Onondaga County Planning Federation Annual Symposium

Joanne M. Mahoney, County Executive
Onondaga Lake Amended Consent Judgment (ACJ) Compliance Program

March 14, 2013

Sean Skehan, PG
CH2M HILL

Save the Rain
Onondaga County, New York

- 7,937 acres
- 49 CSOs
- Over 500 MGY of CSO
History

Onondaga Lake Facts

Watershed: 285 Square Miles

1 Mile Wide – 4.6 Miles Long

Average Depth: 35 feet

Max Depth: 63 feet

1940 – Swimming Banned

1970 – Fishing Banned

1988 – Atlantic States Legal Foundation files lawsuit against County

1989 – Litigation settled through METRO consent judgment

1998 – METRO consent judgment replaced with 1st Amended Consent Judgment (ACJ)

2006 ACJ Amended to include consolidation of ammonia and phosphorus treatment and Harbor Brook conveyances and RTF

3rd Amendment April 2008 – Time Extension (Co. Exec. J. MaHoney elected)

2009 ACJ amended (4th) to authorize use of Gray and Green infrastructure
1998-2008 CSO Abatement Accomplishments

- Developed System Model (SWMM)
- Separated and closed 12 CSO’s
- Constructed 4 Floatables Control Facilities (HB, Franklin, Teall, Maltbie)
- Completed 2 Regional Treatment Facilities (Midland, Hiawatha)
- Completed 1 storage facility (Erie Blvd)
- Completed Clinton Conveyances
- At least 35 projects investing over $350 million
Gray Infrastructure Program Builds on 10 Years of System Improvements

Ammonia decreased from 8,000 pounds per day (ppd) to less than 50 ppd
Phosphorus decreased from 300 ppd to 50 ppd
Fourth Amendment to the ACJ (2009)

- Agreed to by all parties (State, ASLF, County)
- Authorized use of *Gray and Green* technology
- Requires Storage Facilities in place of RTFs
- Includes time extension for Construction, and Metro phosphorus effluent limit
- Balanced program provides additional water quality and community benefits
  - Improve quality of life, Promote Sustainability, Ensure cost effectiveness in compliance with ACJ milestones
Gray Infrastructure Program Summary
2009-2013

Gray Projects
- Harbor Brook Interceptor (ARRA)
- Midland Conveyance (CSO 044)
- Clinton Storage Facility
- Harbor Brook Storage Facility and Conveyances
- Erie Boulevard Storage System (EBSS) Gate Chamber #3 Improvement
- Sewer separation projects

Facilities Planning
- Floatable Controls
County Executive Mahoney Announces “Project 50!”

“Onondaga County will construct fifty distinct green infrastructure projects to return rain water and snow melt to the ground instead of our sewer system.”

Joanne M. Mahoney, State of the County Address, March 1, 2011

Syracuse recognized as one of EPA’s ten Green Cities

Paradigm shifts from planning to construction
• Over 100 projects throughout sewersheds
• Compliments Gray Program
• Total Gray + Green annual volume wet weather capture requirements:
  89.5% by Dec 2013
  91.4% by 2015
  93.0% by 2016
  95.0% by Dec 2018
• Extensive monitoring & reporting required
• ~250 MG CSO

“Gateway Project” 300 Block of East Water Street, Completed 2011-12
# Green Infrastructure Technologies

<table>
<thead>
<tr>
<th>Impervious Area Type</th>
<th>Green Infrastructure Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat Roof Buildings</td>
<td>Vegetated Roof</td>
</tr>
<tr>
<td>Parking Areas &amp; Sidewalks</td>
<td>Porous Pavements, Bioretention</td>
</tr>
<tr>
<td>Roadways</td>
<td>Green Streets (Bioretention, Street Trees)</td>
</tr>
<tr>
<td>Residential Rooftops</td>
<td>Downspout Disconnection</td>
</tr>
<tr>
<td></td>
<td>Rain Barrels &amp; Cisterns</td>
</tr>
<tr>
<td>County Facilities &amp; Schools</td>
<td>Rain Gardens</td>
</tr>
<tr>
<td></td>
<td>Combination of the Above Technologies</td>
</tr>
</tbody>
</table>
Onondaga County Civic Strip
Greening County Facilities Utilizing Multiple Green Infrastructure Technologies

<table>
<thead>
<tr>
<th>Location</th>
<th>Green Technology</th>
<th>Impervious Drainage Area (sq. ft.)</th>
<th>Estimated CSO Volume Reduction (gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Court House</td>
<td>Bioretention, Enhanced Street Trees</td>
<td>6,100</td>
<td>88,072</td>
</tr>
<tr>
<td>Civic Center</td>
<td>Vegetated Roof</td>
<td>68,600</td>
<td>990,444</td>
</tr>
<tr>
<td>War Memorial</td>
<td>Cistern System</td>
<td>20,300</td>
<td>293,090</td>
</tr>
<tr>
<td>Convention Center</td>
<td>Vegetated Roof</td>
<td>58,700</td>
<td>847,508</td>
</tr>
<tr>
<td></td>
<td>Pavement Removal/Bioretention</td>
<td>9,650</td>
<td>139,326</td>
</tr>
<tr>
<td></td>
<td>Bioretention</td>
<td>15,100</td>
<td>218,013</td>
</tr>
<tr>
<td>Sheriff’s Headquarters</td>
<td>Vegetated Roof</td>
<td>15,100</td>
<td>218,013</td>
</tr>
<tr>
<td></td>
<td>Porous Parking Lot</td>
<td>11,550</td>
<td>196,628</td>
</tr>
<tr>
<td>Criminal Court House</td>
<td>Vegetated Roof</td>
<td>22,400</td>
<td>323,410</td>
</tr>
<tr>
<td></td>
<td>Porous Parking Lot</td>
<td>30,750</td>
<td>523,491</td>
</tr>
<tr>
<td>Public Safety Building</td>
<td>Vegetated Roof</td>
<td>29,000</td>
<td>418,701</td>
</tr>
<tr>
<td>Justice Center</td>
<td>Vegetated Roof</td>
<td>53,200</td>
<td>768,099</td>
</tr>
<tr>
<td>Steam Station</td>
<td>Vegetated Roof</td>
<td>3,400</td>
<td>49,089</td>
</tr>
<tr>
<td>Community Plaza</td>
<td>Bioretention</td>
<td>43,000</td>
<td>620,832</td>
</tr>
<tr>
<td>County Parking Lot B</td>
<td>Porous Parking Lot</td>
<td>53,940</td>
<td>918,280</td>
</tr>
<tr>
<td>Convention Center Parking Lot</td>
<td>Porous Parking Lot</td>
<td>95,950</td>
<td>1,633,462</td>
</tr>
<tr>
<td>Convention Center Garage</td>
<td>Downspout Diversion to Bioretention</td>
<td>72,500</td>
<td>1,046,752</td>
</tr>
<tr>
<td></td>
<td>Pavement Removal/Bioretention</td>
<td>6,650</td>
<td>96,012</td>
</tr>
<tr>
<td>S. Townsend St. Median</td>
<td>Enhanced Street Trees</td>
<td>20,520</td>
<td>252,988</td>
</tr>
</tbody>
</table>

**TOTAL**: 656,510, 9,642,210
Onondaga County Civic Strip

OnCenter Convention Center
66,000 Square Foot Green Roof
Onondaga County Civic Strip

War Memorial Cistern Reuse System
War Memorial Cistern Reuse System

Reusing rainwater appears to allow the ice making to occur two to four degrees warmer than using potable water resulting in energy savings.
First Commercial Green Street: Harrison Street

BEFORE: Stormwater enters catch basins and is directly connected to sewer

AFTER: Stormwater is diverted to Green Streets and only overflows to sewer when necessary
First Commercial Green Street: Harrison Street
OnCenter Surface Parking Lot: 290 green spaces

GI Technology:
Perimeter porous asphalt and tree infiltration trench

Project Owner:
County

Capture Area:
134,000 square feet

Runoff Reduction:
2,360,000 gallons/year

Construction Cost:
$812,000 (bid)

$/gallon: $0.48
Installation of Stone Storage Bed
OnCenter Surface Parking Lot

Porous Asphalt Perimeter
OnCenter Municipal Parking Garage

GI Technology:
Roof leaders to rain gardens

Project Owner:
County

Capture Area:
72,500 square feet

Runoff Reduction:
1,277,000 gallons/year

Construction Cost:
$234,000 (bid)

$/gallon: $0.26
Bio-Infiltration

OnCenter Municipal Parking Garage

Bio-Infiltration
Before

Townsend Parking Lot ("Lot B")
Vegetated Infiltration Beds, 90 Trees Planted
Base Course Asphalt Installed prior to winter shutdown
Onondaga County Civic Strip
Greening County Facilities Utilizing Multiple Green Infrastructure Technologies

<table>
<thead>
<tr>
<th>Location</th>
<th>Green Technology</th>
<th>Impervious Drainage Area (sq. ft.)</th>
<th>Estimated CSO Volume Reduction (gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Court House</td>
<td>Bioretention, Enhanced Street Trees</td>
<td>6,100</td>
<td>88,072</td>
</tr>
<tr>
<td>Civic Center</td>
<td>Vegetated Roof</td>
<td>68,600</td>
<td>990,444</td>
</tr>
<tr>
<td>War Memorial</td>
<td>Cistern System</td>
<td>20,300</td>
<td>293,090</td>
</tr>
<tr>
<td>Convention Center</td>
<td>Vegetated Roof</td>
<td>58,700</td>
<td>847,508</td>
</tr>
<tr>
<td></td>
<td>Pavement Removal/Bioretention</td>
<td>9,650</td>
<td>139,326</td>
</tr>
<tr>
<td></td>
<td>Bioretention</td>
<td>15,100</td>
<td>218,013</td>
</tr>
<tr>
<td>Sheriff's Headquarters</td>
<td>Vegetated Roof</td>
<td>15,100</td>
<td>218,013</td>
</tr>
<tr>
<td></td>
<td>Porous Parking Lot</td>
<td>11,550</td>
<td>196,628</td>
</tr>
<tr>
<td>Criminal Court House</td>
<td>Vegetated Roof</td>
<td>22,400</td>
<td>323,410</td>
</tr>
<tr>
<td></td>
<td>Porous Parking Lot</td>
<td>30,750</td>
<td>523,491</td>
</tr>
<tr>
<td>Public Safety Building</td>
<td>Vegetated Roof</td>
<td>29,000</td>
<td>418,701</td>
</tr>
<tr>
<td>Justice Center</td>
<td>Vegetated Roof</td>
<td>53,200</td>
<td>768,099</td>
</tr>
<tr>
<td>Steam Station</td>
<td>Vegetated Roof</td>
<td>3,400</td>
<td>49,089</td>
</tr>
<tr>
<td>Community Plaza</td>
<td>Bioretention</td>
<td>43,000</td>
<td>620,832</td>
</tr>
<tr>
<td>County Parking Lot B</td>
<td>Porous Parking Lot</td>
<td>53,940</td>
<td>918,280</td>
</tr>
<tr>
<td>Convention Center Parking Lot</td>
<td>Porous Parking Lot</td>
<td>95,950</td>
<td>1,633,462</td>
</tr>
<tr>
<td>Convention Center Garage</td>
<td>Downspout Diversion to Bioretention</td>
<td>72,500</td>
<td>1,046,752</td>
</tr>
<tr>
<td>S. Townsend St. Median</td>
<td>Pavement Removal/Bioretention</td>
<td>6,650</td>
<td>96,012</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>656,510</strong></td>
<td><strong>9,642,210</strong></td>
</tr>
</tbody>
</table>
Beyond the Civic Strip...

- Green Streets
  - Commercial and Residential
- CSO Treatment Wetlands (Harbor Brook)
- Green Parks
- Green Schools
- Green Parking Lots
Other Program Elements

- Green Improvement Fund: Onondaga County’s Public-Private-Partnership for Incentivizing GI
- Legislative Agenda
  - New and Innovative City Ordinances: Permission
  - Existing City Ordinances (Stormwater, Tree, Sidewalk)
- Enhanced Street Tree Program: 8500 new street trees
- Rain Barrel Program: 1000 and counting (Goal: 3600)
- Vacant Lot Program
- Grant Funding: Federal/State successes, >$5 M
Save the Rain: 2012-2013

• Focus on Efficiency over Quantity
  ▫ Improved Constructability
  ▫ Lower Maintenance

• Utilize SWMM for prioritization of project location

• Unit Price - Quantity Based Construction Procurements
  ▫ Civil Site Work Contract
  ▫ Landscape Installation and Maintenance Contract
  ▫ Post-Warranty Maintenance Contract, conducted by Conservation Corps (Community Based Green Jobs)

• Asset Management Program Development
Advantages of Revised Program

- **Balanced approach:** Gray & Green
- **Improved water quality for tributaries and lake**
- **Gray:**
  - Fixed capture benefit
  - Depreciates over time
- **Green:**
  - Can appreciate over time
  - Ancillary environmental and community benefits
- **Onondaga County at the forefront of GI Movement**

Cities To Watch:
- **Syracuse, NY**
- **New York, NY**
- **Philadelphia, PA**
- **Portland, OR**
- **Cincinnati, OH**
- **Milwaukee, WI**
- **Chicago, IL**
- **Kansas City, MO**
Thank You!
The Paradigm is REAL!
Please Visit us at www.SaveTheRain.us