Overview

The Basics

Seattle Stormwater Challenges
Green Infrastructure Tools, What and Why
Evolution of Green Infrastructure in Seattle

GSI Program Update

Policy + Program Development
Capital Improvement Projects
Partnerships
Stormwater Challenges

Too Much Runoff…
…causes flooding, sewer back-ups, and sewer overflows

Too Much Pollution
…damages our creeks, lakes, and Puget Sound
What is GSI?

1. bioretention (like rain gardens)
2. permeable/porous pavement
3. green roofs
4. urban canopy cover
5. rainwater harvesting (like cisterns)
6. soil building (like mulch + compost)
7. biofiltration
### Why Use GSI?

<table>
<thead>
<tr>
<th>Preserved Pipe Capacity</th>
<th>Urban Water System &amp; Utility Benefits</th>
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</thead>
<tbody>
<tr>
<td>Decreased Flow/Flood Prevention</td>
<td></td>
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<tr>
<td>Improved Water Quality</td>
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<td>Potable Water Conservation (Reuse)</td>
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<tr>
<td>Groundwater Recharge</td>
<td>Other Environmental Benefits</td>
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<td>Energy + Carbon Savings</td>
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<tr>
<td>Improved Air Quality + Health</td>
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<tr>
<td>Carbon Storage / Sequestration</td>
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<tr>
<td>Biodiversity &amp; Habitat Support</td>
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<tr>
<td>‘Nearby Nature’ + Beautification</td>
<td>Neighborhood Benefits</td>
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<tr>
<td>Improved Pedestrian Safety + Experience</td>
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<tr>
<td>Education &amp; Engagement Opportunities</td>
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<tr>
<td>Increased Property Value</td>
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</tbody>
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**Categories:**
- YES
- SOMETIMES
- NO

*Seattle Public Utilities*
GSI Program History (capital projects)

1. **2000 SEA Streets**
   First full right-of-way GSI improvement in the U.S. achieved a 99% drop in runoff volume.

2. **2003 Carkeek Cascade**
   Post-construction monitoring showed 90% reduction in pollutants like lead, copper, and zinc.

3. **2004 & 2006 Green Grids**
   Neighborhood-wide projects in Pinehurst and Broadview show proof of concept at larger scale.

4. **2005-2009 Highpoint**
   Neighborhood redevelopment project in collaboration with Seattle Housing Authority and Washington Dept. of Ecology.

5. **2010 RainWise Pilot**
   Incentive program provides rebates to property owners who install on-site rain gardens or stormwater cisterns.

6. **2011 Ballard CSO Pilot**
   Roadside GSI project designed to reduce combined sewer overflows into Salmon Bay.
# GSI Projects’ Primary Driver

<table>
<thead>
<tr>
<th>Project</th>
<th>Water Quality</th>
<th>Flow *</th>
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<tbody>
<tr>
<td>SEA Street #1</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Carkeek Cascade @ 110th</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Broadview Green Grid</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Pinehurst Green Grid</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>High Point</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Thornton Creek Water Quality Project</td>
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<td>✓</td>
</tr>
<tr>
<td>Ballard Roadside Rain Gardens</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Swale on Yale</td>
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<td>✓</td>
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</tbody>
</table>

* Systems designed for flow control also achieve water quality targets.
GSI Program History (policy)

2009 Stormwater Code:
GSI to the ‘maximum extent feasible’

Right-of-Way Improvement Manual
Guidance chapter for GSI practices in ROW
In July 2013, City Council unanimously passed Resolution 31549:

- GSI should be relied upon to manage stormwater wherever possible
- Target to manage 700MG annually with GSI by 2025
- City Departments shall collaborate with OSE to produce Implementation Strategy for meeting new target
Policy + Program Development

Integrated Plan
Developed neighborhood-driven GSI partnering option for EPA submittal.

GSI Manuals Developed
CIP Project procedural expectations, for technical design and community engagement

Pre-Vetted Concepts
SDOT, SPU & DPD multidisciplinary team
Policy + Program Development

Stormwater Code
Updating on-site stormwater management requirements
LID code integration
Review and update land-use codes

Cisterns
Can reduce peak runoff and help conserve water
Public Rights-of-Way Retrofits Completing Options Analysis

Ballard Natural Drainage

Delridge Natural Drainage and Neighborhood Greenway

Both slated for construction in 2015
Public Rights-of-Way Retrofits in Design or Construction

Capital Hill Water Quality Project (Swale on Yale)

Venema NDS
Will complete design 3Q 2014

KCWTD’s Barton Project
Starting construction 1Q 2014
Partnerships

Joint GSI program management with King County

RainWise Expansion

40,000 households now eligible

Developing options to increase access and equity

Development Incentives
### Key Milestones (Winter/Spring 2014)

- **December:** Confirm 2013 baseline
- **Jan-Feb.:** Define trajectory under “business as usual” City investment level; Draft potential investment paths (medium and high)
- **Late Feb.:** Define/refine medium + high possible City investment paths (through 2020) — capital departments workshop (mid-late Feb.)
- **Early March:** Executive briefing/s: potential City investment paths and recommended alternative
- **Late March:** Early Mayors Office/Council briefings and request for feedback
- **April:** Revisions + follow-up executive briefings (late April)
- **Early May:** Public Comment Period (on full draft strategy)
- **June:** Delivery to Council

To rely, wherever possible, on natural drainage systems and green stormwater infrastructure (GSI).
Questions?

Tracy Tackett
GSI Program Manager
www.seattle.gov//util/greeninfrastructure