

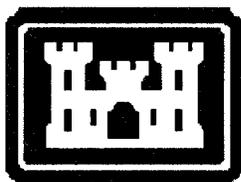
**Final  
Environmental Impact Statement  
December 2002**

---

**Future Dredging of Capron Shoal  
for the  
Fort Pierce Shore Protection Project  
St. Lucie County, Florida**

**LEAD AGENCY: Jacksonville U. S. Army Corps of Engineers  
COOPERATING AGENCY: None**

**For more information, contact Bill Lang, U.S. Army Corps,  
Planning Division, P.O. Box 4970, Jacksonville Florida 32232-  
0019, E-Mail: [william.j.lang@usace.army.mil](mailto:william.j.lang@usace.army.mil), (phone 904-232-  
2615 or fax 232-3442). Additional comments must be received  
by 27 January 2003. Abstract on page ii.**



**US Army Corps  
of Engineers  
Jacksonville District  
South Atlantic Division**

## ABSTRACT

U.S. Army Corps of Engineers, Jacksonville District

### Final Environmental Impact Statement

**Dredging of Capron Shoal  
Fort Pierce Shore Protection Project (SPP)  
St. Lucie County, Florida**

Abstract. The original project was authorized by the River and Harbor Act of 1965 (79 Stat. 1089, 1092) in accordance with the recommendations of the Chief of Engineers in House Document 84, 89<sup>th</sup> Congress. The authorization provided for the restoration of 1.3 miles of shoreline south of Fort Pierce Inlet and for periodic nourishment as needed for a period of 10 years following initial construction of the project. This period was extended to fifty years under authority provided by Section 156 of the Water Resources Development Act of 1976 (PL 94-587), as amended by Section 934 of the 1986 Water Resource Development Act (PL 99-662). The authorized Fort Pierce, Florida, SPP provides for a 50-foot protective berm that extends 1.3 miles from the south Fort Pierce Inlet jetty to the southern terminus at Surfside Park. In 1999, a lawsuit was filed (Judith Winston, et al., v. Lt. Gen. Joe. N. Ballard, Docket No. CA 99-0533) which sought a Temporary Restraining Order (TRO) against the U.S. Army Corps of Engineers (USACE) dredging project, which alleged that the USACE did not conduct a thorough National Environmental Policy Act (NEPA) analysis, and further alleged that immediate and irreparable harm would result if dredging went forward. The Court issued a TRO on March 5, 1999. Subsequently, the USACE and the petitioners reached a Settlement Agreement, which committed the USACE to conduct additional NEPA analysis before beginning the next phases, and to conduct additional studies. This Environmental Impact Statement evaluates two action alternatives and the No-Action Alternative for this next project phase. The Preferred Alternative uses Capron Shoal sand for the beach renourishment. The removal of borrow area sediment would affect the habitat of recently discovered organisms of the phyla Ectoprocta and Entoprocta originally thought to occur only on Capron Shoal. Studies conducted since the Settlement Agreement revealed that some of the target species do occur on nearby shoals; however, study results should not be construed beyond the actual findings contained in (Appendix C). Temporary impacts to about 7.8 acres of exposed limerock (hardbottom) by sand coverage and increased turbidity are unavoidable. These ephemeral effects will be mitigated by a Florida Department of Environmental Protection (FDEP) approved plan which includes 5 acres of hardbottom habitat creation in the vicinity of, but which should not be affected by, the current and future beach renourishments.

Send your comments to the  
District Engineer by:  
January 27, 2003

For Information Contact:  
Mr. William Lang  
U.S. Army Corps of Engineers  
Jacksonville District  
P.O. Box 4970  
Jacksonville, FL 32232-2325  
Telephone: 904-232-2615

Jacksonville, FL 32232-2325  
Telephone: 904-232-2615

## **EXECUTIVE SUMMARY**

Background. As described in the Abstract, the USACE and the petitioners reached a Settlement Agreement which committed the USACE to fund bryozoan studies of Capron and nearby shoals (\$200,000), dredge only in the southern portion of the currently authorized borrow area at Capron Shoal during the first phase of the beach renourishment project, conduct a survey of the effect of beach nourishment on the nearshore hardbottom, and conduct additional NEPA analysis before beginning the next project phases. These studies have been completed and are respectively contained in Appendices C and D. This DEIS represents the required NEPA documentation to be completed prior to initiation of the next beach renourishment using Capron Shoals sand.

Alternatives. The use of various sand sources and the No-Action Alternative are evaluated in this document. The recommended plan uses Capron Shoal as the sand source for beach renourishment. Several shoals offshore of Fort Pierce contain appreciable quantities of beach-compatible sand which could be used for beach renourishment. However, Capron Shoal's estimated 23 million cubic yards of high quality sand is the largest source near the project and can readily supply the projected 3.2 million cubic yards needed for this project's authorized duration. The Section 934 Study completed in 1993 included an evaluation of potential sand sources available for Fort Pierce South Beach. Based on available data, Capron Shoals was selected as an excellent long-term source of beach quality sediments for renourishment. Shoal "A" was also considered as a source, but did not contain sufficient quantities of beach compatible sand for the life of the project. Three additional shoals (Indian River Shoal, Unnamed Shoal #1, and Unnamed Shoal #2) were removed from consideration due to their much greater distance from the project area.

Environmental Consequences of the Preferred Alternative. Environmental consequences of the Preferred Alternative include impacts to communities inhabiting both sand (softbottom) and exposed limerock (hardbottom). Sediment removal from the proposed borrow area will directly impact softbottom habitat and resident infauna and epibenthos. Initially, this will result in a localized reduction in the abundance, diversity, and biomass of fauna within the dredged area. However, due to the relatively small area that will be directly or indirectly affected, the impacts to the surrounding benthic community will be minimal, if present at all, due to the relatively short period of recovery for infaunal communities following dredging activities (Culter and Mahadevan 1982; Saloman et al., 1982). Other benthic organisms will likely migrate into the dredge area to recolonize it within weeks or months of the activity.

Impacts to the nearshore hardbottom habitat and associated biological communities include both direct and indirect impacts. Nearshore reefs will be covered by beach-fill. Furthermore, nearshore reefs, adjacent to areas directly affected, may also be slowly covered by sand after renourishment when the beach fill seeks equilibrium in the nearshore zone. This situation will be temporary as physical forces continually resuspend/redistribute littoral sediment. An accurate estimate of impact

on the nearshore hardbottom community is difficult, if not impossible to predict, due to natural reef exposure fluctuations caused by continuous shifting sand in this highly dynamic area. However, the nearshore habitat to be most acutely affected is already stressed by heavy surf, high turbidities and biological factors which select for biological communities populated with hardy, highly fecund individuals with short reproductive cycles. Sedimentation of beach fill on nearshore hardbottom is not expected to have any long-term adverse impact to photosynthetic, filter-feeding, forage or predator species which frequent the dynamic conditions of the surf zone. These species are well adapted to survive resuspension/redistribution of material, any long-term adverse impact to biological communities is not expected and unlikely. Short-term effects to an estimated 7.8 acres of hardbottom habitat are unavoidable.

Mitigation. Although long-term adverse impacts to biological communities are not expected, the USACE will mitigate based on the short-term effects the project will have on unavoidable hardbottom habitat. The Florida Department of Environmental Protection (FDEP) approved plan requires 5 acres of hardbottom habitat creation in the nearshore environment outside the area of beach renourishment effects.

## TABLE OF CONTENT

|  |    |
|--|----|
| ABSTRACT.....  | II |
| EXECUTIVE SUMMARY.....   | IV |
| TABLE OF CONTENT.....  | VI |
| LIST OF APPENDICES.....  | X  |
| LIST OF FIGURES.....   | XI |
| LIST OF TABLES.....  | XI |
| 1.0 PROJECT PURPOSE AND NEED.....  | 12 |
| 1.1 Project Authority.....   | 12 |
| 1.2 Project Location.....  | 12 |
| 1.3 Need and Description of Proposed Action.....   | 12 |
| 2.0 ALTERNATIVES.....  | 16 |
| 2.1 Description of Alternatives.....   | 16 |
| 2.1.1 Alternative 1 - No-Action.....   | 16 |
| 2.1.2 Alternative 2 - Continued Periodic Nourishment Utilizing Capron Shoal<br>Borrow Area. (Preferred Alternative)..... | 17 |
| 2.1.3 Alternative 3 - Continued Periodic Nourishment Utilizing Other Shoals as<br>Borrow Area.....                       | 17 |
| 2.2 Comparison of Alternatives.....  | 17 |
| 2.3 Preferred Alternative.....   | 19 |
| 2.4 Alternatives Eliminated From Detailed Evaluation.....  | 19 |
| 2.4.1 Alternatives Considered in the 1978 GDM.....   | 19 |
| 2.4.2 Other Sand Sources.....  | 21 |
| 2.5 Mitigation.....  | 21 |
| 3.0 AFFECTED ENVIRONMENT.....  | 22 |
| 3.1 General Environmental Setting.....   | 22 |
| 3.2 Fish and Wildlife Resources.....   | 22 |
| 3.2.1 Beach and Inshore Softbottom Communities.....  | 22 |
| 3.3 Threatened and Endangered Species.....   | 23 |

|           |  |    |
|-----------|--|----|
| 3.3.1     | Sea Turtles .....                                    | 23 |
| 3.3.1.1   | Nesting Habitat for Sea Turtles .....                | 23 |
| 3.3.1.1.1 | Loggerhead Turtle .....                              | 24 |
| 3.3.1.1.2 | Green Turtle .....                                   | 24 |
| 3.3.1.1.3 | Leatherback Turtle .....                             | 24 |
| 3.3.1.2   | Nearshore and Offshore Habitat for Sea Turtles ..... | 24 |
| 3.3.1.2.1 | Loggerhead Turtle .....                              | 24 |
| 3.3.1.2.2 | Green Turtle .....                                   | 25 |
| 3.3.1.2.3 | Leatherback Turtle .....                             | 27 |
| 3.3.2     | Threatened and Endangered Mammals .....              | 27 |
| 3.3.2.1   | West Indian Manatee.....                             | 27 |
| 3.3.2.2   | Southeastern Beach Mouse.....                        | 27 |
| 3.3.2.3   | Northern Right Whale.....                            | 28 |
| 3.4       | Offshore Borrow Area Resources .....                 | 28 |
| 3.6       | Essential Fish Habitat.....                          | 38 |
| 3.7       | Coastal Barrier Resources .....                      | 39 |
| 3.8       | Water Quality.....                                   | 39 |
| 3.9       | Hazardous, Toxic, and Radioactive Waste .....        | 39 |
| 3.10      | Air Quality.....                                     | 40 |
| 3.11      | Noise .....  | 40 |
| 3.12      | Aesthetic Resources .....                            | 40 |
| 3.13      | Recreation Resources .....                           | 41 |
| 3.14      | Navigation.....                                      | 41 |
| 3.15      | Historic Properties.....                             | 42 |
| 4.0       | ENVIRONMENTAL CONSEQUENCES.....                      | 43 |
| 4.1       | General Environmental Setting.....                   | 43 |
| 4.2       | Fish and Wildlife Resources .....                    | 43 |
| 4.2.1     | No-Action (Status Quo).....                          | 43 |
| 4.2.2     | Preferred Alternative.....                           | 43 |
| 4.3       | Threatened and Endangered Species.....               | 44 |
| 4.3.1     | No-Action (Status Quo).....                          | 44 |
| 4.3.2     | Preferred Alternative.....                           | 44 |
| 4.4       | Offshore Borrow Area Resources.....                  | 45 |
| 4.4.1     | No-Action (Status Quo).....                          | 45 |
| 4.4.2     | Preferred Alternative.....                           | 45 |

## LIST OF APPENDICES

- Appendix A 404(b) Evaluation
- Appendix B Florida Coastal Zone Management Program Federal Consistency Evaluation
- Appendix C Bryozoan Study
- Appendix D Hardbottom Report
- Appendix E USFWS Coordination Act Report and Biological Opinion
- Appendix F Pertinent Correspondence, Errata and the Response to Draft EIS comments



## **LIST OF APPENDICES**

|            |  |
|------------|--|
| Appendix A | 404(b) Evaluation  |
| Appendix B | Florida Coastal Zone Management Program Federal Consistency Evaluation |
| Appendix C | Bryozoan Study   |
| Appendix D | Hardbottom Report  |
| Appendix E | USFWS Coordination Act Report and Biological Opinion                   |
| Appendix F | Pertinent Correspondence   |

## LIST OF FIGURES

|  | Page |
|--|------|
| Figure 1 Location Map.....                                 | 13   |
| Figure 2 Project Area Map.....                             | 14   |
| Figure 3 Location of Potential Offshore Borrow Areas ..... | 18   |
| Figure 4 Capron Shoal Borrow Area Bathymetric Survey.....  | 30   |

## LIST OF TABLES

|   | Page |
|---|------|
| Table 1 Comparison of Features and Impacts of Alternatives Evaluated.....   | 19   |
| Table 2 Essential Fish Habitat .....  | 38   |
| Table 3 Past and Proposed Future Projects and Direct Hardbottom Impacts Within Fort<br>Pierce/St. Lucie County..... | 53   |
| Table 4 Compliance with Environmental Requirements and Protection Statutes.....                                     | 59   |

## **1.0 PROJECT PURPOSE AND NEED**

### **1.1 Project Authority**

This project was originally authorized by the River and Harbor Act of 1965 (79 Stat. 1089, 1092) in accordance with the recommendations of the Chief of Engineers in House Document 84, 89<sup>th</sup> Congress. This authorization provided for the restoration of 1.3 miles of shoreline south of Fort Pierce Inlet and for periodic nourishment as needed for a period of 10 years following initial construction of the project. This period was extended to fifty years under authority provided by Section 156 of the Water Resources Development Act of 1976 (PL 94-587), as amended by Section 934 of the 1986 Water Resource Development Act (PL 99-662).

### **1.2 Project Location**

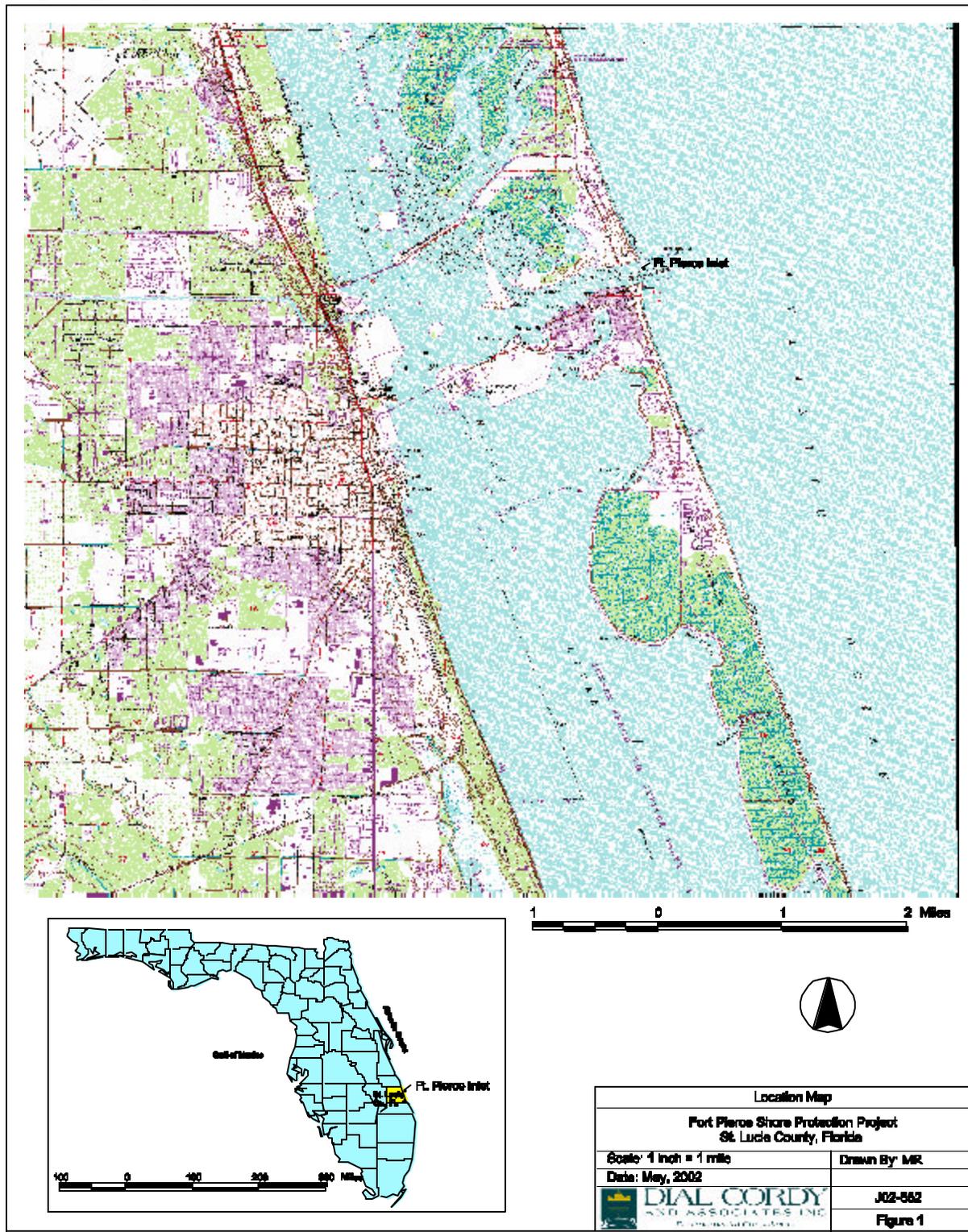
The study area is located along 1.3 miles of shoreline in Fort Pierce, Florida (Figure 1). The northern and southern limits of the study area are the south jetty at Fort Pierce Inlet and the south boundary of Surfside Park, respectively. The project area extends from Florida Department of Environmental Protection (FDEP) Monument R-34 southward to FDEP Monument R-41 (Figure 2).

### **1.3 Need and Description of Proposed Action**

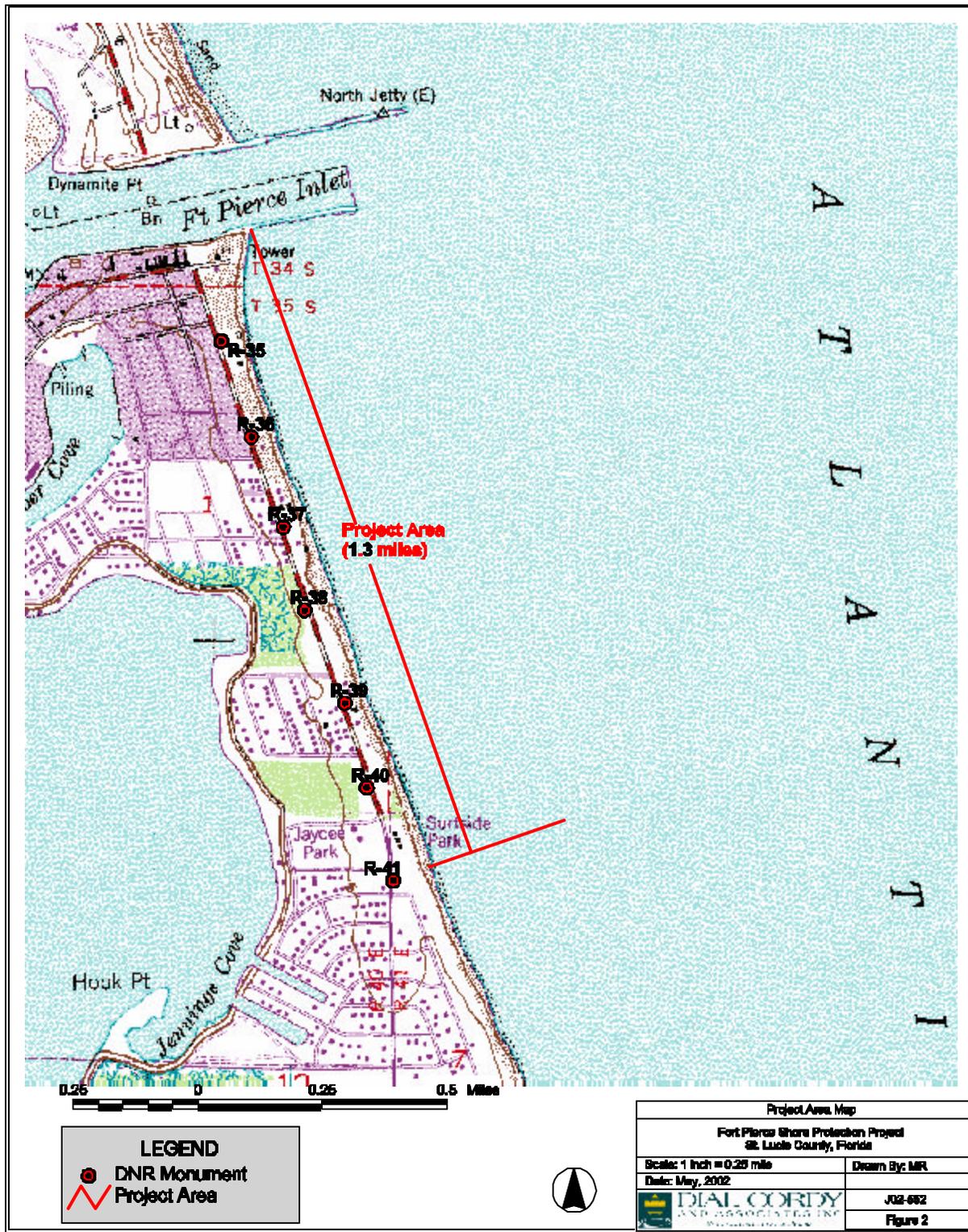
The authorized Fort Pierce Shore Protection Project (SPP) provides for a 50-foot protective berm that extends 1.3 miles from the south Fort Pierce Inlet jetty at FDEP Monument R-34 to the southern terminus of the authorized project at Surfside Park, Monument R-41. Shoreline change data indicate that materials in the 1.3-mile authorized project are eroding at approximately 6 feet/year. Approximately 1,250,000 cubic yards (cy) of material (650,000 cy design volume + 600,000 cy advance nourishment) will be required to complete the 1.3-mile shore protection project. Advance nourishment material would be placed at the time of construction to offset anticipated erosion losses between nourishments.

In 1999, a lawsuit was filed (Judith Winston, et al., v. Lt. Gen. Joe. N. Ballard, Docket No. CA 99-0533) seeking a Temporary Restraining Order (TRO) against the U.S. Army Corps of Engineers (USACE) dredging project that was conducted to obtain material for the beach renourishment component. The suit alleged that the USACE did not conduct a thorough National Environmental Policy Act (NEPA) analysis, and alleging that immediate and irreparable harm would result if dredging went forward. The Court issued a TRO on March 5, 1999. Subsequently, the USACE and the petitioners reached a Settlement Agreement, which committed the USACE to fund bryozoan studies of Capron Shoal and nearby shoals (\$200,000), dredge only in the southern portion of the currently authorized borrow area of Capron Shoal during the first phase of the beach renourishment project, conduct a survey of the effect of beach nourishment on the nearshore hardbottom, and

conduct additional NEPA analysis before beginning the next phases. The purpose of this EIS is to address these issues.



**Figure 1 Location Map**



**Figure 2 Project Area Map**



## 2.0 ALTERNATIVES

### 2.1 Description of Alternatives

After considering the various studies performed in association with shoreline erosion south of the Fort Pierce Inlet jetty, the USACE selected the alternatives for the proposed project. The authorized Fort Pierce SPP provides for a design of the restored beach based on the assumptions that wave energy would dissipate seaward of upland property, and adequate area would be provided for recreation. It was determined that a berm elevation of +10 feet MLW would provide protection during all but the most severe storm events. Design slopes for the adjusted post-construction profiles would be 1V:10H from the berm crest out to MLW, and then 1V:20H out to the intersection with the existing profile. These slopes mimic the natural slopes of the beach face. The width of the restored beach would be 50 feet at elevation +10 MLW. Immediately following project construction, the beach width may exceed 50 feet in places due to the width of the sloped beach face between the seaward edge of the 50-foot berm and the MHW shoreline. Advance nourishment material would be placed at the time of construction to offset anticipated erosion losses between nourishments. The recommended renourishment interval was seven years. However, results from most recent nourishment projects indicate a shorter time span is warranted; placed material eroded within 24 months. It was proposed that in addition to the No-Action Alternative, two action alternatives would be examined. The Preferred Alternative would use Capron Shoal as the sand source for nourishment of the 50-foot shoreline extension berm. The third alternative would be to use sand from other shoals and harbor maintenance dredging.

#### 2.1.1 Alternative 1 - No-Action

Alternative 1 assumes that the erosion in the study area will continue with no solutions or remedial measures being constructed, except for those in response to emergency situations. An estimated \$64 million in structural improvements is currently susceptible to storm damage south of the Fort Pierce Inlet jetty. This estimate does not include infrastructure such as roads and utilities. It is estimated that nearly \$1.5 million in storm damage will occur annually if no action is taken. Local efforts to stop storm and erosion damage have included dune construction, enhancement, and revegetation; geotextile erosion-control-tube installation to hold small quantities of emergency beach fill; construction and repair of coastal armor; and construction of a longshore-parallel spur jetty along the existing south jetty at Fort Pierce Inlet.

### 2.1.2 Alternative 2 - Continued Periodic Nourishment Utilizing Capron Shoal Borrow Area. (Preferred Alternative)

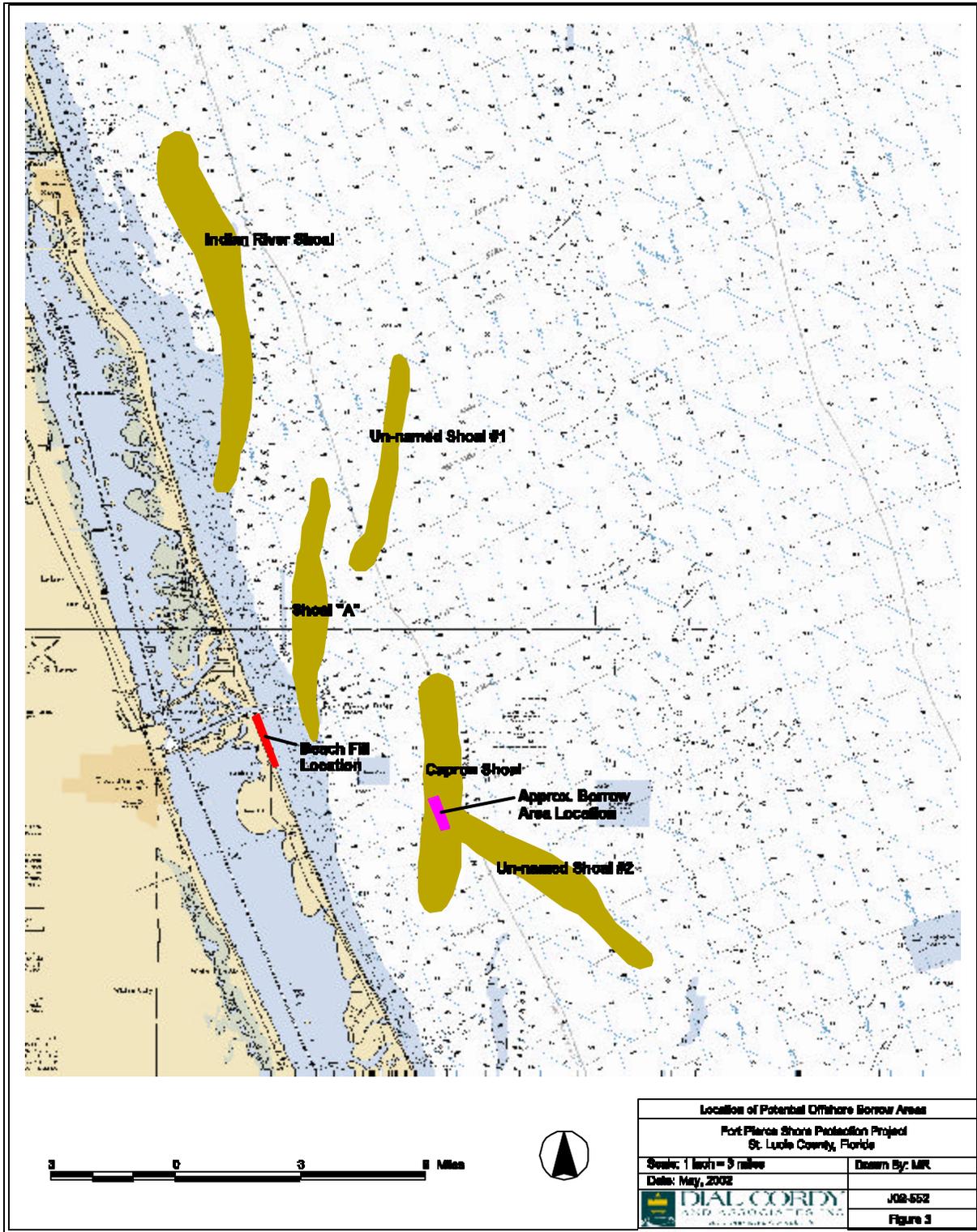
The project area for Alternative 2 extends 1.3 miles from the south Fort Pierce Inlet jetty at FDEP Monument R-34 to the southern terminus of the authorized project at FDEP Monument R-41 in Surfside Park. This alternative, utilizes sand from Capron Shoal. Several of the offshore shoals in the vicinity of Fort Pierce contain appreciable quantities of beach compatible sand. However, the largest sand source near the project beach is Capron Shoal which contains an estimated 23 million cubic yards of beach quality sand. The projected requirements for this project are 3.2 million cubic yards of beach-compatible sand. Capron Shoal is capable of supplying all the sand required for the projected life of the project. The Section 934 Study completed in 1995 included an evaluation of potential sand sources available for Fort Pierce South Beach. Based upon available data, Capron Shoals was determined to be an excellent long-term source of beach-quality sediments for renourishment.

### 2.1.3 Alternative 3 - Continued Periodic Nourishment Utilizing Other Shoals as Borrow Area.

The project area for Alternative 3 extends 1.3 miles from the south Fort Pierce Inlet jetty at FDEP Monument R-34 to the southern terminus of the authorized project at FDEP Monument R-41 in Surfside Park (as with Alternative 2) but uses other shoals and maintenance dredging as the sand source. Figure 3 shows the locations of potential offshore borrow areas. The investigation of potential offshore sand sources for beach renourishment in the vicinity of Fort Pierce began in 1965 with the Inner Continental Shelf Sediment and Structure Program (ICONS). The ICONS identified several offshore shoals that contained appreciable quantities of sediments deemed suitable for beach nourishment. Of these shoals, Bethel, Capron, and Indian River Shoal were described as containing “best” quality sediment. Three other shoals (Shoal “A”, Unnamed Shoal #1, and Unnamed Shoal #2) were described as containing “good” quality material. Bethel Shoal, Unnamed Shoal #1, and Unnamed Shoal #2 were removed from consideration due to their greater distance from the project area.

## 2.2 Comparison of Alternatives

Table 1 lists alternatives considered and summarizes the major features and consequences of the Preferred Alternative and the other alternatives considered (see Section 4.0 for a more detailed discussion). Alternatives 2 and 3 would have approximately the same costs and benefits with respect to sand application, as that aspect is identical for both. However, the alternatives differ with respect to sand source and associated impacts. The results of geotechnical investigations included in the 1998 General Re-Evaluation Report indicated that Capron Shoals was the best long-term supply of beach-compatible sand.



**Figure 3 Location of Potential Offshore Borrow Areas**

**Table 1 Comparison of Features and Impacts of Alternatives Evaluated**

|                      | <b>Alternative 1<br/>No-Action</b> | <b>Alternatives 2 &amp; 3</b> |
|----------------------|------------------------------------|-------------------------------|
| Hardbottom Coverage  | N/A                                | 7.8 acres                     |
| Annual Damages       | \$1,481,300                        | \$234,400                     |
| Annual Project Costs | N/A                                | \$983,300                     |
| Annual SDR Benefit   | N/A                                | \$1,246,900                   |
| Benefit/Cost Ratio   | N/A                                | 1.27                          |

Economic data from 1993 Section 934 Study

### **2.3 Preferred Alternative**

Based on factors and considerations summarized in Section 2.2, Alternative 2, the periodic nourishment of beaches with a 50-foot shoreline extension utilizing Capron Shoal borrow area, has been selected as the Preferred Alternative. Because of excessive erosion in the project area, further actions are also currently being evaluated for their effectiveness in retaining material at the shoreline. These alternatives include such structural elements as groins and breakwaters. Additional measures for the project area will be evaluated and discussed in a General Re-Evaluation Report/Environmental Assessment (GRR/EA) that is currently in preparation by the USACE.

### **2.4 Alternatives Eliminated From Detailed Evaluation**

Plans for addressing shoreline erosion south of the Fort Pierce Inlet were formulated in conjunction with the 1978 General Design Memorandum (GDM) and the 1998 GRR/EA (USACE, 1998). Together, they form an extensive list of potential alternatives considered by the USACE. The plan formulation section of the 1978 GDM was incorporated by reference and appended to the 1998 GRR/EA.

#### **2.4.1 Alternatives Considered in the 1978 GDM**

The initial array of alternatives in the 1978 study included both nonstructural and structural measures. Nonstructural alternatives and their fates included the following:

Rezoning of Beach Area. Carried forward as part of the nonstructural combination plan of the intermediate alternatives.

Modification of Building Codes. Failed to reduce erosion of recreational beach. Eliminated from further consideration.

Construction Setback Line. Carried forward as part of the nonstructural combination plan of the intermediate alternatives.

Moratorium on Construction. Carried forward as part of the nonstructural combination plan of the intermediate alternatives.

Flood Insurance. Does not prevent damage. Eliminated from further consideration.

Evacuation Planning. Carried forward as part of the nonstructural combination plan of the intermediate alternatives.

Establishment of a No-Growth Program. Growth was considered necessary for economic depth to the community. Eliminated from further consideration.

Various Combinations of Above. It was recognized that various aspects of many of the nonstructural plans could be implemented collectively or in combination with structural measures. It was determined that a single nonstructural plan would not be applicable.

Structural measures and their fates consisted of the following:

Offshore Breakwater. Retained for further evaluation as an intermediate alternative.

Continued Periodic Nourishment. Retained for further evaluation as an intermediate alternative.

Beach Nourishment with Maintenance Material from Fort Pierce Inlet. Uncertainty regarding periodicity of maintenance dredging and available quantities of beach-quality material relegates this measure to providing only supplemental material when available. Eliminated from further consideration.

Groins with Periodic Maintenance. Retained for further evaluation as an intermediate alternative.

Seawalls. Because it would result in the loss of beach, this would be unacceptable to residents. Eliminated from further consideration.

Hurricane Surge Protection – Sand Dune. This measure was found to be neither practicable nor economically feasible. Eliminated from further consideration.

Stabilization of Beaches and Dunes by Vegetation. Not applicable to the conditions at Fort Pierce. Eliminated from further consideration.

Relocation of Structures. Most structures in the area cannot be moved economically. Eliminated from further consideration.

Flood Proofing of Structures. Considered to be part of building code modifications. Eliminated from further consideration.

Condemnation of Land and Structures. This alternative would allow the shoreline to erode until equilibrium becomes established. Eliminated from further consideration.

Of the five alternatives retained for intermediate-level analysis, the construction of an offshore rubble breakwater was considered to have an excessive cost and was eliminated from additional consideration. The non-structural plan was eliminated from further consideration because it would not alleviate problems experienced by existing development or prevent the erosion and loss of the existing beach.

Periodic nourishment of the beach using an offshore source of sand was selected as the preferred plan in the 1978 GDM. Analyses revealed that the plan would provide the more practical and acceptable means for addressing the erosion problem while the beneficial effects would offset the detrimental effects. The benefit-to-cost ratio was determined to be greater than unity.

#### 2.4.2 Other Sand Sources

Upland Sand Sources. Several commercial sand mines, located in Brevard County, were identified in the Brevard County Shore Protection Study Reconnaissance Report(1993). The report indicated all but one mine contained material of beach quality. However, quantities were questionable, and costs were prohibitive.

Apalachicola Sand Source. Beach-quality sand is available from the Apalachicola dredging project. However, current costs of transporting it to the project site are prohibitive.

### 2.5 Mitigation

Although long-term adverse impact to biological communities are not anticipated due to the Preferred Alternative, the USACE is prepared to mitigate for any short-term effects this project may have on hardbottom habitat. The multifaceted plan was approved by the FDEP for the 1.3-mile Fort Pierce beach renourishment project that was conducted in 1998-1999.

### **3.0 AFFECTED ENVIRONMENT**

This section describes only those environmental resources that are relevant to the three alternatives that remain under consideration. 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 illustrates the baseline conditions for determining the environmental impacts of the alternatives that remain under consideration.

#### **3.1 General Environmental Setting**

Hutchinson Island is a 24-mile-(38-kilometer)-long, narrow barrier island, bordered by Fort Pierce Inlet on the north, St. Lucie Inlet on the south, the Indian River Lagoon on the west, and the Atlantic Ocean on the east. The general project area on Hutchinson Island is composed primarily of multifamily homes and small condominium complexes facing either the Indian River Lagoon to the west or the Atlantic Ocean to the east. The northern end of Hutchinson Island provides public parking and beach access and therefore comprises hard impermeable surfaces. The dune system in this area, which affords some protection for the waterfront development, is low, and has suffered erosion due to overwash events during severe winter storms. Because of this, erosion of the protective beach along Fort Pierce is a severe seasonal problem.

#### **3.2 Fish and Wildlife Resources**

The biological communities found in the general project areas are all well adapted to the particular physicochemical and hydrodynamic conditions associated with the supralittoral beach zone and the intertidal swash zone (Nelson 1985). Additional descriptions of the biological communities that occur in the SPP area are given in the U.S. Fish and Wildlife Service's (USFWS) Final Fish and Wildlife Coordination Act Report (Appendix E).

##### **3.2.1 Beach and Inshore Softbottom Communities**

The dune system immediately adjacent to the project area is largely artificial, and was built as part of previous restoration projects. Dominant plant species in that community include sea grapes (*Coccoloba uvifera*); the beach morning glory (*Ipomoea pes-caprea*); beach bean (*Canavalia rosea*); sea oats (*Uniola paniculata*); dune panic grass (*Panicum amarulum*) and bay bean (*Canavalia maritima*). Inkberry (*Scaevola plumier*), sea lavender (*Mallotonia gnaphalodes*), spider lily (*Hymenocallis latifolia*), beach star (*Remirea maritima*), and coconut palm (*Coco*

*nucifera*) are also present. In recent years, much of Florida's shoreline has become dominated by larger exotic vegetation such as the Australian pine (*Casuarina litorea*). These trees have a shallow root system and are prone to being uprooted during strong winds. The invasion of this destabilizing exotic species can be detrimental to nesting sea turtles as they tend to increase erosion, and fallen trees and root systems can be detrimental to both turtle eggs as well as hatchlings (National Research Council 1990).

The biological communities in the highly dynamic intertidal swash zone must cope with being aerially exposed during normal tidal cycles as well as being subjected to the high energy of the ocean waves. Typically, these habitats exhibit low species diversity because of the environmentally harsh conditions present. However, animals that are able to successfully adapt to these dynamic conditions are faced with very little competition from other organisms. A dominant invertebrate found along the shoreline of Fort Pierce is the Atlantic coquina clam (*Donax variabilis*). It is because of this lack of competition and adaptability of most organisms to the dynamic conditions found along the project area that *D. variabilis* is able to numerically dominate the biological community (Edgren 1959). A variety of polychaete worms, another of the few taxa that are adapted to this highly dynamic and stressful environment, can be found within the intertidal zone along the Fort Pierce beaches. These intertidal organisms also provide an important food source for foraging shore and wading birds. Amphipods and isopods, which are frequently washed out of their burrows by receding waves and suspended in the water column, serve as an important food source for a variety of nearshore fishes. Highly visible decapod crustaceans of the Fort Pierce supralittoral zone include the ghost crab (*Ocypode quadrata*), mole crab (*Emerita talpoida*), and Atlantic fiddler crab (*Uca pugilator*). These organisms are highly motile and burrow into the moist sand for refuge (Barnes 1974).

### **3.3 Threatened and Endangered Species**

#### **3.3.1 Sea Turtles**

##### *3.3.1.1 Nesting Habitat for Sea Turtles*

Five species of sea turtle have been observed in St. Lucie County and associated waters. The County is within the normal nesting range of three species of sea turtles: the loggerhead (*Caretta caretta*), the green (*Chelonia mydas*), and the leatherback (*Dermochelys coriacea*). The loggerhead, is currently responsible for the vast majority of the nesting, both statewide and in St. Lucie County, although data suggest increasing numbers of green and leatherback turtles nesting statewide. Green and leatherback turtles are both listed as *endangered* under the U.S. Endangered Species Act of 1973 and Chapter 370 of the Florida Statutes. The loggerhead is listed as *threatened*.

All three species noted above have been documented as nesting on St. Lucie County beaches. The Kemp's ridley (*Lepidochelys kempi*) and hawksbill (*Eretmochelys imbricata*) are infrequent nesters along the east coast of Florida and have not been recorded as nesting on County beaches. These observations and more-detailed data discussed below are based on the Florida Fish and Wildlife Conservation Commission (FFWCC) Statewide Nesting Beach Survey (SNBS) program, which has collected/collated data along St. Lucie County beaches since 1980. St. Lucie County data are collected along stretches of beach varying in length from 27.7 to 34.4 km.

#### 3.3.1.1.1      Loggerhead Turtle

Loggerheads nest in the southeastern U.S. from April through September, with peak nesting occurring in June and July (National Marine Fisheries Service and USFWS 1991a). From 1988-2001, the average number of loggerhead nests was 161 nests/km for the beaches surveyed in the southeastern U.S. (FFWCC SNBS 2001).

#### 3.3.1.1.2      Green Turtle

Green turtles nest in Florida from June through late September. The mean nesting density for areas surveyed from 1988-2001 was 2.5 nests/km (FFWCC SNBS 2001).

#### 3.3.1.1.3      Leatherback Turtle

Leatherback turtles nest primarily from April through July. FFWCC statewide nesting data show that for 1988 to 2001 leatherback turtle nesting density was 1.0 nests/km on the beaches the County surveyed (FFWCC SNBS 2001).

#### *3.3.1.2 Nearshore and Offshore Habitat for Sea Turtles*

Sea turtles use the habitats offshore of St. Lucie County to different degrees during different stages of their life-cycle. During summer months, hatchlings utilize this habitat as a corridor to deeper waters farther off the coast. Juvenile and sub-adult turtles use the offshore habitats as a foraging area and to travel to inshore areas such as Indian River Lagoon, while adult turtles are present year round with seasonally high abundances during the breeding season.

#### 3.3.1.2.1      Loggerhead Turtle

Hatchlings emerge primarily at night and swim offshore in a “frenzy” until they arrive at offshore weed and debris lines (Carr 1986; Wyneken and Salmon 1992). Post-hatchling turtles from the Florida coast enter currents of the North Atlantic Gyre, eventually returning to the western Atlantic coastal waters (Bowen et al. 1993). When loggerheads reach a carapace length of approximately 40-60 cm, they leave the pelagic environment and move into various nearshore habitats (Carr 1986). These juvenile and sub-adult loggerhead turtles are found throughout the year in the Indian River Lagoon and the offshore reef habitats of St. Lucie County. Very few loggerheads have been captured on nearshore wormrock reefs by the University of Central Florida marine turtle research program in Indian River County (Ehrhart et al. 1996). However, large numbers of loggerhead turtles have been captured at the Florida Power and Light Company’s (FP&L) St. Lucie Nuclear Power Plant (Quantum Resources, Inc. 1999), which suggests that juvenile loggerheads use habitat within this general area. Adult loggerheads in South Florida utilize foraging grounds in the Caribbean basin, Gulf of Mexico, and along the U.S. east coast (Meylan et al., 1983). Abundances of adult loggerhead turtles in Florida waters increase during the nesting season (Magnuson et al., 1990).

#### 3.3.1.2.2 Green Turtle

Green turtles have a life-history pattern similar to that of loggerheads, but they leave the pelagic phase and enter developmental habitats at a considerably smaller size, about 20-25 cm carapace length (Magnuson et al., 1990). Typical developmental habitats are shallow, protected waters where seagrasses are prevalent (Carr et al., 1978), but green turtles are commonly found in reef habitats where algae is present (Ehrhart et al., 1996; Coyne 1994). Green turtles nesting in Florida have a minimum size of 83.2 cm carapace length, but they appear to leave Florida developmental habitats by about 60-65 cm carapace length (Witherington and Ehrhart 1989), perhaps migrating to the southeastern Caribbean. St. Lucie County contains two significant developmental habitats for green turtles: the Indian River Lagoon and the nearshore reef system (Ehrhart et al., 1996). There are no data on the seasonality of habitat use of juvenile green turtles within St. Lucie County. Dietary needs of juvenile turtles along with seasonal abundances of seagrasses and algae within the area may be factors influencing the habitat use by juvenile turtles within the area. Data from the FP&L St. Lucie Power Plant show juvenile green turtles captures offshore to be more or less consistent all year (Quantum Resources, Inc. 1999). As adults, offshore habitat utilization would be greatest during the nesting period.

As noted above, green turtles leave the early pelagic life stage and enter benthic foraging areas at about 20-25 cm carapace length. During this time they shift from an omnivorous diet to a more herbivorous diet. Juvenile green turtles feed primarily on seagrasses and algae during this life stage. In Florida, these turtles feed primarily on a diet of seagrasses such as *Halodule wrightii*, *Syringodium filiforme*, and red and green algae (Lutz and Musick 1997). Data from the FP&L St. Lucie Power Plant show that juvenile turtles are present within the area offshore of the facility all year. There are some data to suggest there may be a seasonal reduction in the amount of foraging habitat present in the offshore area. The seasonal abundances of algal species offshore may limit the

offshore foraging areas in the winter months. Nelson (1988) noted a great seasonal reduction in algal species richness (56 summer vs. 16 winter) on the nearshore reefs to the north at Sebastian Inlet.

### 3.3.1.2.3      Leatherback Turtle

Leatherback turtles occur worldwide in pelagic waters from the tropics to near the Arctic and Antarctic Circles. Nesting is primarily on the Pacific coast of Mexico and the Caribbean coast of South America, with some continental U.S. nesting in Florida. The majority of leatherback nesting activity is located within St. Lucie, Martin, and Palm Beach counties (Meylan et al., 1995).

## 3.3.2 Threatened and Endangered Mammals

### *3.3.2.1 West Indian Manatee*

The West Indian manatee (*Trichechus manatus*) is protected under both the Endangered Species Act and the Marine Mammal Protection Act and is also protected under Florida State law. The Florida manatee, a subspecies of the West Indian manatee, is most numerous along the coasts of Georgia and Florida, but can also be found in coastal waters of Gulf Coast states. Manatees frequently inhabit shallow areas where seagrasses are present and are commonly found in protected lagoons and freshwater systems. Manatees occasionally use open ocean passages to travel between favored habitats (Hartman 1979). They migrate seasonally, particularly on the east coast of Florida. During the summer months, manatees utilize habitats all along the coast. However, during winter, when water temperatures drop, manatees use warm-water refuges such as springs or warm water discharges at power plants. Within St. Lucie County, manatees infrequently use nearshore Atlantic waters, but are found more frequently within protected lagoon areas, especially during the summer months.

### *3.3.2.2 Southeastern Beach Mouse*

The southeastern beach mouse (*Peromyscus polionotus neveiventris*) is listed as a threatened species at both the federal and state levels. Beach mice primarily use coastal dune communities containing stands of sea oats for habitat. Grasslands and open sandy areas in the fore-dune area may also be utilized (Humphrey 1992). This subspecies was originally endemic to coastal dunes along the Florida coast from Ponce Inlet (Volusia County) to Hollywood Beach (Broward County). Declines in beach mouse populations have been attributed to loss of habitat due to coastal development and beach erosion.

Southeastern beach mice have been historically documented within St. Lucie County (Humphrey 1992). It appears, however, that the southeastern beach mouse may recently have been extirpated from its local range due to erosion of favored habitats.

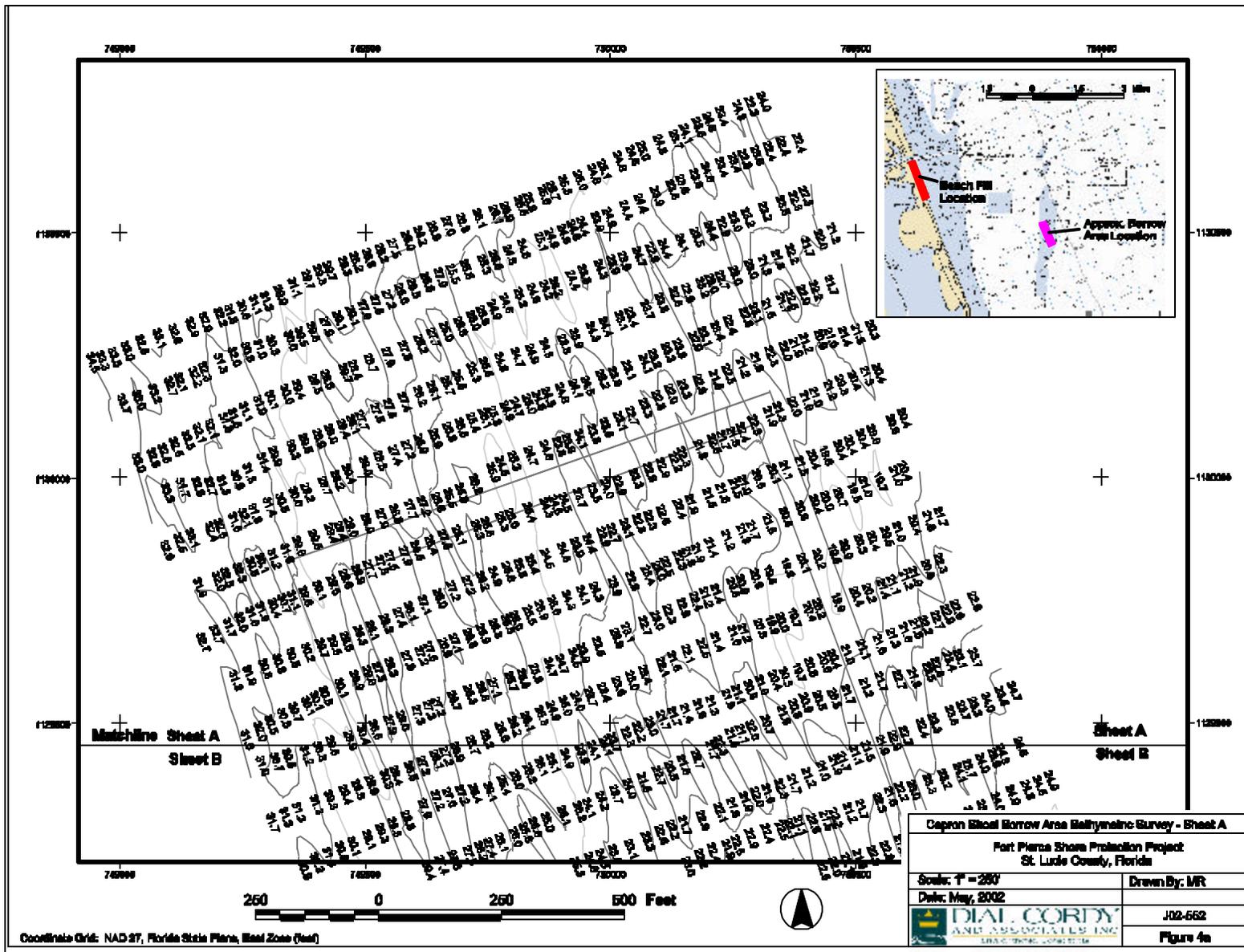
### 3.3.2.3 Northern Right Whale

The northern right whale (*Eubalaena glacialis*) is a federally listed endangered species and is protected under the Marine Mammal Protection Act. Just a decade ago, the migratory population within the Atlantic Region was less than 350 animals (Humphrey 1992). Right whales are highly migratory, and summer in the Canadian Maritime Provinces. They migrate southward in winter to the eastern coast of Florida. The breeding and calving grounds for the right whale occur off of the coast of southern Georgia and northern Florida. During winter months, right whales are routinely seen close to shore and have been sighted as far south as south Florida, with isolated sightings into the Gulf of Mexico. Offshore of St. Lucie County, the peak probability of occurrence of right whales would occur from December through March.

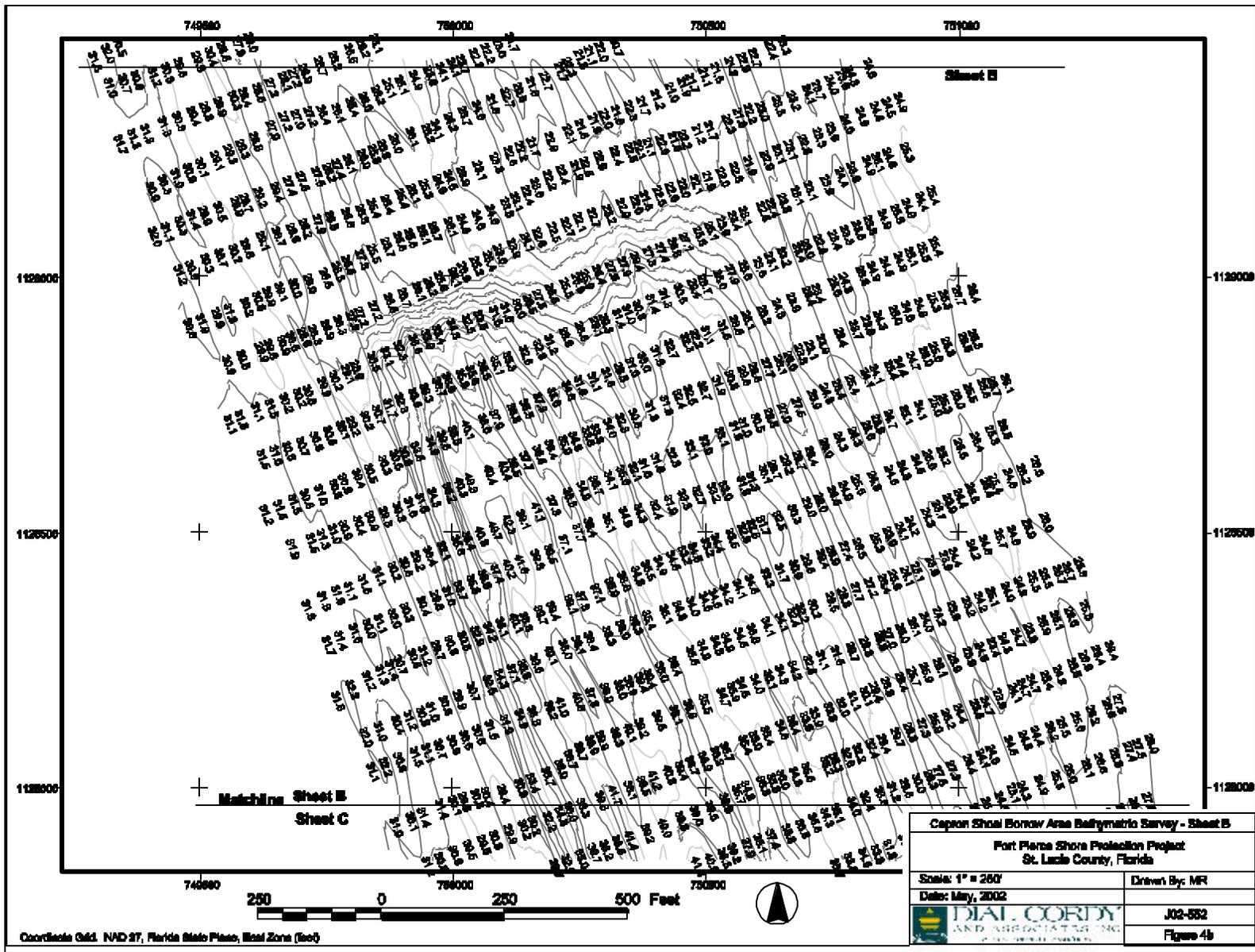
## 3.4 Offshore Borrow Area Resources

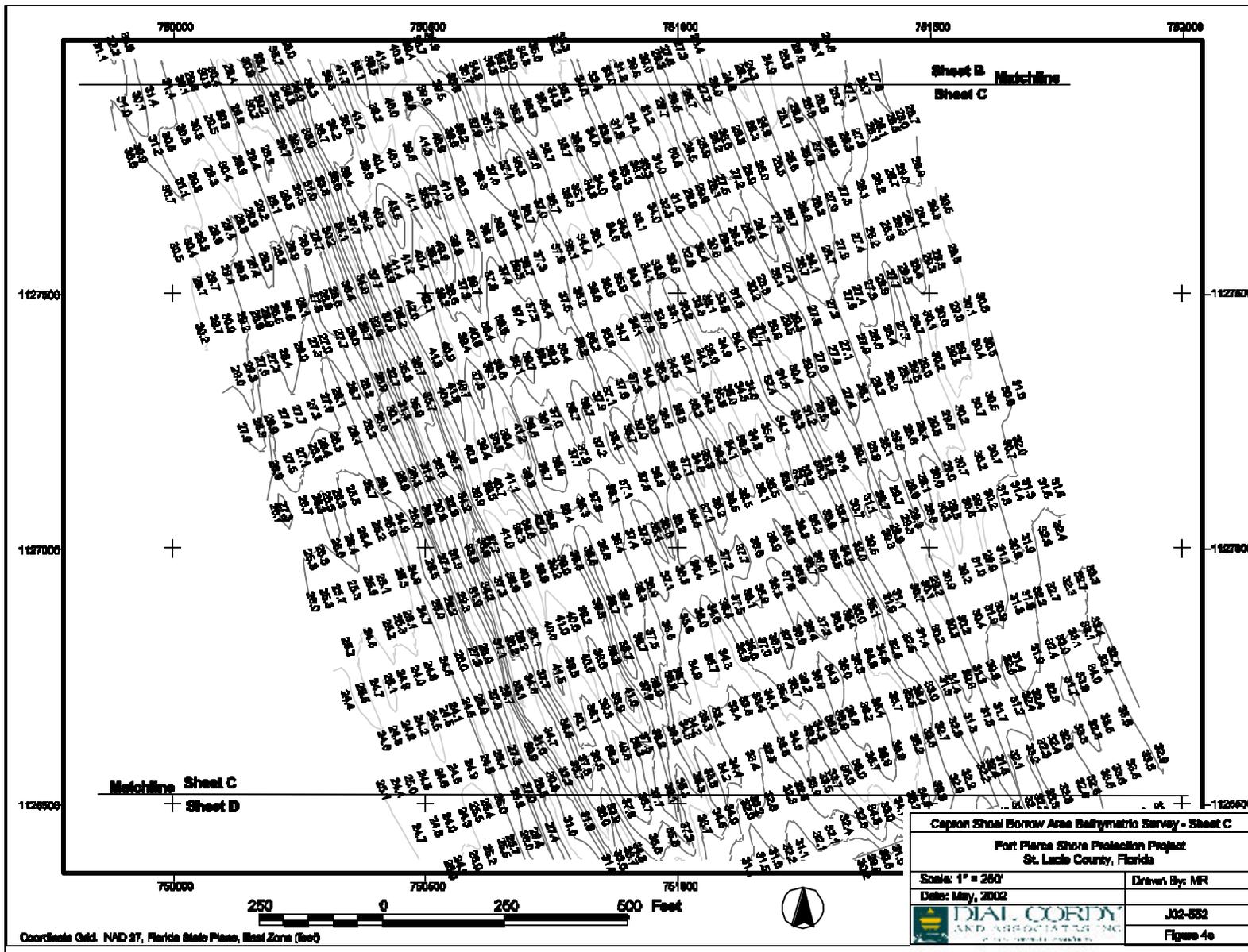
The area selected as the sand source borrow site (Capron Shoals) for the proposed project (Figure 4) is located in approximately 25 to 30 feet of water three miles or less offshore. These sandbars were formed in the recent geologic past by the migration of relic inlets through the barrier island (Moody 1964). As a tidal inlet migrates, its ebb shoal becomes elongated and eventually detaches from the shoreline due to rising sea level and the landward retreat of the shoreline. There are a number of these shoal formations along the local coast, including St. Lucie, Pierce, and Capron Shoals in St. Lucie County, and the Indian River Shoal located offshore of southern Indian River County and northern St. Lucie County.

These offshore sand habitats support a diverse fauna, although there has been comparatively little research conducted in this environment. There are several studies of invertebrates and fishes from the open sand habitat in the general proposed project area. Johnson (1982) collected over 188 species of invertebrates in benthic grab samples from the Capron Shoal area off Fort Pierce Inlet. In a study offshore of Hutchinson Island in St. Lucie County, Futch and Dwinell (1977) collected lancelets (sand-dwelling chordates in the subphylum Acrania) in densities as high as 1,750 per m<sup>2</sup>. Other important invertebrates that utilize these sand areas as habitats are bryozoans. Winston and Hakansson (1986) found at least twelve new species from the Capron Shoal area. Brostoff (2002) in Appendix C re-examined the areas around Capron Shoal and found most of these bryozoan species do occur on nearby shoals. Gilmore et al. (1981) collected 194 species of fishes from open shelf sand habitats to the north in the Indian River County area. Flatfishes, searobins, and cusk eels, along with an assortment of batfishes and skates, dominated the fish fauna in similar habitats.

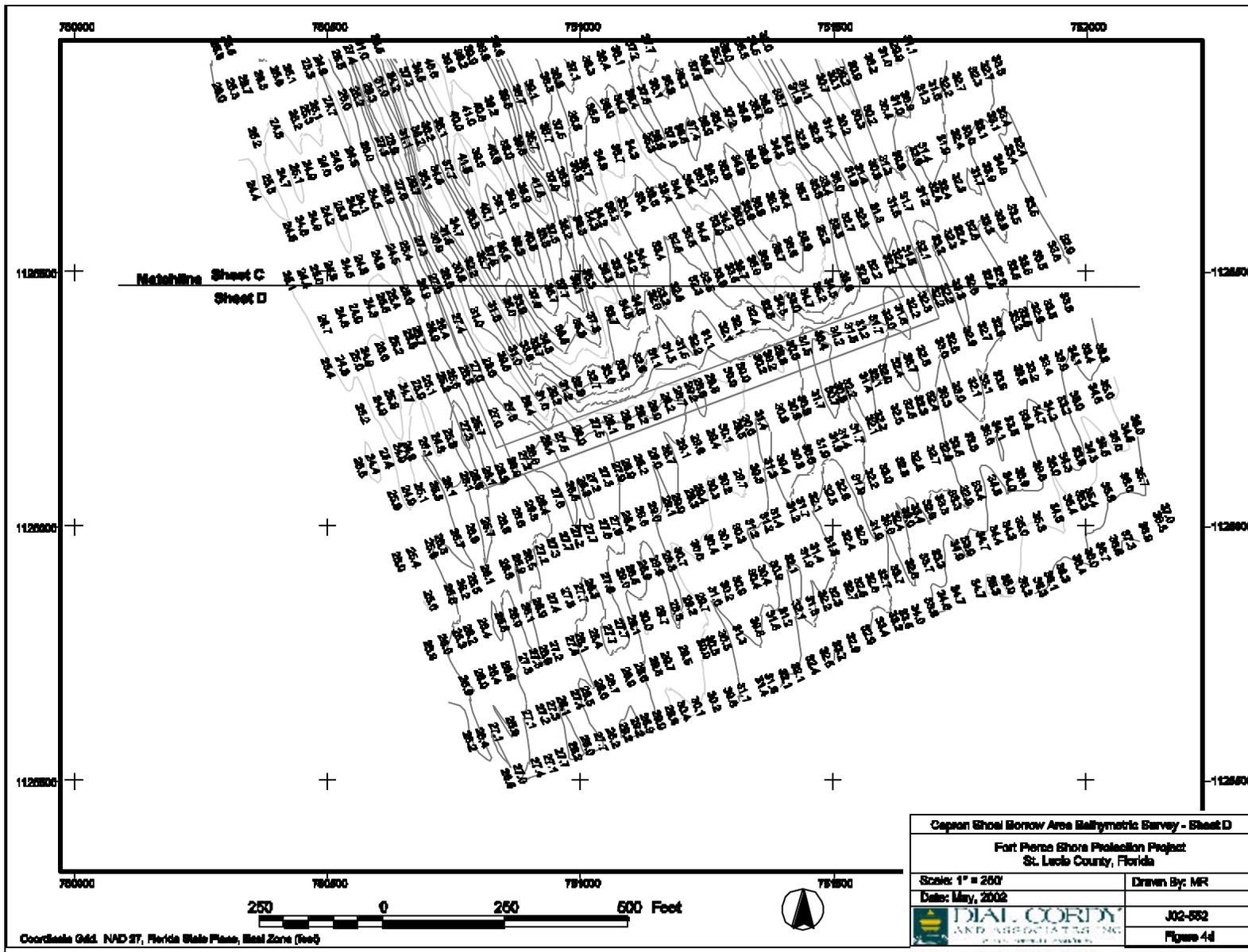


**Figure 4 Capron Shoal Borrow Area Bathymetric Survey**











### 3.5 Hardbottom and Reefs

Both nearshore and offshore reefs are found along much of the Atlantic coast of Florida and significantly contribute to the high biodiversity found in these areas. Limestone deposition, which forms ridges and rocky outcrops and contributes to live-bottom communities, is found along the entire length of the project area. Hardbottom habitat surveys were conducted on May 22 - 26, 2000, which involved video mapping along 14 transects. Each of the transects, set at intervals of 500 feet, were located between FDEP Monuments R-34.5 and R-41 and were approximately 1,700 feet long. In order to compare baseline video transect mapping conducted in 1994 and 1997 with the May 2000 surveys, habitat maps from the 1994 and 1997 studies were scanned into ArcView, projected in a manner similar to those with the 2000 information, and overlain with the 2000 mapped data. From this composite overlay of temporal mapped data, the percent composition for each substrate type by distance along the transects and by area within the survey block was calculated. Direct habitat loss was calculated by spatially comparing the location of rock features in 1994, 1997, and 2000. Modeling to investigate potential direct and/or indirect impacts to hardbottom and sand habitats was not conducted. Substrate types identified and mapped from the video mapping surveys included the following:

- 1) Predominately sand bottom with < 10 percent rock cover.
- 2) Exposed rock with 10 to 50 percent algal sponge community cover.
- 3) Exposed rock with > 50 percent algal sponge community cover.
- 4) Live wormrock.

Based on the total transect length, the percentage of exposed rock with at least 10 percent cover and greater than 50 percent cover was 53 percent, while the remaining 47 percent was open sand. A trend analysis in substrate cover types from 1994 to 2000 showed that the area of exposed hardbottom with 10 to 50 percent biotic cover increased from 81.8 acres to 93.7 acres, while the area of hardbottom with > 50 percent cover decreased from 97.5 acres to 60.5 acres at both inshore and offshore areas. Sand bottom was most commonly observed adjacent to the beach, between the two rock outcrops along the southern half of the survey area, and interspersed between areas of narrow rock outcrops in the northern half of the survey area. The polychaete worm, *P. lapidosa*, forms extensive worm rock colonies off Fort Pierce. Temporal changes from 1994 to 2000 in worm rock distribution along each transect were quite varied. The mean percentage of dense worm rock did not change significantly (12 percent to 11 percent), but the percentage of scattered worm rock declined from 43 percent to 25 percent.

In addition, photodocumentation of permanent stations established in 1994 was conducted (SeaByte 1994). Of the seven stations, two stations (PQ-1, and PQ-3) were not found and subsequently not photodocumented. The photoquadrats were photographed using a Nikonos V camera equipped

with a 28 mm lens mounted on a camera framer jig. The area photographed within each frame for analysis was 0.16 m<sup>2</sup>.

Fixed photographic analysis of the hardbottom cover revealed that either rock or sand/shell accounted for over 95 percent of the total area analyzed. No spatial differences were apparent from the data presented except for an increase in worm rock cover at the southern study area limit and the lack of urchins at the southern inshore station (PQ-6) as compared to the other stations farther offshore (PQ-4, 5, and 7). In comparison to the fixed photographic analysis performed in September 1994, the cover area of animals and plants was significantly less during the 2000 monitoring event than previously observed. While the dominant marine species were observed during both studies, the total area of biotic cover significantly declined.

Off the east coast of central Florida, low relief hardbottom areas are constructed by the tropical sabellarid marine bristle worm. These worms collect sand grains of suitable size and the sand is then cemented together by mixing the sand grains with a protein mucus (Barnes 1974). The worm reefs expand as worm larvae settle on existing worm tubes and the entire process is continually repeated. These worm reefs provide two very important functions. First, as hardened structures, the reefs tend to help dissipate destructive wave energy. Second, the reefs provide attachment area for live-bottom plants and structural habitat for a wide variety of invertebrates and fishes. Worm rock colonies were observed extensively within the first outcrop and less commonly on the outer, more scattered rock outcrops. Areas of dense worm rock cover occurred along the western edge of the first outcrop and, to a lesser degree, on the eastern edge of the first outcrop and offshore outcrops. Colonies ranged from very small (< 20 cm in diameter) to over 1.5 to 2 m in height and 2 to 3 m in diameter. Along many transects, worm rock colonies occurred continuously for distances of over 100 m.

Marine flora and fauna identified from the video survey were limited due to low visibility and were generally larger organisms that could be observed from the video. Consequently, the species list compiled from the surveys does not accurately reflect the diversity of marine species associated with the nearshore hardbottom habitat. The 1994 baseline survey was more extensive in scope and provides a more thorough summary of the marine species common to this area (SeaByte 1994).

The algal sponge community present off Fort Pierce is highly characteristic of nearshore rock outcroppings found along the east central and southeast coast of Florida. Marine algae observed included seven species of green algae, dominated by *Caulerpa racemosa*, *Halimeda* sp., and *Padina gymnospora*; two species of brown algae, *Dictyota* sp. and *Dictyopteris delicatula*; and three species of red algae including *Bryothamnion seaforthii*, *Hypnea musciformis*, and *Jania rubens*. Common invertebrates observed included the sponges *Cliona lampa*, *Tethya* sp. and *Anthosigmella varians*; several species of unidentified hydroids and the star coral, *Siderastrea radians*; bryozoans; and two species of sea urchins, including *Echinometra lucunter* and *Lytechinus variegates*. The polychaete worm, *P. lapidosa*, forms the extensive colonies of worm rock located off Fort Pierce.

Crevices in these limestone outcrops provide important refuge for commercially important crustaceans such as the stone crab (*Menippe mercenaria*), blue crab (*Callinectes sapidus*), and spiny lobster (*Panulirus argus*). These limestone outcrops form three-dimensional structures that provide the only vertical habitat found along vast expanses of sandy substrate. Large carnivores such as snapper (*Lutianus* sp.), grouper (*Epinephelus* sp.) and sea bass (*Centropristis* sp.) are frequently found around these rocky structures. Smaller reef fishes such as the sheepshead (*Archosaurus probatocephalus*), porkfish (*Anisotremus virginicus*), and spadefish (*Chaetodipterus faber*) are also commonly seen foraging around the hardbottom habitat.

### 3.6 Essential Fish Habitat

The South Atlantic Fisheries Management Council (SAFMC) (1998) has designated seagrass, nearshore hardbottom, and offshore reef areas within the study area as Essential Fish Habitat (EFH) (Table 2). The nearshore bottom and offshore reef habitats of Central Florida have also been designated as Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPC) (SAFMC 1998). As many as 60 corals can occur off the coast of Florida (SAFMC 1998) and all of these fall under the protection of the management plan.

**Table 2 Essential Fish Habitat**

| Marine Areas |                      |
|--------------|----------------------|
|              | Live/Hardbottom      |
|              | Coral and Coral Reef |
|              | Artificial Reefs     |
|              | Sargassum            |
|              | Water Column         |

Source: South Atlantic Fisheries Management Council 1998

Managed species that commonly inhabit the inshore and offshore habitats within the study area include pink shrimp (*Farfantepenaeus duorarum*), and spiny lobster (*Panularis argus*). Members of the 73 species snapper-grouper complex include sailors choice (*Haemulon parra*), gray snapper (*Lutjanus griseus*), mahogany snapper (*Lutjanus mahogoni*), and porkfish (*Anisotremus virginicus*). These species utilize the inshore habitats as juveniles and sub-adults and the hardbottom and offshore reef communities as adults. In the offshore habitats, the number of species within the snapper-grouper complex that may be encountered increases. Coastal migratory pelagic species also commonly utilize the offshore area adjacent to the study area. In particular, king mackerel (*Scomberomorus cavalla*) and Spanish mackerel (*S. maculatus*) are the most common.

### **3.7 Coastal Barrier Resources**

The Coastal Barrier Resources Act of 1982, as amended, protects undeveloped coastal barriers and related areas by prohibiting direct or indirect federal funding of various projects in these areas that might support development. The Act also established a Coastal Barrier Resources System, consisting of undeveloped coastal barriers and other areas on the coastal U.S. Because of urbanization and the highly developed nature of Hutchinson Island both north and south of the Fort Pierce Inlet, there is little available terrestrial habitat in the immediate project area to support large numbers of diverse plants and animals. The northern end of Hutchinson Island is not part of the Coastal Barrier Resources System.

### **3.8 Water Quality**

Waters off the coast of St. Lucie County are classified as Class III waters by the State of Florida. Class III waters are designated as suitable for recreation and the propagation of fishes and wildlife. Turbidity is the major limiting factor in coastal water quality in South Florida. Turbidity is measured in Nephelometric Turbidity Units (NTU), which quantitatively measure light-scattering characteristics of the water. However, this measurement does not address the characteristics of suspended material that creates turbid conditions. According to Dompe and Haynes (1993), the two major sources of turbidity in coastal areas are very fine organic particulate matter and sediments and sand-sized sediments that become resuspended around the seabed from local waves and currents. Florida state guidelines set to minimize turbidity impacts from beach restoration activities confine turbidity values to under 29 NTU above ambient levels outside the turbidity mixing zone for Class III waters.

Turbidity values are generally lowest in the summer months and highest in winter, corresponding with winter storm events and the rainy season (Dompe and Haynes 1993; Coastal Planning and Engineering 1989). Moreover, higher turbidity levels can generally be expected around inlet areas, and especially in estuarine areas, where nutrient and entrained sediment levels are higher. Although some colloidal material will remain suspended in the water column upon disturbance, high turbidity episodes usually return to background within several days to several weeks, depending on the duration of the perturbation (storm event or other) and on the amount of suspended fines. Strict control over water quality is addressed by the FDEP in applying specific water quality monitoring requirements during the dredging and beach fill operations stage.

### **3.9 Hazardous, Toxic, and Radioactive Waste**

The coastline within the project area is located adjacent to predominantly residential, commercial, and recreational areas. There are no known industrial activities that produce hazardous, toxic,

and/or radioactive wastes adjacent to the project site that discharge effluents near the shoreline and no known records of such activities in the past. Sediments within the littoral zones of the project area, as well as sediments from the borrow areas, are composed of particles of a large grain-size. Normally, contaminants do not adhere to materials with such properties. Sediments in the potential borrow sites are sufficiently removed from shipping lanes and are located in high-energy areas. Hence, they are unlikely to have been contaminated by pollutants.

### **3.10 Air Quality**

Fort Pierce lies within the Southeast Florida Intrastate Air Quality Region, as established by 40 CFR Part 81.49. St. Lucie County has been designated by U.S. Environmental Protection Agency (USEPA) (40 CFR Part 81.310) as being in attainment with National Ambient Air Quality Standards for ozone, nitrogen dioxide, carbon monoxide; total suspended particulates, and sulfur dioxide that are better than national standards. USEPA has not made a designation for lead in southeastern Florida.

Ambient air quality along coastal St. Lucie County is generally good due to prevalent ocean breezes from the northeast through the southeast. The urbanization of the City of Fort Pierce and the popularity of the beaches area all contribute to a large number of motorized vehicles and vessels being in the project area at any given time. Because of the sea breezes that are usually present along the Fort Pierce shore, airborne pollutants are readily dispersed. No air quality permits are required for this project.

### **3.11 Noise**

Ambient noise levels in the project area are seasonal in nature with higher levels expected during the winter tourist season. Due to urbanization and development found along the shoreline, the shoreline along Fort Pierce is a favorite recreational area for both residents and tourists. The Fort Pierce Inlet, which provides access to the Atlantic Ocean from the Indian River Lagoon Estuary, is a busy waterway for both commercial and recreational watercraft.

The major noise-producing sources include breaking surf, beach and nearshore water activities, adjacent residential and commercial areas, and boat and vehicular traffic. The density of all these activities can be expected to contribute to noise in the surrounding area.

### **3.12 Aesthetic Resources**

Aesthetic resources are those natural and cultural features of the environment that elicit a pleasurable response in the observer, most notably through visual perception. Consequently, aesthetic resources

are commonly referred to as visual resources, i.e., features that can be seen. Historically, the project area consisted of light sandy beige beaches with natural sand dunes contrasting strikingly with the deep hues of the panoramic Atlantic Ocean. Currently, the project area has a narrow beach eroded by strong winds and waves. Sand dunes in the project areas have been eroded and few trees can be found along the project. Three locally managed beach parks located in the project area also appear to be affected by erosional forces. The Atlantic beach and ocean interface along other portions of southeastern Florida reflects characteristics of beaches of the Caribbean Sea. This contrasts sharply with the narrow band of existing beach sand found in the project area.

There is no area within the vicinity of the project that has been designated under 40 CFR 81.407 as a Class I Federal Area, where visibility is an important value.

### **3.13 Recreation Resources**

The minimal amount of commercial development has contributed to the retention of much of the natural appearance of the area, and residents and visitors have mentioned that the area has retained the overall atmosphere of “Old Florida” as it existed prior to the extensive development of the tourist industry along much of the remainder of the Florida east coast. This atmosphere appeals to many recreationists who prefer to avoid the pace characteristic of the more heavily developed resort areas.

Recreation in the Fort Pierce area is predominately water-related. Several boat launches and marinas at Fort Pierce facilitate sport fishing and recreational boating. Shallow, nearshore hardbottom areas are conducive to scuba diving and lobster fishing. Fishermen are often seen on boats in the inlet, within the Indian River Lagoon, and in nearshore and offshore areas. Fishing from the jetties is popular.

There are no state or national wildlife refuges, management areas, forests, wilderness areas, trails, estuaries, or research reserves within the project area. However, the Fort Pierce Inlet State Park, on the northern side of the inlet has camping and picnicking facilities.

The beaches of Fort Pierce have traditionally been popular with residents and tourists. While the Atlantic beach north of the inlet has continued to maintain its popularity, shoreline erosion has diminished the popularity of the beach south of the inlet. The eroded beach conditions in the project area do not present an appealing atmosphere for active or passive recreation.

### **3.14 Navigation**

Although there is some commercial shipping associated with the Port of Fort Pierce, most of the vessel traffic in the Fort Pierce area is associated with recreational boating and fishing. While most

of the concentrated vessel traffic is within the Indian River Lagoon and the Fort Pierce Inlet, private and chartered fishing boats can be found in the vicinity of nearshore and offshore reefs and shoals.

The proposed borrow area is located away from commercial shipping routes. Boating in the area is associated mainly with recreational and commercial fishing, including the harvesting of shrimp and scallops.

### **3.15 Historic Properties**

Documented exploration and transportation activities along Florida's east coast date from the second half of the 16th century. Because of over 400 years of navigation in the Bahama Channel, several hundred shipwrecks have been identified in the waters off the state's southeast coast. Remains of recorded and unrecorded shipwrecks may be located in the area affected by the proposed Fort Pierce SPP.

Archival research and field investigations have been conducted for the study area, and coordination with the Florida State Historic Preservation Officer (SHPO) has been initiated. Results of the investigation of Capron Shoal are included in the draft report *Submerged Historic Properties Survey Capron Shoal Borrow Site, Fort Pierce Beach Erosion Control Project, St. Lucie County, Florida*, December 4, 1997. Mid-Atlantic Technology and Environmental Research completed the fieldwork and prepared the report under contract to the USACE.

One magnetic target was identified during the remote sensing survey. Analysis indicated that the target's magnetic signature does not have characteristics similar to historic shipwreck sites. It was concluded that the target probably was a single modern object and not likely to represent a resource eligible for inclusion in the National Register of Historic Places.

Based on archival research and consultation with SHPO no significant historic properties are known to exist on the beach segment proposed for renourishment. No additional fieldwork is proposed for either the borrow area or beach at Fort Pierce.

## **4.0 ENVIRONMENTAL CONSEQUENCES**

### **4.1 General Environmental Setting**

The planting of native salt-tolerant vegetation along the project area will help to control and conserve wind-blown sand. Completion of the project will ensure that a wide beach exists at high tide as well as a protective sand dune system above the supralittoral zone. The new beach will have a positive effect on the existing dune system. Besides providing protection to the dunes from wave and tidal generated energy, opportunistic and salt-tolerant grasses and other beach vegetation will tend to trap wind blown sand, thereby further building up the dune system in the project area. Addition of a beach and dune system will provide increased foraging habitat for many small birds, mammals, and reptiles as well as protection from storm waves and tides for coastline residents and infrastructure.

### **4.2 Fish and Wildlife Resources**

#### 4.2.1 No-Action (Status Quo)

The No-Action Alternative would have an impact on the vegetation resources within the project area. Continued erosion of the County's beaches would result in continued loss of habitat and eventually loss of vegetated dune areas. Also, the armoring measures that would be taken by residents along the beaches would result in impact to the plant and animal communities within these areas.

#### 4.2.2 Preferred Alternative

The Preferred Alternative would have no impact on the vegetation resources of the County. Sand placement on the beach would not impact the nearby dune communities. The placement of the material on the beach would act as a buffer to these communities from the surge associated with storm events.

Nelson (1989) reviewed the literature on the effects of beach renourishment projects on sand beach fauna and concluded...“Minimal biological effects result from beach nourishment. Some mortality of organisms may occur where grain-size is a poor match to existing sediments, however, recovery of the beach system appears to be rapid.” Nelson reviewed several studies on the most common beach invertebrates of the southeastern U.S., including the mole crab, the surf clam, *Donax* sp., and the ghost crab. None of the studies cited in Nelson (1989) showed significant or lasting impacts to any of the above species resulting from beach nourishment. Hackney et al. (1996) provide a more

recent review of the effects of beach restoration projects on beach infauna in the southeastern U.S. They also reviewed studies on the above species and agreed with Nelson's conclusions, with the caveats that construction should take place in winter months to minimize impacts, and that the sand used should be a close match to native beach sands. In most of the studies reviewed by the previously mentioned authors there was a considerable short-term reduction in the abundances of mole crabs, surf clams, and ghost crabs attributable to direct burial. Recruitment and immigration were generally sufficient to reestablish populations within one year of construction. The proposed projects would be constructed in the winter season, outside the recruitment window for these species, with a high-quality sand source containing a small percentage of fine material. These features would minimize adverse effects on most beach infauna (Hackney et al., 1996). The proposed project would not have any significant, long-lasting impacts on sand beach infaunal communities.

### **4.3 Threatened and Endangered Species**

#### **4.3.1 No-Action (Status Quo)**

The No-Action Alternative would adversely impact the threatened and endangered species utilizing these habitats. The continued erosion of the beaches in this critically eroded area may result in the armoring of additional shoreline in the near future. This loss of beach habitat would have the greatest impact on sea turtles that utilize this habitat for nesting. Nesting success may be diminished as the total area of suitable nesting habitat is reduced by erosion. In some areas, particularly in the vicinity of armoring structures, sea turtle nesting habitat may be lost completely. The hatching success of nests that are successfully laid would also be reduced, as nests on narrow, eroded beaches are more vulnerable to repeated inundation and washout. Loss of beach width would additionally reduce the habitat for the endangered southeastern beach mouse, which utilizes these littoral and vegetated beach habitats.

#### **4.3.2 Preferred Alternative**

Although they are not generally considered permanent residents of sandy beach areas, sea turtles are organisms of major concern, as they use the supralittoral zone for nesting activities and some species use nearshore hardbottom areas for foraging. Providing compatible beach fill would result in increasing the beach area available to nesting threatened and endangered species. The USFWS issued their Biological Opinion letter October 9, 1997 (Appendix E) and listed several issues and concerns in order to ensure that the likelihood of possible impacts to sea turtles and other species will be kept to a minimum. A detailed summary of these concerns can be found in the attached Fish and Wildlife Coordination Act Report and separate Biological Opinion (Appendix E). To ensure

that the project would have little to no affect on sea turtles, special precautions would be taken to protect nesting sea turtles and emerging hatchlings with prior approval of the USFWS.

Nests on renourished beaches generally hatch successfully (Nelson and Dickerson 1988). Herren (1999) found no significant difference in hatching success in the renourished area in the first or second season after the Sebastian Inlet sand transfer renourishment. Ecological Associates Inc. (EAI 1999) found lower overall hatch success on nourished beaches following construction compared to controls, but the differences were not statistically different. The EAI study did show changes in incubation environment, but these changes did not affect the hatching success. Both the Herren and EAI studies point to erosional losses of nests created low on the newly constructed berms as the primary source of impact. A proper relocation program could largely eliminate this source of impact.

Because of where the borrow areas are located, care must be taken by the dredge ship operator to ensure that there would be no collisions with migrating marine mammals such as the northern right whale (*E. alacialis*) or West Indian manatee. With heightened awareness of the possibility that marine mammals may be present in the project area and by following the various precautions mandated in the Marine Mammal Protection Act, the possibility of inadvertently harming any marine mammal would be significantly reduced.

#### **4.4 Offshore Borrow Area Resources**

##### **4.4.1 No-Action (Status Quo)**

The No-Action Alternative would have no impact on the native characteristics of the offshore borrow area or any of its associated resources.

##### **4.4.2 Preferred Alternative**

Dredging of the borrow area would remove a relatively small portion of the existing top layer of habitat and thereby change the topography of the benthic surface. This would have temporary impacts on the benthic infaunal communities. Most studies on the infauna of sand borrow areas have shown little lasting impact in terms of species diversity and total abundance or density. Previous studies have shown dredging to have little long-term adverse effects on benthic habitats (Culter and Mahadevan 1982; Saloman et al., 1982; Hammer et al., 2000). Johnson and Nelson (1985) found that abundance and species richness returned to near normal 9 to 12 months after dredging off Fort Pierce Inlet in the same general location as the proposed Project. Similar results were reported by Saloman et al. (1982) off Panama City Beach, Florida, and by Tuberville and Marsh (1982) in Broward County. Benthic infauna would be expected to start re-colonizing these areas within days

after dredging is completed. Care should be taken not to construct an abrupt pit in the bottom and to dredge a cut with shallow sloping sides. This would aid in the re-colonization of benthic organisms. Barry A. Vittor and Associates, Inc. (1999) found that the amount of silt/clay present within sediments and the location offshore could also affect recovery time of benthic infauna. Since very little fine material (silt/clay) is present within the borrow area, recovery should occur rapidly. Infaunal assemblages within the study area should become re-established within one to two years following dredging.

Recent concern over the habitats that comprise the Capron Shoal area have been addressed in the literature, especially concerning potentially unique bryozoan communities that may utilize these offshore sand habitats (Winston and Hakansson 1986; Brostoff, 2002) (Appendix C). A petition was also filed in February 1999 to list new species of bryozoans discovered at Capron Shoal as endangered species under the Endangered Species Act (ESA) (Federal Register, Vol. 64, Number 103). The NMFS stated in response to this petition that "...the petition does not present substantial scientific or commercial information to warrant the petition action...", furthermore the NMFS stated in the same Federal Register document that:

"NMFS acknowledges that dredging Capron Shoal will temporarily remove a portion of the bryozoan population and some features that make this area suitable habitat for bryozoans. However, NMFS biologists are confident that new surfaces exposed by dredging, when reshaped by natural events such as prevailing currents and wave action, will support the recolonization of the site by bryozoan larvae. The source for these bryozoan larvae will be undredged portions of Capron Shoal, nearby shoals, and the Indian River Lagoon system."

## **4.5 Hardbottom Habitats and Reefs**

### **4.5.1 No-Action (Status Quo)**

The No-Action Alternative would have no effect on the hardbottom or reef habitats within the study area.

### **4.5.2 Preferred Alternative**

Approximately 7.8 acres of hardbottom habitat currently exists within the design equilibrium toe-of-slope of the 50-foot beach-fill berm. Nearshore reefs are vulnerable to direct burial from beach-fill. Furthermore, nearshore reefs also face the potential of being slowly buried after beach nourishment as the beach fill relaxes and seeks equilibrium with the area and the nearshore zone becomes elevated with resuspended material. Courtenay et al. (1974) suggested that destruction of suitable

*habitat* might be more significant than direct impacts on nearshore organisms. An accurate estimate of the environmental impact associated with the nearshore hardbottom area is difficult, if not impossible, to predict due to natural reef exposure fluctuations caused by continuous shifting sand in this highly dynamic area. However, the nearshore habitat to be most acutely affected is already stressed by heavy surf, high turbidities, and biological factors. As the Sea Byte Report (1994) infers, and field observation by Taylor Engineering has verified, hardbottom/reef relief, number of fishes, encrusting organisms, and several other observed biological-value indicators increase with distance from the shore and south of the project area. Accordingly, sedimentation of beach fill on nearshore hardbottom is not expected to have any long-term adverse impact to either photosynthetic or filter-feeding organisms. Since these organisms currently live in dynamic conditions, resuspension of material in these areas is not an uncommon phenomenon. In fact, the sabellarid worm reefs rely on resuspended sand in order to enlarge their colonies (Barnes 1974; Kirtley 1993).

Although long-term adverse impacts to biological communities are not anticipated, the USACE is prepared to mitigate for any short-term effects this project may have on hardbottom habitats.

## **4.6 Essential Fish Habitat**

### 4.6.1 No-Action (Status Quo)

The No- Action Alternative would have no adverse effects on EFH within the study area.

### 4.6.2 Preferred Alternative

Implementation of the beach nourishment associated with the Preferred Alternative would impact hardbottom areas, open sand habitat, and water-column habitat designated as EFH. The hardbottom communities offshore of St. Lucie County have been designated as EFH-HAPC by the SAFMC (1998). There would be a total of 7.8 acres of hardbottom habitat directly impacted by the proposed nourishment. Temporary impacts similar to those described above would also occur. These temporary impacts would include displacement of fishes and some invertebrates from nearshore areas during dredging and fill placement. Other impacts include temporary decrease in water quality due to turbidity and decreased benthic primary productivity until the completion of nourishment.

## **4.7 Historic Properties**

Archival research and field investigations have been conducted for the area that will be affected by the proposed SPP. Only one magnetic target was identified during a remote sensing survey of the

Capron Shoal study area. This target is believed to be a single object of modern origin and not a historic property eligible for inclusion in the National Register of Historic Places.

Based on the archival research and field investigations it is the District's determination that placement of sand on the beach would not have an adverse effect on historic properties included in or eligible for inclusion in the National Register of Historic Places. SHPO concurred with this determination. The draft report, *Submerged Historic Properties Survey Capron Shoal Borrow Site, Fort Pierce Beach Erosion Control Project, St. Lucie County, Florida*, was coordinated with SHPO by a letter dated December 18, 1997. As stated in that letter, it is the District's determination that the proposed shore protection project would not affect historic properties included in or eligible for inclusion in the National Register. SHPO concurrence with this determination has been requested and is expected.

#### **4.8 Socioeconomics**

In general, socioeconomic losses result from potential storm damages to buildings and land along the Atlantic coastline, as well as to losses in revenue to the economy of the area. The shoreline recession can potentially undermine oceanfront structures. If the shoreline recession is allowed to continue, there will be incidental repercussions to tourism and the local economy.

The 1998 GRR/EA assessed the economic justification of the project through an evaluation of expected damages from storms and an examination of the National Economic Development (NED) benefits associated with reductions in storm damages that would result from the project. The socioeconomics associated with the proposed project are essentially the same as those described in USACE, 1998. With the No-Action Alternative the shoreline would continue to erode resulting in the further degradation or loss of shorefront property values.

#### **4.9 Aesthetics**

Aesthetics of the area would be temporarily degraded during the period of construction with the generation of engine noise, exhaust fumes, and increased turbidity. The presence of construction equipment would temporarily detract from the visual aesthetics of the area, but would be offset somewhat by the natural curiosity of some individuals to observe the operation and its progress. Once completed, the project would result in an overall improved aesthetic quality. The placement of the sand would restore the natural appearance of the shore, which has been severely eroded by high tides, storm generated waves, and high winds.

The sand color of the post-construction beach may be slightly different from the current beach, and may detract from its aesthetic quality. This would be of short duration, as natural working of the dredged sediments by sunlight, rain, and wind would lighten the sediments over time. Restored

beach and dune areas will help restore the natural appearance and thus the aesthetic resources of the Fort Pierce beaches.

With the No-Action Alternative the shoreline would continue to erode, resulting in the further loss of the existing shoreline and additional reductions in the visual aesthetics of the area.

#### **4.10 Recreation**

During nourishment activities, the use of the beach for recreational purposes near the construction site would decrease. The use of the beach in the immediate area of the discharge pipe and equipment would be restricted for public safety. Many visitors would seek quieter areas for sunbathing or swimming. As portions of the renourished beach come available, use by the public would increase once again. Once the Fort Pierce beach renourishment project is complete, the beach would contain a larger sand berm/beach, which will provide more space for both active and passive saltwater recreation activities. A wider sand berm along the beach would provide for improved family oriented recreation. The beach park areas would regain their appeal, as the entire project area will be restored to its original pre-eroded state.

There would be a temporary adverse effect on recreational fishing in the immediate area of beach fill operations and at the borrow site. Fishing would not be affected outside the area of immediate construction. Nearshore snorkeling and scuba diving activities may also be impacted by increased turbidity during construction activities and shortly thereafter. Long-term adverse effects on these activities are not anticipated. Boat operations may be detoured during construction; however, the extent of detours and the time frame of operations would render impacts insignificant.

With the No-Action Alternative the shoreline would continue to erode resulting in the further degradation or loss of shorefront property, thereby affecting recreation. There would be no effects on fishing, snorkeling, or scuba diving with the No-Action Alternative.

#### **4.11 Coastal Barrier Resources**

The purpose of the Coastal Barrier Resources Act is to minimize (1) the loss of human life; (2) wasteful expenditure of federal funds; and (3) damage to fishes, wildlife, and other resources associated with the coastal barriers along the Atlantic coast. The Act would restrict future federal expenditures and financial assistance, which have the effect of encouraging development of coastal barriers. There are no designated Coastal Barrier Resource Act Units located within or adjacent to the project area.

#### **4.12 Water Quality**

The project is expected to cause temporary and insignificant increases in turbidity at the borrow area and intertidal swash zone seaward of the beach. Due to the relatively low silt content and high density of the material, sand is expected to quickly fall out of the water column and only a short-term increase in turbidity is expected. The State of Florida water quality regulations require that water

quality standards not be violated during dredging operations. The standards state that turbidity outside the mixing zone shall not exceed 29 NTU above background. Results from turbidity monitoring at previous beach nourishment projects have shown that the turbidity did not exceed the standard. Various protective measures and monitoring programs would be conducted during construction to ensure compliance with state water quality criteria. Should turbidity exceed state water quality standards as determined by monitoring, the contractor would be required to cease work until conditions return to normal. The Preferred Alternative has been evaluated in accordance with Section 404 of the Clean Water Act and a 404(b) (1) Evaluation Report (Appendix A). The use of other submerged borrow sites would have similar turbidity impacts on water quality as using the proposed borrow area. Use of upland sources would not have the impacts associated with dredging an offshore borrow area, but would have the same impact along the beach fill area. A mixing zone variance will be requested from the state for this project, and will be included as an attachment to the final EIS.

#### **4.13 Hazardous, Toxic, and Radioactive Waste**

There are no known hazardous, toxic, or radioactive waste sites or producers in the project area that would be affected by the chosen alternative action. No impacts associated with the disturbances of such sites are anticipated from either the Preferred Alternative or No-Action Alternative. The Preferred Alternative will not involve placement, use, or storage of hazardous and toxic materials in or near the project area. There is a potential for hydrocarbon spills with dredging and construction equipment in the area, but accident and spill prevention plans delineated in the contract specifications should prevent most spills. All wastes and refuse generated by the project would be properly stored and removed when the project activities are completed.

#### **4.14 Air Quality**

The short-term impacts from emissions by dredges and other construction equipment associated with the project would not significantly affect air quality. Because the period of construction activity is brief, exhaust emissions from vehicles, vessels, and construction equipment associated with the project would have a temporary and localized effect on air quality. Because offshore sea breezes would disperse pollutants, there would be no long-term accumulation of particulates in the project area. No air quality permits are required for this project.

#### **4.15 Noise**

The immediate project area may experience an increase in noise levels during the beach fill construction phase. Construction equipment would be properly maintained in order to minimize the

effects of noise. The elevated noise levels would be localized and be of short duration because of the brief, temporary nature of the construction activity.

#### **4.16 Public Safety**

As a public safety measure, beach and water-related recreation in the immediate vicinity of the discharge pipe would be prohibited during project construction. Likewise, water-related activities near the dredge site would also be prohibited during project construction. Recreational access to these areas would return to pre-construction conditions following completion of the project. Long-term effects are not anticipated. The No-Action Alternative would assume continued erosion, allowing the surf zone to advance landward, with the potential of adverse impacts to public safety due to storm damage.

#### **4.17 Energy Requirements and Conservation**

Energy requirements for the proposed alternatives would be confined to fuel for the dredge, labor transportation, and other construction equipment. The No-Action Alternative could allow conditions to develop that may endanger coastal property from storm surges and wave erosion during storm events. On-site preventive measures and post-storm clean-up under the No-Action Alternative could require greater energy expenditures that would be required by the Preferred Alternative.

#### **4.18 Natural Depletable Resources**

The beach quality sand obtained from the borrow area would be the depletable resource. Using sand from the proposed borrow area would reduce the quantity of beach-quality sand in the borrow area. The No-Action Alternative would allow the sand in the borrow area to remain relatively intact, although redistribution would occur with natural cycles and storm events.

#### **4.19 Scientific Resources**

There are no known impacts to scientific resources associated with the Preferred Alternative or the No-Action Alternative.

#### **4.20 Reuse and Conservation Potential**

There is no potential for reuse associated with the proposed project activities, therefore this is not applicable to the proposed renourishment project. Energy requirements for the Preferred Alternative would be confined to fuel for the dredge, vehicles, and other construction equipment.

#### 4.21 Cumulative Impacts

As defined in this EIS, the proposed action will temporarily cover 7.8 acres of nearshore hardbottom habitat. The project will have minimal short-term water quality impacts and will not adversely impact any federally or state listed species. The project will restore and protect dry nesting beach, thereby improving and restoring available nesting area for federally protected sea turtles. For purposes of this assessment, the author used the Council on Environmental Quality’s (CEQ) regulations (40 CFR 1500-1508) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.) to define cumulative effects as follows:

*The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or non-federal) undertakes such other actions (40 CFR 1508).*

Direct impacts from past and the proposed beach restoration activities on the nearshore hardbottom resources within St. Lucie County/Fort Pierce area are summarized in Table 3. A summary of impacts and mitigation involved with this project is also included in this section.

**Table 3 Past and Proposed Future Projects and Direct Hardbottom Impacts Within Fort Pierce/St. Lucie County**

| <b>Projects</b>                  | <b>Type</b>                   | <b>Funding Approved</b> | <b>Permitted</b> | <b>Linear Distance</b> | <b>Hardbottom Impact</b> |
|----------------------------------|-------------------------------|-------------------------|------------------|------------------------|--------------------------|
| <b>Past (FY95-99)</b>            | Inlet Transfer<br>Nourishment | Yes                     | Yes              | N/A                    | N/A                      |
|                                  |                               | Yes                     | Yes              | 1.3 miles              | 9 acres                  |
| <b>Proposed Future (FY03-07)</b> | Renourishment                 | No                      | No               | 2.3 miles              | None                     |

##### 4.21.1 Summary of Impacts to Hardbottom Habitat

Impacts to the nearshore hardbottom habitat and associated biological communities include both direct and indirect impacts. Direct impacts refers to the area of hardbottom habitat located landward of the design toe-of-slope of beach-fill that will be covered by the placement of sand on the beach. Indirect impacts include loss of hardbottom habitat seaward of toe of fill line that could be indirectly tied to the nourishment projects, through transport from the beach and deposition on hardbottom

habitat offshore, scouring and loss of biotic cover from sand in suspension, and the reduction in biotic cover on rock outcrops.

The direct habitat lost since the 1994 baseline mapping of the nearshore hardbottom habitat was calculated by spatially analyzing the pre and post-nourishment locations of hardbottom habitat landward of the equilibrium toe of fill limits. Based on this analysis, 1.7 acres of hardbottom habitat and associated biological community were directly lost as a result of the 1995 and/or 1999 projects. This loss included higher quality habitat characterized as exposed rock with >50 percent algal-sponge community cover. Changes in habitat which occurred outside the fill limit included a loss of 8.4 acres of exposed rock with >50 percent cover or 10 to 50 percent cover immediately seaward of the equilibrium toe of fill, reduction in 52.2 acres of habitat originally classified as exposed rock with >50 percent cover to 10 to 50 percent cover to a cover type of sand, <10 percent exposed rock. Due to the natural dynamic changes inherent to nearshore rock habitat, most of the observed spatial changes in cover types may not be indirect impacts; however, it is quite probable that the 8.4 acres of habitat indirectly lost immediately seaward of the equilibrium toe line is a result of stabilization of the beach profile and movement and redeposition of sand from the beach seaward over the rock outcrops.

Observed spatial changes from 1994 to 2000 in the substrate cover types could be the result of seasonal differences in the occurrence of sessile marine invertebrates, temporary or seasonal deposition of a thin layer of sand over the level hardbottom platform, the frequency and severity of storm events since the restoration projects, or other physical factors influencing the ephemeral exposure of hardbottom and biotic cover. Since the origin of the sand now covering formerly exposed hardbottom habitat is unknown, temporal changes in substrate cover types discussed above cannot be attributed to beach restoration projects only. While some of these observed changes may in fact be considered indirect impacts from the beach restoration projects, the exact area of impact cannot be determined with the available information. Periodic nourishment with a 50-foot protective berm over a 1.3-mile length is the project's Preferred Alternative because it fulfills the project's goal and objectives while minimizing the environmental impacts. Upon completion of the renourishment project, the USACE will conduct a survey of the nearshore hardbottom to assess the area buried by sedimentation. In addition, this survey will assess the secondary effects of sedimentation on marine life such as corals, sponges, fishes, and crustaceans.

Indirect changes in habitat cover type that occurred outside the fill limit included a loss of 8.3 acres of exposed hardbottom with >50 percent cover and 10 to 50 percent cover immediately seaward of the equilibrium toe of fill, and a reduction in 52.2 acres of habitat originally classified as exposed hardbottom with >50 percent cover or 10 to 50 percent cover to a cover type of sand, <10 percent exposed hardbottom. An area of 8.4 acres classified as sand, <10 percent exposed rock in 1994 was found to be exposed rock with 10 to 50 percent cover in 2000.

Whether these changes in cover type can truly be considered indirect impacts is questionable due to the natural dynamic changes inherent to nearshore hardbottom habitat. However, it is probable that

the 8.3 acres of habitat indirectly lost immediately seaward of the equilibrium toe-of-slope line is a result of stabilization of the beach profile and movement and redeposition of sand from the beach seaward over the rock outcrops. The only persistent features are the 3-foot ledges at the inner and outer reaches of hardbottom platforms. Changes in the classification of cover types could be the result of seasonal deposition of a thin layer of sand over the level rock platform, the frequency and severity of storm events since the restoration projects, or other physical factors influencing the ephemeral exposure of hardbottom and biotic cover. Since the original location of the sand residing over the former hardbottom habitat with biotic cover during the 2000 survey is unknown, these changes in substrate cover types discussed above can not solely be attributed to the beach restoration projects. While some of these observed changes might, in fact, be considered indirect impacts from the beach restoration projects, the exact area of impact cannot be determined with the available information.

#### 4.21.2 Summary of Impacts to the Beach and Sand Bottom Habitat

There may be some displacement of small mammals, reptiles, and birds that use the beach habitat for foraging or nesting. However, this displacement will be short-term and there are ample areas with similar characteristics north and south of the project area that can be utilized during renourishment activities. Upon completion of the project, naturally invading and planted grasses and other vegetation will provide for additional foraging and nesting habitat for those species temporarily displaced. Increased turbidity levels produced from the placement of fill material onto the beach is not expected to have a significant effect on shorebirds, waterfowl, and wading birds.

The removal of sediment from the proposed borrow area will directly impact the sand habitat including both the infaunal and epifaunal community. Initially this will result in a significant, but localized reduction in the abundance, diversity, and biomass of the immediate fauna. The fauna most affected will include predominately invertebrates such as crustaceans, echinoderms, mollusks, annelids, as well as finfish larvae. Species affected most are those that have limited capabilities or are incapable in avoiding dredging activities such as the surf clam. Crustaceans such as the ghost crab, mole crab, and the fiddler crab are all highly motile crustaceans and consequently have the ability to avoid dredging related activities.

Studies conducted by Reilly and Bellis (1978, 1983) revealed that mortality levels regarding these crustaceans was minimal because they were able to avoid the nourished area. Six weeks after a nourishment project was completed in Panama City, Florida, Saloman et al. (1982) observed no significant numerical differences in the biological communities between areas where fill material was deposited and not. In addition, other studies have shown that populations of the surf clam and certain species of invertebrates can become numerically abundant within a period of six months post fill deposition (USACE 1998b). Also, benthic communities examined near Hallandale Beach, Florida seven years after a nourishment project, revealed no short-term effects of the infaunal

community (Marsh and Turbeville 1981). Factors that enhance this rapid recovery period include high fecundity and rapid turnover rates of a majority of the intertidal organisms.

Several other studies have examined the effects of beach nourishment on benthic fauna and sediments. Nelson (1989) reviewed literature regarding the effects of beach nourishment on beach sand fauna and concluded that minimal biological effects occurred. Mortality of some organisms may occur where grain size is a poor match to existing sediments; however, recovery was rapid. Common beach invertebrates of the southeastern U.S. including the mole crab, the surf clam, and the ghost crab did not exhibit any significant impacts resulting from beach nourishment (Nelson 1989). In a review of beach nourishment effects on beach fauna, Hackney et al. (1996) came to the same conclusions as Nelson (1989), with the suggestion that beach nourishment should take place during the winter months to minimize the impacts, and that the sand should match as closely as possible.

In a beach renourishment project in Panama City Beach, Florida, Culter and Mahadevan (1982) concluded that the initial destruction of the benthic community at the borrow sites was followed by a rapid recovery which was virtually complete after one year. There were minor differences in sediment parameters, but no differences in fauna in or out of the borrow sites were observed. The benthic community at this site consisted primarily of polychaetes, bivalves, gastropods, amphipods, brachyurans, and amphipods. No species that required a permanent attachment site and only a few tube dwelling organisms were present at the site. The overall findings were that no long-term adverse environmental effects as a result of beach renourishment existed within the nearshore area and that no adverse conditions were present at the borrow sites.

In another study conducted along Panama City Beach, Saloman et al. (1982) observed an immediate decline in the benthic community followed by a rapid recovery within 8-12 months as indicated by species richness, abundance, and diversity. The benthic community was composed of primarily annelids, arthropods, mollusks, and to a much lesser extent platyhelminths, nematodes, echinoderms, and hemichordates. After one year post-dredging, some short-term ecological changes including minor alterations in sediment, and a small decline in the diversity and abundance of benthic invertebrates were reported. However, no long-term effects were observed regarding the benthic community, sediments, and water quality along the shore and in and around the borrow sites.

The removal of sediment from the proposed borrow area will directly impact the benthic habitat including both the infaunal and epifaunal community. Initially this will result in a significant, but localized reduction in the abundance, diversity, and biomass of the immediate fauna. Species affected most are those that have limited capabilities or are incapable in avoiding the dredging activities. The fauna most affected will include predominantly invertebrates such as echinoderms, mollusks, and annelids, as well as finfish larvae. However, due to the relatively small area that will be impacted as viewed on a spatial scale, impacts to the benthic community will be minimal due to the relatively short period of recovery regarding infaunal communities following dredging activities (Culter and Mahadevan 1982; Saloman et al., 1982). Consequently, due to the relatively small area that will be impacted in the proposed project as viewed on a spatial scale, impacts to the infaunal community

will be minimal and short-term. Adjacent areas not impacted will most likely be the primary source of recruitment to the impacted area. Implementing best management practices will assist in minimizing any impacts. To further minimize any adverse effects to the fauna common in these areas, the proposed project will utilize fill material from a borrow site containing a high quality source of sand with a small percentage (2 percent) of fine silt/clay material. In summary, the proposed project will have no short-term adverse effects regarding the supralittoral and intertidal zone organisms in the Fort Pierce Beach nourishment project area.

#### 4.21.3 Mitigation

Although long-term adverse impacts to biological communities are not expected, the USACE will mitigate based on the short-term effects the project will have on hardbottom habitat. The approved FDEP plan for the 1.3-mile Fort Pierce beach project nourished in 1998-99 involved a combination of 2.3 acres of hardground habitat creation, revegetation of approximately 3.7 acres of the upper beach along the 1 mile beach extension, and removal of exotic vegetation on a total of 3 acres on Coon Island. The revegetation of the upper beach and removal of exotic vegetation have been completed along with the planting of 1 acre of natural vegetation in selected areas which serve as recruitment stock where exotics have been removed. As the hardground habitat creation has not yet been done the FDEP has required 5 acres of nearshore hardbottom habitat creation outside the area of beach nourishment effects.

#### **4.22 Unavoidable Adverse Impacts**

Although there is not expected to be any long-term adverse impact to biological communities, short-term effects to an estimated 7.8 acres of hardbottom habitat are unavoidable.

#### **4.23 Environmental Commitments**

Nearshore hardbottom habitats unavoidably affected by beach fill placement will be appropriately mitigated. No known long-term adverse effects from previous project area nourishment activities have occurred. Measures to avoid, reduce, or mitigate potential fish and wildlife resource effects from any future project construction will be coordinated with appropriate State and Federal agencies. The U.S. Army Corps of Engineers and contractors commit to avoiding, minimizing, or mitigating for adverse effects during construction activities. The commitments to ensure the safety of threatened and endangered nesting sea turtles are discussed in more detail in the U.S. Fish and Wildlife Service's October 28, 1997 Coordination Act Report and October 9, 1997, Biological Opinion contained within USACE, 1998.

#### **4.24 Compliance With Environmental Requirements**

Compliance with Federal Statutes, Executive Orders, and polices has been considered for the three project alternatives. The following table includes a list of the various requirements and the compliance status for each of the alternatives.

**Table 4 Compliance with Environmental Requirements and Protection Statutes**

| <b>FEDERAL STATUTES</b>   | <b>Alternative 3A<br/>(Preferred<br/>Alternative)</b> |
|---|---|
| Archeological and Historic Preservation Act<br>As amended, 16 U.S.C. 469, <u>et seq.</u>                              | FC  |
| Clean Air Act, As amended, 42 U.S.C. 7401, <u>et seq.</u>   | FC  |
| Clean Water (Federal Water Pollution Control Act)<br>As amended, 336 U.S.C. 1251, <u>et seq.</u>                      | FC  |
| Endangered Species Act, As amended, 16 U.S.C. 1531, <u>et seq.</u>  | PC  |
|   |   |
| Fish and Wildlife Coordination Act<br>As amended, 16 U.S.C. 661, <u>et seq.</u>                                       | FC  |
|   |   |
| National Environmental Policy Act<br>As amended, 42 U.S.C. 4321, <u>et seq.</u>                                       | FC  |
| National Historic Preservation Act<br>As amended, 16 U.S.C. 470a, <u>et seq.</u>                                      | FC  |
| Rivers and Harbors Act, 33 U.S.C. 401, <u>et seq.</u>   | FC  |
| Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451, <u>et seq.</u>                                       | FC  |
| Marine Mammal Protection Act of 1972, 16 U.S.C. 1361, <u>et seq.</u>  | FC  |
|   |   |
|   |   |
| Watershed Protection and Flood Prevention Act,<br>16 U.S.C. 1001, <u>et seq.</u>                                      | FC  |
|   |   |
| Submerged Land Act of 1953, 43 U.S.C. 1301, <u>et seq.</u>  | FC  |
| Coastal Barrier Resources Act of 1982, 16 U.S.C. 3501, <u>et seq.</u><br>And Coastal Barrier Improvement Act of 1990. | FC  |
|   |   |
|   |   |
| Magnuson-Stevens Fishery Conservation and Management Act,<br>as amended, 16 U.S.C. 1801 <u>et seq.</u>                | FC  |
|   |   |
| <b>EXECUTIVE ORDERS, MEMORANDA, ETC.</b>  |   |
| Floodplain Management (E.O. 11988)  | FC  |
| Protection of Wetlands (E.O. 11990)   | FC  |
|   |   |
| Environmental Justice (E.O. 12898)  | FC  |

FC - full compliance; PC – partial compliance; NA - not applicable

## 5.0 LIST OF PREPARERS

| <b>Name</b> | <b>Affiliation</b>             |
|-------------|--------------------------------|
| Jerry Cordy | Dial Cordy and Associates Inc. |
| Lee Swain   | Dial Cordy and Associates Inc. |
| Jason Croop | Dial Cordy and Associates Inc. |
| Jeff Howe   | Dial Cordy and Associates Inc. |
| Mike Loden  | Dial Cordy and Associates Inc. |
| Mike Rice   | Dial Cordy and Associates Inc. |
| Jason Evert | Dial Cordy & Associates, Inc.  |
| Bill Lang   | U.S. Army Corps of Engineers   |

## **6.0 PUBLIC INVOLVEMENT**

### **6.1 Scoping and Draft EIS**

A Notice of Intent (NOI) to prepare a draft of this EIS appeared in the Federal Register on **May 31, 2002**. In addition, the NOI was mailed to interested and affected parties by letter dated August 26, 2002. A copy of the letter and NOI are in Appendix F.

### **6.2 Agency Coordination**

Agency coordination letters are in Appendix F.

### **6.3 Comments Received and Response**

## 7.0 INDEX

- Affected Environment, 19  
Algae, 22, 30  
Alternative 1, 13, 16  
Alternative 2, 14, 16  
Alternative 3, 14, 50  
Atlantic Coquina Clam, 20  
Atlantic Fiddler Crab, 20  
Australian Pine, 19  
Bay Bean, 19  
Beach Bean, 19  
Beach Morning Glory, 19  
Beach Star, 19  
Biological Opinion, 37, 49  
Blue Crab, 31  
Bryozoan, 10, 24, 30, 39  
Capron Shoals, 1, 10, 13, 14, 16, 24, 25, 35, 39, 40, 41  
Coconut Palm, 19  
Dune Panic Grass, 19  
Essential Fish Habitat, 31, 40  
Florida Department of Environmental Protection, 10, 14, 18, 32, 49  
Florida Fish and Wildlife Conservation Commission, 21  
Florida State Historic Preservation Officer, 35, 40  
Fort Pierce Inlet Jetty, 10, 13, 14  
General Design Memorandum, 16, 18  
General Re-Evaluation Report, 14, 16, 41  
Ghost Crab, 20, 36, 47, 48  
Green Turtles, 20, 22, 30  
Grouper, 31  
Hutchinson Island, 19, 24, 32  
Indian River Lagoon, 19, 21, 22, 33, 34, 39  
Judith Winston et. al., v. Lt. Gen. Joe N. Ballard, 10  
Leatherback Turtle, 20, 21, 23  
Loggerhead Turtle, 20, 21  
Manatee, 23, 38  
Mean High Water, 13  
Mean Low Water, 13  
Mole Crab, 20, 36, 47, 48  
Monument, 10, 14  
National Environmental Policy Act, 10, 45, 50  
National Marine Fisheries Service, 21, 39  
No-Action Alternative, 13, 19, 36, 37, 38, 39, 41, 42, 43, 44  
Northern Right Whale, 24, 38  
Porkfish, 31  
Sea Bass, 31  
Sea Grapes, 19  
Sea Lavender, 19  
Sea Oats, 19, 23  
Sea Turtles, 20, 21, 37, 45, 49  
Sheepshead, 31  
Shore Protection Project, 1, 10, 13, 19, 40  
Snapper, 31  
Southeastern Beach Mouse, 23, 37  
Spadefish, 31  
Spiny Lobster, 31  
Statewide Nesting Beach Survey, 21  
Stone Crab, 31  
Surf Clam, 36, 47, 48  
Surfside Park, 10, 14  
Temporary Restraining Order, 10  
U.S. Army Corps of Engineers, 1, ii, 10, 13, 16, 18, 35, 40, 41, 46, 47, 49, 51  
USFWS Coordination Act Report, 19, 37, 49

## 8.0 REFERENCES

- Barnes, R.D. 1974. Invertebrate Zoology. Third Edition. W.B. Saunders Company. Philadelphia.
- Barry A. Vittor and Associates, Inc. 1999. Pre- and post-dredging monitoring of macroinvertebrate assemblages at a borrow area located offshore of Coney Island, New York: 1992-1998. Data Synthesis. Prepared for the U.S. Army Corps of Engineers, New York District. 10 pp. + app.
- Bowen, B., J.C. Avise, J.I. Richardson, A.B. Meylan, D. Margaritoulis, and S.R. Hopkins-Murphy. 1993. Population structure of loggerhead turtles (*Caretta caretta*) in the northwestern Atlantic Ocean and Mediterranean Sea. *Conservation Biology* 7 (4):834-844.
- Brostoff, W. N. 2002. Interstitial bryozoan fauna from Capron Shoal, Florida and adjacent areas: final report. Report to the U.S. Army Corps of Engineers, Jacksonville, Florida. 29 pp.
- Bustard, H.R., P. Greenham, and C. Limpus. 1975. Nesting behavior of loggerhead and flatback turtles in Queensland, Australia. *Proc. K. Ned. Acad. Wet., Ser. C Biol Med Sci.* 78(2):111-122.
- Carr, A. 1986. Rips, FADS, and little loggerheads. *Bioscience.* 36:92-100.
- Carr, A., M.H. Carr, and A.B. Meylan. 1978. The ecology and migrations of sea turtles, 7. The West Caribbean green turtle colony. *Bull. Am. Mus. Nat. Hist.* 162(1):1-46.
- Coyne, M. 1994. Feeding ecology of subadult green turtles in south Texas waters. MS Thesis, Texas A&M University. 76pp.
- Culter, J.K. and S. Mahadevan. 1982. Long-term effects of beach nourishment on the benthic fauna of Panama City Beach, Florida. U.S. Army Corps of Engineers Coastal Engineering Research Center Miscellaneous Report No. 82-2. 57 pp.
- Ecological Associates Inc. 1999. Martin County beach nourishment project sea turtle monitoring and studies. 1997 annual report and final assessment. EAI, Jensen Beach, Florida.
- Edgren, R.A. 1959. Coquinas (*Donax variabilis*) on a Florida beach. *Ecology* 40:498-502.
- Ehrhart, L.M., W.E. Redfoot, and D.A. Bagley. 1996. A study of the population ecology of in-water marine turtle populations on the east central coast of Florida. Comprehensive Final Report to NOAA. NMFS. 164 pp.

- FFWCC. 2000. Statewide nesting beach survey program data available on the internet ([www.floridaconservation.org](http://www.floridaconservation.org)).
- Futch, C.R and S.E. Dwinell. 1977. Nearshore marine ecology at Hutchinson Island, Florida: 1971-1974. IX. Lancelets and fishes. Fla. Mar. Res. Pub. No. 25.
- Gilmore, R.G., C.J. Donohoe, D.W. Cooke, and D.J. Herrema. 1981. Fishes of the Indian River Lagoon and adjacent waters, Florida. Harbor Branch Foundation Tech. Report 41.
- Hackney, C.T., M.H. Posey, S.W. Ross, and A.R. Norris. 1996. A review and synthesis of data on surf zone fishes and invertebrates in the South Atlantic Bight and the potential impacts from beach nourishment. Report to the U.S. Army Corps of Engineers, Wilmington, North Carolina. 111 pp.
- Hammer, R.M., Thibault, T.D., and Vittor, B.A. 2000. Biological Report for the Offshore Borrow Region Associated with a Beach Restoration Project at the City of Gulf Shores, Alabama. Prepared for Olsen Associates, Inc. by Continental Shelf Associates, Inc. and Barry Vittor and Associates, Inc.
- Hartman, D.S. 1979. Ecology and behavior of the manatee (*Trichechus manatus*) in Florida. American Society of Mammalogists. Special Publication No. 5. 153 pp.
- Herren, R.H. 1999. The effect of beach nourishment on loggerhead (*Caretta caretta*) nesting and reproductive success at Sebastian Inlet, Florida. MS thesis, University of Central Florida. Orlando, FL.
- Humphrey, S.R. (Ed.). 1992. Rare and endangered biota of Florida: mammals.
- Johnson, R.O. 1982. The effects of dredging on offshore benthic macrofauna south of the inlet at Fort Pierce, Florida. MS thesis, Florida Institute of Technology Melbourne, Florida. 137 pp.
- Lindeman, K.C. and D.B. Snyder 1998. Nearshore hardbottom fishes of southeast Florida and effects of habitat burial caused by dredging. Fisheries Bulletin 97:508-525(1999).
- Lutz, P.O. and J.A. Musick. 1997. The Biology of Sea Turtles. CRC Marine Science Series. CRC Press Inc., Boca Raton, FL. 432 pp.
- Magnuson et al. (NRC). 1990. Decline of the Sea Turtles: Causes and Prevention. National Academy Press, Washington D.C.
- Marsh, G. A. and D. B. Turbeville. 1981. The environmental impact of beach nourishment: two studies in southeastern Florida. Shore and Beach 49:40-44.

- Meylan, A., B. Schroeder, and A. Mosier. 1995. Sea turtle nesting activity in the state of Florida, 1979-1992. Florida Marine Research Publications. 52. 51pp.
- Meylan, A.B., K.A. Bjorndal, and B.J. Turner. 1983. Sea turtles nesting at Melbourne Beach, Florida. II. Post-nesting movements of *Caretta caretta*. Biological Conservation 26:79-90.
- Moody, D.W. 1964. Coastal geomorphology and processes in relation to the development of submarine sand ridges off Bethany Beach, Delaware. Ph.D. dissertation, Johns Hopkins University. Baltimore, Maryland. 167pp.
- NMFS and USFWS. 1991a. Recovery Plan for the US Population of Loggerhead Turtles. NMFS. Washington D.C.
- NMFS and USFWS. 1991b. Recovery Plan for the US Population of Atlantic Green Turtles. NMFS. Washington D.C.
- National Research Council. 1990. Decline of the Sea Turtles: Causes and Prevention. National Academy Press. Washington.
- Nelson, D.A. and D.D. Dickerson. 1988. Effects of beach nourishment on sea turtles. Proceedings of the Beach Preservation Technology Conference '88. Florida Shore and Beach Preservation Association, Inc., Tallahassee, Florida. 285-293.
- Nelson, W. G. 1989. Beach nourishment and hardbottom habitats: The cause for caution. Proceedings of the 1989 National Conference on Beach Preservation Technology. Florida Beach and Shore Preservation Association. Tallahassee, Florida.
- Nelson, W.G. 1988. Sebastian Inlet rock outcrop reefs biological inventory study. Technical Report to Sebastian Inlet Commission. 86 pp.
- Nelson, W.G. 1985. Guidelines for beach restoration projects. Part I. Biological. Florida Sea Grant College. SGR-76. Gainesville
- Quantum Resources, Inc. 1999. Florida Power and Light Co. St. Lucie Plant annual environmental operating report (FPL-97). FPL, Juno Beach, Florida.
- Reilly, F. J. and V. J. Bellis. 1978. A study of the ecological impact on beach nourishment with dredged materials on the intertidal zone. Institute for Coastal and Marine Resources, East Carolina University Technical Report No. 4.
- Reilly, F. J. and V. J. Bellis. 1983. The ecological impact of beach nourishment with dredged materials on the intertidal zone. U. S. Army Corps of Engineers, Coastal Engineering Research Center. Miscellaneous Report No. 83-3.

- Saloman, C.H., S.P. Naughton, and J.L. Taylor. 1982. Benthic community response to dredging borrow pits, Panama City Beach, Florida. U.S. Army Corps of Engineers, Coastal Engineering Research Center, Fort Belvoir, VA, Miscellaneous Report No. 82-3. 138 pp.
- SeaByte Inc. 1994. Mapping and biological characterization of nearshore hardbottom habitats. Prepared for Coastal Technology Corporation, Vero Beach, FL.
- South Atlantic Fishery Management Council (SAFMC). 1998. Final Habitat Plan for the South Atlantic Region: Essential Fish Habitat Requirements for Fishery Management Plans of the South Atlantic Fishery Management Council: The Shrimp Fishery Management Plan, The Red Drum Fishery Management Plan, The Snapper Grouper Fishery Management Plan, The Coastal Migratory Pelagics Fishery Management Plan, The Golden Crab Fishery Management Plan, The Spiny Lobster Fishery Management Plan, The Coral, Coral Reefs, and Live/Hard Bottom Habitat Fishery Management Plan, The Sargassum Habitat Fishery Management Plan, and the Calico Scallop Fishery Management Plan. SAFMC. Charleston, SC, 457 pp.
- Turbeville, D.B. and G.A. Marsh. 1982. Benthic fauna of an offshore borrow area in Broward County. USACE Misc. Report No. 82-1. 42pp.
- U. S. Army Corps of Engineers (USACE). 1998a. General Re-Evaluation Report with Final Environmental Assessment. Jacksonville District, Corps of Engineers
- U. S. Army Corps of Engineers (USACE). 1998b. Fort Pierce Shore Protection Project: General Re-Evaluation Report with Environmental Assessment. Jacksonville District.
- U.S. Army Corps of Engineers (USACE). 1995. Fort Pierce Shore Protection Project, Reevaluation Report, Section 934 Study with Environmental Assessment. Jacksonville District.
- Winston, J. E. and E. Håkansson. 1986. The interstitial bryozoan fauna from Capron Shoal, Florida. American Museum of Natural History, No. 2865: 50 pp.
- Witherington, B.E. and L.M. Ehrhart. 1989. Status and reproductive characteristics of green turtles (*Chelonia mydas*) nesting in Florida. Proc. 2nd Western Atlantic turtle symposium. 351-352.
- Wyneken, J. and M. Salmon. 1992. Frenzy and post frenzy swimming activity in loggerhead, green, and leatherback hatchling sea turtles. *Copeia* (2): 478-484.

## **APPENDICES**

**Appendix A**  
**404(b) Evaluation**

**Appendix B**

**Florida Coastal Zone Management Program Federal Consistency Evaluation**

**Appendix C**

**Bryozoan Study**

**Appendix D**  
**Hardbottom Report**

**Appendix E**

**USFWS Coordination Act Report and Biological Opinion**

**Appendix F**

**Pertinent Correspondence and the Response to Draft EIS Comments**

## RESPONSE TO COMMENTS

The Corps received comment letters on the September 2002 Draft Environmental Impact Statement (DEIS), on Future Dredging of Capron Shoal for the Fort Pierce Shore Protection Project, St. Lucie County, Florida Environmental Assessment (EA) from the U.S. Environmental Protection Agency (EPA), the National Marine Fisheries Service (NMFS), the U.S. Department of the Interior (DOI) and the Department of Environmental Protection (DEP). We also received one e-letter from Mr. Bob Bangert on behalf of the Conservation Alliance of St. Lucie County.

**The Florida Department Environmental Protection** expressed concern that the current marine turtle protection and water quality provisions associated with this project would be applied to the work described in the DEIS. St. Lucie County has accepted responsibility for assuring that these measures will be implemented during all project phases. The Corps will incorporate in the project's specifications all U.S. Fish and Wildlife Service recently developed measures, as well as requirements contained in their October 9, 1997 Biological Opinion associated with Section 7 of the Endangered Species Act.

**The EPA, NMFS and the DOI** raised several issues previously discussed in the Corps' September 1998 General Re-Evaluation Report (GRR) with Final Environmental Assessment. The proposed project will be confined within the boundaries of, and will incorporate all environmental protection provisions which were included in the last renourishment completed in March of 1999. This EIS was specifically prepared to satisfy the provisions of the Settlement Agreement which committed the USACE to conduct additional NEPA analysis before beginning the next project nourishment, and to conduct additional studies, specific to nearshore hardbottoms and bryozoan communities at Capron Shoals. As this project is previously authorized all comments provided in 1998, and those currently recommended will be implemented to the degree possible according to previous project plans; and, the State Water Quality Certificate as specifically modified for this project, which will incorporate at least 5 acres of hardbottom mitigation habitat. Essential Fish Habitat and related issues will be addressed in a GRR and Environmental Assessment currently in preparation which proposes modifications of the current beach configuration with inclusion of several groin and breakwater structures.

**Mr. Bob Bangert on behalf of the Conservation Alliance of St. Lucie County indicated several concerns with the bryozoan studies conducted according to the Settlement Agreement.** The bryozoan study did not statistically prove much. However, we fulfilled

the terms and conditions of the joint stipulation in which we agreed to spend up to a certain amount of money addressing the issues. In fact we spent a lot more money and took longer than we were required by the joint stipulation.

We did not agree to do a study that would conclusively address whether these species are limited to Capron Shoal or are rare enough to afford some protection under the Endangered Species Act. It appeared very early on that these organisms are very difficult to collect and identify. A definitive study could well take years and cost millions of dollars. Meanwhile there is a clear and pressing need to place sand on the beach to protect property. Off-shore borrow is by far the most economical source of sand and whose is to say that other shoals would not also have one or more cryptic species of bryozoan which has not been discovered.

We recognize the difficulty in surveying these species and the possible risk and uncertainty associated with it. We recognize that there are organisms which have eluded discovery due to difficulty in collecting, observing, and identifying them. Some of these may be rare. Some may be fairly common. We just don't know. It would take time and dedication of substantial resources to make that determination.

At this time we feel we have neither the responsibility nor the resources to pursue this. These species have not been listed for protection under the Endangered Species Act. In compliance with the National Environmental Policy Act, we have considered the potential for these species being rare and unique in the decision concerning the continued use of Capron Shoal. The associated risk and uncertainty has been weighed against the benefits of the proposed action. Given the area of Capron Shoal and other nearby shoals that would not be impacted, it is unlikely that these species would be eliminated by the continued use of Capron Shoal (even if their distribution turned out to be limited to these shoals).



# Department of Environmental Protection

Jeb Bush  
Governor

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

David B. Struhs  
Secretary

October 25, 2002

Mr. James C. Duck, Chief  
Planning Division, Jacksonville District  
U. S. Army Corps of Engineers  
Post Office Box 4970  
Jacksonville, Florida 32232-0019

RE: Department of the Army – Jacksonville District Corps of Engineers – Draft Environmental Impact Statement – Future Dredging of Capron Shoal for the Fort Pierce Shore Protection Project – St. Lucie County, Florida  
SAI: **FL200208302750C** and **FL200209162887C**

Dear Mr. Duck:

The Florida State Clearinghouse, pursuant to Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated the review of the referenced Draft Environmental Impact Statement (DEIS) for the proposed shore protection project.

The Department's (FDEP) Bureau of Beaches and Wetland Resources indicates that state water quality certification in the form of a Joint Coastal Permit (JCP) was originally granted on May 11, 1998, to the St. Lucie County Erosion District for Capron Shoal dredging and initial Fort Pierce beach nourishment activities (Permit No. 0126215-001-JC). The potential environmental impacts of the proposed Fort Pierce beach renourishment project will be addressed in a modification of this JCP, water quality certification, and authorization to use sovereign submerged lands, pursuant to Chapters 161, 253 and 373, *Florida Statutes*. Final agency action on the permit modification will constitute the State of Florida's final consistency determination. For information on the JCP, modification application, and permitting requirements, please contact Mr. Martin Seeling at (850) 487-4471, ext. 104.

The Florida Fish and Wildlife Conservation Commission (FWC) notes that it is particularly important that the Section 7 consultation with the U. S. Fish and Wildlife Service and National Marine Fisheries Service be concluded and Incidental Take Authorizations be updated prior to final agency action on the permit application. FWC recommends that the DEIS include marine turtle impact minimization information, such as: recent geotechnical data for the proposed borrow site and native beach; construction and design templates that minimize scarping; beach lighting reduction assistance; and reef/hardbottom habitat mapping and biological surveys. For further information, please contact FWC Bureau of Protected Species Management staff (Ms. Robbin Trindell for turtle issues or Ms. Mary Duncan for manatee issues) at (850) 922-4330. Please refer to the enclosed FWC comments for additional details.

*"More Protection, Less Process"*

*Printed on recycled paper.*

Mr. James C. Duck  
October 25, 2002  
Page 2

The Department of State (DOS) indicates that they have reviewed sections 3.15 and 4.7 of the DEIS, both dealing with Cultural Resources. Based on the information provided, it is the opinion of the DOS that the proposed undertaking will have no effect on historic properties. Please see the enclosed DOS comments.

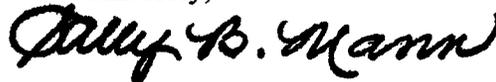
The Florida Department of Transportation's (FDOT) District Four Office in Ft. Lauderdale notes that beach filling appears to be proposed adjacent to State Road A1A near the Fort Pierce Inlet. Use of state right-of-way and activities on or adjacent to state transportation facilities will be subject to the FDOT's Utility Accommodation Manual (Document 710-020-001-c) and may require permits from FDOT. Please contact Mr. Clark Turberville, P.E., FDOT District Four Permits Engineer at (954) 777-4377 for additional information. Please refer to the enclosed FDOT comments.

The Treasure Coast Regional Planning Council (TCRPC) indicates that the proposed project is not in conflict with the goals and policies of its Strategic Regional Policy Plan, provided that proper mitigation is provided for impacts to sensitive marine resources. Regional Strategy 6.4.2 calls for the protection of beach, coastal, and marine resources for wildlife and recreation values. Please see the enclosed comments from the TCRPC.

Based on the information contained in the DEIS, JCP requirements, enclosed agency comments, and continued coordination of federal and state agency staff, the state has determined that, at this stage, the subject dredging/shore protection project is consistent with the Florida Coastal Management Program (FCMP). Please note that the proposed beach renourishment activities, as proposed in an application to modify FDEP Permit No. 0126215-001-JC, are being reviewed to determine the project's continued consistency with the FCMP. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews.

Thank you for the opportunity to review this project. If you have any questions regarding this matter, please contact Ms. Lauren P. Milligan at (850) 245-2163.

Sincerely,



Sally B. Mann, Director  
Office of Intergovernmental Programs

SBM/lm  
Enclosures

cc: Roxane Dow, DEP, BBWR  
Traci Wallace, FWC  
Janet Snyder Matthews, DOS  
Sandra Whitmire, FDOT  
Wynsum Hatton, TCRPC

DIVISIONS OF FLORIDA DEPARTMENT OF STATE  
Office of the Secretary  
Office of International Relations  
Division of Elections  
Division of Corporations  
Division of Cultural Affairs  
Division of Historical Resources  
Division of Library and Information Services  
Division of Licensing  
Division of Administrative Services



FLORIDA DEPARTMENT OF STATE  
Jim Smith  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

MEMBER OF THE FLORIDA CABINET  
State Board of Education  
Trustees of the Internal Improvement Trust Fund  
Administration Commission  
Florida Land and Water Adjudicatory Commission  
Siting Board  
Division of Bond Finance  
Department of Revenue  
Department of Law Enforcement  
Department of Highway Safety and Motor Vehicles  
Department of Veterans' Affairs

LM

Ms. Cindy Cranick  
Florida State Clearinghouse Coordinator  
Florida Department of Environmental Protection  
3900 Commonwealth Boulevard, Mail Station 47  
Tallahassee, Florida 32399-3000

October 14, 2002

RE: DHR No. 2002-09471 / Received by DHR: September 17, 2002  
SAI #: 200209162887C  
*Draft Environmental Impact Statement - Future Dredging of Capron Shoal for the Fort  
Pierce Shore Protection Project*  
St. Lucie County, Florida

Dear Ms. Cranick:

Our office received and reviewed the above referenced project 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*, Chapter 267, *Florida Statutes*, Florida's Coastal Management Program, and implementing state regulations, for possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archaeological value. The State Historic Preservation Officer is to advise and assist state and federal agencies when identifying historic properties, assessing effects upon them, and considering alternatives to avoid or minimize adverse effects.

We have reviewed sections 3.15 and 4.7, both dealing with Cultural Resources, of the referenced Draft Environmental Impact Statement. Based on the information provided, it is the opinion of this office that the proposed undertaking will have no effect on historic properties.

If there are any questions concerning our comments or recommendations, please contact Sarah Jalving, Historic Sites Specialist, by electronic mail at [sjalving@mail.dos.state.fl.us](mailto:sjalving@mail.dos.state.fl.us) or at 850-245-6333 or SunCom 205-6333. Thank you for your interest in protecting Florida's historic properties.

Sincerely,

*Frederick P. Gaska, Deputy SHPO*

*J* Janet Snyder Matthews, Ph.D., Director, and  
State Historic Preservation Officer

RECEIVED

OCT 17 2002

OIP/OLGA

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

Director's Office  
(850) 245-6300 • FAX: 245-6435

Archaeological Research  
(850) 245-6444 • FAX: 245-6436

Historic Preservation  
(850) 245-6333 • FAX: 245-6437

Historical Museums  
(850) 245-6400 • FAX: 245-6433

Palm Beach Regional Office  
(561) 279-1475 • FAX: 279-1476

St. Augustine Regional Office  
(904) 825-5045 • FAX: 825-5044

Tampa Regional Office  
(813) 272-3843 • FAX: 272-2340

DIVISIONS OF FLORIDA DEPARTMENT OF STATE  
Office of the Secretary  
Office of International Relations  
Division of Elections  
Division of Corporations  
Division of Cultural Affairs  
Division of Historical Resources  
Division of Library and Information Services  
Division of Licensing  
Division of Administrative Services



FLORIDA DEPARTMENT OF STATE  
Jim Smith  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

MEMBER OF THE FLORIDA CABINET  
State Board of Education  
Trustees of the Internal Improvement Trust Fund  
Administration Commission  
Florida Land and Water Adjudicatory Commission  
Siting Board  
Division of Bond Finance  
Department of Revenue  
Department of Law Enforcement  
Department of Highway Safety and Motor Vehicles  
Department of Veterans' Affairs

LM

Ms. Cindy Cranick  
Florida State Clearinghouse Coordinator  
Florida Department of Environmental Protection  
3900 Commonwealth Boulevard, Mail Station 47  
Tallahassee, Florida 32399-3000

September 21, 2002

RE: DHR No. 2002-08778 / Received by DHR: September 4, 2002  
SAI #: 200208302750C  
*Scoping Notice - Future Dredging of Capron Shoal for the Ft. Pierce Shore Protection Project*  
St. Lucie County, Florida

Dear Ms. Cranick:

Our office received and reviewed the above referenced project 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*, Florida's Coastal Management Program, and implementing state regulations, for possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archaeological value. The State Historic Preservation Officer is to advise and assist state and federal agencies when identifying historic properties, assessing effects upon them, and considering alternatives to avoid or minimize adverse effects.

We have reviewed the Scoping Letter for the proposed project referenced above, and note that the Jacksonville District Army Corps of Engineers is preparing a Draft Environmental Impact Statement document for the Proposed Future Dredging of Capron Shoal for the Ft. Pierce Shore Protection Project. In this document, environmental considerations will include effects on historical and archaeological resources. We look forward to receiving the Draft Environmental Impact Statement document and coordinating with the Jacksonville District Army Corps of Engineers regarding historic resources that may be impacted by this project.

If there are any questions concerning our comments or recommendations, please contact Sarah Jalving, Historic Sites Specialist, by electronic mail at [sjalving@mail.dos.state.fl.us](mailto:sjalving@mail.dos.state.fl.us) or at 850-245-6333 or SunCom 205-6333. Thank you for your interest in protecting Florida's historic properties.

Sincerely,

Janet Snyder Matthews, Ph.D., Director, and  
State Historic Preservation Officer

RECEIVED  
SEP 30 2002  
OIP/OLGA

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

- |   |  |   |   |
|---|--|---|---|
| <input type="checkbox"/> Director's Office<br>(850) 245-6300 • FAX: 245-6435          | <input type="checkbox"/> Archaeological Research<br>(850) 245-6444 • FAX: 245-6436       | <input checked="" type="checkbox"/> Historic Preservation<br>(850) 245-6333 • FAX: 245-6437 | <input type="checkbox"/> Historical Museums<br>(850) 245-6400 • FAX: 245-6433 |
| <input type="checkbox"/> Palm Beach Regional Office<br>(561) 279-1475 • FAX: 279-1476 | <input type="checkbox"/> St. Augustine Regional Office<br>(904) 825-5045 • FAX: 825-5044 | <input type="checkbox"/> Tampa Regional Office<br>(813) 272-3843 • FAX: 272-2340            |   |

# FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION



QUINTON L. HEDGEPEETH, DDS  
Miami

EDWIN P. ROBERTS, DC  
Pensacola

RODNEY BARRETO  
Miami

SANDRA T. KAUPE  
Palm Beach

H.A. "HERKY" HUFFMAN  
Enterprise

DAVID K. MEEHAN  
St. Petersburg

JOHN D. ROOD  
Jacksonville

KENNETH D. HADDAD, Executive Director  
VICTOR J. HELLER, Assistant Executive Director

DAVID W. ARNOLD, CHIEF  
BUREAU OF PROTECTED SPECIES MANAGEMENT  
(850)922-4330  
FAX (850)922-4338

October 7, 2002

Ms. Cindy Cranick, Clearinghouse Coordinator  
Florida State Clearinghouse  
Florida Department of Environmental Protection  
3900 Commonwealth Boulevard, Mail Station 47  
Tallahassee, FL 32399-3000

RE: SAI#200208302750C, Scoping Notice, To Define Issues and Concerns to be Addressed in a Draft Environmental Impact Statement (DEIS) on the Future Dredging of Capron Shoal for the Ft. Pierce Shore Protection Project, Department of the Army, Jacksonville District, St. Lucie County

Dear Ms. Cranick:

Staff in the Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission (FWC) has reviewed the referenced Notice for a project to place sand in a ~50-foot berm along approximately 2.3 miles of shoreline south of Fort Pierce Inlet, to conduct subsequent periodic renourishment, to assess the use of groins for this area, and to dredge sand from Capron Shoal for this project. Beach nourishment has both direct and indirect impacts on marine turtles, their nests, hatchlings and juveniles that forage in the nearshore area. The following items should be considered in the Draft Environmental Impact Statement (DEIS), and appropriate minimization and avoidance measures to address these concerns should be incorporated into the project design.

We assume that the Corps will be reinitiating Section 7 consultation under the Endangered Species Act with both the U.S. Fish & Wildlife Service and the National Marine Fisheries Service and obtaining updated Incidental Take Authorizations and Biological Opinions for this project. The incidental take authorization should address take due to the proposed groin as well as potential impacts to nesting and nearshore foraging sea turtles from sand placement. An updated incidental take authorization will be needed prior to final agency action by the state.

Placement of sand on a sea turtle nesting beach can affect both use of this beach by nesting females as well as the length and success of the incubation process. To assess this

RECEIVED  
OCT 15 2002  
OIP/OLGA

Ms. Cindy Cranick  
SAI#200208302750C  
October 7, 2002  
Page 2

impact, the DEIS should include a review of recent geotechnical data for the proposed borrow site as well as the native beach (e.g., a beach in the project area that has not been previously nourished). Information should be included on gradation curves, mean grain size, percent shell, percent silt-clay, the amount of calcium carbonate per sample, and composition (carbonate versus quartz) for the dry beach only, as well as for the borrow site and all drillers logs. Please note that coarser sands, 0.8 mm or greater, can negatively impact marine turtle nests and hatchlings in addition to negative impacts from very fine sediments, and the proportion of fill material coarser than 0.8 mm that is proposed for beach placement should be identified.

Recent reviews of nesting data on nourished beaches suggest that, during the first few years, marine turtles tend to nest preferentially on the seaward third of the beach. Unfortunately, this is the area most vulnerable to wave uprush and erosion, particularly during profile adjustment. Nests deposited in this area are vulnerable to erosion. To minimize this negative impact, the DEIS should consider construction and design templates that minimize scarping as the profile adjusts. Such profiles should also reflect a more natural beach topography.

The DEIS should also consider secondary and cumulative impacts due to the impacts of lights from upland development on the nourished beach. Creation of an elevated beach berm can expose marine turtle hatchlings to lights that were not visible prior to the beach project. Under existing state requirements, marine turtle nests cannot be relocated due to lighting. The DEIS should consider these impacts and require assistance from the local government in addressing these concerns. Prior to construction, the local government should ensure that appropriate measures are in place, including a lighting ordinance and mechanisms for enforcing it, within the project area.

The nearshore reefs and hard bottom along Florida's East Coast provide significant foraging ground for marine turtles, particularly juveniles of the endangered green turtle. Impacts to these important foraging sites should be considered and addressed in the draft DEIS.

Finally, the DEIS should include accurate, up-to-date information on all adjacent reef and hard bottom areas. This information could include a map identifying all inshore reefs or patch reefs located within 500 feet of the fill area and the proposed borrow sites. In addition, the abundance and distribution of juvenile sea turtles in the project area should be determined. This information can be collected using visual survey methods, such as running a small boat along several predetermined transects a set distance from the shore and recording the number of turtles observed within a specified "block", or area. Such surveys should be done on a regular schedule throughout the spring, summer and fall. Other survey methods include visual observations by divers, either towed from a boat or using underwater mechanized equipment, along predetermined transect lines.

Ms. Cindy Cranick  
SAI#200208302750C  
October 7, 2002  
Page 3

Thank you for the opportunity to review this project and to provide our concerns at this early stage of the planning process. As noted above, it is particularly important that the Section 7 consultation with the U.S. Fish & Wildlife Service and National Marine Fisheries Service be concluded in order for the state to issue a permit for this activity. Please contact BPSM staff (Robbin Trindell for turtle issues and Mary Duncan for manatee issues) at (850) 922-4330 if you have questions about these comments.

Sincerely,



David W. Arnold, Chief  
Bureau of Protected Species Management

DA/RNT/rnt

X:\turtle\correspond\2002\2002083 Ft Pierce Inlet.doc  
ENV 7-3

cc: Mr. James Duck, ACOE-Jax  
Mr. Mike Sole, DEP

COUNTY: ST. LUCIE

DATE: 9/16/02  
COMMENTS DUE DATE: 10/16/02  
CLEARANCE DUE DATE: 11/15/02

Message:

SAI#: FL200209162887C

| STATE AGENCIES   | WATER MNGMNT. DISTRICTS | OPB POLICY UNITS          |
|--|-------------------------|---------------------------|
| AGRICULTURE<br>OTTED<br>COMMUNITY AFFAIRS<br>FISH and WILDLIFE COMMISSION<br>HEALTH<br>STATE<br>X TRANSPORTATION<br>ENVIRONMENTAL PROTECTION | SOUTH FLORIDA WMD       | ENVIRONMENTAL POLICY UNIT |

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

**Project Description:**

Department of the Army - Jacksonville District  
Corps of Engineers - Draft Environmental Impact  
Statement - Future Dredging of Capron Shoal for  
the Fort Pierce Shore Protection Project -  
September 2002 - St. Lucie County, Florida.

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

To: Florida State Clearinghouse  
AGENCY CONTACT AND COORDINATOR (SCH)  
2555 SHUMARD OAK BLVD  
TALLAHASSEE, FLORIDA 32399-2100  
(850) 414-6580 (SC 994-6580)  
(850) 414-0479

EO. 12372/NEPA

Federal Consistency

- No Comment
- Comment Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau: F007 DY  
Reviewer: Jim Scheckwitz AICP  
Date: 10/16/02



## Florida Department of Transportation

JEB BUSH  
GOVERNOR

OFFICE OF MODAL DEVELOPMENT  
3400 WEST COMMERCIAL BOULEVARD  
FORT LAUDERDALE, FLORIDA 33309-3421  
TELEPHONE: (954) 777-4490; FAX: (954) 677-7892; Toll-Free: (866) 336-8435

THOMAS F. BARRY, JR.  
SECRETARY

October 15, 2002

Ms. Cindy Cranick, Coordinator  
Florida Coastal Management Program  
Department of Environmental Protection  
Douglas Building, Mail Station 47  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Dear Ms. Cranick:

**Subject: FL200209162887C – Capron Shoal – Ft. Pierce**

In response to the subject Intergovernmental Coordination and Review request, the Department has the following comments regarding the Department of the Army, Jacksonville District Corps of Engineers Draft EIS September 2002 for the future dredging of Capron Shoal for the Ft. Pierce Shore Protection Project in St. Lucie County.

Any use of State of Florida right of way and certain activities on or adjacent to State transportation facilities will be subject to the requirements of the Florida Department of Transportation's Utility Accommodation Manual (Document 710-020-001-c) and may require permits to be obtained from the Department. The Department should be contacted regarding requirements that may pertain to any projects that impact State owned right-of-way. Please contact Mr. Clark Turberville, P.E., FDOT District Permits Engineer, at (954) 777-4377 regarding FDOT permitting requirements within State maintained rights-of-way.

Thank you for the chance to participate in this review process.

Sincerely,

A handwritten signature in black ink, appearing to read "Larry Hymowitz".

Larry Hymowitz, AICP  
Intergovernmental Coordinator

LH:TS

cc: Sandra Whitmire  
Clark Turberville  
Nancy Bungo  
Larry Merritt

File: 4280.15



*Handwritten initials*

# Florida Department of Transportation

JEB BUSH  
GOVERNOR

605 Suwannee Street  
Tallahassee, Florida 32399-0450  
September 26, 2002

THOMAS F. BARRY, JR.  
SECRETARY

Cindy Cranick  
Clearinghouse Coordinator  
Florida State Clearinghouse  
Florida Department of Environmental Protection  
3900 Commonwealth Boulevard, Mail Station 47  
Tallahassee, Florida, 32399-3000

Re: U. S. Army Corps of Engineers – Jacksonville District – Draft Environmental  
Impact Statement for Dredging at Capron Shoal at Ft. Pierce, St. Lucie County.  
SAI#: FL200208302750C

Dear Ms. Cranick:

The Department has reviewed the subject proposal and based on an analysis by our  
FDOT District Four Office in Ft. Lauderdale, it appears that beach filling will occur  
adjacent to SR A1A next to the Fort Pierce Inlet. Some coordination may be required  
with the FDOT if there are potential impacts to FDOT right- of-way or easements at this  
location.

Sincerely,

Larry B. Phillips  
Seaport Office/FDOT

C : Nancy Bungo, District 4  
Nancy Bonomo, District 4  
Terry Scheckwitz, District 4  
Patrick J. Webster, District 4  
Sandra Whitmire  
File

LP/

RECEIVED  
SEP 27 2002  
OIP/OLGA

# FLORIDA STATE CLEARINGHOUSE RPC INTERGOVERNMENTAL COORDINATION AND RESPONSE SHEET

SAI#: FL200209162887C

DATE: 9/16/02

COMMENTS DUE TO CLEARINGHOUSE: 10/16/02

AREA OF PROPOSED ACTIVITY: COUNTY: ST. LUCIE CITY:

FEDERAL ASSISTANCE  DIRECT FEDERAL ACTIVITY  FEDERAL LICENSE OR PERMIT  OCS

### PROJECT DESCRIPTION

Department of the Army - Jacksonville District Corps of Engineers - Draft Environmental Impact Statement - Future Dredging of Capron Shoal for the Fort Pierce Shore Protection Project - September 2002 - St. Lucie County, Florida.

### ROUTING:

RPC

X TREASURE COAST RPC

**RECEIVED**

SEP 20 2002

TREASURE COAST  
REGIONAL PLANNING COUNCIL

**PLEASE CHECK ALL THE LOCAL GOVERNMENTS BELOW FROM WHICH COMMENTS HAVE BEEN RECEIVED; ALL COMMENTS RECEIVED SHOULD BE INCLUDED IN THE RPC'S CLEARINGHOUSE RESPONSE PACKAGE. IF NO COMMENTS WERE RECEIVED, PLEASE CHECK "NO COMMENT" BOX AND RETURN TO CLEARINGHOUSE.**

COMMENTS DUE TO RPC: 10/7/02

     ST. LUCIE

### NO COMMENTS:

(IF THE RPC DOES NOT RECEIVE COMMENTS BY THE DEADLINE DATE, THE RPC SHOULD CONTACT THE LOCAL GOVERNMENT TO DETERMINE THE STATUS OF THE PROJECT REVIEW PRIOR TO FORWARDING THE RESPONSE PACKAGE TO THE CLEARINGHOUSE.)

### NOTES

**ALL CONCERNS OR COMMENTS REGARDING THE ATTACHED PROJECT (INCLUDING ANY RPC COMMENTS) SHOULD BE SENT IN WRITING BY THE DUE DATE TO THE CLEARINGHOUSE. PLEASE ATTACH THIS RESPONSE FORM AND REFER TO THE SAI # IN ALL CORRESPONDENCE. IF YOU HAVE ANY QUESTIONS REGARDING THE ATTACHED PROJECT, PLEASE CONTACT THE STATE CLEARINGHOUSE AT (850) 414-6580 OR SUNCOM 994-6580.**

UNAI I

TREASURE COAST REGIONAL PLANNING COUNCIL  
INTERGOVERNMENTAL COORDINATION AND REVIEW LOG

TCRPC NUMBER: 02-SL-09-22 SAI# FL200209162887C

APPLICANT: United States Army Corps of Engineers (USACE)

PROJECT DESCRIPTION: Notice of Availability of Draft Environmental Impact Statement (DEIS) for the Future Dredging of Capron Shoal

The USACE gives public notice that the DEIS for the Future Dredging of Capron Shoal for the Fort Pierce Inlet in St. Lucie County is available. The project provides for a fifty-foot protective berm that extends 1.3 miles from the south Fort Pierce Inlet jetty to the southern terminus at Surfside Park. Two alternatives were investigated: no action and the use of Capron Shoal sand for beach renourishment. The removal of the borrow area sediment would affect the habitat of recently discovered organisms of the phylum bryozoa originally thought to occur at no other location. However, recent studies have revealed that these organisms also occur on other area shoals. Temporary impacts to approximately 8 acres of exposed limerock by sand coverage and increased turbidity would occur. Long-term adverse impacts to biological communities are not expected from this project. Five acres of hard bottom habitat will be created in the nearshore environment to provide mitigation for short-term impacts to hard bottom habitat.

FUNDING AGENCY: None

PROJECT COSTS: N/A

RECOMMENDATIONS: The proposed project is not in conflict or inconsistent with the SRPP provided that proper mitigation is provided for impacts to sensitive marine resources. **Regional Strategy 6.4.2** calls for the protection of beach, coastal, and marine resources for wildlife and recreational values.

AGENCIES CONTACTED: All St. Lucie County Municipalities  
Florida Inland Navigational District

# FLORIDA STATE CLEARINGHOUSE RPC INTERGOVERNMENTAL COORDINATION AND RESPONSE SHEET

SAI#: FL200208302750C

DATE: 8/28/02

COMMENTS DUE TO CLEARINGHOUSE: 8/30/02 9-29

AREA OF PROPOSED ACTIVITY: COUNTY: ST. LUCIE CITY:

FEDERAL ASSISTANCE  DIRECT FEDERAL ACTIVITY  FEDERAL LICENSE OR PERMIT OCS

### PROJECT DESCRIPTION

Department of the Army - Jacksonville District Corps of Engineers - Scoping Notice - To Define Issues and Concerns to be Addressed in a Draft Environmental Impact Statement (DEIS) on the Future Dredging of Capron Shoal for the Ft. Pierce Shore Protection project (SPP) - St. Lucie County, Florida.

### ROUTING:

RPC  
X TREASURE COAST RPC

**RECEIVED**

SEP - 5 2002

TREASURE COAST  
REGIONAL PLANNING COUNCIL

PLEASE CHECK ALL THE LOCAL GOVERNMENTS BELOW FROM WHICH COMMENTS HAVE BEEN RECEIVED; ALL COMMENTS RECEIVED SHOULD BE INCLUDED IN THE RPC'S CLEARINGHOUSE RESPONSE PACKAGE. IF NO COMMENTS WERE RECEIVED, PLEASE CHECK "NO COMMENT" BOX AND RETURN TO CLEARINGHOUSE.

COMMENTS DUE TO RPC: 8/30/02

ST. LUCIE

NO COMMENTS:

(IF THE RPC DOES NOT RECEIVE COMMENTS BY THE DEADLINE DATE, THE RPC SHOULD CONTACT THE LOCAL GOVERNMENT TO DETERMINE THE STATUS OF THE PROJECT REVIEW PRIOR TO FORWARDING THE RESPONSE PACKAGE TO THE CLEARINGHOUSE.)

NOTES:

ALL CONCERNS OR COMMENTS REGARDING THE ATTACHED PROJECT (INCLUDING ANY RPC COMMENTS) SHOULD BE SENT IN WRITING BY THE DUE DATE TO THE CLEARINGHOUSE. PLEASE ATTACH THIS RESPONSE FORM AND REFER TO THE SAI # IN ALL CORRESPONDENCE. IF YOU HAVE ANY QUESTIONS REGARDING THE ATTACHED PROJECT, PLEASE CONTACT THE STATE CLEARINGHOUSE AT (850) 414-6580 OR SUNCOM 994-6580.

**DRAFT**

Subject to Modifications

TREASURE COAST REGIONAL PLANNING COUNCIL  
INTERGOVERNMENTAL COORDINATION AND REVIEW LOG

TCRPC NUMBER: 02-SL-09-06 SAI# FL200208302750C

APPLICANT: United States Department of Army Corps of Engineers  
(USACE)

PROJECT DESCRIPTION: Public Scoping Notice for a Draft Environmental Impact Statement (DEIS) for Dredging of Capron Shoal

The USACE is requesting information to define issues and concerns for a DEIS for the future dredging of Capron Shoal for the Fort Pierce Shore Protection Project. Capron Shoal is located about 4.5 miles southeast of the Fort Pierce Shore Protection Project. The DEIS is to evaluate the potential impacts of further dredging of Capron Shoal.

FUNDING AGENCY: None

PROJECT COSTS: N/A

RECOMMENDATIONS: The proposed project is not in conflict with the SRPP provided that sensitive marine resources are not permanently damaged. **Regional Strategy 6.4.2** calls for the protection of beach, coastal, and marine resources for wildlife and recreational values.

AGENCIES CONTACTED: City of Fort Pierce  
St. Lucie County Planning



GO

help | 411 | feedback | directory

- email Governor Jeb Bush
- Gov. Bush's E-Newsletter

## STATE CLEARINGHOUSE

Home > [My In-Box](#) > [Search Project](#) > **Update Agency Comments**

User: Lauren Milligan, , ENVIRONMENTAL PROTECTION

### Project Information

Project: FL200209162887C

Description: Department of the Army - Jacksonville District Corps of Engineers - Draft Environmental Impact Statement - Future Dredging of Capron Shoal for the Fort Pierce Shore Protection Project - September 2002 - St. Lucie County, Florida.

Keywords: ACOE - DEIS - Dredging of Capron Shoal - St. Lucie

Program:

**Agency**

[Home](#)

[My In-Box](#)

[Search Project](#)

[Help](#)

**Public Area**

[Brochure](#)

[Manual](#)

|                        |   |                                       |           |
|------------------------|---|---------------------------------------|-----------|
| <b>Review Comments</b> |   | Page: <input type="text"/> <b>GO!</b> | Page 1/12 |
| Reviewer:              | AGRICULTURE   |                                       |           |
| Date:                  | 10/11/2002  |                                       |           |
| Description:           | No Comment  |                                       |           |
| Comment Type:          | <input checked="" type="radio"/> Draft <input checked="" type="radio"/> Final |                                       |           |



GO

help | 411 | feedback | directory

- email Governor Jeb Bush
- Gov. Bush's E-Newsletter

### STATE CLEARINGHOUSE

Home > [My In-Box](#) > [Search Project](#) > **Update Agency Comments**  
**User:** Lauren Milligan, , ENVIRONMENTAL PROTECTION

#### Project Information

**Project:** FL200208302750C  
**Description:** Department of the Army - Jacksonville District Corps of Engineers - Scoping Notice - To Define Issues and Concerns to be Addressed in a Draft Environmental Impact Statement (DEIS) on the Future Dredging of Capron Shoal for the Ft. Pierce Shore Protection project (SPP) - St. Lucie County, Florida.

**Keywords:** ACOE - Scoping Notice - Dredging Capron Shoal - St

**Program:**

**Agency**

- [Home](#)
- [My In-Box](#)
- [Search Project](#)
- [Help](#)

**Public Area**

- [Brochure](#)
- [Manual](#)

#### Review Comments

Page:  GO

Page 1/12  

**Reviewer:** AGRICULTURE  
**Date:** 10/01/2002  
**Description:** No Comment  
**Comment Type:**  Draft  Final

COUNTY: ST. LUCIE

DATE: 9/16/02

COMMENTS DUE DATE: 10/16/02

CLEARANCE DUE DATE: 11/15/02

SAI#: FL200209162887C

Message:

STATE AGENCIES

WATER MNGMNT. DISTRICTS

OPB POLICY UNITS

AGRICULTURE  
 X OTTED  
 COMMUNITY AFFAIRS  
 FISH and WILDLIFE COMMISSION  
 HEALTH  
 STATE  
 TRANSPORTATION  
 ENVIRONMENTAL PROTECTION

SOUTH FLORIDA WMD

ENVIRONMENTAL POLICY UNIT

RECEIVED  
 SEP 20 2002  
 OIP/OLGA

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

Department of the Army - Jacksonville District Corps of Engineers - Draft Environmental Impact Statement - Future Dredging of Capron Shoal for the Fort Pierce Shore Protection Project - September 2002 - St. Lucie County, Florida.

To: Florida State Clearinghouse

EO. 12372/NEPA

Federal Consistency

AGENCY CONTACT AND COORDINATOR (SCH)

2555 SHUMARD OAK BLVD  
 TALLAHASSEE, FLORIDA 32399-2100  
 (850) 414-6580 (SC 994-6580)  
 (850) 414-0479

- No Comment
- Comment Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau: OTTED

Reviewer: JMB/Blakeslee

Date: 9/22/02

LM

Message:

SAI#: FL200208302750C

STATE AGENCIES

WATER MNGMNT. DISTRICTS

OPB POLICY UNITS

AGRICULTURE  
 X OTTED  
 COMMUNITY AFFAIRS  
 FISH and WILDLIFE COMMISSION  
 HEALTH  
 STATE  
 TRANSPORTATION  
 ENVIRONMENTAL PROTECTION

SOUTH FLORIDA WMD

ENVIRONMENTAL POLICY UNIT

RECEIVED

SEP 20 2002

OIP/OLGA

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

Department of the Army - Jacksonville District  
 Corps of Engineers - Scoping Notice - To Define  
 Issues and Concerns to be Addressed in a Draft  
 Environmental Impact Statement (DEIS) on the  
 Future Dredging of Capron Shoal for the Ft. Pierce  
 Shore Protection project (SPP) - St. Lucie County,  
 Florida.

To: Florida State Clearinghouse

EO. 12372/NEPA

Federal Consistency

AGENCY CONTACT AND COORDINATOR (SCH)

2555 SHUMARD OAK BLVD  
 TALLAHASSEE, FLORIDA 32399-2100  
 (850) 414-6580 (SC 994-6580)  
 (850) 414-0479

- No Comment
- Comment Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

OTTED

Division/Bureau:

Reviewer:

Date:

  
 Sep 19, 2002

Message:

STATE AGENCIES

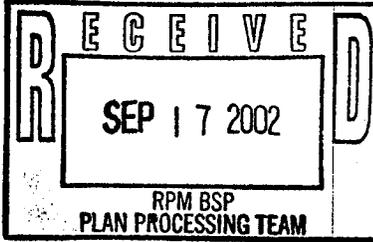
WATER MNGMNT. DISTRICTS

OPB POLICY UNITS

AGRICULTURE  
 OTTED  
 X COMMUNITY AFFAIRS  
 FISH and WILDLIFE COMMISSION  
 HEALTH  
 STATE  
 TRANSPORTATION  
 ENVIRONMENTAL PROTECTION

SOUTH FLORIDA WMD

ENVIRONMENTAL POLICY UNIT



RECEIVED  
 SEP 24 2002  
 OIP/OLGA

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- X Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

Department of the Army - Jacksonville District  
 Corps of Engineers - Draft Environmental Impact  
 Statement - Future Dredging of Capron Shoal for  
 the Fort Pierce Shore Protection Project -  
 September 2002 - St. Lucie County, Florida.

To: Florida State Clearinghouse

EO. 12372/NEPA

Federal Consistency

AGENCY CONTACT AND COORDINATOR (SCH)

2555 SHUMARD OAK BLVD  
 TALLAHASSEE, FLORIDA 32399-2100  
 (850) 414-6580 (SC 994-6580)  
 (850) 414-0479

- No Comment
- Comment Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau: DCA/DCP

Reviewer: \_\_\_\_\_

Date: 9/23

COUNTY: ST. LUCIE

DATE: 8/28/02

COMMENTS DUE DATE: 9/29/02

CLEARANCE DUE DATE: 10/27/02

Message:

SAI#: FL200208302750C

STATE AGENCIES

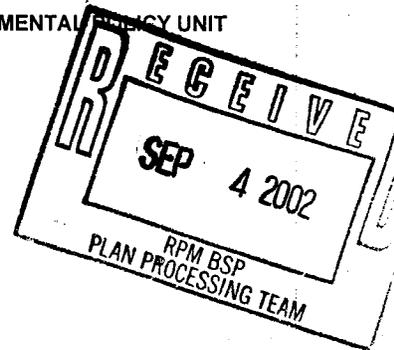
WATER MNGMNT. DISTRICTS

OPB POLICY UNITS

AGRICULTURE  
 OTTED  
 X COMMUNITY AFFAIRS  
 FISH and WILDLIFE COMMISSION  
 HEALTH  
 STATE  
 TRANSPORTATION  
 ENVIRONMENTAL PROTECTION

SOUTH FLORIDA WMD

ENVIRONMENTAL POLICY UNIT



The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- X Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

Department of the Army - Jacksonville District  
 Corps of Engineers - Scoping Notice - To Define  
 Issues and Concerns to be Addressed in a Draft  
 Environmental Impact Statement (DEIS) on the  
 Future Dredging of Capron Shoal for the Ft. Pierce  
 Shore Protection project (SPP) - St. Lucie County,  
 Florida.

RECEIVED

SEP 09 2002

OIP/OLGA

To: Florida State Clearinghouse

EO. 12372/NEPA

Federal Consistency

AGENCY CONTACT AND COORDINATOR (SCH)

2555 SHUMARD OAK BLVD  
 TALLAHASSEE, FLORIDA 32399-2100  
 (850) 414-6580 (SC 994-6580)  
 (850) 414-0479

- No Comment
- Comment Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau:

*DCA/DCP*

Reviewer:

Date:

*9/5/02*

*[Signature]*

Message:

STATE AGENCIES

WATER MNGMNT. DISTRICTS

OPB POLICY UNITS

AGRICULTURE  
 OTTED  
 COMMUNITY AFFAIRS  
 FISH and WILDLIFE COMMISSION  
 X HEALTH  
 STATE  
 TRANSPORTATION  
 ENVIRONMENTAL PROTECTION

SOUTH FLORIDA WMD

ENVIRONMENTAL POLICY UNIT

RECEIVED  
 SEP 24 2002  
 OIP/OLGA

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

Department of the Army - Jacksonville District  
 Corps of Engineers - Draft Environmental Impact  
 Statement - Future Dredging of Capron Shoal for  
 the Fort Pierce Shore Protection Project -  
 September 2002 - St. Lucie County, Florida.

*DREDDING*

To: Florida State Clearinghouse  
 AGENCY CONTACT AND COORDINATOR (SCH)  
 2555 SHUMARD OAK BLVD  
 TALLAHASSEE, FLORIDA 32399-2100  
 (850) 414-6580 (SC 994-6580)  
 (850) 414-0479

EO. 12372/NEPA

Federal Consistency

- No Comment
- Comment Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau: ASES ONSITE SEWAGE  
 Reviewer: DAVE HOLCOMB  
 Date: 9-20-02

RECEIVED

SEP 18 2002

BUREAU OF  
 ONSITE SEWAGE  
 PROGRAMS

COUNTY: ST. LUCIE

DATE: 8/28/02

COMMENTS DUE DATE: 9/29/02

CLEARANCE DUE DATE: 10/27/02

Message:

SAI#: FL200208302750C *LM*

STATE AGENCIES

WATER MNGMNT. DISTRICTS

OPB POLICY UNITS

AGRICULTURE  
OTTED  
COMMUNITY AFFAIRS  
FISH and WILDLIFE COMMISSION  
**X** HEALTH  
STATE  
TRANSPORTATION  
ENVIRONMENTAL PROTECTION

SOUTH FLORIDA WMD

ENVIRONMENTAL POLICY UNIT

RECEIVED

SEP 24 2002

OIP/OLGA

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- X** Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

Department of the Army - Jacksonville District  
Corps of Engineers - Scoping Notice - To Define  
Issues and Concerns to be Addressed in a Draft  
Environmental Impact Statement (DEIS) on the  
Future Dredging of Capron Shoal for the Ft. Pierce  
Shore Protection project (SPP) - St. Lucie County,  
Florida.

*DREDGING*

To: Florida State Clearinghouse

EO. 12372/NEPA

Federal Consistency

AGENCY CONTACT AND COORDINATOR (SCH)

2555 SHUMARD OAK BLVD  
TALLAHASSEE, FLORIDA 32399-2100  
(850) 414-6580 (SC 994-6580)  
(850) 414-0479

- No Comment
- Comment Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau: *ASES ON SITE SUPERVISOR*  
Reviewer: *PAUL NORCOMB*  
Date: *9-20-02*

**FAX COVER SHEET***Bob Bangert*

5608 Eagle Drive  
Fort Pierce, FL 34951  
Phone: 561-465-0196  
Fax: 561-465-8624  
Email: [bangert@digital.net](mailto:bangert@digital.net)

|                                      |   |
|--------------------------------------|---|
| Send to:<br>U.S.A.C.E.               | From:<br>Bob Bangert                    |
| Attention:<br>William Lang           | Date:<br>October 6 <sup>th</sup> , 2002 |
| Office location:<br>Jacksonville, FL | Office location:<br>Fort Pierce         |
| Fax number:<br>904-232-3442          | Phone number:<br>772-465-0196           |

Urgent  Reply ASAP  Please comment  Please review  For your information

Total pages including cover: **3**

**Comments:** On behalf of the Conservation Alliance of St. Lucie County we would like to critique your draft Environmental Impact Statement, September 2002.  
Sincerely, Bob Bangert, Pres.

Critique of the DEIS, dated September, 2002 for the future dredging of Capron Shoal for the Ft Pierce beach renourishment project.

On March 5<sup>th</sup>, 1999, a temporary restraining order was issued to prevent dredging of Capron Shoal due to harm that would be caused certain rare species inhabiting Capron Shoal that had been found nowhere else. A settlement was reached which committed USACE to conduct additional NEPA analysis before beginning the next phase. According to the abstract of the DEIS; "The removal of borrow area sediment would affect the habitat of recently discovered organisms of the phylum bryzoa originally thought to occur at no other location. Studies conducted since the Settlement Agreement revealed that these organisms either do, or are likely to occur on other area shoals (Appendix C)." It is our finding that the study covered in Appendix C is, by its own admission, flawed and does not reach that conclusion.

In the summary to Appendix C (bryzoan study), it is stated; "In the pilot study, it was determined that in order to find all of the species in any particular sample or group of samples, 6 liters of material would need to be examined. Since available resources allowed for sorting of only 3 liters of material from all sites combined, the absence of the species in question may be due to insufficient sampling. Further, analyses herein suggest that with examination of additional material, more species would be found. However, with the data at hand, that the distribution of this one species is indeed limited to Capron Shoal cannot be ruled out."

The study does illustrate that the fauna at Capron Shoal is different from the other areas tested by the observation "Interestingly, two of the non-target species were found only at Capron Shoal, and six species were found at the other shoals but not at Capron." And elsewhere in the report, "One species, *cymuloptora uniserialis*, was found exclusively at Capron Shoal. Whether it will be found elsewhere is unknown since even at Capron Shoal only two individuals were found. Further, two other non-target species (*Cleidochasma prodellianum* and *schizoporella rugosa*), showed a similar pattern with four and one individuals at Capron Shoal, respectively, and none elsewhere."

Actually two studies were performed, according to the bryzoan study, the first in July 2000, called the pilot study, and the second in July 2001. "The results and conclusions from the pilot study were used to develop a sampling strategy for a second phase that could reasonably be expected to either confirm the presence of any or all of Winston and Hakansson (1986)'s new species (target species), or to suggest that their distribution was probably limited to Capron Shoal. This report synthesizes data from both phases to address the issue at hand." (Italics are mine). In other words, samples from two different studies, made in two different years were massaged together with the help of clever statistics to result in the findings published.

Besides using samples from different years and different locations (the pilot study was done using "shoal A" while phase two sampled shoals A, B, St Lucie Shoal and Pierce Shoal) sampling for the two studies used different methods. The first phase (pilot) used

a mini grab sampler from the surface, and the second used divers who discriminated in their sample choices by choosing coarser grained sediment as sample sites.

The methods used in the study are also inappropriate, as shown in the statement "These procedures involved working with dry specimens probably precluding identification of two "target" (new) and one non-target (previously described) species." And this statement "The trade off for the cost-effectiveness of working with dried specimens is that three of the species reported for Capron Shoal are unlikely to be found, but it was *assumed* (italics mine) that if all other target species were found, this group would be likely to occur as well." And the next paragraph "Summary statistics were performed and graphs prepared to determine patterns of distribution and abundance. Formal inferential statistical tests were not performed because the nature of replication and low numbers would have violated basic assumptions required to make the results of these tests valid."

The studies reported in Appendix C are very poor, apparently due to limited resources. They do not show that there are representatives of the species in question at other locations, except through assumption and statistical manipulation. In fact, in spite of the fact that only 1.6 liters of substrate were examined from Capron Shoal, and 3.7 liters were examined from nearby shoals, three species were found on Capron shoal that were not found elsewhere. The fact that the numbers of individuals of these three species were small indicates that they may be endangered, or otherwise compromised.



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

OCT 30 2002

District Engineer, Jacksonville  
P.O. Box 4970  
Jacksonville, FL 32232

Attention: Mr. James C. Duck  
Chief, Planning Division

Subject: **Draft Environmental Impact Statement (DEIS) for Shoreline Protection for Ft. Pierce (Capron Shoal), St. Lucie County, FL CEQ # 020393 ERP # COE-E35086-FL**

Dear Sir:

Pursuant to Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act, Region 4 has reviewed the subject document, an evaluation of the environmental consequences of placing approximately 1.25 million cubic yards (mcy) of material along the Ft. Pierce beach front from FDEP monuments R-34 (Ft. Pierce Jetty) to R-41 (Surfside Park). The project reach is 1.3 miles in extent with renourishment (.6 mcy) taking place every 6 years (although based on recent erosion rates, a greater frequency may become necessary). The transferred sediments will allow for construction of a 50-foot seaward extension of the current shoreline out to an approximation the historic natural profile. The proposed borrow area is located within the Capron Shoal which is approximately 2-3 miles offshore of Hutchinson Island in 25-30 feet of water.

As a result of our review, the following observations are provided for your use in preparing/improving the final EIS:

- The FEIS would be improved by including overview and cross-sectional drawings of the beach renourishment project. These design drawings should include the construction toe of fill, MHW line, pipe line corridor(s), construction berm crest along with an overlay of hardbottom resources. This would assist reviewers in determining what measures (compromises) were taken to avoid and minimize adverse impacts to hardbottom resources. In addition, a drawing(s) of Capron Shoal should also be included with the locations of the adjacent hardbottom resources. This is would be helpful in providing a visualization as to whether a minimum 400- foot buffer will be maintained between the footprint of the initial/future excavated areas (over the project life span) and any significant hardbottom resources.

- There is general agreement in the literature cited in the DEIS that infaunal assemblages within borrow and fill areas become re-established within one to two years following dredging activities. However, the significance of the diminished productivity during these interim periods coupled with the fact that renourishment (and the accompanying losses) will be repeated indefinitely is not evaluated. Since this is effectively an “environmental overhead cost” for beach renourishment, this lapse in functionality should be (at least) qualitatively examined in the final document.
- An artificial reef (5 acres) is being proposed for construction to offset the various project perturbations to 7.8 acres of hardbottom habitat. However, the DEIS did not include sufficient data about its location (and its depth) to make a determination as to its effectiveness (long-term) as mitigation for the expected losses. As we have recently indicated on similar projects, it is our opinion that this type mitigation should be accomplished at a 1 to 1 ratio rather than on a pro rata basis. Further, EPA is concerned that in the absence of sufficient underlying support (hardbottoms) the reef material will eventually sink into the sand (and become less functional). As you recall, this is what happened at Juno Beach when a similar mitigation structure was built over a sandy substrate. We suggest that your technical staff examine the possibility of configuring the reef structure (e.g., expand the footings) in some fashion to lessen the probability of subsidence.

Furthermore, it remains to be demonstrated whether/how the proposed artificial structure(s) will compensate for the losses attendant to project impacts. The DEIS did not include an assessment of the functions and values provided by artificial reefs (placed at different depths) compared with those of the affected natural hardbottoms. In our estimation this is an important evaluation. While the simulated reef is a “hard structure”, it is very different in configuration and geography from the hardbottom resources being affected by the renourishment.

One of the project needs is to restore and maintain the beach for public recreational use. The FEIS would be improved in this regard with some evaluation of the adverse effects on recreational interests (snorkeling areas) and wildlife habitat (the nearshore hardbottom areas) that would be lost if the preferred alternative is selected.

- *Alternative 1 - No Action.* The statement is made that if the No-Action Alternative were selected, \$1.5 million in storm damages would occur annually. It would be helpful if there were some general explanation(s) as to how this and the other values were derived. The dry beach in question can only be maintained via indefinite renourishment which is becoming increasingly costly/problematic. Moreover, in the face of (apparently) accelerating erosion rates, it appears that renourishment may have to be augmented with some additional structural measures. In addition, the DEIS fails to include the initial construction costs and long-term management of the proposed

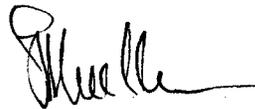
mitigation area(s). See Page 35, *Fish and Wildlife*. The FEIS would be improved by providing additional information (modeling) to support the statement that with the No-Action Alternative, continued erosion of the County's beaches and eventually loss of vegetated dune areas would occur.

- Page 44, *Cumulative Impacts*. The FEIS needs to be expanded to include a review of the primary, secondary, and cumulative impacts that beach nourishment projects in St. Lucie County will have on nearshore and offshore hardbottom resources. The document (Table 3) only lists the past and proposed future projects and direct hardbottom impacts within the Fort Pierce environs. To gain a more accurate picture of beach nourishment consequences, viz., the cumulative impacts to hard bottom resources, the entire county should be examined.

On the basis of our review a rating of EC-2 has been assigned. That is, we have some environmental concerns about whether the overall impacts (direct/indirect) attendant to this proposal have been adequately characterized and believe that these short-coming will need to be addressed by additional information in the final document.

Thank you for providing the opportunity to provide comments on the DEIS. If you should have any questions or need additional information on the above comments, please contact Ron Miedema (EPA South Florida Office) at (561) 616-8741.

Sincerely,



Heinz J. Mueller, Chief  
Office of Environmental Assessment



PD  
UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office  
9721 Executive Center Drive North  
St. Petersburg, Florida 33702-2432

October 31, 2002

RECEIVED

NOV 04 2002

JACKSONVILLE DISTRICT  
USACE

Colonel James G. May  
District Engineer, Jacksonville District  
Planning Division  
Department of the Army, Corps of Engineers  
P.O. Box 4970  
Jacksonville, Florida 32232-0019

Dear Colonel May:

The National Marine Fisheries Service (NOAA Fisheries) has reviewed the **Draft Environmental Impact Statement (DEIS) for the Future Dredging of Capron Shoal for the Fort Pierce Shore Protection Project** in St. Lucie County, Florida. By electronic mail dated September 11, 2002, NOAA Fisheries provided preliminary comments in response to a Jacksonville District, Planning Division letter, dated August 26, 2002 regarding the May 31, 2002, Notice of Intent to prepare the DEIS. This supplements our previous correspondence on the project.

NOAA Fisheries' initially recommended the DEIS identify all locations within the project area where hardbottom and reefs occur and that any anticipated impacts to these habitats and associated biota be fully described along with the mitigation that will be undertaken. In addition, because the project site contains Essential Fish Habitat (EFH), we recommended that an EFH Assessment be included in the DEIS. NOAA Fisheries also expressed concern about new areas that would be subject to beach nourishment.

According to the DEIS, the Preferred Alternative would involve use of Capron Shoal sand for renourishment of beach located 1.3 miles south of Fort Pierce Inlet and for the periodic nourishment, as needed, for a period of 10 years following initial construction of the project. The DEIS states that the 23 million cubic yards of high quality sand at Capron Shoals is the largest sediment source near the project and can readily supply the projected 3.2 million cubic yards of sand needed for this project's authorized duration. In addition, the DEIS concludes that under the preferred alternative, long-term adverse impacts to biological communities are not expected and short-term effects to an estimated 7.8 acres of hardbottom habitat are unavoidable. The U.S. Army Corps of Engineers (COE) proposes to create 5 acres of mitigation reef to compensate for these unavoidable impacts.



The proposed project is located in an area identified as EFH by the South Atlantic Fishery Management Council (SAFMC). Categories of EFH that occur within the project vicinity include marine water column, live/hardbottoms (including sabellariid reefs), coral and coral reefs, and sargassum. Managed species associated with the marine water column include the eggs and sub-adult brown and pink shrimp; gag and yellowedge grouper; gray, mutton, lane and schoolmaster snappers; and white grunt. The marine water column and sargassum have also been identified as EFH for pelagic species, including sub-adult juvenile king and Spanish mackerel, greater amberjack, cobia, and dolphin. Hardbottom/coral reef habitats have been identified as EFH for juvenile and adult gag and yellowedge grouper, gray and mutton snapper, and spiny lobster. Likewise, the Mid Atlantic Fishery Management Council (MAFMC) has identified EFH for bluefish that includes water column in the project area extending from the coastline to well beyond the construction limits for this project. Detailed information on shrimp, the snapper/grouper complex (containing ten families and 73 species), mackerel, bluefish, dolphin, spiny lobster and other Federally managed fisheries and their EFH is provided in the 1998 generic amendment of the Fishery Management Plans (FMP) for the South Atlantic and Mid Atlantic regions prepared by the SAFMC and MAFMC, respectively. The 1998 amendment was prepared as required by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). NOAA Fisheries has identified EFH for highly migratory species that utilize the marine water column in this area, including juvenile and adult nurse, lemon, blacktip, great hammerhead, sandbar, and bull sharks. In addition, the SAFMC has also designated hardbottom habitat, sabellariid reefs, and sargassum as Habitat Area of Particular Concern (HAPC). HAPCs are subsets of EFH that are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area.

In addition to EFH for Federally managed species, the marine water column, sargassum, hardbottom, coral, and shallow nearshore habitats provide nursery, foraging, and refuge habitat for other commercially and recreationally important fish and shellfish. Species such as blue crab, flounder, Florida pompano, striped mullet, tarpon, and a variety reef fish and tropical fish are among the many species that utilize these habitats.

It is our assessment that this project may adversely affect EFH for Federally managed species, as well as habitat for other important living marine resources. Impacts from this proposed project may occur within at least three spatial categories: offshore borrow areas, pipeline corridors, and nearshore fill areas.

#### Offshore Borrow Area

Benthic communities may be impacted by dredging operations through mechanical means and as a result of elevated sedimentation and turbidity. Mechanical impacts occur when dredge equipment such as dredge heads, cables, or barge anchors crush, break, dislodge, or remove benthic organisms and substrates. Sedimentation impacts occur when sand and silt are re-suspended into the water column from the dredge and fill operation and settle on reefs and hard bottom habitats. Turbidity, which also results from resuspension of bottom sediments in the water column, decreases water clarity and light penetration and can reduce photosynthesis, damage gills and other organs, and interfere with feeding and physiological processes. Increased turbidity may have a long residence time (from weeks

to months) after dredging is completed (Goldberg 1989), and can cause long-term reductions in primary and secondary productivity of reef and hard bottom communities. Benthic communities and marine resources using the water column in the area of dredging operations may be impacted from siltation/sedimentation and turbidity. Siltation and elevated turbidity levels can be detrimental to the growth and survival of reef-associated species, especially filter-feeding organisms (Hay and Sutherland 1988) and photosynthetic organisms (Dodge and Vaisnys 1977; Bak 1978). Fishes, particularly larval/juvenile stages, may be adversely affected by chronic exposure to highly-turbid water (Lindeman and Snyder 1999).

The distance that sediment plumes may extend from the dredge depends upon the type of dredge, how it is operated, currents, and the nature of the sediments that are being excavated. Sediment plumes have been documented to travel along the bottom for some distance away from the dredge. For example, elevated sediment levels were recorded 1,100 feet from the borrow area in the 1990, Bal Harbor project, and were estimated to continue for a distance of up to 1,200 feet (Blair *et al.* 1990). Goldberg (1989) suggested that the minimum distance between the hard bottom area and the borrow site should be the mixing zone dimensions around the dredge head. Since the mixing zone around the dredge is typically 450 feet or more, a buffer zone around the borrow area less than this would probably impact hardbottom reefs.

#### Pipeline Corridors

Damage to hardbottom reefs may result from mechanical effects (crushing and scraping) from the pipeline itself, as well as from anchors used to hold the pipeline in place, and from cables used to attach pipeline marker buoys. Impacts to macroalgae and soft and hard corals also may occur due to shading. Impacts can be reduced by elevating the pipe a few inches off the bottom using pipe collars or connector rings. Although uncommon, breaks in pipelines have been documented in previous south Florida beach renourishment projects. A 1999, project in North Miami Beach resulted in over 1,000 cubic yards of sand being deposited on a reef crossed by pipeline. All benthic organisms within an approximately 4,000-square-foot area are reported to have died as a result of at least one inch of sand being placed on the reef (R. Mulcahy, personal communication). Information regarding the location of pipelines for the proposed project, or benthic resources that may exist within these areas, is not provided.

#### Nearshore Fill Areas

The proposed nourishment project would encompass 1.3 linear miles of beach shoreline and involve placement of 1.25 million cubic yards of material along the shoreline and in nearshore subtidal habitats. Nearshore hardbottoms are diverse habitats and the abundant organisms found here are important food items for nearshore fishes. In a relatively modest sampling effort, Nelson (1989) found a total of 325 plant and animal species on subtidal rock outcrops at Sebastian Inlet Harbor. A study conducted in Indian River County found 109 species of benthic algae growing on nearshore reefs off Vero Beach, Florida (Juett *et al.* 1976). Because many organisms associated with nearshore hardbottom habitats are sessile and have no ability to burrow up through the sediment, the

survivability of these communities after renourishment is minimal (Dodge and Vaisnys 1977). Peterson *et al.* (2000) found significant, short-term, adverse effects on dominant species of beach macro-invertebrates from beach nourishment and bulldozing activities in North Carolina.

Nearshore hardbottom reefs serve as settlement habitats for immigrating sub-adults of fish and invertebrates, or as intermediate nursery habitats for juveniles emigrating out of nearby inlets (Vare 1991; Lindeman and Snyder 1999). At least eighty-six taxa of fish have been identified among nearshore hardbottom habitats along southeast mainland Florida, including at least 34 species of juvenile reef fish which may utilize these habitats as nursery areas (Lindeman and Snyder 1999).

Green, hawksbill, leatherback, and loggerhead sea turtles are all known to utilize Martin County beaches and nearshore habitats for nesting, foraging, and resting, and are protected by the Endangered Species Act of 1973. Environmental assessments completed for past beach renourishment projects have focused their discussion of sea turtle impacts to those involving nesting habitat (USACE 1996). However, several studies have determined that nearshore hardbottom habitats along the southeast Florida coast are important as nursery habitat for juvenile green turtles and loggerheads (Guseman and Ehrhart 1990; Wershoven 1992). These studies conclude that juvenile and adult turtles feed upon the large biomass of macroalgae available on these nearshore hardbottom habitats.

According to the DEIS, as a result of past projects in 1995 and/or 1999, 1.7 acres of nearshore hardbottom reef were directly buried offshore of Fort Pierce. In addition, the DEIS recognizes it is likely that an additional 8.6 acres of nearshore hardbottom reef seaward of the equilibrium toe-of-slope were indirectly buried as a result of stabilization of the beach profile and movement and redistribution of sand from the beach seaward over the rock outcrops. Information regarding mitigation for the 10.3 acres of reef lost due to previous nourishments is not provided in the DEIS. According to the DEIS, the preferred alternative will unavoidably impact 7.8 acres of hardbottom reef. Nearshore reefs can be extremely biologically diverse and the abundant organisms found there appear to be important for nearshore fishes (Nelson 1989). The cumulative loss of this nearshore habitat in southeast Florida has most likely contributed to a reduction of overall fishery resource production within the region.

In addition to the habitat impact and project design concerns discussed previously, we find that the DEIS for the proposed project does not incorporate an assessment of impacts to EFH as statutorily required. Pursuant to section 305(b)(2) of the MSFCMA and EFH implementing regulations at 50 CFR 600.920(k), Federal agencies are required to consult with NOAA Fisheries when any activity for which the agency is responsible may have an adverse effect on EFH. The EFH regulations require that, as a part of the consultation process, the action agency prepare and submit for NOAA Fisheries' review an EFH Assessment. At a minimum, the assessment should include the following information: 1) a description of the proposed action; 2) an analysis of reasonably foreseeable impacts including secondary, cumulative, and synergistic effects on EFH, Federally managed fish and major prey species; 3) the COE's views regarding effects on EFH; and 4) proposed mitigation.

In view of the potential adverse effects of this project on EFH and other NOAA trust resources, and the lack of adequate information to assess effects, we recommend that your staff prepare an EFH assessment and initiate EFH consultation in accordance with the MSFCMA and its implementing regulations. In addition to the above cited information requirements, the EFH assessment should present information as required by regulation and should contain the following supplemental information:

1. Information, including maps and surveys, regarding benthic resources located within the proposed borrow site and adjacent hardbottom reefs; distances between the nearest hardbottom reefs and the borrow site, and any proposed buffer zone used in connection with dredging, anchoring, or other construction activity that may adversely affect these resources.
2. Information regarding the location of proposed pipeline routes and their proximity to hard bottom habitats.
3. Copies of the biological monitoring reports, including pre- and post-construction benthic surveys of nearshore reefs within the project area, conducted in association with the 1995, and 1999, nourishment projects.
4. Recent biological assessments of the nearshore reefs that would be impacted by the proposed project. This should include existing random and fixed biological surveys which identify and quantify the sizes and abundances of reef fishes, sponges, soft and hard corals, sabellariid reefs and macroalgae species within the project area. These recent assessments should be compared to previous assessments completed for the 1995, and 1999, nourishment projects.
5. A review of pertinent scientific literature concerning specific habitats and species that may be directly or indirectly affected by the proposed action, and potential short-term and long-term effects on these habitats and species.

Following our review of the requested information, NOAA Fisheries will be able to more thoroughly assess the potential adverse impacts to EFH and associated marine resources. We will then reevaluate the following recommendations and provide supplemental recommendations, as appropriate. Until we have the opportunity to review the requested information and reassess potential impacts, NOAA Fisheries recommends the following actions to ensure the conservation of EFH and related fishery resources:

### **EFH Conservation Recommendations**

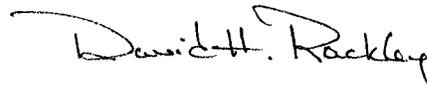
Initiation of the proposed action shall not be undertaken until the above requested information is provided and the the project is modified to include the following provisions:

1. To protect hardbottom reefs, a 400-foot-wide buffer zone shall be established around all borrow areas;
2. A plan for avoidance and/or minimization of damage caused by mechanical operations, siltation, turbidity, and burial of hardbottom areas and live coral habitats shall be developed and implemented. This plan should be made available for review by NOAA Fisheries prior to undertaking project related work;
3. A plan for providing full compensation of unavoidable adverse impacts to hardbottom, coral, and other sensitive nearshore habitats shall be developed and made available for NOAA Fisheries review prior to undertaking project related work. The plan shall address and include plans for compensation of habitat functions and production lost during the period between elimination of hardbottom habitat and establishment of a viable replacement reef; and
4. A post-construction survey of the equilibrium toe of fill and adjacent hardbottom reefs shall be conducted immediately following, six months, and one year after, completion of the project.

Consistent with Section 305(b)(4)(B) of the MSFCMA and NOAA Fisheries' implementing regulation at 50 CFR 600.920(k), your office is required to provide a written response to our EFH recommendations within 30 days of receipt. Your response must include a description of measures to be required to avoid, mitigate, or offset the adverse impacts of the proposed activity. If your response is inconsistent with our EFH Conservation Recommendations, you must provide a substantive discussion justifying the reasons for not implementing those recommendations. If it is not possible to provide a substantive response within 30 days, the Corps of Engineers should provide an interim response to the NOAA Fisheries, to be followed by the detailed response. The detailed response should be provided in a manner to ensure that it is received by the NOAA Fisheries at least 10 days prior to final approval of the action.

We appreciate the opportunity to provide these comments. Related correspondence should be addressed to the attention of Ms. Jocelyn Karazsia at our Miami Office. She may be reached at 11420 North Kendall Drive, Suite #103, Miami, Florida 33176, or by telephone at (305) 595-8352.

Sincerely,



Andreas Mager, Jr.  
Assistant Regional Administrator  
Habitat Conservation Division

cc:

EPA, WPB

DEP, WPB

SAFMC, CHAS

FFWCC, TALL

FWS, VERO

F/SER3

F/SER4

F/SER45-Karazsia

### Literature Cited

Bak, R. P. 1978. Lethal and sublethal effects of dredging on reef corals. *Mar. Poll. Bull* 9(1):14-16.

Blair, S. M., B. S. Flynn, T. McIntosh, and L. Hefty. 1990. Environmental impacts of the 1990 Bal Harbor beach renourishment project: mechanical and sedimentation impact on hard-bottom areas adjacent to the borrow area. Metro Dade DERM Tech. Rep. 90-15. 52 pp.

Dodge, R. E. and J. R. Vaisnys. 1977. Coral populations and growth patterns: responses to sedimentation and turbidity associated with dredging. *J. Mar. Res.* 35(4):715-730.

Goldberg, W. M. 1989. Biological effects of beach restoration in south Florida: the good, the bad and the ugly. *In Proc. 1988 National Conf. Beach Preserv. Technol. FL. Shore and Beach Preserv. Assoc., Tallahassee, FL.* p. 19-27.

Guseman, J. L. and L. M. Ehrhart. 1990. Green turtles on sabellariid worm reefs: initial results from studies on the Florida Atlantic coast. *In Proc. 10<sup>th</sup> Annual Workshop on Sea Turtle Biology and Conservation.* NOAA Tech. Mem. NMFS-SEFC-278. p. 125-127.

Hay, M. E. and J. P. Sutherland. 1988. The ecology of rubble structures of the south Atlantic Bight: a community profile. U.S. Fish Wildlife Serv. Biol. Rep. 85(7.20).

Juett, L., C. J. Miller, S. J. Moore and E. S. Ford. 1976. Summer marine algae at Vero Beach, Florida. *Florida Scientist.* 39:77-80.

Lindeman, K. C. and D. B. Snyder. 1999. Nearshore hard bottom fishes of southeast Florida and effects of habitat burial caused by dredging. *Fish. Bull.* 97:508-525.

Nelson, W. G. 1989. Beach renourishment and hard bottom habitats: the case for caution. *In S. Tait (ed.), Proc. 1989 National Conf. Beach Preserv. Technol. FL. Shore and Beach Preserv. Assoc., Tallahassee, FL.* p. 109-116.

Peterson, C. H., H. M. Hickerson, and G. G. Johnson. 2000. Short-term consequences of nourishment and bulldozing on the dominant large invertebrates of a sandy beach. *J. Coastal Res.* 16(2): 368-378.

U.S. Army Corps of Engineers. 1996. Coast of Florida Erosion and storm effects study: region III with final environmental impact statement. ACOE Tech. Rep., Jacksonville District. 62 pp. plus appendices A-I.

Vare, C. N. 1991. A survey, analysis, and evaluation of the nearshore reefs situated off Palm Beach County, Florida. M.S. thesis, Florida Atlantic Univ., Boca Raton, FL. 165 pp.

Wershoven, J. L. 1992. Juvenile green turtles in their nearshore habitat of Broward County, Florida: a five-year review. *In Proc. 11<sup>th</sup> Annual Workshop on Sea Turtle Biology and Conservation.* NOAA Tech. Memo., NMFS-SEFC-302. p. 185-187.



# United States Department of the Interior

## OFFICE OF THE SECRETARY

### OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE

Richard B. Russell Federal Building

75 Spring Street, S.W.

Atlanta, Georgia 30303

ER 02/906

October 30, 2002

Colonel James G. May  
District Engineer  
Jacksonville District  
U.S. Army Corps of Engineers  
P.O. Box 4970  
Jacksonville, FL 32232

RE: Draft Environmental Impact Statement (DEIS) for Future Dredging of Capron Shoal for the Fort Pierce Shore Protection Project in St. Lucie County, Florida

Dear Colonel May:

The Department of the Interior has reviewed the DEIS and provide the following comments for your consideration.

The proposed project includes the restoration and stabilization of approximately 1.3 miles of beach shoreline along Fort Pierce Beach. Approximately 2,940,000 cubic yards of material will be dredged from an offshore borrow area, known as Capron Shoal. The average construction berm will be approximately 200 feet wide at an elevation of +10 feet NGVD with berm slopes of 1:20 above mean high water (MHW) and 1:30 slope below mean low water (MLW).

We believe the equilibrium toe-of-fill will cause repeated temporary burial of approximately 7.8 acres of wormrock reef and limestone rock outcrops. These hardbottom habitats are colonized by sessile benthic epifauna, attached macrophytes, and demersal fishes. These wormrock reefs and limestone outcrops also provide resting, sheltering, and feeding habitats for nesting sea turtles. The temporary burial of hardbottom will render these habitats unuseable for foraging by sea turtles. The sessile benthic epifauna and demersal fishes will also temporarily lose habitat from burial of hardbottom habitat.

By letter dated October 28, 1997, the U.S. Fish and Wildlife Service (FWS) provided the U.S. Army Corps of Engineers (Corps) with a Fish and Wildlife Coordination Act Report regarding the proposed project's impacts to nearshore wormrock reef and limestone rock outcrops. In this report, the FWS recommended the following measures to reduce adverse effects to nearshore hardbottom habitat: (1) maintain a 500-foot buffer between any reefs and the borrow area; (2) monitor reef edges that are within 1,000 feet of the borrow area for sedimentation effects during dredging; and, (3) provide corrective actions if adverse affects are observed.

The FWS also requested that the Corps provide: (1) pre- and post-project aerial photographs of the nearshore wormrock reef and limestone rock outcrops to assist the Corps and the FWS in the calculation of compensation for impacts to hardbottom habitats; (2) a compensation plan for impacts to hardbottom habitats which includes the deployment of artificial reefs; and, (3) compliance with the Terms and Conditions of the FWS's October 9, 1997, Biological Opinion pursuant to Section 7 of the Endangered Species Act. The Florida Department of Environmental Protection (DEP) is requesting construction of a 5-acre artificial reef as compensation for the burial of the 7.8-acre hardbottom habitat. The FWS would like the opportunity to review the compensation proposal for impacts to the nearshore wormrock and limestone outcrops adjacent to the Fort Pierce Beach fill disposal site. They would also like the opportunity to review post-project aerial photographs to determine appropriateness of compensation for impacts to nearshore hardbottom habitats.

The project site is within the nesting area for the loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), and leatherback sea turtle (*Dermochelys coriacea*). The Corps' DEIS, dated September 13, 2002, states that the project will incorporate the Terms and Conditions of the FWS's October 9, 1997, Biological Opinion. The Corps' adherence to the above-referenced Terms and Conditions will reduce risk to sea turtles nesting within the proposed project area. Re-initiation of consultation may be necessary if there are project modifications, additional information involving potential effects to listed species become available, a new species is listed, or designated critical habitats may be affected by the project.

Additionally, the Federal action agency has a fiduciary responsibility to consult with potentially affected American Indian tribes in a government-to-government relationship prior to any undertaking to determine the potential extent of impact to "Native American cultural items." This consultation is required through various laws and Executive Orders (EO), such as the American Indian Religious Freedom Act and EO 13007 regarding sacred places. The Miccosukee and Seminole Tribes should be consulted for their input.

If you have any questions concerning these comments, I can be reached at 404-331-4524.

Sincerely,



Gregory Hogue  
Regional Environmental Officer

cc:  
OEPC, WASO  
FWS, R4