ATTACHMENT NO. 28

NATURAL COMMUNITY DESCRIPTION

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Natural Community Description

Lido Key is approximately 2.5 miles long and varies in width from about 100 feet to 2,500 feet. Lido Key is bordered on the north by New Pass and on the south by Big Sarasota Pass, both of which connect Sarasota Bay to the Gulf of Mexico. Big Sarasota Pass is bordered on the south by Siesta Key and New Pass is bordered on the north by Longboat Key.

South Lido Public Beach & Park and Otter Key, including their adjacent waters, are part of the Coastal Barrier Resource Area (CBRA) Unit FL72-P. This unit was designated under the Coastal Barrier Resources Act of 1982 which was enacted to discourage Federally-subsidized development of coastal barriers resulting in the loss of natural resources; threats to human life, health and property; and wasteful expenditures of Federal resources. The Coastal Barrier Improvement Act (CBIA) of 1990 added a new category of coastal barriers to the Coastal Barrier Resources System (CBRS) called "otherwise protected areas" (OPAs). OPAs are undeveloped coastal barriers that are publicly owned and are used primarily for wildlife refuge, sanctuary, recreational, or natural resource conservation purposes. Unit FL72-P is classified as an OPA unit which excludes this unit from most of the CBRA restrictions; however, OPA units are prohibited from receiving Federal Flood Insurance for new structures to discourage development.

The physical environment surrounding Lido Key is comprised of three major natural resource classifications. These classifications include the beach and dune system/upland areas, estuarine wetlands, and the nearshore Gulf of Mexico.

Beach and Dune System/Upland Areas

Varying amounts of beach and dune habitat currently exist along Lido Key. The adjacent upland area is generally flat, ranging from sea level at New Pass to about 10 feet in elevation to the east. Much of Lido Key has been developed. Upland coastal development on Lido Key includes motels, hotels, and tourist related facilities. The northern 3,800 feet of Lido Key is mostly undeveloped and extends from the Gulf of Mexico to Sarasota Bay. Although undeveloped, a majority of the upland habitat adjacent to New Pass has been disturbed and the remaining upland vegetation includes both exotic and native species, including Australian pine, sand pine, sea grape and wax myrtle. Closer to the Gulf, a larger area of native dune habitat is present. Dune vegetation in this area consists primarily of pioneer species such as salt grass, sand spur, wild bean, seaside spurge, and sea oats.

South of the Lido Key public beach area, privately-owned uplands in the proposed project area extend for approximately 4,600 feet. The uplands have been fully developed and are occupied primarily by hotels and condominiums. Due to development and beach erosion, there is little native vegetation remaining between the shoreline and buildings or seawalls.

The southernmost 1,100 feet of Lido Key is largely undeveloped and includes the county park South Lido Public Beach & Park, which terminates at Big Sarasota Pass. Development in this area consists of recreational amenities such as picnic shelters, restrooms, parking areas, and

nature walks. Sparse fragments of sea oats and other native halophytic vegetation exist seaward of a cohesive stand of Australian pines located along the pass shoreline.

Commonly observed dune vegetation on the southern portion of Lido Key identified during field investigations performed in 1992 by Coastal Planning & Engineering, Inc. (CPE) biologists are listed in the Table 1.

Table 1. Commonly observed dune vegetation on the southern portion of Lido Key (CPE, 1992).

Scientific Name	Common Name
Spartina patens	Marsh hay cordgrass
Scaevola sericea	Exotic inkberry or beach naupaka
Sabal palmetto	Cabbage palm
Cenchrus spp.	Sandspur
Oenothera humifusa	Seaside evening primrose
Canavalia rosea	Seaside bean
Conocarpus erectus	Buttonwood
Coccoloba uvifera	Seagrape
Helianthus debilis	Beach sunflower
Uniola paniculata	Sea oats
Scaevola plumieri	Inkberry
Ipomoea pes-caprae	Railroad vine
Iva imbricate	Beach elder
Lippia nodiflora	Carpetweed
Casuarina equisetifolia	Australian pine
Solidago sempervirens	Seaside goldenrod
Sporobolus virginicus	Seashore dropseed
Sesuvium portulacastrum	Sea purslane
Cakile lanceolata	Sea rocket
Paspalum vaginatum	Seashore paspalum
Baccharis halimifolia	Groundsel tree
Schinus terebinthifolius	Brazilian pepper

The upland habitat along Lido Key beaches within the proposed project area (R-34.5 to R-44) does not serve as nesting habitat for shore or wading birds. Historically, the beaches in northern Lido Key, north of FDEP Monument R-34.5 to just south of New Pass, may serve as a nesting habitat for least terns and snowy plovers (J. Dubi, pers. comm., 2015; Perry, 1992). Following 1991, usage of the beach by nesting birds dropped dramatically. This decline in nesting could be attributed to the significant reduction in available open beach habitat as a result of encroaching dune vegetation (Parker, 1993). Sarasota Audubon Society volunteers collaborated with Florida Fish and Wildlife Conservation Commission (FWC) and the Suncoast Shorebird Partnership to monitor and document breeding snowy plovers on Siesta Key, north of the main public beach, and monitor continued nesting on Lido Key at North Lido Public Beach and South Lido Public Beach & Park. The 2010 snowy plover monitoring report showed that, on average from 2008-2010, 2-3 pairs of snowy plovers have nested on Lido Key (Sarasota County, 2013).

In May and June 2009 the Sarasota Audubon Society completed bird monitoring along the Lido Key shoreline (SAS, 2013). These surveys documented 34 species, including, but not limited to, American oystercatchers (*Haematopus palliates*), snowy plovers (*Charadrius nivosus*), black-bellied plovers (*Pluvialis squatarola*), black skimmers (*Rynchops niger*), least terns (*Sternula antillarum*), willets (*Tringa semipalmata*), sanderlings (*Calidris alba*), laughing gulls (*Leucophaeus atricilla*), ring-billed gulls (*Larus delawarensis*) and great blue herons (*Ardea Herodias*). Federally listed piping plovers (*Charadrius melodus*) and rufa red knots (*Calidris canutus rufa),* described further in Attachment No. 29, have also been sighted on Lido Key.

In the past three years only snowy plovers and black skimmers have been observed nesting on Lido Key. Snowy plover nests were located on the extreme north and south ends of the island; one breeding pair was observed in 2014 but was unsuccessful. A colony of black skimmers was recorded in mid-Lido Key, opposite the Holiday Inn, in 2014. Least terns have not been observed nesting on Lido Key since 2010 (J. Dubi, pers. comm., 2015).

Sea turtles also nest on Lido Key beaches. Sea turtle species information and nesting data are provided in Attachment No. 29.

Estuarine Wetlands – Sarasota Bay

Both the marine and estuarine environments surrounding Big Sarasota Pass have been directly influenced by the pass. The presence of Big Sarasota Pass allows for the mixing of gulf and estuarine waters. Currents, water circulation, and salinity and temperature regimes within the pass and surrounding inland waters are predominately controlled by the tides and surrounding nearshore areas. In addition, the pass also provides access for a variety of estuarine-marine migratory species. The waters within the Sarasota Bay estuarine system are classified as Outstanding Florida Waters (OFW) of Special Concern (FDEP, 1996).

There are no estuarine wetlands located within the proposed project area. The estuarine wetlands resource classification includes the tidal wetlands, submerged habitat, and impounded wetlands within Sarasota Bay, outside the area of influence of the proposed beach project. The lagoonal estuarine wetlands east of New Pass and Big Sarasota Pass support fragmented patches of native vegetation, including mangrove areas, seagrass and algal beds, and salt marshes. In addition, rip rap and artificial reefs within Sarasota Bay, New Pass, and Big Sarasota Pass provide habitat for varying populations of hardbottom fauna (Kane, 2013).

Several viable seagrass and algal beds, as well as a few salt marshes, currently exist in Sarasota Bay near Big Sarasota Pass. In 1992, the National Estuary Program (NEP) estimated approximately 1,038 acres of seagrass from just north of New Pass southward to the Siesta Key bridge. Field studies performed in 1992 by CPE biologists revealed the establishment of a small area of sparse seagrasses on the ebb tidal shoal at Big Sarasota Pass. No seagrasses were observed in New Pass. In September 2014 CB&I Coastal Planning & Engineering, Inc. (CB&I) biologists conducted a benthic resource investigation and documented seagrasses in the northeastern portion of Big Sarasota Pass (observation report provided as Attachment No. 28-1). Varying densities (50-100% cover) of *Syringodium filiforme* and *Halodule wrightii* were observed in in shallow waters up to 4 foot in depth. The location of seagrass observed during the

September 2014 survey are also shown in permit sketches included as Attachment No. 24 and on the mixing zone figure provided as Attachment No. 33d.

These seagrass and algal beds may serve as habitat and food source for a variety of organisms. In general, well developed seagrass and algal beds may serve as important nursery grounds for snapper, grouper, drum, shrimp, and blue crab. Fishes, sea urchins, sea turtles, and manatees feed on epiphytic algae and seagrasses. Egrets, terns, and herons forage upon the small crustaceans, gastropods, worms and fishes in the tidal flats of Sarasota Bay, New Pass and Big Sarasota Pass. A list of the algal and seagrass species commonly observed in the vicinity of Lido Key is presented in Table 2.

Table 2. Commonly observed algae and seagrass species in the vicinity of Lido Key (CB&I, 2014; CPE, 1992).

Scientific Name
Chlorophyceae – Green Algae
Caulerpa mexicana
Caulerpa prolifera
Caulerpa cupressoides v. *lycopodium*
Ulva lactuca
Phaeophyceae – Brown Algae
Dictyota dichotoma v. *menstrualis*
Rhodophyceae – Red Algae
Acanthophora spicifera
Dasya sp.
Gracilaria tikvahiae
Gracilaria mammillaris
Hypnea cervicornis
Hypnea cornuta
Hypnea musciformis
Spyridia filamentosa
Wrangelia argus
Angiospermae – Flowering Plants
Halodule wrightii
Halophila decipiens
Thalassia testudinum
Syringodium filiforme

Fringing mangrove communities exist in the undeveloped areas within the estuarine area tidal zones north and south of Lido Key. Red (*Rhizophora mangle*) and black (*Avicennia germinans*) mangroves dominate those areas which are frequently inundated by normal tidal action. White (*Laguncularia racemosa*) mangroves and buttonwoods (*Conocarpus erectus*) are usually found at slightly higher elevations, in areas where inundation is less frequent. These fringing mangroves may serve as habitat and food source for fiddler crabs, mangrove snapper, and a variety of wading birds, such as herons and egrets. Mangroves may also act as nursery habitat for snook, mullet, and sea trout. Many of the shellfishes and finfishes commonly observed near

the pass spend at least a portion of their life in the estuarine system. The project area does not contain any mangrove communities.

The shallow waters of Sarasota Bay once supported several commercial shellfish and fin fish fisheries. However, in recent years, commercial harvests of several species have declined or no longer occur. Prior to the mid 1960's hard clams, oyster and scallops were commercially harvested from Sarasota Bay. However, scallops have since disappeared from Sarasota Bay and have not been commercially harvested since 1964 (Estevez and Merriam, 1989). Although commercial harvesting of these species no longer occurs, both species are still present in the bay. Harvests of pink shrimp and blue crab have also declined in recent years, whereas harvests of stone crab have increased, presumably due to increased demand. Present day commercial fisheries within Sarasota Bay include blue crab, pink shrimp, stone crab, bait mullet and spotted sea trout (Estevez and Merriam, 1989).

Nearshore Gulf of Mexico

The nearshore Gulf of Mexico resource classification includes biotic communities mainly associated with two zones: littoral (intertidal) and sublittoral (subtidal). The littoral zone is inhabited by species of polychaete worms, isopods, amphipods, mole crabs and coquina clams. Organisms common to the sublittoral zone include sand dollars, sea urchins, pelecypod mollusks, sea hares, spider crabs, hermit crabs, various species of shrimp and several gastropod mollusk species. In addition, the coastal waters off Lido Key support a variety of commercial and sport fishes, including, but not limited to, tarpon (*Megalops atlanticus*), Florida pompano (*Trachinotus carolinus*), striped mullet (*Mugil cephalus*), amberjack (*Seriola dumerili*), groupers (Serranidae), red snapper (*Lutjanus campechanus*), Spanish mackerel (*Scomberomorus maculatus*), and little tunny (*Euthynnus alletteratus*) (SBEP, 2014).

More than 70 species of birds have been observed in the Gulf of Mexico and the coastal regions of southwest Florida during studies from 1996 to 2005 (Davis and Fargion 1996; Davis *et al.* 2000; Russell 2005). All birds listed in the Gulf studies are protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712). These include members of the seabird guild, which represents a wide range of species dependent on the resources of the pelagic zone in the Gulf of Mexico. Some seabirds spend significant portions of their life cycle offshore and may occur in the project area, such as the magnificent frigatebird (*Fregata magnificens*), greater shearwater (*Puffinus gravis*), sooty shearwater (*P. grisseus*), Audubon's shearwater (*P. lherminieri*), manx shearwater (*P. puffiinus*), masked booby (*Sula dactylatra*), northern gannet (*Morus bassanus*), Wilson's storm-petrel (*Oceanites oceanicus*), and band-rumped storm-petrel (*Oceanodrama castro*). Gulls and terns, pelicans, and cormorants divide their time more or less equally between offshore and coastal waters (Ehrlich *et al.* 1988) and may occur in the project area.

Hardbottom Resources

A 1991 sidescan sonar survey was performed by CPE of the offshore waters immediately adjacent to Big Sarasota Pass; there were no reported hardbottom formations between 0.5 and 1 mile offshore. Some of the areas identified by the side scan sonar survey were comprised of coarser grain sediment, while the majority of the areas consisted of a sand/shell or sand/silt substrate with intermittent coverage by detached algae. Some hardbottom habitat does exist further offshore, outside of the project area. Three artificial reefs are located offshore of Lido

Key: The Don Roehr Reef, the Lynn Silvertooth Reef, and the Allen Fisher Reef. The Don Roehr Reef, comprised of reef balls and bridge rubble, is located approximately 1.3 miles offshore Lido Key in 22 feet of water. The Lynn Silvertooth Reef, comprised of bridge rubble and piles, is located approximately 2.3 miles offshore of Lido Key in 30 feet of water; and the Allen Fisher Reef, which also consists of bridge rubble and piles, is located approximately 2.6 miles offshore of Lido Key in 30 feet of water (Tampa Bay Area Fishing and Recreation Map No. N202). These hardbottom habitats and artificial reefs are located outside the area of proposed project impact.

An updated benthic resource investigation was conducted on September 23-35, 2014 (observation report provided as Attachment No. 28-1). In preparation for the survey, CB&I biologists examined July/August 2013 sidescan sonar data (provided by the USACE) for hardbottom resources, and identified ten contacts that required further investigation. One site of potential hardbottom was also determined from analysis of aerial images. The 11 sites were investigated using towed video, and four of these were identified as potential resources. All four of these sites were located along the seawall at the north end of Siesta Key within Big Sarasota Pass. Benthic resources consisted of large rocks, rubble, and debris that supported growth of sponges (e.g., *Cliona celata, Pione lampa*), macroalgae (e.g., *Caulerpa* sp.), and octocorals (e.g., *Leptogorgia virgulata*). Fish species, such as sheepshead (*Archosargus probatocephalus*), were also observed utilizing this habitat. No hardbottom was observed in the nearshore sand placement area.

Seagrass Resources

The field investigation performed in 1992 by CPE biologists documented the presence of some sparse and scattered seagrasses on the shoal of Big Sarasota Pass. Widely scattered seagrass patches were located in a confined area on the northeastern portion of the Big Sarasota Pass ebb shoal. The seagrasses found in this area included shoal grass (*Halodule wrightii*) and manatee grass (*Syringodium filiforme*). Several small patches of seagrass were also observed along the southeastern shore of Big Sarasota Pass, inland of R-44A. An additional 7.8 acres of seagrasses, predominately shoal grass (*H. wrightii*), were observed offshore of Siesta Key between FDEP monuments R-48 and R-49. In 2001, Dial Cordy and Associates conducted a survey in the nearshore area adjacent to Lido Key. During this survey two small patches of *H. wrightii* were observed approximately 1,800 ft and 2,000 ft offshore from R-35 and a third small patch of *H. wrightii* was observed approximately 2,000 ft offshore of R-43. All three patches were over 500 ft outside of the ETOF.

A recent September 2014 seagrass survey revisited the sites where seagrass was previously documented and investigated areas of potential seagrass based on recent aerials and sidescan data. Results of this survey revealed changes in the location and cover of seagrass resources. CB&I biologists observed patchy areas of seagrasses on the southwest portion of the Big Sarasota Pass ebb shoal (observation report provided as Attachment No. 28-1). Seagrass species observed included *S. filiforme, H. wrightii* and *Halodule decipiens*; these species are not listed as threatened or endangered under the Endangered Species Act. The location of seagrass observed during the September 2014 survey are also shown in permit sketches included as Attachment No. 24 and on the mixing zone figure provided as Attachment No. 33d. Seagrass areas within Big Sarasota Pass were composed of primarily *H. wrightii* sparse in cover (approximately 5 percent)

and areas of dense cover by *S. filiforme* (75-100%) located in depths up to 11 feet. Near the north end of Siesta Key, in the southern portion of the investigation area, there were two small areas of *H. wrightii* and *Halodule decipiens*; this differs greatly from the 7.8 ac of *H. wrightti* observed in this area in 1992. No seagrass was observed in the sand placement area.

Water quality monitoring and minimization measures described in Attachment No. 34 will be adhered to in order to minimize turbidity during project construction. Direct impacts to seagrasses located in the borrow areas will be avoided by designating the seagrass areas as "no work" zones, which prohibit dredging, placing pipeline/equipment, anchoring or spudding; however, these resources may experience temporary elevated turbidity during dredging.

Essential Fish Habitat (EFH)

The Magnuson Fishery Conservation and Management Act of 1976, amended Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act, MSFCMA) by the Sustainable Fisheries Act of 1996, set forth a mandate to identify and protect important marine and estuarine fish and their habitat. The U.S. Congress enacted the Magnuson-Stevens Act to support the government's goal of sustainable fisheries. Crucial to achieving this goal is the maintenance of suitable marine fishery habitat quality and quantity. This goal is achieved through identifying and describing Essential Fish Habitat (EFH), describing non-fishing and fishing threats, and suggesting measures to conserve and enhance EFH. The Magnuson-Stevens Act defines EFH as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16. U.S.C. 1802 (10))."

Pursuant to the MSFCMA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), the Gulf of Mexico Fisheries Management Council (GMFMC, 1998) has designated marine areas of non-vegetated bottoms, live bottoms (i.e., hardbottoms), and water columns within the project area as EFH. During the September 2014 benthic resource investigation, no significant hardbottom was observed in the footprint of the beach fill, groin placement areas and borrow areas. CB&I biologists did not observe any seagrasses in the sand placement area during their field surveys. However, seagrass was observed inside Big Sarasota Pass, on the southwest portion of the Big Sarasota Pass ebb shoal, and offshore of Siesta Key in the southern portion of the investigation area (observation report provided as Attachment No. 28-1).

EFH at the borrow areas consists of a marine water column with an unconsolidated sand substrate. The water column is used for foraging, spawning, and migration. Impacts to the water column may have localized effects on marine species. Injury or entrainment due to dredging would most likely affect demersal species (those living close to the sea floor) and less mobile species, such as shellfish. Dredging may temporarily affect feeding success of EFH species due to turbidity and loss of benthic organisms; however, adjacent similar habitat is available for feeding. Seagrasses located in the borrow areas will be avoided, but may experience temporary impacts due to elevated turbidity. Other potential adverse effects include: behavioral alterations due to sound, light, and structure; increased turbidity and sedimentation; changes to soft bottom bathymetry in the borrow area during dredging; and temporary loss of prey items and foraging habitat.

Water quality concerns are of particular importance in the maintenance of this habitat. During dredging, resuspended materials may interfere with the diversity and concentration of phytoplankton and zooplankton, and therefore could affect foraging success and patterns of schooling fishes and other grazers that comprise prey for managed species. Foraging patterns would be expected to return to normal at the end of dredging activities.

Impacts to benthic infaunal and epifaunal communities would be considered as relatively minimal when examined on a spatial scale. Infaunal communities in particular have very high reproductive potential and recruitment. Adjacent areas that have not been impacted would most likely be the primary source of recruitment to the impacted areas. Studies have shown a relatively short recovery time for infaunal communities following dredging. Succession of post-dredging infaunal communities should begin within days following dredging. This initial settlement usually consists of pelagic larval recruits settling within the impact area. Later recruitment from adjacent non-impacted areas will be more gradual and involves species which are less opportunistic. It is highly likely that infaunal communities would most likely be re-established within 1 to 2 years after dredging ends (Vivan et al., 2009).

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ATTACHMENT NO. 28-1

LIDO KEY HURRICANE AND STORM DAMAGE REDUCTION PROJECT
BENTHIC RESOURCE INVESTIGATION
FIELD OBSERVATION REPORT
SEPTEMBER 2014

FIELD OBSERVATION REPORT

Date:	September 23-25, 2014
Project:	Lido Key Hurricane and Storm Damage Reduction Project Benthic Resource Investigation
Location:	Lido Key, Sarasota County, Florida
Commission No.:	153076.03
Field Representatives:	Katy Brown (biologist), Judd French (field support), Ben Alcocer (field support), and Scott Tillman (captain)

CB&I completed a benthic resource investigation in support of the Lido Key Hurricane and Storm Damage Reduction Project from September 23-25, 2014. The project is anticipated to be constructed in 2015 and includes beach nourishment and construction of three (3) groins. This investigation was required in order to locate seagrass and/or hardbottom resources that may be present in the footprint of the beach fill and groin placement areas and the proposed water quality mixing zones for the beach fill and the Big Sarasota Pass borrow areas. Results from this report will be used in support of obtaining the Florida Department of Environmental Protection (FDEP) permit and consultation with NOAA National Marine Fisheries Service (NMFS) Habitat Conservation Division (HCD). Aubree Hershorin (USACE) and Mark Sramek (NMFS HCD) joined the CB&I crew on September 23 to observe and participate in the resource survey.

METHODS

The initial phase of this investigation involved reviewing existing data, including sidescan sonar survey data provided by the USACE, in-house aerial photographs, and previous Lido Key *in situ* resource investigations (CPE, 1992; Dial Cordy, 2001). These recent and historical data were used to determine areas of potential seagrass and hardbottom resources and to plan field investigation sites. Figure 1 shows the location of the overall investigation area, the specific investigation methodologies conducted and the sidescan contacts (areas that warranted investigation). To efficiently investigate the large survey area, a combination of methods was employed, including towed video, towboard diver surveys and diver verification.

First, a DGPS-integrated towed video camera method was used to survey the borrow areas in Big Sarasota Pass and the nearshore fill placement area to locate potential benthic resources. This method allowed for the collection of data over a large area. The camera was deployed from the vessel and the streaming video was viewed by a biologist topside in real-time. When potential seagrass or hardbottom was observed, a fix was taken in Hypack navigational software to mark the location of the resource. The position data was also recorded and displayed as GPS coordinates overlaid on the video. The preliminary survey lines were spaced 500 ft apart; however, if resources were observed, then the spacing was systematically decreased to delineate the resource area. Cross lines (e.g., C1) were also run to determine the outer extent of resources. Towed video survey lines were concluded once the investigation area boundary was reached or when the water depth became too shallow (less than 1 m [3 ft]) for the vessel to operate.

When general conditions allowed, the towboard survey method was used. This method allowed biologists to directly assess areas of potential seagrass inside Big Sarasota Pass. This method

involved two snorkelers being towed astern of the vessel at slow speeds, allowing for a visual survey of the seafloor. This method was only conducted along one survey line when sea conditions were relatively calm and boat traffic was minimal.

The third method of diver verification was utilized to further investigate areas where seagrass or hardbottom were observed during the towed video and towboard surveys. Figures 2a-b show the location of seagrass and hardbottom resources confirmed by diver verification. A CB&I biologist, accompanied by a field support diver, collected data on the species present, percent cover, substrate type, and depth, and took representative photographs of the site. When conditions permitted, divers delineated the resource using a towed buoy equipped with a DGPS antenna and attached by a cable connected to a topside laptop running HYPACK navigational software to record the positioning data. A summary of the investigation findings is provided below.

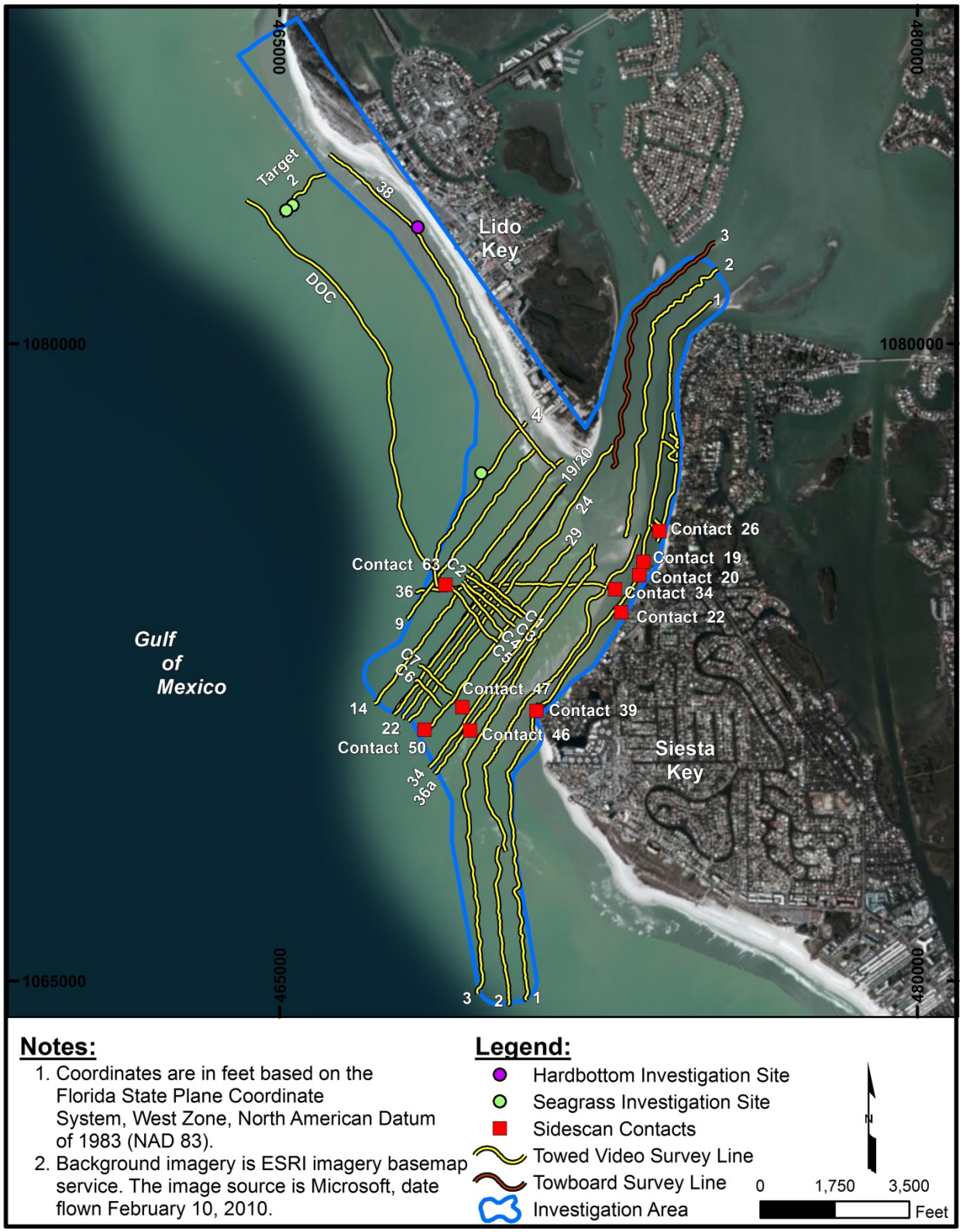

Figure 1. Map of the investigation area located in Big Sarasota Pass. The planned field investigation sites and the towed video and towboard survey lines are shown. A towed video survey line was also conducted along the depth of closure (DOC) even though it was outside of the investigation area. Labels for each line correspond to the labeled towed videos provided on the enclosed DVDs.

RESULTS

Seagrass Resources

Figures 2a-b and Table 1 summarize the seagrass observed during these investigations. No seagrass resources were observed in the nearshore Lido Key fill placement area. A towed video survey was also conducted offshore of the fill placement area along the depth of closure (DOC) (see Figure 1) at approximately 5-6 m (18 ft). No seagrass resources were observed here. Seagrass resources were observed using the towed video and towboard survey methods in three main locations within the investigation area: (1) inside Big Sarasota Pass; (2) on the southwest portion of the Big Sarasota Pass ebb shoal; and (3) offshore of Siesta Key in the southern portion of the investigation area.

Inside Big Sarasota Pass (Figure 2a), seagrass was present in the northeastern and northwestern sections of the investigation area and along the seawall located along the north end of Siesta Key. In the northeastern section a dense patch (Patch 1) of *Syringodium filiforme* (75-100% cover) was observed from the vessel and confirmed by diver verification. The patch was delineated using the diver-towed buoy equipped with a DGPS antenna. The depth was less than 1 m (~2 ft) and the patch extended outside of the investigation area. In the northwestern section of the Big Sarasota Pass investigation area, several patches of seagrass were observed during the towboard survey and subsequently confirmed by diver verification. A dense patch (Patch 2) of *Syringodium filiforme* (75-100% cover) at approximately 1-2 m (4 ft) depth was observed along the edge (and continuing outside) of the investigation area and was delineated from the vessel. Two small patches (Patches 3 and 4) of *Halodule wrightii* (approximately 50-75% cover) were observed at a depth of 1.5-2 m (5-6 ft), and fixes were taken at the center of the patches. Three larger patches (Patches 5, 6, and 7) of *H. wrightii* were also observed and delineated using the diver towed buoy. The percent coverage of *H. wrightii* was greater at Patch 5 (approximately 75-100%) than at Patches 6 and 7 (both had approximately 50-75% cover), and depths ranged from 1.5-2 m (5-7 ft). A patch (Patch 8) of *S. filiforme* was observed along the seawall at the north end of Siesta Key during the towed video survey and fixes were taken from the vessel (Figure 2b). This patch was located near the start of the rocky rubble area in approximately 4 m (14 ft) depth. Due to the strong tidal currents, divers could not safely dive the site to collect *in situ* data. Representative photographs of the seagrass resources in Patches 1-8 are presented in Figures 3 through 5.

On the southwest portion of the Big Sarasota Pass ebb shoal, four large patches (Patches 9, 10, 11 and 12) of *H. wrightii* were observed during the towed video survey and confirmed by diver verification (Figures 2b and 6). Cover by *H. wrightii* was sparse, less than 5% at each of the patches, and depths ranged from 2-3 m (9-11 ft). The substrate consisted mostly of fine sand with areas of shell hash and dense aggregations of sand dollars (*Mellita tenuis)*. To ensure the areas surrounding Patches 9-12 were adequately surveyed, intersecting towed video lines were conducted and fixes were taken to confirm the outer limits of each patch (see lines C1-C7 in Figure 1).

In the southern portion of the investigation area, located southwest of the north end of Siesta Key, two small patches (Patches 13 and 14) were observed during the towed video survey and subsequently confirmed by diver verification (Figures 2b and 7). Fixes were taken at the center

of each patch. Patch 13 was a sparse patch (few individuals, less than 5% cover) of *H. wrightii* that covered approximately 0.5 m^2 at 3 m (9 ft) depth. Patch 14 was a dense patch (50-75% cover) of *Halophila decipiens* that covered approximately 0.5 m^2 at 5 m (17 ft) depth. The substrate consisted of fine sand and sand dollars at both sites.

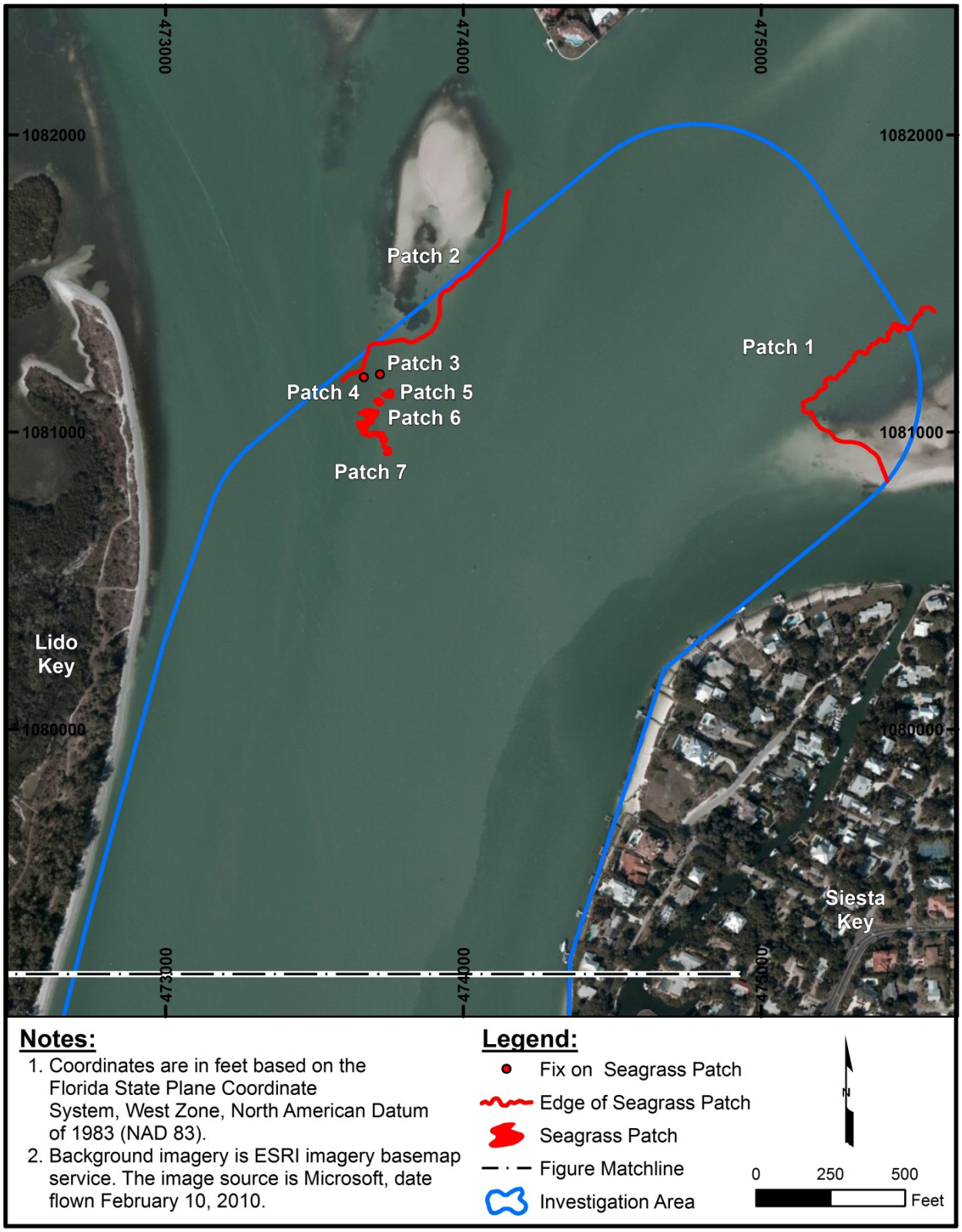

Figure 2a. Location of seagrass patches (Patches 1-7) observed inside Big Sarasota Pass.

Figure 2b. Location of seagrass patches (Patches 8-14) observed along the seawall on the north end of Siesta Key, on the southwest portion of the Big Sarasota Pass ebb shoal, and in the southern portion of the investigation area (offshore of Siesta Key). The location of the rock/rubble resources along the southern seawall is also shown.

Table 1. Summary of seagrass observations in the investigation area.

Site	Depth (m)	Species	Percent Cover
Patch 1	1	*Syringodium filiforme*	75-100%
Patch 2	1	*Syringodium filiforme*	75-100%
Patch 3	2	*Halodule wrightii*	50-75%
Patch 4	2	*Halodule wrightii*	50-75%
Patch 5	2	*Halodule wrightii*	75-100%
Patch 6	2	*Halodule wrightii*	50-75%
Patch 7	2	*Halodule wrightii*	50-75%
Patch 8	4	*Syringodium filiforme*	*
Patch 9	3	*Halodule wrightii*	numerous, but < 5%
Patch 10	3	*Halodule wrightii*	numerous, but < 5%
Patch 11	2	*Halodule wrightii*	numerous, but < 5%
Patch 12	3	*Halodule wrightii*	numerous, but < 5%
Patch 13	3	*Halodule wrightii*	few, < 5%
Patch 14	5	*Halophila decipiens*	50-75%

*Divers were unable to collect *in situ* data for Patch 8 due to the unsafe diving conditions at the site.

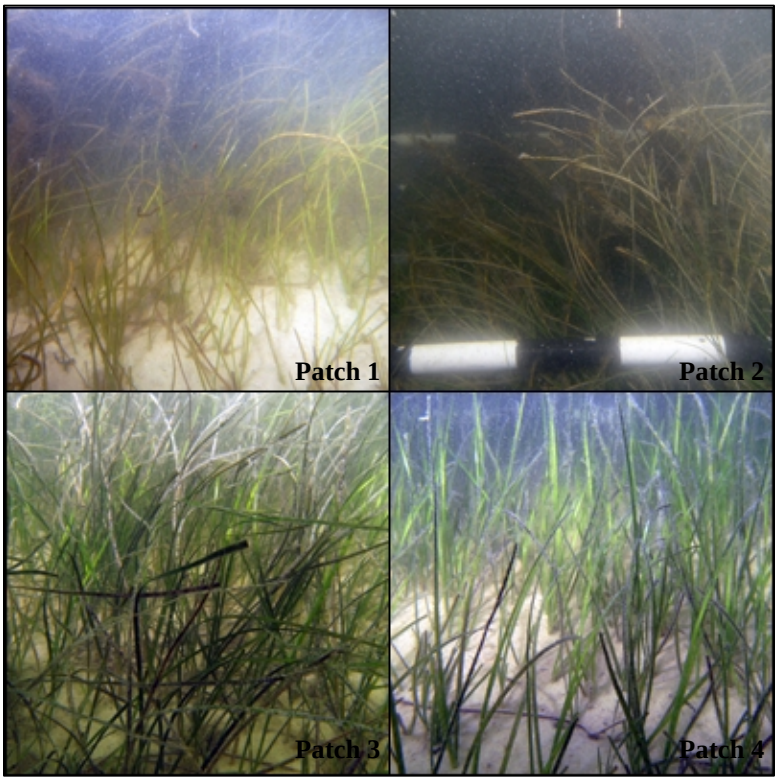

Figure 3. Photographs of seagrass Patches 1-4 located inside of Big Sarasota Pass. Patches 1 and 2 are *S. filiforme* and Patches 3 and 4 are *H. wrightii*.

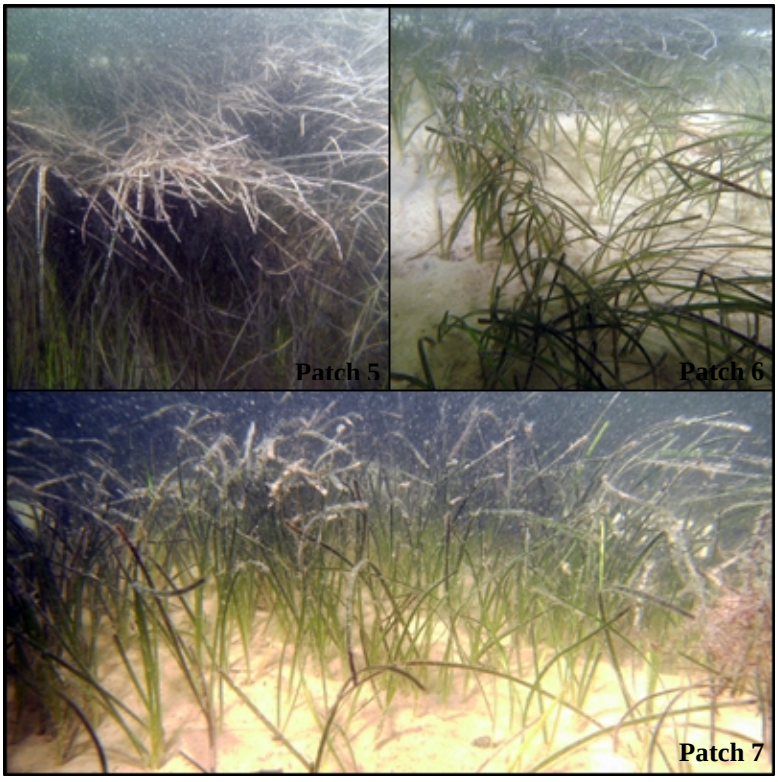

Figure 4. Photographs of seagrass Patches 5-7 located inside of Big Sarasota Pass. All patches consist of *H. wrightii*.

Figure 5. Image of Patch 8 recorded during the towed video survey within the channel in Big Sarasota Pass.

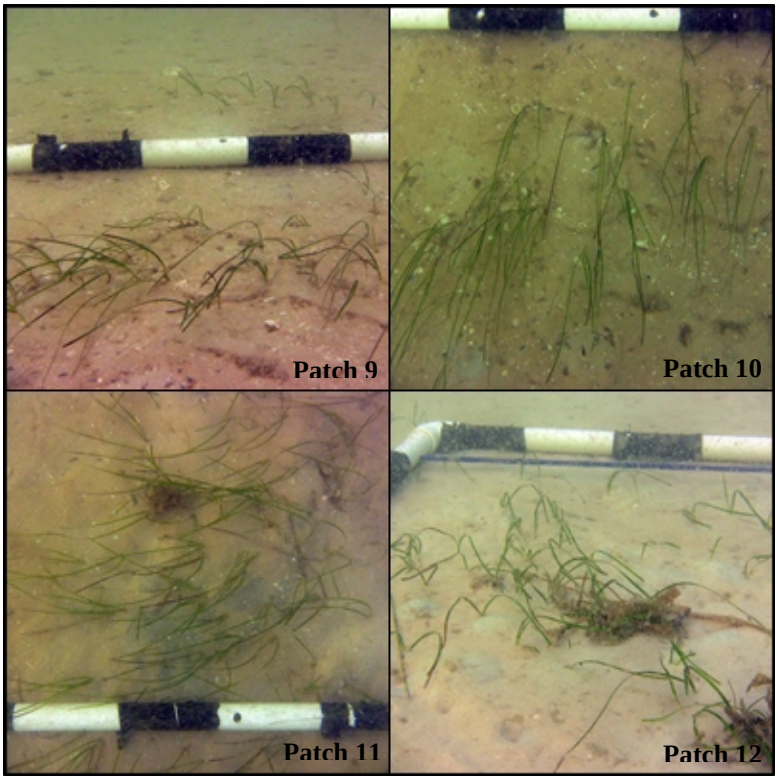

Figure 6. Photographs of seagrass Patches 9-12 located in the southwestern portion of the Big Sarasota Pass ebb shoal. All patches consisted of *H. wrightii*.

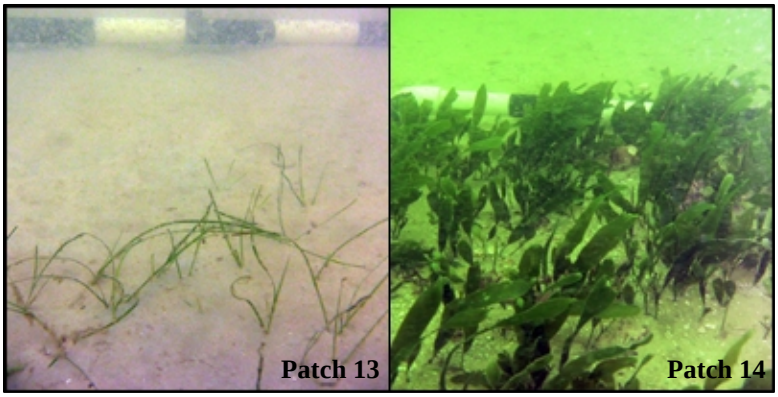

Figure 7. Photographs of seagrass Patches 13 and 14 located in the southern portion of the investigation area, offshore of Siesta Key. Patch 13 consists of *H. wrightii* and Patch 14 is *Halophila decipiens*.

Hardbottom Resources

Sidescan sonar data provided by the USACE was examined prior to the field survey, and ten contacts were determined to be potential resources that required further investigation. Also, one site of potential hardbottom was determined from analysis of aerial images (see Figure 1 - hardbottom investigation site). The towed video camera was used to investigate these 11 sites, four of which resulted in identification of potential resources. All four of these sites (Contacts 19, 20, 22, and 26 in Figure 1) were located along the seawall at the north end of Siesta Key within Big Sarasota Pass. Towed video camera surveys were conducted along the length of the channel as well as perpendicular to the shoreline to delineate the edges of benthic resources

(Figures 1 and 2b). Figure 8 shows representative images of the rock and rubble resources recorded during the towed video. Diver verification was attempted within the channel and a few photographs were taken, however due to the strong tidal currents the diving activities were limited for safety reasons. The benthic resources in this location consisted of large rocks, rubble, and debris that supported growth of sponges (e.g., *Cliona celata*, *Pione lampa*), macroalgae (e.g., *Caulerpa* sp.), and octocorals (e.g., *Leptogorgia virgulata*) (Figures 8 and 9). Fish species, such as sheepshead (*Archosargus probatocephalus*), were also observed utilizing this habitat (Figure 10).

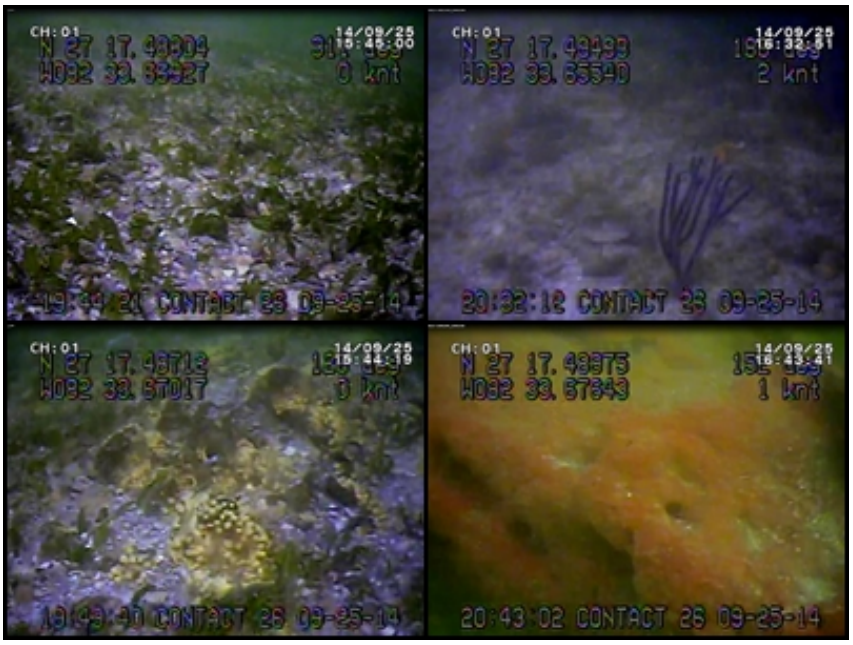

Figure 8. Hardbottom resources located within the channel in Big Sarasota Pass recorded during the towed video survey. Clockwise from the top: *Caulerpa* sp., *Leptogorgia virgulata, Cliona celata,* and *Pione lampa*.

Figure 9. *In situ* photographs of the hardbottom resources located within the channel in Big Sarasota Pass. Clockwise from the top: *Caulerpa* sp., *Leptogorgia virgulata, Cliona celata,* and *Pione lampa*.

Figure 10. ***Archosargus probatocephalus*** **(sheepshead) were one of the fish species recorded during the towed video survey within the channel in Big Sarasota Pass.**

LITERATURE CITED

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