Metropolitan St. Louis Sewer Green Infrastructure Activities

Bruce Litzsinger P.E. Assistant Director – Planning Division
MSD and Green Infrastructure

**Stormwater Utility - MS4 Permit from DNR**
- Required to regulate BMPs in new development

**Wastewater Utility – CSO LTCP, CD from EPA**
- Required to spend $100 M on Green Infrastructure
MSD Rules and Regulations

- Permit goal is to mimic pre-development runoff conditions
- Capture and treat runoff from 90\(^{th}\)\% event, 1.14 inches
- MSD Adopted the Maryland Manual of BMPs
  - Ponds
  - Filters (bioretention)
  - Infiltration
  - Open channel
  - Wetlands
  - Credits
Stormwater BMPs
Different Shapes, Sizes and Places...
Types of BMPs

- Bioretention: 45%
- Permeable Pavement: 14%
- Engineered Swales: 6%
- Infiltration BMPs: 2%
- Cisterns: 1%
- Storm Credits: 3%
- Hydrodynamic Separators: 9%
- Underground Manufactured Filters: 3%
- Underground Sand Filters: 2%
- Ponds: 2%
- Other: 3%

1,600+ BMPs with Final Construction Approval
Maintenance Responsibilities

MSD compliance contact information

To ensure the maintenance of privately owned stormwater management facilities, MSD requires an Annual BMP Maintenance Report to be submitted to the District for all commercial and residential homeowner association maintained facilities. This Annual Report should provide documentation that maintenance was performed in accordance with the Stormwater Management Facilities Report (SWMFR) submitted to and approved by MSD for the development project. The Annual Report typically consists of a completed inspection checklist and/or maintenance log, narrative description of corrective action measures taken, photographs, and any other documentation appropriate for demonstrating compliance with the BMP Maintenance Agreement and the SWMFR.

The Annual BMP Maintenance Report should be submitted to MSD before March 31 of each year. A MSD inspector will also periodically inspect the BMP. The Annual Report should be sent to:
Top 3 Reasons for Enforcement Action

1. **Function**
   - System clogged/Ponding water
   - Debris or Sediment removal/Capacity (i.e. HDSPs)

2. **Vegetation**
   - Plants removed, Invasive species

3. **Structural**
   - i.e. Pavers collapses, Washed out berm at overflow
Long Term Control Plan (LTCP)
Shaping of MSD’s CSO LTCP

💧 **Focus “grey” infrastructure on “urban” streams**
  - Locations where people live and play
  - Measureable water quality benefits
  - Benefits to downstream waters

💧 **Focus “green” infrastructure in areas tributary to Mississippi River**
  - Locations with high redevelopment potential
  - Ancillary benefits of green vs grey
  - Prior spending on “grey” to achieve significant flow reductions
Green Infrastructure (GI) Program

- Invest $100 million over 23 year period, by 2034.
- Reduce CSO volumes to Mississippi River by reducing amount of storm water entering the Combined Sewer System.
Pilot Program Overview

- First $3 Million
- First 5 years (2011-2015)
- Partnership with LRA
- Demonstration Projects
- Monitoring
- Education/Outreach
- Develop plan for Full GI Program
- Final Report
MSD CSO Green Infrastructure

- MSD Designed/Built
- GI and Demolition
  - 33 acres controlled
  - 4 MG CSO reduction
  - $3.8 million
# CSO Pilot Program Early Action Projects

<table>
<thead>
<tr>
<th>Program/Project Type¹,²</th>
<th>Program/Project Name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>Neighborhood-scale Bioretention</td>
<td>4 Bioretention 2 Bioretention with Detention</td>
</tr>
<tr>
<td>Indirect</td>
<td>Early Action Grants Program</td>
<td>Three rounds of grants Awarded 21 grants – $17 million</td>
</tr>
<tr>
<td>Education and Outreach</td>
<td>Rainscaping Small Grants Program</td>
<td>Model round: Awarded 8 grants totaling $19,765.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>First full round: 127 workshop attendees; Awarded 51 grants totaling $135,000</td>
</tr>
</tbody>
</table>
# CSO Green Infrastructure Pilot Summary Of Early Action Program

<table>
<thead>
<tr>
<th>Project Type</th>
<th>GI Type</th>
<th>#</th>
<th>Drainage Area</th>
<th>MG CSO Reduced</th>
<th>GI Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA–MSD</td>
<td>Bioretention</td>
<td>6</td>
<td>9.2 Acre</td>
<td>1.6</td>
<td>$1,840,000</td>
</tr>
<tr>
<td>EA - Applicants</td>
<td>Various</td>
<td>35</td>
<td>4.7 Acre</td>
<td>1.4</td>
<td>$0.9 million</td>
</tr>
<tr>
<td>Small Grants</td>
<td>Rain Garden</td>
<td>59</td>
<td>-</td>
<td>-</td>
<td>$155,000</td>
</tr>
<tr>
<td>EA Total</td>
<td></td>
<td></td>
<td>13.9 Acre</td>
<td>3 MG</td>
<td>~ $2.8 million</td>
</tr>
<tr>
<td>Pilot</td>
<td></td>
<td>33</td>
<td>33 Acre</td>
<td>4 MG</td>
<td>$3,000,000</td>
</tr>
<tr>
<td>Total to Date</td>
<td></td>
<td></td>
<td>47 Acre</td>
<td>7 MG</td>
<td>~ $5.8 million</td>
</tr>
<tr>
<td>GI Program Plan</td>
<td></td>
<td>405</td>
<td>405 Acre</td>
<td>90 MG</td>
<td>$100 million</td>
</tr>
</tbody>
</table>
CSO Green Infrastructure Program

Neighborhood-scale Projects - Clinton St. Rain Garden

Small Grants - Clyde C. Miller Academy

Large Grants & Partnerships - Cortex

Demolitions
Questions?

www.ProjectClearSTL.org

@ProjectClearSTL

Project Clear STL

------

Bruce Litzsinger
Engineering Department, Planning Division
Ph: (314) 768-6273 or blitzsin@stlmsd.com