Water Story

The Building Block for the Newest Gold Star Standard in Water

Jennifer Feltis Cortese, NJDEP
John Hasse, PhD, Rowan University
Jim Waltman, The Watershed Institute

Water Gold Task Force

Andrew Hendry, **New Jersey Utilities Association**
Dan Van Abs, **Rutgers University**
Ed DiFiglia, **New Jersey Future**
Ellen Creveling, **The Nature Conservancy**
Jennifer Coffey, **ANJEC**
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Margaret Waldock, **Dodge Foundation**
Swarna Muthukrishnan, **Clean Ocean Action**
Sophie Glovier, **Princeton EC**
Thomas Flynn, **Woodbridge Township**
Michael Furrey, **American Water Works Assoc.**

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GOLD STAR STANDARD FOR WATER

Jennifer Feltis Cortese, AICP

Water Resources Management

Bureau of Environmental Analysis, Restoration, and Standards and Office of Environmental Justice

Natural Resources Task Force and Water Gold Committee Leader

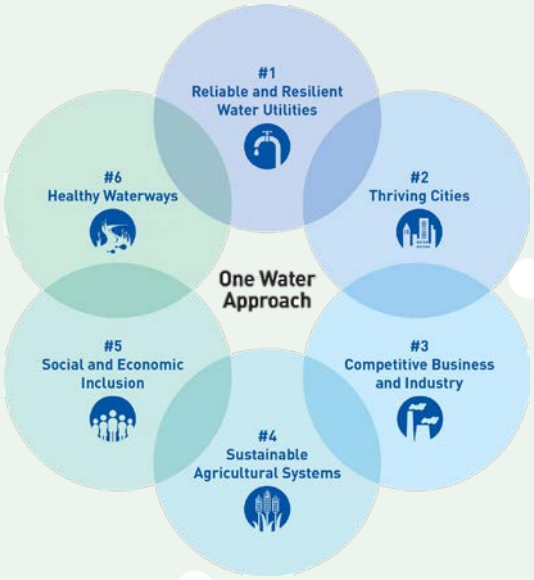
Sustainable Water Goals

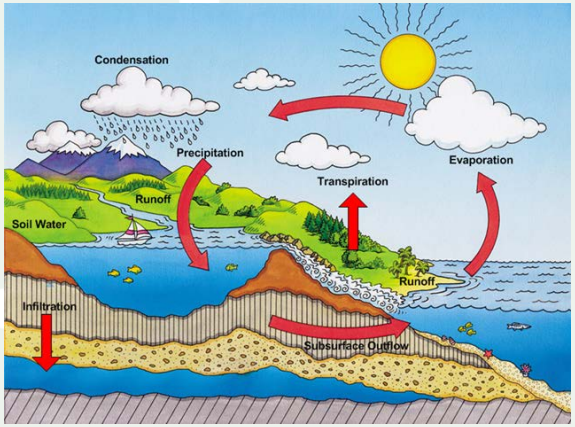




- Drinking water is clean and safe for human consumption.
- Water quality in streams, lakes & wetlands is sufficient to support species & ecosystems; safe for recreation & fishing.
- Water supply, including streamflow & groundwater, is sufficient for human uses & ecosystems.
- The water system, including infrastructure (drinking, stormwater & wastewater), provides adequate capacity & is resilient to climate change.
- Access to water resources is universally affordable & fairly distributed.

One Water Approach



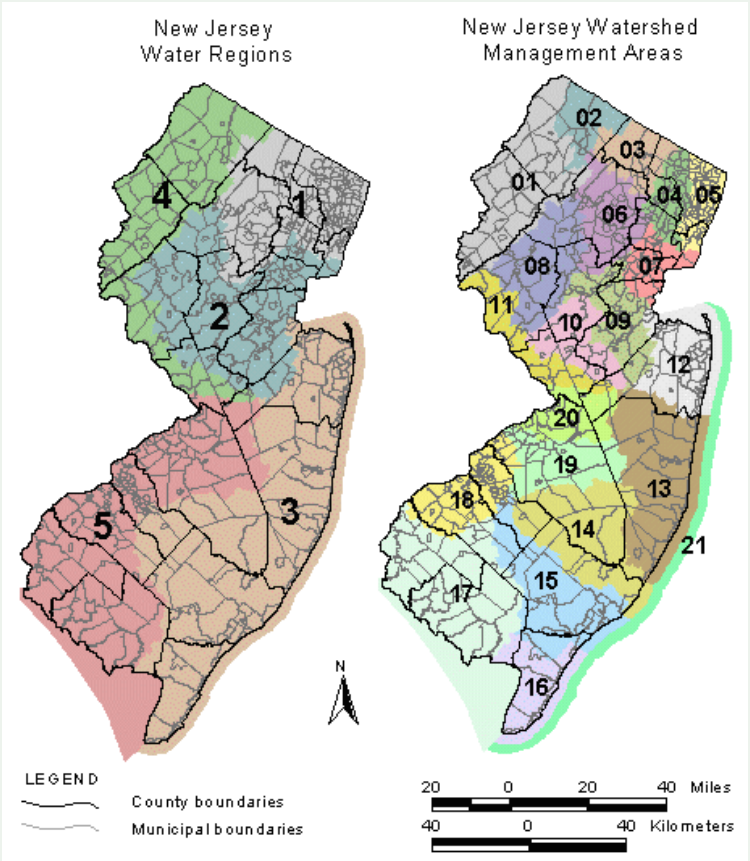


The Gold Star Standard in Water takes a comprehensive approach, which includes:

- "all water has value and should be managed in a sustainable, inclusive, integrated way"- *US Water Alliance on One Water Approach*
- Updates to existing SJ actions related to water
- New actions

New Jersey's Water Story

- Water Supply – 582 public community water systems
- Sewer (waste) Water Systems – 260 systems
- Water Features – approximately 127 miles of coastline; 6,450 river miles, more than 800 lands and ponds.
- Range of Issues – Flooding, water quality, saltwater intrusion into water supplies, degraded streams due to poor storm water management or historically contaminated sites, and access to water.



@SJ_Program • #DecadeofImpact

Gold Star Standard in Water

Current Sustainable Jersey Actions with Water Focus:

- Stormwater Model Ordinance
- Green Infrastructure Planning and Implementation
- Water Conservation Ordinance
- Water Conservation Education
- Others maybe explored for enhanced water requirements (for example, Green Grounds)

Gold Star Standard in Water

Actions Currently Under Development:

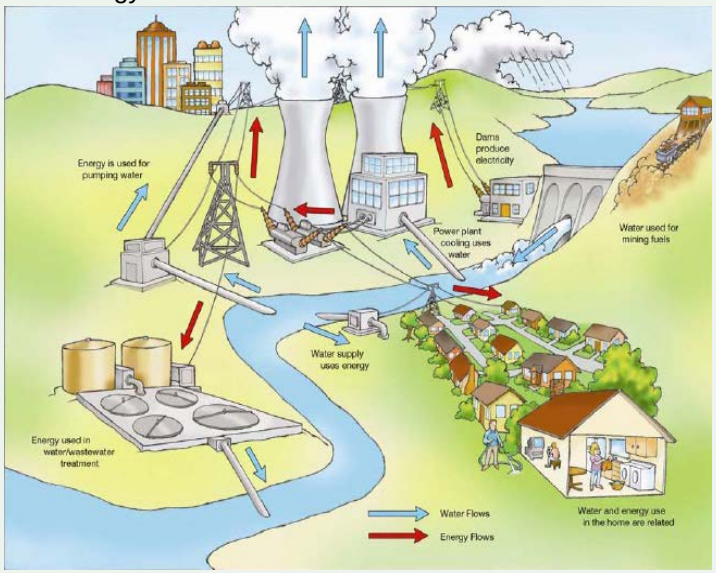
- Integrated Water Planning
- Lead in Drinking Water
- Riparian Buffer Ordinance/Mgt.
- Municipal Water Use Analysis
- Groundwater Recharge
- Partnering Across Municipalities
- List continually updated

Gold Star Standard in Water

Potential Required Actions and Structure for Water Gold

- **Required:** Water Story, Environmental Resource Inventory, Integrated Water Management Planning
- **Water Resources Road Map:** Developed through coordination between Water Gold Jury and Municipality
  - 2 additional actions will be required based needs identified through the required actions

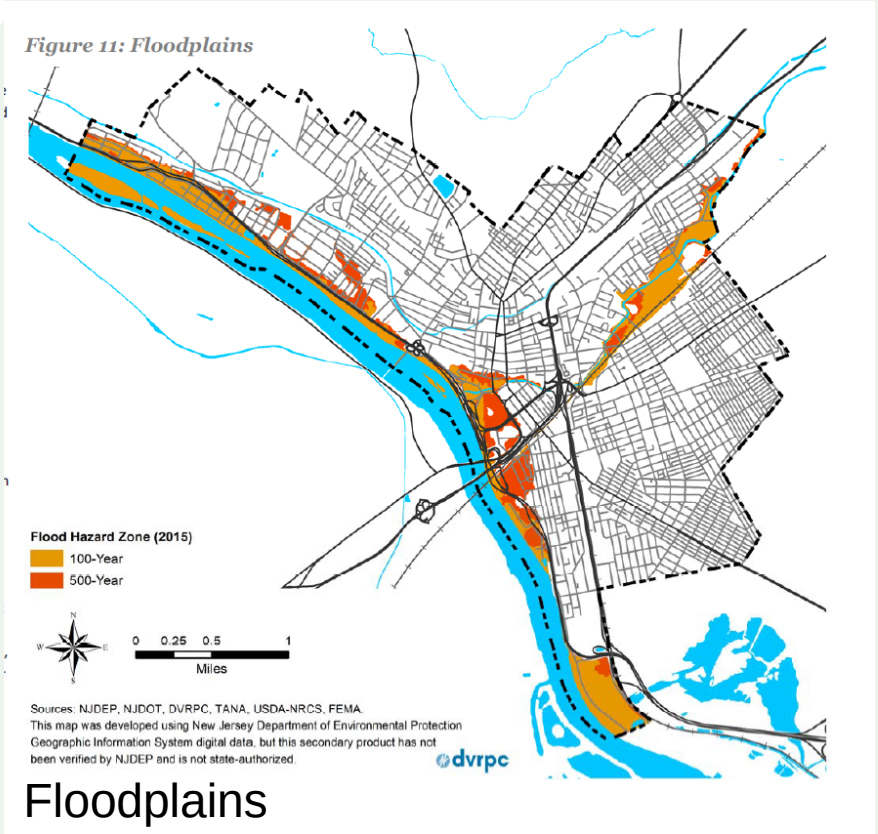
Figure 1. Examples of Interrelationships Between Water and Energy



Source: U.S. Department of Energy, Energy Demands on Water Resources, Report to Congress on the Interdependency of Energy and Water, December 2006, p. 13.

Municipal Water Story

- Describe Water Supply
- Describe Stormwater (runoff) and wastewater (sewer)
- Water features
- Identification of Water Issues
- Outreach



Floodplains

From Water Story to Action

Water-related Issue	Sustainable Jersey Action
Areas of repetitive street flooding – standing water after heavy rains.	Enhanced Stormwater Control Ordinance ***
	Green Infrastructure Planning***
	Green Infrastructure Implementation***
	Restoring and Protecting Ground Water Recharge
Quality of drinking water	Lead in Drinking Water
	Private Well Testing
	Riparian Ordinance
Streams water quality impairments as well as undercutting and eroding	Riparian Ordinance
	Enhanced Stormwater Control Ordinance***
	Green Infrastructure Planning***
	Green Infrastructure Implementation***
Water availability	Integrated Water Planning
	Outdoor water conservation***
	Restoring and Protecting Groundwater Recharge

*** = Action currently available on Sustainable Jersey website

Jennifer Feltis Cortese, AICP

NJ Department of Environmental Protection

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Your Water Story: Building Block for Water Gold

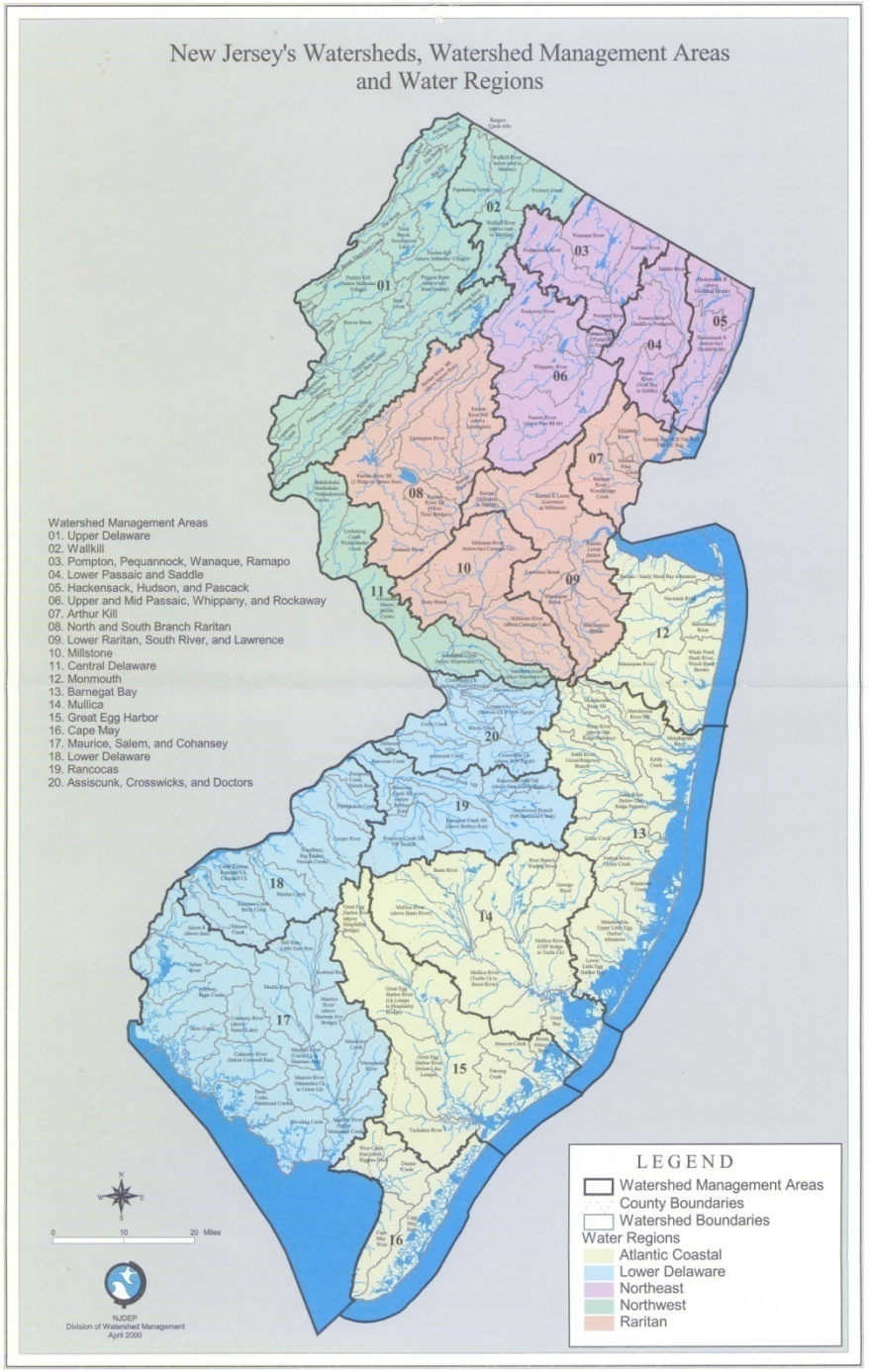
Partnering with Watershed Associations

Mike Pisauro
Policy Director
The Watershed Institute

June 14, 2019

The Watershed Institute

Your water. Your environment. Your voice.



NJ's Watersheds

5 "Water Regions"

20 "Watershed Management Areas"

30 Active Watershed Associations

Watershed Group Locator

Where is your local watershed organization?

Check out the map and alphabetical listing of New Jersey watershed organizations below! Click on the map for links to more information about each organization.

thewatershed.org/group-locator/

Watershed organizations want to work with you to:

- **Improve understanding of local/regional water issues**
- **Coordinate education programs, clean-ups, etc.**
- **Collaborate on stream monitoring programs**
- **Strengthen municipal ordinances, policies & practices**
- **ACHIEVE WATER GOLD**

Watershed organizations are a great source of information about your Water Story:

- **Drinking water sources and threats to drinking water**
- **Water quality in local streams**
- **Potential locations for green infrastructure**
- **Opportunities for inter-municipal water planning**

Case Studies: Watersheds working with municipalities

- **Impervious cover assessments & SW reduction action plans**
- **Revisions to SW ordinances**
- **Implementing SW mitigation plans**

Impervious Cover Assessment And Reduction Action Plan

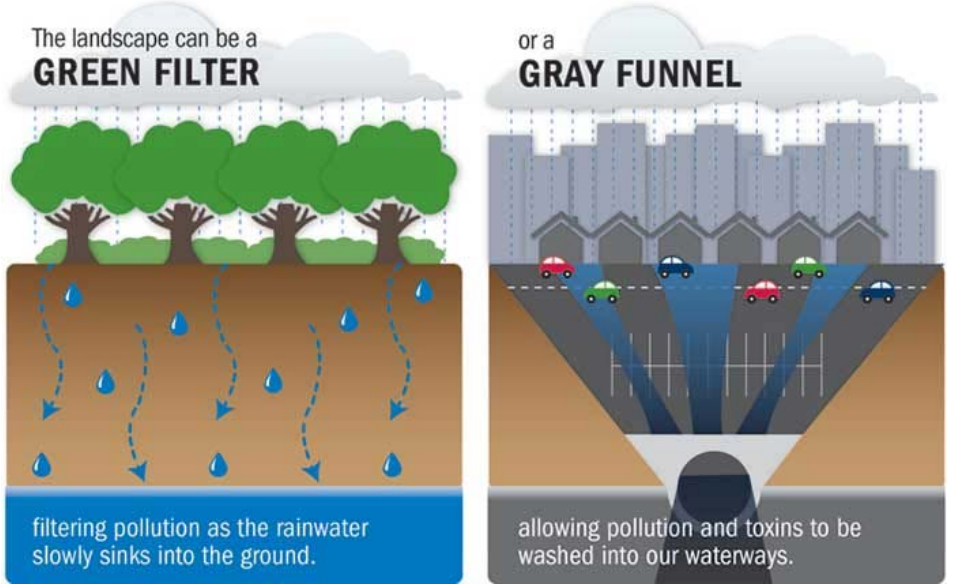
Prepared for Princeton

by The Watershed Institute

NJDEP Funded Non-Point Source Pollution Project

PROJECT GOALS:

1. **Assess Impervious Cover, Runoff, & Pollutant Loading.**
2. **Design Potential Action Plan to Reduce Impacts & Assess Municipal Policy.**
3. **Provide a "Road Map" to Reduce Flooding and Achieve the Raritan River Water Quality Standards (TMDL).**



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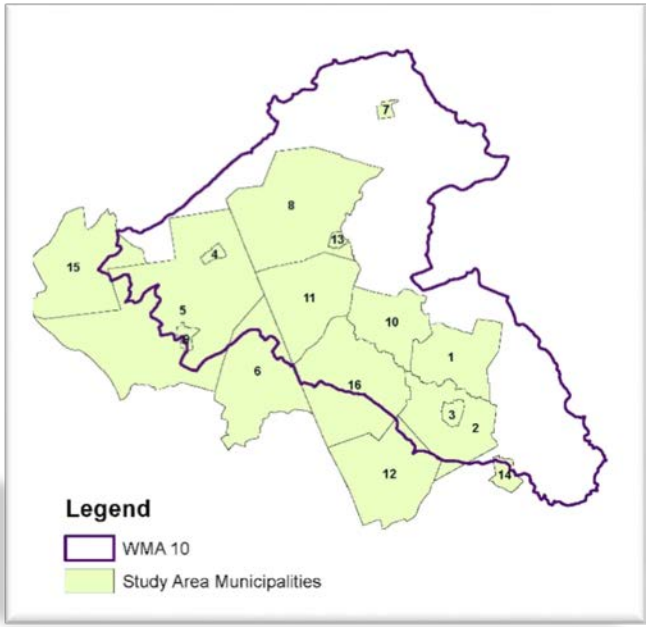
Impervious Cover Assessment & Reduction Action Plans (ICA/RAP)

Separate Plans for each of 16 municipalities:

1. **Prepare land use & impervious cover site assessments for 25-40 sites.**
   - Aerial selection; map making & calculations of impervious cover, runoff & pollutant loading;

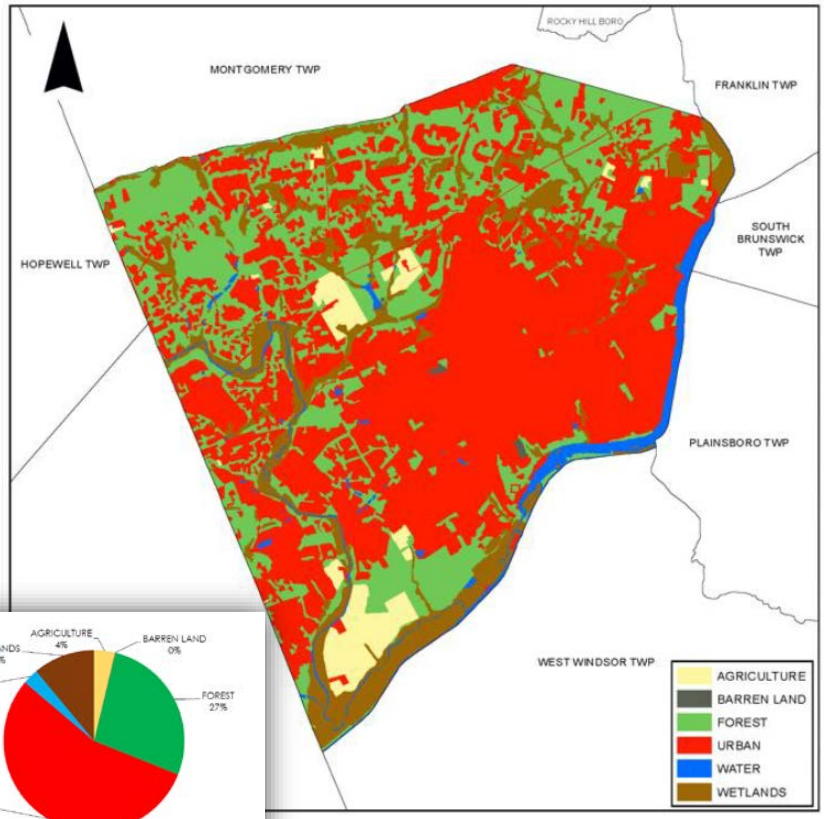
     site visits
2. **Policy review & stakeholder interaction.**
   - Review & suggested revisions for Master Plans

     & relevant ordinances
3. **Design Reduction Action Plans for 10-20 sites.**
   - Design green infrastructures/BMPs to achieve a certain amount of reduction; calculate potential for runoff & pollutant reduction for each
4. **Select 1-3 Reduction Action Plans to implement.**



Land Use and Impervious Cover Assessments

Land Use Assessment for Princeton



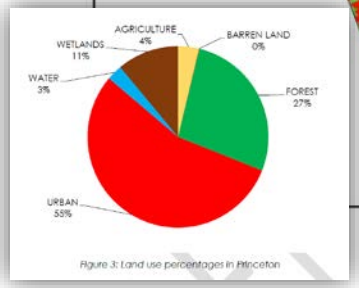
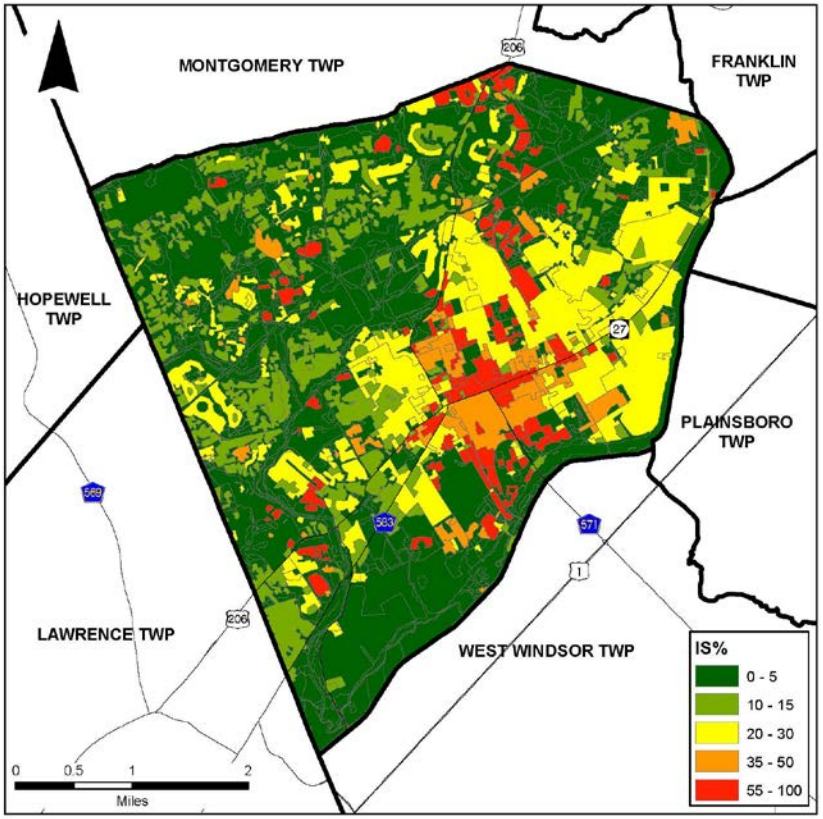


Figure 3: Land use percentages in Princeton

Impervious Cover in Princeton



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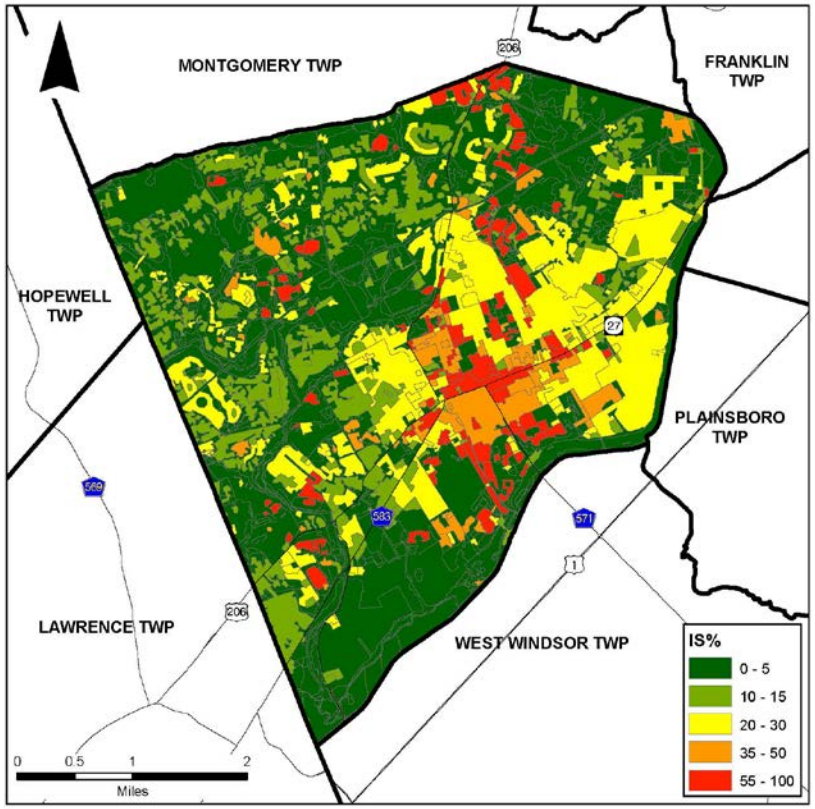
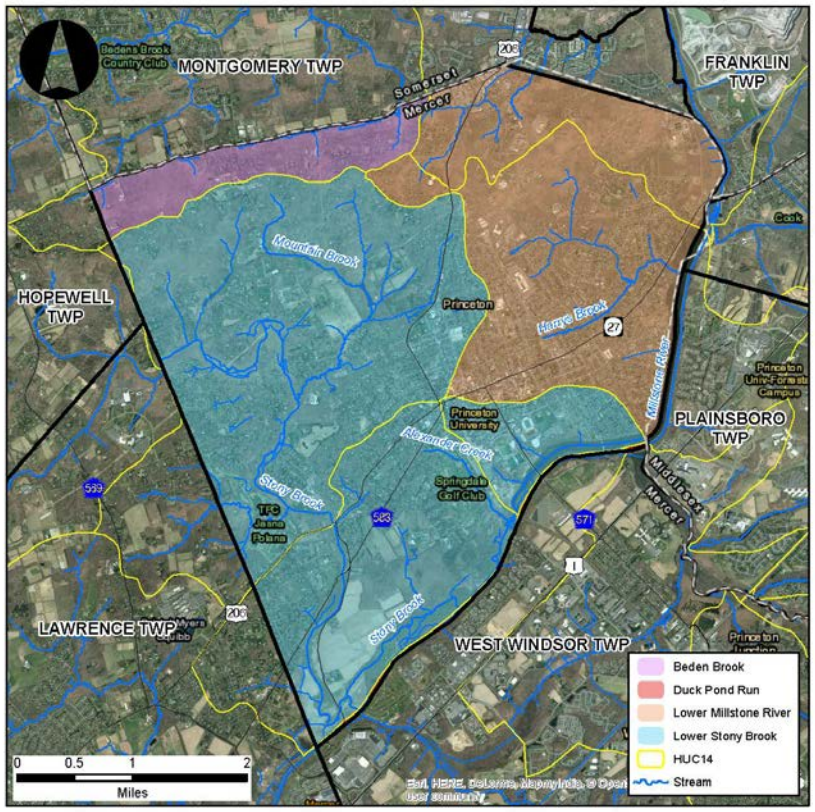
Land Use and Subwatershed Assessments

Impervious Cover in Princeton



Subwatershed & HUC14 of Princeton



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Aerial Assessments – Impervious Cover, Runoff, & Pollution

Subwatersheds & HUC14s of Princeton

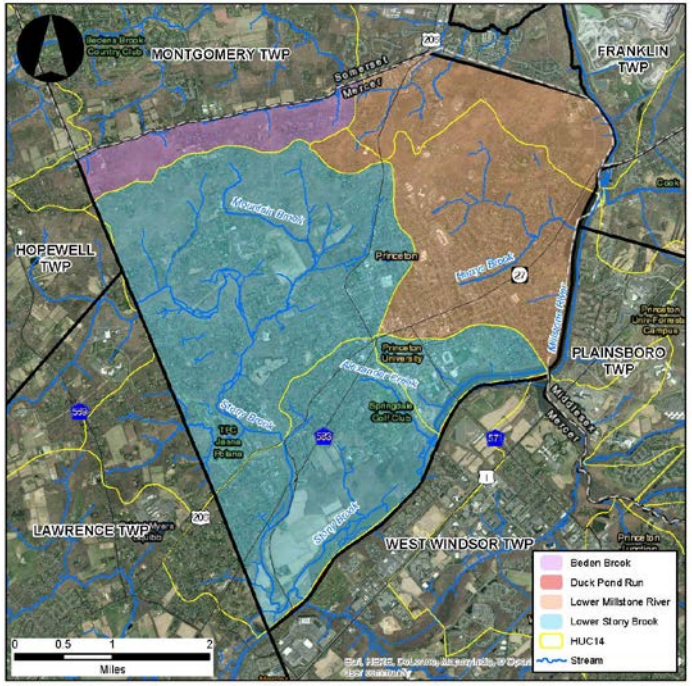

Table 1: Impervious cover analysis by subwatershed for Princeton

Subwatershed	Total Area		Land Use Area		Water Area		Impervious Cover		
	(ac)	(mi²)	(ac)	(mi²)	(ac)	(mi²)	(ac)	(mi²)	(%)
Beden Brook	750.18	1.17	748.57	1.17	1.61	0.00	42.64	0.07	5.70%
Duck Pond Run	57.07	0.09	32.63	0.05	24.44	0.04	0.06	0.00	0.18%
Lower Millstone River	3,733.88	5.83	3,631.49	5.67	102.39	0.16	727.42	1.14	20.03%
Lower Stony Brook	7,242.38	11.32	7,044.39	11.01	197.99	0.31	880.94	1.38	12.51%
Total	11,783.54	18.41	11,457.09	17.90	326.45	0.51	1,651.06	2.58	14.41%

Table 2: Stormwater runoff volumes from impervious surfaces by subwatershed in Princeton[4]

Subwatershed	Total Runoff Volume for the 1.25" NJ Water Quality Storm (MGal)	Total Runoff Volume for the NJ Annual Rainfall of 46.94" (MGal)	Total Runoff Volume for the 2-Year Design Storm (3.30") (MGal)	Total Runoff Volume for the 10-Year Design Storm (5.01") (MGal)	Total Runoff Volume for the 100-Year Design Storm (8.32") (MGal)
Beden Brook	1.4	54.3	3.8	5.8	9.6
Duck Pond Run	0.0	0.1	0.0	0.0	0.0
Lower Millstone River	24.7	927.1	65.2	99.0	164.3
Lower Stony Brook	29.9	1,122.8	78.9	119.8	199.0
Total	56.0	2,104.3	147.9	224.6	373.0

Suggested Goals for Reduction/Mitigation of Impervious Cover, Runoff, & Pollution

Table 3: Impervious cover reductions by subwatershed in Princeton

Subwatershed	Recommended Impervious Cover Reduction/Mitigation (10% in acres)	Annual Runoff Reduction (Mgal)
Beden Brook	4.3	5.43
Lower Millstone River	72.7	92.71
Lower Stony Brook	88.1	112.28
Total	165.1	210.42

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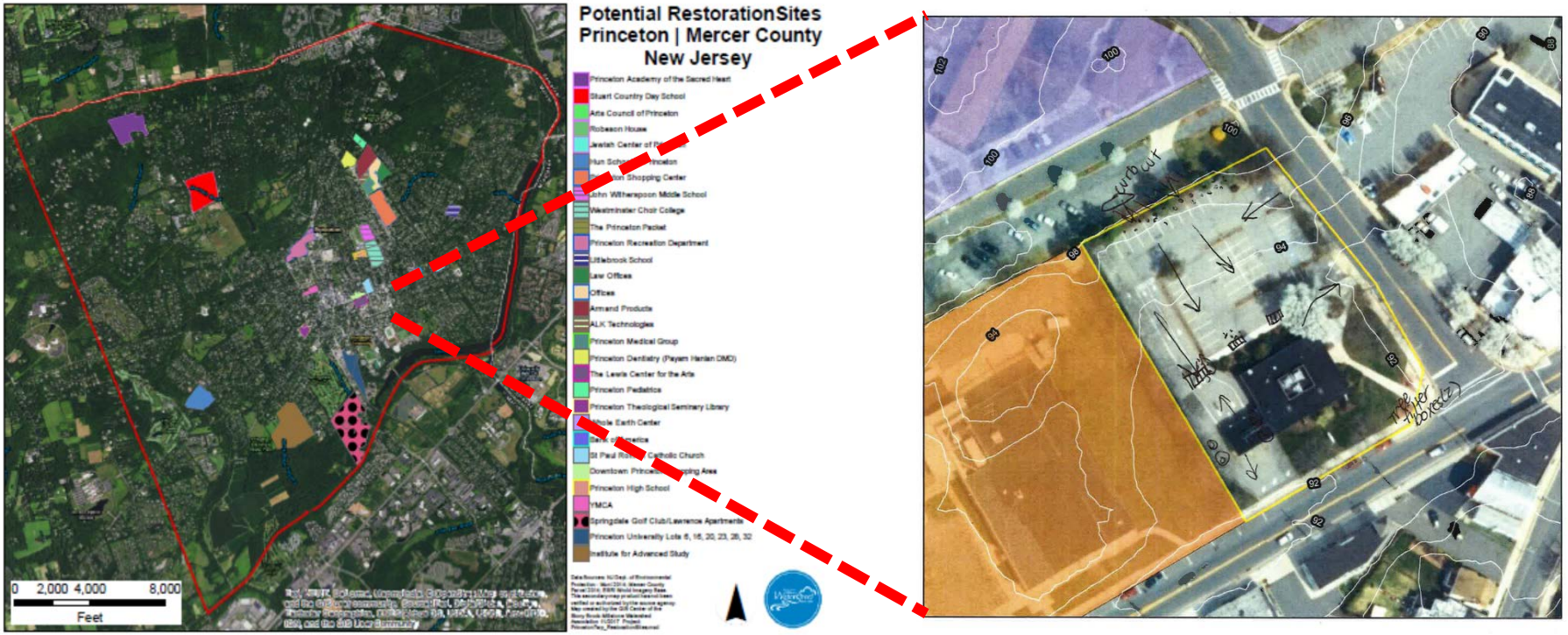
Aerial Site Selection → Site Visit/Assessment



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Reduction Action Plans - RAP

Appendix C: Summary of Existing Conditions by Site and Subwatershed

SITE NAME	LOCATION			PROPERTY AREA	IMPERVIOUS COVER AREA		EXISTING ANNUAL LOADS (lb/yr)			RUNOFF VO	
	ADDRESS	BLOCK	LOT	(ac)	(ac)	Percent of Site	TP	TN	TSS	Water Quality Storm	Two St
BEDEN BROOK SUBWATERSHED											
Princeton Academy of the Sacred Heart	1128 Great Road	301	3	43.41	3.58	8.2%	1.94	19.40	232.74	65,833	17
Beden Brook Subwatershed Total				**43.41**	**3.58**	**8.2%**	**1.94**	**19.40**	**232.74**	**65,833**	**17**
LOWER MILLSTONE RIVER SUBWATERSHED											
ALK Technologies	457 North Harrison Street	5502	2	4.94	2.95	59.8%	6.20	64.90	590.00	100,379	26
Armand Products	469 North Harrison Street	5502	3	21.90	6.85	31.3%	14.39	150.79	1,370.80	232,796	61
Bank of America	360 Nassau Street	32.01	171 & 172	1.46	1.46	100.0%	1.46	14.55	174.60	49,391	13
Clock Building	1000 Herrontown Road	901	19	1.37	0.99	72.3%	0.99	9.92	119.09	33,685	86
Educational Testing Service	660 Rosedale Road	7801	21	350.07	41.44	12.1%	87.02	911.61	8,287.40	1,441,907	3,80
Jewish Center of Princeton	435 Nassau Street	56.03	170	4.85	2.60	53.6%	2.60	25.99	311.85	88,208	23
John Witherspoon Middle School	217 Walnut Lane	7302	12	11.84	3.79	32.0%	3.79	37.90	454.80	128,672	33
Law Offices	29 Thanet Circle # 201	5502	5	9.07	2.81	30.9%	2.81	28.10	337.20	95,246	2
Littlebrook School	39 Magnolia Lane	5803	1	10.12	2.75	27.2%	2.75	27.53	330.36	93,434	

Appendix : Summary of Proposed Green Infrastructure Practices by…

GREEN INFRASTRUCTURE PRACTICE BY SITE	IMPERVIOUS DRAINAGE AREA		SIZE OF PRACTICE		PERCENTAGE OF SITE IMPERVIOUS COVER TREATED	REMOVAL POTENTIAL (lb/yr)[1]			MAX VOLUME REDUCTION POTENTIAL (gal/2-yr storm)[1]	RECHARGE POTENTIAL (gal/year)[1]
	(ac)	(sq ft)	(ac)	(sq ft)		TP	TN	TSS		
BEDEN BROOK SUBWATERSHED										
Princeton Academy of the Sacred Heart										
Bioswale 1	0.06	2,762	0.01	440	1.8%	0.01	0.03	1.09	5,682	76,480
Bioswale 2	0.29	12,755	0.05	2,033	8.2%	0.03	0.14	5.04	26,239	353,181
Rain Garden 1	0.72	31,155	0.27	11,862	20.0%	0.16	0.82	29.41	64,091	862,671
Rain Garden 2	0.57	24,699	0.22	9,368	15.8%	0.13	0.65	23.23	50,809	683,894
Vegetated Swale	1.62	70,756	2.18	94,789	45.4%	0.65	6.53	182.79	145,555	1,959,193
Site Total	**3.26**	**142,127**	**2.72**	**118,493**	**91.2%**	**0.98**	**8.16**	**241.56**	**292,376**	**3,935,418**
Beden Brook Subwatershed Total	**3.26**	**142,127**	**2.72**	**118,493.34**	**91.2%**	**0.98**	**8.16**	**241.56**	**292,376**	**3,935,418**
LOWER MILLSTONE RIVER SUBWATERSHED										
Clock Building										
Rain Garden 1	0.28	12,007	0.11	4,967	27.8%	0.07	0.34	12.31	24,701	332,475
Porous Pavement	0.29	12,491	0.04	1,717	28.9%	0.02	0.20	3.79	25,695	345,860
Rain Garden 2	0.16	6,784	0.06	2,573	15.7%	0.04	0.18	6.38	13,955	187,832
Site Total	**0.72**	**31,282**	**0.21**	**9,257**	**72.4%**	**0.13**	**0.72**	**22.48**	**64,351**	**866,167**

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Reduction Action Plans - RAP

Reduction Action Plans: GREEN INFRASTRUCTURE & BMP RECOMMENDATIONS

JOHN WITHERSPOON MIDDLE SCHOOL
217 WALNUT LANE

This 11.84 acre site contains 165,000 square feet of impervious cover, creating 4.84 million gallons of stormwater runoff and flushing 497 pounds of pollutants into the Lower Millstone River each year.

Erosion in front of the school would be improved with the installation of two rain gardens to manage roof runoff. The rear portions of the buildings would be drained by naturalizing an existing stormwater basin. The basketball court could be converted to permeable pavement and used as an educational opportunity.

These measures would remediate 78.2% of the site's impervious cover and could remove 46.8 pounds of pollutants from the Lower Millstone River annually and restore 3.58 million gallons of water to the natural water cycle through infiltration to groundwater and evapotranspiration.

Table 1: Site Information

Impervious Cover		Existing Annual Loads (lb/yr)			Runoff Volume (gal)		
Square Footage	Percentage	TP	TN	TSS	Water Quality Storm	Two Year Storm	Annual Rainfall
165,129	32.0%	3.79	37.91	454.90	128,672	339,695	4,838,079

Table 2: BMPs

BMP Type	BMP Area (sq ft)	Reduction Potential (lb/yr)			Maximum Volume Reduction Potential (gal/storm)	Recharge Potential (gal/year)	Estimated Cost
		TP	TN	TSS			
Stormwater Basin Naturalization	6,851	0.09	0.47	16.99	139,646	1,879,651	$34,253.10
Porous Pavement	6,478	0.09	0.74	14.28	96,531	1,299,314	$77,734.20
Rain Garden 1	2,752	0.04	0.19	6.82	14,669	197,449	$13,762.30
Rain Garden 2	2,748	0.04	0.19	6.81	14,785	199,011	$13,741.80
Total	18,829	0.26	1.59	44.90	265,631	3,575,425	$139,491.40

4 BMPs: > 265 Gallons / Storm Captured

The Watershed Institute

Amending the Stormwater Ordinance to Address Flooding and Water Pollution

Princeton Planning Board
Princeton, New Jersey
June 1, 2017

Jim Waltman
Executive Director
Stony Brook-Millstone Watershed Association

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Recommendations for Strengthening Stormwater Ordinances

Watershed's Recommendations:

- **Reduce threshold for definition of "major" development**
- **Create requirements for "minor" developments**
- **Require action for re-development projects**
- **Require maintenance, inspections & reporting on stormwater systems**
- **Require mitigation fee to secure waivers**
- **Emphasize nonstructural techniques & Green Infrastructure**
- **Incorporate TMDL in project review and approvals**

Recommendations for Strengthening Stormwater Ordinances

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- ✓ **Reduce threshold for definition of "major" development**
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- ✓ **Incorporate TMDL in project review and approvals**

MANAGING STORMWATER:

Addressing Flooding & Water Pollution

Hopewell Borough Council

March 4, 2019

Jim Waltman
Executive Director
The Watershed Institute

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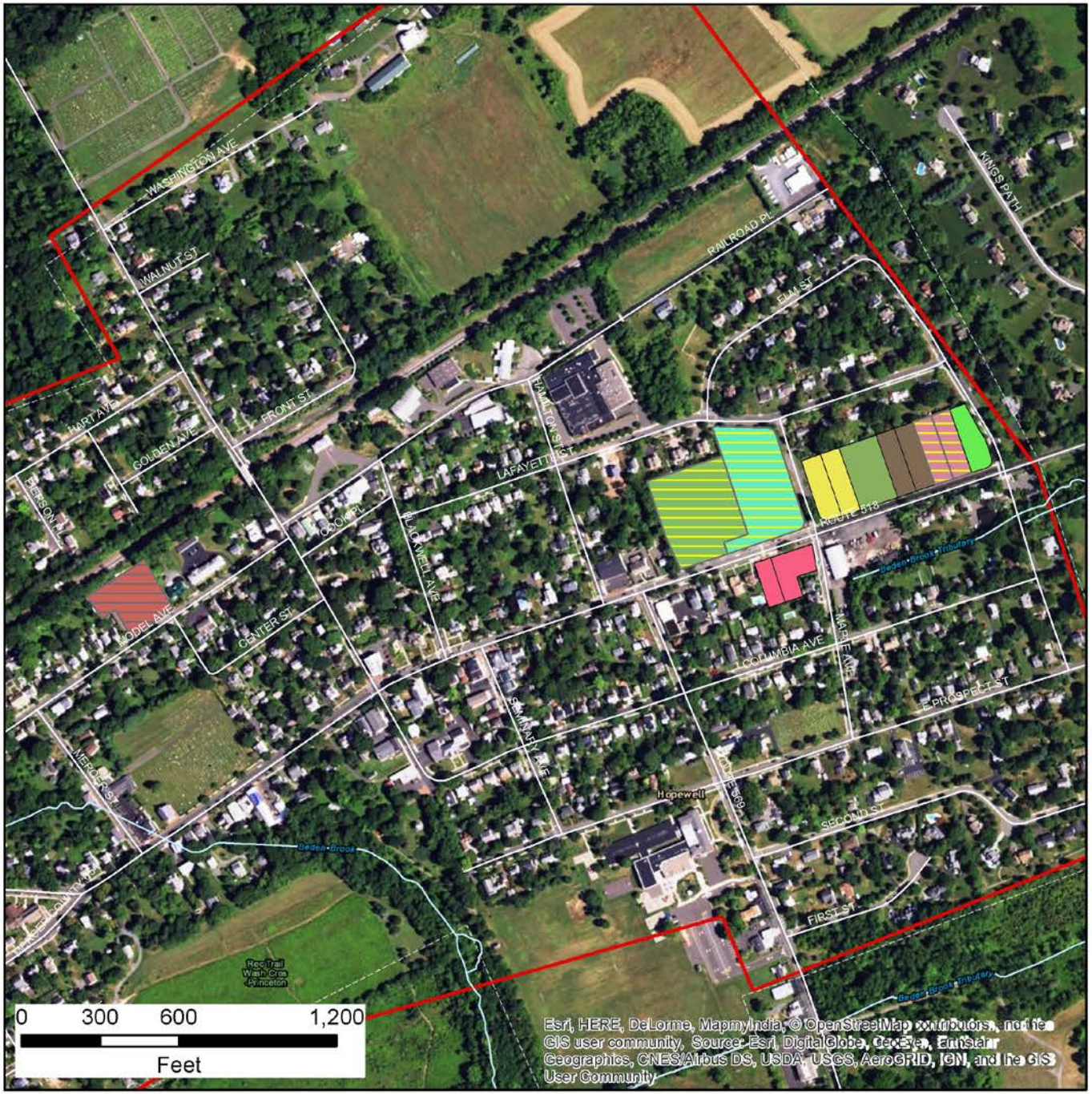
Hopewell Borough/Beden Brook Project

The Watershed has received a grant from NJDEP to design and implement stormwater management projects in Hopewell Borough to address water quality "impairments" in Beden Brook

BOROUGH OF HOPEWELL

Potential Restoration
Hopewell Boro
Mercer County New Jersey



- JC VANDOREN LUMBER & BUILDING
- PNC BANK
- HOPEWELL VILLAGE SQUARE
- DANIELS KENNETH OD
- VERIZON BUILDING
- AMY KARYN INTERIOR DESIGN
- BORO OF HOPEWELL COURT CLERK
- 1ST CONSTITUTION BANK
- BRICK FARM MARKET
- Stream

Data Sources: NJ Dept. of Environmental Protection - Muni 2014; Mercer County Parcel 2014; ESRI Wrold Imagery Base. This secondary map product has not been verified or authorized by the source agency. Map created by the GIS Center of the Stony Brook-Millstone Watershed 11/2017 HopewellBoro_RestorationSites.mxd

Hopewell Borough/Beden Brook Project

Current condition:

Nine properties we've reviewed release 8,077,508 gallons of runoff into Beden Brook

Goals:

Reduce runoff from these properties by 71%

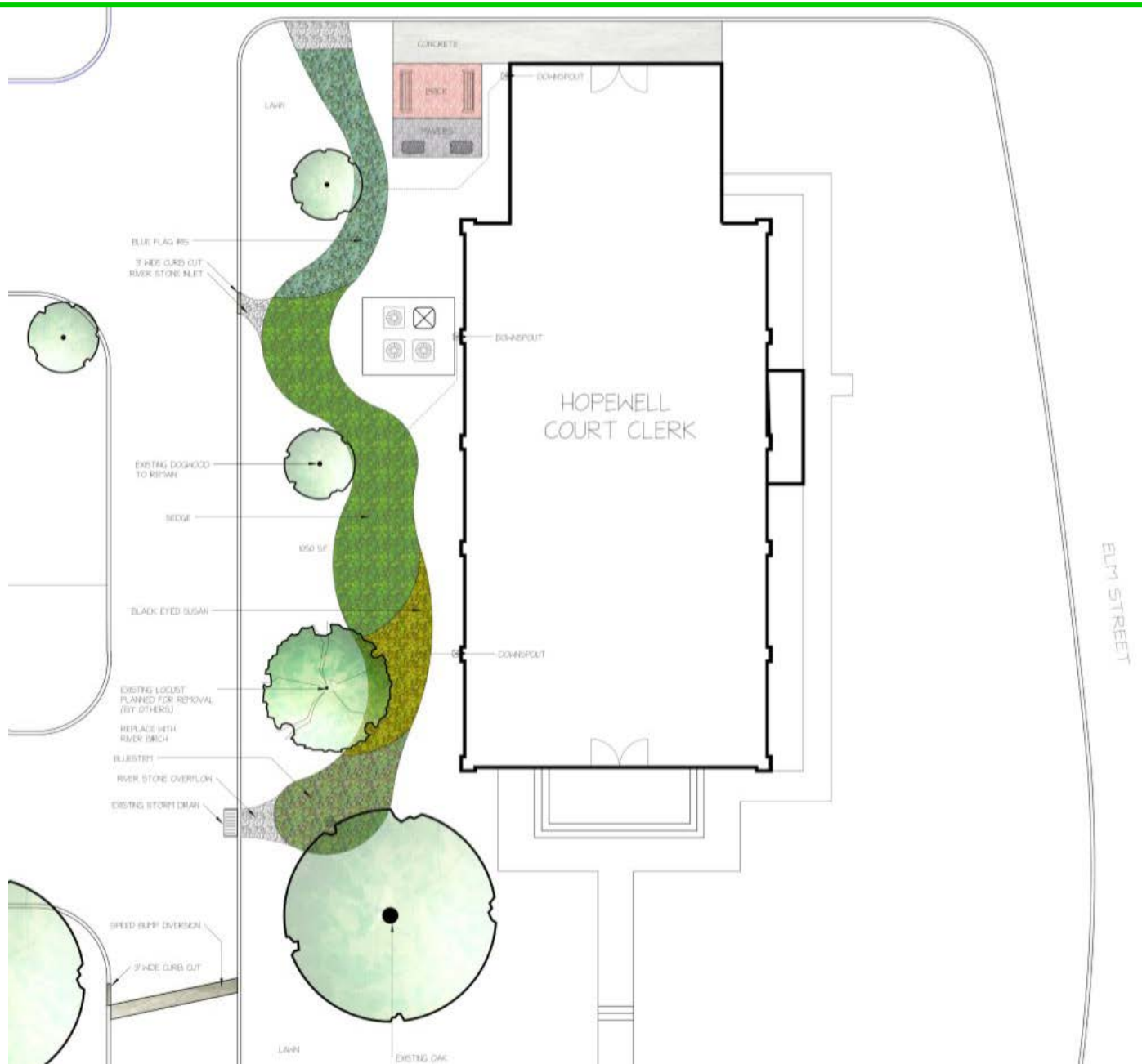
Reduce phosphorous, nitrogen and TSS loading to BB

Create attractive, educational demonstrations of Green Infrastructure that will be widely replicated

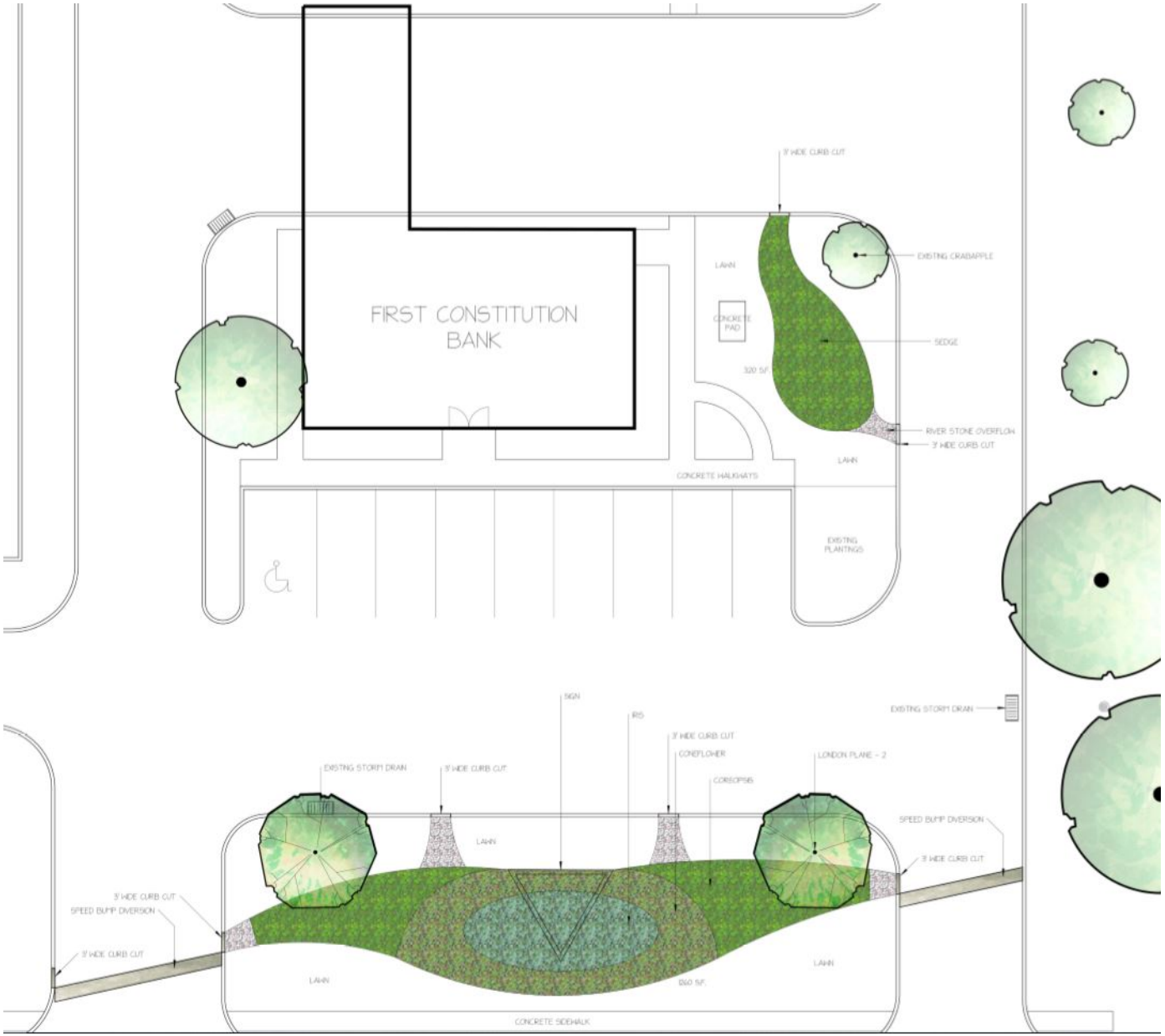
Phase 1

1. Borough of Hopewell Municipal Building
2. 1st Constitution Bank
3. Peasant Grill

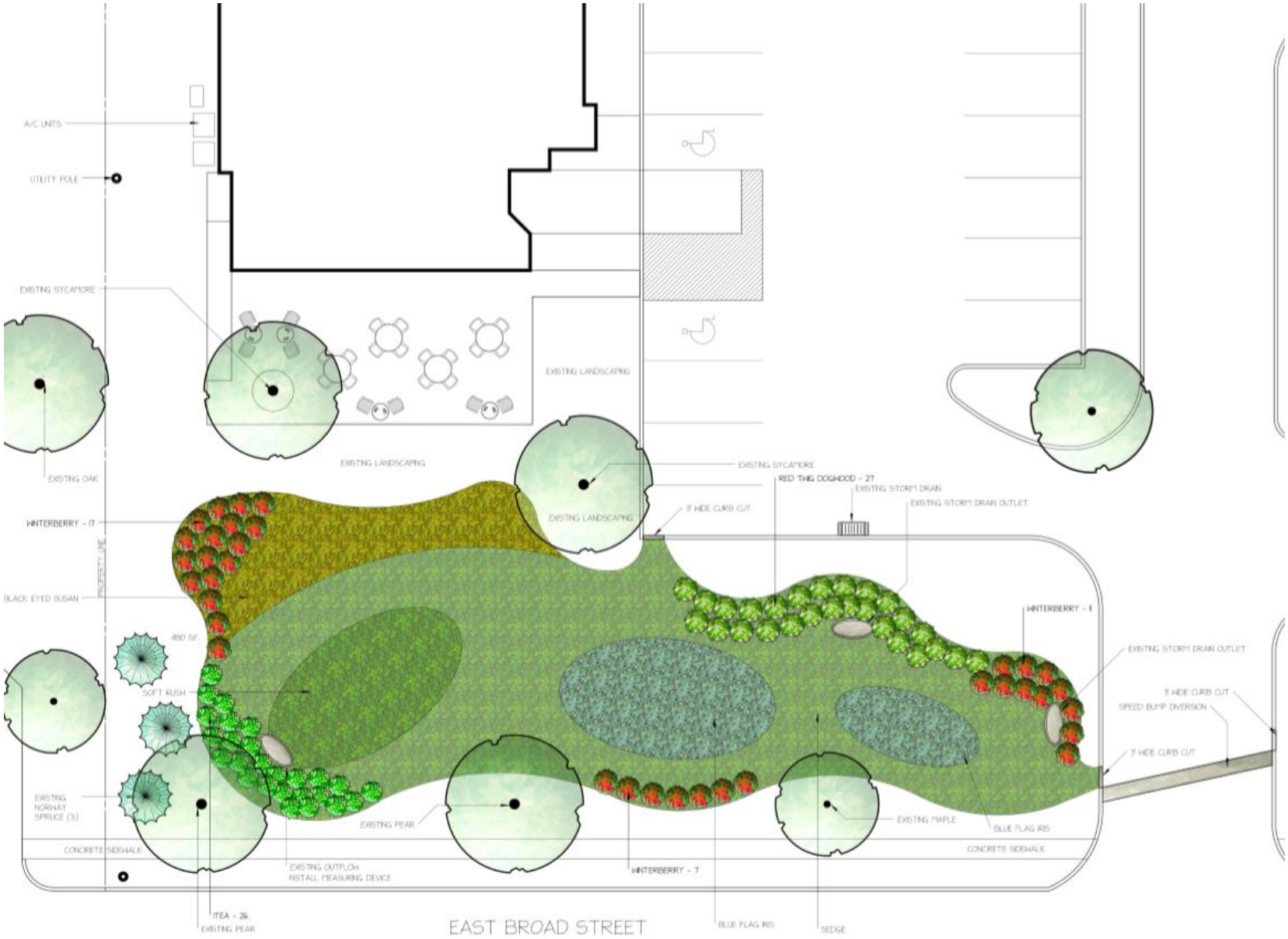
Borough of Hopewell Building



1st Constitution Bank



Peasant Grill



Peasant Grill

Artists Rendering

Phase 1 Calculations

Site	Current Impervious Cover (%)	Current Annual Runoff (gal)*	Annual Regcharge from proposed BMPs (gal)*	% decrease in pollutants**	
1st Constitution Bank	66.20%	723,749	123,301	15.11%	
Hopewell Municipal Building	58.70%	354,854	129,503	32.37%	
Peasant Grill/Baxter	51.80%	572,758	835,445	122.71%	***
Total	**56.22%**	**1,651,361**	**1,088,249**	**58.63%**	

*Annual totals calculated from the New Jersey average annual rainfall (47'')

**Pollutants are a sum of Total Suspended Solids, Total Nitrogen and Total Phosphorous

***The reductions are higher than the current conditions on this site because the drainage area for the BMP extends to other sites)

These totals are calculated from the average annual rainfall from 2018, the impact of this rainfall increase can be seen on the current Beden Brook StreamWatch reportcard

We're Hiring!

New Watershed Resource Center Coordinator will help foster cooperation and collaboration between Watershed Associations, Municipal Green Teams & other interested parties

PLEASE LET US KNOW OF POSSIBLE CANDIDATES

The Watershed Institute

mpisauro@thewatereshed.org

NJ MAP Watershed Explorer for Water Storytelling

John Hasse, Ph.D. Rowan University

Geospatial Research Laboratory

Rowan University


Planet Earth
Planet Water

Water – essence of Life

Watersheds begin in the Sky

Water – flows through environment

Watersheds - connect all things

Water- returns to the sea

We've lost our connection with

water

Rowan University

Rowan University

Rowan University

What is NJ MAP?

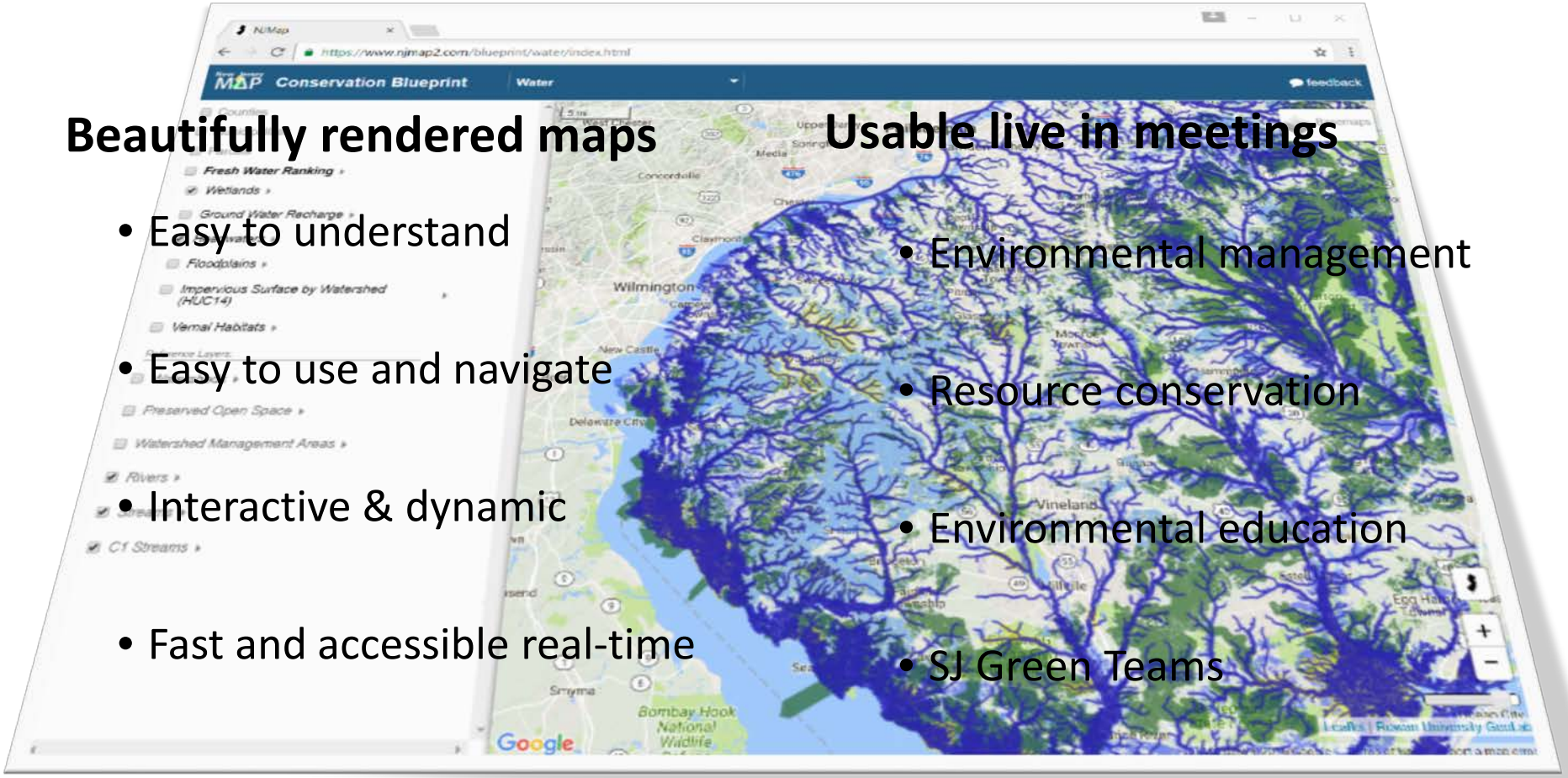
An Interactive Atlas for

- Ecological Resources
- Environmental Education
- Sustainable Communities

Packaged for the GIS non-expert

- Real time access to digital mapping
- map-based story telling of NJ's environment
- Educational laboratory for students to learn digital mapping

NJ MAP Goals



Beautifully rendered maps

- Easy to understand
- Easy to use and navigate
- Interactive & dynamic
- Fast and accessible real-time

Usable live in meetings

- Environmental management
- Resource conservation
- Environmental education
- SJ Green Teams

NJ MAP Proejcts

Conservation Blueprint

Created in partnership with The Nature Conservancy, New Jersey Conservation Foundation and a consortium of 21 conservation-focused groups both governmental and non-profits this series of maps showcase a shared, living blueprint of lands to be protected in the next few decades.

Land Change Viewer

A series of animated maps depicting three decades of land use change and environmental impacts in NJ.

Parcel Explorer

The Parcel Explorer tool allows users to easily find publicly available information about individual tax parcels in NJ.

Watershed Explorer

This interactive map features water resources in New Jersey in an effort to allow users to examine the important role plays in the culture, industry and history of our state.

Municipal Buildout Modeler

This municipally-focused portal is focused on graphically depicting the correlation between nitrate pollution levels and municipal zoning scenarios, including current zoning ordinances and user provided alternative zoning.

Municipal Landuse Dashboard

Maps and data graphics that communicate statistics for each of NJ's 565 towns.

NJ Watershed Explorer

- Interactive map to visualize the environment from a Watershed perspective
- Digital Watershed Field Guide for Natural Resources
- Platform to tell the story of the watershed

Driving Questions

In what ways are human activities impacting the hydrologic system?

In what ways is the hydrologic system part of the human experience?

Can geospatial storytelling tools help shift human interaction with the hydrologic system?

to foster sustainability, resilience, restoration, enhancement, climate change mitigation?

~~Watersheds are an integral part of our communities.~~
Communities are an integral part of our Watersheds.

Telling a Municipal Water Story

Water Story Action

Water Story Action

Action Title and Number of Points (Points 10)

Municipalities that undertake this action will gain a holistic understanding of water, the role that water plays in their community and how it moves through their environment. This overall understanding will serve as a basis for acting to improve water quality, supply and access. In addition, the Water Story will be an entry point and required prerequisite action for communities pursuing the Gold Star in Water.

There are three steps to this action:

(1) develop a narrative that brings together and summarizes essential information characterizing municipal water resources, governance, issues and values,

(2) reach out to a wide segment of municipal residents in order to gather their water stories in order to enrich, refine and validate the narrative, and

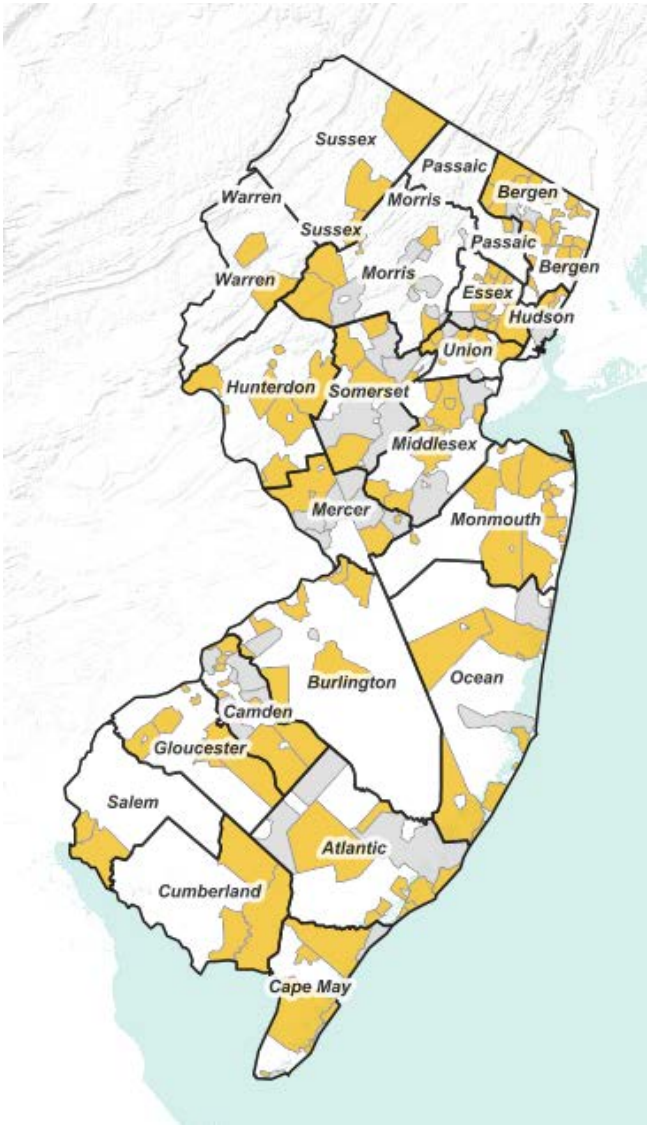
(3) analyze and synthesize the municipal data.

All three steps must be completed within 2.5 years of the date the certification application is submitted.

Why is it important?

Each municipality has its own individual water story and often, it is a complex one. Shaped by

Every Municipal Water Story is Unique



Sustainable Jersey Certified Municipalities

Water Story Elements

- Water Resources in Your Community
- Access to Water
- Water Quality Issues
- Water Supply
- Wastewater
- Stormwater
- Synthesis
- Ranking of Water Issues
- Community Participation

Water Resources in Your Community

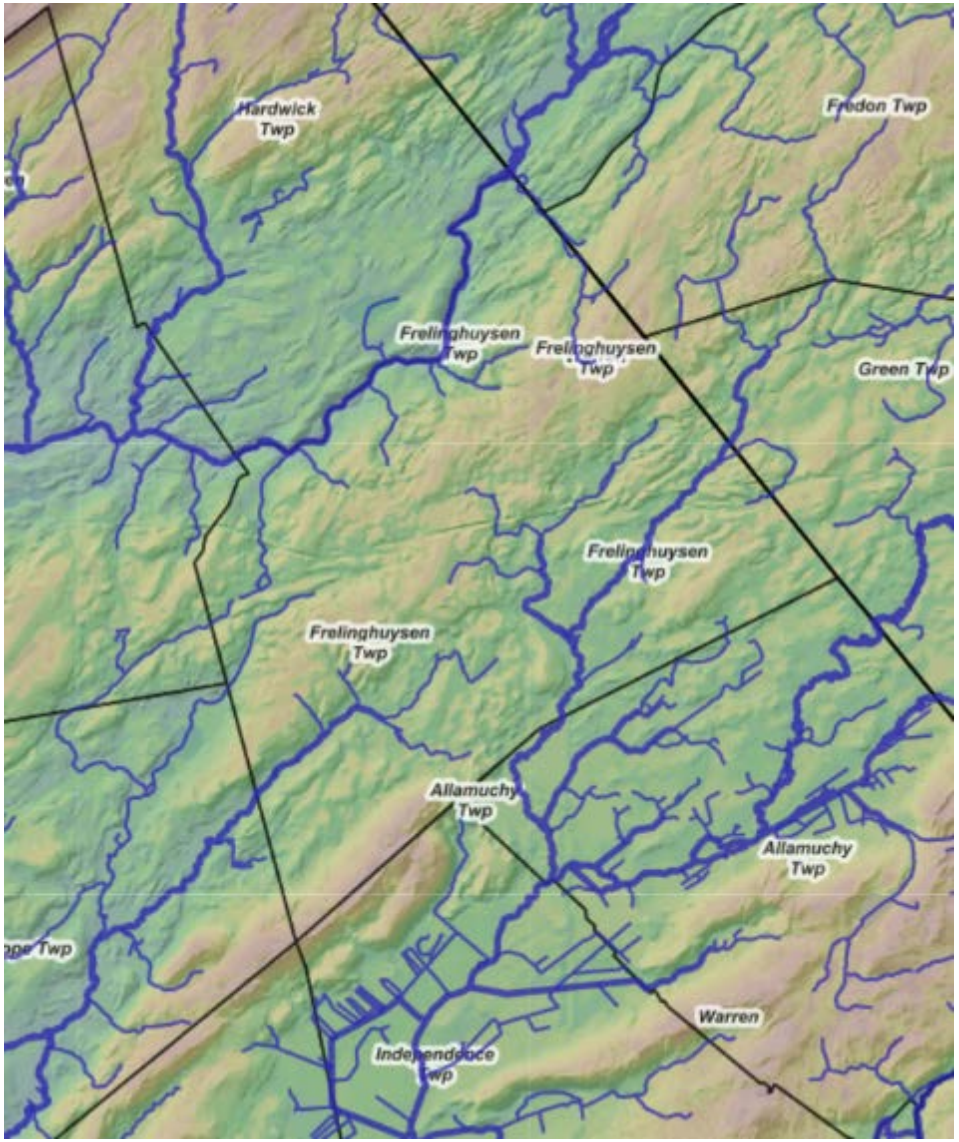
"Write a narrative describing your water resources and how water flows through your community."

- Geography of Watersheds
  - HUC 14
  - HUC 11
  - WMA
  - Where situated in watershed?
  - Upstream municipalities
  - Downstream municipalities

Describing Water Resources

Hydrologic Features

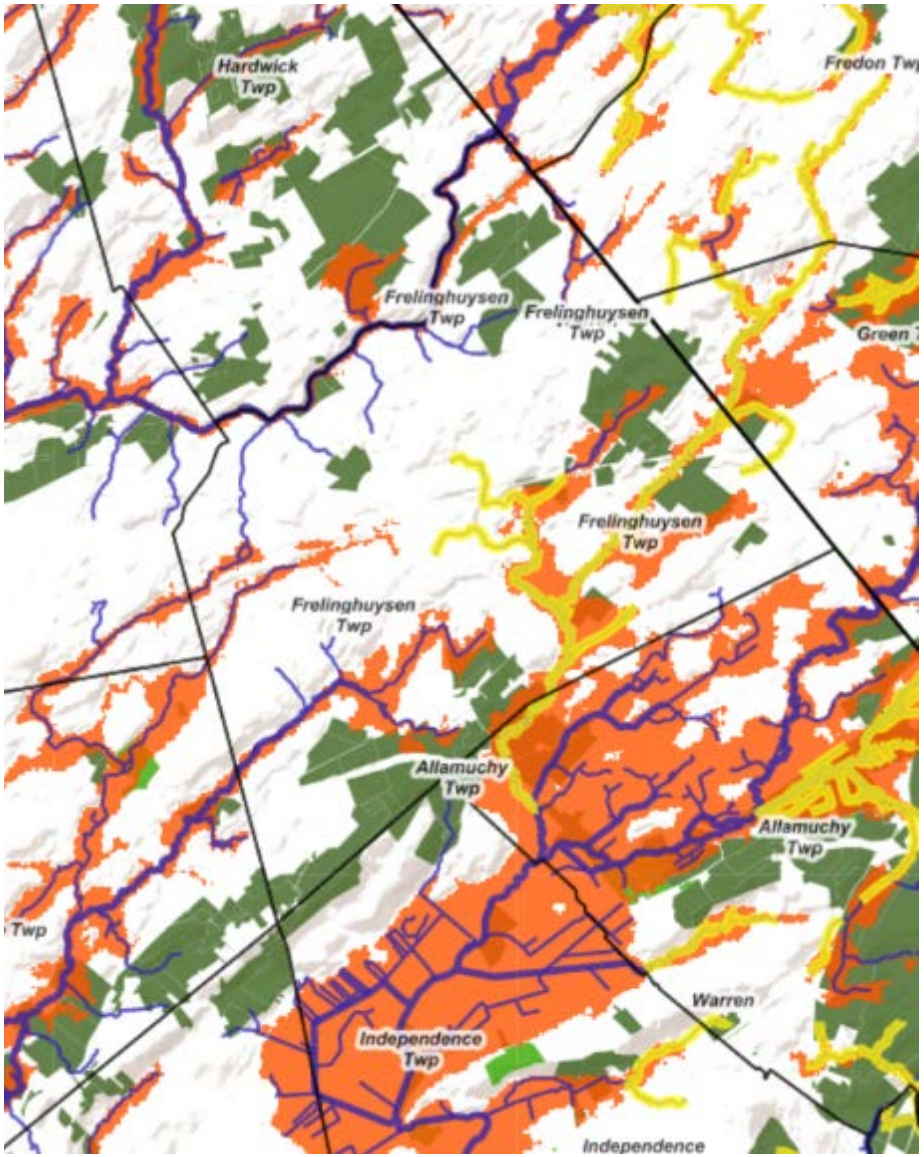
- Streams
- Waterbodies
- Coastal frontages
- Location of Wetlands
  - Tidal
  - Freshwater



Describing Water Resources

Significant Water Landscapes

- How do people use water resources
- Wildlife in the water resource
- Category 1 Streams
- Flooding



Access to Water

- Wetland Boardwalks
- Beaches
- Boat / canoe launces
- Waterfront parks
- Fishing or swimming
- Other

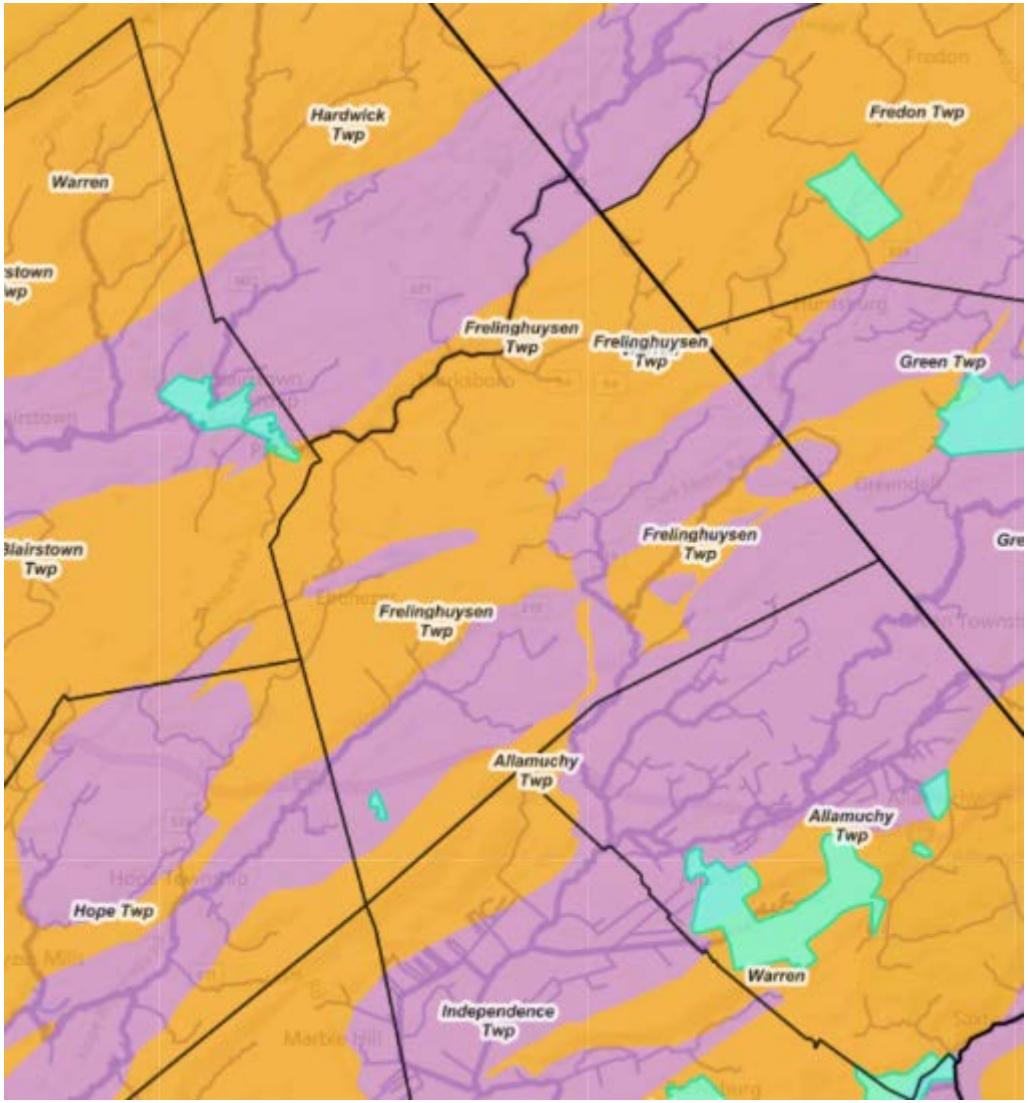
Water Resource Quality Issues

- Stream blockages
- Animal waste
- Safety for recreation
- Storm water management damage
- Water quality impairment

Water Supply

Drinking Water Sources

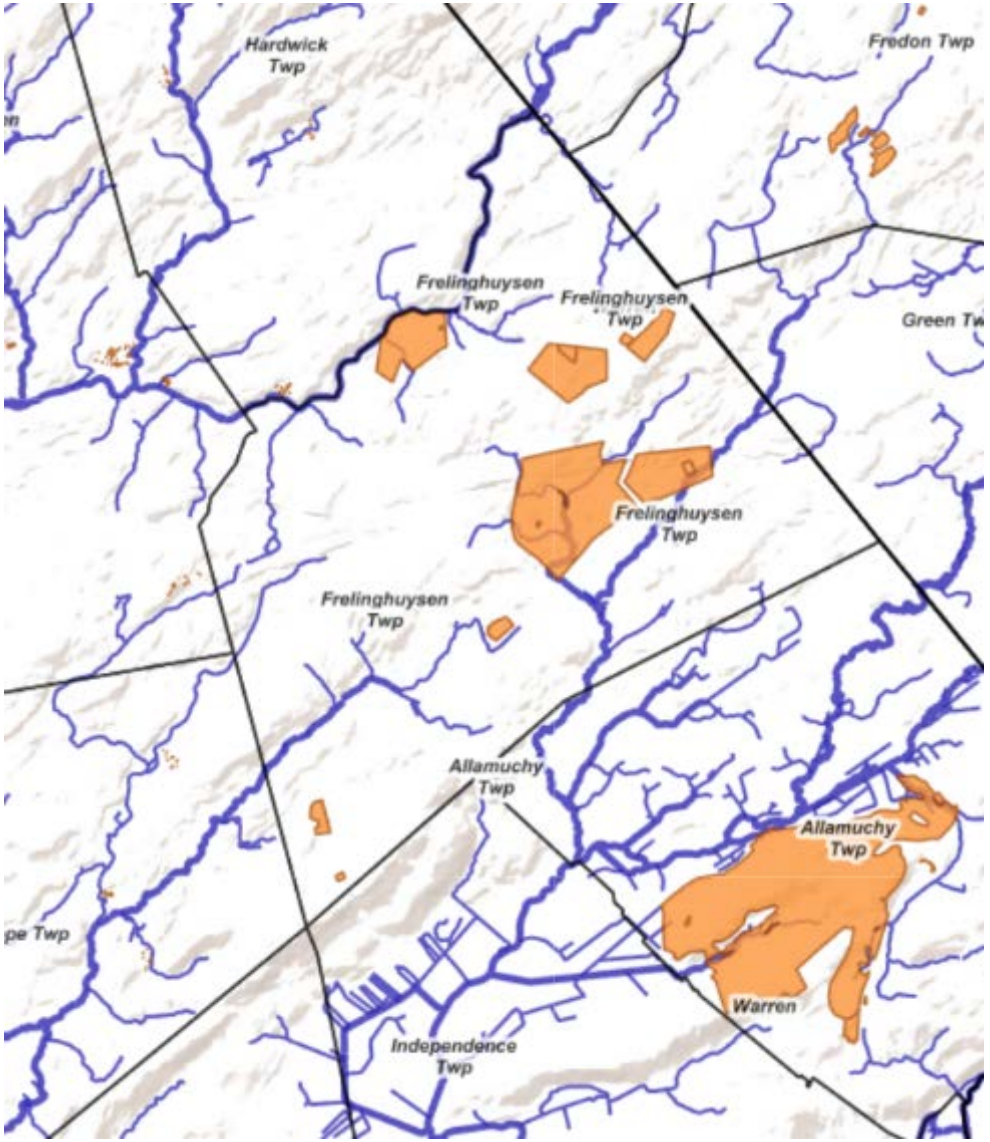
- Public Community Water Systems (PCWS)
- Source of water
- Potential for Lead?
- Known issues in adjoining municipalities



Wastewater

Disposing of Sewage

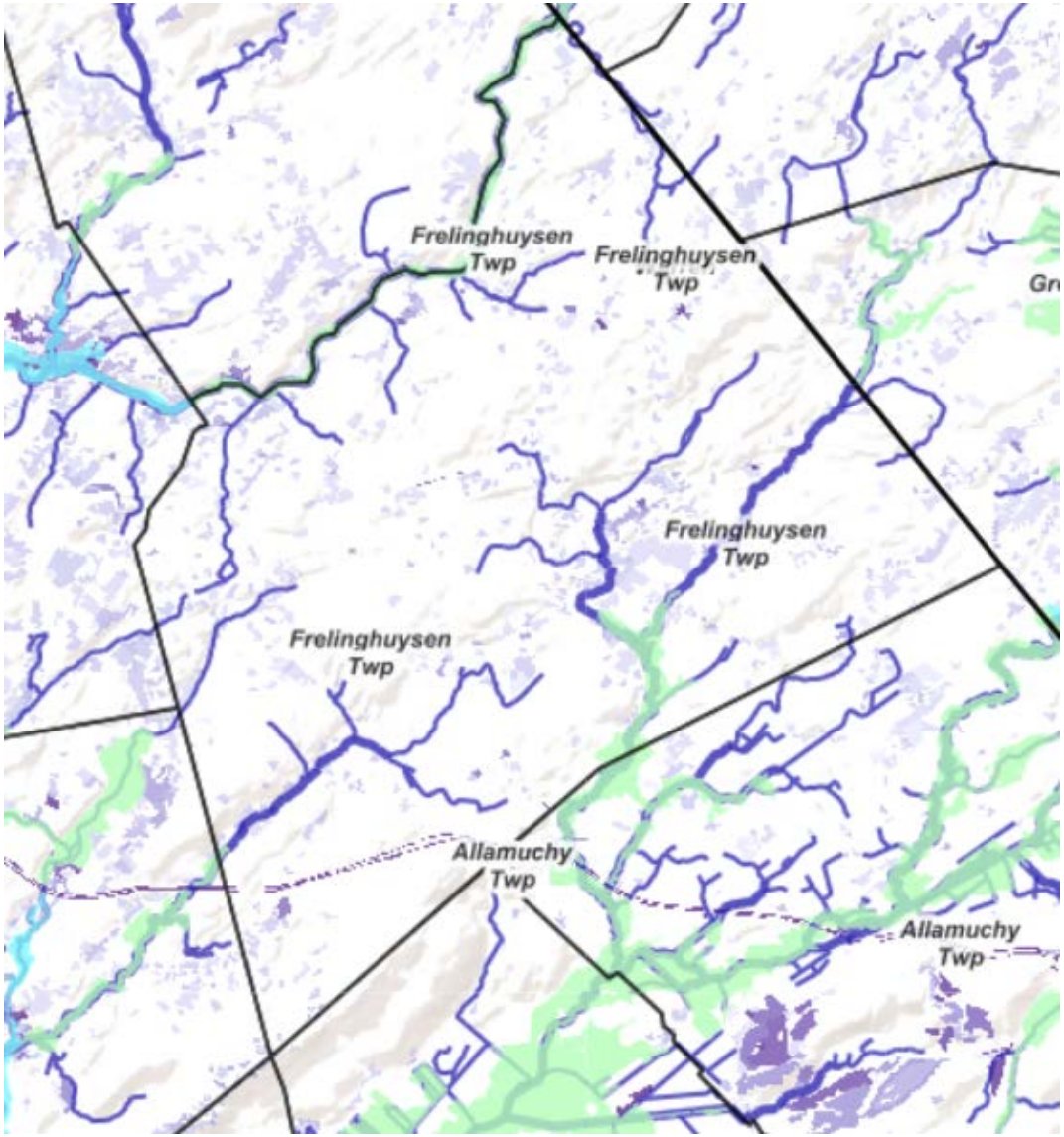
- Public Sewage Utility Facility
- Community Septic
- Individual Septic
- Waste Water Management Plan
- Combined Sewer/Stormwater Overflow systems
- Hydric Soils



Stormwater

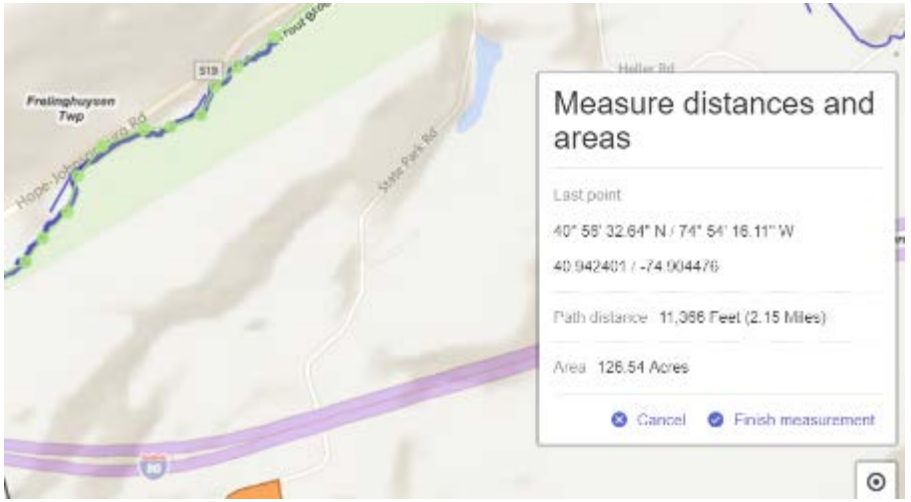
Runoff and Flooding

- Municipal Storm Sewer Systems (MS4)
- Evidence of excessive high-velocity discharge?
- Impervious Cover
- Retention Basins
- Flood zones



Synthesize the information

- Miles of stream/rivers
- Miles of coastal / tidal frontage
- Percent of municipality served by public infrastructure
- Top water issues
- Coordination with other municipalities?

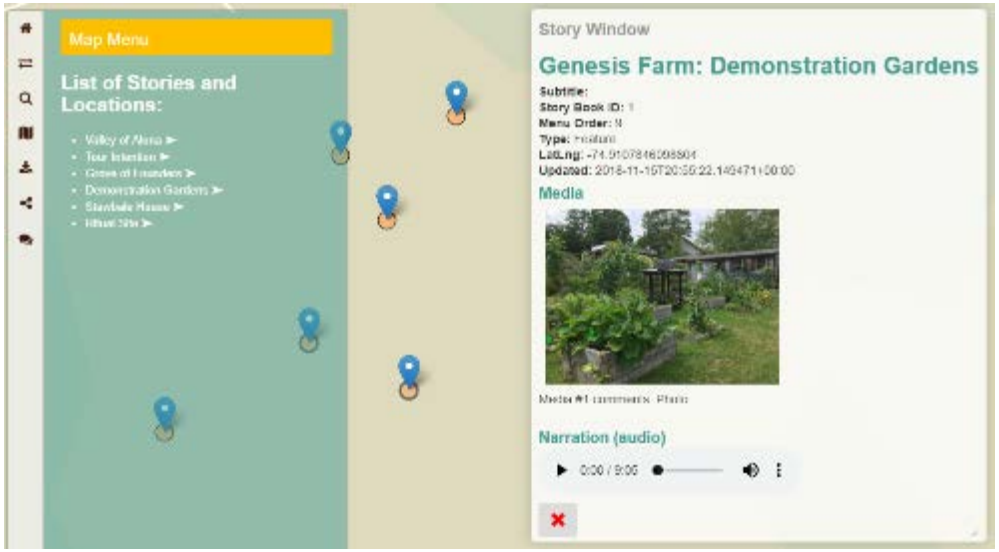


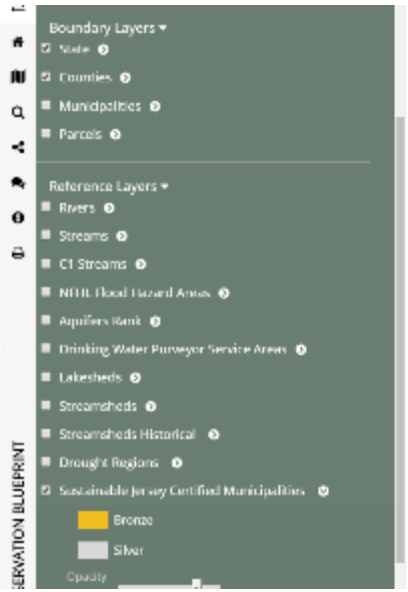
Community Participation

- Share information
- Engage community to share importance and meaning of story
- Inform and inspire community participation
- Present to Local Government
- Available for Review on Website
- Deptford Library Water Story Pantry
- Camden Boat Building Project Back Channel

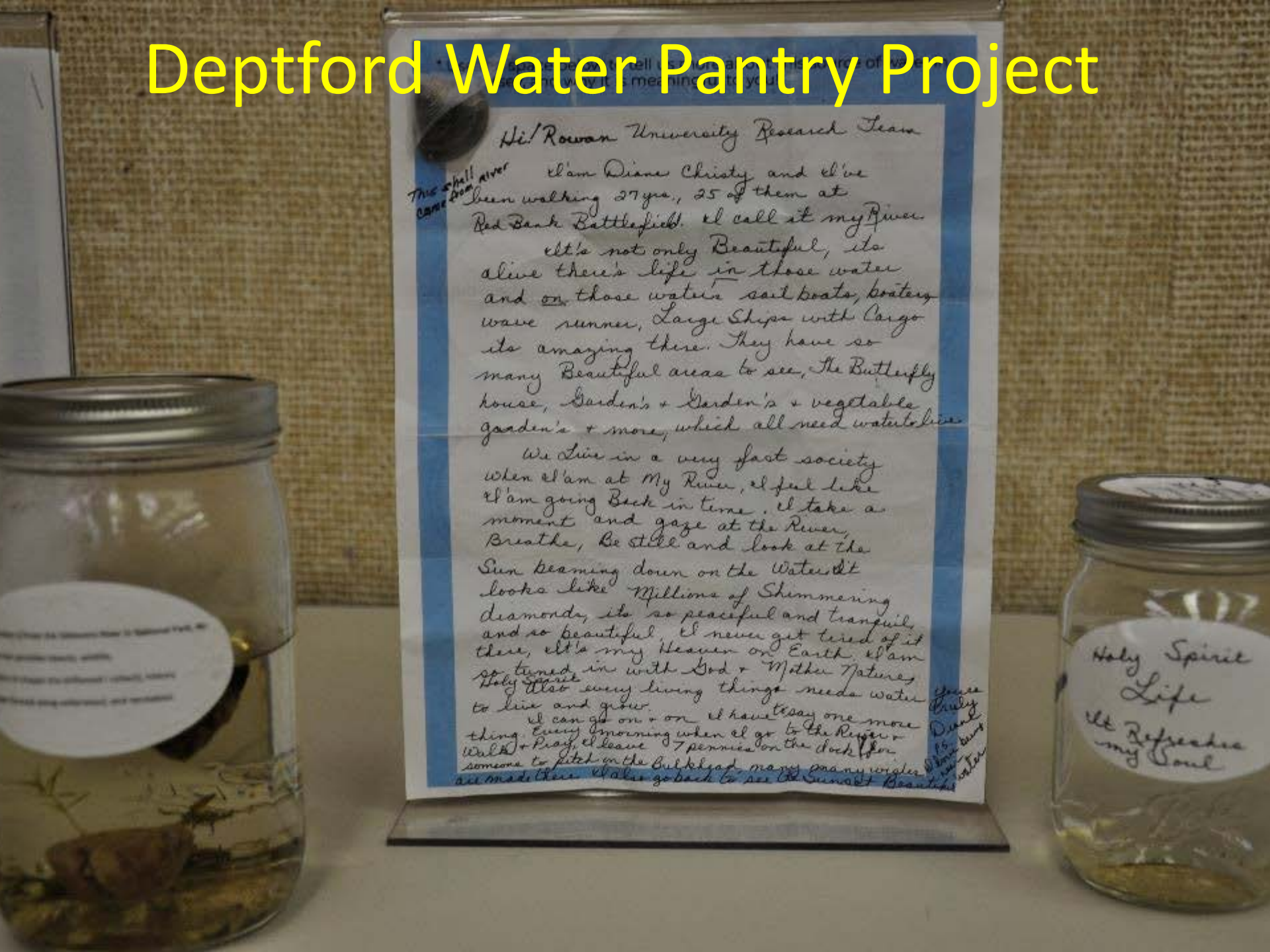
Hosting Water Stories

- NJ MAP Watershed Explorer
- Developing Map Media Experience for telling stories
- Providing Place-based Stories
- Genesis Farm tour
- Sustainable Jersey Municipalities





Deptford Water Pantry Project



Hi! Rowan University Research Team

This shell came from River

I'am Diane Christy and I've been walking 27yrs., 25 of them at Red Bank Battlefield. I call it my River.

It's not only Beautiful, its alive there's life in those water and on those waters sail boats, boaters, wave runner, Large Ships with Cargo its amazing there. They have so many Beautiful areas to see, The Butterfly house, Garden's + Garden's + vegetable gaden's + more, which all need water to live.

We Live in a very fast society when I'am at My River, I feel like I'am going Back in time. I take a moment and gaze at the River, Breathe, Be still and look at the Sun beaming down on the Water it looks like Millions of Shimmering diamonds, its so peaceful and tranquil, and so beautiful. I never get tired of it there, it's my Heaven on Earth. I'am so tuned in with God + Mother Natures Holy Spirit Also every living things needs water to live and grow.

Yours Truly Diane

I can go on + on I have to say one more thing. Every morning when I go to the River + Walk + Pray, I leave 7 pennies on the dock for someone to pitch in the Bulkhead many many many wider all made there. Make go back to see the Sunset Beauty

Deptford Water Pantry Project

Deptford Water Pantry Project


Camden Backchannel Boat Building

Camden Backchannel Boat Building

Camden Backchannel Boat Building

Camden Backchannel Boat Building

Geospatial Research Lab

Rowan University

Sustainability can be achieved one watershed story at a time

New Jersey MAP

https://njmap2.org

John Hasse, Ph.D. AICP
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