



akrf



Rowan University

PUBLIC MEETING
Rowan University Watershed Improvement Plan

May 21 & 27, 2026

INTRODUCTIONS

Rowan University

- Jenny Ko, Senior Director of Planning and Design
- Sue Wyndham, Senior Director of Landscape Architectural Services
- Justin Grillot, Director of Environmental Health & Safety
- Matthew Vanek, Industrial Hygienist

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- Edward Confair, Vice President, Landscape & Resiliency
- Courtney Wilk, Senior Technical Director, Landscape & Resiliency





AGENDA

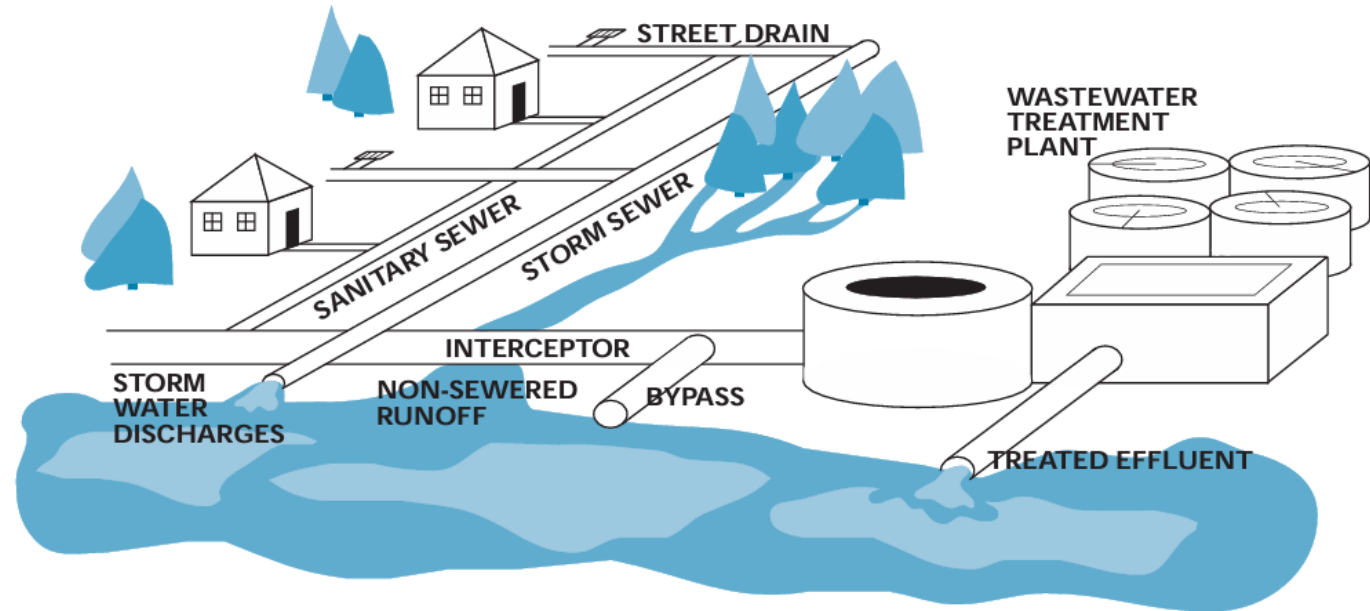
- ❖ Why are we here?
- ❖ Key Terms and Concepts
- ❖ Watersheds
- ❖ What decreases surface water quality?
- ❖ Project Scope
- ❖ What are we already doing?
- ❖ What's next?



WHY ARE WE HERE?

WHY ARE WE HERE?

- **New Jersey Department of Environmental Protection (NJDEP)** regulates all MS4s.
- **MS4s** are Municipal Separated Storm Sewer Systems, which are publicly owned or operated systems designed for collecting and conveying stormwater, not sewage.
- As a public university, Rowan's MS4 is regulated by the **R-11 Public Complex Stormwater General Permit**.
- The R-11 permit is a campus-wide permit affecting all of the University's property and operational activities.
- Each R-11 permit holder is required to implement a **Watershed Improvement Plan** in three phases by the end of 2027.
- Rowan is currently undertaking Phase 1.



Stormwater Sewer and Sanitary Sewer Diagram
Credit: NJ Department of Environmental Protection

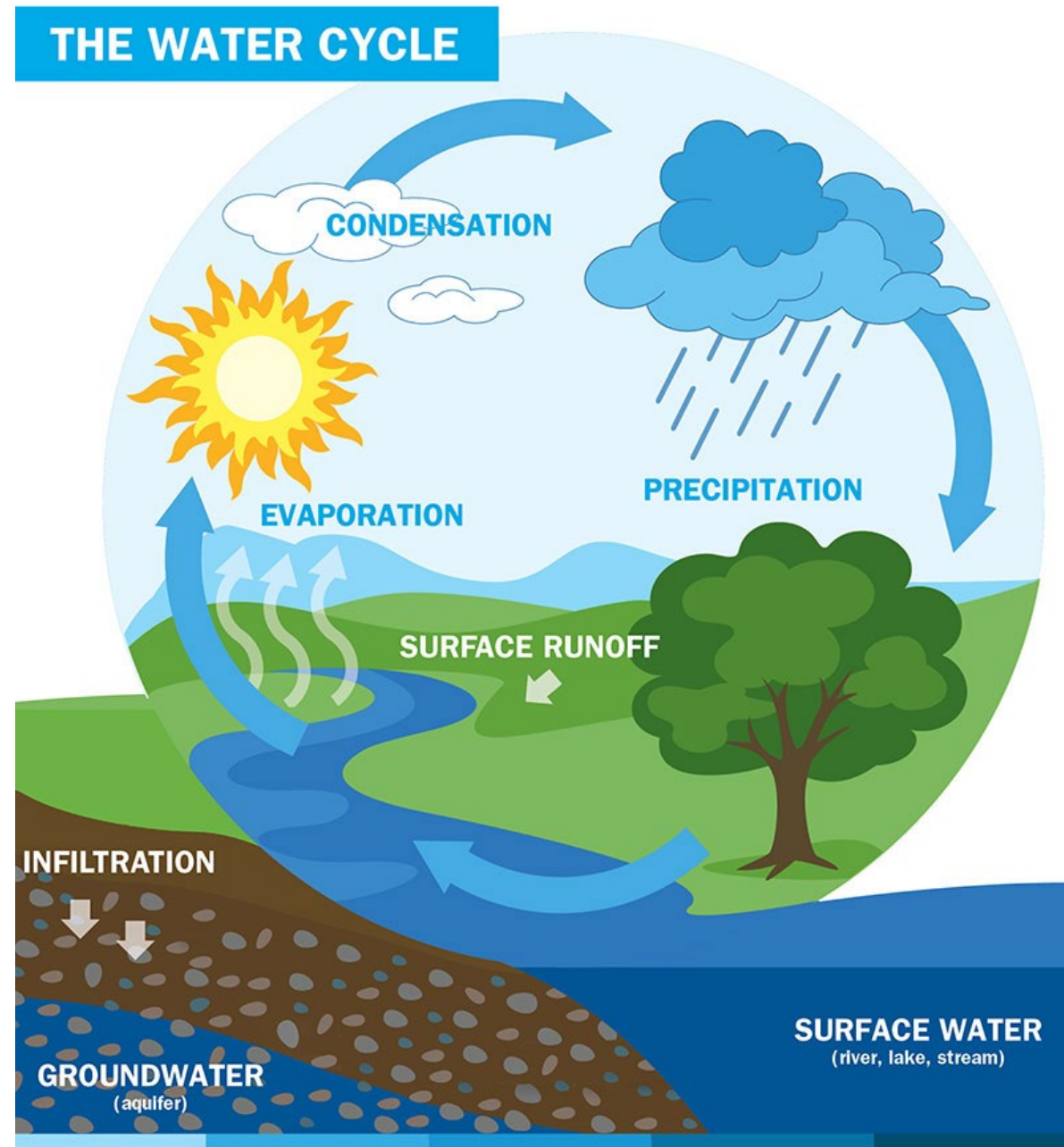


KEY TERMS AND CONCEPTS

INTRODUCTION TO WATERSHED PLANNING

Key Terms

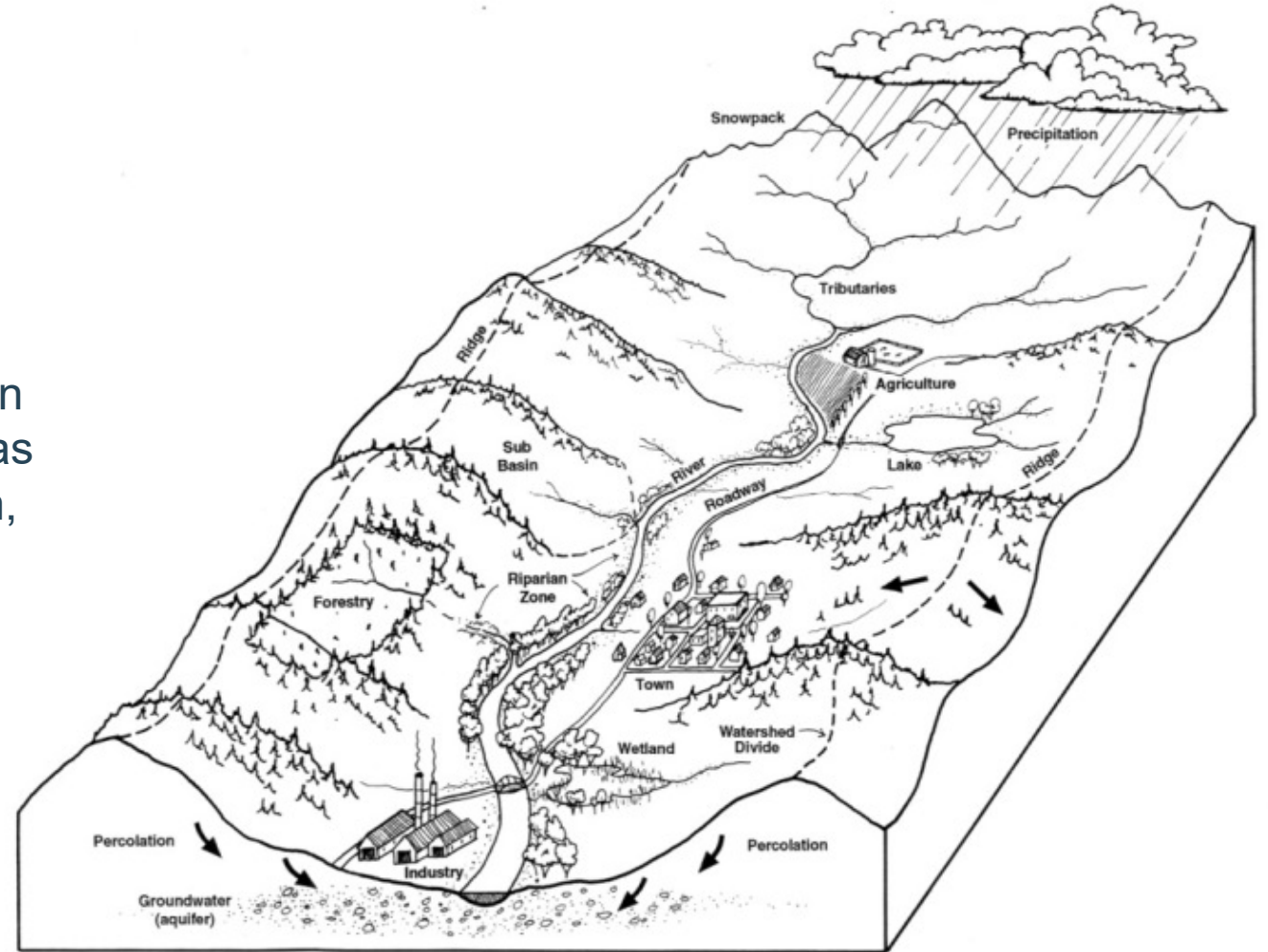
- Precipitation
- Condensation
- Evaporation
- Runoff (Stormwater Runoff)
- Infiltration



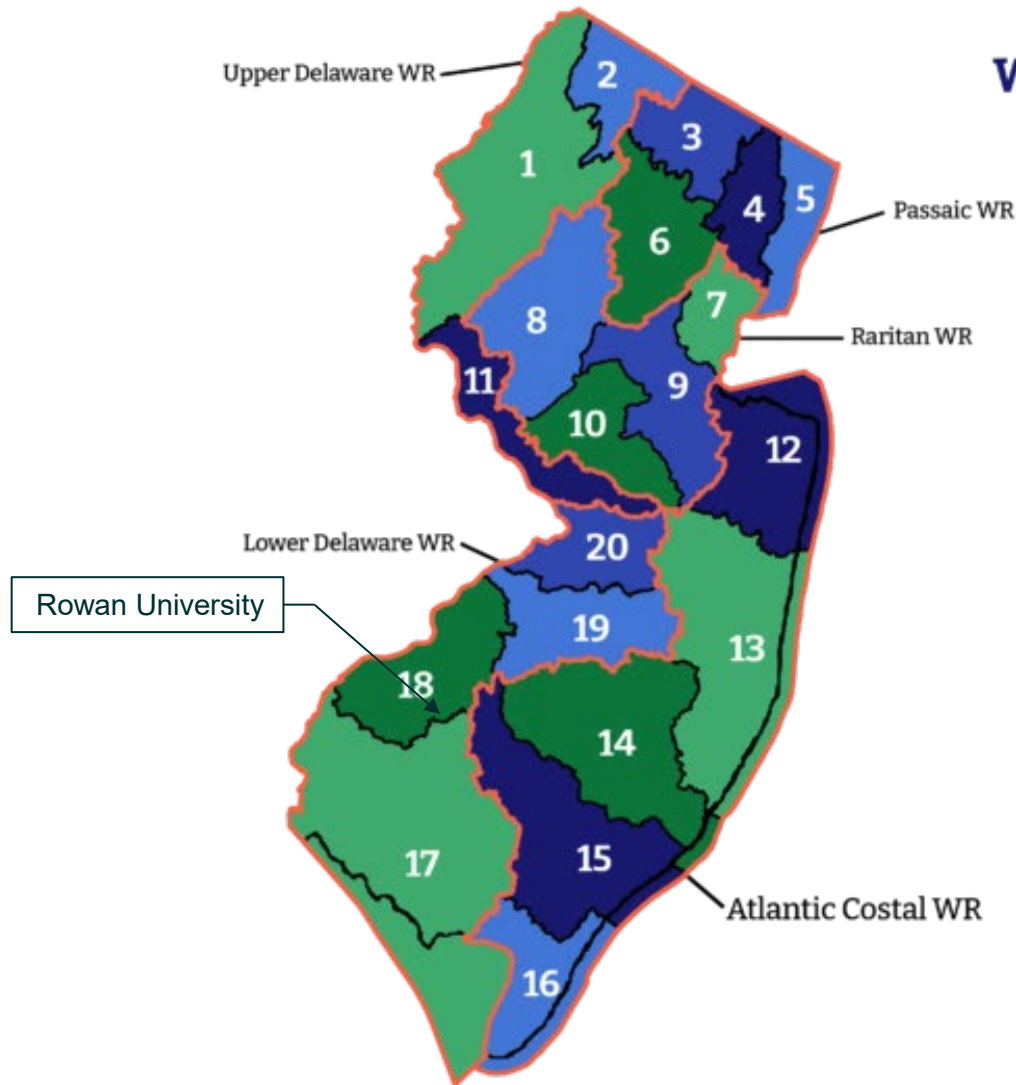
INTRODUCTION TO WATERSHED PLANNING

What is a watershed?

A watershed is an area of land that drains all streams, rainfall, and snowmelt into a common outlet, such as a river, lake, or ocean. It acts as a natural water collection and filtration system, ranging in size from small streams to large river basins.



INTRODUCTION TO WATERSHED PLANNING



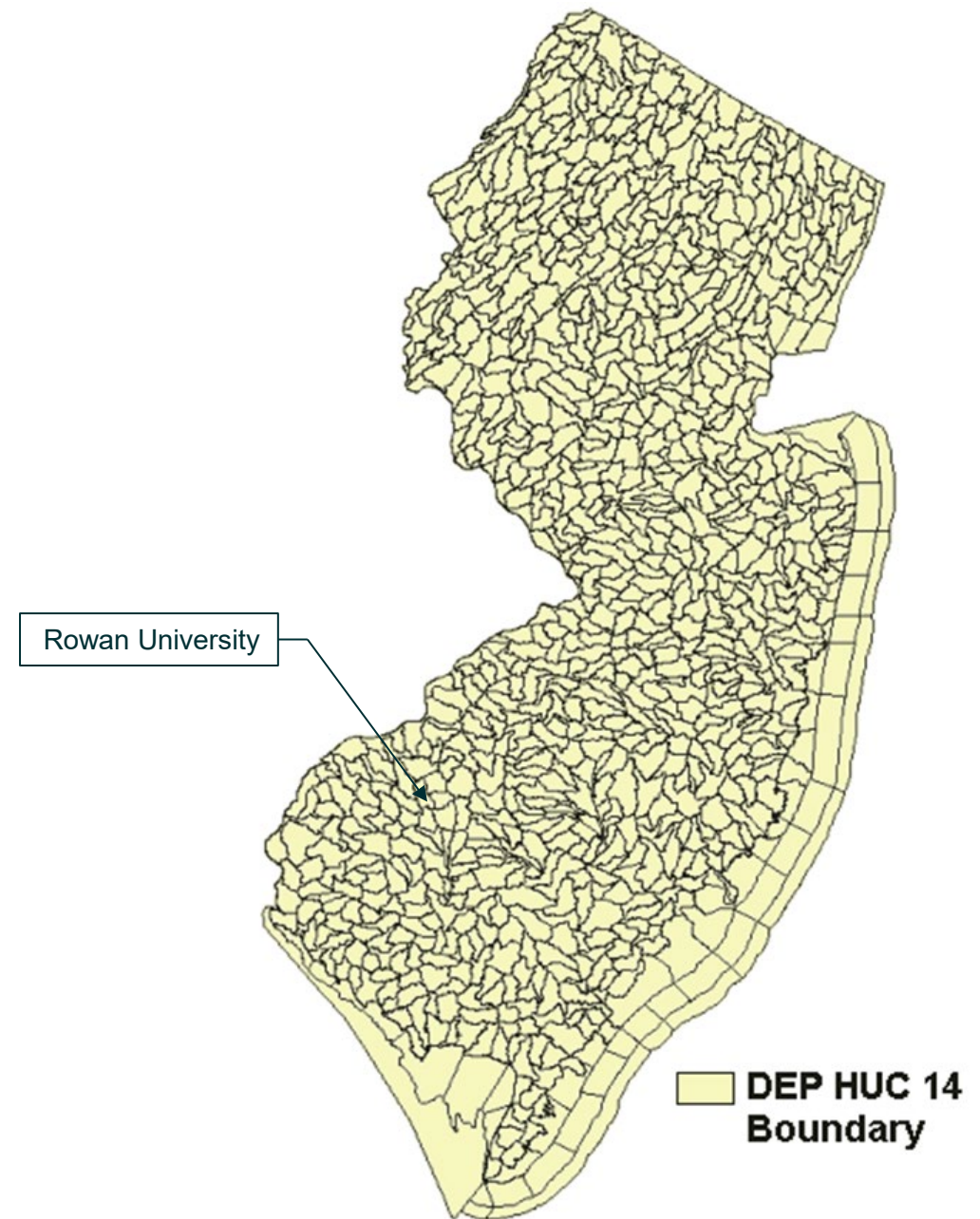
WATERSHED MANAGEMENT AREAS

- WMA 1 Upper Delaware
- WMA 2 Walkill
- WMA 3 Pompton, Pequannock, Wanaque and Ramapo
- WMA 4 Lower Passaic and Saddle
- WMA 5 Hackensack, Hudson and Pascack
- WMA 6 Upper and Mid Passaic, Whippany and Rockaway
- WMA 7 Arthur Kill
- WMA 8 North and South Branch Raritan
- WMA 9 Lower Raritan, South River and Lawrence
- WMA 10 Millstone
- WMA 11 Central Delaware
- WMA 12 Monmouth
- WMA 13 Barnegat Bay
- WMA 14 Mullica
- WMA 15 Great Egg Harbor
- WMA 16 Cape May
- WMA 17 Maurice, Salem and Cohansey
- WMA 18 Lower Delaware
- WMA 19 Rancocas
- WMA 20 Assiscunk, Crosswicks and Doctors
- 👉 Water Regions

INTRODUCTION TO WATERSHED PLANNING

Subwatershed:

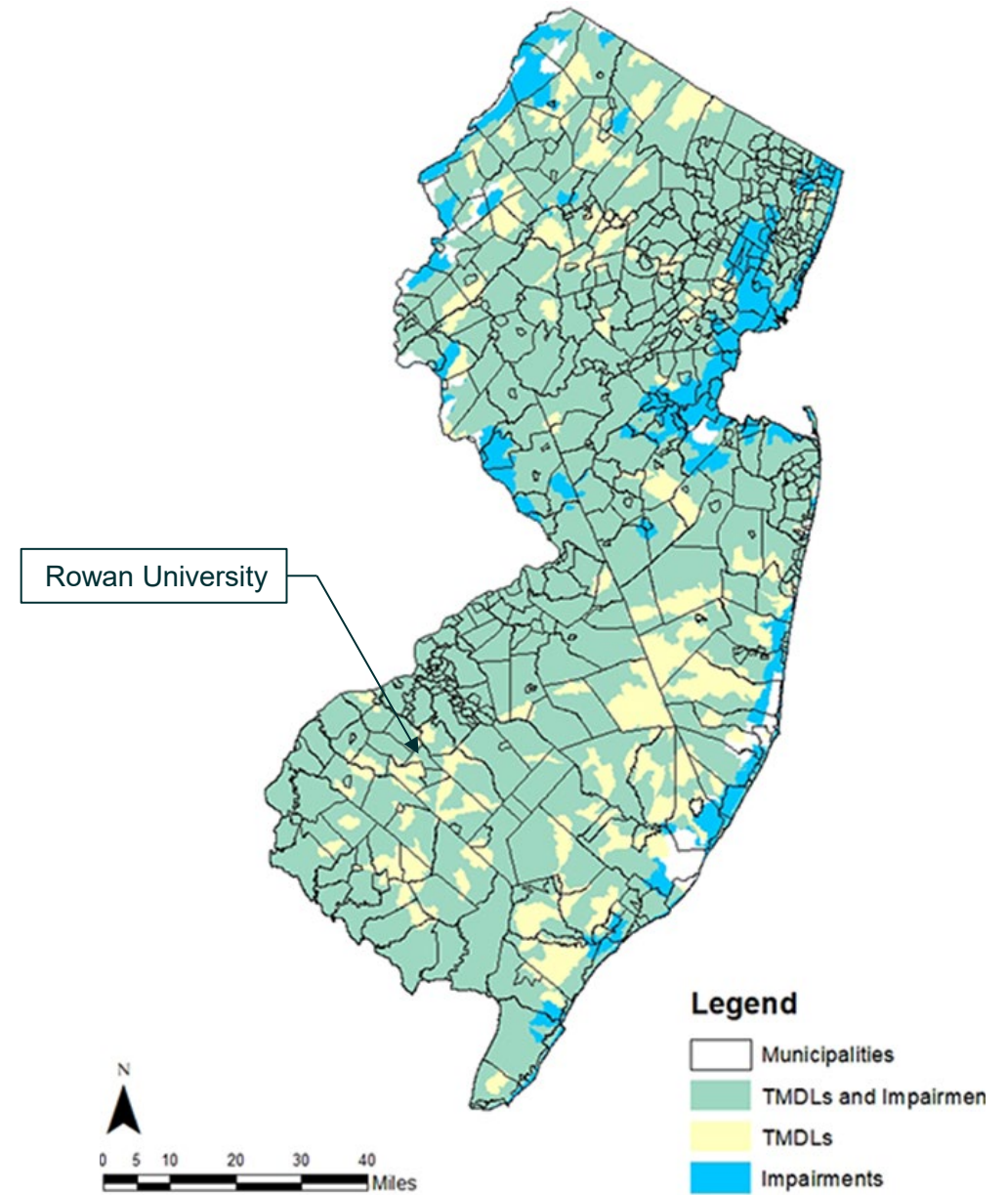
- Water draining to a particular receiving surface water body identified by a 14-digit Hydrologic Unit Code (HUC14)



INTRODUCTION TO WATERSHED PLANNING

What is a Watershed Improvement Plan?

- New NJDEP requirement for MS4 permit holders
- Reduce pollution in watershed and improve water quality over time

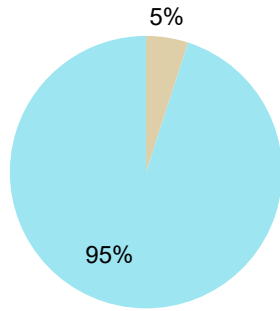




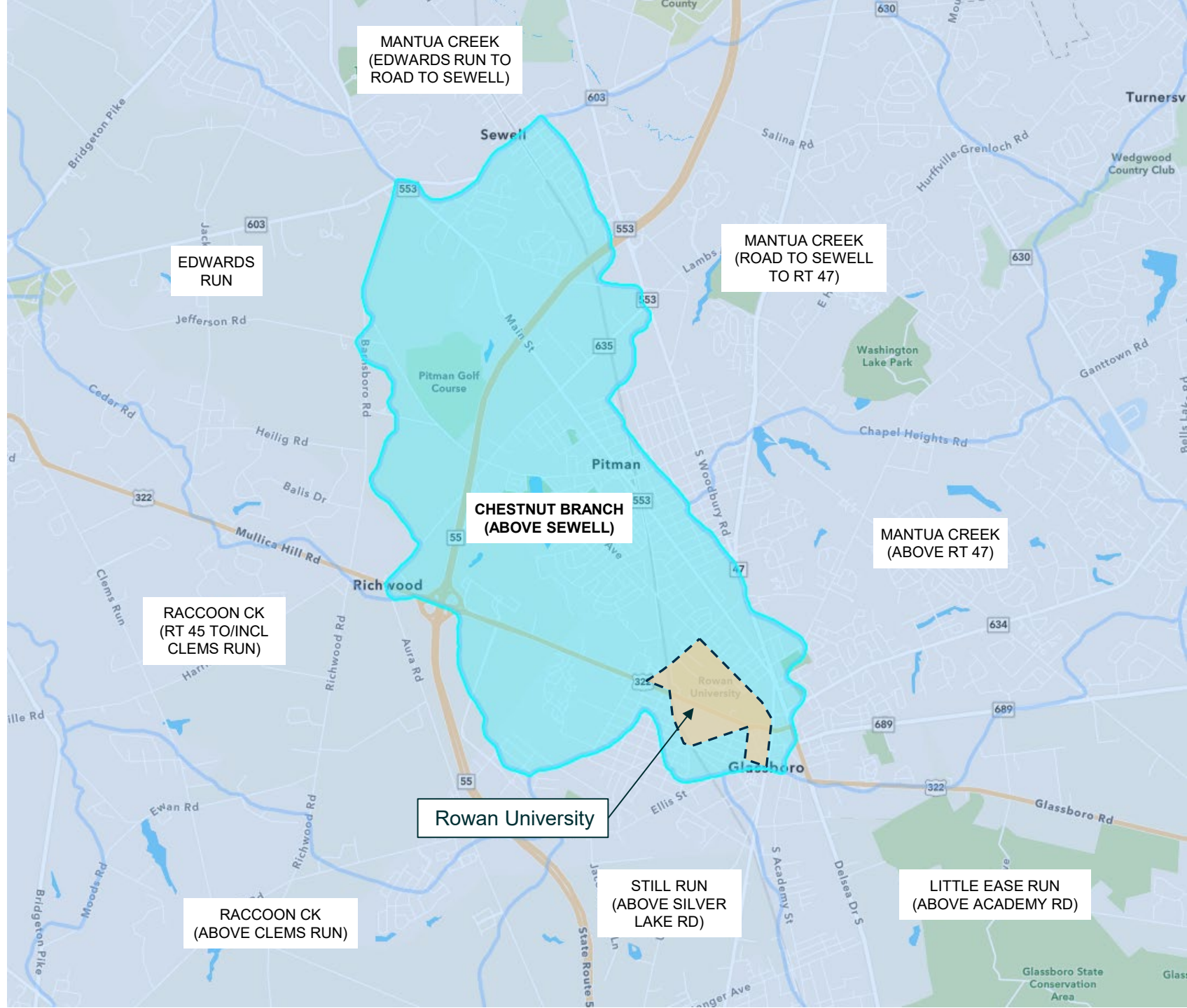
WHICH WATERSHED IS ROWAN UNIVERSITY PART OF?

WATERSHED MAP

**Chestnut Branch
(Above Sewell) (HUC14)**

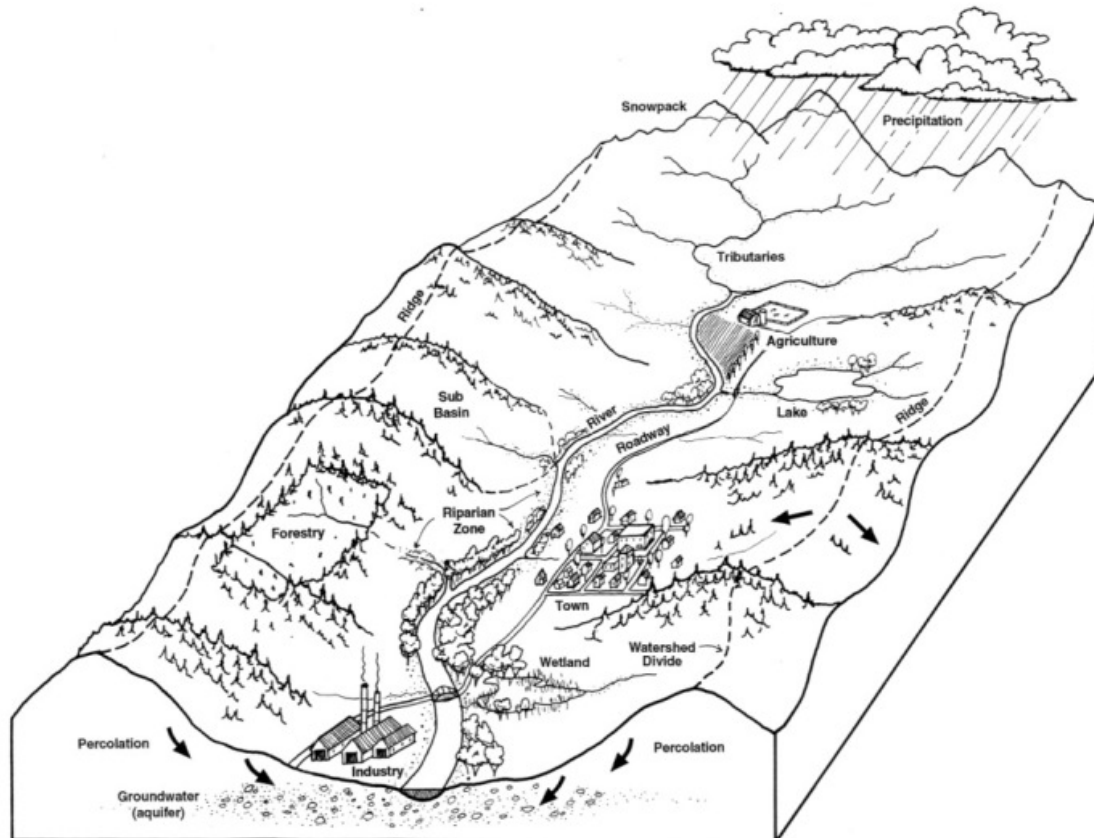


- Rowan University
- Area Outside of Rowan Campus



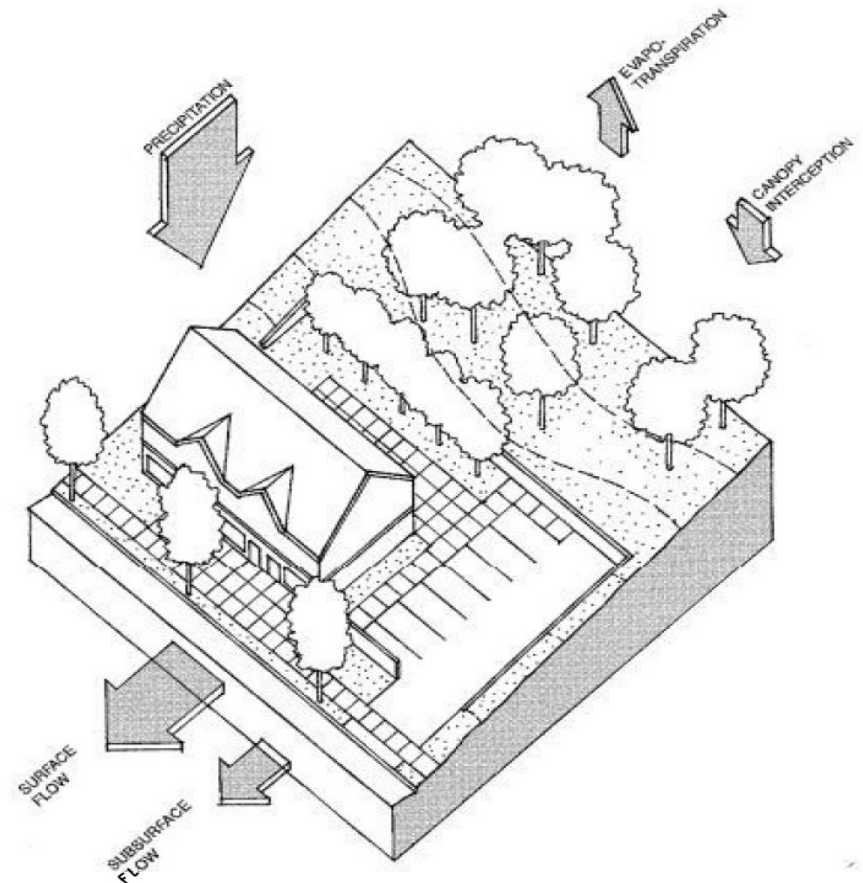
WHAT AFFECTS WATER QUALITY?

WATERSHED SCALE



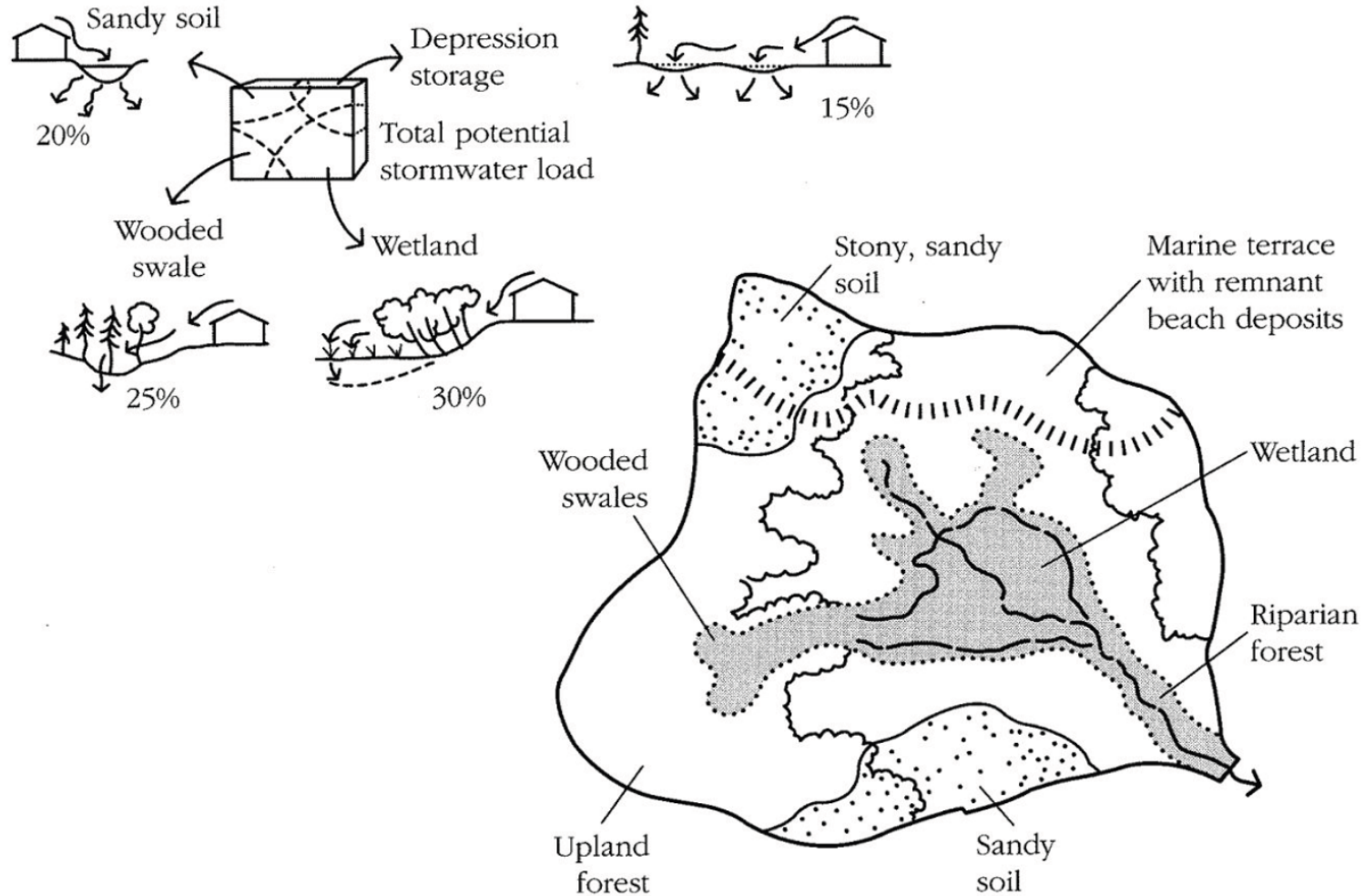
vs

SITE SCALE



WHAT AFFECTS WATER QUALITY?

Land Use vs. Natural Resources



WHAT AFFECTS WATER QUALITY?

Land Use, Stormwater Runoff, and Natural Resources

Production

	<i>Watershed Scale</i>			<i>Site Scale</i>				
	<i>Preservation of Natural Wetlands</i>	<i>Preservation of Permeable Soils</i>	<i>Preservation of Natural Depression Storage Areas</i>	<i>Density-Site Carrying Capacity</i>	<i>Vegetation Conservation and Riparian Buffers</i>	<i>Road Configuration and Design</i>	<i>Production-Based Policies (e.g., hazardous waste disposal)</i>	<i>Education Programs</i>
<i>Planning Options That Affect Stormwater and Contaminant Production</i>								
Land cover	✓	✓	✓		✓	✓		✓
Impervious area				✓		✓		✓
Runoff storage	✓		✓					✓
Runoff treatment	✓	✓			✓			✓
Runoff infiltration	✓	✓			✓			✓
Pollution production				✓		✓	✓	✓

SOURCES OF WATER POLLUTION

Point Source Discharges



- Industrial Waste Discharges
- Combined Sewer Overflow
- Sewage Treatment Plants

Flooding



- Disrupts water and sewage treatment systems
- Creates combined sewer overflows
- Dislodges chemicals, bacteria, waste, and other harmful pollutants
- Affects point **and** non-point discharges

Non-Point Source Discharges



- Diffuse stormwater runoff conveys pollutants from various land uses

MEASURING WATER POLLUTION WITHIN THE WATERSHED

Total Maximum Daily Loads (TMDL)

The Chestnut Branch subwatershed has TMDLs for Mercury, Polychlorinated Biphenyls (PCBs), and Volatile Organic Compounds (VOCs).

Water Quality Impairments

Per the Clean Water Act 303d impaired waters list, the Chestnut Branch subwatershed has water-quality impairments for Total Phosphorous and E. Coli.

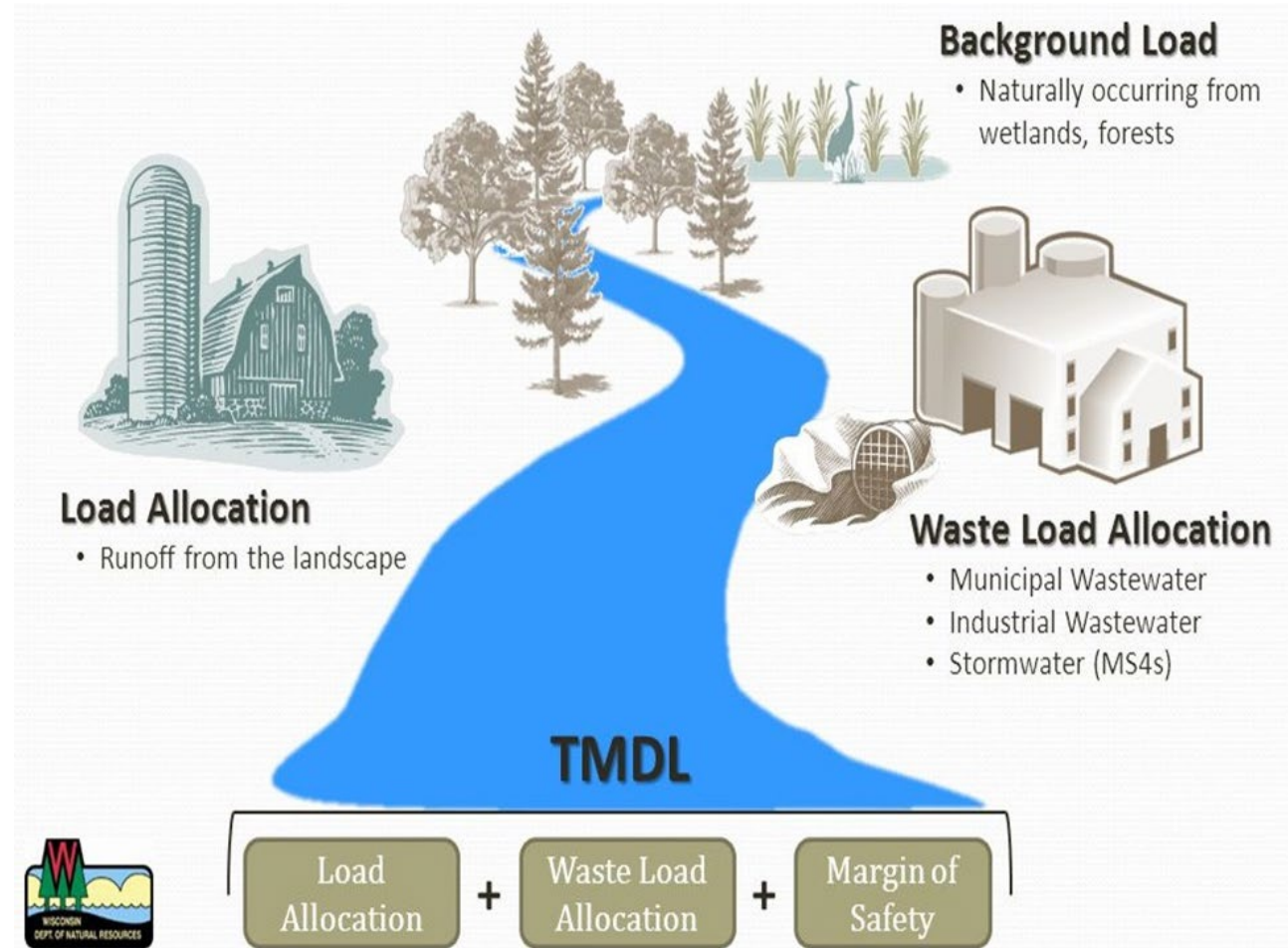
TMDLS

A TMDL is a maximum amount of a pollutant that a water body can receive per day.

These limits are assigned and defined by NJDEP on a case-by-case basis in accordance with established surface water quality standards (SWQS).

Examples of TMDL pollutants:

- Total Suspended Solids (TSS)
- Mercury
- Total phosphorous



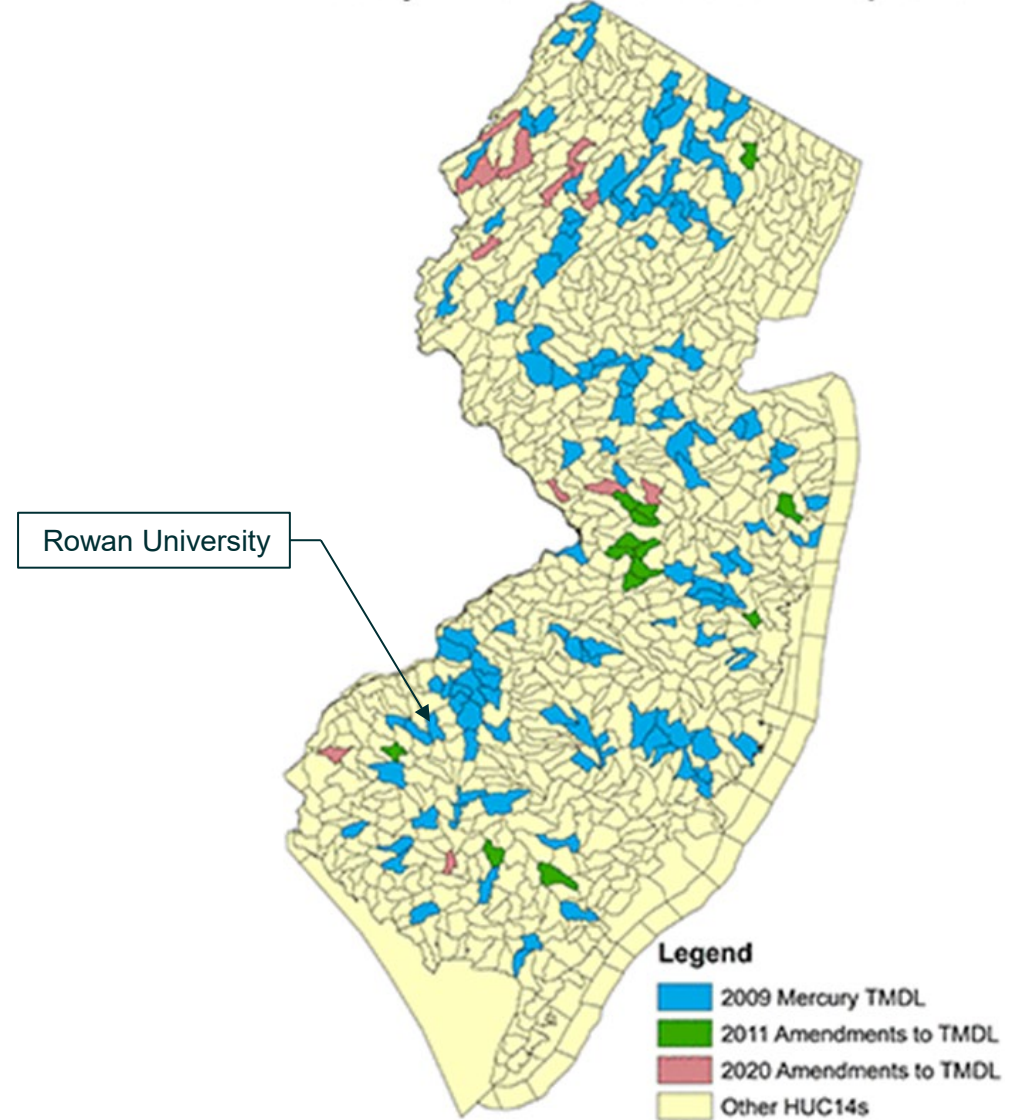
TMDLS ASSOCIATED WITH THE CHESTNUT BRANCH

Mercury



Coal-fired power plants and incinerators

HUC14s covered by TMDL for Mercury in Fish Tissue due to Air Deposition



TMDLS ASSOCIATED WITH THE CHESTNUT BRANCH

Volatile Organic Compounds (VOCs)



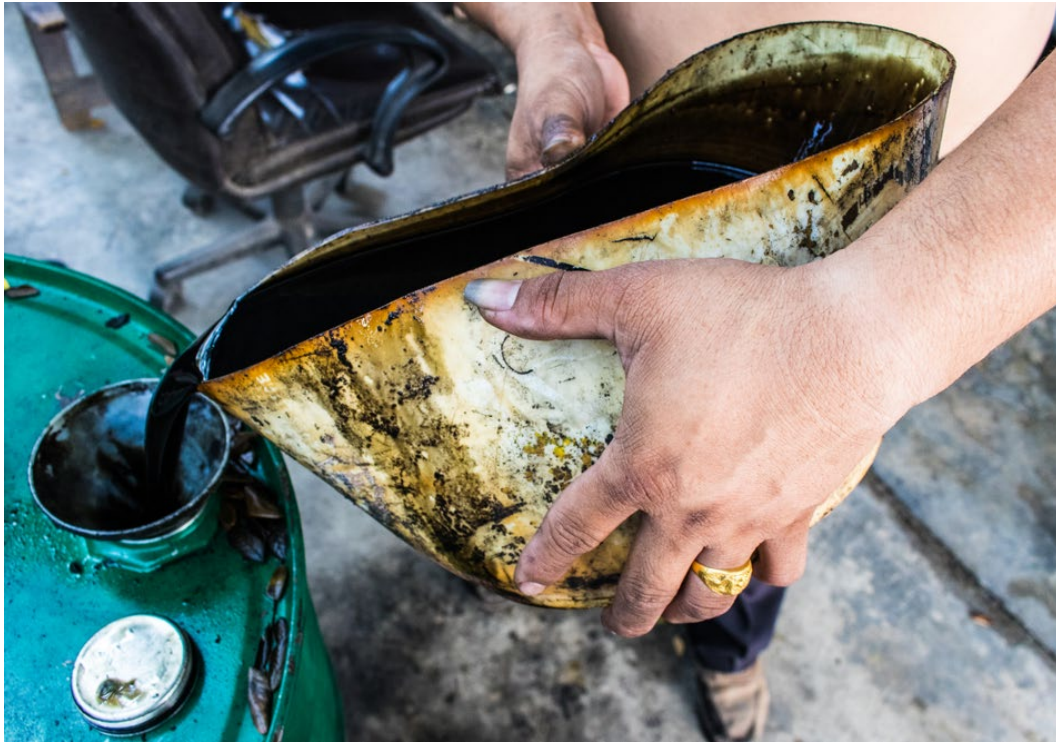
Improper handling of volatile industrial chemicals



Vehicle maintenance and manufacturing

TMDLS ASSOCIATED WITH THE CHESTNUT BRANCH

Polychlorinated Biphenyls (PCBs)



Improper Disposal of Motor Oil



Plastic Pollution

MEASURING WATER POLLUTION WITHIN THE WATERSHED

Total Maximum Daily Loads (TMDL)

The Chestnut Branch subwatershed has TMDLs for Mercury, Polychlorinated Biphenyls (PCBs), and Volatile Organic Compounds (VOCs).

Water Quality Impairments

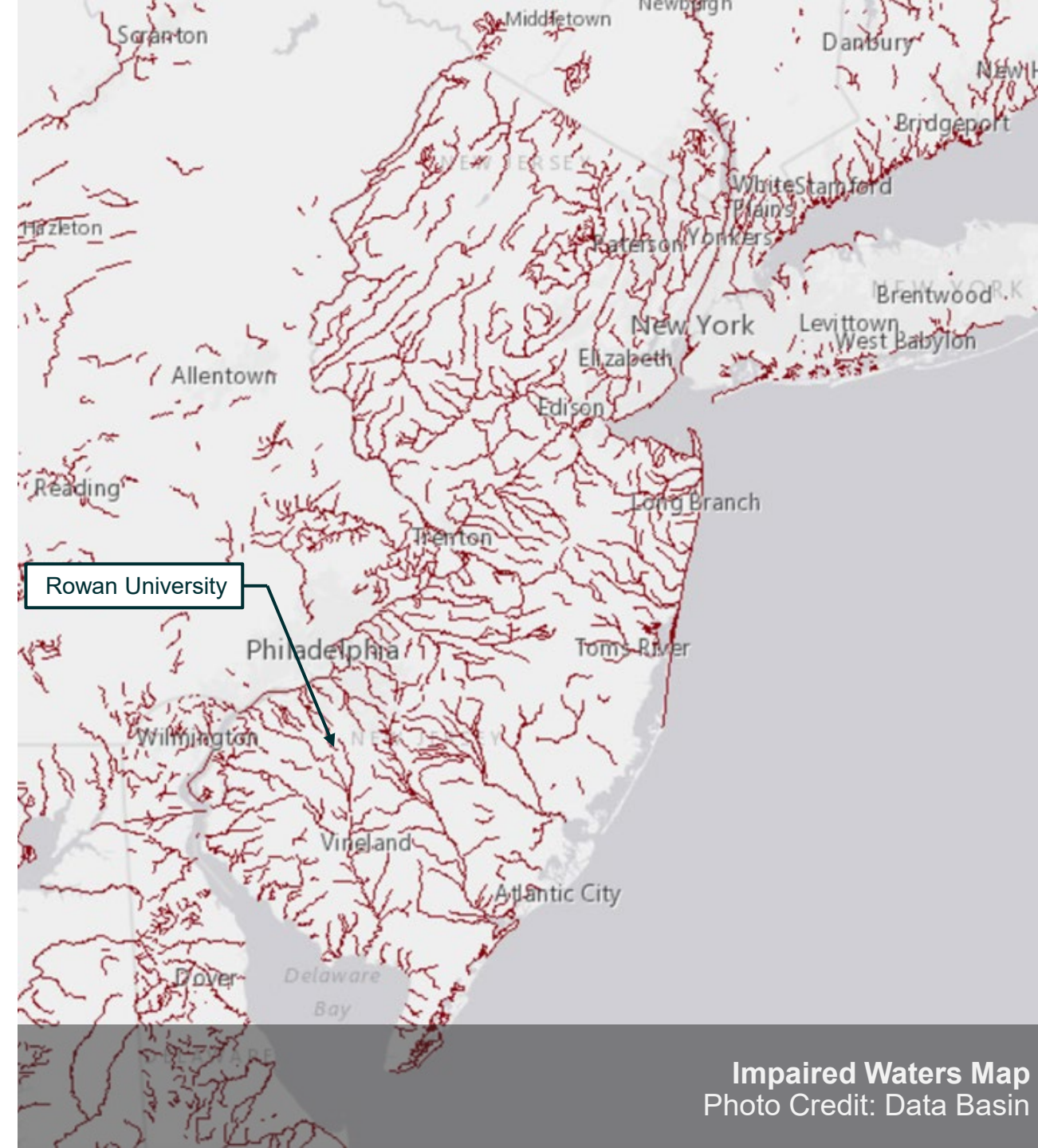
Per the Clean Water Act 303d impaired waters list, the Chestnut Branch subwatershed has water-quality impairments for Total Phosphorous and E. Coli.

IMPAIRMENTS

A stream impairment occurs when a stream's water quality is not sufficient to support designated uses.

Examples of designated uses:

- Recreation
- Drinking Water
- Wildlife protection
- Aquatic Life



IMPAIRMENTS ASSOCIATED WITH THE CHESTNUT BRANCH

Total Phosphorus

- Impaired for aquatic life

wastewater treatment discharge



leaking septic system



urban runoff



fertilizer



IMPAIRMENTS ASSOCIATED WITH THE CHESTNUT BRANCH

E. Coli

- Impaired for recreation

sewer leak



leaking septic system



pet waste



wildlife waste



FLOODING

Causes

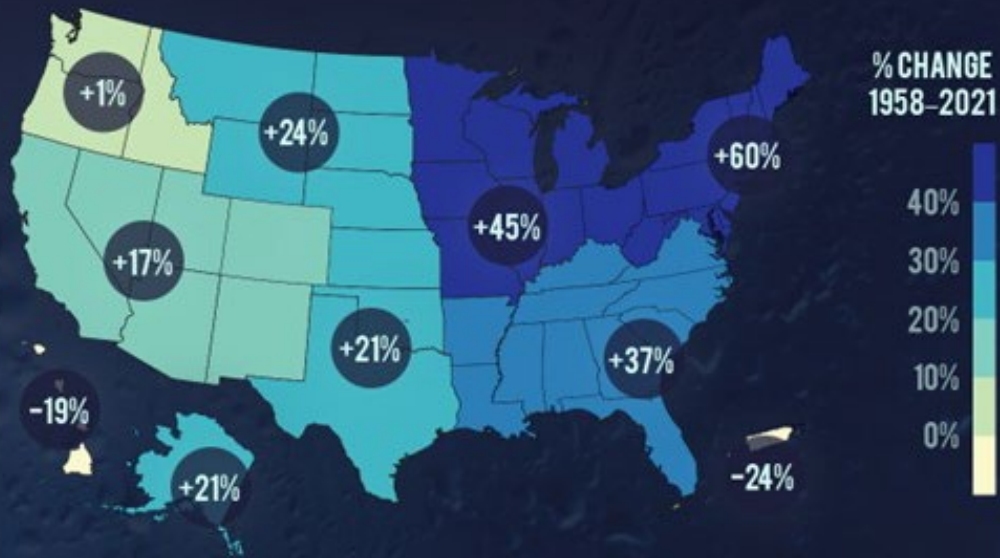
- Urbanization
- Increased rainfall
- Undersized and/or unmaintained storm sewers



FLOODING AND CLIMATE CHANGE

HEAVIER DOWNPOURS

Change in precipitation on heaviest 1% of days

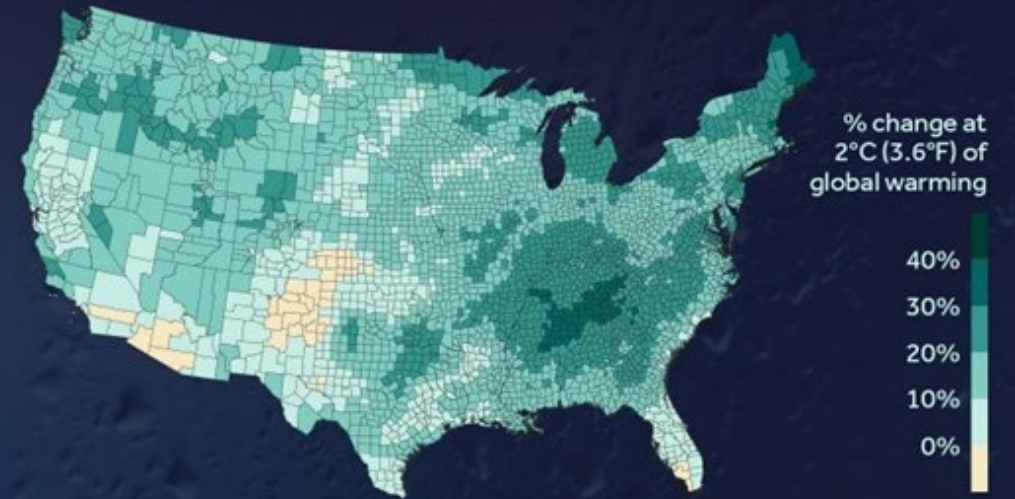


Change in total precipitation falling on the heaviest 1% of days, 1958–2021.
Source: USGCRP, 2023: Fifth National Climate Assessment.

CLIMATE CENTRAL

WARMER FUTURE, MORE EXTREME PRECIPITATION

Projected change in precipitation on heaviest 1% of days



Projected change in total precipitation falling on the heaviest 1% of days at 2°C (3.6°F) of global warming.
Source: USGCRP, 2023: Fifth National Climate Assessment.

CLIMATE CENTRAL

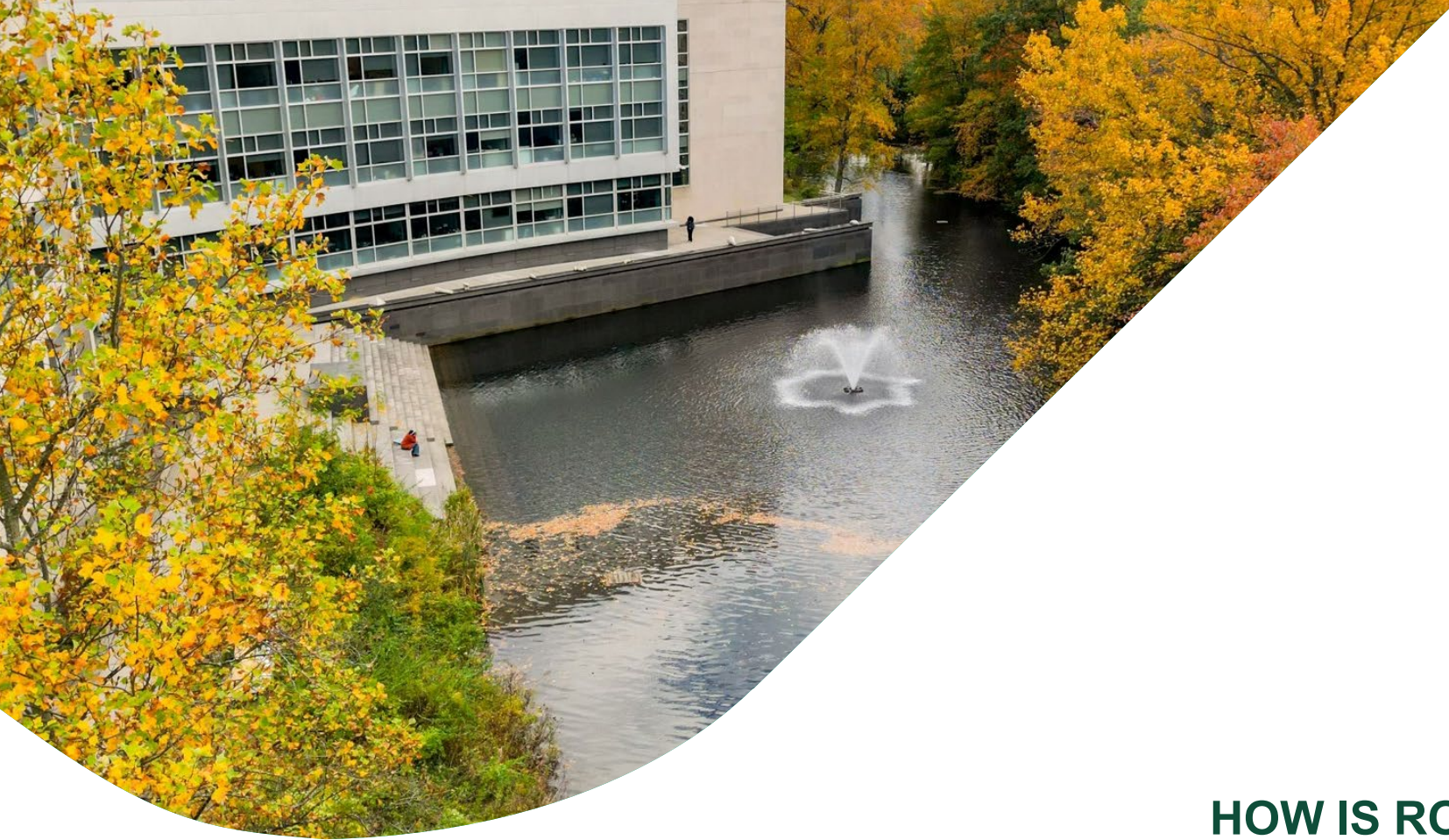
Historic and Projected Precipitation Increase Maps

Photo Credit: Climate Central

FLOODING



Campus flood map with FEMA flood extents and Flood Factor extents for the 100 and 500-year storms and 30-year projection of the 100-year storm.



**HOW IS ROWAN UNIVERSITY WORKING
TO IMPROVE WATER QUALITY?**

MS4 R-11 PUBLIC COMPLEX STORMWATER DISCHARGE PERMIT REQUIREMENTS

- Prepare a Watershed Improvement Plan to:
 1. Improve water quality in water bodies that have total maximum daily loads (TMDLs)
 2. Improve water quality in water bodies listed as impaired
 3. Reduce or eliminate flooding



Credit: New Jersey Future

PROJECT SCOPE

2025-2026

Phase 1 Watershed Inventory Report

- **Document watershed challenges and opportunities**
- **Outfall drainage area map**
- **Comprehensive map of existing infrastructure**

2026

Phase 2 Watershed Assessment Report

- Identify priority areas for watershed improvement
- Identify potential watershed strategies
 - Toolkit for water quality improvements based on impaired parameters
 - Estimated funding and implementation schedule
 - Estimated percent reduction in impaired parameters

2027

Phase 3 Watershed Improvement Plan

- Incorporate feedback to develop proposed watershed improvement projects
 - Develop map of proposed improvements
 - Schedule
 - Cost estimate
 - Project descriptions
 - Other considerations and coordination

ROWAN UNIVERSITY WATER QUALITY IMPROVEMENTS

Water quality management examples currently in use

- Stormwater Pollution Prevention Plan (SPPP)
- Wildlife feeding control
- Refuse container/dumpster control
- Pet waste regulations
- Litter control
- Illicit connection prohibition
- Stormwater management systems
- Proper waste disposal procedures



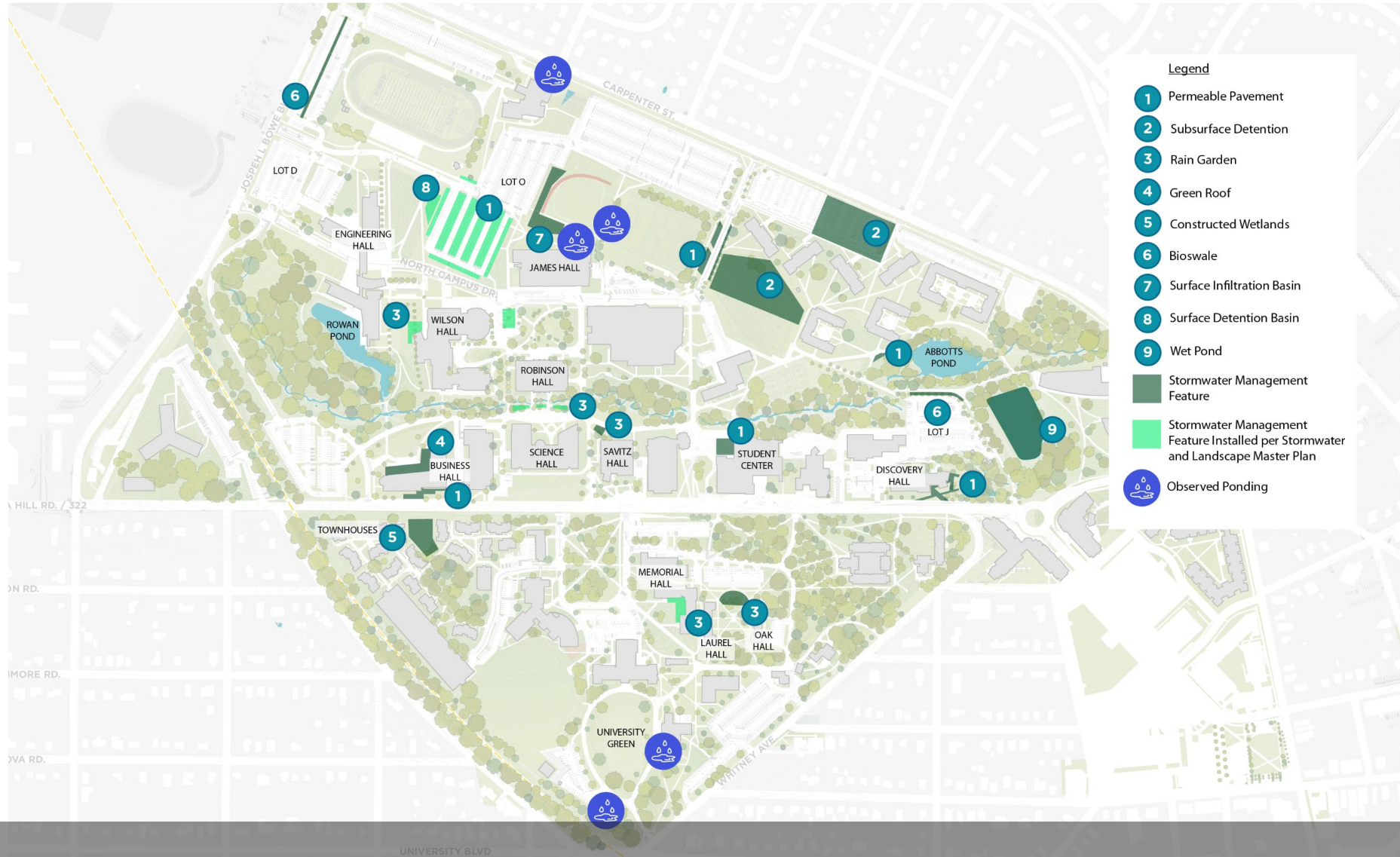
ROWAN UNIVERSITY FLOOD MANAGEMENT

Examples of flood management measures

- Stormwater management systems



STORMWATER MANAGEMENT ON CAMPUS



Stormwater Management Facility Location Map

STORMWATER MANAGEMENT ON CAMPUS



Area inlet in depressed planting bed



Stone conveyance channel at the Memorial Hall rain garden

STORMWATER MANAGEMENT ON CAMPUS

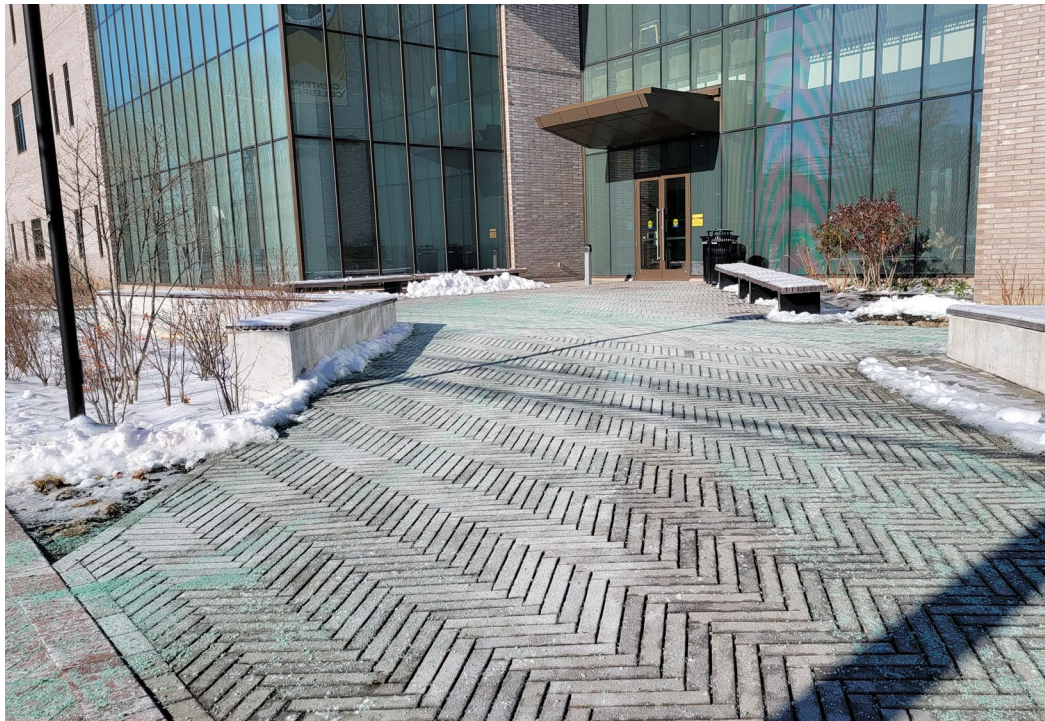


Constructed wetland at Townhouses



Detention basin adjacent to Lot O

STORMWATER MANAGEMENT ON CAMPUS



Permeable pavers in front of Discovery Hall



Rain garden adjacent to Wilson Hall

AREAS OF IMPROVEMENT

- Common Issues
 - Erosion
 - Flow Obstruction / Ponding
- Negative Impacts
 - Sediment accumulation
 - Flooding
 - System failure
 - Watershed degradation
 - Structural damage



EROSION



Bank incising at points along the Chestnut Branch



Erosion near Admissions building

FLOW OBSTRUCTION / PONDING



Ponding north of James Hall



Obstructed area inlet in lawn

OTHER COMPLEMENTARY PLANS, ORDINANCES, AND EFFORTS IN THE WATERSHED

Borough of Glassboro Ordinances

- Stormwater Control Ordinance
- Litter Ordinance
- Solid Waste Ordinance
- Storm Sewers Ordinance
- Animal Control Ordinance



OTHER COMPLEMENTARY PLANS, ORDINANCES, AND EFFORTS IN THE WATERSHED

Borough of Glassboro Water Quality Guidance

- Municipal Stormwater Master Plan (2021)
- Municipal Stormwater Pollution Prevention Plan
- Employ Sustainable Landscaping Practices
- Reduce Runoff
- Properly Use and Dispose of Hazardous Products
- Dispose of Yard Waste Properly
- Litter
- Animal Waste



[Pay Tax/Utility Bill](#) [Government](#) ▾

[Departments](#) ▾ [Business](#) ▾ [Downtown](#) ▾

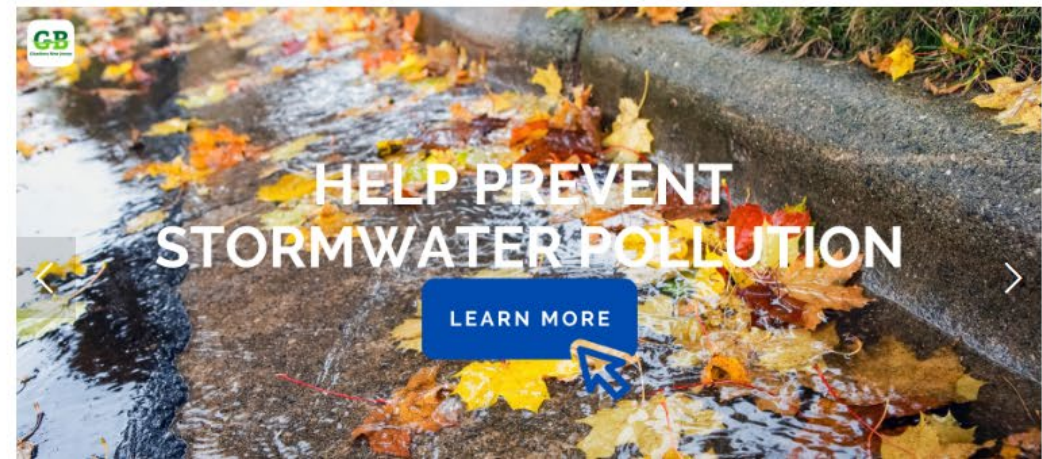
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What is stormwater?

Human activity is largely responsible for the 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 N.J.A.C. 7:14A rules is as follows:

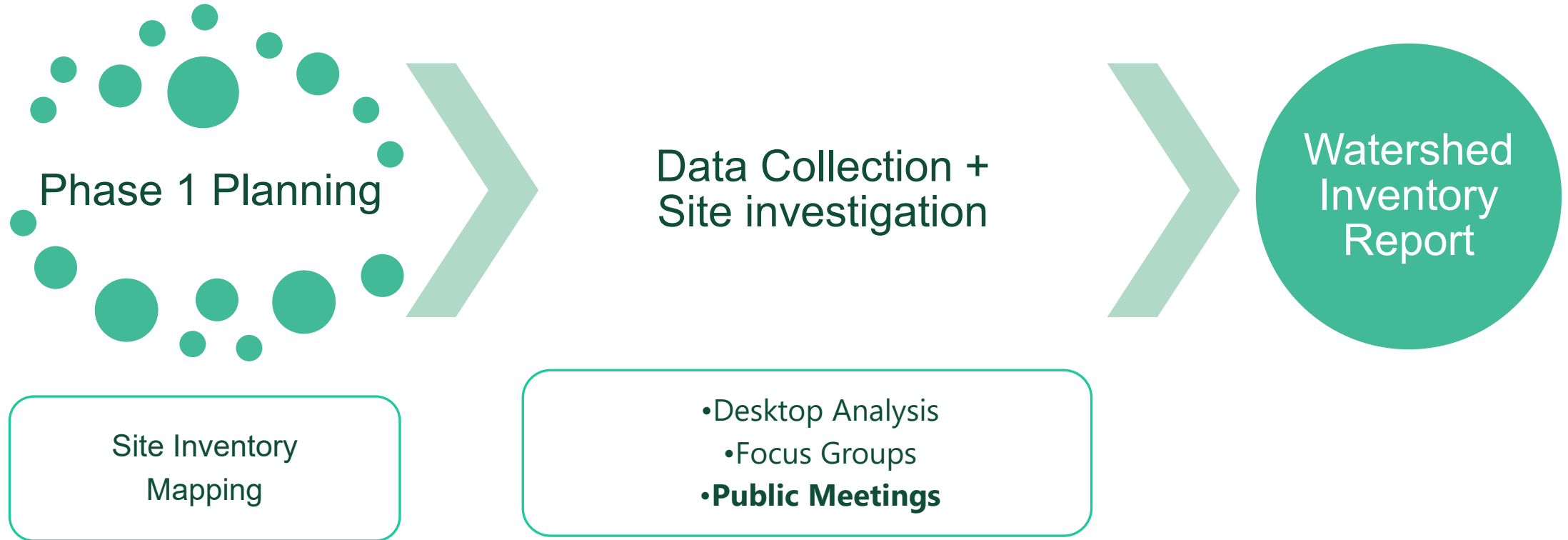
'Stormwater' means water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to





WHAT'S NEXT?

NEXT STEPS FOR PHASE 1



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