VOL. 66, NO. 3 Fall 2019

WELLSPRING

A publication of The Watershed Institute. Keeping central New Jersey's water clean, safe, & healthy since 1949.

Harmful Algal Blooms - a Major Water Pollution Issue ...p4

Warm weather and polluted runoff are creating threats for people & pets.

A Problem in Pike Run ...p12

StreamWatchers make the case for action.

Building a Legacy p2... on the Farm

The Watershed Institute

FROM THE EXECUTIVE DIRECTOR

Building a Legacy on the Farm

by Jim Waltman

For almost 30 years, Farmer Jim Kinsel has ordered seeds, planted vegetables and harvested fields for Honey Brook Organic Farm on acreage leased from The Watershed Institute.

The farm on the Watershed Reserve traces its origins to benefactor Muriel Gardiner Buttinger, who purchased the land in 1982 from the Wargo family and donated it to the Watershed with the goal of creating a "model organic farm." The farm was known as the Watershed Organic Farm until the early 2000s when the name was changed.

Honey Brook Organic Farm was one of the first certified organic farms in New Jersey, and Kinsel and his wife, Sherry Dudas, pioneered the Community Supported Agriculture (CSA) model in central New Jersey. Over the years, they've grown their CSA to feed more than 2,500 families and expanded cultivation from the original 3.5 acres to about 60 acres on the Watershed Reserve and additional land they purchased in Chesterfield, NJ.

The farm has provided healthy produce for tens of thousands of families and helped educate residents about the origins of their food and environmentally sustainable farming practices. Kinsel and Dudas have demonstrated that organic farming can be successful financially, while maintaining strict environmental protections.

Farmer Jim Kinsel and Watershed Director Jim Waltman.

Climate change is both a challenge to Honey Brook's operation and a compelling reason to support the farm by purchasing an annual farm share. The heavier rainfalls we've received in recent years have complicated the planting and harvesting of crops, although longer growing seasons have meant more weeks of ripe produce (Kinsel and Dudas say they have a bumper crop of heirloom tomatoes this fall).

The farm helps address climate change in at least two ways. First, produce grown here in central New Jersey has a much smaller "carbon footprint" than produce flown, shipped, and trucked thousands of miles from remote locations across the country and the globe. Transportation of produce to super markets and direct-to-home delivery by national corporations consumes a substantial amount of fossil fuel, which releases greenhouse gasses that cause global warming.

Second, the farm is implementing strategies to sequester carbon in the soils. The Intergovernmental Panel on Climate Change has reported that unsustainable farming practices are a major contributor to climate change. Just as it has modelled the organic CSA model, Honey Brook Organic Farm is seeking to model practices that mitigate climate change rather than exacerbating the problem as unsustainable agriculture does.

The Honey Brook Organic Farm will offer 2020 Early Bird applications from Sept. 30, 2019 – Jan. 15, 2020 that will extend the 2019 membership fees for the upcoming 2020 season. These Early Bird applications help the farm better plan for the upcoming season and purchase the correct amount of seeds and other supplies. Membership fees will increase for applications received between Jan. 16, 2020 - May 15, 2020. There will not be pro-rated memberships for the 2020 season.

Visit **www.honebrookorganicfarm.com** for more info.

PROVIDING ENVIRONMENTAL EDUCATION

Students Confront Climate Change

Sixteen high school students explored global warming problems and remedies during Climate Change Academy, hearing from experts in classrooms, laboratories, and field trips.

Academy students tour Princeton University's innovative cogeneration plant.

As one of five week-long courses in the Watershed Academy for high school students this summer, the class aimed to strengthen students' understanding of the impact of climate change on water supplies, wildlife populations, human diseases, ocean acidification, and weather patterns. The academy also sought to inspire students to consider careers in environmental science and engineering, renewable energy and energy efficiency, and related fields.

Giancarlo Grullon, 15, of Trenton said the academy provided a broad overview on "climate change, things like hydrogen fuel cells, how greenhouse gases affect our environment, and how we need to stop climate change before it gets too hot."

Several experts, including Jennifer Brady from nonprofit Climate Central and state climatologist David Robinson, illustrated the impacts with computer modeling that showed rising waters submerging Philadelphia, melting mountain snowpacks and heavy rains contributing to soil erosion.

At Princeton University engineering labs the students met scientists working on solutions, such as soil carbon storage, emissions controls, and the development of sustainable concrete.

On another field trip, the students learned about alternative energy by visiting the off-the-grid Hydrogen House, fueled entirely by solar panels and hydrogen fuel cells. Owner and inventor Michael Strizki showed the students how he took energy from the sun, stored it and used it to power everything on his property, including his lights, air conditioners, motorcycles, cars, and other household devices.

Students get a closer look at a hydrogen powered car while touring the Hydrogen House in Hopewell.

Back at The Watershed Institute, the students engaged in a Climate Change "mock" UN game and explored the global interconnectedness of energy use. The game simulated how developing countries are impacted by the energy consumption of developed nations and how negotiations could alter climate change worldwide.

"We not only learned about how much of a problem climate change is, but what we can do about it. We can reduce carbon gasses, switch to hydrogen fuel-cell cars and electric cars …" said Jacob Brown, 13, of Hopewell. "We can install solar panels and wind turbines, we can reduce all greenhouse gasses and start to switch to more renewable energy."

The students finished the week by demonstrating what they learned with presentations, poster boards and interactive games they created before an audience of their families and Watershed staff and trustees.

Look for announcements about registration for Watershed Academy 2020 in late fall at thewatershed.org.

SAFEGUARDING OUR COMMUNITIES

Harmful Algal Blooms Emerge as a Major Water Pollution Issue

The issue of harmful algal blooms exploded across the country during the hot summer of 2019. Pet dogs died after swimming in HAB infested waters in several states and state environmental agencies closed numerous lakes and ponds to public access because of the outbreaks, which can produce neurotoxins dangerous to people and animals.

The New Jersey Department of Environmental Protection (NJDEP) has tested and confirmed 24 HAB advisories in local recreational lakes so far this year; in 2017 and 2018, there were a total of 42 such HAB advisories. You can review a listing of all of the 2019 HABs at www.nj.gov/dep/wms.

Rosedale Lake has been closed to recreation since early July.

Most types of algae are not harmful, but particular species of cyanobacteria can bloom to form a coating on the surface of a waterbody. Not all blooms form in the same fashion, but visuals of "pea soup" or "spilled paint" can serve as a warning to avoid and report a recreation area. "Green streaks" parallel to shorelines and "large green dots" are other descriptive give-aways for possible HAB formations that are most typical in late-summer and early fall. NJDEP recommends calling their hotline (1-877-WARNDEP) to report a suspected HAB.

With climate change, we can expect to have more days of warm temperatures. These warmer days, according to the Environmental Protection Agency, favor more HABs as the average winter temperature creeps above the freezing point. Pests, insects, and harmful bacterias now persist through a cold season that would ordinarily reduce or eliminate these threats.

Rosedale Lake in Hopewell Township, NJ was among the waterbodies closed to recreation this summer due to the growth of HABs. Residents and parkgoers have been cautioned to avoid activity on or near the lake, and posted signs warn of threats to humans and pets.

The Rosedale Lake closure came on the heels of a widely-reported HAB advisory for Lake Hopatcong in Morris County, the state's largest lake. Spruce Run, a Hunterdon drinking water reservoir and popular recreation area, is experiencing its second HAB event of the year.

HABs develop when certain kinds of blue-green algae encounter ideal conditions and form dense blooms. These conditions include sunlight, warm temperatures, high nutrients, and calm water.

Dogs & wildlife are also vulnerable to the effects of HABs.

Another condition necessary for a HAB to occur are high levels of nutrients, like nitrogen and phosphorus, entering the lake. One of the most common sources of nutrients is polluted runoff, especially fertilizers that are washed off of lawns, gardens, farms and other surfaces into waterways after rainfall. High levels of nutrients not only cause HABs, but can also lead to low levels of dissolved oxygen in our lakes. After the algae blooms feed off excess nitrogen and phosphorus in the water, it dies off and the decomposition consumes dissolved oxygen. The resulting low levels of dissolved oxygen harms aquatic life and can, if severe enough, lead to fish die-offs.

Photo by Donna Macalle-Holly of the Lake Hopatcong Foundation

Runoff from homes and businesses contribute to HABs.

The toxins produced by these HABs can cause various health impacts to people and animals. According to NJDEP, contact with HABs can cause sore throat, eczema, runny nose, headaches, diarrhea, rashes, and other skin and digestive issues. Severe reactions may also result in liver and neurological effects. The impacts vary depending on the type of algae species and the severity of the bloom.

Proper stormwater management will reduce the amount of nutrient-rich runoff that reaches our lakes. This is why The Watershed Institute has been urging the State and municipalities to strengthen regulations and ordinances that regulate stormwater management and create stormwater utilities to help address the problem.

Enhanced stormwater treatment will reduce both the amount of runoff and the concentration of pollutants that flow into our waterbodies. If we can reduce the amount of pollution that is in stormwater runoff, we can reduce the threat of HABs.

You can learn more about The Watershed Institute's work on managing polluted stormwater runoff at thewatershed.org.

Did You Know... *New Jersey is one of the fastest-warming states in the nation? Our average temperature has climbed by close to 2° Celsius (3.6°F) since 1895 — double the average for the Lower 48 states. Only Alaska and Rhode Island have warmed faster.*

The Washington Post | "2°C: Beyond the Limit" - www.washingtonpost.com/graphics/2019/national/climate-environment/climate-change-america/

SPEAKING OF NATURE

Hitting a Fish

by Jeff Hoagland

I grew up under the influence of the Delaware River which was just over a mile from my home, as the crow flies. The green landscape beneath the crow's flight, was home to countless adventures and lessons. These were often centered on water.

As curious, feral children, we explored our local waterways. They invited us to follow them, fording them as we pleased with a hop, skip and jump. We listened to their music, had stickboat regattas, discovered a myriad of wild creek-loving plants and animals, and regularly lost track of time. Overtime, we migrated downstream and discovered the Delaware River. This was the western limit of our escapades.

Campers skip stones along the Stony Brook.

The river was an obstacle, presenting an unfathomable expanse of water. It did not offer the same invitations as the smaller waterways. At Washington Crossing, where we explored, the river is almost 1000 feet across. We couldn't begin to contemplate the scale of this. Almost 400 miles long, the Delaware is the longest undammed river east of the Mississippi. Borne in the Catskill Mountains of New York, the Delaware drains over 14,000 square miles of land in five states – New York, New Jersey, Pennsylvania, Delaware, and Maryland.

With such an expansive surface, the river did make one very clear invitation to us. Here we perfected our stone skipping skills, an endless supply of flat, fractured red shale at our feet. "One – two – three – four – five." You would count the skips, the perfectly circular ripples. Sometimes you'd sail that stone right atop the water in an uncountable sequence of skips. Sometimes you didn't. "I hit a fish!" That was a good thing to say when your stone abruptly stopped skipping.

If you laid down a good run of skips, your stone seemed to get swallowed by the current of the river. Averaged over the course of a year, the flow of the Delaware is about 12,000 cubic feet per second at Trenton. That is over five million gallons of water flowing by every minute! That's a good thing – the Delaware River provides drinking water for over 15 million people, not to mention countless other organisms.

On the banks of the river I perfected one other skill – daydreaming. Quietly watching all that water flow induces stream-of-consciousness wanderings of the mind. This is a state of mind that sparks the imagination and spawns creativity. It is restorative and resuscitative. On the banks of this river, on a warm, blue-sky day, I could join George Washington on his crazy, heroic nighttime crossing of the ice-choked Delaware on Christmas night in 1776. With 2400 Revolutionary soldiers!

George wasn't the only one to wander into my daydreams. I often contemplated Tom Sawyer and his adventures, longing to give myself to the pull of the river on a homemade raft adventure. I later revisited this daydream, with my daughter Sydney.

Together, when she was in elementary school, we constructed a raft of milk cartons and scrapwood in the verdant shade of our backyard. We loaded the raft onto the car, and traveled to the river town of Lambertville to launch the raft below the old iron bridge. The raft wasn't big enough to hold the both of us, or even me for that matter, so I pushed the raft with Sydney on it through the shallows and into the current. It was a short-lived adventure, one that may have entertained me more than my daughter.

I've maintained my relationship with the Delaware. I have floated lazily on tire tubes on endless summer days; fished her waters, successfully, for smallmouth bass, and unsuccessfully, for shad; watched eagles and osprey tussle over fish; hunted for ancient sea fossils; camped along the river of stars; and paddled on her living waters.

The starting place for any relationship is simple – go meet the river. Sit on her banks. Be attentive. The river, for a moment, may wash your cares away. A conversation will emerge. Make it a great beginning.

Fall 2019 Calendar

Jump into the fall fun with The Watershed Institute! Join our programs & events with the whole family. Be a part of the magic that makes our work so special. Clean water and a healthy environment depend on you.

Visit us online to register for events, renew your membership, and automatically receive member discounts securely from any device. Pre-registration is required. Programs with low registration are subject to cancellation.
Watershed members receive 20% off most programs when signed in.

thewatershed.org/events

FRIDAY, SEPTEMBER 13

Creepy Spider Hunt

7:30-9:00PM, General Audience, ages 5+; $5 per person

Crab spiders, jumping spiders, wolf spiders, orb and funnel weavers and more! Join our annual night hunt with nocturnal naturalist Jeff Hoagland. Bring your flashlight or headlamp to use as we navigate the trails in search of many different types of spiders.

Fact: The jumping spider is both cute and totally harmless.

WED. | SEPT 18 | OCT 16 | NOV 13 | DEC 11

Out There Reading Group

7:00-8:30PM, Adults; Free

Facilitator Jeff Hoagland invites you to enjoy this unique and relaxed reading group in exploring the wide and varied terrain of nature writing, wildness and wilderness. Each month, readers will receive by email, a curated collection of poems and prose focused on a specific topic or author. Register for individual sessions or all. Light refreshments provided. Topics listed online.

Don't miss out on the tie-dye fun for all ages!

FRIDAY, SEPTEMBER 20

Tie-dye Day

5:00-7:00PM, General Audience; $5 per participant

Campers, are you missing your tie-dye days already? Watershed Nature Camp participants and their families can bring 3 adult-size t-shirts (or the equivalent amount of clothing or fabric) to dye! Using red, yellow, and blue, create your own colors and patterns! Feel free to bring a friend too!

FRIDAY, SEPTEMBER 20

Campfire Storytelling

7:00-8:30PM, General Audience; FREE

Step away from the screen and listen to our storytellers spin yarns from several cultures. Spark your imagination with stories both funny and poignant. Roast a marshmallow as you lend an ear to stories from far and near. Co-sponsored by the Washington Crossing Audubon Society.

WEDNESDAYS | OCTOBER 2, 9, 16, 23, & 30

The Art of Fly Tying

7:00-9:00PM, Adults; Free

This five-session workshop, taught by members of the Ernest Schwiebert Chapter of Trout Unlimited, will enhance your enjoyment of fly fishing. Though it can be intimidating to make flies, catching a fish on a fly that you tied yourself is exciting and very satisfying. This course covers basic fly tying techniques and will ease you into this creative art. Bring your own tools, or use ours.

SATURDAY, OCTOBER 12

Family Fossil Hunt

10:00AM-2:00PM, General Audience, ages 6+; $15 pp

Step back to a time when the ocean covered New Jersey. We will explore Big Brook and search for fossilized shark's teeth, seashells, and squid. Fee includes bus transportation to Big Brook Park in Monmouth County, use of our fossil sifters, and experienced guide. Be prepared to stand in several inches of water to search for fossils.

WEDNESDAY, OCTOBER 16

Poetry Reading – Frost Flowers by Winifred Hughes

7:00–8:30PM, Adults; Free

The poems of Winifred Hughes place us in the natural world, our senses heightened among shifting clouds of blackbirds and the icy grip of the Stony Brook. Wielding more than keen observation and the deft use of language, the poet transports us with her deep sense of intimacy and unwavering curiosity as she chronicles the ways of nature. Join us to celebrate Winnie's latest book, Frost Flowers, as she reads selected poems and shares some thoughts about the interplay between nature and writing. Each winter Winnie conducts the Literary Language of Nature course at The Watershed Institute. Her book can be ordered here: *www.finishinglinepress.com/product/frost-flowers.*

Winifred Hughes presents her new book - Frost Flowers

SATURDAY, OCTOBER 19

Rocktober Hike

1:30-3:30PM, General Audience, ages 6+; $5 per person

Come enjoy a moderate hike through the Sourland Mountains, learning about the rugged rocks that make this place so special. Wear sturdy and comfortable walking shoes/boots and bring a water bottle.

FRIDAY, OCTOBER 25

Volunteer Pumpkin Carving

5:30-8:00PM, General Audience, ages 12+; Free

Can you carve a pumpkin? We need volunteers to carve scores of Jack O' Lanterns in preparation for our Origins of Halloween Night Hike. Bring your own knife or carving tools. Donations of pumpkins very welcome!

Find your pumpkin lit up on our Halloween night hike!

SATURDAY, OCTOBER 26

The Origins of Halloween Night Hike

Hikes every 15 minutes from 6:00-8:30PM, General Audience, ages 5+; $18 per person

Join us on a journey through the woods on a crisp autumn night. You will follow your guide on a trail of glowing Jack O' Lanterns; along the way you stop to meet the characters in an Irish Folktale that unfolds along the path. While other Halloween programs are designed to frighten, our goal is to educate and enchant. We attempt to make the children feel comfortable in the outdoors, and hope to engender a feeling of awe and respect for nature, all while having fun. Guided hikes begin every 15 minutes; last hike begins at 8:30 p.m. Space is limited; register early!

THURSDAY AND FRIDAY, NOVEMBER 7 & 8

Fall Mini-Camp

9:00AM-4:00PM, Children, ages 5-8 & 9-12; $80 pp/day

New Jersey Public Schools are closed for the NJEA Convention. Spend your fall school break exploring nature with the Watershed Educators! Cold and wet weather won't stop us; we spend each day exploring outdoors, getting messy, playing, and creating. Before Care (8-9AM) and After Care (4-5:30PM) available.

SATURDAY DECEMBER 7

Winter Bird Walk

9:00-11:00AM, General Audience, ages 12+; Free

Join Education Director Jeff Hoagland on a hike in search of wintering birds. Bring binoculars and dress for walking outdoors. Co-sponsored by Washington Crossing Audubon Society.

SATURDAY DECEMBER 14

Candle Making Workshop

1:00-3:00PM, General Audience, ages 8+; $18 per person

Get ready to celebrate the approaching winter solstice, Chanukah, Christmas, and the return of the light! We will guide you through creating hand-dipped candles, sand candles, shaping your candles, and adding embellishments. You decide whom to gift with your unique, handmade candles!

SATURDAY DECEMBER 14

Natural Holiday Delights and Drinks

3:30-5:30PM, Adults age 21+; $18 per person

Get into the holiday spirit! Sip some wine or beer as you fashion tiny holiday treasures and gifts from natural materials. We will provide snacks plus everything you need to make festive ornaments and decorations. Bring your own wine or beer; we'll bring the corkscrew!

Bring your own drinks and nature craft with the pros.

Make your own candle creations at our Dec. 14 workshop!

SCHEDULED TUESDAYS, SEPTEMBER – DECEMBER

Toddler Nature Class

10:00-11:00AM, Children, ages 18-36mo.; $10 per child

Start instilling a love of nature with our Toddler Nature Classes. We provide a fun introduction to animals, plants and nature in general. You and your toddler will enjoy a song, a story, and a walk outside. Dress for the weather because we always go outside. Children must be accompanied by an adult. See dates and weekly topics online.

A family plays at the reserve. (Photo by Jessica Sanders)

SCHEDULED TUESDAYS, SEPTEMBER – DECEMBER

Preschool Nature Class

10:00-11:30AM, Children, ages 3-5; $10 per child

Get wild with us as we learn about a variety of nature topics! Each class includes outdoor exploration, stories and a craft. Dress for the weather because we always go outside. Children must be accompanied by an adult. See dates and weekly topics online.

SEPTEMBER 2019 – JUNE 2020

Homeschool Nature Classes

** NEW FORMAT ** Join us each semester for 8 weekly classes (3 classes per bridge) that deeply investigate a topic. Classes include informational classroom-style presentation and outdoor investigation. Parents must stay on the property and are encouraged to let their children participate in the class independently. Dress for the weather of the day. If there are fewer than 5 students per age group, the groups may be combined.

Homeschool students work on a nature craft.

TUESDAYS | SEPTEMBER 10, 17, 24 | OCTOBER 8, 22, 29 | NOVEMBER 5, 12

FALL SEMESTER: INSECTS

9:30-11:30AM, Children, ages 5-8 & ages 9-12, $105 per semester ($15 per class drop-in)

This semester is all about insects. We will cover insects 101, insects as pollinators, aquatic insects, predatory insects, insect adaptations, monarch migration, the social life of insects, insect-human interactions, and insects in winter.

TUESDAYS | DECEMBER 3, 10, 17

FALL-WINTER BRIDGE SEMESTER: CRAFTING

9:30-11:30AM, Children, ages 5-8 & ages 9-12, $40 per semester ($15 per class drop-in)

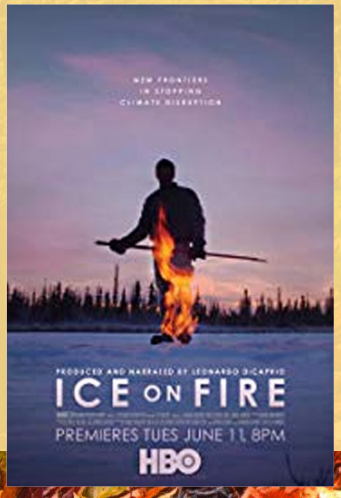
This short, fun semester will be three weeks of crafting, indoors and outdoors!

SUNDAY, OCT 6 | NOV 3 | DEC 1 | JAN 5 | FEB 2 | MAR 1 | APR 5 | MAY 3 | JUN 7

First Sunday Environmental Film Series

1:00PM, General Audience; Free - Walk-ins welcome

Visit thewatershed.org/films to learn more about upcoming screenings at the Watershed Center. This year's lineup includes: Bag It (2010), Ice on Fire (2019), Artifishal (2019), Tomorrow (2017), Promised Land (2013), The Butterfly Trees (2018), A Fierce Green Battle: The Battle for a Living Planet (2012), The Human Element (2018), & Groundswell Rising (2015). Join us for a movie and then hike our trails.



FROM OUR MEMBERS

Why I Chose to Increase My Gift ...

Gery and Anne Juleff of Hopewell have been members of the Watershed since 2013. Gery is a Trustee of the Sourlands Conservancy, whose mission is to protect, promote and preserve the unique character of the Sourland Mountain region. Gery shares with us why he decided to increase his gift this year, *"I appreciate the value and incredible work of our partner, The Watershed Institute. Protecting water is vital to protecting the Sourlands."*

Anne & Gery Juleff of Hopewell

Eric Johnson of Ewing

Lt. Col, USAF, (Retired) Eric Johnson of Ewing has supported the Watershed with a $50 membership since 2014. When asked why he increased his gift this year to $100, Eric shares that- *"The Watershed is close to where I live and I realize it is more important than ever to support it, especially since the federal government is weakening environmental protections in this country."*

When you increase your giving, you can have an even greater impact on protecting our water and encouraging the next generation of environmental leaders. **With a greater number of members and contributions, we can:**

- **Monitor more stream sites for water pollution because more funding means we can buy more stream testing kits and train more volunteers. The data we collect informs the state and municipalities where remediation is needed, and where potential sources of pollution are located.**

- **Give more financial aid to children to attend summer camp and the Watershed Academy. It is important for all kids, no matter where they live, to enjoy nature, and learn about caring for our land and water.**

- **Ensure our advocacy team works on your behalf to prevent the influx of natural gas pipelines, educate lawmakers about the importance of sound environmental laws, and engage with municipalities on managing stormwater to prevent polluted water and flooding.**

As you think about your personal gifts this year, we hope you will consider keeping water clean, safe and healthy an important priority for you and your family. A gift increase of even $5 or $10 more would help.

Don't forget that you can take advantage of special benefits such as discounts on programs and nature shop purchases, plus early registration for summer camp, and free admission to the Butterfly Festival.

Thank you for helping to support the conservation, advocacy, science and education programs of the Watershed Institute. As you have heard us say many times, we can't protect water without you! Thanks to our members, we continue to build a strong reputation as a center of learning and leadership on important water and environmental issues.

STREAMWATCH

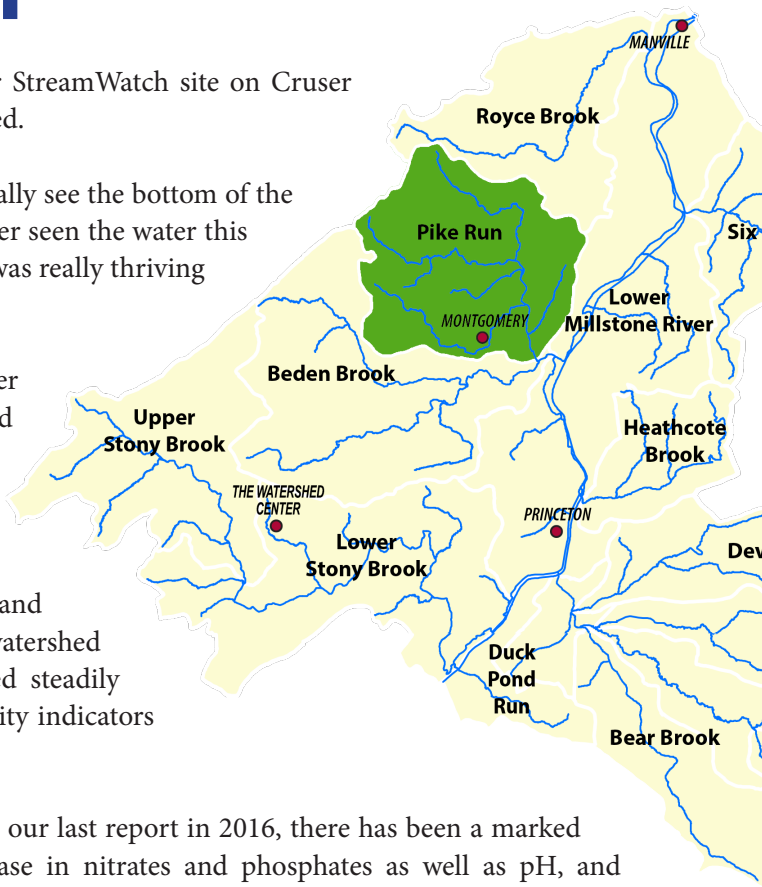
A Problem in Pike Run

When Patti Maslanka, 58, recently noticed the waters at her StreamWatch site on Cruser Brook had once again turned milky white, she was concerned.

"This spring, the stream was the best I had ever seen. I could literally see the bottom of the stream bed and rocks there for the first time," she said. "I had never seen the water this clear and thought maybe there had been changes and the stream was really thriving and could actually support life."

But by early summer, she said, "the stream was horrible. The water levels were terrible, the water had turned to milky color, the pH and turbidity levels were awful, as were the oxygen and nitrates."

Cruser Brook is a tributary in the Pike Run subwatershed, an area that encompasses the towns of Hillsborough, Montgomery and Skillman in central New Jersey. StreamWatchers like Maslanka and Justin Huffman, who also monitors this area, visit streams in the watershed regularly to take measurements. This subwatershed has suffered steadily declining water health according to our StreamWatch water quality indicators over the past few years.



Patti Maslanka climbs the narrow bank of Cruser Brook.

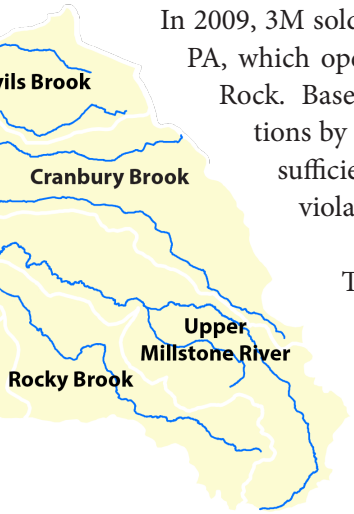
Since our last report in 2016, there has been a marked increase in nitrates and phosphates as well as pH, and a corresponding decrease in dissolved oxygen, which is essential for life in the stream.

Analysis of our data shows that Cruser Brook's impairment is a major contributing factor to this decline in water quality in the Pike Run subwatershed. Maslanka, a veterinarian who has monitored the brook for about nine years with members of her family, said she's never seen wildlife in Cruser Brook, such as fish or turtles, but conditions appear to be getting worse. She said StreamWatchers know their streams, and Cruser Brook usually has a pH of 6.9 or 7. The last measurement she made registered a pH of 8! She wonders what is the source of the Brook's milky white color and declining health?

By way of background, turbidity, or cloudiness, is a measure of the sedimentation that causes the water to turn white and milky. Excessive amounts of sediment, or fine particles of dirt, enter the stream and cause unnaturally high levels of nitrates and phosphates. The sediment can also clog and irritate the gills of animals, and trap heat and prevent oxygen from dissolving in the water, further preventing stream life from getting adequate amounts of oxygen. The type of sediment can have an impact on the water's pH as well.

The data that these and other StreamWatchers share with The Watershed Institute sometimes prompts calls by the Watershed's policy team to state environmental officials or to local municipalities to redress issues. In the case of Cruser Brook, Maslanka's observations have led the Watershed to search for possible causes of turbidity upstream.

For years, a quarry operation near Cruser Brook has been blamed for harming the brook with polluted stormwater runoff. In 2003, 3M agreed to pay NJDEP nearly $100,000 to settle numerous violations for illegal stormwater discharges from the quarry and related issues. The company implemented several measures to address the runoff problem, but those have proven to be insufficient.



In 2009, 3M sold the quarry to the Silvi Group of Fairless Hills, PA, which operates the quarry under the name of Gibraltar Rock. Based on Maslanka's observations and investigations by The Watershed Institute's policy team, there are sufficient grounds to believe that Gibraltar Rock is in violation of the state's stormwater rules.

Patti measures and records her StreamWatch data.

The quarry has proposed new measures to address the problem, but the stream continues to suffer. Mike Pisauro, director of the Watershed's policy team, is currently working with officials at NJDEP to resolve this issue and restore the health of the Cruser Brook and surrounding Pike Run sub-watershed. He said Maslanka's Cruser Brook data has provided his team with critical evidence.

Maslanka said remaining vigilant about the region's waterways is essential for protecting the environment. "I am just one person in a network of volunteers and somebody has to be looking," she said. "If nobody is watching, who is going to protect this stream and protect our water?"

Cruser Brook shown here in a concerning opaque, milky state.

Acknowledgements:

Many thanks to Mara Cige, Justin Huffman, Sahana Kannan, the Maslanka family, Lily and Yuchen Qiu, and Jane Wang. The Watershed StreamWatch program is funded by Janssen Pharmaceuticals Inc, Colgate Palmolive Company, and the New Jersey Water Supply Authority.

Scorecard

Aquatic Life	
Nitrogen	
Phosphorus	
Dissolved Oxygen	
pH	
Temperature	
Turbidity	
Bacteria	
Impervious Cover	
Overall Health	

Rankings

=Excellent =Good =Fair =Poor

STORIES

Where are they now?

Hanna Rush captures a stream sample.

Hanna Rush, a member of the 2015 inaugural class of the Watershed Academy for High School Students and front desk volunteer in 2017, returned this summer to work as a science intern who helped study the quality of local waterways.

A senior at the University of Washington in Seattle, Hanna said this summer's experience added a new dimension to the forestry studies she's done in school where she is majoring in environmental science.

"This was a whole new territory for me; there was a lot of learning involved on how to take samples and do the testing back in the lab," she said.

She split her time each week monitoring water quality at about ten stream locations and running the samples in the Watershed's lab. On stream days, she took water samples to test the amount of dissolved oxygen and nutrients, including nitrates, chloride and phosphates. She also gathered macroinvertebrates and bacterial samples to test later in the lab.

On lab days, she ran bacterial samples to determine how much coliform and E.coli was present in the stream samples. She also sorted and identified macros from each location.

Hanna said she thoroughly enjoyed spending time outside and learning new skills and ways of applying her interest in science. "Now I can take all that with me into school work and into my career, wherever that will take me."

As a summer intern, Hanna said she was able to reconnect with the Watershed staff and people she met while volunteering here.

"I love doing field work and wanted to be working outside this summer," she said. "I thought that doing the water quality testing would be a great way to add to the existing data set and support protection of water in New Jersey."

Hanna tests marked samples in the Watershed Laboratory.

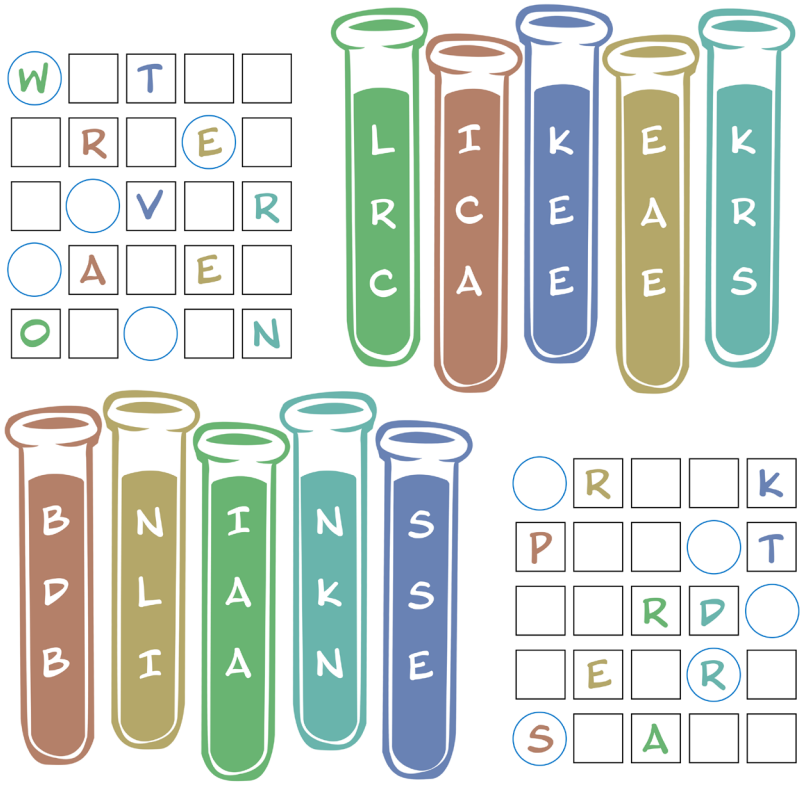
We want to hear from YOU!

The Watershed Institute introduces thousands of children, teens, and young adults to environmental education each year. Many of our former campers, interns, and students have pursued environmental degrees and career opportunities. Did you get your environmental career started at the Watershed? *Water you up to now?*

Tell us your story: info@thewatershed.org | Hear from our big Watershed family: thewatershed.org/stories

Resource Word Scramble

Select a letter from each test tube to complete the words in the rows.
The first word in each set is a clue about the words beneath.
Use the letters from the circles to unscramble the final word puzzle!



"THE IDEA OF W _ _ _ E R _ _ _ S
NEEDS NO DEFENSE, IT ONLY NEEDS DEFENDERS."
– EDWARD ABBEY

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.
The Watershed Institute • 31 Titus Mill Rd, Pennington, NJ 08534
609-737-3735 • info@thewatershed.org

@theH20shed

★★★★ CHARITY NAVIGATOR Four Star Charity

The Watershed Institute
31 Titus Mill Road, Pennington, NJ 08534
thewatershed.org | 609.737.3735

NON-PROFIT ORG.
U.S. POSTAGE
PAID

PERMIT NO.

FSC FOREST STEWARDSHIP COUNCIL