



2016 Resilient Redesign Workshop

Lower Matecumbe Key
Miami Shorecrest
Arch Creek



Sub-Committee Organizational Team:

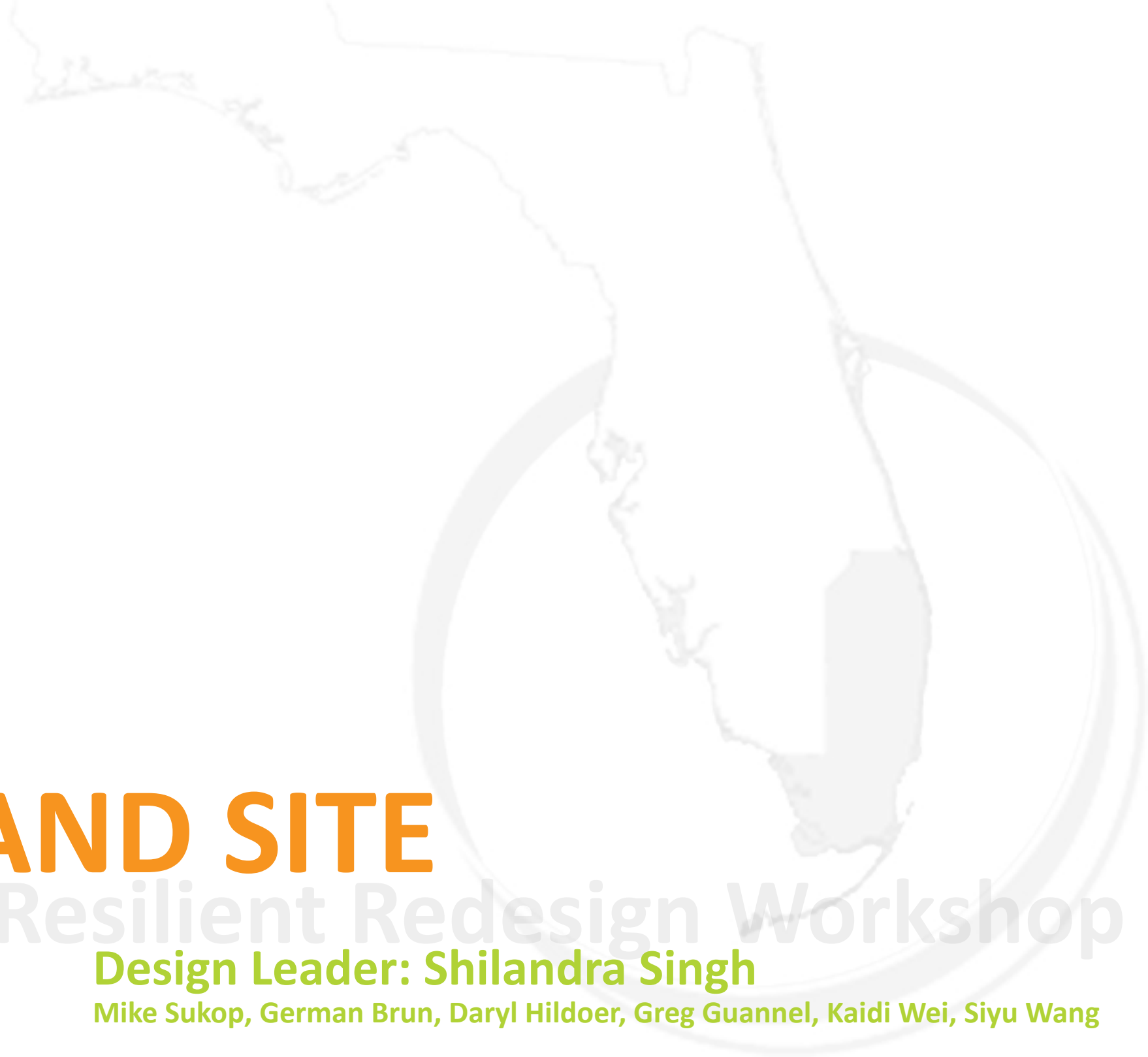
- Nancy Schneider, Institute for Sustainable Communities;
- Katie Hagemann, Miami Dade County - Office of Resiliency
- Ajani Steward, City of Miami - Office of Resiliency
- Chris Bergh, The Nature Conservancy
- Susan Sprunt, Islamorada Village of Islands
- Sonia Chao, Charrette Leader

2016 Resilient Redesign Workshop

A light gray outline map of the state of Florida is centered on the page. A circular magnifying glass graphic is overlaid on the map, with its lens focused on the central part of the state. Within this lens, a specific region in the central part of Florida is shaded in a solid, medium gray color, representing the Arch Creek Area. The text is positioned in the lower-left quadrant of the image.

ARCH CREEK AREA

2016 Resilient Redesign Workshop
Site Leader; Kate Hagemann



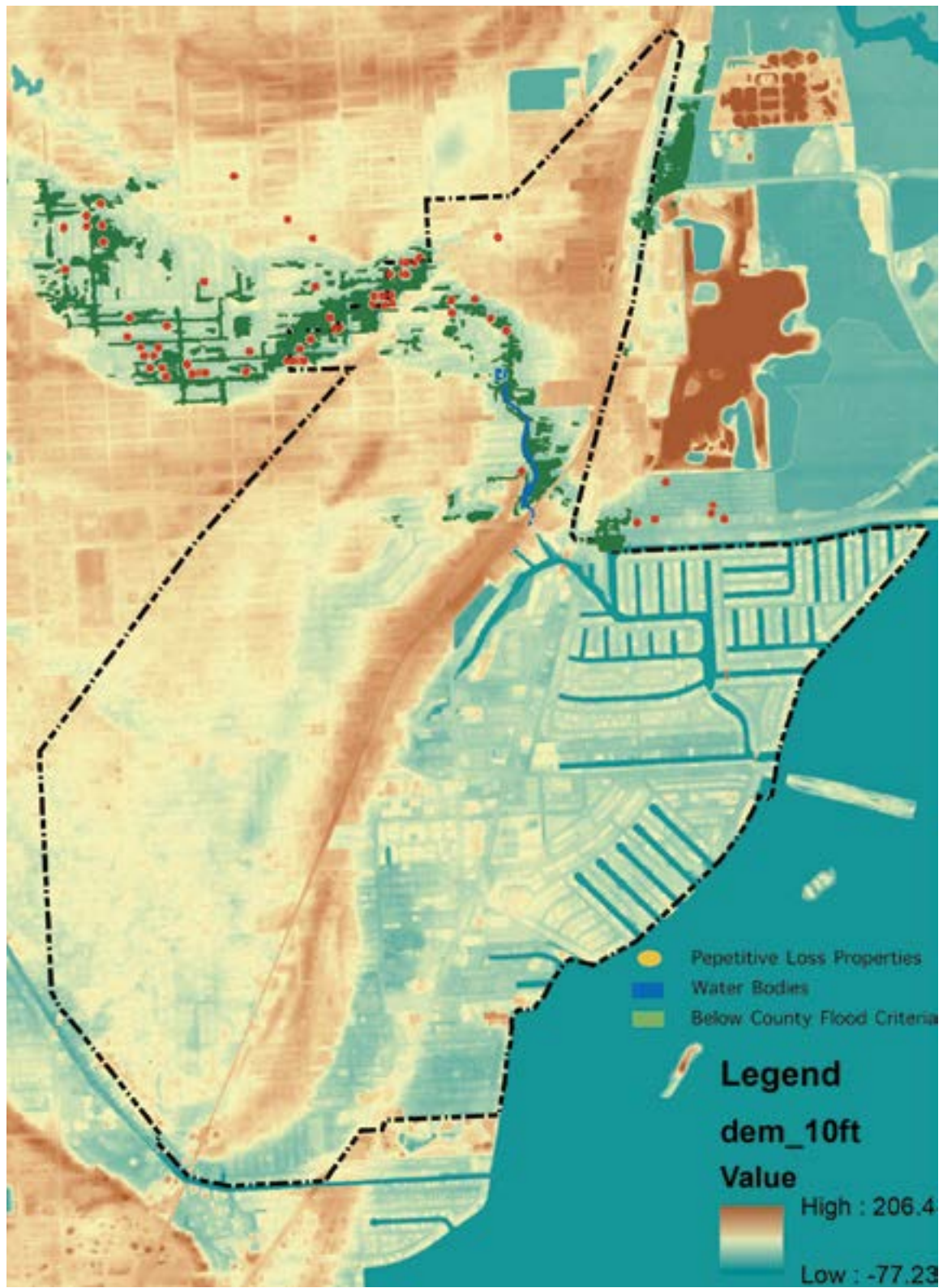
INLAND SITE

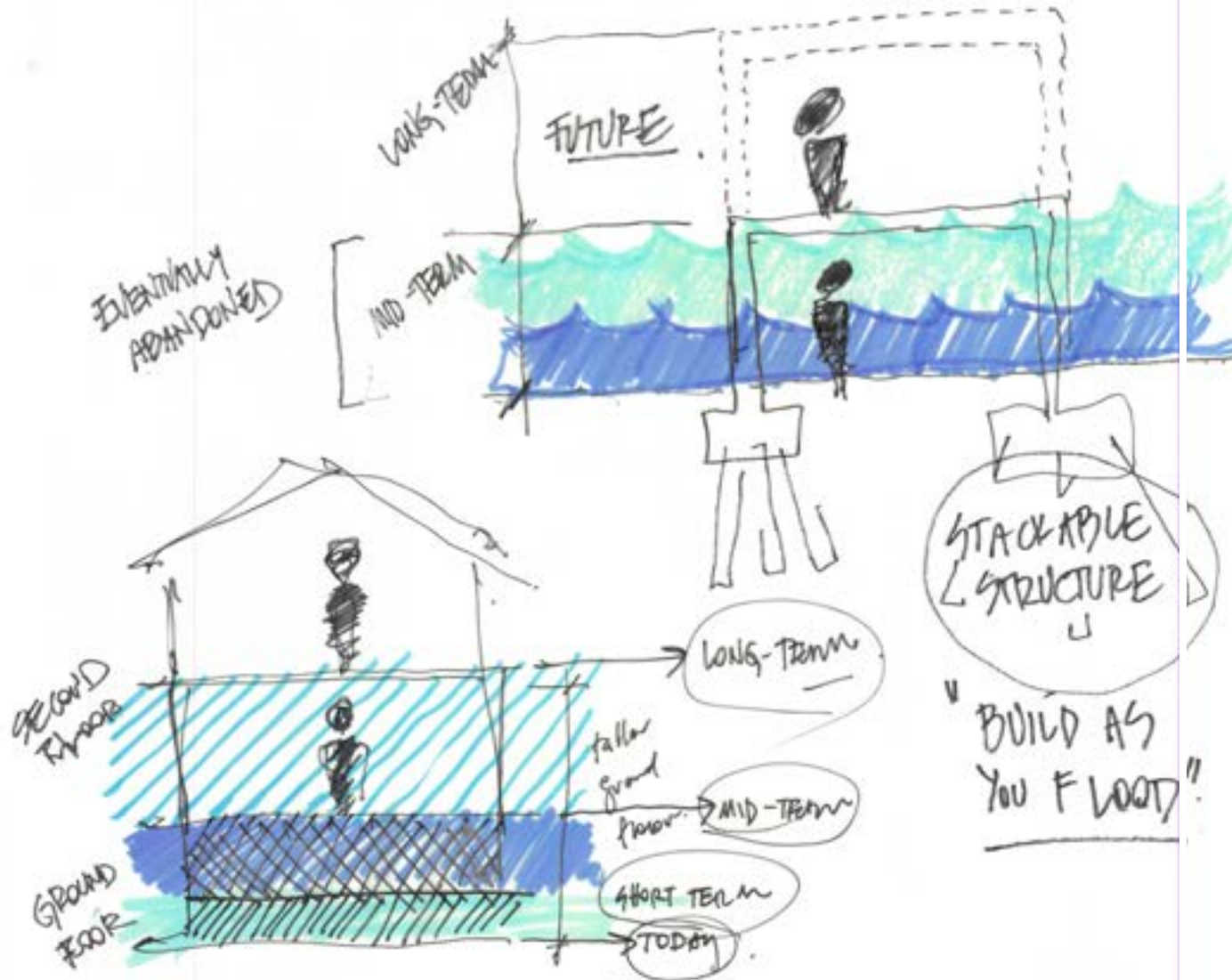
2016 Resilient Redesign Workshop

Design Leader: Shilandra Singh

Mike Sukop, German Brun, Daryl Hildoer, Greg Guannel, Kaidi Wei, Siyu Wang



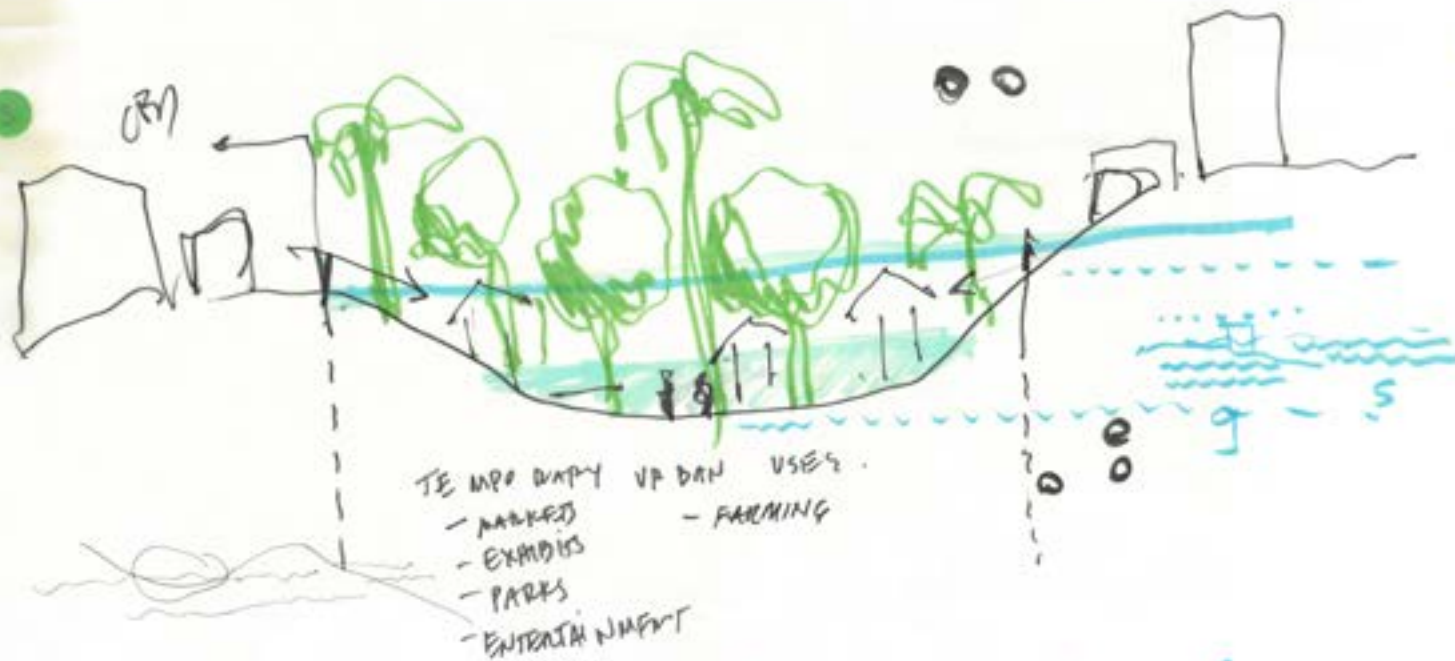




TALLER GROUND FLOOR
 ACCEPTS FLEXIBLE FFE
 BASED ON FLOODING

PRELIMINARY SKETCHES

Midterm

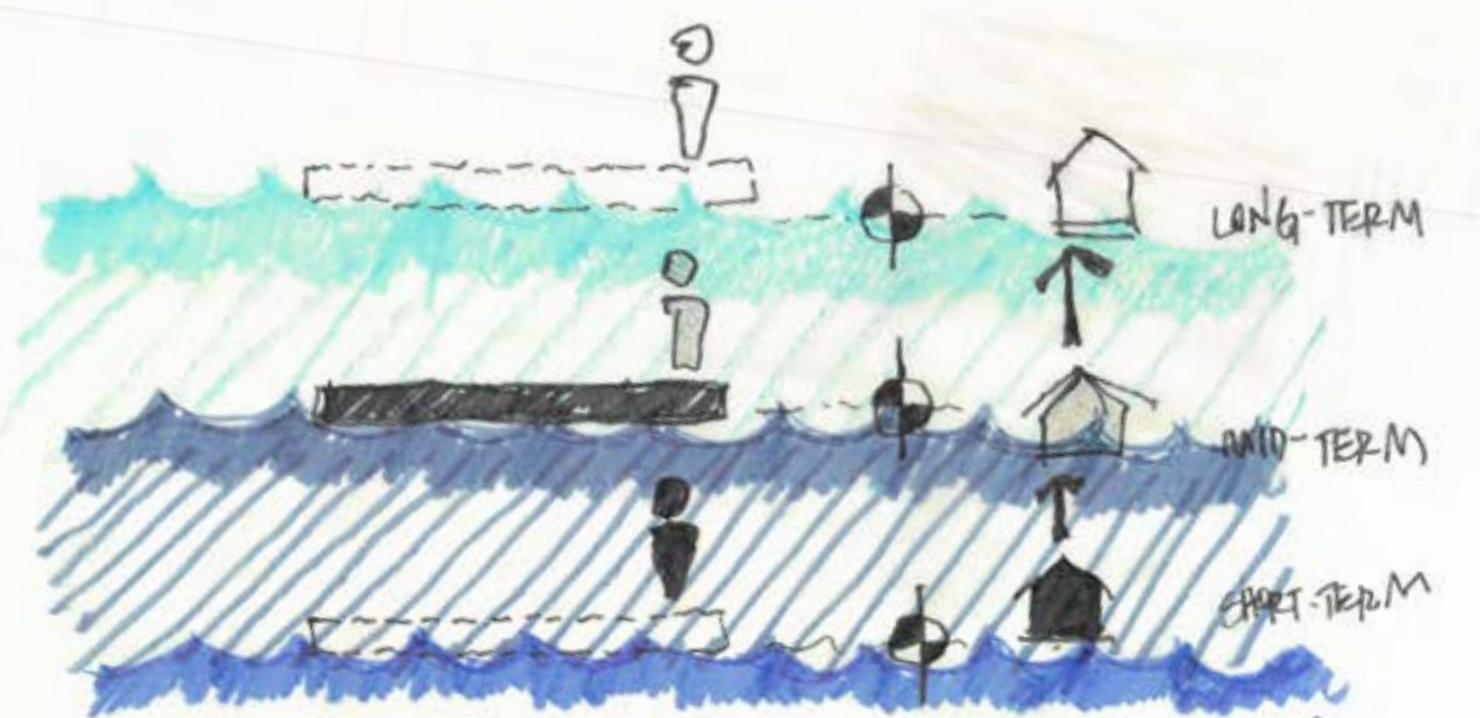


- tidal vs. storm
- Scenarios: residential
- raise streets
 - depave
 - more frequent parks for drainage
 - raise houses (require water retention)

- commercial
- raise streets
 - depave
 - water storage?
 - raise bldgs + bldg pads
 - increase density (to pay for A)

PRELIMINARY SKETCHES

Midterm

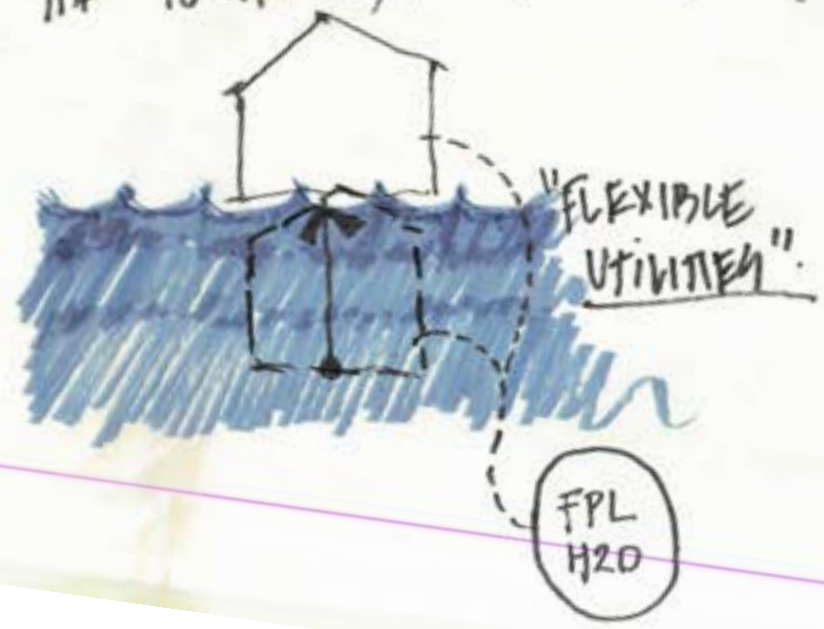


LONG-TERM

MID-TERM

SHORT-TERM

THE "FLOATING FLOOR PLAN" (HOUSE BOAT CONCEPT)



"FLEXIBLE UTILITIES"

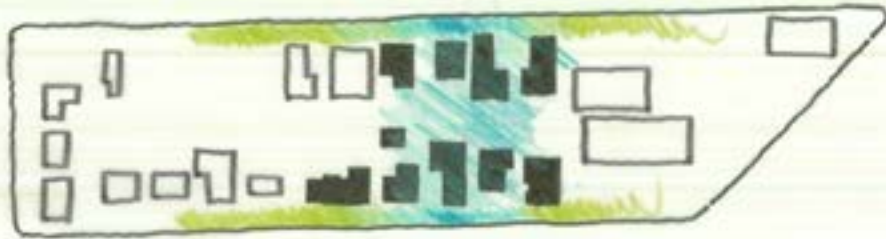
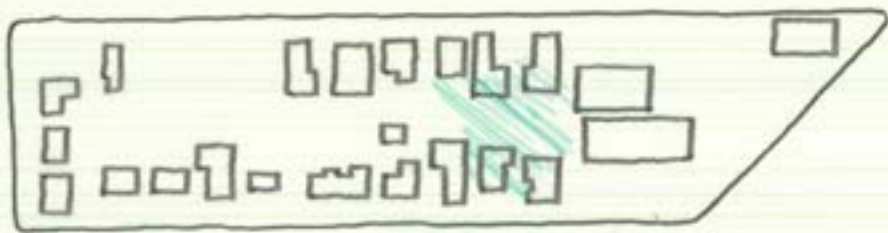
FPL
H2O

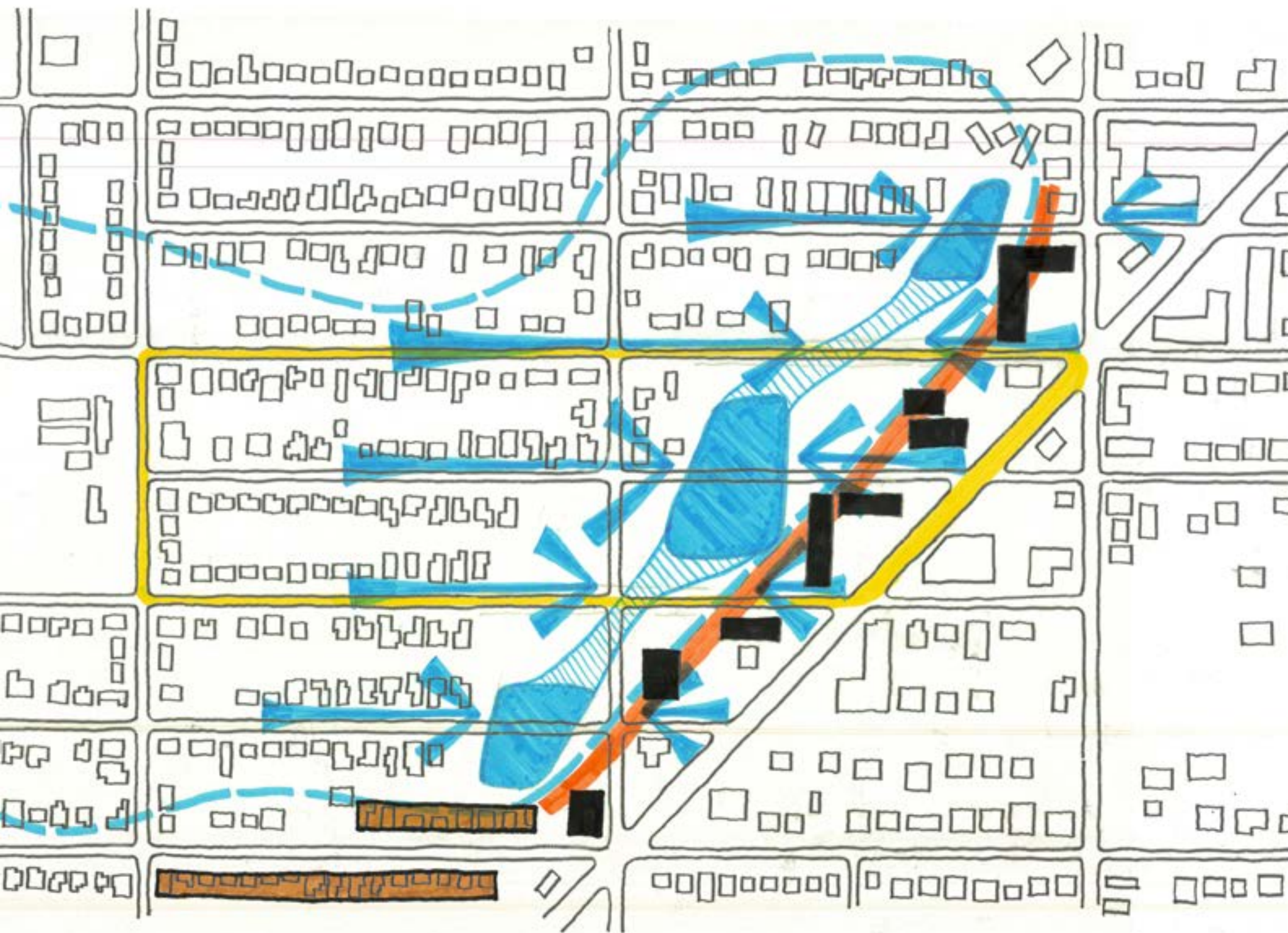
PRELIMINARY SKETCHES

Midterm

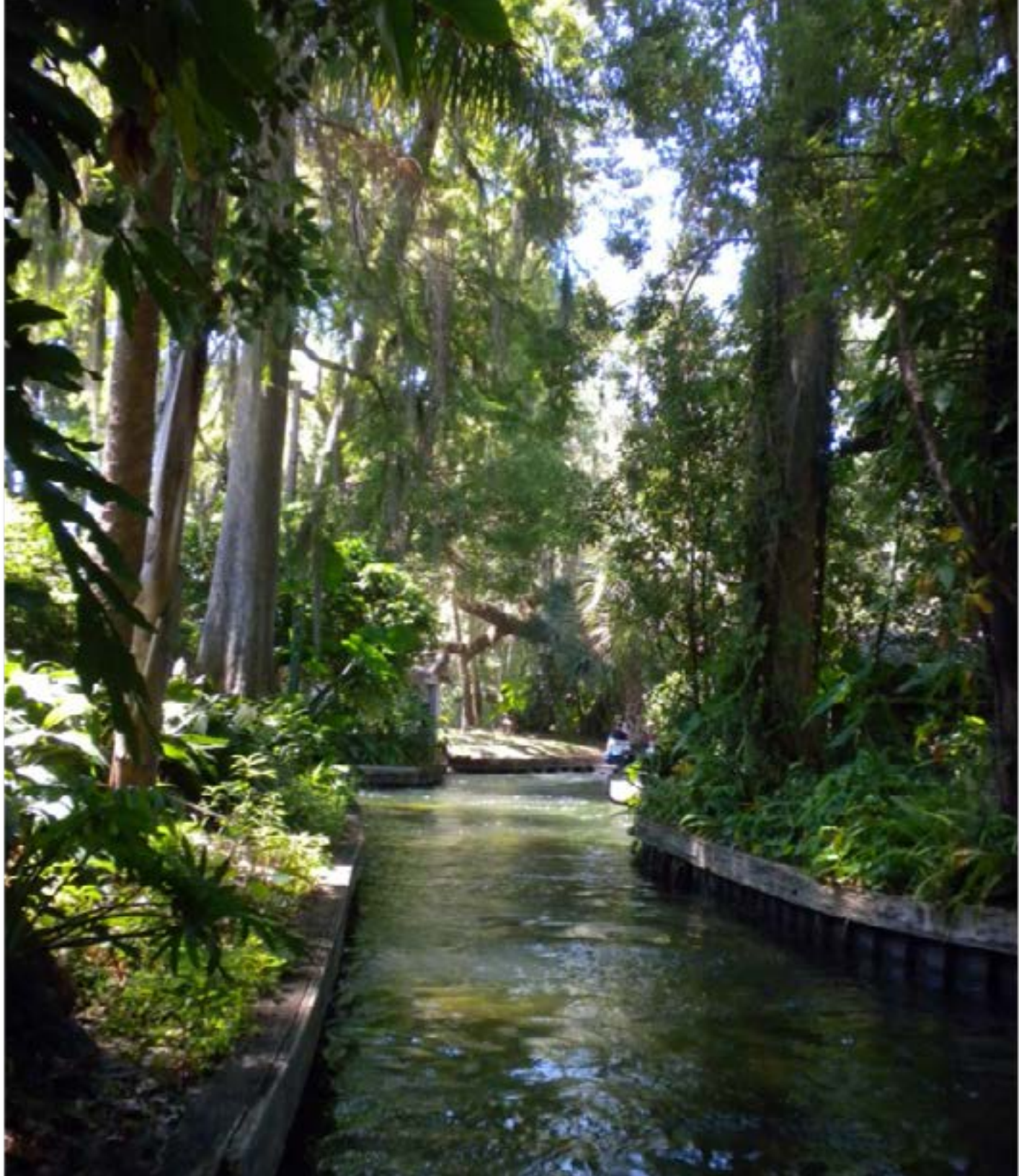






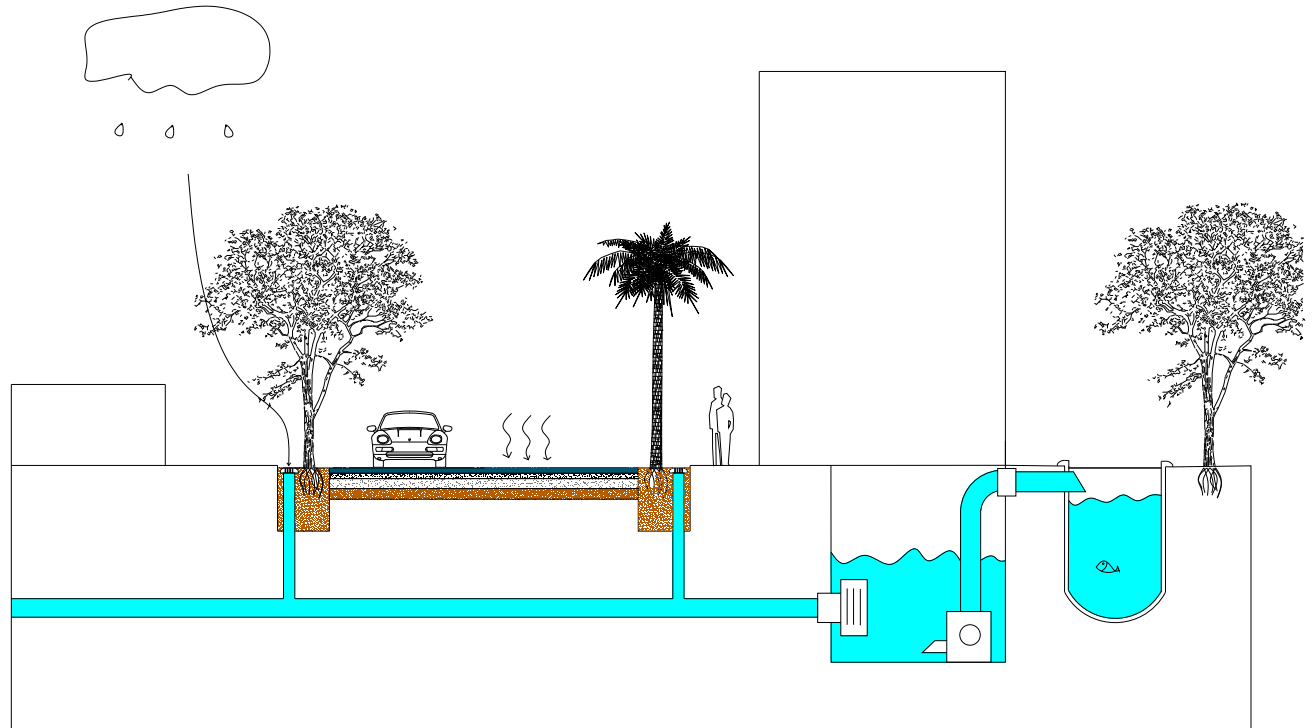
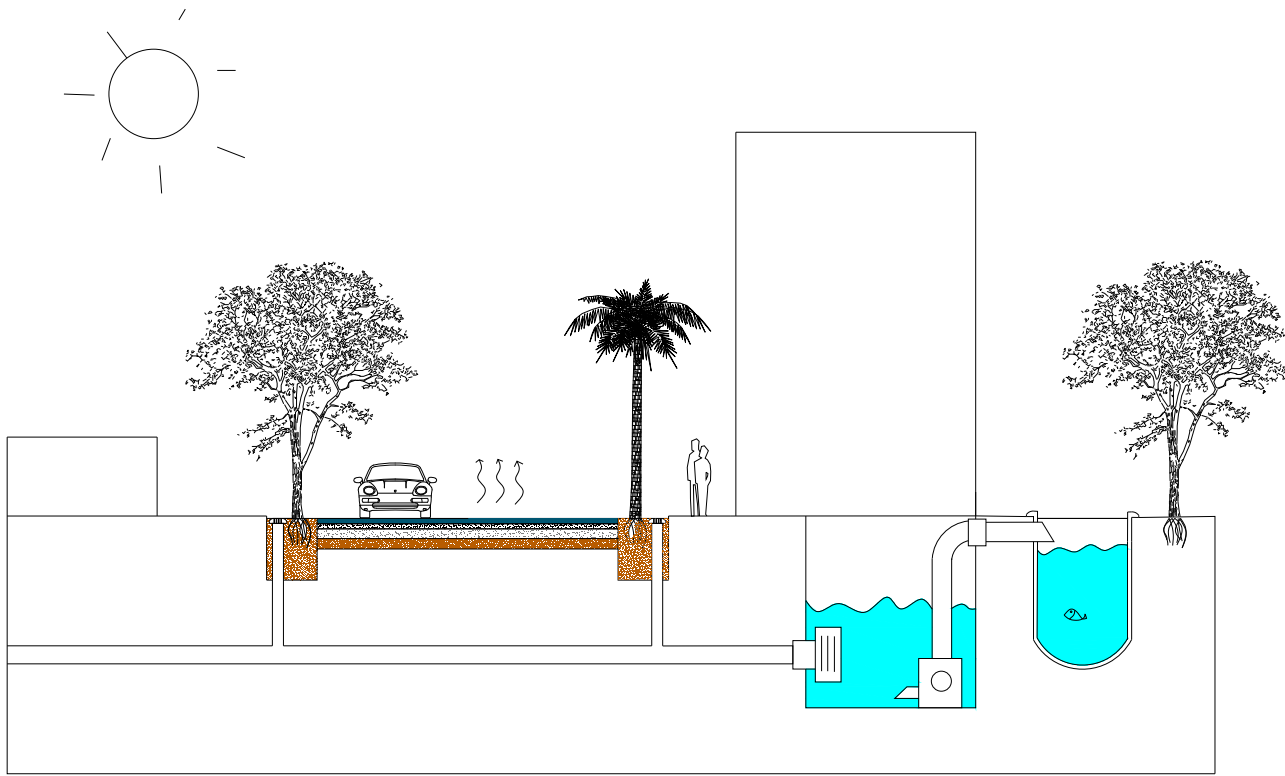
















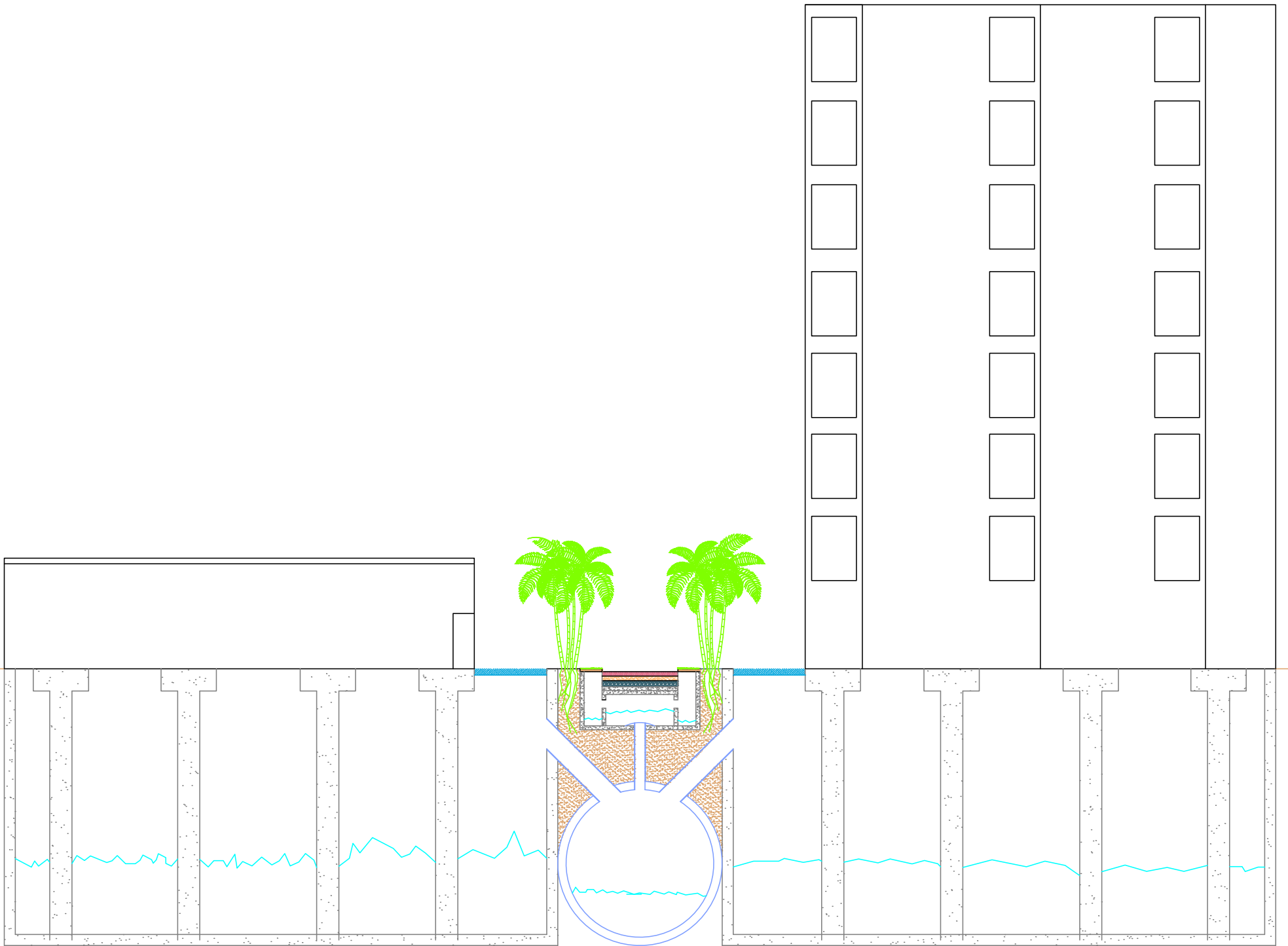


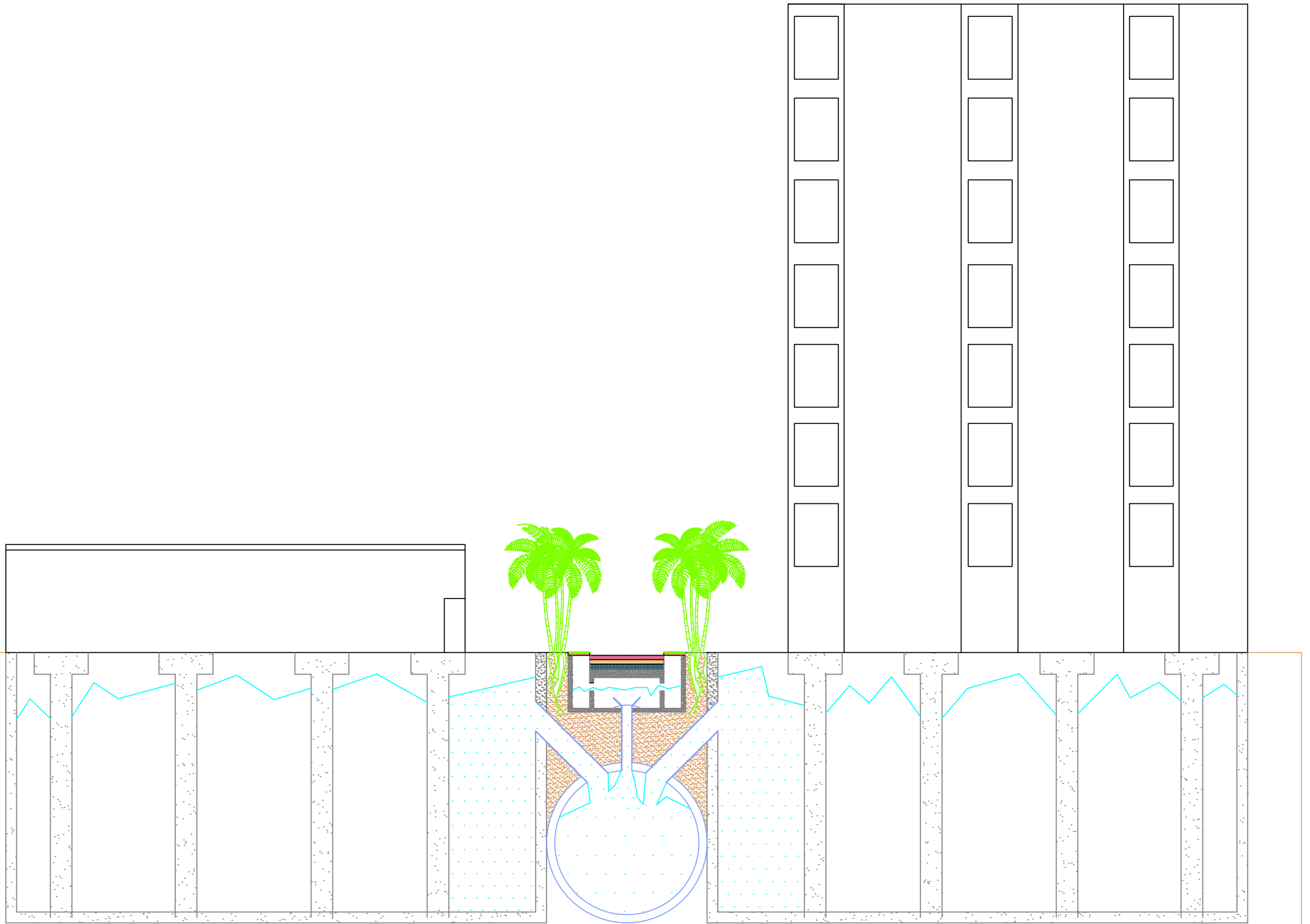


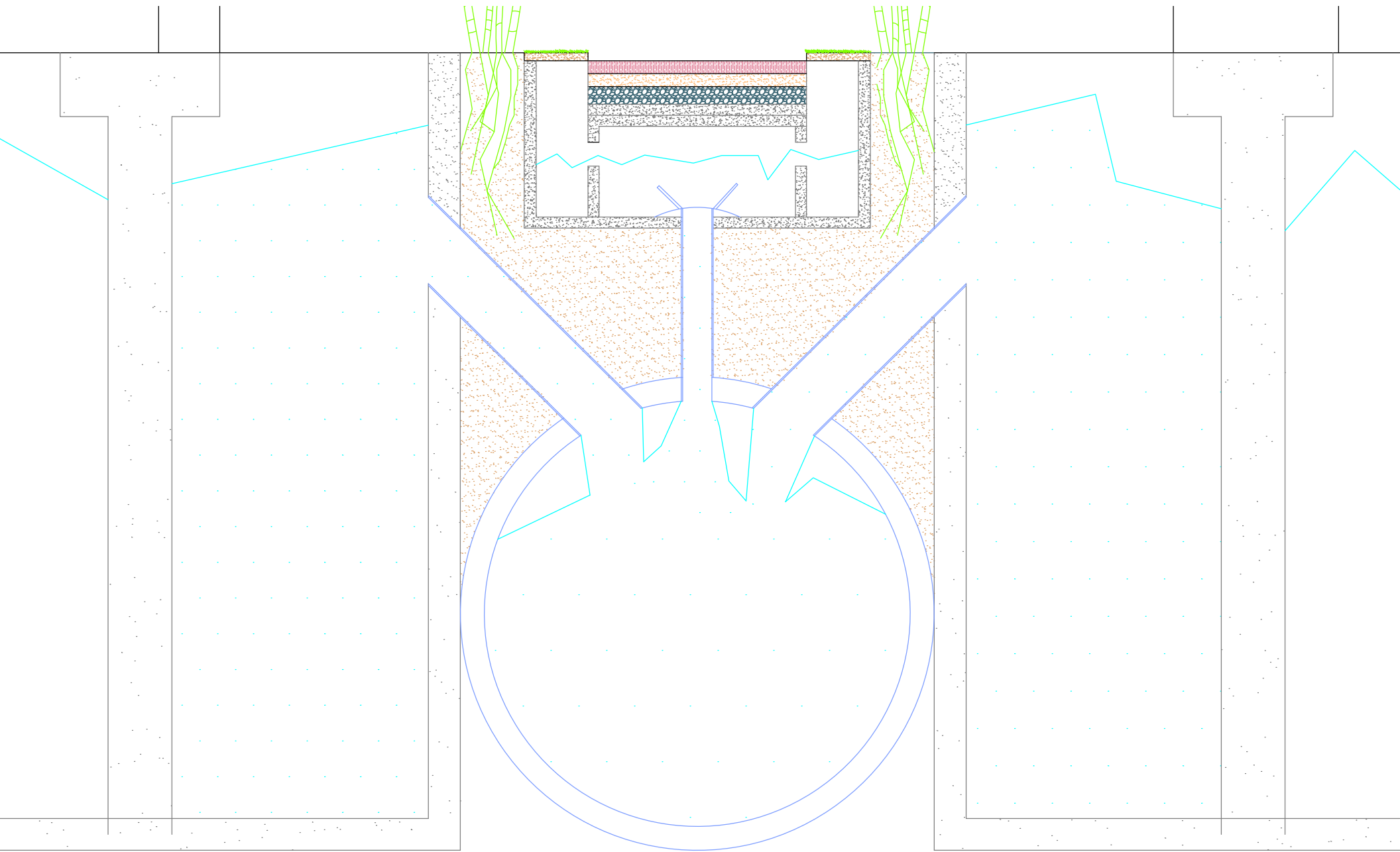
West Dixie













T.O.D. SITE (Sustainable Economic Development Project)

Design Leader:

Sonia Chao & Gustavo Sanchez-Hugalde

Max Zabala, Christina Canton, Mike Sukop, John Gonzalez, Danielle Todd,
Ariana Melendez Djoumblat, Irene Balza

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19th-century slough section: nature handles water.



20th-century slough section: development puts people and property in harm's way.



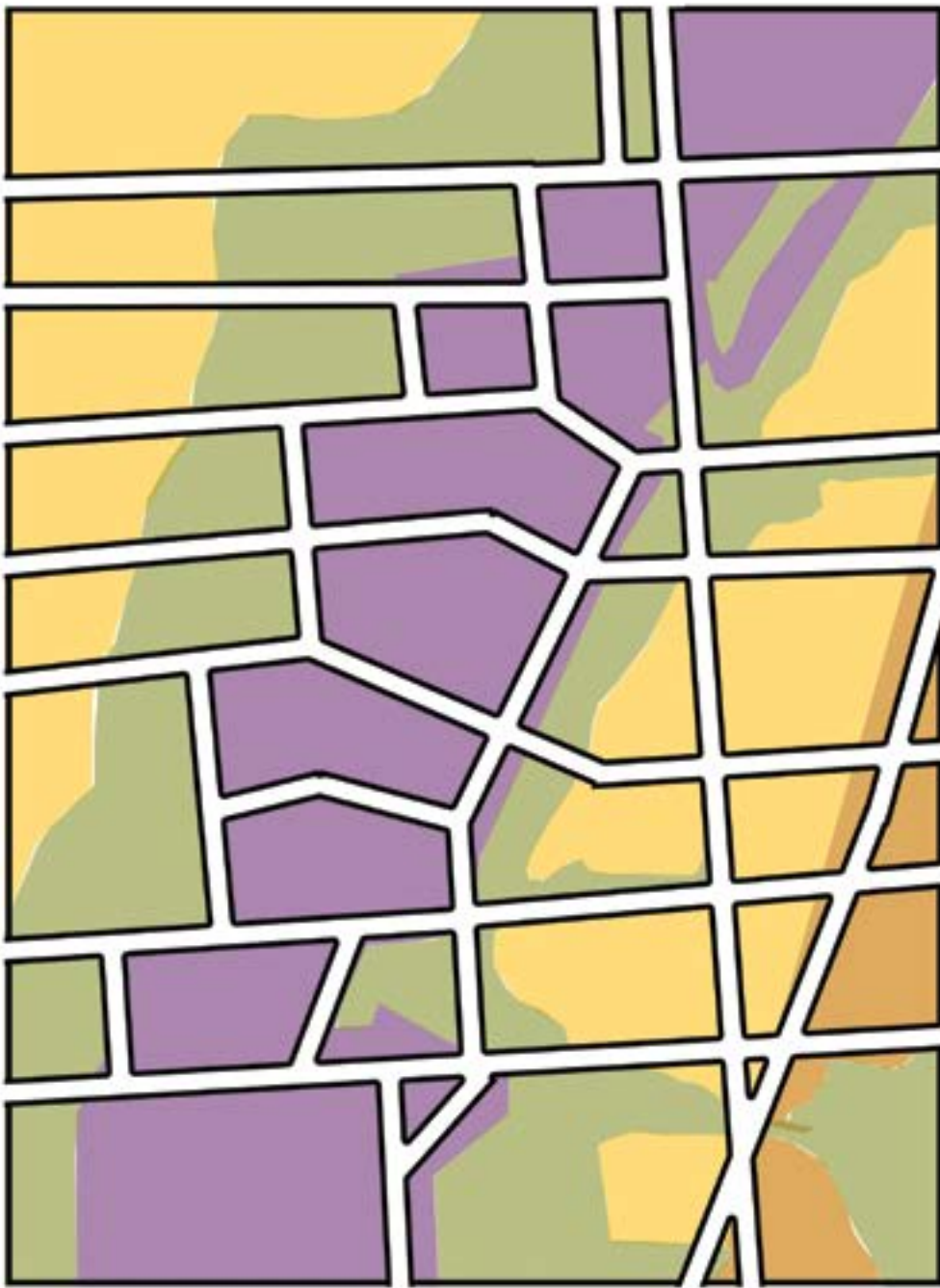
21st-century slough section: a balance of nature, water, and neighborhood.



SHORT TERM INTERVENTION

Schematic Diagram of Uses



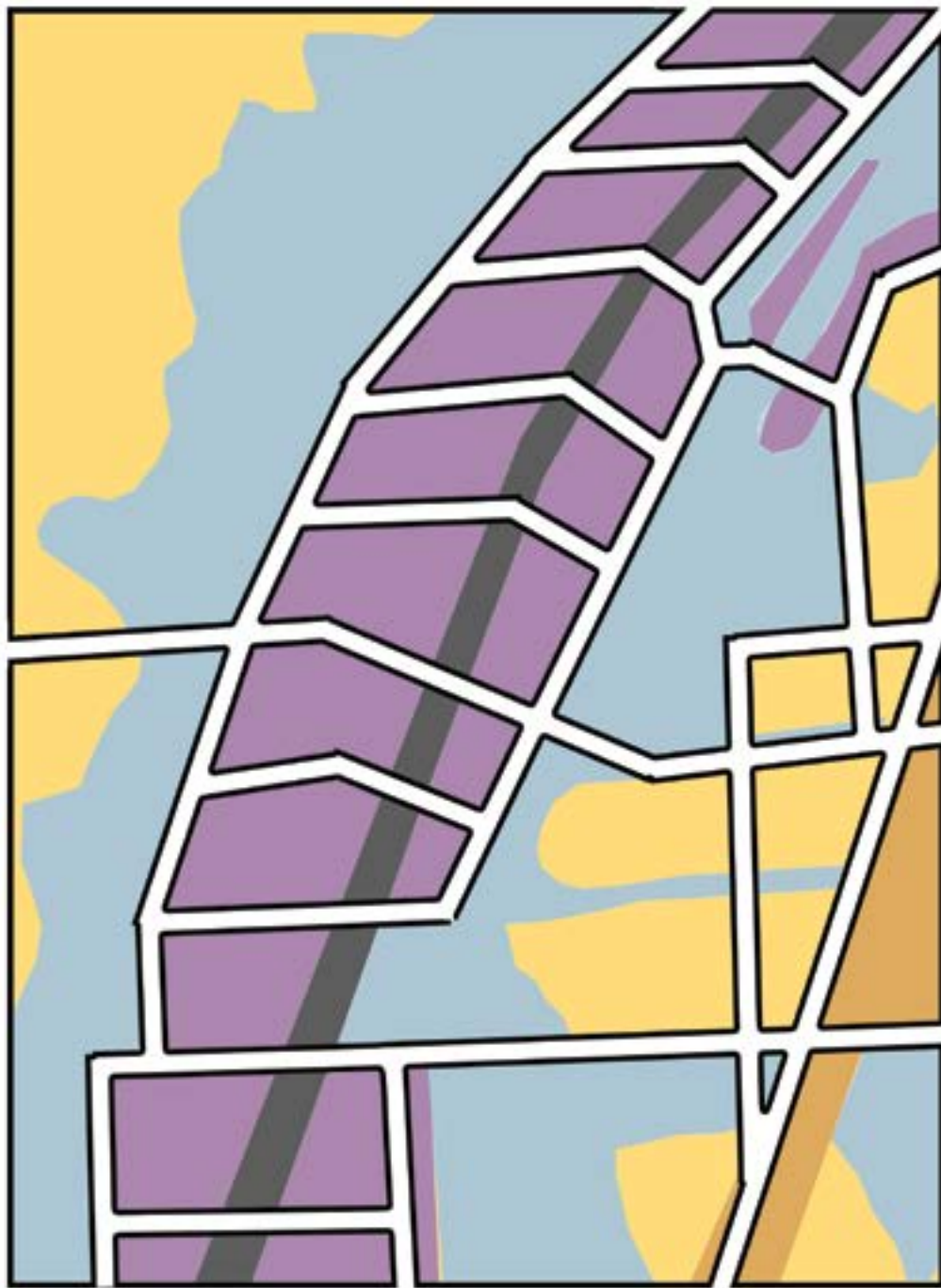


- High Density Commercial
- Low Density Residential
- Wetlands / Recreational Parks / Urban Agriculture / Community Gardens
- Linear TOD

MID TERM INTERVENTION

Schematic Diagram of Uses



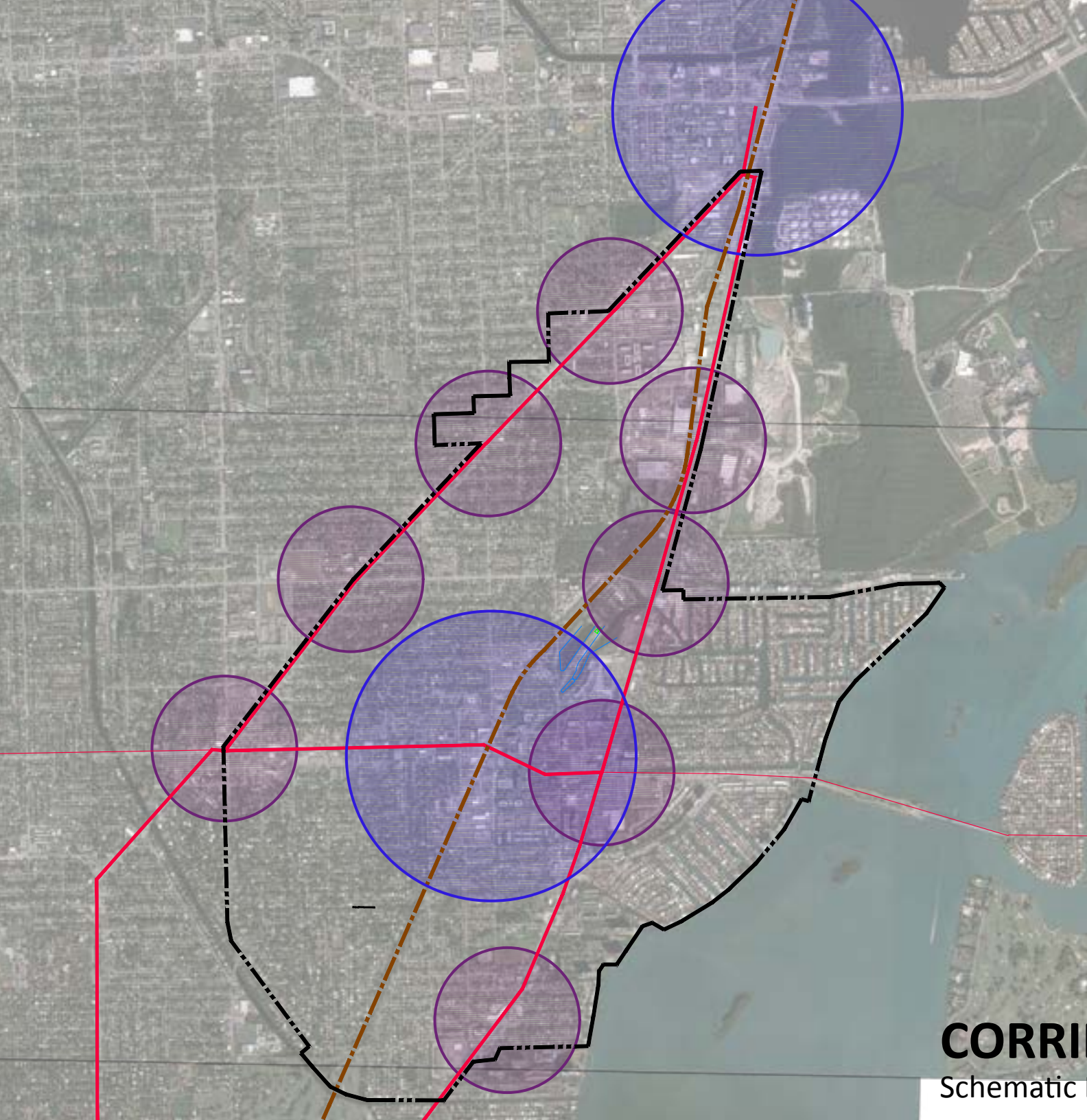


- High Density Commercial
- Low Density Residential
- Navigable routes
- Linear TOD

LONG TERM INTERVENTION

Schematic Diagram of Uses





CORRIDORS & NODES

Schematic Diagram



ARCH CREEK TOD SUSTAINABLE ECONOMIC DEVELOPMENT PROJECT

SHORT TERM CONSIDERATIONS AND ACTIONS

Tiers:

- Physical Implementation
- Support TOD Regulations
- Implementation Strategies List

Phase 1- Level of Service Standards remain consistent with current criteria.

- *Precedents: St. John County, Jordans Case; Pineland, New Jersey.*

1. Create TDR and define its mechanism – determine number of unit needed to successfully feed the TOD site within half mile distance.
Examples: In areas with high owner occupancy that is part of the sending sites then create multi TDR units per property, assigning 1 to owner, potentially. For each private property purchased, developer receives multiple units from local government. Potentially, some dedicated for affordable housing, Relocation/ Clean Up Revolving Trust Fund income, and others and free and clear to the developer. Analyze potential for Hazard Mitigation Fund > FEMA > State and/or Local Government.
2. Streamline Permitting- offered when work force housing is included, built on existing precedent of expedite permit for LEED certified projects.
3. Impact Fees- reduced for immediate upgrades in the short term when work force housing is included.
4. Stormwater Utility Assessment- maintaining and construction of capacity and quality.
5. Infrastructure Sales Tax - maintaining and construction of capacity and quality.
6. Neighborhood Assessment Districts- Improvements and ongoing needs within the neighborhoods.
7. Tax Increment Financing (Redevelopment/ TOD) Cap Value> Revenue> targeted within area
8. Land Acquisition Program (Buy-out)- Bond referendum to purchase at risk properties from 'willing sellers' for revenue dedicated to public parks, infrastructure improvements, transportation, etc.
9. Freeboard Ordinances- requiring 2+ft. benefits the FEMA community rating systems > CRS Program
10. Flood Plain Regulations- limit encroachments into the flood plains.

ARCH CREEK TOD SUSTAINABLE ECONOMIC DEVELOPMENT PROJECT

MID-TERM CONSIDERATIONS AND ACTIONS

Phase 2: Applicable to property owners that do not wish to participate in the TDR Program:

- Property owners would need to abide by water retention policies set for parcels.
- New water high tide setback requirements/ regulations.
- New Infrastructure pumps for water management plan (pumping from west to east).
- Require higher ground and building levels for redevelopment, to meet DFE + Freeboard.
- Analyze capacity for filtration systems of stormwater to bay.

	Existing - Sending	Receiving - 10 Stories	Receiving - 30 Stories	Receiving - 40 Stories
Height	1-2	10	30	40
Building Area	76,000	152,966	330,000	400,000
Density	6 density/acre	56 density/acre	200 density/acre	260 density/acre
Dwelling Units	38 dwellings	44 dwellings	157 dwellings	204 dwellings
TDR	--	x 1(38)	x 4(152)	x 5(190)
Office Potential	0	60,000	60,000	60,000
Commercial Potential	0	8,000	8,000	8,000



Parking Residential: 0.75/unit Office: 1/2,000 ft² Commercial: 1/2,000 ft²

Existing - Sending



Receiving – 10 Stories



Receiving – 30 Stories



Receiving – 40 Stories



Receiving – 40 Stories Sea Level



TOD - 30 Stories



TOD - 30 Stories

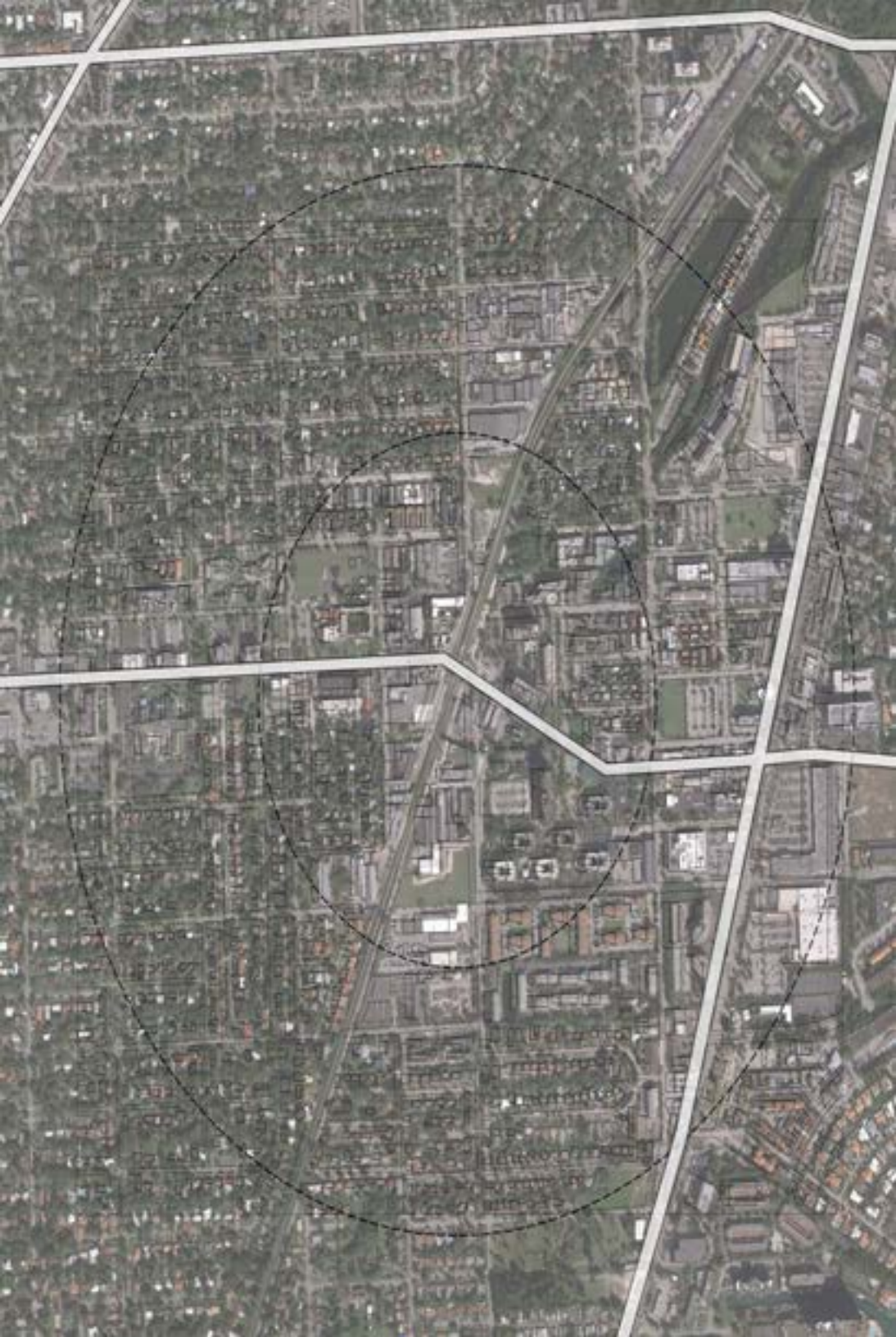


TOD - 40 Stories



TOD - Nodes





TOD STUDY AREA



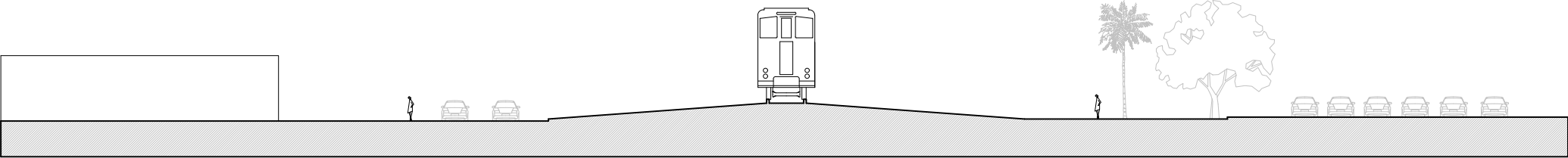
SHORT TO MID TERM INTERVENTION



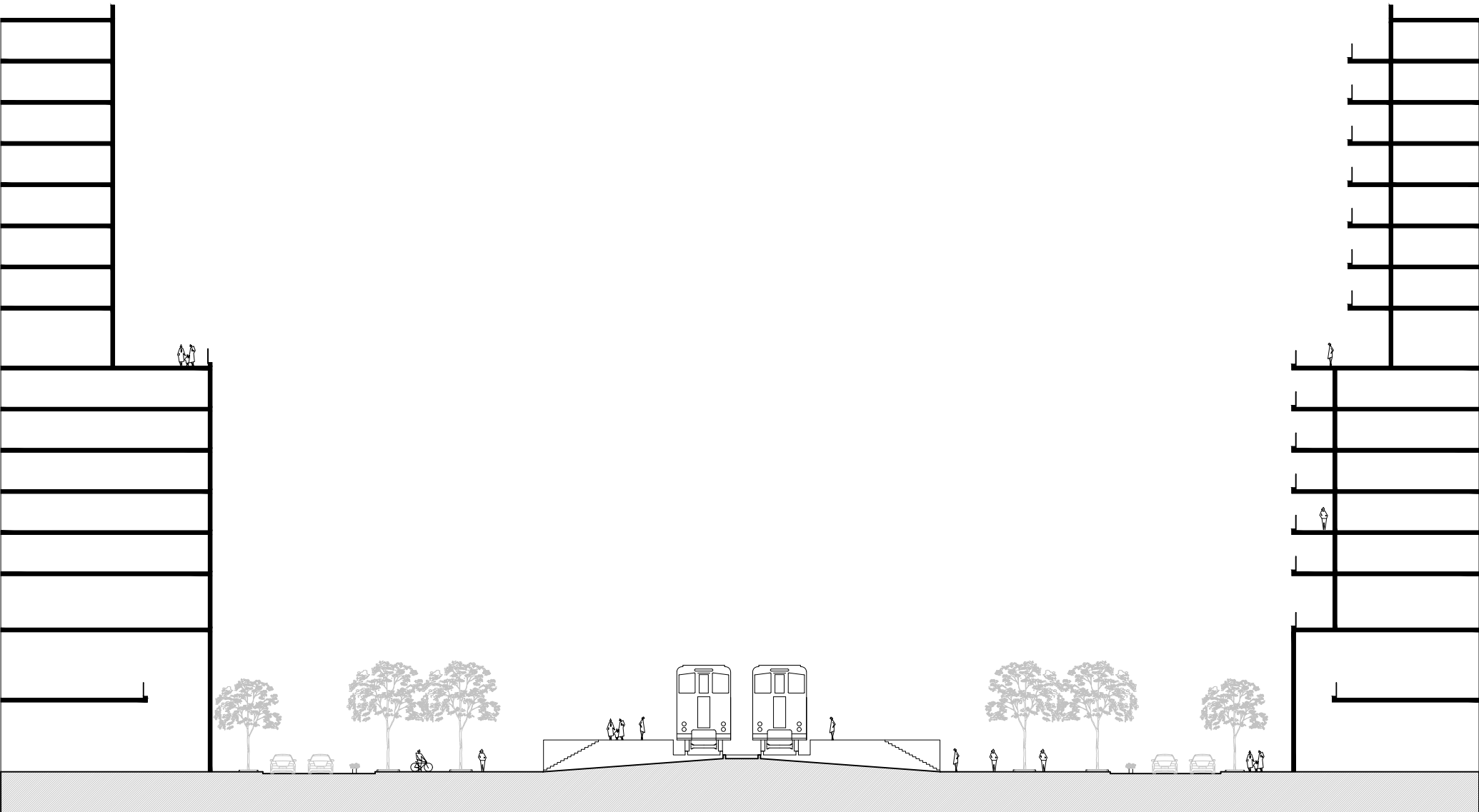
LONG TERM OPTION A



LONG TERM OPTION B

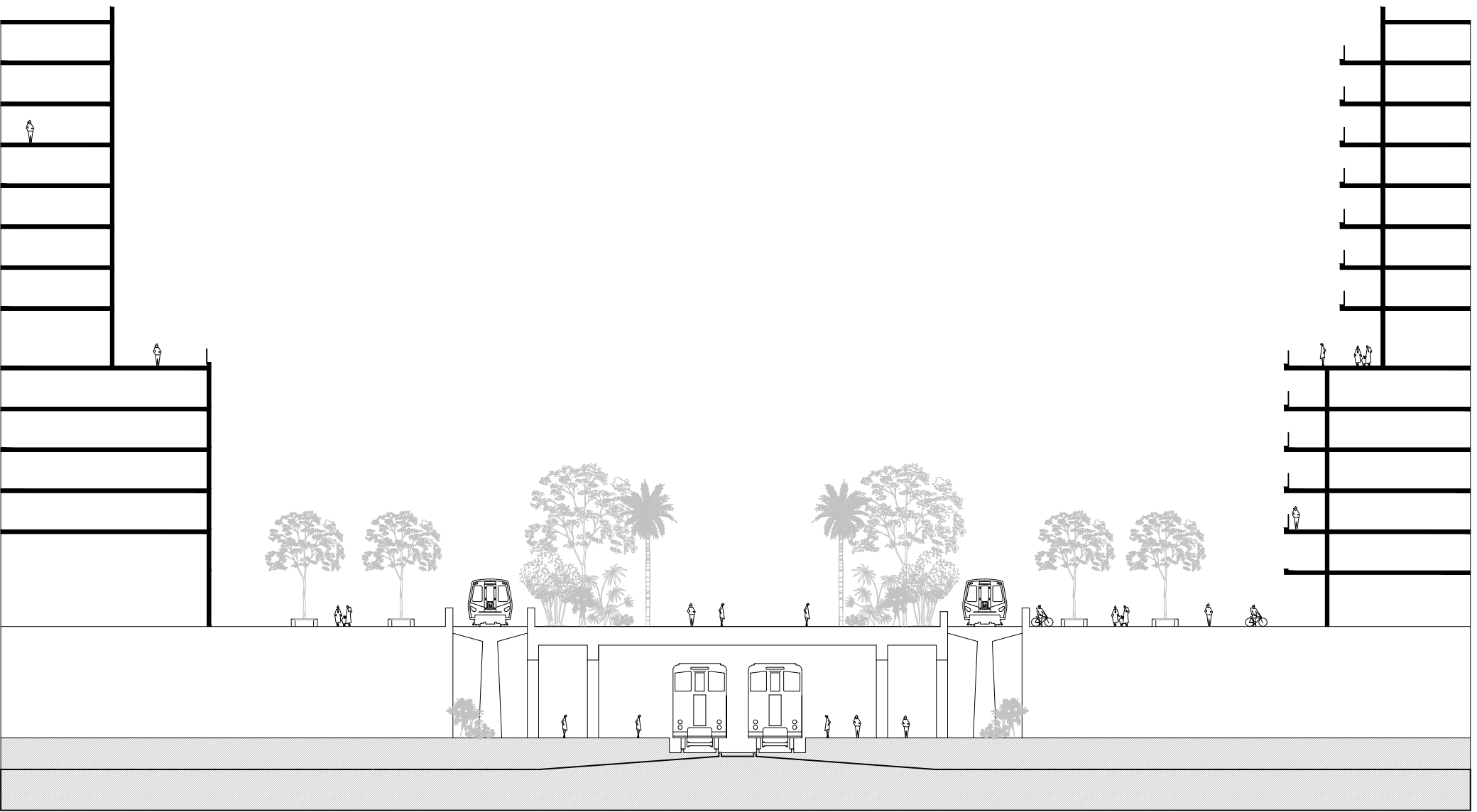


EXISTING
1/16 SCALE



SHORT TERM
1/16 SCALE







WATER FRONT SITE

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Design Leader: Anthony Abbate

Kim Brown, Hugh Gladwin, John Van-leer, Esteban Esiondi, Evelyn Vega,
Marcus Riley, Cindy Cortez, Fadia Jawhari, Alex Cadena, Samantha Varela

FEMA Flood Standards

FLOOD FREQUENCIES/ELEVATIONS: 0.2-percent-annual-chance flood event = 500-year flood event
 1-percent-annual-chance flood event = 100-year flood event → base flood elevation (BFE)

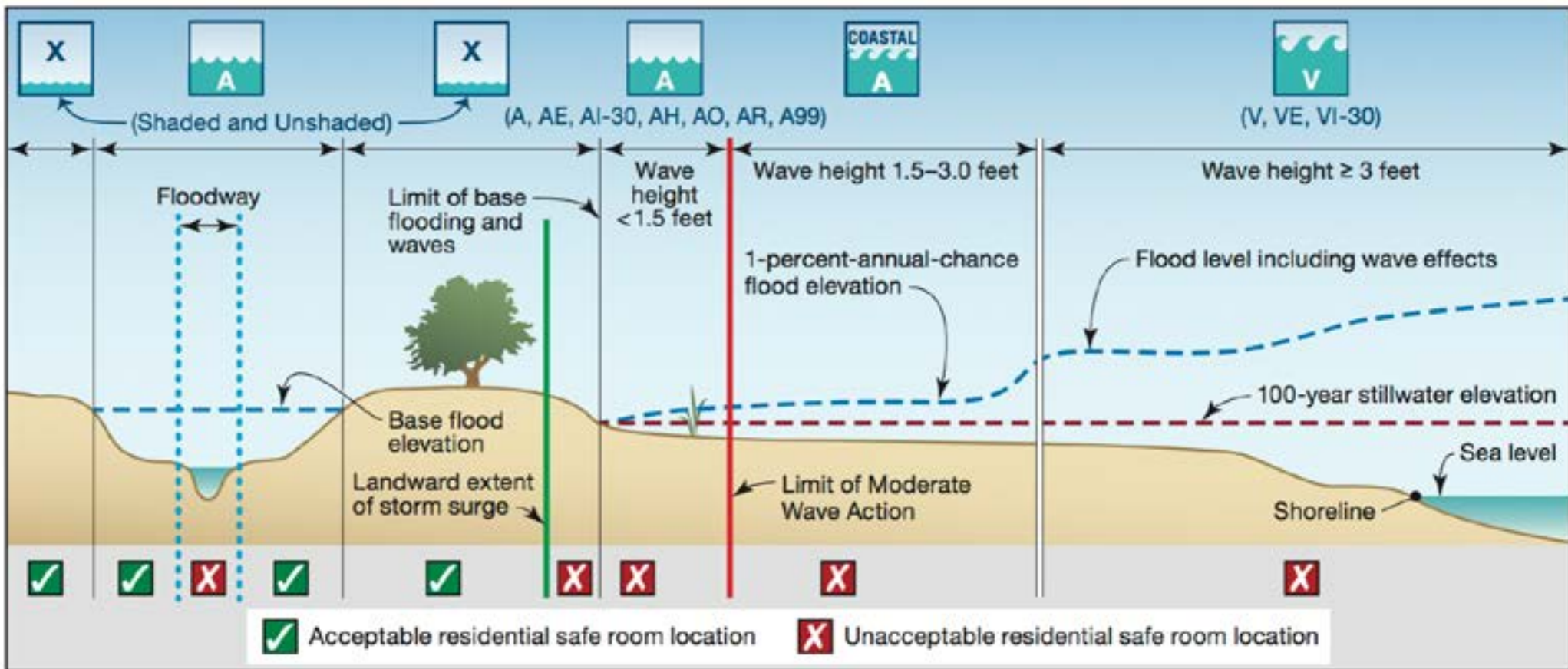


Figure 3. Typical riverine cross section and shoreline transect showing stillwater and wave crest elevations and associated flood zones

Gold Coast, Australia



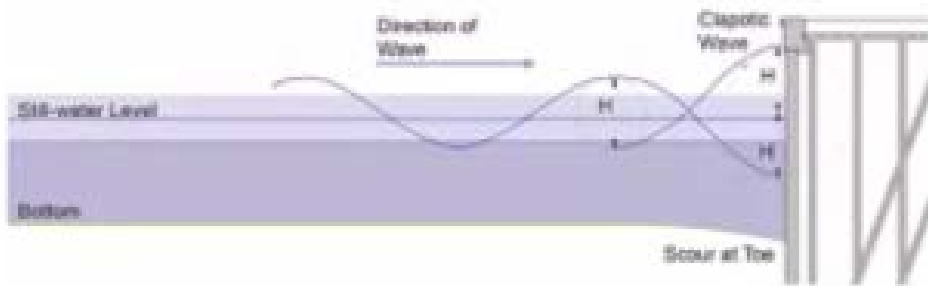
Gold Coast, Australia



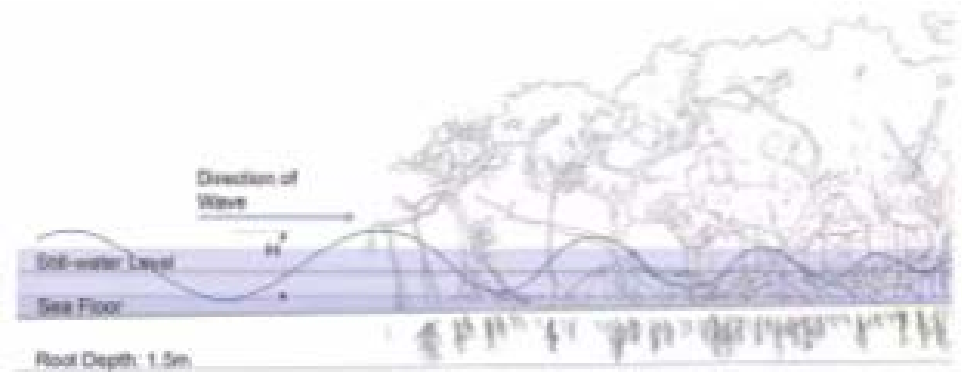
Melbourne, Australia



Engineered Mangroves



Schematic Section of Wave Amplification by Vertical Wall



Schematic Section of Wave Attenuation by Mangrove Forest

Engineered Mangroves



Food (Aquaculture) and Increased Biological Diversity



Tree Restoration (Habitat)



Wave Energy Harvest

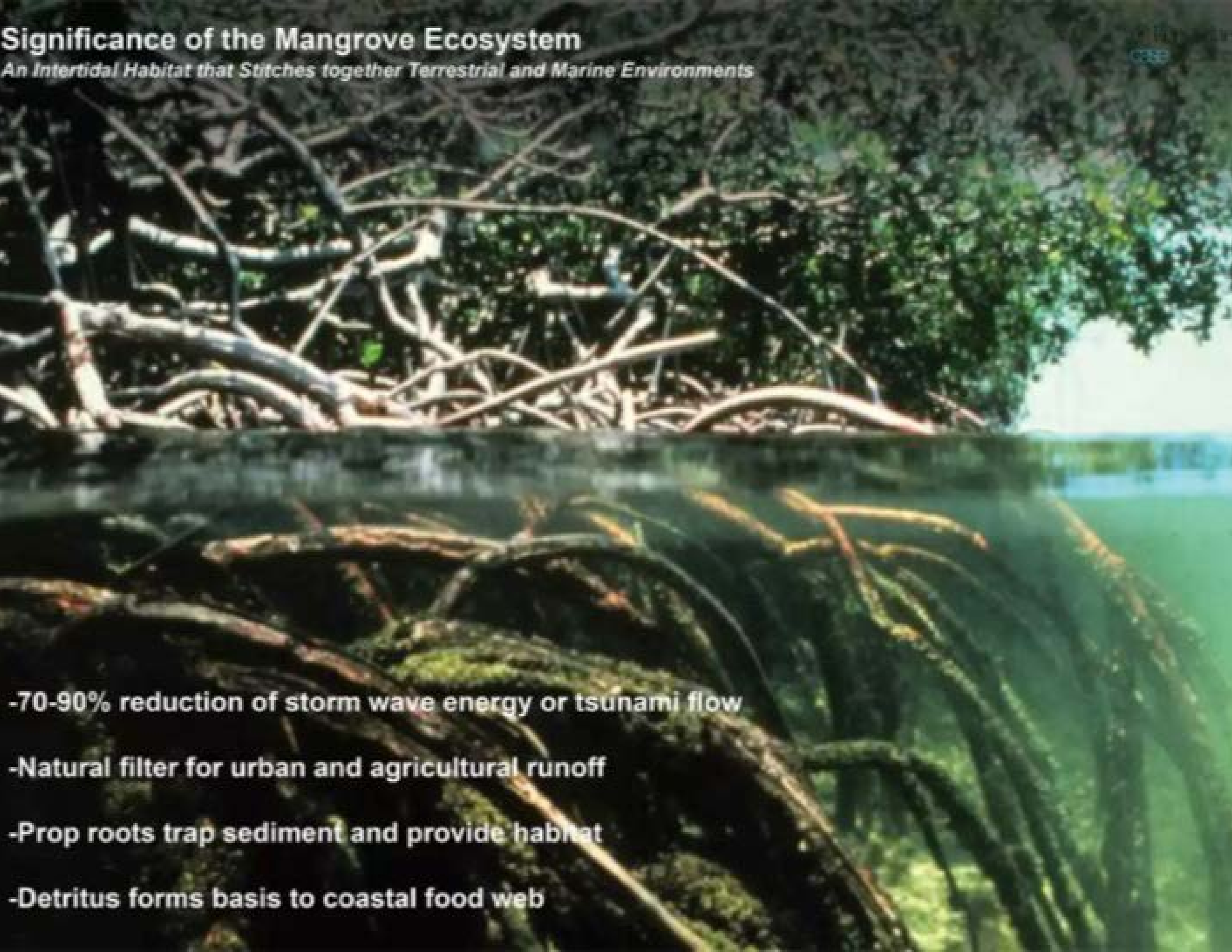


Coupled Reef Regeneration



Significance of the Mangrove Ecosystem

An Intertidal Habitat that Stitches together Terrestrial and Marine Environments



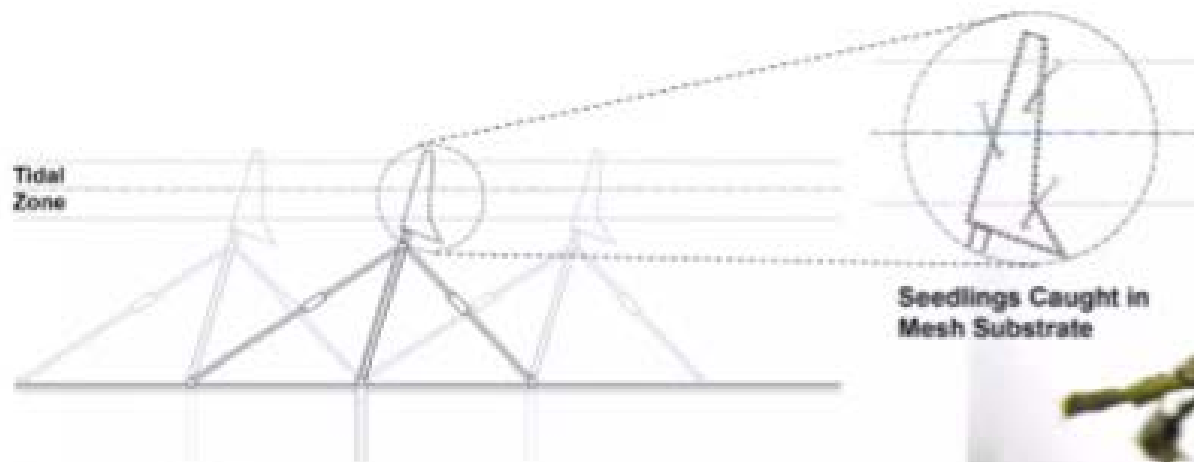
-70-90% reduction of storm wave energy or tsunami flow

-Natural filter for urban and agricultural runoff

-Prop roots trap sediment and provide habitat

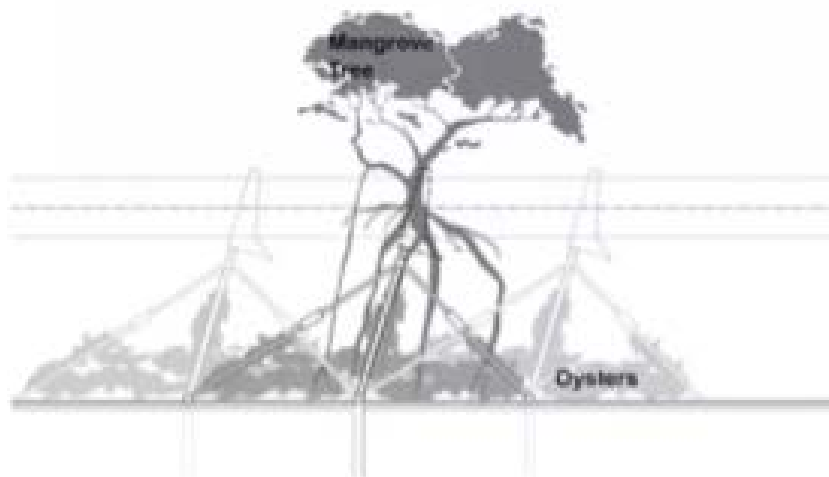
-Detritus forms basis to coastal food web

Engineered Mangroves



Seedlings Caught in Mesh Substrate

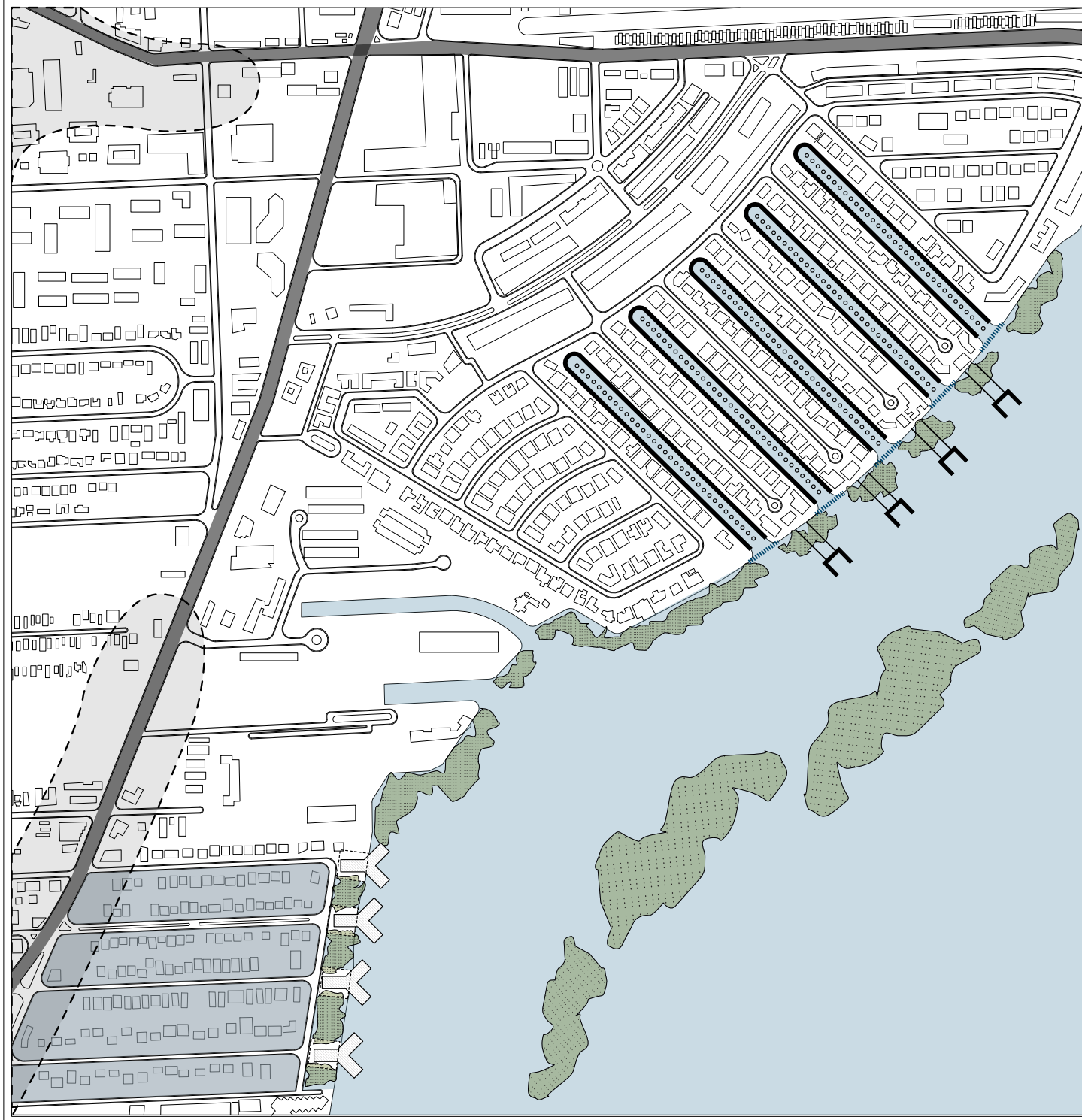
↶ Elevation of Tree Substrate Structure at Installation



Elevation of Structure with Tree and Oyster Growth (@ 8-10 yrs)



Successful Experiment to Establish Seedling onto Porous Substrate (Detail view of root structure)

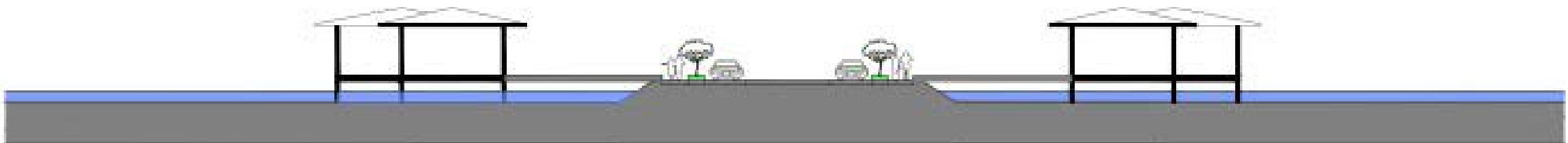
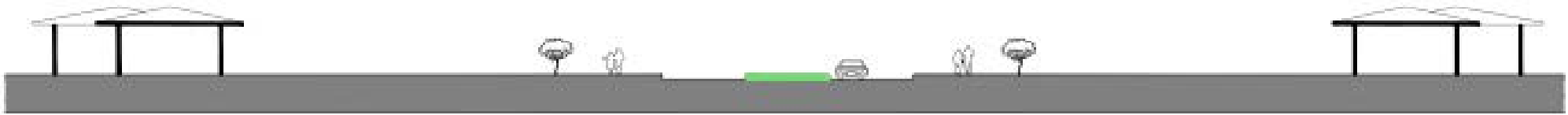


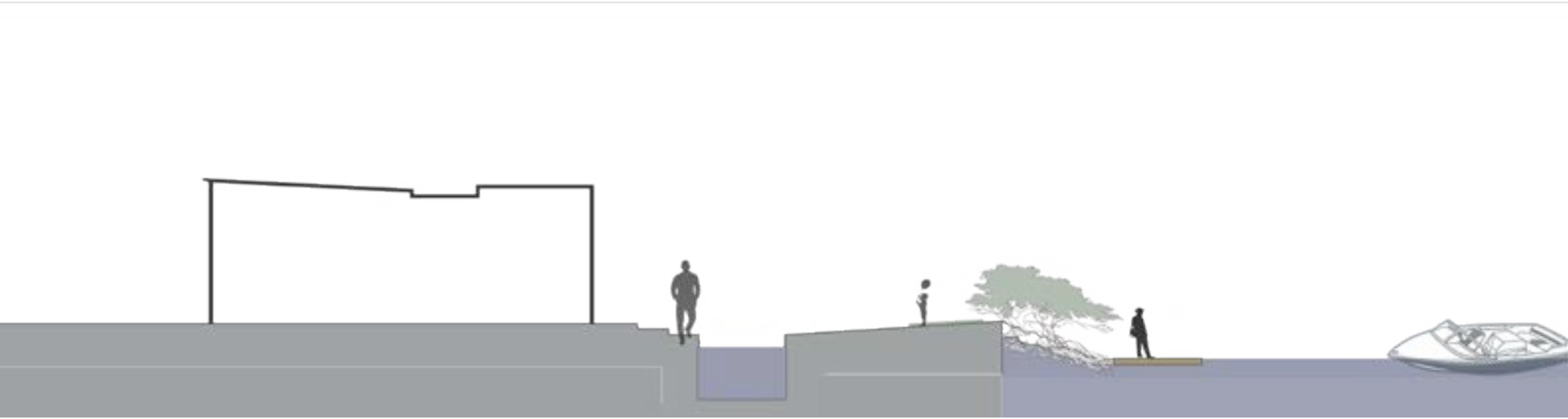
1" = 50'
SCALE BAR 1:180

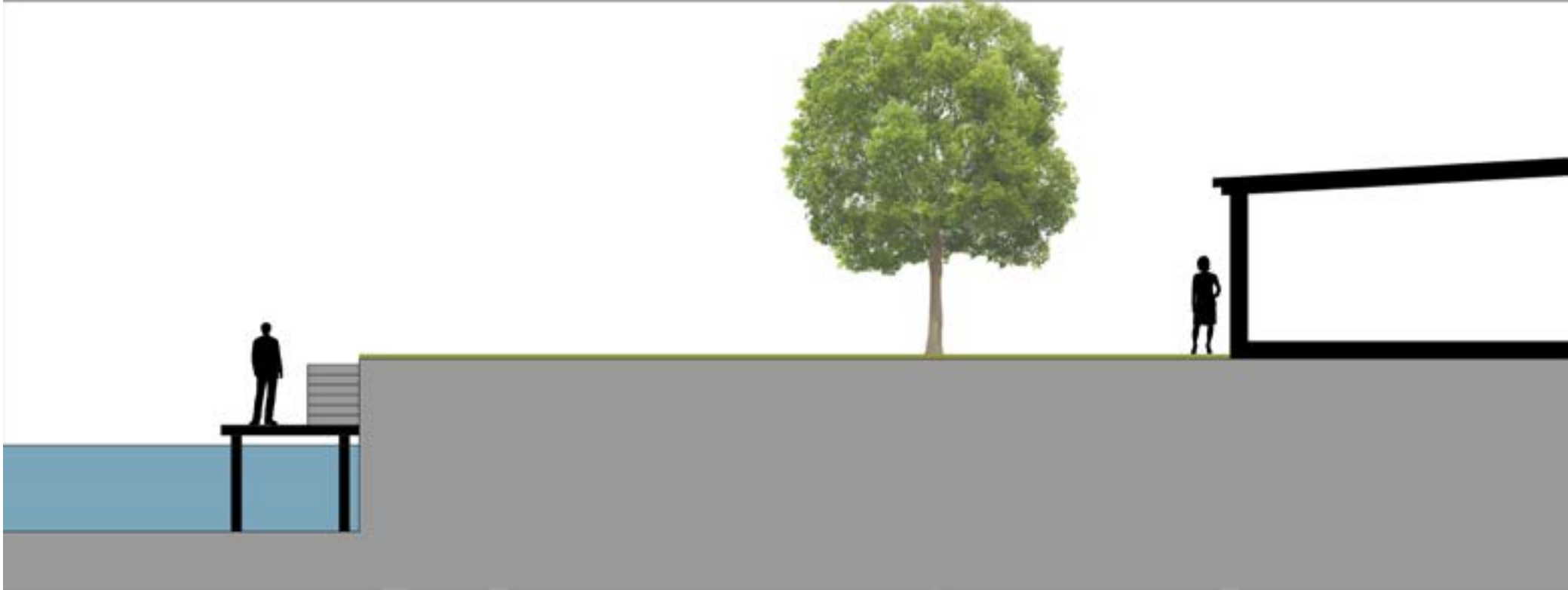
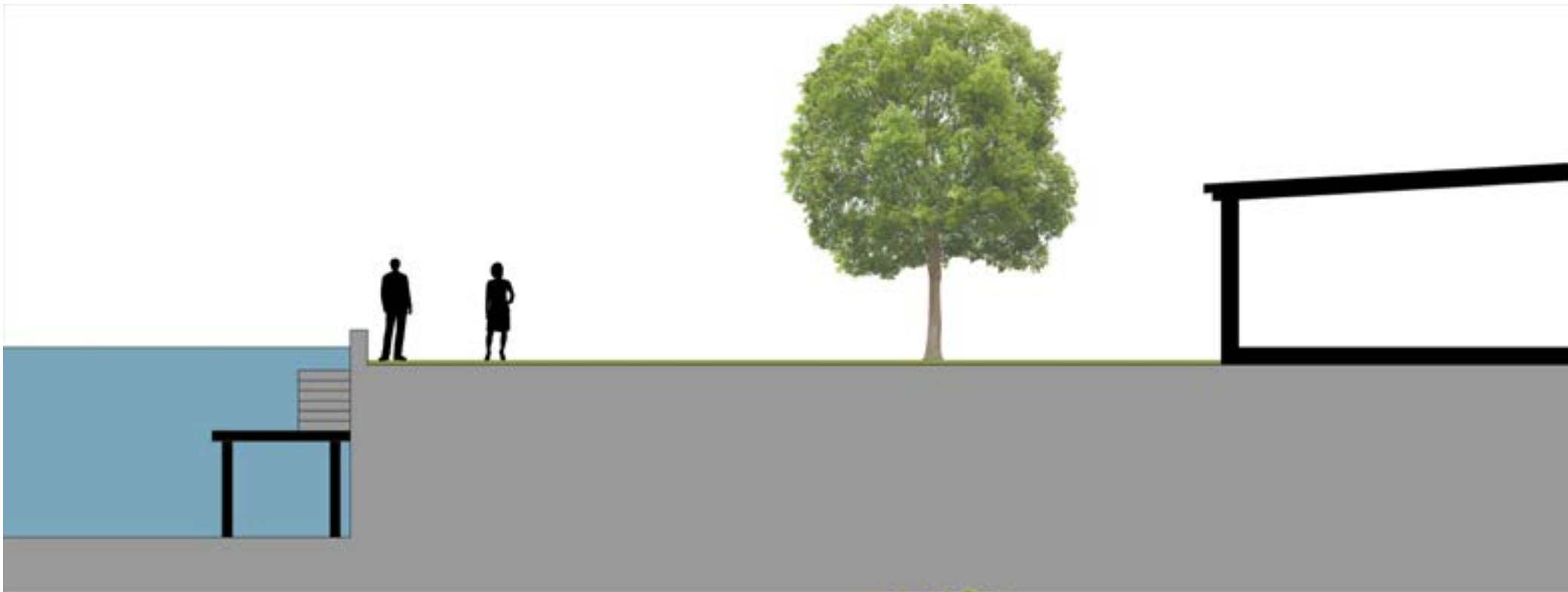
ARCH CREEK BASIN
WATERFRONT SITE
10 MINUTE WALK



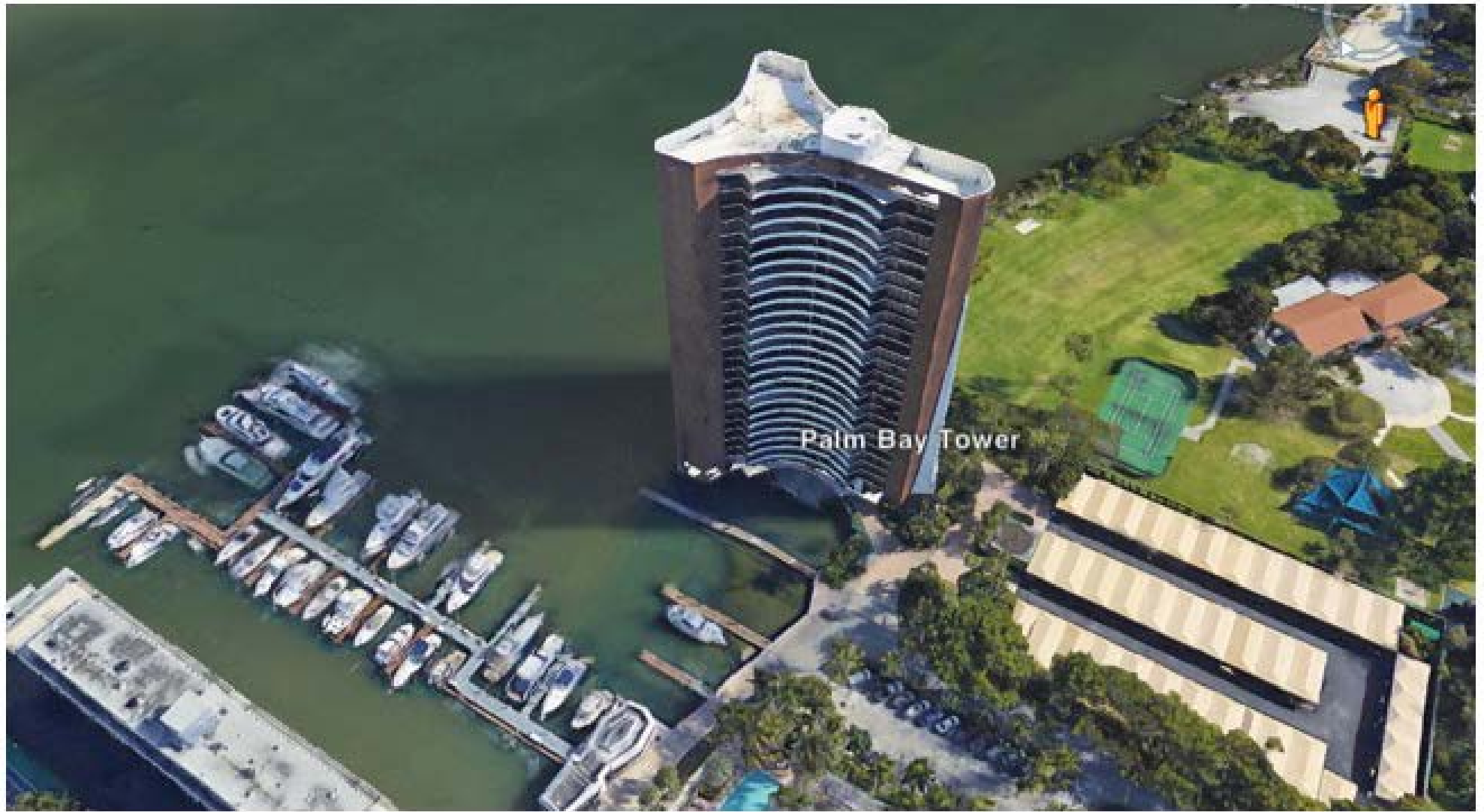
Street Sections

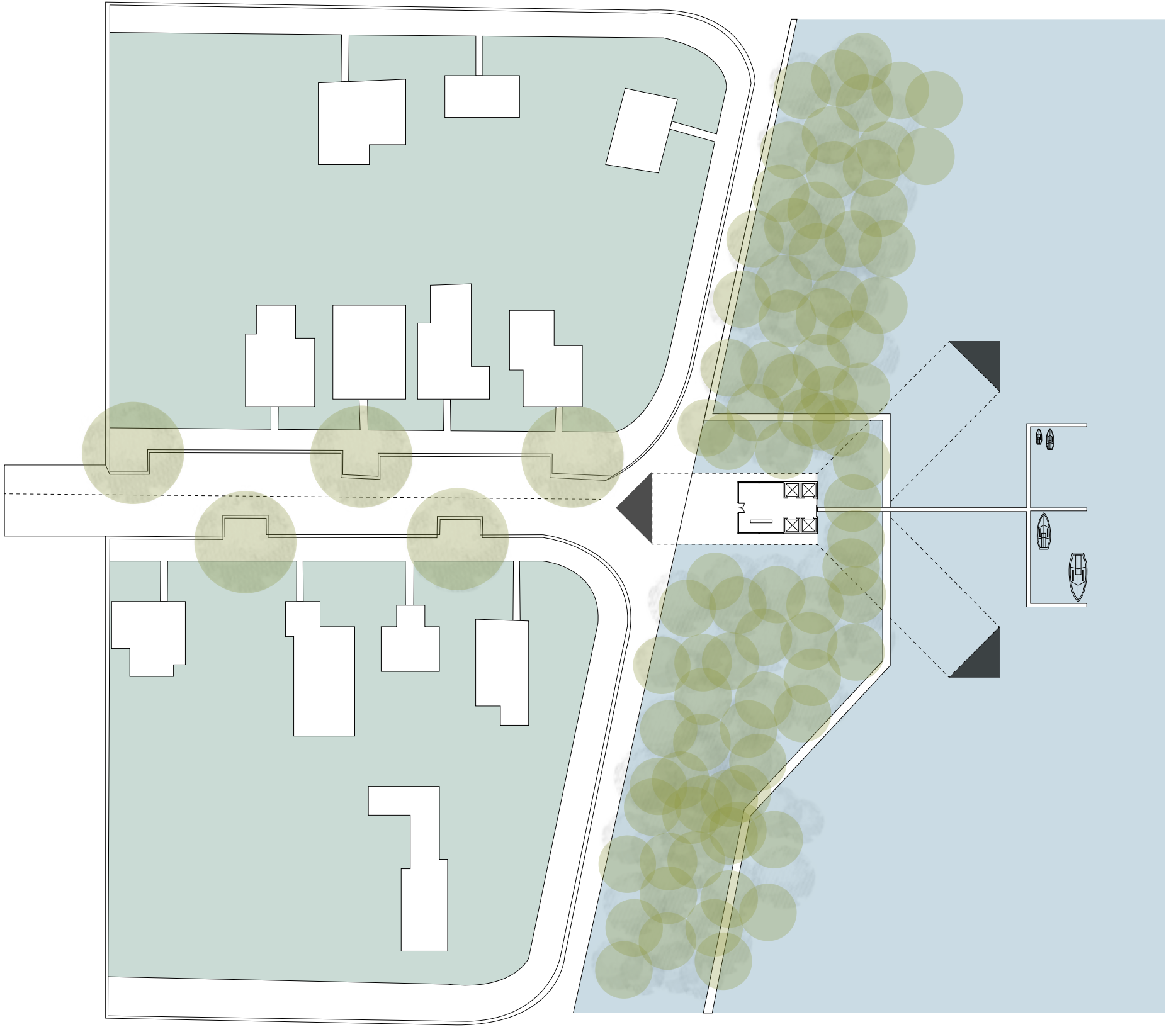






Palm Bay Tower Condominium, FL









1" = 25' 0"
SCALE BAR 1:180

ARCH CREEK BASIN
WATERFRONT SITE
10 MINUTE WALK









MIAMI SHORECREST AREA

2016 Resilient Redesign Workshop
Site Leader; Ajani Stewart



SHORECREST SITE

2016 Resilient Redesign Workshop

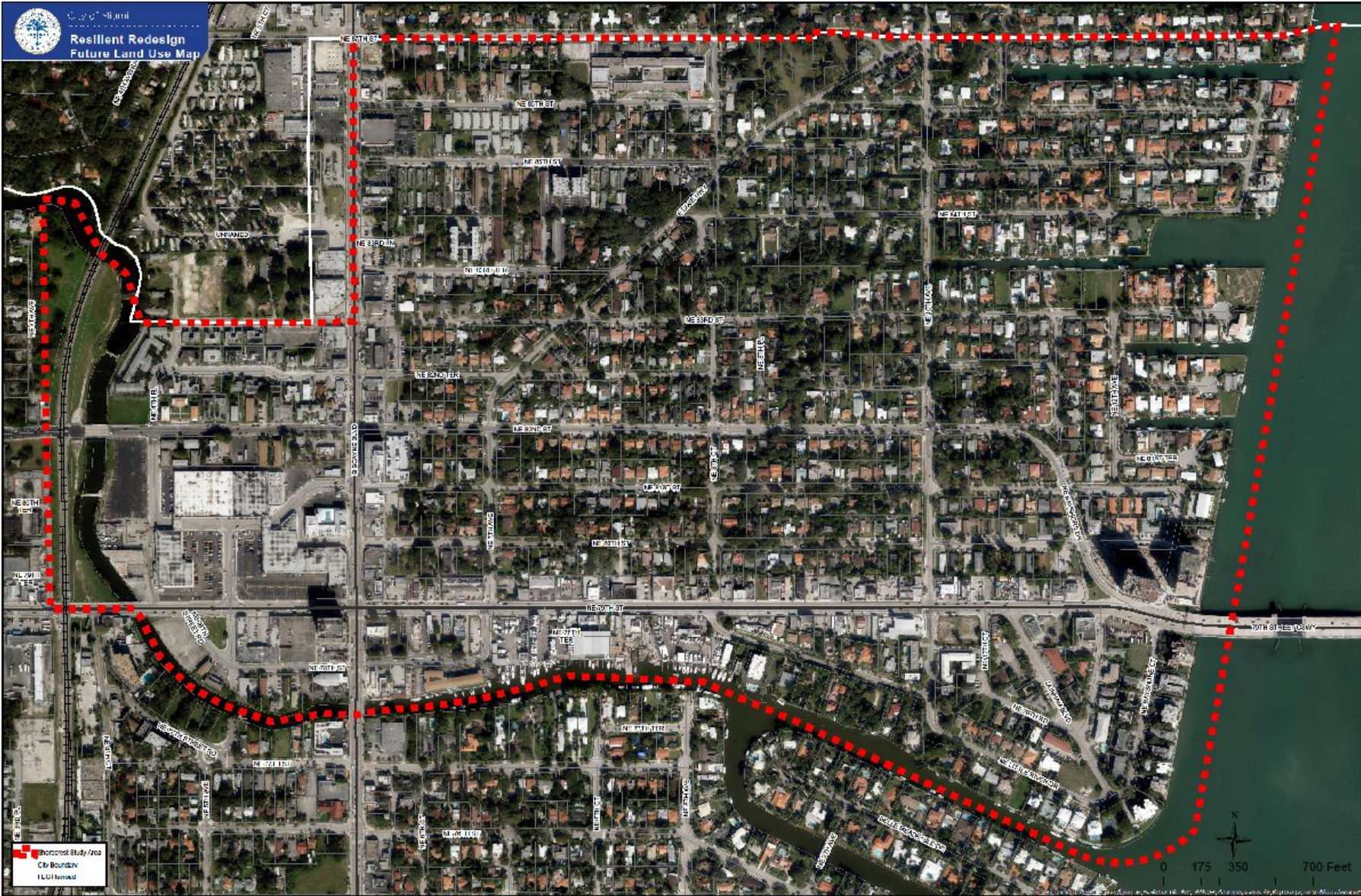
Design Leader: David Snow

Jane Gilbert, Lillian Blondet, Hermez Diaz, Stephanie Tashiro, Yating Yang,
Camille Cortes, Sophia Ellen C.C., Lacey Stansell



RESILIENT REDESIGN III - FINAL PRESENTATION
SHORECREST, MIAMI

SHORECREST AERIAL MAP

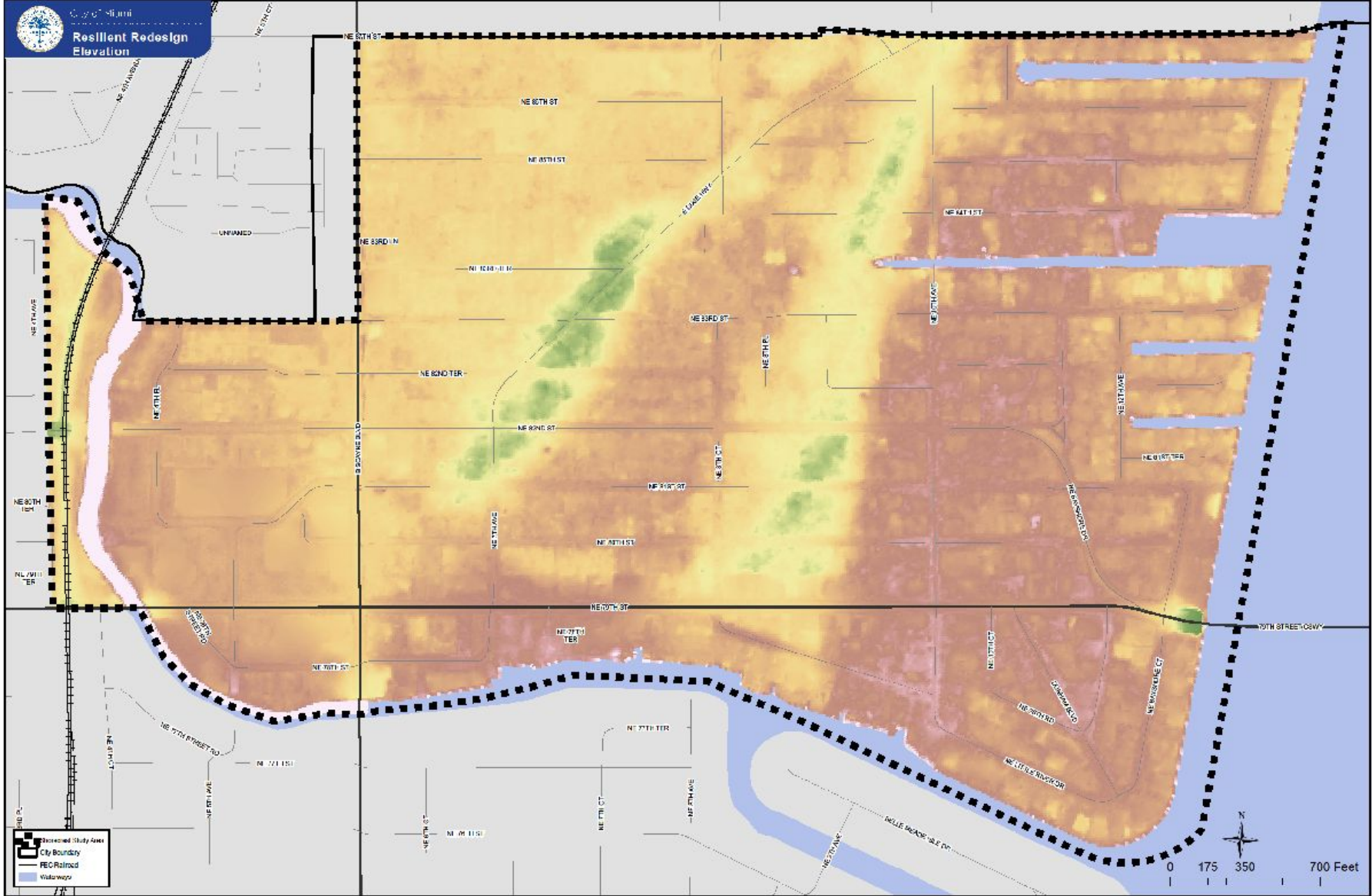


SHORECREST, MIAMI

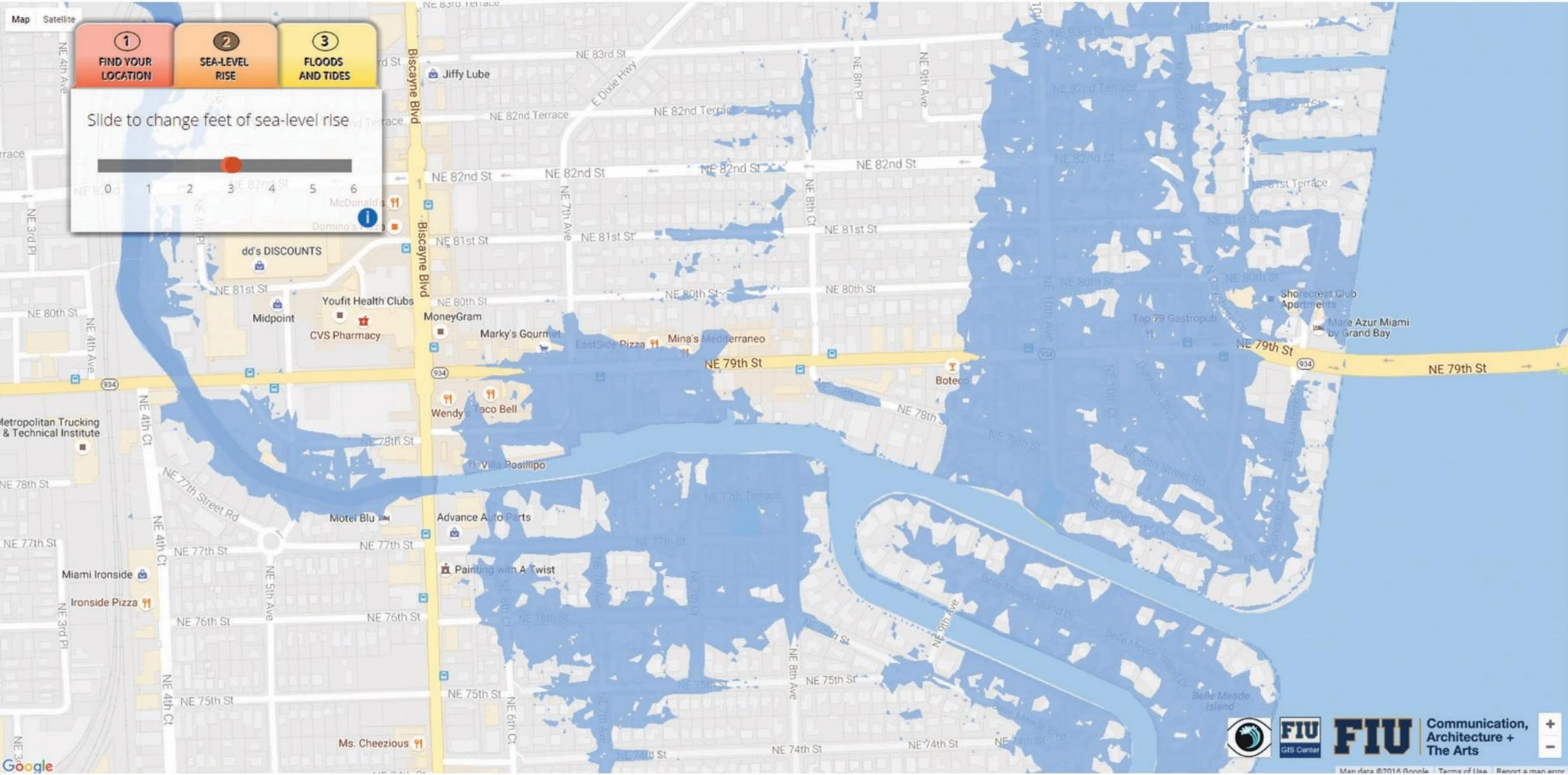
FRAMING THE ISSUES

- Located in northeastern section of the City of Miami
- Very low elevations
- Extremely vulnerable to flooding (tidal, storm surge, rain events), esp. south of 79th street
- Diverse socio-economic conditions, demographics and housing stock
- Single family homes; low-income multi-family; some higher end homes on the Bay; older, well established neighborhoods
- Opportunities for a variety of near, mid and long term solutions

SHORECREST AERIAL MAP



SEA LEVEL RISE (3 FT SCENARIO)



KING TIDE IMPACTS



THE APPROACH

THE SHORT TERM

(1-5 YEARS)

ROADS

- 10th Avenue, 79th Street, and 82nd Street
- Raised a minimum of 1 ft

DRAINAGE

- Backflow Preventers Installed
- Small Pump Stations
- Focus on Current Zones of Frequent Inundation

SEAWALL

- Currently about 6 ft high
- Raise to 8 ft, to Protect Against Storm Surges

THE MID TERM

(5-10 YEARS)

DENSITY LEVELS / DEVELOPMENT OPPORTUNITIES

- Incentivize or Discourage Additional Developments
- Organized by Zone
- Transfer of Development Rights
- Incentivize Relocation to Higher Zones
- Transfer of Development Rights (TDR) Program

IMPROVEMENTS

- Neighborhood Cleanup

ROADS

- 10th, 79th, and 82nd Elevated More than 1 ft
- Drainage + Bioswale Solutions

ARCHITECTURE

- Sustainable Architectural Enhancements
- Building Code Modifications
- Design Guidelines

TRANSPORTATION

- Commuter Rail Service
- Bus Circulation
- Sustainable Water Taxi

THE LONG TERM

(10 YEARS + BEYOND)

FUTURE DEVELOPMENT

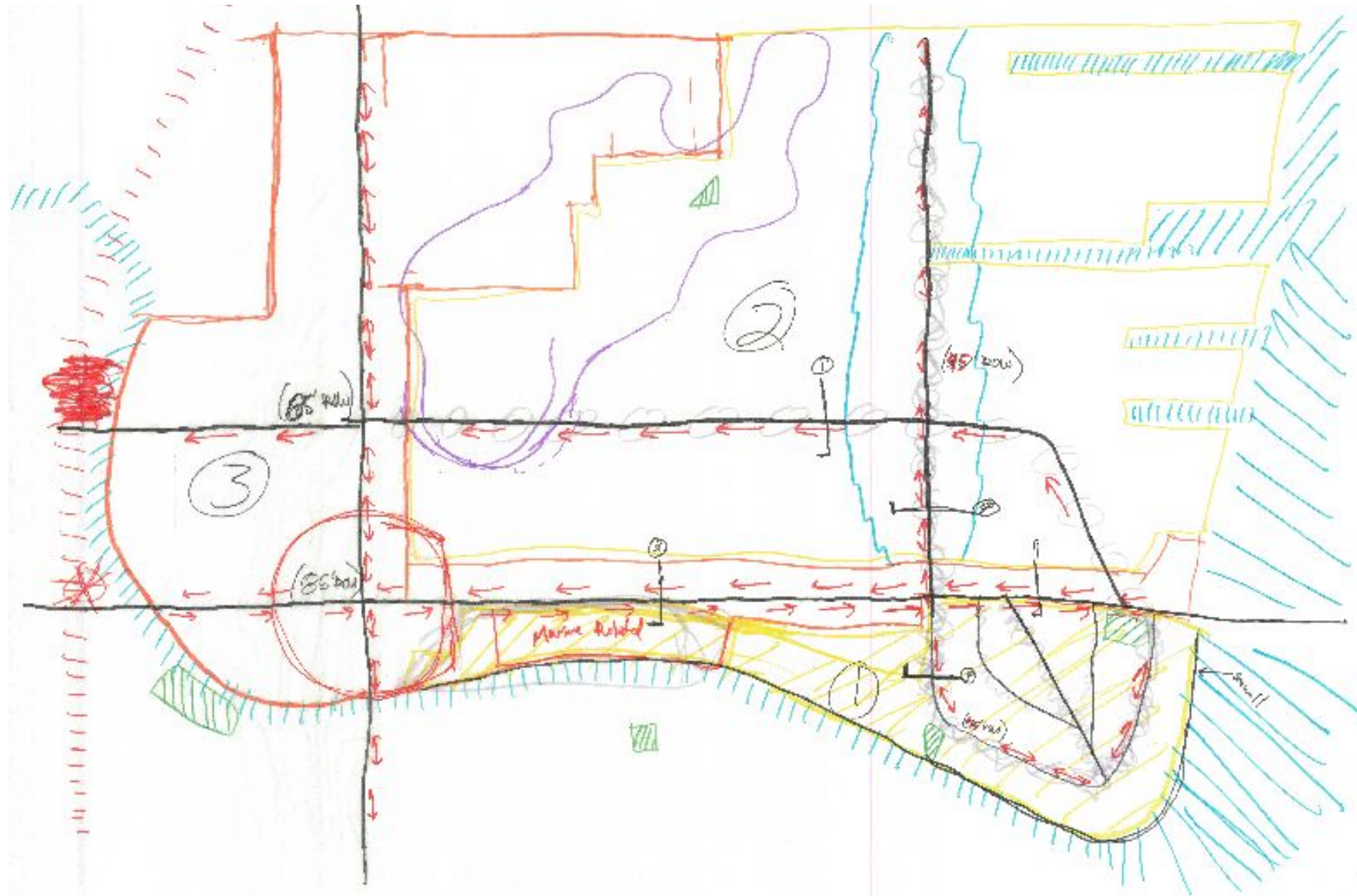
- Water Retention Area / Natural Barrier
- New Housing / Development Areas
- Little River Natural Enhancements

ENHANCEMENTS

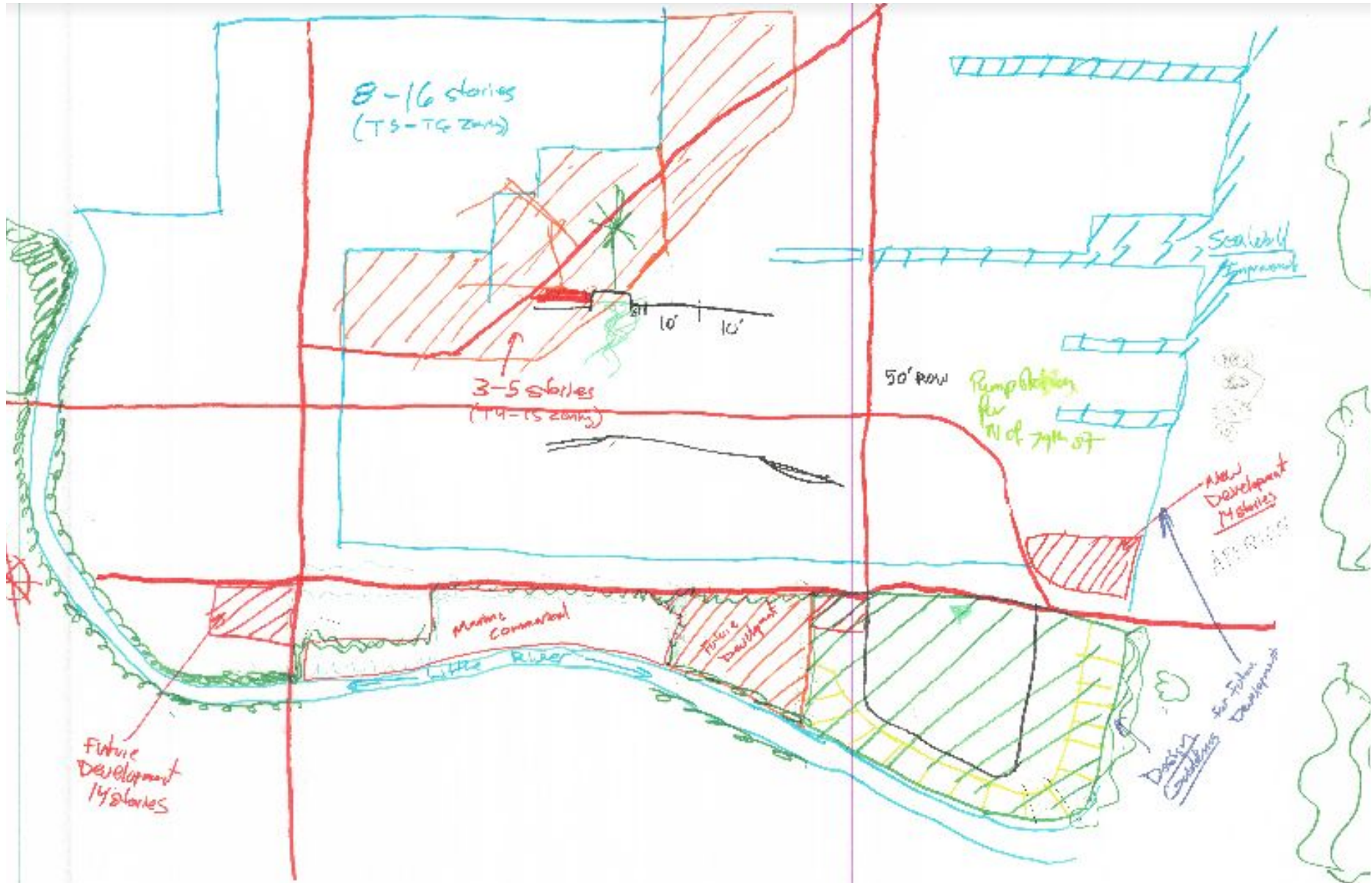
- Existing Marine Business
- Existing Single-Family Neighborhood

MAPPING

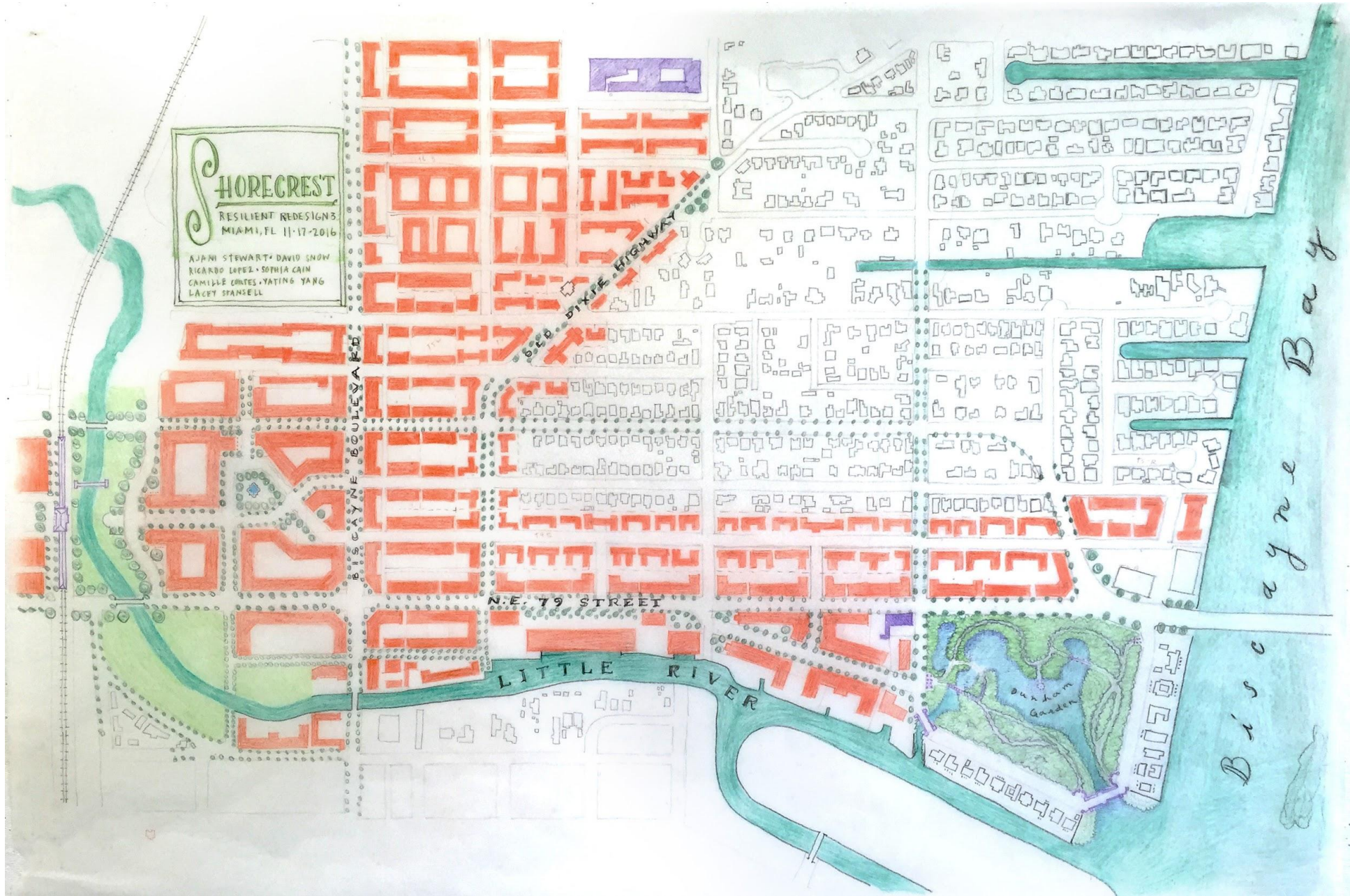
PROGRESS SKETCHES



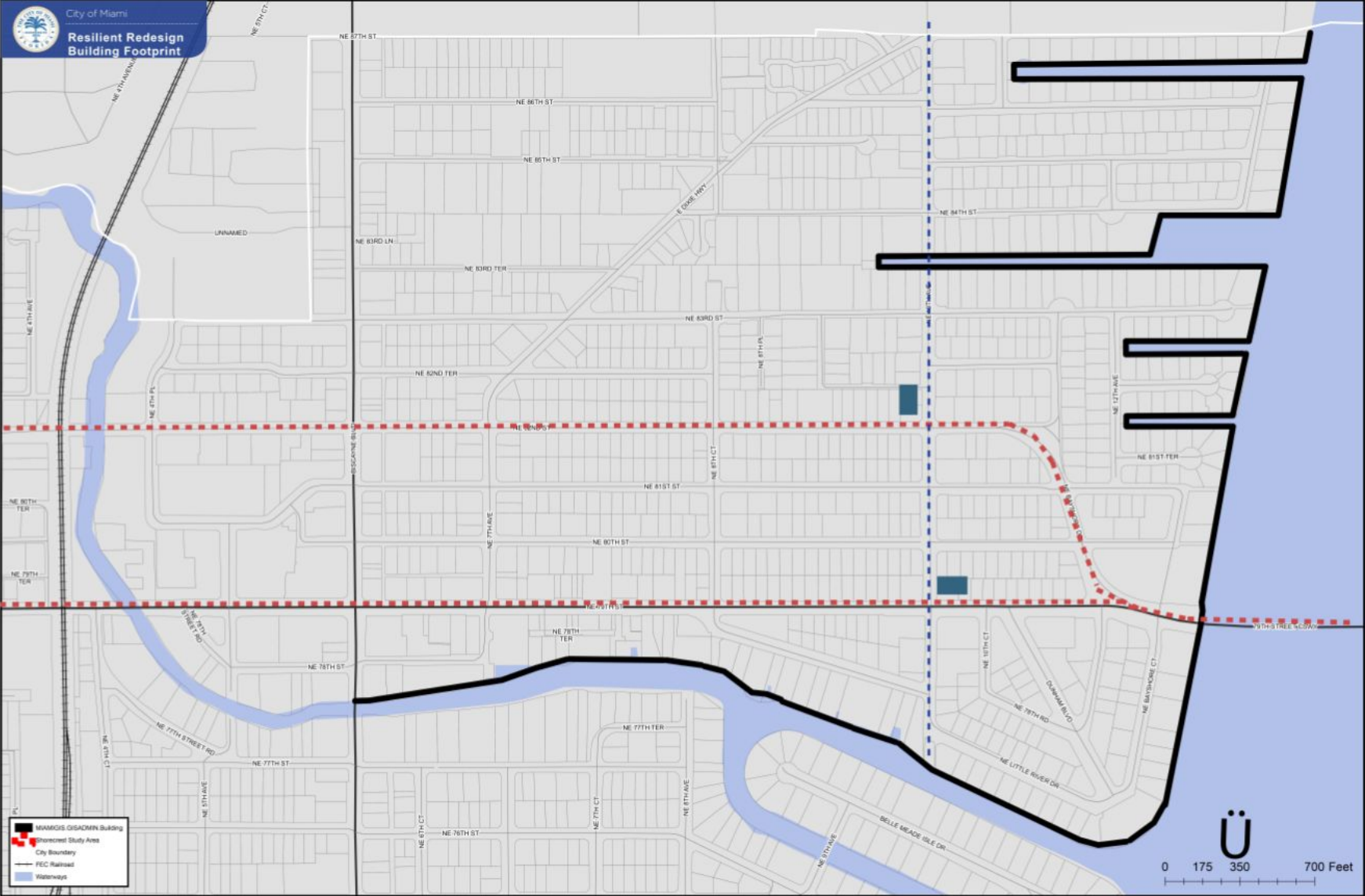
PROGRESS SKETCHES



MASTER PLAN



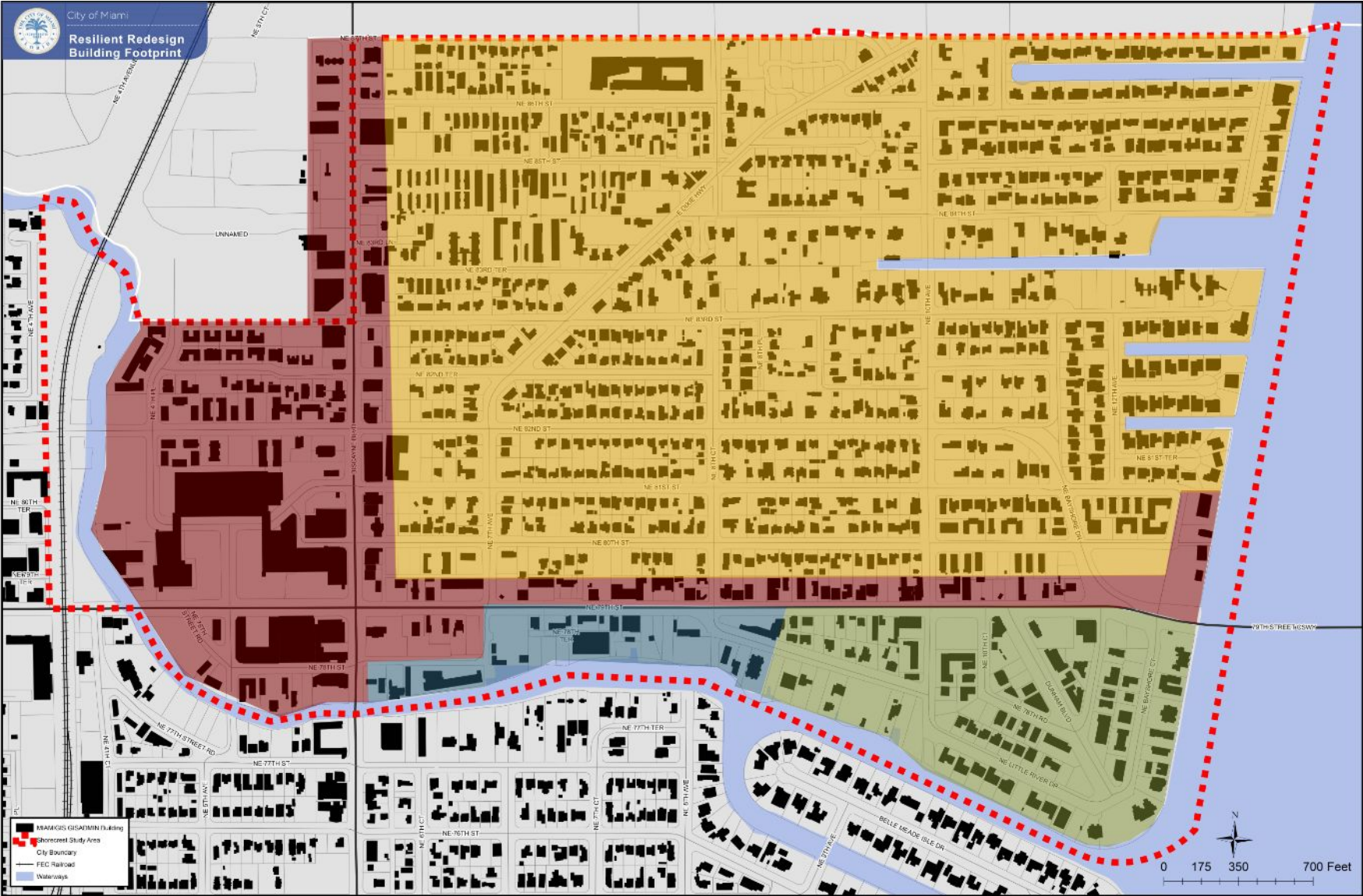
SHORT TERM INFRASTRUCTURE MAP



MID TERM NATURAL ZONE IMPROVEMENTS



ZONES OF IMPROVEMENT

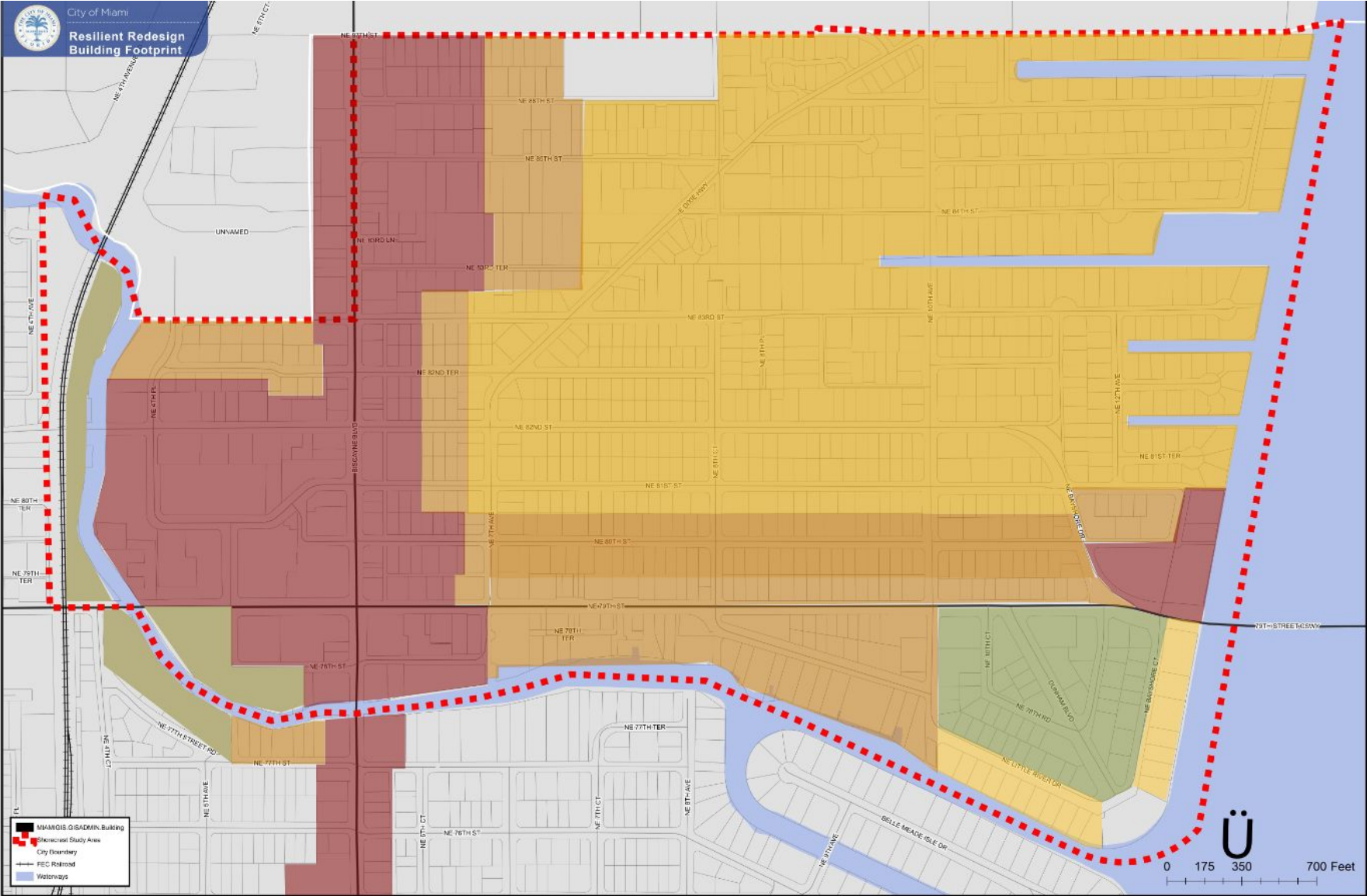


Legend

- High Density Zone
- Residential Zone
- Natural Zone
- Marine Zone

Shorecrest Study Area
 City Boundary
 FEC Railroad
 Waterways

MID TERM ZONING MAP



Legend

Residential

- T3
- T3-R

Commercial

- T5
- T4-R
- T6-8

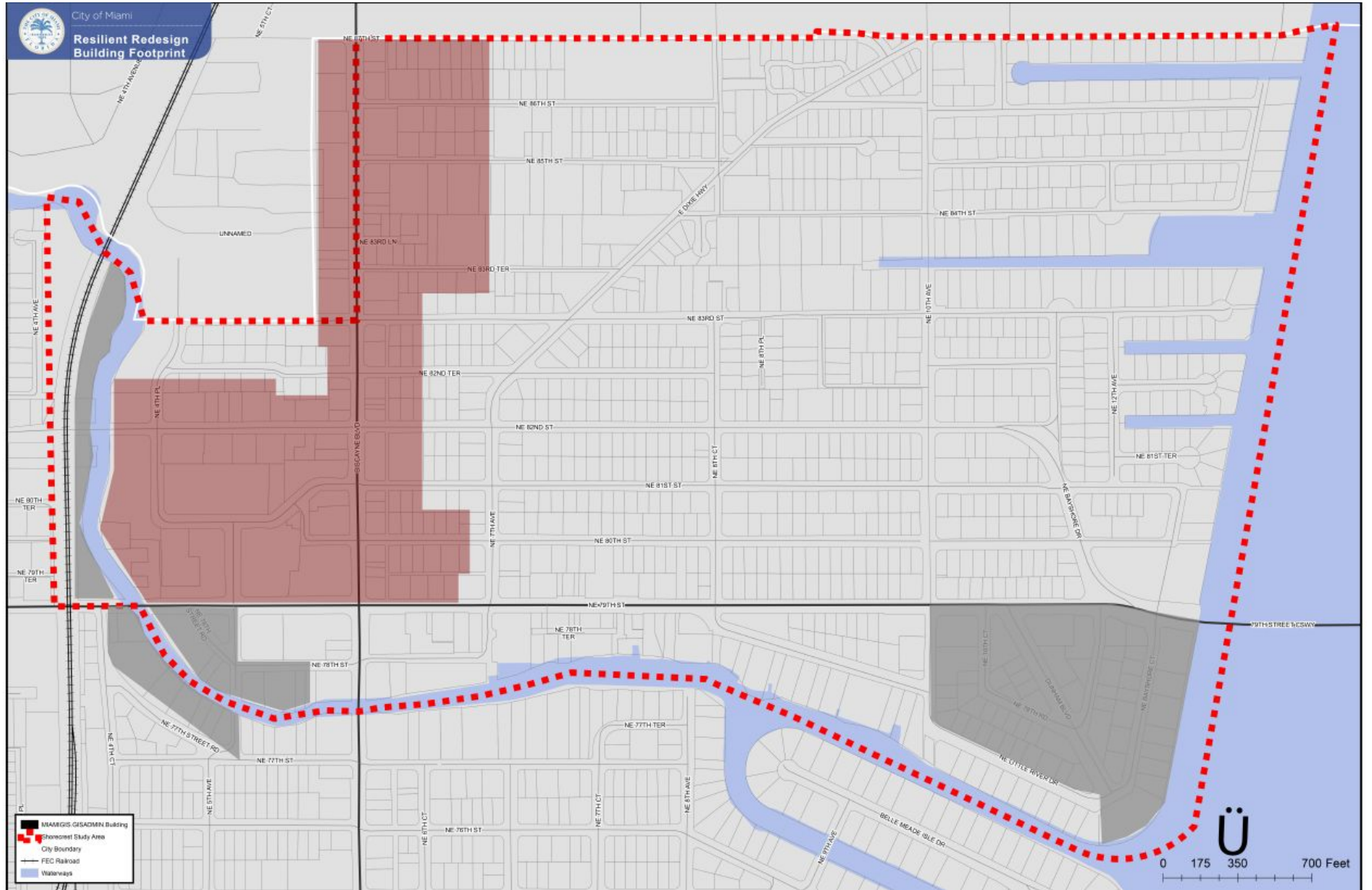
Parks

- CS

Other Symbols:

- MIRAGE OISAKIN Building
- Resilient Redesign Building Footprint
- City Boundary
- FEC Railroad
- Waterways

MID TERM TDR MAP

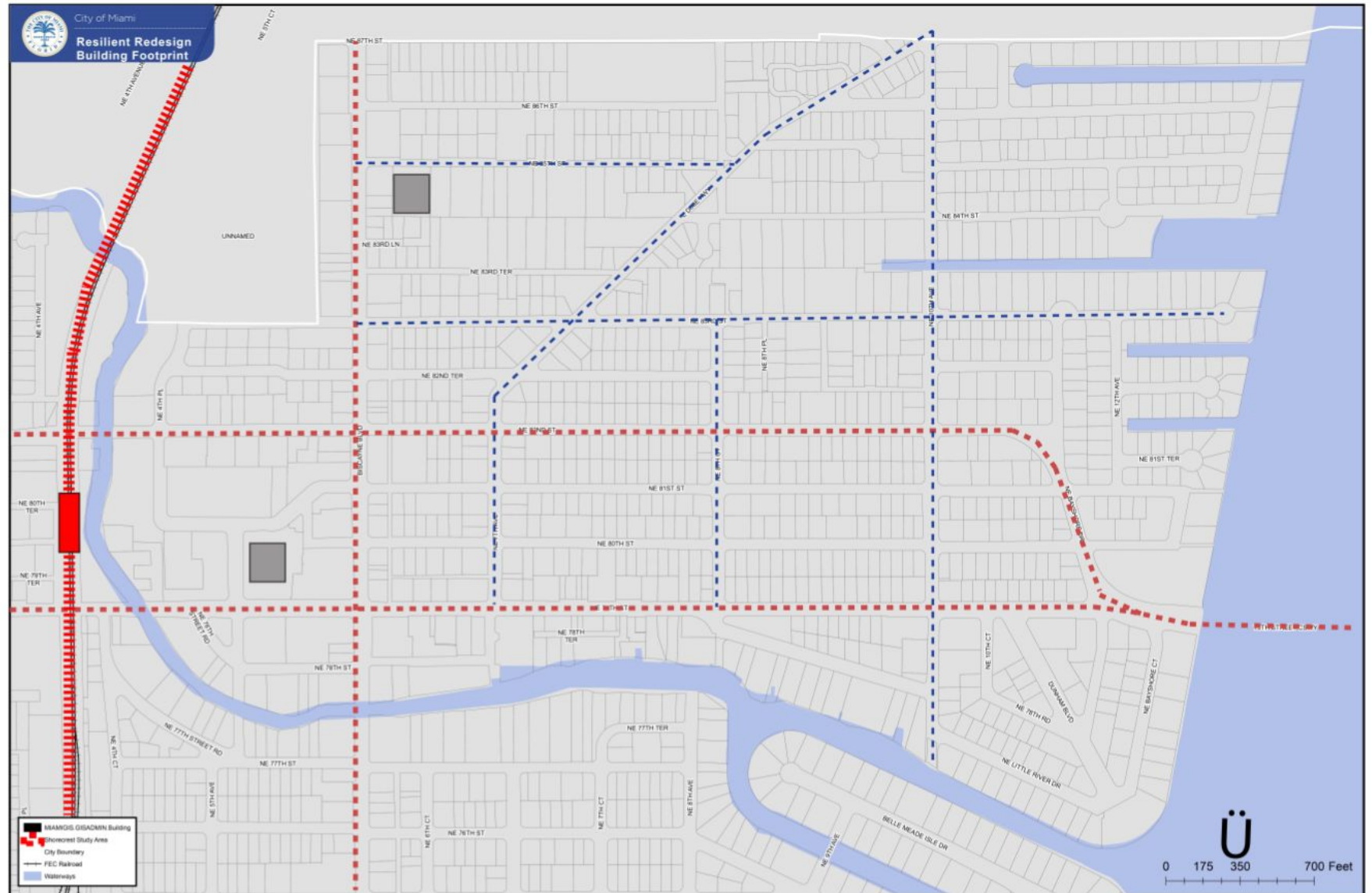


Legend

- Receiving Area
- Transfer Area

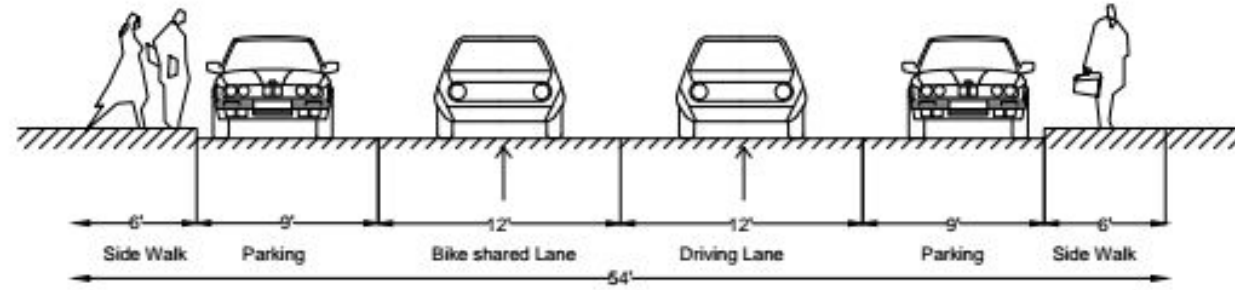
MAMIGIS GASADMIN Building
 Shorecrest Study Area
 City Boundary
 FEC Railroad
 Waterways

MID TERM TRANSPORTATION MAP

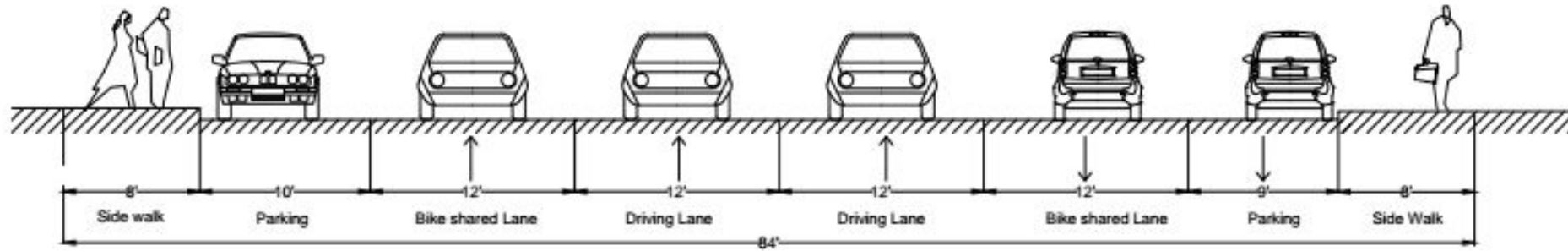


STREET SECTIONS

EXISTING STREET SECTIONS

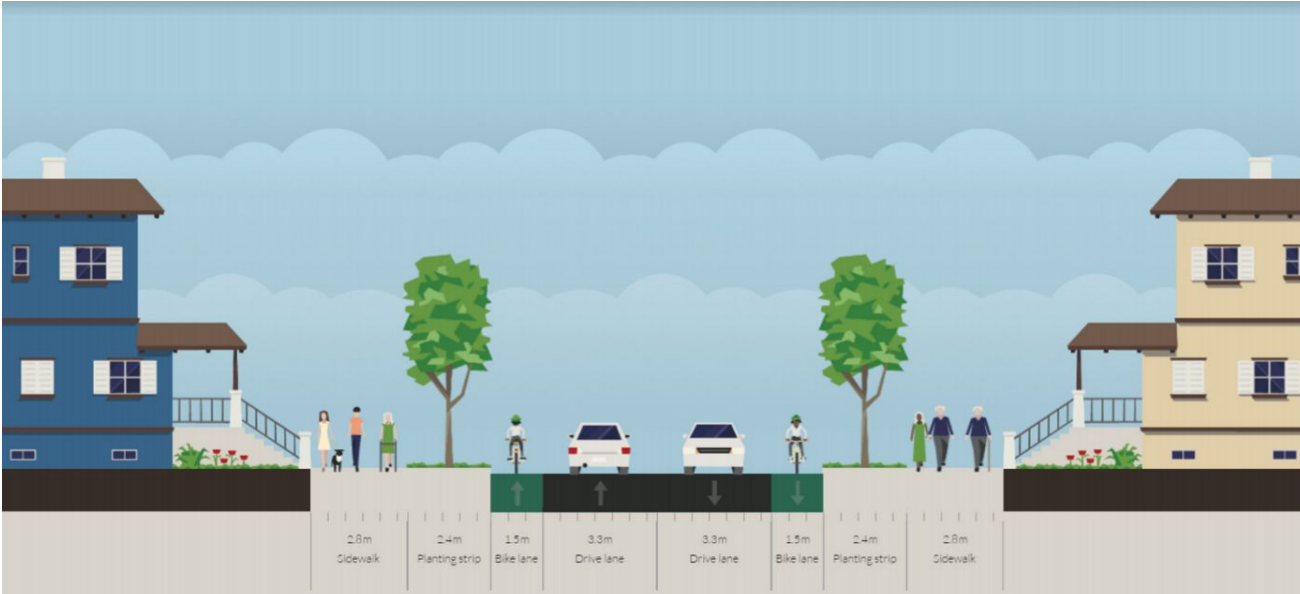


Existing NE 82nd ST Section

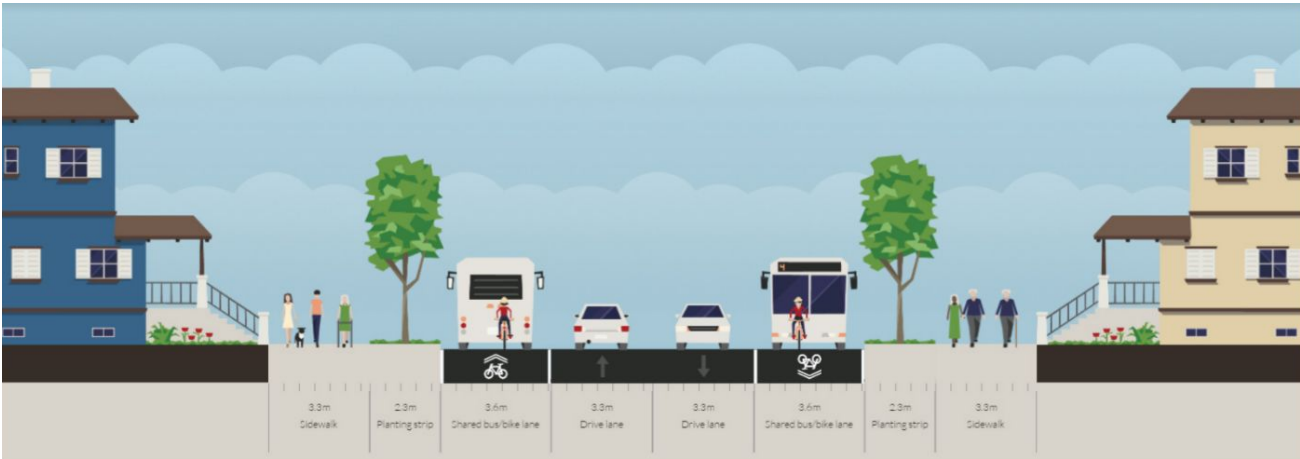


Existing NE 79th ST Section

PROPOSED STREET SECTIONS

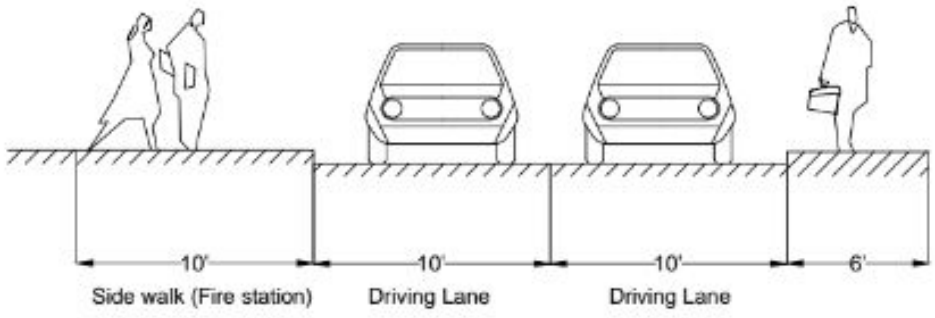


82nd Street Proposal

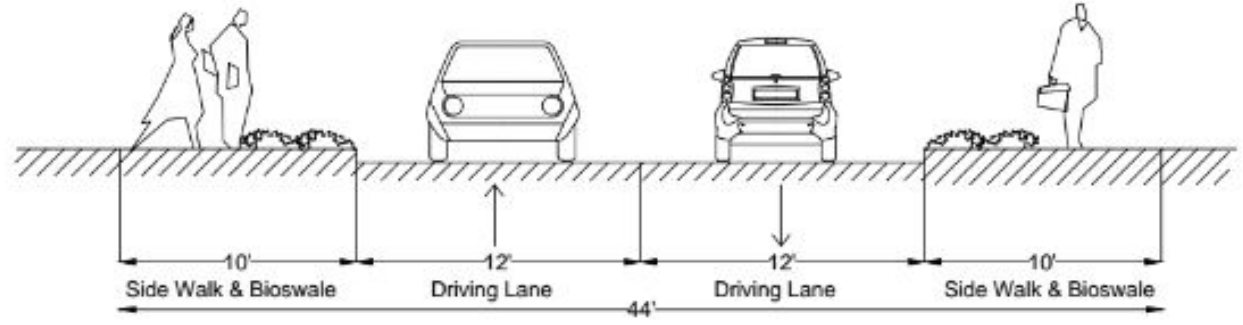


79th Street Proposal

EXISTING STREET SECTIONS



Existing 10TH AVE South Section



Existing 10TH AVE Section

PROPOSED STREET SECTIONS



10th Avenue Southbound Proposal

PROPOSED STREET SECTIONS



10th Avenue Northbound Proposal

FINAL VISION

REGULATORY CONSIDERATIONS

- Zoning and Future Land Use Map Changes: establish appropriate high density development nodes and protections to existing single family neighborhoods
- Building Code Modifications: Establish base flood elevations that anticipate levels beyond FEMA levels
- Public Works: Enhance engineering standards for typical street sections within areas below certain flood levels
- Architectural Design: Create “amphibious” building design guidelines for low-lying areas

REGULATORY CONSIDERATIONS

- Little River Design Guidelines: reestablish a more natural environment along the river's edge while creating a linear park system for waterfront access
- TDR Program: Design a TRD program that will incentivize development in more high-level/higher density areas (Receiving site) and benefit property owners that have lost development opportunities in low-lying areas (Transfer Sites)
- Parking Trust Fund: Establish parking alternatives (centralized parking program) in high-level areas that can be supported by future development contributions

LITTLE RIVER FUTURE ENHANCEMENT

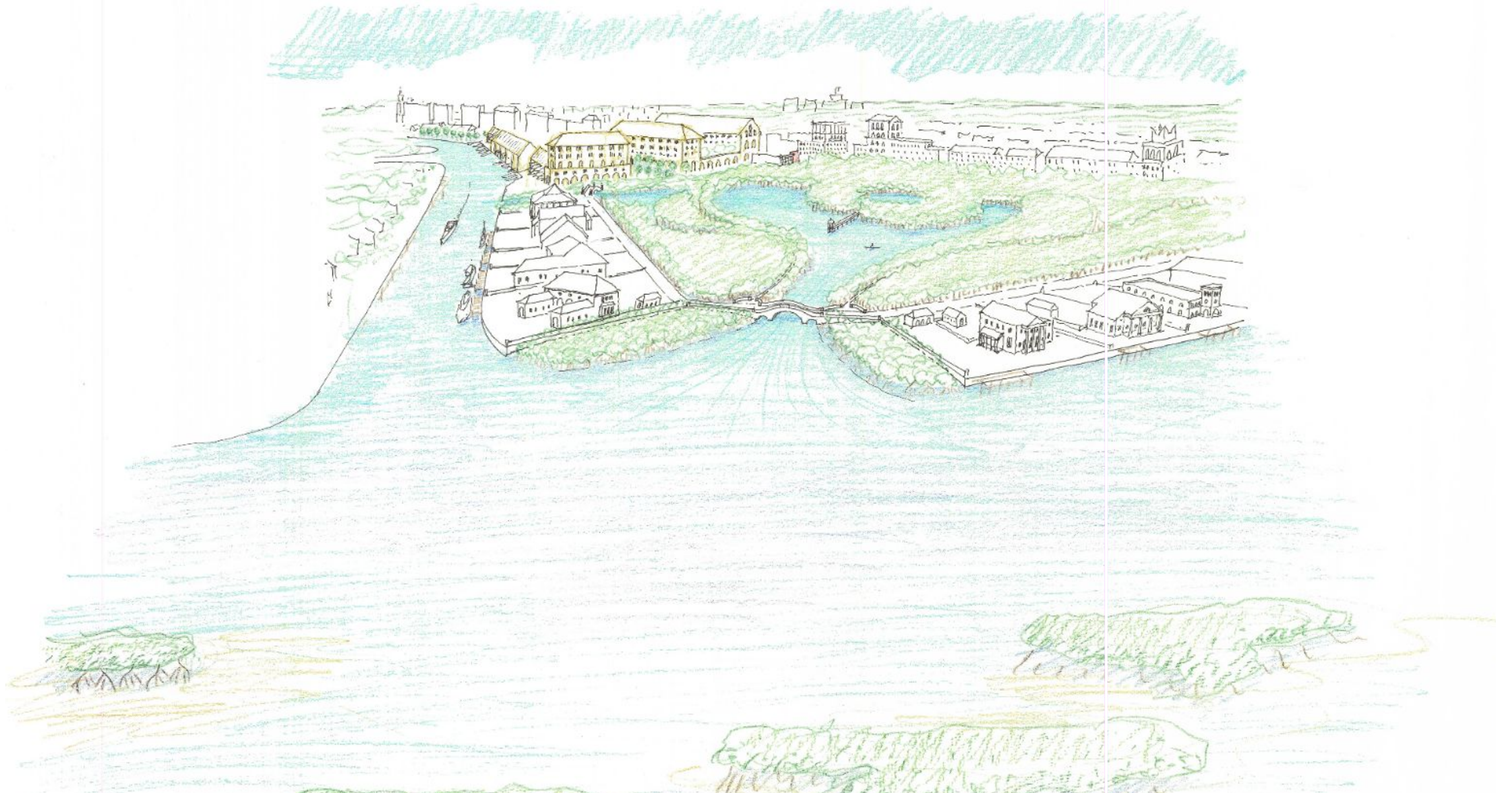


DUNHAM WATERFRONT GARDEN

LONG TERM REPURPOSING OF INUNDATED AREA
SOUTH OF 79TH STREET



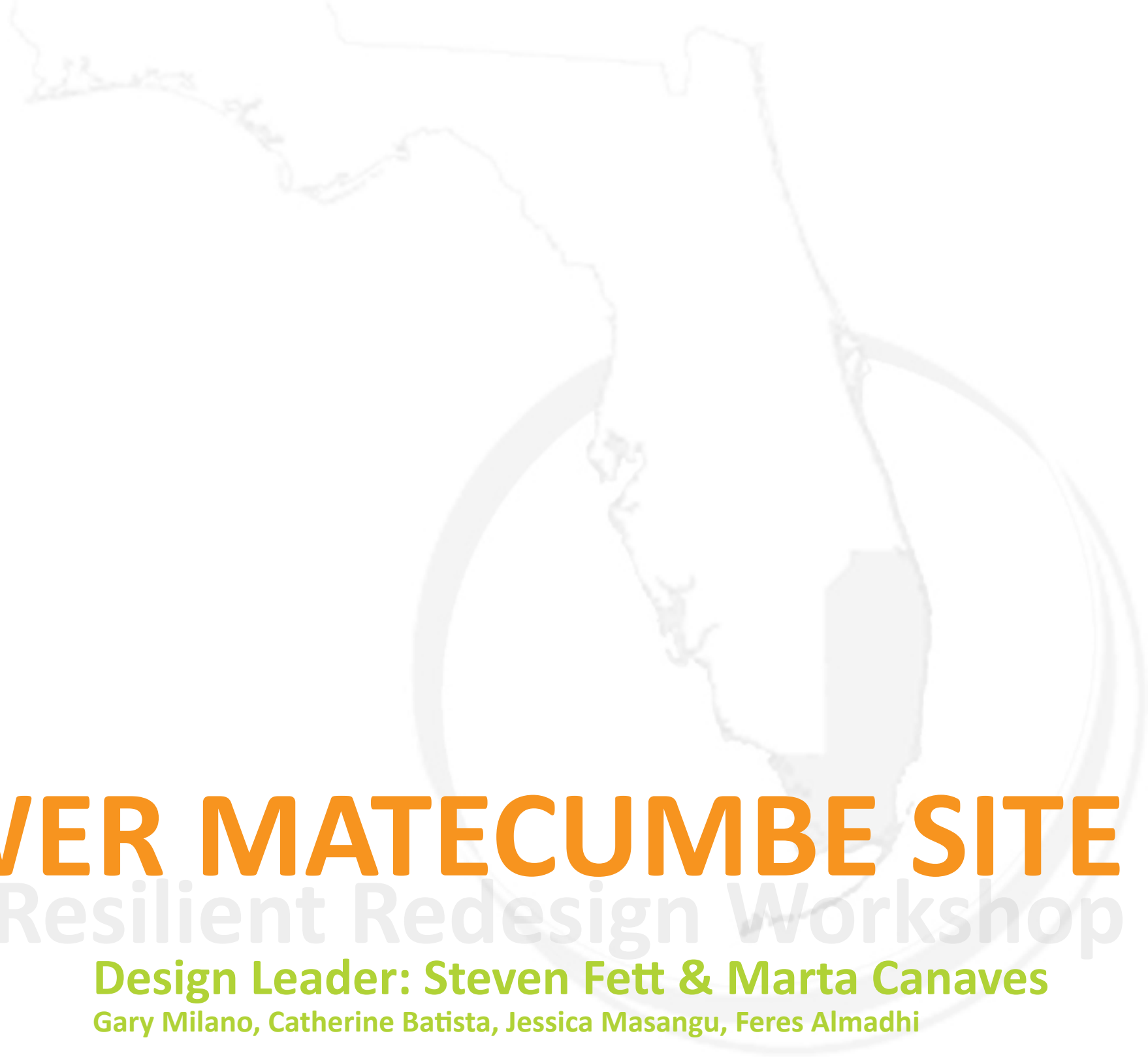
DUNHAM WATERFRONT GARDEN





FLORIDA KEYS

2016 Resilient Redesign Workshop
Site Leader; Chris Bergh & Susan Sprunt, PhD.



LOWER MATECUMBE SITE

2016 Resilient Redesign Workshop

Design Leader: Steven Fett & Marta Canaves

Gary Milano, Catherine Batista, Jessica Masangu, Feres Almadhi

Lower Matecumbe Key

1. Potential Residential



2. Waterway Connectivity



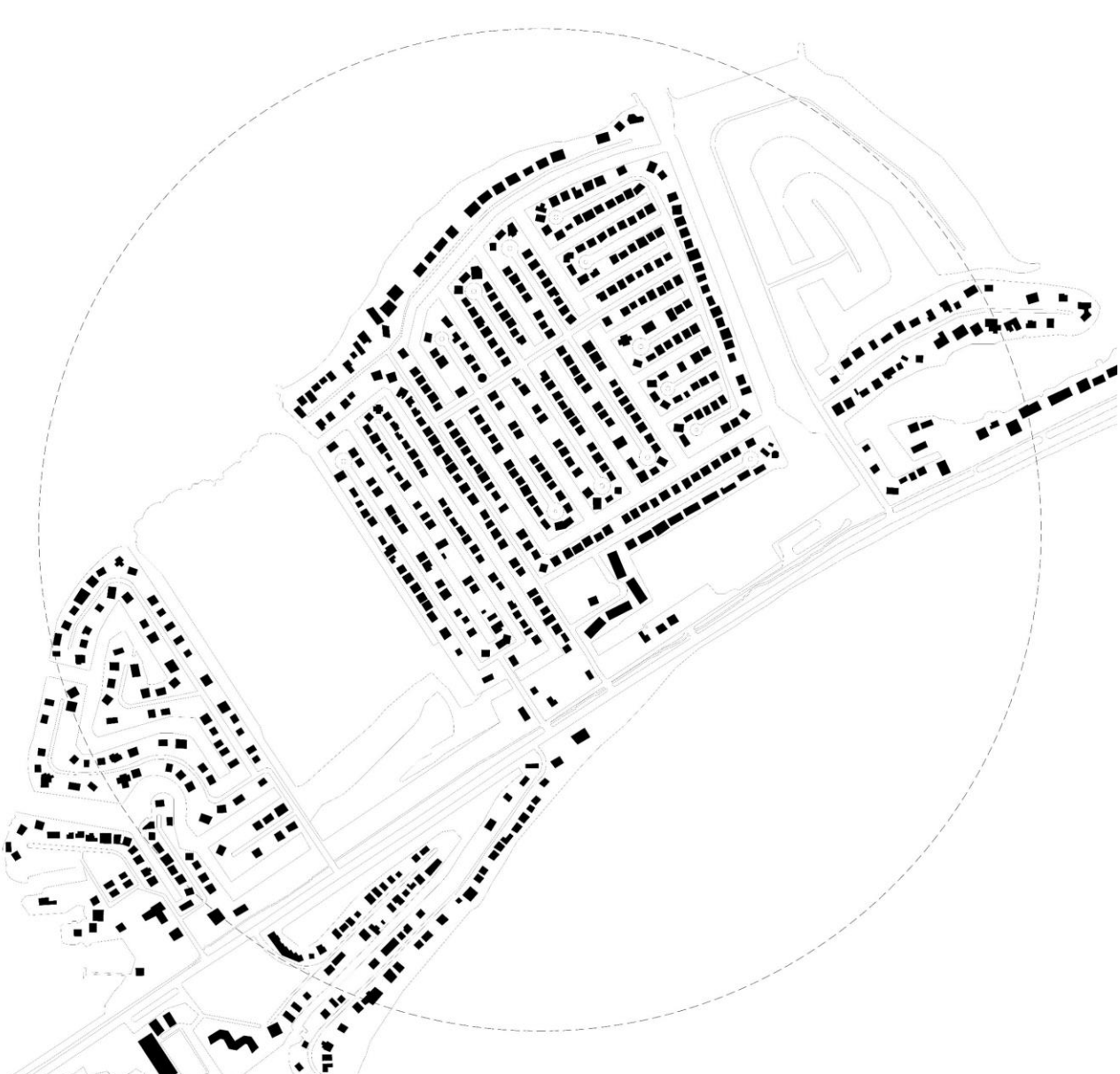
3. Existing Residential



4. Sea Oats Beach/US1 Exposure



Figure Ground Progression



Preliminary Master Plan Proposal



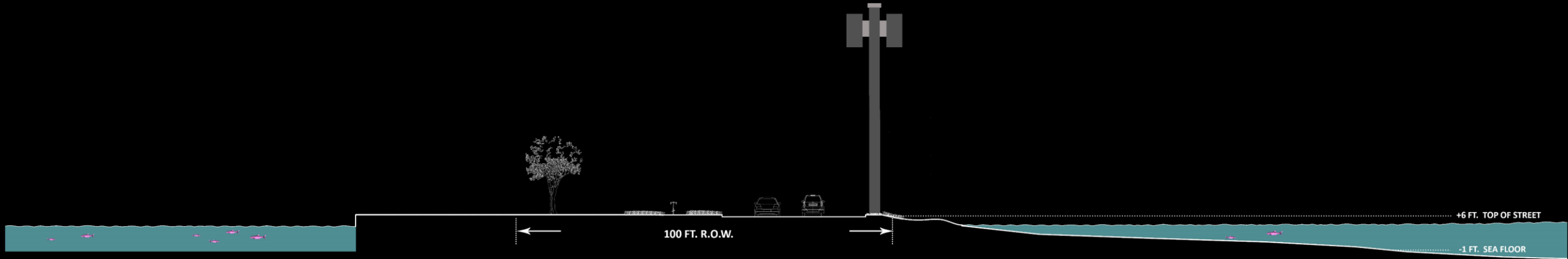
Final Master Plan



Sea Oats Beach/US1 Focal Area



Sea Oats Beach/US1 Existing and New Sections



EXISTING US-1 STREET SECTION



PROPOSED US-1 STREET SECTION

Initial Shoreline Protection Treatment and Beach Restoration Treatment



Commercial Revitalization



Waterway Connectivity Focal Area



Existing Residential Focal Area



Existing Residential Details

- Buying time for the past
- Raising homes
- Improving water access
- Floating “roads” for light vehicles
once road flooding becomes too frequent



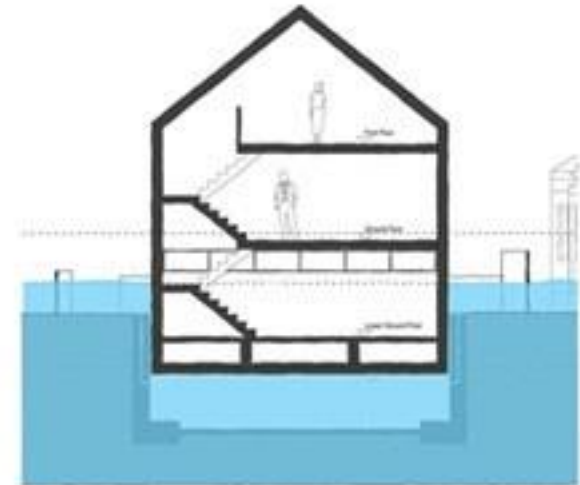
New Residences at Parmelee Estate Focal Area



Parmelee Estate Floating Residential Precedents

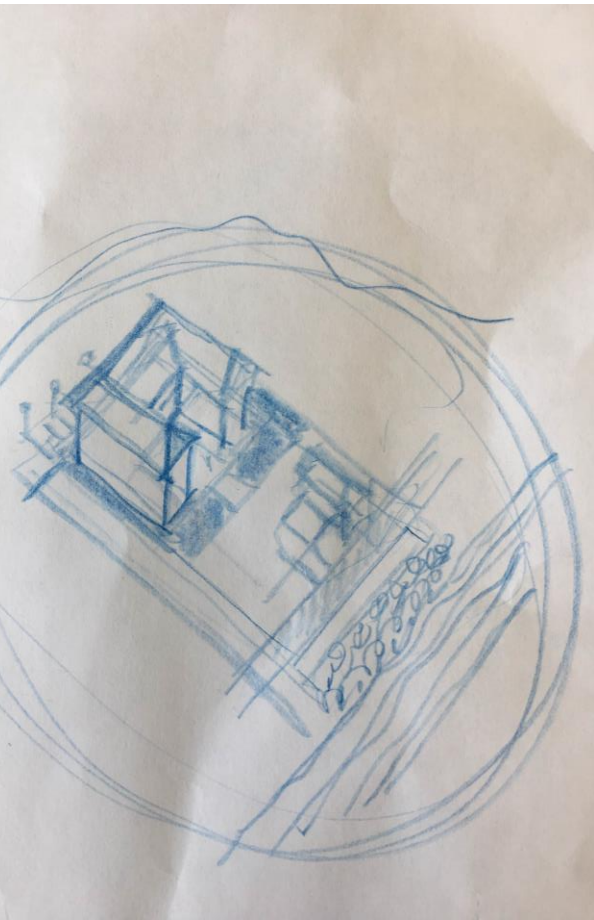


Resting Postion

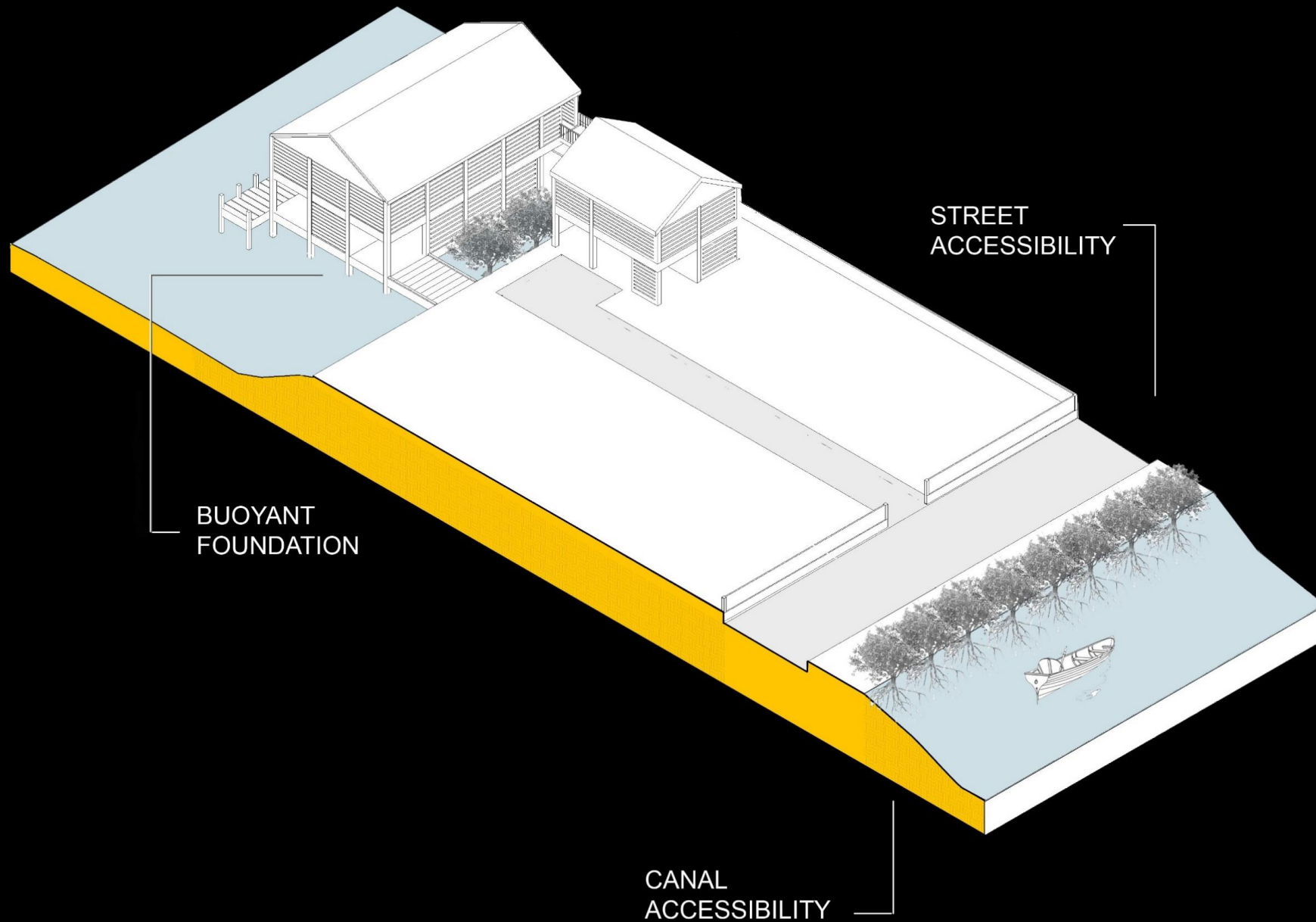


Flood event

Parmelee Estate Floating Residence Sketches



Parmelee Estate Floating Residence Final





Tiffany Troxler, Erin Deady, Rodolphe el-Khoury, Ben Kirtman, Obey Obeysekara, Lizz Plater-Zyberk
Landolf Rhodes-Barbarigos, Thomas Ruppert, Frank Schnidman, Samantha Danchuck, Kent Walia
Tanya Wilson-Sejour, Ricardo Lopez, Greg Guannel, Thomas Ruppert, Ben Kirtman, , Erin Deady
Landolf Rhode- Babarigos

2016 Resilient Redesign Workshop **EXPERTS**



THANK YOU!

Especially to:

Sonia Chao & Nancy Schneider

2016 Resilient Redesign Workshop

Lower Matecumbe Key
Miami Shorecrest
Arch Creek