

**MANATEE HARBOR, FLORIDA  
LIMITED REEVALUATION REPORT**

**APPENDIX F  
1990 POST-AUTHORIZATION CHANGE REPORT**

POST-AUTHORIZATION CHANGE  
REPORT  
FOR  
MANATEE HARBOR, FLORIDA

APRIL 1990

U. S. ARMY ENGINEER DISTRICT, JACKSONVILLE  
CORPS OF ENGINEERS  
P. O. BOX 4970  
JACKSONVILLE, FLORIDA

I. Description of Authorized Project. The authorized project provides for Federal maintenance of an existing 40' x 400' entrance channel and basin, construction of a widener at the northwest end of the entrance channel, and enlarging the turning basin to 900 feet in diameter. The entrance channel extends approximately 3 miles in length from the turning basin to its intersection with the Tampa Harbor Main Channel. A map of the authorized project is provided as enclosure 1. Approximately 3.1 million cubic yards (c.y.) of sand, shell, and silt would be removed. Disposal will be at diked upland disposal areas provided by the Manatee County Port Authority, local sponsor for the project. The two areas to be used for disposal of sandy material from the widener and turning basin would encompass approximately 114 acres (DA-1, DA-2). In addition, silty material dredged from the channel and berthing areas and 250,000 c.y. from the first 5-year maintenance cycle would be placed in an 85-acre area D/A 5. A 65-acre area is provided for disposal of material derived from future maintenance dredging. To mitigate loss of seagrasses which would occur as a result of enlarging the turning basin, a 10-acre area on an existing disposal island adjacent to the entrance channel will be degraded so as to provide wetland habitat.

II. Authorization. Navigation for Port Manatee, Florida, was authorized by the Water Resources Development Act of 1986, Public Law 99-662 dated November 17, 1986. The authorization is quoted, in part, as follows: "The project for navigation, Manatee Harbor, Florida: Report of the Chief of Engineers, dated May 12, 1980, at a total cost of \$16,400,000, with an estimated first Federal cost of \$9,500,000 and an estimated first non-Federal cost of \$6,900,000, including such modifications as the Secretary determines to be necessary and appropriate to mitigate the adverse effects of construction, operation, and maintenance of the project on the benthic environment of the area to be dredged."

III. Funding Since Authorization.

|              | <u>FY-88</u>                  | <u>FY-89</u>                 | <u>FY-90</u>    |
|--------------|-------------------------------|------------------------------|-----------------|
| Appropriated | \$550,000 (CG)                | \$5,000,000 (CG)             | \$8,325,000 (1) |
| Allocated    | 478,000 (CG)                  | 200,000 (CG)                 | 7,489,000       |
| Expended     | 224,287 (CG)<br>22,411 (CP&E) | 218,088 (CG)<br>2,400 (CP&E) | 324,901 (2)     |

(1) reflects \$337,000 reduction under Gramm-Rudman-Hollins Act

(2) expenditures through 31 Mar 90

IV. Changes in Scope of Authorized Project. The 1978 Manatee Harbor Feasibility Report, upon which the Congressional authorization was based, used an estimated annual shoaling rate of 50,000 c.y. During preparation of the 1983 General Design Memorandum, a more accurate estimate of the shoaling rate was determined to be 220,000 c.y. annually. As a result, maintenance dredging will be performed more frequently than the 5-year cycle anticipated by the feasibility report. Instead of 250,000 c.y. being removed every 5 years, 660,000 c.y. would be dredged every 3 years. The annual cost in the 1983 GDM was shown to be \$2,570,000 while the 1978 Feasibility Report carried \$758,000 as an estimated annual cost. The increase in maintenance volumes is also reflected in the annual operation and maintenance costs presented in table X-B in the amount of \$1,400,000 for shoal removal. Additional discussion on project operation and maintenance can be found in the general design memorandum supplement.

Summaries from the respective reports are provided as enclosures 2 and 3 which reflect the annual benefits and costs. Consequently, due to the higher shoaling expected to occur prior to construction, the limited area now available for disposal (as discussed further), and accounting for ponding, bulking factors of the dredged material and free board, the disposal area dikes must be built to higher elevations than initially expected to provide the additional capacity needed for the initial project. The increase in cost, which is 100% sponsor's share, is estimated to be \$3,509,000. Table II tabulates feasibility construction costs versus updated cost estimates and compares them by line item and as a percentage of total authorized costs. In accordance draft ER 1105-2-100, the total project costs have increased by 59.69 percent from \$17,800,000 in 1978 to \$27,589,000 in 1990. Comparative valuations are in October 1989 constant dollars.

Another change in scope recommended by the supplement to the 1983 GDM, entails performing the work under two sequential contracts rather than a single contract. To facilitate the local sponsor's funding capability, the first contract scheduled to be awarded in March 1991 will restore the 40-foot project depth to the existing entrance channel and basin. Under the second contract scheduled to be awarded in June 1992, the new turn widener, enlarged turning basin and associated mitigation required will be provided. As availability of non-Federal funding dictates, the dredging of the local sponsor's berthing areas can be included in either of the two contracts. The increased cost of mobilization and demobilization of equipment, which would be cost-shared on the same basis as the authorized project, is estimated to be \$776,000.

The local sponsor has requested that, due to the value of the land immediately adjacent to the port slip, D/A-1 and -2 (shown on enclosure 1) not be used as disposal areas as indicated in the 1978 Feasibility Report and the 1983 GDM. The Port Authority is in the process of upgrading existing dikes around a portion of disposal areas D/A-5 and -6 for the initial dredging work to be performed under the first two sequential contracts. This portion of Disposal Area D/A-5 and D/A-6 is about 95 acres in lieu of the combined 150 acres as stated previously. The increased pumping cost to use D/A-5 and -6 in lieu of D/A-1 and -2 is approximately \$434,000. Further studies of the cost of lands available for the recommended project (100% sponsor's share), resulted in an increase in cost of \$1,819,000. This increase in real estate is due to a miscommunication which occurred regarding the ability to build on the spoil disposal areas. The correct assumption of buildability without removal of spoil material resulted in the higher value of the property.

Other changes in scope relate to the ship simulator study performed by the Waterways Experiment Station (WES) at a cost of \$90,000. The study's final report dated 15 August 1989 recommended a reduced turn widener for the entrance channel on the south side of its intersection with the Tampa Harbor Main Channel. The report also recommended a turn widener be provided on the north side of that intersection. Neither the authorized document nor the GDM contained a widener at this location. The additional dredging for a turn widener on the north side of the entrance channel would require removal of approximately 180,000 cubic yards. The cost of that additional dredging is more than offset, however, by the recommended reduction of the southerly turn widener where about 300,000 cubic yards would be deleted from the project. Another recommendation made in the WES report entails shifting the enlarged turning basin slightly to the north. This is only a refinement in the location of the turning basin and is not actually a change in scope. There is no increased cost associated with the recommended relocation of the turning basin.

As a result of the Manatee County Port Authority performing maintenance dredging of the existing entrance channel, basin and berthing areas in 1983-84, the excavation quantity for those areas to be dredged under the Federal authorization is substantially reduced. The 1978 Feasibility Report estimated the dredging quantity to be 3,110,000 cubic yards for the entrance channel, turn widener, and enlarged turning basin. Based on a February 1988 survey, the total dredging quantity for these areas is now estimated to be 2,400,000 cubic yards. However, this savings is offset by the fact that recent subsurface investigations indicate that about 160,000 cubic yards of rock dredging will be required for the enlargement of the turning basin. It is anticipated that drilling and blasting will be required to facilitate removal of the rock. The increased cost due to the presence of rock along with shoaling expected to occur between the date of the contract survey and actual commencement of dredging is estimated to be \$2,665,000. This increase will be cost-shared on the same basis as the authorized project.

Another change is the increase in contingencies included in the first cost of construction between the recommended project and the authorized document. In accordance with the EM 1110-2-1301, dated 31 Jul 80, the recommended project first cost of construction included 25% contingencies in lieu of the 15% contingency used in the authorizing document. This is a cost increase of \$1,872,000.

In summary, a portion of the cost increase which resulted in the Section 902 cost limitation being exceeded is attributed to the increased diking cost of the available disposal area in association with the shoaling rate correction identified in the 1983 GDM, but which were not recognized in the projects authorization. It should be noted that the greatest portion of this cost increase relates to the diking cost which is the non-Federal portion of the project. In addition, other substantial increases are: (a) the cost of mobilization and demobilization of equipment due to performing the work under two contracts in lieu of one, (b) the additional cost of dredging due to the presence of rock, (c) increase of the real estate value, and (d) changes in percentage of contingencies due to present policies. These increases were not recognized in the authorized document nor the 1983 GDM.

V. Changes in Project Purpose. None

VI. Changes in Local Cooperation Requirements. As addressed in Item IV, the local sponsor is required to provide higher and larger dikes for additional capacity needed as a result of the more accurate shoaling rate projected in the 1983 GDM.

VII. Change in Location of Project. The only change related to location is the use of a portion of disposal areas D/A-5 and -6 in lieu of D/A-1 and -2 for initial construction of the project as addressed in Item IV above.

VIII. Design Changes. The design changes relate to the changes in scope are described in item IV above. Ultimately all disposal area dikes will be raised to provide the additional capacity needed for the initial project. Additional disposal areas will be provided by the local sponsor for the remainder of the project life. Mobilization and demobilization of equipment for two contracts, drilling, blasting, and rock removal constitute the only other significant design changes.

IX. Changes in Total Project Costs.

| Current Cost Estimate Recommended Project | Cost Estimate as Authorized | Authorized Project Cost at Current (Oct 89) Price Level * | Project Cost Last Presented to Congress |
|---|-----------------------------|---|---|
| \$27,589,000                              | \$16,400,000                | \$17,800,000  | \$22,330,000                            |

\* The civil works construction cost index, EM 1110-2-1304, dated 12 Oct 88 was used to update the authorized project cost to reflect current price levels.

X. Changes in Project Benefits.

The economic benefit stream for the subject harbor has changed slightly since the feasibility report was submitted for Congressional approval in 1978-79. Shifts in origins and destinations of port commerce and tidal delays were the main reasons for port benefits being changed. The change in trip distances for port commerce has reduced transportation savings because existing and planned commerce routes are shorter. The removal of a tidal delay for the larger ships calling at the port has helped recover some of the benefits for lowered transportation costs. Current analyses indicate that the trade conditions contained in benefit analyses will prevail for the life of the project.

Table X-A exhibits the project benefits presented in the feasibility report and Table X-B displays the updated project benefits. The feasibility report benefits are the project document benefits reported to Congress. Detailed economic analyses are contained in the General Design Memorandum Supplement.

Even though benefits have been reduced, port tonnages have increased for petroleum products and dry bulk. The main reason for decreased transportation savings for petroleum products is the shorter trade routes. In addition, benefits for general cargo, 24-hour port operations, and land enhancement were not claimed during benefit updates. Some benefits for 24-hour operations are contained in the removal of channel access delays.

In addition to cargo related costs, changes in interest rates also affected project benefits. The discount rate used in the 1978 feasibility report was 6-7/8% and the current discount rate is 8-7/8%. The net impact of the above changes was a 8.4 percent reduction in project benefits from \$6,268,000 in 1978 to \$5,742,200 in 1990.

XI. Benefit-Cost Ratio. The benefit cost ratio for the recommended project is 1.37 using 8.875 annual percentage rates. Based on current price level the benefit cost ratio for the authorized project is 9.3 using 6.875 annual percentage rate.

XII. Changes in Cost Allocation.

See Table XII attached

XIII. Changes in Cost Apportionment. At current price levels, the cost apportionment is as follows:

|             | <u>Authorized Project</u> | <u>Recommended Project</u> |
|-------------|---------------------------|----------------------------|
| Federal     | \$10,300,000*             | \$12,415,000               |
| Non-Federal | 7,500,000*                | 15,174,000                 |
| Total       | \$17,800,000*             | \$27,589,000               |

\*Updated from 10/1/85

XIV. Environmental Considerations in Recommended Changes. There is no significant effect on the environment associated with the changes recommended herein. The EIS and 404(b) evaluation contained in the 1978 Feasibility Report are considered to be adequate.

XV. Public Involvement. The Manatee County Board of Commissioners recognize the Non-Federal responsibilities associated with the recommended project. The Manatee County Port Authority is committed to the local sponsorship as evidenced by the signed letter of intent, the preliminary draft LCA, and financial plan submitted to the Jacksonville District on 10 January 1990.

XVI. History of Project. To provide for movement of deep draft ships, in 1970 the Manatee County Port Authority dredged a 40'x400' channel from the existing Federal project channel in Tampa Bay to their facilities at Manatee Harbor, a distance of 3 miles. The Port Authority indicated they would like the Federal Government to assume maintenance dredging of the channel, and as a result several studies have been performed. The project study was initiated in June 1976 with the preparation of a plan of study. Upon completion of a preliminary report in April 1977 a more detailed study was recommended and approved. Based upon the ensuing 1978 Feasibility Report, the project was authorized by the Water Resources Development Act of 1986, PL 99-662 dated 17 November 1986. Subsequent to the feasibility report but prior to Congressional authorization, a General Design Memorandum was prepared and approved in 1983 under the continued planning and engineering category. Due to more accurate estimates of the shoaling rate, the 1983 GDM identified the need for more capacity in the disposal areas to accommodate the initial project and maintenance dredging over the 50-year project life.

Coincidentally, upon completion and approval of the GDM, the entrance channel was maintenance dredged by the Port Authority in late 1983 and early 1984. To ensure the safety and efficiency of this navigation project, the Waterways Experiment Station performed a ship simulator study and issued their final report on 15 August 1989. The local cooperation provisions of the project authorization require the project sponsor to cost-share by providing 25% of the project cost in cash-up front plus 10% to be paid over a period of thirty years minus credits for lands, easements, rights-of-way, relocations, and dredged material disposal areas.

In order to meet their financial obligation for the authorized project, the Manatee County Port Authority recently requested the initial project be performed in two separate sequential contracts. To address the phasing of the work and the modifications recommended by the WES ship simulator study, a supplement to the GDM has been prepared. The GDM is accompanied by a new draft LCA based on performing the initial dredging work in two separate contracts. The supplement to the GDM and attachments will be submitted simultaneously with this PAC for concurrent reviews and approval.

TABLE X-A

BENEFITS IN PROJECT DOCUMENT\*

|                               | <u>Average Annual Benefits</u> |
|-------------------------------|--------------------------------|
| Transportation Benefits       |                                |
| Petroleum                     | \$6,373,000                    |
| Bulk Cargo                    | 440,000                        |
| General Cargo                 | 85,000                         |
| 24-Hour Port                  | 58,000                         |
| Land Enhancement              | <u>70,000</u>                  |
| Total Average Annual Benefits | \$7,026,000                    |
| First Cost of Project         | \$8,980,000                    |
| Average Annual Costs          | 758,000                        |
| Benefit to Cost Ratio         | 9.3 to 1                       |
| Excess Benefits               | \$6,268,000                    |

\*Summary of Project benefits and costs as per 1978  
Feasibility Report/

TABLE X-B  
BENEFITS BASED ON  
RECOMMENDED PROJECT

| <u>Commodity Description</u>                      | Average Annual Equivalent<br>According to Specified<br>Interest Rate<br><u>8-7/8% **</u> |
|---|--|
| Liquid Bulk:                                      |  |
| Asphalt   | \$ 17,400  |
| Fuel Oils   | 2,777,200  |
| Diesel Fuel                                       | 449,800  |
| Gasoline  | 360,000  |
| Jet/Aviation Fuel                                 | 428,200  |
| Dry Bulk:   |  |
| Building Cement and<br>Cement Clinkers            | 760,200<br>110,600   |
| Gypsum  | 814,200  |
| Fertilizer  | 24,600   |
| Phosphate Rock                                    | --   |
| Total Benefit Value:                              | \$5,742,200  |
| Project First Costs:                              | \$27,589,000   |
| Average Annual Equivalent<br>(AAEQ):              | 2,483,900  |
| Estimated Annual Carrying<br>Charges (AAEQ):      |  |
| Shoal Removal                                     | 1,400,000  |
| Aids to Navigation                                | 2,000  |
| Diking of Areas                                   | 295,700  |
| <u>Total Average Annual Equivalent<br/>Costs:</u> | \$ 4,181,600   |
| Average Annual Equivalent<br>Benefit (AAEQ):      | 5,742,200  |
| Benefit-to-Cost Ratio:                            | 1.37   |

\*\* Rate as specified for economic assessment for water resources development projects for fiscal year (FY) 1990.

Table XII

COMPARISON OF AUTHORIZED AND RECOMMENDED PROJECT COSTS  
MANATEE HARBOR, FLORIDA

| Item   | Valuations in 1989 Constant Dollars |                     | Relative Percentage Increase |                        |
|--|-------------------------------------|---------------------|------------------------------|------------------------|
|  | As Authorized (1.)                  | Current Recommended | By Item (2.)                 | Relative to Total (3.) |
| Mobilization and Demobilization of Equipment (4.)          |                                     |                     |                              |                        |
| Excavation   | \$474,000                           | \$1,250,000         | 163.71%                      | 4.73%                  |
| Lower 10 Acres of Island to -2.0 ft., m.l.w.               | \$7,203,000                         | \$9,868,000         | 37.00%                       | 16.25%                 |
| Monitoring Costs   | \$95,000                            | \$135,000           | 42.11%                       | 0.24%                  |
| Contingencies ( +/- 15% )                                  | \$39,000                            | \$80,000            | 105.13%                      | 0.25%                  |
|  | \$1,135,000                         | \$3,007,000         | 164.93%                      | 11.41%                 |
| Total Contract Price                                       | \$8,946,000                         | \$14,340,000        | 60.30%                       | 32.89%                 |
| Engineering and Design (E&D)                               | \$632,000                           | \$1,143,000         | 80.85%                       | 3.12%                  |
| Supervision and Administration (S&A)                       | \$722,000                           | \$1,000,000         | 58.50%                       | 1.70%                  |
| Total Engineering, Design, and Administration              | \$1,354,000                         | \$2,143,000         | 58.27%                       | 4.81%                  |
| Total First Cost of Construction                           | \$10,300,000                        | \$16,483,000        | 60.03%                       | 37.70%                 |
| Dredging of Vessel Berthing Areas                          | \$2,095,000                         | \$433,000           | -79.33%                      | -10.13%                |
| Diking and Drainage System                                 | \$2,738,000                         | \$6,247,000         | 128.16%                      | 21.40%                 |
| Wiers  | \$317,000                           | \$209,000           | -34.07%                      | -0.66%                 |
| Land Costs (Economic and Financial)                        | \$1,355,000                         | \$3,174,000         | 134.24%                      | 11.09%                 |
| Aids to Navigation   | \$21,000                            | \$15,000            | -28.57%                      | -0.04%                 |
| Engineering and Design, and Supervision and Administration | \$974,000                           | \$1,028,000         | 5.54%                        | 0.33%                  |
| Total First Supplemental Costs                             | \$7,500,000                         | \$11,106,000        | 48.08%                       | 21.99%                 |
| Total First Cost of Project                                | \$17,800,000                        | \$27,589,000        | 54.99%                       | 59.69%                 |

(1.) Compares to the total authorized project first cost of \$16,400,000 after adjustment for inflation.

(2.) Calculated percentage increase based on constant dollar valuations as presented.

(3.) Calculated percentage(s) based on the net increase for respective line item divided by the total authorized project first cost before adjustment for inflation (i.e., a total project first cost of \$16,400,000). Summation of percentage values by line item totals 59.69 percent, and reconciles with line 5d of the enclosed project cost fact sheet.

(4.) Cost increase primarily attributable to additional mobilization and demobilization cycle anticipated for phased construction.

## PROJECT COST INCREASE FACT SHEET

1. PROJECT: Manatee Harbor, Florida.

2. AUTHORIZATION: Water Resources Act of 1986, Public Law 99-662 dated November 17, 1986.

3. SECTION 902 LIMIT OF THE PROJECT:

|  |              |
|--|--------------|
| a. Project cost as authorized:                                     | \$16,400,000 |
| b. Price level increases from date of authorized cost: (to Oct.89) | \$ 1,400,000 |
| c. Current cost of modifications required by law:                  | \$ 0         |
| d. 20% of line 3a:   | \$ 3,280,000 |
| e. Maximum project cost limited by Section 902:                    | \$21,080,000 |

4. CURRENT COST ESTIMATE: (Oct.1989) \$27,589,000

5. COMPUTATION OF PERCENTAGE INCREASE:

|                                      |              |
|--------------------------------------|--------------|
| a. Current estimate: (Oct.89)        | \$27,589,000 |
| b. Less total of lines 3a, b, and c: | \$17,800,000 |
| c. Subtotal:                         | \$ 9,789,000 |
| d. Percent increase: (line 5c/3a)    | 59.69%       |

6. COST INDEX: The Civil Works Construction Cost Index, EM 1110-2-1304, dated 12 Oct. 1988, was used to update the authorized project cost to reflect current price levels. This resulted in about an 8 percent increase in the authorized cost.

7. PROJECT SCOPE CHANGES: A significant cost increase is attributed to the shoaling rate correction and associated increased diking costs that were identified in the 1983 GDM, but which were not recognized in the project authorization. In addition, other increases are: (a) the cost of mobilization and demobilization of equipment due to performing the work under two contracts in lieu of one, and (b) the additional cost of dredging due to the presence of rock.

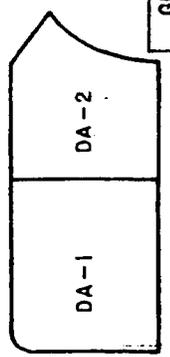
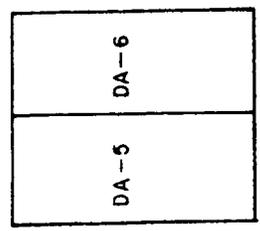
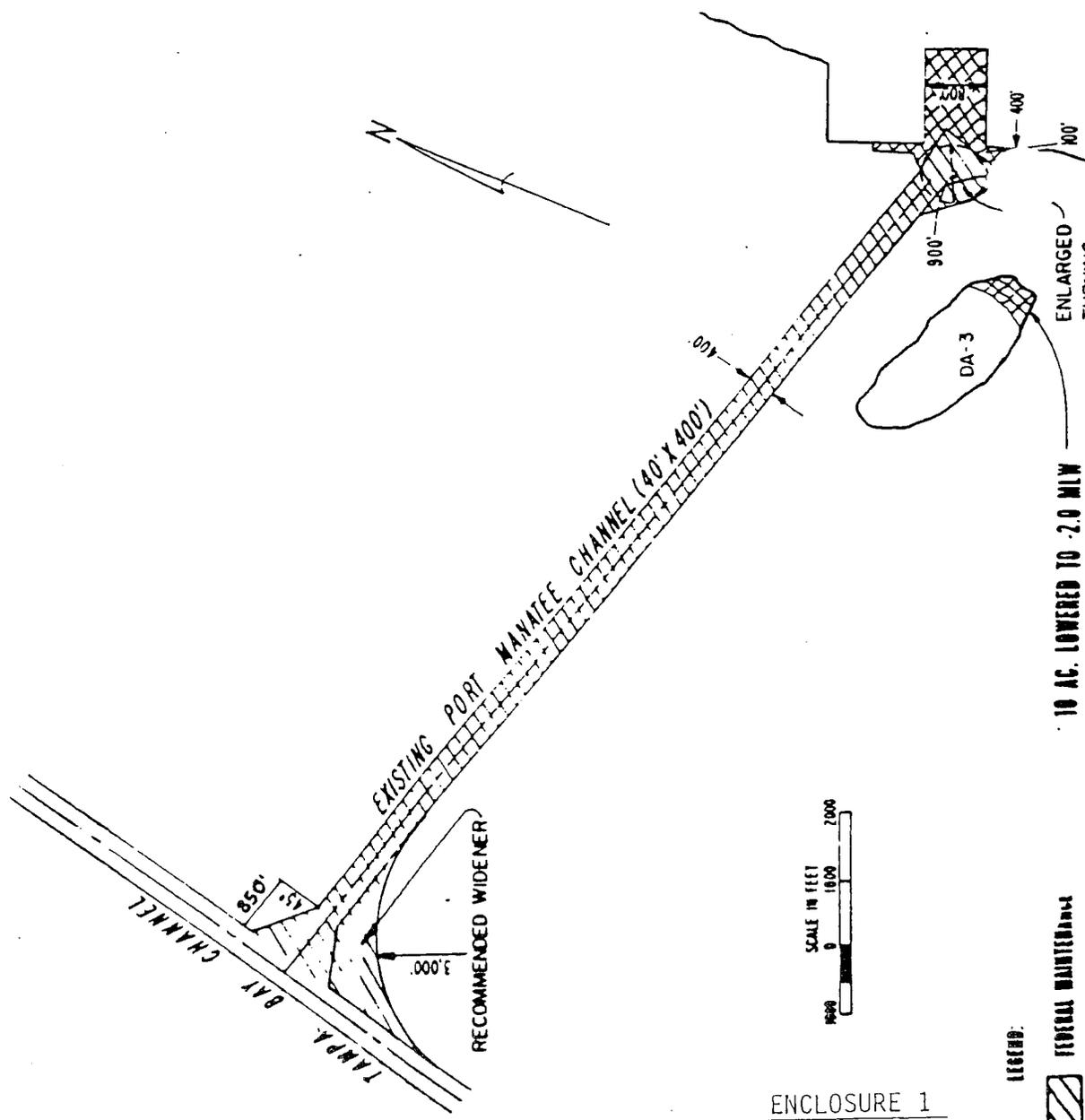
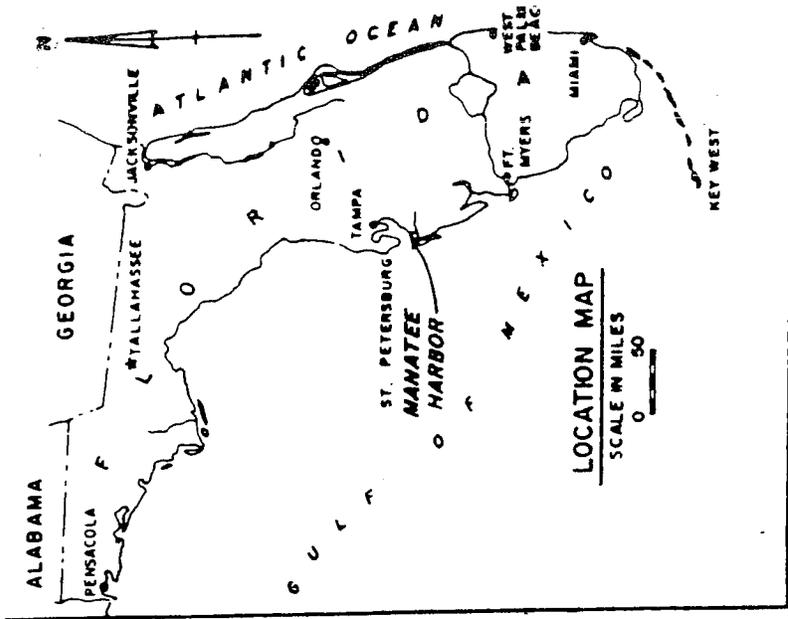
8. PROJECT BENEFIT CHANGES: The economic benefit stream for the subject harbor has changed slightly since the feasibility report was submitted for Congressional approval in 1978-79. Shifts in origin and destinations of port commerce and tidal delays were the main reasons for the port benefits being changed. In addition to cargo related costs, changes in interest rates also affected project benefits. The discount rate used in the feasibility

report was 6 7/8% and the current discount rate is 8 7/8%. The net impact of the above changes was an 8.4 percent reduction in project benefits from \$6,268,000 in 1978 to \$5,742,000 in 1990.

9. PROJECT STATUS: To address the phasing of the work and the modifications recommended by the WES ship simulator study, a supplement to the GDM has been prepared. This supplement is accompanied by a new draft LCA based on performing the work in two separate contracts. The supplement to the GDM will be submitted simultaneously with the PAC for concurrent reviews and approvals. Plans and specifications for the dredging of Manatee Harbor entrance channel, Phase I, have been completed within the district and coordinated with the local sponsor. Plans and specs will be submitted for Division approval upon approval of the GDM supplement and re-authorization of the project.

## DRAFT LEGISLATION

MANATEE HARBOR, FLORIDA. The project to improve navigation at Manatee Harbor, Florida authorized by the Water Resources Act of 1986, Public Law 99-662 dated November 17, 1986 under the heading "MANATEE HARBOR, FLORIDA", is modified to authorized the Secretary to construct the project substantially in accordance with the Post Authorization Change Notification Report, dated April 1990, at a total cost of \$27,589,000, with an estimated first Federal cost of \$12,415,000 and an estimated non-Federal cost of \$15,174,000.



GENERAL DESIGN NO. 1  
MANATEE HARBOR, FLORIDA

10 AC. LOWERED TO -2.0 MLW

LEGEND:  
FEDERAL MAINTENANCE

TABLE F-1

ESTIMATE OF PROJECTS FIRST COST OF CONSTRUCTION

| <u>Items</u>  | <u>Amount</u>      |
|---|--------------------|
| Mobilization and Demobilization of Equipment        | \$ 300,000         |
| Excavation:   |                    |
| a. Channel (1,425,000 c.y. silty @ \$1.30/c.y.)     | 1,852,500          |
| b. Widener (1,175,000 c.y. sandy @ \$1.70/c.y.)     | 1,997,500          |
| c. Turning basin (510,000 c.y. sandy @ \$1.40/c.y.) | 714,000            |
| Lower 10 Acres of Island to -2 feet, m.l.w.         | 60,000             |
| Environmental Costs                                 | 25,000             |
| Contingencies                                       | 719,000            |
| TOTAL CONTRACT PRICE                                | <u>\$5,668,000</u> |
| Engineering and Design                              | 394,000            |
| Supervision and Administration                      | 450,000            |
| TOTAL FIRST COST OF CONSTRUCTION                    | <u>\$6,512,000</u> |
| Dredging of Berthing Areas (610,000 c.y.)           | 793,000            |
| Diking (D/A 5, 895,000 c.y.)                        | 1,000,000          |
| Pipeline, Road Crossing and Ditch Repair            | 24,000             |
| Weirs   | 120,000            |
| Land Costs  | 513,000            |
| Navigation Aids                                     | 8,000              |
| TOTAL FIRST COST OF PROJECT                         | <u>\$8,970,000</u> |

TABLE F-2

SUMMARY OF ESTIMATED ANNUAL COSTS

| <u>Items</u>   | <u>Amount</u>     |
|--|-------------------|
| Investment   | \$8,970,000       |
| Annual Charges:  |                   |
| Interest and Amortization at 6 7/8%<br>on Initial Investment | \$ 640,000        |
| Annual Charges for Maintenance Every 5 Years:                |                   |
| Shoal Removal*   | 81,500            |
| Navigation Aids  | 500               |
| Diking, Weirs, Etc. (including DA-6)                         | 36,000            |
| TOTAL ANNUAL COST  | <u>\$ 758,000</u> |

\*Maintenance dredging of approximately 250,000 cubic yards of silty material from the channel to be performed every 5 years in conjunction with Tampa Harbor maintenance; therefore, the mobilization and demobilization for the Manatee Harbor portion would be \$30,000 per maintenance dredging.

(Rev 30 May 79)

TABLE 8

ESTIMATE OF PROJECTS FIRST COST OF CONSTRUCTION

| <u>Items</u>   | <u>Amount</u>       |
|--|---------------------|
| Mobilization and demobilization of equipment           | \$ 600,000          |
| Excavation:  |                     |
| a. Channel (1,500,000 c.y. silty @ \$2.30/c.y.)        | 3,450,000           |
| b. Widener (1,175,000 c.y. sandy @ \$2.50/c.y.)        | 2,938,000           |
| c. Turning basin (510,000 c.y. sandy @ \$2.15/c.y.)    | 1,097,000           |
| Lower 10 acres of island to -2 feet, MLW               | 95,000              |
| Environmental costs (monitoring)                       | 35,000              |
| Contingencies (20% +)                                  | 1,640,000           |
| TOTAL CONTRACT PRICE                                   | <u>\$9,855,000</u>  |
| Engineering and design (E&D)                           | 780,000             |
| Supervision and administration (S&A)                   | 695,000             |
| TOTAL FIRST COST OF CONSTRUCTION                       | <u>\$11,330,000</u> |
| Dredging of berthing area (610,000 c.y. @ \$2.15/c.y.) | 1,310,000           |
| Diking of Areas 1 & 2 (2,400,000 cy. @ \$1.65/c.y.)    | 3,960,000           |
| Pipeline, road crossing, and ditch repair              | 35,000              |
| Weirs (2 @ \$60,000)                                   | 120,000             |
| Navigation aids (U.S. Coast Guard)                     | 10,000              |
| E&D and S&A  | 820,000             |
| Contingencies  | 1,275,000           |
| TOTAL FIRST COST OF PROJECT                            | <u>\$18,860,000</u> |

TABLE 9

SUMMARY OF ESTIMATED ANNUAL COSTS

| <u>Items</u>  | <u>Amount</u>      |
|---|--------------------|
| Investment  | \$18,860,000       |
| Annual charges:   |                    |
| Interest and amortization @ 7 7/8%<br>on initial investment (0.08057) | 1,520,000          |
| Annual charges for maintenance every 3 years:                         |                    |
| Shoal removal*  | 784,500            |
| Navigation aids (U.S. Coast Guard)                                    | 500                |
| Diking of Areas 5 & 6, weirs, etc.                                    | 265,000            |
| TOTAL ANNUAL COST   | <u>\$2,570,000</u> |

\*Maintenance dredging of approximately 660,000 cubic yards of silty material from the channel, turning basin, widener, and berthing areas to be performed every 3 years.