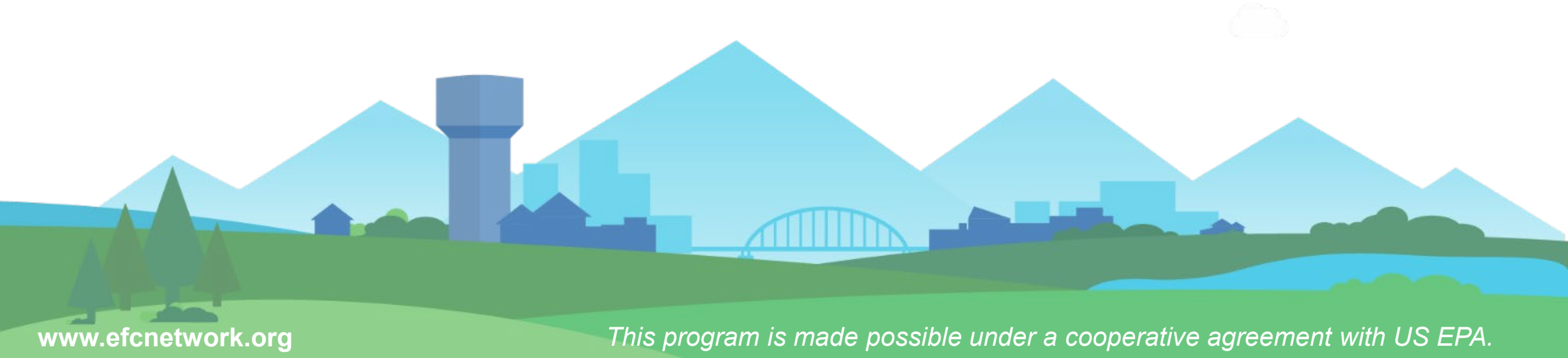
# Green Infrastructure Webinar Series
# Introduction: Green Infrastructure 101

Thursday, April 18th, 2024





*This program is made possible under a cooperative agreement with US EPA.*

# Logistics

## 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

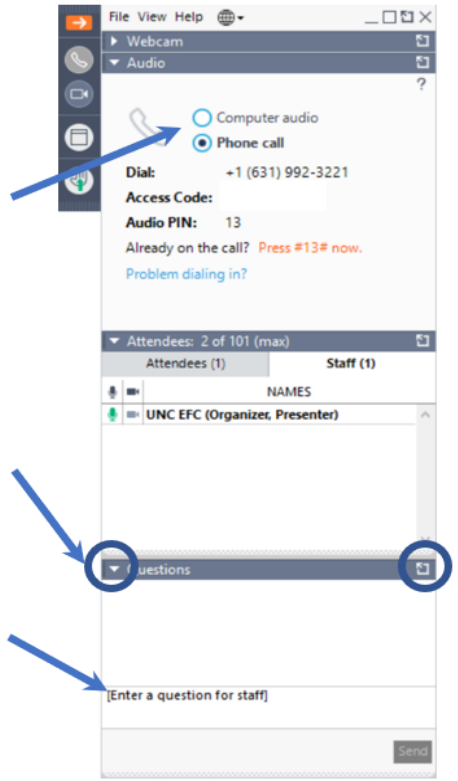
## Using the control panel

**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.

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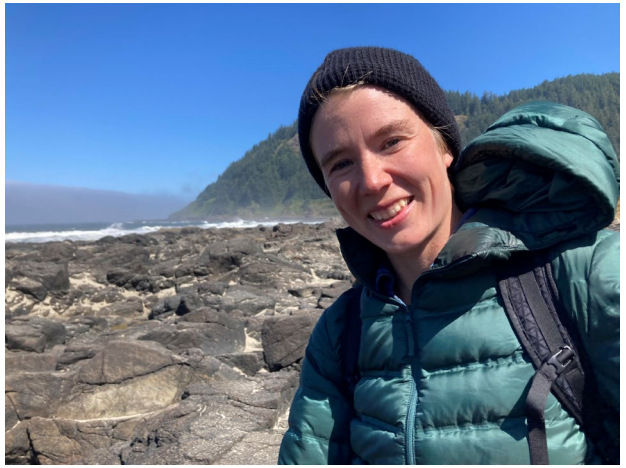
# About Us

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.

# Today's Speakers



**Shannon Sloane Pepper**
Research Scientist

SOUTHWEST ENVIRONMENTAL FINANCE CENTER

**Sarah Hurteau**
Principal Ecologist

BiS

**Amy Bell**
Principal Landscape Architect

groundworkstudio

# About You!

Please complete the poll that pops up on your screen.

# Why Green Infrastructure

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

*Photo credit: NRCS Oregon*

# What is Green Infrastructure?

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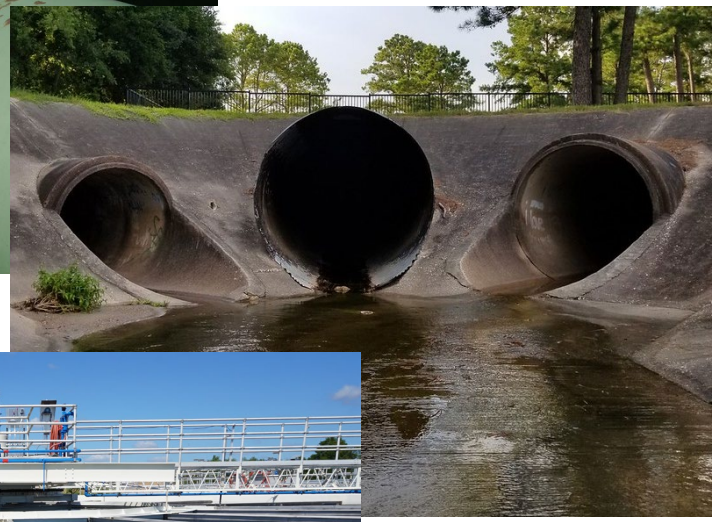
# Water/Wastewater/Stormwater Infrastructure

## Gray:



## Green:

*Photo Credits (top-bottom, left-right): Marcel Kortekaas; Wikipedia; Florida Water Daily; Montgomery County Planning Commission; Radcliffe Dacanay; Robert Rogers*

# Stormwater Infrastructure

## Gray


Storm drain

## Green

Permeable pavement + rain garden

**Function:** Collect stormwater to prevent localized flooding on sidewalk and road

**Some co-benefits of permeable pavers + rain garden**:

- Filtration of water through soil beneath pavers
- Dispersed absorption – stormwater does not make it to wastewater treatment plant
- Space for public enjoyment, habitat

*Photo credits (left-right): Tim Evanson; Center for Neighborhood Technologies*

# Stormwater Infrastructure

Gray

Sewer pipe

Green

Infiltration trench

**Some co-benefits of infiltration trench**:

- 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

*Photo credits (left-right): Pam Broviak; Aaron Volkening*

# Wastewater Infrastructure

## Gray

Wastewater Treatment Plant

## Green

Constructed Wetland

**Some co-benefits of constructed wetlands**:

- Habitat
- Flood mitigation
- Air quality improvement
- Space for public enjoyment and engagement

**Function:** Treat municipal wastewater & return cleaned water to a nearby water body without harm to humans or the environment

*Photo credits (left-right): Water Alternatives; SW EFC*

# Why Green Infrastructure?
# Climate Change Resiliency

- Capture
- Slow
- Filter

*Photo credit: MB Ruxelle*

# Why Green Infrastructure? Co-benefits

- Increased habitat for wildlife
- Improved air quality
- Improved mental health of community members
- Aesthetics
- Benefitting the watershed and everyone downstream
- Bioremediation
- Reduced burden on wastewater treatment plants
- Financial efficiency

*Photo credit: SW EFC*

# Why Green Infrastructure? Partnerships

Utilities, Public Works

Planners, Architects, Engineers

Community Groups & Non-profits

Technical Assistance Providers

*Photo credits (left-right): Adobe Stock (licensed); WA State Department of Ecology; Pennsylvania Dept of Environmental Protection*

# Why this series?

- We have found that there is a dearth of free, accessible trainings & webinars on GI implementation
- We intend to highlight the ways that **effective planning, implementation and maintenance of GI demands partnerships across departments and disciplines**

*Photo credit: NRCS Oregon*

# Webinar Series Overview

| Title | Date (tentative) |
|---|---|
| Green Infrastructure 101 | 18 April 2024 |
| Equitable Green Infrastructure in a Changing Climate | July 2024 |
| Navigating the Green Infrastructure Policy Landscape | October 2024 |
| Asset Management for Green Infrastructure | December 2024 |
| Funding Green Infrastructure | January 2025 |
| Partnerships are Critical to Successful Green Infrastructure | March 2025 |
| Building a Green Infrastructure Workforce | July 2025 |
| Green Infrastructure Frameworks for Environmental Justice | October 2025 |
| Source Water Protection and Watershed Planning for Wildfire | January 2026 |
| Bridging the Gap: Integrating Land and Water Planning for Sustainable Futures | March 2026 |

# GSI Challenges

## Property ownership

- Watersheds don’t honor jurisdictional boundaries
- New policy / existing property design

## Fear of Change

- Myths
- Liability concerns

# GSI Myths

**Change can be scary, but it doesn't have to be:**

- Regional research and success stories exist
- Local experts and champions

**"Not doing anything doesn't cost nothing"**

# Myth: GSI means more maintenance

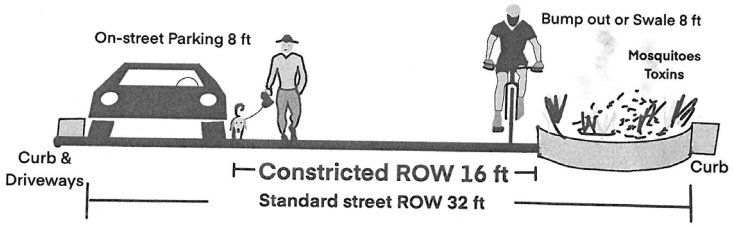
# Myth: GSI compromises pavement


# Myth: GSI creates standing water

Ad Hoc Stormwater Drainage Mgt. Team Attachment #2. Page 1

## Stormwater Action Alert #2

The City has plans to use our neighborhood as a "pilot project" for a stormwater plan (GSI). The following impacts to public health and safety have not been adequately analyzed, nor have better alternatives been examined: **1) constricted right-of-way; 2) mosquitoes, 3) toxicity, 4) less damaging alternatives.**




**1) Dangerous Right-of-Way Downsizing**

All street Right Of Ways (ROW) in Mile Hi and Pueblo Alto neighborhoods are 32 feet wide. Each bump-out and swale on the average may be 8 to 9 feet wide. Length will vary. Bump-outs and swales, combined with on-street parking could dangerously constrict clear ROW to only 16 ft. Large vehicles, like first responders, fire trucks, UPS, FedEx, and trash collection would struggle to pass another oncoming vehicle. Alvarado, our most recently repaved street, would have it's new surface torn up by about 20 bump-outs and swales.

Currently, pedestrian traffic is forced onto the street due to driveway cuts through the sidewalk; this includes dog walkers, parents with strollers, and the disabled. Alvarado and Summer also constitute important sections of the City's Bicycle Boulevard. Some of this on-street bicycle and pedestrian traffic could be forced into the remaining constricted ROW at certain locations, increasing risk of accidents.

One of those accidents did occur about 2002, when parking was allowed on both sides of Alvarado, between Lomas and Alice, leaving only 16 feet of ROW. A cyclist was caught in that narrow corridor and severely injured. As a result, that section of Alvarado today is posted "No Parking" and both curbs are painted yellow. The street was restored to its original 32 foot ROW. There are good public safety reasons to retain the standard 32 foot ROW.

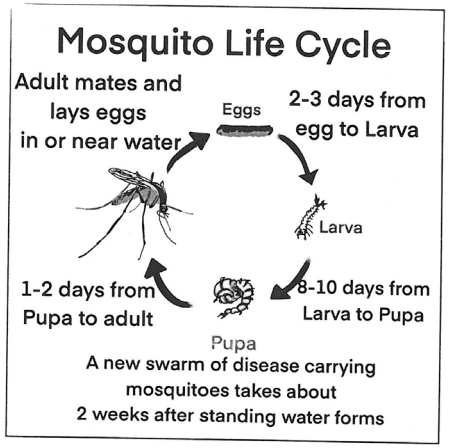
**2) Mosquitos in Bernalillo County: cabq.gov, CDC website**

It only takes a bottle cap of water for mosquitoes to lay hundreds of eggs.

Humans acquire deadly viruses from the bites of infected mosquitos. The most deadly of these is the West Nile virus. Last year there were 33 human cases of West Nile, mostly in Bernalillo county. Mild symptoms are flu like. Severe cases can have high fever, vomiting, diarrhea, coma, seizures, encephalitis, and death. We nearly lost a neighbor on Alvarado to West Nile a few years ago.

A new mosquito has invaded Albuquerque in the past few years.These are the Aedes Aegypti mosquitoes. They are vectors of viruses like Yellow Fever, Zika, and Dengue. According to Albuquerque's Environmental Heath Department website: (*https://www.cabq.gov/environmentalhealth*), Aedes aegypti prefer to live near people as humans are their primary blood source and are considered aggressive biters. Eggs of this species are drought resistant. The eggs can survive in damp soil and thick vegetation. They can survive over winter.

The City's GSI plan would dangerously foster the habitat of these mosquitoes. Creating more habitat for mosquitoes to survive in a residential neighborhood is a consequence the City simply denies.





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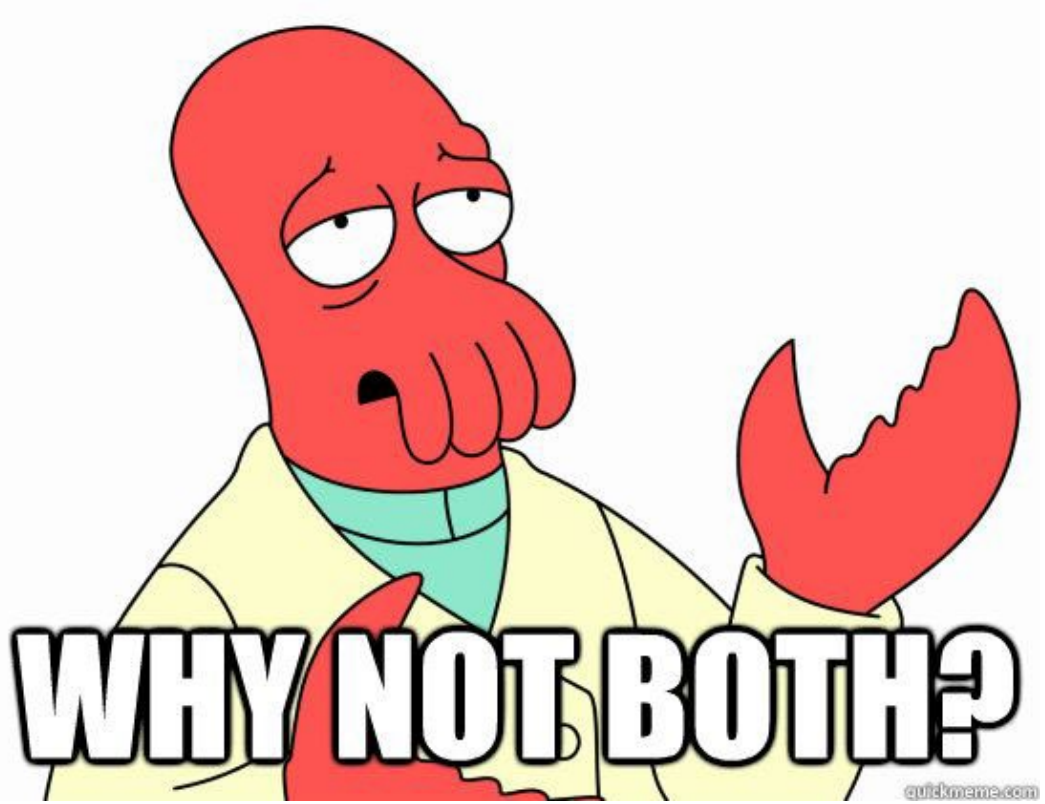
# Myth: GSI isn't as good as Gray Infrastructure

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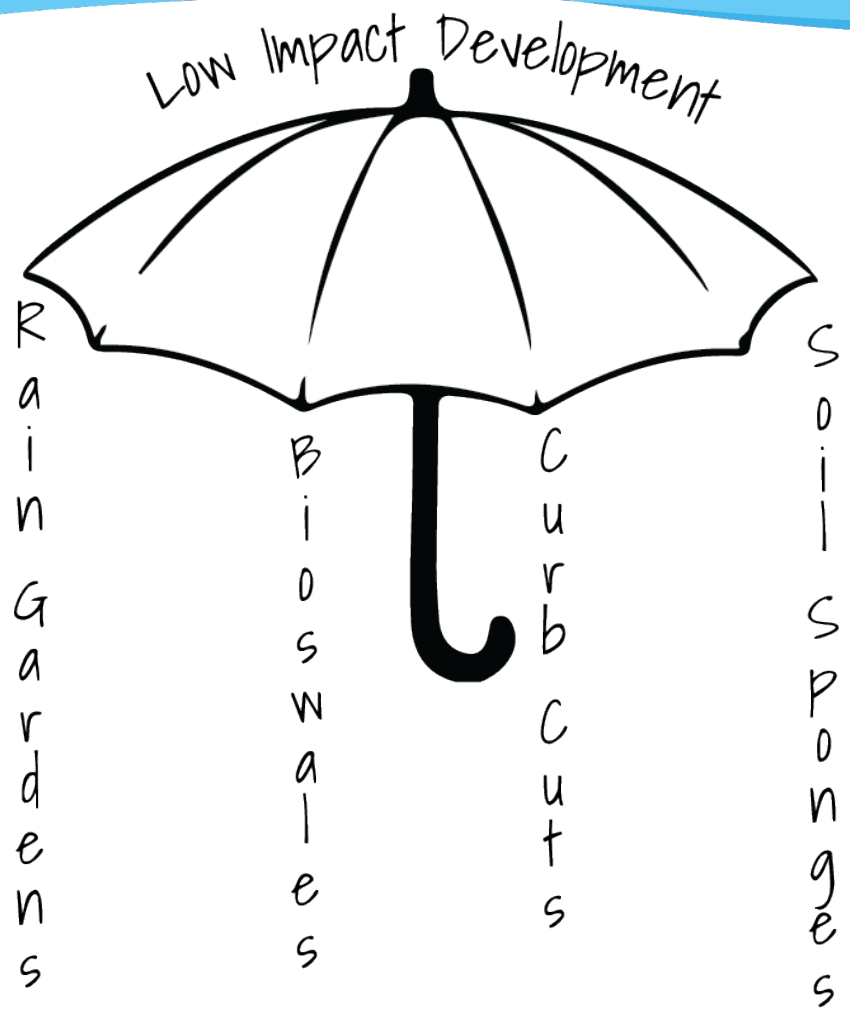
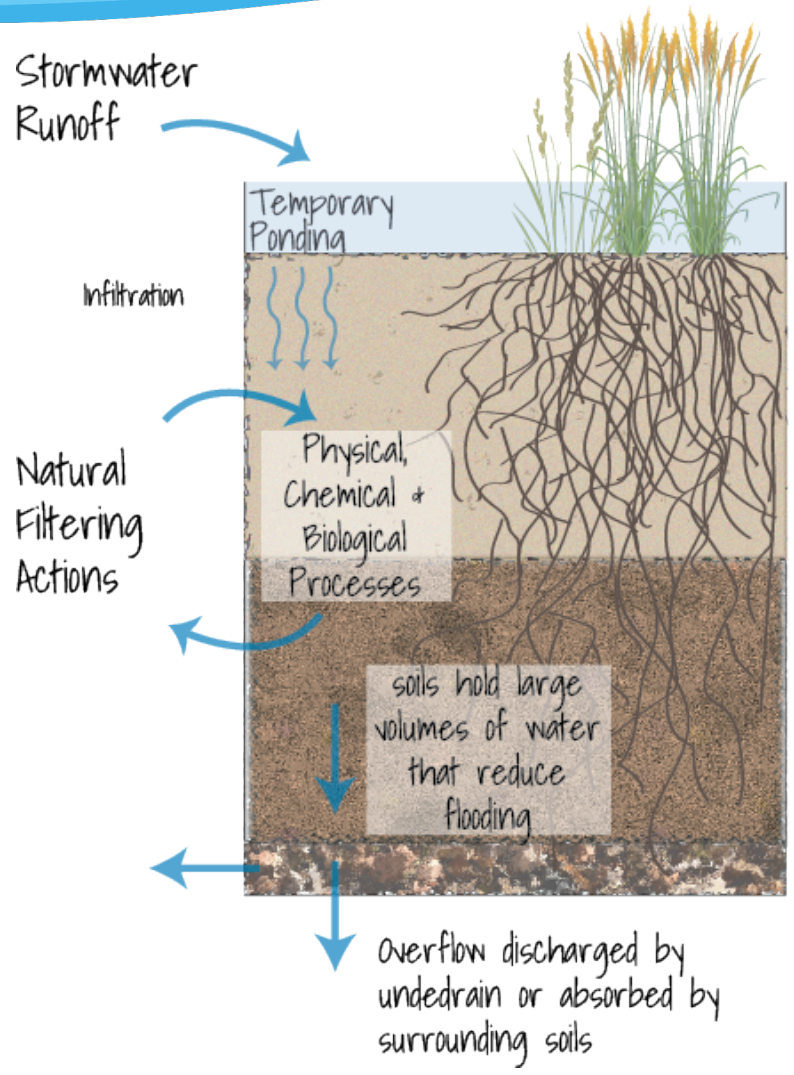
# Myth: GSI replaces irrigation

# GSI Opportunities

- Water is an asset!
- May support landscape where otherwise not possible
- Educational / Interpretation
- Flood mitigation – especially in communities with no storm drain system
- Additional funding sources for infrastructure projects
- Water quality / MS4 Permit compliance

# Low Impact Development vs. Green Stormwater Infrastructure

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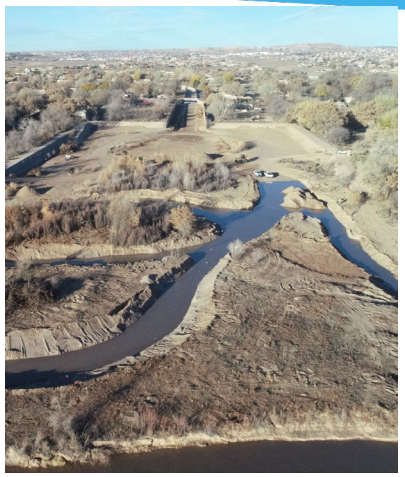
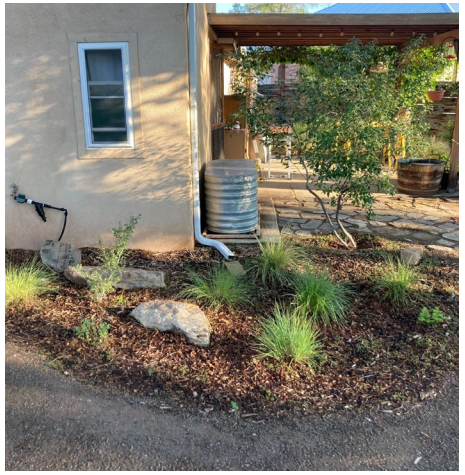
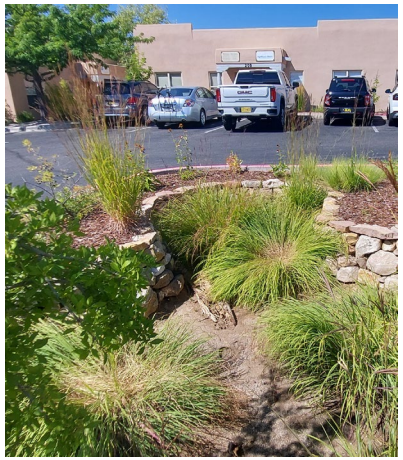
# GSI Opportunities At All Scales





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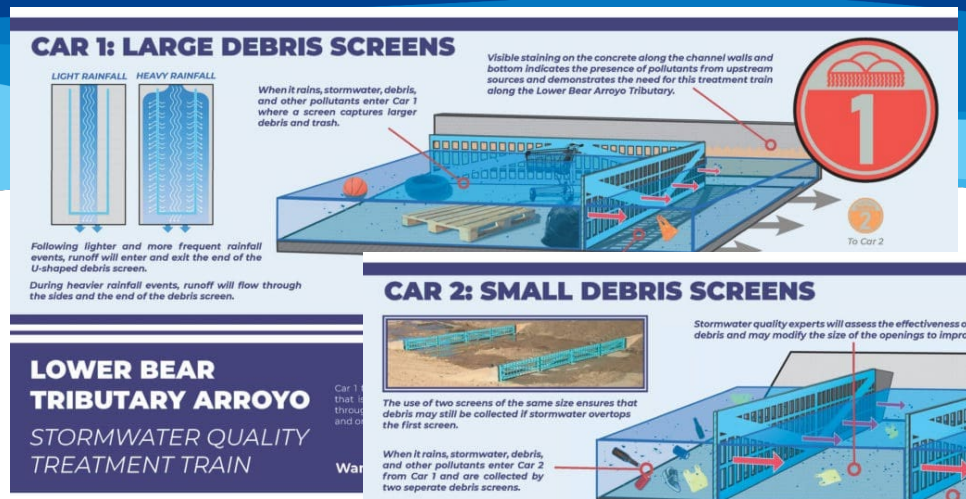
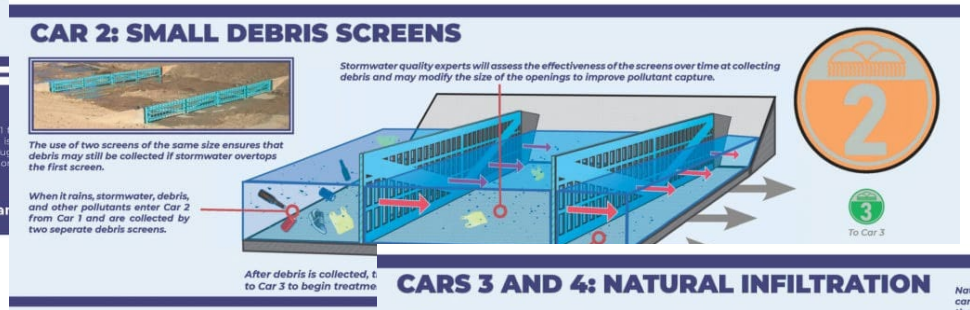
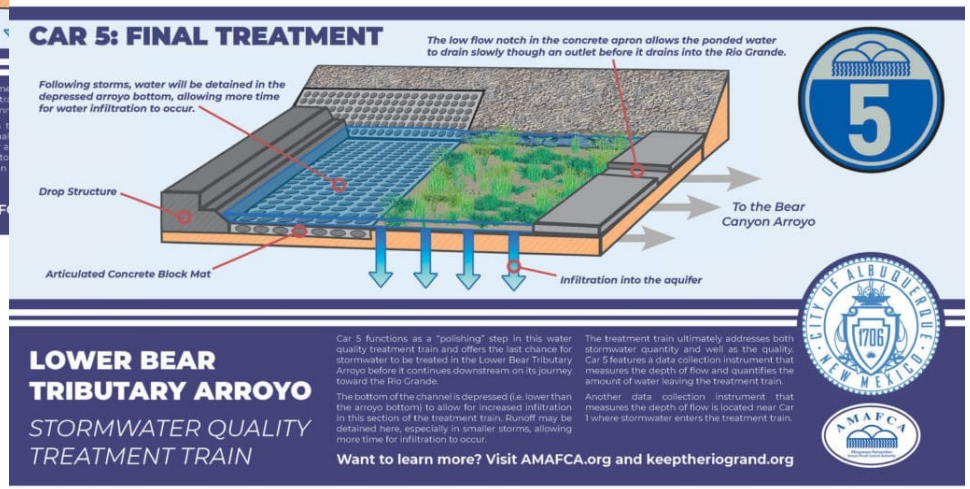
# GSI as a Treatment Train






Project was a collaboration between Albuquerque Metro Arroyo Flood Control Authority (AMAFCA), City of Albuquerque, Bohannan Huston, and The Nature Conservancy

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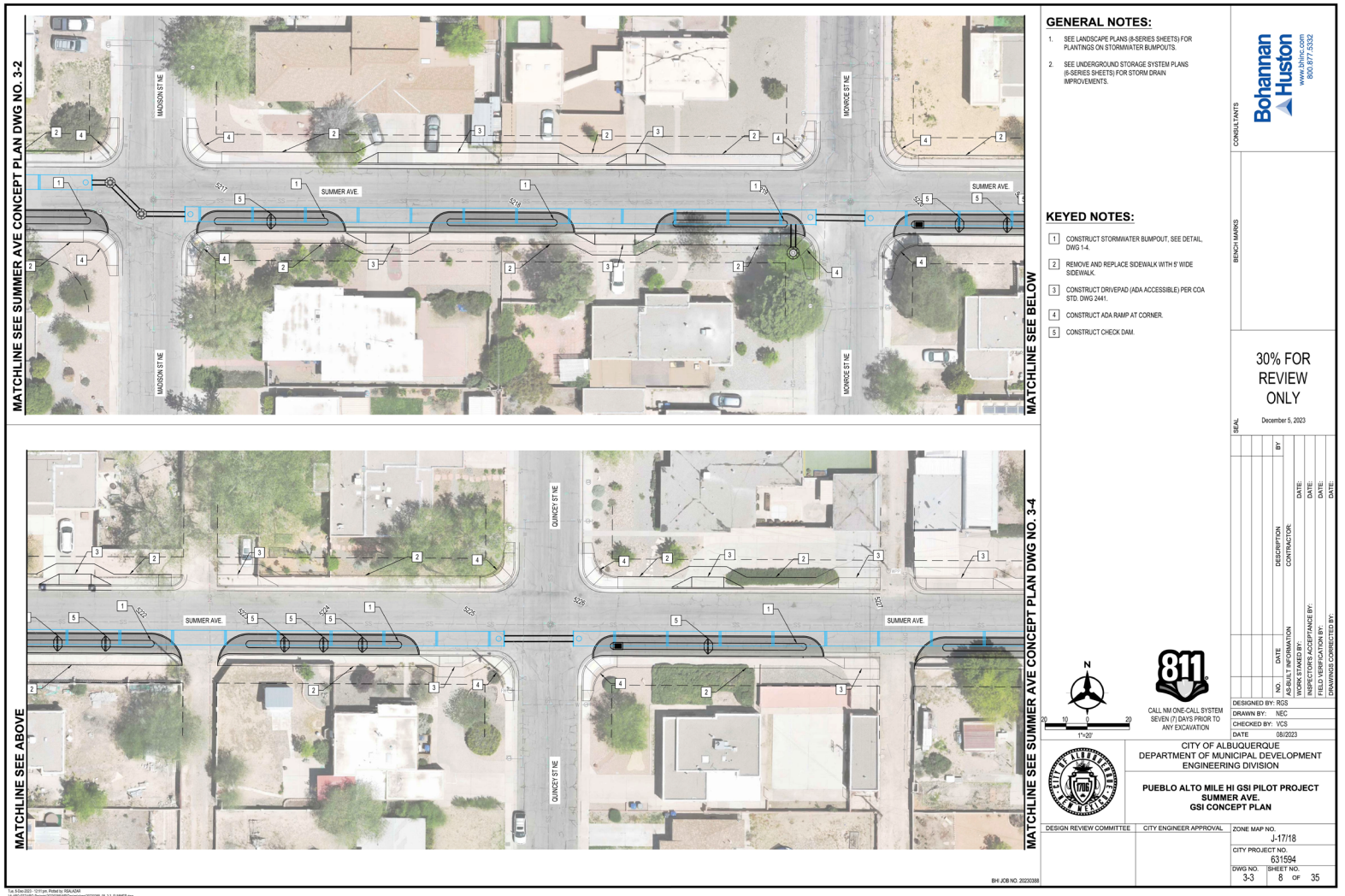
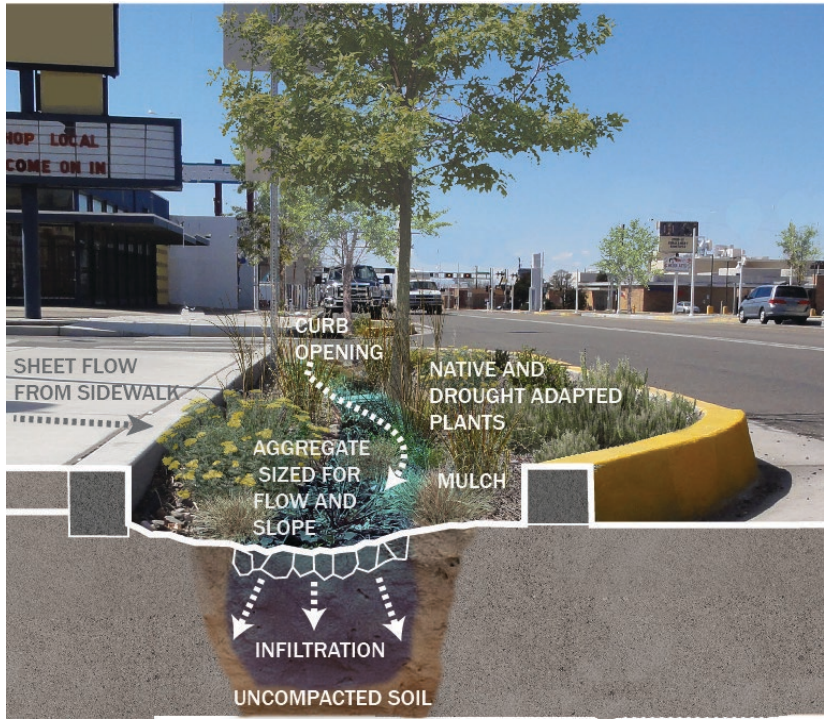
# GSI at a Neighborhood Scale

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# GSI at a Neighborhood Scale

# Large Scale Project Example – Harvey Jones

- Treats 4-5 Million Gallons of Stormwater Annually
- 4-5 Million Gallons of Effluent Daily
- Extensive Community Engagement Effort
- ~30,000 willows + 120 Cottonwoods planted
- $750,000+ Total Budget
- P3 = Public-Private-Partnership
- Treatment Train

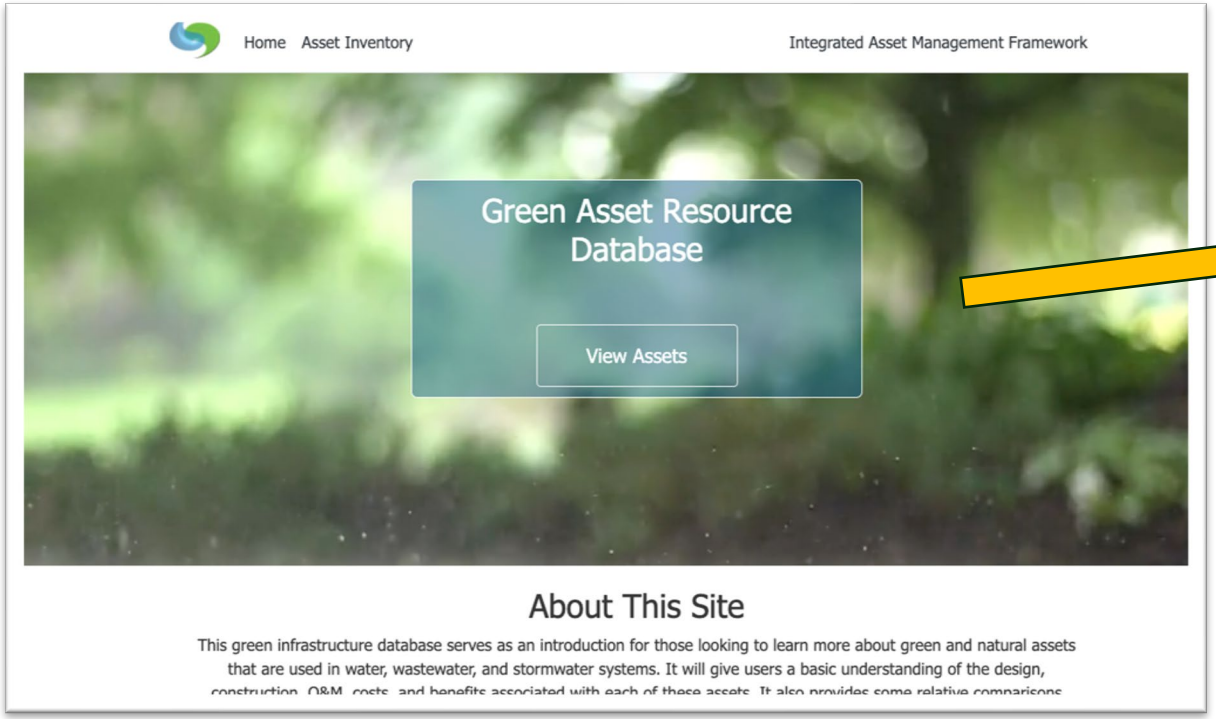


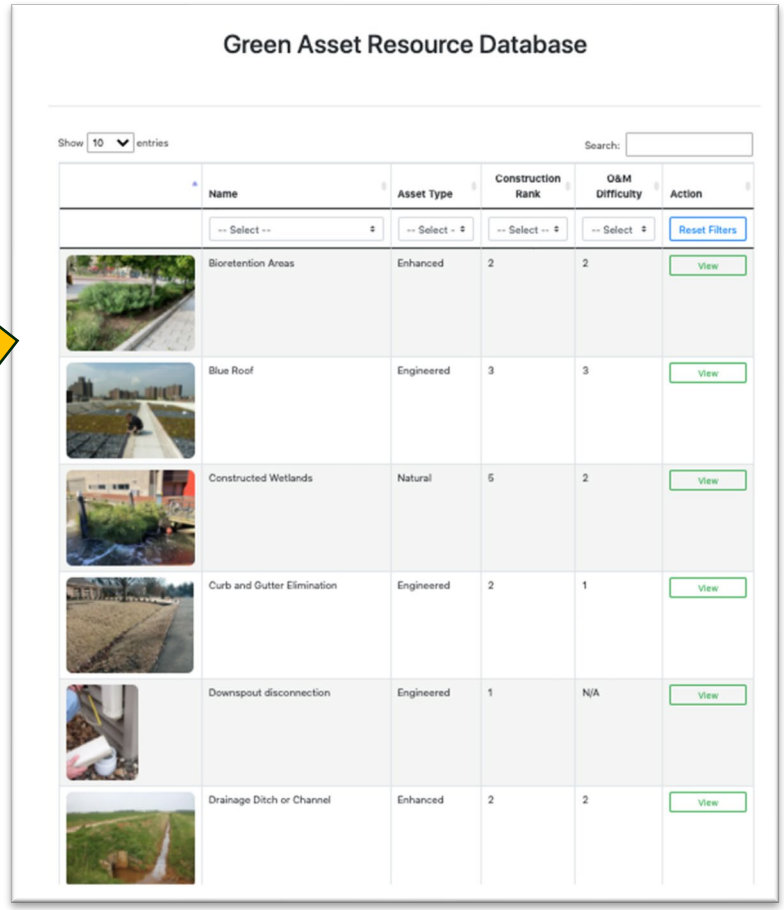

# Key Messages – Challenges & Opportunities

- Create a succession plan
- Project staff turnover will happen – be ready
- Write it all down & put it in your budgets!
- Retain design and construction documents
- These are tools we can use to solve water and climate related issues
- Require in GSI training for maintenance staff and contractors
- GSI can be scaled to address nearly any problem size

# Additional Resources

# Integrated Asset Management Framework & Green Asset Resource Database




https://swefcapps.unm.edu/gardb

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# *GSI Operations & Maintenance Manual*
# & Video Series



https://aridlidcoalition.org/index.php/gsi-maintenance

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# Questions?

# 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 2024 to 2026, with dates still being determined.

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

**Green Infrastructure 101**
April 18, 2024 | 12:00-1:00 ET | Register Here

**Equitable Green Infrastructure in a Changing Climate**
*Date and Time TBD*

**Navigating the Green Infrastructure Policy Landscape**
*Date and Time TBD*

**Asset Management for Green Infrastructure**
*Date and Time TBD*

**Funding Green Infrastructure**
*Date and Time TBD*

**Partnerships are Critical to Successful Green Infrastructure**
*Date and Time TBD*

**Building a Green Infrastructure Workforce**
*Date and Time TBD*

**Green Infrastructure Frameworks for Environmental Justice**
*Date and Time TBD*

**Source Water Protection & Watershed Planning in the Face of Wildfires**
*Date and Time TBD*

**Bridging the Gap: Integrating Land & Water Planning for Sustainable Futures**
*Date and Time TBD*

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Current series flyer in your "Handouts" tab

**+ 2 In-Person Workshops in Albuquerque:**

- Finding Allies and Building Relationships, Part 1
  *Spring 2025*
- Finding Allies and Building Relationships, Part 2
  *Spring 2026*

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# Thanks for attending!

Next webinar in our Green Infrastructure Series:

**Equitable Green Infrastructure in a Changing Climate**

**July 2024**

If you have general questions about this series, please contact:
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palmerjonim@unm.edu