DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

# FINDING OF NO SIGNIFICANT IMPACT
# ADDITIONAL OFFSHORE BORROW AREAS
# HURRICANE AND STORM DAMAGE REDUCTION PROJECT
# VENICE BEACH, SARASOTA COUNTY, FLORIDA

I have reviewed the Environmental Assessment (EA) for the proposed action. Based on information analyzed in the enclosed EA, reflecting pertinent information obtained from cooperating Federal agencies having jurisdiction by law and/or special expertise, I conclude that the proposed action will have no significant impact on the quality of the human environment. Reasons for this conclusion are in summary:

a. Sites of cultural or historical significance will not be affected.

b. Terms and Conditions by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to prevent or minimize impacts to manatees, smalltooth sawfish, sea turtles, and piping plovers will be implemented during and after project construction. There will be no adverse impacts to other endangered or threatened species. The project will not jeopardize the continued existence of any federally listed species if a hopper dredge is used.

c. State water quality standards will be met.

d. Measures to eliminate, reduce, or avoid potential impacts to fish and wildlife resources, including minimization of impacts to hardbottom communities, will be implemented during project construction.

e. The proposed project has been determined to be consistent to the maximum extent practicable with the Florida Coastal Zone Management Program.

f. The proposed project has been evaluated pursuant to the Migratory Bird Treaty Act, and the Migratory Bird Protection Policy will be implemented for this project. The Policy has been coordinated with the U.S. Fish and Wildlife Service and the State of Florida.

In consideration of the information summarized, I find that the proposed action will not significantly affect the human environment and does not require an Environmental Impact Statement.

Alan Dodd
Colonel, U.S. Army
District Engineer

2 July 14
Date

July 2014

# Final Environmental Assessment

## Beach Nourishment

## HURRICANE AND STORM DAMAGE REDUCTION PROJECT

## Venice Beach, Sarasota County, Florida

U.S. Army Corps
of Engineers
JACKSONVILLE DISTRICT

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# ENVIRONMENTAL ASSESSMENT
# ON
# BEACH NOURISHMENT
# HURRICANE AND STORM DAMAGE REDUCTION PROJECT
# VENICE BEACH, SARASOTA COUNTY, FLORIDA

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# VENICE BEACH, SARASOTA COUNTY, FLORIDA

## 1 PROJECT PURPOSE AND NEED

The U.S. Army Corps of Engineers, Jacksonville District (USACE) prepared this Environmental Assessment (EA) to comply with the National Environmental Policy Act (NEPA) and to document project modifications since the initial Final Environmental Assessment was completed for the Beach Erosion Control Project Venice Beach, Sarasota, Florida, and the corresponding Finding of No Significant Impact (FONSI) was signed on June 4, 1992. The initial construction of this project was completed in May 1996, using approximately two million cubic yards of material from offshore shoals near Manasota Key, and the first periodic nourishment was completed in August 2005.

A FONSI associated with the Final Environmental Assessment, Offshore Borrow Sites, Sarasota County Beach Erosion Control Project, Sarasota County, Venice Beach, Florida, was signed in February 2005 for the first periodic nourishment, which occurred in August 2005. Approximately 670,000 cubic yards of sand were placed on the beach from offshore borrow areas near Casey Key.

The second periodic nourishment is proposed to occur in 2016 with placement of approximately 791,000 cy. Future nourishments are anticipated to be needed at ten year intervals and to require 1.620 million cubic yards of sand to maintain the authorized profile. The sand placement site for this project will take place in the same areas previously nourished in 1992 and 2005; however, the previously used borrow areas are no longer viable for use in future nourishment events. Borrow areas were identified for this project offshore of Venice Beach (see Figure 1), and this EA includes an assessment of the new borrow areas proposed for this project and includes updated information on the placement site.

### 1.1 PROJECT AUTHORITY.

Local interests in Sarasota County have explored comprehensive solutions to shoreline erosion problems since the early 1960s. The U.S. Senate and the U.S. House of Representatives adopted resolutions in 1964 requesting the Secretary of the Army, acting through the Chief of Engineers, to survey the Sarasota County shoreline and adjacent shorelines in support of beach erosion control, hurricane protection, and related efforts.

In 1984, the *Beach Erosion Control Study for Sarasota County, Florida, with Environmental Impact Statement* recommended a plan for constructing a protective beach and/or periodic nourishment along 2.4 miles of shoreline on Longboat Key, and 5.6 miles of shoreline on Manasota Key, in the vicinity of Venice, Florida. Congress authorized this plan in the Water Resources Development Act (WRDA) of 1986 at an estimated total project cost of $30,100,000. The project is authorized for 50 years of federal participation from the completion of the initial construction in 1996 through 2046. The cost apportionment for the project included Section 111 considerations for erosion resulting from the Caseys Pass Federal Navigation project constructed in 1937.

The project was modified in 1991/1992 to reduce the length of shoreline to 3.2 miles of shoreline on Manasota Key, to re-evaluate the volume requirements, and to address physical changes in the placement area. These changes are described in the *1992 Sarasota County, Florida Shore Protection Project Post Authorization Change* (PAC) *Report*. The segment of the project referred to as Brohard Beach (R-129 to R-133) was justified with a 20 foot berm width because of protection provided for the wastewater treatment plant located between R-132 and R-133. The 1992 *Final Environmental Assessment* (FEA) analyzed the changes made as part of the PAC Report, and a corresponding *Finding of No Significant Impact* was signed on June 4, 1992. The north limit of the beach placement area from the 1992 FEA was 850 feet south of the south jetty at Venice Inlet, and the south limit was at survey monument R-133. The primary borrow areas included two shoals located between 1.21 to 3.14 miles offshore of Manasota Key, and about 9.8 miles south of Venice Inlet. A secondary borrow site was identified as the Siesta Key site, which was the ebb shoal of Big Sarasota Pass. The placement area and borrow sites authorized as part of the PAC Report and analyzed in the 1992 FEA are shown in Figure 1.

The wastewater treatment facility was removed in 2005 and in 2010 a public park used for recreation opened up in its place. The Brohard segment was previously incrementally justified based upon the wastewater treatment plant. Because this expensive piece of infrastructure has been removed from the project area, the southern segment of the project from R-129 to R-133 is no longer incrementally justified based on HSDR purposes. Engineering Regulation (ER) 1105-2-100 requires that each reach of a project be incrementally justified. The non-Federal sponsor desires the Brohard segment remain in future nourishments at 100 percent non-Federal cost. The project footprint and beach fill design from R-116 to R-133 remains the same as previously authorized.

This project is now referred to as the Hurricane and Storm Damage Reduction (HSDR) Project. The non-Federal sponsor for this project is the City of Venice.

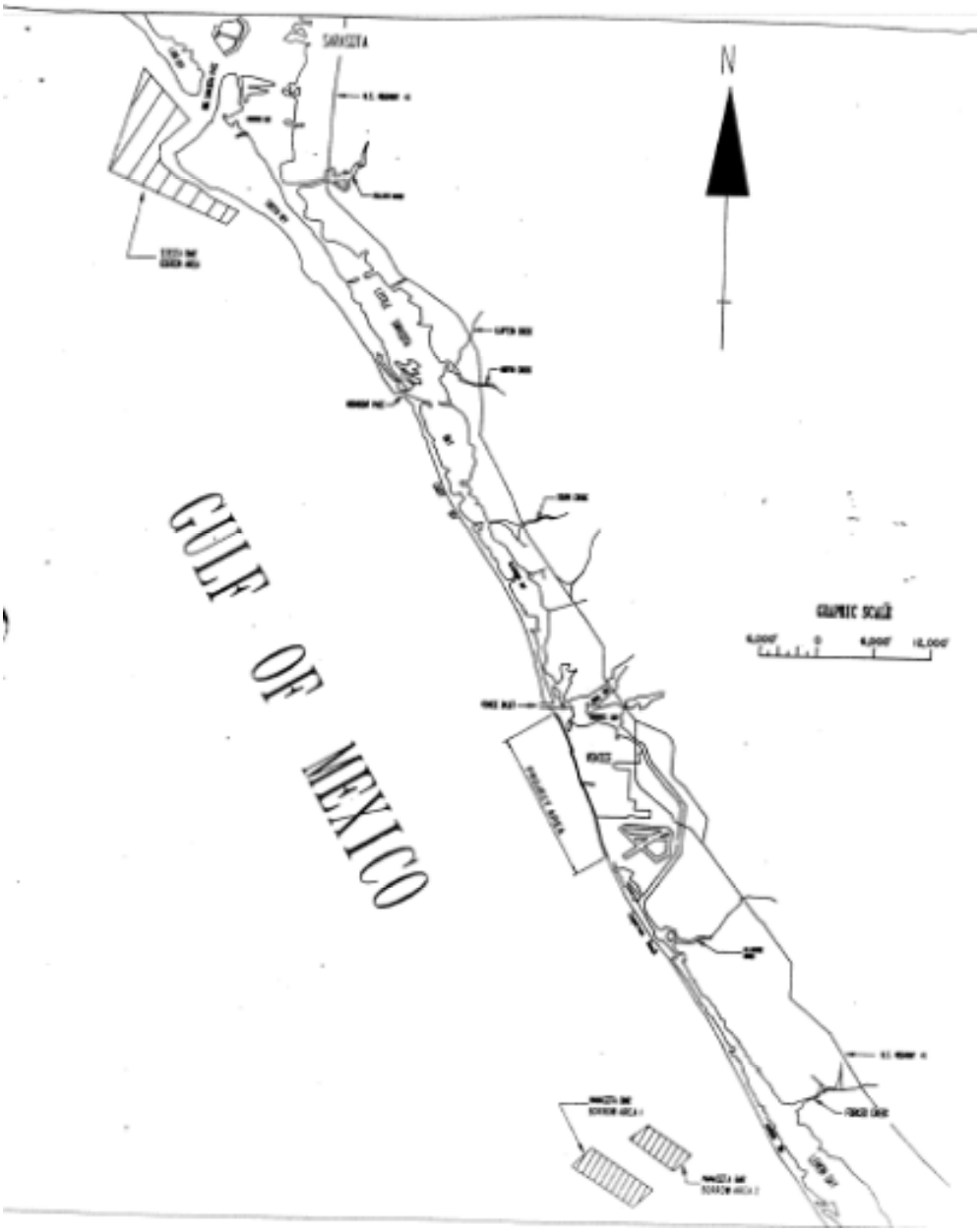


Figure 1. Placement area and borrow areas (hatched areas) authorized as part of the 1992 PAC Report and FEA. Borrow areas shown are the original borrow areas for the project, and are no longer under consideration for placement at Venice Beach.

## 1.2 PROJECT LOCATION.

The project is located on the west coast of Florida near the middle of the peninsula, about 55 miles south of Tampa. The project is situated on Manasota Key, a barrier island separated from the mainland by tidal inlets (see Figure 1). The Florida Department of Environmental Protection (FDEP) reference monument limits are R-116 to R-133, for a total length of 3.2 miles.

Figure 2. Project Vicinity Map (Source: Google Aerials).

## 1.3 PROJECT NEED OR OPPORTUNITY.

The coastline of Sarasota County consists of coastal barrier islands separated from the mainland by shallow tidal lagoons. Problems in this area consist of beach erosion, shoreline recession, and property damage. The previously used borrow areas (shown in Figure 1) are not viable for use in future nourishment events for the Venice HSDR Project. Following the 2005 nourishment event, a sand search was initiated to locate additional sand sources for this project. The four borrow areas shown in Figure 1 were identified, and they contain suitable sand in sufficient quantities for placement at Venice Beach for the 2016 and 2026 renourishments (approximately 1.86 million cubic yards). This volume is based on an erosion rate of 81,000 cy/year. The current fill volume is estimated to be 791,000 cy for the proposed 2016 periodic nourishment with a renourishment interval of 10 years (see Section 2.1 for additional information).

## 1.4 AGENCY GOAL OR OBJECTIVE.

This document evaluates the suitability of the four identified borrow areas for future nourishing of Venice Beach as part of the Venice HSDR Project to achieve the following goals:

- Reduce expected storm damages through beach nourishment and other project alternatives;
- Re-establish beaches as suitable recreational areas;
- Maintain suitable habitat for nesting sea turtles, invertebrate species, and shorebirds;
- Maintain commerce associated with beach recreation in Sarasota County; and
- Obtain beach-quality material in the most cost-effective and environmentally sustainable manner possible.

## 1.5 RELATED ENVIRONMENTAL DOCUMENTS.

References to environmental documents related to this project are provided below. These documents are incorporated into this EA by reference.

1. USACE. 1984. Beach Erosion Control Study for Sarasota County, Florida with Environmental Impact Statement.
    - This is the original decision document for the Venice HSDR project, recommending a plan for construction of a protective beach and/or periodic nourishment along 2.4 miles of shoreline on Longboat Key and 3.7 miles of shoreline on Manasota Key in the vicinity of Venice, Florida. The project was authorized in the WRDA of 1986 at an estimated total project cost of $30,100,000.

2. USACE. July 1991. Sarasota County, Florida Shore Protection Project General Design Memorandum (GDM).
    - This document summarized modifications including physical changes in the project area, new borrow area data, and economic changes. Additional erosion occurring between 1986 and 1991 increased the long-term erosion rate and the volume requirements. The shoreline length for beach nourishment was reduced primarily due to the usage of the shoreline evaluated. New geotechnical data for the borrow areas demonstrated that an increased overfill factor would need to be used. The project costs subsequently went up due to increased volume needs, as well as increased price levels for the required dredging equipment. The 1991 GDM excluded the Longboat Key segment and reduced the project length on Manasota Key to 3.2 miles, beginning 850 feet south of the Venice Inlet South Jetty and extending south to FDEP Monument R-133. The GDM also established that the cost for sand placed landward of the state established Erosion Control Line (ECL) would be a non-federal responsibility. The modified authorized plan was estimated to cost $16,596,000 for initial construction and have an annual cost of $1,773,000 over the 50 years of Federal participation.

3. USACE. 1992. Sarasota County, Florida Shore Protection Project Post Authorization Change (PAC) Report.

- This report supplements the detailed planning and engineering for construction in the *1991 GDM*, and documents the increase in cost for initial construction which exceeded the maximum allowable cost limit imposed by Section 902 of the WRDA of 1986. The *1992 PAC* is the most recent decision document for the project, and is the base for changes documented in the 2013 Draft Limited Reevaluation Report (LRR).

4. USACE. June 1992. Final Environmental Assessment, Beach Erosion Control Project, Venice Beach, Sarasota County, Florida.
    - This EA documented project modifications from the 1991 GDM and the 1992 PAC, including a reduction in the beach placement length, the selection of new borrow sites, and the use of a hopper dredge to complete the work. It proposed 1.0 acre of mitigation (artificial reefs) to offset direct impacts to nearshore hardbottoms as a result of beach fill.

5. USACE. January 1995. Alternate Borrow Area Located at Stump Pass for the Sarasota County Beach Erosion Control Project, Phase II, Sarasota County, Venice Beach, Florida.

6. USACE. February 2005. Final Environmental Assessment for Offshore Borrow Sites for the Sarasota County Beach Erosion Control Project, Sarasota County, Venice Beach, Florida.
    - This EA only evaluated new borrow sites. It did not consider the beach placement area.

## 1.6 DECISIONS TO BE MADE.

This Environmental Assessment evaluates whether to utilize four new borrow areas for nourishing the Venice HSDR Project, and if so, evaluates alternatives for accomplishing that goal.

## 1.7 SCOPING AND ISSUES.

The following issues were identified to be relevant to the proposed action and appropriate for detailed evaluation:

- Vegetation;
- Threatened and endangered species;
- Fish and wildlife resources;
- Essential fish habitat;
- Coastal barrier resources;
- Water quality;
- Air quality;
- Noise;
- Aesthetic resources;

- Recreation resources;
- Navigation;
- Historic and cultural resources;
- Native Americans;
- Socio-economics; and
- Public safety.

The environmental effect of the project on the beach placement area was assessed in the 1991 EIS and the 1992 EA. The current placement area is within the boundaries of the previous placement area, and the effects are anticipated to be similar to those assessed in previous documents. However, updated information regarding the effects of future nourishment activities through the life of the project (2046) are considered in this document where relevant.

## 1.8 PERMITS, LICENSES, AND ENTITLEMENTS.

The City of Venice and USACE obtained a Joint Coastal Permit from the FDEP (Permit #0211217-005-JC) on June 13, 2014. Please refer to Section 5, Compliance with Environmental Requirements, for additional information on permits, licenses, and entitlements required for this action.

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# 2 ALTERNATIVES

The alternatives section is the heart of this EA. This section describes in detail the no-action alternative, the proposed action, and other reasonable alternatives that were studied in detail. Based on the information and analysis presented in the sections on the Affected Environment and the Environmental Effects, this section presents the beneficial and adverse environmental effects of all alternatives in comparative form, providing a clear basis for choice among the options for the decision-makers and the public.

## 2.1 DESCRIPTION OF ALTERNATIVES.

The alternatives under consideration include the No Action alternative, the use of the proposed borrow areas for re-nourishment, the use of other local alternate borrow sites, the use of sand from other sources, and shore protection measures other than beach nourishment.

### 2.1.1 RENOURISHMENT USING THE PROPOSED BORROW AREAS [PREFERRED ALTERNATIVE]

The borrow areas identified in the previous NEPA documents are not suitable for future nourishment activities due to their distance from the placement site or the presence of unsuitable material in them. The four new borrow areas currently proposed are located approximately 8.6 to 11.9 miles southwest of the placement site at Venice Beach, near the Sarasota/Charlotte County line (see Figure 2). These borrow areas were identified during an extensive sand search and were found to obtain approximately 1.86 million cy of beach-compatible sand.

The sand will be placed along 3.2 miles of shoreline, from FDEP reference monuments R-116 to R-133. Transition sections to natural grade, or tapers, extend approximately 200 feet to the north and to the south of the project. The project is authorized to 2046, and additional nourishments are expected to be necessary at 10-year intervals. The anticipated fill volume for the 2015 nourishment is approximately 791,000 CY. Using a 10-year nourishment interval for planning purposes would require 810,000 CY for nourishment in 2025, and 810,000 CY for nourishment in 2035. These volumes are approximate, and may change based on observed erosion occurring at the project site. A new borrow area for the 2035 renourishment will be required as the estimated volume of beach-compatible sand in the currently identified borrow areas will not be sufficient for the final renourishment.

### 2.1.2 OTHER LOCAL ALTERNATE BORROW SITES [ALTERNATIVE B]

Other proposed sites were eliminated from further consideration for a number of reasons, including: close proximity to the shoreline could increase the rate of erosion; the quality and quantity of sand was not sufficient; distances from the borrow site to the disposal site was too great to be economical; or the proposed sites were discovered to have environmental features (reefs, hard bottoms) which made the removal of sand environmentally unsound.

### 2.1.3 UPLAND SAND SOURCES [ALTERNATIVE C]

The use of upland sources, aragonite, and other distant sources are considerations for beach fill. However, trip hauling costs and/or bulk purchase prices make these alternative sand sources not cost effective; therefore, they were not considered further for this project.

### 2.1.4 NO ACTION [STATUS QUO]

With the no action alternative, the Sarasota County shoreline will continue to erode. The no-action alternative does not provide the benefits needed to protect the coast from the effects of erosion and storm damage.

## 2.2 ISSUES AND BASIS FOR CHOICE.

As mentioned in Section 1.3, beach erosion and shoreline recession threaten properties along the sand placement site. Since the sand in the previously used borrow areas is depleted or otherwise unusable, new sand sources were identified for use in nourishing the beach to protect property and to provide habitat for species utilizing beach and dune systems. Alternative A includes the only sand source that is feasible for use in nourishing this beach through 2025.

## 2.3 TYPE OF DREDGING EQUIPMENT.

The U.S. Army Corps of Engineers does not normally specify the type of dredging equipment to be used. This is generally left to the dredging industry to offer the most appropriate and competitive equipment available at the time. Certain types of dredging equipment are normally considered more appropriate depending on the type of material, the depth of the borrow site, the amount of material, the distance to the disposal or placement site, the wave-energy environment, etc. A more detailed description of types of dredging equipment and their characteristics can be found in Engineer Manual, EM 1110-2-5025, *Engineering and Design - Dredging and Dredged Material Disposal*. This Engineer Manual is available on the internet at http://www.usace.army.mil/publications/eng-manuals/em1110-2-5025/toc.htm.

## 2.4 ALTERNATIVES ELIMINATED FROM DETAILED EVALUATION

The 1985 EIS considered a number of alternatives that were ultimately eliminated from detailed evaluation. Alternatives B and C were considered in detail in the 2005 EA, and were eliminated from further consideration in this document for not meeting the project goals. Alternative A (the Preferred Alternative) and the No Action Alternative were carried further in this EA for detailed evaluation.

## 2.5 COMPARISON OF ALTERNATIVES

Table 2 lists alternatives considered and summarizes the major features and consequences of the proposed action and alternatives. See Section 4, Environmental Effects, for a more detailed discussion of the impacts of the proposed alternatives.

## 2.6 MITIGATION

In developing the borrow area design, USACE avoided areas with high potential for hardbottom habitats. Following the identification of the four shoals in the Preferred Alternative, USACE conducted sidescan sonar, multi-beam, and sub-bottom profile surveys to better assess the hardbottom habitats located near the four borrow sites. The surveys did not identify any habitats considered to be "significant" hardbottoms according to the 2003 National Marine Fisheries Services' (NMFS) Gulf of Mexico Regional Biological Opinion (as amended in 2005 and 2007). The borrow sites were designed to allow for 400-foot buffers around the existing low-relief hardbottom habitats.

An artificial reef totaling 1.8 acres was constructed in 1997 by the City of Venice as mitigation for hardbottom habitat impacted as part of the initial construction of the project. The artificial reef was constructed offshore of Florida Department of Environmental Protection (FDEP) monument R-130 in water depths from –20 to –22 feet. The City had an extensive amount of concrete material available for construction of the mitigation reef as a result of their 1995 stormwater management system improvements; therefore, a total of 3.14 acres of artificial reef was ultimately constructed.

Between October 2007 and March 2008, the City of Venice Beach also constructed an additional 7.3 acres of artificial reefs to compensate for impacts associated with past nourishment events at the project location. The artificial reefs were constructed of limestone boulders and are located offshore of Venice Beach, with the northern four located between FDEP Reference Monuments R-119 and R-122, and the fifth located at FDEP Reference Monument R-134. Since the placement area is within the boundaries of previously mitigated resources, no further mitigation is required as part of the proposed action.

The proposed action will not impact fish and wildlife resources requiring compensatory mitigation.

**Table 1: Summary of direct and indirect impacts.**

| ALTERNATIVE<br><br>ENVIRONMENTAL FACTOR | Renourishment Using the Proposed Borrow Areas (Preferred Alternative) | No Action (Status Quo) |
|---|---|---|
| VEGETATION | No sessile macroalgae was noted during surveys of the borrow areas. Landscape features damaged during construction operations outside the work areas at the beach placement area will be restored. | Possible erosion of dune vegetation, depending upon the extent of the erosion at the placement site. |
| PROTECTED SPECIES | Direct adverse impacts include:<br>• Alteration of the beach face resulting in potential adverse impact to sea turtle nesting and hatching success (including effects from grade changes, sediment material, over-compaction, escarpment formation, artificial lighting during construction) resulting in potential "incidental" take of sea turtles<br>• Potential taking of sea turtles with hopper dredge (if utilized)<br>• Possible encounters with manatees by dredge and support vessels during dredge and disposal operations<br>Direct positive impacts:<br>• Nesting area along project reach would increase with nourishment activities<br>Indirect adverse impacts:<br>• Burial of mitigated nearshore hardbottom habitat that serves as foraging habitat for juvenile sea turtles | Loss of sea turtle nesting and piping plover foraging beach. |
| HARDGROUNDS | A 400-ft. buffer will be established around hardground habitats adjacent to the borrow areas to prevent impacts. Mitigation provided following previous nourishment activities for impacts to nearshore hardgrounds associated with placement activities. | Potential increase in nearshore hardbottom habitat due to continued erosion of nearshore sediments. |

| ALTERNATIVE<br><br>ENVIRONMENTAL FACTOR | Renourishment Using the Proposed Borrow Areas (Preferred Alternative) | No Action (Status Quo) |
|---|---|---|
| FISH AND WILDLIFE RESOURCES | Short-term impact to beach habitat due to burial/disturbance, but long term benefit through increase in beach habitat for nesting shorebirds and benthic fauna. Temporary impact to fish in the water column and benthic resources during dredging activities. | Continued loss of beach habitat. |
| ESSENTIAL FISH HABITAT | A 400-ft. buffer will be established around hardground habitats to prevent impacts to EFH at the borrow area. Short-term turbidity would be present at the borrow area and placement site. | No impacts would occur. |
| COASTAL BARRIER RESOURCES | Coastal barrier resources (FL-71P and P21AP) would be enhanced through restoration of natural habitat. No structural components are proposed with this project. | Continued loss of beach habitat associated with CBRA Unit P21AP. |
| WATER QUALITY | Direct adverse impacts include a temporary increase in turbidity adjacent to the borrow site and beach fill area. Turbidity would be monitored during project construction and work would cease if turbidity is not in compliance with Florida water quality standards. | No impacts to water quality would occur. |
| AIR QUALITY | Direct adverse impacts include small, localized, temporary increases in concentrations of nitrogen dioxide (NO2), SO2, CO, VOCs, and PM mostly associated with the dredge plant. | No impacts would occur. |
| NOISE | Temporary increase in noise at the borrow area and at the placement sites. | No impacts would occur. |

| ALTERNATIVE<br><br>ENVIRONMENTAL FACTOR | Renourishment Using the Proposed Borrow Areas (Preferred Alternative) | No Action (Status Quo) |
|---|---|---|
| AESTHETIC RESOURCES | Temporary decrease in the aesthetic appeal of the beach while placement activities occur; long-term increase in the appearance of the beach. | Long-term decline in appearance of the beach as it continues to erode. |
| RECREATION RESOURCES | Inability to utilize beach during construction; long-term benefit to recreational interests using the beach. Minor temporary impact to recreational boaters required to avoid the dredge and associated vessels during dredging activities. | Long-term decline in beach available for use by recreational interests. |
| NAVIGATION | Temporary impacts to vessels utilizing the Gulf of Mexico near the borrow areas and utilizing the nearshore areas during sand pumpout. | No impacts would occur. |
| HISTORIC AND CULTURAL RESOURCES | No adverse effects to potential historic properties with a minimum 250 foot buffer around significant targets identified within the nearshore placement and offshore borrow areas, per SHPO coordination. | No adverse effects to historic properties. |
| NATIVE AMERICANS | No adverse effects to Native American properties. | No adverse effects to Native American properties. |

# 3 AFFECTED ENVIRONMENT

The Affected Environment section succinctly describes the existing environmental resources of the areas that would be affected if any of the alternatives were implemented. This section describes only those environmental resources that are relevant to the decision to be made. It does not describe the entire existing environment, but only those environmental resources that would affect or that would be affected by the alternatives if they were implemented. This section, in conjunction with the description of the "no-action" alternative forms the base line conditions for determining the environmental impacts of the proposed action and reasonable alternatives.

## 3.1 GENERAL ENVIRONMENTAL SETTING

The preferred borrow areas that would be used for the project are located approximately 8.6 to 11.9 miles southwest of the sand placement site offshore of the Sarasota/Charlotte County line. The submerged terrain of the borrow areas consists of the floor of the Gulf of Mexico. The sea floor at these locations is characterized by the presence of undulating topography with a large sandy shoal rising to an elevation of about 8 to 11 feet above the surrounding terrain (see Figure 3). Depths at the borrow areas range from -27 feet to -52 feet MSL.

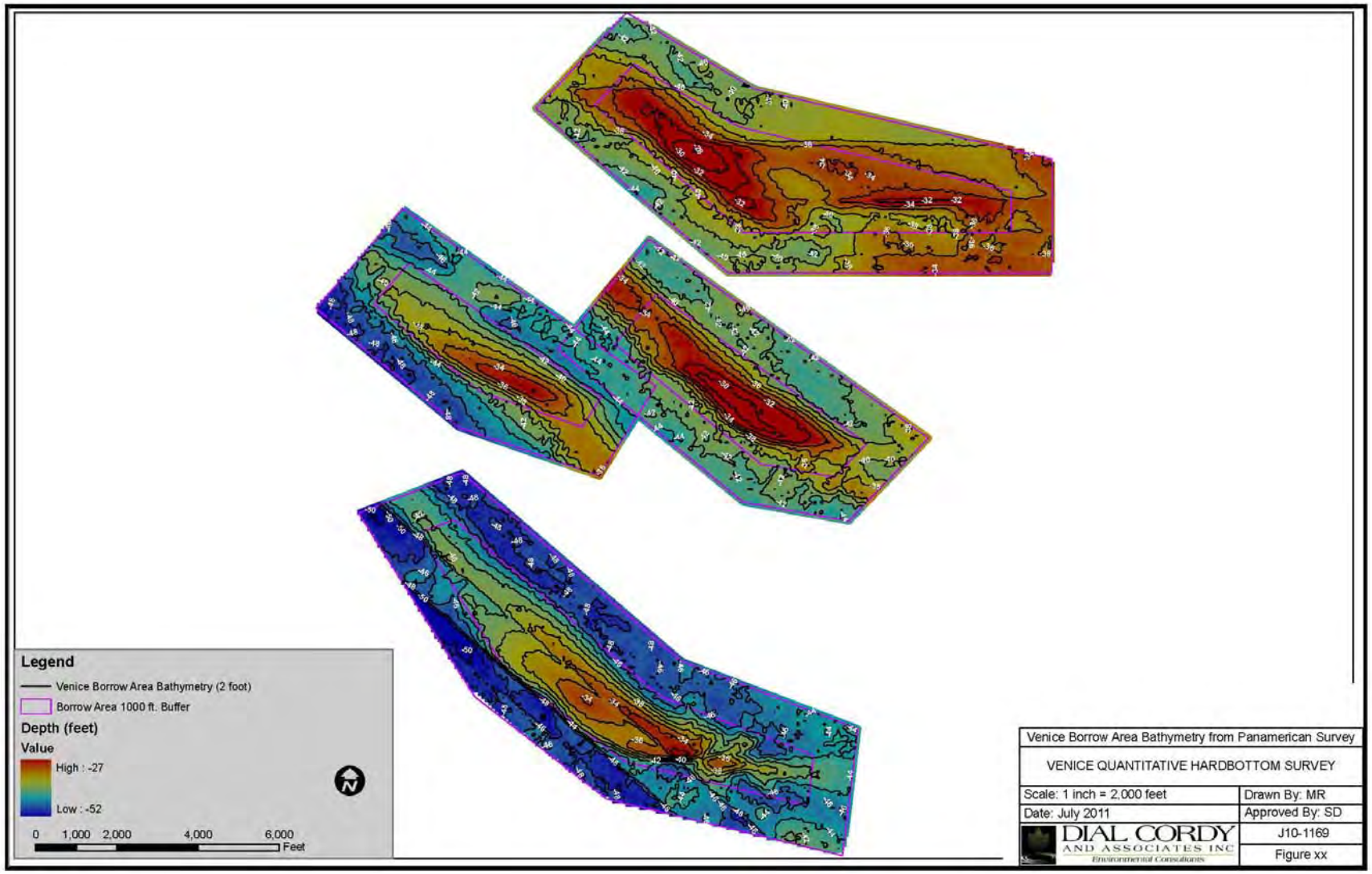

Figure 3. Bathymetry found at the four borrow areas.

## 3.2 VEGETATION

Studies conducted in 2010 and 2011 of the hardbottom habitat near the borrow areas found little vegetation was present at any site. Only *Sargassum* sp. and turf algae were documented during the study (DCA 2011).

## 3.3 THREATENED AND ENDANGERED SPECIES

Table 2 provides listed threatened and endangered species potentially found in the project areas. No critical habitat for the species listed in Table 2 is located in the project area.

Table 2. Protected species potentially found in the vicinity of the project area.

| Common Name | Scientific Name | Federal Status |
|---|---|---|
| Right Whale | *Eubalaena glacialis* | Endangered |
| Sei Whale | *Balaenoptrs Borealis* | Endangered |
| Sperm Whale | *Physeter macrocephalus catadon* | Endangered |
| Finback Whale | *Balaenopters physalus* | Endangered |
| Humpback Whale | *Megaptera novaeangliae* | Endangered |
| Hawksbill Turtle | *Eretmochelys imbricata* | Endangered |
| Kemp's Ridley Turtle | *Lepidochelys kempii* | Endangered |
| Green Turtle | *Chelonia mydas* | Endangered |
| Leatherback Turtle | *Dermochelys coriacea* | Endangered |
| Loggerhead Turtle | *Caretta caretta* | Threatened |
| Smalltooth Sawfish | *Pristis pectinata* | Endangered |
| Piping Plover | *Charadrius melodus* | Threatened |

### 3.3.1 SEA TURTLES

Five species of sea turtles are found in the Gulf of Mexico. These species include the leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricate*), green (*Chelonia mydas*), loggerhead (*Caretta caretta*), and Kemp's ridley (*Lepidochelys kempii*).

#### 3.3.1.1 Nesting Habitat

Three species of sea turtles are known to nest in the project area: loggerhead, green, and Kemp's ridley. The loggerhead makes up the majority of sea turtle nests at Venice Beach, but greens and Kemp's ridleys also nest there. See Table 2 for more information.

Table 3. Sea turtle nesting data for Venice Beaches, 2001-2010. Data courtesy of the FWC Fish and Wildlife Research Institute, Statewide Nesting Beach Survey Program. Source: FWC/FWRI Statewide Nesting Beach Survey Program Database as of 9 April 2014.

| | | | | | LOGGERHEAD | | | | GREEN | | | | KEMP'S RIDLEY | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | COUNTY | BEACH | SURVEY START DATE | SURVEY END DATE | NEST | FALSE CRAWL | FIRST NEST DATE | LAST NEST DATE | NEST | FALSE CRAWL | FIRST NEST DATE | LAST NEST DATE | NEST | FALSE CRAWL | FIRST NEST DATE | LAST NEST DATE |
| 2001 | Sarasota | Venice Beaches | 5/1/01 | 10/15/01 | 274 | 353 | 5/1/01 | 8/17/01 | 0 | 0 | | | 0 | 0 | | |
| 2002 | Sarasota | Venice Beaches | 5/1/02 | 10/1/02 | 184 | 215 | 5/3/02 | 8/16/02 | 0 | 0 | | | 0 | 0 | | |
| 2003 | Sarasota | Venice Beaches | 5/1/03 | 10/21/03 | 252 | 312 | 5/9/03 | 8/28/03 | 0 | 0 | | | 0 | 0 | | |
| 2004 | Sarasota | Venice Beaches | 5/1/04 | 10/14/04 | 187 | 236 | 5/17/04 | 8/15/04 | 0 | 0 | | | 0 | 0 | | |
| 2005 | Sarasota | Venice Beaches | 4/1/05 | 10/20/05 | 195 | 231 | 5/11/05 | 8/17/05 | 0 | 1 | | | 0 | 0 | | |
| 2006 | Sarasota | Venice Beaches | 5/1/06 | 10/28/06 | 173 | 110 | 5/5/06 | 8/19/06 | 0 | 0 | | | 0 | 0 | | |
| 2007 | Sarasota | Venice Beaches | 5/1/07 | 8/29/07 | 163 | 191 | 5/11/07 | 8/8/07 | 2 | 2 | 6/17/07 | 7/4/07 | 0 | 0 | | |
| 2008 | Sarasota | Venice Beaches | 5/1/08 | 11/6/08 | 240 | 196 | 5/10/08 | 8/29/08 | 1 | 1 | 9/5/08 | 9/5/08 | 0 | 0 | | |
| 2009 | Sarasota | Venice Beaches | 5/1/09 | 9/10/09 | 175 | 130 | 5/10/09 | 8/15/09 | 0 | 0 | | | 1 | 0 | 6/5/09 | 6/5/09 |
| 2010 | Sarasota | Venice Beaches | 5/1/10 | 9/18/10 | 215 | 280 | 5/4/10 | 8/27/10 | 1 | 1 | 6/15/10 | 6/15/10 | 0 | 0 | | |
| 2011 | Sarasota | Venice Beaches | 5/1/11 | 9/8/11 | 268 | 261 | 5/4/11 | 8/17/11 | 0 | 0 | | | 0 | 0 | | |
| 2012 | Sarasota | Venice Beaches | 5/1/12 | 9/26/12 | 424 | 277 | 4/25/12 | 8/14/12 | 0 | 0 | | | 0 | 0 | | |
| 2013 | Sarasota | Venice Beaches | 5/1/13 | 9/26/13 | 316 | 208 | 5/8/13 | 9/12/13 | 1 | 0 | 7/31/13 | 7/31/13 | 0 | 0 | | |

| Boundary Description | Survey Length (km) | Days/Wk Surveyed |
|---|---|---|
| Venice Inlet, RM-115 (27.11249, -82.46758) to Casperson Beach, RM-138 (27.05508, -82.44179) | 7.4 | 7 |

#### 3.3.1.2 Offshore Habitat

All five sea turtle species found in the Gulf of Mexico waters could utilize the waters surrounding the borrow areas. Sea turtles are known to forage on benthic invertebrates at hardground habitats. Hardground habitats located at the borrow areas are discussed in further detail in Section 3.3.2.

### 3.3.2 MANATEES

The Florida manatee is a subspecies of the West Indian manatee (*Trichechus manatus*) and can be found in tropical and subtropical coastal waters of the southeastern United States, the Gulf of Mexico, and the Caribbean Sea (Lefebvre and O'Shea 1995), including waters near the project area. Manatees may travel great distances during warm months and have been spotted in Massachusetts and Texas (USFWS 2007). Manatees are a sub-tropical species and are cold intolerant. In Florida, they prefer warm-water sites during the winter, only leaving to feed during warming trends. Manatees congregate near warm water sites, such as natural springs, power plants, and deep canals, when temperatures drop. Florida manatees are found in freshwater, brackish, and marine environments, including coastal tidal rivers and streams, mangrove swamps, salt marshes, freshwater springs, and vegetated bottoms. Manatees are herbivores and feed on aquatic vegetation. Preferred feeding areas in coastal and riverine habitats appear to be shallow grass beds near deep channels. Primary threats include watercraft-related strikes, entanglement in fishing lines and crab pot lines, exposure to cold, and red tide (USFWS 2007).

### 3.3.3 SMALLTOOTH SAWFISH

Smalltooth sawfish are found in peninsular Florida and are typically found off the extreme southern portion of the state. The current distribution is centered in the Everglades National Park, including Florida Bay. They have been historically caught as bycatch in commercial and recreational fisheries throughout their historic range; however, such bycatch is now rare due to population declines and population extirpations. Between 1990 and 1999, only four documented takes of smalltooth sawfish occurred in shrimp trawls in Florida (Simpfendorfer 2000). The borrow areas are approximately 15 miles from the nearest smalltooth sawfish critical habitat, and the placement site is approximately 20 miles from critical habitat (see Figure 4).

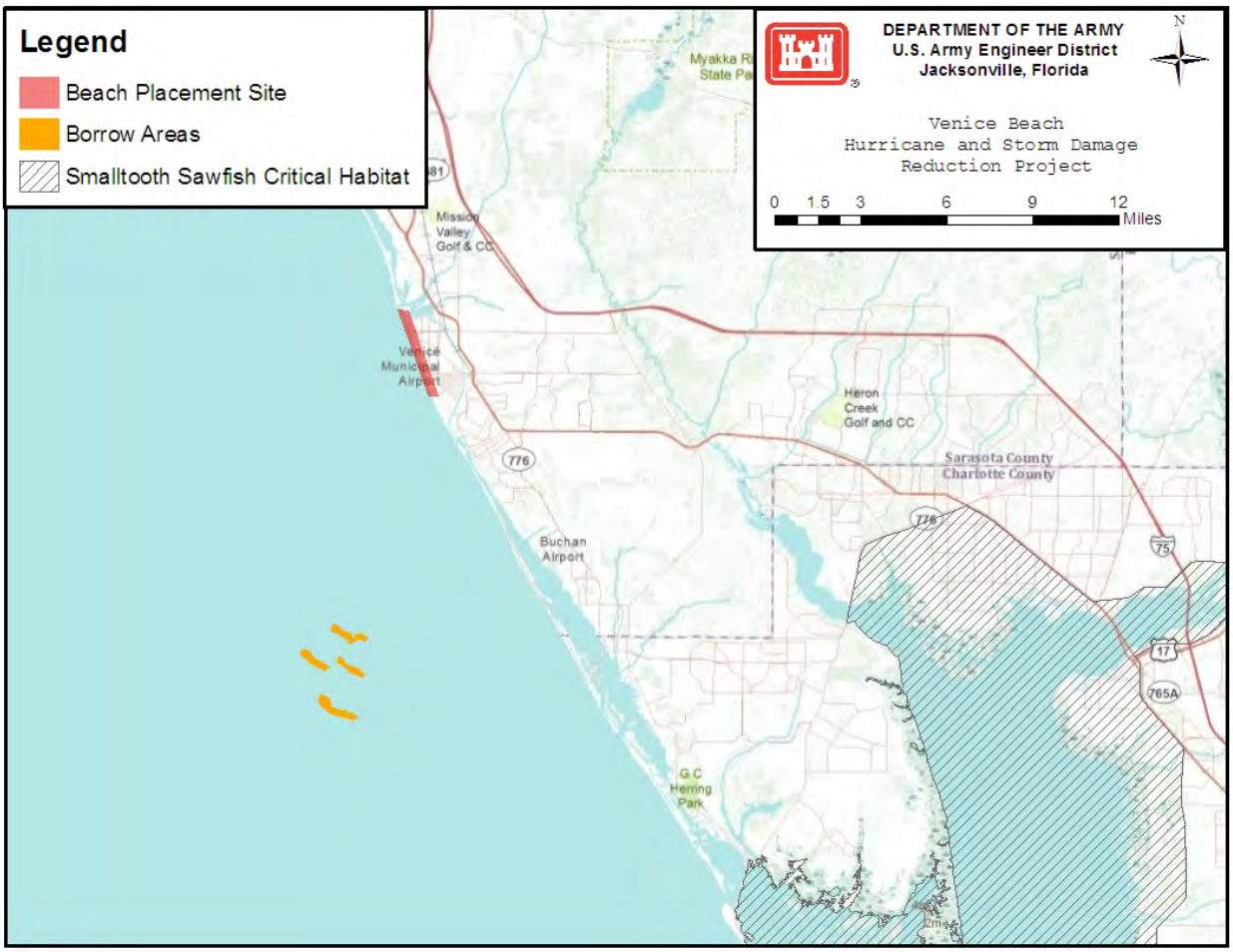


Figure 4. Smalltooth sawfish critical habitat in the project area.

### 3.3.4 PIPING PLOVER

Piping plovers (*Charadrius melodus*) are small shorebirds approximately seven inches long, with sand-colored plumage on their backs and crown, and white underparts. During winter, birds lose the black bands, their legs fade to pale yellow, and the bill becomes mostly black. Piping plovers winter along the Gulf Coast of Florida's beaches, primarily on intertidal beaches with sand and/or mud flats with no or very sparse vegetation (USFWS 2011). Piping plovers are also known to utilize inlets as wintering habitat. Wintering populations of piping plover are listed as a threatened species under the Endangered Species Act. The placement site is approximately 28 miles northwest of piping plover critical habitat unit FL-22, Cayo Costa, and approximately 36 miles southeast of critical habitat unit FL-21, Egmont Key (see Figure 5). The northern project limit abuts Venice Inlet, and the southern limit includes the shoreline adjacent to the Venice Municipal Airport. There are a few small, publicly owned parks within the project boundaries that exhibit the features associated with optimal piping plover habitat.

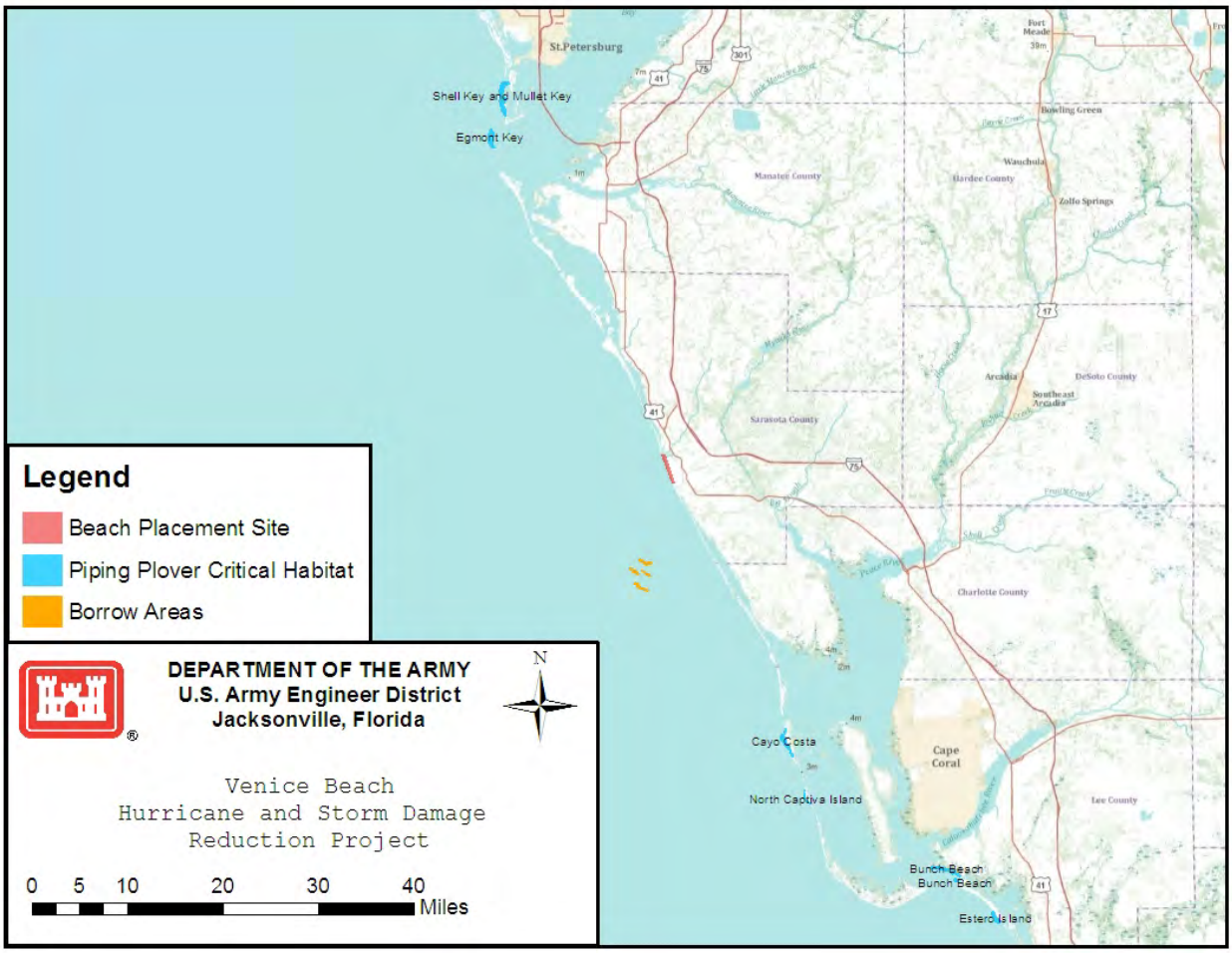


Figure 5. Location of piping plover critical habitat units in the vicinity of the project area.

### 3.4 MARINE MAMMALS

The marine mammals of the Gulf of Mexico are represented by members of the taxonomic order Cetacea, which is divided into the suborders Mysticeti (i.e., baleen whales) and Odontoceti (i.e., toothed whales), as well as the order Sirenia, which includes the manatee. Within the Gulf of Mexico, there are 28 species of cetaceans (7 mysticete and 21 odontocete species) and 1 sirenian species, the manatee (Jefferson *et al.* 1992; Davis *et al.* 2000). Bottlenose dolphins (*Tursiops truncatus)* and Atlantic spotted dolphins (*Stenella frontalis*) are common in shallow Gulf waters [up to 656 ft (200 m) deep]. Bottlenose dolphins are frequently observed in the study area and are a common inhabitant of the continental shelf and upper slope waters of the northern Gulf of Mexico. Bottlenose dolphins are opportunistic feeders, taking a wide variety of fishes, cephalopods, and shrimp (Davis and Fargion 1996; Jefferson and Schiro 1997; Wells and Scott 1999). There appears to be two ecotypes of bottlenose dolphins, a coastal form and an offshore form (Hersh and Duffield 1990; Mead and Potter 1990). The Atlantic spotted dolphin is endemic to the Atlantic Ocean in tropical to temperate waters (Perrin *et al.* 1987, 1994a). They are known to feed on a wide variety of fishes, cephalopods, and benthic invertebrates (Leatherwood and Reeves 1983; Jefferson *et al.* 1993; Perrin *et al.* 1994). In the Gulf of Mexico they are commonly found in continental shelf waters less than

6,556.2 ft (200 m) in depth. The sperm whale is common in oceanic waters of the northern Gulf of Mexico and may be a resident species, whereas the baleen whales are considered rare or extralimital in the Gulf (Würsig *et al.* 2000). The Florida manatee (*Trichechus manatus latirostris*) inhabits only coastal marine, brackish, and freshwater areas. Threatened and endangered marine mammals are discussed further in Section 3.3.

## 3.5 BIRDS

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). The population status and movements of pelagic bird species are difficult to determine because surveys must be conducted offshore under marine field conditions and bird movement is weather dependent. Very few surveys solely dedicated to bird behavior and populations are conducted in the Gulf of Mexico. Many marine mammal surveys contain ancillary pelagic and migratory bird observations. In the Gulf of Mexico, marine mammal movements and pelagic bird species are often associated with the increased primary productivity of the Loop eddies and cold core currents (Ribic *et al.* 1997; Wursig *et al.* 2000; Russell 2005).

Federal regulatory protection of birds falls under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) and the U.S. Endangered Species Act (ESA) 9(a) (1) (B). All birds listed in the Gulf studies are protected under the MBTA. 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. Much of their time is spent in or over water and they are capable of staying far from land for long periods. Most of these birds have adaptive salt glands that allow them to regulate the salt content in their blood (Ehrlich *et al.* 1988). Most species in this guild are colonial nesters that leave the nest to venture far from natal areas. 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.

The west Florida coast serves as a principal route of the Atlantic Flyway for more than 60 migratory landbird species. Many of the birds that breed east of the Allegheny Mountains move southward in fall, through northwestern Florida, crossing the Gulf to the coastal regions of central Mexico where they follow a land route for the remainder of the journey to Cuba or South America (Lincoln *et al.* 1998). Many of the migrants that could pass through the project area are unlikely to stop except to rest on a dredge or boat during migration. Under this condition, all are protected by MBTA.

### 3.6 ESSENTIAL FISH HABITAT

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, 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, and water columns within the study area as EFH. The Magnuson-Stevens Fishery Conservation and Management Act requires federal agencies to consult with NMFS on activities that may adversely affect EFH. This EA is prepared consistent with guidance provided by the NMFS Southeast Regional Office to USACE, Jacksonville District regarding coordinating EFH consultation requirements with NEPA (NMFS, 1999).

EFH at the borrow areas consists of a marine water column with an unconsolidated sand substrate. Some scattered, patchy low relief hardgrounds are found within a 1000 foot buffer of the borrow areas. Hardgrounds provide substrate for benthic organisms, crevices where organisms can seek protection, and foraging habitat for a number of aquatic species. USACE contracted sidescan, multibeam, and sub-bottom profile surveys of the borrow areas in 2010. Studies conducted by Panamerican Consultants, Inc., and Dial Cordy and Associates, Inc., in Fall 2010 to Spring 2011 analyzed the sidescan sonar survey data, prepared a mosaic of the substrate features, conducted towed video transects to verify hardbottom, and collected in situ data from representative hardbottom habitats within and/or adjacent to the borrow areas. The hardground habitats near the proposed borrow areas were found to have less than an average of 1.5 feet vertical elevation above the sand over a 150 foot horizontal distance, and they do not have algae growing on them. The relatively low-relief hardgrounds (<40 cm) have a low diversity of scleractinians, octocorals, and sponges common to offshore habitats of the west coast of Florida in the vicinity of the proposed borrow sites. The full report is included in Appendix E.

Species managed by the National Marine Fisheries Service that may occur within the project area are listed in Table 4.

Table 4. Summary of EFH designation for species in the project area.

| Species | Scientific Name | Young of Year or Neonate | Juveniles | Adults |
|---|---|---|---|---|
| **Coral Species** | | X | X | X |
| **Shrimp Fishery** | | | | |
| brown shrimp | *Farfantepenaeus aztecus* | X | X | X |
| pink shrimp | *F. duorarum* | X | X | X |
| **Stone Crab Fishery** | | | | |
| Florida stone crab | *Menippe mercenaria* | X | X | X |
| **Spiny Lobster Fishery** | | | | |
| spiny lobster | *Panulirus argus* | X | X | X |
| **Red Drum Fishery** | | | | |
| red drum | *Sciaenops ocellatus* | X | X | X |
| **Reef Fish Fishery** | | | | |

| Species | Scientific Name | Young of Year or Neonate | Juveniles | Adults |
|---|---|---|---|---|
| **Balistidae - Triggerfishes** | | | | |
| Gray triggerfish | *Balistes capriscus* | X | X | X |
| **Carangidae - Jacks** | | | | |
| Greater amberjack | *Seriola dumerili* | X | X | X |
| Lesser amberjack | *Seriola fasciata* | X | X | X |
| Almaco jack | *Seriola rivoliana* | X | X | X |
| Banded rudderfish | *Seriola zonata* | X | X | X |
| **Labridae - Wrasses** | | | | |
| Hogfish | *Lachnolaimus maximus* | X | X | X |
| **Lutjanidae - Snappers** | | | | |
| Queen snapper | *Etelis oculatus* | X | X | X |
| Mutton snapper | *Lutjanus analis* | X | X | X |
| Schoolmaster | *Lutjanus apodus* | X | X | X |
| Blackfin snapper | *Lutjanus buccanella* | X | X | X |
| Red snapper | *Lutjanus campechanus* | X | X | X |
| Cubera snapper | *Lutjanus cyanopterus* | X | X | X |
| Gray (mangrove) snapper | *Lutjanus griseus* | X | X | X |
| Dog snapper | *Lutjanus jocu* | X | X | X |
| Mahogany snapper | *Lutjanus mahogoni* | X | X | X |
| Lane snapper | *Lutjanus synagris* | X | X | X |
| Silk snapper | *Lutjanus vivanus* | X | X | X |
| Yellowtail snapper | *Ocyurus chrysurus* | X | X | X |
| Wenchman | *Pristipomoides aquilonaris* | X | X | X |
| Vermilion snapper | *Rhomboplites aurorubens* | X | X | X |
| **Malacanthidae - Tilefishes** | | | | |
| Goldface tilefish | *Caulolatilus chrysops* | X | X | X |
| Blackline tilefish | *Caulolatilus cyanops* | X | X | X |
| Anchor tilefish | *Caulolatilus intermedius* | X | X | X |
| Blueline tilefish | *Caulolatilus microps* | X | X | X |
| (Golden) Tilefish | *Lopholatilus chamaeleonticeps* | X | X | X |
| **Serranidae - Groupers** | | | | |
| Dwarf sand perch | *Diplectrum bivittatum* | X | X | X |
| Sand perch | *Diplectrum formosum* | X | X | X |
| Rock hind | *Epinephelus adscensionis* | X | X | X |
| Speckled hind | *Epinephelus drummondhayi* | X | X | X |
| Yellowedge grouper | *Epinephelus flavolimbatus* | X | X | X |
| Red hind | *Epinephelus guttatus* | X | X | X |

| Species | Scientific Name | Young of Year or Neonate | Juveniles | Adults |
|---|---|---|---|---|
| Goliath grouper | *Epinephelus itajara* | X | X | X |
| Red grouper | *Epinephelus morio* | X | X | X |
| Misty grouper | *Epinephelus mystacinus* | X | X | X |
| Warsaw grouper | *Epinephelus nigritus* | X | X | X |
| Snowy grouper | *Epinephelus niveatus* | X | X | X |
| Nassau grouper | *Epinephelus striatus* | X | X | X |
| Marbled grouper | *Epinephelus inermis* | X | X | X |
| Black grouper | *Mycteroperca bonaci* | X | X | X |
| Yellowmouth grouper | *Mycteroperca interstitialis* | X | X | X |
| Gag | *Mycteroperca microlepis* | X | X | X |
| Scamp | *Mycteroperca phenax* | X | X | X |
| Yellowfin grouper | *Mycteroperca venenosa* | X | X | X |
| **Coastal Migratory Pelagic Fishery** | | | | |
| bluefish | *Pomatomus saltatrix* | | | X |
| dolphin | *Coryphaena hippurus* | | | X |
| cobia | *Rachycentron canadum* | X | X | X |
| king mackerel | *Scomberomorus cavalla* | X | X | X |
| little tunny | *Euthynnus alletteratus* | X | X | X |
| Spanish mackerel | *Scomberomorus maculatus* | X | X | X |
| **Highly Migratory Pelagic Fishery** | | | | |
| Atlantic sharpnose shark | *Rhizoprionodon terraenovae* | X | X | X |
| blacknose shark | *Carcharhinus acronotus* | | X | X |
| blacktip shark | *Carcharhinus limbatus* | X | X | X |
| bull shark | *Carcharhinus leucas* | | X | X |
| dusky | *Carcharhinus obscurus* | | X | X |
| great hammerhead shark | *Sphyrna mokarran* | X | X | X |
| lemon shark | *Negaprion brevirostris* | | X | X |
| silky shark | *Carcharhinus falciformis* | X | X | X |
| spinner shark | *Carcharhinus brevipinna* | | X | X |
| nurse shark | *Ginglymostoma cirratum* | | X | |
| tiger shark | *Galeocerdo cuvieri* | | X | X |

## 3.7 COASTAL BARRIER RESOURCES

The Coastal Barrier Resources Act (CBRA) of 1982 and the Coastal Barrier Resources Improvement Act (CBRIA) of 1990 limit Federally subsidized development within the CBRA Units to limit the loss of human life by discouraging development in high risk areas, to reduce wasteful expenditures of Federal resources, and to protect the natural resources associated with coastal barriers. CBRIA provides development goals for undeveloped coastal property held in public ownership, including wildlife refuges, parks, and other lands set aside for conservation

("otherwise protected areas," or OPAs). These public lands are excluded from most of the CBRA restrictions, although they are prohibited from receiving Federal Flood Insurance for new structures. The extreme southern portion of the sand placement site is located within OPA Unit P21AP (see Table 5 and Figure 6).

Table 5. List of Coastal Barrier Resource System OPAs in the project area and their associated acreages.

| Unit Number | Name | CBRA Unit Type | Acreage |
|---|---|---|---|
| FL-71P | Venice Inlet | Otherwise Protected Area | 123.4 |
| P21AP | Manasota Key | Otherwise Protected Area | 719.1 |


Figure 6. Map of Coastal Barrier Resources located in the vicinity of the beach placement area.

### 3.8 WATER QUALITY

The State of Florida lists the areas waters as Class III, which is suitable for recreation and the propagation and management of fish and wildlife.

### 3.9 AIR QUALITY

The proposed borrow areas are approximately 8 to 12 miles offshore of Sarasota and Charlotte Counties. There are no nearby sources of pollution. These areas and the beach placement area are considered to be in attainment with the National Ambient Air Quality Standards under the Clean Air Act.

### 3.10 NOISE

Ambient noise levels in the project area are low to moderate. The major noise producing sources are the breaking surf, adjacent residential areas, and aircraft activities to and from the local airport. Noise levels are typical of the marine and beach environments.

### 3.11 AESTHETIC RESOURCES

The aesthetic environments at the proposed borrow areas and at the beach placement site are typical of marine and beach environments. There are two outfalls that currently carry stormwater runoff from the upland developments to the ocean in the southern end of the project site. The beach is steadily eroding, which could eventually lead to an aesthetically unappealing beach habitat.

### 3.12 RECREATION RESOURCES

The marine environment near the proposed borrow areas is used by snorkelers, recreational fishermen, and scuba divers. The beach placement site is used by local interests and tourists for typical beach-related activities, including swimming, sunbathing, bird watching, jogging, fishing, etc.

### 3.13 NAVIGATION

Recreational boaters and fishermen often use both the offshore and the nearshore areas near the proposed borrow areas and the placement site.

### 3.14 HISTORIC AND CULTURAL RESOURCES

Florida has been inhabited for at least the last 10,000 years, first by Native Americans and then Europeans beginning in the 16$^{th}$ century. The potential exists for both prehistoric and historic cultural resources to occur within the project area. Prehistoric Native American sites are recorded along the coast of the project area that date from 10,000 YBP (years before present) to 1700 AD. Submerged prehistoric sites have also been identified within the vicinity of Tampa Bay and in Sarasota County, resulting from gradual sea level rise that occurred from about 10,000 years ago to 6,000 years ago. Prior to this gradual sea level rise, the continental shelves

were exposed, an area almost twice the width of the current size of the state, and were available for habitation by Native Americans.

The Gulf Coast of Florida has been explored by warships, trading vessels, submarines and pleasure craft since the Age of Exploration until the present. While no shipwrecks are recorded in the vicinity of the project area, the potential for their presence both along the coast and offshore exists.

### 3.14.1 SHORELINE SAND OPERATIONS AREA

The Florida Master Site File (FMSF) records five archeological sites within the shoreline sand placement area (8SO26, 8SO432, 8SO435, 8SO442, and 8SO445). Four of these sites date from the Archaic period (10,000 YBP to 3000 YBP) and two have portions that are inundated along the shoreline. The other recorded site is of indeterminate age. Components of 8SO26 possibly extend offshore.

### 3.14.2 NEARSHORE SAND OPERATIONS AREA

No historic properties are recorded within the nearshore sand placement area by the FMSF. Components of 8SO26 possibly extend offshore.

### 3.14.3 OFFSHORE BORROW AREA

No historic properties are recorded within the offshore borrow area by the FMSF. No previous submerged remote sensing cultural resource surveys have been conducted in the project area.

## 3.15 NATIVE AMERICANS

Currently, no portion of the proposed project exists within or adjacent to any Native American properties.

# 4 ENVIRONMENTAL EFFECTS

This section is the scientific and analytic basis for the comparisons of the alternatives. See Table 1 in Section 2 for a summary of impacts. The following includes anticipated changes to the existing environment including direct, indirect, and cumulative effects.

## 4.1 GENERAL ENVIRONMENTAL EFFECTS

Dredging in the proposed borrow areas would deplete most of the sand in these shoals over the life of the project; however, the areas do not currently support seagrasses, hardbottoms, or other significant benthic resources that would be altered by the proposed removal of sand. The new borrow areas consist of four locations: 8O, 8P, 8R, and 8S. Area 8O is approximately 162 acres in size, with depths ranging from -35 ft to -42 ft (NAVD 88). The proposed cut depths in 8O range from -37.5 ft to -42 ft. Area 8P is approximately 117 acres in size, with depths ranging from -36 ft to -43 ft. The proposed cut depths in 8P range from -39 ft to -43 ft. Area 8R is approximately 140 acres in size, with depths ranging from -38 ft to -46 ft and proposed cut depths ranging from -41 ft to -48 ft. Area 8S is approximately 194 acres in size, with depths ranging from -40 ft to -50 ft and proposed cut depths ranging from -42 ft to -49.5 ft.

## 4.2 VEGETATION

No macroalgae or submerged aquatic vegetation are found in the project area; therefore, these resources will not be affected by this project. Dune vegetation will be restored to its previous condition following project construction.

## 4.3 THREATENED AND ENDANGERED SPECIES

### 4.3.1 RENOURISHMENT USING THE PROPOSED BORROW AREAS [PREFERRED ALTERNATIVE]

#### 4.3.1.1 Sea Turtles

As the preferred alternative proposes to place sand on the beach, USACE has determined that it may affect nesting sea turtles. If a hopper dredge is utilized, the project may also affect sea turtles in the marine environment.

##### *4.3.1.1.1 Nesting Habitat*

The construction of a wider beach will ensure that sufficient beach habitat is available for gravid turtles to nest. There are a number of potential impacts to nesting sea turtles as a result of changes in beach characteristics following renourishment. Scarp development could hinder gravid turtles from accessing suitable nesting habitat. Sand compaction could make excavating a proper nest difficult. Changes in sand color or sand chemistry could affect the viability of a clutch.

To minimize these potential effects, geotechnical surveys were conducted of the borrow areas to identify sand that is suitable for placement at this site. The sand grain size and color must meet specific criteria to prevent compaction and to help ensure its acceptability by gravid

turtles. Post-construction surveys will monitor the presence of scarps, and tilling will be conducted if scarps or compaction occur. The USFWS agreed that it was appropriate to apply this project to their August 22, 2011 Statewide Programmatic Biological Opinion (SPBO) in a letter dated June 5, 2014.

*4.3.1.1.2 Offshore Habitat*

The dredging may impact sea turtles due to entrainment, benthic foraging and resting habitat disturbance, noise disruption, and injury from vessels and dredges.

Sidescan sonar surveys did not identify any significant hardbottom areas within 400' of the proposed borrow areas. If a hopper dredge is used for the dredging operations, potential impacts to sea turtles could occur. To minimize the risk to sea turtles, standard sea turtle protection conditions will be implemented such as deflector dragheads, inflow screens, and/or monitoring of the operation. A 400-foot buffer will be maintained around low-relief hardground areas that could serve as attractants to sea turtles for foraging. The project will adhere to all turtle safety precautions outlined in the NMFS Gulf Regional Biological Opinion (GRBO) (November 19, 2003; Revision No 1, June 24, 2005; Revision No. 2, January 9, 2007), as well as implement the NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions during project construction.

4.3.1.2 Manatees

Manatees typically use nearshore waters for migration, and are not typically found in offshore waters. While the dredging operations will not affect manatees, the placement operations have the opportunity to encounter manatees during placement of pipelines or maneuvering of dredge equipment.

USACE and its contractors will abide by the Standard Manatee Construction Protocol to ensure no adverse impacts to any manatee that may venture into the project area during construction activities. By incorporation of this protocol, USACE believes that the project may affect, but is not likely to adversely affect, the Florida manatee.

4.3.1.3 Smalltooth Sawfish

Smalltooth sawfish are rare in the action area, and they are not likely to be entrained by a hopper dredge. The NMFS 2003 GMRBO states that:

> *. . .NOAA Fisheries has determined that there has never been a reported take of a smalltooth sawfish by a hopper dredge, and such take is unlikely to occur because of smalltooth sawfishes' affinity for shallow, estuarine systems. Only hopper dredging of Key West channels would have the potential to impact smalltooth sawfish but those channels are not considered in this Opinion. Therefore, NOAA Fisheries believes that smalltooth sawfish are rare in the action area, the likelihood of their entrainment is very low, and that the chances of the proposed action affecting them are discountable. This species will not be discussed further in this Opinion.*

To ensure the protection of smalltooth sawfish, the NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions (2006) will be implemented during project construction. USACE has determined that the project will not affect smalltooth sawfish.

#### 4.3.1.4 Piping Plover

The Preferred Alternative may affect the piping plover. The USFWS agreed that it was appropriate to apply this project to their May 22, 2013 Piping Plover Programmatic Biologcial Opinion in a letter dated June 5, 2014. The proposed action will not adversely modify critical habitat.

### 4.3.2 NO ACTION ALTERNATIVE [STATUS QUO]

No impacts would occur to the threatened and endangered species discussed in this section, except for the slow decline in available habitat for nesting sea turtles and the wintering piping plover.

## 4.4 MARINE MAMMALS

### 4.4.1 RENOURISHMENT USING THE PROPOSED BORROW AREAS [PREFERRED ALTERNATIVE]

Borrow area activities are not likely to affect marine mammal species. Any minor impact due to dredging activity at the borrow areas and vessels traversing from the borrow areas to the placement sites would be temporary in nature. Vessels associated with the dredging activities are slow moving, and are not likely to strike marine mammals.

### 4.4.2 NO ACTION ALTERNATIVE [STATUS QUO]

No impacts would occur to marine mammals as a result of the No Action Alternative.

## 4.5 BIRDS

### 4.5.1 RENOURISHMENT USING THE PROPOSED BORROW AREAS [PREFERRED ALTERNATIVE]

Migratory birds would be minimally affected by borrow area activities. Nourishment activities will include specific monitoring measures during construction with regard to migratory birds. For instance, activities at the beach will be monitored at dawn or dusk daily during the nesting season to protect nesting migratory birds. Should nesting activities occur within the construction area, appropriate buffers will be placed around nests to ensure their protection.

The dredging activity may attract some seabirds to the dredge area. Activities such as oil exploration have been shown to attract large numbers of seabirds to an area, possibly because of an increase in food availability as bottom sediments are stirred up by drilling, potentially resulting in an algal bloom, and attracting species preyed on by seabirds (Tasker *et al.* 1986; Herron Baird 1990). Similar processes may occur during the initial stages of aggregate dredging. In addition, some species groups, notably gulls, are attracted by increases in shipping activity, especially at the low speeds associated with dredging (Garthe and Hüppop 1999; Skov and Durinck 2001; Christensen *et al.* 2003).

Vision has been shown to be an important component in the foraging activity of a number of seabird species (Essink 1999; Garthe *et al.* 2000; Gaston 2004; Thaxter *et al.* 2010). As a result, water clarity may play an important role in the foraging success of these, and other, species. Changes to water clarity resulting from the re-suspension of sediments during dredging operations would negatively affect the foraging capabilities of some species. The impact of increases in turbidity is likely to be dependent (both in scale and spatial extent) on initial background levels (Cook 2010).

### 4.5.2 NO ACTION ALTERNATIVE [STATUS QUO]

The No Action Alternative would result in a steadily eroding shoreline that would limit the availability of beach habitat available for nesting, roosting and foraging migratory birds.

## 4.6 ESSENTIAL FISH HABITAT ASSESSMENT

The project description is in Section 2.1.1. Mitigation of impacts is in Section 2.6. Section 3.6 describes the "existing conditions" of the Essential Fish Habitat (EFH), Federally managed fisheries, and associate species such as major prey species, including affected life history stages. The following subsections describe the individual and cumulative impacts of the proposed action(s) and alternatives on EFH, Federally managed fisheries, and associate species such as major prey species, including affected life history stages.

### 4.6.1 RENOURISHMENT USING THE PROPOSED BORROW AREAS [PREFERRED ALTERNATIVE]

Marine areas of non-vegetated bottoms, live bottoms, and water columns within the study area have been designated as EFH. Although the hardbottom habitat present in the vicinity of the borrow areas is not considered to be "significant" pursuant to the NMFS Gulf of Mexico Regional Biological Opinion, the USACE will maintain 400 foot buffers around these resources to ensure they are not affected by sedimentation. With the establishment of the 400 foot buffer, less impact to reef fish would occur due to their ability to move from the dredging site.

The water column is a habitat 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 or 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. Other potential adverse effects include: vessel strikes; 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.

An artificial reef totaling 1.8 acres was constructed in 1997 by the City of Venice as mitigation for hardbottom habitat impacted as part of the initial construction of the project. The artificial reef was constructed offshore of Florida Department of Environmental Protection (FDEP) monument R-130 in water depths from –20 to –22 feet. The City had an extensive amount of concrete material available for construction of the mitigation reef as a result of their 1995 stormwater management system improvements; therefore, a total of 3.14 acres of artificial reef was ultimately constructed. The City of Venice also constructed 7.3 acres of artificial reefs to compensate for impacts associated with this project. The artificial reefs were constructed of limestone boulders, and were constructed during the period between October 2007 and March 2008. They are located offshore of Venice Beach, with the northern four located between FDEP Reference Monuments R-119 and R-122, and the fifth located at FDEP Reference Monument R-134.

#### 4.6.2 NO ACTION ALTERNATIVE [STATUS QUO]

No impacts would occur to EFH.

## 4.7 COASTAL BARRIER RESOURCES

The proposed project does not include the construction of structures that would require Federal Flood Insurance; therefore, Federal expenditures for the proposed project are not restricted in Unit FL-P21AP, Manasota Key OPA. Please see also Section 3.7, Section 5.14, Table 5 and Figure 6.

## 4.8 WATER QUALITY

#### 4.8.1 RENOURISHMENT USING THE PROPOSED BORROW AREAS [PREFERRED ALTERNATIVE]

Construction activities may cause temporary increases in turbidity in the immediate vicinity of construction. These conditions will cause short-term impacts to the area's water quality. The State of Florida water quality regulations require that water quality standards not be violated during construction operations. The standards require that turbidity shall not exceed 29 NTU's above background. Should turbidity exceed State water quality standards as determined by monitoring, the contractors will be required to cease work until conditions return to normal. Increased turbidity at the borrow site during excavation should be minor and less than the turbidity increase along the shore during re-nourishment. In addition, the FDEP issued a water quality certification for the project to the local sponsor and USACE as co-applicants (Permit #0211217-005-JC) on June 13, 2014.

#### 4.8.2 NO ACTION ALTERNATIVE [STATUS QUO]

The No Action Alternative will not deleteriously affect water quality in the action area.

## 4.9 AIR QUALITY

### 4.9.1 RENOURISHMENT USING THE PROPOSED BORROW AREAS [PREFERRED ALTERNATIVE]

The short-term impact of emissions by the dredge and other construction equipment associated with the project will not significantly impact air quality. Sarasota County is an attainment area and the Florida Department of Environmental Protection does not regulate marine or mobile emission sources (construction equipment) in attainment areas. No air quality permits will be required for this project.

### 4.9.2 NO ACTION ALTERNATIVE [STATUS QUO]

The No Action Alternative would not affect air quality in the project area.

## 4.10 NOISE

### 4.10.1 RENOURISHMENT USING THE PROPOSED BORROW AREAS [PREFERRED ALTERNATIVE]

Dredging noise can affect marine mammals, sea turtles, and fisheries. Possible effects of dredging noise can vary depending on a variety of internal and external factors, and can be divided into masking (obscuring of sounds of interest by interfering sounds, generally at similar frequencies), response, discomfort, hearing loss, and injury (MALSF, 2009). Deeper water operations may propagate sound over greater distances than those in confined nearshore areas (Hildebrandt, 2004).

Dredging to extract marine aggregates produces broadband and continuous sound, mainly at lower frequencies. The little available data indicates that dredging is not as noisy as seismic surveys, pile driving, and sonar; however, it is louder than most shipping, operating, offshore wind turbines, and drilling (MALSF, 2009). Noise associated with dredging activities can be placed into five categories:

**1. Collection noise –** The noise generated from the collection of material from the sea-floor; for example, the scraping of the buckets on a bucket ladder dredge or the operation of the drag head. This noise is dependent on the structure of the sea floor and the type of dredge used.

**2. Pump noise –** The noise from the pump driving the suction through the pipe.

**3. Transport noise -** The noise of the material being lifted from the sea floor to the dredge. For trailing suction hopper and cutter suction dredges, this would be the noise of the material as it passes up the suction pipe. For clamshell dredges, it would be the sound of the crane dropping/lifting the bucket.

**4. Deposition noise -** This noise is associated with the placement of the material within the barge or hopper.

**5. Ship/machinery noise** – The noise associated with the dredging ship itself. For stationary dredges, the primary source will be the onboard machinery. Mobile dredges will also have propeller and thruster noise (MALSF, 2009).

Field investigations have been undertaken to characterize underwater sounds typical of bucket, hydraulic cutterhead, and hopper dredging operations (Dickerson *et al.,* 2001). Preliminary findings indicate that cutterhead dredging operations are relatively quiet as compared to other dredging operations in aquatic environments. Hopper dredges produce somewhat more intense sounds similar to those generated by vessels of comparable size. Bucket dredges create a more complex spectrum of sounds, very different than either cutterhead or hopper dredges. Hopper dredge noises consist of a combination of sounds emitted from two relatively continuous sources: engine and propeller noise similar to that of large commercial vessels, and sounds of dragheads moving in contact with the substrate.

Reported source levels for dredging operations range from 160 to 180 dB re 1 uPa @ 1 m for 1/3 octave bands with peak intensity between 50 and 500 Hz (Greene and Moore, 1995). The intensity, periodicity, and spectra of emitted sounds differ greatly among dredge types. Components of underwater sounds produced by each type are influenced by a host of factors including substrate type, geomorphology of the waterway, site-specific hydrodynamic conditions, equipment maintenance status, and skill of the dredge plant operator (Dickerson *et al.,* 2001).

Noise generated by the dredge will be offshore and will not impact those living on the beaches. Noise generated on the beaches by equipment placing the dredged material will be relatively low level and will be of a short duration. Construction equipment such as booster pumps will be properly maintained to minimize effects of noise. Once dredging and beach placement have concluded, noise levels will drop back to normal levels for the beach area. Since the increases to the current level of noise as a result of this project will be localized and minor, there will only be a temporary reduction in aesthetics and no expectation of adverse effects to the environment as a result of construction-related noise.

#### 4.10.2 NO ACTION ALTERNATIVE [STATUS QUO]

Noise levels in the project area would not be affected by the No Action Alternative.

## 4.11 AESTHETIC RESOURCES

#### 4.11.1 RENOURISHMENT USING THE PROPOSED BORROW AREAS [PREFERRED ALTERNATIVE]

Construction equipment on the beach will be aesthetically unappealing for the duration of construction (less than six months). The project will result in a wider, more aesthetically pleasing beach.

#### 4.11.2 NO ACTION ALTERNATIVE [STATUS QUO]

Beach ecosystems are generally considered to be aesthetically pleasing, and the No Action Alternative may ultimately result in a loss of this ecosystem and a less aesthetically appealing shoreline that may require hard stabilization methods (i.e., revetments or seawalls) to protect upland properties.

## 4.12 RECREATION RESOURCES

### 4.12.1 RENOURISHMENT USING THE PROPOSED BORROW AREAS [PREFERRED ALTERNATIVE]

The current use of the borrow areas for recreation is limited. Recreational fishermen may be required to alter their fishing locations during dredging. At the placement site, additional sand will improve the recreational value of the beach.

### 4.12.2 NO ACTION ALTERNATIVE [STATUS QUO]

The No Action Alternative would result in a loss of recreation resources due to long-term erosion of the recreational beach.

## 4.13 NAVIGATION

### 4.13.1 RENOURISHMENT USING THE PROPOSED BORROW AREAS [PREFERRED ALTERNATIVE]

Recreational boaters frequently use this area. Boating in the area of the dredge equipment will be restricted, but only temporarily while the beach is being re-nourished. Once the project has been completed, navigation will resume unhindered.

### 4.13.2 NO ACTION ALTERNATIVE [STATUS QUO]

There will be no affect on navigation with the No Action Alternative.

## 4.14 HISTORIC AND CULTURAL RESOURCES

### 4.14.1 PROPOSED BORROW AREAS (PREFERRED ALTERNATIVE)

#### 4.14.1.1 Shoreline Operations Area

Because historic properties are recorded by the FMSF within the shoreline operations area and could be damaged by sand placement operations, a cultural resource survey was conducted. A terrestrial cultural resources survey of the shoreline operations area resulted in the report, *Sarasota Beach Erosion Control Cultural Resources Survey: Remote Sensing Survey of Four Offshore Borrow Areas, Nearshore and Shoreline Survey, Sarasota County, Florida* (PCI, 2010). The terrestrial survey did not locate any features associated with recorded or new historic properties along the shoreline. USACE has determined no adverse effect to historic properties in the shoreline operations area. The Florida State Historic Preservation Officer (SHPO) concurred with this determination on November 2, 2011 (DHR Project File No. 2011-04514B).

#### 4.14.1.2 Nearshore Operations Area

Since the FMSF recorded terrestrial archeological sites along the shoreline, two of which have inundated components which could be damaged by sand placement operations in the nearshore, a submerged cultural resource survey was conducted. In the nearshore operations area, six targets (magnetic, sidescan and subbottom) indicative of potential historic properties were identified by the survey *Sarasota Beach Erosion Control Cultural Resources Survey:*

*Remote Sensing Survey of Four Offshore Borrow Areas, Nearshore and Shoreline Survey, Sarasota County, Florida* (PCI, 2010). These targets will be buffered with a minimum of a 250 foot buffer zone to avoid impacts by sand placement operations, including anchoring, pipeline and pumpout operations. In the event these targets cannot be avoided, diver identification of the targets will be conducted before construction. USACE has determined no adverse effect to historic properties in the nearshore operations area. The Florida State Historic Preservation Officer (SHPO) concurred with this determination on November 2, 2011 (DHR Project File No. 2011-04514B).

#### 4.14.1.3 Offshore Borrow Area

The submerged remote sensing cultural resources survey, *Sarasota Beach Erosion Control Cultural Resources Survey: Remote Sensing Survey of Four Offshore Borrow Areas, Nearshore and Shoreline Survey, Sarasota County, Florida* (PCI, 2010) has located three potentially significant targets (magnetic and sidescan) indicative of historic properties within and immediately adjacent to the offshore borrow areas. Unrecorded historic properties could be adversely affected by dredging impacts, including drag arm, cutter suction, and spudding (anchoring). There is a potential to adversely affect unrecorded historic properties within and immediately adjacent to the offshore borrow area. Targets that have been identified as potentially significant historic properties will be buffered with a minimum of a 250 foot buffer zone to prevent damage during dredging operations. In the event these targets cannot be avoided, diver identification of the targets will be conducted before construction. USACE has determined no adverse effect to historic properties in the offshore borrow area. The Florida State Historic Preservation Officer (SHPO) concurred with this determination on November 2, 2011 (DHR Project File No. 2011-04514B).

Consultation with the Florida State Historic Preservation Officer (SHPO) and appropriate Federally recognized tribes was initiated July 15, 2010. Consultation with the Florida SHPO, appropriate Federally recognized tribes, and other interested parties is ongoing and will continue until completion of the project.

### 4.14.2 NO ACTION ALTERNATIVE [STATUS QUO]

#### 4.14.2.1 Shoreline Sand Operations area

There would be no effects to historic properties.

#### 4.14.2.2 Nearshore Operations Area

There would be no effects to historic properties.

#### 4.14.2.3 Offshore Borrow Area

There would be no effects to historic properties.

## 4.15 NATIVE AMERICANS

Currently, no portion of the proposed project exists within or adjacent to any Native American properties.

## 4.16 NATURAL OR DEPLETABLE RESOURCES

Sand is a natural and depletable resource. Using sand from the proposed borrow areas will deplete the sand source at those sites. Although sand will eventually return to the offshore areas and be redistributed over nearshore areas, it is unlikely that the redistributed sand will be sufficient to refill the borrow area. This would result in a depletion of resources in the borrow areas.

The erosion rate was recalculated in 2011 to be 81,000 cy/yr. This is an increase from the rate of 37,900 cy/yr, which was used for the 1991 General Design Memorandum and the 1992 Post Authorization Change Report. The increase in the erosion rate calculation suggests that greater fill volumes are required to maintain the authorized project than those estimated in previous NEPA documents for this project. While this will result in a greater volumes taken from the proposed borrow areas, the effects of the action are similar. The sand will be depleted from the borrow areas, but will enter into the nearshore sand transport system.

## 4.17 CUMULATIVE IMPACTS

Cumulative impacts are defined in 40 CFR 1508.7 as those effects that result from:

> *…the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

Table 6 summarizes the impact of such cumulative actions by identifying the past, present, and reasonably foreseeable future condition of the various resources which are directly or indirectly impacted by the proposed action and its alternatives. The table also illustrates the with-project and without-project condition (the difference being the incremental impact of the project). Also illustrated is the future condition with any reasonable alternatives (or range of alternatives).

Table 6. Summary of cumulative effects.

| | Boundary (time and space) | Past (baseline condition) | Present (existing condition) | Future without project | Future with Proposed Action |
|---|---|---|---|---|---|
| Sand Resources | pre- development to 2046, Sarasota County | more abundant | discrete offshore sand resources are becoming depleted with use for beach placement | offshore sand resources will likely be utilized for shore protection activities in other areas on the Gulf Coast of Florida | offshore sand resources will be depleted over the life of this project |
| Protected Species | pre- development to 2046, Sarasota County | more abundant and widespread | individuals becoming increasingly rare; habitat shrinking | individuals are not acutely affected by dredging; however, beach habitat continues to shrink | individuals may be affected by dredging and placement activities; habitat is sustained for life of project |
| Hardgrounds | pre- development to 2046, Sarasota County | scattered, low-relief hardgrounds in offshore and nearshore areas with low benthic diversity | nearshore hardgrounds may have experienced some burial from past nourishment projects; artificial reefs were constructed as mitigation; benthic habitat fluctuates with sand coverage | nearshore hardgrounds previously buried may be increasingly uncovered as beach sand erodes; benthic habitat fluctuates with sand coverage | nearshore hardgrounds are alternatively covered and uncovered by sand; benthic habitat abundance and diversity fluctuates with sand coverage |
| Water quality | pre- development to 2046, Sarasota County | Pristine | increasingly degraded due to anthropogenic actions | no change to present condition | temporary increases in local turbidity; no long-term change to degraded state |

### 4.17.1 SAND RESOURCES

Because sand resources at offshore sites are not replenished very quickly by natural forces, it is anticipated that the use of the borrow areas for the life of this project would result in the depletion of this sand supply. If the borrow areas identified in this EA are not used for this project, the growing demand for sand to use in protecting Florida shorelines suggests that they would be utilized in the future by other stakeholders.

### 4.17.2 PROTECTED SPECIES

Dredge equipment activities could possibly have an impact on manatees, sea turtles, and smalltooth sawfish, but measures will be taken to prevent these impacts and they are not likely to have a cumulative adverse impact on these species. Long term changes in beach characteristics such as sand color, grain size, etc. could affect the use of the beach by nesting sea turtles. Because the proposed project is not likely to affect protected species, with the exception of listed sea turtles should a hopper dredge be utilized, the project would not contribute to adverse cumulative impacts on protected species. Through the ESA Section 7 consultation process, NMFS has determined that utilization of a hopper dredge is not likely to lead to the extinction of listed sea turtles, providing the reasonable and prudent measures and implementing terms and conditions are followed. The project would restore beach used by nesting sea turtles and migratory birds, which may result in a positive effect on the long-term populations of these species. Protected species would be periodically affected in a manner similar to that described in **Section 4.3** of this EA for each nourishment event through the life of the project.

### 4.17.3 HARDGROUNDS

Sediment transport in the nearshore region is natural and continuous. However, cumulative beach nourishment and other anthropogenic activities can increase rates of nearshore sediment transport, exacerbating background levels and causing stress to nearshore benthic communities (Jordan, Banks et al. 2010).

Dredging of the proposed borrow areas to construct the beach fill project would have temporary impacts to the benthic infaunal communities. Exclusionary buffers would be established around documented hardbottom features within the proposed borrow areas to eliminate any direct or indirect impacts to these features from dredging activities. The proposed action would likely have minimal, temporary adverse impacts to Essential Fish Habitat during each nourishment event over the life of the project.

With the replenishment interval expected to be ten years, and the recovery time of the affected benthic community after sand removal anticipated to be within one to two years, the

potential for significant cumulative benthic biological impacts is remote. No significant cumulative impacts to the pelagic environment, including zooplankton, fishes, sea turtles, and marine mammals, are expected from the use of the borrow areas.

### 4.17.4 WATER QUALITY

Water quality impacts from the proposed action would be temporary in nature. There is some concern that sand movement from nourished beaches can cause increased turbidity in nearshore waters during large storm events. However, barrier islands are dynamic systems with constantly shifting sands. Erosion and accretion of sands occurs naturally in these systems, creating localized turbidity during storm events and in the winter months (Jones and Mangun 2001). An increase in fine sediments following a nourishment event can result in increased turbidity causing a press disturbance that could persist for at least three to ten years (Peterson and Bishop 2005).

### 4.17.5 CONCLUSION

Because sand resources appear to be replenished slowly, the proposed project provides an incremental effect on the depletion of offshore sand resources. The proposed project would not have significant adverse effects on protected species, hardground habitats, or water quality due to protective conditions developed in coordination and consultation with the resource agencies. The proposed project would not provide any known incremental result that would contribute to adverse cumulative impacts of these biological resources.

## 4.18 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

### 4.18.1 IRREVERSIBLE

An irreversible commitment of resources is one in which the ability to use and/or enjoy the resource is lost forever. One example of an irreversible commitment might be the mining of a mineral resource. The use of sand from the proposed borrow areas would, for all practical purposes, irreversibly deplete the suitable sand reserves. The sands would not replenish fast enough to be of much value to future nourishment projects.

### 4.18.2 IRRETRIEVABLE

An irretrievable commitment of resources is one in which, due to decisions to manage the resource for another purpose, opportunities to use or enjoy the resource as they presently exist are lost for a period of time. An example of an irretrievable loss might be where a type of vegetation is lost due to road construction. Environmental impacts caused by use of the borrow sites would be small since only a featureless, sandy bottom would be impacted.

## 4.19 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Species of relatively non-motile infaunal invertebrates that inhabit the borrow areas and the placement site will unavoidably be lost during dredging. Those species that are not able to escape the construction area are expected to recolonize after project completion.

## 4.20 LOCAL SHORT-TERM USES AND MAINTENANCE/ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Species of motile epifaunal invertebrates may inhabit the borrow areas and placement site. Motile organisms such as fish, crabs, and sand dwelling organisms should be able to escape the area during construction. Many of those species that are not able to escape the construction area are expected to recolonize after project completion.

## 4.21 COMPATIBILITY WITH FEDERAL, STATE, AND LOCAL OBJECTIVES

The Preferred Alternative is compatible with Federal, state, and local objectives of protecting upland properties while maintaining a natural beach. It also provides the most cost-effective option for meeting these objectives. The No Action Alternative does not meet the Federal, state, and local objectives.

## 4.22 CONFLICTS AND CONTROVERSY

No conflicts or controversy regarding this project have been identified.

## 4.23 UNCERTAIN, UNIQUE, OR UNKNOWN RISKS

The direct site-specific impacts of the Preferred Alternative and the No Action Alternative can be predicted with a high degree of certainty; therefore, uncertainty is minimized. However, predictions of cumulative and indirect impacts are, to a degree, inherently uncertain. This project is based on the best available scientific and engineering information, and although no significant adverse impacts are expected, a low probability is always present. The project design is not unique; thus, it should not create unique risks.

## 4.24 PRECEDENT AND PRINCIPLE FOR FUTURE ACTIONS

This project would not establish a precedent for future actions with significant effects or represent a decision in principle for future considerations.

## 4.25 ENVIRONMENTAL COMMITMENTS

The U.S. Army Corps of Engineers and contractors commit to avoiding, minimizing, or mitigating for adverse effects during construction activities. Adequate buffers were established during the borrow site design to ensure that no impacts to resources occur. Environmental commitments resulting from agency comments, public concern, laws and regulations, and permit

requirements will be summarized in Section 7.4 of the Final EA and included in the contract specifications.

### 4.25.1 PROTECTION OF FISH AND WILDLIFE RESOURCES

The Contractor shall keep construction activities under surveillance, management, and control to minimize interference with, disturbance to, and damage of fish and wildlife. Species that require specific attention along with measures for their protection shall be listed in the Contractor's Environmental Protection Plan prior to the beginning of construction operation.

Although the hardbottom habitat present in the vicinity of the borrow areas is not considered to be "significant" pursuant to the NMFS Gulf of Mexico Regional Biological Opinion, the USACE will maintain 400 foot buffers. This project is not anticipated to result in hardbottom impacts.

### 4.25.2 ENDANGERED SPECIES PROTECTION

The USACE will comply with all requirements of any consultation documents associated with this project provided under the Endangered Species Act from either USFWS or NMFS. USACE will implement the Standard Manatee Construction Protection Specifications to ensure manatee protection.

Buffers will be maintained around significant hardground areas and bottom structures that serve as attractants to sea turtles for foraging or shelter. These buffers and any other turtle safety precautions would be maintained to comply with the NMFS Gulf Regional Biological Opinion (GMRBO) (November 19, 2003; Revision No 1. June 24, 2005; Revision No. 2. January 9, 2007). If a hopper dredge is used for the dredging operations, potential impacts to sea turtles could occur. To minimize the risk to sea turtles, standard sea turtle protection conditions will be implemented such as the use of a state-of-the-art rigid deflector draghead at all times, inflow screens, and/or monitoring of the operation.

### 4.25.3 WATER QUALITY

The USACE Contractor will prevent oil, fuel, or other hazardous substances from entering the air or water. This will be accomplished by design and procedural controls. All wastes and refuse generated by project construction would be removed and properly disposed. The USACE contractor will implement a spill contingency plan for hazardous, toxic, or petroleum material for the borrow area. Compliance with U.S. EPA Vessel General Permits would be ensured, as applicable. The USACE will secure a Section 401 Water Quality Certification prior to construction.

### 4.25.4 DREDGE AND BORROW AREA MONITORING REQUIREMENTS

Electronic positioning information, production, and volume data will be collected. Pre- and post-dredging hydrographic surveys will be conducted to monitor physical changes in the borrow area. The dredge will be equipped with an on-board global positioning system capable of maintaining or recording the location of the dredge, dragarms, and/or cutterhead.

# 5 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

## 5.1 NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

Environmental information on the project has been compiled and this Environmental Assessment has been prepared. Final compliance with the National Environmental Policy Act will occur with the signing of a Finding of No Significant Impact (FONSI). The project is in compliance with this Act.

## 5.2 ENDANGERED SPECIES ACT OF 1973

This project falls under the scope of the USFWS Statewide Programmatic Biological Opinion for Shore Protection Activities along the Coast of Florida (SPBO; issued April 18, 2011, and modified August 22, 2011). The USACE will adhere to the terms and conditions outlined in that document for projects including sand placement from beach nourishment activities primarily for shore protection. The USACE coordinated with USFWS pursuant to the SPBO on November 1, 2011 (see Appendix C), and the USFWS agreed that the project was within the scope of the SPBO in their letter dated June 5, 2014. This project is also within the scope of the USFWS Piping Plover Programmatic Biological Opinion ($P^3$BO) based on the USFWS' June 5, 2014 letter. Through consultation with the USFWS, the USACE revised their "may affect, but is not likely to adversely affect" determination for the piping plover based on portions of the project within Optimal Piping Plover Habitat. The USACE agrees to implement the Conservation Measures, Reasonable and Prudent Measures, and Terms and Conditions outlined in the $P^3$BO.

This project also falls under the scope of the NMFS Gulf of Mexico Regional Biological Opinion (GRBO; issued November 19, 2003, as amended in 2005 and 2007). The GRBO requires a 400-ft buffer surrounding "significant" hardbottoms. For the purposes of the GRBO, a significant hardbottom is "one that, over a horizontal distance of 150 feet, has an average elevation above the sand of 1.5 feet or greater, and has algae growing on it." The study conducted by Dial Cordy and Associates, Inc., in 2011 did not identify any hardground habitats that met this definition. Therefore, the 400-ft buffer requirement is not applicable to hardbottoms proximate to the four borrow areas considered in this EA. However, the borrow areas were designed to include a 400-ft buffer around the identified hardbottoms as a precautionary measure to avoid impacts to these habitats.

This project was fully coordinated under the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531, *et seq.,* P.L. 93-205, and is in full compliance with this Act.

## 5.3 FISH AND WILDLIFE COORDINATION ACT OF 1958

The USACE has and will continue to maintain continuous coordination with the USFWS during all stages of the planning and construction process. A Fish and Wildlife Coordination Act (FWCA) Report was included in the 1992 EA, and the USFWS and USACE coordinated

extensively as part of that activity. Re-nourishment of Venice Beach will take place in the same footprint as covered by the 1992 EA. The USACE consulted with the USFWS pursuant to the FWCA, NEPA, and the ESA. The USFWS provided comments in accordance with the FWCA in their June 5, 2014 letter (included in Appendix C). This project is in full compliance with the Act.

### 5.4 NATIONAL HISTORIC PRESERVATION ACT OF 1966 (INTER ALIA)

Consultation with the Florida State Historic Preservation Officer (SHPO) was initiated July 15, 2010, and is ongoing in accordance with the National Historic Preservation Act of 1966, as amended, and as part of the requirements and consultation processes contained within the NHPA implementing regulations of 36 CFR 800. This project is also in compliance, through ongoing consultation with the SHPO and appropriate Federally recognized tribes, with the Archeological Resources Protection Act (96-95), the Abandoned Shipwreck Act of 1987 (PL 100-298; 43 U.S.C. 2101-2106) American Indian Religious Freedom Act (PL 95-341), Executive Orders (E.O) 11593, 13007, and 13175 and the Presidential Memo of 1994 on Government to Government Relations.

The submerged remote sensing cultural resources survey, Sarasota Beach Erosion Control Cultural Resources Survey: Remote Sensing Survey of Four Offshore Borrow Areas, Nearshore and Shoreline Survey, Sarasota County, Florida, has identified nine potentially significant targets indicative of historic properties in the borrow area and the nearshore project area. These targets will be buffered a minimum of 250 feet to prevent damage during dredging and pump out operations. USACE has determined that the proposed action will have no adverse effect to historic properties included in or eligible for inclusion in the National Register of Historic Places. The Florida State Historic Preservation Officer (SHPO) concurred with this determination on November 2, 2011 (DHR Project File No. 2011-04514B) and found the submitted report complete and sufficient in accordance with Chapter 1A-46, F.A.C. Consultation with the Florida SHPO and appropriate Federally recognized tribes was initiated July 15, 2010, in accordance with the National Historic Preservation Act of 1966, as amended, and as part of the requirements and consultation processes contained within the NHPA implementing regulations of 36 CFR 800. A copy of the letter(s) indicated above has (have) been placed in Appendix C.

### 5.5 CLEAN WATER ACT OF 1972

The FDEP issued a water quality certification to the local sponsor and USACE as co-applicants (Permit #0211217-005-JC) on June 13, 2014. All State water quality standards will be met. A Section 404(b) evaluation is included in this report as Appendix A. The project is in compliance with this Act.

### 5.6 CLEAN AIR ACT OF 1972

No air quality permits are required for this project. The Draft EA was coordinated with U.S. Environmental Protection Agency (EPA), and comments were received from them on May 8,

2014 (see Appendix C). Responses to their comments are included in Section 7.4.1. This project is in compliance with Section 309 of the Act.

## 5.7 COASTAL ZONE MANAGEMENT ACT OF 1972

A federal consistency determination in accordance with 15 CFR 930 Subpart C is included in this report as Appendix B. State consistency review was performed during the coordination of the Draft EA, and the FDEP issued Permit No. 0211217-005-JC on June 13, 2014.

## 5.8 FARMLAND PROTECTION POLICY ACT OF 1981

No prime or unique farmland would be impacted by implementation of this project. This Act is not applicable.

## 5.9 WILD AND SCENIC RIVER ACT OF 1968

No designated Wild and Scenic river reaches would be affected by project related activities. This Act is not applicable.

## 5.10 MARINE MAMMAL PROTECTION ACT OF 1972

The project will not adversely affect marine mammal species. Incorporation of safeguards to protect threatened and endangered species during project construction would also protect marine mammals in the area. Therefore, this project is in compliance with this Act.

## 5.11 ESTUARY PROTECTION ACT OF 1968

No designated estuary would be affected by project activities. This Act is not applicable.

## 5.12 FEDERAL WATER PROJECT RECREATION ACT

The principles of the Federal Water Project Recreation Act, (Public Law 89-72) as amended, have been fulfilled by complying with the recreation cost sharing criteria as outlined in Section 2 (a), paragraph (2). Another area of compliance includes the public beach access requirement on which the renourishment project hinges (Section 1, (b)).

## 5.13 SUBMERGED LANDS ACT OF 1953

The project would occur on submerged lands of the State of Florida. The project was coordinated with the State and is in compliance with the Act.

## 5.14 COASTAL BARRIER RESOURCES ACT AND COASTAL BARRIER IMPROVEMENT ACT OF 1990

The Coastal Barrier Resources Act (CBRA) and the Coastal Barrier Improvement Act of 1990 (CBRIA) limit Federally subsidized development within the CBRA Units to limit the loss of human

life by discouraging development in high risk areas, to reduce wasteful expenditures of Federal resources, and to protect the natural resources associated with coastal barriers. CBRIA provides development goals for undeveloped coastal property held in public ownership, including wildlife refuges, parks, and other lands set aside for conservation (OPAs). These public lands are excluded from most of the CBRIA restrictions, although they are prohibited from receiving Federal Flood Insurance for new structures.

Federal monies can be spent within the CBRA Units for certain activities, including (1) projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats; (2) establishment of navigation aids; (3) projects funded under the Land and Water Conservation Fund Act of 1965; (4) scientific research; (5) assistance for emergency actions essential to saving lives and the protection of property and the public health and safety, if preferred pursuant to the Disaster Relief Emergency Assistance Act and the National Flood Insurance Act and are necessary to alleviate the emergency; (6) maintenance, repair, or reconstruction, but not expansion, of publically owned or publically operated roads, structures, or facilities; (7) nonstructural projects for shoreline stabilization that are designed to mimic, enhance, or restore a natural stabilization system; (8) any use or facility necessary for the exploration, extraction, or transportation of energy resources; (9) maintenance or construction of improvements of existing federal navigation channels, including the disposal of dredge materials related to such projects; and (10) military activities essential to national security.

There are two CBRIA OPAs in the project vicinity (see Figure 6 and Table 5). The proposed project does not include the construction of structures that would require Federal Flood Insurance in any areas designated as “otherwise protected areas” pursuant to the CBRIA; therefore, Federal expenditures for the proposed project are not restricted in these areas. The activities proposed in the remainder of the CBRA units in the project area are consistent with the intent of the Act. The USACE coordinated with the USFWS concerning the CBRIA units in the project area on September 19, 2011, and the USFWS confirmed that the project is in compliance with the Act in their letter dated June 5, 2014 (see Appendix C).

### 5.15 RIVERS AND HARBORS ACT OF 1899

The proposed work would not obstruct navigable waters of the United States. The proposed action was subject to the public notice, public hearing, and other evaluations normally conducted for activities subject to the Act. The project is in full compliance.

### 5.16 ANADROMOUS FISH CONSERVATION ACT

Anadromous fish species would not be affected. The Draft EA was coordinated with the National Marine Fisheries Service. This project is in compliance with the Act.

## 5.17 MIGRATORY BIRD TREATY ACT AND MIGRATORY BIRD CONSERVATION ACT

Migratory birds would be minimally affected by dredging in the borrow areas. The USACE will include our standard migratory bird protection requirements in the project plans and specifications and will require the contractor to abide by those requirements. Disposal activities at the beach placement site will be monitored at dawn or dusk daily during the nesting season to protect nesting migratory birds. If nesting activities occur within the construction area, appropriate buffers will be placed around nests to ensure their protection (see also Sections 3.3, 4.3, 5.2, and 5.3 of this document). The project is in compliance with these Acts.

## 5.18 MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT

The term "dumping" as defined in the Act (3[33 U.S.C. 1402](f)) does not apply to the disposal of material for beach nourishment or to the placement of material for a purpose other than disposal (i.e. placement of rock material as an artificial reef or the construction of artificial reefs as mitigation). Therefore, the Marine Protection, Research and Sanctuaries Act does not apply to this project. The disposal activities addressed in this EA have been evaluated under Section 404 of the Clean Water Act (see Appendix A).

## 5.19 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

This Act requires preparation of an EFH Assessment and coordination with NMFS. This NEPA document serves as this assessment, and includes these required elements: (1) a description of the proposed action (see Sections 1 and 2.1.1); (2) analysis of individual and cumulative effects on EFH, Federally managed fisheries, and associated species such as major prey species, including affected life history stages (see Section 3.6); (3) the District's view regarding effects (see Section 4.5); and (4) proposed mitigation (see Sections 4.5 and 4.25.1).

The EA was coordinated with NMFS during the public comment period. NMFS staff expressed concern during telephone conversations that it may not be appropriate to apply principles from the NMFS GRBO (such as the 400-foot buffer around hardbottom resources) to EFH-related issues, but noted that they did not have the appropriate staffing levels to provide formal comments on this project at this time (D. Dale, personal communication, June 19, 2014; M. Sramek, personal communication, June 30, 2014). Additionally, NMFS staff noted that they are neither opposed to, nor supportive of, the proposed activities (M. Sramek, personal communication, June 30, 2014). Written correspondences with NMFS are included in Appendix C.

## 5.20 UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT OF 1970.

The purpose of PL 91-646 is to ensure that owners of real property to be acquired for Federal and Federally assisted projects are treated fairly and consistently and that persons displaced as

a direct result of such acquisition will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole.

This project does not involve any real property acquisition or displacement of property owners or tenants. Therefore, this Act is not relevant to this project.

### 5.21 E.O. 11990, PROTECTION OF WETLANDS

No wetlands would be affected by project activities. This project is in compliance with the goals of this Executive Order.

### 5.22 E.O. 11988, FLOODPLAIN MANAGEMENT

To comply with EO 11988, the policy of USACE is to formulate projects that, to the extent possible, avoid or minimize adverse effects associated with use of the floodplain and avoid inducing development in the floodplain unless there is no practicable alternative. No activities associated with this project are located within a floodplain, which is defined by EO 11988 as an "area which has a one percent or greater chance of flooding in any given year". The project is located within the Coastal High Hazard Area (CHHA), as defined by EO 11988 as an "area subject to inundation by one-percent-annual chance of flood, extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms." The project shoreline is already completely developed and further development is not possible.

Achieving HSDR project objectives generally cannot avoid locating actions in CHHA's. The primary objective of the Sarasota County (Venice Segment), Florida HSDR is to reduce infrastructure damage and there is no practicable alternative that could be located outside of the CHHA that would achieve this objective. In fact, the need for protection of the infrastructure located along this CHHA shoreline is the reason it was authorized by Congress. The 1984 BEC Feasibility Study evaluated relocation of structures as a preliminary alternative and found that most structures within the area cannot be economically or physically moved from the area and would have to be abandoned with new structures provided for the existing residents.

The Sarasota County Floodplain Management Plan (SCFMP) 2009 Update provides a comprehensive overview of best management practices in the County that impact the quality of flood protection for its citizens. The SCFMP includes participation in two voluntary Federal programs and implementation of several preventative plans, discussed in the following paragraphs.

Sarasota County participates in two voluntary Federal programs to reduce flood loss and risks to the community, the National Flood Insurance Program (NFIP) and the Community Rating System (CRS) program, both administered by the Federal Emergency Management Agency

(FEMA). The National Flood Insurance Program (NFIP) was approved by Congress in 1968 and was formed to provide flood insurance that was previously unavailable by any private insurers to community residents that would at minimum, follow the Federal guidelines to prevent flood loss. These guidelines are adopted in the 44 Code of Federal Regulations (CFR) and locally in the County Floodplain Damage Protection Ordinance 2009-063 and Land Development Regulations. Sarasota County first adopted the guidelines and the flood risk studies and maps provided in December 1971. In 1992, Sarasota County also became accepted in the CRS program which provides citizens with information as to the quality of flood protection provided by the County and provides for discounts on Federal flood insurance.

In addition, Sarasota County has several preventative plans in place:

- The Sarasota County Comprehensive Plan provides the policy direction used in framing land use to support the NFIP and CRS programs and provisions to address the problems of development in the floodplain and protection of natural drainage features.
- Regulations—Flood Damage Protection Ordinance No. 2009-060 as amended continues to be enforced to ensure proper compliance for the required NFIP and CRS higher regulations.
- Land Development Regulations Ordinance No. 81-12—Surface Water Planning and Regulatory staff are responsible for recommending and monitoring:
  - Other development regulations for 'land uses larger than five acres or 50 structures" and other requirements of the 44 CFR and higher local regulations such as "no adverse impact"
  - Run-off and stormwater that include higher regulations for peak flows and no adverse impacts from development.
- Sarasota County also adheres to the FDEP imposed Coastal Construction Control Line (CCCL) established primarily to prevent beach erosion and has an elevation requirement currently of 19.4 ft.
- The Gulf Coast Setback Line established in 1978, Ordinance No. 2007-023, as amended, was established to preserve and protect the County's coastal barrier island beach and dune system from imprudent construction which would jeopardize the stability of the said system, accelerate erosion, provide inadequate protection to upland properties and endanger adjacent properties.
- The Earth Moving Ordinance No. 2007-091, continues to provide for control where earth may be disturbed and cause or create potential flood hazards to others.
- Drainage System Maintenance—Stormwater Utilities staff provide for a portion of inspections and maintenance monitoring of ponds or other stormwater facilities within the private sector that relate to stormwater utility assessments.
- Flood Risk Maps--Sarasota County uses the SLOSH models for storm surge data and evacuation data as it relates to hurricanes. Citizens can use the website, or maps to identify where a Category 1, 2, 3, 4 or 5 storm surge may impact Sarasota County. The other risk of flooding involves the one to three foot waves that can occur any time in velocity areas along the coastline or intense amounts of rainfall that can cause ponding or sheet flow (flash flooding) that threaten structures. Sarasota County currently has two sources of

information to use for identifying the one percent chance of flooding. The first are the 49 Flood Insurance Rate Map (FIRMs) panels adopted locally and administered by FEMA. The second source of identifying the one percent annual chance of flooding is local flood studies.

- Level of Service—Sarasota County works closely with Southwest Florida Water Management District (SWFWMD) and serves as the Cooperative Technical Partner for flood risk mapping (digital flood map updates) and locally adopted flood studies for eventual inclusion.
- The goal of the Sarasota County Repetitive Loss Plan is to reduce the number of repetitive loss properties within the County.
- The Gulf of Mexico Watershed spans a total of 3,242.9 square miles, 14% of which lies within Sarasota County. The area within the County, totaling 451.7 square miles, is the only portion of the watershed for which information is available on the Sarasota County Water Atlas.
- Public Outreach Strategy Plan.

For the reasons stated above, the project is in compliance with EO 11988, Floodplain Management.

### 5.23 E.O. 12898, ENVIRONMENTAL JUSTICE

This action would not result in adverse human health or environmental effects that would be disproportionately higher towards minority or low-income populations. The activities will not affect subsistence consumption of fish and wildlife. This project is in compliance with the goals of this Executive Order.

### 5.24 E.O. 13089, CORAL REEF PROTECTION

This EO refers to "those species, habitats, and other natural resources associated with coral reefs." This project may affect U.S. coral reef ecosystems as defined by this EO. The borrow areas were designed with 400-foot buffers around all hardbottom areas to prevent impacts (see Section 4.25.1). Precautions would be implemented during construction to minimize impacts.

### 5.25 E.O. 13112, INVASIVE SPECIES

The proposed action will require the mobilization of dredge equipment from other geographical regions. Dredge equipment has the potential to transport species from one region to another, introducing them to new habitats where they are able to out-compete native species. The benefits of the proposed project outweigh the risks associated with the very slight potential for introducing non-native species to this region. The action takes place solely in ocean waters, minimizing risk to more sheltered coastal habitats.

The Draft EA was coordinated with the Invasive Species Council, and is consistent with the Florida Invasive Species Strategic Plan.

### 5.26 E.O. 13186, MIGRATORY BIRDS

This Executive Order requires, among other things, a Memorandum of Understanding (MOU) between the Federal Agency and the U.S. Fish and Wildlife Service concerning migratory birds. No final MOU exists between USACE and the USFWS pursuant to this Executive Order; however, there is an MOU between the Department of Defense and the USFWS, and there is a draft MOU between USACE and the USFWS. Neither the Department of Defense MOU nor the USACE Draft MOU clearly address migratory birds on lands not owned or controlled by USACE, as is the case with the project area. For many USACE civil works projects, the real estate interests are provided by the non-Federal sponsor. Control and ownership of the project lands remain with a non-Federal interest. USACE will include our standard migratory bird protection requirements in the project plans and specifications and will require the contractor to abide by those requirements. Measures to avoid the destruction of migratory birds and their eggs or hatchlings are described in a section above on the Migratory Bird Treaty Act.

### 5.27 E.O. 13045, PROTECTION OF CHILDREN

A growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health risks and safety risks. These risks arise because: children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves. This Executive Order requires Federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children.

This project will not negatively impact the food supplies, drinking water, or air quality to which children are exposed. The construction site will be hazardous to children, but the project specifications include a number of protocols intended to designate the work area and prevent non-authorized personnel from entering the site. These protocols include the installation of orange safety fencing and danger signs, functioning back-up warning signals on all construction equipment, and providing site security when on-site construction activities have temporarily ceased. The project specifications also require Contractors to adhere to the provisions outlined in Engineering Manual 385-1-1 (September 15, 2008).

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# 6 LIST OF PREPARERS

## 6.1 PREPARERS

| | |
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| Aubree Gallaher Hershorin, Biologist | USACE |
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| | |
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# 7 PUBLIC INVOLVEMENT

## 7.1 SCOPING AND DRAFT EA

The draft EA and Finding of No Significant Impact (FONSI) were made available to the public by Notice of Availability dated April 15, 2014 (Appendix C).

## 7.2 AGENCY COORDINATION

Agency coordination letters and pertinent correspondence are found in Appendix C. The mailing list for the Notice of Availability is included as Appendix D, and the Draft EA was posted to the USACE website at http://www.saj.usace.army.mil/Divisions/Planning/Branches/Environmental/DocsNotices_OnLine_SarasotaCo.htm.

## 7.3 LIST OF RECIPIENTS

The Notice of Availability of the Draft EA was mailed to the parties listed on the mailing list, included as Appendix D.

## 7.4 COMMENTS RECEIVED AND RESPONSES

The following comments were received as a result of the public review period.

### 7.4.1 ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) provided comments via email dated May 8, 2014. This correspondence is included in Appendix C, Pertinent Correspondence. Each comment and the USACE response are provided below.

1. *On page 7, Description of Alternatives Section, there is no explanation or description of the previously authorized project and it is difficult for the reader to understand how the current list of alternatives (to include the preferred alternative) relates to the authorized project. EPA recommends that the Corps better describe the authorized project to include designs and photographs. Additionally, EPA recommends the Corps better explain in the Final EA how the preferred alternative relates to the original authorized project.*

   RESPONSE: The borrow areas that were part of the authorized project are no longer usable for the project. Additional borrow areas were evaluated in 2005, and the current alternatives include another group of new borrow areas. The beach placement location has not changed from the *1992 Sarasota County, Florida Shore Protection Project Post Authorization Change* (PAC) *Report* and the 1992 *Final Environmental Assessment* (FEA). Language to clarify this information is included in Sections 1.1, 1.2, and 2.1.1.

2. *On page 27, 4.3 Threatened and Endangered Species section, the Corps has made a "may affect, but is not likely to adversely affect" determination for the Florida Manatee (page 28) and Piping Plover (page 29). However, the Corps does not discuss whether the National Marine Fisheries Service (NMFS)(for Florida Manatee) and U.S. Fish and Wildlife Service (USFWS) (for Piping Plover) has concurred with this determination. EPA recommends that the Corps discuss NMFS and USFWS recommendations regarding this determination within the Final EA.*

   RESPONSE: At the time the Draft EA was released for public comment, NMFS and USFWS had not provided their final comments. The project will utilize the USFWS programmatic biological opinions for project impacts to sea turtles and the wintering piping plover. The USFWS concurred with USACE's "may affect, but is not likely to adversely affect" determination for the Florida manatee. A "may affect" determination for the piping plover was made during consultation with USFWS, and USACE has agreed to implement the appropriate Terms and Conditions in the USFWS' May 22, 2013 Piping Plover Programmatic Biological Opinion. Please see Sections 4.3 and 5.2, as wells as Appendix C, for additional information.

3. *On page 30, 4.6 Essential Fish Habitat Assessment section, the Corps states, "Although the hard bottom habitat present in the vicinity of the borrow areas is not considered to be 'significant' pursuant to the NMFS Gulf of Mexico Regional Biological Opinion, the USACE will maintain 400 foot buffers." However, in Appendix C (Pertinent Correspondences) NFMS responds to the Corps in a June 2, 2004 letter that the Corps "concluded that dredging of these borrow areas will not have an adverse effect on sea turtles or other resources in the areas, and intend to use a 200-foot buffer in the Venice sand mining efforts." NFMS refers to a Corps May 24, 2004 letter that is omitted from Appendix C. Does the Corps intend to use a 400 foot (as stated in the EA) or 200 foot buffer (as stated in the NFMS letter)? Is there current correspondence with the NFMS that recommends the 400 foot buffer? EPA requests that the Corps in the Final EA clarify the rational for the 400 foot buffers.*

   RESPONSE: Please note that the NMFS letter dated June 2, 2004, was related to the previous 2005 Environmental Assessment (EA) and referenced different borrow areas that were analyzed as part of the 2005 EA. Since 2004, the NMFS Gulf Regional Biological Opinion (GRBO) was issued, and it requires a 400-foot buffer around "significant" hardbottom habitats. "Significant hardbottom habitats" are defined for the purposes of the GRBO as an area "that, over a horizontal distance of 150 feet, has an average elevation above the sand of 1.5 feet or greater, and has algae growing on it [emphasis in the original]." The hardbottoms identified in the proximity of the borrow areas did not meet this definition of significant hardbottom habitats.

   USACE consulted with NMFS on the currently proposed borrow areas during the public commenting period for this EA (see Appendix C). NMFS staff expressed concern during

telephone conversations that it may not be appropriate to apply principles from the NMFS GRBO (such as the 400-foot buffer around hardbottom resources) to EFH-related issues, as the GRBO was intended to protect resources important to species listed under the Endangered Species Act. However, NMFS staff did not state that the 400-foot buffers were inadequate; they simply stated that they did not have the staffing levels at this time to review the project and to provide formal comments (D. Dale, personal communication, June 19, 2014; M. Sramek, personal communication, June 30, 2014). Given the low relief and low species abundance/diversity of the hardbottoms in the vicinity of the borrow areas, USACE considers a 400-foot buffer to be appropriate.

To avoid confusion between the two separate consultations with NMFS, the NMFS letter dated June 2, 2004, was removed from Appendix C. It is included in the 2005 EA should readers want to reference the NMFS consultation related to that action.

4. *In Appendix C, Pertinent Correspondences, in the NFMS correspondence dated May 9, 2003, NFMS agrees that the project impacts to Essential Fish Habitat (EFH) would be minimal. Since this correspondence is over 10 years old, has the Corps more recently coordinated with NMFS regarding EFH? If the Corps has not recently coordinated with NMFS regarding EFH, EPA recommends that the Corps coordinate with NMFS and document this coordination within the Final EA. If the Corps has more recently coordinated with NMFS, then EPA recommends this be better explained and documented within the Final EA.*

   RESPONSE: USACE coordinated with NMFS during and following the public comment period. Please see the written correspondences included in Appendix C, as well as Section 5.19 and the response to Question 3 (above) that document personal communications with NMFS staff.

5. *On page 44, 5.3 Fish and Wildlife Coordination Act of 1958 section, the Corps states, "The USACE consulted with the USFWS pursuant to FWCA, NEPA and the ESA. This project is in full compliance." However, the Corps does not reference or cite any correspondence that indicates that they have consulted with the USFWS regarding the FWCA. Has the Corps coordinated with the USFWS regarding any possible changes since the development of the 1992 EA's FWCA report? If the Corps has not coordinated with USFWS regarding the latest proposed project, then EPA recommends the Corps coordinate with the USFWS to ensure the 1992 EA's FWCA report is sufficient to cover the changes outlined in the preferred alternative. If the Corps has coordinated with the USFWS to ensure the 1992 EA's FWCA report are still valid and current, the EPA recommends that the Corps cite this coordination and better explain the USFWS's thoughts and opinions regarding the use of the 1992 EA's FWCA.*

   RESPONSE: The USFWS considered impacts to other fish and wildlife resources resulting from the proposed project in accordance with the FWCA of 1958, as amended, during their

most recent review of the project and of the new borrow areas. In their letter dated June 5, 2014, USFWS acknowledged that no additional benthic impacts are anticipated. They stated that mitigation beyond what was previously conducted for the project was not warranted, and recommended that USACE continue to consult with NOAA Fisheries to assess impacts to hardbottom reef habitat and seagrasses within the borrow area dredge templates, sand placement fill template, and shoreline downdrift area. This letter is included in Appendix C.

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# 9 INDEX

# APPENDIX A - SECTION 404(B) EVALUATION

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**SECTION 404(b) EVALUATION**

**BEACH NOURISHMENT**
**HURRICANE AND STORM DAMAGE REDUCTION PROJECT**
**VENICE BEACH, SARASOTA COUNTY, FLORIDA**

I. Project Description

a. Location. The project is located on the west coast of Florida, approximately 55 miles south of Tampa. It is situated on Manasota Key, a barrier island in Sarasota County separated from the mainland by tidal inlets. The Florida Department of Environmental Protection (FDEP) reference monuments are R-116 to R-133, for a total project length of 3.2 miles.

b. General Description. The project proposes to utilize sand from one of four offshore borrow areas for renourishment of critically eroded beach.

c. Authority and Purpose. Local interests in Sarasota County have explored comprehensive solutions to shoreline erosion problems since the early 1960s. The U.S. Senate and the U.S. House of Representatives adopted resolutions in 1964 requesting the Secretary of the Army, acting through the Chief of Engineers, to survey the Sarasota County shoreline and adjacent shorelines in support of beach erosion control, hurricane protection, and related efforts. In 1984, the *Beach Erosion Control Study for Sarasota County, Florida, with Environmental Impact Statement* recommended a plan for constructing a protective beach and/or periodic nourishment along 2.4 miles of shoreline on Longboat Key, and initial construction of 4.0 miles with periodic nourishment of 5.6 miles of shoreline on Manasota Key, in the vicinity of Venice, Florida. Congress authorized this plan in the Water Resources Development Act (WRDA) of 1986 at an estimated total project cost of $30,100,000. The project is authorized for 50 years of federal participation from the completion of the initial construction in 1996 through 2046. The cost apportionment for the project included Section 111 considerations for erosion resulting from the Caseys Pass Federal Navigation project constructed in 1937.

The project was modified in 1991/1992 to reduce the length of shoreline to 3.2 miles of shoreline on Manasota Key, to re-evaluate the volume requirements, and to address physical changes in the placement area. These changes are described in the *1992 Sarasota County, Florida Shore Protection Project Post Authorization Change* (PAC) *Report*. The segment of the project referred to as Brohard Beach (R-129 to R-133) was only barely justified with a 20 foot berm width because of protection provided for the wastewater treatment plant located between R-132 and R-133.

The wastewater treatment facility was removed in 2005 and in 2010 a public park used for recreation opened up in its place. The Brohard segment was previously incrementally justified based upon the wastewater treatment plant. Because this expensive piece of infrastructure has been removed from the project area, the southern segment of the project from R-129 to R-133 is no longer incrementally justified based on HSDR purposes. Engineering Regulation (ER) 1105-2-100 requires that each reach of a project be incrementally justified. The non-Federal sponsor desires the Brohard segment remain in future nourishments at 100 percent non-Federal cost. The project footprint and beach fill design from R-116 to R-133 remain the same as previously authorized.

This project is now referred to as the Hurricane and Storm Damage Reduction (HSDR) Project. The non-Federal sponsor for this project is the City of Venice.

d. General Description of Dredged or Fill Material.

(1) *General Characteristics of Material.* The excavated material to be placed on the beach is sandy material that meets the requirements outlined in F.A.C. 62B-41.007(2)(j).

(2) *Quantity of Material.* Future nourishments are anticipated to require 810,000 cubic yards of sand to be placed on the beach every ten years to maintain the authorized profile.

(3) *Source of Material.* The material will be dredged from one of four borrow areas shown in Figure 1.

e. Description of the Proposed Discharge Site(s).

*(1) Location.* The material will be placed on the beach using a pipeline system.

*(2) Size. The* material will be placed along approximately 3.2 miles of beach.

*(3) Type of Site*. The material will be placed directly on the beach and manipulated with bulldozers and other machinery to establish the designed profile.

*(4) Type(s) of Habitat.* Beach habitat with sandy substrate.

*(5) Timing and Duration of Discharge.* Beach placement could occur year-round, at any time of day.

f. Description of Disposal Method. Due to the distance of the borrow areas from the beach, a hopper dredge is the most likely dredge type to construct this project. However, a cutter-suction or mechanical dredge using a barge/scow with pump-out

capabilities could also effectively conduct this work. The material would be piped from the nearshore area onto the beach.

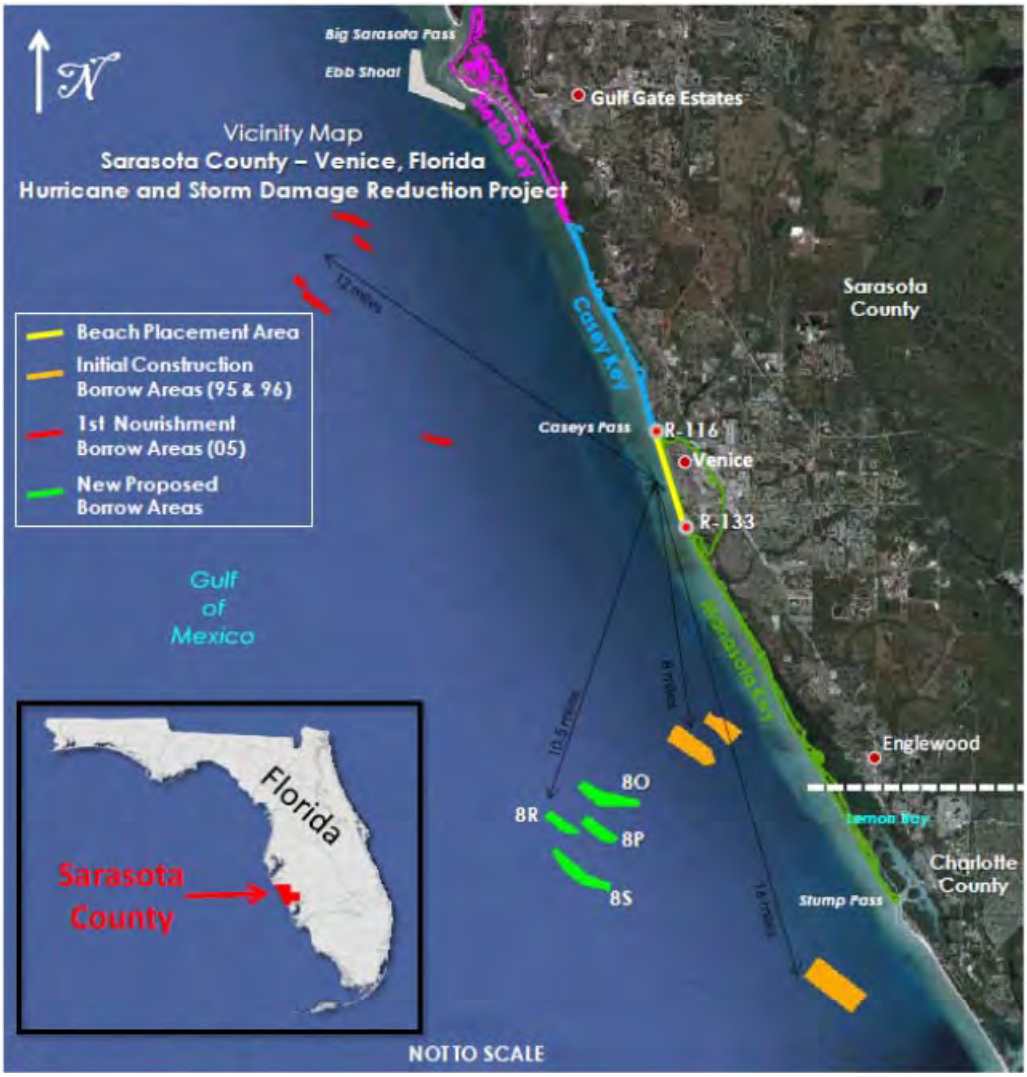


Figure 1. Project Location Map (Source: Google Aerial, 2010).

II. Factual Determinations

a. Physical Substrate Determinations.

*(1) Substrate Elevation and Slope.* The sea floor at the borrow areas is characterized by the presence of undulating topography with a large sandy shoal rising to an elevation of about 8 to 11 feet above the surrounding terrain (see Figure 3). Depths at the borrow areas range from -27 feet to -52 feet MSL.

*(2) Sediment Type.* The material within the proposed dredge limits generally consists of poorly-graded, fine to medium-grained quartz sand with an average visual shell content of 36.4 percent. The mean grain size is 0.43 mm with a standard deviation of 1.14. All samples within the area contain less than 5 percent silt with an average silt content of 2.01 percent. Based on the above criteria, the borrow area material is suitable for beach placement based on the Florida "Sand Rule" (F.A.C. 62B-41.007(j)) which requires beach compatible fill to contain less than 5 percent silt.

*(3) Dredged/Fill Material Movement.* The dredged material placed on the beach will become part of the littoral drift system, moving offshore and onshore with seasonal wave action, and also southward as part of the longshore sediment transport processes.

(4) *Physical Effects on Benthos*. Benthic organisms would be temporarily impacted by beach placement operations; however, they should begin to recolonize in less than one year. Full recovery is anticipated over several years.

(5) *Actions Taken to Minimize Impacts.* Beach placement activities will be monitored to ensure that turbidity levels do not exceed allowable levels, and that sand is constrained to the project profile. Post-construction monitoring will also be conducted to survey for compaction and performance.

b. Water Circulation, Fluctuation, and Salinity Determinations.

(1) *Water Column Effects*.
- (i) Salinity: No significant effect.
- (ii) Water Chemistry: No significant effect.
- (iii) Clarity: A temporary increase in turbidity would reduce water clarity in the nearshore area.
- (iv) Color: Temporary turbidity would alter the water color.
- (v) Odor: No significant effect.
- (vi) Taste: No significant effect.
- (vii) Dissolved Gas Levels: No significant effect.
- (viii) Nutrients: No significant effect.
- (ix) Eutrophication: No significant effect.

*(2) Current Flow and Water Circulation.*
- (i) Current Patterns and Flow. Currents in the project area are primarily tidal. The project is not anticipated to alter tidal patterns or local water circulation.
- (ii) Velocity. No significant effect.
- (iii) Stratification. No significant effect.
- (iv) Hydrologic Regime. No significant effect.

(3) *Normal Water Level Fluctuations.* Tides in the project area are semi-diurnal with varying levels throughout the year. The project would not affect normal water level fluctuations.

(4) *Salinity Gradients*. The project would not affect salinity gradients.

(5) *Actions That Will Be Taken to Minimize Impacts*. As previous mentioned, turbidity will be monitored during project construction. No other significant effects to water circulation, fluctuation, or salinity are anticipated to occur.

c. Suspended Particulate/Turbidity Determinations.

(1) *Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site.* There will be a temporary increase in suspended particulates and turbidity levels in the vicinity of the disposal site.

(2) *Effects (degree and duration) on Chemical and Physical Properties of the Water Column*.

(i) Light Penetration. Light penetration would temporarily decrease during beach placement operations.
(ii) Dissolved Oxygen. No significant effect.
(iii) Toxic Metals and Organics. No significant effect.
(iv) Pathogens. No significant effect.
(v) Aesthetics. Turbidity would temporarily decrease the aesthetic value of the nearshore waters. The turbidity is expected to return to pre-construction levels shortly after construction is complete.

(3) *Effects on Biota*

(i) Primary Production, Photosynthesis. No significant effect.
(ii) Suspension/Filter Feeders. Turbidity would temporarily affect filter feeders during construction.
(iii) Sight Feeders. Turbidity would temporarily affect sight feeders during construction.

(4) *Actions taken to Minimize Impacts*. As previous mentioned, turbidity will be monitored during project construction to ensure that levels do not exceed authorized levels. Should turbidity levels exceed authorized levels, construction activities would cease until turbidity could be maintained at appropriate levels.

d. Contaminant Determinations. Levels of contaminants are not expected to have a significant impact on plankton, benthos, nekton, or the aquatic food web.

e. Aquatic Ecosystem and Organism Determinations.

*(1) Effects on Plankton.* No significant effect.

*(2) Effects on Benthos.* Benthic invertebrates would be affected by the project, but they would be expected to begin recovery within one year.

*(3) Effects on Nekton.* No significant effect.

*(4) Effects on Aquatic Food Web.* Although benthic invertebrates would be affected, significant affects on the aquatic food web are not anticipated.

*(5) Effects on Special Aquatic Sites.*

(i) Sanctuaries and Refuges. The project area is located south of the Little Sarasota Bay Manatee Refuge. No other sanctuaries or refuges are known to be found in the project area.
(ii) Wetlands. No significant effect.
(iii) Mud Flats. No significant effect.
(iv) Vegetated Shallows. No significant effect.
(v) Coral Reefs. There are no coral reefs located in the project area. Impacts to nearshore hardbottom habitats were mitigated through the construction of artificial reefs as part of previous nourishments of this project.
(vi) Riffle and Pool Complexes. No significant effect.

*(6) Threatened and Endangered Species.* The project would not have a significant impact on threatened and endangered species. Standard protection measures for in-water work would be implemented to protect listed species in the project area, including manatees, sea turtles, and smalltooth sawfish. Measures to protect the wintering piping plover would also be implemented.

*(7) Other Wildlife.* Other wildlife would not be able to utilize the beach during project construction, which could cause a temporary adverse impact.

*(8) Actions to Minimize Impacts.* Measures will be taken to avoid and/or minimize impacts to protected species and other wildlife. Please see **Sections 4.3** and **4.4** of the Environmental Assessment for additional information.

f. Proposed Disposal Site Determinations.

(1) *Mixing Zone Determination.* The mixing zone determination will be in accordance with the Water Quality Certification issued for this project.

(2) *Determination of Compliance with Applicable Water Quality Standards.* The work will be conducted in accordance with the Water Quality Certification issued for this project.

*(3) Potential Effects on Human Use Characteristic.*

(i) Municipal and Private Water Supply. No effects are anticipated.

(ii) Recreational and Commercial Fisheries. No significant effect.

(iii) Water Related Recreation. Temporary impacts to water related recreation would occur during project construction.

(iv) Aesthetics. The aesthetic appeal of the beach and nearshore area would be impacted during project construction.

(v) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. No parks, national or historic monuments, national seashores, wilderness areas, research sites, or similar preserves would be affected by the project.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. The cumulative effect of the project would be a beneficial, long-term increase in sediment to the littoral drift system. However, sediment may enter the nearshore area and cause sedimentation on hardbottom communities. These communities are typically ephemeral communities that experience sedimentation on a seasonal basis, and significant impacts are not anticipated.

h. Determination of Secondary Effects on the Aquatic Ecosystem. Adding sand to the system at the project location will provide a source of sand for downdrift beaches, potentially decreasing erosion rates there.

III. Findings of Compliance or Non-Compliance With the Restrictions on Discharge

a. Adaptation of the Section 404(b)(l) Guidelines to this Evaluation. No significant adaptations of the guidelines were made relative to this evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem. Twenty-four alternatives were initially developed for consideration as part of the 1984 Environmental Impact Statement. Of these alternatives (11 nonstructural, 12 structural, and No Action), six alternatives (one nonstructural, four structural, and No Action) were retained for further detailed study in that document. The current discharge site was identified as the Preferred Alternative as a result of that analysis.

The current EA evaluates the proposed discharge site and the no action alternative. The no action alternative does not meet project needs, and would allow continued erosion of the shoreline.

c. Compliance with Applicable State Water Quality Standards. Beach placement activities would be performed in compliance with the Water Quality Certification issued by the State of Florida.

d. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Water Act. The discharge operation would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

e. Compliance with Endangered Species Act of 1973 (ESA). The project has been coordinated with both the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. The proposed project would not jeopardize the continued existence of any species listed under the ESA, nor would it result in the destruction or adverse modification of any critical habitat as specified by the Act.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972. There are no national marine sanctuaries located in the project area; therefore, this Act does not apply to this project.

g. Evaluation of Extent of Degradation of the Waters of the United States

*(1) Significant Adverse Effects on Human Health and Welfare*

(i) Municipal and Private Water Supplies. No significant effect.

(ii) Recreation and Commercial Fisheries. Recreational and commercial fishing interests would not be able to use the area surrounding the borrow sites or the nearshore area for fishing during project construction. No other impact is anticipated.

(iii) Plankton. No substantial adverse effects are anticipated.

(iv) Fish. No substantial adverse effects are anticipated.

(v) Shellfish. No substantial adverse effects are anticipated.

(vi) Wildlife. No substantial adverse effects are anticipated.

(vii) Special Aquatic Sites. No substantial adverse effects are anticipated.

*(2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems.* Most impacts would not be significant, and would be short-term in duration.

(3) *Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity and Stability.* No significant adverse effects on aquatic ecosystem diversity, productivity and stability are anticipated.

*(4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values.* Recreation and aesthetic values would be temporarily disrupted due to construction activity, but significant effects are not anticipated.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem. Appropriate and practicable steps will be taken during project construction to minimize the potential adverse impacts of the discharge on the aquatic ecosystem. As was previously mentioned, turbidity monitoring will occur during project construction to ensure recommended levels are not exceeded. For more information, see **Section 4** of the EA.

i. On the basis of the guidelines, the proposed disposal site(s) for the discharge of dredged or fill material is specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

**FINDING OF COMPLIANCE**
**FOR**
**VENICE BEACH HURRICANE AND STORM DAMAGE REDUCTION PROJECT**
**SARASOTA COUNTY, FLORIDA**

1. No significant adaptations of the guidelines were made relative to this evaluation.

2. Four borrow areas are identified as sand sources for this project. Neither the dredging of sand from these four sites, nor the placement of sand on the beach, will have a significant effect on water levels, fluctuation, circulation, or currents.

3. The planned disposal of dredged material would not violate any applicable State water quality standards with the possible exception of turbidity. Turbidity standards would be monitored pursuant to the Water Quality Certification issued by the State of Florida. If a violation is observed, disposal operations will cease until turbidity levels can be maintained at authorized levels. The disposal operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

4. The proposed discharge of sandy material on the beach will not harm any endangered species or their critical habitat.

5. The proposed disposal of dredged material will not result in significant adverse effects to human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife will not be significantly adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic and economic values will not occur.

6. The proposed project has been determined to be consistent to the maximum extent practicable with the Florida Coastal Zone Management Program.

7. Appropriate steps will be taken to minimize potential adverse impacts of the discharge on aquatic systems.

8. On the basis of these guidelines, the proposed disposal site for the discharge of dredged material is specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem.

# APPENDIX B - COASTAL ZONE MANAGEMENT CONSISTENCY

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**FLORIDA COASTAL ZONE MANAGEMENT PROGRAM**
**FEDERAL CONSISTENCY EVALUATION PROCEDURES**

**BEACH NOURISHMENT**
**HURRICANE AND STORM DAMAGE REDUCTION PROJECT**
**VENICE BEACH, SARASOTA COUNTY, FLORIDA**

**Enforceable Policy.** Florida State Statues considered "enforceable policy" under the Coastal Zone Management Act (www.dep.state.fl.us/cmp/federal/24_statutes.htm ).

**Applicability of the Coastal Zone Management Act.**

The following table summarizes the process and procedures under the Coastal Zone Management Act for Federal Actions and for non-Federal Applicants*.

| Item | Non-Federal Applicant (15 CFR 930, subpart D) | Federal Action (15 CFR 930, subpart C) |
|---|---|---|
| Enforceable Policies | Reviewed and approved by NOAA (in FL www.dep.state.fl.us/cmp/federal/24_statutes.htm ) | Same |
| Effects Test | Direct, Indirect (cumulative, secondary), adverse or beneficial | Same |
| Review Time | 6 months from state receipt of Consistency Certification (30-days for completeness notice) Can be altered by written agreement between State and applicant | 60 Days, extendable (or contractible) by mutual agreement |
| Consistency | Must be Fully Consistent | To Maximum Extent Practicable** |
| Procedure Initiation | Applicant provides Consistency Certification to State | Federal Agency provides "Consistency Statement" to State |
| Appealable | Yes, applicant can appeal to Secretary (NOAA) | No (NOAA can "mediate") |
| Activities | Listed activities with their geographic location (State can request additional listing within 30 days) | Listed or Unlisted Activities in State Program |
| Activities in Another State | Must have approval for interstate reviews from NOAA | Interstate review approval NOT required |
| Activities in Federal Waters | Yes, if activity affects state waters | Same |

* There are separate requirements for activities on the Outer Continental Shelf (subpart E) and for "assistance to an applicant agency" (subpart F).

** Must be fully consistent except for items prohibited by applicable law (generally does not count lack of funding as prohibited by law, 15 CFR 930.32).

## Coastal Zone Consistency Statement by Statute/Enforceable Policy.

### Chapter 161, F.S., Beach and Shore Preservation

Coastal areas are among the state's most valuable natural, aesthetic, and economic resources; and they provide habitat for a variety of plant and animal life. The state is required to protect coastal areas from imprudent activities that could jeopardize the stability of the beach-dune system, accelerate erosion, provide inadequate protection to upland structures, endanger adjacent properties, or interfere with public beach access. Coastal areas used, or likely to be used, by sea turtles are designated for nesting, and the removal of vegetative cover that binds sand is prohibited. This statute provides policy for the regulation of construction, reconstruction, and other physical activities related to the beaches and shores of the state. Additionally, this statute requires the restoration and maintenance of critically eroding beaches.

**Response:** The proposed plans and information were submitted to the State by the City of Venice in compliance with this chapter. The Florida Department of Environmental Protection issued a permit for the proposed action on June 13, 2014.

### Chapter 163, Part II, F.S., Intergovernmental Programs: Growth Policy, County and Municipal Planning: Land Development Regulation

The purpose of this statute is to provide for the implementation of comprehensive planning programs to guide and control future development in the state. The comprehensive planning process encourages units of local government to preserve, promote, protect, and improve the public health, safety, comfort, good order, appearance, convenience, law enforcement and fire prevention, and general welfare; prevent the overcrowding of land and avoid undue concentration of population; facilitate the adequate and efficient provision of public facilities and services; and conserve, develop, utilize, and protect natural resources within their jurisdictions.

Chapter 163 , Part II Intergovernmental Programs: Growth Policy; County and Municipal Planning; Land Development Regulation

Enforceable policy includes only:

Sections 163.3164 Local Government Comprehensive Planning and Land Development Regulation Act; definitions;

.3177(6)(a) requiring a future land use plan element designating proposed future general distribution, location, and extent of the uses of land for residential uses, commercial uses, industry, agriculture, recreation, conservation, education, public buildings and grounds, other public facilities, and other categories of the public and private uses of land.

(10)(h). public facilities and services needed to support development shall be available concurrent with the impacts of such development in accordance with s. 163.3180. [see .3180(2)(a-c), (5)(a&c), (6), and (8); below].

(10)(l). consider land use compatibility issues in the vicinity of all airports in coordination with the Department of Transportation and adjacent to or in close proximity to all military installations in coordination with the Department of Defense.

(11)(a). innovative approaches to development which may better serve to protect environmentally sensitive areas, maintain the economic viability of agricultural and other predominantly rural land uses, and provide for the cost-efficient delivery of public facilities and services.

(11)(c). maximize the use of existing facilities and services through redevelopment, urban infill development, and other strategies for urban revitalization.

.3178(1) local government comprehensive plans restrict development activities where such activities would damage or destroy coastal resources, and that such plans protect human life and limit public expenditures in areas that are subject to destruction by natural disaster.

(2)(d-j); studies, surveys, and data; be consistent with coastal resource plans prepared and adopted pursuant to general or special law; and contain:

(d) A component which outlines principles for hazard mitigation and protection of human life against the effects of natural disaster, including population evacuation, which take into consideration the capability to safely evacuate the density of coastal population proposed in the future land use plan element in the event of an impending natural disaster. The Division of Emergency Management shall manage the update of the regional hurricane evacuation studies, ensure such studies are done in a consistent manner, and ensure that the methodology used for modeling storm surge is that used by the National Hurricane Center.

(e) A component which outlines principles for protecting existing beach and dune systems from human-induced erosion and for restoring altered beach and dune systems.

(f) A redevelopment component which outlines the principles which shall be used to eliminate inappropriate and unsafe development in the coastal areas when opportunities arise.

(g) A shoreline use component that identifies public access to beach and shoreline areas and addresses the need for water-dependent and water-related facilities, including marinas, along shoreline areas. Such component must include the strategies that will be used to preserve recreational and commercial working waterfronts as defined in s. 342.07.

(h) Designation of coastal high-hazard areas and the criteria for mitigation for a comprehensive plan amendment in a coastal high-hazard area as defined in subsection (9). The coastal high-hazard area is the area below the elevation of the category 1 storm surge line as established by a Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computerized storm surge model. Application of mitigation and the application of development and redevelopment policies, pursuant to s. 380.27(2), and any rules adopted thereunder, shall be at the discretion of local government.

(i) A component which outlines principles for providing that financial assurances are made that required public facilities will be in place to meet the demand imposed by the completed development or redevelopment. Such public facilities will be scheduled for phased completion to coincide with demands generated by the development or redevelopment.

(j) An identification of regulatory and management techniques that the local government plans to adopt or has adopted in order to mitigate the threat to human life and to control proposed development and redevelopment in order to protect the coastal environment and give consideration to cumulative impacts.

.3180(2)(a-c), (a) Consistent with public health and safety, sanitary sewer, solid waste, drainage, adequate water supplies, and potable water facilities shall be in place and available to serve new development no later than the issuance by the local government of a certificate of occupancy or its functional equivalent. Prior to approval of a building permit or its functional equivalent, the local government shall consult with the applicable water supplier to determine whether adequate water supplies to serve the new development will be available no later than the anticipated date of issuance by the local government of a certificate of occupancy or its functional equivalent. A local government may meet the concurrency requirement for sanitary sewer through the use of onsite sewage treatment and disposal systems approved by the Department of Health to serve new development.

(b) Consistent with the public welfare, and except as otherwise provided in this section, parks and recreation facilities to serve new development shall be in place or under actual construction no later than 1 year after issuance by the local government of a certificate of occupancy or its functional equivalent. However, the acreage for such facilities shall be dedicated or be acquired by the local government prior to issuance by the local government of a certificate of occupancy or its functional equivalent, or funds in the amount of the developer's fair share shall be committed no later than the local government's approval to commence construction.

(c) Consistent with the public welfare, and except as otherwise provided in this section, transportation facilities needed to serve new development shall be in place or under actual construction within 3 years after the local government approves a building permit or its functional equivalent that results in traffic generation.

(5)(a&c),

(a) … planning and public policy goals may come into conflict with the requirement that adequate public transportation facilities and services be available concurrent with the impacts of such development. … in urban centers transportation cannot be effectively managed and mobility cannot be improved solely through the expansion of roadway capacity, that the expansion of roadway capacity is not always physically or financially possible, and that a range of transportation alternatives is essential to satisfy mobility needs, reduce congestion, and achieve healthy, vibrant centers.

(c) … developments located within urban infill, urban redevelopment, urban service, or downtown revitalization areas or areas designated as urban infill and redevelopment areas under s. 163.2517, which pose only special part-time demands on the transportation system, are exempt from the concurrency requirement for transportation facilities. A special part-time demand is one that does not have more than 200 scheduled events during any calendar year and does not affect the 100 highest traffic volume hours.

(6) a de minimis impact [on a transportation facility] is consistent with this part.

(8) When assessing the transportation impacts of proposed urban redevelopment within an established existing urban service area, 110 percent of the actual transportation impact caused by the previously existing development must be reserved for the redevelopment…

.3194(1)(a); After a comprehensive plan, or element or portion thereof, has been adopted in conformity with this act, all development undertaken by, and all actions taken in regard to development orders by, governmental agencies in regard to land covered by such plan or element shall be consistent with such plan or element as adopted.

.3202(2)(a-h); Local land development regulations shall contain specific and detailed provisions necessary or desirable to implement the adopted comprehensive plan and shall as a minimum:

(a) Regulate the subdivision of land.

(b) Regulate the use of land and water for those land use categories included in the land use element and ensure the compatibility of adjacent uses and provide for open space.

(c) Provide for protection of potable water wellfields.

(d) Regulate areas subject to seasonal and periodic flooding and provide for drainage and stormwater management.

(e) Ensure the protection of environmentally sensitive lands designated in the comprehensive plan.

(f) Regulate signage.

(g) Provide that public facilities and services meet or exceed the standards established in the capital improvements element required by s. 163.3177 and are available when needed for the development, or that development orders and permits are conditioned on the availability of these public facilities and services necessary to serve the proposed development. Not later than 1 year after its due date established by the state land planning agency's rule for submission of local comprehensive plans pursuant to s. 163.3167(2), a local government shall not issue a development order or permit which results in a reduction in the level of services for the affected public facilities below the level of services provided in the comprehensive plan of the local government.

(h) Ensure safe and convenient onsite traffic flow, considering needed vehicle parking.

.3220(2)&(3).

(2) (a) The lack of certainty in the approval of development can result in a waste of economic and land resources, discourage sound capital improvement planning and financing, escalate the cost of housing and development, and discourage commitment to comprehensive planning.

(b) Assurance to a developer that upon receipt of his or her development permit or brownfield designation he or she may proceed in accordance with existing laws and policies, subject to the conditions of a development agreement, strengthens the public planning process, encourages sound capital improvement planning and financing, assists in assuring there are adequate capital facilities for the development, encourages private participation in comprehensive planning, and reduces the economic costs of development.

(3) In conformity with, in furtherance of, and to implement the Local Government Comprehensive Planning and Land Development Regulation Act and the Florida State Comprehensive Planning Act of 1972, it is the intent of the Legislature to encourage a stronger commitment to comprehensive and capital facilities planning, ensure the provision of adequate public facilities for development, encourage the efficient use of resources, and reduce the economic cost of development.

**Response:** The proposed project has been coordinated with various Federal, State and local agencies during the planning process. The project meets the primary goal of the State Comprehensive Plan through preservation and protection of the shorefront development and infrastructure.

### Chapter 186, F.S., State and Regional Planning

The state comprehensive plan provides basic policy direction to all levels of government regarding the orderly social, economic, and physical growth of the state. The goals, objectives, and policies of the state comprehensive plan are statewide in scope and are consistent and compatible with each other. The statute provides direction for the delivery of governmental services, a means for defining and achieving the specific goals of the state, and a method for evaluating the accomplishment of those goals.

**Response:** The proposed project has been coordinated with various Federal, State and local agencies during the planning process. The project meets the primary goal of the State Comprehensive Plan through preservation and protection of the shorefront development and infrastructure.

### Chapter 252, F.S., Emergency Management

The state of Florida is vulnerable to a wide range of emergencies, including natural, technological, and manmade disasters and this vulnerability is exacerbated by the tremendous growth in the state's population, especially the growth in the number of persons residing in coastal areas, in the elderly population, in the number of seasonal vacationers, and in the number of persons with special needs. This statute directs the state to reduce the vulnerability of its people and property to natural and manmade disasters; prepare for, respond to and reduce the impacts of disasters; and decrease the time and resources needed to recover from disasters. Disaster mitigation is necessary to ensure the common defense of Floridians' lives and to protect the public peace, health, and safety. The policies provide the means to assist in the prevention or mitigation of emergencies that may be caused or aggravated by the inadequate planning or regulation of facilities and land uses. State agencies are directed to keep land uses and facility construction under continuing study and identify areas that are particularly susceptible to natural or manmade catastrophic occurrences.

**Response:** The proposed project involves the placing of beach compatible material onto an eroding beach as a protective means for residents, development and infrastructure located along the Gulf shoreline in Sarasota County. Therefore, this project would be consistent with the efforts of Division of Emergency Management.

### Chapter 253, F.S., State Lands

The Board of Trustees of the Internal Improvement Trust Fund (Trustees) is vested and charged with the acquisition, administration, management, control, supervision, conservation, protection, and disposition of all lands owned by the state. Lands acquired for preservation, conservation and recreation serve the public interest by contributing to the public health, welfare and economy. In carrying out the requirements of this statute, the Trustees are directed to take necessary action to fully: conserve and protect state lands; maintain natural conditions; protect and enhance natural areas and ecosystems; prevent damage and depredation; and preserve archaeological and historical resources. All submerged lands are considered single-use lands to be maintained in natural condition for the propagation of fish and wildlife and public recreation. Where multiple-uses are permitted, ecosystem integrity, recreational benefits and wildlife values are conserved and protected.

Not approved as enforceable policy: Section 253.61(1)(d). … no lease of the type covered by this law shall be granted, sold, or executed south of 26° north latitude off Florida's west coast and south of 27° north latitude off Florida's east coast…. After July 31, 1990, no oil or natural gas lease shall be granted, sold, or executed covering lands located north of 26°00'00" north latitude off Florida's west coast to the western boundary of the state bordering Alabama … or located north of 27°00'00" north latitude off Florida's east coast to the northern boundary of the state bordering Georgia ….

**Response:** The proposed beach nourishment would create increased recreational beach and potential sea turtle nesting habitat. No seagrass beds are located within the area proposed to receive fill. The proposed project would comply with the intent of this chapter.

### Chapter 258, F.S., State Parks and Preserves

The statute addresses the state's administration of state parks, aquatic preserves, and recreation areas, which are acquired to emblemize the state's natural values and to ensure that these values are conserved for all time. Parks and preserves are managed for the non-depleting use, enjoyment, and benefit of Floridians and visitors and to contribute to the state's tourist appeal. Aquatic Preserves are recognized as having exceptional biological, aesthetic, and scientific value and are set aside for the benefit of future generations. Disruptive physical activities and polluting discharges are highly restricted in aquatic preserves. State managed wild and scenic rivers possess exceptionally remarkable and unique ecological, fish and wildlife, and recreational values and are designated for permanent preservation and enhancement for both the present and future.

**Response:** The proposed project is not located in the vicinity of a State Park or Aquatic Preserve. The project is consistent with this chapter.

### Chapters 259, F.S., Land Acquisition for Conservation or Recreation

The statute addresses public ownership of natural areas for purposes of maintaining the state's unique natural resources; protecting air, land, and water quality; promoting water resource development to meet the needs of natural systems and citizens of this state; promoting restoration activities on public lands; and providing lands for natural resource based recreation. Lands are managed to protect or restore their natural resource values, and provide the greatest benefit, including public access, to the citizens of this state.

**Response:** This project was coordinated with the State of Florida, and the FDEP issued a permit for the project on June 13, 2014. It is consistent with this chapter.

### Chapters 260, F.S., Florida Greenways and Trails Act

A statewide system of greenways and trails is established in order to conserve, develop, and use the natural resources of Florida for healthful and recreational purposes. These greenways and trails provide open space benefiting environmentally sensitive lands and wildlife and provide people with access to healthful outdoor activities. The greenways and trails serve to implement the concepts of ecosystem management while providing, where appropriate, recreational opportunities such as horseback riding, hiking, bicycling, canoeing, jogging, and historical and archaeological interpretation.

**Response:** This project was coordinated with the State of Florida, and the FDEP issued a permit for the project on June 13, 2014. It is consistent with this chapter.

### Chapter 267, F.S., Historical Resources

The management and preservation of the state's archaeological and historical resources are addressed by this statute. This statute recognizes the state's rich and unique heritage of historic resources and directs the state to locate, acquire, protect, preserve, operate and interpret historic and archeological resources for the benefit of current and future generations of Floridians. Objects or artifacts with intrinsic historic or archeological value located on, or abandoned on, state-owned lands or state-owned submerged lands belong to the citizens of the state. The state historic preservation program operates in conjunction with the National Historic Preservation Act of 1966 to require state and federal agencies to consider the effect of their direct or indirect actions on [significant] historic and archeological resources. These resources cannot be destroyed or altered unless no prudent alternative exists. Unavoidable impacts must be mitigated.

**Response:** This project has been coordinated with the State Historic Preservation Officer (SHPO). Historic Property investigations were conducted in the project area. An archival and literature search, in addition to a magnetometer survey of the proposed borrow sites, were conducted. The SHPO concurred with the USACE determination that the proposed project will not adversely affect any significant cultural or historic resources. The project is consistent with the goals of this chapter.

### Chapter 288, F.S., Commercial Development and Capital Improvements

The framework to promote and develop general business, trade, and tourism components of the state economy are established in this statute. The statute includes requirements to protect and promote the natural, coastal, historical, and cultural tourism assets of the state; foster the development of nature-based tourism and recreation;

and upgrade the image of Florida as a quality destination. Natural resource-based tourism and recreational activities are critical sectors of Florida's economy. The needs of the environment must be balanced with the need for growth and economic development.

**Response:** The proposed beach nourishment would provide more space for recreation and the protection of recreational facilities along the receiving beach. This would be compatible with tourism in this area. Therefore, this project is consistent with the goals of this chapter.

### Chapter 334, F.S., Transportation Administration

The statute addresses the state's policy concerning transportation administration. It establishes the responsibilities of the state, the counties, and the municipalities in the planning and development of the transportation systems serving the people of the state and to assure the development of an integrated, balanced statewide transportation system. This is necessary for the protection of public safety and general welfare and for the preservation of all transportation facilities in the state.

**Response:** No public transportation systems would be impacted by this project.

### Chapter 339, F.S., Transportation Finance and Planning

The statute addresses the finance and planning needs of the state's transportation system.

**Response:** No public transportation systems would be impacted by this project.

### Chapter 373, F.S., Water Resources

The waters in the state of Florida are managed and protected to conserve and preserve water resources, water quality, and environmental quality. This statute addresses sustainable water management; the conservation of surface and ground waters for full beneficial use; the preservation of natural resources, fish, and wildlife; protecting public land; and promoting the health and general welfare of Floridians. The state manages and conserves water and related natural resources by determining whether activities will unreasonably consume water; degrade water quality; or adversely affect environmental values such as protected species habitat, recreational pursuits, and marine productivity.

Specifically, under Part IV of Chapter 373, the Department of Environmental Protection, water management districts, and delegated local governments review and take agency action on wetland resource, environmental resource, and stormwater permit applications, which address the construction, alteration, operation, maintenance, abandonment, and removal of any stormwater management system, dam, impoundment, reservoir, or appurtenant work or works, including dredging, filling and construction activities in, on, and over wetlands and other surface waters.

**Response:** The proposed beach nourishment will not adversely affect water quality, and does not affect the management of water resources used for consumption. The proposed project is consistent with the purposes of this chapter.

## Chapter 375, F.S., Outdoor Recreation and Conservation Lands

The statute addresses the development of a comprehensive multipurpose outdoor recreation plan. The purpose of the plan is to document recreational supply and demand, describe current recreational opportunities, estimate the need for additional recreational opportunities, and propose the means to meet the identified needs.

**Response:** The project will provide increased recreational beach for sunbathers and beachgoers. It is consistent with this chapter.

## Chapter 376, F.S., Pollutant Discharge Prevention and Removal

Regulating the transfer, storage, and transportation of pollutants, and the cleanup of pollutant discharges is essential for maintaining the coastal waters, estuaries, tidal flats, beaches, and public lands adjoining the seacoast in as close to a pristine condition as possible. The preservation of the seacoast as a source of public and private recreation and the preservation of water and certain lands are matters of the highest urgency and priority. This statute provides a framework for the protection of the state's coastline from spills, discharges, and releases of pollutants as a result of the transfer, storage, and transportation of such products. The discharge of pollutants into or upon any coastal waters, estuaries, tidal flats, beaches, and lands adjoining the seacoast of the state is prohibited. The statute provides for hazards and threats of danger and damages resulting from any pollutant discharge to be evaluated; requires the prompt containment and removal of pollution; provides penalties for violations; and ensures the prompt payment of reasonable damages from a discharge. Portions of Chapter 376, F.S., serve as a complement to the national contingency plan portions of the federal Water Pollution Control Act.

**Response:** The construction contract specifications will prohibit the contractor from dumping oil, fuel, or hazardous wastes in the work area and will require the contractor to adopt safe and sanitary measures for the disposal of solid wastes. A spill prevention plan will be required.

## Chapter 377, F.S., Energy Resources

The statute addresses the regulation, planning, and development of the energy resources of the state. The statute provides policy to conserve and control the oil and gas resources in the state, including products made therefrom and to safeguard the health, property and welfare of Floridians. The Department of Environmental Protection (DEP) is authorized to regulate all phases of exploration, drilling, and production of oil, gas, and other petroleum products in the state. The statute describes the permitting requirements and criteria necessary to drill and develop for oil and gas. DEP rules ensure that all precautions are taken to prevent the spillage of oil or any other pollutant in all phases of extraction and transportation. The state explicitly prohibits pollution resulting from drilling and production activities. No person drilling for or producing oil, gas, or other petroleum products may pollute land or water; damage aquatic or marine life, wildlife, birds, or public or private property; or allow any extraneous matter to enter or damage any mineral or freshwater-bearing formation. Penalties for violations of any provisions of this chapter are detailed.

Not approved as enforceable policy: Sections 377.06, .24(9), and .242(1)(a)5. All deal with regulation of oil and gas resources.

**Response:** The contract specifications will prohibit the contractor from dumping oil, fuel, or hazardous wastes in the work area and will require that the contractor adopt safe and sanitary measures for the disposal of solid wastes. A spill prevention plan will be required.

### Chapter 379, F.S., Fish and Wildlife Conservation

The framework for the management and protection of the state of Florida's wide diversity of fish and wildlife resources are established in this statute. It is the policy of the state to conserve and wisely manage these resources. Particular attention is given to those species defined as being endangered or threatened. This includes the acquisition or management of lands important to the conservation of fish and wildlife. This statute contains specific provisions for the conservation and management of marine fisheries resources. These conservation and management measures permit reasonable means and quantities of annual harvest, consistent with maximum practicable sustainable stock abundance, as well as ensure the proper quality control of marine resources that enter commerce.

Additionally, this statute supports and promotes hunting, fishing and the taking of game opportunities in the State. Hunting, fishing, and the taking of game are considered an important part in the state's economy and in the conservation, preservation, and management of the state's natural areas and resources.

Not approved as enforceable policy: Sections 379.2551 and .362.

379.2511? [no 379.2551 shown] Lease of state-owned water bottoms for growing oysters and clams.

379.362 Wholesale and retail saltwater products dealers; regulation.

**Response:** The proposed beach fill may represent a temporary short-term impact to infaunal invertebrates by burying these organisms. However, these organisms are highly adapted to the periodic burial by sand in the intertidal zone. These organisms are highly fecund and are expected to return to pre-construction levels within six months to one year after construction. Nourishment activities are not located on a high nesting density beach, and it is not expected that sea turtles would be significantly impacted by this project. In addition, the project will have no effect on freshwater aquatic life or wild animal life. Based on the overall impacts of the project, the project is consistent with the goals of this chapter.

### Chapter 380, F.S., Land and Water Management

Land and water management policies are established to protect natural resources and the environment; and to guide and coordinate local decisions relating to growth and development. The statute provides that state land and water management policies, to the maximum possible extent, be implemented by local governments through existing processes for the guidance of growth and development and that all the existing rights of private property be preserved in accord with constitutions of this state and of the United States. The chapter establishes the Areas of Critical State Concern designation, the Florida Communities Trust as well as the Florida Coastal Management Act. The Florida Coastal Management Act provides the basis for the Florida Coastal Management Program which seeks to protect the natural, commercial, recreational, ecological, industrial, and aesthetic resources of Florida's coast.

Not approved as enforceable policy: Section 380.23(3)(d). [consistency review of] Federal activities within the territorial limits of neighboring states when the Governor and the department determine that significant individual or cumulative impact to the land or water resources of the state would result from the activities.

**Response:** The proposed work will be coordinated with the local regional planning commission. Therefore, the project will be consistent with the goals of this chapter.

### Chapter 381, F.S., Public Health: General Provisions

The statute establishes public policy concerning the state's public health system, which is designated to promote, protect, and improve the health of all people in the state.

Chapter 381 Public Health: General Provisions
Enforceable policy includes only Sections 381.001, .0011, .0012, .006, ,0061, .0065, .0066, and .0067.
381.001 Legislative intent; public health system.
381.0011 Duties and powers of the Department of Health.
381.0012 Enforcement authority.
381.006 Environmental health.
381.0061 Administrative fines.
381.0065 Onsite sewage treatment and disposal systems; regulation.
381.0066 Onsite sewage treatment and disposal systems; fees.
381.0067 Corrective orders; private and certain public water systems and onsite sewage treatment and disposal systems.

**Response:** This project will not affect public health systems.

### Chapter 388, F.S., Mosquito Control

Mosquito control efforts of the state are to achieve and maintain such levels of arthropod control as will protect human health and safety and foster the quality of life of the people, promote the economic development of the state, and facilitate the enjoyment of its natural attractions by reducing the number of pestiferous and disease-carrying arthropods. It is the policy of the state to conduct arthropod control in a manner consistent with protection of the environmental and ecological integrity of all lands and waters throughout the state.

**Response:** The proposed project will not cause an increase in the propagation of mosquitoes or other pest arthropods.

### Chapter 403, F.S., Environmental Control

Environmental control policies conserve state waters; protect and improve water quality for consumption and for the propagation of fish and wildlife; and maintain air quality to protect human health and plant and animal life. This statute provides wide-ranging authority to address various environmental control concerns, including air and water pollution; electrical power plant and transmission line siting; the Interstate Environmental Control Compact; resource recovery and management; solid and hazardous waste management; drinking water protection; pollution prevention; ecosystem management; and natural gas transmission pipeline siting.

Not approved as enforceable policy: Section 403.7125(2) and (3).

(2) The owner or operator of a landfill …shall establish a fee, or a surcharge on existing fees or other appropriate revenue-producing mechanism, to ensure the availability of financial resources for the proper closure of the landfill.

(3) An owner or operator of a landfill … may provide financial assurance to the department in lieu of the requirements of subsection (2).

**Response:** An Environmental Assessment that addresses project impacts was prepared and reviewed by the appropriate resource agencies, including the FDEP. The FDEP issued a water quality certification for the project as permit number 0211217-005-JC on June 13, 2014. Environmental protection measures will be implemented to ensure that no lasting adverse effects on water quality, air quality, or other environmental resources will occur. The project complies with the intent of this chapter.

### Chapter 553, F.S., Building and Construction Standards

The statute addresses building construction standards and provides for a unified Florida Building Code.

Enforceable policy includes only Sections 553.73 and .79.

553.73 Florida Building Code.

553.79 Permits; applications; issuance; inspections.

**Response:** The proposed project does not involve the construction of any buildings; therefore, this chapter does not apply.

### Chapter 582, F.S., Soil and Water Conservation

It is the state's policy to preserve natural resources; control and prevent soil erosion, prevent floodwater and sediment damages and to further the conservation, development and use of soil and water resources, and the disposal of water. Farm, forest, and grazing lands are among the basic assets of the state; and the preservation of these lands is necessary to protect and promote the health, safety, and general welfare of its people. These measures help to preserve state and private lands, control floods, maintain water quality, prevent impairment of dams and reservoirs, assist in maintaining the navigability of rivers and harbors, preserve wildlife and protect wildlife habitat, protect the tax base, protect public lands, and protect and promote the health, safety, and general welfare of the people of this state.

**Response:** The proposed project is not located near or on agricultural lands; therefore, this chapter does not apply.

**Chapter 597, F.S., Aquaculture**

The statute establishes public policy concerning the cultivation of aquatic organisms in the state. The intent is to enhance the growth of aquaculture, while protecting Florida's environment. This includes a requirement for a state aquaculture plan which provides for the coordination and prioritization of state aquaculture efforts, the conservation and enhancement of aquatic resources and which provides mechanisms for increasing aquaculture production for the creation of new industries, job opportunities, income for aquaculturists, and other benefits to the state.

**Response:** The proposed project does not involve aquaculture or waters used for aquaculture; therefore, this chapter does not apply.

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# APPENDIX C - PERTINENT CORRESPONDENCE

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DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

SEP 2 0 2011

Mr. Paul Souza
U. S. Fish & Wildlife Service
South Florida Ecological Services Office
1339 20th Street
Vero Beach, FL 32960-3559

Dear Mr. Souza,

The following describes the history and the applicability of the Coastal Barrier Resources Act (CBRA) of 1982 and the Coastal Barrier Resources Improvement Act (CBRIA) of 1990 to the Venice Beach Hurricane and Storm Damage Reduction Project (HSDR). The project is located along the shoreline of Sarasota County, Florida (see Figure 1). The proposed borrow areas are located approximately 10.5 miles southwest of the placement site. The placement site is located adjacent to and within two "otherwise protected areas" (OPA) of the John H. Chafee Coastal Barrier Resources System (CBRS). The northern project limit is near CBRA Unit FL-71P, Venice Inlet, and the southern portion of the project is located in a portion of CBRA Unit P21AP, Manasota Key (see Figure 2).

The CBRA and the CBRIA limit federally subsidized development within the CBRA Units to limit the loss of human life by discouraging development in high risk areas, to reduce wasteful expenditures of Federal resources, and to protect the natural resources associated with coastal barriers. CBRIA provides development goals for undeveloped coastal property held in public ownership, including wildlife refuges, parks, and other lands set aside for conservation (OPAs). These public lands are excluded from most of the CBRA restrictions, although they are prohibited from receiving Federal Flood Insurance for new structures.

The proposed Venice Beach HSDR project does not include the construction of structures that would require Federal Flood Insurance; therefore, Federal expenditures for the proposed project should not be restricted in Unit P21AP, Manasota Key OPA.

The U.S. Army Corps of Engineers (Corps) determined that the proposed project is consistent with CBRA and CBRIA, and we request your confirmation of this determination. If you have any questions regarding this project, please contact Ms. Aubree Hershorin by phone at (904) 232-2136 or by email at Aubree.G.Hershorin@usace.army.mil.

Sincerely,

Jason J. Spinning
Chief, Coastal Section

Enclosures

Copy Furnished via Email:
Jeff Howe, USFWS, 1339 20th Street, Vero Beach, FL 32960-3559

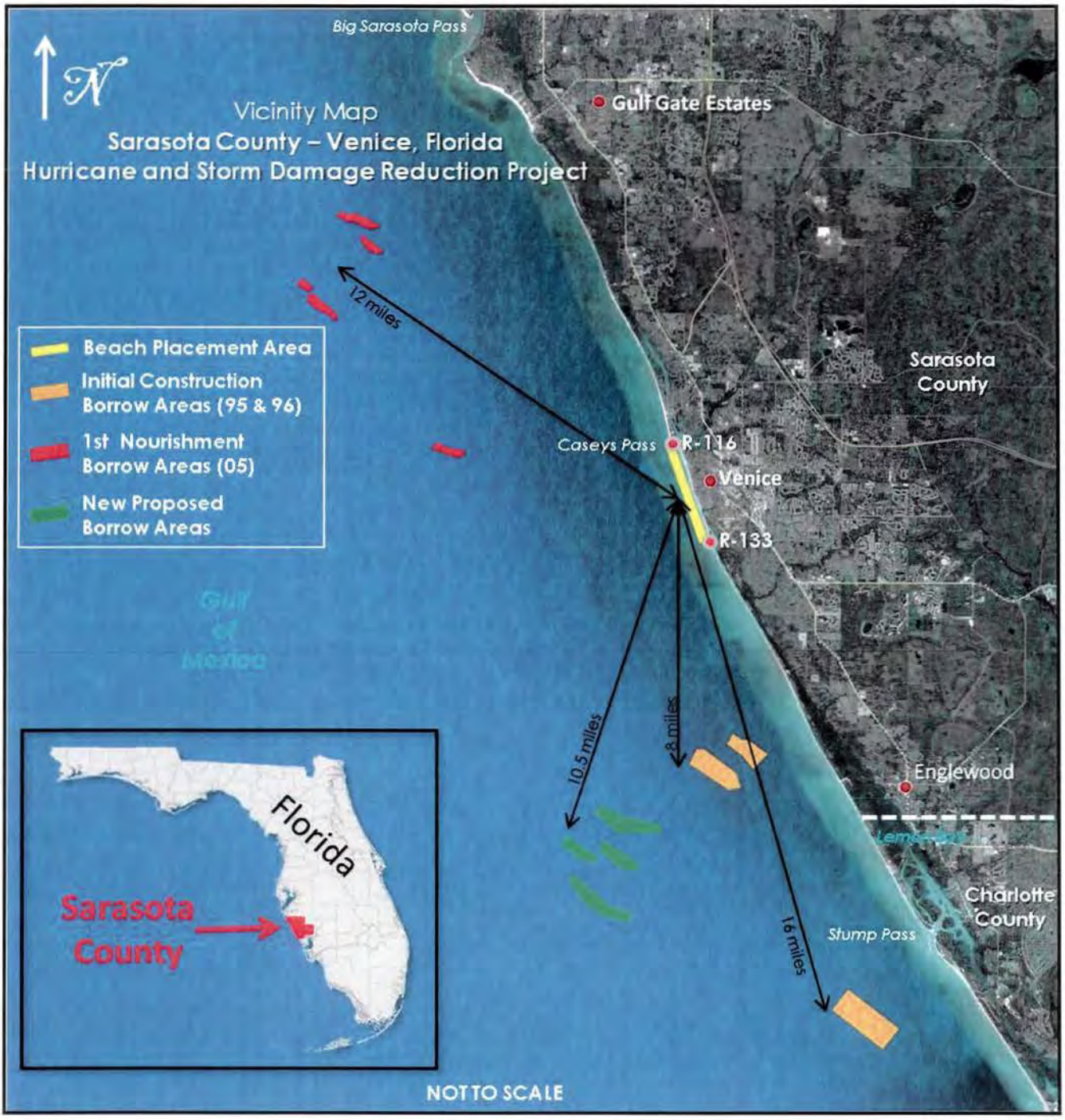



Figure 1: Location map showing the location of the proposed beach nourishment activities and the borrow areas.


Figure 2: Map showing the location of the CBRA Units in the project area.

FLORIDA DEPARTMENT OF STATE
**Kurt S. Browning**
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Mr. Eric Summa
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

October 10, 2011

Re: DHR Project File No.: 2010-04357 (2010-05995) / Received by DHR: October 6, 2011
1A-32 Permit No.: 1011.002
Final Report: *Sarasota Beach Erosion Control Cultural Resources Survey: Remote Sensing Survey of Four Offshore Borrow Areas, Nearshore and Shoreline Survey, Sarasota County, Florida*

Dear Mr. Summa:

Our office received and reviewed the above referenced survey report in accordance with Section 106 of the *National Historic Preservation Act of 1966* (Public Law 89-665), as amended in 1992, and *36 C.F.R., Part 800: Protection of Historic Properties*, and Chapter 267, *Florida Statutes,* for assessment of possible adverse impact to cultural resources (any prehistoric or historic district, site, building, structure, or object) listed, or eligible for listing, in the National Register of Historic Places (NRHP).

In August and September 2010, Panamerican Consultants, Inc. (PCI) conducted an underwater remote sensing survey of four sand borrow areas and the nearshore sand placement area as well as an archaeological and historical Phase I survey of the beach area proposed for sand placement. The surveys were conducted on behalf of G.E.C., Inc. and the US Army Corps of Engineers. PCI identified no cultural resources within the terrestrial portion of the project area during the investigation. PCI identified seventy-six (76) magnetic anomalies, twenty-two (22) side-scan sonar targets, and one thousand one hundred thirty-four (1,134) subbottom impedance features within the borrow areas and nearshore area.

PCI found that six magnetic anomalies (M001, M002, M003, M008, M066, and M075), and four side-scan sonar targets (C0002, C0005, C0006, and C0023) make up six potentially significant clusters that will need to be avoided within a two hundred fifty (250) foot buffer zone. PCI also recommends that four subbottom targets that could represent significant cultural resources will need to be avoided with buffer areas of either 1500 or 1000 feet. In the event that avoidance is not possible, additional investigation of significant anomalies or features will be needed.

Based on the information provided, our office concurs with these determinations and finds the submitted report to be complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code.*

Because the project parameters have not yet been established, we can make no effects determinations at this time. We look forward to further consultation with the Corps regarding this project.

For any questions concerning our comments, please contact Rudy Westerman, Historic Preservationist, by electronic mail at rjwesterman@dos.state.fl.us, or by phone at 850.245.6333. We appreciate your continued interest in protecting Florida's historic properties.

Sincerely,

Laura A. Kammerer

Laura A. Kammerer
Deputy State Historic Preservation Officer
For Review and Compliance

Pc: Panamerican Consultants, Inc.
Kevin Porter, Interoffice Mail Station 8B

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

NOV 01 2011

Mr. Paul Souza
U. S. Fish & Wildlife Service
South Florida Ecological Services Office
1339 20th Street
Vero Beach, FL 32960-3559

Dear Mr. Souza,

The U.S. Army Corps of Engineers (Corps) is conducting a beach renourishment project in Sarasota County, Florida. The project name is the Venice Beach Hurricane and Storm Damage Reduction Project. The Corps proposes to use the Statewide Programmatic Biological Opinion (SPBO) to complete the consultation requirements under the Endangered Species Act (ESA) for this project.

The project proposes to renourish approximately 3.2 miles of beach south of Venice Inlet. The placement volume is approximately 760,000 cubic yards, and the material will be obtained from one of four offshore borrow areas located approximately eleven miles southwest of the placement site. See the enclosed Project Location Map (Figure 1) and the "Project Information and Screening Checklist" for additional details. The USFWS' most recent biological opinion for this project was issued on July 15, 2003 (USFWS Log No. 4-1-03-F-2486).

The proposed action is located adjacent to an inlet. The closest piping plover critical habitat to the north is approximately 37 miles from the placement site (FL-21, Egmont Key), and the closest critical habitat to the south is approximately 28 miles from the placement site (FL-22, Cayo Costa; see Figure 2). In all other respects, the activity would comply with the scope and terms and conditions of the SPBO of August 2011 and the Statewide Programmatic Biological Assessment of February 2011. All post-construction monitoring will be conducted by the City of Venice, and it is not the responsibility of the Corps.

The project involves the placement of sand on the beach, and it may affect nesting sea turtles. All in-water activities will follow the standard manatee protection measures and the dredging and placement activity will not occur in an Important Manatee Area (see Figure 3); therefore, the proposed activity may affect, but is not likely to adversely affect manatees. The piping plover is not likely to be adversely affected because the proposed activity will not alter the on-going management of the shoreline, and migratory bird protection measures will be observed during construction. Finally, the proposed action does not occur in beach mouse habitat and will not affect beach mice.

If you determine that the proposed activity as described herein falls within the scope of the SPBO, please consider this letter as the initiation of the 30-day coordination required by the SPBO. If you determine that the proposed activity as described herein does not fall within the scope of the SPBO, please consider this letter (along with the documents referenced and the enclosures to this letter) a biological assessment initiating consultation.

As stated in the letter dated February 22, 2011 forwarding the USACE Statewide Programmatic Biological Assessment, we will continue to work with the U.S. Fish and Wildlife Service to make the SPBO a more useful tool to streamline and expedite the Section 7 consultation process while providing reasonable protection of ESA resources. We have lingering concerns over some of the exclusions and requirements which could limit our ability to utilize the SPBO. If you have any questions, please contact me at (904) 232-1665, or the technical point of contact, Aubree Hershorin, at (904) 232-2136.

Sincerely,

Eric P. Summa
Chief, Environmental Branch

Enclosures

Figure 1. Project Location Map.

Statewide Programmatic Biological Opinion (SPBO)
Beach Placement and Shore Protection
Coast of Florida
U.S. Fish and Wildlife Service (FWS)

New Record | Save Record | Print Record | Quit App

Record # 28

Prepared by: Hershorin, Aubree SAJ

Date Entered: 10/12/2011

Project Name: Sarasota County, FL B.E.C.

Project Event: Beach Renourishment

Project Number: 113092 Application #:

Sponsor/ Applicant: City of Venice

Quantity (CY): 760,000 Length (Feet): 16,700

County(ies): Sarasota Location R-Monuments: R116 to R133

Lat °: 27 Lat': 05 Lat" 20 Long° -82 Long': 27 Long": 24

Borrow or Dredge Site(s): Four borrow areas located approximately 11 miles southwest of the placement area.

Beach Placement from Navigation Dredging: ☐ O and M ☐ Deepen, Widen, or Expand

Beach Nourishment/Shore Protection Project: ☐ Initial Nourishment ☑ Renourishment

Nature of Activity: ☑ Beach Placement ☐ Beach Placement Below MLW

☐ Dune Placement or Planting ☐ Nearshore Placement (material remains below MLW)

☐ Sand Bypassing ☐ Sand Back-Passing ☐ Sand Transfer ☐ Groin Repair or Replacement

☐ Jetty Repair or Replacement ☐ *Other Activity (list in comment Box)

Area with Sea Turtle Window: ☐ SE Florida (Broward through Brevard ☐ Sarasota Co (Manasota Key)

☐ Gulf Co (St Joe Peninsula St Pk, St. Joe Peninsula, Cape San Blas) ☐ Franklin Co (St George Is)

*Piping Plover Critical Habitat ☑ *Other Piping Plover Habitat ☐ *30-day Coordination Still Pending

PP Crit Hab 1: Project adjacent to an inlet.

PP Crit Hab 2:

☐ *No Pre-Project Survey for Actual or Potential Washover Fan

Beach Mouse Habitat (use drop-down box below) ☐ Other Beach Mouse Habitat (list in comment box)

Beach Mouse Habitat:

☐ *Important Manatee Area ☐ *Beach Jacquemontial Habitat (including pipeline, access, storage, staging, etc.)

☐ *Roseate Term Colon, May-June (Pelican Shoal, Vaca Rock, Truman Annex, Marathon Gov Center)

☐ *Snowy Plover Breeding Area, Mar-Sep (Gulf Coast: Caladesi Is, Fort DeSoto Park, Cayo Costa, isolated peninsulas)

*These items may be outside the scope of the SPBO and/or require additional coordination w/FWS (see next page)

Responsible for Post Construction Monitoring/Corrective Measures (Compaction/Escarpments, 3 yrs post construction)

Sponsor

Responsible for Post Contruction Monitoring (Sea Turtle Nesting, 2-yrs post construction)

Sponsor

Responsible for Post Construction Monitoring (2 Beach Lighting Surveys, early Mand and late July):

Sponsor

☐ *Any Other Term and Condition not Followed

Describe Other TC:

Comment, Habitat:

Comment, Other:

-Instructions-

General: Text fields are limited to 255 characters to accommodate a consolidated report in which the form's data is exported to an Excel spreadsheet. There are 2 "Comment" fields to allow about 500 characters total.
Project Name: Use official project name from P2 for Corps projects.
Project Activity/Event: Identify the dredging or renourishment event (e.g., reach, segment, year, sequence)
Project Number: Use project number from P2 for Corps projects.
Application #: Use Corps permit application number where applicable.
Quantity/Length: Normally use cubic yards and linear feet for beach placement.
Location and R-monuments: Brief phrase for location. Use state R-monuments.
Latitude and Longitude: Enter for approximate center of shoreline project/activity (not for the borrow/dredge site). For example, Jacksonville District Office would be Latitude 30° 19' 04.91" Longitude -81° 39' 36.48".
Borrow or Dredge Sites: Brief phrase or name for borrow area or dredge site.
Piping Plover Critical Habitat: Use the 2 drop-down boxes (only one critical habitat unit per drop-down box).
See PBO or Federal Register of July 10, 2001, pages 36070 to 36073 for additional details on Piping Plover critical habitat.
Other Piping Plover Habitat: List in the comment box any additional critical habitat units and any other important Piping Plover habitat. Refer to SPBO for additional information.

1. For projects located: (a) In piping plover critical habitat, initiation of formal consultation is necessary. (b) In or within one mile of a critical habitat unit, the Corps shall contact the Service with the project description. The Service will aid the Corps in determining potential indirect effects to biological constituent elements within a critical habitat unit. The Service will respond within 30 days. Previous consultations in these areas have ended informally but depending on the latest information, formal consultation may be likely. (c) In or within one mile of an inlet, the Corps shall contact the Service with the project description. The Service will aid the Corps in determining whether there will be any effects to the piping plover. The Service will respond within 30 days. Previous consultations in these areas have resulted in formal consultation. (d) On or adjacent to public lands (county, state, federal, etc), the Corps shall contact the Service with the project description. The Service will aid the Corps in determining whether there will be any effects to the piping plover. The Service will respond within 30 days. Previous consultations in these areas have ended informally but depending on the latest information, formal consultation may be likely.
2. For jetty and groin repairs/replacement project, the Corps shall contact the Service with the project description. The Service will aid the Corps in determining whether there will be any effects to the piping plover. The Service will respond within 30 days. Previous consultations in these areas have resulted in informal consultation.
3. In all other areas, the Corps shall contact the Service with the project description and location. The Service will be the Corps' key source of information to provide technical assistance, including known locations or the latest survey information on piping plovers within 30 days. Previous consultations in these areas have resulted in informal consultation.

Beach Mouse Habitat: Geographic range of species is shown in drop-down box. Note that species is limited to areas of suitable habitat within that range. Refer to the SPBO for additional information.
Important Manatee Areas (IMA): Activities within IMAs are not within the scope of the SPBO and require separate consultation.
Beach Jacquemontia Habitat: Impacts to this species are not within the scope of the SPBO. Within the range of this species a survey and avoidance is required (see SPBO for additional information).
Roseate Tern Nesting Colony, May-June: Activities affecting such colonies during nesting season are not within the scope of the SPBO.
Snowy Plover: In addition to migratory bird protection, is a candidate for listing as threatened. Breeding occurs along Gulf Coast at indicated parks and on isolated coastal peninsulas. If listing is imminent, Section 7 consultation may be appropriate.
Responsible for Post Construction Monitoring and Corrective Measures: The activity is not within the scope of the SPBO if there is no formal acceptance of responsibility for post-construction monitoring and corrective measures. A separate consultation with FWS is required. L:\group\pde\dugger\PBO\ProjInfoSheet4.pdf

Figure 2: Location of piping plover critical habitat in the project vicinity.

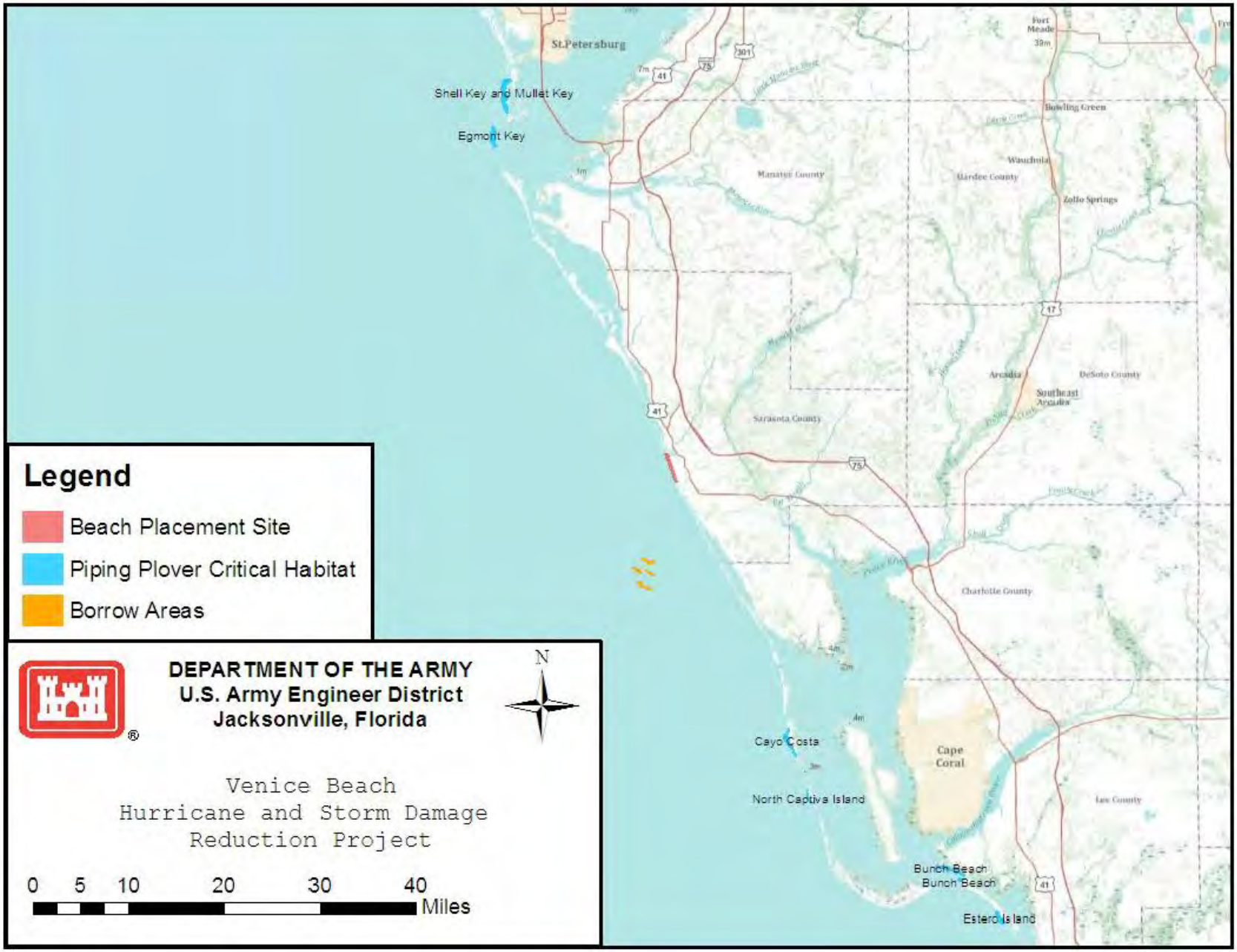
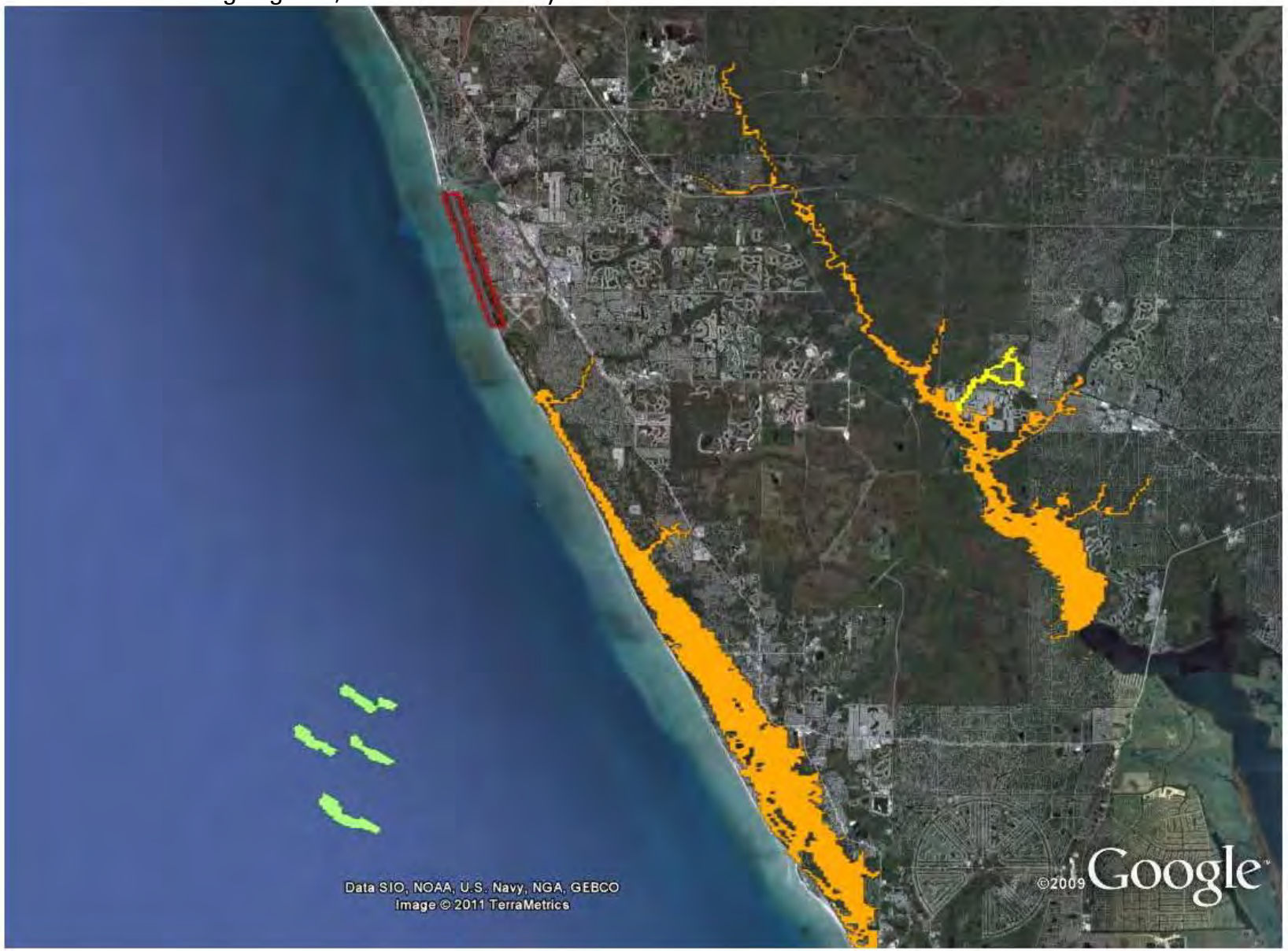


Figure 3: Important Manatee Areas (IMAs) in the project vicinity. The placement site is shown in red, the borrow areas in light green, and the IMAs in yellow.



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DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

APR 15 2014

To Whom It May Concern:

Pursuant to the National Environmental Policy Act and U.S. Army Corps of Engineers (Corps) Regulation (33 CFR 230.11), this letter constitutes the Notice of Availability of the Draft Environmental Assessment (EA) to evaluate the suitability of four borrow areas for future nourishing of Venice Beach as part of the Venice Beach Hurricane and Storm Damage Reduction project in Sarasota County, Florida. The initial project construction occurred in 1996, and the first renourishment was conducted in 2005. The second renourishment is proposed to occur in 2015. The four borrow areas evaluated in this EA contain suitable material in sufficient quantities for placement at Venice Beach for the next two nourishment events.

The draft EA and the draft Finding of No Significant Impact are available on the Corps, Jacksonville District website at the following address for your review:

http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx.

At this time, we are inviting agencies, interest groups, and the public to provide input on the proposed alternatives and to identify significant resource concerns. Your comments will be incorporated into the final EA. Comments should be addressed to the Corps at the following address:

U.S. Army Corps of Engineers
Jacksonville District
Attention: Aubree Hershorin (CESAJ-PD-EC)
Post Office Box 4970
Jacksonville, FL 32232-0019

**Please provide written comments within 30 days of the date of this letter.**

If you have any questions or comments, please contact the project ecologist, Aubree Hershorin, at (904) 232-2136 or Aubree.G.Hershorin@usace.army.mil.

Sincerely,

Eric P. Summa
Chief, Environmental Branch

Enclosure

**FINDING OF NO SIGNIFICANT IMPACT**

**BEACH NOURISHMENT**
**HURRICANE AND STORM DAMAGE REDUCTION PROJECT**
**VENICE BEACH, SARASOTA COUNTY, FLORIDA**

I have reviewed the Environmental Assessment (EA) for the proposed action. Based on information analyzed in the EA enclosed hereto, reflecting pertinent information obtained from cooperating Federal agencies having jurisdiction by law and/or special expertise, I conclude that the proposed action will have no significant impact on the quality of the human environment. Reasons for this conclusion are in summary:

a. Sites of cultural or historical significance will not be affected.

b. Terms and Conditions by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to prevent or minimize impacts to sea turtles and to piping plover will be implemented during and after project construction. There will be no adverse impacts to other endangered or threatened species. The project will not jeopardize the continued existence of any federally listed species if a hopper dredge is used.

c. State water quality standards will be met.

d. Measures to eliminate, reduce, or avoid potential impacts to fish and wildlife resources, including minimization of impacts to hardbottom communities, will be implemented during project construction.

e. The proposed project has been determined to be consistent to the maximum extent practicable with the Florida Coastal Zone Management Program.

f. The proposed project has been evaluated pursuant to the Migratory Bird Treaty Act, and the Migratory Bird Protection Policy will be implemented for this project. The Policy has been coordinated with the U.S. Fish and Wildlife Service and the State of Florida.

In consideration of the information summarized, I find that the proposed action will not significantly affect the human environment and does not require an Environmental Impact Statement.

_____
Date

_____
Alan Dodd
Colonel, U.S. Army
District Engineer

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## Hershorin, Aubree SAJ

**From:** Hershorin, Aubree SAJ
**Sent:** Wednesday, April 16, 2014 1:48 PM
**To:** Mark Sramek
**Subject:** RE: Venice BEC and Tampa O&M (UNCLASSIFIED)
**Attachments:** 20140415, Notice of Availability.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Hi Mark,

Just following up on these two projects. I've attached the NOA for the Venice Beach project, which was put in the mail today. The link to the documents may not be available quite yet, but will be within the next day or so at http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx#Sarasota. If you could provide your comments by mid-May or so, that would be great!

[redacted]

If you have any questions, please don't hesitate to call me!

Best,
Aubree

-----Original Message-----
From: Hershorin, Aubree SAJ
Sent: Friday, March 07, 2014 4:17 PM
To: Mark Sramek
Subject: Venice BEC and Tampa O&M (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Mark!

Hope you're doing well! I wanted to check in with you on two EFH consultations: Tampa O&M and Venice BEC.

[redacted]

Venice BEC was on hold for a while, but received funding this week for construction in FY14. SAJ needs to award before the end of the FY, and I am getting the Draft EA ready for public notice in the next week or two.  There is a new borrow area, and we did HB surveys in 2012 of it.  I will forward you the EA as soon as it's released, but I wanted to give you a heads-up since it will be a quick turn-around project.

Since the Tampa O&M project already has a valid NEPA document, if you could let me know if you have any comments on it as soon as possible, I'd really appreciate it!

Thanks,
Aubree

~~~~~~~~~~~~~~~~~~~~~~~~~
Aubree Hershorin, Ph.D.
Environmental Branch, Coastal Section
Planning and Policy Division
U.S. Army Corps of Engineers
701 San Marco Blvd.
Jacksonville, FL  32207
USACE Office: (904) 232-2136

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE
~~~~~~~~~~~~~~~~~~~~~~~~~

## Hershorin, Aubree SAJ

**From:** Milligan, Lauren [Lauren.Milligan@dep.state.fl.us]
**Sent:** Monday, April 21, 2014 4:03 PM
**To:** Jim Golden (James.Golden@swfwmd.state.fl.us)
**Cc:** Dow, Roxane; Hershorin, Aubree SAJ
**Subject:** [EXTERNAL] FW: Potential Clearinghouse Review? Venice Beach Nourishment, Hurricane and Storm Damage Reduction Project
**Attachments:** Venice Beach USACE EA Notice.pdf; NOI - Venice Beach Nourishment - File No 0211217-005-JC.pdf; DRAFT Permit - Venice Beach Nourishment - File No. 0211217-005-JC.pdf; Venice Bch Sh 1 to Sh 14.pdf

Hi Jim:

RE: U.S. Army Corps of Engineers – Draft Environmental Assessment, Beach Nourishment, Hurricane and Storm Damage Reduction Project – Venice Beach, Sarasota County, Florida.

http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx#Sarasota

Thanks for checking with us. I received that notice from the USACE on Friday as well. I looked up the USACE's Draft EA and then checked DEP's Beaches website to see whether a Joint Coastal Permit application had been or was being processed. I see that DEP just issued a Notice of Intent for JCP Application # 0211217-005-JC on March 5, 2014. In this case, we don't need to review the Draft EA through the State Clearinghouse, since the state has already performed a very detailed CZMA review through the JCP permitting process.

Have a great week!

Lauren

Lauren P. Milligan, Coordinator
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Blvd, M.S. 47
Tallahassee, FL 32399-3000
ph. (850) 245-2170
fax (850) 245-2190

Lauren.Milligan@dep.state.fl.us

From: James Golden [mailto:James.Golden@swfwmd.state.fl.us]
Sent: Monday, April 21, 2014 11:18 AM
To: Milligan, Lauren

Subject: Potential Clearinghouse Review?

Good morning Lauren.  The District received a copy of this document and we have been asked if we are going to be coordinating the review.  Have you seen it?  Are you going to be routing it?

I hope you had a nice Easter weekend!

Jim Golden, AICP

Senior Planner

Southwest Florida Water Management District

2379 Broad Street

Brooksville, FL 34604

(352) 796-7211 x4790

james.golden@watermatters.org

http://bkvvmexpeng01/download/view/site_file_sets/1571/weblogo_60.gif

Dep Customer Survey <http://survey.dep.state.fl.us/?refemail=Lauren.Milligan@dep.state.fl.us>

## Hershorin, Aubree SAJ

**From:** Higgins, Jamie [Higgins.Jamie@epa.gov]
**Sent:** Thursday, May 08, 2014 11:09 AM
**To:** Hershorin, Aubree SAJ
**Cc:** Higgins, Jamie
**Subject:** [EXTERNAL] Venice Beach Sarasota County Beach Re-Nourishment EA

Aubree,

Please find EPA's comments regarding the Venice Beach Sarasota County Beach Re-Nourishment EA (Dated April 2014) below.

Feel free to contact me should you have questions.

Thanks,

Jamie

Hurricane and Storm Damage Reduction (HSDR) Project (Beach Re-nourishment)

Venice Beach, Sarasota, FL

Draft EA

U.S. Environmental Protection Agency Comments

May 8, 2014

1. On page 7, Description of Alternatives Section, there is no explanation or description of the previously authorized project and it is difficult for the reader to understand how the current list of alternatives (to include the preferred alternative) relates to the authorized project. EPA recommends that the Corps better describe the authorized project to include designs and photographs. Additionally, EPA recommends the Corps better explain in the Final EA how the preferred alternative relates to the original authorized project.

2. On page 27, 4.3 Threatened and Endangered Species section, the Corps has made a "may affect, but is not likely to adversely affect" determination for the Florida Manatee (page 28) and Piping Plover (page 29). However, the Corps does not discuss whether the National Marine Fisheries Service (NMFS)(for Florida Manatee) and U.S. Fish and Wildlife Service (USFWS) (for Piping Plover) has concurred with this determination. EPA recommends that the Corps discuss NMFS and USFWS recommendations regarding this determination within the Final EA.

3. On page 30, 4.6 Essential Fish Habitat Assessment section, the Corps states, "Although the hard bottom habitat present in the vicinity of the borrow areas is not considered to be

'significant' pursuant to the NMFS Gulf of Mexico Regional Biological Opinion, the USACE will maintain 400 foot buffers." However, in Appendix C (Pertinent Correspondences) NFMS responds to the Corps in a June 2, 2004 letter that the Corps "concluded that dredging of these borrow areas will not have an adverse effect on sea turtles or other resources in the areas, and intend to use a 200-foot buffer in the Venice sand mining efforts." NFMS refers to a Corps May 24, 2004 letter that is omitted from Appendix C. Does the Corps intend to use a 400 foot (as stated in the EA) or 200 foot buffer (as stated in the NFMS letter)? Is there current correspondence with the NFMS that recommends the 400 foot buffer? EPA requests that the Corps in the Final EA clarify the rational for the 400 foot buffers.

4. In Appendix C, Pertinent Correspondences, in the NFMS correspondence dated May 9, 2003, NFMS agrees that the project impacts to Essential Fish Habitat (EFH) would be minimal. Since this correspondence is over 10 years old, has the Corps more recently coordinated with NMFS regarding EFH? If the Corps has not recently coordinated with NMFS regarding EFH, EPA recommends that the Corps coordinate with NMFS and document this coordination within the Final EA. If the Corps has more recently coordinated with NMFS, then EPA recommends this be better explained and documented within the Final EA.

5. On page 44, 5.3 Fish and Wildlife Coordination Act of 1958 section, the Corps states, "The USACE consulted with the USFWS pursuant to FWCA, NEPA and the ESA. This project is in full compliance." However, the Corps does not reference or cite any correspondence that indicates that they have consulted with the USFWS regarding the FWCA. Has the Corps coordinated with the USFWS regarding any possible changes since the development of the 1992 EA's FWCA report? If the Corps has not coordinated with USFWS regarding the latest proposed project, then EPA recommends the Corps coordinate with the USFWS to ensure the 1992 EA's FWCA report is sufficient to cover the changes outlined in the preferred alternative. If the Corps has coordinated with the USFWS to ensure the 1992 EA's FWCA report are still valid and current, the EPA recommends that the Corps cite this coordination and better explain the USFWS's thoughts and opinions regarding the use of the 1992 EA's FWCA.

Jamie Higgins

US Environmental Protection Agency, Region 4

NEPA Program Office

Atlanta Federal Center

61 Forsyth Street, SW

Atlanta, GA 30303

404-562-9681

higgins.jamie@epa.gov

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

MAY 2 2 2014

Planning Division
Environmental Branch

Mr. Larry Williams, Field Supervisor
U. S. Fish & Wildlife Service
South Florida Ecological Services Office
1339 20th Street
Vero Beach, FL 32960-3559

Dear Mr. Williams:

I am seeking a clarification to the Statewide Programmatic Biological Opinion (SPBO) of August 22, 2011 for beach placement and shore protection along the coast of Florida. The terms and conditions in this opinion specify placement windows for high density nesting beaches.

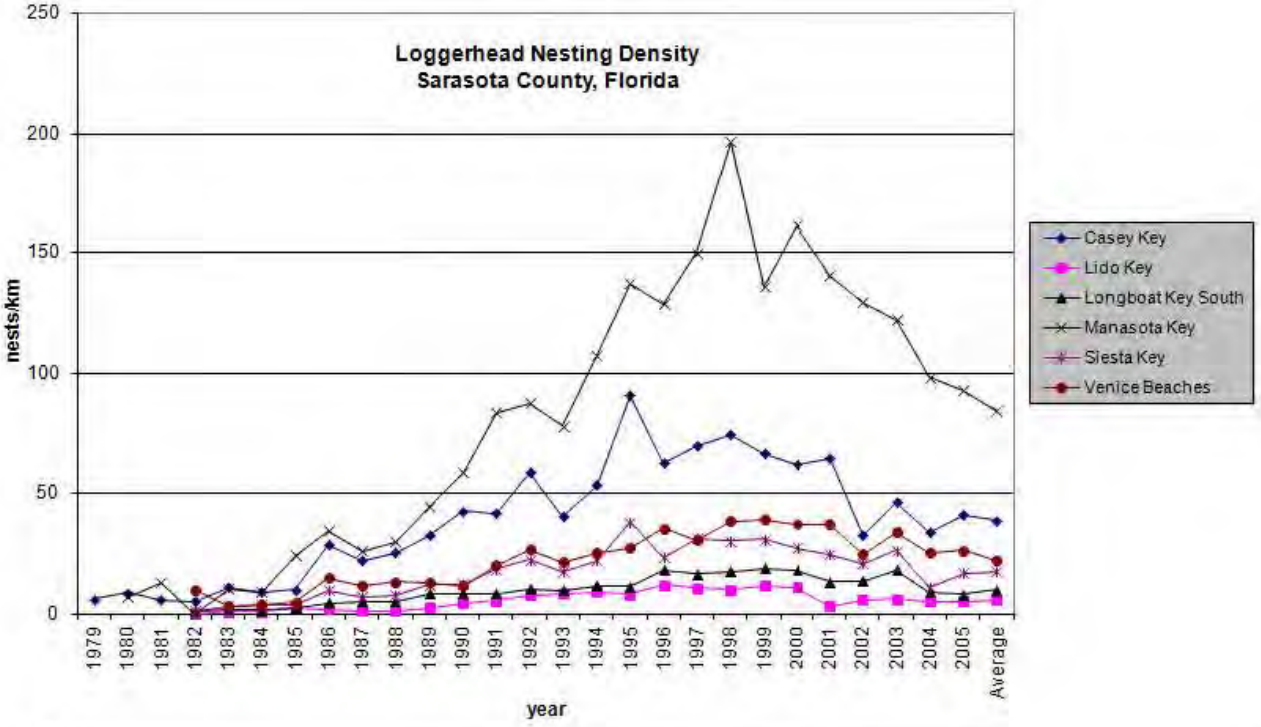
The opinion identifies Manasota Key as a high density nesting beach. Venice Beach is geographically located on Manasota Key. However, nesting at Venice Beach is much lower than and is reported separately from the Manasota Key segment in Sarasota County and the Manasota Key segment in Charlotte County (see enclosed charts).

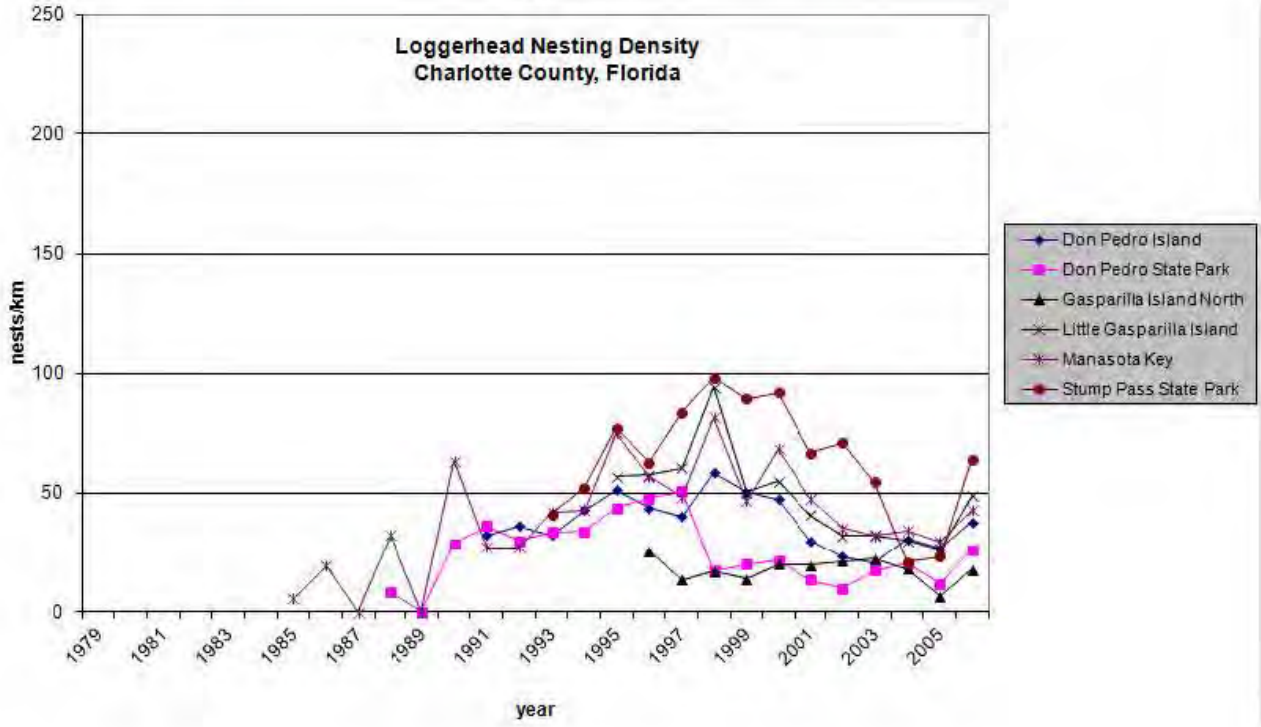
Recent coordination with your staff and the Florida Fish and Wildlife Conservation Commission indicate that Venice Beach need not be treated as a high density nesting beach requiring a placement window. I am requesting a determination as whether Venice Beach should be subject to the beach placement window in the SPBO. If you have any questions, please contact me at 904 232-1665 or Kenneth Dugger at 904 232-1686.

Sincerely,

Eric P. Summa
Chief, Environmental Branch

Enclosure


Loggerhead Nesting Density
Sarasota County, Florida
nests/km
year
Casey Key
Lido Key
Longboat Key South
Manasota Key
Siesta Key
Venice Beaches
Average


Loggerhead Nesting Density
Charlotte County, Florida
nests/km
year
Don Pedro Island
Don Pedro State Park
Gasparilla Island North
Little Gasparilla Island
Manasota Key
Stump Pass State Park

## Hershorin, Aubree SAJ

**From:** Johnnie Jacobs [JJacobs@mcn-nsn.gov]
**Sent:** Monday, May 26, 2014 4:25 PM
**To:** Hershorin, Aubree SAJ
**Subject:** [EXTERNAL] Corps of Engineers, Jacksonville District, Draft EA suitability of 4 burrow areas for future nourishing of Venice Beach, Sarasota County, FL

Dear Mr. Hershorin,

Thank you for the correspondence regarding the above referenced project. The Muscogee (Creek) Nation is unaware of any Muscogee cultural or sacred sites located within the immediate project area. We concur that there should be no effects to any known historic properties and that work should proceed as planned. However, as the project is located in an area that is of general historic interest to the Tribe, we request that work be stopped and our office contacted immediately if any Native American cultural materials or remains are encountered. This stipulation should be placed on the construction plans to insure contractors are aware of it. Please feel free to contact me with any further questions or concerns.

Thank you,

Johnnie Jacobs, Manager
Cultural Preservation Office
Muscogee (Creek) Nation
P.O. Box 580
Okmulgee, OK 74447
jjacobs@mcn-nsn.gov
Cell (405) 712-3623

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## Hershorin, Aubree SAJ

**From:** Hershorin, Aubree SAJ
**Sent:** Tuesday, June 03, 2014 9:44 AM
**To:** Mark Sramek
**Subject:** RE: Venice BEC and Tampa O&M (UNCLASSIFIED)
**Attachments:** Venice final 6-9-11 pg formatted wFigs.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Hi Mark,

Were you able to review the EA for the Venice Beach project? There are some patchy, low relief hardbottoms located near our borrow areas, but none meet the "significant" definition per the GRBO. We've included a 400 foot buffer around them in the interest of being extra-cautious, though. I've attached the report from the surveys we contracted in 2011 of the hardbottoms while we were developing the borrow area boundaries (they've decreased in size from those shown in these maps to account for the 400 foot buffer). The placement portion of the project has not changed from 2006, and all nearshore hardbottoms have been mitigated for during the previous projects.

The public comment period closed on May 15, so we are currently finalizing the EA and hoping to route a FONSI in the next week or two.

If you have any questions about the project, please don't hesitate to give me a call to discuss.

Thanks so much for your assistance!
Aubree

-----Original Message-----
From: Hershorin, Aubree SAJ
Sent: Wednesday, April 16, 2014 1:48 PM
To: Mark Sramek
Subject: RE: Venice BEC and Tampa O&M (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Mark,

Just following up on these two projects. I've attached the NOA for the Venice Beach project, which was put in the mail today. The link to the documents may not be available quite yet, but will be within the next day or so at http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx#Sarasota. If you could provide your comments by mid-May or so, that would be great!

[redacted]

If you have any questions, please don't hesitate to call me!

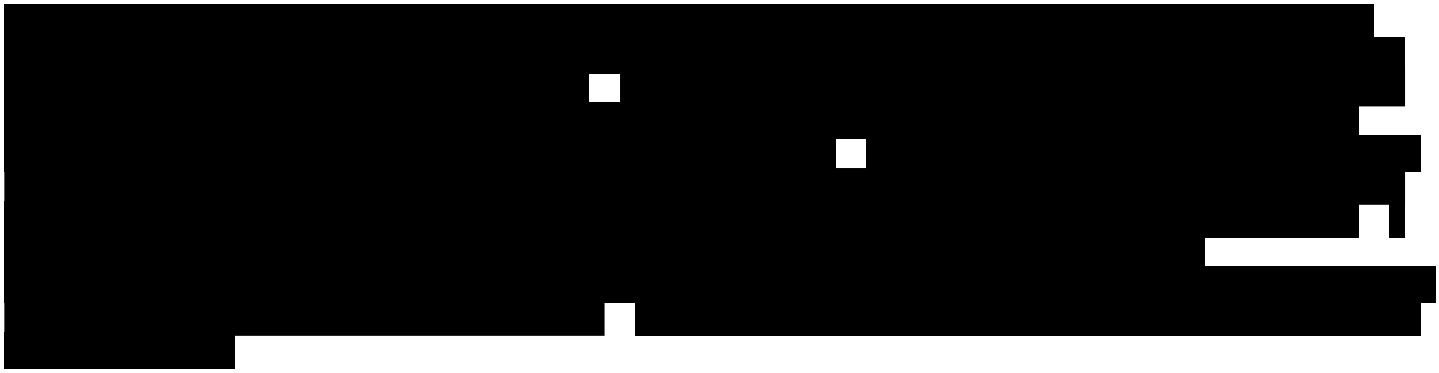
Best,
Aubree

-----Original Message-----
From: Hershorin, Aubree SAJ
Sent: Friday, March 07, 2014 4:17 PM
To: Mark Sramek
Subject: Venice BEC and Tampa O&M (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Mark!

Hope you're doing well!  I wanted to check in with you on two EFH consultations: Tampa O&M and Venice BEC.



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Since the Tampa O&M project already has a valid NEPA document, if you could let me know if you have any comments on it as soon as possible, I'd really appreciate it!

Thanks,
Aubree

~~~~~~~~~~~~~~~~~~~~~~~~~
Aubree Hershorin, Ph.D.
Environmental Branch, Coastal Section
Planning and Policy Division
U.S. Army Corps of Engineers
701 San Marco Blvd.
Jacksonville, FL  32207
USACE Office: (904) 232-2136

Classification: UNCLASSIFIED
Caveats: NONE
~~~~~~~~~~~~~~~~~~~~~~~~~

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

June 5, 2014

Colonel Alan M. Dodd
District Commander
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service CPA Code: 2012-CPA-0053
Date Received: December 5, 2011
Formal Consultation Initiation Date: May 19, 2014
Project: Venice Beach Hurricane and Storm Damage Reduction
County: Sarasota

Dear Colonel Dodd:

This document transmits the U.S. Fish and Wildlife Service's (Service) decision regarding the application of the proposed placement of beach compatible material along the shoreline south of Venice Inlet, Sarasota County, Florida, to the August 22, 2011, Statewide Programmatic Biological Opinion (SPBO) (Service 2011) and the May 22, 2013, Programmatic Piping Plover Biological Opinion ($P^3$BO) (Service 2013). The U.S. Army Corps of Engineers (Corps) determined on November 1, 2011, that the proposed project "may affect" the threatened Northwest Atlantic population of the loggerhead sea turtle (*Caretta caretta*), endangered leatherback sea turtle (*Dermochelys coriacea*), endangered green sea turtle (*Chelonia mydas*), endangered hawksbill sea turtle (*Eretmochelys imbricata*), and endangered Kemp's ridley sea turtle (*Lepidochelys kempii*). In addition, the Corps determined the proposed project "may affect, but is not likely to adversely affect" the endangered West Indian manatee (*Trichechus manatus*), and "will not affect" beach mice. The Service concurs with these determinations.

In the Corps' letter dated November 1, 2011, the Corps determined the proposed project "may affect, but is not likely to adversely affect", the piping plover (*Charadrius melodus*) and requested initiation of informal consultation. This determination was based in part on the fact the Corps did not have any population data that demonstrated the presence of piping plovers in the proposed project area. However, surveys conducted by volunteers and researchers contacted by the Service recorded the presence of two piping plovers south of Venice Inlet in February 2011. Thus, the Service did not concur with the Corps' determination in regard to piping plovers. Following issuance of the $P^3$BO, the Corps identified several locations within the project boundaries that were publicly owned land and would be classified according to the $P^3$BO as optimal habitat. Consequently, in an email dated May 19, 2014, the Corps stated the City of Venice (Sponsor) was willing to conduct the monitoring as outlined in the $P^3$BO for projects located in optimal piping plover habitat, which would constitute a "may affect" determination for this species.

This document is provided in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*), the Marine Mammal Protection Act of 1972, as amended (MMPA) (16 U.S.C. 1361 *et seq.*), and the provisions of the Fish and Wildlife Coordination Act of 1958, as amended (FWCA) (48 Stat. 401; 16 U.S.C. 661 *et seq.*).

## PROJECT DESCRIPTION

The Corps and Sponsor propose to place sand on approximately 3.2 miles of shoreline south of Venice Inlet, Sarasota County, Florida (Figure 1). Using either a hydraulic or mechanical dredge, approximately 760,000 cubic yards of beach compatible material will be dredged from one of four offshore borrow areas located approximately 11 miles southwest of the fill template (Figure 1). Material will be excavated and offloaded within the fill template (200 feet north of Florida Department of Environmental Protection [DEP] reference monument R-116 to R-133). The sand will be graded to the permitted design fill profile of +9.0 feet North American Vertical Datum. All sand placed within the fill template must be approved by the DEP and meet all requirements as outlined in the Florida Administrative Code subsection 62B-41.007. The intent of the proposed sand placement project is to provide shoreline stabilization.

Although beach corridors, staging area, and pipeline corridors will be determined at a later time during the DEP permitting process, and therefore have not been specified at this time, construction vehicles and equipment must traverse or be stored within these designated areas, corridors, and/or within the pipeline corridor. In addition, all construction pipes will be placed parallel to the shoreline and positioned as far landward as possible up to the vegetated dune line. Existing vegetated habitat at these sites and corridors shall be protected to the maximum extent practicable. Any impacted vegetation at these sites and corridors shall be restored to preconstruction conditions. In addition, if heavy equipment and vehicles are required to traverse the dry beach above the mean high water line, the path will be tilled to 3 feet to avoid compaction impacts prior to the following sea turtle nesting season. Tilling may be eliminated if compaction testing does not warrant such activity as outlined in the SPBO.

The next sand placement event is scheduled to occur in 2014-2015, and is expected to take approximately 3 to 4 months to complete. Dredging and sand placement activities may take place during both daytime and nighttime hours. The frequency of sand placement events is anticipated to be once every 10 years.

The action area is defined as all areas to be affected directly or indirectly by the action and not merely the immediate area involved in the action. The Service identifies the action area to include the four borrow areas, sand fill template, beach corridors, pipeline corridor, staging areas, and shoreline downdrift (0.5 mile). The project is located along the Gulf of Mexico, Sarasota County, Florida at latitude 27.0889 and longitude -82.5433.

## COASTAL BARRIER RESOURCES ACT

In a letter dated September 20, 2011, the Corps determined the proposed project is consistent with the Coastal Barrier Resources Act (CBRA) and the Coastal Barrier Resources Improvement Act (CBRIA), and requested confirmation of their determination. The northern extent of the proposed project is located adjacent to CBRA Otherwise Protected Area FL-71P, Venice Inlet,

while the southern portion of the project is within CBRA Otherwise Protected Area P21AP, Manasota Key. Considering the proposed project does not include the construction of structures that would require Federal Flood Insurance, and the only Federal funding prohibition within an "Otherwise Protected Areas" is Federal flood insurance, the Service concurs with the Corps' determination.

## THREATENED AND ENDANGERED SPECIES

### Piping plover

Piping plovers do not breed in Florida, but spend the winter along the southern Atlantic, Gulf Coast, and Caribbean beaches and barrier islands. The primary constituent elements (PCEs) for piping plover wintering habitat are those habitat components that are essential for the primary biological needs of foraging, sheltering, and roosting. The PCEs include intertidal beaches and flats (between annual low tide and annual high tide) and associated dune systems and flats above the annual high tide. The Service and Corps have determined optimal piping plover habitat as outlined in the $P^3BO$ is present within and adjacent to the project area. The Corps and Sponsor have agreed to follow and implement the Reasonable and Prudent Measures and Terms and Conditions outlined in the $P^3BO$ that apply to the proposed project. Therefore, the Service has determined the proposed project is appropriate to apply to the $P^3BO$ and is consistent with the $P^3BO$, and the Service concurs with the Corps' determination. Please submit a report by July 31 of each year in which monitoring is completed, as described in Term and Condition 9 of the $P^3BO$.

In order to comply with the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 701 *et seq.*) and address the potential for the proposed project to impact nesting shorebirds, the Corps and Sponsor shall comply with the Florida Fish and Wildlife Conservation Commission (FWC) standard shorebird protection guidelines to protect against impacts to nesting shorebirds during implementation of this project on the Gulf Coast from April 1 to August 31. All sand placement events could impact nesting shorebirds protected under the MBTA.

### Sea turtles

The Service and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) share Federal jurisdiction for sea turtles under the Act. The Service has responsibility for sea turtles on the nesting beach and the NOAA Fisheries has jurisdiction for sea turtles in the marine environment. Our analysis will only address activities that may impact nesting sea turtles, their nests and eggs, and hatchlings as they emerge from the nest and crawl to the sea. The NOAA Fisheries will assess and consult with the Corps concerning potential impacts to foraging and swimming sea turtles, and all other marine species under their jurisdiction within the action area in accordance with the MMPA.

Please note the provisions of this consultation do not apply to sea turtles in the marine environment, such as swimming juvenile and adult sea turtles. If applicable, you are required to consult with the NOAA Fisheries on your project. For further information on Act compliance with the NOAA Fisheries, please contact Mr. Dennis Klemm, Acting Chief of the Interagency Cooperation Branch, by e-mail at dennis.klemm@noaa.gov or by phone at 727-209-5953.

The Service has determined the proposed project is appropriate to apply to the SPBO. In a Corps letter dated May 22, 2014, the Corps noted in the SPBO, Manasota Key is described as a high density nesting beach with specific sand placement windows. However, the nesting densities for Manasota Key within Sarasota County are much lower than those documented in the Charlotte County segment of Manasota Key. Consequently, the Corps requested the Sarasota County segment of Manasota Key not be subject to the high density nesting beach sand placement widows as outlined in the SPBO. Upon review of the data, the Service agrees with this rationale and authorizes this request. In addition, this issue will be edited accordingly in the revised SPBO due for completion in July 2014. The Corps and Sponsor have agreed to follow and implement the minimization measures, Reasonable and Prudent Measures, and the Terms and Conditions that apply to the proposed project. Please submit a report by July 31 of the year immediately following construction, as described in Term and Condition B19 of the SPBO, post-completion of the proposed work.

**West Indian manatee**

The proposed project area is located within West Indian manatee Consultation Area; however, no critical habitat and no Important Manatee Areas are designated within the project area. The Corps and Sponsor have agreed to implement the Standard Manatee Conditions for In-Water Work (FWC 2011) and the minimization measures outlined in the SPBO to avoid potential impacts on manatees. Based on the proposed protection measures, the Service concurs with the Corps' determination.

This letter fulfills the requirements of the Act and no further action is required. If modifications are made to the project, if additional information involving potential effects to listed species becomes available, or if a new species is listed, reinitiation of consultation may be necessary.

## FISH AND WILDLIFE RESOURCES

This section is provided in accordance with the FWCA of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 *et seq.*) to address other fish and wildlife resources in the project area.

**Hardbottom Reef Habitat and Seagrasses**

Based on postcontruction monitoring guidelines associated with the 2005 sand placement project, benthic surveys of the borrows areas have been conducted. According to the NOAA Fisheries Regional Biological Opinion, 400-foot buffers will be established around all significant hardbottom reef habitat at each borrow area. Since no alteration to the project is currently proposed, no additional benthic impacts are anticipated, hence, additional mitigation is not warranted based on past mitigation measures conducted. The Corps will continue to consult with the NOAA Fisheries whom will assess all potential impacts to hardbottom reef habitat and seagrasses within the borrow area dredge templates, sand placement fill template, and shoreline downdrift area.

## REINITIATION NOTICE

This concludes formal consultation on the action outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if:

1. The amount or extent of incidental take outlined in the SPBO and/or $P^3BO$ is exceeded. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation;
2. New information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion;
3. The agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or
4. A new species is listed or critical habitat designated that may be affected by the action.

Thank you for your cooperation in the effort to conserve fish and wildlife resources. Should you have additional questions or require clarification regarding this letter, please contact Jeff Howe at 772-469-4283.

Sincerely yours,

Victoria A. Foster

for Craig Aubrey
Field Supervisor
South Florida Ecological Services Office

cc: electronic only
Corps, Jacksonville, Florida (Aubree Hershorin)
DEP, Tallahassee, Florida (Tom Jacobs)
EPA, West Palm Beach, Florida (Ron Miedema)
FWC, Tallahassee, Florida (FWS-CPS, Robbin Trindell)
NOAA Fisheries, St. Petersburg, Florida (Dennis Klemm, Mark Sramek)
Service, St. Petersburg, Florida (Anne Marie Lauritsen, Peter Plage)
Service, Tallahassee, Florida (Jerry Ziewitz)
USGS, Gainesville, Florida (Susan Walls)

## LITERATURE CITED

Florida Fish and Wildlife Conservation Commission (FWC). 2011. Standard Manatee Conditions for In-Water Work 2011. Tallahassee, Florida [Internet]. [cited August 6, 2013]. Available from: http://myfwc.com/wildlifehabitats/managed/manatee/permit-review/#Main

U.S. Fish and Wildlife Service (Service). 2011. Statewide programmatic biological opinion to the U.S. Army Corps of Engineers (FWS Log No. 41910-2011-F-0170) for shore protection activities along the coast of Florida (August 22, 2011). Jacksonville, Panama City, and Vero Beach Field Offices, Florida.

U.S. Fish and Wildlife Service (Service). 2013. Programmatic piping plover biological opinion to the U.S. Army Corps of Engineers (Service Consultation Code 04EF1000-2013-F-0124) for shore protection activities in the geographical region of the north and south Florida Ecological Services Field Offices (May 22, 2013). Jacksonville and Vero Beach Field Offices, Florida.

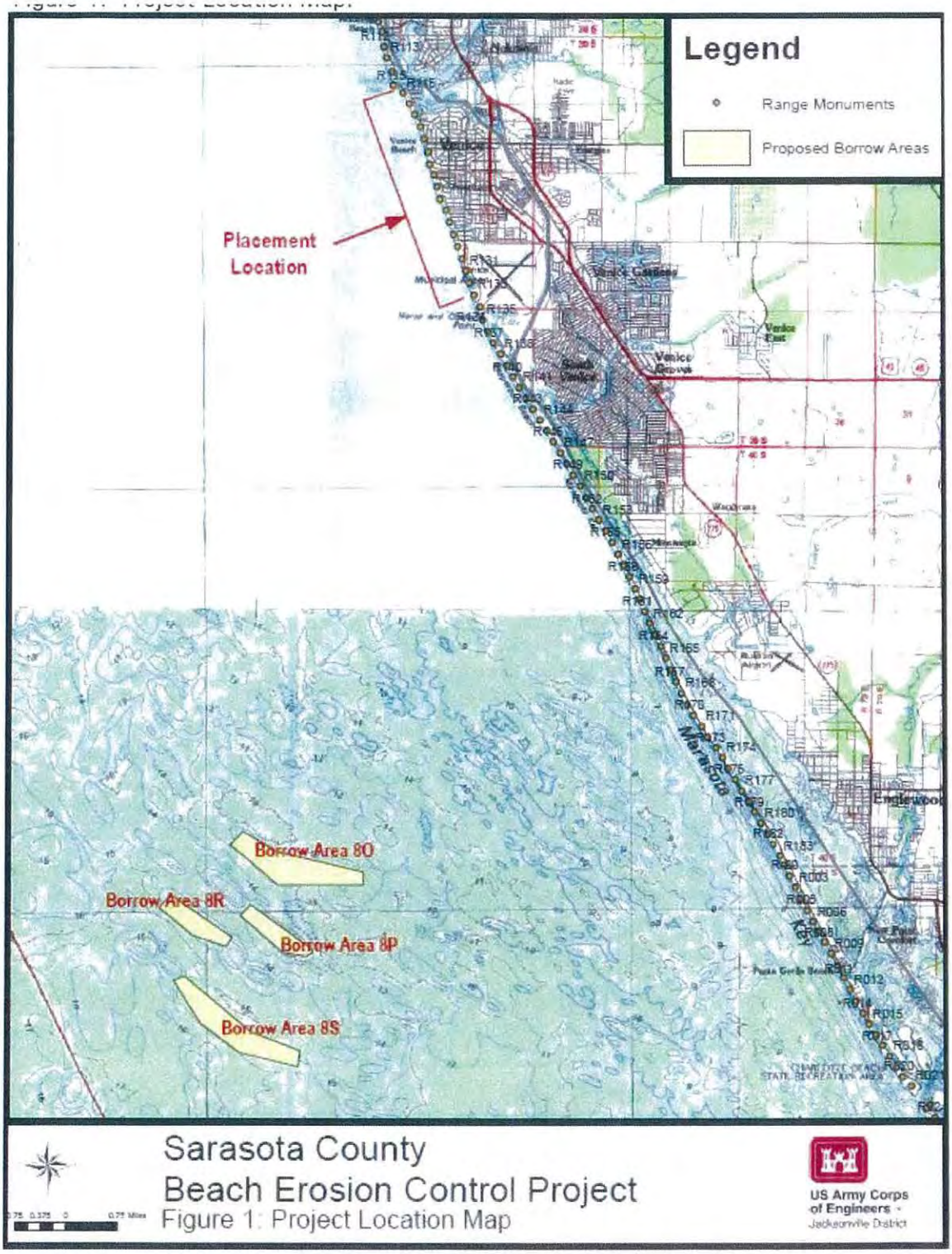


**Figure 1.** Location of the fill template and borrow areas associated with the proposed sand placement project south of Venice Inlet, Sarasota County, Florida.

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**FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION**
BOB MARTINEZ CENTER
2600 BLAIRSTONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

# CONSOLIDATED JOINT COASTAL PERMIT AND INTENT TO GRANT SOVEREIGN SUBMERGED LANDS AUTHORIZATION

**PERMITTEES:**
City of Venice
c/o Kathleen Weedon, P.E., City Engineer
401 West Venice Avenue
Venice, FL 34285

and

U.S. Army Corps of Engineers
Jacksonville District
c/o Eric P. Summa, Chief
Environmental Branch
P.O. Box 4970
Jacksonville, FL 32232-0019

**AGENT:**
Coastal Tech
c/o Lois Edwards, Supervisor
Environmental & Permitting Services Team
3625 20th Street
Vero Beach, FL 32960-2409

**PERMIT INFORMATION:**

Permit Number: 0211217-005-JC

Project Name: Venice Beach Nourishment

County: Sarasota

Issuance Date: June 13, 2014

Expiration Date: June 13, 2029

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**REGULATORY AUTHORIZATION:**

This permit is issued under the authority of Chapter 161 and Part IV of Chapter 373, Florida Statutes (F.S.), and Title 62, Florida Administrative Code (F.A.C.). Pursuant to Operating Agreements executed between the Department of Environmental Protection (Department) and the water management districts, as referenced in Chapter 62-113, F.A.C., the Department is responsible for reviewing and taking final agency action on this activity.

**PROJECT DESCRIPTION:**

The project is to periodically nourish 3.2 miles of shoreline. The fill template will have a variable berm width at an elevation of 8.4 feet NAVD, and a foreshore slope of 1:15 (vertical:horizontal). Beach-compatible sand will be obtained from up to four offshore borrow areas.

**PROJECT LOCATION:**

The beach nourishment segment is located south of Venice Inlet, and extends from 300 feet north of DEP range monument R-116 to R-133, in Sarasota County, Sections 1, 2, 12, 13 and 19, Township 39 South, Range 18 and 19 East, extending into the Gulf of Mexico, Class III Waters. The four offshore borrow areas are located approximately 10.5 miles southwest of the beach nourishment site in the Gulf of Mexico, Class III Waters.

**PROPRIETARY AUTHORIZATION:**

This activity also requires a proprietary authorization, as the activity is located on sovereign submerged lands held in trust by the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees), pursuant to Article X, Section 11 of the Florida Constitution, and Sections 253.002 and 253.77, F.S. The activity is not exempt from the need to obtain a proprietary authorization. The Board of Trustees delegated, to the Department, the responsibility to review and take final action on this request for proprietary authorization in accordance with Section 18-21.0051, F.A.C., and the Operating Agreements executed between the Department and the water management districts, as referenced in Chapter 62-113, F.A.C. This proprietary authorization has been reviewed in accordance with Chapter 253, F.S., Chapter 18-21, F.A.C., Section 62-330.075, F.A.C., and the policies of the Board of Trustees.

As staff to the Board of Trustees, the Department has reviewed the project described above, and has determined that the beach fill placement activity qualifies for a Letter of Consent to use sovereign submerged lands, as long as the work performed is located within the boundaries as described herein and is consistent with the terms and conditions herein. Therefore, consent is hereby granted, pursuant to Section 253.77, F.S., to perform the beach fill placement activity on the specified sovereign submerged lands.

The Department has also determined that the four offshore borrow areas require a public easement for the use of those lands, pursuant to Section 253.77, F.S. The final documents required to execute the public easement have been sent to the Department's Division of State Lands. The Department intends to issue the public easement to the City of Venice upon satisfactory execution of those documents. **You may not begin construction until the public easement has been executed to the satisfaction of the Department.**

**COASTAL ZONE MANAGEMENT:**

This permit constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Zone Management Act.

**WATER QUALITY CERTIFICATION:**

This permit constitutes certification of compliance with state water quality standards pursuant to Section 401 of the Clean Water Act, 33 U.S.C. 1341.

**AGENCY ACTION:**

The above-named Permittees are hereby authorized to construct the work outlined in the activity description and activity location of this permit, and as shown on the approved permit drawings, plans and other documents attached hereto. This agency action is based on the information submitted to the Department as part of the permit application, and adherence with the final details of that proposal shall be a requirement of the permit. **This permit and authorization to use sovereign submerged lands are subject to the General Conditions, the General Consent Conditions and the Specific Conditions, which are a binding part of this permit and authorization.** Both Permittees and their Contractor are responsible for reading and understanding this permit (including the permit conditions and the approved permit drawings) prior to commencing the authorized activities, and for ensuring that the work is conducted in conformance with all the terms, conditions and drawings.

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**GENERAL CONDITIONS:**

1. This permit, including its general and specific conditions, must be construed in light of the February 28, 2006 Interagency Coordination Agreement for Civil Works Projects (ICA) between the Department and the Corps. As recognized in the ICA, the Department has the authority to include reasonable conditions in this permit. All of the conditions in this permit, both general and specific, are enforceable to the extent sovereign immunity has been waived under 33 U.S.C. §§ 1323 and 1344(t). The ICA is incorporated herein by reference.

2. All activities approved shall be implemented as set forth in the drawings incorporated by reference and in compliance with the conditions and requirements of this document. The Corps shall notify the Department in writing of any anticipated changes in:

    a) operational plans;
    b) project dimensions, size or location;
    c) ability to adhere to permit conditions;
    d) project description included in the permit;
    e) monitoring plans.

    If the Department determines that a modification to the permit is required then the Corps shall apply for and obtain the modification. Department approval of the modification shall be obtained prior to implementing the change, unless the change is determined by the Department to reduce the scope of work from that authorized under the original permit, and will not affect compliance with permit conditions or monitoring requirements.

3. If, for any reason, the Corps does not comply with any condition or limitation specified herein, the Corps shall immediately provide the Department with a written report containing the following information:
   a) a description of and cause of noncompliance;
   b) the period of noncompliance, including dates and times;
   c) impacts resulting or likely to result from the non-compliance;
   d) steps being taken to correct the non-compliance; and
   e) the steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

   Compliance with the provisions of this condition shall not preclude the Department from taking any enforcement action allowed under state law with respect to any non-compliance.

4. The Corps shall obtain any applicable licenses, permits, or other authorizations which may be required by federal, state, local or special district laws and regulations. Nothing herein constitutes a waiver or approval of other Department permits or authorizations that may be required for other aspects of the total project.

5. Nothing herein conveys to the Corps or creates in the Corps any property right, any interest in real property, any title to land or water, constitutes State recognition or acknowledgment of title, or constitutes authority for the use of Florida's sovereign submerged lands seaward of the mean high-water line or an established erosion control line, unless herein provided, and the necessary title, lease, easement, or other form of consent authorizing the proposed use has been obtained from the State.

6. Any delineation of the extent of a wetland or other surface water submitted as part of the application, including plans or other supporting documentation, shall not be considered specifically approved unless a specific condition of this authorization or a formal determination under section 373.421(2), F.S., provides otherwise.

7. Nothing herein authorizes any entrance upon or activities on property which is not owned or controlled by the Corps or local sponsor, or conveys any vested rights or any exclusive privileges.

8. This document or a copy thereof, complete with all conditions, attachments, modifications, and time extensions shall be kept at the work site of the authorized activity. The Corps shall require the contractor to review this document prior to commencement of the authorized activity.

9. The Corps specifically agrees to allow Department personnel with proper identification, at reasonable times and in compliance with Corps specified safety standards access to the premises where the authorized activity is located or conducted for the purpose of

ascertaining compliance with the terms of this document and with the rules of the Department and to have access to and copy any records that must be kept; to inspect the facility, equipment, practices, or operations regulated or required; and to sample or monitor any substances or parameters at any location reasonably necessary to assure compliance. Reasonable time may depend on the nature of the concern being investigated.

10. At least forty-eight (48) hours prior to the commencement of authorized activity, the Corps shall submit to the Department a written notice of commencement of activities indicating the anticipated start date and the anticipated completion date.

11. If historic or archaeological artifacts such as, but not limited to, Indian canoes, arrow heads, pottery or physical remains, are discovered at any time on the project site, the Corps shall immediately stop all activities in the immediate area which disturb the soil and notify the Department and the State Historic Preservation Officer. In the event that unmarked human remains are encountered during permitted activities, all work shall stop in the immediate area and the proper authorities notified in accordance with Section 872.05, *Florida Statutes.*

12. Within a reasonable time after completion of construction activities authorized by this permit, the Corps shall submit to the Department a written statement of completion. This statement shall notify the Department that the work has been completed as authorized and shall include a description of the actual work completed. The Department shall be provided, if requested, a copy of any as-built drawings required of the contractor or survey performed by the Corps.

**GENERAL CONSENT CONDITIONS (beach fill placement activity):**

1. Sovereignty submerged lands may be used only for the specified activity or use. Any unauthorized deviation from the specified activity or use and the conditions for undertaking that activity or use will constitute a violation. Violation of the authorization will result in suspension or revocation of the applicant's use of the sovereignty submerged lands unless cured to the satisfaction of the Board of Trustees.

2. Authorization under Rule 18-21.005, F.A.C., conveys no title to sovereignty submerged lands or water column, nor does it constitute recognition or acknowledgment of any other person's title to such land or water.

3. Authorizations under Rule 18-21.005, F.A.C., may be modified, suspended or revoked in accordance with its terms or the remedies provided in Sections 253.04, F.S. and Chapter 18-14, F.A.C.

4. Structures or activities will be constructed and used to avoid or minimize adverse impacts to resources.

5. Construction, use, or operation of the structure or activity will not adversely affect any species which is endangered, threatened or of special concern, as listed in Rules 68A-27.003, 68A-27.004, and 68A-27.005, F.A.C.

6. Structures or activities will not unreasonably interfere with riparian rights. When a court of competent jurisdiction determines that riparian rights have been unlawfully affected, the structure or activity will be modified in accordance with the court's decision.

7. Structures or activities will not create a navigational hazard.

8. Structures will be maintained in a functional condition and will be repaired or removed if they become dilapidated to such an extent that they are no longer functional.

9. Structures or activities will be constructed, operated, and maintained solely for water dependent purposes.

10. The applicant agrees to indemnify, defend and hold harmless the Board of Trustees and the State of Florida from all claims, actions, lawsuits and demands in any form arising out of the authorization to use sovereignty submerged lands or the applicant's use and construction of structures on sovereignty submerged lands. This duty to indemnify and hold harmless will include any and all liabilities that are associated with the structure or activity including special assessments or taxes that are now or in the future assessed against the structure or activity during the period of the authorization.

11. Failure by the Board of Trustees to enforce any violation of a provision of the authorization or waiver by the Board of Trustees of any provision of the authorization will not invalidate the provision not enforced or waived, nor will the failure to enforce or a waiver prevent the Board of Trustees from enforcing the unenforced or waived provision in the event of a violation of that provision.

12. Applicant binds itself and its successors and assigns to abide by the provisions and conditions set forth in the authorization. If the applicant or its successors or assigns fails or refuses to comply with the provisions and conditions of the authorization, the authorization may be terminated by the Board of Trustees after written notice to the applicant or its successors or assigns. Upon receipt of such notice, the applicant or its successors or assigns will have thirty (30) days in which to correct the violations. Failure to correct the violations within this period will result in the automatic revocation of this authorization.

13. All costs incurred by the Board of Trustees in enforcing the terms and conditions of the authorization will be paid by the applicant. Any notice required by law will be made by certified mail at the address shown on page one of the authorization. The applicant will notify the Board of Trustees in writing of any change of address at least ten days before the change becomes effective.

14. This authorization does not allow any activity prohibited in a conservation easement or restrictive covenant that prohibits the activity.

**SPECIFIC CONDITIONS:**

The following Specific Conditions (1-36) shall be met by at least one of the co-Permittees, according to their respective construction obligations, as indicated below. The U.S. Army Corps of Engineers (Corps) shall be responsible for Specific Conditions 1-21 and 29-34. The City of Venice (City) shall be responsible for Specific Conditions 1, 22-28 and 35-36. Neither the Corps nor the City shall be responsible for meeting such conditions for work undertaken by the other pursuant to this permit.

1. The terms, conditions and provisions of the required public easement shall be met. The Notice to Proceed shall not be issued, and construction shall not commence on sovereign submerged lands, title to which is held by the Board of Trustees, until all public easement documents have been executed to the satisfaction of the Department.

2. All reports, notices or other submittals relating to this permit shall be sent to the Department's JCP Compliance Officer by e-mail at: JCPCompliance@dep.state.fl.us, unless otherwise specified in the Specific Conditions. All submittals shall clearly indicate the project name (Venice Beach Nourishment) and the permit number (0211217-005-JC).

3. No work shall be conducted under this permit until the Permittee has received a Notice to Proceed from the Department for each nourishment event. At least 30 days prior to the requested date of issuance of the Notice to Proceed, the Permittee shall submit (to the JCP Compliance Officer) an electronic request for a Notice to Proceed for review and approval by the Department, along the following supporting items:

    a. Documentation that the public easement has been fully executed and recorded.

    b. An anticipated construction schedule and a description of the specific type of dredge equipment to be used.

    c. A detailed Final Biological Monitoring Plan, as described in Specific Conditions 32-34.

d. The names, credentials and contact information for the individuals who will conduct the turbidity monitoring and the biological monitoring.

e. The intermediate turbidity monitoring data from the previous nourishment event and a summary to support the appropriate mixing zone size for the beach nourishment site. If the data support a different mixing zone size, the new mixing zone will be documented through an administrative permit modification. This item is **not** required for the initial nourishment event under this permit, but is required for all subsequent events.

f. A Scope of Work for the turbidity monitoring to ensure that the right equipment is available to conduct the monitoring correctly, at the correct location (i.e., wherever the densest portion of the turbidity plume crosses the edge of the mixing zone polygon), and under any conditions. In addition to the equipment needed to collect water samples and measure turbidity, the equipment needed to access the correct sampling site must be listed. This might include boats, jet skis, floatation devices, wet suits, SCUBA gear, etc.

4. At least seven days prior to commencement of construction authorized by this permit, the Permittees shall review the conditions and monitoring requirements of this permit with all contractors, the individuals responsible for turbidity and biological monitoring, the U.S. Army Corps of Engineers (Corps), the JCP Compliance Officer (or designated alternate), and the Florida Fish and Wildlife Conservation Commission (FWC). Once the JCP Compliance Officer has confirmed his/her availability, the Permittee shall provide notification, at least 14 days in advance of the meeting, to each of these offices advising of the agreed-upon date, time, and location of the pre-construction conference, and also provide a meeting agenda and a teleconference number. The contact information for FWC is:

FWC, Imperiled Species Management Section
620 South Meridian Street, 6A
Tallahassee, FL 32399-1600
Phone: (850) 922-4330
Fax: (850) 921-4369
E-mail: fcmpmail@myfwc.com

The Permittee may wish to combine this pre-construction conference with the FWC pre-construction conference required in Specific Condition 13.

5. The Permittee shall not store or stockpile tools, equipment, materials, etc., within littoral zones or elsewhere within surface waters of the state without prior written approval from the Department. Storage, stockpiling or access of equipment on, in, over or through seagrass beds (or other aquatic vegetation), wetlands or vegetated dunes is prohibited

unless within a work area or ingress/egress corridor specifically approved by this permit. Anchoring or spudding of vessels and barges within beds of aquatic vegetation or over hardbottom areas is also prohibited.

6. The Permittee shall not conduct project activities or store project-related equipment in, on or over dunes, or otherwise impact dune vegetation, outside of the approved staging and beach access areas designated in the permit drawings.

   Best management practices (BMPs) shall be used at all times during construction to minimize turbidity at both the borrow/dredge and beach/fill sites. When fill material is hydraulically pumped onto the beach, these BMPs shall include sand dikes parallel to the shore and landward of the mean high water line. The sand/water slurry pumped from the borrow/dredge site shall be discharged along the landward side of the dikes. When the sand/water slurry is hydraulically pumped onto the beach, the opening of the discharge pipe shall be at least 200 feet from the end of the dike where return water from the slurry flows back into open waters of the state.

7. In order to avoid impacts to historic/archeological resources adjacent the borrow areas, a 250-foot buffer shall be maintained between the dredge and six potentially-significant historical resource clusters, as identified in an underwater remote sensing survey conducted in August and September 2010 by Panamerican Consultants, Inc. The Permittee shall also avoid anchoring or other bottom-disturbing activities within 1,000 feet of four nearshore subbottom targets that were identified in the survey as potentially significant cultural resources (see attached letter from the Florida Department of State, Division of Historical Resources dated November 2, 2011).

8. Sediment quality shall be assessed as outlined in the attached Sediment Quality Assurance/ Quality Control (QA/QC) Plan dated March 21, 2013. If during construction, the Permittee determines that the beach fill material is not in compliance with the Sediment QA/QC Plan, measures shall be taken to avoid further placement of noncompliant fill. A post-remediation report containing a site map, sediment analysis, and volume of noncompliant fill material removed and replaced shall be submitted to the JCP Compliance Officer within seven days following completion of remediation activities.

9. The Permittee shall submit post-construction sediment testing results and an analysis report, as outlined in the Sediment QA/QC Plan, to the JCP Compliance Officer within 90 days following beach placement. A summary table of the sediment samples and test results for the sediment compliance parameters, as outlined in Table 1 of the Sediment QA/QC Plan, shall accompany the complete set of laboratory testing results. A statement describing how the fill material compares to the sediment analysis, and volume calculations from the geotechnical investigation shall be included in the sediment testing

results. The sediment testing results shall be certified by a professional engineer or a professional geologist who represents the testing laboratory.

MANATEE, MARINE TURTLE AND SHOREBIRD PROTECTION

10. During all construction authorized by this permit, and subsequent to authorization of incidental Take by the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS) in accordance with Sections 161.041(5) and 379.2431(1), F.S., the Permittee shall comply with the following conditions intended to protect manatees, marine turtles and shorebirds from direct project effects:

    a. All personnel associated with the project shall be instructed about the presence of marine turtles, manatees and manatee speed zones, and the need to avoid collisions with (and injury to) these protected marine species. The Permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing or killing manatees, which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act, and for killing marine turtles, which are protected under the Endangered Species Act and the Florida Marine Turtle Protection Act.

    b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels shall follow routes of deep water whenever possible.

    c. Siltation or turbidity barriers shall be made of material in which manatees and marine turtles cannot become entangled, shall be properly secured and shall be regularly monitored to avoid entanglement or entrapment. Barriers shall not impede manatee or marine turtle movement.

    d. All on-site project personnel are responsible for observing for the presence of marine turtles and manatees during all in-water activities. **All in-water activities, including vessels, shall be shut down if a marine turtle or manatee comes within 50 feet of the operation.** Activities shall not resume until the animal(s) has moved beyond a 50-foot radius of the project operation, or until 30 minutes has elapsed if the animal(s) has not reappeared within 50 feet of the operation. Animals shall not be herded away or harassed into leaving.

    e. Any collision with or injury to a marine turtle or manatee shall be reported immediately to the FWC Hotline at 1-888-404-3922, and to FWC by email at: ImperiledSpecies@myfwc.com. Collision and/or injury shall also be reported to FWS in Jacksonville at 1-904-731-3336.

f. Temporary signs concerning manatees shall be posted prior to and during all in-water activities. Temporary signs that have already been approved for this use by FWC shall be used (see MyFWC.com/manatee). A "Caution: Manatee Habitat" sign (shown below) measuring at least 8 ½ inches by 11 inches shall be posted in a location prominently visible to all personnel engaged in water-related activities. Questions concerning these signs can be sent to the email address listed above. All signs shall be removed by the Permittee upon completion of the project.


g. All personnel associated with the project shall be instructed about the potential presence of nesting shorebirds and the need to avoid Take of (including disturbance to) these protected species.

h. All vehicles shall be operated in accordance with FWC's "Best Management Practices for Operating Vehicles on the Beach" located at: http://myfwc.com/conservation/you-conserve/wildlife/beach-driving/. Specifically, the vehicle shall be operated at a speed of less than six miles per hour, and run at or below the high-tide line.

FISH AND WILDLIFE PROTECTION DURING DREDGING ACTIVITIES

11. ***Hopper Dredging.*** In the event a hopper dredge is utilized, the following requirements shall be met in addition to the terms and conditions of the applicable NMFS Regional Biological Opinion for Hopper Dredging (Gulf of Mexico):

a. Handling of captured marine turtle(s) shall be conducted only by persons with prior experience and training in these activities, and who is duly authorized to conduct such activities through a valid Marine Turtle Permit issued by FWC, pursuant to Chapter 68E-1, F.A.C.

b. To minimize impingement or entrapment of marine turtles within the water column, dredge pumps shall be disengaged by the operator, or the draghead bypass valve shall be open and in use when the dragheads are not firmly on the bottom. This precaution is especially important during the cleanup phase of dredging activities.

c. A state-of-the-art rigid deflector draghead shall be used on all hopper dredges, in all channels, at all times of the year.

d. The Sea Turtle Stranding and Salvage Network (STSSN) Coordinator shall be notified by email at Allen.Foley@myfwc.com at the start-up and completion of hopper dredging operations. In the event of capturing or recovering marine turtles or marine turtle parts, the STSSN should be contacted by email at: SeaTurtleStranding@myfwc.com.

e. Relocation trawling or non-capture trawling shall be implemented in accordance with the applicable NMFS Biological Opinion and Incidental Take authorization. Any activity involving the use of nets to harass and/or to capture and handle marine turtles in Florida waters requires a Marine Turtle Permit from FWC.

f. The Permittee or their contractor shall email weekly reports to the FWC's Imperiled Species Management Section at MTP@myfwc.com by Friday each week that trawling is conducted in Florida waters. These weekly reports shall include the species and number of turtles captured in Florida waters, general health, and release information. The Permittee(s) shall submit a summary (using the FWC-provided Excel spreadsheet) of all trawling activity, including non-capture trawling, and all turtles captured in Florida waters to MTP@myfwc.com by January 15 of the following year or at the end of the project. The summary shall include the following information: all measurements, the latitude and longitude (in decimal degrees) of captures and tow start-stop points, and times for the start-stop points of the tows, including those tows in which no turtles are captured.

FISH AND WILDLIFE PROTECTION DURING BEACH PLACEMENT ACTIVITIES

12. ***Beach Maintenance.*** All derelict coastal armoring material and other debris shall be removed from the beach to the maximum extent practicable prior to any fill placement. If debris removal activities will take place during shorebird breeding or marine turtle nesting seasons, the work shall be conducted during daylight hours only and shall not commence until the completion of daily seabird, shorebird or marine turtle surveys. All excavations and temporary alterations of the beach topography shall be filled or leveled to the natural beach profile prior to 9 p.m. each day unless otherwise authorized.

13. ***Pre-Construction Meeting.*** A meeting between representatives of the contractor, FWS, FWC, the permitted marine turtle surveyor and Bird Monitors as appropriate, shall be held prior to commencement of construction. At least ten-business days advance notice shall be provided prior to conducting this meeting. The meeting shall provide an opportunity for explanation and/or clarification of the protection measures, as well as additional guidelines when construction occurs during nesting season, such as staging equipment and reporting, as well as follow up meetings during construction. The Permittee may wish to combine this pre-construction meeting with the Department's pre-construction conference required in Specific Condition 4.

14. ***Nesting Seabird and Shorebird Protection Conditions.*** Nesting seabird and shorebird (shorebird) surveys shall be conducted by trained, dedicated individuals (Bird Monitor) with proven shorebird identification skills and avian survey experience. A list of candidate Bird Monitors with their contact information, summary of qualifications, including bird identification skills, and avian survey experience, shall be provided to FWC. This information shall be submitted to the FWC Regional Species Biologist (contact information attached) prior to any construction or hiring for shorebird surveys for revision and consultation. Bird Monitors shall use the following survey protocols:

    a. Bird Monitors shall review and become familiar with the general information, employ the data collection protocol, and implement data entry procedures outlined in FWC's Florida Shorebird Database (FSD) located at: www.FLShorebirdDatabase.org. An outline of data to be collected, including downloadable field data sheets, is available on the website.

    b. Breeding season varies by species. Most species have completed the breeding cycle by September 1, but flightless young may be present through September. The following dates are based on the best available information regarding ranges and habitat use by species around the state:

        Sarasota County: February 15 – September 1

        Breeding season surveys shall begin on the first day of the breeding season or ten days prior to project commencement (including surveying activities and other pre-construction presence on the beach), whichever is later. Surveys shall be conducted through August 31$^{st}$ or until all breeding activity has concluded, whichever is later.

    c. Breeding season surveys shall be conducted in all potential beach-nesting bird habitats within the project boundaries that may be impacted by construction or pre-construction activities. Portions of the project in which there is no potential for project-related activity during the nesting season may be excluded. One or

more shorebird survey routes shall be established in the FSD website to cover these areas.

d. During the pre-construction and construction phases of the project, surveys for detecting breeding activity and the presence of flightless chicks shall be completed on a daily basis prior to movement of equipment, operation of vehicles, or other activities that could potentially disrupt breeding behavior or cause harm to the birds or their eggs or young.

e. Surveys shall be conducted by walking the length of the project area and visually surveying for the presence of shorebirds exhibiting breeding behavior, shorebird/seabird chicks, or shorebird/seabird juveniles as outlined in the FSD "Breeding Bird Protocol for Shorebirds and Seabirds". Use of binoculars is required. If an ATV or other vehicle is needed to cover large project areas, vehicles shall be operated in accordance with FWC's "Best Management Practices for Operating Vehicles on the Beach" located at: http://myfwc.com/conservation/you-conserve/wildlife/beach-driving/. Specifically, the vehicle shall be operated at a speed of less than six miles per hour and run at or below the high-tide line. The Bird Monitor shall stop at no greater than 200-meter intervals to visually inspect for breeding activity.

f. Once breeding is confirmed by the presence of a scrape, eggs, or young, the Bird Monitor shall notify the FWC Regional Species Biologist within 24 hours. All breeding activity shall be reported to the FSD website within one week of data collection.

15. ***Seabird and Shorebird Buffer Zones and Travel Corridors.*** Within the project area, the Permittee shall establish a disturbance-free buffer zone around any location where shorebirds have been engaged in breeding behavior, including territory defense. A 300-foot-wide buffer is considered adequate, based on published studies. However, a smaller, site-specific buffer may be implemented upon approval by the FWC Regional Species Biologist, as needed. All sources of human disturbance, including pedestrians, pets and vehicles shall be prohibited in the buffer zone.

a. The Bird Monitor shall keep breeding sites under sufficient surveillance to determine if birds appear agitated or disturbed by construction or other activities in adjacent areas. If birds do appear to be agitated or disturbed by these activities, then the width of the buffer zone shall be increased immediately to a sufficient size to protect breeding birds.

b. Reasonable and traditional pedestrian access shall not be blocked where breeding birds will tolerate pedestrian traffic. This is generally the case with lateral movement of beach-goers walking parallel to the beach at or below the highest

tide line. Pedestrian traffic may also be tolerated when breeding was initiated within 300 feet of an established beach access pathway. The Permittee shall work with the FWC Regional Species Biologist to determine if pedestrian access can be accommodated without compromising nesting success.

c. The perimeter of designated buffer zones shall be marked with posts, twine and signs stating "Do Not Enter, Important Nesting Area" or similar language, and shall include the name and a phone number of the entity responsible for posting. Posts shall not exceed three feet in height once installed. Symbolic fencing (e.g., twine, string or rope) shall be placed between all posts at least 2.5 feet above the ground, and shall be clearly visible to pedestrians. If pedestrian pathways are approved by the FWC Regional Species Biologist within the 300-foot buffer zone, the pathways shall be clearly marked. The posting shall be maintained in good repair until breeding is completed or terminated. Although solitary nesters may leave the buffer zone with their chicks, the posted area continues to provide a potential refuge for the family until breeding is complete. Breeding is not considered to be complete until all chicks have fledged.

d. No construction activities, pedestrians, movement of vehicles, or stockpiling of equipment shall be allowed within the buffer area.

e. Travel corridors shall be designated and marked outside the buffer areas so as not to cause disturbance to breeding birds. Heavy equipment, other vehicles and pedestrians may transit past breeding areas in these corridors. However, other activities such as stopping or turning shall be prohibited within the designated travel corridors adjacent to the breeding site. When flightless chicks are present within or adjacent to travel corridors, movement of vehicles shall be accompanied by the Bird Monitor who shall ensure that no chicks are in the path of the moving vehicle and no tracks capable of trapping flightless chicks result.

f. To discourage nesting within the travel corridor, it is recommended that the Permittee maintain some activity within these corridors on a daily basis, without disturbing any nesting shorebirds documented on site or interfering with marine turtle nesting, especially when those corridors are established prior to commencement of construction.

16. ***Notification.*** If shorebird breeding occurs within the project area, a bulletin board shall be placed and maintained in the construction staging area. The bulletin board shall include a location map of the construction site that shows the bird breeding areas, and a clearly-visible warning that states: "NESTING BIRDS ARE PROTECTED BY LAW INCLUDING THE FLORIDA ENDANGERED AND THREATENED SPECIES ACT AND THE STATE and FEDERAL MIGRATORY BIRD ACTS".

17. ***Marine Turtle Nest Surveys and Relocation.*** Sand placement may occur during the marine turtle nesting season, May 1 through October 31, provided the following marine turtle protection conditions are met, except where such work is prohibited by the managing agency or under applicable local land use codes.

    a. In accordance with Section 161.041(5), F.S., no construction that could result in Take of marine turtles shall begin until the federal incidental Take authorization is issued in accordance with the Endangered Species Act. In the event that additional or different requirements from the permit conditions are specified in the FWS Incidental Take Authorization and Biological Opinion, additional marine turtle protection conditions shall be incorporated into the permit specific conditions through an administrative permit modification. No relocation of marine turtle nests shall occur unless specifically authorized by FWC in a permit issued pursuant to Section 379.2431(1), F.S. and Chapter 68E-1, F.A.C.

    b. For sand placement projects that occur during the period from April 15 through October 31, daily early morning surveys (before 9 a.m.) shall be conducted beginning April 15, and shall continue through September 30.

    c. Upon receipt of the FWS Incidental Take Authorization, eggs shall be relocated per the requirements below. *Note: Marine turtle monitors shall not enter posted shorebird buffer areas to conduct monitoring or to relocate nests.*

        i. Nesting surveys and nest marking shall only be conducted by persons with prior experience and training in these activities, and who are authorized to conduct such activities through a valid marine turtle permit issued by FWC, pursuant to Chapter 68E-1, F.A.C. Please contact FWC's Marine Turtle Management Program by email at MTP@myfwc.com for information on the permit holder in the project area. Nesting surveys shall be conducted daily between sunrise and 9 a.m. (for all time zones). The contractor shall not initiate work until daily notice has been received from the marine turtle permit holder that the morning survey has been completed. Surveys shall be performed in such a manner so as to ensure that the construction activity does not occur in any location prior to completion of the necessary marine turtle protection measures.

        ii. Only those nests in the area where sand placement occurs shall be relocated. Nest relocation shall not occur upon completion of sand placement. Nests requiring relocation shall be moved no later than 9 a.m. the morning following deposition to a nearby self-release beach site in a secure setting where artificial lighting will not interfere with hatchling orientation. Relocated nests shall not be placed in organized groupings. Relocated nests shall be randomly staggered along the length and width of the beach in settings that are not expected to experience daily inundation

by high tides or known to routinely experience severe erosion and egg loss, or that are subject to artificial lighting. Nest relocations in association with construction activities shall cease when sand placement activities no longer threaten nests.

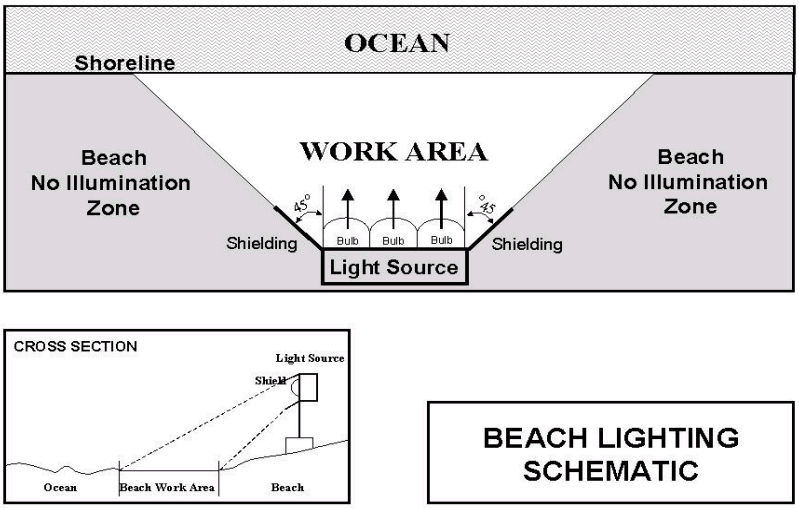
iii. Nests deposited within areas where construction activities have ceased or will not occur for 65 days, or nests laid in the nourished berm prior to tilling, shall be marked and left in place unless other factors threaten the success of the nest. The marine turtle permit holder shall install an on-beach marker at the nest site and/or a secondary marker at a point as far landward as possible to ensure that future location of the nest will be possible should the on-beach marker be lost. No project activities shall occur within this area nor shall any activities occur that could result in impacts to the nest. Nest sites shall be inspected daily to ensure nest markers remain in place and that the nest has not been disturbed by the project.

18. ***Marine Turtle or Nest Encounters.*** Upon locating a dead or injured marine turtle adult, hatchling or egg that may have been harmed or destroyed as a direct or indirect result of the project, the Permittee shall be responsible for notifying STSSN by email at: SeaTurtleStranding@myfwc.com. Care shall be taken in handling injured marine turtles or eggs to ensure effective treatment or disposition, and in handling dead specimens to preserve biological materials in the best possible state for later analysis. In the event a marine turtle nest is excavated during construction activities, the permit holder responsible for egg relocation shall be notified immediately so the eggs can be moved to a suitable relocation site.

19. ***Equipment Storage and Placement.*** All construction pipes that are placed on the beach shall be located as far landward as possible without compromising the integrity of the existing dune system. Pipes placed parallel to the dune shall be no farther seaward than five to ten feet away from the toe of the dune. Temporary storage of pipes shall be off the beach to the maximum extent possible. If it will be necessary to extend construction pipes past a known shorebird nesting site or over-wintering area for piping plovers, then whenever possible, those pipes shall be placed landward of the site before birds are active in that area. No pipe or sand shall be placed seaward of a shorebird nesting site during the shorebird nesting season.

20. ***Project Lighting.*** Direct lighting of the beach and nearshore waters shall be limited to the immediate construction area during the marine turtle nesting season and shall comply with safety requirements. Lighting on offshore or onshore equipment shall be minimized through reduction, shielding, lowering, and appropriate placement to avoid excessive illumination of the water's surface and nesting beach while meeting all Coast Guard, EM 385-1-1, and OSHA requirements. Light intensity of lighting equipment shall be reduced

to the minimum standard required by OSHA for General Construction areas, in order not to misdirect marine turtles. Shields shall be affixed to the light housing and shall be large enough to block light from all lamps from being transmitted outside the construction area (see figure below).




21. ***Fill Restrictions.*** During the marine turtle nesting season, the contractor shall not extend the beach fill more than 500 feet along the shoreline between dusk and the following day until the daily nesting survey has been completed and the beach cleared for fill advancement. An exception to this may occur if there is a permitted marine turtle surveyor present on site to ensure no nesting and hatching marine turtles are present within the extended work area. If 500 feet is not feasible for the project, the Permittee may submit a request for an alternate distance to FWC, and FWC will decide if that distance is acceptable during the pre-construction meeting. Once the beach has been cleared and the necessary nest relocations have been completed, the contractor shall be allowed to proceed with the placement of fill during daylight hours until dusk at which time the 500-foot-length limitation shall apply.

22. ***Compaction Sampling.*** Sand compaction shall be monitored in the area of sand placement immediately after completion of the project and prior to April 15 for three subsequent years. Compaction shall be monitored in accordance with a protocol agreed to by FWS, FWC and the Permittee. The requirement for compaction monitoring can be eliminated if the decision is made to till regardless of post-construction compaction levels. Out-year compaction monitoring and remediation are not required if placed material no longer remains on the beach.

At a minimum, the protocol provided below shall be followed. If the average value for any depth exceeds 500 pounds per square inch (psi) for any two or more adjacent

stations, then that area shall be tilled immediately prior to April 15. If values exceeding 500 psi are distributed throughout the project area, but in no case do those values exist at two adjacent stations at the same depth, then consultation with FWC or FWS shall be required to determine if tilling is required. If a few values exceeding 500 psi are randomly present within the project area, tilling shall not be required.

a. Compaction sampling stations shall be located at 500-foot intervals along the project area. One station shall be located at the seaward edge of the dune/bulkhead line (when material is placed in this area), and one station shall be located midway between the dune line and the high water line (normal wrack line).

b. At each station, the cone penetrometer shall be pushed to depths of 6, 12 and 18 inches, three times at each depth (three replicates). Material may be removed from the hole if necessary to ensure accurate readings of successive levels of sediment. The penetrometer may need to be reset between pushes, especially if sediment layering exists. Layers of highly compact material may lie over less compact layers. Replicates shall be located as close to each other as possible, without interacting with the previous hole and/or disturbed sediments. The three replicate compaction values for each depth shall be averaged to produce final values for each depth at each station. Reports shall include all 18 values for each transect line, and the final six averaged compaction values.

c. No compaction sampling shall occur within 300 feet of any shorebird nest.

d. Any vehicles operated on the beach in association with compaction surveys shall operate in accordance with FWC's "Best Management Practices for Operating Vehicles on the Beach" located at: http://myfwc.com/conservation/you-conserve/wildlife/beach-driving/.

23. ***Tilling Requirements.*** If tilling is required as specified above, the area shall be tilled to a depth of 36 inches. Tilling shall be completed prior to the marine turtle nesting season. If tilling occurs during shorebird nesting season, shorebird surveys prior to tilling shall be required. It is the responsibility of the contractors to avoid tilling, scarp removal, or dune vegetation planting in areas where nesting birds are present. Each pass of the tilling equipment shall be overlapped to allow thorough and even tilling. If the project is completed during the marine turtle nesting season, tilling shall not be performed in areas where nests have been left in place or relocated. If compaction measurements are taken, a report on the results of the compaction monitoring shall be submitted to FWC by email at marineturtle@myfwc.com prior to any tilling actions being taken.

a. No tilling shall occur within 300 feet of any shorebird nest.

b. If flightless shorebird young are observed within the work zone or equipment travel corridor, a Bird Monitor shall be present during the operation to ensure that equipment does not operate within 300 feet of the flightless young.

c. A relatively even surface, with no deep ruts or furrows, shall be created during tilling. To do this, chain-linked fencing or other material shall be dragged over those areas as necessary after tilling.

d. Tilling shall occur landward of the wrack line and avoid all vegetated areas three square feet or greater with a three-foot buffer around the vegetated areas. The slope between the mean high water line and the mean low water line shall be maintained in such a manner as to approximate natural slopes.

e. Any vehicles operated on the beach in association with compaction surveys shall operate in accordance with FWC's "Best Management Practices for Operating Vehicles on the Beach" located at: http://myfwc.com/conservation/you-conserve/wildlife/beach-driving/.

24. ***Escarpment Surveys.*** Visual surveys for escarpments along the project area shall be conducted immediately after completion of the sand placement project, weekly during marine turtle nesting season, and between March 15 and April 15 for three subsequent years by the City if sand from the project still remains on the beach. Weekly reports shall be submitted by Friday each week to FWC by email at: marineturtle@myfwc.com.

Escarpments that interfere with marine turtle nesting or that exceed 18 inches in height for a distance of at least 100 feet shall be leveled, and the beach profile shall be reconfigured to minimize scarp formation by April 15. Any escarpment removal shall be reported to FWC by location. If the project is completed during the marine turtle nesting and hatching season, escarpments may be required to be leveled immediately, while protecting nests that have been relocated or left in place. If, during the nesting and hatching season, there is any subsequent reformation of escarpments that interfere with marine turtle nesting or that exceed 18 inches in height for a distance of 100 feet, the Permittee shall immediately contact FWC to determine the appropriate action to be taken. If it is determined that escarpment leveling is required during the nesting or hatching season, FWS or FWC will provide a brief written authorization that describes methods to be used to reduce the likelihood of impacting existing nests. An annual summary of escarpment surveys and actions taken shall be submitted to FWC by email at marineturtle@myfwc.com, as described below. If escarpment removal occurs during shorebird breeding season, shorebirds surveys shall be required prior to removal. *Note: Out-year escarpment monitoring and remediation are not required if placed material no longer remains on the dry beach.*

a. No heavy equipment shall operate within 300 feet of any shorebird nest.

b. If flightless shorebird young are observed within the work zone or equipment travel corridor, a Bird Monitor shall be present during the operation to ensure that equipment does not operate within 300 feet of the flightless young.

c. Any vehicles operated on the beach in association with compaction surveys shall operate in accordance with FWC's "Best Management Practices for Operating Vehicles on the Beach" located at: http://myfwc.com/conservation/you-conserve/wildlife/beach-driving/.

25. All terms and conditions in the FWS Programmatic Piping Plover Biological Opinion dated May 22, 2013, shall be met.

POST-CONSTRUCTION SHOREBIRD PROTECTION

26. If beach cleaning will occur on the nourished beach, a minimum of 30% of the biotic material within the wrack line shall be left on the beach post-cleaning at the strand line in a natural configuration to ensure that the nourished beach re-establishes its function as foraging habitat for shorebirds. This shall occur for as long as the placed sand remains on the beach.

POST-CONSTRUCTION MONITORING AND REPORTING FOR MARINE TURTLE PROTECTION

27. Reports on all marine turtle nesting activity shall be provided for the initial marine turtle nesting (May 1 through September 15) and hatching (through October 31) season, and for up to three additional nesting seasons as follows:

a. For the initial nesting season and the following year, the number and type of emergences (nests or false crawls) shall be reported per species in accordance with the table below. An additional year of nesting surveys may be required if nesting success for any species on the nourished beach is less than 40%.

b. For the initial nesting season, reproductive success shall be reported per species in accordance with the table below. Reproductive success shall be reported for all marine turtle nests if possible. Otherwise, a statistically significant number of nests for each species shall be reported.

c. In the event that the reproductive success documented by species meets or exceeds required criteria (outlined in the table below) for each species, monitoring for reproductive success shall be recommended, but not required for the second year post-construction.

d. Monitoring of nesting activity in the seasons following construction shall include daily surveys and any additional measures authorized by FWC. Summaries shall include all crawl activity, nesting success rates, hatching success of all relocated nests, hatching success of a representative sampling of nests left in place (if any) by species, project name, applicable project permit numbers and dates of construction.

Data shall be reported for the nourished areas in accordance with the table below and shall include number of nests lost to erosion or washed out. Summaries of nesting activity shall be submitted in electronic format (Excel spreadsheets) to the FWC's Imperiled Species Management Section by email at: MTP@myfwc.com. All summaries shall be submitted by January 15 of the following year. The FWC Excel spreadsheet is available upon request by email at: MTP@myfwc.com.

| Metric | Duration | Variable | Criterion |
|---|---|---|---|
| Nesting Success | Year of construction, one year to two or three years post construction if placed sand remains on beach and variable does not meet criterion based on previous year | Number of nests and non-nesting emergences by day by species | 40% or greater |
| Hatching Success | Year of construction and one to three years post construction if placed sand remains on beach and variable does not meet criterion based on previous year | Number of hatchlings by species to completely escape egg | Average of 60% or greater (data must include washed out nests) |
| Emergence Success | Year of construction and one to three years post construction if placed sand remains on beach and variable does not meet success criterion based on previous year | Number of hatchlings by species to emerge from nest onto beach | Average must not be significantly different than the average hatching success |
| Disorientation | Year of construction and one to three years post construction if placed sand remains on beach | Number of nests and individuals that misorient or disorient | |
| Lighting Surveys | Two surveys the year following construction , one survey between May 1 and May 15 and second survey between July 15 and August 1 | Number, location and photographs of lights visible from nourished berm, corrective actions and notifications made | 100% reduction in lights visible from nourished berm within one to two month period |
| Compaction | Not required if the beach is tilled prior to nesting season each year placed sand remains on beach | Shear resistance | Less than 500 psi |

| | | | |
|---|---|---|---|
| Escarpment Surveys | Weekly during nesting season for up to three years each year placed sand remains on the beach | Number of scarps 18 inches or greater extending for more than 100 feet that persist for more than 2 weeks | Successful remediation of all persistent scarps as needed |

28. Two lighting surveys shall be conducted of all artificial lighting visible from the nourished berm. The first survey shall be conducted between May 1 and May 15 the first nesting season following construction, or immediately after placement if construction is not completed until after May 15. A second survey shall be conducted between July 15 and August 1. The survey shall be conducted by the Permittee, and shall include a landward view from the seaward most extent of the new beach profile. The survey shall follow standard techniques for such a survey, and shall include the number and type of visible lights, location of lights and photo documentation. For each light source visible, it shall be documented that the property owner(s) has been notified of the problem light with recommendations for correcting the light. Recommendations shall be in accordance with the "Florida Model Lighting Ordinance for Marine Turtle Protection" pursuant to Chapter 62B-55, F.A.C. and local lighting restrictions. A report summarizing all visible lights observed during the first survey and the notices sent to property owners shall be submitted to FWC's Imperiled Species Management Section by email at: marineturtle@myfwc.com by the 1st of the month following the survey. A summary report of the second survey documenting the lights that are still visible after the property owners had been notified shall also be submitted by December 15 of that year. After the annual report is completed, a meeting shall be set up with the Permittee, county or municipality, FWC and FWS to discuss the survey report, as well as any documented marine turtle disorientations in or adjacent to the project area.

**MONITORING REQUIRED:**

TURBIDITY MONITORING

29. Turbidity monitoring shall be conducted during all dredging and beach placement activities. Monitoring shall be conducted as follows:

Units: Nephelometric Turbidity Units (NTUs).

Frequency: Three times daily, approximately four hours apart, while the heaviest turbidity plume is crossing the edge of the mixing zone. The compliance samples and the corresponding background samples shall be collected at approximately the same time, i.e., one shall immediately follow the other. *Since turbidity levels can be related to pumping rates, the dredge pumping rates shall be recorded according to date and time, and provided to the*

*Department upon request. If needed, this would to provide supporting evidence that turbidity sampling occurred at times of peak turbidity.*

Location: **Borrow/Dredge Site:**

Background: Samples shall be collected at surface, mid-depth and two meters above the bottom, at least 500 meters upcurrent from the source of turbidity at the dredge and clearly outside the influence of any turbidity generated by the project.

Compliance: Samples shall be collected at surface, mid-depth and two meters above the bottom, no more than 150 meters downcurrent from the source of turbidity at the dredge, or at the nearest hardbottom edge downcurrent from the source of turbidity at the dredge, whichever is closer to the source of turbidity, within the densest portion of any visible turbidity plume.

**Beach/Discharge Site**:

Background: Samples shall be collected at surface and mid-depth, at least 300 meters upcurrent from any portion of the beach that has been, or is being, filled during the current construction event, clearly outside the influence of any turbidity generated by the project, and the same distance offshore as the associated compliance and intermediate samples.

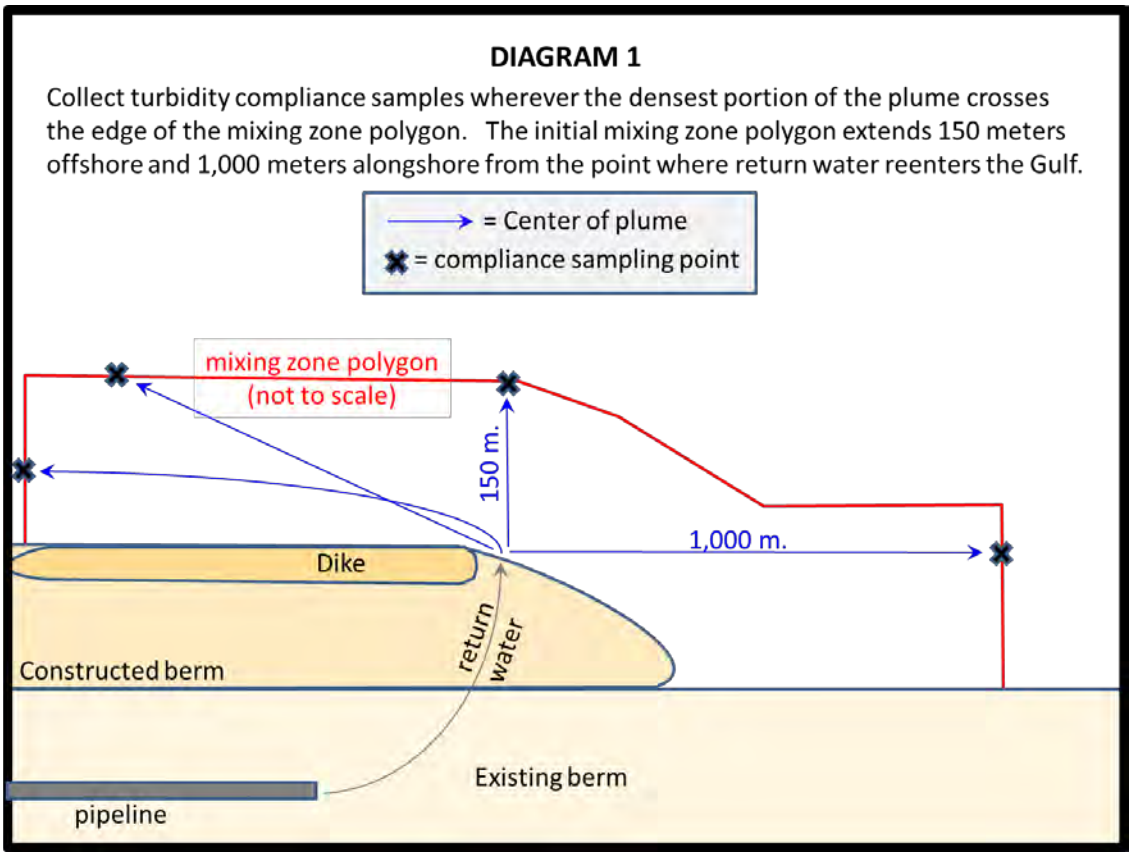
Compliance: Samples shall be collected at surface and mid-depth, where the densest portion of the turbidity plume crosses the edge of the mixing zone polygon, which measures up to 150 meters offshore and up to 1,000 meters alongshore from the point where the return water from the dredged discharge reenters the Gulf of Mexico. *Note: If the plume flows parallel to the shoreline, the densest portion of the plume may be close to shore, in water that is too shallow for a boat (see Diagram 1). In that case, it may be necessary to access the sampling location from the shore, by wading, swimming or using floatation devices, diving gear or other equipment.*

Intermediate Monitoring: Samples shall be collected within the mixing zone, at surface and mid-depth, where the densest portion of the turbidity plume reaches 250 meters, 500 meters and 750 meters from the point where the return water from the dredged discharge reenters the Gulf of Mexico. These measurements will not be used to determine compliance with the water quality standard for turbidity, but will be used to calibrate the size of the mixing zone for future events.

Analysis of turbidity samples shall be performed in compliance with DEP-SOP-001/01 FT 1600 Field Measurement of Turbidity:
http://publicfiles.dep.state.fl.us/dear/sas/sopdoc/2008sops/ft1600.pdf

Calibration: The instruments used to measure turbidity shall be fully calibrated with primary standards within one month of the commencement of the project, and at least once a month throughout the project. Calibration with secondary standards shall be verified each morning prior to use, after each time the instrument is turned on, and after field sampling using two secondary turbidity "standards" that that bracket the anticipated turbidity samples. If the post-sampling calibration value deviates more than 8% from the previous calibration value, results shall be reported as estimated and a description of the problem shall be included in the field notes.

If the turbidity monitoring protocol specified above prevents the collection of accurate data, the person in charge of the turbidity monitoring shall contact the JCP Compliance Officer to establish a more appropriate protocol. Once approved in writing by the Department, the new protocol shall be attached to the permit and shall be implemented without the need for a permit modification.



30. The compliance locations given above shall be considered the limits of the temporary mixing zone for turbidity allowed during construction. If monitoring reveals turbidity levels at the compliance sites that are greater than 29 NTUs above the corresponding background turbidity levels, construction activities shall cease immediately and not resume until corrective measures have been taken and turbidity has returned to acceptable levels. Any such occurrence shall also be immediately reported to the Department's JCP Compliance Officer via email at JCP Compliance@dep.state.fl.us. The subject line of the email shall state "TURBIDITY EXCEEDANCE".

Any project-associated turbidity source other than dredging or fill placement for beach nourishment (e.g., scow or pipeline leakage) shall be monitored as close to the source as possible. If the turbidity level exceeds 29 NTUs above background, the construction activities related to the exceedance shall cease immediately and not resume until corrective measures have been taken and turbidity has returned to acceptable levels. This turbidity monitoring shall continue every hour until background turbidity levels are restored or until otherwise directed by the Department. The Permittee shall notify the Department, by separate email to the JCP Compliance Officer, of such an event within 24 hours of the time the Permittee first becomes aware of the discharge. The subject line of the email shall state "PROJECT-ASSOCIATED DISCHARGE-OTHER".
When reporting a turbidity exceedance, the following information shall also be included:

a. project name;

b. permit number (0211217-005-JC);

c. location and level (NTUs above background) of the turbidity exceedance;

d. time and date that the exceedance occurred; and

e. time and date that construction ceased.

Prior to re-commencing construction, a report shall be submitted to the JCP Compliance Officer with the same information that was included in the "Exceedance Report", plus the following information:

a. turbidity monitoring data collected during the shutdown documenting the decline in turbidity levels and achievement of acceptable levels;

b. corrective measures that were taken; and

c. cause of the exceedance.

31. ***Turbidity Monitoring Reports***. All turbidity monitoring data shall be submitted within one week of analysis. The data shall be presented in tabular format, indicating the measured turbidity levels at the compliance sites for each depth, the corresponding background levels at each depth, and the number of NTUs above background at each depth. Any exceedances of the turbidity standard (29 NTUs above background) shall be highlighted in the table. In addition to the raw and processed data, the reports shall also contain the following information:

    a. time of day samples were taken;

    b. dates of sampling and analysis;

    c. GPS location of sample;

    d. depth of water body;

    e. depth of each sample;

    f. antecedent weather conditions, including wind direction and velocity;

    g. tidal stage and direction of flow;

    h. water temperature;

    i. a map, overlaid on an aerial photograph, indicating the sampling locations, dredging and discharge locations, and direction of flow;

    j. a statement describing the methods used in collection, handling, storage and analysis of the samples; and

    k. a statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection, calibration, and accuracy of both the turbidity and GPS data.

    Monitoring reports shall be submitted by email to the JCP Compliance Officer. The project name (Venice Beach Nourishment), permit number (0211217-005-JC) and the dates of the monitoring interval shall be included in the subject line of the reports, on the cover page, and at the top of each page. Failure to submit reports in a timely manner shall constitute grounds for revocation of the permit.

BIOLOGICAL MONITORING

32. As required in Specific Condition 3, the Permittee shall submit a detailed Final Biological Monitoring Plan subject to review and approval by the Department prior to issuance of a Notice to Proceed.

33. ***Borrow Area Sedimentation Monitoring.*** Impacts to offshore hardbottom areas adjacent to each borrow area from sedimentation generated by dredging operations shall be monitored throughout construction.

a. A pre-construction survey shall be conducted to delineate hardbottom areas adjacent to each proposed borrow area. The parameters of the hardbottom monitoring were generally outlined in a draft biological monitoring plan, which provided reasonable assurance for issuance of the final permit. These parameters shall be finalized after the pre-construction delineation and shall be included in the final biological monitoring plan. The final biological monitoring plan shall be submitted with the request for a Notice to Proceed. The raw data shall be submitted to the JCP Compliance Officer within 60 days of completion of the survey, and the pre-construction survey results shall be submitted to the JCP Compliance Officer within 90 days of completion of the survey. The monitoring program shall measure the amount and duration of sedimentation on the hardbottom, and shall include observations for indicators of biological stress to certain species of stony coral (scleractinian) and soft corals (octocorals), and other prominent benthic organisms, if present on the hardbottom areas. Monitoring stations shall be installed in hardbottom areas located within 300 meters from the edge of each borrow area, and shall be monitored twice prior to construction, once a week during construction, and twice post-construction. Only the monitoring stations located within 300 meters of dredging operations are required to be monitored that week during construction. Standard methodology including 30-meter-long strategically-placed permanent transects with quadrats, line-intercept, and interval sediment depth measurements shall be used for monitoring. A post-construction survey shall be conducted within 90 days of completion of dredging operations to evaluate any damage caused by sedimentation, and shall be provided to the JCP Compliance Officer within 60 days of completion of the survey.

b. A buffer of at least 600 feet (approximately180 meters) shall be maintained between dredging operations and the edge of the nearest hardbottom area. If a 600-foot (180-meter) buffer cannot be maintained during construction, a buffer of no less than 400 feet (approximately120 meters) shall be maintained. If a buffer between 400 feet (120 meters) and 600 feet (180 meters) is used, the frequency of monitoring shall increase to twice per week during construction.

c. In the event that monitoring reveals average daily sediment accumulation levels of more than 1.5 millimeters (mm), as determined by interval sediment depth measurements; and/or stress on benthic organisms (as determined using qualitative visual observation of sediment accumulation on the surrounding benthic community or comparable methodology), then dredging shall be relocated at least 300 meters away from the affected area until conditions change such that sedimentation on the affected hardbottom is no longer occurring, and notification shall be provided to the JCP Compliance Officer within 24 hours. The condition of the affected hardbottom shall be evaluated and compared to the pre-construction survey. Compensatory mitigation may be required to offset adverse impacts to hardbottom as a result of sediment accumulation.

34. ***Pipeline Corridor Monitoring.*** Pipeline corridors shall be located to avoid exposed hardbottom areas where possible. A pre-construction survey of the pipeline corridor shall be conducted prior to placement of the pipeline to verify that hardbottom organisms are not present within the corridor. In the event that the pipeline crosses areas of exposed hardbottom, or if a pump station is located less than 600 feet (approximately180 meters) from hardbottom, then the condition of these hardbottom areas shall be quantitatively evaluated. The raw data shall be submitted to the JCP Compliance Officer within 60 days of completion of the survey, and the pre-construction survey results shall be submitted to the JCP Compliance Officer within 90 days of completion of the survey.

Corridors shall be visually inspected immediately post-construction to evaluate any damage caused by movement of the pipeline and/or by discharge of slurry along the length of the pipeline. If damage to hardbottom organisms is detected, the JCP Compliance Officer shall be notified within 24 hours, the cause of the damage shall be fixed and the damage shall be immediately remediated. If the remediation does not fully restore the functions of the damaged hardbottom, mitigation may be required. Construction shall cease if substantial leaks (i.e., leaks resulting in turbidity that exceeds state water quality standards) are found, and the JCP Compliance Officer shall be notified within 24 hours. Note that there is no mixing zone for the pipeline corridor; therefore, turbidity shall be measured at the leak. Operations may resume upon appropriate repair of the affected pipeline and/or pump station. Following completion of dredging activities and pipeline demobilization, a post-construction inspection shall be conducted in areas where the pipelines crossed hardbottom.

PHYSICAL MONITORING

35. The Permittee shall conduct physical monitoring in accordance with the attached Physical Monitoring Plan dated December 4, 2013.

36. If the Permittee is unable to complete at least two nourishment events within the 15-year life of this permit, they may request an extension of time to allow a second nourishment

event to be completed. The time extension would be implemented through an administrative modification of the permit, with no application fee.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

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Beaches, Inlets and Ports Program

cc: Paul Karch, Corps, Jacksonville District
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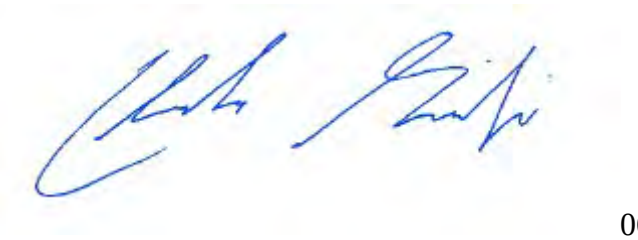
**Attachments:** Approved Permit Drawings (24 pages)
QA/QC Plan dated March 21, 2013 (7 pages)
DHR Letter dated November 2, 2011 (2 pages)
FWC Regional Species Biologist – Contacts for Shorebird Issues (1 page)
Physical Monitoring Plan dated December 4, 2013 (3 pages)

## FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.



06/13/14

Deputy Clerk Date

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# APPENDIX D – MAILING LIST

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Englewood, FL 34223

WSEB FM91.3
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Englewood, FL 34223

ABC 7
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Sarasota, FL 34236-4048

WEDU/PBS
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Fox 4 News Desk
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# APPENDIX E – HARDBOTTOM ANALYSIS OF FOUR PROPOSED BORROW AREAS NEAR VENICE BEACH, SARASOTA COUNTY, FLORIDA

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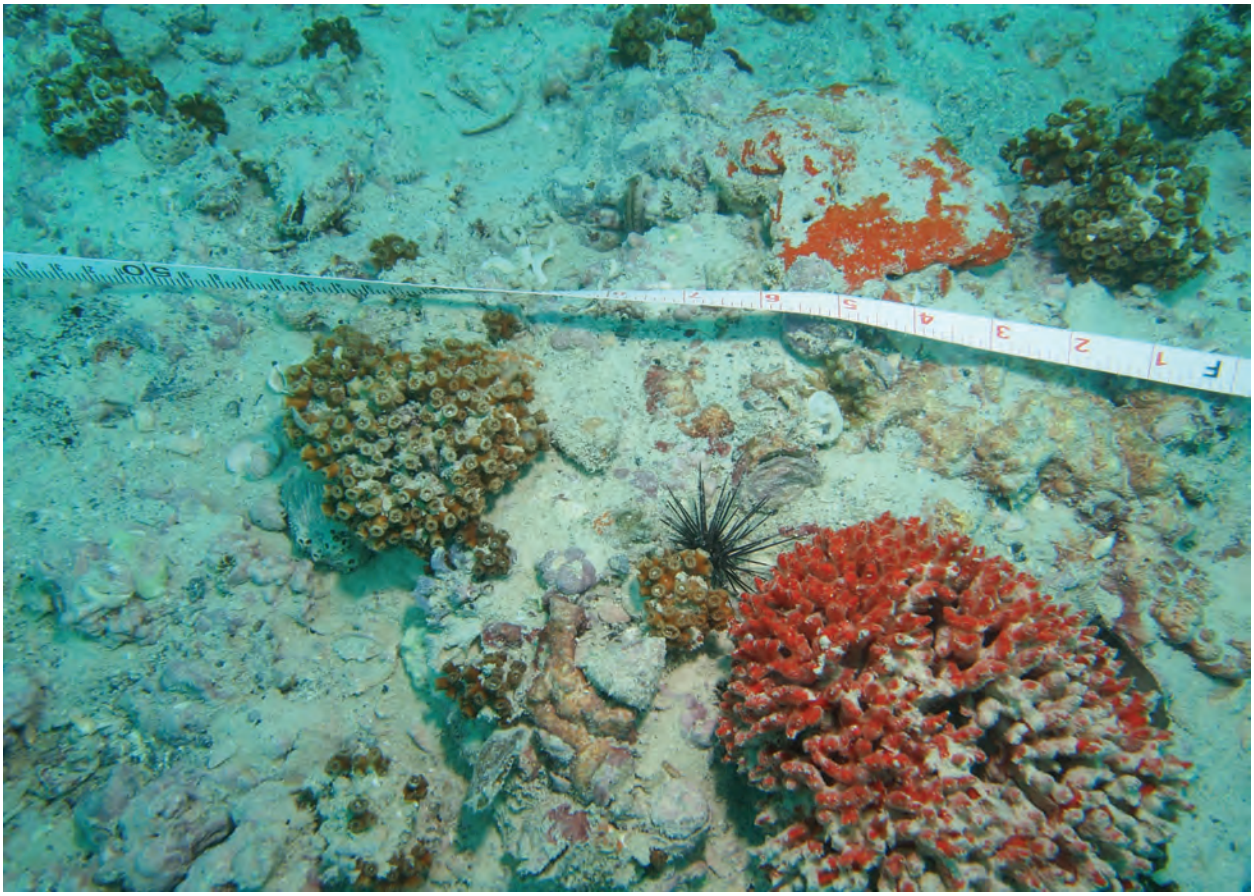
# Hardbottom Analysis of Four Proposed Borrow Areas Near Venice Beach, Sarasota County, Florida



## Final Report

## June 2011

US Army Corps of Engineers
Jacksonville District

# Habitat Analysis of Four Proposed Borrow Areas Near Venice Beach, Sarasota County, Florida

**FINAL R E P O R T**

**June 2011**

**Prepared for:**
**G.E.C., Inc.**
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**Baton Rouge, LA 70809**

**and**

**U.S. Army Corps of Engineers**
**Jacksonville District**
**701 San Marco Blvd.**
**Jacksonville, FL 32207**

**Prepared by:**
**Dial Cordy and Associates Inc.**
**3620 Tuscany Drive**
**Hollywood, FL 33021**

## EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers is investigating four sand shoals for their suitability as borrow areas for the Sarasota County/Venice Beach erosion control project in Sarasota County, Florida. The borrow areas are located approximately 55 miles southeast of Tampa between 5.5 and 8.5 miles offshore of Manasota Key in the Gulf of Mexico.

Dial Cordy and Associates Inc. (DC&A) was contracted to analyze previously collected side-scan sonar data, prepare a mosaic of substrate features, conduct towed video transects to verify hardbottom, and collect *in-situ* data from representative hardbottom habitats within and/or adjacent to (1,000-foot buffer areas) each proposed borrow area, in order to inform and to assist in planning HEA and UMAM calculations.

Side-scan sonar mosaics were developed for each borrow area and the adjacent 1,000-foot buffer. Mosaics were developed using 1-foot by 1-foot resolution side-scan imagery. Hardbottom habitat lies within Borrow Areas 8P and 8S (0.08 and 2.89 acres, respectively), and is located within the 1,000-foot buffer for all borrow areas surveyed. After verification of hardbottom areas with towed video, representative hardbottom areas were characterized using *in-situ* methods.

Together, side-scan sonar, towed video, and *in-si*tu surveys documented low relief (< 40 cm) hardbottom habitat within 1,000 feet of each of the four proposed borrow areas. Five hardbottom sites adjacent to the four proposed borrow areas were documented using *in-situ* benthic surveys. The five sites surveyed were similar to each other in relief and scleractinian, octocoral, and sponge richness and abundance. *In-situ* surveys recorded the presence of five species of scleractinian, three genera of octocoral, and several morphotypes of sponges. All scleractinian species were represented at each site, while octocorals were present at four out of five sites with only one site inclusive of all three octocoral genera.

These habitats were dominated by isolated scleractinians which colonized bare hardbottom substrate. Noticeably, little macroalgae was present at any site. Only *Sargassum* sp. and turf algae were documented. Scleractinian density ranged from four to 13 individuals/$m^2$ across hardbottom sites. Octocorals were less abundant, with density ranging from 0.1 to 0.2 individuals/$m^2$. Sponges were more common than octocorals, ranging from two to five individuals/$m^2$.

The Gulf of Mexico NMFS Biological Opinion states that a significant hardground in a project area is one that, over a horizontal distance of 150 feet, has an average elevation above the sand of 1.5 feet (45.72 cm) or greater, and has algae growing on it. By this definition, the results of side-scan sonar, towed video and in-situ surveys suggest that no significant hardbottom exists within the project area.

Other studies of the effects of placed sand on nearshore hardbottom and hardbottom surrounding offshore borrow areas have been conducted within hardbottom habitat along the west coast of Florida (CSA 2003, Craft 2009). Benthic communities documented in the current study were different than those documented in studies conducted closer to shore.

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## APPENDICES

## LIST OF TABLES

## LIST OF FIGURES

## 1.0 INTRODUCTION

Dial Cordy and Associates Inc. (DC&A) was contracted by the Jacksonville District U.S. Corps of Engineers through G.E.C., Inc. (Contract No. W912EP-09-D-0005, Task Order 0022) to map and assess hardbottom habitat within and adjacent to (1,000-foot buffer) of each of four proposed sand borrow areas. The U.S. Army Corps of Engineers is investigating four sand shoals for their suitability as borrow areas for the Sarasota County/Venice Beach Erosion Control project in Sarasota County, Florida. The borrow areas are located on the west coast of Florida approximately 55 miles southeast of Tampa.

The study of hardbottom associated with the proposed borrow areas is necessary to address the Gulf of Mexico NMFS Biological Opinion, which states that a significant hardground in a project area is one that, over a horizontal distance of 150 feet, has an average elevation above the sand of 1.5 feet (45.72 cm) or greater, and has algae growing on it.

A side-scan sonar survey was conducted by Panamerican Consultants, Inc. (Memphis, TN) of Borrow Areas 8O, 8P, 8R, and 8S (including a 1,000-foot buffer area for each) from 6-August through 22-August 2010 using a 600 kHz Marine Sonic sonar system with a range of 30 meters and sufficient overlap to provide thorough coverage. Analysis of these data sets and further field verification of the hardbottom habitats associated with these borrow areas were completed by DC&A in February 2011.

The side-scan sonar survey was conducted with at least 50 percent overlapping coverage between survey lines to ensure complete, 100 percent, data for the survey area. Line spacing was required to be less than 25 meters during data collection. A dual frequency instrument was used to capture data at lower frequencies, should light penetration of the water column create “noise” in the higher frequencies.

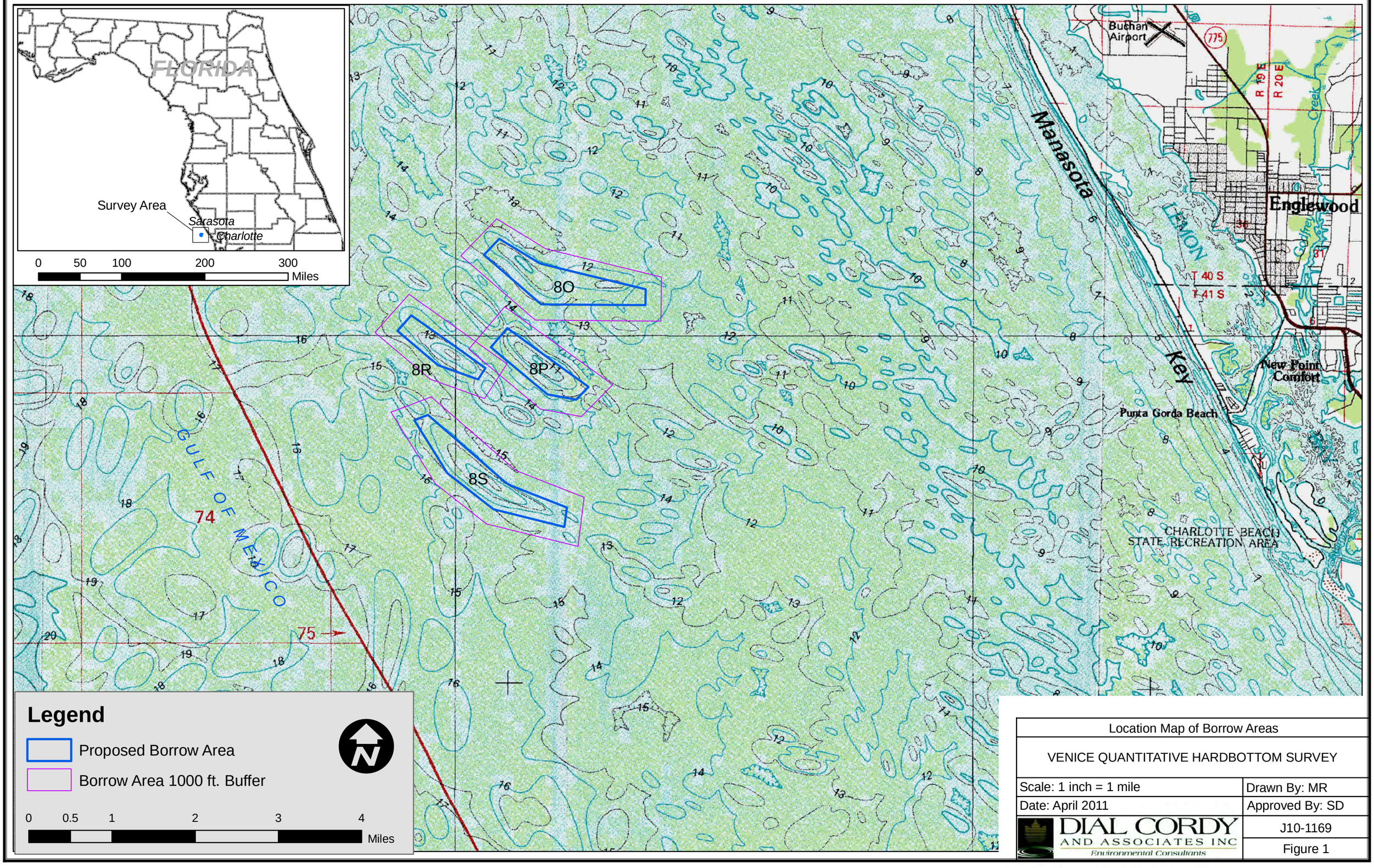
Side-scan sonar, video transects, and *in-situ* benthic surveys were conducted to confirm and document hardbottom habitat adjacent to or within the four proposed borrow areas.

### 1.1 Study Area Location

The proposed borrow areas are located on the west coast of Florida approximately 55 miles southeast of Tampa. They are located between 5.5 and 8.5 miles offshore of Manasota Key in the Gulf of Mexico (Figure 1). The project area for the purposes of this report includes the borrow areas 8O, 8P, 8R, and 8S and the 1000’ foot buffers surrounding each borrow area.

## 2.0 METHODS

The side-scan sonar data collected by Panamerican Consultants, Inc. in August 2010 were analyzed by DC&A to produce accurate mosaics of borrow areas and associated hardbottom habitat. Towed video transects were filmed to visually verify hardbottom habitat interpreted from the side-scan sonar mosaics. *In-situ* surveys were conducted to provide detailed biological information on the benthic communities within the adjacent hardbottom habitat. A description of the technical approach employed to prepare a side-scan mosaic, ground-truth side-scan mapped signatures using towed video, and collect *in-situ* hardbottom community data is provided below.




| Location Map of Borrow Areas | |
|---|---|
| VENICE QUANTITATIVE HARDBOTTOM SURVEY | |
| Scale: 1 inch = 1 mile | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Figure 1 |

## 2.1 Side-Scan Interpretation

A side-scan sonar survey was conducted for Borrow Areas 8O, 8P, 8R, and 8S (including a 1,000-foot buffer area for each) from 6-August through 22-August 2010 using a 600 kHz Marine Sonic sonar system with a range of 30 meters and sufficient overlap to provide thorough coverage. Raw side-scan data was processed and imported into SonarWiz 5 by DC&A to create a mosaic with a 1-foot by 1-foot resolution, instead of the standard 1-meter resolution (Appendix A).

One-foot resolution was chosen due to the low relief of the area. One-meter resolution mosaics would have appeared flat, as if the entire area were without relief. Due to file size and to improve data manageability, three mosaics were created: one for 8O, one for 8S, and one that included both 8P and 8R. Borrow area designations correspond to designations assigned by Panamerican for side-scan data files.

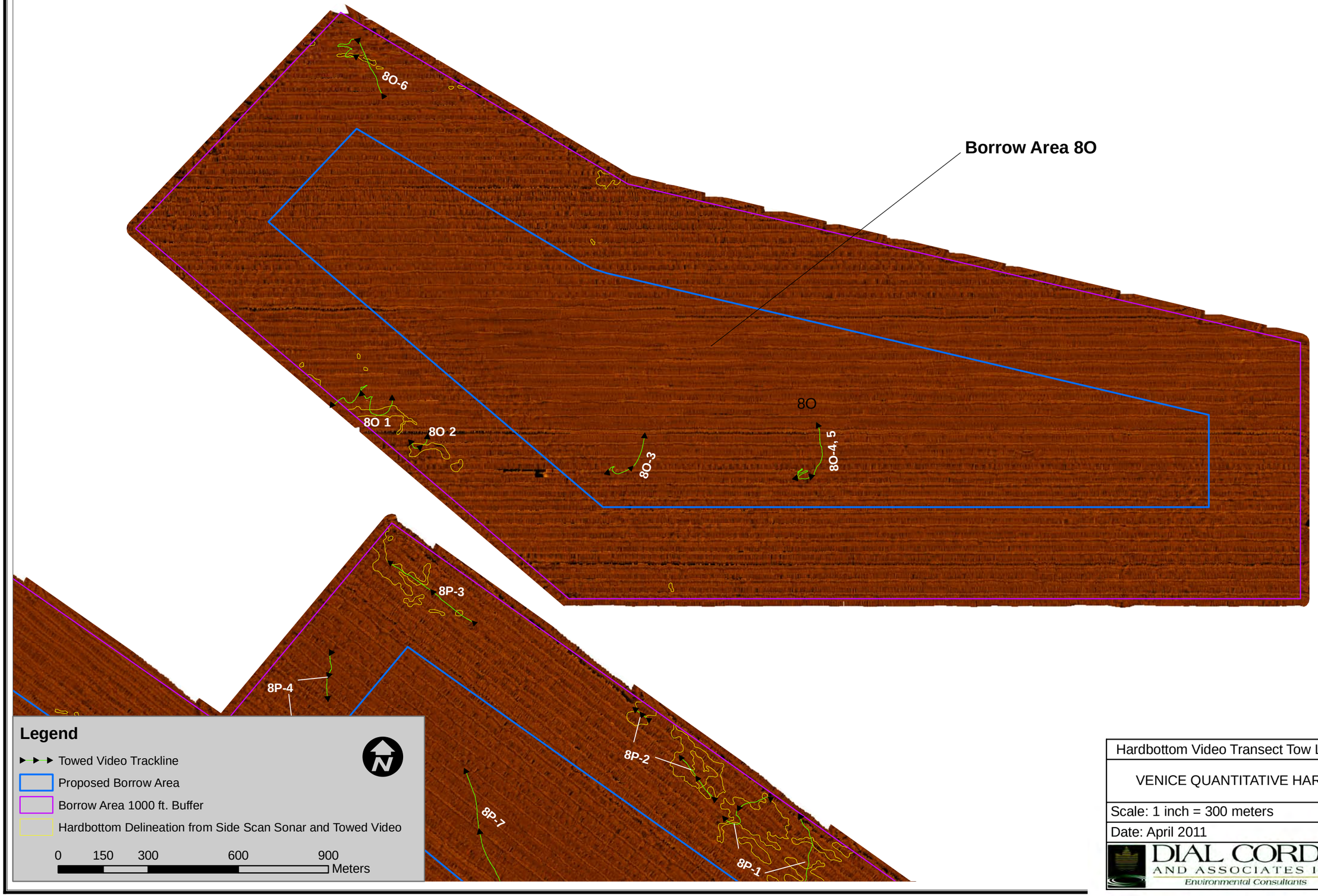
The borrow area mosaics were examined using image texture and shadow analysis to determine potential location and delineation of hardbottom areas. Areas of hardbottom targets were all of low relief (< 40 cm).

## 2.2 Towed Video Survey

The towed video survey was performed to visually verify the hardbottom habitat identified from side-scan sonar analysis and to provide a visual representation of sediment types within the borrow area (Figures 2, 3, 4). Sixteen polygons were delineated based on hardbottom aggregations from side-scan sonar mosaic results. Towed video was recorded in order to verify hardbottom signatures interpreted by side-scan sonar image analysis. Marine scientists in the field chose areas for towed video based on side scan results, sea state and wave direction and the need to capture hardbottom/sand transitions for visual verification. The video survey was performed utilizing an integrated towed calibrated video system which records high definition digital video, and is linked to geo-referenced navigational software and a precision positioning system (DGPS) with an accuracy of +/- one-meter. A digital video camera was mounted on the tow fish with a bird's eye view to record hardbottom and sand features. Recorded images were indexed according to the specified tow line number identified from Figures 2, 3, 4 and were transferred to DVDs (Appendix B).

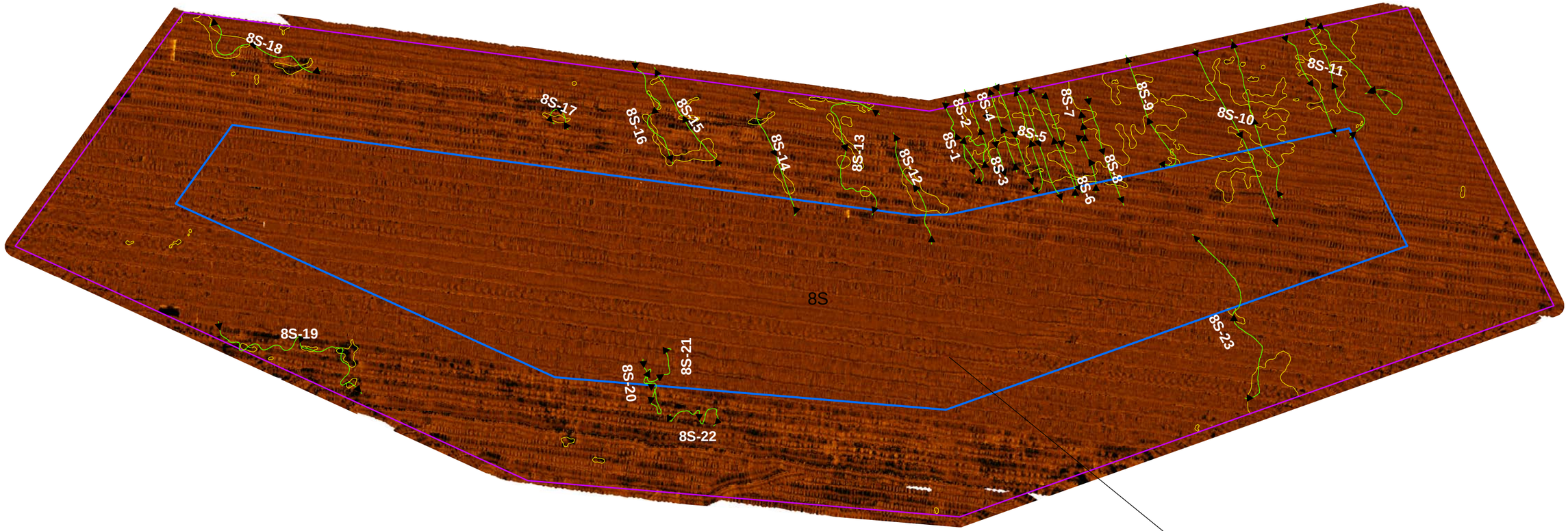
## 2.3 *In-Situ* Surveys

Five hardbottom sites out of sixteen possible sites were chosen for detailed *in-situ* surveys (Figures 5, 6, 7). These hardbottom sites were chosen because they were the areas with the greatest aggregation of hardbottom features identified by side-scan sonar image analysis. Within each hardbottom site, transect-start locations were randomly established using ArcView GIS. From these random start locations, 10-m transects were placed using random bearings that did not allow any portion of a transect to be closer than 2 meters from any other transect, and did not allow a transect to cross another transect. The total number of transects varied among hardbottom sites based on the total area of hardbottom encountered and scleractinian species richness. A total of 40 transects were established within the five hardbottom sites as follows, 10 transects within Area 1, four transects within Area 2, 15 transects within Area 7, five transects within Area 9, and six transects within Area 13 (Appendix C).




| Hardbottom Video Transect Tow Lines for Borrow Area 8O | |
|---|---|
| VENICE QUANTITATIVE HARDBOTTOM SURVEY | |
| Scale: 1 inch = 300 meters | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Figure 2 |


| Hardbottom Video Transect Tow Lines for Areas 8P and 8R | |
|---|---|
| VENICE QUANTITATIVE HARDBOTTOM SURVEY | |
| Scale: 1 inch = 300 meters | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Figure 3 |



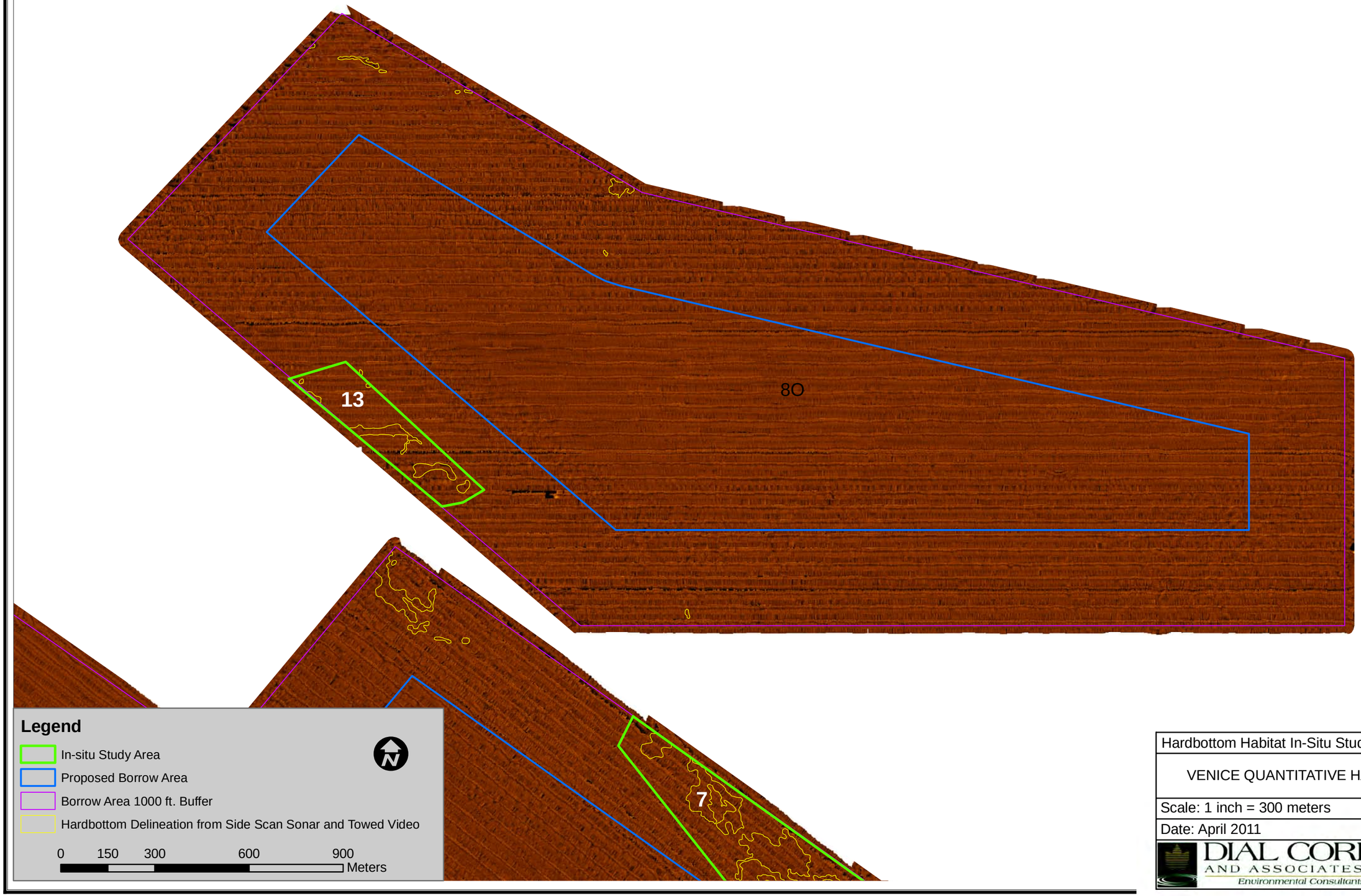

Borrow Area 8S

**Legend**

- Towed Video Trackline
- Proposed Borrow Area
- Borrow Area 1000 ft. Buffer
- Hardbottom Delineation from Side Scan Sonar and Towed Video

0 150 300 600 900 Meters

| Hardbottom Video Transect Tow Lines for Borrow Area 8S | |
|---|---|
| VENICE QUANTITATIVE HARDBOTTOM SURVEY | |
| Scale: 1 inch = 300 meters | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Figure 4 |

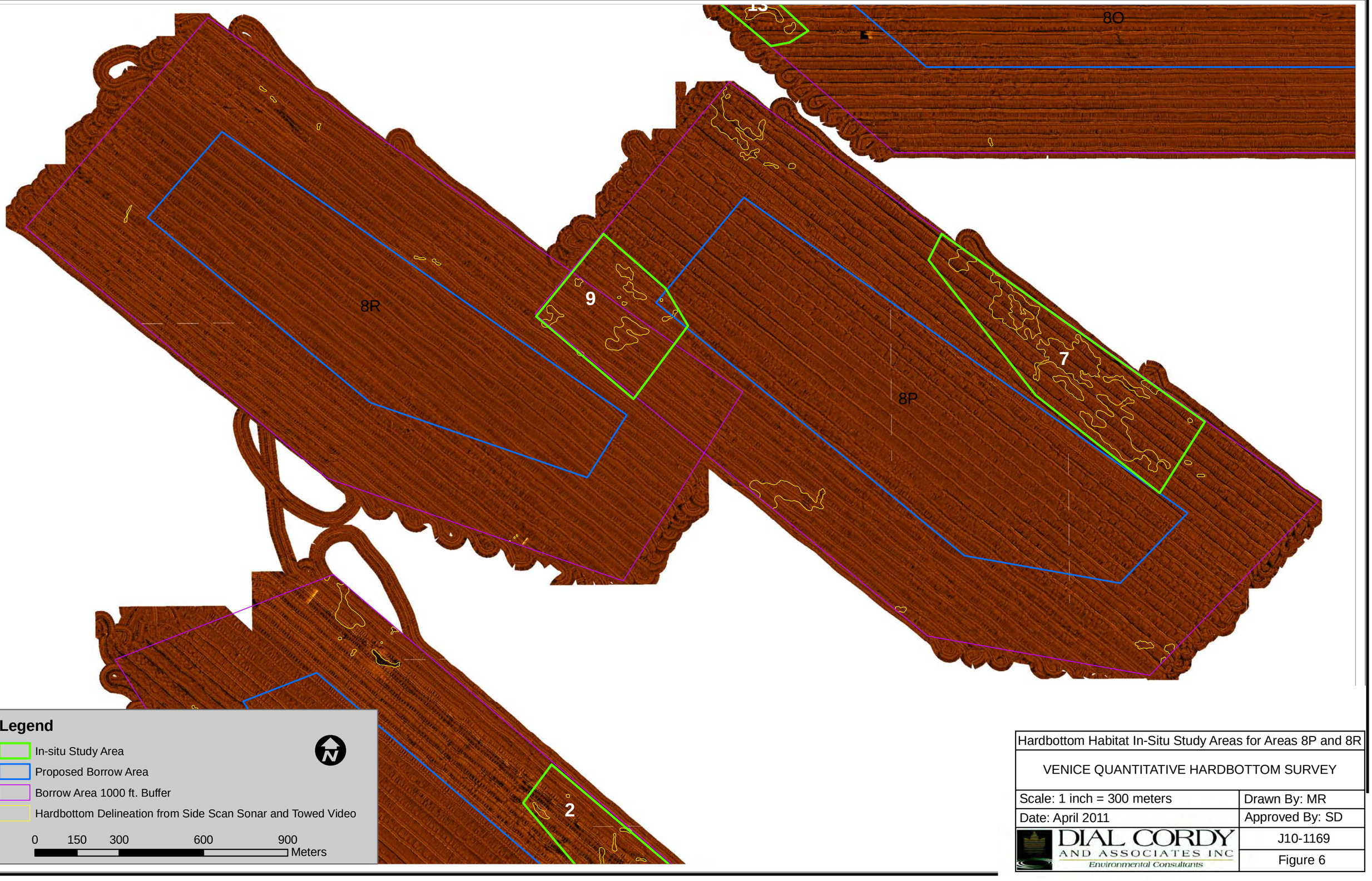



**Legend**

- In-situ Study Area
- Proposed Borrow Area
- Borrow Area 1000 ft. Buffer
- Hardbottom Delineation from Side Scan Sonar and Towed Video

0 150 300 600 900 Meters

| Hardbottom Habitat In-Situ Study Areas for Borrow Area 8O | |
|---|---|
| VENICE QUANTITATIVE HARDBOTTOM SURVEY | |
| Scale: 1 inch = 300 meters | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Figure 5 |

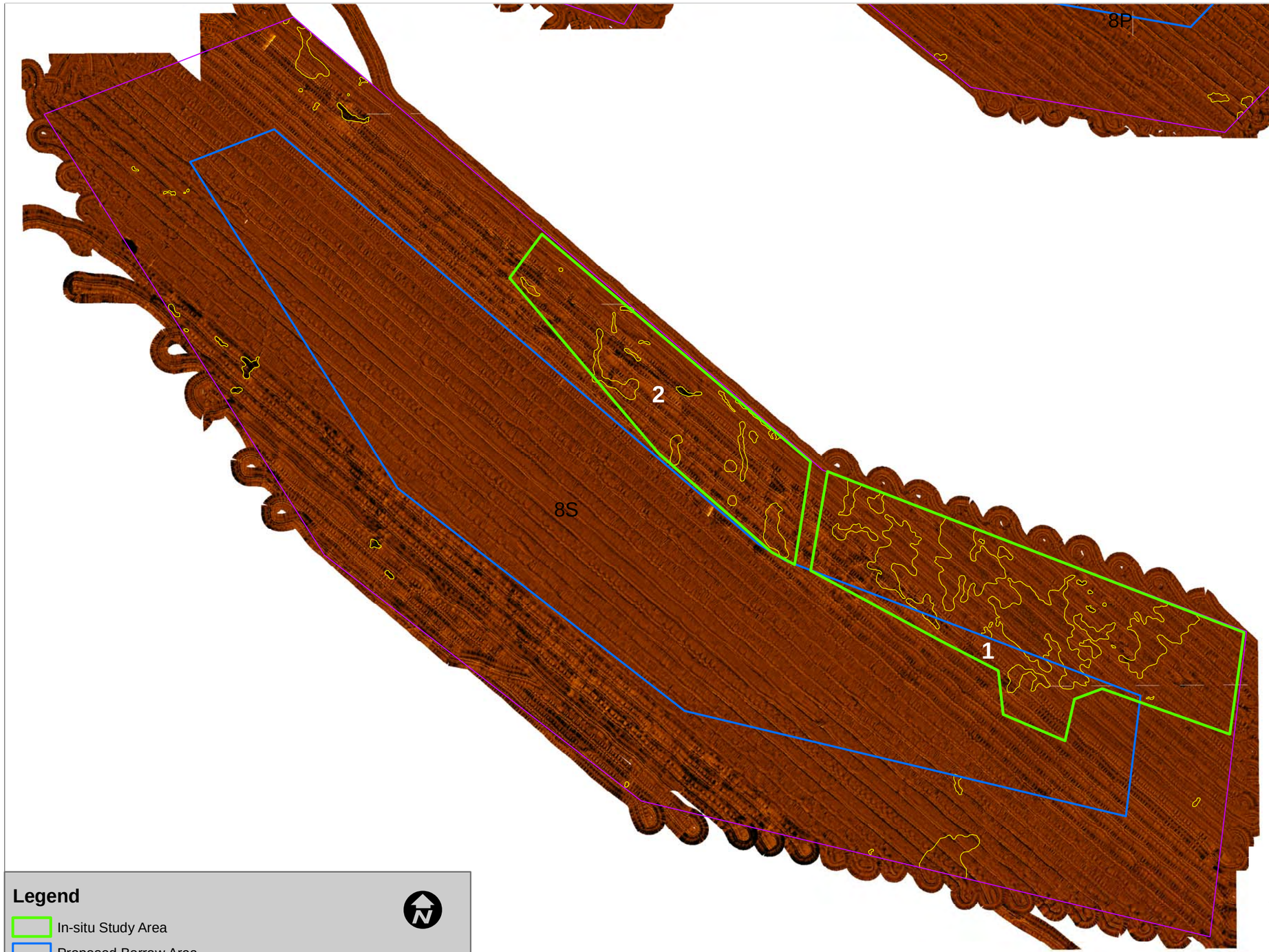



**Legend**

- In-situ Study Area
- Proposed Borrow Area
- Borrow Area 1000 ft. Buffer
- Hardbottom Delineation from Side Scan Sonar and Towed Video

0 150 300 600 900 Meters

| Hardbottom Habitat In-Situ Study Areas for Areas 8P and 8R | |
|---|---|
| VENICE QUANTITATIVE HARDBOTTOM SURVEY | |
| Scale: 1 inch = 300 meters | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Figure 6 |




**Legend**

- In-situ Study Area
- Proposed Borrow Area
- Borrow Area 1000 ft. Buffer
- Hardbottom Delineation from Side Scan Sonar and Towed Video

0 150 300 600 900 Meters

| Hardbottom Habitat In-situ Study Areas for Borrow Area 8S | |
|---|---|
| VENICE QUANTITATIVE HARDBOTTOM SURVEY | |
| Scale: 1 inch = 300 meters | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Figure 7 |

*In-situ* data collected along transects included the abundance of benthic octocorals and scleractinians. Specifically, the following information was documented along each 10 x 1m transect: (1) species-specific scleractinian colony counts; (2) genus-specific octocoral colony counts; (3) sponge colony morphotype counts; and (4) the average relief of the hardbottom features along each transect, measured every 2 meters along the transect. Forty transects, or 400 $m^2$, were sampled in total. Video transect data were collected for all transects down each side of the transect (10 x 0.8-meter per transect) for archival purposes. Data were used to calculate density (organisms/$m^2$), diversity (H'), and evenness (J') (H'/ln(s)), where s = species richness at each site. The Shannon-Wiener diversity index (H') was used to express the biological diversity of scleractinian species in this study. H' was not calculated for octocorals and sponges because these groups were less abundant at study sites. H' is expressed by the following equation

$$H' = -\sum_{i=1}^{S} p_i \ln p_i$$

The calculation considers the relative abundance of species and species evenness distribution (how evenly the species present are represented) to create an index which may be used for comparison purposes. Higher values are indicative of higher biological diversity, diversity values range depending upon the habitat from 0 to 5 or more, depending upon sample size and species richness. These data may be used to conduct Habitat Equivalency Analysis (HEA), UMAM and determine significance of resources based on National Marine Fisheries Service (NMFS) standards in the Gulf Biological Opinion.

## 3.0 RESULTS

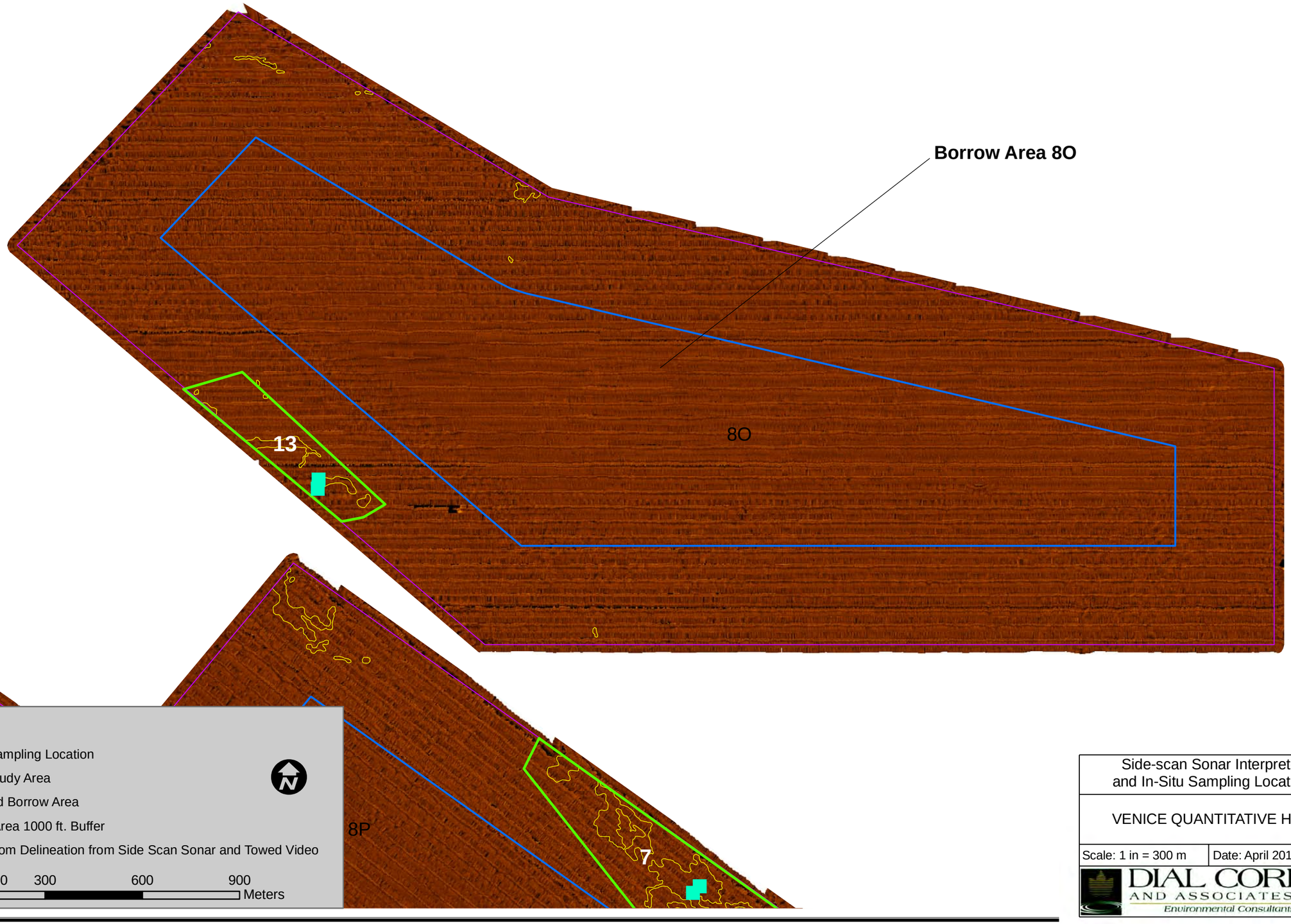
### 3.1 Side-Scan Mosaics of Hardbottom Habitat

Side-scan mosaics were developed for each borrow area, including the 1,000-foot buffer areas (Figures 8, 9, 10). Hardbottom habitat lies within Borrow Areas 8P and 8S, and is located within the 1,000-foot buffer for all borrow areas surveyed. Hardbottom contacts identified from the side-scan image, interpretation, and shadow analysis are listed in Appendix D.

No hardbottom habitat was located within the 8O borrow area. The closest hardbottom habitat to Borrow Area 8O is 71 meters from the borrow area on the north side. An estimated 3.8 acres of hardbottom habitat is located within the 1,000-foot buffer, adjacent to the 8O borrow area (Figure 8). The adjacent southwestern hardbottom habitat was surveyed using *in-situ* methods (Area 13, Section 3.3.).

The 8P borrow area included 0.08-acre of hardbottom habitat within the proposed borrow area. The closest hardbottom habitat adjacent to Borrow Area 8P is 23 meters from the borrow area on the northwestern side: this area was surveyed using *in-situ* methods (Area 7, Section 3.3). An estimated 26.7 acres of hardbottom habitat is located within the 1,000-foot buffer, adjacent to the 8P borrow area (Figure 9).

No hardbottom habitat was located within the 8R borrow area. The closest hardbottom habitat adjacent to Borrow Area 8R is 23 meters from the borrow area on the northwestern side, this area was surveyed using *in-situ* methods (Area 9, Section 3.3). An estimated 3.9 acres of hardbottom habitat is located within the 1,000-foot buffer, adjacent to the 8R borrow area. A portion of this hardbottom habitat is also within the 1,000-foot buffer of Borrow Area 8P, however, the acreage is only included in the 8R hardbottom habitat estimate value (Figure 9).




**Legend**

- In-situ Sampling Location
- In-situ Study Area
- Proposed Borrow Area
- Borrow Area 1000 ft. Buffer
- Hardbottom Delineation from Side Scan Sonar and Towed Video

0 150 300 600 900 Meters

Side-scan Sonar Interpreted Hardbottom Habitat and In-Situ Sampling Locations for Borrow Area 8O

VENICE QUANTITATIVE HARDBOTTOM SURVEY

| Scale: 1 in = 300 m | Date: April 2011 | Approved By: SD |
|---|---|---|
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | | J10-1169 |
| | | Figure 8 |

13

8O

8R

9

8P

7

Borrow Area 8R

Borrow Area 8P

2

## Legend

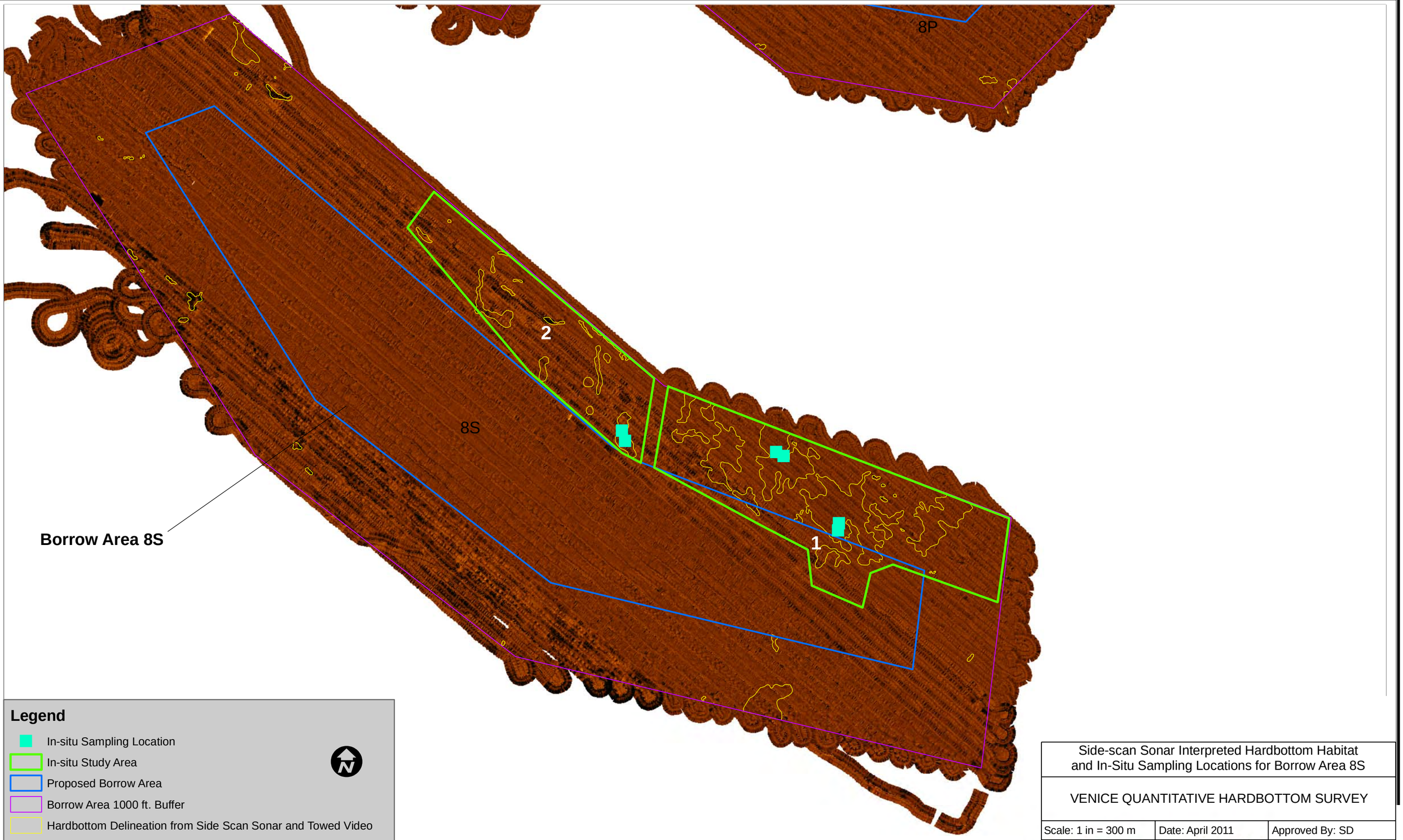
- In-situ Sampling Location
- In-situ Study Area
- Proposed Borrow Area
- Borrow Area 1000 ft. Buffer
- Hardbottom Delineation from Side Scan Sonar and Towed Video

0 150 300 600 900 Meters

Side-scan Sonar Interpreted Hardbottom Habitat
and In-Situ Sampling Locations for Borrow Areas 8P and 8R

VENICE QUANTITATIVE HARDBOTTOM SURVEY

| Scale: 1 in = 300 m | Date: April 2011 | Approved By: SD |
|---|---|---|
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | | J10-1169 |
| | | Figure 9 |




**Legend**

- In-situ Sampling Location
- In-situ Study Area
- Proposed Borrow Area
- Borrow Area 1000 ft. Buffer
- Hardbottom Delineation from Side Scan Sonar and Towed Video

0 150 300 600 900 Meters

Side-scan Sonar Interpreted Hardbottom Habitat and In-Situ Sampling Locations for Borrow Area 8S

VENICE QUANTITATIVE HARDBOTTOM SURVEY

| Scale: 1 in = 300 m | Date: April 2011 | Approved By: SD |
|---|---|---|
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | | J10-1169 |
| | | Figure 10 |

The 8S borrow area included 2.9 acres of hardbottom habitat within the proposed borrow area. The closest hardbottom habitat adjacent to Borrow Area 8R is 2 meters from the borrow area on the northeastern side, these areas were surveyed using *in-situ* methods (Area 1 and 2, Section 3.3). An estimated 48.8 acres of hardbottom habitat is located within the 1,000-foot buffer, adjacent to the 8S borrow area (Figure 10).

On average hardbottom identified in the side-scan sonar analysis was 40 cm in relief. Based on side-scan analysis there is a high level of confidence that no hardbottom within the 1,000-foot buffer is higher than 1.5 feet (45.72 cm).

### 3.2 Towed Video

The towed video survey provided a visual verification of the hardbottom features interpreted from side-scan sonar records and a visual representation of the sediment types within each borrow area. Towed video footage for each transect (Figures 2, 3, 4) is included as a five-DVD set in Appendix B.

### 3.3 *In-Situ* Surveys

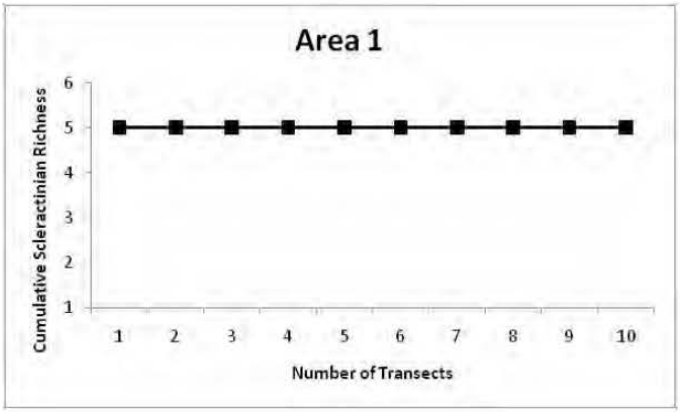
Hardbottom areas adjacent to the four proposed borrow areas with the greatest aggregation of hardbottom features were selected for *in-situ* surveys to provide data on the associated benthic communities (Figures 5, 6, 7). Hardbottom *in-situ* field data are provided in Appendix E. Photographs of hardbottom habitat and their biological constituents are provided in Appendix F. Hand-held video was recorded for all transects for archival purposes and is viewable on DVD (Appendix G).

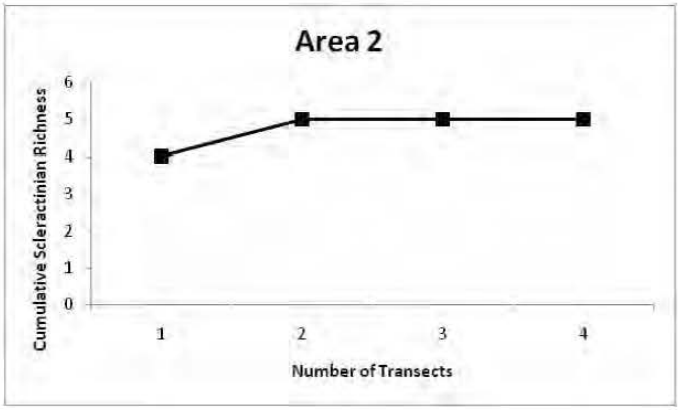
Hardbottom sites 1, 2, 7, 9, and 13 included areas of hardbottom, shell hash, and sand (Table 1) (Figures 5, 6, 7). Water depth ranged from 12 m to 15 m and the maximum relief at any area measured along transects was 28.3 cm. Area 1 had rocks (larger than 25 cm maximum diameter) and rubble (5 cm to 25 cm maximum diameter) and was the only area where sedimentation was documented during surveys. Area 7 also included rubble. Algae were a minor contributor to benthic cover at these sites. Only *Sargassum* sp. and turf algae were documented at Areas 1, 7, and 9.

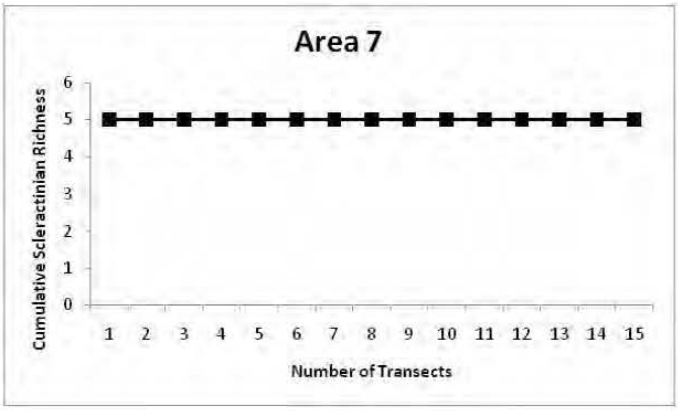
**Table 1. Abiotic data for all sites.**

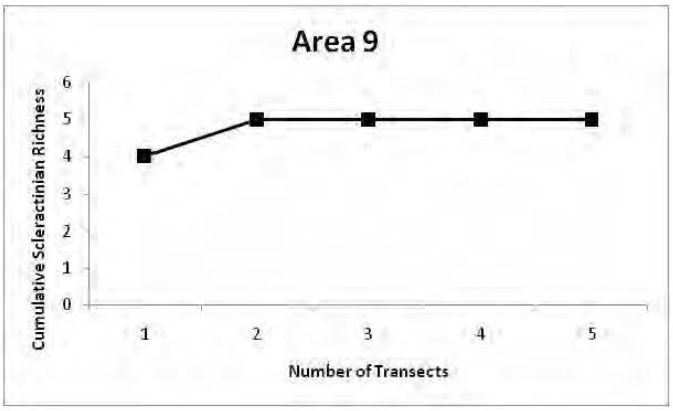
| | Area | | | | |
|---|---|---|---|---|---|
| **Characteristics** | **1** | **2** | **7** | **9** | **13** |
| Hardbottom | • | • | • | • | • |
| Rocks | • | | | | |
| Rubble | • | | • | | |
| Shell Hash | • | • | • | • | • |
| Sand | • | • | • | • | • |
| Sedimentation | • | | | | |
| Maximum Relief (cm) | 17.5 | 16.7 | 28.3 | 5.8 | 15 |
| Depth Range (m) | 14-15 | 15 | 12-14 | 14 | 14-15 |

Asymptotic species richness curves show that an adequate sample size (number of transects) was surveyed to document scleractinian species richness at all hardbottom sites (Figure 11).



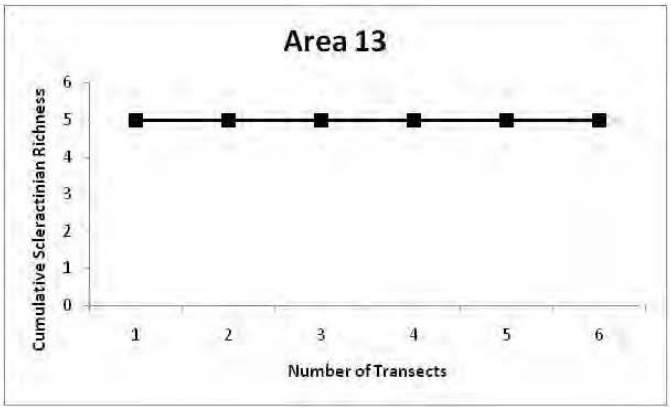




**Figure 11 Scleractinian species rarefaction curves for all hardbottom sites.**

**Scleractinian Species Richness**

Five scleractinian coral species were documented at all hardbottom sites (Table 2). Each site included all five species. Colony density varied by site and ranged from 4.3 to 13.5 individuals/$m^2$ (Table 3). *Oculina robusta* and *Phyllangia americana* were the least abundant species across sites, while *Cladocora arbuscula* was the most abundant (Figure 12). Photographs of typical hardbottom communities found across sites are shown in Figures 13 and 14.

**Table 2. Scleractinian species present at each hardbottom sites.**

| Scleractinian Species | Area 1 | Area 2 | Area 7 | Area 9 | Area 13 |
|---|---|---|---|---|---|
| *Cladocora arbuscula* | • | • | • | • | • |
| *Oculina robusta* | • | • | • | • | • |
| *Phyllangia americana* | • | • | • | • | • |
| *Siderastrea siderea* | • | • | • | • | • |
| *Solenastrea hyades* | • | • | • | • | • |

**Table 3. Number of scleractinian colonies, species richness, and density of scleractinian colonies at hardbottom sites. SD = standard deviation, N = number of belt transects.**

| Hardbottom Area | Colonies | Species | Mean Density (colonies/$m^2$) | *SD* | *N* |
|---|---|---|---|---|---|
| 1 | 703 | 5 | 7.0 | 5.1 | 10 |
| 2 | 539 | 5 | 13.5 | 2.9 | 4 |
| 7 | 1,921 | 5 | 12.8 | 2.6 | 15 |
| 9 | 214 | 5 | 4.3 | 2.2 | 5 |
| 13 | 733 | 5 | 12.2 | 4.8 | 6 |

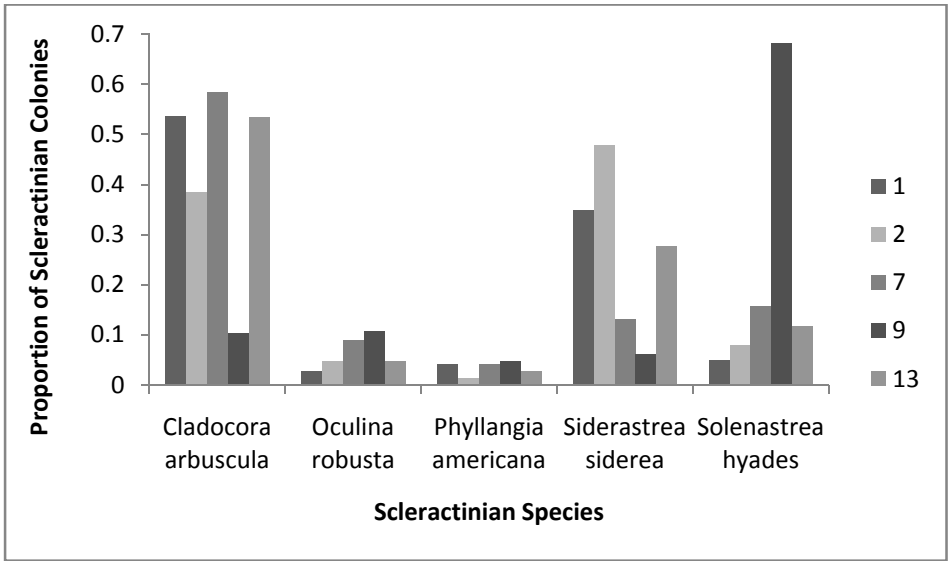



**Figure 12. Proportional Abundance of the Scleractinian Corals at Each Hardbottom Site**

**Figure 13. Shell and Sponge Assemblage with *Cladocora arbuscul*a Colonies**

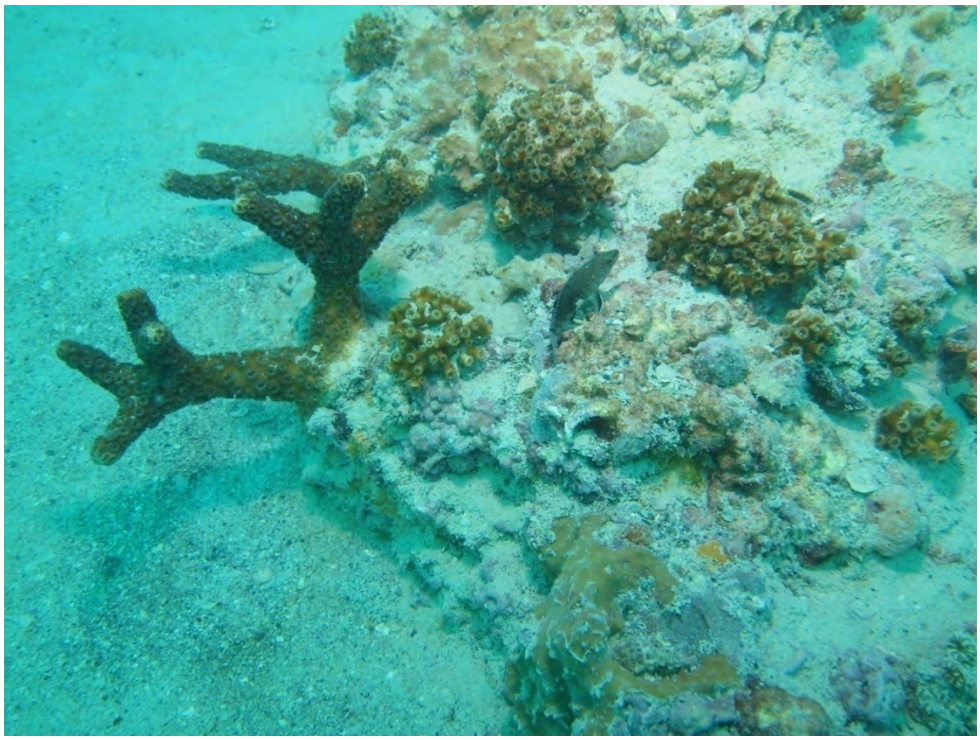


**Figure 14. Hardbottom and Sand Edge with *Oculina robusta* and *Cladocora arbuscula* colonies**

**Scleractinian Species Diversity**

The Shannon–Wiener diversity Index (H') was used to calculate species diversity. Diversity indexes are used to evaluate the biological diversity of a community. H' value calculations consider species richness (number of species) and species evenness distribution (the relative evenness of species sampled). Higher values are indicative of higher biological diversity. Diversity (H') values ranged from 1.1 to 1.3 across the five sites, indicating low diversity across sites (Table 4). Evenness (J') ranged from 0.7 to -0.8 across sites, indicating a fairly even distribution of scleractinians at each site. Evenness values range from 0 to 1, with values closer to 1 indicating a more even distribution of scleractinian species at a site. (Table 4).

**Table 4. Shannon–Wiener Diversity Index (H') and Evenness (J') calculated for scleractinian species at hardbottom sites.**

| Index | 1 | 2 | 7 | 9 | 13 |
|---|---|---|---|---|---|
| Diversity (H') | 1.1 | 1.1 | 1.3 | 1.2 | 1.2 |
| Evenness (J') | 0.7 | 0.7 | 0.8 | 0.7 | 0.7 |

**Scleractinian Density**

Scleractinian density ranged from 4.3 to 13.5 individuals/$m^2$ across all transects within hardbottom sites. Mean scleractinian density was lowest at Area 9 and highest at Area 2 (Figure 15).

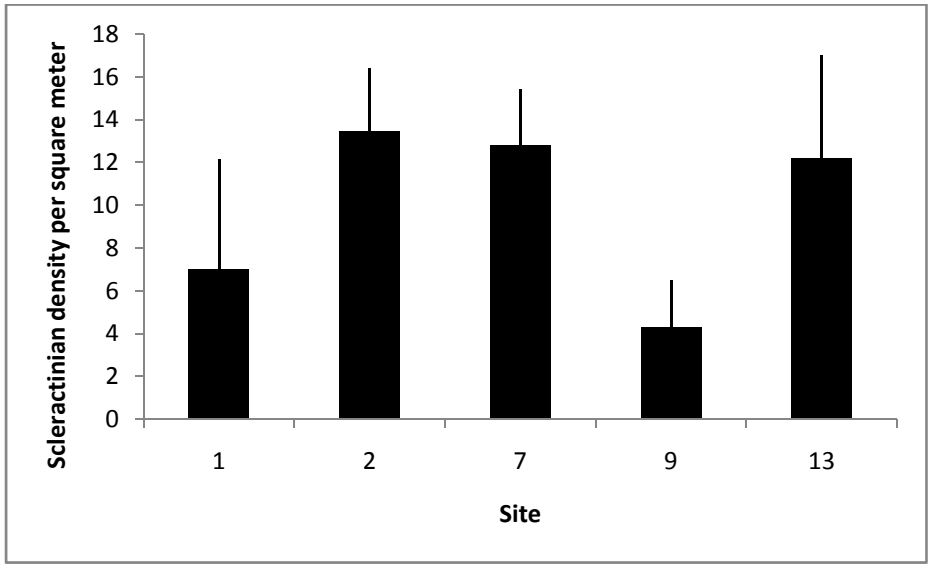



**Figure 15. Scleractinian Density Per Square Meter at All Hardbottom Sites (+/- SD)**

**Octocoral Generic Richness**

Hardbottom sites included three octocoral genera (Table 5). Area 1 did not include any octocorals surveyed along transects or documented in field notes. Area 7 had the highest number of genera, whereas Area 2 had the fewest (Table 5).

**Table 5. List of octocoral genera present at each hardbottom site.**

| Octocoral Genera | Area 2 | Area 7 | Area 9 | Area 13 |
|---|---|---|---|---|
| Eunicea | • | • | • | |
| Leptogorgia | | • | • | • |
| Pseudopterogorgia | | • | | • |

Octocorals were less abundant than scleractinians at hardbottom sites (Table 6). Density values were low across all sites and ranged from less than 0.1 colonies/$m^2$ to 0.2 colonies/$m^2$.

**Table 6. Number of octocoral colonies, species richness, and density of octocoral colonies by hardbottom site as encountered in visual belt transects off Venice Beach, FL. SD = standard deviation, N = number of belt transects.**

| Hardbottom Area | Colonies | Genera | Mean Density (colonies/m$^2$) | *SD* | *N* |
|---|---|---|---|---|---|
| 2 | 1 | 1 | >0.1 | 0 | 4 |
| 7 | 13 | 2 | 0.1 | 0.1 | 15 |
| 9 | 11 | 2 | 0.2 | 0.1 | 5 |
| 13 | 5 | 2 | 0.1 | 0.2 | 6 |

**Morphological Richness of Sponges**

Sponge abundance data were collected at all transects. Sponge data were collected based upon morphotype characterization, since taxonomic identification often requires microscopy. The following categories were used to categorize sponges; ball, encrusting, finger, lumpy, tube, and vase (Table 7).

The greatest variety of sponge types occurred at Area 7, with five out of six types present along transects. Most sites only included half of all sponge types, with the exception of Area 1, which included four out of six.

**Table 7. List of sponge morphotypes present at each hardbottom site.**

| Sponge Types | Area 1 | Area 2 | Area 7 | Area 9 | Area 13 |
|---|---|---|---|---|---|
| ball | • | • | • | • | • |
| encrusting | • | • | • | • | • |
| finger | • | • | • | • | • |
| lumpy | | | • | | |
| tube | | | • | | |
| vase | • | | | | |

Sponge density ranged from 2.1 colonies/m$^2$ to 4.7 colonies/m$^2$ and were most abundant at Area 7, while Area 2 had the highest density (Table 8). Sponge morphotype data reveal that ball, encrusting, and finger were the dominant morphotypes at all sites surveyed. The lumpy, tube, and vase morphotypes were minorly represented at any single site (Figure 16).

**Table 8. Number of sponge colonies, morphotype richness, and density of sponge colonies encountered within the hardbottom sites. SD = standard deviation, N = number of belt transects.**

| Hardbottom Area | Colonies | Morphotype | Mean Density (colonies/m$^2$) | *SD* | *N* |
|---|---|---|---|---|---|
| 1 | 213 | 4 | 2.1 | 1.6 | 10 |
| 2 | 187 | 3 | 4.7 | 1.7 | 4 |
| 7 | 510 | 5 | 3.4 | 0.9 | 15 |
| 9 | 159 | 3 | 3.2 | 1.0 | 5 |
| 13 | 168 | 3 | 2.8 | 1.4 | 6 |

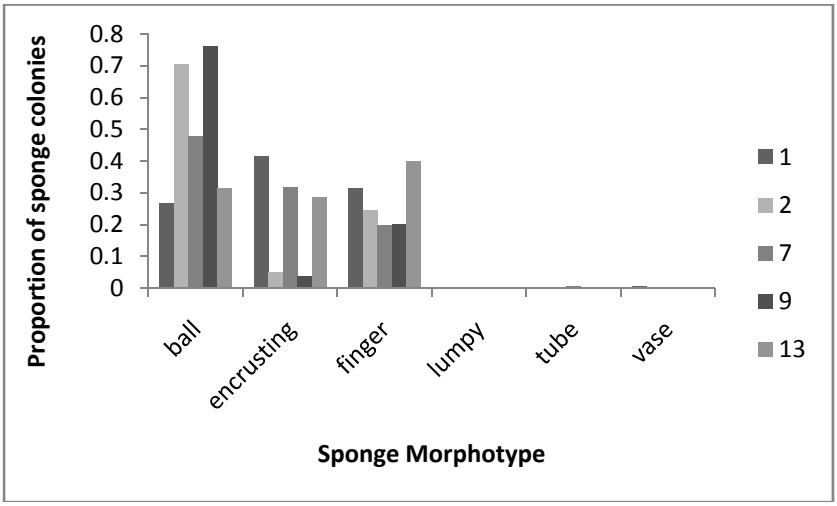



**Figure 16. Proportional Sponge Abundance by Morphotype and Site**

**Sponge Density**

Mean sponge density ranged from 2 to 5 colonies/$m^2$ across the hardbottom sites (Figure 17).

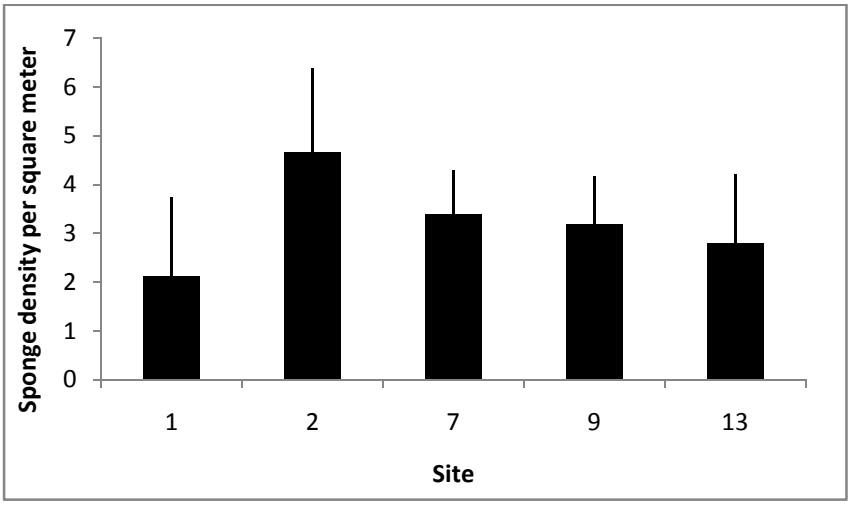



**Figure 17. Mean Sponge Colony Density Per Square Meter at the Hardbottom Sites. Error Bars Represent One SD**

The characterization of the hardbottom Areas 1, 2, 7, 9, and 13 adjacent to the proposed borrow areas reveal hardbottom with relatively low relief (< 40 cm), as well as low diversity of scleractinians, octocorals, and sponges common to offshore hardbottom habitat of the west coast of Florida (Craft 2009). The five sites surveyed were similar to each other in terms of scleractinian, octocoral, and sponge richness, while scleractinian density ranged between three to 14 individuals/$m^2$ across sites, and was highest at Area 2 and lowest at Area 9. Sponges and octocorals were less abundant across sites.

## 4.0 DISCUSSION

Side-scan sonar, towed video, and *in-situ* surveys documented low relief (< 40 cm) hardbottom habitat adjacent to (within 1,000-foot buffer) and within proposed Borrow Areas 8O, 8P, 8R, and 8S. Hardbottom habitat was identified within Borrow Areas 8P and 8S (0.08 and 2.89 acres, respectively), the relief of these areas was also low relief (< 40 cm). Interpreted side-scan sonar data and video transects confirmed that adjacent hardbottom areas fringe the larger sand-filled borrow areas and are isolated from each other. Towed video was used to verify side-scan interpreted and mapped hard bottom features. Five hardbottom habitat sites were documented using *in-situ* benthic surveys. These sites were chosen because they were the areas with the greatest amount of aggregated hardbottom features, identified by the side-scan sonar survey. The five sites surveyed were similar to each other in relief (< 30 cm), and scleractinian, octocoral and sponge richness. *In-situ* surveys recorded the presence of five species of scleractinian, three genera of octocoral, and several morphotypes of sponges. All scleractinian species were represented at each site, while octocorals were present at four out of five sites with only one site inclusive of all three octocoral genera.

These habitats were low in diversity and dominated by isolated scleractinians, which colonized otherwise bare hardbottom substrate (see Appendix F, Photographs). Scleractinian density ranged from four to 13 individuals/$m^2$ across hardbottom sites. Octocorals were less abundant, with density ranging from 0.1 to 0.2 individuals/$m^2$. Sponges were more common, ranging from two to five individuals/$m^2$.

The Gulf of Mexico NMFS Biological Opinion states that a significant hardground in a project area is one that, over a horizontal distance of 150 feet, has an average elevation above the sand of 1.5 feet (45.72 cm) or greater, and has algae growing on it. By this definition, the results of side-scan sonar, towed video and in-situ surveys suggest that no significant hardbottom exists within the project area, including within the 1000' buffer.

Other studies of the effects of placed sand on nearshore hardbottom and hardbottom surrounding offshore borrow areas have been conducted within hardbottom habitat along the west coast of Florida (CSA 2003, Craft 2009). Scleractinians and octocorals documented in the current study were different than those documented in studies conducted closer to shore and further north in Pinellas County (CSA 2003 and Craft 2009). In comparison, this study documented fewer octocorals with fewer genera represented, higher density scleractinian corals, and a less diverse and less abundant assemblage of macroalgae than at sites in Pinellas County (CSA 2003 and Craft 2009). These differences may be attributed to the further distance from shore. These habitats are likely similar to other hardbottom habitats nearby (further south and further offshore than those reviewed here).

## 5.0 CONCLUSION

In order to support the borrow area search for the Sarasota County/Venice Beach Erosion Control project in Sarasota County located approximately 55 miles southwest of Tampa, DC&A was contracted to analyze previously collected side-scan sonar data, prepare a mosaic of substrate features, conduct towed video transects to visually verify mapped hardbottom areas adjacent to or within the borrow areas, and collect *in-situ* data from representative hardbottom habitats within the project area (the proposed borrow areas with a 1,000-foot buffer). The study was conducted to provide data needed to make a determination of hardbottom significance based on the NMFS GRBO, and to conduct HEA and UMAM assessments as necessary. The presence of low relief (< 40 cm) hardbottom habitat was documented and quantified (Table 9). Hardbottom documented adjacent to and within the proposed borrow areas were not significant per the NMFS GRBO criteria.

**Table 9. Estimated hardbottom habitat from side-scan sonar analysis, within and adjacent to (1,000-foot buffer) each borrow area.**

| Borrow Area | Hardbottom Habitat Within (acre) | Adjacent Hardbottom Habitat (acre) |
|---|---|---|
| 8O | 0.08 | 3.8 |
| 8P | 0 | 26.7 |
| 8R | 0 | 3.9 |
| 8S | 2.9 | 48.8 |

## 6.0 LITERATURE CITED

CSA. 2003. Hardbottom Assessment for the City of Venice (Florida) Beach Nourishment Project. Prepared for CoastalTech. Pp.85.

Craft, J., and Ward, G. 2009. Sand Key Beach Renourishment Project: Borrow Area Hardbottom Resource Investigation Report. Boca Raton, Florida. Coastal Planning & Engineering, Inc. 23 pp.

# APPENDIX A

# Side-Scan Mosaics and GIS Data (DVD)

# APPENDIX B

# Towed Video - Hardbottom Transects (DVDs)

# APPENDIX C

# *In-Situ* Survey Areas

1

8S

**Legend**

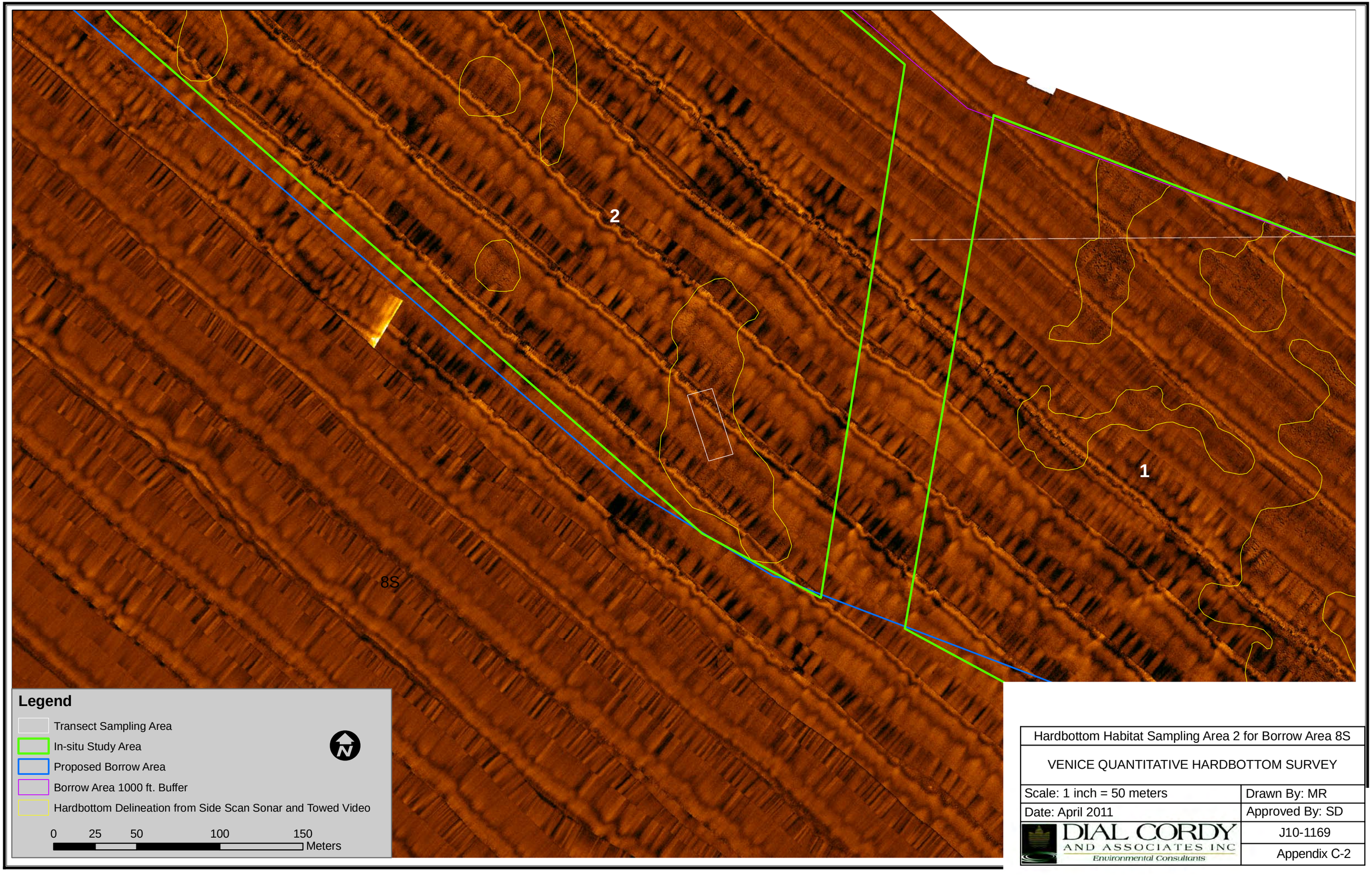
- Transect Sampling Area
- In-situ Study Area
- Proposed Borrow Area
- Borrow Area 1000 ft. Buffer
- Hardbottom Delineation from Side Scan Sonar and Towed Video

0 25 50 100 150 Meters

Hardbottom Habitat Sampling Area 1 for Borrow Area 8S

VENICE QUANTITATIVE HARDBOTTOM SURVEY

| | |
|---|---|
| Scale: 1 inch = 50 meters | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Appendix C-1 |




**Legend**

- Transect Sampling Area
- In-situ Study Area
- Proposed Borrow Area
- Borrow Area 1000 ft. Buffer
- Hardbottom Delineation from Side Scan Sonar and Towed Video

0 25 50 100 150 Meters

| Hardbottom Habitat Sampling Area 2 for Borrow Area 8S | |
|---|---|
| VENICE QUANTITATIVE HARDBOTTOM SURVEY | |
| Scale: 1 inch = 50 meters | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Appendix C-2 |

7

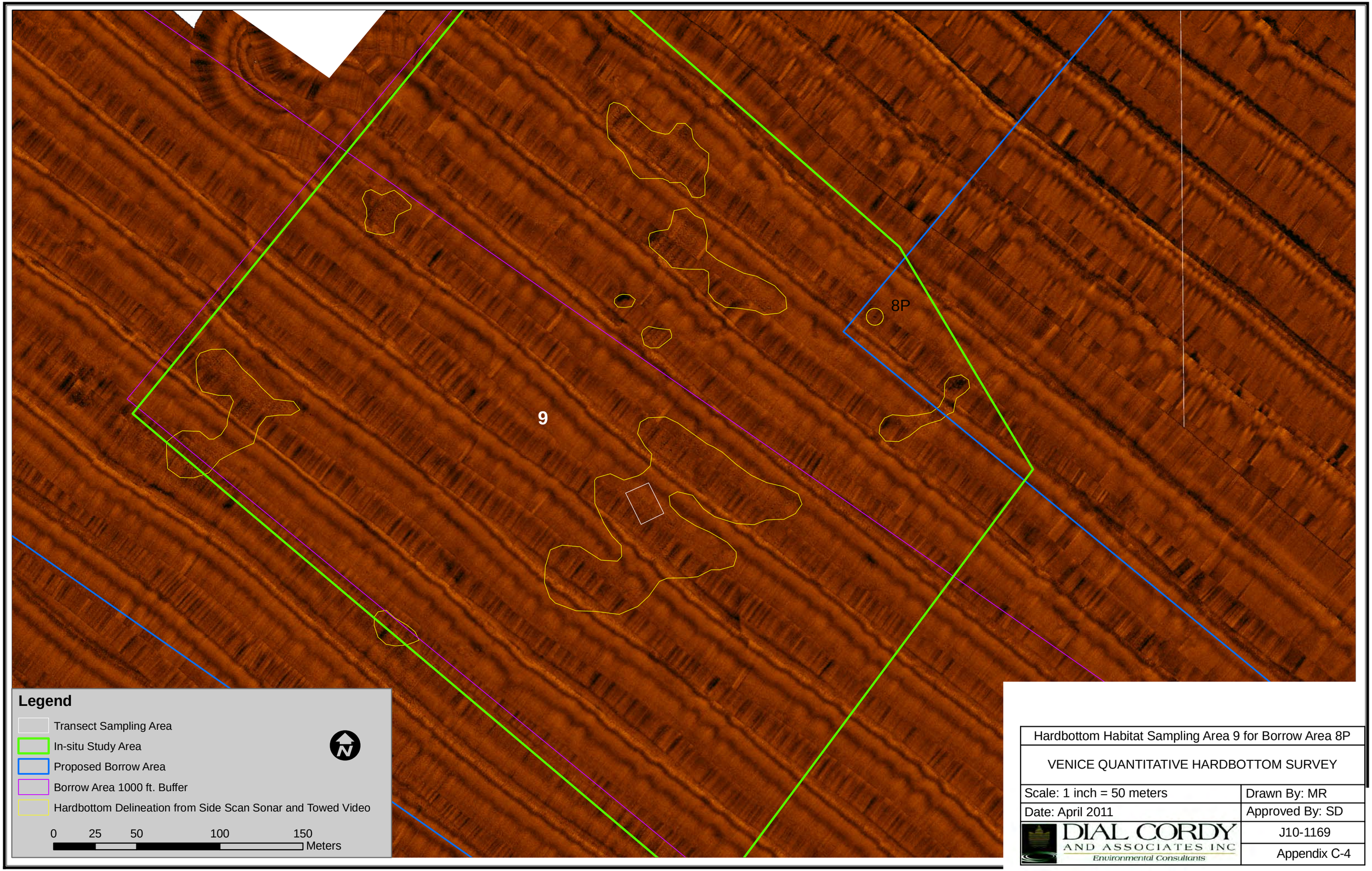
8P

## Legend

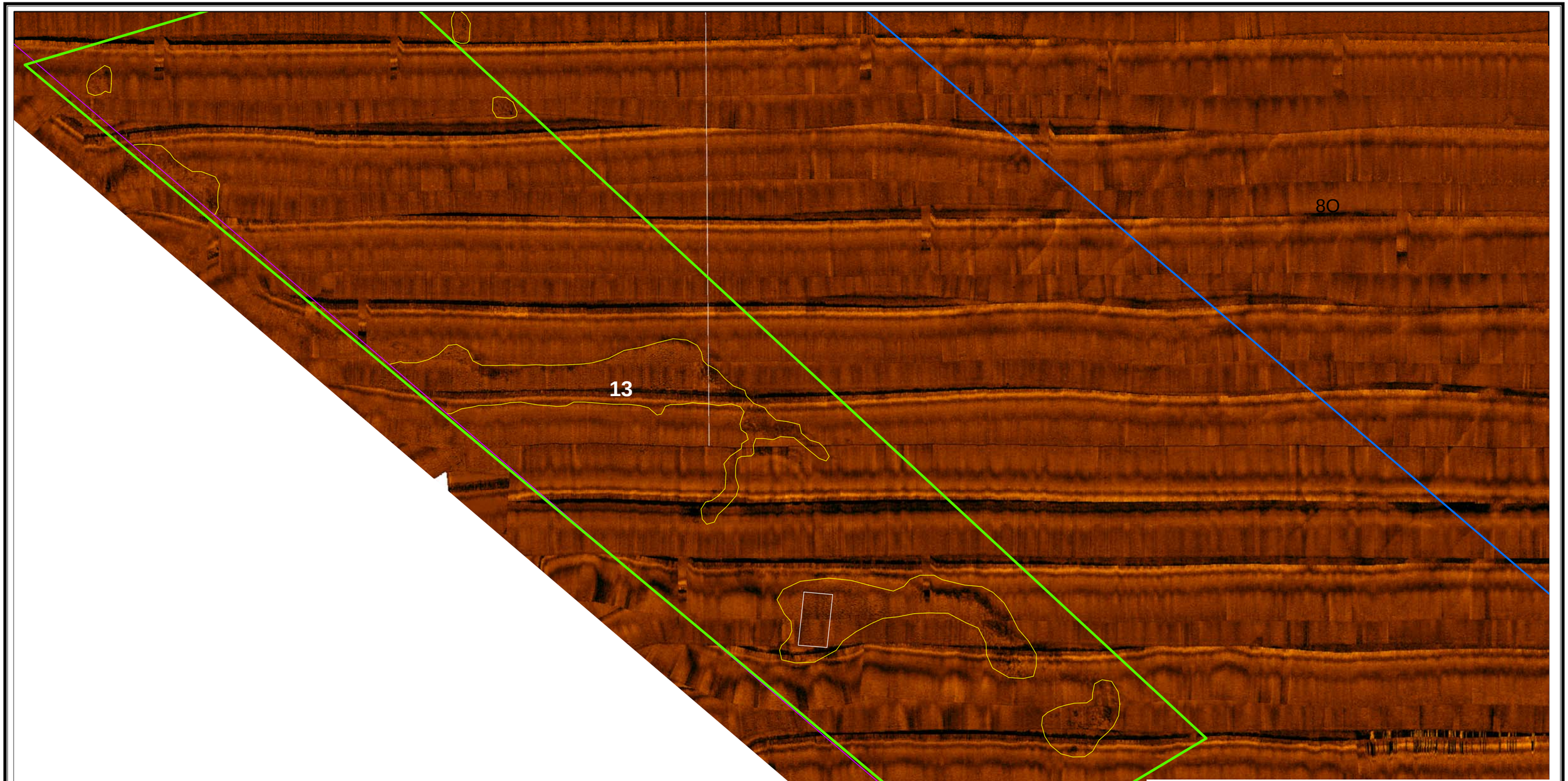
- Transect Sampling Area
- In-situ Study Area
- Proposed Borrow Area
- Borrow Area 1000 ft. Buffer
- Hardbottom Delineation from Side Scan Sonar and Towed Video

0 25 50 100 150 Meters

| Hardbottom Habitat Sampling Area 7 for Borrow Area 8P | |
|---|---|
| VENICE QUANTITATIVE HARDBOTTOM SURVEY | |
| Scale: 1 inch = 50 meters | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Appendix C-3 |




| | |
|---|---|
| Hardbottom Habitat Sampling Area 9 for Borrow Area 8P | |
| VENICE QUANTITATIVE HARDBOTTOM SURVEY | |
| Scale: 1 inch = 50 meters | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Appendix C-4 |




**Legend**

- Transect Sampling Area
- In-situ Study Area
- Proposed Borrow Area
- Borrow Area 1000 ft. Buffer
- Hardbottom Delineation from Side Scan Sonar and Towed Video

0 25 50 100 150 Meters

| Hardbottom Habitat Sampling Area 13 for Borrow Area 8O | |
|---|---|
| VENICE QUANTITATIVE HARDBOTTOM SURVEY | |
| Scale: 1 inch = 50 meters | Drawn By: MR |
| Date: April 2011 | Approved By: SD |
| DIAL CORDY AND ASSOCIATES INC Environmental Consultants | J10-1169 |
| | Appendix C-5 |

# APPENDIX D

# Interpreted Hardbottom Habitat Contact List for All Borrow Areas

## Interpreted Hardbottom Habitat Contact List for All Borrow Areas

| BORROW_AREA | UNIQUE_ID | POLY_ID | CONTACT CENTER EASTING (X) | CONTACT CENTER NORTHING (Y) | AREA_FT | AREA_ACRES | COMMENTS |
|---|---|---|---|---|---|---|---|
| Area 8O | 8O-01 | 1 | 491989 | 953184 | 1731.997 | 0.040 | HB present / SSS confirmed |
| Area 8O | 8O-02 | 2 | 492495 | 953032 | 14401.618 | 0.331 | HB absent / SSS not confirm |
| Area 8O | 8O-03 | 3 | 492720 | 952923 | 1758.176 | 0.040 | HB present / SSS confirmed |
| Area 8O | 8O-04 | 4 | 493617 | 952711 | 1899.209 | 0.044 | HB present / SSS confirmed |
| Area 8O | 8O-05 | 5 | 493504 | 952706 | 1428.731 | 0.033 | HB present / SSS confirmed |
| Area 8O | 8O-06 | 6 | 495204 | 951703 | 27416.465 | 0.629 | HB present / SSS confirmed |
| Area 8O | 8O-07 | 7 | 490826 | 951174 | 4799.901 | 0.110 | HB absent / SSS not confirm |
| Area 8O | 8O-08 | 8 | 490793 | 951025 | 4306.860 | 0.099 | HB absent / SSS not confirm |
| Area 8O | 8O-09 | 9 | 495051 | 951021 | 1609.630 | 0.037 | HB present / SSS confirmed |
| Area 8O | 8O-10 | 10 | 496735 | 949846 | 862.450 | 0.020 | HB absent / SSS not confirm |
| Area 8O | 8O-11 | 11 | 492495 | 949773 | 1472.730 | 0.034 | HB present / SSS confirmed |
| Area 8O | 8O-12 | 12 | 491872 | 949679 | 1637.452 | 0.038 | HB present / SSS confirmed |
| Area 8O | 8O-13 | 13 | 492569 | 949634 | 1258.741 | 0.029 | HB present / SSS confirmed |
| Area 8O | 8O-14 | 14 | 492018 | 949516 | 5770.307 | 0.132 | HB present / SSS confirmed |
| Area 8O | 8O-15 | 15 | 502101 | 949281 | 10684.217 | 0.245 | HB absent / SSS not confirm |
| Area 8O | 8O-16 | 16 | 492744 | 949144 | 55347.526 | 1.271 | HB present / SSS confirmed |
| Area 8O | 8O-17 | 17 | 497517 | 948879 | 2852.966 | 0.065 | HB absent / SSS not confirm |
| Area 8O | 8O-18 | 18 | 493250 | 948754 | 38201.147 | 0.877 | HB absent / SSS not confirm |
| Area 8O | 8O-19 | 19 | 497331 | 948637 | 862.734 | 0.020 | HB absent / SSS not confirm |
| Area 8O | 8O-20 | 20 | 493569 | 948574 | 10769.827 | 0.247 | HB present / SSS confirmed |
| Area 8O | 8O-21 | 21 | 502321 | 948483 | 824.651 | 0.019 | HB absent / SSS not confirm |
| Area 8O | 8O-22 | 22 | 497800 | 948463 | 1189.551 | 0.027 | HB absent / SSS not confirm |
| Area 8O | 8O-23 | 23 | 497413 | 948423 | 9492.711 | 0.218 | HB absent / SSS not confirm |
| Area 8O | 8O-24 | 24 | 501412 | 948404 | 5384.789 | 0.124 | HB absent / SSS not confirm |
| Area 8O | 8O-25 | 25 | 497519 | 948271 | 2255.370 | 0.052 | HB absent / SSS not confirm |
| Area 8O | 8O-26 | 33 | 495909 | 947250 | 2928.552 | 0.067 | HB present / SSS confirmed |
| | | | | | | | |
| | | | | | | | |
| Area 8P | 8P-01 | 27 | 492840 | 947783 | 1915.521 | 0.044 | HB present / SSS confirmed |
| Area 8P | 8P-02 | 30 | 492897 | 947457 | 118512.811 | 2.721 | HB present / SSS confirmed |
| Area 8P | 8P-03 | 34 | 493152 | 947118 | 6260.990 | 0.144 | HB absent / SSS not confirm |
| Area 8P | 8P-04 | 35 | 493350 | 946979 | 4985.243 | 0.114 | HB present / SSS confirmed |
| Area 8P | 8P-05 | 36 | 493591 | 946967 | 4107.251 | 0.094 | HB present / SSS confirmed |
| Area 8P | 8P-06 | 38 | 492198 | 946218 | 15942.764 | 0.366 | HB absent / SSS not confirm |
| Area 8P | 8P-07 | 39 | 492081 | 946114 | 3044.210 | 0.070 | HB absent / SSS not confirm |
| Area 8P | 8P-08 | 41 | 495575 | 945863 | 48948.709 | 1.124 | HB present / SSS confirmed |
| Area 8P | 8P-09 | 43 | 491640 | 945730 | 19867.120 | 0.456 | HB present / SSS confirmed |
| Area 8P | 8P-10 | 45 | 491749 | 945501 | 20506.353 | 0.471 | HB present / SSS confirmed |
| Area 8P | 8P-11 | 46 | 491572 | 945433 | 824.269 | 0.019 | HB present / SSS confirmed |
| Area 8P | 8P-12 | 47 | 492066 | 945402 | 876.577 | 0.020 | HB present / SSS confirmed |
| Area 8P | 8P-13 | 48 | 491633 | 945362 | 1879.161 | 0.043 | HB present / SSS confirmed |
| Area 8P | 8P-14 | 49 | 496177 | 945301 | 176870.167 | 4.060 | HB absent / SSS not confirm |
| Area 8P | 8P-15 | 50 | 492163 | 945212 | 6947.081 | 0.159 | HB absent / SSS not confirm |
| Area 8P | 8P-16 | 54 | 496845 | 944711 | 225461.441 | 5.176 | HB present / SSS confirmed |
| Area 8P | 8P-17 | 56 | 497506 | 944402 | 31197.165 | 0.716 | HB present / SSS confirmed |
| Area 8P | 8P-18 | 57 | 497783 | 944386 | 15961.867 | 0.366 | HB present / SSS confirmed |
| Area 8P | 8P-19 | 58 | 496840 | 944383 | 35139.441 | 0.807 | HB present / SSS confirmed |
| Area 8P | 8P-20 | 62 | 498239 | 943995 | 2191.743 | 0.050 | HB present / SSS confirmed |
| Area 8P | 8P-21 | 65 | 497419 | 943852 | 249383.278 | 5.725 | HB present / SSS confirmed |
| Area 8P | 8P-22 | 70 | 498215 | 943503 | 3069.200 | 0.070 | HB present / SSS confirmed |
| Area 8P | 8P-23 | 71 | 498365 | 943352 | 2326.862 | 0.053 | HB present / SSS confirmed |
| Area 8P | 8P-24 | 72 | 493517 | 943132 | 151175.121 | 3.471 | HB present / SSS confirmed |
| Area 8P | 8P-25 | 77 | 494861 | 941788 | 6461.995 | 0.148 | HB present / SSS confirmed |
| Area 8P | 8P-26 | 82 | 497704 | 941371 | 13753.866 | 0.316 | HB present / SSS confirmed |

## Interpreted Hardbottom Habitat Contact List for All Borrow Areas

| BORROW_AREA | UNIQUE_ID | POLY_ID | CONTACT CENTER EASTING (X) | CONTACT CENTER NORTHING (Y) | AREA_FT | AREA_ACRES | COMMENTS |
|---|---|---|---|---|---|---|---|
| Area 8P | 8P-27 | 83 | 498003 | 941331 | 9430.182 | 0.216 | HB present / SSS confirmed |
| Area 8P | 8P-28 | 85 | 497924 | 941198 | 2410.744 | 0.055 | HB present / SSS confirmed |
| | | | | | | | |
| | | | | | | | |
| Area 8P-8R | 8P-R-01 | 44 | 491096 | 945611 | 5755.635 | 0.132 | HB present / SSS confirmed |
| Area 8P-8R | 8P-R-02 | 51 | 490781 | 945206 | 26013.096 | 0.597 | HB absent / SSS not confirm |
| Area 8P-8R | 8P-R-03 | 52 | 491647 | 944996 | 88680.594 | 2.036 | HB present / SSS confirmed |
| Area 8P-8R | 8P-R-04 | 59 | 492551 | 944282 | 4013.653 | 0.092 | HB absent / SSS not confirm |
| Area 8P-8R | 8P-R-05 | 63 | 492750 | 943967 | 18832.591 | 0.432 | HB absent / SSS not confirm |
| | | | | | | | |
| | | | | | | | |
| Area 8R | 8R-01 | 26 | 487407 | 947869 | 2377.942 | 0.055 | HB present / SSS confirmed |
| Area 8R | 8R-02 | 28 | 487532 | 947750 | 2351.521 | 0.054 | HB present / SSS confirmed |
| Area 8R | 8R-03 | 29 | 487097 | 947656 | 27568.998 | 0.633 | HB absent / SSS not confirm |
| Area 8R | 8R-04 | 31 | 487744 | 947441 | 23443.734 | 0.538 | HB absent / SSS not confirm |
| Area 8R | 8R-05 | 32 | 488063 | 947433 | 2220.644 | 0.051 | HB present / SSS confirmed |
| Area 8R | 8R-06 | 37 | 485830 | 946402 | 3899.518 | 0.090 | HB present / SSS confirmed |
| Area 8R | 8R-07 | 40 | 489240 | 945892 | 3347.310 | 0.077 | HB present / SSS confirmed |
| Area 8R | 8R-08 | 42 | 489435 | 945845 | 3010.444 | 0.069 | HB present / SSS confirmed |
| Area 8R | 8R-09 | 53 | 491116 | 944783 | 3934.379 | 0.090 | HB present / SSS confirmed |
| Area 8R | 8R-10 | 55 | 487129 | 944548 | 21845.573 | 0.502 | HB absent / SSS not confirm |
| Area 8R | 8R-11 | 60 | 487909 | 944109 | 3806.986 | 0.087 | HB absent / SSS not confirm |
| Area 8R | 8R-12 | 61 | 487443 | 944077 | 5424.546 | 0.125 | HB absent / SSS not confirm |
| Area 8R | 8R-13 | 64 | 488906 | 943955 | 4610.328 | 0.106 | HB absent / SSS not confirm |
| Area 8R | 8R-14 | 66 | 489105 | 943839 | 12530.818 | 0.288 | HB absent / SSS not confirm |
| Area 8R | 8R-15 | 67 | 488200 | 943604 | 1260.081 | 0.029 | HB absent / SSS not confirm |
| Area 8R | 8R-16 | 68 | 488138 | 943522 | 1360.087 | 0.031 | HB absent / SSS not confirm |
| Area 8R | 8R-17 | 69 | 488246 | 943512 | 860.846 | 0.020 | HB absent / SSS not confirm |
| Area 8R | 8R-18 | 73 | 490380 | 942649 | 324.996 | 0.007 | HB present / SSS confirmed |
| Area 8R | 8R-19 | 74 | 490351 | 942627 | 266.692 | 0.006 | HB present / SSS confirmed |
| Area 8R | 8R-20 | 75 | 490295 | 942586 | 149.087 | 0.003 | HB present / SSS confirmed |
| | | | | | | | |
| | | | | | | | |
| Area 8S | 8S-01 | 76 | 488164 | 942151 | 1938.139 | 0.044 | HB present / SSS confirmed |
| Area 8S | 8S-02 | 78 | 488399 | 941765 | 79421.134 | 1.823 | HB present / SSS confirmed |
| Area 8S | 8S-03 | 79 | 488944 | 941544 | 3303.688 | 0.076 | HB present / SSS confirmed |
| Area 8S | 8S-04 | 80 | 488311 | 941448 | 1104.266 | 0.025 | HB present / SSS confirmed |
| Area 8S | 8S-05 | 81 | 488799 | 941401 | 411.775 | 0.009 | HB present / SSS confirmed |
| Area 8S | 8S-06 | 84 | 488468 | 941284 | 2697.448 | 0.062 | HB present / SSS confirmed |
| Area 8S | 8S-07 | 86 | 488822 | 941190 | 20018.566 | 0.460 | HB present / SSS confirmed |
| Area 8S | 8S-08 | 87 | 486612 | 940640 | 1707.102 | 0.039 | HB present / SSS confirmed |
| Area 8S | 8S-09 | 88 | 487157 | 940421 | 600.221 | 0.014 | HB present / SSS confirmed |
| Area 8S | 8S-10 | 89 | 487122 | 940397 | 237.276 | 0.005 | HB present / SSS confirmed |
| Area 8S | 8S-11 | 90 | 486977 | 940397 | 2840.558 | 0.065 | HB present / SSS confirmed |
| Area 8S | 8S-12 | 91 | 490974 | 939609 | 1239.057 | 0.028 | HB present / SSS confirmed |
| Area 8S | 8S-13 | 92 | 490672 | 939403 | 7378.801 | 0.169 | HB present / SSS confirmed |
| Area 8S | 8S-14 | 93 | 491654 | 939207 | 5266.408 | 0.121 | HB present / SSS confirmed |
| Area 8S | 8S-15 | 94 | 487010 | 939191 | 6503.757 | 0.149 | HB present / SSS confirmed |
| Area 8S | 8S-16 | 95 | 491517 | 939050 | 6346.518 | 0.146 | HB present / SSS confirmed |
| Area 8S | 8S-17 | 96 | 487139 | 938989 | 1048.809 | 0.024 | HB present / SSS confirmed |
| Area 8S | 8S-18 | 97 | 487493 | 938869 | 4922.403 | 0.113 | HB present / SSS confirmed |
| Area 8S | 8S-19 | 98 | 491827 | 938865 | 2518.352 | 0.058 | HB present / SSS confirmed |
| Area 8S | 8S-20 | 99 | 491357 | 938815 | 16788.174 | 0.385 | HB present / SSS confirmed |
| Area 8S | 8S-21 | 100 | 491710 | 938743 | 6216.435 | 0.143 | HB present / SSS confirmed |
| Area 8S | 8S-22 | 101 | 487783 | 938619 | 22070.650 | 0.507 | HB present / SSS confirmed |

## Interpreted Hardbottom Habitat Contact List for All Borrow Areas

| BORROW_AREA | UNIQUE_ID | POLY_ID | CONTACT CENTER EASTING (X) | CONTACT CENTER NORTHING (Y) | AREA_FT | AREA_ACRES | COMMENTS |
|---|---|---|---|---|---|---|---|
| Area 8S | 8S-23 | 102 | 487654 | 938374 | 5549.541 | 0.127 | HB present / SSS confirmed |
| Area 8S | 8S-24 | 103 | 492268 | 938355 | 10599.549 | 0.243 | HB present / SSS confirmed |
| Area 8S | 8S-25 | 104 | 492659 | 938280 | 5914.747 | 0.136 | HB present / SSS confirmed |
| Area 8S | 8S-26 | 105 | 492826 | 938230 | 4431.072 | 0.102 | HB present / SSS confirmed |
| Area 8S | 8S-27 | 106 | 493076 | 938014 | 17205.353 | 0.395 | HB present / SSS confirmed |
| Area 8S | 8S-28 | 107 | 492946 | 937902 | 7013.543 | 0.161 | HB present / SSS confirmed |
| Area 8S | 8S-29 | 108 | 492155 | 937758 | 6310.902 | 0.145 | HB present / SSS confirmed |
| Area 8S | 8S-30 | 109 | 492836 | 937745 | 27088.158 | 0.622 | HB present / SSS confirmed |
| Area 8S | 8S-31 | 110 | 492710 | 937596 | 11679.791 | 0.268 | HB present / SSS confirmed |
| Area 8S | 8S-32 | 111 | 493934 | 937272 | 32788.038 | 0.753 | HB present / SSS confirmed |
| Area 8S | 8S-33 | 112 | 492729 | 937244 | 7155.799 | 0.164 | HB present / SSS confirmed |
| Area 8S | 8S-34 | 113 | 494211 | 937215 | 23169.848 | 0.532 | HB present / SSS confirmed |
| Area 8S | 8S-35 | 114 | 494004 | 936964 | 4858.269 | 0.112 | HB present / SSS confirmed |
| Area 8S | 8S-36 | 115 | 493166 | 936964 | 87490.508 | 2.009 | HB present / SSS confirmed |
| Area 8S | 8S-37 | 116 | 493831 | 936921 | 8195.511 | 0.188 | HB present / SSS confirmed |
| Area 8S | 8S-38 | 117 | 494148 | 936901 | 7369.615 | 0.169 | HB present / SSS confirmed |
| Area 8S | 8S-39 | 118 | 490189 | 936835 | 12793.152 | 0.294 | HB absent / SSS not confirm |
| Area 8S | 8S-40 | 119 | 495285 | 936828 | 1636.206 | 0.038 | HB present / SSS confirmed |
| Area 8S | 8S-41 | 120 | 489069 | 936798 | 6809.557 | 0.156 | HB present / SSS confirmed |
| Area 8S | 8S-42 | 121 | 494413 | 936710 | 185640.832 | 4.262 | HB present / SSS confirmed |
| Area 8S | 8S-43 | 122 | 495514 | 936706 | 11601.530 | 0.266 | HB present / SSS confirmed |
| Area 8S | 8S-44 | 123 | 490003 | 936700 | 7015.815 | 0.161 | HB absent / SSS not confirm |
| Area 8S | 8S-45 | 124 | 495108 | 936608 | 343426.841 | 7.884 | HB present / SSS confirmed |
| Area 8S | 8S-46 | 125 | 489219 | 936485 | 4267.844 | 0.098 | HB present / SSS confirmed |
| Area 8S | 8S-47 | 126 | 496303 | 936405 | 3587.991 | 0.082 | HB present / SSS confirmed |
| Area 8S | 8S-48 | 127 | 496392 | 936308 | 1417.787 | 0.033 | HB present / SSS confirmed |
| Area 8S | 8S-49 | 128 | 490310 | 936254 | 38325.986 | 0.880 | HB absent / SSS not confirm |
| Area 8S | 8S-50 | 129 | 496539 | 936181 | 1066.385 | 0.024 | HB present / SSS confirmed |
| Area 8S | 8S-51 | 130 | 496398 | 936134 | 3469.404 | 0.080 | HB present / SSS confirmed |
| Area 8S | 8S-52 | 131 | 494714 | 936112 | 51469.174 | 1.182 | HB present / SSS confirmed |
| Area 8S | 8S-53 | 132 | 495373 | 935975 | 1302.413 | 0.030 | HB present / SSS confirmed |
| Area 8S | 8S-54 | 133 | 496431 | 935928 | 40536.724 | 0.931 | HB present / SSS confirmed |
| Area 8S | 8S-55 | 134 | 495900 | 935918 | 499749.668 | 11.473 | HB present / SSS confirmed |
| Area 8S | 8S-56 | 135 | 497107 | 935893 | 244234.909 | 5.607 | HB present / SSS confirmed |
| Area 8S | 8S-57 | 136 | 495338 | 935889 | 6065.029 | 0.139 | HB present / SSS confirmed |
| Area 8S | 8S-58 | 137 | 496632 | 935750 | 811.867 | 0.019 | HB present / SSS confirmed |
| Area 8S | 8S-59 | 138 | 496414 | 935735 | 16792.332 | 0.385 | HB present / SSS confirmed |
| Area 8S | 8S-60 | 139 | 496718 | 935701 | 1239.108 | 0.028 | HB absent / SSS not confirm |
| Area 8S | 8S-61 | 140 | 497075 | 935505 | 970.750 | 0.022 | HB absent / SSS not confirm |
| Area 8S | 8S-62 | 141 | 495718 | 935422 | 53911.394 | 1.238 | HB absent / SSS not confirm |
| Area 8S | 8S-63 | 142 | 497323 | 935374 | 12621.757 | 0.290 | HB absent / SSS not confirm |
| Area 8S | 8S-64 | 143 | 496984 | 935225 | 375.795 | 0.009 | HB present / SSS confirmed |
| Area 8S | 8S-65 | 144 | 497027 | 935221 | 739.010 | 0.017 | HB present / SSS confirmed |
| Area 8S | 8S-66 | 145 | 495850 | 935076 | 47024.929 | 1.080 | HB absent / SSS not confirm |
| Area 8S | 8S-67 | 146 | 492580 | 934940 | 10059.190 | 0.231 | HB absent / SSS not confirm |
| Area 8S | 8S-68 | 147 | 495037 | 934341 | 9998.645 | 0.230 | HB present / SSS confirmed |
| Area 8S | 8S-69 | 148 | 491649 | 934338 | 1744.586 | 0.040 | HB present / SSS confirmed |
| Area 8S | 8S-70 | 149 | 497480 | 934155 | 3653.118 | 0.084 | HB present / SSS confirmed |
| Area 8S | 8S-71 | 150 | 494148 | 933651 | 1609.048 | 0.037 | HB present / SSS confirmed |
| Area 8S | 8S-72 | 151 | 494954 | 933614 | 158610.930 | 3.641 | HB present / SSS confirmed |

# APPENDIX E

## *In-Situ* Survey Data

| *In-Situ* Survey Data | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | Transect | Category | Subcategory | Total Count/ Subcategory | Depth (ft) | Bare Substrate | Hard Bottom | Boulders | Rocks | Rubble | Gravel | Shell Hash | Sand | Artif Substrate | Sediment ation | Relief (cm) | Density |
| 1 | 1 | Scleractinian | Siderastrea siderea | 7 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.7 |
| 1 | 1 | Scleractinian | Cladocora arbuscula | 37 | | Y | Y | | | | | Y | Y | | | 22.5 | 3.7 |
| 1 | 1 | Scleractinian | Solenastrea hyades | 3 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.3 |
| 1 | 1 | Scleractinian | Oculina robusta | 2 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.2 |
| 1 | 1 | Sponge | Brown encrusting | 9 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.9 |
| 1 | 1 | Sponge | finger | 4 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.4 |
| 1 | 1 | Sponge | ball | 4 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.4 |
| 1 | 2 | Scleractinian | Cladocora arbuscula | 71 | | Y | Y | | | | | Y | Y | | | 22.5 | 7.1 |
| 1 | 2 | Scleractinian | Siderastrea siderea | 14 | | Y | Y | | | | | Y | Y | | | 22.5 | 1.4 |
| 1 | 2 | Scleractinian | Solenastrea hyades | 2 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.2 |
| 1 | 2 | Sponge | encrusting | 12 | | Y | Y | | | | | Y | Y | | | 22.5 | 1.2 |
| 1 | 2 | Sponge | finger | 3 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.3 |
| 1 | 2 | Sponge | ball | 3 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.3 |
| 1 | 3 | Scleractinian | Cladocora arbuscula | 51 | | Y | Y | | | | | Y | Y | | | 22.5 | 5.1 |
| 1 | 3 | Scleractinian | Oculina robusta | 2 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.2 |
| 1 | 3 | Scleractinian | Siderastrea siderea | 10 | | Y | Y | | | | | Y | Y | | | 22.5 | 1 |
| 1 | 3 | Scleractinian | Solenastrea hyades | 1 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.1 |
| 1 | 3 | Sponge | finger | 9 | | Y | Y | | | | | Y | Y | | | 22.5 | 0.9 |
| 1 | 4 | Scleractinian | Cladocora arbuscula | 62 | | Y | Y | | | | | Y | Y | | | 29.2 | 6.2 |
| 1 | 4 | Scleractinian | Oculina robusta | 2 | | Y | Y | | | | | Y | Y | | | 29.2 | 0.2 |
| 1 | 4 | Scleractinian | Siderastrea siderea | 14 | | Y | Y | | | | | Y | Y | | | 29.2 | 1.4 |
| 1 | 4 | Scleractinian | Solenastrea hyades | 1 | | Y | Y | | | | | Y | Y | | | 29.2 | 0.1 |
| 1 | 4 | Scleractinian | Phyllangia americana | 2 | | Y | Y | | | | | Y | Y | | | 29.2 | 0.2 |
| 1 | 4 | Sponge | encrusting | 12 | | Y | Y | | | | | Y | Y | | | 29.2 | 1.2 |
| 1 | 4 | Sponge | finger | 7 | | Y | Y | | | | | Y | Y | | | 29.2 | 0.7 |
| 1 | 4 | Sponge | ball | 5 | | Y | Y | | | | | Y | Y | | | 29.2 | 0.5 |
| 1 | 5 | Scleractinian | Cladocora arbuscula | 96 | | Y | Y | | | | | Y | Y | | | 24.2 | 9.6 |
| 1 | 5 | Scleractinian | Oculina robusta | 3 | | Y | Y | | | | | Y | Y | | | 24.2 | 0.3 |
| 1 | 5 | Scleractinian | Siderastrea siderea | 11 | | Y | Y | | | | | Y | Y | | | 24.2 | 1.1 |
| 1 | 5 | Scleractinian | Solenastrea hyades | 4 | | Y | Y | | | | | Y | Y | | | 24.2 | 0.4 |
| 1 | 5 | Scleractinian | Phyllangia americana | 2 | | Y | Y | | | | | Y | Y | | | 24.2 | 0.2 |
| 1 | 5 | Sponge | encrusting | 12 | | Y | Y | | | | | Y | Y | | | 24.2 | 1.2 |
| 1 | 5 | Sponge | finger | 13 | | Y | Y | | | | | Y | Y | | | 24.2 | 1.3 |
| 1 | 5 | Sponge | ball | 4 | | Y | Y | | | | | Y | Y | | | 24.2 | 0.4 |
| 1 | 6 | Scleractinian | Siderastrea siderea | 40 | 49 | Y | Y | | | | | | Y | | | 8.3 | 4 |
| 1 | 6 | Scleractinian | Cladocora arbuscula | 69 | 49 | Y | Y | | | | | | Y | | | 8.3 | 6.9 |
| 1 | 6 | Scleractinian | Solenastrea hyades | 11 | 49 | Y | Y | | | | | | Y | | | 8.3 | 1.1 |
| 1 | 6 | Scleractinian | Phyllangia americana | 6 | 49 | Y | Y | | | | | | Y | | | 8.3 | 0.6 |
| 1 | 6 | Scleractinian | Oculina robusta | 4 | 49 | Y | Y | | | | | | Y | | | 8.3 | 0.4 |
| 1 | 6 | Sponges | ball | 13 | 49 | Y | Y | | | | | | Y | | | 8.3 | 1.3 |
| 1 | 6 | Sponges | vase | 1 | 49 | Y | Y | | | | | | Y | | | 8.3 | 0.1 |
| 1 | 6 | Sponges | finger | 10 | 49 | Y | Y | | | | | | Y | | | 8.3 | 1 |
| 1 | 6 | Sponges | encrusting | 3 | 49 | Y | Y | | | | | | Y | | | 8.3 | 0.3 |
| 1 | 7 | Scleractinian | Siderastrea siderea | 46 | 48 | Y | Y | | | | | | | | | 7.5 | 4.6 |
| 1 | 7 | Scleractinian | Cladocora arbuscula | 48 | 48 | Y | Y | | | | | | | | | 7.5 | 4.8 |
| 1 | 7 | Scleractinian | Solenastrea hyades | 8 | 48 | Y | Y | | | | | | | | | 7.5 | 0.8 |
| 1 | 7 | Scleractinian | Oculina robusta | 2 | 48 | Y | Y | | | | | | | | | 7.5 | 0.2 |
| 1 | 7 | Scleractinian | Phyllangia americana | 7 | 48 | Y | Y | | | | | | | | | 7.5 | 0.7 |
| 1 | 7 | Sponges | ball | 11 | 48 | Y | Y | | | | | | | | | 7.5 | 1.1 |
| 1 | 7 | Sponges | finger | 4 | 48 | Y | Y | | | | | | | | | 7.5 | 0.4 |
| 1 | 7 | Sponges | encrusting | 6 | 48 | Y | Y | | | | | | | | | 7.5 | 0.6 |
| 1 | 7 | Algae | Sargassum | | 48 | Y | Y | | | | | | | | | 7.5 | 0 |
| 1 | 7 | Algae | turf | | 48 | Y | Y | | | | | | | | | 7.5 | 0 |
| 1 | 8 | Scleractinian | Siderastrea siderea | 23 | 49 | Y | Y | | | | | | | | | 10.0 | 2.3 |
| 1 | 8 | Scleractinian | Cladocora arbuscula | 55 | 49 | Y | Y | | | | | | | | | 10.0 | 5.5 |

| *In-Situ* Survey Data | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | Transect | Category | Subcategory | Total Count/ Subcategory | Depth (ft) | Bare Substrate | Hard Bottom | Boulders | Rocks | Rubble | Gravel | Shell Hash | Sand | Artif Substrate | Sediment ation | Relief (cm) | Density |
| 1 | 8 | Scleractinian | Oculina robusta | 2 | 49 | Y | Y | | | | | | | | | 10.0 | 0.2 |
| 1 | 8 | Scleractinian | Solenastrea hyades | 1 | 49 | Y | Y | | | | | | | | | 10.0 | 0.1 |
| 1 | 8 | Sponges | ball | 3 | 49 | Y | Y | | | | | | | | | 10.0 | 0.3 |
| 1 | 8 | Sponges | finger | 8 | 49 | Y | Y | | | | | | | | | 10.0 | 0.8 |
| 1 | 8 | Algae | Sargassum | | 49 | Y | Y | | | | | | | | | 10.0 | 0 |
| 1 | 8 | Algae | turf | | 49 | Y | Y | | | | | | | | | 10.0 | 0 |
| 1 | 9 | Scleractinian | Siderastrea siderea | 29 | 49 | Y | Y | | | | | | | | | 12.5 | 2.9 |
| 1 | 9 | Scleractinian | Cladocora arbuscula | 63 | 49 | Y | Y | | | | | | | | | 12.5 | 6.3 |
| 1 | 9 | Scleractinian | Oculina robusta | 3 | 49 | Y | Y | | | | | | | | | 12.5 | 0.3 |
| 1 | 9 | Scleractinian | Phyllangia americana | 6 | 49 | Y | Y | | | | | | | | | 12.5 | 0.6 |
| 1 | 9 | Sponges | ball | 5 | 49 | Y | Y | | | | | | | | | 12.5 | 0.5 |
| 1 | 9 | Sponges | encrusting | 35 | 49 | Y | Y | | | | | | | | | 12.5 | 3.5 |
| 1 | 9 | Algae | Sargassum | | 49 | Y | Y | | | | | | | | | 12.5 | 0 |
| 1 | 9 | Algae | turf | | 49 | Y | Y | | | | | | | | | 12.5 | 0 |
| 1 | 10 | Scleractinian | Siderastrea siderea | 52 | 45 | Y | Y | | | | | | | | | 17.5 | 5.2 |
| 1 | 10 | Scleractinian | Cladocora arbuscula | 90 | 45 | Y | Y | | | | | | | | | 17.5 | 9 |
| 1 | 10 | Scleractinian | Oculina robusta | 2 | 45 | Y | Y | | | | | | | | | 17.5 | 0.2 |
| 1 | 10 | Scleractinian | Solenastrea hyades | 3 | 45 | Y | Y | | | | | | | | | 17.5 | 0.3 |
| 1 | 10 | Scleractinian | Phyllangia americana | 2 | 45 | Y | Y | | | | | | | | | 17.5 | 0.2 |
| 1 | 10 | Sponges | ball | 9 | 45 | Y | Y | | | | | | | | | 17.5 | 0.9 |
| 1 | 10 | Sponges | finger | 12 | 45 | Y | Y | | | | | | | | | 17.5 | 1.2 |
| 1 | 10 | Sponges | encrusting | 27 | 45 | Y | Y | | | | | | | | | 17.5 | 2.7 |
| 1 | 11 | Scleractinian | Siderastrea siderea | 23 | | Y | Y | | | | | | | | | 5.0 | 2.3 |
| 1 | 11 | Scleractinian | Cladocora arbuscula | 10 | | Y | Y | | | | | | | | | 5.0 | 1 |
| 1 | 11 | Scleractinian | Oculina robusta | 2 | | Y | Y | | | | | | | | | 5.0 | 0.2 |
| 1 | 11 | Scleractinian | Solenastrea hyades | 7 | | Y | Y | | | | | | | | | 5.0 | 0.7 |
| 1 | 11 | Sponges | ball | 7 | | Y | Y | | | | | | | | | 5.0 | 0.7 |
| 1 | 11 | Sponges | finger | 12 | | Y | Y | | | | | | | | | 5.0 | 1.2 |
| 1 | 11 | Sponges | encrusting | 6 | | Y | Y | | | | | | | | | 5.0 | 0.6 |
| 1 | 11 | Algae | Sargassum | | | Y | Y | | | | | | | | | 5.0 | 0 |
| 1 | 12 | Scleractinian | Siderastrea siderea | 23 | 49 | Y | Y | | | | | | | | | 8.3 | 2.3 |
| 1 | 12 | Scleractinian | Cladocora arbuscula | 38 | 49 | Y | Y | | | | | | | | | 8.3 | 3.8 |
| 1 | 12 | Scleractinian | Oculina robusta | 2 | 49 | Y | Y | | | | | | | | | 8.3 | 0.2 |
| 1 | 12 | Scleractinian | Solenastrea hyades | 4 | 49 | Y | Y | | | | | | | | | 8.3 | 0.4 |
| 1 | 12 | Scleractinian | Phyllangia americana | 8 | 49 | Y | Y | | | | | | | | | 8.3 | 0.8 |
| 1 | 12 | Sponges | ball | 7 | 49 | Y | Y | | | | | | | | | 8.3 | 0.7 |
| 1 | 12 | Sponges | finger | 16 | 49 | Y | Y | | | | | | | | | 8.3 | 1.6 |
| 1 | 12 | Sponges | encrusting | 11 | 49 | Y | Y | | | | | | | | | 8.3 | 1.1 |
| 1 | 12 | Algae | Sargassum | | 49 | Y | Y | | | | | | | | | 8.3 | 0 |
| 1 | 12 | Algae | turf | | 49 | Y | Y | | | | | | | | | 8.3 | 0 |
| 1 | 13 | Scleractinian | Siderastrea siderea | 2 | | Y | | | | | | | Y | | Y | 1.7 | 0.2 |
| 1 | 13 | Sponges | ball | 2 | | Y | | | | | | | Y | | Y | 1.7 | 0.2 |
| 1 | 13 | Sponges | finger | 3 | | Y | | | | | | | Y | | Y | 1.7 | 0.3 |
| 1 | 14 | | | | | | | | | Y | | Y | Y | | | 0.0 | 0 |
| 1 | 15 | Scleractinian | Siderastrea siderea | 6 | | Y | Y | | Y | | | Y | Y | | | 4.2 | 0.6 |
| 1 | 15 | Scleractinian | Cladocora arbuscula | 4 | | Y | Y | | Y | | | Y | Y | | | 4.2 | 0.4 |
| 1 | 15 | Scleractinian | Oculina robusta | 2 | | Y | Y | | Y | | | Y | Y | | | 4.2 | 0.2 |
| 1 | 15 | Sponges | finger | 2 | | Y | Y | | Y | | | Y | Y | | | 4.2 | 0.2 |
| 2 | 42 | Scleractinian | Siderastrea siderea | 75 | | | | | | | | | | | | 16.7 | 7.5 |
| 2 | 42 | Octocoral | Eunicea | 1 | | | | | | | | | | | | 16.7 | 0.1 |
| 2 | 42 | Scleractinian | Cladocora arbuscula | 69 | | | | | | | | | | | | 16.7 | 6.9 |
| 2 | 42 | Scleractinian | Oculina robusta | 11 | | | | | | | | | | | | 16.7 | 1.1 |
| 2 | 42 | Scleractinian | Solenastrea hyades | 13 | | | | | | | | | | | | 16.7 | 1.3 |
| 2 | 42 | Sponges | ball | 33 | | | | | | | | | | | | 16.7 | 3.3 |
| 2 | 42 | Sponges | finger | 22 | | | | | | | | | | | | 16.7 | 2.2 |

| *In-Situ* Survey Data | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | Transect | Category | Subcategory | Total Count/ Subcategory | Depth (ft) | Bare Substrate | Hard Bottom | Boulders | Rocks | Rubble | Gravel | Shell Hash | Sand | Artif Substrate | Sediment ation | Relief (cm) | Density |
| 2 | 42 | Sponges | encrusting | 1 | | | | | | | | | | | | 16.7 | 0.1 |
| 2 | 43 | Scleractinian | Siderastrea siderea | 53 | 49 | | Y | | | | | Y | Y | | | 14.2 | 5.3 |
| 2 | 43 | Scleractinian | Cladocora arbuscula | 43 | 49 | | Y | | | | | Y | Y | | | 14.2 | 4.3 |
| 2 | 43 | Scleractinian | Oculina robusta | 4 | 49 | | Y | | | | | Y | Y | | | 14.2 | 0.4 |
| 2 | 43 | Scleractinian | Solenastrea hyades | 10 | 49 | | Y | | | | | Y | Y | | | 14.2 | 1 |
| 2 | 43 | Scleractinian | Phyllangia americana | 1 | 49 | | Y | | | | | Y | Y | | | 14.2 | 0.1 |
| 2 | 43 | Sponges | ball | 52 | 49 | | Y | | | | | Y | Y | | | 14.2 | 5.2 |
| 2 | 43 | Sponges | finger | 10 | 49 | | Y | | | | | Y | Y | | | 14.2 | 1 |
| 2 | 43 | Sponges | encrusting | 4 | 49 | | Y | | | | | Y | Y | | | 14.2 | 0.4 |
| 2 | 44 | Scleractinian | Siderastrea siderea | 47 | | | Y | | | | | Y | Y | | | 13.3 | 4.7 |
| 2 | 44 | Scleractinian | Cladocora arbuscula | 51 | | | Y | | | | | Y | Y | | | 13.3 | 5.1 |
| 2 | 44 | Scleractinian | Oculina robusta | 3 | | | Y | | | | | Y | Y | | | 13.3 | 0.3 |
| 2 | 44 | Scleractinian | Solenastrea hyades | 6 | | | Y | | | | | Y | Y | | | 13.3 | 0.6 |
| 2 | 44 | Scleractinian | Phyllangia americana | 3 | | | Y | | | | | Y | Y | | | 13.3 | 0.3 |
| 2 | 44 | Sponges | ball | 24 | | | Y | | | | | Y | Y | | | 13.3 | 2.4 |
| 2 | 44 | Sponges | finger | 4 | | | Y | | | | | Y | Y | | | 13.3 | 0.4 |
| 2 | 44 | Sponges | encrusting | 4 | | | Y | | | | | Y | Y | | | 13.3 | 0.4 |
| 2 | 45 | Scleractinian | Siderastrea siderea | 82 | | | Y | | | | | Y | Y | | | 10.8 | 8.2 |
| 2 | 45 | Scleractinian | Cladocora arbuscula | 44 | | | Y | | | | | Y | Y | | | 10.8 | 4.4 |
| 2 | 45 | Scleractinian | Oculina robusta | 7 | | | Y | | | | | Y | Y | | | 10.8 | 0.7 |
| 2 | 45 | Scleractinian | Solenastrea hyades | 14 | | | Y | | | | | Y | Y | | | 10.8 | 1.4 |
| 2 | 45 | Scleractinian | Phyllangia americana | 3 | | | Y | | | | | Y | Y | | | 10.8 | 0.3 |
| 2 | 45 | Sponges | ball | 23 | | | Y | | | | | Y | Y | | | 10.8 | 2.3 |
| 2 | 45 | Sponges | finger | 10 | | | Y | | | | | Y | Y | | | 10.8 | 1 |
| 7 | 16 | Scleractinian | Siderastrea siderea | 27 | 47 | | Y | | | Y | | | Y | | | 15.0 | 2.7 |
| 7 | 16 | Scleractinian | Solenastrea hyades | 32 | 47 | | Y | | | Y | | | Y | | | 15.0 | 3.2 |
| 7 | 16 | Scleractinian | Cladocora arbuscula | 67 | 47 | | Y | | | Y | | | Y | | | 15.0 | 6.7 |
| 7 | 16 | Scleractinian | Oculina robusta | 19 | 47 | | Y | | | Y | | | Y | | | 15.0 | 1.9 |
| 7 | 16 | Scleractinian | Phyllangia americana | 9 | 47 | | Y | | | Y | | | Y | | | 15.0 | 0.9 |
| 7 | 16 | Octocoral | Leptogorgia | 4 | 47 | | Y | | | Y | | | Y | | | 15.0 | 0.4 |
| 7 | 16 | Sponges | ball | 26 | 47 | | Y | | | Y | | | Y | | | 15.0 | 2.6 |
| 7 | 16 | Sponges | finger | 24 | 47 | | Y | | | Y | | | Y | | | 15.0 | 2.4 |
| 7 | 16 | Sponges | encrusting | 10 | 47 | | Y | | | Y | | | Y | | | 15.0 | 1 |
| 7 | 17 | Scleractinian | Siderastrea siderea | 15 | 48 | | Y | | | Y | | Y | Y | | | 14.2 | 1.5 |
| 7 | 17 | Scleractinian | Cladocora arbuscula | 60 | 48 | | Y | | | Y | | Y | Y | | | 14.2 | 6 |
| 7 | 17 | Scleractinian | Oculina robusta | 15 | 48 | | Y | | | Y | | Y | Y | | | 14.2 | 1.5 |
| 7 | 17 | Scleractinian | Solenastrea hyades | 31 | 48 | | Y | | | Y | | Y | Y | | | 14.2 | 3.1 |
| 7 | 17 | Octocoral | Leptogorgia | 1 | 48 | | Y | | | Y | | Y | Y | | | 14.2 | 0.1 |
| 7 | 17 | Sponges | ball | 15 | 48 | | Y | | | Y | | Y | Y | | | 14.2 | 1.5 |
| 7 | 17 | Sponges | finger | 7 | 48 | | Y | | | Y | | Y | Y | | | 14.2 | 0.7 |
| 7 | 17 | Sponges | encrusting | 8 | 48 | | Y | | | Y | | Y | Y | | | 14.2 | 0.8 |
| 7 | 17 | Algae | Sargassum | | 48 | | Y | | | Y | | Y | Y | | | 14.2 | 0 |
| 7 | 18 | Scleractinian | Siderastrea siderea | 25 | | | Y | | | Y | | | Y | | | 8.3 | 2.5 |
| 7 | 18 | Scleractinian | Cladocora arbuscula | 93 | | | Y | | | Y | | | Y | | | 8.3 | 9.3 |
| 7 | 18 | Scleractinian | Oculina robusta | 11 | | | Y | | | Y | | | Y | | | 8.3 | 1.1 |
| 7 | 18 | Scleractinian | Solenastrea hyades | 21 | | | Y | | | Y | | | Y | | | 8.3 | 2.1 |
| 7 | 18 | Scleractinian | Phyllangia americana | 5 | | | Y | | | Y | | | Y | | | 8.3 | 0.5 |
| 7 | 18 | Octocoral | Leptogorgia | 1 | | | Y | | | Y | | | Y | | | 8.3 | 0.1 |
| 7 | 18 | Sponges | ball | 14 | | | Y | | | Y | | | Y | | | 8.3 | 1.4 |
| 7 | 18 | Sponges | finger | 4 | | | Y | | | Y | | | Y | | | 8.3 | 0.4 |
| 7 | 18 | Sponges | encrusting | 8 | | | Y | | | Y | | | Y | | | 8.3 | 0.8 |
| 7 | 19 | Scleractinian | Siderastrea siderea | 36 | 47 | | Y | | | | | Y | Y | | | 6.4 | 3.6 |
| 7 | 19 | Scleractinian | Cladocora arbuscula | 55 | 47 | | Y | | | | | Y | Y | | | 6.4 | 5.5 |
| 7 | 19 | Scleractinian | Oculina robusta | 5 | 47 | | Y | | | | | Y | Y | | | 6.4 | 0.5 |
| 7 | 19 | Scleractinian | Solenastrea hyades | 16 | 47 | | Y | | | | | Y | Y | | | 6.4 | 1.6 |

| *In-Situ* Survey Data | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | Transect | Category | Subcategory | Total Count/ Subcategory | Depth (ft) | Bare Substrate | Hard Bottom | Boulders | Rocks | Rubble | Gravel | Shell Hash | Sand | Artif Substrate | Sediment ation | Relief (cm) | Density |
| 7 | 19 | Scleractinian | Phyllangia americana | 7 | 47 | | Y | | | | | Y | Y | | | 6.4 | 0.7 |
| 7 | 19 | Sponges | ball | 11 | 47 | | Y | | | | | Y | Y | | | 6.4 | 1.1 |
| 7 | 19 | Sponges | finger | 2 | 47 | | Y | | | | | Y | Y | | | 6.4 | 0.2 |
| 7 | 19 | Sponges | encrusting | 6 | 47 | | Y | | | | | Y | Y | | | 6.4 | 0.6 |
| 7 | 19 | Sponges | lumpy | 1 | 47 | | Y | | | | | Y | Y | | | 6.4 | 0.1 |
| 7 | 20 | Scleractinian | Siderastrea siderea | 51 | 47 | | Y | | | | | Y | Y | | | 10.8 | 5.1 |
| 7 | 20 | Scleractinian | Cladocora arbuscula | 29 | 47 | | Y | | | | | Y | Y | | | 10.8 | 2.9 |
| 7 | 20 | Scleractinian | Oculina robusta | 9 | 47 | | Y | | | | | Y | Y | | | 10.8 | 0.9 |
| 7 | 20 | Scleractinian | Solenastrea hyades | 19 | 47 | | Y | | | | | Y | Y | | | 10.8 | 1.9 |
| 7 | 20 | Scleractinian | Phyllangia americana | 4 | 47 | | Y | | | | | Y | Y | | | 10.8 | 0.4 |
| 7 | 20 | Sponges | ball | 12 | 47 | | Y | | | | | Y | Y | | | 10.8 | 1.2 |
| 7 | 20 | Sponges | finger | 5 | 47 | | Y | | | | | Y | Y | | | 10.8 | 0.5 |
| 7 | 20 | Sponges | encrusting | 8 | 47 | | Y | | | | | Y | Y | | | 10.8 | 0.8 |
| 7 | 21 | Scleractinian | Siderastrea siderea | 16 | 47 | | Y | | | | | Y | Y | | | 7.5 | 1.6 |
| 7 | 21 | Scleractinian | Cladocora arbuscula | 48 | 47 | | Y | | | | | Y | Y | | | 7.5 | 4.8 |
| 7 | 21 | Scleractinian | Oculina robusta | 11 | 47 | | Y | | | | | Y | Y | | | 7.5 | 1.1 |
| 7 | 21 | Scleractinian | Solenastrea hyades | 36 | 47 | | Y | | | | | Y | Y | | | 7.5 | 3.6 |
| 7 | 21 | Sponges | ball | 26 | 47 | | Y | | | | | Y | Y | | | 7.5 | 2.6 |
| 7 | 21 | Sponges | finger | 2 | 47 | | Y | | | | | Y | Y | | | 7.5 | 0.2 |
| 7 | 22 | Scleractinian | Siderastrea siderea | 7 | | | Y | | | | | Y | Y | | | 12.5 | 0.7 |
| 7 | 22 | Scleractinian | Cladocora arbuscula | 77 | | | Y | | | | | Y | Y | | | 12.5 | 7.7 |
| 7 | 22 | Scleractinian | Oculina robusta | 16 | | | Y | | | | | Y | Y | | | 12.5 | 1.6 |
| 7 | 22 | Scleractinian | Solenastrea hyades | 32 | | | Y | | | | | Y | Y | | | 12.5 | 3.2 |
| 7 | 22 | Scleractinian | Phyllangia americana | 5 | | | Y | | | | | Y | Y | | | 12.5 | 0.5 |
| 7 | 22 | Scleractinian | Pseudopterogorgia | 1 | | | Y | | | | | Y | Y | | | 12.5 | 0.1 |
| 7 | 22 | Octocoral | Eunicea | 1 | | | Y | | | | | Y | Y | | | 12.5 | 0.1 |
| 7 | 22 | Sponges | ball | 14 | | | Y | | | | | Y | Y | | | 12.5 | 1.4 |
| 7 | 22 | Sponges | finger | 13 | | | Y | | | | | Y | Y | | | 12.5 | 1.3 |
| 7 | 22 | Sponges | encrusting | 5 | | | Y | | | | | Y | Y | | | 12.5 | 0.5 |
| 7 | 23 | Scleractinian | Siderastrea siderea | 7 | | | Y | | | | | Y | Y | | | 6.7 | 0.7 |
| 7 | 23 | Scleractinian | Cladocora arbuscula | 50 | | | Y | | | | | Y | Y | | | 6.7 | 5 |
| 7 | 23 | Scleractinian | Oculina robusta | 25 | | | Y | | | | | Y | Y | | | 6.7 | 2.5 |
| 7 | 23 | Scleractinian | Solenastrea hyades | 40 | | | Y | | | | | Y | Y | | | 6.7 | 4 |
| 7 | 23 | Scleractinian | Phyllangia americana | 1 | | | Y | | | | | Y | Y | | | 6.7 | 0.1 |
| 7 | 23 | Octocoral | Leptogorgia | 3 | | | Y | | | | | Y | Y | | | 6.7 | 0.3 |
| 7 | 23 | Sponges | ball | 17 | | | Y | | | | | Y | Y | | | 6.7 | 1.7 |
| 7 | 23 | Sponges | finger | 12 | | | Y | | | | | Y | Y | | | 6.7 | 1.2 |
| 7 | 23 | Sponges | encrusting | 3 | | | Y | | | | | Y | Y | | | 6.7 | 0.3 |
| 7 | 24 | Scleractinian | Siderastrea siderea | 9 | | | Y | | | | | Y | Y | | | 12.5 | 0.9 |
| 7 | 24 | Scleractinian | Cladocora arbuscula | 129 | | | Y | | | | | Y | Y | | | 12.5 | 12.9 |
| 7 | 24 | Scleractinian | Oculina robusta | 10 | | | Y | | | | | Y | Y | | | 12.5 | 1 |
| 7 | 24 | Scleractinian | Solenastrea hyades | 20 | | | Y | | | | | Y | Y | | | 12.5 | 2 |
| 7 | 24 | Scleractinian | Phyllangia americana | 4 | | | Y | | | | | Y | Y | | | 12.5 | 0.4 |
| 7 | 24 | Octocoral | Eunicea | 1 | | | Y | | | | | Y | Y | | | 12.5 | 0.1 |
| 7 | 24 | Sponges | ball | 25 | | | Y | | | | | Y | Y | | | 12.5 | 2.5 |
| 7 | 24 | Sponges | finger | 11 | | | Y | | | | | Y | Y | | | 12.5 | 1.1 |
| 7 | 24 | Sponges | encrusting | 2 | | | Y | | | | | Y | Y | | | 12.5 | 0.2 |
| 7 | 25 | Scleractinian | Siderastrea siderea | 19 | 47 | | Y | | | | | Y | Y | | | 17.5 | 1.9 |
| 7 | 25 | Scleractinian | Cladocora arbuscula | 72 | 47 | | Y | | | | | Y | Y | | | 17.5 | 7.2 |
| 7 | 25 | Scleractinian | Oculina robusta | 13 | 47 | | Y | | | | | Y | Y | | | 17.5 | 1.3 |
| 7 | 25 | Scleractinian | Solenastrea hyades | 26 | 47 | | Y | | | | | Y | Y | | | 17.5 | 2.6 |
| 7 | 25 | Scleractinian | Phyllangia americana | 8 | 47 | | Y | | | | | Y | Y | | | 17.5 | 0.8 |
| 7 | 25 | Octocoral | Eunicea | 1 | 47 | | Y | | | | | Y | Y | | | 17.5 | 0.1 |
| 7 | 25 | Sponges | ball | 23 | 47 | | Y | | | | | Y | Y | | | 17.5 | 2.3 |
| 7 | 25 | Sponges | tube | 2 | 47 | | Y | | | | | Y | Y | | | 17.5 | 0.2 |

| *In-Situ* Survey Data | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | Transect | Category | Subcategory | Total Count/ Subcategory | Depth (ft) | Bare Substrate | Hard Bottom | Boulders | Rocks | Rubble | Gravel | Shell Hash | Sand | Artif Substrate | Sediment ation | Relief (cm) | Density |
| 7 | 25 | Sponges | finger | 7 | 47 | | Y | | | | | Y | Y | | | 17.5 | 0.7 |
| 7 | 25 | Sponges | encrusting | 8 | 47 | | Y | | | | | Y | Y | | | 17.5 | 0.8 |
| 7 | 26 | Scleractinian | Siderastrea siderea | 4 | | | Y | | | | | Y | Y | | | 23.3 | 0.4 |
| 7 | 26 | Scleractinian | Cladocora arbuscula | 90 | | | Y | | | | | Y | Y | | | 23.3 | 9 |
| 7 | 26 | Scleractinian | Oculina robusta | 3 | | | Y | | | | | Y | Y | | | 23.3 | 0.3 |
| 7 | 26 | Scleractinian | Solenastrea hyades | 4 | | | Y | | | | | Y | Y | | | 23.3 | 0.4 |
| 7 | 26 | Scleractinian | Phyllangia americana | 3 | | | Y | | | | | Y | Y | | | 23.3 | 0.3 |
| 7 | 26 | Sponges | ball | 4 | | | Y | | | | | Y | Y | | | 23.3 | 0.4 |
| 7 | 26 | Sponges | finger | 5 | | | Y | | | | | Y | Y | | | 23.3 | 0.5 |
| 7 | 26 | Sponges | encrusting | 29 | | | Y | | | | | Y | Y | | | 23.3 | 2.9 |
| 7 | 27 | Scleractinian | Siderastrea siderea | 8 | 41 | | Y | | | | | Y | Y | | | 28.3 | 0.8 |
| 7 | 27 | Scleractinian | Cladocora arbuscula | 119 | 41 | | Y | | | | | Y | Y | | | 28.3 | 11.9 |
| 7 | 27 | Scleractinian | Oculina robusta | 10 | 41 | | Y | | | | | Y | Y | | | 28.3 | 1 |
| 7 | 27 | Scleractinian | Solenastrea hyades | 5 | 41 | | Y | | | | | Y | Y | | | 28.3 | 0.5 |
| 7 | 27 | Scleractinian | Phyllangia americana | 3 | 41 | | Y | | | | | Y | Y | | | 28.3 | 0.3 |
| 7 | 27 | Sponges | ball | 9 | 41 | | Y | | | | | Y | Y | | | 28.3 | 0.9 |
| 7 | 27 | Sponges | finger | 2 | 41 | | Y | | | | | Y | Y | | | 28.3 | 0.2 |
| 7 | 27 | Sponges | encrusting | 18 | 41 | | Y | | | | | Y | Y | | | 28.3 | 1.8 |
| 7 | 28 | Scleractinian | Siderastrea siderea | 12 | 47 | | Y | | | | | Y | Y | | | 20.8 | 1.2 |
| 7 | 28 | Scleractinian | Cladocora arbuscula | 107 | 47 | | Y | | | | | Y | Y | | | 20.8 | 10.7 |
| 7 | 28 | Scleractinian | Oculina robusta | 14 | 47 | | Y | | | | | Y | Y | | | 20.8 | 1.4 |
| 7 | 28 | Scleractinian | Solenastrea hyades | 10 | 47 | | Y | | | | | Y | Y | | | 20.8 | 1 |
| 7 | 28 | Scleractinian | Phyllangia americana | 12 | 47 | | Y | | | | | Y | Y | | | 20.8 | 1.2 |
| 7 | 28 | Sponges | ball | 20 | 47 | | Y | | | | | Y | Y | | | 20.8 | 2 |
| 7 | 28 | Sponges | finger | 3 | 47 | | Y | | | | | Y | Y | | | 20.8 | 0.3 |
| 7 | 28 | Sponges | encrusting | 16 | 47 | | Y | | | | | Y | Y | | | 20.8 | 1.6 |
| 7 | 29 | Scleractinian | Siderastrea siderea | 7 | | | Y | | | | | Y | Y | | | 24.2 | 0.7 |
| 7 | 29 | Scleractinian | Cladocora arbuscula | 54 | | | Y | | | | | Y | Y | | | 24.2 | 5.4 |
| 7 | 29 | Scleractinian | Oculina robusta | 5 | | | Y | | | | | Y | Y | | | 24.2 | 0.5 |
| 7 | 29 | Scleractinian | Solenastrea hyades | 4 | | | Y | | | | | Y | Y | | | 24.2 | 0.4 |
| 7 | 29 | Scleractinian | Phyllangia americana | 7 | | | Y | | | | | Y | Y | | | 24.2 | 0.7 |
| 7 | 29 | Octocoral | Leptogorgia | 1 | | | Y | | | | | Y | Y | | | 24.2 | 0.1 |
| 7 | 29 | Sponges | ball | 9 | | | Y | | | | | Y | Y | | | 24.2 | 0.9 |
| 7 | 29 | Sponges | finger | 1 | | | Y | | | | | Y | Y | | | 24.2 | 0.1 |
| 7 | 29 | Sponges | encrusting | 21 | | | Y | | | | | Y | Y | | | 24.2 | 2.1 |
| 7 | 30 | Scleractinian | Siderastrea siderea | 9 | 47 | | Y | | | | | Y | Y | | | 20.0 | 0.9 |
| 7 | 30 | Scleractinian | Cladocora arbuscula | 72 | 47 | | Y | | | | | Y | Y | | | 20.0 | 7.2 |
| 7 | 30 | Scleractinian | Oculina robusta | 4 | 47 | | Y | | | | | Y | Y | | | 20.0 | 0.4 |
| 7 | 30 | Scleractinian | Solenastrea hyades | 4 | 47 | | Y | | | | | Y | Y | | | 20.0 | 0.4 |
| 7 | 30 | Scleractinian | Phyllangia americana | 9 | 47 | | Y | | | | | Y | Y | | | 20.0 | 0.9 |
| 7 | 30 | Sponges | ball | 19 | 47 | | Y | | | | | Y | Y | | | 20.0 | 1.9 |
| 7 | 30 | Sponges | finger | 3 | 47 | | Y | | | | | Y | Y | | | 20.0 | 0.3 |
| 7 | 30 | Sponges | encrusting | 20 | 47 | | Y | | | | | Y | Y | | | 20.0 | 2 |
| 9 | 31 | Scleractinian | Siderastrea siderea | 6 | | | Y | | | | | Y | Y | | | 3.3 | 0.6 |
| 9 | 31 | Scleractinian | Cladocora arbuscula | 4 | | | Y | | | | | Y | Y | | | 3.3 | 0.4 |
| 9 | 31 | Scleractinian | Oculina robusta | 2 | | | Y | | | | | Y | Y | | | 3.3 | 0.2 |
| 9 | 31 | Scleractinian | Solenastrea hyades | 41 | | | Y | | | | | Y | Y | | | 3.3 | 4.1 |
| 9 | 31 | Octocoral | Leptogorgia | 2 | | | Y | | | | | Y | Y | | | 3.3 | 0.2 |
| 9 | 31 | Sponges | ball | 28 | | | Y | | | | | Y | Y | | | 3.3 | 2.8 |
| 9 | 31 | Sponges | finger | 3 | | | Y | | | | | Y | Y | | | 3.3 | 0.3 |
| 9 | 31 | Sponges | encrusting | 2 | | | Y | | | | | Y | Y | | | 3.3 | 0.2 |
| 9 | 32 | Scleractinian | Oculina robusta | 3 | | | Y | | | | | Y | Y | | | 4.2 | 0.3 |
| 9 | 32 | Scleractinian | Oculina robusta | 6 | | | Y | | | | | Y | Y | | | 4.2 | 0.6 |
| 9 | 32 | Scleractinian | Solenastrea hyades | 23 | | | Y | | | | | Y | Y | | | 4.2 | 2.3 |
| 9 | 32 | Octocoral | Leptogorgia | 2 | | | Y | | | | | Y | Y | | | 4.2 | 0.2 |

| *In-Situ* Survey Data | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | Transect | Category | Subcategory | Total Count/ Subcategory | Depth (ft) | Bare Substrate | Hard Bottom | Boulders | Rocks | Rubble | Gravel | Shell Hash | Sand | Artif Substrate | Sediment ation | Relief (cm) | Density |
| 9 | 32 | Sponges | ball | 12 | | | Y | | | | | Y | Y | | | 4.2 | 1.2 |
| 9 | 32 | Sponges | finger | 4 | | | Y | | | | | Y | Y | | | 4.2 | 0.4 |
| 9 | 32 | Algae | Sargassum | | | | Y | | | | | Y | Y | | | 4.2 | 0 |
| 9 | 33 | Scleractinian | Siderastrea siderea | 7 | 47 | | Y | | | | | | | | | 5.8 | 0.7 |
| 9 | 33 | Scleractinian | Cladocora arbuscula | 5 | 47 | | Y | | | | | | | | | 5.8 | 0.5 |
| 9 | 33 | Scleractinian | Oculina robusta | 6 | 47 | | Y | | | | | | | | | 5.8 | 0.6 |
| 9 | 33 | Scleractinian | Solenastrea hyades | 52 | 47 | | Y | | | | | | | | | 5.8 | 5.2 |
| 9 | 33 | Scleractinian | Phyllangia americana | 6 | 47 | | Y | | | | | | | | | 5.8 | 0.6 |
| 9 | 33 | Octocoral | Leptogorgia | 2 | 47 | | Y | | | | | | | | | 5.8 | 0.2 |
| 9 | 33 | Octocoral | Eunicea | 1 | 47 | | Y | | | | | | | | | 5.8 | 0.1 |
| 9 | 33 | Sponges | ball | 28 | 47 | | Y | | | | | | | | | 5.8 | 2.8 |
| 9 | 33 | Sponges | finger | 12 | 47 | | Y | | | | | | | | | 5.8 | 1.2 |
| 9 | 33 | Sponges | encrusting | 1 | 47 | | Y | | | | | | | | | 5.8 | 0.1 |
| 9 | 33 | Algae | Sargassum | | 47 | | Y | | | | | | | | | 5.8 | 0 |
| 9 | 34 | Scleractinian | Cladocora arbuscula | 3 | 47 | | Y | | | | | | | | | 1.7 | 0.3 |
| 9 | 34 | Scleractinian | Oculina robusta | 4 | 47 | | Y | | | | | | | | | 1.7 | 0.4 |
| 9 | 34 | Scleractinian | Solenastrea hyades | 15 | 47 | | Y | | | | | | | | | 1.7 | 1.5 |
| 9 | 34 | Scleractinian | Phyllangia americana | 4 | 47 | | Y | | | | | | | | | 1.7 | 0.4 |
| 9 | 34 | Octocoral | Leptogorgia | 3 | 47 | | Y | | | | | | | | | 1.7 | 0.3 |
| 9 | 34 | Sponges | ball | 21 | 47 | | Y | | | | | | | | | 1.7 | 2.1 |
| 9 | 34 | Sponges | finger | 7 | 47 | | Y | | | | | | | | | 1.7 | 0.7 |
| 9 | 34 | Sponges | encrusting | 1 | 47 | | Y | | | | | | | | | 1.7 | 0.1 |
| 9 | 35 | Scleractinian | Cladocora arbuscula | 10 | 47 | | Y | | | | | | | | | 5.8 | 1 |
| 9 | 35 | Scleractinian | Oculina robusta | 2 | 47 | | Y | | | | | | | | | 5.8 | 0.2 |
| 9 | 35 | Scleractinian | Solenastrea hyades | 15 | 47 | | Y | | | | | | | | | 5.8 | 1.5 |
| 9 | 35 | Octocoral | Leptogorgia | 1 | 47 | | Y | | | | | | | | | 5.8 | 0.1 |
| 9 | 35 | Sponges | ball | 32 | 47 | | Y | | | | | | | | | 5.8 | 3.2 |
| 9 | 35 | Sponges | finger | 6 | 47 | | Y | | | | | | | | | 5.8 | 0.6 |
| 9 | 35 | Sponges | encrusting | 2 | 47 | | Y | | | | | | | | | 5.8 | 0.2 |
| 13 | 36 | Scleractinian | Siderastrea siderea | 26 | 46 | | Y | | | | | Y | Y | | | 10.0 | 2.6 |
| 13 | 36 | Scleractinian | Cladocora arbuscula | 107 | 46 | | Y | | | | | Y | Y | | | 10.0 | 10.7 |
| 13 | 36 | Scleractinian | Oculina robusta | 2 | 46 | | Y | | | | | Y | Y | | | 10.0 | 0.2 |
| 13 | 36 | Scleractinian | Solenastrea hyades | 12 | 46 | | Y | | | | | Y | Y | | | 10.0 | 1.2 |
| 13 | 36 | Scleractinian | Phyllangia americana | 8 | 46 | | Y | | | | | Y | Y | | | 10.0 | 0.8 |
| 13 | 36 | Sponges | ball | 12 | 46 | | Y | | | | | Y | Y | | | 10.0 | 1.2 |
| 13 | 36 | Sponges | finger | 10 | 46 | | Y | | | | | Y | Y | | | 10.0 | 1 |
| 13 | 36 | Sponges | encrusting | 13 | 46 | | Y | | | | | Y | Y | | | 10.0 | 1.3 |
| 13 | 37 | Scleractinian | Siderastrea siderea | 13 | 47 | | Y | | | | | Y | Y | | | 12.5 | 1.3 |
| 13 | 37 | Scleractinian | Cladocora arbuscula | 60 | 47 | | Y | | | | | Y | Y | | | 12.5 | 6 |
| 13 | 37 | Scleractinian | Oculina robusta | 7 | 47 | | Y | | | | | Y | Y | | | 12.5 | 0.7 |
| 13 | 37 | Scleractinian | Solenastrea hyades | 14 | 47 | | Y | | | | | Y | Y | | | 12.5 | 1.4 |
| 13 | 37 | Sponges | finger | 16 | 47 | | Y | | | | | Y | Y | | | 12.5 | 1.6 |
| 13 | 37 | Sponges | encrusting | 11 | 47 | | Y | | | | | Y | Y | | | 12.5 | 1.1 |
| 13 | 38 | Scleractinian | Siderastrea siderea | 13 | 47 | | Y | | | | | Y | Y | | | 4.2 | 1.3 |
| 13 | 38 | Scleractinian | Cladocora arbuscula | 10 | 47 | | Y | | | | | Y | Y | | | 4.2 | 1 |
| 13 | 38 | Scleractinian | Solenastrea hyades | 14 | 47 | | Y | | | | | Y | Y | | | 4.2 | 1.4 |
| 13 | 38 | Scleractinian | Phyllangia americana | 2 | 47 | | Y | | | | | Y | Y | | | 4.2 | 0.2 |
| 13 | 38 | Sponges | finger | 2 | 47 | | Y | | | | | Y | Y | | | 4.2 | 0.2 |
| 13 | 38 | Sponges | encrusting | 2 | 47 | | Y | | | | | Y | Y | | | 4.2 | 0.2 |
| 13 | 39 | Scleractinian | Siderastrea siderea | 40 | 47 | | Y | | | | | Y | Y | | | 15.0 | 4 |
| 13 | 39 | Scleractinian | Cladocora arbuscula | 85 | 47 | | Y | | | | | Y | Y | | | 15.0 | 8.5 |
| 13 | 39 | Scleractinian | Oculina robusta | 8 | 47 | | Y | | | | | Y | Y | | | 15.0 | 0.8 |
| 13 | 39 | Scleractinian | Solenastrea hyades | 15 | 47 | | Y | | | | | Y | Y | | | 15.0 | 1.5 |
| 13 | 39 | Scleractinian | Phyllangia americana | 2 | 47 | | Y | | | | | Y | Y | | | 15.0 | 0.2 |
| 13 | 39 | Octocoral | Pseudopterogorgia | 1 | 47 | | Y | | | | | Y | Y | | | 15.0 | 0.1 |

| *In-Situ* Survey Data | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Area** | **Transect** | **Category** | **Subcategory** | **Total Count/ Subcategory** | **Depth (ft)** | **Bare Substrate** | **Hard Bottom** | **Boulders** | **Rocks** | **Rubble** | **Gravel** | **Shell Hash** | **Sand** | **Artif Substrate** | **Sediment ation** | **Relief (cm)** | **Density** |
| 13 | 39 | Sponges | ball | 8 | 47 | | Y | | | | | Y | Y | | | 15.0 | 0.8 |
| 13 | 39 | Sponges | finger | 9 | 47 | | Y | | | | | Y | Y | | | 15.0 | 0.9 |
| 13 | 39 | Sponges | encrusting | 9 | 47 | | Y | | | | | Y | Y | | | 15.0 | 0.9 |
| 13 | 40 | Scleractinian | Siderastrea siderea | 52 | | | Y | | | | | Y | Y | | | 9.2 | 5.2 |
| 13 | 40 | Scleractinian | Cladocora arbuscula | 47 | | | Y | | | | | Y | Y | | | 9.2 | 4.7 |
| 13 | 40 | Scleractinian | Oculina robusta | 11 | | | Y | | | | | Y | Y | | | 9.2 | 1.1 |
| 13 | 40 | Scleractinian | Solenastrea hyades | 17 | | | Y | | | | | Y | Y | | | 9.2 | 1.7 |
| 13 | 40 | Scleractinian | Phyllangia americana | 5 | | | Y | | | | | Y | Y | | | 9.2 | 0.5 |
| 13 | 40 | Octocoral | Leptogorgia | 4 | | | Y | | | | | Y | Y | | | 9.2 | 0.4 |
| 13 | 40 | Sponges | ball | 15 | | | Y | | | | | Y | Y | | | 9.2 | 1.5 |
| 13 | 40 | Sponges | finger | 11 | | | Y | | | | | Y | Y | | | 9.2 | 1.1 |
| 13 | 40 | Sponges | encrusting | 4 | | | Y | | | | | Y | Y | | | 9.2 | 0.4 |
| 13 | 41 | Scleractinian | Siderastrea siderea | 58 | 50 | | Y | | | | | Y | Y | | | 14.2 | 5.8 |
| 13 | 41 | Scleractinian | Cladocora arbuscula | 83 | 50 | | Y | | | | | Y | Y | | | 14.2 | 8.3 |
| 13 | 41 | Scleractinian | Oculina robusta | 6 | 50 | | Y | | | | | Y | Y | | | 14.2 | 0.6 |
| 13 | 41 | Scleractinian | Solenastrea hyades | 14 | 50 | | Y | | | | | Y | Y | | | 14.2 | 1.4 |
| 13 | 41 | Scleractinian | Phyllangia americana | 2 | 50 | | Y | | | | | Y | Y | | | 14.2 | 0.2 |
| 13 | 41 | Sponges | ball | 18 | 50 | | Y | | | | | Y | Y | | | 14.2 | 1.8 |
| 13 | 41 | Sponges | finger | 19 | 50 | | Y | | | | | Y | Y | | | 14.2 | 1.9 |
| 13 | 41 | Sponges | encrusting | 9 | 50 | | Y | | | | | Y | Y | | | 14.2 | 0.9 |
| | | | | | | | | | | | | | | | | | |

# APPENDIX F

# *In-Situ* Transect Photographs (CD)

# APPENDIX G

# *In-Situ* Video Transects (DVD)