Facilitating Change: Strategies and Barriers for Urban/Suburban GI Retrofits

Moderator: Lolly Kunkler
Session Chairs: Peg Staeheli and Kathy Gwilym, MIG|SvR
Ani Jayakaran, WSU and Washington Stormwater Center
4th Annual
Puget Sound Green Infrastructure Summit

Panelists:
Erika Harris, Puget Sound Regional Council
Bob Spencer, Seattle Public Utilities
Valerie Streeter, Tulalip Tribes Natural & Cultural Resources
Jessica Knickerbocker, City of Tacoma
Question

As we focus attention on incentivizing retrofits, what are your thoughts on:

• **Who** do we need to incentivize?

• **Name** one barrier or challenge to incentivizing?

• **What** “thing” in the built environment would you focus on first?
4th Annual
Puget Sound Green Infrastructure Summit

Erika Harris
Puget Sound Regional Council

Transform your community to turn
the tide on polluted runoff.
Central Puget Sound Region

- 4 million people
- 82 cities and towns
- 4 counties
- 1,000 square mile urban areas
- 6,400 total square miles
• A strong economy and a healthy environment
• Preserve waters, farms, recreation and resource lands
• Urban Growth Area and centers strategy
• Local actions to achieve regional VISION
2050 Forecast – VISION 2050

Central Puget Sound Population and Employment 2000-2050

- Population
  - 4.0 million people in 2010
  - Forecast to 5.8 million people in 2050

- Employment
  - 2.2 million jobs in 2010
  - Forecast to 3.4 million jobs in 2050
Urban Density as a BMP

Higher densities consume less land than lower densities, resulting in:

- Less run-off per capita
- Lower vehicle miles travelled (lower emissions and pollution)
- More walking and biking
- Less water, sewer, and other infrastructure
- More habitat preserved

Scenario: 10,000 acre watershed. How to accommodate 10,000 homes?

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Dwelling Units/Acre</th>
<th>% of site impervious</th>
<th>% of watershed impervious</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>38%</td>
<td>9.5%</td>
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<tr>
<td>C</td>
<td>8</td>
<td>65%</td>
<td>8%</td>
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</table>
Urban Redevelopment & Infill

Photos: A. Easton & ASLA/AECOM
4th Annual Puget Sound Green Infrastructure Summit

Bob Spencer
Seattle Public Utilities
Strategies and Barriers for Urban/Suburban GI Retrofits

Jessica Knickerbocker, P.E.
City of Tacoma | Environmental Services

Green Infrastructure Summit
March 22, 2019
Thea Foss Superfund

Over $100 million invested to clean the waterway

• 17 years of data
Tacoma’s Program

- Source Control/ Monitoring
- Enhanced Maintenance
- Treatment Retrofit
Cost of PAH Removal

<table>
<thead>
<tr>
<th>Service</th>
<th>Cost/LB</th>
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<tbody>
<tr>
<td>PIPE CLEANING</td>
<td>$0</td>
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<tr>
<td>STREET SWEEPING</td>
<td>$10,000</td>
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<tr>
<td>FILTRATION</td>
<td>$50,000</td>
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<tr>
<td>PERVIOUS PAVEMENT</td>
<td>$500,000</td>
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</table>
Stormwater Management

Our Green Infrastructure Approach

- GSI Standards
- GSI Grants
- Requirements
- Street Partnership

Current State

Watershed Planning

- Pipe Capacity & Condition
- Creek Flow Restrictions

Future Scenarios

- Water Quality
- Climate Change
- Groundwater Recharge
Watershed Planning

- Marine: 72%
- Resident: 22%
- Arterial: 6%
Opportunity

- 18% of Tacoma is living below the poverty line
- Median Household Income $52,042
- 24% of Tacoma Household Income under $25,000

Puget Sound Regional Council Opportunity Map

Total Income: $25,000

- Utility Bill
- Remaining
- Housing

Note: Poverty for family of 2 adults, 2 kids
Regional Treatment
New P3: Public, Public, Public

Goals:
- Education
- Park Amenity
- Environment
$ Capital / Acre

Water Quality

- Maximum
- Minimum

+ Flow Control

<table>
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<tr>
<th>Bioretention</th>
<th>Regional</th>
<th>Traditional WQ</th>
<th>Permeable Pavement</th>
<th>Traditional WQ + FC</th>
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</thead>
<tbody>
<tr>
<td>$100,000</td>
<td>$0</td>
<td>$300,000</td>
<td>$150,000</td>
<td>$800,000</td>
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</table>
$ Annual Maintenance / Acre

Water Quality

+ Flow Control

- Maximum
- Minimum

- Bioretention
- Regional
- Traditional WQ
- Permeable Pavement
- Traditional WQ+FC

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22
Regional Flow Control
Green Streets

- iDEA School Making Advancements
- Permeable Neighborhoods
  - 40th Street
  - Oakland Neighborhood
What will this look like?

Identify Areas for Permeable Neighborhoods
Bioretention: Rain Gardens
Next Steps

Construction
• iDEA School – Advancements
• Oakland Neighborhood – 22 blocks

Design
• Buckley Water Quality – 350 acres
• Madison & Manitou - 33 blocks

Planning
• Watershed Planning
• Larchmont – 27 blocks
Conclusion

1. Source Control/ Monitoring
2. Enhanced Maintenance
3. Treatment Retrofits
   • Fresh Watersheds: Green Infrastructure
     • Permeable Pavement for Residential Streets
     • Bioretention for Arterials & Business Districts
   • Marine Watersheds: Regional Treatment

What good is an idea if it remains an idea?
Try. Experiment. Iterate. Fail. Try again.
Change the world.

Together is Better: Simon Sinek
Strategies and Barriers for Urban/Suburban GI Retrofits

Jessica Knickerbocker, P.E.
City of Tacoma | Environmental Services

Green Infrastructure Summit
February 8, 2019
4th Annual Puget Sound Green Infrastructure Summit

Erika Harris, Puget Sound Regional Council
Bob Spencer, Seattle Public Utilities
Valerie Streeter, Tulalip Tribes Natural & Cultural Resources
Jessica Knickerbocker, City of Tacoma
Moderator: Lolly Kunkler, MIG|SvR
Questions?

4th Annual Puget Sound Green Infrastructure Summit
March 22nd, 2019 | Cascadia College/U.W. Bothell