

City of Austin Green Infrastructure Strengths & Gaps Assessment

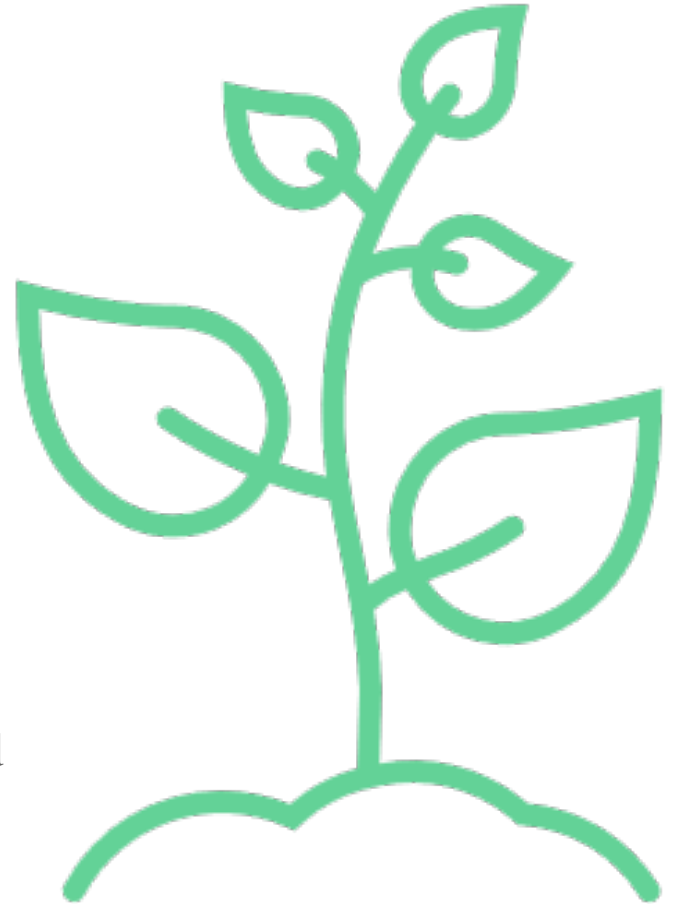
Summary & Takeaways
August 2021

Full Document Available for Download here:

<https://drive.google.com/file/d/1VEirJEoNTt8knNgki6IOSYIVzWqaFqhQ/view?usp=sharing>

Introduction & Purpose

- Green Infrastructure Resolution 20170615-071
- Imagine Austin PP4: Green Infrastructure
- Green infrastructure, when planned and managed correctly, provides numerous ecosystem services and associated benefits for human health.
- Maximum benefits are achieved when open spaces are linked as part of an interconnected matrix of patches and corridors.



Study Area

981,760 acres
total, based on the
76 watersheds
that overlap city
jurisdiction (City
limits + ETJ)

Study Area

- Major Roads
- City of Austin Limits
- City of Austin ETJ
- - - County Boundary
- Study Area

Produced by Siglo Group

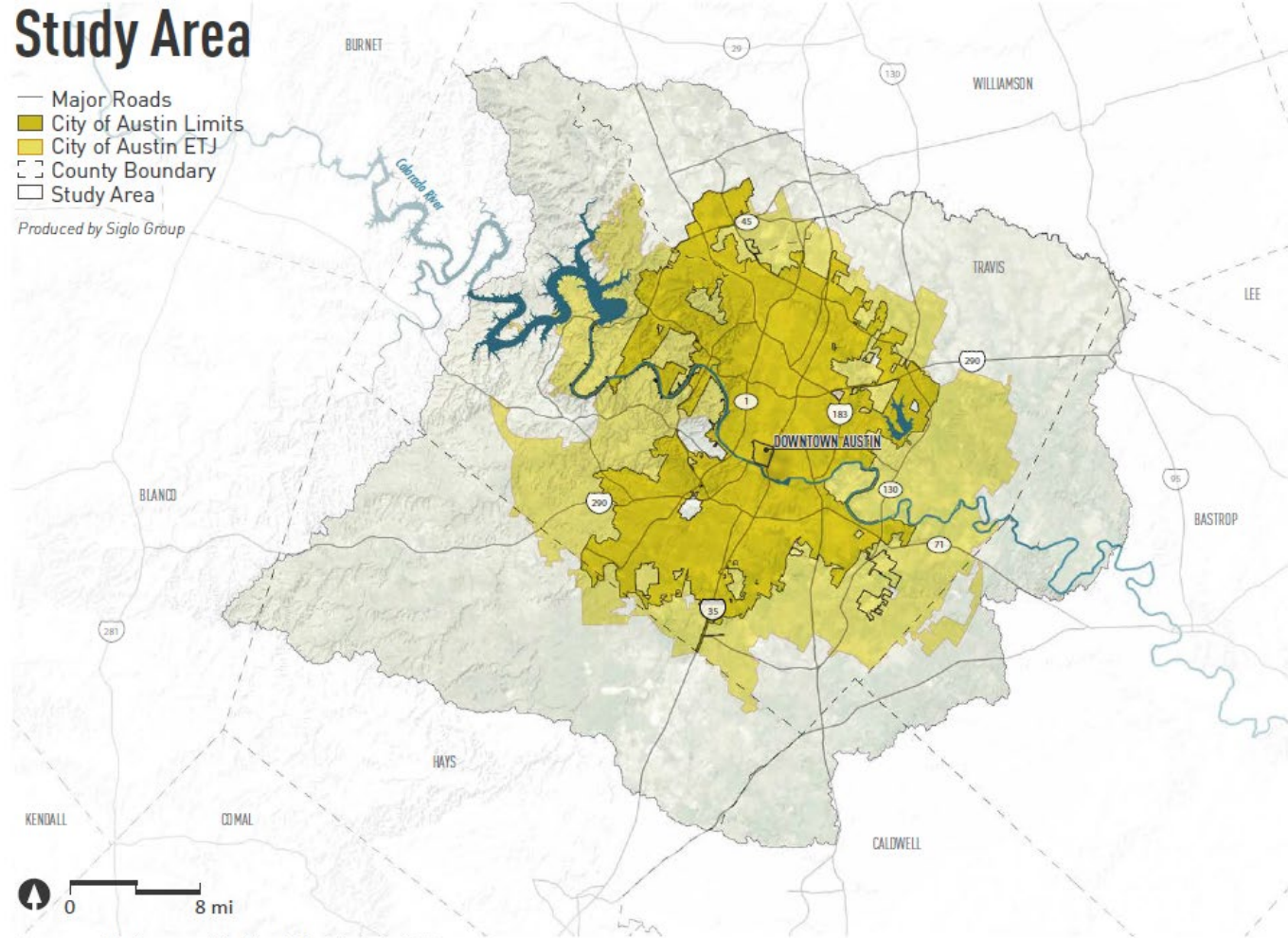
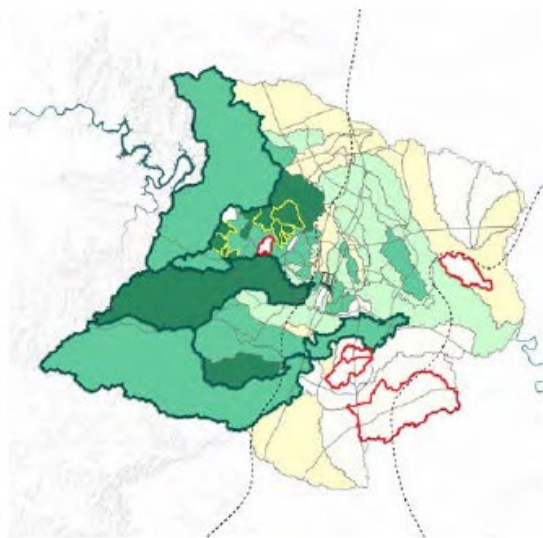


Figure 1.3 Study area with City of Austin jurisdictions.

CONSERVATION

Full assessment can be found in Chapter 2.



Top 3 Watersheds (absolute area)

Top 10 Watersheds (density)

Conservation Land % of Watershed Total Acreage

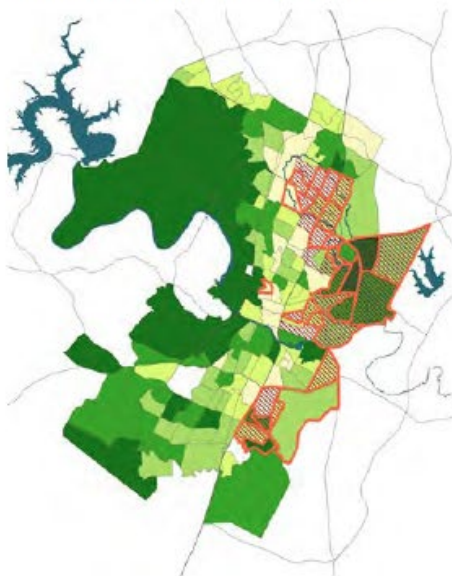
Highest

Lowest

No Conserved Land

ACCESS

Full assessment can be found in Chapter 3.



Health Cumulative Highest

SV Cumulative Highest

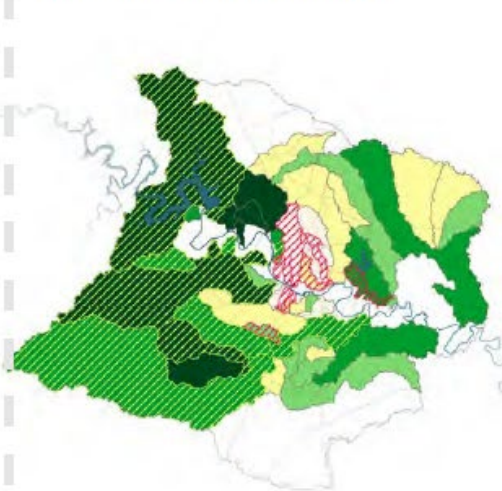
Cumulative GI Access Score:

Highest

Lowest

SYSTEMS

Full assessment can be found in Chapter 4.



EII

Highest

Lowest

Green Infrastructure System Score

Highest

Lowest



Conservation

CONSERVATION //

conservation, protection, distribution and management of land resources.

Chapter Findings

- Conservation lands cover a little over 10% of the study area
 - 40% is owned by COA and the city is the primary conservation easement holder on another 7%.
 - 33% is BCP (owned by COA, TravCo, and LCRA), 29% is WQPL (mix of COA ownership and easements), that leaves 38% other
 - 17% is managed by PARD
 - 25% is held in conservation easements
- 17% of the study area is considered “Top TEP” habitat (area most likely to be habitat for species of conservation interest by TPWD)
- 22.9% of the study area is prime farmland soil



16x

16x more lands identified as significant habitat are preserved in the Edwards Plateau than in the Blackland Prairie, although the two ecoregional hold almost the same amount of the highest ranked TEI lands.

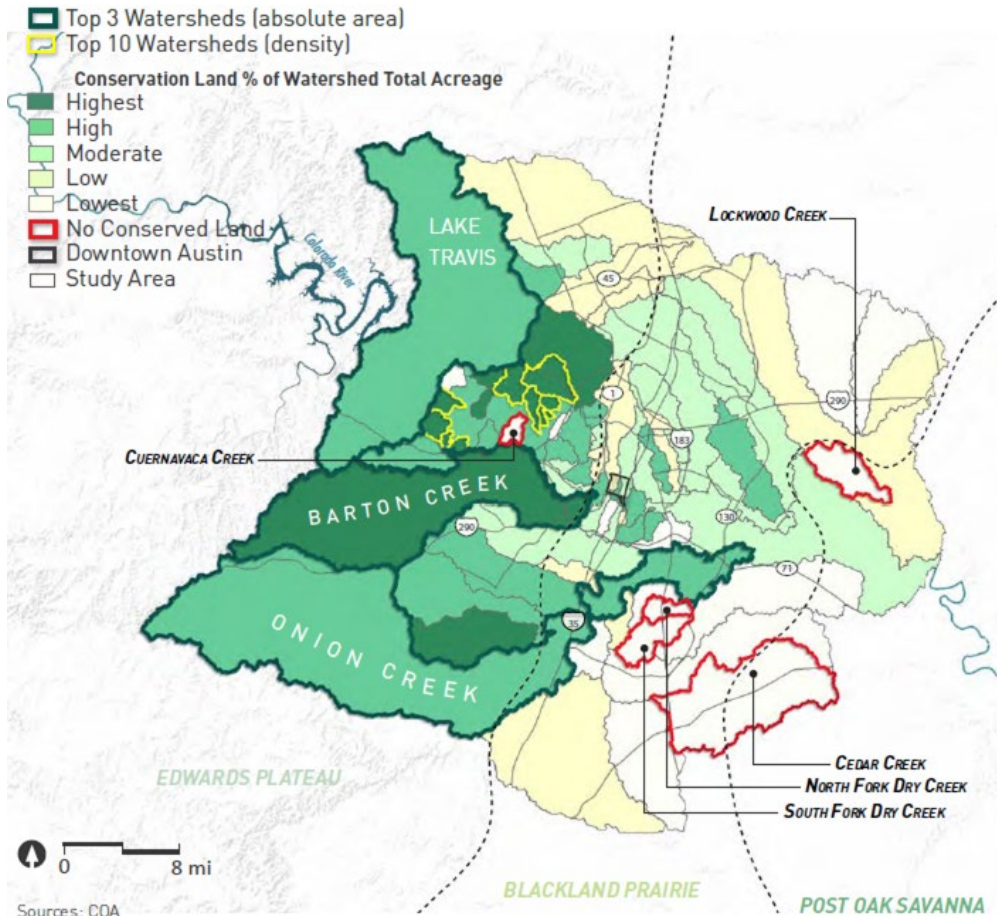
75%

75% of the study area's prime farmland soil is held in the Blackland Prairie ecoregion, but it only has 1% more farmland in conservation than the Edwards Plateau.



Strengths

- City is the major owner of conservation lands
- BCP and WQPL are standout examples of large-scale conservation that produce multi-benefits
- Grow Zones program and Conservancy partnerships have accounted for 590 acres of ecological restoration
- 64% of conservation lands have a land management plan and 41% have ecological restoration actions
- 55% tree canopy on conservation lands
- PARD hired a Land Management Program Manager in 2020, responsible for creating land management plans for PARD preserves and facilitating ecological restoration activities



Gaps

- Conservation, management and restoration are HEAVILY skewed to the Edwards Plateau ecoregion, not much in the Blackland Prairie, hardly any in Post Oak Savanna
- Land is quickly being lost to development and therefore removing the potential for future conservation, especially in the Blackland Prairie and farmable soils.
- Climate change will have big impact on ecosystems and habitat
- No land conservation program dedicated to drinking water supply protection

Recommendations

- Goal to increase conserved lands from 10% to 30%
- Direct energy and resources to expand and grow in the Blackland Prairie and the Post Oak Savanna
- Land conservation program with water supply protection as its main objective
- Increase canopy cover on conservation lands from 55% to 65% (as ecologically appropriate)
- All lands designated for conservation need land management plans and allocation of resources for ecological restoration activities.





Access

ACCESS //

equitable access to green infrastructure indicators and their benefits

Chapter Findings

- Inequitable distribution of GI assets as a result of systemic discrimination, from the City's 1928 plan to present day gentrification.
- Overall, census tracts with the least amount of cumulative green infrastructure coincided with the census tracts with the worst health outcomes and most social vulnerability
- Parkland distribution largely follows an urban-rural gradient
- Most GI metrics (impervious cover, urban forest, and urban heat island temperature) distribution correlate to the I-35 and Hwy 183 corridors.
- Lowest Cumulative Green Infrastructure Access Scores lie along I-35, clustered around HWY 183 west of I-35



73%

73% of census tracts with the Highest scores for Cumulative Green Infrastructure Access Scores are located west of I-35

73%

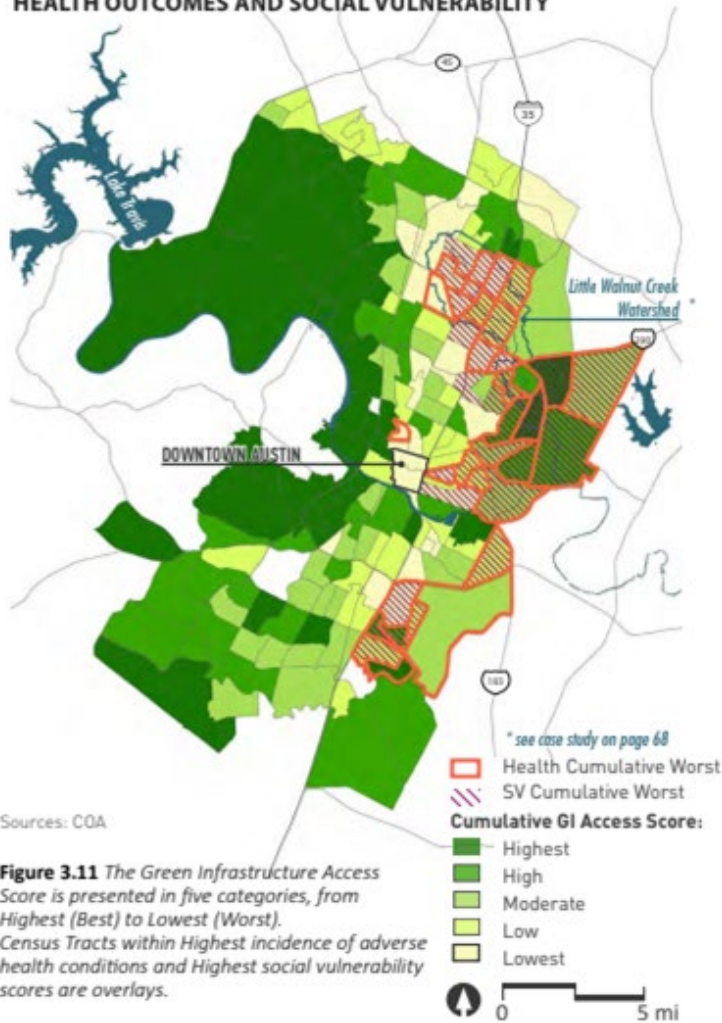
73% of census tracts with the least shade over impervious cover lie on the east side of I-35



Strengths

- 25% more parkland per person than national average
- Austin has relatively low impervious cover per person (12% less than national average)
- Park locations do not appear to follow the distribution of health outcomes or social vulnerability, meaning they are equitably distributed across the city
- The urban forest canopy covers 41.6% of the evaluation area.
- The Tree Planting Priority plan already seems to be addressing the most climate vulnerable parts of the city

CUMULATIVE GREEN INFRASTRUCTURE ACCESS SCORE WITH HEALTH OUTCOMES AND SOCIAL VULNERABILITY



Sources: COA

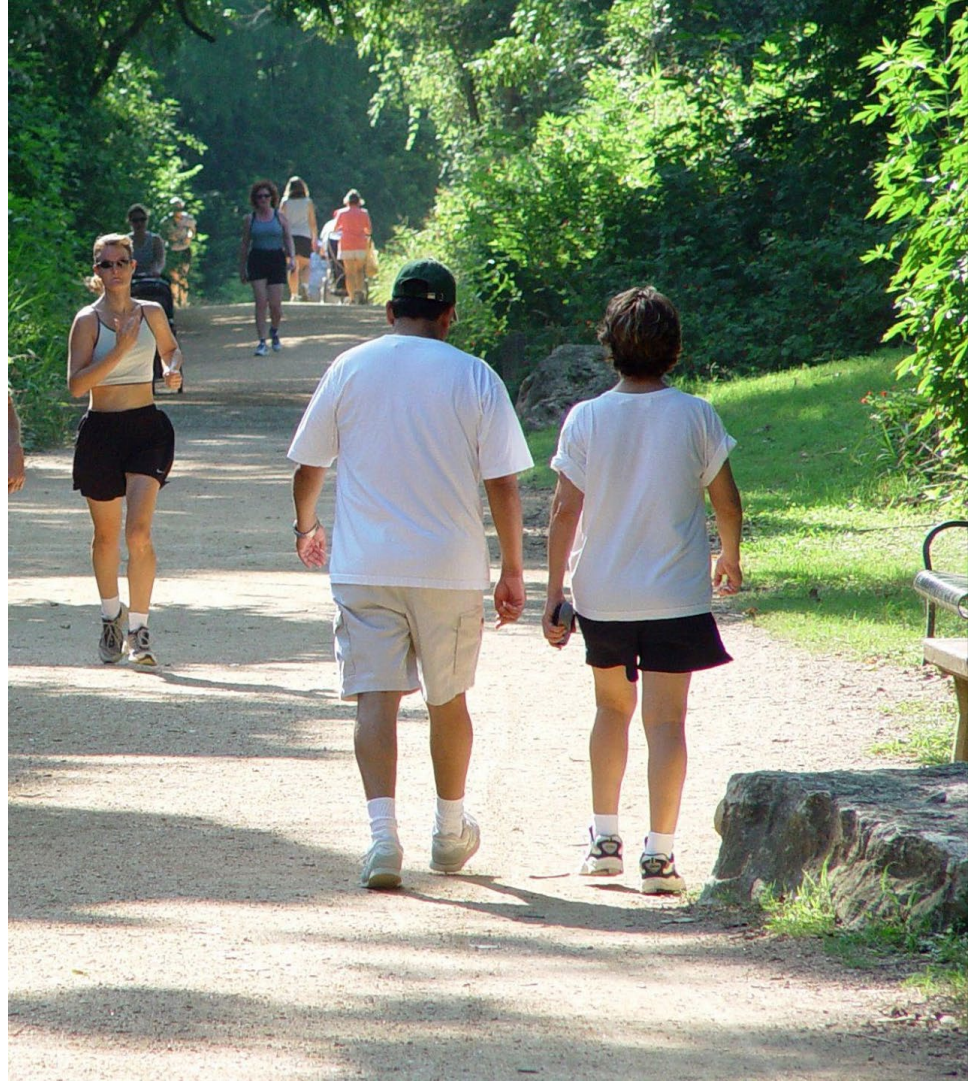
Figure 3.11 The Green Infrastructure Access Score is presented in five categories, from Highest (Best) to Lowest (Worst). Census Tracts within Highest incidence of adverse health conditions and Highest social vulnerability scores are overlaid.

Gaps

- Benefits of GI are less available to those communities who need it the most
- High IC, low canopy cover and low shade over IC leads to higher urban heat
- Lack of GI along highway corridors and decreased access in highly urbanized areas, especially the areas around the intersection of I-35/Hwy 183
- Cumulative GI Access Score has clear relationship to health outcomes and social vulnerability, overlapping low income communities and communities of color that are at high risk of gentrification and displacement.

Recommendations

- Investments in green infrastructure, especially open spaces, canopy cover, and reducing the negative effects of impervious cover
- Addressing disparities in GI systems, City can reap additional health, wellness, climate change preparedness, and resilience benefits for communities.
- Focus on addressing factors that impact urban heat– the “silent killer - and are the most inequitably distributed throughout the city, including tree canopy, impervious cover, and shade over IC





Systems

SYSTEMS //

potential for green infrastructure elements to form an enhanced system

Chapter Findings

- Time, policy promotion, and public infrastructure investment has spurred development in “suburban” watershed zones
- There is a strong relationship between the Cumulative Green Infrastructure System Score and EII score
- the Edwards Plateau has better EII scores than the Blackland Prairie
- The majority of watersheds in the Lowest category for EII scores are clustered around downtown and lie in the Central Zone
- Indicators that have a positive impact on water quality included conserved land and urban forest. Indicators that have a negative impact on water quality included impervious cover and impervious cover within the floodplain.



82%

82% of watersheds with top EII score have top cumulative GI score

92%

92% of watersheds with most expensive mitigation costs
have worst cumulative GI

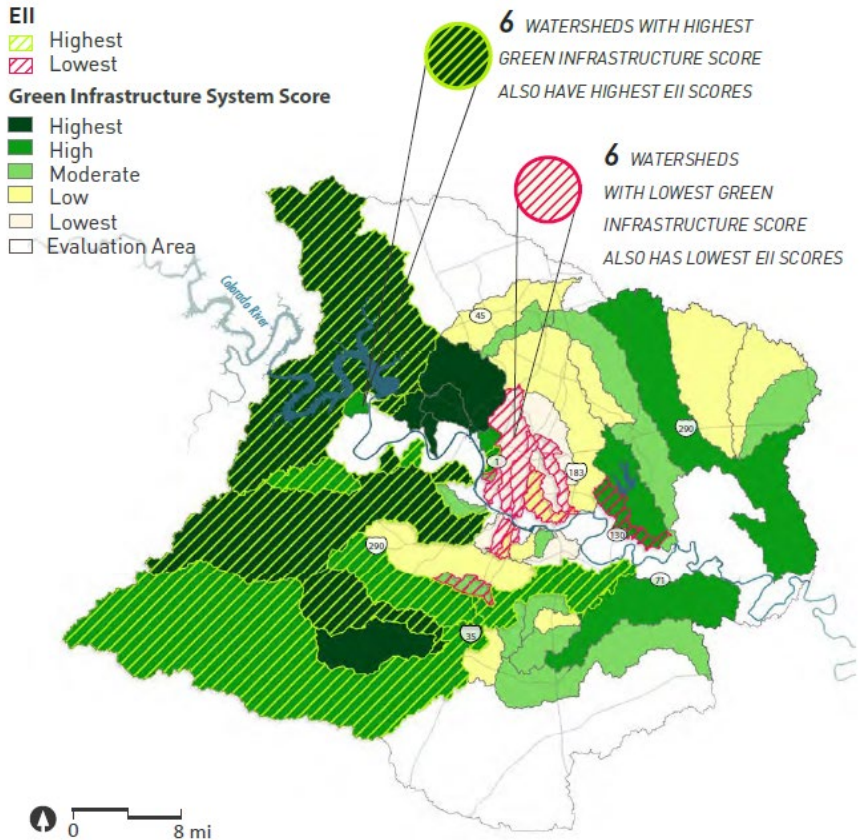
705

705 acres of IC was added to floodplains with Atlas 14 floodplain updates



Strengths

- Decades of work and policies to protect critical watershed functions in the City and the Edwards Aquifer
- 74% of watersheds have good or very good EII scores
- The City and County have had great success with open space bond initiatives
- Blackland Prairie watersheds offer multiple benefits that should warrant their protection
- Local success example with the Wilbarger Creek Conservation Alliance.



Sources: COA

EII & GREEN INFRASTRUCTURE SYSTEM SCORE

Figure 4.8 Nine watersheds have both Lowest EII scores and either Low or Lowest cumulative green infrastructure system scores. All 12 watersheds with Highest EII scores have either High or Highest cumulative green infrastructure system scores.

Gaps

- Development is continuing to impact watershed health and water quality
- Climate change will increase size of floodplains and more IC will be added
- Central Zone has the least GI, worst EII and habitat scores, and highest mitigation costs. Adding GI in this zone will be a challenge due to existing infrastructure.
- 100% of the watersheds with high GI scores occur in the Edwards Plateau Watershed Zones with none in the Central or Blackland Prairie Zones.
- Over \$2 billion is needed over the next 40 years to mitigate issues associated with flooding, erosion, and water quality. (per the 2016 City of Austin Watershed Protection Plan)

Recommendations

- Restore bottomland hardwood forest in the Eastern Zone Watersheds
- Reducing IC with new developments and removing existing IC from watersheds
- 20-year goals and action plans to reduce impervious cover and implement GI improvements.
- As land use changes to suburban and urban landscapes, the urban forest should be created and managed as critical infrastructure.
- Conserve biodiversity, watershed health, and additional lands before development



A Look Through the Lenses

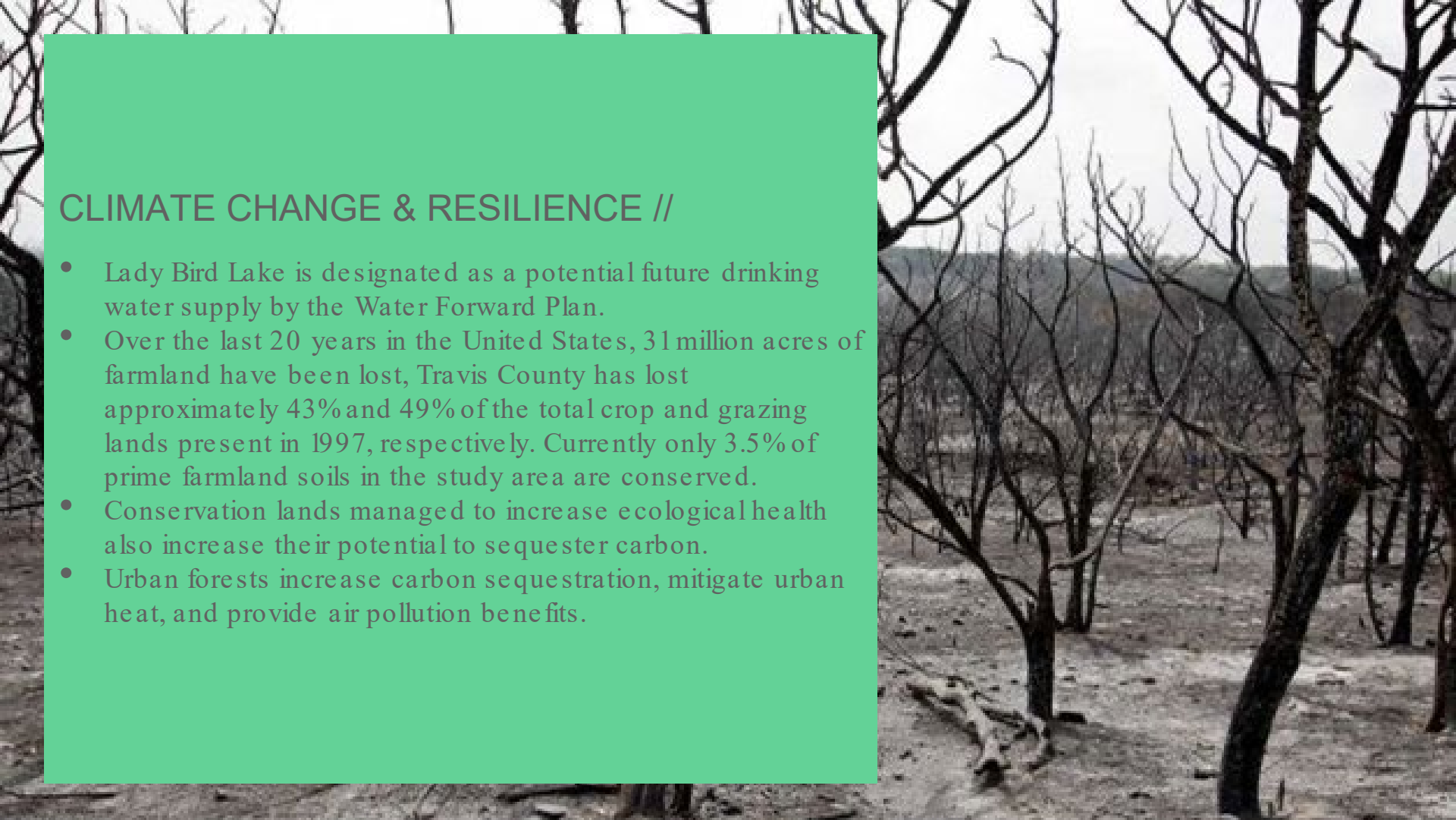
BIODIVERSITY & CONNECTIVITY //

- Central Texas is considered a hotspot of biodiversity. Numerous ecoregions + the Central Flyway, a major bird migration route.
- Less than 1% of the Blackland Prairie remains today, making it one of the most endangered ecoregions in the country.
- The size, shape, closeness and position of conservation lands impacts their ability to support a healthy and resilient landscape. High-quality habitat often requires area greater than 500 acres. There are 28 such properties in the Edwards Plateau and only five in the Blackland Prairie.
- Large tracts of undeveloped land that remain relatively natural but are not in permanent conservation currently contribute to habitat, but are at risk to being lost.



CLIMATE CHANGE & RESILIENCE //

- Lady Bird Lake is designated as a potential future drinking water supply by the Water Forward Plan.
- Over the last 20 years in the United States, 31 million acres of farmland have been lost, Travis County has lost approximately 43% and 49% of the total crop and grazing lands present in 1997, respectively. Currently only 3.5% of prime farmland soils in the study area are conserved.
- Conservation lands managed to increase ecological health also increase their potential to sequester carbon.
- Urban forests increase carbon sequestration, mitigate urban heat, and provide air pollution benefits.



HEALTH & EQUITY //

- Benefits of green infrastructure are less available to those Austin communities who need it and stand to benefit the most.
- Cumulative Green Infrastructure Access Score has a clear spatial relationship to health outcomes and social vulnerability, overlapping with the geographic area known as the “Eastern Crescent”.
- The overwhelming cluster of low green infrastructure occurrences, worst health outcomes, and high social vulnerability occur at the nexus of I-35, HWY 183, at the Little Walnut Creek Watershed.
- Extreme heat days are the “quiet killer” of climate change that exacerbate other health conditions, many of which are often prevalent in communities of color, low income communities, and elderly populations, communities that also see lower rates of green infrastructure.



SMART DEVELOPMENT //

- Traditional development practices are a long-term tax burden on our watershed systems
- Low cumulative GI shows 88% overlap with watersheds in the Highest category of Cost of Watershed Mitigation.
- Over \$2 billion is needed over the next 40 years to mitigate issues associated with flooding, erosion, and water quality. (per the 2016 City of Austin Watershed Protection Plan)
- The watersheds in the Highest and High categories for Costs of Watershed Mitigation (capital costs to mitigate watershed issues) are in the Central Zone
- Watershed costs can be mitigated by layering green infrastructure features and minimizing impervious cover in the floodplain, codifying long-term improvements into policy, and reimagining budget allocations for green infrastructure in place of mitigation
- Existing development under old regulations, development outside the City of Austin's jurisdiction, and the increasing size of floodplains due to climate change pose major concern in the future.

