Outline

- What is Project Clear?
- What is the Rainscaping Program?
- Pilot Program Overview
- Neighborhood Scale Raingardens
  - Siting
  - Design
  - Construction
  - Maintenance
  - Monitoring
- Early Action Program
St. Louis MSD Statistics

- Formed 1954
- 525 square miles
  - City of St. Louis & 80% County
  - 93 Municipalities
  - Serve - 1.4 million (519,000 accounts)
- Responsibilities:
  - Collection & Treatment of Wastewater
    • 7 Treatment Plants - 370 MGD Average Total
  - Stormwater Management
Separate Sewers
- Storm in one set of pipes
- Sanitary in another

Combined Sewers
- Storm and sanitary in same pipes
St. Louis MSD Statistics (cont.)

- From 1992 to 2010, MSD spent approximately $2.3 billion to remove over 300 overflows.
- August 2011 Department of Justice filed a settlement or consent decree.
- April 27, 2012 consent decree agreement between MSD, the EPA and the Missouri Coalition for the Environment went into effect.
- Projects Estimated at $4.7 Billion (Project Clear)
What is Project Clear?

- MSD’s multi-decade, multi-billion dollar program to improve water quality and alleviate many wastewater concerns in the St. Louis region

- **Clear Priorities**
  - Consent Decree – The Rules
  - CSO LTCP / SSO Master Plan – The Plans
  - Good Steward of Public’s Money – Our Responsibility

- **Clear Communications**

- **Clear Water**
3 Focus Areas for Project Clear

- Get the Rain Out
- Repair & Maintain
- Build System Improvements

Initial Push
Second Wave
Get the Rain Out

💧 Stormwater Disconnects
  – Mandatory private stormwater disconnections
  – Touches Many Customers

💧 Rainscaping
  – Green Infrastructure

💧 Citysheds – Combined Sewer Area
  – Resident Relocations
  – Combined Sewer Separations
3 Focus Areas for Project Clear

- Get the Rain Out
- Repair & Maintain
- Build System Improvements
Repair and Maintain

- System Maintenance
- System Inspection
- System Rehab. and Replacement
- Fats, Oil and Grease Control Program
- Emergency Response
- Results Already Happening
3 Focus Area for Project Clear

- Get the Rain Out
- Repair & Maintain
- Build System Improvements
System Improvements

💧 Tunnels
  – 11 Tunnels, 33 miles,
  – from 4ft – 30ft diameter

💧 Storage Facilities
  – 2 Above Ground Tanks

💧 High-Rate Treatment
  – 1 HRT – End of Large CSO Tunnel

💧 Relief Sewers
  – As Necessary
How big is Project Clear?

💧 Building One of the Largest Public Projects in St. Louis History
💧 Mostly Out of Sight

12 = 9
What is the Rainscaping Program?

Get the Rain Out

Build System Improvements

Repair & Maintain
What is Rainscaping?

Combinations of plantings, water features, and other activities that manage stormwater as close as possible to where it falls by slowing it down so it can be absorbed by the soil and/or plants.
MSD’s Green Infrastructure Program for CSO Volume Reduction (aka MSD’s Rainscaping Program)

- Plan to address combined sewer overflows (CSOs)
- www.stlmsd.com

MSD’s Long Term Control Plan (LTCP)

- Chapter 12
- Appendix Q

Green Infrastructure Program details:
Rainscaping Program

- $100 Million
- 23 years
- Area that flows to CSO’s along the Mississippi River
- Bissell Point service area
- Mostly within the City of St. Louis
Pilot Program

- First $3 Million
- First 5 years (2011-2015)
- Demonstration Projects
- Monitoring
- Education/Outreach
- Develop plan for Full GI Program
- Final Report
CSO VOLUME REDUCTION - GREEN INFRASTRUCTURE (Pilot Program)
(Project #11049)
Concept Schematic
How’s it going so far?

Demolitions completed by LRA

- 219 parcels
- 221 buildings
- Removed 10 acres impervious surface
Site Scale Projects
Habitat for Humanity Planter Boxes
Site Scale Projects

Individual Raingardens

Amended Soil
Neighborhood Scale Projects

Clinton St. Rain Garden in Old North
 constructors fall 2012, photo following spring
Site Selection

- Bissell Point study
- Initial screening – GIS analysis of city blocks
- Desktop review of blocks with demos
- Field visit blocks with demo and high ranking blocks nearby
- Prioritization of potential sites – it’s all about the variety!
- Habitable structure search
Site Selection Lessons

- LRA partnership
- Topography
- Sewer capacity
- Environmental concerns
- Politics and community
Site Selection Solutions

- Large number of lots to choose from
- Variety of features plus other projects to study
- Development Agreements
- Detention & backflow prevention
Design – Neighborhood-scale

- All bioretention with IWS
- Forebays
- Some work in ROW
- Pervious overlook (Clinton)
- Detention (stacked & separate)
- Aesthetics matter!
Design Criteria

- Used MSD WQv (1.14”) and sizing criteria
- Assumed re-developed % impervious
- Forebay 10% of WQv
- Detention at least 20-yr back to grass, as required
- Backflow prevention, as required
Design Process

- MSD process adaptations
- Phase 1 ESA & geotechnical investigation
- Integration with landscape design
- Coordination with City of St. Louis
Construction

- MSD “master” specification changes
- No pay items – lump with SOV
- Costs conceptual estimate did not include (water $10K+)
- Availability of materials
Construction Inspection

- Coordination with plant designer
- Inspector familiarity or not
- Performance testing
Subsurface conditions

- Abandoned foundations and walls
- Building rubble = higher excavation cost
- Over-excavate 2’ and geotextile fabric where rubble encountered
Maintenance

- Routine vs. Intensive
- Trash – especially near dumpsters in alley
- Leaf cleanout 2 to 3x/yr
- Vandalism – minimal so far
- RG Mix is VERY dry – use drought tolerant plants
- Maintenance crews can be great ambassadors!
Monitoring

- Plan for during design
- Difficult to get an “ideal” situation
- Allow more time than you need (weather, equipment failures)
- Have a backup plan
Pilot Program Schedule

- 2013 Construction Complete
- Monitoring and Outreach
- Full Program Development
- 2015 Pilot Program Report
Full GI Program Jump Start

“Early Action” projects:

• Good opportunities for partnership
• Must be approved by EPA
• Next application period this fall
• Application and details available: http://www.projectclearstl.org/get-the-rain-out/early-action-program/
• Small grants coming soon!
Find Us Online

www.ProjectClearSTL.org

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Project Clear STL
Questions?