The Campus Landscape: Then, Now & Tomorrow

summer 2019

Jason Gregory, RLA
Capital Planning & Space Management

Jerry Young
Facilities Design and Construction

Georgia Tech

circa 1920

View of Historic Campus from Across North Ave.

Georgia Tech

circa 1970s

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circa 1980s

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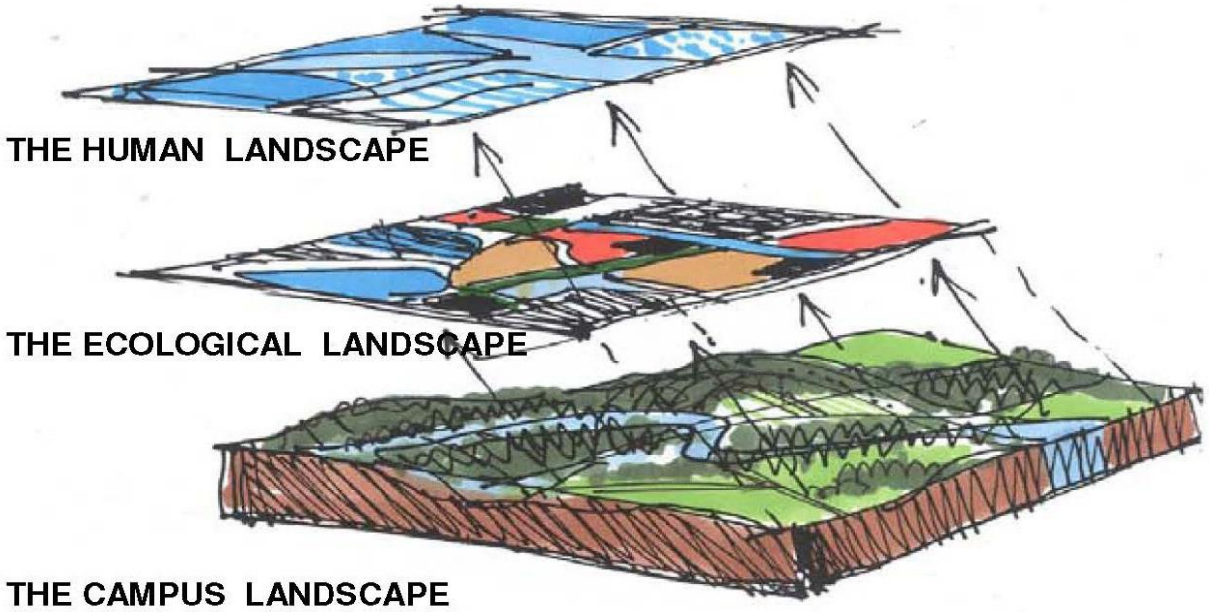
2015-Aug-31 05:27:11.986 PM
Current
Campus
2015

Georgia Tech Landscape Master Plan

…a landscape…unique to ***Georgia Tech*** *-* ***a Performance Landscape*** *- joining technology and ecology to create great* ***sense of place****… integrates landform, hydrology, soils, and biological communities…* ***trees shape microclimate and engage the hydrologic cycle,*** *where soils drink in stormwater instead of discharging it into sewers, where* ***biomass*** *sequesters carbon, improves air quality and increases* ***biodiversity****.*

The landscape is also a ***cultural entity*** *that integrates open space, buildings, circulation and* ***human behavior*** *and* ***experience****.*

Key Concepts:



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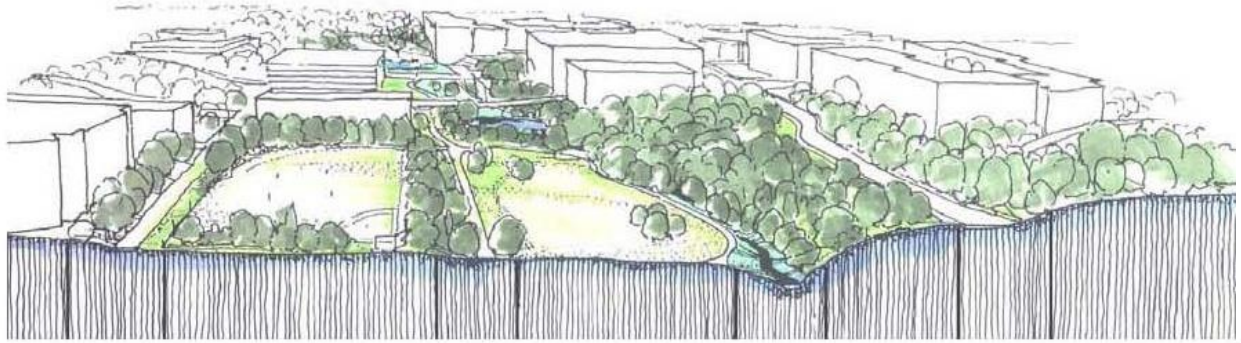
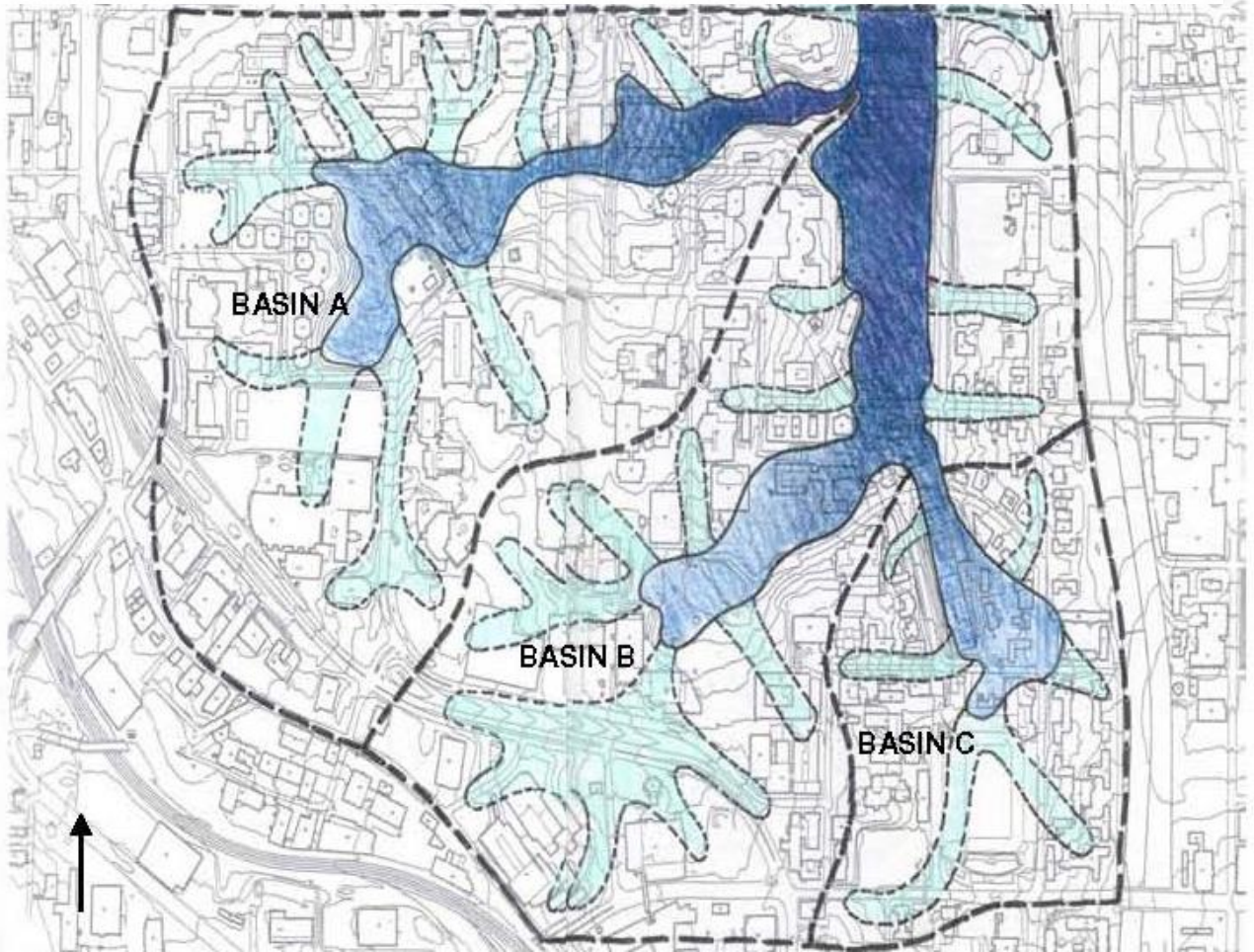
Georgia Tech Landscape Master Plan

Stormwater Basins





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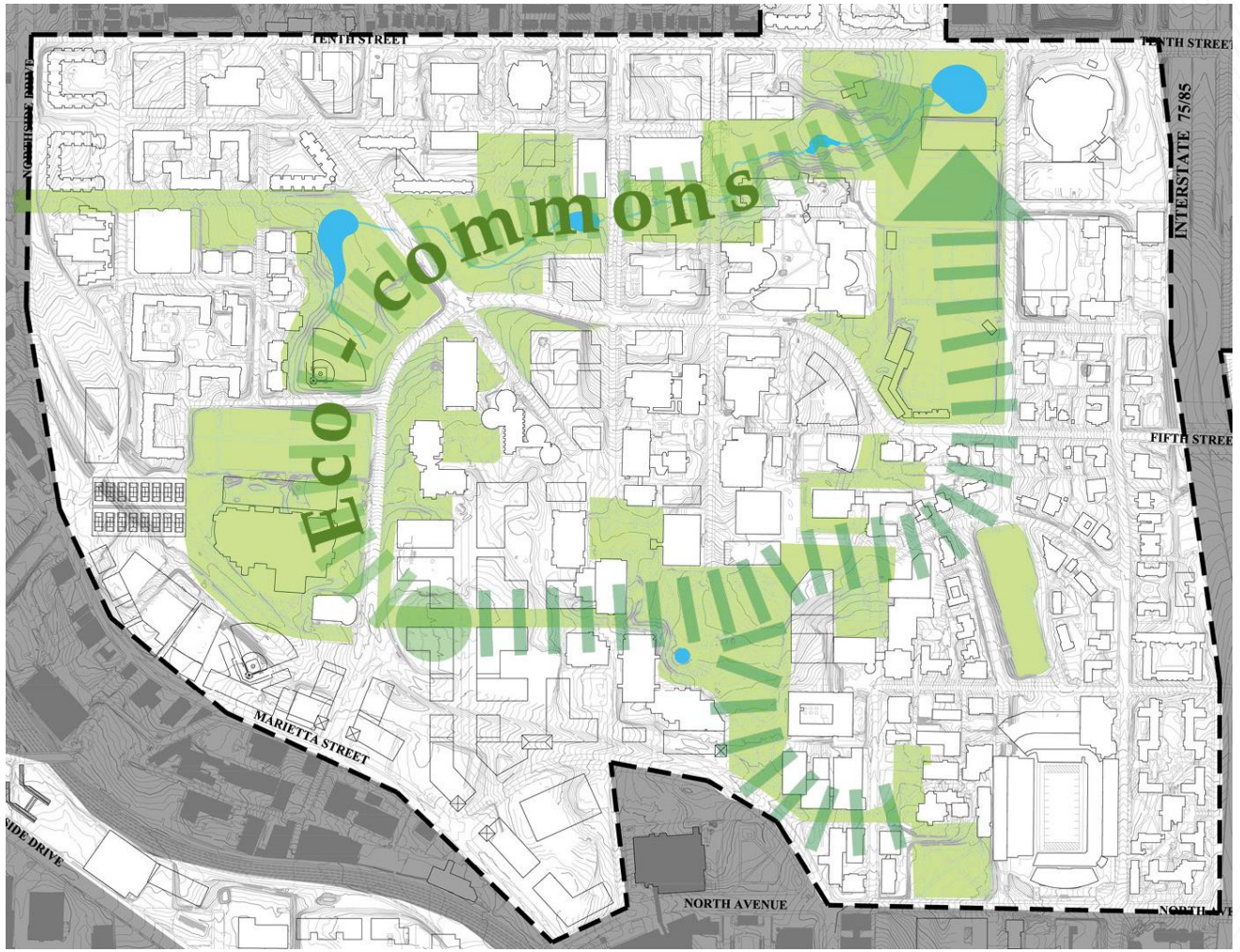
Eco-commons – A Performance Landscape

Goals:

- Develop integrated, **ecologically-based landscape** and open space systems **(storm water management)**
- Enhanced living, working, **learning environment**
- Unify the campus with a distinct **sense of place**
- **Increase tree canopy, replace aging trees**
- Create **Eco-Commons** (80 acres)
- Implement ecological performance requirements of **50% reduction of storm water runoff**



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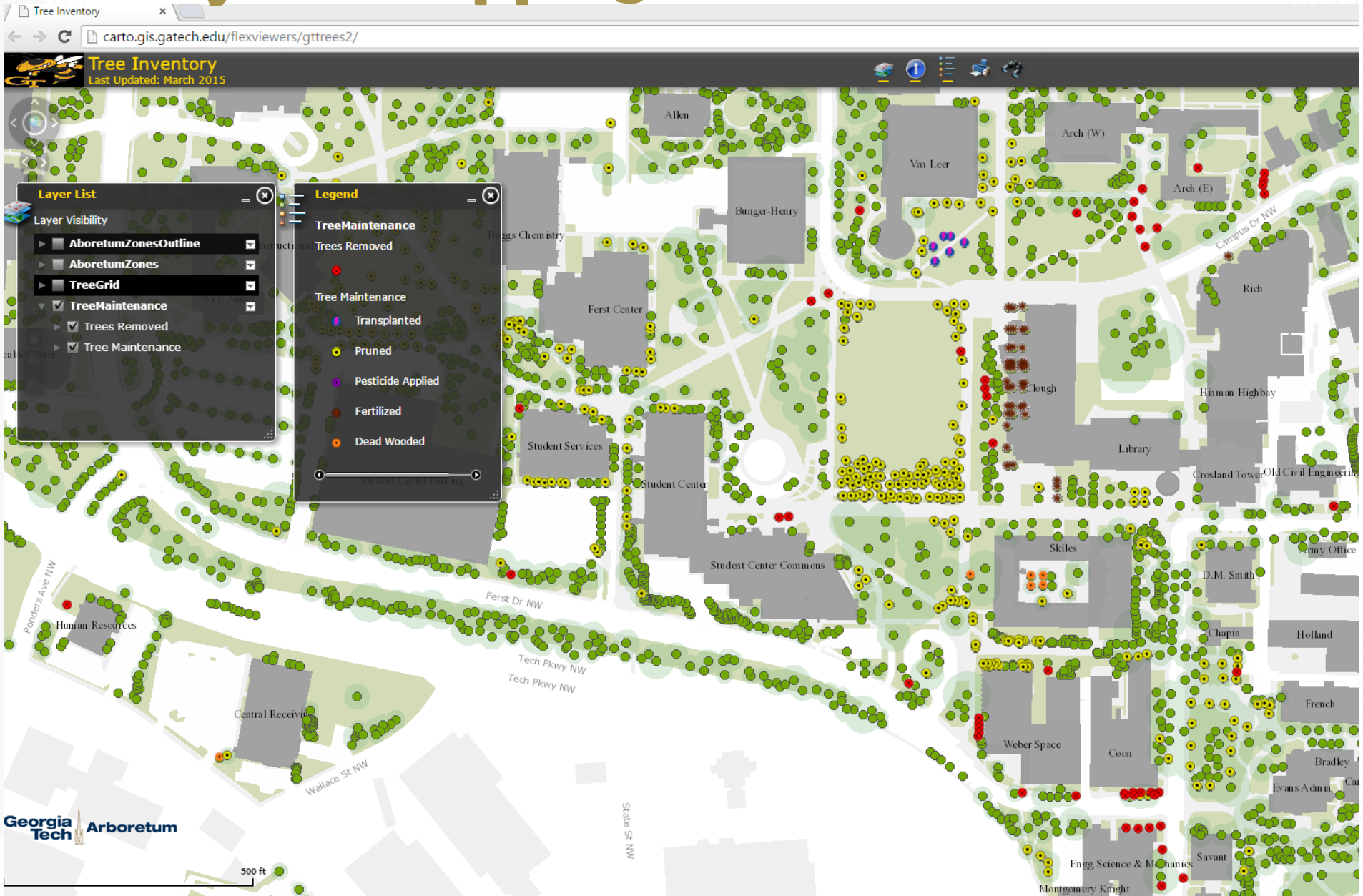
Tree Inventory GIS Mapping



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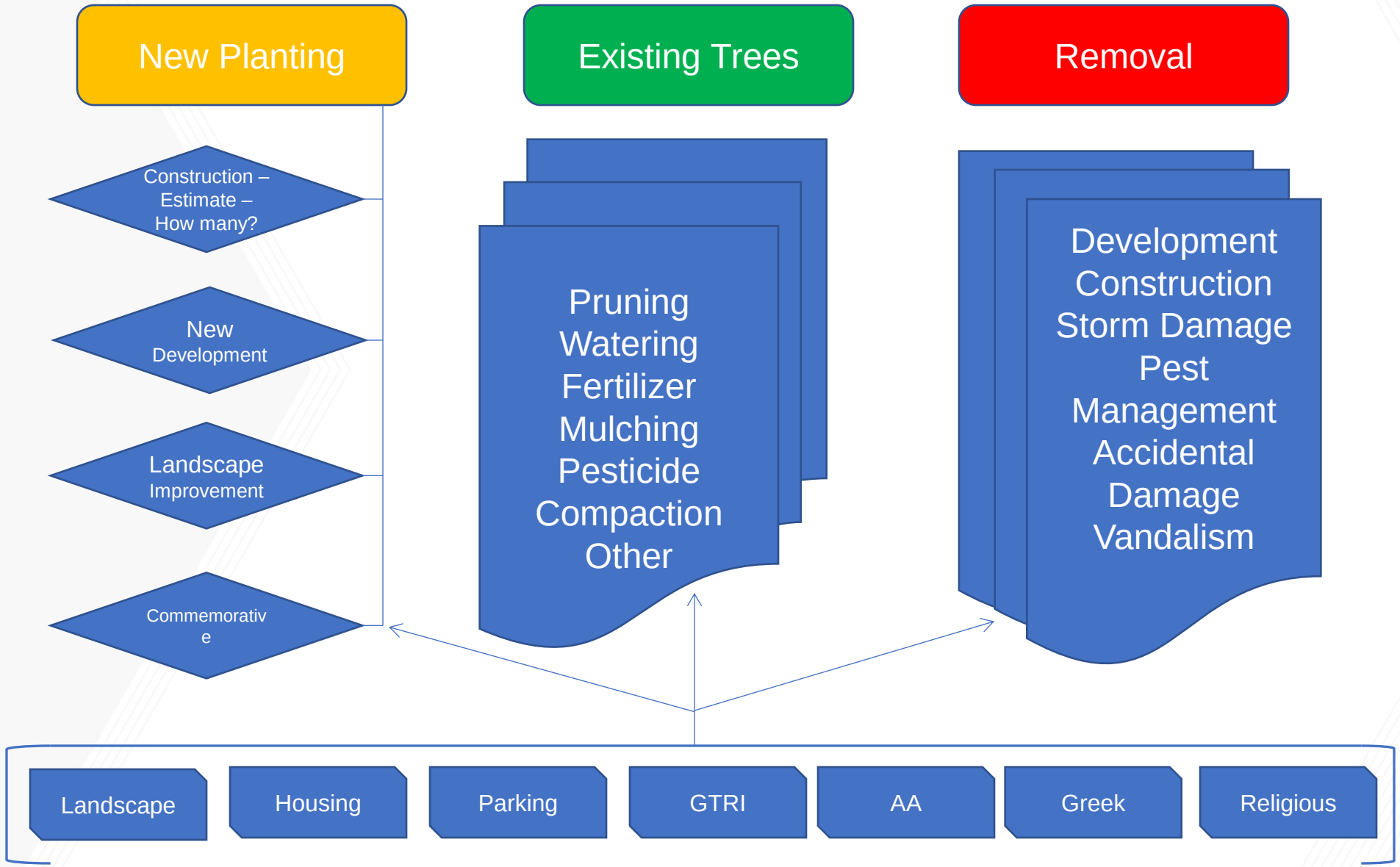
Tree Inventory Upkeep



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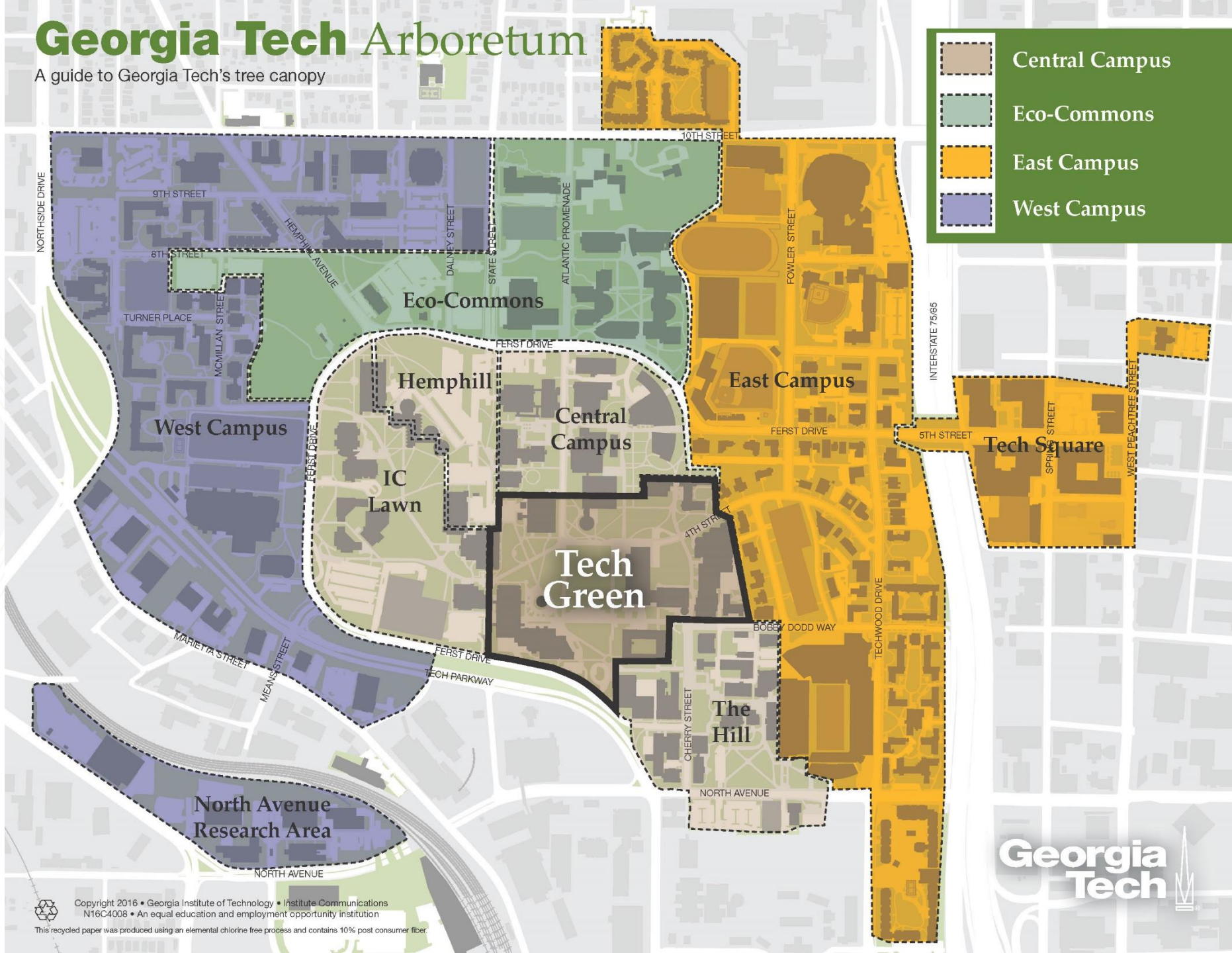
Active trees – 12,427
(08/03/2019)

2019 tree canopy coverage
24% (96 acres)

Projected 2039 tree canopy
35% (138 acres)

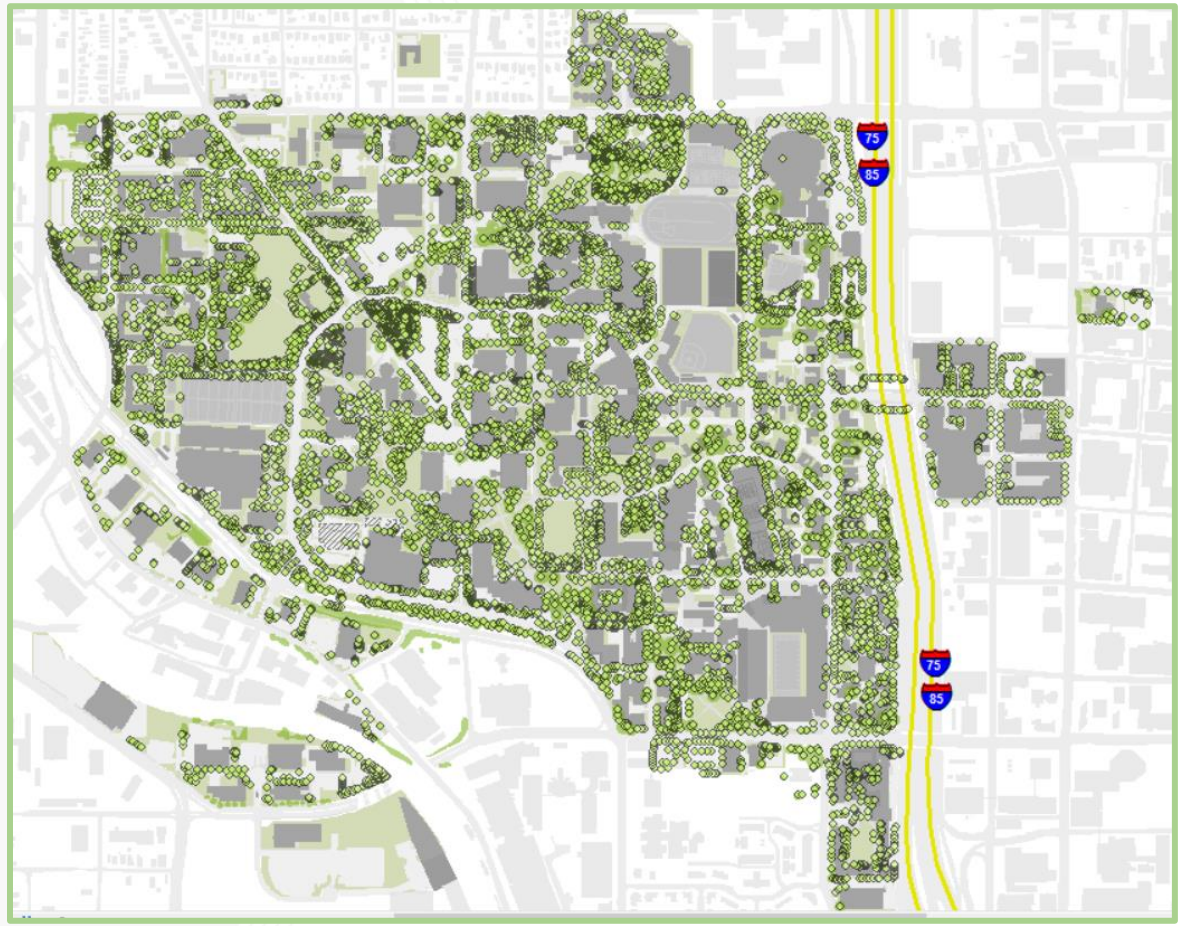
Campus area for canopy calculation is 397 acres

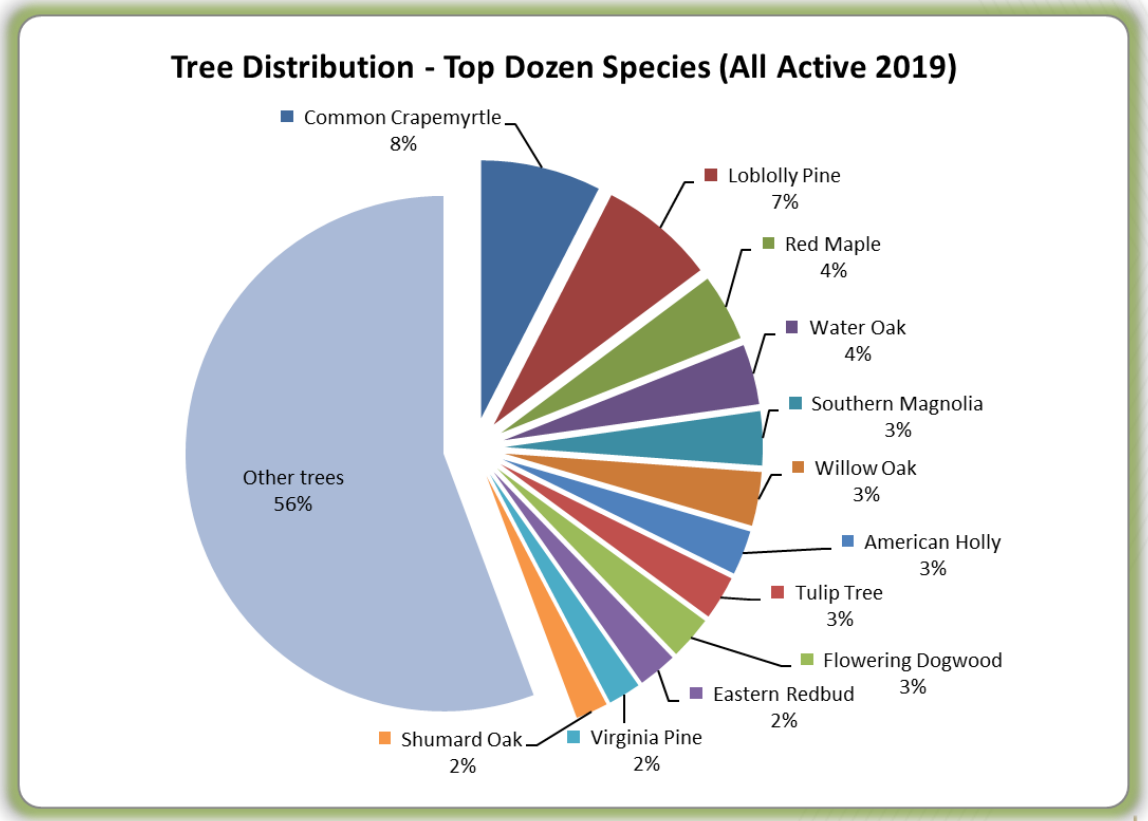
Approximate percent canopy increase from 2019 to 2039
+46%



Species Distribution – All active trees 2019

Tree count 12,427





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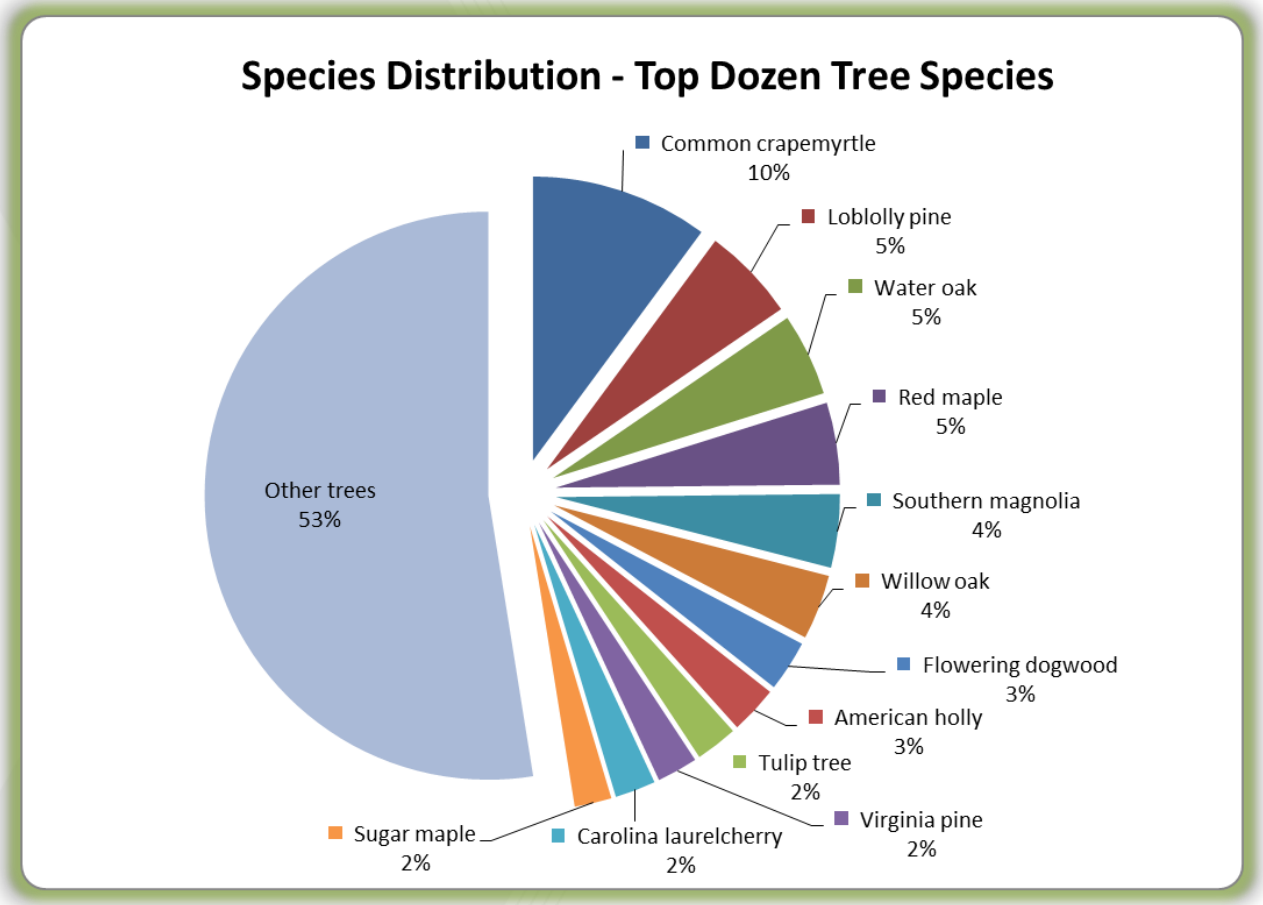
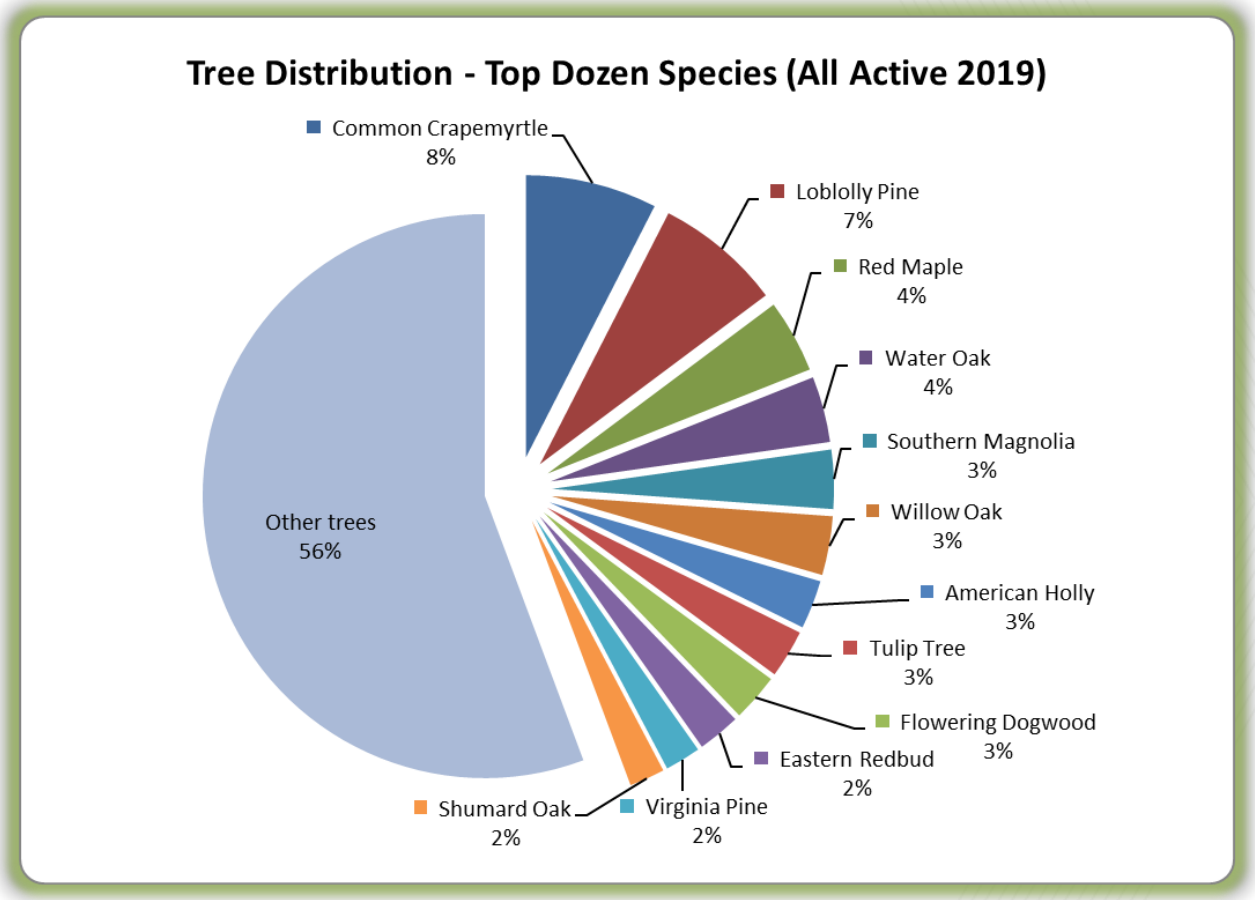
2015 to 2019 Species Comparison





2012 Total tree count: 11,046 Trees

2019 Tree count 12,427

Gained 1381 trees since 2012

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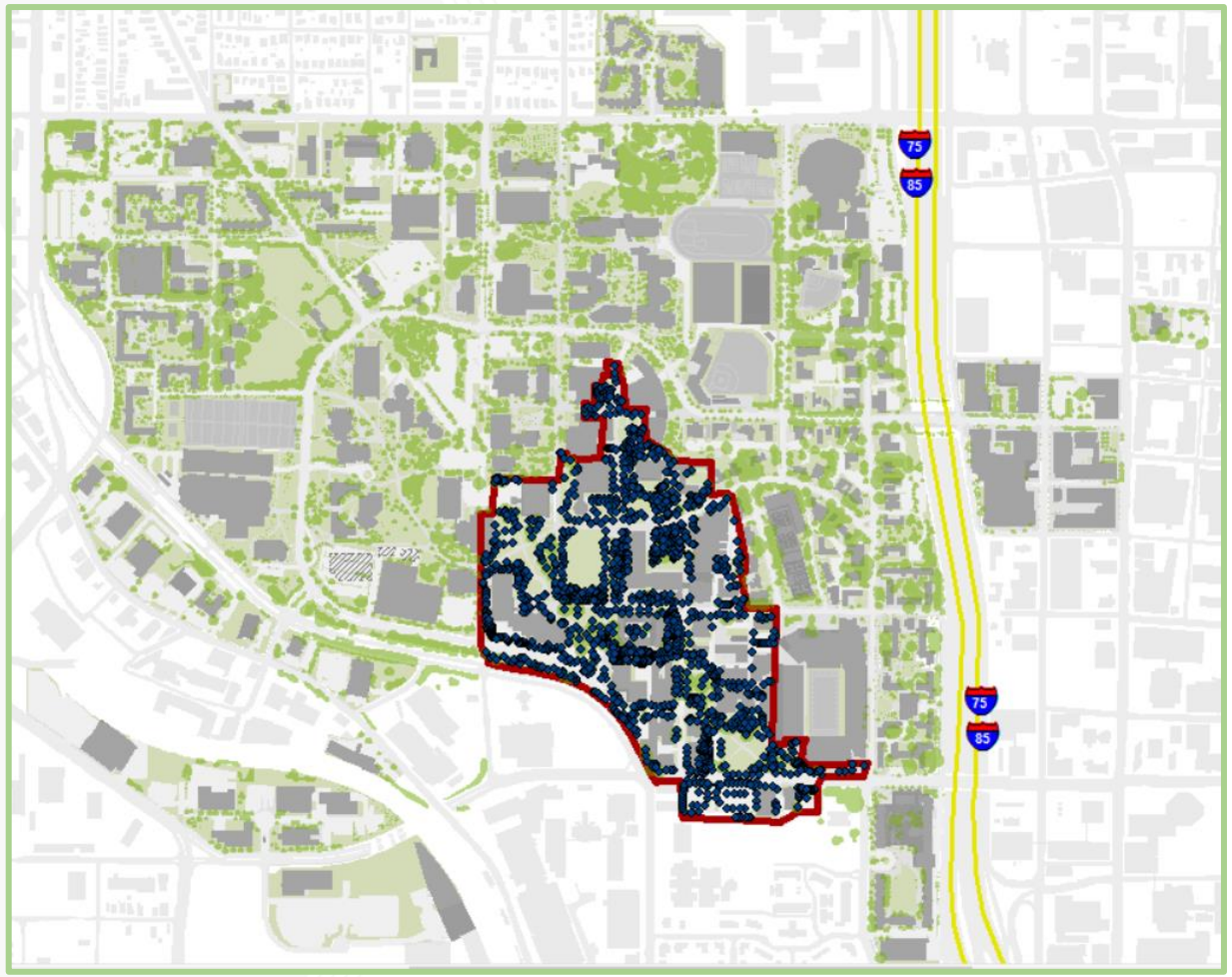
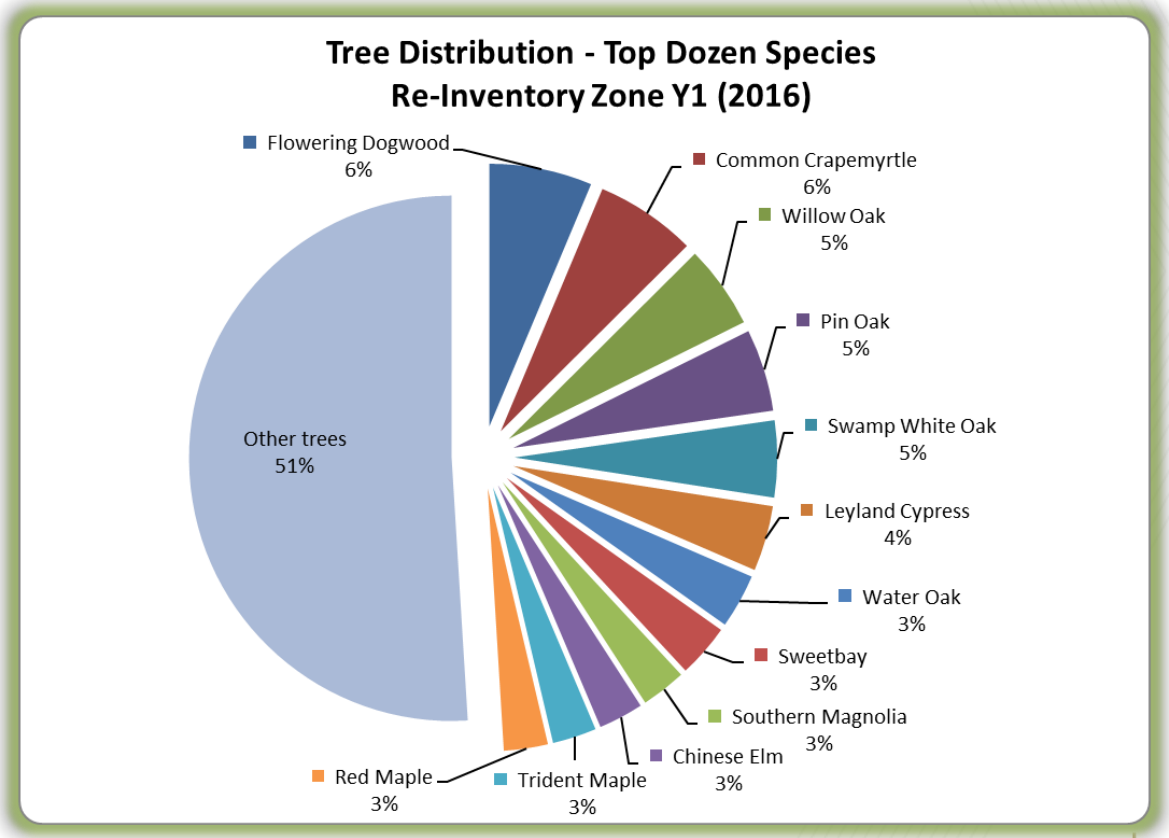
Species Distribution – Year1 re-inventory zone (2016)

Year 1 Zone - caliper growth after 4 years
14.6% increase in cumulative caliper growth.



Tree count 1,821



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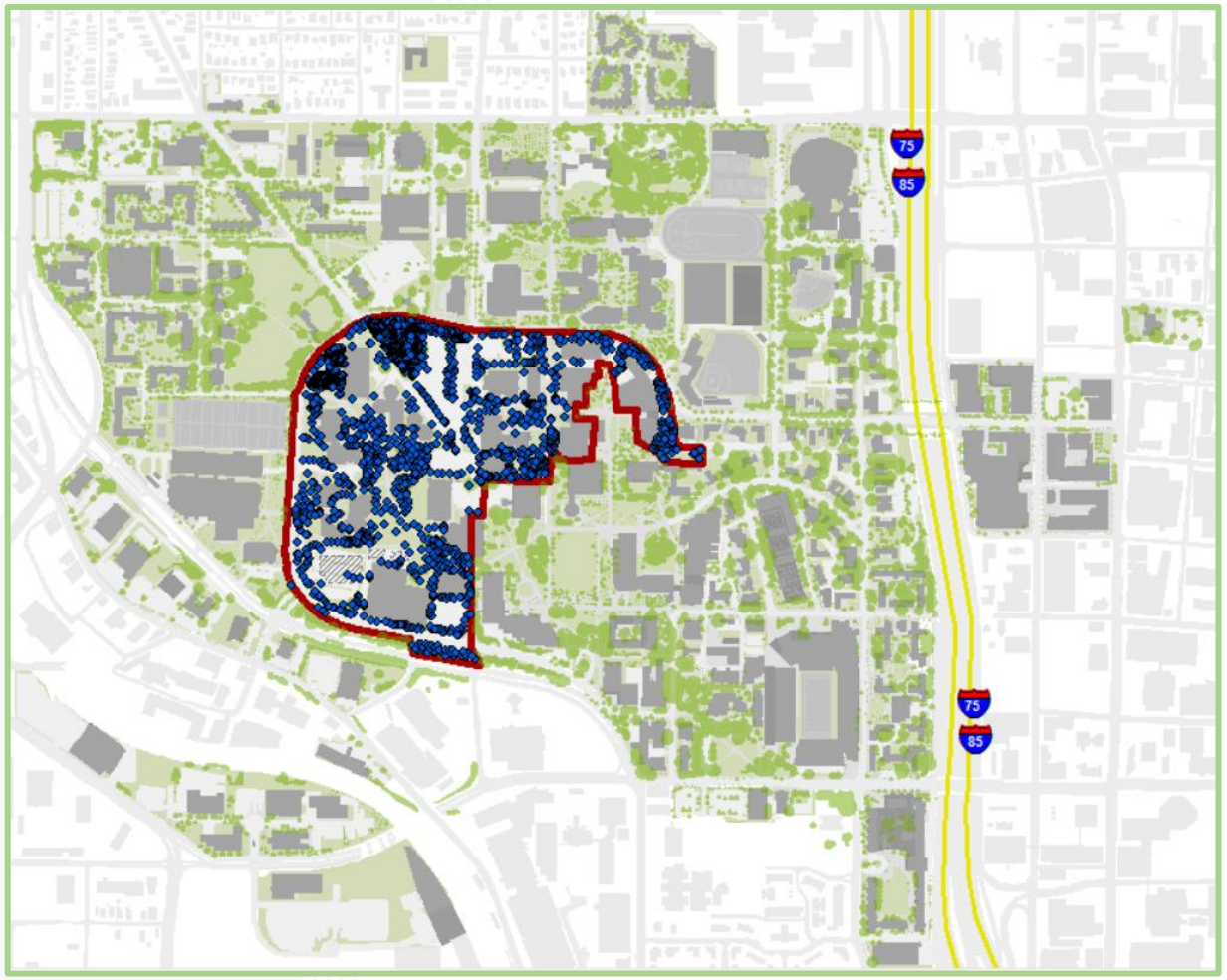
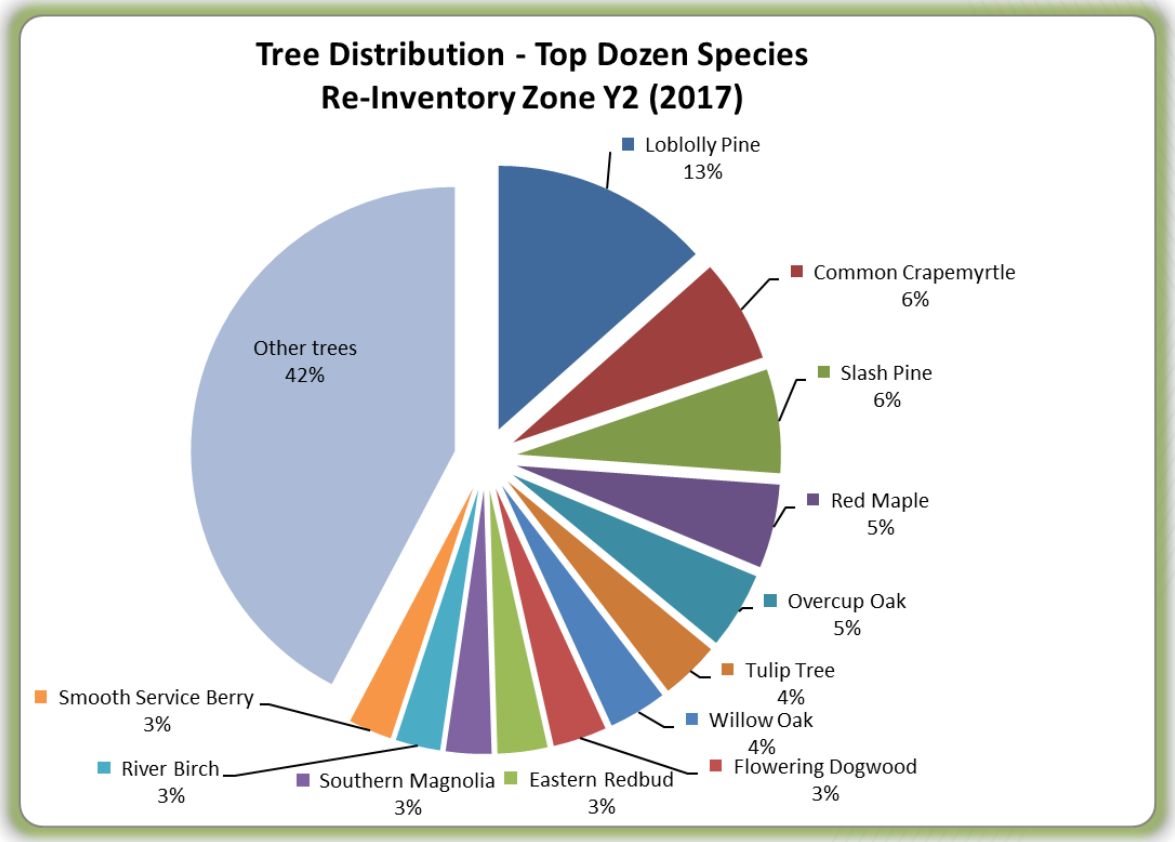
Species Distribution – Year2 re-inventory zone (2017)

Year 2 Zone - caliper growth after 5 years
15.2% increase in cumulative caliper growth



Tree count 2,548



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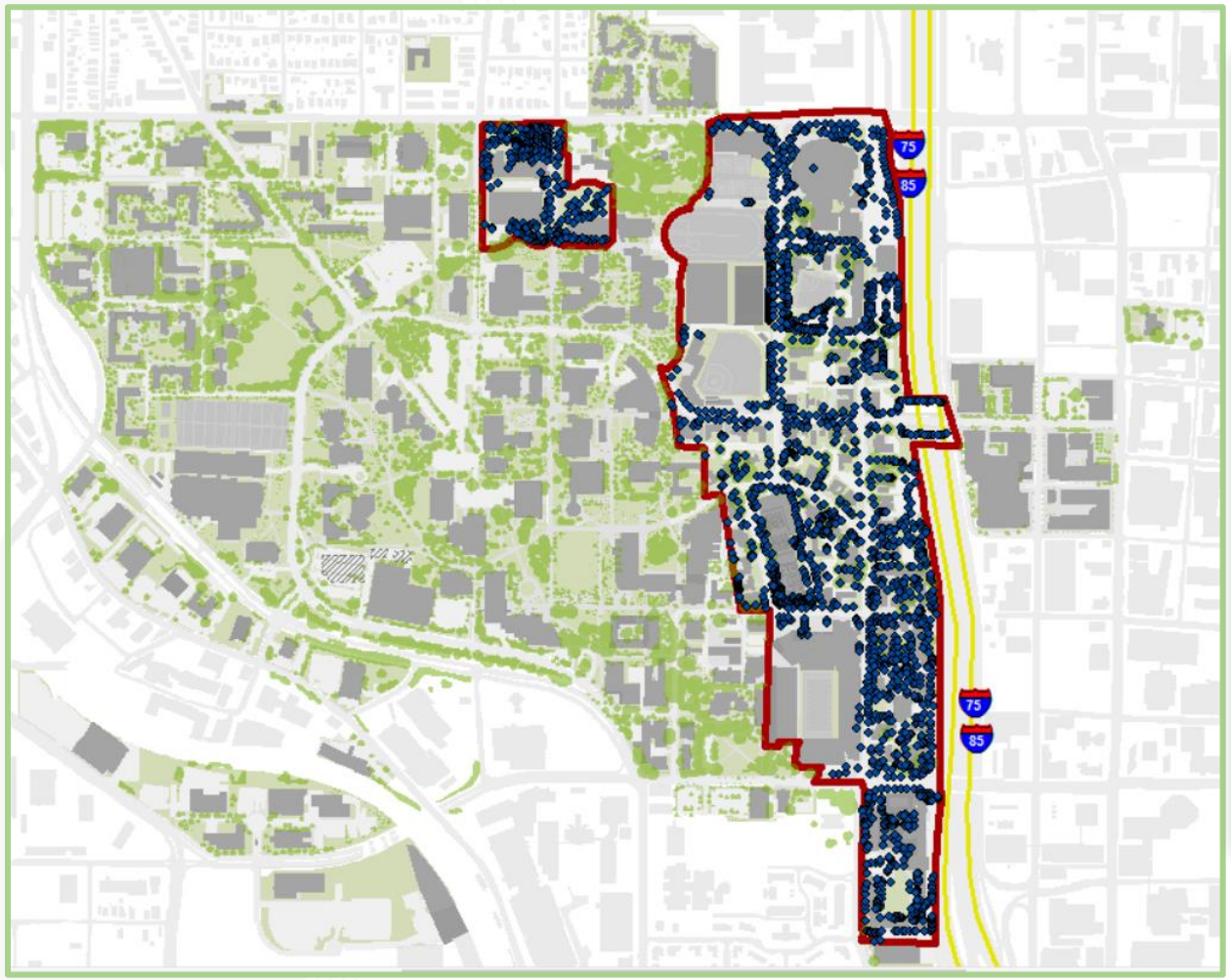
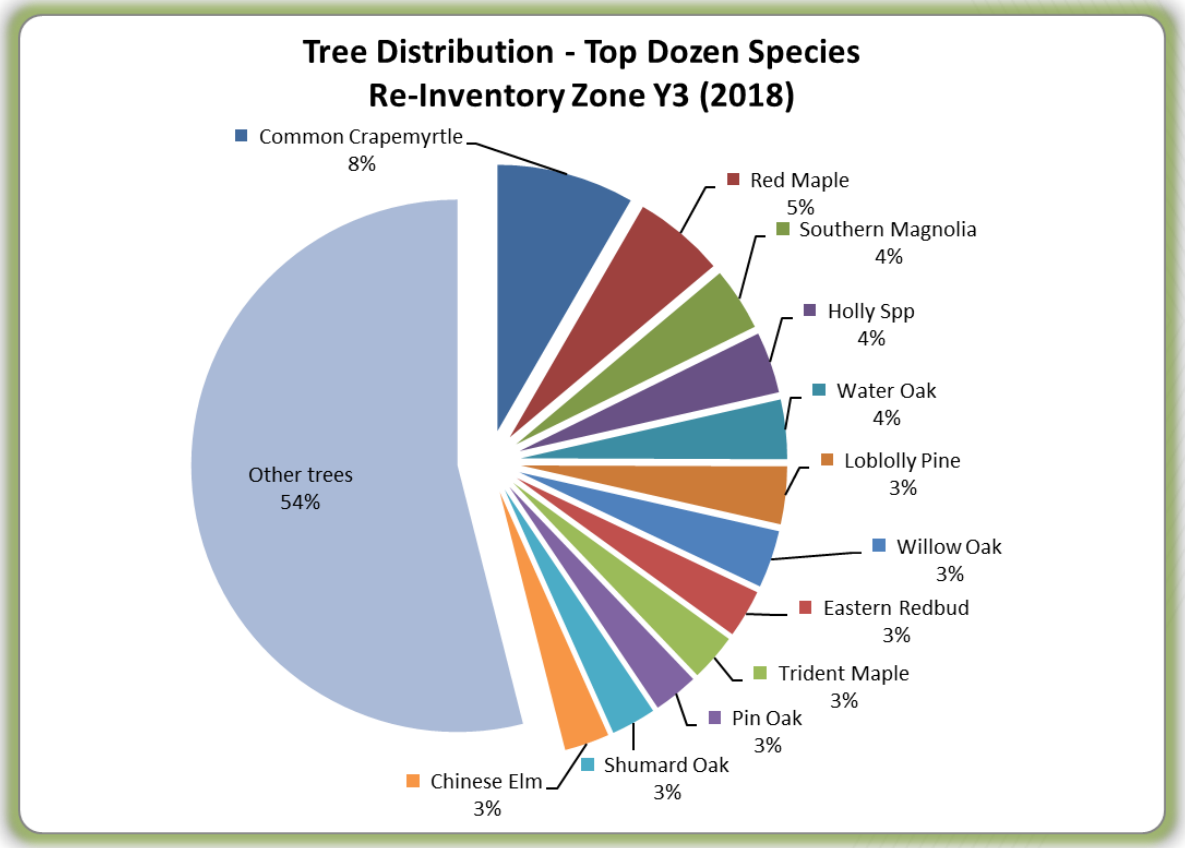
Species Distribution – Year3 re-inventory zone (2018)

Year 3 Zone - caliper growth after 6 years
24.5% increase in cumulative caliper growth.

Tree count 2,602





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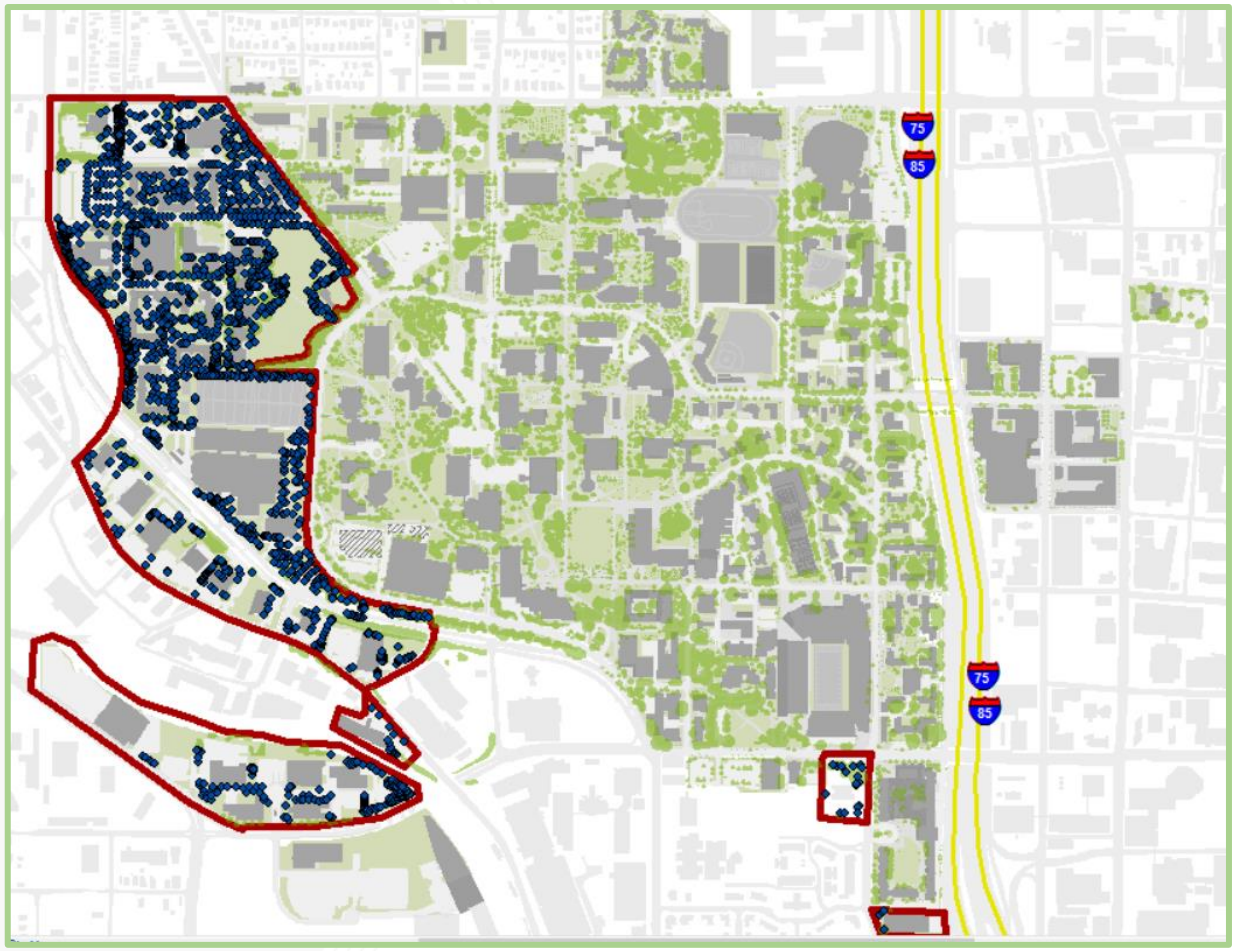
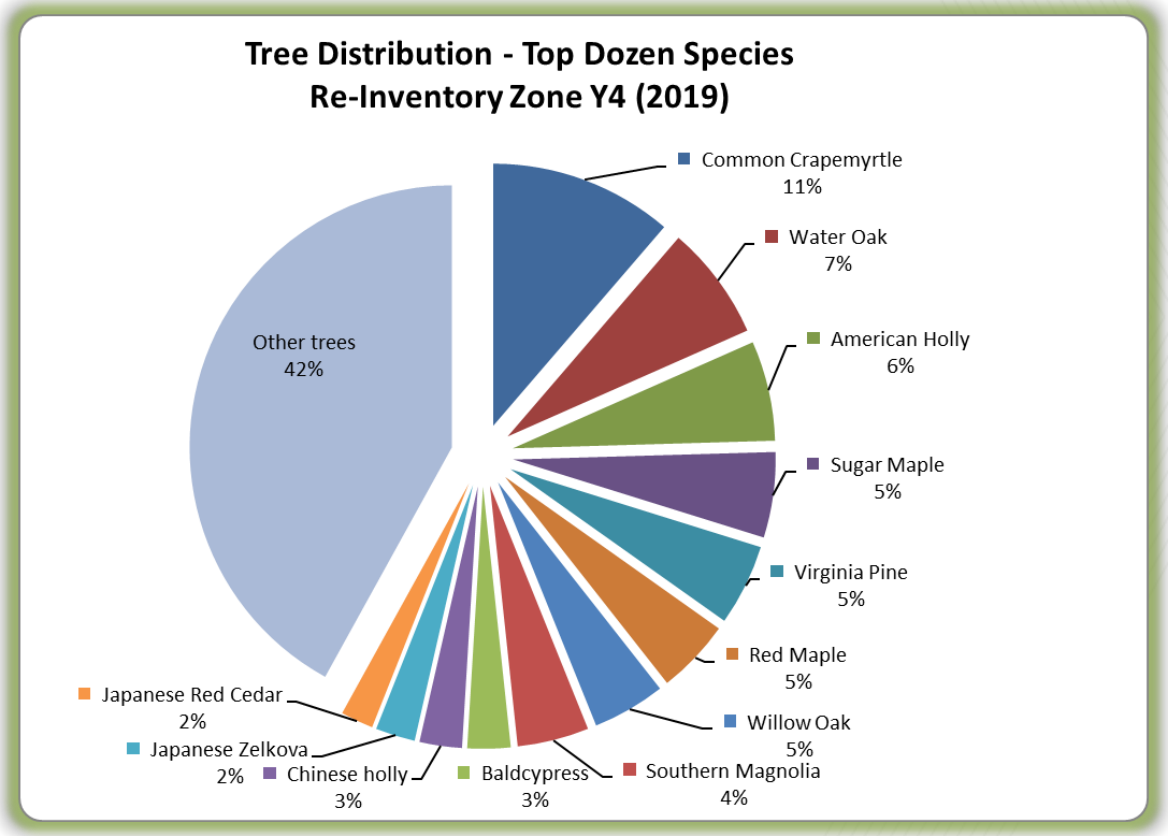
Species Distribution – Year4 re-inventory zone (2019)

Year 4 Zone - Currently being updated.



Tree count 2,335



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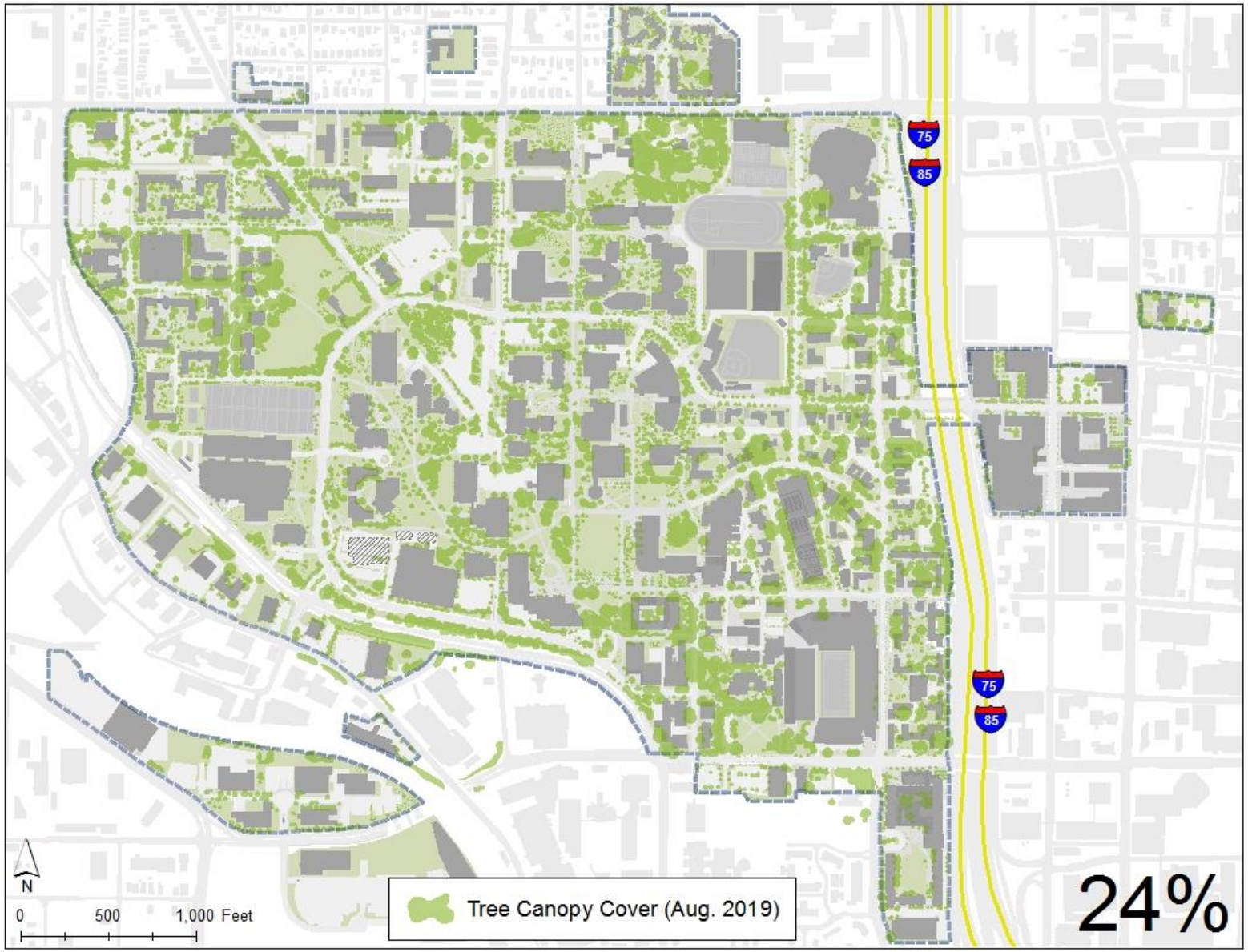
Current Tree canopy Coverage

Tree count 12,427



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Projected Tree Canopy Growth – 20 years

Estimates for Growth
20 years

Canopy Trees under 10” caliper
assume 50% growth

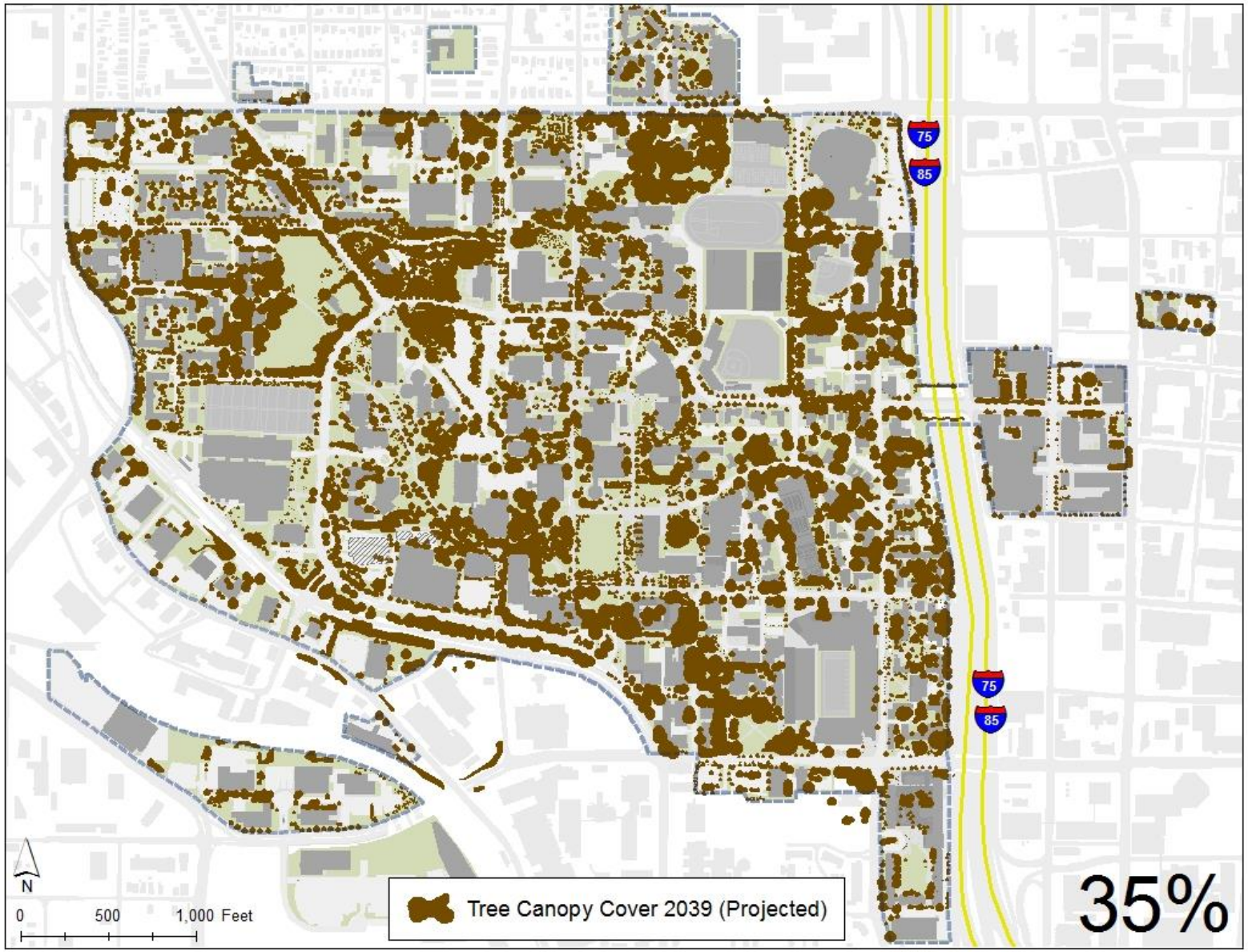
Canopy Trees 10-20” caliper
assume 25% increase

Canopy Trees 20-30” caliper
assume 15% increase

Canopy Trees 30”-50” caliper
assume 7.5% increase

Canopy Trees over 50” caliper
assume 2.5%

Remaining “Non-Canopy” tree species assume 25% increase.



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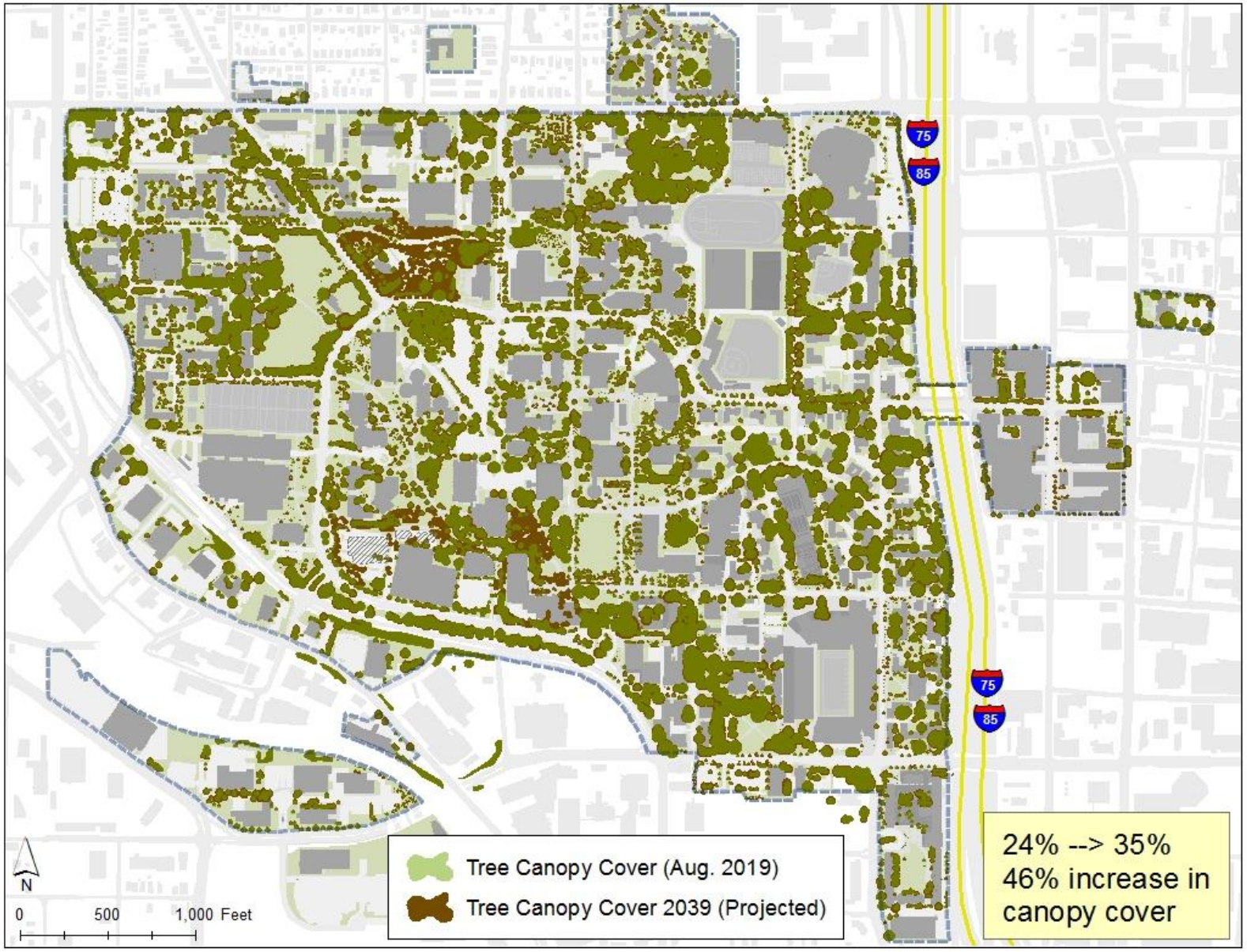
Tree Canopy Projection Overlay



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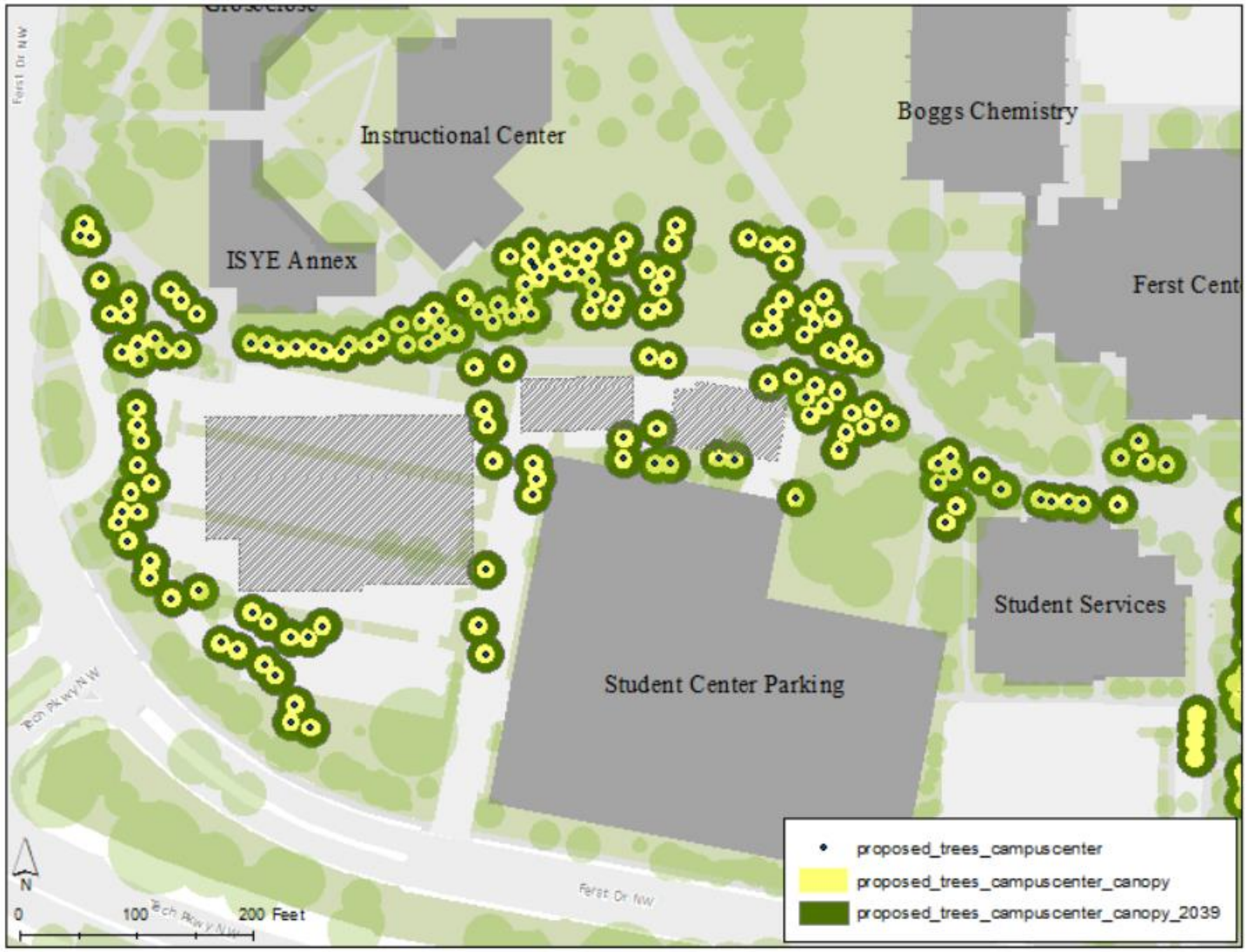
Campus Center - Aerial Photo – November 2018

Campus Center *re(in)novating*

Campus Center – Phase 1



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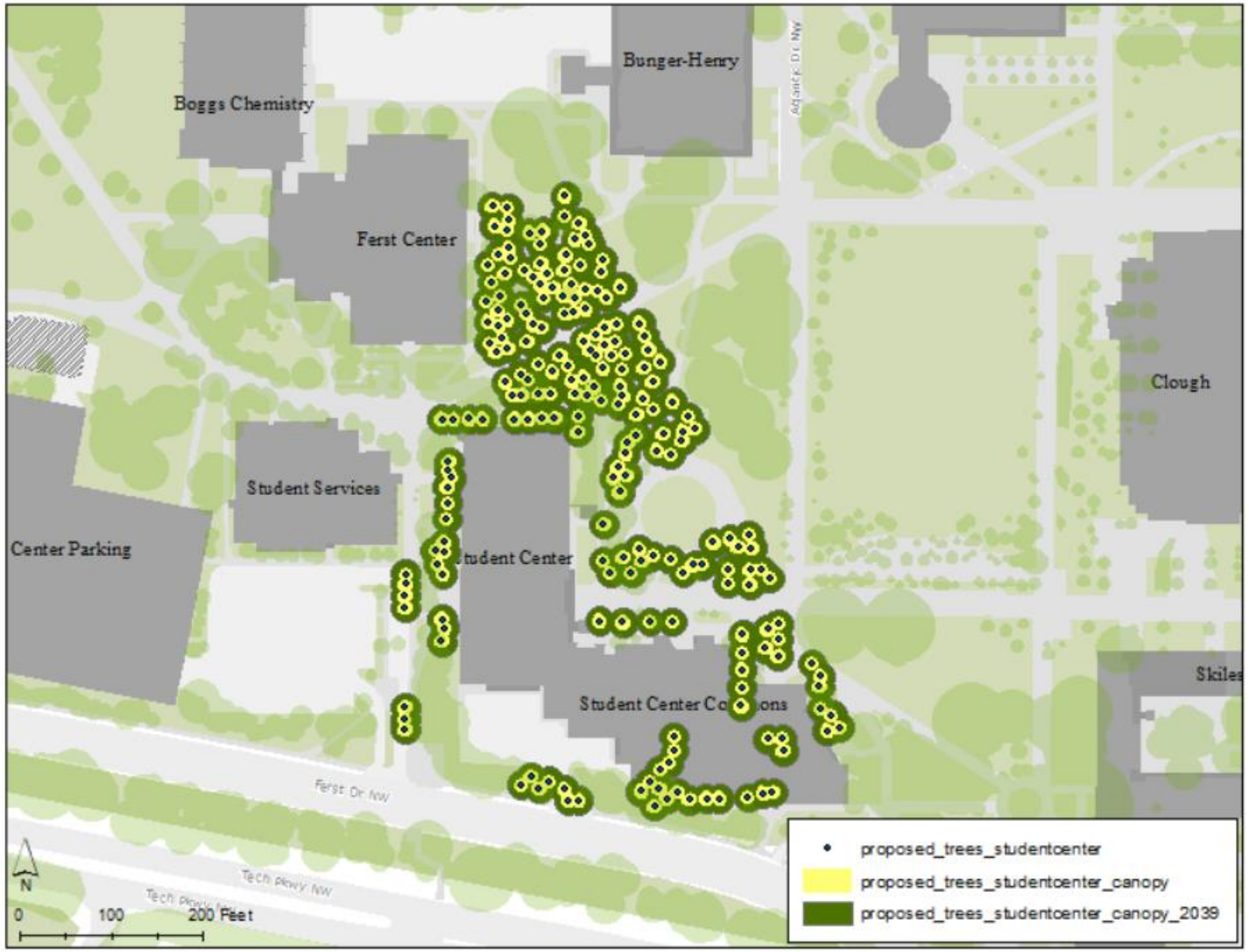
Campus Center – Phase 2



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EcoCommons - Aerial Photo – November 2018

Eco-commons

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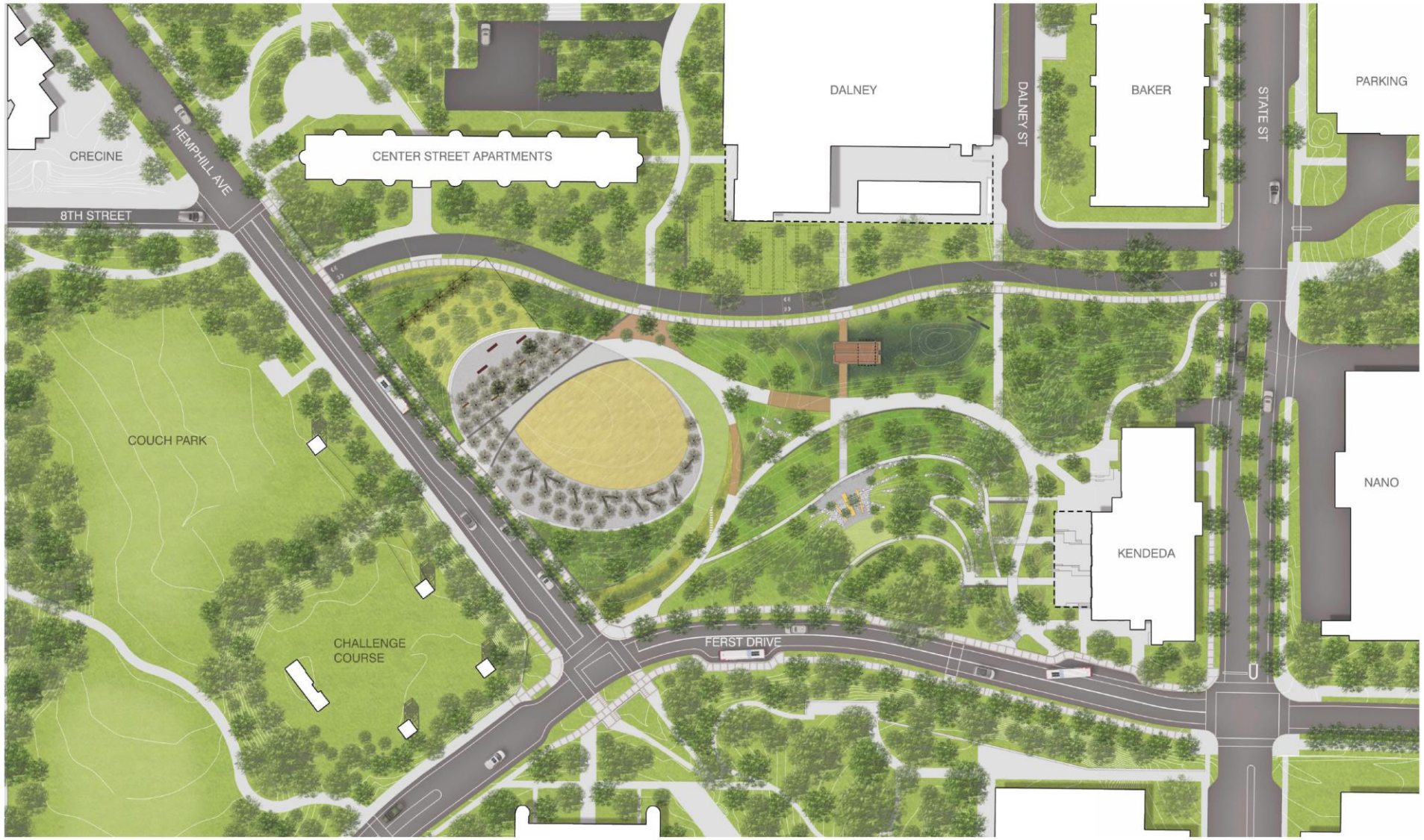
EcoCommons Living Building Sector Plan



ECO COMMONS PLAN

Georgia Tech EcoCommons | Design Development | 06/03/19

Nelson Byrd Woltz Landscape Architects / Barge Design Solutions / Biohabitats / Long Engineering

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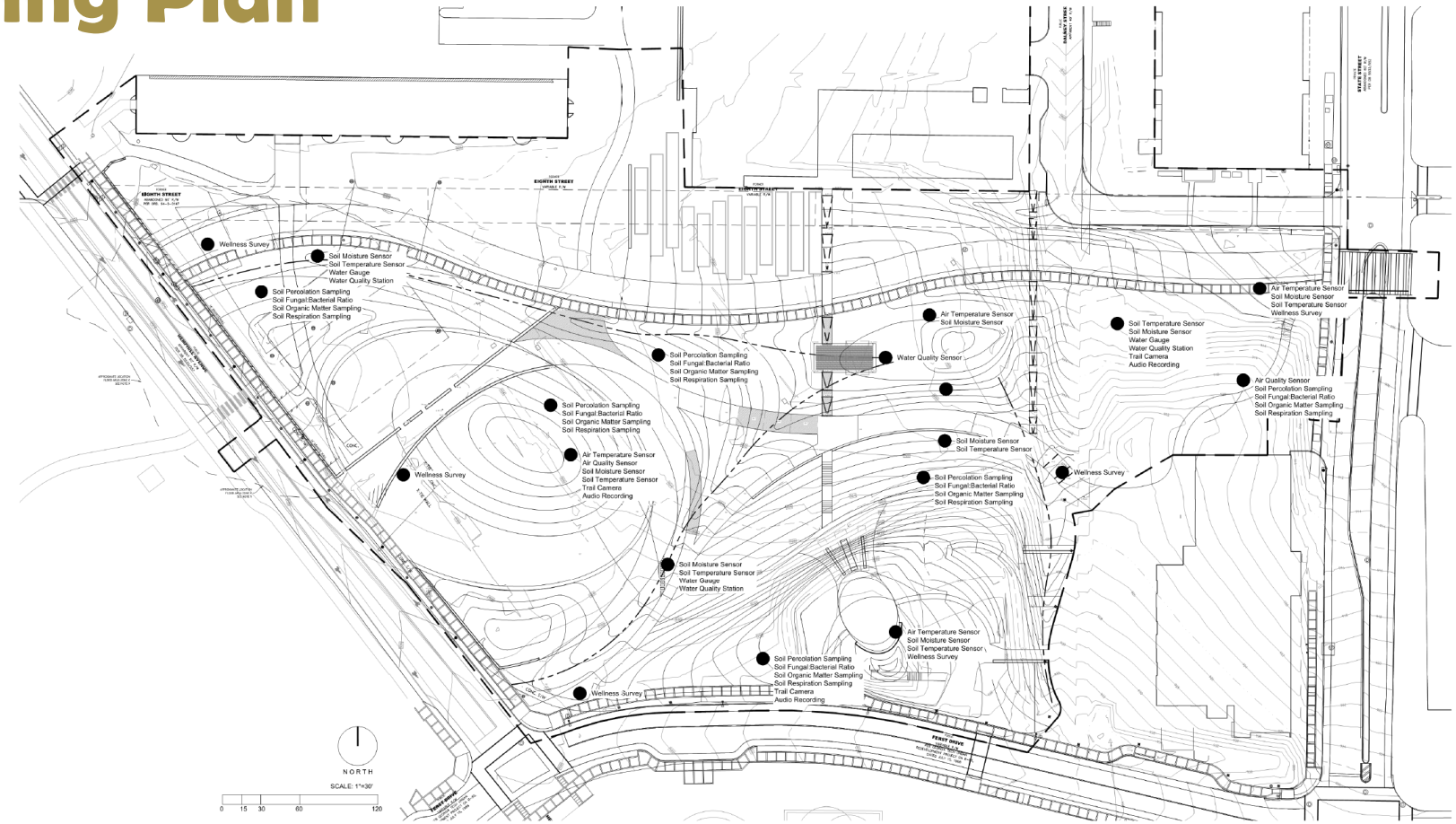
Monitoring Plan

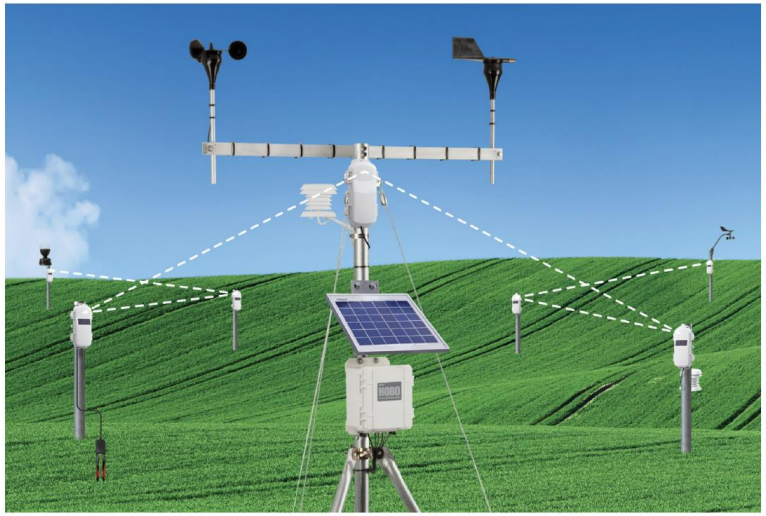


Test	Type	EcoCommons Quantity	Additional Reference Quantity (not shown)	Scope
Air Quality	Sensor	2	2	Site-specific
Air Temperature	Sensor	4	2	Site-specific
Air Humidity	Sensor	4	2	Site-specific
Soil Moisture	Sensor	8	2	Site-specific
Soil Temperature	Sensor	6	2	Site-specific
Soil Organic Matter	Sampling	6	3	Site-specific
Soil Respiration	Sampling	6	3	Site-specific
Soil Percolation	Sampling	6	3	Site-specific
Soil Fungal:Bacterial Ratio	Sampling	6	3	Site-specific
Water Gauge	Sensor	3	NA	Site-specific
Water Quality	Sensor	4	NA	Site-specific
Wellness Survey	Sampling	6	3	Site-specific
Trail Camera	Remote/Sampling	3	1	Site-specific
Auditory Recording	Remote/Sampling	3	1	Site-specific
Vegetation ID & Measure	Sampling	Annual	Annual	Site-wide
iNaturalist	Sampling	Continuous	Continuous	Site-wide
BioBlitz	Sampling	Bi-Annual	Bi-Annual	Site-wide
Carbon Budgeting	Analysis	Annual	Annual	Site-wide
Water Budgeting	Analysis	Annual	Annual	Site-wide

NOTE:
TRAIL CAMERAS AND AUDIO RECORDING HARDWARE HAVE BEEN IDENTIFIED BY SEPARATE VENDORS (NOT INCLUDED IN THE PARTS LIST).

Quantity	Item		Unit Price	Extended Price
5 EA	RX3004-00-01	RX3000 4G Remote Monitoring Station	899.00	4,495.00
5 EA	SP-816	PREMIUM US 10-min 65 sensors	350.00	1,750.00
5 EA	SOLAR-15W	15W solar panel with adjustable bracket	179.00	895.00
2 EA	RXMOD-RXW-900	RX3000 HOBOnet Manager NA	149.00	298.00
7 EA	RXW-THC-900	HOBOnet Temp/RH Sensor NA	249.00	1,743.00
7 EA	RS3-B	Solar Radiation Shield	65.00	455.00
11 EA	RXW-TMB-900	HOBOnet Temp Sensor NA	189.00	2,079.00
11 EA	RXW-SMC-900	HOBOnet Soil Moisture EC-5 Sensor NA	249.00	2,739.00
4 EA	T-SDX-93720-110-020	SDX Sensor Range, Cable	330.00	1,320.00
4 EA			120.00	480.00

Environmental Monitoring Devices



Test	Type	EcoCommons Quantity	Additonal Reference Quantity (not shown)	Scope
Air Quality	Sensor	2	2	Site-specific
Air Temperature	Sensor	4	2	Site-specific
Air Humidity	Sensor	4	2	Site-specific
Soil Moisture	Sensor	8	2	Site-specific
Soil Temperature	Sensor	6	2	Site-specific
Soil Organic Matter	Sampling	6	3	Site-specific
Soil Respiration	Sampling	6	3	Site-specific
Soil Percolation	Sampling	6	3	Site-specific
Soil Fungal:Bacterial Ratio	Sampling	6	3	Site-specific
Water Gauge	Sensor	3	NA	Site-specific
Water Quality	Sensor	4	NA	Site-specific
Wellness Survey	Sampling	6	3	Site-specific
Trail Camera	Remote/Sampling	3	1	Site-specific
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Carbon Budgeting	Analysis	Annual	Annual	Site-wide
Water Budgeting	Analysis	Annual	Annual	Site-wide

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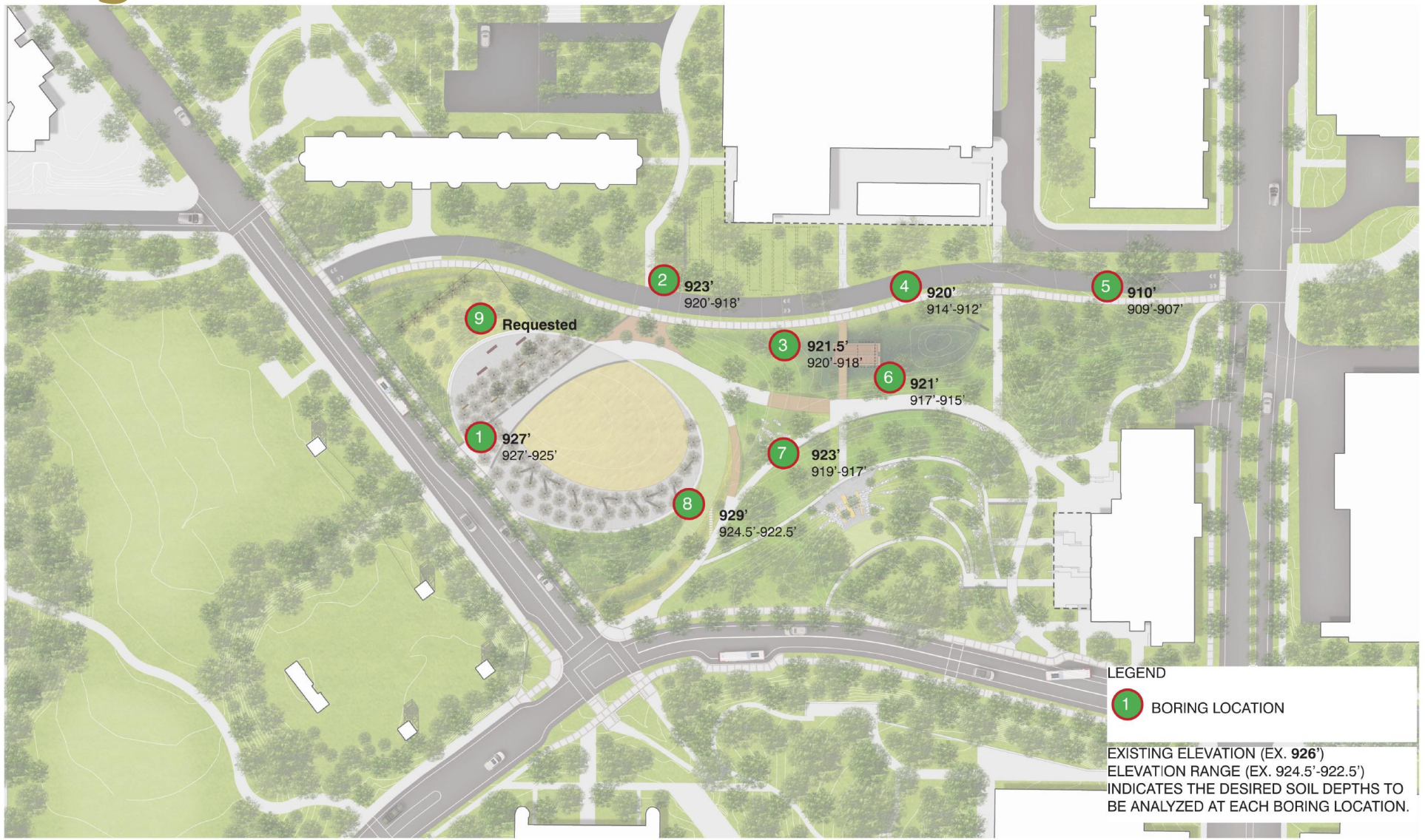
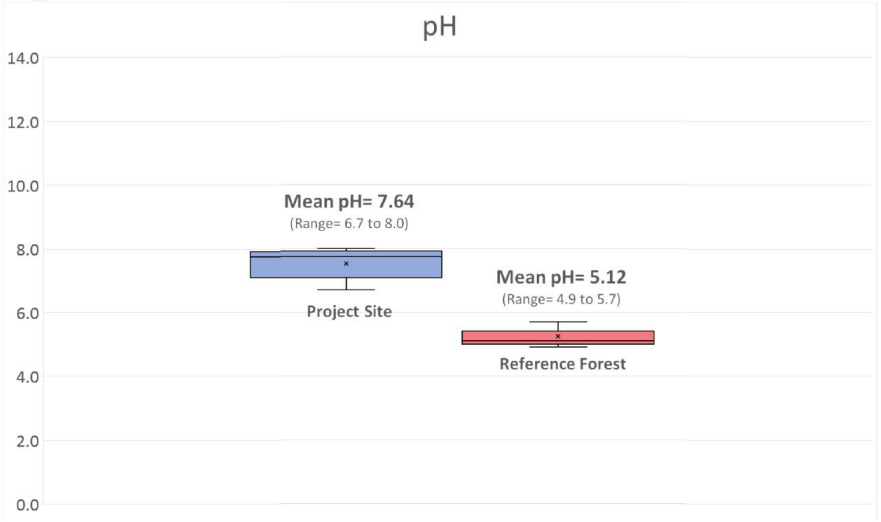
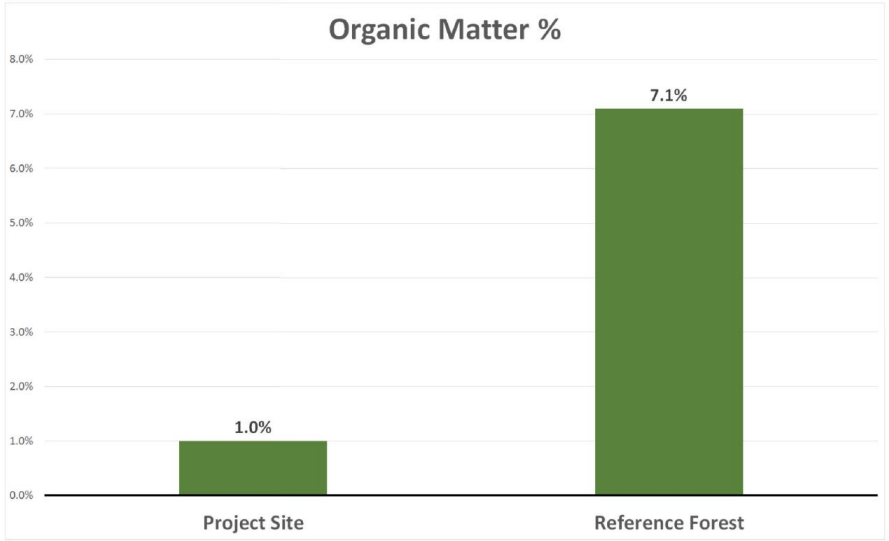
Soil Borings



SOIL BORING LOCATIONS

Soil Comparisons

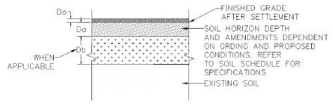




SOIL DATA COMPARISONS

Soils Plan

MIX PROFILE – TYPICAL



Mix 1- Modified Existing Soil - Compacted (Cut)/ Planting Soil Mixes (Fill)/ Furnished Soil for Tree Pits

Horizon	Depth	Notes (%= by volume)
Do	2"	Mulch (shredded hardwood mulch, pine bank mulch or pine needles) OR Compost (Georgia Tech leaves or yard waste)
Da	6"	50% Compost (Georgia Tech leaves or yard waste) 50% Existing sandy loam/loam soil
Db	18-24"	10% Mulch (shredded hardwood mulch, pine bank mulch or pine needles) OR 5% Mulch/Biobotbar mix 90% Existing sandy loam/loam soil

Mix 2- Structural Soil

Horizon	Depth	Notes (%=by volume)
Do	See LA	See LA
Da	24-36"	CU-Structural Soil™

Mix 3- Modified Existing Soil - Critical Root Zone

Horizon	Depth	Notes (%= by volume)
Do	2"	Mulch (shredded hardwood mulch, pine bank mulch or pine needles) or Compost (Georgia Tech leaves or yard waste)
Da	9-12"	Incorporate 2"-3" of compost into in-situ soil with pneumatic digging device

Note: Use pneumatic digging device (i.e. air knife or air spade) to loosen soil without damaging tree roots and to tie into proposed grades. If con

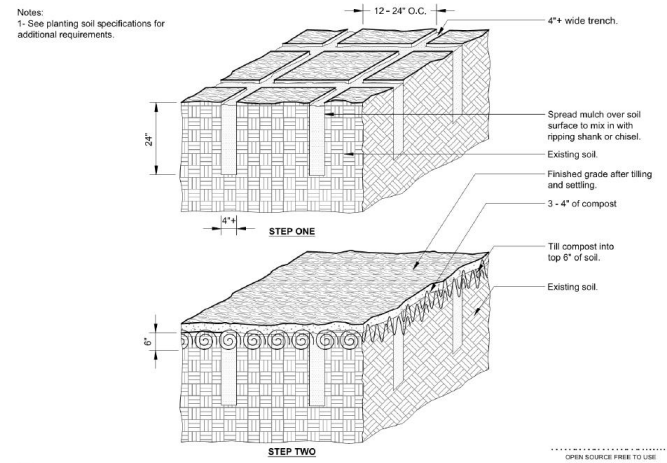
Do = surface mulching placed above proposed finished surface

CONSTRUCTION NOTES

1. LIMIT CONSTRUCTION VEHICLE ACCESS ACROSS THE SITE. CONCENTRATE CONSTRUCTION VEHICLE ACCESS ALONG PROPOSED ROADS AND PATHS ROUTES TO LIMITS COMPACTION WITHIN PROPOSED PLANTING AREAS.
2. PREVENTION OF COMPACTED SOILS CAN BE ACCOMPLISHED BY BEGINNING THE WORK IN CORNER, AGAINST WALLS, OR THE CENTER OF ISOLATED BEDS, AND PROGRESSING OUTWARDS TOWARDS THE BORDERS.
3. NO WHEELED VEHICLES SHALL TRAVEL OVER ANY PLANTING SOIL UNLESS EQUIPPED WITH LOW GROUND PRESSURE TIRES.
4. THE CONTRACTOR SHALL PLACE BARRICADES AS REQUIRED TO PREVENT ANY UNNECESSARY COMPACTION OF PLANTING SOIL FROM VEHICLES, EQUIPMENT, OR PEDESTRIAN TRAFFIC.
5. SOIL SHALL NOT BE HANDLED OR HAULED, PLACED OR COMPACTED WHEN IT IS WET AS AFTER A HEAVY RAINFALL OR IS FROZEN. SOIL SHALL BE HANDLED ONLY WHEN THE MOISTURE CONTENT IS LESS THAN AT FIELD CAPACITY.
6. ACCOUNT FOR SOIL SETTLING. DEPTHS AND GRADES SHOWN ON THE DRAWING ARE FINAL GRADES AFTER SETTLEMENT AND SHRINKAGE OF COMPOST MATERIAL. THE CONTRACTOR SHALL INSTALL THE PLANTING SOILS AT A HIGHER LEVEL TO ANTICIPATE THIS SETTLEMENT. A MINIMUM SETTLEMENT OF APPROXIMATELY 10-15% OF SOIL DEPTH IS EXPECTED. ALL GRADE INCREASES ARE ASSUMED TO BE MEASURED PRIOR TO ADDITION OF SURFACE COMPOST OR MULCH.
7. LOCATE A STOCKPILE AREA WITH ADEQUATE SPACE FOR SALVAGING EXISTING SOILS AND AMENDING, AS NEEDED, TO MEET PLANTING SOIL MIXES SPECIFICATION.

SOILS PLAN

Soils Details



S-X MODIFIED EXISTING SOIL - COMPACTED EXISTING SOIL (RIPPING)

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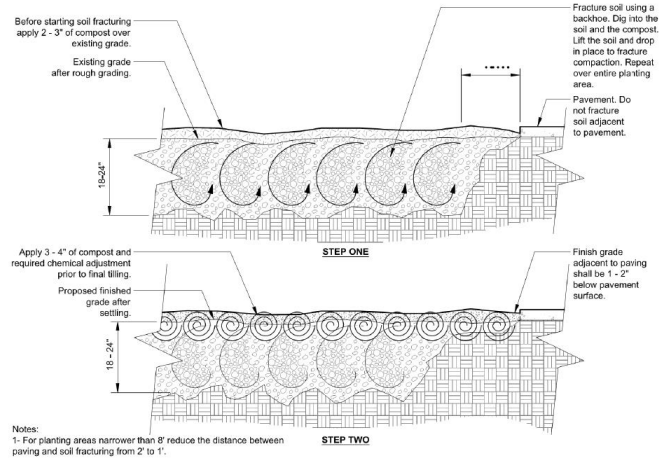
MODIFIED EXISTING SOIL - COMPACTED EXISTING SOIL (RIPPING AND FRACTURING)

DESCRIPTION OF CONDITION TO BE MODIFIED: DEEP SOIL COMPACTION FROM PREVIOUS GRADING, FILLING OR COMPACTION FORCES. THE SOIL ORGANIC MATTER CONTENT IS NOT SUITABLE FOR PROPOSED PLANTING. SEE MODIFIED EXISTING SOIL - COMPACTED EXISTING SOILS IN THE PLANTING SOILS SPECIFICATION FOR ADDITIONAL INFORMATION.



Notes:
1- For planting areas narrower than 8' reduce the distance between paving and soil fracturing from 2' to 1'.

2- See planting soil specification for additional requirements.

S-X MODIFIED EXISTING SOIL - COMPACTED EXISTING SOIL (FRACTURING)

NTS

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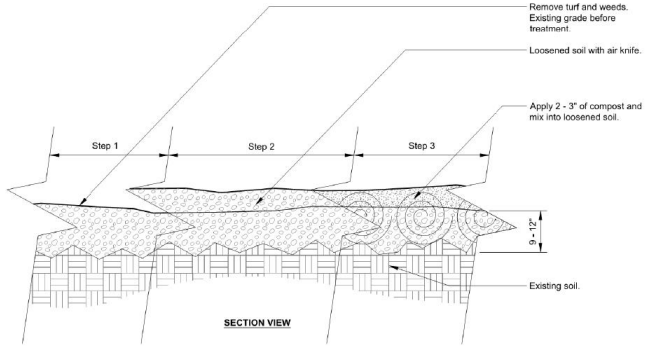
MODIFIED EXISTING SOIL - COMPACTED EXISTING SOIL (RIPPING AND FRACTURING)

DESCRIPTION OF CONDITION TO BE MODIFIED: DEEP SOIL COMPACTION FROM PREVIOUS GRADING, FILLING OR COMPACTION FORCES. THE SOIL ORGANIC MATTER CONTENT IS NOT SUITABLE FOR PROPOSED PLANTING. SEE MODIFIED EXISTING SOIL - COMPACTED EXISTING SOILS IN THE PLANTING SOILS SPECIFICATION FOR ADDITIONAL INFORMATION.



Notes:
1- Prior to the start of work remove all thatch, sod, and/or weeds.

2- Loosen soil with Air Knife or approved equal to a depth of 9 - 12" and work around encountered roots.

3- Apply 2 - 3" of compost over loosened soil. Using an air knife mix compost into loosened soil.

4- Water entire root zone at end of each work day.

5- See planting soil specifications for additional requirements.

S-X MODIFIED EXISTING SOIL - EXISTING SOIL IN CRITICAL ROOT ZONES OF EXISTING TREES TO REMAIN

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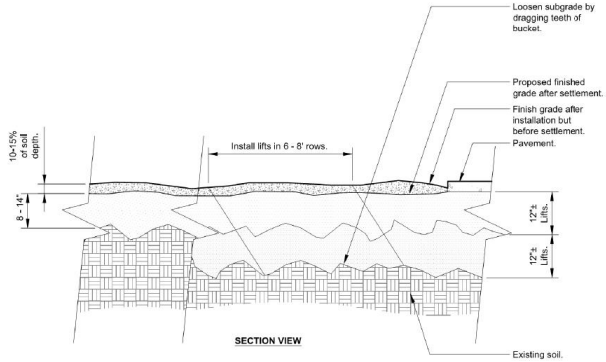
MODIFIED EXISTING SOIL - EXISTING SOIL IN CRITICAL ROOT ZONES OF EXISTING TREES TO REMAIN (PNEUMATIC DIGGING)

DESCRIPTION OF CONDITION TO BE MODIFIED: AREAS WHERE PROPOSED GRADING TIES INTO EXISTING GRADE WITHIN THE CRITICAL ROOT ZONE. IN ADDITION, SURFACE COMPACTION WITHIN THE CRITICAL ROOT ZONE BY BE PRESENT. SEE MODIFIED EXISTING SOIL - COMPACTED EXISTING SOILS IN THE PLANTING SOILS SPECIFICATION FOR ADDITIONAL INFORMATION.



Notes:
1 - Soil compaction after installation shall be 75 - 250 PSI at soil moisture between field capacity and wilting point.

2 - For soil depths see planting soil specifications.

3 - See planting soil specification for additional requirements.

S-x INSTALLED PLANTING SOIL MIXES AND FURNISHED SOIL FOR TREE PITS

NTS

OPEN SOURCE FREE TO USE

INSTALLED PLANTING SOIL MIXES AND FURNISHED SOIL FOR TREE PITS

DESCRIPTION OF CONDITION: IMPORTED SOIL FOR TREE PITS OF LARGER TREE STOCK. LOCATIONS TO BE DETERMINED BASED ON PROPOSED PLANTING PLAN.

Planting Communities

PLANTING COMMUNITIES

Thank you

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