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NEW JERSEY AMERICAN WATER

LEADER
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ARCADIS

Concrete Washout Systems, Inc.

ECHOLOGICS

Greeley and Hansen

Louis Berger

Middlesex Water Company

New Jersey Environmental Infrastructure Trust

US Water Alliance

CONTRIBUTORS

AKRF, INC.
CDM Smith
DEWBERRY
MOTT MACDONALD
National Association of Clean Water Agencies

NEW JERSEY BUSINESS & INDUSTRY ASSOCIATION
NORTH HUDSON SEWERAGE AUTHORITY
OLDCASTLE STORMWATER SOLUTIONS
TETRA TECH
Welcome
Hon. Ras Baraka, Mayor, City of Newark
Regulators’ Roundtable
Peggy Gallos, Executive Director, Association of Environmental Authorities of New Jersey (Moderator)

Dan Kennedy, Assistant Commissioner, Water Resources Management, New Jersey Department of Environmental Protection

Javier Laureano, Director, Clean Water Division, U.S. Environmental Protection Agency Region 2

@JerseyWaterWrks #NJWater2016
Smart Infrastructure, Strong Communities

Maggie Moran, Managing Partner, Kivvit (moderator)

Anthony Attanasio, Executive Director, Utility & Transportation Contractors Association

Robert Ballenger Esq., Staff Attorney, Community Legal Services of Philadelphia

Doug Sims, Director of Strategy and Finance, Natural Resources Defense Council Center for Market Innovation

Thomas J. Stanley, Chief Technology Officer, Water & Process Technologies/GE Power

@JerseyWaterWrks #NJWater2016
11 CITIES AND 2 COUNTIES in NJ have children with higher levels of lead in their blood than kids in Flint, Michigan. (Isles Inc., CDC)

GRADE D given to NJ Wastewater infrastructure. (ASCE)

71% OF AMERICANS SURVEYED deemed it very important to improve and modernize the water infrastructure system. (American Viewpoint, Hart Research)

$40 BILLION IN INVESTMENT is needed to improve NJ’s water and wastewater infrastructure. (EPA (2008))

7 BILLION GALLONS OF DILUTE RAW SEWAGE flow in our rivers and bays each year from Combined Sewer Overflows in 21 NJ cities. (NJ Future)

52% OF NJ RESIDENTS said they were concerned about the quality of their drinking water. (Rutgers)
Smart Infrastructure, Strong Communities

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Doug Sims, Director of Strategy and Finance, Natural Resources Defense Council Center for Market Innovation

Thomas J. Stanley, Chief Technology Officer, Water & Process Technologies/GE Power

@JerseyWaterWrks #NJWater2016
Transforming the Infrastructure Paradigm
Hon. Stephanie A. Miner, Mayor, Syracuse, N.Y.

Introduction by Hon. James Florio, former governor, State of New Jersey
Jersey Water Works Year One Recap And Commitments For 2017

Jane Kenny, Owner and Managing Partner, The Whitman Strategy Group LLC; Co-Chair, Jersey Water Works

Mark Mauriello, Director of Environmental Affairs and Planning, Edgewood Properties; Co-Chair, Jersey Water Works
Greeting from Robert Brabston, Vice President, General Counsel and Secretary (NJ American); Divisional General Counsel, Northeast Division, American Water
Smart infrastructure. Strong communities.

1 Year

260 Supporting Members

2,100 Interested Stakeholders

@JerseyWaterWrks NJWater2016
# Steering Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jane Kenny</td>
<td>Owner and Managing Partner, The Whitman Strategy Group LLC; Co-Chair, Jersey Water Works</td>
</tr>
<tr>
<td>Mark Mauriello</td>
<td>Director of Environmental Affairs and Planning, Edgewood Properties; Co-Chair, Jersey Water Works</td>
</tr>
<tr>
<td>Alyssa Arcaya</td>
<td>New Jersey Department of Environmental Protection, Ex-Officio Non-Voting Government Member</td>
</tr>
<tr>
<td>Jennifer Brunton</td>
<td>The Louis Berger Group Inc.</td>
</tr>
<tr>
<td>Drew Curtis</td>
<td>Ironbound Community Corporation</td>
</tr>
<tr>
<td>Donna Drewes</td>
<td>Sustainable Jersey</td>
</tr>
<tr>
<td>Peggy Gallos</td>
<td>Association of Environmental Authorities of New Jersey</td>
</tr>
<tr>
<td>Andrew Hendry</td>
<td>New Jersey Utilities Association</td>
</tr>
<tr>
<td>Stephen Marks</td>
<td>City of Hoboken</td>
</tr>
<tr>
<td>Meishka Mitchell</td>
<td>Cooper’s Ferry Partnership</td>
</tr>
<tr>
<td>Chris Obropta</td>
<td>Rutgers Water Resources Program</td>
</tr>
<tr>
<td>Shoshanna Page</td>
<td>New Jersey Urban Mayors Association</td>
</tr>
<tr>
<td>Rob Pirani</td>
<td>NY/NJ Harbor and Estuary Program</td>
</tr>
<tr>
<td>Dan Van Abs</td>
<td>Rutgers University</td>
</tr>
<tr>
<td>Margaret Waldock</td>
<td>Geraldine R. Dodge Foundation</td>
</tr>
<tr>
<td>David Zimmer</td>
<td>New Jersey Environmental Infrastructure Trust, Ex-Officio Non-Voting Government Member</td>
</tr>
</tbody>
</table>
Shared Goals

- Smart Combined Sewer Overflow Plans
- Effective Green and Gray Infrastructure
- Financially Sustainable Systems
- Empowered Stakeholders

@JerseyWaterWrks #NJWater2016
Finance Committee

Co-chairmen:

David Zimmer, New Jersey Environmental Infrastructure Trust

Chris Daggett, Geraldine R. Dodge Foundation
Green Infrastructure Committee

Co-chairs:

Jennifer Gonzalez, City of Hoboken

Rob Pirani, NY/NJ Harbor Estuary Program
Municipal Outreach Committee

Co-chairwomen:

Donna Drewes, Sustainable Jersey

Shoshanna Page, New Jersey Urban Mayors Association
Community Engagement Committee

Co-chairwomen:

Debbie Mans, NY/NJ Baykeeper

Meishka Mitchell, Cooper’s Ferry Partnership
Best Practices Committee

Co-chairmen:

Larry Levine, Natural Resources Defense Council

Rick Risoldi, Middlesex Water Company

Presenting: Joan Matthews, Natural Resources Defense Council

@JerseyWaterWrks #NJWater2016
Additional Accomplishments:

- Established an active peer-to-peer CSO Network
- Published resources on lead in drinking water
- Changing the thinking across New Jersey about why water infrastructure matters – through media, presentations, and special meetings
- Coordinated a New Jersey delegation to the One Water Summit.
- Helping to design “integrated” combined sewer solutions in three cities
- Cultivating stakeholder interest in CSO solutions in three cities
Measurement System

1. Establish a common purpose and shared goals
2. Measure results and use insights to shape our work
3. Track progress
4. Align member activities to drive results
Individual Efforts

Collaborative Action
2017 Commitments

Jersey Water Works members are proud to announce more than 30 commitments -- actions they will take to transform New Jersey’s water infrastructure. The commitments represent new projects, initiatives and activities that members plan to undertake in 2017.
Camden County Municipal Utilities Authority

**Expedited Implementation of CSO Long Term Control Plan**

The Camden County Municipal Utilities Authority will complete the design and financing of a $50 million component of its long term CSO control plan to eliminate flooding problems along the Camden waterfront. The project includes a green infrastructure program, a new stormwater pumping station and upgrades to the existing combined sewer system and the wastewater treatment plant.

@JerseyWaterWrks #NJWater2016
Cooper’s Ferry Partnership

Release of Flood Mapping App “Camden Reports”

Camden SMART Partners have committed to enhancing the collaborative’s community engagement platforms through the development of Camden Reports, a web-based app that allows residents to report instances of flooding to Camden SMART Partners in real time via their mobile devices or computers. Residents are encouraged to provide a description and upload photographs of the flooding incident, which are sent directly to Camden SMART Partners and to American Water, the city’s water utility company, which then identifies a best solution.

@JerseyWaterWrks #NJWater2016
City of Hoboken

First Water Infrastructure Capital Improvement Plan

The City of Hoboken will develop its first Capital Improvement Plan for intermediate and longer-term investments in its water distribution system. The CIP will provide a rational planning approach that optimizes the funding required to maintain its drinking-water assets in a state of good repair. The City will evaluate and recommend options for managing Hoboken’s water infrastructure and develop a sustainable financial implementation strategy.
City of Jersey City

Jersey City’s Year of Water

Jersey City and its Office of Innovation have designated 2017 as “A Year of Water.” The Office of Innovation will work with stakeholders to align priorities, promote partnerships, and encourage best practices to support water stewardship.
Middlesex Water Company

$160 Million Capital Investment in Water Infrastructure

Through its “Water for Tomorrow” program, Middlesex Water Company will invest $160 million in water infrastructure in 2017 and 2018 to enhance safety, reliability and resiliency. Projects will include construction of a critical transmission main for backup water supply; new ozonation treatment to meet water quality requirements; several large tanks for additional storage; additional electric standby generation; and relocation of meters to exterior pits for greater customer convenience and safety.

@JerseyWaterWrks #NJWater2016
Association of Environmental Authorities of New Jersey
Piloting a Professional Development Academy and Promoting Asset Management

Association of Environmental Authorities of New Jersey and Sustainable Jersey
Partnering to Host Training Session to Promote Best Practices

Association of New Jersey Environmental Commissions
Empowering Environmental Commissions to Advance Stream Daylighting

Center for Natural Resources Development and Protection at the New Jersey Institute of Technology
Green Infrastructure Installation and Evaluation

@JerseyWaterWrks #NJWater2016
Clean Ocean Action
Canine Scent Detection in the Navesink River Watershed and Beyond

Clean Water Action
Green Infrastructure Installations in Newark and Community Action Teams in the South Ward

Environmental Finance Center at Syracuse University
Technical Assistance and Training in New Jersey

Edgewood Properties and Whitman Strategy Group
Op-Ed to Promote Water Infrastructure Solutions that Provide Multiple Community Benefits

@JerseyWaterWrks #NJWater2016
Geraldine R. Dodge Foundation
Water Infrastructure Funders Affinity Group

City of Hoboken
Bike Tour of Hoboken’s Urban Stormwater Management Measures

Louis Berger
Staff Support for the Jersey Water Works Measurement System

National Association of Clean Water Agencies
Environmental Justice and Community Service Compendium

Congressional Outreach on Water Rate Affordability and Low Income Community Impacts

@JerseyWaterWrks #NJWater2016
The Nature Conservancy
Financing Facility for Green Infrastructure Projects

New Jersey Department of Environmental Protection
Developing Green Infrastructure Guidance

New Jersey Environmental Infrastructure Trust
Issuing Environmental Infrastructure Bonds as “Green Bonds”

New Jersey Future
Going After Green Infrastructure — New Jersey Future Property, Alley and Block
New Jersey Utilities Association
Op-Ed to Promote Water Infrastructure Investments

NY/NJ Baykeeper
100,000 Oysters to Filter Water
250 Volunteer Hours to Clean Local Waterways

NY-NJ Harbor & Estuary Program, Hudson River Foundation
Assessing and Communicating the Benefits of Improved Water Quality

Rutgers Cooperative Extension Water Resources Program
Research Report: Stormwater Utilities as an Economic Driver for New Jersey

@JerseyWaterWrks #NJWater2016
Sustainable Jersey
Water Infrastructure Actions Included in Certification Program

Stevens Institute of Technology
Transforming Stevens’ Campus into a Living Laboratory

The John S. Watson Institute for Public Policy at Thomas Edison State University
Formation of a Mayors’ Water Infrastructure Committee

United States Environmental Protection Agency Region 2
Working with New Jersey and Partners to Improve and Enhance Water Quality

@JerseyWaterWrks #NJWater2016
Daniel Van Abs, Associate Professor, Rutgers University
Comparison of State Wastewater Infrastructure Reliability Regulations

Evaluation of Municipal Master Plans

The Wei
Grassroots Organic Food Coalition
7 Organizations committed to posting the Jersey Water Works “member of” logo on their websites

4 Organizations volunteered for a stream clean-up, green infrastructure workshop or related activity

4 Organizations will feature Jersey Water Works and its work in their newsletters

3 Organizations will publish a new resource in partnership with Jersey Water Works
Jersey Water Works facilitates cross-sector collaboration to transform New Jersey’s inadequate water infrastructure through investments in sustainable, cost-effective solutions that provide multiple community benefits.

Members:
Become a member to add your voice, perspective and expertise!

<table>
<thead>
<tr>
<th>Participate</th>
<th>Connect</th>
</tr>
</thead>
<tbody>
<tr>
<td>in the work of Jersey Water Works at any level you want.</td>
<td>with other members via the communications portal, where you can also access member resources</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stay Up to Date</th>
<th>Get Featured</th>
</tr>
</thead>
<tbody>
<tr>
<td>receive a bi-weekly email with updates, funding, opportunities, news and resources</td>
<td>in the bi-monthly Jersey Water Works blog, website and monthly e-newsletter</td>
</tr>
</tbody>
</table>

SIGN UP!
Fill out the below form to join the collaborative today. Membership is free!

Name

Email Address

Title and Organization

Phone Number

@JerseyWaterWrks #NJWater2016
Facing Water Woes Head-On in Newark

Chip Hallock, President and Chief Executive Officer, Newark Regional Business Partnership (moderator)

Andrea Adebowale, Director, Department of Water and Sewer Utilities, City of Newark

Joseph Della Fave, Executive Director, Ironbound Community Corporation

Linda Morgan, Real Estate Development, Urban Planning, Marketing and External Affairs, RBH Group LLC

Anna Shipp, Project Manager, GSI Partners, Sustainable Business Network of Philadelphia

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@JerseyWaterWrks #NJWater2016
Water Issues, Climate Resiliency, & Neighborhood Revitalization

Community-based Approach
47 years of serving our community

- Early Childhood Education & Youth Development
- Family Services, Adult Education, Workforce Development
- Environmental Justice & Community Development
Draft Waterfront Plan
Ironbound: EJ Context
Superstorm Sandy was a game changer!
Regional Impacts

Hurricane Sandy
Impacts on our Urban Coast
October and November 2012
On top of everyday flooding
On top of everyday flooding
On top of everyday flooding
Hurricane Irene
FEMA FLOOD RISK ZONES: future vulnerability
More than 80% of schools tested in the city.

Kids in Newark are already bombarded by environmental health issues.

Lead in Water  credit: NRDC
Developing Short & Long Term Solutions

- Community Empowerment to create long-lasting, resident climate justice advocates
- Building Partnerships: Resources, Analysis Planning, Design, Demonstration, Implementation
- Policy Development at the municipal, state, regional, and federal levels
- On-the-ground projects
Partnerships

- City of Newark
- Newark DIG
- Rutgers University
- American Planning Association
- Greener By Design
- Jersey Water Works – NJ Future
Approach

**Adaptation**
- Changing how we do things
- Institutions

**Mitigation**
- Agencies
- Community-driven residents
- Reduce greenhouse gases

**Social Cohesion**
- Organizations
- Sharing learning planning action local jobs
Newark Resiliency Action Plan
NEWARK RAP Process

Neighborhood-based Resident Engagement ➔ City-wide, Multi-Sector Steering Committee Engagement ➔ Draft Plan

Final Plan & Implementation ➔ Neighborhood-based Resident Engagement ➔ City-wide, Multi-Sector Steering Committee Engagement

Ironbound Community Corporation
NJ Environmental Justice Alliance
Clean Water Fund
Resiliency Planning
NEWARK RAP

5 Elements of Resiliency:
1. Minimizing flooding and the amount of toxic residue left behind as a result of flooding
2. Reducing temperatures and adapting to heat impacts
3. Preparing for, and responding to, extreme weather situations
4. Reducing Green House Gases (GHG) and local air pollution
5. Minimizing black-outs and stopping the use of dirty energy through energy efficiency and renewable energy alternatives
Resiliency Action
SOUTH IRONBOUND RESILIENCY ACTION PLAN

Prepared by:
IRONBOUND COMMUNITY CORPORATION
COMMUNITY DEVELOPMENT AND ENVIRONMENTAL JUSTICE PROGRAM
And:
AMERICAN PLANNING ASSOCIATION
NEW JERSEY CHAPTER COMMUNITY PLANNING ASSISTANCE PROGRAM

OCTOBER 17, 2016
HABITAT 3 CONFERENCE - QUITO, ECUADOR
SOUTH IRONBOUND COMMUNITY

Location of South Ironbound in Newark

Notable Places in South Ironbound
South Ironbound Vulnerabilities

Air Quality Concerns

- High volume of trucks associated with Port of Newark and Newark Liberty Airport
- Industry throughout the neighborhood, on Doremus Avenue ("Chemical Corridor"), and in Newark Industrial District
- Northeast Corridor passenger rail line and Conrail freight train line
South Ironbound Vulnerabilities

Land Use and Zoning
- Land use is mix of industrial, commercial, and residential uses, often all right next to one another
- Southern portion is zoned for light and medium industrial development and northern portion is zoned for mixed use

Existing Land Use
SOUTH IRONBOUND VULNERABILITIES

- Flooding due to sewer back-up, regular rain events, and storm surge
- Extreme weather impacts

Storm Surge SLOSH Category 1 in South Ironbound
FEMA FLOOD RISK ZONES
SOUTH IRONBOUND VULNERABILITIES

- Vacant and abandoned lots and buildings, some of them contaminated or suspected of being contaminated
- Littering and illegal dumping
- Possible cancer cluster
- Truck congestion causing numerous public health and safety problems
- Pedestrian safety
- Crime
- Lack of recreational space and activities
- Lack of emergency and disaster preparedness or response

Vacant Lots and Abandoned Buildings

(source: City of Newark)
Known Contaminated Sites

Source: Known Contaminated Site List for New Jersey (Non-Homeowner) (2014)
VERY DIVERSE AND POOR NEIGHBORHOOD

- 10,500 residents
- 54% White, 11% Black, 39% Latino
- 52% foreign born
- White residents are predominantly Portuguese
- Latinos are mix of Central and South Americans
- Portuguese and Spanish are predominant languages
- Residents are mixed throughout the neighborhood
- 26% are under age 18
- 76% rent their homes
- 67% have household incomes under $50,000, 25% under $25,000
Environmental Justice Community

- **Environmental Justice Movement**: All communities, regardless of racial, ethnic, or economic composition, are entitled to equal protection from consequences of environmental hazards.

- The Ironbound has historically been an industrial and residential community where factories operate right next to homes. Bound on all four sides by the airport, the highways, the rail lines, and the Passaic River, it’s one of the US’ most polluted areas.

- Since Ironbound is home to both the state’s largest garbage incinerator and one of the country’s most contaminated sites — a former Agent Orange dioxin factory — and has both active and abandoned industrial facilities, close flight paths and active truck routes, ICC has worked to improve the quality of air, water, and green space in our community.
PUBLIC CONSULTATION APPROACH

- With 47 years of history, ICC understood complexities of South Ironbound neighborhood
- ICC got input from residents so plan reflects their needs and benefits from their inputs on resilience strategies
- ICC graduated first class of Environmental Justice Leadership Institute (EJLI), creating environmental justice advocates
- EJLI graduate chosen as ICC’s community organizer to develop neighborhood relationships, communicate with local stakeholders, and ensure plan is representative of neighborhood and its needs
PUBLIC CONSULTATION APPROACH

- Community was engaged through community meetings that were held in various locations - baseball field, public housing complex, social club, and preschool.
- Surveys and public engagement activities were also conducted by local residents and EJLI graduates to ensure feedback was gathered in a multitude of ways.
- Numerous obstacles were encountered throughout the community engagement effort but, through these outreach methods, ICC successfully engaged over 150 residents, small business owners, and neighborhood stakeholders to uncover community assets and vulnerabilities.
CLIMATE RESILIENCE ACTION PLAN

Action Plan Components
- Green Infrastructure
- Brownfield Redevelopment
- Crime Prevention - Urban Design
- Complete Streets
- Community Facilities Microgrid
- Emergency Response Planning
- Climate Change Mitigation

Action Plan Parameters
- Action
- Type of Action (Policy, Capacity / Institutional Building, Physical)
- Priority (High, Medium, Low)
- Schedule (Short-Term, Medium-Term, Long-Term)
- Responsible Party (ICC, Government, Community)
- Funding and Other Resources Required (Low Cost, Medium Cost, High Cost)
- Possible Financing Sources
# EMERGENCY RESPONSE PLAN COMPONENT

<table>
<thead>
<tr>
<th>Action</th>
<th>Type of Action (Policy, Capacity / Institutional Building, Physical)</th>
<th>Priority (High, Medium, Low)</th>
<th>Schedule (Short-Term, Medium-Term, Long-Term)</th>
<th>Responsible Party (ICC, Government, Community)</th>
<th>Funding and Other Resources Required (Low, Medium, High)</th>
<th>Possible Financing Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work with Newark Police Department/Newark Parking Authority to Ensure Commercial Traffic Does Not Impede Flow of Emergency Vehicles</td>
<td>Policy</td>
<td>High</td>
<td>3 months – 1 year</td>
<td>ICC, City of Newark</td>
<td>City Budget</td>
<td></td>
</tr>
<tr>
<td>Ensure The Ironbound Neighborhood Has Representation on the Newark LEPC (Local Emergency Planning Committee)</td>
<td>Policy</td>
<td>Medium</td>
<td>N/A</td>
<td>ICC, Newark Office of Emergency Management</td>
<td>1 staff member to attend quarterly meetings</td>
<td>N/A</td>
</tr>
<tr>
<td>Create a Neighborhood-Based Emergency Planning /Safety Committee that includes Residents, Businesses, Non-Profit Organizations and City Officials (Following Major Events this Committee Can Switch to a Recovery Mission)</td>
<td>Institutional</td>
<td>Medium</td>
<td>6 months – 1 year</td>
<td>ICC, American Red Cross, Salvation Army, neighborhood social organizations, church organizations, private sector business owners</td>
<td>2 staff to establish and manage committee</td>
<td>Citizen Corp Grants</td>
</tr>
<tr>
<td>Create Family Preparedness Campaign to Educate Residents on Preparing and Acting during Different Types of Emergencies (e.g., Heat Waves, Power Outages, Evacuation)</td>
<td>Public Information</td>
<td>High</td>
<td>6 months</td>
<td>ICC, Newark OEM</td>
<td>1 staff to develop, 2 staff to coordinate distribution</td>
<td></td>
</tr>
</tbody>
</table>

*Emergency Response Planning (Chace Cottrell / formerly New Jersey State Office of Homeland Security and Emergency Response)*

*NOTES: Based on NJ Office of Homeland Security and Preparedness Resiliency Index*
# EMERGENCY RESPONSE PLAN COMPONENT

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<th>Funding and Other Resources Required (Low, Medium, High)</th>
<th>Possible Financing Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work with Newark Office of Emergency Management To Create A CERT Program</td>
<td>Institutional</td>
<td>Medium</td>
<td>1-2 years</td>
<td>ICC, Newark OEM, New Jersey OEM, Essex County OEM</td>
<td>City Budget (CERT programs require members to be covered under City’s insurance)</td>
<td></td>
</tr>
<tr>
<td>Create Business Preparedness Guide to Educate Local Business Owners about Emergency Preparedness</td>
<td>Public Information</td>
<td>Medium</td>
<td>1-2 years</td>
<td>ICC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PLAN IMPLEMENTATION AND MONITORING

- Institutional Plan
  - Private Industrial Redevelopment
  - Land Banking
  - 501c3 Organization
  - Business/Special Improvement District (BID/SID)

- Financing Plan
  - Kresge Implementation Grant: $660K, one-third would go to South Ironbound
  - Port Terminal Violations Settlement Newark: $600K, Ironbound portion $200K
    - This funding has then been used to apply to New Jersey Environmental Infrastructure Trust grant/loan, which doubles the amount through a ½ loan forgiveness program (pending approval)
  - Victoria Foundation
    - Funds many local Newark initiatives
  - Wells Fargo Regional Foundation: $100K plan grant; then 5-yr $750K implementation grant
  - Prudential Social Development Funding
  - Industrial/Brownfields Redevelopment by Alternative Fuel Vehicle manufacturer
  - Tax Increment Financing (TIF), Property Assessed Clean Energy (PACE) Financing
PLAN MONITORING AND ADAPTATION

Example of Plan Monitoring and Adaptation for Energy Efficiency and Renewable Energy

<table>
<thead>
<tr>
<th>Tool Name</th>
<th>Purpose</th>
<th>Vendor</th>
<th>Cost</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>CACP</td>
<td>GHG Management</td>
<td>ICLEI</td>
<td>$1700/year</td>
<td>City</td>
</tr>
<tr>
<td>Energy Star Portfolio Manager</td>
<td>Utility Tracking</td>
<td>US EPA</td>
<td>Free</td>
<td>City, delegates</td>
</tr>
<tr>
<td>Various</td>
<td>Building Operations Management</td>
<td>Honeywell, Johnson Controls, etc., or Open Protocol Systems</td>
<td>Varies, may require long-term contract</td>
<td>City, contractor</td>
</tr>
<tr>
<td>Various</td>
<td>Project tracking</td>
<td>Microsoft, Primavera</td>
<td>~$500 for 1 license, more for site license</td>
<td>City, vendors</td>
</tr>
</tbody>
</table>
GREEN DISTRICTS

- Residential-Commercial Green District
- Industrial-Commercial Green District
- Community Micro-Grid

Demonstration South Street Green District
COMMUNITY PLANNING ASSISTANCE PROGRAM

Goal: Provide volunteer planning support to municipalities and community-based organizations in NJ

Progress: Entering Year 3 of program - successfully completed over 12 community driven plans throughout NJ

Types of Plans and Issues Addressed

- Vision plans
- Housing needs assessments
- Environmental plans
- Site plans
- Transportation plans
- Parking strategies
- Transit oriented development
- Redevelopment plans
- Neighborhood-based plans
- Economic development initiatives
- Recreation needs assessments
General Design Recommendations

1. Narrow the street / widen sidewalks west of Pacific Street
2. Add bump-outs
3. Add stormwater planters/bioswales and street trees
4. Add street lights
5. Add street furniture (benches, trash cans, etc.)
6. Add signs for pedestrian crossings and prohibiting truck traffic.
7. Add sharrows
Potential Demonstration Projects

1. Add creative enhancements to the space underneath and around the train underpass

2. Add cisterns and planters for down spouts in front of Pennington Court

3. Build a pocket park in vacant lot across from Pennington Court
Future Projects
Green Infrastructure
Riverfront Park
On-going Education
Climate Resilience, Gentrification, & Displacement
Linda P. Morgan
Vice President, Project Partnerships & External Affairs
35 Maiden Lane (Building 1)
230 Halsey Street (Building 2)
19 William Street - Calumet Building (Building 8)
243 Halsey Street (Building 6)
24 Maiden Lane (Building 5)
42 William Street (Building 7)
GROUNDCOVER PLANTING DETAIL
N.T.S.

5'X5' TREE GRATE
SEE TREE GRATE DETAIL
NJ DOT STANDARD CURB
SEE CIVIL DRAWINGS

STORMWATER GUTTER BEYOND

5'-0"

3" SHREDDED HARDWOOD
BARK MULCH COVERING ENTIRE PLANTING BED.
BACKFILL MIXTURE TO BE SPECIFIED BASED UPON
SOIL TEST AND CULTURAL REQUIREMENT OF PLANT.
UNDISTURBED SUBGRADE

PRUNE DAMAGED & CONFLICTING
BRANCHES MAINTAINING NORMAL TREE
SHAPE, NEVER CUT CENTRAL TRUNK
OR LEADER.

REMOVE TREE GUARD
AFTER PLANTING

COMPLETELY REMOVE BURLAP
AND WIRE BASKET FROM TOP
HALF OF ROOTBALL

PLANTING MIX
(SEE TREE GRATE PLANTING DETAIL THIS SHEET
FOLLOW PLANTING PROTOCOL PER N.D.D. STANDARDS)

UNDER DRAIN
4" CONCRETE SIDEWALK
COMPACTED SUBGRADE

MAIDEN LANE TREE PLANTING
ON SIDEWALK WITH STORM WATER TREATMENT

EXISTING TREE PROTECTION
N.T.S.
Installation of Stormwater Detention
Installation of Stormwater Detention
212 Rome Street, AeroFarms

Retention System Map
Advancing the Local GSI Industry, Innovation, and Economy

NJ Water Works Conference
December 2, 2016
Sustainable Business Network of Greater Philadelphia

- Non-profit membership organization
- ~ 400 business members
- Mission: Build a just, green, and thriving economy in the Greater Philadelphia region
  - local and sustainable economy = environmental, social, profitable
- Advocacy, networking, education
- In support of Green City, Clean Waters
  - Triple bottom line policy that catalyzes investments in sustainable practices and engage local businesses
  - Goal to see more policies with TBL goals to make the city a better place, environmentally, socially, and economically

Green Stormwater Infrastructure (GSI) Partners

- Signature SBN program
- 65 members in GSI design, build, maintenance, material supply
- Amplifying the TBL impact of GCCW
  - Greenest approaches facilitated and incentivized
  - Public and private investment with local firms
- Growing local industry, advancing innovation, strengthening local economy vis-à-vis GSI
- Replicable and scaleable model

*The GSI Partners are generously funded by the Surdna Foundation and William Penn Foundation*
GSI Partners
A Collaborative Approach

• The role of the private sector
  • Business community (industry professionals)
  • Developers and property owners
  • Non-profits and advocate groups

• Occupy a necessary and complimentary space
  • Feedback re: implementation & vision
  • Greenest approaches facilitated and incentivized; local
    • Regulations
    • Policy
    • Process
    • Incentives
  • Publicly support GCCW + work to educate larger audience

Agenda
• SBN and GSI Partners overview
• Our Approach
• Demonstrated economic impact of investments in GSI

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Ongoing Activities

• Networking / Communications
  • Quarterly Meetings and other events
  • Monthly Newsletter
  • Committees

• Advocacy
  • Incentives
  • Policy
  • Interagency Coordination
  • Local

• Professional Development/Capacity Building
  • Continuing Education Grants
  • GSI Operations & Maintenance Course
  • Rain Check (PWD with PHS)

• Elevation and Celebration of GSI, TBL
  – Excellence in GSI Awards Ceremony
  – GSI Monitoring Grant pilot program
  – GSI Precedent Library
  – Local Economic Impact Report

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1. Excellence in GSI Awards Ceremony
   1. Region’s first awards ceremony celebrating all the partners behind successful GSI projects as well as the projects’ triple bottom line benefits
   2. At 5 year anniversary of GCCW

2. GSI Monitoring Grant pilot program
   1. Grant to support private sector in monitoring performance of private GSI projects
   2. Goal to increase collective knowledge of GSI performance, advance innovation, and inform updated performance metrics

3. Precedent Library (with DVGBC)
   1. Library of exemplary urban GSI projects from across the country + peer-reviewed research.
   2. Resource and reference for developers and designers; support the approval of similar projects in Philly, as well as the update of performance metrics

4. Local Economic Impact Report
   1. Analysis of the fiscal and economic impact that GCCW has had in Philadelphia in its first 5 years.
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** – Perculation 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.
On a per acre basis, introductions of green space can render the equivalent of $10.5 M/year in environmental benefits.

**Environmental Benefits**

- Water Quality
- Water Quantity
- Air Quality
  - Greenhouse gasses
  - Urban Heat Island
  - Habitat
Social Benefits

1. New and improved passive and active recreation opportunities
   1. Community health
   2. Individual health
2. Mental and physical wellness
3. Worker and student productivity
4. 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

- 5% High
- 21% Medium
- 27% Moderate
- 47% Low
<table>
<thead>
<tr>
<th>Environmental Benefits</th>
<th>Social Benefits</th>
<th>Economic Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reduces stormwater runoff</td>
<td>• Supports new and improved community amenities and recreation opportunities</td>
<td>• More affordable municipal approach</td>
</tr>
<tr>
<td>• Improves water quality</td>
<td>• Reduces crime and violence</td>
<td>• More accessible on-ramps to employment</td>
</tr>
<tr>
<td>• Improves air quality, reduced greenhouse gasses, reduced urban heat island effect</td>
<td>• Improves employee and student health and productivity</td>
<td>• More contracting opportunities for small and/or local firms</td>
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<tr>
<td>• Enhances adaptability and resiliency</td>
<td></td>
<td>• Increased revenue to the City</td>
</tr>
<tr>
<td>• Improves habitat and biodiversity</td>
<td></td>
<td>• Quantifiable environmental and social benefits</td>
</tr>
<tr>
<td>• Provides other ecosystem services</td>
<td></td>
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</tbody>
</table>

- 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.
Thanks!

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