



Flood Mitigation: Integrating nature into the city

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Water resources are key to Austin's quality of life and viability as a city. Protecting our streams and floodplains helps maintain Austin's natural beauty while promoting public health and safety, improving water quality, and preserving habitat for native species, including threatened and endangered species.



Sustainably manage our water resources. The revised Land Development Code, technical and criteria manuals will include standards and incentives for low impact development, innovative water and graywater reuse, and preservation of environmentally sensitive land, floodplains, and water recharge areas. Changes to the Land Development Code will support development patterns that better manage water resources.

Land Development Code



Floodplain Management:

Moving from “No Adverse Impact” (2000)

Avoid Increased Flood Stages

Avoid Increased Velocities and Flows

Avoid Increased Erosion and Sedimentation

Avoid Increased Encroachment

Pre- Post-Development “Do No Harm”

To “Sustainable Floodplain Management” (2015)

Honor “No Adverse Impact” and Add

Restore base flow and recharge

Restore water quality by reducing thermal, pollution and riparian zone impacts

Restore habitat, forestry and natural features to floodplain for ecological floodplain function.

Promote Land Use that protects floodplain functions

Land Development Code



Flooding can be nuisances, localized and large scale

Examples:

Flat or Depressional sites with sluggish or no discharge
Areas with under sized drainage conveyance
Onion Creek, Shoal Creek, and Others: Overbank Floods

Code must address all aspects for the 2, 10, 25 and 100
Year storm Events

Sustainable Floodplain Management embraces integrated water management and seeks to maintain and reintroduce natural processes to drainage, infiltration, and use of storm water flows.

Land Development Code



Building Blocks of Sustainable Floodplain Management:
nonstructural and structural tools and approaches...

There **IS** a hierarchy for Sustainable Floodplain
Management

But it is always a blend to some degree and a balancing
act

To manage tensions of ecological function, social justice,
economic considerations.

Non-structural – Impervious cover limits, compatible land
Uses, Riparian Corridor Preservation, Low Impact Storm
Water

Design/BMPs (philosophy is non-structural – can be both),
soft infrastructure approaches (e.g., wetland storage)

Structural – Channelization, Detention/Retention Systems,
Drainage Improvements, Levees, Pumping, Diversions, Tanks
etc.,



WORKING
DRAFT

CODENEXT
SHAPING THE AUSTIN WE IMAGINE

Land Development Code



Proposed Changes to Code?

Presentation from COA Watershed staff to follow on details

Embraces “restorative” aspects of storm water management

- Evaluate proposed changes in light of the GOALS And POLICIES of IMAGINE AUSTIN

- Consider that to attain “Living Aquatic Systems” Within Our City will require a different approach and changes to

How we manage stormwater flows in development and “redevelopment” contexts

- Integrated Water Management considers all water As inherently valuable and the need for beneficial use and Reuse of all flows is at its core.....

Land Development Code



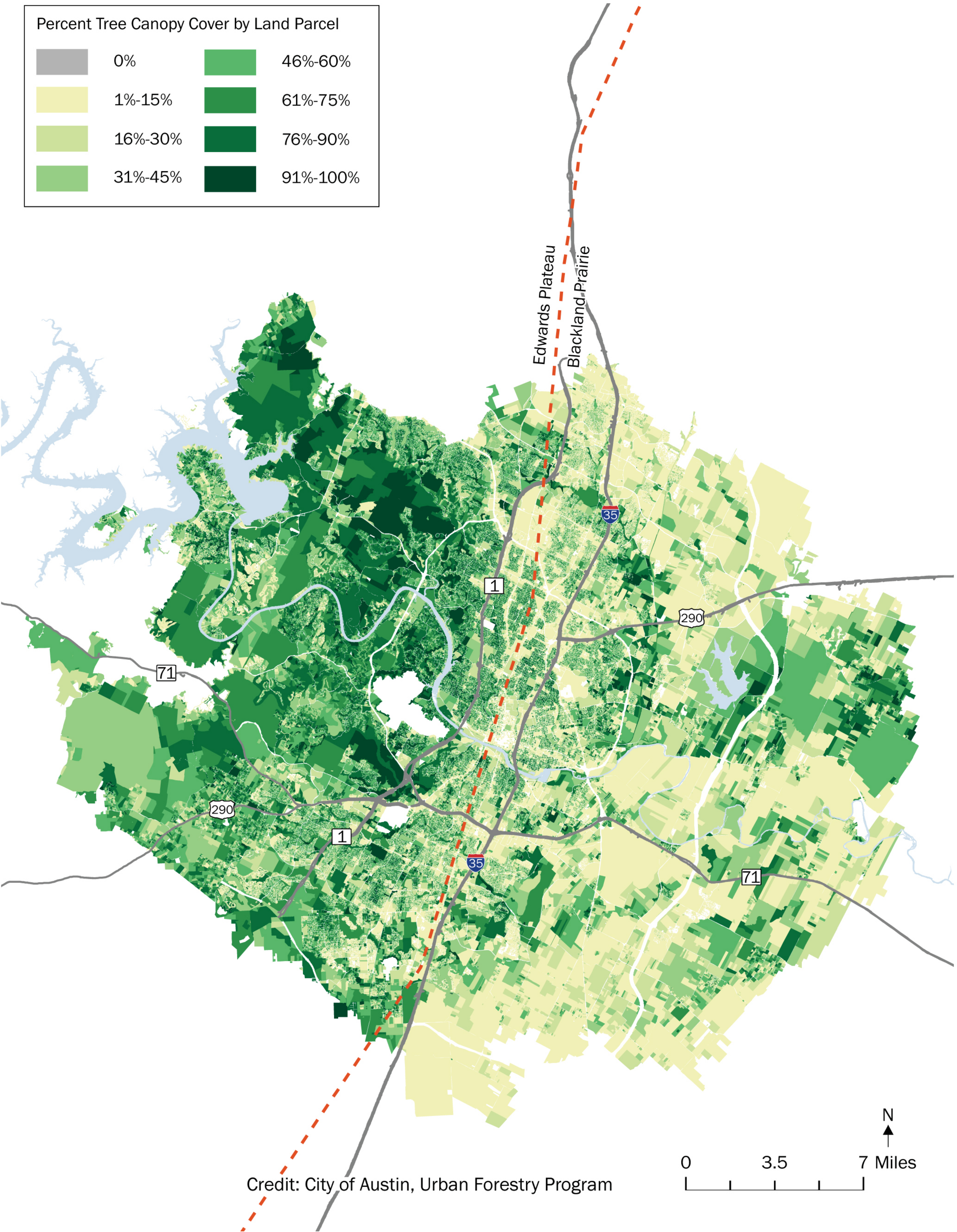
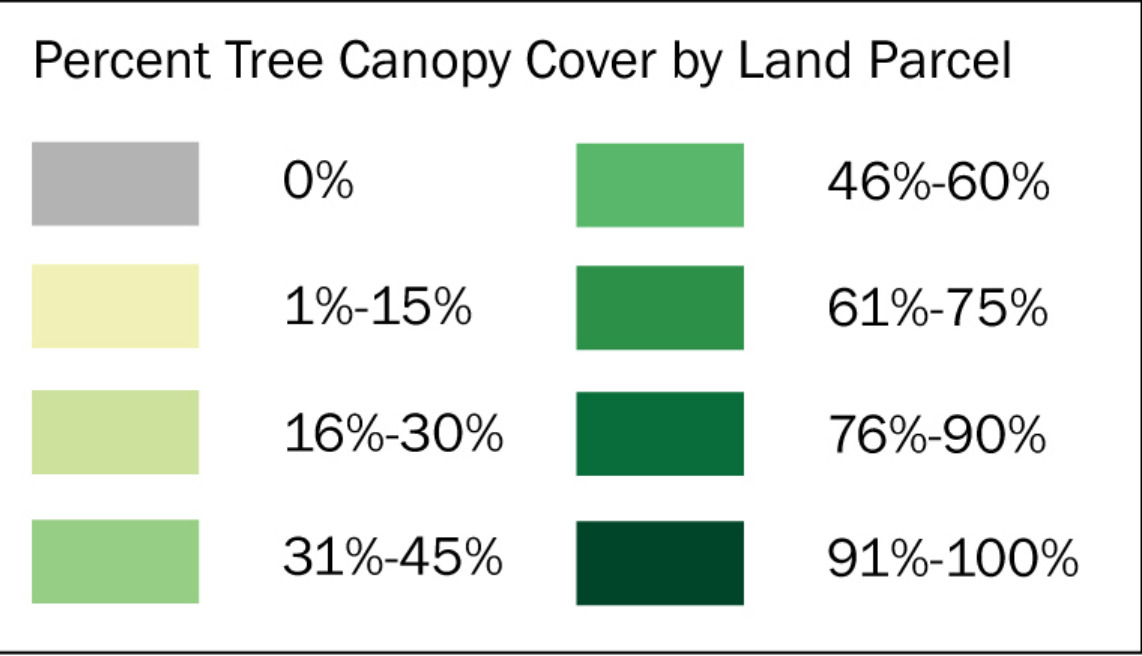
WORKING
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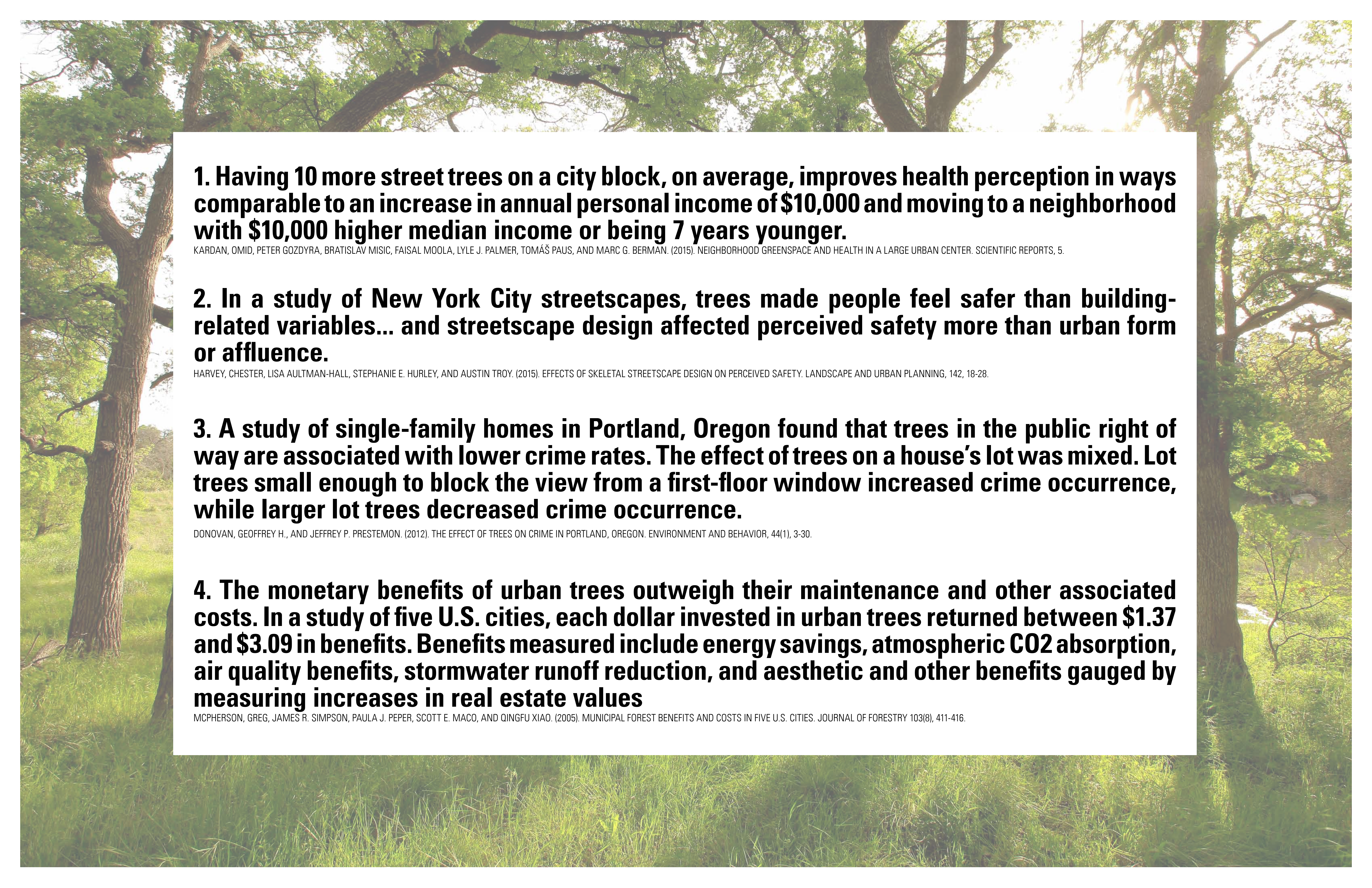


SHAPING THE AUSTIN WE IMAGINE

URBAN FOREST PRESERVATION







1. Having 10 more street trees on a city block, on average, improves health perception in ways comparable to an increase in annual personal income of \$10,000 and moving to a neighborhood with \$10,000 higher median income or being 7 years younger.

KARDAN, OMID, PETER GOZDYRA, BRATISLAV MISIC, FAISAL MOOLA, LYLE J. PALMER, TOMÁŠ PAUS, AND MARC G. BERMAN. (2015). NEIGHBORHOOD GREENSPACE AND HEALTH IN A LARGE URBAN CENTER. SCIENTIFIC REPORTS, 5.

2. In a study of New York City streetscapes, trees made people feel safer than building-related variables... and streetscape design affected perceived safety more than urban form or affluence.

HARVEY, CHESTER, LISA AULTMAN-HALL, STEPHANIE E. HURLEY, AND AUSTIN TROY. (2015). EFFECTS OF SKELETAL STREETSCAPE DESIGN ON PERCEIVED SAFETY. LANDSCAPE AND URBAN PLANNING, 142, 18-28.

3. A study of single-family homes in Portland, Oregon found that trees in the public right of way are associated with lower crime rates. The effect of trees on a house's lot was mixed. Lot trees small enough to block the view from a first-floor window increased crime occurrence, while larger lot trees decreased crime occurrence.

DONOVAN, GEOFFREY H., AND JEFFREY P. PRESTEMON. (2012). THE EFFECT OF TREES ON CRIME IN PORTLAND, OREGON. ENVIRONMENT AND BEHAVIOR, 44(1), 3-30.

4. The monetary benefits of urban trees outweigh their maintenance and other associated costs. In a study of five U.S. cities, each dollar invested in urban trees returned between \$1.37 and \$3.09 in benefits. Benefits measured include energy savings, atmospheric CO2 absorption, air quality benefits, stormwater runoff reduction, and aesthetic and other benefits gauged by measuring increases in real estate values

MCPHERSON, GREG, JAMES R. SIMPSON, PAULA J. PEPER, SCOTT E. MACO, AND QINGFU XIAO. (2005). MUNICIPAL FOREST BENEFITS AND COSTS IN FIVE U.S. CITIES. JOURNAL OF FORESTRY 103(8), 411-416.







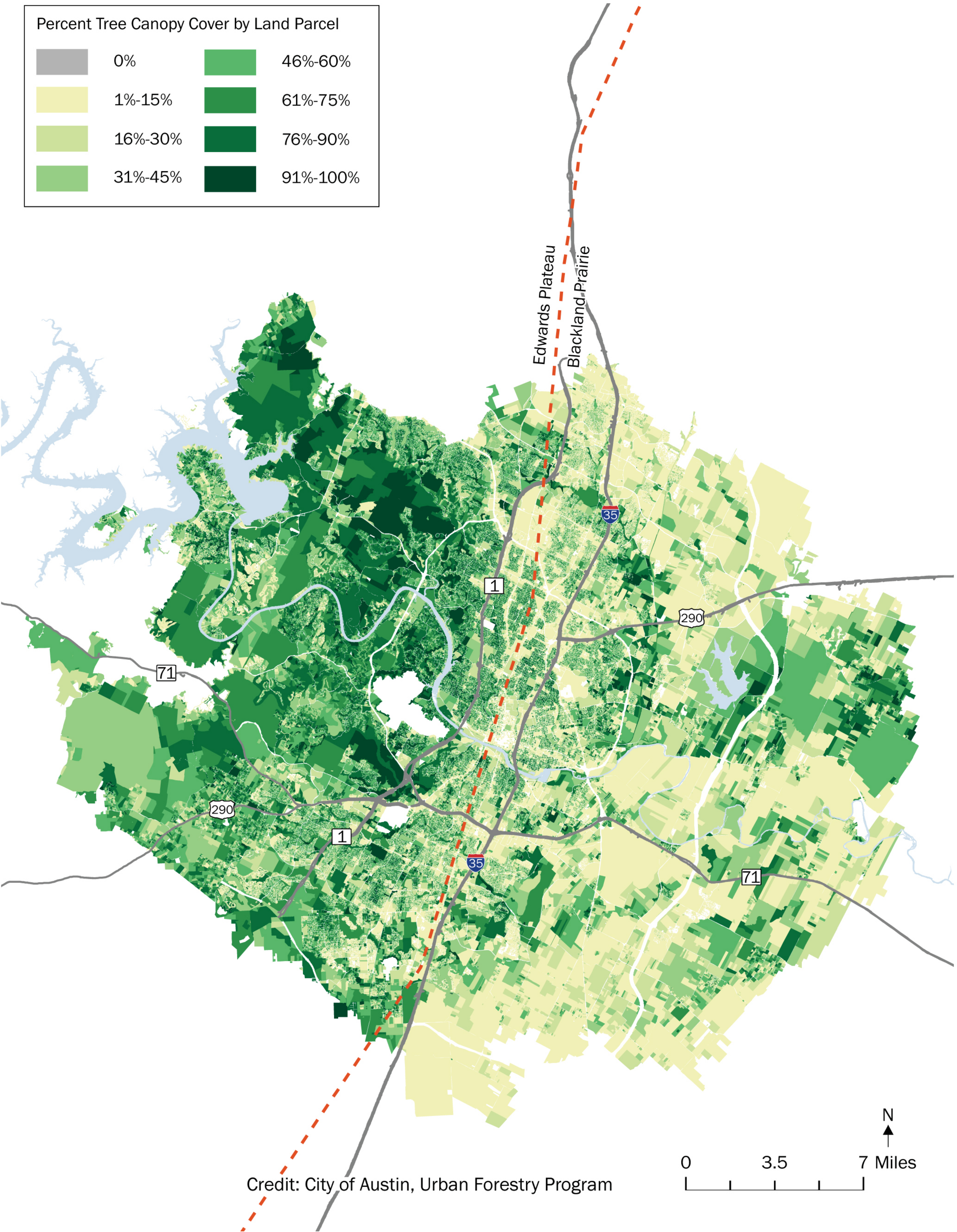
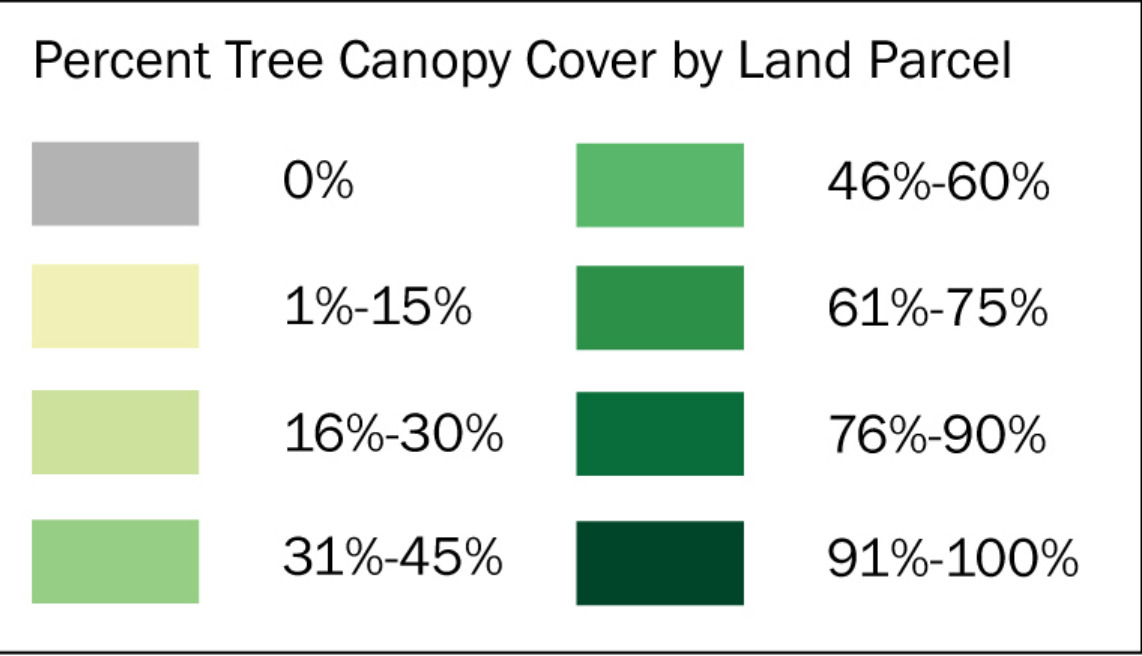
HALF CRITICAL ROOT ZONE

FULL CRITICAL ROOT ZONE



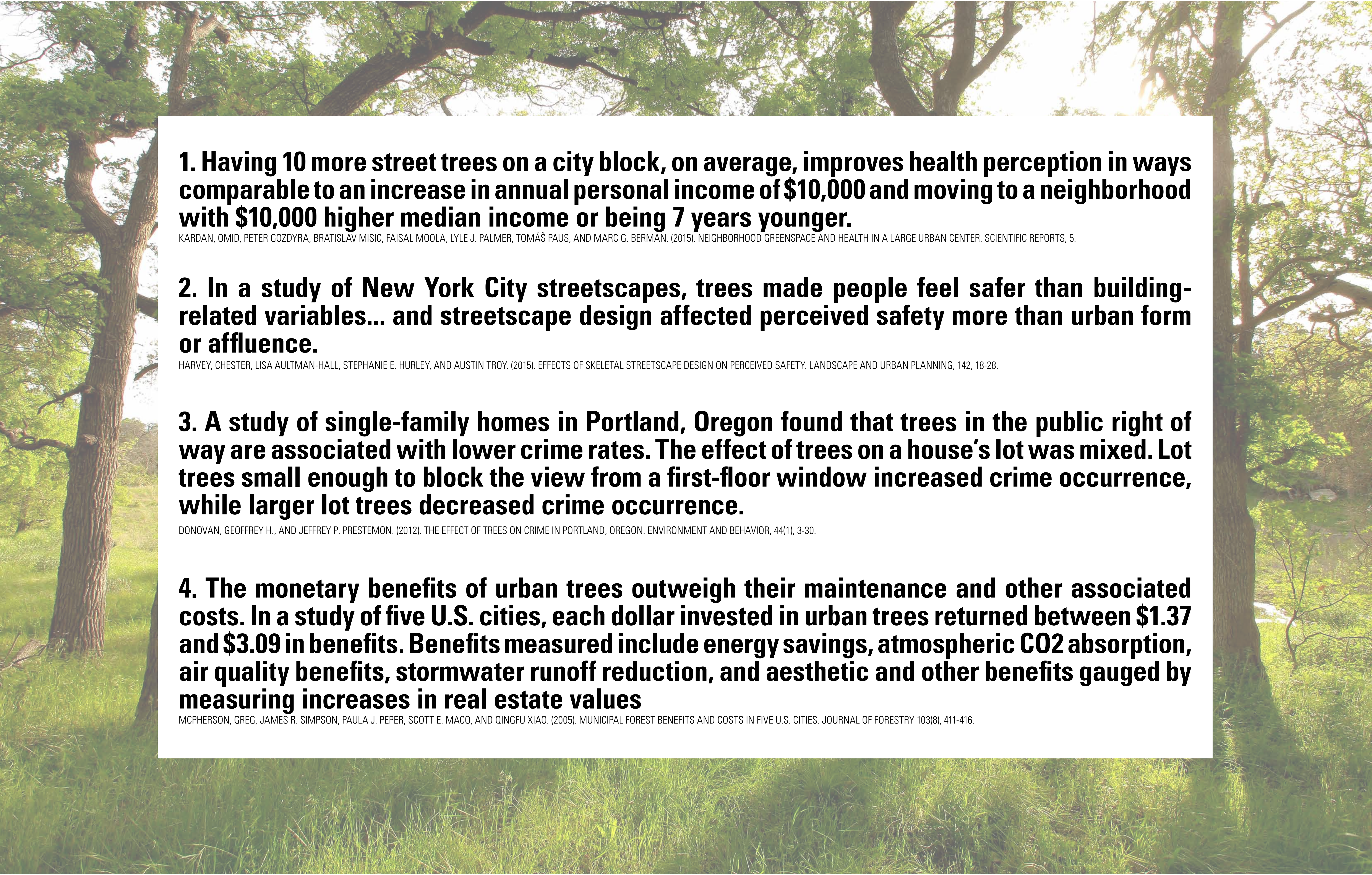






FORM BASED FORESTRY?





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Code TALK - Environment

Parks & Open Space



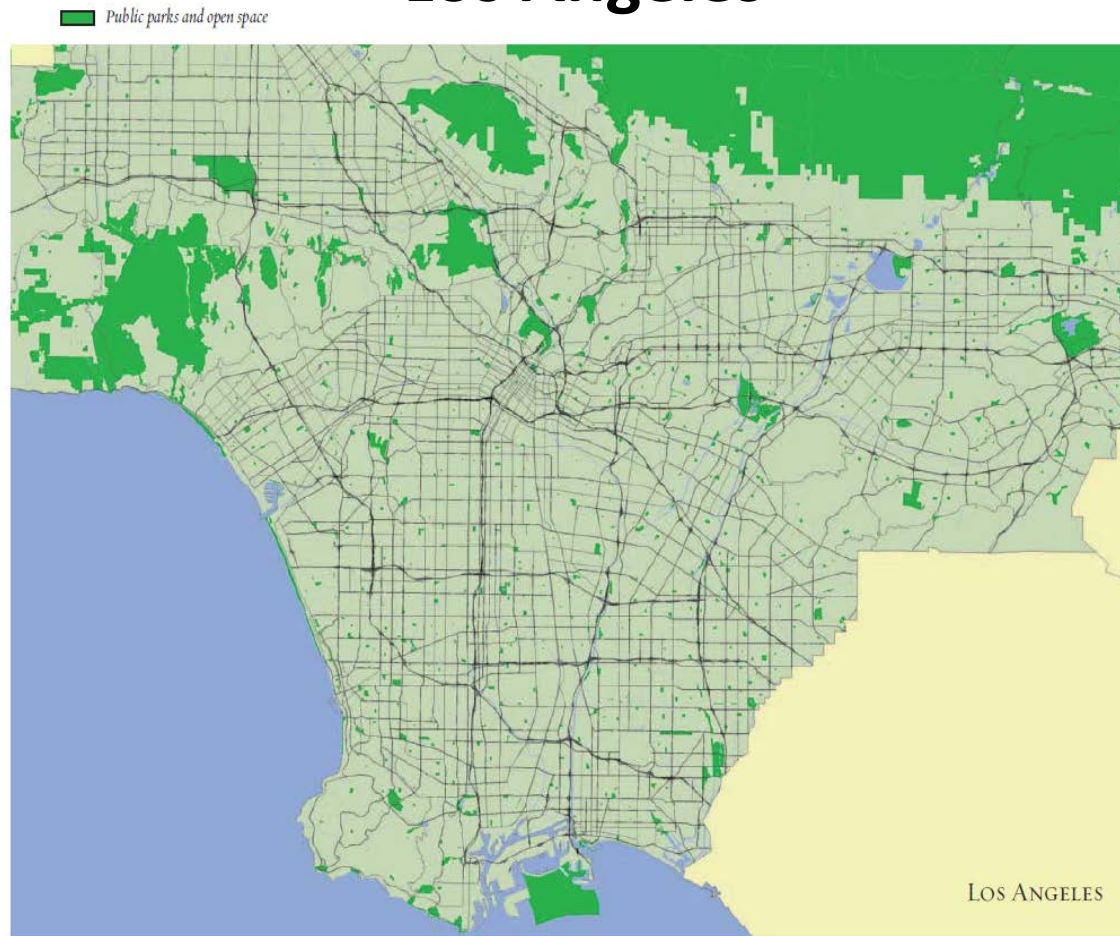
Urban Challenges



Core Code Challenges

Why Park Access?

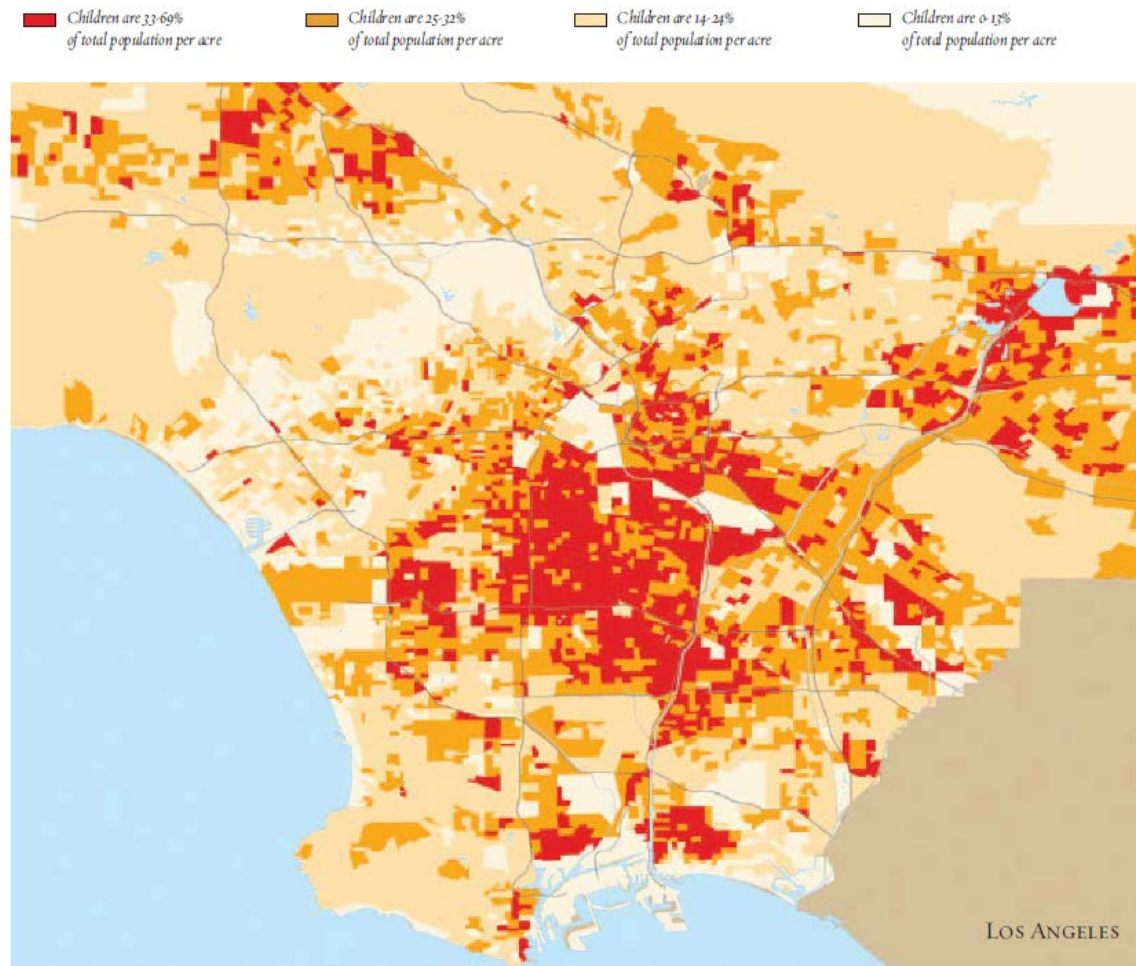
Understanding Why Access is Important: The Example of Park Land in the City of Los Angeles



Parks in Los Angeles are concentrated far from the city center.

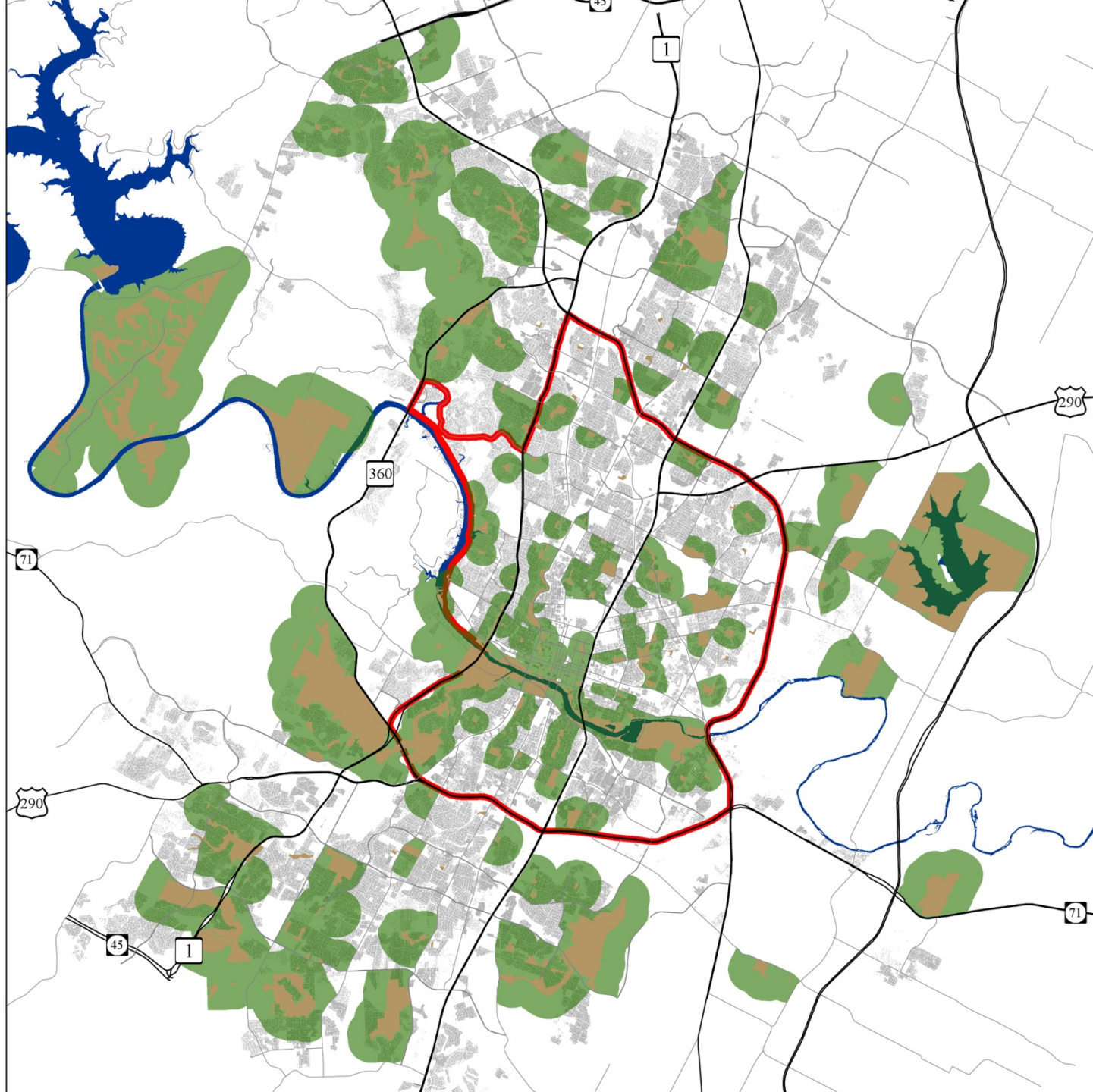
"No Place to Play: A Comparative Analysis of Park Access in Seven Major Cities." Trust for Public Land, 2004.

High Children Population Density Areas in the City of Los Angeles

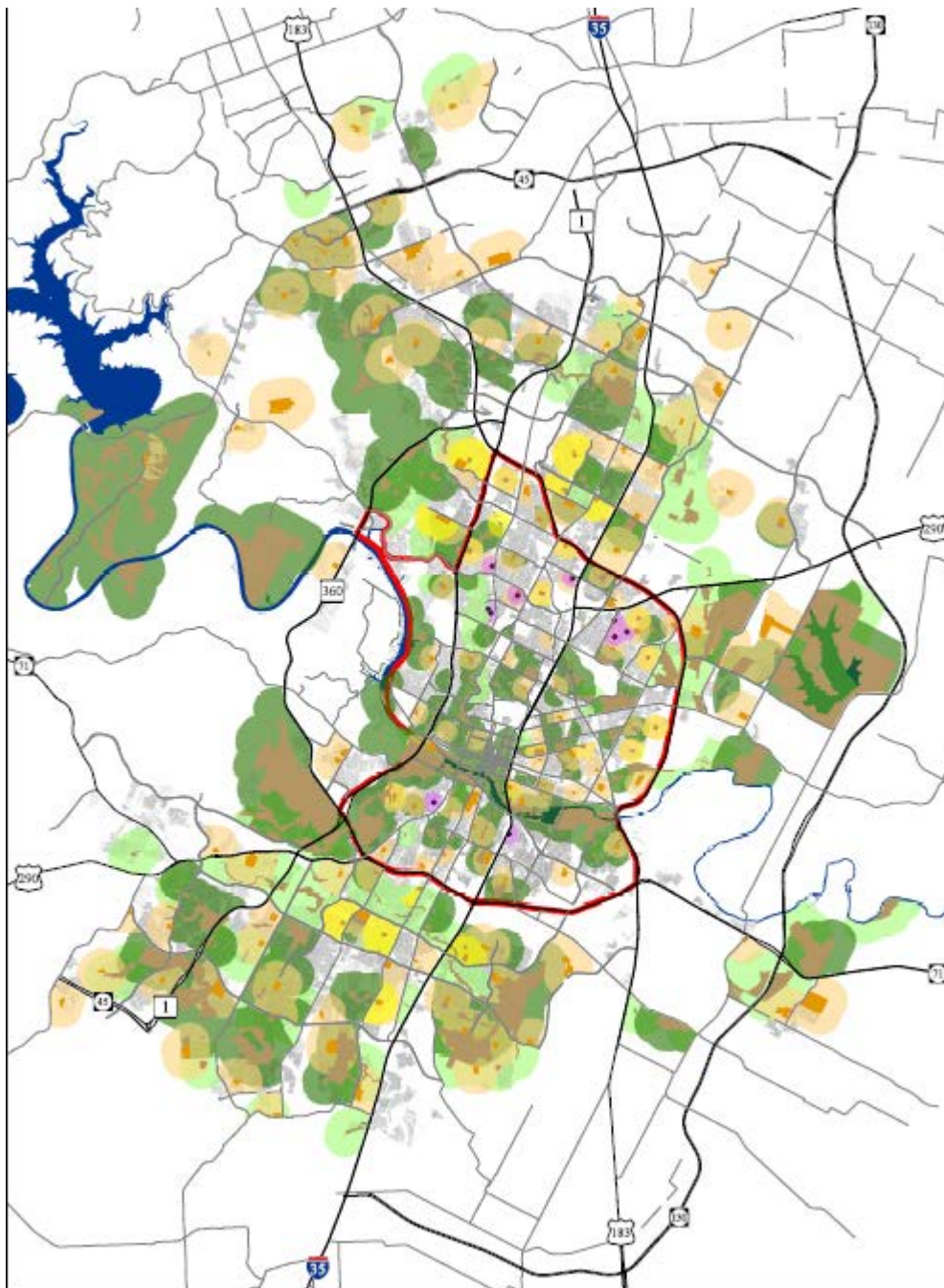







Areas shaded red indicate high children's population density zones.

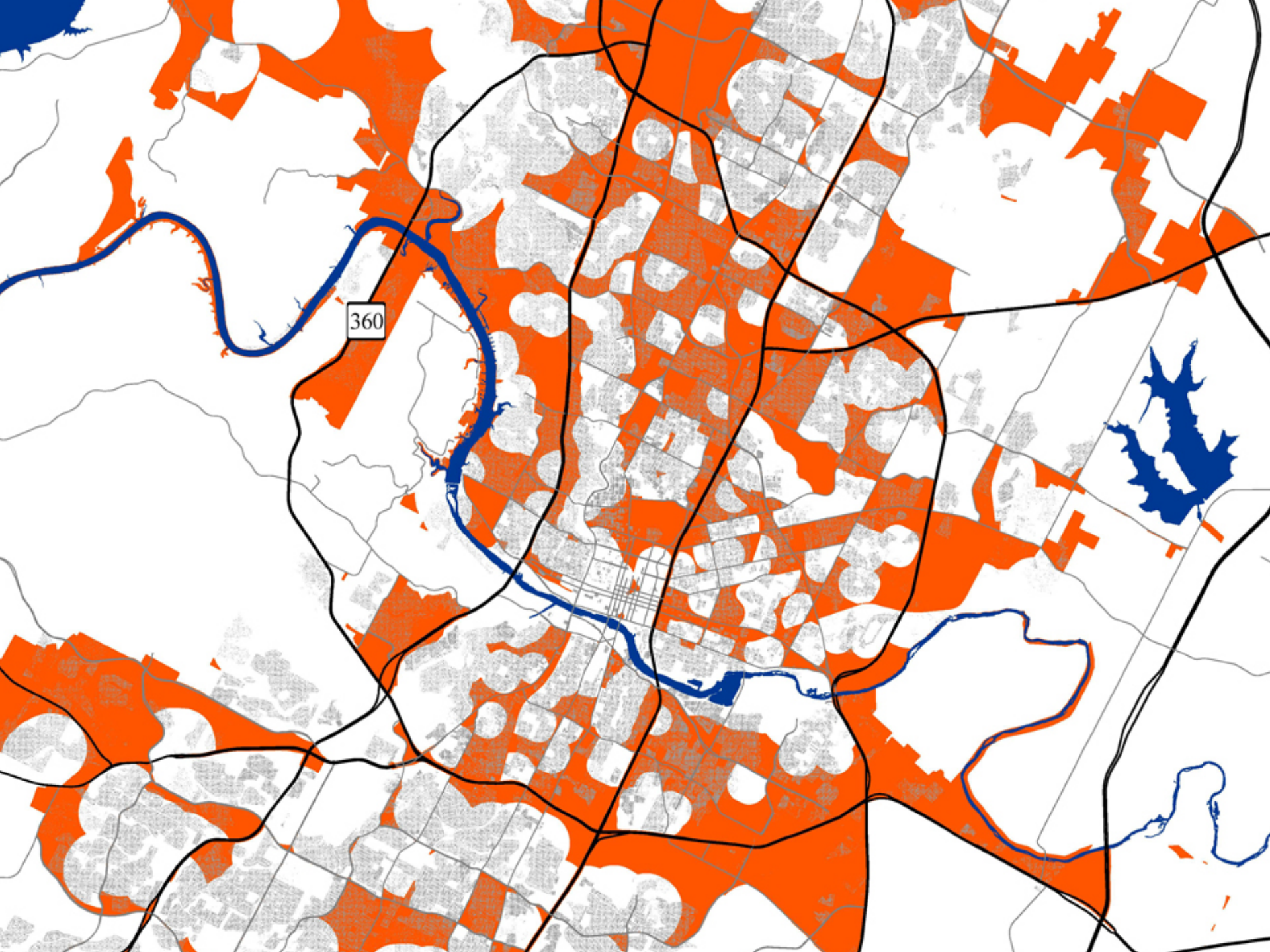
"No Place to Play: A Comparative Analysis of Park Access in Seven Major Cities." Trust for Public Land, 2004.



**Map E:
High Opportunity
Sites**

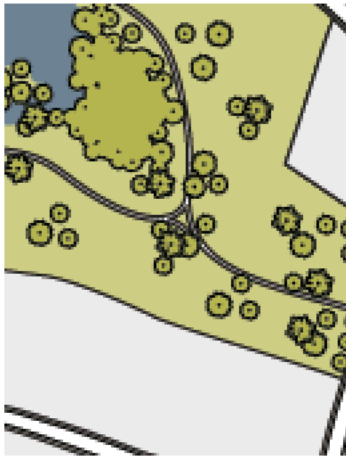


-  Developed Parkland
-  Undeveloped Parkland
-  Existing School Parks
(PARD owns a % of the
school property)
-  New School Sites (no
PARD ownership)
-  High Opportunity Sites

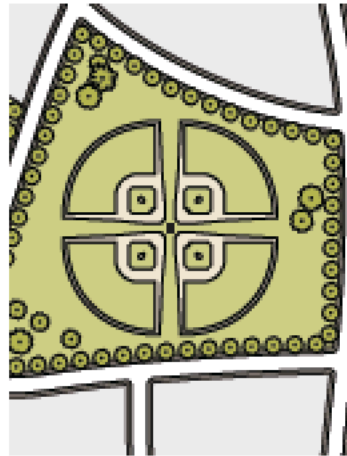


Current Code Solutions

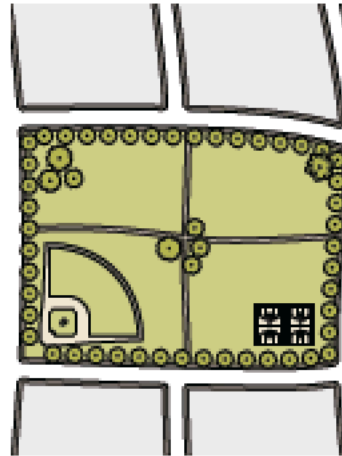
Metropolitan Park



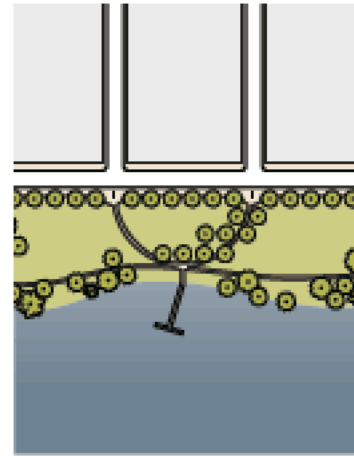
District Park



Neighborhood Park



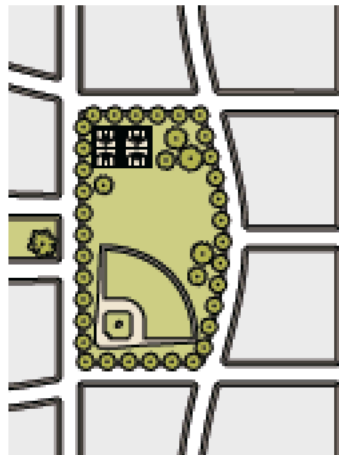
Riparian Park



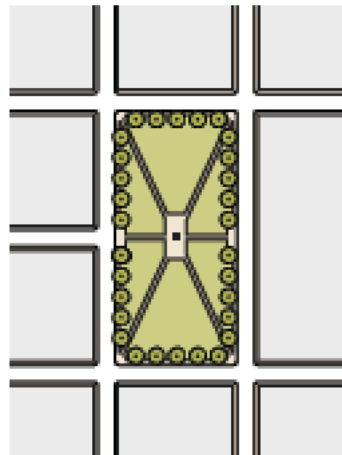
Greenway



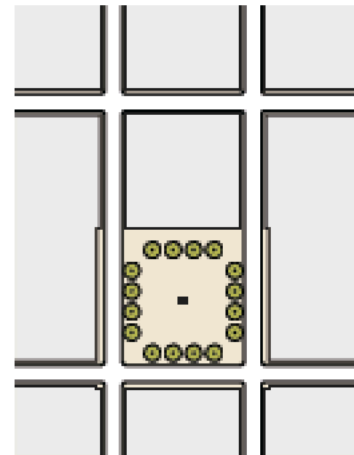
Green



Square



Plaza



440 East 38th Street

erizon

Continued Challenges: POPS

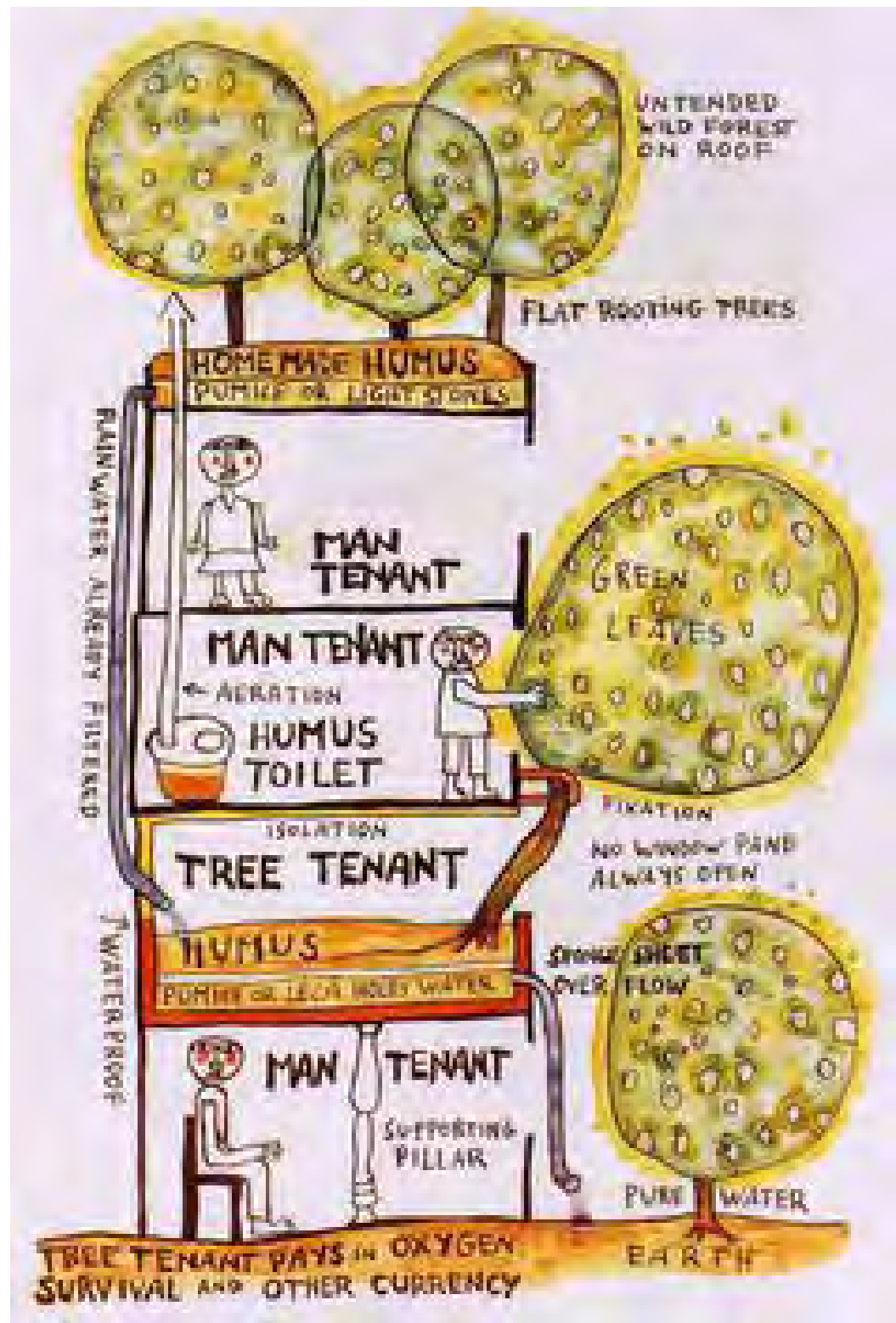
THRIVING		COMPLETE COMMUNITIES	
HEALTHY AUSTIN	CREATIVE ECONOMY	COMPACT & CONNECTED	CODENEXT

NATURE INTO CITY		PATHS TO PROSPERITY	
WATER	ENVIRONMENT	AFFORDABILITY	WORKFORCE

How do we talk about PUBLIC space?

NATURE & CITIES

**HOW DOES NATURE
FIT INTO A CITY?**



HUNDERTWASSER

WHAT IS NATURE?

CENTRAL PARK



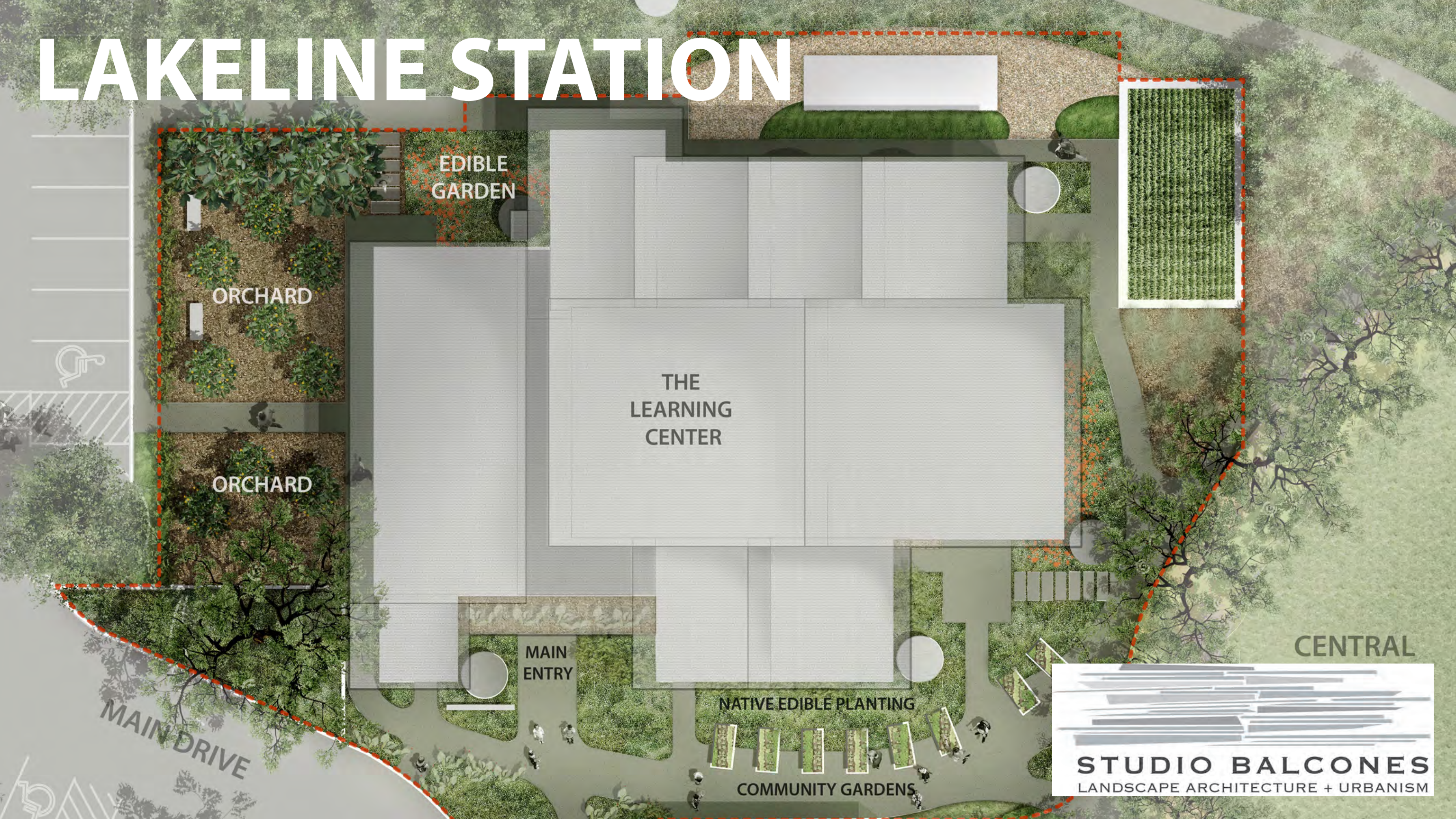
**HOW CAN NATURE
BE INFRASTRUCTURE?**

THE HIGHLINE



**NET ZERO LANDSCAPES =
URBAN AGRICULTURE?**

LAKELINE STATION



EDIBLE
GARDEN

ORCHARD

ORCHARD

THE
LEARNING
CENTER

MAIN
ENTRY

NATIVE EDIBLE PLANTING

COMMUNITY GARDENS

CENTRAL

STUDIO BALCONES
LANDSCAPE ARCHITECTURE + URBANISM



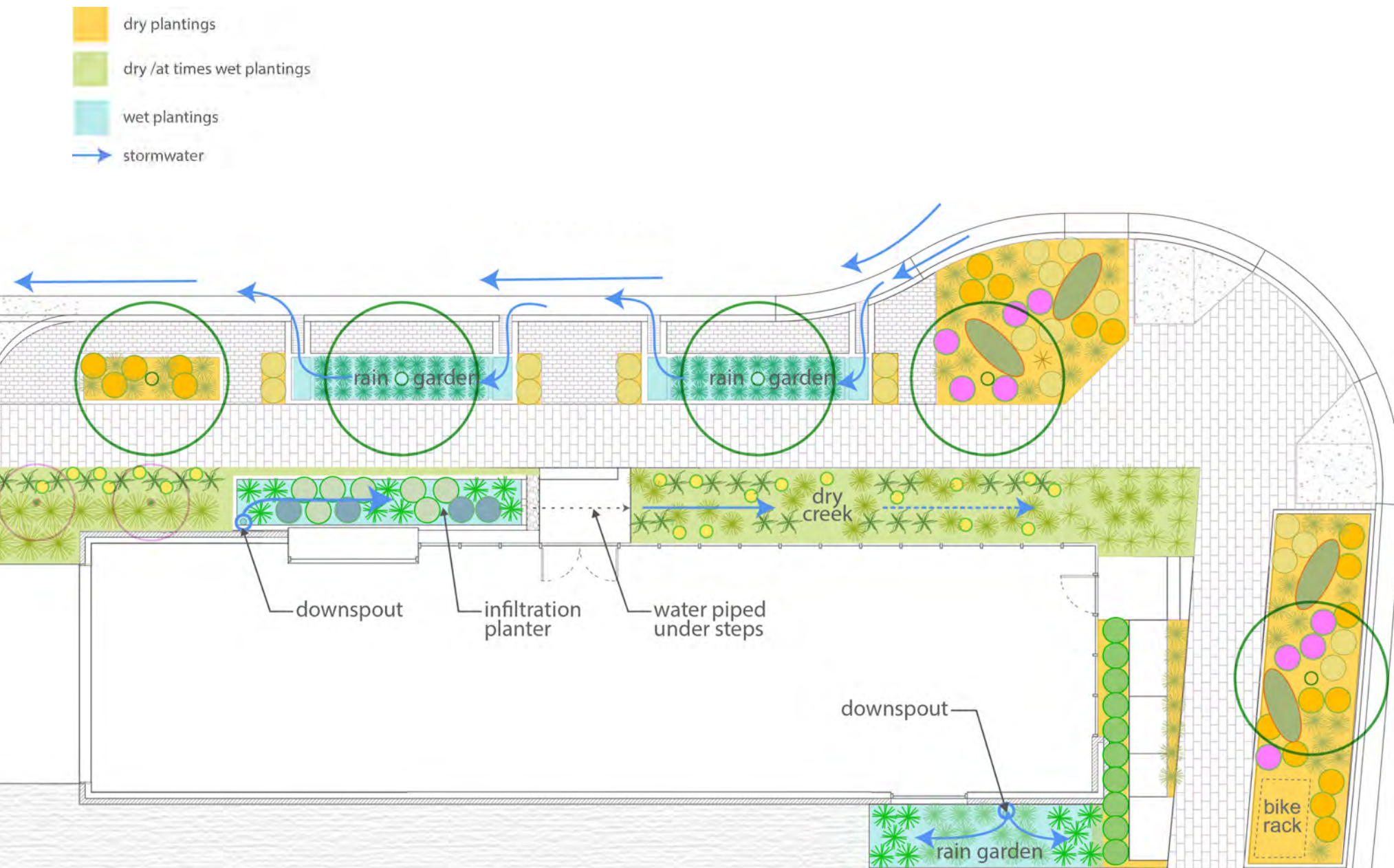


**MASTER PLANNED
LANDSCAPES =
GREEN INFRASTRUCTURE**

PIKE POWERS LAB



STUDIO BALCONES
LANDSCAPE ARCHITECTURE + URBANISM



DROUGHT TOLERANT PLANTS



ADAPTABLE PLANTS



WATER LOVING PLANTS

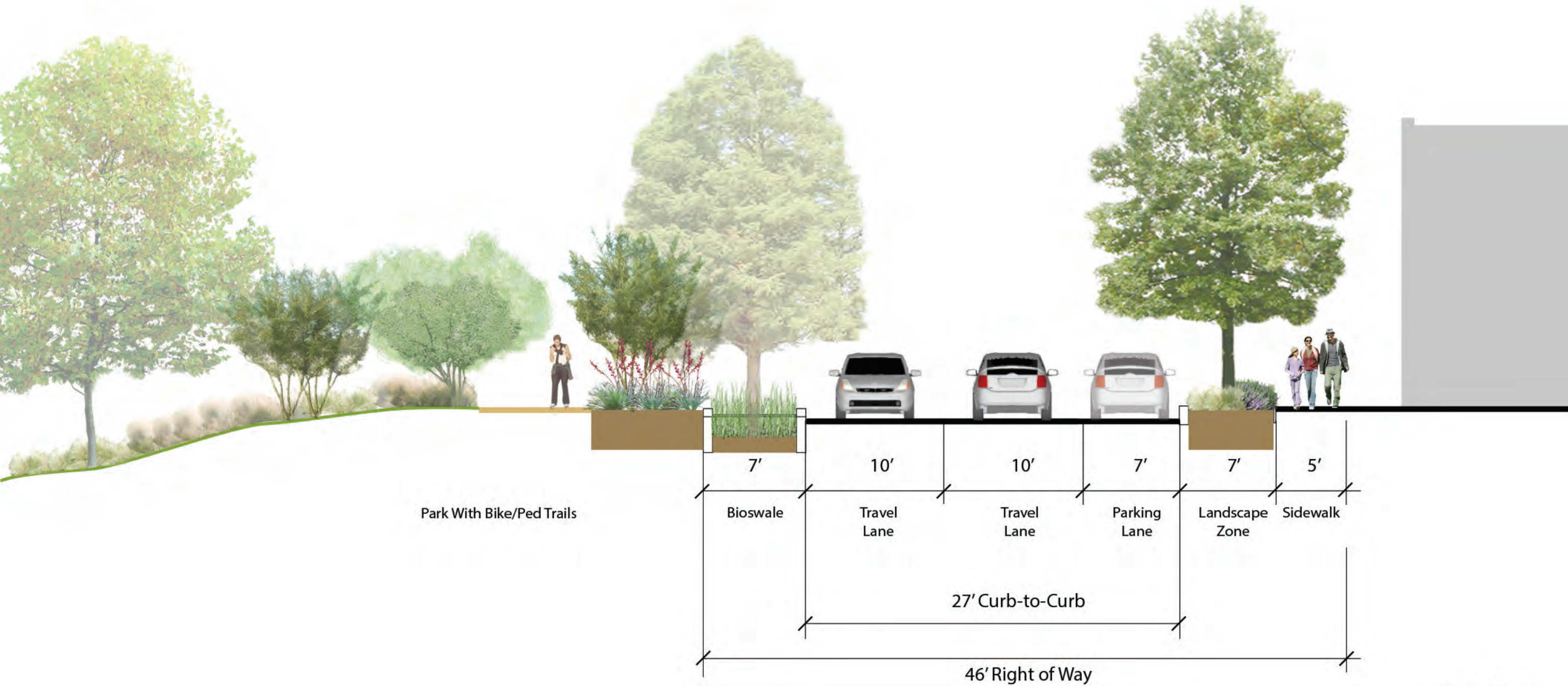


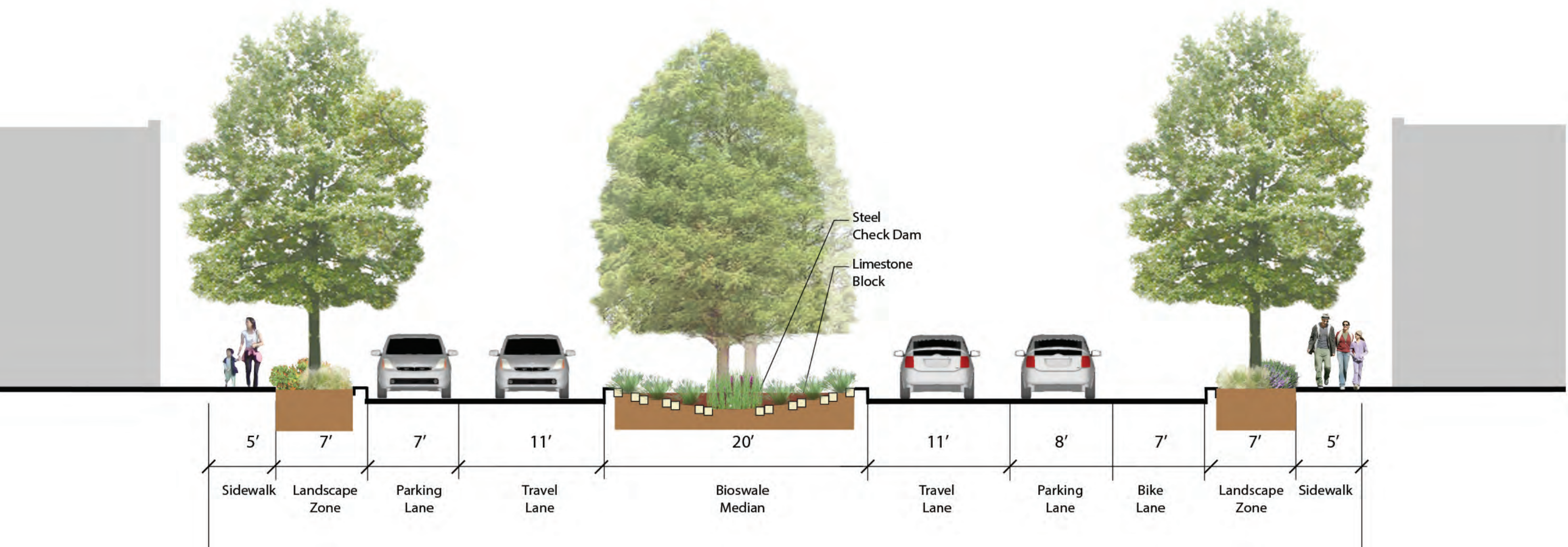


COLONY PARK MASTER PLAN



STUDIO BALCONES
LANDSCAPE ARCHITECTURE + URBANISM





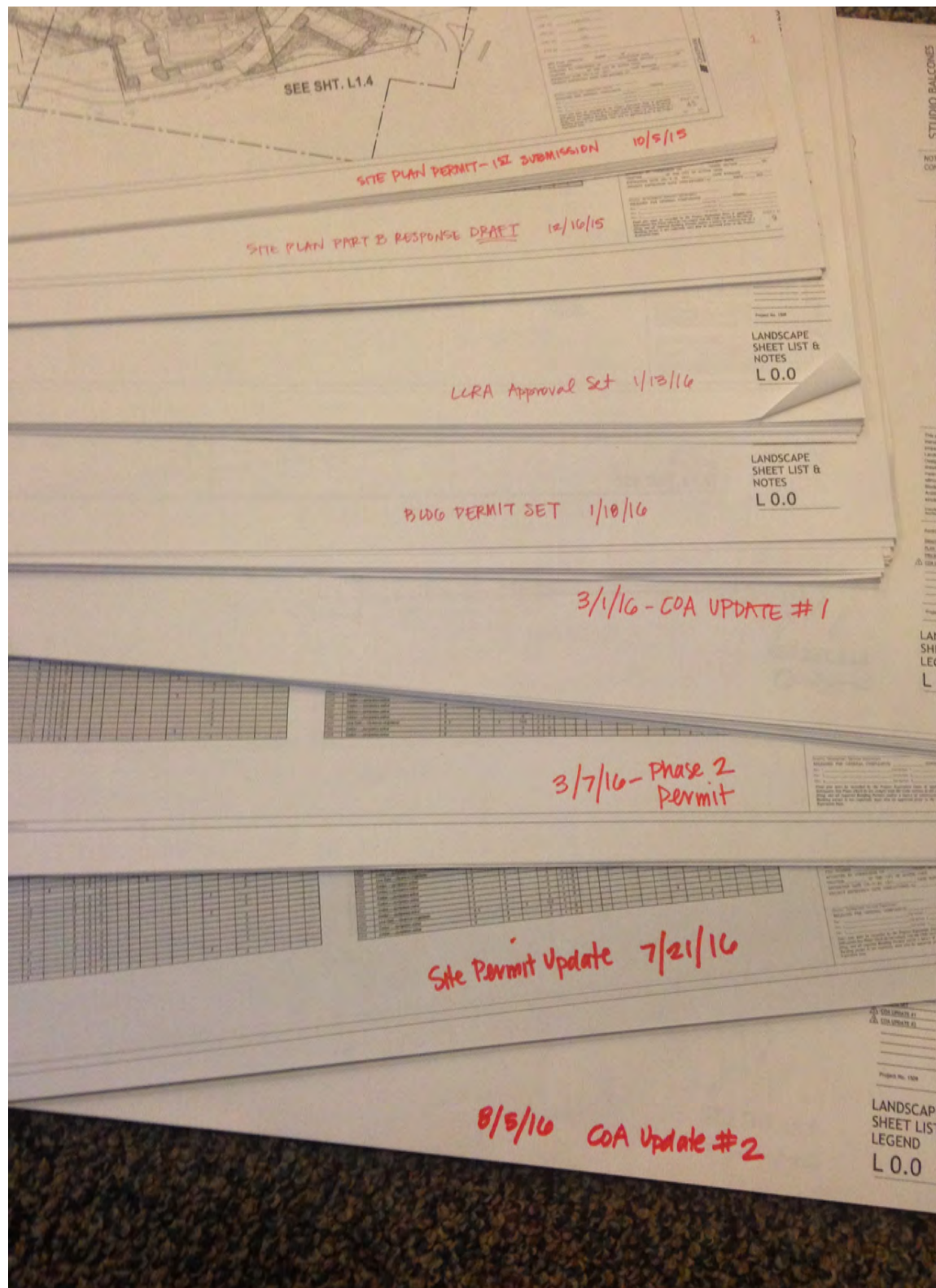


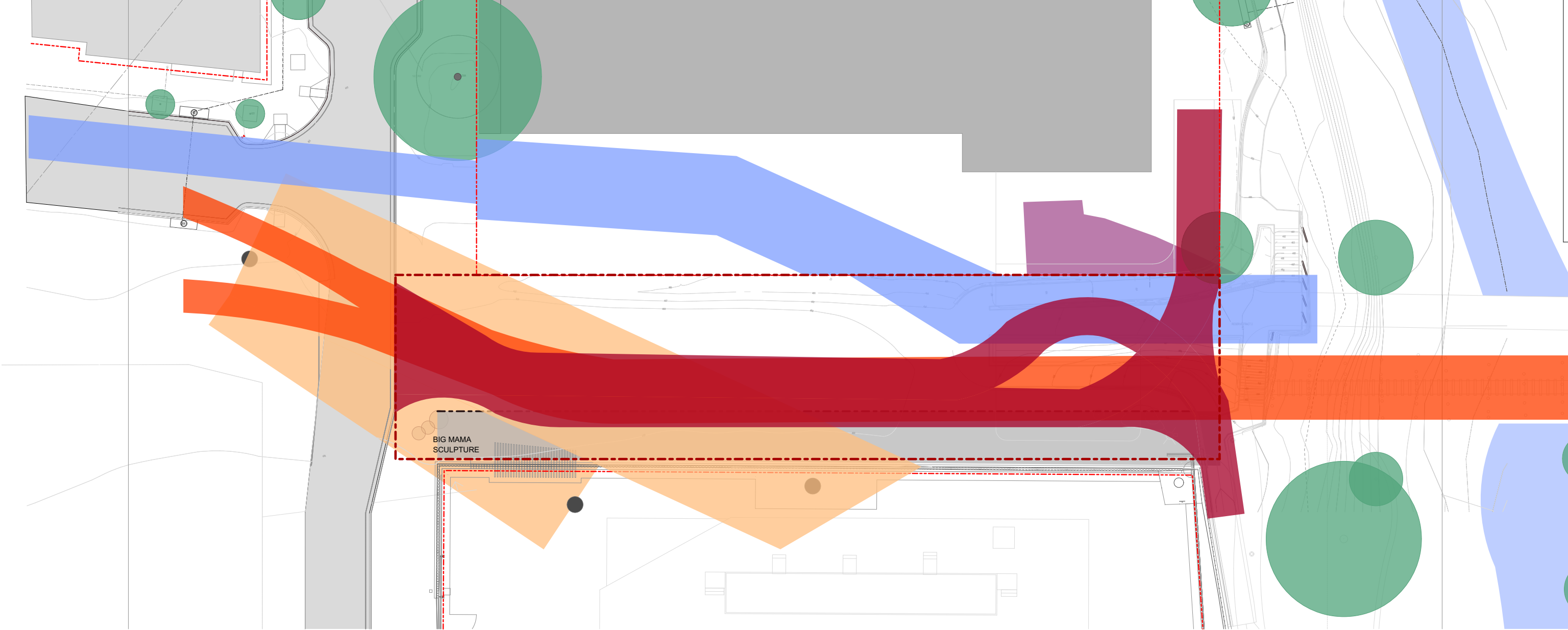
- Mexican Sycamore
(*Platanus mexicana*)
- Cedar Elm
(*Ulmus crassifolia*)
- Shumard Oak
(*Quercus muhlenbergii*)
- Bushy Bluestem
(*Andropogon glomeratus*)
- Brazos Penstemon
(*Penstemon tenuis*)
- Mexican Butterfly Weed
(*Asclepias curravica*)
- Inland Sea Oats
(*Chasmanthium latifolium*)
- Switchgrass
(*Panicum virgatum*)
- Steel check dams
- Limestone blocks
- Limestone benches
- Steel grate



MAKE ROOM FOR TREES

PERMITTING IS A LONG PROCESS...





FINDING GREEN WITHIN CONSTRAINTS



CONTRADICTIONS & LACK OF INCENTIVES