



Cooperative Partnerships to Address

CLIMATE  
CHANGE



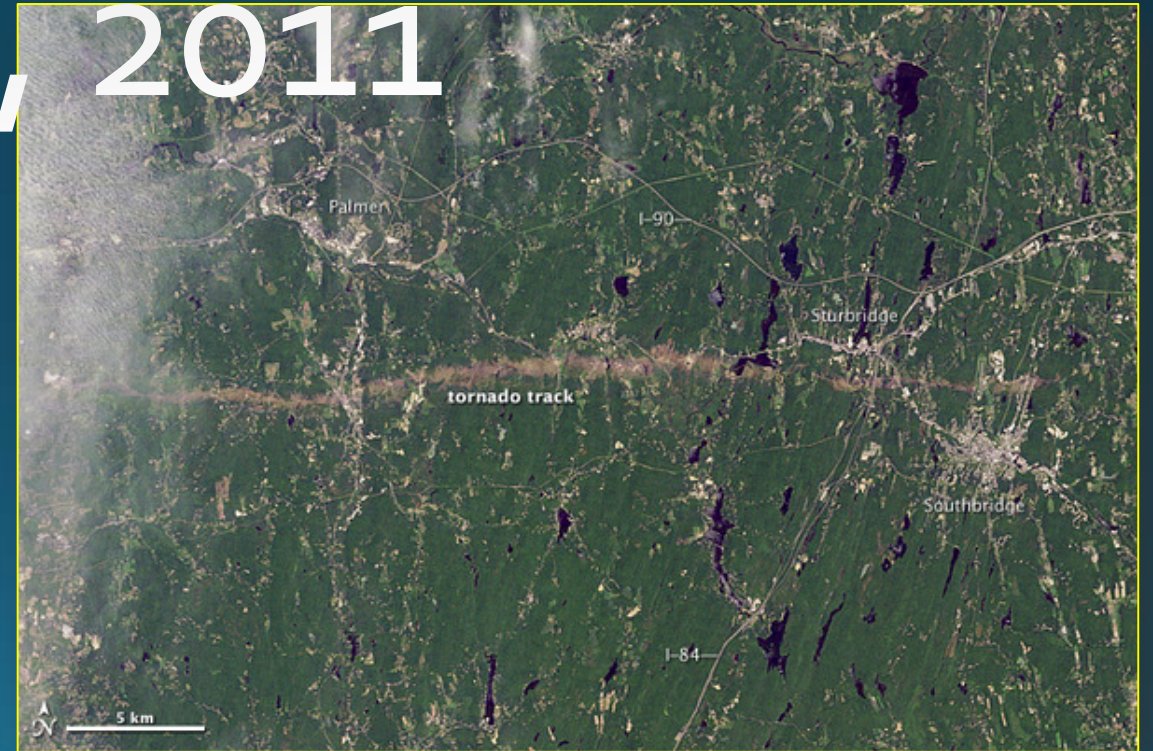
**David V. Bloniarz, US Forest Service**

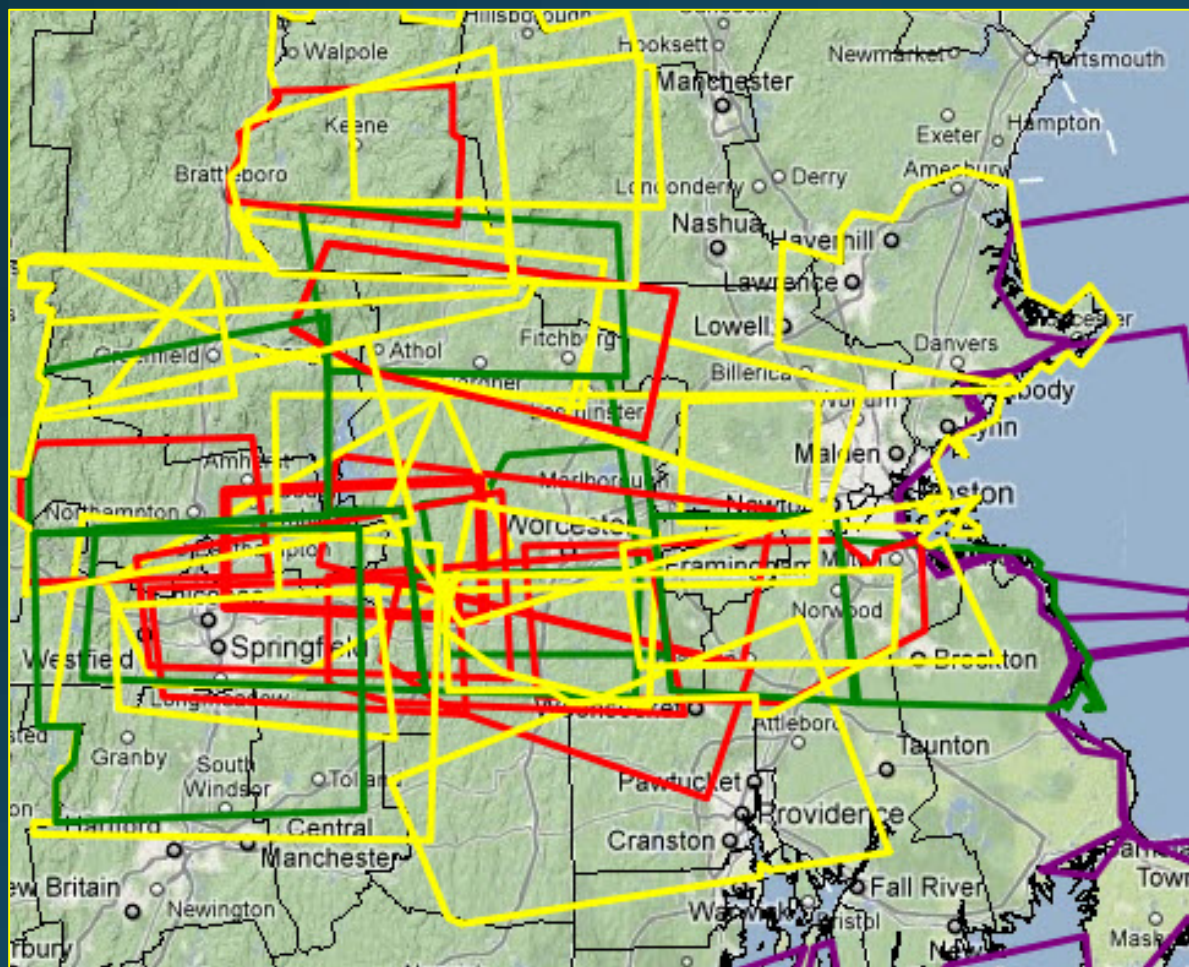




# ReGreenSpringfield


FROM DISASTER COMES RESILIENCE... RESILIENCE MAKES  
US STRONGER AND MORE ADAPTABLE TO CHANGE.

June 1, 2011











My Location  
Springfield, MA 

 **Tornado Watch**

Expires: 06/02/2011 12:00 AM  
 Ma . Massachusetts  
 Counties Included Are

Essex	Franklin
Hampden	Hampshire
Middlesex	Norfolk
Suffolk	Worcester

86°F 















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## An Initial Report on the Status of Street Trees in Springfield, Massachusetts

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### Tornado Damage to Springfield's Street Trees

June 2011

prepared for:

*The City of Springfield, Massachusetts*

*prepared by:*

Alex Sherman, City of Springfield  
Rob Dill, City of Springfield  
Edward Casey, City of Springfield



David V. Bloniarz, USDA Forest Service  
Northern Research Station



# Project Team



USDA Forest Service



City of Springfield



MA Dept of  
Conservation &  
Recreation

ReGreenSpringfield



MA Dept of Energy  
Resources



# Plant a Tree and Cool Down This Summer!

- Save Energy!
- Reduce Air Conditioning Costs by up to 20%!
- Help Clean the Air!

*Please Join Us! Visit [www.regreenspringfield.org](http://www.regreenspringfield.org) to join in the effort to help keep Springfield cool and green.*



## Cool Down!

"Trees properly placed around buildings can reduce air conditioning needs by 30 percent and can save 20–50 percent in energy used for heating." — USDA Forest Service



## Save Energy!

"The net cooling effect of a young, healthy tree is equivalent to ten room-size air conditioners operating 20 hours a day." — U.S. Department of Agriculture



## Clean the Air!

"One acre of forest absorbs six tons of carbon dioxide and puts out four tons of oxygen. This is enough to meet the annual needs of 18 people." —U.S. Department of Agriculture



This **FREE** program is open to all Springfield properties that were impacted by the June 2011 Tornado. Just call 413/285-3056, or visit [www.regreenspringfield.org](http://www.regreenspringfield.org) to join in the effort to ReGreen Springfield...One tree at a time. Your new trees will be planted at no cost to you.



1111 Main Street • Suite 1010  
Springfield, MA 01103-1106  
[www.regreenspringfield.org](http://www.regreenspringfield.org)

# ReGreenSpringfield

PRSR STD  
ECRWSS  
U.S. POSTAGE  
PAID  
EDDM RETAIL

Local  
Postal Customer

**GET A FREE TREE PLANTED IN YOUR  
YARD ...THIS SUMMER**

CALL 413/285-3056 OR VISIT [WWW.REGREENSPRINGFIELD.ORG](http://WWW.REGREENSPRINGFIELD.ORG)

Join in the effort to restore our urban forest... one tree at a time.

**ReGreenSpringfield**



Get A Free Tree. Cool Down,  
Clean the Air and Save Energy.  
All at No Cost to You

**ReGreenSpringfield**

*Join ReGreen Springfield, in partnership with the City of Springfield, the Massachusetts Department of Conservation & Recreation, the Massachusetts Office of Energy Resources and the Massachusetts Clean Energy Center, in planting energy saving trees in your yard. This free program is open to all Springfield properties that were impacted by the June 2011 Tornado.*

**Call 413/285-3056**

**or visit**

**[www.regreenspringfield.org](http://www.regreenspringfield.org)**









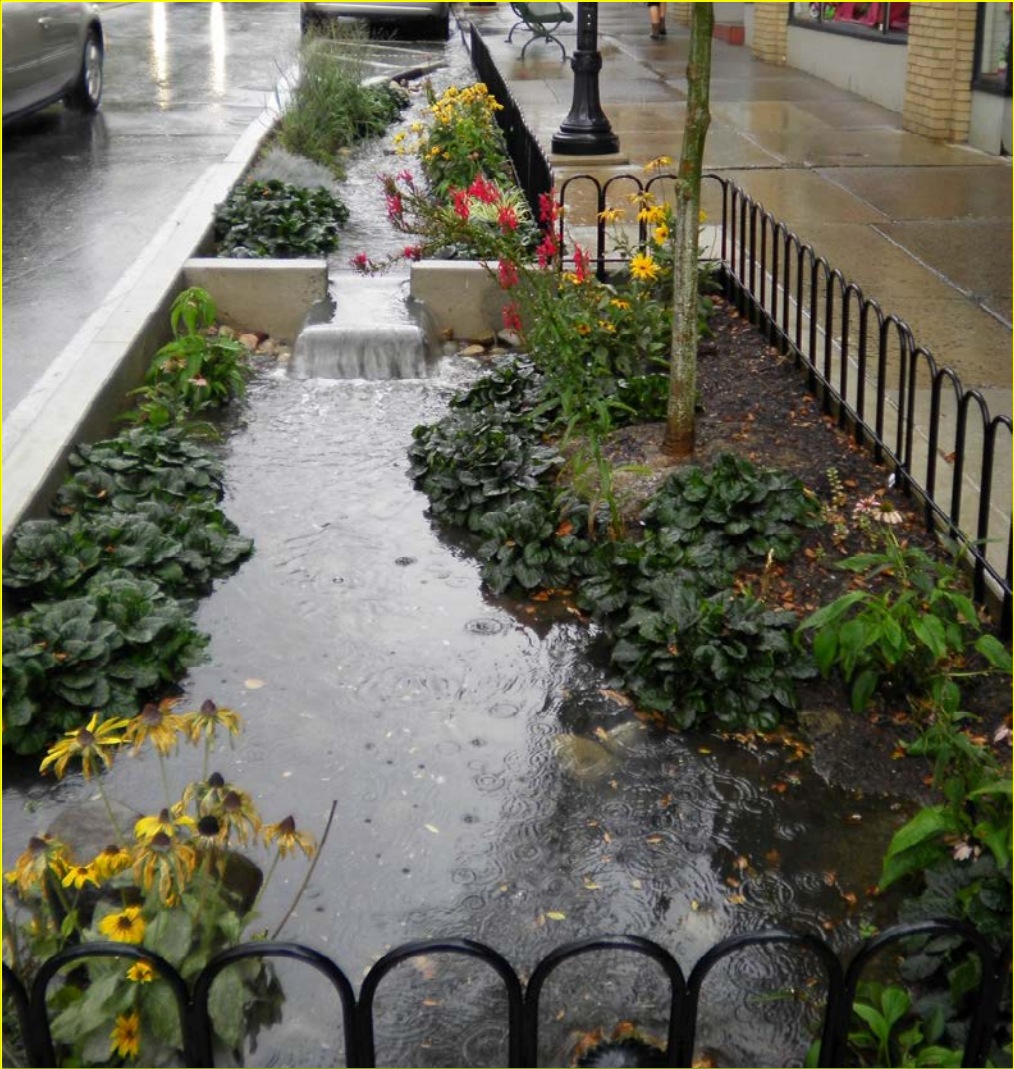


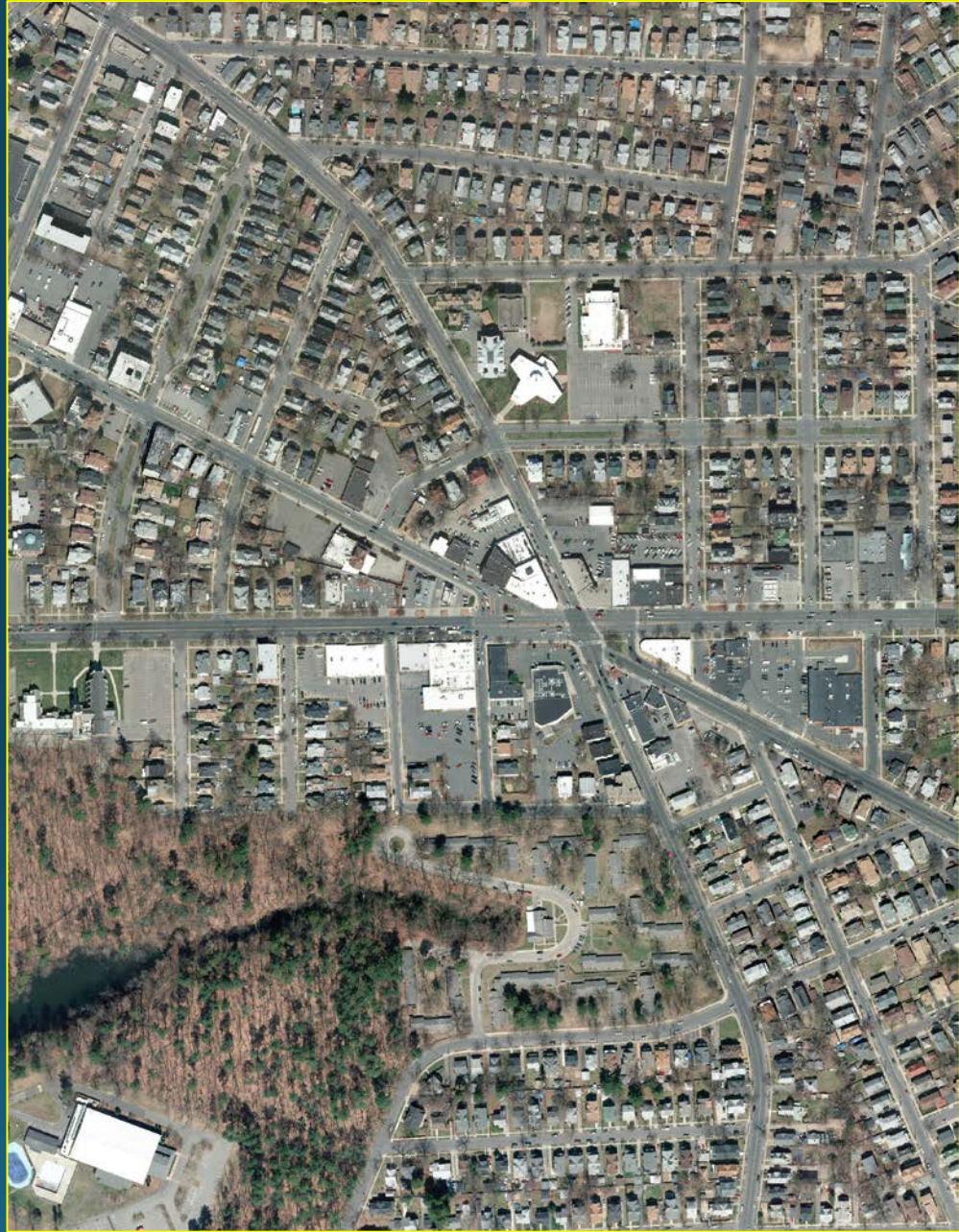
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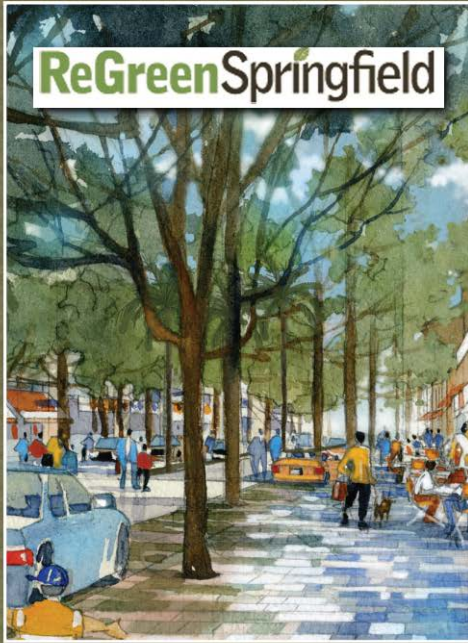
# Urban Trees, Stormwater & Green Streets

- Stormwater Management through Urban Forestry -





# ReGreenSpringfield



## REGREENING THE "X"

Learn About Green Streets in Your Neighborhood

Thursday, February 11th - 4:30 to 6:00 PM

at Forest Park Branch Library

380 Belmont Avenue, Springfield  
Join us in the Community Room

Join our interactive session to learn about the benefits urban trees have on the community and the different components of green streets. In addition there will be information on how to make your neighborhood more environmentally valuable through use of free educational tools and proper tree section and placement. There will also be demonstrations on properly planting and maintaining your trees, along with an explanation about the components that make up a urban watershed.

Plan to attend this FREE event, enjoy some light refreshments and gather information on the creation of 'Green Streets' in the 'X' Neighborhood. This event is open to all ages, including school aged youth. This neighborhood event features students from the Conway School of Design, who will lead you on an informative look at the urban trees, streets, and stormwater in your neighborhood.

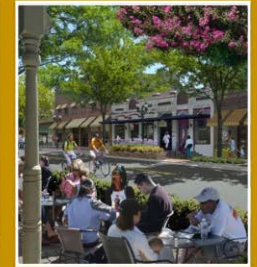
You will also learn about how you can participate in helping to care and maintain for the trees in your yard, neighborhoods, in our parks and along our streets. This will be a FUN, and INFORMATIVE, event. Don't worry if you do not know much about trees, green streets or urban design, you will know a lot more when you leave the event.

- Learn Something New
- Easy to Understand Design & Science
- Play a Role in Making the X a bit Greener
- Fun Filled and Fast Paced



For more information, please visit [www.regreenspringfield.org/greentrees](http://www.regreenspringfield.org/greentrees)

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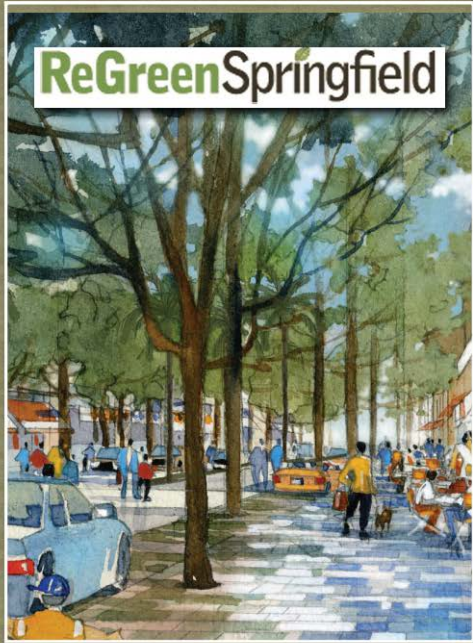
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# REGREENING THE "X"

Aprenda Acerca de Calles Verdes

January 15th - 1:30 to 3:00 PM

at Forest Park Branch Library  
380 Belmont Avenue, Springfield

Venga a aprender sobre los beneficios de la silvicultura urbana y los diferentes componentes de las calles verdes. Además habrá información sobre cómo hacer su vecindario más valioso con el medio ambiente a través del uso de herramientas educativas gratuitas y sección y colocación de árboles adecuada. También habrá demostraciones de plantación en propiedad y el mantenimiento de sus árboles, junto con los componentes de la cuenca hidrológica.

Planee asistir a este evento informativo GRATIS, que también cuenta con información sobre la creación de las "Calles Verdes" en el vecindario "X". Este evento está abierto a todas las edades, incluidos los jóvenes en edad escolar.

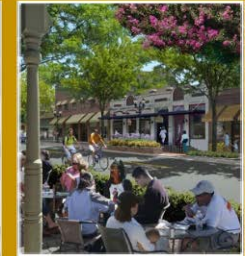
Este evento del vecindario cuenta con estudiantes de la Escuela de Diseño Conway, quienes le dirigirán en una mirada informativa a los árboles urbanos, calles, y las aguas pluviales en su vecindario.

Usted también aprenderá sobre cómo puede participar en ayudar a cuidar y mantener los árboles en su patio, vecindarios, en nuestros parques y nuestras calles. Esta será un evento DIVERTIDO E INFORMATIVO. No se preocupe si usted no sabe mucho acerca árboles, calles verdes o diseños urbanos, sabrá mucho más cuando salga del evento.

- Aprenda algo nuevo
- Diseño y Ciencia fáciles de entender
- Lleno de diversión y ritmo rápido



For more information, please visit [www.regreenspringfield.org/greenstreets](http://www.regreenspringfield.org/greenstreets)



# Reverdecedor la "X"

Obtener información acerca de Green Streets en su vecindario

February 11th - 4:30 to 6:00 PM

at Forest Park Branch Library  
380 Belmont Avenue, Springfield

Venga y aprenda acerca de los beneficios de los árboles de la silvicultura urbana y calles verdes, además habrá información sobre cómo hacer su vecindario más ambientalmente valiosos a través del uso de herramientas educativas gratuitas y sección de árbol adecuado y la colocación también habrá demostraciones sobre la plantación correctamente el mantenimiento de sus árboles mucho con los componentes de cuencas urbanas planean asistir a este evento informativo que también cuenta con información sobre la creación de diseño para "calles verdes" en el barrio de "x" por estudiantes de la escuela Conway de diseño que le llevará en una mirada informativa en la calles árboles y de aguas pluviales urbanas en su vecindario. También aprenderá acerca de cómo puede participar en ayudar a cuidar y mantener las calles en que barrio patio en nuestros parques y un largo de nuestras calles esta será una diversión y visperas informativo



Para más información, por favor visita [www.regreenspringfield.org/greenstreets](http://www.regreenspringfield.org/greenstreets)

# Urban Trees, Stormwater, & Green Streets

- Stormwater Management through Urban Forestry -

## Community Resource Manual



Community volunteers plant trees in Springfield, MA, 2016



ReGreenSpringfield

the  
Conway  
School





# Anatomy of a Green Street

Pedestrian friendly

1000 cf soil volume for street tree tree boxes

Landscape areas

Permeable sidewalks

Transit oriented

Shielded,  
Energy efficient street fixtures

Permeable pavement  
in transitway

Bike Lane

Recycled materials used

Mature Street Trees

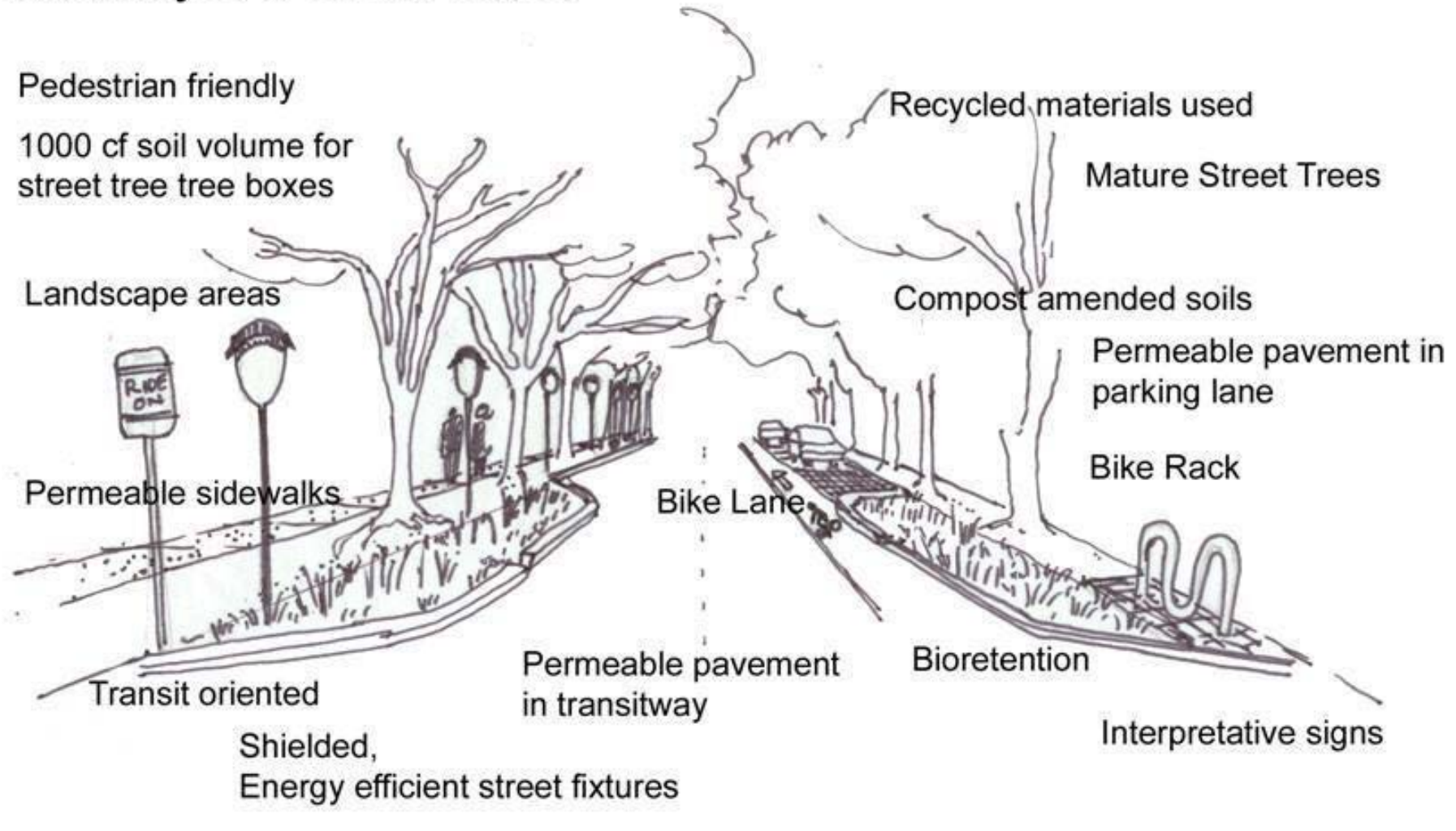
Compost amended soils

Permeable pavement in  
parking lane

Bike Rack

Bioretention

Interpretative signs



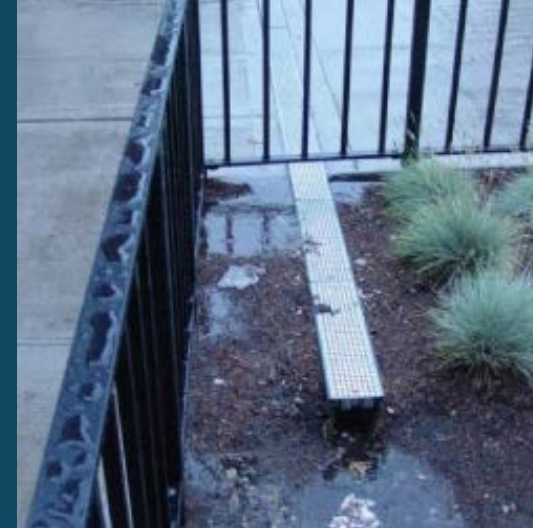
# STORMWATER CAPTURE TOOLS



Pipe Inlets



Surface Edging



Trench Drains



Curb Inlets



Deep Excavation



Bioswale Grading

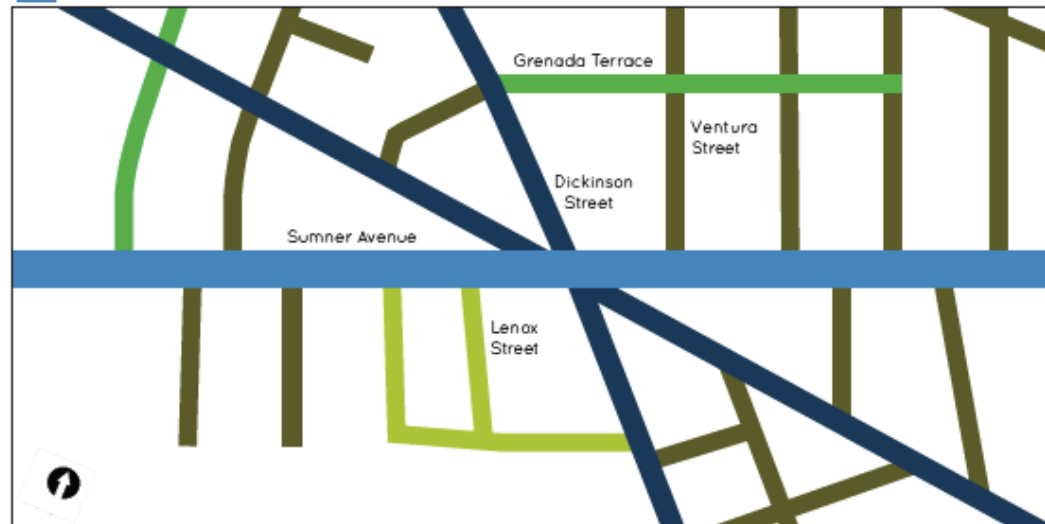
The complete streets guidebook categorizes streets by traffic speed, volume and the width of the right-of-way. This method of categorizing streets shows that there are five different types of streets in the X neighborhood.

Categorizing streets in this way helps inform which best management practices apply. (see table on the opposite page.)

This technique was inspired by the Green Streets Guidebook for Holyoke, written by Conway School students Michele Carlson, Willa Caughey and Nelle Ward in Winter 2014.

**The 5 types of streets in the X:**

- Yield Street
- Neighborhood Street
- Neighborhood Main Street
- Residential Boulevard
- Boulevard



STREET CHARACTERISTICS					
Complete Street Type	Example of X Street	Public Right-of-Way	Driving Lane	Tree Belt	Land Use
Yield Street	Lenax Street	40' ft wide	(2) 12' ft	(2) 3' ft	High Density Residential
Neighborhood Street	Ventura Street	50' ft wide	(2) 13' ft	(2) 7' ft	Low-Medium Density Residential
Neighborhood Main Street	Dickinson Street	60' ft wide	(2) 21' ft	(2) 3' ft	Multi-Family Residential
Residential Boulevard	Grenada Terrace	48' ft wide	(2) 18' ft	(2) 3' ft	Low-Medium Density Residential
Boulevard	Sumner Avenue	100' ft wide	(4) 15' ft	(2) 12' ft	Mix-Use Commercial

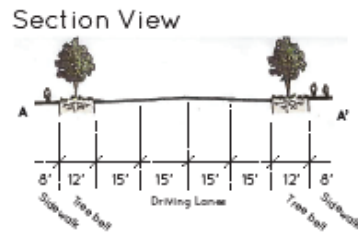
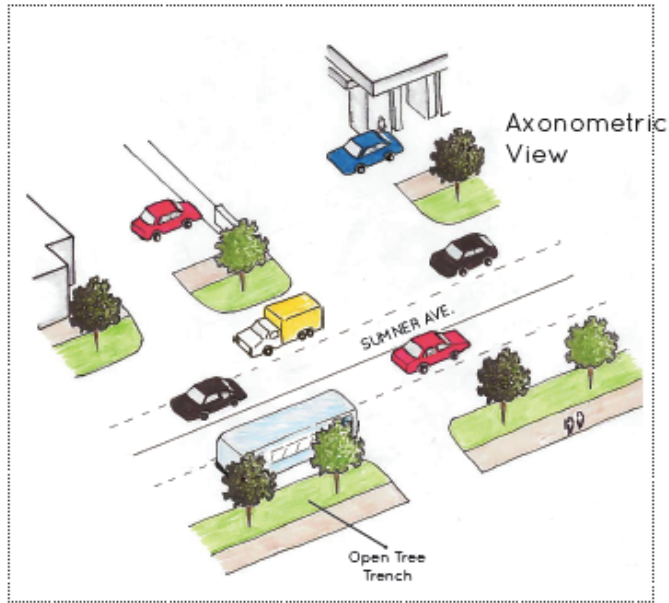
In addition to street characteristics the best management practice metric is a guide to evaluate which toolbox features will be best suited to improve water quality and/or reduce the volume of stormwater for a selected area.

BEST MANAGEMENT PRACTICE METRIC			
Tools	Highlights	Water Quality	Volume Reduction
Tree Box Filter	<ul style="list-style-type: none"> <li>. Increase infiltration</li> <li>. Low maintenance</li> <li>. Best in commercial areas</li> </ul>	Highly Recommended	Useful
Tree Trench	<ul style="list-style-type: none"> <li>. Large soil volume for tree root systems</li> <li>. Increase infiltration</li> <li>. Best in commercial areas</li> </ul>	Useful	Useful
Infiltration Planter	<ul style="list-style-type: none"> <li>. Ideal for small spaces</li> <li>. Aesthetics</li> <li>. Best in commercial areas</li> </ul>	Highly Recommended	Highly Recommended
Bioswale	<ul style="list-style-type: none"> <li>. Harvest sheet flow</li> <li>. Serve as snow storage</li> <li>. Best in commercial areas</li> </ul>	Highly Recommended	Highly Recommended
Rain Garden	<ul style="list-style-type: none"> <li>. Aesthetics</li> <li>. Vary in size</li> <li>. Best in most areas</li> </ul>	Highly Recommended	Highly Recommended
Permeable Pavement	<ul style="list-style-type: none"> <li>. Increase infiltration</li> <li>. Cost effective</li> <li>. Best in low traffic areas</li> </ul>	Useful	Highly Recommended
Rain Barrel	<ul style="list-style-type: none"> <li>. Water storage</li> <li>. Low maintenance &amp; cost</li> <li>. Best in residential areas</li> </ul>	Not Recommended	Highly Recommended
Green Roof	<ul style="list-style-type: none"> <li>. Natural insulation</li> <li>. Reduce heat island effect</li> <li>. Best in most areas</li> </ul>	Not Recommended	Highly Recommended

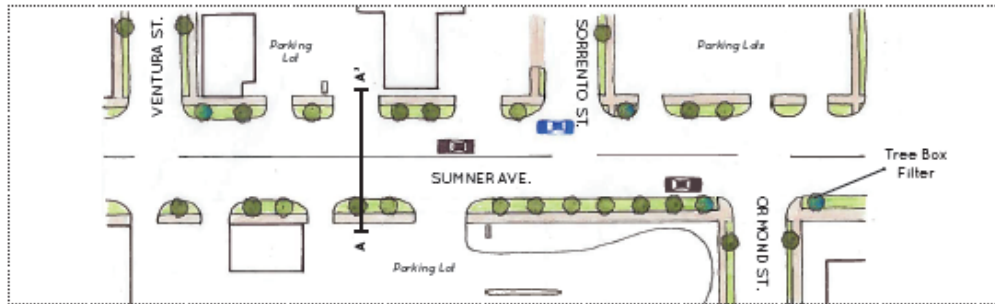
If possible the street profile of a boulevard should be shaped to direct runoff into a median bioswale which overflows during uncommonly large rain events into the combined sewer system. This median should be as wide as right-of-way allows in order to help calm traffic, reduce speeding and provide refuge for a pedestrians crossing the road.

In the tree belt along the edge of the roadway between the street and sidewalk, large trees should be left wherever possible in order to maintain their ecosystem services. Tree trenches are encouraged over tree box filters so that trees can grow large. However, tree box filters are a better option in areas with limited space and could replace younger existing trees.

Bioswales connected to the combined sewer system are appropriate where there is ample space between root systems in existing tree belts.



Plan View



The northwest and southeast extent of the complete street proposal both contain a roundabout. The outer diameter of these structures must be paved and is suitable candidate for permeable asphalt. The interior of the roundabout could function as a rain garden which filters runoff from the road.

In order to maintain sight-lines, vegetation should be kept low, consisting of hardy perennial grasses and herbaceous plants which grow low and are tolerant of periodic drought, flooding and de-icing salts. Plant design should attempt to strike a balance between biodiversity and simplicity, to promote both ecological function and ease of maintenance.



Traffic Circle in Summit, NJ

Plan Views

Belmont & Sumner Ave. (Northwest)



Belmont & Sumner Ave. (Southeast)





February 2017



# **National Disaster Resilience Competition**

# Meet the winners.

Announced by President Obama in 2014, the **National Disaster Resilience Competition** was developed to help U.S. communities recover from prior disasters through innovative resilience projects.

**67** disaster-affected communities

**13** competition winners

**1** billion dollars to rebuild *better*

**#RebuildBETTER**





ReGreenSpringfield



Citizen

Systemcards



Cooperative Partnerships to Address

