RUTGERS UNIVERSITY
Water Resources Program
New Jersey Agricultural Experiment Station

Municipal Separate Storm Sewer System (MS4) Permit
What needs to get done and how we can help

Presented at the Environmental Commissions of Monmouth County
January 23, 2025, Holmdel, NJ

Chris Obropta and Alena Brayshaw

What is an MS4 Permit?

- Municipal Separate Storm Sewer System = MS4
- Five-year General permit (1/1/23 thru 12/31/27)
- The MS4 permitting program was created in 2004 and is required by both federal and state regulations to address water quality and flooding issues in municipal stormwater systems.
- The MS4 Tier A Permit was recently updated with the new permit becoming effective on January 1, 2023.

A primary objective of the MS4 stormwater program

… shall be to implement best management practices and other measures that are designed to reduce the discharge of pollutants from the permittee's MS4, municipal maintenance yards and other ancillary operations to the maximum extent practicable pursuant to N.J.A.C. 7:14A-25.6(a)1 and 40 CFR 122.34(a), to protect water quality, and to satisfy the applicable water quality requirements of the Clean Water Act.

Components of NJ MS4 Permit

Stormwater pollution prevention plan

Minimum Standards:

1. Public involvement and participation
2. Local public education and outreach
3. Construction site stormwater runoff standards
4. Construction stormwater management in new development and redevelopment
5. Pollution prevention/good housekeeping for municipal operators
6. MS4 mapping, stream scouring, and illicit discharge detection and elimination program

Watershed improvement plan

How to deliver public education and outreach programs to help your municipality satisfy NJDEP's MS4 Permit Requirements

Attachment A of MS4 Permit: Points System for Public Education and Outreach Activities

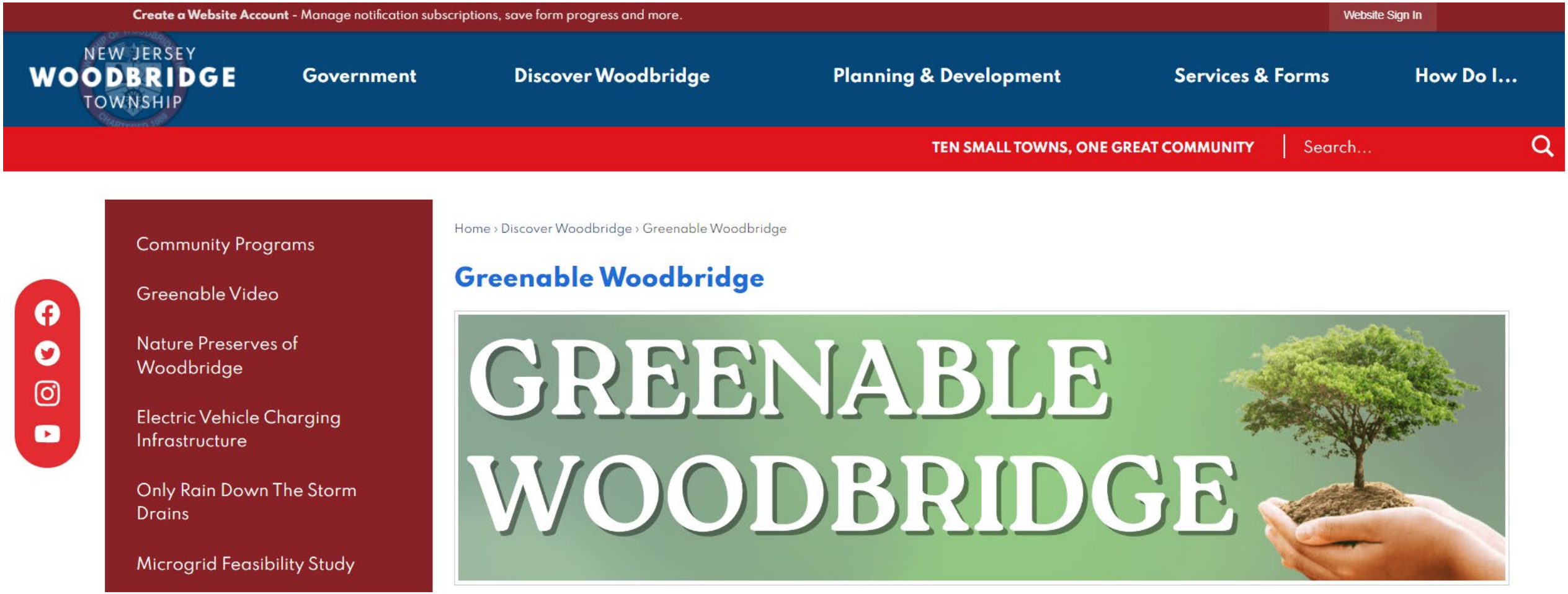
- Five Categories
- 12 points per year is required
- Include activities from at least three of the five categories
- Must educate businesses and the general public of hazards associated with illicit connections and improper disposal of waste
- Must keep records to demonstrate compliance including date of activity and any other relevant documentation

Category 1: General Public Education

ACTIVITIES:

- Social media
- Newspaper Ad
- Radio/Television
- Green Infrastructure Signage
- Billboard/Sign
- Mural
- Stormwater Facility Signage

Social Media:

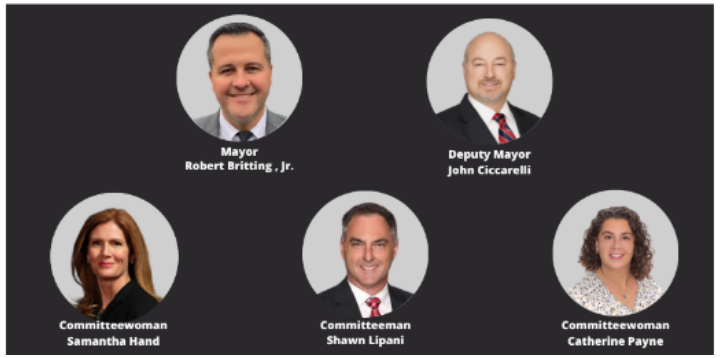


https://www.twp.woodbridge.nj.us/595/Greenable-Woodbridge

Thursday, July 11, 2024

Experience Hillsborough

SPECIAL EVENTS BULLETIN

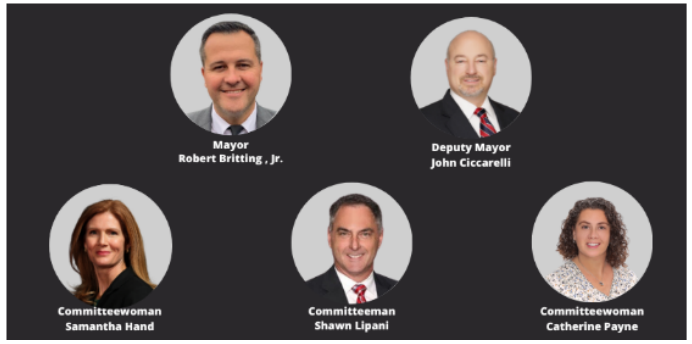


Wednesday, July 10, 2024

HILLSBOROUGH TOWNSHIP

e-News

Brought to you by the Hillsborough Township Committee:



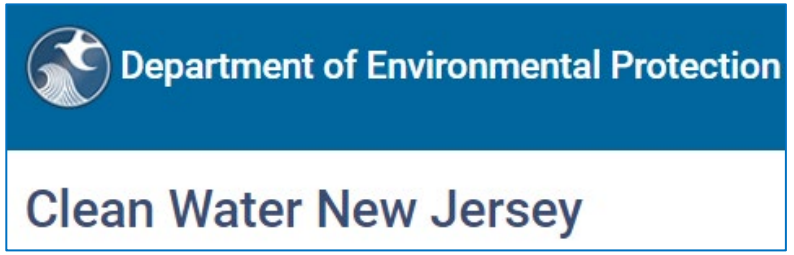
Mayors Wellness Campaign

Introducing Yoga By The Pond!

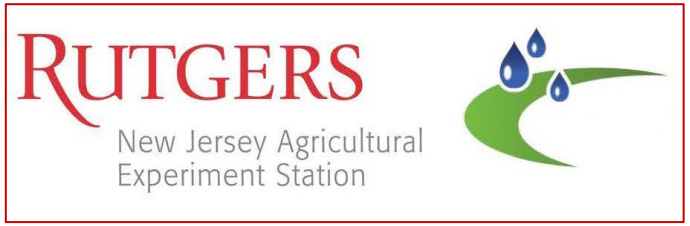
Relax and unwind with Yoga by the Pond at Ann Van Middlesworth Park. Please contact Yazmin Barrantes-Gamboa at ybarrantes@hillsborough-nj.org with any questions, or register here!

Newspaper Ad/ Radio/ Television

- Make sure you are using good science-based information in your outreach efforts.
- www.cleanwaternj.org provide good information



- www.water.rutgers.edu is another good source



- https://gitoolkit.njfuture.org/ has great information that you can share

What to do …

- Write an article or editorial for local paper, community newsletter, or online paper like The Patch. If you are ambitious, offer to have a reoccurring column in the e-News.

- Create some YouTube videos. Short pieces of a few minutes are okay. It doesn't have to be on the same level as Greenable Woodbridge.

- Let's set up a system to share pieces that we prepare so others can use them.

There are always special days to celebrate water …

January

- **National Step in a Puddle and Splash Your Friends Day (1/11)**

February

- **World Wetlands Day (2/2)**
- **Shower with a Friend Day (2/5)**
- **Global Day of the Engineer (2/24) & Engineers Week (the week that includes 2/22)**

March

- **Day of Unplugging (1st Friday of March)**
- **National Groundwater Week (2nd week of March)**
- **World Plumbing Day (3/11)**
- **Plant a Flower Day (3/12)**
- **Fix-a-Leak Week (3rd week of March)**
- **World Water Day (3/22)**

April

- **Water Week (week of 4/15)**
- **Earth Day (4/22)**
- **Hug a Plumber Day (4/25)**
- **Save the Frogs Day (last Saturday of April)**

May

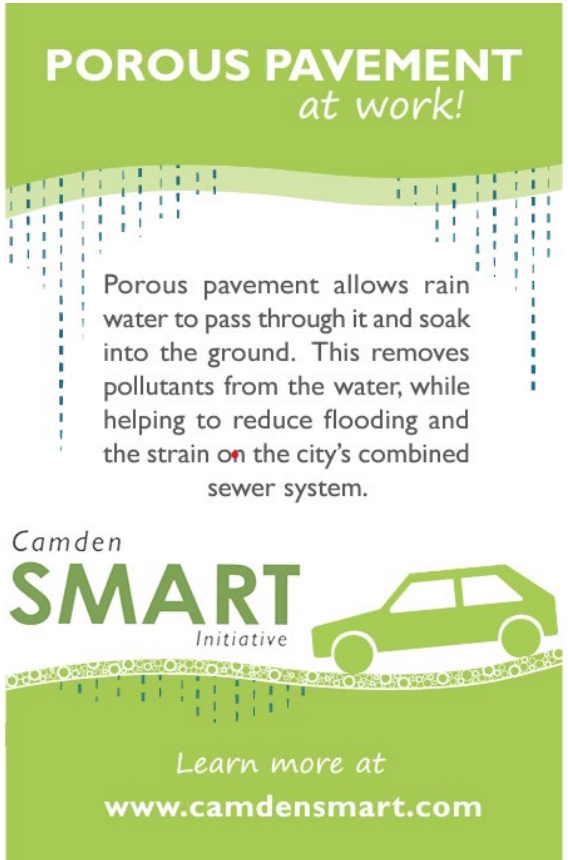
- **Firefighters' Day (5/4)**
- **Water Professional Appreciation Day (1st Monday in May)**
- **Drinking Water Week (1st full week in May)**
- **Mother Ocean Day (5/10)**
- **Hole in My Bucket Day (5/30)**
- **Water a Flower Day (5/30)**

June

- **National Rivers Month**
- **World Oceans Day (6/8)**
- **World Meat Free Day (6/15)**

Green Infrastructure Signage

- Identify locations where signs could be placed and design a sign
- For examples of signs, go to: http://water.rutgers.edu/Projects/Signs/Rain_Garden_Signage.html
- If you create a sign, send it to us so we can put it on the website



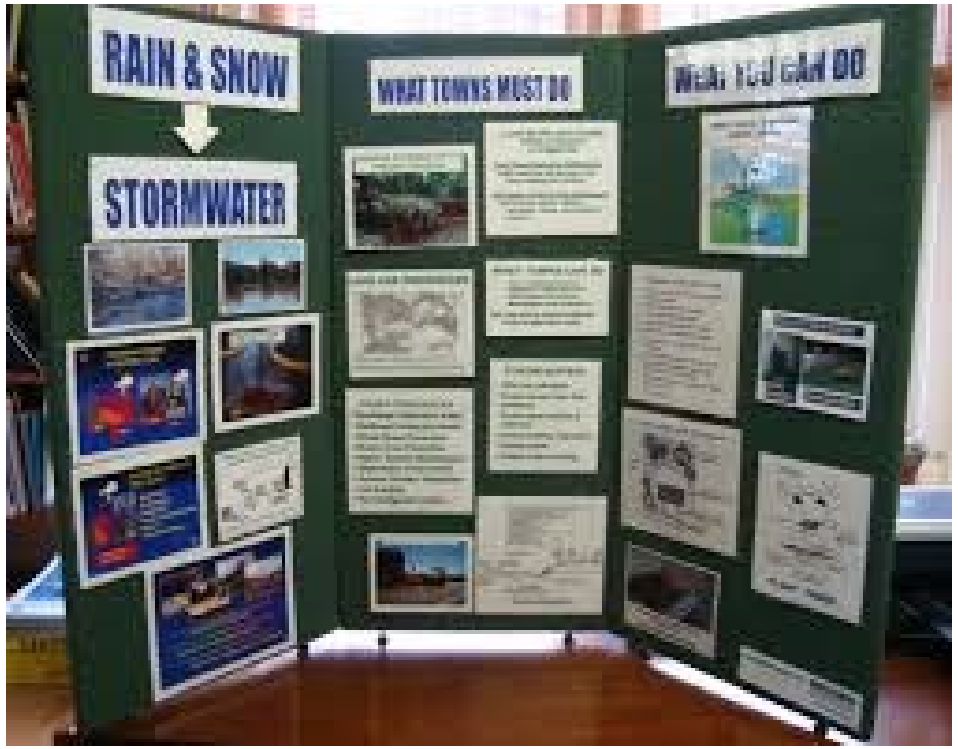
Murals

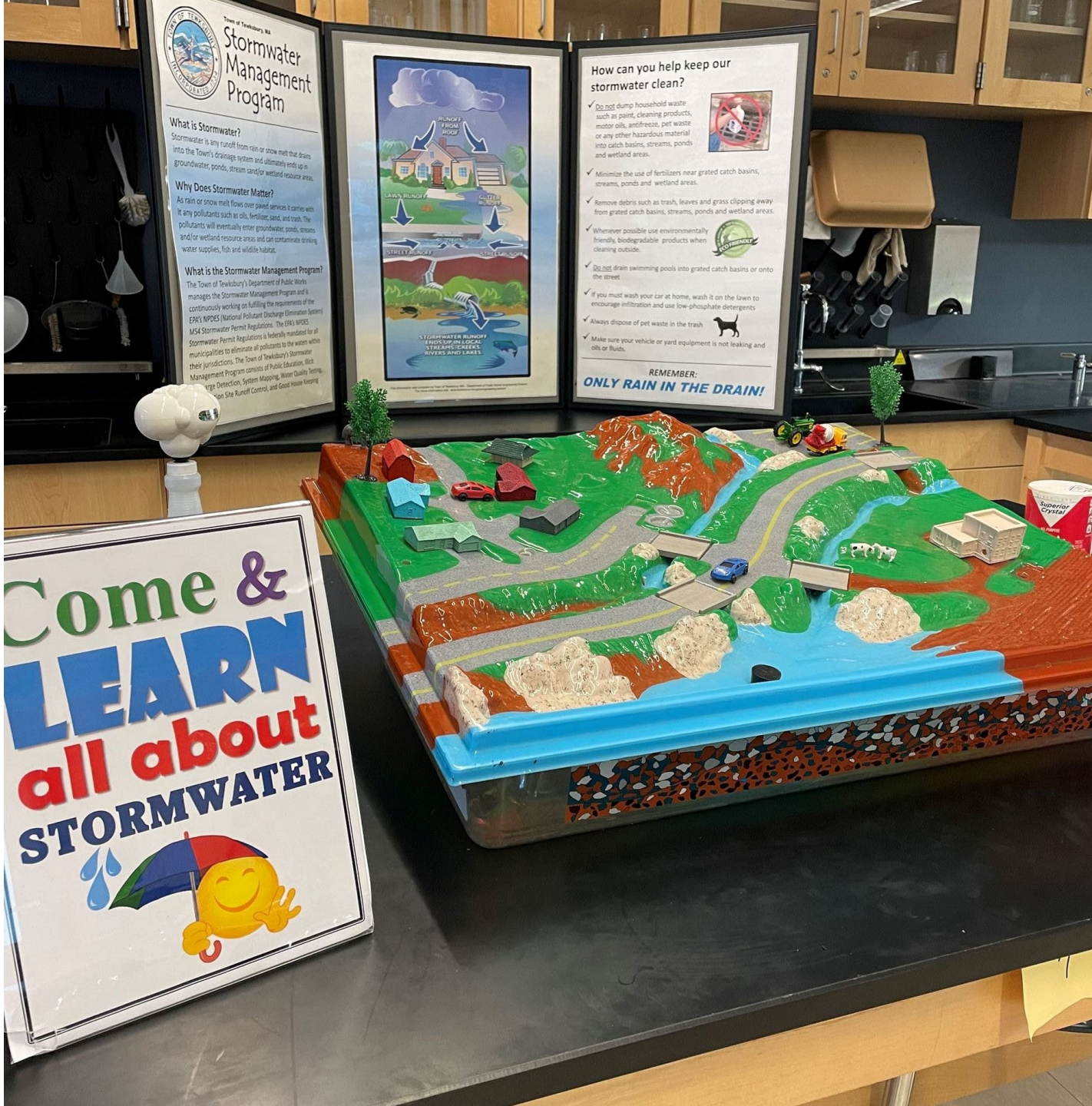
Stormwater Facility Signage

Category 2: Targeted Audiences Outreach

- Stormwater Display
- Promotional Item
- Private Stormwater Facilities Education
- Mailing or e-Mailing Campaign
- Ordinance Education

Stormwater Display





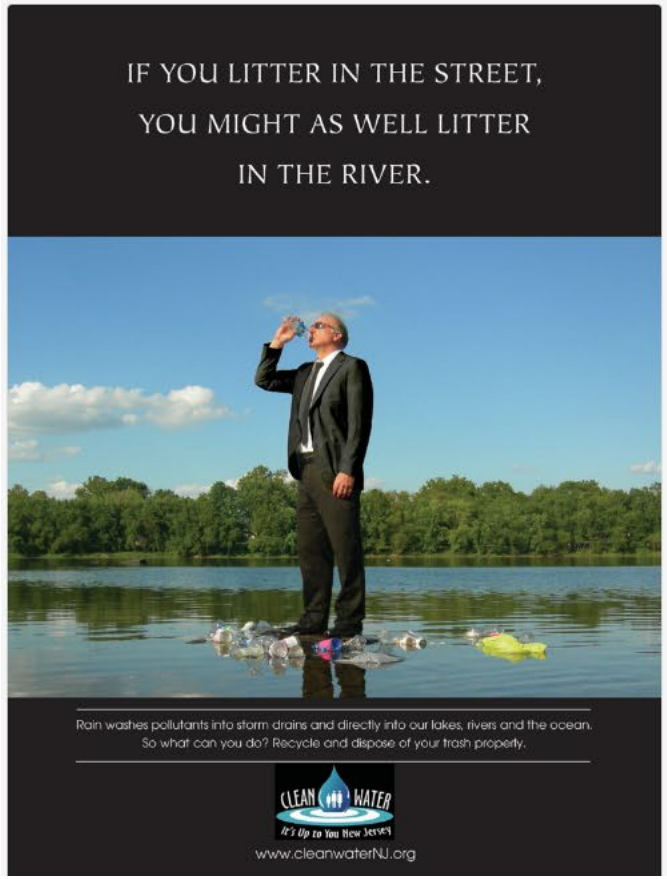
Promotional Items

Private Stormwater Facilities Education

- Develop or assemble the materials.
- Identify private stormwater facility owners.
- Help distribute materials.

Mailing or e-Mail Campaign

- Identify NJDEP materials that should be distributed
- Or create you own materials for you community



Solutions to Stormwater Pollution

Easy Things You Can Do Every Day To Protect Our Water

A Guide to Healthy Habits for Cleaner Water

Pollution on streets, parking lots and lawns is washed by rain into storm drains, then directly to our drinking water supplies and the ocean and lakes our children play in. Fertilizer, oil, pesticides, detergents, pet waste, grass clippings: You name it and it ends up in our water.

Stormwater pollution is one of New Jersey's greatest threats to clean and plentiful water, and that's why we're all doing something about it.

By sharing the responsibility and making small, easy changes in our daily lives, we can keep common pollutants out of stormwater. It all adds up to cleaner water, and it saves the high cost of cleaning up once it's dirty.

As part of New Jersey's initiative to keep our water clean and plentiful and to meet federal requirements, many municipalities and other public agencies including colleges and military bases must adopt ordinances or other rules prohibiting various activities that contribute to stormwater pollution. Breaking these rules can result in fines or other penalties.

As a resident, business, or other member of the New Jersey community, it is important to know these easy things you can do every day to protect our water.

Limit your use of fertilizers and pesticides

- Do a soil test to see if you need a fertilizer.
- Do not apply fertilizers if heavy rain is predicted.
- Look into alternatives for pesticides.
- Maintain a small lawn and keep the rest of your property or yard in a natural state with trees and other native vegetation that requires little or no fertilizer.
- If you use fertilizers and pesticides, follow the instructions on the label on how to correctly apply it.

Make sure you properly store or discard any unused portions.

Properly use and dispose of hazardous products

- Hazardous products include some household or commercial cleaning products, lawn and garden care products, motor oil, antifreeze, and paints.
- Do not pour any hazardous products down a storm drain because storm drains are usually connected to local waterbodies and the water is not treated.
- If you have hazardous products in your home or workplace, make sure you store or dispose of them properly. Read the label for guidance.
- Use natural or less toxic alternatives when possible.
- Recycle used motor oil.
- Contact your municipality, county or facility management office for the locations of hazardous-waste disposal facilities.

Keep pollution out of storm drains

- Municipalities and many other public agencies are required to mark certain storm drain inlets with messages reminding people that storm drains are connected to local waterbodies.
- Do not let sewage or other wastes flow into a stormwater system.

Clean up after your pet

- Many municipalities and public agencies must enact and enforce local pet-waste rules.
- An example is requiring pet owners or their keepers to pick up and properly dispose of pet waste dropped on public or other people's property.
- Make sure you know your town's or agency's requirements and comply with them. It's the law. And remember to:
  - Use newspaper, bags or pooper-scoopers to pick up wastes.
  - Dispose of the wrapped pet waste in the trash or un-wrapped in a toilet.
  - Never discard pet waste in a storm drain.

Don't feed wildlife

- Do not feed wildlife, such as ducks and geese, in public areas.
- Many municipalities and other public agencies must enact and enforce a rule that prohibits wildlife feeding in these areas.

Don't litter

- Place litter in trash receptacles.
- Recycle. Recycle. Recycle.
- Participate in community cleanups.

Dispose of yard waste properly

- Keep leaves and grass out of storm drains.
- If your municipality or agency has yard waste collection rules, follow them.
- Use leaves and grass clippings as a resource for compost.
- Use a mulching mower that recycles grass clippings into the lawn.

Contact information

For more information on stormwater related topics, visit www.njstormwater.org or www.nonpointsource.org

Additional information is also available at U. S. Environmental Protection Agency Web sites www.epa.gov/npdes/stormwater or www.epa.gov/nps

New Jersey Department of Environmental Protection
Division of Water Quality
Bureau of Nonpoint Pollution Control
Municipal Stormwater Regulation Program
(609) 633-7021

www.cleanwaternj.org

Ordinance Education

- Prepare a letter or email for the municipality about various ordinances and ensure that it satisfies the requirements.
- An e-News article could also be prepared about the ordinance and why it is important

List of Ordinances:

✓Pet Waste
✓Wildlife Feeding
✓Litter Control
✓Improper Disposal of Waste
✓Containerized Waste/Yard Waste Collection
✓Private Storm Drain Inlet Retrofitting
✓Illicit Connection
✓Tree
✓Salt Storage

Category 3: School/Youth Education and Activities

- School Presentations
- Water Education Workshops
- Storm Drain Labeling
- Educational Contest for School
- AmeriCorps Event
- Clean-up

School Presentation

- Great opportunity to partner with the Americorps Ambassador.
- Use the EnviroScape model from RCE Water Resources Program.
- Check out the Seeds website for some cool educational programs.

Water Education Workshop

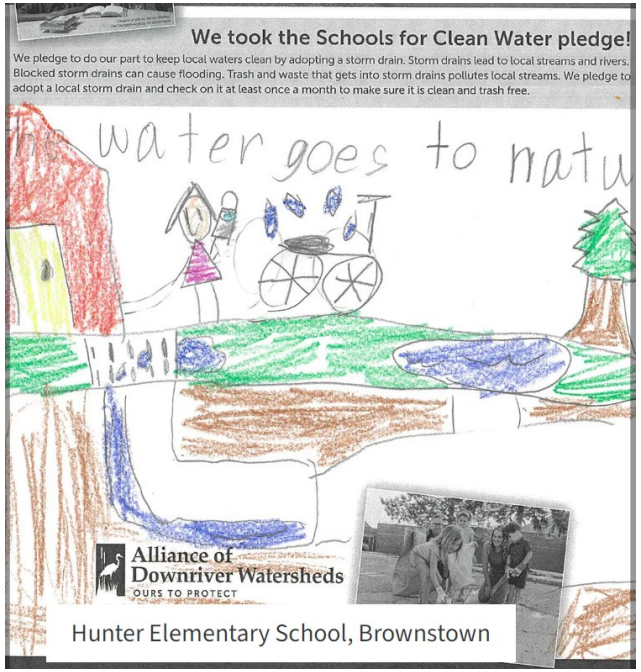
- The NJ Department of Education Professional Development Provider registration program has been eliminated so check with the schools on how you can help offer an educational program for teachers around water issues.
- Schools most like want training on climate change or climate resilience since it is a requirement in the State Educational Core Curriculum.
- Doing a teach in-service training is difficult but very rewarding if the teachers bring what they learn into the classroom

Storm Drain Labeling

- Work with community groups to engage youth in labeling storm drains.

Educational Contest for Students

- Work with school administrators to organize educational contests.
- Partner with environmental commission, sustainable Jersey committee, and home and school association



AmeriCorp Event

- Part of the mission of these AmeriCorps Ambassadors is to educate youth. Partner with your ambassador. Help them achieve their mission so your municipality can get the education and outreach points.

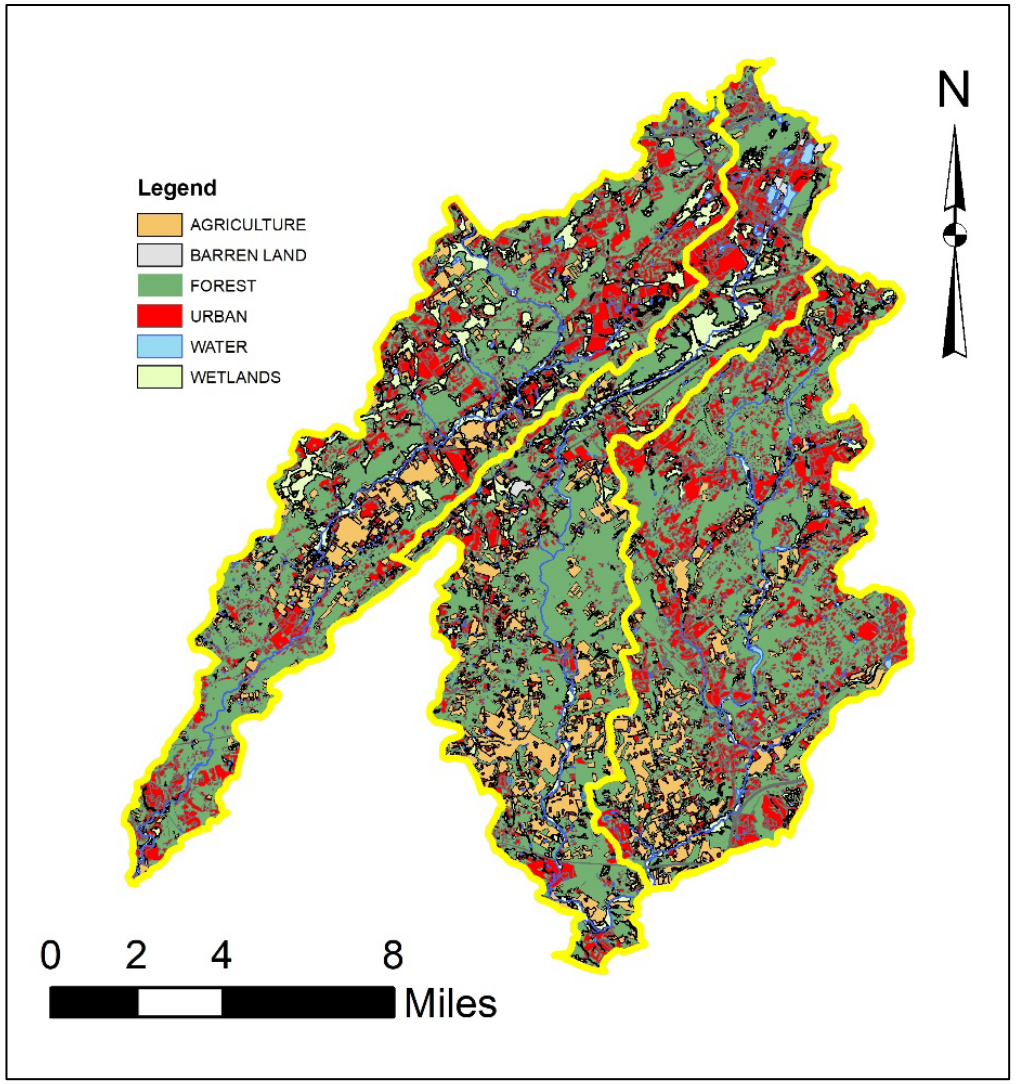
https://dep.nj.gov/wms/bears/americorps-nj-watershed-ambassadors/#current-ambassadors

Clean-up

- Many towns have already received state funding from the Clean Communities Act to do litter clean-up but lack the resources to organize the event. Reach out to your director of public works and see if you can help organize a roadside clean-up or a stream clean-up. Partner with the Boy Scouts, Girl Scouts, Future Farmers of America, 4-H, schools, etc.

Category 4: Watershed/Regional Collaboration

- Regional Stormwater Collaboration
- Green Infrastructure Workshop
- Community Activity

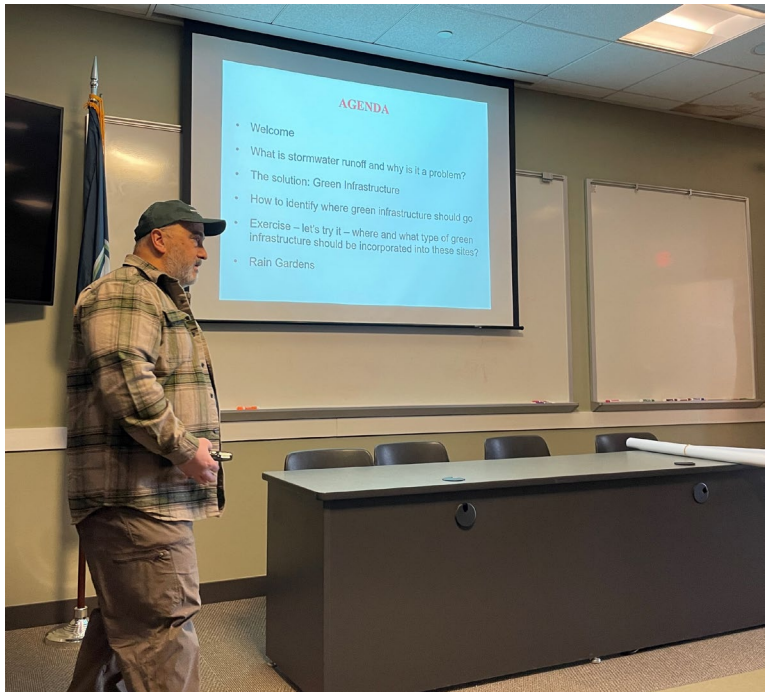


Regional Stormwater Collaboration

- The RCE Water Resources Program is currently preparing watershed restoration and protection plans for Spruce Run, Mulhockaway Creek, North Branch Raritan River, South Branch Raritan River, Lamington River, Oldmans Creek, Racoon Creek, Rancocas Creek, Doctors Creek and Miry Run. We are also preparing smaller watershed plans for five lakes in the NJ Highlands, five lakes in the NJ Pinelands, and 10 urban lakes. Get involved on behalf of your municipality. See if your municipality is already involved and ask how you can help.
- Check with NJDEP and see who has been funded to do plans.

Green Infrastructure Workshop

- The RCE Water Resources Program partnered with Long Branch to deliver a rain garden workshop this past August. This workshop was to train GI Champions on how to deliver their own rain garden design workshop for their communities.



Community Activity

- Instead of organizing a town-wide stream clean up, organize a county wide or maybe just three or four town-wide green infrastructure maintenance day. Identify rain gardens in the communities and determine what maintenance needs to be done. Organize an event to complete this maintenance.

Category 5: Community Involvement Activities

- Volunteer Stormwater Assessment or Stream Monitoring
- Rain Barrel Workshop
- Rain Garden Workshop
- Community Event
- Community Involvement

Volunteer Stormwater Assessment or Stream Monitoring

- Get some training and help your municipality assess stormwater basins, conduct stream visual assessments, or monitor water quality in stream. The Watershed Institute, Raritan Headwaters Association, or the NJDEP may offer training.

Rain Barrel Workshop

- There is train-the-train information available on how to offer a rain barrel workshop. Partner with some local groups. Find food grade barrels that are free or inexpensive. Plan and deliver a workshop. Once again, AmeriCorps Ambassadors may be a good group to partner with.

Rain Garden Workshop

- The RCE Water Resources Program will continue to offer train-the-trainer programs on how to deliver a community workshop to design rain gardens for homeowners.

Community Event

- This community event could be training local volunteers on how to identify sites for watershed improvement projects, which will fit nicely into helping the municipality develop its Watershed Improvement Plan. All certified GI Champions have already been trained on how to identify sites for green infrastructure.

Community Involvement

- This is a bit of an overlap with signage activities in Category 1. Identify signage location and creating/posting signs.

How to help your municipality with its Watershed Improvement Plan to meet MS4 Permit Requirements

Watershed Improvement Plan

- Designed to improve water quality problems
- Focused on reducing the MS4 contribution of pollutants to waterbodies with listed impairments and TMDLs
- Reducing or eliminating flooding with priority given based on human health and safety, environmental impacts, and frequency of occurrence
- Plan shall be developed with input from residents, businesses, neighboring towns, other dischargers

Phase 1 – Prepare and submit the Watershed Inventory Report

Report shall summarize and include an electronic map of the items listed below (Due January 1, 2026)

i. All stormwater outfalls owned/operated by the permittee;
ii. The drainage area for each outfall(s);
iii. The receiving waterbodies of those outfalls;
iv. The water quality classification of all receiving waterbody segments;
v. All stormwater interconnections from the municipality into another entities' storm or sanitary sewer system;
vi. The drainage area for each interconnection into another entities' storm or sanitary sewer system;

More Mapping Requirements

vii. All stormwater connection points into the municipality from another entities' storm sewer system;
viii. All storm drain inlets owned/operated by the permittee;
ix. Area associated with each TMDL for waters that lie within or bordering the municipality;
x. Area associated with each water quality impairment for waters that lie within or bordering he municipality;
xi. Overburdened communities;
xii. Impervious areas; and
xiii. The location and ownership of all stormwater outfalls and basins/infrastructure not owned/operated by the permittee.

Regional Collaboration

- The Department fully supports municipalities and other MS4 permittees collaborating regionally to prepare their WIPs
- Some potential partnership ideas:
  - 2 or more MS4s that discharge to the same or adjacent waterbodies or HUC 14s that share a TMDL or impairment
  - Managed by a watershed group or similar organization
  - Managed by an existing regional authority

Phase 2 – Prepare and submit the Watershed Assessment Report

Report shall summarize and include an electronic map of the items listed below (Due January 1, 2027)

i. An assessment of potential water quality improvement projects by sub-watershed and parameter
ii. An estimate of the percent reduction in loading of the TMDL/impaired parameters due to project(s) in i. above
iii. A summary of feedback from public information sessions
iv. An estimate of funding needs for each project, and identification of potential funding sources, including the New Jersey Water Bank (NJWB); the formation of an SWU, using 319 grants, FEMA BRIC grants
v. An estimate of an implementation schedule

Phase 3 – Prepare and submit the Watershed Improvement Plan Report

Report shall prepare and submit a Watershed Improvement Plan Report (Due December 1, 2027) that includes:

i. A summary of proposed locations and load reductions of water quality improvement projects, both public and private, to be implemented

ii. A summary of the public comments received, and the changes made to the Final Plan

iii. A summary of how the projects will be coordinated with other regulatory requirements, such as:

- flood protection
- endangered habitat/species
- surface & ground drinking water protection
- climate change/resiliency
- green infrastructure/SWM requirements
- wildlife corridors
- green acres
- environmental justice
- Combined Sewer Overflow Long Term Control Plans
- wetlands
- riparian buffers
- forest corridors
- related ongoing projects
- Pinelands Commission
- Highlands Council
- Delaware River Basin Commission

iv. The proposed implementation schedule for the water quality improvement projects

v. A schedule of the public information sessions to be held

vi. Problems identified that are outside the jurisdiction of the permittee, if any. These can be related to pollutant loading due to agricultural properties, or other lands not under the jurisdiction of the municipality, and opportunities to address them

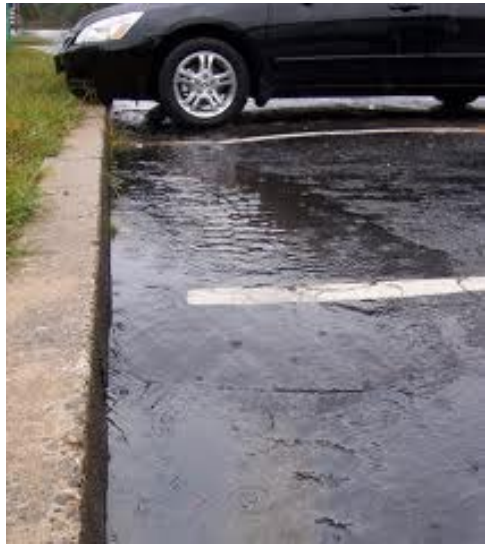
vii. Costs, broken down by project and year, the funding opportunities that will besought

viii. This plan shall describe how stormwater related problems in overburdened communities have been prioritized.

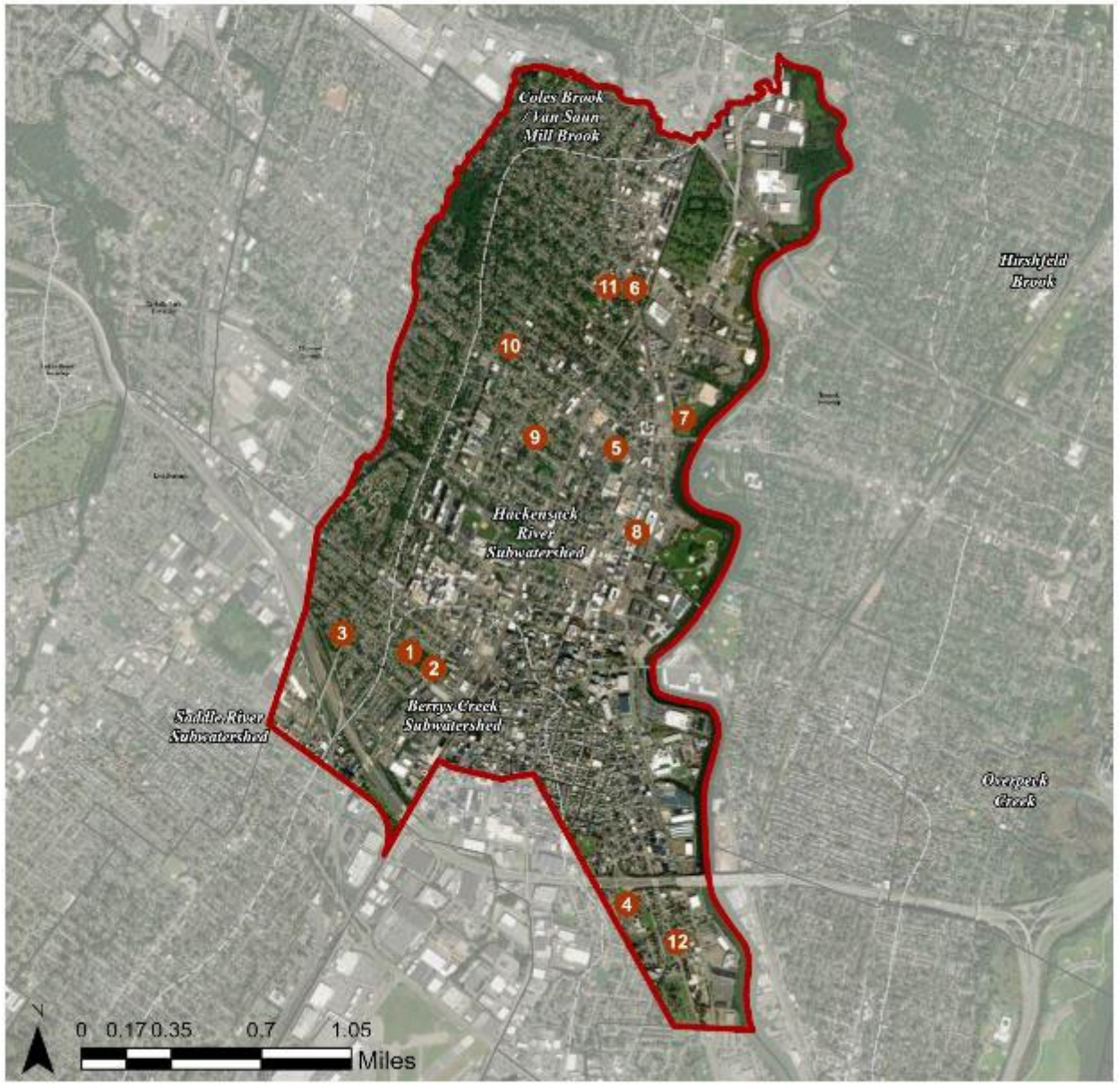
Green Stormwater Infrastructure
As Stormwater Improvement Projects

Identifying Watershed Improvement Projects

It is all about controlling runoff from impervious surfaces



HACKENSACK CITY: GREEN INFRASTRUCTURE SITES



SITES WITHIN THE BERRY'S CREEK SUBWATERSHED

1. Fanny Meyer Hillers School
2. Polify Road Park

SITES WITHIN THE COLES BROOK / VAN SAUN MILL BROOK SUBWATERSHED

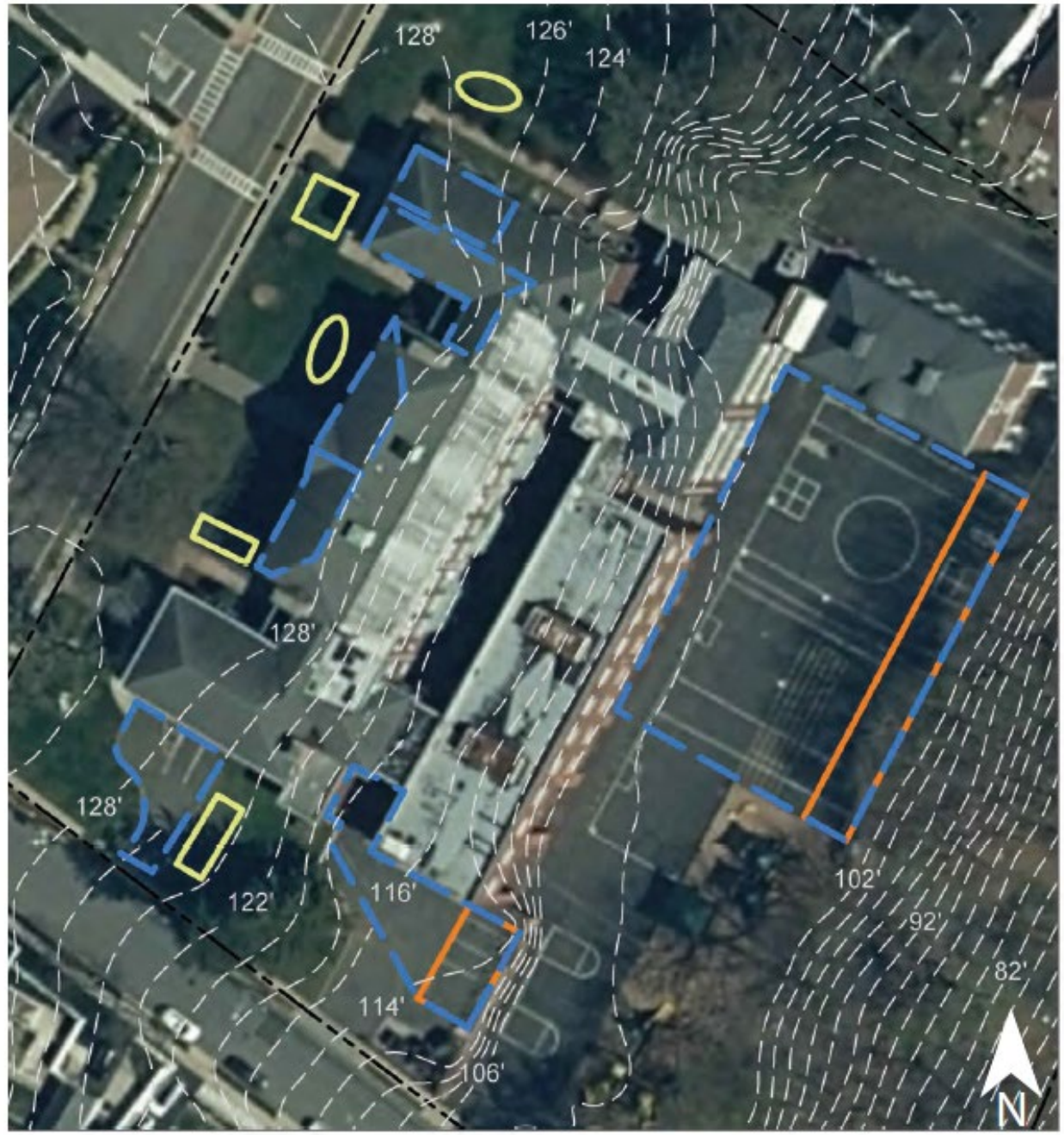
3. Hackensack Fire Department Engine 2

SITES WITHIN THE HACKENSACK RIVER (BELLMAN'S CREEK TO FORT LEE ROAD) SUBWATERSHED

4. Immaculate Conception Roman Catholic Church

SITES WITHIN THE HACKENSACK RIVER (FORT LEE ROAD TO ORADELL GAGE) SUBWATERSHED

5. Bergen County Christian Academy
6. Fairmount Park
7. Johnson Park
8. Johnson Public Library
9. Majestic Lodge 153
10. Mt. Holiness Temple
11. Nuevo Amanecer Spanish Seventh-Day Adventist Church
12. St. Joseph's Roman Catholic Church



- bioretention system
- pervious pavement
- drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0' 30' 60'

FANNY MEYER HILLERS SCHOOL

56 Longview Avenue
Hackensack, NJ 07601

Rain gardens can be installed in various turfgrass areas around the building to capture, treat, and infiltrate the stormwater runoff from the rooftop. This will require redirecting downspouts beneath sidewalks. The existing parking spaces to the rear of the building and parts of the impervious playground can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 48.1"
54	84,970	4.1	42.9	390.1	0.066	2.55

Recommended Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.135	21	9,260	0.35	1,185	$11,850

CURRENT CONDITION

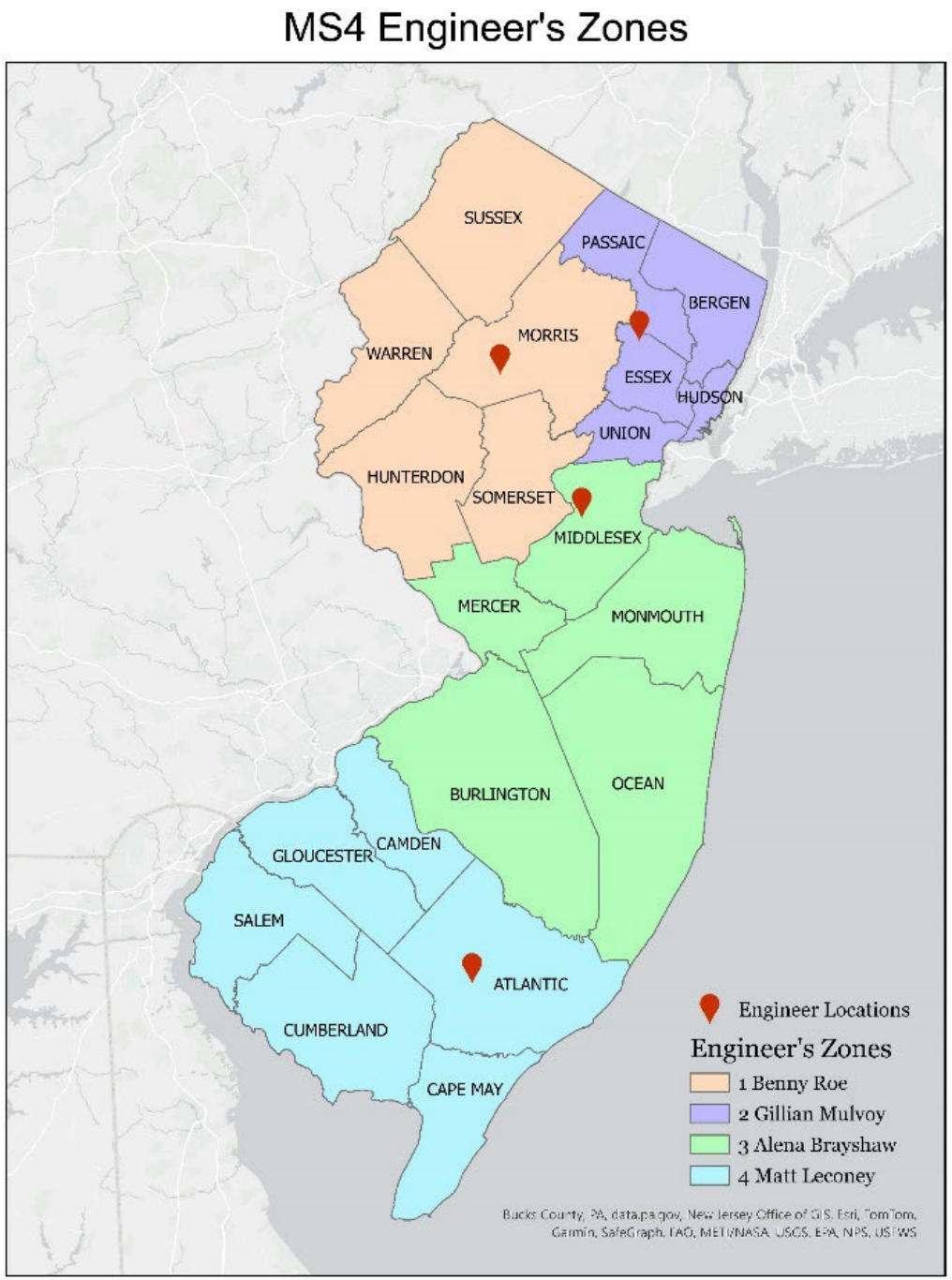
CONCEPT DESIGN

IMMACULATE CONCEPTION ROMAN CATHOLIC CHURCH

49 Vreeland Avenue
Hackensack, NJ

Municipal Stormwater Management Technical Assistance Program

- Three-year agreement w/ NJDEP to support MS4 communities statewide
- Four Regional Engineers
- Provide technical support to all municipalities
  - Focus on former Tier B municipalities



Primary Support Tasks

- **1. Build or enhance stormwater asset inventory or mapping**
  - Catch basins, outfalls, detention/infiltration basins
- **2. Stormwater system vulnerability, condition/functional assessment**
  - Evaluate system performance under current and future precipitation estimates

Primary Support Tasks

- **3. Water quality and flood stressor identification**
  - Identify sources of stressors (i.e. land use, impervious cover, sewerage systems)
- **4. Watershed implementation planning and project identification and design**
  - Assist with development of Watershed Improvement Plan or other planning efforts

Primary Support Tasks

- **5. Zoning and impervious surface build out analysis**
  - Perform analyses to evaluate water quality and flooding risks
- **6. Ordinance evaluation and amendment**
  - Evaluate current ordinances for minimum compliance and recommend more stringent options

Contact Us

- **Northwest**: Benny Roe
  - benny.roe@rutgers.edu
- **Northeast**: Gillian Mulvoy
  - gillian.mulvoy@rutgers.edu
- **Central**: Alena Brayshaw
  - alena.brayshaw@rutgers.edu
- **South**: Matthew Leconey
  - matthew.leconey@rutgers.edu

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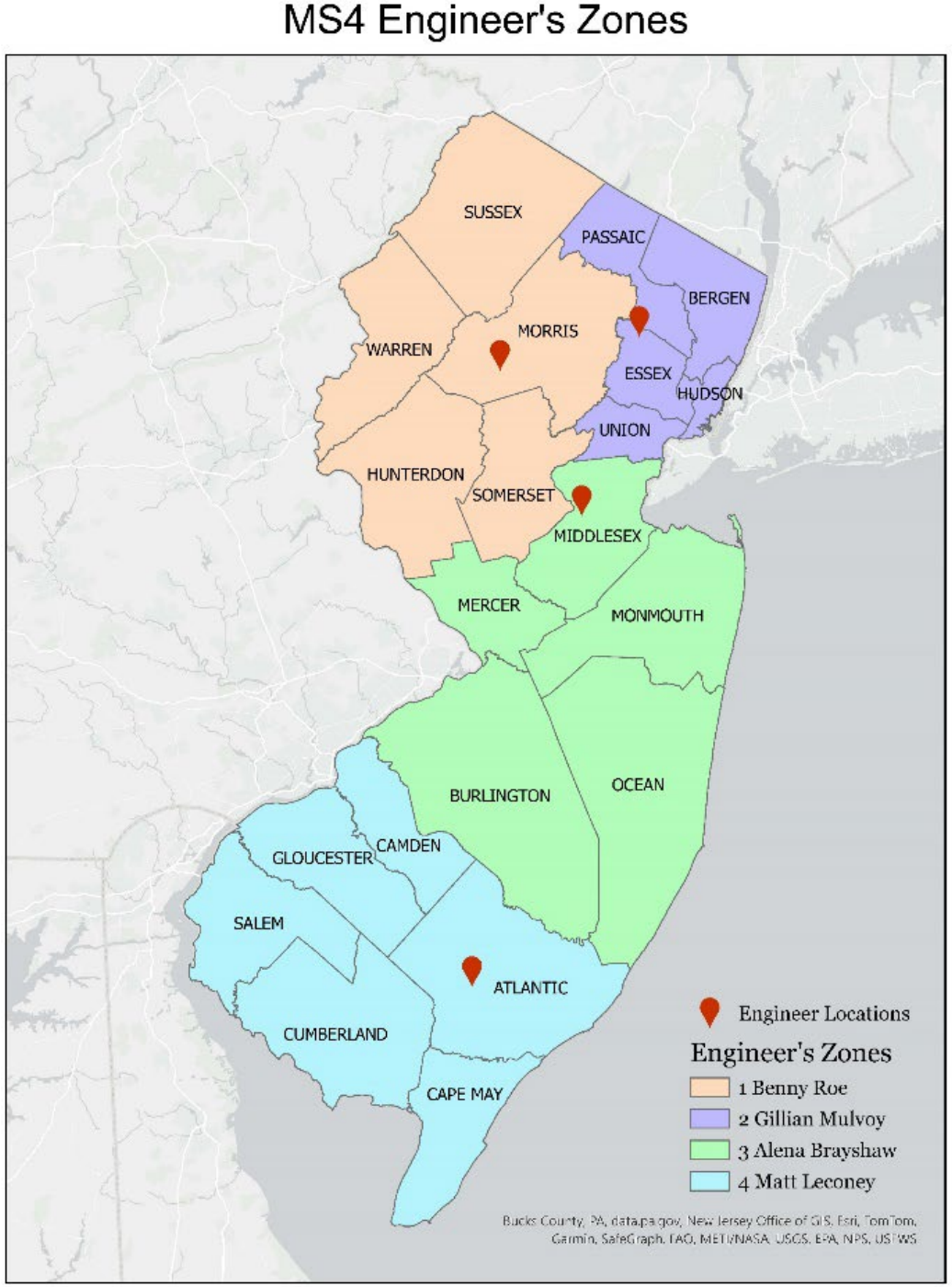

Make a Difference
Become a Green Infrastructure Champion

Join us for the next Green Infrastructure Champions Training Program January 2025

WORKSHOP (all workshops are virtual):

1. How to identify green infrastructure projects in your town (Friday, Jan. 10, 2025)
2. Moving from planning to implementation of green infrastructure (Friday, Jan. 24, 2025)
3. Maintaining green infrastructure practices/ projects (Friday, Feb. 7, 2025)
4. Stormwater management regulations, policies, and ordinances (Friday, Feb. 21, 2025)
5. Green infrastructure planning and implementation for Sustainable Jersey points (Friday, Mar. 7, 2025)
6. Green infrastructure for targeted audiences (Friday, Mar. 21, 2025)
7. How to design and build a rain garden (Friday, Apr. 4, 2025)
8. Retrofitting traditional detention basins with green infrastructure (Friday, Apr. 18, 2025)
9. Developing green infrastructure master plans for an entire site or neighborhood (Friday, May 2, 2025)
10. Using green infrastructure to promote climate resiliency (Friday, May 16, 2025)

Questions?

Christopher C. Obropta, Ph.D., P.E.
Phone: 908-229-0210
Email: obropta@envsci.rutgers.edu