementation Grant will fund the installation of the Turfstone™ roadway and the construction of the bioretention swale.

Please contact us if you are interested in having the RCE Water Resources Program help you green your public works yard.

For more information, contact Dr. Christopher Obropta at 732-932-9800 x6209 or [obropta@envsci.rutgers.edu](mailto:obropta@envsci.rutgers.edu).

**Water Resources Program**  
[www.water.rutgers.edu](http://www.water.rutgers.edu)



Turfstone™ Roadway or Parking Area

# Hillsborough Saves Money and Improves Water Quality



In the early spring of 2007, Hillsborough Township contacted the Rutgers Cooperative Extension Water Resources Program to discuss possible methods to reduce the maintenance needs of several of the Township's detention basins. Six basins in particular were costing the municipality a disproportionate amount of money for maintenance. The basins were more expensive to maintain than other basins in the Township because of safety and access problems.

The Water Resources Program provided Hillsborough Township with a proposal to study these six retention basins and to design retrofits for reducing maintenance costs for each of the basins while enhancing the pollutant removal capabilities of the basins.

Hydrologic models were created for each of the detention basins using construction plans from the municipal records. Three of the six basins were instrumented to record the elevation of the water in each of the basins. Data collected over six months from the instrumented basins, along with data from a nearby rain gauge, was used to calibrate the models to ensure that they accurately reflected the existing conditions. Staff from the Water Resources Program had conversations with the Department of Public Works (DPW) about how they maintain the basins, the problems they have maintaining the basins, the costs associated with the maintenance and what changes to any of the basins would they recommend. The staff used what they had learned from the DPW and their own experience and research to redesign each of the basins to reduce maintenance requirements, improve water quality, and address the concerns of the DPW. The changes were entered into the each of the models to verify that the changes would work as expected.

The Water Resources Program staff created construction plans to retrofit all six of the detention basins with bioretention technology to reduce maintenance costs and improve water quality. The plans were accompanied with a report that included a detailed explanation of the analysis of each basin, a cost estimate to implement the recommended changes for each basin and a savings estimate from a reduction of time spent on maintaining each basin. The designs involve replacing the existing turf grass with native grasses and replacing the low flow concrete channel with a vegetated swale. The grasses in the basins will be allowed to grow higher and will require much less mowing. The Water Resources Program will provide support to local citizen groups to assist in implementing these designs. After construction, this project will save the municipality approximately 200 hours of maintenance work each year.

For more information about this project, please contact Sean Walsh at 732-932-9800 x6162 or [swalsh@envsci.rutgers.edu](mailto:swalsh@envsci.rutgers.edu)



# Hidden Lake Dredging Feasibility Study

Waterbodies such as lakes and ponds are valuable resources. Lakes and ponds can either be natural or man-made, and management depends on the desired use of the waterbody. Human development surrounding a lake or pond, as well as natural phenomena, contributes to unwanted pond and lake conditions. Excessive plant growth, algal blooms, oxygen depletion, sediment build-up, bank erosion, and pests are the most common issues faced in the management of a lake or pond.

Hidden Lake is a man-made residential pond in North Brunswick, NJ created for aesthetic purposes in a local neighborhood. Sediment has accumulated in the lake due to naturally-occurring streambed erosion and deposition. Stormwater runoff also contributes to the sediment loading in Hidden Lake and often contains heavy metals and petroleum hydrocarbons from roadways and other associated residential land uses. Consequently, North Brunswick Township is considering dredging as a viable option for addressing both water quality and flooding concerns related to the accumulation of sediment in Hidden Lake. The Rutgers Cooperative Extension Water Resources Program conducted a feasibility study for the potential dredging project.

The goal of this project was to assess the quantity and quality of sediment to be dredged from Hidden Lake. A sediment survey was conducted over the course of two days. Measurements of lake-bottom and sediment depth were taken along several cross sections of Hidden Lake and mapped in AutoCAD to obtain sediment-volume estimates. Sediment sampling was

also conducted for physical and chemical analyses. The results of the physical and chemical tests, along with the sediment-volume estimates, were compared to state standards and clean-up criteria to determine disposal options and costs.

A report was produced for the Township of North Brunswick, which provided disposal and treatment options, as well as a cost analysis of each option. The report is meant to provide guidance to the Township throughout the development of a dredging workplan for Hidden Lake. The provided information will facilitate economical planning in terms of the resources needed during and after the dredging process. The report also provides additional recommendations for improved stormwater management techniques to be implemented throughout the surrounding community to mitigate the effects that created the need to dredge Hidden Lake.

For more information about this project, please contact Sean Walsh at 732-932-9800 x6162 or [swalsh@envsci.rutgers.edu](mailto:swalsh@envsci.rutgers.edu)



## Congratulations Are In Order!

Josef Kardos and Sandra Goodrow successfully defended their doctorate theses this past spring. Dr. Goodrow's thesis was entitled "Hydrological Modeling for the Regional Stormwater Management Plan: An application and intercomparison of event based runoff generation in an urban catchment using empirical, lumped vs. physical, distributed parameter modeling." Her research focused on comparing HEC-HMS, a lumped parameter hydrologic model, to MIKE-SHE, a fully distributed hydrologic model, for modeling the Troy Brook Watershed in Morris County, New Jersey. Sandra completed her thesis while working full-time for the RCE Water Resources Program. We are very happy that she plans to stay with our program and continue her work on watershed management.

Dr. Kardos' thesis was entitled "Effect of Water Quality Model Uncertainty on the Passaic Total Maximum Daily Load and Water Quality Trading Program for Total Phosphorus." His research focused on evaluating the uncertainty in developing the phosphorus TMDL and Water Quality Trading program for the Upper Passaic River. In addition to completing his doctorate this past spring, Josef and his wife, April, celebrated the arrival of their son, Emir Arthur Rosenblum-Kardos, who was born on March 19th at 5:15 a.m., weighing 7 lbs, 14 oz. Josef has taken a job at the Philadelphia Water Company where he is working on watershed management.

Congratulations Are In Order Continued on Page 5

# Chris Obropta's Recommended Summer Reading

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Running kids to soccer or baseball, cutting the lawn, replacing the old toilet with a low flush toilet—we all lead very busy lives, and we rarely have time to sit down and read a book. When we do, it can be a very rewarding experience. Here are three books that I highly recommend, and if the local library doesn't have a copy, just stop by and visit us on the Cook Campus. The Water Resources Program will lend you a copy of any of these great literary works.

## *The Green Collar Economy* by Van Jones

Van Jones is an attorney from Oakland, California who is an activist and a political advisor that recently joined President Obama's advisory team. In his book he provides a plan to address two of our country's most pressing issues: the failing economy and our devastated environment. By linking the movement from carbon based fuels to renewable energy with the creation of green collar jobs, Van Jones provides a thought provoking plan that resonates in the speeches of many of today's politicians. His plan would create a wave of prosperity that would lift all the classes of residents in this county out of our dismissal economic situation. Rarely will you read a book that is so inspirational and motivates you to take action. If you read one book this summer, it should be *The Green Collar Economy* by Van Jones.

## *Hot, Flat and Crowded* by Thomas L. Friedman

Thomas Friedman is a Pulitzer Prize author who wowed the world with his last book *The World is Flat*. In this newest book, *Hot, Flat and Crowded*, Friedman lays out the argument of why we need a green revolution and how it can renew American. He talks about how the "green revolution" has only just begun, and if

we do not kick it into high gear, there will be little hope for our future generations. Even if you have never read Thomas Friedman's articles in the New York Times, you need to read this book. It is riddled with information that will help even the most hard core non-environmentalist take a hard look at the world around us and reconsider their view on how addressing climate change issues by transforming our energy technology may be the only way to save this planet for our children. Read it, get angry and write your congressman or congresswoman.

## *The Lightning Thief: Percy Jackson & the Olympians* by Rick Riordan

*The Lightning Thief* is a great piece of fiction that is suitable for adults and children (5th grade and up). It is the story of a young Percy Jackson, a 12 year old boy, who realizes he is a little different from the other children in his school; actually he comes to learn he is the son of a Greek god. His mortal mother has him bouncing around from school to school until he finds a home at Camp Half-Blood where there are other children like him. Percy begins to learn that the 21st century world he lives in is not what it seems and that the ancient Greek mythology he has learned about in his classes is real and exists today. Mount Olympus is located in New York City, concealed from the mere mortals who continue to live their normal everyday lives. Zeus rules over Mount Olympus until someone steals his precious symbol of power: his lightning bolt. Percy takes on the quest of retrieving the stolen item, resulting in a hair-raising adventure. If you liked Harry Potter, you'll love *The Lightning Thief*. Buy a copy for yourself and your children. It is great fun reading the book with your children. You will not be disappointed.

## Congratulations Continued...

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Mr. Gregory Rusciano has worked as a Program Associate with the Water Resources Program for over four years. He has received a wonderful opportunity to become a RCE Environmental County Agent for Essex and Passaic Counties. This is one of the five positions that were created to develop a network of County Agents that are providing assistance in watershed management to municipalities, counties and other stakeholder groups. The RCE Water Resources Program hopes to continue to work with Greg as he builds his program in Passaic and Essex Counties.

Dr. Robert Miskewitz has worked as a Senior Project Manager for the Water Resources Program for three years. He has recently taken a position as an Assistant Research Professor with the Department of Environmental Sciences at Rutgers School of Environmental and Biological Sciences. The Water Resources Program will continue to work with Rob as he builds his research program that addresses the environmental needs of New Jersey and the Nation.

# Eco-Friendly Things You Can Do This Summer and Fall

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In these trying economic times, it seems like we are all looking for inexpensive things to do on our days off. The Rutgers Cooperative Extension (RCE) Water Resources Program thought we might take this opportunity to provide you some ideas of how you could spend your time off in an environmentally friendly way.

## Eco-Friendly Things You Can Do

1. Build a rain barrel (RCE County Offices are running build a rain barrel workshops – check with your County Extension Office),
2. Build a rain garden (check out the Rain Garden page at [www.water.rutgers.edu](http://www.water.rutgers.edu) for help and ideas),
3. Participate in a river cleanup (check with your local watershed organization or organize a clean up of your own),
4. Volunteer for your local watershed group or Rutgers Cooperative Extension's Water Resources Program (these groups are always looking for help and you'll have a lot of fun),
5. Install a low-flow toilet, shower head, faucet aerator in your home (what could be more enjoyable than saving water – your kids will thank you in the long run),
6. Take your batteries, electronic waste and chemicals to the local landfill for proper disposal (don't forget to thank the people working at the disposal facility – you might make someone's day),
7. Plant a tree (most garden centers offer half-price trees in the summer – but don't forget to water it),
8. Pick up litter in your neighborhood (always a great activity with the kids),
9. Bike to the public library and check out two of Dr. Obropta's favorite books *The Green Collar Economy* by Van Jones and *Hot, Flat and Crowded* by Thomas Friedman,
10. Write a letter to an elected official and ask them to read Jones' and Friedman's book (it might give them some good ideas) or ask them to continue to support Rutgers Cooperative Extension – we'd really appreciate it.

Have fun on your days off, and remember everyday can be Earth Day.

# Water Resources Program Contact Information

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Christopher C. Obropta, Ph.D., P.E  
Extension Specialist in Water Resources with Rutgers Cooperative Extension  
Associate Professor with the Department of Environmental Sciences  
obropta@envsci.rutgers.edu  
732-932-9800 x6209

Lisa Galloway Evrard  
Senior Program Coordinator  
evrard@rci.rutgers.edu  
732-932-9800 x6130

Sandra Goodrow  
Program Associate  
goodrow@envsci.rutgers.edu  
732-932-9800 x6125

Sean Walsh  
Program Associate  
swalsh@envsci.rutgers.edu  
732-932-9800 x6162

Elaine Rossi  
Program Coordinator  
rossi@aesop.rutgers.edu  
732-932-9800 x6129

Amy Boyajian  
Program Associate  
boyajian@envsci.rutgers.edu  
732-932-9800 x6164

Jillian Thompson  
Program Associate  
jthompson@envsci.rutgers.edu  
732-932-9800 x6166

Cheryl Burdick  
Administrative Assistant  
cburdick@envsci.rutgers.edu  
732-932-9800 x6106

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#### Mailing Address:

Rutgers University  
Water Resources Program  
14 College Farm Road  
New Brunswick, NJ 08901

Visit our web site for more information: [www.water.rutgers.edu](http://www.water.rutgers.edu)