FLOODING AND STORMWATER

Texas Citizen Planner Program

A Matter of Scale: Case Studies in Green Stormwater Infrastructure at Site, Neighborhood and District Scales

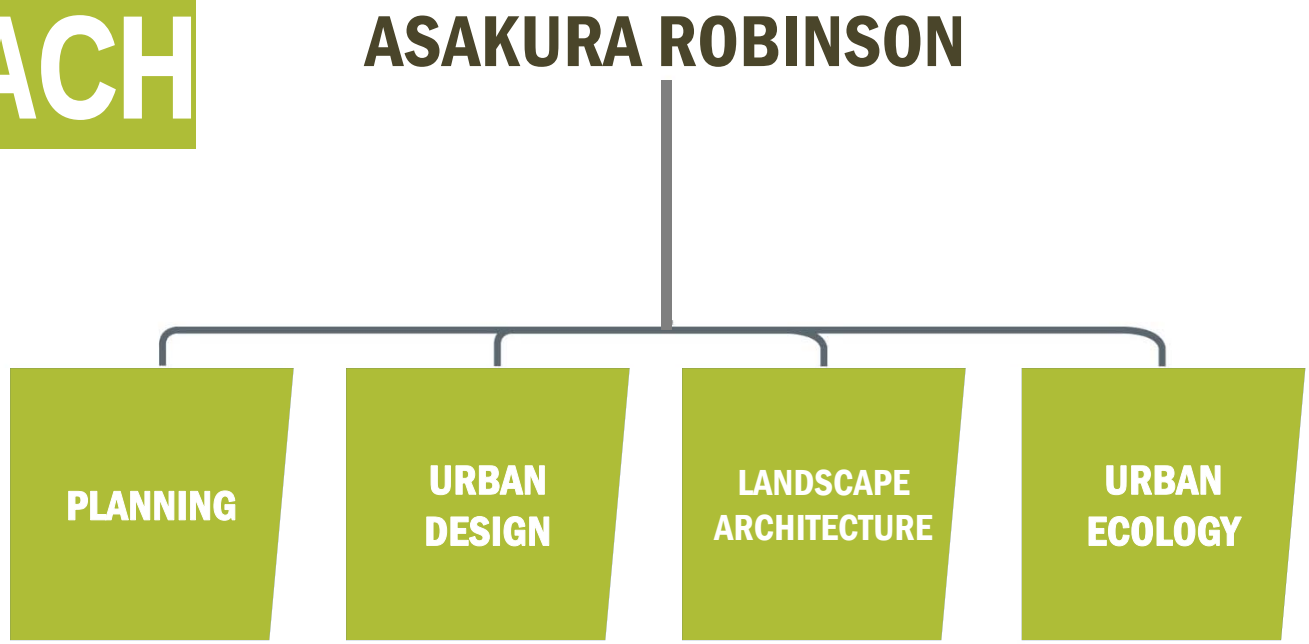
MARGARET ROBINSON, PLA, ASLA, LEED AP
PRINCIPAL

sakura robinson

Gannoway Lake Park

TEAM APPROACH

Offices:
Austin
Houston
New Orleans



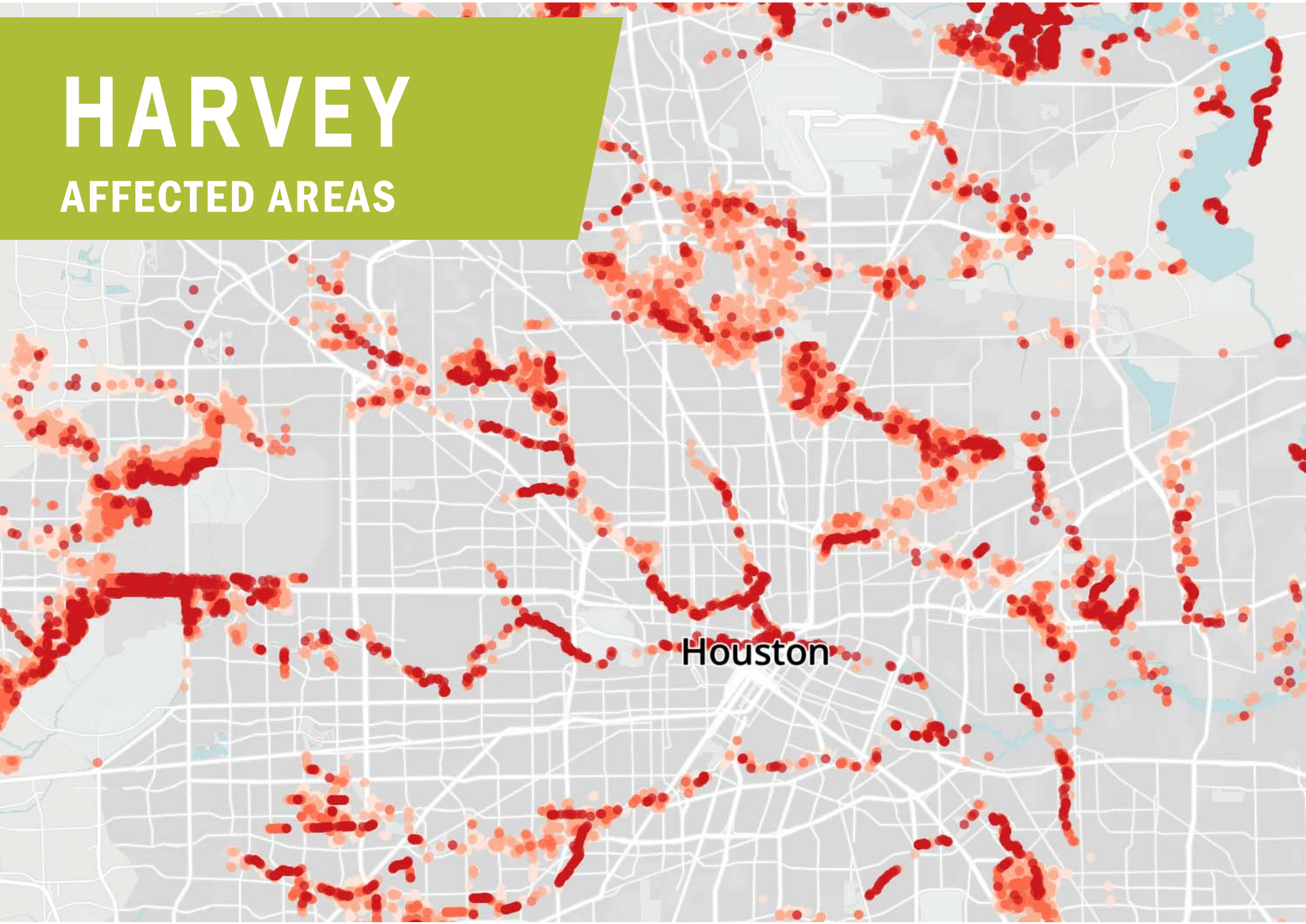
GOALS

6 Benefits of Green Infrastructure

1. Slow and infiltrate stormwater runoff (flood mitigation)
2. Reduce subsidence
3. Improve (storm) water quality
4. Balance urban growth needs with environmental protections (ecological benefits)
5. Increase space for public amenities for parks and open space
6. Reduce system-wide municipal infrastructure and maintenance costs

HARVEY

AFFECTED AREAS



Source: Federal Emergency Management Agency analysis as of Sept. 2

SCALES:

METRO?

DISTRICT

BAYS

NEIGHBORHOOD

RIVERS

SITE

TREATMENT TRAINS

STORMWATER WETLANDS

RAINWATER HARVESTING

GREEN ROOFS

BAYOUS

BIORETENTION SYSTEMS

PERMEABLE PAVING

SITE:
RESIDENTIAL

Green Revival native plantings

Sakowitz SRO rainwater harvesting

Inverness Residence permeable paving

WR Sage green roof

SITE:
SCHOOLS

Lone Star College Aldine detention Pond

Image: Houston Chronicle

Carnegie High School green roof

Peck Elementary bioretention

Ross Elementary rainwater harvesting

SITE:

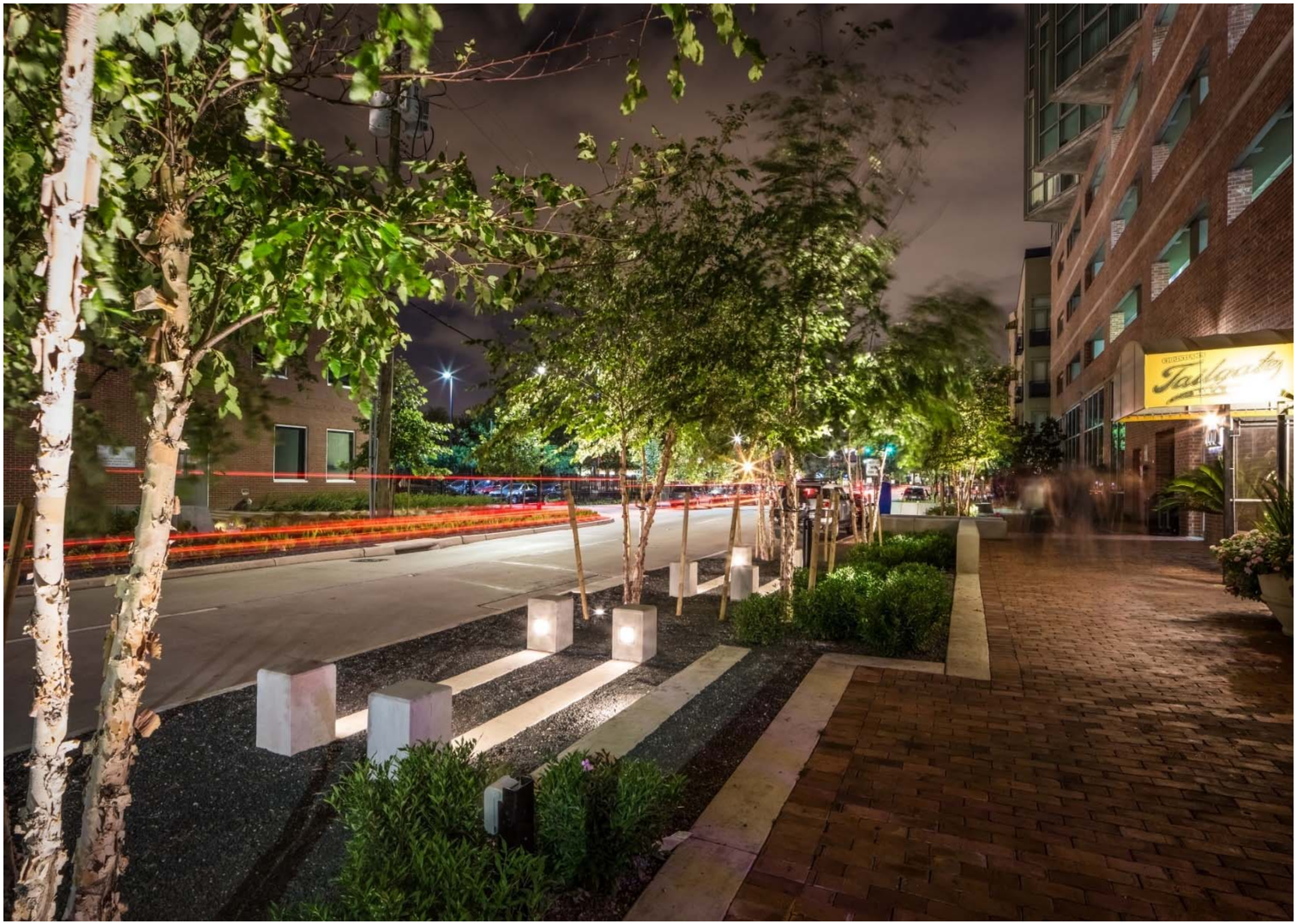
ROADWAY

Bagby Street **bioretention**

Westpark Tollway **bioretention**

North Main St., Baytown **vegetated swale**

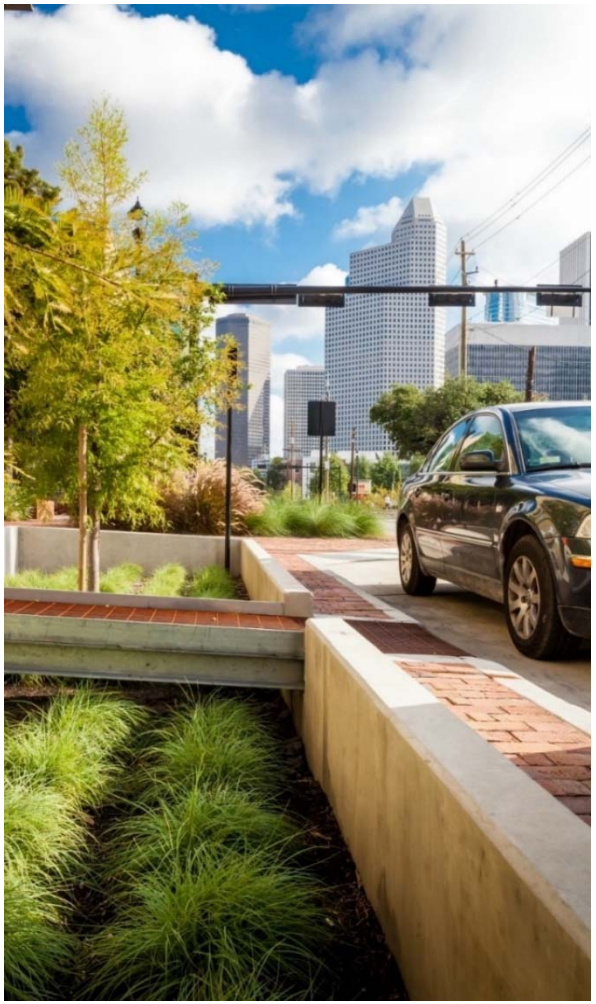
Ft. SmithWoonerf **permeable pavement**



Bagby Streetscape

features:

Reconstruction of 4 lane major thoroughfare to 3 lane with parking lane, ample sidewalks and green infrastructure



Results

stormwater enters through rain gardens + bioswales filtering 80-90 % of pollutants.

increase in trees resulting in decrease in surface temperature and reduced heat island effect.

increase in open seating and gathering areas

SITE:
KIRKWOOD STREETSCAPE

SITE:

KIRKWOOD STREETSCAPE

SITE:
CIVIC & MUNICIPAL

Baker Ripley **rainwater harvesting**

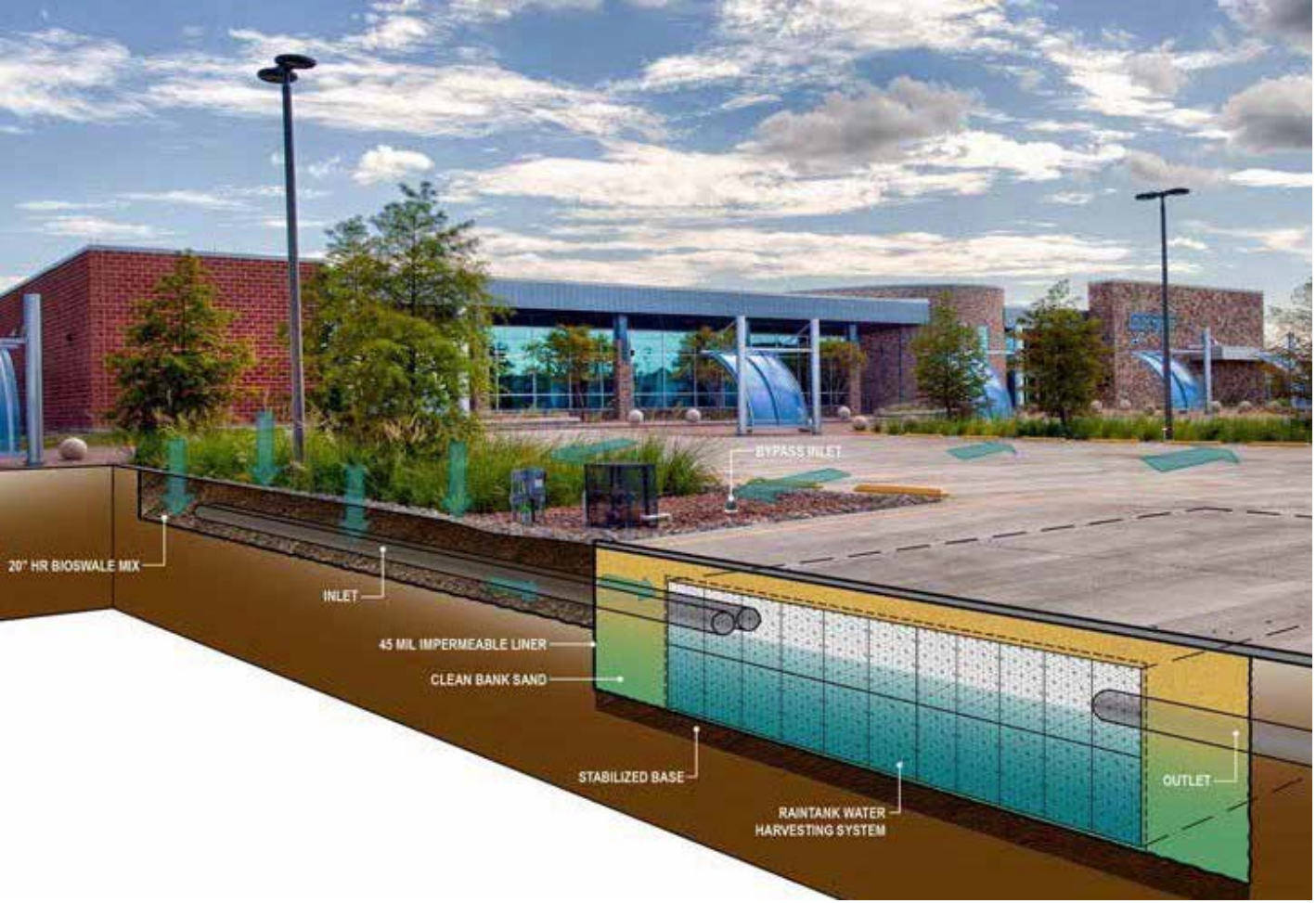
IAH Control Bldg. **bioretention**

Dickenson Library **bioretention**

Federal Reserve Bank **green roof**

CASE STUDY

Meador Library



Meador Library

Architect: English & Associates
Landscape Architect: Asakura Robinson

SITE:
COMMERCIAL

Wildwood Corporate Centre **bioretention**

Core Park West **bioretention**

Springwoods Crossing **bioretention**

Tenaris **native plantings**

SITE:

PARKS + OPEN SPACE

Gene Green Park **bioretention**

Mandell Park **bioswales**

MD Anderson Park **native plantings**

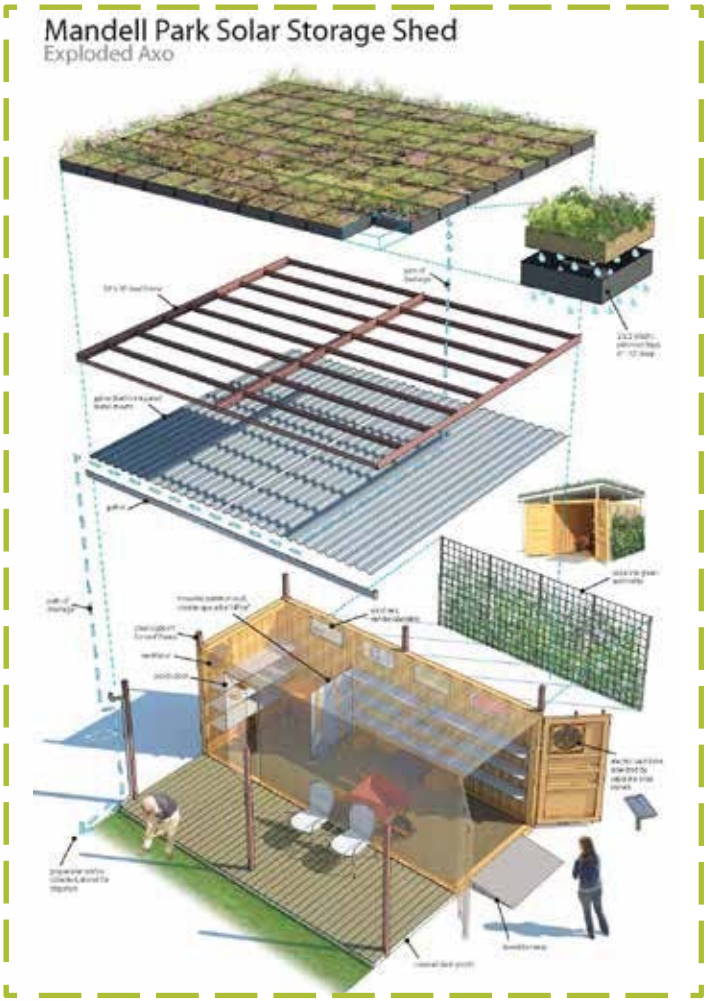
Houston Arboretum **rainwater harvesting**

CASE STUDY

Mandell Park

Mandell Park

Landscape Architect: Asakura Robinson

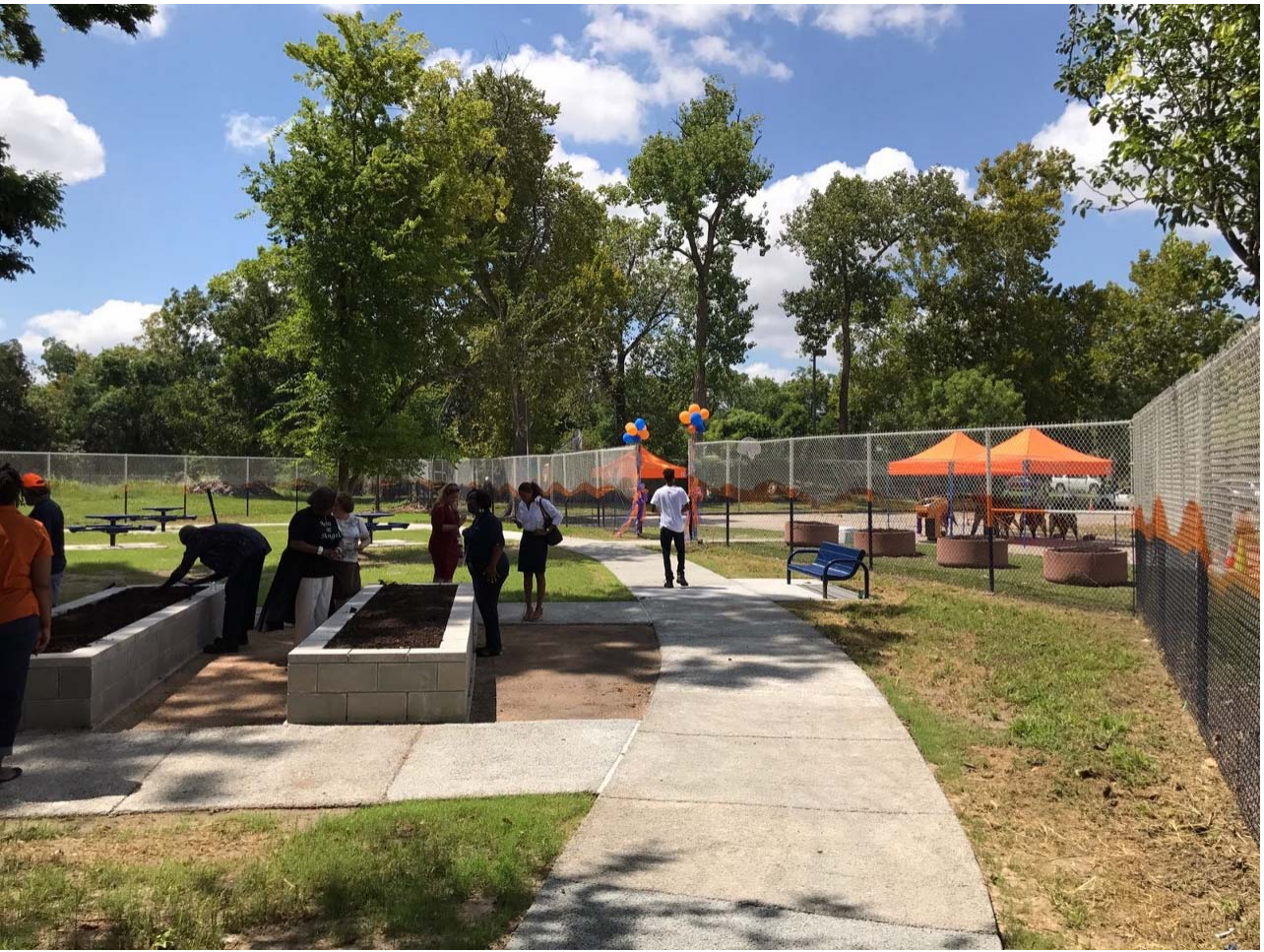


Mandell Park

Landscape Architect: Asakura Robinson

SITE:

ACRES HOMES COMMUNITY GARDEN

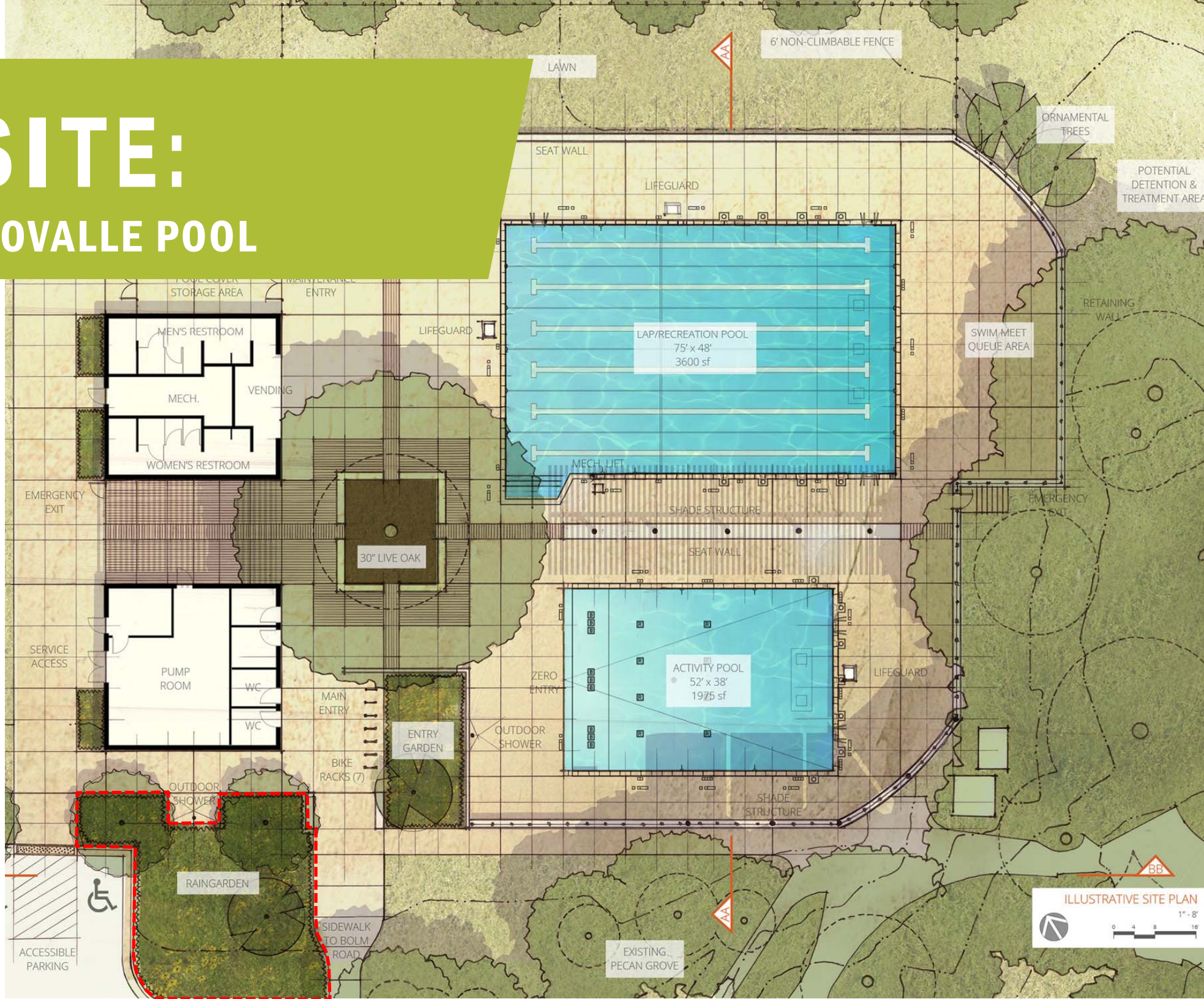


SITE:
LITTLE STACY PARK

asakura robinson

SITE:

GOVALLE POOL



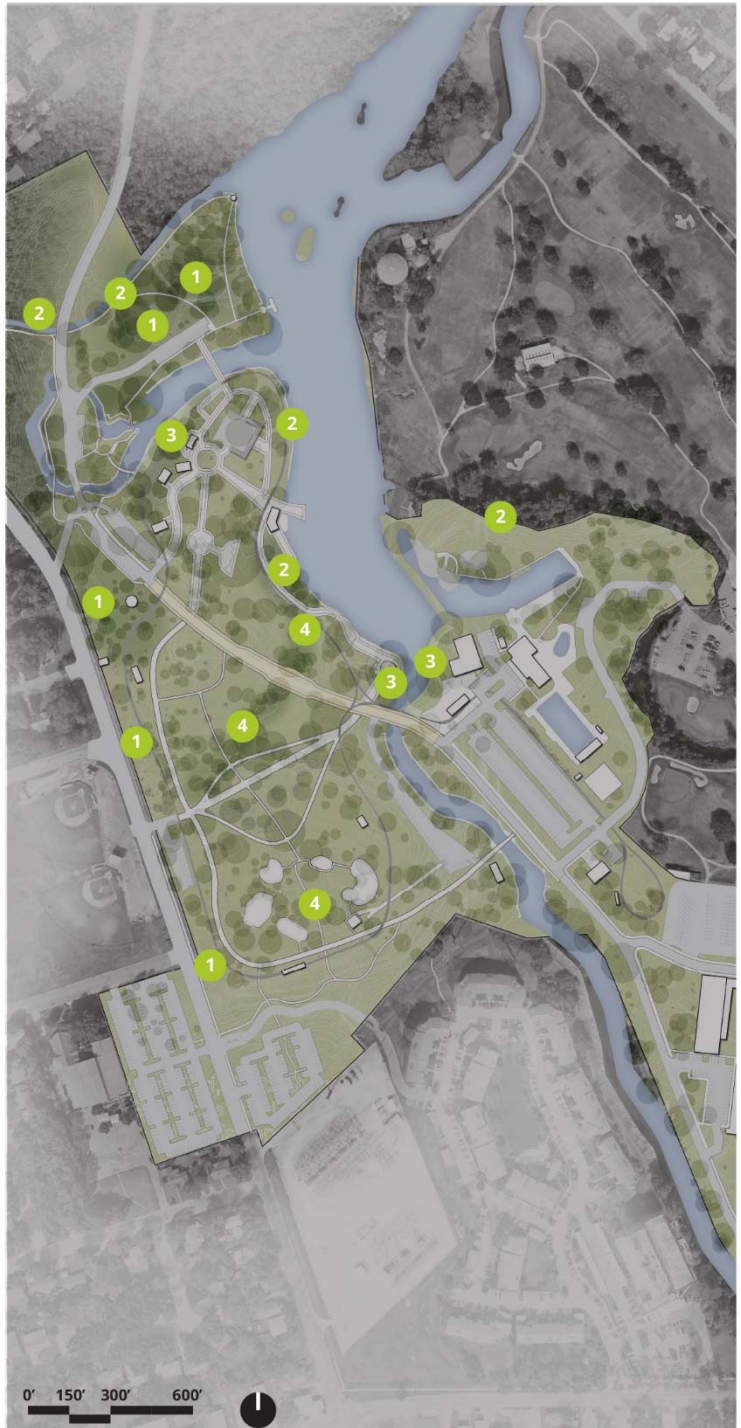
NEIGHBORHOOD:

LANDA PARK MASTER PLAN

LANDSCAPE & ECOLOGY

City of New Braunfels | Sakura Robinson

LANDA PARK & ARBORETUM MASTER PLAN

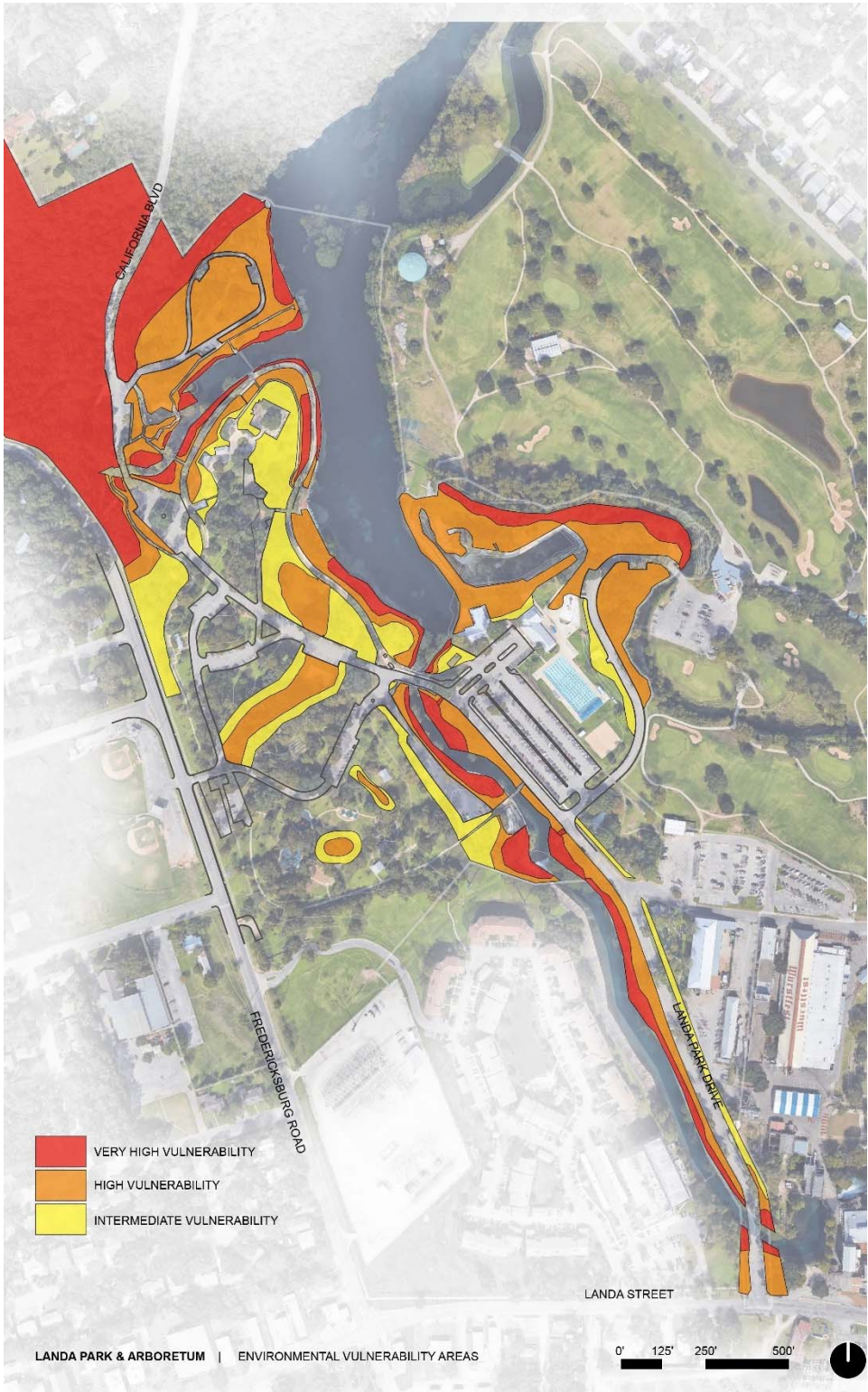


1 **Forested / Protected Areas**

2 **Restored Riparian Areas / No Mow Zones**

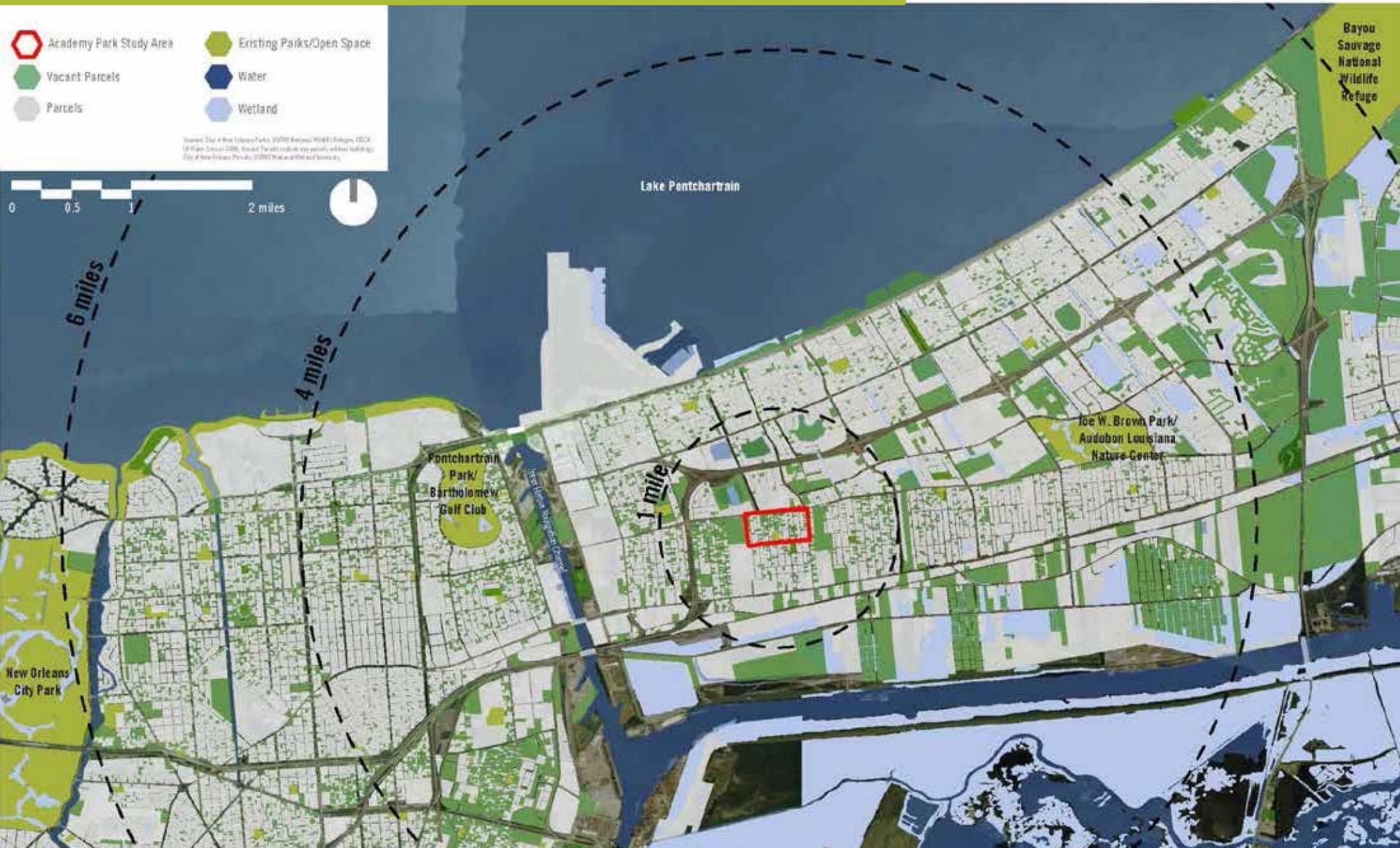
3 **Landscape Terraces**

4 **Bioswales/Rain Gardens**

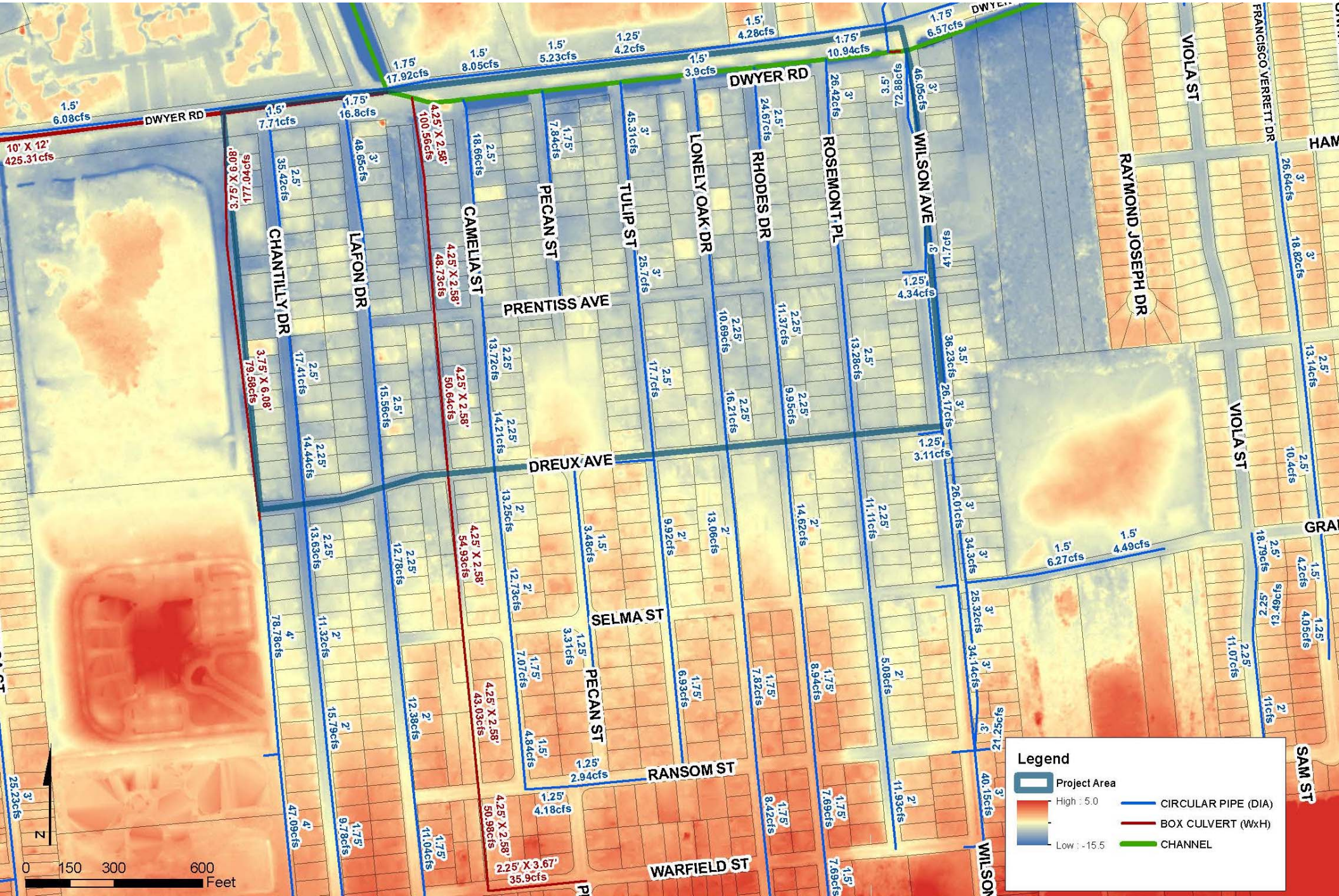


LANDA PARK & ARBORETUM | ENVIRONMENTAL VULNERABILITY AREAS

NEIGHBORHOOD:
ACADEMY PARK

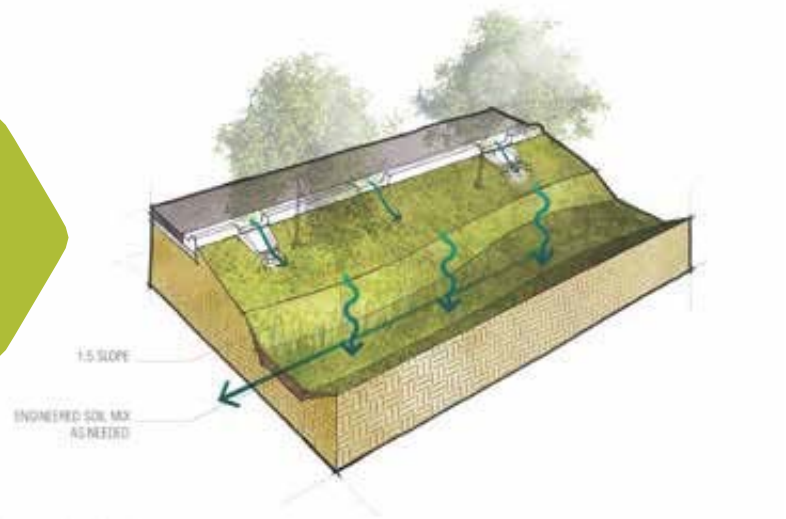


Academy Park
Existing Drainage Infrastructure

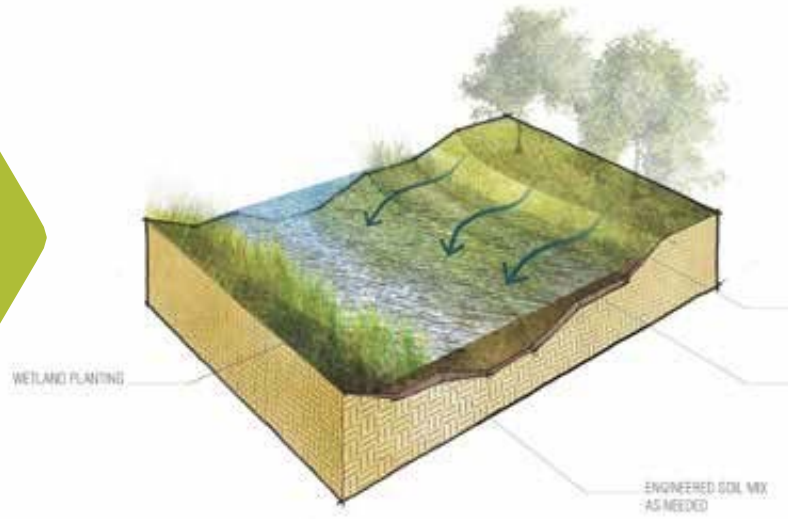


Academy Park
Best Management Practices

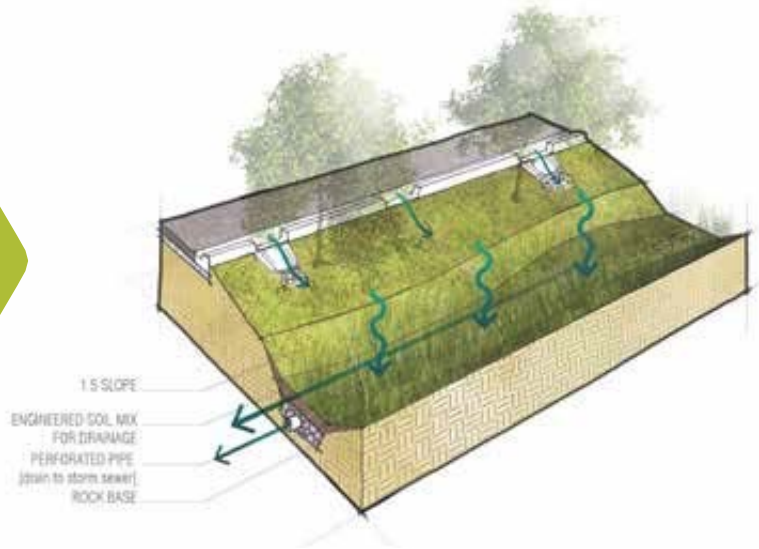
Vegetated Swale



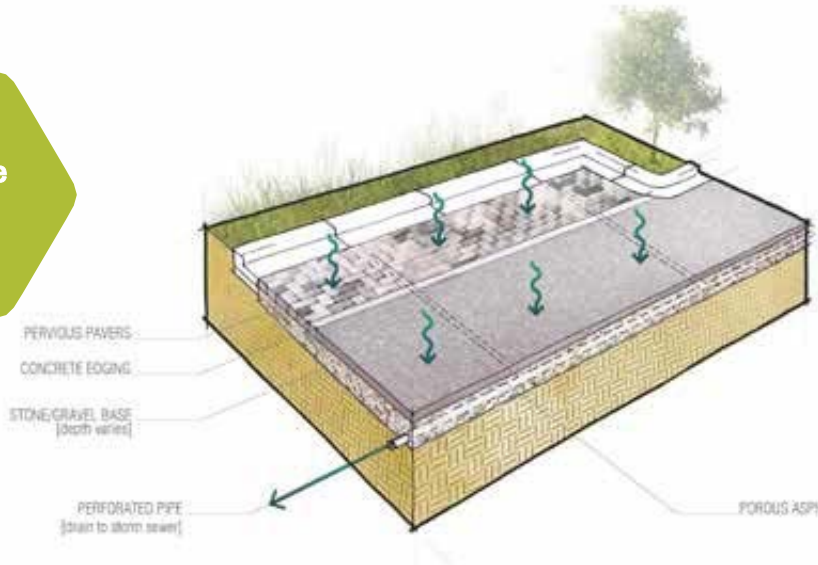
Stormwater Wetlands



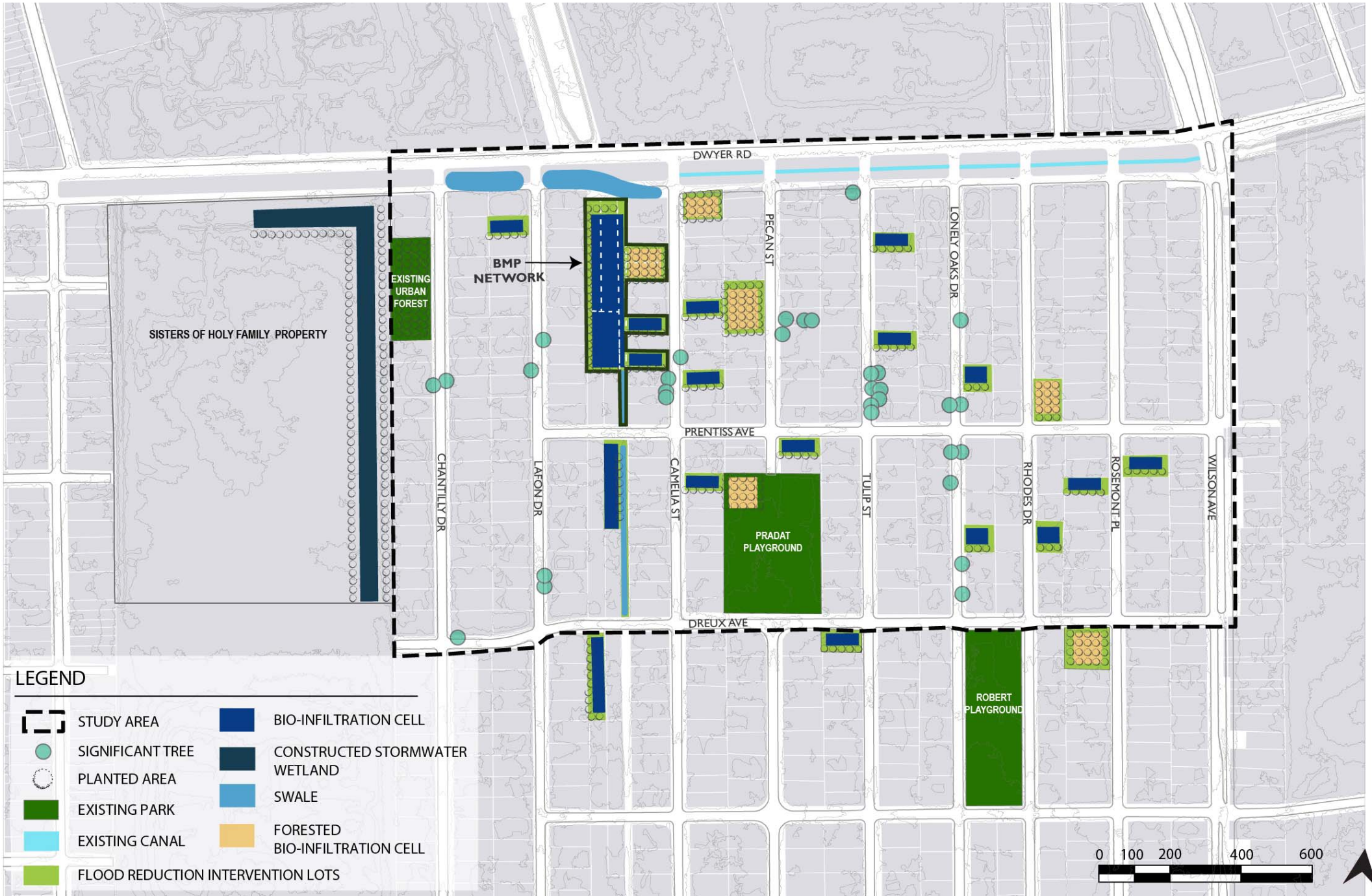
Bioretention Systems



Permeable Paving

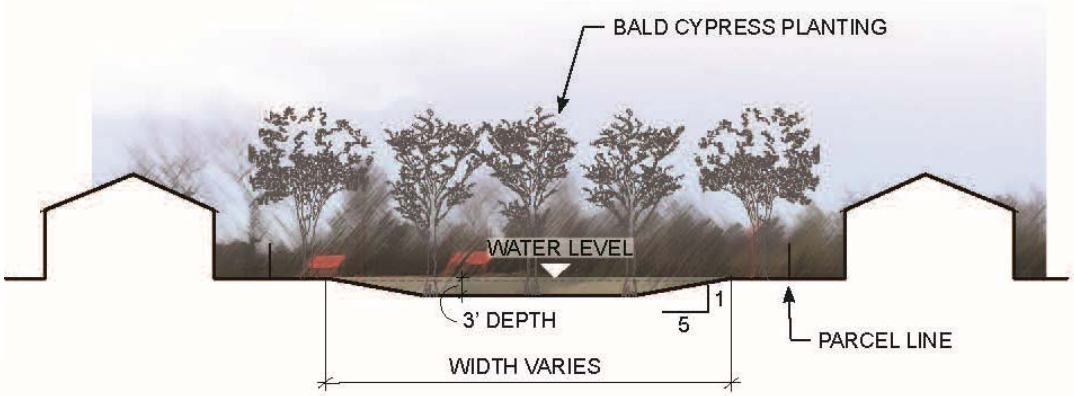


Academy Park
Concept Diagram

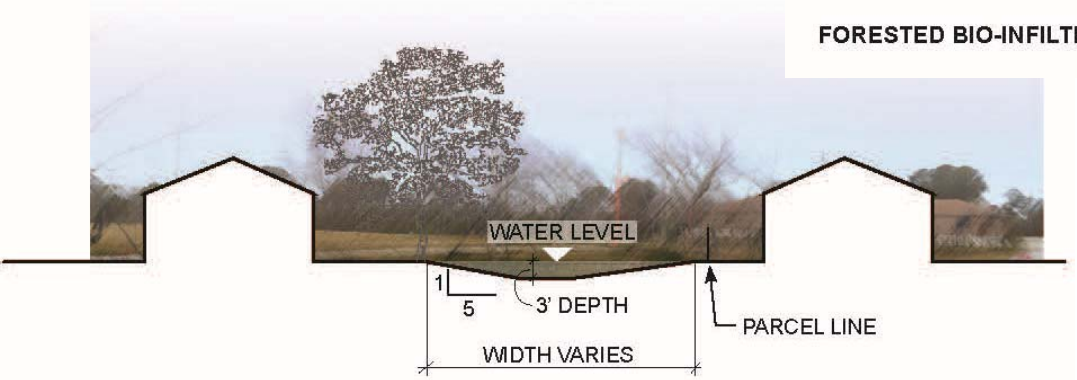


Academy Park
Best Management Practices

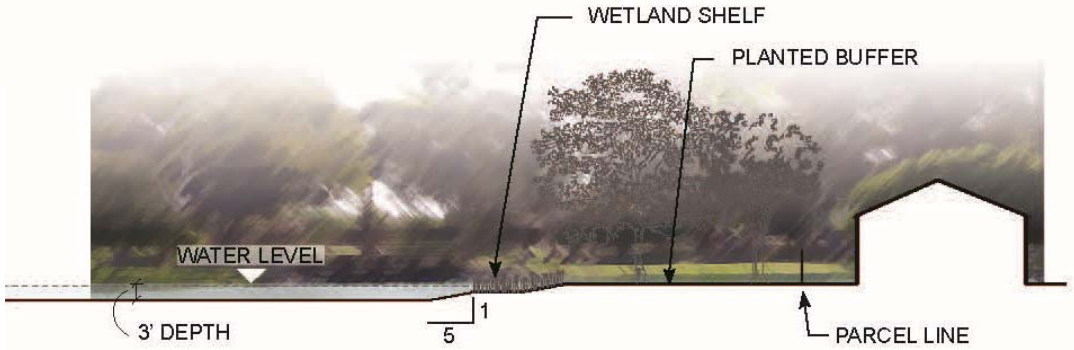
concept sections:
re-forestation, vacant lots,
constructed wetlands



FORESTED BIO-INFILTRATION DETENTION



LOT BIO-INFILTRATION DETENTION



CONSTRUCTED WETLAND SECTION TYPICAL

Academy Park
Sisters of the Holy Family Tract Sketch

Stormwater Hazard Mitigation – HMGP Program
Academy Park – Drainage Upgrade and Green Infrastructure

NEIGHBORHOOD:

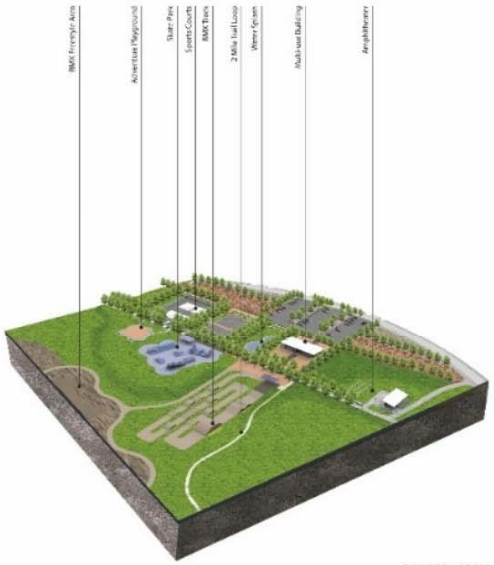
GENE GREEN PARK

August 31, 2017

Gene Green Park

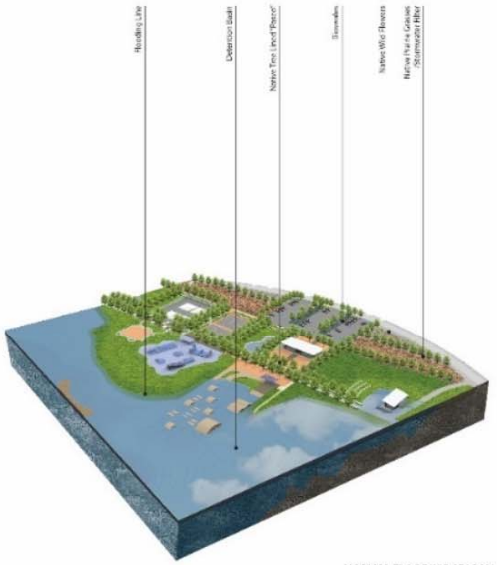
features:

230 acre dual use park and detention basin



DAILY PROGRAM

DESCRIPTION: The park is particularly designed as a safe-haven for teenagers; the "lost population", who are generally overlooked in parks design. It provides both active and passive recreation facilities utilizing sustainable design practices. An educational theme of "Adventure in Motion" is feartured by BMX bikes, Skateboards, zip-lines, etc.



NORMAL FLOODING SEASON

DESCRIPTION: The park is multi-used as a detention pond during flooding season, which increases infiltration rate and supplements underground water. It occurs another natural landscape and decent water edge. Only BMX track is the inundated.

HEAVY FLOODING SEASON

DESCRIPTION: When it comes to heavy flooding season, the skate park and BMX track and lowland area are flooded. A safety flooding line is precisly designed to protect the building and other high value items in the property.

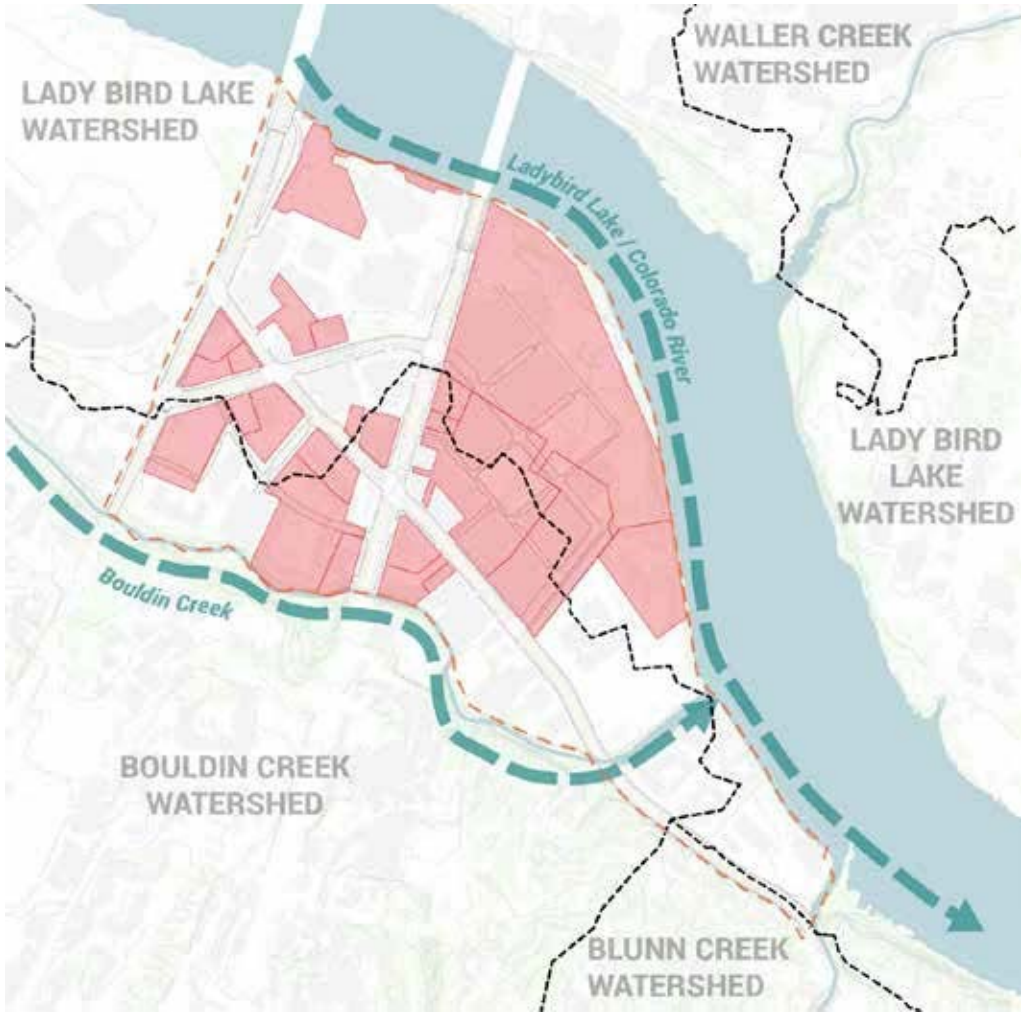
DISTRICT:

SOUTH CENTRAL WATERFRONT

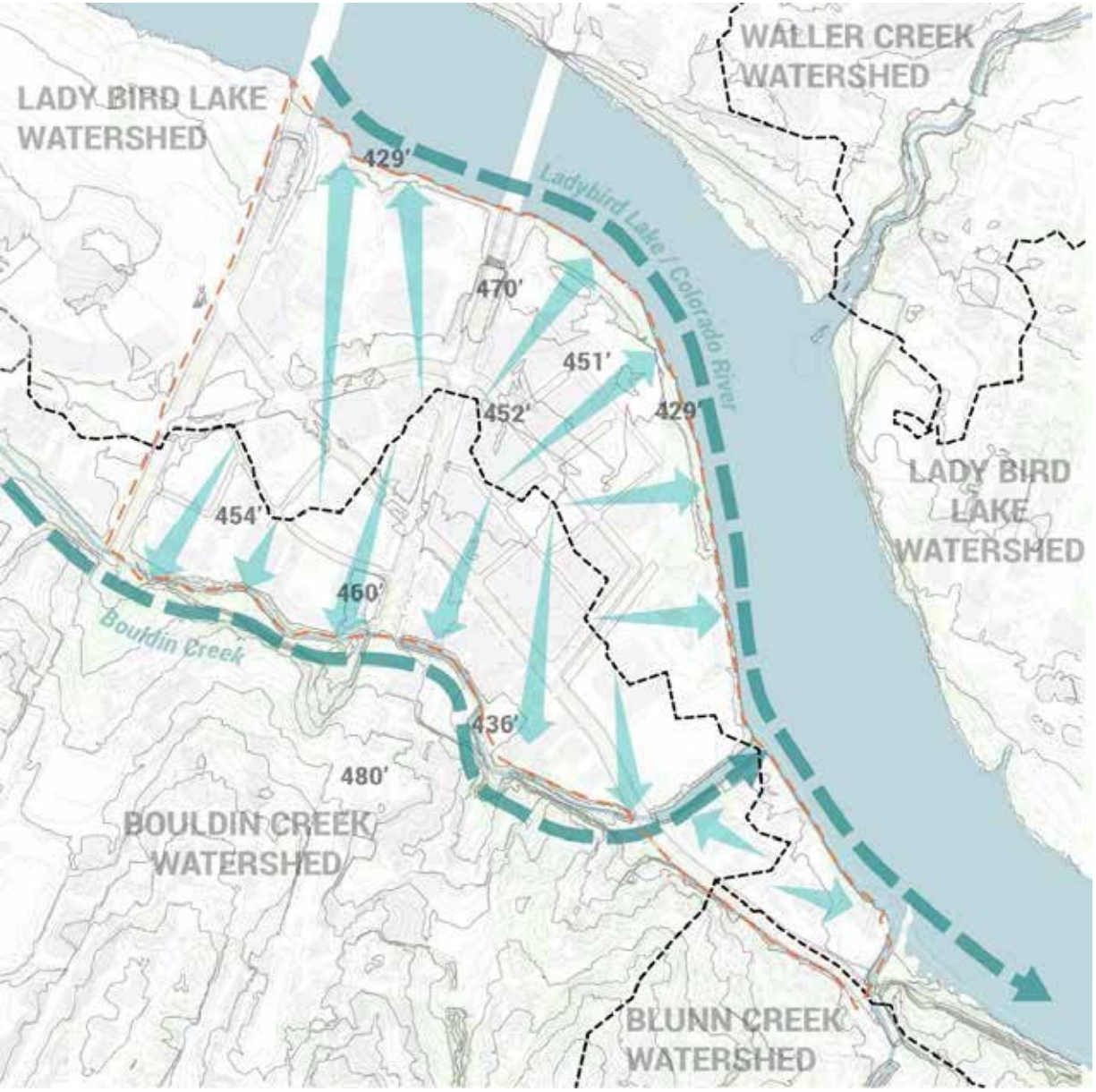
SOUTH CENTRAL WATERFRONT

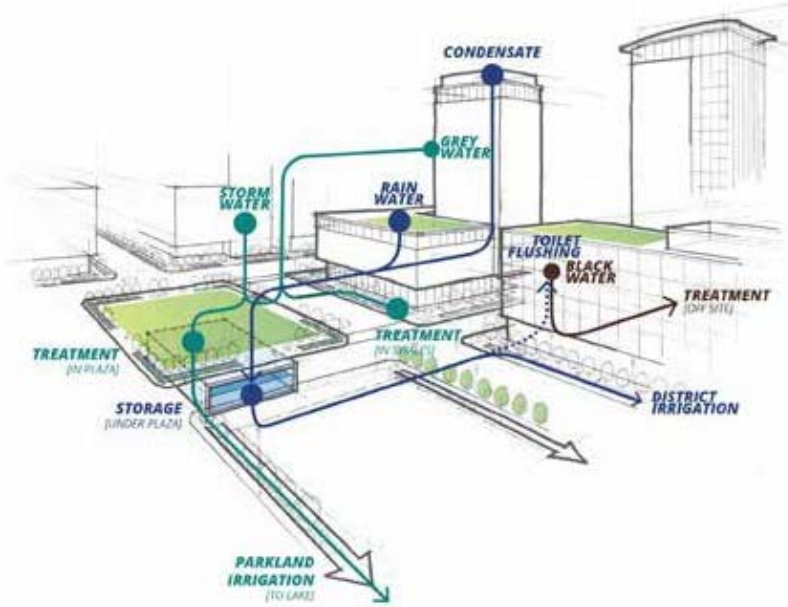
Site Design Features:

- encourage low impact development as an integral part of new developments



SOUTH CENTRAL WATERFRONT





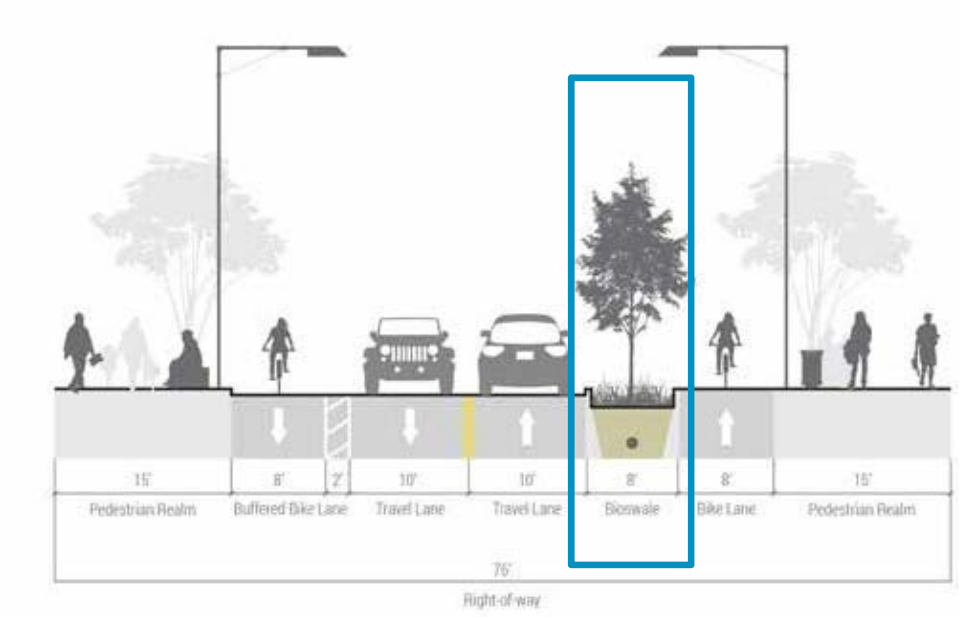
Sustainability Case Study

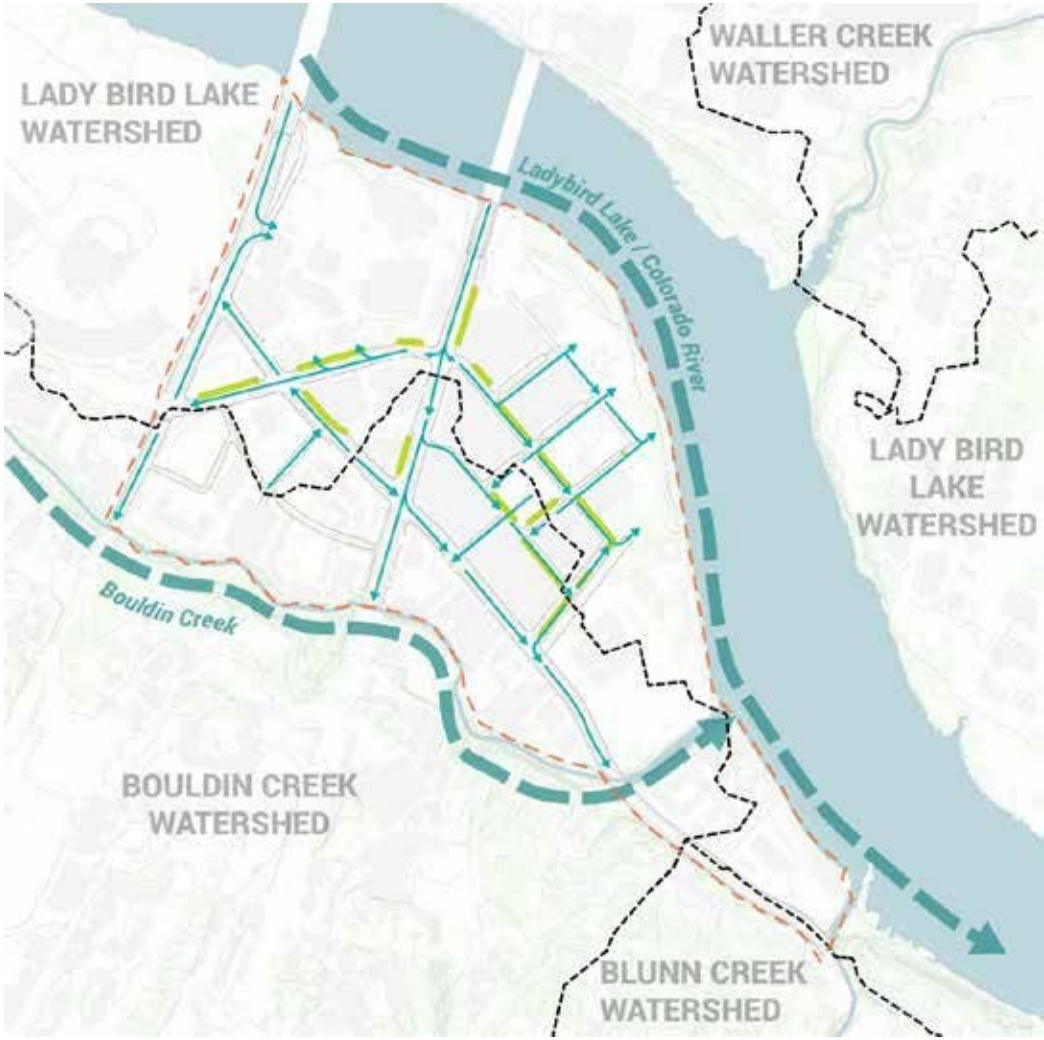
- understanding how water flows through the study area ensures that runoff is properly treated and mitigates flooding from heavy rainfall

SOUTH CENTRAL WATERFRONT

Green Streets Features

- **direct and manage stormwater in the public realm and streetscape through strategic grading and green infrastructure design**

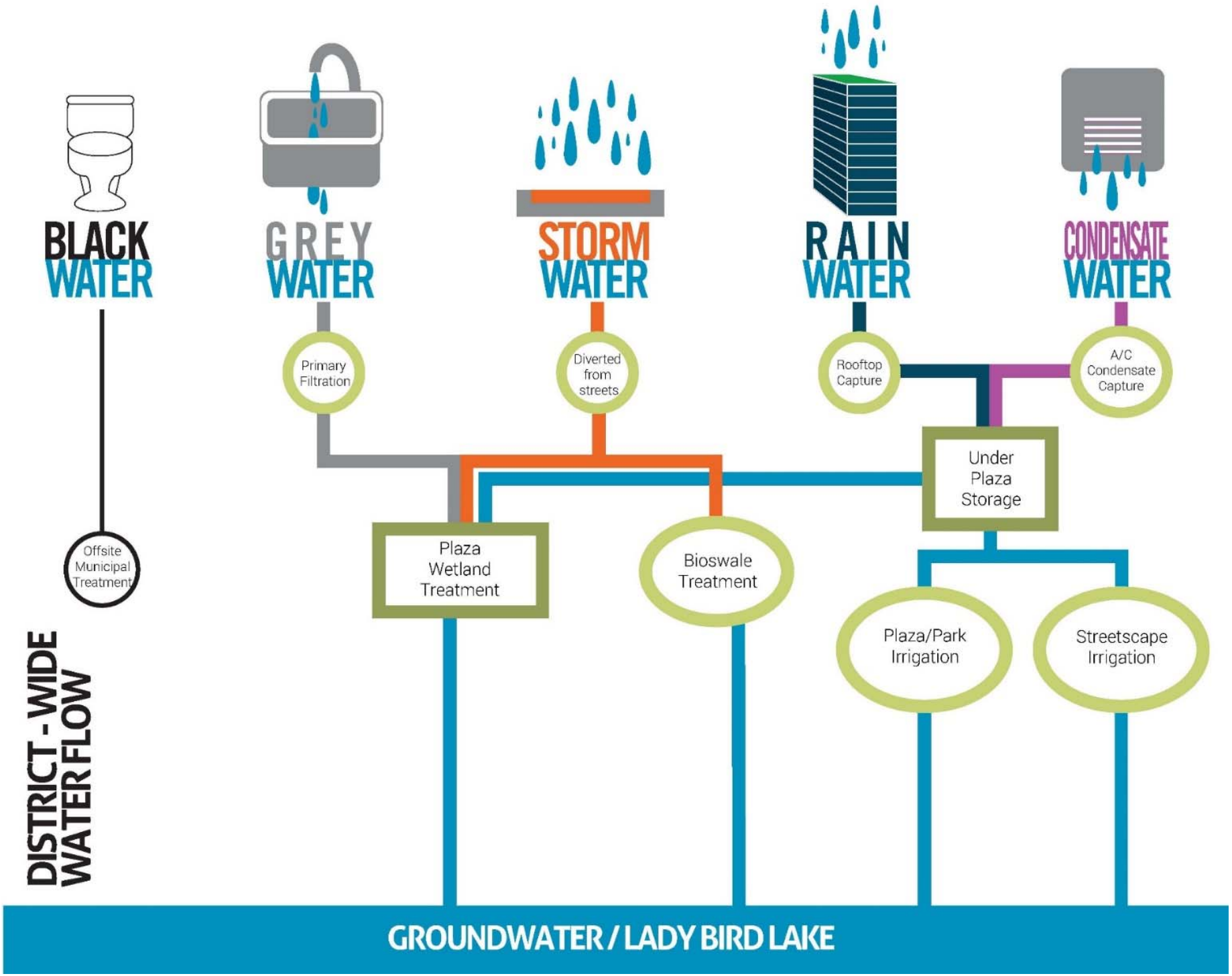




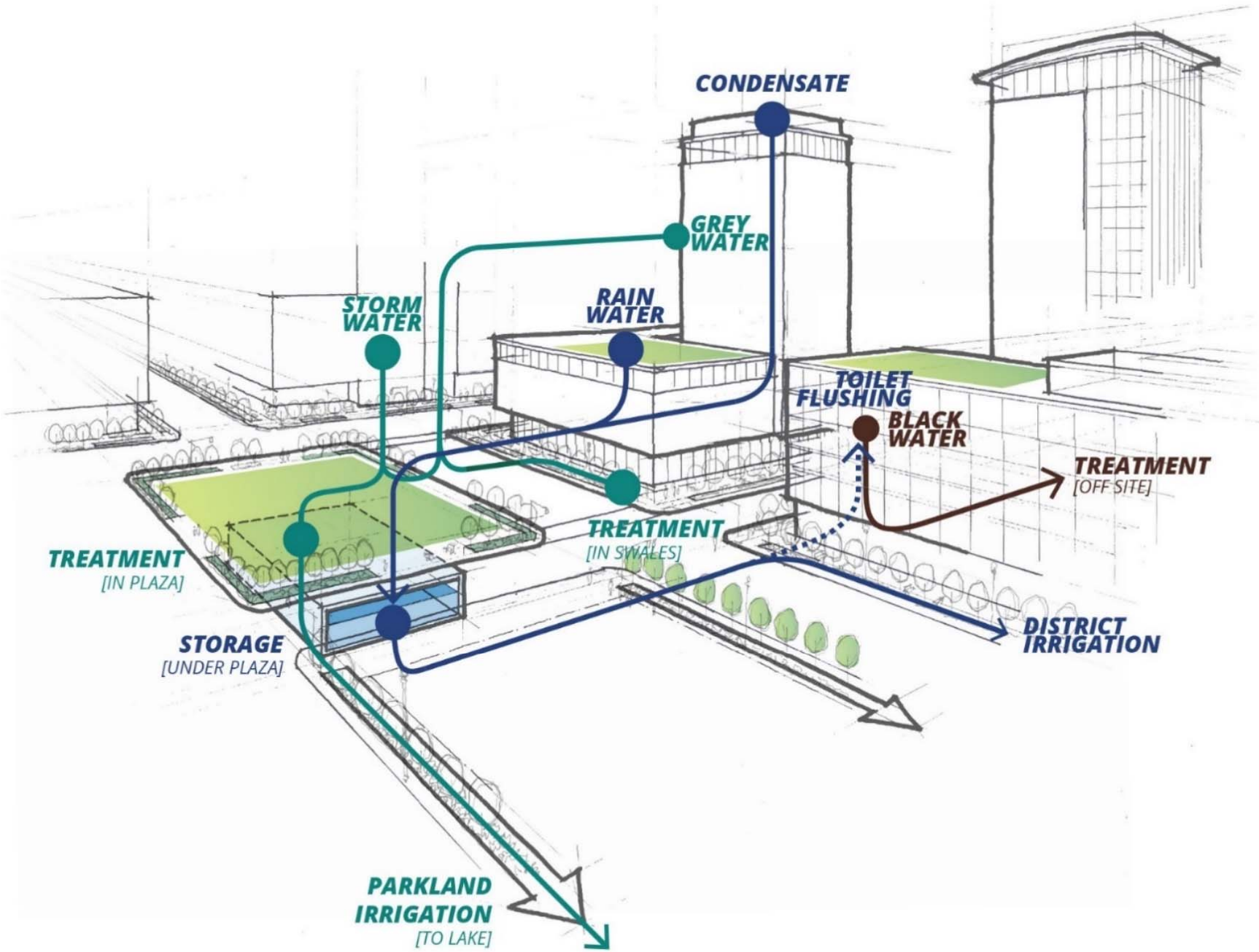
SOUTH CENTRAL WATERFRONT

Central Square

DISTRICT-THINKING: Water Cycling



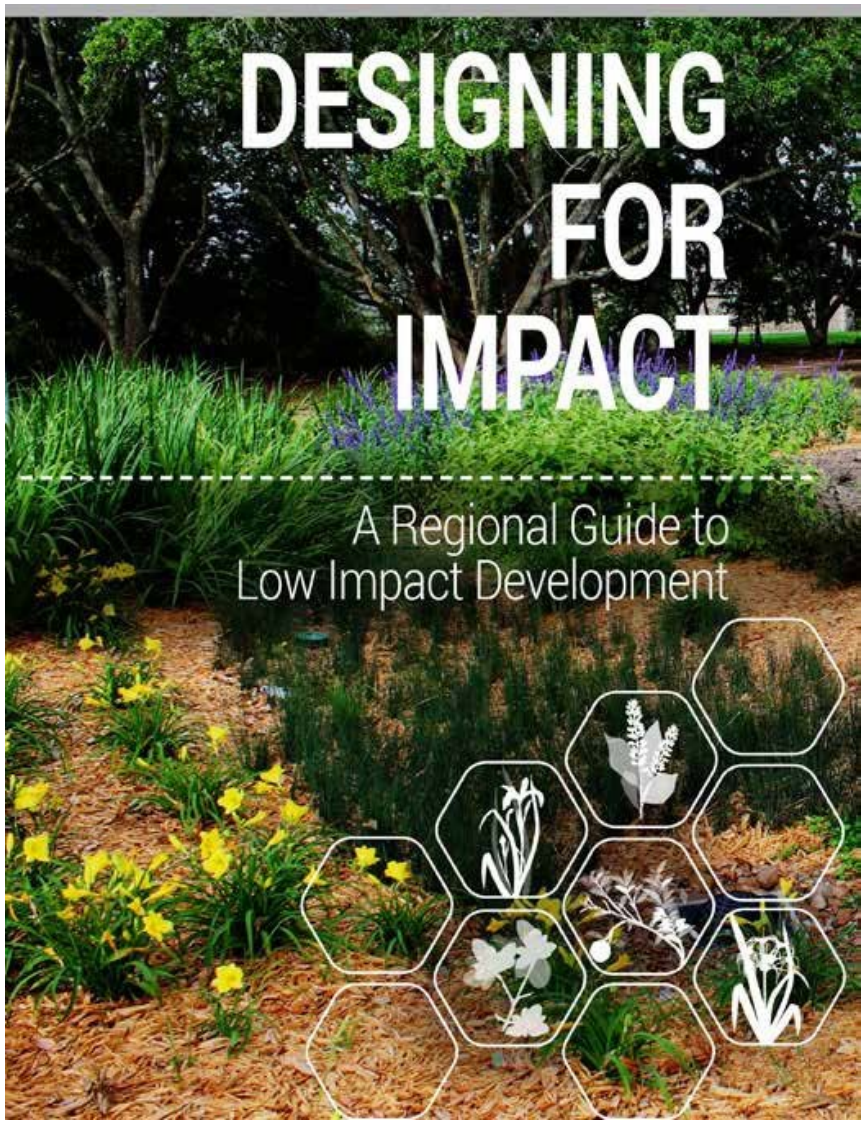
DISTRICT-THINKING: Water Cycling



SOUTH CENTRAL WATERFRONT

Stephanie Bower | Architectural Illustration

RESOURCE:



http://www.h-gac.com/community/low-impact-development/documents/Designing-For-Impact-Guide-for-Governments.pdf

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