

Stormwater & Parks

A Deluge of Benefits



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2023 One Water Summit Community Guidelines

The complex topics presented at Summit can lead to conversations that may be difficult or uncomfortable. These Community Guidelines help identify ways that we can uphold a respectful culture and engage more mindfully.

Be open
and
respectful.

Be
present.

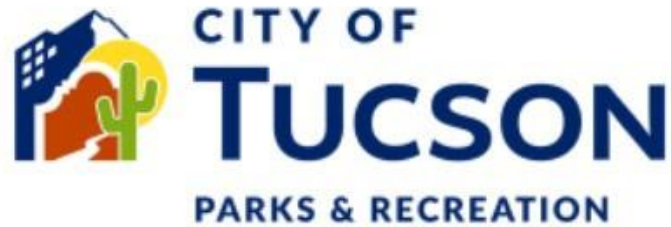
Speak from
your own
experience.

Respect all
kinds of
knowledge.

Be
conscious
of intent vs.
impact.

Be aware
of power
dynamics.

Avoid
jargon,
acronyms,
and industry
language.



Storm *to* Shade
City of Tucson Green Stormwater
Infrastructure Program

GSI in Tucson's Parks: A Perfect Storm

One Water Summit
November 16, 2023

Greg Jackson
Parks & Recreation Deputy Director

Blue Baldwin
Storm to Shade Program Manager





Chuk-son : Tucson, Arizona

- Sonoran Desert
 - Wettest and most biodiverse desert on earth
- 3rd fastest warming city in the US
 - Urban heat is a public health threat
- 11 inches annual rain (historic average)
 - Tier 2 drought

Tucson Resilient Together



Climate Action Hub

Resilient Together

Tucson Million Trees

Electric Vehicles

Storm to Shade

More ▾

- Climate Emergency declared in 2020
- Climate Action Plan adopted March 7, 2023
 - Energy
 - Transportation & Land Use
 - Resource Recovery and Management
 - Community Resilience
 - Urban Forestry Program & Tucson Million Trees
 - **Green Stormwater Infrastructure Program**



CITY OF
TUCSON

TUCSON
WATER



Storm to Shade

City of Tucson
Green Stormwater
Infrastructure Program

What is GSI?

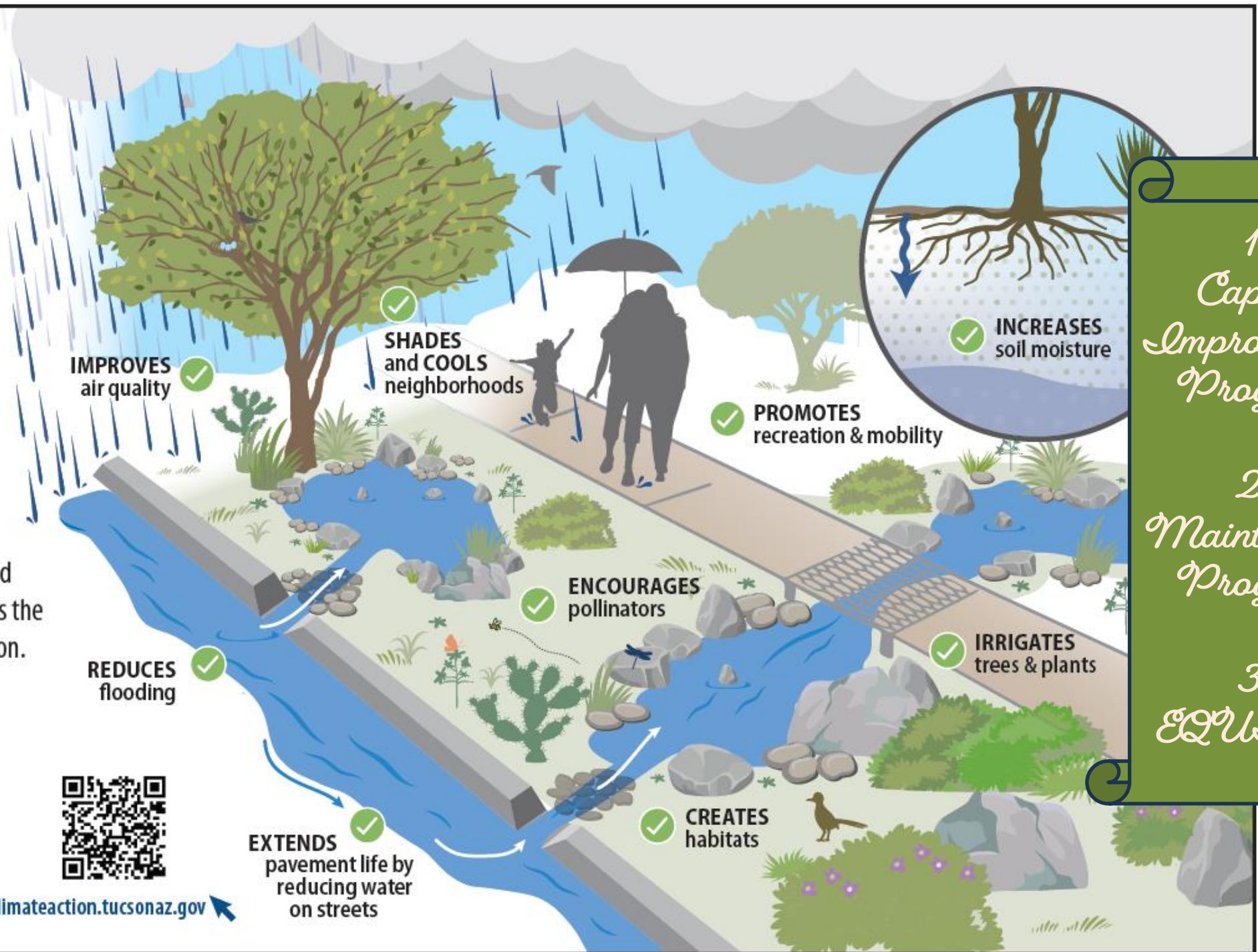
Green Stormwater Infrastructure (GSI) directs stormwater runoff from streets, parking lots, and rooftops into landscaped areas where it infiltrates the soil to support vegetation.

Find GSI at

- ✓ Parks
- ✓ Greenways
- ✓ Neighborhood streets
- ✓ Bike boulevards
- ✓ Public parking lots
- ✓ Traffic circles



climateaction.tucsonaz.gov

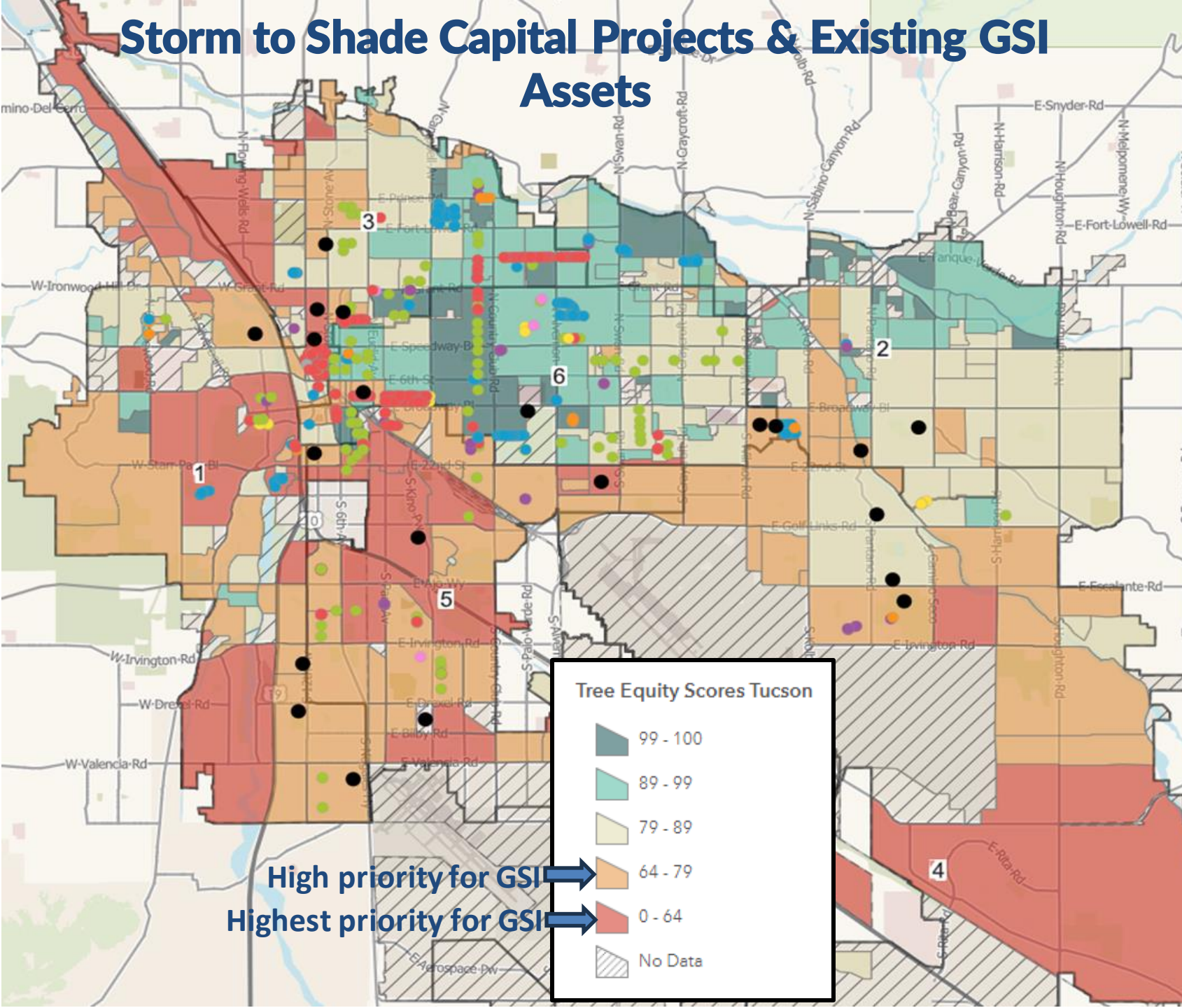


1.
*Capital
Improvement
Program*

2.
*Maintenance
Program*

3.
EQUITY

Storm to Shade Capital Projects & Existing GSI Assets



Tree Equity Score



Existing tree canopy



Population density



Surface temperature



Race



Income



Employment



Age



Health

Tucson Parks and Recreation

132 Parks = 3,357 acres of parkland = ample opportunities to add GSI

*Prop 407: Tucson Delivers Great Parks & Connections (2018)



\$225M to improve City parks

- Opportunities to partner with Storm to Shade and Pima County Regional Flood Control District to add GSI in City parks

+ irrigation upgrades, turf reduction, new reclaimed connections



TREE PLANTING COST

Three Scenarios



IN STREET

\$2250-\$3750 per tree
= 267-444 trees

BEHIND CURB

\$375-\$625 per tree
= 1600-2667 trees



BONUS!



IN A PARK

\$200- \$360 per tree
= 2,778-5K trees

Case Study : CSM Martin R. “Gunny” Barreras Memorial Park



*Plus additional small GSI features throughout the park

A group of students and adults are participating in a tea bag decomposition experiment in a mulched area at Gunny Park. The students are wearing casual clothing, and some are wearing hats. They are standing in a line, observing the experiment. The ground is covered in a layer of brown mulch. In the background, there are trees and a clear blue sky. A green banner with white text is overlaid on the right side of the image.

GSL + Parks 4eva

** UA Soil Scientist Vanessa Buzzard and AZ Project WET's Josh Ruddick lead Sunnyside High Bioscience students in a tea bag decomposition experiment in the Campbell Ave. basin at Gunny Park*

City of Raleigh, North Carolina

Stormwater & Parks: A Deluge of Benefits

One Water Summit, November 2023





Raleigh

Presentation Outline

- City in a Park
- Stormwater + Parks
- Case Study





City of Raleigh

Planned in 1792

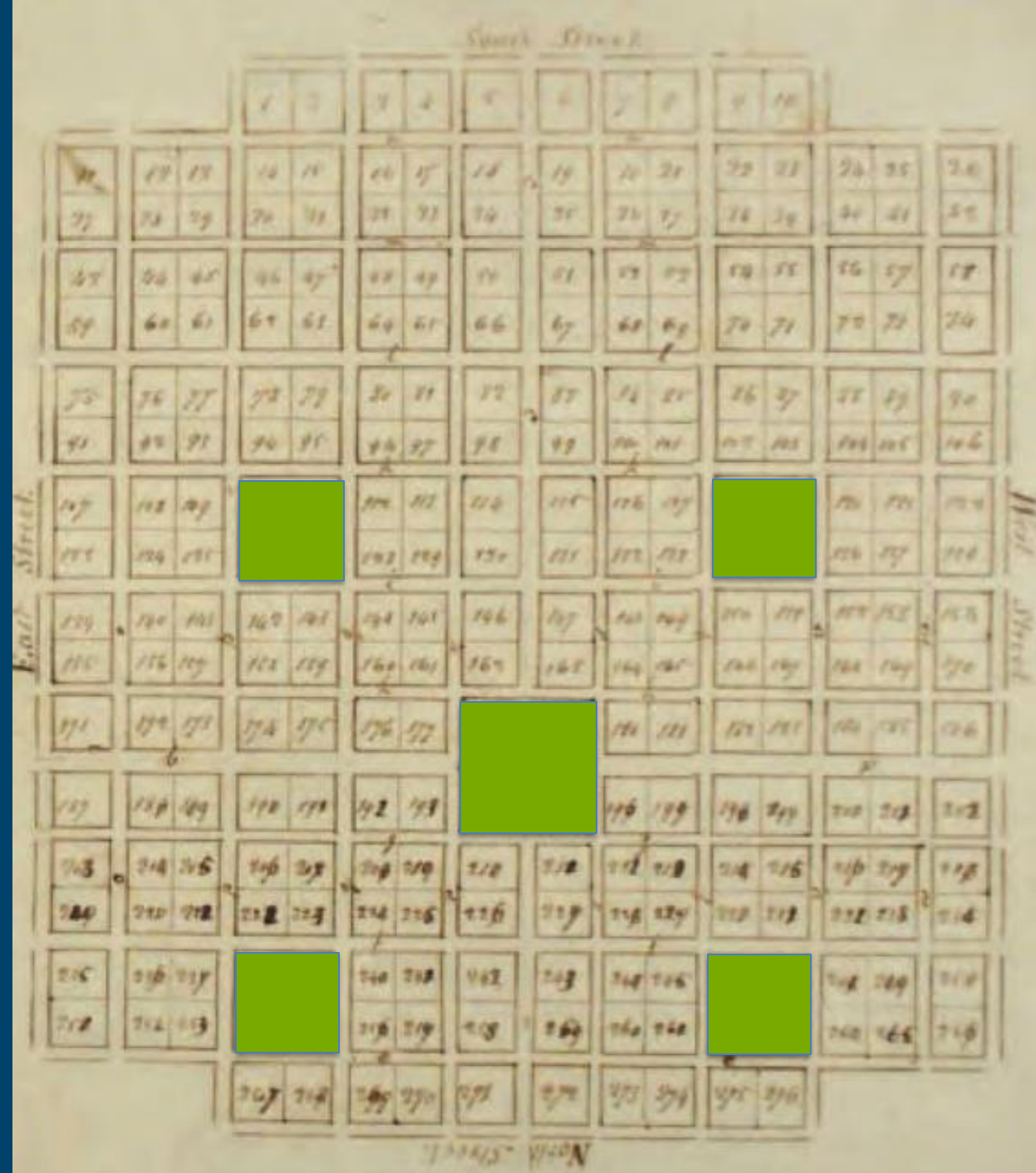
400 Acres

5 Parks (22.5 ac)

Today

147+ Square Miles

467,665 Population
(2020 census)

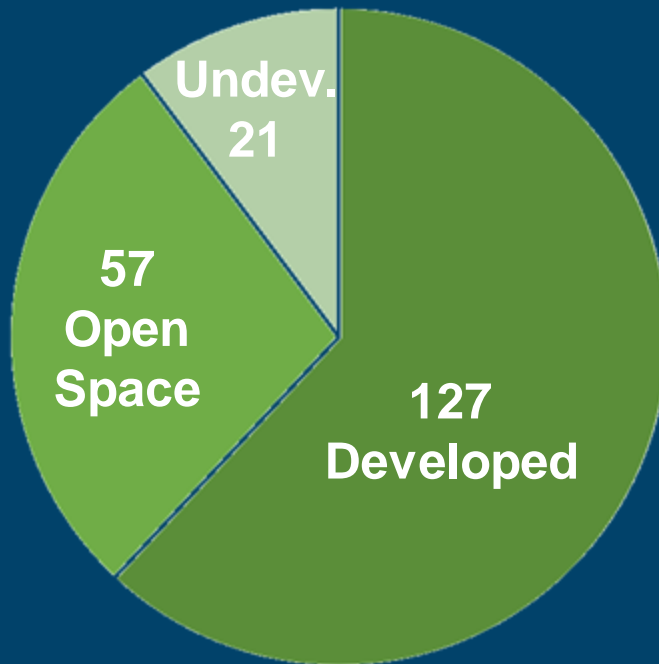




Raleigh Parks

10,000+ Acres of Parks, Greenway
and Open space

200+ Parks Properties





Raleigh Parks

Sustainability Policy

- Min. LEED Silver certification for major facilities

Sustainable Practices:

- LEED certified facilities
- Green roof
- Solar hot water panels
- Constructed wetlands
- Bio-retention areas
- Suspended root protection system
- Above- and under-ground cisterns
- Permeable pavement





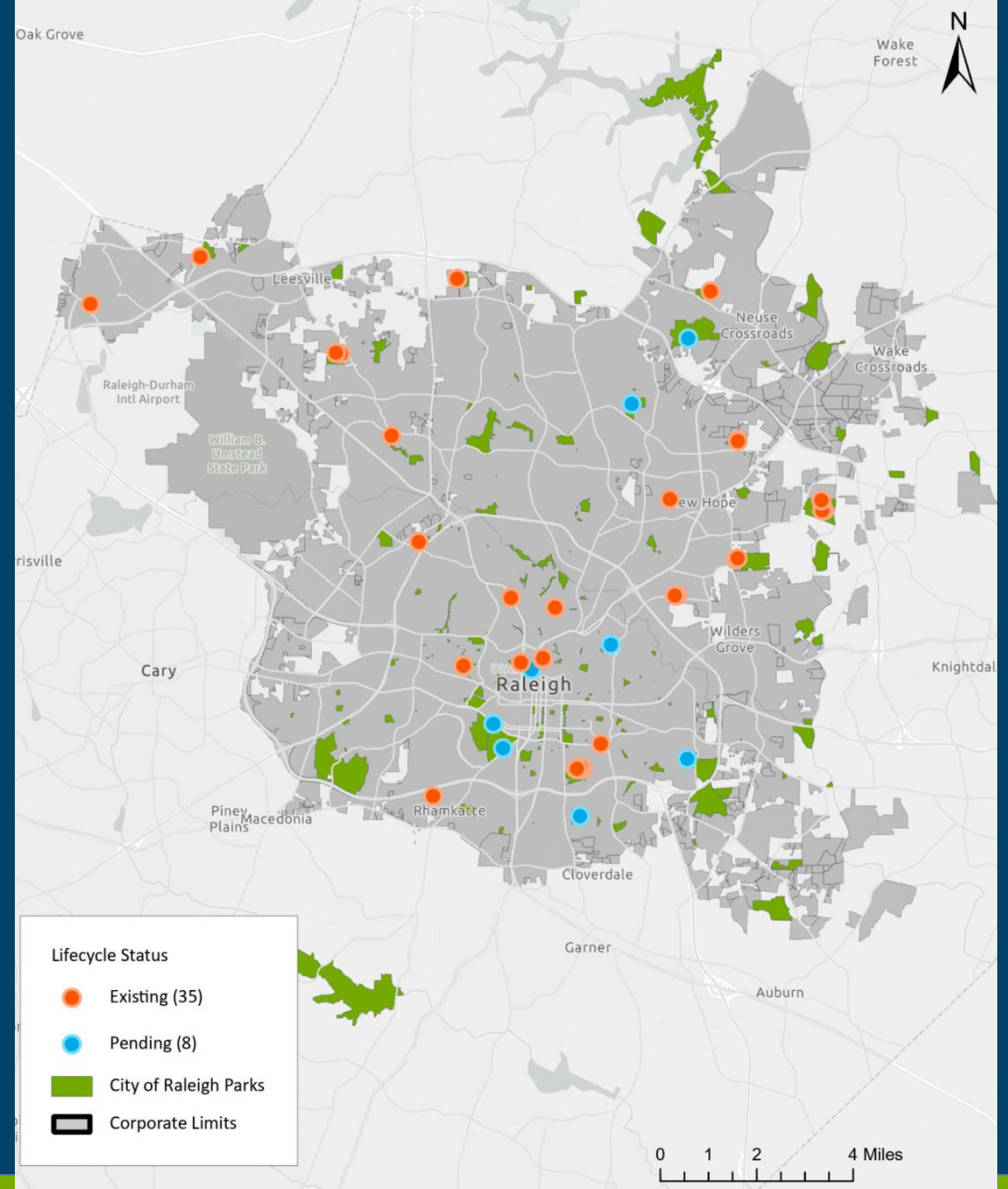
Raleigh Parks

43 GSI in parks

- 35 existing
- 8 in progress

Funding source:

- Parks CIP
- Parks Bond
- Stormwater CIP
- Stormwater Revenue Bond
- Grants





Stormwater + Parks: Why Work Together?

Glen Eden Park

Mutual Goals & Objectives:

- Recreational and Educational Opportunities
- Wildlife Habitat
- Aesthetics & Social Benefits
- Equity & Inclusion
- Water Quality Improvement
- Flood Mitigation & Resilience to Climate Change
- Sustainable Urban Environment

Walnut Creek Wetland Center





Raleigh

Stormwater + Parks: How Work Together?

- Capital Improvements Planning
 - GSI Policy and Plan
 - Annual CIP coordination
- Sharing of Expertise
- Stormwater Maintenance Activities
- Joint Public Engagement and Educational Activities

*Dix Park Gipson Play Plaza
& Stormwater Wetland*



*Wooten Meadow Park &
Created Stormwater Marshland*

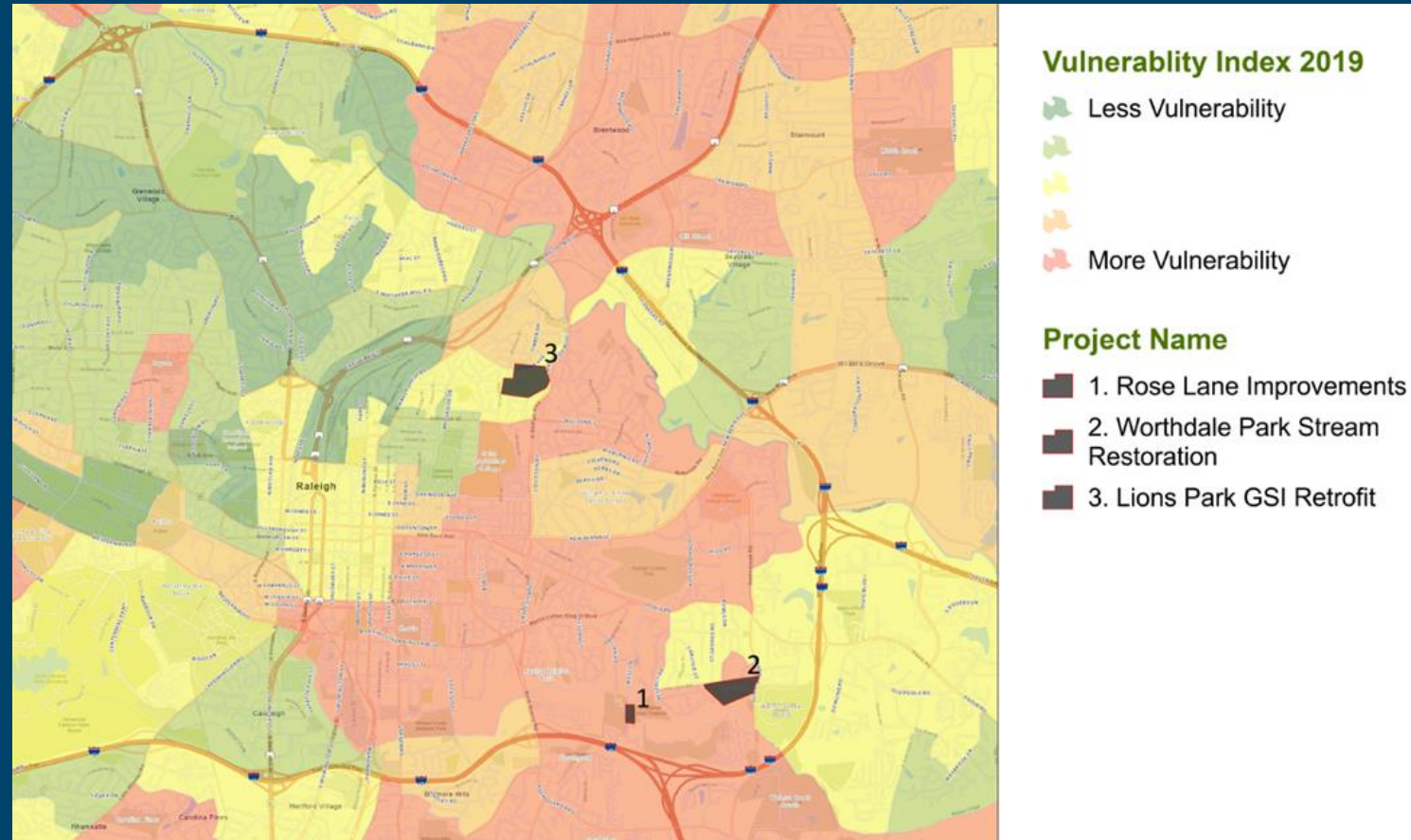




Raleigh

Stormwater + Parks: Capital Improvements

- Equity considered in watershed planning and CIP priorities.
- Raleigh Rainwater Rewards (R3) Program provides 100% funding to construct GSI in disproportionately impacted areas & based on income/rental thresholds.



Wake County vulnerability index used to identify stormwater projects in disproportionately impacted areas for ARPA funding.



Stormwater + Parks: The Community Wins!

- Collaboration with Local Schools & Educators
- Meeting Places for Community Groups with Built-In Educational Opportunities



*Chavis Park Suspended Pavement
Stormwater Treatment*



*Walnut Creek Park & Wetland Education Center
(joint project with Partners for Environmental
Justice – local community group)*



Stormwater + Parks: The Community Wins!

- Parks Visitors Are Eager for Knowledge
- Excellent Opportunities for Education – Flooding, Water Quality, Climate Change, Equity
- Education through Public Art



Alluvial Decoder Floodplain Educational Display

a gang of three

Research-based public art and design for the socially aware, ecologically conscious and intellectually curious





Stormwater + Parks: Maintenance

- Service Level Agreement
- Design Collaboration
- Parks Staff Training and Certification
 - stormwater device maintenance
 - stream restoration techniques
- Parks Greenhouse Horticultural Support





Stormwater + Parks: Case Study

Smoky Hollow Park

Objectives

- Remediation
- Flood Mitigation
- Stream Realignment
- Water Quality
- Passive Recreation
- Historic Interpretation







Stormwater + Parks: Case Study

Smoky Hollow Park

Funding Source

- Approved Parks Bond
- Seeking Grants
- Negotiating P3
- Planning Stormwater CIP

Next Steps

2023-2024 Partial Remediation

2024-2025 Design & Permitting

2026-2027 Construction





Stormwater + Parks

Volunteer Support

- Adopt-A-Stream (*FY2023 on parks and greenway*)
 - 800+ volunteers
 - 1500+/- hours of service
 - 23,000lbs+/- of litter removal
- Invasive Removal and Landscaping
 - At-large events with general public
 - Organized youth events:
 - American Conservation Experience
 - Conservation Corps NC Youth Program
 - Partnership Raleigh Conservation Intern program





Stormwater + Parks

Lessons Learned

Challenges

- City financial regulation and procedure
- On-going maintenance and education
- Life cycle cost planning

Opportunities

- Passionate, knowledgeable and collaborative staff
- Park property inventory
- CIP project collaboration
- Public art incorporation
- Education and engagement
- Volunteer support



Thank You!

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Breakout Discussion

Tucson and Raleigh City Teams will lead discussions around their respective programs. Feel free to move your chairs to your selected group!

Reflection & Wrap-Up

Up Next: Closing Plenary and Luncheon Celebration

