

The Presidents Pen

Thank you for celebrating our 35th Anniversary

By Jaclyn Rhoads, DCVA President

DCVA celebrated its 35th birthday in May at the Springfield Country Club. Thank you to our many supporters including Master Watershed Stewards, William Penn Foundation, and several organization and board members listed on page 5 for making the event fun and successful. We also appreciate our speakers including Ken Hemphill and Marple Greenspace. DCVA presented the group with the Bob Doherty Ribbon of Green Award which recognizes “individuals” making a difference in the community.

Former Congressman Curt Weldon shared fascinating information about the history of Darby Creek and Marcus Hook where he started his career as a school teacher! The Congressman along with several State Representatives – Jennifer O’Mara, Christopher Quinn, and Greg Vitali helped to provide answers to attendees burning questions about the current issues in the watershed.

It was great seeing so many of our members and volunteers at this evening event. Proceeds from our silent auction were donated to Save Marple Greenspace in order

to continue the fight to protect Whetstone Run and the last remaining forest area in Marple Township. The battle continues as the developer continues to push for housing in that pristine area of woods!

All of our efforts would not be possible if we didn’t have dedicated members to support the mission of the organization. Your membership means so much to our water quality and water supply! Every day we do our best to make sure these resources are available for future generations and hopefully cleaner than they are today.



Great Events this Autumn! See this issue of *The Valley* for Details!



- ◇ Trolleyfest
- ◇ Perils of Plastic Lecture

In this issue of *The Valley*:

- Go Plant a Tree
- Plastics– Agh!
- Update on Meadowbrook Run
- EPA repeal of the Clean Water Rule
- History we can learn from cemeteries
- And more!

15th Annual OcTrolleyFest Celebrates Transportation Heritage and Community October 12th by Jan and John Haigis

What do Darby, Media, Norristown, Yeadon, Sharon Hill, Collingdale, University City, Center City, Upper Darby, the Delaware River Waterfront, The Philadelphia Zoo, Philadelphia Airport, Bartram's Garden, the Grange Estate, and a myriad of other historic sites have in common?

The answer is they are all linked by an existing light-rail network connecting us with each other and with the world. On **Saturday, October 12**, the **15th annual OcTrolleyFest** will once more celebrate these connections along with transportation heritage and community in an event we are calling, "Trolleys and Scarecrows and Mills, Oh My." The region is invited to "Get on Board" and explore a new (and old) world on a trolley. "

OcTrolleyFest started in 2005 to celebrate the first streetcar (horsecar) line to come to Delaware County in 1858, still running over its original route as the SEPTA route 11. "It's like we live in Disneyworld." said John Haigis, who coordinates the annual event with his wife Jan. "One difference is we have the real thing connecting all of us. OcTrolleyFest is a good chance to celebrate our historic sites and the places we call home." Since 2005, OcTrolleyFest has expanded as participants are encouraged to explore the many historic sites accessible by light rail throughout the entire region. However you go, the journey is the show!



Events in Darby begin at 10:30 am at **Darby Free Library**, founded in 1743, with a display of Darby's mill heritage as part of Delaware County's **Year of the Mill**, followed by a walking tour to the site of Darby's millrace, built before 1695. There will also be visits to the site of the mills of "The Darby Ram." There will also be visits to the site of Swede's Mill, the first water powered grist mill in Pennsylvania, built by Swedish Governor Printz, circa 1645. Other events include a trolley song sing-a-long, making scarecrows from recycled materials, the cathartic "Bubble Wrap Stomp," an art contest sponsored by Sharon Bank, and many more surprises. Between 2:00 and 4:00,

people are invited to get on board a vintage streamlined President's Conference Committee (PCC) trolley to enjoy a free ride (space permitting) through 300 years of history, followed by a free reading of a new play, "A Streetcar Named Freedom."

A wreath laying ceremony at the grave of baseball pioneer, streetcar and civil rights activist **Octavius V. Catto** is planned at 10:00 am at Historic Eden Cemetery, on land that was the birth place of famed Botanist John Bartram.



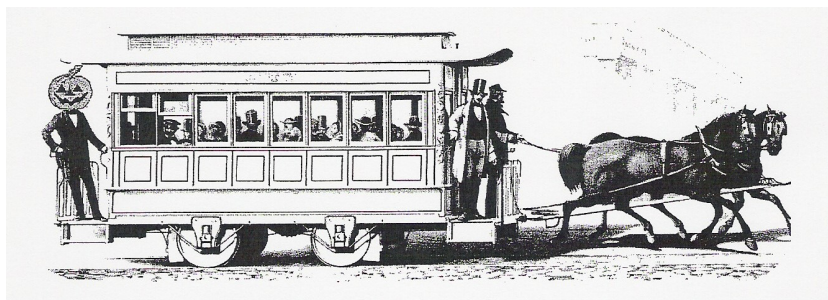
Photo at Bottom left: PCC (President's Conference Committee) trolley; Above: Pumpkin Man in front of the Darby Library; Below right: scarecrow made from gallon milk jugs, a coat hanger, fabric, and PVC pipe

Photos by John Haigis



Continued from previous page. Catto founded, and was one of the star players for, the Pythian Baseball Club, a pioneer team of what later became the Negro Baseball League. That ceremony will be followed by an exhibition match of civil war era baseball between the Philadelphia Athletic Baseball Club and the Mohican Baseball Club of Kennett Square on the grounds of Woodburne Mansion across the street.

History, Harmony, Heritage, Fun! Additional information on Trolleyfest and a complete schedule can be found by visiting DarbyHistory.com or DarbyHistory.com/Oct-1 or by calling (610) 809-4856.



Summer brought more bad news for protection from pollution of the nation's rivers, lakes, streams, and wetlands ... but you can do something!

By Robin Mann

On September 12, 2019 the U.S. Environmental Protection Agency announced its repeal of the Clean Water Rule, a rule adopted by the Obama administration to clarify the broad scope of waters needing protection to meet the goals of the Clean Water Act. When the EPA and the Army Corps of Engineers first proposed repealing the rule in 2017, they received over half a million comments in strong opposition from the public, including from DCVA members. Their proposal the following year to repeal and replace the rule was met with a similarly strong reaction. The response included a joint letter from 187 organizations from across the country representing millions of members and supporters objecting that the agencies would be ignoring "the overwhelming scientific evidence that protecting small streams and wetlands is essential to ensuring water quality in downstream rivers and larger water bodies." [Environmental non-governmental organizations' letter of Aug. 13, 2018]. The EPA's recent announcement turns a deaf ear to those concerns, claiming the need to end uncertainty and to return more oversight to individual states to protect their waters. The agencies say they will propose a new rule in the coming months. A drastically narrowed definition, excluding a vast extent of headwater streams and wetlands, is anticipated. In light of the poor legal justifications for their actions so far, it is likely the "waters of the United States" issue will be headed back to the courts.

But meanwhile, the EPA has been considering another concession to polluters: hand-cuffing the way states can protect their waters through their involvement in federal Clean Water Act permitting. Under Sec. 401 of the Act, states are afforded water quality certification authority, to, within a specified timeframe, certify, deny or condition permits for pollution discharges and other activities that can impact the quality of their waters. In 2010, EPA issued guidance providing that states must be able to have the full information on a proposed project before the clock starts ticking. The Wheeler EPA has now proposed guidance that would reverse that assurance and further circumscribe states' abilities to influence federal permitting of projects in their waters.

*Continued from previous page.....*The agency floated this plan with stakeholders several months ago, including state governments. Among other responses, they received a strong letter of objection from over a dozen states' Attorneys General including the Pennsylvania Attorney General, and PA Department of Environmental Protection as well. The letter argues that "the Guidance undermines the cooperative federalism framework of the Clean Water Act," and "attempts to unlawfully undermine the states' broad and independent authority under Section 401 to evaluate federal project impacts and protect state waters." Regarding the complete application issue, the letter points to the "gamesmanship" that otherwise occurs if project applicants are able to withhold information. And the letter further argues, "As the Supreme Court has recognized, 'State certifications under Sec. 401 are essential ... to preserve state authority to address the broad range of pollution' impacting state water resources. ... This is especially problematic for federally licensed hydroelectric and interstate natural gas projects, which are regulated by the Federal Energy Regulatory Commission ("FERC") under licenses with decades long terms that are largely exempt from state law regulation." State Sec. 401 review is "generally the only mechanism available" to ensure these projects are reviewed and conditioned to protect state water quality. [July 25, 2019 letter of Attorneys General to EPA Administrator Wheeler re CWA Section 401 Guidance].

EPA is accepting comments on this proposal through October 21, 2019. Please add your voice opposing the proposed guidance via www.regulations.gov using docket number EPA-HQ-OW-2019-0405. Let the agency know that they are wrong to be seeking to hobble states' ability to protect water quality; they should show genuine respect for partnering with states to protect our waters, and should restore the 2010 guidance.

Buried History.....What cemeteries can teach us.

by Jan and John Haigis

New England transcendentalist Ralph Waldo Emerson once famously remarked "there is properly no history, only biography," and if this is so, the Darby Creek watershed has an abundance of important stories in its many cemeteries. One of the more remarkable is Eden Cemetery on land that was once the Bartram family farm on the west bank of the Darby Creek. Started in 1902 as one of the nation's oldest African-American owned cemeteries, Eden is a treasure trove of important but sometimes relatively unknown stories to teach, to illuminate, and to inspire.

One of the more inspiring stories is that of opera singer Marian Anderson who, in 1939, was refused permission to sing in Washington, D.C.'s Constitution Hall because she was African-American. Instead, she was able to sing on the Washington Mall, not for 4000 people, but for 17,000 people and a worldwide audience of millions. This petty act of prejudice was transformed into something quite different and gave a larger voice to the cause of human freedom and dignity.

Another Eden story centers around the struggle to desegregate streetcars. In 1858, when streetcars first came to Philadelphia, people of color could not ride inside the cars and had to ride on the platform regardless of who they were, their station in life, their educational level, or their ability to pay. Underground Railroad icon, William Still, started a petition drive which by 1862 had gathered the signatures of more than 300 prominent Philadelphians including Lucretia Mott. She would ride outside on the platform in solidarity regardless of the weather. William Still pointed out that families of soldiers wounded in the Civil War had difficulty in visiting their loved ones recovering in local army hospitals including Summit Hospital (70th and Woodland) and Satterlee General Army Hospital in what is now Philadelphia's Clark Park.

Continued from previous page... Other stories of Eden citizens include Francis Ellen Watkins Harper, abolitionist, teacher, and poet, and Civil War era diarist Emilie Davis who were among the many women who participated in sit-down strikes on streetcars 100 years before Rosa Parks. These examples of courage and persistence in the face of oppression are stories that need to be told. In the same vein are stories of women who challenged segregation in court after such segregation was outlawed in 1867. Among these was educator Caroline LeCount, who was engaged to be married to Octavius Catto at the time of his politically motivated assassination which occurred during the first election where African-Americans were able to vote in 1871.

Octavius Valentine Catto, who recently received a monument in his honor outside Philadelphia's City Hall, taught Greek and Latin at what became Cheney State University. He also raised a regiment during the Civil War and started one of America's first black baseball teams, the Pythians. Named after the Knights of Pythias and inspired by the example of friendship and honor of Damon and Pythias, the Pythians showed that black players were just as talented and capable as white players.

Another Citizen of Eden recently receiving some attention is John Pierre Burr, son of Vice President and "Hamilton" musical villain Aaron Burr. Acknowledged last year after DNA testing as a descendant of Aaron Burr by the Burr family association, John Pierre was an abolitionist, barber, and signer of Frederick Douglass' "Call to Arms" poster which encouraged men of color to fight for their own freedom. As an aside, other signatories include: Octavius Catto, his father, Rev. William Catto, Jacob White, (others), many of whom are also citizens of Eden. Burr was also a founder of the Demosthenian Institute" organized in his home on January 10, 1837 to teach young black men the art of public speaking. Burr and his wife Hetty were leading members of Philadelphia's free black community and their story needs to be told.. Another Citizen of Eden, who lived in the shadows, is Julian Abele, the first African-American graduate of

The University Of Pennsylvania School Of Architecture. Recognizing Abele's talent, noted Philadelphia architect Horace Trumbauer hired him in 1902 and made him his shop foreman in 1909. In his capacity he was the architect on such major projects as the Philadelphia Museum of Art, the Philadelphia Free Library, Duke University, and many more. However, his name does not appear on the drawings, being labeled under the name of the firm and not the individual designer. As he said of the Free Library, "the lines are all Mr. Trumbauer's but the shadows are all mine." Documents also suggest he may have had a part in the design of Woodburne Mansion across Springfield Road from Eden Cemetery.

Cemeteries like Eden, like all our area's places of rest, can be teaching tools. Legacy and lessons abound for those willing to look. For more information, <http://www.darbyhistory.com/Eden.html>

Sincere thanks to everyone who donated a gift basket for the silent auction at DCVA's 35th Anniversary Celebration:

Jamie Anderson
 Apple Walnut Cafe-Broomall
 Bernadette's Jewelry & Gifts- Broomall
 Bike Line Bicycle Shop
 Terry Cooke
 Kate Goddard Doms
 Friends of John Heinz
 Haverford Community Environmental and Recreation Center
 Rich Horowitz - Academy Natural Science
 Longwood Gardens
 Susie MacDonnell
 Marty Milligan
 Philadelphia Union
 Rick's Professional Detailing- Havertown
 Ruth Chris Steakhouse
 Wetlands and Ecology, LLC
 Tyler Arboretum

Thanks also to:

Penn State Master Watershed Stewards and Master Gardeners who supplied the Center pieces and other floral arrangement, which were sold to help support the Penn State Extension Programs training.

Go Plant a Tree

By: Susan Miller

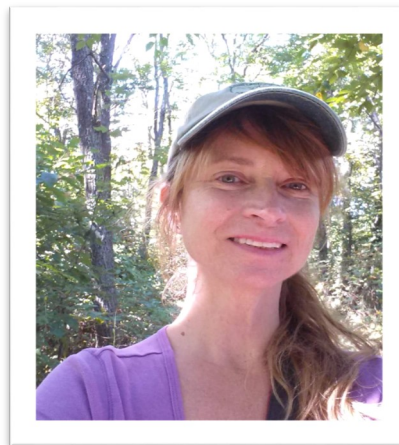
DCVA Director

Earlier this year PECO started trimming and removing trees from Easttown Township in order to make improvements to the lines and prevent future outages. The residences were upset seeing beautiful decades old trees being taken down. The residents realized the importance of trees, and not just from the aesthetic point of view. They realized that the trees play an important role in the environment. Trees provide oxygen, shade help control storm water, increase property values and much more. DCVA will be obtaining and planting another 60 trees for the tree replenishment later this month. A total of 114 trees were funded by PECO and planted by DCVA volunteers and homeowners to replenish the trees cut in Berwyn.

Many don't realize that one mature tree can produce 260 pounds of oxygen a year. One large tree can provide a day's supply of oxygen for up to four people, an acre of trees can produce enough oxygen for 18 people. That same acre is also removing 2.6 tons of carbon dioxide from the atmosphere. Studies have shown that in areas where there are more trees people are healthier and there is a reduction in the number of asthmatics. A study of ten cities found community forests save an average of one life each year. In New York City, trees save an average of eight lives every year (U.S. Forest Service, 2013).

Trees planted within 50 feet of a home can cool a home in the summer. Trees lower surface and air temperatures by providing shade. Shaded surfaces may be 20–45°F cooler than the peak temperatures of unshaded materials (U.S. EPA). Trees cool the city by up to 10°F by shading our homes and streets and releasing water vapor into the air through their leaves (Carnegie Institution, 2011). Trees properly placed around buildings can reduce air conditioning needs by 30% and can save 20–50% in energy used for heating (U.S. Forest Service).

Carefully positioned trees can reduce a household's energy consumption for heating and cooling by up to 25%. Computer models devised by the U.S. Department of Energy predict that the proper placement of only three trees can save an average household between \$100 and \$250 in energy costs annually (Energy.gov).



Trees can also reduce crime in areas. In Baltimore, a 10% increase in tree canopy corresponded to a 12% decrease in crime (University of Vermont and U.S. Forest Service, 2012). Among minor crimes, there is less graffiti, vandalism and littering in outdoor spaces with trees as a part of the natural landscape than in comparable plant-less spaces (University of Washington). Chicago public housing residents with nearby trees and natural landscapes reported 25% fewer acts of domestic aggression and violence (University of Illinois, Urbana-Champaign, 2001).

One of our areas biggest concerns is water quality and storm-water runoff. Every tree planted can make a difference. One mature tree can drink up to a 100 gals of water a day. That same mature tree also stabilizes the ground and helps prevent sediment runoff that ends up in our streams.

There are many different types of native trees that can be planted. Google PA native trees and shrubs for a list that will be suitable for your property. Pay attention to soil and sun conditions and growth size. Smaller lots consider smaller trees or shrubs. So look at your property, see if you have room to plant a tree or shrub, and go plant. Late September or early October is a good time to plant, as well as spring.

Happy Planting !!!!!!!

Most information is from:
<https://www.arboday.org/trees/treefacts/>



See next page for photos of the tree cutting in Easttown Township



Trees cut along Newtown Street Road in Easttown Township to make way for new, taller power lines. Power outages are frequent in this area. Some residents have purchased generators, but not everyone can afford a generator. This area was targeted for new power lines due to the frequent outages. Residents have been encouraged to plant trees that are native to the area and will not grow tall enough to interfere with the power lines.

Photos by Kate Doms

Meadowbrook Run Wetland Rehabilitation at Sacred Heart Academy-Phase 2 Continued

by Ann Jackson

The Meadowbrook Run Wetland Rehabilitation continues. It's a big job but somebody has to do it. In 2019 volunteers planted 383 flowers for pollinators and 23 *Cornus sericea* and *Ilex verticillata* and weeded and weeded and weeded. Thank you volunteers, Sacred Heart Academy students, faculty, and staff; DCVA, Master Watershed Stewards, Delaware County Conservation District (DCCD), Kaleidoscope and thanks to Sue Miller for help recruiting volunteers!

The Meadowbrook wetland is an environmental educational tool. The second and sixth grades collected trash and debris from the Brook and riparian area. The fourth grade students and their science teacher documented seasonal change in the wetland. The environmental science class and their teacher explore the wetland beyond the textbook on one of their many field and stream days. The work will continue in Fall 2019 and Winter, Spring,-Summer 2020 in Phase 2-Con't-Con't;

Tentative Plan. Dates to be announced:

Nov, 2019 /Early February, 2020: cut vines and clear Upland Plateau-vernal pond area

Feb/Early March, 2020: Harvest willow stakes and plant in erosion areas in Meadowbrook Run

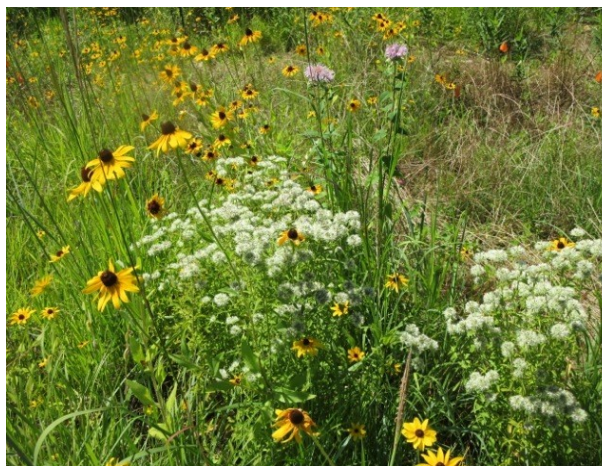
April, 2020: Plant shrubs in Upland Plateau area

May 2020:Plant flowers in Upland Plateau area.

The project has been supported by Delaware County Conservation District's Mini-Grant and in-kind contributions from DCVA members.



Meadowbrook Run Wetland Restoration. Top Left: Yellow Swallowtail on joe pyeweed; Second Row from top on left: Volunteer removing weeds; Second Row from Bottom: Kaleidoscope volunteers planting; Bottom Left: *Monarda didiyma* planted in the riparian zone; Immediately Below: L-R George, Tom, Carol; Middle Row Below: Cindy in the weeds; Bottom right: Black-eyed susans, Monarda fistulas, Mountain mint on an upland slope. All photos by Ann Jackson



Canoe/Kayak on the Water Clean Up was a Great Success!

By Sue Miller, DCVA Director

On September 14, 2019 approximately 15 canoes or kayakers launched at the Ridley Marina and approximately 10 kayakers or canoes launched at John Heinz. Their mission was fun and cleaning up the creek. What was really neat was at Ridley we had people in small boats also. The Officers from the Fish and Boat Commission saw us; they joined in and helped us out. People who were just there to canoe also wanted to join in our efforts. They signed up and took a bag and gloves. Special thanks to the Philadelphia Water Department who brought a small boat in which they ferried some volunteers, including me, to sandbars to clean up trash there. We filled the boat with volunteers!

Having canoers, kayakers, boaters sign up who were just there to boat for fun, gave me an idea for next year: In the summer when there are lots of boaters we can repeat this event and allow anyone who sees that we are cleaning up the creek to sign up to help and also sign up to join DCVA. We encountered people who enjoy the water and want to protect it. I look forward to meeting more next year. We also made a great connection with the Fish and Boat Commission and I am looking forward to a few partnership ideas they had. In all it was a great day.



Top Left: Volunteers collecting debris; Top Right and Bottom Left: Fish and Boat Commission Officers join in the fun; Bottom Right: Volunteers collecting debris. *All Photos by Rachael Winslow*

The Darby Creek Valley Association Annual Fall Darby Creek Race

By Susan Miller, DCVA Director

On September 8th racers turned out to enjoy the DCVA annual Fall Darby Creek Race. The race is 7 miles round trip from Ridley Marina in Ridley Park to the turn around at the John Heinz National Wildlife Refuge and back to the marine. After the race the racers enjoyed appetizers at Stringers Restaurant located at the Ridley Marina. Below are the race results, and DCVA would like to thank all the racers that came out, and a special thank you to Glenn Green for the organizational assistance.

RACE RESULTS

Robert John	1:02:09	unknown	unknown	unknown
Alan Lamb	1:02:43	Mens	Open (19-39)	ICF K-1
Andriy Lyssckoo	1:02:58	Mens	Senior	ICF K-1
Cliff Roach	1:05:42	Mens	Senior	Long Surfski k-1
number 33	1:10:00	Mens	veteran	Long Surfski K-1
Barry Slaff	1:12:33	Mens	Open (19-39)	OC-1
Megan Pfeiffer	1:12:28	Woman	Open (19-39)	OC-2
Glenn Green	1:15:26	Mens	Grand Veteran	Long Surfski k-1
John Sullivan	1:16:36	Mens	Senior	OC-1
David Andrien	1:17:26	Mens	Senior	OC-1
Daniel Nemeth	1:17:35	Mens	Veteran	Racing Canoe-C-1
Bryton Palmer	1:18:16	Mens	Master	Racing Canoe-C-1
Colleen Kunz	1:19:30	Woman	Senior	OC-1
Eric Scatchard	1:21:57	Mens	Grand Veteran	Recreational Kayak K-1
Erin Lamb	1:29:11	Woman	Open (19-39)	ICF K-1
Debra Witowski	1:43:10	Woman	Veteran	Recreational Kayak K-1
Robert MCNamara	1:51:24	Mens	Veteran	OC-1



Raw Sewage in Local Watersheds: A Growing Problem

By Kate Doms



“Sanitary” sewage is what we normally think of as sewage, meaning waste from toilets, showers, and other domestic use. This waste is generally treated in sewage treatment plants in the United States. The solid waste that results from the completed waste treatment process can be taken to a landfill or spread on farm fields as fertilizer. The cleaned water is released into streams or rivers and after processing in a drinking water treatment plant, is the drinking water for people downstream. Homes that are not connected to municipal sewage treatment systems may have onsite waste treatment, such as a septic tank. In some parts of the world such treatment does not yet occur, raw sewage is released into streams and rivers. In the United States stormwater is collected in pipes that are generally separate from the sanitary sewer system and released untreated into streams and rivers. Under our streets is a network of sanitary sewage pipes, stormwater pipes, telephone, cable TV, electrical wires. The Sesame Street video “Down below the Streets” by Fourteen Karat Soul is a must see! <https://www.youtube.com/watch?v=Top8ICjjMw4>

Leaky sewer sanitary pipes and septic tanks are a well-known problem throughout the United States and the world. We know that the sewage therein can leak out into the adjacent ground, but it is somewhat surprising to learn that flow of ground water and stormwater into sanitary sewer systems is also a problem called I & I or Infiltration/Inflow. Stormwater and groundwater entering sanitary sewer systems through faulty pipe joints and broken pipes is called infiltration. Pipes can degrade over time or be broken by heavy trucks running on the streets above or earth movement. Inflow is water entering sanitary sewer systems due to inappropriate connections that were made on purpose or by accident. For example, directing roof gutter flow into the sanitary sewer system is inflow. Infiltration/inflow increases the amount of sewage entering sewage treatment plants particularly during storms. This can overtax the sewage treatment plant. Municipalities can be compelled to fix their leaky underground pipes to stay within their allotted contribution to the flow through a sewage treatment plant.

Combination sewer systems (CSO) are another way that stormwater and sanitary sewage get combined. The sewer systems serving three-fourths of the city’s residents (Center City, South Philadelphia, West Philadelphia, North Philadelphia, Bridesburg-Kensington-Richmond, East Mount Airy, East Germantown, and Northeast Philadelphia) and some nearby suburbs in both the New Jersey and Pennsylvania are CSOs meaning that the sanitary sewer system and the stormwater system are connected (Kummer, 2019). The original reason for this design was to allow high flow to run into the Delaware and Schuylkill Rivers. Indeed that is what still happens, but as pointed out in “The secret scourge of climate change? More raw sewage in Philadelphia’s waterways.” by Frank Kummer in the *Philadelphia Inquirer*, this problem may be increasing due to climate change; The issue is greater rainfall; Kummer points out that rainfall in our area as measured at the Philadelphia International Airport has increased over the decades.

While the sewage that overflows from COs into waterways is diluted by the rainfall and stream or river water, it is nonetheless raw sewage entering streams and rivers. Swimmers, fishermen, kayakers, sailors, pets- just about anyone in or on the water can be exposed to the waste and accompanying pathogens. The Philadelphia Water Department cannot possibly dig up all of the streets to replace the pipes or disconnect the CSO connections, so they are addressing the problem through their “Green City, Clean Waters” Program which is 700 different projects that have helped reduce the city’s combined sewer overflow by 1.7 billion gallons during a typical year of rainfall. The problem is going to increase in the future. The reader is encouraged to read the article by Mr. Kummer for more information and to view the photographs and diagrams that explain this issue further.

Literature Cited:

The secret scourge of climate change? More raw sewage in Philadelphia’s waterways.
by Frank Kummer, Updated: September 13, 2019 *Philadelphia Inquirer*

MICROPLASTICS:AGH!

BY KATE DOMS



Many readers are familiar with “The Great Pacific Garbage Patch” – One huge area of debris collected in the western Pacific and another one in the eastern Pacific. A little over one half of this trash comes from the land. Much of the debris is plastic bags, plastic bottles, bottle caps and Styrofoam (1). Most of the remainder is fishing nets and things that are discarded from or fall off ships. All of this trash is unsightly and dangerous to marine life. We know that plastic bags filled with water are mistaken for jellyfish by sea turtles that prey upon jellyfish. Further, albatrosses and other birds mistake tiny plastic or Styrofoam pellets for fish eggs. Birds, sea turtles, fish and other sea creatures get tangled in fishing lines and ropes. I remember an assembly in middle school at which a representative of the oil company for which my father worked spoke about how much the invention of plastic had changed the world. I was amazed and proud that my dad’s company played a role in producing these miraculous products. Now I wonder.... If you could turn back the clock- would you eliminate the development of plastics??

It turns out that it not just plastics in the Great Pacific Garbage Patch and the grocery bags hanging in local trees with which we should be concerned... Microplastics are particles of plastic less than 5 mm (about 1/8 inch) in size (2). Primary microplastics are plastic particles made deliberately small to add to toothpaste, facial scrubs, or lacquer removal products. Plastics from the breakdown of larger plastic items are classified as secondary microplastics. They can even slough off synthetic clothes. Microplastics in freshwater ecosystems, like those in the GPGP, can be from litter that originated on the land. Mowing grass along roadsides helps to break down litter into microplastics (2). Microplastics are not completely removed from water passing through a waste water treatment plant before it is released into a body of water.

During a rain storm microplastics can also run off sewage sludge that has been spread on farmer’s fields. The breakdown of plastics used for weed control in fields is another source of microplastics that can runoff fields into aquatic systems. Microplastics from all of these sources end up back in surface waters and riverine soils (2).

Quantification of the amount of microplastics in freshwater, estuarine, and marine communities and their possible effects is a growing area of research. Researchers from University of South Florida St. Petersburg and Eckerd College report 4 pieces of microplastic per gallon in Tampa Bay, Florida. That does not sound like much, but when the researchers calculated how much microplastic that represents in the whole Tampa Bay-that amounts to 4 billion particles (3).

Microplastics are in the range of particles eaten by freshwater zooplankton, some insects and protozoans and worms, and organisms that filter water to obtain their food such as freshwater mussels and clams (4). A student in my freshwater biology class ground up a black plastic bottle lid to match the particle size of commercially available *Daphnia* food- within the microplastic size range. He was able to see the black plastic in the *Daphnia*’s gastrointestinal tract. Whether the plastic clogged the gut, or the sharp edges of the plastic produced internal wounds was not clear, but all of the *Daphnia* that ingested the plastic died. Other researchers have also found that a variety of zooplankton ingest microplastics (2, 4). Fish may even ingest microplastics, particularly those that eat plankton or detritus (organic material which are a mixture of dead plants and their microscopic decomposers found on the bottom of streams, marshes, and the sea) (2, 4).

So let’s remember to take the reusable plastic bags into the grocery store, and pass by the facial scrubs in the cosmetics aisles. That’s a start in trying to address this massive problem!! **In addition, on the next page are some seminars at which we can all learn more!**

Continued from previous page...

Two upcoming lectures on plastics:

Perils of Plastics – A Presentation by Sherri Mason. Sunday, September 22, Doors open at 4 p.m. for light refreshments, lecture begins at 4:45 p.m. - Stroud Water Research Center Meetinghouse, 970 Spencer Road, Avondale PA 19311 - For more information, call 610-268-2153, ext. 288, or email jprovinski@stroudcenter.org.

The Science and Business of Plastics in our Environment. A Presentation by Carol Armstrong. Saturday, October 5, 2019 10:00 am- 12:00 Lansdowne Public Library 55 S Lansdowne Ave Lansdowne, PA 19050 **Please help us keep events like this free. Donations are appreciated but not required. Please register at DCVA.org.**

Literature Cited

1. <https://www.nationalgeographic.org/encyclopedia/great-pacific-garbage-patch/>
2. Lambert, S. and Wagner, M., 2018. Microplastics are contaminants of emerging concern in freshwater environments: an overview. In *Freshwater Microplastics* (pp. 1-23). Wagner, M., & S. Lambert, S. (eds). Cham, Switzerland: Springer International Publishing. Open Access online.
3. <https://www.sciencedaily.com/releases/2019/09/190912111819.htm>
4. Scherer, C., Weber, A., Lambert, S. and Wagner, M., 2018. Interactions of microplastics with freshwater biota. In *Freshwater Microplastics* (pp. 153-180). Wagner, M., & S. Lambert, S. (eds). Cham, Switzerland: Springer International Publishing. Open Access online.

The Valley is the quarterly publication of the Darby Creek Valley Association . Send your articles to Kathryn Goddard Doms Editor kgoddard@ursinus.edu

JOIN THE DARBY CREEK VALLEY ASSOCIATION TODAY!

The Darby Creek Valley Association (DCVA) is dedicated to the protection and enhancement of all of the watershed’s resources, including water, wildlife, historical sites, and the floodplains. The organizations immediate goals are to prevent all forms of pollution in the Darby Creek and its tributaries, to prohibit dumping and construction on the floodplain and to expand our educational programs for all residents within the watershed. It Also seeks to improve water quality and maintain a debris-free stream through clean-ups and public education. DCVA works to preserve historic properties, such as the Swedish Cabin and the Blue Bell Inn. The Association would like to set aside the more than 30 miles of valley for use as a greenway for all residents to enjoy. We need your support. Help us continue to protect the environment for ourselves and our children.

We invite you to fill in the form below, check member category, and mail form with your check to:

Darby Creek Valley Association, PO Box 732, Drexel Hill, PA 19026

Name: _____ Date: _____

Address: _____ City: _____ State: _____

Phone Number: _____ Email Address: _____

Individual member.....\$25	Family member.....\$40	Corporate or Municipality.....\$100
Senior Citizen or Student.....\$15	Non-Profit Group..... \$40	Life Member\$275

DCVA is a 501(c)(3) Non-Profit Organization– All Donations are tax deductible to the fullest extent of the law.

CALENDAR

DCVA Board Meeting.....Third Saturday of each month, Delaware County Peace Center
 Young Naturalist Program.....Third Saturday of each month, Haverford Comm. Rec. and Environ Center
 Perils of Plastic LectureSeptember 22nd Lansdowne Library

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