Southeast Stormwater Association

Regional Stormwater Seminar

April 26, 2019

Overview: Resiliency in Stormwater Management

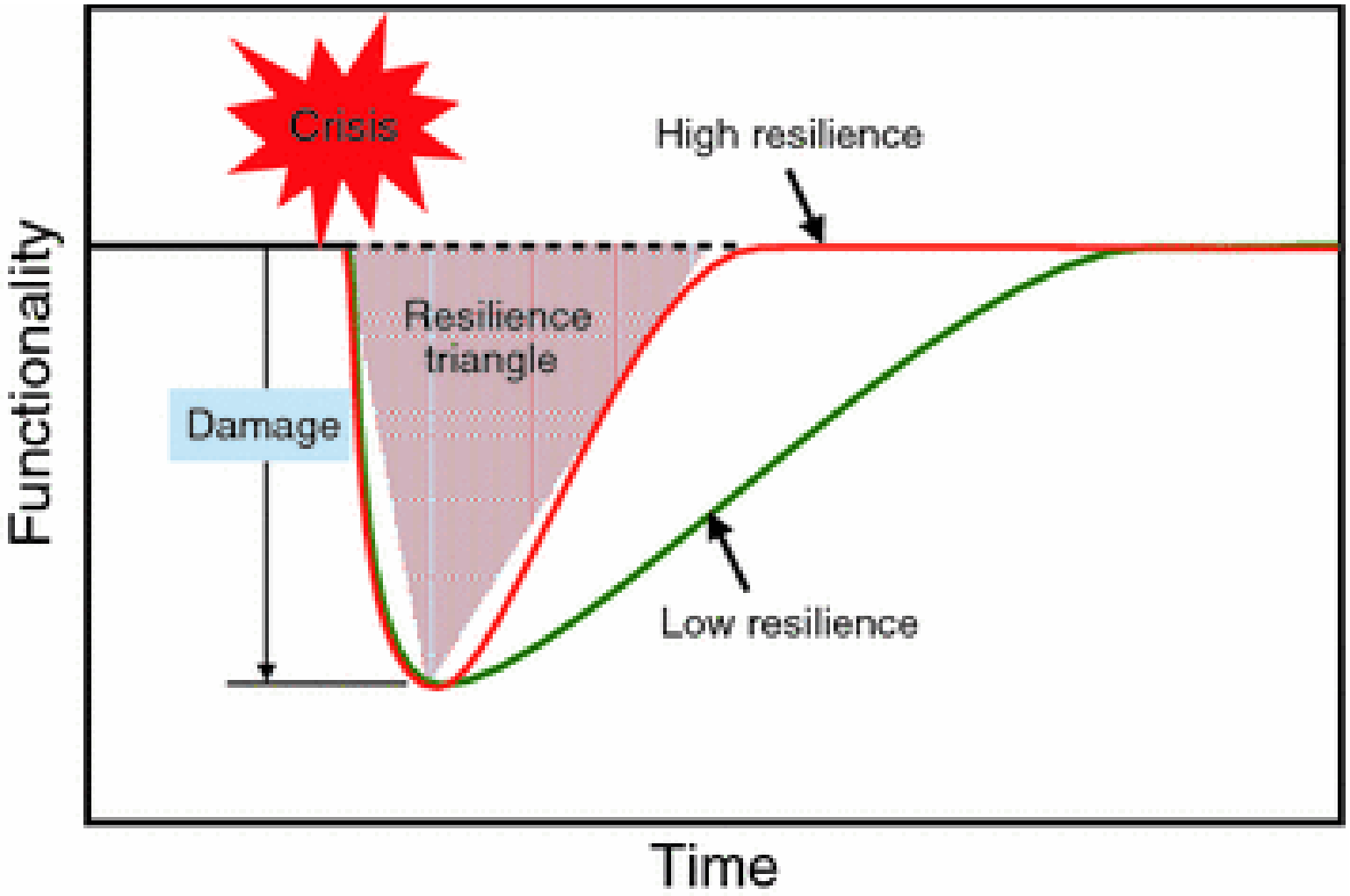
Stephanie Stuckey

Southface

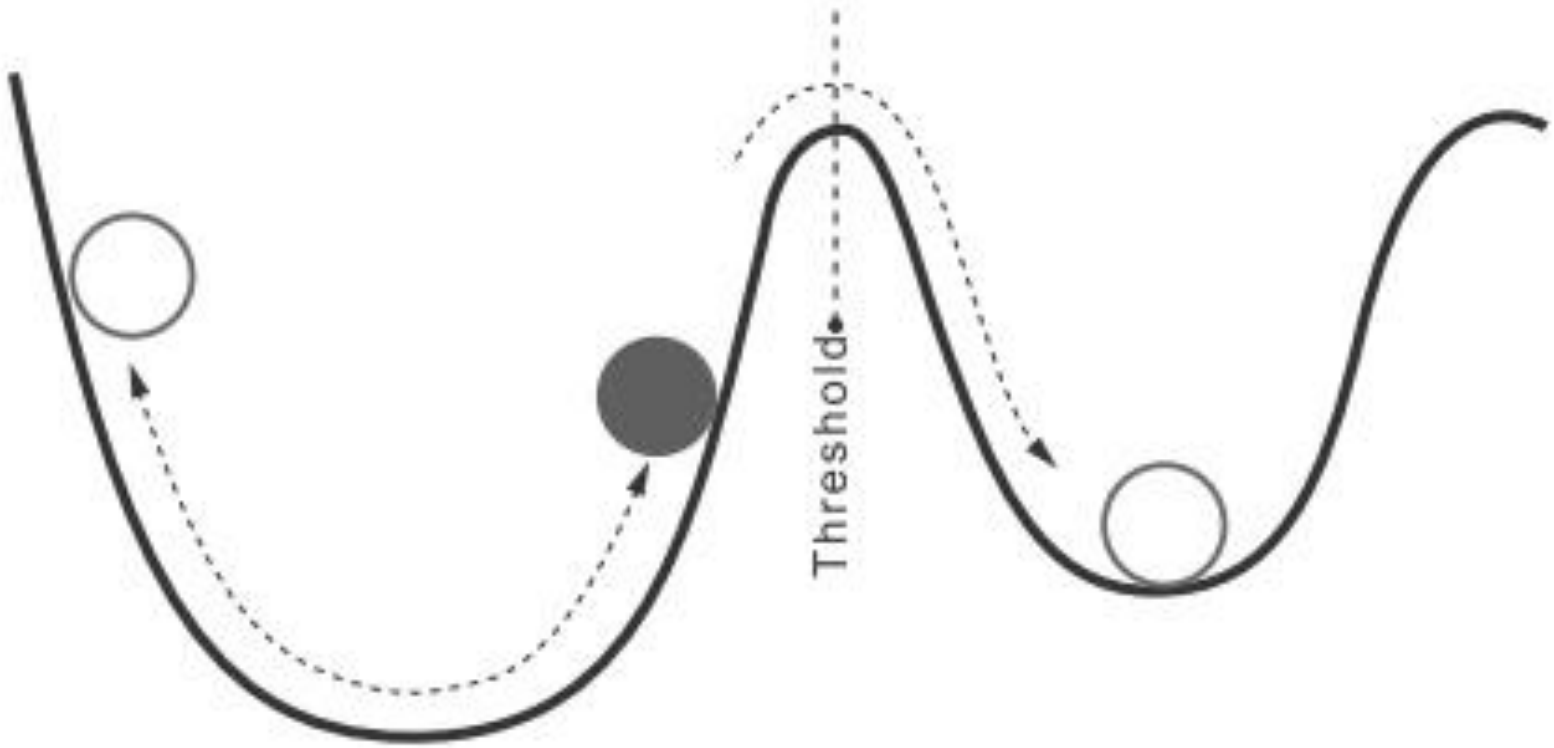
Overview of Resilient Thinking

Amman, Jordan

Engineering Perspective



Ecological Perspective



Ecological resilience concept

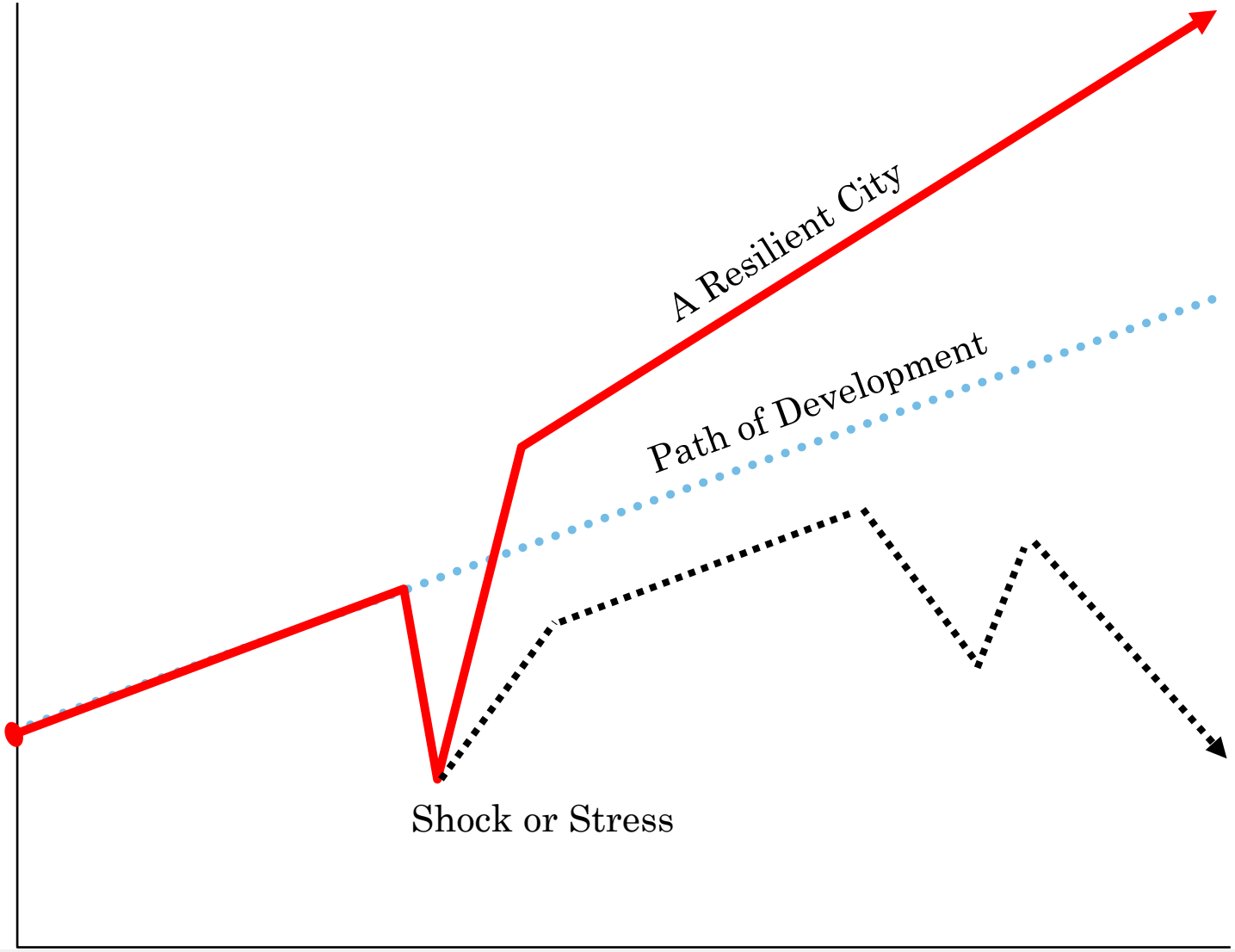
Ecological Perspective

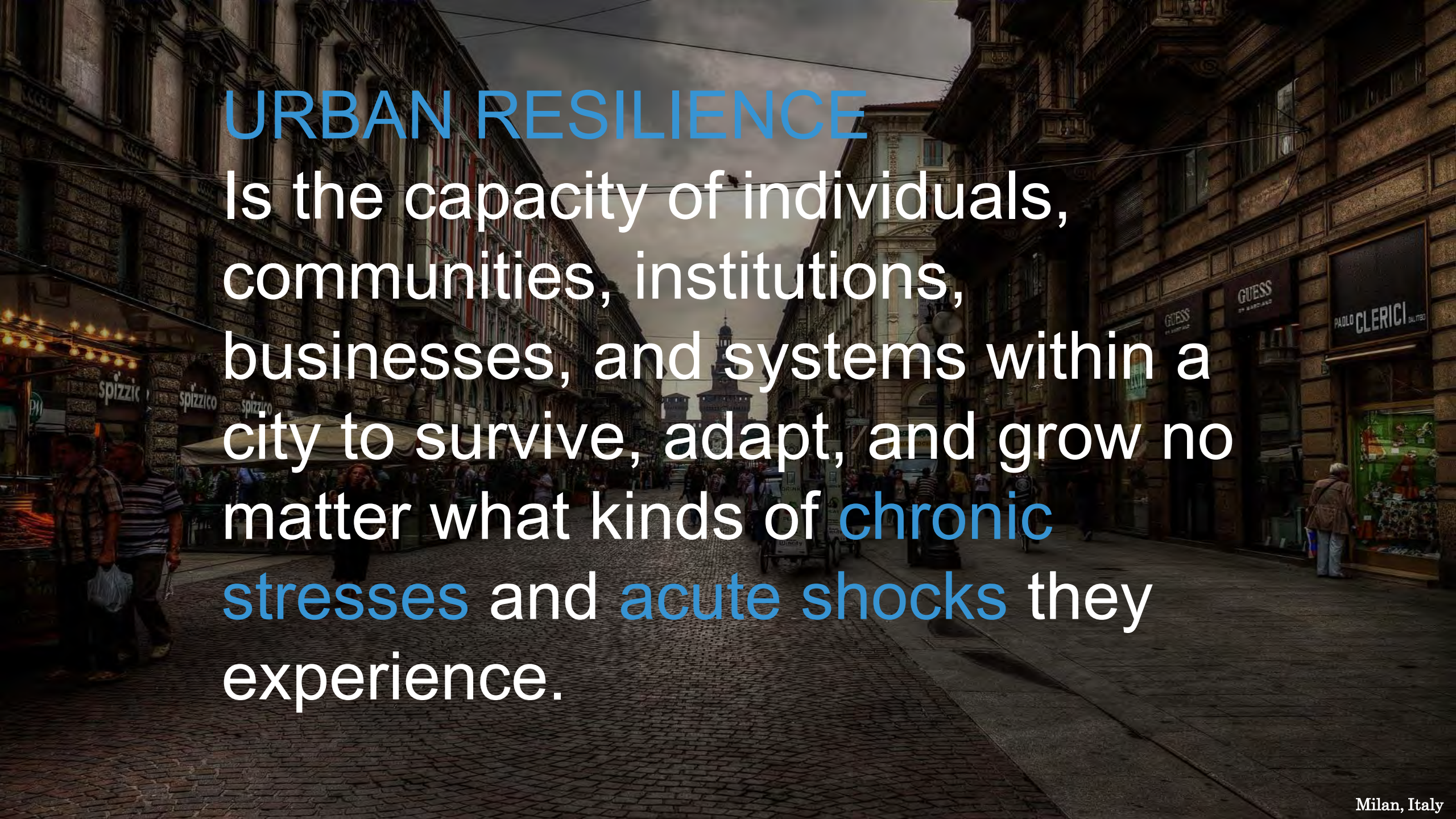
Social-Ecological Perspective

Incorporates the idea of adaptation, learning, and self-organization in addition to the general ability to persist disturbance.

Social-Ecological Perspective

Shocks and stresses can bring opportunities for cities to evolve, and in some circumstances, transform.





URBAN RESILIENCE

Is the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.

Milan, Italy

Flooding in Mandalay, Myanmar

A city's ability to maintain essential functions is threatened by both **acute shocks** and **chronic stresses**.

Abandoned Steel Mill in Pittsburgh, USA

Austerity riots in Athens, Greece

Sudden shocks or accumulating stresses
can lead to social breakdown, physical collapse, or economic decline.

What are acute shocks?

What are chronic stresses?

What are acute shocks?

Earthquake
Wildfires
Flooding
Sandstorms
Extreme cold
Hazardous materials accident
Severe storms and extreme rainfall
Terrorism
Disease outbreak
Riot/civil unrest
Infrastructure or building failure
Heat wave

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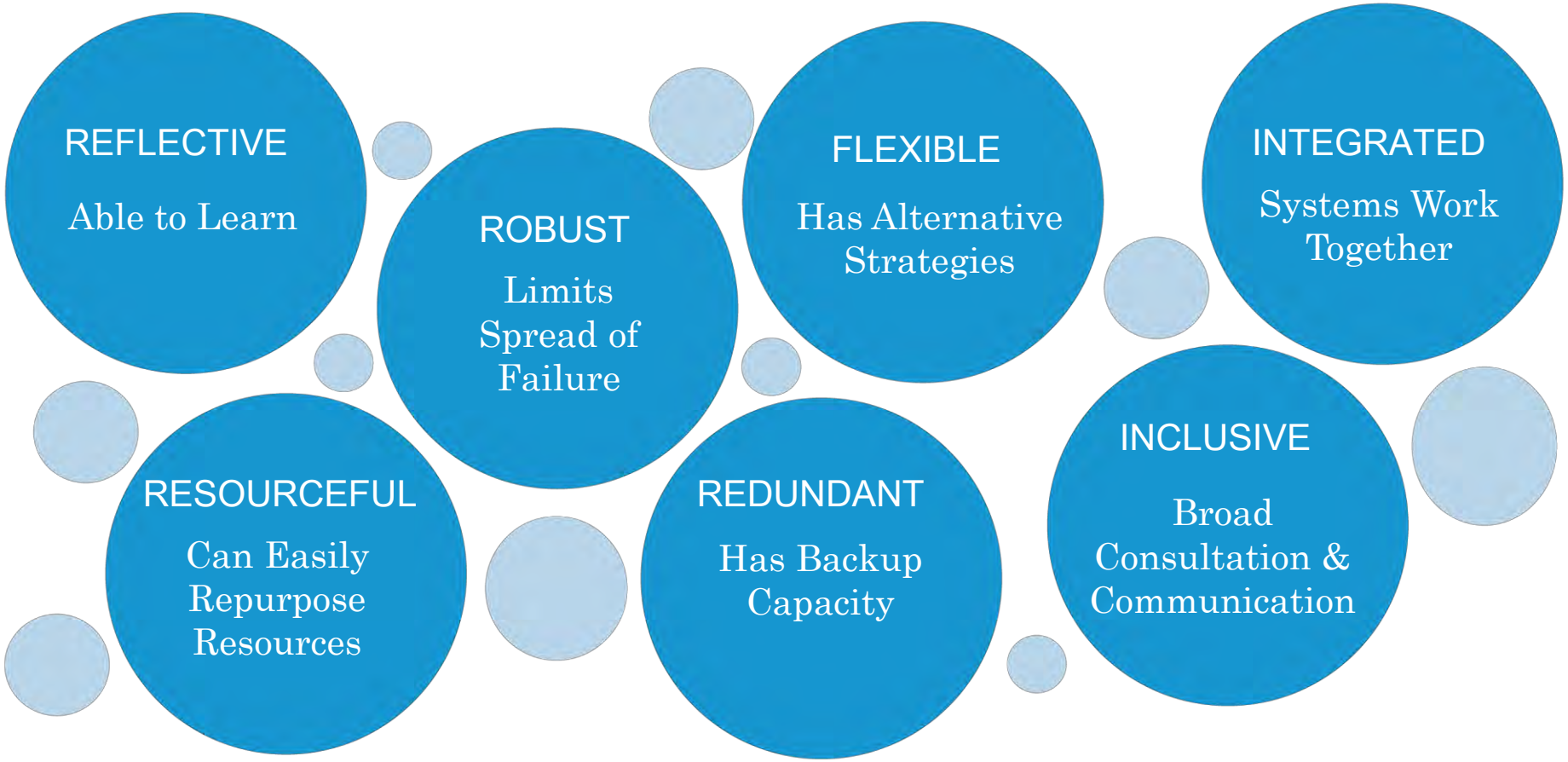
What are chronic stresses?

Water Scarcity
Lack of affordable housing
Poor air quality
High unemployment
Homelessness
Changing demographics
Lack of social cohesion
Poverty/inequity
Aging Infrastructure
Shifting macroeconomic trends
Crime & violence

Qualities of resilient systems

Resilient systems exhibit certain qualities that enable them to withstand, respond, and adapt more readily to shocks and stresses.



Amman, Jordan


Shanghai, China

Half Of The Infrastructure Cities Will Have By 2070 Hasn't Been Built Yet

Cities have a once-in-a-lifetime opportunity to incorporate resilient design into infrastructure projects


Sao Paulo, Brazil

Inequity And Social Cohesion Will Define The Resilience Agenda

City resilience strategies must focus on ways to fully include vulnerable populations

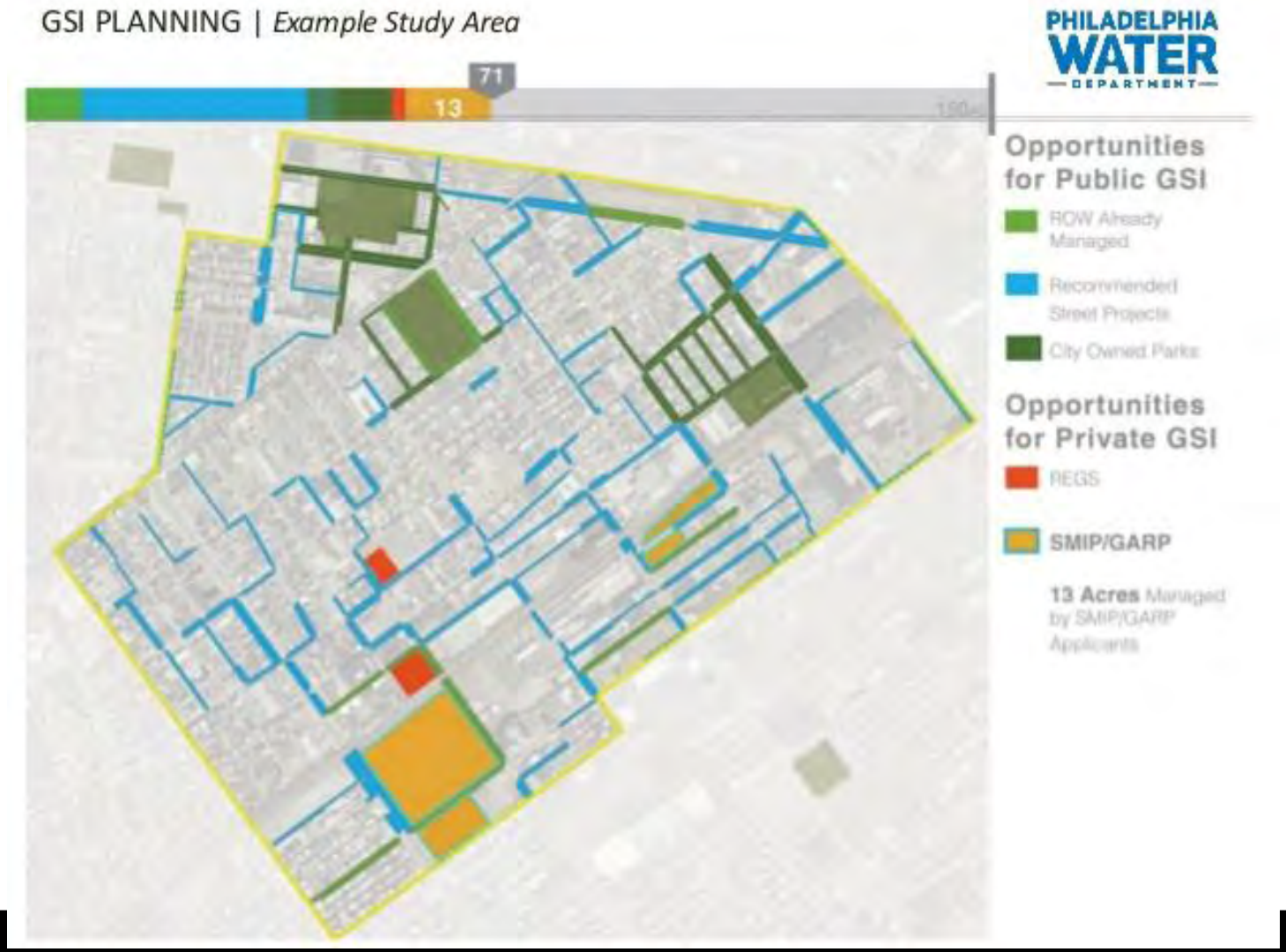
Dutch Model: “Making Room for the River”

- Giving the rivers and waterways room to breathe
- Turned these areas into parks and public amenities for days when flooding isn’t occurring
- Regional Planning
- Constantly Evolving Approach

“We built this culture of living with water,”

- Henk Ovink, Netherlands’ special envoy for international water affairs.

Green Infrastructure on Public & Private Lots



Green Streets

Green Streets

City Agency Partnerships: Green Streets

58th Street Greenway : TIGER Funded, 2013

Green Infrastructure on Public Open Space

City Agency Partnerships: Parks and Recreation

Liberty Lands Park: PWD-led Project, Community Owned & Maintained, 2011

Green Infrastructure on Public Vacant Lots

City Agency Partnerships: Vacant Lands

- **5 Projects Complete**
- **8 Projects in Planning / Design**
- **City Partners:** City Council Dept Public Property, Redevelopment Authority, Philadelphia Land Bank
- **Non-Profit Partners:** Neighborhood Gardens Trust, Local CDCs and Civics

GOALS:

- Identify stormwater management opportunities on vacant lots prioritized for permanent greening by communities and city council members
- PWD-led projects that manage ROW runoff
- Acquire MOUs with City Property to ensure permanency of GSI
- Work with community groups for stewardship and maintenance of sites

Green Infrastructure on Public Brownfields Sites

City Agency Partnerships: Brownfield Sites

- **Partners:** Commerce Department, Office of Sustainability, Farm Philly / Urban Ag, City Legal Counsel
- Land Use History for parcel-based projecst: Sanborns, Zoning records
- Industrial or other potential contaminant uses are further investigated
- Former graveyards also a concern
- **EPA Brownfields Assessment Grant Effort**
  - Urban Gardens
  - Vacant Lots for GSI
- Potential future consideration for **Brownfields Cleanup Grants**
- Excavation can assist in remediation

Green Infrastructure on Schools

Green Schools

George Nebinger School: Grant-Funded, 2013

Green Infrastructure on Public Housing

City Agency Partnerships: Public Housing

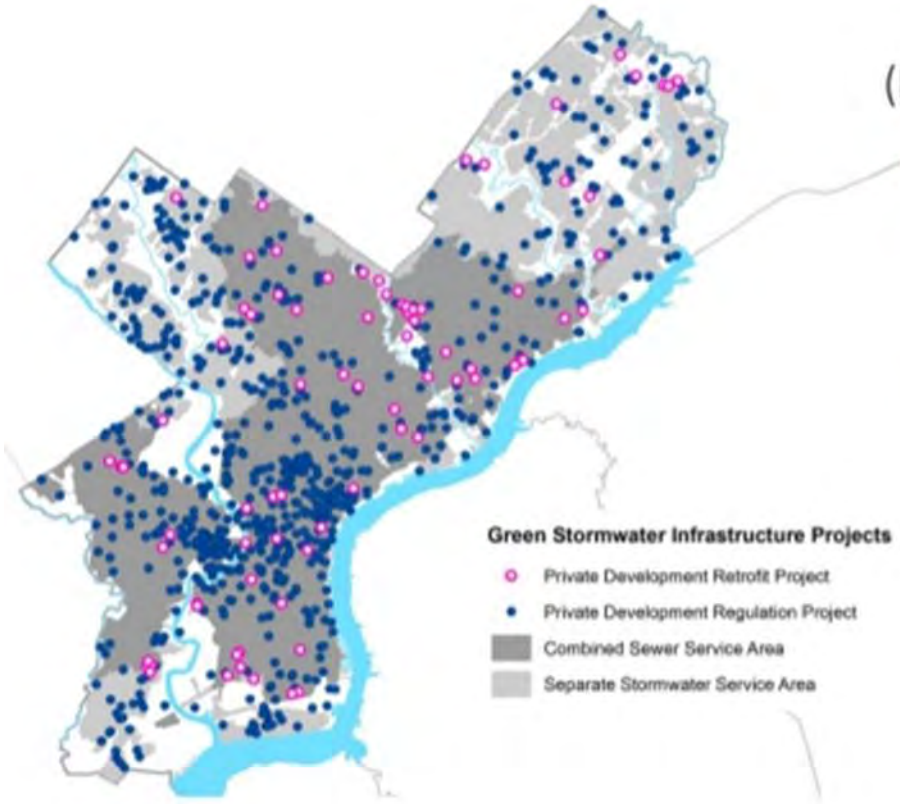
- **3 Green Streets Projects In Design**
- **$30 Million Choice Neighborhoods Grant**
- **Partner:** Philadelphia Housing Authority
- **Additional Partners:** Habitat for Humanity, City Division of Housing and Community Development, Local Developers

GOALS:

- Maximize stormwater management in new housing developments, including green streets.
- Jointly pursue funds for housing development and redevelopment of low-income communities
- Ensure maintenance of stormwater systems constructed to meet regs
- Retrofit existing housing projects to manage stormwater

Green Infrastructure on Commercial Lots

GSI on (Re)Development Projects and Incentivized Retrofits



(Re) Development Projects

266 projects, 423.4 acres

Incentivized Retrofits

38 sites, 234.6 acres

Historic 4th Ward – Sewer Capacity Relief

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Nature Influenced Design

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Aerating Fountain

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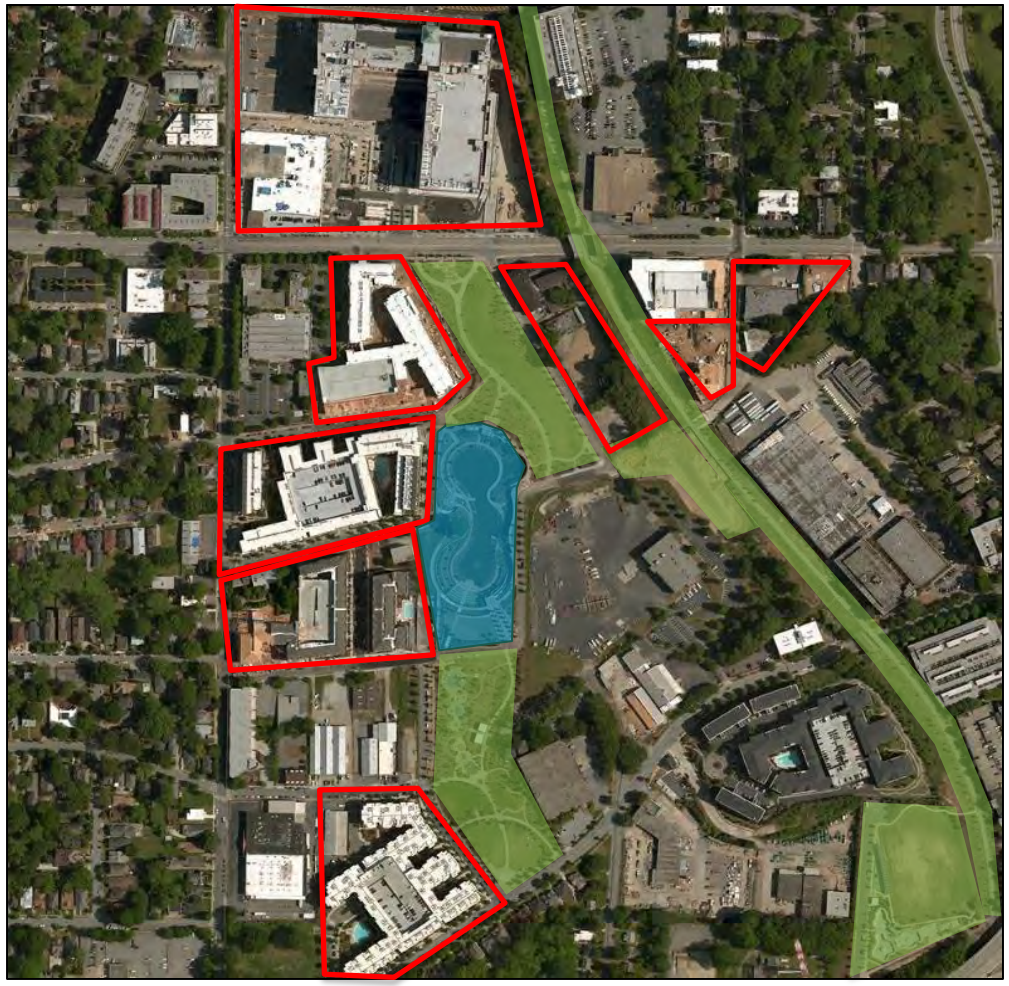
Spurring Economic Development



$500M in Redevelopment

- Apartments
- Condos
- Ponce City Market

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April 16, 2017 – 4” rain event

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Three days later…

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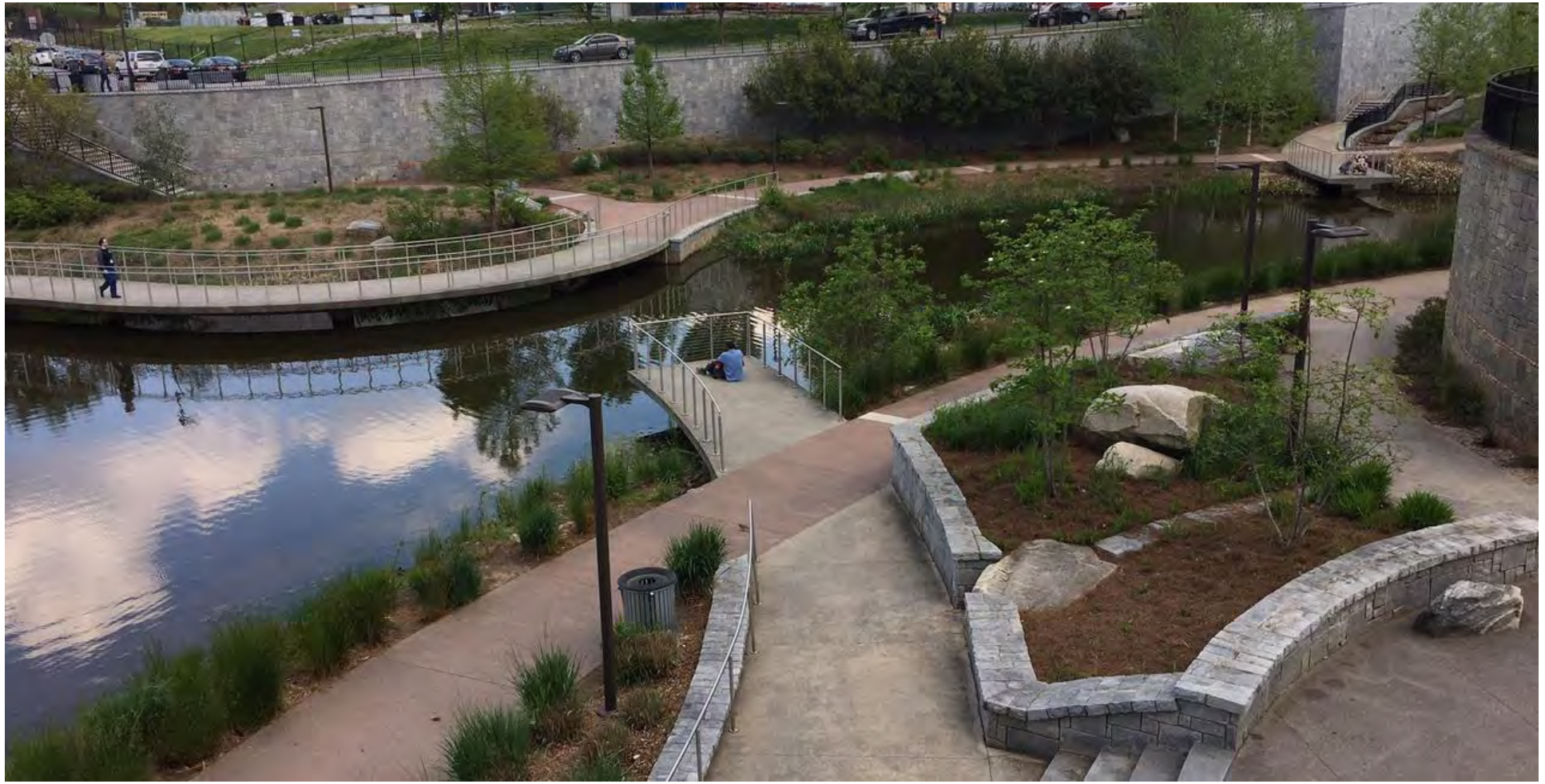

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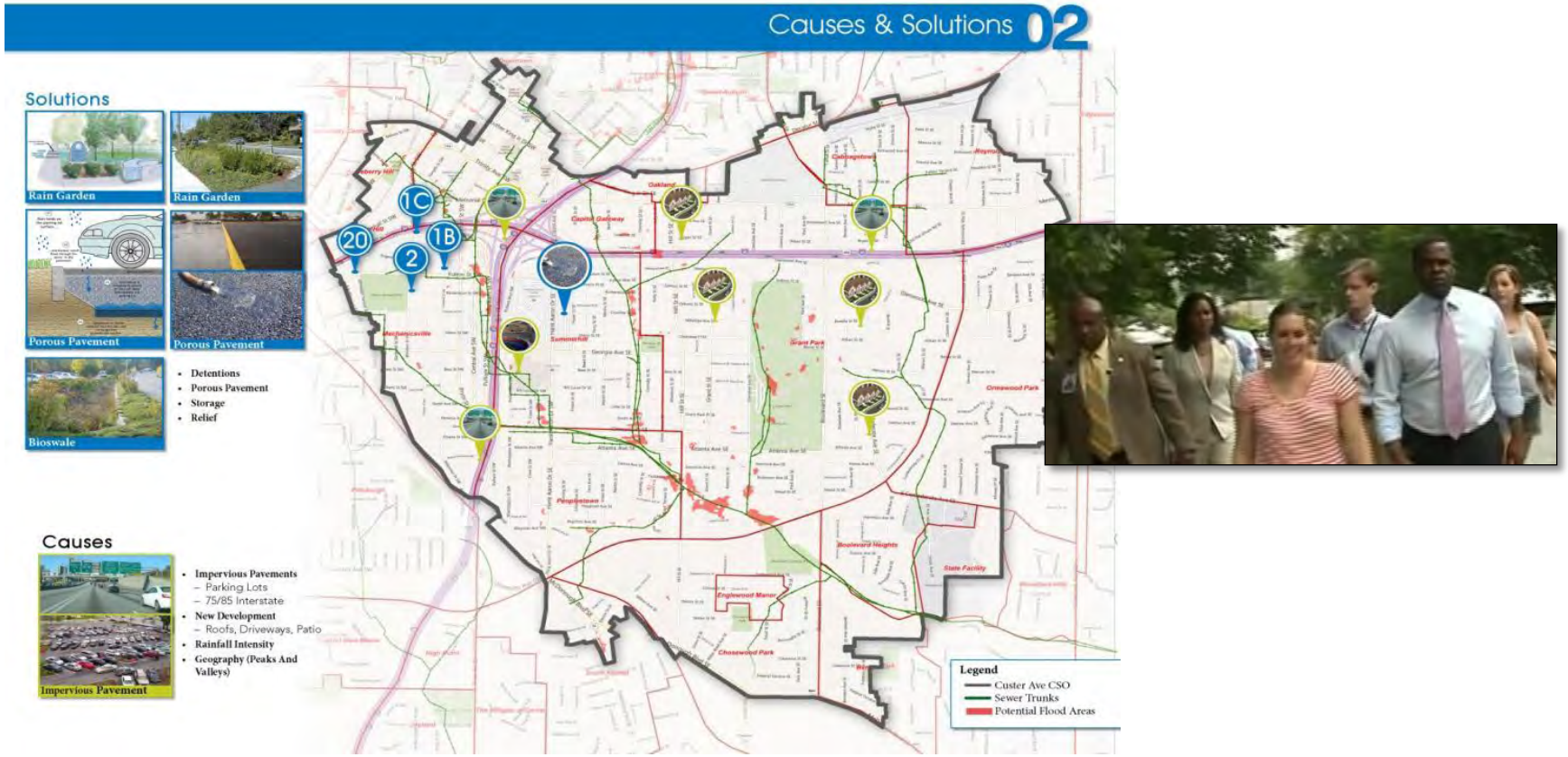
Southeast Atlanta Green Infrastructure Initiative

Combined Sewer Capacity Relief



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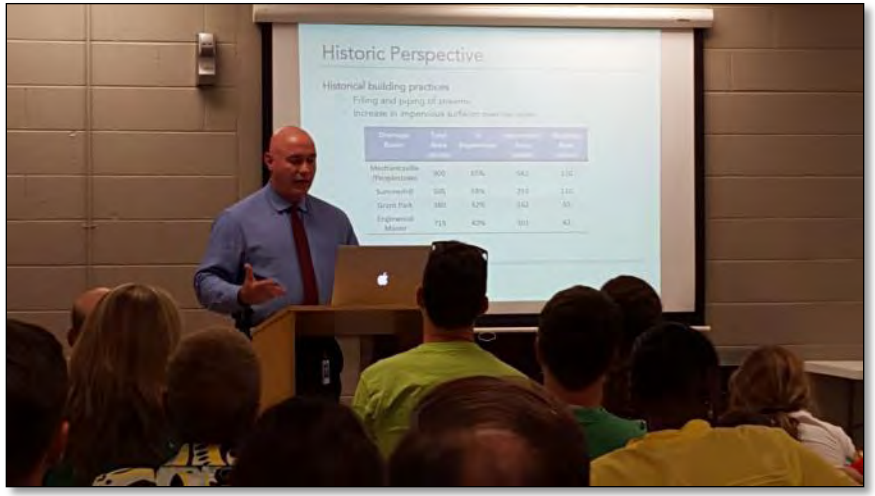
Peoplestown Flooding

Community Engagement



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Completed Streets

Environmental Impact Bond (EIB)

Announced March 2018

100 Resilient Cities Program

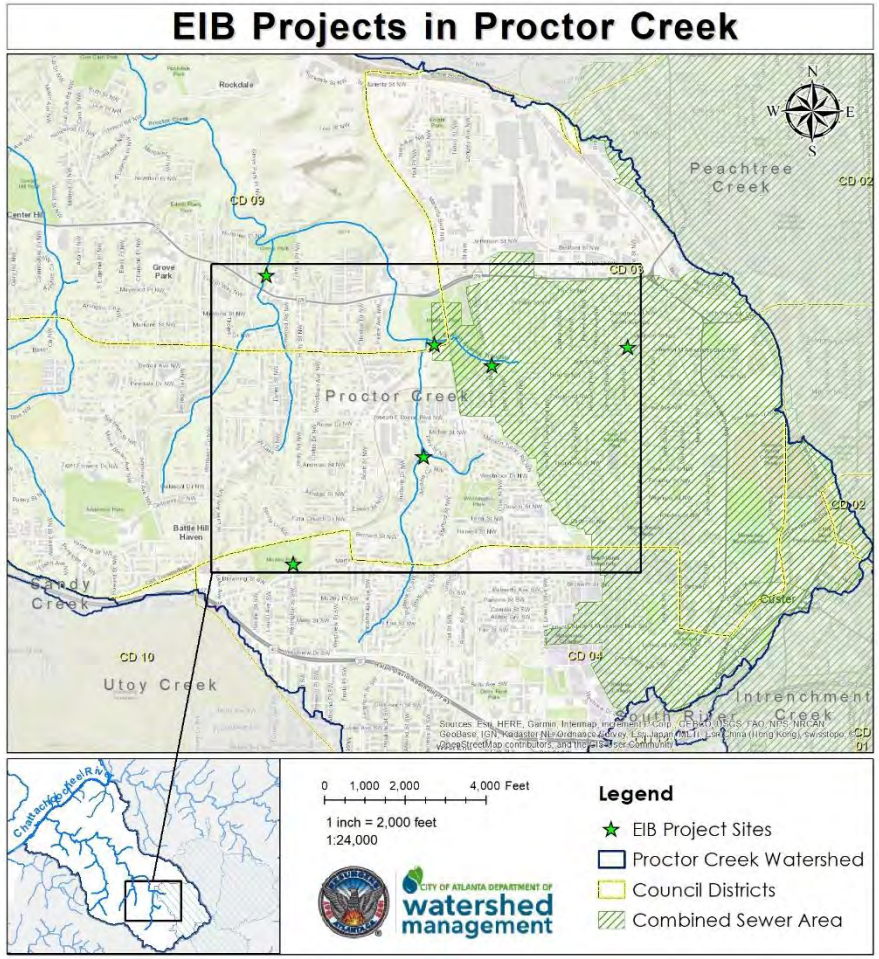
$13.5M to finance Green Infrastructure in Proctor Creek

- Up to 6 GI projects
- Combined and separate sewer areas
- A mix of ecosystem restoration and stormwater BMPs to improve the health and resilience of Westside communities

Multiple environmental & social benefits

Performance Metrics (stormwater volume)

Focus on local job creation



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ReBuild by Design

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UNIVERSITY OF GEORGIA WINS THE TED TURNER DRIVE RESILIENCE CORRIDOR CHALLENGE

The Ted Turner Drive Resilience Corridor Challenge concluded on May 7th with the Atlanta Resilience Office and Council member Amir Farokhi awarding the winners and finalists. The University of Georgia's student team won the design challenge for their work on the "Spark" Strategy Plan, which emphasized increasing the cultural, ecological, and economic benefits of Ted Turner Drive.

This plan focuses on enhancing the pedestrian experience through green infrastructure and ecological enhancements that address heat and excess water, while also creating larger sidewalks and multi-use spaces that can be sectioned off from traffic and utilized for large events. The city will begin implementing the winning submission in the summer and fall of 2018. Learn more>>

Questions?

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