Optimizing Green Infrastructure in Seattle

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SEATTLE PUBLIC UTILITIES
Brief History of Land Development in our Region

1850

1900

1950

TODAY

50% evapotranspiration

35% infiltration

15% runoff

55-70% runoff

15-30% evapotranspiration

15% infiltration

15% runoff

Evapotranspiration

Infiltration

Runoff
1. Pollutants in the runoff

2. Too much, too fast
Seattle has different problems in different places.

**Separated System**
- Too many pollutants
- +/- 15,000,000,000 gal/year

**Combined System**
- Too much water, too fast
- +/- 115,000,000 gal/year

The map shows the distribution of water issues across different parts of Seattle.
We use a range of solutions

- Protecting and restoring creeks
- Physically removing pollutants from roads
- Enforcing environmental regulations
- Building new or improved infrastructure
Our green infrastructure design goals

1. Make A function more like B. (Mimic native systems)

   ![A and B images]

   - Developed, impervious areas
   - Pre-development forest

   ![Runoff Volume vs Time graph]

2. Make neighborhoods better (Get more value for a comparable cost)

   - Improves Water Quality
   - Decreases Flow/Prevents Flooding
   - Preserves Gray Infrastructure Capacity
   - Conserves Potable Water
   - Recharges Groundwater
   - Saves Energy / Reduces Carbon
   - Improves Air Quality + Health
   - Sequesters Carbon
   - Mitigates Heat Island Effect
   - Beautifies Neighborhoods
   - Improves Pedestrian Safety + Experience
   - Supports Biodiversity/Improves Habitat
   - Offers Educational Opportunities
   - Increases Property Value
Here is an example of “make neighborhoods Better”

- Improved tree canopy and urban wildlife habitat
- Improved water quality in nearby creek
- More inviting streetscape for people walking or biking
- Shorter, safer crossing for pedestrians
2013 mandate from our mayor and City Council: accelerate adoption of green approaches
Priority Issues and Focus Areas in Seattle’s 5-Year Strategy

In separated systems, partnership programs focus on creek protection and pollutant removal.

Polluted Runoff Flows Directly into Creeks

+/- 1,800,000,000 gal/year (1.8 BILLION)

In combined systems, partnership programs focus on peak flow delay and volume removal.

Combined Sewer Overflows > 1x/Year

+/- 115,000,000 gal/year (115 MILLION in 2015)
To address this....

...use green infrastructure to filter dirty roadway runoff

To address this....

...use green infrastructure to remove or delay runoff volume

www.700milliongallons.org/rainwise
Natural drainage systems partnering program goals

1. Build bioretention along approximately 66 blocks in Seattle’s three major creek watersheds.

2. Deliver additional benefits such as street trees, traffic calming, and sidewalks by prioritizing partnerships.
Project Pathways

1. **Others’ capital projects**
   SPU provides funding to public or private developers, to add bioretention to manage additional/existing impervious in the ROW (beyond what is required for Code compliance)

2. **SPU co-led**
   Collaborative siting, design, and construction between SPU and partner, with pre-determined approach to cost-sharing

3. **Grassroots**
   Community-driven; Projects identified via competitive solicitation process and developed/delivered by SPU

Budget + Timeline

Applications for others’ capital projects will be evaluated and funded on a rolling basis. Applications for co-led and grassroots projects will be evaluated basin by basin per below. There is $35M for the capital program + dedicated O&M $$

<table>
<thead>
<tr>
<th>Basin</th>
<th>Target # Short Blocks /Year</th>
<th>Begin Design</th>
<th>NTP/construct</th>
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<tbody>
<tr>
<td>Longfellow</td>
<td>7-13</td>
<td>2017</td>
<td>2019</td>
</tr>
<tr>
<td>Thornton</td>
<td>12-18</td>
<td>2018</td>
<td>2019</td>
</tr>
<tr>
<td>Piper’s</td>
<td>7-10</td>
<td>2019</td>
<td>2020</td>
</tr>
<tr>
<td>Thornton</td>
<td>14-18</td>
<td>2020</td>
<td>2021</td>
</tr>
<tr>
<td>Piper’s</td>
<td>3-5 as needed</td>
<td>2021</td>
<td>2022</td>
</tr>
<tr>
<td>Thornton</td>
<td>6-14 as needed</td>
<td>2022</td>
<td>2023</td>
</tr>
</tbody>
</table>
www.700milliongallons.org
Information for residents and property owners on rebates, grant funding, installation and maintenance of GSI

www.seattle.gov/environment/water/green-stormwater-infrastructure
Information on GSI projects built by Seattle Public Utilities in the public right-of-way (planned projects, too!)

www.seattle.gov/util/greeninfrastructure
Information about Seattle-wide policy and 5-year strategy to accelerate GSI adoption

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