Clean Wisconsin's Neighborhood Green Infrastructure Outreach and Installation Project 2014-2016 (ongoing)

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MMSD
PARTNERS FOR A CLEANER ENVIRONMENT

FRESHCOAST 740
MILWAUKEE, WISCONSIN

Marck Landscapings
STEWARDSHIP
DESIGN
CONTRACTING

NORTHWEST SIDE COMMUNITY DEVELOPMENT CORPORATION
Community Reinvestment at Work

sweet water

Project Overview

- **Goals**:
  - Educate neighbors on how they can be a part of the solution to reduce basement backups, overflows, and flooding through the use of green infrastructure.
  - Encourage neighbors to take action to manage stormwater where it falls on their property by installing rain barrels, rain gardens and native landscaping.

What is Green Infrastructure?

- Greenways
- Rain Gardens
- Wetlands
- Stormwater Trees
- Green Roofs

GREENWAYS

Greenways include riparian and non-riparian buffer zones and strips that store and drain stormwater runoff into the ground naturally. As vegetated strips that help to infiltrate and evapotranspire both rainwater and snow melt, they can be placed along bike paths, sidewalks, riverbanks and streets. They can be planted in native vegetation, in mowed grass and as gardens.

RAIN GARDENS

Rain gardens are gardens that are watered by collected or pooled stormwater runoff, slowly infiltrating it into the ground along root pathways. They are typically planted with wildflowers and deep-rooted native vegetation, which helps infiltrate rain channeled to them from roofs, driveways, yards and other impervious surfaces. They can be placed near downspouts on homes (although away from building foundations and sewer laterals), and are an excellent means of removing pollutants from stormwater runoff. They should be slightly depressed to adequately hold and infiltrate stormwater runoff.

WETLANDS

Wetlands are areas that have soils that are inundated or saturated for part of the year or for the entire year, and are also known as bogs, marshes, and swamps. Under federal definition, the inundation or saturation of soil in a wetland is at a frequency and duration to sufficiently support a prevalence of vegetation typically adapted for life in saturated soils. Wetlands allow rainwater to pool and slowly infiltrate into the ground, but are also seeps that provide water at the ground surface.

STORMWATER TREES

Stormwater trees can hold rainwater on their leaves and branches, infiltrate it into the ground, absorb it through root systems and evapotranspire it to the atmosphere. They can be used in conjunction with engineered soils and other types of green infrastructure and work best when they're mature (and so are not a quick fix to stormwater issues).

GREEN ROOFS

Green roofs (also known as eco-roofs) are either partially or completely planted with vegetation growing in soil (or a growing medium) to hold rainwater. They can be planted in waterproof trays or on top of a waterproof barrier, and can be intensive (like a rooftop park) or extensive (relatively lightweight). They function for stormwater management purposes when they're lush and green as well as when they're dormant.

What is Green Infrastructure?

- Bio-swales
- Porous Pavement
- Native Landscaping
- Rain Barrels
- Green Parking Lots
- Green Alleys
- Green Streets

BIO-SWALES

Bio-swales are landscape features that capture and infiltrate runoff and can also remove its pollutants. They are depressed catchment areas planted with vegetation, similar to a rain garden, and are usually used along transportation corridors or parking lots. They can be installed as meandering or straight channels depending on the land that's available, and are designed to maximize the time rainwater spends in the swale.

POROUS PAVEMENT

Porous pavement can reduce and infiltrate surface runoff through its permeable surface into a stone or filter media below. Runoff then percolates into the ground, is conveyed offsite as part of a stormwater system, or is collected and contained for future use. Porous pavement can be asphalt, concrete or pavers, but differs from traditional pavement because it excludes fine material and instead provides pore spaces that store and pass water.

NATIVE LANDSCAPING

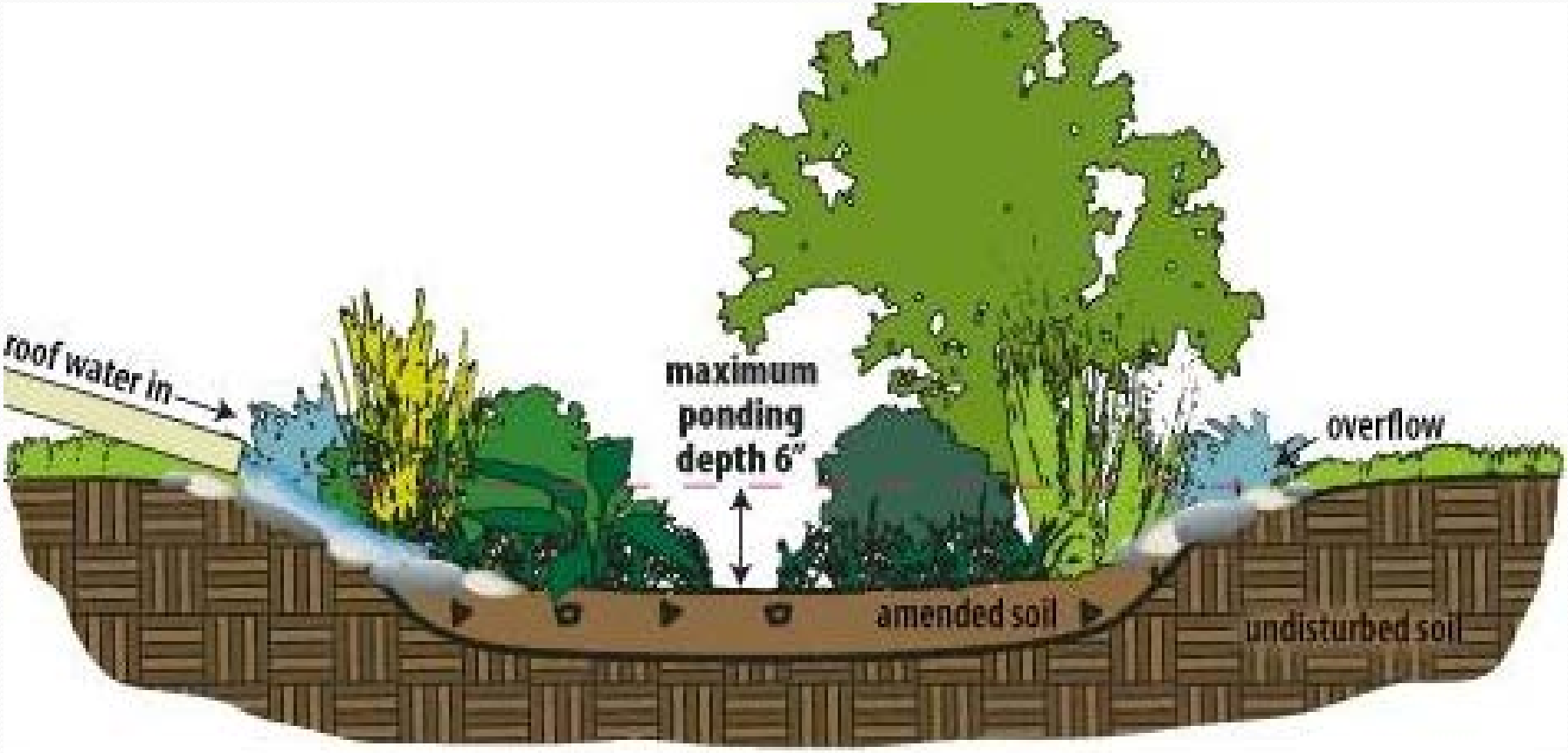
Native landscaping (also known as conservation landscaping) is the use of native plant species that can tolerate the drought and flooding cycles of an area. Native plants are those that evolved in a particular area and are adapted to local climate conditions. Besides use in rain gardens, native landscaping can include prairie and other plants that provide habitat for native animal species.

RAINWATER CATCHMENT

Rainwater harvesting encompasses the capture and storage of rainwater. It also includes the ability to reuse stored rainwater for appropriate uses, primarily gardening and lawn watering. Harvesting not only includes the collection systems, but also the rain barrels and cisterns used to store the water. Rain barrels and cisterns are similar, although cisterns tend to be relatively large and sometimes are installed underground.

GREEN ALLEYS, STREETS AND PARKING LOTS

Green alleys, streets and parking lots are typically in the public right-of-way and can provide a combination of different benefits designed to channel, infiltrate and evapotranspire rainwater. They include permeable pavement, sidewalk planters, landscaped medians and bio-swales, inlet restrictors, greenways and trees (as described above), and can also take advantage of recycled materials.


roof water in
maximum
ponding
depth 6"
overflow
amended soil
undisturbed soil

Green Roofs

- Milwaukee Metropolitan Sewerage District
- Silver City Apartments

Menomonee Valley Industrial Center & Community Park

- The site has become one of the best examples of a successful native planting in an urban environment, has been nationally recognized for urban revitalization, green infrastructure, and brownfield development, and is recognized by the Sierra Club as “One of the 10 Best Developments in the Nation.”

Highland Gardens Public Housing

The Highland Gardens Public Housing Facility uses a green roof, rain gardens in the courtyard, and a cistern to manage stormwater

Westlawn Public Housing

Bio-swales and Retention Ponds

This is one of the many bio-sales that line the curbs of the newly renovated Pabst Complex.

These are the retention ponds installed by the Global Water Center.

Drexel Square Town Center in Oak Creek

Drexel Square Town Center in Oak Creek

Green Infrastructure at MMSD

Supplements MMSD's Sewer System

- Small-scale GI Practices Help:
  - Reduce Overflows, Basement Backups – Goal of Zero by 2035
  - Provide Triple Bottom Line Benefits:
    - Environmental: Improve Water Quality, Attract Pollinators
    - Social: Community Engagement, Increase Green Space
    - Economic: Job Opportunities, Increase Property Values

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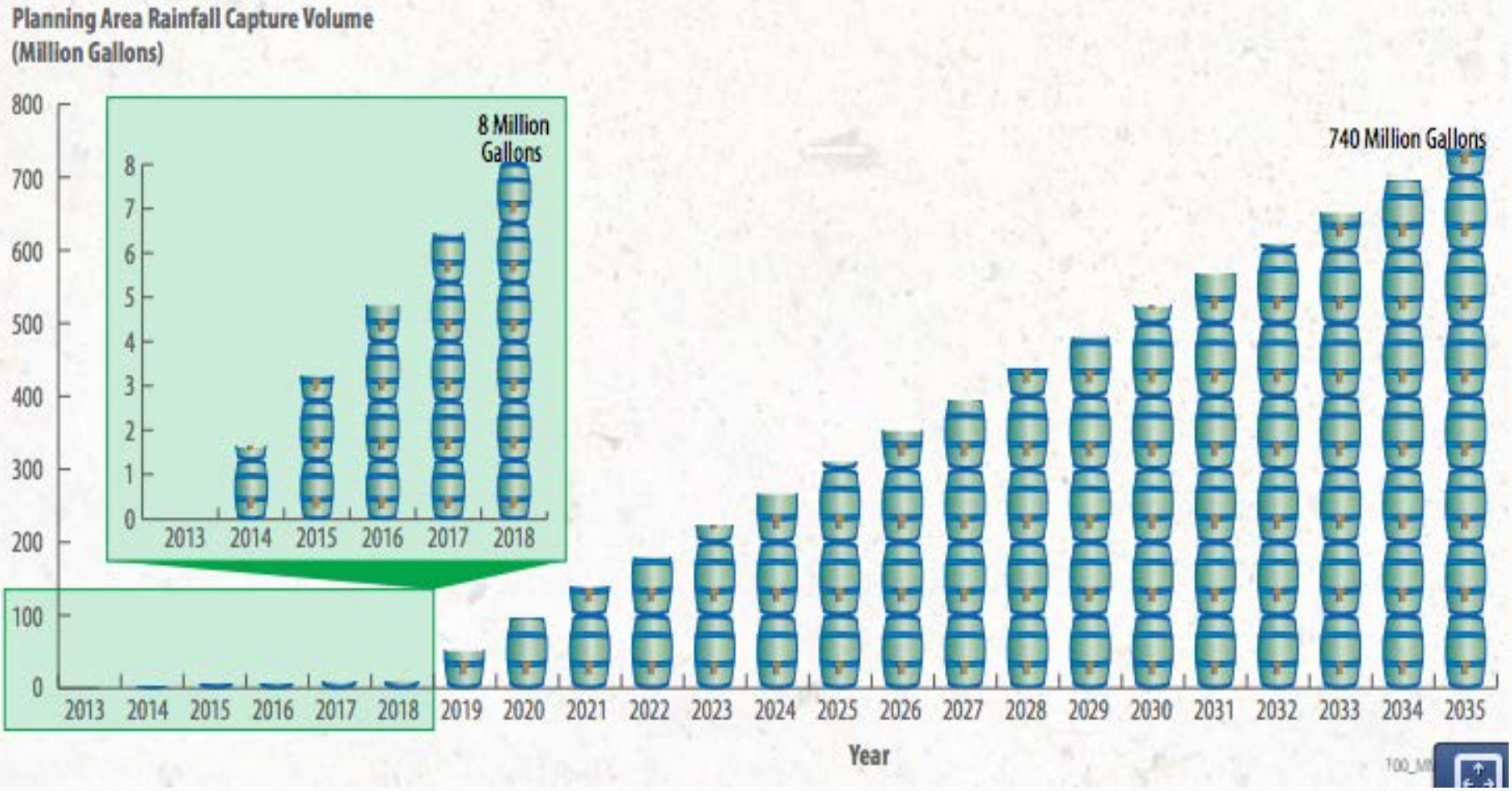
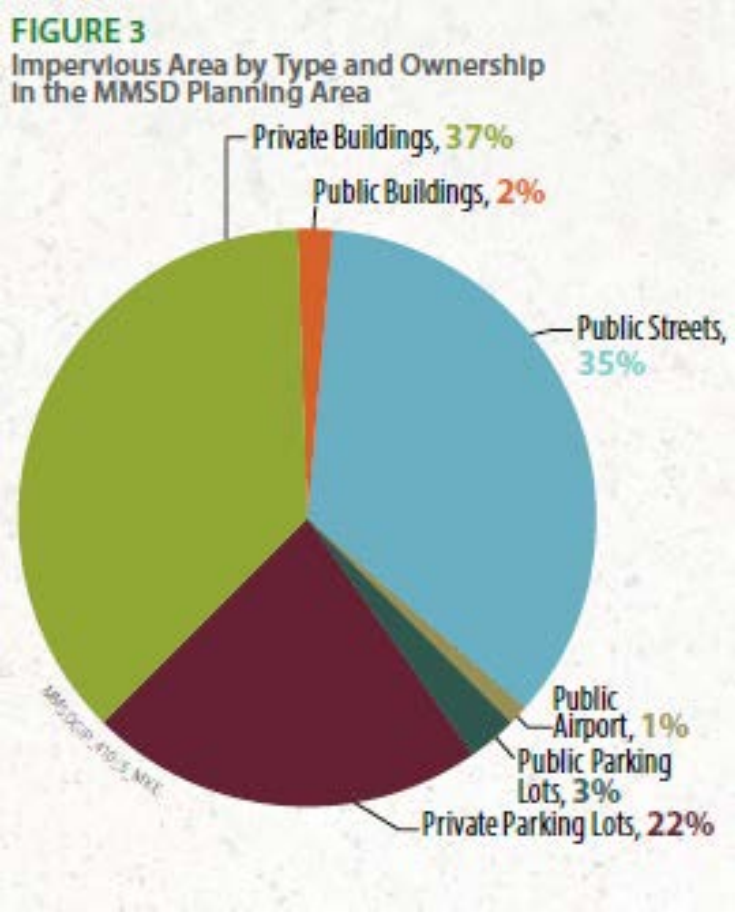
MMSD's 2035 Goal

FIGURE 8
Timeline for Achieving an Equivalent 0.5-inch Rainwater Volume Capture



Importance of Engaging Residents

- Private Buildings and Parking Lots
  - Represent 59% of impervious surface in the Region
  - Support regional efforts
  - Provides understanding of larger GI efforts



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The 30th Street Industrial Corridor

- Revitalization efforts around the Century City Business Park
- Stormwater Management Challenges
- High incidence of basement back-ups and street flooding
- Ideal for Triple Bottom Line Benefits

Lee Menefee's Rain Garden Installation

May 3rd Rain Garden Maintenance Day

- Lee Menefee's Rain Garden on 29th and Capitol Drive
- Help of Milwaukee Collegiate Academy students

Lee Menefee's Rain Garden 2016

Lois Love’s Rain Garden

Cold Spring Park: Green Groundbreaking Ceremony

Cold Spring Park Gathering Green

Benjamin Franklin Native Planting

Garden Homes Installation

Garden Homes Installation

Garden Homes Installation

Cold Spring Park Installation

Cold Spring Park Installation

Century City Tri-angle Community Action Days

Public Art in 29th & Melvina Park

Century City Tri-Angle's 2016 Painted Rain Barrels

These beautiful barrels painted by Marina Lee

Ruth McClinton's Rain Garden

Neighborhood Peace Tower

Uptown Crossing Neighborhood Outreach

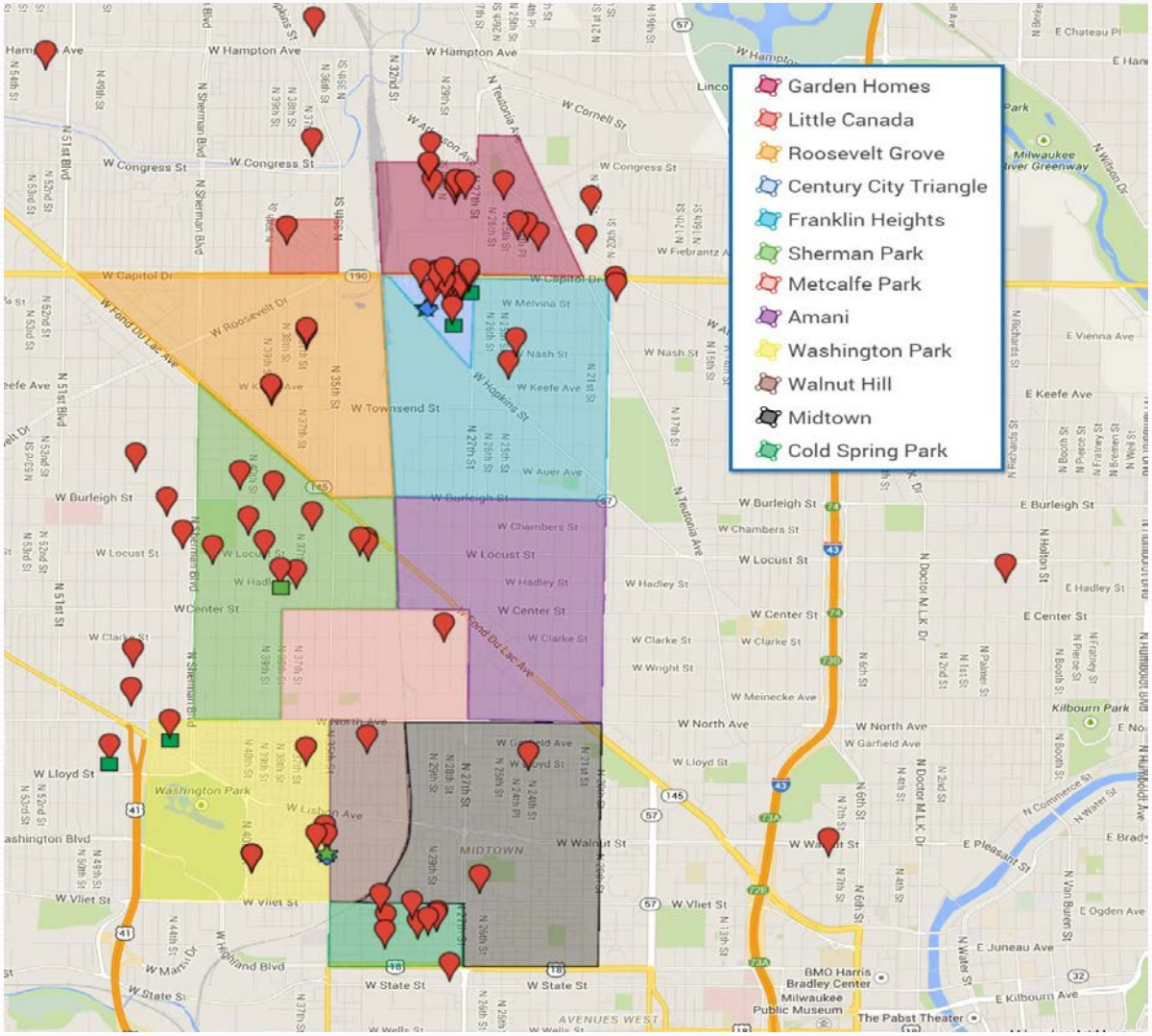
Gardens and Grounds Walking Tour 2016

- Visited gardens and public art in Century City Tri-Angle

Gardens and Grounds Tour

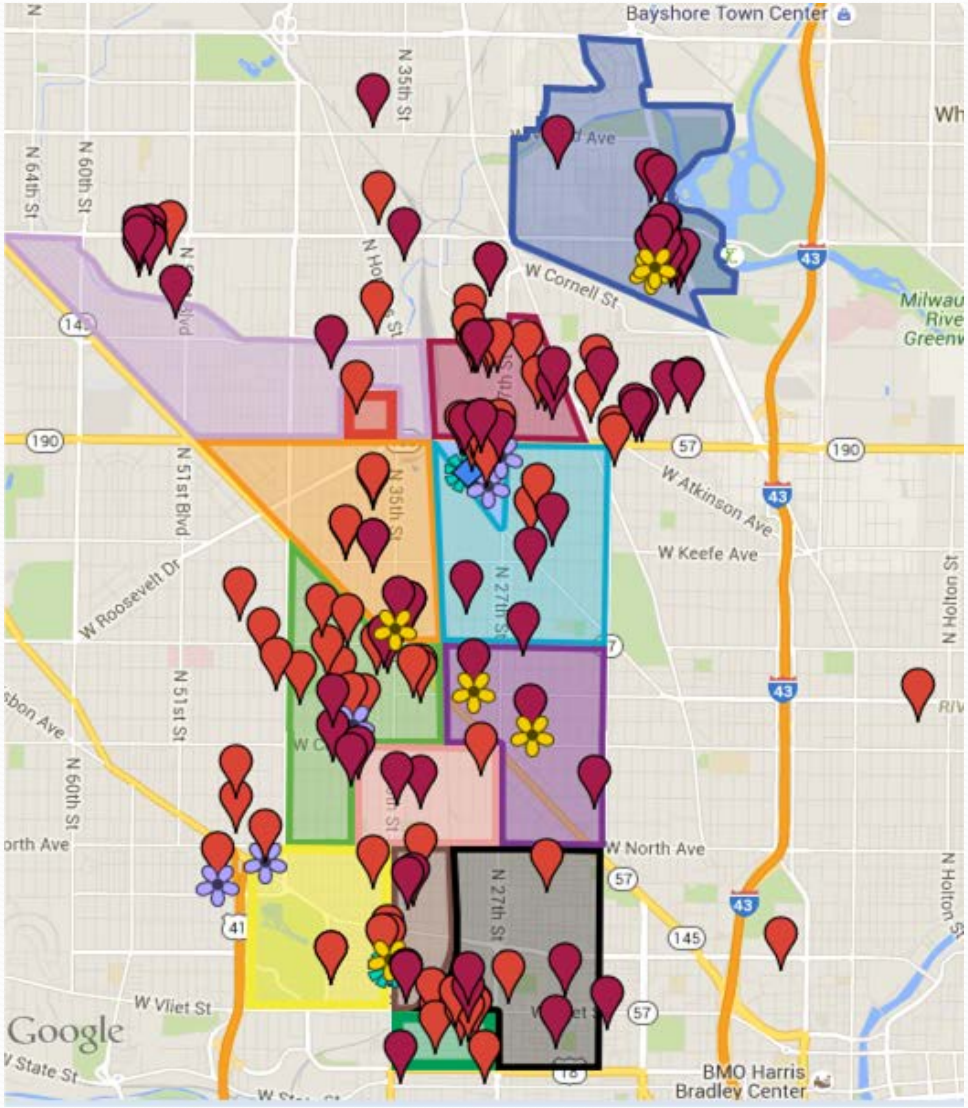
Fall Rain Garden Maintenance

2014 Installations



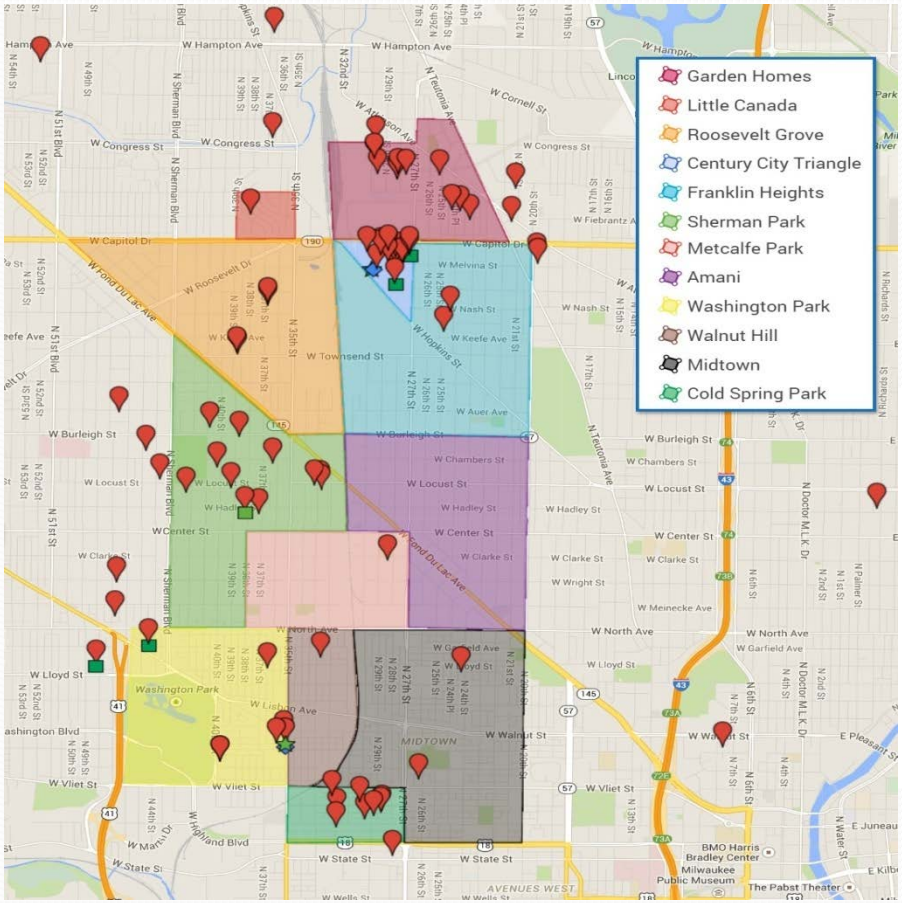
2015 Installations

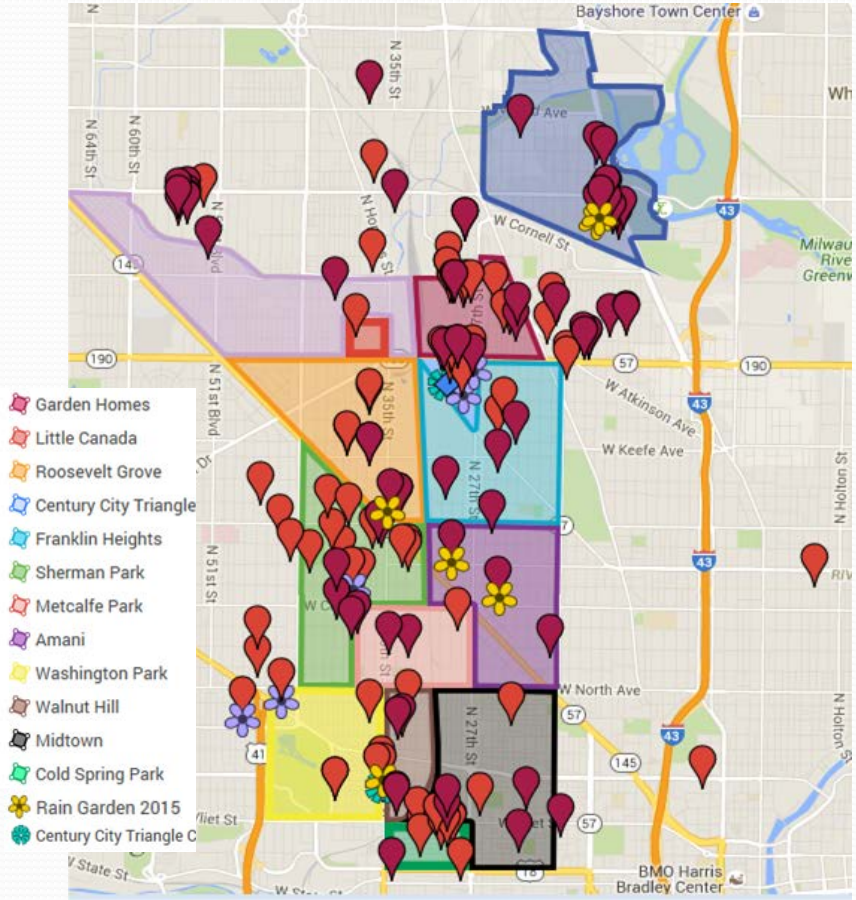
- Garden Homes
- Little Canada
- Roosevelt Grove
- Century City Triangle
- Franklin Heights
- Sherman Park
- Metcalfe Park
- Amani
- Washington Park
- Walnut Hill
- Midtown
- Cold Spring Park
- Rain Garden 2015
- Century City Triangle Comm...



2014
90 Barrel, 8 Garden Installations

2015
77 Barrel, 6 Garden Installations





Water Quantity and Quality Results: 2014

- 90 rain barrels installed + 828 sq. ft. of rain gardens =

  120,500 gallons of stormwater per year and 97 pounds of Total Suspended Solids

Water Quantity and Quality Results: 2015

- 77 rain barrels installed + 645 sq. ft. of rain gardens =

  63,600 gallons of stormwater per year and 51 pounds of Total Suspended Solids

Water Quantity and Quality Results: 2016

- 66 rain barrels installed + 307 sq. ft. of rain gardens + 464 sq. ft. of native plantings =

  65,200 gallons of stormwater per year and 49 pounds of Total Suspended Solids

Water Quantity and Quality Results: Total

- 233 rain barrels installed + 1,780 sq. ft. of rain gardens + 464 sq. ft. of native plantings =

  249,300 gallons of stormwater per year and 197 pounds of Total Suspended Solids

Next Steps

- Generating Neighborhood-Scale Green Infrastructure Targets – modeling and creating neighborhood GI plans
- Supporting efforts to create Job Opportunities

Thank you!

- Questions?