

Workshop 3

City-scale Green Infrastructure Mapping & Planning



City of Clemson

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Green Infrastructure Center

February 11, 2026





Green Infrastructure Planning Workshop 3

Review of Timeline

Green Infrastructure Network –

Local Corridors

Regional Corridors

Urban Cooling

Zoning

Opportunity Analysis – Green Streets

Standard street buffer

City ROW only

Pollinator Habitat

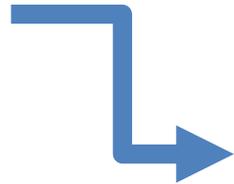
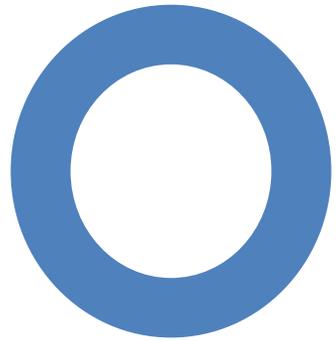
Goals, Priorities and Opportunities

Next Steps

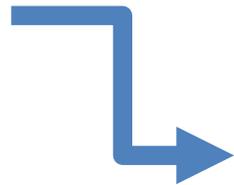
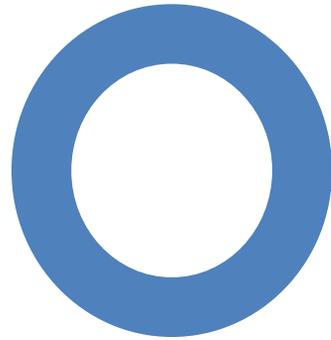




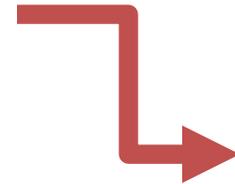
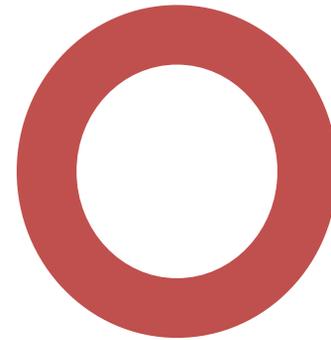
WS 1: Base Maps & Project Overview



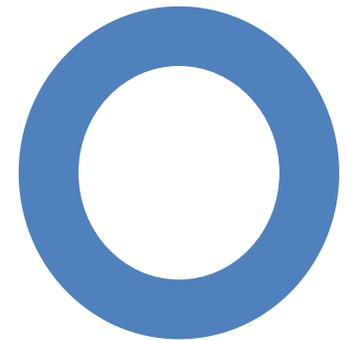
WS 2: Assets & Challenges



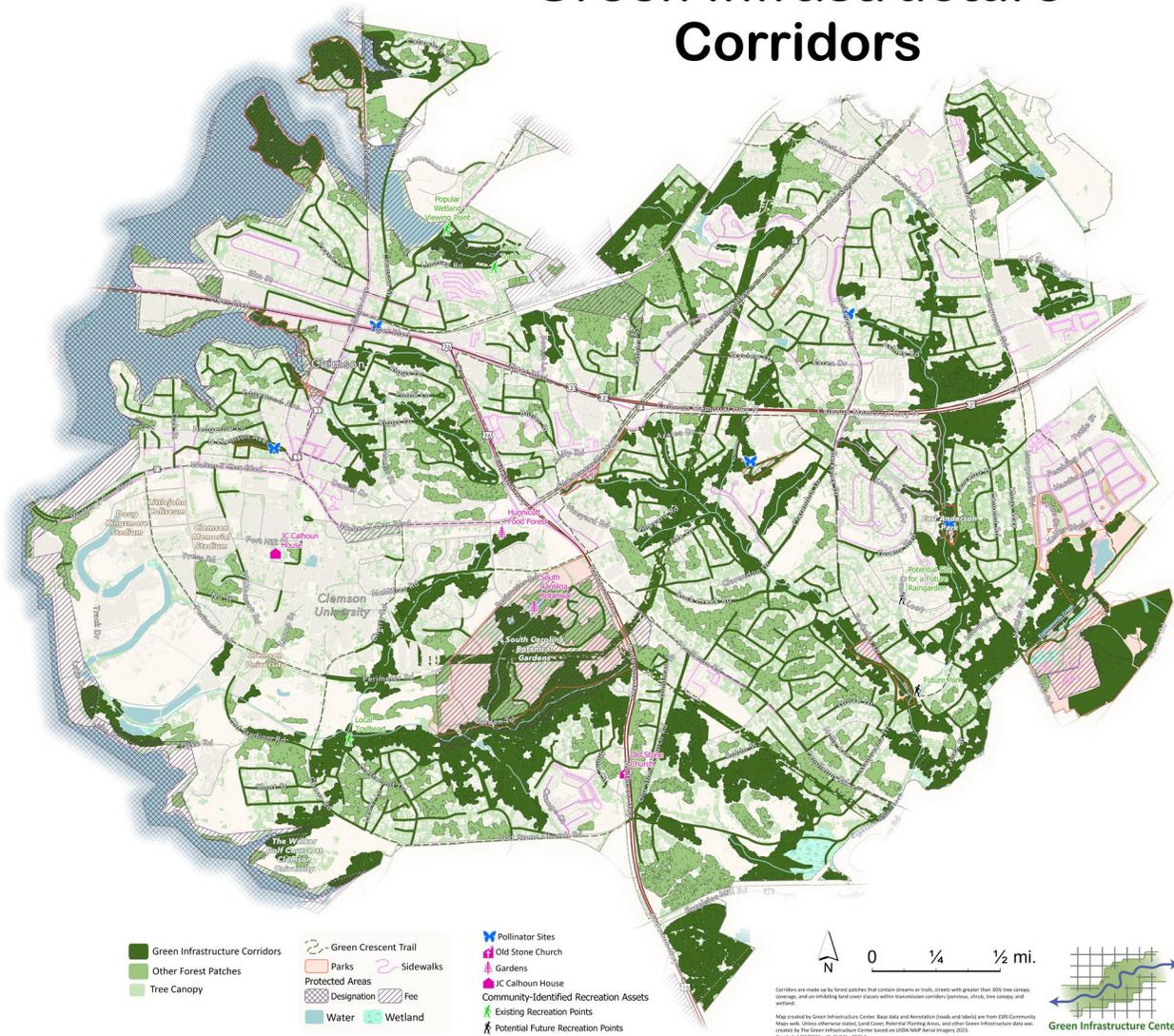
WS 3: Corridors & Opportunities



WS 4: Prioritization & Strategies



Clemson, SC Green Infrastructure Corridors

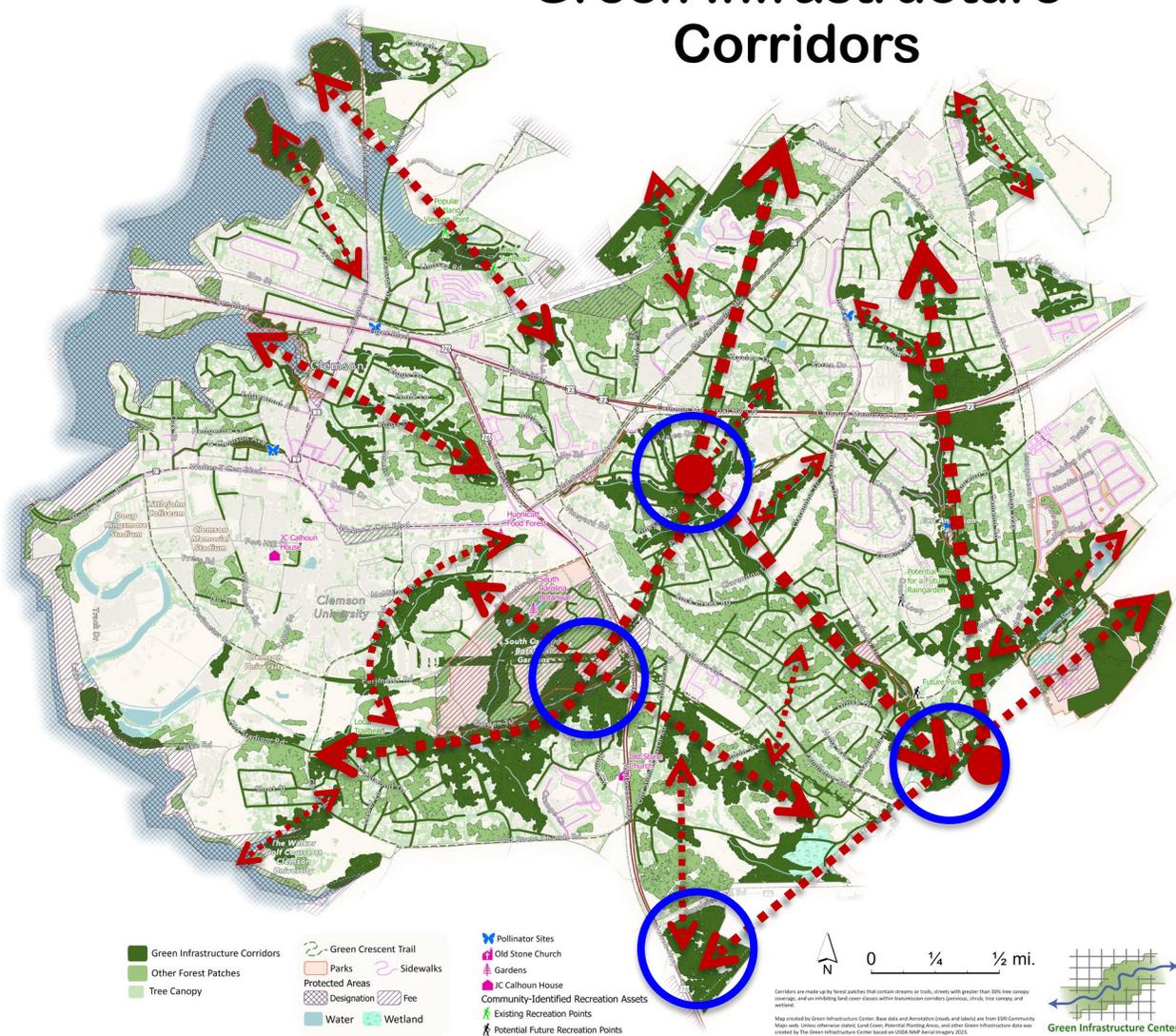


Data layers that went into defining city green infrastructure corridors.

Inputs:

- Riparian corridors: forest patches that intersected with streams layer.
- Streets, sidewalks, trails and greenways that have more than 30% tree canopy along their length.
- Transmission corridors where the land cover underneath the lines were a natural land cover type (tree canopy, turf, shrub).

Clemson, SC Green Infrastructure Corridors



We can highlight the corridors more clearly to illustrate the network based on the underlying assumptions for corridors in the community.

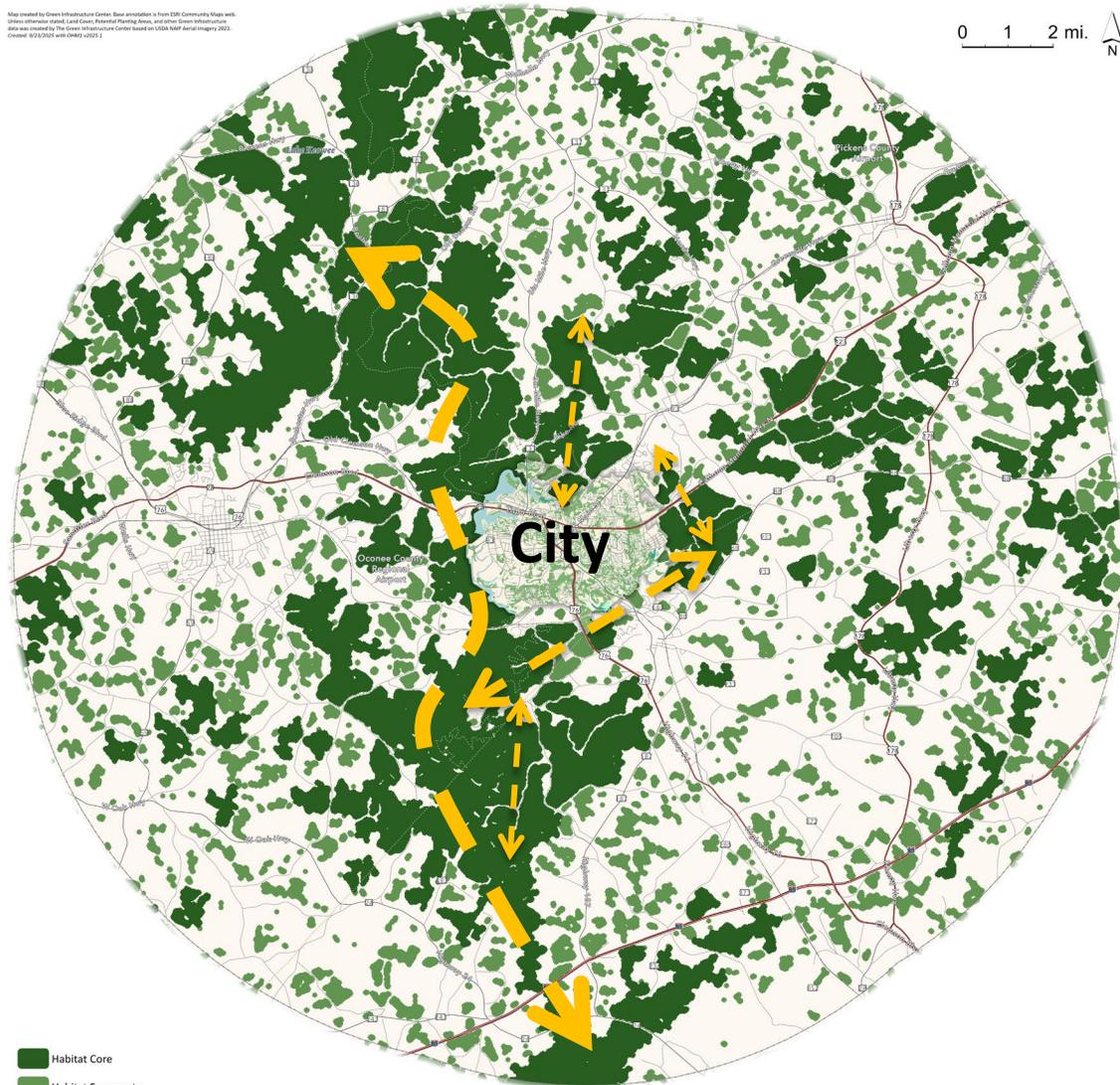
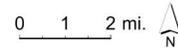
Corridors in this context include possible routes for wildlife but also focus on walkability, recreation and accessibility to natural areas.

We can also identify key hubs, corridors and properties in the city that support the network.

Dark blue circles highlight key hubs or intersections in the network.



Map created by Green Infrastructure Center. Base provided by Esri Community Maps with
license information stated. Land Cover, Potential Flooding Areas, and other Green Infrastructure
data was provided by the Green Infrastructure Center based on USDA National Wetlands Inventory (2012).
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Clemson, SC
Regional Habitat Cores



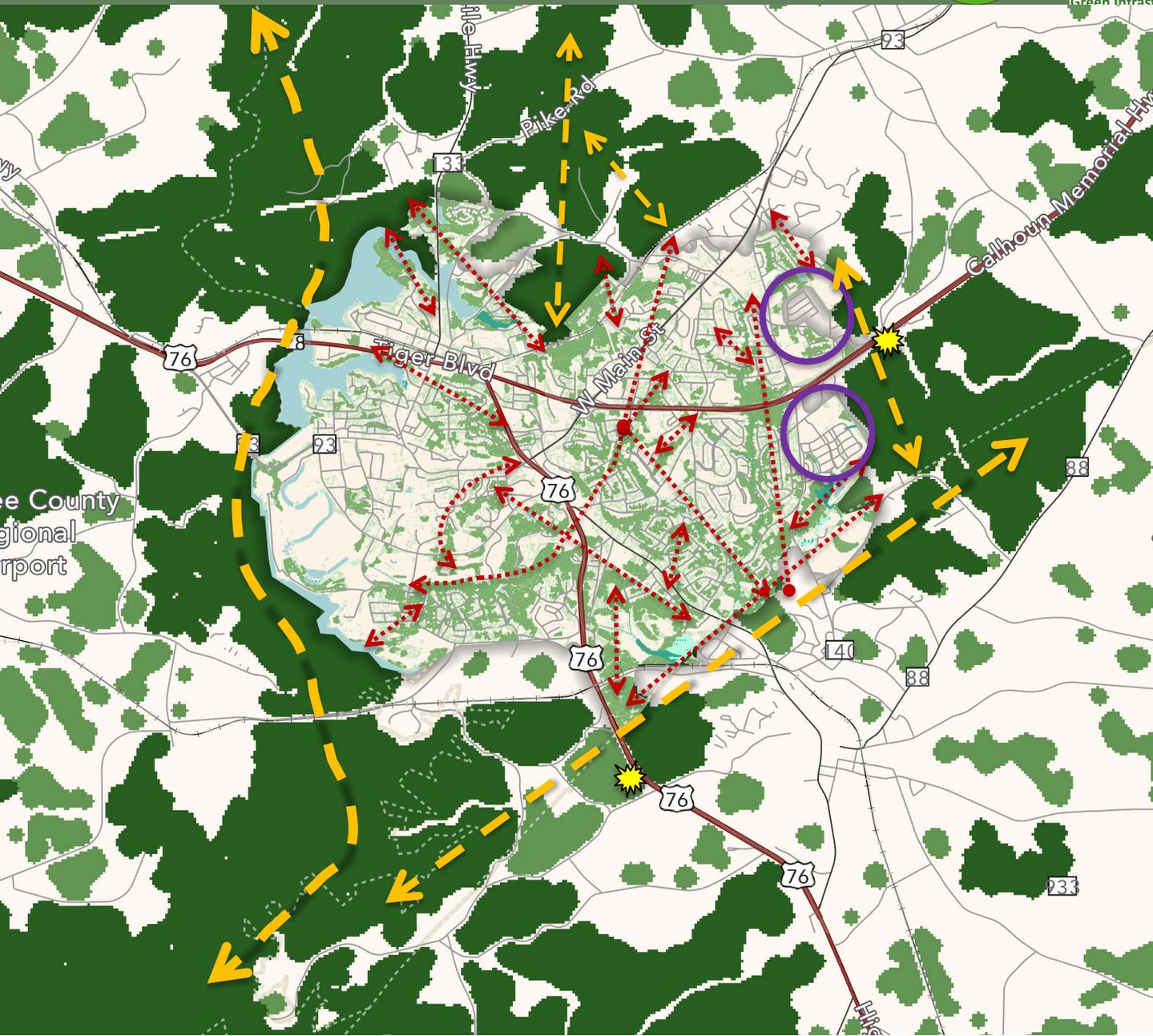
We also want to examine the surrounding region's connectivity.

What corridors exist outside of the city?

How can we minimize impacts to the region's natural resources?

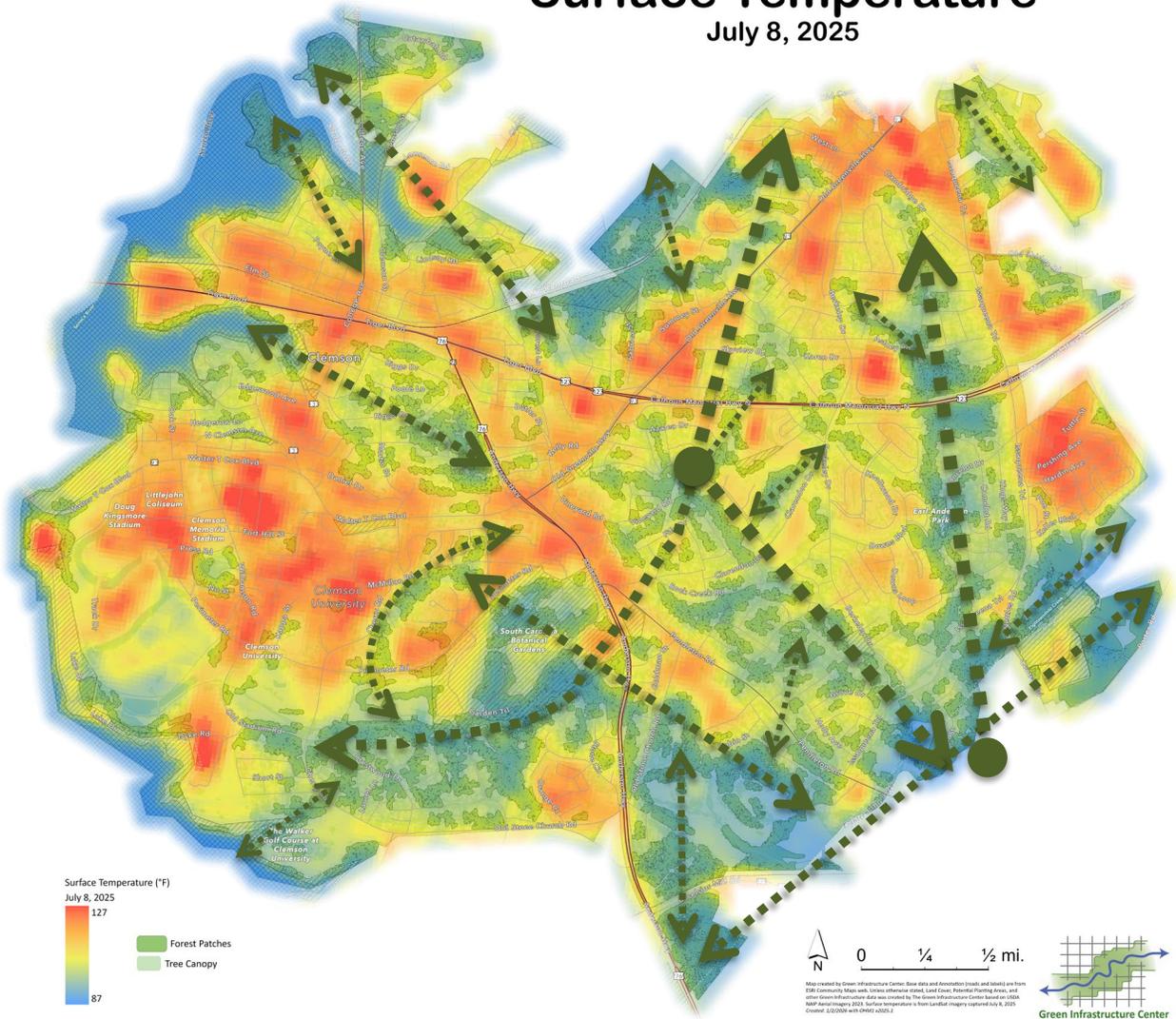


GREEN INFRASTRUCTURE CENTER INC.



- We can also combine the local and regional corridors into a wider and more comprehensive picture of the green infrastructure network.
- Purple circles indicate relatively recent subdivision developments.
- We can see how development and annexation are pushing into surround green assets.
- How can this regional network inform future development and planning.
- How can the city as it continues to grow and expand minimize impacts on the regional green infrastructure.
- What opportunities exist to reconnect or enhance some corridors through restoration?

Clemson, SC
Surface Temperature
 July 8, 2025



We can also overlay the green infrastructure network over the surface temperature data for the city.

The green infrastructure network infiltrates and provides the cooling corridors to minimize urban heat island impacts.

This data can inform a strategy on identifying:

- Hottest sidewalks with room for tree plantings.
- Greenway segments that need more shade.



Clemson, SC Zoning Districts



Sec. 19-301. Residential districts described.

- A. **R-20, Single-family residential district.** The R-20, single-family residential district is intended for an individual dwelling on a relatively large lot in areas where **low density is appropriate because of neighborhood living patterns and the character of the natural environment.**
- B. **R-12, Single-family residential district.** The R-12, single-family residential district is intended for an individual dwelling on a medium-sized lot in areas where densities greater than R-20 are desired, but a neighborhood pattern of individual dwellings is desired.
- C. **R-7, Medium density residential district.** The R7 residential district is intended for conventional residential development of single family homes on relatively small lots in areas where it is appropriate to increase density but maintain a neighborhood scale. It may also serve as a transition between higher density multi-family districts and traditional lower density residential districts.
- D. **RM-1, Two-family residential district.** The RM-1, two-family residential district is intended for conventional residential development, patio home, zero-lot-line housing, and two-family dwellings on relatively small lots in areas where it is appropriate to increase density but maintain a neighborhood scale that serves as a transition between higher density multi-family districts and traditional lower density residential districts.
- E. **RM-2, Two-family residential district.** As with the purpose of the RM-1 District the RM-2, two-family residential district seeks to provide areas that integrate medium-density conventional residential development, patio home and zero-lot-line housing, and duplexes, while also permitting manufactured homes on individual lots.
- F. **RM-3, Multi-family residential district.** The RM-3, multi-family residential district is intended to offer a range of housing types from single to moderate density multi-family that serves the needs of a multi-generational housing market. **Emphasis is given to promoting sustainable, walkable communities that respect the natural environment.**
- G. **RM-3.5, Multi-family residential district.** The purpose of the RM-3.5, multi-family residential is to provide standards that encourage a range of moderate to higher density residential uses designed to promote walkable, sustainable communities serving the needs of a **multi-generational housing market with an emphasis on responsible environmental design principles.**
- H. **RM-4, Multi-family residential district.** The purpose of the RM-4, multi-family residential district is to maintain and promote medium- to high-density residential development as appropriate for multiple-unit, patio home and zero-lot-line housing. This district is intended to provide alternatives to low-density, single-family, detached housing **with an emphasis on walkable, environmentally responsible design principals.**

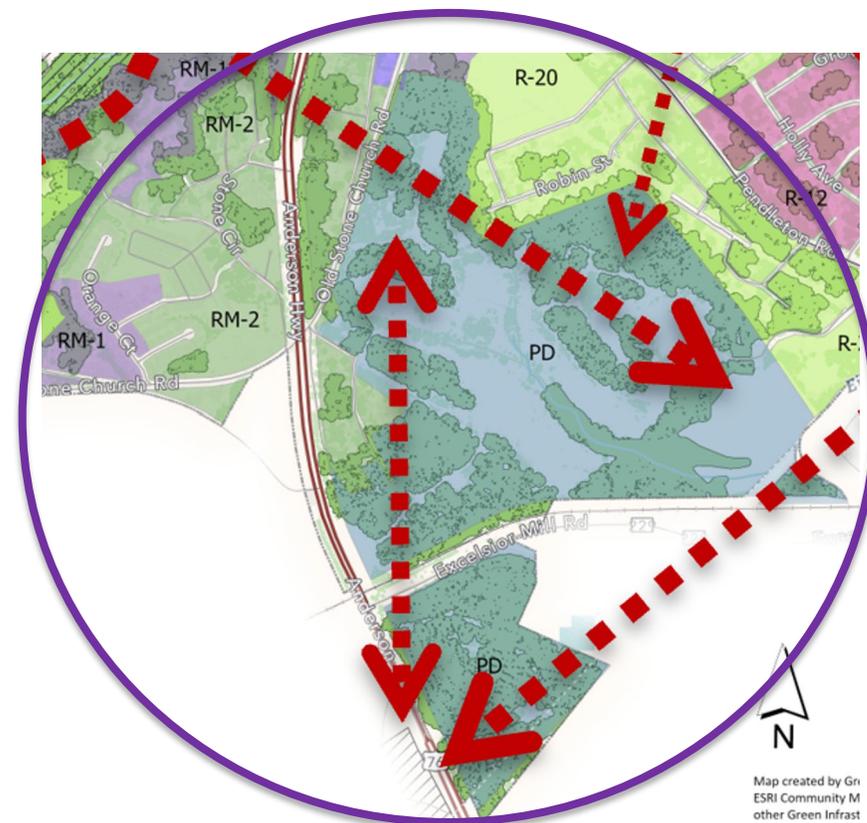
Strategy: Update zoning districts' descriptions to include more language around conservation of the natural environment, environmentally responsible design and built green infrastructure.



Clemson, SC Zoning Districts



These two PD zoning districts have a lot of green assets and are key areas for connectivity. Require greater environmental design, natural areas conservation and maintain corridors on the site.

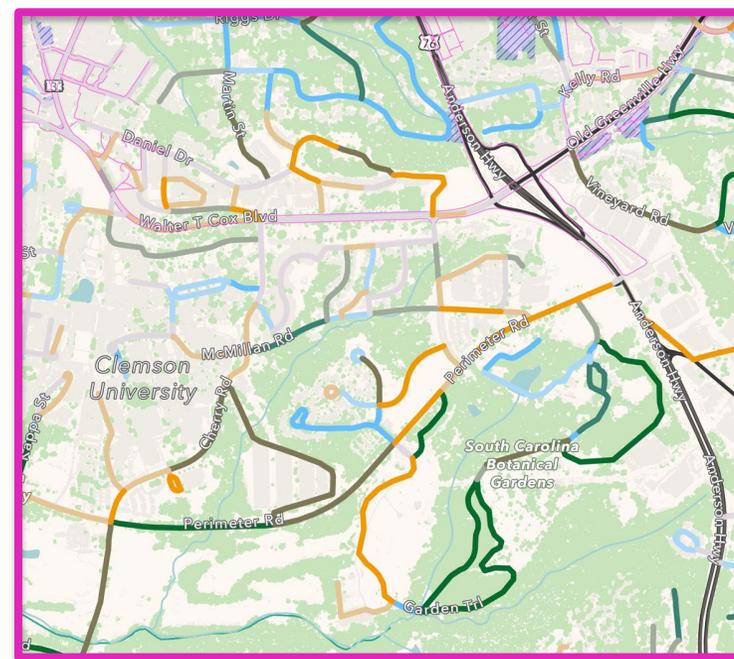
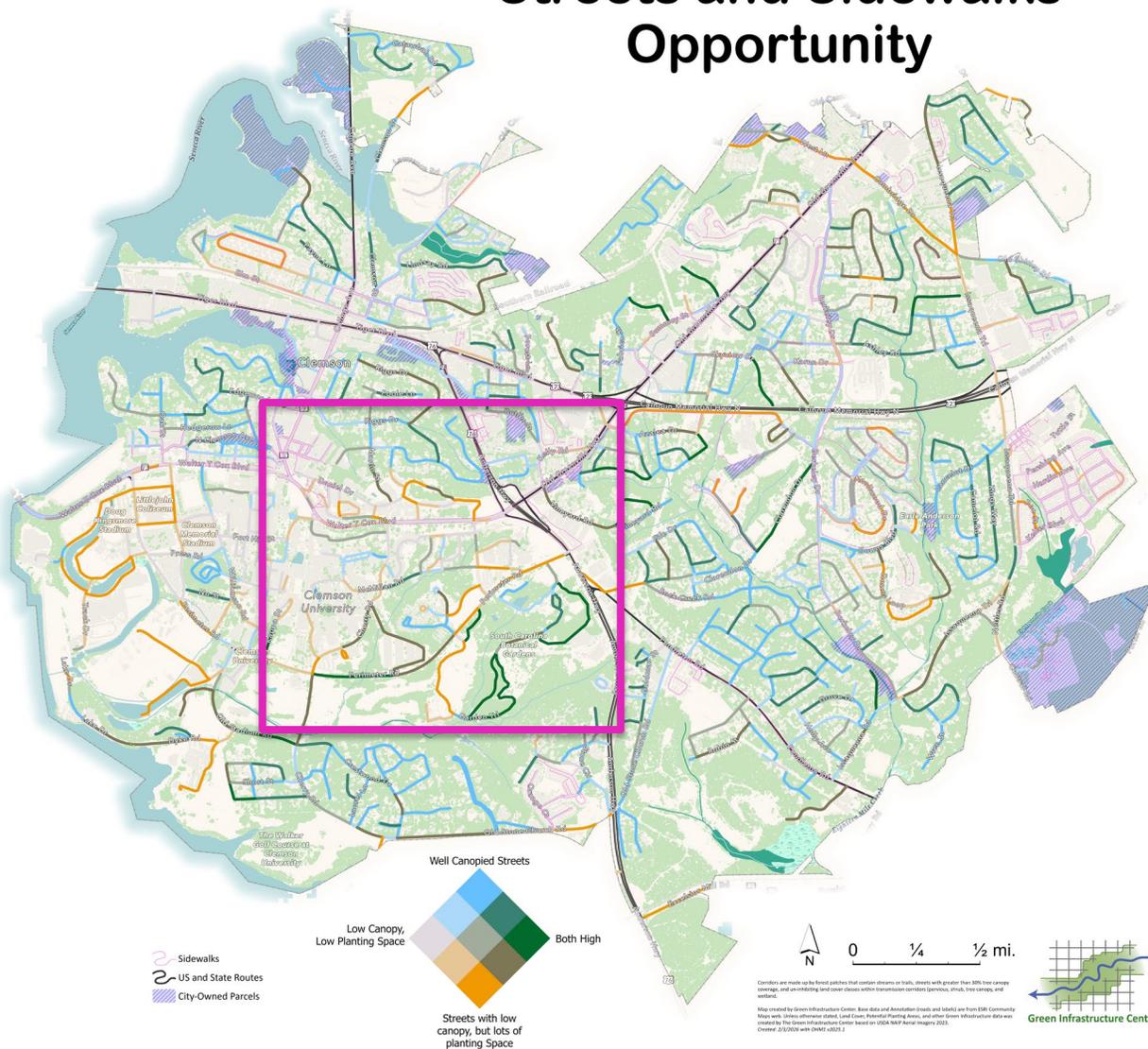


Map created by GR ESRI Community M other Green Infrastr

Clemson, SC Streets and Sidewalks Opportunity

We can also analyze how to increase the green (trees) along corridors and transportation infrastructure.

Orange streets have low canopy but a lot of planting space within 50 feet of road infrastructure.



Clemson, SC Green Infrastructure Corridor Growth Opportunity

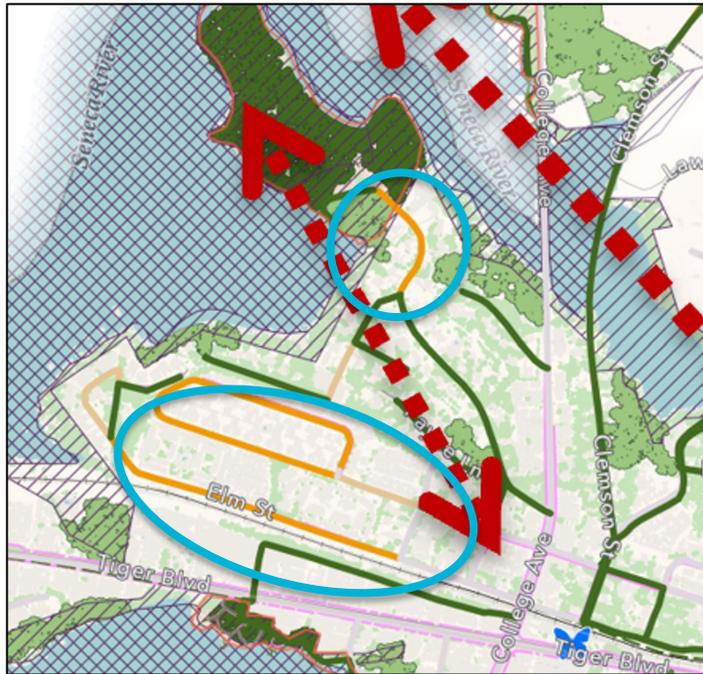


We can use that analysis and filter it to highlight the highest potential planting areas (orange streets) and overlay with the general green infrastructure network (red arrows) to identify gaps and areas for enhancement.

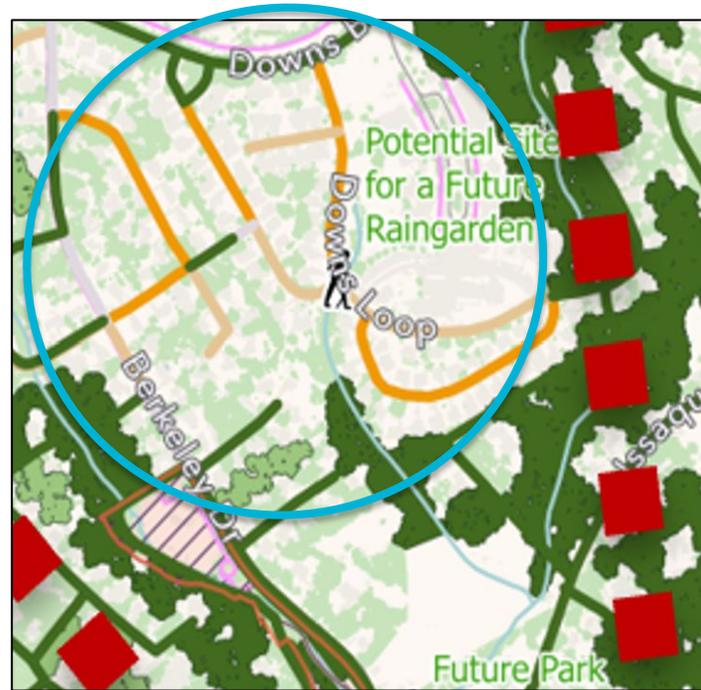
Pink circles highlight some areas where tree canopy can be enhanced along the roadway and create greater connectivity in the wider city green infrastructure network.



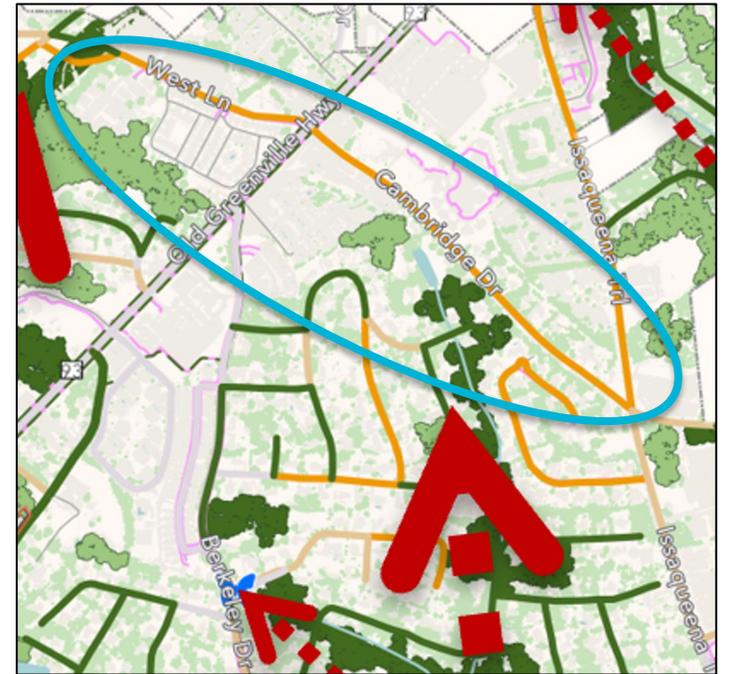
Greater neighborhood green streets connectivity to Mountain View Park.

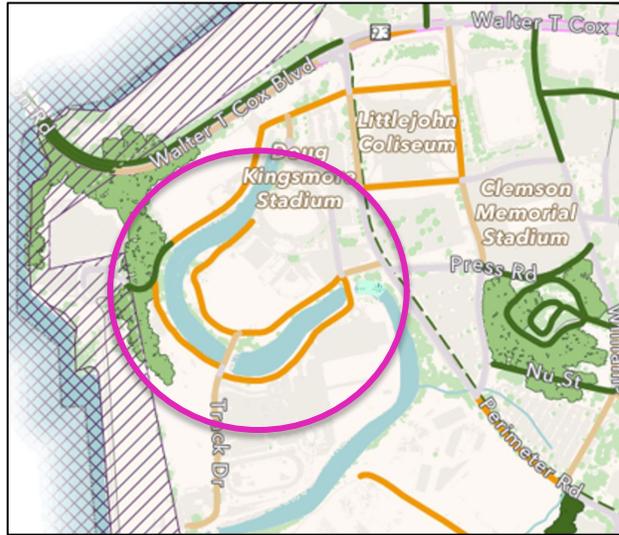


Cross connection between two major green corridors and a rain garden site.



Another connector between two major corridors in the city.





Riparian buffer plantings



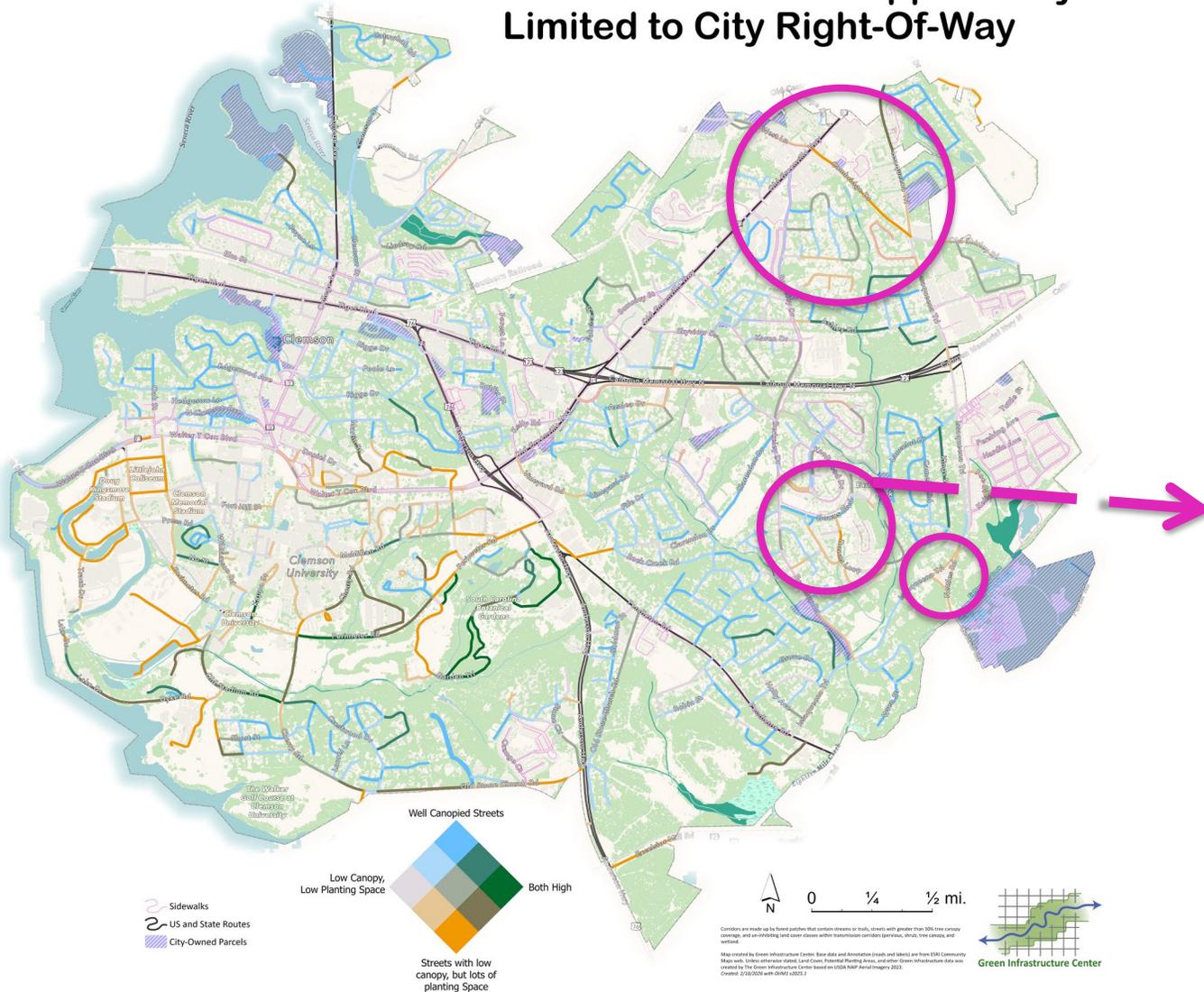
Living shoreline restoration



Living shoreline restoration by Old Dominion University (ODU)



Clemson, SC Streets and Sidewalks Opportunity Limited to City Right-Of-Way



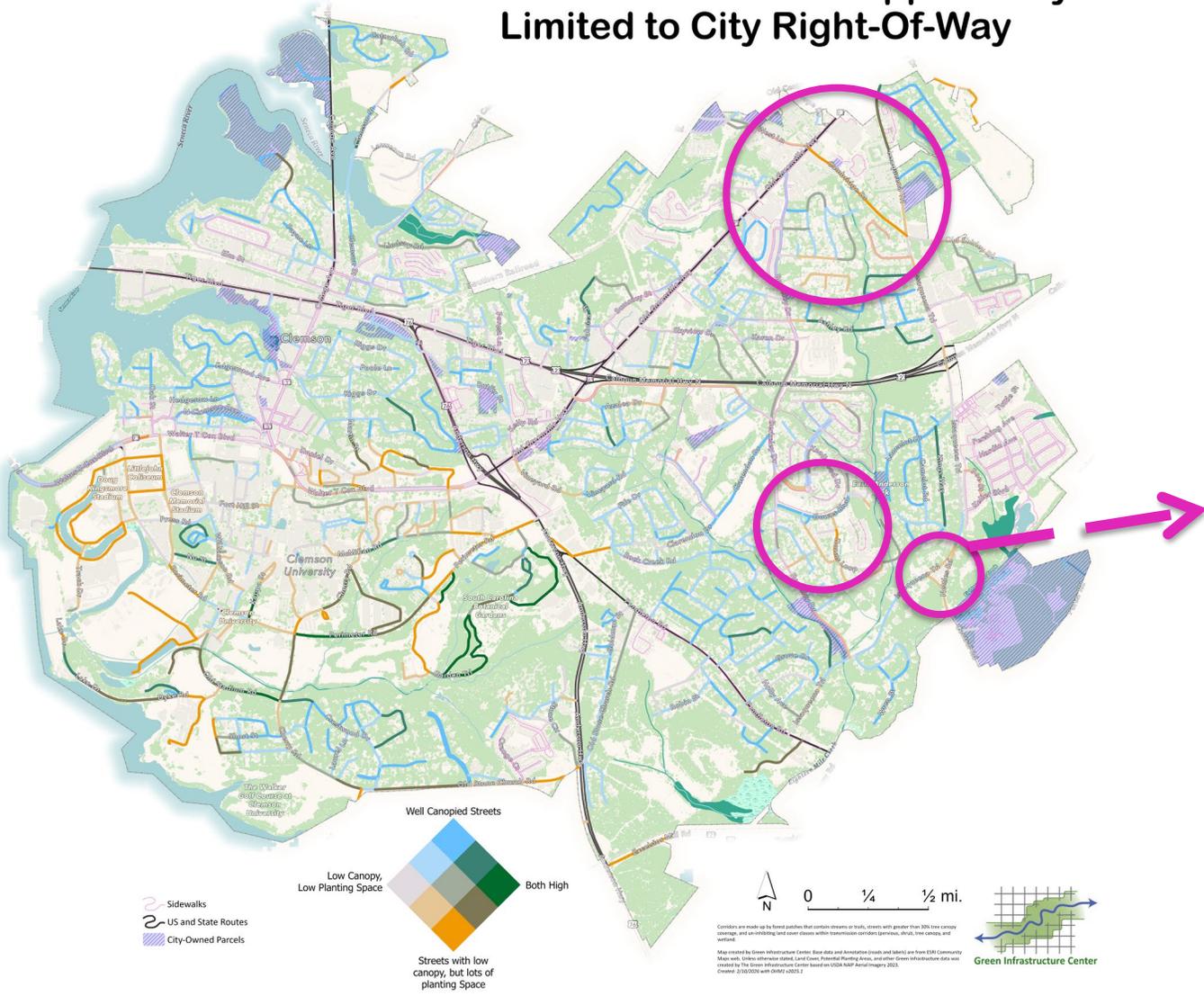
This map shows the best opportunities for the City to take action for planting trees in the ROWs (minus the University's Campus which is still the standard 50 ft road centerline buffer).

Example: Down's Loop Road





Clemson, SC Streets and Sidewalks Opportunity Limited to City Right-Of-Way

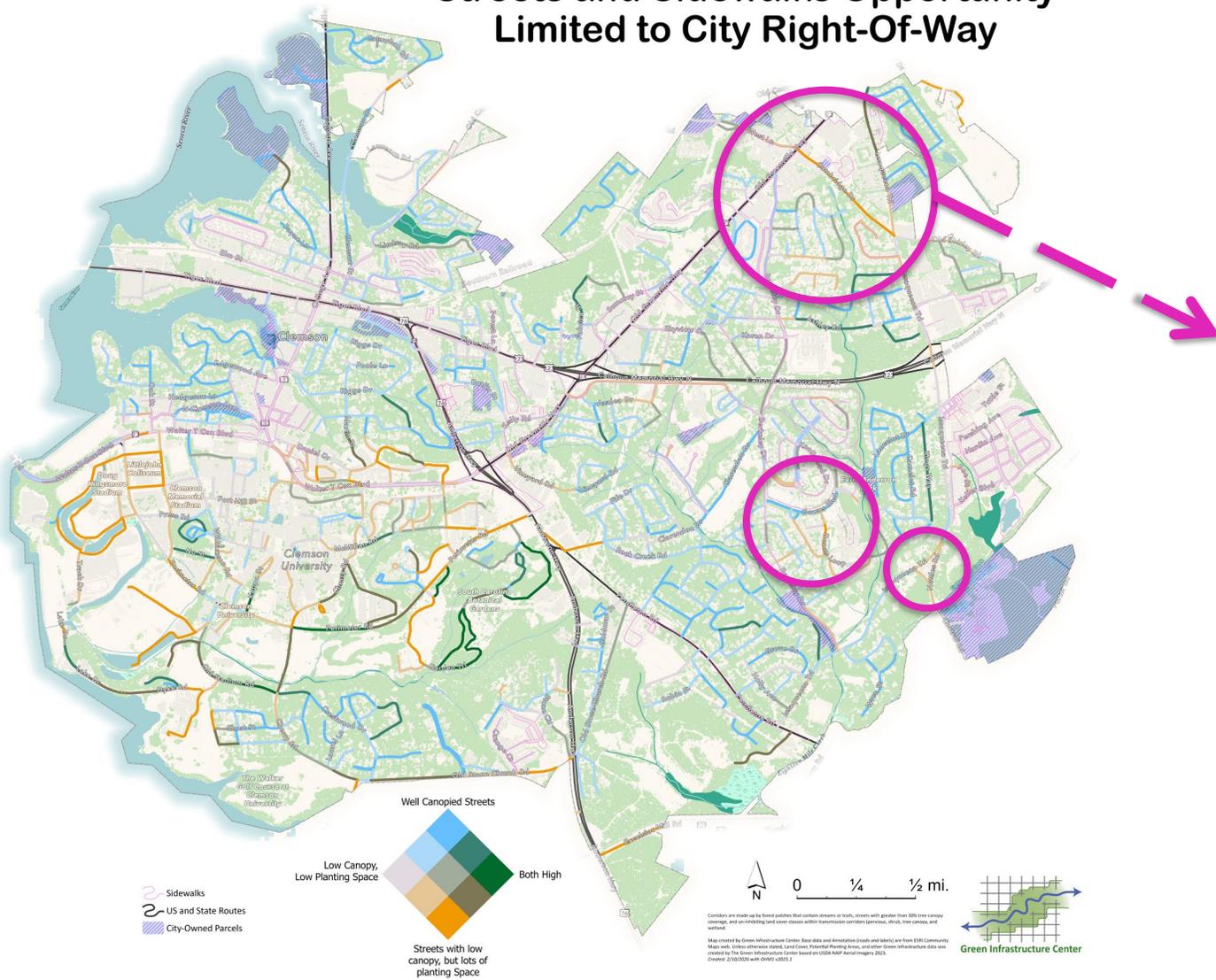


Example: Issaqueena Trail





Clemson, SC Streets and Sidewalks Opportunity Limited to City Right-Of-Way



Example: Cambridge Rd

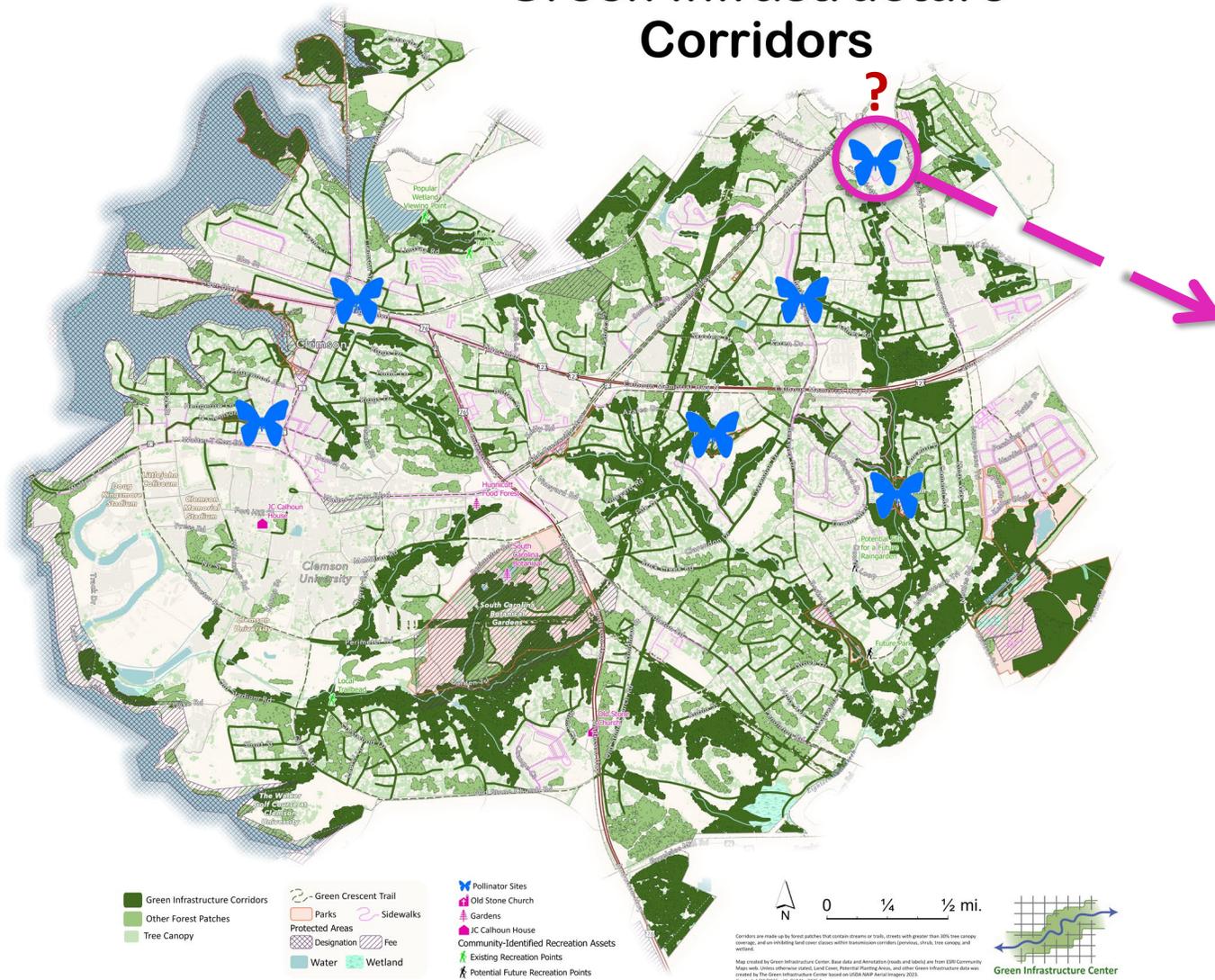


This section of road could have some more trees but also a strategy could be to add small and tall shrubs to increase the buffer between the road and the senior living facility.



Pollinator Sites

Clemson, SC Green Infrastructure Corridors



Alternative green infrastructure goals

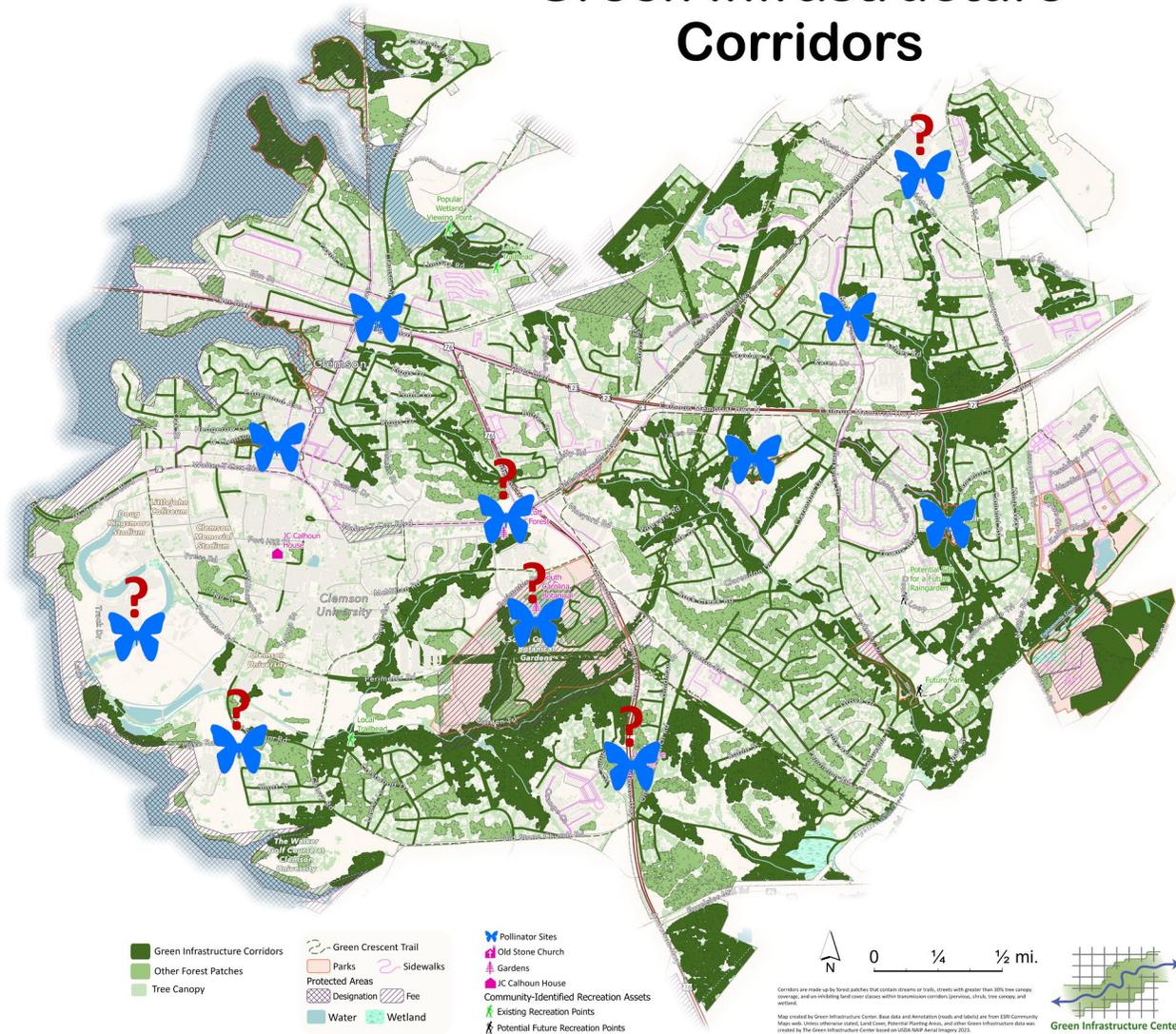


This bench could use a small shade tree. Also, this area could be a spot for a small pollinator garden. Perhaps Master Gardeners could partner with residents at the senior living facility to plant a small garden.



Pollinator Sites

Clemson, SC Green Infrastructure Corridors



Potential Monarch Pollinator Sites

- ❖ Botanical Garden has a Butterfly Garden. Is there a milkweed or monarch section? Education display on monarchs? If no, then could we add one? If yes, let's get it listed in the city's dataset.
- ❖ Hunnicutt Food Forest site?
- ❖ Milkweed/pollinator buffers around experimental ag research fields on campus.
- ❖ Partner with the golf course to create pollinator patches in out of play areas. Prioritize milkweed in the planting palettes.
- ❖ Small pollinator patch at the Old Stone Church? Could Master Gardeners spearhead and maintain a small patch?

0 1/4 1/2 mi.

Map created by Green Infrastructure Center. Base data and Aerial Imagery (lands and labels) are from ESRI Community Map with various other information (land cover, potential planting areas, and other green infrastructure data) was created by the Green Infrastructure Center based on USDA NIP Aerial Imagery 2013.
Created: 1/29/2018 with QGIS v3.0.2



- ✓ **Continue to brainstorm and discuss goals, objectives and actions.**
- ✓ 4th and final workshop we will develop priorities and identify strategies to include in the mini-plan.
- ✓ GIC will compile this into a final summary plan (~20 pages) for the community (plus all data & tools).



Comments,
Questions?

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