DC Water’s DC Clean Rivers Project
Drivers for Long-term Success: Green Infrastructure Asset Management

National Green Infrastructure Learning Lab

October 28, 2015
Agenda

- Overview of the DC Clean Rivers Project
- Drivers for Long-term Success: GI Asset Management
- Questions
OVERVIEW OF THE DC CLEAN RIVERS PROJECT
DC Water’s DC Clean Rivers Project:
Where are Combined Sewers Located?

- 1/3 area is combined (12,478 acres)
- 47 Active CSO outfalls
  - 13 to Anacostia
  - 10 to Potomac
  - 24 to Rock Creek
- Three receiving waters
  - Anacostia River
  - Potomac River
  - Rock Creek
DC Water’s DC Clean Rivers Project:
Magnitude of the Problem, DC Water’s Solution

Anacostia River  Potomac River  Rock Creek  Total System

CSO Overflow (mg/avg year)

1996 (DC Water Formed)  2013  Long Term Control Plan Completed

1996  2142  54  5  3254  96% Reduction
2013  1282  1063  638  49  1963

96% Reduction
DC Water’s DC Clean Rivers Project: Updated Long Term Control Plan

- DC Clean Rivers Project: $2.6 Billion
- Nitrogen Removal: $950 Million
- Total > $3.5 Billion
- 25 yr implementation (2005 – 2030)
- 96% reduction in CSOs & flood relief in Northeast Boundary
- Approx 1 million lbs/yr nitrogen reduction predicted

DC CLEAN RIVERS PROJECT AND NITROGEN REMOVAL PROGRAMS

- Manage the 1.2” Storm Event over 365 Impervious Acres
- Manage the 1.2” Storm Event over 133 Impervious Acres
DC Water’s DC Clean Rivers Project: Identification of the First GI Contracts

- Rock Creek Project A / Potomac River Project A

  Manage the 1.2” Storm Event over 20 Impervious Acres

  Rock Creek GI Project Area

  Potomac River GI Project Area

  Manage the 1.2” Storm Event over 44 Impervious Acres
DRIVERS FOR LONG-TERM SUCCESS: GREEN INFRASTRUCTURE ASSET MANAGEMENT
Managing Assets for Long-term Success: Existing National Knowledge on GI Maintenance

- 2013 Survey of GI Programs on:
  - Maintenance program staffing roles and responsibilities;
  - Maintenance activities and the necessary frequencies;
  - Administrative and maintenance crew staffing needs;
  - Maintenance activity and GI project condition logging and tracking; and
  - Maintenance program costs.

<table>
<thead>
<tr>
<th>Surveyed Programs</th>
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<tbody>
<tr>
<td>Metropolitan Sewer District of Greater Cincinnati</td>
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<tr>
<td>Kansas City Water Services Department</td>
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<td>Montgomery County’s Department of Environmental Protection</td>
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<td>New York City Department of Environmental Protection</td>
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<td>Philadelphia Water Department – GSI Maintenance Group</td>
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<td>Onondaga County Department of Water Environment Protection</td>
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<td>City of Portland’s Bureau of Environmental Services</td>
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<td>Seattle Public Utilities</td>
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Managing Assets for Long-term Success: Existing National Knowledge Takeaways

- Make asset management a forethought, not an afterthought
- Have a vision for where you’re going with your asset management program, but be flexible with how you get there

Surveyed Programs

- Metropolitan Sewer District of Greater Cincinnati
- Kansas City Water Services Department
- Montgomery County’s Department of Environmental Protection
- New York City Department of Environmental Protection
- Philadelphia Water Department – GSI Maintenance Group
- Onondaga County Department of Water Environment Protection
- City of Portland’s Bureau of Environmental Services
- Seattle Public Utilities
Managing Assets for Long-term Success: Design First with Maintenance in Mind

Considerations:
- Cost and time stem from both travel and maintenance activities
- Initial learning curve for crews
- Simpler designs and consistent design minimize complexity

Current Programmatic Design Goals:
- Concentrate siting of GI practices
- Standardize GI practices
  - Layouts and Sizing
  - Materials
  - Planting plans
- Consider crew needs
  - Site access
  - Tools
Managing Assets for Long-term Success: DC Water Maintenance Program Goals

- DCCR’s Green Infrastructure Maintenance Program goals:
  - Function
    - Ensure GI function to meet performance requirements.
  - Safety
    - Ensure public and maintenance crew safety.
  - Aesthetics
    - Ensure GI maintains the original project aesthetic goal.
Managing Assets for Long-term Success: DC Water Asset Management Program Goals

- Manage GI projects and GI program adaptively over time
  - Log maintenance activity completion and issue identification in real time
  - Track project issues, conditions, and performance and identify mitigation tactics through adapting maintenance activities/frequencies and/or design
  - Improve efficiencies long term

Adaptive Management Process:
- Plan
- Perform
- Evaluate
- Monitor
- Adjust

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Managing Assets for Long-term Success: Asset Management Program Process

Adaptive Management Process

Plan

Adjust

Evaluate

Perform

Monitor
Managing Assets for Long-term Success: Create Program Vision with Ability to Adapt

<table>
<thead>
<tr>
<th>Previous Process</th>
<th>Email Request</th>
<th>Contractor Crews</th>
<th>Paper Forms</th>
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<tbody>
<tr>
<td>Updated Process</td>
<td>Automatically generated by Maximo</td>
<td>Maintenance Crews (Contractor/DC Water)</td>
<td>Handheld devices with a mobile application of Maximo</td>
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Questions?

DC Water
DC Clean Rivers Project

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