Appendix I:
Pertinent Correspondence and Mailing List

BREVARD County
BOARD OF COUNTY COMMISSIONERS

FLORIDA'S SPACE COAST

NATURAL RESOURCES MANAGEMENT OFFICE
2725 Judge Fran Jamieson Way, Bldg. A., Viera, Florida 32940

Telephone: (321) 633-2016
Sun Com: 366-2016
FAX: (321) 633-2029

Osvaldo Rodriguez
Civil Engineer,
Project Management Division
U.S. Army Corps of Engineers
400 West Bay Street
Jacksonville, FL 32232-0019

May 20, 2002

Re: Brevard County Federal Shore Protection Project
GRR Study of Mid-Reach – Request for commencement.

Dear Mr. Rodriguez,

I am writing to request that the U.S. Army Corps of Engineers (USACE) begin its General Re-evaluation Report (GRR) for the Mid-Reach of Brevard County's Shore Protection Project.

Brevard County's initial data acquisition of the Mid-Reach is complete, including aerial photography, surveys and mapping of the area's nearshore rock resources. As discussed in our meeting with Congressman Weldon's staff on March 29th, 60 acres of rock outcrops have been identified, with equal portions featuring potentially higher and lower value habitat. We anticipate that the GRR will evaluate the following alternatives:

- No action. All rock resources will be protected from potential nourishment impacts. The beach will continue to narrow, increasing the potential damage to structures by storms.

- Nourish 1.7 miles at the South end of the Mid-Reach. This alternative will potentially impact about 3% of the rock resources and provide storm protection to 24% of the Mid-Reach.

- Nourish 2.3 miles at the South end of the Mid-Reach. This alternative will potentially impact up to about 10% of the rock resources and provide storm protection to 32% of the Mid-Reach.

- Nourish all 7.1 miles of the Mid-Reach, impacting all rock reef habitat in the area (60 acres), but providing storm protection along 100% of the Mid-Reach.

- Truck haul construction and frequent maintenance of a protective dune for the (4.8, 5.4, or 7.1-mile) non-nourished area. This option will provide some storm

protection, but may be more expensive to construct and maintain, erode more quickly, and may still impact some of the rock reef habitat.

- Construction of shoreline revetment, seawalls or other armor along the (4.8, 5.4, or 7.1-mile) non-nourished area. This option will provide storm protection to upland development, but reduce the recreational and environmental benefits of the beach, and may not be permittable on a large-scale basis.

- Relocation of structures and acquisition of at risk properties along the (4.8, 5.4, or 7.1-mile) non-nourished area. All rock resources within this area will be protected from potential nourishment impacts, recreational and environmental beach benefits will be maintained, but upland property will be sacrificed.

- Combination of 2.3 miles of nourishment and $\leq$ 4.8 miles of dune construction and maintenance.

- Combination of 1.7 miles of nourishment and $\leq$ 5.4 miles of dune construction and maintenance.

We anticipate the GRR to include an evaluation of mitigation alternatives for rock resources that may be impacted along the Mid-Reach. Based upon our preliminary studies, to be finalized and delivered to the Corps this summer, the County anticipates that the preferred alternative will be sand nourishment of 1.7 to 2.3 miles at the South end of the Mid-Reach, and possible construction of a dune along portions of the non-nourished area. This is based on the alongshore distribution of rock resources, oceanfront property improvements, and shoreline armoring.

We look forward to hearing back from you with a schedule for the performance of the surveys, economic analysis, environmental assessment, draft document formulation and other milestones attendant to the Report.

Please let me know if further direction is needed to initiate the GRR.

Respectfully Submitted,

Nikhil Mehta

Nikhil Mehta
Environmental Scientist

cc: Virginia Barker, Management Section Supervisor
Kevin Bodge, Olsen Associates

BREVARD County
BOARD OF COUNTY COMMISSIONERS

FLORIDA'S SPACE COAST

TAMARA J. RICARD, Clerk to the Board, 400 South Street • P.O. Box 999, Titusville, Florida 32781-0999

Telephone: (321) 637-2001
Fax: (321) 264-6972

August 29, 2008

M E M O R A N D U M

TO: Ernest Brown, Natural Resources Management Director, Attn: Mike McGarry

RE: Item VIII.A.3, Resolution for Brevard County Shore Protection Project: Mid Reach Plan, State Beach Management Long Range Budget Request and State Cost-Share Request

The Board of County Commissioners, in regular session on August 28, 2008, selected Option B, Local Option Plan (TDC 50-year funding obligation of $31.2 million), for the U.S. Army Corps of Engineers to pursue along the Mid Reach shoreline; adopted Resolution No. 08-187 supporting Brevard County Shore Protection Project and requesting State cost-share funding as a match for dedicated local funds. Enclosed are two certified copies of the Resolution.

Your continued cooperation is always appreciated.

Sincerely yours,

BOARD OF COUNTY COMMISSIONERS
SCOTT ELLIS, CLERK

Tamara Ricard

Tamara Ricard, Deputy Clerk

/te

Encls. (2)

cc: Contracts Administration
Finance
Budget

Meeting Date
August 19, 2008

AGENDA	
Section	New Business
Item No.	

AGENDA REPORT

BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS

SUBJECT: Brevard County Shore Protection Project: Mid Reach Plan, State Beach Management Long Range Budget Request and State Cost-Share Request

DEPT/OFFICE: Natural Resources Management Office

Requested Action:

Select a shore protection plan for the U.S. Army Corps of Engineers to pursue along the Mid Reach shoreline and approve a resolution supporting the Brevard County Shore Protection Project and requesting State cost-share funding as match for dedicated local funds. **All Local Match is derived from the TDC Dedicated Beach Improvement Fund**

Summary Explanation & Background:

The Mid Reach is a 7.78-mile section of critically eroded beach lying between Patrick Air Force Base and Indialantic that includes the Towns of Satellite Beach and Indian Harbour Beach. The Mid Reach was deleted from the Brevard County Federal Shore Protection Project in 1996 due to environmental concerns regarding rocky hard bottom habitat present in the surf zone. Since that time, Brevard County has been working with the U.S. Army Corps of Engineers (Corps) to develop a suitable shore protection plan for the Mid Reach.

On October 26, 2004, the Board executed an Agreement with the Corps to cost share a General Re-evaluation Report (GRR) for developing a federally authorized shore protection project for the Mid Reach. The GRR process is nearly complete. After evaluating over 100 different shore protection options for the Mid Reach, the Corps has identified an environmentally acceptable plan that yields the greatest federal benefits. This National Economic Development (NED) Plan maximizes the available federal cost share for the project. During the Corps' GRR process, County staff and consultants developed and evaluated shore protection alternatives with the desire to enhance local benefits beyond the NED plan. This Local Option Plan increases sand placement and shore protection benefits along the Mid Reach while still maintaining the required federal scope. These two possible shore protection options are described in Attachment A. **On August 4, 2008, the TDC Beach Improvement Committee voted unanimously in favor of recommending the Local Option.**

In order to complete the GRR, the Corps needs the Brevard County Board of County Commissioners to formally select either:

A. National Economic Development (NED) Plan **(TDC 50 year funding obligation $28.3 million)** or
B. The Local Option Plan. **(TDC 50 year funding obligation $31.2 million)**

As part of this agenda, staff also requests authorization to solicit State cost share for the non-federal costs of restoring Brevard's critically eroded beaches. This is accomplished each year by submitting a resolution and funding request to the Florida Department of Environmental Protection (FDEP) Office of Beaches and Coastal Systems. This request contains a 10-year Long Range Budget Plan (LRBP). Attachment B contains two draft LRBP's, one includes cost share for the NED Plan and a second is based on the Local Option Plan. It is requested the Board approve the cost share resolution (Attachment C) and submittal of the appropriate LRBP based on the Board's selection of either the NED Plan or Local Option Plan for shore protection along the Mid Reach.

Fiscal Impact: FY 07-08 No fiscal impact to the General Fund (GF) associated with this item.
FY 08-09 There is no GF impact. Long Range Budget Plan 08-09 expenses to the TDC are up to $4,205,310.

Staff Contacts: Ernest Brown (5-2439) or Mike McGarry (5-2696) Natural Resources Management Office, 633-2016.

Exhibits Attached:

Attachment A: Staff Report RE: U.S. Army Corps of Engineers Mid Reach Plan with option map
Attachment B: Staff report RE: State Long Range Budget Plan with LRBP option tables
Attachment C: Resolution supporting the Brevard County Shore Protection Project and requesting State cost-share funding as a match for the TDC's dedicated local funds.

Contract /Agreement (If attached): Reviewed by County Attorney	**Yes** ☐	**No** ☐	**pending**

County Manager's Office	Natural Resources Management Office
Peggy Busacca, County Manager	Ernest N. Brown, Director

BREVARD COUNTY
BOARD OF COUNTY COMMISSIONERS

STAFF REPORT

NATURAL RESOURCES MANAGEMENT OFFICE

SUBJECT: **US Army Corps of Engineers Mid Reach Plan**
DATE: **August 5, 2008**
AUTHOR: **Mike McGarry**

The US Army Corps of Engineers (Corps) is finalizing the Mid Reach General Reevaluation Report (GRR) to determine the best shore protection plan for the Mid Reach. For the purpose of evaluating the options, the Mid Reach was subdivided into 6 "reaches," so the optimal beach width could be determined for each reach based on the unique shore protection needs and submerged rock habitat in that reach. The six reaches are illustrated in the Corps' Figure 3.3 which is attached.

The GRR process has evaluated over 100 combinations of shore protection options combined across the 6 reaches and narrowed the search to two plans that offer different strengths. The Corps process focuses on identifying a National Economic Development (NED) Plan. The NED Plan is designed to maximize national economic benefit within constraints imposed by environmental and other regulations. Maximizing shore protection or recreational benefits is not a specific goal of the NED Plan. The highest NED Plan with not more than 3 acres of rock impact is the federally chosen plan. This plan is illustrated as a blue line on Figure 3.3 with project widths ranging from "dune only" in Reaches 4 and 6, to 30+ feet of beach widening in Reach 3.

In order to provide Brevard County with an option that provides a more equitable treatment of reaches while maximizing shore protection and recreational benefits, the Corps has considered a Local Option. In this plan the width of additional beach in Reach 3 has been reduced from 30' to 20' to allow construction of 10' of beach in Reach 4. Additional costs of this plan, if selected, would be the responsibility of Brevard County. To facilitate comparison of the two plans, the primary differences are highlighted in the table below and relative beach widths are sketched on Figure 3.3.

Comparison of NED Plan and Local Option Plan

	NED Plan	Local Option Plan
Initial Sand Volume	540,000 cy	588,000 cy
Total Project Length	7.78 miles	7.78 miles
Length of Widened Beach	5.36 miles	6.42 miles
Length of Dune Only	2.42 miles	1.36 miles
Rock Impact	2.9 acres	3.0 acres
Average Storm Protection	32 year return	35 year return
Total 50 Year Project Cost	$103.5 M	$108.4 M
Federal Cost Share	54%	51.55%
Local 50 Year Project Cost	$28.3 M	$31.2 M

On August 4, 2008 the Tourist Development Council (TDC) Beach Improvement Committee reviewed both plans and the relative benefits. The County and State will bear the extra cost of the local option which amounts to $2.9 million for the TDC over the 50 year project life. A 25 year budget forecast indicates the TDC Beach Improvement Fund can provide sufficient funding for either plan. The TDC Beach Improvement Committee voted unanimously to recommend the Local Option Plan. The Corps has requested that the Brevard County Board of County Commissioners decide whether to finalize the GRR based on the NED Plan or the Local Option Plan.

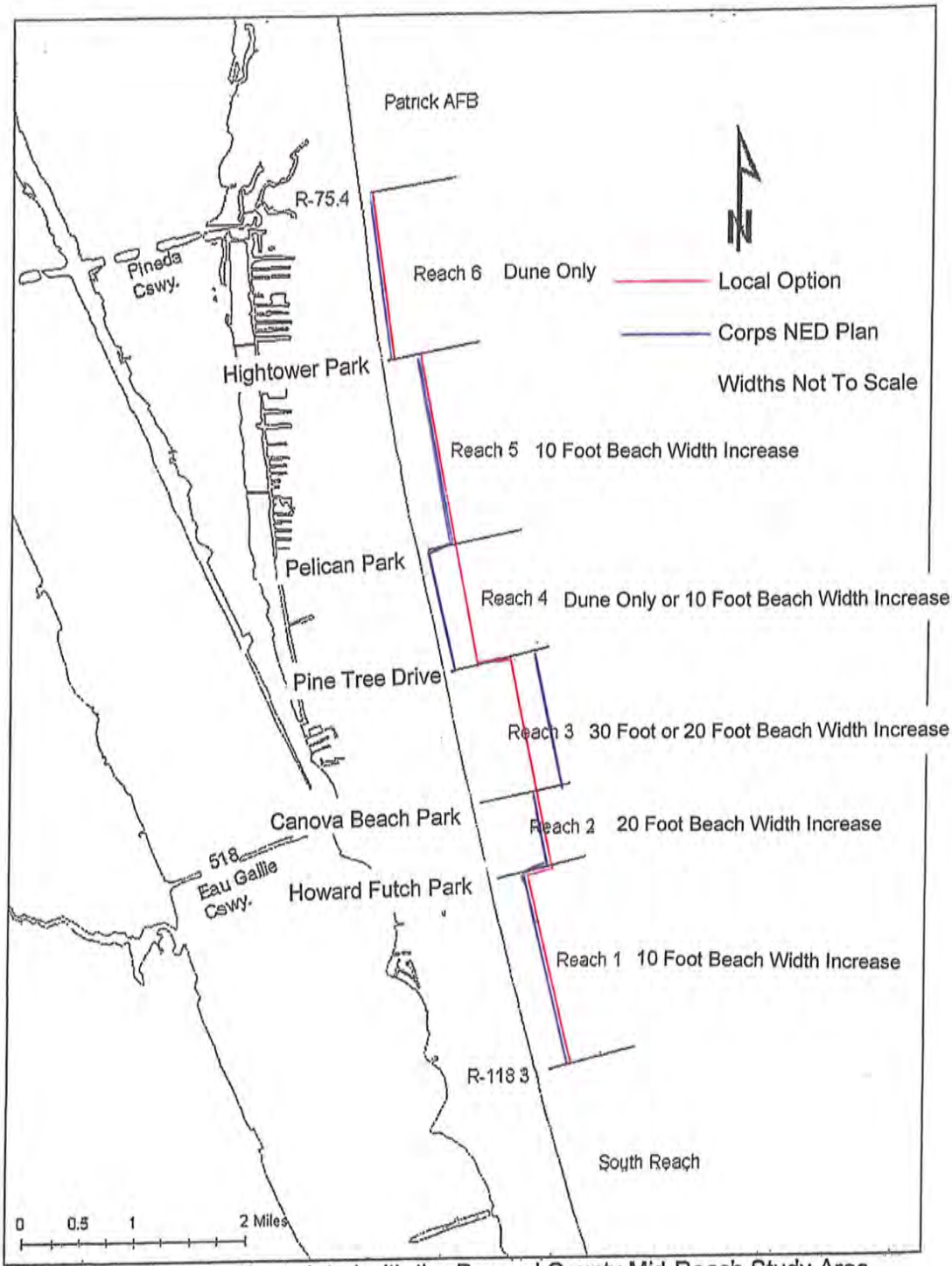

Figure 3-3. Reaches Associated with the Brevard County Mid-Reach Study Area

Programs and Project Management Division
Coastal, Navigation and Antilles Branch

JAN 05 2007

LTC Michael L. Furey
45 CES/CC
1224 Jupiter St MS 9125
Patrick AFB, Florida 32925-3343

Dear Colonel Furey:

The U.S. Army Corps of Engineers, Jacksonville District is currently engaged in a general reevaluation study of the Brevard County shore protection project. The study will determine if the area known as the Mid-Reach is justified for federal participation in a project to reduce storm damages along the shoreline. The study area extends from the southern limit of Patrick Air Force Base for 7.6 miles south along the shoreline. As part of the study, we are evaluating several alternatives including a truck haul fill of the beach. It has come to our attention that an existing dredged material management area located at Port Canaveral could be beneficial to our project. This could also benefit the U.S. Air Force and the Naval Ordinance Test Unit.

This letter and enclosure is intended to inform you of the alternative being considered in the Brevard County Mid-Reach project and request participation and concurrence. The alternatives include dredging of offshore sands, dewatering the material at the upland disposal site (stockpile site), and truck-hauling the material to the mid-reach shoreline. It is our belief that stockpiling material at Port Canaveral is beneficial in nature in that it will 1) rehabilitate the existing Poseidon dredged material management area at no cost to the U.S. Navy or U.S. Air Force including clearing of exotics and relocation of gopher tortoises; 2) provide capacity above the existing upland disposal area for future dredging of the Port and Navy Trident Basin; and 3) provide an additional source of material for shorelines including capacity above that for the Mid-Reach and the Patrick Air Force Base Reach.

Detailed design of the stockpile area would be completed in coordination with your office to meet the goals of all parties involved.

It would be our pleasure to meet further to discuss this issue. The project manager for the Brevard County Mid-Reach project, Mr. Osvaldo Rodriguez, can be reached at 904-232-2909.

Sincerely,

Paul L. Grosskruger
Colonel, U.S. Army
District Commander

Enclosure

Copies Furnished:

CAPT William M. Drake, Naval Ordnance Test Unit, P.O. Box 1623, Cape Canaveral, Florida 32920-1623
Mr. Carlos Alvarado, P.O. Box 1623, Cape Canaveral, Florida 32920-1623
Mr. Patrick S. Giniewski, 45 CES/CEVR, 1224 Jupiter St. MS 9125, Patrick AFB, Florida 32925-3343
Mr. Robert Van Vonderen, 45 CES/CEL, 1224 Jupiter St. MS 9125, Patrick AFB, Florida 32925-3343
Mr. Dale Hawkins, 45 CES/CEVP, 1224 Jupiter St. MS 9125, Patrick AFB, Florida 32925-3343
Ms. Virginia Barker, 2725 Judge Fran Jamieson Way, Building A, Viera, Florida 32940
Dr. Kevin Bodge, Olsen Associates Inc., 4438 Herschel St. Jacksonville, Florida 32210
Ms. Jeannie Adame, Canaveral Port Authority, 200 George King Blvd, Cape Canaveral, Florida 32920

bcf:
CESAJ-PD (Mrs. Candida Bronson)

Rodriguez/DP-C
jam/3137 12-18-06
Scarborough/DP-C
Bonner/DP
Finch/DX
Robertson/DD
Grosskruger/DE

BREVARD COUNTY, FLORIDA SHORE PROTECTION PROJECT
MID-REACH GRR

STOCKPILE AREA ALTERNATIVE

1. PROJECT DESCRIPTION: Brevard County Mid-Reach study area is 7.6 miles in length and extends from Patrick Air Force Base in the north to the city of Indialantic to the south (see attached map, Figure 1). As part of the study, sand sources for truck haul fill of the shoreline are being investigated. An offshore sand source has been used in other projects, and could be used in conjunction with an upland stockpile area for dewatering.

   The sand source for the fill material is Canaveral Shoals II (CSII), which is located approximately 20 miles north-northeast of the Mid Reach and 9.4 miles east of the proposed Poseidon stockpile site. This sand source has been used previously for construction and renourishment of the North and South Reaches of Brevard County.

   The sand will be dredged from CSII and transported to the Poseidon DMMA at Port Canaveral (see project map, Figure 1) at approximately 6 year intervals. Sand will be dredged utilizing hopper dredges with direct pump-out at the stockpile site. Sand will be dewatered at the Poseidon site and then transported to the Mid Reach Project via dump truck and placed and shaped on the beach utilizing tractors. Initial use of the Poseidon site will require clearing, grubbing and dike repair work as outlined in section 2.

   The economic life of the proposed project is 50 years. Over this time period, multiple stockpiling events would occur at approximately 6 year intervals. The initial fill is anticipated to be up to 900,000 cubic yards, with removal of half that volume immediately following dewatering. The remaining volume will allow for two truck haul events prior to the next dredging event to fill the stockpile area. All subsequent dredging events will only fill the stockpile area to approximately half full. Thus it is anticipated that except for the intial fill event, the stockpile area will generally be half or less full. The remaining capacity could be used for other projects.

2. POSEIDON STOCKPILE SITE: The Poseidon DMMA is directly adjacent to the Trident Submarine Basin on the west side. The interior of the site will require approximately 15 acres of heavy clearing, 20 acres of light clearing, and two dike repairs of 6000 cy and 8500 cy, respectively. The dikes surrounding the placement area will require approximately 10 acres of light clearing and approximately 1 foot of material added (30,000 cy total) to dress and restore the dike surface. Material that is presently within the stockpile site should be suitable for repairing the dikes and dressing the surface. In addition to the rehabilitation and preparation of the site, a road ramp will be constructed at the southwest corner for truck access over the dike. The site will have a capacity of approximately 900,000 cy if filled to +28' NGVD within the southern portion of the site (see Figure 2 Poseidon site map). The Poseidon

site's perimeter dikes are approximately 32' above grade at the present time. It is anticipated that the stockpile site would be replenished when hydraulic dredges were mobilized for the north and south reach hydraulic beach fill renourishments (approximately every 6 years). The sand source contains sand that consists primarily of poorly graded, slightly silty, fine to medium grained sands, with trace to some sand sized carbonate shell and shell fragments. Occasional gravel sized shell fragments as indicated in the laboratory data should be expected. The sand source has an approximate mean grain size of 0.30 mm (1.75 phi) and a standard deviation of 1.03 phi. This same material has been used successfully for beach fill in other portions of Brevard County.

3. DUNE AND BEACH FACE FILL: Table 1 summarizes the quantities for the Dune Only and Dune + Beach Face alternatives under consideration. The final proposed plan has not been selected at this time. The limits and lengths of each reach are included along with the haul distance (via existing roads) from the mid-point of each reach to the Poseidon stockpile site. The project alternatives consist of 1) a dune fill of approximately 5 cubic yards per foot and 2) the same 5 cy/ft dune plus a 9.4 cy/ft beach face fill.

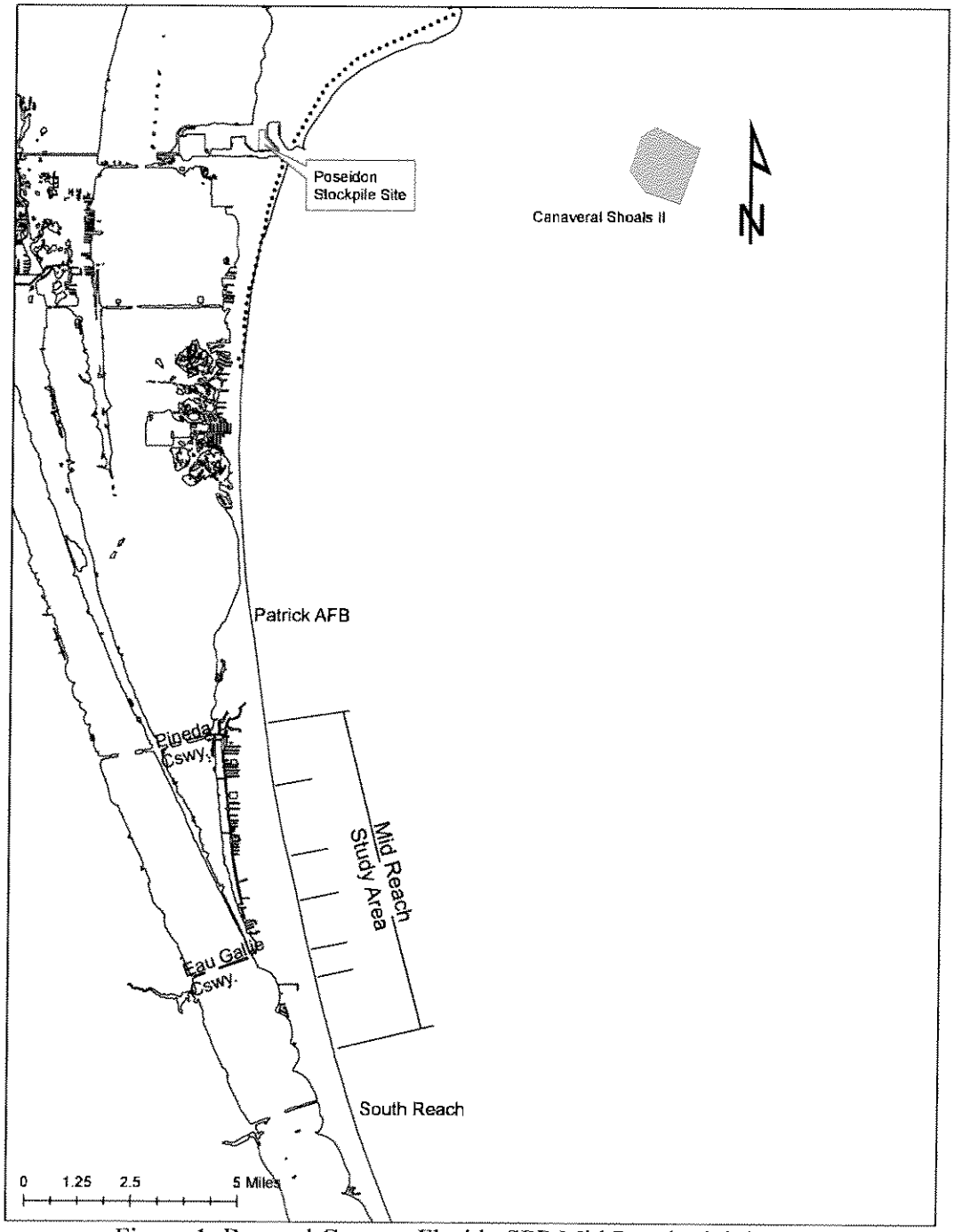

Figure 1. Brevard County, Florida SPP Mid Reach vicinity map

Table 1. Dune and Beach Initial Construction Fill Quantities

	Reach Limits			Dist to	Truck Haul Volume (cy)	
	FDEP Monuments		Length (ft)	Stockpile Site (mi)	Dune Fill (5 cy/ft)	Dune + 20-Foot Beach Face Fill (14.4 cy/ft)
Reach 1	R119 -	R109	9,599	24.0	48,000	138,000
Reach 2	R109 -	R105.5	3,406	22.7	17,000	49,000
Reach 3	R105.5 -	R99	6,239	21.7	32,000	90,000
Reach 4	R99 -	R93	5,603	20.7	28,000	81,000
Reach 5	R93 -	R83	9,029	19.4	45,000	130,000
Reach 6	R83 -	R75.4	7,207	18.0	36,000	104,000
					206,000	592,000

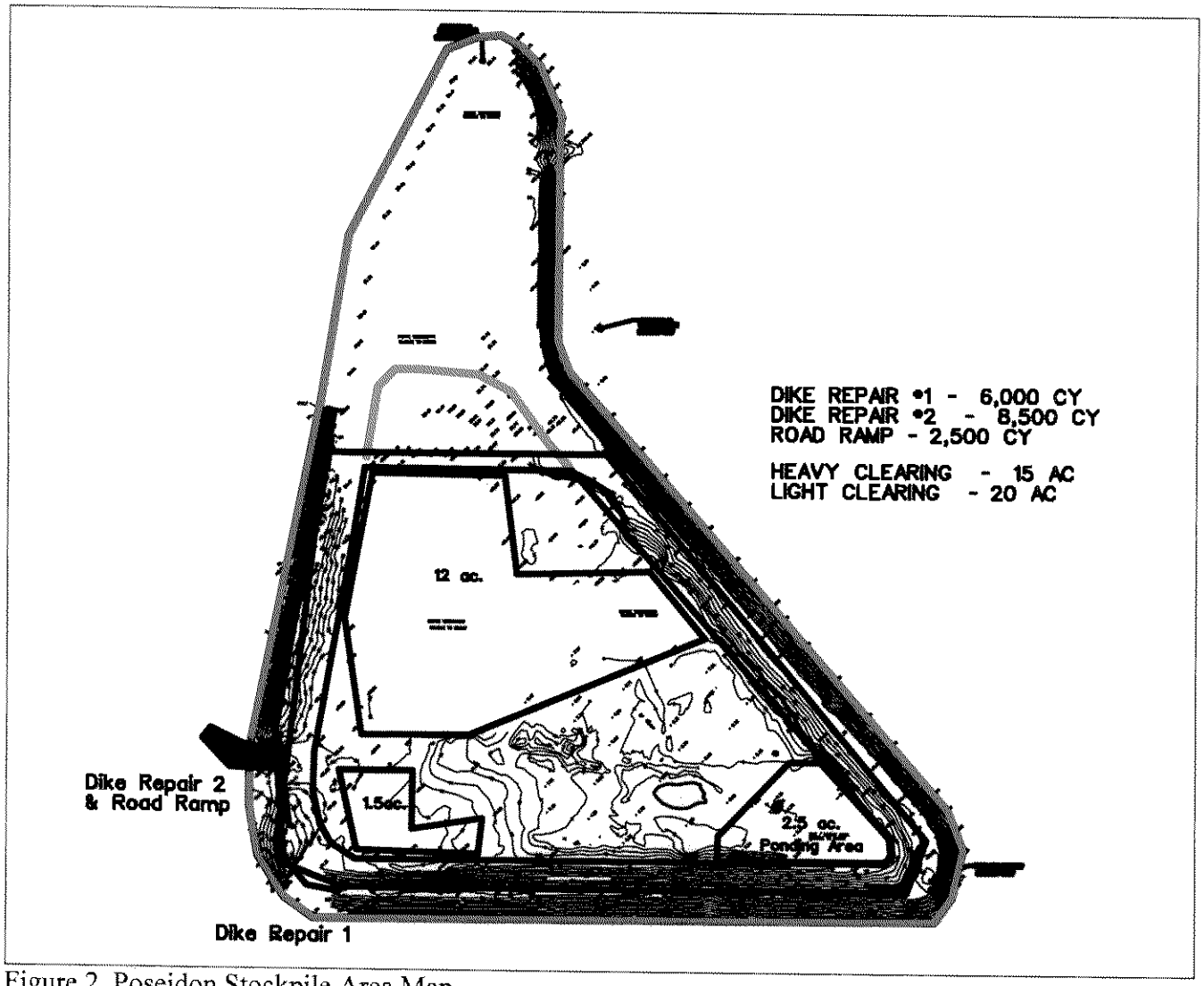

Figure 2. Poseidon Stockpile Area Map

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

REPLY TO
ATTENTION OF

JAN 05 2007

Programs and Project Management Division
Coastal, Navigation and Antilles Branch

LTC Michael L. Furey
45 CES/CC
1224 Jupiter St MS 9125
Patrick AFB, Florida 32925-3343

Dear Colonel Furey:

The U.S. Army Corps of Engineers, Jacksonville District is currently engaged in a general reevaluation study of the Brevard County shore protection project. The study will determine if the area known as the Mid-Reach is justified for federal participation in a project to reduce storm damages along the shoreline. The study area extends from the southern limit of Patrick Air Force Base for 7.6 miles south along the shoreline. As part of the study, we are evaluating several alternatives including a truck haul fill of the beach. It has come to our attention that an existing dredged material management area located at Port Canaveral could be beneficial to our project. This could also benefit the U.S. Air Force and the Naval Ordinance Test Unit.

This letter and enclosure is intended to inform you of the alternative being considered in the Brevard County Mid-Reach project and request participation and concurrence. The alternatives include dredging of offshore sands, dewatering the material at the upland disposal site (stockpile site), and truck-hauling the material to the mid-reach shoreline. It is our belief that stockpiling material at Port Canaveral is beneficial in nature in that it will 1) rehabilitate the existing Poseidon dredged material management area at no cost to the U.S. Navy or U.S. Air Force including clearing of exotics and relocation of gopher tortoises; 2) provide capacity above the existing upland disposal area for future dredging of the Port and Navy Trident Basin; and 3) provide an additional source of material for shorelines including capacity above that for the Mid-Reach and the Patrick Air Force Base Reach.

Detailed design of the stockpile area would be completed in coordination with your office to meet the goals of all parties involved.

It would be our pleasure to meet further to discuss this issue. The project manager for the Brevard County Mid-Reach project, Mr. Osvaldo Rodriguez, can be reached at 904-232-2909.

Sincerely,

Paul L. Grosskruger
Colonel, U.S. Army
District Commander

Enclosure

Copies Furnished:

CAPT William M. Drake, Naval Ordnance Test Unit, P.O. Box 1623, Cape Canaveral, Florida 32920-1623
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Ms. Virginia Barker, 2725 Judge Fran Jamieson Way, Building A, Viera, Florida 32940
Dr. Kevin Bodge, Olsen Associates Inc., 4438 Herschel St. Jacksonville, Florida 32210
Ms. Jeannie Adame, Canaveral Port Authority, 200 George King Blvd, Cape Canaveral, Florida 32920

DEPARTMENT OF THE AIR FORCE
45TH SPACE WING (AFSPC)

JAN 2 2 2007

MEMORANDUM FOR JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE FL 32232-0019
ATTN: COLONEL PAUL L. GROSSKRUGER, DISTRICT COMMANDER

FROM: 45 CES/CC
1224 Jupiter St, MS 9125
Patrick AFB FL 32925-3343

SUBJECT: Brevard County Mid-Reach Project, Poseidon Sand Stockpile

1. The 45th Space Wing, US Air Force supports the subject project as outlined in your letter of 5 Jan 07.

2. We would like to meet and discuss several aspects of the proposed project including sand deposition on the north jetty, truck haul traffic and roadway impacts, methods of dewatering, hopper-dredge siting, prevention of re-infestation of invasive species and relocation of gopher tortoises under the 45 SW permit.

3. We would also like to discuss development of a memorandum of understanding with the Corps of Engineers for the eventual operation of the stockpile area. Finally, we would like to discuss renourishment of Patrick Air Force Base south beaches.

4. We propose a meeting on 6 Feb 07 at 1000, building 60600, Cape Canaveral Air Force Base. We will finalize this meeting time and location with Mr. Osvaldo Rodriguez.

5. Our POC for this action is Dale Hawkins, 45 CES/CEV, 321-853-6578, or E-mail, dale.hawkins@patrick.af.mil.

MICHAEL L. FUREY, Lt Col, USAF
Commander

FLORIDA DEPARTMENT OF STATE
Sandra B. Mortham
Secretary of State
DIVISION OF HISTORICAL RESOURCES
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Director's Office
(904) 488-1480

Telecopier Number (FAX)
(904) 488-3353

August 9, 1994

Mr. A. J. Salem, Chief
Planning Division, Environmental
Resources Branch
Jacksonville District Corps of
Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

In Reply Refer To:
Frank J. Keel
Historic Sites
Specialist
(904) 487-2333
Project File No. 942533

RE: Cultural Resource Assessment Review Request
A Cultural Resources Magnetometer Survey of Proposed Borrow Areas, Vicinity of Cape Canaveral, Brevard County, Florida.
Tidewater Atlantic Research, May 20, 1994.
Cape Canaveral, Brevard County, Florida

Dear Mr. Salem:

In accordance with the procedures contained in 36 C.F.R., Part 800 ("Protection of Historic Properties"), we have reviewed the results of the magnetometer survey and find them to be sufficient. In order to make the materials complete, would your office or Tidewater Atlantic Research fill out the enclosed Florida Site File Survey Log Sheet.

We note that nine magnetic anomalies were recorded within the proposed borrow areas. The proximity of CC-01, CC-02, and CC-03 led the investigators to conclude that these anomalies may represent a significant resource. In addition, the signatures and proximity of CC-07, CC-08, and CC-09 may represent significant submerged resources. We concur with the investigators conclusions that these areas should be avoided or additional investigations be completed if area is impacted. This office is also of the opinion that a buffer zone of 300 feet would sufficiently protect these resources. Therefore, if the buffer zone is maintained, it is our opinion that project activities will not effect significant resources listed or eligible for listing in the National Register of Historic Places.

If you have any questions concerning our comments, please do not hesitate to contact us. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Laura A. Kammerer

for George W. Percy, Director
Division of Historical Resources
and
State Historic Preservation Officer

GWP/Kfk
Enclosures (2)
xc: Gordon P. Watts

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

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

FLORIDA DEPARTMENT OF STATE
Katherine Harris
Secretary of State

DIVISION OF HISTORICAL RESOURCES

June 9, 1999

Mr. Hanley K. Smith
Planning Division, Environmental Branch
Jacksonville District, Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

RE: DHR Project File No. 992156
Cultural Resource Assessment Review Request
Draft Report - *A Submerged Cultural Resources Remote Sensing Survey of Four Proposed Borrow Areas and Archaeological Diver Identification and Evaluation of Eight Potentially Significant Targets for the Brevard County Shore Protection Project, Brevard County, Florida.* By Tidewater Atlantic Research, March 1999.

Dear Mr. Smith:

In accordance with the procedures contained in 36 C.F.R., Part 800 ("Protection of Historic Properties"), we have reviewed the draft report for the referenced project performed by Tidewater Atlantic Research and find it sufficient. Please have Tidewater Atlantic Research provide a survey log sheet.

We have reviewed the draft copy of the "A Submerged Cultural Resources Remote Sensing Survey of Four Proposed Borrow Areas and Archaeological Diver Identification and Evaluation of Eight Potentially Significant Targets for the Brevard County Shore Protection Project." Mr. Jim Dunbar, Underwater Archaeologist, Division of Historical Resources, has reviewed the proposed remote sensing survey.

For *Borrow Area I, Sand Rehandling Area and the Space Coast Shoal Area*, based on the results of the survey, it is the opinion of this office that the proposed activities within these areas will have no effect on historic properties listed or eligible for listing in the National Register of Historic Places or otherwise of historical or archaeological value.

As for *Borrow Area II*, we concur with Mr. Dunbar's recommendations:

- The eight potentially significant targets (C2-01, C2-02, C2-10 - C2-14 and C2-16) should be diver checked and assessed.

- If target C2-02 is identified as a historic shipwreck then targets C2-17, C2-18 and C2-19 be diver checked.

- In addition, targets that lie within 1000ft of each other should be diver checked. This would include targets C2-05, C2-07 and C2-08.

If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservation Planner, at 850-487-2333 or 800-847-7278. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

James A. Kammerer

for George W. Percy, Director
Division of Historical Resources
and
State Historic Preservation Officer

GWP/Ese

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FLORIDA DEPARTMENT OF STATE
Katherine Harris
Secretary of State

DIVISION OF HISTORICAL RESOURCES

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

May 3, 2000

RE: DHR Project No. 2000-02415
Contract No. DACW17-98-M-0272
Request for Submerged Cultural Resource Survey Review: *A submerged Cultural Resources Remote Sensing Survey of Four Proposed Borrow Areas and Archaeological Diver Identification and Evaluation of Eight Potentially Significant Submerged Targets for the Brevard County Shore Protection Project, Brevard County, Florida.*

Dear Mr. Duck:

In accordance with the procedures contained in 36 C.F.R., Part 800 ("Protection of Historic Properties"), as well as those contained in Chapter 267.061, *Florida Statutes*, as implemented through 1A-46 *Florida Administrative Code*, we have reviewed the results of the submerged cultural resource survey of the referenced project and find them to be complete and sufficient.

Results of the diver evaluation revealed that the large cluster of anomalies in the northern part of the survey area (CC-01, CC-02, CC-03, CC-04, CC-05, and CC-08) were the remains of modern fishing vessels. The remaining anomalies (CC-07 and CC-09) were identified as modern debris. No anomalies were identified in either Borrow Area 1 – Access Channel, the Sand Rehandling Area, or the Space Coast Shoals Area. We concur with these findings. Further, Borrow Area 2 produces 20 anomalies. Eight of these targets produced signatures characteristic of potentially significant submerged cultural resources and are recommended by Tidewater Atlantic Research for further investigation in the event that proposed dredging activity could impact these sites. We concur with these recommendations.

If you have any questions concerning our comments, please contact Brian Yates, Historic Sites Specialist at (850) 487-2333 or 1-800-847-7278. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Janet Snyder Matthews, Ph.D., Director
Division of Historical Resources
State Historic Preservation Officer

JSM/Yby
Xc: Gordon Watts, Tidewater Atlantic Research, Inc.

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FLORIDA DEPARTMENT OF STATE
Katherine Harris
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Mr. James C. Duck
Attn: Mr. Tommy Birchett
Jacksonville District US Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

August 10, 2001

RE: DHR No. 2001-316
Date Received by DHR: January 3, 2001
Agency: United States Army Corps of Engineers
Project Name: *Archaeological Diver Identification and Evaluation of Fourteen Potentially Significant Submerged Targets for the Brevard County Shore Protection Project*
Brevard County, Florida

Dear Mr. Duck:

Our office has received and reviewed the above referenced project in accordance with Section 106 of the *National Historic Preservation Act of 1966* (Public Law 89-665), as amended in 1992, and *36 C.F.R., Part 800: Protection of Historic Properties*. The State Historic Preservation Officer (SHPO) is to advise and assist federal agencies when identifying historic properties (listed or eligible for listing, in the National Register of Historic Places), assessing effects upon them, and considering alternatives to avoid or reduce the project's effect on them.

Results of the investigations revealed that eight of the anomalies (C2-01, C2-02, C2-08, C2-12, C2-13, C2-14, C2-16, and C2-17) were debris from either the Air Force missile program or the NASA space program. Although considered modern, the association of these materials with the Air Force and NASA programs suggests that these objects may be potentially eligible for listing in the National register. Thus, it is the opinion of the project archaeologist that these targets be avoided during the proposed project. If this is not feasible, the additional investigation and evaluation is recommended.

Finally, Anomaly C2-11 was identified as the remains of a modern fishing vessel. Anomaly C2-10 was identified as a section of cable and most likely associated with C2-11. Based on the information provided, this agency concurs with this determination and finds the submitted report complete and sufficient. Please note that all future submissions to our office for review and comment must adhere to the Division of Historical Resources' recently revised Performance Standards for Submerged Remote Sensing Surveys.

If you have any questions concerning our comments, please contact Brian Yates, Historic Sites Specialist, at byates@mail.dos.state.fl.us. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Frederick P. Gaske, Deputy SHPO

Janet Snyder Matthews, Ph.D., Director
Division of Historical Resources
State Historic Preservation Officer

JSM/Yby

DIVISIONS OF FLORIDA DEPARTMENT OF STATE
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FLORIDA DEPARTMENT OF STATE
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Secretary of State
DIVISION OF HISTORICAL RESOURCES

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

July 16, 2002

Re: DHR No. 2002-06980 / Date Received by DHR: July 9, 2002
A Cultural Resources Marine Remote Sensing Survey of the Offshore Borrow and Re-Handling Areas South Reach Brevard County Shore Protection Project, Brevard County, Florida (Mid-Atlantic Technology and Environmental Research, Inc. 2002) – Draft Report

Dear Mr. Duck:

Our office has received and reviewed the above referenced project in accordance with Section 106 of the *National Historic Preservation Act of 1966* (Public Law 89-665), as amended in 1992, and *36 C.F.R., Part 800: Protection of Historic Properties*. The State Historic Preservation Officer is to advise and assist federal agencies when identifying historic properties listed or eligible for listing in the *National Register of Historic Places*, assessing effects upon them, and considering alternatives to avoid or minimize adverse effects.

No magnetic or acoustic anomalies were identified during the survey. It is the opinion of the project archaeologist that use of the proposed borrow and re-handling areas will have no effect on any historic properties eligible for listing in the *National Register of Historic Places*. Based on the information provided, this office concurs with this determination and finds the submitted draft report complete and sufficient.

If you have any questions concerning our comments, please contact Mary Beth Fitts, Historic Sites Specialist, at mbfitts@mail.dos.state.fl.us or (850) 245-6333. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Frederick P. Gaske, Deputy SHPO

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

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

Ms. Lauren Milligan
Director, Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida 32399-3000

May 12, 2005

RE: DHR No.: 2005-3278 / Date Received by DHR: April 8, 2005
SAI #: FL199606100442CR / Jacksonville Corps of Engineers
Scoping Notice – Feasibility Study, Mid-Reach Section of the Brevard County Shore Protection Project – Brevard County, Florida

Dear Ms. Milligan:

Our office received and reviewed the above referenced project in accordance with Section 106 of the *National Historic Preservation Act* of 1966, as amended, and 36 *C.F.R.*, Part 800: *Protection of Historic Properties*, and the *National Environmental Policy Act* of 1969, as amended. The State Historic Preservation Officer is to advise and assist federal agencies when identifying historic properties (archaeological, architectural, and historical) listed, or eligible for listing, in the *National Register of Historic Places*, assessing the project's effects, and considering alternatives to avoid or minimize adverse effects.

We reviewed the Florida Master Site File and our records for information to define issues and concerns to be addressed in the referenced project. Our review indicates that the NN Shipwreck (8BR199) is located close to shore less than a mile north of the old Canova Beach Pier (see enclosed map). Therefore, the location of 8BR199 needs to be addressed and the area avoided by project activities.

Our review indicated that the 7.6 miles of developed shoreline from the south end of Patrick Air Force Base to just north of Indialantic, a/k/a the "Mid-Reach," has never been subjected to a cultural resource assessment to determine whether any archaeological sites or historic properties are present. We further note that the location of the borrow areas for the alternatives of hydraulic beach fill and truck-haul beach fill and dune fill, are not identified. If the borrow areas—whether terrestrial or offshore—have not been surveyed previously, they should be investigated. Therefore, and in consultation with Ms. Della Scott-Ireton, Underwater

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☐ Historical Museums (850) 245-6400 • FAX: 245-6433
☐ Southeast Regional Office (954) 467-4990 • FAX: 467-4991
☐ Northeast Regional Office (904) 825-5045 • FAX: 825-5044
☐ Central Florida Regional Office (813) 272-3843 • FAX: 272-2340

Archeologist with our Bureau of Archaeological Research, this office recommends that a standard systematic remote sensing survey be performed for offshore borrow areas in order to avoid potential adverse effect to unrecorded shipwrecks. In addition, we recommend that terrestrial borrow areas be subjected to the standard professional cultural resource survey to avoid possible impact to unrecorded sites. This office looks forward to coordinating with the Jacksonville District Corps of Engineers in the management and protection of historic properties associated with this project.

If there are any questions concerning our comments, please contact Janice Maddox, Historic Sites Specialist, by electronic mail at jmaddox@dos.state.fl.us, or by telephone at 850/245-6333. Thank you for your interest in protecting Florida's historic properties.

Sincerely,

Laura A. Kammerer, Deputy SHPO

for Frederick Gaske, Director, and
State Historic Preservation Officer

Xc: Thomas Birchett, USACOE-Jacksonville

Enclosure

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

Mr. Kenneth Dugger
Jacksonville District Army Corps of Engineers
P. O. Box 4970
Jacksonville, Florida 32232-0019

November 28, 2007

Re: DHR No.: 2007-8113
Received by DHR: October 25, 2007
Historic Assessment and Cultural Resources Survey of the Shoreline and Submerged Remote Sensing Survey and Diver Evaluation of the NN (No Name) Shipwreck Site (8BR199) Brevard County, Florida

Dear Mr. Dugger:

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

From September 2006 through July 2007, Southeastern Archaeological Research (SEARCH) conducted an underwater remote sensing survey of the Brevard County beach renourishment project area, diver investigations of selected anomalies, and an archaeological and historical terrestrial survey of the beach access and staging areas on behalf of the U.S. Army Corps of Engineers.

SEARCH identified 64 magnetic anomalies in the project area during the investigation. Of these, four were determined to be a storm drain outfall pipe and five are likely the remains of the Canova Beach Pier. SEARCH divers investigated six additional anomalies and determined that all were buried deeply under the sand. Only two of these (BC-7 and BC-8) are likely to represent a historic shipwreck. SEARCH determined that, due to the depth of the materials and the nature of the proposed project, the proposed project will have no effect on BC-7 and BC-8.

SEARCH was unable to relocate a previously recorded historic shipwreck, The No Name Wreck (8BR199). SEARCH determined that the proposed project will have no effect on cultural resources listed or eligible for listing in the NRHP, or otherwise of historical, archaeological, or architectural value. SEARCH recommends no further investigation of the project areas.

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.*

For future reports:

1) Include the location where all project records will be curated.

2) Cite informant interviews in the References Cited section.

3) If the subbottom profiler is not used for a remote sensing survey, please include an explanation of why that technology was not considered necessary for the investigation.

For any questions concerning our comments, please contact April Westerman, Historic Preservationist, by electronic mail at amwesterman@dos.state.fl.us, or by phone at (850) 245-6333. We appreciate your continued interest in protecting Florida's historic properties.

Sincerely,

Frederick P. Gaske

Frederick P. Gaske, Director, and
State Historic Preservation Officer

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

Mr. Kenneth Dugger
Jacksonville District Army Corps of Engineers
P. O. Box 4970
Jacksonville, Florida 32232-0019

January 14, 2008

Re: DHR No.: 2008-00032
Received by DHR: January 8, 2008
Final Report: Historic Assessment and Cultural Resources Survey of the Shoreline and Submerged Remote Sensing Survey and Diver Evaluation of the NN (No Name) Shipwreck Site (8BR199) Brevard County, Florida

Dear Mr. Dugger:

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

From September 2006 through July 2007, Southeastern Archaeological Research (SEARCH) conducted an underwater remote sensing survey of the Brevard County beach renourishment project area, diver investigations of selected anomalies, and an archaeological and historical terrestrial survey of the beach access and staging areas on behalf of the U.S. Army Corps of Engineers.

SEARCH identified 64 magnetic anomalies in the project area during the investigation. Of these, four were determined to be a storm drain outfall pipe and five are likely the remains of the Canova Beach Pier. SEARCH divers investigated six additional anomalies and determined that all were buried deeply under the sand. Only two of these (BC-7 and BC-8) are likely to represent a historic shipwreck. SEARCH determined that, due to the depth of the materials and the nature of the proposed project, the proposed project will have no effect on BC-7 and BC-8.

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☐ Central Florida Regional Office (813) 272-3843 • FAX: 272-2340

SEARCH was unable to relocate a previously recorded historic shipwreck, The No Name Wreck (8BR199). SEARCH determined that the proposed project will have no effect on cultural resources listed or eligible for listing in the NRHP, or otherwise of historical, archaeological, or architectural value. SEARCH recommends no further investigation of the project areas.

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.*

For future reports:

1) Include the location where all project records will be curated.

2) Cite informant interviews in the References Cited section.

3) If the subbottom profiler is not used for a remote sensing survey, please include an explanation of why that technology was not considered necessary for the investigation.

For any questions concerning our comments, please contact April Westerman, Historic Preservationist, by electronic mail at amwesterman@dos.state.fl.us, or by phone at (850) 245-6333. We appreciate your continued interest in protecting Florida's historic properties.

Sincerely,

Frederick P. Gaske, Director, and
State Historic Preservation Officer

Florida Department of
Environmental Protection
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

CERTIFIED - RETURN RECEIPT REQUESTED

June 16, 2008

Ernest N. Brown, Director
Natural Resources Management Office
Brevard County Board of County Commissioners
2725 Judge Fran Jamieson Way, Building A
Viera, FL 32940-6605

c/o

Kevin Bodge, Ph.D., P.E.
Olsen Associates, Inc.
4438 Herschel Street
Jacksonville, FL 32210

JCP File Number:	0254479-001-JC
Applicant Name:	Brevard County Board of County Commissioners
Project Name:	Brevard County Mid-Reach Beach Restoration

Dear Mr. Brown:

The Department has calculated the final mitigation ratio for the anticipated hardbottom impacts associated with the Brevard County Mid-Reach Beach Restoration Project using the Uniform Mitigation Assessment Methodology (UMAM) according to Rule 62-345, F.A.C. For the anticipated 2.95 acres of hardbottom impact, 4.8 acres of mitigation will be required, which is a ratio of approximately 1:1.6.

The mitigation acreage stated herein is based on information provided by the Applicant as well as the Department's knowledge of the site. The mitigation ratio has been calculated assuming that no changes are made to the application, and that the anticipated impacts are not exceeded. The Department is in the process of finalizing the UMAM spreadsheets, and can provide these to you once this process is complete. If you have any questions, please contact Ms. Caitlin Lustic at (850) 413-7766.

Sincerely,

Michael R. Barnett, P.E., Chief
Bureau of Beaches and Coastal Systems

Copies furnished to:

Virginia Barker, Brevard County
Irene Sadowski, USACE, CESAJ-RD-NA-M
George Getsinger, NOAA/NMFS, Jacksonville
AnnMarie Lauristen, USFWS, St. Petersburg
Dave Herbster, DEP, Central District
Vladimir Kosmynin, DEP, BBCS-JCP
Paden Woodruff, DEP, BBCS-BECP
BBCS Permit File
Mike McGarry, Brevard County
Osvaldo Rodriguez, USACE, CESAJ-DP-B
Robbin Trindell, FWC, ISMS
Keith Mille, FWC, MFMS
Martin Seeling, DEP, BBCS-JCP
Robert Brantly, DEP, BBCS-CE
Guy Weeks, DEP, BBCS-BECP

INTERAGENCY COORDINATION AGREEMENT
FOR CIVIL WORKS PROJECTS
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
UNITED STATES ARMY CORPS OF ENGINEERS JACKSONVILLE DISTRICT
UNITED STATES ARMY CORPS OF ENGINEERS MOBILE DISTRICT

I. Parties, Purposes and Goals

A Parties: Florida Department of Environmental Protection (FDEP), United States Army Corps of Engineers Jacksonville District (SAJ), and United States Army Corps of Engineers Mobile District (SAM). SAJ and SAM shall jointly be known as the Corps.

B. Common Vision: Mutual recognition of the environmental and economic benefits to the State of Florida and the nation associated with planning, designing, constructing, and operating Federal water resource projects that are consistent with Federal law and the State of Florida's environmental regulatory and proprietary requirements.

C. Goals:

1. Work together cooperatively within the Corps' schedules and budgets and the state's statutory and rule timeframes and requirements during project development and throughout the project lifecycle, to develop and review project designs and process permit applications.
2. Provide quality service to the taxpayers through the planning and implementation of environmentally sound public works projects and environmental protection and restoration programs.
3. Fully satisfy appropriate environmental standards and requirements applicable to Corps public works activities covered by this agreement.

D. Objectives:

1. Establish and maintain close, professional partnership.
2. Establish better integration of Corps civil works processes with FDEP regulatory, Sovereignty submerged lands, and Coastal Zone Management (CZM) requirements.
3. Implement effective project coordination at early stages of project development.
4. Streamline application submittal and processing requirements.
5. Establish a clear understanding of criteria and parameters for development of specific conditions.
6. Meet mutual expectations with regard to business processes and regulatory requirements.

II. Acknowledgements

A. The Corps agrees to apply for and the FDEP is responsible for taking action on the following permits:

1. Joint Coastal Permits (JCPs) issued pursuant to Ch. 161 and Part IV of Ch. 373, F.S.
2. Comprehensive Everglades Restoration Plan Regulation Act (CERPRA) permits issued pursuant to Section 373.1502, F.S.
3. Lake Okeechobee Protection Act Permits (LOPA) issued pursuant to Section 373.4595, F.S.
4. Environmental Resource Permits (ERPs) and Wetland Resource Permits (WRPs) processed by FDEP pursuant to Part IV of Ch. 373, F.S.

B. For the purposes of this agreement, the term "permit" or "permits" means one of the permit types referenced in Section II. A., the issuance of which constitutes the granting of water quality certification and concurrence with the CZM program. Issuance of such Joint Coastal Permits, Comprehensive Everglades Restoration Plan Regulation Act Permits, Lake Okeechobee Protection Act Permits, Environmental Resource Permits and Wetland Resource Permits constitutes certification of compliance with state water quality standards pursuant to Section 401 of the Clean Water Act, 33 U.S.C. Section 1341, and where applicable constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Management Act, 16 U.S.C. Section 1456, 15 C.F.R. Part 930, and Section 380.23 of the Florida Statutes.

C. The Corps is engaged in its mission in Florida, which includes activities for which water quality certification is required pursuant to 33 U.S.C. Section 1341.

D. The Corps considers its mission in Florida to include the requirement to be consistent to the maximum extent practicable with the Florida Coastal Zone Management Plan under 16 U.S.C. Section 1456, as defined by 15 C.F.R.§930.32, in accordance with Corps regulations at 33 C.F.R. Parts 335-337. It is the Corps' position that the state can impose reasonable conditions on water quality certification, consistency concurrence, and other required permits. The Corps contends that "reasonableness" is defined by a comparison to a "Federal standard," which is the least costly environmentally acceptable alternative consistent with engineering requirements established for the project. Pursuant to Corps regulations, the District Engineer will cooperate to the maximum extent practicable to achieve consistency to the maximum extent practicable with an approved coastal zone management program. 33 CFR 337.2(a). Corps regulations provide that the District Engineer may request the State or local sponsor to pay for costs above the Federal standard. If a state agency attempts to impose conditions or controls which in the District Engineer's opinion cannot be reasonably accommodated or requires additional conditions or activities above that required for the Federal standard, the project may be referred to Corps headquarters with deferral likely. See 33 CFR § 335-338.

E. FDEP contends that 33 CFR § 335-338, which includes the "Federal standard", cannot apply to consistency determinations under the CZMA, and disagrees that there is a

"reasonableness test" different from or in addition to the requirements of the CZMA and NOAA's implementing regulations, which require that the COE comply with the CZMP to the maximum extent practicable, as defined by 15 C.F.R.§ 930.32. FDEP also contends that there is no "irreconcilable conflict" test apart from the requirements of the CZMA and NOAA's implementing regulations.

F. Pursuant to Florida Statute 403.061(4), during the feasibility phase of a project, the FDEP's Office of Intergovernmental Programs serves as the Florida State Clearinghouse for CZM review. The Clearinghouse solicits and coordinates comments from other agencies and regulatory programs within FDEP for the preliminary CZM consistency determination. Once a permit application is submitted, the FDEP's regulatory program coordinates the CZM review. The FDEP regulatory program solicits and coordinates comments from other agencies and other programs within FDEP for the final CZM consistency determination, which is granted as part of the permit. As stated in II D. above, the Corps agrees to comply with reasonable comments and requirements of the commenting agencies to the maximum extent practicable, as defined by 15 C.F.R. § 930.32, and 33 CFR § 335-338 unless to do so creates an irreconcilable conflict with the Corps' view of its federal responsibilities.

G. It is the intent of the parties to coordinate with all involved federal and state agencies to determine if there are mutually acceptable alternatives that would avoid an irreconcilable conflict with the Corps' interpretation of its federal responsibilities. The parties agree that conditions that are inconsistent with the Corps' view of its Federal responsibilities shall not be imposed in FDEP permits, but rather, a permit application will be denied and the denial will include alternatives, if any, that would make the project consistent with state requirements. Nothing in this agreement will be construed to imply that the State will issue a permit that does not comply with State requirements.

H. The parties recognize that the provisions of Section 404(r) of the Clean Water Act could be used for projects with National Environmental Policy Act (NEPA) documents which are approved by Congress. For a project authorized under 404(r), the COE is not required to obtain water quality certification from the state. However, it is not current Corps policy to avail itself of the provisions of 404(r). The parties will make all reasonable efforts to avoid the use of the provisions of 404(r) but recognize that the Corps may consider it necessary in certain cases.

I. All parties maintain positions regarding their authority and sovereign immunity and do not waive their respective positions by entering into this agreement.

J. Nothing in this agreement will be construed to imply that the State waives any rights it has to mediation or judicial challenge regarding any requirement under the CZMA.

III. Early Project Coordination

A. General

1. It is the intent of the parties to coordinate with all involved federal and state agencies to determine if there are mutually acceptable alternatives that would avoid an irreconcilable conflict between the State's view of Federal and state requirements and the Corps' view of its federal responsibilities. The goal of including all project requirements into the planning documents and plans and specifications is critical to the success of the parties' respective missions.

2. The parties agree that early participation by, and close coordination among the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), and the Florida Fish and Wildlife Conservation Commission (FFWCC) on listed species protection measures recommended for proposed projects is critical to the success of the parties' respective missions. The parties agree to promote and facilitate such participation and coordination in order to avoid conflicts between federal and state requirements, to the extent possible within the responsibilities and capabilities of the parties. It is the intent of the parties to coordinate with all federal and state agencies to determine if there are mutually acceptable alternatives that would avoid an irreconcilable conflict.

3. As previously stated in II D., the Corps complies with Federal law with regard to protected species and agrees to consider input from and to comply with reasonable requirements of the Florida Fish and Wildlife Conservation Commission for consistency with the FCMP to the maximum extent practicable to the extent that to do so would not create an irreconcilable conflict with the Corps' view of its federal responsibilities.

4. The parties agree to work to identify other agencies that are a part of Florida's Coastal Management Program that may have a heightened interest in a particular project (such as Department of Agriculture and Consumer Services with respect to CERPRA and LOPA projects) early in project development and to promote and facilitate coordination and participation of such agencies to the extent possible within the responsibilities and capabilities of the parties.

5. The parties, within their respective authorities and funding allocations, shall ensure that, for Joint Coastal Permits, beach compatible dredged material is disposed on Florida's beaches to the extent economically feasible consistent with Florida's beach management plan adopted pursuant to Chapter 161 F.S. and other beneficial uses criteria as may be specified by the FDEP and applicable federal standards. To further the parties' goals for sediment management, the Corps shall provide the FDEP with geotechnical information characterizing the sediments to be dredged and alternative disposal options with projected costs to allow the FDEP to participate in funding alternative disposal options over the least costly method.

6. The goal for obtaining required permits from the State is one year prior to the expected start of the work.

B. New Work

This category of work includes any new project being considered for Federal Involvement. The process normally begins with a series of studies, including reconnaissance and feasibility studies, to determine if Federal involvement is warranted. Project design can begin after the Federal interest is determined. Each project with a Federal interest is also authorized in public law. Construction can begin after the project is authorized (and needed permits are obtained). Project operation and maintenance (O&M) commences when construction is completed. The responsibility for O&M varies from Federal to local depending upon the project type. Navigation projects are typically federally maintained while flood control projects are typically locally maintained.

1. Reconnaissance Phase (Applies to ERP, WRP, and JCP)

Under this phase, there is a reconnaissance study which includes tasks to determine if a proposed project has sufficient merit to warrant moving into more detailed studies prior to authorization of the project. The study includes reconnaissance and assembly of the Project Management Plan (PMP). Reconnaissance is designed to compile the best input in the shortest amount of time. At its conclusion, all potential issues that may derail a project should be identified. Participation by the State is critical to help identify these issues.

a) At the initiation of the reconnaissance phase the Corps will contact appropriate persons on the contact list (Appendix A) for initial input on the proposed activity. The State will identify any critical issues over which the state has authority to the Corps project manager.
b) The Corps will include all comments in the Draft Reconnaissance (905b) Report.
c) A copy of the draft report will be sent to all contacts to ensure their issues are accurately captured.
d) A copy of the draft report will be provided to the state clearinghouse for interagency review

2. Project Management Plan

The Project Management Plan (PMP) lists all the activities which are required to complete the feasibility phase. Examples of activities are cultural resource surveys, endangered species reports, and seagrass surveys. The PMP has cost estimates, time estimates and identifies who performs the activities. It is critical for the State to participate in its formulation to ensure its issues are fully explored and that any requirements are included prior to funding.

a) The Corps will include the issues raised by the State in the "issue gathering" phase when planning activities under the PMP.
b) A template of a typical PMP is included under Appendix B.
c) The Corps will provide a copy of the current PMP to the contact person at FDEP.

3. Feasibility Phase

The feasibility phase continues the study process to determine Federal Interest in construction of a project. The study efforts include gathering a significant amount of information for engineering, environmental, and economic analysis. The National Environmental Policy Act (NEPA) document is prepared during this phase and is normally incorporated as part of the feasibility report. The entire report is coordinated with the public and numerous Federal, State, and Local agencies. The Project Implementation Report (PIR) phase serves the same function for CERP projects as the feasibility phase.

The State has three mechanisms under which they may participate in this early coordination including the Feasibility Study scoping letter, serving as a Project Delivery Team (PDT) member(s) and serving as a cooperating agency under NEPA.

a) The Corps will send a Feasibility Study scoping letter to the State Clearinghouse. The State Clearinghouse will provide comments upon receipt of the letter. The Corps will include a copy of the reconnaissance study in the scoping letter when possible.
b) The State agrees to designate a member to serve on the PDT. Members will be encouraged to attend team meetings when possible, comment on interim products when possible, and express any concerns on resource or regulatory issues. At a minimum State PDT members agree to participate in Feasibility Scoping Meetings (FSM) and the Alternative Formulation Briefings (AFB).
c) As an additional option the state may elect to be a cooperating agency under NEPA. This will entail attendance at the scoping meeting, in progress reviews on portion(s) of the NEPA document (Environmental Assessment (EA)/Environmental Impact Statement (EIS)), input into project descriptions and alternatives, comments on draft EIS, comments on a response matrix and on the draft EIS and final EIS.

It is the goal of the Corps to submit the permit application when the Draft NEPA document is completed. The draft NEPA document will contain the preferred alternative which will form the basis of the permit application. At the conclusion of the feasibility phase the final NEPA document is approved and a decision document is written (Finding of No Significant Impact/Record of Decision).

It is the ultimate goal to obtain the State authorizations which constitute Water Quality Certification and Coastal Zone Management concurrence when the decision document is completed at the Corps District level. It is recognized that receipt of a

permit during this part of the Federal process may result in the need to apply for a permit modification at a later date due to changes to the project.

4. Design Phase

This phase focuses on preparation of plans and specifications which take into account all pertinent issues identified in the feasibility phase and permitting requirements, and will contain more detailed information on geotechnical data and various required surveys. Occasionally additional studies will need to be done at the request of sponsors, due to the discovery of unknown site conditions, or reevaluations that occur due to new technology.

Plans and specifications will be provided to all state PDT members. Differences between plans and specifications and a permitted project will be identified by the Corps and the Corps will notify FDEP when there are changes in:

a) Plans for operation of facilities such as water control structures
b) Dimensions, size or location of proposed work
c) Ability to adhere to permit conditions
d) Project Description included in the permit
e) Monitoring plans
f) Environmental impacts

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

If the FDEP determines that a modification would affect the consistency concurrence of a partner FCMP agency, the partner agency's concurrence with the modification will be required.

Communication between the Corps and FDEP will occur during the design phase through participation in the PDT, and plans and specifications sent to PDT members via electronic means such as CDs, email, phone, or letters when appropriate.

5. Construction Phase

During the construction phase unforeseen site conditions or other environmental conditions may require that modifications to permits be obtained. The parties recognize that there are significant costs whenever the Corps requests a modification during the construction phase. The FDEP and the Corps will expedite the processing of modifications to the extent possible.

Plans and specifications will be provided to all state PDT members. Differences between plans and specifications and a permitted project will be identified by the Corps and the Corps will notify FDEP when there are changes in:

a) Plans for operation of facilities such as water control structures
b) Dimensions, size or location of proposed work
c) Ability to adhere to permit conditions
d) Project Description included in the permit
e) Monitoring plans
f) Environmental impacts

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

If the FDEP determines that a modification would affect the consistency concurrence of a partner FCMP agency, the partner agency's concurrence with the modification will be required.

C. Operations and Maintenance Projects

Projects included under this category include, for example, maintenance dredging of federal channels and revision of regulation schedules for lakes, canals, and structures. Procedures similar to those described above in Section III.B.5. Construction Phase will apply for renewal of state permits (water quality certification and certification of consistency with the State CZMP) for existing Operations and Maintenance projects with no new project features or significant changes in operation and maintenance activities. Application for renewal of the state permit for a routine Operations and Maintenance project would be submitted one year prior to expiration of the current State permit, with the goal to obtain the renewal permit prior to expiration of the current State permit.

Procedures similar to those described above in Sections III.B.3, Feasibility Phase and III.B. 5. Construction Phase would apply to Operations and Maintenance projects with new project features or significant changes in project operations and maintenance activities. The level of reporting documentation, e.g. Post Authorization Change Report with Congressional approval, PAC with higher level Corps approval, revision to a Dredged Material Management Plan, revision to an Operational Manual, modification of the permit, etc., would be determined depending on the specifics of the change. Regardless of the level of reporting documentation, the Corps will involve the FDEP at the earliest stage of planning to define the issues of concern as described in Section III.B.3.

IV. Permit Application Fees

The Corps contends that the requirement to pay permit application fees is dependent on whether the specific federal law that waives sovereign immunity and requires the Corps to obtain a particular type of permit also waives sovereign immunity as to fees. The parties agree that the Corps will pay permit application fees as follows:

Permit Type	Corps To Pay Application Fee
Joint Coastal Permits issued pursuant to Ch. 161 and Part IV of Ch. 373, F.S.	No
Comprehensive Everglades Restoration Plan Regulation Act permits issued pursuant to Section 373.1502, F.S.	No
Lake Okeechobee Protection Act Permits issued pursuant to Section 373.4595, F.S.	No
Environmental Resource Permits and Wetland Resource Permits pursuant to Part IV of Ch. 373, F.S.	No
*NPDES Generic Permit for Stormwater Discharges From Large and Small Construction Activities pursuant to 403.0885, F.S.	Yes
*NPDES Discharge Permits pursuant to 403.0885, F.S.	Yes
*Underground Injection Control Permits (for aquifer storage and recovery) pursuant to 403.087, F.S.	Yes
*Air Pollution Control Permits Pursuant to 403.087, 403.0872, 403.08725, F.S.	Yes
*Solid Waste Disposal Permits pursuant to 403.704(16), 403.707(1), F.S.	Yes
*Hazardous Waste Disposal Permits pursuant to 403.722(1), F.S.	Yes

* This agreement does not specifically address these permitting programs, but this information is included here for completeness.

V. Permit Application Submittal and Review

A. The parties agree to communicate and coordinate on the anticipated submittal dates of applications. To this end, the Corps agrees to provide FDEP a list of project applications expected to be submitted in the next year, along with the desired date of receipt of the permit. The list shall be updated at least monthly.

B. The Corps agrees to make every effort to submit permit applications that are well organized, clear and complete in order to facilitate timely and efficient review by FDEP.

C. FDEP recognizes that engineering drawings and analysis submitted by the Corps as part of a permit application are not subject to the Florida's statutory requirement that the information be signed and sealed by a professional engineer (P.E.) registered in the State of Florida. However, the engineering documents including permit drawings shall be signed, and may be sealed, by a P.E. registered in any state. Professional certification may be required for other portions of the permit application.

D. The Corps shall make every attempt to submit, as part of the application, the specific requirements that will be included in the plans and specifications for the project (for example, standard specifications) as a method for providing FDEP with the necessary reasonable assurances.

E. The parties agree that it shall be a goal to minimize requests for additional information (RAI). The parties agree that communication by phone or e-mail will be used as appropriate to resolve minor informational issues that do not warrant a formal RAI.

F. Weekly or biweekly teleconferences may be held with SAJ and SAM to review and discuss active permit applications.

G. The parties acknowledge that for Corps maintenance dredging projects the Corps performs preconstruction bathymetric surveys shortly before actual construction and that these surveys may not be available at the time of application for water quality certification. The Corps will send preconstruction surveys prior to the start of construction.

VI. Permit Condition Principles

A. General

1 Notwithstanding the different positions reflected in II. D and E. above, the parties agree to work together in good faith in an attempt to resolve any issues concerning permit conditions. The parties agree to follow the dispute resolution procedures contained in this agreement prior to referral to Corps headquarters

2. The parties agree that the state and the Corps have an interest in protecting resources, and agree to work together to agree to mutually acceptable resource provisions related to the project that do not conflict with federal laws. Where necessary, the parties will work with federal resources agencies concerning appropriate resource protections.

3. In the event of a disagreement regarding the acceptability of certain state requirements for a federal project, the parties recognize that a local sponsor may

agree to resolve the dispute by accepting responsibility for meeting such requirements. The parties acknowledge that the Corps' position is that it cannot cost share in requirements agreed to by the local sponsor in a separate agreement with FDEP that is not also part of the permit.

B. Specific Parameters for Permit Conditions

The parties agree that brand name restrictions, e.g. for equipment or materials used, are generally not acceptable but may be included if the parties agree that specification of a brand name is necessary and appropriate and consistent with Federal law.

2. The parties agree that permit conditions should not require the use of a specific contractor or provider of services or supplies.

3. The parties agree that conditions will not require specific licensing of Federal contractors.

4. The parties agree that they will strive to avoid requirements for specific methodology or equipment (such as requiring the use of a cutter head dredge) in order to allow flexibility in the Corps bidding process; however, the parties recognize that there may be situations in which the prohibition of specific equipment may be acceptable.

5. As stated in II.D. above, the Corps agrees that permit conditions requiring reasonable monitoring and testing are generally acceptable.

6. The parties agree that anchorage restrictions should be specifically tailored to resources to be protected (known hard bottoms, sea grass areas, etc.) and are generally acceptable conditions; however, restrictions on anchoring outside of the project limits will be reviewed on a case-by-case basis. (For example, depending on methodology, channel dredging usually requires anchorage outside the channel.)

7. As stated in II.D. above, the Corps recognizes that reasonable restrictions on hours of operation may impact project costs but are generally acceptable conditions.

8. As stated in II.D. above, the Corps agrees that reasonable lighting restrictions are generally acceptable conditions within project boundaries.

9. The Corps agrees that conditions requiring aerial over-flight for environmental protection are acceptable to the extent the Corps contends is allowed by Federal standards. (For example, Federal Aviation Administration and the Department of Homeland Security may regulate such flights.)

10. The parties acknowledge that permit conditions that address direct and indirect effects outside of project boundaries due to the construction, operation or

maintenance of the project may be appropriate. The parties acknowledge that conditions that require work outside of project boundaries may not be within the control of the Corps or may be outside the scope of the Corps' authority.

11. If any conditions required by the State prompt safety concerns, the Corps will provide justification to support their request that the condition be modified. The parties commit to work together to resolve the conflict.

12. The parties agree that early coordination should eliminate the need for conditions requiring notice to proceed from the state prior to construction and agree to avoid such conditions.

C. General Conditions

The parties agree that the general conditions in Appendix C shall be included in permits issued to SAM or SAJ. These conditions shall be enforceable to the extent sovereign immunity has been waived under Federal law.

VII. Operating Permits

The parties recognize that some Corps projects include the construction of structures that will require long-term operation and maintenance. In most cases an entity other than the Corps, usually the local sponsor, will have the responsibility for long term operation and maintenance. For these projects, one of the following approaches may be taken:

A. The Corps and the local sponsor may be co-applicants for the permit. The conditions of the subsequently issued permit shall clearly indicate which activities are the responsibility of the Corps and which are the responsibility of the local sponsor; or

B. The Corps may be the permittee, and the permit shall contain a condition that requires that the permit be transferred to the appropriate operation and maintenance entity following project construction.

C. Separate permits may be issued to Corps (construction) and the local sponsor (operation and maintenance). Ideally, both permit applications would be applied for at the same time.

The parties recognize that operations must meet Federal requirements, and the state, Corps and local sponsor are encouraged to work together to ensure that conflicts are resolved prior to issuance of the operating permit.

VIII. Sovereignty Submerged Lands:

A. It is the Corps' position that no authorization to use sovereignty submerged lands is required for the projects it constructs because of navigation servitude which extends to its civil works projects under the commerce clause.

B. The state concurs that certain projects constructed by the Corps in the State of Florida (navigation, flood control, and power generation) fall within one of the federal powers listed in the Sovereign Submerged Lands Act under 43 USC 1311(d) or 43 USC 1314, and, under those provisions, needs no authorization from the Board of Trustees to utilize sovereignty submerged lands. However, under the provisions of the Coastal Zone Management Act (16 USC 1451-1465), the state's position is that this activity requires Florida's concurrence with a determination of consistency with the sovereignty submerged lands provisions of Florida's approved Coastal Management program prior to Federal approval of the proposed activity. For these projects, the state shall include a determination of the consistency with the sovereignty submerged lands provisions of Florida's approved Coastal Management program in permits issued for Corps projects.

C. For projects not covered in B. above, such as beach restoration and nourishment, it is the FDEP's position that the appropriate form of consent of use is required. Without waiving their respective positions, the parties agree that authorization to use sovereignty submerged lands may be issued to the project local sponsor. The parties recognize that the Corps is concerned that no additional costs be imposed on the Corps, or on the local sponsor that the Corps would be required to cost-share, as part of the authorization. The Corps is also concerned that no additional conditions will be imposed on the federal project or which will interfere with the requirements for local cooperation imposed by federal law on the local sponsor. The intent of the parties is that the state submerged lands process, to the maximum extent allowable under applicable laws, will not add additional cost or time to the process. Nothing in this paragraph waives the state's rights under the Coastal Zone Management Act.

D. The parties recognize that the State's interests in submerged lands include tracking what submerged lands are being used in order to avoid conflicting uses by other parties. The Corps agrees to provide the State the information the State needs in an agreed upon format.

IX. Compliance and Enforcement

A. The parties have a mutual interest in protecting environmental resources. Where sovereign immunity has been waived by Congress, State permit and CZMA conditions are part of the Congressional intent to protect those resources. In addition, the parties recognize that non-compliance with permit conditions has resulted in significant adverse environmental impacts and problems in obtaining permits for subsequent projects. Non-compliance can lead to imposition of more extensive, time-consuming or expensive permit conditions on subsequent projects, or permit denial.

B. In furtherance of the parties' mutual goals, the Corps agrees that it will monitor performance of its contractors for compliance with state permit conditions, and will use all contractual means available to it to ensure compliance with both permit conditions and any corrective actions required by the Corps or FDEP.

C. If non-compliant activities are observed at the project site by either FDEP or the Corps, the other entity shall be notified by phone or e-mail as soon as practicable.

D. During the Corps' responsibility determination for prospective contractors, the Corps will coordinate with both the Corps project managers and FDEP about the contractor's past performance in complying with FDEP permit conditions and taking any corrective action required by the Corps or FDEP. The Corps will consider such comments in its determination of responsibility. The Corps will include appropriate provisions in the bid package informing contractors.

E. On contracts where past performance is an evaluation factor, the Corps will ask both the Corps project managers and FDEP for past performance of contractors in complying with FDEP permit conditions, and taking any corrective action required by the Corps or FDEP. The Corps will consider such comments in its evaluation of past performance of prospective contractors. The Corps will include appropriate provisions in the bid package informing contractors.

F. Contractor performance will be considered in rating Quality of Work, Contractor Quality Control, Effectiveness of Management, and any other applicable element of contractor performance that is rated. Unsatisfactory performance on one or more of the elements to be rated may be sufficient to justify an overall unsatisfactory rating.

G. When subcontractors receive a performance rating, the Corps agrees to follow the same procedures for subcontractors.

H. The Corps agrees, and may state in its specifications, that the Corps may not issue its final performance evaluation of the contractor until it has consulted with Corps project managers and FDEP on the contractor's compliance with FDEP permits or any corrective actions required by the Corps or FDEP for violations of permit conditions.

I. The Corps agrees, and may state in its specifications, that the contractor's failure to comply with FDEP permit conditions, or to take the corrective action required by FDEP or the Corps, may be considered as a basis for an unsatisfactory performance rating.

J. The Corps of Engineers agrees that federal law waives sovereign immunity for certain state penalties for Underground Injection Control (aquifer storage and recovery), Air Pollution Control, Solid Waste Disposal, Hazardous Waste Disposal, the state's NPDES Stormwater programs for Point Sources for Construction Activities, and the

State's NPDES permits where applicable. The Corps' position is that the extent of liability for penalties depends on the exact language of the federal law waiving sovereign immunity for penalties in that area.

K. The standard federal Permits and Responsibilities clause, required in all federal contracts, provides that: "The Contractor shall, without additional expense to the Government, be responsible for ... complying with any Federal, State, and municipal laws, codes, and regulations applicable to the performance of the work." The Corps' position is that this contract clause does not waive sovereign immunity of the federal government itself. However, the Corps also agrees that under this contract clause, federal contractors are liable for penalties for violations of State permit conditions.

L. The Corps agrees to include in its bid package and contract documents a provision advising prospective contractors that failure of any subcontractor to comply with any permit condition for the purposes of this section or perform any required corrective actions may be deemed to be a failure of the contractor to supervise the work and comply with the Permits and Responsibilities Clause.

X. Staff Training

A. The parties agree to train their respective staffs on the provisions of this agreement within 90 days of its execution.

B. The parties commit to training each other's staff on agency processes and policies to promote a better understanding of each other's requirements and limitations.

XI. Dispute Resolution

The parties will use the specific dispute resolution agreement, if any, applicable to that work, or, if there is none, then the provisions of this paragraph.

If disputes arise during the permitting coordination outlined in this agreement, the parties shall make all efforts to resolve the dispute at the staff level. If resolution is not reached, the issue shall be elevated within the FDEP and the Corps to the next supervisory level until the dispute is resolved. If an issue has not been resolved after involving the highest level staff, the issue shall be raised to the Secretary of FDEP and the appropriate Corps District Engineer. The parties may also use dispute resolution mechanisms as provided by law.

XII. Superseded Agreements

This Agreement supersedes the Standard Operating Procedure Related to Corps Coastal Activities between the United States Army Corps of Engineers and the State of Florida Department of Environmental Protection, dated June 5, 1998.

The parties recognize that as of the effective date of this agreement, many Corps Civil works projects are in various stages of development and permitting. For these projects the parties

agree that the provisions of this agreement will be implemented to the greatest extent practicable.

XIII. Effective Date

This Agreement shall become effective upon execution by all parties.

XIV. Termination

Any party to this Agreement may terminate, with or without cause, its participation hereunder by giving 60 days written notice to all parties. In the event of termination by FDEP, the Corps waives any right to an administrative hearing under Sections 120.569 or 120.57, F.S.

Signatures

Colleen M. Castille, Secretary
Department of Environmental Protection
State of Florida

February 28, 2006
Date

Robert A. Carpenter
Colonel, Corps of Engineers
District Engineer, US Army Engineer District Jacksonville

28 Feb 06
Date

Peter F. Taylor, Jr.
Colonel, Corps of Engineers
District Engineer, US Army Engineer District Mobile

24 Feb 06
Date

Appendices:

Appendix A: List of Contacts with the State of Florida
Appendix B: Project Management Plan Format
Appendix C: General Conditions

Appendix A: List of Contacts with the State of Florida

Activity Type	Geographical Area	Responsible Office	Contact Name	Contact Title	Telephone Number	E-mail	Mailing Address
CERP	Any County	Office of WQS & Special Projects	Temperince Morgan	Envir. Manager	850-245-8424	Temperience.Morgan@dep.state.fl.us	
LOPA	Any County	Office of WQS & Special Projects	Temperince Morgan	Envir. Manager	850-245-8425	Temperience.Morgan@dep.state.fl.us	
Kissimmee River	Any County	Office of WQS & Special Projects	Temperince Morgan	Envir. Manager	850-245-8426	Temperience.Morgan@dep.state.fl.us	
SF Restoration Project	Any County	Office of WQS & Special Projects	Temperince Morgan	Envir. Manager	850-245-8427	Temperience.Morgan@dep.state.fl.us	
Beach Restoration	Any County	Bureau of Beaches and Coastal Systems	Michael Barnett	Bureau Chief	850 488-7708	Michael.Barnett@dep.state.fl.us	3900 Commonwealth Blvd. M.S. 300 Tallahassee, FL 32399-3000
Beach Renourishmen	Any County	Bureau of Beaches and Coastal Systems	Michael Barnett	Bureau Chief	850 488-7708	Michael.Barnett@dep.state.fl.us	3901 Commonwealth Blvd. M.S. 300 Tallahassee, FL 32399-3000
Deep Water Ports	Any County	Bureau of Beaches and Coastal Systems	Michael Barnett	Bureau Chief	850 488-7708	Michael.Barnett@dep.state.fl.us	3902 Commonwealth Blvd. M.S. 300 Tallahassee, FL 32399-3000
Inlet Work**	Any County	Bureau of Beaches and Coastal Systems	Michael Barnett	Bureau Chief	850 488-7708	Michael.Barnett@dep.state.fl.us	3903 Commonwealth Blvd. M.S. 300 Tallahassee, FL 32399-3000
Other Dredging and Restoration	Escambia	Northwest District Main Office	Connie Lasher	Envir. Administrator	850-595-8300	Connie.Lasher@dep.state.fl.us	160 Governmental Center Pensacola, FL 32502
Other Dredging and Restoration	Santa Rosa	Northwest District Main Office	Connie Lasher	Envir. Administrator	850-595-8302	Connie.Lasher@dep.state.fl.us	162 Governmental Center Pensacola, FL 32502
Other Dredging and Restoration	Okaloosa	Northwest District Main Office	Connie Lasher	Envir. Administrator	850-595-8305	Connie.Lasher@dep.state.fl.us	165 Governmental Center Pensacola, FL 32502
Other Dredging and Restoration	Walton	Northwest District Main Office	Connie Lasher	Envir. Administrator	850-595-8306	Connie.Lasher@dep.state.fl.us	166 Governmental Center Pensacola, FL 32502
Other Dredging and Restoration	Holmes	Northwest District Main Office	Connie Lasher	Envir. Administrator	850-595-8309	Connie.Lasher@dep.state.fl.us	169 Governmental Center Pensacola, FL 32502
Other Dredging and Restoration	Bay	Pamana City Branch Office	Diana Athnos	Environmental Manager	850-872-4375	Diana.Athnos@dep.state.fl.us	2353 Jenks Avenue Panama City, FL 32405
Other Dredging and Restoration	Washington	Pamana City Branch Office	Diana Athnos	Environmental Manager	850-872-4378	Diana.Athnos@dep.state.fl.us	2356 Jenks Avenue Panama City, FL 32405
Other Dredging and Restoration	Jackson	Pamana City Branch Office	Diana Athnos	Environmental Manager	850-872-4379	Diana.Athnos@dep.state.fl.us	2357 Jenks Avenue Panama City, FL 32405
Other Dredging and Restoration	Calhoun	Pamana City Branch Office	Diana Athnos	Environmental Manager	850-872-4382	Diana.Athnos@dep.state.fl.us	2360 Jenks Avenue Panama City, FL 32405
Other Dredging and Restoration	Gulf	Pamana City Branch Office	Diana Athnos	Environmental Manager	850-872-4383	Diana.Athnos@dep.state.fl.us	2361 Jenks Avenue Panama City, FL 32405
Other Dredging and Restoration	Gadsden	Tallahassee Branch Office	Tom Franklin	Envir. Supervisor II	850-488-3705	Thomas.Franklin@dep.state.fl.us	2816 Remington Green Circle Tallahassee, FL 32308-1513
Other Dredging and Restoration	Leon	Tallahassee Branch Office	Tom Franklin	Envir. Supervisor II	850-488-3706	Thomas.Franklin@dep.state.fl.us	2817 Remington Green Circle Tallahassee, FL 32308-1513
Other Dredging and Restoration	Liberty	Tallahassee Branch Office	Tom Franklin	Envir. Supervisor II	850-488-3709	Thomas.Franklin@dep.state.fl.us	2820 Remington Green Circle Tallahassee, FL 32308-1513
Other Dredging and Restoration	Wakulla	Tallahassee Branch Office	Tom Franklin	Envir. Supervisor II	850-488-3710	Thomas.Franklin@dep.state.fl.us	2821 Remington Green Circle Tallahassee, FL 32308-1513
Other Dredging and Restoration	Franklin	Tallahassee Branch Office	Tom Franklin	Envir. Supervisor II	850-488-3713	Thomas.Franklin@dep.state.fl.us	2824 Remington Green Circle Tallahassee, FL 32308-1513
Other Dredging and Restoration	Jefferson(split w/NE District)	Tallahassee Branch Office	Tom Franklin	Envir. Supervisor II	850-488-3714	Thomas.Franklin@dep.state.fl.us	2825 Remington Green Circle Tallahassee, FL 32308-1513
Other Dredging and Restoration	Nassau	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3300	Jim.Maher@dep.state.fl.us	7825 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Duval	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3301	Jim.Maher@dep.state.fl.us	7826 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	St. Johns	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3302	Jim.Maher@dep.state.fl.us	7827 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Flagler	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3303	Jim.Maher@dep.state.fl.us	7828 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Putnam	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3304	Jim.Maher@dep.state.fl.us	7829 Baymeadows Way, Suite B200 Jacksonville, FL 32256

Other Dredging and Restoration	Clay	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3305	Jim.Maher@dep.state.fl.us	7830 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Union	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3306	Jim.Maher@dep.state.fl.us	7831 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Bradford	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3307	Jim.Maher@dep.state.fl.us	7832 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Baker	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3308	Jim.Maher@dep.state.fl.us	7833 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Alachua	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3309	Jim.Maher@dep.state.fl.us	7834 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Levy	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3310	Jim.Maher@dep.state.fl.us	7835 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Gilcrist	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3311	Jim.Maher@dep.state.fl.us	7836 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Columbia	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3312	Jim.Maher@dep.state.fl.us	7837 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Dixie	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3313	Jim.Maher@dep.state.fl.us	7838 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Lafayette	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3314	Jim.Maher@dep.state.fl.us	7839 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Suwannee	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3315	Jim.Maher@dep.state.fl.us	7840 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Hamilton	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3316	Jim.Maher@dep.state.fl.us	7841 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Madison	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3317	Jim.Maher@dep.state.fl.us	7842 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Jefferson(split w/NW District)	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3318	Jim.Maher@dep.state.fl.us	7843 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Taylor	Northeast District Main Office	Jim Maher	Environmental Administrator	904-807-3319	Jim.Maher@dep.state.fl.us	7844 Baymeadows Way, Suite B200 Jacksonville, FL 32256
Other Dredging and Restoration	Marion(split w/SW District)	Central District Office	Dave Herbster	Environmental Administrator	407-894-7555	Dave.Herbster@dep.state.fl.us	3319 Maguire Blvd. Suite 232 Orlando, FL 32803-3767
Other Dredging and Restoration	Lake	Central District Office	Dave Herbster	Environmental Administrator	407-894-7556	Dave.Herbster@dep.state.fl.us	3320 Maguire Blvd. Suite 232 Orlando, FL 32803-3767
Other Dredging and Restoration	Orange	Central District Office	Dave Herbster	Environmental Administrator	407-894-7557	Dave.Herbster@dep.state.fl.us	3321 Maguire Blvd. Suite 232 Orlando, FL 32803-3767
Other Dredging and Restoration	Volusia	Central District Office	Dave Herbster	Environmental Administrator	407-894-7558	Dave.Herbster@dep.state.fl.us	3322 Maguire Blvd. Suite 232 Orlando, FL 32803-3767
Other Dredging and Restoration	Seminole	Central District Office	Dave Herbster	Environmental Administrator	407-894-7559	Dave.Herbster@dep.state.fl.us	3323 Maguire Blvd. Suite 232 Orlando, FL 32803-3767
Other Dredging and Restoration	Osceola	Central District Office	Dave Herbster	Environmental Administrator	407-894-7560	Dave.Herbster@dep.state.fl.us	3324 Maguire Blvd. Suite 232 Orlando, FL 32803-3767
Other Dredging and Restoration	Brevard	Central District Office	Dave Herbster	Environmental Administrator	407-894-7561	Dave.Herbster@dep.state.fl.us	3325 Maguire Blvd. Suite 232 Orlando, FL 32803-3767
Other Dredging and Restoration	Indian River	Central District Office	Dave Herbster	Environmental Administrator	407-894-7562	Dave.Herbster@dep.state.fl.us	3326 Maguire Blvd. Suite 232 Orlando, FL 32803-3767
Other Dredging and Restoration	Marion(split w/SW District)	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6100	Cece.McKiernan@dep.state.fl.us	3804 Coconut Palm Dr. Tampa, FL 33619-8318
Other Dredging and Restoration	Sumter	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6101	Cece.McKiernan@dep.state.fl.us	3805 Coconut Palm Dr. Tampa, FL 33619-8318
Other Dredging and Restoration	Citru	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6102	Cece.McKiernan@dep.state.fl.us	3806 Coconut Palm Dr. Tampa, FL 33619-8318
Other Dredging and Restoration	Hernando	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6103	Cece.McKiernan@dep.state.fl.us	3807 Coconut Palm Dr. Tampa, FL 33619-8318
Other Dredging and Restoration	Pasco	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6104	Cece.McKiernan@dep.state.fl.us	3808 Coconut Palm Dr. Tampa, FL 33619-8318
Other Dredging and Restoration	Pinellas	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6105	Cece.McKiernan@dep.state.fl.us	3809 Coconut Palm Dr. Tampa, FL 33619-8318
Other Dredging and Restoration	Hillsborough	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6106	Cece.McKiernan@dep.state.fl.us	3810 Coconut Palm Dr. Tampa, FL 33619-8318

Other Dredging and Restoration	Manatee	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6107	Cece.McKiernan@dep.state.fl.us	3811 Coconut Palm Dr. Tampa, FL 33619-8318
Other Dredging and Restoration	Sarasota	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6108	Cece.McKiernan@dep.state.fl.us	3812 Coconut Palm Dr. Tampa, FL 33619-8318
Other Dredging and Restoration	DeSoto	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6109	Cece.McKiernan@dep.state.fl.us	3813 Coconut Palm Dr. Tampa, FL 33619-8318
Other Dredging and Restoration	Hardee	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6110	Cece.McKiernan@dep.state.fl.us	3814 Coconut Palm Dr. Tampa, FL 33619-8318
Other Dredging and Restoration	Polk	Southwest District Office	Cece McKiernan	Environmental Administrator	813-744-6111	Cece.McKiernan@dep.state.fl.us	3815 Coconut Palm Dr. Tampa, FL 33619-8318
Other Dredging and Restoration	Charlotte	Punta Gorda Branch Office	Calvin Alvarez	Environmental Manager	941-575-5810	Calvin.Alvarez@dep.state.fl.us	A-10 Airport Road Punta Gorda, FL 33982
Other Dredging and Restoration	Highlands	Punta Gorda Branch Office	Calvin Alvarez	Environmental Manager	941-575-5811	Calvin.Alvarez@dep.state.fl.us	A-10 Airport Road Punta Gorda, FL 33983
Other Dredging and Restoration	Glades	Punta Gorda Branch Office	Calvin Alvarez	Environmental Manager	941-575-5812	Calvin.Alvarez@dep.state.fl.us	A-10 Airport Road Punta Gorda, FL 33984
Other Dredging and Restoration	Lee	South Disrict Office	Lucy Blair	Environmental Administrator	239-332-6975	Lucy.Blair@dep.state.fl.us	P.O. Box 2549 Ft. Myers, FL 33902
Other Dredging and Restoration	Hendry	South Disrict Office	Lucy Blair	Environmental Administrator	239-332-6976	Lucy.Blair@dep.state.fl.us	P.O. Box 2549 Ft. Myers, FL 33903
Other Dredging and Restoration	Collier	South Disrict Office	Lucy Blair	Environmental Administrator	239-332-6977	Lucy.Blair@dep.state.fl.us	P.O. Box 2549 Ft. Myers, FL 33904
Other Dredging and Restoration	Monroe	Marathon Branch Office	Tania McMillan	Envirinmental Manager	305-289-2310	Tania.McMillan@dep.state.fl.us	2796 Overseas Hwy. Marathon, FL 33050
Other Dredging and Restoration	Okeechobee	Port St. Lucie Branch Office	Kim Hefty	Envir. Specialist III	772-398-2806	Kimberly.Hefty@dep.state.fl.us	1801 SE Hilmoor Dr. Suite C-204 Port St. Lucie, FL 34952
Other Dredging and Restoration	St. Lucie	Port St. Lucie Branch Office	Kim Hefty	Envir. Specialist III	772-398-2807	Kimberly.Hefty@dep.state.fl.us	1802 SE Hilmoor Dr. Suite C-204 Port St. Lucie, FL 34952
Other Dredging and Restoration	Martin	Port St. Lucie Branch Office	Kim Hefty	Envir. Specialist III	772-398-2808	Kimberly.Hefty@dep.state.fl.us	1803 SE Hilmoor Dr. Suite C-204 Port St. Lucie, FL 34952
Other Dredging and Restoration	Palm Beach	Southeast District	Vacant	Environmental Administrator	561-681-6600		400 N. Congress Ave. Suite 200 West Palm Beach, FL 33401
Other Dredging and Restoration	Broward	Southeast District	Vacant	Environmental Administrator	561-681-6601		401 N. Congress Ave. Suite 200 West Palm Beach, FL 33401
	Dade	Southeast District	Vacant	Environmental Administrator	561-681-6602		402 N. Congress Ave. Suite 200 West Palm Beach, FL 33401

Appendix B: Project Management Plan Format

U.S. Army Corps of Engineers

Project Management Plan/Program Management Plan (PMP/PgMP) Minimum Content

This reference defines the minimum requirements for Project/Program Management Plans (PMPs/PgMPs). The PMP/PgMP is required to provide the framework so that all team members can work together efficiently. The PMP/PgMP communicates critical project/program information to all interested parties. The PMP/PgMP serves as the planning, communications, and quality management tool for the project. It encompasses all aspects, phases, and resources for the lifecycle of a project. The Environmental Operating Principles (http://www.hq.usace.army.mil/cepa/envprinciples.htm) should be considered as a critical component in the planning and execution of the project. The document records endorsement by the PDT. The following items comprise the PMP/PgMP:

a. Scope, based on customer need (project definition, objective, identification of customer(s) and stakeholder(s), description of services to be provided, key products authority, location, unique customer requirements/concerns stored within P2 as notebook items or other features, etc.). Refer to Project Scope and Customer Requirements Definition – PROC2010.

b. Team Identification; refer to Team Establishment – PROC2020.

c. Critical Assumptions and Constraints. Critical assumptions are considered to be true at the time the PMP/PgMP is written/updated and if changed, could cause major impact to the project. Constraints are items that limit the PDT's options.

d. Work Breakdown Structure (WBS). Specifies the task and subtask necessary to fulfill the objectives of the project. Refer to Activity/Schedule Development – PROC2030

e. Funding (sources, available budget, customer requirements for requesting/receiving funds and reporting of expenditures, resource estimates). Refer to Resource Estimate Development – PROC2040

f. Schedule (schedule in Project Manager™, continuously maintained to show actual completion status and show how schedule will be progressed). Refer to Activity/Schedule Development – PROC2030 and Project Execution and Control – PROC3000.

g. Project Quality Control Plan and Objectives (customer expectations, applicable Quality Management Plans, criteria and regulations) Refer to Quality Management Plan – REF8008G.

h. Acquisition Strategy. Refer to Project Delivery Acquisition Strategy – PROC2050.

i. Risk Analysis. Refer to Risk Management Plan – REF8007G.

j. SOH hazard analysis and monitoring. Refer to Safety and Occupational Health Plan – REF8016G.

k. Change Management Plan – REF8009G (Schedule/cost risk analysis, thresholds, how cost growth and other changes to the plan will be approved, what changes require customer re-approval). Refer to Change Management – PROC3010.

l. Communications Strategy - how the team will communicate with the customer(s) and each other, customer's requirements for status reporting. Refer to Communications Plan – REF8006G.

m. Value Management. Refer to Value Management Plan - REF8023G

n. Closeout Plan. Refer to Activity/Project/Program Closeout – PROC4000

o. Approvals. Refer to PMP/PgMP Approval – PROC2070 . Page may include signatures of the PM and the customer(s) and may be electronic.

Additional information may be found at:
http://bp.usace.army.mil/Robo/BIN/Robo.dll?mgr=agm&tpc=%2Frobo%2Fprojects%2Fpmbp_manual%2Fpages%2Findex.html&wnd=PMBP_Manual%7CPMBP%20Manual&agt=wsm&ctxid=

Appendix C: General Conditions

GENERAL CONDITIONS

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

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

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

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

3 If, for any reason, the Corps does not comply with any condition or limitation specified herein, the Corps shall immediately provide the Department with a written report containing the following information:

a) a description of and cause of noncompliance;
b) the period of noncompliance, including dates and times;
c) impacts resulting or likely to result from the non-compliance;
d) steps being taken to correct the non-compliance; and
e) the steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

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

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

5 Nothing herein conveys to the Corps or creates in the Corps any property right, any interest in real property, any title to land or water, constitutes State recognition or acknowledgment

of title, or constitutes authority for the use of Florida's sovereign submerged lands seaward of the mean high-water line or an established erosion control line, unless herein provided, and the necessary title, lease, easement, or other form of consent authorizing the proposed use has been obtained from the State.

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

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

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

9. The Corps specifically agrees to allow Department personnel with proper identification, at reasonable times and in compliance with Corps specified safety standards access to the premises where the authorized activity is located or conducted for the purpose of ascertaining compliance with the terms of this document and with the rules of the Department and to have access to and copy any records that must be kept; to inspect the facility, equipment, practices, or operations regulated or required; and to sample or monitor any substances or parameters at any location reasonably necessary to assure compliance. Reasonable time may depend on the nature of the concern being investigated.

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

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

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

BREVARD County
BOARD OF COUNTY COMMISSIONERS

FLORIDA'S SPACE COAST

TAMARA J. RICARD, Clerk to the Board, 400 South Street • P.O. Box 999, Titusville, Florida 32781-0999

Telephone: (321) 637-2001
Fax: (321) 264-6972

August 29, 2008

M E M O R A N D U M

TO: Ernest Brown, Natural Resources Management Director, Attn: Mike McGarry

RE: Item VIII.A.3, Resolution for Brevard County Shore Protection Project: Mid Reach Plan, State Beach Management Long Range Budget Request and State Cost-Share Request

The Board of County Commissioners, in regular session on August 28, 2008, selected Option B, Local Option Plan (TDC 50-year funding obligation of $31.2 million), for the U.S. Army Corps of Engineers to pursue along the Mid Reach shoreline; adopted Resolution No. 08-187 supporting Brevard County Shore Protection Project and requesting State cost-share funding as a match for dedicated local funds. Enclosed are two certified copies of the Resolution.

Your continued cooperation is always appreciated.

Sincerely yours,

BOARD OF COUNTY COMMISSIONERS
SCOTT ELLIS, CLERK

Tamara Ricard

Tamara Ricard, Deputy Clerk

/te

Encls. (2)

cc: Contracts Administration
Finance
Budget

Meeting Date
August 19, 2008

AGENDA	
Section	New Business
Item No.	

AGENDA REPORT

BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS

SUBJECT: Brevard County Shore Protection Project: Mid Reach Plan, State Beach Management Long Range Budget Request and State Cost-Share Request

DEPT/OFFICE: Natural Resources Management Office

Requested Action:

Select a shore protection plan for the U.S. Army Corps of Engineers to pursue along the Mid Reach shoreline and approve a resolution supporting the Brevard County Shore Protection Project and requesting State cost-share funding as match for dedicated local funds. **All Local Match is derived from the TDC Dedicated Beach Improvement Fund**

Summary Explanation & Background:

The Mid Reach is a 7.78-mile section of critically eroded beach lying between Patrick Air Force Base and Indialantic that includes the Towns of Satellite Beach and Indian Harbour Beach. The Mid Reach was deleted from the Brevard County Federal Shore Protection Project in 1996 due to environmental concerns regarding rocky hard bottom habitat present in the surf zone. Since that time, Brevard County has been working with the U.S. Army Corps of Engineers (Corps) to develop a suitable shore protection plan for the Mid Reach.

On October 26, 2004, the Board executed an Agreement with the Corps to cost share a General Re-evaluation Report (GRR) for developing a federally authorized shore protection project for the Mid Reach. The GRR process is nearly complete. After evaluating over 100 different shore protection options for the Mid Reach, the Corps has identified an environmentally acceptable plan that yields the greatest federal benefits. This National Economic Development (NED) Plan maximizes the available federal cost share for the project. During the Corps' GRR process, County staff and consultants developed and evaluated shore protection alternatives with the desire to enhance local benefits beyond the NED plan. This Local Option Plan increases sand placement and shore protection benefits along the Mid Reach while still maintaining the required federal scope. These two possible shore protection options are described in Attachment A. **On August 4, 2008, the TDC Beach Improvement Committee voted unanimously in favor of recommending the Local Option.**

In order to complete the GRR, the Corps needs the Brevard County Board of County Commissioners to formally select either:

A. National Economic Development (NED) Plan **(TDC 50 year funding obligation $28.3 million)** or
B. The Local Option Plan. **(TDC 50 year funding obligation $31.2 million)**

As part of this agenda, staff also requests authorization to solicit State cost share for the non-federal costs of restoring Brevard's critically eroded beaches. This is accomplished each year by submitting a resolution and funding request to the Florida Department of Environmental Protection (FDEP) Office of Beaches and Coastal Systems. This request contains a 10-year Long Range Budget Plan (LRBP). Attachment B contains two draft LRBP's, one includes cost share for the NED Plan and a second is based on the Local Option Plan. It is requested the Board approve the cost share resolution (Attachment C) and submittal of the appropriate LRBP based on the Board's selection of either the NED Plan or Local Option Plan for shore protection along the Mid Reach.

Fiscal Impact: FY 07-08 No fiscal impact to the General Fund (GF) associated with this item.
FY 08-09 There is no GF impact. Long Range Budget Plan 08-09 expenses to the TDC are up to $4,205,310.

Staff Contacts: Ernest Brown (5-2439) or Mike McGarry (5-2696) Natural Resources Management Office, 633-2016.

Exhibits Attached:

Attachment A: Staff Report RE: U.S. Army Corps of Engineers Mid Reach Plan with option map
Attachment B: Staff report RE: State Long Range Budget Plan with LRBP option tables
Attachment C: Resolution supporting the Brevard County Shore Protection Project and requesting State cost-share funding as a match for the TDC's dedicated local funds.

Contract /Agreement (If attached): Reviewed by County Attorney	**Yes** ☐	**No** ☐	**pending**

County Manager's Office	Natural Resources Management Office
Peggy Busacca, County Manager	Ernest N. Brown, Director

BREVARD COUNTY
BOARD OF COUNTY COMMISSIONERS

STAFF REPORT

NATURAL RESOURCES MANAGEMENT OFFICE

SUBJECT: **US Army Corps of Engineers Mid Reach Plan**
DATE: **August 5, 2008**
AUTHOR: **Mike McGarry**

The US Army Corps of Engineers (Corps) is finalizing the Mid Reach General Reevaluation Report (GRR) to determine the best shore protection plan for the Mid Reach. For the purpose of evaluating the options, the Mid Reach was subdivided into 6 "reaches," so the optimal beach width could be determined for each reach based on the unique shore protection needs and submerged rock habitat in that reach. The six reaches are illustrated in the Corps' Figure 3.3 which is attached.

The GRR process has evaluated over 100 combinations of shore protection options combined across the 6 reaches and narrowed the search to two plans that offer different strengths. The Corps process focuses on identifying a National Economic Development (NED) Plan. The NED Plan is designed to maximize national economic benefit within constraints imposed by environmental and other regulations. Maximizing shore protection or recreational benefits is not a specific goal of the NED Plan. The highest NED Plan with not more than 3 acres of rock impact is the federally chosen plan. This plan is illustrated as a blue line on Figure 3.3 with project widths ranging from "dune only" in Reaches 4 and 6, to 30+ feet of beach widening in Reach 3.

In order to provide Brevard County with an option that provides a more equitable treatment of reaches while maximizing shore protection and recreational benefits, the Corps has considered a Local Option. In this plan the width of additional beach in Reach 3 has been reduced from 30' to 20' to allow construction of 10' of beach in Reach 4. Additional costs of this plan, if selected, would be the responsibility of Brevard County. To facilitate comparison of the two plans, the primary differences are highlighted in the table below and relative beach widths are sketched on Figure 3.3.

Comparison of NED Plan and Local Option Plan

	NED Plan	Local Option Plan
Initial Sand Volume	540,000 cy	588,000 cy
Total Project Length	7.78 miles	7.78 miles
Length of Widened Beach	5.36 miles	6.42 miles
Length of Dune Only	2.42 miles	1.36 miles
Rock Impact	2.9 acres	3.0 acres
Average Storm Protection	32 year return	35 year return
Total 50 Year Project Cost	$103.5 M	$108.4 M
Federal Cost Share	54%	51.55%
Local 50 Year Project Cost	$28.3 M	$31.2 M

On August 4, 2008 the Tourist Development Council (TDC) Beach Improvement Committee reviewed both plans and the relative benefits. The County and State will bear the extra cost of the local option which amounts to $2.9 million for the TDC over the 50 year project life. A 25 year budget forecast indicates the TDC Beach Improvement Fund can provide sufficient funding for either plan. The TDC Beach Improvement Committee voted unanimously to recommend the Local Option Plan. The Corps has requested that the Brevard County Board of County Commissioners decide whether to finalize the GRR based on the NED Plan or the Local Option Plan.

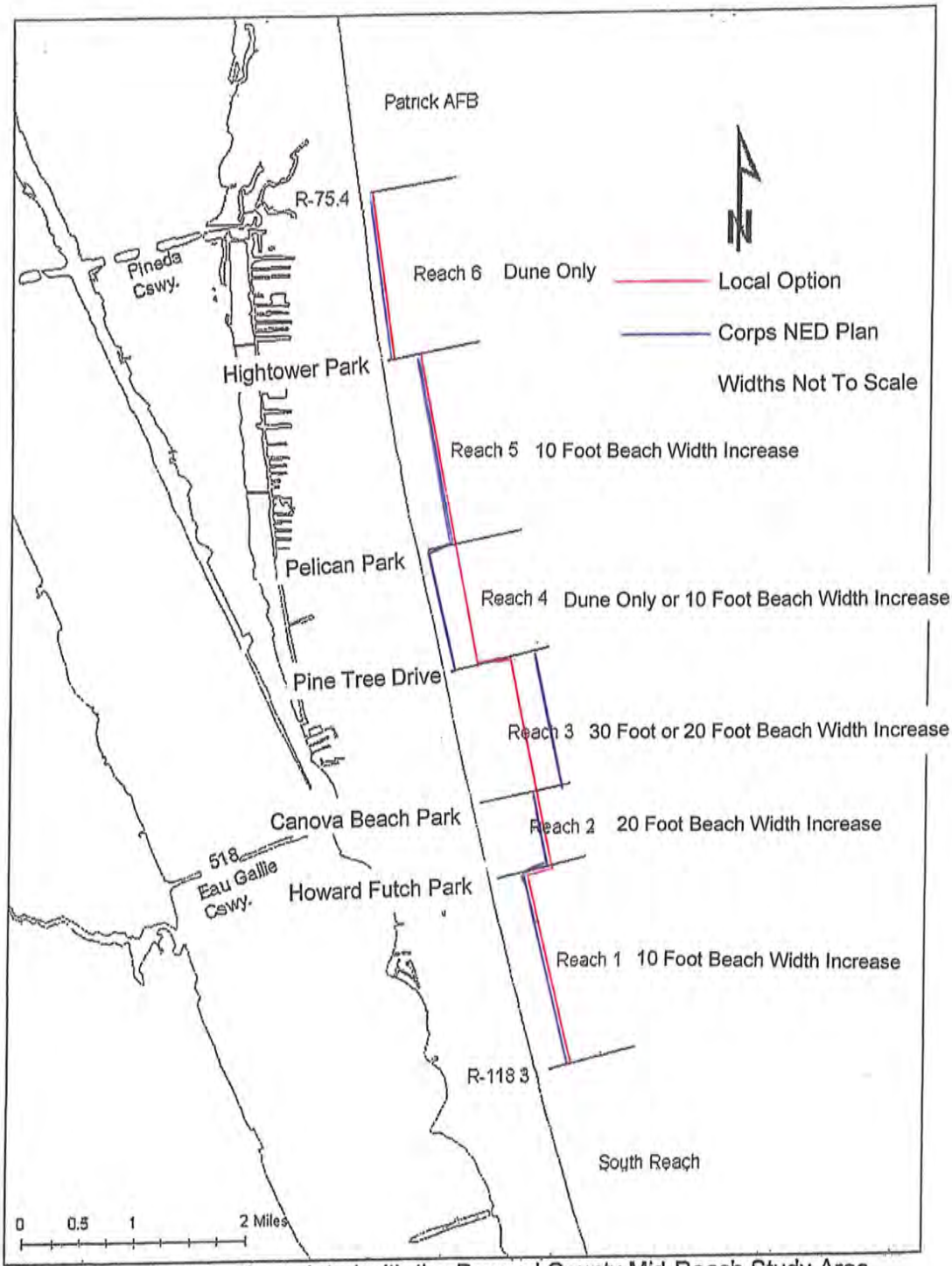

Figure 3-3. Reaches Associated with the Brevard County Mid-Reach Study Area

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

Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
(727) 824-5317; FAX (727) 824-5300
http://sero.nmfs.noaa.gov/

January 22, 2010 F/SER4:GG/pw

(Sent via electronic mail)

Ms. Candida Bronson
Planning Division, Environmental Branch
Jacksonville District, Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Attention: Paul Stodola

Dear Ms. Bronson:

NOAA's National Marine Fisheries Service (NMFS) reviewed the Draft Integrated General Reevaluation Report (GRR) and Draft Supplemental Environmental Impact Statement (SEIS) dated October 2009 for the Brevard County, Florida, Hurricane and Storm Damage Reduction Project, Mid-Reach Segment. The Mid-Reach encompasses approximately 7.6 miles between Patrick Air Force Base and Indiatlantic (Florida Department of Environmental Protection [FDEP] Monuments R-75.4 to R-118.3). For study purposes, the Mid-Reach shoreline is divided into six segments or sub-reaches, Reaches 1 to 6 (from south to north). The Draft GRR and Draft SEIS support the local sponsor's preferred plan (LPP), which would extend the mean high water line up to 20 feet plus advanced nourishment to maintain the design fill volume. Specifically, the extension would be 10 feet within Reaches 1, 4, and 5; 20 feet within Reaches 2 and 3; and only dune construction within Reach 6. Based on results from a survey conducted during 2008, the approximate volume of sand needed to construct the project is 409,000 cubic yards plus an advanced nourishment fill of 164,000 cubic yards for a total fill of 573,000 cubic yards. Subsequent nourishment volumes with placement occurring approximately every 3 years is estimated to be 164,000 cubic yards. The source of the sand would be the Poseidon Dredged Material Management Area (DMMA) at Port Canaveral. Compatible material would be dredged from Canaveral Shoals and placed into the Poseidon DMMA every 6 years, and then hauled by dump truck to the Mid-Reach Segment for placement at 3-year intervals. Placement of the sand is anticipated to impact approximately 3.0 acres of worm rock reef and hardbottom within intertidal and nearshore areas; 1.4 acres of the proposed 3.0 acres of impact is expected to become re-exposed between nourishment intervals. As compensatory mitigation, the project would include construction of 4.8 acres of a low-relief, artificial reef designed to mimic the impacted worm rock reef and hardbottom habitats to the extent that current science and engineering allow. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the following comments and recommendations are provided pursuant to authorities of the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

Consultation History
By letter dated, May 3, 2005, NMFS commented on the scoping letter for the Feasibility Phase of the Brevard County Mid-Reach Shoreline Protection Project. In that letter, NMFS discussed the high value to fishery species of the worm rock reefs within the proposed project area and the importance of thoroughly evaluating in the EFH assessment the impacts to this habitat.

By letter dated October 7, 2005, NMFS provided the District with additional comments in response to a public scoping meeting held on September 8, 2005. In that letter NMFS requested a detailed analysis of potential direct, indirect, and cumulative impacts of the proposed action on EFH and federally managed fishery resources by life history stage; an evaluation of potential on-site and off-site compensatory mitigation options; a description of hardbottom areas in the vicinity of the project described within an ecosystem context; and information on the level of recruitment by sabellariid larvae in the Mid-Reach area and the importance of the Mid-Reach's mature worm rock colonies as a source of larvae for maintaining sabellariid reefs along Florida's east coast.

On December 16, 2005, NMFS provided the Jacksonville District with comments on a permit application by the Brevard County Board of County Commissioners (SAJ-2005-8688), which at that time was requesting authorization for a 10-year authorization to nourish the Mid-Reach Segment discussed in the Draft GRR and Draft SEIS. Our comments re-affirmed the high value to fishery species of the worm rock reefs within the proposed project area. We also requested a pilot study to determine the adequacy of the proposed mitigation reef and that any nourishment be restricted to the southern portion of the project area (R-118 to R-99). This permit application was subsequently withdrawn in favor of pursuing an approach for the Mid-Reach Segment that relied solely upon the federal civil works project now proposed in the Draft GRR and Draft SEIS.

During 2006, 2007, and 2008, NMFS attended several information meetings, including:

- February 9, 2006, meeting sponsored by the Jacksonville District and FDEP to discuss approaches to mitigating impacts to worm rock reefs and nearshore hardbottom habitat.
- February 15, 2006, an additional feasibility scoping meeting at the Jacksonville District.
- May 11, 2007, an interagency meeting to discuss evaluations of mitigation alternatives; these evaluations included use of Habitat Equivalency Analysis (HEA) and Florida's Uniform Mitigation Assessment Method (UMAM).
- May 22-23, 2007, meeting of the Hard Bottom Technical Advisory Committee.
- November 13, 2007, Alternative Formulation Briefing at the Jacksonville District.
- April 2008, NMFS provided the U.S. Fish and Wildlife Service with informal comments on the Fish and Wildlife Coordination Act Report.

General Comments
Sabellariid Reef Connectivity: The Draft SEIS provides a detailed description of EFH and federally managed fishery resources in the project vicinity, a description of hardbottom areas in the vicinity of the project, and an analysis of alternatives considered to avoid and minimize impacts. However, the Draft SEIS provides no information on the importance of the Mid-Reach's mature worm rock colonies as a source of larvae for maintaining sabellariid worm rock reefs outside the project area. This information is needed to determine the indirect impacts that could result from this project and the cumulative impacts that result from the various activities along Florida's east coast that impact sabellariid reefs. NMFS recommends the Final SEIS include this discussion.

Sequential Mitigation
Avoidance and Minimization: Planning of the Brevard Mid-Reach project has focused on minimizing the impacts to sabellariid worm rock reefs and on compensating for the unavoidable impacts to this habitat.

Design features aimed at minimizing impacts include the relatively small amounts of fill that would be placed per nourishment event and using trucks to bring dry sand to the beach, rather than using hydraulic pumps that would bring sand to the beach in a slurry. The potential minimization of impacts that would result from these design features may be adequate, however before concluding this is the case, NMFS requests additional examination of the plans for Reaches 3 and 4.

While the overall impacts to hardbottom habitat from the NED plan and the LPP are similar, differences between these alternatives for Reach 3 and Reach 4 may show additional opportunities to avoid or minimize impacts to worm rock reef and other hardbottom habitat. Both plans would directly impact approximately 3.0 acres of nearshore hardbottom habitat. The principal difference between the NED plan and the LPP is the extent of the indirect impacts to nearshore hardbottom. This difference in the projected indirect impacts results from the NED plan's design for Reach 3 having a 30-foot-wide fill and Reach 4 having only dune construction, whereas the LPP would result in a 20-foot-wide fill along Reach 3 and 10-foot-wide fill along Reach 4. NMFS recommends the Final GRR and Final SEIS evaluate the feasibility of a hybrid design, selecting the LPP's design for Reach 3 and the NED plan's design for Reach 4. Evaluation of the hybrid design should specifically address whether it would meet the project's objective and quantify the differences in direct and indirect impacts to worm rock reef and hardbottom between the hybrid, NED plan, and LPP designs.

Compensatory Mitigation: There is no well established method of compensatory mitigation for impacts to sabellariid worm rock reefs. The Draft SEIS discusses three types of artificial reef structures and concludes that, due to construction and cost constraints, mitigation in the form of an artificial reef composed of articulated concrete mats embedded with coquina rock may be successful. The mitigation reef is proposed to be placed at depths of 14 to 16 feet mean lower low water (MLLW), about 1000 feet offshore from the project area. Articulated concrete mats have been successfully deployed as seabed foundation structures on sandy and silty substrates in similar conditions. However, their direct use as a reef structure (with coquina-rock surface) is new.

A pilot study was done to investigate the potential success of this approach to mitigating impacts to sabellariid worm rock reefs. Brevard County developed and installed test platforms to study the recruitment of the sabellariid worm *Phragmatopoma lapidosa* to man-made structures. The study, referred to as "Propagule and Larval Measurement (PALM)" study, deployed three 24.7-cubic-foot boxes for periods of 45 days and 300 days, respectively, on May 24, 2006, and July 8, 2006. These boxes were equipped with 60 limestone plates at various elevations above the seabed. The plates were removed after each deployment to examine the recruitment (abundance) and species of worm settlement and algae growth. The PALM study found recruitment of *P. lapidosa* on the structures deployed in 15 feet of water. The measured coverage by sabellariid worms on the plates was about 34% and 4%, on average, during the two sampling periods, respectively. While these results demonstrate recruitment by larvae, survivorship of these recruits is not clear. In a recent report prepared for FDEP entitled *Ecological Functions of Nearshore Habitats in East Florida, a Literature Synthesis*, Lindeman, McCarthy, Holloway-Adkins, and Synder (2009), indicate that survivorship of *P. lapidosa* recruits at these depths would be low due to low water temperatures and high rates of sedimentation. This report also concludes the ecological functions of nearshore hardbottom functions are not likely to be replaced on mitigation reefs in depths greater than 4 meters.

Placing the mitigation reefs into as shallow water as possible seems the most effective way to address these shortcomings. Salvage companies operating in the same area often safely maneuver barges to within 200 feet of nearshore hardbottom without significant adverse impacts to this habitat. It seems a similar approach could be used to transport and deploy the articulated concrete mats. Further, articulated mats placed closer to existing hardbottom areas might pose less of a risk to boaters and recreational users since they are already cautious in this area because of the natural hardbottom. Information within the

Draft GRR and Draft SEIS indicates the mats will be stable, so NMFS believes the potential gains from deploying the mats in closer proximity to the areas of impacts are worth the risks from the mats coming free from their anchors and abrading natural hardbottom habitat.

Monitoring

The primary objectives of the biological elements of the monitoring plan described in the Draft SEIS are to assess indirect impacts to the existing reef in the Mid-Reach project area and to evaluate the degree to which the mitigation reef replicates the ecological functions of the existing nearshore reef. NMFS is satisfied that the monitoring proposed for the fill area are adequate for determining whether the actual impacts from beach nourishment are consistent with the predicted extents. However, NMFS has concerns about the proposed monitoring of the performance of the mitigation reef.

The Draft SEIS estimates that 75% of the macroalgae, invertebrate, and fish species present at the impact site will ultimately reside on the mitigation reef. Although the nearshore hardbottom is known to be important refugee habitat earlier life-stages of federally managed species, no monitoring for these earlier life-stages is planned. In short, an important ecological function of the nearshore hardbottom habitat is not being evaluated directly and indirect measures are expected to show less than full replacement.

The proposed success criteria for the mitigation reef would be based upon the extent of burial/exposure at the nearshore and mitigation reefs relative to historical measures and model predictions. NMFS would recommends that the success criteria for the mitigation reef also include survival rates for the epibiota and sustained utilization by fishery species and their prey. NMFS would be happy to work with the District to develop protocols for these assessments.

As stated in the Draft SEIS (Appendix K, Sub-appendix J), the results of the monitoring should be used to assess whether the amount of mitigation constructed was appropriate for offsetting the impacts that actually occur (as opposed to predicted to occur) and that gaps should be addressed by additional mitigation. NMFS recommends these contingency plans and their triggers be developed prior to project construction instead of waiting until the year-5 summary review, as proposed in the Draft SEIS. Having a clear set of acceptable versus unacceptable trajectories for the mitigation reefs will allow mid-course corrections in a timelier and cost efficient manner, and this feedback is essential to execution of an adaptive management program.

Lastly, NMFS is concerned that monitoring of the borrow areas does not include examination of the forage base. While recovery of infaunal communities often occurs, it does not always occur, especially when dredge cuts are deep. An appropriate monitoring program would guide future management options to ensure the beach is maintained while minimizing impacts to fishery resources. NMFS would be happy to work with the District to develop protocols for this monitoring.

Recommendations

NMFS recommends the Final SEIS include discussion of:

- The importance of the Mid-Reach's mature worm rock colonies as a source of larvae for maintaining sabellariid worm rock reefs outside the project area.
- Evaluation of a hybrid of the NED plan and LPP for Reaches 3 and 4. This evaluation should specifically address whether it would meet the project's objective and quantify the differences in direct and indirect impacts to worm rock reef and hardbottom between the hybrid, NED plan, and LPP designs. If this evaluation shows the hybrid design would meet the project purpose and impact less hardbottom habitat, it should be adopted as the recommended plan.

NMFS recommends the project be amended to include:

- Construction and monitoring of the mitigation reefs for at least one year before beginning the beach fill.
- Placement of the mitigation reefs closer to shore and in closer proximity to existing hardbottom.
- A monitoring program that examines utilization of the mitigating reefs by fishery species and their prey and examination of the recovery of the infauna communities within the borrow areas. Results from both monitoring efforts should be incorporated into an adaptive management program aimed at meeting the project's purpose while minimizing impacts to fishery resources.

Thank you for the opportunity to provide comments early in the planning process for this project. Please direct related questions or comments to the attention of Mr. George Getsinger, at our Marineland Office. He may be reached at 9741 Ocean Shore Drive, St. Augustine, Florida 32080, or by telephone at (904) 461-8674.

Sincerely,

/ for

Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

cc:

CESAJ, Candida.Bronson@usace.army.mil, Paul.E.Stodola@usace.army.mil
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FWS, Jay_Harrington@fws.gov
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

11/30/2009

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

Subject: **EPA's Review Comments on the Draft Integrated General Reevaluation Report and Supplemental Impact Statement (DSEIS) for the Hurricane and Storm Damage Reduction Project (Mid-Reach Segment), Brevard County**

Dear Mr. Summa:

Pursuant to Section 309 of the Clean Air Act (CAA) and Section 102(2)(C) of the National Environmental Policy Act (NEPA), the U.S. Environmental Protection Agency (EPA) Region 4 has reviewed the U. S. Army Corps of Engineers' (Corps) Draft Integrated General Reevaluation Report and Supplemental Impact Statement (DSEIS) for the Hurricane and Storm Damage Reduction Project (Mid-Reach Segment), Brevard County, Florida. Under Section 309 of the CAA, EPA is responsible for reviewing and commenting on major federal actions significantly affecting the quality of the human environment.

EPA notes that this DSEIS addresses a hurricane and storm damage reduction project limited to the 7.8 mile "Mid-Reach" coastal segment of Brevard County, Florida. It is our understanding that the goal of this Brevard County Mid-Reach project is to reduce the erosion-induced damages to shorefront structures along the Mid-Reach study area, and that the Corps "supports the non-Federal sponsor's locally preferred plan and recommends the plan as the Tentatively Recommended Plan." This plan consists of a beach fill varying from a 0-ft to 20-ft extension of the mean high water line, with the addition of "advanced nourishment" to maintain the design fill volume. The Corps reports that the approximate volume of sand to be placed is 409,000 cubic yards, plus another 164,000 cubic yards for advanced nourishment, giving a total fill requirement of 573,000 cubic yards. The Corps also reports that placement of the sand will impact about 3.0 acres of hardbottom areas by direct and indirect cover, of which 1.4 acres is expected to "include some temporal variation as the advanced nourishment erodes." Because the mitigation quantity is based upon a ratio of 1.6 mitigation acres for every acre of hardbottom impacted, mitigation of 4.8 acres is required.

In response to your October 30, 2009 letter, Region 4 appreciates the offer to provide comments on the General Reevaluation Report and DSEIS, and we offer the following:

- EPA previously reviewed Feasibility Report with Final Environmental Impact Statement (FEIS) for Brevard County (1996), and we noted that the Mid-Reach segment was removed from the recommended plan due to environmental concerns.
- EPA concurs with the Corps' subsequent inclusion of the Mid-Reach within the overall Brevard County Hurricane and Storm Damage Project. EPA also concurs with the Corps' decision to assess impacts from all proposed construction and dredging, as well as addressing potential effects at borrow areas, offshore areas, and the ocean bottom. EPA also supports the Corps' efforts to assess impacts from future beach maintenance, as well as requiring pre- and post- environmental monitoring efforts.
- In general, the DSEIS adequately addresses all issues associated with the Brevard County Mid-Reach project, which has been proposed for construction to "reduce the damages caused by erosion and coastal storms to shorefront structures along the Mid-Reach study area." Project objectives have appropriately focused on "reducing storm damages to coastal structures, maintaining the recreational beach, maintaining opportunities for recreational use of the nearshore areas, and maintaining environmental quality."
- EPA recommends that if the comprehensive post-construction monitoring indicates any changes occurring to the beaches and the near-shore environment (e.g., unexpected erosion is detected), the project should be halted for a re-evaluation of the long term shoreline maintenance plan conducted. EPA recommends that any loss of material during construction should be thoroughly investigated, and appropriate remedies enacted.
- EPA strongly recommends the use of adaptive management measures to address potential problems with fish populations and turtle/shore bird nesting. If necessary, the maintenance plan should be modified.
- The EIS adequately addressed a number of alternatives, including both structural and non-structural alternatives. These alternatives adequately addressed beach nourishment while seeking to minimize impact to the nearshore hardbottom.
- EPA recommends that the Corps' future development efforts should consider potential sea level rise.
- EPA notes that the locally preferred plan consists of a 10-foot extension of the mean high water line plus advanced nourishment to maintain that design fill volume in Reach 1 (R-119 to R-109), a 20-foot extension of the mean high water line plus advanced nourishment to maintain that design fill volume in Reaches 2 and 3 (R-109 to R-99), a 10-foot extension of the mean high water line plus advanced nourishment to maintain that design fill volume in Reaches 4 and 5 (R-99 to R-83), and a dune fill with no

added advanced nourishment in Reach 6 (R-83 to R-75.4).

- EPA recommends that if project construction is delayed for more than a year, an updated survey (to calculate sand volumes) should be initiated.
- EPA notes that the Corps plans to rehabilitate the Poseidon dredged material management area (DMMA) at Port Canaveral, with dredged material from Canaveral Shoals then placed into the Poseidon DMMA every 6 years. The Corps proposes to haul this sand by dump truck to the Mid-Reach for placement on the beach at approximately 3 year intervals. As the renourishment volume is approximately 164,000 cubic yards, EPA notes that this equates to about 16,400 fully loaded trips with a 10-yard dump truck or 8,200 fully loaded trips with a 20-ard truck. The highway haul route for this major sand hauling project should carefully be considered, with particular attention to any load rated bridges on the route and other safety issues. Coordination with local highway officials is needed to ensure that the hauling is accomplished in a safe manner with minimal effects to road and bridge structures.
- EPA notes that the recommended plan appropriately offers erosion protection ranging from a 5-year storm level to a 75-year storm, varying along the length of the Mid-Reach.
- EPA supports the Corps' goal "to avoid, minimize and mitigate environmental impacts to the nearshore hardbottom." EPA notes that the project impacts 3.0 acres of hardbottom out of the total of 31.3 acres of nearshore rock in the Mid-Reach study area. The mitigation quantity has been calculated from the ratio of 1.6 mitigation acres required for every acre of natural rock impacted, resulting in a mitigation of 4.8 acres. EPA does have some environmental concerns regarding the long-term consequences of inundating this hard-bottom habitat, especially since this will not be the last beach nourishment project in the Mid-Reach. Therefore, EPA has identified cumulative impacts as being an issue of concern.
- EPA believes that these hardbottom communities are the premier communities in the local marine environment, and the Final SEIS should therefore document all activities that will prevent detrimental impacts to these communities. The final mitigation decision and final monitoring plans should demonstrate, therefore, that the project will be conducted in an ecologically sustainable manner.
- The Corps' documents appropriately discuss and address project economics, including cost sharing (e.g., the overall Federal participation in cost for the project is reported to be 54% of the NED plan, with the remainder to be non-Federal). EPA notes that the some of the structural valuations used by the Corps (Table 2-15) may no longer be valid based upon recent significant decreases (since 2008) in home prices in the local real estate market, and we recommend that the Corps review these numbers for accuracy before inclusion in the Final SEIS.
- EPA concurs with the Corps' decision to select the project alternative that is the most "economically feasible, environmentally acceptable, and

soundly engineered" out of the range of alternatives considered. EPA requests the Corps' continued coordination with our Agency to resolve any issues that may arise after the Final SEIS is issued.

In summary, EPA does have some environmental concerns regarding the long-term consequences of inundating a hard-bottom habitat, especially since this will not be the last beach nourishment project in the Mid-Reach. EPA requests that the Final SEIS include detailed information on both the final mitigation and final monitoring plans. We therefore rate this Draft SEIS as EC2 (Environmental Concerns – additional information requested). Please include us in any notifications of interagency meetings. Thank you, again, for the opportunity to comment on these documents. If you wish to discuss EPA's comments, please contact me at 404/562-9611 (mueller.heinz@epa.gov) or Paul Gagliano, P.E., of my staff at 404/562-9373 (gagliano.paul@epa.gov)

Sincerely,

Heinz J. Mueller, Chief
NEPA Program Office
Office of Policy and Management

Florida Department of Environmental Protection

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

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

December 18, 2009

Mr. Eric P. Summa, Chief
Environmental Branch, Planning Division
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

RE: Department of the Army, Jacksonville District Corps of Engineers – Draft Integrated General Reevaluation Report and Supplemental Environmental Impact Statement (GRR/SEIS), Brevard County Hurricane and Storm Damage Reduction Project, Mid-Reach Segment – Brevard County, Florida.
SAI # FL200911025003C

Dear Mr. Summa:

The Florida State Clearinghouse has coordinated a review of the Draft GRR/SEIS under the following authorities: Presidential Executive Order 12372; Section 403.061(40), *Florida Statutes*; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended.

Based on the information contained in the Draft GRR/SEIS and enclosed state agency comments, the state has determined that, at this stage, the proposed activity is consistent with the Florida Coastal Management Program (FCMP). The state's continued concurrence will be based on the activity's compliance with FCMP authorities, including federal and state monitoring of the activity to ensure its continued conformance, and the adequate resolution of issues identified during this and subsequent regulatory reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting process.

Thank you for the opportunity to review the draft document. Should you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2170.

Yours sincerely,

Sally B. Mann

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lm
Enclosures

Project Information	
Project:	FL200911025003C
Comments Due:	12/07/2009
Letter Due:	12/16/2009
Description:	DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT CORPS OF ENGINEERS - DRAFT INTEGRATED GENERAL REEVALUATION REPORT AND SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT, BREVARD COUNTY HURRICANE AND STORM DAMAGE REDUCTION PROJECT, MID-REACH SEGMENT - BREVARD COUNTY, FLORIDA.
Keywords:	ACOE - MID-REACH SEGMENT BREVARD CO. HURRICANE/STORM DAMAGE REDUCTION PROJECT
CFDA #:	12.101

Agency Comments:

E. CENTRAL FL RPC - EAST CENTRAL FLORIDA REGIONAL PLANNING COUNCIL

The East Central Florida Regional Planning Council has received the Brevard County Integrated General Reevaluation Report and Supplemental Environmental Impact Statement. The document has been reviewed in accordance with the functions of the regional clearinghouse, which are designated by the Executive Order of the Governor, pursuant to Federal Executive Order 12372, Intergovernmental Review of Federal Programs. The Council staff has not identified any significant or adverse effects to regional resources or facilities, nor have any extra-jurisdictional impacts been identified that would adversely affect neighboring jurisdictions. The proposed project is found to be consistent with the goals, objectives, and policies of the East Central Florida Regional Planning Council. Should there be any questions concerning this review, please contact Mr. Matt Boerger at (407) 262-7772 or email mboerger@ecfrpc.org.

FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

NO COMMENT BY ROBBIN TRINDELL ON 11/6/09.

STATE - FLORIDA DEPARTMENT OF STATE

No Comment/Consistent

ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

The DEP's Bureau of Beaches and Coastal Systems is currently processing a state Joint Coastal Permit/Water Quality Certification for the proposed project and is working with the applicant on mitigation for near-shore hardbottom habitat.

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

The District has no comments on the Draft Integrated General Reevaluation Report and Environmental Impact Statement.

For more information or to submit comments, please contact the Clearinghouse Office at:

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

Visit the Clearinghouse Home Page to query other projects.

COUNTY: BREVARD
Sch -

DATE: 11/2/2009
COMMENTS DUE DATE: 12/7/2009
CLEARANCE DUE DATE: 12/16/2009
SAI#: FL200911025003C
REFER TO: FL200504050677C

MESSAGE: 2009 – 06693

STATE AGENCIES	WATER MNGMNT. DISTRICTS	OPB POLICY UNIT	RPCS & LOC GOVS
ENVIRONMENTAL PROTECTION	ST. JOHNS RIVER WMD		
FISH and WILDLIFE COMMISSION			
X STATE			

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

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

Project Description:

DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT CORPS OF ENGINEERS - DRAFT INTEGRATED GENERAL REEVALUATION REPORT AND SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT, BREVARD COUNTY HURRICANE AND STORM DAMAGE REDUCTION PROJECT, MID-REACH SEGMENT - BREVARD COUNTY, FLORIDA.

To: Florida State Clearinghouse

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

EO. 12372/NEPA

- ☑ No Comment
- ☐ Comment Attached
- ☐ Not Applicable

Federal Consistency

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

From:

Division/Bureau: Division of Historic Resources

Reviewer: Michael Hart

Date: 12/01/09

Laura A. Kammerer
Deputy SHPO
12.02.09

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United States Department of the Interior

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OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE
Richard B. Russell Federal Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

9043.1
ER 09/1175

December 22, 2009

Ms. Candida Bronson
U.S. Army Corps of Engineers
Planning Division
P.O. Box 4970
Jacksonville, FL 32232

Dear Ms. Bronson:

The Department of the Interior has reviewed the Draft Environmental Impact Statement for the Hurricane and Storm Damage Reduction Project (Mid-Reach Segment), Brevard County, Florida. We have no comments on this document.

I can be reached at 404-331-4524 or by email at gregory_hogue@ios.doi.gov if you should have any questions.

Sincerely,

Gregory Hogue
Regional Environmental Officer

cc:
FWS, R4
USGS, Reston
OEPC, Washington, DC

Stodola, Paul E SAJ

From: Wikel, Geoffrey L [Geoffrey.Wikel@mms.gov]
Sent: Wednesday, March 10, 2010 10:53 PM
To: Stodola, Paul E SAJ
Cc: Wikel, Geoffrey L; Finnegan, Colleen R.
Subject: Comments on Brevard County Mid-Reach Project

The Minerals Management Service (MMS) appreciates the opportunity to review and provide comments on the U.S. Army Corps of Engineers' Draft Integrated General Reevaluation Report / Supplemental Environmental Impact Statement (IGRR/EIS) prepared in support of constructing the Mid-Reach Segment of the Brevard County, Florida Hurricane and Storm Damage Reduction Project.

The draft IGGR/EIS describes the Corps' revised proposal to undertake a beach fill program along 7.8 miles of sensitive shoreline in Brevard County, Florida, immediately south of Patrick Air Force Base. The draft IGGR/EIS identifies two borrow areas on the Outer Continental Shelf
(OCS) that could be used to obtain sand for the proposed project:
Canaveral Shoals II and the Canaveral Ocean Dredged Material Disposal Site. Since the MMS has jurisdiction over borrow areas located on the OCS, including ODMDSs on the OCS, we recommend that the Corps request the MMS to become a cooperating agency for the environmental review of the proposed project. The MMS maintains that its National Environmental Policy Act obligations require the bureau to consider the potential impacts of reasonably foreseeable actions, include transport, unloading, placement, and truck-haul activities that may occur following dredging operations. As a cooperating agency, the MMS may then adopt and use the Final IGGR/EIS to facilitate future leasing decisions.

In the spirit of streamlining environmental review requirements and future requests to access OCS sand resources, the MMS further requests that the Corps assume lead agency responsibility for compliance with other major Federal environmental requirements, including consultations and coordination required by the Endangered Species Act Section 7, Magnuson-Stevens Fishery Conservation and Management Act Section 305, Coastal Zone Management Act 307, and National Historic Preservation Act Section 106. If the Corps decides to assume the role of lead agency, the Corps should inform the respective Federal or State resource agencies of the involvement of the MMS in the proposed action, even if the respective consultation or coordination is already complete.

If the Corps decides to pursue these recommendations, the MMS and Corps should memorialize their relationship in writing. If the Corps decides not to pursue these recommendations, it is likely that the project sponsors will experience unnecessary processing delays when a formal request is submitted to use OCS sand resources.

Following an expedited review of the draft document, the MMS recommends that the Corps consider the following:

1. The potential impacts to air quality were dismissed during alternative and plan formulation. The MMS believes the potential for air
quality impacts related to truck loading, hauling, and dumping,
including those associated with fugitive dust, should be evaluated in the IGGR/EIS.

2. The draft IGGR/EIS mischaracterizes the non-Federal sponsor's lease status. Brevard County does not have current approval for the use
of Canaveral Shoals II for the proposed action. In contrast, both
federal and non-federal sponsors will be required to enter into a new

negotiated agreement with the MMS for use of either proposed OCS borrow area.

3. The MMS recommends that the Corps include a robust discussion of the potential impacts to prehistoric resources in proposed borrow areas and placement site, either providing new information or incorporating existing analyses by reference.

Thank you again for the opportunity to provide comments. The MMS reserves the right to make additional comments on the Final IGGR/EIS. If you have any questions, please feel free to contact Geoffrey Wikel at Geoffrey.Wikel@mms.gov or (703)787-1283.

United States Department of the Interior
U. S. FISH AND WILDLIFE SERVICE
7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FLORIDA 32256-7517

IN REPLY REFER TO:

FWS Log Number: 41910-2008-F-0547

April 22, 2009

Colonel Paul L. Grosskruger, District Engineer
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Colonel Grosskruger:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion (BO) based on our review of the proposed Mid Reach beach nourishment project located in Brevard County, Florida, and its effects on the loggerhead (*Caretta caretta*), green (*Chelonia mydas),* leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*), and Kemp's ridley (*Lepidochelys kempii*) sea turtles in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Your October 6, 2008, request for formal consultation was received on October 10, 2008.

This BO is for sand placement along the Brevard County Mid Reach area. Information is provided in the October 10, 2008 coordination letter, Florida Mid Reach Shore Protection Project Revision A (11/10/05), Post-construction Monitoring of the Canaveral Shoals II Offshore Borrow Area, telephone conversations, and other sources of information. A complete administrative record of this consultation is on file at Jacksonville Field Office.

The Corps determined that this project may affect the loggerhead, green, leatherback, and hawksbill sea turtles. In addition, the Corps made a determination that the project may affect but was not likely to adversely affect the Eastern indigo snakes (*Drymarchon corais couperi*), the West Indian manatee (*Trichechus manatus*), the southeastern beach mouse (*Peromyscus polionotus nineiventris*) and the piping plover (*Charadrius milodus*). The Service concurred with these determinations.

Eastern indigo snake

Eastern indigo snakes may occupy a broad range of habitats from scrub and sandhill communities, to wet prairies and swamps, near the Poseidon dredged material management area (DMMA) where fill material will be obtained for the project. The eastern indigo snake is most strongly associated with high, dry, well-drained sandy soils, and closely parallels habitat preferred by the gopher tortoise (*Gopherus polyphemus*), a state of Florida listed species. The Service recommends that the Corps implement the Service's Standard Protection Measures for the Eastern Indigo snake during the construction phase of the project. Those measures can be found at the Service's Jacksonville Ecological Service Field Office website at http://northflorida.fws.gov/IndigoSnakes/east-indigo-snake-measures-071299.htm. With inclusion of these conditions, the project may affect, but is not likely to adversely affect the Eastern indigo snake.

Florida manatee

The Corps also determined that the proposed project may affect but is not likely to adversely affect the Florida manatee. The Service has reviewed the Biological Assessment and concurs that, if the Standard Manatee Construction Conditions are made a condition of the permit and implemented, then these activities will not result in take of the Florida manatee. We also conclude that these activities will not adversely modify its critical habitat. That finding will fulfill section 7 requirements of the Act. In addition, because no incidental take of manatees is anticipated, no such authorization under the Marine Mammal Protection Act (MMPA) would be needed.

Southeastern beach mouse

The Southeastern beach mouse is found at Cape Canaveral Air Force Station. The Poseidon DMMA upland stockpile site is located along the north bank of the harbor and substantially separated from the beach and dunes. The Corps also determined that the proposed project may affect but is not likely to adversely affect the southeastern beach mouse. The Service concurs with this determination provided that no less than two weeks prior to the excavation of the existing upland stockpile a beach mouse habitat assessment must be conducted within the area of impact. The presence of any mouse burrows and tracks within the impact area must be recorded and mapped. The Corps must contact the Service with this information. If there are no beach mouse tracks and burrows at the Poseidon DMMA upland stockpile site, the Service concurs that the project may affect, but is not likely to adversely affect the southeastern beach mouse. If tracks and borrows are presents at the Poseidon DMMA upland stockpile site, the Corps will reinitiate consultation.

Piping plover

The Corps also determined that the proposed project may affect but is not likely to adversely affect the piping plover. Optimal habitat consists of washover passes, inlets, lagoons, and mud and sand flats. The Corps provided information that optimal piping habitat was not found within the project area. The Service concurs that the project may affect, but is not likely to adversely affect the non-breeding piping plover.

Consultation History

The Mid Reach shoreline was deleted from the originally proposed federal project limits in 1996 because of environmental concerns related to the burial of the existing nearshore rock outcrops by conventional beach nourishment. The Service determined that in order to further consider beach nourishment alternatives along the Mid-Reach, it would be necessary to (1) more definitively map the rock resource, (2) demonstrate the severity of the beach erosion problem relative to the local abundance of the rock, (3) evaluate alternative solutions and their potential environmental impacts, and (4) present a specific plan or proposal for comment.

On April 1, 2005, the Corps issued a scoping letter to all appropriate stakeholders including the Service. On August 23, 2005, the Service agreed to review and coordinate the Fish and Wildlife Coordination Act Report (FWCAR). On September 8, 2005, the Corps and the local sponsor held a public scoping meeting.

On December 8, a meeting was held with representatives of the Corps, the Florida Department of Protection (FDEP), National Marine Fisheries Service (NMFS), Florida Fish and Wildlife Conservation Commission (FWC), Olsen and Associates, Dynamac, and the Service.

On December 8, 2005, and February 15, 2005, interagency meetings were held. On March 21, 2006, the Service accepted the Corps invitation to be a cooperating agency. On November 7, 2007, a draft FWCAR is provided to the Service. On August 12, 2008, the Service provided a revised draft FWCAR to the Corps.

In addition to the above coordination, the Regulatory Division of the Corps initiated formal Section 7 consultation with the Service for the beach nourishment and shoreline stabilization project for Brevard Mid Reach area. This consultation resulted in the issuance of a BO dated February 1, 2006.

The Corps submitted a revised BA on December 23, 2008. The Service sent the Corps a draft BO on March 18, 2009. The Corps provided comments on March 27, 2009.

On April 9, 2009, the Corps provided final comments to the draft BO.

The Service had sufficient information to issue a BO for the proposed project. Information for this BO was obtained by email correspondence, meetings, site visits, telephone conversations

and other sources of information. A complete administrative record of this consultation is on file at the Service's Jacksonville Field Office.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Brevard County is located on Florida's central Atlantic coast and includes about 72 miles of sandy, ocean shoreline. Of this, 32 miles are mostly undeveloped federal coastline north of Canaveral Harbor Entrance. The other forty miles feature a diverse mix of public, private, and federal oceanfront development. The Service has described the action area to include 7.8 miles of this developed shoreline, from the south end of Patrick AFB to just north of Indialantic (R-Monument 75.4 to R-Monument 119) for reasons that will be explained and discussed in the "EFFECTS OF THE ACTION" section of this consultation. This 7.8-mile area is referred to as the "Mid-Reach". There have been no prior, significant beach nourishment projects constructed along the Mid-Reach shoreline. Small-scale, truck-haul placement of sand against the eroded bluffline has been conducted by property owners at many locations after storm events.

The Corps divided the Mid-Reach into six "sub-reaches". The proposed project consists of placing beach quality sand within the 6-sub-reaches of the Mid-Reach. Sub-Reach 1 (R-Monument 119 to R-Monument 109) consists of a 10-foot extension of the mean high water line plus advanced nourishment to maintain that design fill volume. Sub-Reach 2 and 3 (R-Monument 109 to R-Monument 99, a 10-foot extension of the mean high water line plus advanced nourishment to maintain that design fill volume in Sub-Reach 4 and 5 (R-Monument 99 to R-Monument 83), and a dune fill with no added advanced nourishment in Sub-Reach 6 (R-Monument 83 to R-Monument 75.4). Approximately 573,000 cubic yards of sand will be placed at initial construction. Fill will be obtained from the Poseidon DMMA at Port Canaveral. Dredging material from Canaveral shoals with placement into the Poseidon DMMA will occur every 6 years, and hauling by dump truck to the Mid-Reach for placement on the beach will occur at approximately 3-year intervals. 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 Corps has committed not to do the work during the sea turtle nesting season, May 1 through October 31.

The proposed plan includes a total of 3.0 acres of direct and indirect impacts to the nearshore rock resources, however, 1.4 acres is expected to include some temporal variation as the advanced nourishment erodes. Mitigation for impacts was calculated from the Uniform Mitigation Assessment Method (UMAM), resulting in 4.8 acres of mitigation reef to be created.

A dune feature will be incorporated into the beach fill template design. The dune-only fill template will extend landward on a 1:1.5 slope to an elevation that matches the existing dune crest elevation. It will then tie into the existing dune with a flat section. The template will follow a 1:6 slope ration seaward to intersect with the existing grade. The dune + beach face template consists of a dune feature that extends landward on a 1:8 slope followed by a 1:1.5 slope elevation upward to the native dune. The berm elevation is on a 1:40 slope to intersect with the upper beach face. The upper beach face slopes landward from the mean high water line at a 1:8 slope to intersect with the 1:40 berm slope. The swash zone section extends seaward from the mean high water line on a 1:8 slope seaward until intersection with the existing grade.

Conservation Measures

Sea Turtles

1. The Corps will place material on the beach between November 1 and April 30 to avoid the majority of sea turtle nesting activities.

2. The Mid-Reach project will utilize trucks to place beach fill, and the work will occur during the daytime only.

3. FWC and the local sponsor have an agreement to conduct sea turtle monitoring for a minimum of two additional nesting seasons after the nourishment event if placed sand remains.

STATUS OF THE SPECIES/CRITICAL HABITAT

The Service has responsibility for implementing recovery of sea turtles when they come ashore to nest. This BO addresses nesting sea turtles, their nests and eggs, and hatchlings as they emerge from the nest and crawl to the sea. The National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) has jurisdiction over sea turtles in the marine environment.

Species/critical habitat description

Loggerhead Sea Turtle

The loggerhead sea turtle was listed as a threatened species on July 28, 1978 (43 FR 32800). The loggerhead occurs throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans.

Within the continental U.S., loggerheads nest from Texas to Virginia with major nesting concentrations found in South Florida. Additional nesting concentrations occur on coastal islands of North Carolina, South Carolina, and Georgia, and on the Atlantic and Gulf coasts of

Florida (NMFS and Service 1991b). Within the western Atlantic, loggerheads also nest in Mexico and the Caribbean.

The loggerhead sea turtle grows to an average weight of about 200 pounds and is characterized by a large head with blunt jaws. Adults and subadults have a reddish-brown carapace. Scales on the top of the head and top of the flippers are also reddish-brown with yellow on the borders. Hatchlings are a dull brown color (NMFS 2002a). The loggerhead feeds on mollusks, crustaceans, fish, and other marine animals.

The loggerhead occurs throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans. However, the majority of loggerhead nesting is at the western rims of the Atlantic and Indian Oceans. It may be found hundreds of miles out to sea, as well as in inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouths of large rivers. Coral reefs, rocky places, and ship wrecks are often used as feeding areas. Nesting occurs mainly on open beaches or along narrow bays having suitable sand, and often in association with other species of sea turtles.

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

Green Sea Turtle

The green sea turtle 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 sea 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 (NMFS and Service 1991a). Nesting also has been documented along the Gulf coast of Florida from Escambia County through Franklin County in northwest Florida and from Pinellas County through Collier County in southwest Florida (FWC Statewide Nesting Beach Survey database). Green turtles have been known to nest in Georgia, but only on rare occasions (Georgia Department of Natural Resources statewide nesting database). The green turtle also nests sporadically in North Carolina and South Carolina (North Carolina Wildlife Resources Commission statewide nesting database; South Carolina Department of Natural Resources statewide nesting database). Unconfirmed nesting of green turtles in Alabama has also been reported (Bon Secour National Wildlife Refuge nesting reports).

Green sea turtles are generally found in fairly shallow waters (except when migrating) inside reefs, bays, and inlets. The green turtle is attracted to lagoons and shoals with an abundance of marine grass and algae. Open beaches with a sloping platform and minimal disturbance are required for nesting.

The green sea turtle grows to a maximum size of about 4 feet and a weight of 440 pounds. It has a heart-shaped shell, small head, and single-clawed flippers. The carapace is smooth and colored gray, green, brown and black. Hatchlings are black on top and white on the bottom (NMFS 2002b). Hatchling green turtles eat a variety of plants and animals, but adults feed almost exclusively on seagrasses and marine algae.

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, listed as an endangered species on June 2, 1970 (35 FR 8491), nests on shores of the Atlantic, Pacific and Indian Oceans. Leatherbacks have the widest distribution of the sea turtles with nesting on beaches in the tropics and sub-tropics and foraging excursions into higher-latitude sub-polar waters. They have evolved physiological and anatomical adaptations (Frair et al. 1972, Greer et al. 1973) that allow them to exploit waters far colder than any other sea turtle species would be capable of surviving. 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 historically 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 (NMFS and 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 (NMFS and Service 1992). Leatherback turtles have been known to nest in Georgia, South Carolina, and North Carolina, but only on rare occasions (North Carolina Wildlife Resources Commission; South Carolina Department of Natural Resources; and Georgia Department of Natural Resources statewide nesting databases). Leatherback nesting has also been reported on the northwest coast of Florida (LeBuff 1990; FWC Statewide Nesting Beach Survey database); and in southwest Florida a false crawl (non-nesting emergence) has been observed on Sanibel Island (LeBuff 1990).

This is the largest, deepest diving of all sea turtle species. The adult leatherback can reach 4 to 8 feet in length and weigh 500 to 2,000 pounds. The carapace is distinguished by a rubber-like texture, about 1.6 inches thick, made primarily of tough, oil-saturated connective tissue. Hatchlings are dorsally mostly black and are covered with tiny scales; the flippers are edged in white, and rows of white scales appear as stripes along the length of the back (NMFS 2002c). Jellyfish are the main staple of its diet, but it is also known to feed on sea urchins, squid, crustaceans, tunicates, fish, blue-green algae, and floating seaweed.

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 (50 CFR 17.95).

Hawksbill Sea Turtle

The hawksbill sea turtle was listed as an endangered species on June 2, 1970 (35 FR 8491). The hawksbill is found in tropical and subtropical seas of the Atlantic, Pacific, and Indian Oceans. The species is widely distributed in the Caribbean Sea and western Atlantic Ocean. Within the continental U.S., hawksbill sea turtle nesting is rare and is restricted to the southeastern coast of Florida (Volusia through Dade Counties) and the Florida Keys (Monroe County) (Meylan 1992; Meylan et al. 1995). However, hawksbill tracks are difficult to differentiate from those of loggerheads and may not be recognized by surveyors. Therefore, surveys in Florida likely underestimate actual hawksbill nesting numbers (Meylan et al. 1995). In the U.S. Caribbean, hawksbill nesting occurs on beaches throughout Puerto Rico and the U.S. Virgin Islands (NMFS and Service 1993).

Hawksbills typically weigh around 176 pounds or less in the wider Caribbean; hatchlings average about 1.6 inches straight length and range in weight from 0.5 to 0.7 ounces. The carapace is heart shaped in young turtles, and becomes more elongated or egg-shaped with maturity. The top scutes are often richly patterned with irregularly radiating streaks of brown or black on an amber background. The head is elongated and tapers sharply to a point. The lower jaw is V-shaped (NMFS 2002d).

Critical habitat for the hawksbill sea turtle has been designated for selected beaches and/or waters of Mona, Monito, Culebrita, and Culebra Islands, Puerto Rico.

Kemp's Ridley Sea Turtle

The Kemp's ridley sea turtle was listed as endangered on December 2, 1970 (35 FR 18320). The Kemp's ridley, along with the flatback sea turtle (*Natator depressus*), has the most geographically restricted distribution of any sea turtle species. The range of the Kemp's ridley includes the Gulf coasts of Mexico and the U.S., and the Atlantic coast of North America as far north as Nova Scotia and Newfoundland. The majority of nesting for the entire species occurs on the primary nesting beach at Rancho Nuevo (Marquez-M. 1994).

Outside of nesting, adult Kemp's ridleys are believed to spend most of their time in the Gulf of Mexico, while juveniles and subadults also regularly occur along the eastern seaboard of the U.S. (Service and NMFS 1992). There have been rare instances when immature ridleys have been documented making transatlantic movements (Service and NMFS 1992). It was originally speculated that ridleys that make it out of the Gulf of Mexico might be lost to the breeding population (Hendrickson 1980), but data indicate that many of these turtles are capable of moving back into the Gulf of Mexico (Henwood and Ogren 1987). In fact, there are documented

cases of ridleys captured in the Atlantic that migrated back to the nesting beach at Rancho Nuevo (Schmid and Witzell 1997, Schmid 1998, Witzell 1998).

Hatchlings, after leaving the nesting beach, are believed to become entrained in eddies within the Gulf of Mexico, where they are dispersed within the Gulf and Atlantic by oceanic surface currents until they reach about 7.9 inches in length, at which size they enter coastal shallow water habitats (Ogren 1989).

No critical habitat has been designated for the Kemp's ridley sea turtle.

Life history

Loggerhead Sea Turtle

Loggerheads are long-lived, slow-growing animals that use multiple habitats across entire ocean basins throughout their life history. This complex life history encompasses terrestrial, nearshore, and open ocean habitats. The three basic ecosystems in which loggerheads live are the:

1. Terrestrial zone (supralittoral) - the nesting beach where both oviposition (egg laying) and embryonic development and hatching occur.

2. Neritic zone - the inshore marine environment (from the surface to the sea floor) where water depths do not exceed 656 feet (200 meters). The neritic zone generally includes the continental shelf, but in areas where the continental shelf is very narrow or nonexistent, the neritic zone conventionally extends to areas where water depths are less than 656 feet (200 meters).

3. Oceanic zone - the vast open ocean environment (from the surface to the sea floor) where water depths are greater than 656 feet (200 meters).

Maximum intrinsic growth rates of sea turtles are limited by the extremely long duration of the juvenile stage and fecundity. Loggerheads require high survival rates in the juvenile and adult stages, common constraints critical to maintaining long-lived, slow-growing species, to achieve positive or stable long-term population growth (Congdon et al. 1993; Heppell 1998; Crouse 1999; Heppell et al. 1999, 2003; Musick 1999).

Life History Trait	**Data**
Clutch size (mean)	100-126 eggs[1]
Incubation duration (varies depending on time of year and latitude)	Range = 42-75 days[2,3]

Juvenile (<87 cm CCL) sex ratio	65-70% female[4]
Pivotal temperature (incubation temperature that produces an equal number of males and females)	29.0°C[5]
Nest productivity (emerged hatchlings/total eggs) x 100 (varies depending on site specific factors)	Range = 45-70%[2,6]
Clutch frequency (number of nests/female/season)	3-4 nests[7]
Internesting interval (number of days between successive nests within a season)	12-15 days[8]
Remigration interval (number of years between successive nesting migrations)	2.5-3.7 years[9]
Nesting season	late April-early September
Hatching season	late June-early November
Age at sexual maturity	32-35 years[10]
Life span	>57 years[11]

[1] Dodd 1988.
[2] Dodd and Mackinnon (1999, 2000, 2001, 2002, 2003, 2004).
[3] B. Witherington, FWC, pers. comm. 2006 (information based on nests monitored throughout Florida beaches in 2005, n=865).
[4] National Marine Fisheries Service (2001); A. Foley, FWC, pers. comm. 2005.
[5] Mrosovsky (1988); Marcovaldi et al. (1997).
[6] B. Witherington, FWC, pers. comm. 2006 (information based on nests monitored throughout Florida beaches in 2005, n=1,680).
[7] Murphy and Hopkins (1984); Frazer and Richardson (1985); Ehrhart, unpublished data.
[8] Caldwell (1962), Dodd (1988).
[9] Richardson et al. (1978); Bjorndal et al. (1983); Ehrhart, unpublished data.
[10] M. Snover, NMFS, pers. comm. 2005.
[11] Dahlen et al. (2000).

Green Sea Turtle

Green turtles deposit from one to nine clutches within a nesting season, but the overall average is about 3.3 nests. 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 two, three, four or more years intervene between breeding seasons (NMFS and 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 nests (NMFS and Service 1992). The interval between nesting events within a season is about 9 to 10 days. Clutch size averages 80 to 85 yolked eggs, with the addition of usually a few dozen smaller, yolkless eggs, mostly laid toward the end of the clutch (Pritchard 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).

Hawksbill Sea Turtle

Hawksbills nest on average about 4.5 times per season at intervals of approximately 14 days (Corliss et al. 1989). In Florida and the U.S. Caribbean, clutch size is approximately 140 eggs, although several records exist of over 200 eggs per nest (NMFS and Service 1993). On the basis of limited information, nesting migration intervals of 2 to 3 years appear to predominate. Hawksbills are recruited into the reef environment at about 14 inches in length and are believed to begin breeding about 30 years later. However, the time required to reach 14 inches in length is unknown and growth rates vary geographically. As a result, actual age at sexual maturity is unknown.

Kemp's Ridley Sea Turtle

Nesting occurs from April into July during which time the turtles appear off the Tamaulipas and Veracruz coasts of Mexico. Precipitated by strong winds, the females swarm to mass nesting emergences, known as *arribadas* or *arribazones*, to nest during daylight hours. The period between Kemp's ridley arribadas averages approximately 25 days (Rostal et al. 1997), but the precise timing of the arribadas is highly variable and unpredictable (Bernardo and Plotkin 2007). Clutch size averages 100 eggs and eggs typically take 45 to 58 days to hatch depending on temperatures (Marquez-M. 1994, Rostal 2007).

Some females breed annually and nest an average of 1 to 4 times in a season at intervals of 10 to 28 days. Analysis by Rostal (2007) suggested that ridley females lay approximately 3.075 nests per nesting. Interannual remigration rate for female ridleys is estimated to be approximately 1.8 (Rostal 2007) to 2.0 years (Marquez Millan et al. 1989, TEWG 2000). Age at sexual maturity is believed to be between 10 to 17 years (Snover et al. (2007).

Population dynamics

Loggerhead Sea Turtle

The loggerhead occurs throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans. However, the majority of loggerhead nesting is at the western rims of the Atlantic and Indian Oceans. The most recent reviews show that only two loggerhead nesting beaches have greater than 10,000 females nesting per year (Baldwin et al. 2003, Ehrhart et al. 2003, Kamezaki et al. 2003, Limpus and Limpus 2003, Margaritoulis et al. 2003): South Florida (U.S.) and Masirah (Oman). Those beaches with 1,000 to 9,999 females nesting each year are Georgia through North Carolina (U.S.), Quintana Roo and Yucatán (Mexico), Cape Verde Islands (Cape Verde, eastern Atlantic off Africa), and Western Australia (Australia). Smaller nesting aggregations with 100 to 999 nesting females annually occur in the Northern Gulf of Mexico (U.S.), Dry Tortugas (U.S.), Cay Sal Bank (Bahamas), Sergipe and Northern Bahia (Brazil), Southern Bahia to Rio de Janerio (Brazil), Tongaland (South Africa), Mozambique, Arabian Sea Coast (Oman), Halaniyat Islands (Oman), Cyprus, Peloponnesus (Greece), Island of Zakynthos (Greece), Turkey, Queensland (Australia), and Japan.

The loggerhead is commonly found throughout the North Atlantic including the Gulf of Mexico, the northern Caribbean, the Bahamas archipelago, and eastward to West Africa, the western Mediterranean, and the west coast of Europe.

The major nesting concentrations in the U.S. are found in South Florida. However, loggerheads nest from Texas to Virginia. Total estimated nesting in the U.S. has fluctuated between 47,000 and 90,000 nests per year over the last decade (FWC, unpublished data; GDNR, unpublished data; SCDNR, unpublished data; NCWRC, unpublished data). About 80% of loggerhead nesting in the southeast U.S. occurs in six Florida counties (Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties). Adult loggerheads are known to make considerable migrations between foraging areas and nesting beaches (Schroeder et al. 2003, Foley et al. in press). During non-nesting years, adult females from U.S. beaches are distributed in waters off the eastern U.S. and throughout the Gulf of Mexico, Bahamas, Greater Antilles, and Yucatán.

From a global perspective, the 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). The status of the Oman loggerhead nesting population, reported to be the largest in the world (Ross 1979), is uncertain because of the lack of long-term standardized nesting or foraging ground surveys and its vulnerability to increasing development pressures near major nesting beaches and threats from fisheries interaction on foraging grounds and migration routes (E. Possardt, Service, personal communication 2005). The loggerhead nesting aggregations in Oman, the U.S., and Australia account for about 88% of nesting worldwide (NMFS and Service 1991b).

Green Sea Turtle

About 150 to 3,000 females are estimated to nest on beaches in the continental U.S. annually (FWC 2005). 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 (NMFS and Service 1998a). 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 (Limpus et al. 1993). In the Indian Ocean, major nesting beaches occur in Oman where 30,000 females are reported to nest annually (Ross and Barwani 1995).

Leatherback Sea Turtle

A dramatic drop in nesting numbers has been recorded on major nesting beaches in the Pacific. Spotila et al. (2000) have highlighted the dramatic and possible extirpation of leatherbacks in the Pacific.

The East Pacific and Malaysia leatherback populations have collapsed. Spotila et al. (1996) estimated that only 34,500 females nested annually worldwide in 1995, which is a dramatic decline from the 115,000 estimated in 1980 (Pritchard 1982). In the eastern Pacific, the major nesting beaches occur in Costa Rica and Mexico. At Playa Grande, Costa Rica, considered the most important nesting beach in the eastern Pacific, numbers have dropped from 1,367 leatherbacks in 1988-1989 to an average of 188 females nesting between 2000-2001 and 2003-2004. In Pacific Mexico, in 1982 through aerial surveys of adult female leatherbacks this area became the most important leatherback nesting beach in the world. Tens of thousands of nests were laid on the beaches in 1980s but during the 2003-2004 seasons a total of 120 nests were recorded. In the western Pacific, the major nesting beaches lie in Papua New Guinea, Papua, Indonesia, and the Solomon Islands. These are some of the last remaining significant nesting assemblages in the Pacific. Compiled nesting data estimated approximately 5,000-9,200 nests annually with 75% of the nests being laid in Papua, Indonesia.

However, the most recent population size estimate for the North Atlantic alone is a range of 34,000-94,000 adult leatherbacks (Turtle Expert Working Group 2007). In Florida, an increase in leatherback nesting numbers from 98 nests in 1989 to between 800 and 900 nests in the early 2000s has been documented.

Nesting in the Southern Caribbean occurs in the Guianas (Guyana, Suriname, and French Guiana), Trinidad, Dominica, and Venezuela. The largest nesting populations at present occur in the western Atlantic in French Guiana with nesting varying between approximately 5,029 and 63,294 nests between 1967 and 2005 (Turtle Expert Working Group 2007). Trinidad supports an estimated 6,000 leatherbacks nesting annually, which represents more than 80% of the nesting in the insular Caribbean Sea. Leatherback nesting along the Caribbean Central American coast

takes place between the Honduras and Colombia. In Atlantic Costa Rica, at Tortuguero the number of nests laid annually between 1995 and 2006 was estimated to range from 199-1,623; modeling of these data indicated that the nesting population has decreased by 67.8% over this time period.

In Puerto Rico, the main nesting areas are at Fajardo on the main island of Puerto Rico and on the island of Culebra. Between 1978 and 2005, nesting increased in Puerto Rico with a minimum of 9 nests recorded in 1978 and a minimum of 469-882 nests recorded each year between 2000 and 2005. Recorded leatherback nesting on the Sandy Point National Wildlife Refuge on the island of St. Croix, U.S. Virgin Islands between 1990 and 2005, ranged from a low of 143 in 1990 to a high of 1,008 in 2001. In the British Virgin Islands, annual nest numbers have increased in Tortola from 0-6 nests per year in the late 1980s to 35-65 nests per year in the 2000s.

The most important nesting beach for leatherbacks in the eastern Atlantic lies in Gabon, Africa. It was estimated there were 30,000 nests along 60 miles (96.5 km) of Mayumba Beach in southern Gabon during the 1999 - 2000 nesting season. Some nesting has been reported in Mauritania, Senegal, and the Bijagos Archipelago of Guinea-Bissau, Turtle Islands and Sherbro Island of Sierra Leone, Liberia, Togo, Benin, Nigeria, Cameroon, Sao Tome and Principe, continental Equatorial Guinea, Islands of Corisco in the Gulf of Guinea and the Democratic Republic of the Congo, and Angola. A larger nesting population is found on the island of Bioko (Equatorial Guinea).

Hawksbill Sea Turtle

About 15,000 females are estimated to nest each year throughout the world with the Caribbean accounting for 20 to 30 percent of the world's hawksbill population. Only five regional populations remain with more than 1,000 females nesting annually (Seychelles, Mexico, Indonesia, and two in Australia) (Meylan and Donnelly 1999). Mexico is now the most important region for hawksbills in the Caribbean with about 3,000 nests/year (Meylan 1999). Other significant but smaller populations in the Caribbean still occur in Martinique, Jamaica, Guatemala, Nicaragua, Grenada, Dominican Republic, Turks and Caicos Islands, Cuba, Puerto Rico, and U.S. Virgin Islands. In the U.S. Caribbean, about 150 to 500 nests per year are laid on Mona Island, Puerto Rico and 70 to 130 nests/year are laid on Buck Island Reef National Monument, U.S. Virgin Islands. In the U.S. Pacific, hawksbills nest only on main island beaches in Hawaii, primarily along the east coast of the island of Hawaii. Hawksbill nesting has also been documented in American Samoa and Guam (NMFS and Service 1998b).

Kemp's Ridley Sea Turtle

Most Kemp's ridleys nest on the coastal beaches of the Mexican states of Tamaulipas and Veracruz, although a small number of Kemp's ridleys nest consistently along the Texas coast (Turtle Expert Working Group 1998). In addition, rare nesting events have been reported in Alabama, Florida, Georgia, South Carolina, and North Carolina. Historic information indicates that tens of thousands of ridleys nested near Rancho Nuevo, Mexico, during the late 1940s (Hildebrand 1963). The Kemp's ridley population experienced a devastating decline between the late 1940s and the mid 1980s. The total number of nests per nesting season at Rancho Nuevo remained below 1,000 throughout the 1980s, but gradually began to increase in the 1990s. In 2007, 11,268 nests were documented along the 18.6 miles (30 km) of coastline patrolled at Rancho Nuevo, and the total number of nests documented for all the monitored beaches in Mexico was 15,032 (Service 2007c). During the 2007 nesting season, an arribada with an estimated 5,000 turtles was recorded at Rancho Nuevo from May 20 to May 23. In addition, 128 nests were recorded during 2007 in the U.S., primarily in Texas.

Status and Distribution

Loggerhead Sea turtle

A combination of geographic distribution of nesting densities, geographic separation, and geopolitical boundaries, in addition to genetic differences, were used to reassess the designation of subpopulations within the U.S. to identify recovery units for the Northwest Atlantic population of the loggerhead (NMFS and Service 2008). Five units were designated; the first four recovery units represent nesting assemblages in the southeast U.S. The fifth recovery unit includes all other nesting assemblages within the Northwest Atlantic.

(1) The Northern Recovery Unit is defined as loggerheads originating from nesting beaches from the Florida-Georgia border through southern Virginia (the northern extent of the nesting range). Annual nest totals for this recovery unit averaged 5,215 nests from 1989-2008. The loggerhead nesting trend from daily beach surveys showed a significant decline of 1.3% annually since 1983. Nest totals from aerial surveys conducted by SCDNR showed a 1.9% annual decline in nesting in South Carolina since 1980. Overall, there is strong statistical evidence to suggest the Northern Recovery Unit has experienced a long-term decline;

(2) Peninsula Florida Recovery Unit is defined as loggerheads originating from nesting beaches from the Florida-Georgia border through Pinellas County on the west coast of Florida, excluding the islands west of Key West, Florida. Annual nest totals for this recovery unit averaged 64,513 nests from 1989-2007. An analysis of index nesting beach survey data has shown a decline in nesting. Results of the analysis indicated that there has been a decrease of 26% over the 20-year period from 1989-2008 and a 41% decline since 1998. The mean annual rate of decline for the 20-year period was 1.6%;

(3) Dry Tortugas Recovery Unit is defined as loggerheads originating from nesting beaches throughout the islands located west of Key West, Florida. Annual nest totals for this recovery unit averaged 246 nests from 1995-2004 (surveys not conducted in 2002). The nesting trend data for the Dry Tortugas Recovery Unit are from beaches that are not part of the Florida index nesting beach survey program but are part of the statewide nesting beach survey program. There are 9 years of data for this recovery unit. A simple linear regression accounting for temporal autocorrelation revealed no trend in nesting numbers. Because of the annual variability in nest totals, a longer time series is needed to detect a trend;

(4) Northern Gulf of Mexico Recovery Unit is defined as loggerheads originating from nesting beaches from Franklin County on the northwest Gulf coast of Florida through Texas. Annual nest totals for this recovery unit averaged 906 nests from 1995-2007. Evaluation of long-term nesting trends for the Northern Gulf of Mexico Recovery Unit is difficult because of changed and expanded beach coverage. However, there are 12 years of Florida index nesting beach survey data for the Northern Gulf of Mexico Recovery Unit. A log-linear regression showed a significant declining trend of 4.7% annually; and

(5) Greater Caribbean Recovery Unit is composed of loggerheads originating from all other nesting assemblages within the Greater Caribbean (Mexico through French Guiana, The Bahamas, Lesser Antilles, and Greater Antilles. Statistically valid analyses of long-term nesting trends for the entire Greater Caribbean Recovery Unit are not available because there are few long-term standardized nesting surveys representative of the region. Additionally, changing survey effort at monitored beaches and scattered and low-level nesting by loggerheads at many locations currently precludes comprehensive analyses. The most complete data are from Quintana Roo, Yucatán, Mexico, where an increasing trend was reported over a 15-year period from 1987-2001. However, nesting since 2001 has declined and the previously reported increasing trend appears not to have been sustained. Other smaller nesting populations have experienced declines over the past few decades.

Recovery Criteria

1. Number of Nests and Number of Nesting Females

a. Northern Recovery Unit

(i) The annual rate of increase over a generation time of 50 years is 2% or greater.
(ii) This increase in number of nests must be a result of corresponding increases in number of nesting females.

b. Peninsular Florida Recovery Unit

(i) The annual rate of increase over a generation time of 50 years is statistically detectable (1%) resulting in a total annual number of nests of 106,100 or greater.

(ii) This increase in number of nests must be a result of corresponding increases in number of nesting females.

c. Dry Tortugas Recovery Unit

(i) The annual rate of increase over a generation time of 50 years is 3% or greater.
(ii) This increase in number of nests must be a result of corresponding increases in number of nesting females.

d. Northern Gulf of Mexico Recovery Unit

(i) There is statistical confidence (95%) that the annual rate of increase over a generation time of 50 years is 3% or greater resulting in a total annual number of nests of 4,000 or greater.
(ii) This increase in number of nests must be a result of corresponding increases in number of nesting females.

e. Greater Caribbean Recovery Unit

(i) The total annual number of nests at a minimum of three nesting assemblages, averaging greater than 100 nests annually (e.g., Yucatán, Mexico; Cay Sal Bank, The Bahamas) has increased over a generation time of 50 years.
(ii) This increase in number of nests must be a result of corresponding increases in number of nesting females.

2. Trends in Abundance on Foraging Grounds

A network of in-water sites, oceanic and neritic, distributed across the foraging range is established and monitoring is implemented to measure abundance. There is statistical confidence (95%) that a composite estimate of relative abundance from these sites is increasing for at least one generation.

3. Trends in Neritic Strandings Relative to In-water Abundance

Stranding trends are not increasing at a rate greater than the trends in in-water relative abundance for similar age classes for at least one generation.

Green Turtle

Nesting data collected as part of the Florida SNBS program (2000-2006) show that a mean of approximately 5,600 nests are laid each year in Florida. Nesting occurs in 26 counties with a peak along the east coast, from Volusia through Broward Counties. The green turtle nesting population of Florida appears to be increasing based on 19 years (1989-2007) of INBS data from throughout the state. The increase in nesting in Florida is likely a result of several factors, including: (1) a Florida statute enacted in the early 1970s that prohibited the killing of green turtles in Florida; (2) the species listing under the ESA in 1973, affording complete protection to eggs, juveniles, and adults in all U.S. waters; (3) the passage of Florida's constitutional net ban amendment in 1994 and its subsequent enactment, making it illegal to use any gillnets or other

entangling nets in state waters; (4) the likelihood that the majority of Florida adult green turtles reside within Florida waters where they are fully protected; (5) the protections afforded Florida green turtles while they inhabit the waters of other nations that have enacted strong sea turtle conservation measures (e.g., Bermuda); and (6) the listing of the species on Appendix I of CITES, which stopped international trade and reduced incentives for illegal trade from the U.S.

Recovery Criteria

The U.S. Atlantic population of green sea turtles can be considered for delisting when, over a period of 25 years the following conditions are met:

1. The level of nesting in Florida has increased to an average of 5,000 nests per year for at least six years. Nesting data shall be based on standardized surveys.

2. At least 25 percent (65 miles) of all available nesting beaches (260 miles) are in public ownership and encompass at least 50 percent of the nesting activity.

3. A reduction in stage class mortality is reflected in higher counts of individuals on foraging grounds.

4. All priority one tasks identified in the recovery plan have been successfully implemented.

The current "Recovery Plan for the U.S. Population of Atlantic Green Turtle (*Chelonia mydas*)" was completed in 1991, the Recovery Plan for U.S. Pacific Populations of the Green Turtle (*Chelonia mydas*)" was completed in 1998, and the "Recovery Plan for U.S. Pacific Populations of the East Pacific Green Turtle (*Chelonia mydas*)" was completed in 1998. The recovery criteria contained in the plans, while not strictly adhering to all elements of the Recovery Planning Guidelines (Service and NOAA), are a viable measure of the species status.

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 (historically estimated to be 65 percent of worldwide population), is now less than one percent of its estimated size in 1980. Spotila et al. (1996) 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 action is taken to reduce adult mortality and increase survival of eggs and hatchlings.

In the U.S., nesting populations occur in Florida, Puerto Rico, and the U.S. Virgin Islands. In Florida, the SNBS program has documented an increase in leatherback nesting numbers from 98 nests in 1988 to between 800 and 900 nests per season in the early 2000s (FWC SNBS; Stewart and Johnson 2006). Although the SNBS program provides information on distribution and total abundance statewide, it cannot be used to assess trends because of variable survey effort. Therefore, leatherback nesting trends are best assessed using standardized nest counts made at INBS sites surveyed with constant effort over time (1989-2007). An analysis of the INBS data has shown a substantial increase in leatherback nesting in Florida since 1989 (FWC INBS; Turtle Expert Working Group 2007).

Recovery Criteria

The U.S. Atlantic population of leatherbacks can be considered for delisting when the following conditions are met:

1. The adult female population increases over the next 25 years, as evidenced by a statistically significant trend in the number of nests at Culebra, Puerto Rico, St. Croix, U.S. Virgin Island, and along the east coast of Florida.

2. Nesting habitat encompassing at least 75 percent of nesting activity in U.S. Virgin Islands, Puerto Rico, and Florida is in public ownership.

3. All priority one tasks identified in the recovery plan have been successfully implemented.

The current "Recovery Plan for the Leatherback Turtles (*Dermochelys coriacea*)" in the U.S. Caribbean, Atlantic, and Gulf of Mexico" was signed in 1992 and the "Recovery Plan for U.S. Pacific Populations of the Leatherback Turtle (*Dermochelys coriacea*)" was signed in 1998. The recovery criteria contained in the plans, while not strictly adhering to all elements of the Recovery Planning Guidelines (Service and NOAA), are a viable measure of the species status.

Hawksbill Sea Turtle

The hawksbill sea turtle has experienced global population declines of 80 percent or more during the past century and continued declines are projected (Meylan and Donnelly 1999). Most

populations are declining, depleted, or remnants of larger aggregations. Hawksbills were previously abundant, as evidenced by high-density nesting at a few remaining sites and by trade statistics.

Recovery Criteria

The U.S. Atlantic population of hawksbills can be considered for delisting when the following conditions are met:

1. The adult female population is increasing, as evidenced by a statistically significant trend in the annual numbers of nests on at least five index beaches, including Mona Island and Buck Island Reef National Monument (BIRNM).

2. Habitat for at least 50 percent of the nesting activity that occurs in the U.S. Virgin Islands (USVI) and Puerto Rico is protected in perpetuity.

3. Numbers of adults, subadults, and juveniles are increasing, as evidenced by a statistically significant trend on at least five key foraging areas within Puerto Rico, USVI, and Florida.

4. All priority one tasks identified in the recovery plan have been successfully implemented.

Kemp's Ridley Sea Turtle

Today, under strict protection, the population appears to be in the early stages of recovery. The recent nesting increase can be attributed to full protection of nesting females and their nests in Mexico resulting from a bi-national effort between Mexico and the U.S. to prevent the extinction of the Kemp's ridley, and the requirement to use Turtle Excluder Devices (TEDs) in shrimp trawls both in the United States and Mexico.

The Mexico government also prohibits harvesting and is working to increase the population through more intensive law enforcement, by fencing nest areas to diminish natural predation, and by relocating most nests into corrals to prevent poaching and predation. While relocation of nests into corrals is currently a necessary management measure, this relocation and concentration of eggs into a "safe" area is of concern since it makes the eggs more susceptible to reduced viability.

Recovery Criteria

The goal of the recovery plan is for the species to be reduced from endangered to threatened status. The Recovery Team members feel that the criteria for a complete removal of this species from the endangered species list need not be considered now, but rather left for future revisions

of the plan. Complete removal from the federal list would certainly necessitate that some other instrument of protection, similar to the Marine Mammal Protection Act, be in place and be international in scope. Kemp's ridley can be considered for reclassification to threatened status when the following four criteria are met:

1. Protection of the known nesting habitat and the water adjacent to the nesting beach (concentrating on the Rancho Nuevo area) and continuation of the bi-national project.

2. Elimination of the mortality from incidental catch from commercial shrimping in the U.S. and Mexico through the use of TEDs and full compliance with the regulations requiring TED use.

3. Attainment of a population of at least 10,000 females nesting in a season.

4. All priority one recovery tasks in the recovery plan are successfully implemented.

The current Recovery Plan for the Kemp's Ridley Sea Turtle (*Lepidochelys kempii*) was signed in 1992. Significant new information on the biology and population status of Kemp's ridley has become available since 1992. Consequently, a full revision of the recovery plan has been undertaken by the Service and NMFS and is nearing completion. The revised plan will provide updated species biology and population status information, objective and measurable recovery criteria, and updated and prioritized recovery actions. The Service and NMFS completed a five-year status review of the Kemp's ridley sea turtle in August 2007 (NMFS and Service 2007d). Recommendations provided in the five-year review focused on the protection of the species both in the water (enforcement of TED use) and on land (nesting habitat).

Common threats to sea turtles in Florida

Anthropogenic (human) factors that impact hatchlings and adult female turtles on land, or the success of nesting and hatching include: beach erosion, armoring and nourishment; artificial lighting; beach cleaning; increased human presence; recreational beach equipment; beach driving; coastal construction and fishing piers; exotic dune and beach vegetation; and poaching. An increased human presence at some nesting beaches or close to nesting beaches has led to secondary threats such as the introduction of exotic fire ants, feral hogs, dogs, and an increased presence of native species (*e.g.*, raccoons, armadillos, and opossums), which raid and feed on turtle eggs. Although sea turtle nesting beaches are protected along large expanses of the western North Atlantic coast, other areas along these coasts have limited or no protection.

Anthropogenic threats in the marine environment include oil and gas exploration and transportation; marine pollution; underwater explosions; hopper dredging, offshore artificial lighting; power plant entrainment and/or impingement; entanglement in debris; ingestion of marine debris; marina and dock construction and operation; boat collisions; poaching and fishery interactions.

Fibropapillomatosis, a disease of sea turtles characterized by the development of multiple tumors on the skin and internal organs, is also a mortality factor, particularly for green turtles. This disease 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.

Climate change is evident from observations of increases in average global air and ocean temperatures, widespread melting of snow and ice, and rising sea level, according to the Intergovernmental Panel on Climate Change Report (IPCC 2007). The IPCC Report (2007) describes changes in natural ecosystems with potential wide-spread effects on many organisms, including marine mammals and migratory birds. The potential for rapid climate change poses a significant challenge for fish and wildlife conservation. Species' abundance and distribution are dynamic, relative to a variety of factors, including climate. As climate changes, the abundance and distribution of fish and wildlife will also change. Highly specialized or endemic species are likely to be most susceptible to the stresses of changing climate. Based on these findings and other similar studies, the Department of the Interior (DOI) requires agencies under its direction to consider potential climate change effects as part of their long-range planning activities (Service 2007).

Temperatures are predicted to rise from 2°C to 5°C for North America by the end of this century (IPCC 2007a,b). Other processes to be affected by this projected warming include rainfall (amount, seasonal timing and distribution), storms (frequency and intensity), and sea level rise.

Climatic changes in Florida could amplify current land management challenges involving habitat fragmentation, urbanization, invasive species, disease, parasites, and water management. Global warming will be a particular challenge for endangered, threatened, and other "at risk" species. It is difficult to estimate, with any degree of precision, which species will be affected by climate change or exactly how they will be affected. The Service will use Strategic Habitat Conservation planning, an adaptive science-driven process that begins with explicit trust resource population objectives, as the framework for adjusting our management strategies in response to climate change (Service 2006). As the level of information increases concerning the effects of global climate change on sea turtles, the Service will have a better basis to address the nature and magnitude of this potential threat and will more effectively evaluate these effects to the range-wide status of sea turtles.

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 Southern Florida Atlantic beaches extends from March 15 through November 30. Incubation ranges from about 45 to 95 days.

The Brevard Mid Reach project area has a significant number of loggerhead nests. The Mid Reach project lies within the south Brevard beaches area. Between 9,933 and 15,425 loggerhead nests were deposited annually on south Brevard County beaches from 2003 through 2007.

Green Sea Turtle

The green sea turtle nesting and hatching season for Southern Florida Atlantic extends from May 1 through November 30. Incubation ranges from about 45 to 75 days.

The Brevard Mid Reach project area has a significant number of green turtle nests. The Mid Reach project lies within the south Brevard beaches area. Between 615 and 4,461 green turtle nests were deposited annually on south Brevard County beaches from 2003 through 2007.

Leatherback Sea Turtle

The leatherback sea turtle nesting and hatching season for Southern Florida Atlantic beaches extends from February 15 through November 15. Incubation ranges from about 55 to 75 days.

The Brevard Mid Reach project area has had an increasing number of leatherback nests over the years. The Mid Reach project lies within the south Brevard beaches area. Between 12 and 74 leatherback turtle nests were deposited annually on south Brevard County beaches from 2003 through 2007.

Hawksbill Sea Turtle

The hawksbill sea turtle nesting and hatching season for Southern Florida Atlantic beaches extends from June 1 through December 31. Incubation lasts about 60 days.

Hawksbill sea turtle nesting is rare and is restricted to the southeastern coast of Florida (Volusia through Dade Counties) and the Florida Keys (Monroe County) (Meylan 1992, Meylan *et al.* 1995). However, hawksbill tracks are difficult to differentiate from those of loggerheads and may not be recognized by surveyors. Therefore, surveys in Florida likely underestimate actual hawksbill nesting numbers (Meylan *et al.* 1995). In the U.S. Caribbean, hawksbill nesting occurs on beaches throughout Puerto Rico and the U.S. Virgin Islands (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1993).

Factors affecting the species environment within the action area

Coastal Development

Loss of nesting habitat related to coastal development has had the greatest impact on nesting sea turtles in Florida. Beachfront development not only causes the loss of suitable nesting habitat, but can result in the disruption of powerful coastal processes accelerating erosion and interrupting the natural shoreline migration (National Research Council 1990b). This may in turn cause the need to protect upland structures and infrastructure by armoring, groin placement, beach emergency berm construction and repair, and beach nourishment which cause changes in, additional loss or impact to the remaining sea turtle habitat.

Hurricanes

Hurricanes were probably responsible for maintaining coastal beach habitat upon which sea turtles depend through repeated cycles of destruction, alteration, and recovery of beach and dune habitat. Hurricanes generally produce damaging winds, storm tides and surges, and rain and can result in severe erosion of the beach and dune systems. Overwash and blowouts are common on barrier islands. Hurricanes and other storms can result in the direct or indirect loss of sea turtle nests, either by erosion or washing away of the nests by wave action or inundation or "drowning" of the eggs or hatchlings developing within the nest or indirectly by loss of nesting habitat. Depending on their frequency, storms can affect sea turtles on either a short-term basis (nests lost for one season and/or temporary loss of nesting habitat) or long term, if frequent (habitat unable to recover). How hurricanes affect sea turtle nesting also depends on its

characteristics (winds, storm surge, rainfall), the time of year (within or outside of the nesting season), and where the northeast edge of the hurricane crosses land.

Because of the limited remaining nesting habitat, frequent or successive severe weather events could threaten the ability of certain sea turtle populations to survive and recover. Sea turtles evolved under natural coastal environmental events such as hurricanes. The extensive amount of pre-development coastal beach and dune habitat allowed sea turtles to survive even the most severe hurricane events. It is only within the last 20 to 30 years that the combination of habitat loss to beachfront development and destruction of remaining habitat by hurricanes has increased the threat to sea turtle survival and recovery. On developed beaches, typically little space remains for sandy beaches to become re-established after periodic storms. While the beach itself moves landward during such storms, reconstruction or persistence of structures at their pre-storm locations can result in a major loss of nesting habitat.

Erosion

The designation of a Critically Eroded Beach is a planning requirement of the State's Beach Erosion Control Funding Assistance Program. A segment of beach shall first be designated as critically eroded in order to be eligible for State funding. A critically eroded area is a segment of the shoreline where natural processes or human activity have caused or contributed to erosion and recession of the beach or dune system to such a degree that upland development, recreational interests, wildlife habitat, or important cultural resources are threatened or lost. Critically eroded areas may also include peripheral segments or gaps between identified critically eroded areas which, although they may be stable or slightly erosional now, their inclusion is necessary for continuity of management of the coastal system or for the design integrity of adjacent beach management projects (FDEP 2005). It is important to note, that for an erosion problem area to be critical, there shall exist a threat to or loss of one of four specific interests – upland development, recreation, wildlife habitat, or important cultural resources. The total of critically eroded beaches statewide in Florida for 2007 is 388 miles of 497 miles of shoreline. Seventy-eight (78) percent of the State's shoreline is considered to be critically eroded.

Beachfront Lighting

Artificial beachfront lighting may cause disorientation (loss of bearings) and misorientation (incorrect orientation) of sea turtle hatchlings. Visual signs are the primary sea-finding mechanism for hatchlings (Mrosovsky and Carr 1967; Mrosovsky and Shettleworth 1968; Dickerson and Nelson 1989; Witherington and Bjorndal 1991). Artificial beachfront lighting is a documented cause of hatchling disorientation and misorientation on nesting beaches (Philibosian 1976; Mann 1977; FWC 2006). The emergence from the nest and crawl to the sea is one of the most critical periods of a sea turtle's life. Hatchlings that do not make it to the sea quickly become food for ghost crabs, birds, and other predators or become dehydrated and may never reach the sea. Some types of beachfront lighting attract hatchlings away from the sea while some lights cause adult turtles to avoid stretches of brightly illuminated beach. Research has

documented significant reduction in sea turtle nesting activity on beaches illuminated with artificial lights (Witherington 1992). During the 2007 sea turtle nesting season in Florida, over 64,000 turtle hatchlings were documented as being disoriented (**Table 1**) (FWC/FWRI 2007, http://www.myfwc.com/seaturtle/Lighting/Light_Disorient.htm). Exterior and interior lighting associated with condominiums had the greatest impact causing approximately 42 percent of documented hatchling disorientation/misorientation. Other causes included urban sky glow and street lights (http://www.myfwc.com/seaturtle/Lighting/Light_Disorient.htm).

Table 1. Documented Disorientations along the Florida coast.

Year	Total Number of Hatchling Disorientation Events	Total Number of Hatchlings Involved in Disorientation Events	Total Number of Adult Disorientation Events
2001	743	28,674	19
2002	896	43,226	37
2003	1,446	79,357	18
2004	888	46,487	24
2005	976	41,521	50
2006	1,521	71,798	40
2007	1,410	64,433	25
2008	1192	49,623	62

Predation

Depredation of sea turtle eggs and hatchlings by natural and introduced species occurs on almost all nesting beaches. Depredation by a variety of predators can considerably decrease sea turtle nest hatching success. The most common predators in the southeastern United States are ghost crabs (*Ocypode quadrata*), raccoons (*Procyon lotor*), feral hogs (*Sus scrofa*), foxes (*Urocyon cinereoargenteus* and *Vulpes vulpes*), coyotes (*Canis latrans*), armadillos (*Dasypus novemcinctus*), cats (*Felis catus)*, and fire ants (*Solenopsis* spp.) (Dodd 1988, Stancyk 1995). Raccoons are particularly destructive on the Atlantic coast and may take up to 96 percent of all nests deposited on a beach (Davis and Whiting 1977, Hopkins and Murphy 1980, Stancyk et al. 1980, Talbert et al. 1980, Schroeder 1981, Labisky et al. 1986). As nesting habitat dwindles, it is essential that nest production be naturally maximized so the turtles may continue to exist in the wild.

In response to increasing depredation of sea turtle nests by coyote, fox, hog, and raccoon, multi-agency cooperative efforts have been initiated and are ongoing throughout Florida, particularly on public lands.

Climate Change

Based on the present level of available information concerning the effects of global climate change on the status of sea turtles, the Service acknowledges the potential for changes to occur in the action area, but presently has no basis to evaluate if or how these changes are affecting sea turtles or its

designated critical habitat. Nor does our present knowledge allow the Service to project what the future effects from global climate change may be or the magnitude of these potential effects.

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, hawksbill, and leatherback 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, hawksbill, 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, hawksbill, and leatherback turtle, in the continental United States; therefore, none will be affected.

The proposed project will affect only 7.8 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 Corps 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 Corpshas a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (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 Corps 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 ANTICIPATED

The Service anticipates 7.8 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 from March 1 through April 30 and from September 1 through September 30 and missed by a nest survey and egg relocation program within the boundaries of the proposed project; (2) destruction of all nests deposited from October 1 through February 28 (or 29 as applicable) 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 Service.

Incidental take is anticipated for only the 7.8 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 loggerhead, green, hawksbill, 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. Beach nourishment activities must not occur from May 1 through October 31, the period of peak sea turtle egg laying and egg hatching, to reduce the possibility of sea turtle nest burial or crushing of eggs.

3. If the beach nourishment project will be conducted during the period from March 1 through April 30, surveys for early nesting sea turtles must be conducted. If nests are constructed in the area of beach nourishment, the eggs must be relocated. If the beach nourishment project will be conducted during the period from November 1 through November 30, surveys for late nesting sea turtles must be conducted. If nests are constructed in the area of beach nourishment, the eggs must be relocated.

4. All derelict concrete, metal, coastal armoring geotextile material or other debris must be removed from the beach prior to any sand placement.

5. A survey(s) of all artificial lighting visible from the project beach must be completed. This information must be provided to the Service and the FWC.

6. A meeting between representatives of the contractor, the Service, the FWC, and the permitted sea turtle surveyor, and other species surveyors as appropriate, must be held prior to the commencement of work on this project.

7. Beach compaction must be monitored and tilling (non-vegetated areas) must be conducted if needed immediately after completion of the sand placement project and prior to the next three nesting seasons to reduce the likelihood of impacting sea turtle nesting and hatching activities. (NOTE: Out-year beach compaction monitoring and tilling are not required if placed material no longer remains on the dry beach.)

8. Escarpment formation must be monitored and leveling must be conducted if needed immediately after completion of the sand placement project and prior to the next three nesting seasons to reduce the likelihood of impacting nesting and hatchling sea turtles.

9. Construction equipment and materials must be stored in a manner that will minimize impacts to nesting and hatchling sea turtles to the maximum extent practicable.

10. Lighting associated with the project construction must be minimized to reduce the possibility of disrupting and disorienting nesting and/or hatchling sea turtles.

11. A report describing the actions taken to implement the terms and conditions of this incidental take statement must be submitted to the Service by March 1 of the year following completion of the proposed work for each year when the activity has occurred.

12. The Service and the FWC must be notified if a sea turtle adult, hatchling, or egg is harmed or destroyed as a direct or indirect result of the project.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the CORPS 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. Beach compatible fill must be placed on the beach or in any associated dune system. Beach compatible fill is material that maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system. Such material must be predominately of carbonate, quartz or similar material with a particle size distribution ranging between 0.062mm and 4.76mm (classified as sand by either the Unified Soils or the Wentworth classification), must be similar in color and grain size distribution (sand grain frequency, mean and median grain size and sorting coefficient) to the material in the historic beach sediment at the disposal site, and must not contain:

    1a. Greater than 5 percent, by weight, silt, clay or colloids passing the #230 sieve;

    1b. Greater than 5 percent, by weight, fine gravel retained on the #4 sieve (- 2.25φ);

    1c. Coarse gravel, cobbles or material retained on the 3/4 inch sieve in a percentage or size greater than found on the native beach;

    1d. Construction debris, toxic material or other foreign matter; and

    1e. Material that will result in cementation of the beach.

If rocks or other non-specified materials appear on the surface of the filled beach in excess of 50 percent of background in any 10,000 square foot area, then surface rock should be removed from those areas. These areas must also be tested for subsurface rock percentage and remediated as required. If the natural beach exceeds any of the limiting parameters listed above, then the fill material must not exceed the naturally occurring level for that parameter on nearby native beaches.

Pursuant to subsection 62B-41.005(15), Florida Administrative Code (F.A.C.), sandy sediment derived from the maintenance of coastal navigation channels must be deemed suitable for beach placement with up to 10 percent fine material passing the #230 sieve, provided that it meets the criteria contained in 2b to 2e above and water quality standards. If this material contains

between 10 percent and 20 percent fine material passing the #230 sieve by weight, and it meets all other sediment and water quality standards, it must be considered suitable for placement in the nearshore portion of the beach.

These standards must not be exceeded in any 10,000 square foot section extending through the depth of the nourished beach. If the native beach exceeds any of the limiting parameters listed above, then the fill material must not exceed the naturally occurring level for that parameter on nearby native beaches.

2. Beach nourishment must be started after October 31 and be completed before May 1. During the May 1 through October 31 period, no construction equipment or pipes will be stored on the beach.

3. For sand placement projects that occur during the period from March 1 through April 30, daily early morning surveys must be conducted for sea turtle nests from March 1 through April 30 or until completion of the project (whichever is earliest), and eggs must be relocated per the following requirements. For sand placement projects that occur during the period from November 1 through November 30, daily early morning sea turtle nesting surveys must be conducted 65 days prior to project initiation and continue through September 30, and eggs must be relocated per the following requirements.

   3a. Nesting surveys and egg relocations will only be conducted by persons with prior experience and training in these activities and who are duly authorized to conduct such activities through a valid permit issued by FWC, pursuant to F.A.C 68E-1. Please contact FWC's Marine Turtle Management Program in Tequesta at (561) 575-5408 for information on the permit holder in the project area. Nesting surveys must be conducted daily between sunrise and 9 a.m. (this is for all time zones).

   3b. Only those nests that may be affected by sand placement 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. Relocated nests must not be placed in organized groupings; relocated nests must be randomly staggered along the length and width of the beach in settings that are not expected to experience daily inundation by high tides or known to routinely experience severe erosion and egg loss, or subject to artificial lighting. Nest relocations in association with construction activities must cease when construction activities no longer threaten nests.

   3c. Nests deposited within areas where construction activities have ceased or will not occur for 65 days or nests laid in the nourished berm prior to tilling must be marked and left in situ unless other factors threaten the success of the nest. The turtle permit holder must install an on-beach marker at the nest site and/or a secondary marker at a point as far landward as possible to assure that future location of the nest will be possible should the on-beach marker be lost. No activity will occur within this area nor will any activities occur which could result in impacts to the nest. Nest sites must be inspected daily to assure nest markers remain in place and the nest has not been disturbed by the project activity.

4. All derelict concrete, metal, and coastal armoring geotextile material and other debris must be removed from the beach prior to any sand placement to the maximum extent practicable. If debris removal activities will take place during the sea turtle nesting season (March 1 through October 31), the work must be conducted during daylight hours only and must not commence until completion of the sea turtle survey each day.

5. A survey shall be conducted of all lighting visible from the beach placement area, using standard techniques for such a survey, between May 1 and May 15, and between July 15 and August 1, in the year following construction. For each light source visible, the local sponsor shall take actions to notify the property owner(s) and/or the Cities of Satellite Beach, Indian Harbor, and Melbourne (in which the property(s) may be located) of the light and to specify the action(s) recommended for correcting the light within a reasonable resolution timeframe. A summary report of the surveys and of actions taken toward reduction or elimination of visible lights shall be submitted to the Service by December 1 of each year in which surveys are conducted.

6. A meeting between representatives of the contractor, the Service, the FWC, the permitted sea turtle surveyor, and other species surveyors as appropriate, must be held prior to the commencement of work on this project. At least 10-business days advance notice must be provided prior to conducting this meeting.

7. Sand compaction must be monitored in the area of sand placement immediately after completion of the project and prior to March 1 for 3 subsequent years in accordance with a protocol agreed to by the Service, FWC, and the applicant or local sponsor. At a minimum, the protocol provided under 7a and 7b below must be followed. If tilling is needed, the area must be tilled to a depth of 36 inches. Each pass of the tilling equipment must be overlapped to allow more thorough and even tilling. All tilling activity must be completed at least once prior to nesting season. A report on the results of the compaction monitoring must be submitted to the Service's field office prior to any tilling actions being taken. (NOTE: The requirement for compaction monitoring can be eliminated if the decision is made to till regardless of post-construction compaction levels. Additionally, out-year compaction monitoring and remediation are not required if placed material no longer remains on the dry beach.)

   7a. 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).

   7b. At each station, the cone penetrometer must 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 lie over less compact layers. Replicates must 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 must 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.

7c. 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 the dates listed above.

7d. 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 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.

7e. Tilling must occur landward of the wrack line and avoid all vegetated areas 3 square feet or greater with a 3 square foot buffer around the vegetated areas.

8. Visual surveys for escarpments along the project area must be made immediately after completion of the beach nourishment project or dredged channel material placement and during 30 days prior to March 1 for 3 subsequent years if sand still remains on the beach. Escarpments that interfere with sea turtle nesting or that exceed 18 inches in height for a distance of 100 feet must be leveled and the beach profile must be reconfigured to minimize scarp formation by March 1. Any escarpment removal must be reported by location. If the project is completed during the early part of the sea turtle nesting and hatching season (March 1 through April 30), escarpments may be required to be leveled immediately, while protecting nests that have been relocated or left in place. Surveys for escarpments must be conducted weekly during the three nesting seasons following completion of the project. 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 or FWC will provide a brief written authorization that describes methods to be used to reduce the likelihood of impacting existing nests. An annual summary of escarpment surveys and actions taken must be submitted to the Service's Field Office. (NOTE: Out-year escarpment monitoring and remediation are not required if placed material no longer remains on the dry beach).

9. Staging areas for construction equipment must be located off the beach from March 1 through April 30 and November 1 through November 30, if off-beach staging areas are available. Nighttime storage of construction equipment not in use must be off the beach to minimize disturbance to sea turtle nesting and hatching activities.

10. Direct lighting of the beach and nearshore waters must be limited to the immediate construction area from March 1 through April 30 and November 1 through November 30, 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 water's 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 1**).

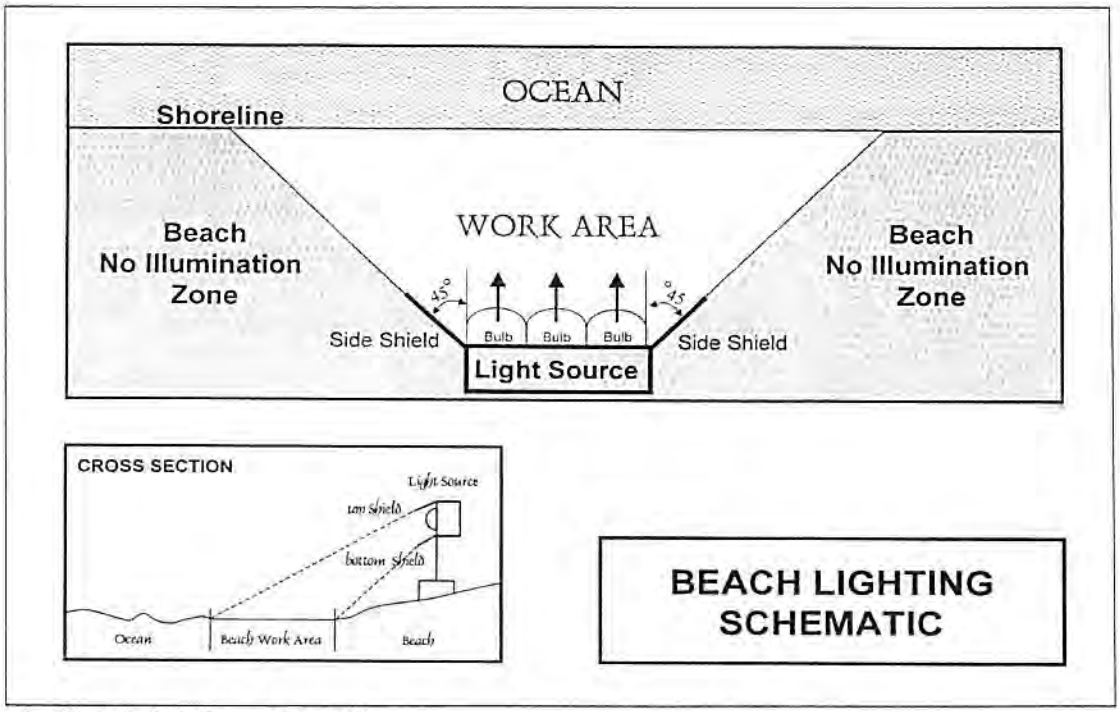

Figure 1. Beach lighting schematic.

11. A report describing the projects conducted during the year and actions taken to implement the reasonable and prudent measures and terms and conditions of this incidental take statement shall be submitted to the Service by March 1 of the following year of completing the proposed work for each year when the activity has occurred. This report will include project location (FDEP R-Monuments), dates of construction, descriptions and locations of self-release beach sites.

12. 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.

    Upon locating a dead or injured sea turtle adult, hatchling, or egg that may have been harmed or destroyed as a direct or indirect result of the project, the Corps or local sponsor must be responsible for notifying FWC Wildlife Alert at 1-888-404-FWCC (3922) and the Service Office.

    Care must be taken in handling injured or dead 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 7.8 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 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 7.8 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 Corps 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. 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.

2. 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.

3. 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 NOTICE

This concludes formal consultation on the action outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take 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 BO, please contact Ann Marie Lauritsen of this office at (904) 525-0661.

Sincerely,

David L. Hankla
Field Supervisor

cc:

Robbin Trindell- FWC
Ken Graham- Service/Atlanta

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APPENDIX J

CUMULATIVE EFFECTS ASSESSMENT

APPENDIX J – CUMULATIVE EFFECTS ASSESSMENT

The following describes the methods, rationale, and results of the Cumulative Effects Assessment for the proposed action in terms of the eleven steps in cumulative effects analysis (CEA) identified by the Council on Environmental Quality (CEQ, 1997).

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.

The goal of the NEPA process is to reduce adverse environmental effects, including cumulative effects. The CEQ regulations for implementing NEPA define cumulative effects as "the impact on the environment which results form the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions (40 CFR, 1508.87)". Cumulative effects analysis is an iterative process in which consequences are assessed repeatedly following incorporation of avoidance, minimization, and mitigation measures into the alternatives. Monitoring is the last step in determining the cumulative effects that ultimately results from the action. The significance of cumulative effects depends upon the ecosystem, resource baseline conditions, and relevant resource stress thresholds (CEQ, 1997).

Cumulative impacts "result from spatial (geographic) and temporal (time) crowding of environmental perturbations. The effects of human activities will accumulate when a second perturbation occurs at a site before the ecosystem can fully rebound from the effect of the first perturbation" (CEQ 2007).

Priority habitats within the Brevard County shore protection project area subjected to potential cumulative effects include (1) nearshore hardbottom reefs along the shoreline that are within the direct and/or indirect influence of beach nourishment (sand placement) activities, and (2) benthic, fish and related resources within offshore sand borrow areas subject to dredging, and (3) benthic, fish and related biotic community along shoreline areas subject to periodic sand burial and/or turbidity associated with beach nourishment activities. The nearshore hardbottom habitat in particular is generally considered by the U.S. Fish and Wildlife Service as Resource Category 2, and no net loss of in-kind habitat value is recommended. Within this resource, no known Resource Category 1 habitats are known to be included (viz., those considered to be unique resources which cannot be replaced.)

The proposed action, in addition to past projects and future actions, primarily impacts habitat or environmental factors related to the beach, nearshore hardbottom, offshore sand borrow areas, upland sand stockpile area, and upland

development. Of these, the first two [beach and nearshore harbottom] are identified as being of greatest potential significance from a standpoint of cumulative effects, as described below.

The proposed action will increase the length of ocean beach shoreface along which sand fill is placed, relative to the adjacent beaches where sand fill has been placed in the past and will be placed in the future. The beach will continue to be maintained as an area suitable for shoreline protection, recreation, and wildlife habitat. Principal effects to the beach habitat include temporal impacts to the benthic community and potentially to marine turtle nesting.

Approximately 3 acres of existing nearshore hardgrounds will be affected by the proposed action, principally through increased sedimentation (whole or partial burial, varying in time) along the landward edge of the rock reef outcrops. Direct mechanical impacts to the hardgrounds (by pipeline, etc.) will not occur because the sand fill is placed by truck. The 3-acre impact area comprises about 7% of the total exposed hardground area mapped in 2004 along the project area and immediate adjacent shoreline. The existing nearshore hardgrounds are adjacent to beach areas where beach fill has been placed in the past and will be placed in the future. These hardground resources are therefore subject to cumulative effects from the proposed activity and similar activities.

The proposed activity would increase the future, anticipated dredging requirements at the offshore borrow areas from about 12 Mcy to about 15.3 Mcy, forecast 50 years into the future. This action would not deplete the borrow areas. Remaining, proven reserves within the existing limits of the permitted offshore borrow areas comprise over 39 Mcy of sand (23 Mcy in CS-II plus 16 Mcy in CS-I). These borrow areas are anticipated to be the subject of excavation for the future renourishment of previously established (and possibly future) shore protection projects throughout Brevard County. Dredging-related impacts to the offshore borrow area(s) for the proposed activity is anticipated to occur commensurate and equivalently with other present and future foreseen dredging activities. That is, the gross volume of sand removed from the borrow areas will be increased by the proposed action, but the spatial and temporal extents of environmental impacts will not be significantly different or greater than the impacts from past, present and expected future activities.

The upland stockpile area proposed for interim disposal of the dredged material (before transfer to the beach fill project area) is already developed and designated as a dredged-material stockpile area, and its boundaries and function will remain unchanged. With monitoring for, and relocation of, gopher tortoise and other species of concern proximate to that stockpile area, no singular or cumulative significant adverse environmental impacts are anticipated from the stockpile activity.

The transport of fill sand from the offshore area to the stockpile area (within Port Canaveral) will increase vessel traffic near the Port Entrance and within the Port. Transport of fill sand from the stockpile area to the beach site will increase truck traffic within local upland roadways. These activities are not continuous but would occur for several months every few years. Both activities increase air pollution and carbon emissions. Equivalent activities have occurred in the past, and will continue through the present and future. Vessel and truck activities at the Port and stockpile area are all within existing, industrial areas developed for similar purposes. Transport of the sand on the public roads cumulatively increases traffic and related impacts on these roads; however, truck transport conducted through the proposed action will replace nearly identical truck transport conducted by non-federal interests for periodic dune restoration after storm events. (That is, with the proposed action, there will be less or no need for placement of dune sand along the Mid Reach by the County or other local interests). Thus there are no significant cumulative impacts associated with these factors.

The proposed project will increase the length of shoreline where sand is placed to mitigate beach erosion and decrease property losses. Because the upland shorefront property along the project area and adjacent shores is more or less fully developed, and because the proposed beach fill and level of storm protection is small, the action is not anticipated to significantly alter (increase) the density of nature of upland development – when viewed in the cumulative context of past, present and future related activities. In the absence of the proposed action -- and/or the absence of continued or future, similar beach fill actions in the overall area -- it is not reasonably anticipated that development will decrease. Instead, in the absence of the proposed action and other beach fill actions, it is likely that property values and maintenance will decrease, blight may increase, and seawalls and shoreline armoring will increase. Thus, in regard to upland development and related trends, there are no significant adverse cumulative effects anticipated with implementation of the project. Instead, adverse impacts are more likely associated with the no-action alternative and/or the cumulative effects of discontinuing existing and future active beach management activities.

In sum, the significant cumulative effects associated with the proposed action are those associated with the nearshore hardgrounds and the sand beach habitat. The attendant issues include (1) direct and indirect sedimentation (burial) and/or turbidity upon the nearshore hardground resources that are located immediately along the shoreline, and (2) burial and/or alteration of the beachface and berm sediment by placement of beach fill sediment.

Local, short-term impacts of turbidity and sedimentation will occur adjacent to the beach fill sites during project construction, in addition to sedimentation (burial) associated with equilibration of the placed beach fill. Sedimentation (burial) of the landward edge of the nearshore hardbottom by direct placement and subsequent equilibration/diffusion has been predicted in the project formulation

(i.e., on the order of 3 acres, time-varying). Sedimentation (burial) of nearshore hardbottom from long-term diffusion of existing, adjacent beach fill projects has been likewise considered and monitored.

The proposed action shall place sand from the same offshore borrow areas as has been used for past beach fill activities along adjacent shores since 2000. Through these prior actions, no adverse impacts from turbidity have been observed. Measurement of turbidity at the borrow, dump, rehandling, and hydraulic discharge locations of this material has never resulted in turbidity measurements that approached or exceeded State water quality limits. This is consistent with the granular nature of the material, measured both at the borrow areas and upon the beach, which contains less than 2% to 3% fine sediments and is, overall, as coarse or coarser than the native beach sediment. Significant adverse cumulative impact from turbidity associated with the proposed activity is not anticipated.

Based upon June 2004 mapping, there are approximately 31.3 acres of nearshore hard bottom in a band along the entire Mid-Reach shoreline, exposed in irregularly scattered outcrops near the mean low water shoreline. There is an additional 11.2 acres of exposed nearshore hard bottom along the adjacent mile of shoreline immediately north of the Mid Reach, along Patrick Air Force Base. The rock surface supports macroalgae and other epibionts that are important food sources or shelter for fishes and marine turtles of varying life stages. Much of the epibiota is emphemeral and subject to extensive wave scour. Portions of the exposed rock are colonized by the sabellariid worm *Phragmatopoma lapidosa*. As noted above, portions of this hardground resource will be impacted by the placement of beach fill.

Brevard County beaches serve as important nesting habitat for threatened and endangered sea turtle species. Overall, approximately 39% of the loggerhead and green sea turtle nests laid annually in Florida are on Brevard County beaches, although Brevard's beaches comprise only 9% of the state's ocean shore length. The average number of sea turtle nests established along a 111.5 km survey length of Brevard County, in 1990-2007 was 25,445 for loggerhead, 1782 for green, and 28 for leatherback sea turtles. The nesting density of loggerhead turtles in southern Brevard County is among the greatest in the world, and the nesting density of green turtles is rising in global rank. In 2007 average nesting density for loggerhead and green turtles was twice as great in Brevard County than for Florida's east coast beaches, overall. (Source – Florida FFWCC, Fish and Wildlife Research Institute).

The proposed project has the potential to adversely affect nesting females, nests, and hatchlings within the proposed project area. However, prior analogous activities have not been observed to result in significant adverse effects to marine turtle nesting. The dune and beach berm along the project area has been

renourished with sand (from upland sources) in 2005, 06, and 08. The adjacent 13.6 miles of shoreline to the north, and 4 miles of shoreline to the south, have been renourished with sand (mostly from offshore sources proposed for this project) since 1974. The dune further south has been restored with sand (from upland sources) in 2005, 06, and 08. To-date, appropriate protective measures and the use of compatible sand sources have maintained the beaches as suitable nesting habitat for sea turtles without jeopardizing the existence of these species. Monitoring reports from these beaches "indicate that the [North Reach] nourishment material is compatible with sea turtle nesting behavior and hatching success" (Geomar 2008), and "continues to provides evidence of the overall high quality and suitability as an incubation medium of the fill material used on the South Reach…." (Ehrhart, L. M. and S. Hirsch 2008). The proposed action will replace the haphazard use of upland sand for beach (dune) placement with the use of sand from the offshore sand borrow areas. This action will better ensure the consistency and high-quality of the beach fill sediment as a nesting medium – relative to existing measures (which require increasingly difficult identification of suitable upland sand sources). The slopes and grades of the beach fill placement follow "turtle friendly" designs that were developed and introduced by Brevard County; and monitoring has proven these fill innovations as being effective for turtle nesting, hatching success, and emergence.

The principal goal of this assessment is to identify, avoid, minimize, and mitigate adverse environmental impacts associated with the project objectives of providing storm protection along the Mid Reach shoreline of Brevard County, with particular emphasis upon potential cumulative impacts to the nearshore rock resources and the sand beach habitat along the Mid Reach and adjacent shoreline.

2. Establish the geographic scope for the analysis.

Brevard County is located on the east central coast of Florida and includes approximately 80 miles of Atlantic Ocean coastline divided approximately equally in length by the Canaveral Harbor Entrance. The project impact area comprises the beach-fill placement (project) area, offshore borrow areas and upland stockpile area, and the uplands there between. This broadly encompasses an area from the south boundary of the Mid Reach project area to Cape Canaveral, or about 26 miles by shoreline measure. Included therein is the Mid Reach project area which encompasses slightly less than 8 miles of this shoreline, from the south boundary of Patrick Air Force Base to near the north boundary of Indialantic, Florida; or between approximately 13.5 and 21.5 miles south of Canaveral Harbor Entrance.

The affected nearshore hardground area encompasses all of the project impact area (the Mid Reach) in addition to approximately 1 mile north thereof; i.e., the southern mile of Patrick Air Force Base, more or less. These nearshore

hardgrounds occur within about a 400-ft wide band, at and seaward of the mean low water shoreline. There are no other known exposed hardgrounds along the Brevard County shoreline. The nearest exposed hardground resources occur 18.5 miles or more to the south (south of Sebastian Inlet -- Brevard County's southern boundary -- in Indian River County), and well over 22 miles to the north (north of the Cape, or north of Brevard County).

In addition to the proposed action, past, present and future actions that would potentially affect the project impact area principally include beach management activities (including beach nourishment) conducted within the littoral zone of the Mid Reach. Broadly, this includes the shoreline from Cape Canaveral to Sebastian Inlet. Beach management activities within this zone include sand bypassing and inlet sand management at Canaveral Harbor, beach nourishment along the North Reach (Brevard County Shore Protection Project, BCSPP) and Patrick Air Force Base immediately north of the Mid Reach, the Mid Reach (the project shoreline), the South Reach (BCSPP) immediately south of the Mid Reach, and the South Beaches extending to Sebastian Inlet. Near the north end of this zone, Canaveral Harbor acts as a complete littoral barrier to sediment transport excepting sand bypass activities that commenced in 1995. At the south end of this zone, Sebastian Inlet divides the littoral system and inhibits the natural drift of alongshore sediment transport.

As such, the geographic scope of this analysis includes the coastline from Cape Canaveral to Sebastian Inlet; viz., about 45 miles of ocean coastline, more or less. Coastal jurisdictions or cities within this range, from north to south, include Cape Canaveral Air Station (US Air Force), the Canaveral Port Authority (CPA), Cities of Cape Canaveral and Cocoa Beach, Patrick AFB (USAF), Indian Harbour, Satellite Beach, Indialantic, and Melbourne Beach, among others, along with unincorporated areas of Brevard County.

3. Establish the time frame for the analysis.

The anticipated project construction start date is 2010-2011. Initial construction is anticipated to be phased over one to three years, encompassing rehabilitation of the upland sand stockpile area at Cape Canaveral Air Station, dredging and stockpiling of sand, transport and placement of initial fill material, and construction of nearshore mitigation reefs. Temporal overlap of these activities is anticipated. Planning for the project was formulated by the Corps of Engineers over a 50-year horizon. Assessment of the project's mitigation requirements for impacts to nearshore hardgrounds was computed over an indefinite (perpetual) horizon; i.e., presuming perpetual impacts to resources. The proposed action includes periodic renourishment of the project beach fill in nominal three year intervals after initial construction.

Prior activities affecting the project impact area potentially include the initial construction of Canaveral Harbor (c. 1951-54), the inception of comprehensive inlet sand management at Canaveral Harbor (c. 1992-95) and initial construction of modern ("prevailing") dredging and beach restoration activities along the Brevard coastline (c. 2000-01). While there were beach restoration activities (mostly from upland sand sources) prior to 2000-01, these earlier activities were either of limited scale or physically distant from the project impact area. Accordingly, apart from downdrift littoral impacts from the construction of the Canaveral Harbor Federal Navigation Project (which may not have necessarily caused definitive impacts to the Mid Reach shoreline (Kriebel et al. 2002)), those beach activities that principally affected the existing Mid Reach shoreline and resources are principally those beach and dune restoration projects commencing in/after 2000-01, in addition to Canaveral Harbor inlet sand management projects (bypassing and jetty improvements) commencing in/after 1995. Anecdotal accounts of the nearshore rock outcrops along the Mid Reach and Patrick AFB date from at least the 1940's; however, there is no known quantitative mapping of the topographic extent of these resources prior to about 1989 or 1995 (CSA 1990, USACE 1996, Olsen 2003).

4. Identify other actions affecting the resources, ecosystems, and human communities of concern.

Other significant actions potentially affecting the resources of concern identified in this analysis (nearshore hardbottom and sand beach habitat) principally include adjacent beach restoration and related activities, beach lighting and urban storm water runoff (outfalls).

There are no other direct mechanical (e.g., pipeline) impacts to the hardgrounds associated with the proposed action or other, adjacent actions. Beach fill placement along the project area shall be from the upland (truck-haul). Elsewhere in the region, where pipeline (hydraulic) delivery of beach fill material is implemented, there are no hardbottom resources. There are no other regional beach restoration activities that result in direct impact to hardgrounds.

Sand fill placement within the project impact area (Mid Reach) has previously included dune restoration to partially restore sand eroded from the dune, above the high water line, from severe storms in 2004 through 2007. These activities have not advanced the beach or shoreline relative to pre-storm conditions. The sand fill for these activities has been from permitted upland sources. No adverse environmental effects have been identified from these activities. However, identifying upland sand sources with adequate quantities of acceptable beach-compatible material has become increasingly difficult and is anticipated to become further difficult in the future (Mike McGarry, Brevard County Natural Resource Management Office – personal communication). The proposed action would serve to replace ongoing non-federal actions for post-storm dune

restoration. It would fulfill future requirements for dune restoration (in terms of both maintenance and storm protection) using high-quality, beach compatible sand from proven offshore sources.

The historical and future placement of beach nourishment material adjacent to the Mid Reach project impact area can potentially result in cumulative impacts to the nearshore hardgrounds and beach habitat along the Mid Reach. Immediately north of the Mid Reach, these activities include beach nourishment along the adjacent 4-mile long Patrick Air Force Base (PAFB) shoreline and further north along the 9.6-mile long North Reach of the Brevard County Shore Protection Project (BCSPP). Immediately south of the Mid Reach, these activities include beach nourishment along the adjacent 3.8-mile long South Reach of the BCSPP.

The southern mile of the PAFB shoreline is immediately adjacent to the Mid Reach and features nearshore rock outcrops. Along this 1-mile subreach, placement of dune and beach fill is made only above the mean high water line. (Sand placement along this one mile of shoreline has been limited to dune restoration in 2005, pursuant to erosion caused by the 2004 hurricane season. The source of this dune fill material was stockpiled sand dredged from the CS-II offshore borrow area, similarly to that of the proposed activity.) Beach fill along the northern 3-mile remainder of the PAFB shoreline consists of a long "taper" that extends from the south end of the BCSPP North Reach project to one mile north of the Mid Reach project area. Within this broad 3-mile long taper, the southernmost one mile tapers from hydraulic-fill placement to beachface/dune-fill placement above the high water shoreline. The purpose of this 3-mile long taper is to minimize/avoid impacts (burial) of the nearshore hardgrounds that exist along the southern mile of the PAFB shoreline and further south along the Mid Reach project area. Specific physical monitoring conducted since 2005 pursuant to coordination with the National Marine Fisheries Service (NMFS, 2005b), has indicated no net effects to the nearshore rock hardground along the southern mile of PAFB and north end of the Mid Reach, relative to historically expected natural fluctuations. (See **Appendix K – Subappendix I**). This monitoring intrinsically includes the effects of beach fill placement along the North Reach of the BCSPP, north of PAFB, which provides some littoral drift southward from the North Reach to the PAFB project area.

Recent beach nourishment along the South Reach, BCSPP, immediately south of the Mid Reach, was initially constructed in 2002-03. It was renourised in Spring 2005 to restore erosion losses sustained during the severe hurricane impacts of 2004. The northern limit of this project was truncated to its initially constructed limits to avoid potential impacts to nearshore hardgrounds at the south end of the Mid Reach. This project otherwise includes only a nominal taper length in view of the relatively sparse and highly ephemeral exposure of hardgrounds immediately north of the South Reach project area. Specific physical monitoring conducted since 2005 pursuant to coordination with the National Marine Fisheries Service (NMFS, 2005a), has indicated no effects to the

nearshore rock hardground along the southern 1.5 miles of the Mid Reach, immediately adjacent to the South Reach, relative to historical natural fluctuations. (See **Appendix K – Subappendix I**).

Improvements to inlet sand management improvements at Port Canaveral, since 1992/95, are intended to mitigate ongoing and future erosion impacts associated with the Canaveral Harbor federal navigation project. Evaluation by an independent coastal expert study concluded that, while these inlet improvements are not intended to restore historical littoral impacts, they appear to be adequate to offset present and future impacts (Kriebel et al. 2002). These improvements include numerous measures. Nearshore disposal of suitable maintenance-dredged sandy material is placed in about 18 ft water depths, offshore of Cocoa Beach, over 8 miles north of the Mid-Reach. Sand bypassing transfers an average of about 936,000 cy of sand from the shoreline north of the inlet for placement within 1 to 3 miles south of the inlet (about 12 miles north of the Mid Reach), about every six years. Improvements to the north and south jetties at the inlet include extensions and sand-tightening to retain sand upon the beach and out of the inlet. These measures are intended to maintain the natural littoral system, and not to advance the shoreline. Kriebel et al. (2002) concluded that there is no direct indication that the littoral impacts associated with Canaveral Harbor extend significantly into the Mid Reach; i.e., beyond 10 to 15 miles south of the inlet.

Artificial lighting, coupled with loss of dune/coastal hammock vegetation and increased elevation of the beach berm, exposes the marine turtle nesting beach to increased artificial lighting. This lighting can lead to disorientation of marine turtles (viz., hatchlings), impeding their timely entry from nest to sea. To address this impact, to date, all beach nourishment activities along the Brevard County shoreline, adjacent to the Mid Reach, have incorporated (1) dune vegetation, (2) sloping “turtle friendly” berm elevations, (3) beach lighting surveys and follow-up measures to reduce lighting. The slopes, elevations and widths of the beach fill placement in the proposed action are likewise designed to minimize impacts to marine turtles. Beach lighting surveys will be likewise conducted.

Urban storm water runoff can potentially degrade water quality and the biotic community associated with the nearshore hardgrounds. The geographic region includes about 17 storm water outfalls that discharge upon the sand beach during rainfall events, of which 12 are within the project impact area. Of these 17, three are considered high-flow, four are considered to be moderate to low flow, five are observed as no-flow, three have been already improved, and two are small and maintained by private interests. The non-federal interests in the project have developed a plan and schedule to improve these outfalls in order to minimize discharge onto the beach (Brevard County NRMO, 2008). Improvements in this regard are typically required by the State of Florida as part of its issuance of permits for the proposed action. As such, the proposed action

represents a stimulus for the non-federal interests to improve urban storm water runoff.

5. Characterize the resources, ecosystems, and human communities identified in scoping (Items 1-4) in terms of their response to change and capacity to withstand stresses.

The nearshore hardgrounds exist in a shallow, turbulent, highly dynamic, energetic and sedimentary environment. The hardgrounds are subject to frequent burial and exposure by sand, turbidity, and abrasion. Ground-truth transects indicate changes in the amount of exposed rock along the entire Mid Reach shoreline of over 35% within a few weeks (Olsen 2003), with dynamic burial varying between 1 and 100 centimeters in vertical thickness).

The physical stresses of the nearshore habitat limit the biodiversity and survivability of epibenthic species. Despite this physically demanding environment, however, several sessile organisms are well adapted to the prevailing conditions and often cover high portions of the exposed rock. One such organism is the sabellarid polychaete *Phragmatopoma lapidosa*, which forms large gregarious colonies commonly referred to as worm reefs (Kirtley and Tanner, 1968; McCarthy, 2001). The worm reef colonies are composed of sand grains cemented together to form rugose structures that add relief and structural complexity to existing natural and artificial hard bottom. The growth of worm reef depends on a combination of available hard substrate, wave energy, sediment availability, and larval supply (McCarthy et al., 2003). Wave impacts from fairly frequent to severe storms can dislodge and destroy much or almost all of the worm rock colonies that have formed upon the nearshore coquina rock outcrops along the Mid Reach. The colonies are typically reformed within a few summers thereafter (Olsen 2003).

In addition to fish species, worm reef supports associated assemblages of organisms, such as decapod crustaceans (Gore et al., 1978). A total of 22 species of algae, at least two sponge species, a gastropod mollusk, a crab, and unidentified hydroids and ascidians was identified within the project area rock habitat (CSA 2005b); see **Appendix K – Subappendix B**. The occurrence of fish species is described in CSA 2005a; see **Appendix K – Subappendix C.**

Turbidity can affect feeding, movements and respiration in fishes. High concentrations of suspended or fine sediments can clog or abrade gills. The ability of these biota -- specific to the existing hardgrounds -- to survive within this dynamic and turbulent environment indicates their tolerance to high levels of sedimentation, turbidity and periodic burial.

While nesting marine turtles are likewise adapted to a dynamic, energetic, sandy environment, non-nesting emergences may result on beaches that are overly

compact. Hatching success may be adversely impacted by nests established on sand beaches with poor gas exchange, or which are subject to physical erosion or frequent inundation.

The proposed action will introduce additional sediment to the beach system, directly or indirectly at the nearshore hardgrounds. The degree to which this sediment will impart change or stress to the system is in large part associated with the amount and quality (grain size, compatibility) of the sediment, and the lines, grades and slopes to which the sediment is placed.

6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.

Critical levels of sedimentation (in terms of thickness and temporal length of sand burial) and sedimentary abrasion affecting the survival or growth of macroalgae, worm rock, infauna and other biota associated with the nearshore hardgrounds are likely cross-dependent on numerous other factors and vary with the biota, and are otherwise not definitive. Levels of sedimentation associated with the nearshore habitat along the Mid Reach can not be pragmatically measured (as is done for coral reef monitoring, for example) and compared to regulatory thresholds, for which there are none applicable to these very shallow water, dynamic habitats.

Relevant State of Florida turbidity thresholds require that activities create less than 29 NTU above background levels. It is not anticipated that the proposed action will result in turbidity that reaches or approaches this level given (1) the coarse nature of the beach fill sediment with very low (<2% to 3%) fines fraction, (2) the beach fill will be placed by truck-haul after previously being dewatered in an upland stockpile area, and (3) there have been no prior instances of the use of the proposed material nearing the 29 NTU turbidity level in five years of previous project applications.

Standards developed by the USFWS require that measured beach compaction be less than 500 cone penetrometer units at 6”, 12”, and 18” below beach grade, in order that the beach be compliant with marine turtle nesting activity (else, the beach must be tilled). Monitoring for beach compaction, and subsequent tilling when required, is undertaken for all beach restoration activities in Brevard County. The standards developed and followed in this regard have thus far appeared to be appropriate relative to their objectives.

7. Define a baseline condition for the resources, ecosystems, and human communities.

The general occurrence of nearshore rock hardgrounds along the project impact area was described by Continental Shelf Associates (1990). Preliminary mapping of the hardgrounds from aerial photography was conducted by the Corps of Engineers in 1995, and identified about 32 acres along the Mid Reach shoreline (USACE 1996). Multi-spectral image analysis of January 2001 aerial photography with ground-truth transect surveys indicated an estimated 51.4 acres of exposed rock along the Mid Reach area plus an additional 9.3 acres along the southern mile of Patrick AFB. Image analysis of June 2004 aerial photography with repeated transect surveys indicated an estimated 31.3 acres of rock along the Mid Reach, plus an additional 11.2 acres along PAFB.

Collecting aerial photography of sufficient clarity (in terms of water clarity, surf and turblulence, cloud cover, etc.) to accurately identify and quantify the amount of exposed nearshore rock hardgrounds along this coastline is extremely difficult. Because the June 2004 results represent the most recent, reliable mapping of the rock outcrops, they have been used as the baseline for the project formulation, described in this report.

Percent cover analyses from surveyed sites along the Mid Reach rock hardgrounds showed total green algal cover ranging from 0.0% to 30.4% (11.4% average), total red algal cover from 4.7% to 47.0% (22.2% average), and total algal cover from 16.3% to 54.5% (39.1% average) at individual locations (Continental Shelf Associates 2005b). The two most abundant green algae species were *C. prolifera* and *U. lactuca*, which had percent cover values ranging from 0.0% to 24.4% (5.9% average) and 0.0% to 12.5% (2.3% average), respectively. *Bryocladia cuspidata* was the only abundant species of red algae that could be consistently identified from the video data set, and its percent cover at specific sites ranged from 0.0% to 41.6% (6.5% average). Wormreef (*P. caudata*) was observed at nine of 14 sampling locations and had percent cover values ranging from 0.0% to 27.2%, and 5.2% cover for all sites averaged. This value is consistent with estimates from aerial image analysis (Olsen 2003). The abundance and foraging activities of marine turtles among the nearshore hardgrounds of the project impact area are described by Holloway-Adkins and Provancha (2005). See also **Appendix K – Subappendix A and B**.

Pre-project, baseline conditions that characterize the biota and physical exposure (and natural variation) of the nearshore rock hardgrounds and beach profile shall be measured as part of the project's Mitigation and Monitoring Plan. Details of this plan are presented in **Appendix K – Subappendix J**.

Baseline conditions for marine turtle nesting activities have been previously established through mostly annual monitoring conducted in Brevard County since 1992 and before.

8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.

Anthropogenic factors that may principally, and potentially, result in substantial effects to the nearshore hardground communities in the project impact area would be shore protection, pollution, mechanical destruction, and overfishing. Of these, only shore protection activities are pragmatically relevant. Pollution would adversely affect the hardground biota. A source of pollution may be stormwater outfalls upon the beaches, and these outfalls are to be modified by non-federal actions in the future, particularly as the proposed action may be implemented. Mechanical destruction of the hardgrounds (by dredging or displacement, etc.) is not known to occur or likely to occur at this location. Recreational (surf) fishing occurs along the hardgrounds, from the beach, but is not known to be unusually frequent or abundant in the quantity of catch.

Shore protection activities can affect the nearshore hardgrounds by (1) direct burial/sedimentation by sand placement, (2) indirect burial/sedimentation by alongshore or cross-shore diffusion (transport) of sand across the reefs, (3) turbidity, (4) accumulation of sand by the construction of groins, breakwaters, or similar structures intended to entrap or stabilize sand movement, and (5) beach erosion and burial of the nearshore rock, such as induced by seawalls and armoring.

Mechanical and beach lighting activities along the beach can adversely impact marine turtle nesting by (1) physical impact, (2) burial, indundation and/or exposure of nests, (3) establishment of beach sediment that is not compatible with nesting, and (3) disorientation.

Direct burial of nearshore hardbottom will result in mortality of macroalgae and faunal epibenthic species, as well direct burial of newly settled life stages of fishes. Suspension of sediment may cause mortality of eggs and larvae of marine and estuarine fish, and a reduction in feeding in juvenile and adult fish. Settlement and shelter of juvenile fish may be reduced by the gradual burial of 3 acres of nearshore hardbottom habitat. Foraging sea turtles and fish will be displaced to adjacent areas of hardbottom. Some speculate that reduced feeding success may influence survival, year-class strength, and recruitment of juvenile fish that inhabit nearshore hardbottom. For these reasons, the proposed action includes compensatory mitigation to serve towards replacing ecological functions potentially lost with the partial or total burial of about 3 acres of existing nearshore hardgrounds.

9. Determine the magnitude and significance of cumulative effects

The proposed action is anticipated to impact on the order of 3 acres of existing nearshore hardgrounds, or about 7% of the total exposed hardground resource

along the Mid Reach project area and adjacent Patrick AFB shoreline, based upon June 2004 mapping. The impacts are predicted to vary, decreasing (to on the order of 1.8 acres) between project renourishments. Formulation of the project, including requirements for mitigation, are based upon the higher, nominal value of 3 acres.

This assessment accounts for cumulative impacts to the nearshore hardgrounds from adjacent, regional beach nourishment activities. Annual monitoring of the beach and hardground resources since 2005 indicates that beach and dune renourishment activities along the adjacent shorelines have not adversely impacted the occurrence of exposed nearshore hardgrounds relative to historically expected, natural fluctuations. (See **Appendix K – Subappendix I**.)

Through a detailed assessment based upon field prototype investigations and related analysis, the project's mitigation reef has been evaluated and developed in terms of its likely ability to replace ecological functions impacted by the proposed action. (See **Appendix K – Subappendix G**.) Mitigation reefs proposed for this project cannot be assumed to replace all ecological functions for the same suite of species or life stages that exist on natural reefs in shallower water. There are likely species-specific differences in sensory perception to water depth, wave energy, light penetration, turbidity, and other factors that may be different at the proposed mitigation site. In addition to these deterministic factors, there is an element of uncertainty associated with the colonization of newly available substrate by marine organisms that leads to variability and unpredictability. Nevertheless, an estimate of the fraction of the macroalgal, invertebrate, and fish species present at the impact site that will ultimately reside on the mitigation reefs located 300 to 400 m offshore is 75%. Over time, this will lessen the significance of the initial adverse impact affected by direct burial of the landward edge of the hard bottom feature. Detailed discussion of the anticipated functional loss and functional gain associated with the biotic community and habitat at the impacted (nearshore hard bottom) and mitigation reef features is presented in CSA et al. (2006, 2008), and **Appendix K – Subappendix G**.

Annual monitoring of marine turtle nesting success on Brevard's beaches have indicated no significant adverse impacts associated with prior or ongoing renourishment activities. The proposed action will utilize sand from the same sources utilized for these other activities, and shall adopt similar "turtle friendly" fill placement geometries, construction restrictions and monitoring protocols.

The proposed action will not result in a cumulative increase in sand placement along the Mid Reach project impact area, as it will replace dune restoration that has been periodically required by the non-federal sponsor in response to dune erosion effected by severe storms, since 2004. Instead, the action should act to better ensure the beach-compatible quality of the placed sand through the placement of high-quality sand from offshore sand sources that has been successfully used on the adjacent shorelines.

The results of the environmental monitoring of the beach/seabed, nearshore hardground and mitigation reef structures will provide the information necessary to assess the overall cumulative impacts of the proposed action upon the affected environmental resources in and offshore of Brevard County.

10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects

The Corps of Engineers and Brevard County, through research activities and through coordination and discussion with the representatives of the Corps regulatory division, National Marine Fisheries Service, U.S. Fish & Wildlife Service, Environmental Protection Agency, and Florida Department of Environmental Protection, has reduced the potential for significant cumulative effects to environmentally sensitive nearshore resources from turbidity and sedimentation through the development of the selected plan.

As described in Chapter 5, formulation of the proposed action considered over 70 beach-fill project alternatives in addition to other alternatives comprising coastal structures and armoring, reefs, nearshore sand mounds, coastal regulation, retreat, acquisition and no-action. The ultimate selection of the proposed plan sought to avoid and minimize project-related impacts to the greatest extent possible while maintaining the project objectives and to likewise implement mitigation for unavoidable impacts. (See Chapter 5 for a detailed discussion.) Development of the project's innovative mitigation reef structure has been modified through the course of the project formulation to increase the probable success of the reef in replicating displaced ecological function of the impacted nearshore hardgrounds, by better emulating the physical nature of the impacted resource and decreasing the possibility of subsidence of the structure.

11. Monitor the cumulative effects of the selected alternative and adapt management.

A physical and biological monitoring program will be implemented to evaluate the pre- and post-project conditions, performance and effects of the proposed beach fill placement, nearshore hardgrounds, and mitigation reef. Details of this program are described in **Appendix K – Subappendix J** (Mitigation and Monitoring Plan). This Plan likewise describes adaptive management actions that shall be taken in response to results of the monitoring plan.

In the present instance, the proposed activity and its predicted effects are relatively small and reversible. The resources of the nearshore hardgrounds that will be affected by the proposed sand placement exist in a dynamic environment and are adapted to naturally high sedimentation, sand abrasion, turbidity, and

cyclical sand burial and exposure. The physical and temporal scales of the sand placement and resultant impacts to the beach and nearshore hardgrounds are relatively small. The scale of the project can be readily adapted to respond to the monitored effects of the project's action, relative to the predicted effects described herein.

The project shall likewise implement monitoring during construction attendant to threatened and endangered species protection, turbidity, cultural resources, beach compaction, beach lighting and marine turtle nesting and success, sediment-quality assurance, and dredge location and control. These monitoring activities are described in Section 7.2.34 (Environmental Commitments). Each activity includes prescribed measures for monitoring and real-time response (adapative management) to the monitoring observations. Identical or analogous monitoring protocols and measures have been successfully utilized in the past for analogous projects constructed within the affected region and elsewhere throughout the State of Florida.

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