Living Shoreline/Green Infrastructure Proposals: Implementation Perspective

NOAA in the Caribbean (NOAA CARIB) Partners Workshop
August 19-23, 2019

MIAMIBEACH
RISING ABOVE

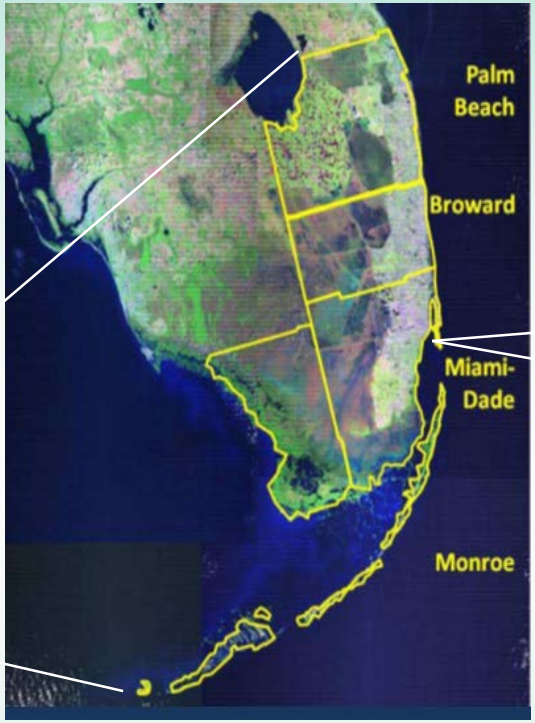
Implementing Green Infrastructure

1. **History** of Miami Beach

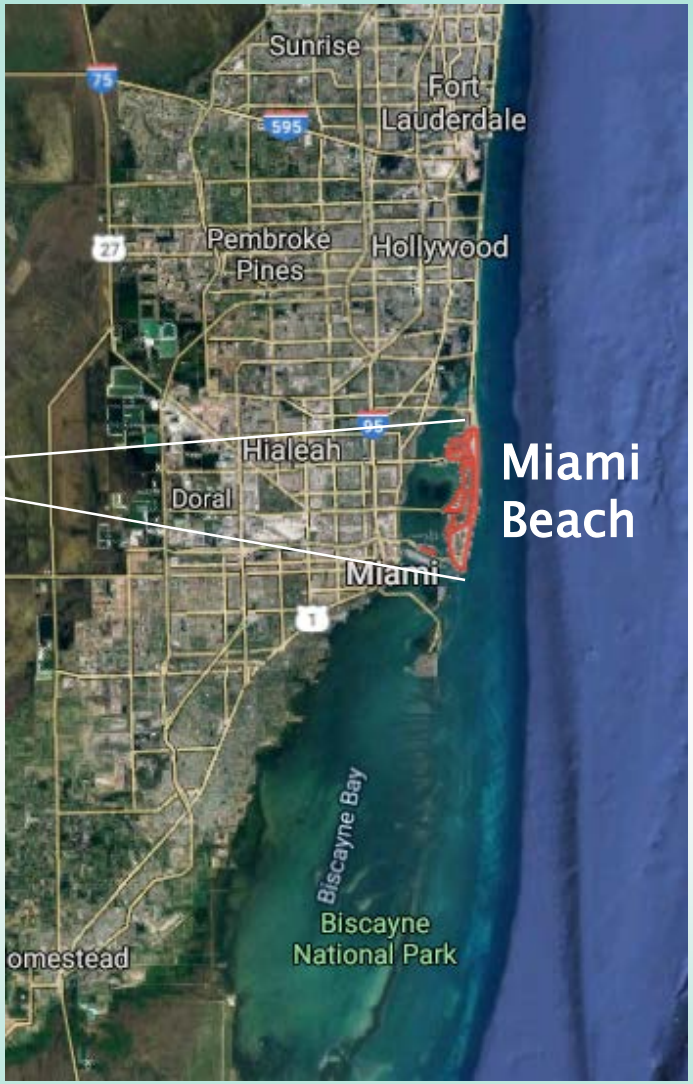
2. **Nature Based Infrastructure**
    - Dunes & Beaches
    - Waterways & Bayfront
    - Integrated Water Management

3. **Opportunities**

Florida



Southeast Florida



MIAMIBEACH RISING ABOVE

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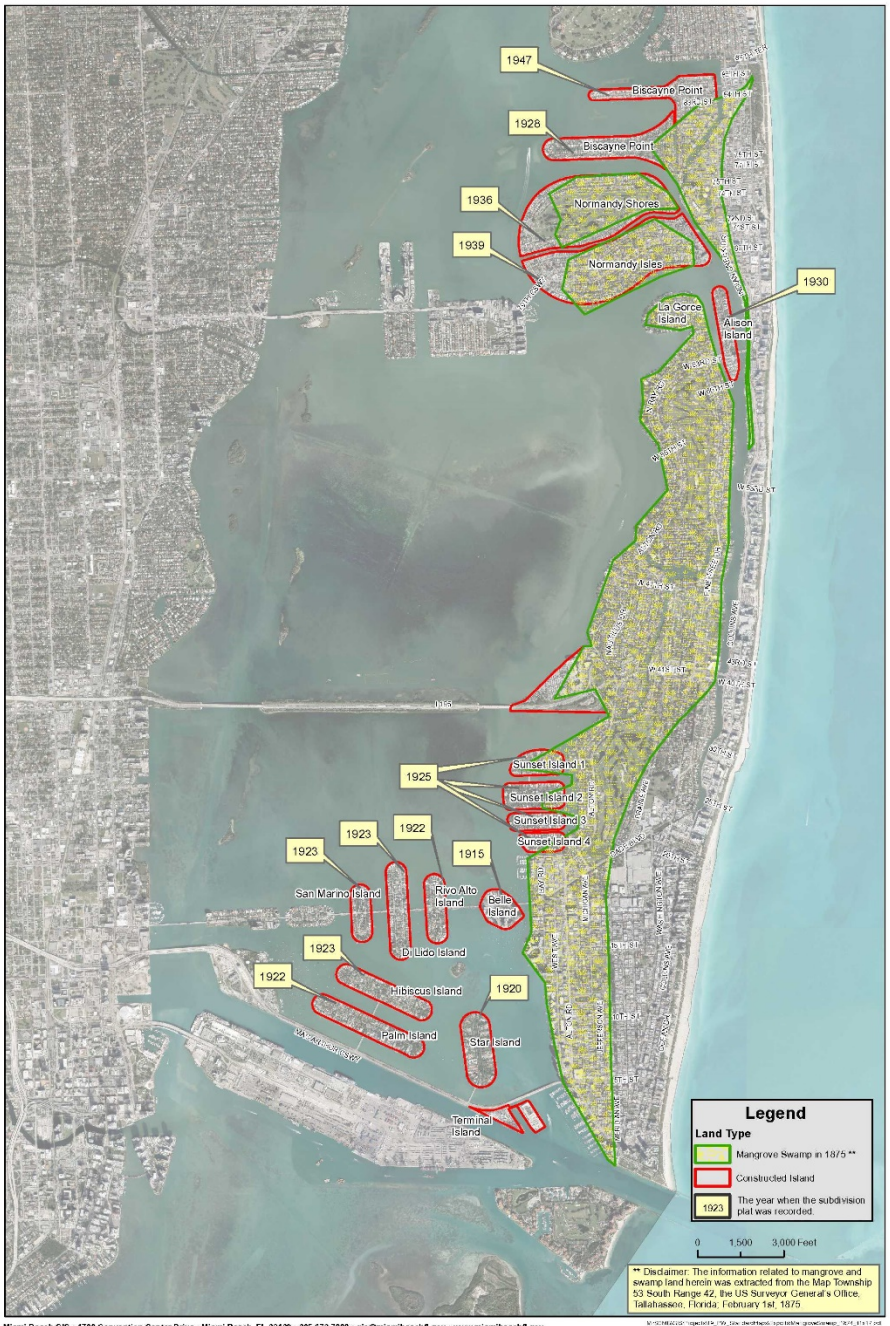


Miami Beach GIS • 1700 Convention Center Drive • Miami Beach, FL 33139 • 305.673.7000 • gis@miamibeachfl.gov • www.miamibeachfl.gov

Miami Beach
Miami-Dade County, FL

City of Miami Beach
Mangrove and Swamp Areas 1875

156-12. Before development the ridge east of the mangrove forest was covered with palmetto and cabbage palms.

Hi - 45

253-12. 1919—Alligator hole, which extended from Indian Creek nearly to the ocean drive, and only a few blocks north of the Firestone estate.

4-13. 1920—The east side of Indian Creek at about Fiftieth Street. In the immediate foreground a ballistic station was located during the World War. The picture shows the mangrove forest cut down, ready for the fill, and in the distance a part of the retaining fill.

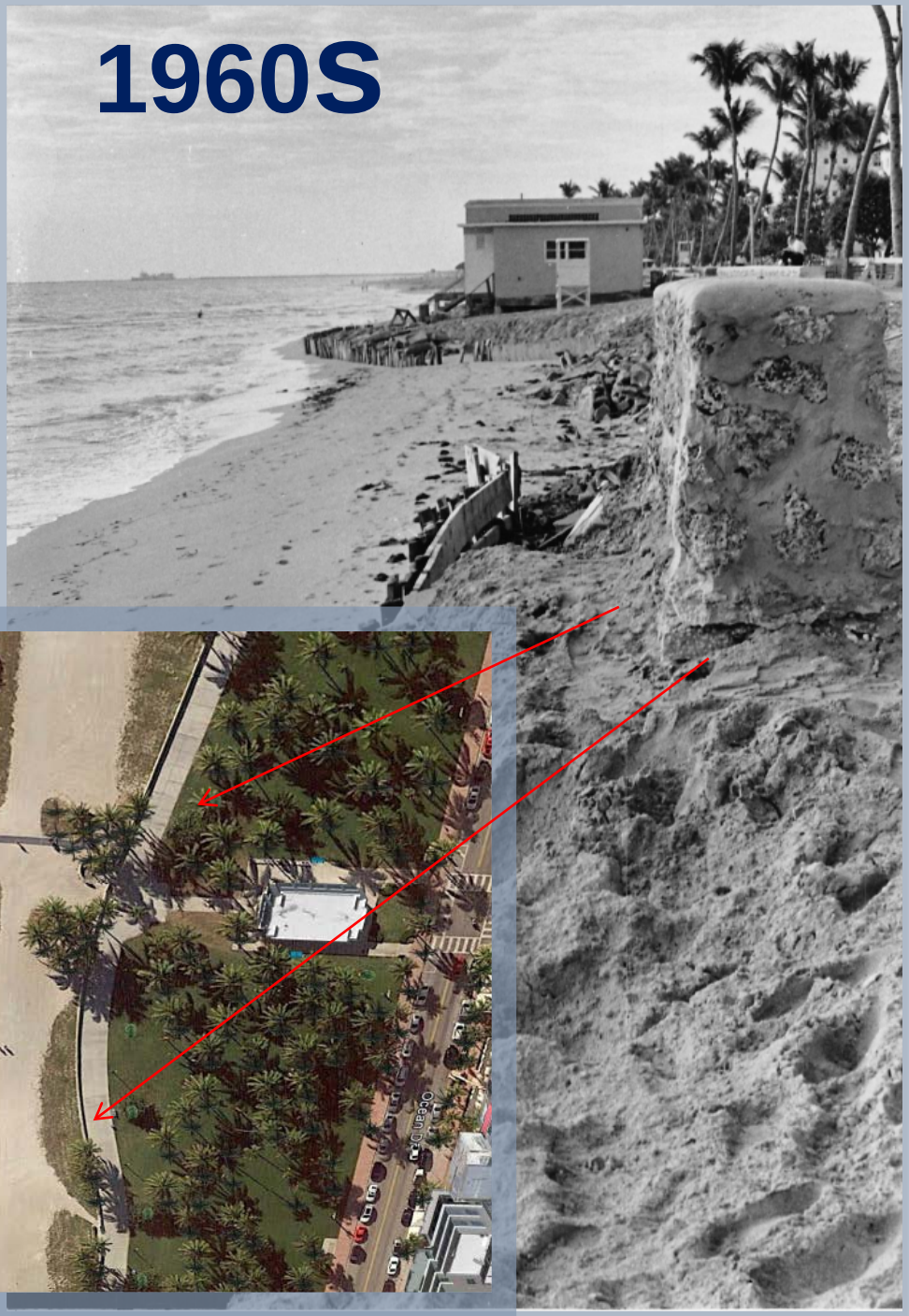
Firestone Estate - 1932

3-13. 1920—Cutting down the mangrove forest in the Bay Shore section of Miami Beach, close to present location of Nautilus Hotel.

Bay side of Miami Beach- 1905

Nature Based Infrastructure: Dunes & Beaches

Nature Based Infrastructure: Dunes & Beaches



Building up the Coastal Line of Defense

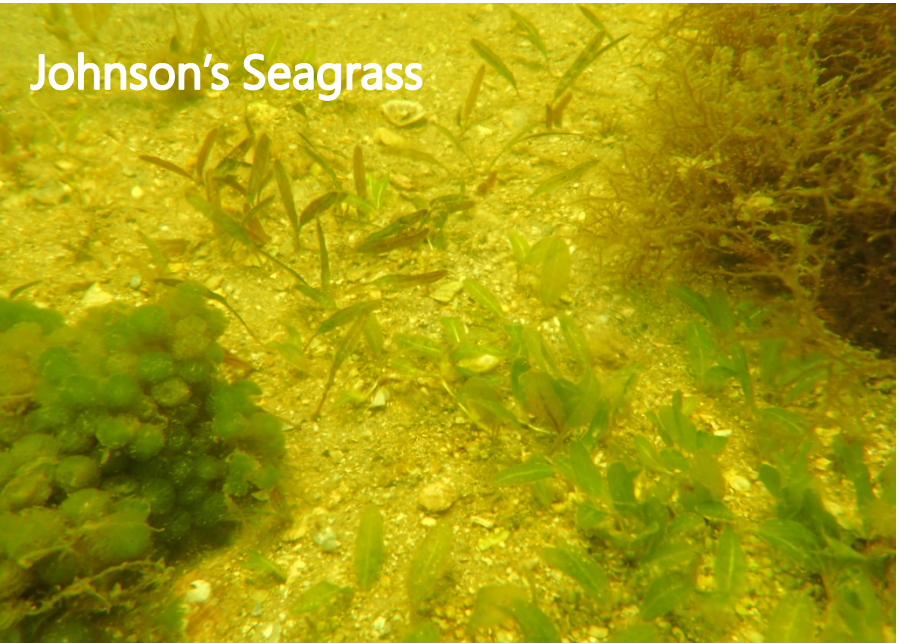
2012 Sand Back-passing Project

Nature Based Infrastructure: Dunes & Beaches

ENVIRONMENTAL PERMITTING

West Indian Manatee

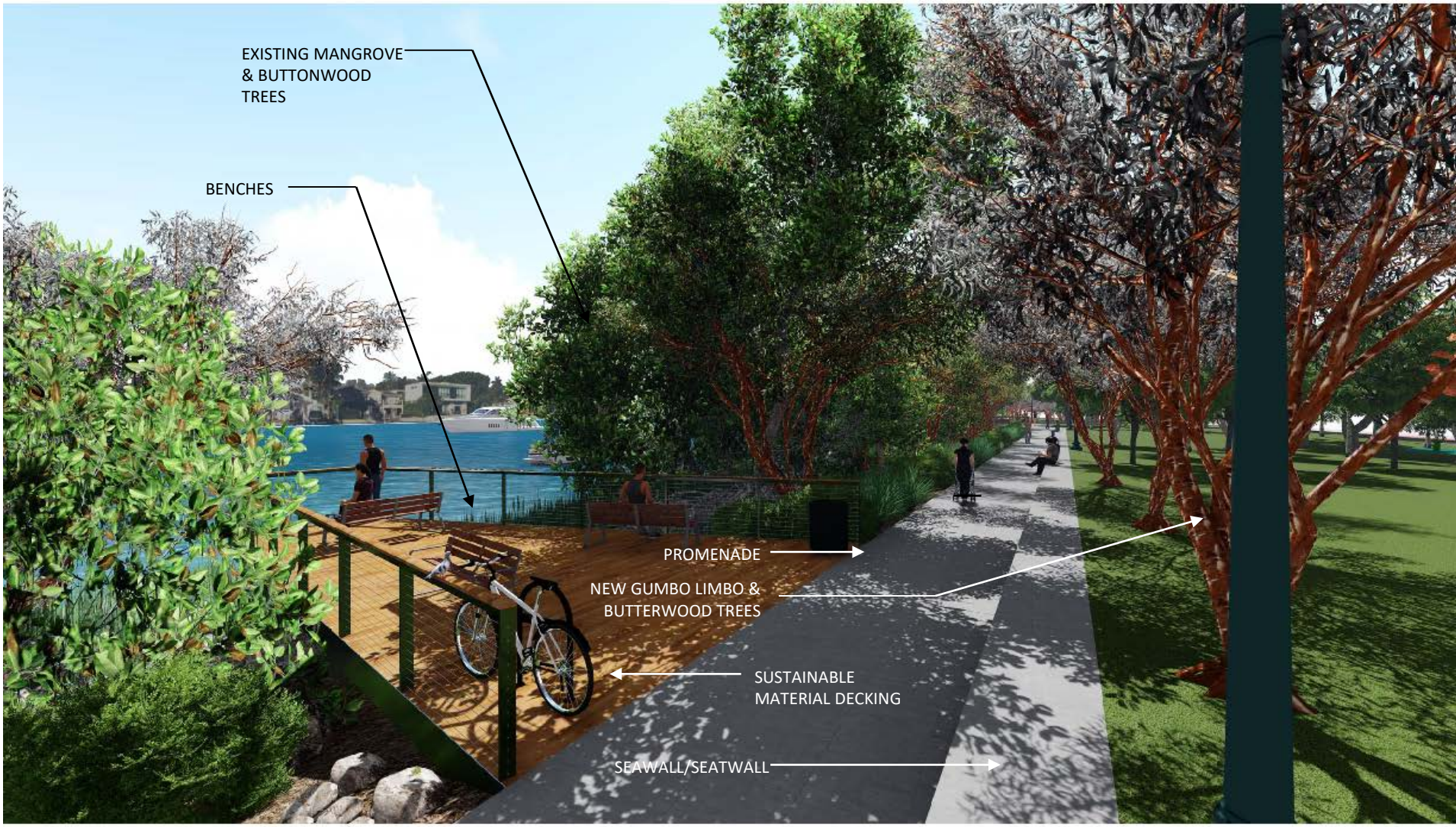
Staghorn and Elkhorn Corals


Johnson's Seagrass

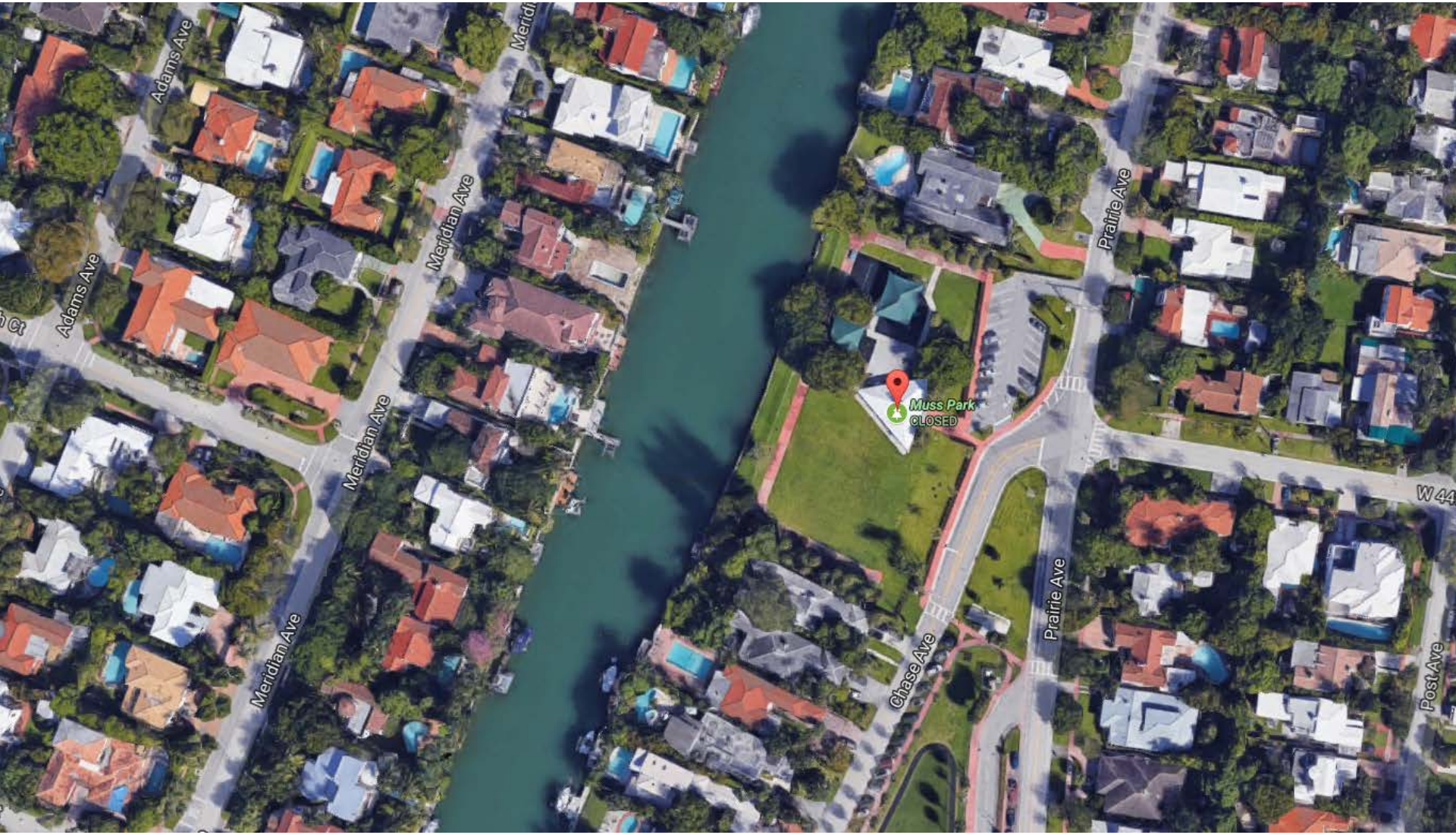
Mangroves

Brittany Bay Living Shoreline

Brittany Bay Living Shoreline



MUSS PARK SEAWALL REHABILITATION



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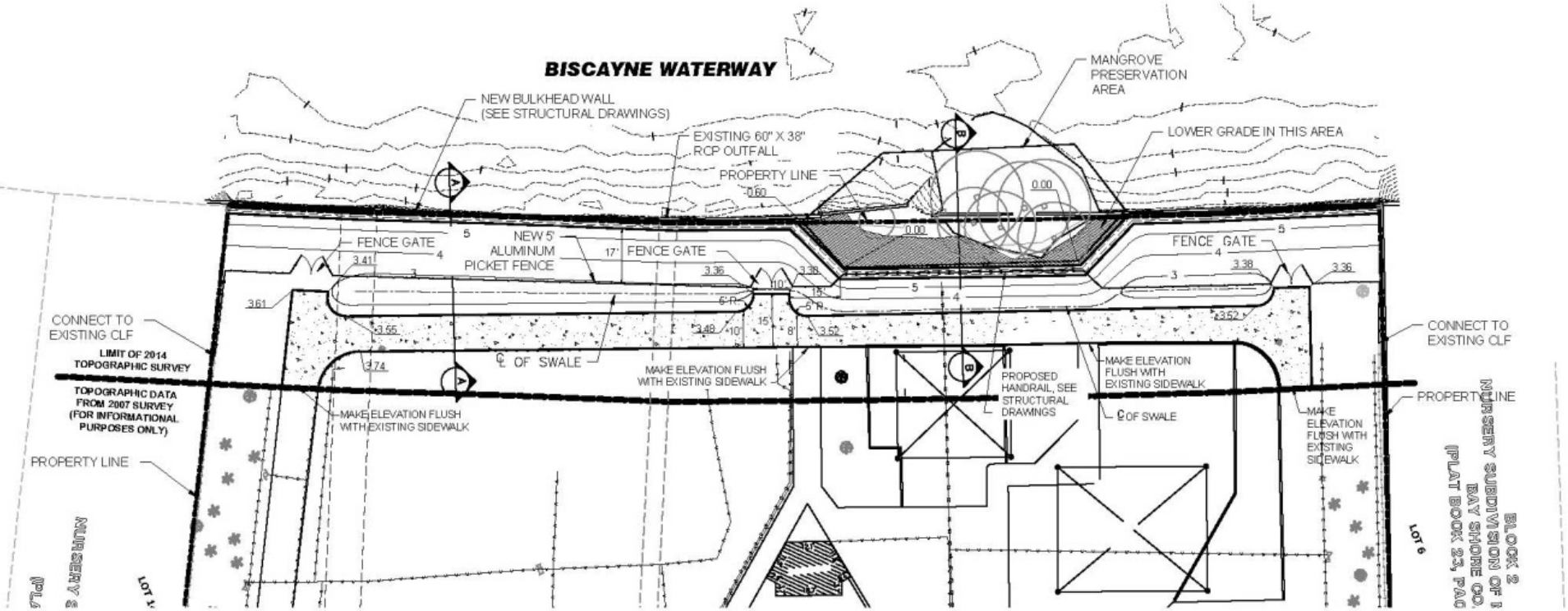

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INDIAN CREEK DR

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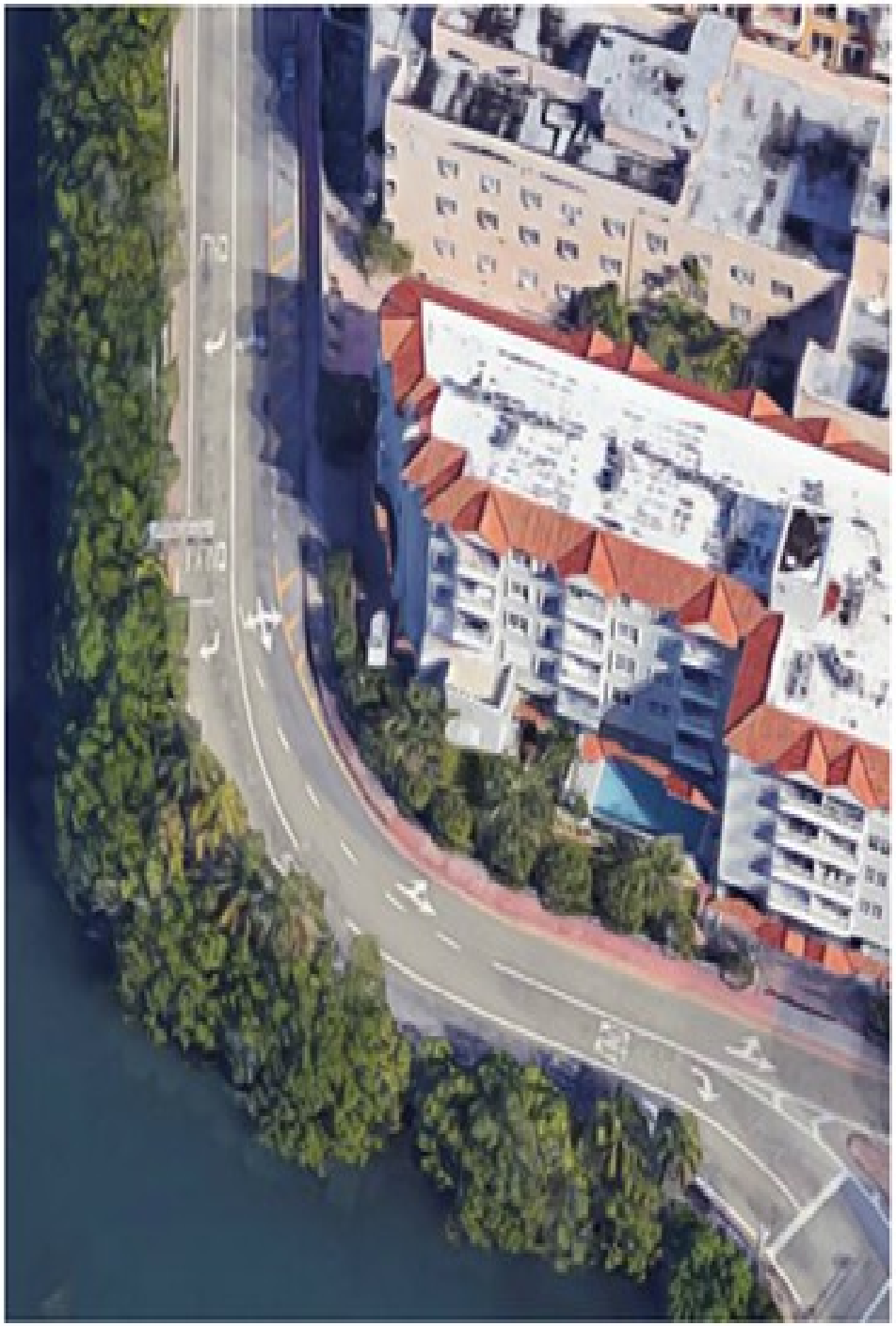
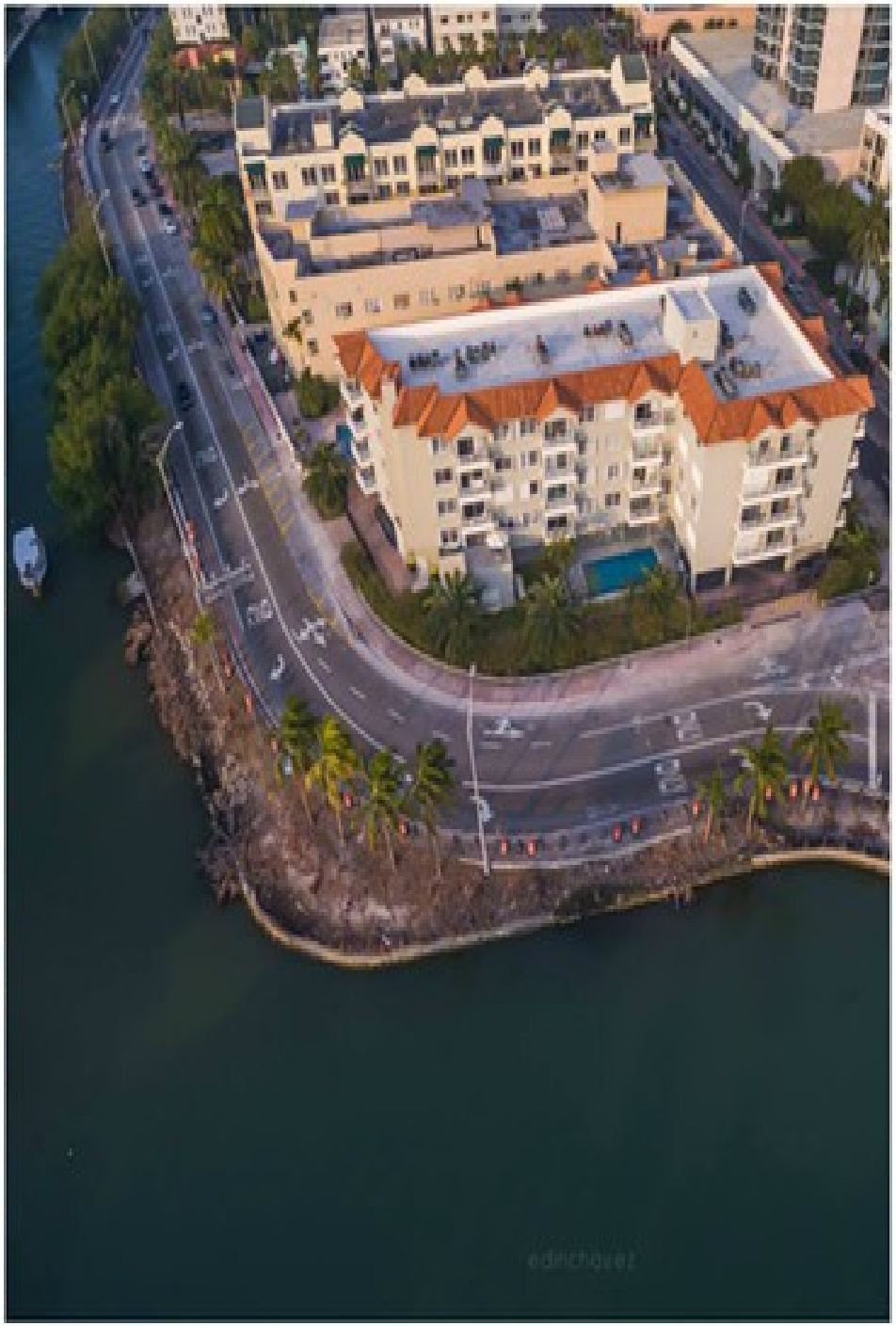
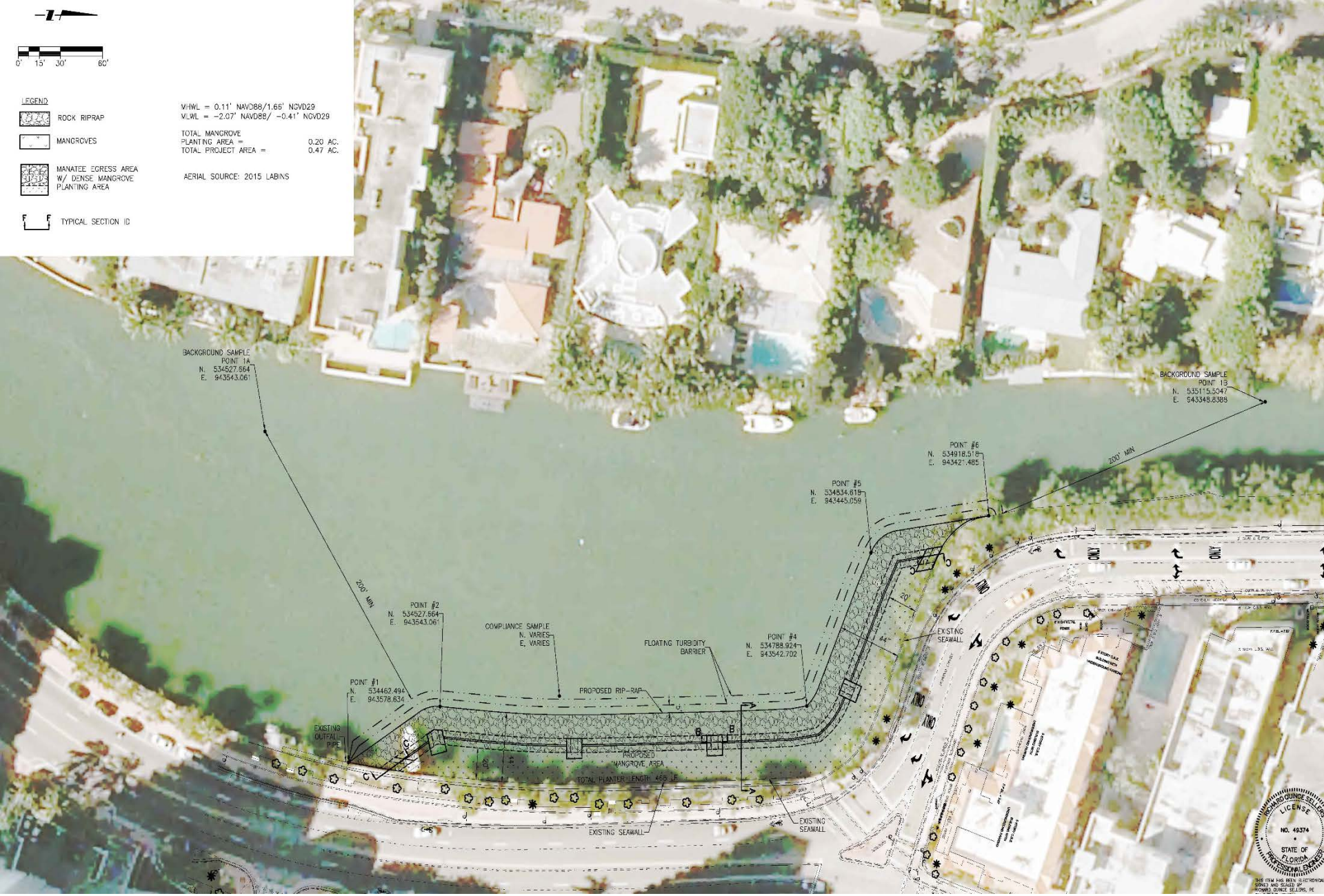
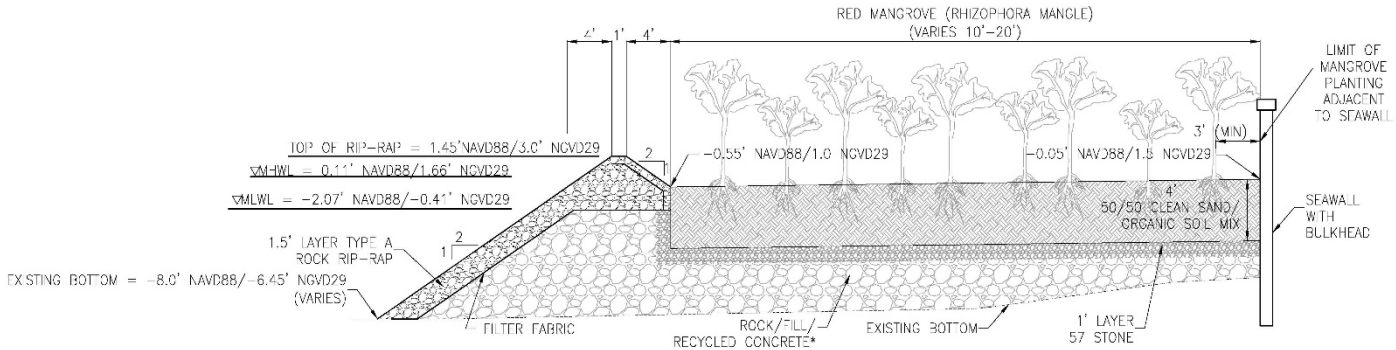




INDIAN CREEK LIVING SHORELINE



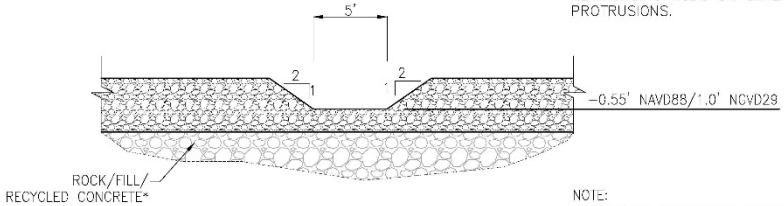
LAKE PANCOAST LIVING SHORELINE CONCEPT



RIP-RAP AND PLANTER SECTION A-A

NTS

NOTE:
*ROCK/FILL/RECYCLED CONCRETE SHALL BE UNCONSOLIDATED BOULDERS,ROCKS, OR CLEAN CONCRETE RUBBLE WITH NO REINFORCING RODS OR SIMILAR PROTRUSIONS.



MANATEE EGRESS AREA SECTION B-B

NTS

NOTE:
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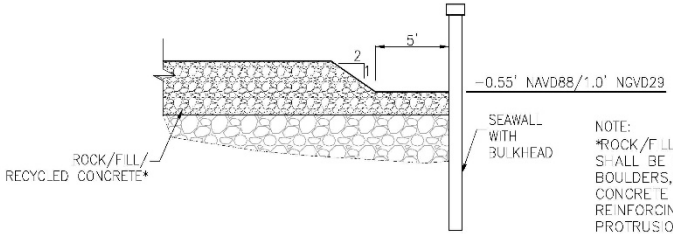

NOTE:
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MANATEE EGRESS AREA AT SEAWALL SECTION C-C

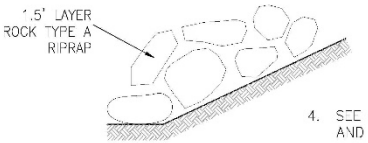
NTS

MANGROVE ZONE PLANTING SPECIFICATIONS							
STRATUM	COMMON NAME	SCIENTIFIC NAME	ELEVATION RANGE (FT NAVD)	AREA (SF) WITHIN EL. RANGE	AVG SPACING (FT O.C.)	QUANTITY	SIZE (MINIMUM)
MANATEE EGRESS AREA	RED MANGROVE	RHIZOPHORA MANGLE	-0.50 TO 0.50	283	0.5	1,132	1-GAL
TREES	RED MANGROVE	RHIZOPHORA MANGLE	-0.50 TO 0.50	4,205	5	195	3-GAL
	RED MANGROVE	RHIZOPHORA MANGLE	-0.50 TO 0.50	4,205	1	4,500	1-GAL

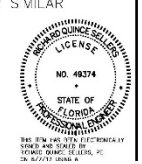
NOTES:
1. USE SOUND, HARD, DURABLE RUBBLE, FREE OF OPEN OR INCIPIENT CRACKS, SOFT SEAMS, OR OTHER STRUCTURAL DEFECTS, CONSISTING OF BROKEN STONE WITH A BULK SPECIFIC GRAVITY OF AT LEAST 1.90.
2. ENSURE THAT STONES ARE ROUGH AND ANGULAR.
3. USE BROKEN STONE MEETING THE FOLLOWING GRADATION AND THICKNESS REQUIREMENTS:

WEIGHT MAX. POUNDS	WEIGHT 50%. POUNDS	WEIGHT MIN. POUNDS	MIN. BLANKET THICKNESS IN FT.
75	30	4	1.5
ENSURE THAT AT LEAST 97% OF THE MATERIAL BY WEIGHT IS SMALLER THAN MAXIMUM POUNDS. ENSURE THAT AT LEAST 50% OF THE MATERIAL BY WEIGHT IS GREATER THAN WEIGHT 50% POUNDS. ENSURE THAT AT LEAST 90% OF THE MATERIAL BY WEIGHT IS GREATER THAN WEIGHT MINIMUM POUNDS.			

4. SEE SECTION 530 RIPRAP FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION FOR ADDITIONAL INFORMATION.



TYPE A ROCK RIP-RAP TYPICAL DETAIL

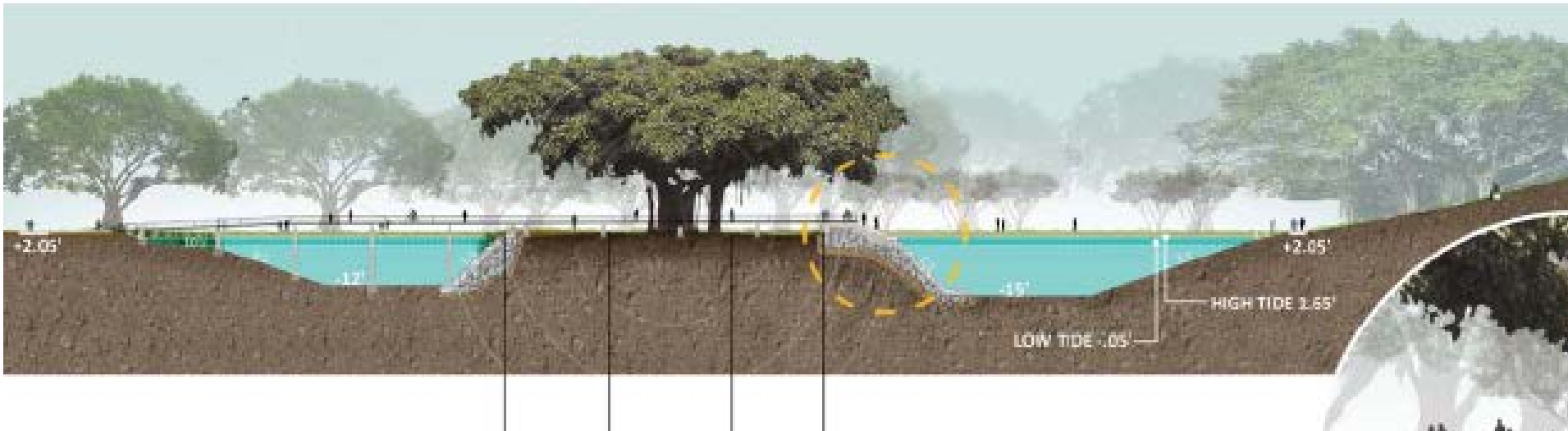


LAKE PANCOAST LIVING SHORELINE CONCEPT

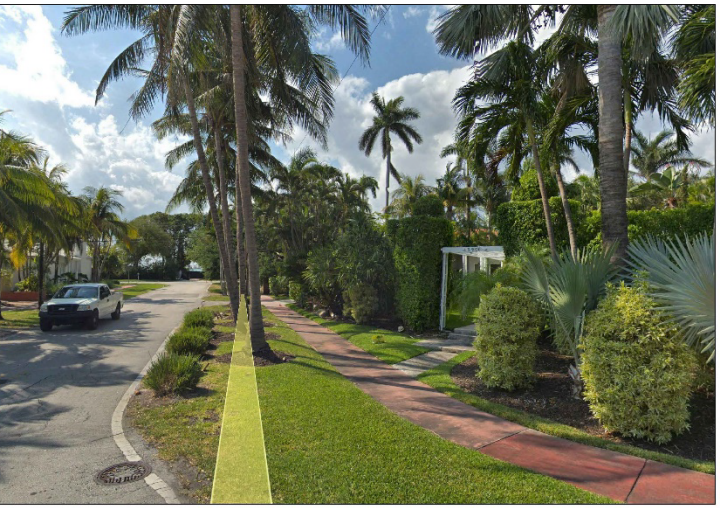
SIMILAR CONCEPT POST-

SIMILAR CONCEPT POST-CONSTRUCTION

Integrated Water Management: Public Parks

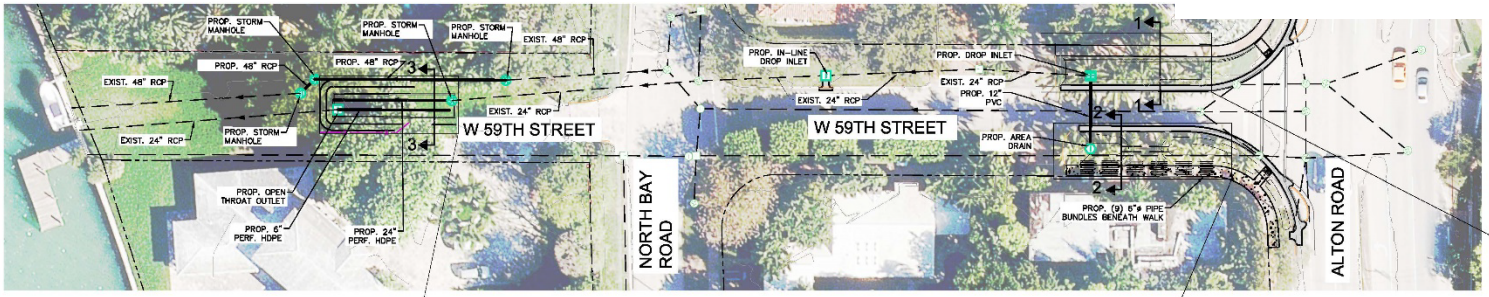


Integrated Water Management: Bioswales

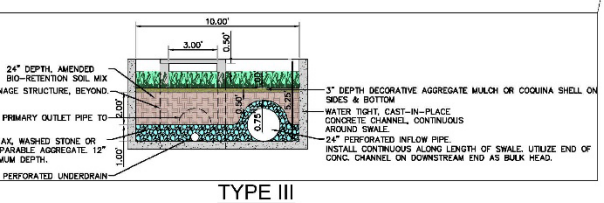


EXISTING CONDITIONS
(LOOKING WEST AT W. 59TH ST)

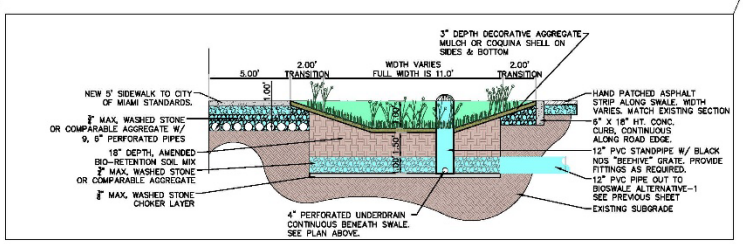
PROPOSED TYPE I BIOSWALE
(LOOKING WEST AT W. 59TH ST)



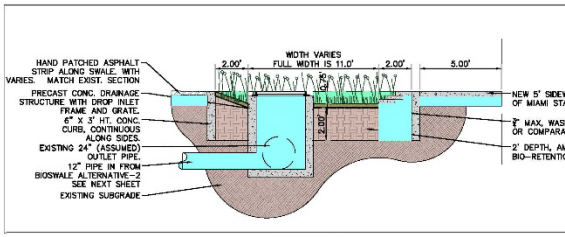
PLAN
SCALE: 1"=30' (22"X34")
1"=60' (11"X17")



TYPE III
SECTION 3
SCALE: 1"=4' (22"X34")
1"=8' (11"X17")



TYPE II
SECTION 2
SCALE: 1"=4' (22"X34")
1"=8' (11"X17")



TYPE I
SECTION 1-1
SCALE: 1"=4' (22"X34")
1"=8' (11"X17")

MIAMIBEACH WORKS DEPARTMENT 1700 CONVENTION CENTER DRIVE, MIAMI BEACH, FL 33139	NEIGHBORHOOD: NO. 5 LA GORCE	CITY MANAGER: JIMMY L. MORALES	ENGINEER OF RECORD: NP	ENGINEER OF RECORD:	5				File Name: EXHIBIT.dwg
	TITLE: W. 59TH STREET BIOSWALE EXHIBIT PLAN AND DETAILS	DIRECTOR: ROY COLEY	DESIGN ENGINEER: LS		4				Survey Reference:
		CITY ENGINEER: NELSON PEREZ-JACOME, P.E.	DRAWN BY: RF	NELSON PEREZ-JACOME, P.E. NO. 79676	3				Field Book: N/A Page N/A Work Orde
			CHECKER: JR		2				
			SCALE: AS NOTED		1				Date: 04/01/2019 Sheet: 1 of 1 Drawing: E
					NO.	DATE	REVISION	APP'D BY	

LIVING SHORELINE CHALLENGES

- Location
- Cost/Benefits
- Permitting
- Mitigation
- Design
- Funding

Opportunities

A ULI Advisory Services Panel Report

Miami Beach
Florida

April 16–19, 2018

Urban Land Institute

IN THE CIRCUIT COURT OF THE ELEVENTH JUDICIAL CIRCUIT
OF FLORIDA IN AND FOR THE COUNTY OF MIAMI-DADE

FINAL REPORT
OF THE
MIAMI-DADE COUNTY GRAND JURY

FALL TERM A.D. 2018

State Attorney
KATHERINE FERNANDEZ RUNDLE

Chief Assistant State Attorney
DON L. HORN

Chief Assistant State Attorney for Special Prosecutions
HOWARD ROSEN

Assistant State Attorneys
DAVID MAER
JOHN PERIKLES

ROBERT BEHAR
VICE FOREPERSON

ERIK KESSLER
ACTING CLERK

FILED

August 8, 2019

Photo: Sam Turken/WLRN

Partnerships

The City has also formalized several **PARTNERSHIPS** to help us fill data gaps and coordinate planning efforts regionally, nationally, and internationally.

THINK Globally, **WORK** Regionally, **ACT** Locally

MIAMI

FIU

SOUTHEAST FLORIDA REGIONAL COMPACT CLIMATE CHANGE

The Nature Conservancy

COMPACT of MAYORS

RESILIENT GREATER MIAMI & THE BEACHES

ASCE American Society of Civil Engineers

Harvard University Graduate School of Design

USDN urban sustainability directors network

Business Certification Program

LEVEL 1

Plastic Bags or straws

LEVEL 2

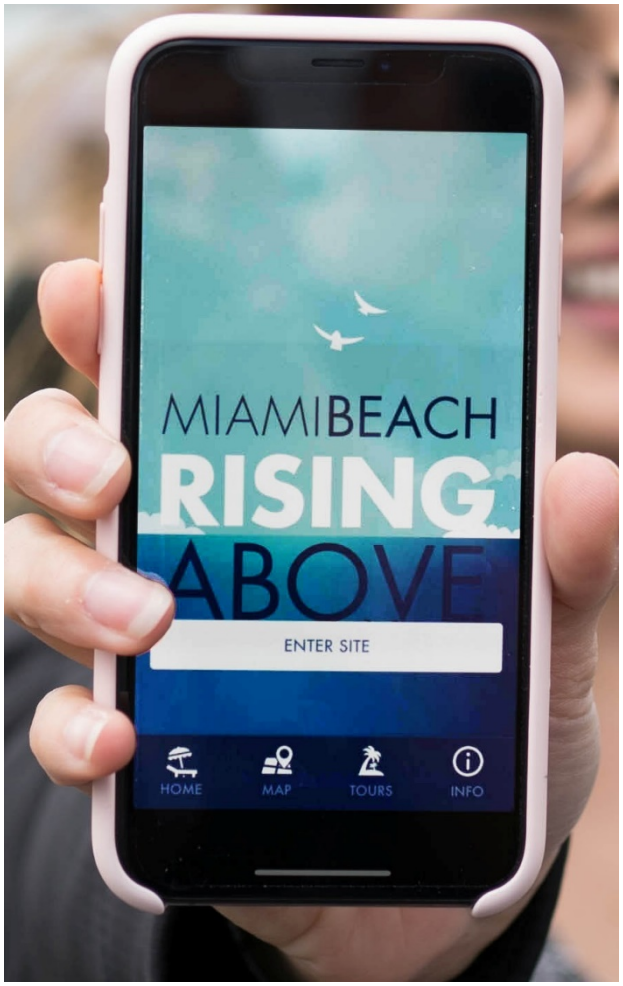
Plastic bags, straws, and one more item

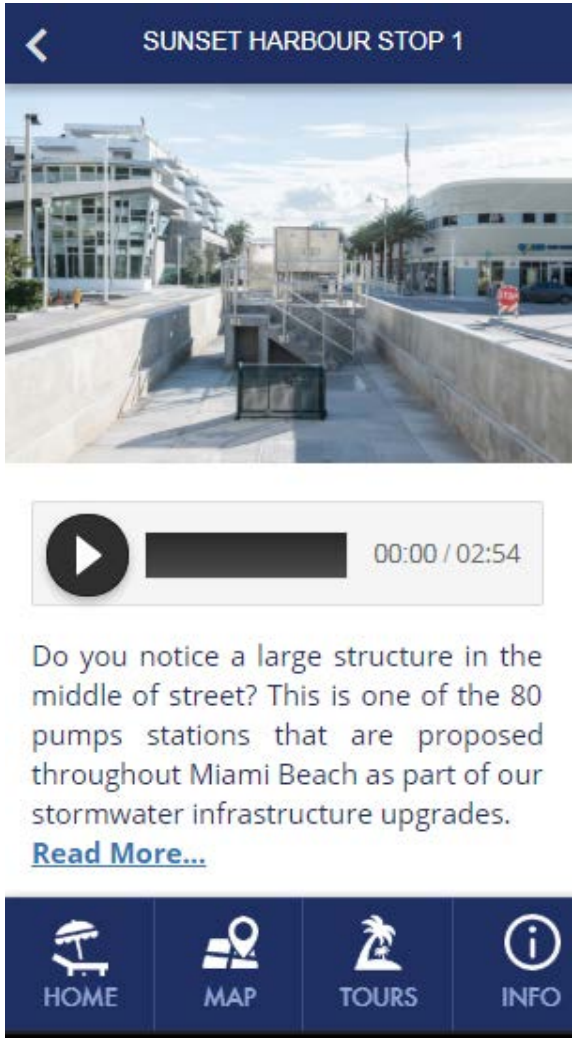
LEVEL 3

100% Plastic Free

Utensils Stirrers Straws Take out Coffee Cups Lids Bags

EDUCATION: Interactive Web-based Tour





Elizabeth Wheaton, Director
Environment & Sustainability
elizabethwheaton@miamibeachfl.gov

MIAMIBEACH
RISING ABOVE