



SOUTHWEST
ENVIRONMENTAL
FINANCE CENTER

Green Infrastructure Webinar Series

Webinar 6: The Power of Partnerships for Green Infrastructure

Thursday, 17 July 2025

10:00am Mountain Time



Logistics

Using the control panel

Opening the control panel



Show your control panel

All phones/microphones are muted for the duration of the webinar

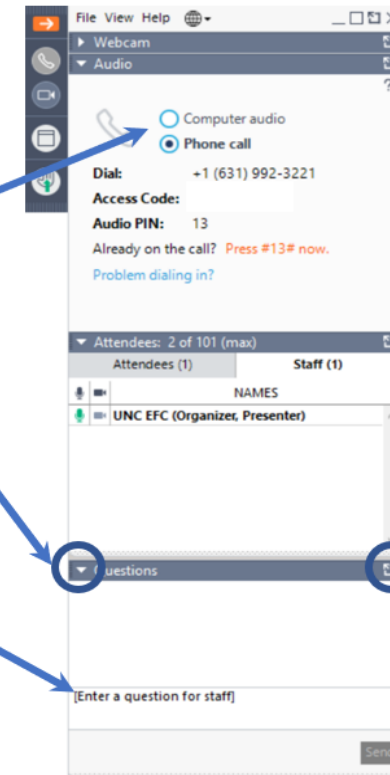
Toggle between full screen/window screen view


Audio: please choose between computer audio or phone call

If you do not hear audio right now, please check your speaker volume or enter #[your Audio PIN]# if using phone

Click  to open in Control Panel

Submit **questions** in the Questions box at any time, and press [Send]



Click  to open in separate box and resize

Certificate of Completion

This session has **NOT** been submitted for pre-approval of Continuing Education Credits, but eligible attendees will receive a certificate of attendance for their personal record.

To receive a certificate:

- You must attend the entire session
- You must register and attend using your real name and unique email address - group viewing credit will not be acceptable
- You must participate in polls
- Certificates will be sent via email within 30 days

If you have questions or need assistance, please contact smallsystems@syr.edu.

About Us

The **Environmental Finance Center Network (EFCN)** is a university- and non-profit-based organization creating innovative solutions to the difficult how-to-pay issues of environmental protection and water infrastructure.

The EFCN works collectively and as individual centers to address these issues across the entire U.S, including the 5 territories and the Navajo Nation. The EFCN aims to assist public and private sectors through training, direct professional assistance, production of durable resources, and innovative policy ideas.



Webinar Series Overview

Title	Date
Green Infrastructure 101	18 April 2024
Equitable Green Infrastructure in a Changing Climate	25 July 2024
Navigating the Green Infrastructure Policy Landscape	10 October 2024
Asset Management for Green Infrastructure	23 January 2025
Funding Green Infrastructure	24 April 2025
The Power of Partnerships for Green Infrastructure	17 July 2025
Building a Green Infrastructure Workforce	16 October 2025
Green Infrastructure Frameworks for Environmental Justice	22 January 2026
Source Water Protection and Watershed Planning for Wildfire	16 April 2026
Bridging the Gap: Integrating Land and Water Planning for Sustainable Futures	16 July 2026

Overview of Today's Webinar

1. Brief recap: What is green infrastructure?
2. Overview of Partnership Possibilities with Green Infrastructure Projects
3. Partnerships in Action:
 - Milwaukee Metropolitan Sewerage District
 - Philadelphia Water Department and Power Corps
 - Seattle Public Utilities, Parks and Recreation, and Mid-Sound Fisheries
6. Resources
7. Question & answer session with speakers

Today's Speakers



Shannon Sloane Pepper

Water Utility Trainer and Specialist,
*Southwest Environmental Finance
Center*



Barbara Hopkins

Executive Director,
*Green Infrastructure Leadership
Exchange*



Lisa Sasso

Senior Project Planner,
*Milwaukee Metropolitan Sewerage
District*

Today's Speakers



Aaron Kirkland

Grounds Maintenance Superintendent,
Philadelphia Water Dept. & Power Crops



Amanda Barnett

Senior Planner and Liason,
*Seattle Public Utilities, Seattle Parks
and Recreation, and Mid-Sound
Fisheries*



Quick Recap: Green Infrastructure

What makes green infrastructure such a compelling water management option for communities of all sizes?

Water/Wastewater/Stormwater Infrastructure

Gray:



Green:



Example: Gray & Green Stormwater Infrastructure

Gray



Sewer pipe

Green



Infiltration trench

Some co-benefits of infiltration trench or bioswale:

- Filtration of water through soil
 - Plant & fungi uptake of pollutants
- Dispersed absorption – stormwater does not make it to treatment plant
- Space for public enjoyment, habitat

Function: Convey storm water away from roads/buildings

Why Green Infrastructure?



Climate Resiliency



Co-Benefits



Partnerships

The Power of Partnerships for Green Infrastructure

Prepared for the Southwest Environmental Finance Center,
July 17, 2025



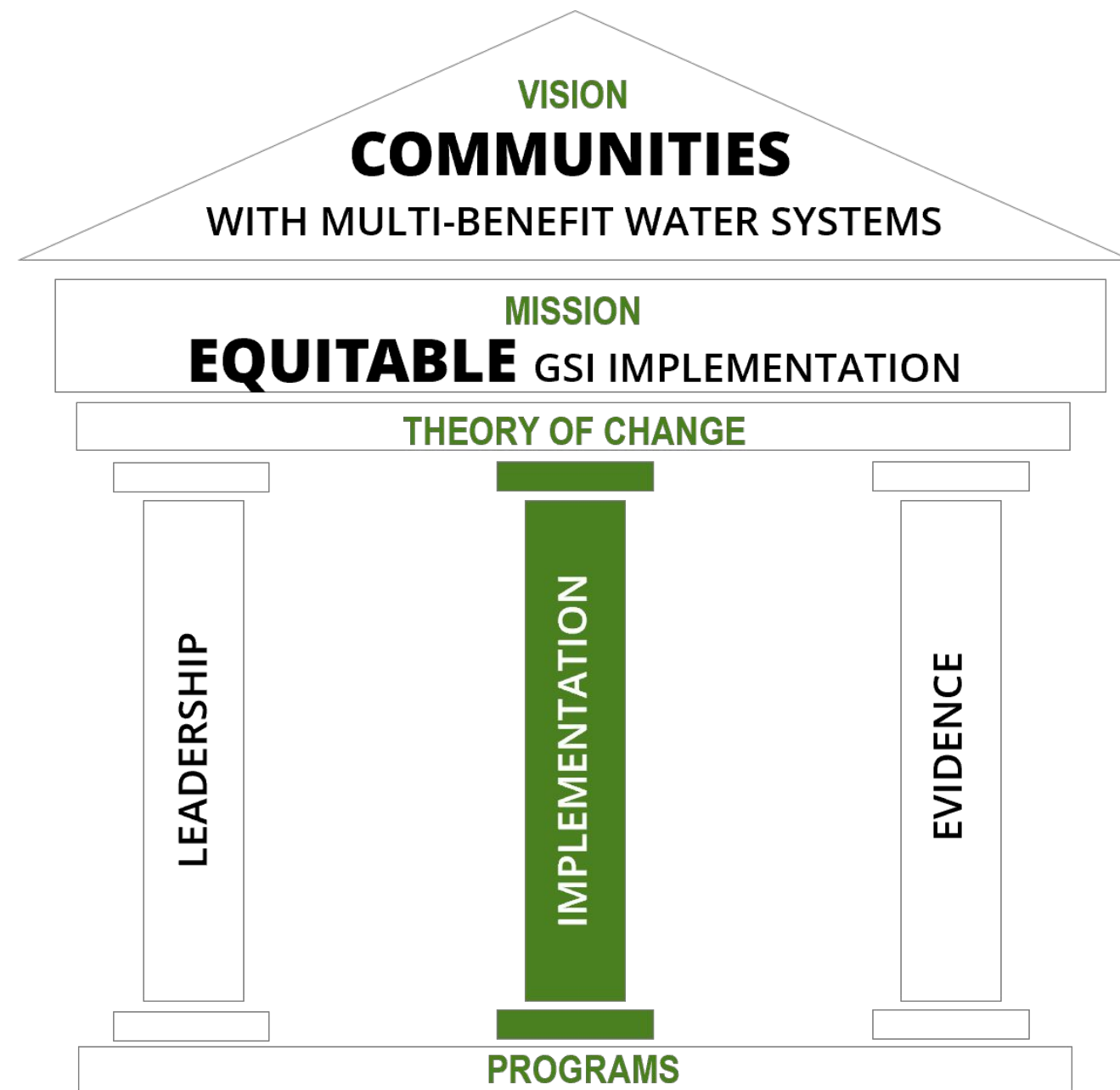
GREEN
INFRASTRUCTURE
LEADERSHIP
EXCHANGE



The Exchange ...

... is a cross-sector, social impact network and community of practice that seeks to scale the equitable implementation of green stormwater infrastructure across the U.S. and Canada.





Framing:

- Framework of GSI Practice
- Peer Learning
- Educ. Res. & Needs Survey
- Re-grant Program
- Partnership Projects

Training:

- Training Courses
- Webinars
- Annual Meeting
- Catalyst Program

Making the Evidentiary Case

- GI Library
- The State of Public Sector GSI
- GSI Impact Hub

Theory of Change

The Framework of GSI Practice

Why? Establish a Shared Vision

1 (Completed) Center Equity

This topic explores preparing teams for equitable GSI delivery; centering community; ensuring project selection, siting, and investments enhance equity; designing projects and programs for lasting community benefits; fostering economic stability and wealth building; mitigating displacement risks; identifying equitable policies and programs; addressing racial equity; combatting biases in urban planning; and promoting equitable distribution of assets and benefits.

2 Advance Sustainability

This topic centers on advancing GSI as part of overarching sustainability goals, enhancing urban environments for cooler, safer and more biodiverse cities, and seamlessly integrating GSI strategies with other sustainability and resilience efforts. Key considerations include addressing climate resilience and implementing designs that are sustainable and adaptable to climate change.

3 (Completed) Build Buy-in

This topic addresses making a compelling case for GSI; positioning green and gray solutions; securing leadership buy-in; fostering partnerships and intergovernmental coordination; employing effective narrative strategies; conducting cost-benefit analyses; engaging elected officials and senior champions; implementing public outreach; utilizing demonstration projects; sharing case-making research; fostering cross-pollination; and providing education and training.

What? Craft a Strategy

4 Align Policy, Procurement + Program

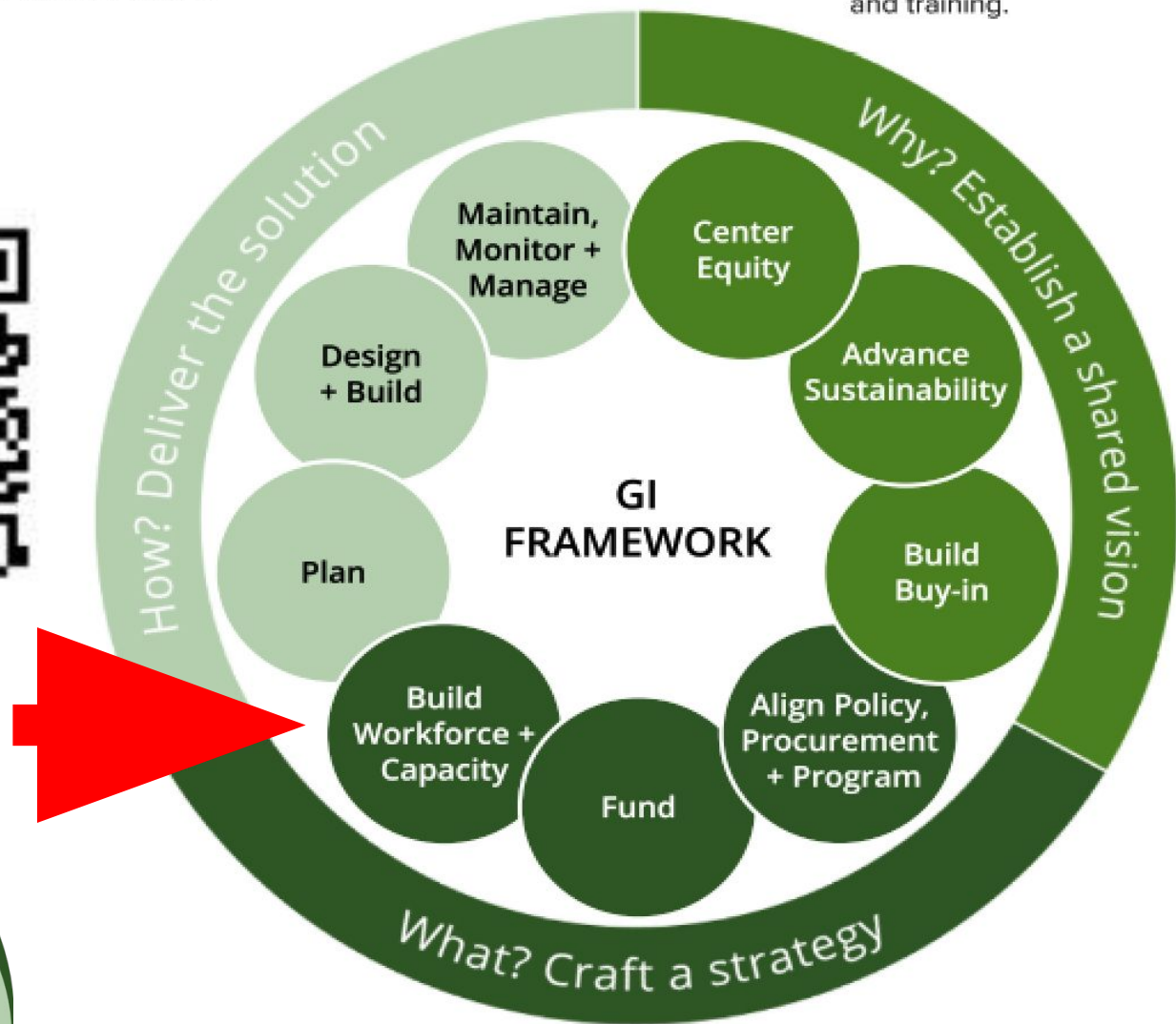
This topic focuses on understanding the regulatory environment at federal, state, and local levels; leveraging existing conditions to inform policies and programs; exploring program and procurement models; and coordinating across departments and agencies.

5 Fund

This topic covers determining how to pay for GSI; building public support for storm-water fees; identifying funding and financing tools aligned with program models; exploring funding accelerators; evaluating new financing approaches; obtaining loans and grants; securing funding for ongoing maintenance and asset management; and ensuring funding accessibility and equitable distribution.

6 Build Workforce + Capacity

This topic explores avenues for workforce training; ensuring confidence in knowledge and skills; assessing the potential need for mentor/protege, internship or apprenticeship programs; increasing opportunities in disadvantaged communities; forging partnerships; and program models for workforce development.



How? Deliver the Solution

7 Plan

This topic is dedicated to strategically planning GSI. It involves determining optimal locations; assessing quantity and types of GSI; integrating equity considerations; planning for lasting community benefits; mitigating displacement risks; defining design considerations; and aligning GSI with broader planning efforts.

8 (In progress) Design + Build

This topic revolves around the design and construction of GSI. It includes national and local design standards; designing for lasting community benefits; reducing the chances of community displacement; involving communities in the design process; implementing best practices for GSI construction; addressing design barriers; fostering innovation; and designing with maintenance in mind.

9 Maintain, Monitor + Manage

This topic includes understanding asset management systems and their benefits; planning and executing maintenance strategies; addressing funding for monitoring and maintenance; considering data standardization; and delving into various elements such as lifecycle costs, criticality, levels of service, capital project rehabilitation, public and private inspections, and ongoing monitoring efforts.

Today's Presenters



Barbara Hopkins, Exec. Dir.
Green Infrastructure Leadership
Exchange
barbara@giexchange.org



Amanda Barnett, Senior Planner &
Liaison
Seattle Public Utilities &
Seattle Parks & Recreation



Aaron Kirkland, Superintendent,
Green Stormwater Operations
Philadelphia Water Department



Lisa Sasso, Senior Project Planner
Milwaukee Metropolitan Sewerage
District

Lake City Floodplain Park

City + NGO Co-development Project

Learning Together

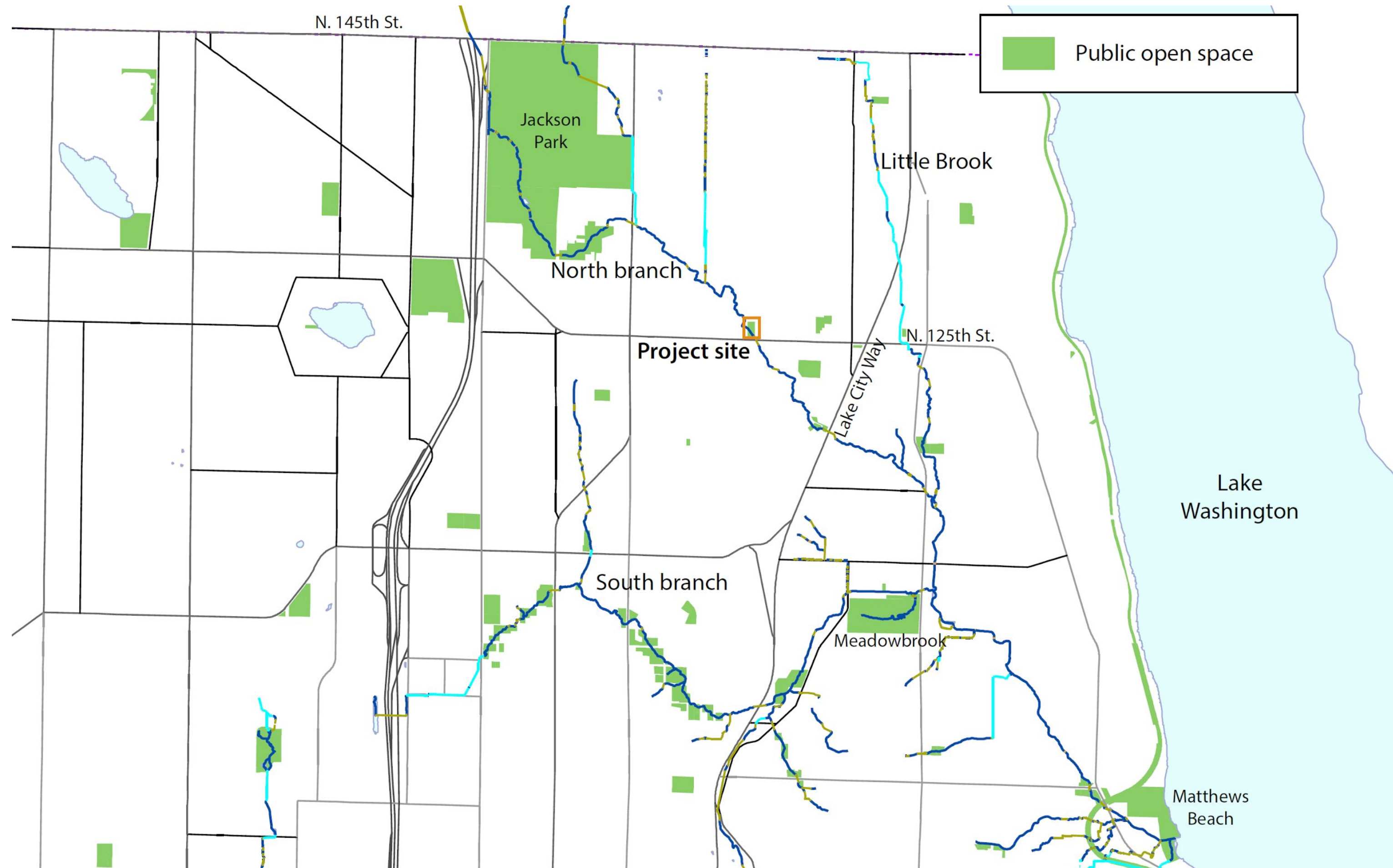


Goals for Today

- Site Context, project drivers
- Partner organizations; roles and responsibilities
 - Engagement
 - Performance Requirements
- Progress to date (60% design)
- Cost Sharing and Site Management Plan assumptions
- Partnership strengths and challenges



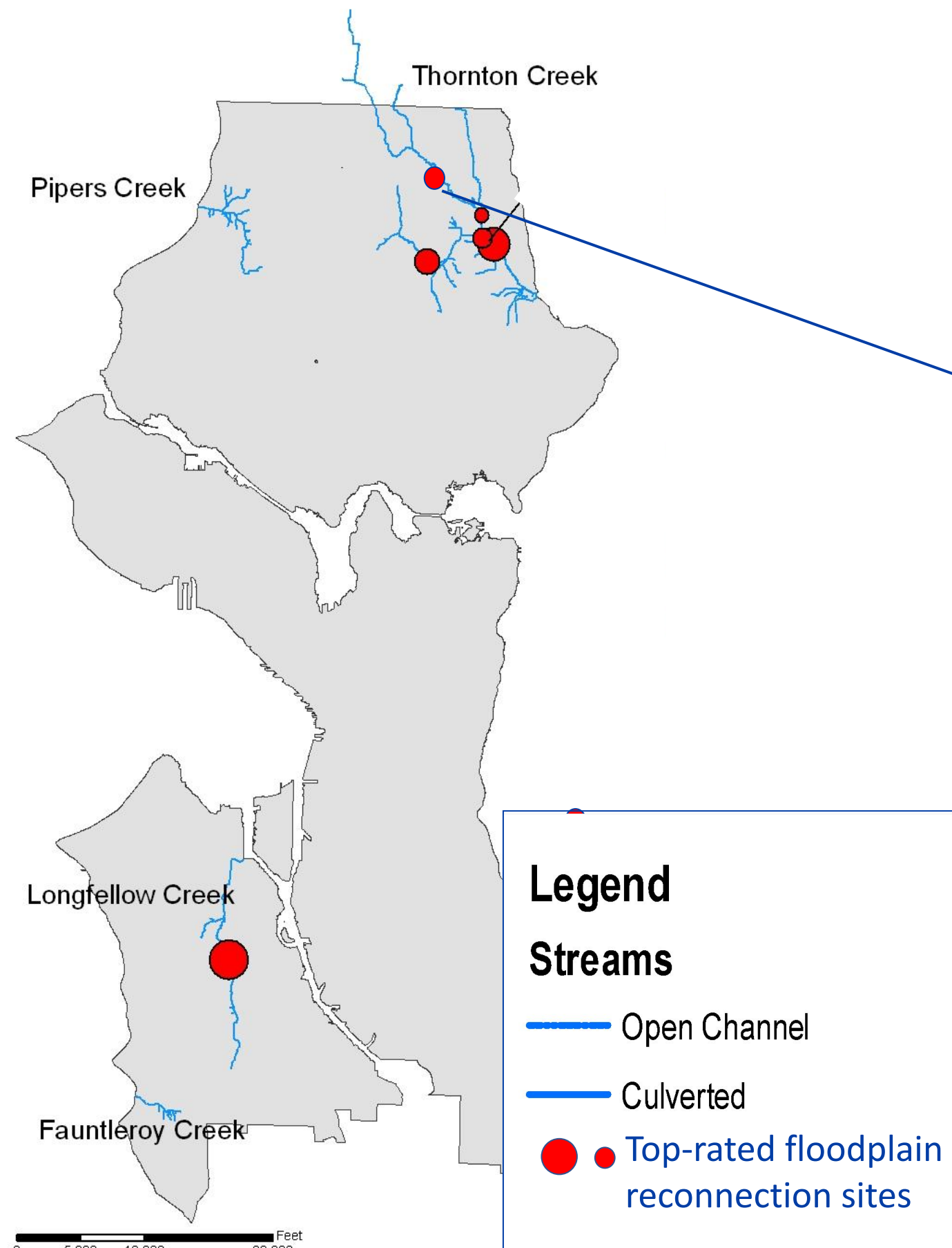
Creek context: public ownership



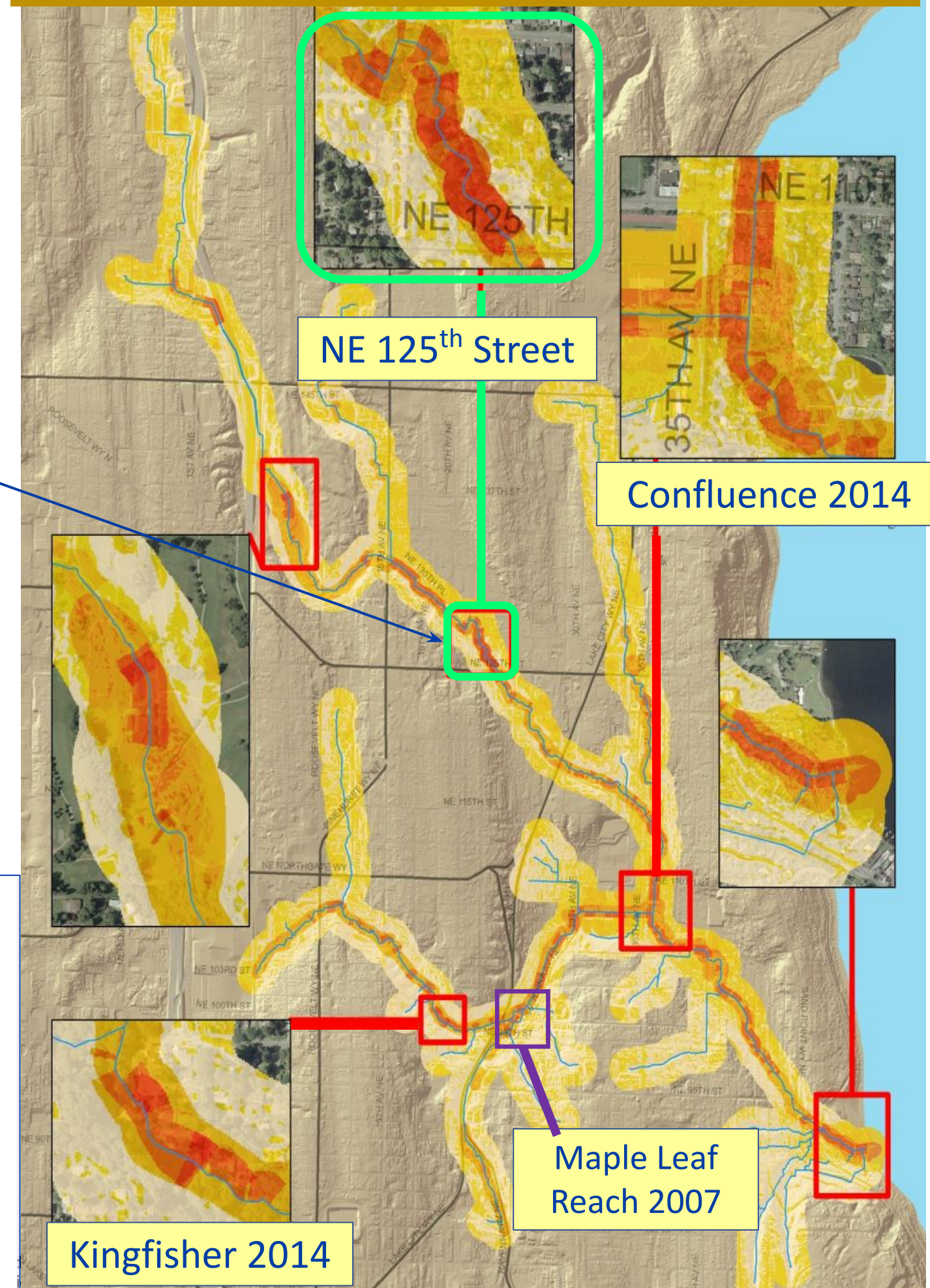
Neighborhood context



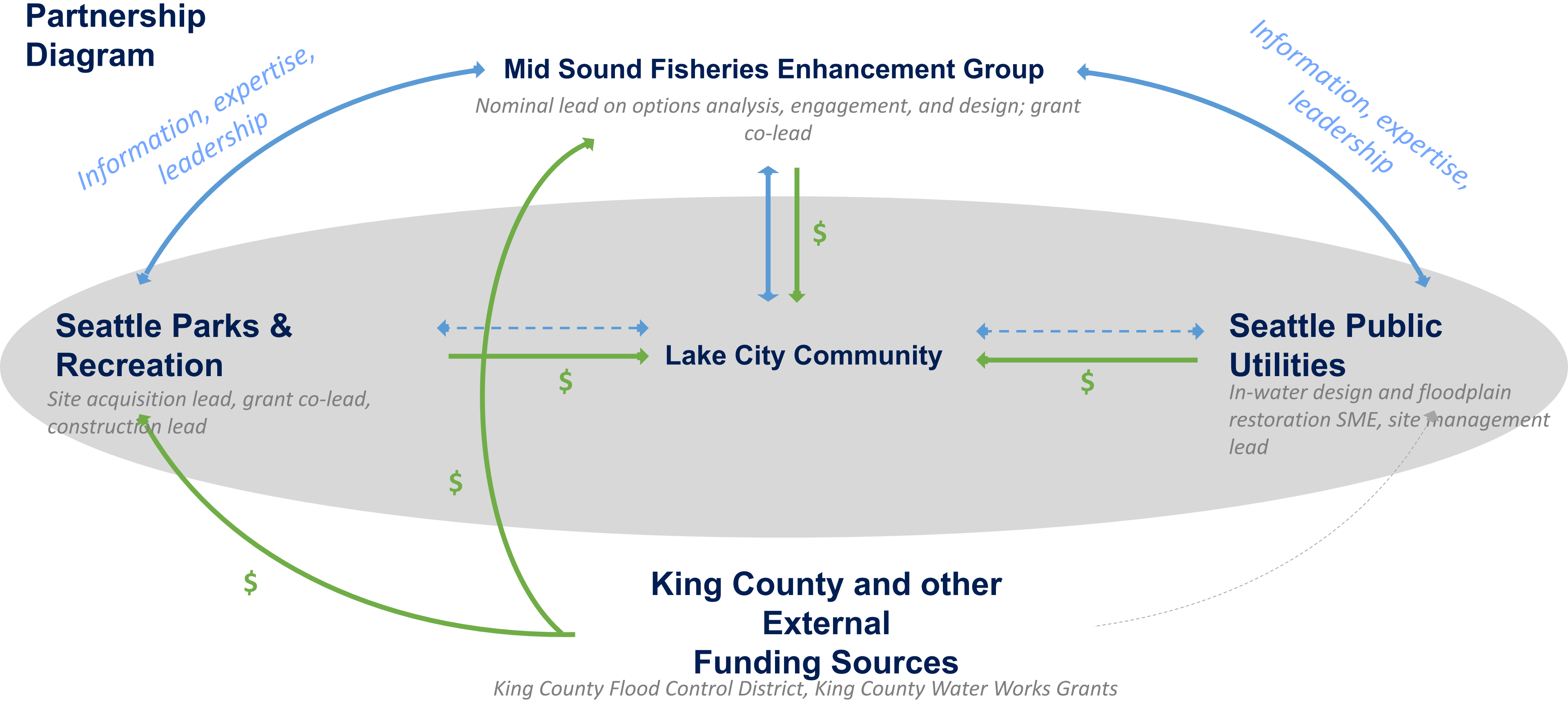
Creek context: flood storage



Floodplain reconnection opportunities Site suitability



Partnership
Diagram



Options Analysis: Equitable community engagement

- Varied engagement tactics, aligned with existing community groups and events
- Targeted outreach to youth, equity-oriented community organizations and programs
- Intentional checks/balances on historically privileged community groups
- Incorporating community priorities for recreational and educational use



SPU/SPR Performance Requirements

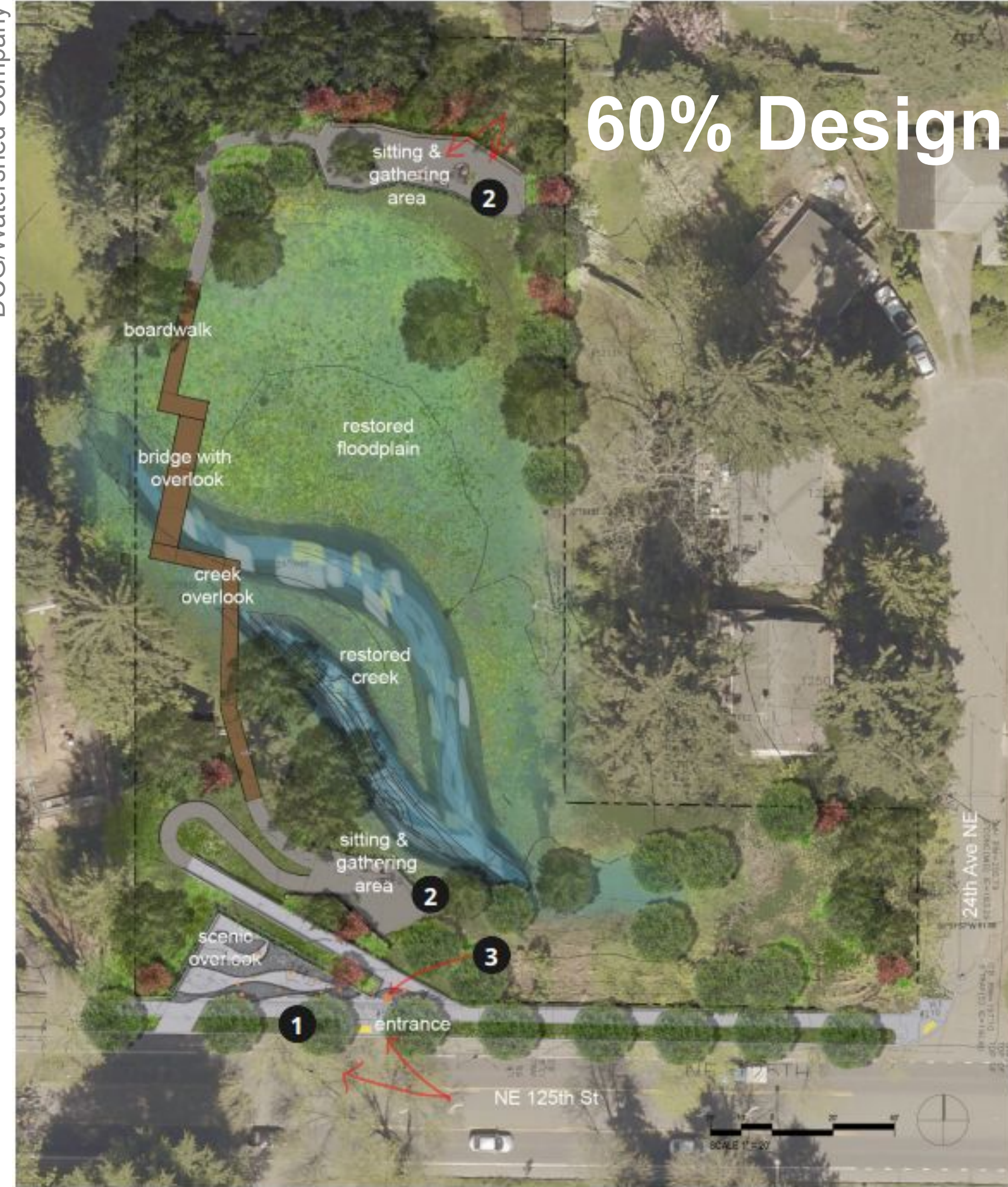
- Maximize floodplain, reduce peak flow and improve sediment dynamics
- Increase channel complexity, improve fish habitat
- Reduce risk to neighboring & downstream properties
- Design for vegetation enhancement and management
- Create a passive park space with low impact amenities, including paths/trails, access to the creek.
- Provide city residents with a way to immerse themselves in nature.
- Address underground infrastructure challenges
- Design to facilitate operations and maintenance



30% Design



60% Design





Lake City Floodplain Park, Seattle
ART INTERVENTION | Stream ecology medallion inlay

Project Cost Sharing

Cost Estimates (\$6.6M+)

- Acquisition: \$1,070,000*
- Demolition: \$397,822*
- Pre-construction Site Management: \$50,000*
- Design: \$2,398,000
- Construction: \$2,800,000*
- *KC Main Design: unknown*

Fundraising

- Grant Funding: \$4,060,050
 - MSFEG: \$1,600,000

**50/50 split by two City departments*



Joint Site Management

- Delineate responsibility above and below OHWM
 - SPU: creek and floodplain area (mostly below OHWM)
 - Creek flows, bank erosion, sediment, and large wood
 - SPR: uplands and riparian area (above OHWM)
 - Vegetation and public amenities
 - SPU shares costs on plant establishment
- SPU responsible for sewer and drainage infrastructure
- SPR responsible for public amenities (i.e., trails, boardwalks, benches, bridge)
- Confirm direction at 30% design, details to be documented in Site Management Plan at 60% design



Partnership Lessons Learned, Learning...

- **Strengths:**
 - Combined resources (subject matter expertise, stakeholders, access to funding, etc.)
 - Synergistic group dynamics, relationships
 - Balancing public access with creek protection (also a challenge)
- **Challenges:**
 - Complicated decision-making and approvals
 - Differences in departmental norms, priorities, and funding
 - Redefining property, breakdown of silos – One City approach
- **Hard with or without partnerships!**
 - Fences, encampments, unhoused neighbors
 - Existing King County Sewer Main (“other people’s pizza”)





Thank you!

Amanda Barnett,
SPR+SPU Liaison
Amanda.Barnett@seattle.gov

Philadelphia Water Department (PWD)

Workforce Development Through Community Partnership

Aaron Kirkland

Philadelphia, PA

Aaron.Kirkland@Phila.gov





Green City,
Clean Waters

A Sustainable Utility in support of a Sustainable City

Drinking Water

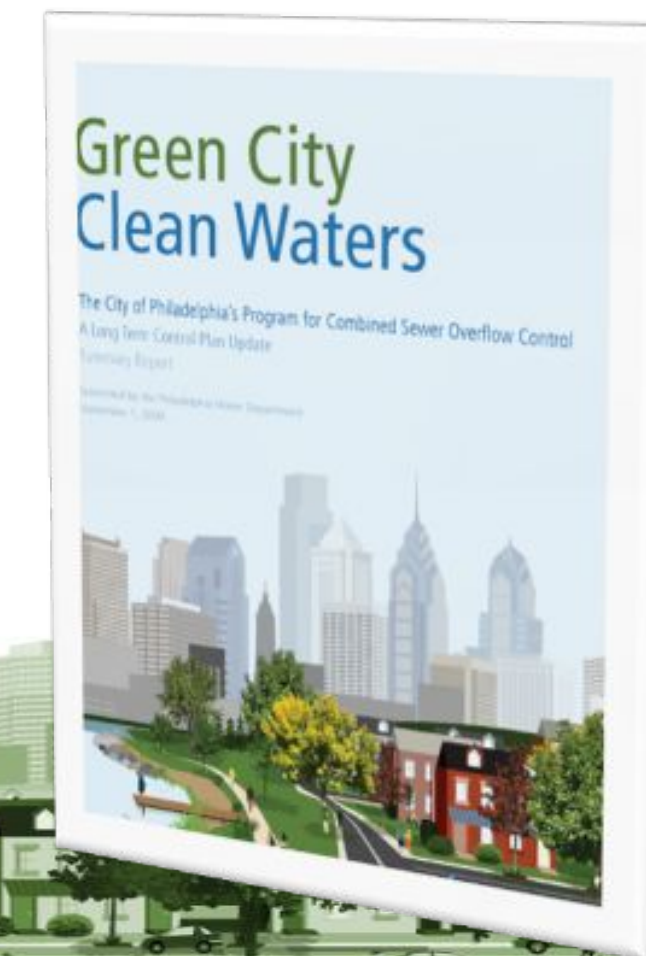
1.73 million customers in Philadelphia, Bucks, Montgomery & Delaware Counties

Wastewater

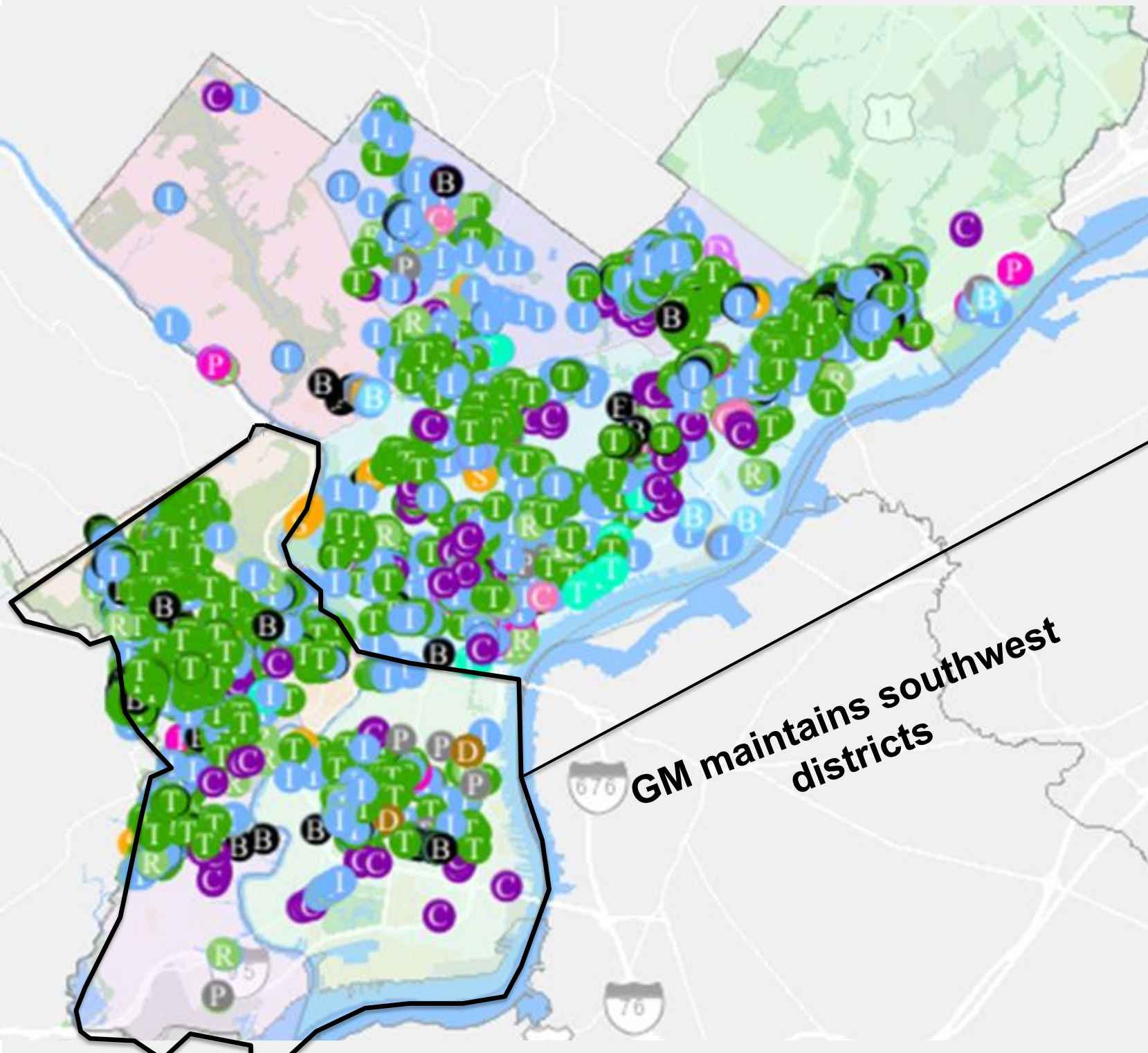
2.22 million customers in Philadelphia, Bucks, Montgomery & Delaware Counties

Stormwater

Philadelphia City/County only

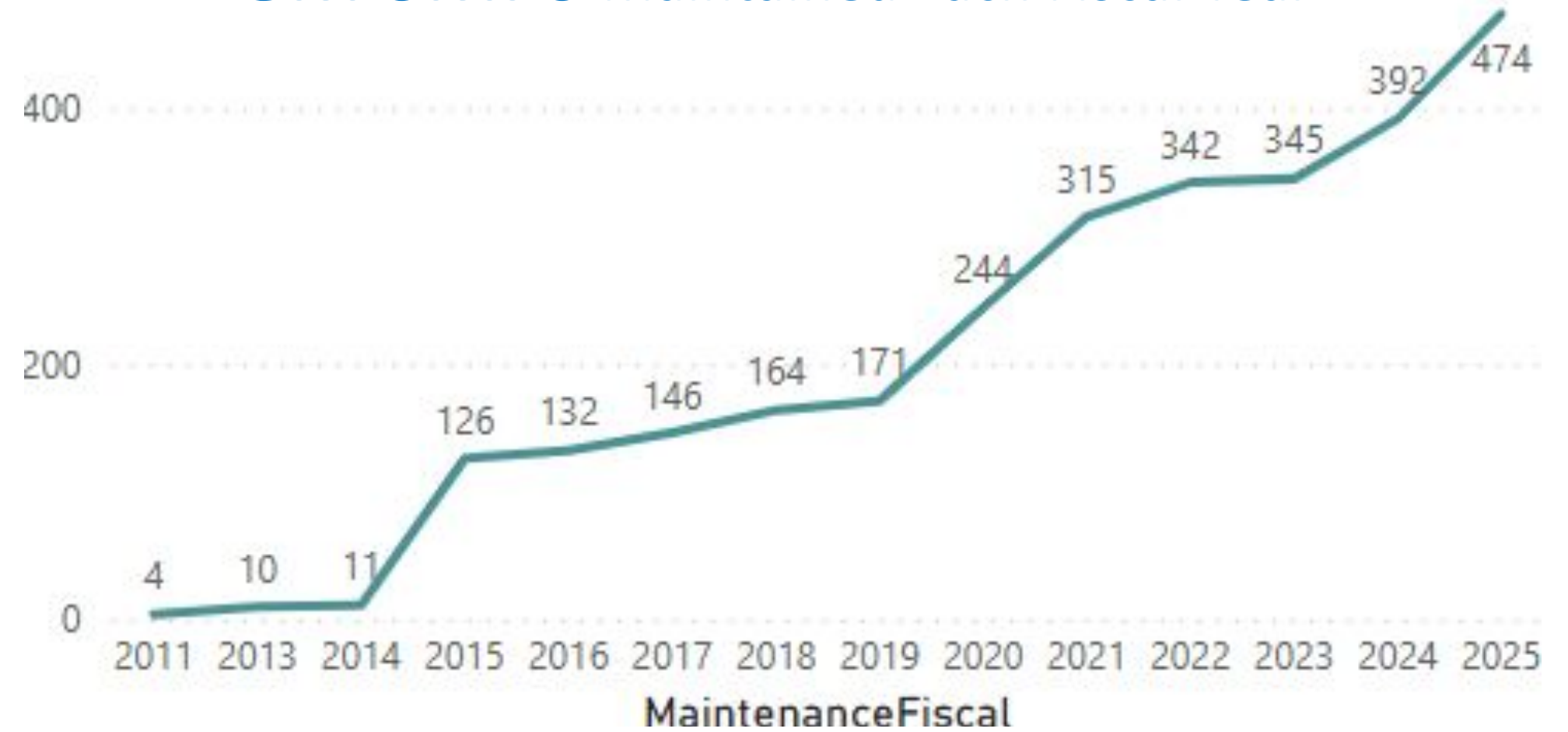


1,943 SMPs Maintained Citywide



PWD Grounds Maintenance

GM SMPs Maintained Each Fiscal Year



tree trenches

rain gardens

planters

stormwater trees



bumpouts

swales

green roofs

Green Stormwater Operations Overview

- GSI Maintenance Group (GSIMN) created in FY2010 in Office of Watersheds
- 2011 21 pilot sites; 100% of surface maintenance via contractor; limited PWD subsurface maintenance
- 2015 1st Internal Maintenance Crew formed
- 2017 GSIMN moved to PWD Operations and became the Green Stormwater Operations (GSO) Unit
 - Technical and Grounds Maintenance staff
 - Support from PowerCorps_PHL and contract labor for surface, subsurface, porous and repair tasks
 - Additional support from SIU Adoption partners (community engagement)
- Currently >1,943 active stormwater maintenance practices (SMPs) FY2023 ~27,500 work orders to fulfill O&M requirements

Philadelphia Water & PowerCorps PHL in Partnership



WORKING WITH
**PHILADELPHIA
WATER**
— DEPARTMENT —



- **Scope of Work**
 - Trash & Debris Removal
 - Organic Materials
 - Sediment
 - Construction Debris
 - Other (short dumping)
 - Hand -weeding
 - Collaborative projects
 - Skill transfer from PWD Staff
 - GSO Surface and Grounds Teams
 - Waterways Restoration



A group of six construction apprentices are posing for a photo in a wooded area. They are all wearing high-visibility safety vests and hard hats. The person on the far left is holding a red surveying pole. The person in the center is wearing a white hard hat. The person on the far right is holding a blue folder. In the background, there are several white SUVs parked in a lot. The text "Apprenticeship Program" is overlaid in the center of the image.

Apprenticeship Program

12-24 months

Staff Trainings & Skill Development



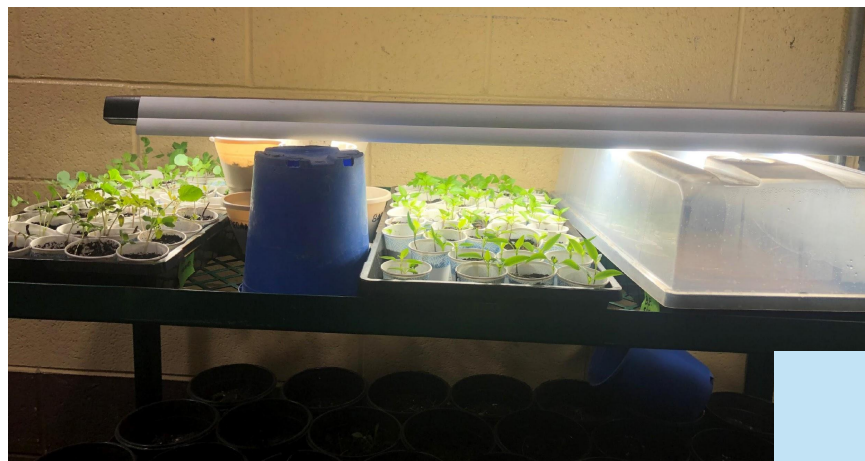
Investing in Staff to Build Skills

- Center for Watershed Protection Clean Water Certificate Program
- Surveying
- Inspections
- Pruning
- Structural Repairs
- Planting
- Plant Identification
- Mulching
- CityWorks
- Erosion Control
- Seeding
- Wetland Maintenance
- Hydrants
- Landscape Plans
- Pesticide Usage
- Plant Propagation

Grounds Maintenance Training Series

Month	Focus Area	Topics Highlighted
January	Program Orientation	Maintenance Manual, CityWorks, HUB
February	Vegetation Management	Weed ID, Vegetation Cutbacks
March	Equipment & Field Skills	Survey, Small Engines, Chainsaws, Mowers
April	Planting Season Begins	Transplanting, Watering Techniques
May	Planting & Soil Science	Container Plants, Soil Basics
June	Water Management	Hydrant Reports, Irrigation
July	Advanced Plant ID	Native Plants, Biology, Taxonomy
September	Seeding	Turfgrass & Seeding Techniques
October	Mulching & Beds	Bed Preparation
November	Structural Maintenance	Concrete, Pruning, Snow Ops
December	Specialized Topics	Erosion, Pesticide License, Wetlands

NEW FALL 2024 Plant Propagation Team



Started **seedlings** for 5 GSI plant species
Splitting & storing 3 more species
Growing 15 vegetable species for a staff garden



PWD-GSO Plant ID Quiz 1

Chapter ▸ Question #1

[Quiz Question Index](#)

Question 10 of 10 (ID:940159)

Flag Question: ☐

Which tree's leaves are this?



Possible Answers:

- ☐ Yellowwood
- ☒ Japanese Tree Lilac
- ☐ Kentucky Coffeetree

PWD-Test GSO Weed Course

[Glossary](#) ▸ [Glossary Activity](#)

[← Prev](#) [Next →](#)

What's that plant part



Choose Your Contestant

[← Prev](#) [Next →](#)

GREEN STORMWATER OPERATIONS (GSO) GROUNDS MAINTENANCE



Career Ladder

Leadership (2 originally Apprentices)

Crew Chiefs (3 originally Apprentices)

GM Workers (8 promoted from Apprentices, 1 from PowerCorps)

Apprentices (30 total hired, 23 from PowerCorps)

PowerCorps Volunteers



structural repairs

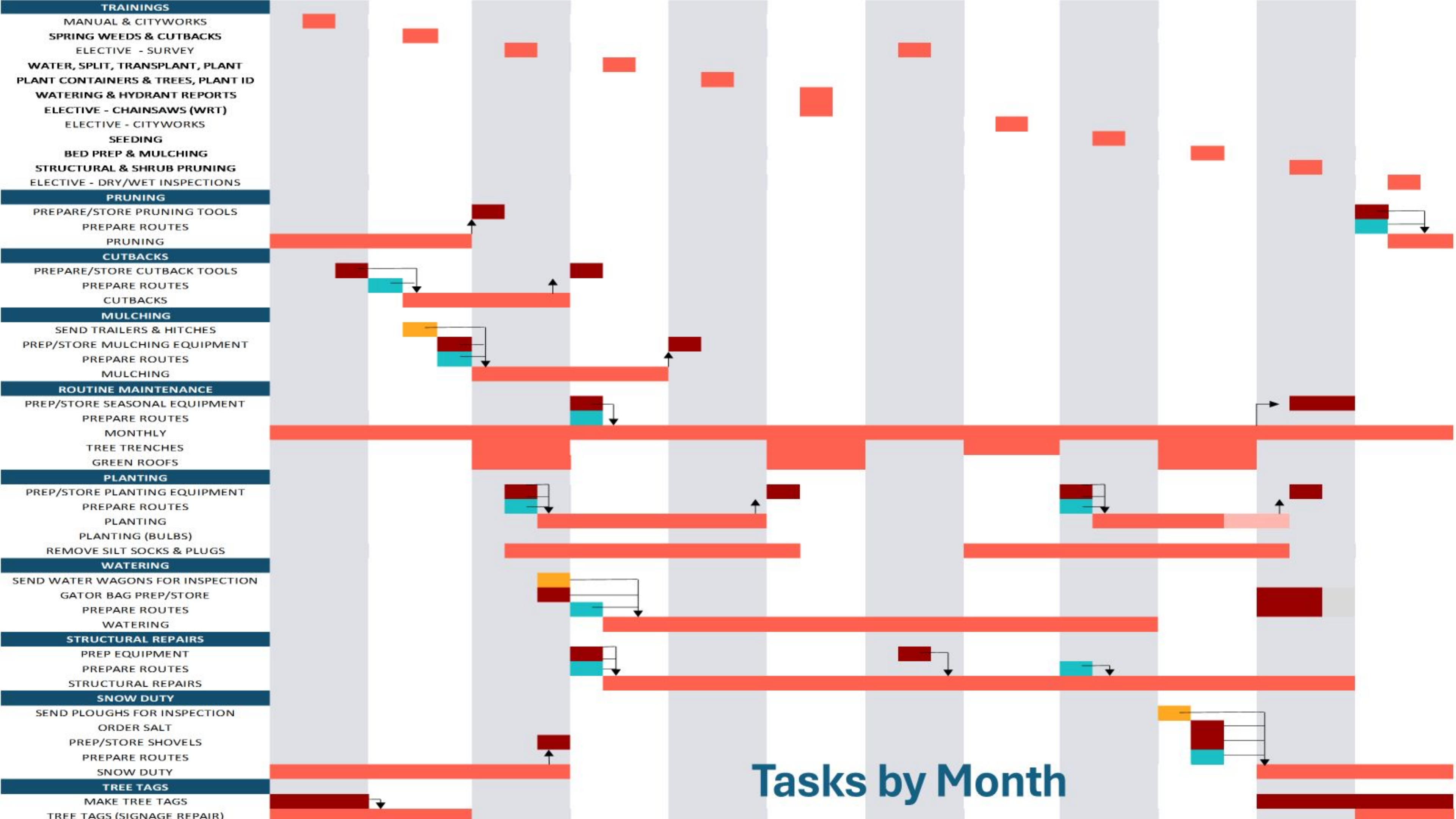


vegetation repairs

4,939

Work Orders Completed
by GM in FY 2024







GREEN INDUSTRY PROFESSIONALS



Key Take-Aways

Intentional Growth of GSO

- Rooted in internal skill-building and apprenticeship development
- 40% of SMPs now maintained by in-house staff
- Community ambassadors bring lived experience and pride to the work

PowerCorpsPHL as a Workforce Engine

- Serves as a buffer and foundation of the green jobs pipeline
- 35+ hires through partnerships, many now in leadership
- Apprenticeship model provides real advancement with testimonies

Scaling for the Future

- Growth paced to match onboarding and logistics capacity
- New facility will require expanded mentorship and support systems
- Long-term success depends on deepening community hiring and partnerships



PHILADELPHIA
WATER
— DEPARTMENT —

THANK YOU!

Aaron.Kirkland@phila.gov

Community Based Green Infrastructure

Milwaukee Metropolitan Sewerage District



GREEN
INFRASTRUCTURE
LEADERSHIP
EXCHANGE



MMSD

PARTNERS FOR A CLEANER ENVIRONMENT





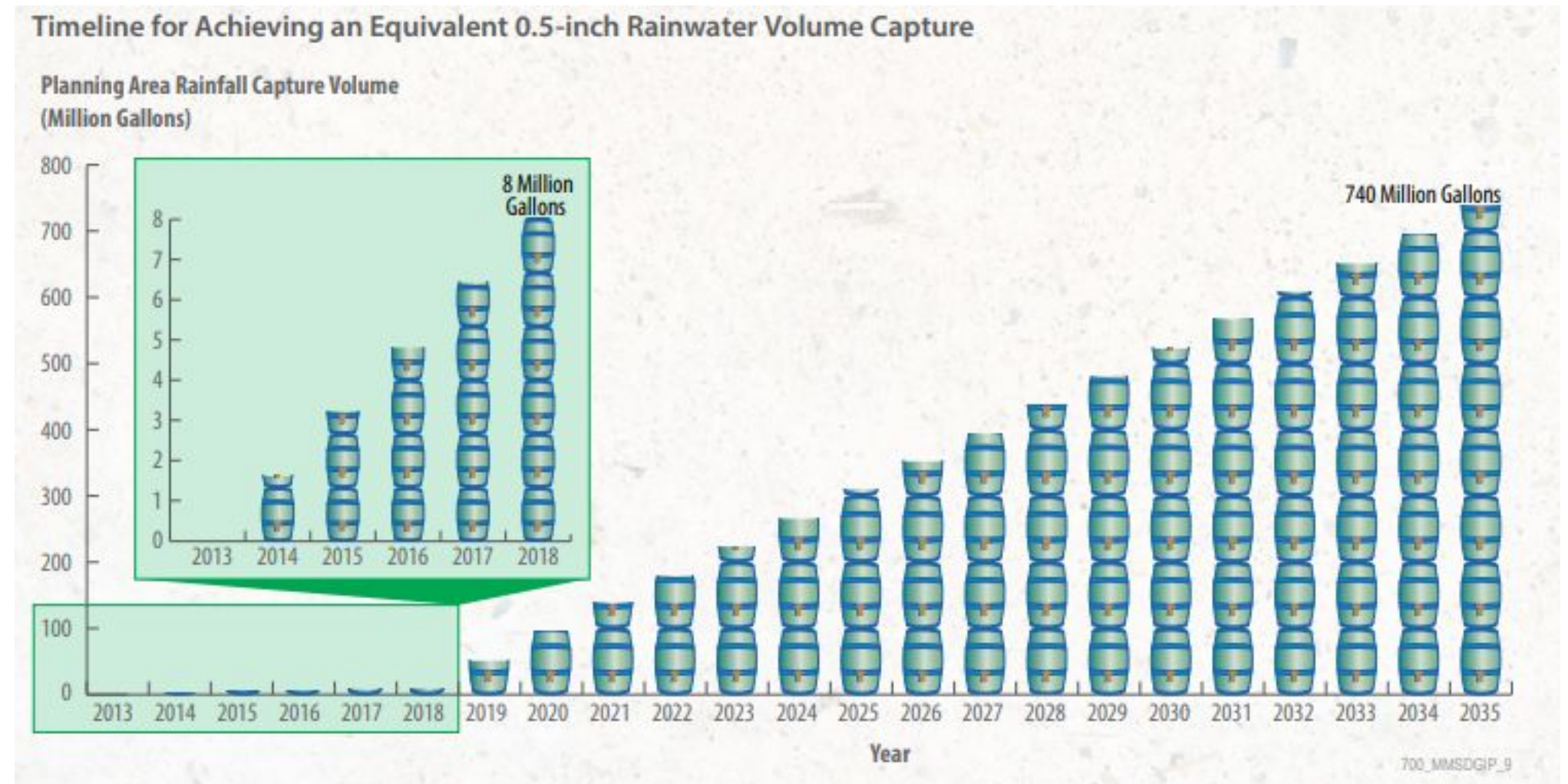
Milwaukee Metropolitan Sewerage District



Envisions a healthier, cleaner, resilient region.

Need for Innovation / Why CBP3?

- Existing programs all reimbursement based
- Need to ramp up our implementation to meet goals
- Streamline programs
- Funding Gaps (RFAs, partial payments)
- Maintenance Gap
- Staffing Resources



Overview

Consultant oversees sourcing project, design, construction, and 5 years of vegetation establishment

	Fresh Coast Protection Partnership (Phase 1)	Fresh Coast Green Communities (Phases 2 & 3)
Contracted Partner	Corvias / CIS, LLC	Greenprint Partners
Contract Amount	\$29.72 MD	\$31.74 MD
Planned Total Gallons	11.61 MG	10.4 MG
Cost per Gallon	\$2.36 (at risk sourcing, design + construction)	\$2.48 (design + construction)
Payment	Fixed cost / Consultant paid after inspection & signed easement	Guaranteed Maximum Price (fixed & variable costs, pay actual cost per gallon)
Metrics	Private Property, Low to Moderate Income Areas, CSSA, Outside City of Milwaukee	CSSA, High SVI, High Imperviousness

Fresh Coast Protection Partnership

Key Stats

- **Launch:** March 2020
- **Contract:** \$29.72M
- **Goal:** 11.5-million-gallon goal by 2025

2021-22 Project Master List

- 11 projects totaling 8.85 MG in volume capture
- 1 Project construction complete
- 5 Projects in construction

2022-23 Group B

- 12 projects totaling 3.35 MG in volume capture

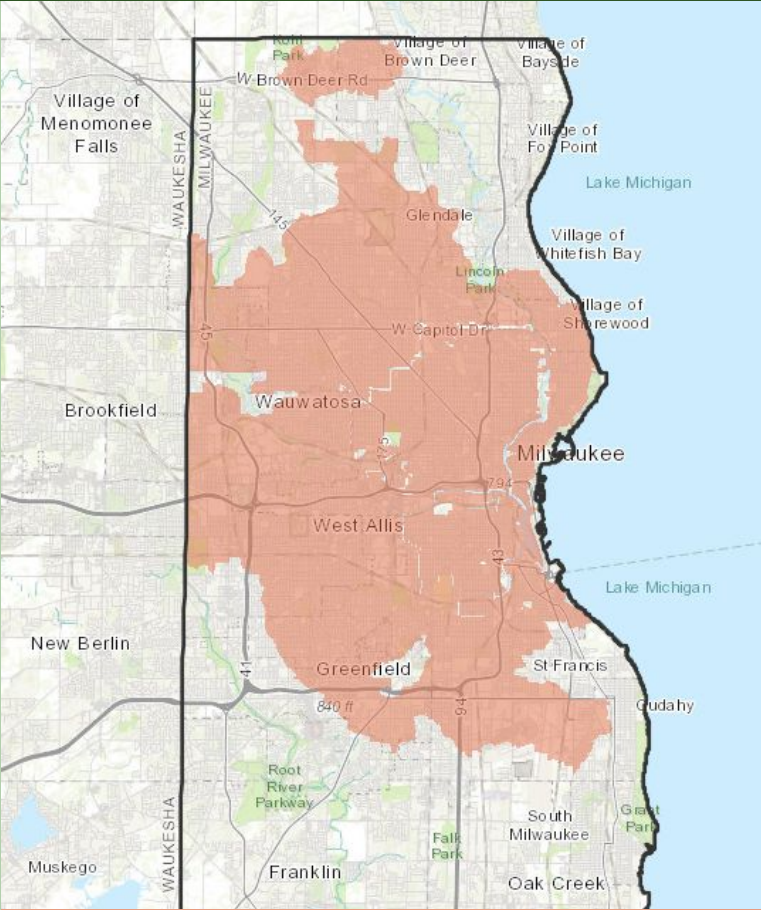


Fresh Coast Green Communities

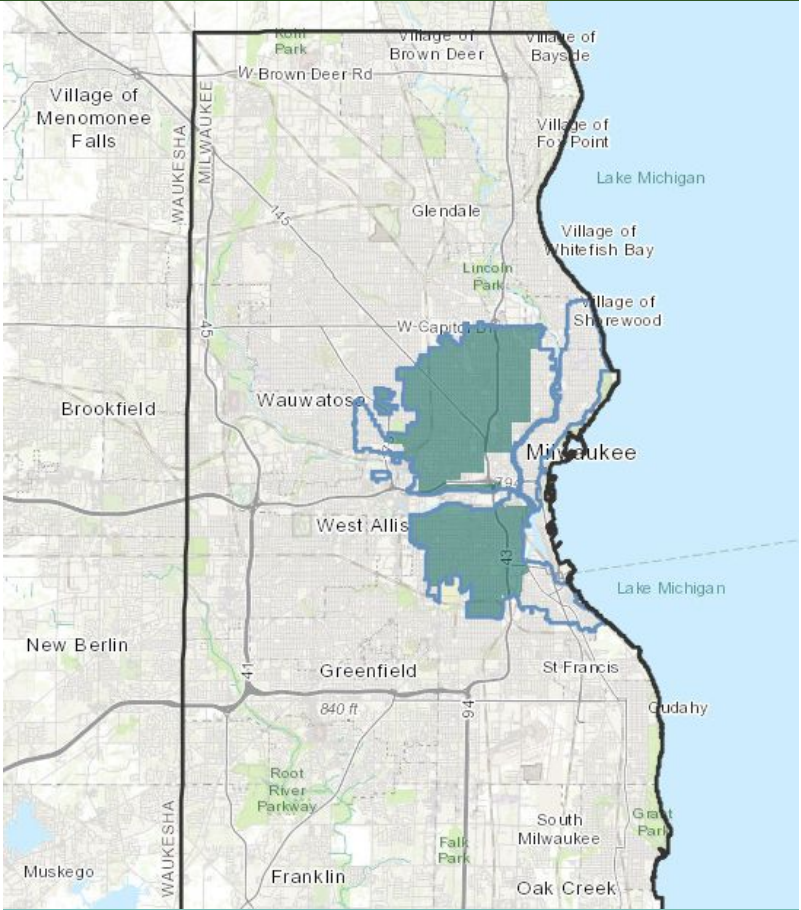
Portfolio Metrics

PHASE 2	Contract Goals	Actual
Price	≤ \$3/gal	\$2.87/gal
Total Gallons Managed (GM)	6M to 8M	6M
Portfolio Metrics		
% Gallons in High Impervious Area	50% (+/- 10%)	60%
% Gallons in High SVI + CSSA	50% (+/- 10%)	40%

PHASE 3	Contract Goals	Actual
Price	≤ \$3/gal	\$2.12/gal
Total Gallons Managed (GM)	3M to 4M	4.4M
Portfolio Metrics (projects must achieve 2 out of 3 metrics below)		
% Gallons in High Impervious Area	100%	
% Gallons in High SVI	100%	
% Gallons in CSSA	4%	



High Impervious Area
(>40%)



Area of High SVI within
CSSA (>0.75)

- 90% of projects are in areas of high SVI
- 100% of gallons/projects are in a high impervious area
 - 71% of projects are the in CSSA
- 53% S/W/MBE utilization on construction contracts

Fixed Price - FCPP

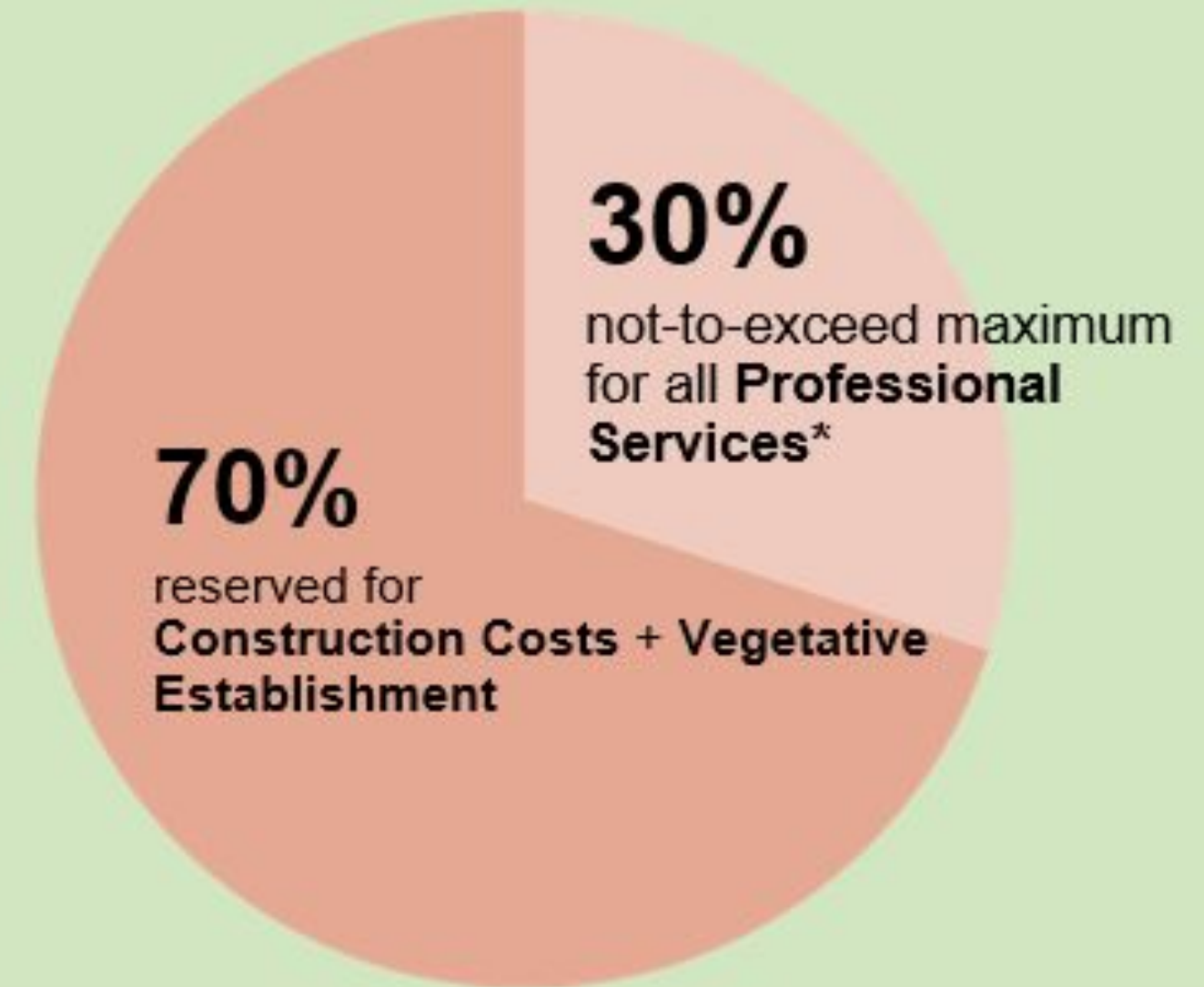
- **Cost Certainty:** MMSD knows exactly what they will pay per gallon
- **Incentivized Delivery:** CIS is only paid once projects are certified and deliver verified performance outcomes
- **Design + Build at Risk:** Transfers financial and delivery risk from MMSD to CIS—CIS must deliver functional, certified GSI before payment
- **Accountability Through Certification:** Independent verification of performance ensures transparency, quality control, and environmental benefit.

Guaranteed Maximum Price - FCGC

Project Phase	Design Engineering + Construction		Maintenance (5 years)
	Meet	Exceed	
Stormwater requirements	Meet	Exceed	
Cost Reimbursement– Competitive Bid	50%	100%	100%
Cost Reimbursement– Non-Competitive Bid	Negotiated price per gallon managed		100%

GMP Structure

A Program-Level GMP in the amount of the total program budget



*PM, origination, design, construction bidding + mgmt

An aerial photograph of Davidson Park, a circular green space in the heart of a city. The park features a central circular area with a decorative pattern, surrounded by concentric rings of paved walkways and greenery. In the background, there are large, multi-story brick buildings, including a prominent one with a water tower on its roof. The scene is captured during the golden hour, with warm sunlight illuminating the park and surrounding urban area.

Davidson Park (Harley-Davidson) - FCPP

- Transformed parking lot into model inner city green space
- CIS financed GI upfront
- 232,279 gallons captured
- \$20M overall project value
- Bioswales, permeable paving, native plantings

Orthopaedic Hospital of Wisconsin - FCGC

- **Green Infrastructure**

- Stormwater Trees
- Native Plantings
- Bioretention Basin



- **Gallons Managed**

- 255,667 gallons

- **Program Metrics**

- High SVI: 0.61
- High Impervious Area: 47%
- Located within the SSSA

- **Schedule**

- Construction Start Date: July 2024



Lisa Sasso
Senior Project Planner
Lsasso@mmsd.com

Thank you for the privilege of your time and attention!



Barbara Hopkins, Exec. Dir.
Green Infrastructure Leadership
Exchange
barbara@giexchange.org



Amanda Barnett, Senior Planner &
Liaison
Seattle Public Utilities &
Seattle Parks & Recreation
amanda.barnett@seattle.gov



Aaron Kirkland, Superintendent,
Green Stormwater Operations
Philadelphia Water Department
aaron.kirkland@phila.gov



Lisa Sasso, Senior Project Planner
Milwaukee Metropolitan Sewerage
District
lsasso@mmsd.org

Additional Resources



Community Based Public Private Partnerships (CBP3s) and Alternative Market-Based Tools for Integrated Stormwater Infrastructure

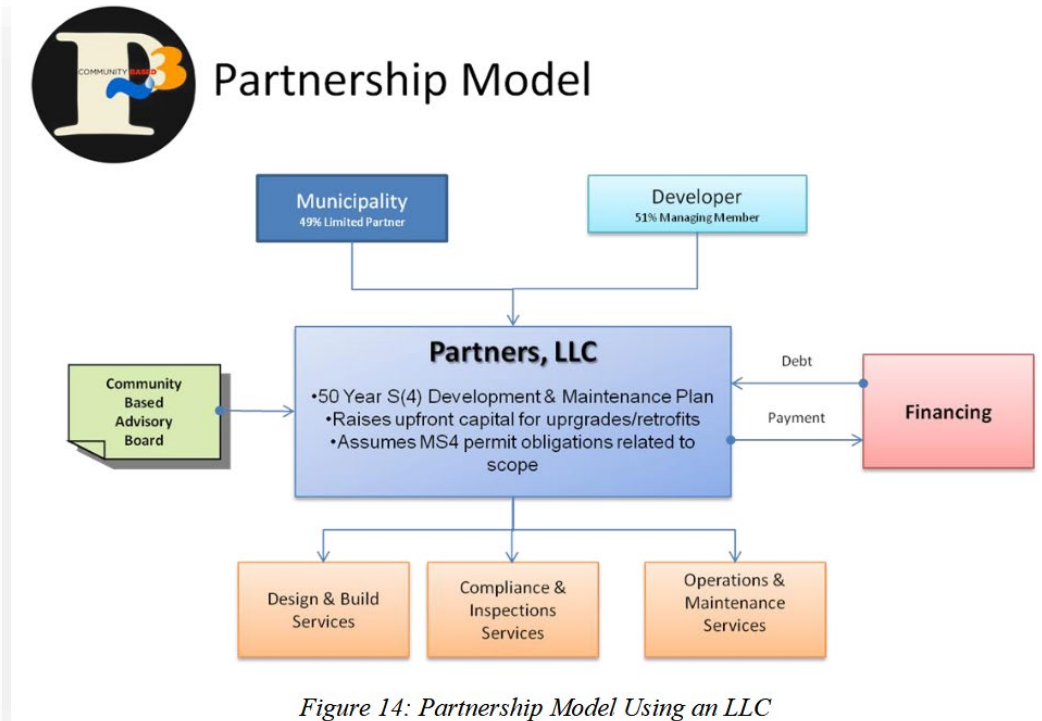
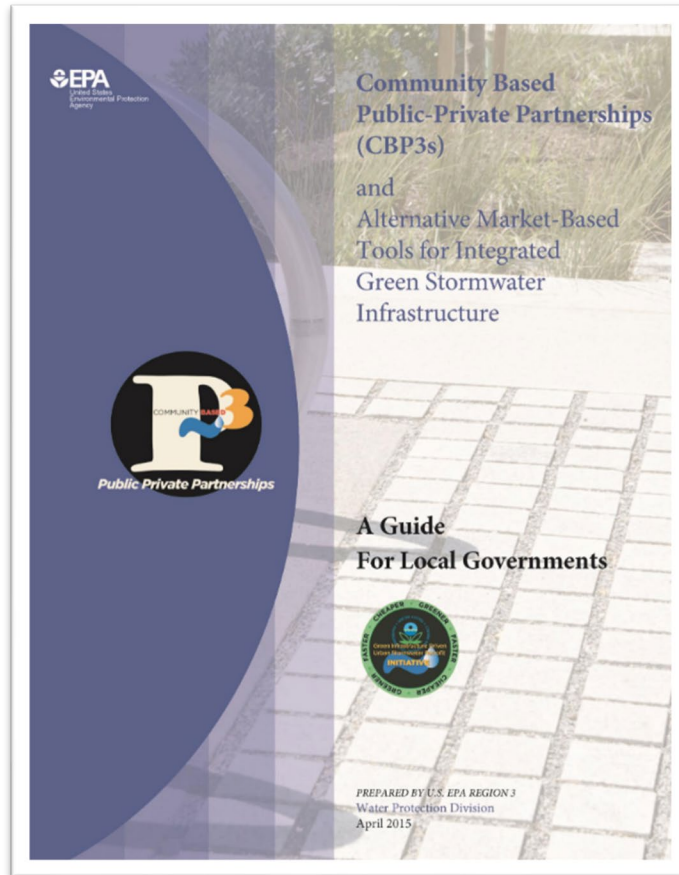
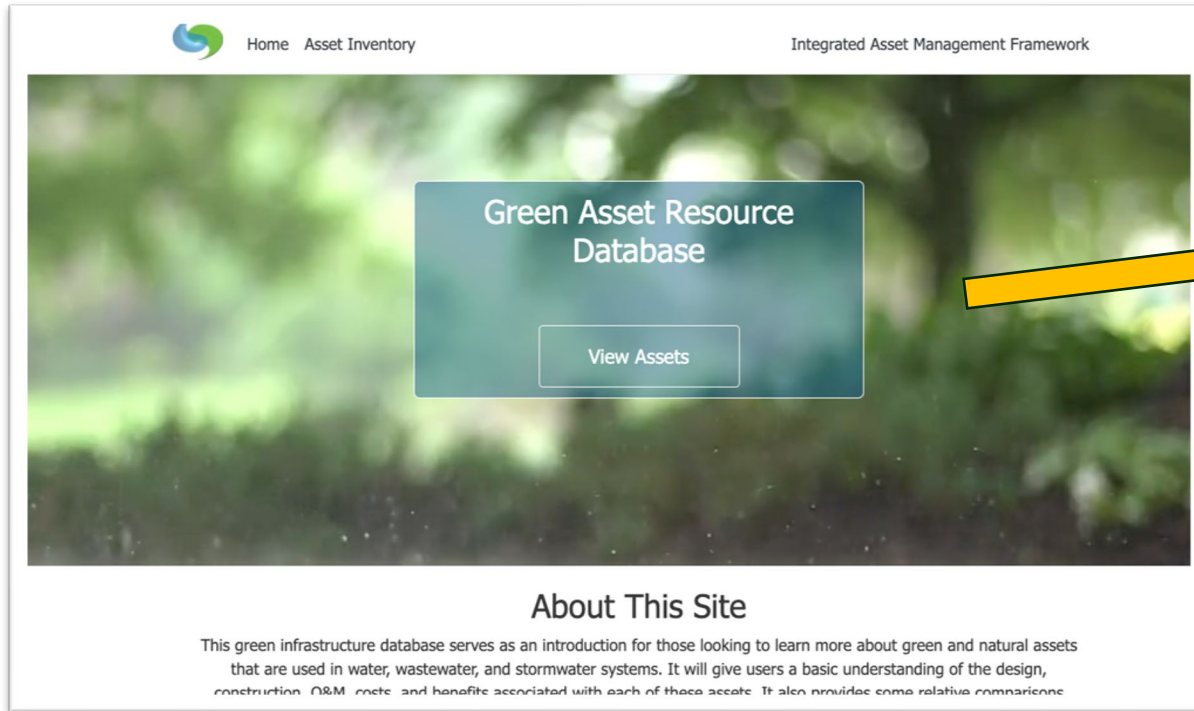


Figure 14: Partnership Model Using an LLC

https://www.epa.gov/sites/default/files/2015-12/documents/gi_cb_p3_guide_epa_r3_final_042115_508.pdf

Integrated Asset Management Framework & Green Asset Resource Database



The screenshot shows the 'Green Asset Resource Database' table. It has a search bar at the top right and a 'Show 10 entries' dropdown at the top left. The table has columns for Name, Asset Type, Construction Rank, O&M Difficulty, and Action. Each row includes a small image of the asset, a 'View' button, and a 'Reset Filters' button.

Name	Asset Type	Construction Rank	O&M Difficulty	Action
Bioretention Areas	Enhanced	2	2	View
Blue Roof	Engineered	3	3	View
Constructed Wetlands	Natural	5	2	View
Curb and Gutter Elimination	Engineered	2	1	View
Downspout disconnection	Engineered	1	N/A	View
Drainage Ditch or Channel	Enhanced	2	2	View

<https://swefcapps.unm.edu/gardb>

Question & Answer Session



Green Infrastructure Webinar Series

Join us for this 10-part webinar series focused on the financial, managerial, and technical aspects of green infrastructure. Experienced practitioners, policy and funding experts, as well as academics, will discuss the opportunities and challenges facing the implementation of green infrastructure. These informative sessions will be offered quarterly, from April 2024 to July 2026.

Series Host: Shannon Pepper, Research Scientist, *Southwest Environmental Finance Center*

Green Infrastructure 101

April 18, 2024 | 12:00-1:00 EDT

[Watch Here](#)

Equitable Green Infrastructure in a Changing Climate

July 25, 2024 | 12:00-1:15 ET

[Register Now](#)

Navigating the Green Infrastructure Policy Landscape

October 10, 2024 | 12:00-1:15 ET

[Register Now](#)

Asset Management for Green Infrastructure

January 23, 2025 | 12:00-1:15 ET

[Register Now](#)

Funding Green Infrastructure

April 24, 2025 | 12:00-1:15 ET

[Register Now](#)

Power of Partnerships in Green Infrastructure

July 17, 2025 | 12:00-1:15 ET

Registration TBA

Building a Green Infrastructure Workforce

October 16, 2025 | 12:00-1:15 ET

Registration TBA

Green Infrastructure Frameworks for Environmental Justice

January 22, 2026 | 12:00-1:15 ET

Registration TBA

Source Water Protection & Watershed Planning in the Face of Wildfires

April 16, 2026 | 12:00-1:15 ET

Registration TBA

Bridging the Gap: Integrating Land & Water Planning for Sustainable Futures

July 16, 2026 | 12:00-1:15 ET

Registration TBA

<https://efcnetwork.org/training-events>



SOUTHWEST
ENVIRONMENTAL
FINANCE CENTER



Please fill out the survey for this webinar!



Thanks for attending!

Next webinar in our Green Infrastructure Series:

Building a Workforce for Green Infrastructure Maintenance

October 16, 2025

Shannon Sloane Pepper
Webinar Series Host

spepper@unm.edu



SOUTHWEST
ENVIRONMENTAL
FINANCE CENTER

