Potential Planting Suitability for the City of Austin

Treecon

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Purpose

Identify public areas suitable for the City of Austin
to plant trees, referred to as Possible Planting Space (PPS).

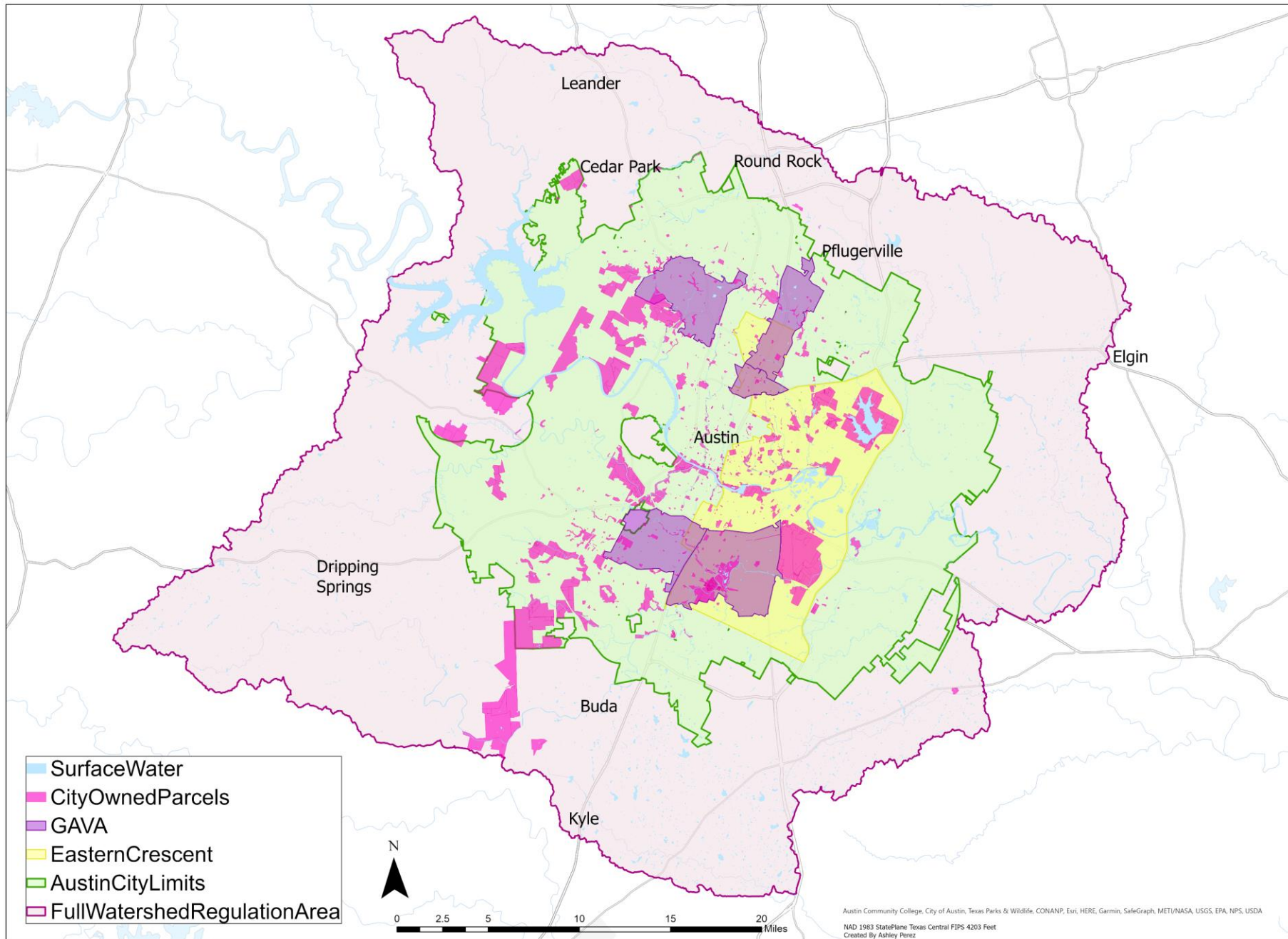Analyze the current tree canopy distribution and find patterns.

Provide a data table of PPS ranking based on suitability.

Importance

- "The Urban Forestry Program has set a goal for tree distribution of at least 70% of trees going to high-priority areas."

- Equity/ Ecological needs

Total Study Area: Austin Full Watershed Regulation Area

Legend:
- SurfaceWater
- CityOwnedParcels
- GAVA
- EasternCrescent
- AustinCityLimits
- FullWatershedRegulationArea

Austin Community College, City of Austin, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

NAD 1983 StatePlane Texas Central FIPS 4203 Feet
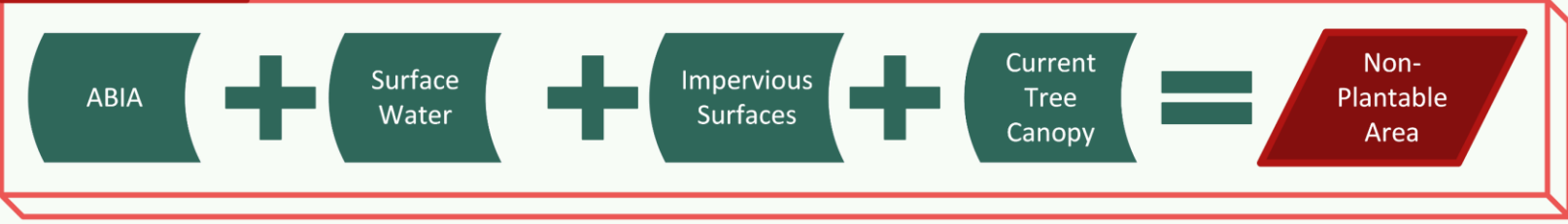Created By Ashley Perez

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Data

Data provided from client:
- Existing tree canopy
- Impervious cover, surface water
- Parcels owned by the City of Austin
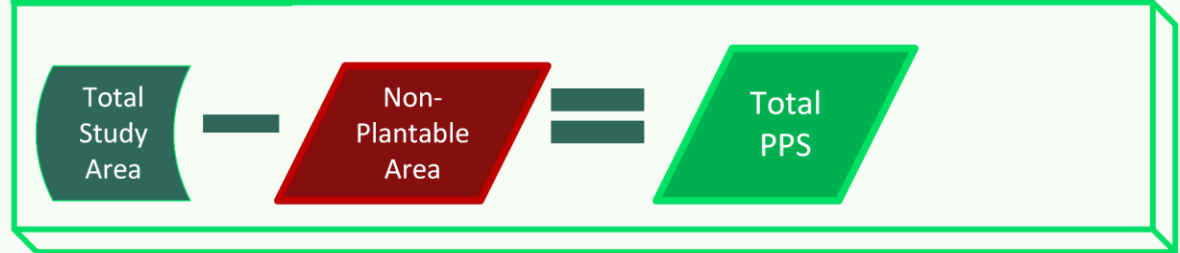- Important boundaries

Additional Data:
- Urban Heat Island
- Flood risk zones

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Non-Plantable Area

ABIA + Surface Water + Impervious Surfaces + Current Tree Canopy = Non-Plantable Area

Total PPS

Total Study Area − Non-Plantable Area = Total PPS

City of Austin Owned Parcels Suitability Score

East Austin + GAVA Zip Codes + Urban Heat Island Severity + Flood Risk = City of Austin Owned Parcels Suitabilty Score
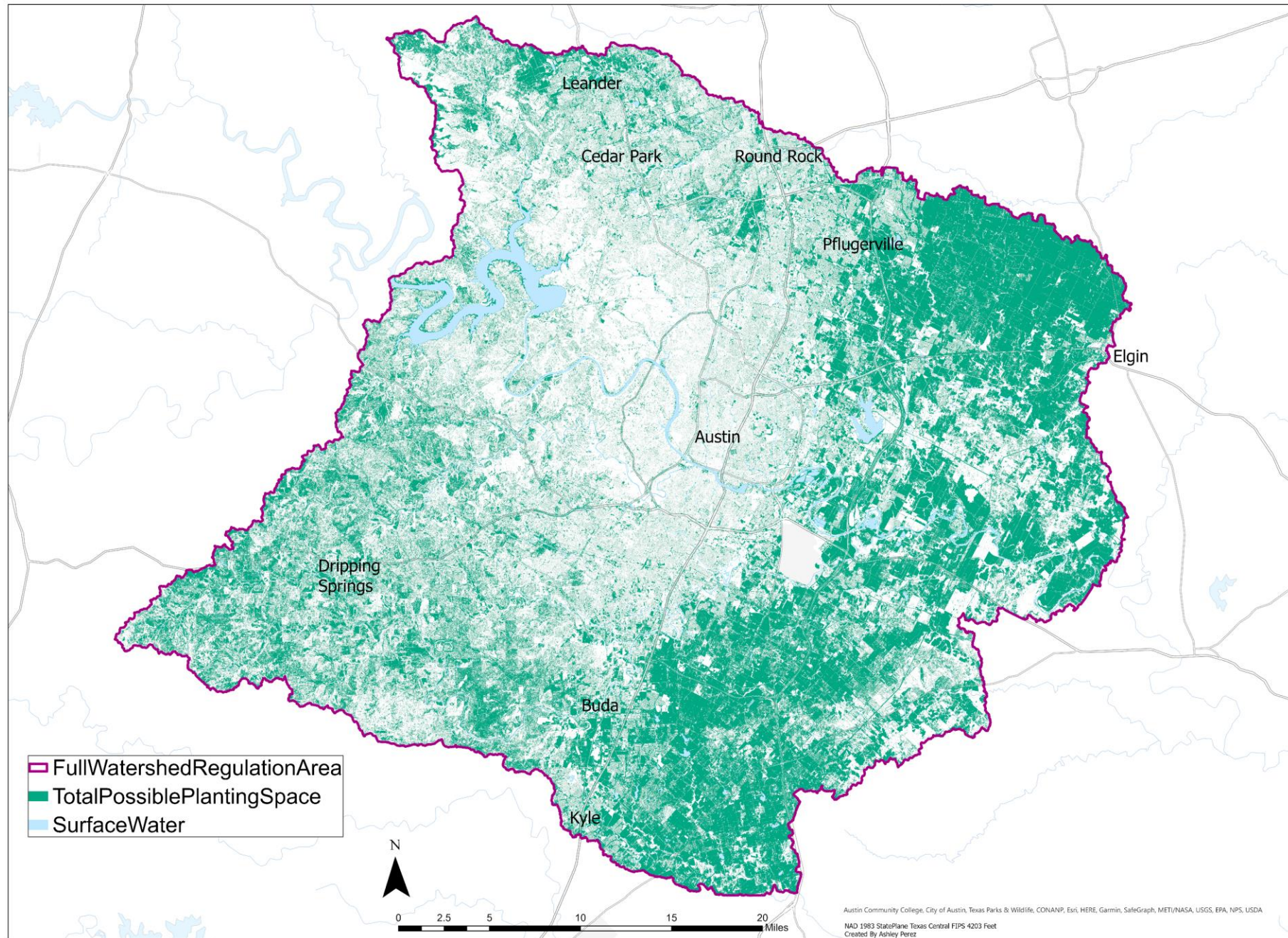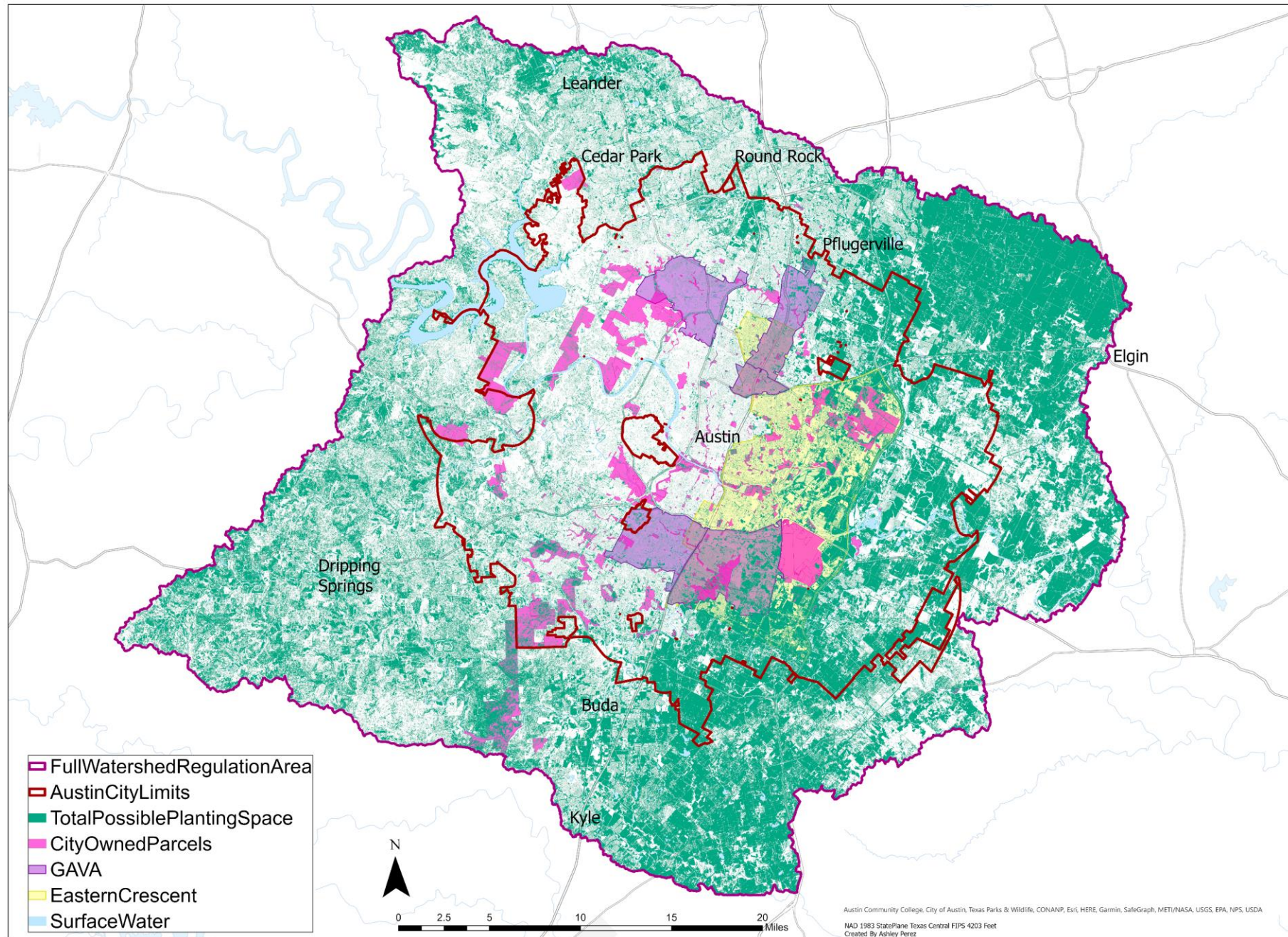
Results

Geodatabase

- Total Possible Planting Space (PPS)
- City of Austin owned parcels Summarized Within
- Eastern Crescent Austin PPS
- GAVA PPS
- Austin Owned PPS
- PPS layer weighted by ecological and equity need
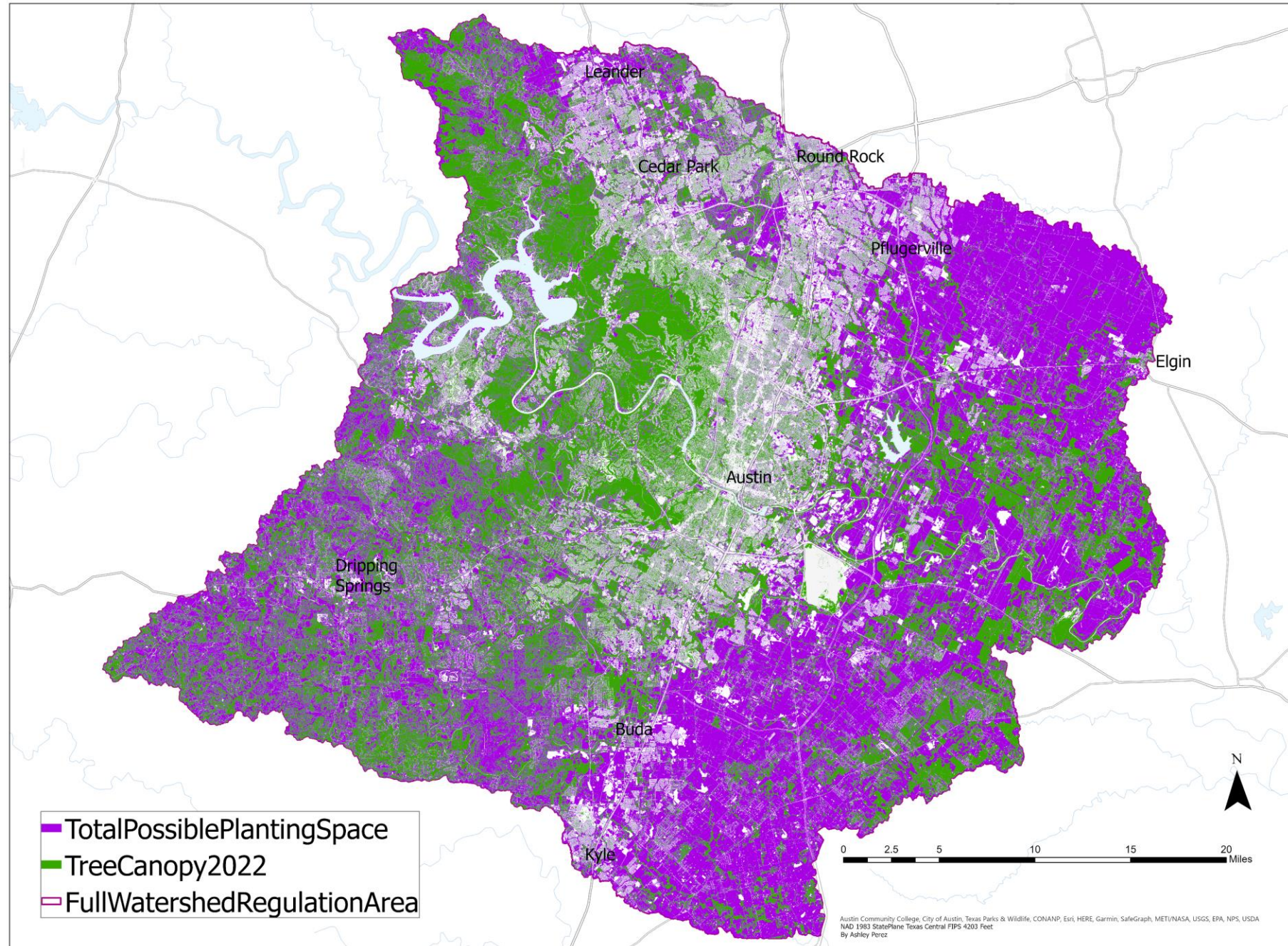- Ordered spreadsheet depicting prime parcels

Austin Watershed Possible Planting Space

Legend:
- FullWatershedRegulationArea
- TotalPossiblePlantingSpace
- SurfaceWater

Labels on map: Leander, Cedar Park, Round Rock, Pflugerville, Elgin, Austin, Dripping Springs, Buda, Kyle

N

0 2.5 5 10 15 20 Miles

Austin Community College, City of Austin, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

NAD 1983 StatePlane Texas Central FIPS 4203 Feet
Created By Ashley Perez

Possible Planting Space City Owned, GAVA, Eastern Crescent

Legend:
- FullWatershedRegulationArea
- AustinCityLimits
- TotalPossiblePlantingSpace
- CityOwnedParcels
- GAVA
- EasternCrescent
- SurfaceWater

Austin Community College, City of Austin, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

NAD 1983 StatePlane Texas Central FIPS 4203 Feet
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Current Tree Canopy 2022 vs Total Possible Planting Space

Leander

Cedar Park

Round Rock

Pflugerville

Elgin

Austin

Dripping
Springs

Buda

Kyle

■ TotalPossiblePlantingSpace
■ TreeCanopy2022
□ FullWatershedRegulationArea

N

0   2.5   5   10   15   20
                            Miles

Weight Scores justifications (Subjective and Binary)

- Gava Zip Codes - Binary (0 or 1) * 100
- Eastern Crescent – Binary (0 or 1) * 250
- Urban Heat Risk - Intersects polygon greater than class 4 (2) * 50
- Urban Heat Risk – Intersects polygon less than class 4 (1) *50
- Flood risk withins - (2) * 25
- Flood risk intersects (1) * 25
- Summarized PPS area / highest contributable parcel * 100 = percent * 5
- Noncontributing/contributing parcels - Binary (0 or 1)

- Score Calculation : ((GAVA * 100) + (Eastern Crescent *250) + (UHR *50) + (Flood risk *50) + ([SUM PPS / Best contributing parcel]% *5)) * (Noncontributing/contributing Parcel)
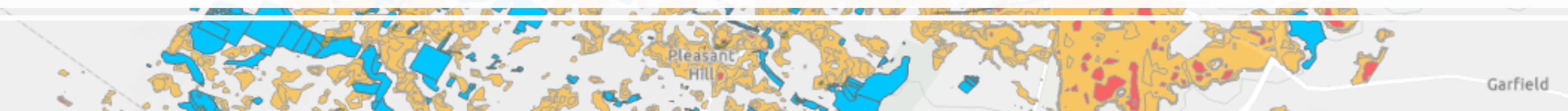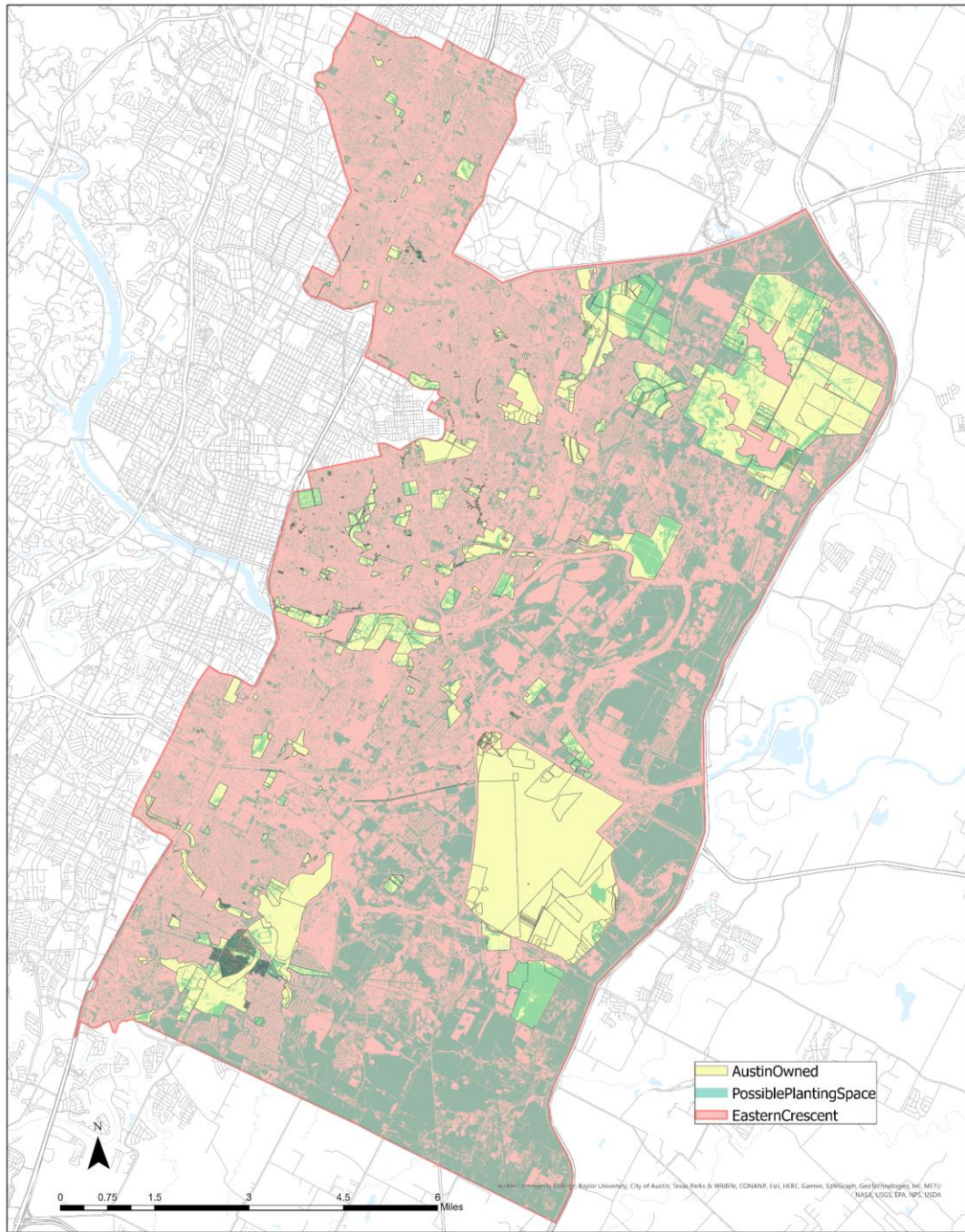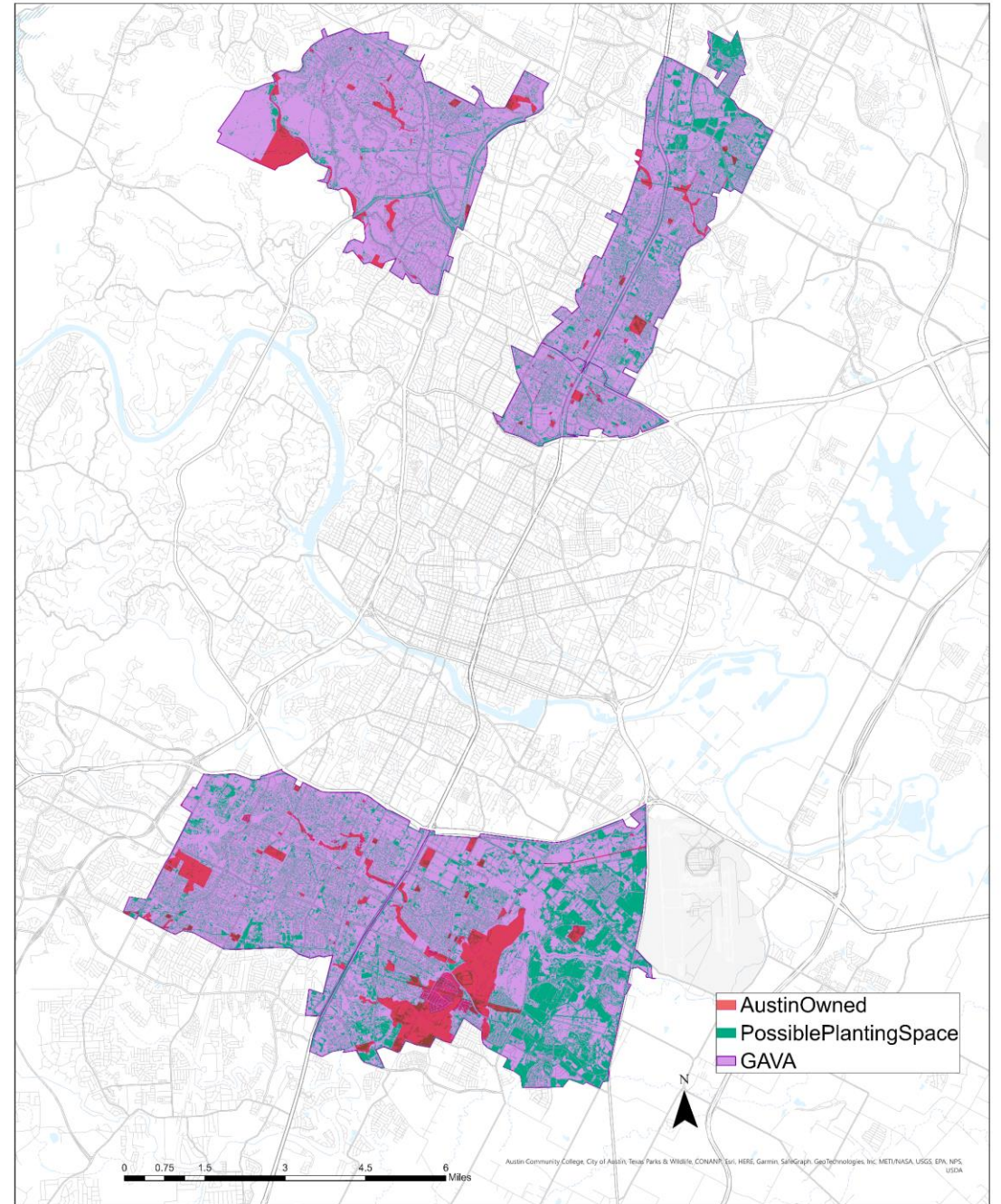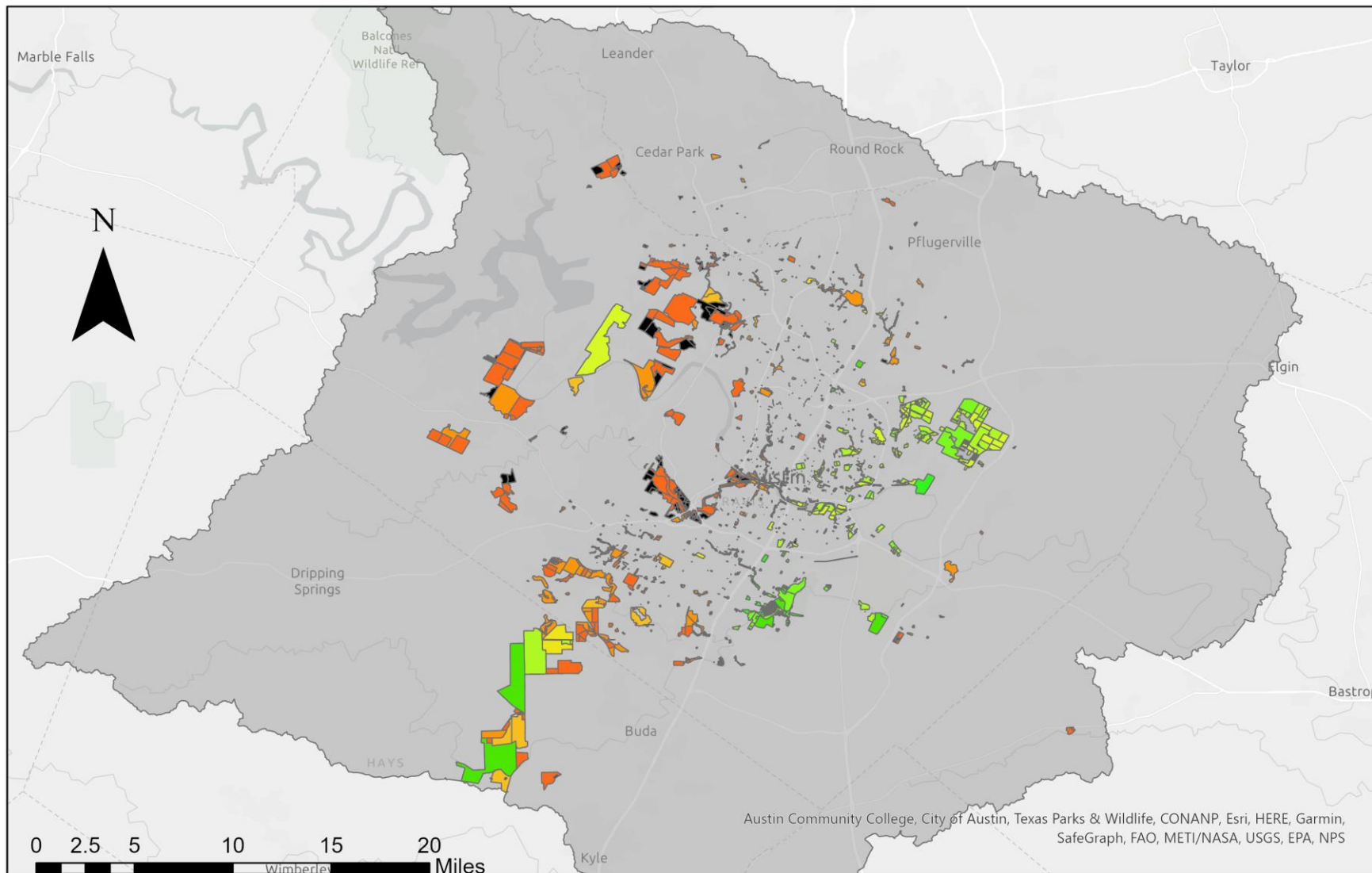
Flood Zone
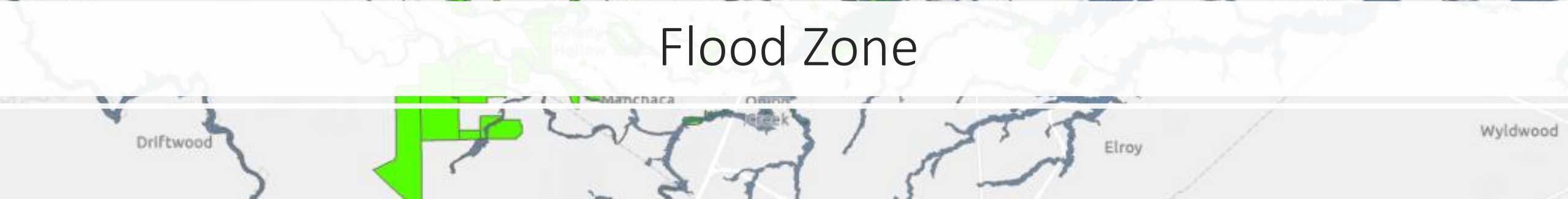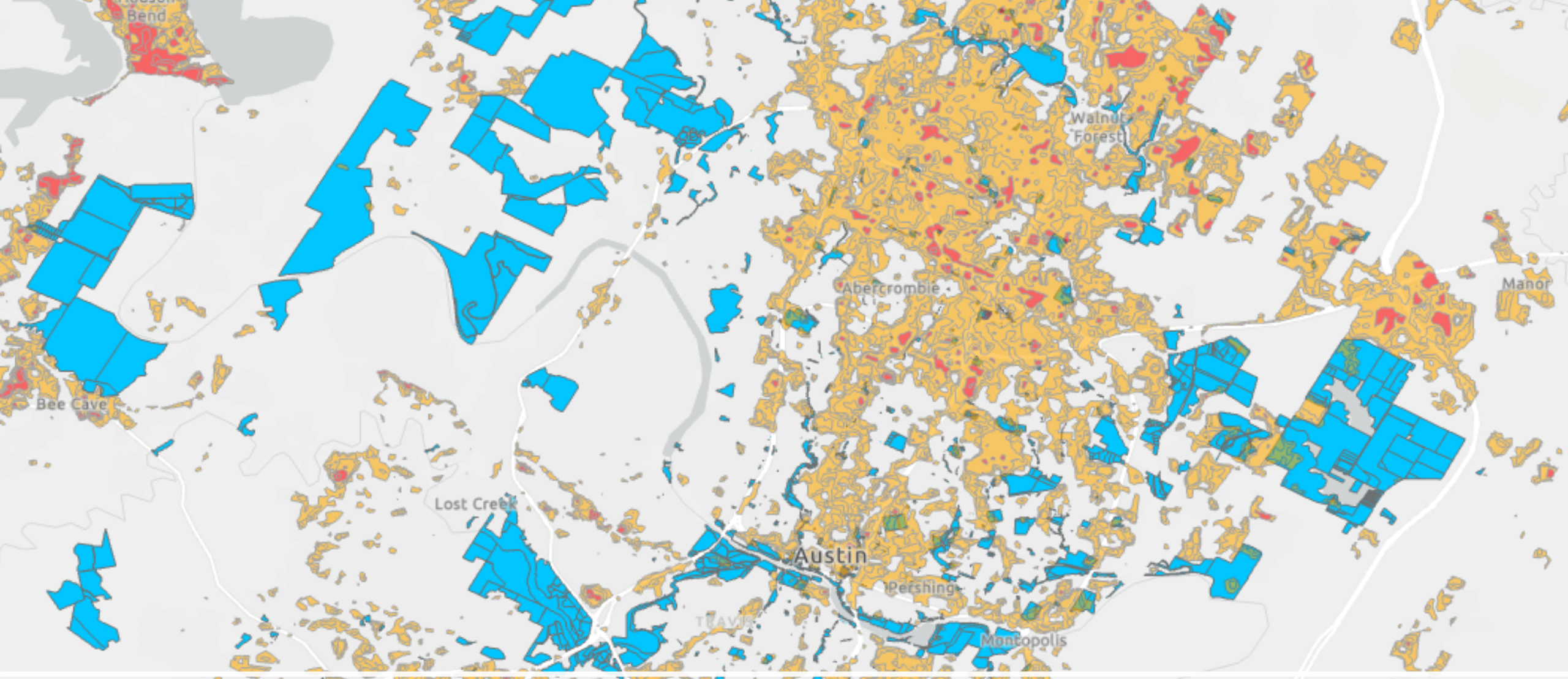
Urban Heat

Possible Planting Space Austin Owned Eastern Crescent

Legend:
- AustinOwned
- PossiblePlantingSpace
- EasternCrescent

N

0 0.75 1.5 3 4.5 6
Miles

Austin Community College, Baylor University, City of Austin, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

Possible Planting Space Austin Owned, GAVA

Legend:
- AustinOwned
- PossiblePlantingSpace
- GAVA

N

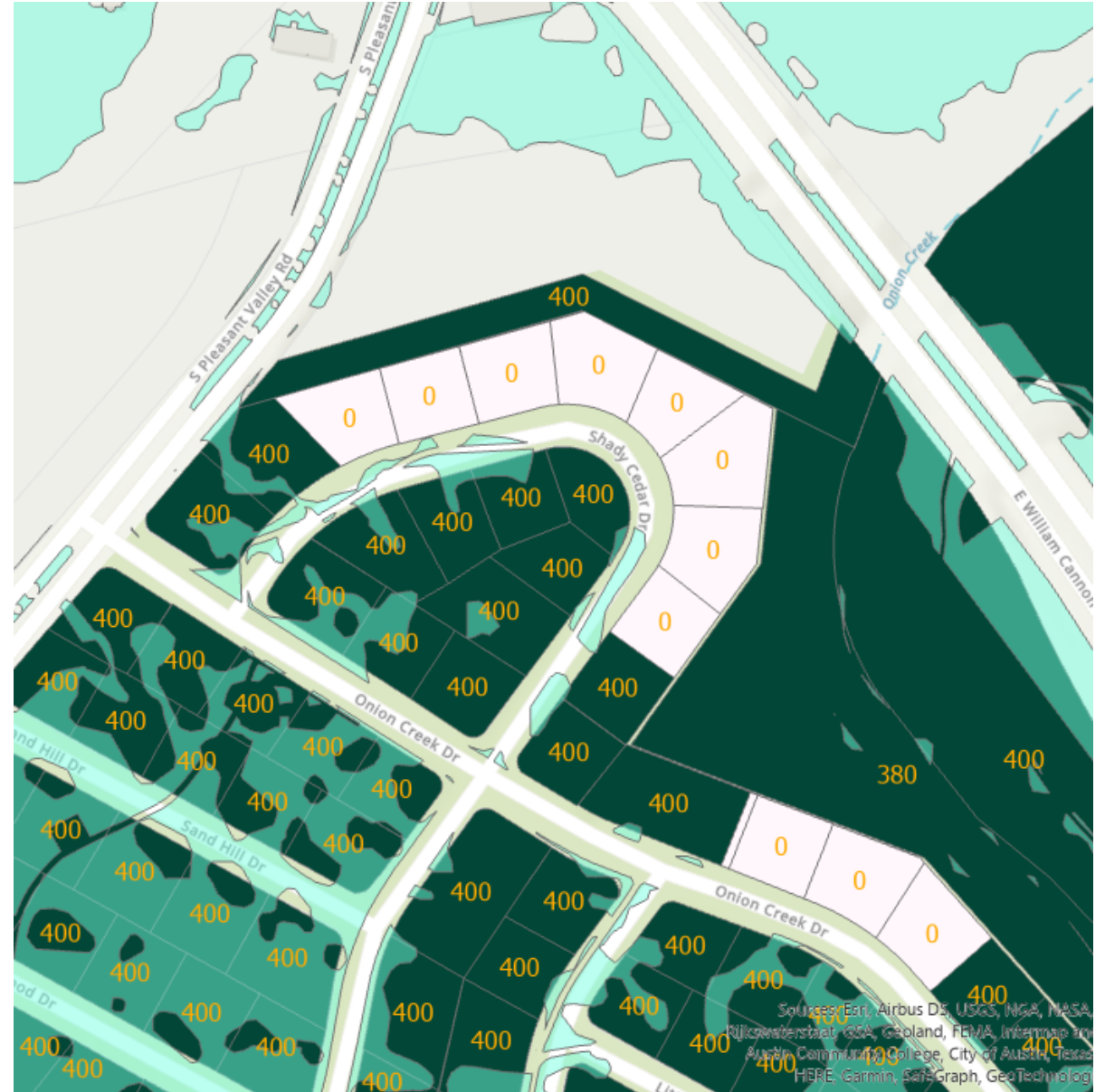0 0.75 1.5 3 4.5 6
Miles

Austin Community College, City of Austin, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

Scored City of Austin Parcels by Climate Equity, Ecology Benefit and PPS Contribution

Legend

full_watershed_regulation_are	

Score

■ 0		■ 136 - 205	
■ 1 - 60		■ 206 - 280	
■ 61 - 105		■ 281 - 335	
■ 106 - 135		■ 336 - 380	
		■ 381 - 430	
		■ 431 - 525	

Austin Community College, City of Austin, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

Highest scoring COA owned parcels

| PROPERTY name	GENERAL land mgmt	SPECIFIC land mgmt	PROPERTY address	PPS sum area sq ft	PPS%	GAVA	East Austin	Flood risk	Heat risk	PPS area/PPS area of best parcel	PPS present	Score	PPS%	Total Parcel Shape area SQ ft
Barton springs clean drinking wtr-may98prop2_wqpl	Conservation	Water quality protection land	4410 bliss spillar road	46152154	61	0	0	1	0	100	1	525	61	75763888
Landfill site	Facility		10108 FM 812 rd.	11710089	92	0	1	1	2	25	1	500	92	12791794
	Utility			45305519	69	0	0	0	0	98	1	490	69	65328611
Gustavo "gus" L. Garcia district park	Park	Mixed	1201 E rundberg ln.	856853	41	1	1	1	2	2	1	485	41	2078581
Bergstrom RR spur	Other			433608	63	1	1	1	2	1	1	480	63	689252
Onion creek soccer complex	Park	Special use	5600 E william cannon dr.	975567	22	1	1	2	1	2	1	460	22	4519813
T.A. Brown school park	Park	Active use	520 northway dr.	55927	56	1	1	0	2	0	1	450	56	100022
Dedicated drainage ditch	Unknown	Unknown		140	1	1	1	2	1	0	1	450	1	25567
Salt springs neighborhood park	Park	Natural area	6401 E william cannon dr.	230441	100	1	1	2	1	0	1	450	100	231504
Salt springs neighborhood park	Park	Natural area	6400 spring fever trl.	8662	97	1	1	2	1	0	1	450	97	8906
	Other	Undefined	7309 N IH 35 svrd NB	4462	2	1	1	0	2	0	1	450	2	231407
Salt springs neighborhood park	Park	Natural area	6401 E william cannon dr.	24418	100	1	1	2	1	0	1	450	100	24448
St. John's pocket park	Park	Special use	889 wilks ave.	24960	66	1	1	0	2	0	1	450	66	37629

Discussion

Vector and Raster PPS computed.

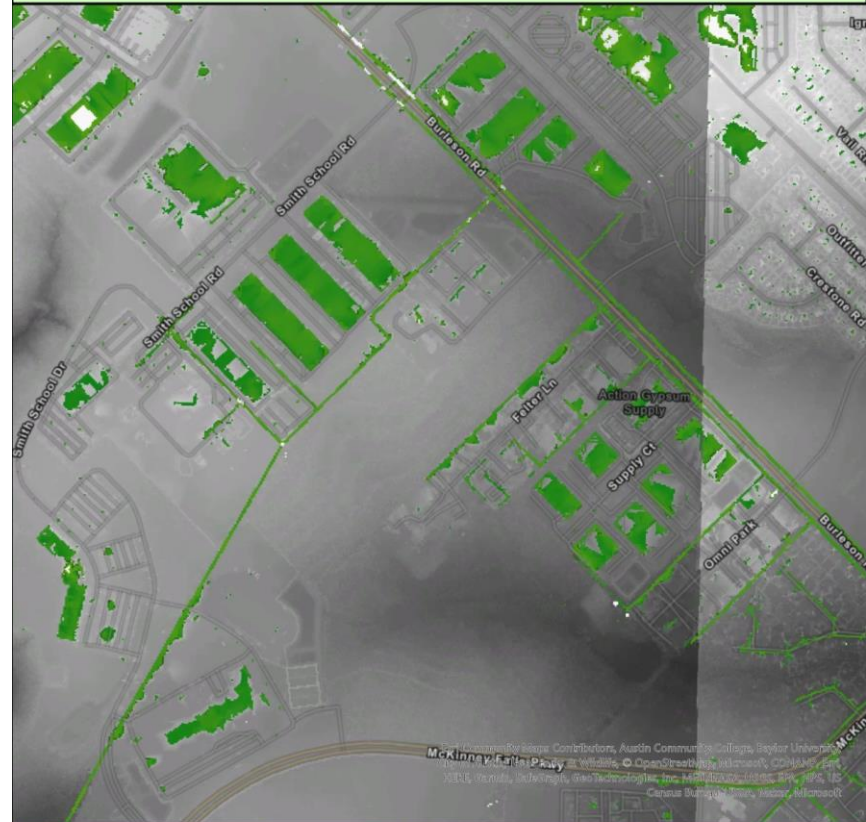Suitability scored parcels identified.

Limitations of analysis.
-LiDAR

Power Lines and Electric Poles in the Austin Area
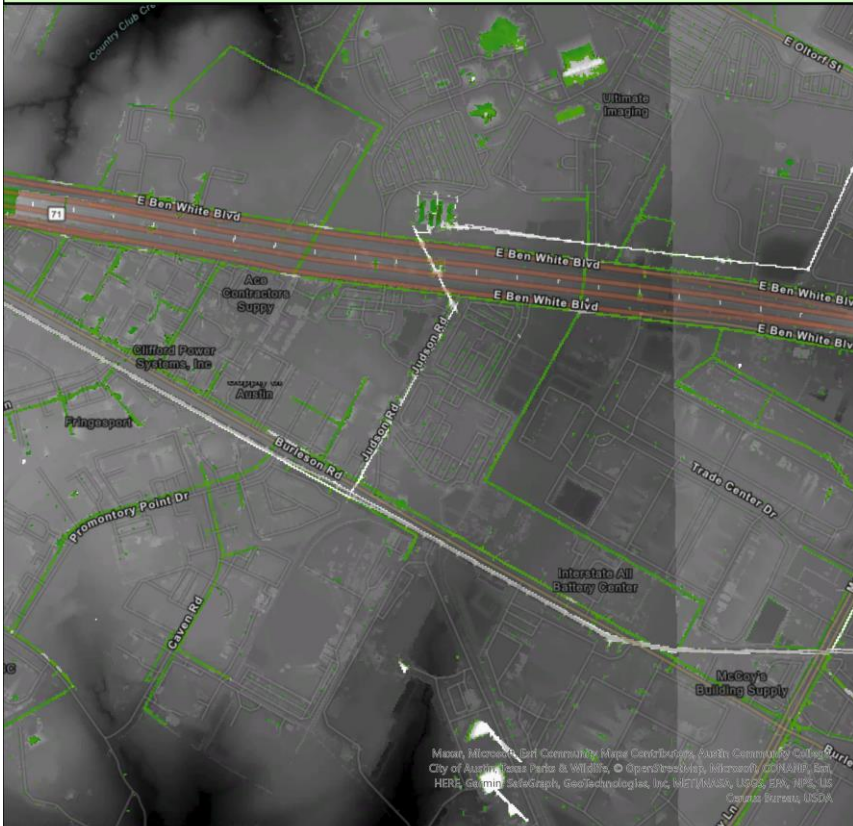
The green lines represent power lines that run through the city and the path they follow. Gathered by using LiDAR elevation to calculate power lines.


Power Line Limitations and Inaccuracies

The areas in green here not only show power lines but also buildings. Even though the classification for buildings was unchecked it still marked the area that they contain. Showing some inaccurate representation of power lines in the area.

An example for unfiltered LiDAR, containing all classes.
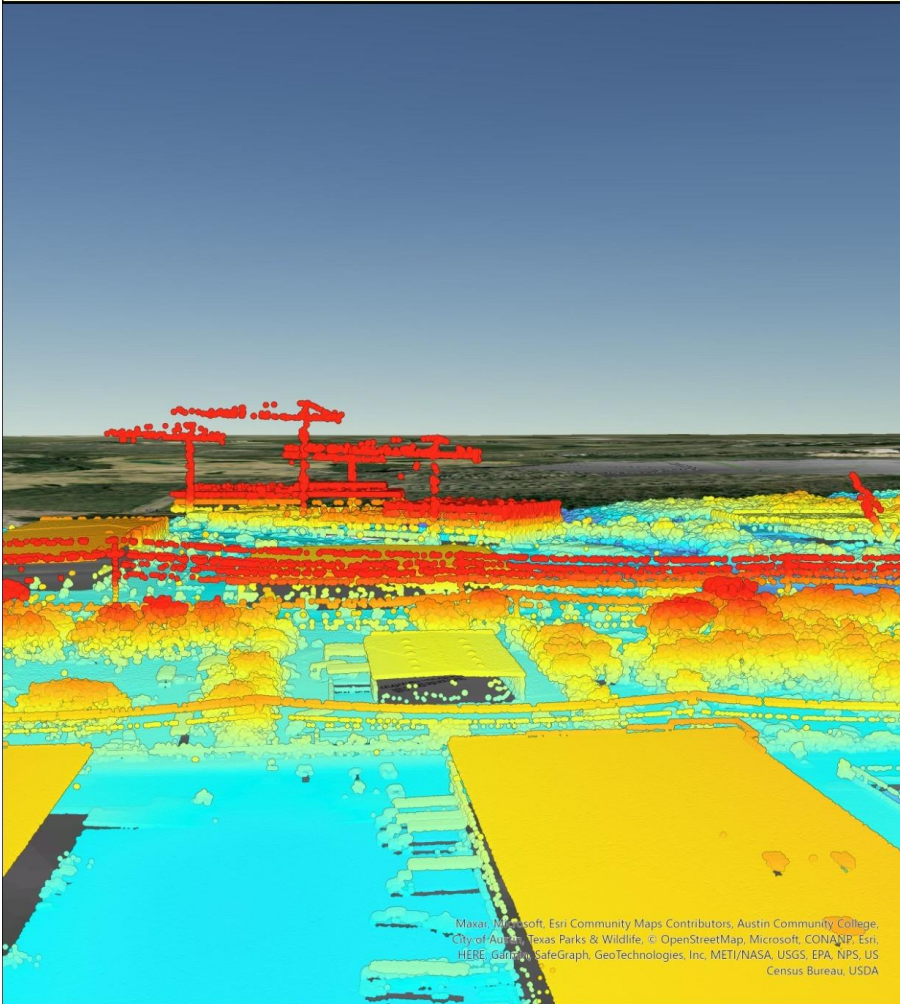
An example of the filtered LiDAR in the Austin area, containing only the unassigned class.
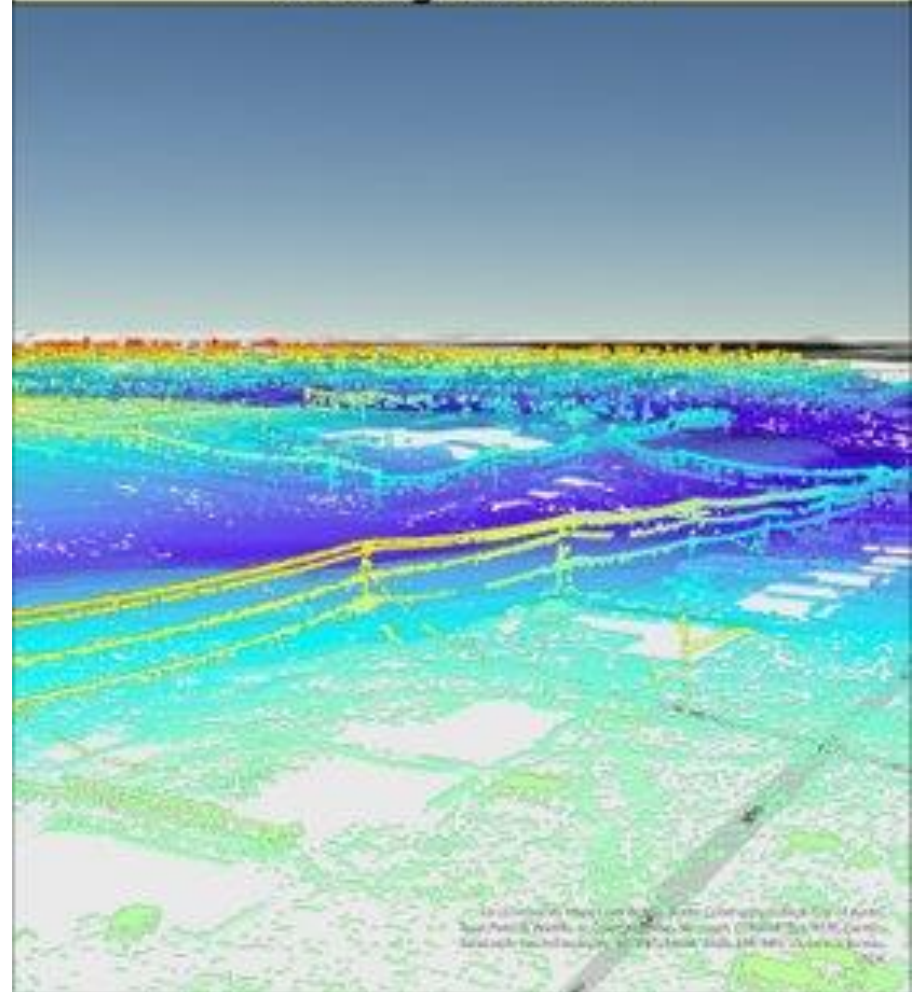
Conclusion

- Identified possible planting space of Austin watershed area

- Focus Eastern Crescent and GAVA communities combined with flood risk and urban heat reduction.

- 2018 Tree canopy value: 28% of full watershed polygon.

- 2022 Percent Tree canopy value: 36% of full watershed polygon.

- Watershed polygon stands to gain 1.17% tree canopy from just public parcel planting alone.

Questions