

Impacts of a Shrinking Forest Canopy and Solutions for Restoring Our Urban Trees

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PRESENTATION ANATOMY

The Roots:

Overview on the
Importance of Trees



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The Trunk:

Maintaining
an Urban Arboretum



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The Branches:

Impact of
Urban Forests



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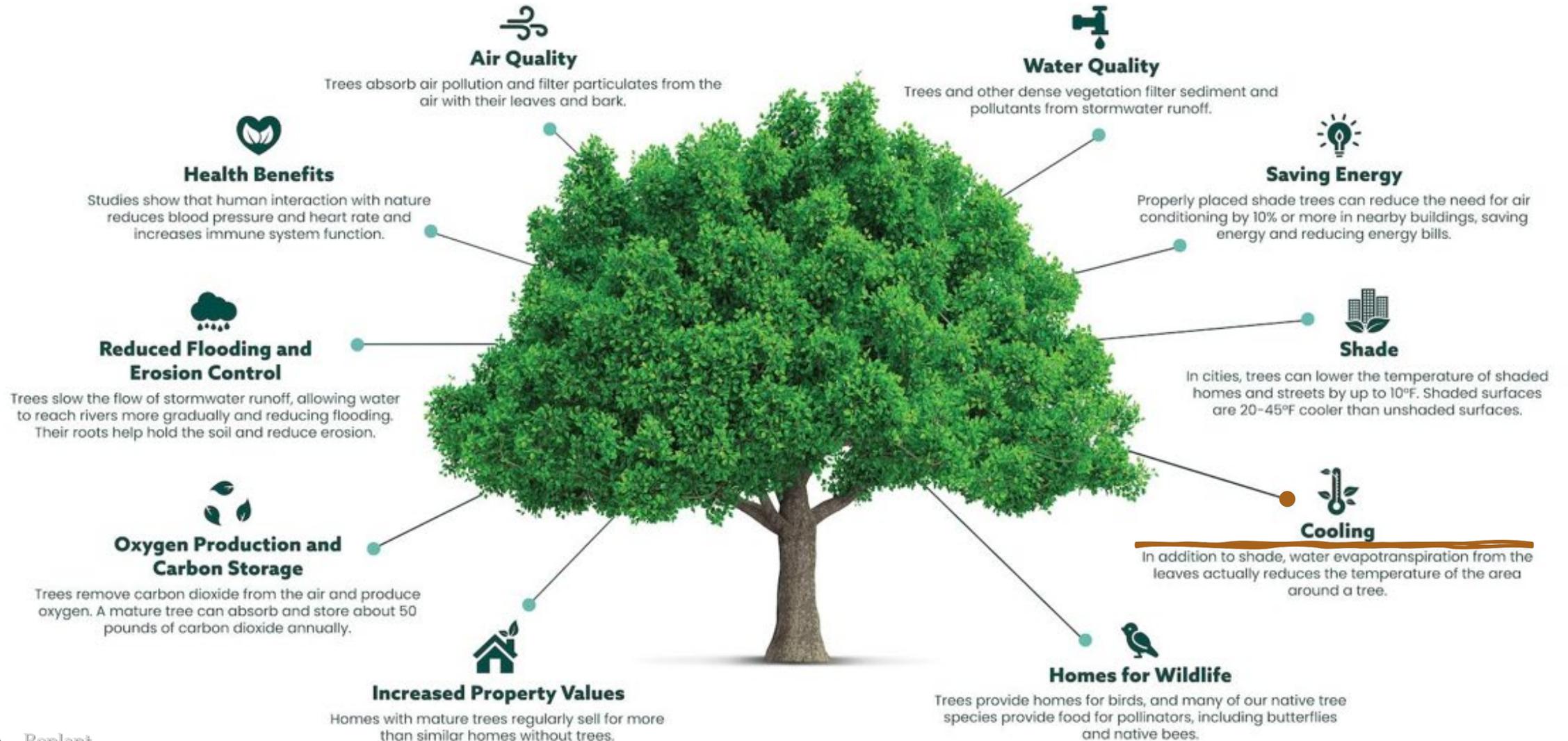
The Canopy:

Urban Forest
Restoration



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BENEFITS OF TREES



URBAN HEAT ISLAND

URBAN AREAS

1.) Downtown

2.) Fairgrounds

3.) The Mall

4.) Cunningham Ln.

5.) Fort Campbell

HIGH SCHOOLS

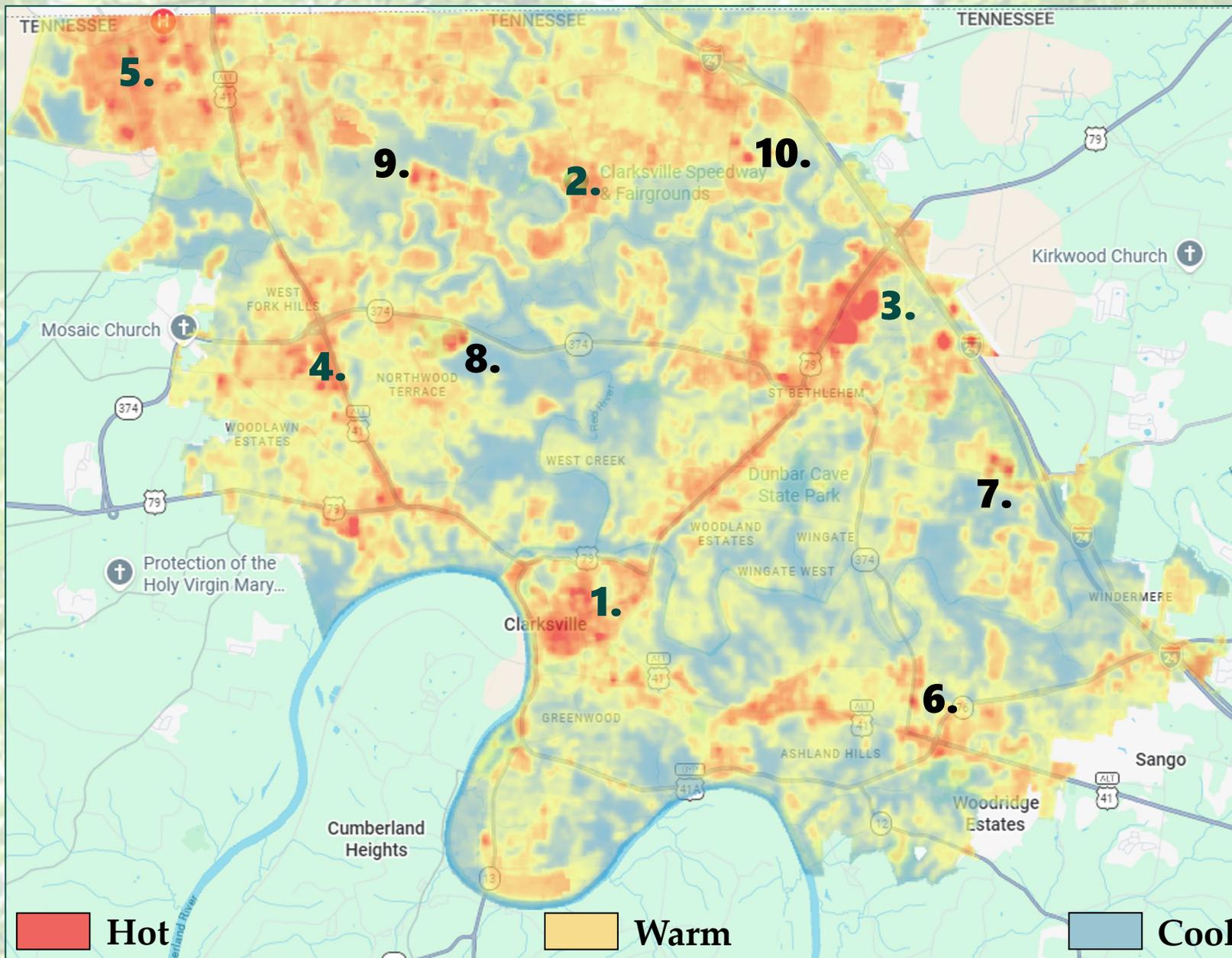
Clarksville HS (.6)

Rossvie HS (.7)

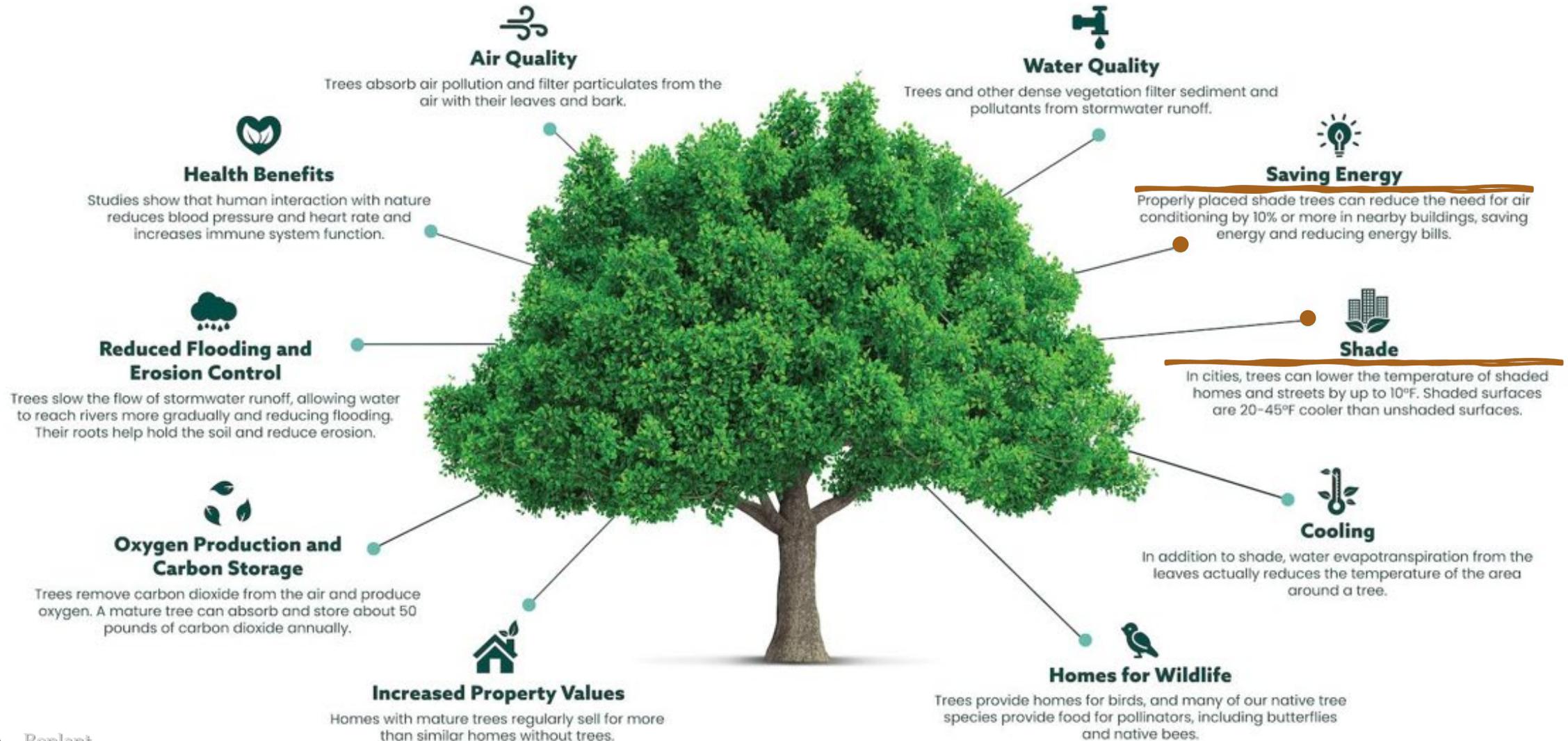
Kenwood HS (.8)

West Creek HS (.9)

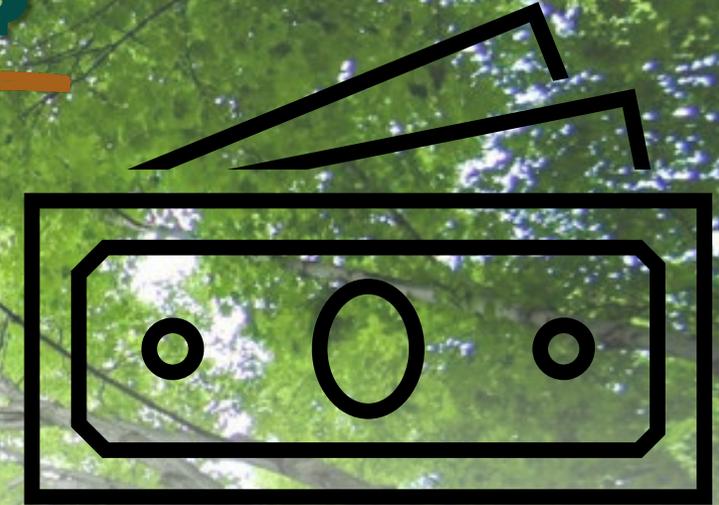
Northeast HS (.10)



BENEFITS OF TREES



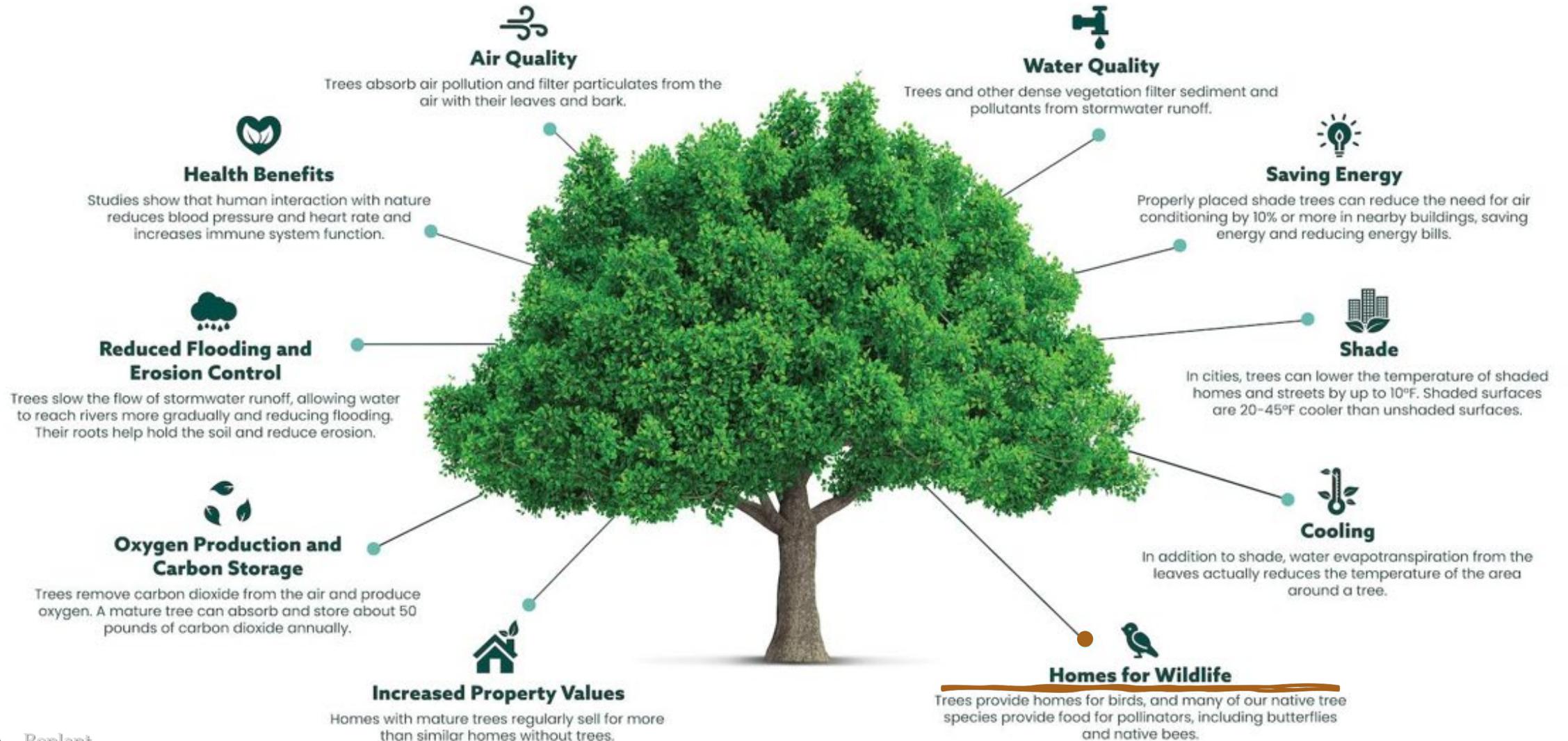
ENERGY \$AVING\$



- Numerous studies show a reduction of summer cooling costs with an increase of urban canopy
 - Using a standard kw-hr/day rate, an average reduction of \$0.31/day was found in one study in Indiana (nearly \$40 over the cooling year period)¹
 - Green infrastructure including urban parks and forestry can reduce and the energy demand of nearby buildings by 10 percent.²



BENEFITS OF TREES

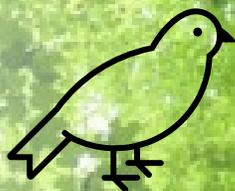


WILDLIFE HABITAT



Eastern Red Bat

- Tree dwelling species
- Spending time in forests and around shade trees in cities and farms
- Insectivorous

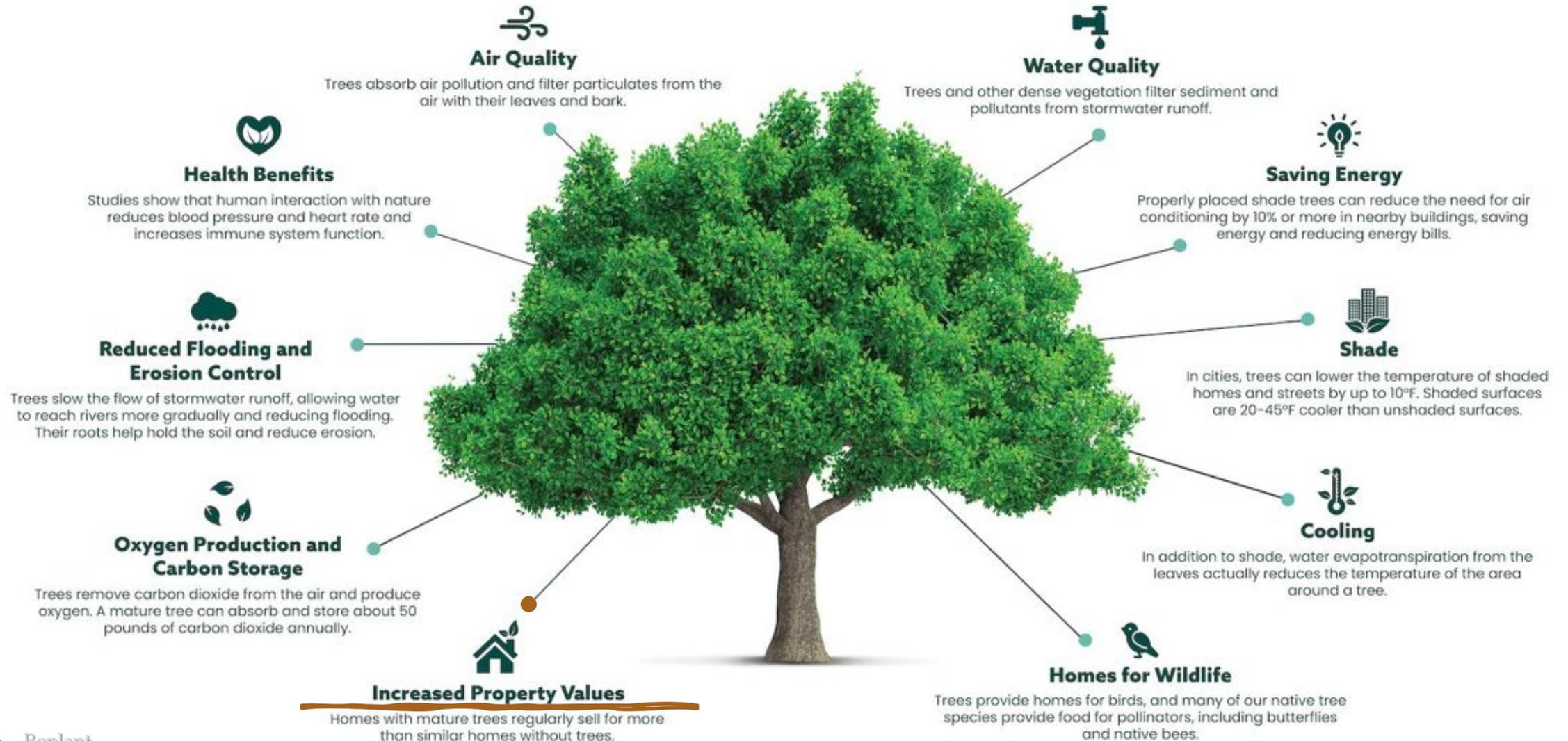


Cooper's Hawk

- Tends to nest near the edge of large patches of deciduous, mixed, coniferous forests
- In rural woodlots and wooded suburban areas
- Consumes rodents and snakes



BENEFITS OF TREES



PROPERTY VALUES

- Homes with trees in their yard saw increases of more than \$30 billion, annually, in the U.S.¹
- Well **maintained trees** can increase property values by 5 - 18%²
 - Based on a \$400,000 home that equates to between \$20,000-\$70,000³
- Urban green spaces become areas for communities to meet and provide space for recreation which increases property values³

¹Nowak, 2017, <https://research.fs.usda.gov/treesearch/54838>

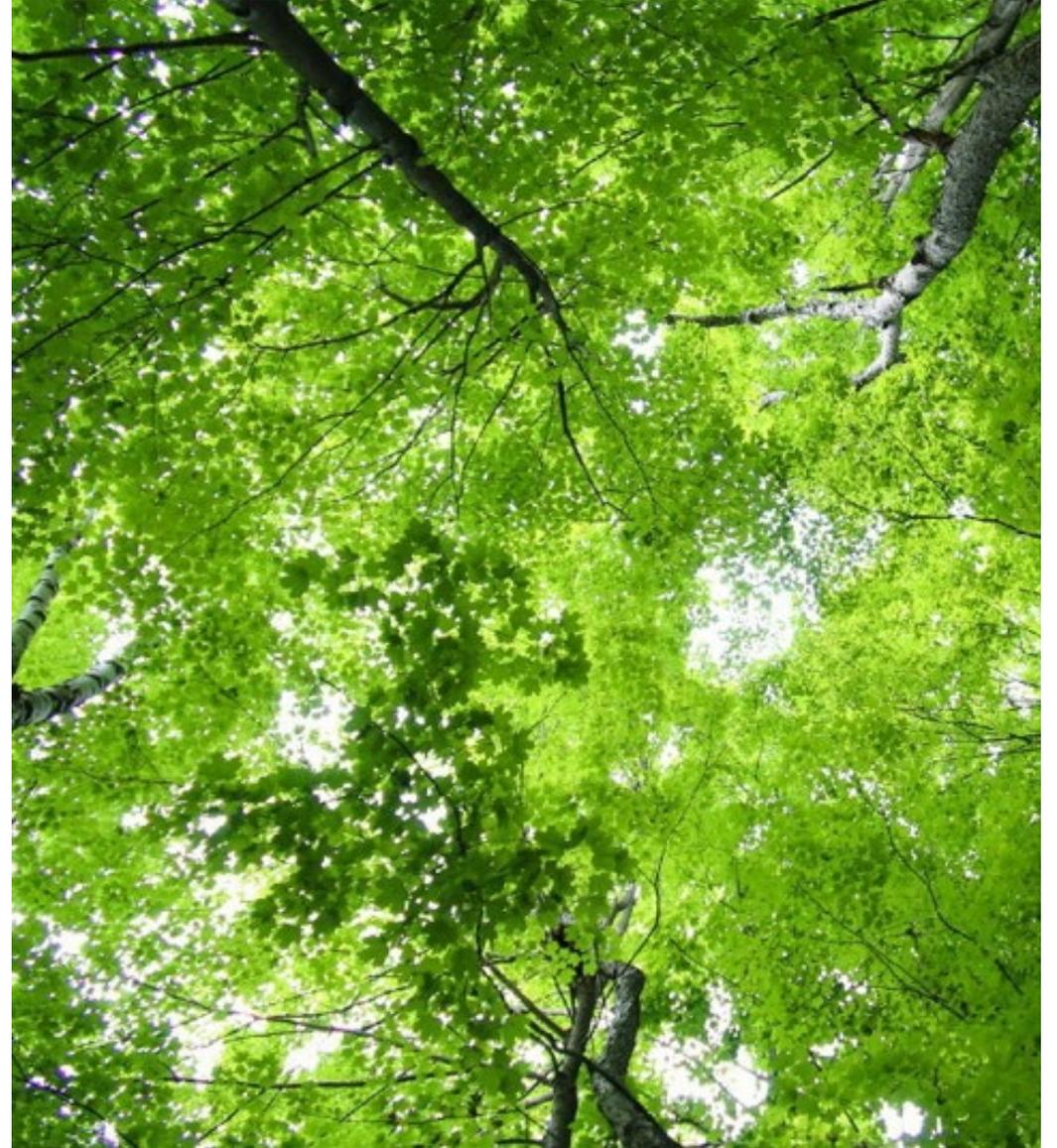
²Wolf, 1998, <https://wrrc.arizona.edu/sites/default/files/urbanforestvalues.pdf>

³Morales (1983) <https://doi.org/10.48044/jauf.1980.074>





AUSTIN PEAY
ARBORETUM



Trees Planted On Campus For Benefit Of Future Students

Recently about 210 black walnuts have been planted in the basin near the heating plant, in which approximately 550 black walnuts were planted four years ago. This makes a total of approximately 500 black walnuts in this basin.

To take the place of the 1 oaks on the campus which slowly passing away, two which have fallen within last eight years, 75 small trees, 50 white oaks and 25 oaks have been purchased placed in the school nursery final planting over the gro next year.

This will insure a fores oaks of good size for the p ure of students who at school here from fifty to hundred fifty years from One of these trees just a old will be set in the plac the large one that fell last ter. This large oak was



ALL STATE

Herbert Roake's Skilled Hands Shape Beautifully Landscaped College Campus

By FRANK VINSON



Herbert Roake

Within a few years the campus of Austin Peay will have undergone a complete change of scenery, according to H. Roake, college gardener, who is directing the landscaping.

Currently receiving a general face lifting, the college will soon be sporting a new campus along with its new buildings. Although the young shrubs and trees are not scheduled to achieve full beauty until they reach maturity, the "new look" is already beginning to take shape.

Heading the project is Mr. Roake, the college gardener, who as a boy assisted his father in the rural



Page 4—The All State, Wednesday, Nov. 19, 1969

Trees were 'in' thing on hill 100 years ago

by PAT HART

School on the hill among the large oaks. . . Austin Peay?

According to Dr. Haskell Phillips, chairman of the biology department and Grounds Committee, among the oaks was an accurate description of APSU's hill 100 years ago. Trees, vines and grass were "in" then.

Today only one of the many mighty oaks still stands. That one warms the southwest corner of the Claxton Building.

One of the landscaping goals now is to have every native tree of Tennessee represented on campus. This idea bloomed when Charles Pinckley became landscape planner.

He and his committee have

brought several new species to campus, even some exotic ones.

As many as 72 species have been planted here. Due to destructive students, campus renewal and improvement projects, and overly adventurous dogs it's hard to tell exactly how many of those trees still exist.

The tulip popular tree just the left of the University Center was recently cut down. The loss of the tree has taken away greatly from Austin Peay's beauty.

The most well-known tree on campus is the huge willow in the bowl facing Harned Hall. It gives both shade and privacy to young lovers.

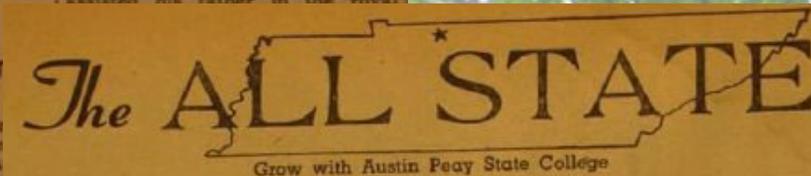
Many campus spots, however, are not so beautifully attired as the Harned Hall bowl. In fact, there are spots that are without

Tree Planted In Memorial Ceremony

In a brief and informal ceremony held in the area behind the Administration Building of Austin Peay State College, a young Hackberry tree was planted in memory of the old and beloved Castle Building which once stood proudly on campus.

President Harvill has named the tree the "Castle Hackberry" because it lacked a name but cause the tree has a unique history of its own.

The story begins about ten years ago when one of the students Austin Peay pointed to the tower of the Castle Building and shouted, "Look! There's a tree growing on the tower." Day after day the students and faculty followed the growth of this tree, how the seed found its place.



CLARKSVILLE, TENNESSEE, FEBRUARY 12, 1954

NUMBER 7

Begins 25th Anniversary Pageant

College Presidents Honored By Trees Planted On Campus

The convocation and tree planting ceremony was held on February 10, celebrating Austin Peay State College's 25 years of progress. This was the second in regards to the advancement of the college.

The anniversary celebration began October 31 with the events of the annual homecoming. Other events scheduled are a historical pageant on May 12, and a banquet on May 21.

The anniversary convocation began at 9 o'clock a. m. in the Memorial Health Building on the college campus following a recital of chimes music from the tower of the Administration Building.

Featured music for the convocation was presented by the college choir under the direction of Dr. Charles L. Gray.

Following the invocation by Rev. William P. Barmes, pastor of the First Presbyterian Church, Clarksville, Dean P. G. Woodward spoke on the "History of Austin Peay College."

Following Dean Woodward's address, President Herbert Harvill spoke on the "Responsibility of the College to the State."

After the convocation, the attend



A TREE IS PLANTED — President Herbert Harvill (right) wields a shovel in planting a tree in an impressive convocation program at Austin Peay State College Wednesday morning. Herbert Roake, landscape gardener, sees that the work is done properly. — Photo by W. J. Souza



Replant
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Overview

Suspense thriller

i-Tree Eco Tree Benefits

Tree Sites Benefits

2,121
Calculated Trees

Total Benefits Over
10 years

\$126,642.92

Carbon Dioxide Uptake
\$92,989.85
Carbon Sequestered **429,784.64 pounds**
CO2 Equivalent **1,575,877.03 pounds**

Storm Water Mitigation
\$13,500.80
Runoff Avoided **1,510,831.85 gallons**
Rainfall Intercepted **18,702,121.63 gallons**

Air Pollution Removal
\$20,152.27
Carbon Monoxide **7,040.03 ounces**
Ozone **164,688.82 ounces**
Nitrogen Dioxide **15,502.07 ounces**
Sulfur Dioxide **7,669.93 ounces**
PM_{2.5} **6,267.11 ounces**

Energy Benefits Unavailable

USD

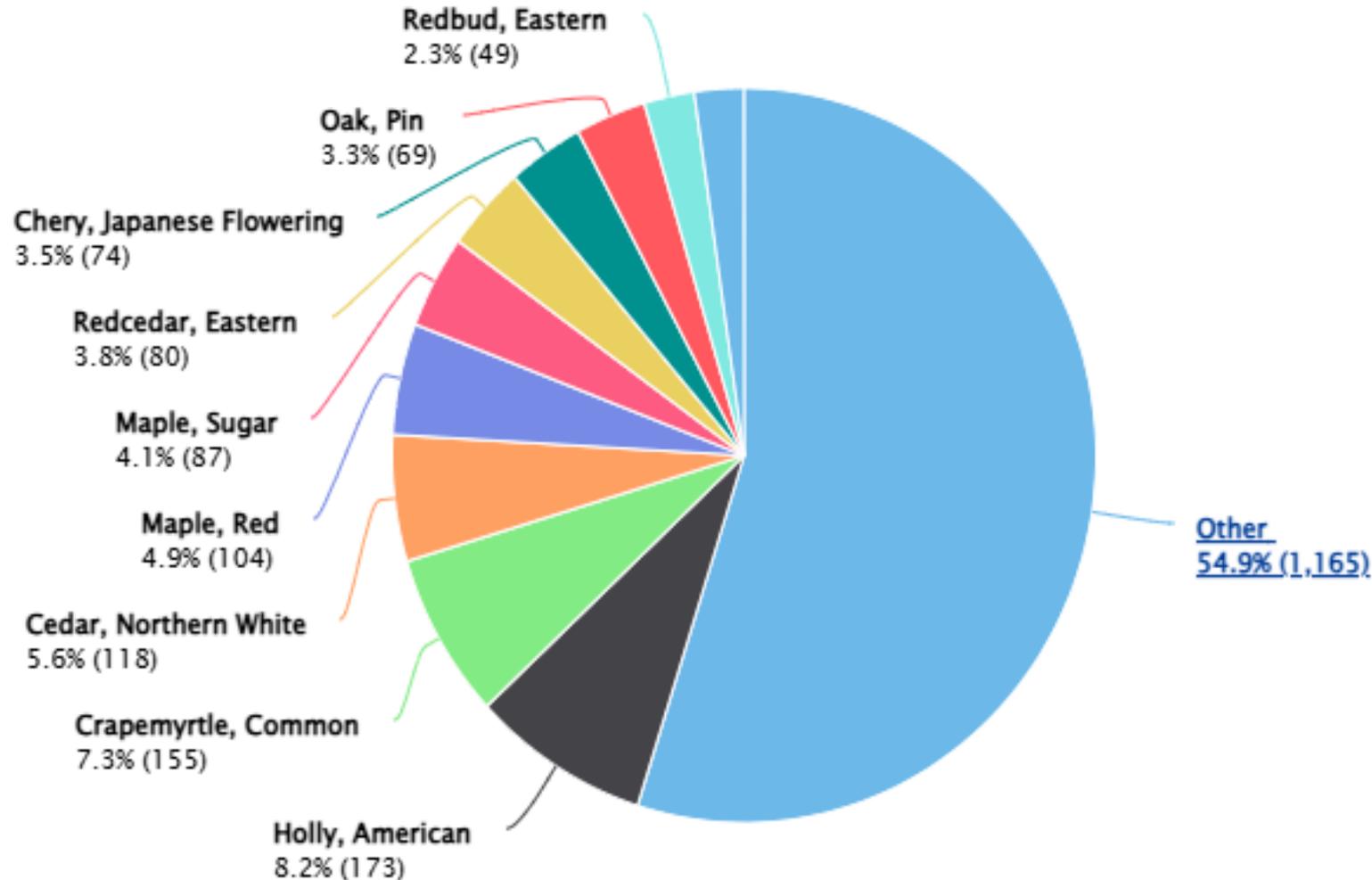




MANAGING APSU TREES

- Tree Campus Higher Ed
- 10-20-30 Rule
- Positive Tree Target
- Minimum of 50% native
- Focus plantings near impermeable surfaces

Count per (Common) Species



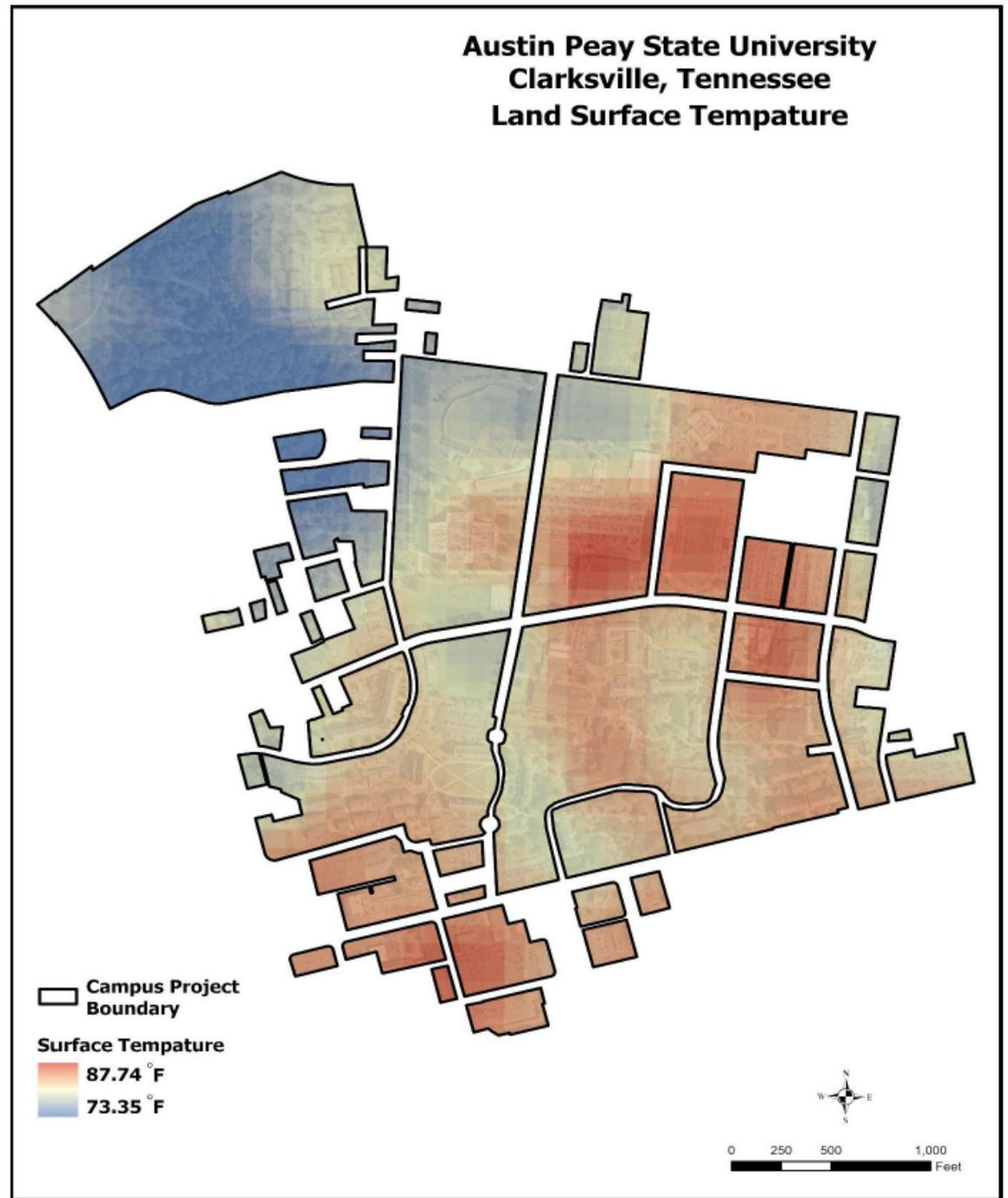


Figure 4. Land Surface Temperature



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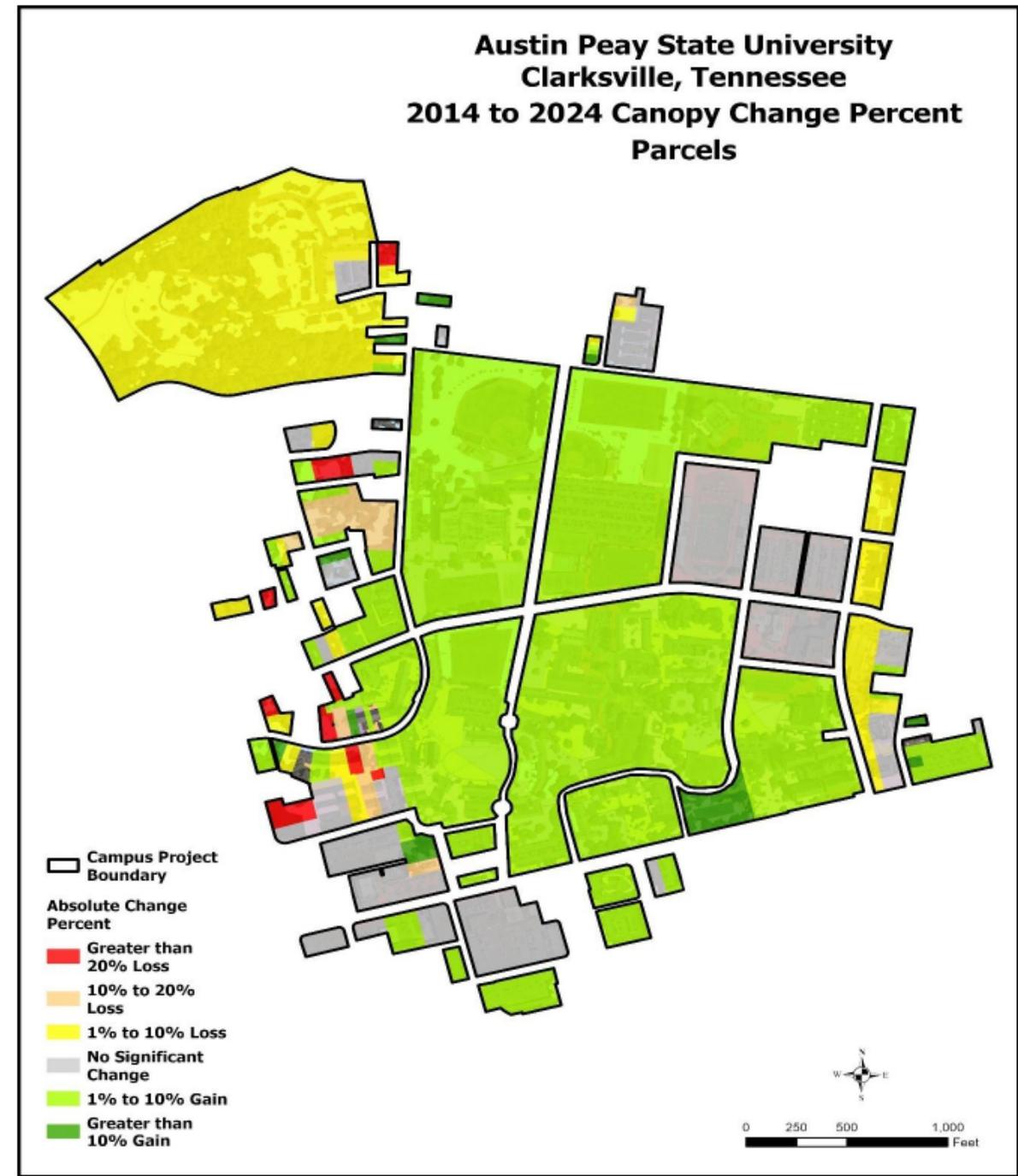


Figure 3. Canopy Percent Change 2014-2024



CLARKSVILLE

TENNESSEE



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Overview

CITY FORESTRY MAINTENANCE DIVISION

- Four-person team maintains 5,247 city trees worth \$12M
- Trees pruned in 2025 for health, safety and aesthetics 5,151
- Total trees planted 527
- Established new urban groves at Spring Creek Parkway and Crossland Avenue
- TAEP Grant Planted trees at Fire station 11 and at Fair Brook Place, Exit 4



City Forester & Clarksville Tree Board

- Tree City USA 36 years
- Tree Board & Tree Ordinance for the City
- Wood Waste is Recycled
- Christmas Tree Recycling
- Tree Tuesdays
- TAEP Grant received each year
- Tree Seedling Giveaway with help of UT Extension Master Gardeners
- Continuing education for Forester and Tree Board
- Arboretum at Liberty Park (teaching tool)
- Plant the Campus Red with APSU
- Growth Award 19 years
- Completed a Tree Inventory
- Mayors Sumer Night Lights
- Love a Tree Week Giveaway
- Champion Trees
- TN Tree Day with TEC and APSU
- Continuing Education with Local Schools
- Downtown Market booth for continuing Education about Trees
- TN Urban Forestry Council



i-Tree Eco Tree Benefits

Tree Sites Benefits

5,247

Calculated Trees

Total Benefits Over

20 years

\$537,412.36

Carbon Dioxide Uptake

\$279,535.74

Carbon Sequestered 3,234,750.14 pounds

CO2 Equivalent 11,860,750.51 pounds

Storm Water Mitigation

\$77,366.43

Runoff Avoided 8,657,834.80 gallons

Rainfall Intercepted 112,719,852.34 gallons

Air Pollution Removal

\$180,510.19

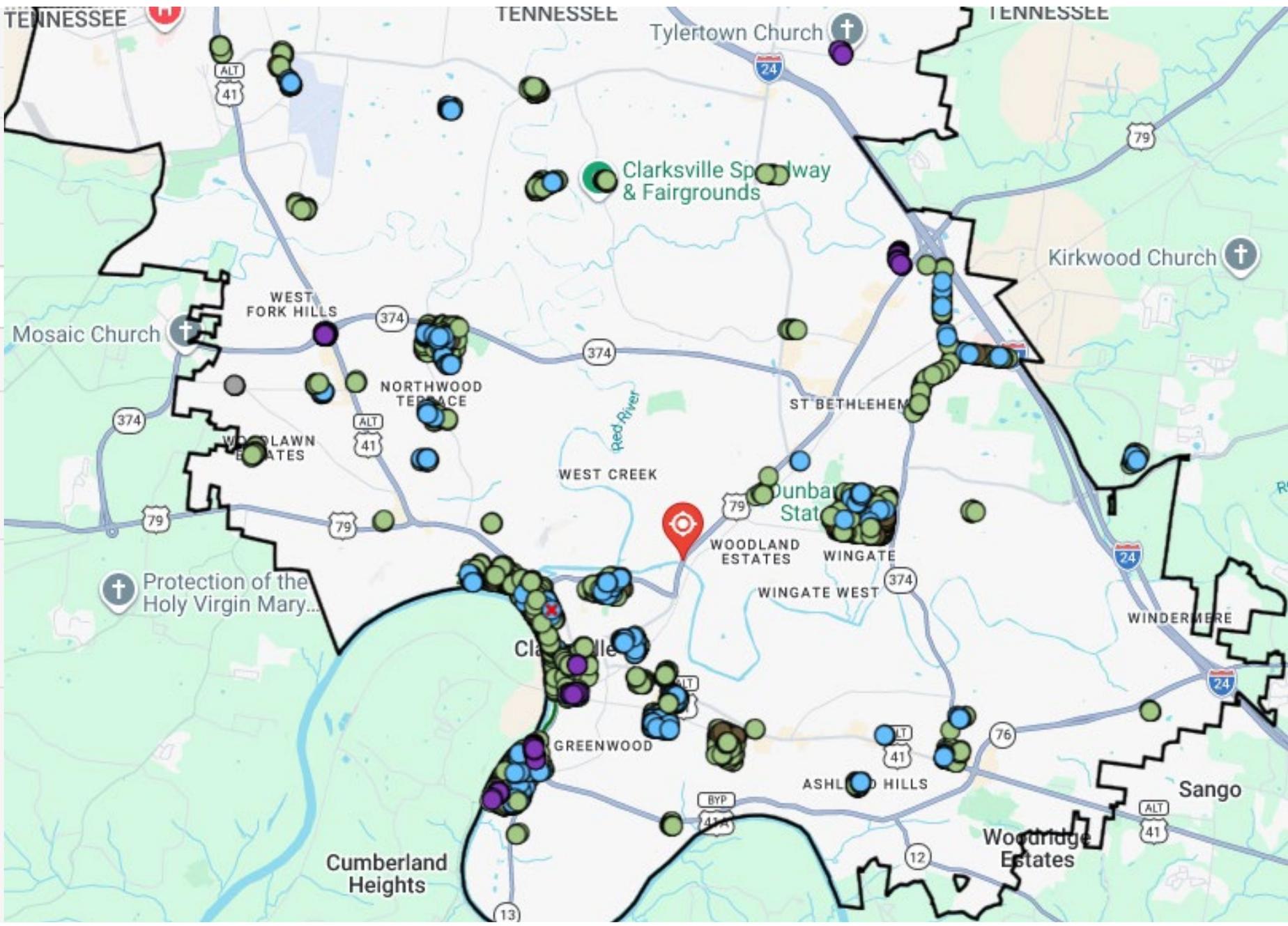
Carbon Monoxide 41,009.89 ounces

Ozone 1,252,496.73 ounces

Nitrogen Dioxide 127,836.42 ounces

Sulfur Dioxide 57,006.54 ounces

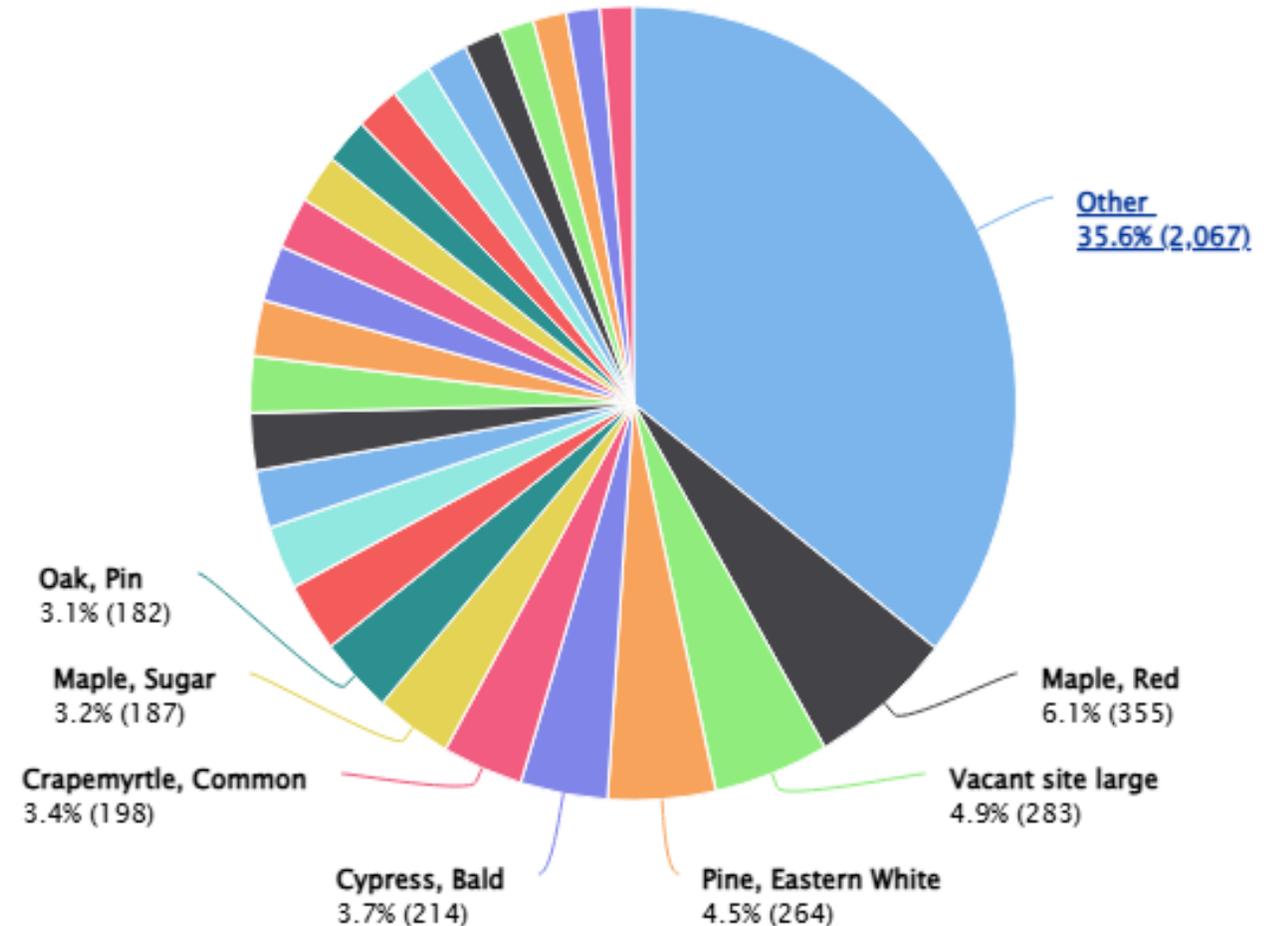
PM_{2.5} 67,931.32 ounces



INVENTORY OF TREE SPECIES

- Tree City USA
- 10-20-30 Rule
- Prioritize Native Species
- Maintain Age Diversity
- Ecological Restoration
- Stormwater Mitigation

Count per (Common) Species



Forestry 2026

- Our goal is to plant, grow and sustain a healthy urban and community forest
- Will be implementing training for Tree Stewards this year for volunteers for our urban forest with TN Urban Forestry Council, APSU, Replant Clarksville and UT Extension partners
- TAEP Grant volunteers needed to plant 75 trees March 12th – April
- Assist Master Gardeners with beautifying downtown Clarksville projects
- Assist City parks staff with planting 2200 new Tree Seedlings exit 8
- State and City Arbor Day Celebration this week March 6th at 1pm
- Assisting County Parks with new state certification for Arboretum at Rotary Park and teach correct pruning practices to their landscaping team
- Continuing education for local schools
- Species selections for new trees for next year
- Home visits for Tree Health, inspections for pests and disease to protect our urban forest
- Increase our canopy
- TN Tree Day with TEC and Austin Peay Partners March 20th & 21st Edith Pettus Park
- Regional Hub for TN Tree Day
- Continuing education and Safety classes for Forester and Forestry Team
- Drive thru Tree Seedling Giveaway (2300) will be given away March 6 from 8am-12pm



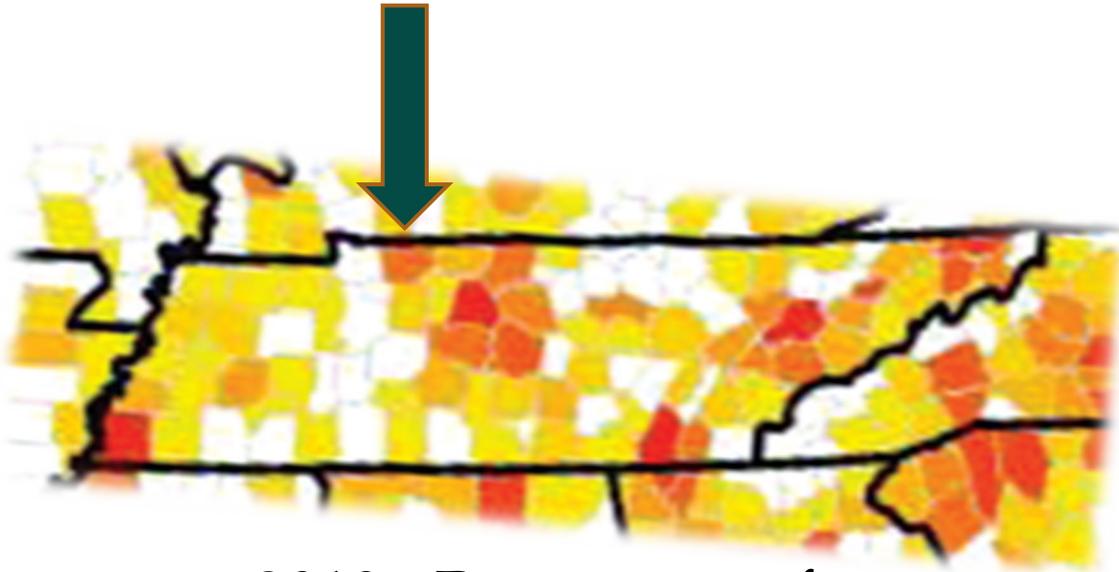
CENTER OF EXCELLENCE FOR
FIELD BIOLOGY



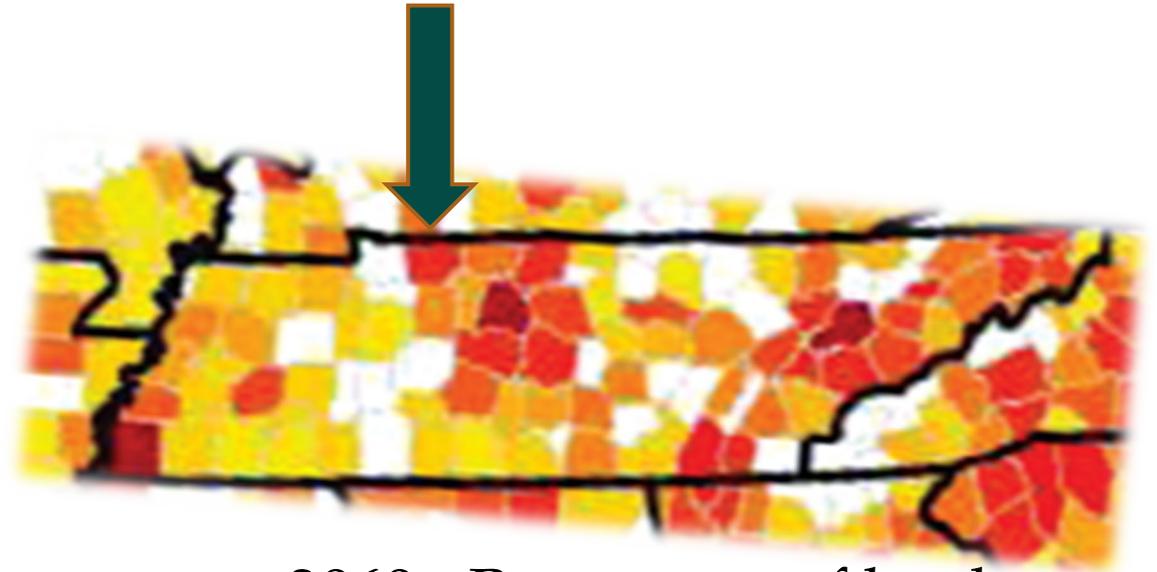
REPLANT

CLARKSVILLE

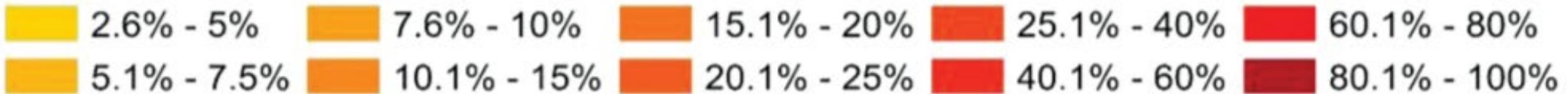
CHANGE IS COMING TO MONTGOMERY COUNTY



2010 - Percentage of land that was urban



2060 - Percentage of land projected to be urban





REPLANT

CLARKSVILLE

*Our mission: to restore the tree canopy
of Clarksville and Montgomery County*

- ✦ Established as a non-profit 2025
- ✦ All volunteers
- ✦ All funds local private donations



<https://replantclarksville.org>



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Year 1

- ▀ All the startup and organizing: website, legal paperwork, bank account, committees, seeking partners, donors, volunteers...
- ▀ 350+ new trees in the ground



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50 NEW TREES - CIVITAN PARK

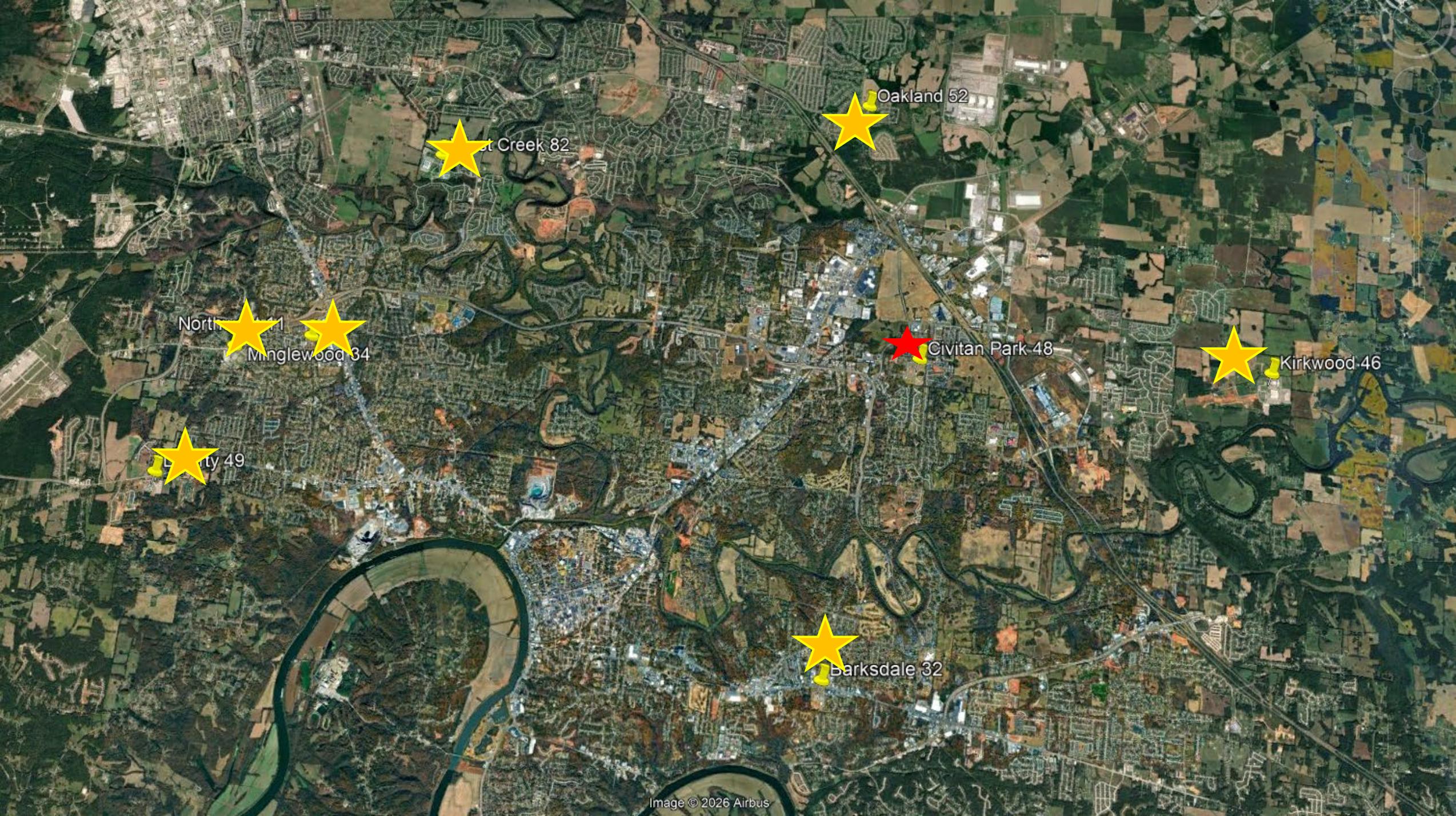
- Montgomery County Parks and Recreation
- Volunteers
- 1-inch caliper trees
- All native species
- All tree installs take place November - March



300 NEW TREES

- Oakland Elementary
- Kirkwood Elementary
- Liberty Elementary
- Oakland Elementary
- West Creek campus
- Northwest High School
- Minglewood Elementary
- Barksdale Elementary





North City 49
Minglewood 34

Redwood Creek 82

Oakland 52

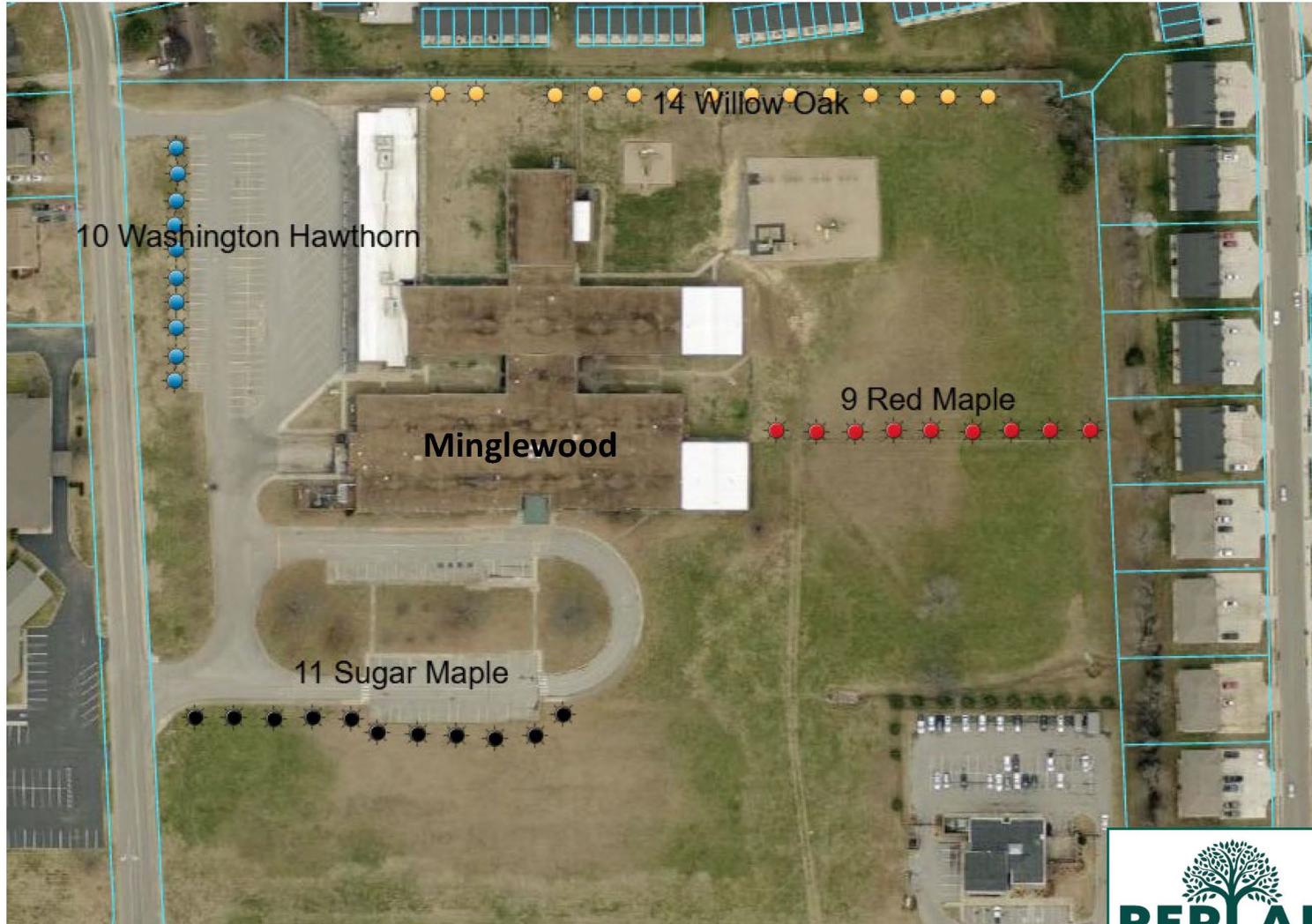
Civitan Park 48

Kirkwood 46

Barksdale 32

MINGLEWOOD ELEMENTARY

215 CUNNINGHAM LANE, 44 TREES



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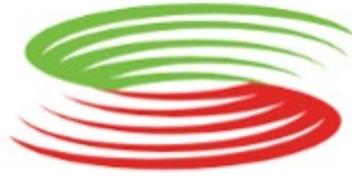
SCHOOL TREES

- ☛ All native species
- ☛ 2-inch caliper
- ☛ 8-12 feet tall





SIERRA CLUB
TENNESSEE CHAPTER



EDE
LIGHTBAND®

*Montgomery County
Master Gardeners
Association*



**MONTGOMERY
COUNTY
TENNESSEE**



AP
Austin Peay
State University
CLARKSVILLE  TENNESSEE



CLARKSVILLE-MONTGOMERY COUNTY
REGIONAL PLANNING COMMISSION



What's next?

- 🍃 1,000 new trees in 2027
- 🍃 More trees for schools

PARTNERSHIP ON A NEW MONTGOMERY COUNTY PARKS & RECREATION TREE FARM



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What's next for Replant Clarksville?

- ▀ Residential tree program
- ▀ A green corridor from APSU to downtown
- ▀ Replant Historic Madison (between 2nd and Liberty Parkway)
- ▀ More public outreach



Upcoming Event

May 17, 2026, Sunday 10am-2pm

Healthy Yards

Pollinator & Native Plant Summit

♣ **Replant Clarksville** will have a booth at the Healthy Yards Pollinator Festival, Rotary Park. Volunteers needed starting at 9:00 am

♣ Contact Michelle at rogersm@apsu.edu





REPLANT

CLARKSVILLE

*Our mission: to restore the tree canopy
of Clarksville and Montgomery County*

