



DEPARTMENT OF PLANNING AND ENVIRONMENTAL PROTECTION - Biological Resources Division

218 S.W. 1st Avenue • Fort Lauderdale, Florida 33301 • 954-519-1230 • FAX 954-519-1412

July 16, 2003

Richard Bonner, P.E., Deputy District Engineer
Corps of Engineers, Jacksonville District
701 San Marco Blvd
Jacksonville, FL 32232-0019

Subject: Broward County, Segments II and III, Shore Protection Project

Dear Mr. Bonner: *RICHARD*

This letter transmits under separate cover the following items, as requested by your staff:

1. An updated Independent Technical Review Certification, reflecting local sponsor review of the most recent version of the report.
2. Twenty-four (24) copies of a revised Economic Update Addendum. This revised addendum should replace the version which is currently in the beginning of the General Reevaluation Report (GRR) for the above-referenced project. The revision provides additional information regarding changes in the estimated cost of certain project activities and applies the current interest rate to costs and benefits.

Twenty-four (24) copies of revised front cover inserts for each of the three volumes of the GRR. The revised covers show the appropriate revision dates of the document.
4. Twenty-four (24) copies of a revised page 34. The revision to paragraph 120 states our intention to consider use of sand from the navigation channel of Port Everglades for nourishment of Segment III beaches.

We appreciate the efforts of you and your staff to expedite the transmission of the report to your higher authority for review. Portions of the project beach are at critically eroded status, and it is vital that the project be implemented as soon as possible. Once again, thank you for your support of this important project.

Sincerely,

Stephen Higgins
Beach Erosion Administrator

attachments

- c (w/attach): David Smith, Corps of Engineers Jacksonville District, CESAJ-PD-PN
- c(w/o attach.) Steve Somerville, Director, Department of Planning and Environmental Protection
- Pamela Landi, Office of Public and Governmental Relations
- Eric Myers, Director, Biological Resources Division
- Jackie Thompson, Bureau of Beaches and Wetlands Resources, FDEP
- Norman Beumel, Coastal Planning & Engineering, Inc.
- Chris Creed, Olsen Associates, Inc.

INDEPENDENT TECHNICAL REVIEW CERTIFICATION
FOR
Broward County, Florida
Shore Protection Project
Segments II and Segment III

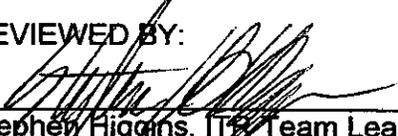
General Reevaluation Report (GRR)
with Final Environmental Impact Statement

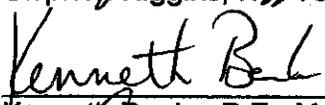
July, 2003

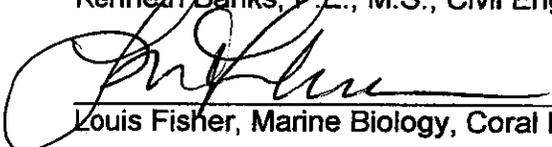
Certification by Non-Federal Sponsor:

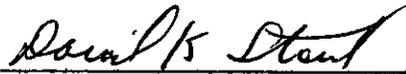
The GRR with Final Environmental Impact Statement for Segment II and Segment III of the Broward County, Florida, Shore Protection Project, developed by Broward County (the non-Federal sponsor) has been reviewed and coordinated for technical quality by the County. Comments by CESAJ on the most recent draft report and sponsor responses to the comments have been appended to and made part of the final report. All parties are in agreement and the appropriate actions taken. Outstanding issues identified at the Alternative Formulation Briefing and in subsequent reviews by Federal, State, and local agencies, interest groups, and the public have been addressed and all appropriate review comments have been incorporated into the final feasibility report. Updated interest rate calculations and changes in estimated costs for certain aspects of the project have been incorporated into an Economic Update Addendum included in the report. This certification is for the sole and limited purpose of documenting the completion of the ITR process on the final feasibility report with Final Environmental Impact Statement.

REVIEWED BY:

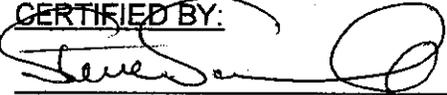

Stephen Higgins, ITT Team Leader, Policy, Interagency Coordination, Economics


Kenneth Banks, P.E., M.S., Civil Engineering, Coastal Engineering, Geology


Louis Fisher, Marine Biology, Coral Reef Ecology, Sea Turtle Conservation


David K. Stout, Surveying, Inshore Hydrography

CERTIFIED BY:


Steve Somerville, Director, Broward County Department of Planning and Environmental Protection

Date 7/15/03


Chief, Planning Division (CESAJ-PD)

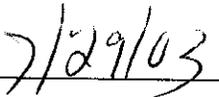
Date 7/29/03

CERTIFICATION OF LEGAL REVIEW

The report for Broward County, Florida, Shore Protection Project Segments II & III, General Reevaluation Report, including all associated documents required by the National Environmental Policy Act, has been fully reviewed by the Office of Counsel, Jacksonville District and is approved as legally sufficient.



District Counsel



Date

**RESPONSES
TO
POLICY COMPLIANCE REVIEW COMMENTS**

**BROWARD COUNTY, FLORIDA
SHORE PROTECTION PROJECT SEGMENTS II AND III
DOCUMENTATION OF POLICY COMPLIANCE REVIEW, GENERAL
REEVALUATION REPORT/DRAFT ENVIRONMENTAL IMPACT STATEMENT
ALTERNATIVE FORMULATION BRIEFING, HELD ON 29 AUGUST 2001**

A. BACKGROUND

1. **Authorization and History:** A Federal shore protection project providing for initial beach fill and periodic nourishment along the entire barrier island coastline of Broward County, Florida was authorized in 1965 (Section 301, P.L. 89-298). The authorization provided for initial beach fill and periodic nourishment along the entire barrier island coastline of the County as needed. Section 506(a)(1) of WRDA 96 authorized the Secretary of the Army to carry out periodic nourishment for Segments II and III of Broward County, FL, for a period of 50 years from the date of initiation of construction. Section 311 of WRDA 99 authorized the Secretary to reimburse the non-Federal interest for the Federal share of the cost of PED if the Secretary determines that the work is compatible with and integral to the project. Segment II is from the Hillsboro Inlet to the Port Everglades inlet, a distance of 11.4 miles and includes the municipalities of Pompano Beach, Sea Ranch Lakes, Lauderdale-by-the-Sea, and Fort Lauderdale. Segment III is from Port Everglades to the Broward/Dade County Line, a distance of 6.8 miles, and includes the municipalities of Dania, Hollywood, and Hallandale, as well as the John U. Lloyd Beach State Recreation Area. A contractor prepared this General Reevaluation Report for the non-Federal project sponsor, Broward County, Florida, with input from the Corps of Engineers Jacksonville District. The principle purpose of the report is to serve as a decision document to support execution of a PCA for construction and nourishment of the project for the remaining 50 years of authorized Federal participation.

In 1970, initial construction of a Federal berm fronting approximately 3.2 miles of the communities of Pompano and Lauderdale-by-the-Sea in Segment II was completed. Sand bypass activity around Hillsborough Inlet began in 1979 and the quantity of sand bypassed was doubled in 1986, providing a supplemental source of sand to the initial fill from updrift littoral flow. This portion of the project was renourished in 1983. Also at that time, the original berm length was increased by 2.2 miles to include other nearby eroding beach areas. In 1971, the City of Hallandale nourished the southernmost 4,000

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

feet of its beach in Segment III. No Federal funds were included in this activity. In 1976-77, a Federal project in front of John U. Lloyd Beach State Recreation Park, immediately south of the Port Everglades entrance jetties in Segment III, was constructed. In 1979, a 5.2-mile Federal storm berm was constructed along the Hollywood and Hallandale beachfront in Segment III. In 1989, the State Park beach area was renourished to replace rapidly eroding material in the longshore drift shadow of the jetties. To retard the loss of fill from north-flowing nearshore winter currents, the south jetty was also sand tightened. Other changes in the authorized project to date include adjustments in authorized berm elevation, width, and slope and changes in expected erosion and replenishment rates to better emulate natural beach conditions and to incorporate lessons learned through observation of the originally constructed berms.

As a result of reevaluation studies in 1991 and 1994 under Section 934 of WRDA 86, reports were submitted for extending Federal participation in segments of the project from 15 to 50 years. However, no PCA or LCA amendment has been executed to date. To date, the non-Federal sponsor has performed all of the original construction and renourishment activities, with reimbursement by the Federal government for the Federal share. The sponsor desires to extend this arrangement into the future.

2. **Summary of Recommended Renourishment Plan:** The recommended plan is to nourish the existing Federal storm damage reduction beach berms at Pompano Beach, Lauderdale-by-the-Sea, in Segment II and the John U. Lloyd State Park, Hollywood, and Hallandale in Segment III. In addition, the recommended plan calls for construction of an additional Federal storm damage reduction berm along a 3.4 mile reach in Fort Lauderdale in Segment II. Recommended changes to existing storm berms include construction of a small groin field in the north end of the State Park fill, construction of a sand bypass facility at Port Everglades entrance channel, and construction of berm transition tapers at the south end of the State Park berm and at both ends of the Hollywood/Hallandale berm. Mitigation for project impacts on approximately 13.6 acres of nearshore hardbottom habitat is included. The sand will be dredged from five offshore borrow areas.

B. COMMENTS, RESPONSES, DISCUSSION, AND REQUIRED ACTIONS

1. **Study and Project Authorities:**

COMMENT: The report fails to cite all relevant authorities, including section 506 of WRDA 1996 and section 311 of WRDA 1999. A complete discussion of the project authorization, which includes quotations for the relevant provisions is required. While the GRR does mention the River and Harbor Act approved 3 July 1930, Public Law 71-84th Congress, the report fails to include an adequate discussion of the authority. In

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

addition, Paragraph 2 of the report states that a House document is the authority for the study. A congressional document cannot be authorization for the study; rather, it must be a statute or a resolution. District should check the citation and clarify. In addition, there are other authorities, which pertain to the project as noted in paragraph 1 of this review document and page 4 of the report. All relevant authorities should be cited and fully explained in the report.

RESPONSE: Concur. The Authorized Project Description, page 4 of the report will be revised to include all relevant authorities and fully explained. The first sentence of Paragraph 2, Study Authorization, will be changed to state, "Section 301 of Public Law 89-298 provides authority for the non-Federal sponsor to construct the project, provided that the work is approved by the Chief of Engineers as being in accordance with the authorized project."

DISCUSSION: The old 1930 and 1955 project authorities will be explained in the text in the report. Hillsboro Inlet project feature will be further discussed to indicate that a GRR on project implementation for this feature is under review in HQUSACE.

REQUIRED ACTION: All relevant authorities will be cited and addressed fully in the report along with succinct descriptions and characterizations of prior reports and actions undertaken in connection with the Federal participation in the project over the years.

ACTION TAKEN: The authority section (paragraph 2) has been rewritten to cite the authorizations for this project. The 1930 and 1955 authority references have been deleted, as they did not authorize this project. The project description (paragraphs 9 through 12) has been rewritten to clearly identify the authorized project. Table 1 has been added to summarize the reports, the work and the approval documents.

2. **Authorities and Remaining Period of Federal Participation:**

COMMENT: The report treats Segments II and III as separable elements for purposes of determining the remaining period for Federal participation in renourishment resulting in a 19-year remaining period for Segment II and a 30-year remaining period for Segment III. The basis and rationale for treating the authorization in this manner is not clear. Section 506 of WRDA 96 states that the Secretary shall carry out periodic beach nourishment for a period of 50 years beginning on the date of initiation of construction of the project. It is not clear that the governing authorization(s) should apply separately to the two segments. In addition, the actual date of initial construction needs to be identified. The district should prepare information, including a legal opinion, regarding initial construction dates

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

and applicability of the governing authorization(s) to the remaining period of Federal participation.

RESPONSE: The Broward County, Florida, Beach Erosion Control and Hillsboro Inlet Navigation Project was authorized by Section 103 of PL 89-298. This authorization, as described in HD 91-89, provided for project construction in three separable segments. The authorization was for a period of ten years. This will be added to the Authorized Project Description on page 4. The authorization also provided for construction by local interests with subsequent reimbursement of the Federal share of the eligible costs.

The project sponsor elected to construct Segments II and III as separable elements, and separate LCAs were executed for each segment (Segment II, 21 May 1984 and earlier agreements; Segment III, 6 April 1976). A more complete description of these separate LCAs will be added to Existing Local Cooperation Agreement section of the report, paragraph 14.

The dates of initiation of construction were different for each of Segments II and III. The sponsor completed initial construction of Segment II in 1970. The Chief of Engineers extended Federal participation from ten to fifteen years under the authority of Section 156 of the 1976 WRDA. The project sponsor accomplished periodic nourishment in 1983. Federal participation in Segment II expired in 1985. In 1993, a Section 934 Reevaluation Report prepared by the Jacksonville District recommended extending Federal participation in the Segment II project for a period of fifty years from the date of initial construction. In June, 1995, the ASA(CW) declined extension of Federal participation under the Section 934 authority. Section 506(a)(1) of the Water Resources Development Act of 1996 extended the project authorization to 50 years from the date of initiation of construction, which would be the year 2020.

The first phase of initial restoration of Segment III (at John U. Lloyd Beach State Park (JUL)) was completed during the winter of 1976-77. The second phase of initial restoration, which completed construction of Segment III, occurred along the Hollywood-Hallandale area in 1978-79. The date of initiation of construction for Segment III is therefore 1976. The date of completion of initial restoration for Segment III is 1979. Nourishment of JUL occurred in 1989, and in 1991, nourishment of Hollywood and Hallandale was carried out. All design and construction of Segment III was by the local sponsor, with reimbursement of the Federal share of the eligible costs.

The Jacksonville District prepared a Section 934 Reevaluation Report in 1992, in which extension of Federal participation to 50 years from the date of initial construction was recommended. The ASA(CW) approved extension of Federal participation in September 1992.

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

DISCUSSION: The past history of reports and Federal participation in Segments II and III was discussed at length. In summary, the authorizing document, HD 91-89 clearly stated that the project for Broward County shoreline protection was three separable elements that could be constructed and nourished independently. In addition, the entire history of Federal participation supports the treatment of the segments of the county as independent and separable elements. Following the AFB, the HQ review team further reviewed HD 91-89 and information provided informally by the district regarding Federal participation in the project.

REQUIRED ACTION: After further review of HD 91-89 and the history of the Federal participation in the project, the HQ review team is satisfied that it would be appropriate to treat Segments II and III as separable elements for purposes of determining the remaining period of Federal participation and any future PCA's. The action required in paragraph 1 above should resolve this matter. However, the HQ review team recommends that the Sponsor considering using the GRR as a Post-Authorization Report recommending a modification of the project authorization(s) for a new 50 year period of Federal participation. It is recognized this would likely trigger application of the cost-sharing revisions for H&SDR projects in WRDA 99 and appropriate documentation in the EIS. But it does have the advantages of authorizing a longer period of Federal participation in all of Segments II and III and would be an appropriate vehicle to clarify any uncertainties regarding modifications of the project for the Fort Lauderdale section and the tentatively proposed sand by-pass plant at Port Everglades Inlet as discussed in paragraphs 3 and 4 below. Should the Sponsor elect to pursue the project modification avenue, the district needs to inform CECW-PM prior to public release of the draft GRR and request further guidance on how to proceed.

ACTION TAKEN: The Sponsor is declining, at this time, to seek a post authorization change to establish a new 50 year project life.

3. **Authority for Fort Lauderdale Addition:**

COMMENT: The following concern is stated in the 30 May 2001 Jacksonville District comments on the report:

“The Ft. Lauderdale reach of Segment II is currently only authorized for periodic nourishment. Therefore, Federal participation in cost sharing for the construction of any berm width extension along this reach of shoreline is not authorized at this time.”

Additional explanation for the basis of this concern is needed. According to the description of the authority contained in the report, the entire Broward County coastline was included in the original congressional authorization, even though only a few specific

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

locations have been constructed. The solution to the erosion problem at that time was to construct several berms and provide for periodic nourishment of those and any other portions of shoreline in the county where future erosion might occur.

In accordance with PL 826 of 1956, the Corps may consider periodic nourishment as continuing construction (par. 3-4.b. (7), ER 1105-2-100). This established the Federal interest in cost sharing renourishment, usually for the economic life of the project. The underlying rationale is that continuing construction is a better approach than providing 50 years of advanced maintenance fill at the time of initial construction. Therefore, the construction of the Ft. Lauderdale berm may be authorized as continuing construction under both general law and the specific authorities for the Broward County project.

RESPONSE: Concur. The need for a GRR is based on increased project lengths and volumes and costs. These changes are beyond the scope of a design document or a Limited Reevaluation Report. In addition, construction of a sand transfer plant with harbor mitigation as a project purpose would require congressional authorization.

DISCUSSION: The District's position regarding the need for authorization for the additional 3.4 miles of beach restoration (construction for Segment II) is based on the premise that the original authorization was for only 3 miles of restoration in the Pompano area with nourishment only for the entire segment on an as needed basis and that there is a clear distinction between restoration and nourishment. Subsequent to the AFB, the HQ review team examined HD 91-89 as well as the history of restoration and nourishment over the years. Congress authorized the project at Broward County in accordance with the plans and subject to the conditions recommended by the Chief of Engineers contained in HD 91. The Chief's Report recommended improvements for beach erosion control and stated that the most suitable plan of protection for the ocean shores of Broward County comprises of a protective beach and stabilization by periodic nourishment. The Chief's Report did not restrict the length of the beach improvement, but rather provided a very broad description of the project. In addition to this broad description of the project, the Chief's Report included standard discretionary language to modify the project as deemed appropriate. Further, it is noted that in 1983, an additional 2.2 miles of beach restoration was added to Segment II as part of the nourishment efforts and reimbursement of the Federal share was provided.

REQUIRED ACTION: After further review of the authorizing documents and the prior history, it is the opinion of the HQ review team that the Corps probably does have the legal authority to approve the recommended 3.4-mile extension in Segment II. To confirm this preliminary opinion, the district should provide a complete history of the authorization and prior reports and action as directed in paragraph 1 above along with

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

pertinent information in accordance with Appendix G, Section III (Post Authorization Changes) of ER 1105-2-100. As discussed in paragraph 2 above, the Sponsor is encouraged to use the GRR as a Post-Authorization Change report seeking a modification to the project authorization for a new 50-year period of Federal participation.

ACTION TAKEN: The complete history is provided in Table 1. The District determined that since the project was authorized in 1965, that Appendix G, Section III of ER 1105-2-100 does not apply. The Sponsor is declining, at this time, to seek a post authorization change to establish a new 50-year project life.

4. **Cost-Sharing for Renourishment and the Sand Bypass Plant:**

COMMENT: The review team could not locate information in the report outlining the cost allocation and cost sharing for the future renourishment activities of the sand bypass plant. The report needs to include information including tables for the allocation and sharing of costs for these project features.

RESPONSE: Harbor mitigation cost allocation and apportionment will be added to the report discussion.

DISCUSSION: The County (Sponsor) stressed the need to develop a comprehensive solution, and views the proposal for a sand-by-pass plant as a cost-savings feature. There was general consensus that this could be accomplished within the scope and authority of the existing shore protection project, either as part of initial construction or as a deferred construction feature, provided it remains a cost-sharing feature of the shore protection. Although it could be considered as harbor mitigation, additional Congressional authority would be required. It was stated that the park is environmentally sensitive, with over 300 nests per year, as well as a highly used state recreation area. This park provides substantial revenue to the state for its park system. It was also discussed that it would be valid to consider the sand bypassing as a feature for harbor mitigation and cost-share it in accordance with Sections 101(c) and 940 of WRDA 86.

REQUIRED ACTION: The HQ review team concludes there is sufficient authority to include the sand-by-pass facility as a part of the authorized shore protection project and cost-share the facility accordingly. The review further concludes that additional Congressional authority would be needed if the facility is to be cost-shared as harbor mitigation. The GRR needs to more fully describe the facility, its costs and benefits, whether it is an initial construction item or a deferred feature, and the cost sharing for construction and OMRR&R. Environmental benefits for sand bypassing (mangrove and turtle habitat protection) to the John H. Iloyd park area shoreline should be considered

As recommended in paragraphs 2 and 3 above, the Sponsor should consider using the GRR as a Post-Authorization Change Report to recommend Congressional authorization for a new 50-year period and any changes in cost sharing from shore protection to harbor mitigation or ecosystem restoration.

ACTION TAKEN: Sand bypassed across Port Everglades would directly nourish the John U. Lloyd Beach State Recreation Area and indirectly nourish the Dania, Hollywood, and Hallandale shorelines. Therefore sand bypassing would benefit the entire Segment III project. Accordingly, the construction of sand bypassing infrastructure and the annual transfer of sand across the inlet would be features of the Segment III shore protection project and cost-shared accordingly. That is, sand bypassing would be equivalent to and cost-shared as any other sand source used to maintain the project. In this instance, the construction of the facility and annual operation will be cost-shared at the Segment III Federal rate of 56.16 percent. A table summarizing the cost allocation for sand bypassing has been added to the main text (Table 6).

Although sand bypassing would not meet the total nourishment needs of Segment III, it would reduce the annual demand for more expensive offsite sand. As a result, sand bypassing would reduce the average annual cost of maintaining the Segment III shoreline. The details of the accompanying economic analysis are included in Appendix D of the GRR.

It is noted that sand bypassing will not be constructed as part of the current renourishment, rather it is expected that sand bypassing will be available by the end of the next renourishment interval. The report has been revised to better explain the expected configuration of a sand bypassing facility at Port Everglades, the expected associated costs, and the net cost savings to the Segment III project. It is noted that a detailed sand-bypassing feasibility study is currently being performed by the project sponsor. The findings of the feasibility study will be included in a Design Documentation Report (DDR) prior to implementation of the recommended bypassing plan.

Sand bypassing would also have environmental benefits. The reduction in the demand for offshore sand sources will decrease potential impacts to offshore resources. Furthermore, high-frequency sand placement along the John U. Lloyd shoreline will eliminate the need for wide fill sections that impact nearshore hardbottom areas while maintaining a consistent healthy beach system necessary for marine turtle nesting.

5. Incremental Analysis for Segment III Elements:

COMMENT: There is a concern that the NED plan may not have been identified for segment III. A beam grouting only the structures in Hollywood and Hallandale would

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

capture almost all of the storm damage reduction benefits in segment III at less cost than the plan recommended in the report.

The two portions of Segment III of the project, the berm fronting the John U. Lloyd State Park and the berm fronting Hollywood and Hallandale, are potentially separable project elements. Therefore, each berm needs to be independently formulated and justified. The primary purpose of the project fronting Hollywood and Hallandale is to protect shoreline structures from physical damage due to storms. However, there are only a few scattered structures and other infrastructure behind the State Park berm, mainly those on the Naval Warfare Center property. Since protection of damage-prone structures in the State Park area may not generate sufficient benefits for economic justification, what is the justification for this portion of the project? Is the project intended to mitigate for the down drift impact of the jetties at Port Everglades entrance channel? Or to preserve the recreation benefits associated with visitation at the park? Is the primary purpose of this element of the project to protect the environmental resources in this relatively rare portion of undisturbed beach area in Southeast Florida? Or perhaps all of the above?

If water resources development problems and opportunities are not properly specified, the resulting project may not be the most efficient and effective solution to a problem (See par. 2-2.b, Planning Principles, ER 1105-2-100). Once formulation and design objectives have been established, then and only then can alternatives be identified and evaluated. Also, both Federal budget priorities and the extent of Federal cost sharing are highly dependent on the purpose and outputs of a project. Corps participation in separable recreation features at HSD projects, even though such features may be economically justified, is precluded under current Department of the Army Policy (par. 6.a. (1), ER 1165-2-130). Where environmentally beneficial use of dredged material from channel maintenance is the least cost and environmentally acceptable method of disposal, it is cost shared as navigation cost (par. 3-2.b (7), ER 1105-2-100). The cost for implementing measures to alleviate damages induced by a Federal navigation project is cost shared in the same proportion as the cost for the project causing the shore damage (par. 12-24, EP 1165-2-1 (the Policy Digest)), in this case, the cost sharing for the entrance channel jetties.

An additional explanation is needed to demonstrate that the berm fronting John U. Lloyd State Park has been properly formulated, evaluated, and cost-shared.

RESPONSE: Segment II was constructed as a continuous segment. Reformulation for length purposes is not typically required for projects whose initial restoration has been completed, and are in the renourishment phase of continuing construction. Concur that a protection section for JUL is not required. Reducing the 50-ft berm project at JUL to periodic nourishment of the existing shoreline would also reduce hard bottom impacts.

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

The report will be revised to reflect periodic nourishment only at JUL. An additional project purpose of harbor mitigation will be added to the report, and would affect cost apportionment for Segment II.

DISCUSSION: Except for the northernmost structures (Navy and Coast Guard), which require protection from storms, the J. U. Lloyd portion of this project segment can be reduced to a periodic nourishment only (no design section) to maintain the existing beach, which is suitable for turtle nesting. The sand bypassing purpose is discussed previously (see response to comment 4).

REQUIRED ACTION: The report will be revised in accordance with the discussion.

ACTION TAKEN: An analysis was performed to evaluate the John U. Lloyd reach as a separable project element. The analysis considered the potential storm damage reduction, loss of land, and recreation benefits that are generated along the Naval Surface Warfare Center and John U. Lloyd shorefront. These benefits were compared to the cost to implement renourishment only (pre-project shoreline conditions), a 25-ft design berm, and a 50-ft design berm. This independent analysis of the costs and benefits of the John U. Lloyd reach indicates that the periodic nourishment alternative maximizes net primary benefits. Therefore, the 50-ft design berm was eliminated from the John U. Lloyd reach of the Segment III project. Implementation of the periodic nourishment only alternative reduced the potential nearshore hardbottom impacts along the John U. Lloyd reach from over 10 to less than 5 acres. The details of this independent formulation are included in Appendices B (Page B-56) and Appendix D (Page D-28) of the GRR. The results of the analysis are also summarized in the main text.

6. **Dade County Shoreline:**

COMMENT: The proposed transition taper at the south end of the Hollywood/Hallandale berm extends 1,500 feet into Dade County. Although most of the dredged sand is to be placed offshore below the Mean High Water line, it is questionable whether either the Corps or Broward County has the authority to perform work in an area outside of the boundary of the authorized project. Will some sort of agreement with Dade County be required to construct the berm? If so, has Dade County expressed any indication that such an agreement can be obtained? Do the various provisions of the Broward County Local Cooperation Agreement, notably the requirements for public access and for land use management within the flood plain, also apply to the Dade County property owners behind the transition fill? The District may need to consult with local and State authorities regarding this concern and obtain an opinion. Alternatively, the District may elect to move the beginning and end points of the transition northward so that the entire footprint of the project, as proposed for renourishment, lies within the boundaries of Broward County.

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

RESPONSE: The taper is a more cost effective way of maintaining the design section than a terminal groin. This is similar to the Brevard County shore protection project, where tapers were used for both segments, extending them beyond the physical project lengths contained in the Chief's report authorized by Congress. The non-Federal sponsor will coordinate with the Town of Golden Beach, Miami-Dade County, and the State of Florida regarding the referenced taper.

DISCUSSION: Taper does extend into Dade County below MHW. Did not look at shortening Segment III to pull taper north to keep all of project in Broward County. Town of Golden Beach's position on this and its effects on project implementation is unknown. Town of Golden Beach agreed to a taper on the north end of the Sunny Isles segment of the Dade County project (an offshore, submerged breakwaters and 1,000 foot beach fill transition). Previous construction at south end of Segment III was an abrupt termination of the project, with high end-losses resulting almost immediately afterward. The south end of Segment III is highly developed, but has numerous beach accesses and parking to allow public use. All of the beaches in Segment III (including Hollywood, Hallandale, Dania and J.U. Lloyd) contribute to recreation (benefits) of the project.

REQUIRED ACTION: Broward County, the non-Federal sponsor will work with the Town of Golden Beach, Miami-Dade County and the State of Florida to coordinate the proposed transition and the acquisition of necessary lands. The culmination of this effort will be documented in the report.

ACTION TAKEN: The necessity of a beach fill taper into Miami-Dade County was reevaluated with the calibrated and verified GENESIS model and updated 2001 shoreline position data. The reanalysis of the taper requirement suggests that a taper into Miami-Dade County is not necessary to maintain the design beach section over the required 6-year Segment III renourishment interval. Instead, the model suggests that a terminal section of advance fill and an additional terminal sand bulge placed along the southernmost Broward County shoreline will maintain the design beach section for the six-year nourishment interval. The sand bulge was also more cost effective (smaller sand volume and shorter pipeline distance during construction) than the taper into Miami-Dade County. Application of this terminal alternative eliminates the need to coordinate with Golden Beach and Miami-Dade County on this matter. The results of this analysis are summarized in Appendix B, Page B-63.

7. **Justification for Segment III Transition Tapers:**

COMMENT: The stated purpose of constructing the transition tapers is to reduce the life-cycle average annual cost of renourishment. Records of project performance show

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

rapid loss of berm material after placement of the initial fill in the past and providing transition berms to limit such losses is almost a standard practice for state-of-the-art beach fill design. In concept, the extra cost of placement of transition berm sand will be more than compensated by a reduction in the amount of fill that needs to be placed in the advanced maintenance portion of the main storm-protection berm. Was an analysis performed of the average annual cost of the segment III berms with and without the incremental cost of each of the transition berms? Did this analysis demonstrate that average annual costs were lower with the transitions in place? If so, the District needs to obtain the quantitative results of this analysis for inclusion into the package to be forwarded to higher authorities.

RESPONSE: The transition tapers are an engineering feature designed to increase the life of the design beach. The text will be revised to better explain that shorter tapers do not perform adequately to reduce nourishment costs; and tapers longer than those selected add costs, but do not increase nourishment cost savings benefits and/or severely impact hard bottoms.

DISCUSSION: Acknowledged.

REQUIRED ACTION: The report text will be revised to provide a clear explanation of the performance of the transition tapers and quantitative results of analysis demonstrating that average annual costs were lower with the transitions in place will be provided if that is the case.

ACTION TAKEN: Transition tapers are engineering features designed to protect the design beach from erosion over a pre-determined period of time. In this instance, the transitions are intended to protect the design beach over the economically optimal renourishment interval. As demonstrated in Appendix B of the GRR, if a transition or other terminal element is not implemented, the design beach will be impacted before the end of the economically optimal interval. Thus, the project will not provided the stated benefits. The tapers are added to ensure that the integrity of the design beach is not jeopardized during the interval.

Optimization of beach fill tapers within EN-HC has typically been based on the utilization of the calibrated and verified GENESIS model developed for the study area. At the end of the fill section, various alternative taper lengths are modeled over a specific time period that generally coincides with the renourishment interval. The simulations are reviewed to determine which alternative taper length and volume results in the least loss of fill volume from the project beach. No direct analysis of the cost of constructing the alternatives taper lengths versus the loss of fill is generally included. However, the integrity of the design fill section over the renourishment interval is the primary concern

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

and the alternative that requires the least amount of sand (i.e., least cost) and supports the least loss of fill from the project would be selected.

The tapers and terminal transitions for the Segment III project were formulated according to the method described above (see Appendix B, Pages B-60-63).

8. Least Cost Borrow Plan:

COMMENT: The report needs to demonstrate that all potential borrow sites were considered, show the relative costs associated with dredging sand from the more nearby and/or more protected (thus more productive) sites, determine the extra cost of not using the most cost-effective sources, and properly allocate the extra costs (if any) to the non-Federal sponsor.

RESPONSE: Existing offshore borrow sources within Broward County have been extensively utilized. The proposed borrow sites are the some of the last viable sand sources in Broward County. There are no closer-to-the-project borrow areas. Future borrow sites for periodic nourishment will be from a combination of distant upland borrow areas (commercial sand mining areas) south and west of Lake Okeechobee and pocket offshore sources. The report will be revised to clarify that utilization of these future borrow sources now would increase the implementation costs of the recommended plan.

DISCUSSION: No borrow areas offshore of Segment III remain, all have been used for previous nourishment is Segment III. Borrow areas offshore of Segments I & II are the only remaining areas available. Previously used borrow areas have not recovered, as hardbottom reefs prevent offshore transport of sediments to these areas. There is enough offshore sand to cover the volume needed in Segment II to support construction (nourishment) through the remainder of Segment II's project life.

REQUIRED ACTION: The report will be revised to provide clarification on the utilization of the availability of future borrow sources through the remainder of the period of Federal participation. If the GRR is used to seek authorization for a new 50-year period of Federal participation, sufficient borrow sources for the entire period need to be identified, costs estimated, and covered in the EIS.

ACTION TAKEN: The GRR is not being used to seek a new 50-year period of federal participation. Appendix E has been amended (paragraph E-34) to indicate that the existing known sources of sand will not be sufficient for the remaining authorized life, but that more distant sources (both upland and north along the coast) are known to exist. Costs for the last nourishment have been increased to reflect these distant sources.

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

9. **Environmental Impact Statement:**

COMMENT: The draft Environmental Impact Statement (DEIS) satisfactorily addresses the required environmental compliance statutes, executive orders, and other environmental policy. There are statements in the DEIS, however, that would not be appropriate for the information required at the draft level of documentation. For example, paragraph 4.6, Essential Fish Habitat, page 82 of the DEIS, states “Specific mitigative measures will be identified and implemented once project impacts are clearly identified.” And paragraph 4.31, Conflicts and Controversy, page 90 of the DEIS, states “Project-specific mitigation plans for hard bottom impacts will be prepared as project details are finalized.” By the time the main report and DEIS are ready for public and agency review as a draft document, and the DEIS is formally filed with the U.S. Environmental Protection Agency, environmental impacts and needed mitigation should have been identified to the best of the Corps ability. The public and agency review of the draft may disclose additional, unforeseen impacts, but the Corps should have identified all the major impacts, and the needed mitigation, by the time the draft is filed with EPA. Those sorts of statements should not appear in the DEIS.

RESPONSE: Concur. The County is collecting additional data on the nearshore and offshore hardbottom areas in response to concerns from the resource agencies. The draft EIS will be revised to include the information. The data will be used to reduce the environmental impacts of the proposed project.

DISCUSSION: The County is performing \$2.5 million in additional studies, primarily environmental, to respond to environmental concerns about the use of the offshore borrow areas. Reduction in some of the borrow areas overall dimensions is necessary based on recently completed field work, which has identified hardbottom and sea grasses within the borrow areas.

USF&WS stated that an oxygen depleted zone can occur in the bottom of the borrow pits. Some rubble remains within the bottom of the borrow areas after the sand is removed. They also stated that if a hopper dredge is used, and if the hopper overflows, then significant turbidity occurs. USF&WS and Broward County are working on a monitoring protocol to prevent this from happening. USF&WS is working on draft Coordination Act Report (CAR), and is waiting on Broward County to complete its work.

Environmental Mitigation – None expected in the borrow sites. There will be nearshore hardbottom impacts. County is developing edge of reef transects, quality, character, etc for all areas where nearshore reefs may be impacted. Adjustments will be made to the proposed beach placement to avoid the high quality areas. Boulder mounds will be placed in barren nearshore areas to mitigate for the hardbottom losses. One-to-one

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

mitigation ratio is being proposed for any needed mitigation. An analysis will be conducted to show the species being impacted, the species that will benefit from the boulder mounds, and whether or not a “one-to-one” mitigation ratio is supportable.

SAJ/SAD will file notice of DEIS. Department of Army permit will be required. The County needs to refine its implementation schedule to more realistically reflect time for coordination of a draft NEPA document.

REQUIRED ACTION: Broward County will continue to work on the draft NEPA document with District assistance and resolve any environmental issues. A mitigation plan acceptable to the environmental resource agencies and complies with Corps policy will be developed. If additional authorization for a new 50-year period of Federal participation is pursued, this needs to be covered in the NEPA document. The CAR should also be included in the NEPA documentation.

ACTION TAKEN: The NEPA document has been revised. The mitigation plan has been incorporated into the NEPA document. A new 50-year period of Federal participation is not being requested at this time. The Coordination Act Report (CAR) has been included in the NEPA document.

10.

Real Estate Easements:

COMMENT: The non-standard estate for a Temporary Beach Storm Damage Reduction Easement (page F-3, paragraph 14) is approved where the acquisition of a perpetual easement cannot be acquired.

RESPONSE: Concur. Broward County patterned its easements on those approved by the Corps for Brevard County. However, the County desires to use the temporary easements for all easements.

DISCUSSION: The perpetual easement is the easement the Corps requires, and the HQ comment approving the temporary easements needs to be revised. The recommended estate in the GRR is the standard SAD perpetual storm damage reduction easement. However, the sponsor further recommended in the GRR that a temporary storm reduction easement be approved if any difficulty was encountered in obtaining the perpetual easement. The temporary easement set out in the GRR was for terms of 19 and 30-years for segments II and III, respectively, corresponding with the remaining authorized periods of federal participation. The County’s proposed easements contain the end dates of Federal participation as the expiration date of the easements. This has the potential to cause future problems. Broward County is ready to send the easements to the property owners and begin the easement acquisition process. FDEP states that there is case law

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

regarding prescriptive easement from the dune to the mean high water line, and this can be provided to the Corps upon request.

SAD has, for a number of years, consistently insisted on perpetual easements for storm damage reduction projects. This includes a variety of such projects in South Carolina, North Carolina and Georgia. Reasons for the perpetual easement include:

- a. The standard PCA requires the sponsor to O&M the project for as long as it remains authorized. This may well exceed the authorized period of federal participation as the project remains authorized until Congress de-authorizes it.
- b. The cost to acquire the easement over private lands is typically administrative costs only. The principal of offsetting benefits results in no payment for lands in almost all cases. In the few cases where compensation might be due, there is essentially no difference in value between a 50-year easement and a perpetual easement. It makes sense, therefore, to acquire the easement once and not be faced with the need to extend the easement should the period of federal participation be extended. This is particularly true in a project such as this where the current remaining period of federal participation is 19 and 30 years.
- c. The perpetual easements also assure that there will not be any structures constructed on any lands raised, filled in, or created by the federal project in the future. It also assures that any such land will not later be a barrier to public access.

Subsequent to the AFB, SAD has discussed the easement issue with SAJ-RE and they have agreed to require the perpetual easement. Further, it is our understanding that the district received a letter from the County on September 12, 2001 stating that they are changing the estate they intend to acquire to the perpetual easement.

REQUIRED ACTION: The HQ comment approving the temporary easement is withdrawn. The GRR should delete the temporary easement. The GRR should further reflect that the sponsor will acquire the perpetual storm damage easement. It is also noted that the placement of any rock groins landward of the ECL will require an appropriate interest in land. (This appears to be applicable only in the state park portion.) This can be accomplished by inserting the right to construct groins in the standard easement language.

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

ACTION TAKEN: The sponsor is acquiring the perpetual storm damage reduction easement. An easement from the State of Florida for the groin construction landward of the ECL is also being sought.

11. **Cost Sharing and Public Access:**

COMMENT: It is not clear in the report (page 41, par. 124) that the 100 percent non-Federal cost share applies to privately owned shores seaward of the erosion control line (ECL), as well as landward. Paragraph 124 seems to limit the 100-percent non-Federal share to private lands landward of the ECL. Corps policy is that the focus is on "private shores" rather than "private lands" and that a "private shore" includes the area seaward of the ECL as well as the actual private land within the private shore frontage. For the lands seaward of private land which is not accessible to the public, the public may be able to walk on the part of the land seaward of the ECL, but the cost sharing is still 100 percent non-Federal. Substitute the following: "The non-Federal sponsor will provide the entire cost of all material placed on undeveloped lands, developed private lands and private shores, landward and seaward of the ECL." Cost sharing in the report may need to be adjusted to account for this.

RESPONSE: Concur. If a particular parcel of land landward of the ECL is not open and available for public use, cost sharing for that parcel is 100-percent non-Federal, even though the land seaward of the ECL is state-owned. Cost apportionment in the report was determined using this criteria. Paragraph 141 of the report will be revised as requested.

DISCUSSION: The report was unclear in this regard, and the report will be revised.

REQUIRED ACTION: The report is to be revised per response to the comment. In addition, the real estate appendix should address public access or cross reference discussion elsewhere in the document. The district needs to confirm that adequate public use, access and parking are included in all elements of the project for which Federal cost-sharing is recommended. This includes confirmation that there is public access at the public access points shown in the GRR over any private lands situated between public streets/sidewalks, etc. and the landward tow of the proposed beach berm.

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

ACTION TAKEN: Paragraph 129 has been revised per this comment. Public use, access, and parking are documented in the report and are sufficient for Federal cost sharing.

12. **Legislative Reference:**

COMMENT: Section 402 of WRDA 86 has been amended by WRDA 2000. The reference in paragraph 153 of the report should simply state Section 402 of WRDA 86 (PL99-662), as amended.

RESPONSE: Concur. Paragraph 153 of the report will be revised as requested.

DISCUSSION: Acknowledged.

REQUIRED ACTION: The report is to be revised per response to the comment.

ACTION TAKEN: The requested change has been made to paragraph 158.

13. **Certification of Legal Review:**

COMMENT: The subject report was apparently submitted without evidence of legal review by the District's Office of Counsel, as required by CECC policy. CECC cannot complete its review until such certification is provided. Certification of technical and legal review must accompany the revised report when submitted for final policy compliance review.

RESPONSE: There is no requirement in ER 1105-2-100 that requires Office of Counsel legal certification of a draft or final report be completed prior to the AFB.

DISCUSSION: Final certification will be provided when the final report and FEIS are submitted for review and approval.

REQUIRED ACTION: The draft and final reports are to be submitted with legal certification.

ACTION TAKEN: Office of Legal Counsel has reviewed this report and has attached its certification of legal review.

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

14. **Financial Assessment:**

COMMENT: The District must provide an assessment of the non-Federal sponsor's financial capability. This should be provided in the final report.

RESPONSE: Concur. A financial assessment will be added to the main text of the report.

DISCUSSION: Acknowledged.

REQUIRED ACTION: An assessment of the non-Federal sponsor's capability will be incorporated in the final report.

ACTION TAKEN: Broward County is working with the District to prepare a statement of financial capability. This will be incorporated into the final report. A general statement of Broward County's financial capability has been added to paragraph 155.

15. **Items of Local Cooperation:**

COMMENT: The items of local cooperation shown in the draft report are not current. A current list is included below. The District should review the current list carefully, with the assistance of its Office of Counsel, and revise it further as needed to address the needs of the current project.

Items of Local Cooperation.

a. Provide 35 percent of initial project costs assigned to hurricane and storm damage reduction plus 100 percent of initial project costs assigned to protecting undeveloped private lands and other private shores which do not provide public benefits and __ percent [**FOR PROJECTS AUTHORIZED FOR CONSTRUCTION AFTER DECEMBER 31, 1999, INSERT "40" FOR NOURISHMENT CARRIED OUT AFTER JANUARY 1, 2001, "45" FOR NOURISHMENT CARRIED OUT AFTER JANUARY 1, 2002, AND "50" FOR NOURISHMENT CARRIED OUT AFTER JANUARY 1, 2003**] of periodic nourishment costs assigned to hurricane and storm damage reduction plus 100 percent of periodic nourishment costs assigned to protecting undeveloped private lands and other private shores which do not provide public benefits and as further specified below:

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

- (1) Enter into an agreement which provides, prior to construction, 25 percent of design costs;
 - (2) Provide, during construction, any additional funds needed to cover the non-federal share of design costs;
 - (3) Provide all lands, easements, and rights-of-way, and perform or ensure the performance of any relocations determined by the Federal Government to be necessary for the initial construction, periodic nourishment, operation, and maintenance of the project;
 - (4) Provide, during construction, any additional amounts as are necessary to make its total contribution equal to 35 percent of initial project costs assigned to hurricane and storm damage reduction plus 100 percent of initial project costs assigned to protecting undeveloped private lands and other private shores which do not provide public benefits and ___ percent [FOR PROJECTS AUTHORIZED FOR CONSTRUCTION AFTER DECEMBER 31, 1999, INSERT "40" FOR NOURISHMENT CARRIED OUT AFTER JANUARY 1, 2001, "45" FOR NOURISHMENT CARRIED OUT AFTER JANUARY 1, 2002, AND "50" FOR NOURISHMENT CARRIED OUT AFTER JANUARY 1, 2003] of periodic nourishment costs assigned to hurricane and storm damage reduction plus 100 percent of periodic nourishment costs assigned to protecting undeveloped private lands and other private shores which do not provide public benefits;
- b. For so long as the project remains authorized, operate, maintain, and repair the completed project, or functional portion of the project, at no cost to the Federal Government, in a manner compatible with the project's authorized purposes and in accordance with applicable Federal and State laws and regulations and any specific directions prescribed by the Federal Government;
 - c. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-Federal Sponsor, now or hereafter, owns or controls for access to the project for the purpose of inspecting, operating, maintaining, repairing, replacing, rehabilitating, or completing the project. No completion, operation, maintenance, repair, replacement, or rehabilitation by the Federal Government shall relieve the non-Federal Sponsor of responsibility to meet the non-Federal Sponsor's obligations, or to preclude the Federal Government from pursuing any other remedy at law or equity to ensure faithful performance;

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

- d. Hold and save the United States free from all damages arising from the initial construction, periodic nourishment, operation, maintenance, repair, replacement, and rehabilitation of the project and any project related betterments, except for damages due to the fault or negligence of the United States or its contractors;
- e. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 Code of Federal Regulations (CFR) Section 33.20;
- f. Perform, or cause to be performed, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 96-510, as amended, 42 U.S.C. 9601-9675, that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for the initial construction, periodic nourishment, operation, and maintenance of the project. However, for lands that the Federal Government determines to be subject to the navigation servitude, only the Federal Government shall perform such investigations unless the Federal Government provides the non-Federal Sponsor with prior specific written direction, in which case the non-Federal Sponsor shall perform such investigations in accordance with such written direction;
- g. Assume complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the initial construction, periodic nourishment, operation, or maintenance of the project;
- h. Agree that the non-Federal Sponsor shall be considered the operator of the project for the purpose of CERCLA liability, and to the maximum extent practicable, operate, maintain, and repair the project in a manner that will not cause liability to arise under CERCLA;
- i. If applicable, comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended by Title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (Public Law 100-17), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way, required for the initial construction, periodic nourishment,

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

operation, and maintenance of the project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act:

- j. Comply with all applicable Federal and State laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army," and Section 402 of the Water Resources Development Act of 1986, as amended (33 U.S.C. 701b-12), requiring the non-Federal preparation and implementation of floodplain management plans;
- k. Provide the non-Federal share of that portion of the costs of mitigation and data recovery activities associated with historic preservation, that are in excess of 1 percent of the total amount authorized to be appropriated for the project, in accordance with the cost sharing provisions of the agreement;
- l. Participate in and comply with applicable Federal floodplain management and flood insurance programs;
- m. Do not use Federal funds to meet the non-Federal sponsor's share of total project costs unless the Federal granting agency verifies in writing that the expenditure of such funds is authorized;
- n. Prescribe and enforce regulations to prevent obstruction of or encroachment on the project that would reduce the level of protection it affords or that would hinder future periodic nourishment and/or the operation and maintenance of the project;
- o. Not less than once each year, inform affected interests of the extent of protection afforded by the project;
- p. Publicize floodplain information in the area concerned and provide this information to zoning and other regulatory agencies for their use in preventing unwise future development in the floodplain, and in adopting such regulations as may be necessary to prevent unwise future development and to ensure compatibility with protection levels provided by the project;

CESAJ-PD-PN

Subject: Broward County, Florida, Shoreline Protection Project Segments II and III
Documentation of Policy Compliance Review

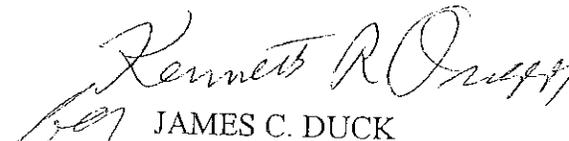
- q. For so long as the project remains authorized, the non-Federal Sponsor shall ensure continued conditions of public ownership and use of the shore upon which the amount of Federal participation is based;
- r. Provide and maintain necessary access roads, parking areas, and other public use facilities, open and available to all on equal terms;
- s. Recognize and support the requirements of Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended, and Section 103 of the Water Resources Development Act of 1986, Public Law 99-662, as amended, which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element; and
- t. At least twice annually and after storm events, perform surveillance of the beach to determine losses of nourishment material from the project design section and provide the results of such surveillance to the Federal Government.

RESPONSE: Concur. Pages 7 through 10 of the report will be revised to reflect the items of cooperation above.

DISCUSSION: Section 311 of WRDA 1999 allows PED by sponsor with subsequent reimbursement. Broward County desires to receive reimbursement for work as it is completed and accepted by the District (i.e., after PED, Segment II, Segment III). Cost apportionment in the items of cooperation also needs to be revised to be project specific.

REQUIRED ACTION: The report will be revised to reflect the most current items of cooperation as cited in the comment.

ACTION TAKEN: The report has been revised to reflect the most current items of cooperation.


JAMES C. DUCK
Chief, Planning Division



DEPARTMENT OF PLANNING AND ENVIRONMENTAL PROTECTION - Biological Resources Division

218 S.W. 1st Avenue • Fort Lauderdale, Florida 33301 • 954-519-1230 • FAX 954-519-1412

June 27, 2003

Richard Bonner, P.E., Deputy District Engineer
Corps of Engineers, Jacksonville District
701 San Marco Blvd
Jacksonville, FL 32232-0019

Subject: Broward County, Segments II and III, Shore Protection Project

Dear Mr. Bonner: *RICHARD*

Attached are 24 complete copies of the General Reevaluation Report (GRR) with Final Environmental Impact Statement (FEIS) for the above-referenced project. The documents have incorporated comments by your staff provided to us under your letter of May 12, 2003, as summarized in the response sheets appended to this letter. It is our understanding that following a brief review by your staff to ensure that our revisions incorporate staff comments, the documents will be forwarded to the South Atlantic Division in Atlanta for their review, and thence to Headquarters in Washington D.C.

We respectfully request that every effort be made to expedite the review processes. The GRR and FEIS have been extensively coordinated with the Corps of Engineers at all levels over the past three years, as well as with other state and federal agencies and the public. Comments received by the Corps, other agencies, and the public have been considered and addressed in the reports where appropriate. The resulting analyses clearly document the engineering, economic, and environmental justification for carrying out the project. It should be pointed out that during the time it has taken to conduct the many reviews, revisions, and studies required to complete the reports, the beaches in question have continued to erode, placing important and valuable property, structures, and infrastructure at risk of damage from even moderate storms. It is critical that this project be carried out as soon as possible.

We are grateful to you and your staff for your continuing support of this important project. Please feel free to contact me at any time if you or your staff have questions or need additional information.

Sincerely,

Stephen Higgins
Beach Erosion Administrator

attachments

c(w/o attach.) Steve Somerville, Director, Department of Planning and Environmental Protection
Pamela Landi, Office of Public and Governmental Relations
Eric Myers, Director, Biological Resources Division
Jackie Thompson, Bureau of Beaches and Wetlands Systems, FDEP
Norman Beumel, Coastal Planning & Engineering, Inc.
Chris Creed, Olsen Associates, Inc.

Broward County Board of County Commissioners

Stephen Eggleston, Jr. • Ben Graber • Sue Gunzburger • Kristin D. Jacobs • Ilene Lieberman • Lori Nance Parrish • John E. Rodstrom, Jr. • James A. Scott • Diana Wasserman-Rubin
www.broward.org/dpep

April 25, 2003

CONSOLIDATED JACKSONVILLE DISTRICT (CESAJ) COMMENTS ON THE BROWARD COUNTY SHORE PROTECTION PROJECT GRR/EIS (SEG II AND III)

REAL ESTATE (RE)

1. In the Real Estate Appendix it indicated in Paragraph 12, c. there is a cost of \$150,000 identified as "Relocation Assistance Payments". There is a footnote, which identifies this cost as an expense for installation of cable conduit to be used for installation of future cable infrastructure to prevent impacts to the design beach section.

We do not believe that this should be a real estate cost. If the installation of this conduit is an authorized project feature, it would appear to be a construction cost vs. a real estate cost. PL 91-646 (referred to in the report) would come into play in the event that we were relocating an individual or business because of project impacts. This does not seem to be the case here. Is the conduit already in place? Are we "relocating" the conduit?

I think there are some unanswered questions related to this cost, but in any event, we are almost certain that this cost should not be in the Real Estate Appendix.

Response/Action: \$150,000 cost should not be in the report. Sponsor to send Real Estate Appendix to our Real Estate Office to be placed in Federal Format.

Action Taken: The requested information was sent to the District under separate cover and incorporated into Appendix F.

OFFICE OF COUNSEL (OC) - (Revisions made to the following comments 4/25/03 by CESAJ-OC)

2. Paragraph 29, Items of local cooperation needs to include a compliance statement with Federal labor laws. The statement is normally part of the compliance with federal and state laws. It normally reads as follows as taken from the Manatee Harbor PCA.

In the exercise of their respective rights and obligations under this Agreement, the Non-federal Sponsor and the Government agree to comply with all applicable Federal and State laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army" and all applicable federal labor standards requirements

including, but not limited to, 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 (revising, codifying and enacting without substantive change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a et seq.), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 et set.) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c)). (Please change paragraph 29 (j) to add the words from the above paragraph that are indicated in bold letters.)

Action Taken: Paragraph 29. Paragraph 29(j) has been replaced with the requested language.

Paragraph 29, Items of local Cooperation, needs to include the Congressionally mandated items regarding controlling water pollution, and the Corps' approval of plans and specifications and the arrangements for the prosecution of work on the project. Are other items specified by Congress applicable at this time? This needs to be consistent with the 1965 authorization language.

Change paragraph 29 (b) to read as follows:

"(b) For so long as the project remains authorized, perform periodic nourishment, operate, maintain, repair, replace, and rehabilitate the completed project, or functional portion of the project, at no cost to the Federal Government, in a manner compatible with the project's authorized purposes and in accordance with applicable Federal and State laws and regulations and any specific directions prescribed by the Federal Government;"

Action Taken: The requested change has been made to Paragraph 29.

Add to paragraph 29 the following subparagraphs

(u) Control water pollution to the extent necessary to safeguard the health of bathers;

(v) Obtain approval of the Chief of Engineers, prior to commencement of work on a project, of detailed plans and specifications and arrangements for prosecution of work on the project.

Action Taken: Paragraph 29. The requested paragraphs have been added.

3. Please change paragraph 166 to read as "It is recommended that the authorized project for Broward County, Florida be modified and Federal construction funding provided to the local sponsor in accordance with the recommended plan described in paragraphs 119, 120 and 121 (please confirm these are correct.) and subject to local interests complying with the items of local cooperation as stated in paragraph 29, with such modifications as in the discretion of the Chief of Engineers may be advisable."

Action Taken: Paragraph 166. The paragraph has been revised to include a statement that the recommendation is subject to non-Federal sponsor compliance to the items of local cooperation. The paragraph numbers that reference the recommended plans have been revised.

4. Paragraph 156 states that a mitigation plan for unavoidable hardbottom impacts is being developed. I believe one has been developed and needs to be so stated. Additionally, if it is desired that the Federal government participate in mitigation it should be clearly stated. There also need to be items of local cooperation providing for this mitigation participation plus a statement of the non-federal sponsor's duty to OMRR&R the mitigation until the project is deauthorized. Are the mitigation costs included in the project costs? (Where is this shown?) It must be clearly shown in the EIS that the state and Federal agencies require mitigation construction up front. If the Sponsor is going to start building the mitigation in May 2003, state this in the GRR.

Action Taken: Paragraph 156. The statement regarding the mitigation plan has been revised to reflect its completed status. Federal participation is shown in Table 3 (existing) and Table 5 (revised). Paragraphs 119 and 120 have been revised to reflect that the mitigation is part of the recommended plan.

5. Paragraph 165, Project operation and maintenance needs to state that the OMRR&R plan must be approved by the Corps.

Action Taken: Paragraph 165. The paragraph has been revised to reflect that the OMRR&R plan will be approved by the Corps of Engineers.

~~6. Normally we provide a District Engineer's Recommendation as being subject to the Non-Federal Sponsor requirement to comply with the items of local cooperation. This report does not. (John Pax indicated on 4/25/03 that this was completed by Comment 3.)~~

Action Taken: No response required.

7. EIS section 1.8, is coordination with the State Historic Preservation Officer Complete? (See Environmental Section on Cultural Resources after Comment 26.) Completion of the Cultural Resources Coordination is being conducted via a letter dated April 22 or 23, 2003, from Jacksonville District (CESAJ-PD-E) to Dr. Janet S. Matthews, SHPO.

Action Taken: Section 1.8 was revised to reflect completion of coordination.

8. EIS, Coastal Barrier Resources, has the coordination on the application to the project to these Coastal Barrier Resources Units been completed? (Refer to page 206 in the EIS) State this was accomplished with the CAR if appropriate.

Action: David Bacon Act requirements are needed. Where you get the language and where you place the language must be consistent. Mitigation: Para. 156 to be developed further. Mitigation Plan to be updated by Sponsor. It must be in report and will have to work with HQ. Sponsor to place paragraph in report addressing up front mitigation and deal with cost sharing with HQ. Coastal Barrier Resources: issues must be clarified. Can refer back to CAR. Clarify that John U Lloyd is in Coastal Barrier Resources Unit.

Action Taken: The requested coordination is complete and is reflected in the EIS. Davis-Bacon Act requirements were added to the main text. References to the mitigation were added to the project description in the main text.

GEOTECHNICAL (EN-GG)

9. Editorial Comments:

- a. Appendix A, page A-19, paragraph A-49, line 6. "Borrow Areas I and I" should be "I and II".
- b. Appendix E, page E-7, paragraph E-23, line 5. Arenitic is not synonymous with siliceous. Arenitic means sand, regardless of composition. Delete arenitic and leave siliceous. This error is repeated in main report, Environmental Impact Statement, Section 3, Affected Environment, page 49, 3rd paragraph, Sediment Composition, line 7.

Action Taken: The requested changes have been made.

INDEPENDENT TECHNICAL REVIEW SECTION (EN-TI)

General concern for comments 10 through 15 relate to the following general questions: Does the project perform its authorized function and will it be a safe, functional, and constructible solution to the authorized project purpose?

10. (EN-TI-jdm-1) A cursory inspection of the report plates indicates that the recommended plan berm widths need to be re-affirmed. See Plate 23 at R-110 & R-111. See Plate 25 at R-117, notice 6-foot berm width (Also a constructability concern). Monument R-123 has 4 times the amount of material in the construction template over that shown in the equilibrium profile. How was the reduced berm width arrived at? Is this discussed as the locally preferred plan?

Response/Action: Provide information on the formulation of berm widths – why do they vary? (See Plate 25 @ R-117 and Plate 15 for examples)

Response: The reevaluation of the Segment III project revealed that the optimum design berm width along the Hollywood/Hallandale reach is a constant 50-ft (relative to the Erosion Control Line). Advance fill and overfill are additive to the profile section. This design section remains in place along most of the

Segment III shoreline due to past nourishment. Accordingly, the proposed renourishment is intended mostly to replace advance fill and overfill along the Segment III shoreline.

The specified advance fill and overfill along the shoreline varies according to the historical erosion rates documented with post-project monitoring from two previously constructed Federal projects at this location. It is noted that the shoreline change conditions along the project shoreline vary significantly from quasi-stability to erosion of more than 9 cubic yards per foot per year. The noted areas of narrower beach sections (R-110, R-111, and R-117) are located along reaches of shoreline where the historical shoreline changes rates are some of the lowest along the entire project reach. Accordingly, the volume of advance fill and overfill at these locations was specified according to need.

Regarding the constructability of the project, there are areas along the project reach where very little fill will be required. Consultations with the dredging industry have confirmed that because there are substantial volumes of sand currently in place along those areas, continuous alongshore sand placement operations can be performed with appropriate diking and pipeline extensions.

The comment regarding the equilibrium fill section at R-123 is discussed in the response to comment 11.

11. (EN-TI-jdm-2) Check material balancing at Monument R-123. It appears to have 2-4 times the amount of material in the construction template over that shown in the equilibrium profile. Possible excess material may impact sensitive habitat. Profile R-86 in the groin field at J. U. Lloyd appears to be overbuilt. Explain added beach fill, or indicate location of this information in the GRR/EIS.

Response/Action: Explain.

Response: Inspection of the construction and equilibration beach shapes at R-123 does not suggest that there is a discrepancy between the respective volumes on the order of 4 times. The clarity of the reproduced figure in Plate 27 may be the source of the confusions. Please note that the construction fill is shaded with a "sand" hatch. The equilibrium beach shape is the upper line along the seaward most portion of the project and the middle line along the upper portion of the section.

It is noted that the equilibrated beach shape is assumed to represent beach conditions approximately one year following project construction. It is common for the cross-shore equilibration of a beach section to occur over a period from one to three years. During this period, the alongshore loss of sand from the beach continues to occur reducing the amount of material that is ultimately available to form the equilibrated beach shape. In this present design analysis, it was assumed that cross-shore equilibration of the project will be mostly complete

within one year following construction and that the annual loss of sand from a profile is equivalent to historical trends.

Quantitatively, the construction volume depicted on Plate 27 (R-123) is about 1.14 times larger than the equilibrium volume. Therefore, the equilibration shape of the beach profile represents the construction volume of sand (about 73 cy/ft) minus one year's losses for that reach of shoreline (9 cy/ft/yr). Since the historical alongshore sand losses rate is documented to be highly variable along the Segment III shoreline, the expected equilibrium beach shape was estimated at each FDEP R-monument rather than simply assuming a uniform sand loss rate along the entire Segment III shoreline.

The same method was used for estimating the equilibrated beach shape for the John U. Lloyd reach. Therefore, the explanation presented above also applies to the comment for R-86.

It is noted that the beach sections at R-86 and R-123 have historically been the most highly erosional along any section of the Segment III shoreline. Therefore, the imbalance between construction and equilibrated beach volumes are most pronounced at these locations.

12. (EN-TI-jdm-3) Plate 29 does not have the bulb at county line as noted in HQ AFB response to comment 6 and comment 7 on tapers in AFB.

Response/Action: AFB comment – explain reasons.

Response: Although the terminal configuration of the beach fill at the Broward/Miami-Dade County line does not visually appear as a "bulb", a sand volume, on the order of about 20,000 cubic yards, in addition to the advance nourishment and overfill has been added to the southernmost end of the Hollywood/Hallandale reach to address end losses from that portion of the fill. This additional material is to be distributed along the southernmost 1,000 feet of the fill, thus acting as a feeder section to the southern end. Placement of the material in a classical "bulb" would result in an unacceptable amount of hardbottom impacts at that location. The performance of this approach was examined with the calibrated GENESIS model established for the project. The results of this analysis are discussed in Page B-135 of the GRR. It is noted that due to the shoreline configuration immediately south of the project, the expected end loss rates at the south end of the project are relatively low compared to those expected at north Hollywood.

13. (EN-TI-jdm-4) Some derelict structures are noted. For safety, are they to be removed or leveled. Has the beachfill area been inspected for other safety concerns such as misc debris, structure remnants, etc?

Response/Action: Address or indicate where concerns are addressed. Advise if sponsor is the process of removing derelict structures.

Response: Derelict structures in Segments II and III were removed in spring 2003.

14. (EN-TI-jdm-5) The PDT and sponsor have probably considered this, it is included for completeness. In regards to safety and the amount of shell and shell hash, will this beach section develop escarpments in excess on 1-foot in height. Will the public need to be made aware of possible drop off?

Response/Action: Address or indicate where safety concerns are addressed.

Response: Escarpments will be leveled during construction. Significant post construction scarping is not expected.

General concern for comment 15: Does the design follow USACE engineering criteria and professional procedures? (If not, have proper waivers been obtained?). Are the basic design assumptions valid and in accordance with principles and practices?

15. (EN-TI-jdm-6) In regards to Civil Engineering, yes. What about in regards to Coastal Engineering, Coastal Geology and Coastal Hydrodynamics?

Response: The beach nourishments and coastal structures have been designed in accordance with the standard of care in the coastal engineering industry.

General concern for comment 16: Are appropriate analyses and methods being used and do they conform to USACE policy, regulations, and principles?

16. (EN-TI-jdm-7) In regards to Civil Engineering, yes. What about in regards to Coastal Engineering and Coastal Hydrodynamics? What about in regards to planning guidance and policy?

Response/Action: Address or indicate where concerns are addressed. (Reference use of ER 1105-2-100 Planning Guidance Notebook if applicable.)

Response: The project has been planned in accordance with ER 1105-2-100.

General concern for Comments 17 through 23: For the current phase of the project, is the engineering content sufficiently complete, and does it provide an adequate basis for the baseline cost estimate and possible cost growth issues?

Response: The engineering is complete. Cost estimates have been reviewed and amended as appropriate.

17. (EN-TI-jdm-8) Project completion and costs are sensitive to the amount of material in the borrow areas and how they will be dredged and placed. Plate E-3 B/A III has dredging depths for 95% of the B/A ranging from EL (-) 71 to EL (-) 86 feet. Explain the technology for this work and the associated costs.

Response/Action: Explain dredging plan, sequencing, methodology. May refer to EIS.

Action Taken: We recognize that the proposed dredge depth limits in Borrow Area III are at or beyond the dredge limits of the majority of the U.S. hopper dredge fleet. Nevertheless, published specifications on Great Lakes Dredge & Dock's hopper the *Liberty Island* and Bean Stuyvesant's hopper the *Stuyvesant* indicate nominal dredge depth capability in excess of 100 feet. Therefore, the dredge industry is capable of performing the work without modification of a dredge. Borrow Area III represents only 10 percent of the total borrow area volume. If there is an increase in cost in dredging Borrow Area III, its effect on the overall cost estimates are minimal. No change to the document is warranted.

A borrow area rotation plan was developed as part of the regulatory review. A copy is attached to further explain the dredging plan, sequencing, and methodology.

18. (EN-TI-jdm-9) The B/As do not appear to have addressed side slope sloughing in their design. All slopes are shown vertical (may be because of scale) What is the impact of side slopes on the quantities? See Plate E-1 EI(-) 29 along E 960500 and elsewhere.

Response/Action: Explain dredging plan, sequencing, methodology. May refer to EIS.

Action Taken: The volume of sand contained in a 1V:2H side slope for all the borrow areas is approximately 105,000 c.y. This is 2.3 percent of the available volume. Side slopes will be shown in the construction plans. No change in the document is warranted.

19. (EN-TI-jdm-10) Address work corridors to and from the B/As and to and from the beachfill areas. Address permitting for same.

Response/Action: Show work corridors in EIS or WQC.

Action Taken: Work corridors are addressed in the plans and specifications. No change in the document is warranted.

20. (EN-TI-jdm-11) Check the environmental windows for the dredging and construction schedule. Are their other times of year/ time of day work constraints

that need to be addressed in the cost estimate? Describe dredging process, methods, and constraints.

Response/Action: Indicate if there are environmental windows that can or will affect the construction schedule and cost estimate. Indicate where this information is located in the GRR or EIS. Show work corridors in EIS or WQC.

Action Taken: Work corridors will be included in the plans and specifications. Environmental restrictions have been factored into the project. Hollywood/Hallandale have no environmental window restrictions. Segment II and John U. Lloyd must be built outside of sea turtle nesting and hatching season.

21. (EN-TI-jdm-12) Suggest adding Vibration Monitoring/Construction Controls to the project.

Response/Action: Vibration monitoring – will it be used? Explain how. Indicate if and where costs are included in cost estimate.

Action Taken: These are addressed in the plans and specifications. No change in the document is warranted.

22. (EN-TI-jdm-13) Include anticipated construction sequence and equipment mix that was used as the basis for the cost estimate. Costs will vary. Suggest that a match of B/A versus beach fill area be included so that cost growth can be monitored. What are the routes and distances and how do they compare to the cost estimate?

Response/Action: Explain how cost estimates were obtained with construction sequencing. Add rationale for construction sequence and assumptions involved as the basis for the cost estimates.

Response: See the attached borrow area rotation and construction time estimate.

23. (EN-TI-jdm-14) Refer to EIS App F (mitigation construction) Fig. 7 and list of constraints. The work is limited to deeper than 15-foot contour. This does not match provided bathymetry. In addition, the barge is set beam into the waves. Review for constructability and safety. See page 7, item 3, suggest removing word “excessive.” Item 4, is less than 15 feet.

Response/Action: Explain. Also, explain why barges are shown parallel to wave crest?

Response: Several challenges are inherent in building artificial reefs in shallow waters around natural reefs. These include depth clearance for barge

navigability, sensitivity to sea state, and barge anchoring. The magnitude of the project adds the problem of material supply and delivery to the deployment site. In addition, these factors can compound as in the case of sea state and water depth where wave height must be subtracted from the water depth to calculate minimum draft clearances.

Minimum water depth at the proposed mitigation site is 15 feet, which in calm weather conditions will allow a 600-ton barge to operate (7 feet, loaded draft). The shallow water depths will prohibit construction in any but calm weather conditions. Therefore, all construction will take place during the summer months.

Barges will be anchored during deployment with permanent moorings for precise horizontal positioning. The challenge of anchoring is two-fold. Nearby hardbottom restricts anchor placement locations and shallow sediment depths create poor holding ground for anchors. As a result a 50-foot buffer will provide some westward anchoring areas shoreward of the nearshore reef. The buffer will also minimize the risk of accidental damage to natural hardbottom by misplacement of rocks. The permanent moorings will be installed on sandy substrate and will consist of steel pilings driven into the hardbottom.

Specific quality assurance requirements that will be followed include:

- a. No lines, cables or chain will be allowed to pass over hardbottom areas. If this proves necessary (for reef or existing mitigation) buoyant lines or floats will be used to prevent scraping the reef. Permanent moorings may be used for barges (if allowed in State and Federal permit conditions). These will be steel pilings driven into sand covered bottom. No anchors or moorings will be placed on hardbottom.
- b. Rocks will be in a single layer but allowance is made for rocks landing in crevices between existing rocks as long as the vertical relief does not exceed 6 feet above the existing grade. A maximum spacing of 7 feet between some boulders is permitted, but the frequency of occurrence of this will not exceed 40%.
- c. Limestone boulders will be clean and free of excessive soil or plant material.
- d. Barges and tugs loaded drafts will not exceed 10 feet, and vessels will not operate in water depths less than 15 feet.
- e. The County will be notified within 24 hours if reef damage occurs, and all construction operations shall cease until an assessment of damage is made.

- f. Deployment operations will cease if seas exceed 4 feet, and all vessels must be released from moorings and relocated to deeper waters.
- g. Deployment operations will take place between April 1 and September 30 unless approved by Broward County.
- h. Transit corridors for barges will be identified to ensure adequate draft is available. The corridors will be located over sandy bottom to the greatest extent possible.

General concern for Comments 24 and 25: Has ITR been performed according to COE guidance and District Standard Operating Procedures and is the ITR documentation appropriate?

Response: ITR has been accomplished.

24. (EN-TI-jdm-16) The depth, experience and knowledge of the reviewers were evident by their comments. Their review was a definite value added. **NO RESPONSE IS REQUIRED FOR THIS COMMENT.**

25. (EN-TI-jdm-17) Verify that quantities have been independently checked.

Action Taken: The quantities were checked.

COASTAL DESIGN SECTION (EN-HC)

26. The reproduction quality of some of the figures in the GRR is not as sharp as in previous versions. For example, see figures B-8, B-13, B-14, B-23, B-25, and B-27. Can these figures be improved for the final printing of the document?

Response/Action: Clarify figures in final report.

Action Taken: Improvements in printing the document have been attempted.

ENVIRONMENTAL AND CULTURAL RESOURCES (PD-EG) (Comment not numbered)

General information for the record – not for response: Completion of the Cultural Resources Coordination is being conducted via a letter dated April 22 or 23, 2003, from Jacksonville District (CESAJ-PD-E) to Dr. Janet S. Matthews, SHPO.

Response: See Response Number 7.

QUALITY ASSURANCE (CO-CQ)

~~27. It was difficult to determine if all comments had been addressed correctly as the pages or paragraph given by the response was not always accurate. I spent a great deal of time trying to 'match' or find the correct response, therefore, I may be incorrect when I say I couldn't find the response. I did not find any 'show stoppers'. The following was noted:~~

- ~~a. Page 4, para k; Not found~~
- ~~b. Page 4, para m; Not found~~
- ~~c. Page 6, para 18; Amount not consistent with response~~
- ~~d. Page 7, para 24; Unable to find change~~
- ~~e. Page 12, para 54; Did not find change~~
- ~~f. Page 14, para 65; Table shows B53, not T53~~
- ~~g. Page 31, para 155, 156; Did not find changes~~

~~Overall it was noted that location of changes were not consistent with stated paragraph or page as given in the response.~~

~~Response/Action: Sponsor to locate and make corrections.~~

~~Action Taken: Comment rescinded, no action required.~~

ECONOMICS (PD-D)

28. The Federal Discount Rate for projects for FY 2003 (per Section 1.4.11 of P & G) is 5.875 percent. The subject report is using FY 2002's rate of 6.125 percent.

Response/Action: Show benefits/costs for recommended plan at 5 7/8% in an Economics Addendum to the report as discussed during the conference call on April 17, 2003.

Action Taken: The economics of the project have been verified with the current interest rate. The pertinent data page and the syllabus have been revised accordingly. A brief explanation page has been inserted after the pertinent data page with tables as required.

The remainder of the document was left unaltered.

END of Comments

p:broward/5350.56/response to comments ltr.doc

Broward County Shore Protection Project
 Estimated Construction Time and Borrow Area Use

Scenario 1

Construct with one small dredge (2000 cy capacity)

	Time to Construct	Construction Start	Construction Finish	Cycles/day	# of Borrow Areas Avilbe	Borrow Areas Available for Use	Avg # of Trips to each BA per day	Total # of Trips
Hollywood/Hallandale	173	1-Sep-03	20-Feb-04	4.3	5	I, II, III, IV, VI	0.9	550
John U. Lloyd	67	20-Feb-04	27-Apr-04	4.4	3	I, II, III	1.5	220
Pompano	22	1-Nov-04	22-Nov-04	6.1	3	I, II, III	2.0	99
Ft. Lauderdale	91	22-Nov-04	21-Feb-05	5.4	2	I, II	2.7	366
								1,235

Scenario 2

Construct with two small dredges (2 * 2000 cy capacity)

	Time to Construct	Construction Start	Construction Finish	Cycles/day	# of Borrow Areas Avilbe	Borrow Areas Available for Use	Avg # of Trips to each BA per day	Total # of Trips
Hollywood/Hallandale	86	1-Sep-03	26-Nov-03	8.6	5	I, II, III, IV, VI	1.7	550
John U. Lloyd	34	26-Nov-03	29-Dec-03	8.7	3	I, II, III	2.9	220
Pompano	11	1-Nov-04	11-Nov-04	12.3	3	I, II, III	4.1	99
Ft. Lauderdale	46	11-Nov-04	27-Dec-04	10.9	2	I, II	5.4	366
								1,235

Scenario 3

Construct with one large dredge (3500 cy capacity)

	Time to Construct	Construction Start	Construction Finish	Cycles/day	# of Borrow Areas Avilbe	Borrow Areas Available for Use	Avg # of Trips to each BA per day	Total # of Trips
Hollywood/Hallandale	118	1-Sep-03	28-Dec-03	3.5	5	I, II, III, IV, VI	0.7	315
John U. Lloyd	47	28-Dec-03	12-Feb-04	3.6	3	I, II, III	1.2	126
Pompano	16	1-Nov-04	17-Nov-04	4.7	3	I, II, III	1.6	57
Ft. Lauderdale	65	17-Nov-04	21-Jan-05	4.3	2	I, II	2.1	210
								708

Broward County Shore Protection Project						
Borrow Area Volume (Cubic Yards) Summary						
	Senairo			3		
	1 and 2			1 and 2		
Borrow Area	Initial Volume	Final Volume after Segment III	Final Volume after Segments III and II	Final Volume after Segment III	Final Volume after Segments III and II	Final Volume after Segments III and II
1	1,529,000	1,075,000	659,000	1,074,000	627,500	627,500
2	2,288,000	1,834,000	1,418,000	1,833,000	1,386,500	1,386,500
3	495,000	39,000	1,000	40,000	1,000	1,000
4	78,000	0	0	0	0	0
6	99,000	1,000	1,000	1,000	1,000	1,000

Expected Average Production for Hollyhock/Hallandale (Small Dredge)

	1-dredge	2-dredges
Volume Required for HH	1,100,000	cy
Capacity of dredge	2000	cy
Number of trips required	550	knots
Steaming speed	8.5	trips
Rock dump every	4	nautical miles (rock dump every 4th trip)
Average distance traveled	20.7	minutes
Round trip travel time	146	minutes (10% rock)
Fill time	90	(12 minutes connect/ 8 min disconnect)
Connect/Disconnect	20	minutes
Pumpout time	80	minutes
Total cycle time	336	hours
Cycles per day	5.6	
Production without weather	4.3	8.6
Effect of weather and delays	8,500	17000
Production with delays	75%	
Time to Construct HH	6,375	12750
	173	86

Construct HH first

Volume Available (cy)	# of Potential Visits by 2,000 cy dredge	# of trips to borrow area	Trip Distance (nm)	Total distance (nm)	Volume remaining in BA (cy)
BA I	764	154	22.7	3490	1,221,000
BA II	1144	154	20.6	3170	1,980,000
BA III	247	154	20.5	3153	187,000
BA IV	39	39	18.9	736	0
BA VI	49	49	16.9	827	1,000
4,489,000	2,243	550		11376	

Expected Average Production for John U. Lloyd (Small Dredge)

Volume Required for JUL	440,000	cy
Capacity of dredge	2000	cy
Number of trips required	220	
Steaming speed	8.5	knots
Rock dump every	4	trips
Average distance traveled	19.7	nautical miles (rock dump every 4th trip)
Round trip travel time	139	minutes
Fill time	90	minutes (10% rock)
Connect/Disconnect	20	(12 minutes connect/ 8 min disconnect)
Pumpout time	80	minutes
Total cycle time	329	minutes
	5.5	hours
Cycles per day	4.4	8.7
Production without weather	8,700	17400
Effect of weather and delays	75%	
Production with delays	6,525	13050
Time to Construct JUL	67	34

Construct John U. Lloyd Second

	Volume Available (cy)	# of Potential Visits by 2,000 cy dredge	# of trips to borrow area	Trip Distance (nm)	Total distance (nm)	Volume remaining in BA (cy)
BA I	1,221,000	610	73	21.2	1545	1,075,000
BA II	1,980,000	990	73	19.1	1394	1,834,000
BA III	187,000	93	74	19.0	1403	39,000
BA IV	0	0	0	17.4	0	0
BA VI	1,000	0	0	15.4	0	1,000
	3,389,000	1,693	220		4341	

Expected Average Production for Pompano Beach / Lauderdale-By-The-Sea Section

Volume Required for PB/LBTS	198,000	cy
Capacity of dredge	2000	cy
Number of trips required	99	
Steaming speed	8.5	knots
Rock dump every	4	trips
Average distance traveled	6.4	nautical miles (rock dump every 4th trip)
Round trip travel time	45	minutes
Fill time	90	minutes (10% rock)
Connect/Disconnect	20	(12 minutes connect/ 8 min disconnect)
Pumpout time	80	minutes
Total cycle time	235	minutes
	3.9	hours
Cycles per day	6.1	12.3
Production without weather	12,200	24400
Effect of weather and delays	75%	
Production with delays	9,150	18300
Time to Construct PB/LBTS	22	11
		days

Construct PB/LBTS third

	Volume Available (cy)	# of Potential Visits by 2,000 cy dredge	# of trips to borrow area	Trip Distance (nm)	Total distance (nm)	Volume remaining in BA (cy)
BA I	1,075,000	537	40	7.6	304	995,000
BA II	1,834,000	917	40	5.5	221	1,754,000
BA III	39,000	19	19	5.4	104	1,000
BA IV	0	0	0	3.8	0	0
BA VI	1,000	0	0	4.3	0	1,000
	2,949,000	1,473	99		629	

Expected Average Production for Fort Lauderdale Section

Volume Required for PB/LBTS	732,000	cy
Capacity of dredge	2000	cy
Number of trips required	366	
Steaming speed	8.5	knots
Rock dump every	4	trips
Average distance traveled	11.0	nautical miles (rock dump every 4th trip)
Round trip travel time	78	minutes
Fill time	90	minutes (10% rock)
Connect/Disconnect	20	(12 minutes connect/ 8 min disconnect)
Pumpout time	80	minutes
Total cycle time	268	minutes
	4.5	hours
Cycles per day	5.4	10.7
Production without weather	10,700	21400
Effect of weather and delays	75%	
Production with delays	8,025	16050
Time to Construct PB/LBTS	91	46

Scenario 1. Construct FL last

	Volume Available (cy)	# of Potential Visits by 2,000 cy dredge	# of trips to borrow area	Trip Distance (nm)	Total distance (nm)	Volume remaining in BA (cy)
BA I	995,000	497	168	12.1	2029	659,000
BA II	1,754,000	877	168	10.0	1680	1,418,000
BA III	1,000	0	0	9.9	0	1,000
BA IV	0	0	0	8.3	0	0
BA VI	1,000	0	0	6.3	0	1,000
	2,751,000	1,374	336		3709	

Expected Average Production for Hollywood/Hallandale

Volume Required for HH 1,100,000 cy
 Capacity of dredge 3500 cy
 Number of trips required 315
 Steaming speed 8.5 knots
 Rock dump every 4 trips
 Average distance traveled 20.7 nautical miles (rock dump every 4th trip)
 Round trip travel time 146 minutes
 Fill time 120 minutes (10% rock)
 Connect/Disconnect 20 (12 minutes connect/ 8 min disconnect)
 Pumpout time 120 minutes
 Total cycle time 406 minutes
 6.8 hours
 Cycles per day 3.5
 Production without weather 12,400 cy/day
 Effect of weather and delays 75% (Construction between November & March)
 Production with delays 9,300 cy/day
Time to Construct HH 118 days

Construct HH first

	Volume Available (cy)	# of Potential Visits by 3,500 cy dredge	# of trips to borrow area	Trip Distance (nm)	Total distance (nm)	Volume remaining in BA (cy)
BA I	1,529,000	436	88	22.7	1994	1,221,000
BA II	2,288,000	653	88	20.6	1812	1,980,000
BA III	495,000	141	89	20.5	1822	183,500
BA IV	78,000	22	22	18.9	415	1,000
BA VI	99,000	28	28	16.9	473	1,000
	4,489,000	1,280	315		6516	

Expected Average Production for John U. Lloyd

Volume Required for JUL 440,000 cy
 Capacity of dredge 3500 cy
 Number of trips required 126
 Steaming speed 8.5 knots
 Rock dump every 4 trips
 Average distance traveled 19.7 nautical miles (rock dump every 4th trip)
 Round trip travel time 139 minutes
 Fill time 120 minutes (10% rock)
 Connect/Disconnect 20 (12 minutes connect/ 8 min disconnect)
 Pumpout time 120 minutes
 Total cycle time 399 minutes
 6.7 hours
 Cycles per day 3.6
 Production without weather 12,600 cy/day
 Effect of weather and delays 75% (Construction between November & March)
 Production with delays 9,450 cy/day
Time to Construct JUL 47 days

Construct John U. Lloyd Second

	Volume Available (cy)	# of Potential Visits by 3,500 cy dredge	# of trips to borrow area	Trip Distance (nm)	Total distance (nm)	Volume remaining in BA (cy)
BA I	1,221,000	348	42	21.2	889	1,074,000
BA II	1,980,000	565	42	19.1	802	1,833,000
BA III	187,000	53	42	19.0	796	40,000
BA IV	0	0	0	17.4	0	0
BA VI	1,000	0	0	15.4	0	1,000
	3,389,000	966	126		2487	

Expected Average Production for Pompano Beach / Lauderdale-By-The-Sea Section

Volume Required for PB/LBTS 198,000 cy
 Capacity of dredge 3500 cy
 Number of trips required 57
 Steaming speed 8.5 knots
 Rock dump every 4 trips
 Average distance traveled 6.3 nautical miles (rock dump every 4th trip)
 Round trip travel time 45 minutes
 Fill time 120 minutes (10% rock)
 Connect/Disconnect 20 (12 minutes connect/ 8 min disconnect)
 Pumpout time 120 minutes
 Total cycle time 305 minutes
 5.1 hours
 4.7
 Cycles per day 16,500 cy/day
 Production without weather 75% (Construction between November & March)
 Effect of weather and delays
 Production with delays 12,375 cy/day
Time to Construct PB/LBTS 16 days

Construct PB/LBTS third

Volume Available (cy)	# of Potential Visits by 3,500 cy dredge	# of trips to borrow area	Trip Distance (nm)	Total distance (nm)	Volume remaining in BA (cy)
BA I 1,075,000	307	23	7.6	175	994,500
BA II 1,834,000	524	23	5.5	127	1,753,500
BA III 39,000	11	11	5.4	60	500
BA IV 0	0	0	3.8	0	0
BA VI 1,000	0	0	4.3	0	1,000
2,949,000	842	57		362	

Expected Average Production for Fort Lauderdale Section

Volume Required for PB/LBTS 732,000 cy
 Capacity of dredge 3500 cy
 Number of trips required 210
 Steaming speed 8.5 knots
 Rock dump every 4 trips
 Average distance traveled 11.0 nautical miles (rock dump every 4th trip)
 Round trip travel time 78 minutes
 Fill time 120 minutes (10% rock)
 Connect/Disconnect 20 (12 minutes connect/ 8 min disconnect)
 Pumpout time 120 minutes
 Total cycle time 338 minutes
 5.6 hours
 Cycles per day 4.3
 Production without weather 14,900 cy/day
 Effect of weather and delays 75% (Construction between November & March)
 Production with delays 11,175 cy/day
Time to Construct PB/LBTS 66 days

Scenario 1. Construct FL last

	Volume Available (cy)	# of Potential Visits by 3,500 cy dredge	# of trips to borrow area	Trip Distance (nm)	Total distance (nm)	Volume remaining in BA (cy)
BA I	995,000	284	105	12.1	1268	627,500
BA II	1,754,000	501	105	10.0	1050	1,386,500
BA III	1,000	0	0	9.9	0	1,000
BA IV	0	0	0	8.3	0	0
BA VI	1,000	0	0	6.3	0	1,000
	2,751,000	785	210		2318	

SYLLABUS SEGMENT II

The Broward County, Florida Shore Protection Project was authorized by Section 301 of Public Law 89-298, passed on 27 October 1965. The project was authorized in accordance with the report of the Chief of Engineers dated 15 June 1964 and is described in House Document 91, 89th Congress, 1st Session. The authorization provided for the restoration of 2.2 miles of Pompano Beach, and periodic nourishment as needed for the remainder of Segment II for a period of 10 years following initial construction of the project. The initial construction of the Federal project commenced in 1970. A total of 1.1 million cubic yards of sand was placed between FDEP monuments R-32 and R-49. The first renourishment of the authorized Federal project occurred in 1983. An estimated 1.9 million cubic yards of sand was placed between R-26 and R-53. Following the 1994 Section 934 Reevaluation Report, Federal participation of the authorized project was extended to 50 years after initial construction.

The recommended plan is to provide periodic nourishment to Pompano Beach and Lauderdale-by-the-Sea, the Federal project, from FDEP monuments R-37 to R-42 and R-51 to R-53. Furthermore, it is recommended that periodic nourishment be provided to Ft. Lauderdale (R-53 to R-71) as a modification to the Federal project. Recommended design widths were developed independently for the Federal project and the proposed modification using National Economic Development (NED) methods.

The recommended NED design width for the Federal project (Pompano Beach/Lauderdale-by-the-Sea) is a 100 ft extension of the ECL/baseline. Since Pompano Beach and Lauderdale-by-the-Sea have been previously constructed and receive sand bypassed across Hillsboro Inlet, only 1.5 miles of the 5.4 mile shoreline requires fill to implement the NED plan (i.e., R-37 to R-42 and R-51 to R-53). Implementation of the Federal project will require 26,000 cy of design fill and 172,000 cy of advance fill (198,000 cy total), using a renourishment interval of 6 years. The design beach slope will be constructed similar to the natural beach slope of 1 vertical to 10 horizontal. The sand source for the Segment II shoreline will be portions of five borrow areas located offshore of northern Broward County. The total hardbottom coverage is anticipated to be 3.0 acres. These impacts will be mitigated with limestone boulders at an estimated cost of \$650,000 per acre.

The recommended NED design width for the modification to the Federal project (Ft. Lauderdale) is a 20 ft extension of the pre-project MHW. This reach is 3.4 miles long and extends from R53 to R71. This project will require 476,000 cy of design fill. The advance fill needed to maintain the design throughout a nourishment cycle of 6 years is 256,000 cy, resulting in a total of 732,000 cy of material. The design beach slope will be constructed similar to the natural beach slope of 1 vertical to 10 horizontal. The sand source will be the same five borrow areas that will be used for the Federal project limits. The total hardbottom coverage for the modification to the Federal project will be 3.0 acres. These impacts will be mitigated with limestone boulders at an estimated cost of \$650,000 per acre.

The renourishment construction cost of the project is \$22,084,000, of which 55.35% is eligible for Federal cost sharing. The annualized cost of this plan is \$4,449,000 and the annualized benefits of the project are \$35,028,000. The resulting benefit to cost ratio is 7.9 to 1.0.

**BROWARD COUNTY, FLORIDA
SHORE PROTECTION PROJECT
GENERAL REEVALUATION REPORT**

**PERTINENT DATA AND ECONOMIC SUMMARY
SEGMENT II - HILLSBORO INLET TO PORT EVERGLADES**

<u>Item</u>	<u>Amount</u>
Physical Data:	
Project Length (R25 to R71) (mi.)	8.8
Effective Renourishment Length (mi)	4.9
Volume of Nourishment (1000 cy)	930
Berm Height (ft. above NGVD)	9
Nourishment Interval (yrs.)	6
Remaining Project Life (yrs)	18
Source of Material	Five Offshore Borrow Areas
Financial Data (\$1000):	
Renourishment Construction Cost	22,084.0
Annual Cost (NED Plan) ⁽¹⁾	4,449.0
Annual Benefits	
Damage Reduction and Loss of Land	25,826.0
Recreation	9,202.0
Total	35,028.0
Net Benefits (\$1000)	30,579.0
Benefit-to-Cost Ratio	7.9
Interest Rate (%)	5.875
Cost Apportionment of Construction (\$1000)	
Federal ⁽²⁾	12,455.0
Non-Federal	9,629.0

⁽¹⁾ Includes interest during construction cost.

⁽²⁾ The Federal share is 56.40% of costs eligible for apportionment.

SYLLABUS SEGMENT III

The Broward County, Florida Shore Protection Project was authorized by Section 301 of Public Law 89-298, passed on 27 October 1965. The project was authorized in accordance with the report of the Chief of Engineers dated 15 June 1964 and is described in House Document 91, 89th Congress. The authorization for the Segment III shoreline provided for the restoration of 8.1 miles of shoreline and periodic nourishment for a period of 10 years following initial construction of the project. Following a 1991 Section 934 Reevaluation Report, Federal participation in the authorized project was extended to 50 years after initial construction. Since the Broward County Shore Protection Project was authorized, two reaches of Segment III have been constructed. These are (1) the northern section of the John U. Lloyd State Recreational Area shoreline and (R-86 to R-94) and (2) the Hollywood/Hallandale shoreline (R-101 to R-128).

Initial construction of the John U. Lloyd portion of Segment III occurred in late 1976 and early 1977. That project extended along about 1.52 miles of shoreline between FDEP monuments R-86 and R-94. This project's first renourishment occurred in 1989. The Hollywood and Hallandale project segment was originally constructed in 1979. This project included about 5.25 miles of shoreline between R-101 and R-128. That reach of shoreline was renourished in 1991.

The recommended plan is to reconstruct the NED design width and provide periodic nourishment to John U. Lloyd Beach State Recreation Area (Port Everglades to R-94) and Hollywood/Hallandale (R-101 to R-128). Recommended design widths were reevaluated using National Economic Development (NED) methods. The recommended Segment III NED design width is a 50-ft extension of the ECL/baseline along Hollywood and Hallandale and maintenance of the pre-project shoreline with periodic nourishment along John U. Lloyd. It is recommended that the project be modified to include two T-head groins and jetty spur along the northern 700 feet of the John U. Lloyd shoreline. It is also recommended that sand bypassing be implemented at Port Everglades as a future renourishment sand source for the Segment III project. A Design Documentation Report (DDR) will be required to evaluate the details of the infrastructure required to implement the bypassing plan. These modifications would reduce the average annual project costs by an estimated \$111,000 over the remaining life of the project.

Renourishment of Segment III will require the placement of 1,540,000 cubic yards of sand along the John U. Lloyd Beach State Recreation Area shoreline and the Hollywood/Hallandale shoreline. Of this fill volume, approximately 694,900 cubic yards will be required to reconstruct the design beach and add tapers the remaining 845,100 cubic yards are required for the advance fill and overfill volumes. The sand source for the Segment III shoreline will be portions of five borrow areas offshore of northern Broward County. Nourishment would be provided at 6-year intervals over the remaining 24 years of the project life. The total hardbottom impacts associated with the project are estimated to be 7.6 acres which require 8.9 acres of mitigation. These impacts will be mitigated with limestone boulders at an estimated cost of \$650,000 per acre.

The estimated construction cost of the next renourishment is \$38,452,850, of which 56.16 percent is eligible for Federal cost sharing. The average annual cost for the reevaluated authorized project is approximately \$3,545,000. Average annual equivalent benefits of the project are approximately \$26,480,500 resulting in a benefit to cost ratio of 7.5 to 1.0.

**BROWARD COUNTY, FLORIDA
SHORE PROTECTION PROJECT
GENERAL REEVALUATION REPORT**

**PERTINENT DATA AND ECONOMIC SUMMARY
SEGMENT III - PORT EVERGLADES TO COUNTY LINE
IMPLEMENTATION OF THE REEVALUATED FEDERAL PROJECT**

<u>Item</u>	<u>Amount</u>
Physical Data:	
Project Length (mi.)	6.8
Volume of Nourishment (1,000 cy)	1,540,000
Berm Height (feet above NGVD) (Hollywood/Hallandale)	7
Nourishment Interval (yrs.)	6
Remaining Project Life (yrs.)	24
T-Head Groins/Jetty Spur	2/1
Source of Material	Five Offshore Borrow Areas
Financial Data (\$1000)	
Renourishment Construction Costs	38,452.9
Annual Cost (NED Plan) ¹	3,545.0
Annual Benefits	
Storm Damage Reduction and Loss of Land	13,496.4
Recreation	<u>12,984.1</u>
Total	26,480.5
Net Benefits (\$1000)	9,951.4
Benefit-to-Cost Ratio	7.5
Interest Rate (%)	5.875
Cost Apportionment of Construction (\$1000) ²	
Federal	21,595.1
Non-Federal	16,857.8

¹ Includes interest during construction.

² The Federal share is 56.16 percent for eligible costs.

ECONOMIC UPDATE ADDENDUM
Broward County, Segments II and III, Shore Protection Project
July, 2003

1. The benefits identified in the syllabus and pertinent data pages have been recomputed using the current interest rate, 5.875 percent.
2. The costs identified in the syllabus and pertinent data pages reflect the current estimates to implement the project and to evaluate the NED plan. All annualized project costs were recomputed at the current interest rate, 5.875 percent. Tables EU-1 and EU-2, attached to this addendum, show the revised project costs for Segments II and III, respectively. These costs can be compared with the originally estimated costs for Segment II shown on Table A-28 in GRR Appendix A and for Segment III on Table B-6-3 in GRR Appendix B.
3. Costs and benefits outlined in the remainder of the report have not been updated.
4. The overall estimated costs for mitigation have changed significantly. Mitigation for impacts to nearshore hardbottoms from widening of the beach is a requirement of Federal and State regulatory and resource agencies. Appendix F of the Final Environmental Impact Statement (FEIS) contains the mitigation plan required by the agencies. Estimated unit costs for mitigation in Segment II have increased over the originally estimated costs, but the quantity of mitigation attributable to impacts in Segment II has decreased such that the total estimated costs for mitigation have not increased significantly. Currently estimated costs for mitigation in Segment III are significantly higher than originally estimated due to an increase in the quantity of required mitigation and the aforementioned increase in unit cost for mitigation materials. The increase in the unit cost of mitigation results from a current shortage in the supplies of suitable limestone boulders, from the difficulty in conducting rock deployment in the nearshore zone, and from the necessity for stringent environmental controls and monitoring. The quantity of mitigation was minimized by agency requirement and local sponsor commitment to construct the mitigation prior to construction of the beach project, as detailed in FEIS Appendix H. In summary, as shown in the tables referenced in Item 1 above, estimated cost increases for the required mitigation will result in a contract cost for Segment II (including beach fill, beach tilling, and mitigation) of \$12.1 million vs. the originally estimated cost of \$12.9 million. For Segment III, the currently estimated contract cost (includes beach fill, tilling, groin construction, and mitigation) is \$26.0 million vs. the originally estimated cost of \$22.0 million.
5. The estimated costs for several non-construction contract items have also changed significantly, including surveillance items such as Physical Monitoring and Environmental Monitoring. Due to an increased Federal emphasis on coral reef protection, the US Army Corps of Engineers Regulatory Division, the Environmental Protection Agency, US Fish and Wildlife Service (FWS), and the National Marine Fisheries Service have required that the sponsor conduct

extraordinarily intensive pre-construction, during construction, and post-construction monitoring of the offshore and nearshore resources, including coral reefs, hardbottom communities, and fishes. The FEIS contains a complete treatment of the nature of the resources in the area and of the potential impacts of the project. FEIS Sub-Appendix C-1 contains the FWS Coordination Act Report and Biological Opinion which outlines these requirements. FEIS Appendix E contains the mandated offshore and nearshore biological monitoring programs, and FEIS Appendix G contains the mandated monitoring plan for fishes. Estimated costs for implementing the required environmental monitoring programs have increased significantly over original estimates, which were based on previous successful projects. Physical monitoring, another surveillance item, is shown as a separate cost in Tables EU-1 and EU-2 whereas it was included in the Engineering Design and Supervision and Administration category in Tables A-28 and B-6-3. Due to the comprehensive nature of the project and to the location of Borrow Areas 1 and 2 offshore of Segment I of the project, physical monitoring is required along all three segments of the County's 24 miles of shoreline, increasing the estimated cost of this item.

6. For Segment II, the overall estimated costs for project implementation have changed as follows: Total investment costs are now estimated at \$22.3 million, vs. the original estimate of \$15.1 million, resulting in a total present worth of \$33.5 million and an average annual cost of \$3.1 million vs. an originally estimated total present worth of \$23.9 million and an originally estimated average annual cost of \$2.2 million.
7. For Segment III, the overall estimated costs for project implementation have changed as follows: Total investment costs for the shore protection project are now estimated at \$38.5 million, vs. the original estimate of \$24.3 million. The addition of sand bypassing (the cost estimates for which did not change) results in a total present worth of all costs of \$71.6 million vs. the originally estimated total present worth of \$53.2 million. Average annual costs are now estimated at \$5.6 million contrasted with the originally estimated average annual cost of \$4.3 million.
8. As noted above, the benefits identified in the syllabus and pertinent data pages have been recomputed using the current interest rate, 5.875 percent, but otherwise estimates of benefits have not changed. The primary benefits remain ample to justify Federal participation in the project. The benefit to cost ratios for Segments II and III, recomputed using the new interest rate and incorporating the revised costs, are now 7.9 to 1.0 and 7.5 to 1.0, respectively.

TABLE EU-1
Estimate of Contract and Construction Costs
Segment II
6 Year Renourishment Interval
18 Year Project Life

INTEREST RATE	5.875%
---------------	--------

ITEM	UNIT	QUANTITY	UNIT COST	RENOURISHMENT YEAR		
				0	6	12
Mobilization/Demobilization	JOB	1	\$1,100,000	\$1,100,000	\$1,100,000	\$1,100,000
INITIAL BEACH FILL- Pompano/LBTS	CY	27,000	\$8.50	\$229,500		
INITIAL BEACH FILL-Ft Lauderdale	CY	480,000	\$9.00	\$4,320,000		
RENOURISHMENT NO.	YEAR					
2 - Pompano/LBTS	0	CY	171,000	\$8.50	\$1,453,500	
2 - Ft. Lauderdale	0	CY	257,000	\$9.00	\$2,313,000	
3 - Pompano/LBTS	6	CY	171,000	\$8.50		\$1,453,500
3 - Ft. Lauderdale	6	CY	257,000	\$9.00		\$2,313,000
4 - Pompano/LBTS	12	CY	171,000	\$8.50		\$1,453,500
4 - Ft. Lauderdale	12	CY	257,000	\$9.00		\$2,313,000
Beach Tilling	ACRE	95.0	\$300	\$28,500	\$28,500	\$28,500
Hard Bottom Mitigation	ACRE	3.0	\$650,000	\$1,950,000	\$0	\$0
Subtotal				\$11,394,500	\$4,895,000	\$4,895,000
Contingency		15%		\$1,709,175	\$734,250	\$734,250
Subtotal Contract Cost				\$13,103,675	\$5,629,250	\$5,629,250
Easements	JOB	1	\$543,400	\$543,400	\$0	\$0
Physical Monitoring	JOB	1	\$670,600	\$670,600	\$670,600	\$670,600
Offshore Environmental Monitoring	JOB	1	\$2,278,000	\$2,278,000	\$1,000,000	\$1,000,000
Nearshore Environmental Monitoring	JOB	1	\$2,886,000	\$2,886,000	\$1,000,000	\$1,000,000
Beach Tilling-3 yrs Post Construction	JOB	1	\$243,000	\$243,000	\$243,000	\$243,000
Geotechnical Investigations	JOB	1	\$190,000	\$190,000	\$190,000	\$190,000
E&D+S&A	JOB	1	\$1,894,685	\$2,169,685	\$500,000	\$500,000
Total Construction				\$22,084,360	\$9,232,850	\$9,232,850
Summary-Investment and Annual Costs						
Construction Cost				\$22,084,360	\$9,232,850	\$9,232,850
Interest During Construction				\$256,614	\$0	\$0
Total Investment Cost				\$22,340,974	\$9,232,850	\$9,232,850
Present Worth of Each Construction				\$22,340,974	\$6,555,038	\$4,653,875
Total Present Worth				\$33,549,887		
Average Annual Cost (rounded)				\$3,070,000		

TABLE EU-2
Estimate of Contract and Construction Costs
Segment III
6 Year Renourishment Interval
24 Year Project Life

INTEREST RATE	5.875 %
---------------	---------

ITEM	UNIT	QUANTITY	UNIT COST	RENOURISHMENT YEAR				
				0	6	12	18	
Mobilization/Demobilization	JOB	1	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	
INITIAL FILL	CY	557,600	\$9.79	\$5,458,904				
RENOURISHMENT								
2	0	CY	982,400	\$9.79	\$9,617,696			
3	6	CY	682,500	\$15.00		\$10,237,500		
4	12	CY	682,500	\$15.00			\$10,237,500	
5	18	CY	682,500	\$15.00			\$10,237,500	
Beach Tilling	ACRE	115.0	\$300	\$34,500	\$34,500	\$34,500	\$34,500	
Hardbottom Mitigation	ACRE	8.90	\$650,000	\$5,785,000	\$0	\$0	\$0	
Groins	TONS	5,300	\$75.00	\$397,500	\$43,650	\$43,650	\$43,650	
Groin Mattress Foundation	SQ.FT.	22,000	\$15.00	\$330,000	\$0	\$0	\$0	
Subtotal					\$22,623,600	\$11,315,650	\$11,315,650	\$11,315,650
Contingency	15	%			\$3,393,500	\$1,697,300	\$1,697,300	\$1,697,300
Subtotal Contract Cost					\$26,017,100	\$13,012,950	\$13,012,950	\$13,012,950
Easements	JOB	1	\$81,200	\$81,200	\$0	\$0	\$0	
Physical Monitoring	JOB	1	\$555,600	\$555,600	\$555,600	\$555,600	\$555,600	
Offshore Monitoring	JOB	1	\$4,317,800	\$4,317,800	\$1,000,000	\$1,000,000	\$1,000,000	
Nearshore Monitoring	JOB	1	\$3,623,000	\$3,623,000	\$1,000,000	\$1,000,000	\$1,000,000	
Beach Tilling 3-years Post Const.	JOB	1	\$332,900	\$332,900	\$332,900	\$332,900	\$332,900	
Geotechnical Investigations	JOB	1	\$190,000	\$190,000	\$190,000	\$190,000	\$190,000	
E&D+S&A	JOB	1	\$2,571,000	\$2,571,000	\$1,000,000	\$1,000,000	\$1,000,000	
Total Construction					\$37,688,600	\$17,091,450	\$17,091,450	\$17,091,450
Summary-Investment and Annual Costs								
Construction Cost					\$37,688,600	\$17,091,450	\$17,091,450	\$17,091,450
Interest During Construction					\$764,252	\$0	\$0	\$0
Total Investment Cost					\$38,452,852	\$17,091,450	\$17,091,450	\$17,091,450
Present Worth of Each Construction					\$38,452,852	\$12,134,402	\$8,615,051	\$6,116,420
Initial Cost of Bypass Infrastructure = \$7,000,000						\$7,000,000		
Present Worth of Bypass Infrastructure Construction					\$4,969,784			
Present Worth of Annual Bypassing (44,000 cy/yr @ \$3.50/cy starting at YEAR 6)					\$1,304,366			
Total Present Worth of all Costs					\$71,592,874			
Average Annual Cost (rounded)					\$5,639,000			