

MICRO to MACRO

GREEN INFRASTRUCTURE
IN THE GULF SOUTH

aSakura
robinSon

GREEN INFRASTRUCTURE

MACRO LEVEL

Conservation & Restoration

BAYS

RIVERS

MICRO LEVEL

“Low-Impact Development”

**TREATMENT
TRAINS**

BAYOUS

**STORMWATER
WETLANDS**

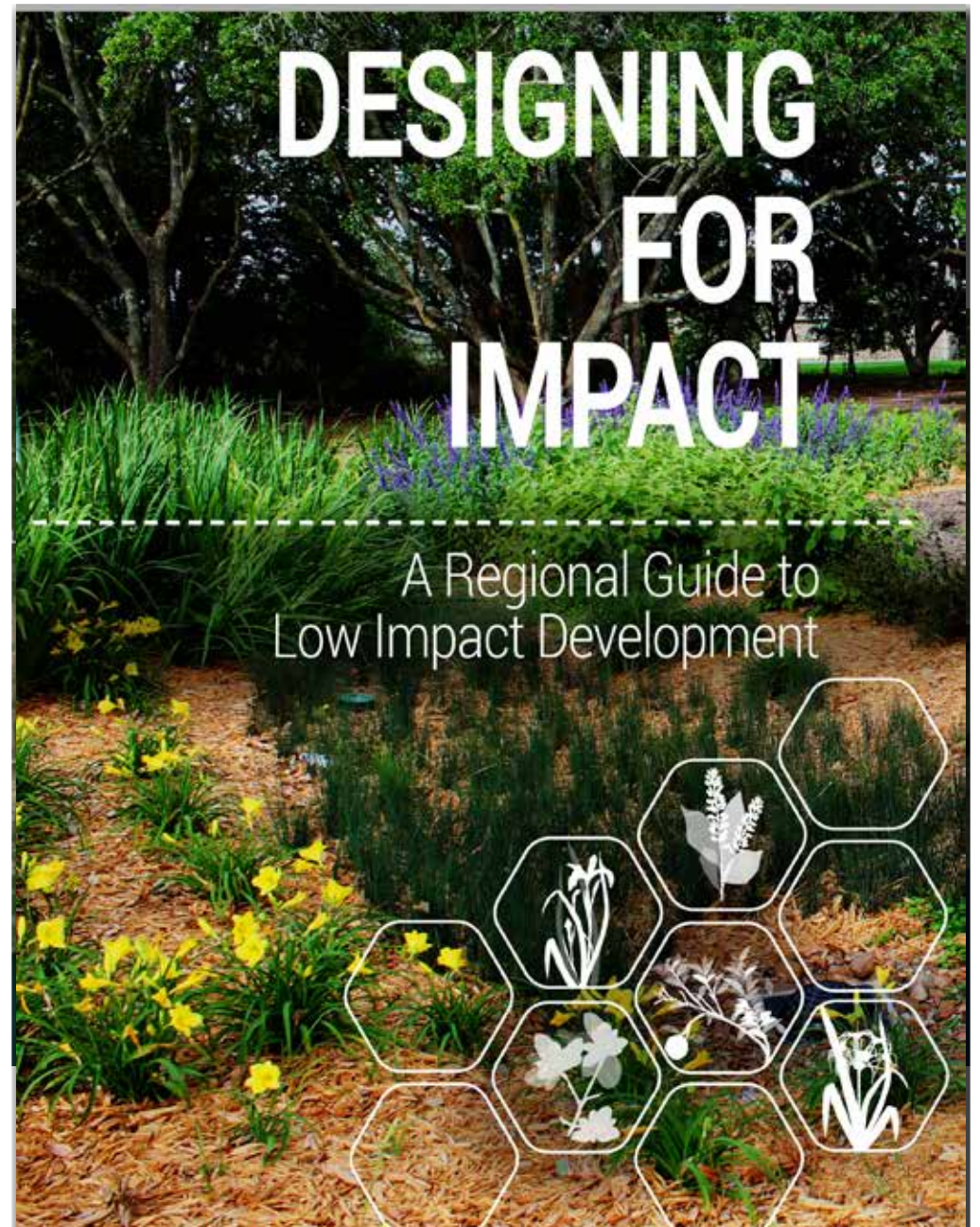
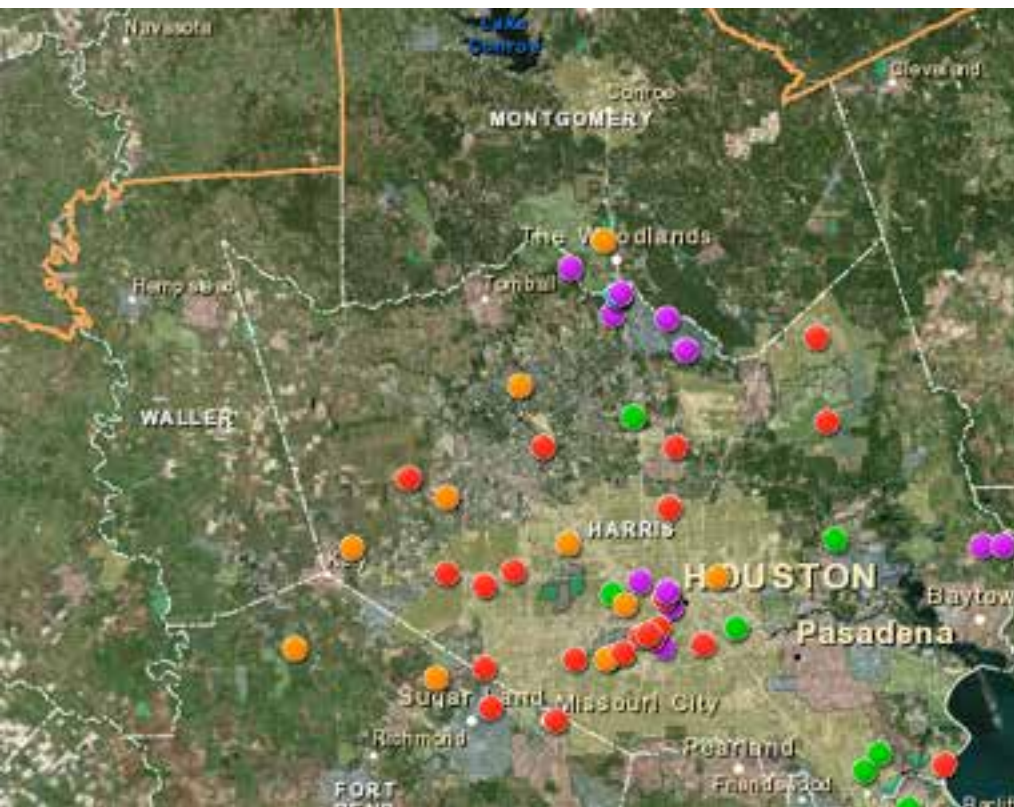
**GREEN
ROOF**

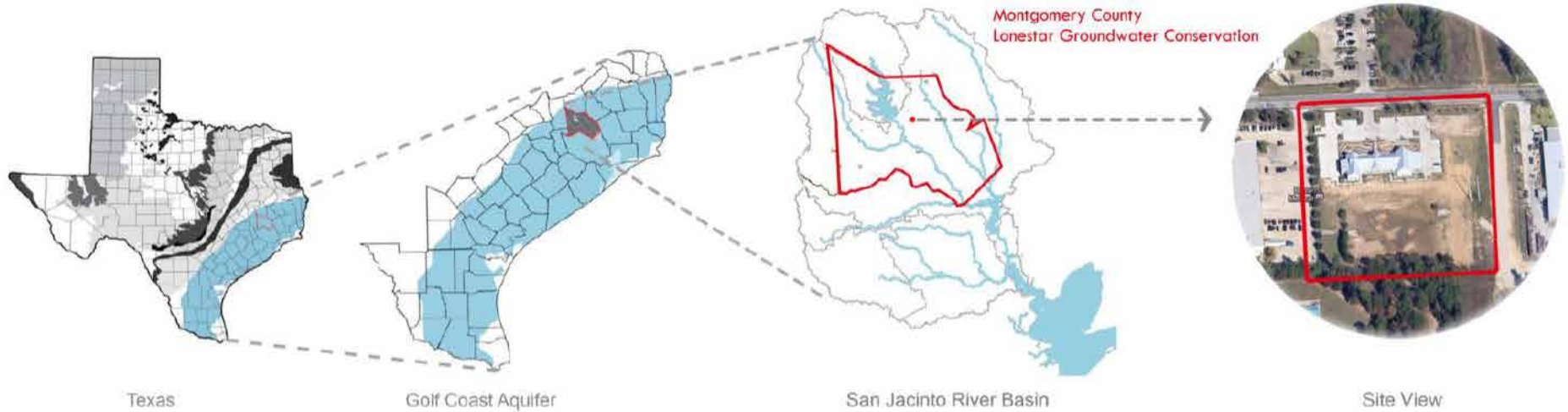
**BIORETENTION
SYSTEMS**

**STORMWATER
HARVESTING**

**PERMEABLE
PAVING**







Detention Pond



Lonestar Groundwater Conservation Office



Transmission Corridor



ELEVATED
WALKWAY

UNPAVED
PATH

RAINWATER

RAIN
GARDEN

XERISCAPE
GARDEN

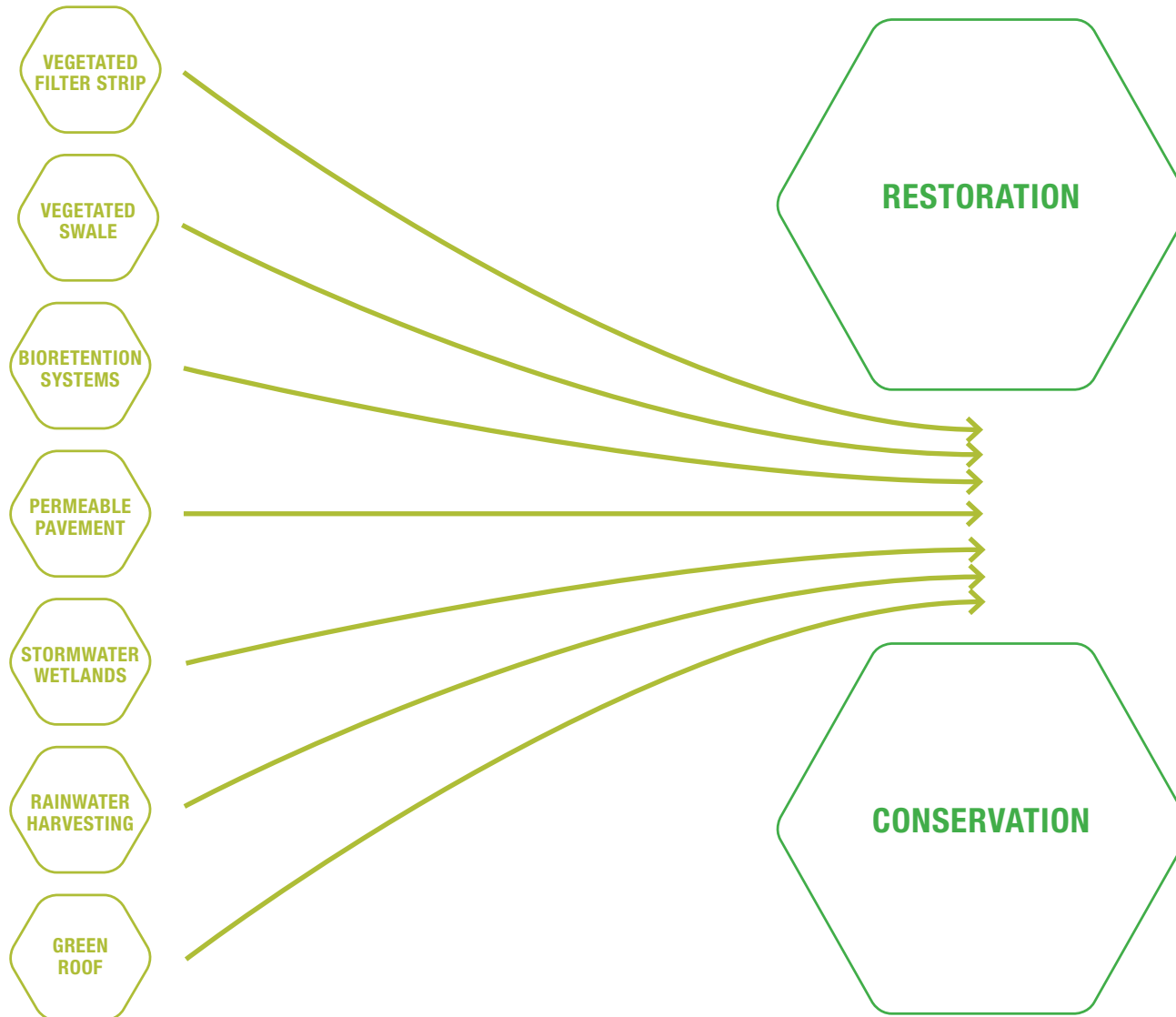
FILTER STRIP
GARDEN

FLOODABLE
GARDEN

0.94 Infiltration Rate Of
Rain Garden
0.90 Infiltration Rate Of
Xeriscape Garden & Floodable Garden
0.75 Infiltration Rate Of
Filter Stripe Garden

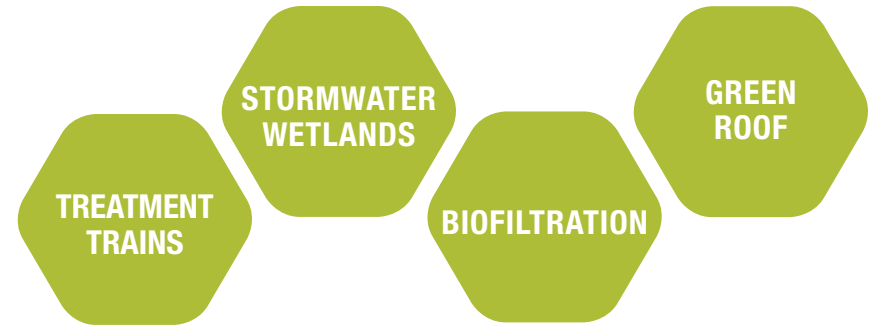
MACRO LEVEL LID BMPs LARGE SITES

+ CONSERVATION &
RESTORATION

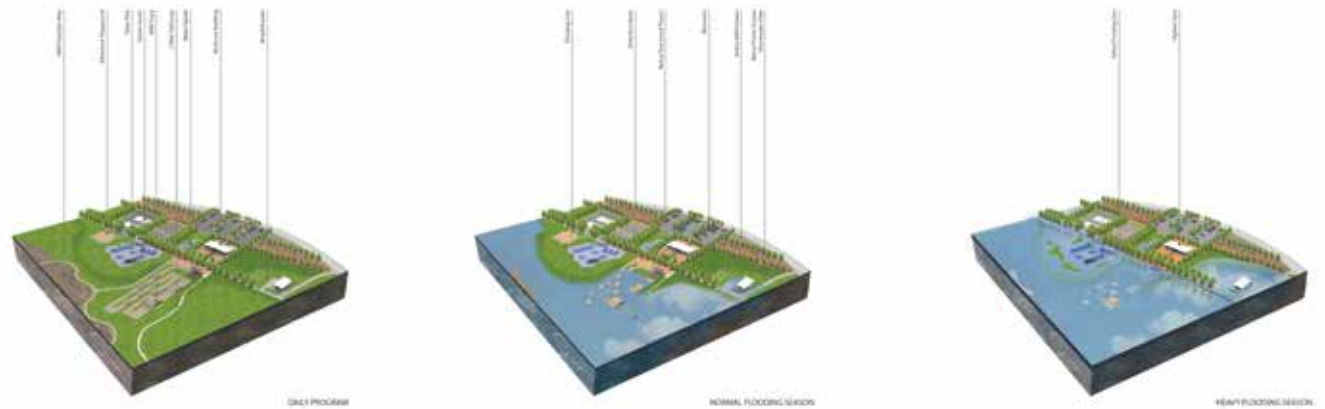


MACRO LEVEL LID BMPs

LARGE SITES



GANNOWAY PARK **bioretention**



GENE GREEN PARK **stormwater wetlands**



WILLOW WATERHOLE **conservation and restoration**

MACRO LEVEL LID BMPs

CASE STUDY

MD ANDERSON PARK



MD ANDERSON PARK

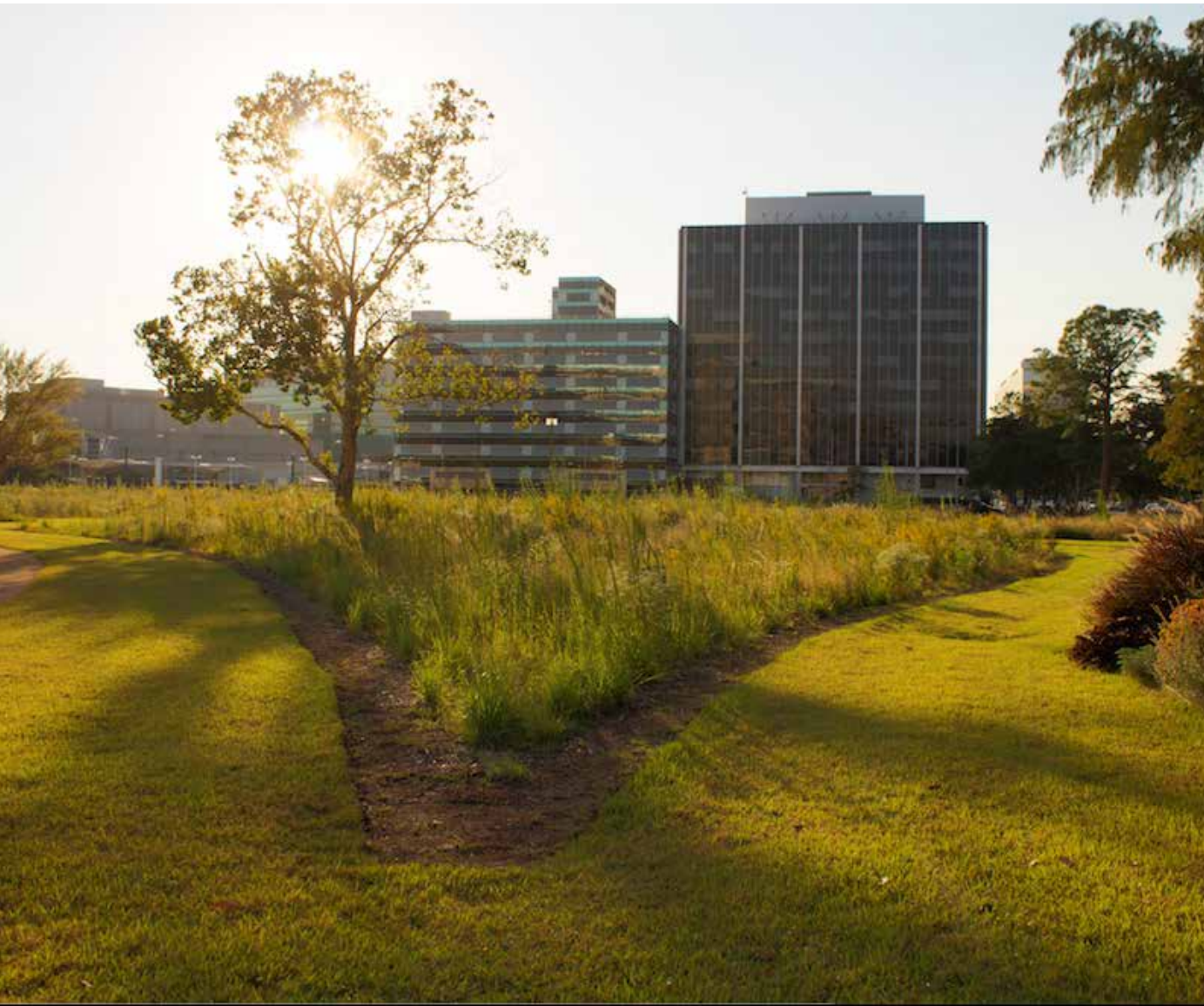
Landscape Architect: Asakura Robinson

Planting Consultants: Jaime Gonzalez and Scott Barnes

NATIVE
PLANTINGS

PERMEABLE
PAVING

BIORETENTION
SYSTEM



MACRO LEVEL LID BMPs

CASE STUDY

GANNOWAY LAKE PARK



GANNOWAY LAKE PARK

Landscape Architect: Asakura Robinson

Civil Engineer: Walter P. Moore

Environmental Consultant: Berg Oliver

NATIVE
PLANTINGS

RAINWATER
HARVESTING

PERMEABLE
PAVING

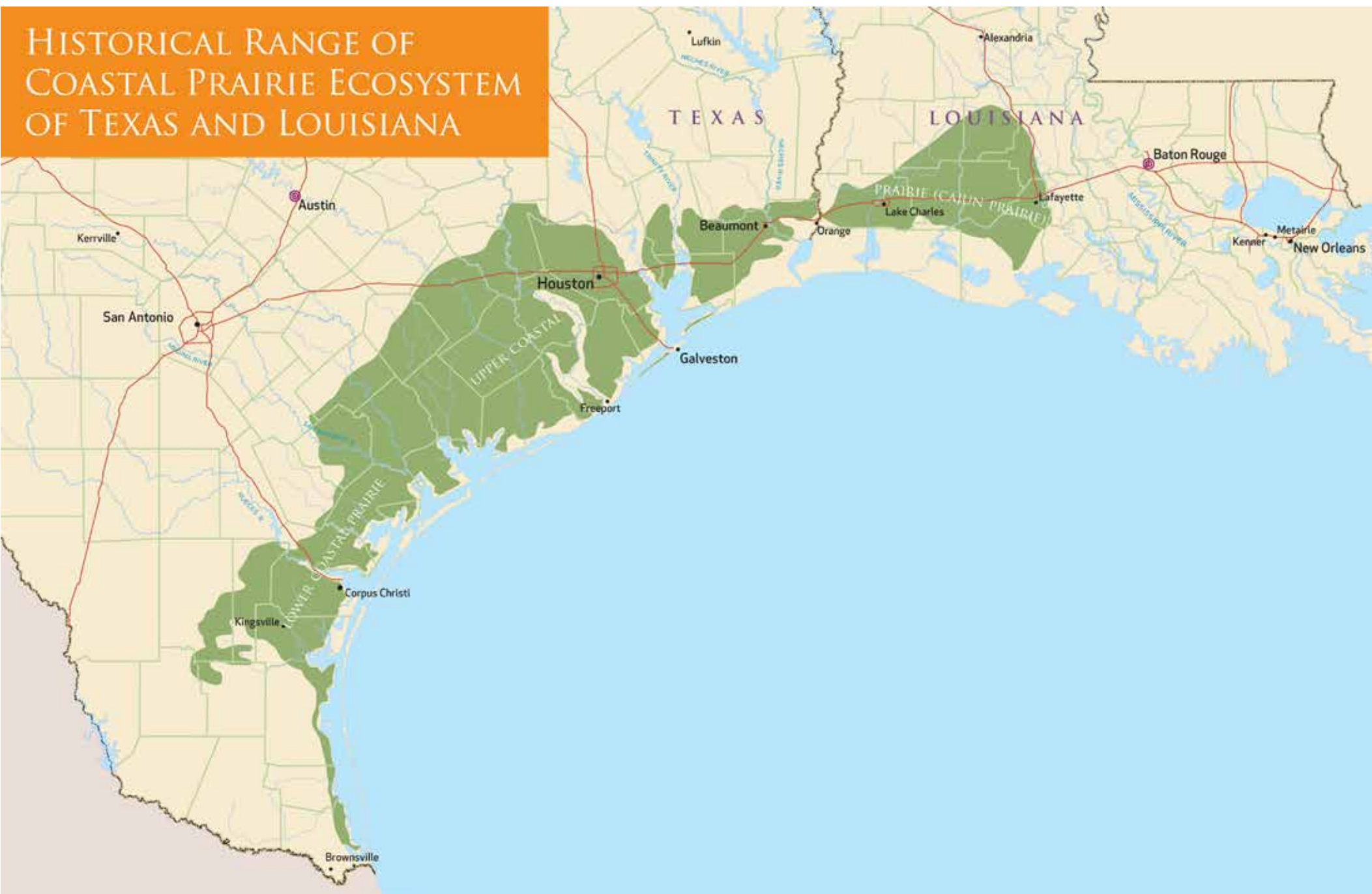
BIORETENTION
SYSTEM

STORMWATER
WETLANDS





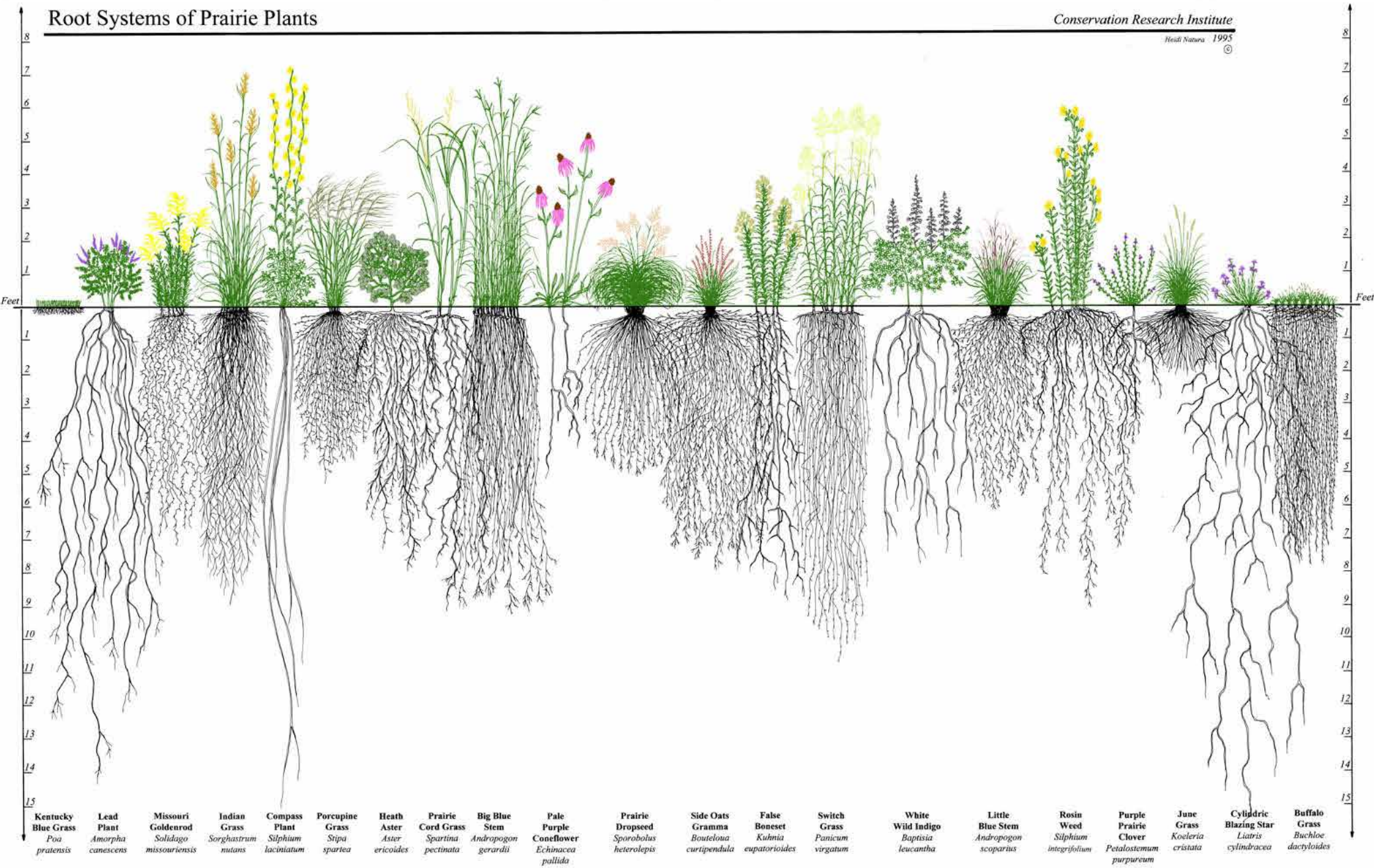
HISTORICAL RANGE OF COASTAL PRAIRIE ECOSYSTEM OF TEXAS AND LOUISIANA

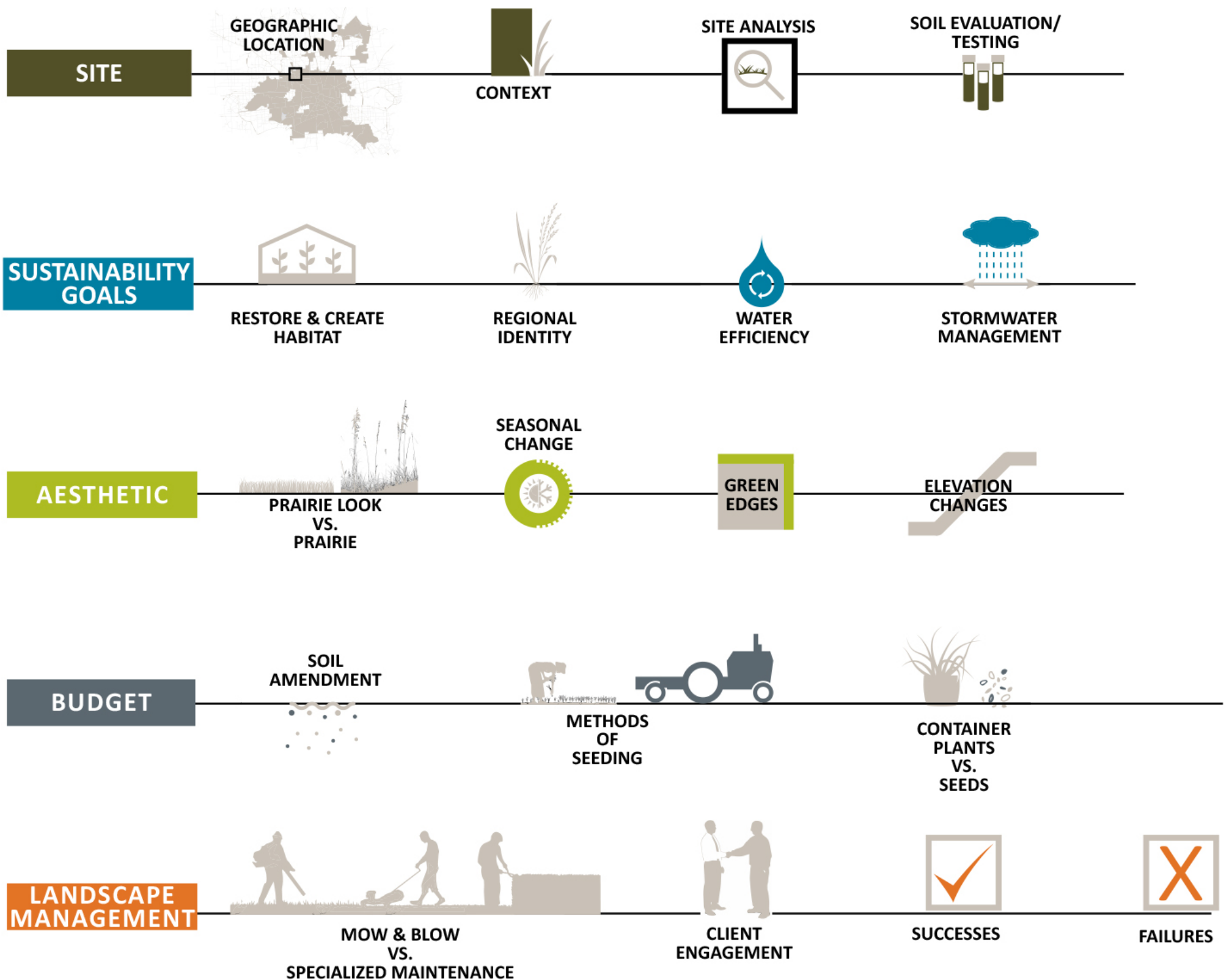


Root Systems of Prairie Plants

Conservation Research Institute

Heidi Natura 1995
©





MICRO LEVEL LID BMPs

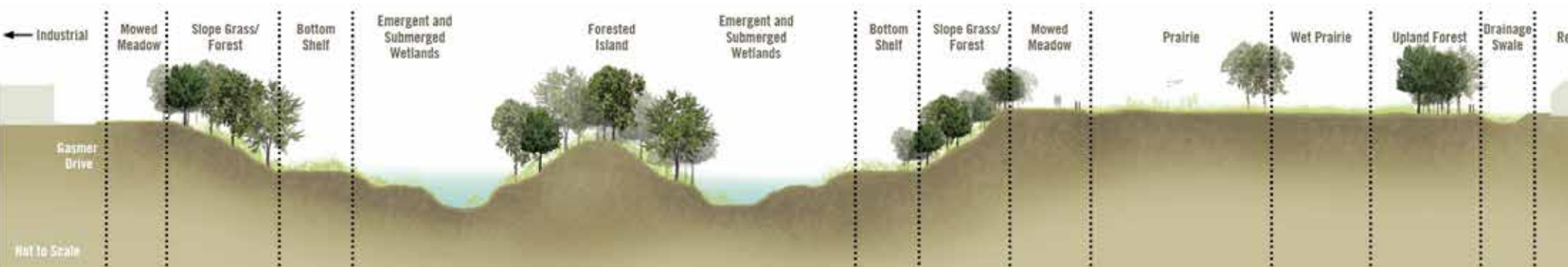
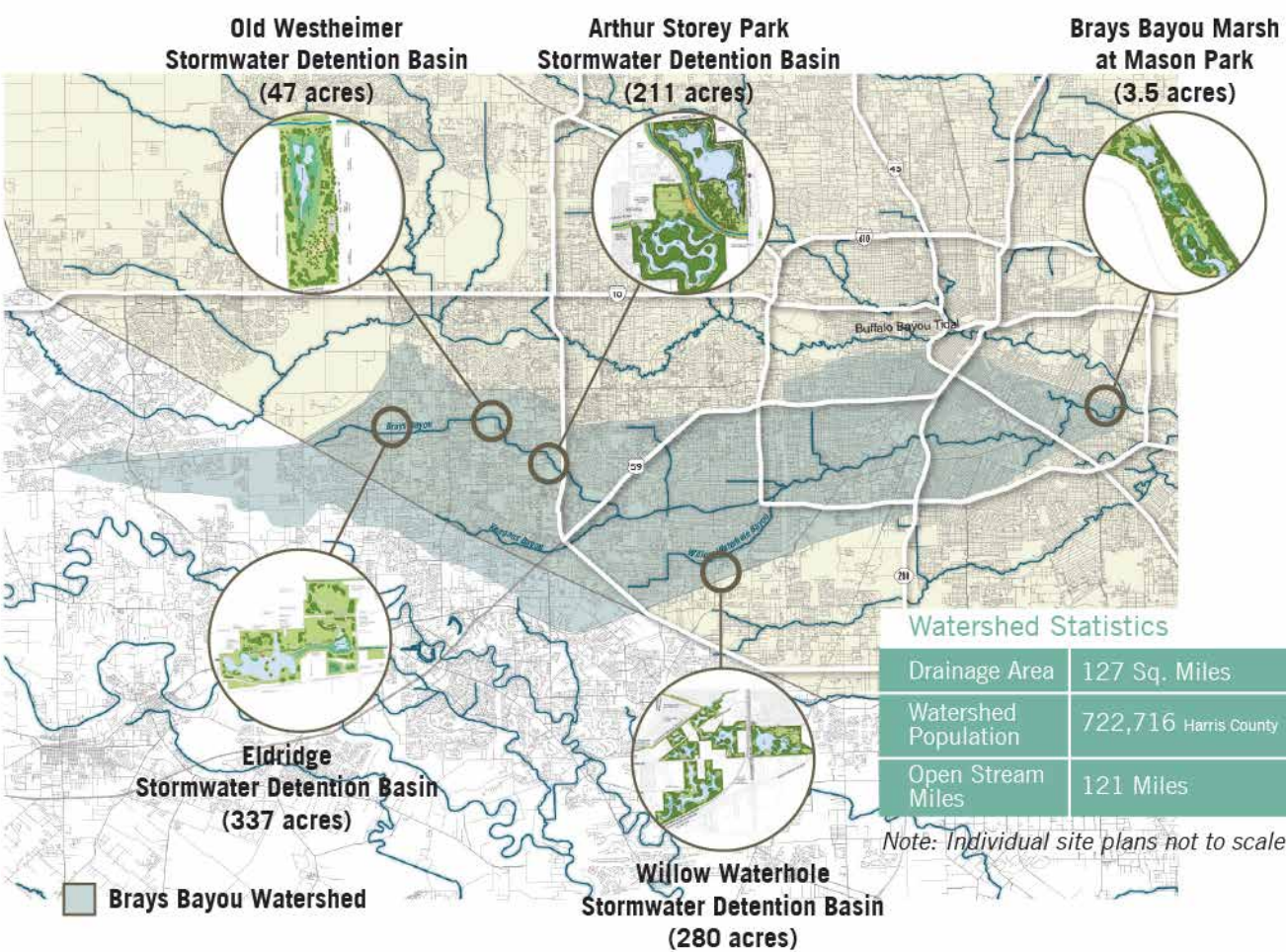
CASE STUDY

WILLOW WATERHOLE



WILLOW WATERHOLE PUBLIC ACCESS PLAN

Planner: Asakura Robinson





MACRO LEVEL CONSERVATION & PRESERVATION

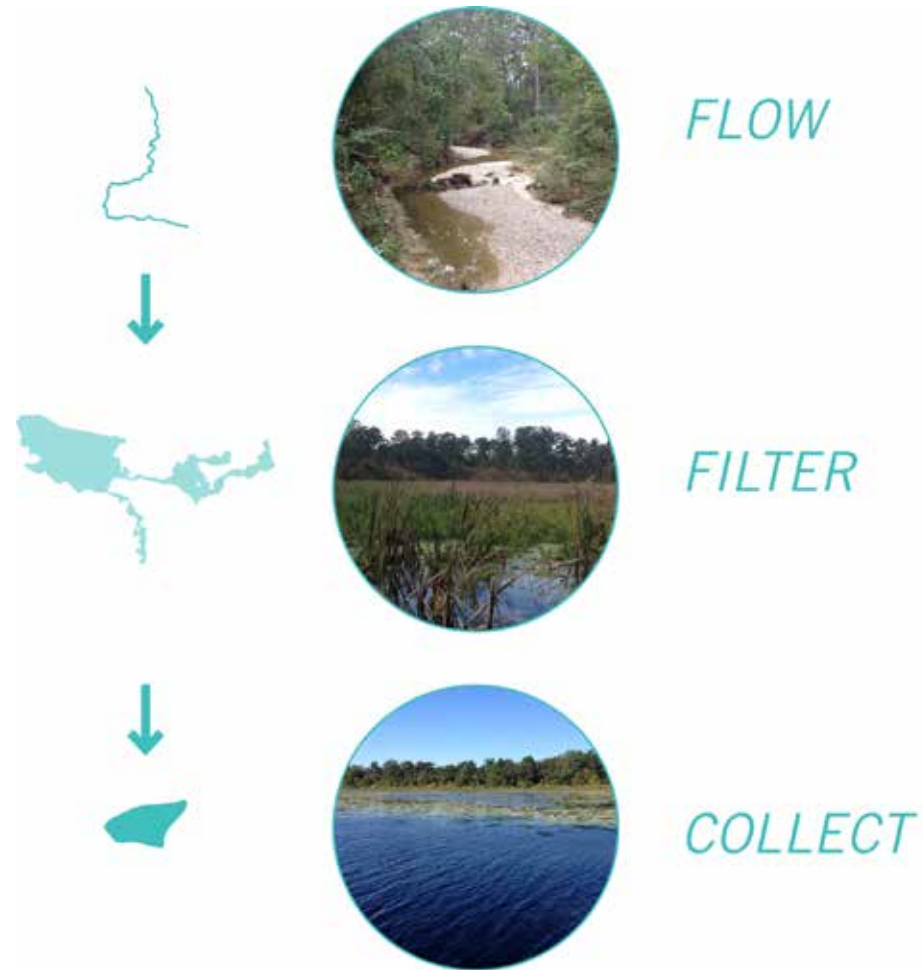
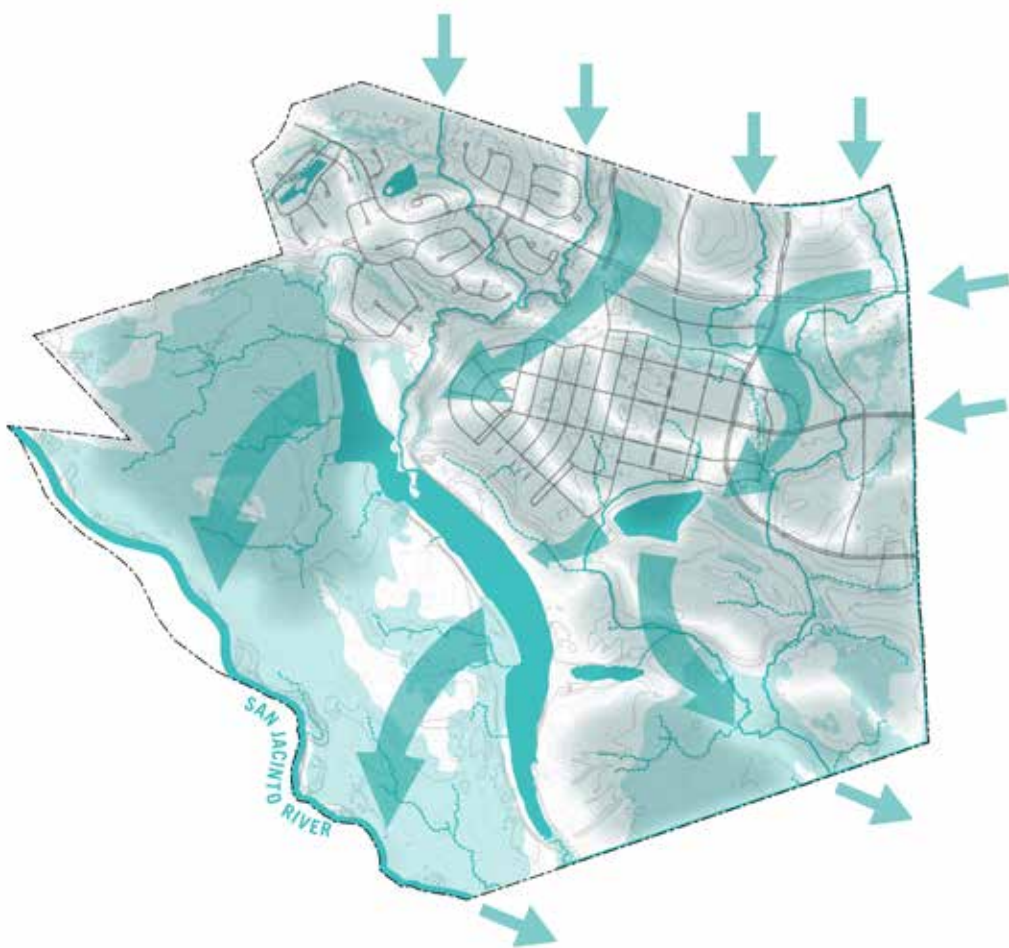
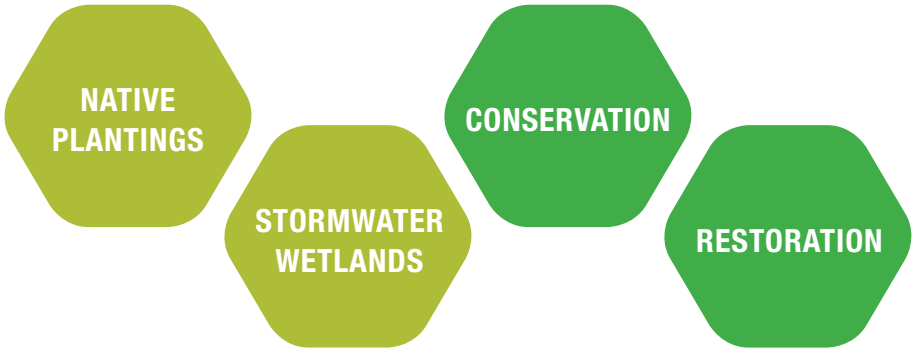
CASE STUDY

GRAND CENTRAL PARK



GRAND CENTRAL PARK CONSERVATION VISION

Landscape Architect: Asakura Robinson





CONSERVATION

Parks and open spaces which encompass the preserved or minimally altered existing natural environment of Grand Central Park



RECREATION

Parks and open spaces which serve as the critical interface between the built and natural environments of Grand Central Park



URBAN

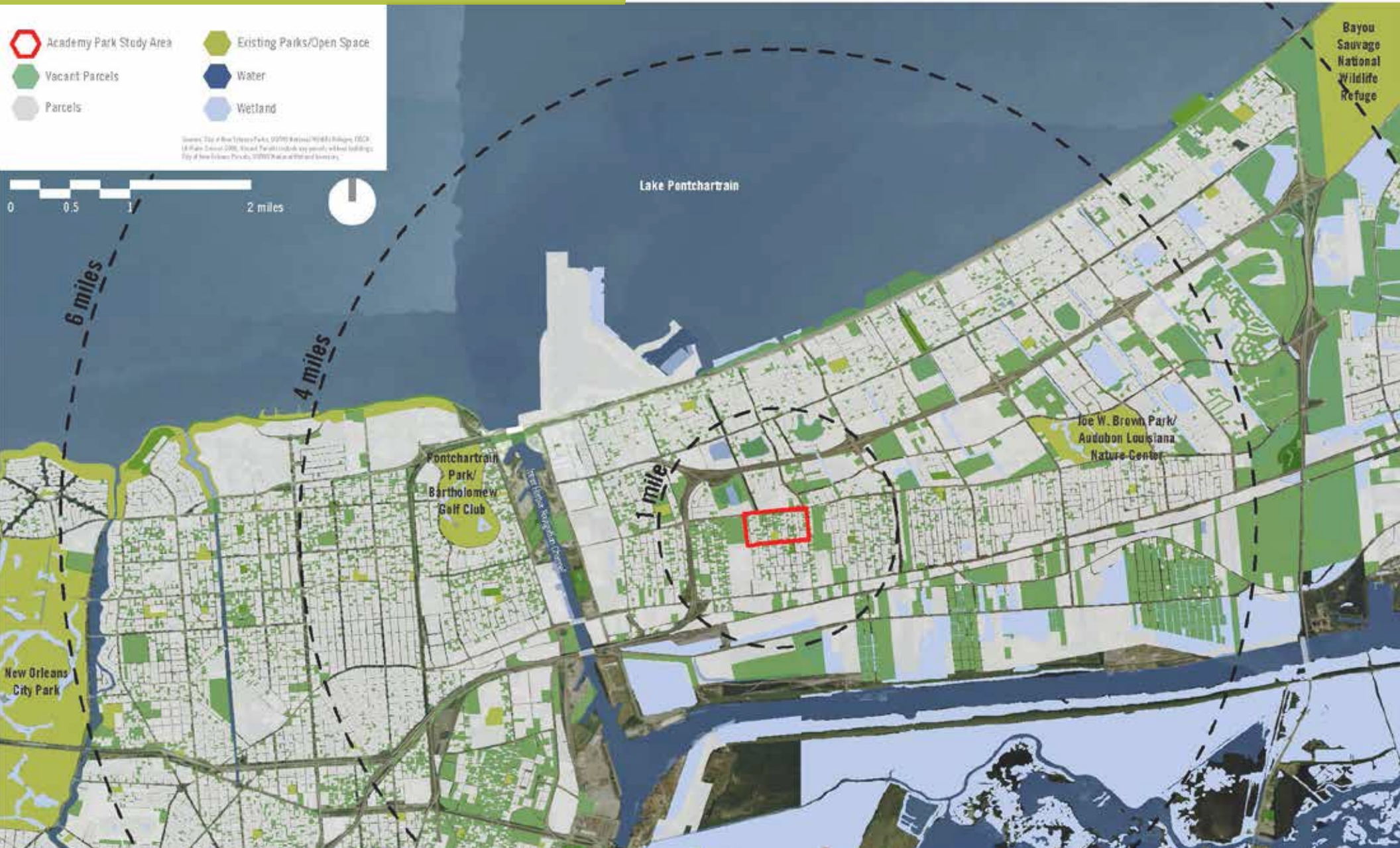
Parks and open spaces which are woven into the built environment of Grand Central Park



MACRO LEVEL CONSERVATION & PRESERVATION

CASE STUDY

ACADEMY PARK



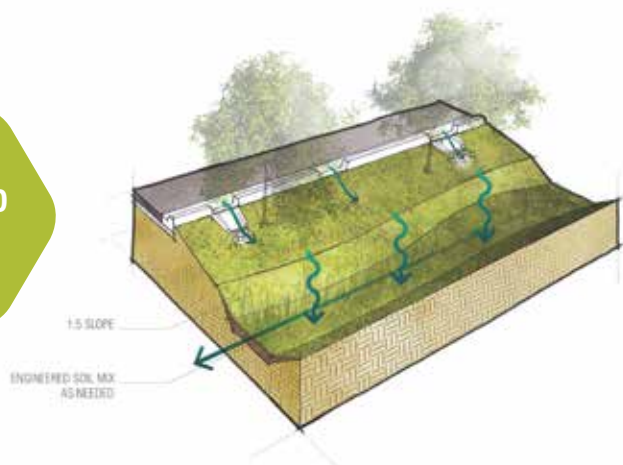
ACADEMY PARK GREEN INFRASTRUCTURE PLAN

Planner: Asakura Robinson

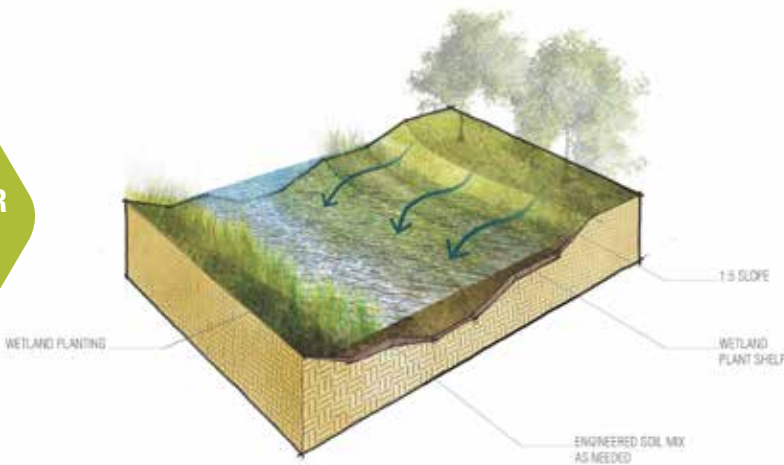
CONSERVATION

RESTORATION

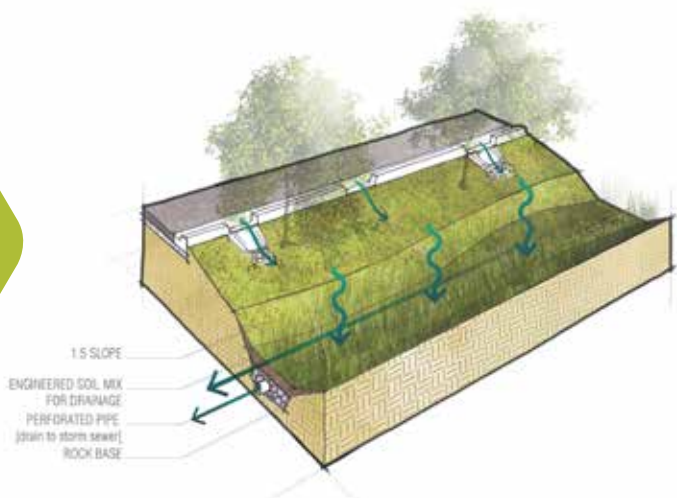
VEGETATED SWALE



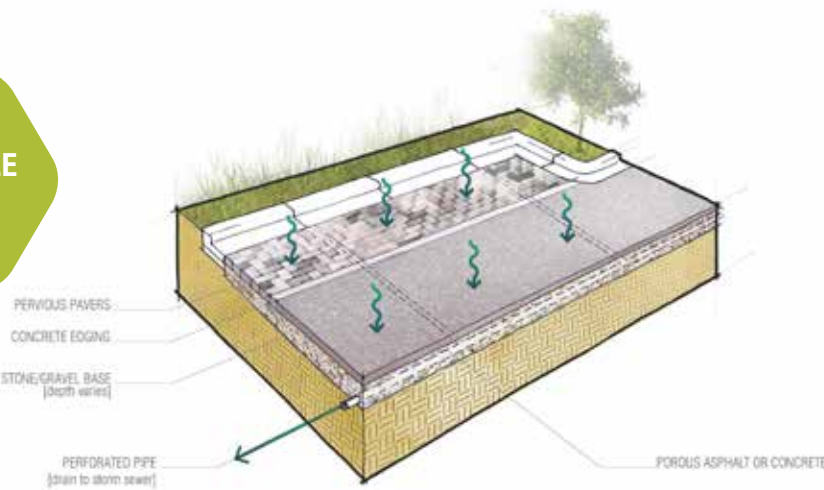
STORMWATER WETLANDS



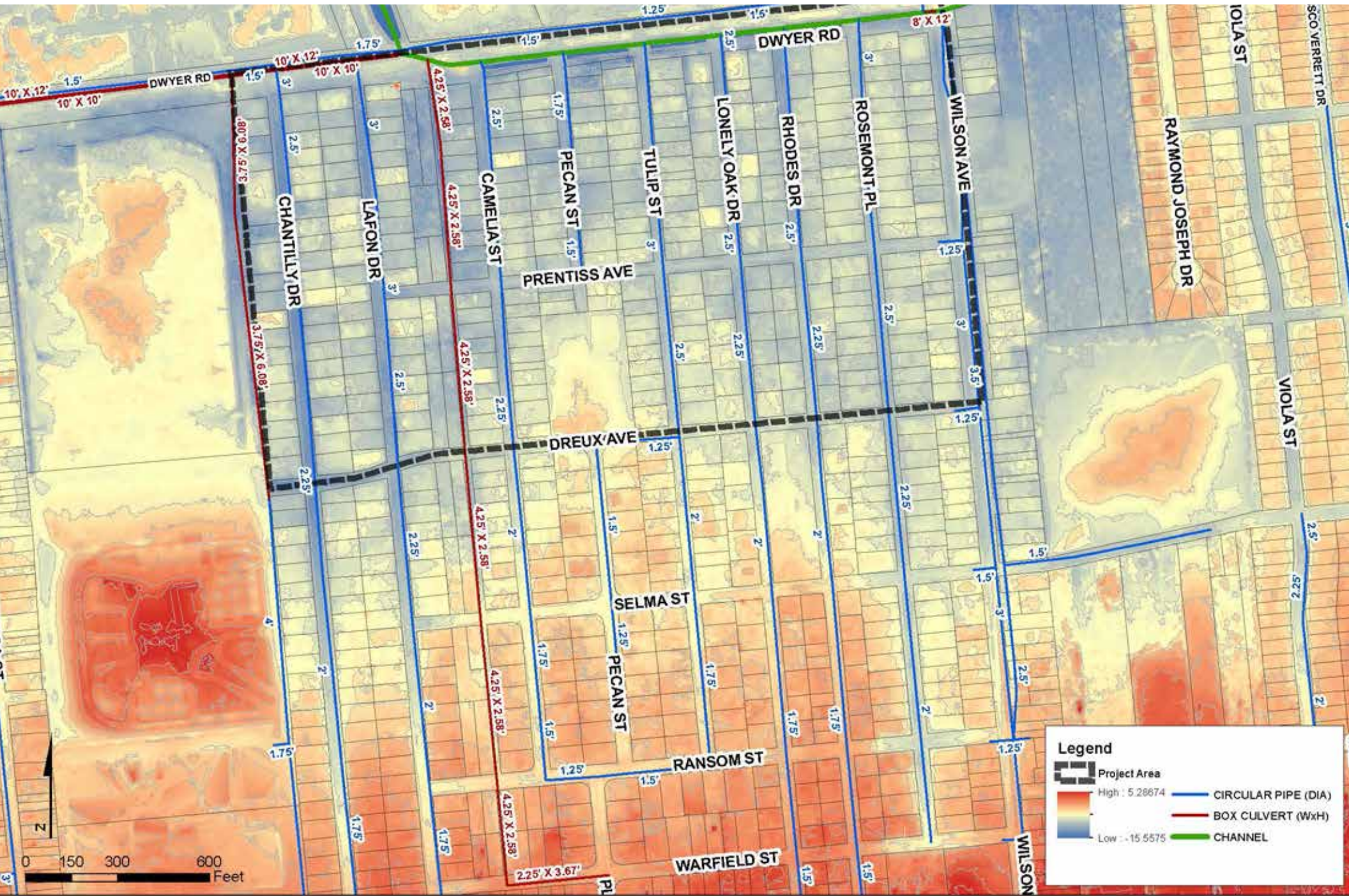
BIORETENTION SYSTEMS



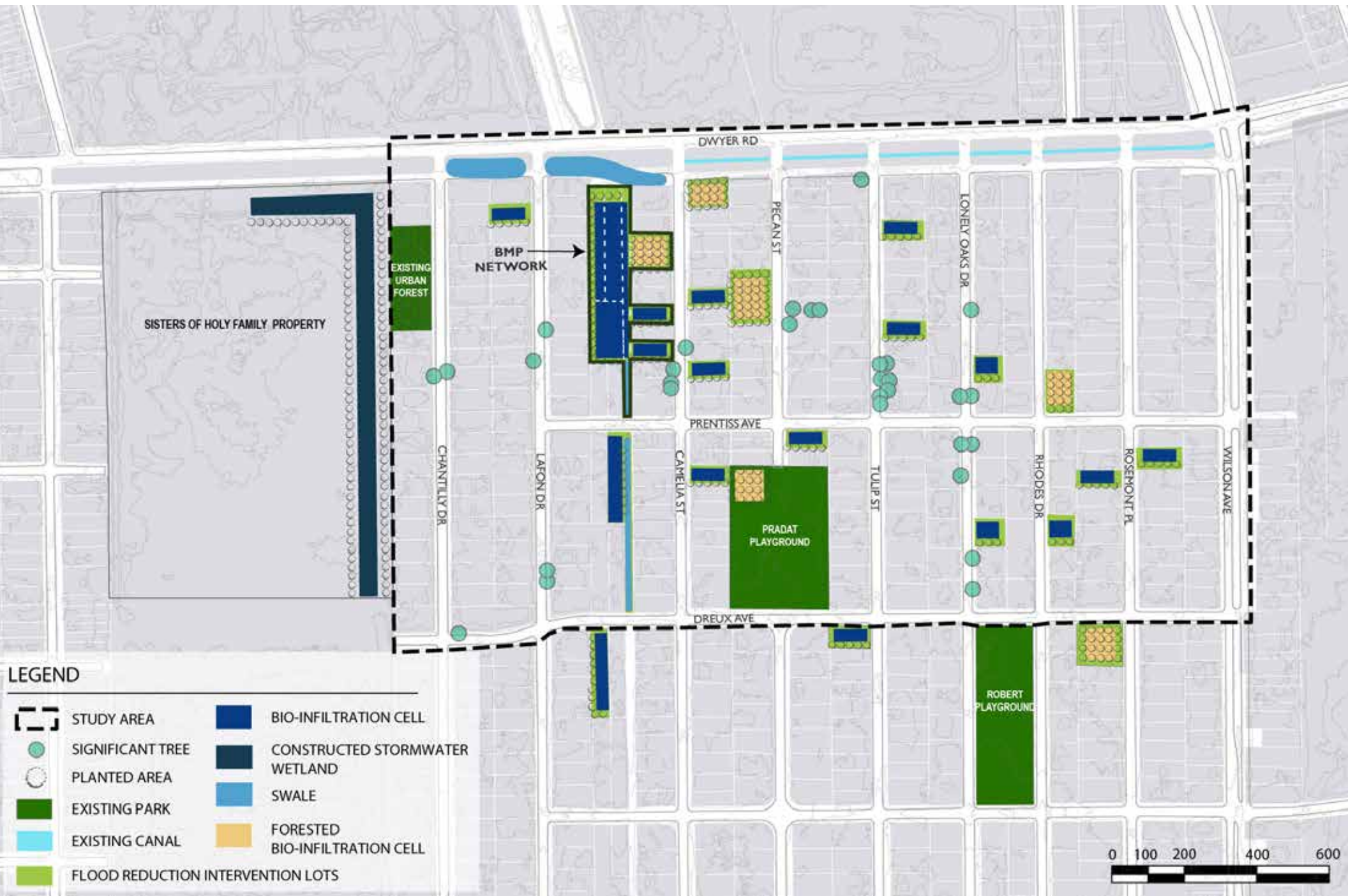
PERMEABLE PAVING



EXISTING DRAINAGE PLAN



CONCEPT PLAN



MACRO LEVEL CONSERVATION & PRESERVATION

CASE STUDY

SOUTH CENTRAL WATERFRONT



SOUTH CENTRAL WATERFRONT

Planner: Asakura Robinson

BIORETENTION
SYSTEMS

VEGETATED
SWALE

NATIVE
PLANTINGS

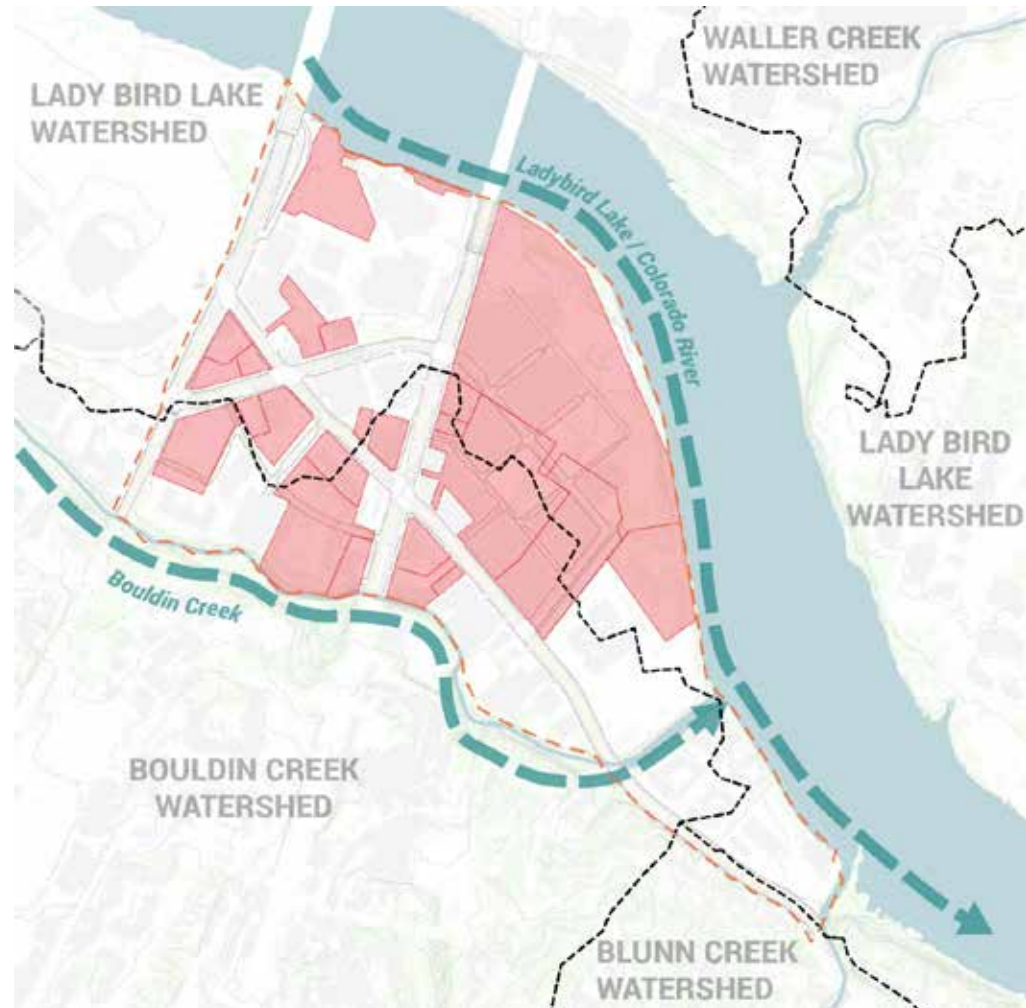
STORMWATER
WETLANDS

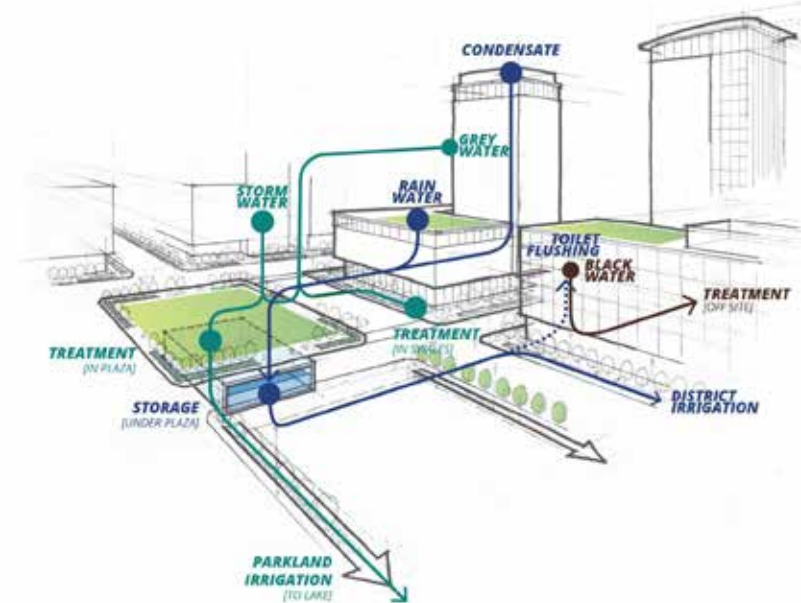
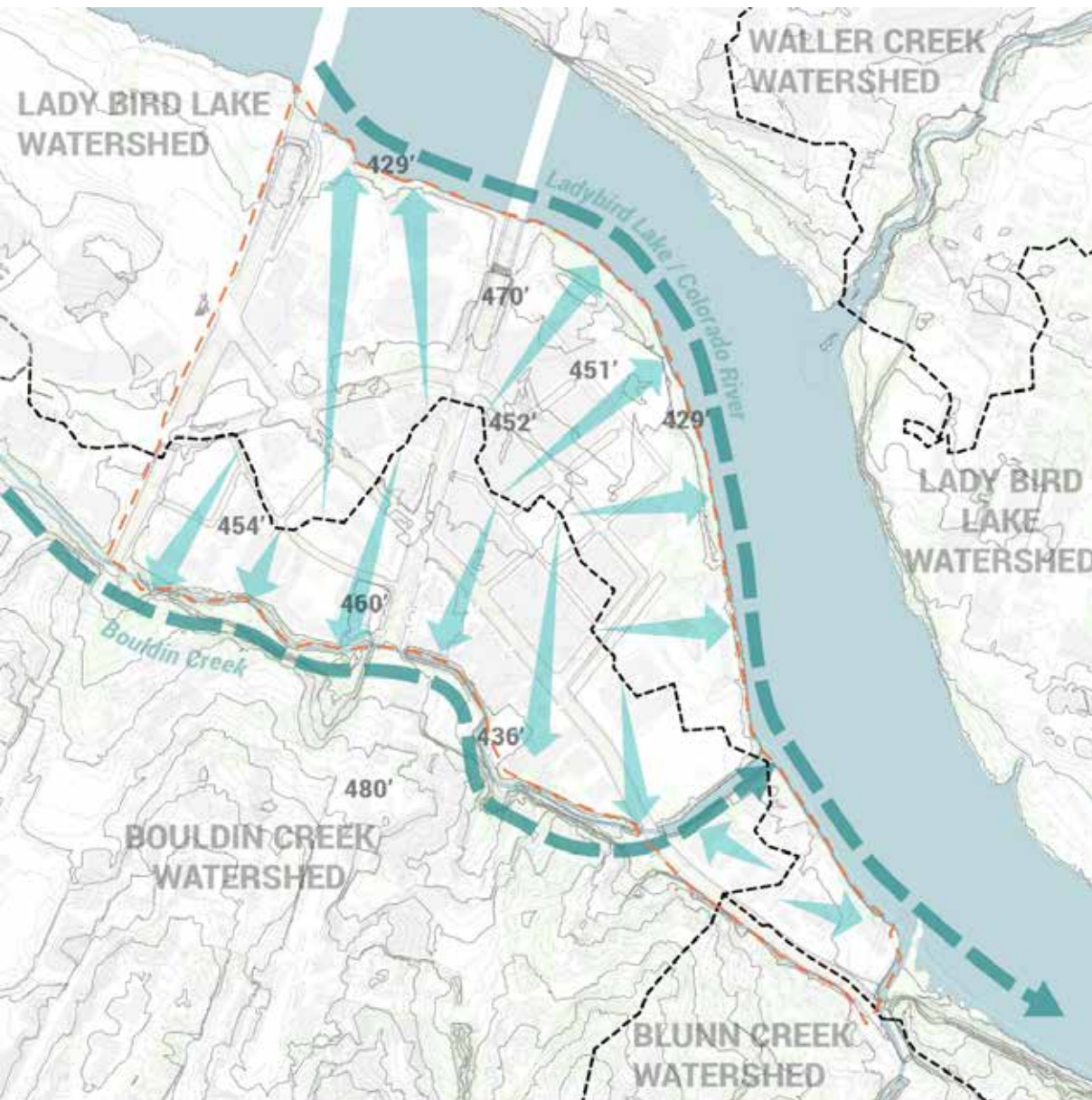
CONSERVATION

RESTORATION

SITE DESIGN FEATURES

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



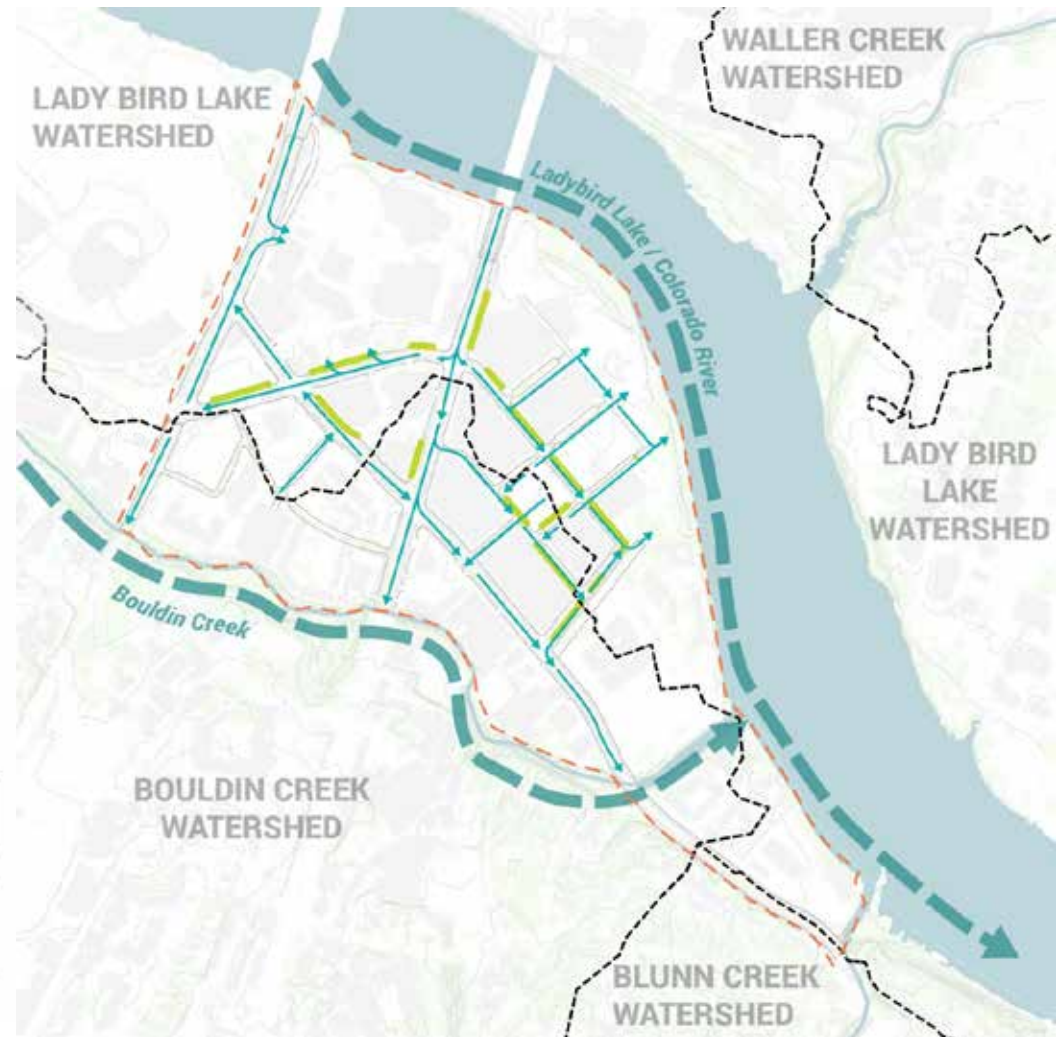
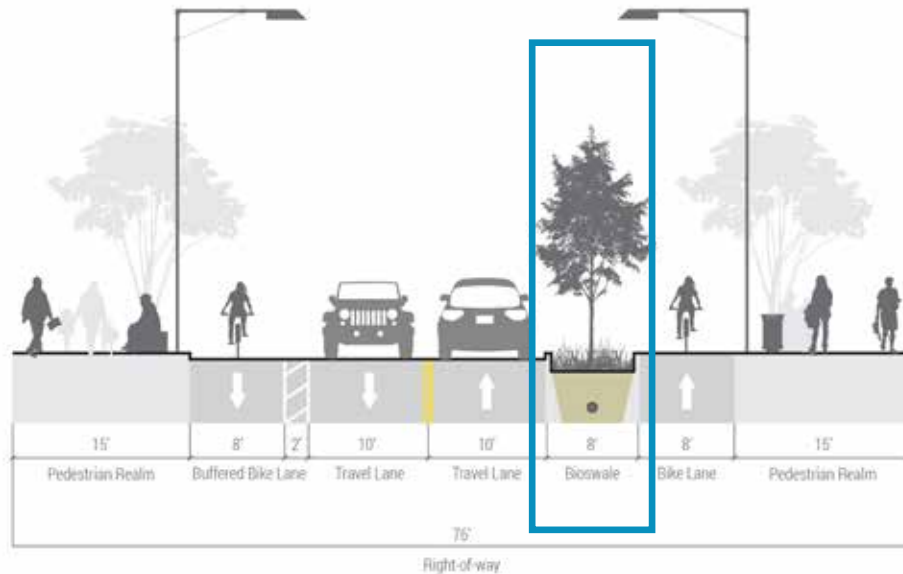


SUSTAINABILITY CASE STUDY

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

GREEN STREETS FEATURES

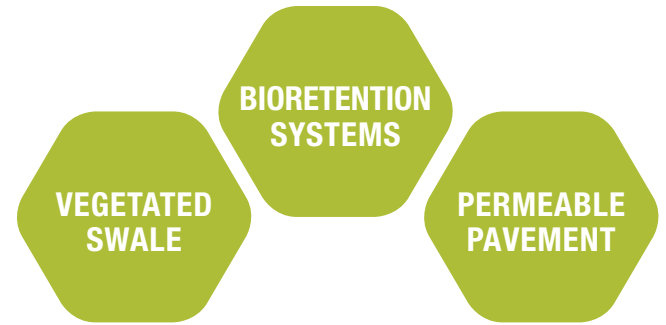
- Direct and manage stormwater in the public realm and streetscape through strategic grading and green infrastructure design





MICRO LEVEL LID BMPs

ROADWAY



BAGBY STREET **bioretention**



WESTPARK TOLLWAY **bioretention**



NORTH MAIN ST. **vegetated swale**



FT. SMITH WOONERF **permeable pavement**

MICRO LEVEL LID BMPs

SCHOOLS

BIORETENTION
SYSTEMS

RAINWATER
HARVESTING

GREEN
ROOF



LONE STAR COLLEGE ALDINE **Detention Pond**



CARNEGIE HIGH SCHOOL **green roof**



LONE STAR COLLEGE CONROE **bioretention**



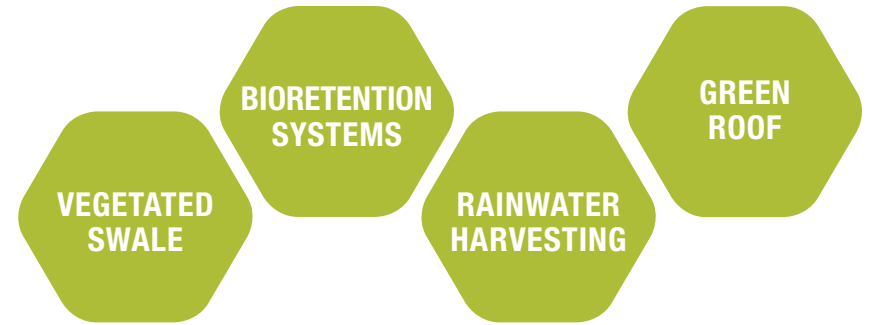
PECK ELEMENTARY **bioretention**



ROSS ELEMENTARY **rainwater harvesting**

MICRO LEVEL LID BMPs

CIVIC & MUNICIPAL



BAKER RIPLEY rainwater harvesting



IAH CONTROL BLDG bioretention



DICKINSON LIBRARY bioretention



FEDERAL RESERVE BANK green roof

MICRO LEVEL LID BMPs

CASE STUDY

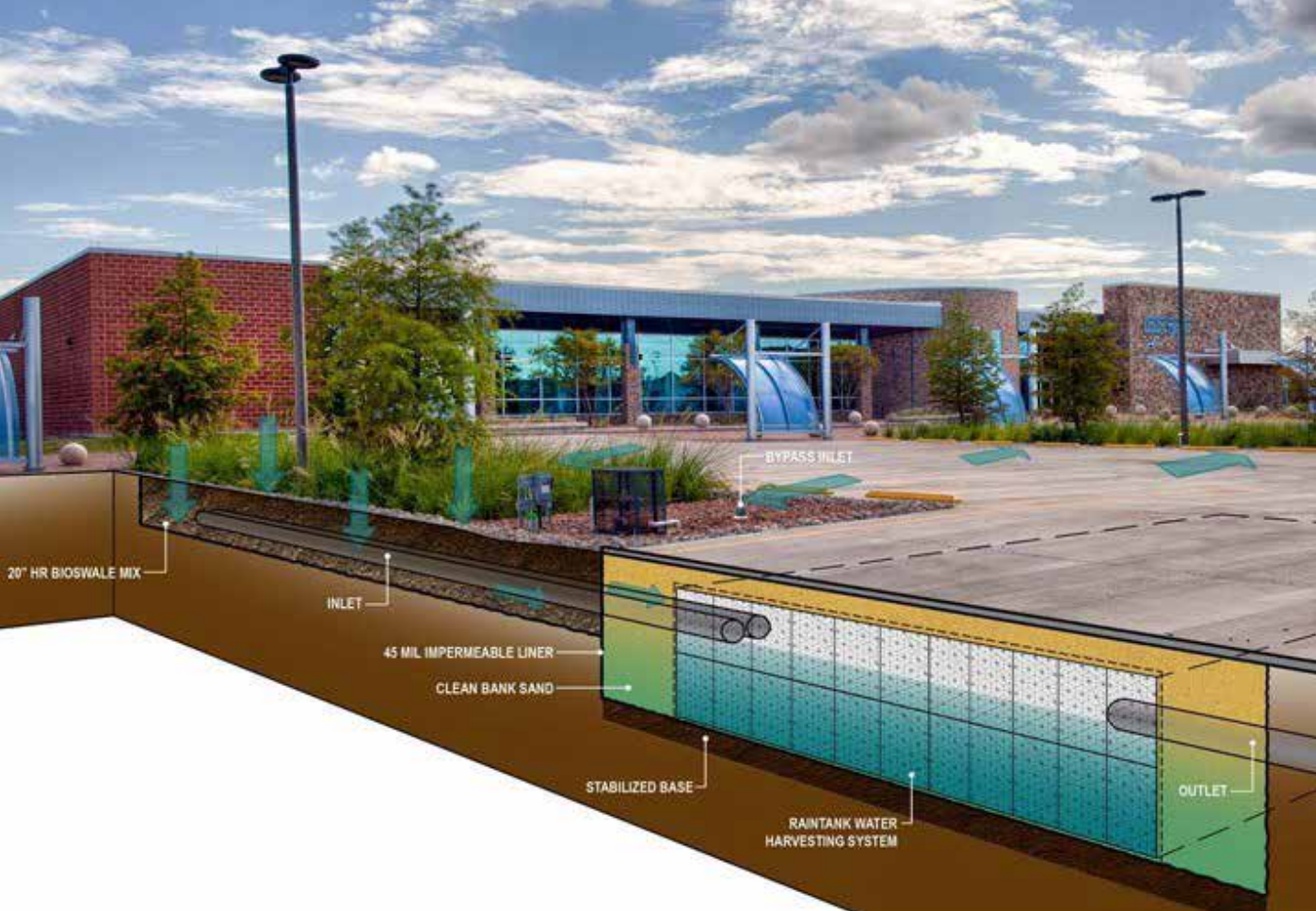
MEADOR LIBRARY



MEADOR LIBRARY

Architect: English & Associates

Landscape Architect: Asakura Robinson



BIOSWALE

**VEGETATED
RAIN
GARDENS**

**DETENTION
BASINS**



MICRO LEVEL LID BMPs

CASE STUDY

FIRE STATION 90





FIRE STATION 90

Architect: English & Associates

Landscape Architect: Asakura Robinson

Engineer: Othon



NATIVE
PLANTINGS

RAINWATER
HARVESTING

PERMEABLE
PAVING

BIORETENTION
SYSTEM

MICRO LEVEL LID BMPs

RESIDENTIAL

BIORETENTION
SYSTEMS

RAINWATER
HARVESTING

GREEN
ROOF

PERMEABLE
PAVING



GREEN REVIVAL **native plantings**



SAKOWITZ SRO **rainwater harvesting**



INVERNESS RESIDENCE **permeable paving**



WR SAGE **green roof**

MICRO LEVEL LID BMPs COMMERCIAL

NATIVE
PLANTINGS

BIORETENTION
SYSTEMS

RAINWATER
HARVESTING

GREEN
ROOF



WILDWOOD CORPORATE CENTRE **bioretention**



CORE PARK WEST **bioretention**



SPRINGWOODS CROSSING **bioretention**



TENARIS **native plantings**

MICRO LEVEL LID BMPs

PARKS + OPEN SPACE

BIORETENTION
SYSTEMS

NATIVE
PLANTINGS

RAINWATER
HARVESTING

VEGETATED
SWALES



GENE GREEN PARK **bioretention**



MANDELL PARK **Bioswales**



MD ANDERSON PARK **native plantings**



HOU. ARBORETUM **Rainwater Harvesting**

MICRO LEVEL LID BMPs

CASE STUDY

MANDELL PARK



MANDELL PARK

Landscape Architect: Asakura Robinson

NATIVE
PLANTINGS

RAINWATER
HARVESTING

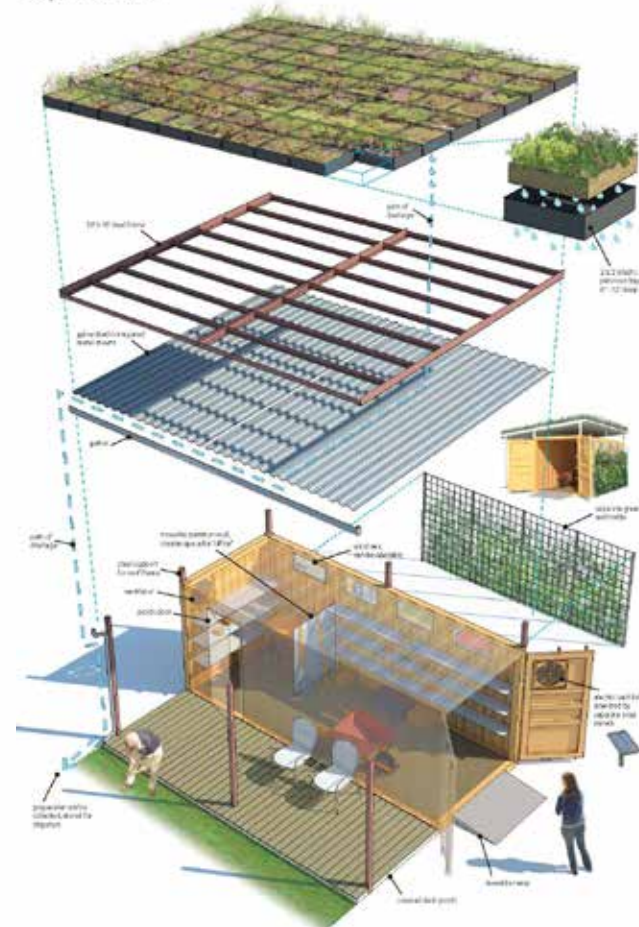
PERMEABLE
PAVING

BIORETENTION
SYSTEM

GREEN ROOF



Mandell Park Solar Storage Shed
Exploded Axo





LANDSCAPE MANAGEMENT

MANAGEMENT COMPARISON

2 YEARS

5 YEARS

10 YEARS

THE NATIVE GRASSES REQUIRE MORE ATTENTION IN THE BEGINNING FOR SUCCESSFUL ESTABLISHMENT.



NATIVE LANDSCAPE
10,000 S.F. NATIVE GRASSES
LABOR:
APPROX. \$25/ HOUR



TURF GRASS
10,000 S.F. LAWN
LABOR:
APPROX. \$25/HOUR

TURFGRASS RECEIVES CONSTANT MANICURING, INPUTS OF FERTILIZERS, HERBICIDES, & WATER.

MAINTENANCE COST
AFTER 10 YEARS:
APPROX. \$15,000



PERPETUAL
MANAGEMENT

MAINTENANCE COST
AFTER 10 YEARS:
APPROX. \$4,000



DECREASED
MANAGEMENT

LANDSCAPE MANAGEMENT

MANAGEMENT COMPARISON

2 YEARS

5 YEARS

10 YEARS

INCREASED VALUE

RETURN ON INVESTMENT AFTER 10 YEARS:

- HIGH PERFORMANCE LANDSCAPE
- CREATION OF HABITAT
- GENETIC BIODIVERSITY
- INCREASED AESTHETIC VALUE

NATIVE
LANDSCAPE

TURF
GRASS

RETURN ON INVESTMENT AFTER 10 YEARS:

- LANDSCAPE REMAINS STATIC
- NO HABITAT CREATION
- NO CHANGE IN AESTHETIC VALUE

NO CHANGE IN VALUE



THANK YOU

MACRO LEVEL

Conservation & Restoration

BAYS

RIVERS

MICRO LEVEL

“Low-Impact Development”

**TREATMENT
TRAINS**

BAYOUS

**STORMWATER
WETLANDS**

**GREEN
ROOF**

**BIORETENTION
SYSTEMS**

**STORMWATER
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