SF Bay Area Stormwater Treatment to Address Macro & Microplastics and Other Pollutants in Stormwater

2019 Symposium on San Francisco Microplastics
Chris Sommers (EOA, Inc.)
SF Bay Area Stormwater Trash Reduction Requirements

- Issued by SF Bay Regional Water Quality Control Board
- 76 cities/counties
- Mandated reductions of macro (>5mm) trash in stormwater
- Recent expansion of requirements to statewide level
Stormwater Trash Control Measures

1. Source Controls/Pollution Prevention Actions
2. Institutional Controls
   • Street/Sidewalk Sweeping
   • On-land Cleanups
   • Others (e.g., business inspections, illegal dumping prevention)
3. Stormwater Treatment
   • Trash Capture Systems
   • Green Stormwater Infrastructure
4. Removal from Waterways
Trash Capture Systems

• Underground screening/treatment systems
  • Small systems in storm drains
  • Large systems in pipes draining to waterways

• Intercept Macro (>5mm) materials transported small/moderate-sized storms

• Trash/debris removed via maintenance
Current Extent of Stormwater Treatment
San Mateo and Santa Clara Counties

<table>
<thead>
<tr>
<th>Category</th>
<th>Area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urbanized Area</td>
<td>235,000</td>
</tr>
<tr>
<td>Trash Capture</td>
<td>29,000</td>
</tr>
</tbody>
</table>
Imperviousness also increases the potential for urban pollutants (e.g., microplastics) to be transported to waterways.
Green Stormwater Infrastructure (GSI)

- An approach that uses vegetation, soils, and natural processes to manage stormwater runoff, while creating healthier urban environments
- Filters/infiltrates runoff from small, frequent storm events (80% of annual runoff)
- Removes pollutants, including macro/microplastics
- Also provides habitat/biodiversity, urban cooling and air quality benefits
Types of Green Stormwater Infrastructure

- Permeable Pavers/Pavement
  Berkeley

- Bioretention Systems
  El Cerrito

- Green Roofs
  SF Public Transit Center

- Flow-through Planters
  Emeryville

- Regional Projects
  Subsurface Detention (Southern California)
Current Extent of Stormwater Treatment
San Mateo and Santa Clara Counties

<table>
<thead>
<tr>
<th>Category</th>
<th>Area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urbanized Area</td>
<td>235,000</td>
</tr>
<tr>
<td>Trash Capture</td>
<td>29,000</td>
</tr>
<tr>
<td>Green Stormwater Infrastructure</td>
<td>6,600</td>
</tr>
<tr>
<td>% Stormwater Treatment (Trash Capture or GSI)</td>
<td>15%</td>
</tr>
</tbody>
</table>
Future of GSI Implementation in Bay Area

*Hot off the Press* - SF Bay Municipal GSI Plans

- Recently adopted by Bay Area municipalities
- Plans summarize existing GSI
  - Private and public properties
- Identify and prioritize potential future public GSI projects
  - Parcel-based (e.g. parking lots)
  - Street-based (e.g. green streets)
  - Regional projects
- Identify 2020, 2030, and 2040 impervious surface retrofit targets
- Identify the need for additional funding to support the implementation of GSI in the urban SF Bay Area
Moving Forward
Policy Considerations for Microplastics in Stormwater

- Significant investments made to-date on stormwater treatment will benefit microplastics
  - Trash Capture – parcels + streets
  - Green Stormwater Infrastructure – largely parcel-based (to-date)

- Funding needed to support additional GSI
  - Parcel-based: Funded by property owners and/or developers
  - Green streets & Regional projects: Need significant State/Federal funding
  - Long-term operation and maintenance funding?

- Additional science needed to further evaluate GSI as an effective control measure for microplastics

- Stormwater Treatment + Source Controls
  - Work in parallel to reduce macro-trash & microplastic concerns
Thanks!

Chris Sommers
Vice President
EOA, Inc.
csommers@eoainc.com