The Great Swamp Watershed Association
Across the Watershed
Fall-Winter 2013

Protecting our Waters and our Land for more than 30 Years

EPA Regional Administrator Visits the Great Swamp

On Tuesday, August 6, 2013, the Great Swamp Watershed Association received a special delegation from the U.S. Environmental Protection Agency's (EPA) Region 2 offices in New York City. EPA Region 2 encompasses New York, New Jersey, Puerto Rico, the U.S. Virgin Islands, and eight tribal nations.

Regional Administrator Judith Enck and five representatives of her staff arrived at our Tempe Wick Road offices shortly after 10:00 a.m., only to have GSWA staff members whisk them off on a whirlwind tour of several important watershed sites. Destinations included the Great Swamp National Wildlife Refuge, the site of a recent environmental remediation project at Seaton Hackney Stables in Morris Township, and our own Conservation Management Area in Harding Township.

GSWA volunteer Ari Kaufman snapped this shot of the EPA tour group just prior to helping them carry their kayaks over the beaver dam at the confluence of Black Brook and the Passaic River. August 2013.

The highlight of the day-long trip came when Executive Director Sally Rubin, Director of Water Quality Programs Laura Kelm, and GSWA Volunteer Ari Kaufman loaded the entire tour group into kayaks, and set out on an hour-long exploration of the upper reaches of the Passaic River. That brief, but exciting, paddle along the border between Morris County and Somerset County included a portage over the infamous beaver dam located at the confluence with Black Brook.

Following the watershed tour, members of both organizations shared lunch and discussed local environmental issues. Administrator Enck and her team were most interested in GSWA's ongoing investigation of the effects of road salt on watershed streams. At present, EPA Region 2 is actively engaged with the New Jersey

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From the Desk of the Executive Director

Collaborate: *to work jointly with others or together, especially in an intellectual endeavor.*

by Sally Rubin

I'm very proud of the collaborative efforts GSWA undertakes. At our Seaton Hackney project, we work collaboratively with the Morris County Park Commission; Rutgers Equine Science Center; Princeton Hydro, the environmental consultants; Equishare, the equestrian vendor; and PSE&G. The project is making significant stormwater quantity and quality improvements at Seaton Hackney Stables at Loantaka Reservation. Stop by and take a look!

SWaMP, School Water Monitoring on the Passaic, is another one of our collaborative programs. We work with several local high schools and colleges to get students out on the river to perform basic chemical water testing. This year the program dovetailed with our new Watershed Friendly Homes program. We worked with students in Bernards High School's AP Environmental Science class. After their AP exam, the participating students completed some team projects where they applied the information they learned throughout the year to real world issues. One of the teams won top prize in The Nature Conservancy's Show Us Your H2O competition.

In May, we held a multi-disciplinary panel discussion with Montclair State University professors, entitled *The Challenges of Climate Change and Building Resilient Communities.* The program was held at the Somerset County Environmental Education Center at Lord Stirling Park in Basking Ridge. The event would not have been possible without the cooperation of Montclair State University and Associate Professor of Biology Meiyin Wu. Dr. Wu arranged the speakers and Somerset County Park Commission provided its wonderful facility.

Promotional flyer for the 2013 Great Swamp Scavenger Hunt. Credit: istockphoto.com/ FlamingPumpkin (background only).

Also in May, we held our annual Scavenger Hunt. We partnered with all of the local environmentally-oriented organizations in our region, including the Morris County Park

Commission, the Somerset County Park Commission, the Great Swamp National Wildlife Refuge (Great Swamp N.W.R.), the Friends of the Great Swamp N.W.R, The Raptor Trust, New Jersey Audubon, and the Morristown National Historical Park. The event drew almost 200 people, and got them out and about to see the historic, cultural, and natural history sites in our diverse and beautiful region.

Recently, we held a workshop for various environmental non-profit groups—primarily land trusts and watershed groups—on programming and program evaluation. The workshop was co-presented with The Watershed Institute and the New Jersey Conservation Foundation. It is so helpful to share information and brainstorm with similar organizations. We're certainly not competitors. We all share a common goal of inspiring people to appreciate our environment.

Also recently, we spent a day with Judith Enck, Regional Administrator for U.S. Environmental Protection Agency Region 2. She and several members of her staff—including her Chief of Staff Lisa Plevin and the Director of her Clean Water Division, Joan Matthews—joined us for a tour of some of the highlights of our watershed. Stops included the Great Swamp N.W.R., the remediation project at Seaton Hackney Stables, and GSWA's Conservation Management Area in Harding. Judith, Joan, and Lisa all made it clear that they look forward to working collaboratively with us.

So, my take away from all this is simple. We get a lot more done when we work together. We certainly should keep that in mind in all aspects of our varied and busy lives.

Across the Watershed
is a publication of the **Great Swamp Watershed Association**.

GSWA is a member-supported non-profit organization that has been protecting our waters and our land for more than 30 years.

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In This Issue:

Watershed Watch — Environmental Hot Spots

by Sally Rubin, GSWA Executive Director

The "environmental hot spots" described below outline some of GSWA's advocacy activities throughout the Great Swamp Watershed over recent months. Where appropriate, we continue to closely monitor each situation. We rely on you, our friends and supporters, to keep us informed of pending development issues in your town.

Harding Township: Cell Tower

The Harding Township Board of Adjustment denied the application to erect a cell tower at the corner of Tempe Wick Road and Route 202. However, the application may be reconsidered with a reduced scope.

Long Hill Township: Copper Springs

Indoor Soccer, LLC has withdrawn its request for a zone change for this property, located on New Vernon Road near Meyersville Road. The proposed change would have rezoned the land from a Conservation Zone to a newly created Commercial Recreation Zone. This would have significantly increased the allowable coverage on the site. The rezoning request may be resubmitted at a later date. The owner/developer also holds the option to further develop the property by submitting an application for variance relief to the Long Hill Board of Adjustment. GSWA continues to monitor the status of this proposed project.

Morris Township: Seaton Hackney Stables, Loantaka Brook Reservation

GSWA continues to work on improvements at this property with funding from a Section 319 grant from the New Jersey Department of the Environment (NJDEP). One year remains on the grant term. Significant improvements to the site were made in April and May. Those improvements included the installation of a two-acre stream buffer. The buffer was composed of fencing and more than 450 trees planted by PSE&G as part of a riparian restoration project.

GSWA Experts Available to Speak to Area Groups

Do you wonder, "What is in my water?" or "What can I do to ensure clean water for my children?" These and other questions about water quality, land preservation, and local efforts to protect the environment can be answered by GSWA. GSWA speakers will present interesting, hands-on presentations that will educate and inspire members of your local club or group. Call today for more details: (973) 538-3500.

Across the Watershed: Salvage Logging

In the aftermath of Superstorm Sandy, GSWA has been contacted several times regarding instances of salvage logging on preserved properties throughout the 55-square-mile watershed. There are companies offering to remove downed trees at little or no cost to the land owner; however, the heavy equipment used to conduct these operations causes significant environmental damage. Unless trees pose a safety hazard—foresters might refer to such hazards as *widowmakers* or *leaners*—or block trails, the best ecological practice is to leave downed trees on preserved lands in place.

While tree falls often look "messy," the impact of destructive logging practices on forested areas is of much greater concern. Logging damage extends far beyond the visual. Trucks and other heavy equipment compact the soil and the roads created to access timber advance soil erosion and promote the spread of invasive plant species. There are ways to remove downed or dangerous trees that respect the local environment; however, such methods are considerably more expensive than free salvage logging.

Rain falls on GSWA's environmental remediation site at Seaton Hackney Stables (Morris Township). Taken on June 10, 2013, the photo shows a paddock where new drains were installed to handle stormwater, as well as newly planted trees Credit: GSWA, Sally Rubin.

Outdoor Programs

Want to explore the Great Swamp region? Then join GSWA for one of our outdoor exploration events this fall. Outdoor education programs are fun, informative, and accessible for people of all ages and skill levels. We'll see you outside!

Evening Hike at the Great Swamp N.W.R. with Ranger Dave Sagan
Thursday, September 19, 6:30—8 p.m.

Start at Wildlife Observation Center, Great Swamp N.W.R., Long Hill Road , Harding Township, NJ

As the Great Swamp National Wildlife Refuge (Great Swamp N.W.R.) prepares to celebrate the 50th anniversary of the Federal Wilderness Act, there is no better time to visit one of the Refuge's designated Wilderness Areas. Your expert guide will be biologist Dave Sagan. Dave is a U.S. Fish & Wildlife Service Ranger, and he will be there to help you spot all sorts of wildlife, including frogs, owls, foxes, ducks, and more! He'll also teach you more about the Refuge's wildlife management plans for deer and carnivores in the area.

Hikers will meet at the Wildlife Observation Center off Long Hill Road, and then carpool to another location with limited parking. Waterproof footwear—especially hiking boots—are very strongly recommended for this hike.

Participation is free. Donations to the Great Swamp Watershed Association are gratefully accepted. Strict limit of 20 hikers. Waiting list available. No rain date. Register online at *GreatSwamp.org* or call (973) 538-3500 x22.

Spooky Swamp Walk
Friday, October 25, 6:30—8 p.m.

GSWA Conservation Management Area, 1 Tiger Lily Lane, Harding Township, NJ

Come in costume or come as you are to this outdoor celebration of all things that go bump in the Great Swamp at night! Is there a troll under that bridge? A wild, swamp man in the trees? A demon dog on the loose?

Young or old, little or big, all of the ghosts, ghouls, goblins, and witches who appear will go on a special nighttime tour of the darkest trails, eeriest boardwalks, and blackest recesses of GSWA's own small corner of New Jersey's Great Swamp. Expect lots of fun and lots of surprises as you trek through forest and marsh after sunset.

The walk is 1.4 miles long. Small groups will leave from the entrance every 15 minutes. Last group will begin the walk at 8 p.m. Cider, snacks, photo opportunities, Halloween music, and decorations will entertain everyone waiting to enter the swamp. Wait times may vary.

GSWA members and non-members alike are respectfully asked to give the standard suggested donation amount for participation (see *Important Information About Events* on opposite page). Register online at *GreatSwamp.org* or call (973) 538-3500 x22.

Wilderness Hike — Green Village to Meyersville

Saturday, November 16, 10 a.m.—Noon

Orange Trailhead, Great Swamp N.W.R., Harding Township, NJ

Crisp air and the last of fall's fireworks display await as GSWA's Director of Education & Outreach Hazel England guides you along one of the less-travelled paths through the Great Swamp National Wildlife Refuge's Wilderness Area.

Limited to 30 participants. Register online at *GreatSwamp.org* or call (973) 538-3500 x22.

"Full Long Nights Moon" Hike at Primrose Farm

Sunday, December 15, 6—7:30 p.m.

Primrose Farm, appx. 15 Brook Drive South, Harding Township, NJ

Native American nations across North America give special names to all the full moons of the year. In most cases, each name holds a meaning that speaks to the seasons and ways of life that subtly shift from region to region. This means that there are many different names and many different meanings given to each moon. Here in the northeastern U.S., many European colonists adopted and adapted the moon names used by native Algonquin peoples.

December's "Full Long Nights Moon" (aka, "Full Cold Moon") is aptly named. After all, this is the time of year when nights become long and dark, and the moon itself spends much of its time above the horizon line, opposite a low sun.

Join us for our first-ever night hike at the recently preserved Primrose Farm property in Harding Township. Weather permitting; the stars will shine bright as we listen for the calls of coyotes, owls, and other wildlife prowling the forests and meadows of this special 113-acre open space. Don't miss out on seeing the branches of Primrose Farm's venerable oak tree silhouetted against the light of a full moon!

Participation is free. Donations to GSWA are gratefully accepted. Register online at *GreatSwamp.org* or call (973) 538-3500 x22.

Important Information About Events

Please register as requested for each program listed above. Unless otherwise noted, current GSWA members participate free of charge. Non-members are asked to make a voluntary donation of $10/adult and $5/child (6 to 17 years), or $35/family (includes 4). No suggested donation for children five and under.

Please dress for the weather when attending an outdoor program. Conditions may be wet, muddy, hot, or cold. Long pants and sturdy shoes or boots are strongly recommended. Feel free to bring your own water in a reusable water bottle, and your own snacks. Binoculars and field guides are welcome where conditions permit use.

State of the Streams in the Great Swamp Watershed: Summary of Findings

by Laura Kelm, GSWA Director of Water Quality Programs

Following a year of scientific research and writing, the Great Swamp Watershed Association (GSWA) published its first report on long-term water quality trends inside the Great Swamp Watershed in May 2013. The report entitled, *State of the Streams in the Great Swamp Watershed*, analyzes water monitoring data collected between 1999 and 2012 at sites along all five of the watershed's main streams; Black Brook, Great Brook, Loantaka Brook, the Upper Passaic River, and Primrose Brook. The following article provides a short summary of the report findings.

The Data

Chemical water quality data included in the final report focuses on five parameters: (1) total dissolved solids—typically from road salt; (2) total suspended solids—sediment, generally from erosion; (3) total nitrogen; (4) total phosphorus; and (5) dissolved reactive phosphorus. Collectively, the last three components are considered nutrients. Nutrients can over-enrich stream ecosystems causing algae blooms and other problems.

Results from the chemical data were then compared with the results from data collected from surveys of local macroinvertebrate wildlife communities. The macroinvertebrate surveys—which record changes in the population of certain species of worms, mollusks, insects, and other small aquatic invertebrates over time—were collected between 2000 and 2012.

GSWA found several common factors that negatively affected both the results of the macroinvertebrate surveys and the results of chemical monitoring. Those common factors included the presence of impoundments, golf courses, major roads, and high density development in close proximity to the five main streams, as well as a generalized problem with stormwater runoff throughout the watershed.

Impoundments

Impoundments impact streams in a few different ways. As water becomes trapped behind an impoundment, it is often exposed to sunlight. In turn, prolonged exposure to the sun increases water temperature and decreases levels of dissolved oxygen. Impoundments also trap sediment. Under certain circumstances this sediment trapping characteristic actually improves water quality for aquatic plants and animals living downstream. Under other circumstances, such as those that occur during heavy rainstorms, the reverse may be true. Sediments stirred up by storms and carried over impoundment dams may adversely affect life downstream.

Golf Courses

High nutrient levels and poor macroinvertebrate communities were found downstream of several golf courses located throughout our watershed. Although a root cause for the degradation has yet to be identified, fertilizer and pesticide use at the facilities provide two obvious starting points. A review of satellite imagery from the region

An early photograph of the riparian buffer planted in November 2011 around the pond at Harding's Bayne Park. Credit: GSWA, Steve Reynolds

Now firmly established, plants and shrubs installed as part of a new riparian buffer at Harding's Bayne Park are working to impede the flow of stormwater into Bayne Pond. Credit: GSWA, Laura Kelm

revealed that the facilities often integrate nearby waterways into course designs as water hazards and landscape features. Many of these hazards and features take the form of ponds or impoundments (see above) where water is exposed to sunlight for prolonged periods of time. As mentioned earlier, this causes water temperatures to increase and levels of dissolved oxygen to decrease, both of which can become detrimental to life downstream.

Large areas of mown grass adjacent to golf course water features also provide excellent habitat for Canada geese (*Branta canadensis*). Washed into the water by every passing shower, the high concentration of goose droppings found in these areas may also contribute to higher nutrient and bacteria levels found along local streams.

Roads & Developments

Major roads and high-density building sites often appear together on the watershed landscape. In additional to the myriad automotive chemicals and fluids spilled onto them every day, paved thoroughfares also introduce tremendous amounts of road salt into nearby streams. GSWA has verified that road salt represents the single largest threat to water quality in the Great Swamp Watershed at this time

High density developments—those where a large number of residences and offices have been built—also act as pollution sources. The common pollutants finding their way from homes and businesses into local waterways include lawn fertilizers, pesticides, and, once again, de-icing salt. This means that each individual homeowners or business owner located inside the boundaries of the Great Swamp Watershed is responsible for creating at least a small amount of water pollution. Considered on an individual scale—home by home or business by business—the environmental impact of development-related pollution appears negligible. But, appearances change radically as the problem is considered on a community-wide scale. Pollution compounds exponentially as population increases and more and more land is developed.

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Stormwater Runoff

Related to the proliferation of roads and developments in our watershed is the issue of stormwater runoff. Runoff is created when impervious surfaces—like roofs, driveways, roads, sidewalks, parking lots, etc.—fail to allow rain water and snow melt to soak into the ground. Instead, precipitation flows quickly over these hard, nonporous surfaces into the closest storm drain, and then into the closest stream. As the runoff speeds through, it picks up just about anything in its path, including pollutants like trash, animal waste, excess fertilizer, road salt, petroleum products, and much more.

The majority of pollution finding its way into the streams of the Great Swamp Watershed is carried there by stormwater runoff. One way or another, the stormwater issue underlies all other pollution issues identified by the *State of the Streams* report.

Conclusions

As the *State of the Streams* report renders environmental problem areas in sharper detail, GSWA is able to engage in more focused and effective efforts to find solutions for the watershed.

In the near term, the organization will develop closer relationships with golf courses in the region. Current theories about fertilizer and pesticide use at these facilities will need to be tested and verified before their impact on Great Swamp water quality is thoroughly understood. These investigations will require a high level of cooperation from the course owners, as well as a better understanding of any water quality protections already being implemented. Once the relationships have been established and the situation on the ground is made clear, GSWA will be in a position to suggest new water protection measures and further reduce the impact that golf courses have on our local waterways.

GSWA also will focus effort on creating and protecting riparian buffers adjacent to streams and ponds. These vegetated areas will provide a natural tool for mitigating the effects of stormwater runoff in the watershed, and help alleviate problems associated with rising water temperatures around impoundments. They also will provide a modicum of protection against pollutants from roads and developments.

The mix of trees, shrubs, and herbaceous plants commonly found in buffer areas perform several important tasks that achieve these goals. They physically slow down the flow of stormwater, giving it additional time to soak into the ground before reaching a waterway. The roots of buffer plants also absorb some of the excess water from storms and snow melt. Trees and taller shrubs and plants provide shade from the sun which is crucial for regulating water temperature and maintaining appropriate levels of dissolved oxygen.

In order to develop better riparian buffers inside the watershed, GSWA will need to enter into more partnerships with private landowners, golf course concessions, and park commissions that share an interest in maintaining water quality. The organization has already established one effective partnership like this with Harding Township. Planted in 2012, the buffer installed around the pond at Bayne Park off Blue Mill Road provides a model for future projects.

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Teacher Education Workshops, Fall 2013

Learning about the importance of water is a vital part of any student's academic career. Join Great Swamp Watershed Association for each of these hands-on, fun-packed teacher workshops to learn more about integrating water resource education, environmental stewardship, and critical thinking skills into your current curriculum.

Project WET Workshop
Saturday, October 19, 9 a.m.—3 p.m.

Helen C. Fenske Visitor Center, 32 Pleasant Plains Road, Harding Township, NJ

Project WET is a collection of nearly 100 science-based, interdisciplinary activities with teacher-tested, classroom-ready lesson plans for students in grades K through 12. Activities use the vital importance of water to educate students about diverse topics. The newly updated *Project WET* guide is integrated into new online resources that make learning fun. Join in the 'Water Olympics' to learn about the properties of water. Go on an 'Incredible Journey' to learn more about the real water cycle. Track the transmission of disease as you follow along with 'Poison Pump,' an exciting whodunit that is sure to get your students' attention. The *Project WET* teacher's guide is only available to educators who participate in a six-hour Project WET Workshop. Lessons in the guide are correlated to New Jersey Core Curriculum Content Standards. Workshop participants also receive supplementary educational materials focusing on New Jersey's water resources.

Participation in this workshop is free of charge, but advanced registration is required. Register online at *GreatSwamp.org* or call (973) 538-3500 x20.

Important Information About Teacher Workshops

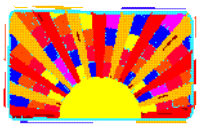
Workshops are held jointly with Great Swamp National Wildlife Refuge and the Friends of Great Swamp National Wildlife Refuge. They will take place at the Great Swamp National Wildlife Refuge inside the Helen C. Fenske Visitor Center located at 32 Pleasant Plains Road in Harding Township, NJ. Each event will include indoor and outdoor experiences. All participants will leave with activity-packed teaching guide and other useful resources.

Up to six professional development credits (PDC) may be available for attendance at each workshop. Space is limited, so please register online right now at *GreatSwamp.org*. To register by telephone, please call GSWA's Director of Outreach and Education Hazel England at (973) 538-3500 x20. For more information, please write to Hazel at *hazele@GreatSwamp.org*.

Start Your Day with GSWA

Great Swamp Watershed Association's (GSWA) Breakfast Briefing speakers series returns in October!

Briefings were developed to help busy professionals stay informed about community environmental issues without taking valuable time away from work or family life. Presentations are brief, focus on current environmental topics, and minimize overlap with most traditional business hours. Briefings are traditionally, although not always, held on the second Tuesday of the month from 8 a.m. to 9:30 a.m. Scheduling exceptions are noted below, so please read carefully.



R U Disconnected? Flood & Pollution Reduction for You & Your Community
Tuesday, October 15, 8–9:30 a.m.

GSWA Office, 568 Tempe Wick Road., Morristown, NJ

New Jersey has several problems with its water resources. Many communities experience flooding even during small rain storms. Many of the state's streams are polluted and are not fishable or swimmable. Stream banks erode and stream channels undercut roads, bridges, buildings, and other infrastructure. Development and redevelopment of the landscape exacerbates these problems; and, so too, do the effects of climate change as New Jersey faces more intense storm events.

Is there anything we can do? Yes! It's a process called disconnecting, and it works because it directly addresses the problem of stormwater runoff—the biggest contributor to flooding and water pollution statewide. The disconnecting process is straightforward. Identify the impervious surfaces around you—the roadways, parking lots, buildings, and other non-porous surfaces—and then slow down all the fast-moving water flowing over them during rain falls and snow melts. There are some simple, cost-effective techniques out there that we all can use to put stormwater back into the ground—where it moves slowly and gets cleaned—instead of allowing it to rocket into nearby waterways.

Dr. Chris Obropta is the extension specialist in water resources for Rutgers New Jersey Agricultural Experiment Station's (NJAES) Cooperative Extension. As administrator of the Extension's Water Resources Program, he works throughout the state to help communities identify and address their water issues using sustainable and practical science-based solutions. He joins us for our first Breakfast Briefing of the Fall 2013 season to teach us more about how we can disconnect at home and in our communities, and how he and his team at Rutgers can help.

Seating is limited. Register online at *GreatSwamp.org*, or call 973-538-3500 x22.

Build Resiliency In Your Community: Reduce Flood Risk, Save Money
Tuesday, November 12, 8—9:30 a.m.

GSWA Office, 568 Tempe Wick Road., Morristown, NJ

In the past eight years, there have been 11 Presidential Disaster Declarations related to flooding in the Garden State. Superstorm Sandy was the latest major storm to have such an impact. At the same time, reforms to the National Flood Insurance Program are generating significant flood insurance rate increases for certain residential and commercial building classes. Learn how you and your municipality can respond to flood risk by embracing practices that reduce future damages and lower homeowner and business flood insurance rates. Also, learn how to be eligible and how to aggressively apply for FEMA grants.

John A. Miller, P.E., CFM, CSM, is a water resources engineer, Certified Floodplain Manager, and a nationally recognized flood policy expert from Ringoes-based consulting firm Princeton Hydro. He joins us for a discussion of how to implement the FEMA Community Rating System, which rewards communities for exceeding minimum standards by providing discounts to flood insurance rates. He also will review the suite of FEMA mitigation programs and how New Jersey is managing its grants.

Seating is limited. Register online at *GreatSwamp.org*, or call 973-538-3500 x22.

The Passaic: More Than Just A River
Tuesday, December 10, 8—9:30 a.m.

GSWA Office, 568 Tempe Wick Road., Morristown, NJ

Learn everything you wanted to know about the Passaic River, and more! **Dick Plambeck**, chairman of the Passaic River Coalition, joins us for the final Breakfast Briefing of the Fall 2013 season to discuss pollution prevention and remediation, flood control and damage reduction, and land acquisitions in critical water supply, wetland, and flood plain areas.

Dick is a professional engineer, retired after a career with ExxonMobil. In addition to chairing the Passaic River Coalition, he is a former mayor and councilman for the Borough of Chatham, NJ. He continues to serve on several regional, county, and non-profit boards and commissions.

Seating is limited. Register online at *GreatSwamp.org*, or call 973-538-3500 x22.

Important Information About Breakfast Briefings

Unless otherwise noted, GSWA members participate free. Non-member are asked to make of voluntary donation of $10/adult and $5/child (6 to 17 years old), or $35/family (includes 4). There is no suggested donation for children five and under. Programs are suitable for all ages.

Event dates, times, and locations are subject to change. Provide your email address or phone number at registration and GSWA will make every effort to inform you about scheduling changes. Updated scheduling information is available via our *Event Information Hotline* at (973) 538-3500 x22.

2013 Gala Celebration

The 2013 Gala Committee, the Board of Trustees, and the staff of the Great Swamp Watershed Association invite you to attend this year's gala celebration on Thursday, October 3, 2013 at the Westin Governor Morris in Morristown, NJ.

This year's event honors all of the past chairs of the organization's Board of Trustees. The honorees and their terms of service are listed below.

Per tradition, GSWA's annual silent auction will take place during the gala. This year we are introducing two features designed to enhance your auction experience. Our new mobile bidding technology allows you to place bids and receive updates on your text-capable cell phone. Our new online bidding website allows you to get a head start on all the auction action, or participate remotely if you are unable to attend the event.

Tickets for this year's gala start at $150. Make your reservation online at *GreatSwamp.org* or call (973) 538-3500 x14. Please visit our website for additional information about the silent auction and underwriting opportunities, or to purchase ad space in our gala program.

More than 300 GSWA members and their guests joined us for our 2012 Gala Celebration. Won't you join us this year? Credit: Debbie Weisman.

Past Chairs of the Board of Trustees

William Aiello
1998–2000

Paul C. Becker II
1994–95

Robert Blanchard
2003–04

David Budd
2001–02, 2009, 2012–present

Sally Dudley
1984–87

Anne Essner
2007–08

Abigail Fair
1981–82

Leonard Hamilton
1996–97

Daniel Harding
2005–06

Anne Morris
1983

Madeleine Pitney
1988–89

Douglas Wheat
1990—93

Benjamin Wolkowitz
2010—11

Do You Remember Radon?

by Jim Northrop, GSWA Land Use Committee Member and Volunteer

Years ago when my wife and I sold our home and purchased another house, one issue in both transactions was whether radon gas was present on either property. We hired a third-party radon-detection company to take samples and determine our risk. In the end, insignificant amounts of radon gas were found, and we soon forgot about it.

Recently, however, radon has been in the news. We have learned that it continues to threaten health, and that it can appear unexpectedly when substantial home improvements are made or when a new well is dug.

What is radon gas?

Radon gas takes the form of radiation and is derived from the natural breakdown of uranium, thorium, and radium in soil, rock, and water. Once freed, the radioactive gas enters the air we breathe. The word *radon* is derived from the name of the chemical element called radium, which has an atomic weight of 88. Radon gas was first detected in 1902 as an emission from radium during radioactive decay. The gas is colorless and odorless, and high concentrations of it can infiltrate any type of building. But, we most likely receive our greatest exposure to it where we spend most of our time — in our homes.

How is radon gas unhealthy?

The alpha radiation emitted by radon gas is identical to the radiation emitted by plutonium and other similarly radioactive substances. This means that no level of exposure is completely safe.

When inhaled, radioactive particles[i] from the gas damage cells lining the lungs; in turn, this leads to lung cancer. It is estimated that cancer caused by radon exposure kills many thousands of people each year. In fact, the U.S. Surgeon General has warned that radon is the second leading cause of lung cancer today. Only smoking causes more lung-cancer deaths. If one smokes and has high levels of radon gas in the home, the risk of contracting lung cancer is especially high.

Theoretically, it only takes a single particle of alpha radiation from radon to begin the cascading chain of events that leads to cancer. Our goal then must be to reduce our chances of exposure.

What is an "acceptable" level of radon gas?

The U.S. Environmental Protection Agency (EPA) has established an "action level" for deciding when we need to "do something" about the radon found at a particular location. That EPA standard is 4pCi/L (4 picocuries per liter of air).

In layman's terms, the standard allows approximately 12,672 radioactive disintegrations in one liter of air during a 24-hour period. The standard of 4pCi/L is accepted by most states and U.S. territories, except for New Jersey. New Jersey's Department of Environmental Protection (NJDEP) has tried to establish 2pCi/L as the acceptable "action level" for the state.

A family whose home has radon gas levels of 4 pCi/L is exposed to approximately

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35 times as much radiation as the Nuclear Regulatory Commission (NRC) would allow if the same family stood next to the fence of a radioactive waste site.

The average **national** indoor radon gas level is 1.3 pCi/L. In New Jersey, 30% of the homes tested are found to be in excess of 4.0 pCi/L. The average indoor radon gas levels of Morris County, as determined by radon gas test results from Air Check, Inc., is 4.4 pCi/L.

Testing is the only way to know your home's radon gas levels. There are no immediate symptoms that will alert you to the presence of radon gas. It typically takes years of exposure before any health problems surface. Current NJ state surveys show that one home in five has elevated radon gas levels.

Is there radon gas in your drinking water?

In a few areas, depending on local geology, radon gas dissolves into ground water. If your home has tested positive for a radon problem and your water comes from a well, you should have your water tested.

Compared with the risk of entering a home through soil, radon's presence in well water poses little risk under most circumstances. Showering and other household water uses may release radon gas into the air, but research suggests that swallowing radon-tainted water is nowhere near as dangerous as breathing it in.

In homes served by public water utilities, waterborne radon is of little or no concern.

What if high levels of radon gas are found in your home?

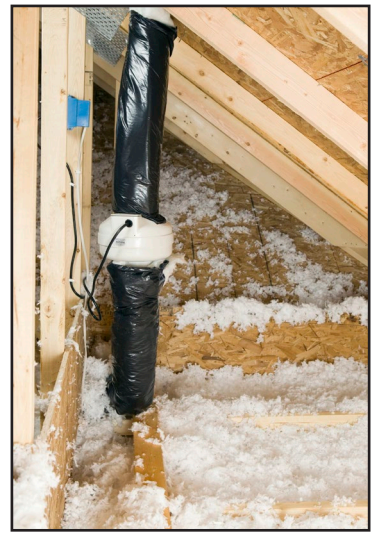
The first thing to do is re-test to confirm that levels are indeed too high. Do you average more than 2pCi/L over the course of two or more short-term tests, or a single long-term test of 90 days or more?

There are some simple, relatively inexpensive things you can do to fix radon problems at home, and even very high gas concentrations can be reduced to acceptable levels.

If your tests exceed the state standard, you need to ask yourself a series of important questions.

Are you going to try to fix the problem yourself? If so, there is a wealth of information available on the EPA's website located at *EPA.gov/radon/pubs/consiguid.html.* Most radon gas test kits are inexpensive. If a home exceeds 4pCi/L, the EPA recommends taking immediate action to reduce exposure.

Will you hire a contractor to fix the problem? If so, the job will cost anywhere from $700 to $2,500 depending on the size of your building. If you do hire a contractor, consider contacting your state radon officer to ask for an approved list of *Radon Mitigation Contractors* in



An active radon ventilation fan with black pipe insulation. The fan runs continuously, depressurizing the area below a concrete slab in the basement floor. Radon gas is captured by a drain tile below the floor and extracted from the house via the fan shown here. Credit: istockphoto.com/BanksPhotos

your area. The Radon Officer for the State of New Jersey is Anita Kopera. Her office is located in Trenton, NJ and can be reached via telephone at (800) 648-0394 or (609) 984-5425.

Typically, radon gas is removed from a home by making a hole in the floor of the basement. The radon-tainted air below the floor is then pumped outside where it decays and dissipates quickly. Have you ever seen a pipe running up the side of a house from basement to roof? It's likely a radon vent, and the bulge you see in the pipe is the pump fan.

Remember, radon gas can enter and collect in homes through cracks in basement floors, walls, or foundations. Homes that are well insulated, tightly sealed, and/or built on soil rich in the elements uranium, thorium, and radium run a higher risk for contamination. Testing is the only way to know if your home has elevated levels of radon.

What are some of the strange and inaccurate beliefs people have about radon gas?

I'm safe because I don't spend much time in my basement.

Not true! If your furnace or duct-runs are located down below, radon gas levels on the first floor will often be the same as they are in the basement or crawlspace anytime the furnace or air conditioning fans run. Staying away from the basement does not make any difference when your furnace or air conditioning fan is running.

I already have a "radon monitor" in my home and it says I am safe.

Not true! Some people mistakenly believe that carbon monoxide detectors or smoke detectors also detect radon. While every home should have a carbon monoxide detector and a smoke detector, neither device is capable of detecting the presence of radon gas.

On average, residential fires kill 2,800 Americans every year. Carbon monoxide deaths in the home average 235 per year. Radon gas continues to claim 21,000 lives each year.

My neighbor's home tested fine so I must be safe.

Not true! You must never rely on your neighbor's test results as an accurate measure of radon levels in your own home. Even identical homes in the same development, next door to each other, built at the same time, and constructed by the same builder, can have radon levels 100 times higher or 100 times lower than your house. Surprisingly, there can even be a huge difference in gas concentrations from one side of a duplex or attached townhouse to the other side. That is why **every** residence needs to be tested.

Do-it-yourself radon test kits are not accurate.

Not true! If you follow the instructions, do-it-yourself test kits are just as accurate as extremely expensive professional-grade radon gas monitors. If you are testing your own home and are not in the process of a real estate transfer, do-it-yourself test kits are recommended. Test kits perform a simple measurement of how many radioactive "explosions" occur in the home every minute of every hour of every day.

[i] While most of us commonly think of radiation as a wave of energy, the alpha radiation described here consists of those miniscule particles of matter that form the building blocks of atoms. These particles

(continued on page 21)

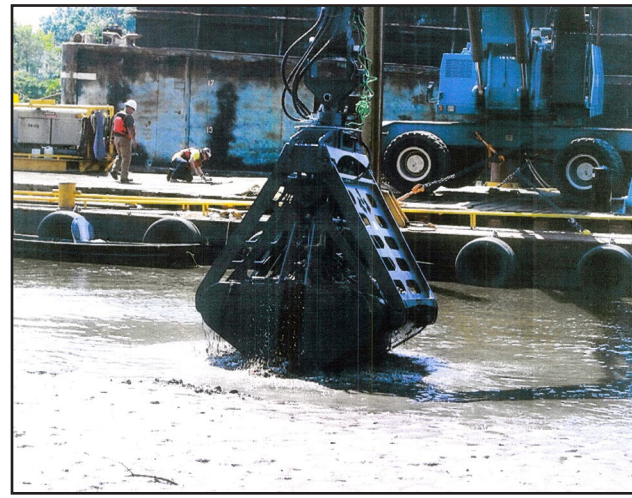
Cleanup Begins on the Lower Passaic: Summary and Opinion

In July, after many years of study and debate, the U.S. Environmental Protection Agency (EPA) began oversight of a $20 million dredge-and-cap project along the Lower Passaic River in Lyndhurst, New Jersey. The work will remove approximately 20,000 cubic yards of contaminated sediment from a short stretch of river adjacent to Riverside County Park. On August 7, GSWA Executive Director Sally Rubin attended a press conference intended to mark the start of dredging and introduce the project timeline to media representatives and the general public.

A long legacy of industrial pollution has rendered the Lower Passaic unswimmable, unfishable, and unlivable by most standards. In fact, in 1984, the overwhelming presence of hazardous substances in and below the water led the EPA to list 17 miles of the river—from Dundee Dam near Garfield to Newark Bay—as part of the Diamond Alkali Superfund site.

The site takes its name from the now-defunct Diamond Shamrock Chemical Company (aka Diamond Alkali). As a major manufacturer of the chemical defoliant Agent Orange in the 1950s and 1960s, the corporation's old Lister Avenue plant is now understood to be the predominant source of PCBs, dioxin, mercury, and other toxins afflicting the Lower Passaic.

For decades, cleanup of the contaminated river bottom has been mired down by innumerable feasibility and impact studies conducted by federal and state government agencies; as well as an unremitting, seven-year lawsuit. Filed by the New Jersey Department of Environmental Protection (NJDEP), the suit sought damages against 70 corporations deemed responsible for causing the pollution. Most of those corporations, including the oft-mentioned Occidental Chemical Corporation, are successors to the



Workers use a specialized environmental dredging bucket to remove contaminated sediment from the RM 10.9 portion of the Passaic River. Sediment is transported to a facility in Kearny, NJ for processing before it is moved by rail to a landfill in Oklahoma. Courtesy of Lower Passaic River Study Area Cooperating Parties Group.

original Diamond Shamrock concern which was broken up, sold, and resold over the course of many years.

With the majority of impact studies concluded or wrapping up and the NJDEP lawsuit settled for $130 million in the state's favor this past June, remediation is finally starting.

The project now underway at River Mile 10.9—RM 10.9 in common parlance—was not designed to address all 17 miles of the designated Superfund site. In truth, the intervention only covers a 5.6-acre area of severe contamination located offshore west of Riverside County Park. Nevertheless, Judith Enck, regional administrator for EPA Region 2, interprets activity at RM 10.9 as a positive sign of progress to come.

In a prepared statement released at the August 7 press conference Enck stated, "This cleanup removes some of the worst contamination in the Passaic River while the EPA continues to develop long-term cleanup plans for a 17-mile stretch of the Lower Passaic River..." An NJ.com report from the same event portrayed the Administrator's hopeful outlook: "When you clean up urban waterways, people flock to the river," Enck said. "It's a tremendous opportunity for recreation and economic growth."

The Lower Passaic River Study Area Cooperating Parties Group (CPG) recently released a statement announcing a timeline for work at RM 10.9. Equipment barges were to move into the vicinity of Riverside Park by the end of July, and dredging was to be completed by the end of September. However, a number of drawbridge failures along the downstream river corridor delayed the initial staging. Assuming the project recovers lost time, site capping—which involves the placement of an engineered stone barrier over the area of sediment removal—will begin in October and will conclude by December 31.

Work will be conducted entirely on the water, and is not expected to adversely affect park access, or the health and safety of nearby homes and businesses. However, a number of measures have been implemented in order to ensure the continuing safety and security of workers and residents. Those measures include the presence of an onsite security officer, a roving team of noise monitors, air-quality monitoring stations, and the installation of a floating silt curtain system in waters surrounding the site. The silt curtain, which extends several hundred yards downstream, is designed to prevent disturbed sediments from washing into other areas.

New Jersey will cover the $20 million price tag associated with RM 10.9 by dipping into the $130 million fund secured by NJDEP's lawsuit. Although all of that settlement money has been earmarked for cleanup of the Lower Passaic, the Christie Administration—in a bid to balance the state budget—is pushing to reallocate at least $40 million of it into the state's General Fund.

(continued on next page)

Passaic Cleanup *(continued from previous page)*

Speaking at the August 7 press conference, NJDEP Commissioner Bob Martin explained that the substantial reallocation would be used to pay back the state for earlier environmental investigations and intervention planning his agency conducted on the Lower Passaic. According to *The Observer Online*, Martin clarified his position stating that, "Before EPA got involved, the state did a lot of research to understand the magnitude of the problem with the river…"

NJDEP's argument in favor of retroactive remuneration to the General Fund does not sit well with many. Congressman Bill Pascrell from New Jersey's 9th District is one of those opposed to the idea. In a letter to Governor Christie dated August 6, 2013, he wrote, "… it is essential that all funding recovered from the responsible parties be put toward the remediation and environmental restoration of the Passaic River, and not diverted to alternate programs."

Congressman Pascrell's view echoes those of others throughout New Jersey who see the governor's move as a scheme to pad the state's budget at the expense of Passaic River communities. From this perspective, a clear distinction is made between the fuzzy logic of collecting a reimbursement for past exploratory exercises, and the inevitable need to pay the bills coming due for current, effective, shovel-in-the-ground remediation projects. For those who have waited much of their lives to see even a single concrete step taken toward river restoration, there is nothing to contest. Funds from NJDEP's settlement must be used to alleviate the present threat and real pain of Passaic River pollution, and not redistributed under the pretense of refunding the government for work that has already been bought and paid for.

The poet and author Maya Angelou famously wrote that, "When we cast our bread upon the waters, we can presume that someone downstream whose face we will never know will benefit from our action, as we who are downstream from another will profit from that grantor's gift." The communities of the Great Swamp Watershed have put tremendous effort into ensuring that the water passing through their custody on its way to Newark Bay remains clean and accessible to all. It is a given that those efforts have not been entirely successful, neither have they been wholly altruistic. Nevertheless, the principle of Angelou's statement stands. The Passaic River begins with fishable, swimmable, and livable water. There is no valid principle or reasoning available to deny or delay the same for those living beyond its headwaters.

As protectors and advocates for waters that eventually find their way into the Lower Passaic, the Great Swamp Watershed Association lauds the progress made with the initiation of the dredge-and-cap program at RM 10.9. We also encourage all parties involved to look forward, instead of dwelling on past travails. Maintain your established momentum and commit all available resources and earmarks to the continuation of viable, effectual environmental remediation and restoration. Action is the best and only way to stretch the gift of cleaner water from the Great Swamp all the way to Newark Bay. And the sooner it is done, the sooner all of us in New Jersey may profit from a swimmable, fishable, and livable Passaic River.

Comings and Goings...

There have been a number of changes of late to the local environmental community. This fall we take some time to say goodbye to a few old friends departing for new opportunities, and welcome some new friends as they take on new roles in and around our watershed.

Our deepest appreciation and respect go out to one of GSWA's closest partners and collaborators over recent years. Cathy Schrein, manager of environmental science with the Somerset County Park Commission (SCPC), retired from her position as director of SCPC's Environmental Education Center (Basking Ridge, NJ) in May 2013. We will miss you!

Our congratulations go out to Michael Catania, formerly the president of Conservation Resources (Chester, NJ) and now Executive Director of Duke Farms in Hillsborough, NJ. He took his new position with the well-known environmental education and research facility in March 2013. GSWA worked closely with Michael during his tenure at Conservation Resources, and we look forward to working with him once again in his new capacity.

Congratulations also go out to Tom Flynn. Tom will take over as Executive Director of the Harding Land Trust (HLT) in late September 2013. We look forward to working with Tom as we continue to strengthen our partnership with HLT.

As the guard changes at Harding Land Trust, we say goodbye to outgoing Executive Director Tina Bologna. We wish her the best of luck in her future endeavors.

Radon *(continued from page 17)*

demonstrate wave-like qualities as a result of the wave nature of matter, a theory of quantum physics first postulated by physicist Louis de Broglie in the 1920s. So-called "alpha particles" consist of two neutrons and two protons bonded together into a particle that is identical to the nucleus of a helium atom. Unlike the helium atom, which has two negative electrons in addition to its nucleus, there is nothing in the alpha particle's makeup to balance the positive charge of its two protons. Although simplified here, it is the positive charge of the alpha particle (as well as the great speed at which it moves) that gives it the ability to tear electrons from their orbits around otherwise stable atoms. As their electrons are removed, those atoms become charged ions; hence, scientists refer to alpha radiation as a form of "ionizing radiation." This ionizing interaction is also what makes the radiation from radon gas so hazardous when inhaled.

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Every Drop Counts! Tips and Tricks to Save Water Inside Your Home: Part II: Water-guzzling Appliances

by Laura Kelm, GSWA Director of Water Quality Programs, and Mary Fisher, GSWA Intern 2012

In Part I of this two-part article on home water conservation we gave you the poop on toilet flappers and the dirt on low-flow showerheads. In this installment, we take you out of the bathroom and into the rest of the house where the water you use helps with the cleaning, the cooking, and a variety of other tasks.

For many of us, appliances now do the heavy lifting when it comes to finishing everyday household chores. Gone are the days when a functioning washboard and tub graced most American homes, and let's face it, how many of us routinely wash dishes by hand these days.

Modern conveniences abound in the kitchen and laundry, so let's focus on some common appliances. Have you thought a lot about how much water it takes for them to do their jobs?

And don't forget, saving water saves us money and energy. For those on public water, your monthly bill is a reminder of the importance of conservation. Those on well water will also notice the difference when conserving. No doubt your well water gets into your home through an electric pump. That means that the less water you use, the less your pump runs, and the more you save on your energy bill. If you have a septic system, less water going down your drain means less frequent pump-outs.

The Washing Machine

A typical top loading clothes washer uses 40 gallons of water per load.[i] For our arithmetically minded readers, that's about 334 lbs. or 5.3472 cubic feet of water per load. Given the average price per gallon today in New Jersey, the equivalent volume of regular unleaded gasoline would cost a whopping $136.72.[ii] And the equivalent amount of another precious liquid—a certain brand-name Swedish vodka we all know and love—would set you back a little more than $2,300.[iii] Thankfully, water is not as expensive as vodka or gasoline, yet!

Based on Food & Water Watch's 2010 report *Has Privatization Gone Too Far in New Jersey?* United Water New Jersey customers in our region paid about $4.40 per 1,000 gallons of water supplied to their homes.[iv] New Jersey American customers paid about $5.38 per 1,000 gallons supplied.[v] In practical terms, that layout of cash buys the owner of a top-loading washer about 25 full loads of laundry.

Seems like a decent return on investment, right? But, consider how much more value you could generate per gallon by doing some simple upgrades.

Replace that top-loader with a front-loading model and you cut water use by nearly 40%; from 40 gallons per load, to about 24 gallons per load.[vi] That amounts to the conservation of more than 6,000 gallons of water each year.[vii] In terms of your water bill the $4.40 or $5.38 you originally spent on 25 wash cycles, now buys 42 full loads of laundry. That's a significant return on value, but what if we took it one step further?

An Energy-Star-certified washing machine uses only 15 gallons of water per

load.[viii] Over the machine's lifetime, it could save 38,000 gallons of water![ix]

No matter what type of washing machine you have, make sure you only wash full loads; this can save you a lot of water (and time) each month compared to running smaller loads.

The Dishwasher

According to the U.S. Energy Information Administration's 2001 Residential Energy Consumption Survey, if your household income is $30,000 a year or more, then you probably have a dishwasher at home.[x] If you happen to be an ardent hand washer, keep this in mind.[xi] You could be saving 5,000 gallons[xii] of water, $40 in utility costs, and 230 hours of your time annually (over hand washing) by investing in an Energy-Star-qualified dishwasher.[xiii]

Energy Star dishwashers only use about 4 gallons of water per load,[xiv] and even today's standard dishwashers only use about 5 gallons per load.[xv] That's not a lot when you consider that most machines manufactured before 1994 used about 15 gallons of water per load. So what are your really saving when you buy a model approved by Energy Star? The answer is energy. The more water your dishwasher uses, the more energy it takes to heat the water for each load. Replacing your older machine can not only save 1,300 gallons of water over a lifetime of use,[xvii] but can also reduce your energy use by 10 percent.[xviii] That, in turn, saves you money!

Whatever dishwasher you own, make sure that you only run it when it is full. Running a partial load will use the same amount of water as running a full load. If the average household runs 215 half-full loads per year, you could save 430 gallons in the same time period by combining every two half-full loads into one full load.[xix]

If you still prefer hand washing, an easy way to save water is to have a tub in your sink that you fill with soapy water. Use this water to wash dirty dishes and soak anything that needs it. Once everything is soapy, you only need to turn on the faucet to rinse the dishes clean.

The Garbage Disposal

Also known as a waste disposal unit, a garbage disposal certainly is a household convenience, but it may not be so convenient for the environment. On top of consuming extra energy and water in their operation, disposals send pounds of organic material on a wild ride through our sewer systems only to end up at a wastewater treatment plant.

Wastewater treatment plants, like the Woodland facility in Morris Township or the Tanglewood Lane facility in Chatham, are really good at removing stuff from water. But what you might not realize is that those solids drawn out of the water, including the organics from your disposal, are packaged up and sent off to a landfill. That's a lot of extra water and extra energy added to the bill you ultimately pay to get food scraps into a landfill, don't you think?

(continued on next page)

Every Drop Counts *(continued from previous page)*

If your home's wastewater goes into a septic system, using a garbage disposal can cause some immediate issues for you. Food scraps often contain lots of nitrogen, which can overwhelm the bacteria in your septic system and throw it out of balance. Putting food waste into the garbage disposal also increases the volume of solids your septic system needs to handle. More solids mean more frequent pump-outs. And just like wastewater treatment plants, what gets pumped out of your septic system ultimately ends up in a landfill.

When it comes to garbage disposals, we follow the example set by the U.K.'s World War II era Railway Executive Committee. We ask you: "Is this journey really necessary?" If your food scraps end up in a landfill anyway, why not cut out the middle men—and all the excess water and energy used by the sewer system—and toss them right into trash? Better yet, convert all that organic waste into black gold! Compost it in the back yard so you have a homemade, ready-to-hand source of fertilizer for your lawn and garden. What a great way to turn trash into treasure!

The Conclusion

Congratulations! You have reached the end of our two-part series on household water conservation. We hope you enjoyed it!

Before you rush out and start implementing all these water-saving techniques in your home, we want to tell you two more important things.

The Energy Star program mentioned above is a partnership between the U.S. Environmental Protection Agency and the U.S. Department of Energy that certifies products, like appliances, that meet set standards for energy efficiency AND deliver the features and performance consumers expect. You can find a lot more information from them online at *EnergyStar.gov*.

Want more tips about water use in and around your home? Want to share your household water conservation experience with other likeminded people from our region? Stay tuned this fall for the launch of the Great Swamp Watershed Association's new Watershed Friendly Homes online community. Each month, this new Web tool will provide you with a set of water-saving and water-cleaning tips you can introduce into your home. Sign up for a free account, and GSWA will provide you with personalized guidance and encouragement as you work toward your water conservation

goals. You'll also gain access to an entire community of enthusiastic neighbors who share your environmental concerns and your sense of civic duty. And, just to up the ante a bit, you'll earn points and rewards for every new water-conscious action you and your household undertake. Who knows? There may even be a special prize or two in it for top conservers.

So remember, watch for Watershed Friendly Homes coming your way this fall. Sign up for GSWA's e-newsletter at *GreatSwamp.org* to receive an announcement with the new website address. See you online!

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[i] California Energy Commission, Consumer Energy Center. (2013). *Appliances: Clothes Washers.* Retrieved from *http://www.consumerenergycenter.org/home/appliances/washers.html.*

[ii] Average price per gallon of regular unleaded gasoline on August 12, 2013 was $3.468. GasBuddy.com, NewJerseyGasPrices.com. (12 August 2013). *Average Gas Prices by State.* Retrieved from *http://www.newjerseygasprices.com/Prices_Nationally.aspx.*

[iii] Anderson, K. (June 2006). *The Price of a Gallon* [online forum]. Retrieved from *http://www.cockeyed.com/science/gallon/liquid.html.*

[iv] Food & Water Watch. (June 2010). *Has Water Privatization Gone Too Far In New Jersey? An independent analysis of New Jersey's expensive and troubling experiences with private water companies.* Washington, DC; New Brunswick, NJ. Retrieved from *http://documents.foodandwaterwatch.org/doc/PrivatizationInNewJersey.pdf.*

[v] Food & Water Watch. (June 2010). *Has Water Privatization Gone Too Far In New Jersey? An independent analysis of New Jersey's expensive and troubling experiences with private water companies.* Washington, DC; New Brunswick, NJ. Retrieved from *http://documents.foodandwaterwatch.org/doc/PrivatizationInNewJersey.pdf.*

[vi] California Energy Commission, Consumer Energy Center. (2013). *Appliances: Clothes Washers.* Retrieved from *http://www.consumerenergycenter.org/home/appliances/washers.html.*

[vii] California Energy Commission, Consumer Energy Center. (2013). *Appliances: Clothes Washers.* Retrieved from *http://www.consumerenergycenter.org/home/appliances/washers.html.*

The U.S. Department of Energy estimates 392 loads wash per year for the average household. U.S. Environmental Protection Agency, Energy Star Program. (3 April 2013). ENERGY STAR Residential Clothes Washers Product List. Washington, D.C. Retrieved from *http://downloads.energystar.gov/bi/qplist/res_clothes_washers.pdf.*

Calculate the savings: (1) Top-loading machine: 40 gal/load x 392 loads/year = 15,680 gal/year; (2) Front-loading machine: 24 gal/load x 392 loads/year = 9,408 gal/year; (3) Savings: 15,680 gallons - 9,408 gallons = 6,272 gallons.

[viii] U.S. Environmental Protection Agency, Energy Star Program. (16 August 2013) *Clothes Washers for Consumers*. Washington, D.C. Retrieved from *http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=CW.*

[ix] U.S. Environmental Protection Agency, Energy Star Program. (16 August 2013) *Clothes Washers for Consumers*. Washington, D.C. Retrieved from *http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=CW.*

Estimated life expectancy of the average clothes washer is 11 years. U.S. Environmental Protection Agency, Energy Star Program. (28 March 2005). *Market Analysis and Proposed Changes to the ENERGY STAR Criteria for Clothes Washers.* Washington, DC.

Calculate the savings: (1) ES washer: 15 gallons/load x 392 loads/year = 5,880 gallons/year; (2) ES washer replacing top load washer: 15,680 gallon/year – 5,880 gallons/year = 9,800 gallons/year savings; (3) If ES washer lasts 11 years, then: 11 years x 9,800 gallons savings/year = 107,800 gallons savings over lifetime; (4) ES washer replacing front-load washer: 9,408 gallons/year – 5,880 gallons/year = 3,528 gal/year savings; (5) If ES washer lasts 11 years, then: 11 years x 3,528 gallon savings/year = 38,808 gallons savings over lifetime.

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[x] U.S. Energy Information Administration. (2009). *Residential Energy Consumption Survey (RECS): Appliances.* Washington, DC. Retrieved from *http://www.eia.gov/emeu/recs/appliances/appliances.html.*

[xi] The average person uses about 27 gallons of water and 79 minutes when hand washing the equivalent number of dishes found in 12 place settings. Stamminger, R., et al. (n.d.). *A European Comparison of Cleaning Dishes by Hand.* Bonn, Germany: University of Bonn, Insitut für Landtechnik. Retrieved from *http://www.landtechnik-alt.uni-bonn.de/ifl_research/ht_1/EEDAL_03_ManualDishwashing.pdf*.

Most standard dishwashers hold the equivalent of about 8 place settings, so a simple conversion of the statistics from the German study of hand washing (from 12 settings to 8 settings of dishes) clearly demonstrates how manual washing stacks up against machine washing.

Calculate the conversion from 12 place settings to 8 place settings: (1) (27 gallons / 3) x 2 = 18 gallons; (2) (79 minutes / 3) x 2 = 53 minutes (approximately).

[xii] U.S. Environmental Protection Agency, Energy Star Program. (16 August 2013) *Dishwashers for Consumers.* Washington, D.C. Retrieved from *http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=DW.*

Calculate gallons of water saved annually: (1) assume 215 loads of dishes per year (see xix below); (2) assume 27 gallons/load for hand washing (see xi above), or 4 gallons/load for an ES dishwasher; (3) Hand washing: 215 loads x 27 gallons = 5,805 gallons; (4) ES dishwasher: 215 loads x 4 gallons = 860 gallons; (5) Savings: 5,805 gallons – 860 gallons = 4,945 gallons saved.

[xiii] Note that water usage, cost, and time savings do depend on your own personal habits. The numbers quoted here are derived for the average person.

[xiv] To be Energy-Star-certified, a standard-size dishwasher must use 4.25 gallons or less per wash cycle. U.S. Environmental Protection Agency, Energy Star Program. (16 August 2013). *Dishwashers Key Product Criteria.* Washington, D.C. Retrieved from *http://www.energystar.gov/index.cfm?c=dishwash.pr_crit_dishwashers.*

[xv] Energy Star dishwashers can be 20% more water efficient than standard models. U.S. Environmental Protection Agency, Energy Star Program. (16 August 2013) *Dishwashers for Consumers.* Washington, D.C. Retrieved from *http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=DW.*

Calculate gallons used by a standard dishwasher: (1) (standard dishwasher usage variable) x 0.8 (or 80%) = 4 gallons (the number of gallons used by an ES machine; (2) 4 gallons/0.8 = 5 gallons/load for standard dishwasher.

[xvi] U.S. Environmental Protection Agency, Energy Star Program. (18 May 2006). *How much water do ENERGY STAR dishwashers use? Is there a water-efficiency metric ("water factor") for ENERGY STAR dishwashers like there is for ENERGY STAR qualified clothes washers?* (Topic # 23002-17719) [online forum]. (Last modified: 28 April 2011). Retrieved from *http://energystar.supportportal.com/ics/support/kbanswer.asp?deptID=23018&task=knowledge&questionID=17719&__utma=20819436.756592613.1376410889.1376671763.1376676115.6&__utmb=208194 36.6.6.1376676215324&__utmc=20819436&__utmx=-&__utmk=181559460.*

[xvii] U.S. Environmental Protection Agency, Energy Star Program. (16 August 2013) *Dishwashers for Consumers.* Washington, D.C. Retrieved from *http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=DW.*

[xviii] U.S. Environmental Protection Agency, Energy Star Program. (16 August 2013) *Dishwashers for Consumers.* Washington, D.C. Retrieved from *http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=DW.*

[xix] DOE assumes 215 loads per year. *Energy Conservation Program for Consumer Products,* 10 C.F.R. pt. 430.23c (4 April 2012). Retrieved from *http://cfr.regstoday.com/10cfr430.aspx#10_CFR_430p23.*

Calculate gallons of water saved: (1) ES dishwasher: 4 gallons/load x 215 partial loads/year = 860 gallon/year. (2) Combine two half-loads into one full-load: 860 gallons per year / 2 = 430 gallons/year in water savings.

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Farewell
Ella Filippone

On Saturday, July 13, 2013, New Jersey bid a fond farewell to Ella Filippone, one of the state's most ardent environmental voices. The 78-year-old co-founder and executive director of the Passaic River Coalition passed away on June 21 following a short hospitalization.

Friends and colleagues who gathered to celebrate her life and accomplishments at Morristown's Willow Hall lauded Ella's devotion to the 935-square-mile Passaic River Watershed, and the tenacious spirit with which she fought to restore and protect clean water in the region. Among her myriad victories on behalf of the environment, most-often noted were her successful efforts to preserve 1,500 acres of land along the banks of the Passaic, and the grassroots defense she and her husband Joe organized in 1969 against the proposed construction of a U.S. Army Corps of Engineers flood tunnel.

The Great Swamp is a sub-watershed of the larger Passaic River Watershed region. As such, we owe Ella our respect and most-profound thanks for the 43 years she dedicated to the salvation and protection of waters that rise and flow to the sea from our own ten towns. The Great Swamp Watershed Association will honor her legacy as we honor those of Helen C. Fenske and other pioneers of New Jersey's environmental movement. We will continue the fight to protect the waters and the land of the Passaic River and the Great Swamp, and we will stand in solidarity with all who seek to preserve the integrity and majesty of New Jersey's magnificently diverse landscapes.

Our deepest sympathies extend to Ella's family, as well as the friends and co-workers who loved and cared for her.

GSWA Executive Director Sally Rubin posed for this photo with U.S. Environmental Protection Agency Region 2 Administrator Judith Enck (right), the Director of EPA Region 2's Clean Water Division Joan Matthews (left) during their visit to the Great Swamp Watershed on August 6, 2013. Read our cover story EPA Regional Administrator Visits the Great Swamp *on pg. 1 for details of the visit. Credit: GSWA, Steve Reynolds.*

Moths in The Great Swamp Watershed, Part II

by Blaine Rothauser, Naturalist, Photographer, and GSWA Member and Volunteer

Scientists still have much to discover about the ecology of moths, but what we have learned thus far from this guild of insects starts to provide a natural gizmo we can use to gauge the environmental health of defined landscapes. So what, if anything, do moths tell us about the environment here in our own Great Swamp Watershed region?

If we take the 7,768-acre Great Swamp National Wildlife Refuge as an example of a defined landscape—that is to say, a subunit of land within the greater watershed proper—then performing a moth survey within its boundaries would provide a good starting point for making some preliminary determinations.

Such an inventory was performed in 2007. The survey lasted but a mere two evenings in one location—one in June and another in August—but astonishingly found 280 species of moths. That's right! The researchers identified 280 distinct species in the same location! This begs the question: How many species of moths really call the Refuge home? If we performed further studies, in all months of all seasons, we would surely find more than 700—probably more.

*Luna moth (*Actias luna*) and blue flag iris (*Iris versicolor*). ©2012 Blaine Rothauser.*

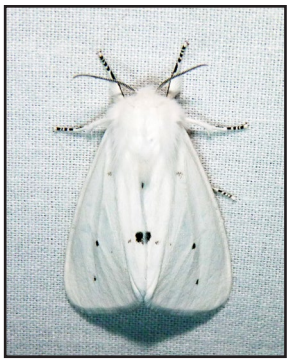
By encountering so many species from distinct taxa, the 2007 survey demonstrates an ecological concept called *over-yielding* where a wide variety of individual moth species work together in groups to fill a wide variety of ecological niches (i.e., perform an array of ecological tasks).

For example, the larvae of the lost owlet moth (*Ledaea perditalis*) feed and pupate in cattail. The downy woodpecker (*Picoides pubescens*) is especially fond of caterpillar hunting in cattail in late winter and early spring. If this food source were not available to the woodpeckers at this crucial time of the year, this could affect their long-term prospects for survival. The good news for the downy is that cattail is the host plant for a few other moth specialists besides the lost owlet, such as Julia's dicymolomia (*Dicymolomia julianalis*), waved sphinx (*Ceratomia undulosa*), Henry's marsh moth (*Simyra insularis*), and the pickerelweed borer (*Bellura densa*).

According to the ecologist's principle of species richness, measuring the number of individual species present in a given study area is key to understanding more about how the local environment functions. The measurement of species richness within the moth community during the Refuge

study revealed an over-yielding ecology. As the moth guilds perform their tasks and subsequently contribute to local ecological processes, they may enhance the stability of the entire ecosystem by providing a buffer—or a redundancy—against future environmental perturbations.

Put simply, the more species that call a landscape-subunit home, the less chance there is for overall ecosystem failure. This is evinced at the Great Swamp National Wildlife Refuge where the landscape displays an internal resistance to ecologic perturbation. The natural diversity of habitat and the accompanying diversity of wildlife are of a size and scope that withstands both internal and external upheaval. For instance, in the core of the Refuge where there's a greater variety of understory shrubs and canopy trees, fewer blow-downs have occurred because the increased twig and branch density better equips the forest to consume the power of storms such as Superstorm Sandy. The Refuge, then, is a bastion for genetic, natural, and over-yielding diversity.[i]



*Virginia tiger moth (*Spilosoma virginica*). Credit: flickr.com/photos/dendroica/ (Creative Commons Attribution)*

I mentioned earlier that each species of moth at the Refuge has an ecological niche to fill. This is a fancy way of saying that each species has a biological task to perform. While some Refuge moths behave as ecological generalists—performing a variety of biological tasks and associating with a variety of plant species—others exhibit specialist characteristics and only engage in very specific, highly evolved ecological activities. Specialists tend to appear only where their highly circumscribed duties can be adequately performed. Here is an example. There is one denizen of our beloved swamp, the deceptive snout moth (*Hypena deceptalis*), whose larvae only feed on basswood. By contrast, another swamp denizen, the Virginia tiger moth (*Spilosoma virginica*), is much more the ecological generalist, associating itself with a dozen different host trees where it develops and feeds. It is not hard to reason then that the tremendous variety of moths found on this subunit of land can act as a metric for landscape health—a sort of ecological barometer, if you will.

The Refuge sets the bar high for healthy ecosystems when compared with other landscapes in our region. This is true even for those other watershed locales we quite reasonably assume are ecologically healthy. The Great Swamp Watershed Association's baby, our very own Conservation Management Area (CMA) on Tiger Lily Lane

(continued on next page)

in Harding Township, is one good example. The ecology of this closely monitored and managed site certainly has benefitted from all the environmental stewardship activity undertaken by hard-working volunteers and staff in recent years. But, when I compared the results of the two-day Refuge survey described above with my own three-day survey at the CMA last year, I realized that there is still room for improvement.

My CMA study—conducted in June, July, and August 2012—resulted in a total species richness count of 120 moths. Eighty percent (80%) of those species I found were ecological generalists. I account for the moderate species count here by considering the condition of the land at the CMA, including, the relative lack of sub-habitat types in the surrounding patched and fragmented landscape, the intensive understory browsing done by white-tailed deer (*Odocoileus virginianus*), intrusions by invasive plant species, and exposure to pollution from the nearby highway (I-287).

Although the CMA's diversity index score was lower than that of the Wildlife Refuge, supporters of GSWA should not fret! My study revealed a higher index score and a higher number of ecological specialists than the scores from a similar survey I conducted at nearby Loantaka Brook Reservation in Morris Township. The forest understory at the Reservation—a much-larger, greenway-connected system inside our watershed—is ravaged by deer. There is very little herbaceous plant diversity as compared to the understory at the CMA—recovering, as it is, with significant help from GSWA's fortified and well-maintained deer exclosure fence. The fence does an excellent job of keeping deer from completely devastating approximately 28 acres of the larger 53-acre CMA site.

I have to warn the reader and remind myself that my surveys have not been repeated, or peer-reviewed, nor have they been very extensive in scope. Many hundreds of study nights remain before deeper insights might be drawn from this research. Therefore my data can only be viewed as a "snapshot" of what potentially underpins environmental change. Still, as stewards of the land within the Great Swamp Watershed, the moth diversity found within localized landscape subunits is, in my humble opinion, a baseline for guiding future conservation management activities.

Getting all the remaining lands in our watershed to over-yield as the Great Swamp National Wildlife Refuge does seems like a prudent plan of attack in terms of restoring the local ecology. And increasing local species diversity will certainly pay dividends as we wait for future generations to carry the torch of environmental stewardship. Why not, then, let moths lead the way?

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[i] Warning! Even though the Refuge is well buffered against ecological disruption, that does not mean it is immune to upheaval. All systems have a breaking point, and we must be vigilant in our defense against such disruptions.

GSWA is blogging at http://acrossthewatershed.blogspot.com

State of Streams *(continued from page 10)*

Other avenues for stormwater runoff control may also be explored as GSWA develops new plans to address the issues revealed by the State of the Streams report. Existing education programs that already offer guidance on collecting and storing rain water in rain barrels and rain gardens are ready to be extended to municipalities interested in creating demonstration projects for residents. The organization also engages in ongoing research of green- and blue-infrastructure technologies capable of reducing the impact of stormwater pollution. In order to address problems with road salt, GSWA is continuing its effort to encourage local municipalities to adopt the use of brine as a preferred method for wintertime de-icing. Staff is also investigating the practicality and implementation of permeable pavements capable of passing more rainfall and snow melt into the ground instead of merely diverting it into waterways.

The complete *State of the Streams in the Great Swamp Watershed* report provides additional analysis and information about all of the issues highlighted in the preceding article. Download a copy of the report online at *GreatSwamp.org* or stop by GSWA's offices located at 568 Tempe Wick Road in Morristown, NJ, for a paper copy. Please direct all questions about analysis and findings to GSWA's Director of Water Quality Programs Laura Kelm at *lkelm@greatswamp.org* or call (973) 538-3500 x16.

EPA Regional Administrator *(continued from page 1)*

Department of Environmental Protection (NJDEP) in finding ways to reduce the negative environmental impact of road salt statewide.

GSWA shared the details of plans for future *E. coli* bacteria monitoring of Loantaka Brook near Seaton Hackney Stables. The intent is to use a genetic testing protocol to determine if the bacteria are originating from horses, geese, humans, or some combination of animals.

The EPA also expressed interest in learning more about local nitrogen pollution levels. In the recently published report, *State of the Streams in the Great Swamp Watershed*, GSWA identified a seasonal problem with nitrogen pollution in certain watershed locations. The exact source of that pollution has yet to be pinpointed.

GSWA would like to thank Administrator Enck and her entire team for venturing out into the wilds of New Jersey to visit with us. We also wish to thank a number of other people for contributing to the success of the tour. U.S. Fish and Wildlife Service Ranger Dave Sagan presented us with some important information about ongoing environmental management projects at Great Swamp N.W.R. Cathy Schrein, Kurt Bender, and Monica Juhasz at the Somerset Environmental Education Center in Basking Ridge provided invaluable support for our on-water adventure by allowing us to borrow their fleet of kayaks. These partnerships were key to creating such a special day for our visitors!

GSWA Forms New Advisory Council

On Tuesday, May 14, 2013, the Great Swamp Watershed Association convened the first official meeting of the organization's newly formed Advisory Council. Council members, members of the Board of Trustees, and staff met at Blue Willow Marketplace in New Vernon for dinner, informal discussion, and a special presentation. The speaker for the evening was Dr. Chris Obropta, extension specialist in water resources for Rutgers New Jersey Agricultural Experiment Station's (NJAES) Cooperative Extension.

Dr. Obropta works to create innovative solutions to water quality issues in New Jersey. He presented on the Cooperative Extension's *R U Disconnected* program, a statewide information campaign aimed at teaching residents how to reduce flooding and improve water quality by changing the way they deal with stormwater runoff at home and in their local communities.

The Advisory Council was created to help GSWA increase its visibility in the community, to offer advice on issues as they may arise, and to help provide support for the organization as needed.

Inaugural members of the Advisory Council are—

Kathy Abbott (Chatham Township)
Chris Allyn (Harding Township)
Astri Baillie (Madison)
Marshall Bartlett (Harding Township)
Jim Bellis (Bedminster)
Len Berkowitz (Berkeley Heights)
Cathie Coultas (Madison)
Susan Deeks (Harding Township)
Anne Essner (Sarasota, FL)
Pam Harding (Bernards Township)
Julie Keenan (Summit)
Wade Kirby (Harding Township)
Alden Siegel (Morris Township)

Across The Watershed is also available electronically

Help reduce our print and mailing costs by signing up for electronic delivery of future issues of ***Across the Watershed*** at *GreatSwamp.org* or send an e-mail with your name and address (so we can identify you in our member database) to *sreynolds@GreatSwamp.org*. By giving GSWA your e-mail address, you'll also receive our monthly e-newsletter, which provides timely information on upcoming programs and events along with news on what's happening in and around the watershed.

Your e-mail address will be used solely for the purpose of sharing information with you about GSWA-related programs and events. We will not provide your e-mail address to any other person or entity without your permission.

GSWA Announces Changes to its Board of Trustees

The Great Swamp Watershed Association offers profound thanks to **Chuck Gullage** and **Ed DeVeaux** for their years of service as members of the organization's Board of Trustees. Both men said their farewells in August 2013.

We also wish to extend an enthusiastic welcome to this year's new Board members. **Mary Horn**, **Jane Kendall**, and **Lois Olmstead** all joined our Board of Trustees in January 2013 and have been working hard to support the organization ever since.

Mary Horn is a resident of Whitehouse Station, NJ. As an agent for Weichert Realtors in Morristown, Mary has been named to the prestigious "Women in Real Estate" list and has represented Weichert's Capital Properties & Estates division as a luxury home specialist. She is very active in local communities. She has chaired gala committees for several local charities over the years, and serves as a board member for several other organizations, including the Women's Association of Morristown Memorial Hospital.

Mt. Kemble Lake (Harding Township) resident **Jane Kendall** is a noted local photographer and author. She serves on the board of the Mt. Kemble Lake Homeowners Association, and is an active member of the Friends of the Great Swamp National Wildlife Refuge and the Friends of Harding Township Library. Jane's book of color photography, *Rural Harding: Fleeting Glimpses*, visually explores all of Harding's natural vistas and historic landscapes.

Lois Olmstead is a resident of New Vernon (Harding Township). Her career in realty spans more than two decades. Well known for her multi-million dollar production levels, Lois currently bases her business at Turpin Realtors in Chatham. In 2011, *New Jersey Monthly* magazine named her a Five Star Real Estate Agent. Her work in local communities includes tenure as a member of the Pingry School Parents' Association and time spent as an assistant kindergarten teacher for religious education at Christ the King Church in New Vernon.

If you have an interest in environmental stewardship, education, and advocacy, and seek an opportunity to provide your support and services as a member of GSWA's Board of Trustees or volunteer in another capacity, please contact Executive Director Sally Rubin at 973-538-3500 or send an email message to *srubin@GreatSwamp.org*.

Got Some Time? Volunteer!

There are lots of ways to help GSWA protect our waters and our land. Here are some upcoming opportunities for you, your family, and your friends to consider.

Fall Stream Restoration Project
Sunday, October 13, 9 a.m.—Noon

Bayne Park, Blue Mill Road, New Vernon, NJ

Help GSWA maintain vegetated pond buffers planted in 2011 around Harding Township's Bayne Pond. The buffers improve water quality by slowing down stormwater runoff. They also help absorb pollutants carried by stormwater runoff before they enter the pond. Volunteers will help prepare the buffers for winter by weeding, spreading mulch, and repairing deer and goose fencing.

Register online at *GreatSwamp.org* or call (973) 538-3500. New volunteers will be asked to sign a waiver before beginning work.

Stream Assessment Training for Volunteers
Sunday, November 10, 9 a.m.—Noon

GSWA Office, 568 Tempe Wick Road., Morristown, NJ

If you are interested in becoming a stream monitoring volunteer or just learning more about stream health, this training is for you! An early-morning indoor classroom session helps you learn how to conduct a visual stream assessment and recognize environmental factors that may impact stream health. A late-morning outdoor session helps you practice your new-found skills at a local stream site. By afternoon, you will be a fully trained visual-stream-assessment volunteer ready to conduct a new assessment next spring!

Register online at *GreatSwamp.org* or call (973) 538-3500. New volunteers will be asked to sign a waiver before beginning work. This training may be conducted in partnership with the AmeriCorps New Jersey Watershed Ambassador Program.

GSWA volunteers plant new native trees along the shore of Loantaka Brook Reservation's Kitchell Pond (Morris Township) on May 5, 2013. Part of a newly installed riparian buffer, the trees will work to slow the flow of stormwater into the pond and provide shade that will reduce water temperatures.

Volunteer Work Day at the Conservation Management Area

Sunday, December 1, 9 a.m.—1 p.m.

GSWA Conservation Management Area, 1 Tiger Lily Lane, Harding Township, NJ

GSWA's post-Thanksgiving volunteer day returns for another year!

Help us maintain and improve access to our 55-acre Conservation Management Area (CMA) located in Harding Township. This secluded natural treasure includes areas of upland forest, swamp, marsh, and other wetlands. Tasks will be varied and may include trail maintenance, fence repair, and invasive plant removal. Bring your best holiday-season energy and enthusiasm!

Register online at *GreatSwamp.org* or call (973) 538-3500. New volunteers will be asked to sign a waiver before beginning work.

Important Information for Volunteers

Volunteer events usually take place outdoors, so please dress for the weather. Conditions may be wet, muddy, hot, or cold. Long pants and sturdy shoes or boots are strongly recommended. Long sleeves are optional, but deter insects. Feel free to bring your own water in a reusable water bottle, and your own snacks. All other tools and supplies will be provided. Preferred volunteers are 15 or older.

Event dates, times, and locations are subject to change. Provide your email address or phone number at registration and GSWA will make every effort to inform you about scheduling changes. Updated scheduling information is available via our *Event Information Hotline* at (973) 538-3500 x22.

From time to time, GSWA calls on volunteers to assist with other land stewardship, water quality testing, and fundraising tasks. Calls for volunteers are distributed via email on an "as needed" basis. If you would like to be added to our email list, or need more information, please send an email message to *volunteer@greatswamp.org.*

Please be sure to let us know if you change your e-mail address. Send a note with your name, address, and old e-mail address to *sreynolds@GreatSwamp.org* so you don't miss out on our new monthly e-newsletters.

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