

The New York State
Environmental Facilities Corporation:
Green Infrastructure and Combined Sewer Overflows



The Path to a Sustainable Future:
Public Health and the Environment

The US Environmental Protection Agency and the Earth Institute,
Columbia University, New York City

April 15, 2011

Andrew M. Cuomo, Governor

Matthew J. Driscoll, President & CEO

The Environmental Facilities Corporation

Providing Low-cost Financing and Technical Assistance to Municipalities, Businesses, and NY State Agencies for Environmental Projects

- A Public Benefit Corporation
 - Accountability
 - Transparency
- Clean Water State Revolving Fund (1987 Clean Water Act Amendments)
 - Clean Water Program:
50% Interest Subsidy
- Drinking Water State Revolving Fund (1996 Safe Drinking Water Act)
 - Drinking Water Program:
33.3% Interest Subsidy

FINAL INTENDED USE PLAN

**Clean Water State Revolving Fund
for Water Pollution Control**

Federal Fiscal Year 2011

Effective October 1, 2010 - September 30, 2011
Issued October 2010



State of New York
David A. Paterson, Governor



Department of Environmental Conservation



Environmental Facilities Corporation
Matthew J. Driscoll, President

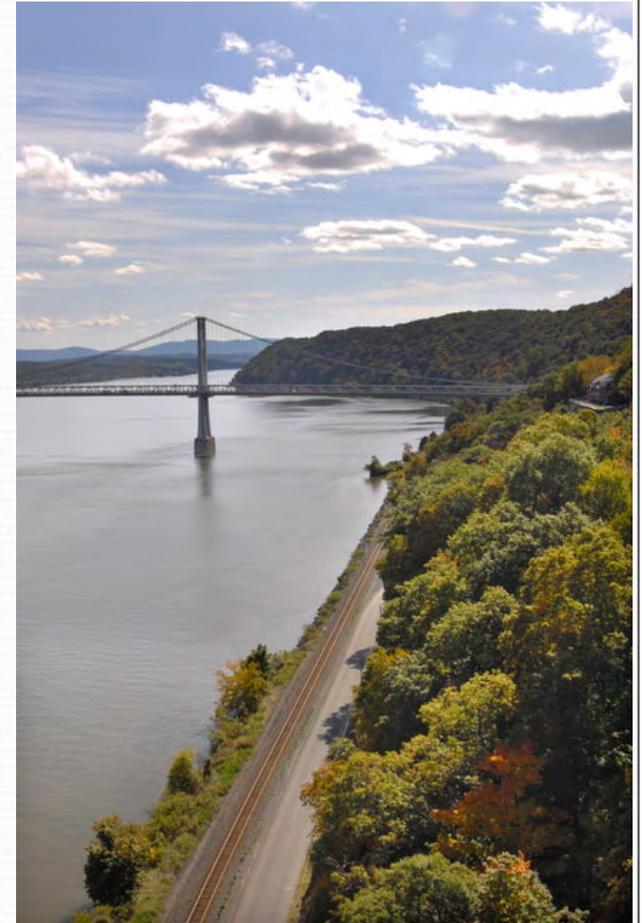


NYS Environmental Facilities Corporation

April 15, 2011

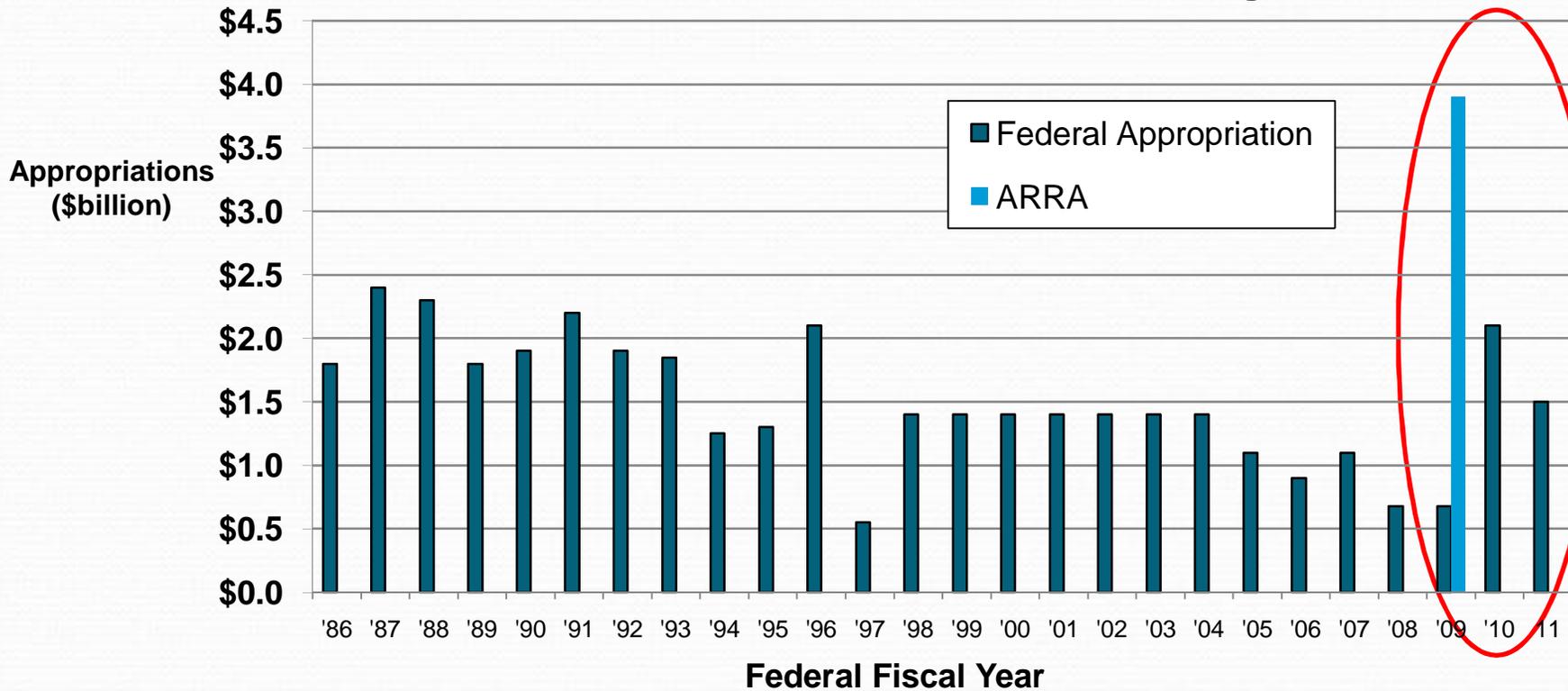
2011 Highlights

- 2011 Budget passed 4/14/11
 - CW: \$1.5 billion (\$161 million for NY)
 - DW: \$936 million (\$61 million for NY)
- No word yet on additional requirements:
 - Green Project Reserve
 - Additional Subsidization



CW Funding – An Underfunded Legacy

Federal Wastewater Treatment Funding 1986-2011



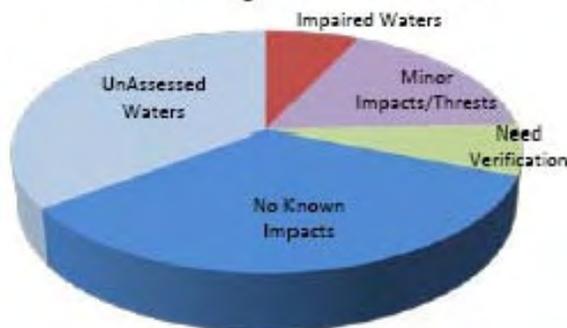
- Average documented need = \$14.9 Billion per year



NYS Water Infrastructure Needs

- CW - \$36.2 Billion: 20 Years
 - \$11 Billion in Urgent Need
- DW - \$38 Billion: 20 years
- Declining Water Quality
 - Urban Stormwater Runoff
- Aging Sewers
 - **Combined Sewer Overflow**
 - Over 100 years old
- Historic Declines in Federal Funding
 - Delayed Projects

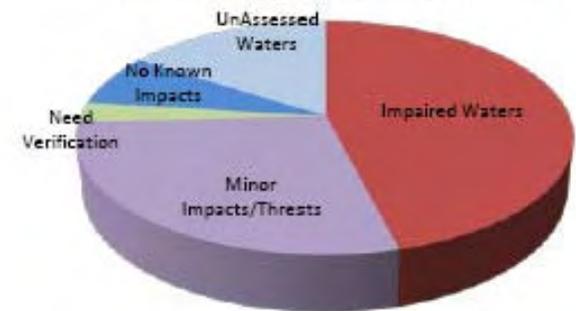
Rivers/Streams



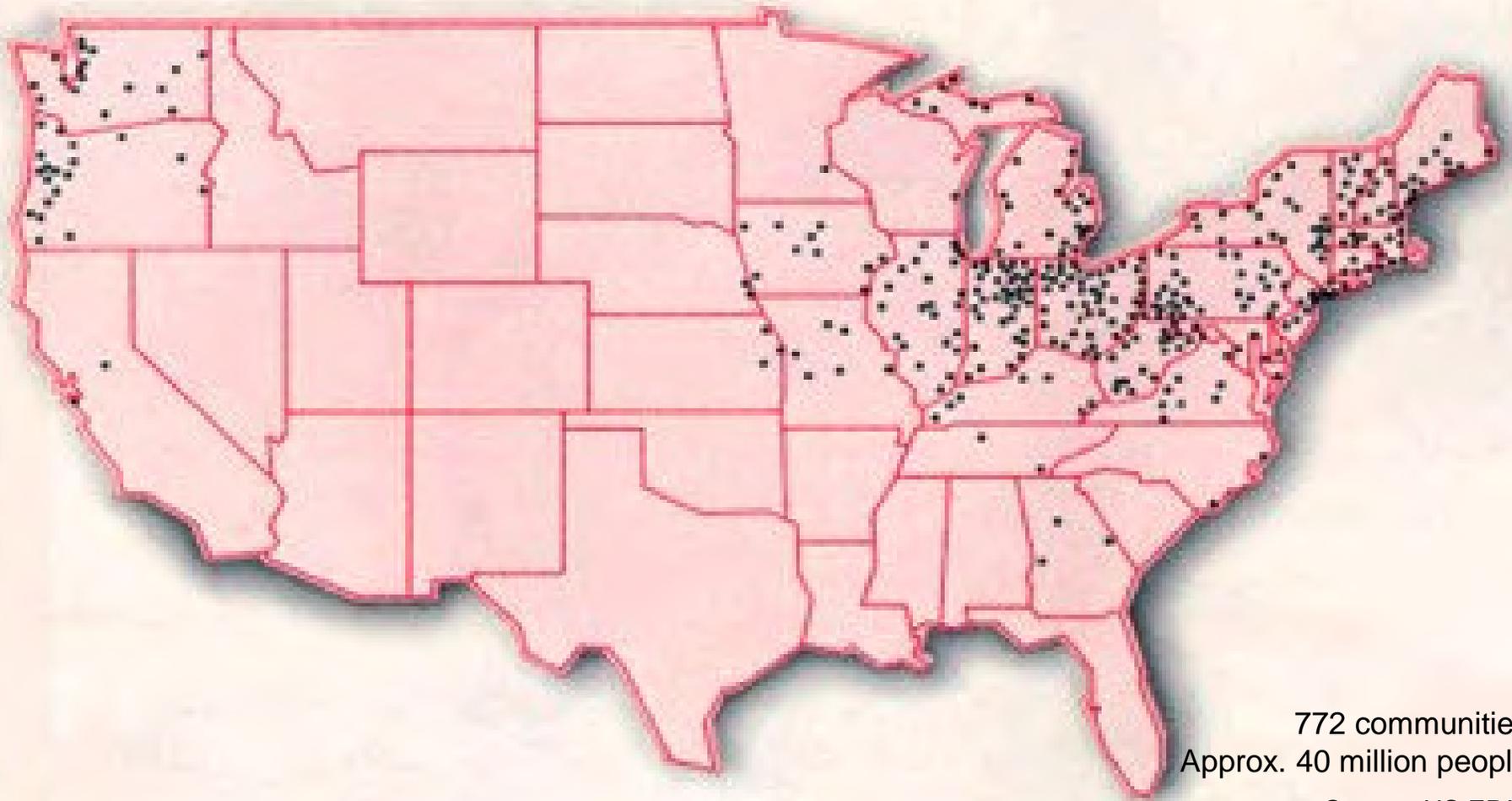
Estuary Waters



Lakes/Reservoirs



Combined Sewer Overflows



772 communities
Approx. 40 million people

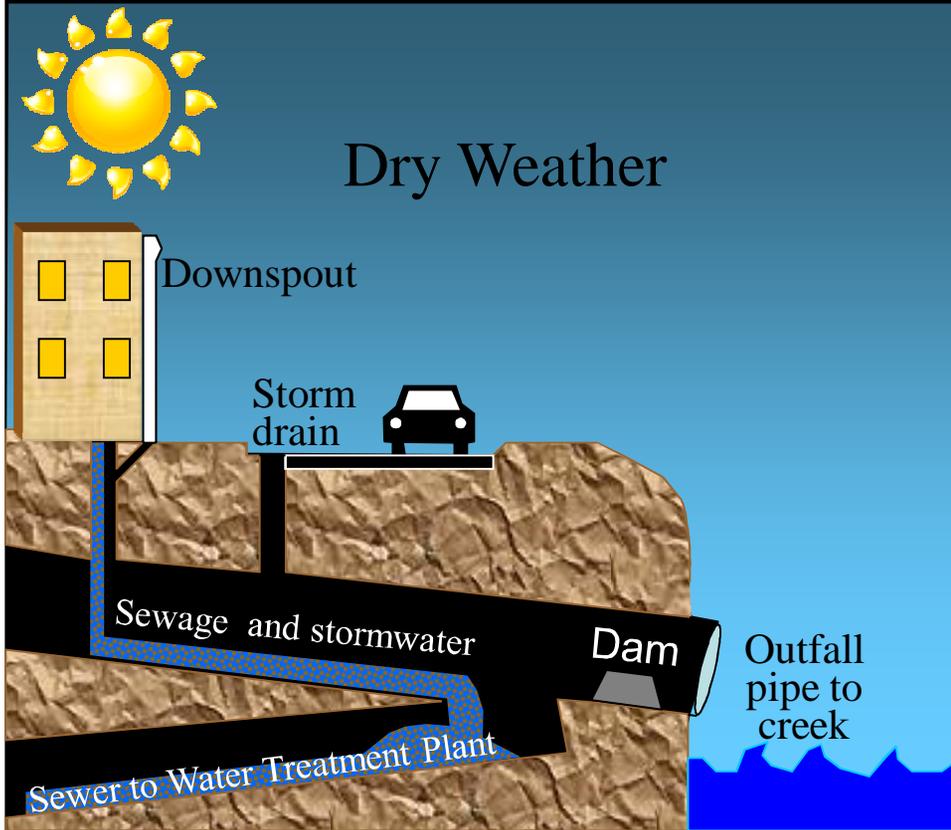
Source: US EPA



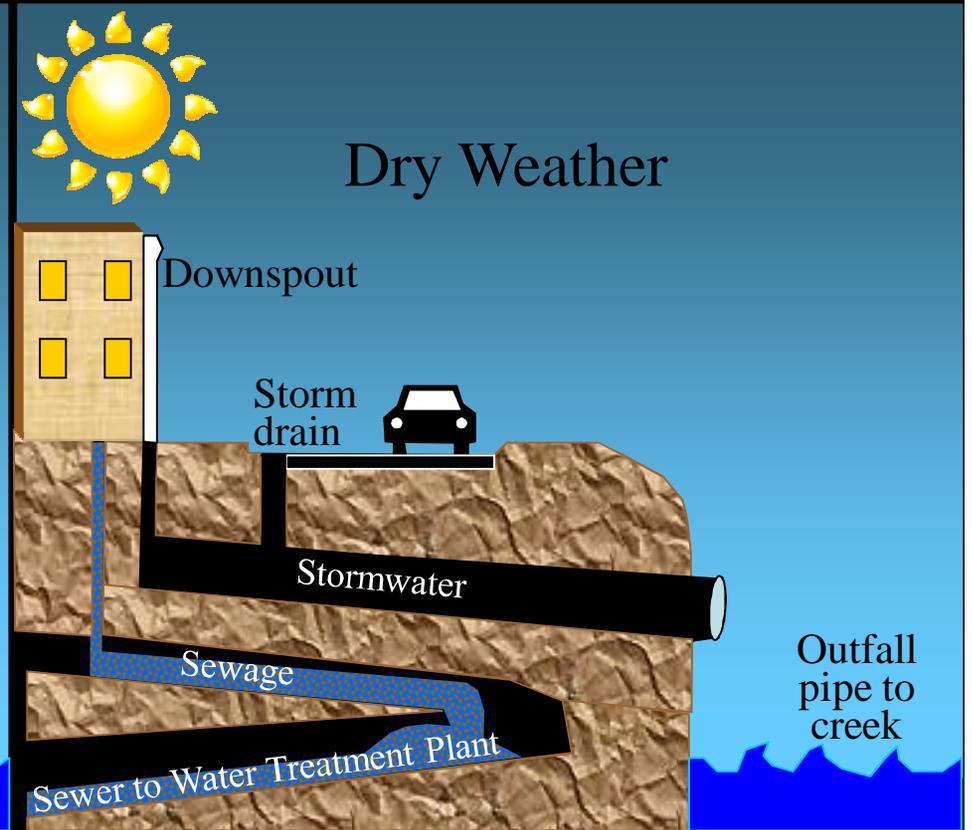
Source: Philadelphia Water Department

Combined Sewers – What are they

Combined Sewer

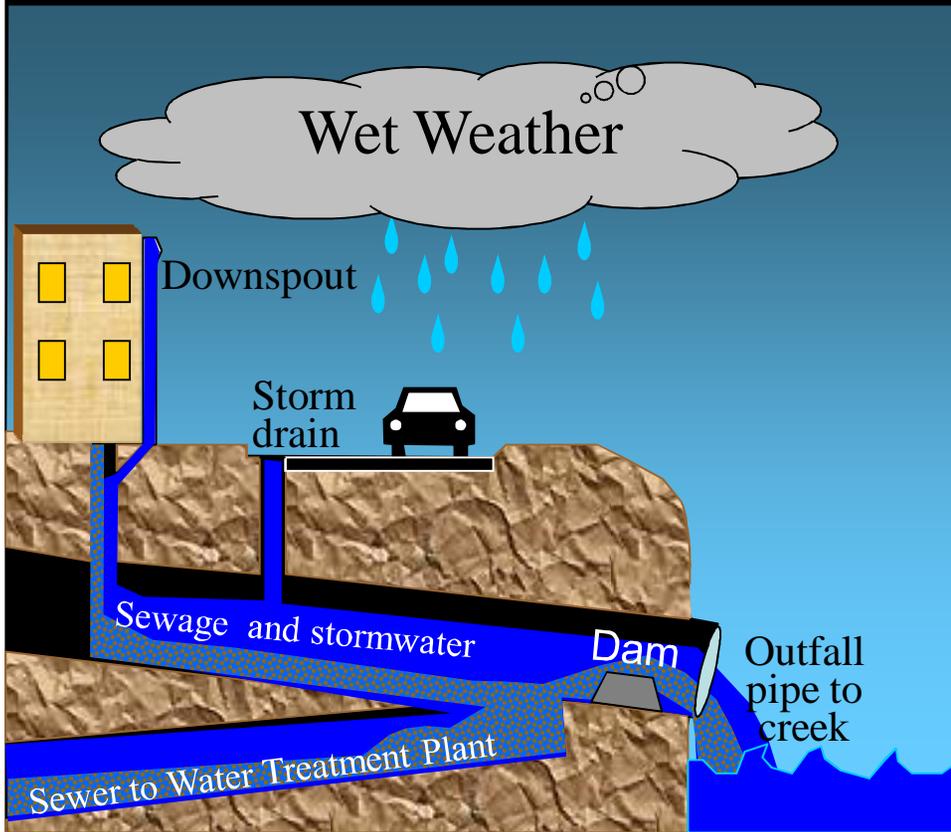


Separate Sewer

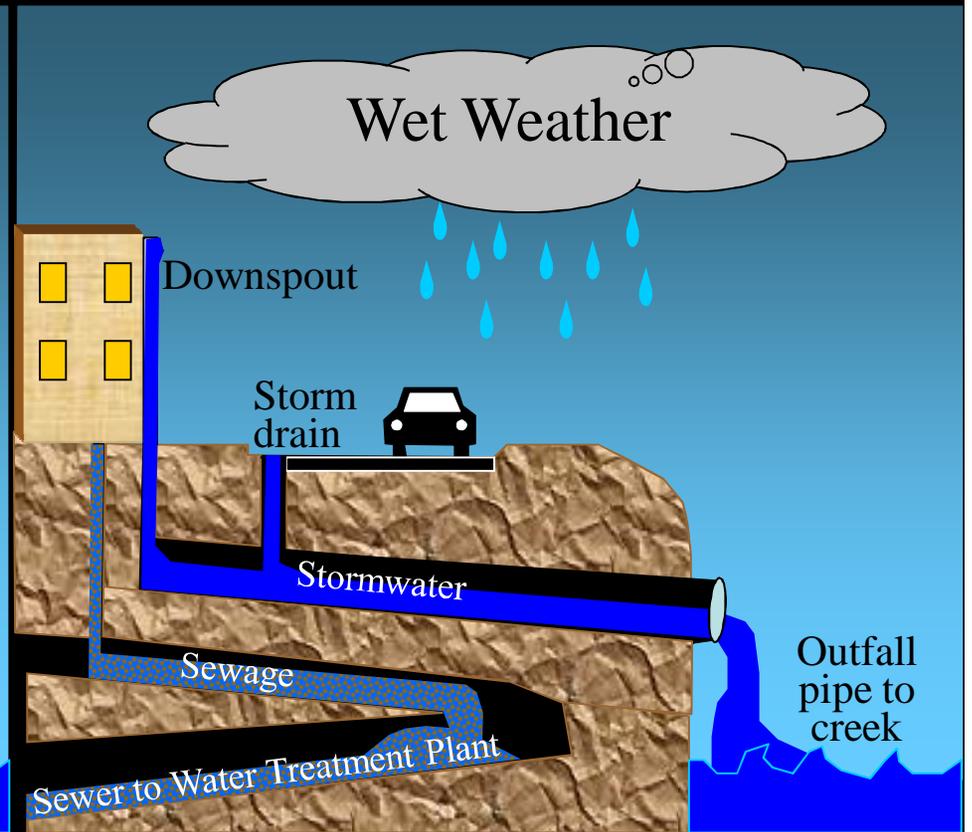


Combined Sewers – What are they

Combined Sewer



Separate Sewer





Source: Philadelphia Water Department

Combined Sewer Overflows



Source: Philadelphia Water Department



Source: Philadelphia Water Department

Municipal Separate Storm Sewers

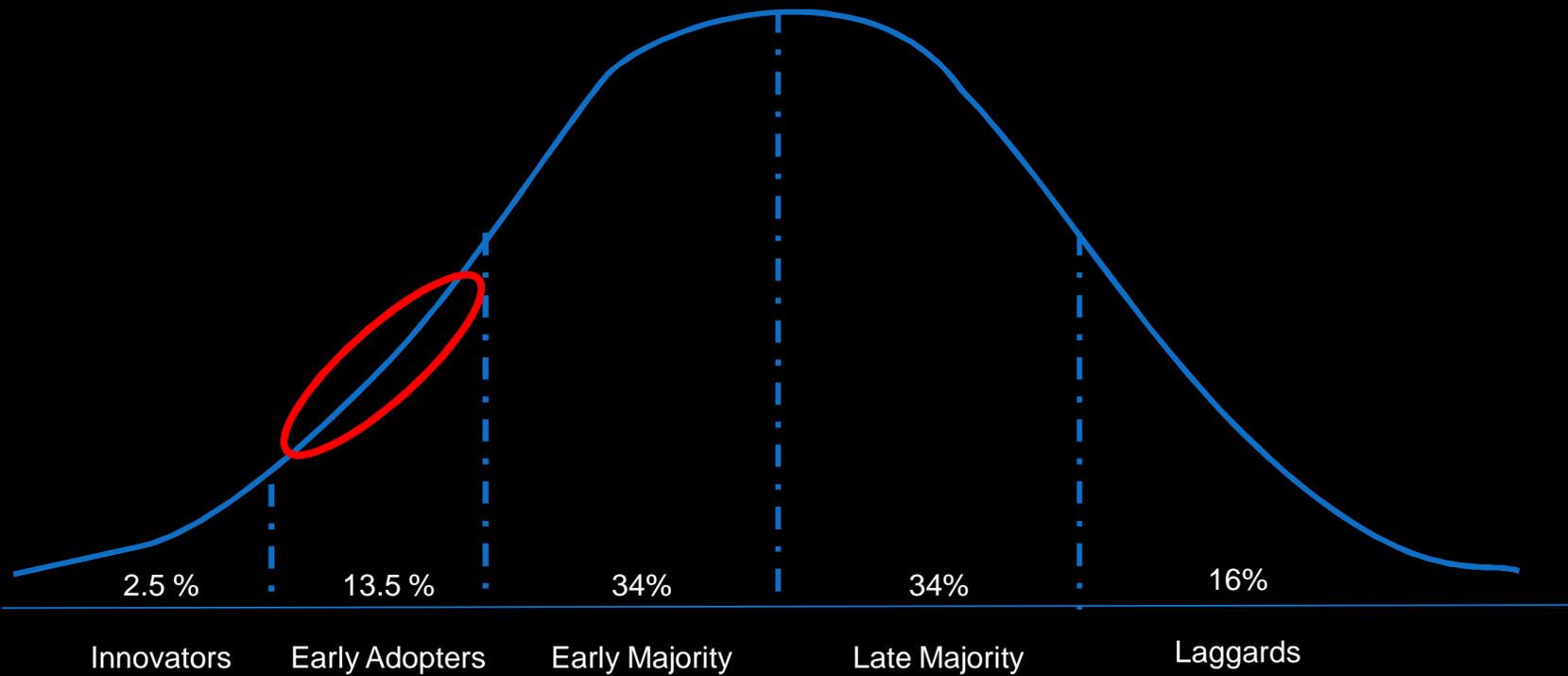


Source: Philadelphia Water Department

Clean Water Act

Fishable
Swimmable
Drinkable

Where are we now...



US EPA recognizes Green Infrastructure as:

- Cost effective
- Environmentally preferable and
- An acceptable solution to
 - Clean Water Act Goals
 - Sustainable City Goals
 - Global Warming Goals

Table S.1. City-wide natural unit benefits of key CSO options: Cumulative through 2049^a

Benefit categories	50% LID option	30' Tunnel option ^b
Additional creekside recreational user days	247,524,281	
Additional non-creekside recreational user days	101,738,547	
Reduction in number of heat-related fatalities	196	
Annual willingness to pay (WTP) per household for water quality and aquatic habitat improvements ^c	\$9.70–\$15.54	\$5.63–\$8.59
Wetlands created or restored (acres)	193	
Green collar jobs (job years)	15,266	
Change in particulate matter (PM _{2.5}) due to increased trees (µg/m ³)	0.01569	
Change in seasonal ozone due to increased trees (ppb)	0.04248	
Electricity savings due to cooling effect of trees (kWh)	369,739,725	
Natural gas savings due to cooling effect of trees (kBtu)	599,199,846	
Fuel used (vehicles for construction and operation and maintenance) (gallons)	493,387	1,132,409
Sulfur dioxide (SO ₂) emissions (metric tons)	(1,530) ^d	1,452
Nitrogen oxides (NO _x) emissions (metric tons)	(38)	6,356,083
Carbon dioxide (CO ₂) emissions (metric tons)	(1,091,433)	347,970
Vehicle delay from construction and maintenance (hours of delay)	346,883	796,597

a. The 50% LID and 30' Tunnel options were chosen as example alternatives to illustrate the differences between green and traditional infrastructure approaches. This does not imply that a final decision has been made by PWD regarding the implementation of these options.

b. 28' Tunnel option in Delaware River Watershed.

c. WTP per household in Philadelphia, MA, including Bucks, Chester, Delaware, Montgomery, and Philadelphia counties.

d. Parentheses indicate negative values.

Multiple Benefits of Green Infrastructure

- **Air Quality Improvement**
- **Reduction in Crime**
- **Increased Community Aesthetics**
- **Higher Property Values**
- **Reducing Urban Heat Island and Heat Stress**
- **Local Green Jobs**
- **Energy Savings**
- **Reduced Carbon Footprint**
- **Aquatic Ecosystem Improvements**
- **Wetland Creation and Enhancement**
- **Water Quality Improvements**

Green Infrastructure...

Where can you do it?

What does it look like?



Image: Philadelphia Water Department



Image: Philadelphia Water Depa



Image: Philadelphia Water Department



Image: Melissa Yearick Tioga County SWCD

Wetland Restoration in the NY Susquehanna River Basin
Tioga, Schuyler, Cortland, Tompkins, and Steuben Counties, NY



Images: Lindenhurst Library

Porous Pavement

Lindenhurst Library - Suffolk County



Image: Lumber City Development Corporation

Green Parking Lots (North Tonawanda, NY)



Images: Lehman and Getz Engineering

Village Hall Stormwater Retrofit Greenwood Lake, NY

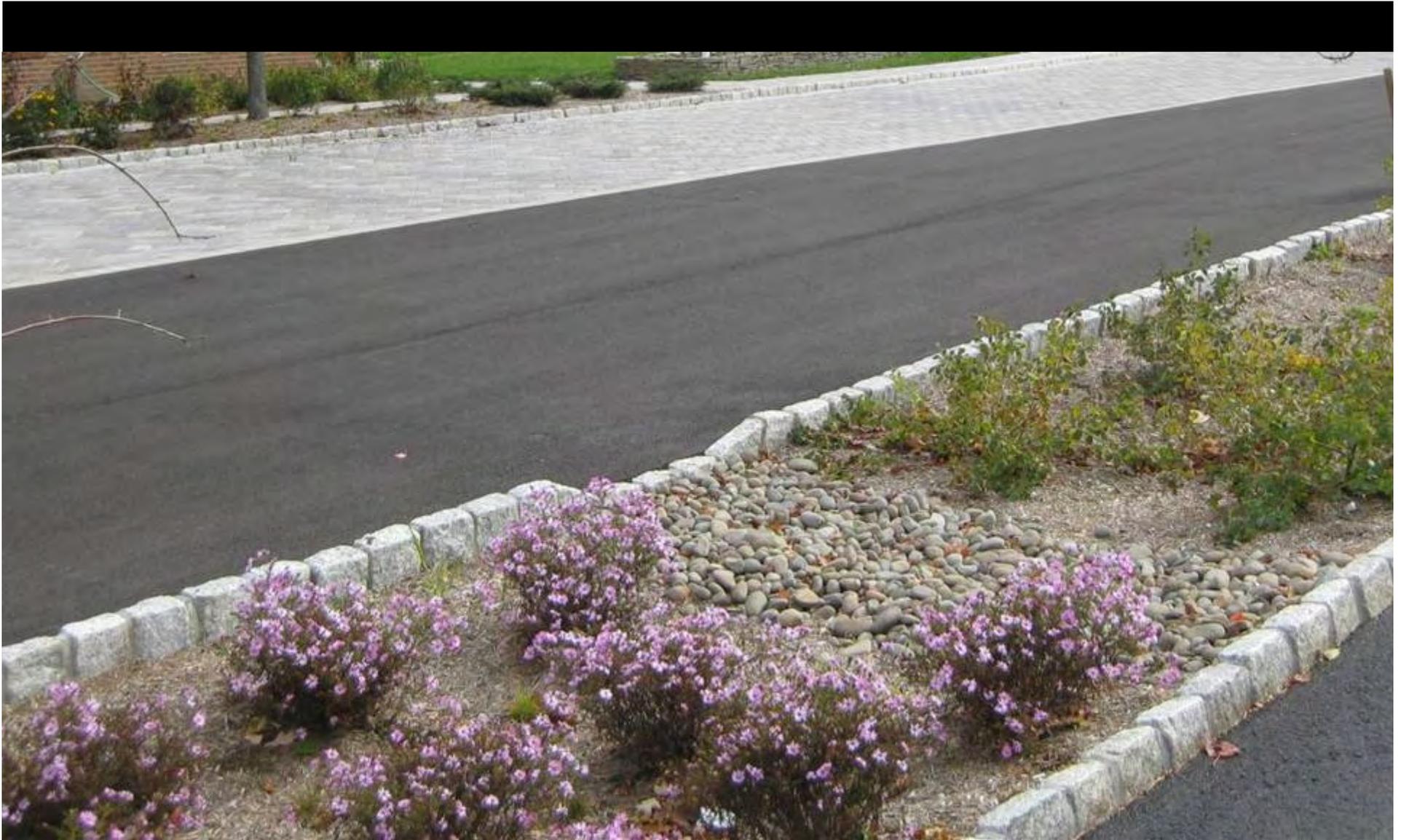


Image: Lehman and Getz Engineering

Village Hall Stormwater Retrofit

Greenwood Lake, NY



Image: Lehman and Getz Engineering

Village Hall Stormwater Retrofit

Greenwood Lake, NY



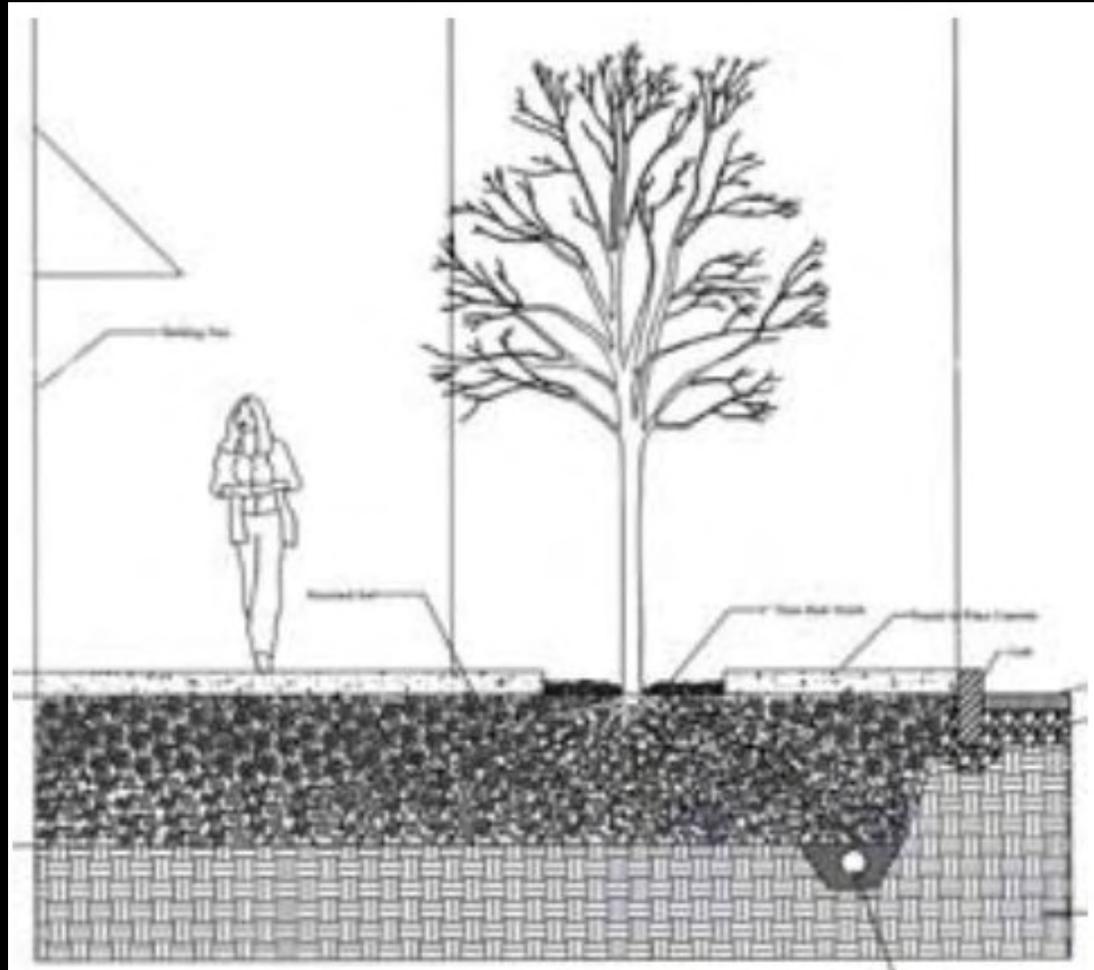
Image: City of Utica

Stormwater Trees

Utica, NY

Green Streets

US EPA Municipal Handbook Series - Managing Wet Weather with Green Infrastructure: Green Streets



Urban Horticulture Institute, Cornell University

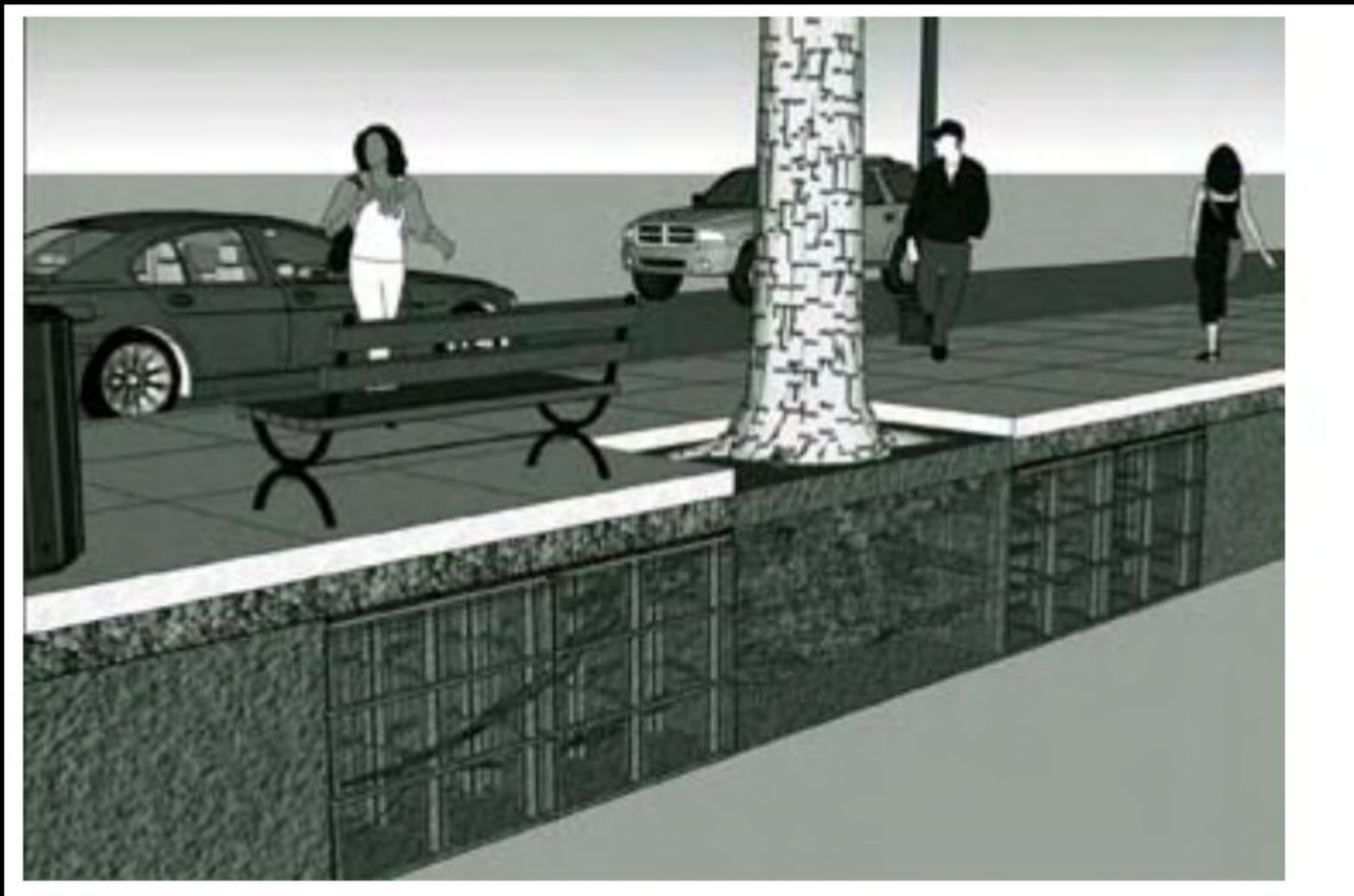


Image: City of Utica

Stormwater Trees Pits
Utica, NY

Green Streets

US EPA Municipal Handbook Series - Managing Wet Weather with Green Infrastructure: Green Streets



Source: Deep Root Partners, LP



Images: City of Rome

Pervious Pavement and Tree Inventory North James Street, Rome, NY



Image: New York City Parks Department

Seagirt Planting Bed – NYC Green Streets
Queens, NY

Green Streets

(Niagara Falls, NY)



Green Streets

(Niagara Falls, NY)



Green Roofs

(NYC, NY)





Image: Monroe County

Green Roofs
Monroe County, NY



Image: TYLIN

Green Roofs
Monroe County, NY



Image: Karl Schwesinger Fagan Engineers

Green Roofs
Chemung County, NY



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Financing for a Sustainable Future

