



GSI PARTNERS™  
REIMAGINING STORMWATER

# *Advancing the Local GSI Industry, Innovation, and Economy*

Delaware River Watershed Forum  
September 26, 2018



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## Sustainable Business Network of Greater Philadelphia

- ❖ Building a just, green, and thriving economy in the Greater Philadelphia region
- ❖ In support of *Green City, Clean Waters* nature-based vision

## Green Stormwater Infrastructure (GSI) Partners

- ❖ Initiative of SBN
- ❖ Advancing the local GSI industry and innovation to maximize the *triple bottom line* impact of GCCW
- ❖ 80 members in GSI design, build, maintenance, material supply



**In 2009, Nancy Stoner of the Natural Resources Defense Council delivered testimony to the U.S. Congress with a comprehensive list detailing the goals and benefits of GSI and its role in addressing urban stormwater runoff.**



**PER STONER, THIS LIST INCLUDES:**

**SOURCE WATER PROTECTION** – Green infrastructure practices provide pollutant removal benefits, thereby providing some protection for both ground water and surface water sources of drinking water. In addition, green infrastructure provides groundwater recharge benefits by putting stormwater back into the ground and enhances surface water quality by redirecting the high volume and velocity flows that scour streams and muddy drinking water sources.

**CLEANER WATER** – Percolation of stormwater through soil, uptake by vegetation, and water reuse reduce the volumes of stormwater runoff and, in combined systems, the volume of combined sewer overflows, as well as reduce concentrations of pollutants in those discharges.

**ENHANCED WATER SUPPLIES** – Most green infiltration approaches involve allowing stormwater to percolate through the soil where it recharges the groundwater and the base flow for streams, thus ensuring adequate water supplies for humans and more stable aquatic ecosystems. In addition, capturing and using stormwater conserves water supplies.

**COMMUNITY BENEFITS** – Trees and plants improve urban aesthetics and community livability by providing recreational and wildlife areas. Studies show that property values are higher, homes sell faster, and crime is reduced when trees and other vegetation are present.

**HEALTH BENEFITS** – Studies show that people who have access to green infrastructure in their communities get more exercise, live longer, and report better health in general. Exposure to green infrastructure (even through a window) improves mental functioning, reduces stress, and reduces recovery time from surgery.

**COST AVOIDANCE** – Green infrastructure saves capital costs associated with paving, curb and gutter, building large collection

and conveyance systems, and digging big tunnels and centralized stormwater ponds; operations and maintenance expenses for treatment plants, pumping stations, pipes, and other hard “gray” infrastructure; energy costs for pumping water around; cost of treatment during wet weather; and costs of repairing the damage caused by stormwater, such as streambank restoration.

**MODERATED IMPACTS OF CLIMATE CHANGE** – Climate change impacts and effects vary regionally, but green infrastructure techniques provide adaptation benefits for a wide array of circumstances, by conserving and reusing water, promoting groundwater recharge, reducing surface water discharges that could contribute to flooding.

**REDUCED FLOODING** – Green infrastructure both controls surface flooding and stabilizes the hydrology so that peak stream flows are reduced.

**CLEANER AIR** – Trees and vegetation improve air quality by filtering many airborne pollutants and can help reduce the amount of respiratory illness. Green infrastructure approaches that facilitate shorter commute distances and the ability to walk to destinations also reduce vehicle emissions.

**REDUCED URBAN TEMPERATURES** – Summer city temperatures can average 10°F higher than nearby suburban temperatures. High temperatures are also linked to higher ground level ozone concentrations. Vegetation creates shade, reduces the amount of heat absorbing materials and emits water vapor – all of which cool hot air.

**WILDLIFE HABITAT** – Stream buffers, wetlands, parks, meadows, green roofs, and rain gardens increase biodiversity within the urban environment.

**INCREASED ENERGY EFFICIENCY** – Energy efficiency not only reduces costs, but also reduces generation of greenhouse gases.



# Environmental Benefits



- ❖ Water Quality
- ❖ Water Quantity
- ❖ Air Quality
  - ❖ Greenhouse gasses
  - ❖ Urban Heat Island
  - ❖ Habitat



On a per acre basis, introductions of green space can render the equivalent of \$10.5 M/year in environmental benefits.

# Social Benefits

- ❖ New and improved passive and active recreation opportunities
  - ❖ Community health
  - ❖ Individual health
- ❖ Mental and physical wellness
- ❖ Worker and student productivity
- ❖ Crime reduction



Over the life of GCCW, the value of estimated increased recreational trips could amount to \$520 million.

# Economic Benefits

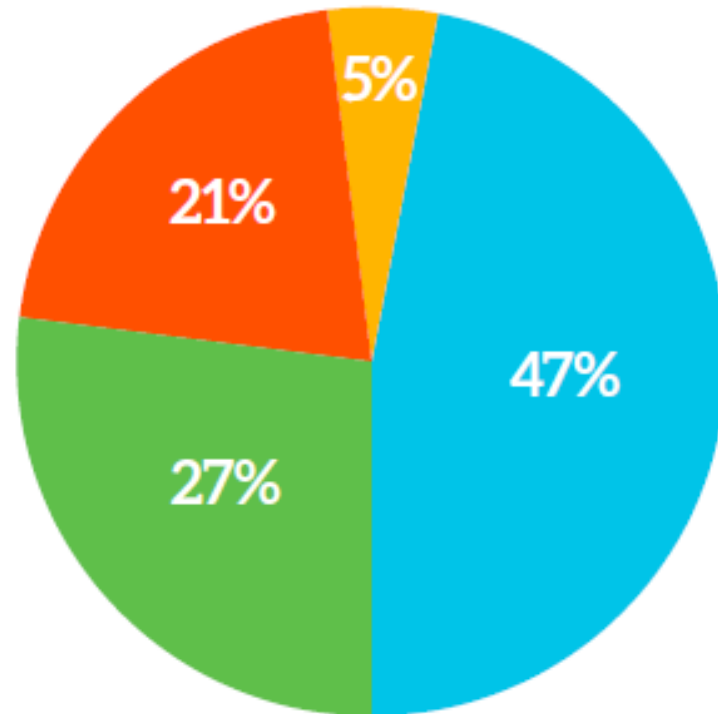
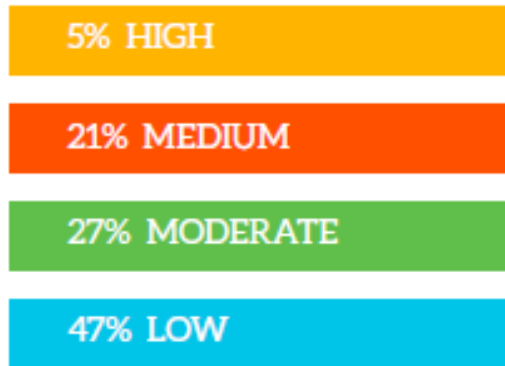


- ❖ Affordable for ratepayers
- ❖ Higher ROI for ratepayers
- ❖ Accessible contract ops
- ❖ Accessible employment ops
- ❖ Improves property values

“My company has been greatly affected by Green City Clean Waters. About 40% of our projects have been because of public or private investment in GSI, and about 25% have benefitted from grant funding for GSI.”

# Economic Benefits, cont.

FIGURE 3.4 DISTRIBUTION OF CENSUS BLOCK GROUPS WITH A PUBLIC GSI PROJECT BY MEDIAN INCOME LEVEL



## Environmental Benefits

- ❖ Reduces stormwater runoff
- ❖ Improves water quality
- ❖ Improves air quality, reduced greenhouse gasses, reduced urban heat island effect
- ❖ Enhances adaptability and resiliency
- ❖ Improves habitat and biodiversity
- ❖ Provides other ecosystem services

## Social Benefits

- ❖ Supports new and improved community amenities and recreation opportunities
- ❖ Reduces crime and violence
- ❖ Improves employee and student health and productivity

## Economic Benefits

- ❖ **More affordable municipal approach**
- ❖ **More accessible on-ramps to employment**
- ❖ **More contracting opportunities for small and/or local firms**
- ❖ **Increased revenue to the City**
- ❖ **Quantifiable environmental and social benefits**





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# Thank you!

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