Edgewater resources

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18-81

2019 Sarasota Bay Phase I – Marine Resource Survey Report

Report Date: September 26, 2019
Issued To: Sarasota Bayfront Planning Organization
Survey Date: August 27, 2019

Inspectors: Christie Hurley, M.S.; Penny Cutt, and Mike Kenny

I. BACKGROUND

On August 27, 2019 Edgewater Resources, LLC (Edgewater) performed a marine resource survey along the submerged lands offshore of Phase I of The Bay Project at 1001 Boulevard of the Arts in Sarasota, Florida 34236 (Section 24, Township 36S, Range 17E), in Sarasota County (see the location map in Sheet 1 in Appendix 1). The survey area consisted of approximately 4.5 acres of submerged lands along the east coast of Sarasota Bay offshore of the sun deck, located south of the Van Wezel Performing Arts Hall, south to the property line. The Sarasota Bay Estuarine System is listed by the Florida Department of Environmental Protection (FDEP) as Outstanding Florida Waters (OFW). Although the survey area is considered an OFW, it is not part of an Aquatic Preserve. Sarasota Bay is partially enclosed from the Gulf of Mexico by the barrier islands of Lido Key, to the south, and by Longboat Key and Bradenton Beach, to the north. The Project area is located north of the John Ringling Causeway, approximately a mile east of New Pass, an inlet that opens into the Gulf of Mexico.

The uplands at the site are currently used as a mixed-use arts and recreational area. The northern portion of the Phase I uplands supports the Van Wezel Performing Arts Hall, while the southern portion of the Phase I uplands was the site of the historical Gulfcoast Wonder and Imagination Zone (GWIZ) building, which was demolished in May 2019. Between the two parcels is a Y shaped mangrove creek with an existing overwater walkway and dilapidated kayak launch.

The Bay Project involves the revitalization, design, and construction of 53 acres of City of Sarasota (City) owned bayfront near downtown Sarasota that will enhance the regional, cultural, and ecological heritage and resources, while promoting sustainability, connectivity, active, and passive use of the Bayfront area. The Bay Master Plan was approved in September 2018 by the City Commission. The Plan has been broken down into three Phases. Phase I of the Project involves the southern edge of the property, along the Boulevard of the Arts. The proposed Phase I project involves the construction of a spiral pier, open lawn area where the public can gather, kayak launch, mangrove and hammock walkways, a "reading room" overlook into the mangroves, and dredging of accumulated muck from within the mangrove creek to enhance flushing of the creek and facilitate non-motorized vessel use (e.g. kayaks, paddleboards).

The purpose of this study was to locate and identify ecologically important marine resources including seagrass, macroalgae, hardbottom, coral, and sponge communities in support of planning Phase I activities in, on and over the submerged lands in this area. This survey updated the previous survey conducted July 31 – August 1, 2018, which had less dense transect spacing and shorter transects. This report includes a site description, methodology, transect coordinates, observed species list, habitat basemap, representative

photographs and a discussion. This updated survey is intended to refine project design and support permit applications.

II. METHODOLOGY

The survey area consisted of approximately 4.5 acres of submerged lands immediately offshore of 1001 Boulevard of the Arts in Sarasota, Florida 34236. Edgewater conducted a qualitative marine resource survey on August 27, 2019, during the federally recognized seagrass growing season (June 1 through September 30) to ensure seagrass was at its peak density and extent of growth for monitoring purposes. The weather was sunny with temperatures around 89° F. Water temperature was 86°, with a slight southern current in the afternoon. Underwater visibility ranged from 2 to 10 feet. Data and photographs were collected by two marine biologists familiar with the identification of marine flora and fauna in South Florida.

A combination of mapping swims/walks and temporary transects were used by two marine biologists using SCUBA equipment to investigate and record the presence/absence of marine resources within the survey area. Mapping swims/walks were conducted in two areas within the survey area: 1) the mouth of the mangrove creek, and 2) east of the riprap located south of the mangrove creek. During the mapping swims/walks, the two biologists swam or walked, depending upon depth, in random "S" shaped patterns while looking for seagrass. The approximate location of marine resources was recorded on underwater paper along with species observed.

In addition to the mapping swims, nine temporary transects were established to facilitate the survey of the submerged lands within the survey area. Transects (an easy to follow path made from a 300-foot survey tape measure) were established by securing one end of the survey tape to a weight underwater and then swimming the tape out along the bottom of the submerged lands, while following a compass heading until the desired transect length had been reached. Transects A-D, G, and I-K were established approximately perpendicular to shore. Transect A was established at the northern end of the survey area, off of the Van Wezel sun deck, and Transect K at the southern end of the survey area, off the southern property line (Appendix 1). Prior to surveying these transects, a buoy was dropped at the start point, approximately 300 feet west of the shoreline and the GPS coordinates of each buoy were collected (See Table 1). The nine temporary shore-perpendicular transects were spaced approximately 50 feet apart. Each transect started (0 feet) at the buoy and extended east (90°) at least 300 feet to the shoreline.

For each transect, one biologist would swim out the transect tape and take photographs, while the other biologist collected data such as community structure, species, density, and substrate type along the transects. The biologist recorded the beginning and end of each change in benthic community composition. The density of the macroalgae and seagrass communities was based on the following scale: Sparse (1-25%), Moderate (26-60%) and Dense (61-100%). All data was collected on underwater paper and later transcribed into an Excel spreadsheet (Appendix 3) that was used to create a basemap (See Figures 1 – 3 in Appendix 1). Representative photographs of benthic community types, benthic marine resources, fish, and substrate were taken along each of the mapping swims and temporary transects (See Photographic Logs in Appendix 2).

Table 1. GPS Coordinates for Each Transect

Transect Number	Latitude	Longitude
A	27° 20'32.50"	82°33'07.12
B	27° 20'32.01"	82°33'07.12
C	27° 20'31.51"	82°33'07.11
D	27° 20'31.02"	82°33'07.11
F	27° 20'30.03"	82°33'07.11
H	27° 20'29.04"	82°33'07.10
I	27° 20'28.51"	82°33'07.31
J	27° 20'28.05"	82°33'07.10
K	27° 20'27.55"	82°33'07.09

III. DESCRIPTION OF FINDINGS

Mapping Swims

Mouth of the Mangrove Creek

The Y-shaped channel between the Van Wezel Performing Arts Hall and the historic GWIZ building that was recently demolished, is lined with limestone boulders at the entrance and then progresses to a natural mud shoreline populated with red, black and white mangroves. Sparse shoal grass (*Halodule wrightii*), extending east approximately 49 feet, with a small sparse patch of turtle grass (*Thalassia testudinum*) was located Inside the mouth of the Y-shaped mangrove creek (See the Basemap in Appendix 1). The submerged lands in this area consist of unconsolidated substrate with decaying organic material extending further east into the creek. The southern edge of the submerged lands within the mouth of the creek had a heavy detritus layer.

South Beach Area

South of the Y-shaped mangrove creek is a small beach area contained by a newly reconstructed riprap breakwater. Within this shallow nearshore area sparse patches of shoal grass (*Halodule wrightii*) and turtle grass (*Thalassia testudinum*) were observed. The landward most edge of the seagrass was mapped (See Sheet 1 in the Basemap in Appendix 1).

Transects

Nine transects (Transects A-D, G, I-K) were established perpendicular to shore. Transect A was established at the northern end of the survey area, off the Van Wezel sun deck, and Transect K at the southern property line. Each transect started (0 feet) at the buoy and extended east (90°) at least 300 feet to the shoreline. All distances below are feet from the start buoy. See the Basemap in Appendix 1 for Transect layout and marine resources observed.

Transects A through C were established north of the Y-shaped mangrove creek. Transect A extended 330 feet offshore of the sun deck located south of the Van Wezel building (See Photographs 1 – 8 in the Photographic Log in Appendix 2). Transect B was 314 feet long, lined up with the northern palm tree, and terminated at the living shoreline riprap installment just waterward of the shoreline (See Photographs 9 - 13 in the Photographic Log in Appendix 2). Transect C was 292 feet long, lined up with the southernmost

palm tree, and terminated at the living shoreline riprap installment just waterward of the shoreline (See Photographs 14 -18 in the Photographic Log in Appendix 2).

Transects A, B and C had corals along the western two-thirds of the transect, in deeper waters. Transect A had the most corals observed followed by Transect B and then Transect C. Most of the corals were observed within the first 100 feet east of the start buoy; however, Transect A had corals present throughout the length of the transect. The biologists observed three species of stony corals (*Solenastrea bournoni, Solenastrea hyades, and Oculina robusta*) and one species of octocoral (*Leptogorgia virgulata*) along Transects A through C. Corals were observed growing on rubble, rock or out of the sandy sediment. Hardbottom, in the traditional form of reef or pavement, was not observed, rather low relief rubble, rocks or corals growing up from a sand or shell bottom was observed. Transect A had a region of scattered rocks and rubble with some macroalgae growth between 118 and 166 feet from the buoy and a small section or rubble and macroalgae was also observed at the eastern end of Transect B (between 303 and 314 feet).

Seagrass was generally observed along the eastern third of Transects A, B and C, growing in sandy substrate close to shore. Transect A had the least amount of seagrass with Transect C having the most. When compared to the other eight transects, Transect A had the least amount of seagrass observed in the survey area. Seagrass coverage and density increased along Transects B and C. All three transects had a small patch or two of paddle grass (*Halodule decipiens*), as well as, a patch or large bed of shoal grass (*Halodule wrightii*). Transects B and C had mixed beds of seagrass containing turtle grass (*Thalassia testudinum*) and Transect B also contained manatee grass (*Syringodium filiforme*) in the mixed seagrass beds along the transect.

Transect D extended 269 feet and ended in the shallow waters at the mouth of the mangrove creek. Three species of seagrass were observed along the eastern portion of Transect D (*Halodule wrightii, Thalassia testudinum* and *Syringodium filiforme*). A mixed dense bed of manatee grass (*Syringodium filiforme*) and turtle grass (*Thalassia testudinum*) was observed between 224 and 268 feet. This bed transitioned into a mixed bed of manatee grass (*Syringodium filiforme*) and shoal grass (*Halodule wrightii*) as you approached the mouth of the creek (See Photographs 19 - 22 in the Photographic Log in Appendix 2).

South of the Y-shaped mangrove creek Transects F, H, I, J and K were temporarily established. Transect F extended 273 and was located offshore of the north edge of the mangrove creek (See Photographs 23 and 24 in the Photographic Log in Appendix 2). Many soft (*Leptogorgia virgulata*) and stony (*Solenastrea bournoni, Solenastrea hyades, and Oculina robusta*) corals were observed along Transect F. This transect was the only one where coral was observed at the nearshore end of the transect. Two species of seagrass were observed along the transect, a sparse 8-foot length bed of paddle grass (*Halodule decipiens*) and a moderately dense bed of shoal grass (*Halodule wrightii*) that extended 27 feet.

Transect H was 314 feet long, lined up with the osprey nest on the uplands and terminated at the northern end of the living shoreline riprap installment located waterward of the shoreline (See Photographs 25 - 29 in the Photographic Log in Appendix 2). Various stony and soft corals were observed along the first 50 feet of the transect in deeper water. The remainder of the transect was mostly sediment until the shallower eastern end of the transect between 241 and 307 feet where seagrass beds occurred. Four species of seagrass were observed along Transect H (*Halodule decipiens, Halodule wrightii, Syringodium filiforme* and *Thalassia testudinum*). Transect H along with Transect B were the only two transects to support all four species of seagrass and they both had the largest and densest seagrass beds among all the other transects.

Transect I was 309 feet long and terminated at the living shoreline riprap installment located waterward of the shoreline (See Photographs 30 - 33 in the Photographic Log in Appendix 2). Transect I had the least amount of corals located along its length. Corals (*Solenastrea* spp. and one *Leptogorgia hebes*) were only observed along 8 feet of the transect (between 22 and 30 feet) and shoal grass (*Halodule wrightii*) was the only species of seagrass observed in the shallow nearshore area between 241 and 309 feet, close to shore.

Transect J was 315 feet long and terminated at the living shoreline riprap installment located waterward of the shoreline (See Photographs 34 -36 in the Photographic Log in Appendix 2). Most of the corals (*Solenastrea bournoni, Solenastrea hyades, Oculina robusta and Leptogorgia virgulata*) were observed along the first 100 feet of the transect in the deeper waters to the west. Sparse to moderate seagrass, consisting of mostly shoal grass and a small area of manatee grass was concentrated in the eastern end of the transect between 222 and 309 feet.

Transect K was 324 feet long and terminated at the shoreline riprap at the southern property line (See Photographs 37 - 40 in the Photographic Log in Appendix 2). The western deeper portion of Transect K consisted of barren sediment. Only ten corals were observed along Transect K, between 29 and 143 feet from the western end of the transect. Transect K had the least amount and sparsest density of seagrass located along its length. Several small sparse areas of paddle grass (*Halodule decipiens*) and shoal grass (*Halodule wrightii*) and a seven-foot-long moderate bed of shoal grass (*Halodule wrightii*) were located along Transect K.

The survey area supported three species of stony coral (*Solenastrea bournoni, Solenastrea hyades, Oculina robusta*), two species of soft corals (*Leptogorgia virgulata* and *Leptogorgia hebes*), four species of seagrass (*Halodule decipiens, Halodule wrightii, Syringodium filiforme* and *Thalassia testudinum*), and eight species of macroalgae, along with numerous invertebrates and fish (See Table 2 for a list of all species observed). The stony coral *Solenastrea* spp., soft coral *Leptogorgia virgulata*, sponge *Cliona celata* along with the green macroalgae *Caulerpa sertularoides* were the most common marine resources observed along the western deeper half of each transect, while shoal grass (*Halodule wrightii*) was the most dominant marine resource observed in the nearshore eastern half of each transect.

No Federally listed threatened seagrass or coral species [i.e. Johnson's seagrass (*Halophila johnsonii*), staghorn coral (*Acropora cervicornis*), elkhorn coral (*Acropora palmata*), lobed star coral (*Orbicella annularis*), mountainous star coral (*Orbicella faveolata*), boulder star coral (*Orbicella franksi*) pillar coral (*Dendrogyra cylindrus*), rough cactus coral (*Mycetophyllia ferox*)], were observed during the survey. The site is not listed as critical habitat for any of these species. Mobile fish and crabs (e.g. sheepshead, grey snapper, various juvenile fish, stone crabs and a lined seahorse) were observed within the survey area (Photographs 8 - 10 in Photographic Log in Appendix 2).

Table 2. List of Species Observed in the Survey Area.

Common Name	Scientific Name
Seagrass	
Manatee Grass	*Syringodium filiforme*
Paddle Grass	*Halodule decipiens*
Shoal Grass	*Halodule wrightii*
Turtle Grass	*Thalassia testudinum*
Stony Corals	
Knobby Star Coral	*Solenastrea hyades*
Robust Ivory Tree Coral	*Oculina robusta*
Smooth Star Coral	*Solenastrea bournoni*
Octocorals	
Colorful Sea Whip	*Leptogorgia virgulata*
Regal Sea Fan	*Leptogorgia hebes*
Macroalgae	
Graceful Red Weed	*Gracilaria tikvahiae*
Green Feather Algae	*Caulerpa sertularioides*
Red Algae	*Gracilaria bursa-pastoris*
Red Algae	*Hypnea* sp.
Red Algae	*Laurencia* sp.
Scroll Algae	*Padina sanctae-crucis*
Sea Lettuce	*Ulva* sp.
Spiny Seaweed	*Acanthaphora spicifera*
Invertebrates	
Blue Crab	*Callinectes* sp.
Brittlestar	CLASS:Ophiuroidea
Florida Stone Crab	*Menippe mercenaria*
Red Boring Sponge	*Cliona delitrix*
Upsidedown Jelly	*Cassiopea frondosa*
Yellow Boring Sponge	*Cliona celata*
Fish	
Grey Snapper	*Lutjana griseus*
Lined Seahorse	*Hippocampus erectus*
Sheepshead	*Archosargus probatocephalus*

Figure 2(i) - Marine resources between 0 and 100 feet on Transect A-K

(Corals – Seagrass – Hardbottom – Sand/Silt)

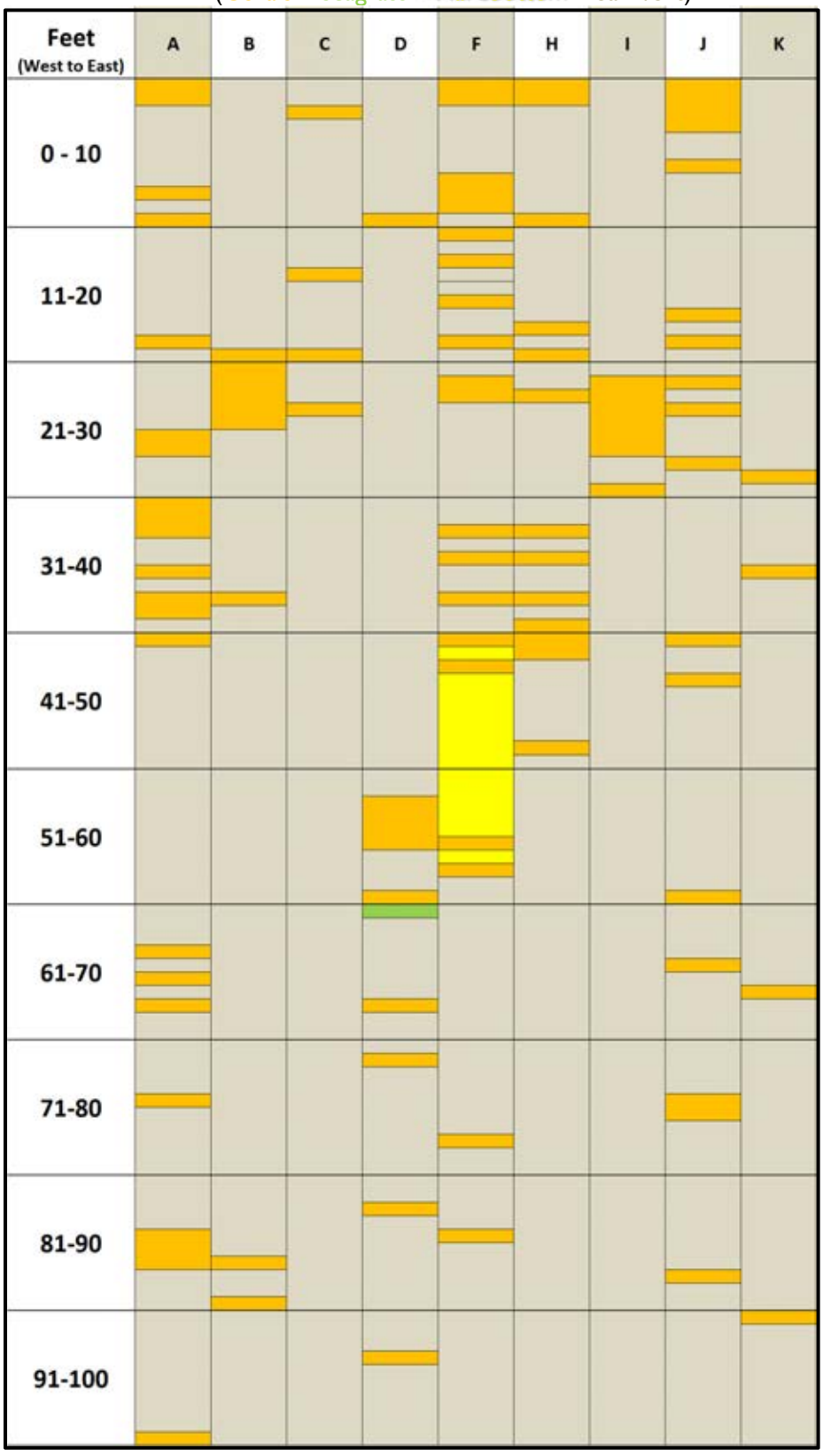


Figure 2(ii) - Marine resources between 101 and 200 feet on Transect A-K

(Corals – Seagrass – Hardbottom – Sand/Silt)

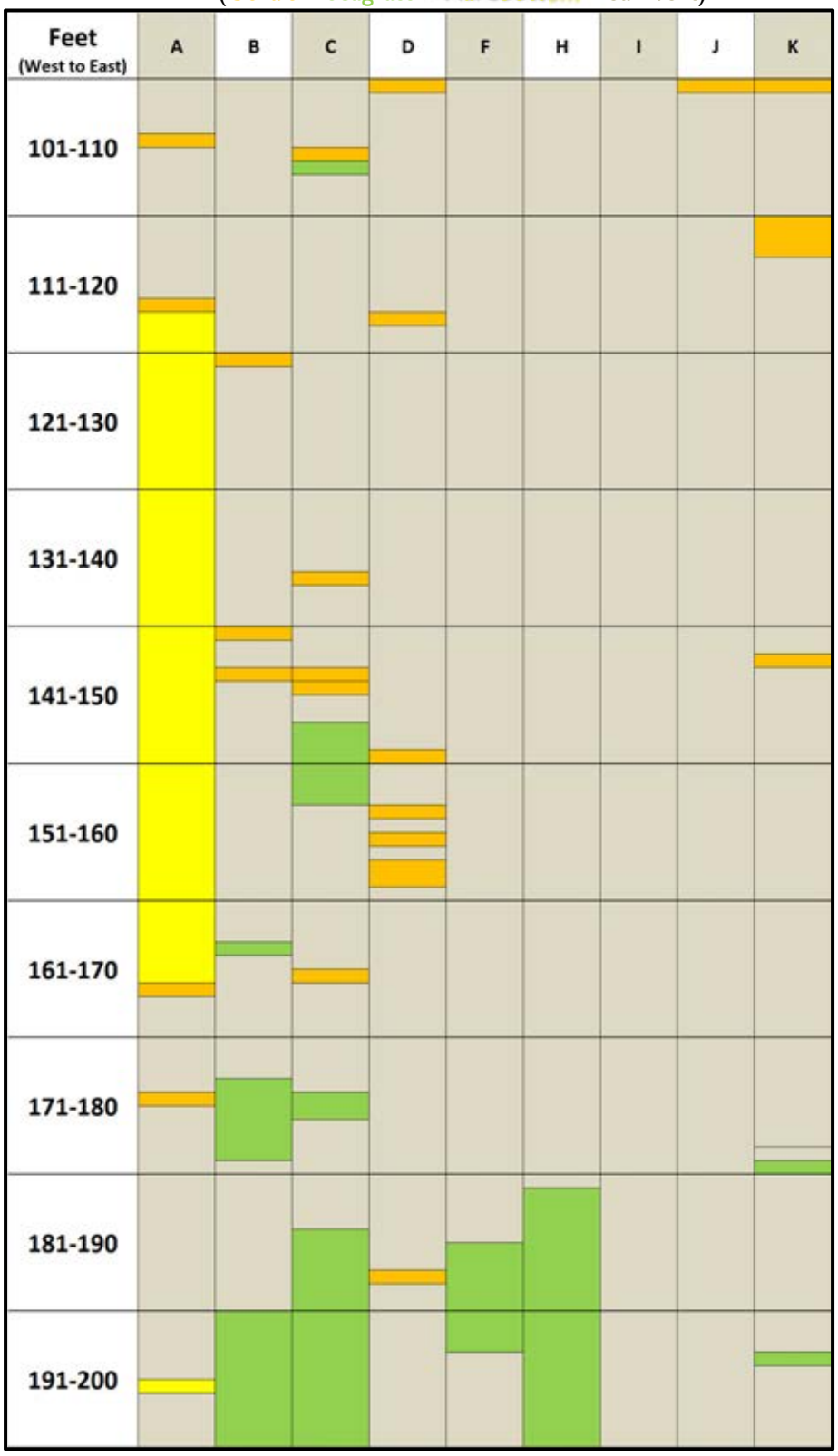


Figure 2(iii) - Marine resources between 200 and 300 feet on Transect A-K

(Corals – Seagrass – Hardbottom – Sand/Silt)

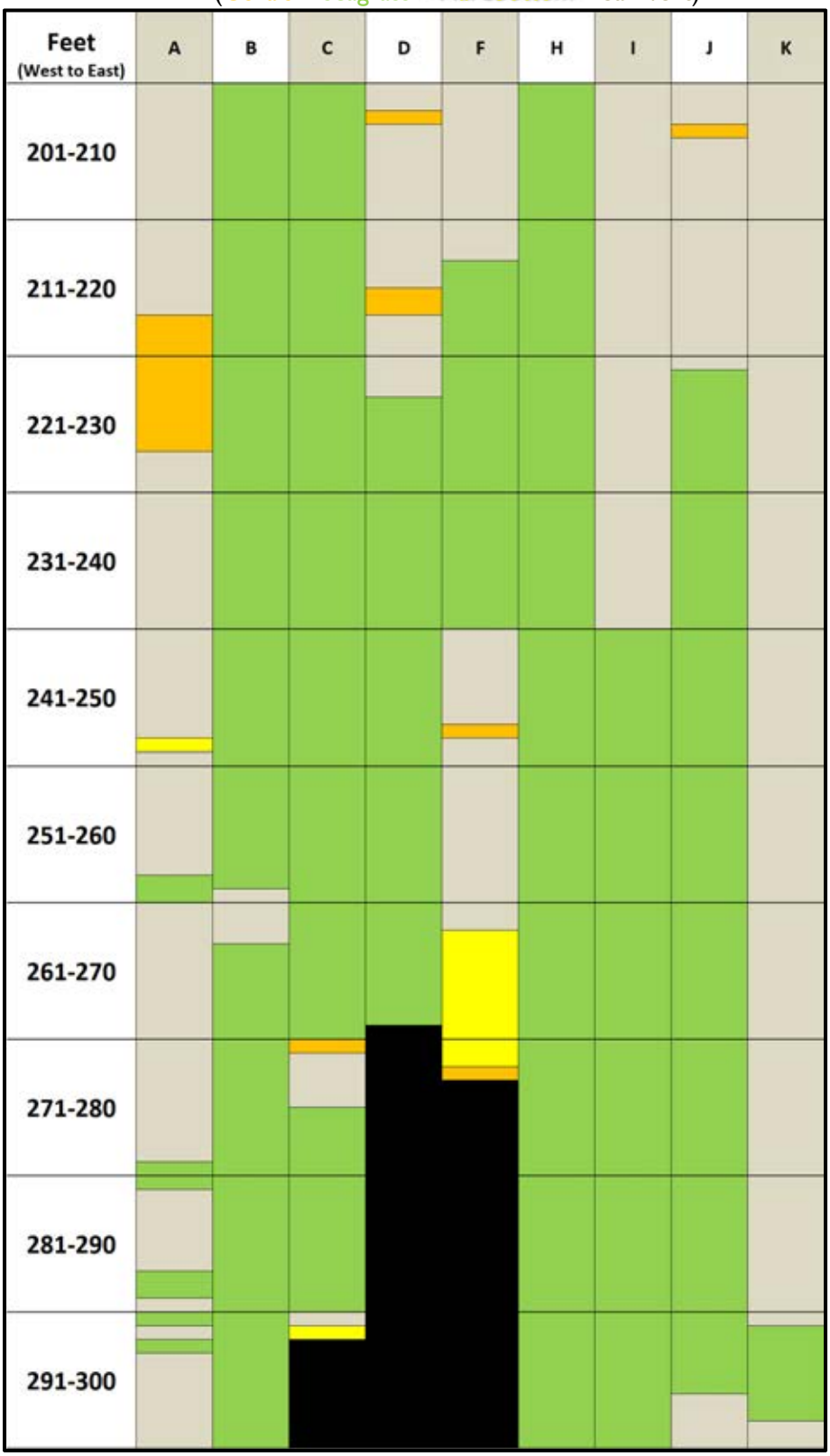
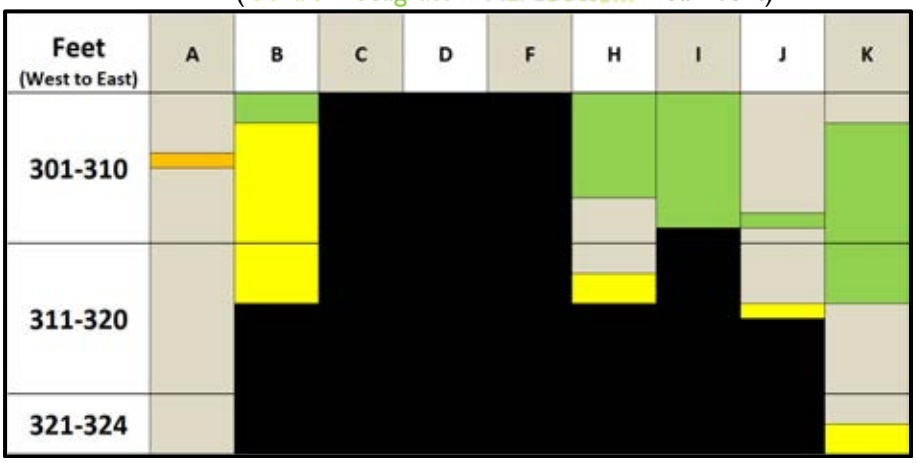


Figure 2(iv) - Marine resources between 301 and 324 feet on Transect A-K

(Corals – Seagrass – Hardbottom – Sand/Silt)

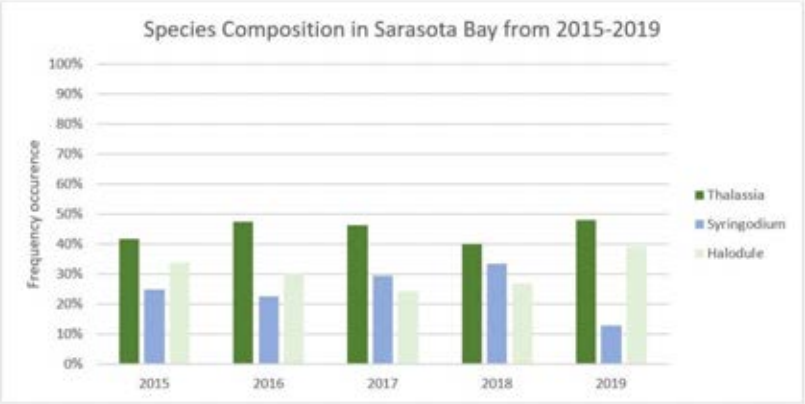


IV. DISCUSSION

The proposed Phase I Project area is located north of the John Ringling Causeway along the eastern shoreline of Sarasota Bay, in Class III waters. The Sarasota Bay Estuarine System is designated by the FDEP as Outstanding Florida Waters. Although the survey area is considered an Outstanding Florida Water, it is not part of an Aquatic Preserve. Sarasota Bay is partially enclosed from the Gulf of Mexico by the barrier islands of Lido Key, Longboat Key, Siesta Key, Casey Key and Bradenton. The barrier islands shield the Bay from wind and waves coming from the west over the Gulf of Mexico, while the three passes (Big Sarasota, New and Longboat Pass) provide good water flushing between the Bay and the Gulf of Mexico. The Project area is located approximately a mile east of New Pass, an inlet that opens into the Gulf of Mexico. As such, this site is subject to tidal variations and flushing from the ebbing and flowing tides through New Pass. All of these factors combined with the shallow water depths (1 to 15 feet) within the survey area provide conditions conducive for seagrass and coral growth.

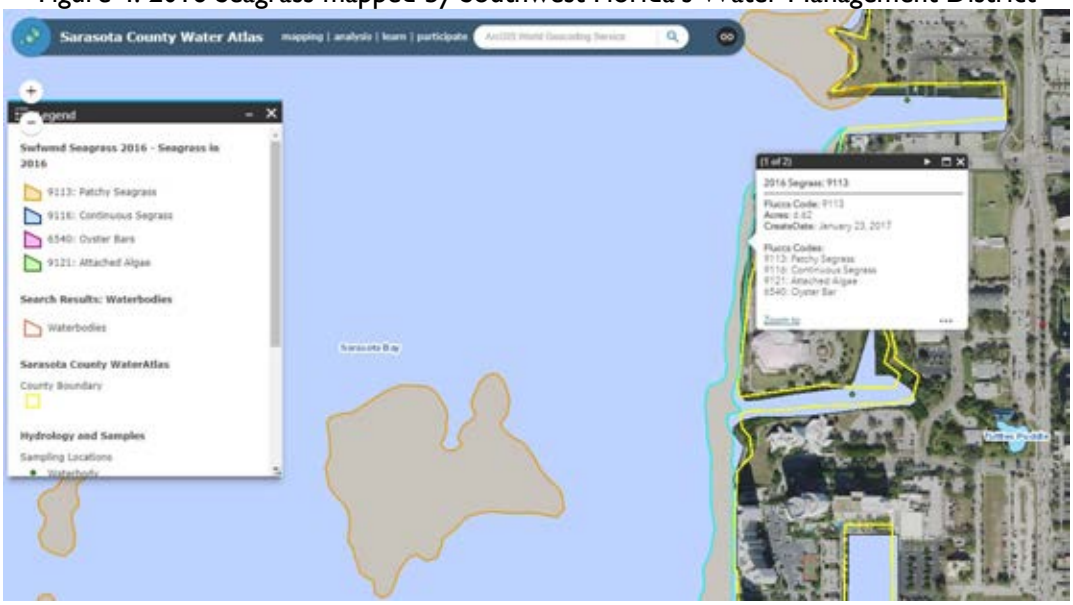
Sarasota bay is a 50-mile-long (150 square mile) coastal lagoon that connects to the Gulf of Mexico to the west. The Bay is comprised of mangroves, salt marshes, oyster reefs, seagrass flats, and macroalgae beds along sand/mud and rock bottom habitats (SBEP 2014). Seagrass comprises approximately 35% of the submerged lands within the bays of Sarasota (Sarasota Seagrass 2018). Five species of seagrass (*Thalassia testudinum, Syringodium filiforme, Halodule wrightii, Halophila decipiens and Halophila engelmannii*) grow in Sarasota Bay. Turtle grass (*Thalassia testudinum*) has historically dominated the Sarasota Bay, followed by manatee grass (*Syringodium filiforme*) and shoal grass (*Halodule wrightii*) (SCWA 2019).

Figure 3. Seagrass composition in Sarasota Bay from 2015 - 2019 (SCWA 2019)



The location and acreage of seagrass beds are mapped in Sarasota Bay every two years by the Southwest Florida Water Management District via digital aerial photography taken during the winter. The aerials are then converted to GIS maps and seagrass beds are field verified by staff. Historical data shows that both continuous and patchy seagrass beds have been present in the survey area since at least 2006 (See the 2006, 2008, 2014 and 2016 seagrass maps in Appendix 4; Sarasota County 2018). The 2006 seagrass survey shows the nearshore region offshore of the project area to conisist of patchy seagrass, except for an area west of the entrance to the Centennial Boat Basin that was classified as continous seagrass. Two years later, in 2008, the submerged lands closest to shore, located in the north region of the project area, were depicted as having patchy seagrass resources with more continous seagrass beds further offshore, whereas the southern portion of the project area was described as having continous seagrass beds close to shore. More recently, in 2014, most of the nearshore region was depicted as having patchy segrass resources, with only one area of continuous seagrass beds located within the cove created by the two jetties that extend offshore of the shoreline, just north of the entrance channel to the Centennial Boat Basin. Two years later in 2016, the entire nearshore region offshore of the City owned Property was depicted as having patchy segrass resources.

Figure 4. 2016 Seagrass mapped by Southwest Florida's Water Management District



On July 31 and August 1, 2018 Edgewater conducted a marine resource survey of approximately 20 acres of submerged lands offshore of Centennial Park south to the southern end of the current Phase I Project area. Six transects (T14 through 20) overlap with the Phase I Project area (See Sheet 3 of the Basemap in Appendix I). In 2018 the immediate nearshore area was mostly sand with occasional macroalgae growth, with patchy seagrass beds dominated by *Halodule wrightii* a little further from shore. The offshore region was characterized by sand substrate with sporadic rock and rubble populated by occasional stony (*Solenastrea bournoni, Solenastrea hyades* and *Oculina robusta*) and octocorals (*Leptogorgia virgulata*).

The marine resource survey conducted on August 27, 2019 provides further insight into the conditions of the marine environment along the submerged lands offshore of 1001 Boulevard of the Arts and 803 N. Tamiami Trail in Sarasota, Florida. In 2019 the shallower nearshore regions of the survey area supported moderate to dense beds of patchy seagrass and attached macroalgae. Four species of seagrass (*Halodule decipiens, Halodule wrightii, Syringodium filiforme* and *Thalassia testudinum*) were observed in the shallow waters off the western shoreline, with shoal grass (*Halodule wrightii*) being the most dominant seagrass observed. Most of the seagrass observed was patchy, with only a few continous beds of grass. Seagrass density increased markedly close to shore, where shallow water depths and good light penetration are optimal for growth. Only the three most common species (*T. testudinum, S. filiforme and H. wrightii*) were observed in the nearshore waters off the project area. *H. wrightii* was the most dominant species of seagrass observed within the survey area. The fresh water influx from Whitaker Bayou located to the north of the project area may influence the dominant presence of *H. wrightii*, which can tolerate less saline waters. The seagrass beds were concentrated in the nearshore region approximately 10 to 150 feet from shore. *H. wrightii* was observed in both monolithic beds, as well as, mixed seagrass beds with *Syringodium filiforme and Thalassia testudinum. Syringodium filiforme* was also observed frequently, while *Thalassia testudinum* was the least observed species of seagrass within the survey area. Most of the seagrass beds had a moderate to dense layer of epiphytic algal cover at the time of the survey.

Eight species of macroalgae were observed growing in the nearshore area on the riprap boulders, amongst the seagrass beds and along the sand. *Caulerpa sertularoides* was the most dominant macroalgae species observed.

None of the Federally listed threatened seagrass or coral species [i.e. Johnson's seagrass (*Halophila johnsonii*), staghorn coral (*Acropora cervicornis*), elkhorn coral (*Acropora palmata*), lobed star coral (*Orbicella annularis*), mountainous star coral (*Orbicella faveolata*), boulder star coral (*Orbicella franksi*) pillar coral (*Dendrogyra cylindrus*), rough cactus coral (*Mycetophyllia ferox*)] were observed during the survey.

Hardbottom, in the traditional form of reef or pavement, was not observed, rather low relief rubble, rocks or corals growing up from a sand or shell bottom were observed. Organisms growing on the hard substrate were typical for the west coast of Florida and included macroalgae, turf algae, corals and sponges. Coral growth, therefore, was sporadic in distribution, with a few corals clustered, but most of the corals observed dotted the submerged landscape indicating the presence of ephemeral hardbottom substrate. Three species of stony corals (*Solenastrea bournoni, Solenastrea hyades* and *Oculina robusta*) and two species of octocorals (*Leptogorgia virgulata* and *Leptogorgia hebes*) were observed within the 2019 surveyed area. Corals were typically seen 150 to 315 feet offshore with *Solenastrea* spp. being the most abundant coral species observed. It is likely that corals continue to grow further offshore, as many were seen further to the west of where the transects started approximately 315 feet offshore.

V. REFERENCES

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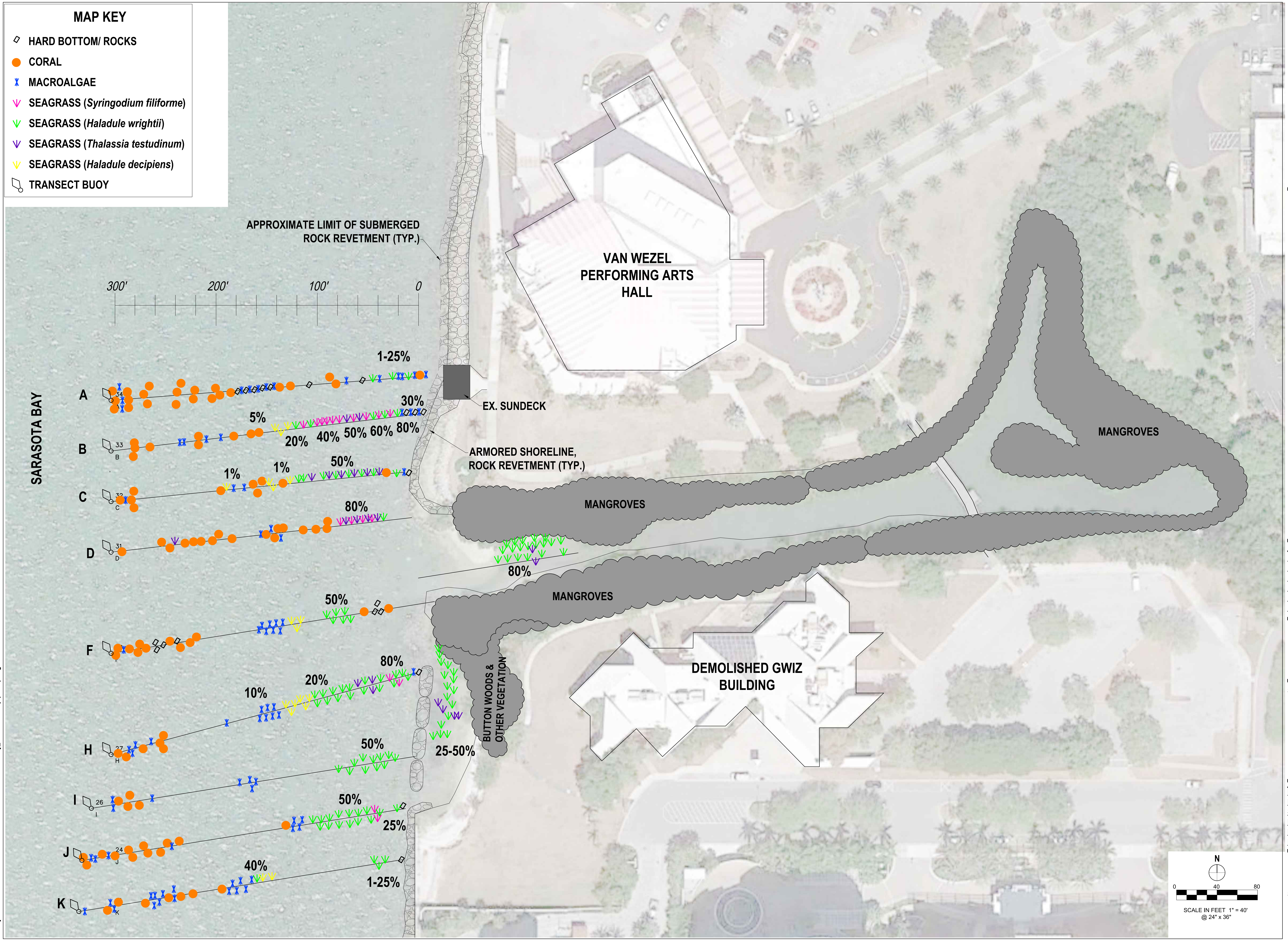
LIST OF APPENDICES:

APPENDIX 1:
Marine Resource Basemaps



MAP KEY
HARD BOTTOM/ ROCKS
CORAL
MACROALGAE
SEAGRASS (*Syringodium filiforme*)
SEAGRASS (*Haladule wrightii*)
SEAGRASS (*Thalassia testudinum*)
SEAGRASS (*Haladule decipiens*)
TRANSECT BUOY
APPROXIMATE LIMIT OF SUBMERGED ROCK REVETMENT (TYP.)
300'
200'
100'
0
SARASOTA BAY
A
B
C
D
F
H
I
J
K
1-25%
30%
5%
20%
40%
50%
60%
80%
1%
1%
50%
80%
50%
80%
20%
10%
50%
50%
25%
40%
1-25%
80%
25-50%
EX. SUNDECK
ARMORED SHORELINE, ROCK REVETMENT (TYP.)
VAN WEZEL PERFORMING ARTS HALL
MANGROVES
MANGROVES
MANGROVES
MANGROVES
BUTTON WOODS & OTHER VEGETATION
DEMOLISHED GWIZ BUILDING
N
0
40
80
SCALE IN FEET 1" = 40'
@ 24" x 36"

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www.edgewaterresources.com

PROJECT TITLE:
2019 MARINE RESOURCE SURVEY

SARASOTA, FLORIDA

SHEET TITLE:
BENTHIC RESOURCES EXHIBIT - PHASE I PROJECT AREA - 2019

NO.	DATE	REVISION

ISSUED FOR:

REVIEW

SEAL:

DATE:	09/24/19
PROJ NO.:	18-47
SCALE:	VARIES
DESIGNED BY:	CAH
DRAWN BY:	SV
REVIEWED BY:	CAH

SHEET NUMBER:

MAP KEY

- HARD BOTTOM/ ROCKS
- CORAL
- MACROALGAE
- SEAGRASS (*Syringodium filiforme*)
- SEAGRASS (*Haladule wrightii*)
- SEAGRASS (*Thalassia testudinum*)
- TRANSECT BUOY

T14

1 - 5%

APPROXIMATE LIMIT OF SUBMERGED ROCK REVETMENT (TYP.)

300' 200' 100' 0

T15

EX. SUNDECK

ARMORED SHORELINE, ROCK REVETMENT (TYP.)

VAN WEZEL PERFORMING ARTS HALL

MANGROVES

SARASOTA BAY

T16

T17

25% 50% 75% - 100%

75% 75 - 100%

MANGROVES

MANGROVES

T18

25% 25%

T19

25% 50 - 75% 100% 25 - 50% 75 - 100%

AREA C

SARASOTA INSTITUTE OF LIFETIME

T20

5 - 25%

N

0 40 80

SCALE IN FEET 1" = 40'
@ 24" x 36"

Edgewater resources
2075 N Powerline Road, Suite 4
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F: (269) 932.3542
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PROJECT TITLE:
2018 BENTHIC RESOURCE SURVEY
SARASOTA, FLORIDA

SHEET TITLE:
BENTHIC RESOURCES EXHIBIT - SOUTH

NO.	DATE	REVISION

ISSUED FOR:
REVIEW

SEAL:

DATE:	8/27/18
PROJ NO.:	18-47
SCALE:	VARIES
DESIGNED BY:	CAH
DRAWN BY:	MK
REVIEWED BY:	CAH

SHEET NUMBER:
2 of 3

MAP KEY

- HARD BOTTOM/ ROCKS
- CORAL
- MACROALGAE
- SEAGRASS (*Syringodium filiforme*)
- SEAGRASS (*Haladule wrightii*)
- SEAGRASS (*Thalassia testudinum*)
- SEAGRASS (*Haladule decipiens*)
- TRANSECT BUOY

APPROXIMATE LIMIT OF SUBMERGED ROCK REVETMENT (TYP.)

300' 200' 100' 0

T14

T15

T16

T17

T18

T19

T20

A

B

C

D

F

H

I

J

K

SARASOTA BAY

EX. SUNDECK

ARMORED SHORELINE, ROCK REVETMENT (TYP.)

VAN WEZEL PERFORMING ARTS HALL

MANGROVES

MANGROVES

MANGROVES

MANGROVES

BUTTON WOODS & OTHER VEGETATION

DEMOLISHED GWIZ BUILDING

N

0 40 80

SCALE IN FEET 1" = 40'
@ 24" x 36"

Edgewater resources
2075 N Powerline Road, Suite 4
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PROJECT TITLE:
MARINE RESOURCE SURVEY

SARASOTA, FLORIDA

SHEET TITLE:
MARINE RESOURCES EXHIBIT - PHASE I PROJECT AREA - 2018 & 2019 SURVEY RESULTS

NO.	DATE	REVISION

ISSUED FOR:

REVIEW

SEAL:

DATE:	09/24/19
PROJ NO.:	18-47
SCALE:	AS SHOWN
DESIGNED BY:	CAH
DRAWN BY:	SV
REVIEWED BY:	CAH

SHEET NUMBER:

3 of 3

O:\Projects\2018\18-47 Sarasota Master Plan\CAD\Models\Dive Survey_Resources Map (18-47).dwg

APPENDIX 2:

Photographic Log

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.:**
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	**Date:**
1	8/27/19

Photo Location:
TS-A

Description:

Transect A extended 330 feet west of the northern edge of the existing sun deck.

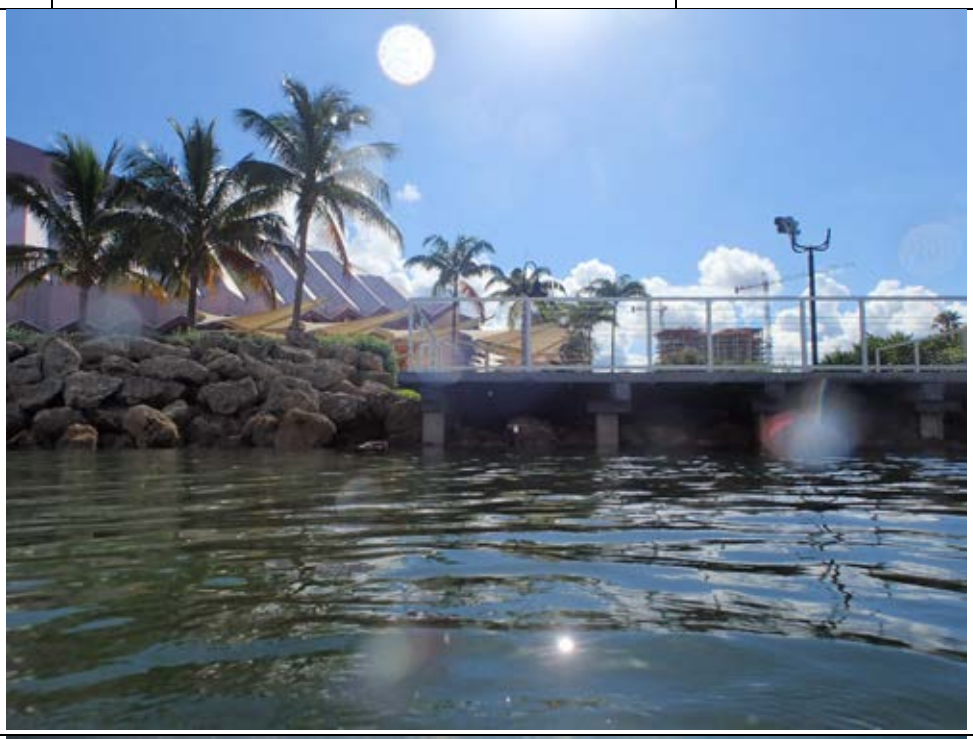


Photo No.	**Date:**
2	8/27/19

Photo Location:
TS-A

Description:
Solenastrea bournoni corals and the boring sponge *Cliona celata* were observed along the western end of Transect A. Numerous stone crabs were also observed associated with these resources.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.:**
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	**Date:**
3	8/27/19

Photo Location:
TS-A

Description:
Three large (>30 cm) *Solenastrea bournoni* coral colonies were observed growing along Transect A.

Photo No.	**Date:**
4	8/27/19

Photo Location:
TS-A

Description:

The green macroalgae *Caulerpa sertularoides* was observed growing throughout the survey area as pictured here adjacent to a small *Solenastrea bournoni* was observed 221 feet from the start of Transect A.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	Date:
5	8/27/19

Photo Location:
TS-A

Description:

Leptogorgia virgulata was the most common species of octocoral observed during the survey. Many large (>30cm tall) colonies were observed throughout the survey area.

Photo No.	Date:
6	8/27/19

Photo Location:
TS-A

Description:

A sparse patch of *Halodule decipiens* was observed 259 feet from the start of Transect A.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	Date:
7	8/27/19

Photo Location:
TS-A

Description:

Sparse patches of the seagrass *(Halodule wrightii)* were located between 280 and 293 feet from the start of Transect A.

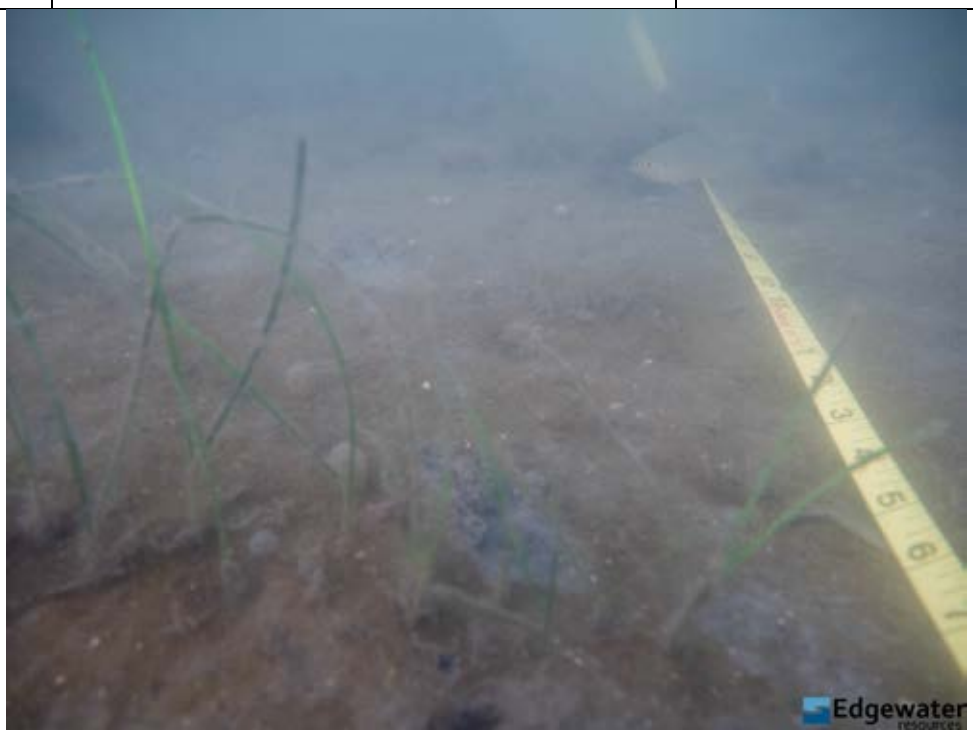


Photo No.	Date:
8	8/27/19

Photo Location:
TS-A

Description:
The submerged bottom within the survey area consisted mostly of sand and silt as pictured here on Transect A.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	Date:
9	8/27/19

Photo Location:
TS-B

Description:

Transect B extended 314 feet west of the outer riprap off the western shoreline north of the mangrove creek.

Photo No.	Date:
10	8/27/19

Photo Location:
TS-B

Description:
Occulina robusta corals were observed growing on rubble throughout the survey area such as this colony observed 20 feet from the start of Transect B.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.:**
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	**Date:**
11	8/27/19

Photo Location:
TS-B

Description:

One Upside down Jellyfish was observed along the beginning of Transect B.

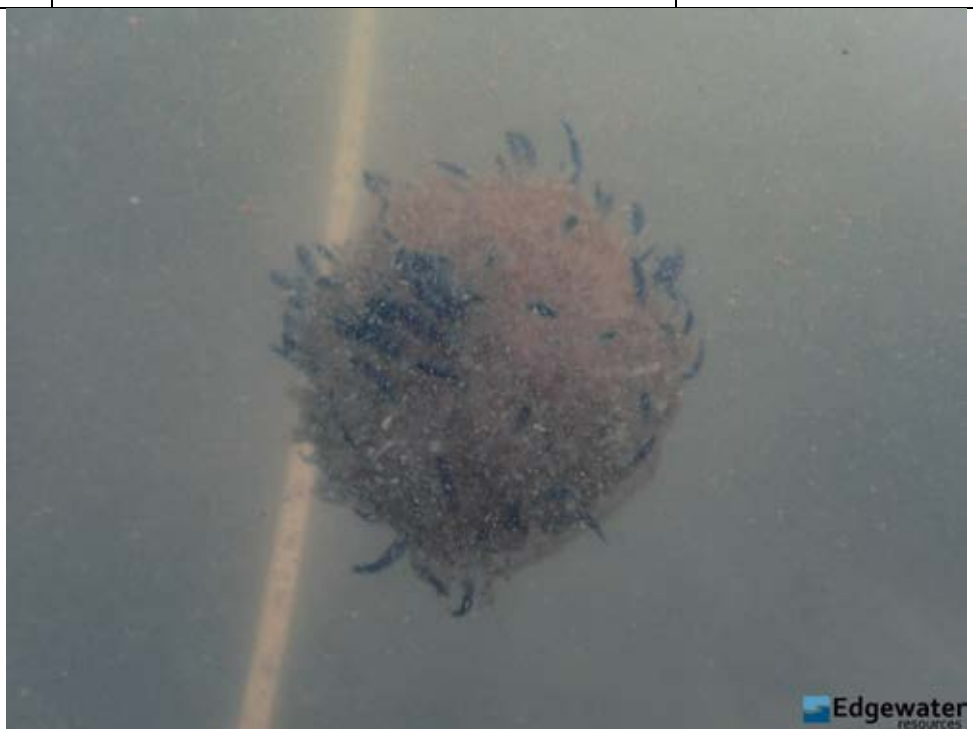


Photo No.	**Date:**
12	8/27/19

Photo Location:
TS-B

Description:

A patch of *Halodule decipiens* seagrass and the green macroalgae (*C. sertularoides*) was observed 165 feet from the start of Transect B.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.:**
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	**Date:**
13	8/27/19

Photo Location:
TS-B

Description:
A large bed of mixed seagrass (*Halodule wrightii, Syringodium filiforme,* and *Thalassia testudinum*) extended between 191 and 302 feet from the start of Transect B. A mixed bed of *H. wrightii* and *T. testudinum.* was observed between 269 and 283 feet.

Photo No.	**Date:**
14	8/27/19

Photo Location:
TS-C

Description:

Transect C extended 300 feet west of the outer riprap off of western shoreline north of the mangrove creek.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	Date:
15	8/27/19

Photo Location:
TS-C

Description:

Occulina robusta coral observed along Transect C.

Photo No.	Date:
16	8/27/19

Photo Location:
TS-C

Description:

A sparse patch of *Halophila decipiens* was observed 175 feet from the start of Transect C.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	Date:
17	8/27/19

Photo Location:
TS-C

Description:

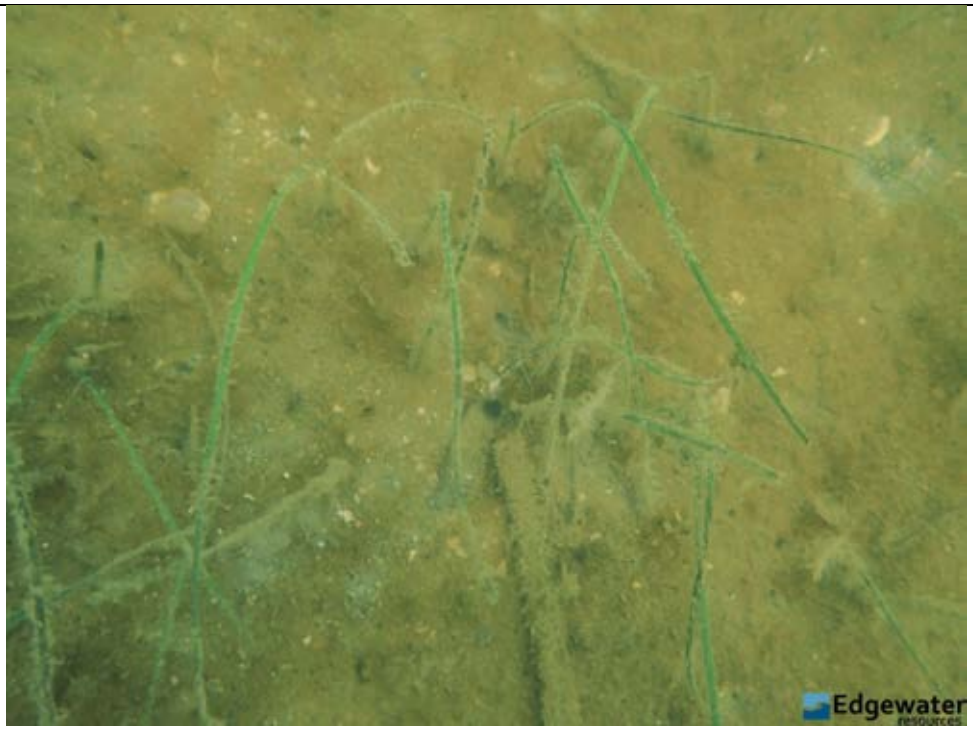
Another sparse patch of *Halophila decipiens* was observed between 148 and 153 feet from the start of Transect C.

Photo No.	Date:
18	8/27/19

Photo Location:
TS-C

Description:

Sparse *Halodule wrightii* seagrass was located along Transect C at the end of the transect, near the riprap.



Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	Date:
19	8/27/19

Photo Location:
TS-D

Description:
Occulina robusta corals were observed growing on rocks and rubble throughout the survey area. This colony was located 215 feet from the start of Transect D.

Photo No.	Date:
20	8/27/19

Photo Location:
TS-D

Description:
Numerous large (>30cm) *Solenastrea bournoni* corals were observed growing within the survey area. The corals were observed in the offshore region of the transects such as this colony located 73 feet from the start of TS-D.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	Date:
21	8/27/19

Photo Location:
TS-D

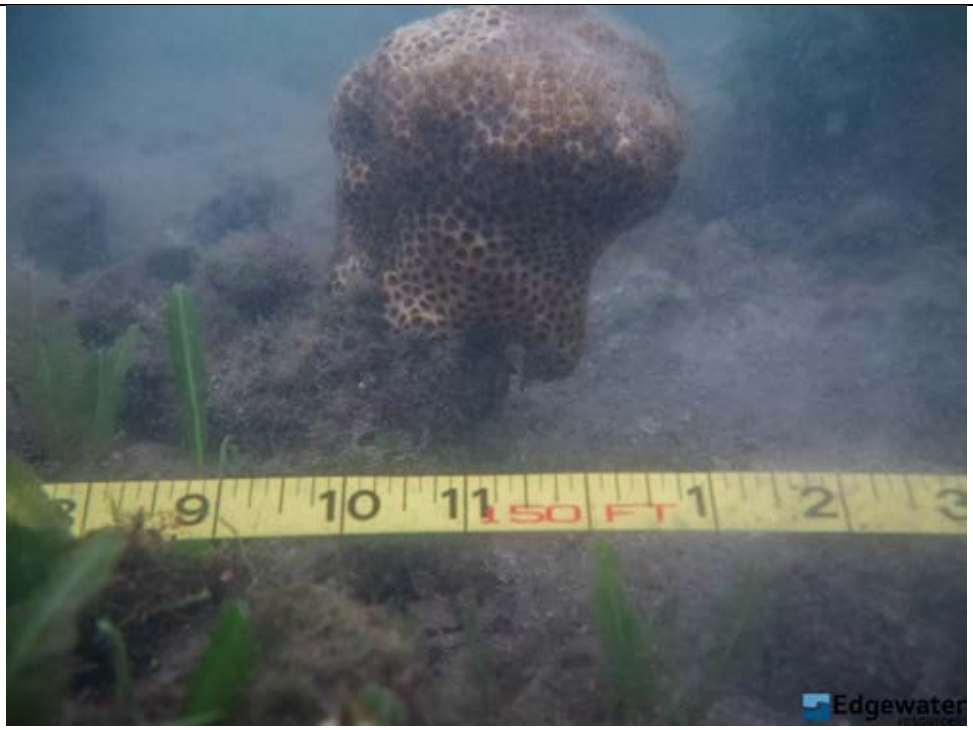
Description:

The large *Solenastrea* sp. colonies growing along Transect D provide habitat for stone crabs and gray snapper, as pictured here.

Photo No.	Date:
22	8/27/19

Photo Location:
TS-D

Description:
Solenastrea bournoni and *Caulerpa sertularoides* were the most commonly observed corals and macroalgae, respectively, growing within the survey area.



Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.:**
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	**Date:**
23	8/27/19

Photo Location:
TS-F

Description:

Several *Solenastrea bournoni* colonies were observed growing in the offshore region of Transect F.

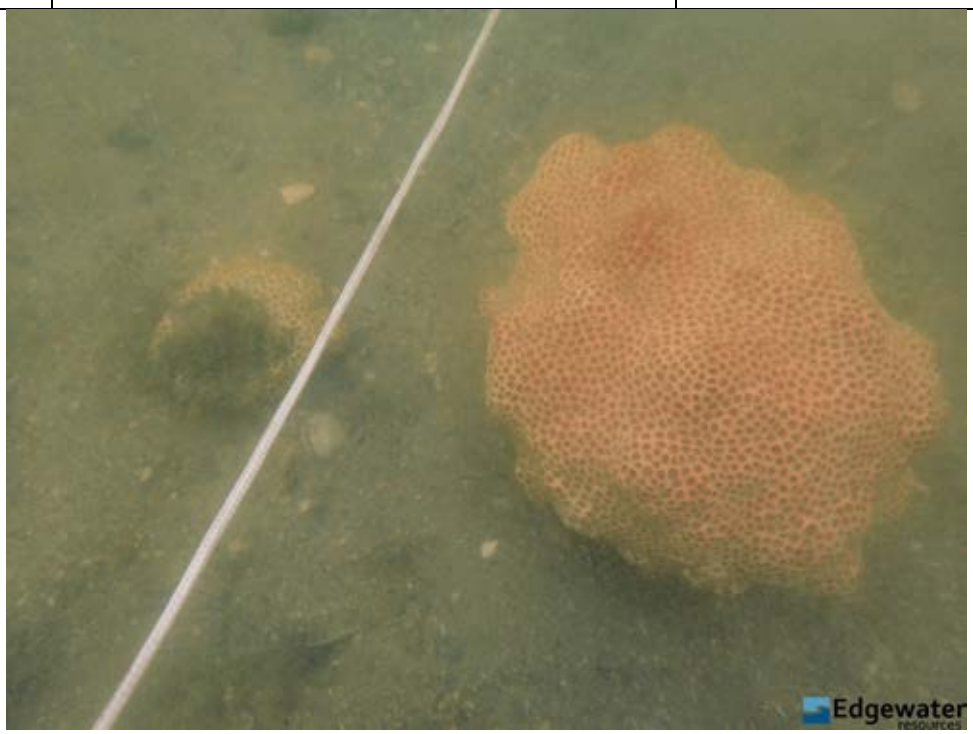
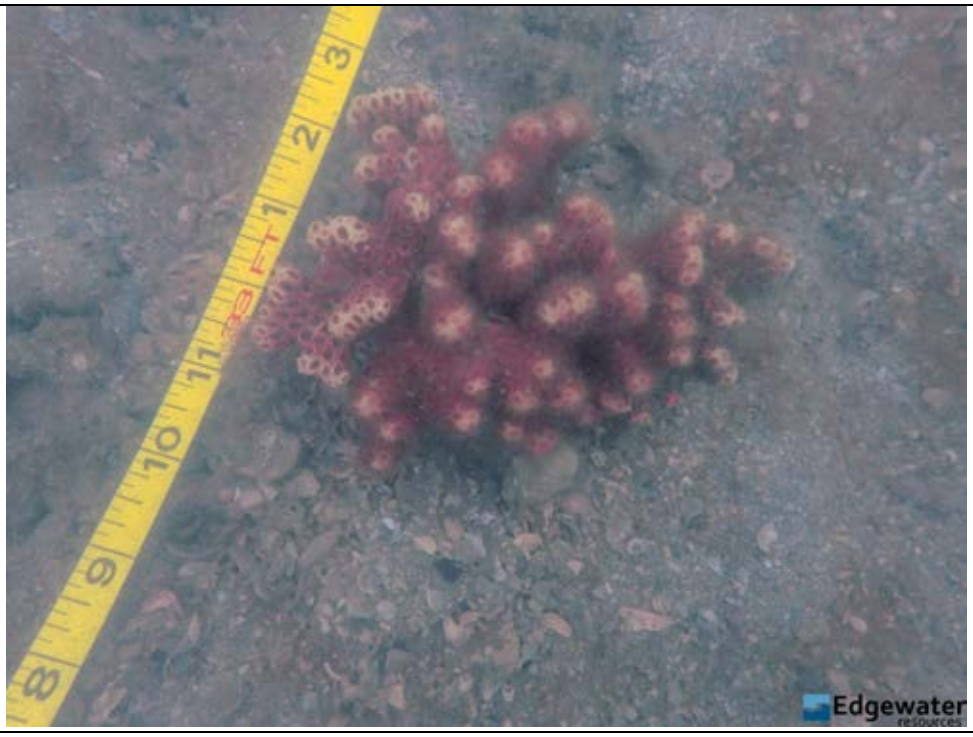


Photo No.	**Date:**
24	8/27/19

Photo Location:
TS-F

Description:

Occulina robusta corals were observed growing on rubble throughout the survey area. This colony was seen 33 feet from the start of Transect F.



Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.:**
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	**Date:**
25	8/27/19

Photo Location:
TS-H

Description:

Transect H extended 314 feet west of the outer riprap off the western shoreline, south of the mangrove creek.

Photo No.	**Date:**
26	8/27/19

Photo Location:
TS-H

Description:

One of the marine biologists collecting data along Transect H.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.:**
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	**Date:**
27	8/27/19

Photo Location:
TS-H

Description:

A mixed seagrass bed of *Syringodium filiforme, Halodule wrightii* and *Thalassia testudinum* was located 251 to 293 feet from the start of Transect H.

Photo No.	**Date:**
28	8/27/19

Photo Location:
TS-H

Description:

The red macroalgae *Acanthaphora spicifera* was observed in the nearshore region along several transects.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.:**
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	**Date:**
29	8/27/19

Photo Location:
TS-H

Description:

A bed of *Halodule wrightii* seagrass was located along the shallow nearshore region of Transect H.

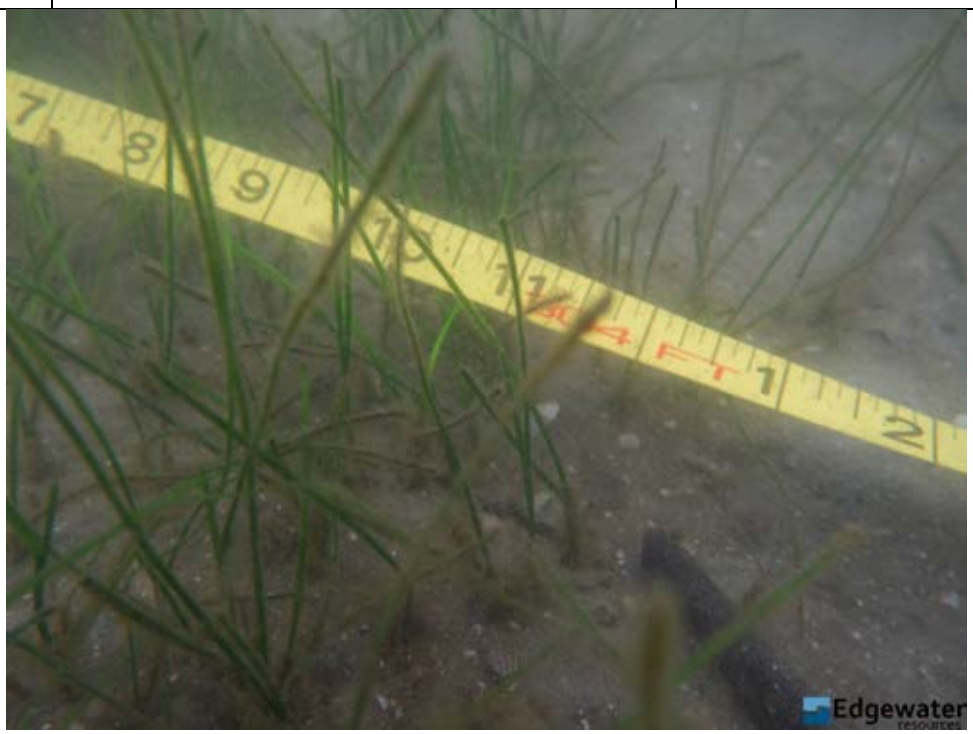


Photo No.	**Date:**
30	8/27/19

Photo Location:
TS-I

Description:

Transect I extended 309 feet west of the outer riprap, off the western shoreline, south of the mangrove creek.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.:**
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	**Date:**
31	8/27/19

Photo Location:
TS-I

Description:

The octocoral *Leptogorgia hebes* was observed growing along Transect I.

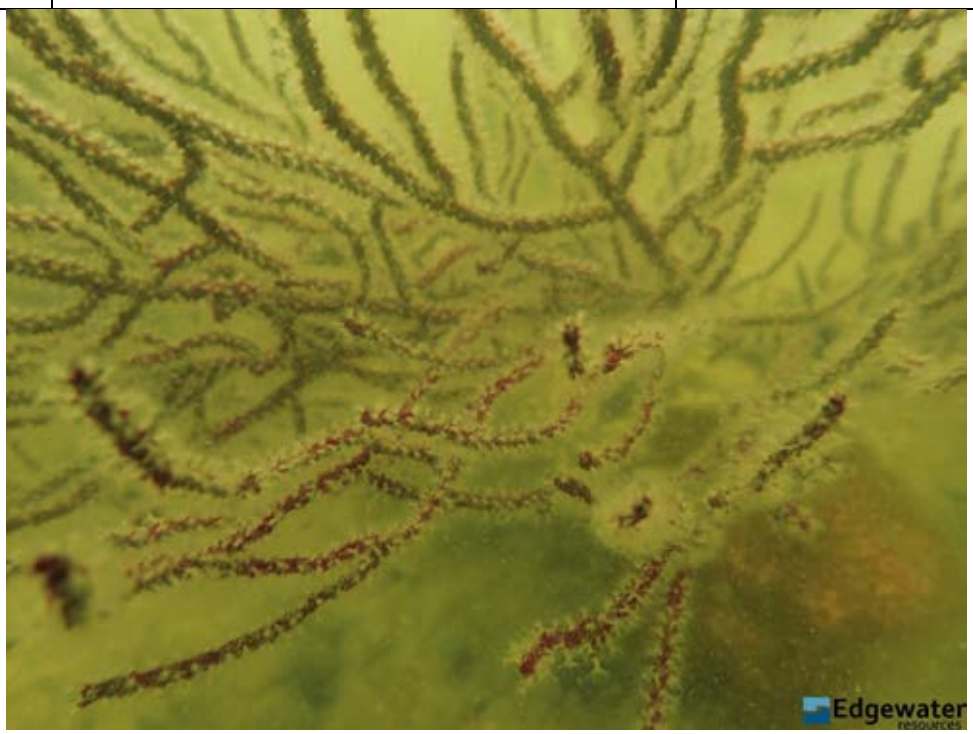
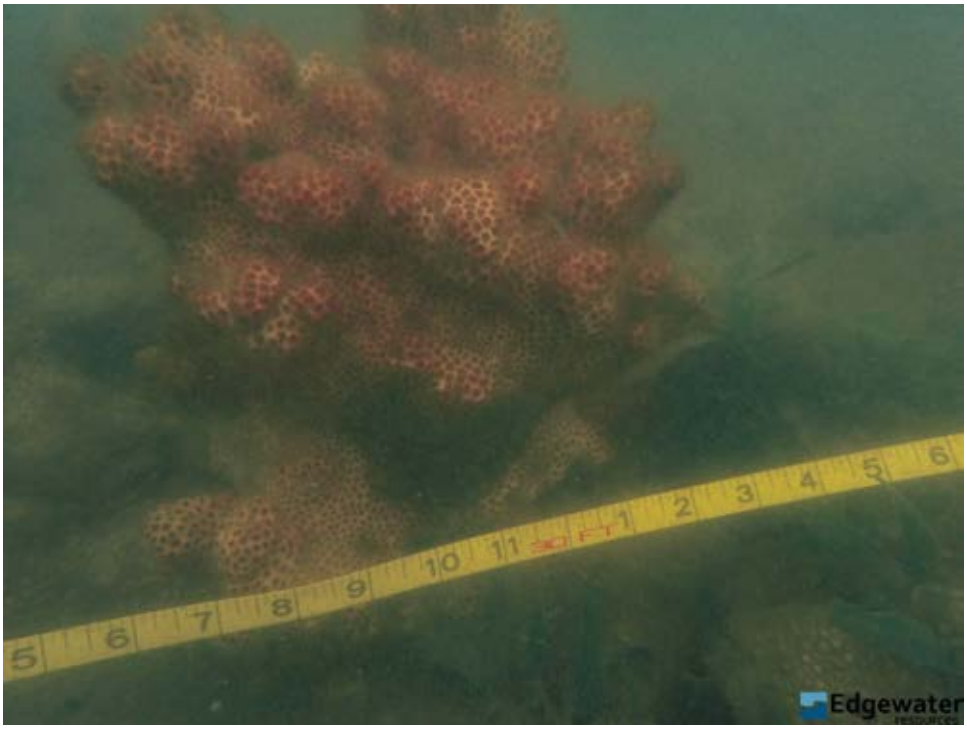


Photo No.	**Date:**
32	8/27/19

Photo Location:
TS-I

Description:

A large (>30 cm) *Solenastrea hyades* observed growing 30 feet from the start of Transect I in the offshore region of the Transect.



Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	**Site Location:**	**Project No.:**
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	**Date:**
33	8/27/19

Photo Location:
TS-I

Description:

Halodule wrightii was observed growing in the nearshore region of Transect I.

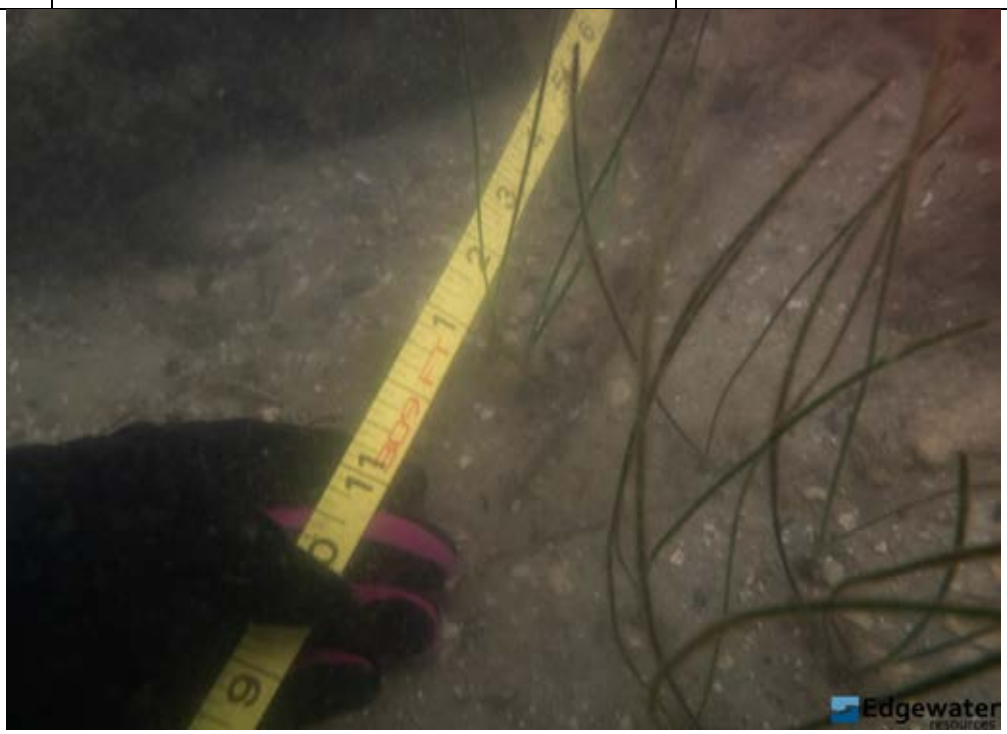


Photo No.	**Date:**
34	8/27/19

Photo Location:
TS-J

Description:

Transect J extended 315 feet west of the outer riprap off, of the western shoreline, south of the mangrove creek.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	Date:
35	8/27/19

Photo Location:
TS-J

Description:

An Occulina robusta and a *Solenastrea bournoni* coral were observed at the start of Transect J.

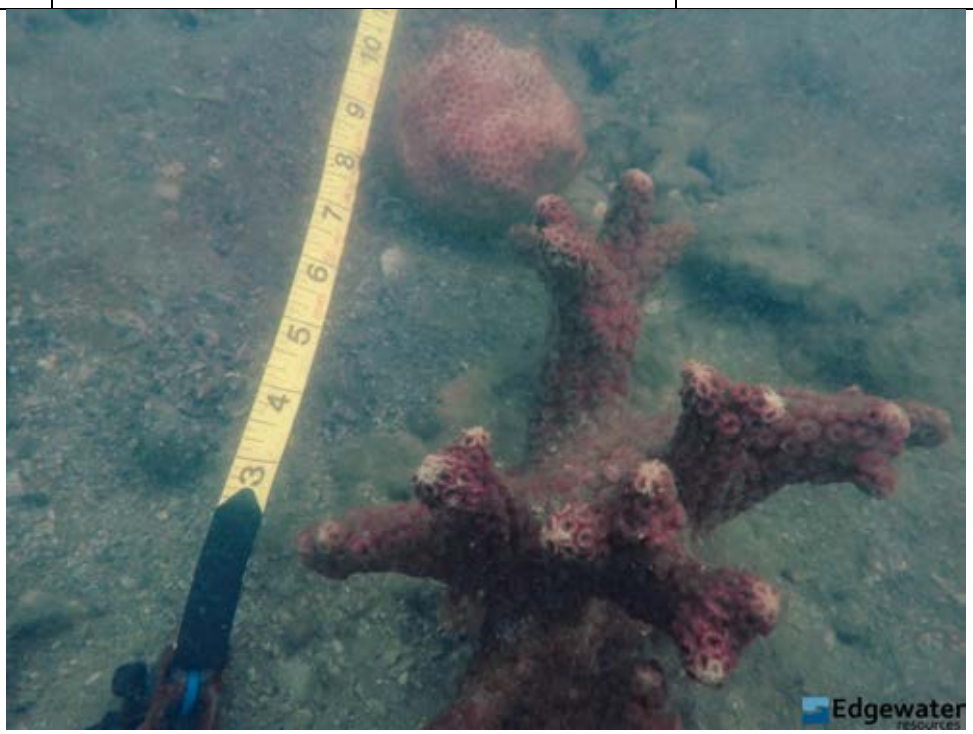


Photo No.	Date:
36	8/27/19

Photo Location:
TS-J

Description:

A Lined Seahorse resting beside a *Solenastrea bournoni* coral along Transect J.

Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	Date:
37	8/27/19

Photo Location:
TS-K

Description:

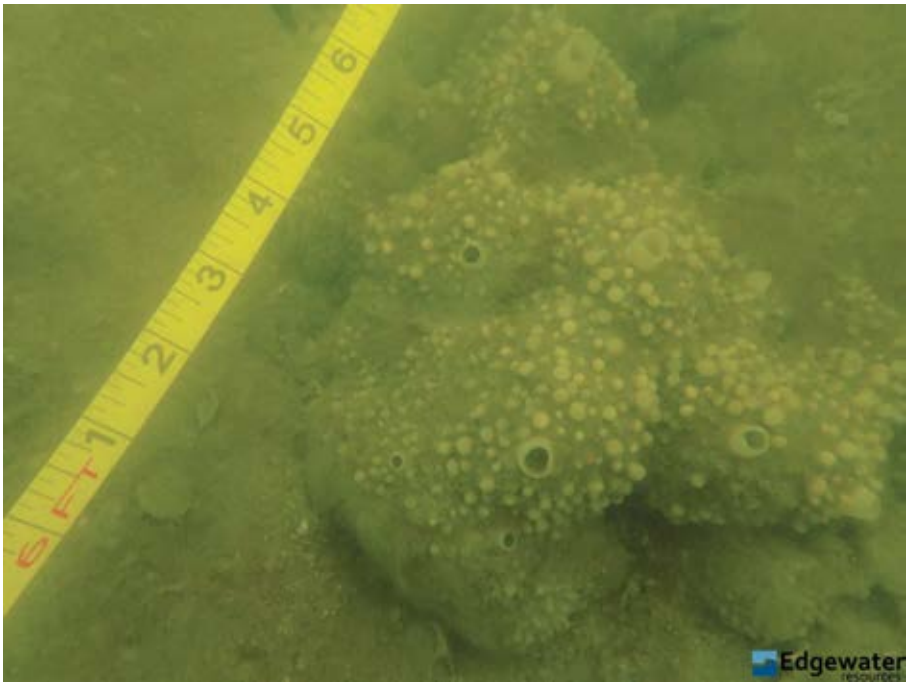
Transect K extended 324 feet west of the southern property line, terminating at the riprap along the shoreline.

Photo No.	Date:
38	8/27/19

Photo Location:
TS-K

Description:

A large boring sponge (*Cliona celata*) observed along the western portion of Transect K.



Edgewater resources

PHASE I - PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.:
Sarasota Bayfront Planning Organization	Submerged Lands off 1000-1001 Boulevard of the Arts, Sarasota, Florida 34236	18-47

Photo No.	Date:
39	8/27/19

Photo Location:
TS-K

Description:

Silty sediment was observed along a portion of all the transects, as pictured here at 218 feet along Transect K.

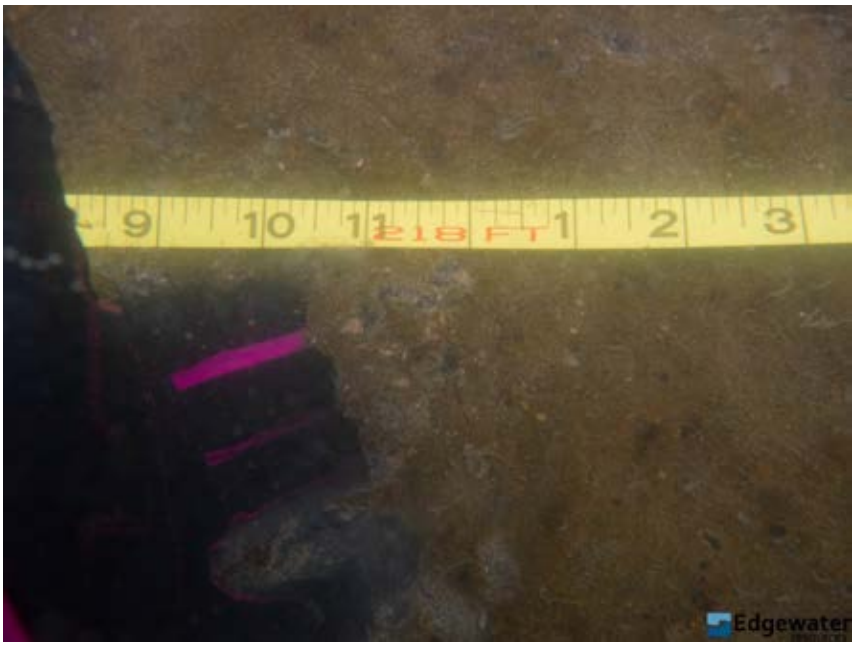
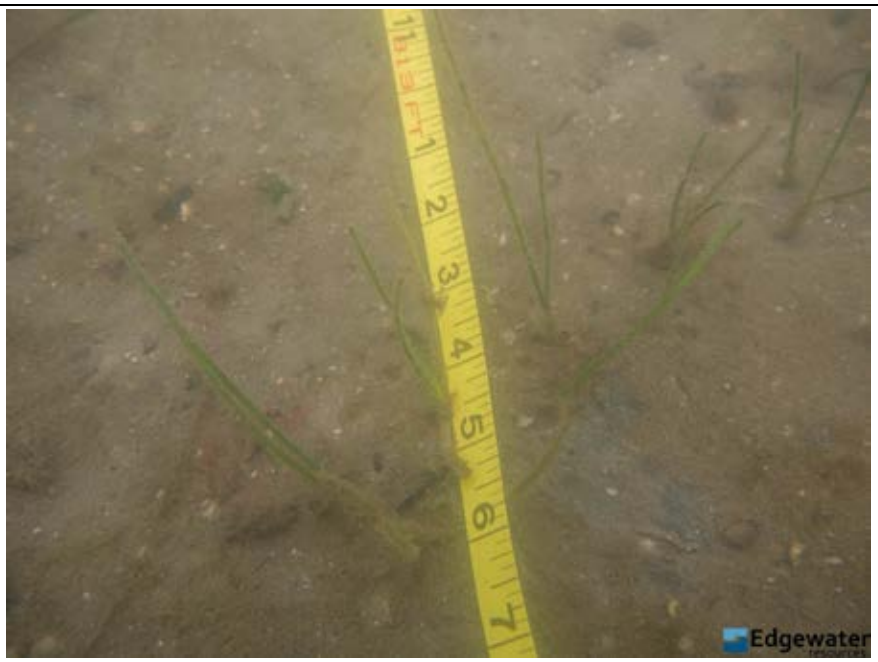


Photo No.	Date:
40	8/27/19

Photo Location:
TS-K

Description:

Sparse *Halodule wrightii* was observed growing in the nearshore region along Transect K.



APPENDIX 3:
Data

Feet from Bouy (West to East)	A	B	C	D	F	H	I	J	K
0	Solenastrea 22*36, 11*11, 10*10, 7*5, 18*20, 17*15cm				17, 7cm (bleached) Solenastrea	2,11,13,9,12,6,5, >30 Solenastrea		10cm O.robusta	
1	L. virgulata & O. robusta							14,7,8,8 Solenastrea	
2	Sparse MA & Sponge (C. sert, Cliona sp.)		28cm L.virgulata						
3			C. sertularoides					14cm Solenastrea	
4									
5									
6								6cm Solenastrea	Cliona celata
7					5,10, 12cm Solenastrea			MA & Sponges	
8	1*1cm Solenastrea				13,14,22cm Solenastrea				
9					25cm Solenastrea				
10	1*1cm Solenastrea			>30cm L.virgulata		5cm Solenastrea			
11					10cm Solenastrea				
12									
13					10cm Solenastrea Partially dead				
14			>30cm L.virgulata						
15					G. tikvahiae				
16					8cm Solenastrea	Cliona celata			
17								6cm Solenastrea PD	
18						13cm Solenastrea			
19	6*5cm Solenastrea				L. virgulata			3, 7, 25cm Solenastrea PD	
20		15 cm O.robusta	>30cm L.virgulata			12, 12cm Solenastrea	MA - (C. sert)	Cliona celata	
21		8cm Solenastrea							
22		>30 L.vigulata			24cm Solenastrea		L. hebes	15cm Solenastrea PD	
23	MA & Sponge (C. sert & Cliona sp.)	18cm Solenastrea			L. virgulata	23cm Solenastrea	27cm Solenastrea	MA	
24		11cm Solenastrea	22cm Solenastrea				15cm Solenastrea	16, 5cm Solenastrea	
25		15,19,22cm Solenastrea					18cm Solenastrea		
26	Occulina robbusta						12cm Solenastrea		
27	4 Solenastrea's (21,15,16,18cm)						13cm Solenastrea		
28								13, 15cm Solenastrea	
29									30cm L.virgulata
30							30, 12cm Solenastrea + more north of tape		
31	Solenastrea 22cm								
32	Solenastrea 25cm								
33	Solenastrea 17cm				14cm O. robbusta	16m Solenastrea			
34									
35					L. virgulata	13m Solenastrea & L. virgulata			
36	Solenastrea 25cm								30cm L.virgulata
37									
38	2 Solenastrea 1&2cm	24cm Solenastrea			L. virgulata	17m Solenastrea			
39	Solenastrea 13cm								
40						15m Solenastrea			
41	Dead Solenastrea & Cliona sp.				O. robbusta	16cm Solenastrea		14, 10cm Solenastrea	
42					exposed HB	18m Solenastrea			
43					9cm Solenastrea				
44					exposed HB			30cm Solenastrea	
45									
46									
47									
48									
49						>30cm Solenastrea			
50									
51									
52									
53				Solenastrea 16,7,6,14,8,21,16,10,12, 5,18cm					
54									
55									
56					9cm Solenastrea				
57					exposed HB				
58					23cm Solenastrea				
59									
60				Solenastrea 13,20cm + additionals				10cm Solenastrea	
61							MA - (C. sert)		
62									
63									
64	Solenastrea 14cm								
65								13cm Solenastrea	
66	Solenastrea 9cm								
67									13cm Solenastrea
68	Solenastrea 5cm	C. sertularoides		14cm Solenastrea					MA - C. sertularoides/ Acanthaphora & Sponges (Cliona celata)
69									
70									
71									
72				>30cm Solenastrea					
73									
74									
75	Solenastrea 12cm							17,17,14cm Solenastrea	
76									
77									
78					2 L. virgulata				
79									
80									
81									
82									
83				22cm Solenastrea					
84									
85	2 Solenastrea 20&20cm				11cm O. robbusta				
86	Solenastrea 6cm								
87	Solenastrea 10cm	L. virgulata							
88								13cm Solenastrea + L.virgulata	
89									
90		16cm Solenastrea						Sponge	
91									L.virgulata
92									MA - C. sertularoides/ Acanthaphora & Sponges (Cliona celata)
93									
94				>30cm Solenastrea					
95		Patch of C. sert							
96									
97									
98									
99									
100	Solenastrea 11cm								
101				18cm Solenastrea				2 L. virgulata	L.virgulata
102									

Feet from Bouy (West to East)	A	B	C	D	F	H	I	J	K
103									
104									
105	corals off the tape								
106			3cm L.virgulata						
107			Small patch						
108									
109		Patch of C. sert							
110									
111									3, 9cm Solenastrea
112									L.virgulata
113									3cm Solenastrea
114									
115									
116									
117	Solenastrea 8cm - More corals off the tape								
118	MA (C. sert) 118-166			L.virgulata		C. sertularoides			
119	Scattered rocks 118-166								
120									
121		>30cm L.virgulata							
122			C. sertularoides						
123									
124									
125									
126									
127									
128									
129									
130			C. sertularoides						
131									
132									
133									
134									
135									
136									
137			14cm Solenastrea						
138									
139									
140									
141		L.virgulata							
142									
143									15cm Solenastrea
144		L.virgulata	30 cm L.virgulata						
145			8cm Solenastrea						
146									
147					MA (C.sertularoides, Laurencia sp.) & Sponge (Cliona celata)	MA (C. serularoides, G. tikvahiae, Hypnea sp. Laurencia sp. Acanthaphora sp) & Sponge (Cliona celata)	MA (Gracilaria, Hypnea & C. serularoides) & Sponges		
148			1%						
149									
150				11.6cm Solenastrea					Sparse MA & Sponges
151									
152									
153									
154				8cm Solenastrea					
155									
156				L.virgulata					
157									
158				L.virgulata					
159				>30cm O.robusta					
160									
161									
162									
163									
164		Patch Hd & C.sert							
165									
166			dead Solenastrea						
167	Solenastrea 5cm								
168									
169									
170									
171									
172									
173									
174		5%							
175	L. virgulata		Small patch						
176									
177									
178									Sprig
179									
180									1.5'*1.5' patch
181									
182						10%			
183									
184									
185			Sparse						
186					20%				
187									
188				L.virgulata					
189			50%						
190									
191		5-20%							
192									
193									
194						20%			Sprig
195									
196	Cliona celata								
197									
198									
199		Sf & Hw 20%				80%			
200		Sf & Hw 20%							
201		Sf & Hw 20%							
202		Sf & Hw 20%							
203		Sf = 40%		5cm Solenastrea					
204								O. robusta	
205								MA	
206									
207									
208									
209									
210									
211									
212									
213									
214					50%				
215									

Feet from Bouy (West to East)	A	B	C	D	F	H	I	J	K
216				L.virgulata					
217				L.virgulata					
218	Solenastrea >30cm, stone crab, many sponges (Cliona celata), MA (C. sert&G. tik)								
219									
220	Solenastrea 6,9,7,2sm, L. virgilata, Cliona celata & MA (C. sertularoides)								
221									
222								Sparse	
223	Solenastrea 3cm								
224				Sf & Tt =80%					
225	L. virgulata, Solenastrea & sponge (Cliona celata) & MA (C. sertularoides)			Sf & Tt =80%					
226				Sf & Tt =80%					
227				Sf & Tt =80%					
228				Sf & Tt =80%					
229				Sf & Tt =80%					
230				Sf & Tt =80%					
231	MA - C. sertularoides			Sf & Tt =80%					
232				Sf & Tt =80%					
233		Sf & Tt = 50%		Sf & Tt =80%					
234		Sf & Tt = 50%		Sf & Tt =80%					
235		Sf & Tt = 50%		Sf & Tt =80%					
236		Sf & Tt = 50%		Sf & Tt =80%					
237		Sf & Tt = 50%		Sf & Tt =80%					
238		Hw & Sf =60%		Sf & Tt =80%					
239		Hw & Sf =60%		Sf & Tt =80%					
240		Hw & Sf =60%		Sf & Tt =80%					
241		Hw & Sf =60%		Sf & Tt =80%			Sparse		
242		Hw & Sf =60%		Sf & Tt =80%					
243		Hw & Sf =60%		Sf & Tt =80%					
244		Hw & Sf =60%		Sf & Tt =80%					
245		Hw & Sf =60%		Sf & Tt =80%					
246		Hw & Sf =60%		Sf & Tt =80%					
247		Hw & Sf =60%		Sf & Tt =80%					
248		Hw & Sf =60%		Sf & Tt =80%	L. virgulata				
249	HB & MA (C. sert)	Hw & Sf =60%		Sf & Tt =80%					
250		Hw & Sf =60%		Sf & Tt =80%		80% Hw, Tt & Sf			
251		Hw & Sf =60%		Sf & Tt =80%		80% Hw, Tt & Sf			
252		Hw & Sf =60%		Sf & Tt =80%		80% Hw, Tt & Sf		50%	
253		Hw & Sf =60%		Sf & Tt =80%		80% Hw, Tt & Sf			
254		Hw & Sf =60%		Sf & Tt =80%		80% Hw, Tt & Sf			
255		Hw & Sf =60%		Sf & Tt =80%		80% Hw, Tt & Sf			
256				Sf & Tt =80%		80% Hw, Tt & Sf			
257				Sf & Tt =80%		80% Hw, Tt & Sf			
258				Sf & Tt =80%		80% Hw, Tt & Sf			
259		60%		Sf & Tt =80%		80% Hw, Tt & Sf	50%		
260	Sparse			Sf & Tt =80%		80% Hw, Tt & Sf			
261				Sf & Tt =80%		80% Hw, Tt & Sf			
262				Sf & Tt =80%		80% Hw, Tt & Sf			
263				Sf & Tt =80%		80% Hw, Tt & Sf			
264	MA - C. sertularoides			Sf & Tt =80%		80% Hw, Tt & Sf			
265				Sf & Tt =80%		80% Hw, Tt & Sf			
266				Sf & Tt =80%		80% Hw, Tt & Sf			
267				Sf & Tt =80%		80% Hw, Tt & Sf			
268		50%		Sf & Tt =80%	Rubble & Riprap	80% Hw, Tt & Sf			
269		Hw & Tt = 60%		Hw & Sf to mouth of creek		80% Hw, Tt & Sf			
270		Hw & Tt = 60%				80% Hw, Tt & Sf			
271		Hw & Tt = 60%	>30cm L.virgulata			80% Hw, Tt & Sf			
272		Hw & Tt = 60%				80% Hw, Tt & Sf			
273		Hw & Tt = 60%			18cm L. virgulata	80% Hw, Tt & Sf			
274		Hw & Tt = 60%				80% Hw, Tt & Sf			
275		Hw & Tt = 60%				80% Hw, Tt & Sf			
276		Hw & Tt = 60%				80% Hw, Tt & Sf			
277		Hw & Tt = 60%				80% Hw, Tt & Sf			
278		Hw & Tt = 60%				80% Hw, Tt & Sf			
279		Hw & Tt = 60%				80% Hw, Tt & Sf			
280		80%				80% Hw, Tt & Sf			
281	3%	Hw & Tt = 80%				80% Hw, Tt & Sf			
282		Hw & Tt = 80%				80% Hw, Tt & Sf			
283		Hw & Tt = 80%	Sparse			80% Hw, Tt & Sf			
284						80% Hw, Tt & Sf			
285						80% Hw, Tt & Sf			
286		80%				80% Hw, Tt & Sf		25%	
287						80% Hw, Tt & Sf			
288						80% Hw, Tt & Sf			
289	Sparse					80% Hw, Tt & Sf	Sparse HW & SF		
290	MA - C. sertularoides					80% Hw, Tt & Sf			
291	Sparse					80% Hw, Tt & Sf			
292	MA - C. sertularoides, Gracilaria tikvahiae		Rubble/Riprap			80% Hw, Tt & Sf			
293	Sparse					80% Hw, Tt & Sf		Sf & Hw	
294						80% Hw, Tt & Sf		Sf & Hw	40%
295								Sf & Hw	
296								Sf & Hw	
297									
298									
299									
300									
301									
302	MA - C. sertularoides, Gracilaria tikvahiae	Hw 30%							
303									
304		Rubble							
305	L. virgulata	MA - Acanthaphora							
306	MA - C. sertularoides, Gracilaria tikvahiae	Rubble							
307									
308		Rubble							Sparse
309							Sparse		
310		Rubble							
311									
312		Rubble				MA			
313									
314		Riprap				Rubble & Riprap			
315								Riprap	
316									
317									
318									
319									
320									
321									
322									
323									Rubble & Riprap
324									
325									
326									
327									
328									
329									
330									

APPENDIX 4:

Sarasota Historic Seagrass Maps

South Sarasota Bay (West)

Sarasota County

Legend

SWFWMD 2006 Seagrass

- Patchy
- Continuous

N
W E
S

0.3 0.15 0 0.3 Miles

South Sarasota Bay (East)

Sarasota County

0.3 0.15 0 0.3 Miles

2008 SWFWMD Seagrass

- Patchy
- Continuous
- Rooted Algae

N

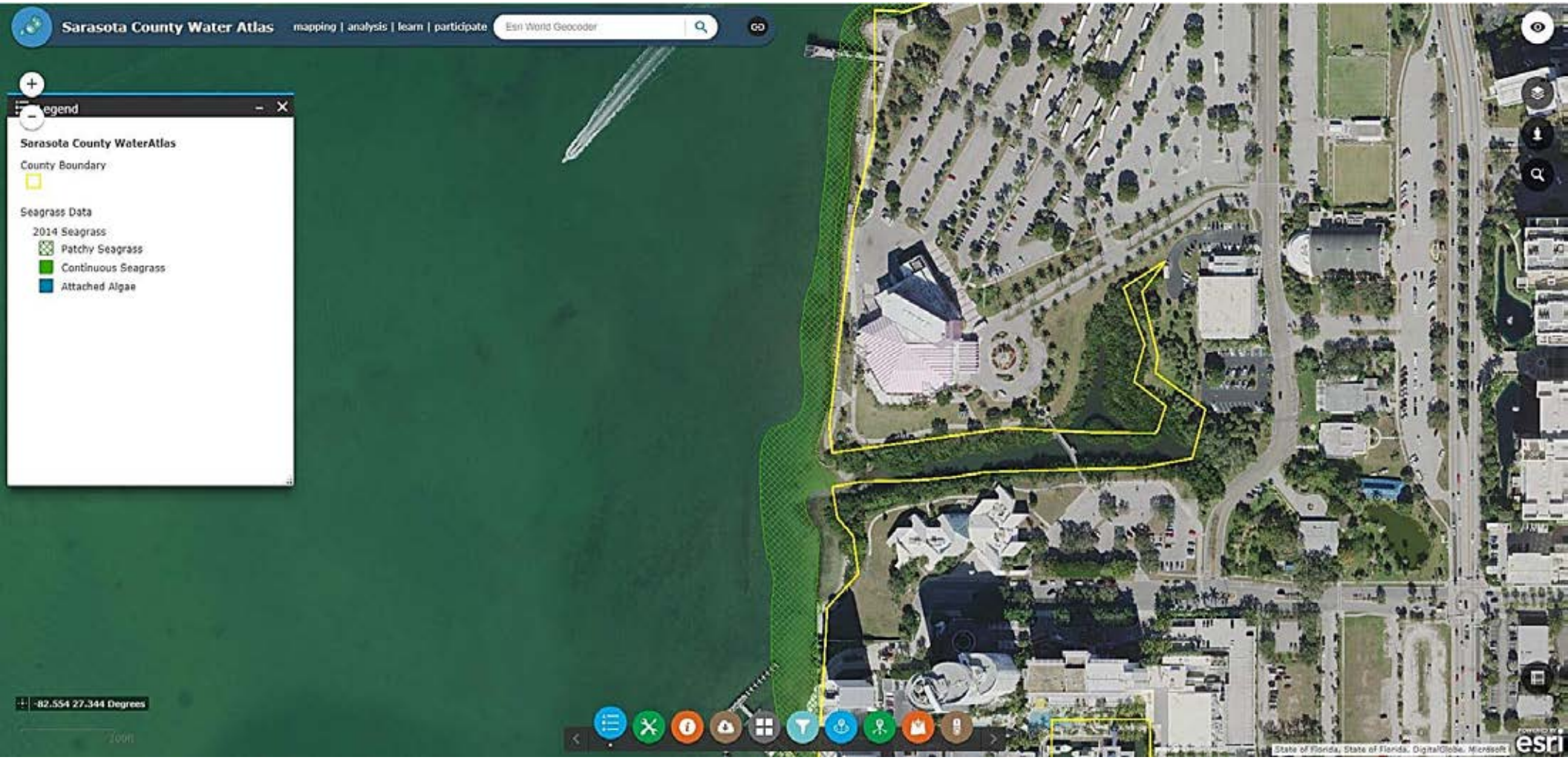
W E

S

Sarasota Environmental Aquatics Team

SEA Team

2014 Seagrass Map of the South Project Area



2016 Seagrass Map of the South Project Area