**MAY 2000**

# MAINTENANCE DREDGING

# FERNANDINA HARBOR
# NASSAU COUNTY, FLORIDA

# ENVIRONMENTAL ASSESSMENT

**U.S. Army Corps**
**of Engineers**
Jacksonville District
South Atlantic Division

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

REPLY TO
ATTENTION OF

MAY 25 2000

MAINTENANCE DREDGING
FERNANDINA HARBOR
NASSAU COUNTY, FLORIDA

**FINDING OF NO SIGNIFICANT IMPACT**

I have reviewed the Environmental Assessment (EA) of the proposed action. This Finding incorporates by reference all discussions and conclusions contained in the EA enclosed hereto. Based on information analyzed in the EA, reflecting pertinent information obtained from other agencies and special interest groups having jurisdiction by law and/or special expertise, I conclude that the proposed action will have no significant impact on the quality of the human environment. Reasons for this conclusion are, in summary:

1. The work will be conducted in accordance with the Biological Opinion issued by the U.S. Fish and Wildlife Service for impacts to manatees and sea turtles, and the Regional Biological Opinion issued by the National Marine Fisheries Service. The proposed action will not jeopardize the continued existence of any threatened or endangered species or adversely impact any designated "critical habitat."

2. In coordination with the Florida State Historic Preservation Officer, it was determined that the proposed dredging and beach disposal will not impact any sites of cultural or historical significance.

3. The Florida Department of Environmental Protection has issued a Water Quality Certification (WQC) for this project. The conditions contained within the WQC will be addressed in the Plans and Specifications. Therefore, the state water quality standards will be met.

4. The proposed work has been determined to be consistent with the Florida Coastal Zone Management Program (CZMP).

5. Measures to eliminate, reduce, or avoid potential impacts to fish and wildlife resources will be implemented during project construction.

6. Benefits to the public will be maintenance of the navigation channel, continued local economic stimulus, increased recreational benefits and erosion protection from replacing lost beach area, and increased nesting habitat for sea turtles.

CESAJ-PD-ER
SUBJECT: Finding of No Significant Impact

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

May 24, 2000
Date

JOE R. MILLER
Colonel, U.S. Army
District Engineer

# ENVIRONMENTAL ASSESSMENT
# ON
# MAINTENANCE DREDGING
# FERNANDINA HARBOR
# NASSAU COUNTY, FLORIDA

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## 1 PROJECT PURPOSE AND NEED

### 1.1 INTRODUCTION

The U.S. Army Corps of Engineers (Corps), Jacksonville District, proposes to continue conducting routine maintenance dredging of Fernandina Harbor, Nassau County, Florida (see Figure 1, Plan View and Location Map). Approximately 300,000 cubic yards of sediment, resulting from shoaling, will be removed from the harbor's entrance channel on an annual basis. The harbor's inner channel and turning basin will also require dredging every 5 to 10 years. An estimated 300,000 cubic yards of additional material will be removed from these locations during each dredge event. Various types of dredging equipment, possibly including a hopper dredge, will be used to accomplish the above tasks. Excavated material consisting of suitable sand may be placed at several different beach locations on Amelia Island. Any dredged material not suitable for beach placement will be taken to the Fernandina Ocean Dredged Material and Disposal Site (ODMDS) or the Nearshore Disposal Area. Periodic removal of accumulated sediments from the entrance channel, inner channel, and turning basin allows commercial vessels and recreational boats access to the port of Fernandina. Dredging the entrance channel also serves the navigational needs of the Navy's Trident submarines stationed at King's Bay, Georgia.

### 1.2 PROJECT AUTHORITY

Maintenance dredging of Fernandina Harbor is authorized under Section 107 of the River and Harbor Act of 1960, as amended. Under the terms of a Memorandum of Understanding between the U.S. Department of the Navy and the state of Florida, dredged material from the Fernandina entrance channel will be placed (by the Corps) at designated beach disposal sites, the ODMDS, or the Nearshore Disposal Area. Disposal of dredged material within the ODMDS is authorized under the Marine Protection, Research, and Sanctuaries Act, the Water Resources Development Act of 1992, and a Memorandum of Agreement between the U.S. Environmental Protection Agency and the Corps.

### 1.3 DECISION TO BE MADE

This Environmental Assessment will evaluate whether to conduct the maintenance dredging and, if so, where the dredged material should be placed.

## 1.4 RELEVANT ISSUES

The following issues were identified as relevant to the proposed action and appropriate for detailed evaluation: (1) water quality degradation, especially in regards to turbidity and sediment contaminants; (2) impacts to endangered and threatened species occurring within the project area (i.e. manatees, sea turtles, whales, and shortnose sturgeon); (3) alteration of other wildlife resources; (4) potential damage to Essential Fish Habitat which may cause a reduction in standing stocks of certain managed species; (5) deleterious effects to benthos; (6) impacts to cultural resources; (7) beneficial or adverse effects to recreation; (8) impacts to navigation; (9) socio-economic effects to individuals, families, and businesses harmed by or benefiting by the project, especially in regards to commercial and recreational navigation; and (10) impacts to aesthetics.

## 1.5 NEPA DOCUMENTATION

Pursuant to the National Environmental Policy Act (NEPA), this Environmental Assessment was prepared by the Corps in order to address all of the current Fernandina Harbor dredging and disposal alternatives. Dredging of the entrance channel, inner channel, turning basin, and potential disposal areas were previously covered under six different NEPA documents. In 1991, the Corps completed a Detailed Project Report and Environmental Assessment for modifications to the Fernandina Harbor inner channel and turning basin. These modifications, completed in 1994, included the construction of a new turning basin and realignment of the inner channel. Additionally, an Environmental Impact Statement was prepared in conjunction with the Corps' Feasibility Report for Beach Erosion Control for Nassau County, Florida, in 1985.

## 1.6 PERMITS REQUIRED

In accordance with Section 401 of the Clean Water Act of 1977, as amended, a Water Quality Certification will be required from the Florida Department of Environmental Protection for the proposed dredging activity (see Appendix C).

## 1.7 METHODOLOGY

An interdisciplinary team used a systematic approach to analyze the affected area, to estimate the probable environmental effects, and to prepare the Environmental Assessment. This included a literature search, coordination with agencies having expertise in certain areas, and on-site field investigations.

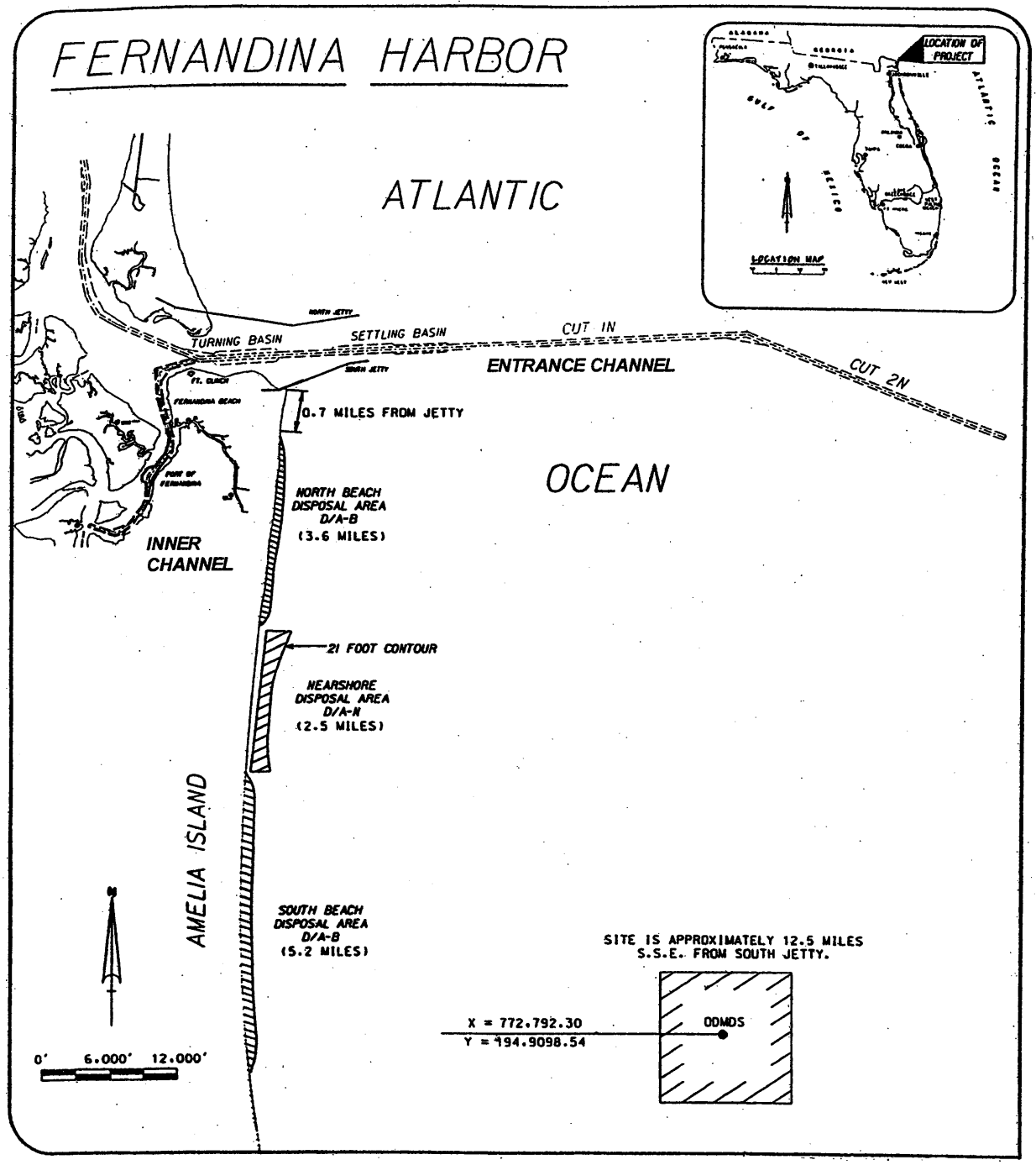


Figure 1. Plan View and Location Map. Entrance and Inner Channels of Fernandina Harbor, Nassau County, Florida.

# 2 ALTERNATIVES

## 2.1 INTRODUCTION

The Alternatives Section is perhaps the most important component of this Environmental Assessment. It describes the no-action alternative, the proposed dredging alternative, as well as the dredged material disposal options. The beneficial and adverse environmental effects of the alternatives are presented in comparative form, providing a clear basis for choice to the decisionmaker and the public. A preferred alternative was selected based on the information and analysis presented in the sections on the Affected Environment and Probable Impacts.

## 2.2 DESCRIPTION OF ALTERNATIVES

### 2.2.1 NO-ACTION ALTERNATIVE

Fernandina Harbor would no longer be dredged. Sediment would continue to accumulate making the project channel eventually too shallow to be safely navigated.

### 2.2.2 DREDGING ALTERNATIVE

Fernandina Harbor would continue to be maintenance dredged. As previously stated, dredging of the harbor's entrance channel serves the navigational needs of commercial and recreational vessels wanting access to Fernandina Harbor as well as the Navy's Trident submarines stationed at King's Bay. The Corps, under contract with the Navy, dredges the entrance channel on an annual basis in order to maintain a depth of 49-feet plus 2-feet allowable overdepth (total of 51-feet). Approximately 300,000 cubic yards of sediment will be removed each time it's dredged. The length of the civil works portion of the entrance channel, from the junction with the inner channel to station 270, is 27,000 feet. Fernandina Harbor's inner channel, cuts 1-6, and turning basin will also require dredging in order to provide commercial and recreational vessels access to the port's facilities. The inner channel will be dredged to a depth of 36-feet and the turning basin to a depth of 35-feet, both areas have a 1-foot allowable overdepth condition. An estimated 300,000 cubic yards of sediment will be removed from these areas every 5 to 10 years. The length of the inner channel, from cut 1 up to and including part of cut 6, is 15,337 feet. Material removed during each dredge event will be taken to one of the following disposal sites.

#### 2.2.2.1 OCEAN DISPOSAL

Dredged material not suitable for beach placement would be transported by barge to the Fernandina Ocean Dredged Material Disposal Site (ODMDS) and released.

#### 2.2.2.2 NEARSHORE DISPOSAL

Dredged material that contains less than 20% fines could be placed in the Nearshore Disposal Area. An inspector with training in the determination of sediment characteristics will evaluate the composition of the material during

dredging operations. All dredged material with greater than 20% fines would still be taken to the ODMDS.

#### 2.2.2.3 BEACH PLACEMENT

Dredged material that contains 10% or less fines could be placed in several different locations on Amelia Island. Sites under consideration include the North and South Beach Disposal Areas as well as the Fort Clinch groin field. Suitable sand would be removed by a dredge and piped onto the beach. Bulldozers and front-end loaders would be used to spread the material. The beaches, as stated above, may benefit from additional sand. All dredged material with greater than 10% fines would be taken to the ODMDS or the Nearshore Disposal Area.

## 2.3 PREFERRED ALTERNATIVE

The preferred alternative is to dredge the Fernandina Harbor in order to maintain safe navigation conditions. All of the disposal areas are considered environmentally acceptable. According to survey data, however, it appears that the substrate within the inner channel and turning basin is comprised primarily of silt and clay and is not suitable for beach nourishment. Therefore, this material will need to be placed in the ODMDS with some of it, depending on composition, going into the Nearshore Disposal Area. In recent years, sandy material from the entrance channel has been placed at the North Beach Disposal Area with silty material being transported to the ODMDS.

## 2.4 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

In the past, upland disposal of dredged material from Fernandina Harbor was evaluated. This option was not regarded as feasible due to the high cost and general unavailability of suitable nearby uplands.

## 2.5 COMPARISON OF ALTERNATIVES

Table 1 lists alternatives considered and summarizes the major features and consequences of the proposed action and alternatives. See Section 4.0, Environmental Effects, for a more detailed discussion of impacts of alternatives.

Table 1: Summary of Direct and Indirect Impacts

| ALTERNATIVE / ENVIRONMENTAL FACTOR | NO-ACTION ALTERNATIVE | DREDGING WITH OCEAN DISPOSAL | DREDGING WITH NEARSHORE DISPOSAL | DREDGING WITH BEACH PLACEMENT |
|---|---|---|---|---|
| WATER QUALITY | No impact. | Short-term localized increase in turbidity at the dredge site and the ODMDS. | Short-term localized increase in turbidity at the dredge site and the Nearshore Disposal Site. | Short-term localized increase in turbidity at the dredge site and the surf zone along the beach placement area. |
| MANATEES | No impact. | No impact with implementation of standard protection conditions. | No impact with implementation of standard protection conditions. | No impact with implementation of standard protection conditions. |
| SEA TURTLES | Minor reduction in the overall available nesting habitat in the area. | Incidental take may occur if a hopper dredge is used. | Incidental take may occur if a hopper dredge is used. | Incidental take may occur if a hopper dredge is used. Minor short-term adverse impact on turtle nesting from placing the sand on the beach may occur. Minor increase in the overall available nesting habitat in the area. |
| WHALES | No impact. | No adverse effects are anticipated. Precautions will be taken to insure vessels do not collide with whales. | No adverse effects are anticipated. Precautions will be taken to insure vessels do not collide with whales. | No adverse effects are anticipated. |
| SHORTNOSE STURGEON | No impact. | No adverse effects are anticipated. | No adverse effects are anticipated. | No adverse effects are anticipated. |
| WILDLIFE RESOURCES (OTHER THAN T&E SPECIES) | No impact. | Minor short-term disturbance. | Minor short-term disturbance. | Minor short-term disturbance. |

| ALTERNATIVE / ENVIRONMENTAL FACTOR | NO-ACTION ALTERNATIVE | DREDGING WITH OCEAN DISPOSAL | DREDGING WITH NEARSHORE DISPOSAL | DREDGING WITH BEACH PLACEMENT |
|---|---|---|---|---|
| ESSENTIAL FISH HABITAT | No impact. | Minor short-term disturbance. | Minor short-term disturbance. | Minor short-term disturbance. |
| BENTHOS | No impact | Minor short-term disturbance. | Minor short-term disturbance. | Minor short-term disturbance. |
| CULTURAL RESOURCES | No impact. | No adverse impacts are anticipated with avoidance of historic property. | No adverse impacts are anticipated with avoidance of historic property. | No adverse impacts are anticipated with avoidance of historic property. |
| RECREATION | Moderate long-term impact to recreational boating from loss of navigable capacity of channel. Minor reduction in available beach for recreational purposes. | Moderate long-term benefit to recreational boating from maintaining the channel. Short-term impact to recreational boat traffic from construction vessel congestion. | Moderate long-term benefit to recreational boating from maintaining the channel. Short-term impact to recreational boat traffic from construction vessel congestion. Minor increase in available beach for recreation. | Moderate long-term benefit to recreational boating from maintaining the channel. Short-term impact to recreational boat traffic from construction vessel congestion. Minor increase in available beach for recreation. |
| NAVIGATION (COMMERCIAL AND MILITARY) | Major long-term reduction in navigable capacity of channel. | Major long-term benefit from maintaining the channel. Short-term impact caused by construction vessel congestion. | Major long-term benefit from maintaining the channel. Short-term impact caused by construction vessel congestion. | Major long-term benefit from maintaining the channel. Short-term impact caused by construction vessel congestion. |
| ECONOMICS | Major long-term impact from loss of commercial port facilities and reduced recreational boating. | Major long-term benefit from maintaining commercial port facilities and recreational boating opportunities. | Major long-term benefit from maintaining commercial port facilities and recreational boating opportunities. | Major long-term benefit from maintaining commercial port facilities and recreational boating opportunities. |
| AESTHETICS | Minor long-term impacts from loss of beach. | No adverse impacts are anticipated. | No adverse impacts are anticipated. | Major short-term impact due to work on beach. |

# 3 AFFECTED ENVIRONMENT

## 3.1 INTRODUCTION

The Affected Environment Section succinctly describes the existing environmental resources of the areas that would be affected if any of the alternatives were implemented. This section describes only those environmental resources that would affect or that would be affected by the alternatives if they were implemented, not the entire existing environment. This section and the description of the "no-action" alternative provides the basic information for determining the environmental impacts of the proposed action and reasonable alternatives.

## 3.2 GENERAL ENVIRONMENTAL SETTING

### 3.2.1 AREAS TO BE DREDGED

Fernandina Harbor is located on the Atlantic coast in the extreme northeastern corner of Florida. The entrance channel to the harbor passes through Cumberland Sound, which is sometimes also referred to as the mouth of the St. Mary's River. Additionally, the middle of the entrance channel delimits the Florida-Georgia state boundaries. Cumberland Island, just north of the sound, supports a large maritime forest, an extensive salt marsh, and many miles of relatively untrammeled beach. This barrier island was acquired by the National Park Service in 1972 and is managed as a National Seashore. Diverging southwards from the entrance channel and into the Amelia River, the Fernandina Harbor inner channel and turning basin provides commercial vessels final access to the port's facilities. This tidally influenced system is bordered on the west by Little Tiger Island as well as by a fairly large salt marsh. Little Tiger Island remains undeveloped and, along with the marsh, supports a diverse biological community. Amelia Island forms the eastern boundary of the project channel. In addition to the city of Fernandina and Amelia Island Plantation, a resort community, this island still contains large relatively undisturbed wooded areas. Fort Clinch State Park occupies 1,121 acres on the north end of Amelia Island. The Fort Clinch State Park Aquatic Reserve, at 9,000 acres, includes portions of Cumberland Sound on the north, the Amelia River on the west, and the Atlantic Ocean on the east.

### 3.2.2 OCEAN DREDGED MATERIAL DISPOSAL SITE (ODMDS)

Material dredged from the project channel which is unsuitable for beach placement will be taken to the Fernandina Ocean Dredged Material Disposal Site for release. The U.S. Environmental Protection Agency (EPA) designated this area for the disposal of dredged material in 1987. It has been used on multiple occasions. This open-ocean site is located approximately 7 miles east of Amelia Island's southern terminus. Depths within this 4-square nautical mile area range from 40.5 to 67.7 feet below m.l.l.w. The bottom is composed of soft sediments (U.S. EPA 1998).

### 3.2.3 NEARSHORE DISPOSAL SITE

The Nearshore Disposal Area is approximately 10,000 feet offshore from the eastern shoreline of Amelia Island and centered some 5.5 miles south of the entrance channel. It is approximately 3,500 acres in total size and has a sandy bottom. This site has been used on multiple occasions.

### 3.2.4 BEACH DISPOSAL SITES

The North Beach Disposal Area begins 0.7 miles south of the entrance channel on the eastern shoreline of Amelia Island and continues southwards for 3.6 miles. As stated previously, beach quality sand from the entrance channel has been placed here on multiple occasions in the past. The South Beach Disposal Area is located near the town of American Beach and is approximately 5.2 miles in length. Even though this site has also been designated for beach disposal, it has not been typically used in the past because the erosion problems here are not as significant as those found further north. Both of these disposal sites can be described as recreational beaches with physically altered dune systems. In addition to the above disposal areas, the Florida Department of Environmental Protection has requested that beach quality sand from the entrance channel be placed within the groin field adjacent to Fort Clinch. The purpose of the groin field is to reduce on-going erosion of the shoreline.

## 3.3 WATER QUALITY

### 3.3.1 WATER USE CLASSIFICATION

Waters within the proposed dredging area have been designated by the state of Florida as Class III Waters, suitable for recreation as well as propagation and maintenance of a healthy and well-balanced population of fish and wildlife. In addition to this classification, the waters within the Fort Clinch Aquatic Preserve have also been designated by the state as Outstanding Florida Waters. Cuts 1 through 3 of the inner channel and part of the entrance channel are located within the preserve. According to the Florida Department of Environmental Protection, "the intent of an Outstanding Florida Water designation is to maintain ambient water quality, even if these designations are more protective than those required for the classification of the individual water body."

### 3.3.2 WATER COLUMN ANALYSIS

Past sampling of the water column within the Fernandina Harbor inner channel indicated that the quality was fairly good. Trace amounts of chromium, zinc, and nickel were detected but not at levels above the state of Florida's water quality standards. Mercury has been detected at a level of 0.18 ug/l, which is above the state's class III water quality standard of 0.1 ug/l. No other contaminants were found. Tidal flow through the project channel appears to be sufficient enough to

keep dissolved oxygen levels above state water quality standards even in the hot summer months (USACOE 1991).

### 3.3.3 SEDIMENT ANALYSIS

Sediment analysis indicated detectable levels of certain contaminants, such as heavy metals, but not at concentrations which would preclude ocean disposal (USACOE 1991). Examination of the sediments from the inner channel indicates that the composition is comprised primarily of silt and clay and, therefore would need to be transported to the ODMDS. Physical analysis of sediments from the entrance channel indicates the presence of beach quality sand from the inner channel junction to station 220. In the past, this material has been placed within the North Beach Disposal Area. Beyond station 220, the sediments contain a significant percentage of silt and have been historically transported to the Fernandina ODMDS for release.

## 3.4 THREATENED AND ENDANGERED SPECIES

### 3.4.1 MANATEES

The West Indian manatee (*Trichechus manatus*), a federally endangered species, is commonly observed in the Amelia River. According to aerial survey work and radio-tracking studies, the manatees frequent the American Container Corporation's warmwater discharge area during the months of November through March. The discharge pipes are located just to the north of the port of Fernandina. During warmer months, the manatees disperse throughout the watershed and are generally found in depths greater than four feet (USFWS 1989). Fort Clinch State Park personnel have reported four to five manatee sightings a year in the vicinity of the fort. Manatees may also infrequently occur in transit along the nearshore of Amelia Island.

### 3.4.2 SEA TURTLES

The loggerhead (*Caretta caretta)*, green (*Chelonia mydas)*, and Atlantic Ridley (*Lepidochelys kempii)* sea turtles can occur within the proposed dredging area. It would also be possible to encounter the leatherback (*Dermochelys coriacea)* and hawksbill (*Eretmochelys imbricata)* sea turtles during project related ocean disposal activities. All of these species are federally endangered except the loggerhead, which is classified as threatened. The loggerhead is also the only sea turtle that is known to regularly nest within the project area (USFWS 1989). According to Amelia Island Sea Turtle Watch, Inc., a total of 42 loggerhead nests were recorded within the North Beach Disposal Area and pipeline route during the 1999 season.

### 3.4.3 WHALES

Right whales (*Eubalaena glacialis*) are known to occur in the vicinity of the Fernandina ODMDS during the months of December through March. The site lies

within the federally designated critical habitat for this highly endangered species. The humpback whale (*Megaptera noveaeangliae)* may also be encountered near the ODMDS during the winter months (National Marine Fisheries Service 1995).

### 3.4.4 SHORTNOSE STURGEON

Small numbers of shortnose sturgeon (*Acipenser brevirostrum*), classified as endangered, apparently still occur in the St. Johns River, Florida. While highly unlikely, it is possible that this species may occasionally be found within the project area (Gilbert 1992).

## 3.5 WILDLIFE RESOURCES OTHER THAN THREATENED AND ENDANGERED SPECIES

The nearshore area and beach disposal sites provide certain groups of birds a place to rest and feed. Commonly observed species along the edge of the surf include shorebirds such as sanderlings (*Calidris alba*) and willets (*Catoptrophorus semipalmatus*). Occasionally, large mixed flocks of laughing gulls (*Larus atricilla*), royal terns (*Sterna maxima*), black skimmers (*Rhynchops niger*), and other species are present at the North and South Beach Disposal Areas. During the winter months, many additional bird species including gannets, loons, cormorants, and scoters may be seen in the nearshore area. Nesting by shorebirds or seabirds is not known to occur, or is extremely limited, within the beach disposal areas. Various species of crabs can also be observed on these beaches. Free-swimming and burrowing organisms inhabit the surf zone and nearshore areas.

## 3.6 ESSENTIAL FISH HABITAT

The Cumberland Sound and Amelia River inlets are considered habitat areas of particular concern. They provide access to nursery or staging zones in salt marsh, another habitat area of particular concern, located adjacent to the project channel. Managed species such as juvenile penaeid shrimp (*Penaeus sp.*) and red drum (*Sciaenops ocellatus*) are dependent on these habitat types in order to complete their life cycles (South Atlantic Fishery Management Council 1998).

## 3.7 BENTHOS

Past surveys of bottom dwelling organisms, or benthos, indicate that the Amelia River channel is well scoured and is composed mostly of shell material with numerous small crabs. Deepwater areas adjacent to the channel show a dominance of spionid polychaete annelids (mudworms) as well as numerous other taxa, including mollusks, arthropods, nemertean worms, sponges and polyps. Additional benthic surveys conducted in similar habitats of the Cumberland Sound-Kings Bay area indicate a seasonal abundance of macroinvertebrates. Samples taken in August indicate a higher density and diversity of organisms, including the commercially valuable brown shrimp (*Penaeus aztecus*), compared to samples taken in February (USFWS 1989).

## 3.8 CULTURAL RESOURCES

In accordance with the recommendations of the State Historic Preservation Officer, the proposed dredging area was surveyed for historical structures using a magnetometer. Survey results revealed the presence of four different shipwrecks outside, but close to the project channel. Other historical landmarks in the area include Fort Clinch and the Fernandina Beach Historic District. In 1935, the state of Florida acquired the abandoned fort with 256 surrounding acres and designated the area a state park. The Fernandina Beach Historic District is located just east of the port.

## 3.9 RECREATION

Recreational boaters use the Fernandina Harbor inner channel primarily for accessing Cumberland Sound and the entrance channel for accessing the ocean. Fishing and sailing these waters remains extremely popular. In addition to the commercial port facilities, the harbor also has a large marina. All of the beaches in the area support a wide variety of recreational activities such as surf fishing, swimming, and sun bathing.

## 3.10 NAVIGATION (COMMERCIAL AND MILITARY)

Fernandina Harbor, while being a small port, is attractive to some shipping companies because of its relatively short access channel. In the past, it was also particularly appealing to regional paper companies who were interested in exporting wood products. In 1997, a total of 836 trips were made by commercial vessels in and out of the port. They transported 533,000 short tons of freight that included coal, petroleum products, chemicals, crude materials, and manufactured goods (Waterborne Commerce of the United States 1997). The Navy's Trident submarines and other ships use the entrance channel to access the Kings Bay Naval Base in Georgia.

## 3.11 ECONOMICS

Dredging of Fernandina Harbor is necessary to allow deep-draft vessels access to the port. The port, in turn, provides employment and also produces income for the local community through the purchase of goods and materials. Channel dredging maintains safe navigation conditions for commercial fishermen and recreational boating enthusiasts as well. Boating opportunities and maintained beaches offer the local tourism industry attractions for generating revenue.

## 3.12 AESTHETICS

Amelia Island is enjoyed by thousands of visitors every year. The area's appeal may be attributed in part to the many picturesque waterways and beaches found around the island. Access to some of the natural and scenic nearby locations, such as Cumberland Island National Seashore, is by boat only.

# 4 ENVIRONMENTAL EFFECTS

## 4.1 INTRODUCTION

This section describes how the implementation of each alternative would affect the environmental resources listed in Section 1.4. A summary of these impacts can be found in Table 1 of Section 2.0. The following anticipated changes to the existing environment include direct, indirect, and cumulative effects.

## 4.2 WATER QUALITY

### 4.2.1 NO-ACTION ALTERNATIVE

There will be no impact to water quality if Fernandina Harbor is no longer dredged.

### 4.2.2 DREDGING ALTERNATIVE

The only anticipated change in water quality at the proposed dredge sites will be a temporary increase in turbidity. According to the state of Florida's water quality standards, turbidity levels during dredging are not to exceed 29 nephelometric turbidity units (NTUs) above background levels within a 150 meter mixing zone. In order to comply with this standard, turbidity will be monitored according to state protocols during the proposed dredge work. If at any time the turbidity standard is exceeded, those activities causing the violation will cease. According to past sampling data, dredging the Fernandina Harbor has never exceeded the state's turbidity standard. The Corps has also requested a variance from the state to allow a temporary elevation of turbidity, not exceeding 29 NTUs above background conditions at the edge of a 150 meter mixing area, within the Fort Clinch Aquatic Preserve. As stated previously, the preserve has been classified as Outstanding Florida Waters and is regulated more restrictively.

#### 4.2.2.1 Disposal Sites

Based on past sampling data, all chemical constituents identified within the sediments from the proposed dredge areas were at levels considered low enough for ODMDS and nearshore disposal or beach placement. A temporary increase in turbidity will occur at all of these sites during disposal activities. Turbidity levels will be monitored at the Nearshore and Beach Disposal Areas according to state protocols. Placement of dredged material within the ODMDS will be done according to the Site Management and Monitoring Plan for this area. Impacts to the ODMDS caused by disposal are also addressed in the Section 103 Evaluation Report (see Appendix D).

## 4.3 THREATENED AND ENDANGERED SPECIES

### 4.3.1 NO-ACTION ALTERNATIVE

There could be a minor loss of loggerhead sea turtle nesting habitat if suitable sand is no longer placed at the beach disposal sites. Otherwise, there will be no impact to threatened and endangered species if Fernandina Harbor is no longer dredged.

### 4.3.2 DREDGING ALTERNATIVE

Coordination with the U.S. Fish and Wildlife Service (USFWS) was conducted regarding possible impacts to the manatee and sea turtles caused by the proposed project (see Appendix C). The USFWS stated that the project is not likely to adversely affect the manatee if the precautions listed below are implemented, whereas the project may affect the loggerhead sea turtle. Precautions regarding nesting sea turtles, as listed in the biological opinion of the USFWS, will be implemented. Coordination with the National Marine Fisheries Service (NMFS) was conducted via the public notice. All standard precautions for hopper dredge use, as stated in the regional biological opinion of the NMFS, will be incorporated in the project plans and specifications should one be utilized.

#### 4.3.2.1 Manatees

Protective measures will be taken during dredging and disposal activities to ensure the safety of manatees. To make the contractor and his personnel aware of the potential presence of this species in the project area, their endangered status, and the need for precautionary measures, the contract specifications will include the following standard manatee protection clauses. The contractor will instruct all personnel associated with construction activities about the potential presence of manatees in the area and the need to avoid collisions with them. If a manatee(s) is sighted within 100 yards of the project area, all appropriate precautions shall be implemented by the Contractor to ensure protection of the manatee. These precautions shall include the operation of all moving equipment no closer than 50 feet of a manatee. If a manatee is closer than 50 feet to moving equipment or the project area, the equipment will be shut down and all construction activities will cease to ensure protection of the manatee. Construction activities will not resume until the manatee has departed the project area. During clamshell dredging operations a dedicated observer will monitor for the presence of manatees. If manatees are present, the observer will document all activities with the use of a video camera with the capabilities of video taping at night. The video tape will have date/time signature and record all manatee movements in the construction area and note any reactions to turbidity, sound and light. Copies of the videos will be forwarded to the Corps as stated in the plans and specifications. All vessels associated with the project shall operate at 'no wake' speeds at all times while in shallow waters or channels where the draft of the boat provides less than three feet clearance from the bottom. Mooring bumpers shall be placed on all large