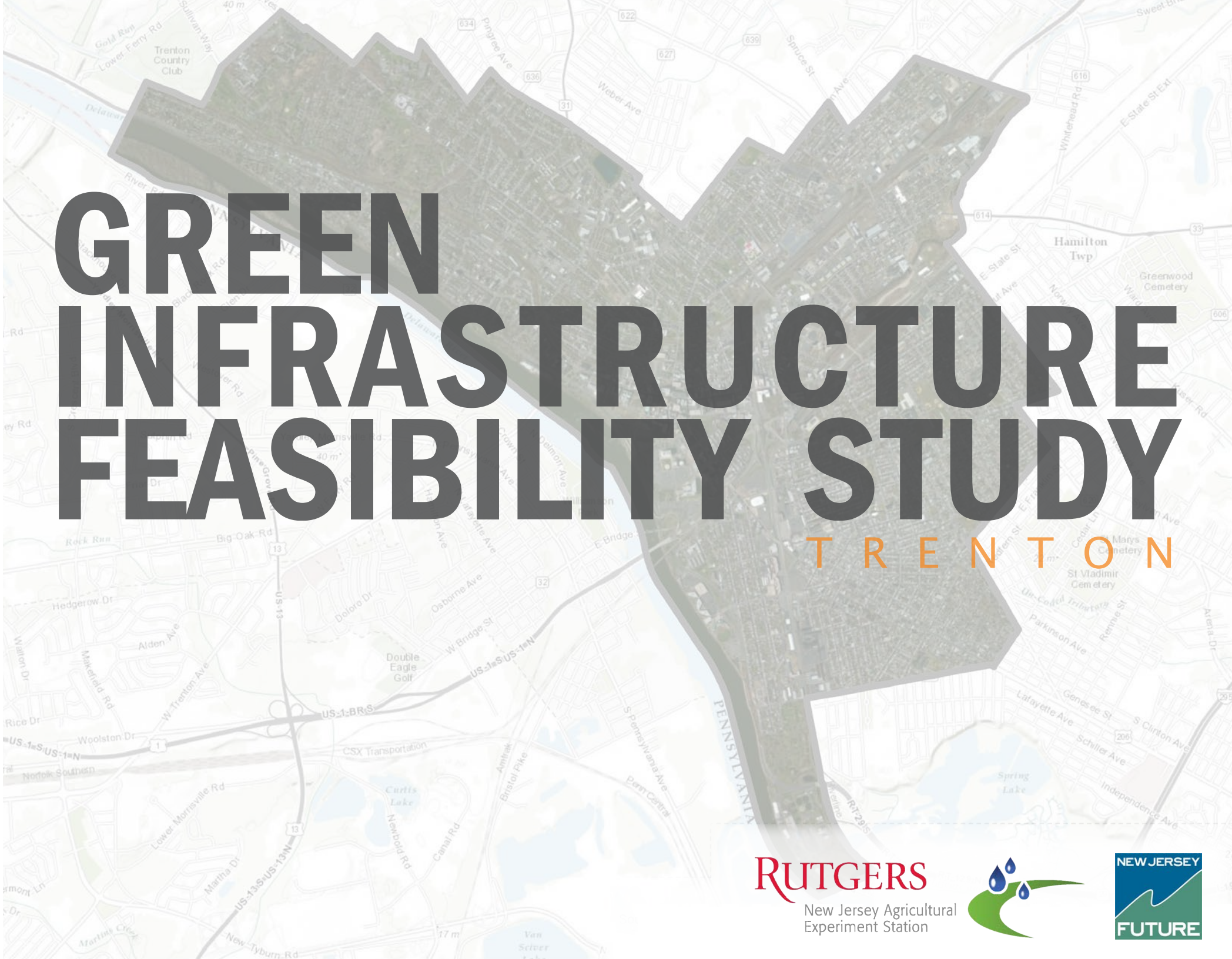


GREEN INFRASTRUCTURE FEASIBILITY STUDY

TRENTON

RUTGERS
New Jersey Agricultural Experiment Station

NEW JERSEY FUTURE

ACKNOWLEDGEMENTS

This document has been prepared by the Rutgers Cooperative Extension Water Resources Program with funding and direction provided by New Jersey Future and the New Jersey Agricultural Experiment Station. This work is intended to expand upon the existing lower Assunpink Daylighting project being executed by the City of Trenton and the U.S. Army Corps of Engineers with community engagement and facilitation provided by New Jersey Future.

RUTGERS
New Jersey Agricultural Experiment Station

NEW JERSEY FUTURE

TABLE OF CONTENTS

INTRODUCTION

Using the site of the lower Assunpink Creek as a focal point, the City of Trenton has organized a series of projects designed to advance and highlight redevelopment and ecological restoration around one of Trenton's natural and cultural assets. Current projects include: daylighting the segment of the Assunpink Creek between S. Broad Street and S. Warren Street, upgrading the historic Douglass House, creating new signage for Mill Hill Park and rehabilitating the Jackson Street Bridge.

New Jersey Future was asked to help the city engage the community to better understand these projects, make recommendations for improvements, identify new ideas and build ownership and stewardship of this area and the projects that will ensue.

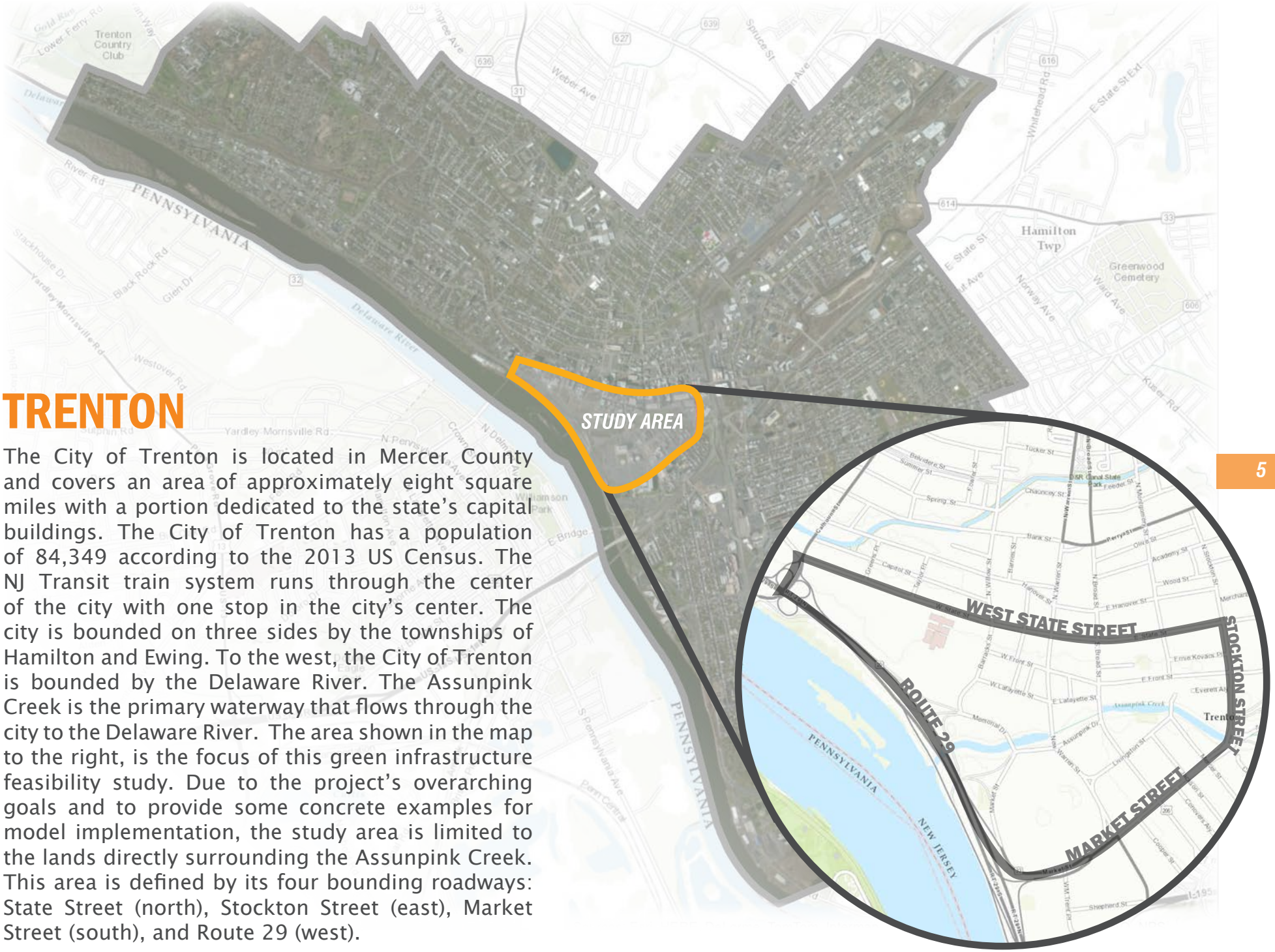
Rutgers University professor, Tobiah Horton, reviews a rain garden design with a homeowner.

In the course of planning the daylighting project, it became apparent that there is a high percentage of impervious cover surrounding the Assunpink Creek. When it rains, stormwater rapidly moves through the area collecting any sediment and contaminants in its path. By using cost-effective green infrastructure practices, the City of Trenton can begin to reduce the negative impacts of stormwater runoff, reduce potential flooding, protect the health of waterways and create attractive urban amenities. It should also be noted that the City of Trenton is going to receive a final permit from the New Jersey Department of Environmental Protection (DEP) in January 2015, requiring the city to evaluate green infrastructure alternatives for resolving their Combined Sewer Outfalls. To help inform stakeholders about the benefits and opportunities associated with green infrastructure in this area and to assist the city with their DEP requirement, New Jersey Future partnered with the Rutgers Cooperative Extension (RCE) Water Resources Program to develop a green infrastructure systems study for the surrounding lower Assunpink Creek project area.

This feasibility study is intended to be used as a guide for the City of Trenton and other stakeholders to: better understand the benefits of green infrastructure, and identify specific opportunities for early implementation. The study focuses on near-term opportunities to incorporate green infrastructure into existing sites, but does not look at the substantial opportunities for integrating green infrastructure into future redevelopment projects.

TRENTON

The City of Trenton is located in Mercer County and covers an area of approximately eight square miles with a portion dedicated to the state's capital buildings. The City of Trenton has a population of 84,349 according to the 2013 US Census. The NJ Transit train system runs through the center of the city with one stop in the city's center. The city is bounded on three sides by the townships of Hamilton and Ewing. To the west, the City of Trenton is bounded by the Delaware River. The Assunpink Creek is the primary waterway that flows through the city to the Delaware River. The area shown in the map to the right, is the focus of this green infrastructure feasibility study. Due to the project's overarching goals and to provide some concrete examples for model implementation, the study area is limited to the lands directly surrounding the Assunpink Creek. This area is defined by its four bounding roadways: State Street (north), Stockton Street (east), Market Street (south), and Route 29 (west).



WHAT IS STORMWATER?

When rainfall hits the ground, it can soak into the ground or flow across the surface. When rainfall flows across a surface, it is called "stormwater" runoff. Pervious surfaces allow stormwater to readily soak into the soil and recharge groundwater. An impervious surface can be any material that has been placed over soil that prevents water from soaking into the ground. Impervious surfaces include paved roadways, parking lots, sidewalks, and rooftops. As impervious areas increase, so does the amount of stormwater runoff. New Jersey has many problems due to stormwater runoff from impervious surfaces, including:

- POLLUTION: According to the 2010 New Jersey Water Quality Assessment Report, 90% of the assessed waters in New Jersey are impaired. Urban-related stormwater runoff is listed as the most probable source of impairment (USEPA, 2013). As stormwater flows over the ground, it picks up pollutants, including animal waste, excess fertilizers, pesticides and other toxic substances. These pollutants are carried to waterways.
- FLOODING: Over the past decade, the state has seen an increase in flooding. Communities around the state have been affected by these floods. The amount of damage caused also has increased greatly with this trend, costing billions of dollars over this time span.
- EROSION: Increased stormwater runoff causes an increase in stream velocity. The increased velocity after storm events erodes stream banks and shorelines, degrading water quality. This erosion can damage local roads and bridges and cause harm to wildlife.

A local reservoir

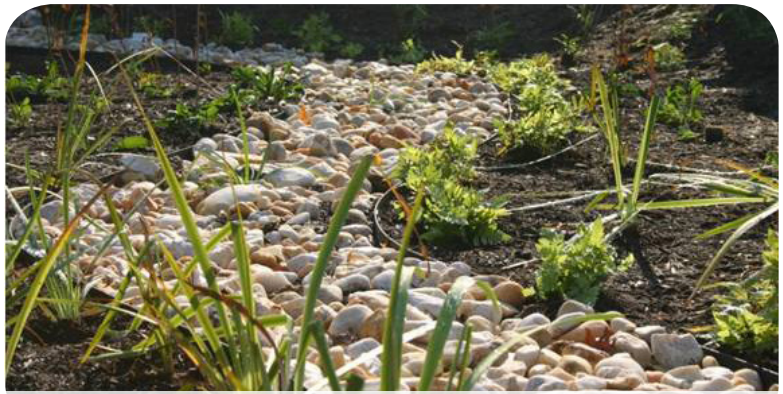

Purple Cone Flower


Pervious Pavers

To protect and repair our waterways, reduce flooding, and stop erosion, stormwater runoff has to be better managed. Impervious surfaces need to be disconnected with green infrastructure to prevent stormwater runoff from flowing directly into New Jersey's waterways. Disconnection redirects runoff from paving and rooftops to pervious areas in the landscape.

A community garden that harvests and recycles rainwater

Rain barrel workshop participants



A rain garden after planting

WHAT IS GREEN INFRASTRUCTURE?

Green infrastructure is an approach to stormwater management that is cost-effective, sustainable, and environmentally friendly. Green infrastructure projects capture, filter, absorb, and reuse stormwater to maintain or mimic natural systems and to treat runoff as a resource. As a general principal, green infrastructure practices use soil and vegetation to recycle stormwater runoff through infiltration and evapotranspiration. When used as components of a stormwater management system, green infrastructure practices such as bioretention, green roofs, porous pavement, rain gardens, and vegetated swales can produce a variety of environmental benefits. In addition to effectively retaining and infiltrating rainfall, these technologies can simultaneously help filter air pollutants, reduce energy demands, mitigate urban heat islands, and sequester carbon while also providing communities with aesthetic and natural resource benefits (USEPA, 2013).

GLOSSARY OF GREEN INFRASTRUCTURE TERMINOLOGY

A ***DISCONNECTED:***

Disconnected refers to channeling water from gutters and pipes that collect runoff to somewhere other than a sewer drain where it can be filtered.

B ***DEPAVING:***

Depaving is the process of removing hardscape such as asphalt or concrete.

C ***INFILTRATION:***

Infiltration occurs when water on the ground's surface is absorbed into the soil below. Plants promote infiltration.

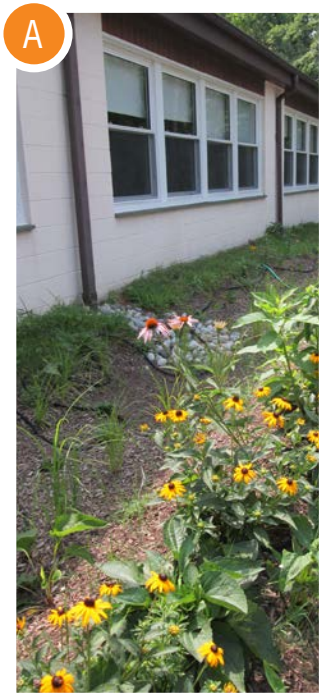
D ***IMPERVIOUS SURFACE:***

An impervious surface is one that water cannot penetrate.

E ***RUNOFF:***

Runoff is water from precipitation that flows across land and paved surfaces before entering local waterways or sewer systems.

A



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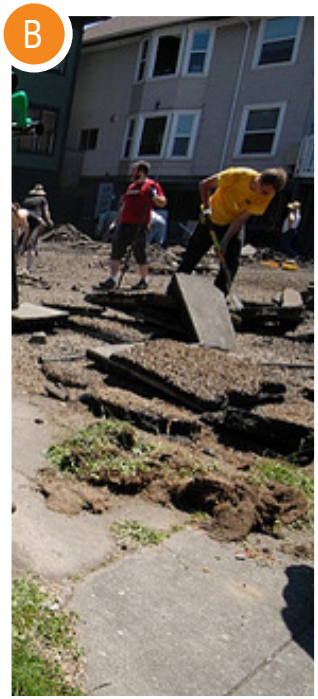
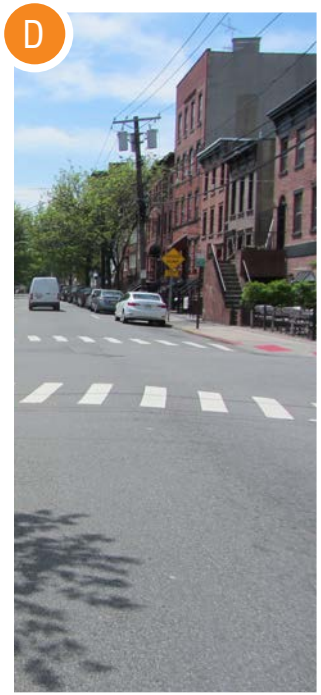


C

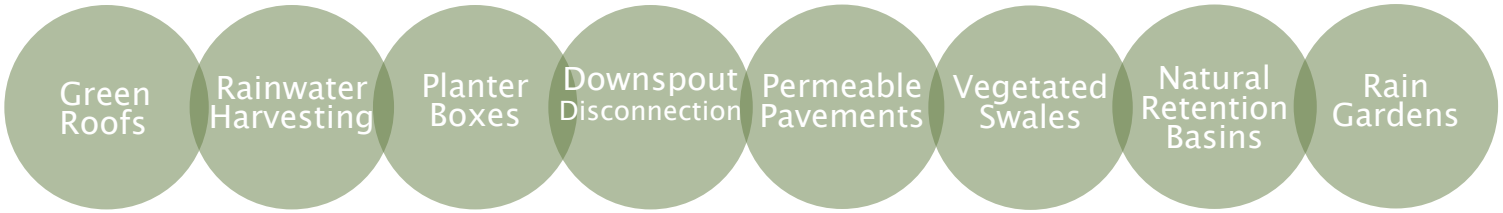
D



E

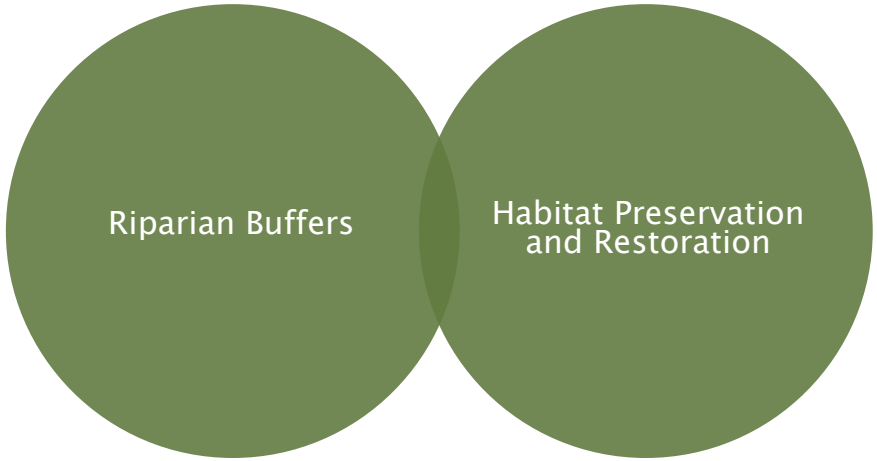
GREEN INFRASTRUCTURE STRATEGIES

SITE



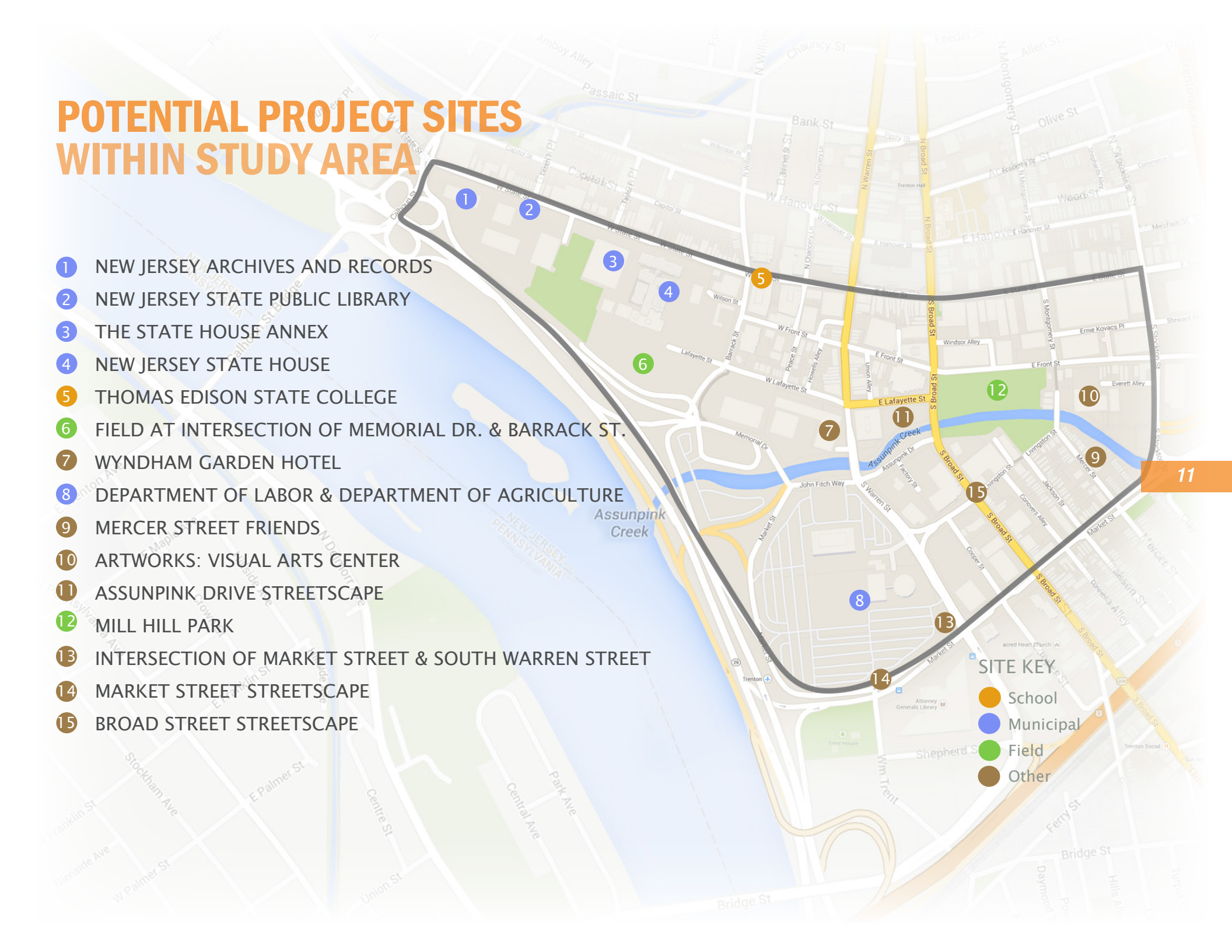
NEIGHBORHOOD

WATERSHED



POTENTIAL PROJECT SITES WITHIN STUDY AREA

1. NEW JERSEY ARCHIVES AND RECORDS
2. NEW JERSEY STATE PUBLIC LIBRARY
3. THE STATE HOUSE ANNEX
4. NEW JERSEY STATE HOUSE
5. THOMAS EDISON STATE COLLEGE
6. FIELD AT INTERSECTION OF MEMORIAL DR. & BARRACK ST.
7. WYNDHAM GARDEN HOTEL
8. DEPARTMENT OF LABOR & DEPARTMENT OF AGRICULTURE
9. MERCER STREET FRIENDS
10. ARTWORKS: VISUAL ARTS CENTER
11. ASSUNPINK DRIVE STREETSCAPE
12. MILL HILL PARK
13. INTERSECTION OF MARKET STREET & SOUTH WARREN STREET
14. MARKET STREET STREETSCAPE
15. BROAD STREET STREETSCAPE

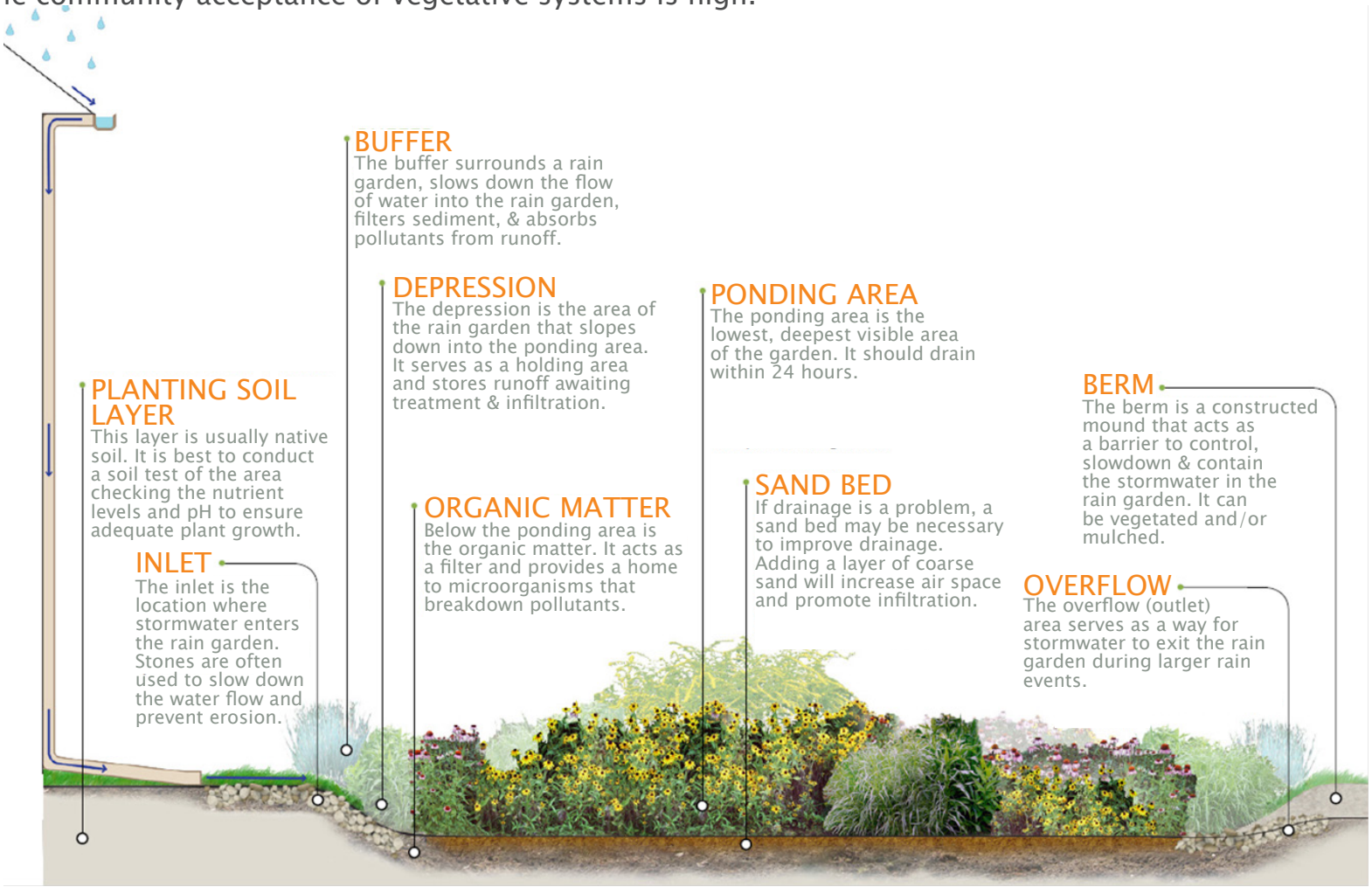



STATE OF
NEW JERSEY
DEPARTMENT OF
ENVIRONMENTAL
PROTECTION

GREEN INFRASTRUCTURE SYSTEMS

VEGETATED SYSTEMS

Vegetative systems primarily focus on reducing water quality impacts and less on reducing flooding. These systems are typically located close to the sources of runoff and can manage the smaller storms of several inches. The main treatment mechanisms are infiltration, filtration, and evapotranspiration. These systems do an excellent job at removing total suspended solids, nutrients and pathogens. Construction costs for vegetated systems are typically low to moderate when compared to other green infrastructure practices. Since these systems often can be incorporated into existing landscapes and enhance aesthetics, the community acceptance of vegetative systems is high.



RAIN GARDEN DIAGRAM

VEGETATED SYSTEM SUITABILITY

Rain gardens are shallow landscaped depressions designed to capture, treat, and infiltrate stormwater runoff. Rain gardens can be readily installed throughout a community to begin re-establishing the natural processes of the landscape. Rain gardens:

- Capture stormwater runoff, reducing soil erosion and sedimentation and the amount of water that flows to our streams and waterways during rain storms
- Protect water quality by filtering out and breaking down pollutants
- Infiltrate runoff and recharge groundwater supplies by providing base flow to nearby streams and waterways
- Enhance and increase green space and vegetated cover

Rain gardens are a simple way communities can begin to reduce stormwater runoff, manage flows to sewer systems, and protect water resources. Rain gardens can be placed in strategic locations to capture runoff from rooftops and paved areas, including:

- Homes
- Schools
- Churches
- Parking areas
- Community gardens

VEGETATED SYSTEM SUITABILITY: EXAMPLE PROJECT SITE

VEGETATED SYSTEM SUITABILITY: EXAMPLE PROJECT SITE

RAINWATER HARVESTING SYSTEMS

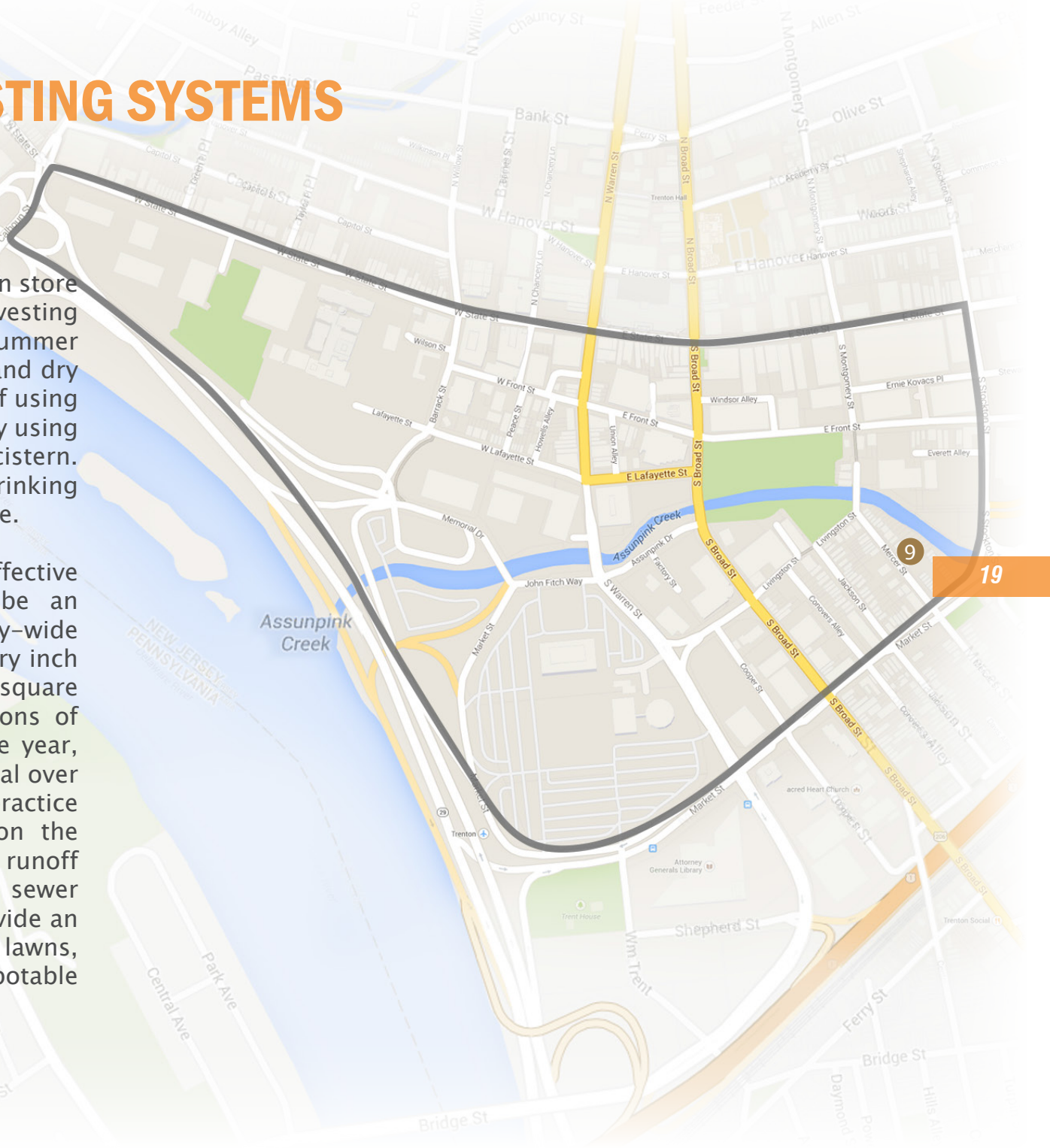
Rainwater harvesting systems focus on the conservation, capture, storage, and reuse of rain water. These systems are located close to residential and commercial buildings. Construction costs are low to moderate, depending on the size of the system, compared to other green infrastructure practices. Since these systems can be easily incorporated into the built landscape, the community acceptance of rainwater harvesting systems is moderate to high. Rainwater harvesting systems include rain barrels and cisterns.

RAIN BARREL DIAGRAM

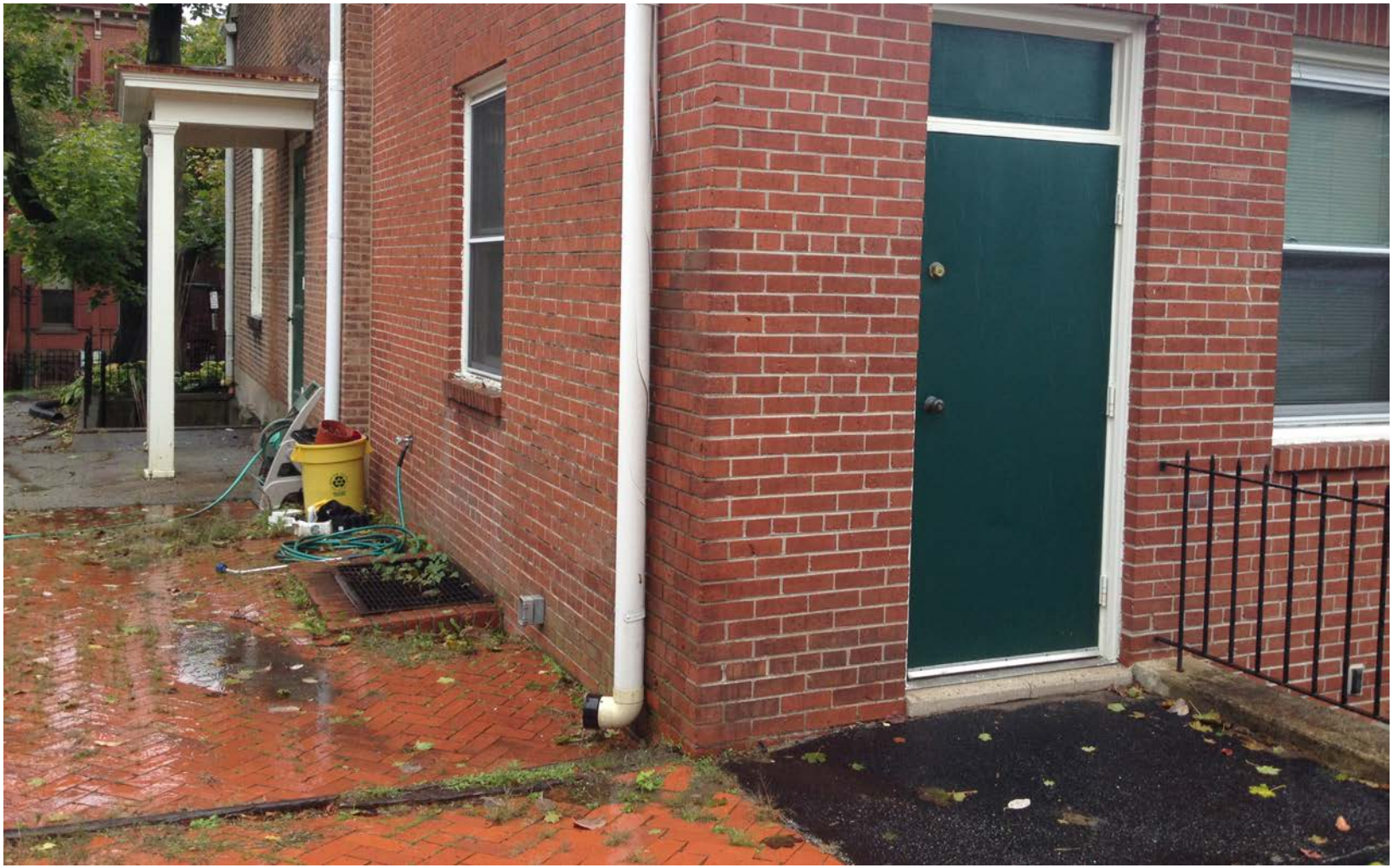
RAINWATER HARVESTING SYSTEMS SUITABILITY

Typical rainwater harvesting systems can store up to 5,000 gallons of water. Harvesting during the rainy months of spring and summer provides a source of water during hot and dry periods between rain storms. Instead of using potable water, residents can save money using the rainwater stored in a rain barrel or cistern. This also reduces the demand on drinking water supplies and related infrastructure.

Rain barrels and cisterns are an effective rainwater harvesting tool and can be an important element in a community-wide green infrastructure program. For every inch of rain that falls on an eight hundred square foot roof (20' x 40'), nearly 500 gallons of water can be collected. Over an entire year, water draining from this rooftop will total over 20,000 gallons. This sustainable practice reduces the impact a building has on the environment by harvesting stormwater runoff from rooftops and decreasing flow to sewer systems. Rain barrels and cisterns provide an alternative source of water for gardens, lawns, and landscaping by reducing the use of potable water supplies.



RAINWATER HARVESTING SYSTEM SUITABILITY: EXAMPLE PROJECT SITE



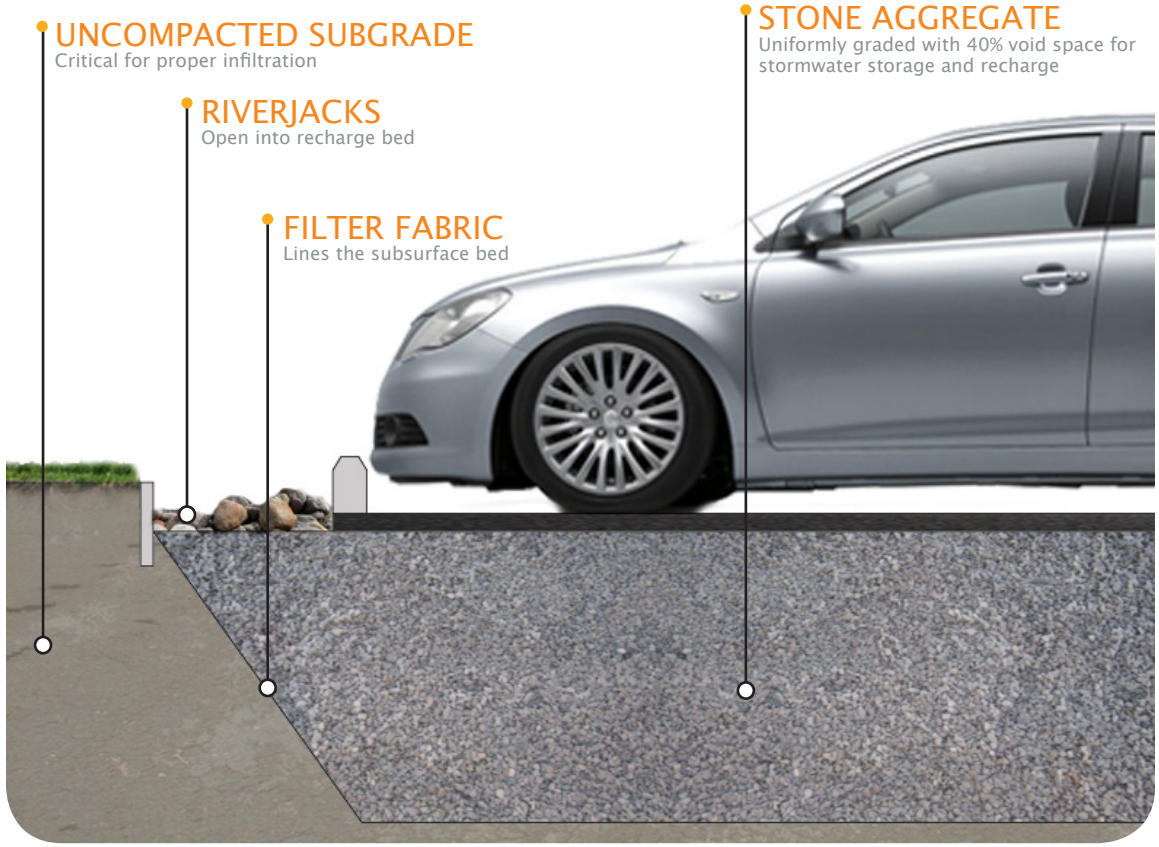
RAINWATER HARVESTING SYSTEM SUITABILITY: EXAMPLE PROJECT SITE

STORAGE, QUANTITY, & INFILTRATION SYSTEMS

Storage, quantity, and infiltration systems primarily focus on storage. These systems are typically located close to runoff sources within residential, commercial, and industrial landscapes. The main treatment mechanism is reducing peak flows of stormwater by storing it before it becomes runoff. Construction costs for storage, quantity, and infiltration are moderate to high when compared to other green infrastructure practices because they require more space and infrastructure and are more laborious to install. Since these systems can be seamlessly incorporated into the built environment and can manage a large quantity of water, the community acceptance of storage, quantity, and infiltration systems is high.

PERMEABLE PAVEMENT

- Underlying stone reservoir
- Porous asphalt and pervious concrete are manufactured without “fine” materials to allow infiltration
- Grass pavers are concrete interlocking blocks with open areas to allow grass to grow
- Ideal application for porous pavement is to treat a low traffic or overflow parking area



PERMEABLE PAVEMENT DIAGRAM

STORAGE, QUANTITY, & INFILTRATION SYSTEM SUITABILITY

Pervious paving systems are paved areas that produce less stormwater runoff than areas paved with conventional paving. These systems include:

- Permeable pavers
- Porous asphalt
- Pervious concrete

The paving material is placed over a bed of uniformly graded stone. The paving materials allow water to pass through and then infiltrate into the pore spaces of the underlying stone bed. The stored runoff then infiltrates over time into the uncompacted subgrade soils.

Stormwater planters are small, contained vegetated systems that collect and treat stormwater using a prepared soil media and mulch. These systems serve as small bioretention facilities filtering stormwater through layers of mulch, soil, and plant root systems. Treated stormwater can then be infiltrated into existing surrounding soils as groundwater (infiltration planter), or if infiltration is not appropriate, drainage pipes can discharge filtered stormwater into traditional storm sewer infrastructure (flow-through planter).

STORAGE, QUANTITY, & INFILTRATION SYSTEM SUITABILITY: EXAMPLE PROJECT SITE

STORAGE, QUANTITY, & INFILTRATION SYSTEM SUITABILITY: EXAMPLE PROJECT SITE


TREE
PLANTING

COMMUNITY ENGAGEMENT & EDUCATION

BUILD A RAIN BARREL WORKSHOP

With the Build a Rain Barrel Workshop, community members participate in a short presentation on stormwater management and water conservation and then learn how to build their own rain barrel. Workshop participants work with trained experts to convert 55 gallon plastic food-grade drums into rain barrels. They are quickly able to take an active role in harvesting rainwater by installing a rain barrel at their house! Harvesting rainwater has many benefits including saving water, saving money, and preventing basement flooding. By collecting rainwater, homeowners are helping to reduce flooding and pollution in local waterways. When rainwater flows across a hard surface like rooftops, driveways, roadways, parking lots, and compacted lawns, it carries nonpoint source pollution to our local waterways. Harvesting the rainwater in a rain barrel is just one of the ways homeowners can reduce nonpoint source pollution and help reduce neighborhood flooding problems.

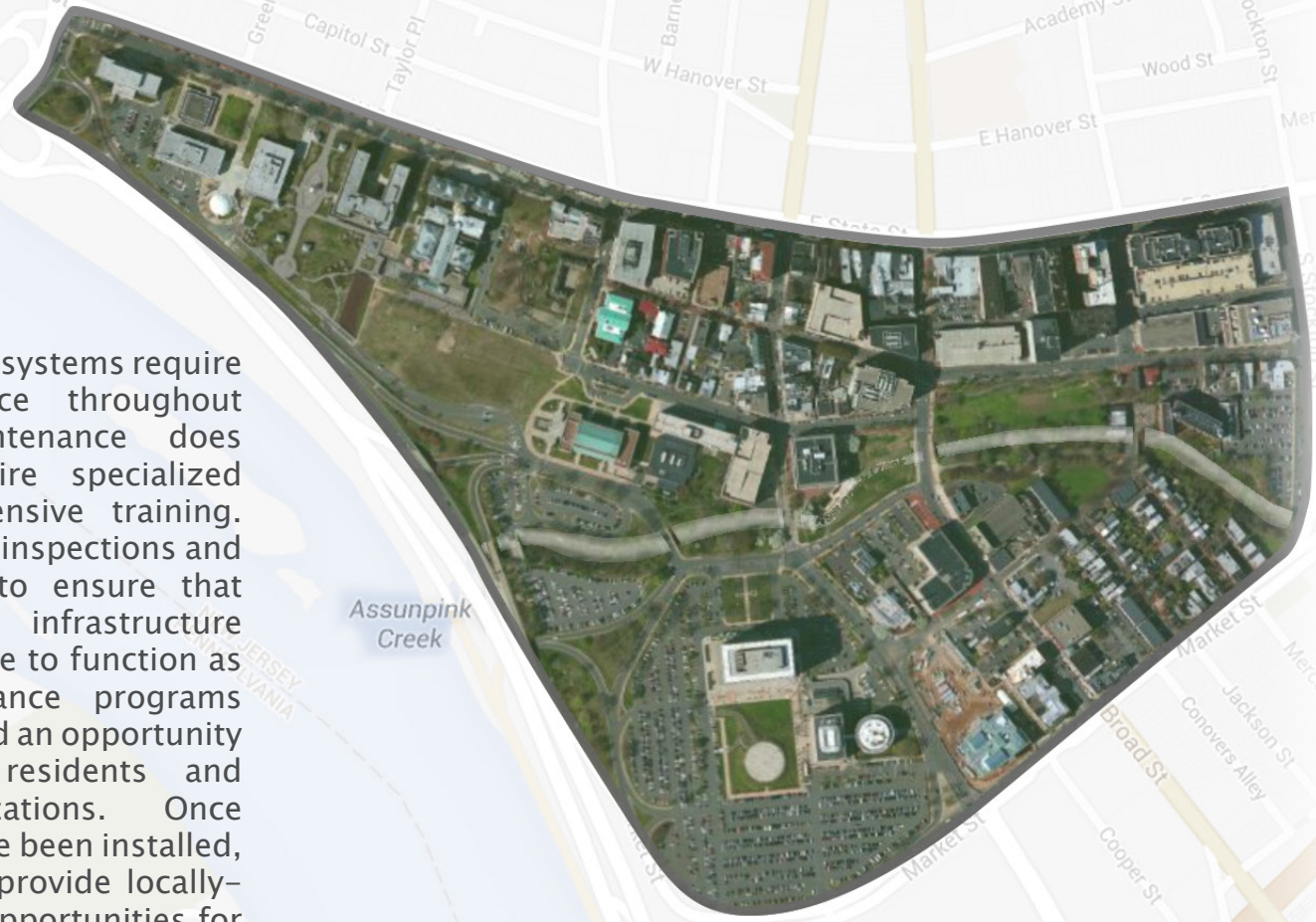
STORMWATER MANAGEMENT IN YOUR SCHOOLYARD

The *Stormwater Management in Your Schoolyard* program provides educational lectures, hands-on activities, and community-level outreach for students on the topics of water quality issues and stormwater management practices such as rain gardens and rain barrels. Program objectives include the exploration of various aspects of the natural environment on school grounds, the detailed documentation of findings related to these explorations, and the communication of these findings to the school community. As part of this program, several New Jersey State Core Curriculum Content Standards for science (5.1, 5.3, and 5.4), 21st-century life and careers (9.1, 9.3, and 9.4), and social studies (6.3) are addressed. Every school is unique in its need for stormwater management, so each school's *Stormwater Management in Your Schoolyard* program can be delivered in a variety of ways. This program can be tailored for grades K-8 or 9-12 and can be offered to meet a variety of schedules.




MAINTENANCE PROCEDURES

MAINTAINING TRENTON'S GREEN INFRASTRUCTURE SYSTEMS



Green infrastructure systems require routine maintenance throughout the year. Maintenance does not typically require specialized equipment or extensive training. Regularly scheduled inspections and maintenance help to ensure that constructed green infrastructure systems will continue to function as designed. Maintenance programs should be considered an opportunity to engage with residents and community organizations. Once enough systems have been installed, maintenance could provide locally-sourced green job opportunities for city residents. Green infrastructure systems should become an integral component of a neighborhood's landscape, and local stewardship of these systems can provide long-term success.

1. VEGETATED SYSTEMS
   - Rain Gardens
   - Stormwater Planters
   - Bioswales
2. RAINWATER HARVESTING
   - Rain Barrels
   - Cisterns
3. STORAGE, QUANTITY, AND INFILTRATION
   - Pervious Pavements
4. COMBINATION OF STRATEGY TYPES

VEGETATED SYSTEM MAINTENANCE

RAIN GARDEN:

Weekly

- Water
- Weed
- Inspect for invasive plants, plant health, excessive sediment, and movement of sediment within the rain garden
- Observe the rain garden during rain events and note any successes (Example of success: stormwater runoff picks up oil and grease from the parking lot, flows through a curb cut, and into a rain garden; the rain garden traps the nonpoint source pollutants before they reach the nearby waterway)

Annually

- Mulch in the spring to retain a 3-inch mulch layer in the garden
- Prune during dormant season to improve plant health
- Remove sediment
- Plant
- Test the soil (every 3 years)
- Harvest plants to use in other parts of the landscape
- Clean debris from gutters connected to rain garden
- Replace materials (such as river rock and landscape fabric) where needed

BIOSWALE

Very similar maintenance regime to rain gardens

RAINWATER HARVESTING SYSTEM MAINTENANCE

RAIN BARREL:

- Keep screen on top and a garden hose attached to the overflow to prevent mosquitoes- change screen every two years
- Remove debris from screen after storms
- Disconnect the barrel in winter- store inside or outside with a cover
- Clean out with long brush and water/dilute bleach solution (~3%)

CISTERN:

- In the fall prepare cistern for the winter by diverting flow so no water can enter and freeze within the barrel
- Weekly check: Check for leaks, clogs and other obstructions; check for holes and vent openings where animals, insects and rodents may enter; repair leaks with sealant and drain the first flush diverter/ roof washer after every rainfall event
- Monthly check: Check roof and roof catchments to make sure no debris is entering the gutter and downspout directed into the cistern; keep the roof, gutters, and leader inlets clear of leaves; inspect the first flush filter and all of its attachments and make any necessary replacements; inspect cistern cover, screen, overflow pipe, sediment trap and other accessories; make any necessary replacements

STORAGE, QUANTITY, & INFILTRATION SYSTEM MAINTENANCE

POROUS ASPHALT & CONCRETE:

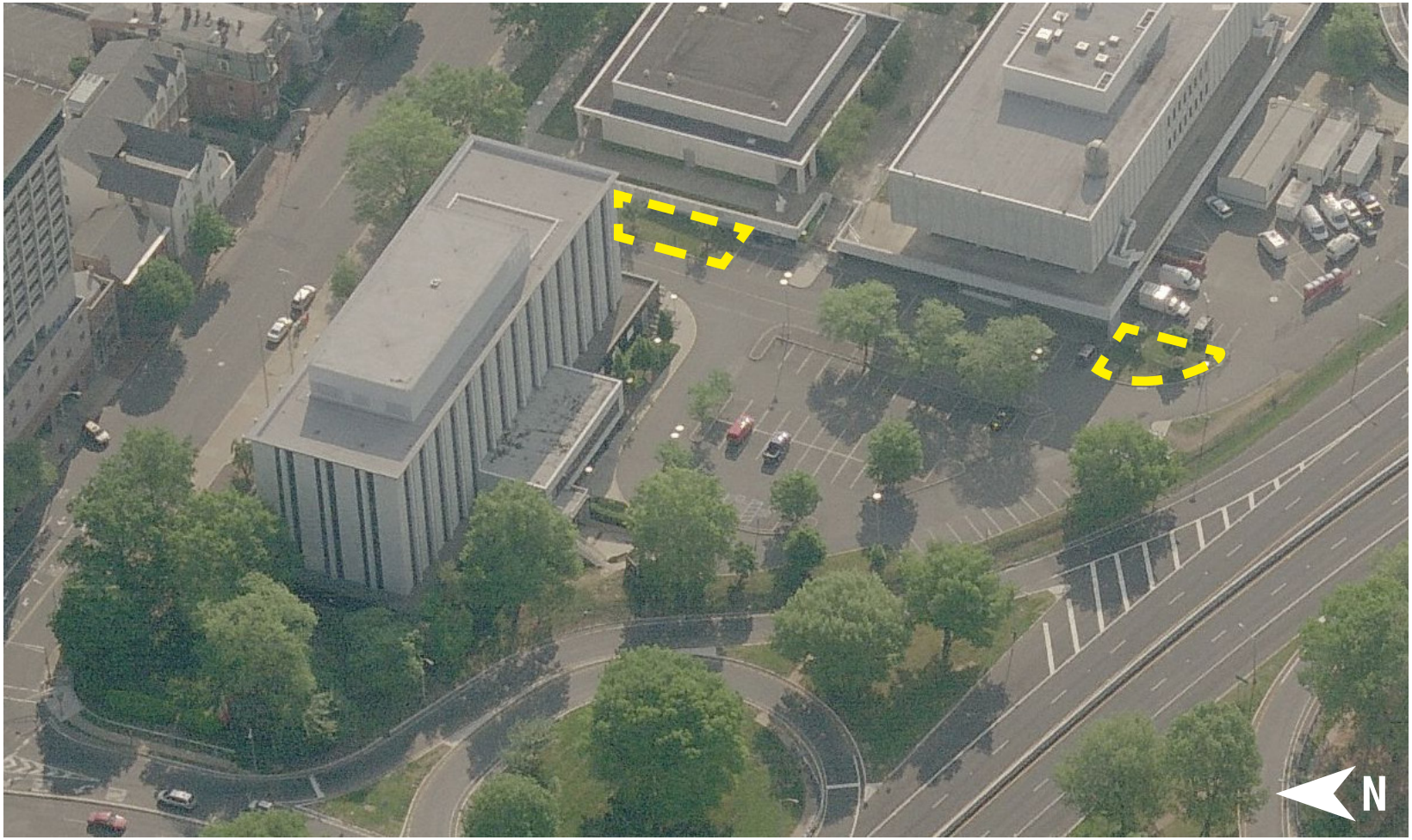
- Materials cost is ~20–25% more than traditional asphalt or concrete
- Long-term maintenance is required by routine quarterly vacuum sweeping
- Sweeping cost may be off-set by reduced deicing costs
- Asphalt repairs can be made with standard asphalt not to exceed 10% of surface area
- Concrete repairs can be made with standard concrete not to exceed 10% of the surface area

UNDERGROUND DETENTION:

- Periodic inspections of the inlet and outlet areas to ensure correct operation of system
- Clean materials trapped on grates protecting catch basins and inlet area monthly
- Primary maintenance concerns are removal of floatables that become trapped and removal of accumulating sediments within the system; this should be done at least on an annual basis
- Proprietary traps and filters associated with stormwater storage units should be maintained as recommended by the manufacturer
- Any structural repairs required to inlet and outlet areas should be addressed in a timely manner on an as needed basis
- Local authorities may require annual inspection or require that they carry out inspections and maintenance



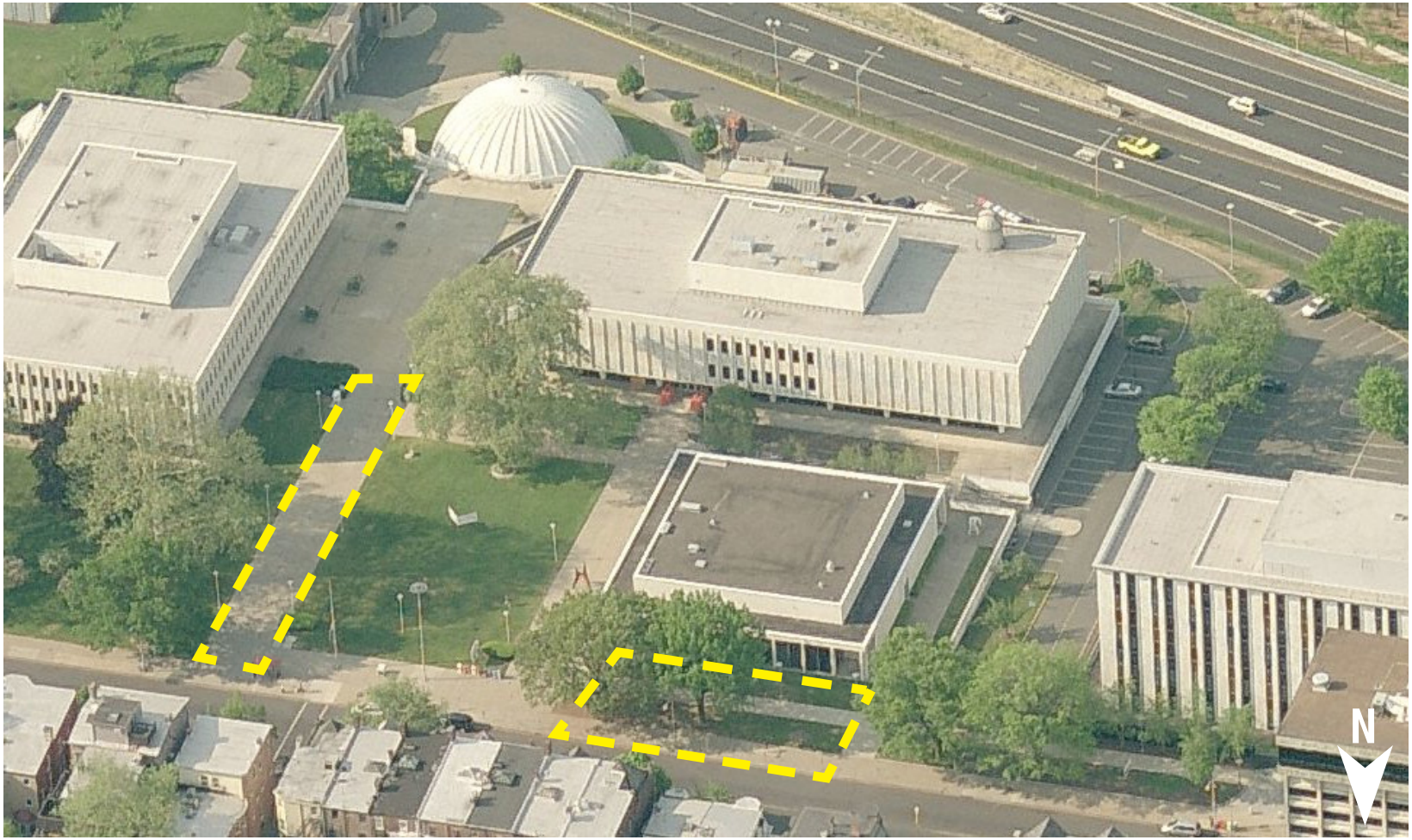

POTENTIAL PROJECT SITES


N

This site is located at the intersection of West State Street and Calhoun Street with Route 29 along its southern edge. The site slopes in the direction of Route 29 toward the southeast corner of the parking lot. Small islands in the lot provide catch basins piped directly to the Delaware River. Providing curb cuts and rain gardens will redirect stormwater runoff from the parking lot away from the street inlet and help it infiltrate into the ground.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [x] curb cuts
- [ ] stormwater planters
- [ ] tree planting
- [ ] buffers
- [ ] cisterns/rain barrels
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving



253 West State Street,
Trenton NJ 08625

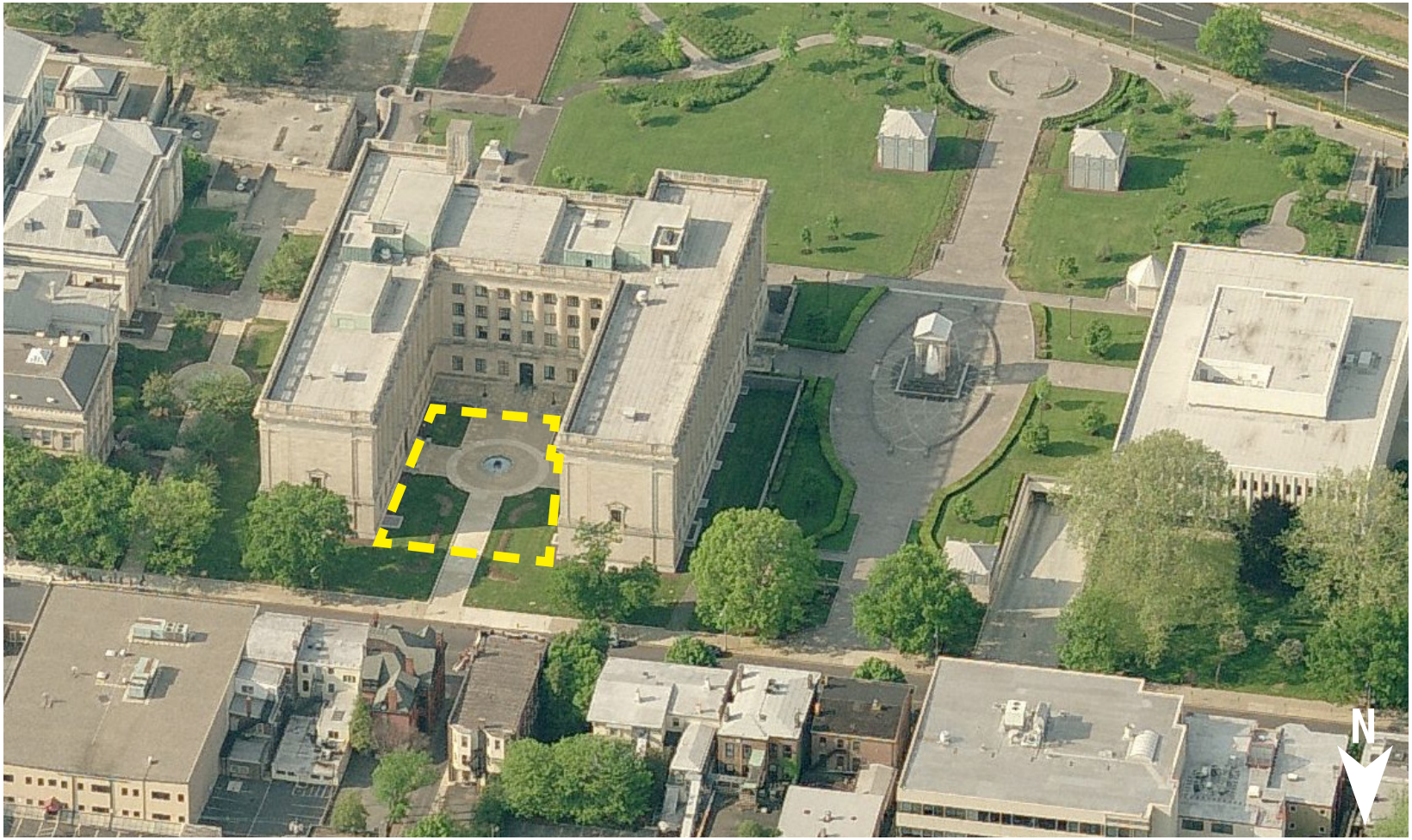
The New Jersey State Public Library is located along West State Street in the capitol park in Trenton, NJ. The site begins at the street and gradually slopes towards the south end. The site is elevated from Route 29, leaving only stair access. The streetscape along West State Street suffers from eroded concrete sidewalks causing severe puddling. Improving that landscape with pervious paving and rain gardens will promote water infiltration and aesthetic value.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] tree planting
- [ ] buffers
- [ ] cisterns/rain barrels
- [x] pervious pavement
- [ ] bioswales
- [ ] depaving

NEW JERSEY STATE PUBLIC LIBRARY

253 West State Street,
Trenton NJ 08625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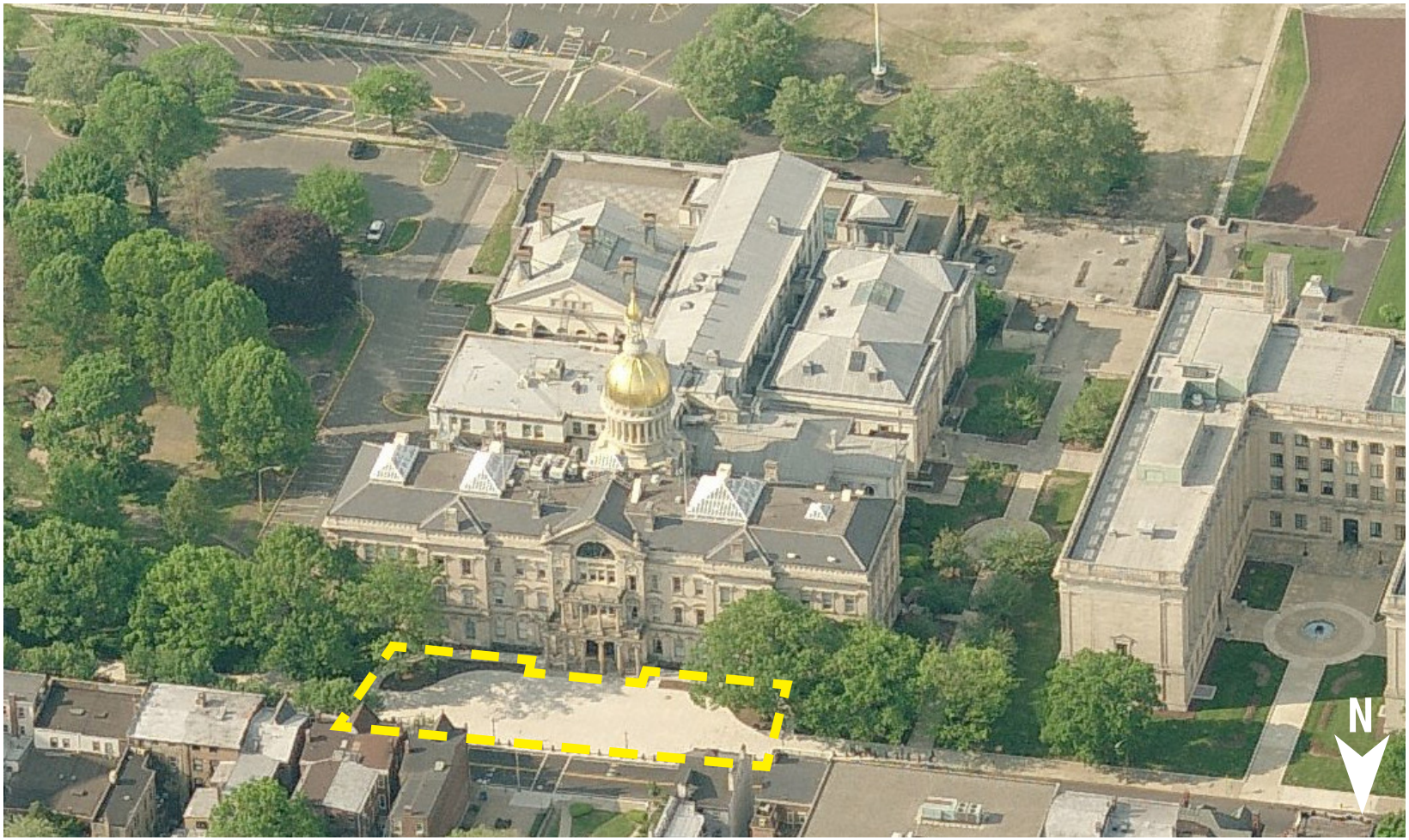
The New Jersey State House Annex is located along West State Street in the capital park of Trenton, NJ. The building's shape and orientation along the south sloping land creates a variety of problems with regard to how stormwater drains along the site. Currently, conditions direct stormwater from the buildings entryway into catch basins with limited treatment. By repurposing the lawn areas adjacent to the building's entryway as rain gardens, we can provide infiltration and treatment of stormwater before it reaches the catch basins.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [x] curb cuts
- [ ] stormwater planters
- [ ] tree planting
- [ ] buffers
- [ ] cisterns/rain barrels
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving



NEW JERSEY STATE HOUSE

125 West State Street,
Trenton, NJ 08625



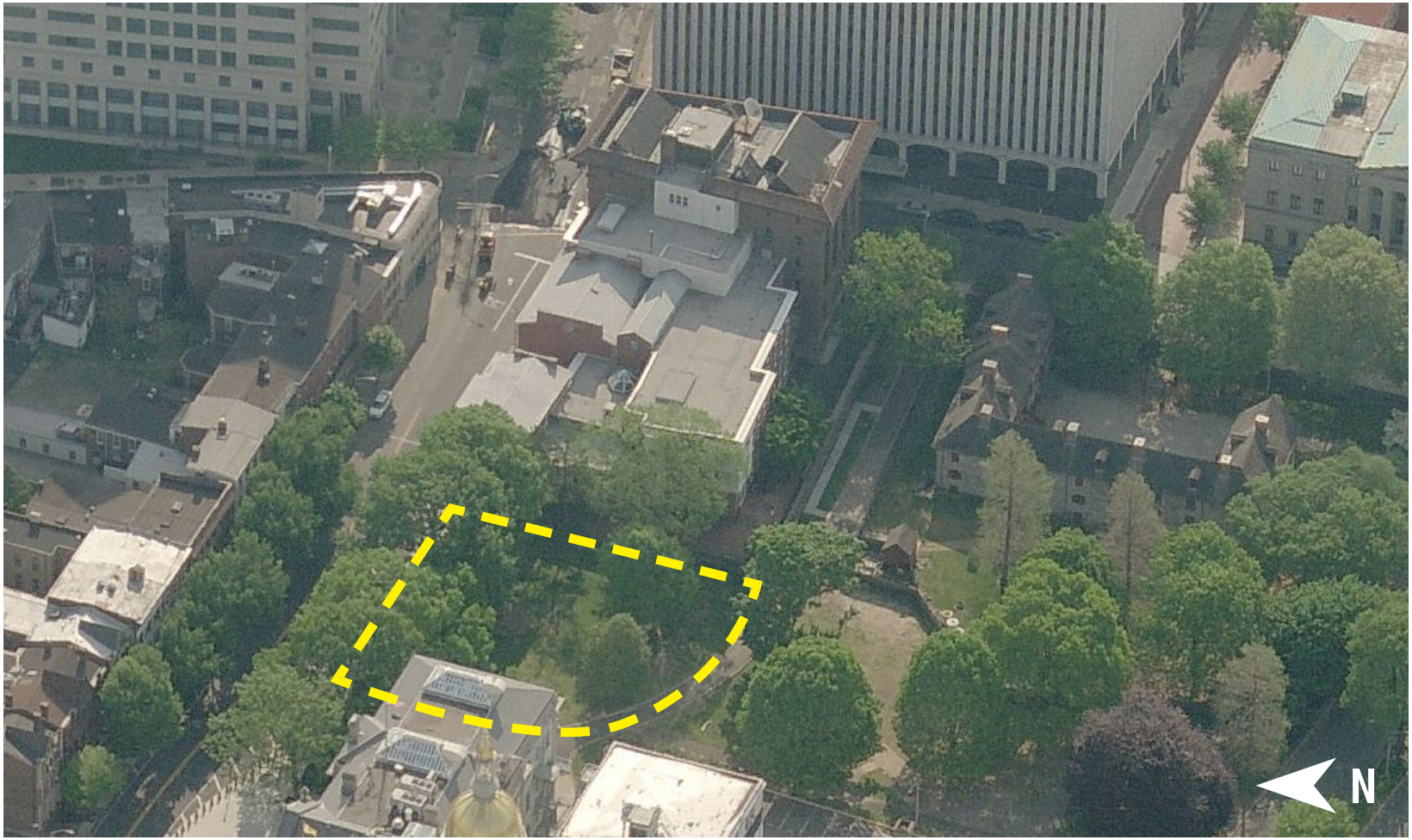
The New Jersey State House is located on West State Highway. It serves as an icon in the capitol park of Trenton, NJ. Currently, the site of the New Jersey State House slopes severely towards Route 29 towards a large lawn area. The entrance to the site provides two large kidney shaped planters with little visible planting. This site could benefit from retrofitting these planters into rain gardens with curb cuts to collect stormwater runoff from the sidewalk and adjacent plaza in front of the state house. These gardens would help to treat and retain stormwater during regular storm events.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [x] curb cuts
- [ ] stormwater planters
- [ ] tree planting
- [ ] buffers
- [ ] cisterns/rain barrels
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving

NEW JERSEY STATE HOUSE

125 West State Street,
Trenton, NJ 08625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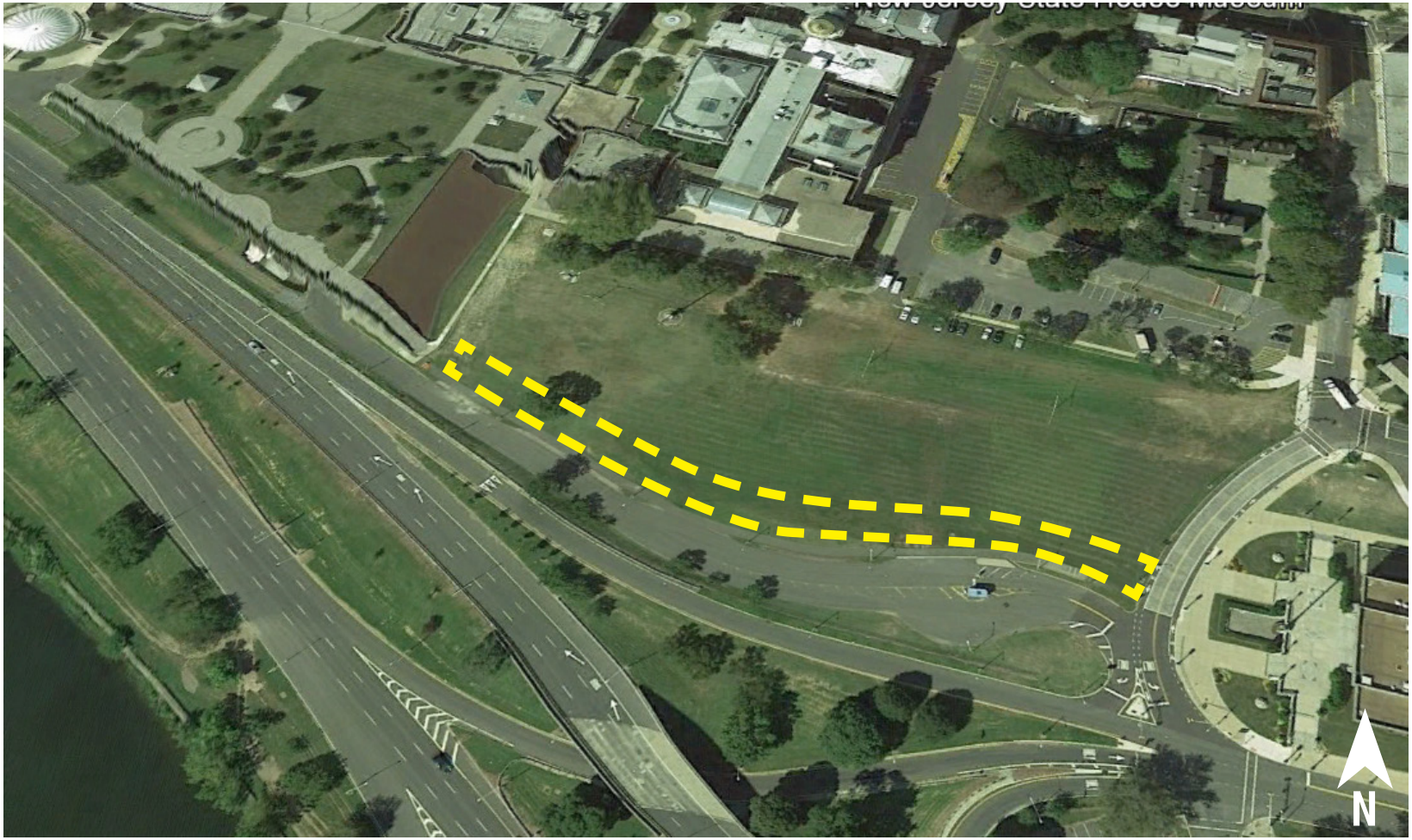
The site of Thomas Edison State College is located on the corner of West State Street and Barrack Street in Trenton, NJ. The site slopes toward the south in the direction of Petty's Run, the site of a historical steel furnace, and Trenton's historical barracks site. The lawn located to the west collects the majority of the site and streetscape stormwater, directing it towards a catch basin at the southern end of the site. Providing a rain garden in the pre-existing lawn space would provide treatment for stormwater runoff and additional green space for the Trenton community.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [x] curb cuts
- [ ] stormwater planters
- [ ] tree planting
- [ ] buffers
- [ ] cisterns/rain barrels
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving



FIELD AT MEMORIAL DR. AND BARRACKS ST.

Intersection of Memorial Dr.
and Barracks St.
Trenton, NJ 08625



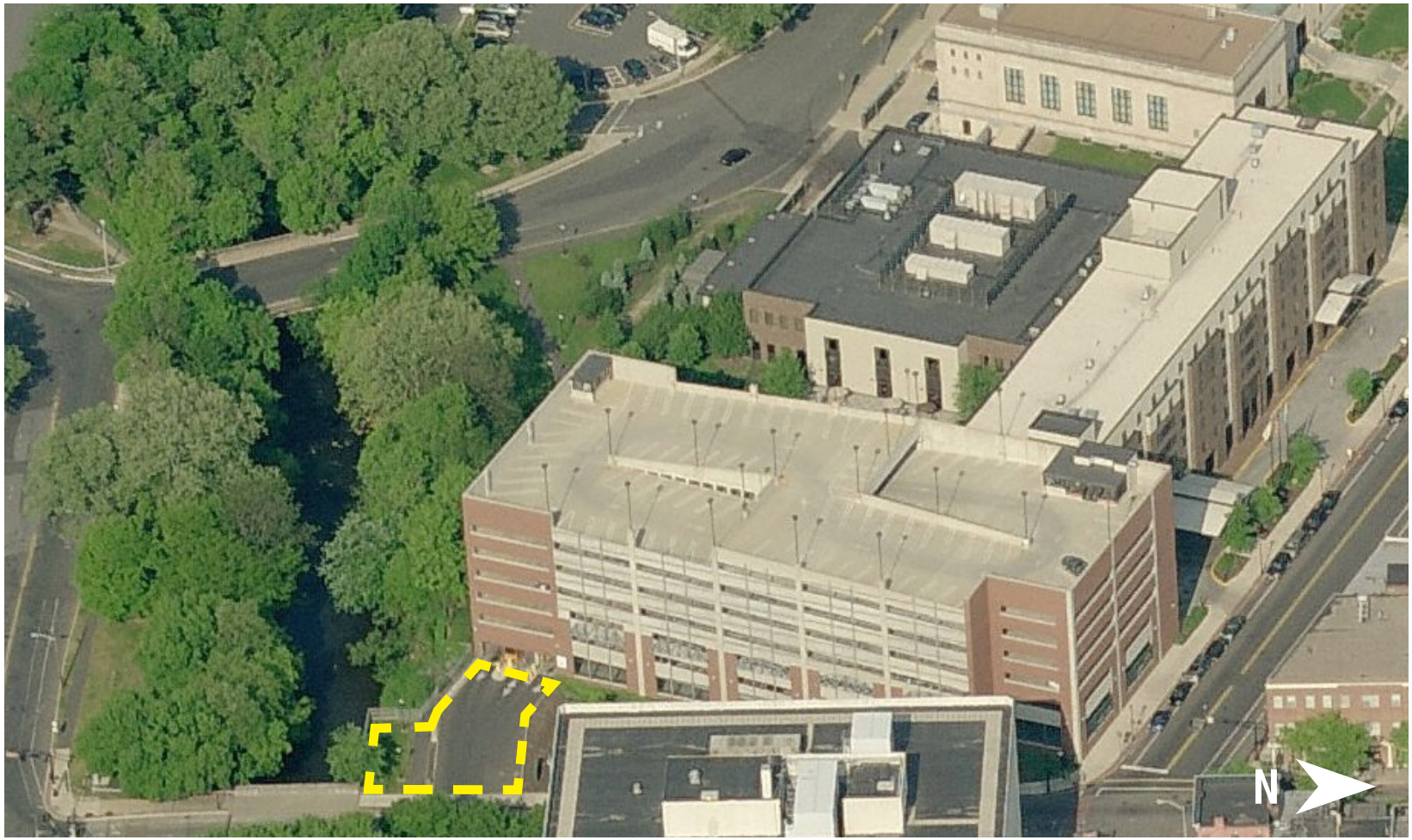
The site is located at the intersection of Memorial Drive and Barracks Street. Originally a parking lot and deadend roadway, the now vacant site captures stormwater runoff, from the surrounding roads and parking areas. The site is currently collecting a majority of the stormwater runoff between West State Street and Memorial Drive with little treatment. Providing an edge of rain gardens along Memorial Drive would help to improve the condition of the field.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] tree planting
- [ ] buffers
- [ ] cisterns/rain barrels
- [ ] pervious pavement
- [x] bioswales
- [ ] depaving

FIELD AT MEMORIAL DR. AND BARRACKS ST.

Intersection of Memorial Dr.
and Barracks St.
Trenton, NJ 08625

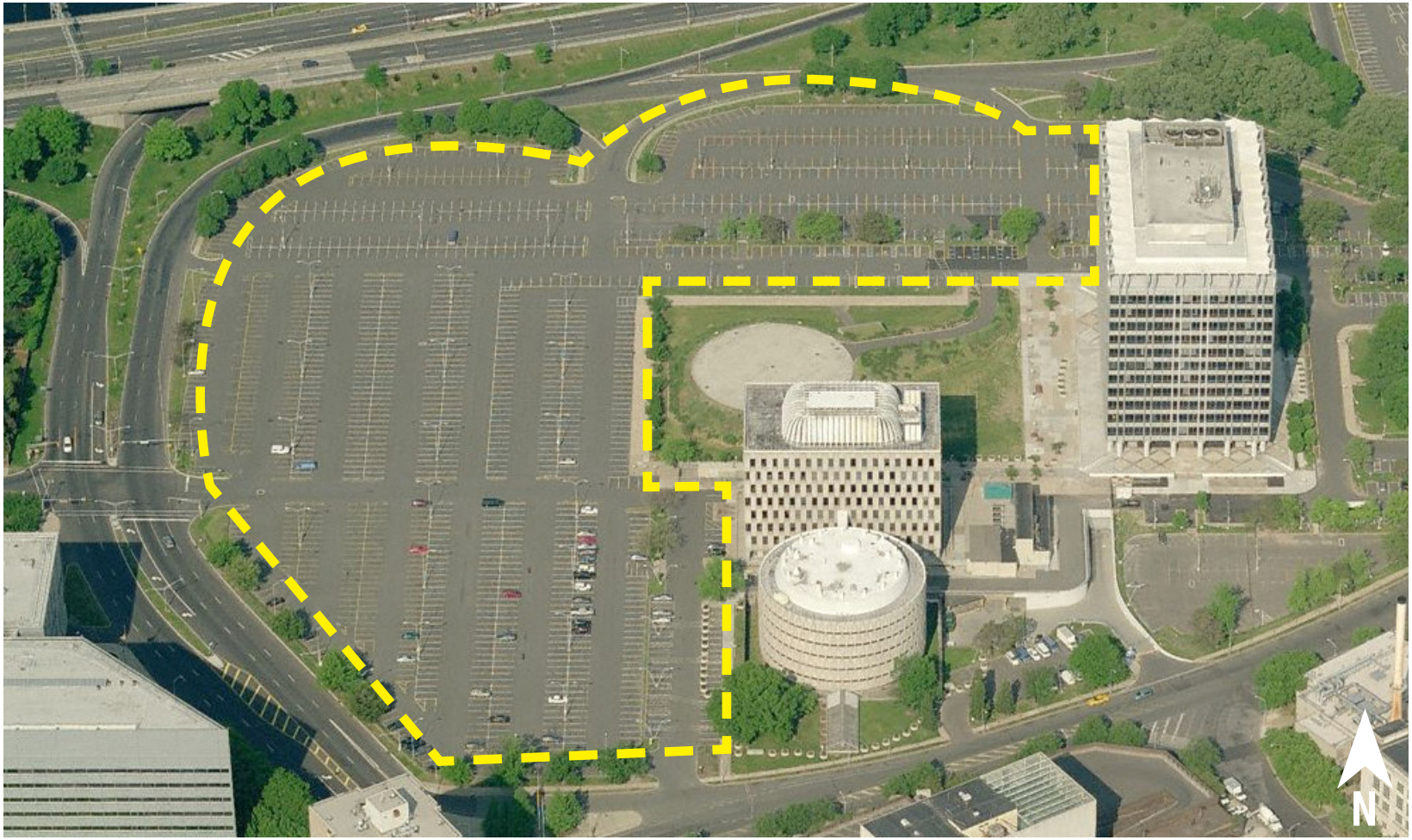

N



The Wyndam Garden Hotel is located on Lafayette Street in Trenton, NJ. The site is located adjacent to the Assunpink Creek. Currently, much of the stormwater is captured and piped directly into the creek with limited, if any, treatment. By disconnecting current systems and rerouting water to newly designed rain gardens, the site has the ability to treat and even infiltrate stormwater runoff.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] tree planting
- [ ] buffers
- [ ] cisterns/rain barrels
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving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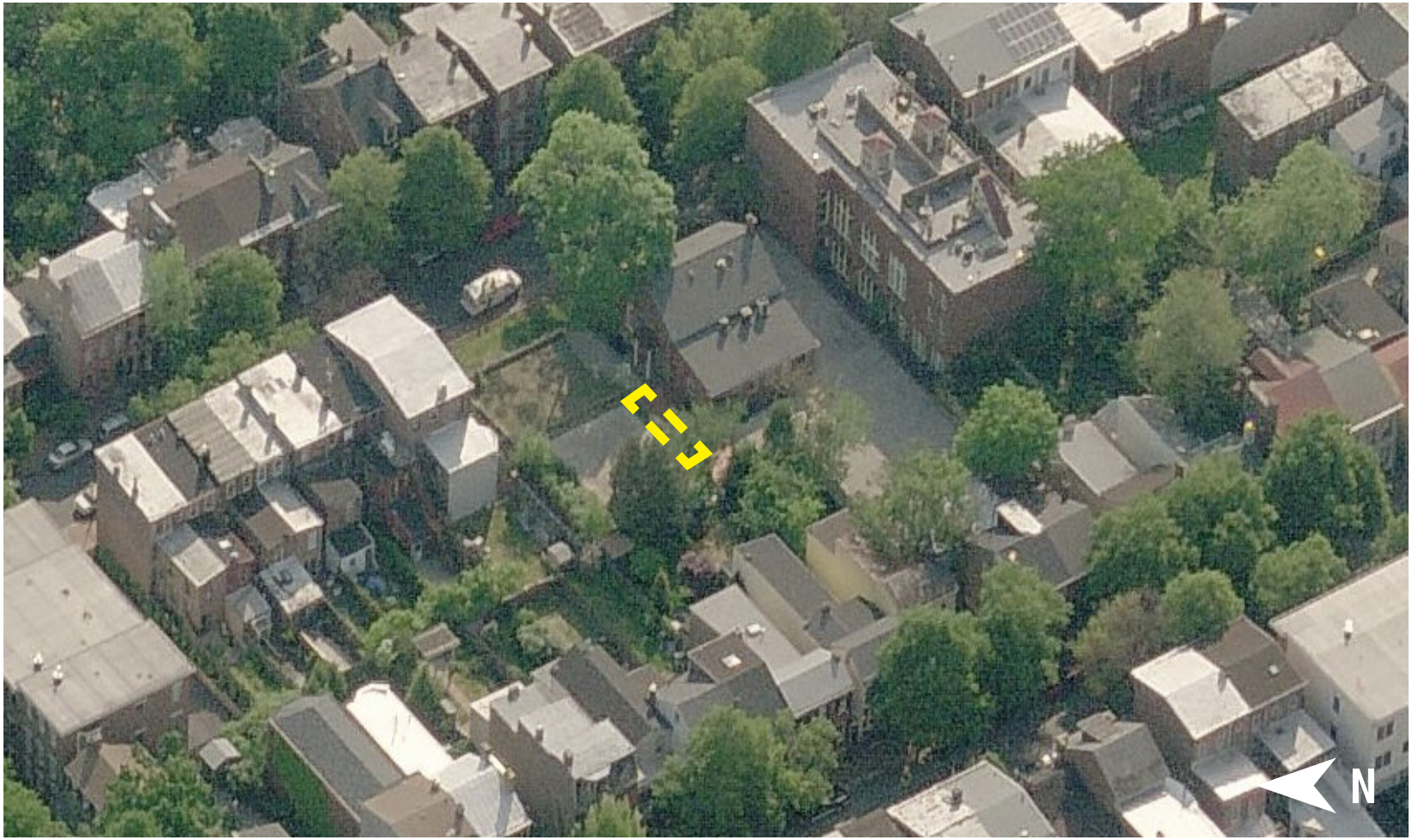
This site is located on the corner of Warren Street and Market Street. Unfortunately, due to the site's high percentage of impervious cover, most of the stormwater flows directly into catch basins with little to notreatment before entering the waterway. To improve this condition, using pervious asphalt will promote infiltration and improve water quality. In addition, redesigning the lot with angled parking spaces can provide space for additional rain garden islands to capture, filter, and infiltrate stormwater runoff.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] tree planting
- [ ] buffers
- [ ] cisterns/rain barrels
- [x] pervious pavement
- [ ] bioswales
- [ ] depaving


151
N

The site of the Mercer Street Friends is located on Mercer Street in Trenton. The site itself is raised from the street and slopes towards the parking area. Currently, the site's stormwater is collected from the roof and piped down to ground-level with traditional downspouts. In the northwest corner of the property, two downspouts flood the existing patio space. The site could benefit from the use of cisterns or rain barrels to collect stormwater to repurpose it for watering the neighboring garden and landscape.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- ☐ rain gardens
- ☐ curb cuts
- ☐ stormwater planters
- ☐ tree planting
- ☐ buffers
- ☑ cisterns/rain barrels
- ☐ pervious pavement
- ☐ bioswales
- ☐ depaving


N

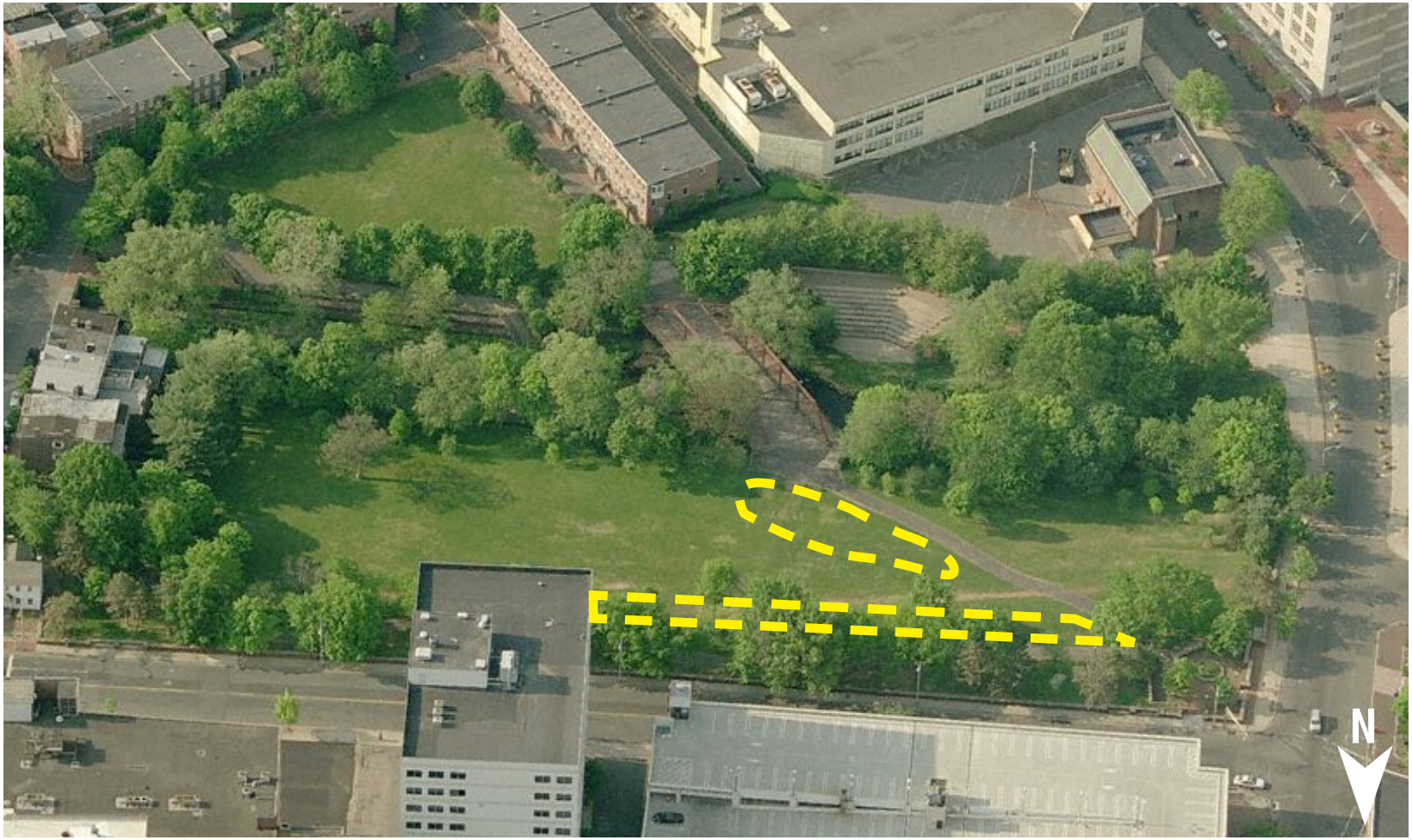


The site of Assunpink Drive is located adjacent to the design area for the Assunpink Creek daylighting project. Currently, the site uses traditional street catch basins to capture stormwater and direct it to the Assunpink Creek. By integrating rain gardens into the streetscape, stormwater can be mitigated and treated before reaching the creek.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [x] curb cuts
- [ ] stormwater planters
- [ ] tree planting
- [ ] buffers
- [ ] cisterns/rain barrels
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving

222 South Warren St.
Trenton, NJ 08625



MILL HILL PARK

East Front Street & Broad Street, Trenton, NJ 08625



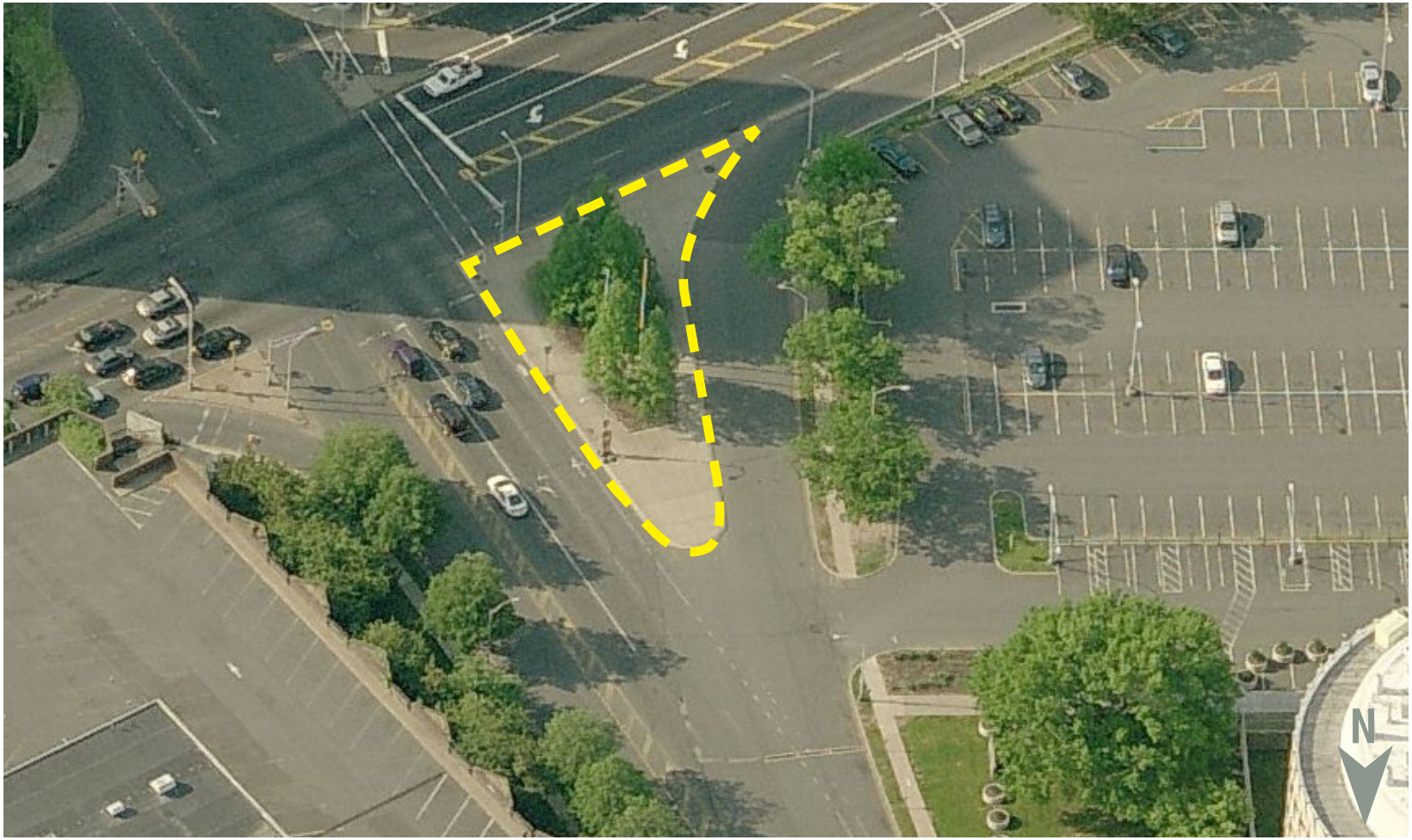
Mill Hill Park is located on the corner of East Front Street and Broad Street neighboring the Assunpink Creek. The site is mildly sloped in the direction of the creek with a series of catch basins to capture stormwater runoff. By providing rain gardens and bioswales on the property, stormwater will be retained and treated prior to flowing into the creek.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [ ] curb cuts
- [ ] stormwater planters
- [ ] tree planting
- [ ] buffers
- [ ] cisterns/rain barrels
- [ ] pervious pavement
- [x] bioswales
- [ ] depaving

MILL HILL PARK

East Front Street & Broad Street, Trenton, NJ 08625



INTERSECTION AT MARKET ST. AND S. WARREN ST.

Between S. Warren & S. Broad St.
Trenton, NJ 08625



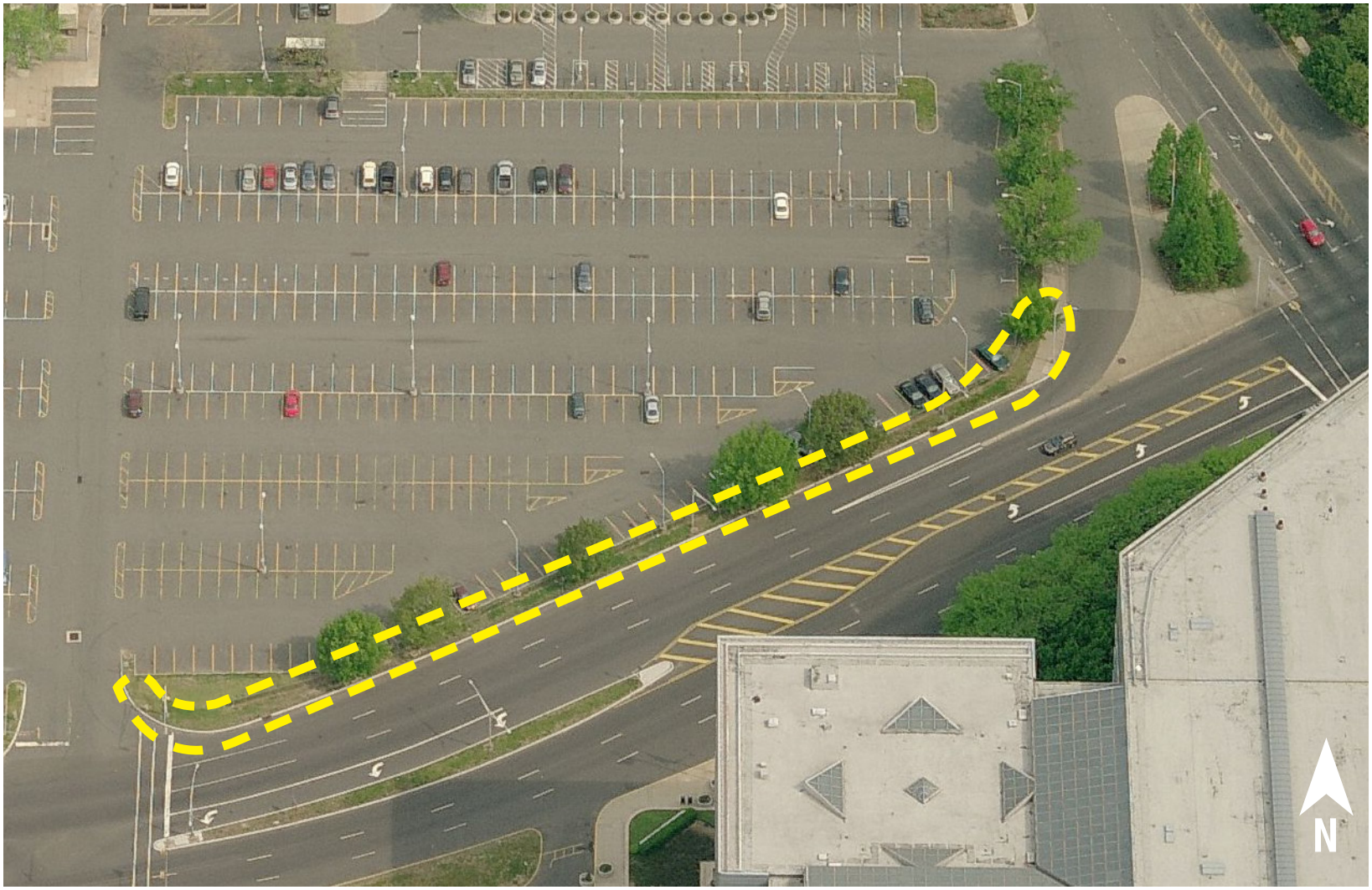
This site is located at the intersection of Market Street and South Warren Street. Currently, the site is designed as a pocket park to provide space for people outside of the Department of Agriculture building. The site's proximity to the streetscape offers a great opportunity to collect and treat stormwater coming off the roadway. By retrofitting some of the existing lawn plantings into rain gardens, stormwater can be diverted from the roadways and sewer system. This can help mitigate flooding on the roadway during storm events.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- [x] rain gardens
- [x] curb cuts
- [ ] stormwater planters
- [ ] tree planting
- [ ] buffers
- [ ] cisterns/rain barrels
- [ ] pervious pavement
- [ ] bioswales
- [ ] depaving

INTERSECTION AT MARKET ST. AND S. WARREN ST.

Between S. Warren & S. Broad St.
Trenton, NJ 08625



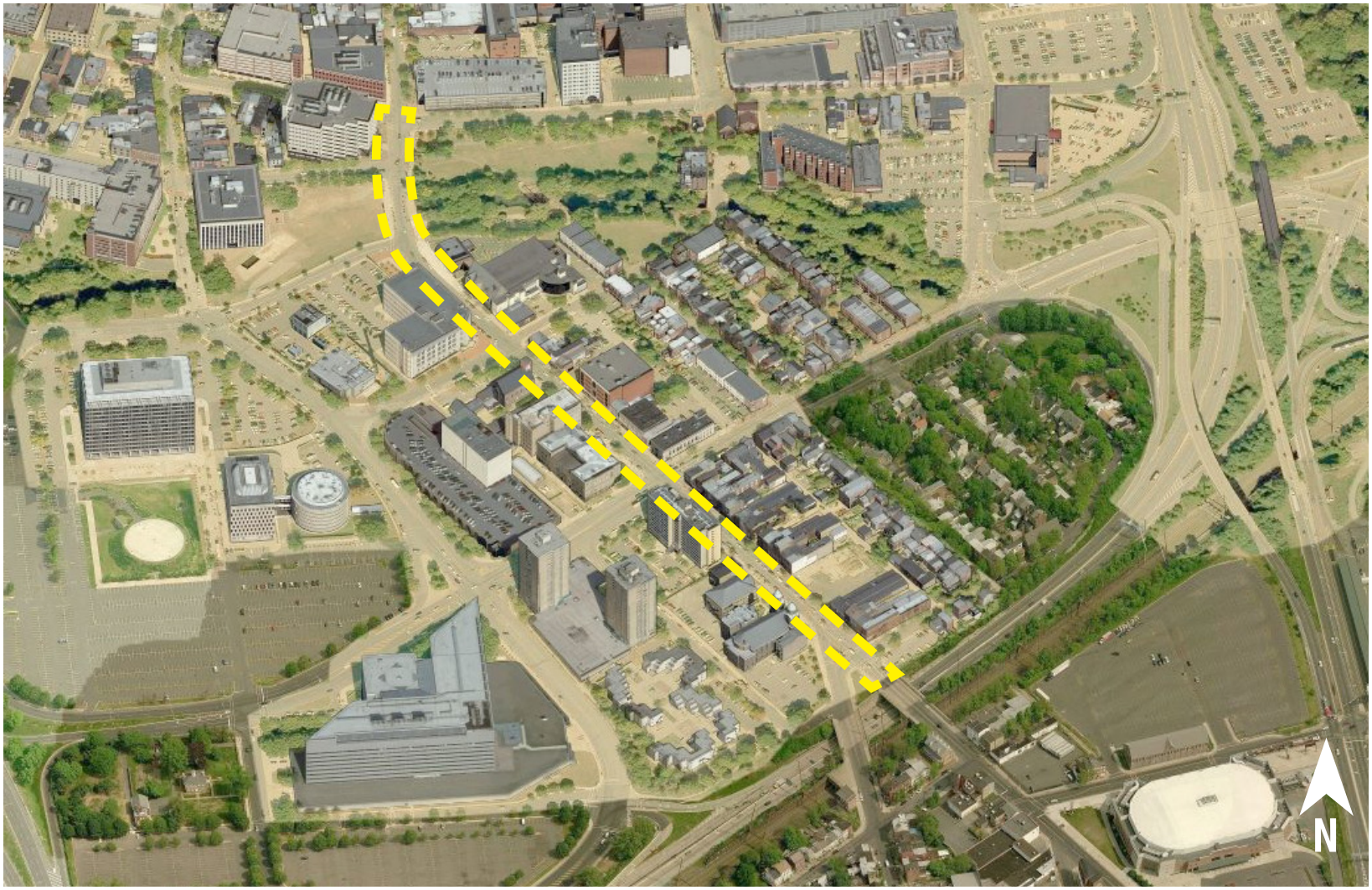
MARKET STREET STREETSCAPE

Between S. Warren & S. Broad St.
Trenton, NJ 08625

This site is located on a stretch of Market Street bordered by South Warren Street and South Broad Street. Currently, the site captures all the street's stormwater runoff in three inlets along the roadway. By using bioretention systems and tree trenches along the roadway, stormwater can be disconnected from the traditional inlets and diverted into green infrastructure systems to reduce sediment buildup and potential flooding.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- ☐ rain gardens
- ☑ curb cuts
- ☐ stormwater planters
- ☐ tree planting
- ☐ buffers
- ☐ cisterns/rain barrels
- ☐ pervious pavement
- ☑ bioswales
- ☐ depaving



BROAD STREET STREETSCAPE

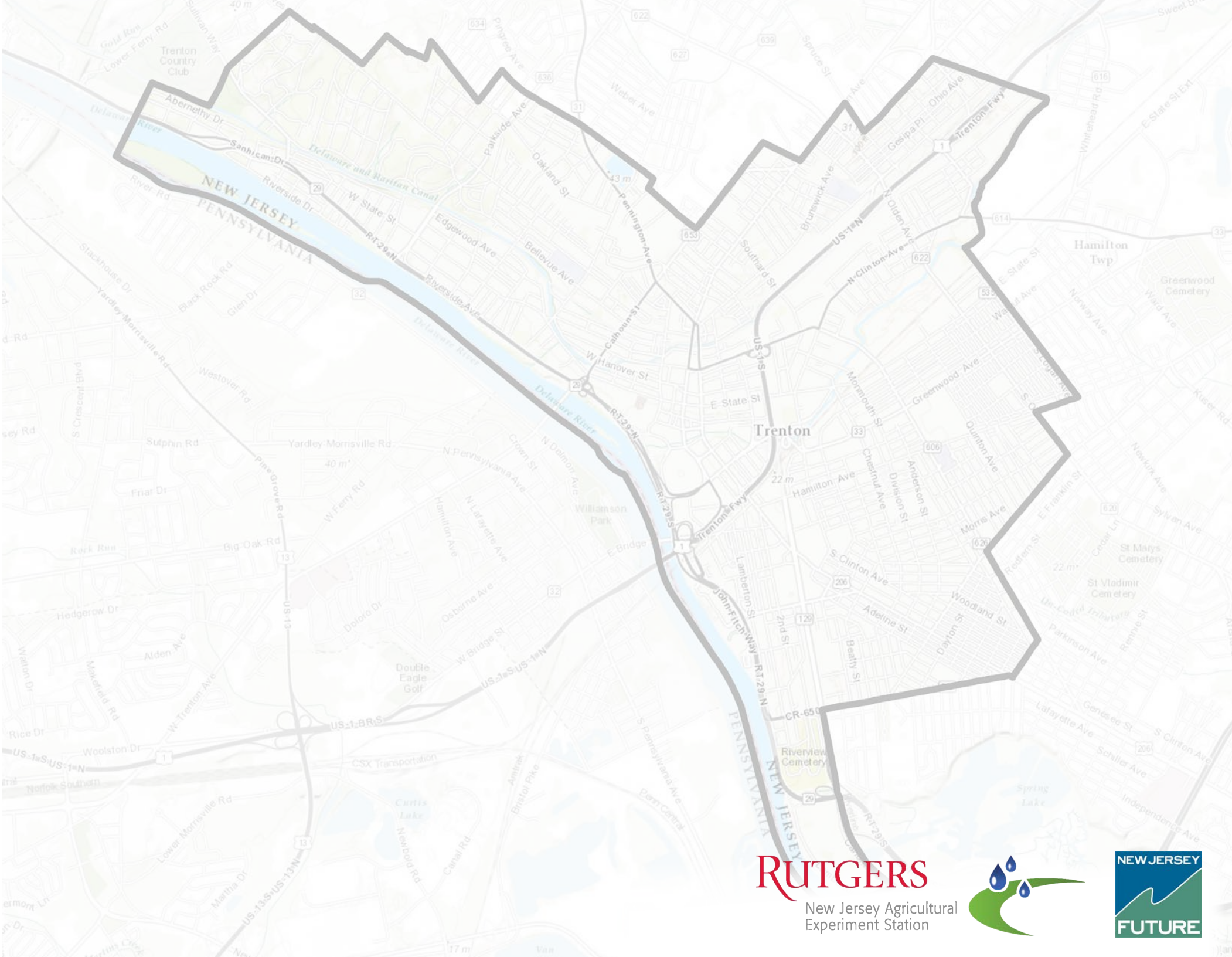
Between State St. & Market St.
Trenton, NJ 08625



Trees intercept rainfall and provide stormwater management benefits when properly integrated as a component of a community's infrastructure. Planting trees along streets and roadways reduces impervious cover and the volume of stormwater that flows into sewer systems. Planting the right tree in the right place is important to avoid onflicts with utilities, pedestrians, and site lines. Tree planting should be considered along Broad Street in Trenton to provide a range of stormwater management benefits. Trees not only reduce stormwater runoff, but also help to combat the urban heat island effect, improve property values, and enhance neighborhood aesthetics. Planning and implementing tree planting along all or portions of South Broad Street can help the city begin tackling these issues.

SUITABLE GREEN INFRASTRUCTURE STRATEGIES:

- ☐ rain gardens
- ☐ curb cuts
- ☐ stormwater planters
- ☑ tree planting
- ☐ buffers
- ☐ cisterns/rain barrels
- ☐ pervious pavement
- ☐ bioswales
- ☐ depaving



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