DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

October 21, 1986

REPLY TO
ATTENTION OF:
Coastal Environment Section

TO ALL INTERESTED PARTIES:

Attached is a signed copy of the Record of Decision to implement a long-term dredged material disposal plan for the Upper Mobile Harbor, Mobile County, Alabama. This document represents final compliance with the Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act.

Thank you for your interest in this matter.

Sincerely,

James S. Hildreth

for Lawrence R. Green
Chief, Planning Division

Attachment

SAMPD-EC
Ashford

Date Prepared:
17 October 1986

RECORD OF DECISION
CONTINUED OPERATION AND MAINTENANCE
UPPER MOBILE HARBOR
MOBILE COUNTY, ALABAMA

1. Decision: Upper Mobile Harbor consists of a 40-foot navigation channel in Mobile River from the juncture of Mobile River with Mobile Bay to the U.S. Highway 90 bridge. Adequate disposal sites for the large amounts of dredged material from the Upper Mobile Harbor has been a long-standing concern. A recommended plan was formulated that maximizes the use of existing upland dredged material disposal areas, including North Blakeley, South Blakeley and North Pinto, and includes a 238-acre site, ALCOA Expansion Area, and the 509-acre ALCOA tailing ponds on Blakeley Island. The life of these areas will be extended by active management through the use of limited lift thicknesses of disposal material and mechanical dewatering to achieve quicker and more complete consolidation and drying of the material than normally is accomplished by natural means. Past history has indicated that an annual average of 1,400,000 cubic yards of material are dredged from Upper Mobile Harbor. Implementation of this long-term management plan for disposal is dependent on the State of Alabama acquiring the ALCOA land described above and a portion of North Pinto, as well as the preparation of the upland sites for long-term use, i.e., dike construction, dewatering and conditioning of site. An interim disposal plan will be implemented until such time as the Alcoa lands are available. The proposed interim disposal plan involves the use of the existing open-water disposal sites in a step-down fashion along with the diked upland disposal areas which will be prepared for use at the time dredging is required. The use of the upland areas will be alternated so as not to adversely affect the long-term management plan. The open-water sites are currently being used for maintenance of the Mobile Bay and Arlington Ship Channels. The disposal sequence for dredged material will be as follows: the first disposal area, A, just south of the proposed ship turning basin east of McDuffie Island, will be used for dredged material from the Upper Mobile Harbor; material from the ship channel that is normally removed from the channel adjacent to Area A will be disposed of in Area B to the south; material that is removed from the channel adjacent to Area B will be disposed of further south in Area C; and so on down the channel to Area D at the Theodore Ship Channel. Stepping down of material disposal will end at Area D, which will receive material from the channel adjacent to Areas C and D. Material from the Upper Mobile Harbor disposed of in Area A is estimated to be an annual average amount of 664,000 cubic yards. Dredged material disposal will impact approximately 34 acres of artificially created wetlands in the North Pinto site.

2. Alternatives and Considerations Balanced in Making the Decision. An array of alternatives were considered in formulating a long-term disposal plan for dredged material from Upper Mobile Harbor. Initially, twenty-six (26) alternatives were investigated, including disposal options such as upland sites, use of open water and diked sites, industrial uses of the

material, filling existing disposal areas, and gulf disposal. Disposal alternatives considered for detailed analysis include the maximized use of the existing sites, the use of the ALCOA Expansion Area with existing sites, unconfined open-water disposal near Hermit Island with existing sites, step-down along the Mobile Ship Channel with the existing sites and Gulf of Mexico disposal.

The no-action alternative (maximized use of the existing sites) was also considered, but this alternative would provide disposal capacity for only about 10 years whereas the other disposal alternatives would provide at least 40 years of disposal capacity.

The use of unconfined open-water disposal at Hermit Island would involve the loss of between 1,000 and 1,400 acres of bay bottoms and some grassbeds, and related habitat. This alternative is not considered to be environmentally acceptable.

The use of disposal in the Gulf of Mexico is expected to provide 50 or more years of capacity. In order to be feasible, it was assumed in this alternative that the Mobile Bay Ship Channel would be deepened and a portion of that material would be disposed of in the Gulf of Mexico. This would provide the cost effectiveness and technical feasibility to allow the Upper Mobile Harbor material to be disposed of in the Gulf of Mexico. Even though this alternative is environmentally acceptable, without the deepening project it would be economically unacceptable.

The recommended plan was selected over the other alternatives because it addresses the immediate and long term disposal needs for the Upper Harbor in a fashion that is on balance the most economically and environmentally acceptable alternative.

3. Means to Avoid or Minimize Adverse Environmental Effects: All practicable means to avoid or minimize adverse environmental effects have been incorporated into the recommended plan. Measures to minimize adverse project impacts include avoidance of wetlands to the maximum extent practicable, maximized use of existing disposal areas, and active disposal area management through dewatering and consolidation of dredged material. The use of the North Pinto disposal site will entail the loss of approximately 34 acres of artificially created wetlands. Subsequent to the final coordination of the SEIS and after the close of the comment period on the public notice, letters expressing opposition to the use of the North Pinto site have been received. Copies of these letters and the Mobile District's responses are attached. Some of the opponents requested that a public hearing be held. I determined, based on an evaluation of the requests, that no new information relevant to the decision process would be developed. All concerns that were raised have been previously considered; therefore a public hearing was not held. The North Pinto site is essential to the effectiveness and efficiency of the long-term disposal plan for Upper Mobile Harbor. Feasible alternatives have been considered and none that are practicable will have less adverse impacts on the aquatic and semi-aquatic

ecosystem. As experience is gained with the management techniques, it may be possible to adjust the manner in which the diked disposal areas are utilized to either prolong their lives or to utilize the sites for other purposes.

Appropriate erosion control techniques will be utilized during the preparation and construction of all upland sites to minimize sedimentation into adjacent wetlands and waterways. Discharges from appropriate upland disposal sites will be monitored to ensure that the effluent is within a range of pH 6.0 to 9.0.

4. Compliance with Environmental Requirements: The social and environmental concerns for the selected plan and alternative plans have been evaluated and coordinated with Federal, state, and environmental agencies and the public. The proposed discharge of dredged material into waters of the U.S. has been specified in accordance with the 404(b)(1) guidelines. The selected plan is in full compliance with the National Environmental Policy Act, the Clean Air Act, the Clean Water Act, the Fish and Wildlife Coordination Act, the Coastal Zone Management Act, the Migratory Game-Fish Act, the Endangered Species Act, National Historic Preservation Act, the Marine Protection, Research and Sanctuaries Act; and Executive Orders 11988 and 11990. Certification of compliance with state water quality standards and the coastal zone management plan were granted by the State of Alabama on June 6, 1986 and will expire on June 6, 1991.

Summary: In view of the above, I find the adverse effects of the selected disposal plan have been minimized to the extent practicable, and the proposed action is consistent with national policy, statutes and administrative directives. The total public interest will best be served by the implementation of a long-term disposal plan. Furthermore, the discharge sites for maintenance activities in the Upper Harbor have been specified through the application of the Section 404(b)(1) Guidelines. After weighing all factors involved and considering the cumulative effects of the proposed action on the environment, I have concluded that this work should proceed.

Date: 20 Oct 86

C. HILTON DUNN, JR.
Mobile District, Corps of Engineers
District Engineer

file: Mobile Harbor
20 Oct 86

SAMPD-EC

July 23, 1986

SUMMARY SHEET
MOBILE HARBOR DEEPENING

1980 Survey Report

- Recognized data lacking to analyze full magnitude of difference in environmental impacts of bay vs. gulf disposal.
- Recommended gulf disposal for portion of new work material and all future maintenance material.

1984 General Design Memorandum

- March 1982 "Fast Track" process.
- Primary document to prepare plans and specifications.
- No plans consider outside of scope of recommended plan.
- Incremental features studied:
  - a. Turning basin.
  - b. Anchorage area.
  - c. Transshipment facility.
  - d. Channel deepening to 55 feet at existing 400-foot width.
  - e. Passing lane.
  - f. Upper channel widening of 4.2 miles.
  - g. Disposal of new work material in Wilson Gaillard Island.
  - h. Disposal of all new work material in Gulf of Mexico.
- Gulf disposal of maintenance material remained a feature of recommended plan including the initial phased channel construction.

Mitigation Planning

- As part of GDM U.S. Fish and Wildlife Service tasked to develop mitigation plan.
- Reports submitted in 1984, 1986.

1518-01 Mobile Harbor 86 deepening

- Both reports included gulf disposal of maintenance material as integral part of mitigation plan.

- No mitigation plans developed for 45-ft. deep channel with/without Brookley nor with/without gulf disposal.

Conclusion

- Specifics of overall plan must be submitted to U.S. Fish and Wildlife Service to finalize mitigation.

- Additional environmental documentation dependent upon project features. See attached summary table.

SUMMARY TABLE
ENVIRONMENTAL COMPLIANCE
MOBILE BAY, ALABAMA

PROJECT FEATURE	ENVIRONMENTAL COMPLIANCE	ADDITIONAL ENVIRONMENTAL WORK	REMARKS
Turning Basin & Anchorage Area Maintenance			
. Gulf Disposal	Yes	---	No delay in construction.
. Bay Disposal	No	404, EA.	3-6 Months for EA if no constroversy, and no field studies.
45-Foot Deep Channel Maintenance			
. Gulf Disposal	Yes	---	No delay in construction.
. Bay Disposal	No	404, Probable EIS Supplement.	1-2 years for data collection and EIS, and mitigation plan.
Transshipment Facility	No	404 or 103, EA.	3-6 months depending upon specific project features, amount of field data needed, and potential controversy.
Continued Maintenance of Existing Bay Channel	Yes	Periodic renewal of water quality certification, and coastal zone consistency. Continued study of open water disposal in bay.	Additional studies of bay disposal in particular alternative locations for upper bay material and sediment movement studies.

AGREEMENT BETWEEN

THE DEPARTMENT OF THE ARMY

AND

THE ALABAMA STATE DOCKS DEPARTMENT

FOR LOCAL COOPERATION ON MOBILE HARBOR

DEEPENING PROJECT, PHASE I, MOBILE, ALABAMA

THIS AGREEMENT entered into this 13th day of June, 1986, by and between the DEPARTMENT OF THE ARMY (hereinafter called the "Government"), represented by the Assistant Secretary of the Army (Civil Works), and the Alabama State Docks Department, an Agency of the State of Alabama (hereinafter called the "State Docks"), WITNESSETH THAT:

WHEREAS, construction of the Mobile Harbor Deepening Project, Mobile, Alabama, was authorized by the Supplemental Appropriations Act for the Fiscal Year Ending September 30, 1985 (Public Law 99-88, Ninety-Ninth Congress, First Session), which also authorizes the Secretary of the Army to initiate construction of the Project under terms and conditions acceptable to him as set out below; and

WHEREAS, Public Law 99-88 authorizes construction of the Project substantially in accordance with the Report of the Chief of Engineers dated 18 November 1981, said Report specifying that work on the Project may be accomplished in separable units or features and that the written agreement with non-Federal interest required by Section 221 of the Flood Control Act of 1970, Public Law 91-611, may be obtained in compatible increments; and

WHEREAS, the State Docks hereby represents that it has the authority and capability to furnish the non-Federal cooperation for Phase I of the Project, as required by the Federal legislation authorizing the Project, and by other applicable law, as implemented below.

Phase I of the Project consists of constructing either:

1) A channel to the vicinity of the McDuffie Coal Terminal, in upper Mobile Bay, consisting of a 47 - by 600-foot channel for a distance of 6.1 miles across the Mobile Bar, then a 45- by 400-foot channel for a distance of 31.2 miles plus necessary bend widening (including a 40-foot deep turning basin 1,500 feet square opposite the McDuffie Coal terminal and a 40-foot deep anchorage area 4000 feet long and 600 feet wide adjacent to the southern part of the turning basin;

or, if the State Docks notifies the Government prior to September 30, 1987, that it has reached agreement with private parties and/or other state or local agencies to construct a transhipment facility in lower Mobile Bay,

2) A channel to a transhipment facility in lower Mobile Bay, consisting of a 57- by 600-foot channel for a distance of 7.8 miles across the Mobile Bar, then a 55- by 400-foot channel for a distance of 3.0 miles to the area of the transhipment facility (including a 40-foot deep turning basin 1,500 feet square opposite the McDuffie Coal Terminal); and

WHEREAS, the parties understand that it is the intention of the Secretary of the Army that initiation of construction of Phase I of the Project is contingent upon the enactment of legislation imposing a nationwide Federal port use charge, revenues from which will be applied to the Government's cost for harbor maintenance;

NOW, THEREFORE, the parties agree as follows:

ARTICLE I - DEFINITION

For purposes of this Agreement:

1. The term "total cost of construction of general navigation facilities assigned to commercial navigation" shall mean all costs incurred by the State Docks and the Government directly related to construction of the general navigation features of Phase I of the Project. Such costs shall include, but not necessarily be limited to, actual construction costs, costs of applicable engineering and design, continuing planning and engineering costs incurred after October 1, 1985, and supervision and administration costs, but shall not include the value of lands, easements, rights-of-way, relocations, dredged material disposal areas, non-Federal dredging of public or private channels and berthing areas, and aids to navigation.

ARTICLE II - OBLIGATIONS OF PARTIES

a. The State Docks shall construct, operate, and maintain, at its own expense, all project facilities other than those for general navigation.

b. As further specified in Article III hereof, the State Docks shall, without cost to the Government, provide all necessary interests in property and perform all necessary utility and facility alterations and relocations.

c. As further specified in Article V hereof, the State Docks shall provide, during the period of construction, a cash contribution equal to the following percentages of the total cost of construction of the general navigation facilities assigned to commercial navigation based on the depths below mean water listed herein:

1. Deeper than 20 feet but no more than 45 feet: 25 percent; and

2. Deeper than 45 feet: 50 percent.

d. The State Docks shall pay 50 percent of the incremental costs of maintaining the Project depth below 45 feet below mean low water.

e. As further specified in Article V hereof, the State Docks shall repay with interest, over a period of 30 years following completion of Phase I of the Project, 10 percent of the total cost of construction of general navigation facilities assigned to commercial navigation.

f. If the State Docks notifies the Government prior to September 30, 1987, that it has reached agreement with private parties and/or other state or local agencies to construct a transhipment facility in lower Mobile Bay, the Government, using funds provided by the State Docks and appropriated by Congress, shall construct a channel to a transhipment facility in lower Mobile Bay, consisting of a 57- by 600-foot channel for a distance of 7.8 miles across the Mobile Bar, then a 55- by 400-foot channel for a distance of 3.0 miles to the area of the transhipment facility (including a 40-foot deep turning basin 1,500 feet square opposite the McDuffie Coal Terminal); otherwise, the Government shall construct a channel to the vicinity of the McDuffie Coal Terminal, in upper Mobile Bay, consisting of a 47- by 600-foot channel for a distance of 6.1 miles across the Mobile Bar, then a 45- by 400-foot channel for a distance of 31.2 miles plus necessary bend widening (including a 40-foot deep turning basin, 1,500 feet square opposite the McDuffie Coal Terminal and a 40-foot deep anchorage area 4000 feet long and 600 feet wide adjacent to the southern part of the turning basin. The Government shall apply those procedures usually followed or applied in Federal projects, pursuant to Federal laws, regulations, and policies. Award of Federal contracts and performance of the work thereunder shall be within the control of the Government.

g. The Government shall operate and maintain the general navigation features of Phase I of the Project.

h. Construction of Phase I, and all rights and responsibilities arising under this Agreement, shall be contingent upon the enactment of Federal legislation permitting written agreements for the construction of water resources projects between the Secretary of the Army and States, bodies politic of States which derive their powers from the State constitution, or governmental entities created by the State legislature, to reflect that nothing therein obligates future legislative appropriations when so doing would be inconsistent with State constitutional limitations.

ARTICLE III - LANDS, FACILITIES, AND RELOCATION ASSISTANCE

a. The State Docks shall provide without cost to the Government all lands, easements, and rights-of-way, including suitable dredged material disposal areas, as may be determined by the Chief of Engineers to be necessary for construction of Phase I of the Project. Prior to the award of any construction contract, the State Docks shall furnish to the Government rights-of-entry to all lands required for Phase I of the Project, together with evidence supporting the State Dock's legal authority to grant such rights-of-entry.

b. The State Docks shall accomplish without cost to the Government all alterations and relocations of buildings, streets, storm drains, utilities, and other structures and improvements made necessary by construction of Phase I of the Project.

c. The State Docks shall comply with the applicable provisions of the Uniform Relocations Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, approved January 2, 1971, in acquiring lands, easements, and rights-of-way for construction and subsequent operation and

maintenance of Phase I of the Project, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

ARTICLE IV - PROJECT PHASING AND MANAGEMENT

a. To provide for consistent and effective communication between the State Docks and the Government as Phase I of the Project is implemented, the State Docks and the Government shall appoint representatives to coordinate on scheduling, plans, specifications, modifications, contract costs, and other matters relating to construction of Phase I of the Project.

b. The representatives appointed above shall meet as necessary and shall make such recommendations as they deem warranted to the Contracting Officer.

c. The Contracting Officer shall consider the recommendations of said representatives in all matters relating to Phase I of the Project, but the Contracting Officer, having ultimate responsibility for construction of Phase I of the Project, has complete discretion to accept, reject, or modify the recommendations of the representatives.

ARTICLE V - METHOD OF PAYMENT

a. The State Docks shall provide, over the term of construction, the percentages of the total cost of construction of general navigation facilities assigned to commercial navigation specified in Article II.c. hereof. Such total cost is presently estimated to be $89,100,000 if the 55 foot channel to the transhipment facility is to be constructed. In order to meet its share, the State Docks must provide over the term of construction a cash contribution presently estimated to be $40,750,000.00. If the 45-foot channel to McDuffie is to be constructed, the total cost is presently estimated to be $89,770,000. In this case, in order to meet its share, the

State Docks must provide over the term of construction a cash contribution presently estimated to be $24,090,000.

b. Payments shall be made as follows:

1. Two months before the start of each fiscal year of the Government, the Government shall notify the State Docks of the estimated funds that will be required from the State Docks to meet its share of project costs for that Government fiscal year. The State Docks shall then make those funds available to the Government as expeditiously as possible through either cash payments or deposit of cash in an escrow account acceptable to the Government. The estimate of project costs for each Government fiscal year of construction will include the amortized portion of costs incurred by the Government prior to the date of this Agreement.

2. Thirty days prior to the advertisement of each construction contract, the Government shall notify the State Docks of its required share of contract costs, plus engineering, supervision, and administration costs, under paragraph a. of this Article. Within 30 calendar days thereafter, the State Docks shall verify to the satisfaction of the Government that sufficient funds are available to the Government in the funding institution or mechanism referred to in paragraph b.1. of this Article to meet its share of the contract costs. If the Government determines that sufficient sums are not available to it, it shall so notify the State Docks and the State Docks shall deposit said sums within 10 calendar days and provide verification of such deposit. If the contract is expected to extend into more than one Government fiscal year, the State Docks may make the deposit in installments, with each installment to be made to each Government fiscal year in the amount required for that year's work on the contract,, plus engineering, supervision, and administration costs.

3. When bids are opened on any given contract and additional funds are needed from the State Docks to meet its required share of contract costs, the Government shall so notify the State Docks and the State Docks shall deposit the additional funds within 10 calendar days after demand is made by the Government.

d. The Government will draw on the funds, escrow account, or letter of credit provided by the State Docks such sums as it deems necessary to cover contractual obligations and in-house fiscal obligations, to include engineering and design and supervision and administration costs as they occur, and Government costs incurred prior to the date of this Agreement.

e. Upon completion of Phase I of the Project and resolution of all contract claims and appeals, the Government shall compute the total cost of construction of general navigation facilities assigned to commercial navigation and tender to the State Docks a final accounting of its share of Phase I project costs. In the event the total contribution by the State Docks is less than its initial required share of Phase I project costs at the time of the final accounting, the State Docks shall deposit within 90 calendar days after receipt of written notice whatever sum is required to meet its initial required share of Phase I project costs. In the event the State Docks has made excess cash contributions which result in the State Docks' having provided more than its initial required share of Phase I project costs, such excess will be refunded to the State Docks.

f. The State Docks shall repay the additional 10 percent of the total cost of construction of general navigation facilities assigned to commercial

navigation in equal annual installments over a period not to exceed thirty years from the date of project completion. Such repayment shall include interest at a rate determined by the Secretary of the Treasury, taking into consideration the average market yields on outstanding marketable obligations of the United States with remaining periods of maturity comparable to the repayment period, during the month preceeding the fiscal year in which costs for the construction of Phase I of the Project are incurred, plus a premium of one-eighth of one percentage point for transaction costs. The interest shall be recalculated by the Secretary of the Treasury at five-year intervals.

ARTICLE VI - DISPUTES

Before any party to this Agreement may bring suit in any court concerning an issue relating to this Agreement, such party must first seek in good faith to resolve the issue through negotiation with the other party, or through other forms of nonbinding alternative dispute resolution.

ARTICLE VII - OPERATION AND MAINTENANCE

a. The State Docks shall operate and maintain all portions of Phase I of the Project, except for general navigation facilities, upon completion in accordance with regulations or directions prescribed by the Secretary of the Army.

b. The State Docks hereby gives the Government a right to enter, at reasonable times and in a reasonable manner, upon land which it owns or controls for access to Phase I of the Project for the purpose of inspection, and, if necessary, for the purpose of completing, operating, repairing, and maintaining Phase I of the Project. If any inspection shows that the State Docks for any reason is failing to complete, operate, repair, and maintain Phase I of the Project in accordance with the assurances hereunder, the

Government will send a written notice to the State Docks. If the State Docks persists in such failure for 30 calendar days after receipt of the notice, then the Government shall have right to enter, at reasonable times and in a reasonable manner, upon lands the State Docks owns or controls for access to Phase I of the Project for the purpose of completing , operating, repairing, or maintaining Phase I of the Project. No completion, operation, repair, or maintenance by the Government shall operate to relieve the State Docks of responsibility to meet its obligations as set forth in this Agreement, or to preclude the Government from pursuing any other remedy at law or equity to assure faithful performance pursuant to this Agreement.

c. The Government shall operate and maintain the general navigation features of Phase I of the Project.

d. The State Docks shall pay the Government 50 percent of the incremental costs of maintaining the general navigation features of Phase I of the Project at depths below 45-feet mean low water. The incremental costs shall be determined at a future date by formula to be negotiated by the parties. The Government shall notify the State Docks of its share of maintenance costs 365 days before the award of the maintenance contract, and the local sponsor shall tender its share within 270 days thereafter.

ARTICLE VIII - RELEASE OF CLAIMS

The State Docks shall hold and save the Government free from all damages arising from the construction and operation of Phase I of the Project, except for damages due to the fault or negligence of the Government or its contractors.

ARTICLE IX - MAINTENANCE OF RECORDS

The Government and the State Docks shall keep books, records, documents, and other evidence pertaining to costs and expenses incurred

pursuant to this Agreement to the extent and in such detail as will properly reflect total Phase I project costs. The Government and the State Docks shall maintain such books, records, documents, and other evidence for a minimum of three years after completion of construction of Phase I of the Project and resolution of all claims arising therefrom, and shall make available at their offices at reasonable times, such books, records, documents, and other evidence for inspection and audit by authorized representatives at the parties to this Agreement.

ARTICLE X - FEDERAL AND STATE LAWS

a. In acting under its rights and obligations hereunder, the State Docks agrees to comply with all applicable Federal and state laws and regulations.

b. The State Docks agrees to comply with Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.II issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations, in connection with the construction, operation, and maintenance of Phase I of the Project.

ARTICLE XI - RELATIONSHIP OF PARTIES

The parties to this Agreement act in an independent capacity in the performance of their respective functions under this Agreement, and neither party is to be considered the officer, agent, or employee of the other.

ARTICLE XII - OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, or resident commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom.

ARTICLE XIII - COVENANT AGAINST CONTINGENT FEES

The State Docks warrants that no person or selling agency has been employed or retained to solicit or secure this Agreement upon agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the State Docks for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this Agreement without liability, or, in its discretion, to add to the Agreement or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE XIV - TERMINATION OF SUSPENSION

a. If at any time the State Docks fails to make the payments required under this Agreement, the Secretary of the Army shall terminate or suspend work on Phase I of the Project until the State Docks is no longer in arrears or unless the Secretary determines that continuation of work on Phase I of the Project is in the interest of the United States. Any delinquent payment shall be charged interest at a rate, to be determined by the Secretary of the Treasury, equal to 150 percentum of the average bond equivalent rate of the 13-week Treasury bills auctioned immediately prior to the date on which such payment became delinquent, or auctioned immediately prior to the beginning of each additional 3 month period if the delinqency exceeds 3 months.

b. If the Government fails to receive annual appropriations in amounts sufficient to meet expenditures for the then-current fiscal year, the Government shall so notify the State Docks. After sixty days either party may elect without penalty to terminate the Agreement or to suspend performance thereunder, and the parties shall proceed to wind up their

activities relating to Phase I of the Project and proceed to a final accounting in accordance with Article V.e.

ARTICLE XV - STATEMENT OF INTENT

As required under Title I, Chapter IV of Public Law 99-88, the State Docks hereby affirms its willingness and capability to meet its cost-sharing obligations as set forth in this Agreement.

ARTICLE XVI - EFFECT OF SUBSEQUENT LEGISLATION

a. The parties hereto anticipate the passage of legislation during the current term of Congress regarding Federal and non-Federal cost sharing for Federal navigation projects.

b. If the pending water resources authorization bill, H.R. 6, 99th Congress, 2nd session, as enacted into law, contains a provision of general effect that changes or results in changes to cost-sharing principles applicable to commercial harbor projects funded in Title I, Chapter IV of Public Law 99-88, the parties hereto shall renegotiate their respective rights, duties, and responsibilities under his Agreement so as to conform to such provision. In any event, any renegotiated agreement must be approved by the State Docks and the Secretary of the Army.

ARTICLE XVII - OBLIGATION OF FUTURE APPROPRIATIONS

Nothing herein shall constitute or shall be deemed to constitute, an obligation of future appropriations by the Legislature of the State of Alabama.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

THE DEPARTMENT OF THE ARMY

BY: _____

Robert K. Dawson

Assistant Secretary of

the Army (Civil Works)

DATE: 13 June 1986

THE STATE OF ALABAMA,

acting by and through its

statutory agent, The Alabama State

Docks Department

BY: _____

George C. Wallace

Governor

DATE: _____

BY: _____

Robert M. Hope

Director

Alabama State Docks Department

APPROVED AS TO FORM

BY: _____

Charles A. Graddick

Attorney General

AS WITNESSED BY:

Tom Bevill
House of Representatives

H. L. Callahan
House of Representatives

Patrick J. Kelly
Brigadier General, USA
Deputy Director, Civil Works

C. E. Edgar, III
Brigadier General USA
Division Engineer

C. Hilton Dunn, Jr.
Colonel, Corps of Engineers
District Engineer

AGREEMENT BETWEEN

THE DEPARTMENT OF THE ARMY

AND

THE ALABAMA STATE DOCKS DEPARTMENT

FOR LOCAL COOPERATION ON MOBILE HARBOR

DEEPENING PROJECT, PHASE I, MOBILE, ALABAMA

THIS AGREEMENT entered into this 13th day of June, 1986, by and between the DEPARTMENT OF THE ARMY (hereinafter called the "Government"), represented by the Assistant Secretary of the Army (Civil Works), and the Alabama State Docks Department, an Agency of the State of Alabama (hereinafter called the "State Docks"), WITNESSETH THAT:

WHEREAS, construction of the Mobile Harbor Deepening Project, Mobile, Alabama, was authorized by the Supplemental Appropriations Act for the Fiscal Year Ending September 30, 1985 (Public Law 99-88, Ninety-Ninth Congress, First Session), which also authorizes the Secretary of the Army to initiate construction of the Project under terms and conditions acceptable to him as set out below; and

WHEREAS, Public Law 99-88 authorizes construction of the Project substantially in accordance with the Report of the Chief of Engineers dated 18 November 1981, said Report specifying that work on the Project may be accomplished in separable units or features and that the written agreement with non-Federal interest required by Section 221 of the Flood Control Act of 1970, Public Law 91-611, may be obtained in compatible increments; and

WHEREAS, the State Docks hereby represents that it has the authority and capability to furnish the non-Federal cooperation for Phase I of the Project, as required by the Federal legislation authorizing the Project, and by other applicable law, as implemented below.

Phase I of the Project consists of constructing either:

1) A channel to the vicinity of the McDuffie Coal Terminal, in upper Mobile Bay, consisting of a 47 - by 600-foot channel for a distance of 6.1 miles across the Mobile Bar, then a 45- by 400-foot channel for a distance of 31.2 miles plus necessary bend widening (including a 40-foot deep turning basin 1,500 feet square opposite the McDuffie Coal terminal and a 40-foot deep anchorage area 4000 feet long and 600 feet wide adjacent to the southern part of the turning basin;

or, if the State Docks notifies the Government prior to September 30, 1987, that it has reached agreement with private parties and/or other state or local agencies to construct a transhipment facility in lower Mobile Bay,

2) A channel to a transhipment facility in lower Mobile Bay, consisting of a 57- by 600-foot channel for a distance of 7.8 miles across the Mobile Bar, then a 55- by 400-foot channel for a distance of 3.0 miles to the area of the transhipment facility (including a 40-foot deep turning basin 1,500 feet square opposite the McDuffie Coal Terminal); and

WHEREAS, the parties understand that it is the intention of the Secretary of the Army that initiation of construction of Phase I of the Project is contingent upon the enactment of legislation imposing a nationwide Federal port use charge, revenues from which will be applied to the Government's cost for harbor maintenance;

NOW, THEREFORE, the parties agree as follows:

ARTICLE I - DEFINITION

For purposes of this Agreement:

1. The term "total cost of construction of general navigation facilities assigned to commercial navigation" shall mean all costs incurred by the State Docks and the Government directly related to construction of the general navigation features of Phase I of the Project. Such costs shall include, but not necessarily be limited to, actual construction costs, costs of applicable engineering and design, continuing planning and engineering costs incurred after October 1, 1985, and supervision and administration costs, but shall not include the value of lands, easements, rights-of-way, relocations, dredged material disposal areas, non-Federal dredging of public or private channels and berthing areas, and aids to navigation.

ARTICLE II - OBLIGATIONS OF PARTIES

a. The State Docks shall construct, operate, and maintain, at its own expense, all project facilities other than those for general navigation.

b. As further specified in Article III hereof, the State Docks shall, without cost to the Government, provide all necessary interests in property and perform all necessary utility and facility alterations and relocations.

c. As further specified in Article V hereof, the State Docks shall provide, during the period of construction, a cash contribution equal to the following percentages of the total cost of construction of the general navigation facilities assigned to commercial navigation based on the depths below mean water listed herein:

1. Deeper than 20 feet but no more than 45 feet: 25 percent; and

2. Deeper than 45 feet: 50 percent.

d. The State Docks shall pay 50 percent of the incremental costs of maintaining the Project depth below 45 feet below mean low water.

e. As further specified in Article V hereof, the State Docks shall repay with interest, over a period of 30 years following completion of Phase I of the Project, 10 percent of the total cost of construction of general navigation facilities assigned to commercial navigation.

f. If the State Docks notifies the Government prior to September 30, 1987, that it has reached agreement with private parties and/or other state or local agencies to construct a transhipment facility in lower Mobile Bay, the Government, using funds provided by the State Docks and appropriated by Congress, shall construct a channel to a transhipment facility in lower Mobile Bay, consisting of a 57- by 600-foot channel for a distance of 7.8 miles across the Mobile Bar, then a 55- by 400-foot channel for a distance of 3.0 miles to the area of the transhipment facility (including a 40-foot deep turning basin 1,500 feet square opposite the McDuffie Coal Terminal); otherwise, the Government shall construct a channel to the vicinity of the McDuffie Coal Terminal, in upper Mobile Bay, consisting of a 47- by 600-foot channel for a distance of 6.1 miles across the Mobile Bar, then a 45- by 400-foot channel for a distance of 31.2 miles plus necessary bend widening (including a 40-foot deep turning basin, 1,500 feet square opposite the McDuffie Coal Terminal and a 40-foot deep anchorage area 4000 feet long and 600 feet wide adjacent to the southern part of the turning basin. The Government shall apply those procedures usually followed or applied in Federal projects, pursuant to Federal laws, regulations, and policies. Award of Federal contracts and performance of the work thereunder shall be within the control of the Government.

g. The Government shall operate and maintain the general navigation features of Phase I of the Project.

h. Construction of Phase I, and all rights and responsibilities arising under this Agreement, shall be contingent upon the enactment of Federal legislation permitting written agreements for the construction of water resources projects between the Secretary of the Army and States, bodies politic of States which derive their powers from the State constitution, or governmental entities created by the State legislature, to reflect that nothing therein obligates future legislative appropriations when so doing would be inconsistent with State constitutional limitations.

ARTICLE III - LANDS, FACILITIES, AND RELOCATION ASSISTANCE

a. The State Docks shall provide without cost to the Government all lands, easements, and rights-of-way, including suitable dredged material disposal areas, as may be determined by the Chief of Engineers to be necessary for construction of Phase I of the Project. Prior to the award of any construction contract, the State Docks shall furnish to the Government rights-of-entry to all lands required for Phase I of the Project, together with evidence supporting the State Dock's legal authority to grant such rights-of-entry.

b. The State Docks shall accomplish without cost to the Government all alterations and relocations of buildings, streets, storm drains, utilities, and other structures and improvements made necessary by construction of Phase I of the Project.

c. The State Docks shall comply with the applicable provisions of the Uniform Relocations Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, approved January 2, 1971, in acquiring lands, easements, and rights-of-way for construction and subsequent operation and

maintenance of Phase I of the Project, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

ARTICLE IV - PROJECT PHASING AND MANAGEMENT

a. To provide for consistent and effective communication between the State Docks and the Government as Phase I of the Project is implemented, the State Docks and the Government shall appoint representatives to coordinate on scheduling, plans, specifications, modifications, contract costs, and other matters relating to construction of Phase I of the Project.

b. The representatives appointed above shall meet as necessary and shall make such recommendations as they deem warranted to the Contracting Officer.

c. The Contracting Officer shall consider the recommendations of said representatives in all matters relating to Phase I of the Project, but the Contracting Officer, having ultimate responsibility for construction of Phase I of the Project, has complete discretion to accept, reject, or modify the recommendations of the representatives.

ARTICLE V - METHOD OF PAYMENT

a. The State Docks shall provide, over the term of construction, the percentages of the total cost of construction of general navigation facilities assigned to commercial navigation specified in Article II.c. hereof. Such total cost is presently estimated to be $89,100,000 if the 55 foot channel to the transhipment facility is to be constructed. In order to meet its share, the State Docks must provide over the term of construction a cash contribution presently estimated to be $40,750,000.00. If the 45-foot channel to McDuffie is to be constructed, the total cost is presently estimated to be $89,770,000. In this case, in order to meet its share, the

State Docks must provide over the term of construction a cash contribution presently estimated to be $24,090,000.

b. Payments shall be made as follows:

1. Two months before the start of each fiscal year of the Government, the Government shall notify the State Docks of the estimated funds that will be required from the State Docks to meet its share of project costs for that Government fiscal year. The State Docks shall then make those funds available to the Government as expeditiously as possible through either cash payments or deposit of cash in an escrow account acceptable to the Government. The estimate of project costs for each Government fiscal year of construction will include the amortized portion of costs incurred by the Government prior to the date of this Agreement.

2. Thirty days prior to the advertisement of each construction contract, the Government shall notify the State Docks of its required share of contract costs, plus engineering, supervision, and administration costs, under paragraph a. of this Article. Within 30 calendar days thereafter, the State Docks shall verify to the satisfaction of the Government that sufficient funds are available to the Government in the funding institution or mechanism referred to in paragraph b.1. of this Article to meet its share of the contract costs. If the Government determines that sufficient sums are not available to it, it shall so notify the State Docks and the State Docks shall deposit said sums within 10 calendar days and provide verification of such deposit. If the contract is expected to extend into more than one Government fiscal year, the State Docks may make the deposit in installments, with each installment to be made to each Government fiscal year in the amount required for that year's work on the contract, plus engineering, supervision, and administration costs.

3. When bids are opened on any given contract and additional funds are needed from the State Docks to meet its required share of contract costs, the Government shall so notify the State Docks and the State Docks shall deposit the additional funds within 10 calendar days after demand is made by the Government.

d. The Government will draw on the funds, escrow account, or letter of credit provided by the State Docks such sums as it deems necessary to cover contractual obligations and in-house fiscal obligations, to include engineering and design and supervision and administration costs as they occur, and Government costs incurred prior to the date of this Agreement.

e. Upon completion of Phase I of the Project and resolution of all contract claims and appeals, the Government shall compute the total cost of construction of general navigation facilities assigned to commercial navigation and tender to the State Docks a final accounting of its share of Phase I project costs. In the event the total contribution by the State Docks is less than its initial required share of Phase I project costs at the time of the final accounting, the State Docks shall deposit within 90 calendar days after receipt of written notice whatever sum is required to meet its initial required share of Phase I project costs. In the event the State Docks has made excess cash contributions which result in the State Docks' having provided more than its initial required share of Phase I project costs, such excess will be refunded to the State Docks.

f. The State Docks shall repay the additional 10 percent of the total cost of construction of general navigation facilities assigned to commercial

navigation in equal annual installments over a period not to exceed thirty years from the date of project completion. Such repayment shall include interest at a rate determined by the Secretary of the Treasury, taking into consideration the average market yields on outstanding marketable obligations of the United States with remaining periods of maturity comparable to the repayment period, during the month preceeding the fiscal year in which costs for the construction of Phase I of the Project are incurred, plus a premium of one-eighth of one percentage point for transaction costs. The interest shall be recalculated by the Secretary of the Treasury at five-year intervals.

ARTICLE VI - DISPUTES

Before any party to this Agreement may bring suit in any court concerning an issue relating to this Agreement, such party must first seek in good faith to resolve the issue through negotiation with the other party, or through other forms of nonbinding alternative dispute resolution.

ARTICLE VII - OPERATION AND MAINTENANCE

a. The State Docks shall operate and maintain all portions of Phase I of the Project, except for general navigation facilities, upon completion in accordance with regulations or directions prescribed by the Secretary of the Army.

b. The State Docks hereby gives the Government a right to enter, at reasonable times and in a reasonable manner, upon land which it owns or controls for access to Phase I of the Project for the purpose of inspection, and, if necessary, for the purpose of completing, operating, repairing, and maintaining Phase I of the Project. If any inspection shows that the State Docks for any reason is failing to complete, operate, repair, and maintain Phase I of the Project in accordance with the assurances hereunder, the

Government will send a written notice to the State Docks. If the State Docks persists in such failure for 30 calendar days after receipt of the notice, then the Government shall have right to enter, at reasonable times and in a reasonable manner, upon lands the State Docks owns or controls for access to Phase I of the Project for the purpose of completing , operating, repairing, or maintaining Phase I of the Project. No completion, operation, repair, or maintenance by the Government shall operate to relieve the State Docks of responsibility to meet its obligations as set forth in this Agreement, or to preclude the Government from pursuing any other remedy at law or equity to assure faithful performance pursuant to this Agreement.

c. The Government shall operate and maintain the general navigation features of Phase I of the Project.

d. The State Docks shall pay the Government 50 percent of the incremental costs of maintaining the general navigation features of Phase I of the Project at depths below 45-feet mean low water. The incremental costs shall be determined at a future date by formula to be negotiated by the parties. The Government shall notify the State Docks of its share of maintenance costs 365 days before the award of the maintenance contract, and the local sponsor shall tender its share within 270 days thereafter.

ARTICLE VIII - RELEASE OF CLAIMS

The State Docks shall hold and save the Government free from all damages arising from the construction and operation of Phase I of the Project, except for damages due to the fault or negligence of the Government or its contractors.

ARTICLE IX - MAINTENANCE OF RECORDS

The Government and the State Docks shall keep books, records, documents, and other evidence pertaining to costs and expenses incurred

pursuant to this Agreement to the extent and in such detail as will properly reflect total Phase I project costs. The Government and the State Docks shall maintain such books, records, documents, and other evidence for a minimum of three years after completion of construction of Phase I of the Project and resolution of all claims arising therefrom, and shall make available at their offices at reasonable times, such books, records, documents, and other evidence for inspection and audit by authorized representatives at the parties to this Agreement.

ARTICLE X - FEDERAL AND STATE LAWS

a. In acting under its rights and obligations hereunder, the State Docks agrees to comply with all applicable Federal and state laws and regulations.

b. The State Docks agrees to comply with Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.II issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations, in connection with the construction, operation, and maintenance of Phase I of the Project.

ARTICLE XI - RELATIONSHIP OF PARTIES

The parties to this Agreement act in an independent capacity in the performance of their respective functions under this Agreement, and neither party is to be considered the officer, agent, or employee of the other.

ARTICLE XII - OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, or resident commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom.

ARTICLE XIII - COVENANT AGAINST CONTINGENT FEES

The State Docks warrants that no person or selling agency has been employed or retained to solicit or secure this Agreement upon agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the State Docks for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this Agreement without liability, or, in its discretion, to add to the Agreement or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE XIV - TERMINATION OF SUSPENSION

a. If at any time the State Docks fails to make the payments required under this Agreement, the Secretary of the Army shall terminate or suspend work on Phase I of the Project until the State Docks is no longer in arrears or unless the Secretary determines that continuation of work on Phase I of the Project is in the interest of the United States. Any delinquent payment shall be charged interest at a rate, to be determined by the Secretary of the Treasury, equal to 150 percentum of the average bond equivalent rate of the 13-week Treasury bills auctioned immediately prior to the date on which such payment became delinquent, or auctioned immediately prior to the beginning of each additional 3 month period if the delinqency exceeds 3 months.

b. If the Government fails to receive annual appropriations in amounts sufficient to meet expenditures for the then-current fiscal year, the Government shall so notify the State Docks. After sixty days either party may elect without penalty to terminate the Agreement or to, suspend performance thereunder, and the parties shall proceed to wind up their

activities relating to Phase I of the Project and proceed to a final accounting in accordance with Article V.e.

ARTICLE XV - STATEMENT OF INTENT

As required under Title I, Chapter IV of Public Law 99-88, the State Docks hereby affirms its willingness and capability to meet its cost-sharing obligations as set forth in this Agreement.

ARTICLE XVI - EFFECT OF SUBSEQUENT LEGISLATION

a. The parties hereto anticipate the passage of legislation during the current term of Congress regarding Federal and non-Federal cost sharing for Federal navigation projects.

b. If the pending water resources authorization bill, H.R. 6, 99th Congress, 2nd session, as enacted into law, contains a provision of general effect that changes or results in changes to cost-sharing principles applicable to commercial harbor projects funded in Title I, Chapter IV of Public Law 99-88, the parties hereto shall renegotiate their respective rights, duties, and responsibilities under his Agreement so as to conform to such provision. In any event, any renegotiated agreement must be approved by the State Docks and the Secretary of the Army.

ARTICLE XVII - OBLIGATION OF FUTURE APPROPRIATIONS

Nothing herein shall constitute or shall be deemed to constitute, an obligation of future appropriations by the Legislature of the State of Alabama.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

THE DEPARTMENT OF THE ARMY

BY: _____

Robert K. Dawson

Assistant Secretary of

the Army (Civil Works)

DATE: 13 June 1986

THE STATE OF ALABAMA,

acting by and through its

statutory agent, The Alabama State

Docks Department

BY: _____

George C. Wallace

Governor

DATE: _____

BY: _____

Robert M. Hope

Director

Alabama State Docks Department

APPROVED AS TO FORM:

BY: _____

Charles A. Graddick

Attorney General

AS WITNESSED BY:

Tom Bevill
House of Representatives

H. L. Callahan
House of Representatives

Patrick J. Kelly
Brigadier General, USA
Deputy Director, Civil Works

C. E. Edgar, III
Brigadier General USA
Division Engineer

C. Hilton Dunn, Jr.
Colonel, Corps of Engineers
District Engineer

DEPARTMENT OF THE ARMY
WATERWAYS EXPERIMENT STATION, CORPS OF ENGINEERS
3909 HALLS FERRY ROAD
VICKSBURG, MISSISSIPPI 39180-6199

REPLY TO
ATTENTION OF

CEWES-CD-SE (1110-2-1403b) 20 September 1990

MEMORANDUM FOR Commander, U.S. Army Engineer District, Mobile,
ATTN: CESAM-OP-OM (Mr. ~~Paul Bradley~~), P.O. Box 2288,
Mobile, AL 36628-0001

T.M. Feeder Berm

SUBJECT: Transmittal of a Memorandum For Record on Cuspate Foreland Development Shoreward of the Sand Island Berms

1. A copy of the subject Memorandum For Record (MFR) (encl 1) is forwarded for your review.

2. Should any questions arise concerning the contents of this MFR, please contact Mr. Edward B. Hands (202/272-0470) directly.

FOR THE CHIEF OF THE COASTAL
ENGINEERING RESEARCH CENTER:

Encl

THOMAS W. RICHARDSON
Chief, Engineering Development Division
Coastal Engineering Research Center

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ENGINEERING RESEARCH CENTER:

Encl

THOMAS W. RICHARDSON
Chief, Engineering Development Division
Coastal Engineering Research Center

DEPARTMENT OF THE ARMY
WATERWAYS EXPERIMENT STATION, CORPS OF ENGINEERS
3909 HALLS FERRY ROAD
VICKSBURG, MISSISSIPPI 39180-6199

REPLY TO
ATTENTION OF

CEWES-CD-SE

12 September 1990

MEMORANDUM FOR RECORD

SUBJECT: Cuspate Foreland Development Shoreward of the Sand Island Berms

1. Rapid growth of the present massive foreland, 2.5 miles west of Pelican Point, began following Hurricane Frederic (September 1979), though an incipient protrusion was visible in aerial photographs in February of that year. The salient began and is still growing in a longshore position where an even larger cuspate foreland existed in 1868. The earliest map (encl 1) examined revealed that the offshore ephemeral island (then referred to as Pelican Island) was, in the 1850's, of a similar size and positioned close to Dauphin Island, just as Sand Island is today. None of the other, more than two dozen shoreline images over the intervening 140 years, showed the ephemeral islands nearly so close to Dauphin Island. In the 1850's and the 1970 to 1990's, the "nearshore ephemeral island", exceeded two miles in length. However, Dauphin Island had no cuspate foreland on the 1850's map. By 1868, a foreland extended Dauphin Island's shoreline 2000 ft gulfward, overlapping with the former position of the northern end of the ephemeral island; and almost all but the southern (offshore) end had disappeared.

2. Though both the foreland and the extensive, nearshore ephemeral island once existed near positions they occupy today, they never existed simultaneously before. In fact, erosion of the ephemeral island after the 1850's and onshore transport of its sand may have built the earlier massive foreland. Since 1979, the ephemeral island has migrated shoreward and, perhaps as a result of wave sheltering, helped form today's foreland. Most of the sand in today's foreland probably came from an adjacent 1500-ft reach to the east of the foreland.

3. If Sand Island were to continue northward migration and merge with the Dauphin Island beach, the extra sand could enlarge the present foreland to 1868 dimensions, completing a roughly 125 year evolutionary sequence.

ROUTING:
1. CEWES-CD-SE (DR. Yen-hsi Chu) YHC
2. CEWES-CD-S (Ms. Joan Pope) JHP
3. CEWES-CD (Mr. Thomas W. Richardson) TWR
4.
5. CEWES-CD-S (Mrs. Janie Daughtry)

4. But swift currents between Dauphin and Sand Islands have a large capacity for westward transport. A local waterman estimates that the maximum ebb current runs at 3 to 4 knots in this 20-ft deep passage. Fishermen on the Dauphin Island pier, about 2000 ft west of the passage, report a strong predominance of current to the west. Near times of maximum ebb they can not keep their lines down with 8 oz weights.

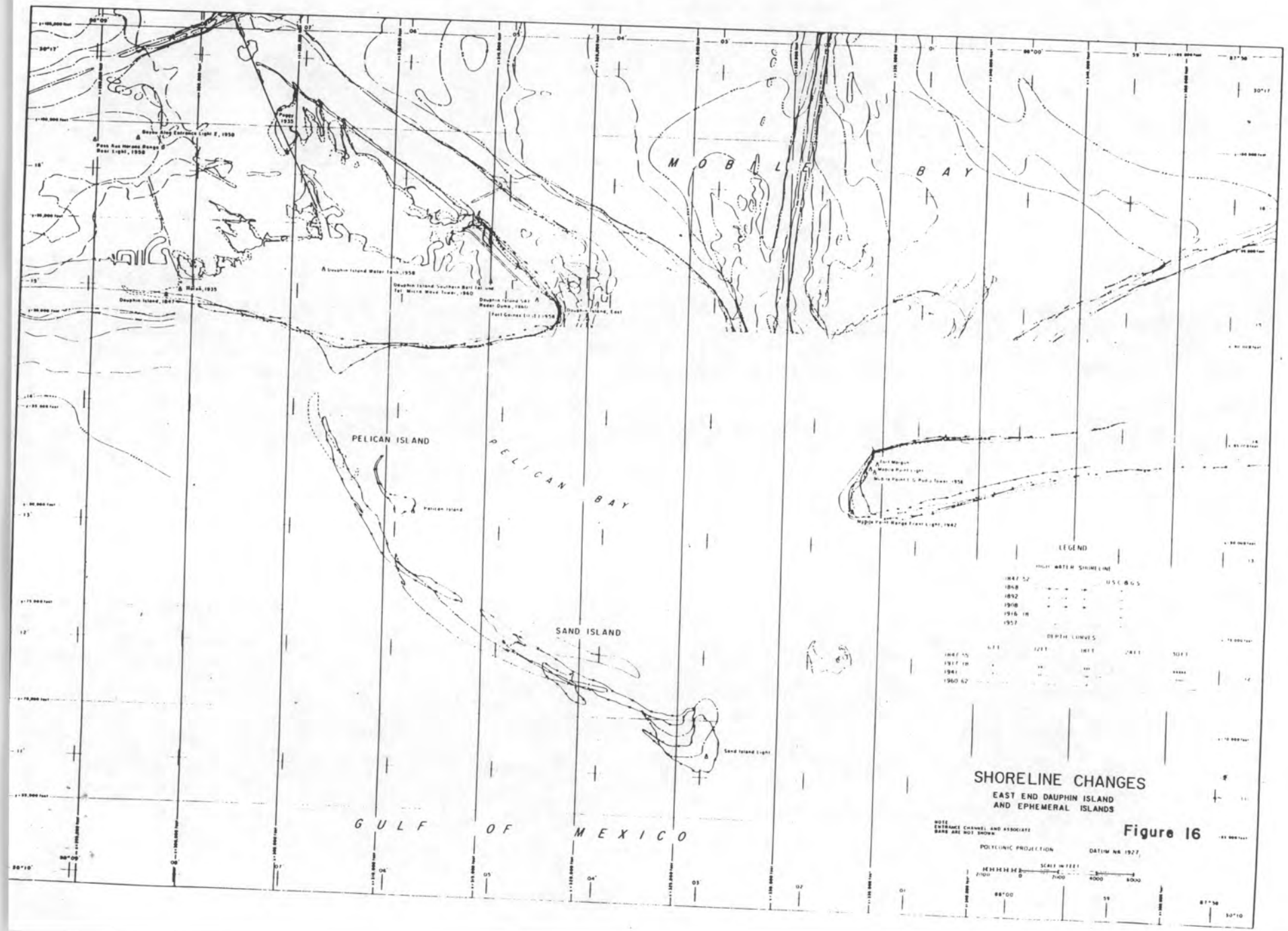
5. If Sand Island were to continue migrating north, the velocity of tidal currents would increase tending to even further deepen the passage or erode Dauphin Island beaches. It thus seems impossible for the present elongate Sand Island to merge with Dauphin Island beaches. The island would have to be breached or flattened by a storm. Then ebb currents could escape through a more direct path to the Gulf. And the excess sand from the eroded island could migrate to Dauphin Island beaches.

6. The natural cycle described above could be accelerated by a man-induced breach that would reroute a portion of the ebb flow. This would further strengthen an analogy between Dauphin Island and the well-documented cases of onshore ebb-tidal shoal migration that followed inlet channel stabilization at, for example, St. Augustine, Florida, or Murrells Inlet, South Carolina.

7. These speculations are posed here to elicit comments and to suggest that Dauphin Island may eventually provide a striking case of natural onshore transport and beach nourishment. There will probably be interest in simulating the development with models to forecast, explain, and plan for changes as well as to demonstrate model capabilities. Continued collection of annual aerial photographs is important for these same reasons.

Edward B. Hands
Physical Scientist
Coastal Engineering Research Center

CF:
CEWES-CR (Dr. Nick C. Kraus)


MOBILE BAY
PELICAN ISLAND
PELICAN BAY
SAND ISLAND
GULF OF MEXICO
LEGEND
SHORELINE CHANGES
EAST END DAUPHIN ISLAND
AND EPHEMERAL ISLANDS
Figure 16