

# Green Infrastructure for Community Resilience:

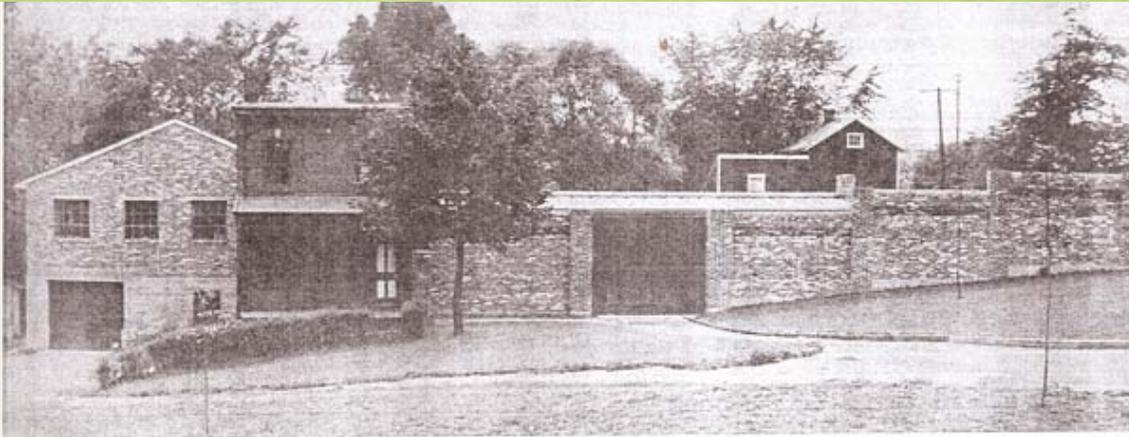
## Site Scale Examples in Urban Settings

May 5, 2016

Vikram Krishnamurthy  
Executive Director  
Delaware Center for Horticulture

thedch.org  
vkrishna@thedch.org

# Delaware Center for Horticulture



- Founded in 1977 as the Wilmington Garden Center
- Nonprofit, membership-based urban greening resource center
- Community greening and education programs
- Workshops, trips, tours, lectures
- Urban Agriculture - community gardens, Wilmington's first urban farm
- Community Forestry - tree steward network, street tree consultation, research
- Public Landscapes - gateway beautification, community, volunteer & corporate engagement
- Education – vocational training, youth & adult programs

# Green Infrastructure – Public Landscapes

- Scale-dependent approach +
- Context-driven design +
- Ecosystem services +
- Methods are repeatable (scaling up) +
- Grounded in science +
- Streetscapes +



= Importance of collaboration and community input

# Definitions and types of projects

## Bioswale

- Concord Ave (Rt. 202),  
Wilmington
- Former contaminated  
industrial/commercial site
- Alternative to redevelopment
- Low-impact development



# Definitions and types of projects

## Tree Trench

- Thatcher Street in Northeast Wilmington
- Residential area and adjacent park space
- Located in city's highest-priority CSO (combined sewer overflow) basin



# Definitions and types of projects

## Rain Garden

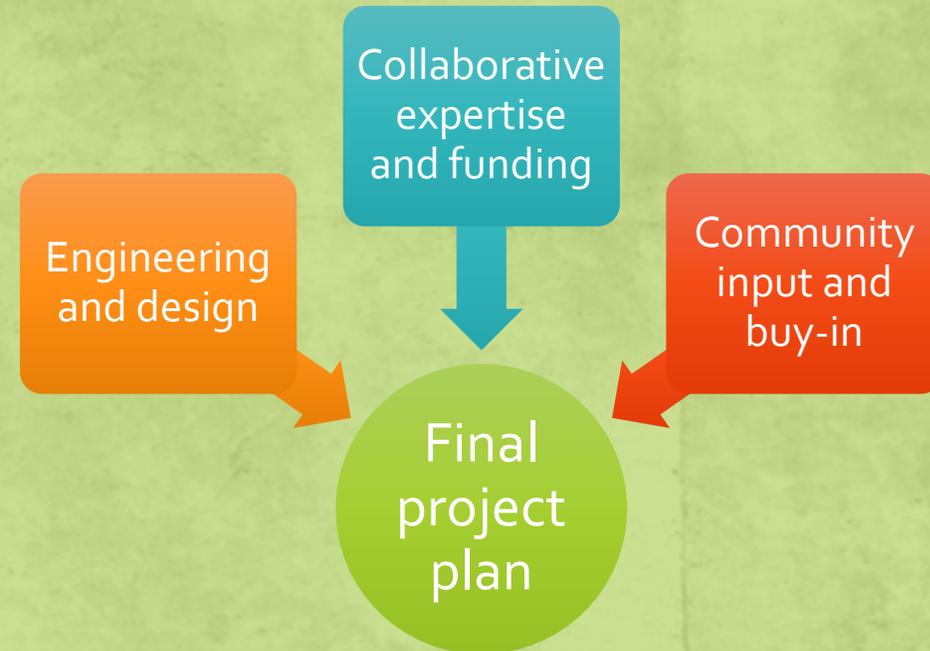
- Acme grocery, Trolley Square neighborhood, Wilmington
- Parking lot surrounded by additional impervious areas
- Flash-flooding prone intersection (Delaware Ave. & N. Dupont St.)



# Lessons learned: Importance of participatory process

Community input process – priorities included:

- Availability and net loss of parking spaces
- Safety for pedestrian passage
- Aesthetics & attractiveness of final design
- Inconvenience and disruption of construction
- Maintenance responsibilities



# Thatcher St. Tree Trench



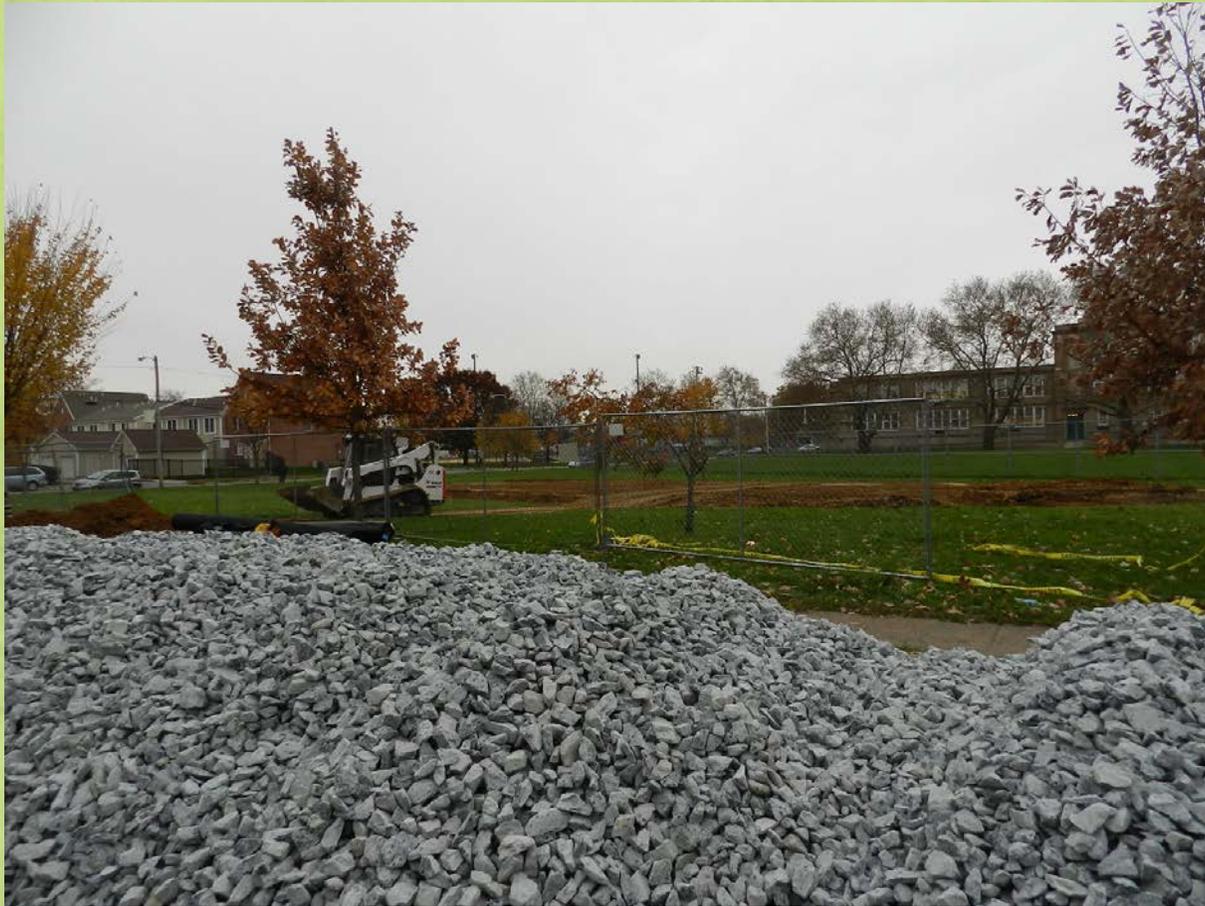
# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# Thatcher St. Tree Trench



# How this shady row of trees helps to keep our city waterways clean

Hidden below this row of trees on Thatcher Street is a prime example of “green stormwater management” at work in Wilmington.

Generations ago when this neighborhood was first built, pipes were installed under the street to carry both rainwater and sewage out to the river. Today the pipes are routed through a treatment plant, but in heavy rains, the combined system is overwhelmed and dirty water still dumps directly into our beautiful waterways.

The trees along this sidewalk and the materials buried underneath them are working hard to soak up and filter water before it can flow into the drains. This 150-foot tree trench system is collecting the rain from more than an acre of roofs and streets.

A view of the Thatcher Street tree trench during construction



## What kind of trees are these?

Quercus bicolor leaves will turn yellow-brown in the autumn

The scientific name for the trees in this tree trench is *Quercus bicolor*, commonly called Swamp White Oak. Native to Delaware, this tree is highly adaptable to city life and is a good shade tree. It produces acorns in the fall which are attractive to squirrels.

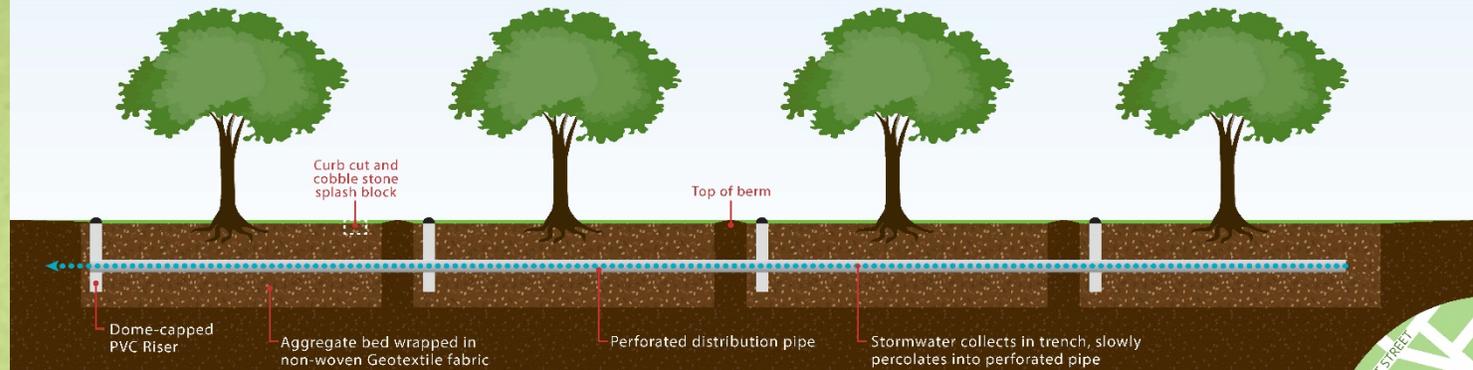
### The benefits of large trees in the city

Big trees like these oaks will grow to provide 10 to 20 times more benefits than a smaller type of tree.

Large trees are beneficial because they:

- Absorb more water than smaller trees
- Act like giant air conditioners to cool the city
- Clean our air by removing pollutants
- Shade paved surfaces
- Prevent water runoff and erosion
- Increase property values

## The Thatcher Street tree trench: How it works



Thatcher Street Tree Trench project sponsors:



Quercus bicolor acorns

# Trolley Square Acme



# Trolley Square Acme



# Trolley Square Acme



# Trolley Square Acme



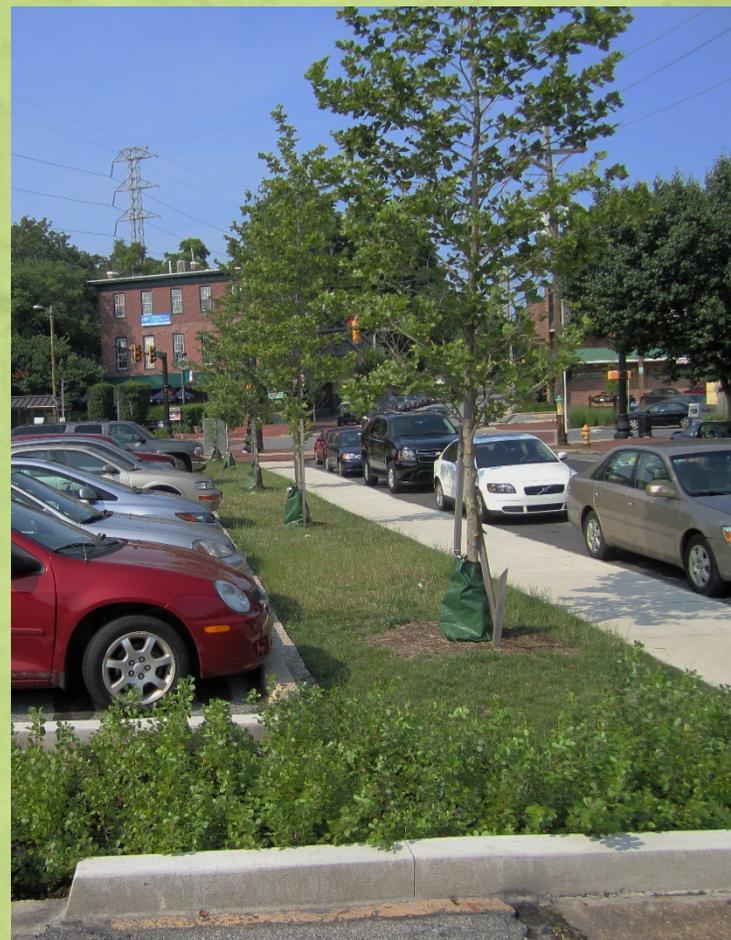
# Trolley Square Acme



# Trolley Square Acme



# Trolley Square Acme



# Trolley Square Acme



# Trolley Square Acme



# Trolley Square Acme



# Trolley Square Acme



# Latest project – Delaware Ave. Bioswale



# Latest project – Delaware Ave. Bioswale



# Upcoming projects

- Conaty Park renovations to include (2) rain gardens
- Additional plantings and maintenance of Delaware Ave. bioswale
- Enhancement plantings of Acme parking lot
- Increasing number of successful projects
- Wilmington land bank – vacant land utilization
- Thanks to our many partners and collaborators

# Green Infrastructure for Community Resilience:

## Site Scale Examples in Urban Settings

May 5, 2016

Vikram Krishnamurthy  
Executive Director  
Delaware Center for Horticulture

thedch.org  
vkrishna@thedch.org