

# WELLSPRING

Your Water. Your Environment. Your Voice.



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Meet 14-year-old Sonja Michaluk



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FROM THE EXECUTIVE DIRECTOR

# New Gov. Should Act on Flooding

by Jim Waltman

**A**s we pass the five-year anniversary of Superstorm Sandy, and with millions of Americans still suffering the ravages of Hurricanes Harvey, Irma, and Maria, resiliency to extreme weather should be a major issue for New Jersey's Governor-Elect, Phil Murphy.

The changing climate and continual creep of development across the Garden State are a double whammy that portends more flood damage to homes and businesses, unless our state and local governments take bold action. The physics is pretty simple: a warmer atmosphere creates more evaporation and more precipitation during storms. As hard surfaces like asphalt and concrete spread, there is less room for water to percolate into the ground, causing more runoff.

These epic storms – Harvey, Irma, Irene, Maria, Sandy – displaced millions of people and exposed many to the health hazards of floodwaters contaminated with fecal matter, industrial toxins and other pollutants from overwhelmed storm and sewage systems.

Governor-Elect Murphy should adopt a four-part strategy to protect our state from the storms that are sure to come during his tenure.

*First*, strengthen protections against development near streams, rivers, and coastlines. As the saying goes, when you're in a hole, stop digging. Allowing more homes and businesses to be built near waterbodies will just lead to more costly damages from flooding. Unfortunately, in 2016, regulations implementing the Flood Hazard Area Control Act were weakened to ease restrictions on such developments. Governor-Elect Murphy should reverse those moves and strengthen protections against building near water bodies.



*Second*, remove imperiled homes and businesses from harm's way. According to a January 2017 report prepared for New Jersey Realtors, nearly 300,000 land parcels are located within in the 100-year floodplain in New Jersey's nine eastern counties. Since Superstorm Sandy, New Jersey has used state and federal funding to purchase and demolish hundreds of flood-prone homes from willing sellers in 11 towns. The new Governor should heartily embrace this "Blue Acres" program to protect people from flooding while providing additional land to soak up flood waters.

*Third*, require developers to build smarter. Every time we cover the earth with hard surfaces that are impervious to water, we cause our flooding problems to worsen. But there are ways to mitigate this problem by requiring businesses and municipalities to install "green infrastructure" systems like rain gardens, and cisterns to catch storm water runoff generated by construction projects, and use the water or allow it to gradually percolate into the ground.

Our state's stormwater regulations require such actions to some degree, but only on large new developments. These measures must be strengthened to protect our communities from the unintended consequences of construction upstream from where people live and work.

*Fourth*, retrofit older developments to address flooding. Much of our state was developed long before there were concerns about runoff or flooding. To really address our flooding problems, we must address developments built before these regulations were adopted.

Governor-Elect Murphy has appropriately called for bold action to reduce our emissions of greenhouse gases so that our state does its part in preventing the worst extremes of climate change. But he must also lead our state in preparing for the inevitable extreme weather that will bring more flooding.



# New Grant Supports More Citizen Science

Sonja Michaluk, 14, discovered her passion for streams and critters at a young age, and the Watershed has been a nurturing eddy where she's developed her scientific prowess. A new grant from the New Jersey Department of Environmental Protection (NJDEP) will allow the Watershed to expand its role in training citizen scientists.



Sonja Michaluk, Citizen Scientist

Michaluk, a sophomore at the Hopewell Valley Central High School, joined the Watershed as a citizen scientist at a young age, sampling local waterways for macroinvertebrates at age six. Four years later, she joined the team examining the chemical makeup of local streams.

"Water is the essence of life. Special magical life surrounds a clean body of water," Sonja said.

The Watershed has been a second home for Sonja, allowing her to explore and develop her scientific skills with increasing challenges and responsibilities, regardless of her age.

Sonja is one of many volunteers for StreamWatch, the Watershed's program for monitoring the health of central New Jersey streams. Stream Watch, now celebrating its 25th anniversary, recently received a \$240,000 grant from NJDEP to expand its community-based programs to monitor water quality throughout the state.

Led by Erin Stretz, the Watershed's Assistant Director of Science and Stewardship, the team will connect with nonprofits, green teams and local agencies to build a statewide network. Erin is highly qualified for this role, bringing her experience as the StreamWatch coordinator and, previously with the Connecticut Department of Energy and Environmental Protection's Project SEARCH monitoring program and with NJDEP's Americorps Watershed Ambassador Program. Erin is a member of the New Jersey Water Quality Monitoring Council and has a strong professional relationship with NJDEP.

The Watershed will be responsible for expanding the range and number of assessments throughout the state as well as developing and maintaining consistent methodology between the various volunteer groups. The Watershed also will work to increase the quality and quantity of volunteer-collected data used by NJDEP.



Erin Stretz, Assistant Director of Science

Sonja said she would encourage others to join StreamWatch, saying those experiences helped spark her interest in chemistry, geology, and herpetology. "StreamWatch sharpens your observational skills and helps you connect the dots so you can develop conclusions from the data you've collected."

Sonja talks about her inspiration when, at age 10, she first spotted a bright orange Long-tailed Salamander, a threatened and endangered species. She said acting as a guardian for stream life is a key reason she wants to keep water clean, safe and healthy.

"In science, there isn't really an age or gender – everyone is just a scientist," she said. Thanks to the NJDEP grant, more young scientists will be able to explore the field, just as Sonja was allowed to discover, pursue her passion, and be herself.

## MONITORING OUR WATER

# Live Streaming Water Quality Data

In partnership with the Stroud Water Research Center, new devices called Mayfly Data Loggers will help the Watershed quantify the impacts of polluted stormwater runoff and provide live data to monitor the health of our waterways.



First day on the job with a Mayfly Data Logger

The new devices, developed by Stroud, collect continuous data and provide real-time observations on stream height, conductivity, turbidity and other metrics. The Watershed staff are working with Stroud to refine the devices in an initial study at Jacobs Creek in Hopewell Township. The Watershed will promote the use of Mayfly Data Loggers by other environmental groups as part of its statewide volunteer water monitoring network.

The devices augment the Watershed's traditional water quality measurements done by staff and summer interns. Each week, water in nine locations at Jacobs Creek and its main tributary, Woolsey Brook, is monitored for chemical and physical health. Biological samples will also be collected in the spring, summer and fall at these same locations.

The Watershed is grateful for the efforts of interns, Cedric Lary (Mercer County Community College), Megan Schupsky (Pennsylvania State University), Nicolas Fribas (Rutgers University), Raffia Ahmed (Rutgers University) and Jennifer Cuevas (Trenton Central High School) who launched the Jacobs Creek water monitoring project last summer. Several of these interns have continued with data collection in the fall, including Raffia who is a Rutgers Raritan Scholar.

The Jacobs Creek study provides baseline observations to help the Watershed staff evaluate the impact of human activity, climate change, and land use on the waterway's health. For example, if the PennEast natural gas pipeline is constructed, it would trench through the headwaters of Jacobs Creek and its tributaries multiple times, increasing sedimentation and degrading biological health.

Data gathered at Jacobs Creek would also allow us to measure positive changes to stream health and resiliency from planned green infrastructure, such as naturalized stormwater basins, in managing polluted runoff from housing developments near the creek.

We're excited to learn more every day! Watch the live data at [thewatershed.org/monitoring](http://thewatershed.org/monitoring)

# PennEast Preps Eminent Domain Fight

The Watershed and other opponents of the controversial PennEast Pipeline have been fighting the proposed 120-mile natural gas pipeline for more than three years. We now await a decision by the Federal Energy Regulatory Commission (FERC) on whether or not the proposal will move to the next steps of a multi-stage approval process.

Regardless of FERC's decision, the Watershed and its allies have vowed to halt the proposed pipeline given the clear threat to New Jersey's water quality. Even if FERC issues its approval, PennEast would still need to obtain permits from the New Jersey Department of Environmental Protection (NJDEP).

In June, NJDEP refused to consider an application for such permits because PennEast lacked the legal authority to submit an application. Additionally, PennEast did not have all of the required information because it had not completed environmental surveys. The company has said it intends to reapply for the required permits.

What's at stake: FERC certification would allow PennEast to secure access to landowners' properties along the proposed route in New Jersey and Pennsylvania where owners have not allowed PennEast's to conduct surveys.

-- *Continued on page 14 ...*



Pipeline construction poses significant potential disturbance to water quality and animal habitat



A floating wetland at Meadow Lakes

## Restoration Projects Take Root

This fall, Watershed science and stewardship staff constructed a 100-square-foot, artificial floating wetland and installed it at Meadow Lakes, a continuing care retirement community in East Windsor. Last year, Joe Greipp, the arboretum director for Meadow Lakes, applied to the Watershed's River-Friendly Business Certification program and inquired about this approach to combatting algae growth in their network of connected lakes and ponds.

Floating wetlands are designed to maximize the surface area of plant roots to absorb nutrients from water. They are an aesthetically pleasing feature that reduces or removes the need for chemical algae control. Science staff have already been monitoring the water quality at Meadow Lakes for a year and these test islands will allow the Watershed to assess the usefulness of floating wetlands as a tool for restoring water quality in the future.

Watershed staff has also initiated a forest restoration project on our own Reserve, where browsing by extremely high deer populations has degraded forest health and biodiversity. By erecting fencing to exclude the deer from an area, removing invasive species, and transplanting native saplings, the protected area can begin the healing process of redeveloping a healthy forest. As part of this project, we will transplant some of the 1,000 tree seedlings from the plant nursery that we established last spring. The project is being led by Senior Naturalist Allison Jackson, with guidance from Bill Brash, a certified forestry consultant.



Deer exclusion fencing

# Middle Schools Take Learning Outdoors

Almost 500 sixth graders visited the Watershed in early October for daylong science explorations and team building as they immersed themselves in hands-on activities at the Watershed Center and Reserve.

School teachers from both the Princeton and Hopewell Valley public schools said these trips give students a chance to live the curriculum and collaborate together while learning in a natural setting.



John Witherspoon 6th graders practice team building

"This trip builds camaraderie," said science teacher Jacques Bazile of the Princeton middle school. "The haiku is observing nature as they get to know each other's feelings through their communication in the poems. The shelter and team building are core; the students pay attention to team dynamics and who led and who followed."

Timberlane Middle School (TMS) students explored creative thinking and problem solving using the science practices from the Next Generation Science Standards. Each team of about 90 students came for one day to learn about the natural world with the Watershed's educators and to get to know their new classmates.



Watershed Americorps Ambassador Gad Lee identifies macroinvertebrates with Timberlane Middle School students

The John Witherspoon Middle School focused on hands-on science, exploration and team building. Each team of about 110 students visited for one day to learn about the natural world with the Watershed's educators.

Those students learned about sustainability and team dynamics. They also observed their surroundings and used their senses for writing haiku poems.



John Witherspoon students explore engineering outside

"Our partnership with the Watershed is invaluable," said Timberlane Principal Nicole Gianfredi. "It is a great opportunity to have science standards come to life in a 'real world' context - all while having fun!"

Students toured the Watershed's LEED-Platinum certified building, teamed up to build shelters in the woods from branches, leaves and Japanese stilt grass, and engaged in observation, data collection and problem solving at the Stony Brook.

Teachers said the outings provide fodder for in class activities beyond science, including social studies and language arts. "This is monumental for them," said science teacher Ellen Bocchieri. "I love the hands on aspect of collecting 'real life' evidence out of the stream coupled with 'real life' problems to solve."

Several of the parent chaperones said the outings enlivened the science concepts and offered hands-on learning outside. Parent chaperone, Kristi Rosenburg of Pennington, said the trips stand out for students. "This is definitely a change of pace and is a withdrawal from technology as they get to know nature," she said. "They have to think differently without Google and other conveniences to discover their answers."

# Winter 2017-18 Calendar

Prepare for an exciting new year of activities at the Watershed Center, featuring events and environmental programs for everyone. Be a part of the magic that makes our work so special. Clean water and a healthy environment depend on you. We hope you will join us for one of our upcoming events. Call 609-737-3735 to get started!

Unless stated otherwise, all programs meet at the Watershed Center, 31 Titus Mill Road, Pennington.

Pre-Registration required. Credit cards accepted by phone. **Members** of the Stony Brook-Millstone Watershed Association are eligible for discounts on most program registration fees. Membership starts at \$35 and helps to protect clean water in central New Jersey.

**Refund Policy:** A full refund will be made if notice of cancellation is received by phone at least 48 hours before a program. No refunds or credits will be given after that time. All returned checks incur a bank fee. Membership transactions are non-refundable.

*“To a person uninstructed in natural history, his country or seaside stroll is a walk through a gallery filled with wonderful works of art, nine-tenths of which have their faces turned to the wall.” - Thomas Huxley*

## Adult Education

### Fall Language of Nature Series

Deepen your understanding of, and appreciation for, the natural world. In collaboration with faculty from NJ colleges and universities, we present a series of courses on “The Language of Nature.” These stimulating six-week courses offer learning for fun and enrichment, and promise a deeper and more luminous connection to our plant and animal neighbors. *No tests, no papers, no stress!* Register online, [www.thewatershed.org/adults](http://www.thewatershed.org/adults).

#### JANUARY 18 - FEBRUARY 22

#### Literary Language of Nature

Thursdays, 7:30-9:00PM, Adults, \$140 (\$90 for members)

Instructor: Dr. Winifred Hughes Spar

Through reading some classic and contemporary nature prose and poetry, examine how writers from Genesis to modern times have captured the natural world, addressing their own time, even as they transcend it. More than a reading group, this course will open your eyes to the varied terrain of nature in literature. New readings for 2018! This course does not have any field trips.

#### MARCH 14 - APRIL 25

#### Birds of New Jersey

Wednesdays, 7:30-9:00PM, Adults, \$245 (\$195 members)

Saturday field trip dates: March 24, April 7, April 28

Instructor: Dr. Luke Butler, Associate Professor, Department of Biology, TCNJ

Get ready for the song of spring by learning about our feathered neighbors. Examine their evolution, morphology and taxonomy, while discovering their behavior, habits and habitats. Identify birds on field trips and learn about bird conservation.

#### MAY 9 - JUNE 13

#### Plants & Wildflowers of Woods, Fields & Roadsides

Wednesdays, 7:30-9:00PM, Adults, \$245 (\$195 members)

Saturday field trip dates: May 19, June 2 and June 9

Instructor: Dr. Kate B. Lepis, Adjunct Professor, Monmouth University

As spring descends, learn about all the fantastic new growth of plants and wildflowers, their morphology, evolution, and pollinator interactions. Find out about the conservation of New Jersey’s plant communities, native plant functions, and discover local habitats during three weekend field trips.

#### ARRIVING THIS AUTUMN...

#### Ecology of NJ Rivers, Streams, Lakes & Ponds

Dates to be announced with instructor, Olaf Jensen, Ph.D., Assistant Professor of Marine and Coastal Sciences, Rutgers University.

## Family & Adult Programs



A Barred Owl gets some shut-eye on a snowy branch

### DECEMBER 16

#### Candle Making Workshop

Saturday, 1:00-3:00PM, Adults & Families, ages 8+

Fee per person: \$20 (\$15 for members)

Celebrate the approaching Winter Solstice and the return of the light by making candles with the Teacher-Naturalists! We will create hand-dipped candles and sand candles. Learn how to shape candles and add embellishments, then go home with your unique handmade gifts!

### DECEMBER 16

#### Candle Dip and Sip

Saturday, 5:00-7:00PM, Adults Only, age 21+

Fee per person: \$30 (\$25 for members)

Learn to make colored tapers the old fashioned way. This is a fun and relaxing craft with beautiful results. We provide everything you need to make candles, plus cheese and snacks. Bring your own wine; we'll bring the corkscrew!

### JANUARY 6

#### Welcome Winter Walk in Princeton

Saturday, 9:30AM-11:30AM, Adults & Families, ages 5+

Fee per person: \$5

Join Education Director Jeff Hoagland on a morning walk at the Mountain Lakes Preserve in Princeton to explore the wonders of the natural world in winter. Discover the unique survival strategies of local plants and animals, learn where animals store food and how they survive the season's relentless chill. Dress warmly, boots are recommended. Presented in partnership with The Friends of Princeton Open Space.

### JANUARY 7 | FEBRUARY 4 | MARCH 4

#### First Sunday Environmental Film Series

Sunday, 1:00PM, Adults & Families, Free - Walk-ins welcome

Visit [thewatershed.org/films](http://thewatershed.org/films) to learn more about upcoming screenings at the Watershed Center.

### JANUARY 12 | FEBRUARY 9 & 10

#### In Search of Owls

Friday, 7:00-8:30PM, Adults & Families, ages 6+

Fee per person: \$15 (\$10 for members)

Begin the evening indoors with a presentation that will introduce you to owls, their calls and adaptations. After a Naturalist-led night hike in search of the nocturnal raptors, we will warm up indoors with a hot beverage. Three dates available; sign up for only one date.

### JANUARY 13

#### Fabric Paint Intensive

Saturday, 10:00AM-4:00PM, ages 15+

Fee: \$130 (\$105 for members of ACP or SBMWA)

Dive into the surprising and diverse world of fabric paints. Come explore a half dozen artistic fabric paint techniques with Master Artisan Lian Sawires in this one day workshop. Color washes, heliographing, salt techniques, scrunching, spider veins, stamping and stencils. Everything is provided, including 6 cotton squares, 2 scarves, color theory, handout and more. \$35.00 material fee to instructor on the day. Registration is exclusively through Arts Council of Princeton. Please call 609-924-8777 or visit classes at [arts councilofprinceton.org](http://arts councilofprinceton.org).

### JANUARY 20

#### The Hibernation Challenge

Saturday, 10:00-12:00AM, Families, ages 10+

Fee per person: \$10 (\$5 for members)

The Hibernation Challenge is a fun and informative way to explore winter ecology and the engineering design process. On a short walk on the Watershed Reserve, explore some strategies of animal survival and play the hibernation game. Afterwards, explore different materials to design a small winter shelter to protect your "creature". Can you craft the ultimate winter shelter in the Hibernation Challenge?

### JANUARY 27

#### Groundhog Day Celebration

Saturday, 10:00 – 11:30AM, Families, Free

Celebrate Groundhog Day at the Watershed Reserve with a hike to check out several burrows of these furry weather forecasters. Learn about their life history and role in the ecological community and enjoy the challenge of the hibernation game. After our hike and game, warm up by our outside fire to enjoy roasted marshmallows and a hot beverage. Presented with funding from Washington's Crossing Audubon Society.

## FEBRUARY 3

### Botanical Drawing: Weeds in Winter

Saturday, 11:00AM-3:30PM, ages 16+

Fee: \$65 (\$55 for members of ACP or SBMWA)

Celebrate the endless variety of structures and the fascinating shapes and textures of the weeds of winter. Join a Watershed naturalist on an exploratory walk, followed by a drawing workshop led by Arts Council of Princeton Botanical Illustrator Ruth Councill. Participants will collect specimens during the walk for later use in the studio. After lunch (please remember to bring a sack lunch; hot beverages will be provided), the group will spend time with specimens, studying and sketching them under Ruth's guidance. Participants should come dressed for wintery weather on the trails. Registration is exclusively through Arts Council of Princeton. Please call 609-924-8777 or visit classes at [artscouncilofprinceton.org](http://artscouncilofprinceton.org).

## FEBRUARY 3

### Storytelling: Weaving Winter Tales

Saturday, 3:00-4:30PM, Adults and Families, ages 7+

Fee per person: \$15 (\$10 for members)

Step away from the screen, cozy up and listen to our storytellers spin yarns from several cultures. Spark your imagination with stories both funny and poignant. Enjoy a hot beverage as you lend an ear to stories from far and near.

## FEBRUARY 10

### Trail Cameras - Finding Winter Denizens

Saturday, 10:00AM –12:00PM, Adults & Families, ages 8+

Fee per person: \$10 (\$5 for members)

Trail cameras are valuable research tools, offering glimpses into wildlife behavior, nest predation, population size and more. On this family hike, join Naturalist Tyler Christensen and visit some hidden trail cameras on the Watershed Reserve to view the latest images of resident animals while learning about the cameras' role in science.

## FEBRUARY 17

### The Great Backyard Bird Count Hike

Saturday, 9:00–11:00AM, Adults & Families, ages 6+

Fee per person: \$15 (\$10 for members)

The Great Backyard Bird Count (GBBC) is a fun, and easy event that engages bird watchers of all ages in counting birds to create a real-time snapshot of bird populations. Participants are asked to count birds and report their sightings online. Walk with one our naturalists and take part in this exciting citizen science project.

## FEBRUARY 24

### A Year on the Stony Brook – Ettl Farm Trail

Saturday, 9:00–11:00AM, Adults & Families, ages 6+, Free

Join us as we explore different stretches of the Stony Brook throughout the seasons. We will focus on seasonal ecology, meeting a variety of plants and animals, including those that indicate water and environmental quality. Follow the Ettl Farm Trail through the forest along the Brook to the "Big Bend" where we will search for eco-relics. Presented with funding from Washington's Crossing Audubon Society.

## FEBRUARY 24

### Winter Fairy Land

Saturday, 10:30–1:00PM, Families & Children, ages 2-12

Fee per child: \$15 (\$10 for members) Parents attend free!

Celebrate winter with the mystical creatures of the Watershed Reserve. Don your fairy attire for dancing and magical games. Spend time indoors listening to winter tales, making festive arts and crafts, and even creating a cozy fairy abode to take home. If you're brave, venture outside for some winter wonder exploration.



Enjoy a sweet treat at our Maple Sugaring Brunch!

## MARCH 3

### Maple Sugaring Brunch & Hike

Saturday, 2 sessions: 9:30–11:30AM or 11:00AM-1:00PM, Adults & Families, Fee per adult: \$22 (\$16 for members)

Fee per child ages 3-13: \$15 (\$12 for members)

Join us at the Watershed Center for this popular annual event. Hike with the Teacher-Naturalists to our tapped trees, learn about the process to convert maple sap to syrup and visit the evaporation station. The highlight of the morning is a delicious pancake brunch, served with our homemade maple syrup made from trees on the Reserve! Part of this program is conducted outdoors – winter gear, including boots, is necessary. Sign up for one session – registration and prepayment are required. *No charge for children under age 3.*

## Watershed Nature Camp 2018

### Visit a Camp Open House!

SATURDAY, JANUARY 13 - 2:00-4:00PM

WEDNESDAY, JANUARY 31 - 6:00-7:30PM

SATURDAY, FEBRUARY 24 - 2:00-4:00PM

Summer will be here before you know it! Kids ages 5-16 and their families can learn more about 2018 Watershed Nature Camp at any of our three open houses. RSVP is not required, drop-ins are welcome! *Online registration opens January 19 and early bird discounts end March 1.*

JANUARY 20

### Sensational Camp Fair in Lawrenceville

Saturday, 12:00-3:00PM, Families, Free

Meet Camp Director Tammy Love at the camp fair in the Quakerbridge Mall to learn about Watershed Nature Camp 2018!



Watershed Nature Camp (WNC) has been focusing on the natural environment for over 40 years. Our camp staff members are engaging, well-qualified, and love teaching children. We keep campers active all day long in play, learning, making friends, and challenging themselves outdoors! Older campers enjoy cookouts, campouts, day trips, and overnight adventure trips. NEW this year for our 5 year-old campers is a larger choice of camps and a full day schedule!

## Programs for Children

### Weekly Preschool Nature Classes

Tuesdays, 10:00-11:30AM & Wednesdays, 1:00-2:30PM

Class fee per child: \$15 (\$10 for members)

Register and pay for 5 classes, receive a 6th class free!

Children 3-5 years old learn about nature while exploring the out-of-doors with one of the Teacher-Naturalists. Each class includes outdoor exploration, stories and simple crafts. A parent must stay with any child younger than 4. Class size is limited and registration is required.

### Winter Session 1

JANUARY 9 & 10 - Story Time Winter

JANUARY 16 & 17 - What's in a Cone?

JANUARY 23 & 24 - Tracks and Trails

JANUARY 30 & 31 - Groundhog Day

FEBRUARY 6 & 7 - Winter Trees

FEBRUARY 13 & 14 - Reptiles are Fun

### Winter Session 2

FEBRUARY 20 & 21 - Winter Winds

FEBRUARY 27 & 28 - Sensible Senses

MARCH 6 & 7 - Bears

MARCH 13 & 14 - Life Underwater

MARCH 20 & 21 - Secret Life of Rodents

MARCH 27 & 28 - Birds of Prey Play

DEC 11 | JAN 8 | FEB 12 | MAR 12 | APR 9

### Tiny Tot Walks

Mondays, 10:30-11:30AM, Children 18-36months (with an adult). Class fee per child: \$15 (\$10 for members)

You are never too young to start exploring outdoors! You and your toddler will experience nature as we share walks on the Reserve, art activities and story time. Tiny Tot walks provide a fun introduction to animals, plants and nature in general. Dress for the weather because we always go outside. Class size is limited and registration is required. All children must be walking and accompanied by an adult.

### Home School Nature Classes

Mondays, 10:00-11:30AM, Families, ages 5-12

Class fee per child: \$15 (\$10 for members)

We dedicate one Monday per month to families who home school their children. Each month we will offer a different topic. Students may be divided into two groups to ensure the activities are age appropriate.

DECEMBER 18 - Winter Nature Crafts

JANUARY 22 - The Frozen Forest

FEBRUARY 26 - Maple Sugaring

MARCH 26 - Birds

APRIL 23 - Water Wonders

# A Common Love

by Jeff Hoagland

Anne Wieland of Homer, Alaska, grew up on the Stony Brook, in Princeton, near the Hun School. She fell hard for the Brook though her relationship started a few decades before mine in the 1940s. Seeking solace, Anne was drawn by the song of the Brook, the carpet of spring ephemerals and the varied and fascinating creatures. Here she found endless enchantment and her spiritual mother.

Anne was captivated by the fish, some cruising invisibly yet leaving a wake, others shifting about in schools, with flashes of silver. Watching fish feeding and forming perfect ripples, Anne decided she must get a fishing rod, which provided endless hours of entertainment and meditation.

She has maintained her relationship with the Stony Brook over the years with regular visits to Princeton. Wandering the floodplain, Anne still finds magic and relics along the Brook's edge. She returns to her sitting rock out in the middle of the Brook. Here, surrounded by brooksong, she is at peace and at home.

Sadly, I don't remember my first encounter with the Stony Brook. There were so many waterways before, back when a bicycle was my ticket to adventure. Steele Run, Jacobs Creek, the Delaware and Raritan Canal, the Delaware River - they all flowed through my early formative years. These vibrant waterways shaped me, informed me, they were my home away from home. It wasn't until later, during college, that I began my love affair with the Stony Brook.

I imagine our first meeting was fleeting, involving a failed attempt to catch fish or maybe just fantasizing about them. Later, I rediscovered the Brook on the Newlands Research Reserve, now known as the Watershed Reserve, during the summer of 1980 when a college roommate was doing trail work here. Slowly that summer, a trail penetrated the verdant depths of the oak-hickory forest, past old worn cattle paths and some crooked apple trees, through a boot-sucking red maple swamp and out to the flood plain of the Stony Brook. It was love at first sight.

The Brook was a wilderness; not a human in sight. Kingfishers cruised beneath arching river birch trees; oily muskrats groomed on muddy banks; and two-lined salamanders pa-



From left, Executive Director Jim Waltman, Anne Wieland with longtime companion, Dr. Todd Gustafson, and Education Director Jeff Hoagland

trolled for insects beneath the broken red shale. Tiger swallowtails and red-spotted purples sipped the colorful blooms of cardinal flower, golden alexanders and square-stemmed monkey flower. Bullfrogs bellowed poolside and toadlets poured forth onto the land, hidden beneath the streamside vegetation. I was completely seduced.

In 1984, the Brook became the heart of my existence when I found a home, literally and figuratively, at the Watershed. What a gift! Living mere minutes from the Stony Brook's banks, our relationship blossomed. I became familiar with every stretch and every mood of the Brook. I catalogued and communed with a wide assortment of stream critters. I became a secret rock-skipping champion. The best fishing hole doubled as my skinny-dipping pool. I perfected the art of disappearing.

In 1985, Anne discovered the Watershed Association. She was drawn to our mission of keeping water clean, healthy and safe - someone was looking out for the health of her sacred Brook! She visited the Buttinger Center to learn about our programs and in the process, we met, two kindred spirits, both speaking the language of love for the Stony Brook.

We have both dedicated our lives to working for the environment but this common love for the brook has become the core of our relationship. With each visit back to NJ, Anne and I share the joys and trials of protecting the environment. We visit our old friend, no matter the season. And while we celebrate our mutual love for Stony Brook we recognize that we are not alone. Almost 70 years ago, the Watershed Association began its love affair with this Brook and others like it. *Read more of Anne's story online at [thewatershed.org/stories](http://thewatershed.org/stories)*

# Milestone on the Millstone

**W**ater always flows downstream, and conditions in one waterway can have an impact on all waters into which it flows. The Lower Millstone River is the final stop for waters in the Stony Brook-Millstone Watershed before they converge with the Raritan River and Raritan Bay. What happens here can be indicative of how the rest of the watershed fares – and as many other subwatersheds go, conditions are fair to good.

The New Jersey Department of Environmental Protection's Integrated Water Quality Monitoring and Assessment Report has shown a general stabilization of water quality throughout the state. Impaired waterways are improving, while formerly excellent waterways are degrading. This trend is reflected along the lower stretch of the Millstone River, from Lake Carnegie downstream to Manville.

As a useful indicator of the general health of a stream, macroinvertebrate populations indicate fairly good water quality in the Lower Millstone, despite excess levels of nitrate and phosphate. A healthy community of macroinvertebrates relies on stable and diverse habitats along the stream bottom.

The Weston Mill and Blackwells Mills Dams dramatically altered the structure of the ecosystem for several miles along the Lower Millstone River. The river channel filled with sediment upstream of the dams, smothering natural rocky habitats along the river bottom. Macroinvertebrate communities surrounding the dams lost diversity, the water column became more turbid, and waters warmed and lost dissolved oxygen to the air.



**StreamWatch**  
is celebrating 25 years  
of Monitoring Your Water!

[thewatershed.org/stream-watch](http://thewatershed.org/stream-watch)

## Scorecard

Aquatic Life .....	Yellow
Nitrogen .....	Orange
Phosphorus .....	Red
Dissolved Oxygen .....	Yellow
pH .....	Green
Temperature .....	Yellow
Turbidity .....	Yellow
Bacteria .....	Red
Impervious Cover .....	Yellow
<b>Overall Health</b> .....	Yellow

## Rankings

Green = Excellent Yellow = Good Orange = Fair Red = Poor

After successfully removing the Weston Mill Dam in August, we can already see the river repairing itself. Water levels have dropped. Sediment is finally moving through the ecosystem revealing the cobble that had been hidden underneath. We are working through many years of chemical data to uncover other trends and we will continue to monitor the area extensively to chronicle the other effects of dam removal on water quality.

We hope to witness the revitalization of the Lower Millstone River. So with this in mind, next stop – Blackwells Mills Dam!

## Acknowledgements

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PROVIDING LIFELONG LEARNING

# Exciting Programs for Teens and Adults

Thousands of people explore the Watershed Center & Reserve, attend educational programs, or join us for events. Volunteers don work gloves as they help with stream cleanups, tree plantings, or another conservation efforts. These Watershed experiences give visitors a chance to learn about our environment and how we all play a role in stewardship.

We teach people of all ages about the natural world around them. Environmental education for adults ranges from owl banding to tree identification. And during the summer, high school students wade into streams and design green buildings at our Watershed Academy.



The Watershed Academy looks at "people pollution" in our water



High school students take water samples in the Stony Brook

We're offering new courses at this summer's **Watershed Academy**. These experiences will engage high school students in science and stewardship while encouraging their awareness, action, and leadership skills. Students will explore environmental careers alongside professors and professionals. Opportunities to work with Watershed staff on related independent study and internships are available.

**Green Architecture** – Design environmentally friendly structures working one-on-one with green architects.

**Climate Change** – Discover what drives climate change and the impact of human activities on the environment from a climate scientist.

**Clean Water** – Learn the fundamentals of how “people pollution” mixes with rainwater and creates threats to our environment. Work alongside the Watershed staff and Director of Science, Steve Tuorto, PhD., on NJDEP-funded water quality restoration projects in our communities.

**Field Science** – Go on an outing everyday with Watershed staff to learn various ecological field science techniques. Trips include visits to the Rutgers University Raritan Research Vessel and a marine science field station.

**Registration opens online January 19 at [thewatershed.org/academy](http://thewatershed.org/academy)**

For adults who enjoy learning outside, join us for this year's slate of classes in the **Language of Nature** series. From January to September, the range of choices will include wilderness and nature readings, New Jersey birds, plants and wildlife, and state water ecology.



These classes have no tests, no papers and no stress! Explore in-depth topics from professionals in six weeknight classes - complete with weekend trips.

**Sign up at [thewatershed.org/adult-education](http://thewatershed.org/adult-education)**



Observe the natural world from a new perspective

## GET INVOLVED

# Gift a Watershed Membership this Holiday Season

A gift of membership allows your friends and families to be part of the Watershed team, protecting our water and environment in central New Jersey.

Members receive discounts on programs and activities at the Watershed Center, as well as purchases in our Nature Shop and on our TapWatch home water testing kits.

Explore our 10 miles of hiking trails, visit our green building, and enroll yourself or a family member in any of our classes –banding owls, tagging butterflies, tapping trees, and much, much more.

Adventure starts outside. [thewatershed.org/gift](http://thewatershed.org/gift)



A Naturalist introduces guests to a resident butterfly

## PennEast Preps Eminent Domain Fight *... continued from page 5*

Since FERC rarely denies permit applications like this one, the likely outcome is that PennEast's application will move forward. Even so, PennEast would still have major hurdles to overcome before construction could start.



An endangered Bobcat spotted along the proposed pipeline route.  
Photo by Tyler Christensen

First, even if FERC does issue a “certificate of public convenience and necessity,” PennEast would still need to acquire easements along the proposed route. This means either property owners voluntarily negotiate an easement or force PennEast to take them to court to gain access. Next, PennEast would need to complete a variety of environmental studies to satisfy NJDEP. These include mapping the location of wetlands and waterways along the proposed route as well as surveying for threatened and endangered species.

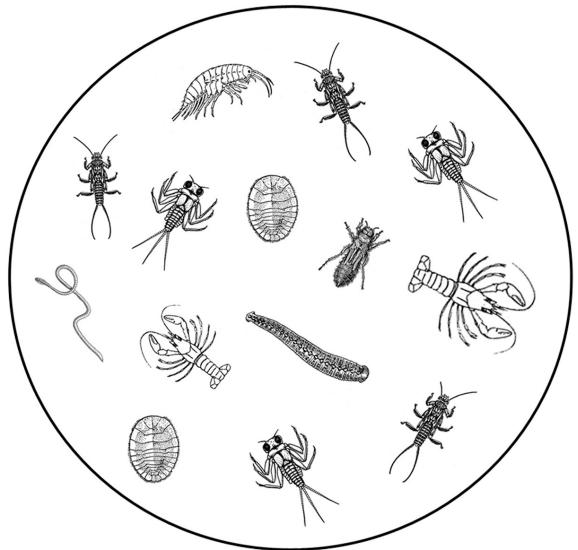
Only after the required state environmental, geological, and archeological surveys are completed, would PennEast be able to reapply to NJDEP for necessary Clean Water Act permits.

The Watershed and its allies have laid the ground work with NJDEP and other agencies to hold PennEast to the strictest standards. We will continue to urge NJDEP to reject any application that does not have all of the required surveys and information.

Ultimately, our organization does not believe that PennEast can demonstrate that the construction, operation and maintenance of the pipeline will not violate the state's water quality standards. Without this demonstration, NJDEP cannot issue a 401 Water Quality Certification and PennEast cannot proceed. With our allies, we will continue to review, educate and advocate for the protection of New Jersey's natural resources. To follow our efforts, visit [thewatershed.org/penneast](http://thewatershed.org/penneast).

# Macro Discovery Mini Game

Our StreamWatch volunteers monitor water quality by testing chemistry, measuring bacteria levels, and assessing the biological and physical health of our waterways. Count the critters inside this sample and add up their points for a biological score. Discover the health of your water at [thewatershed.org/streamwatch](http://thewatershed.org/streamwatch)!



3 Points Each			2 Points Each			1 Point Each	
Water Penny	Mayfly	Stonefly	Crayfish	Scud	Dragonfly	Leech	Aquatic Worm

**EXCELLENT**  
34+ pts

**GOOD**  
27-33 pts

**FAIR**  
20-26 pts

**POOR**  
14-19 pts

*Keeping water clean, safe and healthy is the heart of our mission.*

*We work to protect and restore our water and natural environment in central New Jersey through conservation, advocacy, science and education.*

Visit us online to show your support. Stay informed, get involved, donate.  
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**Stony Brook-Millstone Watershed Association**  
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