



Great Swamp Watershed Association

The Passaic River **WATERKEEPER®** ALLIANCE Affiliate



Across the Watershed

Spring-Summer 2021

40th Anniversary



Protecting our Waters and our Land for 40 Years

Wetland Restoration Along the Silver Brook is Finally Done!

by Hazel England, Director of Education and Outreach - Land Steward

The dramatic changes wrought by the recent restorations at GSWA's 73-acre Conservation Management Area (CMA) may appear sudden when you next visit the property! Though becoming apparent in the blink of an eye, this hydrological makeover of the CMA has been over a decade in the making!

Back in 2009, initial discussions took place between GSWA staff and several acronym laden federal partners - the biologists from the US Fish and Wildlife Service (USF&W) Partners for Wildlife program and the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). On that long ago summer day, we walked throughout the CMA, a bunch of rubber-booted detectives hunting for signs of past agricultural practices.

Although a maturing forest now covers most of our Silver Brook floodplain, tell-tale signs of a past agricultural legacy were visible to those who could peer into the past. Wide, straight drainage ditches had once been cut several feet deep into the subsoil. Known as mosquito ditches, they sliced through the original, complex system of natural drainage, conveying rainfall away as fast as possible to dry the soil or crops. A 500' section of the Silver Brook itself had been straightened and channeled, so that when rainfall entered the stream it flowed downstream quickly to drain the wetland pools and muddy sloughs of the area. One hundred years ago these drainage changes allowed farmers to



Hazel England overseeing restoration progress.

(continued on page 20)

From the Desk of the Executive Director

One Good Thing

by Sally Rubin, Executive Director

My children and the entire GSWA staff know that if they go to a meeting or an event, they should be able to identify at least one good thing they learned. We know the pandemic has been difficult, but we felt sure we could also identify at least one good thing we've learned from the pandemic as well. Here's what we said!

Sally Rubin: I've learned to lower the bar on my expectations and to be happy with what I have and appreciate life more.

Debbie Rice: It's been a blessing that work and payroll have been consistent and I'm staying healthy. One silver lining to this pandemic is, with not being able to go out and about much ... or go to the salon as often ... or dine out with friends at bars and restaurants, I have spent a lot less money in the last several months than I normally would. I have been able to save up quite a bit for that girlfriends' weekend that I'm dreaming to take when this is over.

Lynne Applebaum: One good thing I got out of the pandemic is my job at GSWA!

Sandra LaVigne: Took the time to put in hard wood floors myself.

Kristina Necovska: One good thing I experienced during this ongoing global pandemic is witnessing more people than ever before become motivated to end the inequities that the pandemic brought into the open.


Wade Kirby: As a result of the pandemic, less people are traveling, less planes are flying, there are fewer cars on the road. I wonder if the pandemic has caused the weather to be more normalized. There are a far greater number of consistent blue sky/sunny days here in New Jersey at least, and not so much *rain, rain, rain* all the time! We are having a winter much like

the ones I remember as a boy - cold, with beautiful, deep snow. From a GSWA perspective, our CMA has been a *haven* like never before for those seeking outdoor, healthy recreation and has, in turn, increased the profile, awareness and appreciation for this organization and its work.

Hazel England: By wearing a mask everywhere I go for the last 11 months, I've avoided catching any colds, flu or chest infections, which would typically be a common fall and winter companion. Especially as we teach many hundreds of students face to face and in close quarters on field experiences... But I'd take having the worst cold any day to be able to be in person again!

Adam Palmer: For my one good thing from the pandemic I would say, while I prefer working with students in person, the challenges of switching to virtual and zoom learning has allowed me to reassess and improve my teaching methods and become a better educator as we have to convey information differently in the new platforms.

Val Thorpe: I'm a social bug and I enjoy being active. No commute to work during the pandemic means a lot of quiet indoor time. But it also frees up some time to jump outside, get my steps in, and enjoy all the benefits the great outdoors has to offer. I've gotten to know many of my like-minded neighbors and people around town (and their pups) and bonus, when there's an informal meeting with a co-worker, we often dial up, pop on our headphones, and take it outdoors!

Sue Levine: I have come to appreciate my friends and family more during the pandemic. 

Across the Watershed

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

GSWA is a member-supported non-profit organization that has been protecting the waters and the land of the Great Swamp Watershed for 40 years.

Editor: Sally Rubin
Designer: Susan Kessel
Contributors:

- Lynne Applebaum
- Hazel England
- Wade Kirby
- Sandra LaVigne
- Sue Levine
- Kristina Necovska
- Adam Palmer
- Debbie Rice
- Sally Rubin
- Val Thorpe

In This Issue:

Wetland Restoration Along the Silver Brook is Finally Done!	1
One Good Thing	2
Board of Trustees Updates	4
Upcoming Events	6
Introducing Lynne Applebaum, GSWA Director of Institutional Relations	11
Visualizing New Jersey's Wetlands Over the Last 100 Years.....	12
Those We Lost	14
Plastic Bag Ban is a Huge Win for Environment and Water Quality!.....	15
Three Local Foundations Support GSWA Technology and Education	16
2020 GSWA Water Quality Report Card.....	18
We're Celebrating 40 Years	19
Chatham Trail Adopted by Local Scout Troop	23
Annual Great Swamp Gala Prevails	24
GSWA Capital Campaign	25
Creeping Under Bridges for Science.....	26
Two FUNdraisers Benefit GSWA	28
GSWA's New Virtual Classroom - Lessons and Technology	29
New Jersey Climate Education and You - Perfect Together!	30
Hot Spots	32
Financial Report	34



Board of Trustees Updates

by Sally Rubin, Executive Director

GSWA is pleased to announce that David Naidu and Brett Williamson have joined the Board of Trustees and our longtime supporter, Michael Dee, has returned to the Board.

David Naidu currently serves on the Summit City Council and previously served as the Council President. He has been a Council member since 2016. He has also served as a Member of the Summit Planning Board since 2010 and previously



B. David Naidu

served on the Summit Environmental Commission. David is a Partner at K&L Gates and has over 20 years of experience advising clients on environmental and land-use issues in the transactional, litigation and regulatory compliance contexts.

David graduated from Vassar College, Cornell University and Georgetown Law School. He is the Vice President of The Summit Conservancy and has lived in Summit for 18 years with his wife, Andrea, and two sons.

Brett Williamson is currently Vice President of Wells Fargo Bank, N.A. in New York where he manages the financial crime risk and operational risk associated with the Commercial Banking Group's merger, acquisition, and divestiture activity.

Brett holds a Master of Arts in International Business and Policy from Georgetown University, as well as a Bachelor of Science in Business Administration, Finance from

Ramapo College of New Jersey, Mahwah, NJ.

Brett resides with his wife Stephanie and new baby, Mackenzie Grace, in Morristown, NJ. Brett is also an Eagle Scout, Wells Fargo Enterprise Talent Associate

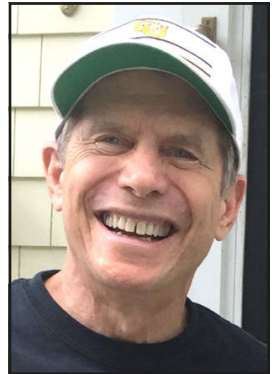
Program Mentor, a member of The Morristown Club Board of Governors and holds a CFA Institute Investment Foundations Certificate.

Michael Dee first joined GSWA's Board of Trustees in the 1990s. He served as Board Chair in 2014 and 2015, and as Vice Chair in 2012, 2013, 2018, and 2019. He has been an avid supporter of the organization and our annual Gala. Michael is a longtime Executive Vice President of Smarties Candy Company, performing a variety of roles in that family business.

Michael earned his Bachelor of Arts from Yale College, as well as a Master of Letters and Doctor of Letters from Drew University. He is very active with a wide variety of environmental, animal rights, and other non-profit groups, from Trustees of Reservations to Mercy for Animals.



Brett Williamson



Michael Dee

Michael and his wife Marilyn (also a Board member) now split their time between homes in Harding Township and Stockbridge, MA. They enjoy their play time with daughters and grandchildren, as well as gardening. Michael is also an avid adult hockey player.

GSWA is also proud to announce that established, local property rights attorney, **Anthony DellaPelle**, was elected as Board Chairperson on January 22, 2021. Tony joined the GSWA Board in 2017 after the completion of a volunteer commitment with his undergraduate alma mater, Franklin & Marshall College.



Anthony DellaPelle

Tony is a partner with the law firm of McKirdy, Riskin, Olson & DellaPelle, located in Morris Plains. He has practiced eminent domain, redevelopment, and real estate tax appeal law for over 30 years. He is a Certified Civil Trial Attorney by the NJ Supreme Court and is a member and officer of the Counselors of Real Estate, an international organization of real estate advisors and consultants who are recognized as thought leaders in the industry, with about 1,000 members around the world.

As a property rights attorney with experience in land preservation and a 30-year resident of Morris Township, Tony was aware of GSWA and its important work for many years and felt his skills and interest would be a great

GSWA Board of Trustees

Debra Apruzzese, Vice Chair
Reed Auerbach
Kate Barry
Paul Boudreau
Gerry-Jo Cranmer
Marilyn Dee
Michael Dee
Anthony DellaPelle, Chairman
Jordan Glatt
Eric Inglis
Matthew Krauser
Teresa Lane
David Naidu
Chris Obropta, Ph.D., P.E.
Guy Piserchia, Treasurer
Nic Platt
Lisa Stevens
Dorothea Stillinger
Kevin Sullivan
Giorgios Vlamis
Clark Wagner
Brett Williamson

fit. He looks forward to helping GSWA continue its efforts to preserve more land in the watershed in the coming years and continue our essential work protecting the watershed, including increasing awareness of the organization's mission downstream as a result of our recent mission expansion.

Tony succeeds Nicolas W. Platt, Former Mayor of Harding Township and current Harding Township Committee Person. Nic served as Chairperson for three years and will remain on the Board of Directors. Nic's support and guidance and his commitment to the environment are greatly appreciated. 🌲

Upcoming Events

Trivia Pub Quiz on Zoom – FREE! Saturday, March 6, 1-2 PM

Get ready to challenge yourself and others in a fast-paced thinking game. Play alone or work together as a household team to answer these multiple-choice questions on your phone, iPad, etc. Play for prizes and bragging rights! Then start brushing up on your water quality and enviro facts. Sign up today to play along, have some fun, and compete for some cool prizes! Register at GreatSwamp.org or call 973-538-3500. Zoom link will be shared prior to the event.

Become a FrogWatcher - Citizen Science Training on Zoom – FREE! Friday March 19, 7-8 PM

Like frogs? Hop onto our “citizen science” Zoom training session to learn more about our amphibian friends including how to distinguish between a spring peeper and a wood frog, and how to identify many other local frogs and toads. Feeling inspired to do more? Become an official FrogWatch volunteer. Eric Jackson, Environmental Educator at Cora Hartshorn Arboretum, will train you how to properly log and report your sightings in a nationwide database. It’s fun for the whole family and it’s free! This training program is held in association with Cora Hartshorn Arboretum. Register at GreatSwamp.org or call 973-538-3500. Zoom link will be shared prior to the event.

Water Quality Report Card on Zoom – FREE! Friday, March 19, 3-4 PM

Human beings can survive three weeks without food, but only three days without water. How important is it to you that your water is clean? Join GSWA Water Quality Director, Sandra LaVigne, for an in-depth

review of the water quality in the Great Swamp watershed and in the Passaic River region. This brief presentation will highlight the results of the sampling and testing we performed on our local streams throughout 2020. Sandra will also provide an overview of our recently added testing protocol for PFAS (Perfluoroalkyl) manmade chemicals, an emerging threat to our health and the health of our water. A Q&A session will follow at the end. Register at GreatSwamp.org or call 973-538-3500. Zoom link will be shared prior to the event.

Cook with GSWA on Zoom - Plant-based Recipe – FREE! Tuesday, March 23, 5-6 PM

Our “Cook with GSWA” series has a guest chef this month! Cook along with Chef Dianne Wenz or simply relax with your favorite beverage and enjoy the show. Author of three plant-based cookbooks and an established cooking instructor, Chef Wenz invites us (virtually) into her kitchen to prepare a tantalizing vegan meal of Cauliflower Piccata and Greek Salad that is sure to amuse everyone’s taste buds. Register at GreatSwamp.org or call 973-538-3500. Recipes and Zoom link will be shared prior to the event.

Intro to Rain Gardens on Zoom in collaboration with Rutgers Water Resources Program – FREE! Thursday, March 25, 7-8 PM

Thinking of adding a rain garden to your yard? Smart choice! A rain garden is a beautiful addition to your landscape that also reduces and sometimes even prevents flooding and keeps stormwater run-off from carrying pollution to our drinking water sources. Join us for an in-depth review of the benefits of

installing a rain garden at your home and get some basic how-to suggestions. *At the end of this program, Summit area residents can also register for a free, 30-minute consultation scheduled for April 8, 5-8 PM. Rutgers University engineers and landscape architects will work with you to plan and lay out a rain garden specific to your yard. You will leave with a design plan and a list of recommended native and pollinator plants. You MUST attend this program to qualify for the April 8 design session. No exceptions.* This free program is sponsored by The Stackhouse Foundation with the purpose of improving water quality in the Summit area, one yard at a time. Register at GreatSwamp.org or call 973-538-3500. Zoom link will be shared prior to the event.

Vernal Pool Exploration Hike Friday, March 26, 7-9 PM

GSWA's Conservation Management Area (CMA), 91 Tiger Lily Lane, Harding Township, NJ 07960

With temperatures rising, the forest floor will be hopping with new life as frogs and other amphibians crowd into shallow puddles of water to breed and lay their eggs. These puddles, called vernal pools, provide a perfect opportunity to learn more about Mother Nature here in New Jersey – and they disappear quickly. This nighttime exploration provides a fun, outdoor learning experience for kids and adults alike. Discover the differences between a spring peeper, a chorus frog, and a wood frog. Find out how far an endangered spotted salamander will walk to find a mating pool. And learn how much everything we have come to appreciate about the springtime depends upon a few unassuming puddles of water on the forest floor. Warm clothing and waterproof footwear, especially hiking boots, are strongly recommended. COVID protocols will be followed. Registration is required. Space is limited so register

today at GreatSwamp.org or call 973-538-3500. Suggested donation: GSWA Members \$5, non-members \$10, children under 18 free.

Stream Assessment Training on Zoom - FREE!

Friday, April 2, 2021, 1-2 PM

Interested in the health of your local stream? Concerned about clean water? Perhaps you've even considered becoming a stream monitoring volunteer. If any of this makes you raise an eyebrow, this free virtual training session is for you! Sandra LaVigne, GSWA Director of Water Quality Programs, will teach you how to conduct visual and biological stream assessments, identify macro-invertebrates, and recognize environmental factors that may impact stream health. By the end of the hour, you will have the skills you need to conduct your own assessments for fun or as a visual stream assessment volunteer! (Preferred volunteers are 15 or older.) Register at GreatSwamp.org or call 973-538-3500. Zoom link will be shared prior to the event.

Spring into Spring Hike @ the Refuge Sunday, April 11, 10 AM - 12 PM

Great Swamp National Wildlife Refuge (GSNWR), Blue Bird parking lot

Blooming flowers, budding branches, and a glimpse of our forest critters are all indicators that spring is here! The red-winged blackbirds and eastern phoebes are the first to get the memo that it's time to return and start nesting, while woodpeckers and spring peepers make their presence known more by sound than by sight. Don't miss this glorious time of year to be in the great outdoors. Step on out and inhale the earthy spring smell that the land produces this time of year. GSWA Education Associate, Adam Palmer, will guide you along the boardwalk trails of

the Refuge for this relaxing, family-friendly stroll. COVID protocols will be followed. Registration is required. Space is limited so register today at GreatSwamp.org or call 973-538-3500. Suggested donation: GSWA Members \$5, non-members \$10, children under 18 free.

Houseplants: Air Quality Benefits and Tending Tips on Zoom – FREE!
Sunday, April 18, 2-3 PM

In the last year, houseplant sales have taken off! Whether you've recently become the proud owner of a houseplant or have had a green thumb for many years, this Zoom program is right for you. Amy Seuberth, General Manager of Back to Nature Home & Garden, will broadcast from her store in Basking Ridge to introduce her top 10 favorite plants and explain why they are on her list. This is also your chance to ask an expert about your own plants. Join us for this unique opportunity to learn more about these decorative and oxygen producing flora that brighten up our homes and our moods. All who register and attend will be entered in a raffle to win a free plant from Back to Nature! Register at GreatSwamp.org or call 973-538-3500. Zoom link will be shared prior to the event.

Perfect Your Flower Arrangement Skills on Zoom
Sunday, April 25, 2-3 PM \$40/person

We've all been there - we put a bunch of flowers in a vase imagining how great they will look. They don't. We move them around and tilt our head. Nope. So, we walk away with plans to fix them. A week later, we toss these once cheery flowers in the trash. Let's change that behavior. Join Amy Seuberth, General Manager of Back to Nature Home & Garden, for a demo on how to arrange flowers in a pleasing way. She will also share tips on how to keep them healthier and looking

more beautiful longer. The \$40 fee covers your flowers, a mason jar vase, and an expert tutorial on crafting a fabulous floral arrangement. Seasonal flowers may include Seeded Eucalyptus, Mini Green Hydrangea, Thistle, Stock, Wax Flower, and others. Pickup takes place April 24 & 25 at Back to Nature in Basking Ridge. Registration closes April 18 @ 5 PM to allow for ordering, so register today at GreatSwamp.org or call 973-538-3500. Zoom link will be shared prior to the event.

Early AM Birding Hike @ Jockey Hollow
Tuesday, May 11, 7-8:30 AM

Morristown National Historical Park - Jockey Hollow Visitor Center
(appx. 600 Tempe Wick Road, Morristown, NJ)

New Jersey birding reaches its peak in May! So, let's go check it out together. You'll start your workday off right by exploring the woods of Jockey Hollow with some of the most popular bird watching trails in the area. The park contains important breeding habitat and is home to more than 120 bird species throughout the year including Yellow-bellied Sapsucker, Pileated as well as Hairy Woodpeckers, Yellow-throated Vireo, thrushes and more. COVID protocols will be followed. Registration is required. Space is limited so register today at GreatSwamp.org or call 973-538-3500. Suggested donation: GSWA Members \$5, non-members \$10, children under 18 free.

Sustainable Foraging - The Basics
Sunday, May 16, 1-3 PM

GSWA's Conservation Management Area (CMA), 91 Tiger Lily Lane, Harding Township, NJ 07960

Foraging: To search for a particular food or foods, often in the wild. Curious? Come learn more. GSWA's Education Associate and resident forager, Adam Palmer, will guide you through the woods of Harding Township and

identify the various wild foods that you can forage, what to avoid, and why. It's important to understand how to forage safely and ethically before you try it yourself. This is an informative hike only - we will not actually be foraging. COVID protocols will be followed. Registration is required. Space is limited so register today at GreatSwamp.org or call 973-538-3500. Suggested donations: GSWA Members \$5, non-members \$10, children under 18 free. If you're anxious to give it a go, join us again on May 17 for a "Cook with GSWA" Zoom call where we will prepare a garlic mustard pesto made from foraged garlic mustard!

Cook with GSWA on Zoom: Garlic Mustard Pesto & Beyond - FREE!
Monday, May 17, 5-6 PM

Let's get wild! Join us for a cooking demonstration where we will showcase the items we have foraged and then turn them into food. We will talk about the benefits of foraging for edible invasive (non-native) species, for example, garlic mustard. Garlic mustard is one of the worst invaders of Northeast and Midwest American forests, reducing the diversity of all species. April through end of May is garlic mustard season so you will be able to easily find it and make your own pesto. Come learn about these and other types of plants where we can reduce their presence simply by eating them! Register at GreatSwamp.org or call 973-538-3500. Zoom link will be shared prior to the event.

Work Out with Lynne at the Refuge
Saturday, May 22, 10-11 AM

Great Swamp National Wildlife Refuge Visitor Center

What a great time to get moving together in the great outdoors! We are thrilled to offer you this chance to work out with GSWA's newest staffer, Lynne Applebaum, Director

of Institutional Relations. Lynne is also a NASM certified personal trainer. Join us for a body weight total strength workout (with a little cardio thrown in!) at the Refuge. All you need is the desire to exercise in the fresh, clean air, appropriate exercise wear, water, and a towel or floor mat. All levels are welcome. COVID protocols will be followed. Registration is required. Space is limited so register today at GreatSwamp.org or call 973-538-3500. Suggested donations: GSWA Members \$5, non-members \$10, children under 18 free.

Dog and Family Hike
Sunday, May 23, 1-3 PM

GSWA's Conservation Management Area (CMA), 91 Tiger Lily Lane, Harding Township, NJ 07960

Your pup has been walking the same route for too long. Let's change things up a bit. Treat your best friend, and yourself, to a beautiful spring walk in the woods. After the big renovations that have taken place at our CMA, there's so much to see, smell, and enjoy. Your pooch must remain on a leash for the full hike and play nicely with other dogs. Come prepared to clean up any messes. COVID protocols will be followed. Registration is required. Space is limited to 10 pups and 8 humans. This is one of our more popular hikes so register today at GreatSwamp.org or call 973-538-3500. Suggested donations: GSWA Members \$5, non-members \$10, children under 18 free.

Workout with Lynne at the Refuge
Tuesday, June 15, 7-8 AM

Great Swamp National Wildlife Refuge Visitor Center

Looking to sneak in a quick workout before work? C'mon out to the Refuge and Join GSWA's newest staffer, Lynne Applebaum, Director of Institutional Relations. Lynne is

Remember to check out our website
at: greatswamp.org/events/
for additional events.

also a NASM certified personal trainer who will lead a body weight total strength workout (with a little cardio thrown in!) at the Great Swamp National Wildlife Refuge. All you need is the desire to exercise outside in the fresh air, appropriate exercise wear, water, and a towel or floor mat. All levels are welcome. COVID protocols will be followed. Registration is required. Space is limited so register today at GreatSwamp.org or call 973-538-3500. Suggested donations: GSWA Members \$5, non-members \$10, children under 18 free.

Saturday, June 26, 1-2:30 PM
Wildflower Hike (prelude to July 2
wildflower arranging on Zoom optional)

GSWA's Conservation Management Area (CMA), 91 Tiger Lily Lane, Harding Township, NJ 07960

Join us for a hike with a purpose. As we meander through the trails, our hike leaders will draw your attention to the many varieties of wildflowers and natives that can be found at our 73-acre Conservation Management Area. Fresh air combined with some environmental learnings - what a combo! This hike is a great lead-in to our July 2 "Perfect Your Wildflower Arrangements" Zoom call where you will learn how to create a professional looking wildflower display that's sure to illuminate your fourth of July table. COVID protocols will be followed. Registration is required. Space is limited so register today at GreatSwamp.org or call 973-538-3500. Suggested donations: GSWA Members \$5, non-members \$10, children under 18 free.

Perfect Your Wildflower Arrangements on Zoom
Friday, July 2, 5-6 PM \$40/person

Spruce up your backyard fourth of July table with a professional looking wildflower display. But don't just drop them in a vase without thought, you will be missing out on a truly spectacular feast for the eyes. We can't have that! Join Amy Seuberth, General Manager of Back to Nature Home & Garden, for a demo on how to arrange wildflowers in a pleasing way. She will also share tips on how to keep them healthier and looking more beautiful longer. The \$40 fee covers your wildflowers, a mason jar vase, and an expert tutorial on crafting a fabulous floral arrangement. Pickup takes place July 1 & 2 at Back to Nature in Basking Ridge. Registration closes on June 25 at 5 PM to allow for ordering, so register today at GreatSwamp.org or call 973-538-3500. Zoom link will be shared prior to the event.

4th Annual Great Swamp Great Music Festival
June 2021

Live music, food, friends, and more are on tap at our 4th Annual Great Swamp Great Music Festival. Set up under the tent or in the field and groove to the music of six stellar bands! Grab a bite to eat, check out the unique merchandise vendors, and enjoy some fresh squeezed lemonade or an adult beverage in this expansive field of music. This is everything you need for a sensational Sunday afternoon! Tickets: \$25/adult (\$30 at the gate); \$15/high school and college students; children 13 and under are free. Tickets will be on sale soon at GreatSwamp.org - stay tuned! *All COVID-19 safety protocols will be followed at this event based on the current mandates put forth by Governor Murphy's office.* 🌲

Introducing Lynne Applebaum, GSWA Director of Institutional Relations

by Lynne Applebaum, Director of Institutional Relations

I joined the GSWA staff team in late October as the new Director of Institutional Relations, after Rick Porter's retirement, and I am thrilled to be here. I am very proud to work for GSWA, with Sally and the awesome team that make up the staff and volunteers. There is tremendous heart, hard work and talent amongst this group.

My background in the non-profit space is deep, having worked for the YMCA fulltime for 13 years, part time for at least 5 years prior. Until October 2020, I was the Senior Wellness Director at the Somerset Hills YMCA. In that position, I oversaw, directly and indirectly, 140 employees, both full and part time, was responsible for creating and managing the department budget, maintaining fitness equipment, headed up chronic disease programming in addition to being responsible for wellness programming overall, taught classes and personal trained, sought out community partners for offsite wellness programming, wrote grants with our grant director, and ran the department annual campaign team, as well as making donor asks myself.

COVID-19 changed everything for me and everyone else I worked with, as the Y suddenly had to shut its doors for an extended time. We lost many members as a result of the closure, people's fears of being in the gym, and job losses. Membership was simply no longer an option for many and that is the lifeblood of any Y. Many of my coworkers and I were furloughed without an end in sight.

As I often say to people, things happen for a reason. The longer I was in my job, the more

drawn I became to the strategies behind being able to do the mission work, which for me, was working with challenged populations. I worked with people with Parkinson's Disease, ran the Diabetes Prevention Program and worked on grants to support both of these. How would I get continued support for these programs?

It was some of the most satisfying work I did in the job.

With that said, I decided to make a concerted effort to move my career in a totally different direction. I was told about the opening at GSWA by a good friend, and I jumped on the



opportunity. I love working in the non-profit world – specifically, pushing forward a mission that is meaningful and of course takes wellness into consideration. In the case of GSWA, the wellness of the lands and waters in the Passaic River region and its inhabitants are now my focus.

At the face of things, it might not seem like a linear path to this new job. I personally find a connection in every path I have taken, and in many ways, being hired as Director of Institutional Relations at GSWA drills down to the essence of what inspires me most. Being truly invested in our mission makes it easy for me to seek funding. If you do not believe in what you are asking people to support, they will never believe you. I wholeheartedly believe in the work that GSWA is doing and am very happy to represent us to the corporations and foundations through grant proposals and other partnerships. I am excited to be part of the team that keeps moving this mission forward, protecting and preserving our most precious natural resources. 🌲

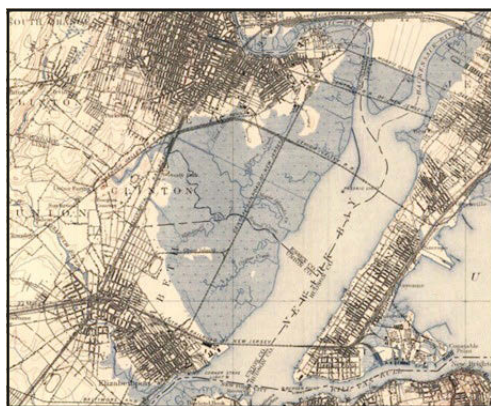
Visualizing New Jersey's Wetlands Over the Last 100 Years

by Kristina Necovska, Membership Associate, GIS Specialist

We invite you to look back at the last 100 years of wetlands history to see just how New Jersey became one of the most densely populated states in the nation. By the 1970s, over half of the nation's wetlands had already been lost to residential development or industry. Even today, the incorrect notion that wetlands are wastelands still percolates through and it is our job to help people understand that wetlands are wonderlands!

Just what do wetlands have to offer?

Wetlands make up our drinking water's first line of defense from pollution by filtering out chemicals, pollutants, and sediments. Wetlands provide natural flood control by absorbing runoff and snowmelt. During times of drought, wetlands supply streams with stored floodwater. Wetlands provide unique habitat for many of our state's rare and threatened plants and animals and are of scientific value. Finally, wetlands provide high quality open space for recreation and tourism.



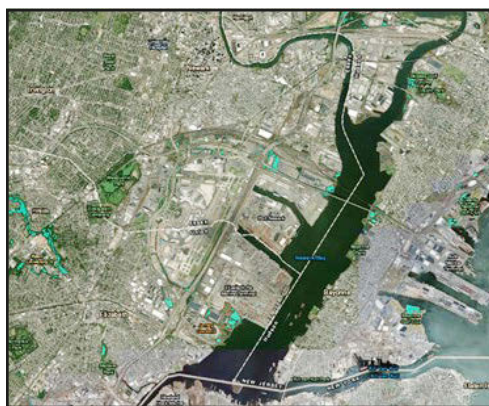
In February, I published an interactive web map which gives you a comparison between two moments in history. The first map displays scanned United States Geological Survey (USGS) maps from a period of about 1881 to 1924. The second map is recent satellite imagery with a wetlands layer highlighted from the New Jersey Department of Environmental Protection's 2015 Land Use layer. This is meant as a thought exercise about development and water resources. You can access this map at: bit.ly/Wetlands100GSWA

1881-1924 vs. 2015: While we can't make this newsletter interactive, the maps below and right show some key differences since the 1880s.

What are the implications of this development?

When we talk about development we are talking about the creation of *impervious surface*.

Natural land is porous and allows rainwater to filter through into the groundwater. Part of the rainwater is also absorbed up through the living green layer made up of plants and



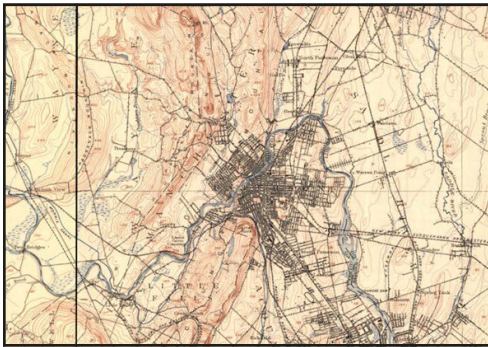
Newark International Airport: 100 years ago this area was primarily tidal marshland (left). Contrast the old map with the 2015 satellite map (right). Hardly any wetlands remain aside from medians dominated by phragmites.

trees, which allows for some of the water to evaporate through plants in a process called transpiration.

When land is developed, pavement effectively cuts off this process by sealing the top layer of soil away from the water cycle. As a result, rainwater cannot filter through into the ground and recharge groundwater. “While urban areas cover only 3 percent of the U.S., it is estimated that their runoff is the primary source of pollution in 13 percent of rivers, 18 percent of lakes and 32 percent of estuaries.”(Seattle Times).

Impervious surface also brings with it more pollution - things like fertilizers, harmful bacteria from pet waste, gasoline, motor oil, and plastic pollution all flood our natural streams. Impervious surfaces also increase the rate at which water flows, so the faster runoff causes faster and more furious erosion damage to our streams. The extra sediments released by stream erosion also disrupt ecosystems by increasing nutrients and changing the water chemistry.

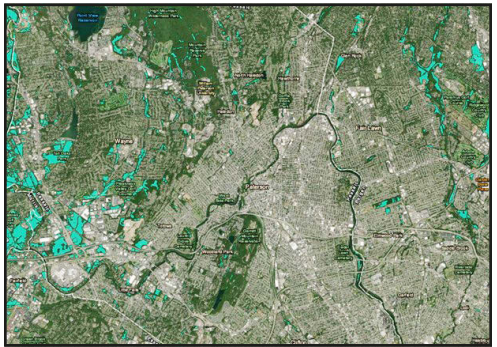
In New Jersey, many cities use what is called CSO infrastructure. CSO stands for “combined sewer overflow” which is engineered to release runoff overflow directly into our streams after reaching a critical overflow point. If this system seems outdated



and ineffective to you, you are correct. As we experience more extreme weather due to climate change, these outdated systems will only increase raw sewage to spill over into our streams.

What can you do?

For starters, help by supporting Great Swamp Watershed Association. GSWA works by year-round chemical and biological monitoring of the waterways of the Great Swamp Watershed. In 2017, we expanded our mission to include the main branch of the Passaic River by joining the Waterkeeper Alliance as the Passaic River Waterkeeper Alliance Affiliate. Since then, we have worked to add many sites along the Passaic River to our annual water monitoring. GSWA also advocates for responsible development and delivers environmental education to residents and their families across our watershed region. There are many more ways that you as an individual can help offset your footprint on your local environment, reducing your consumption of products with unnecessary plastic packaging is a major way you can help keep our streams clean and protect our drinking water. For more ways on living a “Watershed Friendly” lifestyle, visit our interactive “Watershed Friendly” page for more ways you can reduce your impact. 🌲



Paterson: In the Passaic River Valley sandwiched between two northern ridges of the Watchung Mountains, Paterson has a long history of industry. The difference here is once undeveloped land surrounding this city has been entirely urbanized. Wetlands west of the Saddle River have been filled where current day Fair Lawn is located. Preakness Valley Golf course sits upon former wetlands.

Those We Lost

by Sally Rubin, Executive Director

2020 saw the loss of many loved ones. We call your attention to just a few of the true environmental champions with a connection to the Great Swamp region.

James L. Northrop, 83, passed away March 23, 2020. A native New Yorker, Jim lived for many years in Summit and Madison. After a corporate career, Jim was adamant that he remain active and have a purpose in retirement. He volunteered for many organizations and became active in writing many opinion and fact based articles for GSWA and other area organizations. He was active with his local church and many social service community groups within the region.

Candace “Candy” McKee Ashmun passed away on May 23, 2020 at the age of 96. Candy was an educator and devoted environmentalist. During her career, she worked at Upper Raritan Watershed Association, served on the Pinelands Commission for more than 40 years until her death, was founding director of the Association of NJ Environmental Commissions, among many other environmental and cultural history activities. Candy was dedicated throughout her life to protecting the environment, mentoring many generations of environmental leaders and an inspiration to many.

Mary W.T. Moore passed away on June 10, 2020 at the age of 80. A lifelong resident of Great Swamp Watershed, Mary grew up within its boundaries, and lived for many years in Mendham. An ardent conservationist, Mary was a 40 year member of the Brookside Garden Club, a former member of the Mendham Township Environmental Commission and served on the board of New Jersey Conservation Foundation for more than 20 years.

David Dietz passed away on December 25, 2020 at the age of 80. David and his wife Jane lived in Harding where David was active in many community activities including the Harding Planning Board, Harding Open Space Trust, Harding Land Trust, and the Harding Environmental Commission, among others.

Cam Cavanaugh passed away on December 30, 2020 at the age of 89. She was a conservation trailblazer and a long time New Jersey Conservation Foundation board member. Cam wrote “Saving the Great Swamp: The People, the Power Brokers, and an Urban Wilderness.” The book laid out the details of the fight to save the Great Swamp, and this important win for the grassroots conservation community story may have been lost to history if not for her efforts.

May their memory be a blessing. 

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 srubin@GreatSwamp.org so you don't miss out on our new monthly e-newsletters.

Plastic Bag Ban is a Huge Win for Environment and Water Quality!

by Adam Palmer, Education Associate

In September, New Jersey lawmakers put forth a bill which was set to be one of the strictest plastic bag bans in the nation. That bill, in a huge win for water quality and the environment, has since been signed by Governor Murphy in November. Starting in May 2022, following an 18 month grace period for companies and businesses that would be affected to prepare, single use plastics will be prohibited except for specific instances.

The law also creates a “Plastics Advisory Council” within the DEP, which would be tasked with monitoring the implementation of the new regulations and more importantly studying plastic waste in New Jersey. We know plastics are pervasive, and we know that plastic waste in the environment also leads to the generation of microplastics as they further degrade and breakdown in the ecosystem. The creation of the Plastics Advisory Council is a step in the right direction to addressing this issue, as it will allow for further monitoring and studies on the largely unknown impacts of microplastics in the environment and our water. While we know most of the more obvious impacts of large plastics in our environment and their detrimental effects on the health of its creatures and functions, we still have a lot to learn about microplastics.

Historically, most microplastics research has only focused on marine systems, but in 2018, GSWA began a pilot study to determine the extent of microplastics in the waters of the Great Swamp Watershed and the Upper Passaic River. In the early winter of

2018, GSWA staff and volunteers collected samples throughout the region. Sampling locations were selected to cover all four of the Great Swamp Watershed tributaries, the Passaic headwaters and the new expanded Upper Passaic region. The samples were returned to the GSWA office and processed using a filter system. The samples were then examined under a microscope to quantify the microplastics in each sample with the goal of understanding the extent of microplastics pollution in our local waters. All of the four Great Swamp Watershed tributaries, Great Brook, Black Brook, Loantaka Brook, and Primrose Brook showed presence of microplastics, Great Brook containing the highest quantity with 26 fibers observed and 12 pieces of film likely from broken up plastic bags or bottles. Along the Upper Passaic River, the highest concentration observed was just 34 below Route 202 in Basking Ridge, with 56 individual fibers observed (though a further 12 clumps containing multiple fibers were also noted) and 16 pieces of plastic film.

Through these findings, GSWA was able to provide information for and work with several towns and their environmental commissions to pass local plastic bag bans and restrictions.

These initial baseline sampling efforts will also hopefully provide great context once the ban has taken place, as we continue to monitor the situation and look to see if this new ban is making an impact on the presence of plastics in our precious water resources. 🌲

Three Local Foundations Support GSWA Technology and Education

by Lynne Applebaum, Director of Institutional Relations

In March 2020, the trajectory of our well-known and respected environmental education programs took a hard left due to the onset of COVID-19. Like us, organizations around the country and the world tried to figure how to do “business as usual,” and their plans had to quickly pivot to a largely virtual marketplace. We at GSWA are known for our inspiring, in-person educational experiences for students in schools all across our watershed, and clearly, this was not an option at this point. Seeing and feeling nature in per-

son cannot be replicated, however, it CAN be viewed, heard, and responded to remotely, thanks to modern technology.

When our team realized that they would have to modify their programming to online platforms, they set themselves up in their backyards, at the CMA, in the streams, at their homes, with video cameras (mostly their phones) and microphones to conduct the lessons via Zoom. This quickly became the platform of choice in most schools. Our visual stream assessment trainings were created and

GSWA Staff Live Remote Teaching During COVID 19



Our cobbled together set up to be able to teach live from the field using a phone and camera mount. Pre-submitted questions on the topic posed by the students are being answered at a live meet held at our Conservation Management Area using real plants to further explain concepts!



Teaching virtually from the field using jerry rigged equipment to make it work!

put on our website for potential volunteers to access whenever they wish and remain there today.

Happily, challenges often present opportunities. Even though no one wanted to rely on offering classes remotely, teaching the classes at all was, and is, the priority. With that understanding, we sought to create the most professional product we could. How do we do this? What do we need? After months of stop-gap solutions, such as trying to shoot video of oneself while teaching in the stream, we gradually started purchasing supplemental equipment to improve the experience for all involved.

Through the generosity of three local foundations, we are now able to purchase assorted equipment such as cameras, headsets, microphones, mounts, tripods, lighting, laptops and tablets with waterproof cases and cables, enabling us to concentrate on delivering the best possible product, without fighting inferior equipment.

These same three foundations are funding the purchase of mechanical maintenance

tools to efficiently manage our CMA property, a professional flow meter to continue our monitoring as we progress with sampling along the Passaic and enabling us to upgrade our office technology.

It is clear that remote education is here to stay, certainly as a backup option, and complements our in-person programming. It is very likely that we will be able to extend our education programs into communities that would otherwise be very difficult to reach in person, as time and travel present real obstacles. This ultimately allows us to educate more people in our watershed towns and cities about the preservation and protection of the waters and lands that surround them.

I can safely say that everyone is eager to get out and be with the students again in the classrooms, in the streams and at the CMA. This will happen. The bigger picture is that we will be able to continue teaching our STEM based programs and offer public events to all who are interested.

This is made possible by these three local foundations, to whom we are very grateful. 🌿

GSWA Experts Available to Speak to Area Groups


Do you wonder, “What is in my water?” or “What can I do to keep water clean for my children?” These and other questions about water quality, land preservation, and local efforts to protect the environment can be answered by the Great Swamp Watershed Association (GSWA). GSWA speakers give interesting, hands-on or virtual presentations that will educate and inspire members of your local club or group. Please contact Hazel England, Director of Education & Outreach at (973) 538-3500 or hazele@greatswamp.org.

2020 GSWA Water Quality Report Card

by Sandra LaVigne, Director of Water Quality Programs

Neither snow, nor rain, nor heat, nor pandemic can keep us from monitoring the waters of the Passaic. 2020 was a challenging year but GSWA staff and our amazing Stream Team volunteers rose to the challenge. All of our sampling, including quarterly chemistry sampling, bi-annual visual assessments, summer bacteria monitoring, and macroinvertebrate sampling, was conducted on schedule. 2020 was another big year for our water quality monitoring efforts as we made the next progression downstream along the Passaic River. From 2017 through 2019, we began our downstream expansion project monitoring five new sites between Millington Gorge and Livingston. In 2020, we expanded again from Livingston through Little Falls, adding four new sampling locations while condensing our initial expansion through Livingston to three sites. This all adds up to a grand total of 21 distinct chemistry sampling sites that we

monitored each quarter. The results you see here are a summary of that data. In our upstream areas we saw improvement in most locations in the amount of total dissolved solids, which is a representation of road salt. With a mild winter in 2020, there was minimal salting needed to keep the roads clean. Road salt in freshwater systems can have a serious impact on aquatic wildlife, effecting reproduction as well as overall health. Within the Ten Towns area, both Loantaka Brook and Black Brook saw significant increases in nutrient levels with both experiencing higher levels of phosphorus than in 2019. Elevated levels of phosphorus can cause excessive algal growth and impact habitat and oxygen levels.

To learn more about the results of the 2020 Water Quality report, join us for a live presentation of the results by our Director of Water Quality, Sandra LaVigne, on March 19th. 

Stream	Dissolved Oxygen	Water Temperature	pH	Road Salt	Water Clarity	Nitrogen	Phosphorus
Black Brook	Good ↓	Excellent	Excellent	Good	Poor ↓	Excellent ↑	Poor ↓
Great Brook (main stem)	Excellent	Excellent	Excellent	Good ↑	Poor ↓	Poor ↑	Good ↓
Silver Brook	Excellent ↑	Excellent	Excellent ↑	Good	Good	Very Poor	Good
Loantaka Brook	Excellent	Excellent	Excellent	Poor ↑	Poor ↓	Very Poor ↓	Poor ↓
Primrose Brook (main stem)	Excellent ↓	Excellent ↓	Excellent	Excellent ↑	Excellent ↑	Excellent	Excellent
Passaic River (Headwaters)	Excellent	Excellent	Excellent	Excellent ↑	Poor ↓	Good ↓	Excellent
Passaic River Watershed Outlet	Excellent	Excellent	Excellent	Good ↓	Very Poor ↓	Excellent ↓	Good
Passaic River (Upper Passaic)							
Millington through Livingston	Excellent ↓	Good ↑	Excellent	Good ↓	Very Poor ↓	Very Poor ↓	Very Poor ↓
Livingston through Little Falls	Excellent	Excellent	Excellent	Good	Poor	Very Poor	Poor

KEY				
Arrows indicate a >.5 change from the 2019 data and correspond with the grade not the measurement				
Excellent	Good	Poor	Very Poor	NO Data

We're Celebrating 40 Years Protecting the Environment as a Watershed Association – Do You Have a Memory to Share?

by Val Thorpe, Director of Communications & Membership

2021 marks our 40th year as guardians of the Great Swamp watershed! Founded in 1981 by a small grassroots group of concerned citizens to protect the Great Swamp from increased development, Great Swamp Watershed Association (GSWA) has since grown to a staff of 10 with over 1800 members. Our mission: *to protect and improve the water resources of the Passaic River region, from the Great Swamp headwaters to Newark Bay.*

Help us gather our historic hidden gems before they're lost forever!

We invite you to join in our 40th anniversary celebration by digging into your archives and your memory banks! Many of you have a rich history with the area and have been longtime GSWA supporters. **We would love to hear your stories!** We are on a quest to conduct 40 interviews and gather 40 accomplishments, as told by you. This celebration is not about us; it's about what we are protecting and why. The information you provide will enrich GSWA's history and remind future generations what it takes to protect and preserve our precious natural resources. *Please email your memory, or your desire to be interviewed at Vthorpe@GreatSwamp.org with the subject: 40 Years of GSWA.*

Fun facts:

Located within Morris and Somerset Counties, The Great Swamp watershed covers nearly 35,000 acres in the towns of Bernardsville, Bernards Township, Chatham Township, Harding Township, Long Hill Township, Madison Borough, Mendham Borough, Mendham Township, Morristown, and Morris Township. In 2016, GSWA became the official Passaic River Waterkeeper Alliance Affiliate, expand-

ing our purview to include the entire Passaic River, from the headwaters in Mendham to Newark Bay.

The five streams that flow through the Great Swamp watershed empty into the Passaic River at Millington Gorge, carrying this water approximately 80 miles until the river reaches Newark Bay. For 40 years, GSWA has continued to grow our environmental education and water quality monitoring programs, advocating for the health of our waterways that provide drinking water to over two million New Jersey residents.

With our focus on water quality, in 1996, GSWA established our "Stream Team" citizen science training and volunteer program to help collect water sampling data and monitor stream conditions. In 2018, GSWA conducted microplastics sampling protocols and, in 2021, we will begin testing for PFAS, man-made chemicals also known as "forever chemicals."

What else does GSWA protect? Throughout the last 40 years, GSWA has stewarded properties in the Great Swamp region. To date, we have preserved 86 acres of land, assisted with the preservation of many additional acres, and we continue to pursue new opportunities.

More than just a swamp, the area hosts a variety of habitats including grasslands, sandy knolls, ponds, brooks, marshes, woodlands, and ridges. It is home to many exceptional plants and animals including several state and federally designated threatened species like the barred owl and swamp pink. And it provides a peaceful place for people to relax and benefit from the soothing powers of nature. that is home

We look forward to hearing your stories! 

Wetlands Restoration Along the Silver Brook is Finally Done! *(continued from page 1)*

rough graze sheep or horses on the poor forage emerging in the drained sections of the Silver Brook floodplain. Although the wet soil was likely never tilled, the common sight of invasive species in the forest undergrowth was yet another sign that heavy clearing and grazing had taken place.

At this original site meeting, the assembled biologists all agreed that the site met the requirements as 'past agricultural land' and was therefore eligible for a partner restoration project known as the Wetlands Reserve Program (WRP). We were also eligible for planning help from the USF&W Partners for Wildlife Program (PFWP)...and so the acronyms began! The group would touch base every six months or so, to determine progress on design and environmental permitting necessary to become eligible for an upcoming round of funding. Project plans and permit applications had to be developed, federal funds had to be appropriated by Congress, and the project fleshed-out enough to be bid on by restoration contractors. Five or so years ago, our neighboring non-profit landowner, the Harding Land Trust, joined the discussions, and their land was added to the restoration proposal. USF&W grant monies they had obtained years before were added to the funding pot to create detailed restoration plans. The process gradually inched its way into being. Suddenly in late fall 2017, GSWA got the call that there was money in the current cycle of the federal budget, and a project could begin, if we could get all the paperwork together, signed and back to the NRCS within four days! We scrambled for agency signatures and were off to the races. On-the-ground restoration was in sight!

Permits were filed with the NJDEP. The initial back-of-the-envelope plans finally gave way to phase 1 surveys and detailed site sur-

veys. The GSWA contract consisted of eight different practices to be completed over three years. Some of the work could be done by our own staff and volunteers, and some would be undertaken by licensed contractors, with the partner contract reimbursing around 65% of the agreed costs for the different practices, once inspected and certified. GSWA entered into an agreement with HLT to oversee management and implementation of the project on both our lands. For nearly one thousand hours, from 2017 through 2019, staff and volunteers conducted invasive plant removal, with the goal to clear eight acres of ex-agricultural weeds and shrubs. Corporate volunteers with their jaunty colored team T-shirts spent days sweating as they cut and piled multiflora rose, honeysuckle, and wisteria. Trained GSWA volunteers donned neon yellow safety gear for carefully permitted herbicide treatment of alien species. Invasive species removal is a long-term commitment, and the areas cleared will need to be maintained. We used additional funding to replant some of the cleared areas with more than 1,100 native woody trees and shrubs over the three years, tipping the balance towards a more natural understory once again.

Eventually, the NJDEP wetland permits were signed in the fall of 2019, and we could begin to plan the restoration practices and work within the timing constraints imposed by the NJDEP permit. Because of threatened and endangered species present at the site, only limited windows of time were available to conduct necessary work in the stream corridor and in felling the trees necessary to complete some aspects of the restoration. October lined up as the only month when all the restoration work could be achieved, and so we anticipated completing all remaining work in the fall of 2020.

After multiple COVID impacted, socially distanced, masked meetings with prospective contractors, NRCS engineers and biologists, an expert ecological restoration firm - Indigenous Ingenuity - was hired as contractor, and in late September 2020 we finally broke ground.

To restore hydrology at the site to its pre-farming conditions, precipitation falling on the land had to stick around for longer, slowly seeping into the lower layers of the soil, and flowing gradually as underground base flow to the Silver Brook. To make this happen, sections of the mosquito ditches at various points around the property were plugged, with the fill material coming from excavation of new wetland depressions, known as vernal pools. The hardworking crew of contractors took advantage of the dry conditions created by a six-week long late summer drought. Heading into the CMA from the Tiger Lily Lane cul-de-sac entrance, they began creating the large, shallow, unevenly textured depressions and soil mounds that would mimic existing vernal pool habitat. The tiny excavators and diggers chugged



Vernal pool excavation

carefully back and forth along the CMA trails carrying the soil that would fill the ditches, while minimizing disturbance to the existing trail system and restoration work that had al-

ready been carried out. Plans were altered to avoid damaging carefully constructed boardwalks, and work progressed rapidly.

The very next day after the last vernal pool was dug and ditch plugged, the effectiveness of the work was put to the test after a huge deluge hit the area, dropping more than three inches of rain in a 24 hour period. The ditch plugs held, the vernal pools filled, and the extra water spread out over the remaining



Broadcasting native plant seed into vernal pool basins

lands. From a hydrological point of view, the project was already a success! Unfortunately, the existing hiking trail network built around the property over many years was also totally under water, and an emergency boardwalk construction plan was put in place. A generous volunteer donated funds to be used solely for boardwalk construction, and in the months since the restoration almost 350 feet of emergency temporary boardwalks have been constructed to continue access around the trails of the property. When funds and volunteers permit in the future, wider, more permanent boardwalk can replace these 'bog boards', but for now hiking access has been maintained. After more than ten vernal pools were dug or enhanced throughout the property, creating almost (continued on page 22)

Wetlands Restoration Along the Silver Brook is Finally Done! *(continued from page 21)*

360,000 square feet (nearly eight acres) of new vernal wetlands, native seed was broadcast to fill the new pools with native, herbaceous plants upon spring germination. More than 650 linear feet of ditches were plugged and seeded and will receive woody plantings in the spring.

The final part of the restoration is the most exciting from a water quality point of view. Along five different reaches of stream, long lengths of tree trunk were felled and carefully secured in an alternating pattern along the banks, especially along the artificially straightened section of the stream. The tree trunks were held in place with steel



Tying down the tree trunks with duck bill fasteners

wires known as duck bills, sunk deeply into the banks. These woody logs will direct the flow of water within the stream, protecting one bank while slowly and gradually eroding the other, and progressively re-establishing the sinuous path that a natural stream should possess. This process was aided by the removal of a 20' long, four-foot diameter culvert pipe, which was pulled from the stream

with chains and excavators. This pipe had acted like a fire hose when the stream was full, squeezing the width of the channel into a narrow "nozzle", and increasing the velocity of the water along with its power to erode the banks and stream bottom. The woody debris placed along the stream banks traps and holds sediment, depositing it in some places and scouring it out in others. Along with improving the eventual course of the stream, the brushy material has nooks and crannies that can be used as valuable habitat by macro-invertebrates, improving the biodiversity, and eventually the water quality of this section of the Silver Brook

Accepting change can be hard - areas of the CMA look totally different and maintaining access around these wetter lands will certainly involve plenty of work in the coming months and years. However, the excitement of seeing wetland systems so rapidly returned to their natural state, to witness these pools with the water they are meant to hold, and to see the benefits to myriad species of flora and fauna that call the Conservation Management Area and Harding Land Trust habitats home is worth the years of planning and future maintenance work! It has also been worth grappling with the many vowelless acronyms that supported the project. GSWA would like to thank the biologists and engineers of the USDA NRCS, USFWS PFWP and GSNWR and HLT, along with Ingenious Ingenuities. We encourage you to visit the property and walk the trails. Just be prepared with your boots! 🌲

Chatham Trail Adopted by Local Scout Troop

by Sandra LaVigne, Director of Water Quality Programs

If you travel along Green Village Road in Chatham, you may notice a small trail head just opposite of Melrose Lane, near the Oak Knoll School Athletic Field. This hidden gem is the entrance to a beautiful tract of land that was originally preserved by the New Jersey Conservation Foundation and Chatham Township and is now owned by Morris County. Over the past six years, members of the community, including the township's Environmental Commission and scouts from Troop 121, Troop 8, and now Troop 280, have worked to build trails to make the property more accessible. A map of the trails can be found on the AllTrails app as "Green Village Loop Trail."

The trails have been laid out to capture all the most beautiful aspects of the property and with an eye to wildlife watching. Part of the loop trail brings you right along a pond where, in the spring, frogs can be heard calling and, if you look carefully, sometime seen as well. As you continue along the trail, you come to the edge of a field where a myriad of birds can be seen foraging along the forest edge. Along the way, you will easily be able to cross the streams thanks to the hard work of volunteers and some local scout troops. The building projects along the trail system started with the main bridges enabling hikers to cross the larger streams. However, the property, especially in the spring, was wet with the trails being very muddy and at times impassable. Following a trip by Chatham Troop 6 to GSWA's CMA, the group was inspired to install some boardwalk over the muddiest areas so that the trail would be accessible all year long.

I talked about the project with Senior Patrol Leaders from Troop 280, Azniv Basralian and Amelie Lambert. Azniv explained how they held "First Day Walks" as fundraisers to help raise the funds for lumber needed. She told me one of her favorite parts was sharing the funds they raised with other local troops so that they could be involved in the project as well. Amelie was also involved in the project and enjoyed working with her friends building the new boardwalks. In all, the troops installed over 200 feet of new boardwalk over the muddy sections of the trail so that it is now more accessible throughout the entire year.

Looking toward the future, Troop 280 has decided that they want to do more to learn about and protect this beautiful property. In 2017, three of the girls (who would eventually become the first three Senior Patrol Leaders of the troop) attended a water quality workshop at GSWA where they learned about sampling for water quality. Moving forward, Troop 280 members reached out to GSWA to see if they could start a stream monitoring project on the Chatham Property. Sandra LaVigne, our Director of Water Quality, has been working with the Troop to purchase the supplies and equipment they will need to get started. As spring approaches, GSWA will work with the scouts to develop a monitoring program for the streams on the property. This data will be added to GSWA's overall water quality data. We are excited to have these enthusiastic scouts, the next generation of environmentalists, working with us on this great new project. 🌲

Annual Great Swamp Gala Prevails

by Debbie Rice, Office Manager & Event Coordinator

GSWA's annual Gala is our most important fundraiser of the year. The event traditionally generates over 20% of revenue to support our water quality work, community education and outreach, land stewardship efforts and more. Facing a growing pandemic in 2020, along with social distancing requirements for safety and state guidelines for gatherings, we faced a unique challenge—would a 2020 Gala be possible and what could it look like?

After much research and deliberation, our amazing GSWA team of trustees, staff and creative friends braved any doubts and created our first-ever 2020 Virtual Gala and Silent Auction which aired on October 1. The theme followed *The Lorax* by Dr. Seuss, a classic environmental storybook. Embarking on new and exciting territory, the Gala team, with the help of some very talented people like Producer Tina Gargiulo and Videographer Paul Morgan of Finite Visual, quickly learned the ropes of video production and videography, which was the perfect tool for bringing the Swamp we love and the work we do into the homes of hundreds of friends and supporters. Brian Soliwoda, sporting pink hair to look like a Truffula tree, provided lively commentary as our host. GSWA Executive Director,

Sally Rubin, started us on a journey from the Passaic River headwaters in Mendham and viewers followed along to Newark Bay, where the river meets the sea. The evening included Swamp trivia, door prizes for viewers, and in-the-field guest appearances from: then Board Chair, Nicolas Platt; GSWA's Director of Education and Outreach, Hazel England; Captain Bill Sheehan of Hackensack Riverkeeper; GSWA Board Trustee Chris Obropta of Rutgers University Cooperative Extension; Sandra LaVigne, GSWA Director of Water Quality Programs, GSWA's Education Associate, Adam Palmer; and Madison High School Teacher, Karen DeTrollo.

Despite growing economic challenges, neighboring businesses offered their support, allowing another fantastic silent auction of fun items and special experiences for all, including personalized GSWA boardwalk planks, bird houses, and bench dedications. Special thanks to our loyal and generous underwriters: New Jersey American Water, BASF, Senlac Partners, Reed and Adrienne Auerbach, Glenmede, First Energy Foundation, Newmark Knight Frank, PSE&G and Valley Bank. Enhancing the experience, GSWA offered and delivered Gala Wine Packages with delicious gourmet treats and fine




wine. Special thanks to GSWA supporter Claire Griffin Miller for her delicious treats!

While we did miss seeing our friends at an in-person event, our hard work paid off and the Virtual Gala resulted in an exciting online adventure grossing over \$120,000

for GSWA! We sincerely thank every one of our supporters and friends for helping us to exceed our goals for this event. Considering the challenges we are all facing, we are grateful that GSWA stands strong and was able to keep our Gala tradition.

Miss the Gala? You can still take the journey!


Replay our video at <https://event.webinarjam.com/t/click/x4wrwayszocvwc1sytkxs8>

Use Password: greatswamp 

I have some exciting news! 2021 finds the Great Swamp Watershed Association celebrating its 40th Anniversary. Since its founding in 1981, GSWA has stayed true to its core mission. So vitally important is the water quality monitoring and testing of the streams and rivers that feed the Passaic from which two and a half million New Jersey residents get their drinking and bathing water. Countless numbers of people have benefitted from our work, and now our Board of Trustees have decided to initiate a campaign to increase our resources even more. The Angeletti Group in Harding has been hired as our campaign consultant to develop an investigation that includes a new five-year strate-

GSWA Capital Campaign

by Wade Kirby, Director of Development

gic plan and feasibility study. Our continued reach downstream will be a crucial part of the new strategic plan. One of the key components for this campaign is the anticipated acquisition of a property to call our very own. The goal will hopefully include an educational facility component and water quality lab. Education would be highly focused on all aspects of environmental science. The funds raised from this campaign will enable GSWA to have a bright and enduring future for many years to come...at least **another 40!** We will keep you apprised as we move forward, and by all means, please contact me if you would like to be a part of our impactful new growth within the community. 

Have You Considered Including GSWA in Your Estate Plans?

Designating the Great Swamp Watershed Association as a beneficiary in your will is a sure way to continue your support for our work and sustain it long into the future.

Specific language in your will should of course be reviewed with your attorney. For more information on GSWA's Planned Giving program, please contact Sally Rubin, Executive Director at (973) 538-3500 or srubin@greatswamp.org.

Creeping Under Bridges for Science!

by Sandra LaVigne, Director of Water Quality Programs

In 2020, GSWA teamed up with NY/NJ Harbor Estuary Program (HEP) to assess the culverts in the Upper Passaic River sub-watershed region. This project was developed to determine the connectivity, local hydrology, and infrastructure condition of the river crossings. Using an assessment developed by the North Atlantic Connectivity Collaborative (NAACC), the GSWA team assessed 45 culverts and crossings and entered the data into the NAACC data base for evaluation.

GSWA team members, Adam Palmer and Sandra LaVigne, trained in the field with Isabelle Stinnette from HEP to learn the ins and outs of the culvert assessments. We waded into many areas of the watershed to examine the stream crossings, crawling under local roadways and driveways. In our travels we encountered many interesting critters like beautiful crayfish and spiders who make their homes in the shady spots under the bridges.

The crossings ranged from large overpasses, like the Rt 287 bridge that spans the Passaic River in Bernardsville, to tiny pipe culverts that allow driveways to cross small tributaries in the headwater areas. Some of



Adam Palmer and Sandra LaVigne

the parameters we looked at included measuring the length, width, and height of the crossing interior; as well as determining what the structure was made of. We looked at the design and integrity of the structure as well to gauge the ability of the structure to accommodate 1 year to 500 year storm events and

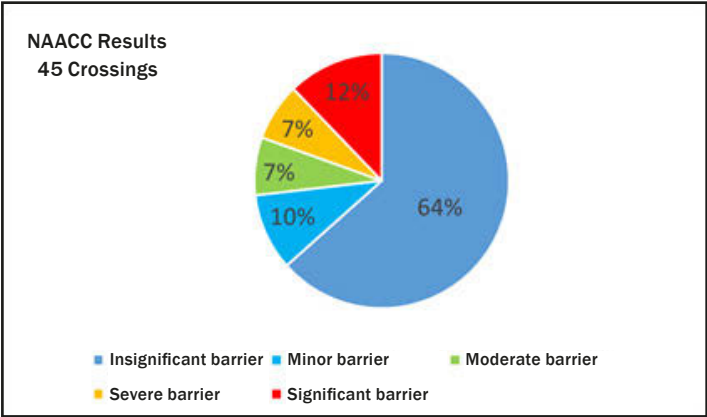


the overall condition of the infrastructure. Finally, we assessed the connectivity of the stream in the area of the structure.

Streams are ecological systems that depend on connectivity upstream and down. The life cycle of many organisms such as trout and American eel depend on their ability to move freely along the stream corridor. If barriers prevent this movement then the ecosystem as a whole can be impacted. The NAACC assessment rates the culverts from “Insignificant barrier” meaning that organisms can freely move, to “Significant barrier” meaning it is mostly impassable to the organisms that live in the stream. Overall, the majority of the culverts and bridges in our area posed little to no barrier. The findings showed that the major connectivity issues in our area were not caused by the culverts and bridges themselves but by the numerous small dams that support small ponds.

Restoration recommendations from the project include installing a fish ladder or other alternative connectivity structure at the Osborne Pond Dam. This major barrier creates almost a complete disconnect for organisms between the waters above the pond and

the waters below. Another recommendation, this one along the Indian Grave Brook, is to upgrade a small culvert pipe, which is placed so that there is a significant drop to the stream below, to a more robust structure. This would not only allow better aquatic connectivity but, by enlarging the pipe, it would be better able to handle significant rain events without the potential of flooding the road.



HEP has already shared our findings with the local municipalities. GSWA hopes that our data can help to restore stream connectivity as we work with our local towns on improvement projects. In 2021, we will continue to work with HEP to survey another section of our watershed. This area will encompass culverts in the Primrose Brook sub-watershed as well as more crossings along the Passaic River. 🌿

Two FUNdraisers Benefit GSWA

by Val Thorpe, Director of Communications & Membership

At a time where there is not a lot of good news to share, we are happy to bring you two sweet stories of unexpected donations.

Thank you, Juls & Jazmin Palmer, for your \$600 donation!

After years of enjoying their annual holiday girls' night out, several years ago Juls Palmer and her friends started a new tradition of getting together and giving back. Juls began hosting the dinner at her home. Saving money by dining in made it easy for each guest to bring a monetary donation. These collective funds

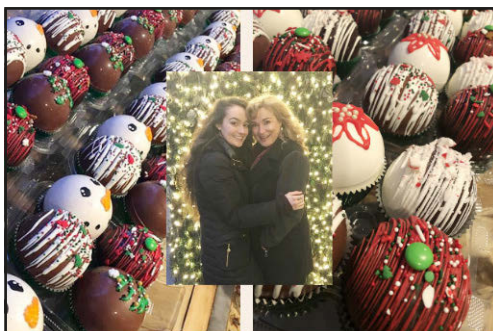
were then distributed evenly among pre-determined local charities. Juls and her daughter, Jazmin, a recent college grad, were disappointed that they could not host dinner this year due to the pandemic. So they got creative. They teamed up to make and sell delicious treats in the form of hot cocoa bombs, coffee creamer bombs, and smash bombs, with proceeds going to three charities, including GSWA. Juls told us, "We were so thrilled to work on this project together while supporting the important work taking place at the Great Swamp Watershed Association!"

Fun fact, aside from being an avid GSWA supporter, Juls Palmer is also the mom of our very own Adam Palmer, Education Associate,

hike leader extraordinaire, and our leading fungi expert.

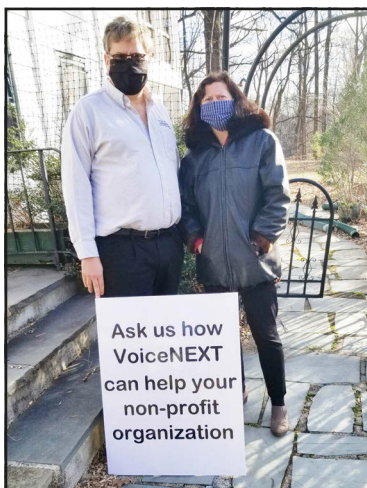
Thank you, VoiceNEXT, for your \$1250 donation!

A phone company committed to helping others and giving back, VoiceNEXT decided to get creative this year and encourage some online social interaction in the midst of the




pandemic. "We know it's been a tough year for not-for-profit organizations, so we decided to do something lighthearted for Halloween and help them out at the same time," said Mike Galkin, co-founder and VP at VoiceNEXT. They

mailed their customers candy corn and a face mask along with a note requesting that they post an honest review of their company. In return, customers would receive \$50 off their next bill and VoiceNEXT would donate \$50 to charity. As an added incentive, if customers posted a photo of themselves wearing the mask, they would receive \$100 off their bill and the donation



to charity would increase to \$100! They kept the challenge going through the end of the year and had 52 takers. The donations added up and were split between two charities, one of which was GSWA.

Learn more about VoiceNEXT at [Voicenext.com](https://voicenext.com) 

GSWA's New Virtual Classroom – Lessons and Technology


by GSWA Program Staff: Sandra LaVigne, Adam Palmer, and Hazel England

As we all adjust to the changes in schools and learning related to COVID, GSWA staff are working hard to continue to bring our excellent educational programming to students near and far through new mechanisms. Throughout 2020 we continued to educate many hundreds of students by utilizing our own phones, laptops, and cameras to bring our outdoor programs virtually to students. To move forward, we applied for many grants to help us acquire better, more advanced equipment that will improve the quality and flexibility of what we stream to classes we teach.

Through support from several private foundations and corporations, we have begun to assemble some of the new equipment, starting with a GoPro9 waterproof camera that will allow us to share with students stream life and water quality sampling directly from the stream- above and below the surface of the water. A specialized Platypod, camera stand with attached lighting will allow closeup views of macroinvertebrates so that students can see the characteristics that will help them to identify what type of specimen they are seeing. Finally, a new galaxy tablet with a cellular connection will allow us to stream directly from the streams in our watershed. Our next purchases are being finalized which will include a rugged outdoor vlogging style camera, additional stands, wireless mikes, and other gadgets and gizmos more typically found in the kitbag of a Youtuber!

Switching to virtual isn't just about getting new equipment though, GSWA educators have been working hard to make sure these

new lessons are just as valuable and effective as they have been in-person, even though classroom periods may be shortened as they become virtual. By utilizing new programs and tech such as ARCGIS and google classrooms, novel avenues of learning and lessons can be explored. For example, with ARCGISSurvey 123, students can snap a picture and add a geolocator to a collective class map as they explore their neighborhood, posting items such as storm drains and trees; which can tie into GSWA lessons and discussion on green infrastructure and ecological values.

In addition to upgrading equipment and new technology for the live virtual lessons, GSWA has also partnered with Finite Visual to film and produce a series of modular educational videos which will aid in conveying important information about water and water quality while reserving precious face-to-face (err...camera-to-camera) time with students to address their questions and promote thoughtful discussion and discourse. The eight brief videos, which are intended to be viewed either stand alone or in conjunction, will enable us to teach students about everything from what is a watershed, to how to conduct a stream flow experiment, to the benefits of green infrastructure. They will be helpful and continue to be utilized even when we return (fingers crossed soon) to in-person teaching, and will help in our ultimate goal to spread our water quality reach and message to even more communities. And the silver lining to this dark and gloomy cloud is that we are able to reach students remotely who we would not have been able to teach in-person. 

New Jersey Climate Education and You – Perfect Together!

by Hazel England, Director of Education and Outreach - Land Steward

Without a doubt, New Jersey is already feeling the impacts of a changing and warming climate! With low-lying urban centers and many miles of shoreline, the state will be at the frontline of feeling direct economic, biological, and social impacts of increasing CO2 levels affecting its climate over coming decades. However, climate change impacts are not simply limited to sea level rise, though the prospect of a 36" rise in the next hundred years is dismaying. State Climatologist, Rutgers University Professor (and sometime GSWA program presenter) Dave Robinson, notes that the impacts of a changing climate in NJ will be varied. Changing precipitation patterns are occurring—the wets are getting wetter and the dries are getting drier. The amplitude of weather extremes is increasing, and data shows the impacts are already being felt. 2018 was the wettest year on record in NJ, and the 12 months from July 2018 to July 2019 the second wettest period. Most of the top ten warmest months on record have been within the last decade. These extremes have impacts for agricultural crops, the health and resiliency of our ecosystems and a myriad of other yet unseen health and social impacts.

How then do we begin to address the compelling need to engage NJ's population in meaningful climate resiliency education, and enact the changes to our behaviors we will need to make to address this urgent global issue? One way to start is to include mandated climate change education within the curriculum for the next generation of decision makers-- it is the students of today who will become the consumers, voters, and

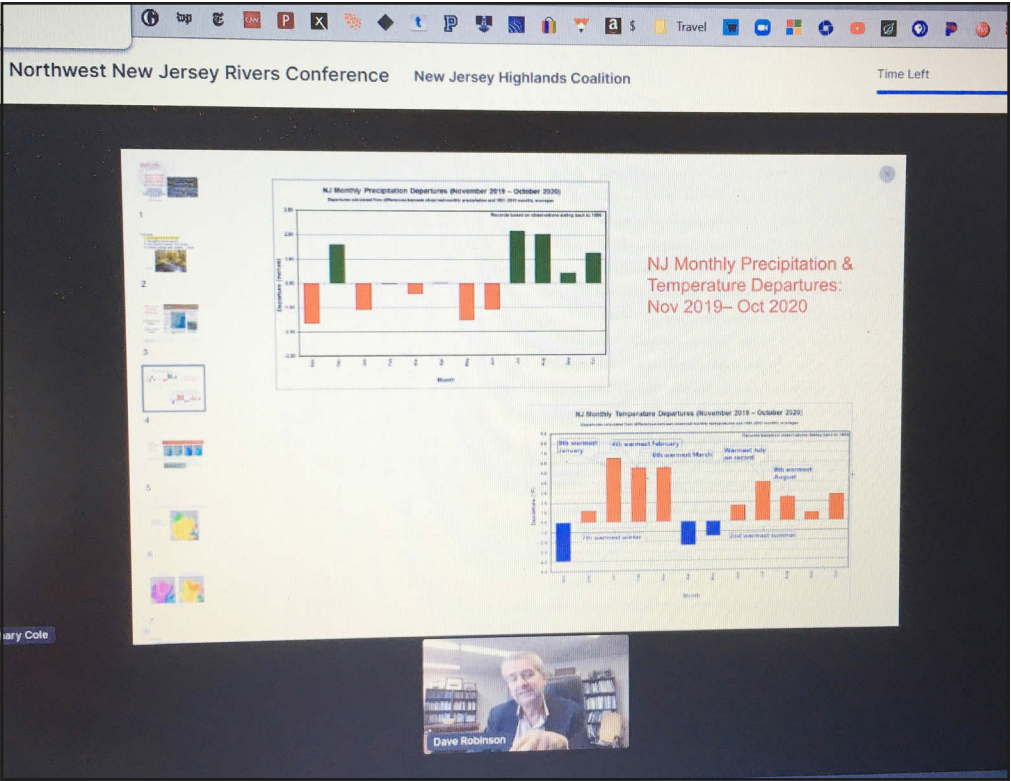
changemakers of tomorrow. On June 4th, NJ did just that, becoming the first state in the nation to adopt such unequivocal climate change learning into our state standards. The State Board of Education adopted new guidelines which will mandate that students learn about climate change from kindergarten through 12th grade. Go New Jersey!

The new standards were unveiled by first lady Tammy Murphy, who commented *"This generation of students will feel the effects of climate change more than any other, and it is critical that every student is provided an opportunity to study and understand the climate crisis through a comprehensive, interdisciplinary lens"*. The new standards will come into effect in school years beginning in 2021 and 2022 and will be integrated into multiple subject areas of the state's educational standards including science, social studies, technology, performing arts, world languages and more. As math and language arts standards come up for review, they will also be modified to include climate change learning.

GSWA education staff, as longtime providers of data-based hands-on science education, have already been teaching the many thousands of students we interact with each year about real impacts of climate change on their communities. Students learn how mitigating such impacts are critical to successfully addressing climate change. For example, students on field experiences survey the 'ecosystem services' as they hike through the forested wetlands of the Conservation Management Area. They learn firsthand that protected open spaces are not just areas to be cleared and developed but have eco-

nomic and intrinsic value as places for contemplation and recreation, and whose trees can store carbon more efficiently than any man-made machine. GSWA staff are now creating new lessons to tie into the climate change standards that will further deepen and strengthen student understanding. Using simple measurements can lead to math and science related activities that allow students to calculate the amount of carbon a specific tree species can store and highlight

the value of tree planting, even in urban communities. Our water quality programs can demonstrate how increased precipitation can be effectively handled by implementing green infrastructure such as rain gardens and bioswales around schools. By involving students directly in hands on learning about climate change, our hope is to create a new generation of changemakers who will keep NJ at the forefront of addressing the complex climate crisis. 🌱



Hot Spots

GSWA's new land acquisition: GSWA is pleased to announce that we recently acquired a 10 acre open space parcel in Chatham Township from the Kent family. The property was owned by the Kent family since 1947 and we are grateful to them for their donation. The property is located at the end of Evergreen Road and connects to another small parcel owned by GSWA on Swamp Road. It is also adjacent to the Great Swamp National Wildlife Refuge. The property contains wetlands and has potential for restoration to improve hydrology, flood storage, improve habitat and connectivity with existing preserved open space. Ultimately, our intent is to remediate and restore habitat to high value wetlands. Thank you to Fred Kent for working with us on this acquisition and thank you to the entire Kent family for their contribution. If you have a property you may be interested in donating or conveying, please contact Sally Rubin at srubin@greatswamp.org.

Rolling Knolls: Rolling Knolls Land-fill Superfund in Chatham Township continues to be a hot environmental issue. NJ Department of Environmental Protection (DEP) has provided comments to the EPA and EPA has provided comments and instructed the responsible parties (PRP) to revise the draft feasibility study which will ultimately provide five potential alternative clean up remedies. The EPA will then select their preferred alternative.

GSWA applied for and received a grant from the EPA to hire a technical advisor to assist the community in understanding and providing input into the clean up process. The advisor, GEI Consultants, has reviewed and continues to review documents

and provide guidance to GSWA and the Community Advisory Group (CAG). Most recently, on January 14, GEI made a presentation to the CAG along with a presentation by a consultant retained by the Department of the Interior (DOI). DOI has retained the consultant to do further testing and analysis of the portion of the site located in the Wilderness Area of the Refuge. Both presentations are available on GSWA's website. The next CAG meeting is a zoom meeting scheduled for March 18. We anticipate an update on the feasibility study will be presented by the EPA. Please reach out to Sally Rubin at srubin@greatswamp.org if you would like more information on this important issue.

Noe Pond in Chatham Township: Great Swamp Watershed Association and Save Noe Pond, a grassroots coalition, have joined forces to protect the delicate ecosystem in and around Noe Pond from devastation as a result of anticipated construction and overdevelopment. Our focus is education on the ensuing environmental impacts and advocacy to build support in opposition to over development of the property in Chatham Township.


Noe Pond sits on a 35-acre site that directly borders the Great Swamp National Wildlife Refuge. Much of the site is wetlands and the defining feature is the three-and-a-half-acre farm pond. Noe Pond has been a part of Chatham's history and culture since the American Revolution. Potential excessive development could have detrimental effects on the substantial wetlands on the property and the Great Swamp National Wildlife Refuge.

The historic Noe Pond property was originally part of a larger 800-acre tract

of land that was home to a dairy farm and a rose business in the late 1800s, with the Noe greenhouses becoming a focal point of the American rose-growing industry. Noe Pond itself provided water for the dairy farm and rose business and served as an oasis for families from miles around during warmer weather while supplying ice to the local community during winter months. In 1955, the Noe Pond Club was founded on the property as a swimming and recreation club for local families and quickly became a cornerstone of the local community.

In September 2020, after more than 65 years of operation, the property owners shocked members, employees, and a broad community of diverse stakeholders when they announced the sale of the property to a real estate developer. A grassroots coalition

formed under the banner Save Noe Pond, which is dedicated to protecting the property from development that could bring substantial harm to the wetlands and wildlife on and around the property and the adjacent Great Swamp National Wildlife Refuge.

“Noe Pond and its surrounding fields and forest have been enjoyed by generations of families in our community,” said Rich Rein, spokesperson for Save Noe Pond. “Destroying this delicate ecosystem by building a large scale residential real estate development is an attack on our environment and our community.” Rein concluded, “We are thrilled that the Great Swamp Watershed Association will join in our mission to educate the public about this proposal and help protect Noe Pond’s future.” 

Interested in Volunteering?

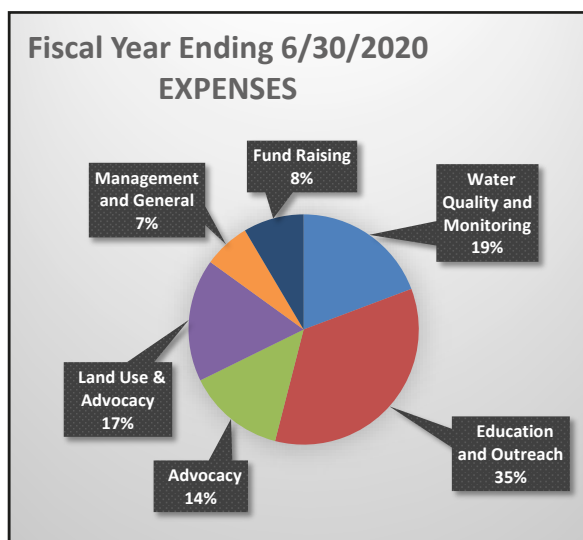
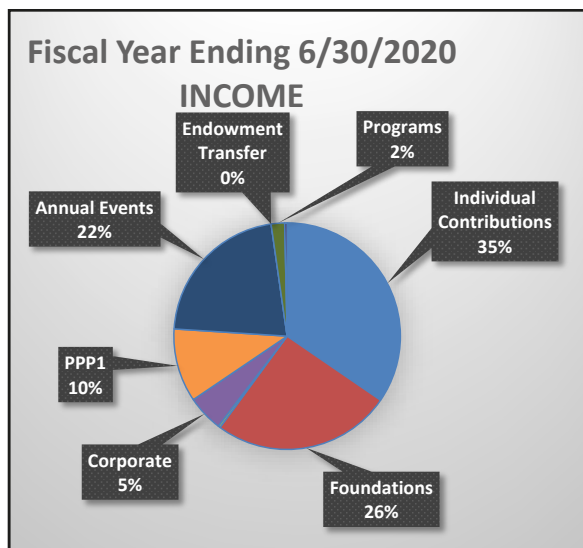
If you are interested in getting actively involved in efforts to protect and preserve the watershed, GSWA has a number of volunteer opportunities (see *GreatSwamp.org/volunteer/*).

Please send an email to *volunteer@GreatSwamp.org* if you would like to volunteer.

Financial Report: Statement of Activities for the Fiscal Year Ended June 30, 2020

by Sue Levine, Director of Finance

	2020
INCOME	
Individual Contributions	\$ 361,194
Foundation Support	\$ 266,710
Government Grants	\$ 3,295
Corporate	53,685
Annual Events (Gross)	226,971
Endowment transfer in (4% draw) - see Note 1	-
Programs	20,000
Miscellaneous & Interest Income	3,643
Total from Primary Operations	935,498
PPP1	109,500
Total Operations	1,044,998
EXPENSES	
Programs:	
Water Quality and Monitoring	\$ 152,333
Education and Outreach	\$ 274,600
Land Use & Advocacy	\$ 244,878
Total Program Expense Note 4	671,811
Management and General	51,568
Fund Raising	67,301
Direct Benefit to Donors	-
Total from Primary Operations	790,680
SURPLUS/(DEFICIT) - see Note 1,2 (a)	\$ 144,818
ENDOWMENT ACTIVITY	
Market Value 6/30/19 Note 3	\$ 1,224,986
Investment Income & Interest Earned (b)	32,899
Gain/Loss on Investments (c)	20,188
Net change - see Note 2	53,087
Transfer to Operational Funds Note 1	(53,815)
Endowment Market Value 6/30/20	\$ 1,224,257
Market Value 6/30/19 Operational Funds Invested	\$ 96,050
Change to Operational Funds Invested	53,815
Market Value 6/30/20 Operational Funds Invested	\$ 149,865
Total Funds Invested 6/30/2020	\$ 1,374,123



- Note 1:** The organization did not use 4% allotted to operations from the endowment. The funds were set aside as Invested Operational Funds. These funds include the Endowment Transfer 4% and market changes.
- Note 2:** To tie to the audited financial statement's "change in net asset" line, you need to add (a), (b), and (c) left.
- Note 3:** The Endowment has \$65,080 permanently restricted funds
- Note 4:** Depreciation of \$8,841 is included in program expenses



Great Swamp Watershed Association

The Passaic River WATERKEEPER® ALLIANCE Affiliate

Post Office Box 300

New Vernon, NJ 07976

(973) 538-3500

www.GreatSwamp.org



*Printed on recycled paper.
Please recycle again.*