



MS4 DEPARTMENT MONTHLY REPORT

June 1, 2024 – June 30, 2024

NOTEWORTHY ITEMS

- ❖ The beginning and end of June brought many very warm dry days followed by periods of thunderstorms. The majority of the month brought us extreme heat and many dry days.
- ❖ Monitored flow of stormwater, inspected, and assessed conditions and performance of storm drains, inlets, outfalls, tributaries, BMPs, and green infrastructure (including newly planted Bare Root Trees) throughout the month during all weather conditions.



- ❖ Routine inspections of infrastructure by MS4 staff identified cracking of asphalt and ground depressions due to stormwater damage leading into storm drain box in White Oak Circle.
 - Maintenance Staff repaired sink hole and patched road with asphalt.

BEFORE



AFTER



- ❖ In line with the guidelines set forth by the Pennsylvania Department of Environmental Protection (PA DEP), conducted official inspections assessing the performance of MS4 Outfalls (10), Observation Points (10), and Best Management Practices (BMPs – 19) to be reported on our Annual MS4 Status Report to the PA DEP.



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- ❖ MS4 & Maintenance staff watered pollinator pots, newly planted areas of rain gardens, all recently planted TreePennsylvania trees, etc. during dry periods to ensure health of plantings.
- ❖ Removed trash, leaves, and debris from Rain Gardens and pots.



- ❖ Maintenance Department outfitted large dump truck with new leaf box attachment to prepare for upcoming leaf season.
 - Attachment provides additional volume of leaf storage and less wear over time to vehicles.



- ❖ Street sweeping continues throughout the Borough
 - Regular street sweeping keeps our Borough clean.
 - Street sweeping removes trash, cigarette butts, abrasive materials, organic waste, and chemicals from our roadways.
 - Street sweeping prevents pollution, reduces the risk of flooding, improves air quality, prevents accidents, and provides regular maintenance on our roads.



- We greatly appreciate our maintenance crew and all they do all year long!!

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- ❖ Heavy rains with high-speed winds and thunderstorms caused significant buildup on storm drains throughout month. MS4 and Maintenance staff removed tree limbs, leaves, debris, trash, & sediment.

BEFORE



AFTER



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- ❖ Erosion & Sediment Control Basin at 1200 Block of Hummel Ave has been regraded on sides & bottom, seeded, matted, with new vegetation watered to better control construction dust & debris, onsite runoff, and provide improved soil quality & natural filtration of stormwater pollutants.



- ❖ Brandt Ave Stormwater Infrastructure Replacement Project:

- During a scheduled infrastructure project on Brandt Ave, some underground stormwater pipes were found to be damaged beyond repair.
- The existing damaged corrugated metal pipe was removed, the pipe beds were graded and filled with gravel, and new PVC pipes connected into the existing MS4 system.



- ❖ Land Studies performed scheduled maintenance on Market and State Street Rain Gardens, including hand weeding, sediment removal, invasive plant control, and trash/ debris removal.





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❖ Cumberland County Land Partnerships Grant:

- Researched options and pricing and purchased 2 steel park benches with extremely durable protective thermoplastic coating finish.
- Vendor selection, design, and pricing for Memorial Park signage.
- New backboards installed onto existing poles on basketball court.



❖ Attended “What a Warming World Means to Our Plants, Pests, and Pollinators”

- Hosted by the Smithsonian Environmental Research Center and University of Maryland, featuring the studies of Dr. Michael Raupp, Entomologist.
- Shifting weather patterns (hotter weather in the Mid-Atlantic Region) has created an abundance of pest insects (ticks, boring insects, etc.), increased their distribution areas, lengthened their seasonal behaviors, and changed the web of interactions among plants, herbivores, and insects.
- Insects and mites become active earlier in the year and remain active later in the year.
- Insects and mites will complete more generations per year – a pest boom.
- Over time, this will negatively affect the health of our native plants and trees and reduce the amount of stormwater that can be absorbed by our green infrastructure.
- Planting native trees and increasing canopy can help reduce the temperatures and impacts locally.
- Trees reduce incoming solar radiation by 90% and slow water movement, aiding in infiltration.
- Rapid stormwater runoff from impervious surfaces reduces water available for transpiring.
 - Without water, transpiration declines, and trees and cities become hotter.

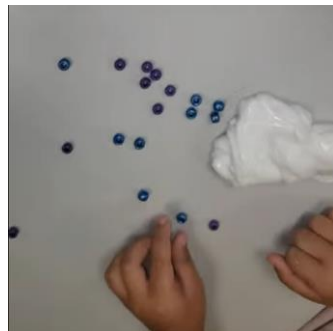
❖ Created MS4 educational materials and presented to Greater Harrisburg Association of Realtors

- This activity counts towards public education and outreach on our Annual MS4 Report to DEP.



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- ❖ Washington Heights Stormwater Education for 3 different classrooms
 - Created custom watershed science presentations and follow up educational puzzles & activities based on grade level, recent science & social studies lessons, state curriculum, etc.
 - Educated students about local and global watershed issues and empowered them to affect change in their communities by taking action locally.
 - Worked with Penn State Extension to provide state curriculum-approved lesson plans.
 - Read picture books, educated students about the water cycle, hydrologic cycle, how rain becomes stormwater in our town (from parking lot to drain to stream/ river/ bay/ ocean) and reaches the Susquehanna River, Chesapeake Bay, and Atlantic Ocean, etc.
 - Discussed ways water becomes polluted and how it impacts people, animals, and the environment.
 - Brainstormed ideas with students ways they can reduce pollution and have cleaner water and air.
 - Instructed students about the Incredible Journey of Water, played interactive games, and did a craft related to lesson. Students received take home materials including custom coloring books for children and take-home educational materials such as puzzles, etc.
 - On Science Experiment Day, read students a book about stormwater pollution, assisted children in making homemade slime to exemplify how polymers are used to clean up pollution and contaminants in our waters.
 - These watershed science activities will give Lemoigne Borough credit for MS4 public outreach education on our DEP Annual MS4 Report.



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- ❖ Invited to Participate in PEC Southcentral Region Watershed Workshop and Project Site Tours
 - Hosted by Pennsylvania Environmental Council (PEC) & PA Organization for Watersheds & Rivers (POWR); this activity will count on our Annual MS4 Report to DEP.
 - Toured the comprehensive Chambersburg Rail Trail Stormwater Management Project along the Conococheague Creek adjacent to their urban areas.
 - Chambersburg Borough shared their challenges and successes throughout the project.
 - They hired a flock of goats to clear overgrown land and perform invasive vegetation control; it was very successful at a substantial cost savings.
 - Once the total overgrowth is cleared, native trees, shrubs, and plants will be planted along the creek banks.
 - Several different types of BMPs were installed to reduce impervious surfaces, eliminate existing severe erosion and scouring, and heavy sedimentation.
 - This project provides the ability to capture, clean, and reduce stormwater runoff prior to discharge into the Conococheague Creek and the Chesapeake Bay, including stream bank stabilization, endwall creation, outfall stabilization, rain gardens, native tree plantings, underground detainment areas, underground infiltration beds, new MS4 infrastructure, etc.
 - This Stormwater management project was funded by grants from The Chesapeake Bay Trust and the EPA Green Streets, Green Jobs, Green Towns program.

CHAMBERSBURG RAIL TRAIL STORMWATER PROJECT





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- In roundtable format, shared updates on stormwater projects and watershed improvements, funding sources, and community support on behalf of Lemoyne Borough and heard updates from other municipalities, engineering firms, and watershed groups.
- POWR gave presentations on Climate Resilience Best Management Practices, making connections in your community, and best communication practices.
- Toured the 40+ acre Buttonwood Nature Center to see their watershed improvement projects in new locale in Waynesboro.
 - Currently undergoing a stream restoration of a stormwater tributary, bridge rebuild, selective tree removal, conservation efforts, and sustainable reuse of all materials harvested on site, including wood, rocks/ stones, dirt/fill, etc.
 - Upcoming projects include pond restoration, wetland restoration, implementation of walking trails, ADA accessibility, additional teaching pavilions, improved habitat and ecosystem services for local wildlife and beneficial insects, etc.
 - Environmental Education and outreach programs will expand for children of all ages once stream and bridge restoration are complete, to ensure safe passage for large vehicles.
 - Institute of Watershed Science ongoing projects include water quality and macroinvertebrate Stream Monitoring in partnership with Dickinson’s Alliance for Aquatic Resource Monitoring (ALLARM), internships for high school and college students, training and support for citizen scientists, and Water Striders environmental education after school programs for middle school and high school students.
 - Discussed maximizing funding sources, including requesting donations, large investments, in-kind services, grant funding, and building community relationships and gaining ongoing support for watershed projects, including becoming the model for watershed projects in the community.

BUTTONWOOD NATURE CENTER





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- ❖ June is **National Rivers Month**. Celebrate by protecting water quality!
 - The Susquehanna River was formed in the Paleozoic Era and is considered to be the oldest main river system on Earth, predating the formation of the Appalachian Mountains.
 - The mountains and valleys formed around the Susquehanna River, rather than the river forming the valleys of the mountains.
 - The Susquehanna River stretches 444 miles from Otsego Lake in Cooperstown, NY to the Chesapeake Bay in Havre-de-Grace, MD.
 - It provides over 50% of the fresh water for the Chesapeake Bay.
 - It is the longest river on the east coast to drain into the Atlantic Ocean.
 - The Susquehanna River Watershed consists of 3 states and encompasses almost half of Pennsylvania's total land area.
 - FEMA counts the Susquehanna River Basin as the most flood-prone watershed in U.S.
 - The Susquehanna River consists of over 49,000 miles of waterways.
 - Its widest point stretches one mile wide right here at Harrisburg.
 - Marietta has PA's deepest waters with a typical depth of 34 ft.
 - Harrisburg's waters have a typical depth of 3.66 ft.
 - USGS data shows Marietta's waters reached 48.79 ft deep and Harrisburg's waters reached 15.62 ft in April 2024.
 - There are also areas in Maryland where the river is over 100 ft deep, extending below sea level.
 - The Susquehanna River is an important source of recreation, drinking water, and hydroelectric power for Pennsylvania. It is also a source of habitat and rich biodiversity.
 - The Susquehanna River is the longest flyway on the east coast of the U.S. for migratory birds and a large portion of the Atlantic Flyway used by 500+ bird species.
 - **How can we help the Susquehanna River?**
 - Reduce stormwater pollution by cleaning up trash in your neighborhood or town.
 - Participate in a Creek Clean Up through our local watershed organizations:
 - Conodoguinet Creek Watershed Association www.conocreek.org
 - Saturday, 7/27/24 at Conodoguinet Youth Park in Hampden Township
 - Saturday, 8/26/24 at a location to be determined
 - Yellow Breeches Watershed Association www.ybwatershed.org/
 - Sunday, 7/28/24 11:30 am – 5:00 pm at Lower Allen Community Park



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Do Your Part to Protect Water Quality
Simple actions at home can reduce water pollution

NEEF

Keep leaves and grass clippings out of streets and storm drains. Use them as mulch or compost in your garden.

Install a rain barrel to collect rain water. The rain water can later be used to water your plants and lawn.

Keep trash out of streets and storm drains. Make sure trash cans have tight-fitting lids.

Make sure sprinklers are watering your lawn – not the street or sidewalk.

Never dump household waste outside or in a storm drain. If you no longer need a product, take it to a local household hazardous waste collection program.

Always pick up after your pet.

Use fertilizer and pesticide sparingly. Read the label and wait for dry weather to apply.

Plant native trees and shrubs. Their roots help absorb and filter pollutants from rain water.

Find out more: NEEFusa.org

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- ❖ June 5 is **World Environment Day**. One way to celebrate is to plant an oak tree!
 - Did you know OAK TREES are a native Keystone species in our watershed?
 - **No other plant comes close to supporting this type of diversity.**
 - According to Dr. Doug Tallamy, white oaks are the best, but all are very good!
 - Caterpillars are an essential part of the food web - to rear one clutch of birds, it takes 6,240 – 9,120 caterpillars! For more info, visit: www.homegrownationalpark.org.



Oak landscaping myths

- 1) Oaks are too expensive
- 2) Oaks grow too slowly to use as landscape plants
- 3) Oaks are too big to use on small lots
- 4) Oaks will crush our house
- 5) Oaks will lift up your sidewalk

Small oaks could be great street trees

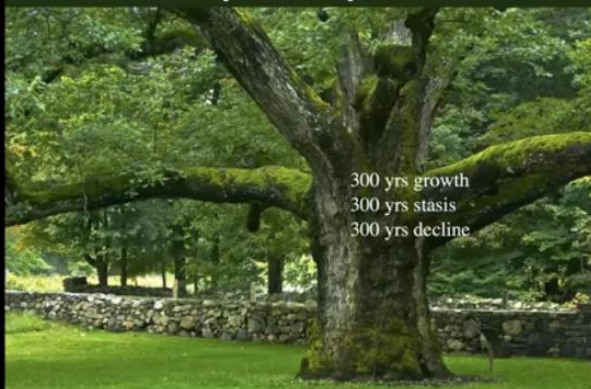
Eastern oaks

Dwarf chestnut oak; *Q. prinoides*
 Georgia oak; *Q. georgiana*
 Bluejack oak; *Q. incana*
 Runner oak; *Q. pumila*
 Dwarf live oak; *Q. virginiana minima*
 Myrtle oak; *Q. myrtifolia*
 Chapman oak; *Q. chapmanii*

Oaks support 557 species of caterpillars in the mid-Atlantic and 950 species nationwide



900 year life cycle



Oaks have superior function!

- 1) have the highest biodiversity value
- 2) sequester more CO₂
- 3) are the best soil stabilizers
- 4) make the best leaf litter
- 5) promote healthier watersheds



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Compared to native landscapes, yards dominated by introduced plants:

- 1) Produced 75% fewer caterpillars
- 2) Were 60% less likely to have breeding chickadees
- 3) Nests contained 1.5 fewer eggs
- 4) Clutches were 29% less likely to survive
- 5) Nests produced 1.2 fewer fledglings
- 6) Maturation was delayed by 1.5 days

A single oak tree can produce up to 3 million acorns in a lifetime!

A single jay can plant 3,360 oak trees each year!

To find more Keystone species for your area, please visit:

www.nwf.org/NativePlantFinder/

- ❖ June is **National Perennial Month**, **National Rivers Month**, and **Great Outdoors Month**.
 - Celebrate by learning about the **Watershed Friendly Property Certification Program!**
 - Learn simple guidelines to manage your property to protect area streams & rivers.
 - Certified properties vary in size from small residential apartments to large commercial facilities.
 - More information about this program can be found at:
 - <https://extension.psu.edu/programs/watershed-stewards/watershed-friendly-pa>



Your home can be part of the solution.

Reducing stormwater runoff, reducing water pollution, conserving water, and supporting wildlife and pollinators are critical elements of healthy, watershed-friendly properties. The goal of the Watershed-Friendly Property Certification program is to improve and maintain the quality of water resources, as well as improve and maintain habitat for wildlife and pollinators. Residents, communities, educational institutions, and businesses will simultaneously be educated about the value of a healthy watershed and best practices for improving water quality. **Healthy landscapes make healthy communities.**





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Watershed Friendly Property Certification Program

Watershed-Friendly Property Certification recognizes landowners who incorporate best practices in managing and protecting water resources and provide habitat for wildlife and pollinators on their property. In addition, the certification recognizes landowners who make a commitment to minimize their potential impact on water quality by using less harmful chemicals, and who maintain good housekeeping of their property.

What can you do to make your property more watershed-friendly?

1. Conserve water by:

- Using native plants in your yard. They usually do not require watering once established.
- Mulch flower beds so they retain water better.
- Instead of cleaning patios and driveways with water, use a broom.
- Use water from your rain barrels to water flower beds if necessary.
- Limit lawn watering. Grasses are adapted to drying out periodically, and they will green up again once it rains.

2. Reduce pollution from your property by:

- Reducing or eliminating the use of commercial herbicides and pesticides on your property.
- [Testing](#) your soil before using commercial fertilizer and limit applications to the recommended amounts.
- Avoiding the use of salt in the winter; instead, try using sand, which can be swept up after the ice or snow has melted.
- Picking up pet waste and put it in the trash.
- Removing any litter from your property that could wash away, and store motors, batteries, and chemicals indoors - in a shed or garage.
- Don't wash your car on the driveway or street. The water will run to your nearest stream. Wash your car on the lawn or at a facility that recycles the water. Make sure safe, nontoxic soaps are used.

3. Reduce stormwater runoff by:

- Installing a [rain barrel](#), creating a [rain garden](#), and [reducing lawn area with native plant beds](#). Rain and snowmelt may run into storm drains, which empty into your nearest stream. Impervious surfaces, such as asphalt, sidewalks, and lawns don't allow water to soak into the ground. This intensifies the amount and speed of water in streams, and greatly increases the erosion of streambanks.

4. Choose native plants to support wildlife and protect stream banks.

- By planting native plants in your yard, you can reduce the need for pesticides and watering.
- Native plants - including native trees - provide habitat and food for birds, butterflies, and pollinators. Non-natives do not provide this benefit.
- Native plants are more resistant to local diseases and insect pests.
- Native plants are better at holding soil, reducing soil erosion, and flooding from stormwater. This helps [protect streambanks](#).

