MS4 Permit – New Year, New Goals

ANJEC MS4 Webinar
February 11, 2026

RUTGERS UNIVERSITY
Water Resources Program
New Jersey Agricultural Experiment Station

Rutgers Cooperative Extension Water Resources Program
Christopher C. Obropta, Ph.D., P.E.

Rutgers Cooperative Extension

Rutgers Cooperative Extension (RCE) helps the diverse population of New Jersey adapt to a rapidly changing society and improves their lives through an educational process that uses science-based knowledge.

Water Resources Program

Our mission is to identify and address water resources issues by engaging and empowering communities to employ practical science-based solutions to help create a more equitable and sustainable New Jersey.

What is the 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 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.

Why is this important?

- Nearly 95% of waterways impaired in NJ
- Lack of stormwater management for developments
  - prior to 1983 (no management)
  - prior to 2004 (poor WQ management)
- Stormwater infrastructure needs to be maintained to reduce pollutant load to local waterways and reduce flooding
- The carrot has not worked so the MS4 Permit is the stick

Summary of MS4 Requirements

Section A: Stormwater Management Program

- Overview of MS4 Permit and SPPP

Section B: Minimum Standards for Public Involvement

- Public participation and published information of stormwater website

Section C: Minimum Standards for Local Public Education

- Complete 12 points of educational stormwater activities annually

Section D: Minimum Standards for Construction Site Stormwater Runoff

- Construction runoff covered by separate permit

As of January 1, 2023

Summary of MS4 Requirements

Section E: Minimum Standards for Post Construction Stormwater Management in New Development and Redevelopment (N.J.A.C. 7:8 Stormwater Management Rules)

- Sets forth review requirements of development plans for stormwater management

Section F: Minimum Standards for Pollution Prevention/ Good Housekeeping for Municipal Operators

- Ordinances, community measures, inspection of stormwater facilities, maintain logs, municipal maintenance yards, trainings

Section G: Minimum Stands for MS4 Mapping, and Scouring, and Illicit Discharge Detection and Elimination

- Mapping requirements, stream scour inspection, illicit discharge detection and elimination from outfalls

As of January 1, 2023

Summary of MS4 Requirements

Section H: Watershed Improvement Plan

- Three phase document: Watershed Inventory Report (1/1/2026), Watershed Assessment Report (1/1/2027), Watershed Improvement Plan Report (12/1/2027)

Section I: Additional Measures and Optional Measures

- Allows additional measures/limits if desired

Section J: Recordkeeping

- Retain records of the permit for 5 years available on request

Section K: Annual Report and Certification

- Submit annual report to summarize compliance by May 1st annually

As of January 1, 2023

Section A:
Stormwater Management Program

- Develop, update, implement and maintain a Stormwater Pollution Prevention Plan (SPPP)
- Designate a Stormwater Program Coordinator (SPC)
- Ensure the MS4 Program and the SPPP is consistent with the Municipal Stormwater Management Plan (MSWMP)
- Ensure the MSWMP is a component of the municipal master plan
- Shall modify and update applicable ordinances and plan to reflect the MS4 Program including the Stormwater Control Ordinance

Updated SPPP should have been submitted to NJDEP by January 1, 2024

Section B:
Minimum Standards for Public Involvement and Participation

- Comply with applicable State and local public notice requirements
- Develop a municipal stormwater webpage displaying:

- Stormwater Pollution Prevention Plan (SPPP) (excluding inspection logs and other recordkeeping documents)
- Municipal Stormwater Management Plan (MSWMP)
- Stormwater Control Ordinance (SCO)
- Pet Waste Ordinance
- Wildlife Feeding Ordinance
- Litt
- Imp
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- Containerized Yard Waste/Yard Waste Collection Program Ordinances
- Private Storm Drain Inlet Retrofitting Ordinance
- Illicit Connection Ordinance
- Tree Removal/Replacement Ordinance
- Privately-Owned Salt Storage Ordinance

o
nt Plan

Dedicate webpage should have been posted by February 1, 2024

NJDEP Stormwater Webpage Template

What is stormwater?

Human activity is largely responsible for stormwater pollution. Everything that we put on the ground or into the storm drain can end up in our water. Each of us has a responsibility to make sure these contaminants stay out of our water. Whether we have clean water is up to you.

The official definition of stormwater under the New Jersey Pollutant Discharge Elimination System(NJPDES) regulations at N.J.A.C. 7:14A is as follows:

'Stormwater' means water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment.

Stormwater Program Coordinator (SPC) Contact Information

If you have any questions about our stormwater program or would like additional information, please contact:

insert contact information here

Stormwater Links

Stormwater Pollution Prevention Plan (SPPP)

The SPPP was last updated on insert date here and describes how we implement the stormwater program in order to meet the requirements of our NJPDES Municipal Separate Storm Sewer System (MS4) permit.

- Check out the SPPP here Insert your own SPPP here

Municipal Stormwater Management Plan (MSWMP)

- Check out the Municipal Stormwater Management Plan Here Insert your own MSWMP here

MS4 Outfall Pipe Map

Watershed Improvement Plan (WIP)

The purpose of the WIP is to identify opportunities to improve water quality, reduce MS4 contribution of pollutants to waterbodies with impairments and Total Maximum Daily Load(TMDLs), and to address stormwater flooding to protect human health and safety, and the environment.

- Watershed Inventory Report
- Watershed Assessment Report
- Watershed Improvement Plan Report

Stormwater Resources

Click on the links below to learn more about stormwater and get access to educational resources.

- Rutgers Cooperative Research & Extension
- Clean Water NJ
- NJ Stormwater

Stormwater Ordinances/Regulatory Mechanisms

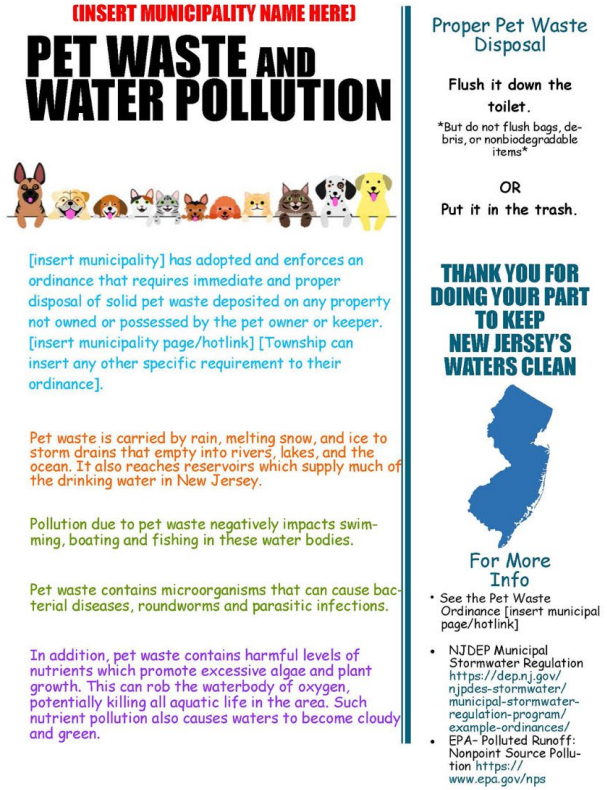
Click on our adopted stormwater ordinances below.

- Stormwater Control Ordinance
- Pet Waste Ordinance
- Wildlife Feeding Ordinance
- Litter Control Ordinance
- Improper Disposal of Waste Ordinance
- Containerized Yard Waste Ordinance
- Yard Waste Collection Program Ordinance
- Private Storm Drain Inlet Retrofitting Ordinance
- Illicit Connection Ordinance
- Tree Removal/Replacement Ordinance
- Privately-Owned Salt Storage Ordinance
- (Optional) Privately-Owned Refuse

NJDEP Stormwater Webpage Template

Brochures and Handouts

Check out the following handouts for more information on stormwater.


(INSERT MUNICIPALITY NAME HERE)

PET WASTE AND WATER POLLUTION

[insert municipality] has adopted and enforces an ordinance that requires immediate and proper disposal of solid pet waste deposited on any property not owned or possessed by the pet owner or keeper. [insert municipality page/hotlink] [Township can insert any other specific requirement to their ordinance].

Pet waste is carried by rain, melting snow, and ice to storm drains that empty into rivers, lakes, and the ocean. It also reaches reservoirs which supply much of the drinking water in New Jersey.

Pollution due to pet waste negatively impacts swimming, boating and fishing in these water bodies.

Pet waste contains microorganisms that can cause bacterial diseases, roundworms and parasitic infections.

In addition, pet waste contains harmful levels of nutrients which promote excessive algae and plant growth. This can rob the waterbody of oxygen, potentially killing all aquatic life in the area. Such nutrient pollution also causes waters to become cloudy and green.

Proper Pet Waste Disposal

Flush it down the toilet.

But do not flush bags, debris, or nonbiodegradable items

OR

Put it in the trash.

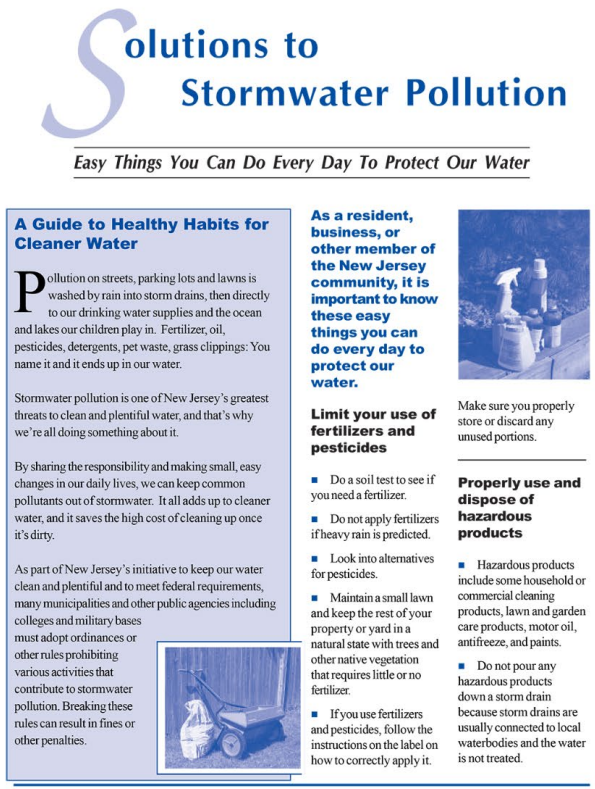
THANK YOU FOR DOING YOUR PART TO KEEP NEW JERSEY'S WATERS CLEAN

For More Info

- See the Pet Waste Ordinance [insert municipal page/hotlink]
- NJDEP Municipal Stormwater Regulation https://dep.nj.gov/njpdes-stormwater/municipal-stormwater-regulation-program/example-ordinances/
- EPA- Polluted Runoff: Nonpoint Source Pollution https://www.epa.gov/nps

Pet Waste Flyer

DOWNLOAD PET WASTE FLYER >


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.

Stormwater Education Brochure

DOWNLOAD BROCHURE >

STORMWATER POLLUTION: WHAT DO YOU THINK?

- You may think littering is no big deal (it is).
- You may think that whatever runs into the storm drains gets treated before it reaches local rivers and streams (it isn't).
- You may think motor oil and other hazardous materials doesn't harm the water very much (it does).

Pollution seeps into the ground and is carried by stormwater (rain and snow) directly to our drinking water, streams, lakes and oceans. Contaminated stormwater is the #1 cause of water pollution in New Jersey. Simple things, like proper clean-up after oneself and careful use of chemicals in the home, office and yard, are helpful ways for businesses and residents to protect the water.

[Insert Munipality Name] has ordinances aimed at reducing pollution from litter, fertilizer, oil, pesticides, detergents, animal waste, grass clippings and other debris. For details, see [Insert Municipal Ordinance Website Link] . Thank you for keeping them in mind and doing your share.

Clean Water NJ

Stormwater Education Handout

DOWNLOAD BROCHURE >

Section C:
Minimum Standards for Local Public Education and Outreach

- Implement a Public Education and Outreach Program
  - Earn 12+ points each year from three of the five categories
  - A minimum of one activity must involve educating businesses or the public of illicit connections and improper disposal of waste

Section C:
Point System

Category 1: General Public Outreach
- Social Media (3)
- Newspaper Ad (1)
- Radio/Television (2)
- Green Infrastructure Signage (5)
- Mural (2)
- Billboard/Sign (2)
- Stormwater Facility Signage (5)

Category 2: Targeted Audiences Outreach
- Stormwater Display (1)
- Promotional Item (2)
- Private Stormwater Facilities Education (3)
- Mailing or e-mailing Campaign (2)
- Ordinance Education (3)

Category 3: School/Youth Education and Activities
- School Presentations (5)
- Water Education Workshops (2)
- Storm Drain Labeling (3)
- Educational Contest for Schools (3)
- AmeriCorps Event (4)
- Clean-up (3)

Category 4: Watershed/Regional Collaboration
- Regional Stormwater Collaboration (3)
- Green Infrastructure Workshop (3)
- Community Activity (3)

Category 5: Community Involvement Activities
- Volunteer Stormwater Assessment or Stream Monitoring (3)
- Rain Barrel Workshop (3)
- Rain Garden Workshop (3)
- Community Event (3)
- Community Involvement (5)

Section F:
Minimum Standards for Pollution Prevention/ Good Housekeeping for Municipal Operators

1. Community-wide Ordinances
   - Pet Waste, Wildlife Feeding, Litter Control, Improper Waste Disposal, Yard Waste, Private Inlet Retrofitting (existing)
   - Privately-Owned Salt Storage, Tree Removal/Replacement **(January 1, 2024)**

2. Community-wide Measures
   - Street Sweeping (triannual w/ inlets, annual w/o inlets)
   - Storm drain labeling and retrofitting
   - Herbicide Management (don't apply near storm drains or steep ground)
   - Excess De-Icing Material (remove within 72 hours excess salt piles)
   - Roadside Vegetative Waste management (proper disposal of yard waste)
   - Roadside Erosion Control (inspect municipal roads annually for erosion)

3. Inspection and Maintenance of Stormwater Facilities Owned and Operated

Section F:
Minimum Standards for Pollution Prevention/ Good Housekeeping for Municipal Operators

4. Inspection and Maintenance of Stormwater Facilities Not Owned and Operated

- Certify annually that facilities not owned or operated by the town constructed after February 7, 1984, are adequately cleaned and maintained

5. Municipal Maintenance Yards

- Many requirements in this section that should be reviewed. Focus on identifying possible sources of contamination to stormwater discharge on maintenance yards and how materials are stored.

6-10. Trainings

- Stormwater Program Coordinator Training
- Annual Employee Training
- Stormwater Management Design Review Training
- Stormwater Management Rule Amendment Training
- Municipal Board and Governing Body Member Training

More on Section F: 4. Inspection and Maintenance of Stormwater Facilities Owned and Operated by Permittee

I. Storm drain inlet inspection

II. Storm drain inlet cleaning and maintenance

III. Catch basin inspection

IV. Catch basin cleaning

More on Section F: 4. Inspection and Maintenance of Stormwater Facilities Owned and Operated by Permittee

V. MS4 conveyance inspection and cleaning

VI. Stormwater infrastructure inspection

VII. Stormwater infrastructure maintenance

VIII. Inspection and maintenance logs

IX. Annual report

More on Section F:
5. Municipal Maintenance Yards

Monthly inspection under both dry and wet conditions:

a. Document best management practices
b. Site inspections
c. Inventory list
d. Container labels
e. Spill kits
f. Bulk liquid storage
g. Fueling operations
h. Discharge of stormwater from secondary containment
i. Vehicle/Equipment maintenance and/or repair
j. Wash wastewater containment

Municipal Maintenance Yards (cont'd)

k. Salt and other granular de-icing material storage & handing
l. Aggregate material, wood chips, and finished leaf compost storage
m. Cold patch asphalt storage
n. Street sweeping and storm sewer clean out material storage
o. Construction and demolition waste, wood waste, and yard trimming storage
p. Scrap tires
q. Inoperable vehicle or equipment
r. Outdoor refuse containers and dumpsters

More of Section F: Training

6. Stormwater Program Coordinator (SPC) Training

- Participate in Department free training webinar within EDPA + 36 months and once per permit cycle thereafter

7. Annual Employee Training

- Individual responsible for implementation of MS4 permit receive annual training, i.e. governing body members, municipal employees in public works, engineering, etc.

i. SPPP
ii. Construction Site Stormwater Runoff
iii. Post-Construction Stormwater Management in New Development and Redevelopment
iv. Community-wide Ordinances
v. Community-wide Measures
vi. Stormwater Facility Maintenance
vii. Municipal Maintenance Yard
viii. Operations and other ancillary operations
ix. MS4 Mapping
x. Outfall stream scouring detection and control
xi. Illicit Connection Elimination
xii. Watershed Improvement Plan

Section G: MS4 Mapping, and Scouring, and Illicit Discharge Detection Elimination

- MS4 Mapping
  i. MS4 outfalls
  ii. MS4 groundwater discharge points
  iii. MS4 interconnections
  iv. Storm drain inlets
  v. MS4 manholes
  vi. MS4 conveyance
  vii. MS4 pump stations
  viii. Stormwater facilities
  ix. Property boundaries of maintenance yards

Section G: MS4 Mapping, and Scouring, and Illicit Discharge Detection Elimination

- Stream Scouring
  - Inspect each outfall once every five years
- Illicit Discharge Detection and Elimination
  - Dry weather inspections once every five years
  - Detect source within 30-days
  - Eliminate within one year

Section H:
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

Section H:
Watershed Improvement Plan

Phase 1 – Prepare and submit the Watershed Inventory Report; conduct outreach (January 1, 2026)

- Summarize/map required information, some is available from the Department's GIS database

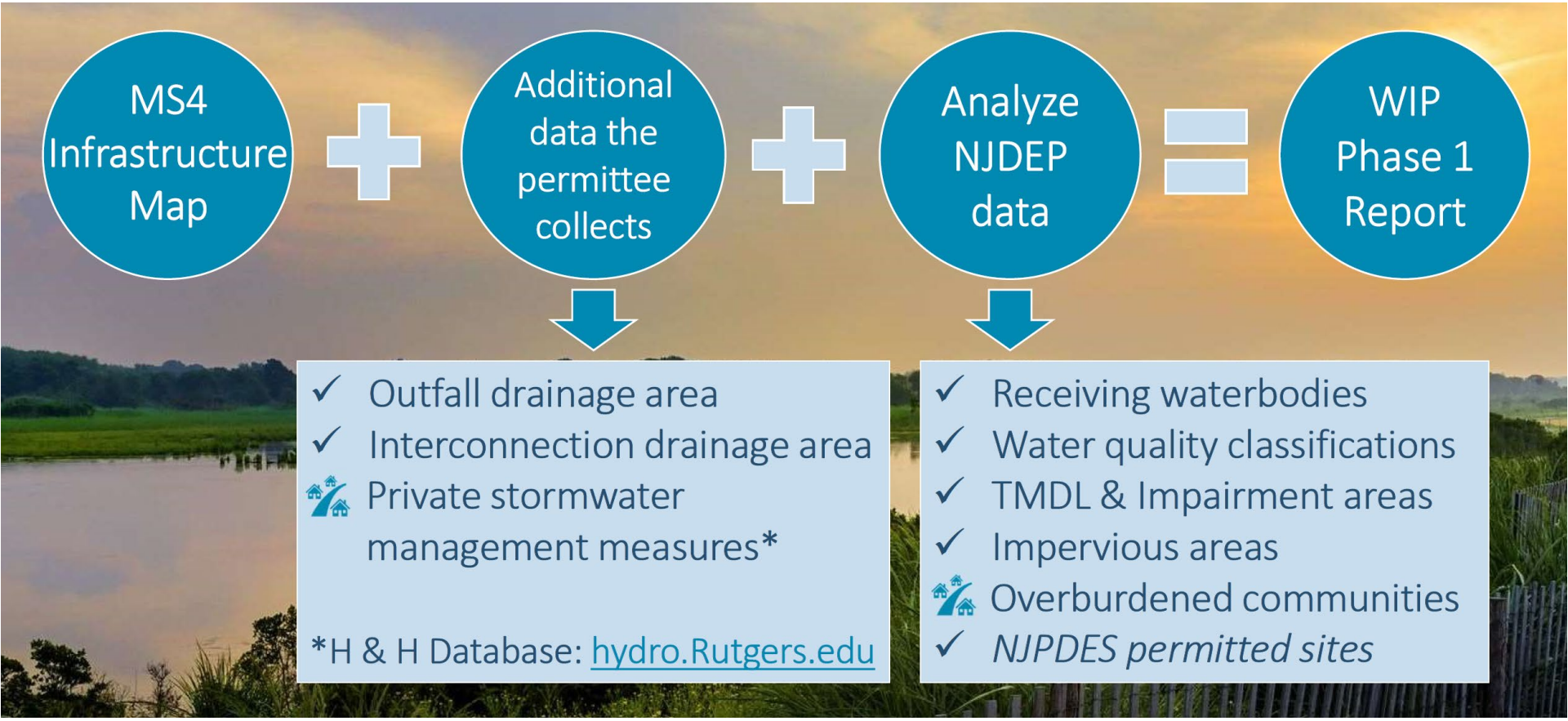
Phase 2 – Prepare and submit the Watershed Assessment Report; conduct outreach (January 1, 2027)

- Assess potential projects with estimates of the reduction in pollutant loading & funding need

Phase 3 – Prepare and submit the Watershed Improvement Plan Report; conduct outreach (December 1, 2027)

- Summarize proposed projects with improvement expected, comments received, costs, coordination with other regulatory programs, and implementation schedule

Phase 1
Watershed Inventory Report (WIP)



Due of January 1, 2026

Phase 1
MS4 Infrastructure Map

Delineates the location of the following stormwater features that are <u>owned or operated</u> by the permittee

i. MS4 outfalls

ii. MS4 ground water discharge

iii. MS4 interconnections

iv. Storm drain inlets

v. MS4 manholes

vi. MS4 conveyances

vii. MS4 pump stations

viii. Stormwater facilities

ix. Property boundaries of maintenance yard

Due of January 1, 2026

Phase 1
Drainage Area Delineation

- Area that flows to each outfall

"Outfall" means any point source which discharges directly to waters of the United States …"

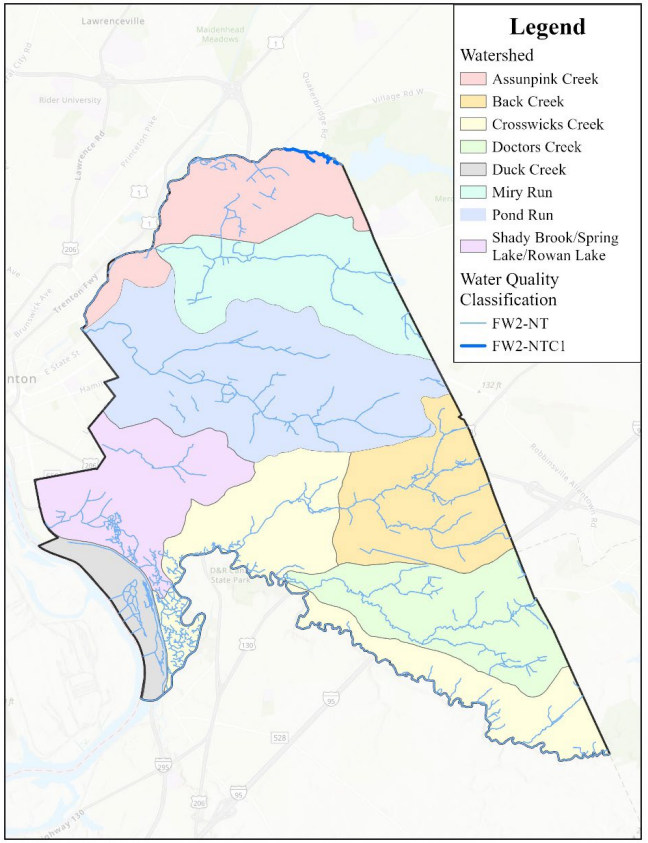
- Area that drains from a MS4 interconnection

"MS4 interconnection" means any point at which an MS4 flows into or from another MS4.

Due of January 1, 2026

Phase 1
Water Quality Classification of Receiving Water

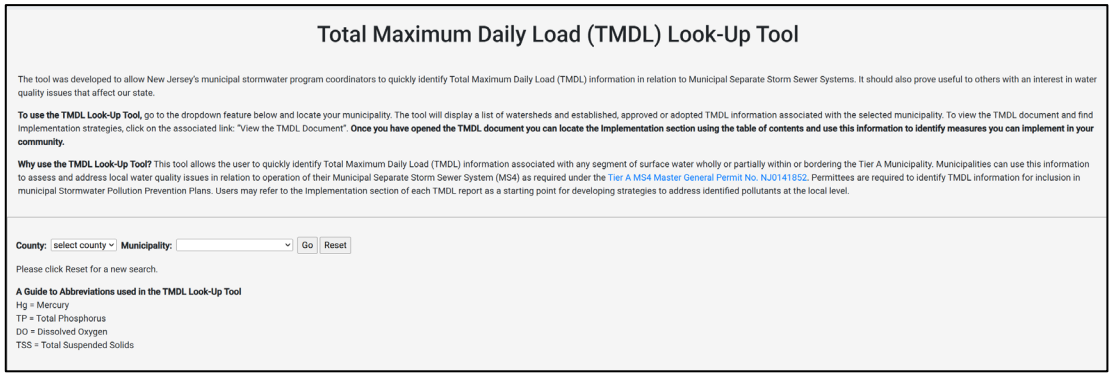
- Example classifications:
  - Freshwater
    - FW1 – (no man-made wastewater)
    - FW2-TP, FW2-TM, FW2-NT (other freshwater)
  - Saline waters
    - SE – Saline estuary
    - SC – Saline Coastal
  - PL – Pinelands waters



Due of January 1, 2026

Phase 1
Total Maximum Daily Load (TMDL) Areas

- TMDL is a pollutant budget for an impaired waterbody
- Use the TMDL look-up tool to identify study reports



Total Maximum Daily Load (TMDL) Look-Up Tool

The tool was developed to allow New Jersey's municipal stormwater program coordinators to quickly identify Total Maximum Daily Load (TMDL) information in relation to Municipal Separate Storm Sewer Systems. It should also prove useful to others with an interest in water quality issues that affect our state.

To use the TMDL Look-Up Tool, go to the dropdown feature below and locate your municipality. The tool will display a list of watersheds and established, approved or adopted TMDL information associated with the selected municipality. To view the TMDL document and find implementation strategies, click on the associated link: "View the TMDL Document". **Once you have opened the TMDL document you can locate the Implementation section using the table of contents and use this information to identify measures you can implement in your community.**

Why use the TMDL Look-Up Tool? This tool allows the user to quickly identify Total Maximum Daily Load (TMDL) information associated with any segment of surface water wholly or partially within or bordering the Tier A Municipality. Municipalities can use this information to assess and address local water quality issues in relation to operation of their Municipal Separate Storm Sewer System (MS4) as required under the Tier A MS4 Master General Permit No. NJ0141852. Permittees are required to identify TMDL information for inclusion in municipal Stormwater Pollution Prevention Plans. Users may refer to the Implementation section of each TMDL report as a starting point for developing strategies to address identified pollutants at the local level.

County: select county **Municipality:** Go Reset

Please click Reset for a new search.

A Guide to Abbreviations used in the TMDL Look-Up Tool
Hg = Mercury
TP = Total Phosphorus
DO = Dissolved Oxygen
TSS = Total Suspended Solids

- Examples – PCBs, Total Phosphorus, Fecal Coliform, Mercury (air deposition)
- Water Quality Impairments
  - Areas with high concentrations but no study complete

Due of January 1, 2026

Phase 1
Additional Mapping

- Overburdened Communities
  - Areas with:
    - > 35% Low-income households
    - > 40% minority or tribal community
    - > 40% limited English proficiency
- Impervious Cover
  - Areas of roads, buildings, and other paved areas
- Outfalls and infrastructure not owned/operated

Due of January 1, 2026

NJDEP WIP Template

Was due January 1, 2026

Watershed Inventory Report

Phase 1 of the Watershed Improvement Plan
Template for Tier A and Public Complex Permittees

INSERT PERMITTEE NAME
INSERT COUNTY

Date Report Finalized: _____

Permit Number: NJG_____

Stormwater Program Coordinator: _____

Phase 2

Due of January 1, 2027

Watershed Assessment Report

Report shall summarize and include an electronic map of the items listed below

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

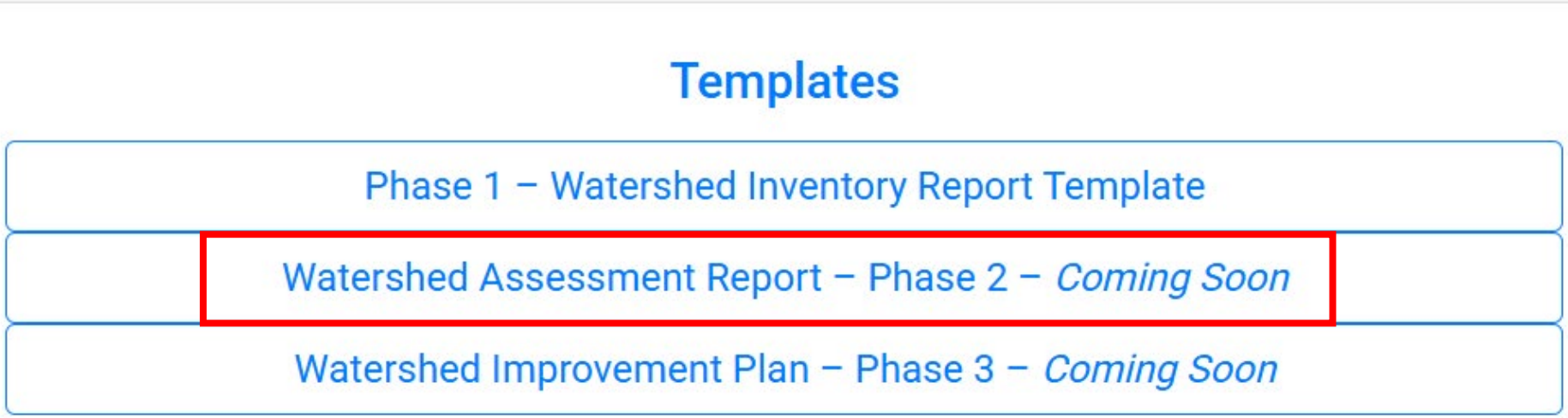
iv. An **estimate of funding needs** for each project, and identification of potential funding sources, including the New Jersey Water Bank (NJWB); the formation of an SWU, using 319 grants, FEMA BRIC grants

v. An estimate of an **implementation schedule**

Due of January 1, 2027

Phase 2
Watershed Assessment Report

The NJDEP is working on a template for the Watershed Assessment Report:



https://dep.nj.gov/njpdes-stormwater/municipal-stormwater-regulation-program/watershed-improvement-plan-resource-page/

Due of January 1, 2027

Phase 2
Watershed Assessment Report

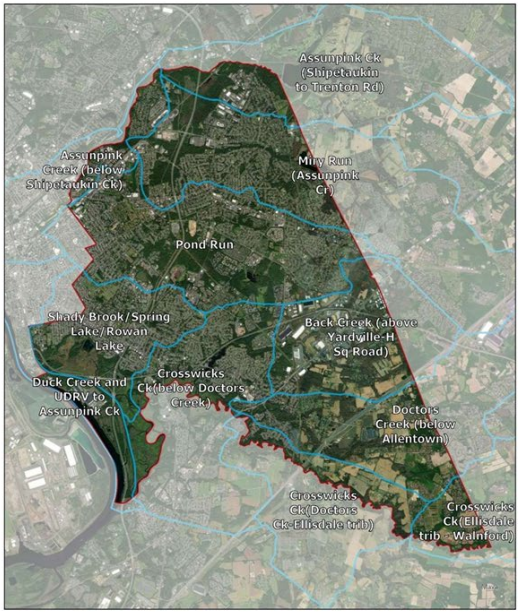
RCE Water Resources Program completed a Watershed Assessment Report for Hamilton Township, which included…

- Subwatershed (HUC14) analysis
- Identification of existing water quality problems
- TDML reduction targets & load reductions
- Sources of problems
  - Land-use
  - Impervious cover
  - Other potential sources (point sources, septic systems, leaf litter/road debris, wildlife)
- Proposed projects
- Budget
- Timeline

Due of January 1, 2027

Phase 2
Watershed Assessment Report

RUTGERS UNIVERSITY
Water Resources Program
New Jersey Agricultural Experiment Station



Hamilton Township (Mercer County)
Watershed Assessment Report

Developed by the Rutgers Cooperative Extension Water Resources Program

Funded by Hamilton Township, Mercer County, New Jersey

April 2, 2025

Table 1: Hamilton Subwatershed Areas

HUC 14	Subwatershed Name	Hamilton Area (acres)	Total Area (acres)
2040105230050	Assunpink Ck (Shipetaukin to Trenton Rd)	1,017	6,182
2040105240030	Miry Run (Assunpink Cr)	3,721	8,555
2040105240040	Pond Run	5,954	6,405
2040105240060	Assunpink Creek (below Shipetaukin Ck)	798	3,051
2040201030010	Duck Creek and UDRV to Assunpink Ck	902	2,124
2040201050050	Crosswicks Ck(Ellisdale trib - Walnford)	754	4,383
2040201050070	Crosswicks Ck(Doctors Ck-Ellisdale trib)	1,099	4,144
2040201060030	Doctors Creek (below Allentown)	3,012	5,596
2040201070010	Back Creek (above Yardville-H Sq Road)	3,009	4,171
2040201070020	Crosswicks Ck(below Doctors Creek)	2,657	5,518
2040201070030	Shady Brook/Spring Lake/Rowan Lake	2,824	3,150

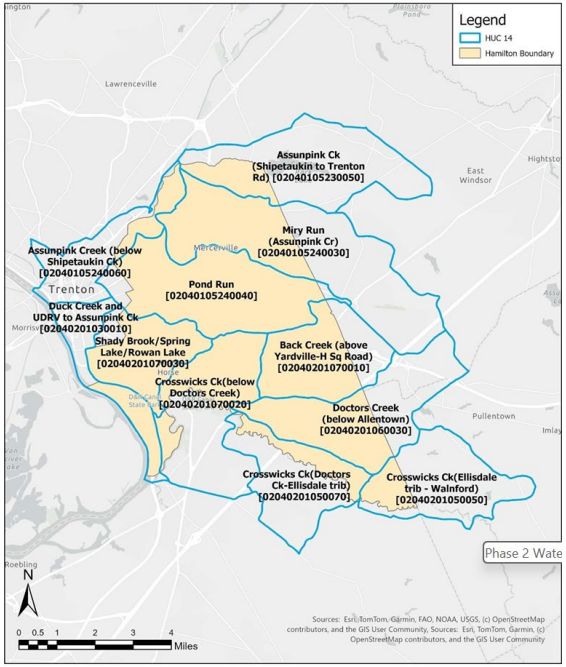
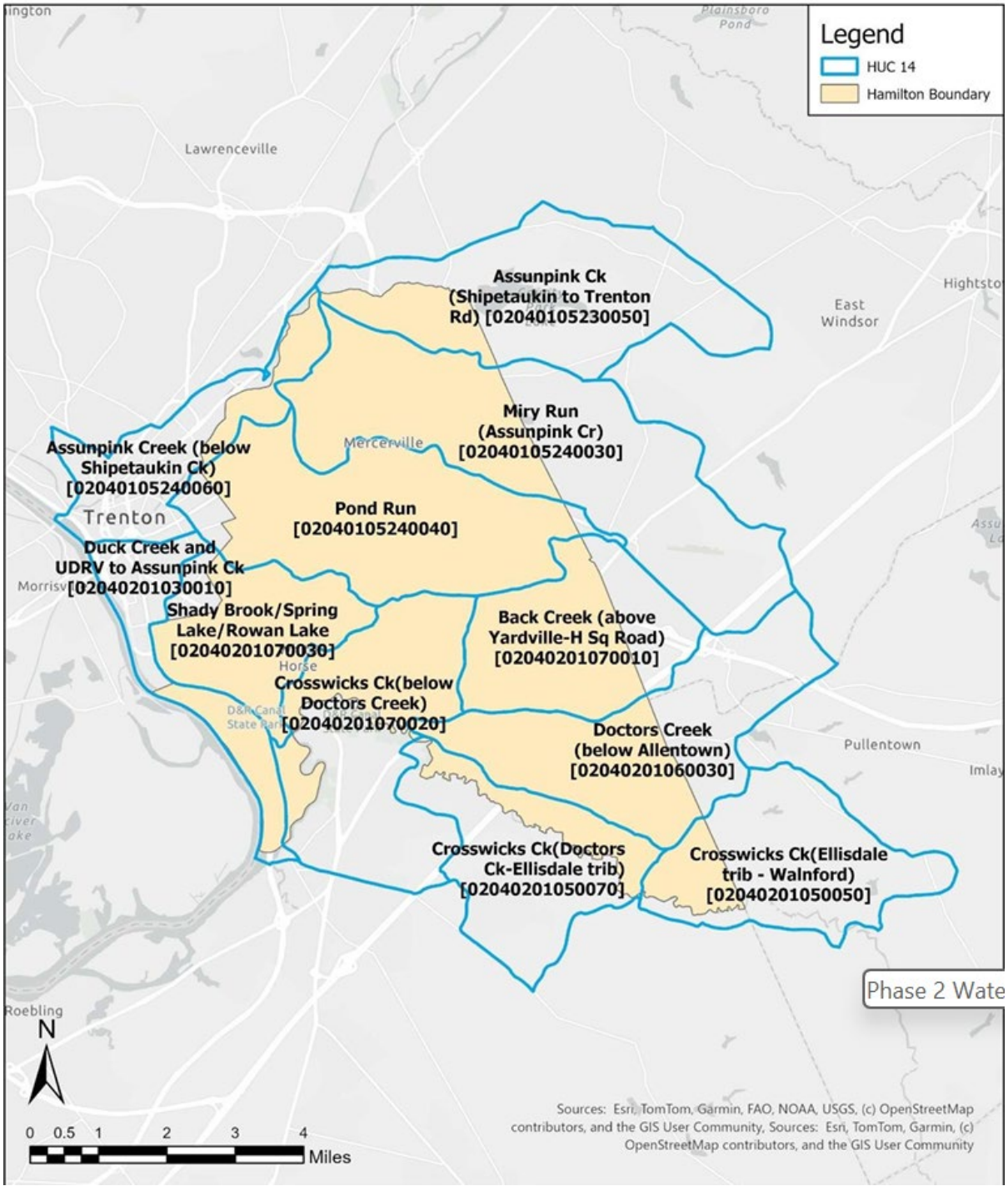


Figure 1: Hamilton Subwatersheds

Due of January 1, 2027


Legend
HUC 14
Hamilton Boundary
Assunpink Ck (Shipetaukin to Trenton Rd) [02040105230050]
Miry Run (Assunpink Cr) [02040105240030]
Assunpink Creek (below Shipetaukin Ck) [02040105240060]
Pond Run [02040105240040]
Duck Creek and UDRV to Assunpink Ck [02040201030010]
Shady Brook/Spring Lake/Rowan Lake [02040201070030]
Back Creek (above Yardville-H Sq Road) [02040201070010]
Crosswicks Ck(below Doctors Creek) [02040201070020]
Doctors Creek (below Allentown) [02040201060030]
Crosswicks Ck(Doctors Ck-Ellisdale trib) [02040201050070]
Crosswicks Ck(Ellisdale trib - Walnford) [02040201050050]
Lawrenceville
Mercerville
Trenton
East Windsor
Pullentown
Roebling
N
0 0.5 1 2 3 4
Miles
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Sources: Esri, TomTom, Garmin, (c) OpenStreetMap contributors, and the GIS User Community

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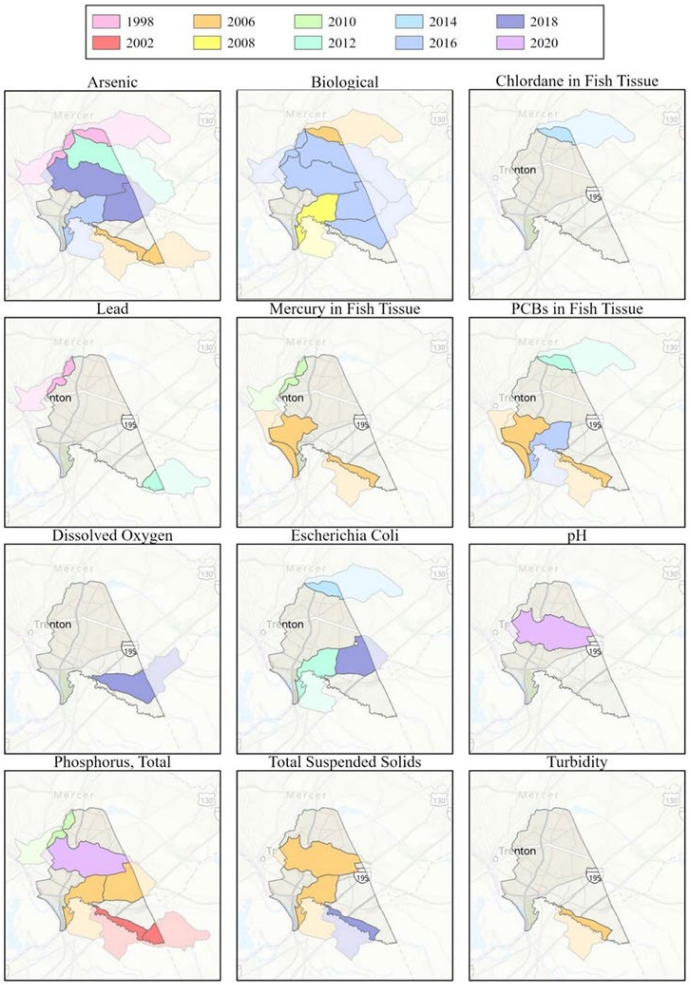
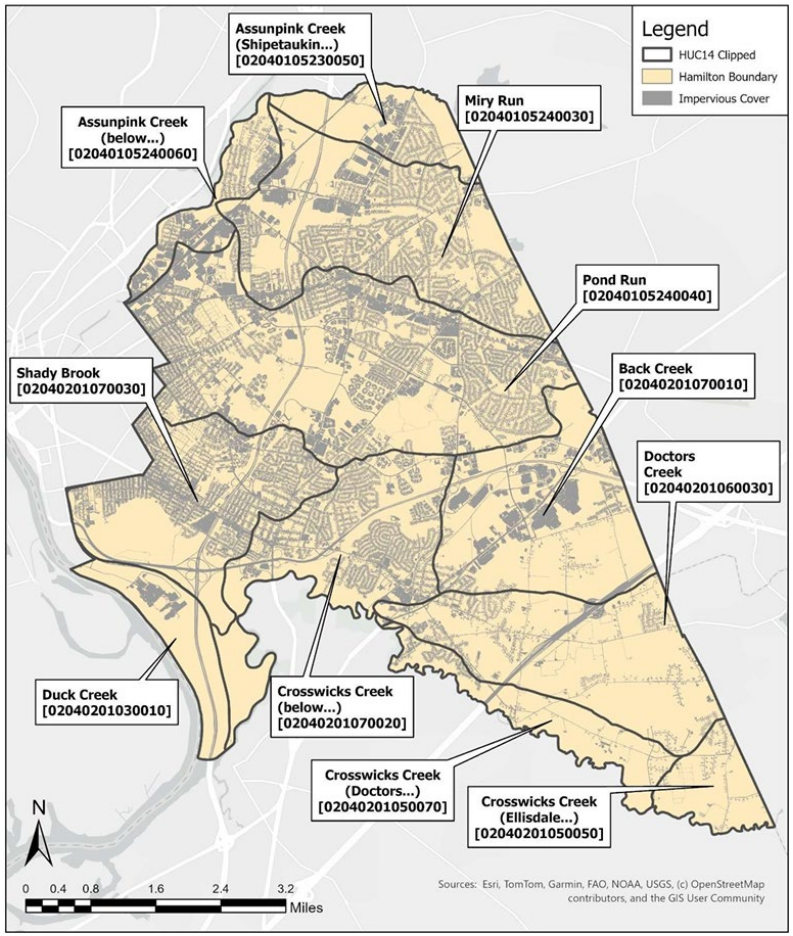
2040105240030	Miry Run (Assunpink Cr)	3,721	8,555
2040105240040	Pond Run	5,954	6,405
2040105240060	Assunpink Creek (below Shipetaukin Ck)	798	3,051
2040201030010	Duck Creek and UDRV to Assunpink Ck	902	2,124
2040201050050	Crosswicks Ck(Ellisdale trib - Walnford)	754	4,383
2040201050070	Crosswicks Ck(Doctors Ck-Ellisdale trib)	1,099	4,144
2040201060030	Doctors Creek (below Allentown)	3,012	5,596
2040201070010	Back Creek (above Yardville-H Sq Road)	3,009	4,171
2040201070020	Crosswicks Ck(below Doctors Creek)	2,657	5,518
2040201070030	Shady Brook/Spring Lake/Rowan Lake	2,824	3,150

Phase 2
Watershed Assessment Report

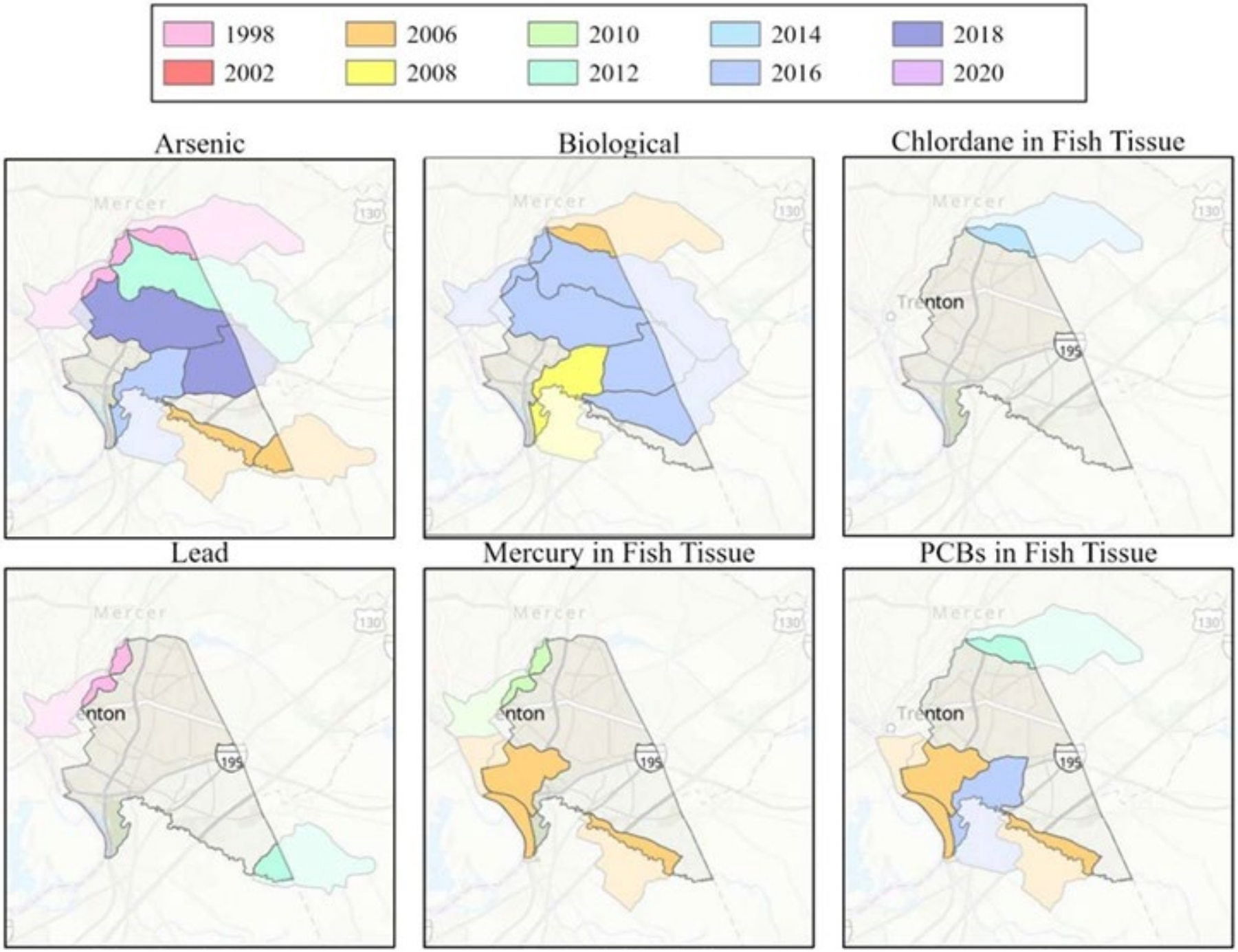


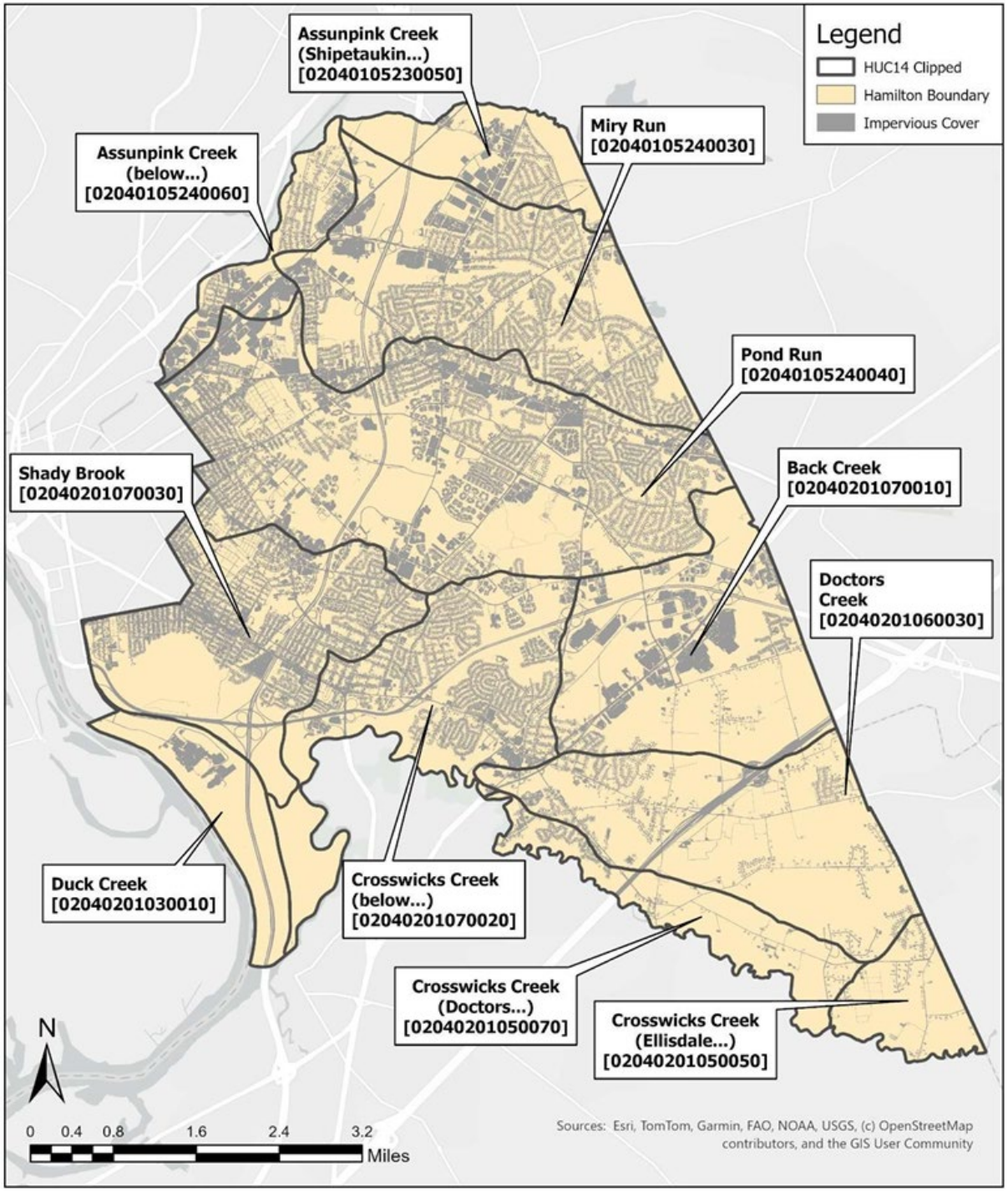
303(d) Impaired Waters by Year First Listed



Impervious Cover

Due of January 1, 2027


1998
2002
2006
2008
2010
2012
2014
2016
2018
2020
Arsenic
Biological
Chlordane in Fish Tissue
Lead
Mercury in Fish Tissue
PCBs in Fish Tissue
Mercer
130
Trenton
195


Legend
HUC14 Clipped
Hamilton Boundary
Impervious Cover
Assunpink Creek (Shipetaukin...) [02040105230050]
Miry Run [02040105240030]
Assunpink Creek (below...) [02040105240060]
Pond Run [02040105240040]
Shady Brook [02040201070030]
Back Creek [02040201070010]
Doctors Creek [02040201060030]
Duck Creek [02040201030010]
Crosswicks Creek (below...) [02040201070020]
Crosswicks Creek (Doctors...) [02040201050070]
Crosswicks Creek (Ellisdale...) [02040201050050]
N
0 0.4 0.8 1.6 2.4 3.2
Miles
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

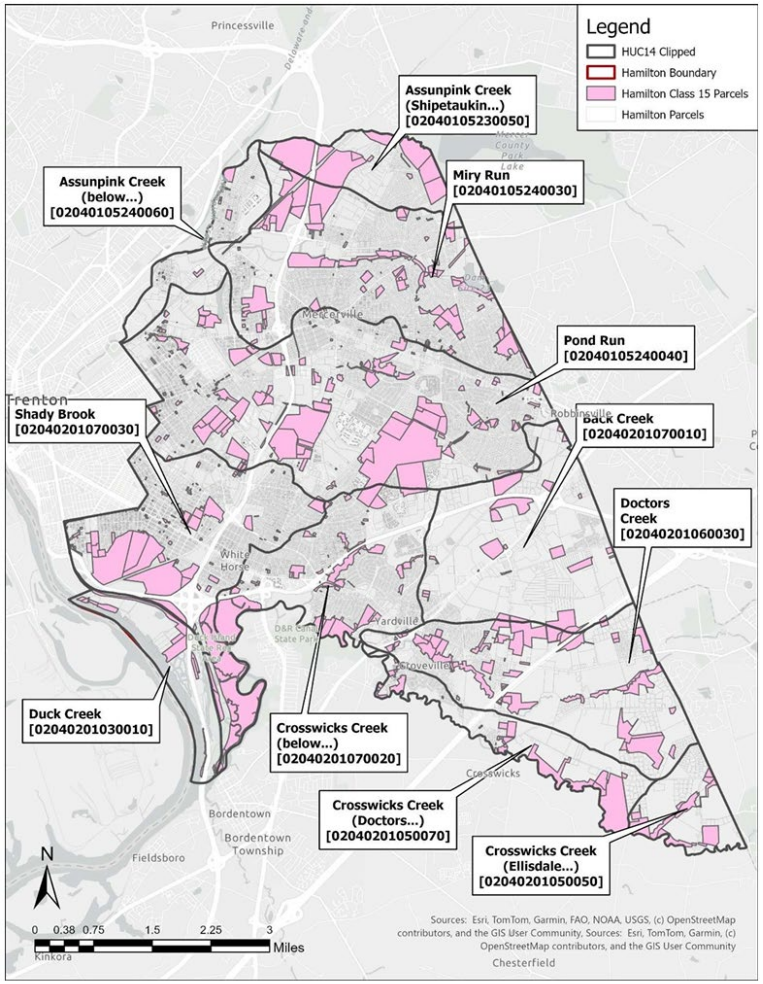
Phase 2
Watershed Assessment Report

Areal Loading Coefficients and Coliform EMC

Land Cover	TP [lbs/acre/yr]	TN [lbs/acre/yr]	TSS [lbs/acre/yr]	EMC [CFU/100 mL]
High, Medium Density Residential	1.4	15	140	7,750
Low Density, Rural Residential	0.6	5	100	7,750
Commercial	2.1	22	200	4,500
Industrial	1.5	16	200	2,500
Urban, Mixed Urban, Other Urban	1	10	120	4,500
Agriculture	1.3	10	300	10,000
Forest, Water, Wetlands	0.1	3	40	3,100
Barrenland/ Transitional Area	0.5	5	60	3,100

TSS Target Load Reductions (lb/yr)

HUC14	Pond Run*	Crosswicks Ck*	Crosswicks Ck*2
	2040105240040	2040201050070	2040201070020
Total	742,622	169,386	281,443
Ag +Urban	690,394	153,173	242,651
Manage %	20%	20%	20%
Target Load Reductions	**138,079**	**30,635**	**48,530**
Allowable Load	604,543	138,751	232,913



Tax Except Parcels (Class 15)

Due of January 1, 2027

Areal Loading Coefficients and Coliform EMC

Land Cover	TP [lbs/acre/yr]	TN [lbs/acre/yr]	TSS [lbs/acre/yr]	EMC [CFU/100 mL]
High, Medium Density Residential	1.4	15	140	7,750
Low Density, Rural Residential	0.6	5	100	7,750
Commercial	2.1	22	200	4,500
Industrial	1.5	16	200	2,500
Urban, Mixed Urban, Other Urban	1	10	120	4,500
Agriculture	1.3	10	300	10,000
Forest, Water, Wetlands	0.1	3	40	3,100
Barrenland/ Transitional Area	0.5	5	60	3,100

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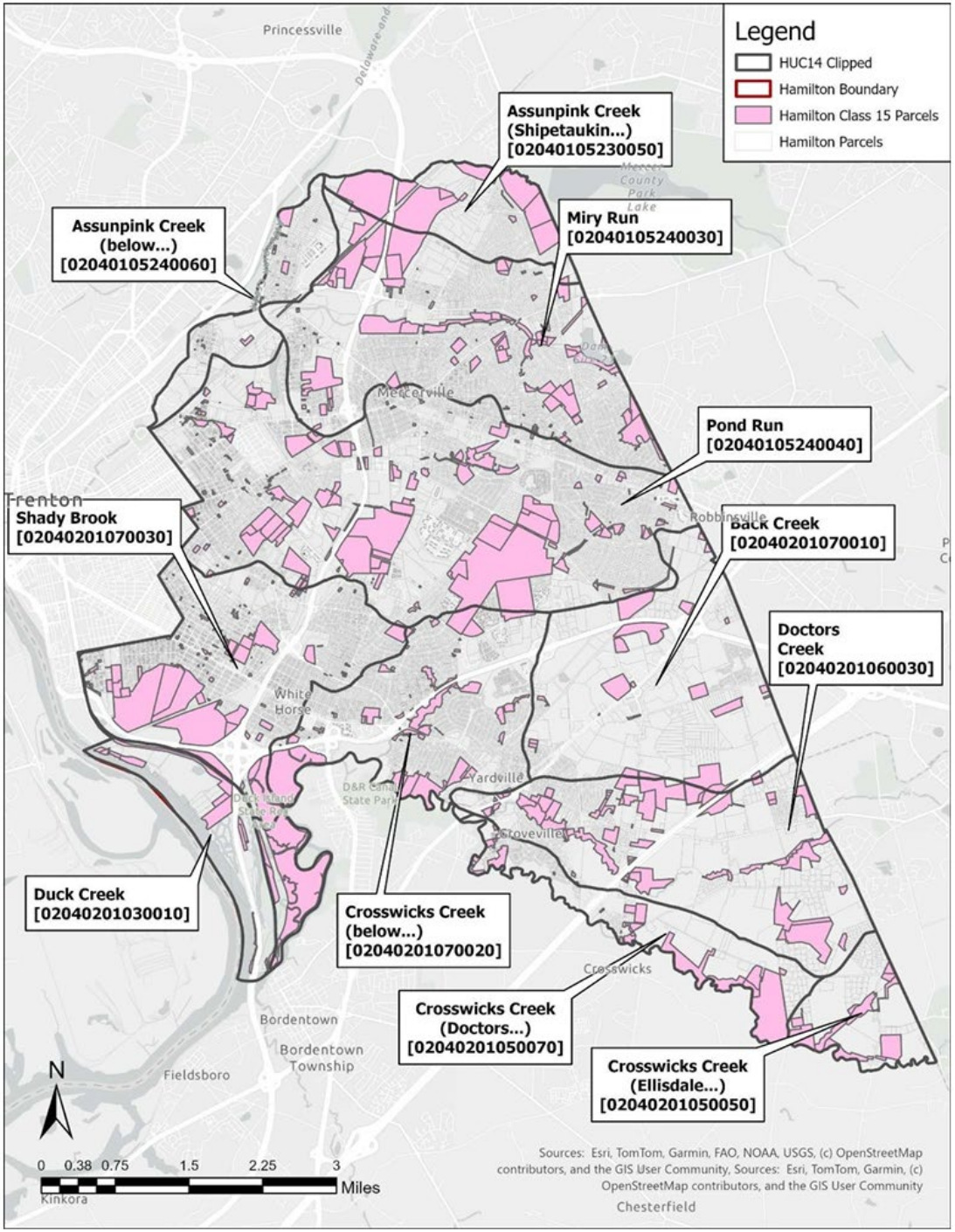
Manage %	20%	20%	20%
Target Load Reductions	**138,079**	**30,635**	**48,530**
Allowable Load	604,543	138,751	232,913

Phase 2
Watershed Assessment Report

How to we find project locations?

- Look at Class 15 Parcels
- Prioritize areas with TMDLs
- Right of Way areas
- Private sites
- Public information session input
- Primary method = implementation of BMPs
  - New Green Infrastructure like Bioretention Systems
  - Retrofit: Detention Basins -> Bioretention Systems

Due of January 1, 2027


Legend
HUC14 Clipped
Hamilton Boundary
Hamilton Class 15 Parcels
Hamilton Parcels
Assunpink Creek (Shipetaukin...) [02040105230050]
Assunpink Creek (below...) [02040105240060]
Miry Run [02040105240030]
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Crosswicks Creek (Ellisdale...) [02040201050050]
Princessville
Mercerville
Trenton
White Horse
Yardville
Groveville
Robbinsville
Crosswicks
Bordentown
Bordentown Township
Fieldsboro
Kinkora
Chesterfield
N
0 0.38 0.75 1.5 2.25 3
Miles
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Sources: Esri, TomTom, Garmin, (c) OpenStreetMap contributors, and the GIS User Community

Phase 2
Watershed Assessment Report

Cost of Proposed Management Strategies for Phosphorus Removal

Action	Management Strategy	Cost	Cost per lb/yr
1	Leaf collection and street sweeping (Leaf collection procedure to be reviewed to comply and street sweeping to follow. Street sweeping to be increased to twice a week [once every other week] with appropriate technology). This is an annual cost.	$1,090,635 [$259,896]	$3,125 [$891]
3	Bioretention systems for unmanaged areas (~111 acres of BMPs managing water quality storm with one foot of storage) [~$750,000/acre]	$83,250,000	$88,563
4	Converting existing detention basins to bioretention basins (66 basins need to be transformed) [~$40,000 each]	$2,640,000	$5,106
5	Repair and/or replacement of 29 septic systems [~$9,000 each]	$261,000	$1,426
	Total construction cost estimate =	$86,151,000	
	Total annual maintenance cost	$1,090,635 [$259,896]	

Phase 2 Watershed Assessment Re...

Cost of Proposed Management Strategies for Fecal Coliform Removal

Action	Management Strategy	Cost	Cost per CFU *10^12/yr
1	Street sweeping (Street sweeping to be increased to twice a week [once every other week]with appropriate technology). This is an annual cost.	$1,090,635 [$259,896]	$371 [$177]
2	Bioretention systems for unmanaged areas (~786 acres of BMPs managing water quality storm with one foot of storage) [~$750,000/acre]	$589,500,000	$19,277
3	Converting existing detention basins to bioretention basins (212 basins need to be transformed) [~$40,000 each]	$8,480,000	$1,648
	Total construction cost estimate =	$597,980,000	
	Total annual maintenance cost estimate =	$1,090,635 [$259,896]	

Implementation Schedule

Step	Management Strategy	Time Frame
1	Review leaf collection and street sweeping program. The township should begin soliciting grant funding for advanced street sweepers as needed.	0 to 6 months
2	Develop and deliver the educational programming, particularly focusing on encouraging residents to adopt pollution reduction strategies, build rain gardens, and install rainwater harvesting systems to help reduce stormwater flows to the waterways; seek funding to support rain garden installation by private property owners.	6 to 18 months
3	Develop detention basin retrofit designs that can be submitted for grant funding to implement.	6 to 18 months
4	Prepare designs for green infrastructure projects and submit these designs for funding.	6 to 24 months
5	Adopt a septic system registration program where homeowners must inspect and pump their systems on a regular basis (once every three years).	12 to 24 months
6	Continue developing retrofit designs and green infrastructure projects on a regular basis trying to achieve a certain amount each year to reach target reductions in a reasonable timeframe.	24 months+
7	Implement a sampling plan to establish effectiveness of implementation efforts	24 months+

Due of January 1, 2027

Cost of Proposed Management Strategies for Phosphorus Removal

Action	Management Strategy	Cost	Cost per lb/yr
1	Leaf collection and street sweeping (Leaf collection procedure to be reviewed to comply and street sweeping to follow. Street sweeping to be increased to twice a week [once every other week] with appropriate technology). This is an annual cost.	$1,090,635 [$259,896]	$3,125 [$891]
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Phase 2 Watershed Assessment Re...

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7	Implement a sampling plan to establish effectiveness of implementation efforts	24 months+

Phase 3
Watershed Improvement Plan

- Summary of proposed location and load reductions of water quality improvement project
- Summary of public comments
- Summary of how projects will coordinate 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

Due of December 1, 2027

Phase 3
Watershed Improvement Plan

- Proposed implement schedule of the water quality improvement projects
- Schedule of public information sessions to be held
- Problems identified that are outside the jurisdiction of the permittee
- Cost, by project and year, and the funding opportunities to be sought
- Plan should be followed according to schedule set forth
- Plan should be updated biennially

Due of December 1, 2027

What can environmental commissions do to help?

- Public education and outreach
  - Stormwater education programs
  - Flyers, social media post, or website content
  - Workshops, etc.
- Record-keeping of public education & outreach

Program Ideas

Category 1: General Public Outreach
- Social Media (3)
- Newspaper Ad (1)
- Radio/Television (2)
- Green Infrastructure Signage (5)
- Mural (2)
- Billboard/Sign (2)
- Stormwater Facility Signage (5)

Category 2: Targeted Audiences Outreach
- Stormwater Display (1)
- Promotional Item (2)
- Private Stormwater Facilities Education (3)
- Mailing or e-mailing Campaign (2)
- Ordinance Education (3)

Category 3: School/Youth Education and Activities
- School Presentations (5)
- Water Education Workshops (2)
- Storm Drain Labeling (3)
- Educational Contest for Schools (3)
- AmeriCorps Event (4)
- Clean-up (3)

Category 4: Watershed/Regional Collaboration
- Regional Stormwater Collaboration (3)
- Green Infrastructure Workshop (3)
- Community Activity (3)

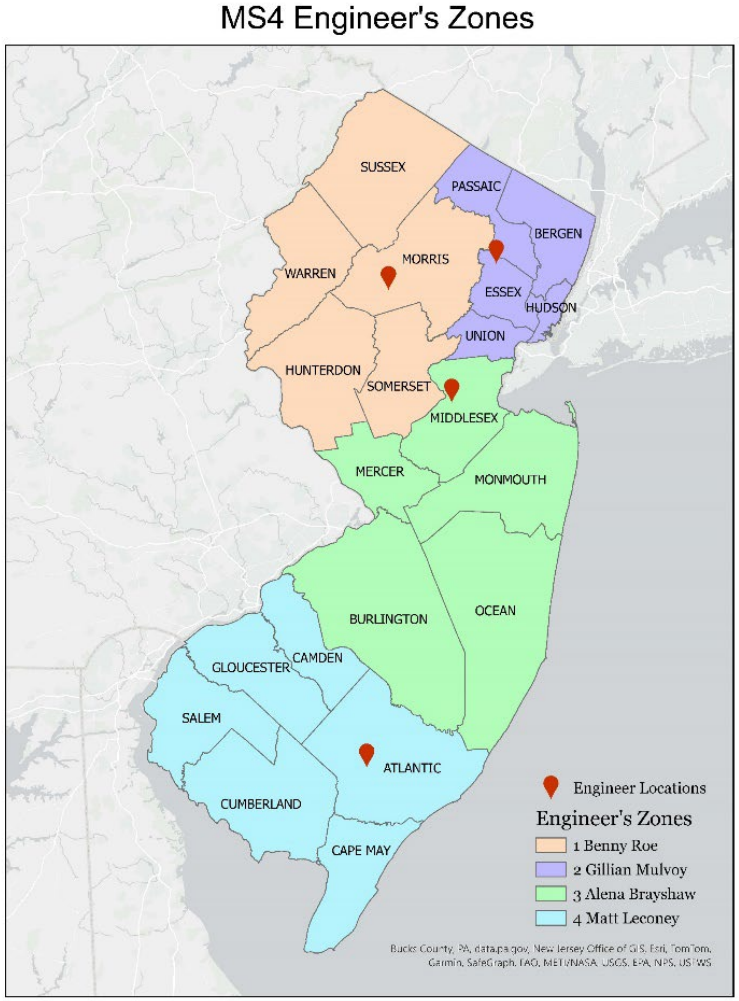
Category 5: Community Involvement Activities
- Volunteer Stormwater Assessment or Stream Monitoring (3)
- Rain Barrel Workshop (3)
- Rain Garden Workshop (3)
- Community Event (3)
- Community Involvement (5)

What can environmental commissions do to help?

- Check your town's stormwater webpage to see if they are up-to-date
- Reach out to your town's Stormwater Program Coordinator (SPC) to see if they need assistance
- Keep an eye out for illicit discharges and report to the Department of Public Works (DPW) or SPC if there are any
- Encourage the town to adopt optional Privately-Owned Refuse Container/Dumpster Ordinance
- Promote green infrastructure
  - Rain gardens
  - Stormwater planters, etc.
- Help identify potential Watershed Improvement Projects

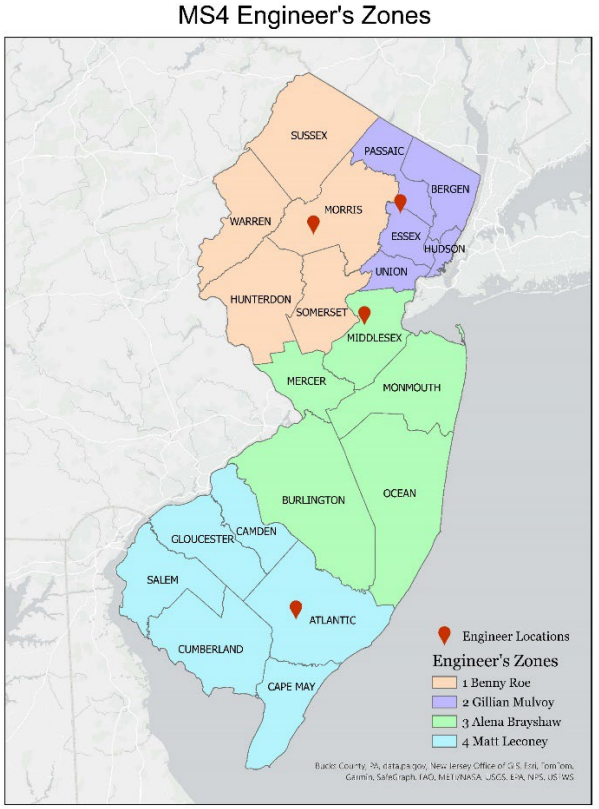
MS4 Technical Assistance Program

- 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
- Expand to existing Tier A as capacity is available



MS4 Technical Assistance Program

- 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@rutgets.edu



QUESTIONS?

Rutgers Cooperative Extension
Water Resources Program

Chris Obropta
Email: obtropta@envisci.rutgers.edu

www.water.rutgers.edu

RUTGERS
New Jersey Agricultural Experiment Station