



Sustainable Jersey Program Updates

Presiding: Mayor Ed Mahaney, Cape May City

Donna Drewes, Co-Director, Sustainable Jersey

Lauren Skowronski, Program Director for Community Engagement,
Sustainable Jersey

Randall Solomon, Co-Director, Sustainable Jersey

Chris Sturm, Managing Director, Policy and Water, NJ Future

Chris Obropta, Extension Specialist, Rutgers Cooperative Extension

New Jersey League of Municipalities

November 16, 2016

Agenda

- Welcome
- Sustainable Jersey 2016 Accomplishments
- Program Updates
 - Gold Level Certification
 - Regional Hubs
 - Community Information and Civic Engagement
 - Resiliency
 - New Actions
 - Green Infrastructure
 - Water Loss Audit



Who are you?

- Elected Municipal Official
- Municipal Staff
- State or Federal Government Employee
- Non-Profit
- Academia
- Business
- Other



What do you know about Sustainable Jersey?

- Certified Community?
- Registered but not certified?
- Not registered but want to learn more?
- Task force member?
- Partner organization?
- Sponsor?



Nine Years of Growth

- Historic Growth in Municipal Program
 - Nearly 88% of NJ residents live in a participating community
 - 76% of the 565 municipalities are registered in the program
 - Over 35% are certified
- Collective Impact – All Major Actors Participating
- Expanding Definition of Sustainability – Arts, Community, Economy, Equity, Quality of Life Over Long Term
- Spreading the Model to Other Places
- Using Momentum to Launch Strategic Initiatives



Sustainable Jersey Supporters

Underwritten By:



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Small Grants Program Underwriter



Platinum Sponsors



Gold Sponsors



Silver Sponsors



Bronze Sponsors



The Secret to Success

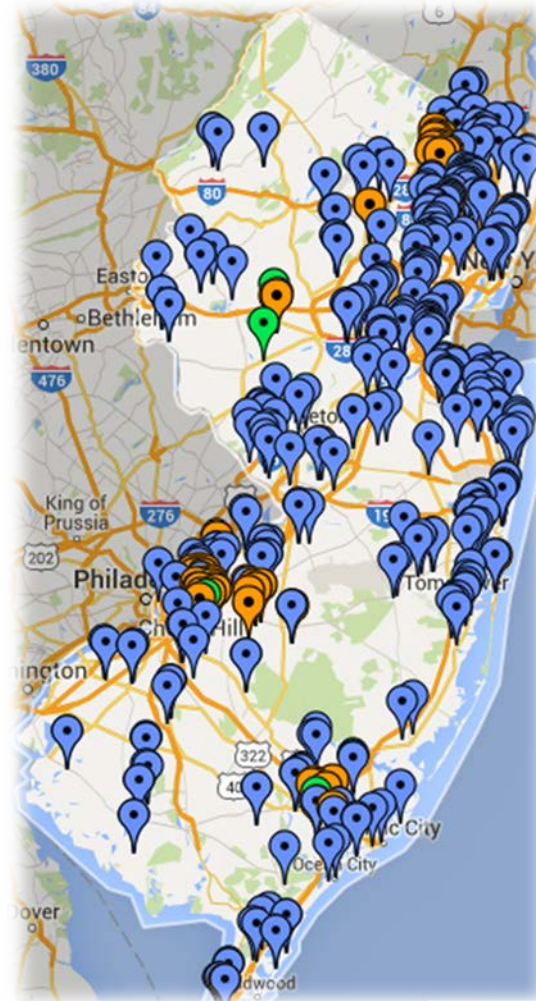
- Provides a framework for action
 - Works with government, academia, nonprofits, and the business sector to identify actions to help municipalities and schools become more sustainable
- Develops tools, resources, and guidance to help make progress
- Offers free training, technical support and grants to support local efforts
 - Sustainable Jersey Small Grants Program \$3.1 million funding to municipalities and schools



Sustainable Jersey



440 Municipalities



224 Districts/551 Schools

Municipal Progress

- Sustainable Jersey Municipal Certification Program
- 198 Currently Certified
- 440 Total Participating
- 157 Bronze
- 41 Silver---9 new Silver Towns!!

Expiring Town Outreach Analysis				
	2013	2014	2015	2016
Expirations	58	42	17	62
Extensions Granted	6	2	0	0
Net Expiring Towns	52	40	17	62
Applications Received *	39	39	15	59
% Applied	75%	98%	88%	95%
Applicants Achieving Certification	36	39	14	TBD
% Certified	92%	95%	82%	TBD



Statewide Impact by Year

	2009	2010	2011	2012	2013	2014	2015	2016
# of Municipalities	566	566	566	566	565	565	565	565
Participating by Year End	240	315	359	380	399	419	430	440
Bronze Certified	34	70	99	98	117	152	158	157
Silver Certified	0	4	9	12	22	28	33	41
Total Certified	34	74	108	110	139	180	191	198
% Municipalities Participating	42%	56%	63%	67%	70%	74%	76%	78%
% Municipalities Certified	6%	13%	19%	19%	25%	32%	34%	35%





**The PSEG Foundation is contributing
\$200,000 to support the Sustainable Jersey
Small Grants Program for municipalities**



PSEG

We make things work for you.

Small Grant Awards

Sponsor	Date	Awards	Total \$
PSEG 2016 Schools	February 2016	34	\$100,000
PSEG 2016 Municipalities	March 2016	32	\$200,000
NJDOH 2016 Schools	June 2016	30	\$120,000
NJEA 2016 Schools	August 2016	50	\$180,000
Gardinier 2016 Municipalities & Schools	August 2016	7	\$150,000
PSEG 2017 Schools	October 2016		\$100,000
PSEG 2017 Municipalities	November 2016		\$200,000
TOTAL		153	\$1,050,000





Regional Hubs & Public Information & Engagement Initiative (PIE)

Regional Hubs

- ✓ Connect sustainability leaders for peer-peer learning
- ✓ Foster collaborations for regional impact

8 Current Hubs:

- Atlantic-Cape May
- Burlington-Camden-Gloucester
- Essex
- Hunterdon
- Mercer
- Middlesex
- Monmouth
- Somerset

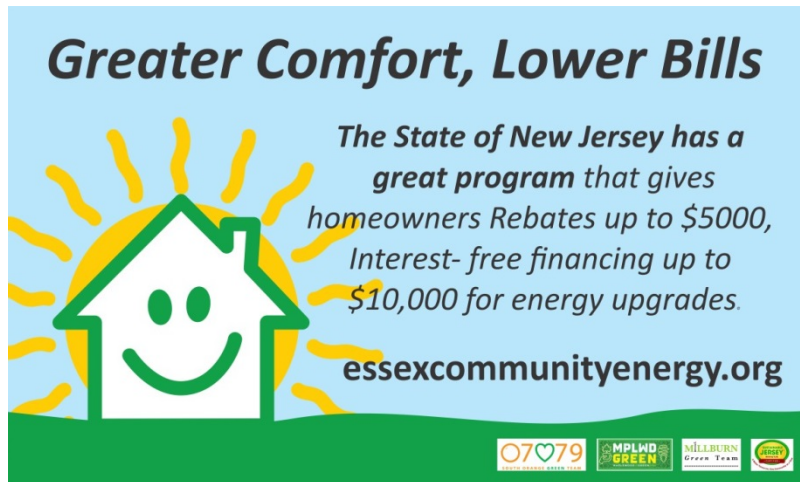
Atlantic-Cape May Hub

3 towns, Downbeach green team plastic bag education campaign



Essex County Hub

4 towns, home energy audit awareness campaign



Greater Comfort, Lower Bills

The State of New Jersey has a **great program** that gives homeowners **Rebates up to \$5000**, **Interest-free financing up to \$10,000** for energy upgrades.

essexcommunityenergy.org

07079
SUSTAINABLE GREEN TEAM

MPLWD
GREEN

MILLBURN
Green Team

ESSEX



Monmouth County Hub

county-wide Buy Fresh/Buy Local campaign



@SJ_Program | #njleague





Everyone likes PIE

new Public Info & Engagement action:

Access to Public Information

Open Data Inventory & Management (10 pts)

- Take stock of data sets that exist in your town
- Share them with the public in some central location on your website (portal or links)
- Engage the public in learning what data is important to them and collaborate with them to create useful applications

PIE Assistance for Towns:

Gov 2.0 Tech Assessments

1. Team to meet with key municipal staff to assess
 - Strategic goals related to public engagement & communications
 - Municipal needs & challenges
2. Final report & road map provided
 - Resources needed
 - Available digital technologies

* Municipal application deadline: **Sun. Feb 5, midnight**

PIE Assistance for Towns:

Coding for Community Competition

cfc.sustainablejersey.com

Municipalities + tech community = tech solutions to community issues

Benefits:

- ✓ Win \$ and a custom tech project for your town
- ✓ Build relationships for future municipal projects

Timeline:

- Kicks off **Friday, Jan. 27th @ NJIT**
- 2 month development phase (*March – April*)
- Presentation & awards (*early May*)



Sustainable Jersey Resiliency Program

Linda Weber, AICP, PP
Resiliency Program Director

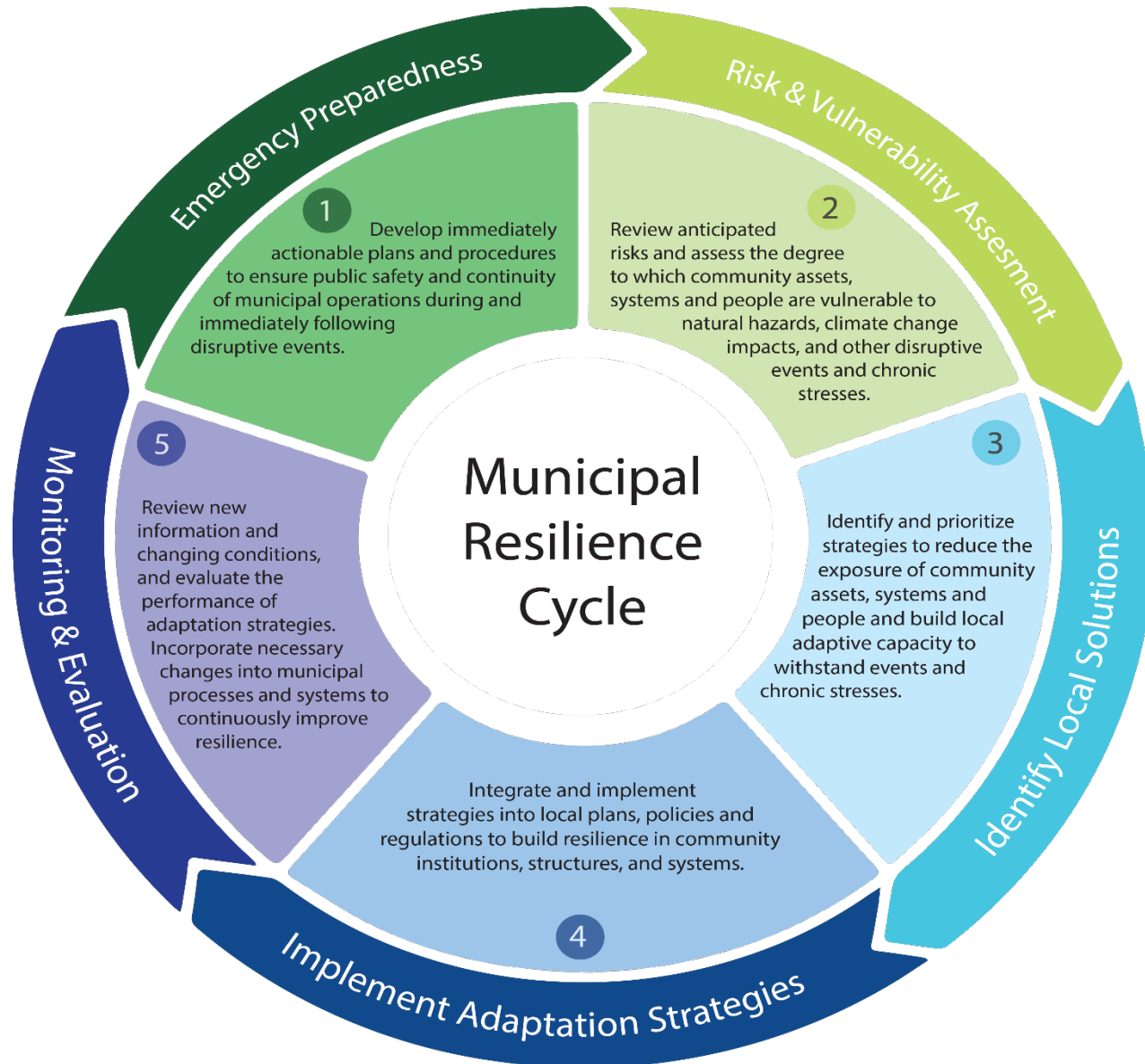
Sustainable Jersey Resiliency Program

“To help municipalities strengthen their resiliency to the impacts of climate change.”

- Work closely with the **Climate Adaptation Task Force**
- Collaborate with **partners**
- Develop/compile **tools and resources** for climate resiliency
- Provide **technical assistance** to municipalities
- **Develop and promote standards** through Sustainable Jersey actions



Sustainable Jersey Resiliency Program



NJ Climate Adaptation Alliance



Sustainable Jersey Resiliency Program

Promoting ecological solutions to coastal (and tidal) hazards

- Living shoreline, green infrastructure, protection of tidal wetlands
- Assisting 20 municipalities
- Future Sustainable Jersey “action”



Sustainable Jersey Resiliency Program

Environmental Justice in Urban Communities

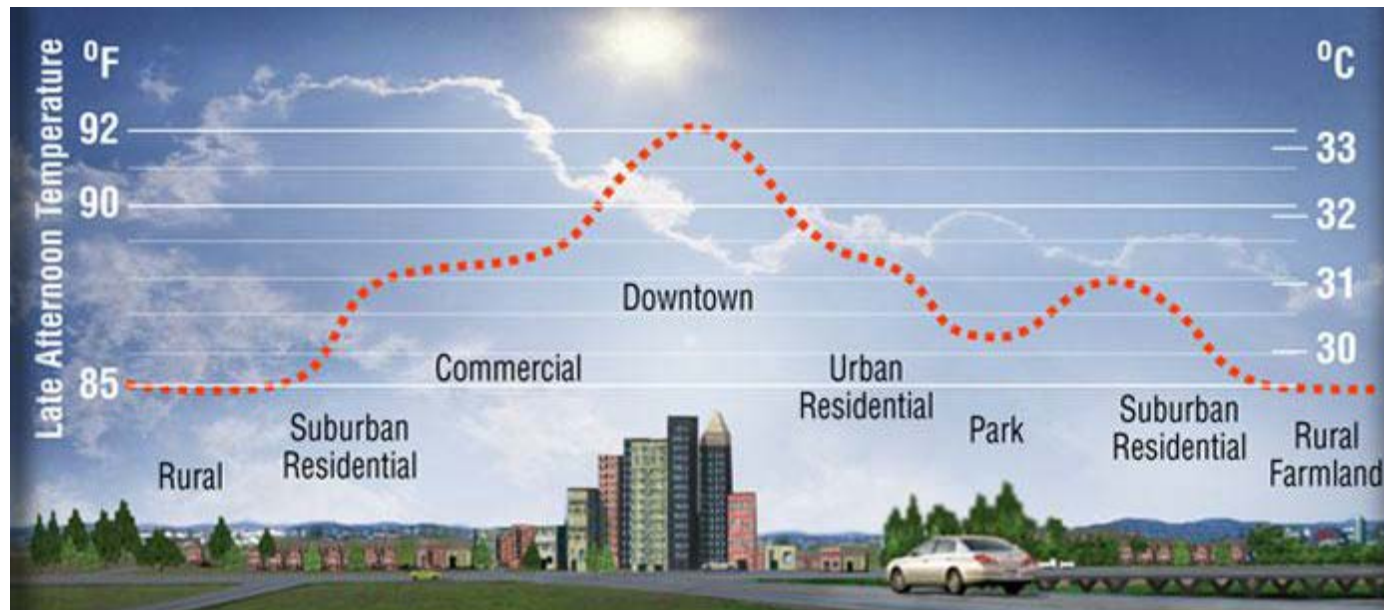
- Assisting up to five municipalities
- Upcoming revised Sustainable Jersey action
- Hosting 3-6 statewide workshops and webinars



Sustainable Jersey Resiliency Program

Mitigating Heat Island Effects

- Technical assistance to urban communities
- Upcoming action, using mapping tools to help identify heat islands and



Sustainable Jersey Resiliency Program

Reducing Toxic Materials in Small, Flood-Risk Businesses

- Technical assistance to three urban communities and county
- Store toxic materials safely
- Use less toxic alternatives
- Upcoming Sustainable Jersey action



Sustainable Jersey Resiliency Program

Emergency Communications to Vulnerable Populations

- Sustainable Jersey action approved
- Upcoming workshop for Register Ready
- Potential technical assistance to urban communities



**DON'T WAIT. COMMUNICATE.
MAKE YOUR EMERGENCY PLAN TODAY.**



SEPTEMBER IS NATIONAL PREPAREDNESS MONTH!



FEMA

AMERICA'S
PrepareAthon!



Energy

- New Building Efficiency Action
 - Combines Audits and Building Upgrades
 - 5-50 Points
 - Higher point levels based on energy reductions for entire building portfolio
 - Highest levels require simple calculation of Energy Use Intensity
 - Saves money, puts data in the hands of managers
 - All New Jersey BPU Clean Energy Program incentives are back in place

Electric and Alternative Fuel Vehicles

- Public Charging Infrastructure
 - New NJDEP and PSEG Grants
- Make Your Town EV Friendly
 - Upgraded Action
 - Zoning, Permitting, and Staff Training
 - Community Outreach



Solar Energy

- Solar Installations on Buildings
 - Points awarded based on size of installation (percent of building energy consumption displaced)
- Make Your Town Solar Friendly
 - Up to 30 points
 - 15 points for zoning changes
 - 15 points for permitting changes
- Community Led Solar Initiatives
 - Up to 15 points
 - 10 points for group purchasing
 - 5 points for municipal solar incentives
 - Sustainable Jersey Solar Challenge



Second Sustainable State of the State

- What is our Vision?
- Tracking progress toward 56 sustainability goals
- Over 100 indicators
- Expert panel judged progress (thumbs up or down)
- Identifies what's changed since 2015
- Forms the basis for creating Gold Star Standards
 - What does each municipality need to achieve for NJ to meet it's goals?



Gold Star Standards in Energy and Waste

- Gold Star in Energy
 - Reduce Greenhouse Gasses from Municipal Operations 3.6% a year for 3 years
 - Take actions to lower GHG I the community: vehicles, renewables, energy efficiency in residential and commercial buildings
- Gold Star in Waste
 - Achieve 65% total recycling rate (55% MSW)
 - Lower total solid waste production 2% a year for 3 years
 - Institute a hazardous waste collection program
 - Perform robust education and enforcement



Gold Star Standards

- Municipalities with Gold Stars will have a new icon on the Sustainable Jersey map and website and will be distinguished in other ways
- Looking for leaders to take the plunge
- Sustainable Jersey staff will provide hands-on assistance
- First window of opportunity to apply is June 2016
- New Gold Star Standards will be created and released over time





Annual Water Loss Audits



Chris Sturm, New Jersey Future

Why address “water loss”?

- Older water systems can **“lose” 30 - 40 percent of the water** that is withdrawn from rivers, lakes, reservoirs, and groundwater and treated by treatment plants, ... before the water ever reaches a home, business, or other customer.
- How much water is your utility losing? Does the public have any idea?
- **“What gets measured gets managed.”**
 - Water loss audits are a necessary first step

Benefits for Your Community

- ❖ **Protect water supply** : reduce the likelihood of severe low stream flows
 - ❖ Reduce water use restrictions.
 - ❖ Defer the need new storage reservoirs, etc.
- ❖ **Save money**: reduce/delay need for treatment plants, pumping stations, reservoirs, and conveyance systems.
 - ❖ Extend the life of water pipes.
- ❖ **Reduce water main breaks** and impacts on roads, etc.



AWWA Water Audit – Standardized Format

AWWA Free Water Audit Software

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association.
Copyright © 2014. All Rights Reserved.

Water Audit Report for: **Greater Cincinnati Water Works**
Reporting Year: **2015** 7/2014 - 6/2015

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: **Millions of Gallons (US) PER YEAR**

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

Enter grading in column 'E' and 'J'

Point: Value: MG/Yr

Point: Value: MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

Click here: [?] for help using option buttons below

Use buttons to select percentage of water supplied OR value

Point: Value: MG/Yr

Point: Value: MG/Yr

Point: Value: MG/Yr

Point: Value: MG/Yr

WATER SUPPLIED

Volume from own sources:	7	7	43,025.000	MG/Yr
Water imported:	7	n/a	0.000	MG/Yr
Water exported:	7	7	9,088.000	MG/Yr
WATER SUPPLIED:			34,133.629	MG/Yr

AUTHORIZED CONSUMPTION

Billed metered:	7	9	26,014.000	MG/Yr
Billed unmetered:	7	10	28.100	MG/Yr
Unbilled metered:	7	10	501.900	MG/Yr
Unbilled unmetered:	7	6	330.700	MG/Yr
AUTHORIZED CONSUMPTION:			26,874.700	MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption)

7,258.929 MG/Yr

Apparent Losses

Unauthorized consumption:	7		85.334	MG/Yr
Customer metering inaccuracies:	7	9	267.837	MG/Yr
Systematic data handling errors:	7		65.035	MG/Yr
Apparent Losses:			418.206	MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: Use Customer Retail Unit Cost to **6,840.722** MG/Yr

WATER LOSSES: **7,258.929** MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: **7** **8,091.529** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	7	10	3,153.0	miles
Number of active AND inactive service connections:	7	10	248,559	
Service connection density:	7		79	conn./mile main

Are customer meters typically located at the curbstop or property line? No Yes (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: **7** **9** **27.0** ft

Average operating pressure: **7** **9** **93.8** psi

- Can be readily conducted by any water utility
- Low cost -- Excel-based software is free
- Can be performed by existing utility staff
- Forgiving -- Allows entry of estimated or imprecise data
- Generates recommendations for where data quality should be improved
- Most utilities can complete the audit in 1 to 3 days without outside help



Requirements for Credit

Municipality must provide evidence that their water supplier, in conjunction with the municipality as appropriate:

- **Conducts an annual “water loss audit”** of the drinking water distribution system using the standardized methodology of the American Water Works Association (AWWA)
- **Submits the annual audit report** to the:
 - municipal manager, business administrator, or equivalent
 - head of the Dep.t of Public Works or Municipal Utilities Authority;
- **Publicly releases a summary** of the audit results online; and
- No later than the second annual audit, **obtains independent “Level 1” validation** of the audit by a qualified third-party.
(Independent validation must be completed once per 3-year cycle of Sustainable Jersey recertification.)



Interested in your drinking water, sewer and/or stormwater systems?

- Sign up for our monthly newsletter
- Join Jersey Water Works!

JerseyWaterWorks.org

Chris Sturm csturm@njfuture.org



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THE STATE UNIVERSITY
OF NEW JERSEY

Green Infrastructure Planning Action Items – Coming Soon!

Christopher C. Obropta, Ph.D., P.E.

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November 16, 2016

www.water.rutgers.edu



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 community water resources issues using sustainable and practical science-based solutions.

Three New Sustainable Jersey Action Items

1. Tier 1: Impervious Cover Assessment (5 points)
2. Tier 2: Green Infrastructure Action Plan (10 points)
3. Tier 3: Green Infrastructure Strategic Plan (20 points)



Tier 1: Impervious Cover Assessment

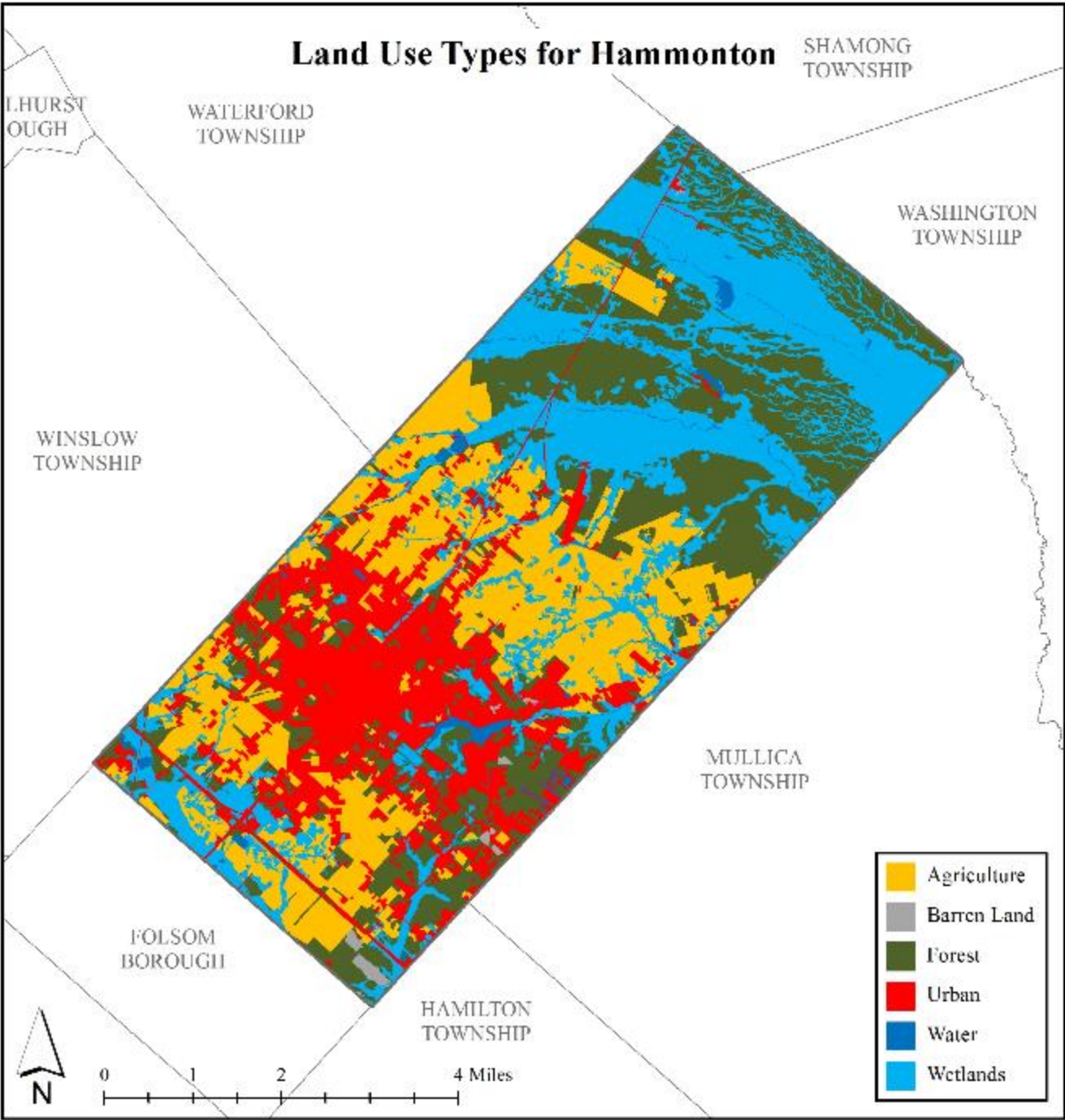


Impervious Cover Assessment

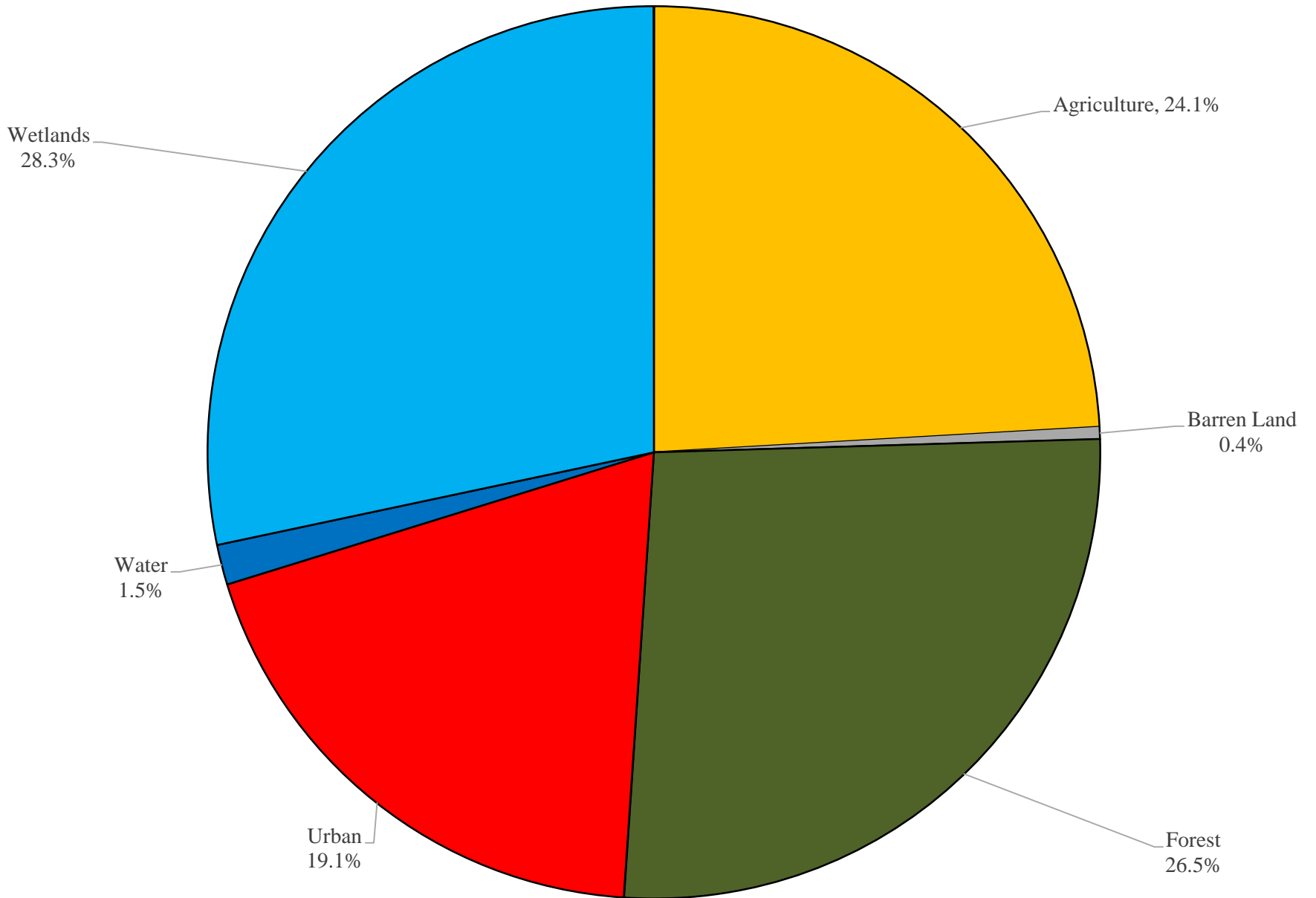
- Analysis completed by watershed and by municipality
- Use 2007 Land Use data to determine impervious cover
- Calculate runoff volumes for water quality, 2, 10 and 100 year design storm and annual rainfall
- Contain three concept designs

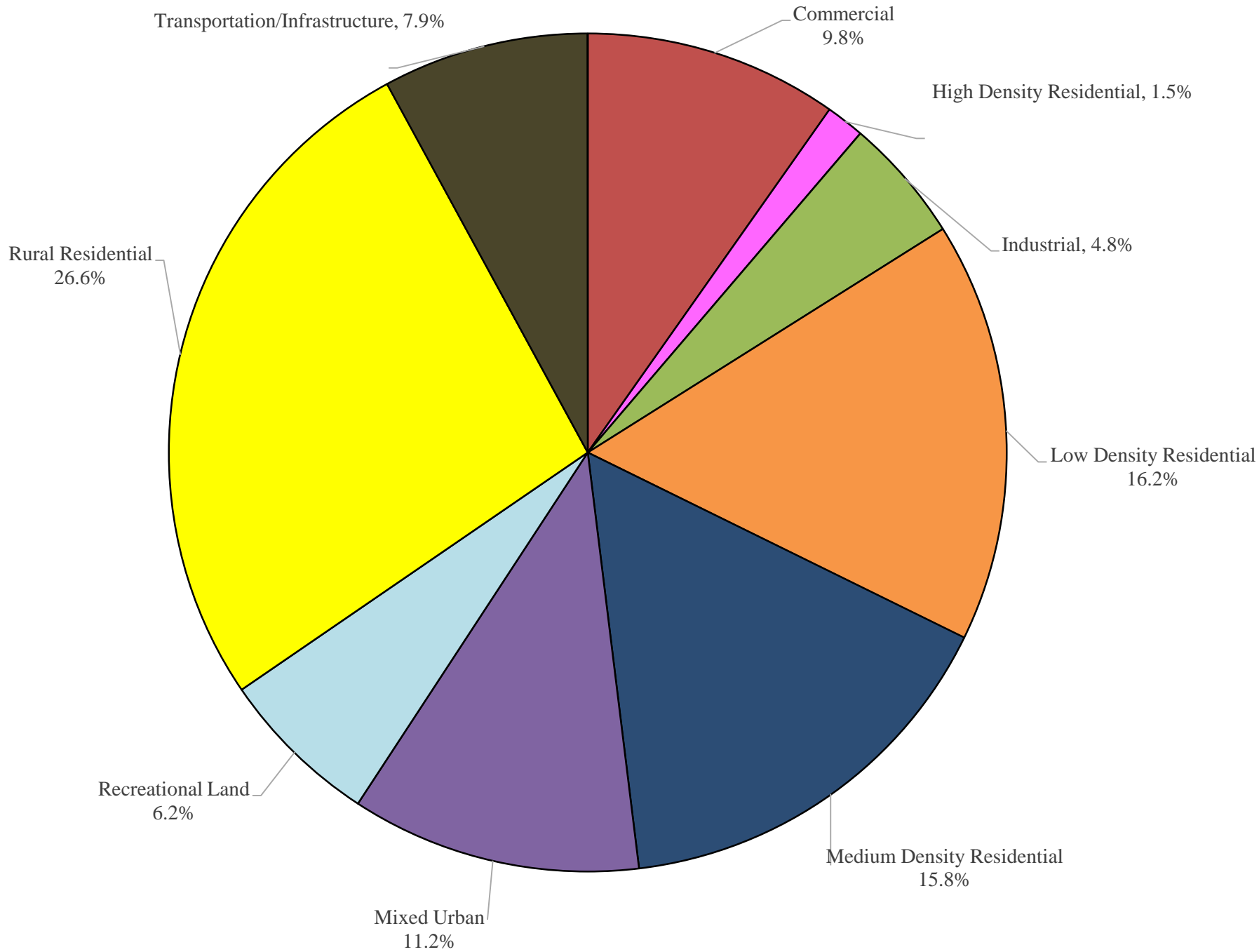


Land Use Types for Hammonton

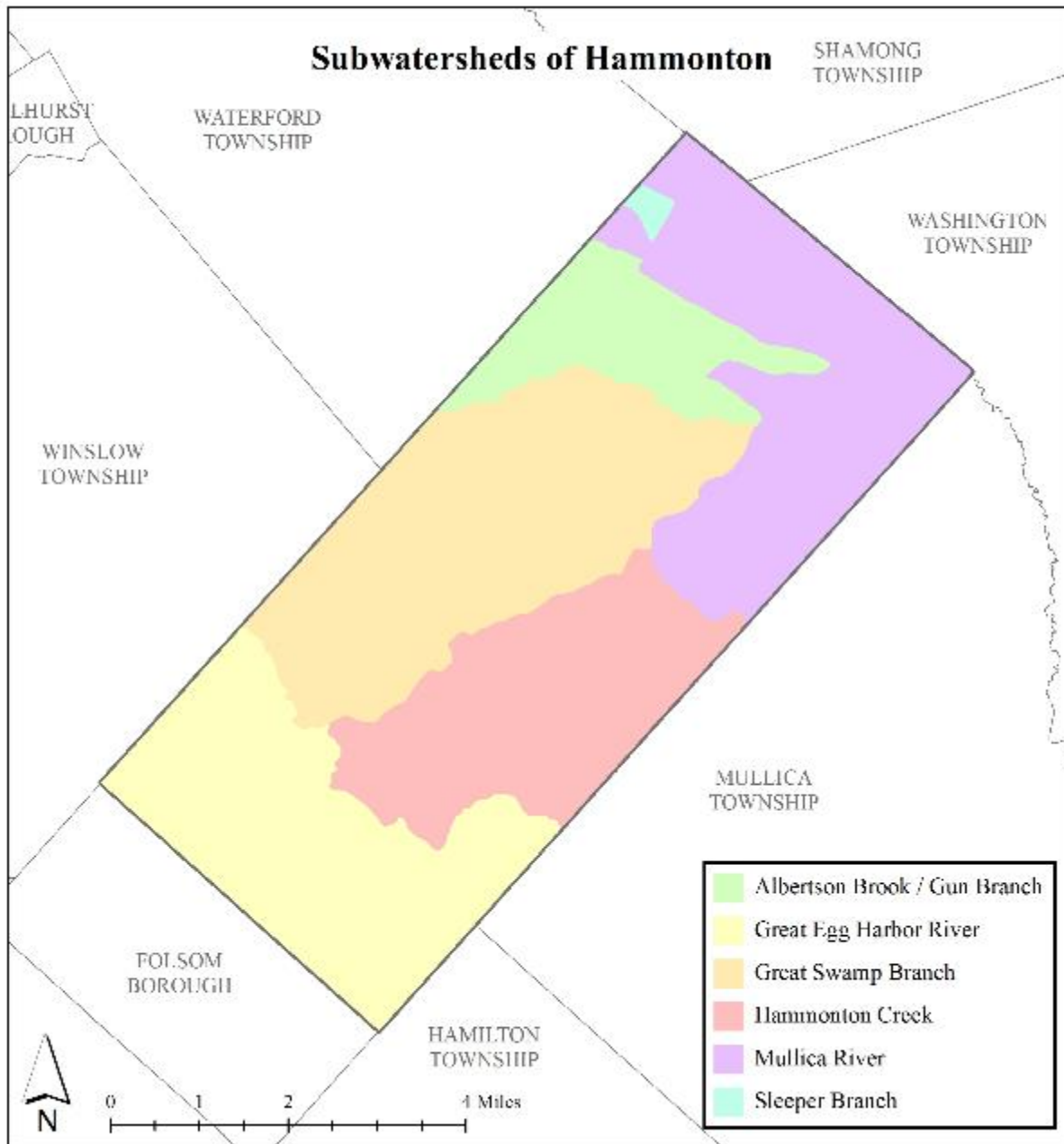


- Agriculture
- Barren Land
- Forest
- Urban
- Water
- Wetlands



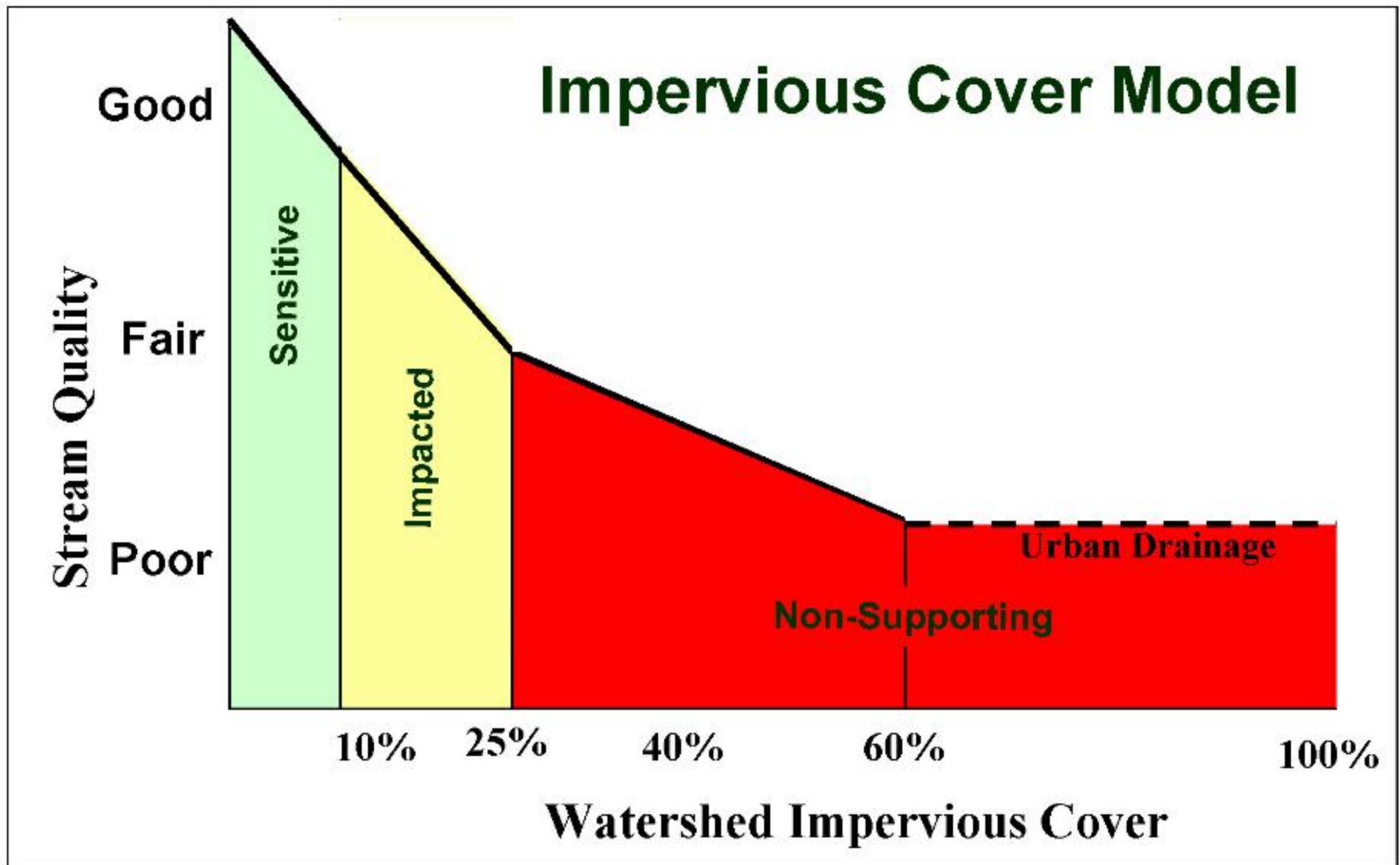


Subwatersheds of Hammonton



Watershed	Total Area (ac)	Impervious Cover (ac)	%
Albertson Brook / Gun Branch	2,358.4	10.1	0.4%
Great Egg Harbor River	5,947.5	341.0	5.8%
Great Swamp Branch	7,144.4	544.1	7.7%
Hammonton Creek	4,872.7	450.2	9.5%
Mullica River	5,998.5	8.2	0.1%
Sleeper Branch	117.4	2.8	2.4%
Total	26,438.8	1,356.4	5.2%

Original ICM developed based on 200+ reports and papers



Subwatershed	NJ Water Quality Storm (MGal)	Annual Rainfall of 44" (MGal)	2-Year Design Storm (3.3") (MGal)	10-Year Design Storm (5.0") (MGal)	100-Year Design Storm (8.2") (MGal)
Albertson Brook / Gun Branch	0.3	12.1	1.0	1.4	2.3
Great Egg Harbor River	11.6	407.4	32.4	48.1	76.8
Great Swamp Branch	18.5	650.0	51.7	76.8	122.6
Hammonton Creek	15.3	537.9	42.8	63.6	101.5
Mullica River	0.3	9.8	0.8	1.2	1.8
Sleeper Branch	0.1	3.4	0.3	0.4	0.6
Total	46.0	1,620.5	128.9	191.5	305.7

Tier 2: Green Infrastructure Action Plan



Action Plan ...

- Sets immediate and short-term goals (< 5 years)
- Documents community engagement
- Identifies opportunities
- Contains concept plans for opportunities



Green Infrastructure

...an approach to stormwater management that is cost-effective, sustainable, and environmentally friendly

Green Infrastructure projects:

- capture
- filter
- absorb
- reuse

stormwater to maintain or mimic natural systems and treat runoff as a resource









Green Infrastructure includes:

- green roofs
- rainwater harvesting
- tree filter/planter boxes
- rain gardens/bioretention systems
- permeable pavements
- vegetated swales or bioswales
- natural retention basins
- trees & urban forestry
- green streets



Parker Urban Greenscapes. 2009.



-  disconnected downspouts
-  pervious pavement
-  bioretention systems
-  drainage area
-  property line
-  2012 Aerial: NJOIT, OGIS

0' 100' 200'



Downspouts around the building can be disconnected and redirected to rain gardens to capture, treat, and infiltrate roof runoff. Parking spaces in the two parking lots can be converted to porous asphalt to capture and infiltrate runoff from the parking lot. 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	From the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
12	606,360	29.2	306.2	2,784.0	0.472	16.63

Recommended Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Disconnection	-	-	-	-	-	\$3,250
Bioretention systems	0.627	105	45,912	4.02	7,365	\$30,090
Pervious pavement	1.075	180	148,269	1.25	6,018	\$184,125

CURRENT CONDITION

42



HAMMONTON HIGH SCHOOL

566 Old Forks Road
Hammonton, NJ 08037

CONCEPT DESIGN



Tier 3: Green Infrastructure Strategic Plan



Strategic Plan ...

- Sets long-term goals (5-20 years)
- Identifies long-term projects
- Documents water quality benefits
- Identifies a funding strategy
- Contains agenda with policy recommendations and incentives



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QUESTIONS?

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