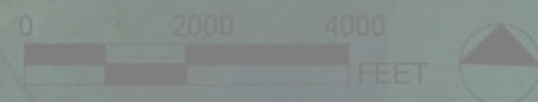


Southwest Streetscape & Street Tree Master Plan

Resiliency Action Forum

April 27, 2021



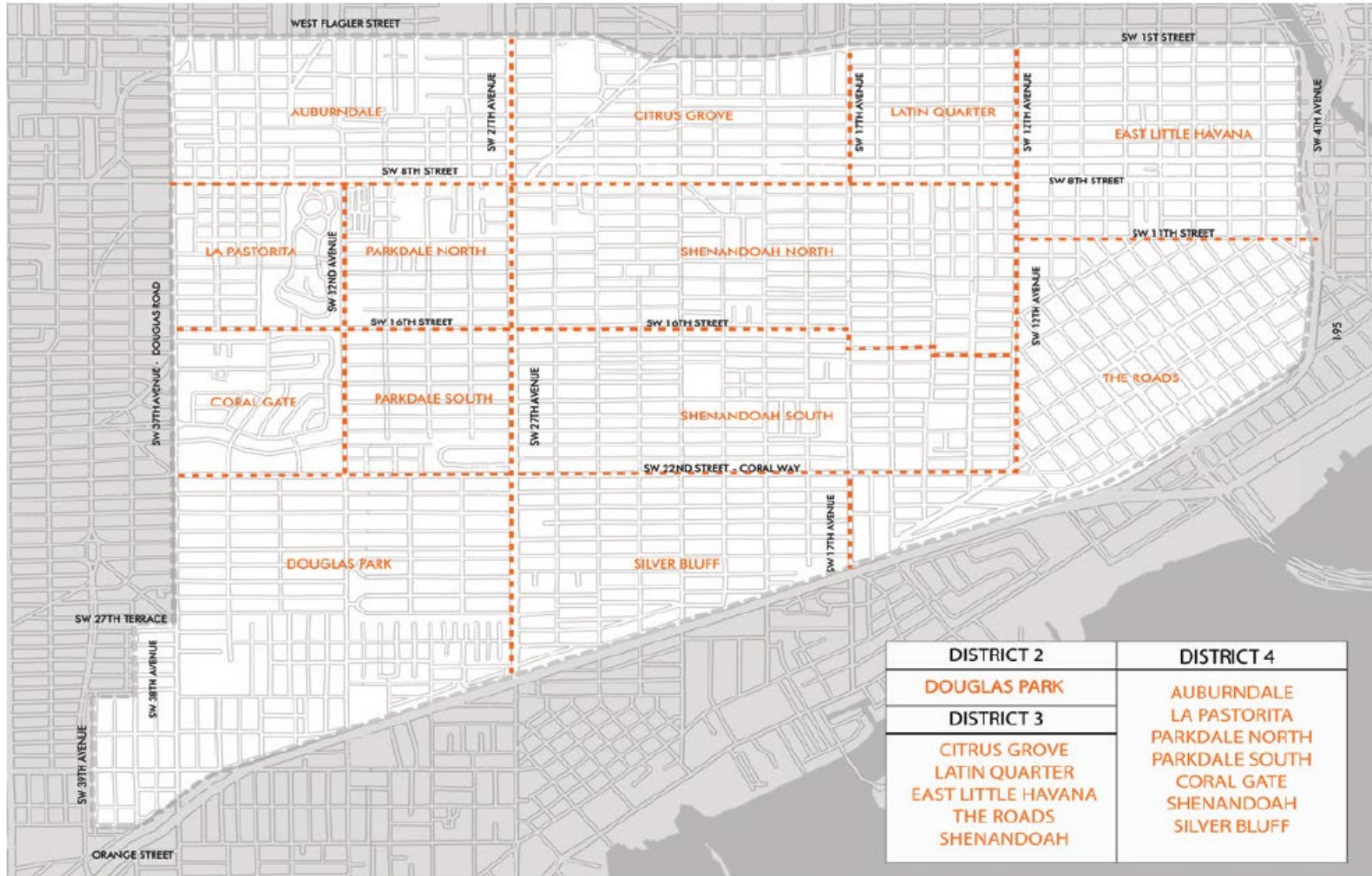
Southwest Streetscape & Street Tree Master Plan



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PROJECT LIMITS



SW Streetscape Project Limits

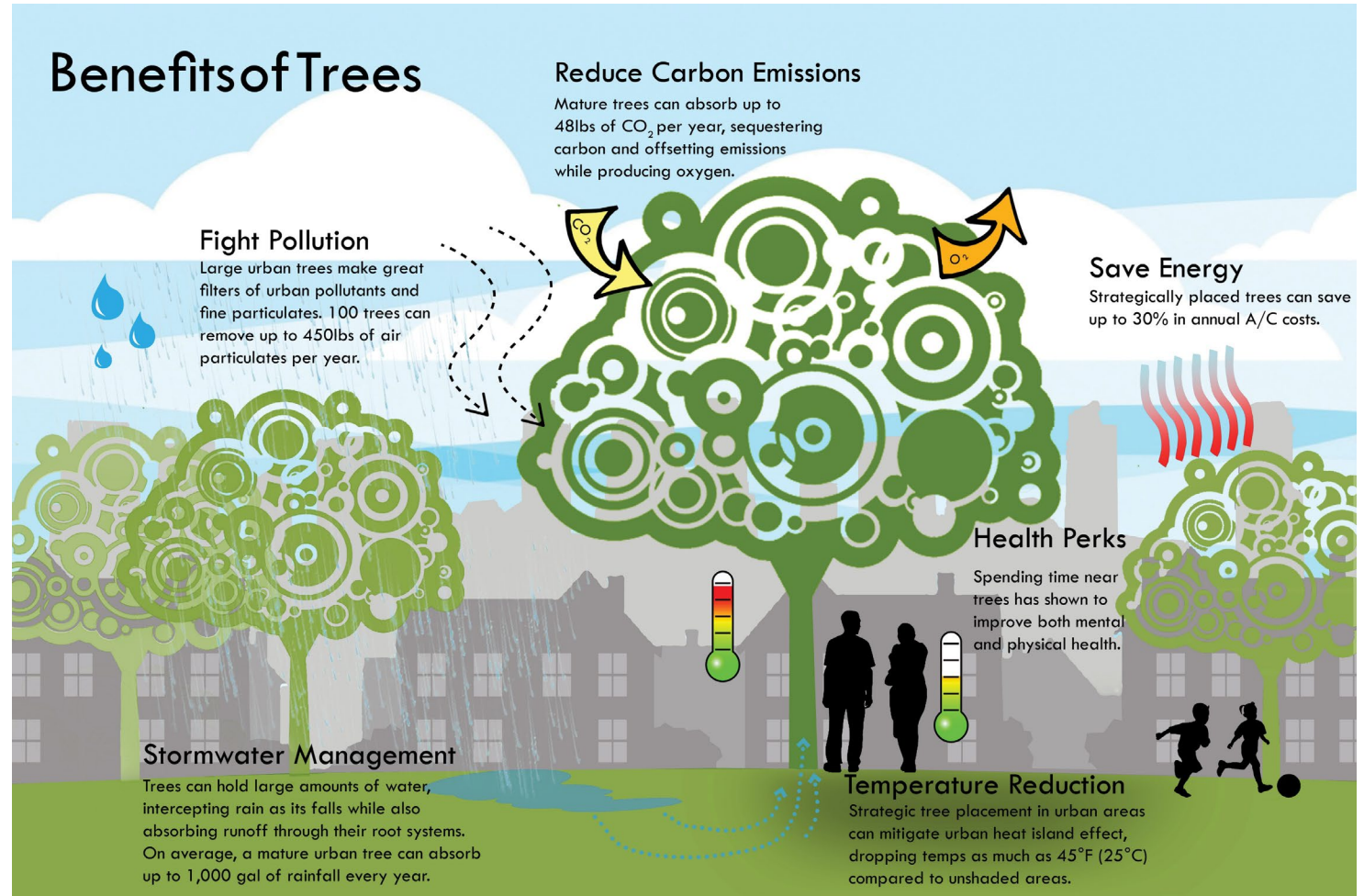


GOALS

- Build the community's resilience to the impacts of climate change through tree shading to reduce the heat island effect;
- Maintain and enhance the quality of the air, water and land through a mature tree canopy's ability to sequester carbon and release oxygen, and filter storm water;
- Promote and encourage actions that reduce greenhouse gas emissions through the creation of attractive and comfortable pedestrian and cycling routes which foster the use of alternate modes of transportation;

METHODS

- Increasing Tree Canopy
- Protecting the existing tree canopy
- Naturalizing water conveyance, where possible
- Permeable surfaces
- Develop storm water retention capability







Green Infrastructure is “... the range of measures that use plants or soil systems, permeable pavement or other permeable surfaces of substrates, stormwater harvest and reuse, or landscaping to store, infiltrate or evapotranspire stormwater and **reduce flows to sewer systems or to surface waters.**”

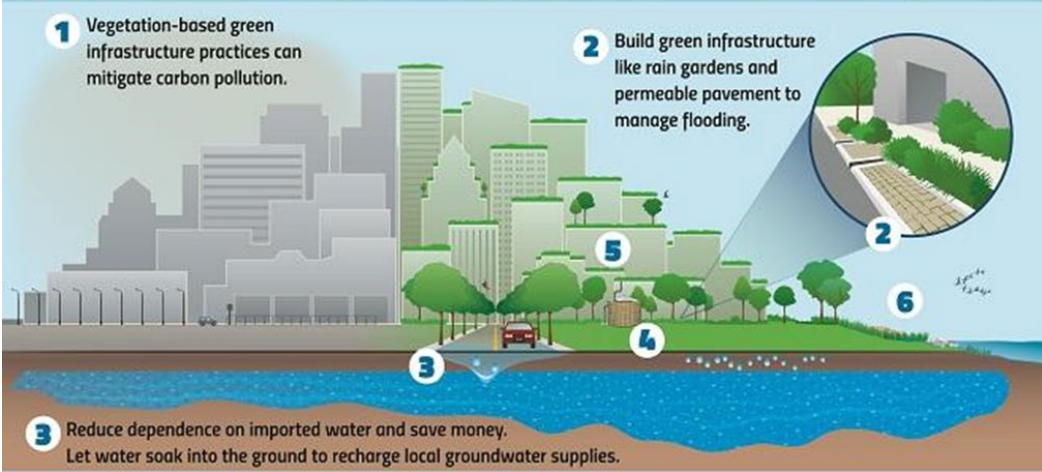
Section 502 of the Clean Water Act

Green Infrastructure for Climate Resiliency

Climate change is impacting urban areas in many ways, from exacerbating the urban heat island effect to elevating flood risk. Build green infrastructure to help improve community resiliency.

FLOODING	DROUGHT	COASTAL DAMAGE	URBAN HEAT
			
By the end of the century, annual damages from flooding in the U.S. are projected to increase by 30% . ¹	1 out of 3 U.S. counties in the lower 48 states face higher risks of water shortages by mid-century. ²	50% of Americans live in coastal counties, where water and energy infrastructure are increasingly vulnerable to higher sea levels. ³	Climate change will likely lead to more frequent and severe heat waves during summer months. ⁴

Green Infrastructure Builds Resiliency



- 1 Vegetation-based green infrastructure practices can mitigate carbon pollution.
- 2 Build green infrastructure like rain gardens and permeable pavement to manage flooding.
- 3 Reduce dependence on imported water and save money. Let water soak into the ground to recharge local groundwater supplies.
- 4 Keep water local. Capture runoff in cisterns and rain barrels to reduce municipal water use.
- 5 Plant trees and green roofs to mitigate the urban heat island effect.
- 6 Use living shorelines, buffers, dunes and marsh restoration to reduce the impact of storm surges.

Green Infrastructure at Work

- *In progress* - Public Outreach and Consensus Building
- *Next Steps* -Pilot Projects Schematics
 - Identify areas with highest priority for implementation
 - Develop sustainable, green infrastructure and resilient strategies for Pilot Projects



NEIGHBORHOOD:
DOUGLAS PARK

Southwest Streetscape and Street Tree Master Plan

The City of Miami has started a project to restore and enhance the Urban Forest (tree canopy) in the southwest portion of the City.

This project consists of:

- Analysis of existing trees on public right of way
- Analysis of the effectiveness of swales for drainage
- Community Outreach to identify neighborhood issues and concerns
- Development of Pilot Projects for improvements related to resiliency, canopy coverage, identity and drainage.

A Community meeting in your area to seek resident input

will be held on December 8th 2020. Notifications for this meeting will be sent out via email and will be posted on the City Website:

<https://www.miamigov.com/Notices/Events-Activities/City-of-Miami-Public-Meetings>

If you have further questions, please call or email the City of Miami's Chief of Urban Design: David Snow at 305-416-1474 or dsnow@miamigov.com.



NOTICE OF UPCOMING VIRTUAL COMMUNITY OUTREACH MEETING

TUESDAY DECEMBER 8TH 2020
6:00PM

Meeting will take place Online through video conference.

Zoom Link: [952 2075 6442](https://zoom.us/j/95220756442) Passcode: 909064

Phone: 888 475 4499

International numbers available: <https://zoom.us/j/95220756442>

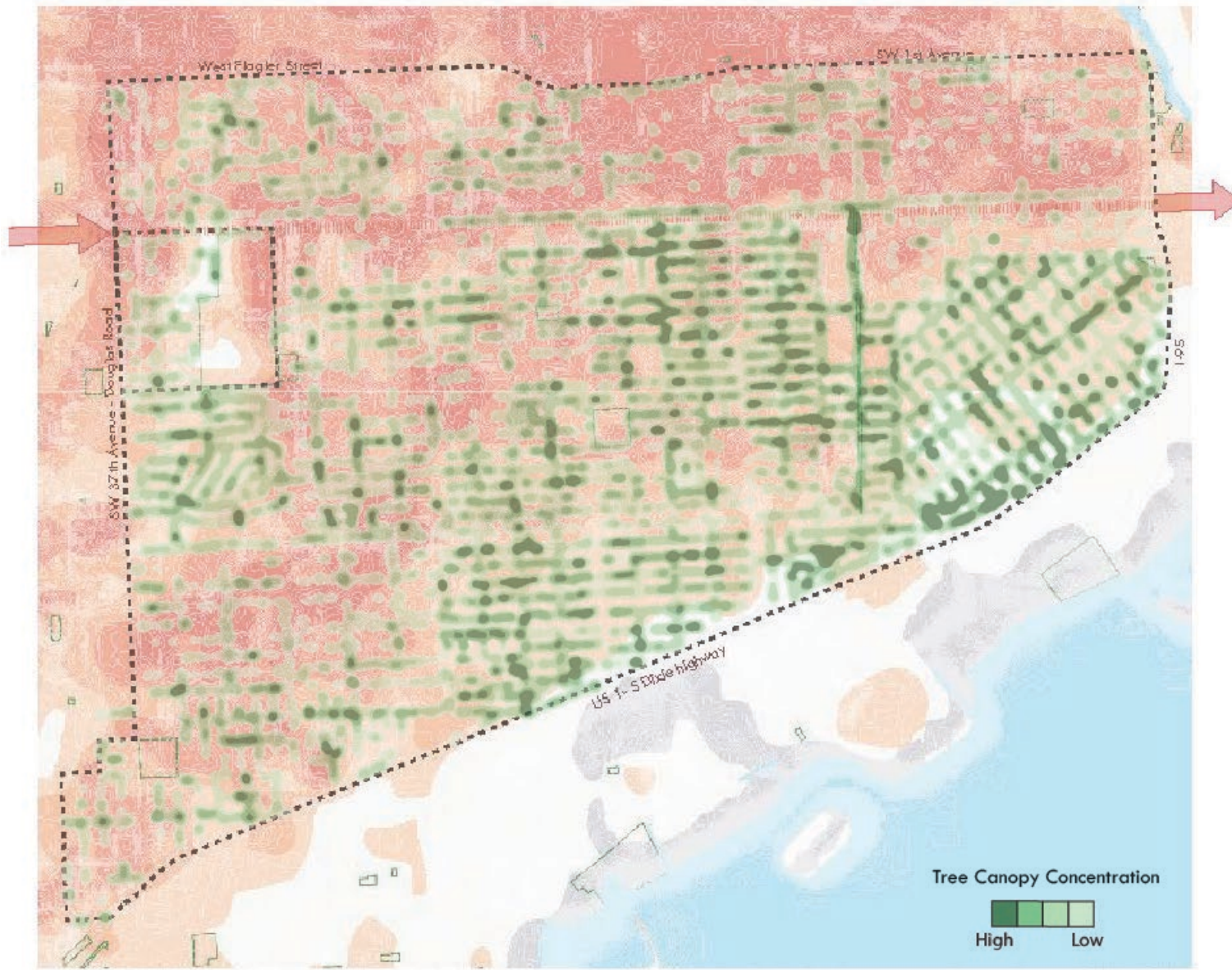
Please, register for the meeting in advance if possible at:

https://zoom.us/webinar/register/WN_A0wtosB-TvikwP_riVPs2A

Participants will be able to provide live comments during the virtual community meeting. Comments and questions may be submitted to: <https://www.miamigov.com/Government/Departments-Organizations/Planning/Southwest-SW-Streetscape-and-Street-Tree-Master-Plan>

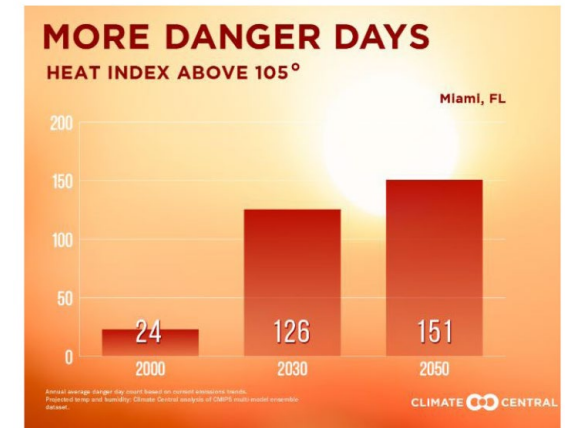
In accordance with the Americans with Disabilities Act of 1990, persons needing special accommodations to participate in this proceeding may contact the City Liaison at (305) 416- 1409 (Voice) no later than two (2) business days prior to the proceeding. TTY users may call via 711 (Florida Relay Service) no later than two (2) business days prior to the proceeding.





Overlay of Heat island Mapping (orange) and Tree Canopy Mapping (Green)

The hottest locations are those with the least canopy



<https://www.climatecentral.org/news/sizzling-summer-20515>



Street Tree Assessment | Species

Tree Inventory

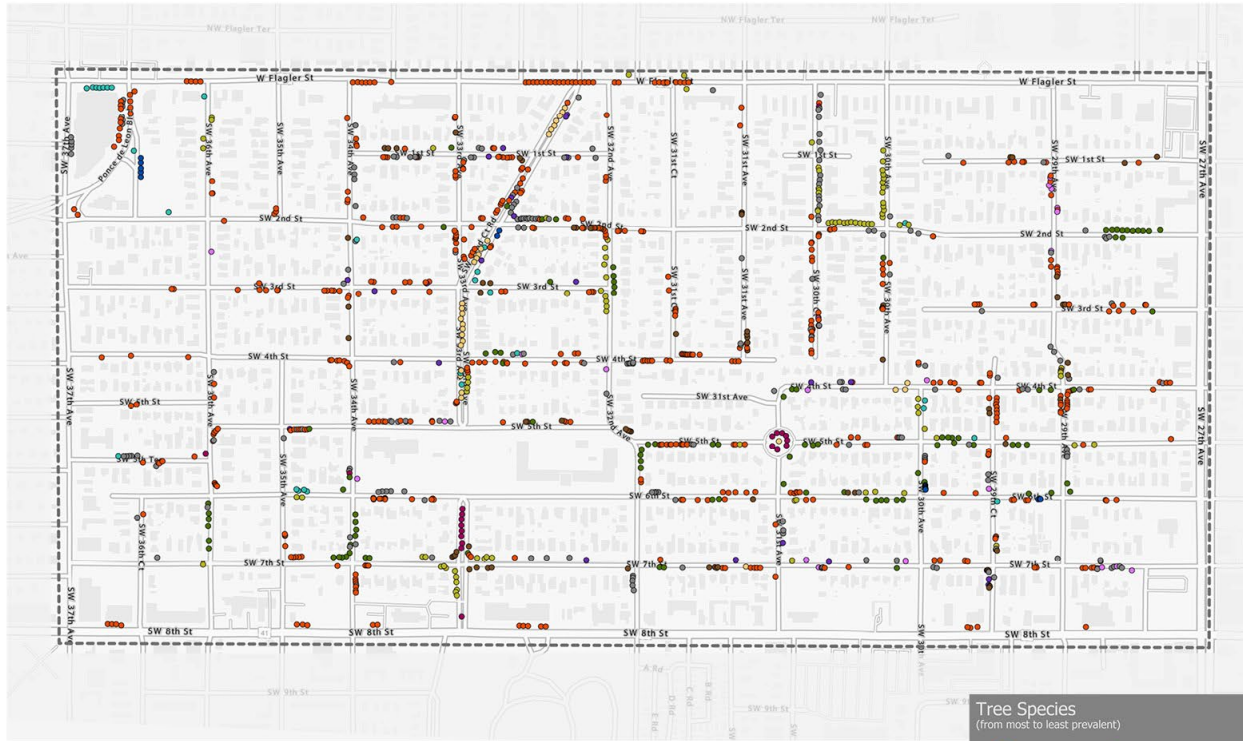
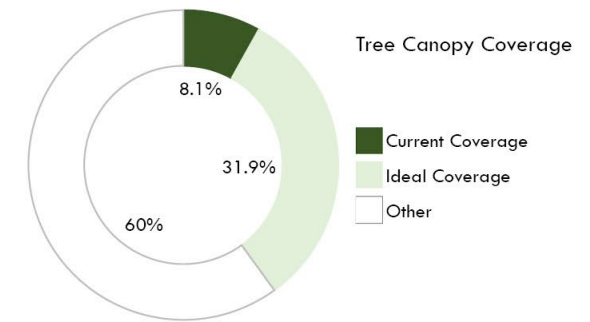
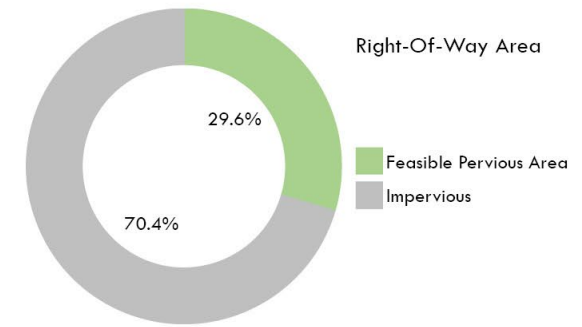


Figure 3. Auburndale Tree Species Inventory

Main Takeaways

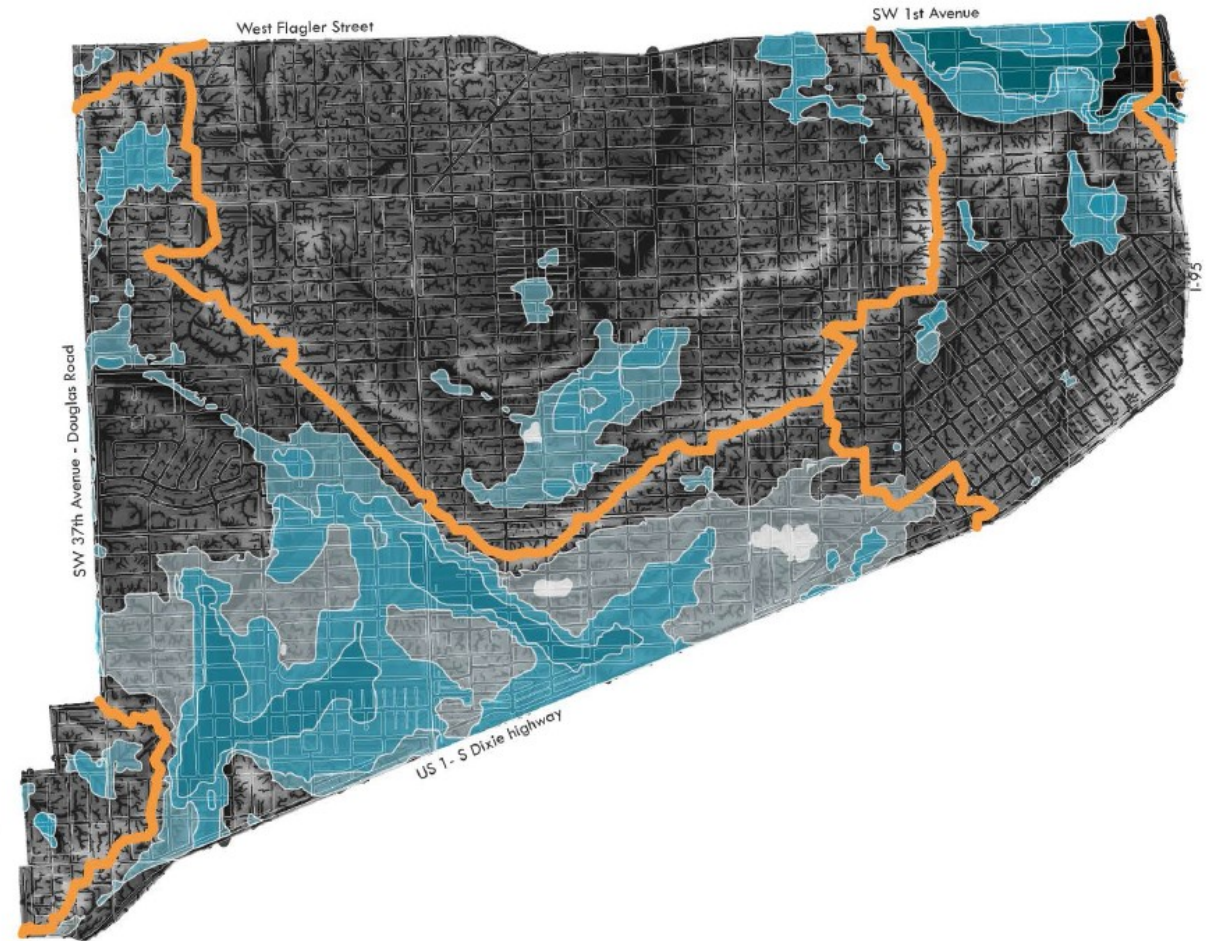
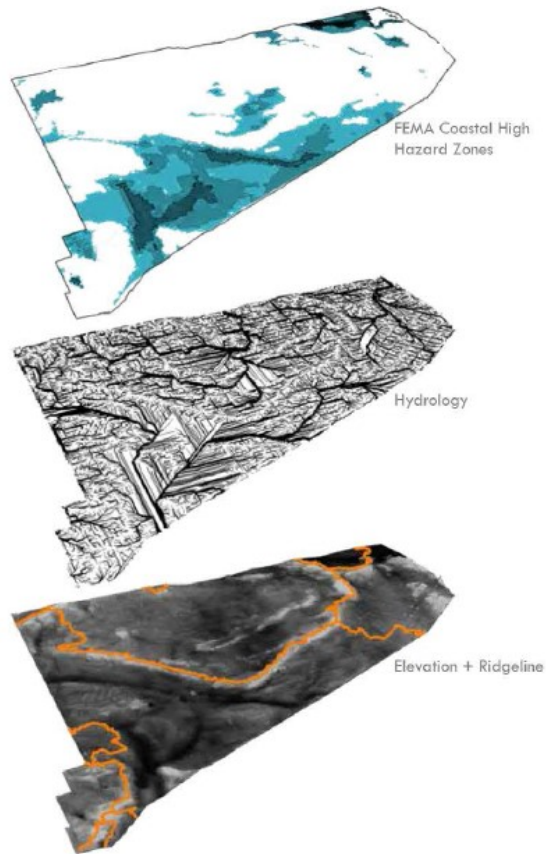
- Overall very little street tree canopy with the exceptions of SW 30th Court, SW 30th Avenue as well as SW 32nd Court Road and SW 33rd Avenue.
- Predominant trees for the neighborhood are Mahogany (*Sweitenia mahagoni*) and Black Olive (*Bucida buceras*)
- Streets with one predominant species
 - SW 33rd Avenue - Tamarind (*Tamarindus indica*) in Median
 - SW 30th Avenue - Black Olive (*Bucida buceras*) surrounding



Hydrology Modeling

Hydrology Modeling

Using computer-generated analysis tools to accurately model the existing hydrology, we can see how even slight variations in topography greatly affect the movement of water. Flood risk zones (as designated by FEMA) overlap the pre-development sloughs, and the boundaries of atolls form ridgelines, creating distinct sub-watersheds.



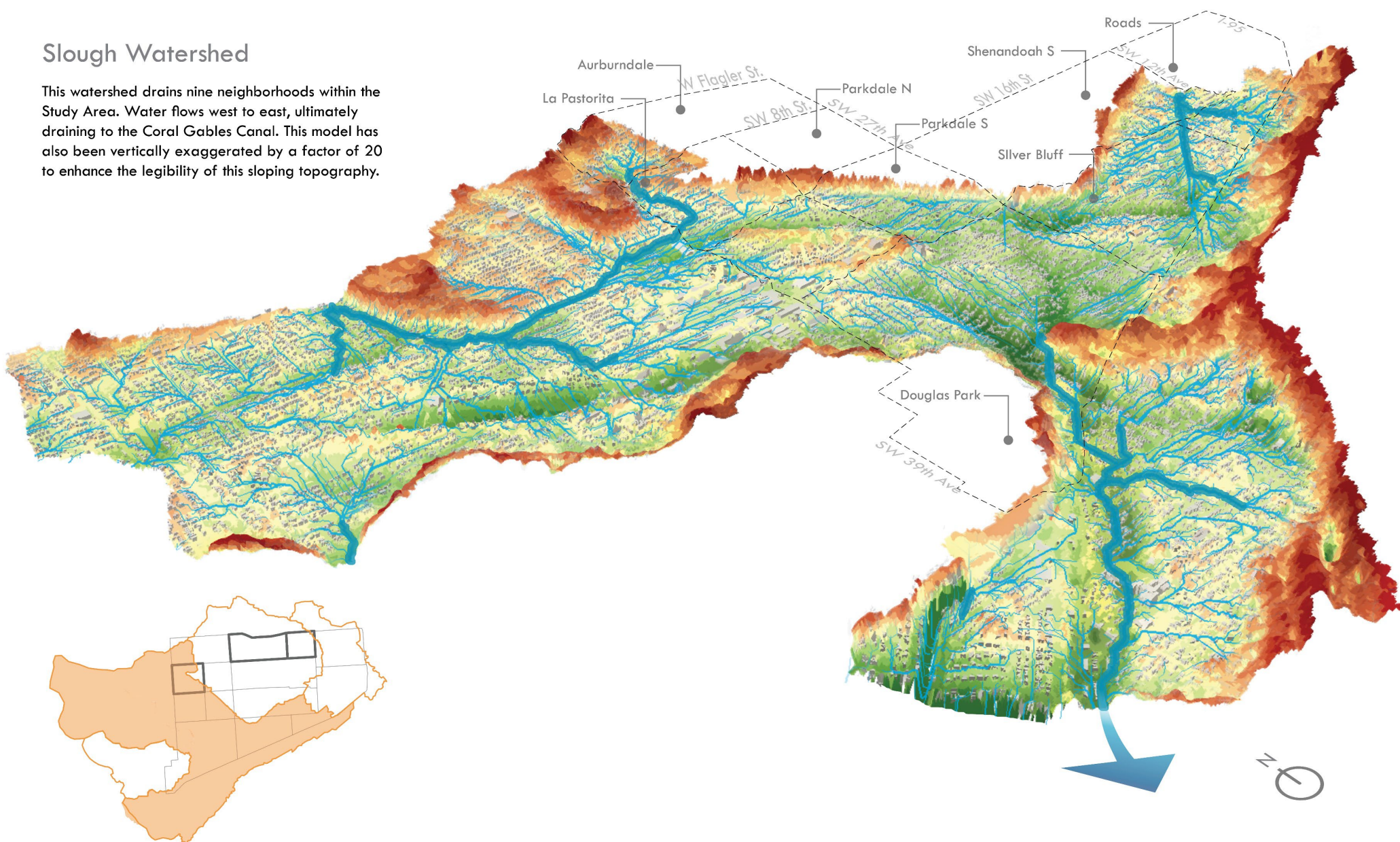
Source: 1. Hydrology flow study conducted through LAS data for Miami Dade county. Analytic graphics generated by LOLA
2. Coastal Hazard data generated by FEMA



Hydrology Modeling

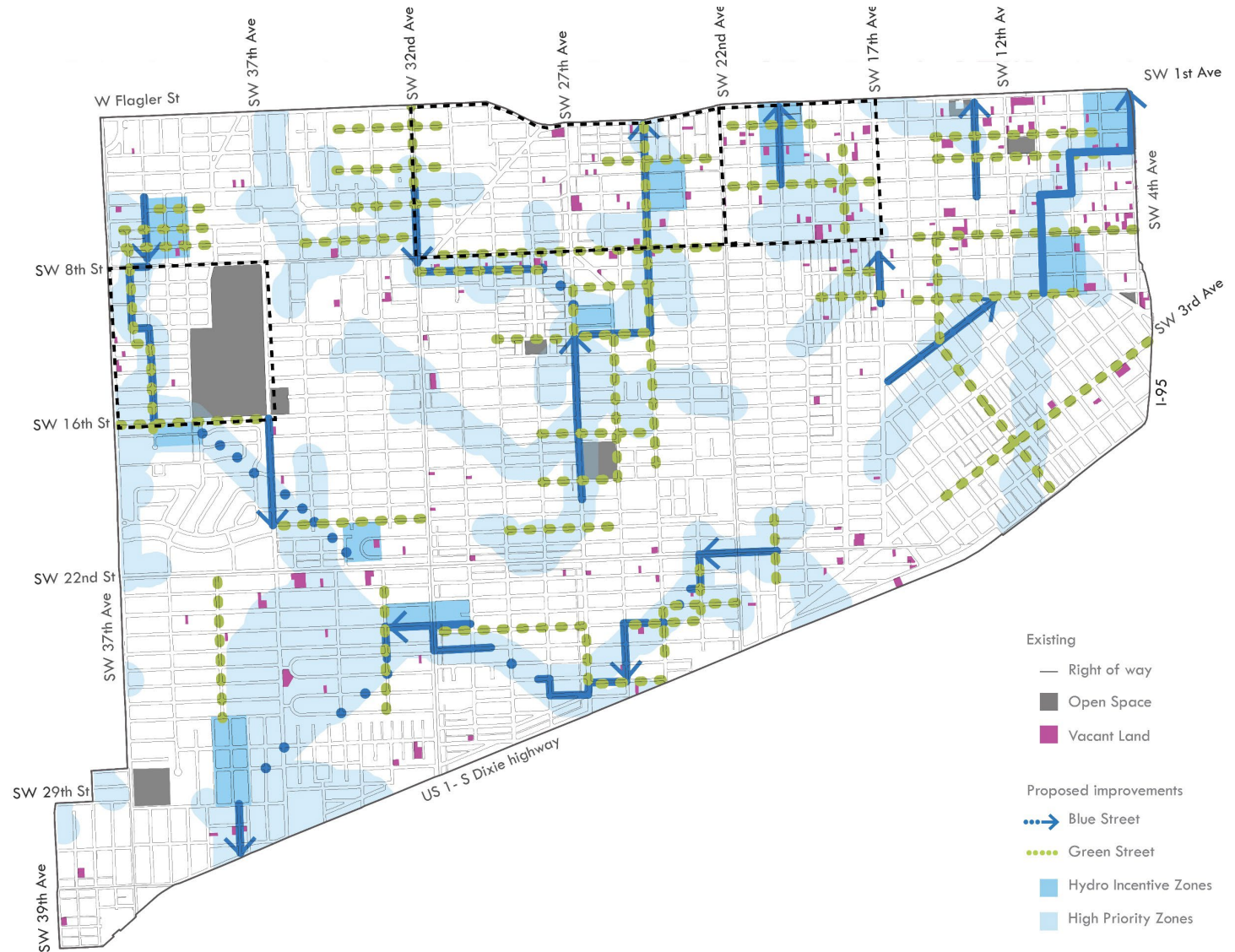
Slough Watershed

This watershed drains nine neighborhoods within the Study Area. Water flows west to east, ultimately draining to the Coral Gables Canal. This model has also been vertically exaggerated by a factor of 20 to enhance the legibility of this sloping topography.



Source: Hydrology flow and elevation study conducted through LAS data for Miami Dade county. Analytic graphics generated by LOLA

Implementation of blue and green streetscape adaptations should follow the hydrology. Blue streets, which convey water flow, and green streets, which allow infiltration, are deployed throughout the Priority Zone to mitigate downstream flash flood risks. The lowest and wettest areas within the Study Area are targeted for incentives to encourage investment beyond the right-of-way limits, so that improvements on private property leverage the public interventions.



Source: 1. Analytic graphics generated by LOLA
 2. Heat map data generated by Climate Central, graphically analyzed by LOLA



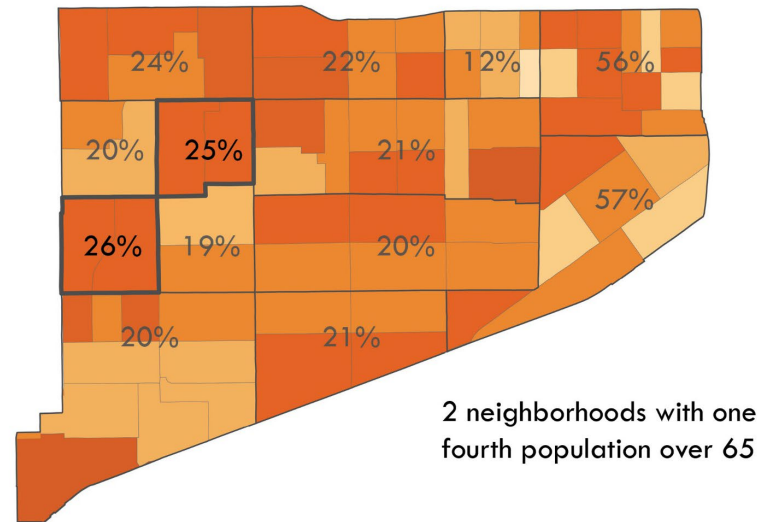
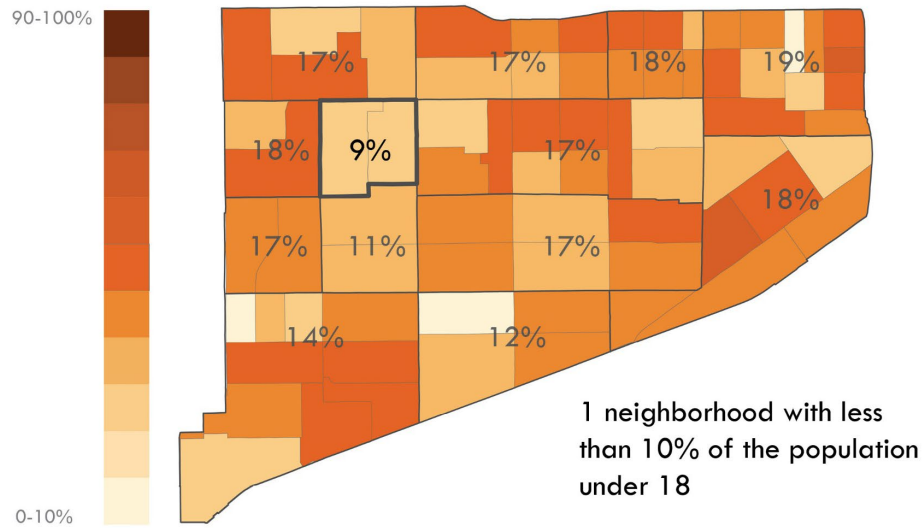
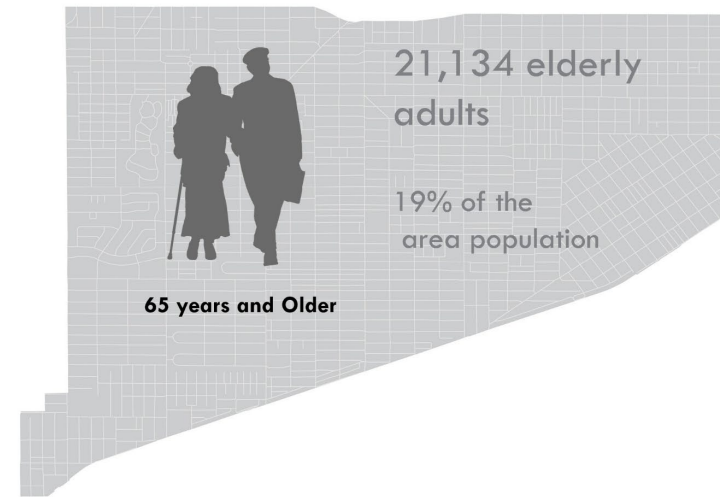
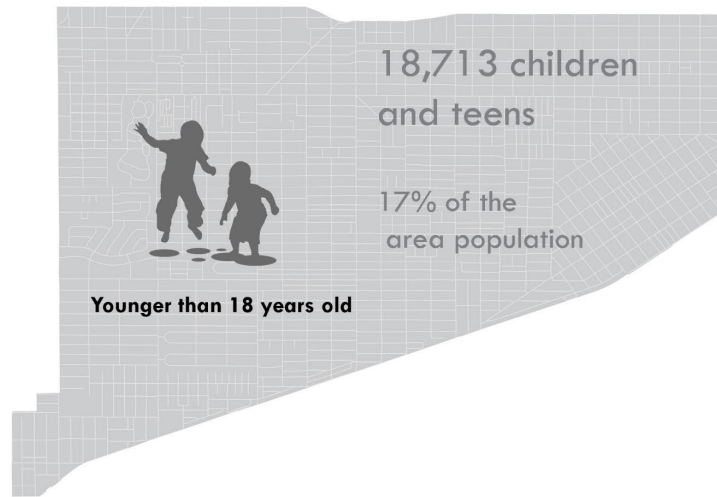
Southwest Streetscape & Street Tree Master Plan



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Community Statistics



C+R assessed a variety of demographic and statistical information included within Volume I of the report:

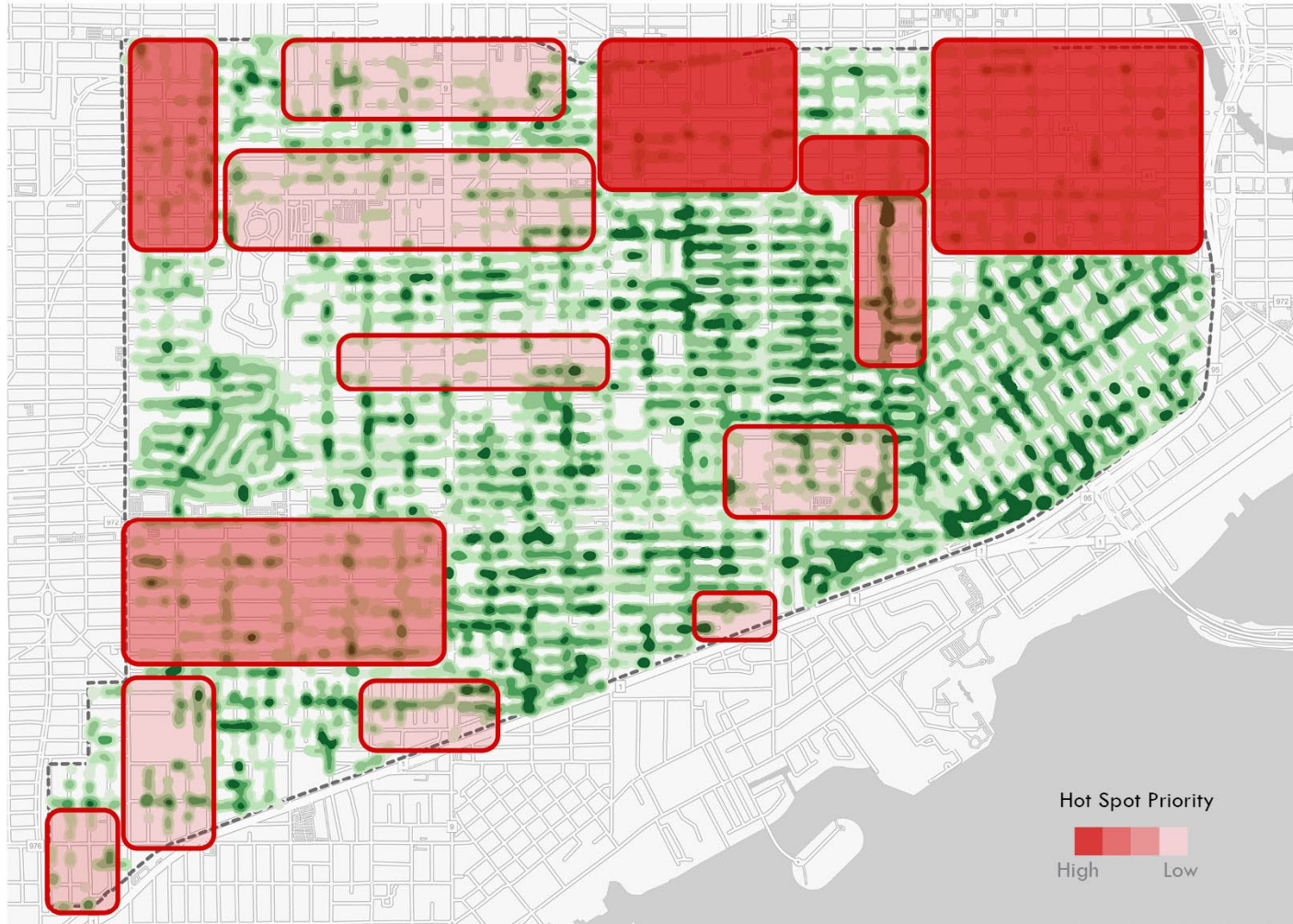
- Age
- Household Type
- Ethnicity
- Home Value
- Home Vacancy
- Income
- Poverty
- Unemployment
- Health
- Chronic Illness
- Crime
- Education

Figure 1: Age Distribution under 18 years of Age

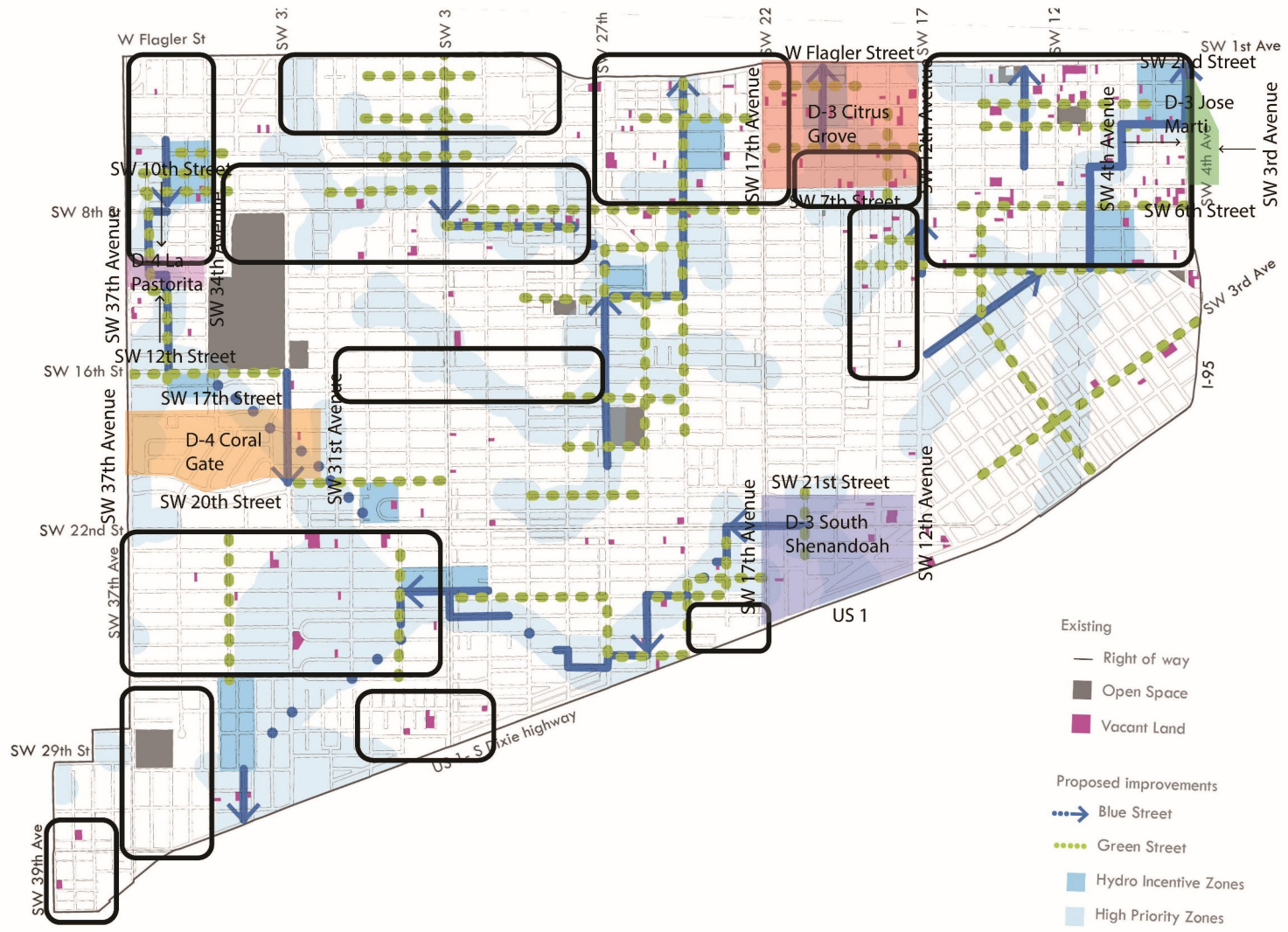
Figure 2: Age Distribution over 65 years of Age



Hot Spot Priority



This graphic delineates the identified hot spots in order of priority based upon statistical data gathering to identify our most vulnerable populations

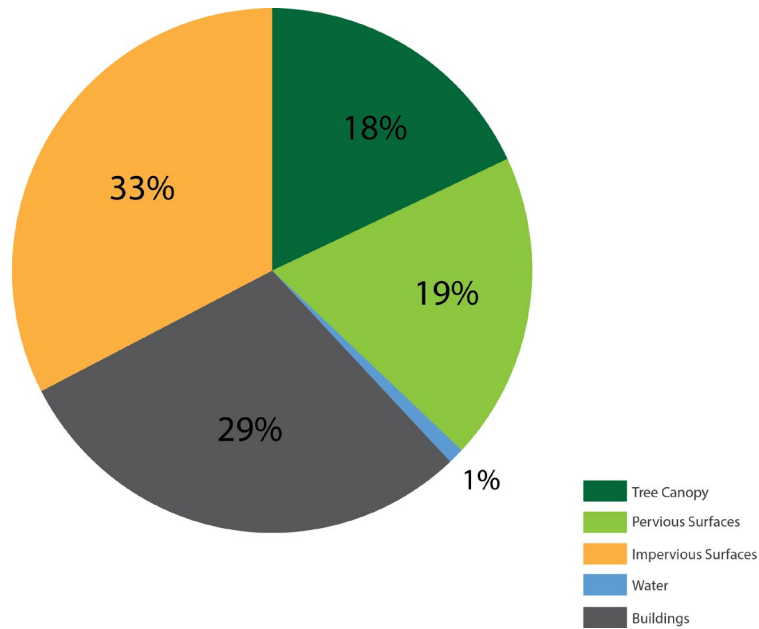


NEXT STEPS –
 IDENTIFY PILOT PROJECT LOCATIONS

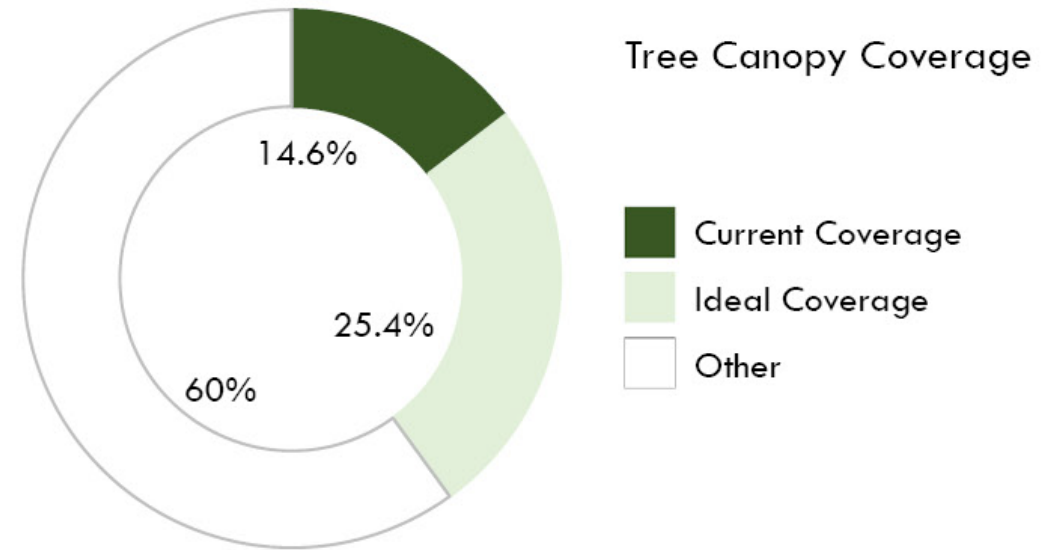
Coordinate with the Stormwater Master for our Pilot Projects



- [American Forests recommends an average of 40% tree canopy](#) coverage in areas East of the Mississippi. This is ideal to obtain the optimal benefits provided by a healthy urban tree canopy.



City of Miami- Urban Tree Canopy 18%



Project area averages 14.6% Canopy in the ROW

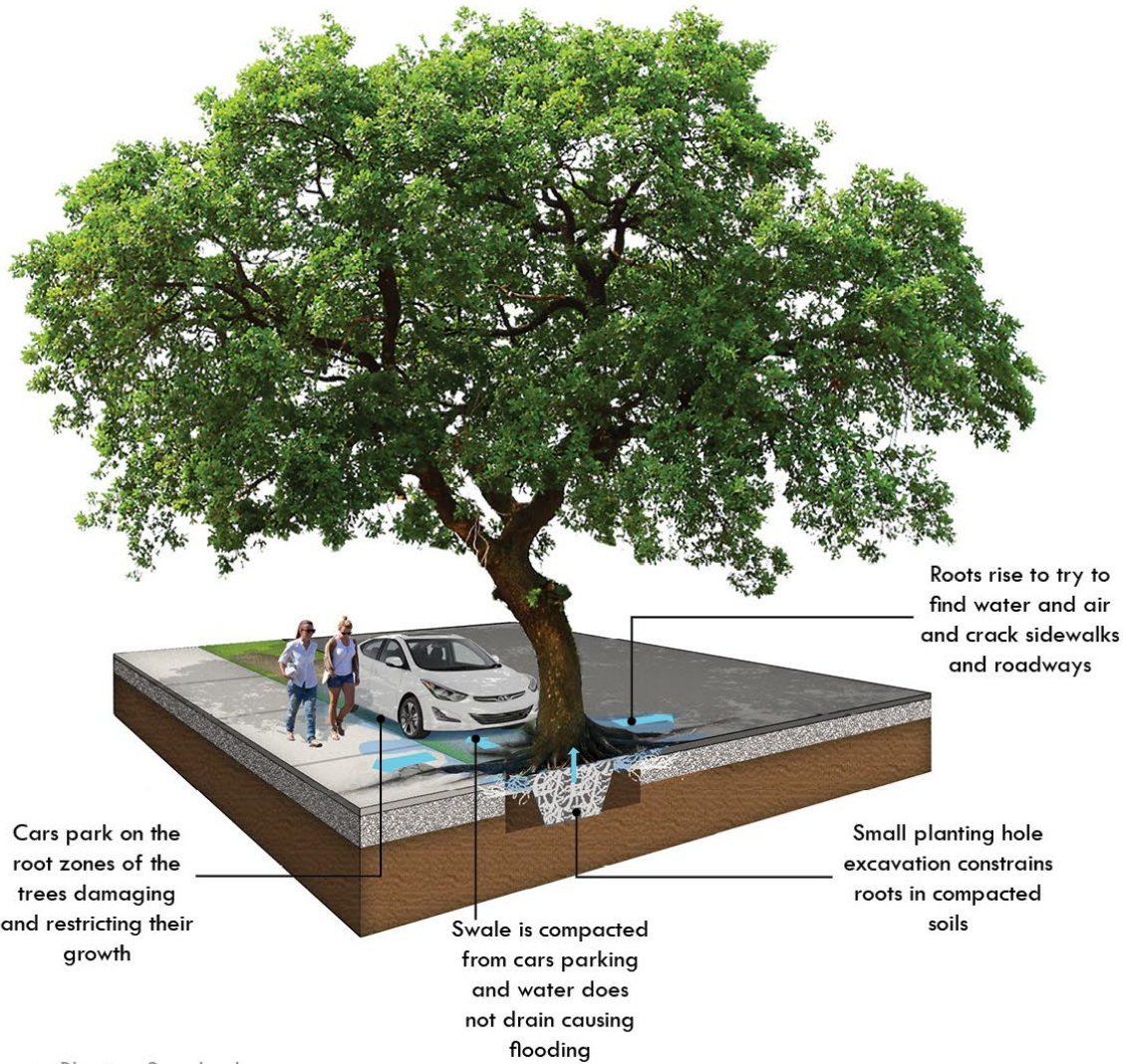


Goal:

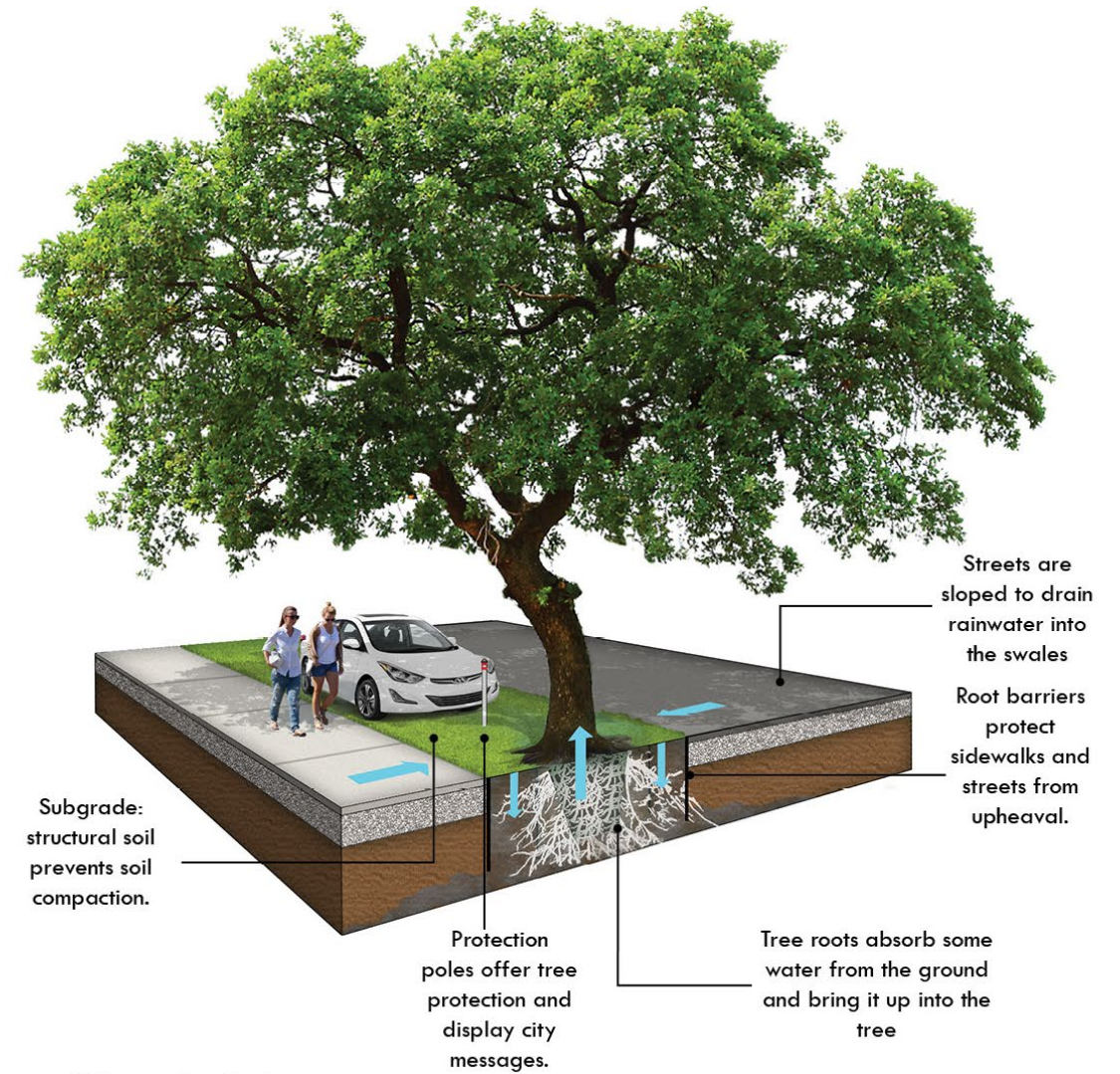
To create a design criteria for street trees that can be applied throughout the City that is based on scientific research of how to get the healthiest, most beneficial tree canopy. Why is healthy important?

Many City street trees currently cause maintenance issues, heaving sidewalks and roads and interference with overhead utility lines which cost the City to repair.





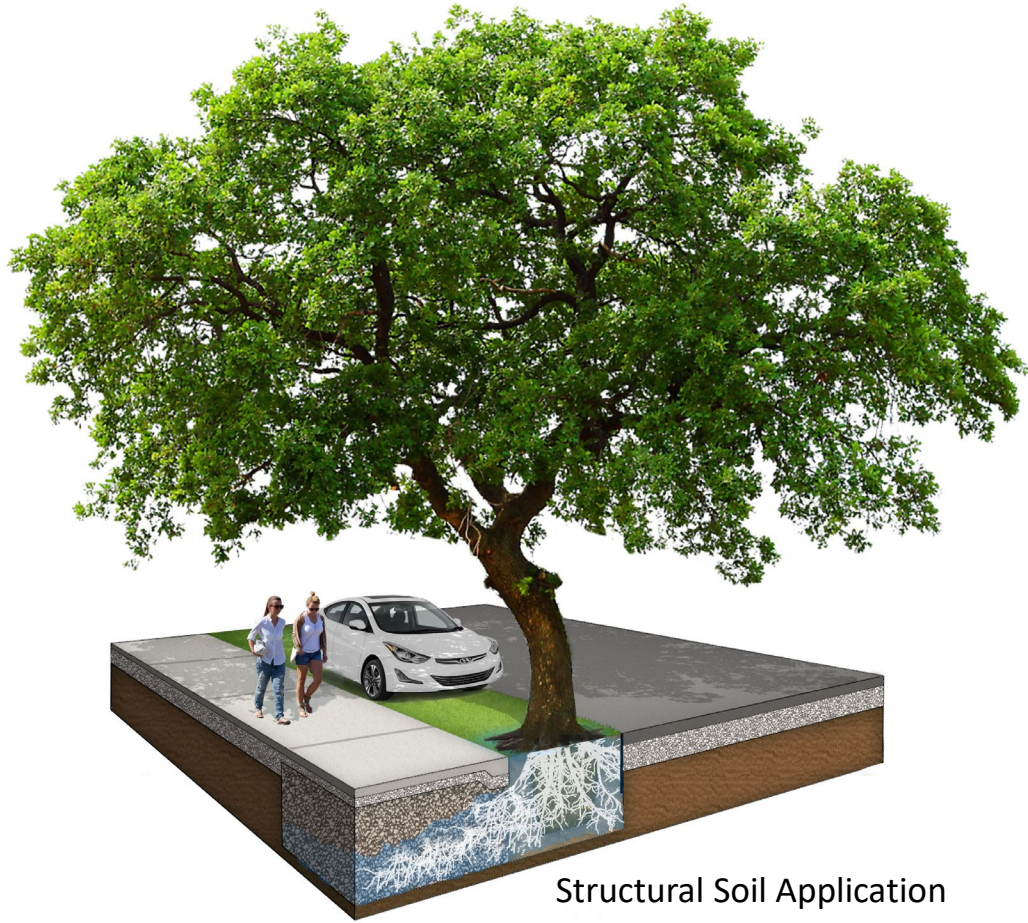
Current Planting Standards



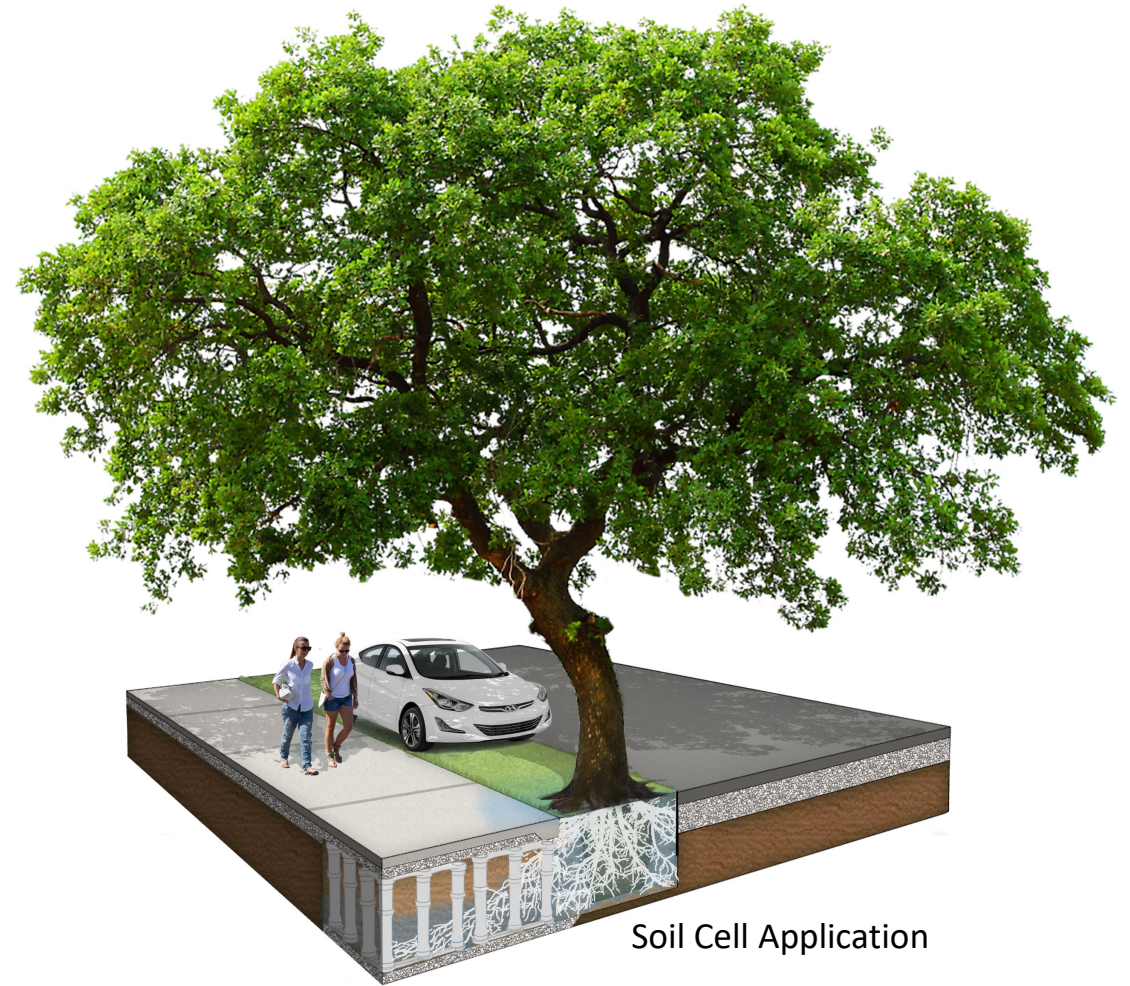
Proposed Planting Standards

Big canopy trees need big spaces to grow





Structural Soil Application



Soil Cell Application

How do we get bigger canopy trees in smaller spaces?
Infrastructure





EXISTING CONDITION

■ SHADE

TOTAL SHADE OF STREET = 2,530 SF (13%)
 TOTAL SHADE OF SIDEWALK = 1,931 SF (35%)
 4,461 SF = **18% SHADE**



**15%
MORE**

ADDING TREES

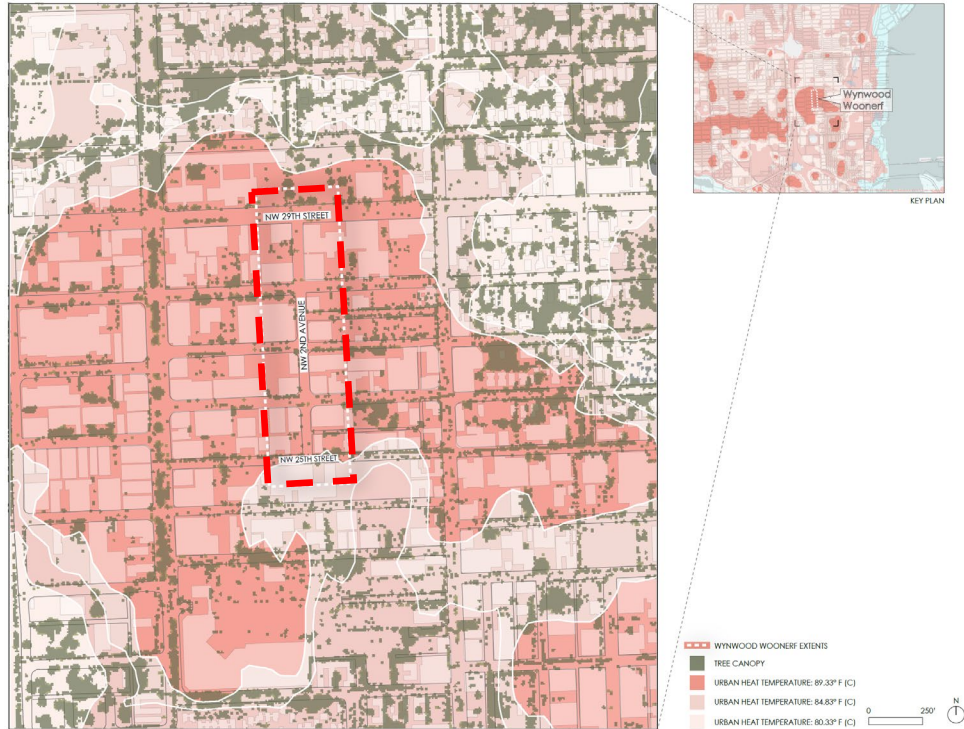
■ SHADE 15% MORE SHADE ON STREET
 ■ SHADE 15% MORE SHADE ON SIDEWALK

TOTAL SHADE OF STREET = 5,400 SF (28%)
 TOTAL SHADE OF SIDEWALK = 2,755 SF (50%)
 8,155 SF = **33% SHADE**



Vulnerabilities

Impervious surfaces create multiple risks in the Miami climate



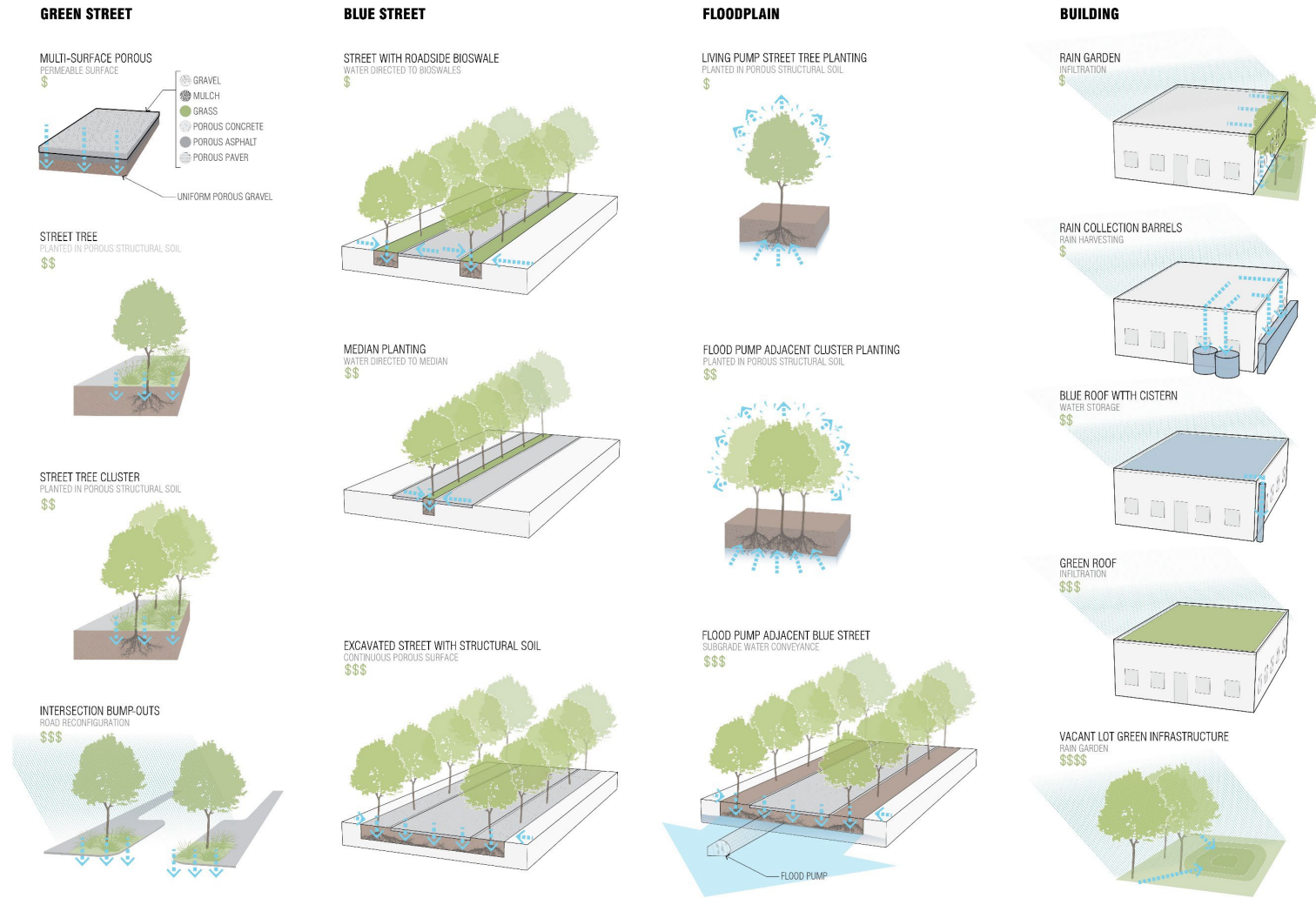
Urban Heat Island Impact



12/19 Rainbomb closed FLL and flooded Miami

Blue-Green Infrastructure Toolkit

Water can be collected, stored and slowed down by various methods and at a range of scales. Providing options at different price points illustrates a path toward accessible and incremental change. The methods shown can be deployed as appropriate to the context, budget, available right-of-way, and community interests.



Source: Analytic graphics generated by LOLA

Resilient Pavement Design

Asphalt Retrofit



Maintenance Equipment

- Complete solution for routine maintenance of porous pavement and green infrastructure (such as bio-retention, rain gardens, and tree box filters)
- Powerful pure vacuum and blower— easy to use, stand-on operation
- Integrated hand wand and large volume, on-board debris collection
- Versatile tool for non-storm- water property maintenance— with available attachments
- General landscaping, litter/leaf collection, fall/spring cleanup



Hand-held wand attachment



Easy to transport

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Routine Maintenance
2x/year
\$30,000 Machine Cost

- Most effective rehabilitation system available for all porous pavement
- Focuses extreme suction and water pressure of vactor directly to porous surface
- Simultaneously blasts and extracts sediment from clogged pavement
- Available as a manually-driven system or mated with the SUV system (vactor truck required)
- Restores maximum possible infiltration rate of any porous pavement system



High-pressure nozzles



SUV attachment

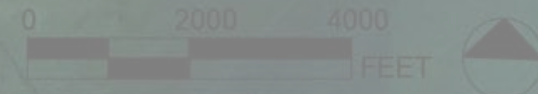
Focused Deep Clean
1x/5 years
\$10,000 Machine Cost



Southwest Streetscape & Street Tree Master Plan

Questions

April 27, 2020



Southwest Streetscape & Street Tree Master Plan



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