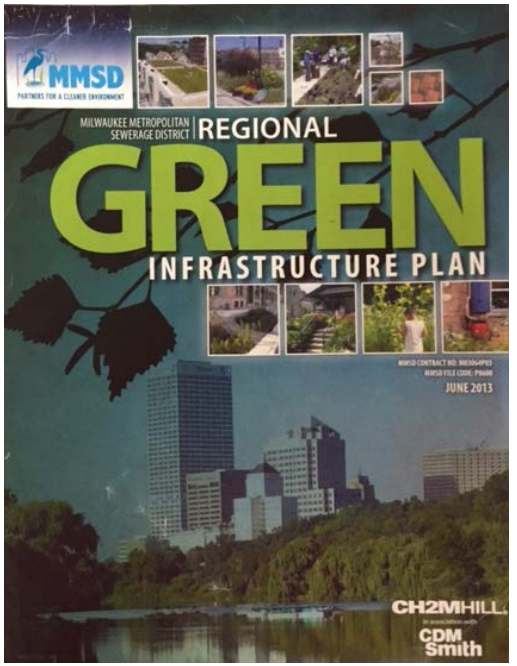
MMSD's Green Infrastructure Plan

Waukesha County Stormwater Workshop

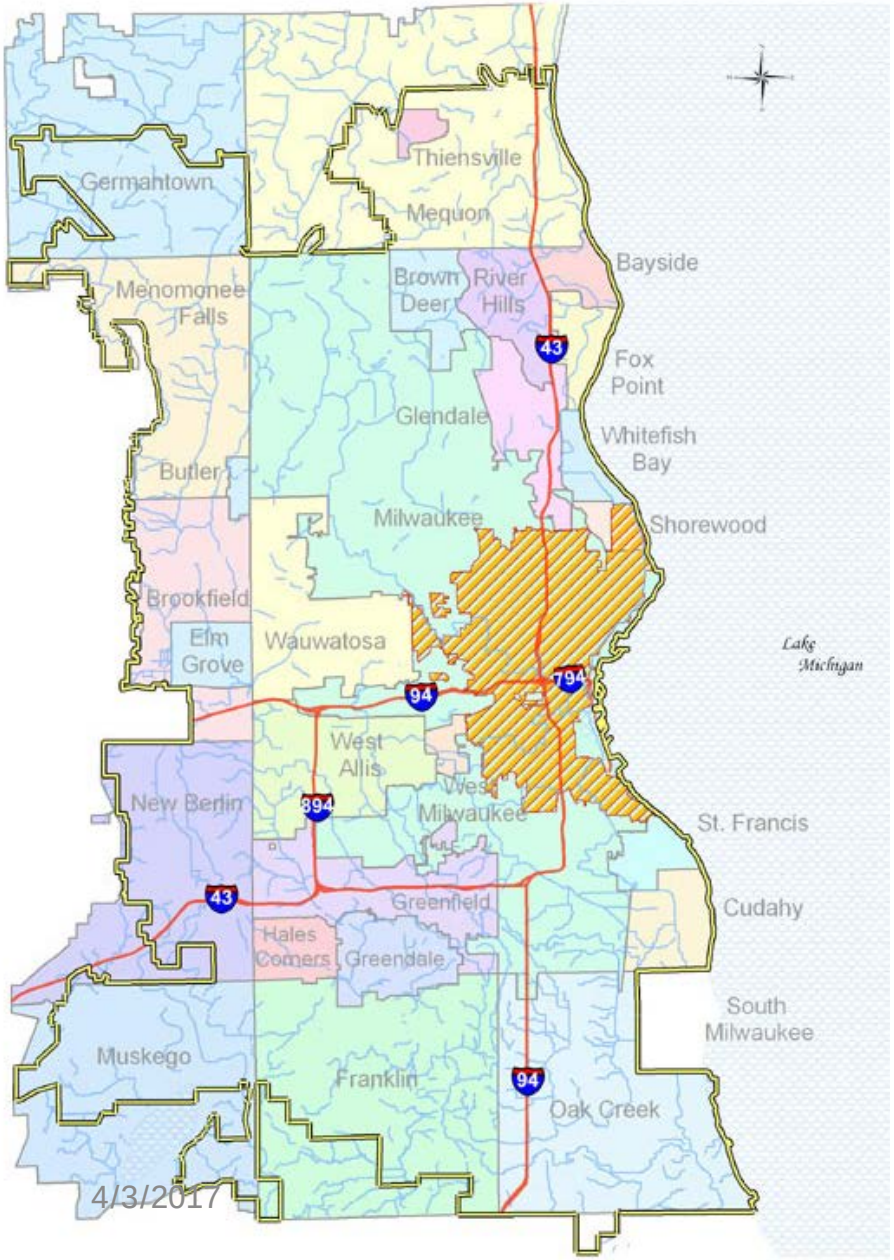
Karen L. Sands, AICP, ENV SP
Director of Planning, Research and Sustainability



MMSD PARTNERS FOR A CLEANER ENVIRONMENT

Milwaukee Metropolitan Sewerage District

Milwaukee Metropolitan Sewerage District



We Serve:

- 1.1 Million Customers
- 28 Municipalities
- 411 Square Miles

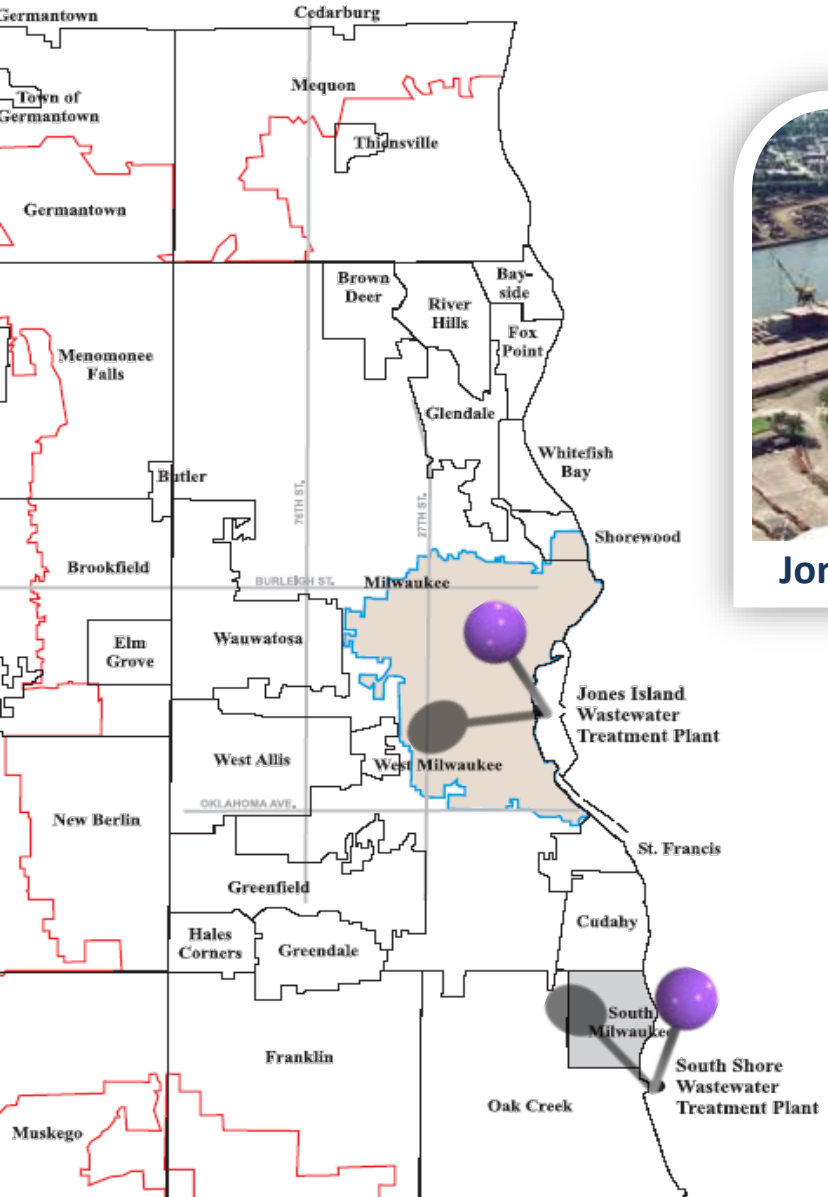
We Protect the Public & Lake Michigan:

- Convey/Store/Reclaim Wastewater
- Manage Flooding

We Have:

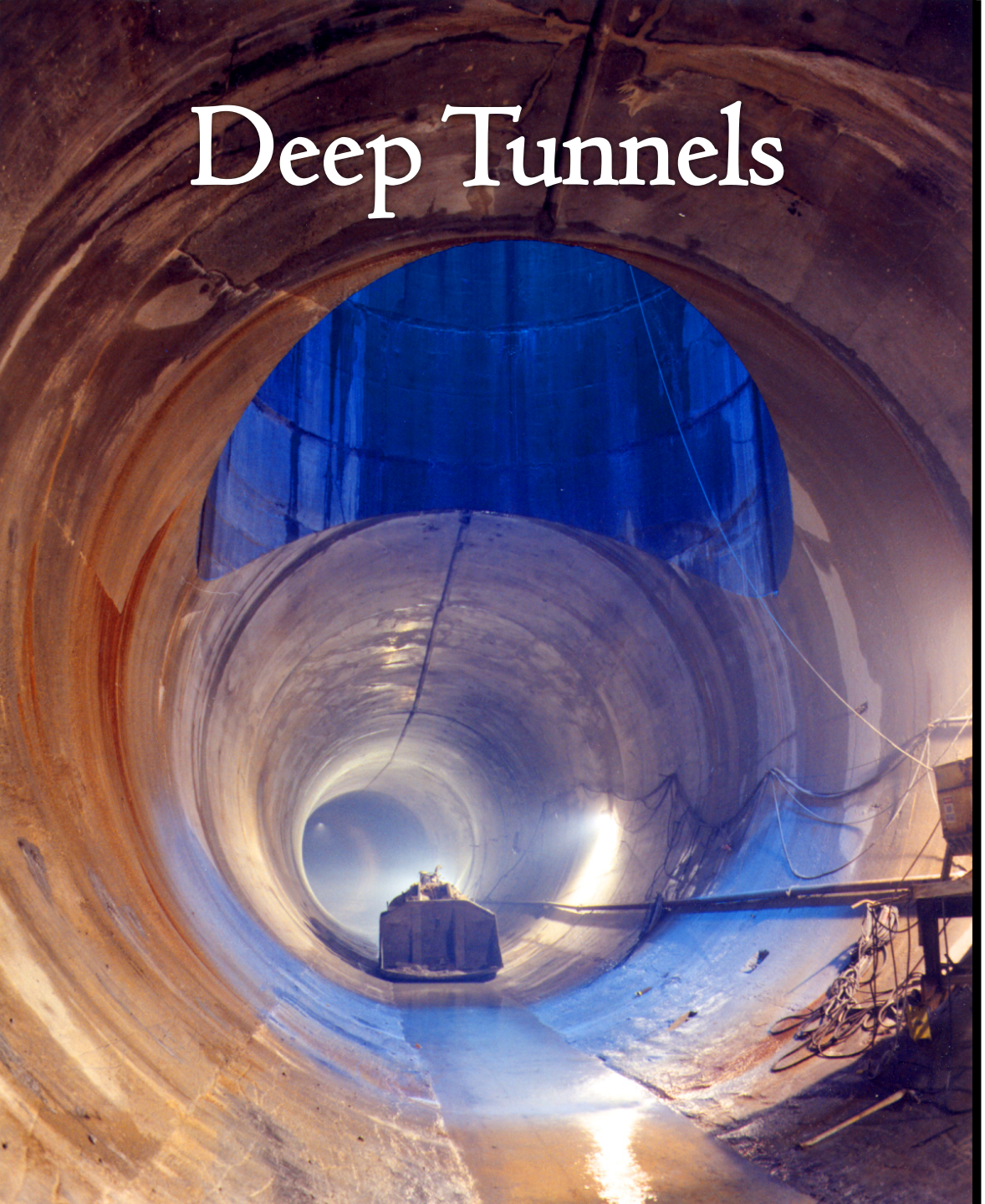
- 300 Miles of Sewers (municipalities and individuals have 6,000 miles!)
- 521 MG Tunnel System
- 2 Water Reclamation Facilities

MMSD's Water Reclamation Facilities (WRFs)



Jones Island

South Shore



300 Feet
Below ground

521 Million
Gallons of Storage

28.5 Miles
Long

17- to 32-feet
In Diameter

Designed to minimize basement backups and for 1-2 overflows per year.

98.4%
Capture & Clean
Since 1993
Photo by: David Stefanik
MMSD
PARTNERS FOR A CLEANER ENVIRONMENT

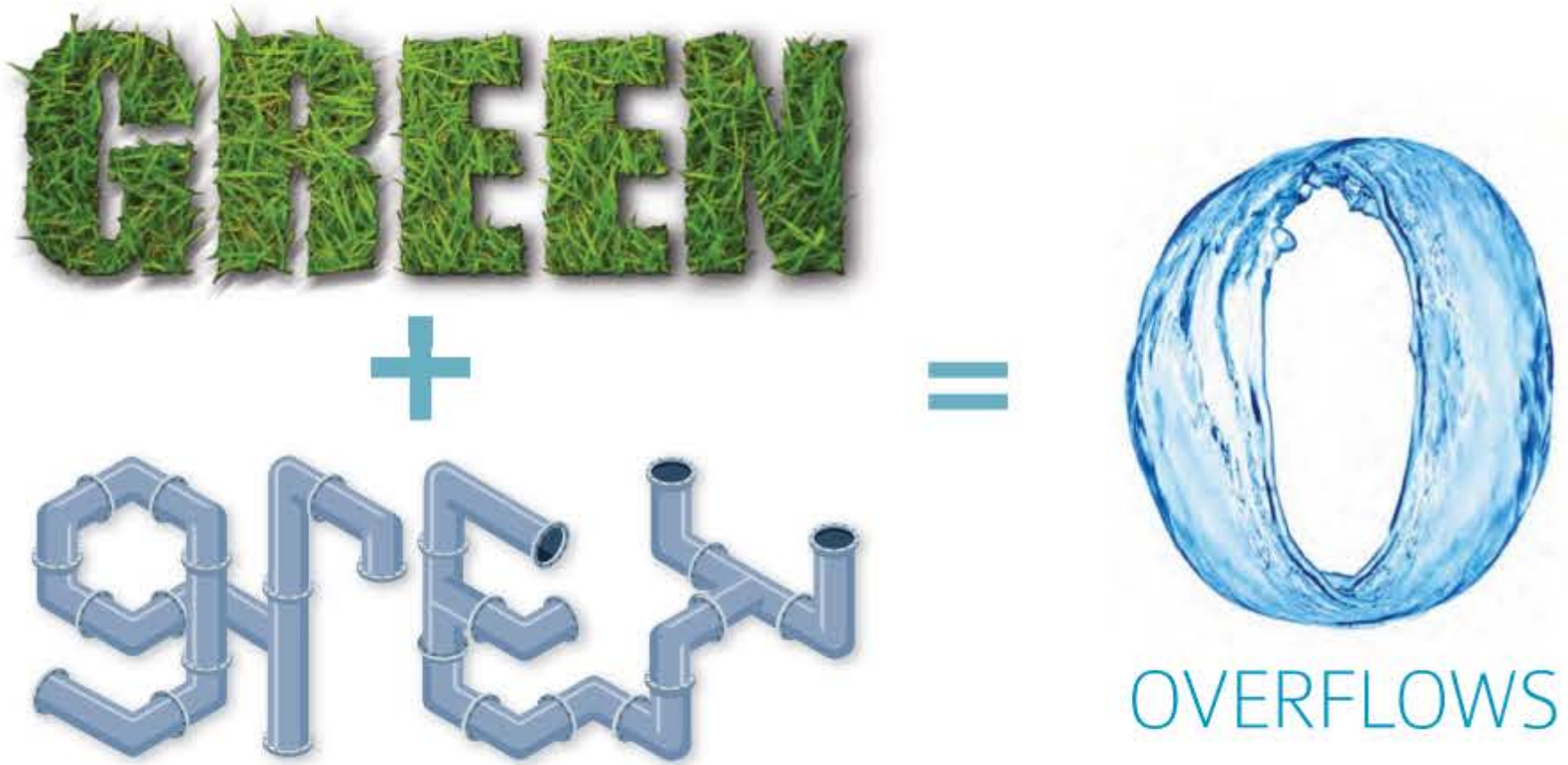
We started with a grey foundation…

- **Water Reclamation Facilities**
- **Sewer Pipes**
- **Storage Vessels**

And are topping it off with green…

- **Green Roofs**
- **Rain Gardens**
- **Bioretention**
- **And More!**

To Serve Our Region...
MMSD Implements Grey & Green Infrastructure



MMSD's Interest in Green Infrastructure

- Complements Traditional Grey Infrastructure
- Uses Vegetation and Soil/Foundation to Manage Water Where it Falls
- Provides a Host of Benefits that Pipes Can't

MMSD's 2035 Vision

(http://v3.mmsd.com/NewsDetails.aspx)

Integrated Watershed Management Goals:

Zero sanitary sewer overflows

Zero combined sewer overflows

Zero homes in the 100-year floodplain

Acquire an additional 10,000 acres of river buffers through Greenseams®

Use green infrastructure to capture the first 0.5 inch of rainfall

Harvest the first 0.25 gallons per square foot of area of rainfall

Energy Efficiency and Climate Mitigation & Adaptation Goals:

Meet 100% of MMSD's energy needs with renewable energy sources

Meet 80% of MMSD's energy needs with internal, renewable sources

Use the Greenseams® Program to provide for 30% sequestration of MMSD's carbon footprint

Reduce MMSD's carbon footprint by 90% from its 2005 baseline

Regional Green Infrastructure Plan

- Implement the MMSD 2035 Vision (740 MG)
- Help prioritize green infrastructure funding decisions
- Provide input for the next facilities plan
- Logically implement WPDES green infrastructure goals

MMSD's Approach to Green Infrastructure

- Regulations
  - Chapter 13
  - Municipal Codes/Ordinances Review

- Education/Information:
  - www.freshcoast740.com
  - Studies: Property Values, Triple Bottom Line Evaluation
  - Green Streets Assistance
  - Business Plan for GI O&M
- Green Infrastructure Programs
  - Rain Barrels, Rain Garden Plant Sales
  - Funding Programs (various)

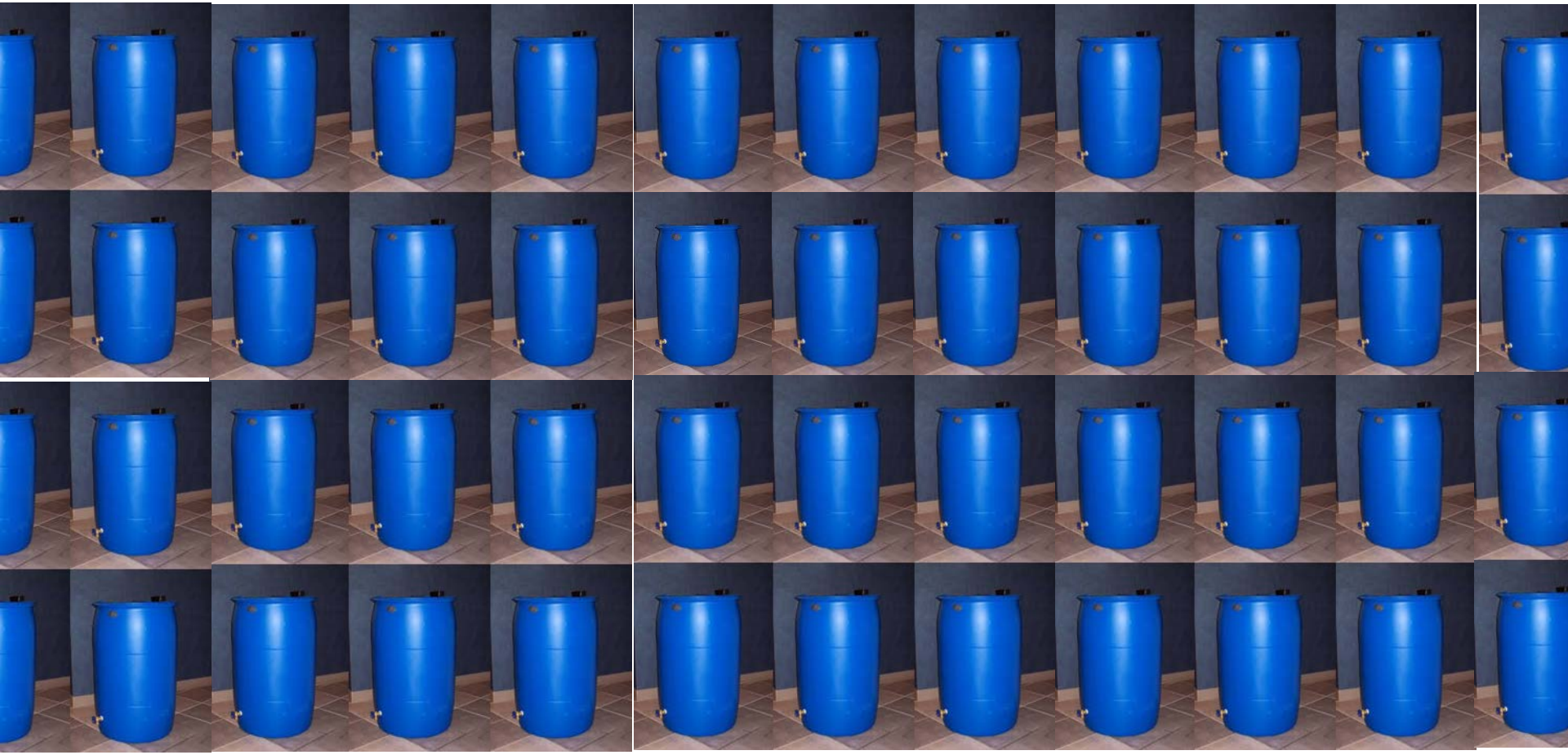
Fresh Coast 740: What is it?

- MMSD GI Efforts
- 2035 Vision: Capture the First 0.5”
- Regional GI Plan Goal = 740 million gallons of GI
- MMSD’s GI Center of Excellence “brand”

FRESHCOAST 740
MILWAUKEE, WISCONSIN

How Much is That?

155,400,000 gallons (2,800,000+ rain barrels)



How Big is That?

1,190 acres (900 football fields)

Environmental Paybacks

- Stormwater Capture
  - 740 MG new GI storage available per storm, 14,900 MG/year
- Reduced Pollutant Loadings
  - Total Suspended Solids (TSS): 15.1 million pounds/year
  - Total Phosphorus: 54,400 pounds/year
- CO_2 Sequestered plus Emissions Avoided
  - 73,000 tons/year at full implementation
- Air Pollutants Removed by Trees (plus emissions avoided)
  - CO: 8 tons/year
  - NO_2: 103 tons/year
  - Ozone: 403 tons/year
  - PM_{10}: 190 tons/year
  - SO_2: 113 tons/year
- Human Health Benefits from NO_2 and SO_2 Emission Reductions
  - $6.4 million/year

Social Paybacks

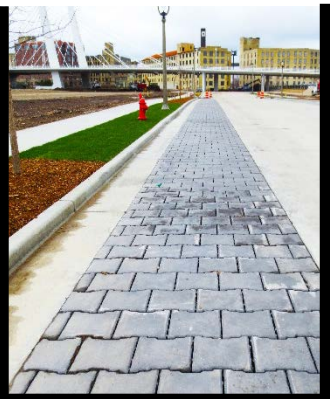
- New Green Jobs
  - 633 green O&M related jobs at full implementation
  - 161 green construction jobs on average for 25 years
- Reduced social costs
  - $1.4 million/year

Rockwell International Green Roof

Economic Paybacks

- Property Values (due to aesthetic improvements)
  - Residential: $447.8 million
  - Commercial: $238.2 million
  - Industrial: $19.9 million
  - Total: $705.9 million
- Reduced cooling
  - 16.5 million kWh/year
- Associated cost savings
  - $1.5 to $2.1 million

Golda Meir Library, UW Milwaukee
Green Roof



Green Infrastructure

FRESHCOAST 740
MILWAUKEE, WISCONSIN

Funded in 2016 = 10,440,000 Gallons

Since 2002 **31.9 Million** Gallons

Green Roofs

FRESHCOAST 740
MILWAUKEE, WISCONSIN

MMSD
PARTNERS FOR A CLEANER ENVIRONMENT

11.63 Acres Funded Since 2003

506,000 Gallons per storm

Northwestern Mutual®

Rain Barrels

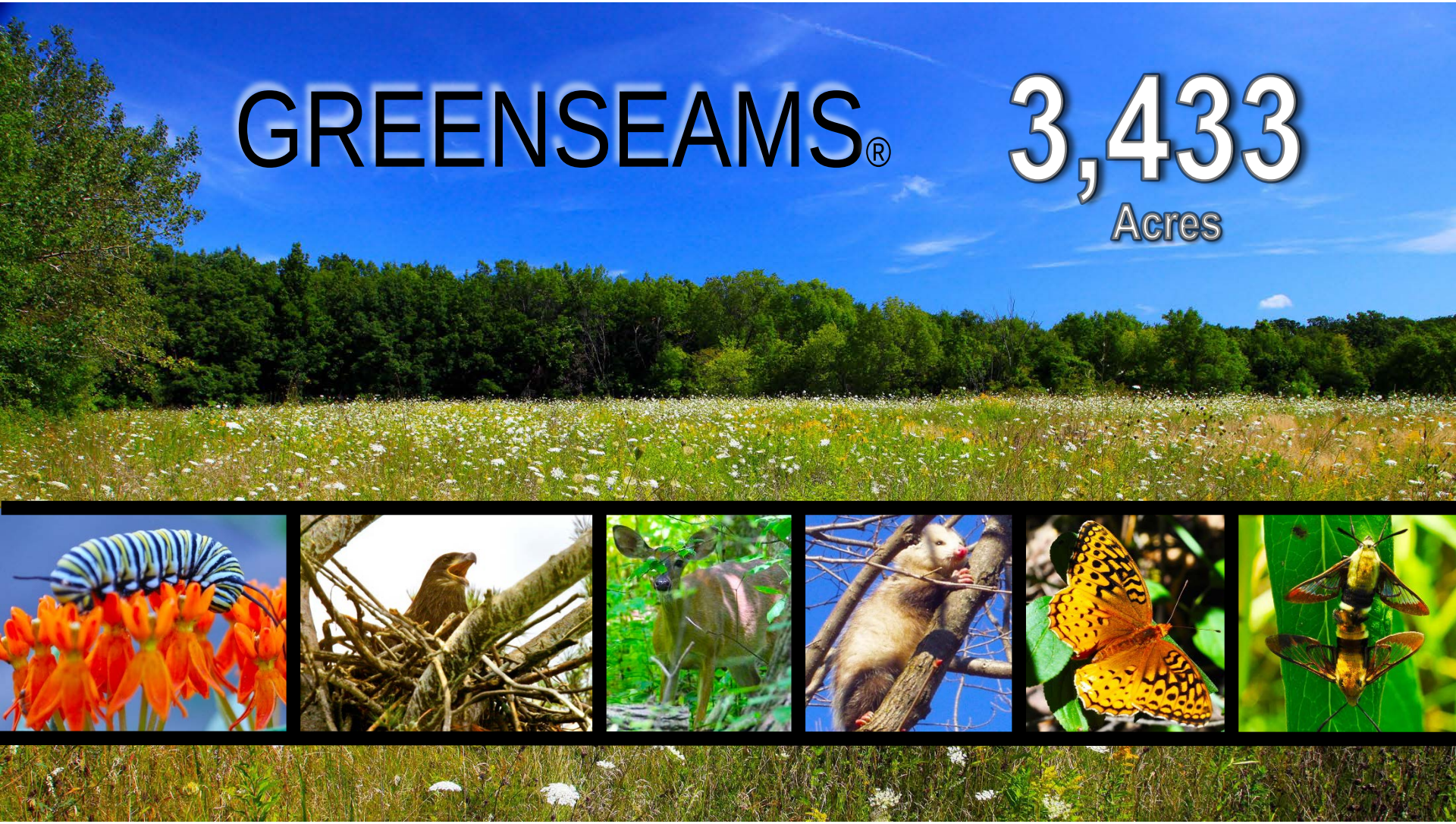
22,280 since 2004 (Sold & Donated)

= 1,225,400 Gallons

FRESHCOAST 740
MILWAUKEE, WISCONSIN

Green Summer 2016

FRESHCOAST 740
MILWAUKEE, WISCONSIN


GREENSEAMS®
3,433
Acres

Questions

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