JANUARY 2005

DUVAL COUNTY
BEACH EROSION CONTROL (BEC)
PROJECT NEW BORROW AREA

FINDING OF NO SIGNIFICANT IMPACT
&
ENVIRONMENTAL ASSESSMENT

DUVAL COUNTY, FLORIDA

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

DEPARTMENT OF THE ARMY
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REPLY TO
ATTENTION OF

DUVAL COUNTY BEACH EROSION CONTROL PROJECT
NEW BORROW AREA
DUVAL COUNTY, FLORIDA

FINDING OF NO SIGNIFICANT IMPACT

I have reviewed the Environmental Assessment (EA) of the Duval County beach erosion control project using a new borrow area. This Finding incorporates by reference all discussions and conclusions contained in the EA enclosed herein. Based on information analyzed in the EA and on pertinent data obtained from Federal, State and local agencies having jurisdiction and/or special expertise, and information obtained during public coordination of a draft EA and Finding of No Significant Impact, I conclude that the considered action will have no significant impact on the quality of the human environment. Reasons for this conclusion are, in summary:

1. Both the National Marine Fisheries Service (NMFS) and the U. S. Fish and Wildlife Service (FWS) concurred that there will be no adverse effects on threatened and endangered species at either the placement area or the new borrow area.

2. The work will be done in accordance with the Biological Opinion issued by the FWS for impacts to manatees, and nesting sea turtles and, the latest Regional Biological Opinion issued by the NMFS for impacts to whales and sea turtles in water.

3. Measures to eliminate, reduce, or avoid potential effects to fish and wildlife resources will be implemented (EA sec. 5.0, Environmental Commitments).

4. In consultation with the Florida State Historic Preservation Officer, it was determined that the proposed dredging in the new offshore borrow area, and subsequent placement on the beach will not impact any sites of cultural or historic significance.

5. A State water quality certification will be issued shortly and State water quality standards will be met during placement.

6. Benefits to the public will be protection of upland residences and businesses as well as associated infrastructure along an erosive beach from storm generated wave energy.

In consideration of the information summarized, I find that the considered action of using the new offshore borrow area for the Duval County Beach Erosion Control project will not significantly affect the human environment and does not necessitate that an Environmental Impact Statement be undertaken.

JAN 27 2005

Date

for

Robert M. Carpenter
Colonel, U.S. Army
District Engineer

Erik L. Stor
Major, U.S. Army
Deputy District Engineer

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DUVAL BEC NEW BORROW AREA

FINAL ENVIRONMENTAL ASSESSMENT

1.0 PROJECT PURPOSE AND NEED

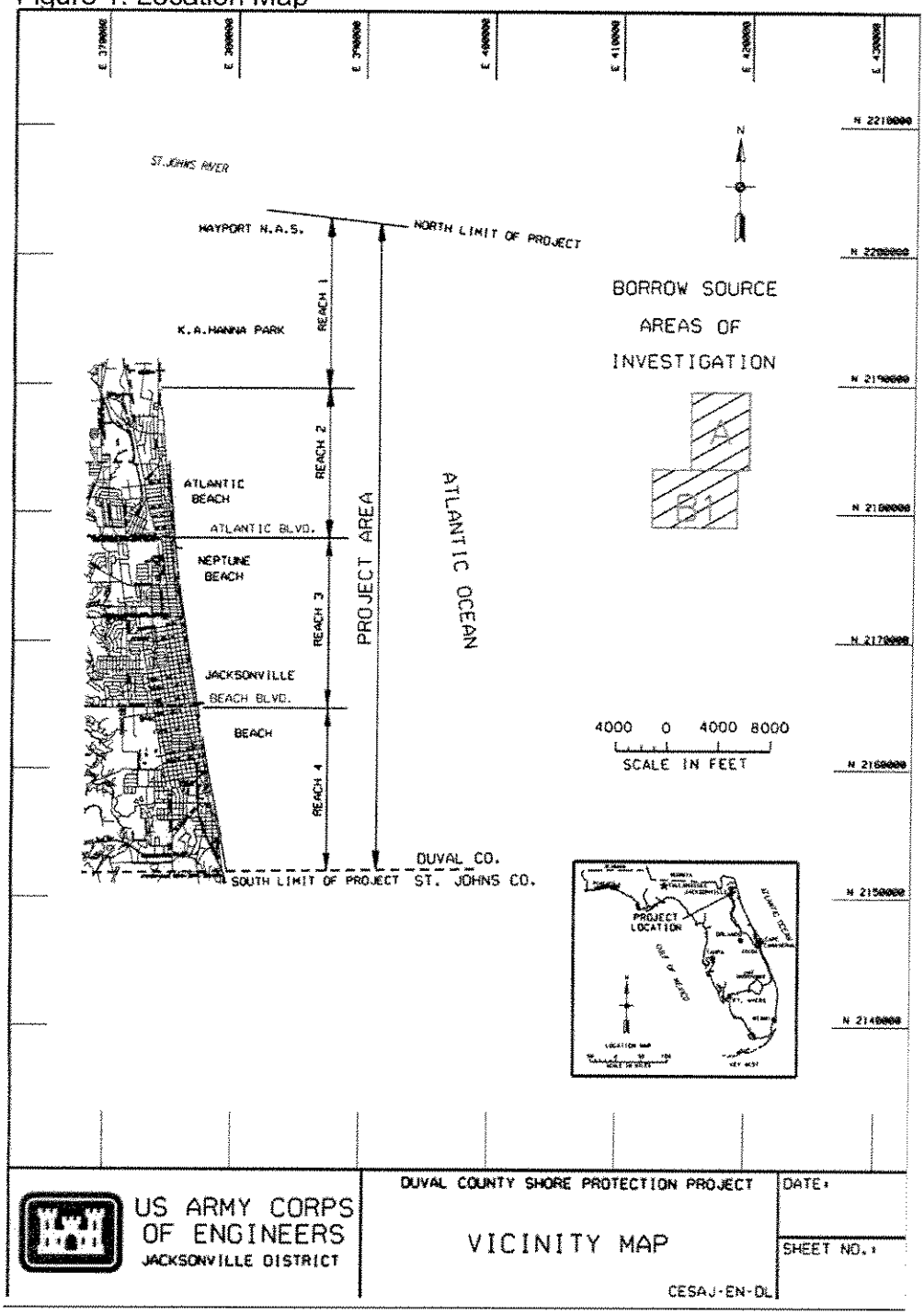
1.1 Project Authority. The authorized Duval County Beach Erosion Control Project (BEC) involves the periodic renourishment of 10 miles of Atlantic shoreline between the St. Johns River to the Duval County - St. Johns County line (Figure 1 and 2). The project was authorized by Section 301 of the River and Harbor Act of 1965 (Public Law 89-298) on 27 October and is described in House Document 273/89/1. The authority for Federal participation in the cost of periodic renourishment expired in December of 1990. Accordingly, the Corps prepared a Section 934 Reevaluation Report in October 1990 to evaluate extending Federal participation in the cost of future Duval County beach renourishment. In accordance with Section 934 of the Water Resources Development Act on 3 February 1993, the Assistant Secretary of the Army for Civil Works approved the extension of Federal participation in periodic renourishment of the Duval County Beach Erosion Control Project.

1.2 Project Location. Duval County is located in the north-eastern corner of Florida along the Atlantic Ocean (Figure 1). The Atlantic shore of the county consists of a barrier island bounded to the north by Nassau Sound, to the west by the Intracoastal Waterway, to the east by the Atlantic Ocean, and to the south by St. Johns County and the community of Ponte Vedra. The authorized project requires that periodic nourishment from just south of the St. Johns River south jetty to the St. Johns County line be undertaken, as needed. The Duval County beaches are highly developed with private homes, apartment houses, resort motels and condominiums, and concession establishments located throughout the area. The Duval Borrow Area (BA) is located 8 miles offshore in the immediate vicinity of the same shoal used for past renourishment projects. It borders the southern and eastern edge of the previous BA.

1.3 Need and Description of Proposed Action. A comparative analysis of historical surveys, aerial photographs, and information obtained from local officials and residents aided in defining the extent and seriousness of the erosion problem along the Duval County shoreline. Winter storms accompanied by strong northeast winds results in beach erosion and lowering of the beach profile by scouring in areas protected by seawalls, and recession of the dunes on unprotected beaches. Although natural accretion of the beach generally occurs during the summer months, this seasonal accretion does not equal the winter recession of the beach. Erosion rates, and pictures of the shorefront structures potentially at risk from beach erosion along the Duval County shoreline, are contained in the 1990 Section 934 Reevaluation Report and EA.

1.4 Project History & Previous National Environmental Policy Act (NEPA) Documentation. In the early 1960's local, State, and Federal officials concluded that the beaches of Duval County and the adjacent buildings and infrastructure faced a serious

Figure 1. Location Map



damage threat from storm generated waves and tides. To combat and reduce this threat, the Jacksonville beaches were renourished as early as 1963. Subsequent to the passage of NEPA in 1969 a Final Environmental Impact Statement (FEIS) was prepared

in August 1974 to place 3.3 million cubic yards of sand along 10 miles of Duval County beaches. The authorized project area was renourished in 1980, 1986/87, 1994 and partially in 2003. This most recent nourishment was associated with the large amounts of sand found with the deepening of the Jacksonville Harbor channel. The effort ended prematurely when an excessive amount of shell material was deposited on the beach along with sand. The shell material was subsequently removed from the beach but the beach renourishment was not completed. In 2000 an EA was completed and FONSI signed to excavate beach quality sand from the Buck Island dredge material disposal area. However, for economic reasons that planned effort was never begun. A comprehensive renourishment of the beach has not occurred since 1994. The approved Federal participation in the periodic renourishment of the Duval County shoreline requires that beach fill is placed on the project area when erosional forces have significantly reduced the beach berm, and coastal residences and infrastructure are at risk from storm damage. Accordingly, the current state of the beach requires a complete renourishment to assure protection to coastal residents, buildings and infrastructure.

The current project will use the same construction templates as the previous renourishment. Information concerning the specifics of the above mentioned templates as well as justification for the calculated fill volumes can be found in the 1984 General Design Memorandum (GDM) and the 1990 Section 934 Report. It is estimated that the current renourishment project will place approximately 1,500,000 cubic yards of beach compatible material on the project beach.

2.0 ALTERNATIVES

2.1 Alternative Beach Erosion Control Measures. Alternatives, such as, groins, offshore breakwaters, and nonstructural plans were all considered during the original project study. A thorough description of the potential environmental effects of each alternative and the reasons for alternative selection and/or dismissal are described in detail in the 1974 Final Environmental Impact Statement (FEIS), the 1984 General Design Memorandum (GDM), and to some extent in the 1990 934 Reevaluation Report. In addition, a NEPA scoping letter dated December 15, 2003 solicited public comments concerning use of the heavily shoaled Ft. George River/Inlet north of Huguenot Park as a borrow source. Subsequent comments indicated that an EIS was needed to sufficiently address all issues. Initial economic analysis indicated use of this borrow area was prohibitably expensive due to the need to double handle the sand in order to get it to the beach south of the inlet. Therefore, the duration required for the EIS preparation and approval process and the costs involved in getting the sand to the beach South of the Inlet, effectively eliminated the use of this borrow area for the proposed 2005 renourishment.

2.2 No Action. The no action alternative would allow the beaches to further erode over time. The current state of erosion would significantly increase the threat of wave and tidal storm damage to residences and businesses along the shoreline as well as virtually

eliminate oceanfront recreation for the residents and tourists of Duval County.

2.3 Authorized Project. The current project will use the same construction templates as the previous renourishments but the borrow material will be dredged from a different site (described below) located on the same shoal used for several previous nourishments. Information concerning the specifics of the above mentioned templates as well as justification for the calculated fill volumes can be found in the 1984 GDM and the 1990 Section 934 Report. It is estimated that the renourishment project will place approximately 1,500,000 cubic yards of beach compatible material on the project beach.

2.4 General Borrow Area. The beach compatible material used in the initial construction and subsequent renourishments was obtained from an offshore shoal located approximately 8.0 miles (12.8km) northeast of Jacksonville Beach, Florida (Figure 4). Material for the current renourishment will come from suitable borrow areas immediately adjacent to the original borrow site from water depths of 50-60 feet (15.2m-18.2m). The material found on this shoal was shown to consist primarily of sand that is gray quartz, fine to medium grain, well sorted, and ranges from clean to slightly silty with a small percentage of clay present. As reported in the 1990 Section 934 Reevaluation Report, the pre-project native beach had a phi-mean of 2.38 (0.192 mm). The sand from current borrow area is not significantly different from the native beach sand and has a phi-mean of 2.00 (0.25 mm).

3.0 AFFECTED ENVIRONMENT

3.1 General Environmental Setting. The State of Florida is a portion of the Floridian Plateau, the plateau being exposed as dry land during periods of drop in sea level. Each retreat of the sea left behind a wide variety of hard mineral deposits, which have been moved about subsequently by waves and currents. The movement of these deposits has formed present day sandy beaches, offshore bars, and barrier islands. Shore processes over geologic time have enlarged and extended many of these barrier islands. These barrier islands are generally vegetated with salt tolerant grasses, herbs, and shrubs. Pioneer species such as sea oats (*Uniola paniculata*) dominate the foredune and the saw palmetto (*Serenoa repens*) the leeward slope of the Atlantic coastal dunes in this area. Waves are continually adding new sections to barrier islands and eroding the old, through dynamic processes such as longshore drift, winter storms, and hurricanes. Where summer accretion does not keep up with winter storm recession, an erosion problem such as the one that Duval County is currently experiencing prevails.

3.2 Beach. At high tide and especially during storm events, the beach is inundated up to the base of the dunes. Relatively wide vegetated dune areas occur primarily along the northern portion of the BEC area. Such dunes are less prominent in the southern project reach. The vegetated dunes are dominated by a mixture of sea oats (*Uniola*

paniculata), beach pennywort (*Hydrocotyle umbellata*), gaillardia (*Gaillardia pulchella*), saltwort (*Batis maritima*), sea rocket (*Cakile edentula*), railroad vine (*Ipomoea pes-caprea*), prickly pear cactus (*Opuntia compressa*) and beach tea (*Croton punctatus*).

3.3 New Borrow Area. The Duval Co. Borrow Area is located 8 miles offshore and borders the southern and eastern edge of the borrow area used for past renourishment projects. The previously used borrow area provided sand that proved excellent for the beaches. The current borrow area, comprised of Area A (NAD 27 midpoint x=417717, y=2186550) and B1 (x=416009, y=2181210), is located in 45 to 55 foot water depth and contains, on average, 5-7 feet of clean sand. Areas within the borrow area vary in useable sand thickness from 0 to 19 feet.

The borrow area was defined by using remote sensing surveys and vibracores. Marine geophysical seismic reflection surveys mapped the sediment thickness, used to guide the initial core-boring program. This outlined the borrow area of interest. A bottom towed geophysical survey utilizing the Aquares Resistivity System was done in conjunction with bathymetry mapping to produce detailed maps of the sub-bottom on both the horizontal and vertical plane. The results are provided in the Final Report of the Bottom-Towed Resistivity Survey and Vibracore Borings for Duval County, FL BEC, Duval County, Florida, July, 2004 (Challenge Engineering & Testing, Inc., 2004). Vibracores were drilled based on preliminary data from this survey to define in detail the sand quality and quantity available for use. No rock was encountered at the surface or with depth within the borrow area, although small amounts of sand with weak to moderate cementation was encountered with depth. The borrow area will be designed to the State of Florida regulations regarding material quality and a 2 foot buffer above poor quality material will be included for dredging inaccuracies.

The material to be excavated is generally gray, poorly graded quartz and carbonate sand, fine-grained, with varying amounts of shell. The silt content averages 3.4% (#230 sieve). The composite mean grain size of the borrow area is 2.00 phi (0.25 mm) with a phi standard deviation of 1.15 phi.

Included is a map of the borrow area being developed, the location of the area used for previous projects and potential areas for future use. Also included is a composite frequency curve plot and representative laboratory data and core boring logs.

3.4 Benthic Organisms/Habitat. Site specific information concerning the Duval Borrow Area (DBA) benthic biological communities is extensive as the U.S. Army Corps of Engineers (Corps) in cooperation with the U.S. Bureau of Minerals Management, sponsored the monitoring of the DBA to assess post-mining recolonization by benthic infauna.

The study site was located approximately 8 miles east southeast of the St. Johns River

inlet (Duval County, Florida) and due east of Atlantic Beach. Benthic core samples were collected by divers for grain size and macroinfaunal analysis for one pre-mining survey, June 1995, and four post-mining surveys, February 1996, and September 1996, June 1997, and February 1998. For the June 1995 collection, surface sediments of the Borrow and Control areas were significantly different for most of the measured grain size parameters. After analysis of the June 1995 infaunal samples, the number of Borrow and Control areas was reduced for subsequent post-mining collections from five (each) to two. The number of samples collected at each station was increased from four (June 1995) to ten for all post-mining collections. One Control area was the same location as for June 1995, but the second (new) Control area was located to the East of the Borrow area in an area with a sediment type similar to the pre-mining Borrow area. Results of the pre-mining and first two post-mining collections were submitted to the USACE in February 1997. A second report with a detailed analysis of the pre-mining and three post-mining collections was submitted in September 1997. This final report synthesized the information and data analyses resultant from all five surveys.
The ambient seabed of the proposed borrow area is coarse to fine grain sand of recent origin. Sidescan sonar survey results revealed no hardbottom, reef, or similar perturbations at either borrow area location. Significant regional information is available concerning benthic and pelagic biological communities. These data are from sites that exhibit similar physical, chemical and geologic characteristics and from which reliable inferences can be made as to the effects dredging will have on the biological communities and infrastructure associated with the Borrow Area

3.5 Fish and Wildlife Resources. The biological communities found in the general project area are all well adapted to the particular physiochemical and hydrodynamic conditions associated with the supralittoral beach zone and the intertidal swash zone (Nelson 1985). 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 organisms have low species diversity because of the harshness of the environmental conditions present. However, animals that are able to successfully adapt to these dynamic conditions are faced with very little competition from other organisms. It is because of this lack of competition and adaptability to the dynamic conditions found along the project area that *D. variabilis* and *A. pansus* are able to numerically dominate the biological community (Edgren 1959). These organisms serve as an important food source for nearshore fish and crustaceans. Another important food source are amphipods and isopods that are washed out of their burrows and suspended in the water by receding waves. A variety of polychaete worms that are also adapted to this highly dynamic and stressful environment can be found within the intertidal zone of the Duval County beaches. These intertidal organisms also provide an important food source for foraging shore, wading birds and fish. Highly visible decapod crustaceans of the Duval County 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 and to retard water evaporation from their bodies during aerial exposure (Barnes 1974). In addition to the benthic organisms described in section 3.01 which inhabit this site the plant life dominating such open sea areas is phytoplankton and the chief consumers are zooplankton. Depending on these for an energy base are the nekton dominated by the fishes.

Figure 2. Borrow Area Location Map

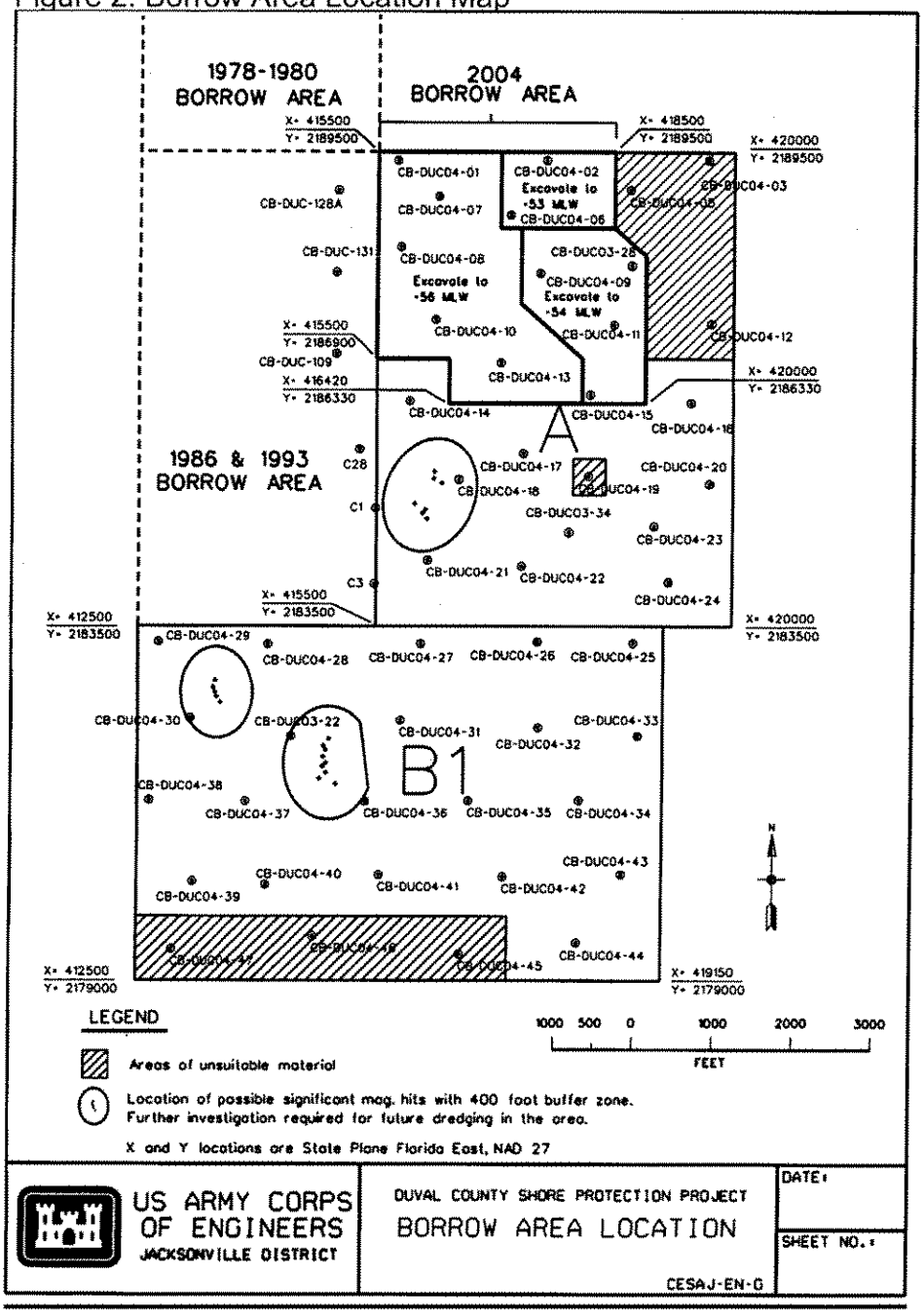
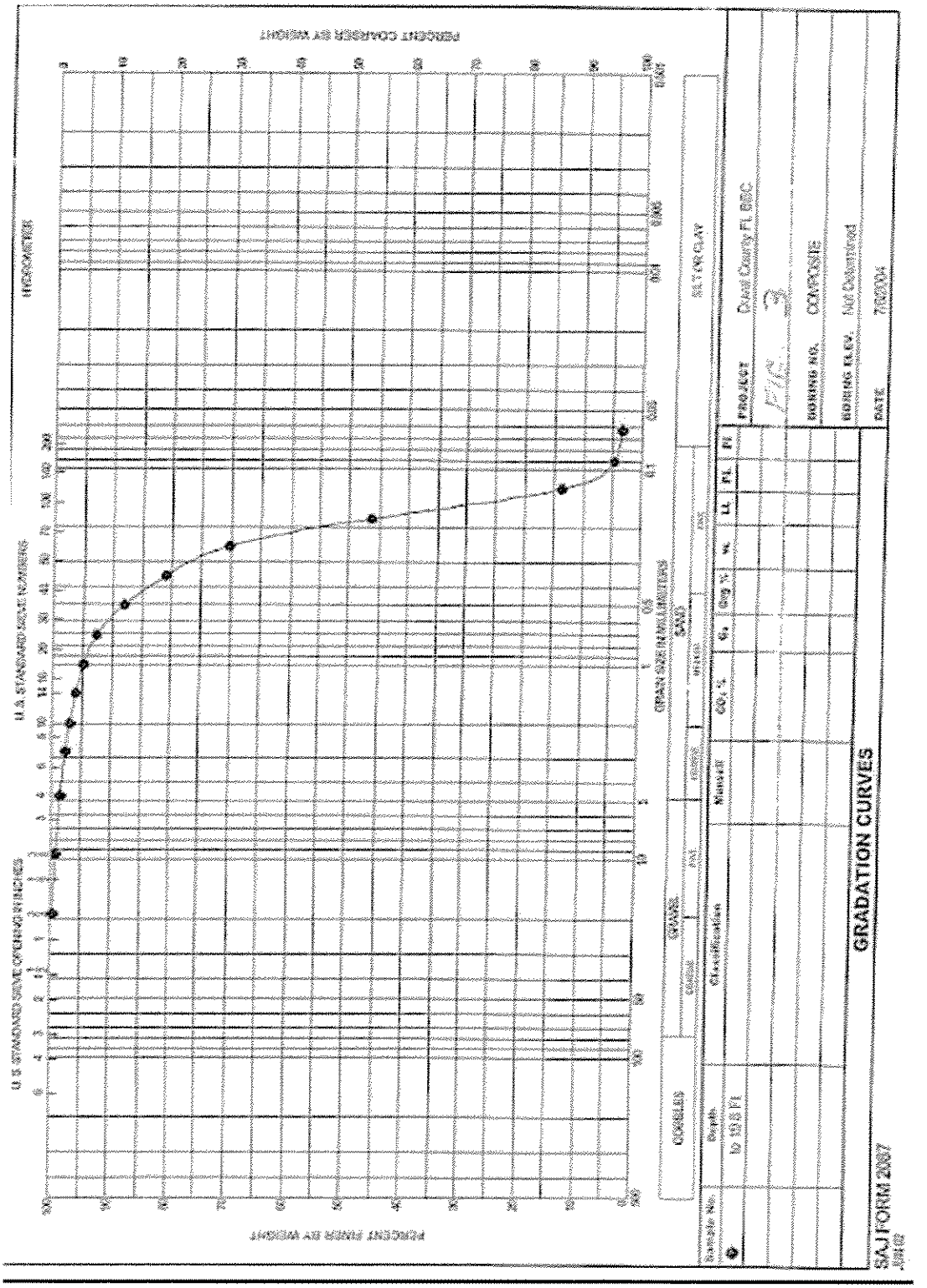


Figure 3. Borrow Area Sediment Grain Size Analysis



3.8 Water Quality. The project area is a sandy, high energy coastline. The beach is predominantly quartz sand with some shell fragments. Due to the high energy conditions found along the Duval County coastline, sand is continuously resuspended in the water column with each breaking wave. This resuspension results in highly turbid conditions normally being found throughout the project area. The coastal waters within the 3mile state boundary area of the authorized work are designated by the State of Florida as Class III. Class III waters are designated as suitable for recreation and the propagation of fish and wildlife. Strict control over water quality is addressed by the Florida Department of Environmental Protection in applying specific water quality monitoring requirements during the beach fill operations stage in Florida waters.

3.9 Hazardous and Toxic Wastes. The coastline in the project area is located adjacent to predominantly residential and recreational areas. There are no known sources of hazardous and toxic wastes in the proposed borrow area or proposed placement areas, and no records of such activities in the past.

3.10 Aesthetic Resources. Aesthetics found along the project area can be valued in the moderate range. The intertidal range of the beach is wide and consists of the beach from the coastal construction setback line through intertidal zone to open water. The residential areas consist of some backdune naturalized areas with dune grasses, morning glory, and other native flowering groundcovers. The few commercial areas generally develop right up to the beach leaving little backdune, dune, or native vegetation present. The majority of Duval County beaches have some dunes with native vegetation present as the result of previous efforts to restore the beach through erosion control measures. This ongoing effort greatly improves the aesthetics of the Duval County beaches.

3.11 Coastal Barrier Resources. The Coastal Barrier Resources Act of 1982 (Public Law 97-348) encouraged implementation of conservation measures on largely undeveloped coastal barrier islands along the Atlantic and Gulf of Mexico coasts. These conservation measures were designed to help conserve critical habitat for a variety of island flora and fauna. Due to the urbanization and highly developed nature of the project area, the barrier islands along the Duval County shore are not units of the Coastal Barrier Resources System.

3.12 Acoustical Quality. The project area is a favorite recreational spot for the beach residents who reside in the area as well as the tourists who temporarily reside in the high rise hotels and condominiums. Additionally, the Duval County beaches are a favorite spot for many of the residents that reside in the western portions of Duval County. Because of the urbanization of the surrounding area and the popularity that the beaches enjoy, noise levels are usually elevated during the tourist season as well as on most weekends.

3.13 Air Quality. The urbanization of the City of Jacksonville and the popularity of the beaches area all contribute to a large number of motorized vehicles being in and around the surrounding project area at any given time. Because of the sea breezes that are usually present along the beaches, Duval County is an air quality attainment area as airborne pollutants are readily dispersed by the ocean generated winds.

3.14 Recreation/Economics. The project area is a local favorite for county residents to spend much of their leisure time sunbathing, sailing, walking, and riding bicycles, in addition to a variety of other active and passive activities. The spring, summer, and fall months of the year are the most active times with the summer months comprising the peak use period. During the winter months, the Duval County beaches are generally used by relatively few people due primarily to relatively low temperatures (40°F - 60°F) and the frequency of northeast winds, which produce strong waves and high tides. The 1989 Florida Statewide Comprehensive Outdoor Recreation Plan (SCORP) states that saltwater beach activities are the most participated in outdoor recreation activity in the county.

4.0 ENVIRONMENTAL EFFECTS.

4.1 General Environmental Impacts to Beach and Borrow Area Benthic Habitat. 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 impact 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. Replenishment 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 residents and infrastructure of the coastline.

Benthic Organisms/Habitat. The immediate short-term impact at the dredged (borrow) site is a temporary defaunation of the benthic community. Reestablishment of the benthic community at the borrow site appears to coincide with the recovery of the site to predredging physical and chemical conditions. Lotspeich, 1997 and other Florida studies conducted by Marsh et al., 1980; Marsh and Turbeville, 1981; Culter and Mahadevan, 1982; Gorzelany, 1983; Saloman et al., 1982; Nelson, 1985; Continental Shelf Associates, Inc., 1987b; Gorzelany and Nelson, 1987; Bodge and Shaul, 1994; investigated the impact of dredging and/or filling on benthic communities in borrow and fill areas. These studies suggest that site physical and chemical conditions after borrow activities should match previous site conditions as nearly as possible for successful biological community recovery. Marsh et al. (1980) found no continuing impacts at the borrow site off Hallandale Beach, Broward County, Florida, surveyed seven years after a beach restoration project. Marsh and Turbeville (1981) found no long-term effects on

many benthic community parameters in a borrow area off Hillsboro Beach, Broward County, Florida, five years after use of the site; however, qualitative changes in species composition in the community were noted. Culter and Mahadevan (1982) found similar results off Panama City Beach, Bay County, Florida, three to four years after a restoration project. Saloman et al (1982) found that dredging done at a Panama City Beach borrow area had no adverse long-term effect on bottom dwelling invertebrates, sediments, or water quality along shore or in offshore borrow areas. Furthermore, short-term ecological consequences of dredging lasted only about 1 year and included minor sedimentary and benthic invertebrate population changes.

Suspended sediment plume sub lethal effects on filter feeding benthos such as: gill abrasion/clogging and respiration impairment should not be a factor as the substrate is clean sand being dredged in an open-water, typically dynamic, environment. In light of the relatively coarse nature of the sand and minimal silt content, turbidity and/or oxygen depletion associated with dredging is predicted to be minimal, if at all, and of no significant impact. Furthermore, the physical characteristics of the proposed borrow material are the same as the beach fill previously placed in this area. Therefore, no adverse impacts associated with the introduction of the borrow material to the beach fill areas are predicted.

4.1.1 Summary of Beach and Borrow Area Benthic Habitat Effects Specific to Duval County. Lotspeich and Associates, in June 1995, performed a benthic macroinfaunal and sediment survey to examine long term effects of sand mining for the Duval County, Florida, Shore Protection Program Beach Erosion Control Project. A sand borrow area (BA) and associated control area were surveyed in June 1995, February 1996, September 1996, June 1997, and February 1998. The study area was located approximately 7 miles east southeast of the St. Johns River inlet, and due east of Atlantic Beach. At the time of sampling, the depth of the BA ranged from 48 to 50 feet, and the depth of the Control site ranged from 60 to 63 feet.

Borrow and control areas were sampled for benthic macroinfauna and sediments. Five locations were sampled at each site in June 1995 and two locations at each site in February/September 1996, June 1997, and February 1998. Divers collected 50 benthic cores at these two sites in June 1995 and sixty cores for the post-mining surveys. For the June 1995 sampling, forty cores were collected for infauna analysis (10 reserved as spare samples), and 10 samples were collected for sediment analyses. For the post-mining surveys, forty cores were collected for infaunal analysis, and twenty samples were collected for sediment analyses.

Results of analysis indicated significant differences in several sediment parameters that could only partially be attributed to the mining activity. In part, differences were due to the natural pre-mining spatial variance of the study areas. The substratum originally consisted primarily of medium to coarse sand with small portions of shell hash and silt-

clay fractions. Mining activity did not significantly alter the overall grain size composition of the area as the quantity of material removed appeared to be small with respect to the total available resource.

There were strong temporal changes in benthic infaunal abundance and species richness that greatly exceeded spatial variance. Borrow and Control areas behaved similarly on a temporal basis, with abundance and species richness being comparable between the two areas. Community composition was notably different between the two areas for the early surveys but the differences in community composition diminished through time. There were considerable differences in species composition of individual samples, indicating strong within-area infaunal heterogeneity.

Long term effects of the sand-mining at this location were undetectable for the post-mining sampling periods. The February and September 1996, post-mining sampling events were conducted during periods of seasonal low periods of abundance and species diversity in comparison to the June 1995 sampling. The June 1997 sampling resulted in data indicating a near recovery, within 10%, on the basis of numbers of species and abundance. A complicating factor was the nearly identical infaunal fluctuations of the Borrow and Control areas. Severe 1996 summer storms may have impacted the benthos in a manner similar to effects manifested by mining. However, by February 1998, the Borrow and Control communities were responding in a similar manner and seasonal variation accounted for the winter declines in abundance and species.

Finally, Lotspeich study results of analysis indicated significant differences in several sediment parameters that could only partially be attributed to the mining activity. In part, differences were due to the natural pre-mining spatial variance of the study areas. The substratum consisted primarily of medium to coarse sand with small portions of shell hash and silt-clay fractions. Mining activity did not significantly alter the overall grain size composition of the area, as the quantity of material removed appeared to be small with respect to the total available resource.

This study revealed that the effects of sand mining on the shallow shelf region are limited to the area of disturbance and recovery is complete within one year after the initial disturbance. The disturbed bottom, observed six months post-mining, was indistinguishable from the Control area by the second post-mining event (15 months post-mining).

4.1.2 Potential Impacts to the Borrow Area. The hopper dredging activity will be limited to a small area within the borrow area limits. Efficient dredging practice, and prudent design, entails dredging material in 2 to 5 ft thicknesses at a time along long, straight, adjacent runs. Dredging of the 1.5 mcy quantity estimated for the project's renourishment activity is anticipated to directly involve (impact) to an area of about 6000 ft by 4000 ft.

Where the direct effects of dredging occur, nonmotile invertebrates would succumb or be transported to the beach placement area. However, as dredging will be limited to a relatively small area, species inhabiting bottom areas adjacent to dredged furrows will provide a local recruitment stock. As these organisms are very fecund, the dredged site should quickly recolonize.

Suspended sediment plume sub lethal effects on filter feeding benthos such as: gill abrasion/clogging and respiration impairment should not be a factor as the substrate is clean sand being dredged in an open-water, typically dynamic, environment. In light of the nature of the sand and minimal silt content, turbidity and/or oxygen depletion associated with dredging is reasonably predicted to be non existent or minimal and of no significant impact.

4.2 Fish and Wildlife Resources. During the beach renourishment construction phase, there may be some displacement of foraging and resting birds as well as small mammals and reptiles that use the project area. This displacement will be short-term, and there exists ample areas north and south of the project area with similar characteristics that may be used by displaced species while construction activities are ongoing. Concurrently, there is a short term increase in birds' opportunistically feeding on disturbed benthic organisms near the outfall pipe. After the initial construction, invading grasses and other beach vegetation will provide additional refuge and foraging opportunities to small rodents and reptiles. The Duval County near-shore waters are naturally turbid because of the highly dynamic physical conditions present in the area. Organisms inhabiting this shoreline must be readily adapted to these turbid conditions in order to successfully survive. Therefore, elevated turbidity levels from placement of fill material on the beach is not expected to have a significant detrimental impact to such sightfeeders as the brown pelican (*Pelecanus occidentalis*) or other shorebirds, waterfowl and wading birds.

The inhabitants of the intertidal zone typically possess high fecundity and rapid turnover rates during the summer breeding season. Populations of the mollusk, *Donax variabilis*, and the crustacean, *Acanthohaustorius pansus*, in areas of beach nourishment usually become numerically abundant once again after six months most likely from littoral transport of larvae from adjacent areas (Mikkelson 1981). Because of this, long term impacts to infaunal invertebrates inhabiting the intertidal zone along the beaches of Duval County are not expected to be significant. The highly visible decapod crustaceans of the Duval County supralittoral zone such as the ghost crab (*Ocypode quadrata*), mole crab (*Emerita talpoida*), and the Atlantic fiddler crab (*Uca pugilator*) are all highly motile organisms and are easily adapted to avoiding unacceptable environmental conditions. Reilly and Bellis (1978, 1983) have concluded that direct burial by beach nourishment activities is not a major mortality source as these crabs are able to actively avoid the nourished area or burrow up through the overburden material,

if necessary. Marsh and Turbeville (1981) examined benthic communities near Hallandale Beach, Florida, seven (7) years after a beach nourishment project and concluded that no long term effects were observed for the infaunal benthos. Cutler and Mahadeven (1982) found no significant differences in biotic communities between borrow sites and surrounding areas off of Panama City, Florida, some 3-4 years after a beach nourishment project. Gorzelany (1983) found no evidence that a beach nourishment project of Indiatlantic and Melbourne Beach, Florida, had any negative effect of the nearshore infaunal communities in that area. Saloman and Naughton (1984) saw no significant numerical differences in biological communities between beach deposition and non-deposition areas after six (6) weeks following beach fill operations off Panama City, Florida. In summary, no long term adverse impacts are expected to organisms in the supralittoral or intertidal zone from the Duval County Beach erosion Project.

Fishes are generally believed to flee the active dredging site while operations are in progress. Courtenay et al. (1974) claimed that fish and motile invertebrates seem to vacate borrow sites during dredging activities but will return after operations have ceased. Negative impacts to populations of fossorial (= burrowing) fishes such as eels, jawfish, and gobies have occurred, however, with a relatively rapid benthic recovery these impacts are expected to be insignificant and temporary. All dredging and disposal will be done in open water and no adverse impacts to wildlife resources are expected

4.3 Threatened or Endangered Species. Sea turtles are organisms of major concern as they use the supralittoral zone for nesting activities and the near-shore areas for foraging. Providing the eroding shoreline of Duval County with beach fill will result in widening the beach berm and increasing the beach area that is available to nesting threatened and endangered species. This beach is a low-density turtle nesting beach and the U.S. Fish and Wildlife Service updated its reasonable and prudent measures and terms and conditions from their 1993 Biological Opinion, previously modified in January 2000, by email dated January 11, 2005 (Appendix C). These new provisions were incorporated into our Environmental Commitments Section 5. Implementation of these measures will minimize project effects on nesting turtles.

One of the primary human caused sources of injury and mortality for the right and humpback whales are collisions with vessels. Right whales are particularly susceptible due to their surface resting and slow swimming habits in their southern critical habitat. Although this will limit the possibilities for encounters with whales, any ocean going vessels used for this project will apply all provisions of the NMFS September 1997 Regional Biological Opinion, as well as any more recent guidance provided to control ship operations. The NMFS provided a letter dated December 16, 2004 stating that the terms and conditions of the 1997 RBO covered the proposed activity and no further consultation pursuant to section 7(a)(2) of the ESA was required.

4.4 Essential Fish Habitat. EFH coordination with the National Marine Fisheries Service (NMFS) was initiated during the public notice process and general comments were received from NMFS by letter dated November 22, 2004 (Appendix C). Essential Fish Habitat (EFH) effects resulting from the renourishment of the Duval County Beaches should ultimately benefit the littoral environment by restoring, stabilizing and sustaining normal beach dynamics to the benefit of those species typically adapted to this environment. Based on analyses discussed in section 4.1, negative acute and cumulative effects on EFH as a result of the proposed project are expected to be negligible. Please refer to Appendix D. EFH Assessment for a detailed assessment of potential impacts to these habitats. This assessment was sent to the NMFS on December 17, 2004 who then provided their EFH conservation recommendations by email dated January 12, 2005. Finally, the Corps responded to the NMFS conservation recommendations by letter dated January 13, 2005 accepting the recommendations and completing the EFH coordination process.

4.5 Historic Properties. As stated in paragraph 3.7, there are no known cultural resources located within the borrow or placement areas of impact for the Duval County Beach erosion Project. All activities were appropriately coordinated with the Florida State Historic Preservation Officer and with the Minerals Management Service Preservation Officer. Magnetometer and Side Scan surveys have been conducted and three areas were identified that might contain significant historic resources. These areas will be avoided by at least a 400' buffer.

4.6 Water Quality. During project construction, an insignificant increase in turbidity in the immediate placement area can be expected due to the beach fill operations. As the background conditions in the project area are naturally turbid due to the dynamic physical conditions of the area, this elevated increase in turbidity will be a temporary condition and is not expected to present any detrimental impact to organisms in the nearshore zone.

4.7 Hazardous and Toxic Wastes. The project will not involve placement, use or storage of hazardous and toxic materials in or near the project area. All project wastes and refuse will be disposed of properly upon work completion.

4.8 Aesthetic Resources. Beach renourishment will restore the natural aesthetic resources of the Duval County beaches. The project will restore the beaches severely eroded during Hurricane Floyd's storm generated waves, and subsequent "northeasters" and other strong wind events. Recently exposed beach armorment, which had previously been covered for many years, will again be encased in a sheath of sand and dune areas will be restored to a more natural appearance. The project will vastly improve the aesthetics of Duval County's beaches.

4.9 Coastal Barrier Resources. The project area is not part of the Coastal Barrier Resources System.

4.10 Acoustical Quality. The immediate project areas will experience increased noise levels during sand placement to rebuild the beach. Construction equipment will be properly maintained in order to minimize the effects of noise. The elevated noise levels will be localized and will not persist due to the brief, temporary nature of the construction activity. Operating equipment should result in no more than a white noise phenomena having uniform characteristics which are usually less disruptive. Backup sounds will be used as a safety measure.

4.11 Air Quality. There will be no long term accumulation of particulates in the project area because offshore sea breezes are likely to disperse pollutants away from the barrier island and the construction activity is brief and temporary in nature. No air quality permits are required for this work.

4.12 Recreation/Economics. Once the Duval County beach renourishment project is complete, the beach will contain a larger sand berm that will provide more space for both active and passive saltwater beach recreation activities. A wider sand berm along the beach will provide for improved family oriented recreation activity that is a significant tourist and county resident attraction. The additional sand will also function to help separate active and passive recreational activities.

The 1989 Florida Statewide Comprehensive Outdoor Recreation Plan (SCORP) states that saltwater beach activities are the most participated in outdoor recreation activity in the county (Check and see if this is current for the DUVAL SCORP). Beyond shore protection, economic impacts of the proposed activity are principally associated with benefits accruing to those industries associated with recreation and tourism along and adjacent to the project fill areas. In addition, public recreation benefits will accrue as all of the project shoreline is within 1/4 mile of a public beach access, most of which include dedicated public beach parking.

5.00 ENVIRONMENTAL COMMITMENTS

5.1 Commitments List. The U.S. Army Corps of Engineers and contractors commit to avoiding, minimizing, or mitigating for adverse effects during construction activities by including the following commitments in the contract specifications:

(1) Inform contractor personnel of the potential presence of whales, sea turtles and manatees in the borrow and/or beach fill areas, their endangered status, the need for precautionary measures, and the Endangered Species Act prohibition on taking and/or harassing any of these species.

(2) During transport to/from the offshore staging, borrow, or beach fill areas, personnel will take precautions to avoid collisions with sea turtles, manatees, and whales. Vessels transporting personnel between offshore and nearshore areas shall follow routes of deep water whenever possible. A lookout will be posted on all dredge and support ships operating offshore between November and March to minimize potential collisions with sea turtles, manatees and whales. If vessels operate after sunset and before the next sunrise, low sodium lights will be installed aboard these vessels in order to reduce the possibility of taking sea turtles.

(3)The project beach will be visually inspected each morning between April 15 and November 30. If beach construction activities are undertaken between April 15 and November 30, any sea turtle nest found within an area to be renourished will be relocated between sunrise and 09:00 a.m. to a non-renourishment beach location or hatchery. Nest surveys and relocations will be conducted daily by personnel with prior experience and training in these procedures and with a valid Florida Department of Environmental Protection permit. Nesting surveys shall be initiated 65 days prior to nourishment activities or by April 15, whichever is later. Nesting surveys shall continue through the end of the project or through September 30, whichever is earlier. All eggs to be selected shall be relocated according to measures described in the Fish and Wildlife Service's January 11, 2005 BO (Appendix C). In addition, surveys for nesting success of sea turtles will be continued for 3 years following beach nourishment to determine sea turtle nesting success.

(4)Immediately following completion of beach renourishment and prior to April 1 for 3 subsequent years, sand compaction shall be monitored in the restoration area according to a protocol agreed to by the FWS, the State regulatory agency, and the Corps as indicated in Appendix C.

(5) According to timing indicated in (4), any escarpment interfering with turtle nesting or in excess of 18 inches and longer than 100 feet, will be mechanically leveled to the natural beach contour just prior to April 1. Additional procedures for escarpment control and construction schedules and methods are given in Appendix C.

(6) If any nest is relocated to a safer beach location, a report describing the actions taken, description of nest location, and names and qualifications of personnel involved in the nest survey and relocation will be submitted to the U.S. Fish and Wildlife Service, Jacksonville Field Office within 60 days after completion of the beach renourishment project and within 60 days after each subsequent annual nesting success survey described in (3).

(7) Any incident involving the death or injury of any endangered or threatened species shall be immediately reported to the U.S. Army Corps of Engineers, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the Florida Department of

Environmental Protection for investigation to determine the most appropriate course of action.

(8) In order to prevent impacts to migratory bird species during construction, the project would be constructed in compliance with the Jacksonville District Corps of Engineers district-wide migratory bird protection policy (COE, 1993).

(9) Turbidity shall be monitored at the beach fill nearshore area. Should monitoring reveal turbidity levels above State standards (> 29 NTU's above background), construction activities will be immediately suspended until turbidity levels return to within acceptable standards as specified in the State water quality certification.

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 Biological Opinion (Appendix C).

6.0 COMPLIANCE WITH ENVIRONMENTAL STATUTES

6.1 National Environmental Policy Act of 1969, as amended. Environmental information on this authorized project has been compiled and the interested public will be notified that this Environmental Assessment has been prepared in accordance with the National Environmental Policy Act.

6.2 Endangered Species Act of 1973, as amended. This project has been fully coordinated with agencies which administer this Act and a list of endangered, threatened, proposed, or candidate species was received from the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS). Accordingly, this project is in full compliance with the Act.

6.3 Fish and Wildlife Coordination Act of 1958, as amended. In the most recent correspondence (Appendix C), the U.S. Fish and Wildlife Service has advised the Corps that no adverse effects to fish and wildlife resources are expected to occur from implementation of this project. The environmental concerns related to this project have been coordinated with the U.S. Fish and Wildlife Service in full compliance with this Act. The proposed renourishment is not expected to significantly affect infaunal or epifaunal invertebrates or motile ichthyofauna.

6.4 National Historic Preservation Act of 1966, as amended (PL 89-665). Research, determinations of effect, and consultation with the Florida State Historic Preservation Officer are underway and will be completed according to the guidelines established in 36 CFR Part 800 and Section 106 of the Act.

6.5 Clean Water Act of 1972, as amended. All State water quality standards will be

met. A Section 404(b) Evaluation was prepared and is included in this report as Appendix A.

6.6 Clean Air Act of 1972, as amended. No permits will be required for this project. Full compliance will be achieved with receipt of comments on the EA from the U.S. Environmental Protection Agency.

6.7 Coastal Zone Management Act of 1972, as amended. The study is in partial compliance at this time. Full compliance will be achieved with receipt of comments from the State Clearinghouse. A federal consistency determination is included in this report as Appendix B.

6.8 Marine Mammal Protection Act of 1972, as amended. Incorporation of the safeguards used to protect threatened or endangered species during dredging and disposal operations will also protect any marine mammals in the area; therefore, this project is in compliance with the Act.

6.9 Farmland Protection Policy Act of 1981. No prime or unique farmland will be affected by implementation of this project. This act does not apply.

6.10 Estuary Protection Act of 1968. No designated estuary will be affected by project activities. This act does not apply.

6.11 E.O. 11990, Protection of Wetlands. No wetlands will be affected by project activities. This project does not apply to the goals addressed in this Executive Order.

6.12 E.O. 11988, Floodplain Management. No project activities will take place within a floodplain; therefore this Executive Order does not apply.

6.13 Wild and Scenic River Act of 1968, as amended. No designated Wild and Scenic river reaches will be affected by project related activities. This act does not apply.

6.14 Magnuson-Stevens Fishery Conservation and Management Act.
Based on analyses discussed in this EA acute and cumulative effects on EFH resulting from the renourishment of the Duval County Beaches are expected to be negligible. The NMFS provided their EFH conservation recommendations by email dated January 12, 2005. The Corps responded to the NMFS conservation recommendations by letter dated January 13, 2005 accepting the recommendations and completing the EFH coordination process. Therefore, the proposed project is considered to be in compliance.

6.15 E.O. 12898, Environmental Justice. The proposed action would not impact human health and would not substantially impact the environment. The impacts would not be

disproportionately high towards minority or low-income populations. We are not aware of any use of the proposed project area for subsistence consumption of fish and wildlife. The proposed action would not impact such subsistence consumption if any is associated with the project area. As the borrow area is sufficiently far offshore low income/minority populations do not inhabit, nor use, areas adjacent to it. At this time there is no need for an analysis of the effects to use patterns or other possible environmental or health impacts. An initial evaluation of effects for this item results in the conclusion that no further effects will be evaluated, as the proposed action does not overlap with specific groups in a manner that is disproportionately adverse.

7.0 PUBLIC INVOLVEMENT.

7.1 Draft EA/Preliminary FONSI. The draft EA and preliminary FONSI were coordinated with all interested agencies/individuals by public notice dated October 22, 2004.

7.2 Agency Coordination. Agency coordination letters are in Appendix C.

7.3 Comments Received and Response. The following comments were received to the public notice dated October 22, 2004.

1) The NMFS, protected resources division, was resent the draft EA and preliminary FONSI on December 14, 2004. They responded by letter dated December 16, 2004 stating that the terms and conditions of the 1997 RBO covered the proposed activity and no further consultation pursuant to section 7(a)(2) of the ESA is required.

Response: The terms and conditions of the 1997 RBO will be abided by.

2) The NMFS, habitat conservation division, provided EFH conservation recommendations by letter dated January 12, 2005.

Response: The Corps responded to the NMFS conservation recommendations by letter dated January 13, 2005 accepting the recommendations and ending the EFH coordination process. In order to comply to the NMFS conservation recommendations, the Corps has agreed to develop an interagency team to examine the feasibility of using alternative borrow sites located on the north side of the St. Johns River Jetty prior to the next renourishment cycle.

3) The USFWS responded by letter dated January 10, 2005 providing a new BO with updated terms and conditions for nesting sea turtles.

Response: The terms and conditions of the January 10, 2005 letter will be abided by and no further consultation pursuant to section 7(a)(2) of the ESA is required.

4) The Florida State Clearinghouse completed their coordinated review and provided their comments by letter December 15, 2004. They noted that the DEP Bureau of Beaches and Coastal Systems is currently processing an application State water quality certification (WQC). In addition, the Corps must address the concerns identified by DEP and FWC staff during the permitting process.

Response: A notice of completeness was received from DEP Bureau of Beaches and Coastal Systems on January 7, 2005. The WQC will be obtained prior to project construction and will include conditions from the FWC.

8.0 LIST OF PREPARERS. This EA was prepared by the following U.S. Army Corps of Engineers personnel:

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9.0 LIST OF REVIEWERS. This EA was reviewed by:
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Appendix A

Section 404(b) Evaluation Report

Duval County Shore Protection Project
New Borrow Area, Duval County, Florida

SECTION 404 (b) EVALUATION REPORT
DUVAL COUNTY SHORE PROTECTION PROJECT
NEW BORROW AREA, DUVAL COUNTY, FLORIDA

I. Project Description

a. Location. Duval County is located in the extreme northeastern corner of Florida along the Atlantic Ocean. The Duval County shore is separated from the western mainland portion of the county by the Intracoastal Waterway. The Atlantic shore of the county consists of a barrier island bounded to the north by Nassau Sound and the St. Johns River, to the west by the Intracoastal Waterway, to the east by the Atlantic Ocean, and to the south by St. Johns County and the community of Ponte Vedra Beach.

b. General Description. The authorized project requires that periodic beach nourishment just south of the U.S. Naval Station at Mayport and the areas of Kathryn Abbey Hanna Park, and the towns of Atlantic Beach, Neptune Beach, and Jacksonville Beach be undertaken as needed. These areas were initially nourished with beach compatible sand between 1978-80 and were renourished between 1986-87 and 1994-95. The current project will renourish the entire project length requiring approximately 1.5 million cubic yards of material.

c. Authority and Purpose. The 10 miles (16 kilometers) of Atlantic shoreline between the St. Johns River to the north and the Duval County-St. Johns County line to the south was authorized as a beach erosion project with periodic renourishment. The project was authorized by Section 301 of the River and Harbor Act of 1965 (Public Law 89-298) on 27 October and is described in House Document 273/89/1. The purpose of renourishing the eroded beach along the Duval County Atlantic shoreline is to provide protection from storm generated waves and tides for development and infrastructure located along the coast as well as to restore a very important recreation area.

d. General Description of Dredged or Fill Material

(1) General Characteristics of Material.

(2) Quantity of Material. It is estimated that the eroded beach from the Mayport Jetties south to the St. Johns County line will be renourished with approximately 1,500,000 cubic yards of beach compatible material.

(3) Source of Material. Beach compatible material will be obtained from a new borrow area which is part of a previously dredged shoal located approximately 8.0 miles east of the Duval County beach.

e. Description of the Proposed Discharge Site

(1) Size and Location. The authorized beach fill site is an erosive beach located along the Duval County Atlantic shoreline. The 1965 authorization provides for initial beach fill and periodic renourishment for a 10 mile (16 km) segment between the south jetty of the St. Johns River and the Duval County - St. Johns County line. The 1990 Section 934 Reevaluation Report recommends that the eroded beach berm be restored to a width of 75 feet (22.7m) and a berm elevation of 11 feet (3.3m) above mean low water.

(2) Type of Site. Currently, the project area is a barrier island with a seriously eroding beach.

(3) Type of Habitat. The habitat currently found in the authorized project area consists of an eroding dune system and sandy beach. The erosive beach extends from just south of the entrance to the St. Johns River southward to the St.Johns County line. Seaward of the eroding beach, the submerged substrate consists entirely of sand.

(4) Timing and Duration of Discharge. Construction should begin in the fall (September-December) of 2004 and will take approximately four months to complete.

f. Description of Disposal Method The borrow area is located offshore of the Duval County beaches in approximately 50 feet of water. At this depth and location, the material will be dredged using a trailing-suction hopper dredge or trailing-suction hopper barge with pump-out capabilities. The dredge will traverse the borrow area in successive passes with drag arms lowered until the hull is safely loaded. The dredge will then transport the contents of the hopper to the project site. The hopper dredge will likely tie up to a mooring buoy located directly offshore of the beach that has a submerged pipeline extending to the beach. On the beach, a Y-valve will be set up in the pipeline to pump the material in more than one direction. The dredge will discharge its contents in the hopper by adding water to create a slurry for pumping to the beach. If required, the mooring buoy will be moved down the shore as the work progresses until the project is completed.

II. Factual Determinations

a. Physical Substrate Determinations.

(1) Substrate Elevation and Slope. The authorized project area for all of the Duval County Atlantic shoreline is approximately 10 miles (16 km) long. The design for the beaches of Duval County was based on a protective beach obtained by restoration and future renourishment. The original project berm design elevation of 11.0 feet (3.3m) above mean low water remains the design berm height. Based on maximization of primary benefits, the selected plan of a berm width of 75 feet (22.7m) provides the optimum benefits at most economical costs. Based on initial fill of the beaches and subsequent renourishment activities, it is estimated that the estimated slopes will be 1

vertical to 20 horizontal from the top of the berm to mean high water, 1 vertical to 30 horizontal to mean low water, and 1 vertical to 45 horizontal out to closure depth.

(2) Sediment Type. The sand to be dredged from the offshore borrow area is gray quartz, fine to medium grain, well sorted, and ranges from clean to slightly silty. Based on information obtained from geologic records, the composite phi-mean of the borrow area sand is 2.0 (0.25 mm).

(3) Dredge/Fill Material Movement. The principal mode of sand movement away from the erosive beach is caused by littoral transport of sand in a southerly direction. This transport of sand in a southerly direction is greatest during periods of strong northeast winds and accompanying high waves. The northeast winds dominate in generation of destructive waves, due to their long uninterrupted fetch. Sand to the project area is not replenished from the sand sources in the north due to the interception of the sand movement by the St. Johns River jetties.

(4) Physical Effects on the Benthos. Benthic organisms found in the intertidal areas at the beach fill site will be directly and indirectly affected by burial of sand during the beach renourishment activities. The benthic organisms (principally small crustaceans) found in this intertidal swash zone are readily adapted to being buried as many of these organisms are buried with each receding wave. As is the case with bivalve mollusks, these organisms tend to possess a strong foot which enables them to burrow up through the sand. Many of the dominant intertidal amphipods possess strong appendages which enable them to move quickly through sand. As intertidal organisms are adapted to highly stressful environmental conditions and tend to be highly fecund individuals, these populations are expected to repopulate their communities within 3 to 6 months after construction activities have ceased. Pre- and post-construction infaunal sampling undertaken for a previous renourishment statistically confirmed that infaunal community structure was minimally effected along the Duval County shore.

b. Water Circulation, Fluctuation and Salinity Determinations.

(1) Water. The placement of beach compatible material may increase turbidity in the immediate project area during the construction phase. This phenomenon is expected to be short-term and temporary. No significant long term increase in turbidity is expected to occur as a result of this project.

(a) Salinity. The beach fill material will not change nearshore salinity.

(b)Water Chemistry. No changes in the chemical makeup of the nearshore environment are anticipated.

(c) Clarity. There may be a short-term insignificant increase in turbidity seaward of the beach as the fill material seeks equilibrium with the existing ocean bottom.

(d) Color. There will be no change in color of the nearshore waters.

(e) Odor. The clean beach material used to renourish the beach will not result in adverse odors.

(f) Taste. This is not applicable to the project.

(g) Dissolved Gas Levels. The project will not impact the chemistry of the nearshore waters.

(h) Nutrients. The project is not expected to affect nutrient concentrations of project waters.

(i) Eutrophication. Because of water exchanges from tides and currents, no significant buildup of macronutrients in the project area is expected.

(2) Current Patterns and Circulation.

(a) Current Patterns and Flow. As the authorized project involves renourishment of an existing beach that is currently in place, no change to current patterns in the general area is expected.

(b) Velocity. No changes in the movement of water are anticipated.

(c) Stratification. This is not applicable to the project.

(d) Hydrologic Regime. The project would have no adverse impact.

(3) Normal Water Level Fluctuations. The project would have no adverse impact. The beach fill and widened beach will provide protection from storm waves and tides.

(4) Salinity Gradients. Salinity in the project area is likely at or slightly below (due to occasional freshwater inputs from the St. Johns River) open ocean levels. The project would have no affect on the salinity regime.

c. Suspended Particulate/Turbidity Determinations.

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site. There may be a temporary increase in turbidity levels in the project area during the construction phase. Increases in turbidity will be short-term and localized and no significant long-term adverse impacts are expected. State water quality standards for turbidity will not be exceeded.

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

(a) Light Penetration. There may be a slight suppression of light penetration

during the construction phase as beach compatible material is placed on the erosive beach. No significant long-term adverse impacts seaward of the renourished beach are anticipated.

(b) Dissolved Oxygen. There will be no impact on dissolved gas levels.

(c) Toxic Metals. Clean beach compatible material will not affect particulate or dissolved toxic metal concentrations.

(d) Pathogens. No pathogenic material is expected to be involved with the project.

(e) Aesthetics. Aesthetic quality will be reduced during construction, but this will be a short-term temporary condition. The placement of clean beach compatible sand on the eroded beach will likely improve the beach's aesthetic quality.

(3) Effect on Biota.

(a) Primary Production/Photosynthesis. No adverse impacts are anticipated.

(b) Suspension/Filter-Feeders. An increase in turbidity may adversely affect burrowing invertebrate filter-feeders. However, the Duval County shoreline is naturally turbid because of the dynamic physical processes found there. Benthic organisms have had to adapt to filtering in suspended sediment and sand along with other debris into their incurrent siphons. It is not expected that a short-term, temporary increase in turbidity will have any long term negative impact on these highly fecund organisms.

(c) Sight Feeders. No significant effects to these organisms are expected. The majority of sight feeding organisms are highly motile and can seek optimum environmental conditions elsewhere. Furthermore, waters of coastal Duval County are naturally turbid due to the highly dynamic beach conditions. Because of this, sight feeders such as predatory fish and wading birds are already adapted to surviving in such an environment.

d. Contaminant Determinations. The fill material collected from the offshore borrow site resembles the material currently found on the beach as closely as possible. As the beach compatible material is expected to be free of contaminants, constructing the beach fill sections will not introduce, relocate or increase contaminants in nearshore waters.

e. Aquatic Ecosystem and Organism Determinations.

(1) Effects on Plankton. No adverse impacts on autotrophic or heterotrophic organisms are anticipated.

(2) Effects on Benthos. No adverse long term impacts on non-motile or motile invertebrates are anticipated. Any impact to the meiofauna is expected to be temporary

in nature and statistically insignificant.

(3) Effects on Nekton. No adverse impacts to the highly motile nektonic species are expected from construction of the authorized project.

(4) Effects on Aquatic Food Web. No adverse long term impact to any trophic group in the food web is anticipated.

(5) Effects on Special Aquatic Sites.

(a) Sanctuaries and Refuges. No adverse effects are expected.

(b) Wetlands. There is no wetland habitat located along or seaward of the authorized project area.

(c) Vegetated Shallows. Because of the highly dynamic nature and high turbidity conditions naturally found along the Duval County nearshore, there are no submerged aquatic vegetation present along the project site. A recent visual inspection of the intertidal area revealed that all of the nearshore substrate consists entirely of sand.

(d) Coral Reefs. There are no scleractinian or gorgonian corals located along the nearshore in northeastern Florida.

(6) Threatened and Endangered Species. In accordance with Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) have concurred that implementation of the proposed project would not adversely affect threatened or endangered species under their purview. Important safeguards to be implemented to assure that no adverse impacts from the project are experienced by threatened/endangered species is documented in Appendix C of this report.

(7) Other Wildlife. No adverse impacts to small foraging mammals, reptiles, or wading birds are expected.

(8) Actions to Minimize Impacts. All practical safeguards will be taken during construction to preserve and enhance aesthetic, recreational, and economic values in the project area.

f. Proposed Disposal Site Determinations.

(1) Mixing Zone Determination. The clean beach compatible material to be placed on the eroded beach will not cause unacceptable changes in the mixing zone water quality requirements as specified by the Florida Department of Environmental Protection Water Quality Certification permit procedures. No adverse effects related to depth, current velocity, direction and variability, degree of turbulence, stratification, or ambient concentrations of constituents are expected from implementation of the authorized project.

(2) Determination of Compliance with Applicable Water Quality Standards. Class III State water quality standards will not be violated.

(3) Potential Effects on Human Use Characteristics.

(a)Municipal and Private Water Supply. No municipal or private water supplies will be affected by the implementation of the project.

(b) Recreational and Commercial Fisheries. No adverse impacts are anticipated to fisheries seaward of the project area.

(c) Water Related Recreation. Protecting oceanfront development and infrastructure and retarding erosional processes of areas behind the eroded shoreline will only contribute to assuring that recreational opportunities in and around the beach areas may be allowed to continue in the immediate project area.

(d) Aesthetics. A temporary decrease in aesthetics will only occur during the construction phase of the project. However, the stabilization of an eroding shoreline will ensure that the oceanfront and accompanying aesthetic quality will be present in the future.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. No such designated sites are located within the confines of the project area.

(f) Determination of Cumulative Effects on the Aquatic Ecosystem. The construction activity of placing beach compatible material along an eroded shoreline will have no cumulative negative impacts that would result in degradation of the natural, cultural, or recreational resources in and around the project area. The authorized project will have no cumulative impacts that would result in major impairment of water resources nor will it interfere with the productivity and water quality of the existing aquatic ecosystem.

(g) Determination of Secondary Effects on the Aquatic Ecosystem. No secondary adverse effects are expected.

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

1. No significant adaptations of the Section 404 (b) guidelines were made relative to this evaluation.

2. The No Action Plan as well as several nonstructural and structural project alternatives were considered for adoption. Placing beach compatible material on an eroded beach satisfactorily meets the study objective and produces the most favorable net economic benefits for the project area.

3. Placing beach compatible material on an eroded beach will not cause or contribute to violation of any applicable State water quality standards for Class III waters.

4. There will be no discharge of toxic fill material in the proposed project area. Therefore, the project complies with Section 307 of the Clean Water Act.

5. The placing of beach compatible material on an eroded beach will not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.

6. There will be no adverse impact on the water supply of the Duval County oceanfront from the implementation of this project.

7. There will be no direct or indirect adverse impact on any threatened or endangered organism from the construction of this project.

8. There will be no adverse impact on any autotrophic organism from the implementation of the selected plan.

9. There will not be a direct or indirect adverse impact on highly motile organisms such as fish and crustaceans.

10. No long term significant direct or indirect adverse impacts are anticipated on non-motile infaunal organisms or motile epifaunal organisms in the immediate project area from the proposed project.

11. No significant adverse impacts are anticipated on terrestrial wildlife in the immediate project area.

12. Implementing the project will pose no threat to juvenile fish or wildlife dependent upon the immediate project area for their subsistence.

13. No significant or long term change in biodiversity of the communities found along the intertidal or nearshore zones is expected due to the implementation of this project. Neither primary nor secondary productivity in the project area will be adversely impacted by the placement of beach compatible material onto an eroding beach.

14. One of the primary goals of this project is to protect oceanfront infrastructure as well as business and housing development from storm energy as well as to retard erosional processes which pose a threat to recreational opportunities along the northeastern Florida Atlantic shoreline. The protection that the wide beach affords is expected to contribute to positive economic gains in the area due to the preservation of beachfront development and accompanying infrastructure.

15. There will be disposal of beach compatible material onto an eroded beach in the project area. All appropriate safeguards will be taken to ensure that construction equipment doesn't adversely impact the surrounding landscape which currently exists around the immediate project area.

16. On the basis of the guidelines, the proposed disposal site for the discharge of beach compatible material is specified as complying with the requirements of the Clean Water Act.

Appendix B

Florida Coastal Zone Management Program
Federal Consistency Evaluation Procedures

Duval County Beach Erosion Control Project
New Borrow Area, Duval County, Florida

FLORIDA COASTAL ZONE MANAGEMENT PROGRAM
FEDERAL CONSISTENCY EVALUATION PROCEDURES
DUVAL COUNTY SHORE PROTECTION PROJECT
NEW BORROW AREA

DUVAL COUNTY, FLORIDA

1. Chapter 161, Beach and Shore Preservation.

The intent of the coastal construction permit program established by this chapter is to regulate construction projects located seaward of the line of mean high water and what might have an effect on natural shoreline processes.

Response: The primary purpose of the authorized project is to provide protection from wave and tidal energy for residences, businesses, and infrastructure located along the shoreline of Duval County, Florida. Consideration is given during the planning process to possible impacts upon natural coastal processes, natural vegetation, biological resources, and adjacent property. The goals set forth in this chapter have been met through consultation and communication with appropriate Federal, State, and local agencies.

2. Chapters 186 and 187, State and Regional Planning.

These chapters establish the State Comprehensive Plan which sets goals that articulate a strategic vision of the State's future. It's purpose is to define in a broad sense, goals, and policies that provide decision-makers directions for the future and provide long-range guidance for an orderly social, economic and physical growth.

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

3. Chapter 252, Disaster Preparation, Response and Mitigation.

This chapter creates a state emergency management agency, with the authority to provide for the common defense; to protect public peace, health and safety; and to preserve the lives and property of the people of Florida.

Response: The authorized project involves the placing of beach compatible material onto an eroding beach as a protective means for residents, development, and infrastructure located along the Atlantic shoreline of Duval County. The placement of beach compatible material currently represents the most appropriate long term, low cost solution to help protect the shoreline and adjacent development and roadways from

destructive erosional processes caused by wind and storm generated waves. This authorized project is therefore consistent with the efforts of the Division of Emergency Management.

4. Chapter 253, State Lands.

This chapter governs the management of submerged state lands and resources within state lands. This includes archeological and historical resources; water resources; fish and wildlife resources; beaches and dunes; submerged grass beds and other benthic communities; swamps, marshes and other wetlands; mineral resources; unique natural resources; submerged lands; spoil islands; and artificial reefs.

Response: An archival search and a literature review, including the current National Register of Historic Places listing, have been conducted. No known historic, cultural, or archeological resources are present in the vicinity of the area of proposed impact. The authorized project is needed due to the seriously eroded condition of much of the shorefront of Duval County. There are no known physical, geological, or biological characteristics that are exclusively unique to the authorized project area. This authorized project complies with the intent of this chapter.

5. Chapters 253, 259, 260, and 375, Land Acquisition.

This chapter authorizes the state to acquire land to protect environmentally sensitive areas.

Response: The submerged area seaward of the Duval County mean high water line does not contain any unique or environmentally sensitive areas. Since the affected property already is in public ownership, this chapter does not apply.

6. Chapter 258, State Parks and Aquatic Preserves.

This chapter authorizes the state to manage state parks and preserves. Consistency with this statute would include consideration of projects that would directly or indirectly adversely impact park property, natural resources, park programs, management or operations.

Response: Kathyrn Abbey Hanna Park (450 acres) is located just south of the Mayport Naval Station, the beach portion of which will be renourished. The renourishment of the eroded beach seaward of this Jacksonville City Park will serve to improve shore protection and adjacent infrastructure.

7. Chapter 267, Historic Preservation.

This chapter establishes the procedures for implementing the Florida Historic Resources Act responsibilities.

Response: Consultation with the Florida Division of Historical Resources and the State Historic Preservation Officer have indicated that there are no known or anticipated cultural resources likely to be found within the proposed project area. Therefore, this proposed project fully complies with the responsibilities set forth in this legislation.

8. Chapter 288, Economic Development and Tourism.

This chapter directs the state to provide guidance and promotion of beneficial development through encouraging economic diversification and promoting tourism.

Response: The Jacksonville Beach Fishing Pier has been a popular recreational location for fishermen and sightseers. The authorized beach fill will provide more space for recreation and protection against wind and wave generated damage and ensure the accessibility of the fishing pier to the public. This will be compatible with promoting tourism and protecting tourist related structures for this area and is therefore consistent with the goals of this chapter. Similarly the entire beach front area is exclusively used by tourists and locals for recreational purposes.

9. Chapters 334 and 339, Public Transportation.

This chapter authorizes the planning and development of a safe and efficient transportation system.

Response: The increase in construction vehicles during the construction phase of the authorized project may present a short term adverse impact on vehicular traffic patterns in the immediate area. This adverse impact will be temporary in nature, however, and will cease once construction is completed. No adverse impacts to public transportation systems are anticipated. Therefore, this project is in compliance with the intent of this chapter.

10. Chapter 370, Saltwater Living Resources.

This chapter directs the state to preserve, manage and protect the marine, crustacean, shell and anadromous fishery resources in state waters; to protect and enhance the marine and estuarine environment; to regulate fisherman and vessels of the state engaged in the taking of such resources within or without state waters; to issue licenses for the taking and processing products of fisheries; to secure and maintain statistical records of the catch of each such species; and, to conduct scientific, economic, and studies of research.

Response: The authorized beach fill project may represent a temporary short-term impact to infaunal invertebrates by burying these intertidal organisms. However, organisms that inhabit the dynamic intertidal zone are readily adapted to intermittent burial from sand. These organisms are highly fecund and their populations are expected to return to pre-constructions levels within 6 months to two years. Motile epifaunal invertebrates and ichthyofauna will be able to avoid any stressful environmental conditions produced by beach renourishment activities. This authorized project has been coordinated with the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act. There will be no adverse impacts to endangered cetaceans and sea turtles. Special precautions to ensure the safety of endangered and threatened species have been incorporated into the Plans and Specifications of the project. Based on the overall expected impacts of this project, the project is consistent with the goals of this chapter.

11. Chapter 372, Living Land and Freshwater Resources.

This chapter establishes the Game and Freshwater Fish Commission and directs it to manage freshwater aquatic life and wild animal life and their habitat to perpetuate a diversity of species with densities and distributions which provide sustained ecological, recreational, scientific, educational, aesthetic, and economic benefits.

Response: The authorized project will have no adverse impact on freshwater aquatic life or wild animal life. Any avifauna or other small foraging animals associated with salt tolerant herbaceous vegetation found along the dune line will be able to migrate out of the proposed project area during the construction phase and seek optimum environmental conditions elsewhere.

12. Chapter 373, Water Resources.

This chapter provides the authority to regulate the withdrawal, diversion, storage, and consumption of water.

Response: This authorized project does not involve or impact water resources as described by this chapter.

13. Chapter 376, Pollutant Spill Prevention and Control.

This chapter regulates the transfer, storage, and transportation of pollutants and the cleanup of pollutant discharges.

Response: This authorized project does not involve transportation of any toxic substances. All precautions will be taken to assure that no petrochemicals or other

toxins are expelled into the environment by machinery during the construction phase.

14. Chapter 377, Oil and Gas Exploration and Production.

This chapter authorizes the regulation of all phases of exploration, drilling, and production of oil, gas, and other petroleum products.

Response: This authorized project does not involve the regulation of any phase of exploration, drilling, and production of gas, oil, or other petroleum products.

15. Chapter 380, Environmental Land and Water Management.

This chapter establishes criteria and procedures to assure that local land development decisions consider the regional impact nature of proposed large-scale development.

Response: The renourishment of an eroded beach to dissipate wave energy and help provide storm protection to shorefront structures will have no adverse regional impact on the overall resources of northeast Florida. The authorized project is therefore consistent with the established goals of this chapter.

16. Chapter 388, Arthropod Control.

This chapter provides for a comprehensive approach for abatement or suppression of mosquitoes and other pest arthropods within the state.

Response: The authorized project will not impound freshwater and is not expected to further the propagation of mosquitoes or other pest arthropods.

17. Chapter 403, Environmental Control.

This chapter authorizes the regulation of pollution of the air and waters of the state by the Florida Department of Environmental Protection (DEP).

Response: The DEP regulates air and water pollution by issuing a Water Quality Certification (WQC) which lists appropriate safeguards which must be implemented during construction activities to ensure that degradation of Florida's air and water resources are not permitted. The State of Florida issued such certification in April of 1993 and the Corps is in the process of renewing the WQC. An application for a WQC has been submitted to the DEP for construction of the authorized project. Therefore, this project is complying with the intent of this chapter.

18. Chapter 582, Soil and Water Conservation.

This chapter establishes policy for the conservation of the state soil and water through the Department of Agriculture. Land use policies will be evaluated in terms of their tendency to cause or contribute to soil erosion or to conserve, develop, and utilize soil and water resources both onsite or in adjoining properties affected by the project. Particular attention will be given to the project on or near agricultural lands.

Response: The authorized project is not located near or on agricultural lands and therefore, this chapter does not apply.

Appendix C

Pertinent Correspondence

Duval County Beach Erosion Control Project
New Borrow Area, Duval County, Florida

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

REPLY TO
ATTENTION OF

OCT 2 2 2004

Planning Division
Environmental Branch

TO WHOM IT MAY CONCERN:

The Jacksonville District, U.S. Army Corps of Engineers has prepared a Draft Finding of No Significant Impact (FONSI) and Environmental Assessment (EA for re-nourishment of Duval County's beaches from the Mayport Naval Station South Jetty to the St. Johns County line. Approximately 1.5 million cubic yards of beach compatible sand from a new borrow site 8 miles east of Duval County will be placed on project beaches. The enclosed draft FONSI and EA supplement environmental information contained in the 1974 Environmental Impact Statement and 1990 Section 934 Reevaluation Report with EA.

We welcome your views, comments and information about resources and important features within the described project area, as well as any suggested improvements. Letters of comment or inquiry should be addressed to the letterhead address to the attention of Planning Division, Environmental Branch, Atlantic Coast Section within 30 days of the date of this letter. Questions about environmental issues may be directed to Mr. William Lang at 904-232-2615.

Sincerely,

James C. Duck
Chief, Planning Division

Enclosures

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Dr. N.
St. Petersburg, FL 33702
(727) 570-5317, FAX 570-5317
http://sero.nmfs.noaa.gov

F/SER3: JCL

Mr. James C. Duck
Chief, Planning Division
Jacksonville District
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Mr. Duck:

This responds to your December 14, 2004, letter and Environmental Assessment (EA), received via electronic mail, regarding the proposed Duval County dredging and storm damage beach nourishment/shore protection project. Hopper dredges will be utilized to obtain the desired fill from a suitable offshore shoal area located approximately 8.0 miles northeast of Jacksonville Beach, Florida. You indicated that the completion of the dredging activities and beach fill work is anticipated before June 2005. Further, you indicate that a Memorandum of Agreement with the Department of the Interior's Minerals Management Service (MMS) for use of federal sand sources along the Outer Continental Shelf will be completed once consultation with the National Marine Fisheries Service (NOAA Fisheries) is finalized.

We have reviewed your letter and EA with respect to possible effects on the species listed and the critical habitat designated under the Endangered Species Act (ESA) under the purview of NOAA Fisheries. In your letter you indicate that you intend to abide by the requirements of the existing biological opinion with the U.S. Army Corps of Engineers' (COE) South Atlantic Division (SAD) on hopper dredging in U.S. South Atlantic waters. That opinion, dated September 22, 1997, established an annual Division-wide incidental take limit on the numbers of sea turtles and shortnose sturgeon that may be taken incidental to COE SAD-permitted hopper dredging of U.S. South Atlantic channels and sand mining areas. Thus, no further consultation with NOAA Fisheries pursuant to section 7(a)(2) of the ESA is required, and the activity can proceed subject to the existing terms and conditions of the current biological opinion to the COE SAD.

Due to the recent human-related mortalities occurring this year, NOAA Fisheries announced on December15, 2004, through a press release, that it is organizing a summit among federal agencies to seek immediate voluntary actions that will make East Coast waters safer for migrating and calving North Atlantic right whales. Because the population is so small, a single death of a right whale has big implications on the species' survival. Each year these whales migrate to and reside off the east coast of Florida during November through April; specifically right whales are known to concentrate off the northeast coast of Florida during this period.

We would like to remind you that under the terms and conditions of the hopper-dredging opinion NOAA Fisheries requires monitoring by endangered species observers with at-sea large whale identification experience to conduct daytime observations for whales between December 1 and March 31, when humpback and right whales occur in the vicinity of channels and borrow areas, north of Cape Canaveral. During daylight hours, the dredge operator must take necessary precautions to avoid whales. During evening hours or when there is limited visibility due to fog or sea states of greater than Beaufort 3, the dredge must slow down to 5 knots or less when transiting between areas if whales have been spotted within 15 nm of the vessel's path within the previous 24 hours. South of Cape Canaveral, surveys for whales should be conducted by endangered species observers during the intervals between dredge spoil monitoring. Further, North of the St. Johns River, in Florida, endangered species observers on hopper dredges within nearshore and riverine areas must also monitor for shortnose sturgeon impingements.

We look forward to further cooperation with you on other COE projects to insure the conservation of our endangered and threatened marine species. If you have any questions, please contact Mr. Juan Levesque at the number listed above or by e-mail at Juan.Levesque@noaa.gov.

Sincerely,

David Bernhart
Assistant Regional Administrator
for Protected Resources

File: 1514-22.f.1.FL
I/SER/2004/01823

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

January 12, 2005

Mr. James C. Duck
Chief, Environmental Branch
Jacksonville District, Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Duck:

The National Marine Fisheries Service (NOAA Fisheries) has reviewed the essential fish habitat (EFH) consultation information you provided concerning the Duval County Beach Erosion Control (BEC) Project in Duval County, Florida. According to your letter, emergency stabilization of critically eroded shoreline will be performed utilizing material from a new borrow area.

Although Duval County's Atlantic coast beaches were nourished in 2003, passage of Hurricanes Charlie, Frances, and Jeanne have significantly lowered beach profiles. As part of the current Coastal Shorelines Emergency Renourishment effort, federal funds have been made available to restore beaches to pre-storm conditions (i.e., nourishment to a full template). Work would be perfomed through a cost-sharing agreement with the local sponsor. In Duval County, ten miles of Atlantic Coast beachfront will receive 1.5 million cubic yards of sand dredged from a borrow site located eight miles offshore. Direct and indirect impacts to federally managed species and marine water column and marine nearshore environments have been deemed temporary by the Jacksonville District.

Off-shore sand dredging and placement of the beach will impact marine ecosystems, including EFH. Categories of EFH in the project vicinity include the marine water column, submerged bottom, and marine nearshore and offshore habitats. Federally managed fishery resources associated with these habitats include postlarval and juvenile red drum (*Sciaenops ocellata*), white shrimp (*Litopenaeus setiferus*), pink shrimp (*Farfantepenaeus duorarum*), and brown shrimp (*Farfantepenaeus aztecus*). Detailed information concerning federally managed fisheries and their EFH is provided in the 1998 comprehensive amendments of the Fishery Management Plans for the SAFMC and MAFMC. The 1998 amendment was prepared in accordance with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (P.L. 104-297). The project area may also provide nursery and forage habitat for other species including black drum (*Pogonias cromis*), Atlantic menhaden (*Brevoortia tyrannus*), and blue crab (*Callinectes sapidus*) which serve as prey for other species (e.g., mackerels, snappers, and groupers) that are managed by the SAFMC, and for highly migratory species (e.g., billfishes and sharks) that are managed by NOAA Fisheries.

As discussed with your staff, NOAA Fisheries encourages the use of sand accumulations located in the vicinity of the Ft. George River Inlet. Removal of sand shoals from the inlet could improve water circulation and quality in the Timucuan Ecological and Historic Preserve, and in waters surrounding Huguenot Park and Little Talbot Island State Park. Notably, this sand accumulation is the result of littoral sand drift blockage caused by the jetties at the St. Johns River Inlet. As noted in our previous letter, bypassing this sand would provide less damaging alternative with regard to EFH and could possibly cost less.

NOAA Fisheries is also concerned that repeated burial of nearshore habitats by large-scale beach nourishment projects may be altering the physical and biological characteristics of this ecosystem, resulting in significant shifts in species diversity and abundance. NOAA Fisheries is aware of the economic consequences of shoreline erosion and the urgent nature of the current project; however, we continue to believe that beach nourishment must consider the cumulative effect of numerous such projects and man-induced alteration caused by jetties and harbor maintenance. In our review of previous beach nourishment projects, NOAA Fisheries has recommended that the U.S. Army Corps of Engineers consider continual or periodic transfer of sand around fortified inlets, including back-passing sand to areas experiencing critical erosion. While this would not stop naturally occurring erosional processes (e.g., that resulting from sea-level rise) it should lengthen the interval between beach nourishment activities and, thereby, lessen environmental impacts.

In an effort to better understand and quantify the direct, indirect, and cumulative ecological and environmental impacts of repetitive nourishment of beaches, NOAA Fisheries recommends that in addition to developing alternative borrow areas and a permanent sand by-passing process, a Programmatic Environmental Impact Statement (PEIS) be prepared for the east coast of Florida. The PEIS should evaluate the cumulative effects of repeated excavation and burial of nearshore habitats, and acute and chronic sedimentation and elevated turbidity resulting from offshore dredging and beach nourishment. The impacts and benefits of sand bypassing at jettied inlets and

inlets where water flow is obstructed by sand accumulations should also be examined.

Based on the preceding, we conclude that an important area of EFH and affiliated federally managed species would be adversely affected by the proposed action. However, given the urgent nature of the subject action,NOAA Fisheries does not object to the project, as proposed.

In regard to any subsequent beach nourishment in Duval County, NOAA Fisheries provides the following recommendation:

EFH Conservation Recommendation

Prior to the next scheduled beach nourishment project, a state and federal interagency working group should be developed to explore the alternative action of sand by-passing around fortified inlets and the use of sand accumulations in the vicinity of coastal inlets. This should be performed concurrently with preparation of a Programmatic Environmental Impact Statement on the cumulative effects of repeated excavation and burial of nearshore habitats, and acute and chronic sedimentation and elevated turbidity resulting from offshore dredging and beach nourishment.

Consistent with Section 305(b)(4)(B) of the Magnuson-Stevens Act and NOAA Fisheries' implementing regulations at 50 CFR 600.920(k), your office is required to provide a written response to our EFH recommendation 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 recommendation, you must provide a substantive discussion justifying the reasons for not implementing the recommendation. If it is not possible to provide a substantive response within 30 days, the Corps of Engineers should provide an interim response to 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 ten days prior to final approval of the action.

We appreciate the opportunity to provide these comments. Please direct related questions or comments to the attention of Mr. George Getsinger, at our Jacksonville Office. He may be reached at 6620 Southpoint Drive South, Suite 310, Jacksonville, Florida 32216-0958, or at (904) 232-2580 ext. 138.

Sincerely,

Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

cc:
EPA, ATL
FWS, JAX
FDEP, JAX
FFWCC, TAL
F/SER4
F/SER43-Ruebsamen

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administratio
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, Florida 33702-2432

November 22, 2004

Mr. William Lang
Environmental Branch
Jacksonville District, Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Lang:

The National Marine Fisheries Service (NMFS) has reviewed the U.S. Army Corps of Engineers' Preliminary Draft Environmental Assessment (EA) and Finding of No Significant Impact, dated October 22, 2004, regarding the Duval County Beach Erosion Control (BEC) Project, New Borrow Area, in Duval County, Florida. Specific action includes re-nourishment of the entire coastline within the county's limits using 1.5 million cubic yards of sand dredged from a borrow site located eight miles offshore.

General comments

Off-shore dredging and sand placement will impact marine ecosystems that support essential fish habitat (EFH). Categories of EFH in the project vicinity include marine water column and submerged bottom, and marine nearshore and offshore habitats. Because the project is located in marine waters of the coastal region, utilization by living marine resources is likely. Therefore, if you determine that design features may adversely impact EFH, those impacts and any related mitigation should be fully described in the draft EA for the project. Specific requirements pursuant to activities that may affect EFH are found at 50 CFR 600.920 the regulation to implement the EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act. Descriptions and locations of EFH found along the south Atlantic seaboard can be viewed by going to the website for the South Atlantic Fishery Management Council at www.safmc.net/.

By letter dated January 14, 2004, the NMFS endorsed the use of sand accumulations located in the vicinity of the Ft. George River Inlet. Removal of sand shoals from the inlet could improve water circulation and quality in the Timucuan Ecological and Historic Preserve, and in waters surrounding Huguenot Park and Little Talbot Island State Park. Notably, this sand accumulation is the result of blockage of littoral sand drift caused by the jetty system at the St. Johns River. As noted in our previous letter, bypassing this sand would provide an environmentally less damaging alternative and could possibly cost less.

In regard to beach re-nourishment, we note that large portions of Duval County's Atlantic coast beaches were nourished within the last two years, as were beaches in St. Johns, Brevard, and Indian River counties. Beach profiles along all these coastal counties have been lowered significantly by the passage of hurricanes Charlie, Frances, and Jeanne and all these coastal counties are in the process of seeking authorization to again re-nourish their beaches. Although the NMFS is aware of the economic consequences of shoreline erosion, we believe that erosion and re-nourishment should be addressed both in terms of the cumulative effect of numerous such projects and in terms of man induced alteration caused by jetties and harbor maintenance. In our review of previous similar projects NMFS has recommended that the U.S. Army Corps of Engineers consider continual or regularly conducted sand by-passing around fortified inlets, including back-passing sand to areas experiencing critical erosion. While this would do little to diminish the effects of naturally occurring erosional processes (e.g., sea-level rise) it should lengthen the interval between re-nourishment activities and thereby lessen environmental impacts.

In an effort to understand and quantify the direct and indirect impacts these authorized activities have and will continue to have on living marine resources and habitat, NMFS recommends that in addition to the EA for the Duval County BEC project, a Programmatic Environmental Impact Statement (PEIS) be prepared for the east coast of Florida. The PEIS should evaluate the cumulative effects of repeated excavation and burial of nearshore habitats, and acute and chronic sedimentation and elevated turbidity resulting from offshore dredging and beach nourishment.

We appreciate having the opportunity to provide comments early in the planning process. Mr. George Getsinger, at our Jacksonville Office, is available if further assistance is needed. He may be reached at 6620 Southpoint Drive South, Suite #310, Jacksonville, Florida 32216, or by telephone at (904) 232-2580 ext. 138.

Sincerely,

David H. Robbins

for Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

cc:
EPA, ATL
FWS, JAX
DEP, JAX
FFWCC, TAL
F/SER4

DeMarco, Paul M SAJ

From: AnnMarie_Maharaj@fws.gov
Sent: Tuesday, January 11, 2005 3:41 PM
To: DeMarco, Paul M SAJ
Subject: RE: Duval BEC Project New Borrow Area BO- Terms and Conditions

05-444-Duval BO.doc

Paul,

I have attached the revised Biological Opinion for Duval County. The hard copy with the appropriate signatures will follow in the mail. (See attached file: 05-444-Duval BO.doc)

Ann Marie Maharaj

January 10, 2005

Mr. James C. Duck
Chief, Planning Division
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232

RE: FWS Log No: 05-444

This document transmits the Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed beach nourishment project located in Duval County, Florida, and its effects on and its effects on the loggerhead, green, and leatherback sea turtle in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Your November 16, 2004 request for formal consultation was received on December 13, 2004.

This biological opinion is a modification of the biological opinion written in October 1993 and amended letter written in January 2000 for sand placement along Duval County's beaches from the Mayport Naval Station South Jetty to the St. John's County line. Information is provided in the Environmental Assessment received on October 28, 2004, the email request for Duval County renourishment on December 10, 2004, conference calls, telephone conversations of January 6, 2005 with Paul DeMarco, and other sources of information. A complete administrative record of this consultation is on file at Jacksonville Field Office.

This document transmits the Fish and Wildlife Service's (Service) revised biological opinion based on our review of the proposed beach nourishment project located in Duval County, Florida,

CONSULTATION HISTORY

On October 22, 2004, the Service received a Draft Finding of No Significant Impact (FONSI) and Environmental Assessment for re-nourishment of Duval County's beaches from Mayport Naval Station South Jetty to the St. John's County line. On December 10, 2004, the Service received an email requesting concurrence that the January 25, 2000 letter (FWS/R4/ES-JAFL), which updated the 1993 biological opinion, would cover the new proposal which includes a new borrow area. On December 14, 2004, the USACOE initiated formal Section 7 consultation with the Service for the beach nourishment and shoreline stabilization project for Duval County beaches. On December 15, a conference call was held with the USACOE, the Florida Department of Protection (DEP), and the Service. The USACOE determined that this project may affect the loggerhead, green,

leatherback sea turtle. On January 6, 2005, the Service had all the necessary information to complete an amended Biological Opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Jacksonville District of the USACE proposes to replace beach sand that has eroded due to hurricanes Frances and Jeanne storm surge. The proposed project will place approximately 1.5 million cubic yards of beach compatible sand from a new burrow site eight miles east of Duval County along 10 miles of Duval County beaches from Mayport Station South Jetty to the St. John's County line.
The sand source for both projects will be an offshore burrow site eight miles east of Duval County. The fill material will be similar in both coloration and grain size distribution to the native beach. The fill material will be free of construction debris, rocks, or other foreign matter and will not contain, on average, greater than 10 percent fines (i.e., silt and clay) (passing the #200 sieve) and will not contain, on average, greater than 5 percent coarse gravel or cobbles, exclusive of shell material (retained by the #4 sieve). The sand will be dredged and trucked to the nourishment site.

The Service has described the action area to include 10 miles of Duval County beaches from Mayport Station South to the St. John's County line for reasons that will be explained and discussed in the "Effects of the Action" section of this consultation.

STATUS OF THE SPECIES/CRITICAL HABITAT

Species/critical habitat description

Loggerhead Sea Turtle

The loggerhead sea turtle (*Caretta caretta*), listed as a threatened species on July 28, 1978 (43 FR 32800), inhabits the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian Oceans. Loggerhead sea turtles nest within the continental U.S. from Louisiana to Virginia. Major nesting concentrations in the U.S. are found on the coastal islands of North Carolina, South Carolina, and Georgia, and on the Atlantic and Gulf coasts of Florida (Hopkins and Richardson 1984).

No critical habitat has been designated for the loggerhead sea turtle.

Green Sea Turtle

The green sea turtle (*Chelonia mydas*) was federally listed as a protected species on July 28, 1978 (43 FR 32800). Breeding populations of the green turtle in Florida and along the Pacific Coast of Mexico are listed as endangered; all other populations are listed as threatened. The green turtle has a worldwide distribution in tropical and subtropical

waters. Major green turtle nesting colonies in the Atlantic occur on Ascension Island, Aves Island, Costa Rica, and Surinam. Within the U.S., green turtles nest in small numbers in the U.S. Virgin Islands and Puerto Rico, and in larger numbers along the east coast of Florida, particularly in Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991a). Nesting also has been documented along the Gulf coast of Florida on Santa Rosa Island (Okaloosa and Escambia Counties) and from Pinellas County through Collier County (Florida Fish and Wildlife Conservation Commission, unpublished data). Green turtles have been known to nest in Georgia, but only on rare occasions (Georgia Department of Natural Resources, unpublished data). The green turtle also nests sporadically in North Carolina and South Carolina (North Carolina Wildlife Resources Commission, unpublished data; South Carolina Department of Natural Resources, unpublished data). Unconfirmed nesting of green turtles in Alabama has also been reported (Bon Secour National Wildlife Refuge, unpublished data).

Critical habitat for the green sea turtle has been designated for the waters surrounding Culebra Island, Puerto Rico, and its outlying keys.

Leatherback Sea Turtle

The leatherback sea turtle (*Dermochelys coriacea*), listed as an endangered species on June 2, 1970 (35 FR 8491), nests on shores of the Atlantic, Pacific and Indian Oceans. Non-breeding animals have been recorded as far north as the British Isles and the Maritime Provinces of Canada and as far south as Argentina and the Cape of Good Hope (Pritchard 1992). Nesting grounds are distributed worldwide, with the Pacific Coast of Mexico supporting the world's largest known concentration of nesting leatherbacks. The largest nesting colony in the wider Caribbean region is found in French Guiana, but nesting occurs frequently, although in lesser numbers, from Costa Rica to Columbia and in Guyana, Surinam, and Trinidad (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1992, National Research Council 1990a).

The leatherback regularly nests in the U.S. in Puerto Rico, the U.S. Virgin Islands, and along the Atlantic coast of Florida as far north as Georgia (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1992). Leatherback turtles have been known to nest in Georgia, South Carolina, and North Carolina, but only on rare occasions (Murphy 1996, Winn 1996, Boettcher 1998). Leatherback nesting also has been reported on the northwest coast of Florida (LeBuff 1990; Florida Fish and Wildlife Conservation Commission, unpublished data); a false crawl (non-nesting emergence) has been observed on Sanibel Island (LeBuff 1990).

Marine and terrestrial critical habitat for the leatherback sea turtle has been designated at Sandy Point on the western end of the island of St. Croix, U.S. Virgin Islands.

Life history

Loggerhead Sea Turtle

Loggerheads are known to nest from one to seven times within a nesting season (Talbert *et al.* 1980, Richardson and Richardson 1982, Lenarz *et al.* 1981, among others); the mean is approximately 4.1 (Murphy and Hopkins 1984). The interval between nesting events within a season varies around a mean of about 14 days (Dodd 1988). Mean clutch size varies from about 100 to 126 along the southeastern United States coast (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991b). Nesting migration intervals of 2 to 3 years are most common in loggerheads, but the number can vary from 1 to 7 years (Dodd 1988). Age at sexual maturity is believed to be about 20 to 30 years (Turtle Expert Working Group 1998).

Green Sea Turtle

Green turtles deposit from one to nine clutches within a nesting season, but the overall average is about 3.3. The interval between nesting events within a season varies around a mean of about 13 days (Hirth 1997). Mean clutch size varies widely among populations. Average clutch size reported for Florida was 136 eggs in 130 clutches (Witherington and Ehrhart 1989). Only occasionally do females produce clutches in successive years. Usually 2, 3, 4, or more years intervene between breeding seasons (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991a). Age at sexual maturity is believed to be 20 to 50 years (Hirth 1997).

Leatherback Sea Turtle

Leatherbacks nest an average of five to seven times within a nesting season, with an observed maximum of 11 (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1992). The interval between nesting events within a season is about 9 to 10 days. Clutch size averages 101 eggs on Hutchinson Island, Florida (Martin 1992). Nesting migration intervals of 2 to 3 years were observed in leatherbacks nesting on the Sandy Point National Wildlife Refuge, St. Croix, U.S. Virgin Islands (McDonald and Dutton 1996). Leatherbacks are believed to reach sexual maturity in 6 to 10 years (Zug and Parham 1996).

Population dynamics

Loggerhead Sea Turtle

Total estimated nesting in the Southeast is approximately 50,000 to 70,000 nests per year (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991b). In 1998, there were over 80,000 nests in Florida alone. From a global perspective, the southeastern U.S. nesting aggregation is of paramount importance to the survival of the species and is second in size only to that which nests on islands in the Arabian Sea off Oman (Ross 1982, Ehrhart 1989, National Marine Fisheries Service and U.S. Fish and

Wildlife Service 1991b). The status of the Oman colony has not been evaluated recently, but its location in a part of the world that is vulnerable to disruptive events (e.g., political upheavals, wars, catastrophic oil spills) is cause for considerable concern (Meylan *et al.* 1995). The loggerhead nesting aggregations in Oman, the southeastern U.S., and Australia account for about 88 percent of nesting worldwide (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991b). About 80 percent of loggerhead nesting in the southeastern U.S. occurs in six Florida counties (Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties) (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991b).

Green Sea Turtle

About 200 to 1,100 females are estimated to nest on beaches in the continental U.S. In the U.S. Pacific, over 90 percent of nesting throughout the Hawaiian archipelago occurs at the French Frigate Shoals, where about 200 to 700 females nest each year. Elsewhere in the U.S. Pacific, nesting takes place at scattered locations in the Commonwealth of the Northern Marianas, Guam, and American Samoa. In the western Pacific, the largest green turtle nesting aggregation in the world occurs on Raine Island, Australia, where thousands of females nest nightly in an average nesting season. In the Indian Ocean, major nesting beaches occur in Oman where 6,000 to 20,000 females are reported to nest annually.

Leatherback Sea Turtle

Recent estimates of global nesting populations indicate 26,000 to 43,000 nesting females annually (Spotila *et al.* 1996). The largest nesting populations at present occur in the western Atlantic in French Guiana (4,500 to 7,500 females nesting/year) and Colombia (estimated several thousand nests annually), and in the western Pacific in West Papua (formerly Irian Jaya) and Indonesia (about 600 to 650 females nesting/year). In the United States, small nesting populations occur on the Florida east coast (35 females/year), Sandy Point, U.S. Virgin Islands (50 to 100 females/year), and Puerto Rico (30 to 90 females/year).

<u>Status and distribution</u>

Loggerhead Sea Turtle

Genetic research involving analysis of mitochondrial DNA has identified five different loggerhead subpopulations/nesting aggregations in the western North Atlantic: (1) the Northern Subpopulation occurring from North Carolina to around Cape Canaveral, Florida (about 29° N.); (2) South Florida Subpopulation occurring from about 29° N. on Florida's east coast to Sarasota on Florida's west coast; (3) Dry Tortugas, Florida, Subpopulation, (4) Northwest Florida Subpopulation occurring at Eglin Air Force Base and the beaches near Panama City; and (5) Yucatán Subpopulation occurring on the eastern Yucatán Peninsula, Mexico (Bowen 1994, 1995; Bowen *et al.* 1993; Encalada *et al.* 1998; Pearce 2001). These data indicate that gene flow between these five regions is

very low. If nesting females are extirpated from one of these regions, regional dispersal will not be sufficient to replenish the depleted nesting subpopulation. The Northern Subpopulation has declined substantially since the early 1970s, but most of that decline occurred prior to 1979. No significant trend has been detected in recent years (Turtle Expert Working Group 1998, 2000). Adult loggerheads of the South Florida Subpopulation have shown significant increases over the last 25 years, indicating that the population is recovering, although a trend could not be detected from the State of Florida's Index Nesting Beach Survey program from 1989 to 1998. Nesting surveys in the Dry Tortugas, Northwest Florida, and Yucatán Subpopulations have been too irregular to date to allow for a meaningful trend analysis (Turtle Expert Working Group 1998, 2000).

Threats include incidental take from channel dredging and commercial trawling, longline, and gill net fisheries; loss or degradation of nesting habitat from coastal development and beach armoring; disorientation of hatchlings by beachfront lighting; excessive nest predation by native and non-native predators; degradation of foraging habitat; marine pollution and debris; watercraft strikes; and disease. There is particular concern about the extensive incidental take of juvenile loggerheads in the eastern Atlantic by longline fishing vessels from several countries.

Green Sea Turtle

Total population estimates for the green turtle are unavailable, and trends based on nesting data are difficult to assess because of large annual fluctuations in numbers of nesting females. For instance, in Florida, where the majority of green turtle nesting in the southeastern U.S. occurs, estimates range from 200 to 1,100 females nesting annually. Populations in Surinam, and Tortuguero, Costa Rica, may be stable, but there is insufficient data for other areas to confirm a trend.

A major factor contributing to the green turtle's decline worldwide is commercial harvest for eggs and food. Fibropapillomatosis, a disease of sea turtles characterized by the development of multiple tumors on the skin and internal organs, is also a mortality factor and has seriously impacted green turtle populations in Florida, Hawaii, and other parts of the world. The tumors interfere with swimming, eating, breathing, vision, and reproduction, and turtles with heavy tumor burdens may die. Other threats include loss or degradation of nesting habitat from coastal development and beach armoring; disorientation of hatchlings by beachfront lighting; excessive nest predation by native and non-native predators; degradation of foraging habitat; marine pollution and debris; watercraft strikes; and incidental take from channel dredging and commercial fishing operations.

Leatherback Sea Turtle

Declines in leatherback nesting have occurred over the last two decades along the Pacific coasts of Mexico and Costa Rica. The Mexican leatherback nesting population, once considered to be the world's largest leatherback nesting population (65 percent of

worldwide population), is now less than one percent of its estimated size in 1980. Spotila *et al.* (1996) recently estimated the number of leatherback sea turtles nesting on 28 beaches throughout the world from the literature and from communications with investigators studying those beaches. The estimated worldwide population of leatherbacks in 1995 was about 34,500 females on these beaches with a lower limit of about 26,200 and an upper limit of about 42,900. This is less than one third the 1980 estimate of 115,000. Leatherbacks are rare in the Indian Ocean and in very low numbers in the western Pacific Ocean. The largest population is in the western Atlantic. Using an age-based demographic model, Spotila *et al.* (1996) determined that leatherback populations in the Indian Ocean and western Pacific Ocean cannot withstand even moderate levels of adult mortality and that even the Atlantic populations are being exploited at a rate that cannot be sustained. They concluded that leatherbacks are on the road to extinction and further population declines can be expected unless we take action to reduce adult mortality and increase survival of eggs and hatchlings.

The crash of the Pacific leatherback population is believed primarily to be the result of exploitation by humans for the eggs and meat, as well as incidental take in numerous commercial fisheries of the Pacific. Other factors threatening leatherbacks globally include loss or degradation of nesting habitat from coastal development; disorientation of hatchlings by beachfront lighting; excessive nest predation by native and non-native predators; degradation of foraging habitat; marine pollution and debris; and watercraft strikes.

Analysis of the species/critical habitat likely to be affected

The proposed action has the potential to adversely affect nesting females, nests, and hatchlings within the proposed project area. The effects of the proposed action on sea turtles will be considered further in the remaining sections of this biological opinion. Potential effects include destruction of nests deposited within the boundaries of the proposed project, harassment in the form of disturbing or interfering with female turtles attempting to nest within the construction area or on adjacent beaches as a result of construction activities, disorientation of hatchling turtles on beaches adjacent to the construction area as they emerge from the nest and crawl to the water as a result of project lighting, behavior modification of nesting females due to escarpment formation within the project area during a nesting season resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs. The quality of the placed sand could affect the ability of female turtles to nest, the suitability of the nest incubation environment, and the ability of hatchlings to emerge from the nest.

Critical habitat has not been designated in the continental United States; therefore, the proposed action would not result in an adverse modification.

ENVIRONMENTAL BASELINE

Status of the species within the action area

Loggerhead Sea Turtle

The loggerhead sea turtle nesting and hatching season for Northern Florida Atlantic beaches extends from April 15 through November 30. Incubation ranges from about 45 to 95 days.

The Duval County project area has a number of loggerhead nests. For the current nesting season (2003-2004) through August 30, 2004, there were 55 loggerhead turtle nests within the Duval County project area specifically Mayport Naval Station and South Duval County beaches.

Green Sea Turtle

The green sea turtle nesting and hatching season for Northern Florida Atlantic beach extends from May 15 through November 15. Incubation ranges from about 45 to 75 days.

The majority of green turtle nests are more common on Florida beaches than leatherback turtle nests. The majority of green turtle nests are found from Brevard County south. For the current nesting season (2003-2004) through August 30, 2004, there were no green turtle nests on Mayport Naval Station and South Duval County beaches.

Leatherback Sea Turtle

The leatherback sea turtle nesting and hatching season for Northern Florida Atlantic beaches extends from April 15 through September 30. Incubation ranges from about 55 to 75 days.

The Duval project area has had a few leatherback nests over the years. However, for the current nesting season (2003-2004) through August 30, 2004, there were 2 leatherback nests.

EFFECTS OF THE ACTION

Factors to be considered

Placement of sand on an eroded section of beach or an existing beach in and of itself may not provide suitable nesting habitat for sea turtles. Although beach nourishment may increase the potential nesting area, significant negative impacts to sea turtles may result if protective measures are not incorporated during construction. Nourishment during the nesting season, particularly on or near high density nesting beaches, can cause increased

loss of offspring from human-caused mortality and, along with other mortality sources, may significantly impact the long-term survival of the species. For instance, projects conducted during the nesting and hatching season could result in the loss of sea turtles through disruption of adult nesting activity and by burial or crushing of nests or hatchlings. While a nest monitoring and egg relocation program would reduce these impacts, nests may be inadvertently missed or misidentified as false crawls during daily patrols. In addition, nests may be destroyed by operations at night prior to beach patrols being performed. Even under the best of conditions, about 7 percent of the nests can be missed by experienced sea turtle surveyors (Schroeder 1994).

Analyses for effects of the action

Beneficial Effects

The placement of sand on a beach with reduced dry fore-dune habitat may increase sea turtle nesting habitat if the placed sand is highly compatible (i.e., grain size, shape, color, etc.) with naturally occurring beach sediments in the area, and compaction and escarpment remediation measures are incorporated into the project. In addition, a nourished beach that is designed and constructed to mimic a natural beach system may be more stable than the eroding one it replaces, thereby benefiting sea turtles.

Direct Effects

Placement of sand on a beach in and of itself may not provide suitable nesting habitat for sea turtles. Although beach nourishment may increase the potential nesting area, significant negative impacts to sea turtles may result if protective measures are not incorporated during project construction. Nourishment during the nesting season, particularly on or near high density nesting beaches, can cause increased loss of eggs and hatchlings and, along with other mortality sources, may significantly impact the long-term survival of the species. For instance, projects conducted during the nesting and hatching season could result in the loss of sea turtles through disruption of adult nesting activity and by burial or crushing of nests or hatchlings. While a nest monitoring and egg relocation program would reduce these impacts, nests may be inadvertently missed (when crawls are obscured by rainfall, wind, and/or tides) or misidentified as false crawls during daily patrols. In addition, nests may be destroyed by operations at night prior to beach patrols being performed. Even under the best of conditions, about 7 percent of the nests can be misidentified as false crawls by experienced sea turtle nest surveyors (Schroeder 1994).

1. Nest relocation

Besides the potential for missing nests during a nest relocation program, there is a potential for eggs to be damaged by their movement, particularly if eggs are not relocated within 12 hours of deposition (Limpus *et al.* 1979). Nest relocation can have adverse impacts on incubation temperature (and hence sex ratios), gas exchange parameters, hydric environment of nests, hatching success, and hatchling emergence (Limpus *et al.* 1979, Ackerman 1980, Parmenter 1980, Spotila *et al.* 1983, McGehee 1990). Relocating

nests into sands deficient in oxygen or moisture can result in mortality, morbidity, and reduced behavioral competence of hatchlings. Water availability is known to influence the incubation environment of the embryos and hatchlings of turtles with flexible-shelled eggs, which has been shown to affect nitrogen excretion (Packard *et al.* 1984), mobilization of calcium (Packard and Packard 1986), mobilization of yolk nutrients (Packard *et al.* 1985), hatchling size (Packard *et al.* 1981, McGehee 1990), energy reserves in the yolk at hatching (Packard *et al.* 1988), and locomotory ability of hatchlings (Miller *et al.* 1987).

Comparisons of hatching success between relocated and *in situ* nests have noted significant variation ranging from a 21 percent decrease to a 9 percent increase for relocated nests (Florida Fish and Wildlife Conservation Commission, unpublished data). Comparisons of emergence success between relocated and *in situ* nests have also noted significant variation ranging from a 23 percent decrease to a 5 percent increase for relocated nests (Florida Fish and Wildlife Conservation Commission, unpublished data). A 1994 study of hatching and emergence success of *in situ* and relocated nests at seven sites in Florida found that hatching success was lower for relocated nests in five of seven cases with an average decrease for all seven sites of 5.01 percent (range = 7.19 percent increase to 16.31 percent decrease). Emergence success was lower for relocated nests in all seven cases by an average of 11.67 percent (range = 3.6 to 23.36 percent) (Meylan 1995).

2. Equipment

The placement of pipelines and the use of heavy machinery on the beach during a construction project may also have adverse effects on sea turtles. They can create barriers to nesting females emerging from the surf and crawling up the beach, causing a higher incidence of false crawls and unnecessary energy expenditure.

3. Artificial lighting

Visual cues are the primary sea-finding mechanism for hatchling sea turtles (Mrosovsky and Carr 1967, Mrosovsky and Shettleworth 1968, Dickerson and Nelson 1989, Witherington and Bjorndal 1991). When artificial lighting is present on or near the beach, it can misdirect hatchlings once they emerge from their nests and prevent them from reaching the ocean (Philibosian 1976; Mann 1977; Florida Fish and Wildlife Conservation Commission, unpublished data). In addition, a significant reduction in sea turtle nesting activity has been documented on beaches illuminated with artificial lights (Witherington 1992). Therefore, construction lights along a project beach and on the dredging vessel may deter females from coming ashore to nest, misdirect females trying to return to the surf after a nesting event, and misdirect emergent hatchlings from adjacent non-project beaches. Any source of bright lighting can profoundly affect the orientation of hatchlings, both during the crawl from the beach to the ocean and once they begin swimming offshore. Hatchlings attracted to light sources on dredging barges may not only suffer from interference in migration, but may also experience higher probabilities of predation to predatory fishes that are also attracted to the barge lights. This impact could be reduced by using the minimum amount of light necessary (may require shielding) or low pressure sodium lighting during project construction.

Indirect Effects

Many of the direct effects of beach nourishment may persist over time and become indirect impacts. These indirect effects include increased susceptibility of relocated nests to catastrophic events, the consequences of potential increased beachfront development, changes in the physical characteristics of the beach, the formation of escarpments, and future sand migration.

1. Increased susceptibility to catastrophic events
Nest relocation may concentrate eggs in an area making them more susceptible to catastrophic events. Hatchlings released from concentrated areas also may be subject to greater predation rates from both land and marine predators, because the predators learn where to concentrate their efforts (Glenn 1998, Wyneken *et al.* 1998).

2. Increased beachfront development
Pilkey and Dixon (1996) state that beach replenishment frequently leads to more development in greater density within shorefront communities that are then left with a future of further replenishment or more drastic stabilization measures. Dean (1999) also notes that the very existence of a beach nourishment project can encourage more development in coastal areas. Following completion of a beach nourishment project in Miami during 1982, investment in new and updated facilities substantially increased tourism there (National Research Council 1995). Increased building density immediately adjacent to the beach often resulted as older buildings were replaced by much larger ones that accommodated more beach users. Overall, shoreline management creates an upward spiral of initial protective measures resulting in more expensive development which leads to the need for more and larger protective measures. Increased shoreline development may adversely affect sea turtle nesting success. Greater development may support larger populations of mammalian predators, such as foxes and raccoons, than undeveloped areas (National Research Council 1990a), and can also result in greater adverse effects due to artificial lighting, as discussed above.

3. Changes in the physical environment
Beach nourishment may result in changes in sand density (compaction), beach shear resistance (hardness), beach moisture content, beach slope, sand color, sand grain size, sand grain shape, and sand grain mineral content if the placed sand is dissimilar from the original beach sand (Nelson and Dickerson 1988a). These changes could result in adverse impacts on nest site selection, digging behavior, clutch viability, and emergence by hatchlings (Nelson and Dickerson 1987, Nelson 1988).

Beach compaction and unnatural beach profiles that may result from beach nourishment activities could negatively impact sea turtles regardless of the timing of projects. Very fine sand and/or the use of heavy machinery can cause sand compaction on nourished beaches (Nelson *et al.* 1987, Nelson and Dickerson 1988a). Significant reductions in nesting success (i.e., false crawls occurred more frequently) have been documented on severely compacted nourished beaches (Fletemeyer 1980, Raymond 1984, Nelson and Dickerson 1987, Nelson *et al.* 1987), and increased false crawls may result in increased

physiological stress to nesting females. Sand compaction may increase the length of time required for female sea turtles to excavate nests and also cause increased physiological stress to the animals (Nelson and Dickerson 1988c). Nelson and Dickerson (1988b) concluded that, in general, beaches nourished from offshore borrow sites are harder than natural beaches, and while some may soften over time through erosion and accretion of sand, others may remain hard for 10 years or more.

These impacts can be minimized by using suitable sand and by tilling compacted sand after project completion. The level of compaction of a beach can be assessed by measuring sand compaction using a cone penetrometer (Nelson 1987). Tilling of a nourished beach with a root rake may reduce the sand compaction to levels comparable to unnourished beaches. However, a pilot study by Nelson and Dickerson (1988c) showed that a tilled nourished beach will remain uncompacted for up to 1 year. Therefore, the Service requires multi-year beach compaction monitoring and, if necessary, tilling to ensure that project impacts on sea turtles are minimized.

A change in sediment color on a beach could change the natural incubation temperatures of nests in an area, which, in turn, could alter natural sex ratios. To provide the most suitable sediment for nesting sea turtles, the color of the nourished sediments must resemble the natural beach sand in the area. Natural reworking of sediments and bleaching from exposure to the sun would help to lighten dark nourishment sediments; however, the timeframe for sediment mixing and bleaching to occur could be critical to a successful sea turtle nesting season.

4. Escarpment formation

On nourished beaches, steep escarpments may develop along their water line interface as they adjust from an unnatural construction profile to a more natural beach profile (Coastal Engineering Research Center 1984, Nelson *et al.* 1987). These escarpments can hamper or prevent access to nesting sites (Nelson and Blihovde 1998). Researchers have shown that female turtles coming ashore to nest can be discouraged by the formation of an escarpment, leading to situations where they choose marginal or unsuitable nesting areas to deposit eggs (e.g., in front of the escarpments, which often results in failure of nests due to prolonged tidal inundation). This impact can be minimized by leveling any escarpments prior to the nesting season.

5. Erosion

Future sand displacement on nesting beaches is a potential effect of the nourishment project. Dredging of sand offshore from a project area has the potential to cause erosion of the newly created beach or other areas on the same or adjacent beaches by creating a sand sink. The remainder of the system responds to this sand sink by providing sand from the beach to attempt to reestablish equilibrium (National Research Council 1990b).

<u>Species' response to a proposed action</u>

Ernest and Martin (1999) conducted a comprehensive study to assess the effects of beach nourishment on loggerhead sea turtle nesting and reproductive success. The following

findings illustrate sea turtle responses to and recovery from a nourishment project. A significantly larger proportion of turtles emerging on nourished beaches abandoned their nesting attempts than turtles emerging on Control or pre-nourished beaches. This reduction in nesting success was most pronounced during the first year following project construction and is most likely the result of changes in physical beach characteristics associated with the nourishment project (e.g., beach profile, sediment grain size, beach compaction, frequency and extent of escarpments). During the first post-construction year, the time required for turtles to excavate an egg chamber on the untilled, hard-packed sands of one treatment area increased significantly relative to Control and background conditions. However, in another treatment area, tilling was effective in reducing sediment compaction to levels that did not significantly prolong digging times. As natural processes reduced compaction levels on nourished beaches during the second post-construction year, digging times returned to background levels.

During the first post-construction year, nests on the nourished beaches were deposited significantly farther from both the toe of the dune and the tide line than nests on Control beaches. Furthermore, nests were distributed throughout all available habitat and were not clustered near the dune as they were in the Control. As the width of nourished beaches decreased during the second year, among-treatment differences in nest placement diminished. More nests were washed out on the wide, flat beaches of the nourished treatments than on the narrower steeply sloped beaches of the Control. This phenomenon persisted through the second post-construction year monitoring and resulted from the placement of nests near the seaward edge of the beach berm where dramatic profile changes, caused by erosion and scarping, occurred as the beach equilibrated to a more natural contour.

As with other beach nourishment projects, Ernest and Martin (1999) found that the principal effect of nourishment on sea turtle reproduction was a reduction in nesting success during the first year following project construction. Although most studies have attributed this phenomenon to an increase in beach compaction and escarpment formation, Ernest and Martin indicate that changes in beach profile may be more important. Regardless, as a nourished beach is reworked by natural processes in subsequent years and adjusts from an unnatural construction profile to a more natural beach profile, beach compaction and the frequency of escarpment formation decline, and nesting and nesting success return to levels found on natural beaches.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. The Service is not aware of any cumulative effects in the project area.

CONCLUSION

After reviewing the current status of the loggerhead, green, and leatherback sea turtle, the environmental baseline for the action area, the effects of the proposed beach nourishment, and the cumulative effects, it is the Service's biological opinion that the beach nourishment project, as proposed, is not likely to jeopardize the continued existence of the loggerhead, green, and leatherback turtle and is not likely to destroy or adversely modify designated critical habitat. No critical habitat has been designated for the loggerhead, green, and leatherback turtle in the continental United States; therefore, none will be affected.

The proposed project will affect only 10 miles of the approximately 1,400 miles of available sea turtle nesting habitat in the southeastern U.S. Research has shown that the principal effect of beach nourishment on sea turtle reproduction is a reduction in nesting success, and this reduction is most often limited to the first year following project construction. Research has also shown that the impacts of a nourishment project on sea turtle nesting habitat are typically short-term because a nourished beach will be reworked by natural processes in subsequent years, and beach compaction and the frequency of escarpment formation will decline. Although a variety of factors, including some that cannot be controlled, can influence how a nourishment project will perform from an engineering perspective, measures can be implemented to minimize impacts to sea turtles.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered or threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be implemented by the USACOE so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The USACOE has a continuing duty to regulate the activity covered by this incidental take statement. If the USACOE (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement

through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the USACOE must report the progress of the action and its impacts on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

The Service anticipates 10 miles of nesting beach habitat could be taken as a result of this proposed action. The take is expected to be in the form of: (1) destruction of all nests that may be constructed and eggs that may be deposited and missed by a nest survey and egg relocation program within the boundaries of the proposed project; (2) destruction of all nests deposited during the period when a nest survey and egg relocation program is not required to be in place within the boundaries of the proposed project; (3) reduced hatching success due to egg mortality during relocation and adverse conditions at the relocation site; (4) harassment in the form of disturbing or interfering with female turtles attempting to nest within the construction area or on adjacent beaches as a result of construction activities; (5) misdirection of hatchling turtles on beaches adjacent to the construction area as they emerge from the nest and crawl to the water as a result of project lighting; (6) behavior modification of nesting females due to escarpment formation within the project area during a nesting season, resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs; and (7) destruction of nests from escarpment leveling within a nesting season when such leveling has been approved by the Fish and Wildlife Service.

Incidental take is anticipated for only the 10 miles of beach that has been identified for sand placement. The Service anticipates incidental take of sea turtles will be difficult to detect for the following reasons: (1) the turtles nest primarily at night and all nests are not found because [a] natural factors, such as rainfall, wind, and tides may obscure crawls and [b] human-caused factors, such as pedestrian and vehicular traffic, may obscure crawls, and result in nests being destroyed because they were missed during a nesting survey and egg relocation program; (2) the total number of hatchlings per undiscovered nest is unknown; (3) the reduction in percent hatching and emerging success per relocated nest over the natural nest site is unknown; (4) an unknown number of females may avoid the project beach and be forced to nest in a less than optimal area; (5) lights may misdirect an unknown number of hatchlings and cause death; and (6) escarpments may form and cause an unknown number of females from accessing a suitable nesting site. However, the level of take of these species can be anticipated by the disturbance and renourishment of suitable turtle nesting beach habitat because: (1) turtles nest within the project site; (2) beach renourishment will likely occur during a portion of the nesting season; (3) the renourishment project will modify the incubation substrate, beach slope, and sand compaction; and (4) artificial lighting will deter and/or misdirect nesting females and hatchlings.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species. Critical habitat has not been designated in the project area; therefore, the project will not result in destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of loggerheads, greens, and leatherback sea turtles.

1. Beach quality sand suitable for sea turtle nesting, successful incubation, and hatchling emergence must be used on the project site.

2. If the beach nourishment project will be conducted during the sea turtle nesting season, surveys for nesting sea turtles must be conducted. If nests are constructed in the area of beach nourishment, the eggs must be relocated.

3. Immediately after completion of the beach nourishment project and prior to the next three nesting seasons, beach compaction must be monitored and tilling must be conducted as required to reduce the likelihood of impacting sea turtle nesting and hatching activities.

4. Immediately after completion of the beach nourishment project and prior to the next three nesting seasons, monitoring must be conducted to determine if escarpments are present and escarpments must be leveled as required to reduce the likelihood of impacting sea turtle nesting and hatching activities.

5. The applicant must ensure that contractors doing the beach nourishment work fully understand the sea turtle protection measures detailed in this incidental take statement.

6. During the sea turtle nesting season, construction equipment and pipes must be stored in a manner that will minimize impacts to sea turtles to the maximum extent practicable.

7. During the sea turtle nesting season, lighting associated with the project must be minimized to reduce the possibility of disrupting and misdirecting nesting and/or hatchling sea turtles.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the USACOE must comply with the following terms and conditions, which implement the reasonable and

prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. All fill material placed must be sand that is similar to a native beach in the vicinity of the site that has not been affected by prior renourishment activities. The fill material must be similar in both coloration and grain size distribution to the native beach. All such fill material must be free of construction debris, rocks, or other foreign matter and must not contain, on average, greater than 10 percent fines (i.e., silt and clay) (passing the #200 sieve) and must not contain, on average, greater than 5 percent coarse gravel or cobbles, exclusive of shell material (retained by the #4 sieve).

2. Daily early morning surveys for sea turtle nests will be required if any portion of the beach nourishment project occurs during the period from April 15 through November 30. Nesting surveys must be initiated 65 days prior to nourishment activities or by April 15, whichever is later. Nesting surveys must continue through the end of the project or through September 30, whichever is earlier. If nests are constructed in areas where they may be affected by construction activities, eggs must be relocated per the following requirements.

2a. Nesting surveys and egg relocations will only be conducted by personnel with prior experience and training in nesting survey and egg relocation procedures. Surveyors must have a valid Florida Fish and Wildlife Conservation Commission permit. Nesting surveys must be conducted daily between sunrise and 9 a.m. Surveys must be performed in such a manner so as to ensure that construction activity does not occur in any location prior to completion of the necessary sea turtle protection measures.

2b. Only those nests that may be affected by construction activities will be relocated. Nests requiring relocation must be moved no later than 9 a.m. the morning following deposition to a nearby self-release beach site in a secure setting where artificial lighting will not interfere with hatchling orientation. Nest relocations in association with construction activities must cease when construction activities no longer threaten nests. Nests deposited within areas where construction activities have ceased or will not occur for 65 days must be marked and left in place unless other factors threaten the success of the nest. Any nests left in the active construction zone must be clearly marked, and all mechanical equipment must avoid nests by at least 10 feet.

3. Immediately after completion of the beach nourishment project and prior to April 15, for 3 subsequent years, sand compaction must be monitored in the area of restoration in accordance with a protocol agreed to by the Service, the State regulatory agency, and the applicant. At a minimum, the protocol provided under 3a and 3b below must be followed. If required, the area must be tilled to a depth of 36 inches. All tilling activity must be completed prior to April 15.

If the project is completed during the nesting season, tilling will not be performed in areas where nests have been left in place or relocated. An annual summary of compaction surveys and the actions taken must be submitted to the Service. (NOTE: The requirement for compaction monitoring can be eliminated if the decision is made to till regardless of post-construction compaction levels. Also, out-year compaction monitoring and remediation are not required if placed material no longer remains on the dry beach.)

3a. Compaction sampling stations must be located at 500-foot intervals along the project area. One station must be at the seaward edge of the dune/bulkhead line (when material is placed in this area), and one station must be midway between the dune line and the high water line (normal wrack line).

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

3b. If the average value for any depth exceeds 500 pounds per square inch (psi) for any two or more adjacent stations, then that area must be tilled immediately prior to April 15. If values exceeding 500 psi are distributed throughout the project area but in no case do those values exist at two adjacent stations at the same depth, then consultation with the Fish and Wildlife Service will be required to determine if tilling is required. If a few values exceeding 500 psi are present randomly within the project area, tilling will not be required.

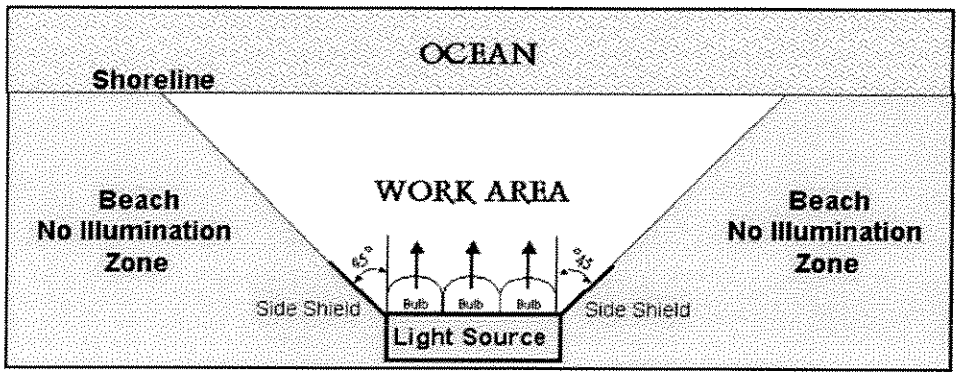
4. Visual surveys for escarpments along the project area must be made immediately after completion of the beach nourishment project and prior to April 15, for 3 subsequent years. Escarpments that interfere with sea turtle nesting or that exceed 18 inches in height for a distance of 100 feet must be leveled to the natural beach contour by April 15. If the project is completed during the sea turtle nesting and hatching season, escarpments may be required to be leveled immediately, while protecting nests that have been relocated or left in place. The Service must be contacted immediately if subsequent reformation of escarpments that interfere with sea turtle nesting or that exceed 18 inches in height for a distance of 100 feet occurs during the nesting and hatching season to determine the appropriate action to be taken. If it is determined that escarpment leveling is required during the nesting or hatching season, the Service will provide a brief written authorization that describes methods to be used to reduce the likelihood of impacting existing nests. An annual summary of escarpment surveys and actions taken must be submitted to the Service. (NOTE:

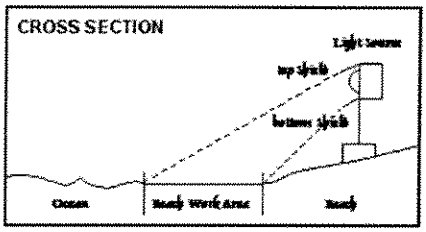
Out-year escarpment monitoring and remediation are not required if placed material no longer remains on the beach.)

5. The applicant must arrange a meeting between representatives of the contractor, the Service, the Florida Fish and Wildlife Conservation Commission, and the permitted person responsible for egg relocation at least 30 days prior to the commencement of work on this project. At least 10 days advance notice must be provided prior to conducting this meeting. This will provide an opportunity for explanation and/or clarification of the sea turtle protection measures.

6. From April 15 to November 30, staging areas for construction equipment must be located off the beach to the maximum extent practicable. Nighttime storage of construction equipment not in use must be off the beach to minimize disturbance to sea turtle nesting and hatching activities. In addition, all construction pipes that are placed on the beach must be located as far landward as possible without compromising the integrity of the existing or reconstructed dune system. Temporary storage of pipes must be off the beach to the maximum extent possible. Temporary storage of pipes on the beach must be in such a manner so as to impact the least amount of nesting habitat and must likewise not compromise the integrity of the dune systems (placement of pipes perpendicular to the shoreline is recommended as the method of storage).

7. From April 15 to November 30, direct lighting of the beach and near shore waters must be limited to the immediate construction area and must comply with safety requirements. Lighting on offshore or onshore equipment must be minimized through reduction, shielding, lowering, and appropriate placement to avoid excessive illumination of the waters surface and nesting beach while meeting all Coast Guard, EM 385-1-1, and OSHA requirements. Light intensity of lighting plants must be reduced to the minimum standard required by OSHA for General Construction areas, in order not to misdirect sea turtles. Shields must be affixed to the light housing and be large enough to block light from all lamps from being transmitted outside the construction area (see figure on next page).





BEACH LIGHTING SCHEMATIC

8. A report describing the actions taken to implement the terms and conditions of this incidental take statement must be submitted to the Jacksonville Field Office within 60 days of completion of the proposed work for each year when the activity has occurred. This report will include the dates of actual construction activities, names and qualifications of personnel involved in nest surveys and relocation activities, descriptions and locations of self-release beach sites, nest survey and relocation results, and hatching success of nests.

9. In the event a sea turtle nest is excavated during construction activities, the permitted person responsible for egg relocation for the project must be notified so the eggs can be moved to a suitable relocation site.

10. Upon locating a sea turtle adult, hatchling, or egg harmed or destroyed as a direct or indirect result of the project, notification must be made to the Florida Fish and Wildlife Conservation Commission at 1-888-404-3922 and Jacksonville Field Office at (904) 232-2580. Care should be taken in handling injured turtles or eggs to ensure effective treatment or disposition, and in handling dead specimens to preserve biological materials in the best possible state for later analysis.

The Service believes that incidental take will be limited to the 10 miles of beach that have been identified for sand placement. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. The Service believes that no more than the following types of incidental take will result from the proposed action: (1) destruction of all nests that may be constructed and eggs that may be deposited and

missed by a nest survey and egg relocation program within the boundaries of the proposed project; (2) destruction of all nests deposited during the period when a nest survey and egg relocation program is not required to be in place within the boundaries of the proposed project; (3) reduced hatching success due to egg mortality during relocation and adverse conditions at the relocation site; (4) harassment in the form of disturbing or interfering with female turtles attempting to nest within the construction area or on adjacent beaches as a result of construction activities; (5) disorientation of hatchling turtles on beaches adjacent to the construction area as they emerge from the nest and crawl to the water as a result of project lighting; (6) behavior modification of nesting females due to escarpment formation within the project area during a nesting season, resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs; and (7) destruction of nests from escarpment leveling within a nesting season when such leveling has been approved by the Fish and Wildlife Service. The amount or extent of incidental take for sea turtles will be considered exceeded if the project results in more than a one-time placement of sand on the 10 miles of beach that have been identified for sand placement. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The USACOE must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. Construction activities for this project and similar future projects should be planned to take place outside the main part of the sea turtle nesting and hatching season.

2. Prior to the next nourishment cycle, an interagency team should be developed to examine the feasibility of using alternate borrow sites where substantial sand deposits exist.

3. Appropriate native salt-resistant dune vegetation should be established on the restored dunes. The Florida Department of Environmental Protection, Bureau of Beaches and Wetland Resources, can provide technical assistance on the specifications for design and implementation.

4. Surveys for nesting success of sea turtles should be continued for a minimum of 3 years following beach nourishment to determine whether sea turtle nesting success has been adversely impacted.

5. Educational signs should be placed where appropriate at beach access points explaining the importance of the area to sea turtles and/or the life history of sea turtle species that nest in the area.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the action outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Ann Marie Maharaj of this office at (904) 232-2580 ext 111.

Sincerely,

Dave Hankla
Field Supervisor

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Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

December 15, 2004

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 FONSI and Environmental Assessment for the Duval County Beach Erosion Control Project New Borrow Area – Duval County, Florida.
SAI # FL200410260173C

Dear Mr. Duck:

The Florida State Clearinghouse, pursuant to Presidential 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 a review of the referenced draft Environmental Assessment (EA).

Department (DEP) staff notes that the DEP Bureau of Beaches and Coastal Systems is currently processing an application for a Joint Coastal Permit/state water quality certification (File No. 0228528-001-JC) pursuant to Chapters 161, 253 and 373, *Florida Statutes*. Please continue to coordinate with Bureau and Florida Fish and Wildlife Conservation Commission (FWC) staff to resolve any outstanding issues regarding sediment quality/geotechnical analysis, marine turtle nesting, biological monitoring, etc. For additional information on the pending permit application, please contact Mr. Martin Seeling at (850) 487-4471, ext. 104.

The Florida Department of State (DOS) notes that they have received and reviewed the previously requested historic assessment and underwater remote sensing survey of the proposed offshore borrow area. The survey identified, categorized, and recommended avoidance of a number of magnetic and acoustic anomalies within the project area. DOS concurs with the results of the survey and finds the submitted report complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code*. Please refer to the enclosed DOS letter for additional information.

The Northeast Florida Regional Council (NEFRPC) indicates that the project is generally consistent with the goals and policies of its Strategic Regional Policy Plan. In

addition, the City of Atlantic Beach notes that Duval County beaches are long overdue for a renourishment project. Hurricane Jeanne severely damaged the dunes in the City of Atlantic Beach and washed away a great quantity of sand – disturbing and destroying many sea turtle nests in the process. The City strongly recommends the applicant's support of this project, as it is urgently needed in the Atlantic Beach area. Please see the enclosed NEFRPC comments.

Based on the information contained in the draft EA and comments provided by our reviewing agencies, the state has determined that, at this stage, the subject project is consistent with the Florida Coastal Management Program (FCMP). The applicant must, however, address the concerns identified by DEP and FWC staff during the permitting process. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this review and the ongoing permit/water quality certification review. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting stage.

Thank you for the opportunity to review this proposal. If you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2161.

Sincerely,

Sally B. Mann

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lm

Enclosures

cc: Roxane Dow, DEP, BBCS
Traci Wallace, FWC
Scott Edwards, DOS
Tobin Lilly, NEFRPC

Project Information	
Project:	FL200410260173C
Comments Due:	November 25, 2004
Letter Due:	December 15, 2004
Description:	DEPARTMENT OF THE ARMY - JACKSONVILLE DISTRICT CORPS OF ENGINEERS - DRAFT FONSI AND ENVIRONMENTAL ASSESSMENT FOR THE DUVAL COUNTY BEACH EROSION CONTROL PROJECT NEW BORROW AREA - DUVAL COUNTY, FLORIDA.
Keywords:	ACOE - DEA, DUVAL COUNTY BEACH EROSION CONTROL PROJECT NEW BORROW AREA
CFDA #:	12.101

Agency Comments:

COMMUNITY AFFAIRS - FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS

ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP staff notes that the DEP Bureau of Beaches and Coastal Systems is currently processing an application for a Joint Coastal Permit/state water quality certification (File No. 0228528-001-JC) pursuant to Chapters 161, 253 and 373, Florida Statutes. Please continue to coordinate with Bureau and Florida Fish and Wildlife Conservation Commission (FWC) staff to resolve any outstanding issues regarding sediment quality/geotechnical analysis, marine turtle nesting, biological monitoring, etc. For additional information on the pending permit application, please contact Mr. Martin Seeling at (850) 487-4471, ext. 104.

FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

STATE - FLORIDA DEPARTMENT OF STATE

DOS notes that they have received and reviewed the previously requested historic assessment and underwater remote sensing survey of the proposed offshore borrow area. The survey identified, categorized, and recommended avoidance of a number of magnetic and acoustic anomalies within the project area. DOS concurs with the results of the survey and finds the submitted report complete and sufficient in accordance with Chapter 1A-46, Florida Administrative Code.

ST. JOHNS RIVER WMD - ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

SJRWMD is not involved in permitting for this project.

ENVIRONMENTAL POLICY UNIT - OFFICE OF POLICY AND BUDGET, ENVIRONMENTAL POLICY UNIT

No Comment

NE FLORIDA RPC - NORTHEAST FLORIDA REGIONAL PLANNING COUNCIL

This project is generally consistent with NEFRPC policies, plans and programs. This letter signifies that the Northeast Florida Regional Council has no objection to the above-cited Activity.

DUVAL - DUVAL COUNTY

The City of Atlantic Beach notes that Duval County beaches are long overdue for a renourishment project. Hurricane Jeanne severely damaged the dunes in the City of Atlantic Beach and washed away a great quantity of sand - disturbing and destroying many sea turtle nests in the process. A beach renourishment project in Atlantic Beach is urgently needed and we strongly recommend support of this project.

For more information please contact the Clearinghouse Office at:

3900 COMMONWEALTH BOULEVARD MS-47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

FLORIDA DEPARTMENT OF STATE
Glenda E. Hood
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Mr. James C. Duck
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

September 13, 2004

Re: DHR Project File No. 2004-7682/ Received by DHR: August 6, 2004
Historic Assessment and Remote Sensing Survey of the Duval County Shore Protection Sand Source, Duval County, Florida

Dear Mr. Duck:

Our office received and reviewed the above referenced survey report in accordance with procedures outlined in Chapters 267 and 373 of the *Florida Statutes*, for possible adverse impact to historic properties listed or eligible for listing in the *National Register of Historic Places (NRHP)*, or otherwise of historical, architectural or archaeological value.

Between April and May 2004, R. Christopher Goodwin & Associates, Inc. conducted an underwater remote sensing survey of the Duval County Shore Protection Sand Source area for the Jacksonville District Corps of Engineers. A total of 63 magnetic anomalies and 104 acoustic anomalies were identified within the project areas during the investigation. Most of these anomalies are single isolated objects not indicative of significant cultural resources, however a number of these anomalies are found to group into nine distinct target clusters.

Target Cluster 1 consists of three magnetic anomalies (M1, M2, and M3) indicative of an isolated linear object. Target Cluster 2 consists of two magnetic anomalies (M6 and M7) indicative of an isolated linear object. Target Cluster 3 consists of two magnetic anomalies (M14 and M15) indicative of an isolated ferrous object. Target Cluster 4 consists of three magnetic anomalies (M27, M29, and M30) indicative of an isolated rectilinear object. Target Cluster 5 consists of three magnetic anomalies (M60, M61, and M62) indicative of an isolated rectilinear object. Target Cluster 6 consists of two magnetic anomalies (M38 and M41) indicative of an isolated rectilinear object oriented vertically in the sedimentary matrix. R. Christopher Goodwin & Associates, Inc. recommends no further investigations in target clusters 1-6.

Target Cluster 7 consists of two seemingly related magnetic loci made up of seven magnetic anomalies (M16, M17, M18, M20, M22, M23, and M25) and one acoustic anomaly (A70). Target Cluster 7 could be in indicative of a buried cultural resource, possible a shipwreck. It is the opinion of R. Christopher Goodwin & Associates, Inc. that Target Cluster 7 should be avoided by the proposed dredging, if avoidance is not possible then a program of Phase II evaluation including diver investigation and sampling be conducted.

Target Cluster 8 consists of five magnetic anomalies (M34, M35, M36, M39, and M40) and one acoustic anomaly (A99). Target Cluster 8 could be indicative of a significant cultural resource representing a large, buried object surrounded by associated ferrous debris. It is the opinion of R. Christopher Goodwin & Associates, Inc. that Target Cluster 7 should be avoided by the proposed dredging, if avoidance is not possible then a program of Phase II evaluation including diver investigation and sampling be conducted.

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

Enc

Target Cluster 9 consists of nine magnetic anomalies (M47, M48, M49, M50, M51, M53, M54, M55, and M56) and two acoustic anomalies (A102 and A104). Target Cluster 9 could be indicative of a significant cultural resource representing a large object buried beneath sediments. It is the opinion of R. Christopher Goodwin & Associates, Inc. that Target Cluster 9 should be avoided by the proposed dredging, if avoidance is not possible then a program of Phase II evaluation including diver investigation and sampling be conducted.

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

If you have any questions concerning our comments, please contact Ron Grayson, Historic Sites Specialist, by phone at (850) 245-6333, or by electronic mail at rigrayson@dos.state.fl.us. Your continued interest in protecting Florida's historic properties is appreciated.

Sincerely,

Laura A. Kammerer, Deputy SHPO

for Frederick Gaske, Director, and
State Historic Preservation Officer

Northeast Florida Regional Council

Bringing Communities Together

Baker • Clay • Duval • Flagler • Nassau • Putnam • St. Johns

November 23, 2004

Lauren Milligan
Florida State Clearinghouse
Department of Environmental Protection
3900 Commonwealth Blvd.
Douglas Building - Mail Station 47
Tallahassee, Florida 32399-3000

NOV 2 9 2004

OIP/OLGA

SAI# FL200410260173C
NEFRC# DV0024

Program title: Department of the Army - Jacksonville district corps of engineers - draft fonsi and environmental assessment for the Duval county beach erosion control project new borrow area - Duval county, Florida

The Northeast Florida Regional Council has reviewed the above Activity. Response sheets were sent out to notify potentially affected agencies concerning project intentions. There was 1 endorsement received in regards to this application from: **City of Atlantic Beach City Manager.**

> Additional Comments: "Duval County Beaches are long overdue for a renourishment project. The jetties located at the mouth of the St. Johns River prevent the down stream migration of new sand onto the Duval county beaches. Recent attempts at renourishment have failed due to poor materials being taken from the dredging of the St. Johns River. Most recently, Hurricane Jeanne severely damaged the dunes in the city of Atlantic Beach and washed away a great quantity of sand. Because of this storm, many sea turtle nests were disturbed and or destroyed. Further, because the high tide line often comes up to the remaining dune line, the available locations for turtle nests have been significantly reduce. Concerns have been expressed by shoreline consultants working for upcoming months may cause for additional deterioration. In summary, a beach renourishment project in Atlantic Beach (Duval County) is urgently needed and we strongly recommend your support of this project."

This project is generally consistent with the Northeast Florida Regional Council's policies, plans and programs. This letter signifies that the Northeast Florida Regional Council has no objection to the above-cited Activity.

6850 Belfort Oaks Place • Jacksonville, FL 32216 • (904) 279-0880 • Fax (904) 279-0881 • Suncom 874-0880 • Suncom Fax 874-0881
Web Site: www.nefrc.org • Email: nefrc@nefrc.org
Equal Opportunity Employer

Sincerely,

Tobin Lilly
Assistant Regional Planner, Intergovernmental Coordination & Review

Cc: James C. Duck, Chief of the Planning Division, Department of the Army, Jacksonville Corps of Engineers, P.O. Box 4970, Jacksonville, Florida 32232-0019

Appendix D

Essential Fish Habitat Assessment

Duval County Beach Erosion Control Project
New Borrow Area, Duval County, Florida

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

ESSENTIAL FISH HABITAT ASSESSMENT

DUVAL COUNTY BEACH EROSION CONTROL PROJECT NEW BORROW AREA

DUVAL COUNTY, FLORIDA

1. **PROJECT AUTHORITY:** The authorized Duval County Beach Erosion Control Project (BEC) involves the periodic renourishment of 10 miles of Atlantic shoreline between the St. Johns River to the Duval County - St. Johns County line. The project was authorized by Section 301 of the River and Harbor Act of 1965 (Public Law 89-298) on 27 October and is described in House Document 273/89/1. The authority for Federal participation in the cost of periodic renourishment expired in December of 1990. Accordingly, the Corps prepared a Section 934 Reevaluation Report in October 1990 to evaluate extending Federal participation in the cost of future Duval County beach renourishment. In accordance with Section 934 of the Water Resources Development Act on 3 February 1993, the Assistant Secretary of the Army for Civil Works approved the extension of Federal participation in periodic renourishment of the Duval County Beach Erosion Control Project.

2. **LOCATION:** Duval County is located in the northeastern corner of Florida along the Atlantic Ocean (see attached map). The Atlantic shore of the county consists of a barrier island bounded to the north by Nassau Sound, to the west by the Intracoastal Waterway, to the east by the Atlantic Ocean, and to the south by St. Johns County and the community of Ponte Vedra. The authorized project requires that periodic nourishment from just south of the St. Johns River south jetty to the St. Johns County line be undertaken, as needed. The Duval County beaches are highly developed with private homes, apartment houses, resort motels and condominiums, and concession establishments located throughout the area. The Duval Borrow Area (BA) is located 8 miles offshore in the immediate vicinity of the same shoal used for past renourishment projects. It borders the southern and eastern edge of the previous BA.

3. **BACKGROUND:** A comparative analysis of historical surveys, aerial photographs, and information obtained from local officials and residents aided in defining the extent and seriousness of the erosion problem along the Duval County shoreline. Winter storms accompanied by strong northeast winds results in beach erosion and lowering of the beach profile by scouring in areas protected by seawalls, and recession of the dunes on unprotected beaches. Although natural accretion of the beach generally occurs during the summer months, this seasonal accretion does not equal the winter recession of the beach. Erosion rates, and pictures of the shorefront structures potentially at risk from beach erosion along the Duval County shoreline, are contained in the 1990 Section 934

Reevaluation Report and EA.

In the early 1960's local, State, and Federal officials concluded that the beaches of Duval County and the adjacent buildings and infrastructure faced a serious damage threat from storm generated waves and tides. To combat and reduce this threat, the Jacksonville beaches were renourished as early as 1963. Subsequent to the passage of NEPA in 1969 a Final Environmental Impact Statement (FEIS) was prepared in August 1974 to place 3.3 million cubic yards of sand along 10 miles of Duval County beaches. The authorized project area was renourished in 1980, 1986/87, 1994 and partially in 2003. This most recent nourishment was associated with the large amounts of sand found with the deepening of the Jacksonville Harbor channel. The effort ended prematurely when an excessive amount of shell material was deposited on the beach along with sand. The shell material was subsequently removed from the beach but the beach renourishment was not completed. In 2000 an EA was completed and FONSI signed to excavate beach quality sand from the Buck Island dredge material disposal area. However, for economic reasons that planned effort was never begun. A comprehensive renourishment of the beach has not occurred since 1994. The approved Federal participation in the periodic renourishment of the Duval County shoreline requires that beach fill is placed on the project area when erosional forces have significantly reduced the beach berm, and coastal residences and infrastructure are at risk from storm damage. Accordingly, the current state of the beach requires a complete renourishment to assure protection to coastal residents, buildings and infrastructure.

4. DESCRIPTION OF PROPOSED ACTION: The current project will use the same construction templates as the previous renourishment. Information concerning the specifics of the above mentioned templates as well as justification for the calculated fill volumes can be found in the 1984 General Design Memorandum (GDM) and the 1990 Section 934 Report. It is estimated that the current renourishment project will place approximately 1,500,000 cubic yards of beach compatible material on the project beach

5. DISCUSSION OF POTENTIAL IMPACTS TO ESSENTIAL FISH HABITAT IN THE PROJECT AREA: The Corps has determined that the Duval County Beach Erosion Control Project and New Borrow area include marine water column, marine bottom/open shelf, live/hard bottom, and coastal/nearshore/inter-tidal/littoral, which are considered Essential Fish Habitat by the South Atlantic Fishery Management Council. These habitat types provide refugia and forage for various life-stages of Council-managed marine fish and shellfish species as well as their prey base species (South Atlantic Fishery Management Council 1998).

a. Marine Water Column: Where the direct effects of dredging occur, an insignificant increase in turbidity can be expected. However, as dredging will be limited to a relatively small area, suspended sediment plume sub lethal effects on filter feeding organisms such as: gill abrasion/clogging and respiration

impairment should not be a factor as the substrate is clean sand being dredged in an open-water, typically dynamic, environment. In light of the nature of the sand and minimal silt content, turbidity and/or oxygen depletion associated with dredging is reasonably predicted to be non existent or minimal and of no significant impact to the marine water column.

b. Marine Bottom/Open Shelf: The immediate short-term impact at the dredged (borrow) site is a temporary defaunation of the benthic community. Reestablishment of the benthic community at the borrow site appears to coincide with the recovery of the site to predredging physical and chemical conditions. Lotspeich, 1997 and other Florida studies conducted by Marsh et al., 1980; Marsh and Turbeville, 1981; Culter and Mahadevan, 1982; Gorzelany, 1983; Saloman et al., 1982; Nelson, 1985; Continental Shelf Associates, Inc., 1987b; Gorzelany and Nelson, 1987; Bodge and Shaul, 1994; investigated the impact of dredging and/or filling on benthic communities in borrow and fill areas. These studies suggest that site physical and chemical conditions after borrow activities should match previous site conditions as nearly as possible for successful biological community recovery. Marsh et al. (1980) found no continuing impacts at the borrow site off Hallandale Beach, Broward County, Florida, surveyed seven years after a beach restoration project. Marsh and Turbeville (1981) found no long-term effects on many benthic community parameters in a borrow area off Hillsboro Beach, Broward County, Florida, five years after use of the site; however, qualitative changes in species composition in the community were noted. Culter and Mahadevan (1982) found similar results off Panama City Beach, Bay County, Florida, three to four years after a restoration project. Saloman et al (1982) found that dredging done at a Panama City Beach borrow area had no adverse long-term effect on bottom dwelling invertebrates, sediments, or water quality along shore or in offshore borrow areas. Furthermore, short-term ecological consequences of dredging lasted only about 1 year and included minor sedimentary and benthic invertebrate population changes. Suspended sediment plume sub lethal effects on filter feeding benthos such as: gill abrasion/clogging and respiration impairment should not be a factor as the substrate is clean sand being dredged in an open-water, typically dynamic, environment. In light of the relatively coarse nature of the sand and minimal silt content, turbidity and/or oxygen depletion associated with dredging is predicted to be minimal, if at all, and of no significant impact. Furthermore, the physical characteristics of the proposed borrow material are the same as the beach fill previously placed in this area. Therefore, no adverse impacts associated with the introduction of the borrow material to the beach fill areas are predicted

c. Live/Hard Bottom: No live/hard bottom areas were identified within the limits of the proposed borrow area during the Bottom-Towed Resistivity Survey and Vibracore Borings for Duval County, FL BEC, Duval County, Florida, July, 2004 (Challenge Engineering & Testing, Inc., 2004). The hopper dredging activity will be limited to a small area within the borrow area limits. Efficient

dredging practice, and prudent design, entails dredging material in 2 to 5 ft thicknesses at a time along long, straight, adjacent runs. Dredging of the 1.5 mcy quantity estimated for the project's renourishment activity is anticipated to directly involve (impact) to an area of about 6000 ft by 4000 ft. During project construction, an insignificant increase in turbidity in the borrow and immediate placement area can be expected. This elevated increase in turbidity will be a temporary condition and is not expected to present any detrimental impact to live/hard bottom areas in the vicinity of the borrow area and nearshore zone.

d. Coastal/Nearshore/Inter-tidal/Littoral: An insignificant increase in turbidity in the immediate placement area can be expected due to the beach fill operations. As the background conditions in the project area are naturally turbid due to the dynamic physical conditions of the area, this elevated increase in turbidity will be a temporary condition and is not expected to present significant acute or cumulative detrimental impacts to organisms in the nearshore zone. Organisms inhabiting this shoreline must be readily adapted to these turbid conditions in order to successfully survive. These inhabitants of the intertidal zone typically possess high fecundity and rapid turnover rates during the summer breeding season. Populations of the mollusk, *Donax variabilis*, and the crustacean, *Acanthohaustorius pansus*, in areas of beach nourishment usually become numerically abundant once again after six months most likely from littoral transport of larvae from adjacent areas (Mikkelson 1981). Because of this, long-term impacts to invertebrates and fishes inhabiting the intertidal zone along the beaches of Duval County are not expected to be significant.

6. EFFORTS TO ELIMINATE POTENTIAL IMPACTS: Efforts to eliminate or significantly reduce the potential impacts associated with construction activities would be addressed by implementing the following actions:

a. The primary anticipated changes in water quality during borrow area excavation and beach placement would be a temporary increase in turbidity. Beach placement would be performed in compliance with the water quality certification issued by the State. Turbidity would be monitored according to State protocols during beach placement. If at any time the turbidity standard were exceeded, those activities causing the violation would cease. In addition, the Corps would monitor turbidity at the borrow area and apply state water quality monitoring standards to it's work even though the borrow area is outside of State waters.

b. Best management practices would be followed during beach placement activities to minimize impacts to the nearshore area.

7. SUMMARY: The proposed project would impact approximately 10 miles of nearshore habitat and 0.86 square miles of marine bottom/open shelf possibly utilized by various life stages of

fish and crustaceans of Council managed species and their prey base. Replenishment of a beach and dune system will provide increased foraging habitat for many small birds, mammals, and reptiles as well as nearshore fish and crustaceans. In addition, minor sedimentary and benthic invertebrate population changes can be expected at the borrow site. Therefore, the Corps has determined that the proposed project would temporarily impact Essential Fish Habitat and should have no long-term detrimental effects.

3.6 Threatened or Endangered Species. The supralittoral zone of the project area provides nesting habitat for the endangered green sea turtle (*Chelonia mydas*) and the threatened loggerhead sea turtle (*Caretta*). In addition, the endangered West Indian manatee *(Trichechus manatus)* frequently migrates in and out of the St. Johns River. During the winter months, the Atlantic coast of Florida is inhabited by migrating cetaceans such as the endangered right whale (*Eubalaena glacialis*) the finback (*Balaenoptera physalus*), humpback (*Megaptera novaeangliae*), right (*Eubalaena glacialis*), sei (*Balaenoptera borealis*), and sperm (*Physeter catodon*) whales. In an August 9, 2004 conversation with Mr. David Bernhardt, NMFS indicated that the Small-Toothed Sawfish had been added to the list of Endangered Species under NMFS purview in the Duval County area.

3.8 Essential Fish Habitat. Species managed under the Magnuson-Stevens Fishery Conservation and Management Act (PL 94-265) within project area include, but are not limited to, various life stages of penaeid shrimp (*Penaeus sp.*), red drum (*Sciaenops ocellatus*) and summer flounder (*Paralichthys dentatus*). These species and their food organisms' use the area for spawning, foraging, and refugia.

The area in the vicinity of the Duval county BEC project and new borrow area contains the following marine/offshore habitats designated as Essential Fish Habitat (EFH):

- Coastal
- Marine Bottom/Open Shelf
- Marine Water Column
- Live/Hard Bottom

Please refer to Appendix D. EFH Assessment for a detailed assessment of these habitats.

3.7 Historic Properties. An archival and literature search, in addition to coordination with the State Historic Preservation Officer (SHPO), was conducted for the Duval County Beach Erosion Control Project. There are no known cultural or archeological resources located on the beach proposed for renourishment. However, the new portions of the borrow area have been investigated with side scan and magnetometer surveys to assure that significant cultural archeological are not affected. Additionally, the new portions of the borrow area were surveyed in accordance with the requirements outlined in the MMS Gulf of Mexico Region's Notice to Lessees 2002-G01, to ensure that significant archaeological resources were not affected by proposed dredging activities.

REFERENCES

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