

# When It Rains, It Pays: The Value of Stormwater Utilities



# Climate Change

## STATE OF NEW JERSEY 2024 ALL-HAZARD MITIGATION PLAN

### NATURE-BASED HAZARD PROFILES AT A GLANCE

#### FLOOD

**18.5%**

OF NEW JERSEY'S LAND AREA IS LOCATED IN THE SPECIAL FLOOD HAZARD AREA (SFHA)

**597**

STATE FACILITIES ARE WITHIN THE SFHA

**3,000+**

BRIDGES AND TUNNELS

**5,000**

MILES OF ROADWAY ARE LOCATED WITHIN THE SFHA



#### WILDFIRE

**1,500** WILDFIRES OCCUR ON AVERAGE EVERY YEAR

**7,000** TOTAL ACRES BURNED

**99%** ARE HUMAN CAUSED



#### STORM LOSSES

**\$2.02 BILLION** ESTIMATED IN DAMAGE FROM HURRICANE IDA

**\$873.6 MILLION** APPROVED IN DISASTER RELIEF

**45 THOUSAND** HOMES

#### NFIP STATISTICS

**188,781** TOTAL POLICIES

**61,013** PROPERTY LOSSES

**\$24,279** AVERAGE LOSS VALUE

**\$6 BILLION** IN TOTAL PAYMENTS

#### FEMA HAZUS ESTIMATES

##### FLOOD



**50 THOUSAND** PEOPLE SEEKING SHELTER DUE TO DISPLACEMENT

**775 THOUSAND** TONS OF TOTAL DEBRIS ACCUMULATION



##### WIND



**2 THOUSAND** PEOPLE SEEKING SHELTER DUE TO DISPLACEMENT

**8.6 BILLION** IN DAMAGES AND ECONOMIC LOSS FOR A 1% EVENT

##### EARTHQUAKE



**5.9 BILLION** IN BUILDING-RELATED ECONOMIC LOSS

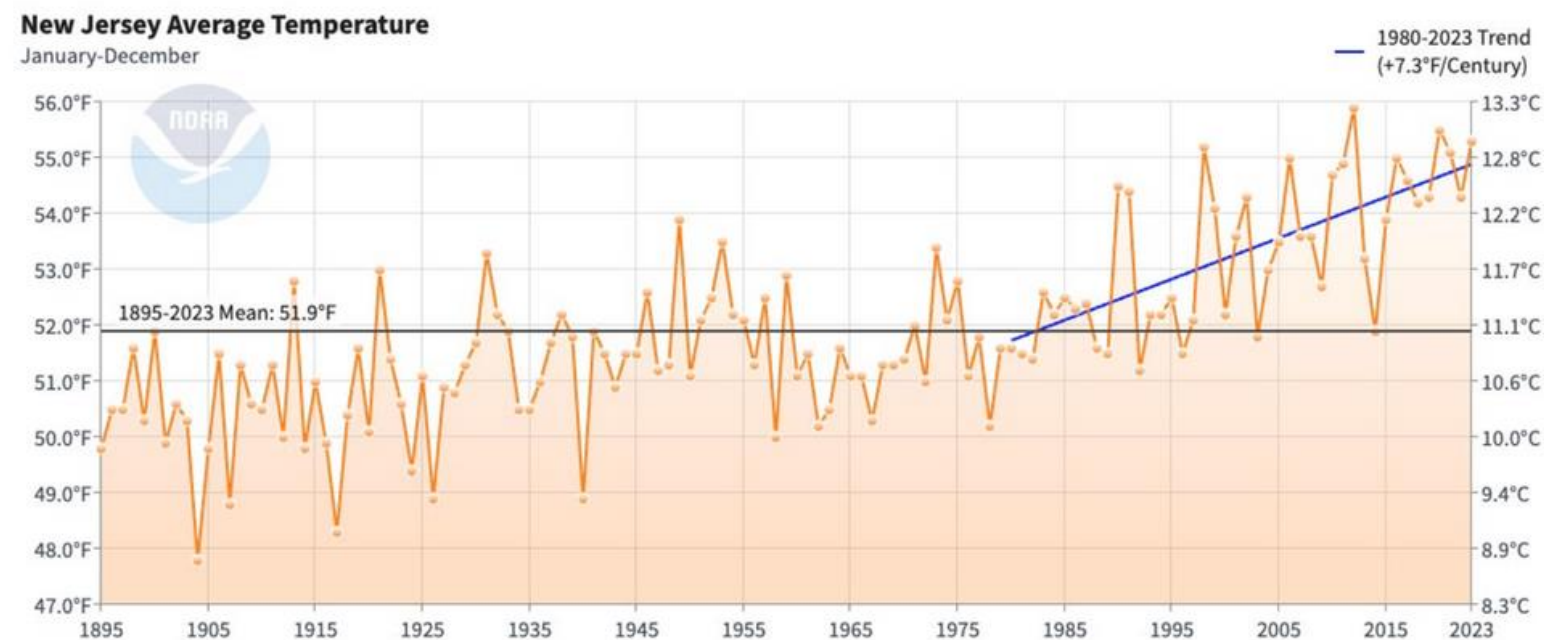


**5.13 MILLION** IN UTILITY SYSTEM ECONOMIC LOSSES

# IT'S GETTING HOTTER

## Observations

### New Jersey annual temperature: 1895-2023



data source: National Centers for Environmental Information

1895-2023 upward trend  
of 2.9° F per 100 years

1980-2023 trend is  
7.3° /100 years

15 of the 20 warmest  
years have occurred  
since 2001; 19 of 20 since  
1990

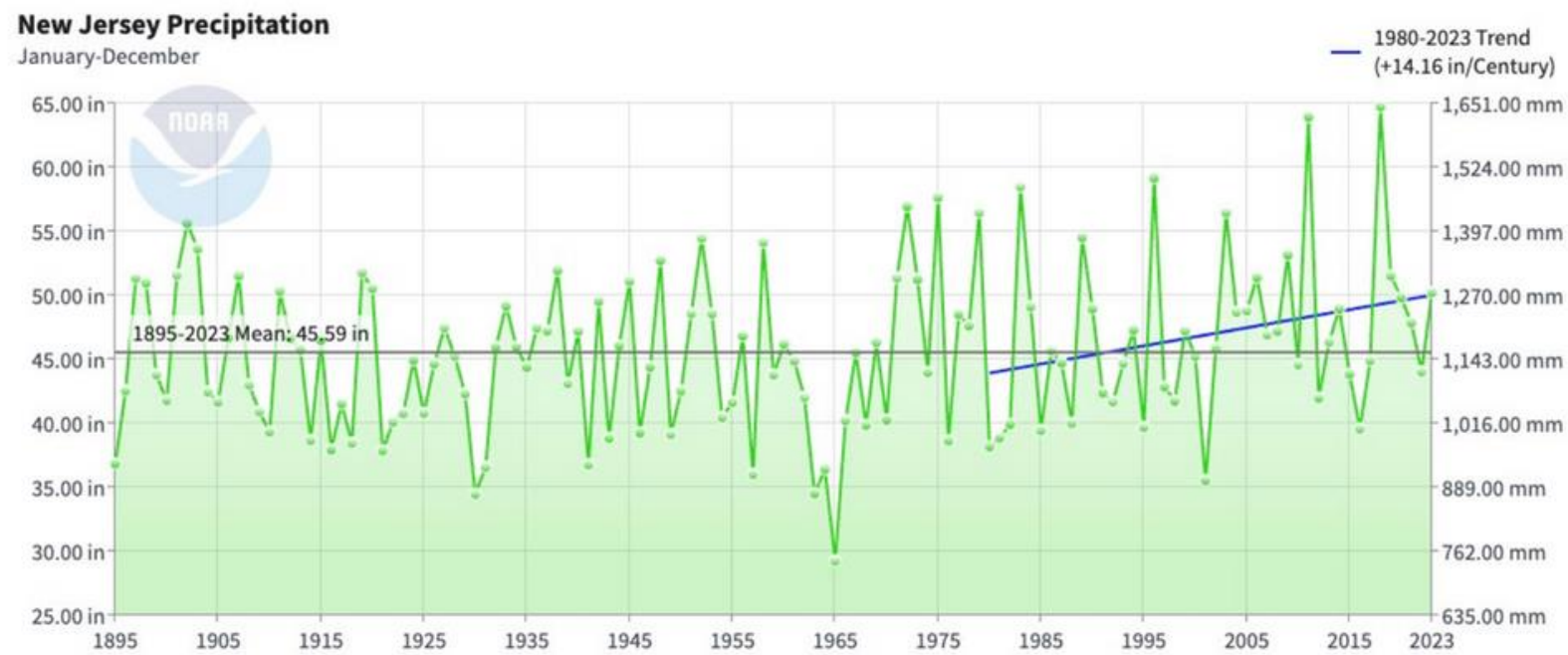
2012 was the warmest  
year on record, 2020 2nd  
warmest, 2023 3<sup>rd</sup> warmest

Warming in all seasons

Source: NJ State Climatologist David Robinson “New Jersey’s Changing Climate”  
presentation to  
ANJEC Environmental Congress, 9/27/24

# AND IT'S GETTING WETTER

## New Jersey annual precipitation: 1895-2023



data source: National Centers for Environmental Information

1895-2023 upward trend of 3.00" per 100 years

1980-2023 trend of 14.16" per 100 years

2018 & 2012 the two wettest years

Large decadal variability (early 1960s drought, wet 1970s, quite variable in the past decade)

Most of the upward trend comes from changes in spring and fall



Source: NJ State Climatologist David Robinson "New Jersey's Changing Climate" presentation to ANJEC Environmental Congress, 9/27/24

# Climate Change

Summing up:

New Jersey has a wide variety of weather and climate conditions.

Climate continues changing in New Jersey, much like elsewhere. This includes changes in extremes.

Change will continue and likely accelerate in the foreseeable future. Expect more extremes.

Impacts will expand, becoming increasingly noteworthy.

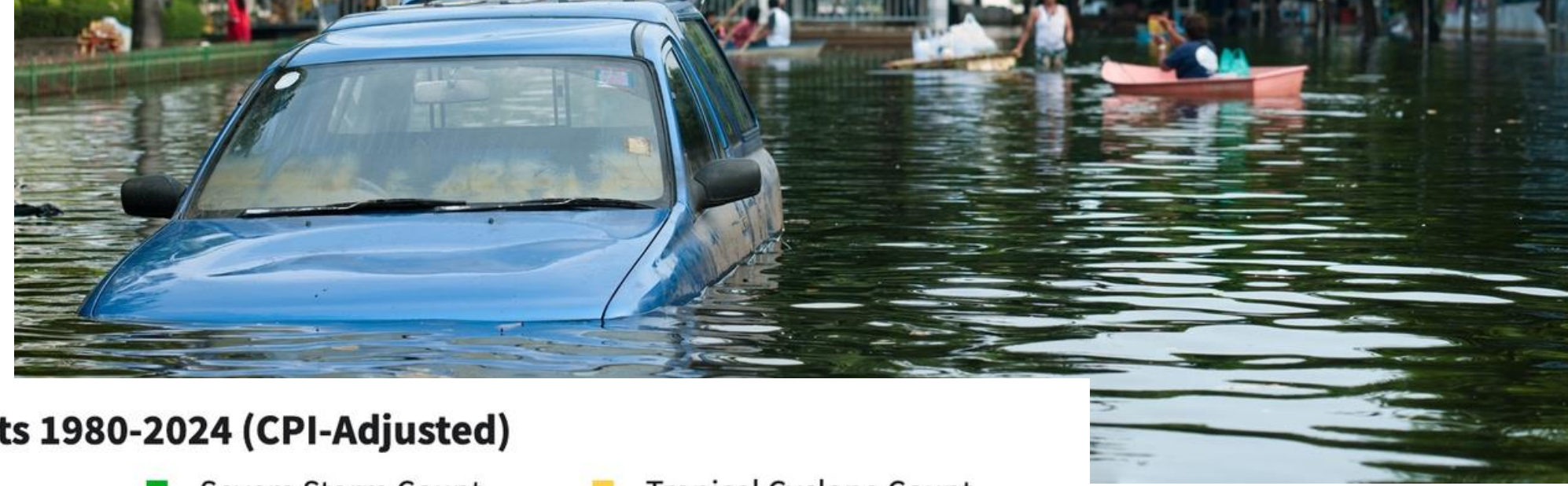
We must keep a watchful eye of NJ's weather and climate

While ongoing change is certain, time remains for mitigative and adaptive actions to address and attenuate threatening conditions.

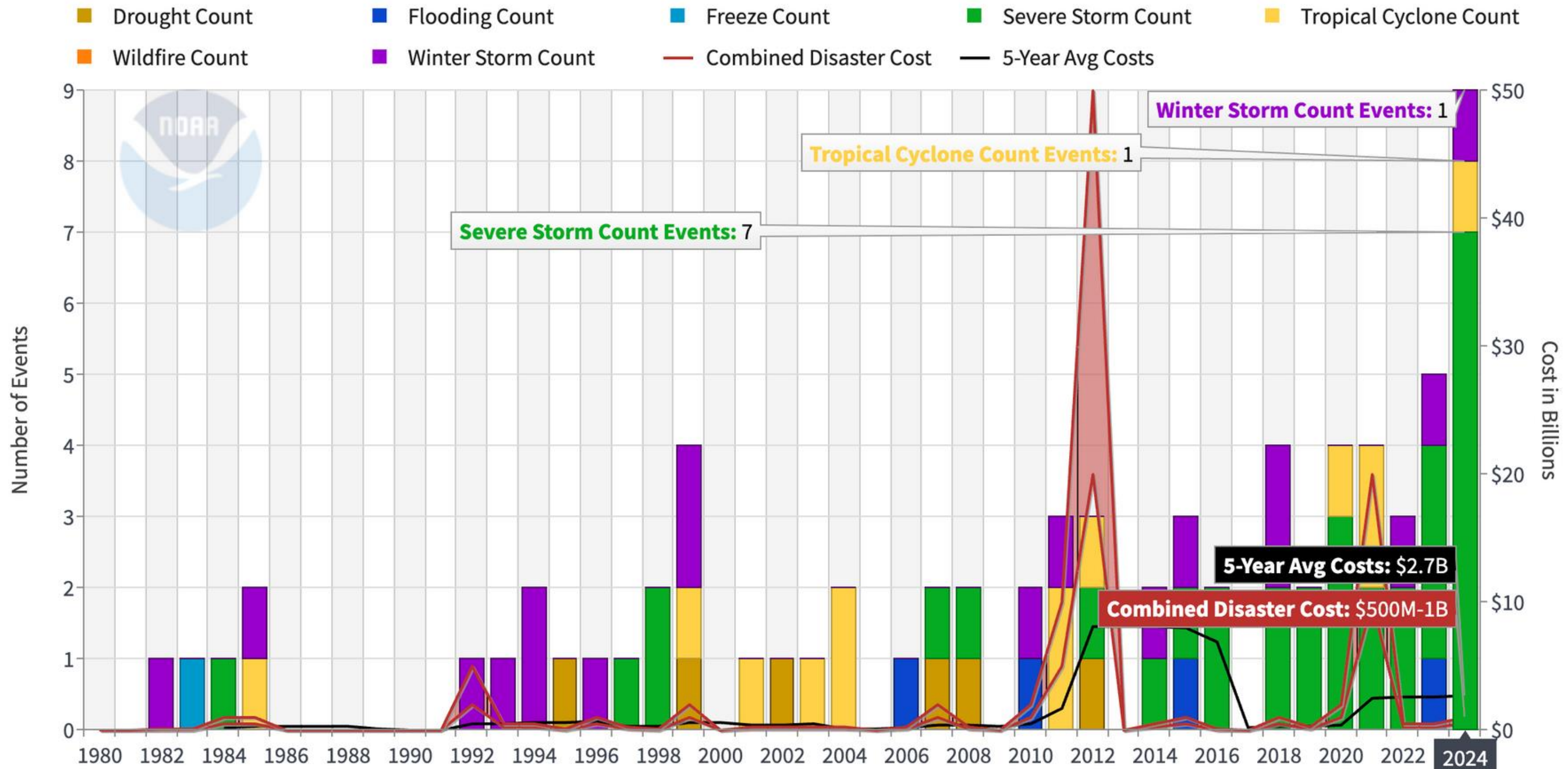
Source: NJ State Climatologist David Robinson  
"New Jersey's Changing Climate" presentation to  
ANJEC Environmental Congress, 9/27/24



# Increased flooding



**New Jersey Billion-Dollar Disaster Events 1980-2024 (CPI-Adjusted)**



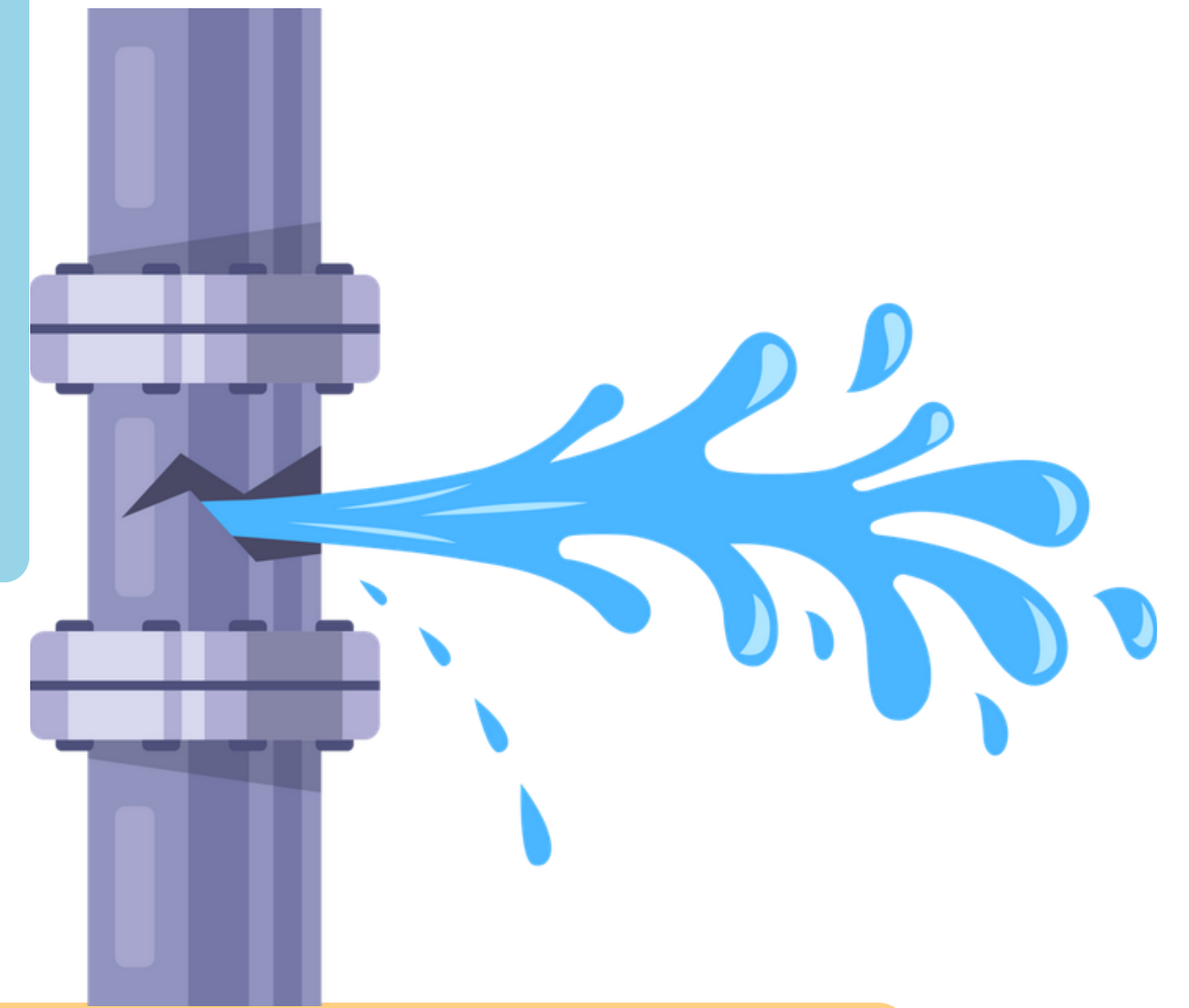
Updated: November 1, 2024

Source: National Center for Environmental Information, NOAA, <https://www.ncei.noaa.gov/access/billions/state-summary/NJ>

Powered by ZingChart

# Bigger storms

# Failing infrastructure



### Did you know?

•New Jersey has a \$30 billion stormwater infrastructure problem, and right now there is no dedicated funding source to address this massive need.

Source: <https://njclimateresourcecenter.rutgers.edu/new-jersey-is-getting-1b-for-water-infrastructure-but-asks-will-anyone-come-and-get-it/>

# Impervious surfaces

- Superhighways! Streets and pavement! Driveways! House roofs! These are all "impervious surfaces"; impervious to the water from precipitation. When it rains in this locale, water no longer seeps into the ground, but now runs off into storm sewers and then quickly into local creeks. Localized flooding is too often the result.



# Rutgers Draft Impervious Cover Reduction Plan for Piscataway

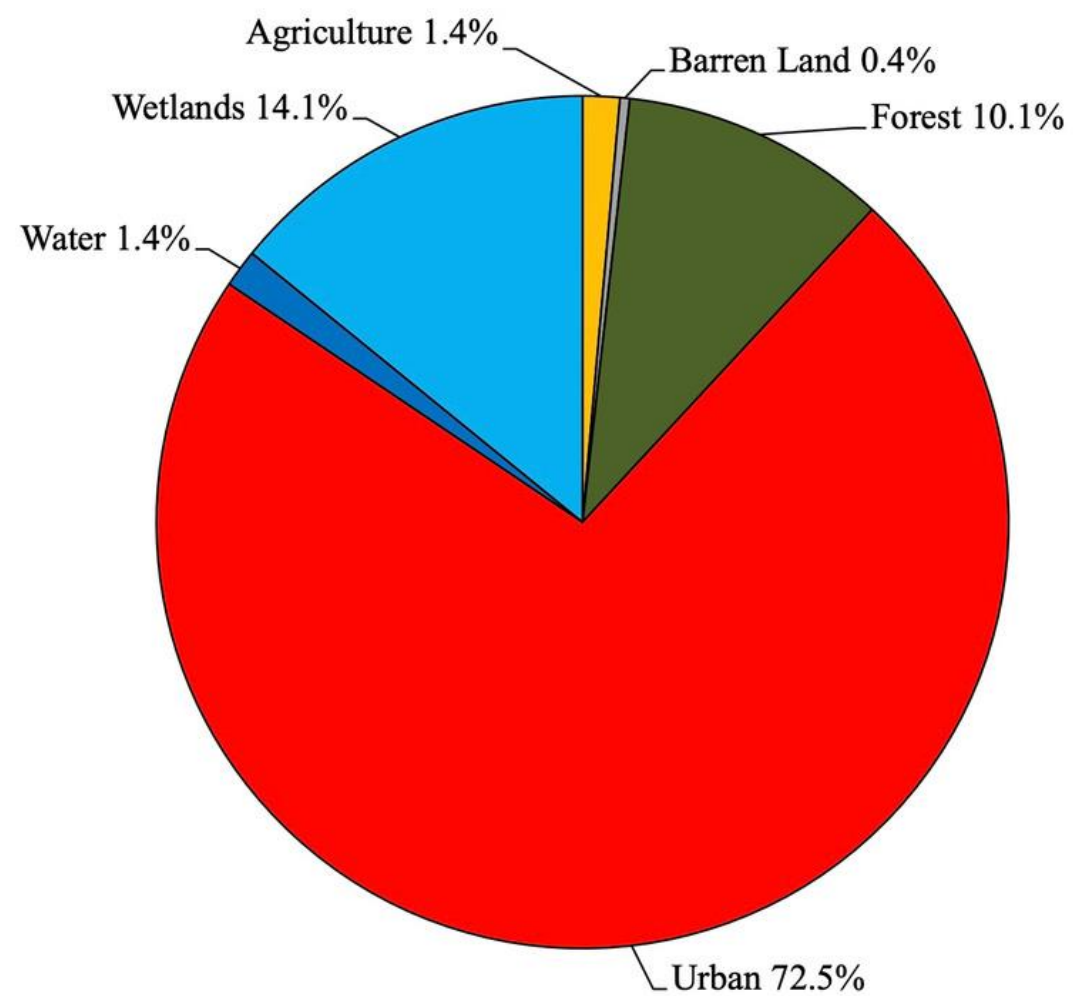


Figure 3: Pie chart illustrating the land use in Piscataway Township

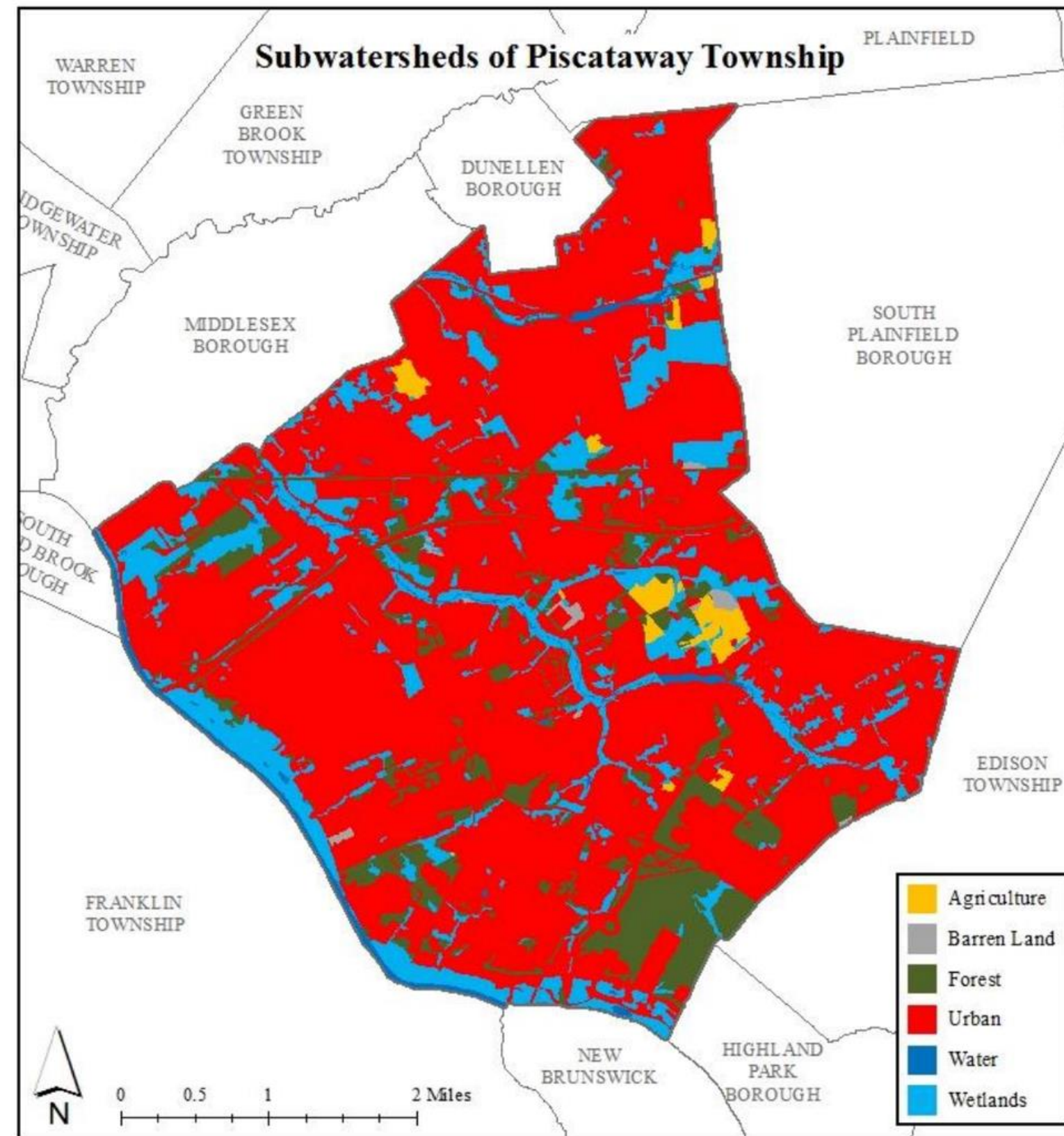


Figure 1: Map illustrating the land use in Piscataway Township

# Green infrastructure solutions



Rain gardens, bioswales, pollinator gardens, pervious pavers, green roofs, rain barrels, cisterns, increased tree canopy – all are green infrastructure solutions to manage stormwater where it falls, reduce pollution, and provide ecological and social benefits.

## List of recommendations from Rutgers Water Resources study

- Christian United Methodist Church
- Eisenhower Elementary School
- Grandview Elementary School
- John F. Kennedy Library
- ***Middlesex County Vocational and Technical School***
- New Dunham Chapel
- Piscataway Board of Operations Complex
- Piscataway Municipal Center
- Possumtown Volunteer Fire Company
- Randolphville School

There were 22 green infrastructure strategies recommended for Piscataway.  
*(Items in italics and bold have been completed.)*

- Travelers Fellowship Church
- T. Schor Middle School
- US Post Office
- Wynnewood Swim Club
- First Baptist Church of New Market
- Piscataway Public Library
- Quibbletown Middle School
- Arbor Intermediate School
- Conackawack Middle School
- Knollwood Elementary School
- Saint George Church
- Zion Hill Baptist Church

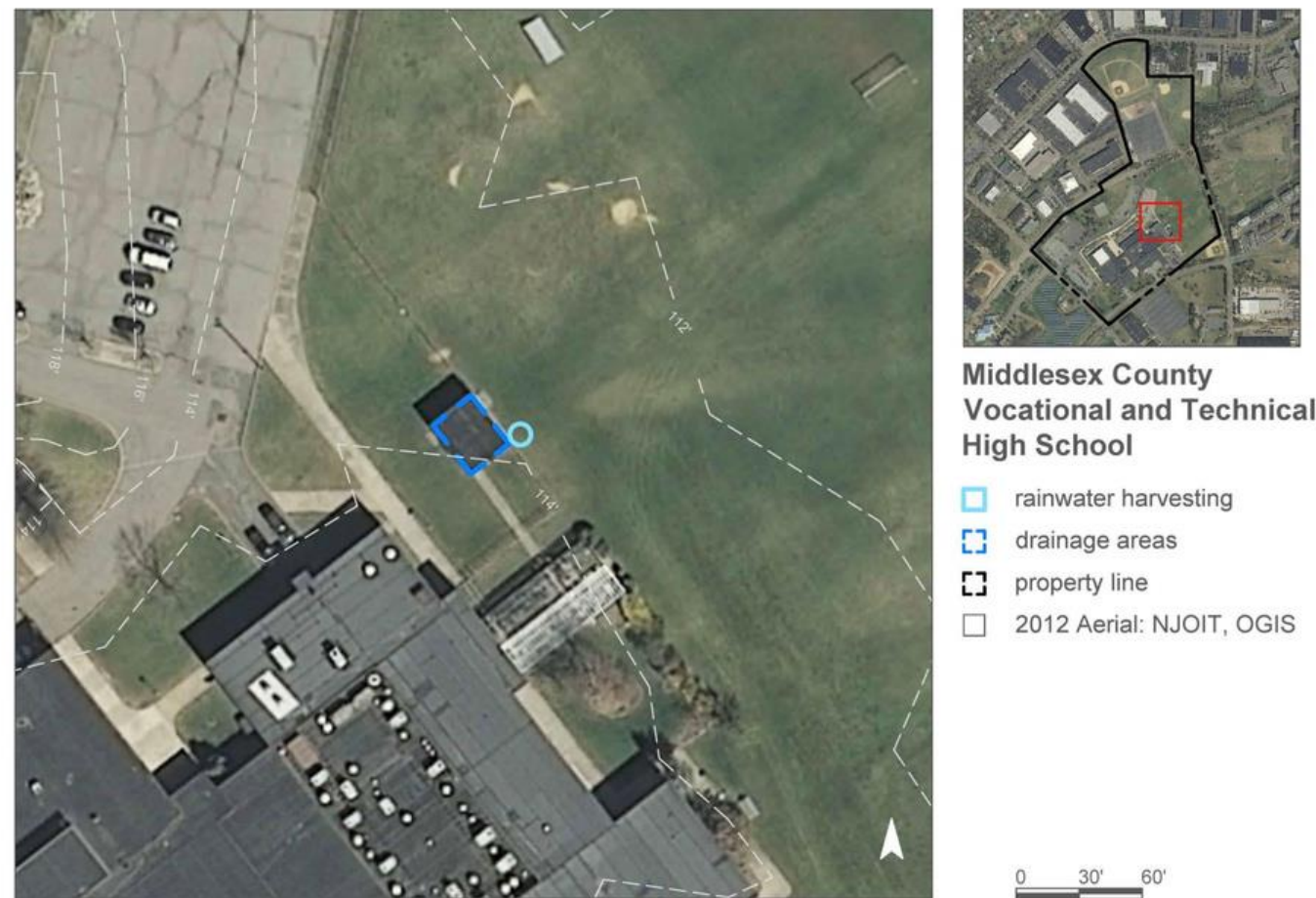
# Completed GI projects in Piscataway

## MIDDLESEX COUNTY VOCATIONAL AND TECHNICAL HIGH SCHOOL

Subwatershed: Ambrose Brook  
 Site Area: 2,270,440 sq. ft.  
 Address: 21 Suttons Lane  
 Piscataway, NJ 08854  
 Block and Lot: Block 9,301, Lot 47.03



### GREEN INFRASTRUCTURE RECOMMENDATIONS



Rainwater can be harvested by installing a cistern at a building located near the baseball field. The water can be used for watering the landscaping or for conducting car wash fundraisers. A preliminary soil assessment suggests that the soils have suitable drainage characteristics 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 44"
42	952,473	45.9	481.0	4373.2	0.742	26.12

Recommended Green 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
Rainwater harvesting systems	0.018	3	1,000	0.05	1,000 (gal)	\$2,000

***Rutgers installed a cistern at Middlesex County Vocational School.***

# Girl scout project Rain garden in Columbus Park



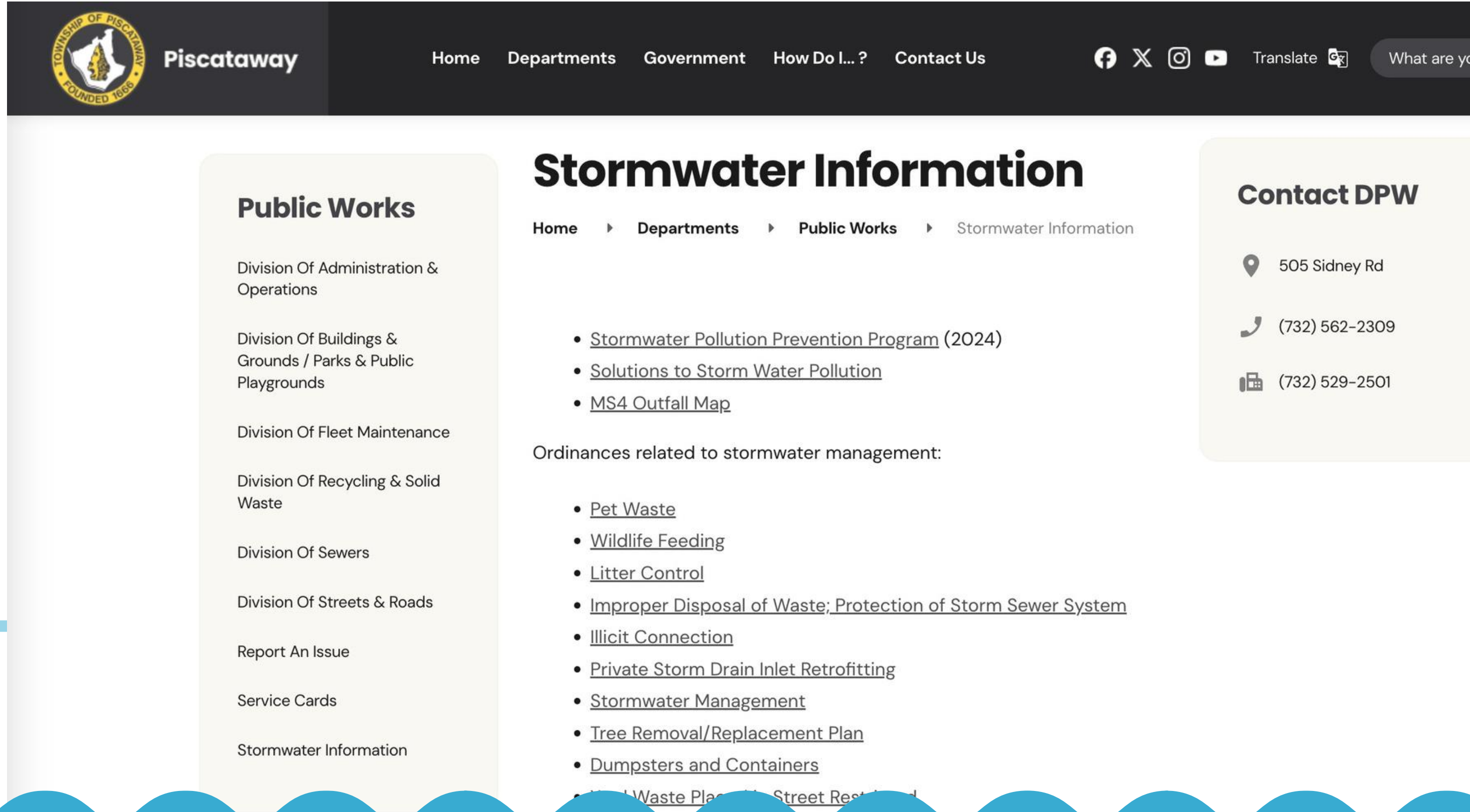
Green

## Piscataway Girl Scout Builds Rain Garden at Columbus Park



Photo Credit: Valerie Mason-Robinson

# Piscataway Stormwater Management Page



The screenshot shows the website for the Township of Piscataway, specifically the Stormwater Information page under the Public Works department. The page features a dark navigation bar with the town's logo and name, and a menu with links to Home, Departments, Government, How Do I...?, and Contact Us. Social media icons for Facebook, X, Instagram, and YouTube are also present. A search bar is visible on the right. The main content area is divided into three columns. The left column is a sidebar menu for Public Works, listing various divisions and services. The middle column is the main content area, titled 'Stormwater Information', which includes a breadcrumb trail, a list of links to stormwater-related programs and maps, and a section for ordinances related to stormwater management. The right column is a 'Contact DPW' box providing the address, phone numbers, and a fax number.

**Township of Piscataway** | Home | Departments | Government | How Do I...? | Contact Us | Translate | What are you looking for?

## Public Works

- Division Of Administration & Operations
- Division Of Buildings & Grounds / Parks & Public Playgrounds
- Division Of Fleet Maintenance
- Division Of Recycling & Solid Waste
- Division Of Sewers
- Division Of Streets & Roads
- Report An Issue
- Service Cards
- Stormwater Information

## Stormwater Information

Home > Departments > Public Works > Stormwater Information

- [Stormwater Pollution Prevention Program \(2024\)](#)
- [Solutions to Storm Water Pollution](#)
- [MS4 Outfall Map](#)

Ordinances related to stormwater management:

- [Pet Waste](#)
- [Wildlife Feeding](#)
- [Litter Control](#)
- [Improper Disposal of Waste; Protection of Storm Sewer System](#)
- [Illicit Connection](#)
- [Private Storm Drain Inlet Retrofitting](#)
- [Stormwater Management](#)
- [Tree Removal/Replacement Plan](#)
- [Dumpsters and Containers](#)
- [Solid Waste Plan and Street Restoration](#)

## Contact DPW

- 📍 505 Sidney Rd
- 📞 (732) 562-2309
- 📠 (732) 529-2501

# How to pay for it?



**A new economic study finds every \$1 spent on climate resilience and preparedness saves communities \$13 in damages, cleanup costs, and economic impact..\***

**\*Source: US Chamber of Commerce**

**"Being Prepared for the Next Disaster Pays Off, New Study Shows"**

<https://www.uschamber.com/security/being-prepared-for-the-next-disaster-pays-off-new-study-shows>

**\*Another Source: US Chamber of Commerce**

**"New report finds investing in resilience saves jobs and incomes"**

<https://www.uschamber.com/climate-change/new-report-finds-investing-in-resilience-saves-jobs-and-incomes>

# Current method of funding stormwater management



**PROPERTY TAXES**



**SEWER FEES**

# Maintaining and updating infrastructure



**What are my options?**

Do nothing.

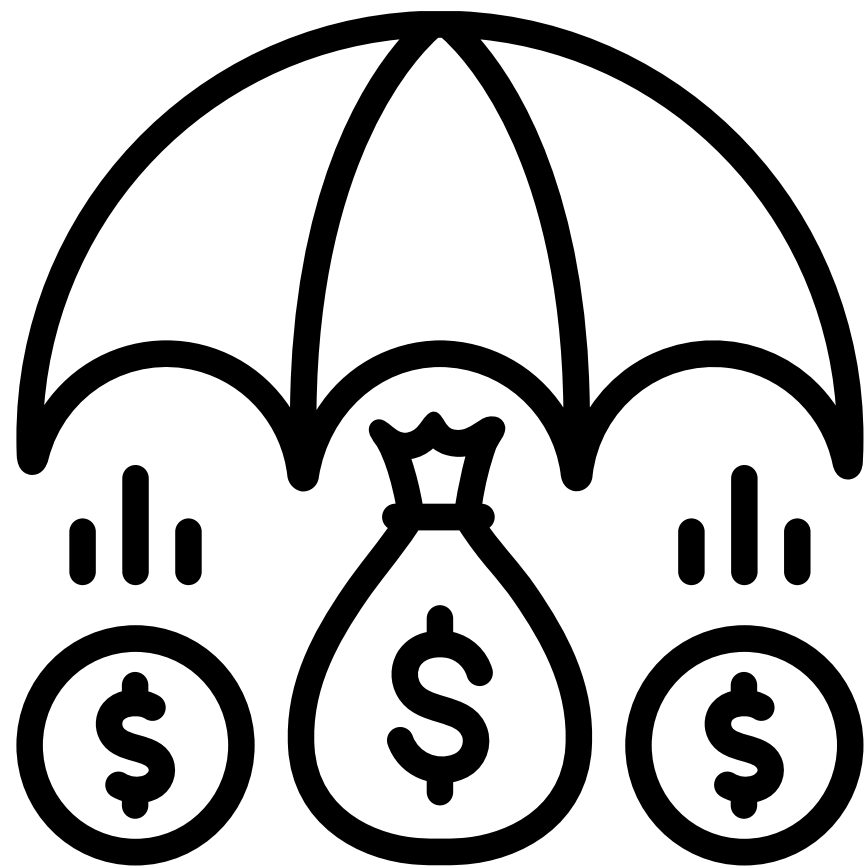
Increase property taxes.

Increase sewer rates.

Create a stormwater utility.



# What is a stormwater utility?



Similar to a water or sewer utility, a stormwater utility is a dedicated funding mechanism to pay for a community's stormwater management program.

**Equitable** -- All those who contribute to the problem will help pay for the solutions.\*

**Dedicated** - Funds raised can only be used for stormwater management.

**Fees** calculated based on impervious surfaces.

**Credits** usually available to reduce your fee.

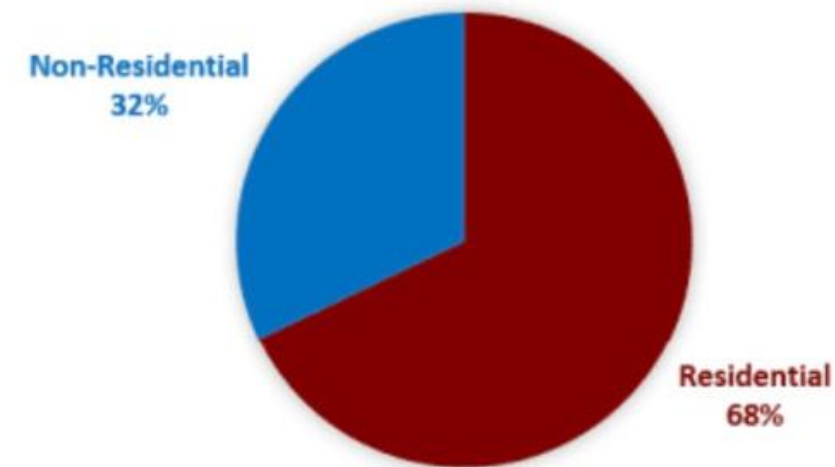
\*The sole exemption is for agriculture/horticulture

# Equitable

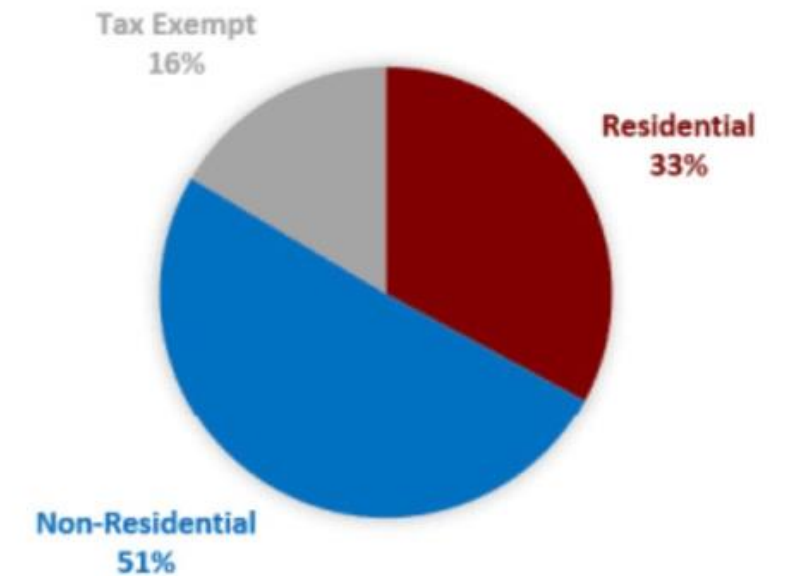
Paying a fair share

## BREAKDOWN OF REVENUES COLLECTED VIA:

PROPERTY TAX COLLECTED BY PROPERTY VALUE



STORM WATER FEES COLLECTED BY IMPERVIOUS AREA



## Fee Distribution

Source: City of Columbus, WI  
<https://www.cityofcolumbuswi.com/2445/Additional-Information>

# Equitable

## Example -- New Brunswick



***Before:* 51% of landowners in New Brunswick were exempt from paying for stormwater management before the stormwater utility was enacted.\***

***After:* Rutgers University, a major source of impervious surfaces and stormwater runoff in New Brunswick, now has an annual stormwater fee of **\$250,000.****

**That is the equivalent of over 3,000 households' share of the stormwater cost.**

\*Source: "New Brunswick is NJ's first town to set up a stormwater utility"

<https://www.njspotlightnews.org/2024/06/stormwater-utility-new-brunswick-first-town-in-nj-rainwater-runoff-fee-property-owners/>

# Dedicated

To protect against legal challenges and to address concerns over the potential diversion of funds to other pressing budget needs, the *enabling statute requires that all fee revenue be dedicated **solely** to stormwater-related expenses.*



Your name \_\_\_\_\_ 0123

Date \_\_\_\_\_ 20\_\_

Pay to the order of \_\_\_\_\_ \$ \_\_\_\_\_

\_\_\_\_\_ dollars

Memo  
*For stormwater management purposes **only***

Security features included details on back

# Dedicated

## Stormwater Utilities provide dedicated funding for:

- Establishment of stormwater utility
- Capital expenditures
- Operations and maintenance
- Asset Management
- Stormwater management plan and stormwater control ordinances
- New Jersey Pollutant Discharge Elimination System (NJPDDES)
- Combined sewer overflow (CSO)
- Monitoring, inspection, and enforcement
- Public outreach and education
- Administrative costs



\*Also, any additional stormwater activities as authorized by the NJDEP, the Division of Local Government Services in the department of Community Affairs, or the Local Finance Board

Source: NJ Future Stormwater Utility Resource Center, <https://stormwaterutilities.njfuture.org/>

# Fees

**Fees are based on impervious surface or hard surfaces on a property.**

**“The cost of an ERU is \$77 a year, each parcel in the City is subject to the minimum fee of one ERU.**

**With each parcel subject to a minimum fee, most homes in New Brunswick would incur a quarterly charge of \$19.25.”**

**(\$6.42 a month)**

**Source: “New Brunswick Creates Stormwater Utility to Deter Flooding,”  
CityofNewBrunswick.org**

**ERU=Equivalent Residential Unit**

# Credits

Credits are typically offered for on-site stormwater management practices that manage peak rate, run-off volume and/or water quality. They may be extended to other activities such as maintenance of public facilities on private property, public education support, and other specific green initiatives.



**Impervious area reduction**



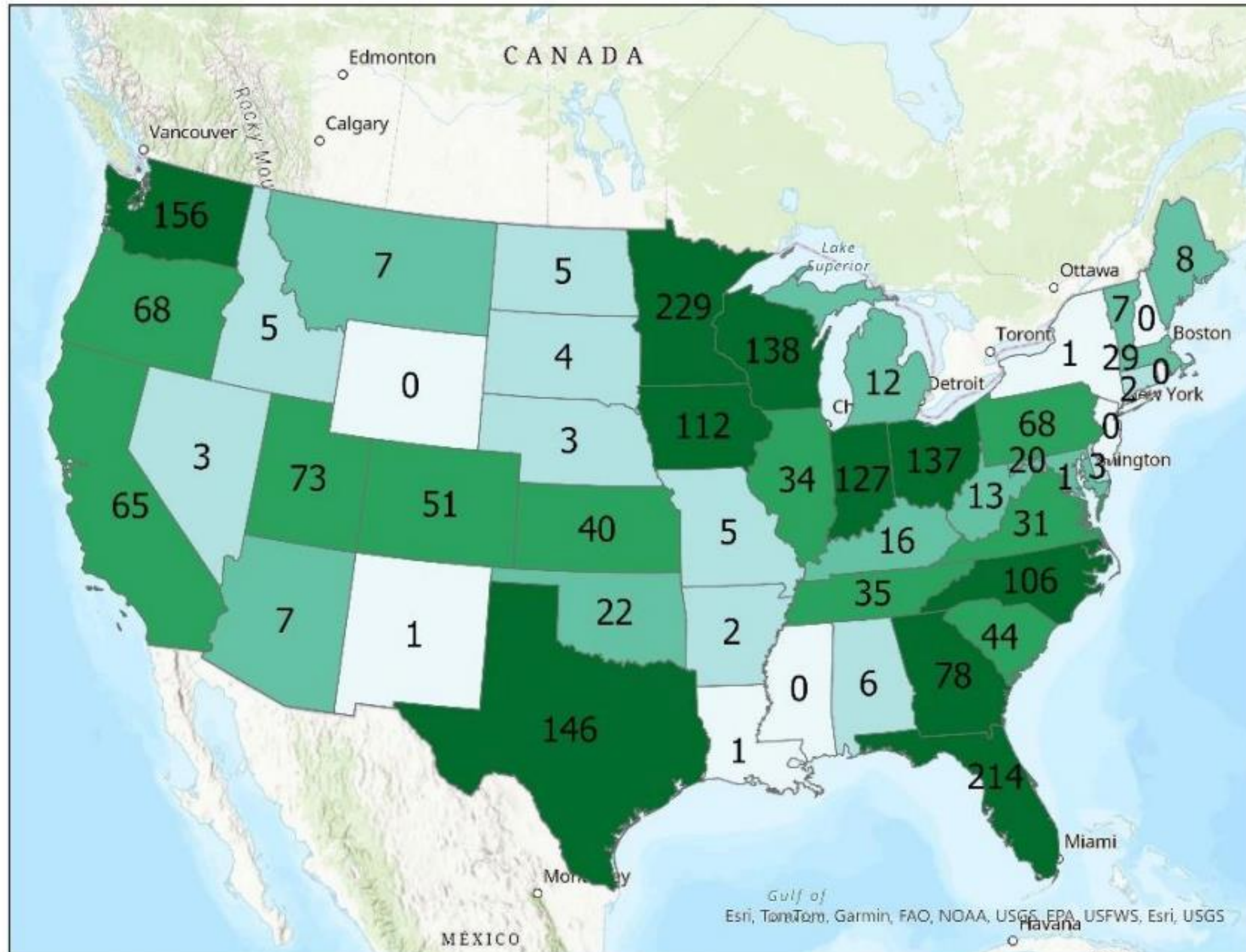
**Rain Garden**



**Rain barrel**

# Solutions

## U.S. SWU Fees 2024



2135 stormwater utilities  
in 42 states

Nationwide, the average  
monthly single-family  
residential fee was \$6.19.

The most widely used method  
of funding is the ERU system  
comprising about half of all  
SWUs. An Equivalent Residential  
Unit is usually the average or  
median impervious area on a  
single-family residential parcel.

Source: Western Kentucky University  
Stormwater Utility Survey 2024

# Action Items



Sign up for May 18<sup>th</sup> water quality monitoring.

Write and publish op-eds or letters to the editor.

Identify those in your community who have been impacted by flooding and/or water quality issues.

Educate and work with business leaders who could benefit from reduction of flooding.

Speak at your city council meeting about flooding and/or water quality problems in your community.

Contact your elected officials and email them your comments. (Contact info will be on their website.)

Put in a rain barrel or a rain garden on your property.

Get on NJDEP's mailing list and make comments when the option arises.

# Resources

## Stormwater Utilities Resource Center

<https://stormwaterutilities.njfuture.org>



## NJDEP Stormwater Utilities Guidance

[https://dep.nj.gov/njpdes-stormwater/swu\\_stormwaterutility/](https://dep.nj.gov/njpdes-stormwater/swu_stormwaterutility/)



We need your help to  
keep our water clean!



## **Stormwater Utilities Can Facilitate Green Infrastructure**

<https://www.jerseywaterworks.org/resource/s/stormwater-utilities-can-facilitate-green-infrastructure-updated-october-2024/>

## Stormwater Utilities Can Facilitate Green Infrastructure

Issued by the Jersey Water Works Stormwater Utility  
Subcommittee and Green Infrastructure Committee  
**Updated October 2024**



# ***Questions?***

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