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**GULF INTRACOASTAL WATERWAY—  
CHANNEL TO PALACIOS, TEXAS**

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**LETTER  
FROM  
THE SECRETARY OF THE ARMY  
TRANSMITTING**

A LETTER FROM THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY, DATED JUNE 22, 1962, SUBMITTING A REPORT, TOGETHER WITH ACCOMPANYING PAPERS AND ILLUSTRATIONS, ON A REVIEW OF THE REPORTS ON THE GULF INTRACOASTAL WATERWAY—CHANNEL TO PALACIOS, TEXAS, REQUESTED BY A RESOLUTION OF THE COMMITTEE ON RIVERS AND HARBORS, HOUSE OF REPRESENTATIVES, ADOPTED SEPTEMBER 13, 1944



AUGUST 8, 1962.—Referred to the Committee on Public Works  
and ordered to be printed with two illustrations

U.S. GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1962

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LETTER OF TRANSMITTAL



DEPARTMENT OF THE ARMY  
WASHINGTON 25, D.C.

IN REPLY REFER TO:

August 1, 1962

Honorable John W. McCormack  
Speaker of the House of Representatives

Dear Mr. Speaker:

I am transmitting herewith a favorable report dated 22 June 1962, from the Chief of Engineers, Department of the Army, together with accompanying papers and illustrations, on a review of the reports on the Gulf Intracoastal Waterway - Channel to Palacios, Texas, requested by a resolution of the Committee on Rivers and Harbors, House of Representatives, adopted 13 September 1944.

In accordance with Section 1 of Public Law 14, 79th Congress, and Public Law 85-624, the views of the Governor of Texas and the Department of the Interior are set forth in the inclosed communications, together with the reply of the Chief of Engineers to the Department of the Interior.

The Bureau of the Budget noted that in view of the relatively marginal economic justification of the project and the obvious difficulty of predicting benefits over a period as long as 100 years, it would expect that the project, if authorized, would be reevaluated prior to any request for funds to initiate construction.

The Bureau of the Budget advises that there is no objection to the submission of the report to the Congress; however, it states that no commitment can be made at this time as to when any estimate of appropriation would be submitted for construction of the project modification, if authorized by the Congress, since this would be governed by the President's budgetary objectives as determined by the then prevailing fiscal situation. A copy of the letter from the Bureau of the Budget is inclosed.

Sincerely yours,

A handwritten signature in cursive script that reads "Cyrus Vance".

Cyrus R. Vance  
Secretary of the Army

1 Incl  
Rept w/accmpg  
papers & illus

COMMENTS OF THE BUREAU OF THE BUDGET

EXECUTIVE OFFICE OF THE PRESIDENT

BUREAU OF THE BUDGET

WASHINGTON 25, D. C.

25 July 1962

Honorable Cyrus R. Vance  
Secretary of the Army  
Washington 25, D. C.


Dear Mr. Secretary:

Assistant Secretary Schaub's letter of June 29, 1962, submitted the proposed report of the Chief of Engineers on the Gulf Intracoastal Waterway - Channel to Palacios, Texas, in response to a resolution of the Committee on Rivers and Harbors of the United States House of Representatives, adopted September 13, 1944.

The Chief of Engineers recommends modification of the existing project to provide for a channel 12 feet deep and 125 feet wide from the Intra-coastal Waterway to Palacios, with similar deepening and maintenance of two turning basins and an approach channel, and construction of two breakwaters at the entrance to the turning basins. The estimated first cost is \$888,000 of which the Federal cost is \$818,000 for construction and the non-Federal cost is \$70,000 for lands, rights-of-way, spoil disposal areas, and pipeline alterations. The Federal cost of maintenance is estimated to be \$19,000 in addition to that now required. The benefit-cost ratio is stated to be 1.2 based on a 100-year period of analysis and using an interest rate of 2-5/8% to convert benefits and Federal costs to equivalent time periods. When reevaluated using an interest rate of 2-7/8%, the present rate under recently approved standards for project formulation and evaluation, the benefit-cost ratio is reduced to slightly above unity. In view of its relatively marginal economic justification and the obvious difficulty of predicting benefits from a project such as this over a period as long as 100 years, the Bureau of the Budget would expect that the project if authorized would be reevaluated prior to any request for funds to initiate construction.

I am authorized by the Director of the Bureau of the Budget to advise you that there would be no objection to the submission of the report to the Congress. No commitment, however, can be made at this time as to when any estimate of appropriation would be submitted for construction of the project modification, if authorized by the Congress, since this would be governed by the President's budgetary objectives as determined by the then prevailing fiscal situation.

Sincerely yours,

  
Carl H. Schwartz, Jr., Chief  
Resources and Civil Works  
Division

COMMENTS OF THE GOVERNOR OF TEXAS



EXECUTIVE DEPARTMENT  
AUSTIN 11, TEXAS

PRICE DANIEL  
GOVERNOR

May 7, 1962

Maj. Gen. Keith R. Barney  
Acting Chief of Engineers  
United States Army  
Washington 25, D. C.

Dear General Barney:

This has further reference to your letter of March 9, 1962, transmitting copy of the proposed report on the Gulf Intracoastal Waterway - Channel to Palacios, Texas.

At my request, the Texas Water Commission reviewed this report and approved its feasibility, as evidenced by the attached copy of a Commission Order. I concur in the findings and conclusions of the Commission.

Sincerely yours,

A handwritten signature in cursive script that reads "Price Daniel".

PD:gs

Enclosure

cc: Hon. Joe D. Carter, Chairman  
Texas Water Commission  
Capitol Station, Box 2311  
Austin 11, Texas

# TEXAS WATER COMMISSION



AN ORDER approving the feasibility of the Gulf Intra-Coastal Waterway (Galveston District) - Channel to Palacios, Texas, Project, as proposed in the Review of Reports of the Corps of Engineers, United States Army, on said project.

BE IT ORDERED BY THE TEXAS WATER COMMISSION:

Section 1. Statement of Authority. Article 7472e, Vernon's Annotated Civil Statutes, provides that upon receipt of any engineering report submitted by a Federal Agency seeking the Governor's approval of a Federal Project, the Texas Water Commission shall study and make recommendations to the Governor as to the feasibility of the Federal Project. The Commission shall cause a public hearing to be held to receive the views of persons or groups who might be affected should the Federal Project be initiated and completed.

Section 2. Statement of Jurisdiction. (a) By letter dated March 13, 1962, the Honorable Price Daniel, Governor of Texas, requested the Texas Water Commission to study and make recommendations concerning the Review of Reports of the Corps of Engineers, United States Army, on the Gulf Intracoastal Waterway (Galveston District) - Channel to Palacios, Texas, Project, said Review being initially dated October 26, 1961, and to enter its order finding said project to be feasible or not feasible. (b) In accordance with Article 7472e, the Commission caused a public hearing after due notice by publication and mail, to be held on May 1, 1962, at 10:00 o'clock, A.M., in the offices of the Texas Water Commission, 201 East Fourteenth Street, Austin, Texas, on said Review and Project, and at which time all those interested or who may be affected should the Project recommended in said Review be initiated and completed were requested to come forward and give testimony.

Section 3. After fully considering all the evidence and exhibits presented by persons and groups who may be affected should the Project be initiated and completed, including the matters set forth in Section 4 of



Article 7472a, the Commission finds that said Project is feasible and that the public interest will be served thereby.

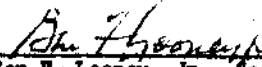
Section 4. It is further ordered that a certified copy of this Order be transmitted to the Governor.

Section 5. This Order shall take effect on the 1st day of May, 1962, the date of its passage, and it is so ordered.

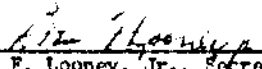
SIGNED IN THE PRESENCE OF THE  
TEXAS WATER COMMISSION

  
Joe D. Carter, Chairman

ATTEST:

  
Ben F. Looney, Jr., Secretary

I certify that the foregoing order was adopted by the Texas Water Commission at a meeting held on the 1st day of May, 1962, upon motion of Commissioner Dent, seconded by Commissioner Beckwith, Commissioner Dent voting "aye", Commissioner Beckwith voting "aye", and Chairman Carter voting "aye".

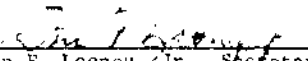
  
Ben F. Looney, Jr., Secretary

STATE OF TEXAS     |

COUNTY OF TRAVIS   |

I, Ben F. Looney, Jr., Secretary of the Texas Water Commission do hereby certify that the foregoing is a true and correct copy of an order of said Commission, the original of which is filed in the permanent records of said Commission.

Given under my hand and the seal of the Texas Water Commission, this the 7<sup>th</sup> day of May, A.D., 1962.

  
Ben F. Looney, Jr., Secretary

COMMENTS OF THE DEPARTMENT OF THE INTERIOR



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
OFFICE OF THE SECRETARY  
WASHINGTON 25, D. C.

May 25, 1962

Lt. General Walter K. Wilson, Jr.  
Chief of Engineers  
Department of the Army

Dear General Wilson:

This is in reply to General Barney's letter of March 9, transmitting for our comments reports on the Gulf Intercoastal Waterway -- channel to Palacios, Texas. These reports recommend widening and deepening the existing channel and turning basins and construction of breakwaters, at an estimated Federal cost of \$818,000.

The Bureau of Sport Fisheries and Wildlife prepared a report on the proposed modification of the existing project in which were included five specific recommendations to protect the fishery resources of the area. In his comments on that report the District Engineer stated that these recommendations appeared reasonable and would be considered in further coordination with the Fish and Wildlife Service if the proposed improvements are constructed. This Department believes that, in accordance with 1954 agreement between the Fish and Wildlife Service and the Corps of Engineers, the District Engineer should specifically accept each of the recommendations or give his reasons for considering them unacceptable. The assurance that these recommendations "will be considered" if the proposed improvements are constructed connotes neither acceptance nor rejection of them. It is requested that your proposed report be modified to indicate your acceptance of each of the recommendations in the report of the Bureau of Sport Fisheries and Wildlife or reasons for finding any of them unacceptable.

The Bureau of Mines notes that, by providing more economical transportation, the project would benefit the mineral industries in the area.

We appreciate the opportunity of presenting our views.

Sincerely yours,

A handwritten signature in dark ink, appearing to be "K. H. ...", written over a horizontal line.

Assistant Secretary of the Interior

LETTER TO THE DEPARTMENT OF THE INTERIOR



IN REPLY REFER TO  
ENGOW-PD

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
OFFICE OF THE CHIEF OF ENGINEERS  
WASHINGTON 25, D.C.

21 June 1962

Honorable Kenneth Holum

Assistant Secretary of the Interior

Dear Mr. Holum:

This is in reply to your letter dated 25 May 1962, furnishing comments of the Department of the Interior on our report on the Gulf Intercoastal Waterway, Channel to Palacios, Texas.

A letter report from the Southwestern Regional Director, U. S. Fish and Wildlife Service, containing the coordinated comments and recommendations of that agency and the Texas Game and Fish Commission, is appended to the report of the District Engineer. The letter report contains five specific recommendations, as follows: (1) that spoil dredged from the inner 3500 feet of the existing channel be placed on dry land; (2) that spoil from dredging operations be placed on the west side of the channel; (3) that the existing 1000-foot openings between the spoil disposal areas for the existing channel be continued; (4) that an opening of 1,500 feet be provided at the end of the existing channel and the beginning of the extension channel; and, (5) that material dredged from the extension channel be deposited in 3000-foot banks, with openings of 1500 feet between disposal areas.

The first three recommendations, applicable to the existing channel, have been adopted and were incorporated in the last maintenance contract for the channel, completed in January 1962.

The fourth and fifth recommendations also are acceptable. However, within the past two years the U. S. Fish and Wildlife Service has modified its recommendations for the placement of spoil from maintenance dredging on this channel. Accordingly, the wording in the report of the District Engineer is believed to be in the best interests of the Fish and Wildlife Service, in that the selection of spoil areas can be coordinated with the Service during preconstruction planning, and at

that time any recommended changes in locations found practical and economical would be adopted.

We appreciate your comments on our report, and your letter together with this reply will be made a part of the final report to the Congress.

Sincerely yours,

(Signed)

W. K. WILSON, JR.  
Lieutenant General, USA  
Chief of Engineers

# GULF INTRACOASTAL WATERWAY—CHANNEL TO PALACIOS, TEXAS

## REPORT OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY



IN REPLY REFER TO

ENG CW-PD

22 June 1962

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
OFFICE OF THE CHIEF OF ENGINEERS  
WASHINGTON 25, D.C.

SUBJECT: Gulf Intracoastal Waterway - Channel to Palacios, Texas

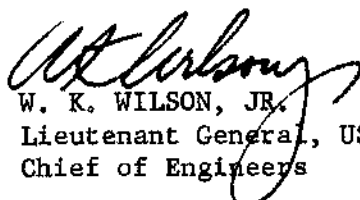
TO: THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress the report of the Board of Engineers for Rivers and Harbors, accompanied by the reports of the District and Division Engineers, in response to a resolution of the Committee on Rivers and Harbors of the House of Representatives, United States, adopted 13 September 1944, concerning the advisability of modifying the existing project for the Gulf Intracoastal Waterway - Channel to Palacios, Texas.

2. The District and Division Engineers recommend modification of the existing project to provide for a channel 12 feet deep and 125 feet wide from the Gulf Intracoastal Waterway to Palacios, Texas, with similar deepening and maintenance of two turning basins and the approach channel to basin No. 2, and construction of two breakwaters at the entrance to the turning basins. They estimate the first cost of the proposed improvements at \$888,000, of which the Federal cost is \$818,000 for construction and the non-Federal cost is \$70,000 for lands, rights-of-way, spoil-disposal areas, and pipeline alterations. The Federal maintenance costs for the breakwaters and dredging are estimated at \$19,000 in addition to that now required, including \$4,000 for maintenance of the existing turning basins. The benefit-cost ratio is 1.2.

3. The Board concurs in general in the findings of the reporting officers and recommends the improvements subject to local cooperation.

4. I concur in the recommendations of the Board.

  
W. K. WILSON, JR.  
Lieutenant General, USA  
Chief of Engineers

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS



CORPS OF ENGINEERS, U. S. ARMY  
BOARD OF ENGINEERS FOR RIVERS AND HARBORS  
WASHINGTON 25, D. C.

ENGBR

25 January 1962

SUBJECT: Gulf Intracoastal Waterway - Channel to Palacios, Texas

TO: Chief of Engineers  
Department of the Army

1. Authority and scope.--This report is in response to the following resolution adopted 13 September 1944:

Resolved by the Committee on Rivers and Harbors of the House of Representatives, United States, That the Board of Engineers for Rivers and Harbors created under section 3 of the River and Harbor Act, approved June 13, 1902, be, and is hereby, requested to review the reports on Palacios, Texas; and Camp John A. Hulien, to Intra-coastal Waterway Channel, submitted in House Document Numbered 564, Seventy-fifth Congress, third session, with a view to determining if it is advisable to modify the existing project in any way at this time, and particularly with a view to extending the Palacios project channel to the city pier.

2. Description.--Palacios, Texas, is on the west shore of Trespalacios Bay in Matagorda County about midway between Galveston and Corpus Christi. The existing 9- by 100-foot navigation channel extending from Palacios to a 9-foot depth in Matagorda Bay connects with the 12- by 125-foot channel of the existing Gulf Intracoastal Waterway and provides access to and from the Gulf of Mexico through Pass Cavallo. Pass Cavallo usually has a controlling depth of about 9 feet over the bar but navigation through the pass is hazardous and undependable because of shifting sand bars. This condition will be relieved upon construction of the authorized deep-draft project for Matagorda Ship Channel through the barrier beach. The channel, 13.5 miles long, from the Intracoastal Waterway to Palacios was completed in 1940 at a cost of \$60,000. Maintenance costs to 30 June 1961 have been \$232,300. The current estimate of annual cost of maintenance for the channel is \$13,000. In 1941, the Matagorda County Navigation District completed construction of

turning basin No. 1 on the project channel at Palacios as an item of local cooperation. The basin is 9 feet deep, 280 feet wide, and 650 feet long. The Navigation District added a second turning basin in 1952. This basin, lying west of turning basin No.1, was dredged to a depth of 9 feet, 400 feet wide, and 1,250 feet long, and is connected to the Palacios channel by a connecting channel of the same depth, 250 feet wide and 400 feet long. The total costs of constructing the turning basins are reported to have been \$337,000. The basins are being maintained by local interests. The basins and the locally improved Crawford Channel, or slip, to the east have facilities for cargo transfer, boat repair, processing sea food, icing, and oil storage. The mean range of tide is 1 foot. However, water levels may be depressed as much as 2 feet below mean low water by north winds and raised as much as 16 feet by hurricanes. Prevailing winds are from the southeast.

3. Tributary area and commerce.--Palacios is the distribution center for a predominately agricultural area of about 1,000 square miles in Matagorda, Wharton, and Jackson Counties. It is served by highway and rail facilities. The population of Palacios was about 3,680 in 1960. There are 23 producing oilfields in the area and crude oil shipments from the harbor have been initiated and are expected to increase. Oilfield equipment and supplies are received by barge. Four processing plants have a capacity of about 12,300 tons of seafood annually. Waterborne commerce consists of shell, seafood products, ice, crude oil, and miscellaneous items. Fresh seafood catch from the bay is not expected to increase, but increased use of the harbor by Gulf shrimping boats is expected to occur with a deeper channel. Waterborne commerce at Palacios increased from 79,262 tons in 1951 to 140,844 tons in 1960.

4. Improvements desired.--Local interests desire that the existing channel be enlarged to provide a depth of 12 feet and a width of 125 feet from the Gulf Intracoastal Waterway to Palacios, the turning basins be deepened and Federally maintained, and protection works be provided to reduce wave damage. They point out that the present channel is inadequate for large fishing boats and fully loaded barges, that frequent shoaling has denied full use of the existing channel to commerce, and that maintenance of turning basins is no longer a local responsibility at other harbors.

5. Improvements proposed.--The District Engineer proposes modification of the existing project to provide for a channel 12 feet deep and 125 feet wide extending from the main channel of the Gulf Intracoastal Waterway in Matagorda Bay to the turning basins

at Palacios, two protective breakwaters at the entrance to the turning basins, deepening the two turning basins and connecting channel to 12 feet with dimensions of 200 feet by 700 feet in turning basin No. 1, 300 feet by 1,150 feet in turning basin No. 2, and 150 feet to 480 feet wide by 450 feet long in the connecting channel, in accordance with the plan presented in his report. He estimates the first cost of this work, based on October 1961 prices, at \$938,000 of which \$868,000 would be Federal including \$11,000 for preauthorization studies and \$39,000 for aids to navigation, and \$70,000 would be non-Federal for lands, spoil areas, and alteration of a pipeline. He estimates the annual charges at \$47,500, of which \$44,500 would be Federal including additional maintenance costs of \$14,000 for dredging over that now required, \$1,000 for breakwaters, and \$5,000 for aids to navigation. Not included in these amounts is an increase in Federal annual cost of \$4,000 for maintenance of the basins and reduction of this amount in the cost to local interests. The District Engineer estimates the average annual benefits at \$55,000. This consists of savings due to use of deeper draft loading of vessels amounting to \$15,000 for oil, \$7,000 for shell, and \$19,000 for sea food; and of \$14,000 for reductions in hazards to navigation. The benefit-cost ratio is 1.2, based on a 100-year period of analysis. The District Engineer recommends the improvements in accordance with his plan, subject to certain conditions of local cooperation, and provided that no dredging shall be done within 50 feet of any established pierhead line, wharf, or structure. The Division Engineer concurs.

6. Public notice.--The Division Engineer issued a public notice stating the recommendations of the reporting officers and affording interested parties an opportunity to present additional information to the Board. No communications have been received.

Views and Recommendations of the Board of Engineers for Rivers and Harbors.

7. Views.--The Board of Engineers for Rivers and Harbors concurs in the finding of the reporting officers that the proposed improvements are economically justified and suitable for the needs of navigation. It believes that in the interest of cost saving and channel efficiency, the proposal to relocate the Intracoastal Waterway in this area should be resolved prior to final decision as to location of the connecting channel to Palacios. The Chief of Engineers should be given discretionary authority to modify the plan to include any advisable change in alignment.



8. Recommendations.--Accordingly, the Board recommends modification of the existing project for the Gulf Intracoastal Waterway, channel to Palacios, Texas, to provide for:

A channel 12 feet deep and 125 feet wide from the Gulf Intracoastal Waterway to Palacios, with two protective breakwaters totaling about 1,600 feet in length at the entrance to the turning basins;

Deepening and maintaining the existing basins, Nos. 1 and 2, at Palacios to 12 feet with dimensions of 200 feet by 700 feet and 300 by 1,150 feet, respectively; and

Deepening, enlarging, and maintaining the existing approach channel to basin No. 2 to 12 feet by 150 to 480 feet wide and 450 feet long;

generally in accordance with the plan of the District Engineer, which provides that no dredging be accomplished within 50 feet of any established pierhead line, wharf, or structure, and with such modifications in the plan as in the discretion of the Chief of Engineers may be advisable. The estimated cost to the United States is \$818,000 for new-work dredging and breakwater construction and \$19,000 annually for breakwater and dredging maintenance in addition to that now required. This work is recommended subject to the provision that prior to construction and accomplishment of any maintenance beyond that now authorized, local interests agree to:

a. Provide without cost to the United States all lands, easements and rights-of-way required for construction and subsequent maintenance of the improvements and of aids to navigation upon the request of the Chief of Engineers including suitable areas determined by the Chief of Engineers to be required in the general public interest for initial and subsequent disposal of spoil and necessary retaining dikes, bulkheads, and embankments therefor or the costs of such retaining works;


b. Accomplish without cost to the United States all alterations of pipelines, power lines, utility lines, cables, and highway facilities, when and as required for construction of the project;

c. Continue to provide and maintain at local expense adequate public terminal and transfer facilities open to all on equal terms;

d. Provide and maintain without cost to the United States depths in berthing areas serving the terminals commensurate with the project depths; and

e. Hold and save the United States free from damages due to the construction works and maintenance of the improvement.

FOR THE BOARD:

  
KEITH R. BARNEY  
Major General, USA  
Chairman

# REPORT OF THE DISTRICT ENGINEER

## REVIEW OF REPORTS ON GULF INTRACOASTAL WATERWAY CHANNEL TO PALACIOS, TEXAS

October 26, 1961

### SYLLABUS

This report comprises the results of an investigation to determine the advisability of modifying the navigation project for the Gulf Intracoastal Waterway, Channel to Palacios, Texas. It was found that:

a. Enlargement of the Channel to Palacios to provide a channel 12 feet deep and 125 feet wide, extending from the main channel of the Gulf Intracoastal Waterway to the turning basins at Palacios, deepening of the turning basins to a depth of 12 feet and constructing protective breakwaters at the entrance to the turning basins would provide substantial benefits to navigation. Benefits would result from reduction in transportation costs achieved by efficient operation of larger vessels on the channel, and from a reduction in navigation hazards. The proposed improvements are justified with a benefits to cost ratio of 1.2.

b. Maintenance of the two locally dredged turning basins at Palacios by the United States would be justified as the basins are well-established parts of the overall navigation facilities and serve the needs of general commerce.

Accordingly, it is recommended that the existing project for the Gulf Intracoastal Waterway, Channel to Palacios, Texas, be modified to provide for a channel 12 feet deep and 125 feet wide from the main channel of the Gulf Intracoastal Waterway to the city of Palacios including breakwaters at the entrance to the turning basins, for deepening of the basins to 12 feet, and for maintenance of the two turning basins by the Federal government at an estimated first cost to the United States of \$818,000 for new work, and an increase of \$19,000 in the cost of annual maintenance, including \$4,000 for maintenance of the existing turning basins, subject to certain provisions of local cooperation.

U. S. ARMY ENGINEER DISTRICT, GALVESTON  
CORPS OF ENGINEERS  
GALVESTON, TEXAS

October 26, 1961

SUBJECT: Review of Reports on Gulf Intracoastal Waterway, Channel to  
Palacios, Texas

TO: Chief of Engineers, Department of the Army  
Washington, D. C., through  
Division Engineer, U. S. Army Engineer Division, Southwestern  
Dallas, Texas

AUTHORITY

1. This review of reports on the Gulf Intracoastal Waterway, Channel to Palacios, Texas is submitted pursuant to the following resolution adopted September 13, 1944 by the Committee on Rivers and Harbors of the House of Representatives, United States:

"Resolved by the Committee on Rivers and Harbors of the House of Representatives, United States, That the Board of Engineers for Rivers and Harbors created under section 3 of the River and Harbor Act, approved June 13, 1902 be, and is hereby requested to review the report on Palacios, Texas, and Camp John A. Hulen, to Intracoastal Waterway Channel, submitted in House Document No. 564, Seventy-fifth Congress, Third Session, with a view to determining if it is advisable to modify the existing project in any way at this time, and particularly with a view to extending the Palacios project channel to the city pier."

PURPOSE AND EXTENT OF STUDY

2. This report of survey scope, considers the advisability of modifying the existing project for the Gulf Intracoastal Waterway, Channel to Palacios, Texas, to provide for:

- a. Widening and deepening the existing channel.
- b. Deepening the two locally dredged turning basins and Federal maintenance of the basins.
- c. Protection for the harbor entrance at Palacios.

3. Field investigation for this report consisted of hydrographic and topographic surveys of the channel and basins. Earth borings were made as required to determine the quantity and character of the materials that would be encountered in dredging the requested improvements. Office studies consisted of preparing designs and estimates of costs for the requested improvements, analyzing the existing and prospective commerce and vessel traffic on the waterways, and estimating the benefits to be derived from the requested improvements.

4. A public hearing was held in Palacios, Texas, on February 28, 1945 at which local interests requested that the Channel to Palacios be extended to the city pier. Analysis of the project found that the proposed extension would not be feasible. Subsequently, local interests requested that a report not be submitted at that time but that the matter be held in abeyance until other local plans could be developed. On February 14, 1961 a second public hearing was held in Palacios to obtain the views of local interests regarding improvements proposed at this time. The improvements requested at the second hearing, as modified by subsequent conferences and correspondence, are summarized in paragraph 2 and discussed in paragraphs 26 through 29.

5. The views of Federal, State and other agencies are presented in paragraphs 65 and 66 and in Section III of the appendix.

#### DESCRIPTION

6. Palacios, Texas, is located in Matagorda County on the west shore of Trespalacios Bay about 96 miles southwest of Galveston and 97 miles northeast of Corpus Christi. Trespalacios Bay is an arm of Matagorda Bay, one of the larger bays on the Texas coast. Natural depths of water in Trespalacios Bay range up to 7 feet at mean low tide and depths of 10 to 12 feet are available over a large portion of Matagorda Bay. Access to and from the Gulf of Mexico is afforded through Pass Cavallo, a natural opening between Matagorda Peninsula and Matagorda Island. Pass Cavallo usually has a controlling depth of about 9 feet over a bar at its outer end; however, navigation through the pass is hazardous and undependable because of shifting sand bars. Palacios is about 22 miles northeast of Pass Cavallo. Although the mean tidal range in Trespalacios and Matagorda Bays is about 1 foot, the water surface is affected to a greater extent by wind. Water levels may be depressed as much as 2 feet below mean low tide by strong north winds and raised as much as 16 feet or more above mean low tide by hurricanes.

7. An authorized Federal project provides for a navigation channel, 9 feet deep, 100 feet wide, and about 13.5 miles long, extending from the main channel of the Gulf Intracoastal Waterway across Matagorda and Trespalacios Bays to a turning basin at Palacios, Texas. The tributary channel joins the main channel of the Gulf Intracoastal Waterway about 462 miles from New Orleans, Louisiana. The main channel of the Gulf Intracoastal Waterway, 12 feet deep by 125 feet wide, extends from Appalachee Bay, Florida, to Brownsville, Texas, and connects the numerous navigable channels along the Gulf coast.

There are no bridges across the existing channel or the modifications to the channel considered in this report. Plate 1 accompanying this report and United States Coast and Geodetic Survey charts Nos. 889, 117, and 1284 show the channel to Palacios and adjacent area.

8. The topography of the city of Palacios consists of flat slopes from about 5 feet along the shore line to maximum ground elevations of 15 feet along the north limits of the city. The lowest elevations of less than 5 feet are generally along the shoreline of Trespalacios Bay. Practically all improvements in the city are located on ground elevations of 10 feet and higher, except the developments near the turning basins which are on ground elevations of about 6 feet. Existing storm protection works at Palacios consist of a concrete seawall with a top elevation of 4.5 feet extending along 7,400 feet of the bay side of the city. Tides of 10 feet or more would inundate a large portion of the city and the harbor. The extreme high winds and tides of 15 to 18 feet at Palacios on 11 September 1961, which accompanied the passage of hurricane Carla, caused extensive damage to nearly all residential, commercial and industrial properties in Palacios. Preliminary estimates indicated storm damages of about \$7,500,000 to properties in Palacios and its vicinity. Repair and reconstruction of the damages have been started and the city should make rapid recovery from the disaster.

9. Records indicate that winds of hurricane force have occurred in the general vicinity of Palacios about once in every 5 years. Advance warning of approaching hurricanes is given in bulletins and advisories issued by the United States Weather Bureau. Vessels in the Palacios area would receive these warnings in sufficient time to find shelter either in the harbor of refuge at Port Lavaca or in protected areas in the Colorado and San Bernard Rivers.

#### TRIBUTARY AREA

10. General. The area considered as being commercially tributary to Palacios, Texas, consisting of parts of Matagorda, Wharton, and Jackson Counties, contains approximately 1,037 square miles. Palacios, the principal city in the area, had a population of 3,680 in 1960 according to the U. S. Bureau of the Census. Other small towns in the tributary area with populations ranging from 100 to 1,000 include Blessing, Collegepo and Francitas.

11. Resources. There are 139,000 acres of tillable land in the area, of which 69,000 acres are now under cultivation. The principal crops are cotton, corn, rice, grain sorghums, and hay. Cattle raising is also an important segment of the agricultural economy. Records indicate about 57,000 acres were planted in rice in 1960, and produced about 1,254,000 barrels of rice, valued in excess of \$7,000,000. Oil production is of increasing importance in the area. There are 23 producing fields within the area, which at present are producing at a rate of about 6,360,000 barrels of oil annually. Most of the available land is leased for oil exploration and active drilling in several locations indicates that future production of oil will be greater than present levels.

12. Commerce. The principal pursuits of the inhabitants of the area are associated with commercial fishing, shrimping, gathering of oysters in bays and the processing and shipment of sea foods to market. A number of inhabitants are employed on oyster shell dredges operating in the various adjacent bays.

13. Palacios is the distributing center for the area. Four companies at Palacios are engaged in processing of seafood for the commercial market. A shrimp-canning plant, a quick-freezing plant, a crab meat processing plant, and a fresh shrimp plant are capable of processing about 12,300 tons of seafood annually.

14. Transportation. The improved highway system in the area is adequate for present needs. Rail transportation is provided by the Missouri Pacific Railroad which crosses the northern edge of the area, and a branch line of the Southern Pacific Railroad which extends to Palacios. Palacios is also served by state highway 35 which approaches the city from the north and from the west.

#### PRIOR REPORTS

15. The only prior report on the tributary channel to Palacios was printed as House Document No. 564, 75th Congress, 3rd session and recommended the existing project channel.

#### EXISTING CORPS OF ENGINEERS' PROJECT

16. The Channel to Palacios, Texas, is tributary to the existing project for the Gulf Intracoastal Waterway. The project channel was authorized by the River and Harbor Act of June 20, 1938, (House Document No. 564, 75th Congress, 3rd session), which provides for a tributary channel 9 feet deep and 100 feet wide extending from Palacios, Texas, through Trespalacios and Matagorda Bays to the main channel of the Gulf Intracoastal Waterway, an overall distance of about 13.5 miles. Construction of the channel was completed in 1940. Dredging was required only in the reach extending about 6 miles southward from Palacios, as the remaining portion traverses a part of Matagorda Bay having natural depths of 10 feet or greater. The turning basin dredged by the local interests at Palacios as an item of local cooperation is 9 feet deep, 280 feet wide, and 650 feet long. Details of the existing project are shown on plate 2.

17. The cost of the existing project to June 30, 1961, was as follows:

<u>Item</u>	<u>New work</u>	<u>Maintenance</u>	<u>Total</u>
Federal funds	\$60,000	\$232,300	\$292,300
Contributed funds	None	None	None
Total cost	\$60,000	\$232,300	\$292,300

18. The current estimate of annual cost of maintenance for the channel to Palacios is \$13,000. The actual amounts expended for maintenance during the last 5 years ending June 30, 1961 averaged about \$14,000 annually.

#### LOCAL COOPERATION ON EXISTING AND PRIOR PROJECTS

19. The requirements of local cooperation for the authorized tributary channel to the turning basin at Palacios, all of which have been complied with by the local interests, are:

a. Furnish free of cost to the United States all necessary lands, easements and rights-of-way, and suitable disposal areas for new work and subsequent maintenance when required;

b. Hold and save the United States free from any damages resulting from the improvement; and

c. Dredge and maintain a suitable harbor basin.

#### OTHER IMPROVEMENTS

20. In 1935, the Palacios Seawall Commission, under a Department of the Army permit, constructed a municipal pier about 3,500 feet east of two small boat basins and a shell dock constructed by private interests. In 1937, the Palacios Seawall Commission constructed a seawall about 7400 feet long along the Palacios bay front. The seawall and pier are reported to have cost \$125,000.

21. In 1941, the Matagorda County Navigation District completed construction of turning basin No. 1 on the project channel at Palacios in compliance with the requirements of local cooperation. A second turning basin was added in 1952 by the Matagorda County Navigation District. The second turning basin, lying west of turning basin No. 1, was dredged 9 feet deep, 400 feet wide and 1250 feet long, and is connected to the Palacios channel by a connecting channel 9 feet deep, 250 feet wide, and 400 feet long. The total costs of constructing the turning basins are reported to be \$337,000.



## TERMINAL AND TRANSFER FACILITIES

22. The terminal and transfer facilities at Palacios are located along a 3,000-foot reach of the southwest waterfront of the city, principally on the two public turning basins and on a private slip known as Crawford's slip. Turning basin No. 1, the east basin, has 1,100 feet of timber bulkhead frontage and 200 feet of steel sheet pile frontage. The area behind the bulkheads is filled with earth to an elevation of 6 feet and is surfaced with shell or concrete aprons. Turning basin No. 2 has 2,400 feet of timber bulkhead. The area behind the bulkhead has been filled with earth to an elevation of 6 feet and is surfaced with shell. None of the bulkheads or fills were damaged by the hurricane Carla of September 11, 1961.

23. The terminal and transfer facilities were severely damaged and some were destroyed. On basin No. 1 were located an oyster packing house, a marine railway for repairing boats, marine repair and service shops, a diesel engine sales and service company, and shell unloading facilities. The seafood plant was destroyed and the other facilities damaged, however, the drydocks and shell handling facilities were in service soon after the hurricane. The facilities on basin No. 2 consisted of two shrimp and oyster companies, two crab packing companies and oil handling facilities with tank storage. The sea food plants were severely damaged. The oil tank and handling facilities were damaged but were soon repaired and put back in service. About 1,500 feet of frontage on basin No. 2 is used for mooring transient fishing vessels and the adjacent area is used for open storage of miscellaneous commodities.

24. Seafood processing facilities, including a cold storage and ice plant and a machine shop, are located on Crawford's slip. These structures were severely damaged but are being repaired.

25. The port facilities were severely damaged by hurricane Carla. Actual reconstruction has been started on a number of these plants and it is reported that all companies on the public and private basins have plans to continue in operation at Palacios. The terminal and transfer facilities, when repaired will be adequate for existing commerce. About 2,200 feet of unoccupied space on the basins is available for future terminal development to accommodate the prospective commerce that would develop from the proposed improvements.

## IMPROVEMENTS DESIRED

26. A public hearing was held in Palacios, Texas, on February 14, 1961, to determine the nature and extent of the improvements desired by the local interests and to afford all interested parties an opportunity to express their views concerning the desired improvements. There were 64 persons present at the hearing including Federal, State, County and local officials; representatives of civic organizations, business and navigation interests; and other interested parties.

27. At the hearing Matagorda County Navigation District No. 1 submitted a brief requesting improvements to the channel to Palacios as follows:

a. Enlarge the existing project to provide a depth of 12 feet and a width of 125 feet in the channel from the Gulf Intracoastal Waterway to the town of Palacios.

b. Deepen the locally dredged turning basins to 12 feet, and assumption of maintenance of the basins by the Federal government.

c. Installation of protection works to convert turning basin No. 2 into a harbor of refuge.

28. The installation of necessary mooring facilities to convert turning basin No. 2 into a harbor of refuge would restrict if not eliminate further use of the basin for commercial purposes. When advised of this aspect, the navigation district withdrew its request for conversion of the basin into a harbor of refuge, and requested that no consideration for a harbor of refuge at an alternate site be given at this time. However, protective works at the harbor entrance to reduce wave damage in the basins still were desired.

29. In support of the requested improvements, the local interests stated that:

a. Frequent shoaling in the existing channel has denied its use to the commerce that has been using it, and for which it was constructed.

b. Precedent established on similar projects indicates that, under present Federal policies, the maintenance of turning basins is no longer assigned to the local interests.

c. The draft of vessels is increasing because of a shift of emphasis from bay to Gulf fishing. This increased draft requirement has caused obsolescence of the existing 9 x 100-foot channel.

EXISTING AND PROSPECTIVE COMMERCE

30. Existing commerce.- The annual commerce on the channel to Palacios for the ten years ending with 1960, obtained from records of commercial statistics, is shown in table 1.

TABLE 1  
WATERBORNE COMMERCE - PALACIOS, TEXAS

Year	Commerce in tons (2,000 pounds)				Total
	Shells	Seafood products	Misc.		
1951					79,262
1952					96,383
1953	103,133	785	18,674		122,592
1954	47,438	10	2,325		49,793
1955	92,206		16,770		108,976
1956	79,310		6,766		86,076
1957	62,896	607	13,797		77,300
1958	88,998	1,119	2,155		92,272
1959	98,336	2,370	1,567		102,273
1960	132,496	4,245	4,103		140,844

31. The principal item of commerce on this channel since its construction in 1941 has been shells and, during the ten-year period since 1950, this commodity has furnished from 80 to 95 percent of the total tonnage on the waterway. The shells are dredged in nearby bays and are moved in barges to Palacios, and thence by truck throughout the adjacent counties for use in road construction and repair work. Seafoods, caught in the bays and Gulf and landed at Palacios, contribute an increasingly important item of commerce. Reliable records of the quantity of seafood actually landed are not available; however, information obtained from the local seafood companies indicates that the annual catch of seafoods landed at Palacios in recent years has averaged about 6,000 tons, of which 2,500 tons were fish and shrimp and 3,500 tons were oysters (in the shell). About 2000 tons of the fish and shrimp are caught in Matagorda Bay and landed at Palacios and 500 tons are caught in the Gulf of Mexico and moved through Pass Cavallo and landed at Palacios.

32. The tonnage shown as miscellaneous in table 1 consists principally of ice carried by the outbound fishing vessels and oil well supplies and equipment shipped into the area. In February 1961 crude oil shipments from Palacios was started and 37,000 tons were moved

in the next 8 months. Recent shipments indicate that the rate has increased to about 110,000 tons annually. The crude oil is being produced from a newly developed oil field about 22 miles from Palacios and is moved by truck to a storage tank on turning basin No. 2, thence is moved by barge to Corpus Christi. The petroleum, with an API gravity of 57°, is a very thin oil which requires only a limited amount of processing, and the owner moves it by truck and barge to avoid contamination by other oils in pipe lines.

33. Prospective commerce.- The local interests claim that the requested enlargement of the project would promote a considerable increase in the commerce moved on this waterway and that the future growth and development of Palacios and the tributary area will contribute markedly to the future commerce that will move on the channel.

34. The movement of shells from deposits in Matagorda Bay has furnished the largest volume of commerce on the waterway since its construction and probably will continue to do so in the future. The demand for shell for construction and repair of state, county, municipal and oil field roads will require movement of large quantities of this material through Palacios. A detailed survey of shell deposits in Matagorda and adjacent bays is not available, but the large areas covered by known reefs indicate that reserves are sufficient to furnish the prospective rate of production for the estimated life of the project. It is estimated that the commerce in shells will increase from its present rate of about 100,000 tons annually to about 200,000 tons annually within 25 years and continue at that rate over the life of the project.

35. Present oil production in the tributary area is about 6,360,000 barrels annually. Most of this is moved by pipelines; however, barge movements have been initiated and, with the facilities for such shipments installed, it is expected that the barge movements will continue and increase. Officials of the oil company shipping through Palacios state that the present rate of shipments of 110,000 tons annually will increase at least from 10 to 15 percent in the next five years, or to about 125,000 tons annually. One storage tank of 30,000 barrels capacity has been constructed on the basin and it is reported that a second tank of the same size has been ordered. Considerable drilling and exploration is now under way in the immediate area. It is probable that additional oil fields with similar type crude will be brought into production in the future. The prospective movement of crude petroleum from Palacios is estimated to increase from its present 110,000 tons annually to 125,000 tons annually in five years, about 150,000 tons annually in 50 years and to continue at that rate during the life of the project.

36. The major economic activity in Palacios is associated with the seafood industry. Seafoods comprising fish, shrimp, crabs and oysters are caught in the adjacent bays and in the Gulf of Mexico and are landed at Palacios for processing and shipping to market. Shrimp is the most important seafood processed at Palacios. At present the hazardous navigation through Pass Cavallo limits the passage of shrimp boats between the bay and the Gulf and has seriously affected the industry at Palacios.

In the River and Harbor Act of July 3, 1958, Congress authorized a project for improvement of an entrance channel from the Gulf of Mexico to Matagorda Bay under the Matagorda Ship Channel project. Construction of the project is to be initiated in 1962. Upon completion of the entrance channel, access to the Gulf by shrimp boats will be unrestricted and a tremendous improvement in the seafood industry at all Matagorda Bay ports can be expected. The landings at Palacios of seafoods caught in the bays are not expected to increase in the future. Of the present commerce of about 2,500 tons of fish and shrimp, about 2,000 tons are bay products and 500 tons are Gulf products moved through Pass Cavallo. The estimate of prospective seafood movement through the improved Matagorda Ship Channel entrance, made for that project, included 5,400 tons of whole shrimp annually. Of this total amount, it is expected that somewhat less than half or about 2,000 tons of shrimp would be landed at Palacios. A conservative estimate of fish caught in the Gulf and landed at Palacios would be at least 1,000 tons annually, after the Matagorda Ship Channel is completed.

37. The movement of miscellaneous commodities undoubtedly will increase with the expected expansion of the port. Ice outbound on shrimp boats will be greatly increased. The movement of oil field supplies and equipment will continue and probably will increase when improvement of the Matagorda Ship Channel entrance permits dependable navigation by boats servicing oil explorations and developments in the Gulf. It is estimated that the present commerce in miscellaneous commodities will increase to about 50,000 tons annually in 25 years and continue at that rate for the remaining life of the project.

38. Summary.- The estimates of prospective commerce on the waterway total 408,500 tons annually and are summarized as follows:

<u>Commodity</u>	<u>Tons (2,000 lbs)</u>
Shells	200,000
Crude petroleum	150,000
Seafoods	8,500
Miscellaneous	<u>50,000</u>
Total prospective commerce	408,500

VESSEL TRAFFIC

39. General.- The statistics on trips and drafts of vessels that traversed the channel to Palacios during 1959 are as shown in table 2.

TABLE 2

TRIPS AND DRAFTS OF VESSELS  
CHANNEL TO PALACIOS, TEXAS  
CALENDAR YEAR 1959

Type of vessel	Trips of vessels		Total
	Inbound	Outbound	
Less than 10-foot draft			
Motor vessels	4,295	4,295	8,590
Barges	182	183	365
Total	4,477	4,478	8,955

40. The traffic engaged in transporting commerce on the waterway is included in table 2 and available data does not readily permit segregation from the trips by pleasure craft, single tugs, or fishing boats when empty. Numerous trips of fishing boats and pleasure craft are not reported and are not included in the statistics of vessel traffic.

41. Types of vessels.- The present vessel traffic on the Channel to Palacios is composed of fishing boats, pleasure craft, tow boats and barges. Local interests report that 528 vessels regularly operate out of Palacios, including 84 fishing boats with drafts of from 5 to 10 feet, 9 tow boats with drafts of from 6-1/2 to 9 feet, 14 barges with drafts of from 8 to 10 feet, and 421 pleasure boats, with drafts ranging up to 8 feet. During the height of the fishing season from 30 to 44 additional boats are employed by the local companies.

42. Local interests report that 64 bay fishing boats average about 160 round trips annually and 20 Gulf fishing boats average approximately 80 round trips annually, or a total of about 11,840 round trips annually by the regularly operated fishing boats. The fishing boats are limited to 8-foot draft for traversing the present channel and, on numerous occasions, are forced to wait for higher tides to move in and out of the turning basin. Local interests state that if sufficient depth were available, larger boats would be generally used in the fishing fleets, especially for shrimping in the Gulf. The draft of the shrimp boats normally employed in this operation is 5 to 7-1/2 feet; however, the larger vessels draw as much as 10 feet. The prospective commerce in seafoods through the improved entrance

to the Matagorda Ship Channel will require about 6,000 trips of large shrimp trawlers. If an adequate channel is available, about 80 to 100 boats will be engaged in this traffic of landing Gulf-caught seafoods on the wharves at Palacios.

43. Most of the barge tows now used to transport shell on the channel generally do not draw over 7-1/2 to 8 feet, fully loaded. However, some larger barges are being used, but are being light loaded about 600 tons per trip in order to navigate the channel. It is estimated that half of the prospective commerce in shell would move in the larger barges fully loaded if sufficient depth is available. Similarly, all the prospective commerce in crude petroleum would move in larger barges fully loaded.

44. The miscellaneous commodities would be moved generally in tows of one or two barges and in relatively small quantities. Large barges probably would not be required for these operations.

#### DIFFICULTIES ATTENDING NAVIGATION

45. The principal difficulties attending navigation on the Channel to Palacios are those created by the lack of adequate channel depths and widths, by the lack of adequate depths in the turning basins, by the lack of a flared approach to turning basin No. 2, and by the lack of protection from wave damage to vessels and terminal facilities in the turning basins. Lack of adequate depths and widths contributes to the hazard of collision and grounding to barge traffic on the narrow and shallow channel. Also, the present project dimensions are inadequate to permit full loading of barges, or use of the channel by the larger fishing vessels in the modern fleets. The prevailing southeasterly and south winds cross a fairly wide expanse of Trespalacios Bay and generate considerable wave action in the turning basins. Enlargement of the channel, deepening of the turning basins, flaring of the connecting channel between the turning basins, and a breakwater at the harbor entrance, all as proposed under the plan of improvement would relieve present navigation difficulties, reduce damages to vessels and terminal facilities, and permit use of the channel by the larger barges now operating on the Gulf Intracoastal Waterway and the larger fishing vessels now used in the Gulf of Mexico.

#### WATER POWER AND OTHER SPECIAL SUBJECTS

46. The proposed improvements under consideration in this report would have no bearing on water power, flood control, municipal or industrial water supply, abatement of pollution, irrigation, or any other purpose involving the control of conservation of water resources, except wildlife and recreation. Comments of the U. S. Fish and Wildlife Service are contained in Section III of the attached appendix and discussed in paragraph 66 of this report.

## PLAN OF IMPROVEMENT

47. The plan of improvement presented in this report comprises, in general, the improvements requested by the Matagorda County Navigation District at the public hearing, as modified by subsequent conferences and correspondence. The improvements are based, also, on an analysis of the requirements of vessel traffic that would be used in the movement of prospective commerce over the channel. The plan of improvement is described in the following paragraphs and is shown on plate 2.

48. The plan of improvement provides for the widening, deepening, and extending the existing Channel to Palacios, to provide a channel 12 feet deep and 125 feet wide extending from about mile 466 on the main channel of the Gulf Intracoastal Waterway to the city of Palacios, a total distance of about 16.2 miles. The plan also provides for deepening the two locally dredged turning basins to 12 feet; flaring the connecting channel; and for constructing protective breakwater structures at the entrance to the turning basins. Turning basin No. 1 would be deepened over a width of 200 feet and a length of 700 feet. Turning basin No. 2 would be deepened over a width of 300 feet and a length of 1150 feet. The connecting channel would be 12 feet deep, from 150 to 400 feet wide, and about 450 feet long, as shown on plate 2. No work would be done within 50 feet of the existing bulkheads around the basins.

49. A proposed relocation of the main channel of the Gulf Intracoastal Waterway in Matagorda Bay (between mile 454.3 and 471.3 west of Harvey Lock) as shown on plate 2, being considered in a separate report, would locate the main channel of the Gulf Intracoastal Waterway in its old channel north of Halfmoon reef. At this location of the main channel the length of the tributary channel would be shortened about 2.8 miles. In the event the main channel is relocated prior to construction of the tributary channel, a saving of about \$50,000 in first costs and about \$2000 in annual maintenance would result.

50. Prevailing winds from the south and southeast propagate waves across Trespalacios Bay, which enter the turning basins at Palacios and cause considerable difficulty for vessels moored at adjacent wharves. Also, materials moved by the waves have caused rapid shoaling in the entrance area and in the turning basins. To afford protection to vessels moored at wharves and to reduce the cost of maintaining the turning basins, breakwater protection would be provided at the entrance. The breakwater protection would consist of two concrete sheet pile walls with top elevations of 4 feet. The protective structure on the east side of the channel would extend southward from the shore for a distance of about 1200 feet. The structure on the west side would extend eastward for a distance of about 400 feet from the point of land south of the turning basins. Details of the protective walls are shown on plate 2.

51. The proposed channel widening would be constructed along the westerly side of the existing 100-foot wide channel to avoid relocation of the aids to navigation, which are now located along the easterly side. A portion of the proposed channel extension would be through natural water



depths of 12 feet or more in Matagorda Bay and would not require initial dredging.

52. The materials to be encountered in excavating the proposed improvements consist of sand, silt, shell, clay, and small quantities of gravelly clay and mud. The materials would present no unusual difficulties in dredging. Channel side slopes would be 1 vertical on 5 horizontal through cuts in the open bay and 1 on 2 in land cuts. Enlarging and extending the Channel to Palacios and deepening the turning basins as described above would require the removal of approximately 2,311,000 cubic yards of material, including 2 feet of advance maintenance and 2 feet of allowable overdepth dredging, except in reaches where natural depths of water in Matagorda Bay are 12 feet or greater. No additional rights-of-way would be required. Disposal of excavated materials would be in established spoil disposal areas which have been used for disposal of materials from dredging the existing project or in the open waters of Matagorda Bay. The areas of spoil disposal would not be enhanced in value by deposition of the spoil material. Alteration of one submerged pipeline which crosses the proposed channel extension route in the open waters of Matagorda Bay would be required.

53. Other plans of improvement considered include (a) a channel extension following a direct course from the existing channel to Palacios, through Half Moon reef to about mile 459.5 on the main channel of the Gulf Intracoastal Waterway, and (b) a channel extension from the existing channel to Palacios, passing to the west of Half Moon reef, to about mile 462.3 on the main channel of the Gulf Intracoastal Waterway. These two plans were not considered further because of higher first costs and a greater average annual maintenance cost.

54. Aids to navigation.- The Commander, Eighth Coast Guard District, New Orleans, Louisiana, furnished estimates of the number and type of additional aids to navigation that would be required in connection with the proposed improvements, and of the cost of installation and maintenance of the additional aids. These data are included in the estimates of first cost of the plan of improvement.

#### SHORELINE CHANGES

55. The improvements considered herein would not affect existing natural shorelines to any appreciable extent.

#### ESTIMATES OF FIRST COST

56. Detailed estimates of first cost for improvement of the Channel to Palacios in accordance with the plan of improvement are given in section II of appendix, and are summarized in table 3. The unit prices used in estimating the first cost of the improvements are based on experienced cost of similar work in this area during October 1961. The division of first cost between the Federal and non-Federal interests is

based on the requirements set forth in paragraphs 63 and 64. The estimated total first cost includes the cost for construction, lands, rights-of-way and damages, contingencies, engineering, supervision, administration and overhead.

TABLE 3  
ESTIMATES OF FIRST COST  
FOR PROPOSED PLAN OF IMPROVEMENT

Item	Estimated costs
<u>Federal first cost</u>	
Corps of Engineers:	
Dredging	\$452,000
Construction of breakwaters	276,000
Engineering and design	27,000
Supervision and administration	<u>63,000</u>
Subtotal	818,000
Preauthorization studies	<u>11,000</u>
Subtotal, Corps of Engineers	829,000
U. S. Coast Guard, aids to navigation	<u>39,000</u>
Total Federal first cost	868,000
<u>Non-Federal first cost</u>	
Non-Federal public:	
Lands, rights-of-way and spoil disposal areas	12,000
Non-Federal private:	
Alteration of pipeline	<u>58,000</u>
Total non-Federal first cost	70,000
<u>Total estimated first cost</u>	938,000

NOTE: Estimates are based on October 1961 prices.

ESTIMATES OF ANNUAL CHARGES

55. Estimates of the investment and annual charges for improvement of the Channel to Palacios, as considered in the plan of improvement, are given in detail in section II of the attached appendix, and are summarized in table 4. Computations of annual charges for interest on the investment and amortization of the investment over a 100-year period were based on interest rates of 2.625 percent Federal, 3 percent non-Federal public, and 4 percent non-Federal private. The estimates of the increase in cost of annual maintenance due to construction of the improvements are based on the shoaling experience of the existing channels and basins, but do not include the cost of maintaining the existing turning basins No's. 1 and 2 at Palacios. This cost, estimated at \$4,000 annually is now borne by the local interests.

TABLE 4

ESTIMATES OF ANNUAL CHARGES  
FOR PROPOSED PLAN OF IMPROVEMENT

Item	: Estimated annual charges
Estimated construction period, 12 months	
<u>Investment</u>	
Federal	\$868,000
Non-Federal	<u>70,000</u>
	938,000
<u>Annual charges</u>	
Federal:	
Corps of Engineers	
Interest and amortization	23,500
Additional cost of maintenance	<u>15,000 (1)(2)</u>
Total, Corps of Engineers	38,500
U. S. Coast Guard	
Interest and amortization	1,000
Additional cost of maintenance and advance replacement	<u>5,000</u>
Total, U. S. Coast Guard	6,000
Total Federal annual charges	44,500
Non-Federal:	
Interest and amortization	<u>3,000</u>
Total annual charges	47,500 (1)

(1) Does not include cost of maintenance for existing turning basins No's. 1 and 2, estimated at \$4,000 annually.

(2) Includes \$14,000 for maintenance dredging and \$1,000 for maintenance of protective breakwater structures.

## ESTIMATES OF BENEFITS

56. Enlargement of the Channel to Palacios to provide a depth of 12 feet in the channel and turning basins and a width of 125 feet in the channel would afford substantial benefits to navigation by reducing transportation costs through more efficient operations of vessels, and by reducing the hazard to barge traffic now experienced on the narrow and shallow channel. A savings in transportation costs for shipping crude petroleum and receiving shell would result from operating barges fully loaded on the deepened and widened channel instead of partly loaded on the existing channel. The proposed improvements would permit the use of larger fishing boats and result in an increased number of fishing vessels that would operate in the Palacios area. The proposed widening and deepening of the channel would afford material benefits to navigation by reducing the difficulties and hazards to navigation on the narrow channel, would reduce the danger of collisions between barge tows and fishing boats and would reduce the damages from numerous groundings and bank scrapings that occur in the smaller channel. The benefits from deepening the channel are not estimated separately from the benefits from widening the channel since the estimated benefits are realized from the several components of the proposed improvements. It is considered that the deepening and widening if considered individually would be justified.

57. The benefits from savings in transportation costs were developed separately for each item of prospective commerce on the Channel to Palacios and are presented in the appendix attached to this report. The benefits from savings in transportation costs of existing commerce and reductions in hazards to navigation are estimated at \$30,000 annually. Based on projections of benefits into the future, as discussed in the appendix, the average annual equivalent benefits for a project life of 100 years are computed at \$55,000. The benefits are summarized in table 5.

TABLE 5

### ESTIMATED ANNUAL BENEFITS FOR PROPOSED PLAN OF IMPROVEMENT

<u>Item</u>	<u>Benefits to present commerce</u>	<u>Average annual equivalent value of prospective benefits</u>
Savings in oil transportation	\$12,000	\$15,000
Savings in shell transportation	4,000	7,000
Savings in seafood transportation	4,000	19,000
Reduction in hazards to navigation	<u>10,000</u>	<u>14,000</u>
Estimated annual benefits	30,000	55,000

## COMPARISON OF BENEFITS AND COSTS

58. The estimated first costs, annual charges, annual benefits and the ratio of annual benefits to annual charges for the plan of improvement proposed for the Channel to Palacios, are as follows:

Estimated first cost	\$938,000
Annual charges	47,500
Annual benefits	55,000
Ratio of benefits to charges	1.2

59. The estimated annual charges for the proposed improvements include interest on and amortization of the estimated initial investment and the estimated increase in annual maintenance costs that would result from construction of the improvements. Annual charges for the existing locally dredged turning basins at Palacios, including annual maintenance costs estimated at \$4,000, are justified by benefits derived from use of the turning basins by existing commerce and have not been used in the determination of economic justification of the proposed improvements.

60. In formulating the channel improvements necessary to accommodate the prospective vessel traffic and commerce on the Channel to Palacios, it was evident that the channel depth and width should be commensurate with the main channel of the Gulf Intracoastal Waterway. The using vessels would be a part of the total vessel traffic using the main channel in this section of the coast and, for most efficient use, should have the same latitude of draft clearance and maneuverability in the tributary channel. A major portion of the evaluated benefits are based on the use of larger vessels fully loaded on the improved channel rather than light loaded on the existing channel. Lesser deepening increments than the 3 feet provided in the plan of improvement would not develop proportionate benefits because the larger vessels still could not be used fully loaded. Similarly, greater deepening would not provide substantially larger benefits because the using vessels would be limited by the main channel dimensions. Accordingly, benefits and costs were not determined for plans with greater or lesser channel dimensions than those used for the plan of improvement.

## PROPOSED LOCAL COOPERATION

61. The requirements of local cooperation proposed for modification of the existing project for the Gulf Intracoastal Waterway, Channel to Palacios, as considered herein, are based on the apportionment of costs discussed in paragraphs 63 and 64. In accordance with present Federal policies, it is proposed that local interests shall be required to:

a. Provide without cost to the United States all lands, easements and Rights-of-way required for construction and subsequent maintenance of the project and of aids to navigation upon the request of the Chief of Engineers, including suitable areas determined by the Chief of Engineers to be required in the general public interest for initial and subsequent disposal of spoil and necessary retaining dikes, bulkheads and embankments therefor or the costs of such retaining works;

b. Accomplish, without cost to the United States, all alterations of pipelines, powerlines, utility lines, cables, and highway facilities, when and as required for construction of the project; and

c. Hold and save the United States free from damages due to the construction works.

62. The Matagorda County Navigation District has stated that it is willing to comply with these requirements.

## APPORTIONMENT OF COST

63. The apportionment between the Federal and non-Federal interests of the estimated first cost and the annual cost of maintenance of the recommended modifications is based on present Federal policy on navigation projects for multi-use channels. This policy requires local interests to provide lands and rights-of-way and hold the Government free from damages. Construction and maintenance costs are apportioned to the United States. The local cost would include the cost of rights-of-way, spoil disposal areas and relocations.

64. The proposed apportionment of the estimated first cost and annual maintenance cost of the recommended improvements to the Gulf Intracoastal Waterway, Channel to Palacios project is given in table 6.

TABLE 6

APPORTIONMENT OF FIRST COST AND ANNUAL MAINTENANCE  
FOR PROPOSED PLAN OF IMPROVEMENT

Item	: Federal	: Non-Federal	: Total
<u>First cost</u>			
Construction	\$857,000	\$12,000	\$869,000
Relocations	<u>None</u>	<u>58,000</u>	<u>58,000</u>
Total first cost	857,000	70,000	927,000
<u>Preauthorization surveys and studies</u>			
	<u>11,000</u>	<u>None</u>	<u>11,000</u>
Total cost	868,000	70,000	938,000
<u>Annual cost of maintenance and operation</u>			
	24,000 (1)	None	24,000 (1)

(1) Includes \$4,000 for maintenance of existing locally dredged turning basins.

COORDINATION WITH OTHER AGENCIES

65. Copies of the notice of the public hearing held in Palacios, Texas, on February 14, 1961, were sent to all known Federal, State, and local agencies that might be interested in the proposed improvements. The only expression of interest in the proposed improvements by other Federal or state agencies was received from the U. S. Fish and Wildlife Service.

66. A letter report from the Southwestern Regional Director, U. S. Fish and Wildlife Service, containing the coordinated comments and recommendations of that agency and the Texas Game and Fish Commission, is included in the appendix. The letter report recommends that dredging spoil from the inner 3,500 feet of the existing channel be placed on land; otherwise, that spoil from the dredging operations be placed on the west side of the channel; that the existing 1,000-foot openings between the spoil disposal areas for the existing channel be continued; and that spoil from the proposed channel extension be placed in disposal areas parallel with the channel extension and 3,000 feet long, the spoil disposal areas to be separated by 1,500-foot openings. These recommendations appear reasonable and will be considered in further coordination with the Fish and Wildlife Service if the proposed improvements are constructed.

## DISCUSSION

67. Local interests request improvements to the Gulf Intracoastal Waterway, Channel to Palacios project as follows: (1) enlarge and extend the existing 9 by 100-foot channel in Matagorda Bay to provide a channel 12 feet deep and 125 feet wide, extending from the main channel of the Gulf Intracoastal Waterway in Matagorda Bay to the city of Palacios; and (2) deepen the two locally-dredged turning basins at Palacios to a depth of 12 feet and provide protective works at the harbor entrance. Local interests also request that the cost of future maintenance of the turning basin be borne by the Federal government.

68. Local interests state that the present inadequate channel has prevented the larger, more efficient fishing vessels from operating profitably out of Palacios and many such vessels have been diverted to other ports and that the development of Palacios has been hampered for this reason. They state, further, that movement of petroleum and shells is held to a minimum by the inadequate channel and that the present channel would not accommodate the prospective commerce in these commodities. Local interests claim that the lack of breakwater protection at the entrance to the turning basins contributes to rapid shoaling of the basins and causes difficulty and damage to vessels moored at wharves adjacent to the turning basins. Local interests state that, under present Federal policies, maintenance of turning basins is not normally assigned as a local responsibility and that local interests should be relieved of maintenance requirements for the two turning basins at Palacios.

69. The Matagorda Bay area has a large potential for the catching and landing of seafoods, since some of the best fishing grounds along the Texas coast are in this vicinity. However, landings at Matagorda Bay ports from Gulf of Mexico fishing have been greatly hampered by lack of a dependable navigation channel through Pass Cavallo. Under the authorized Matagorda Ship Channel project, a dependable entrance from the Gulf to Matagorda Bay will be provided and the activities connected with landing commercial seafood catches are expected to increase greatly at Palacios, as well as Port Lavaca and other Matagorda Bay ports.

70. The plan of improvement considered in this report would provide essentially the improvements desired by local interests. The plan would provide for a 12 by 125-foot channel extending from about mile 466 on the Gulf Intracoastal Waterway to the turning basins at Palacios. A depth of 12 feet would be provided in the two locally dredged turning basins and in the connecting channel, which would be flared at its junction with the channel. Protective breakwater structures would be provided on both sides of the entrance to the turning basins. The total first cost of the proposed improvements is estimated at \$938,000, including \$11,000 which has been expended for preauthorization studies. Annual charges, based on an amortization period of 100 years, are estimated at \$47,500.



71. A large portion of the benefits from the proposed improvements would be derived from savings in transportation costs of the prospective commerce in petroleum, seafoods and shells. The savings would result from the use of larger vessels operating fully loaded on the improved channel rather than light loaded on the existing channel. Other substantial benefits would be realized from reductions in hazards to navigation and vessel damage. Based on a 100-year period of analysis, the total benefits are estimated to have an average equivalent value of \$55,000. The proposed improvements have a favorable benefits to cost ratio, estimated at 1.2.

72. The design of the channel enlargement and the estimates of costs are based on extending the channel to existing location of the main channel of the Gulf Intracoastal Waterway in the southern part of Matagorda Bay. There is currently under study a proposed realignment of the main channel in Matagorda Bay as shown on plate 2. The proposed alignment extends from about Mile 454.3 through Palacios Point and north of Halfmoon Reef, thence, through the middle of Matagorda Bay to rejoin the present route at Mile 471.3. The waterway was originally constructed on this alignment but was relocated because of military activities in the bay. The bay is no longer used for military activities and it is proposed to locate the channel on its original alignment. The proposed alignment of the main channel of the Gulf Intracoastal Waterway would be north of its present location so that the extension of the Channel to Palacios would be shortened by about 2.8 miles. If the proposed relocation of the Intracoastal Waterway is authorized and constructed prior to construction of the recommended enlargement of the Channel to Palacios, the estimated first cost for construction of the recommended enlargement would be reduced by about \$50,000 and the estimated annual maintenance cost would be reduced by about \$2,000.

73. In considering the request for Federal maintenance of the turning basins at Palacios, it is noted that local interests constructed the existing turning basins at a reported cost of \$337,000. Local interests have maintained one of the turning basins since completion of the first facilities in 1951. The turning basins meet the needs of general commerce and serve a considerable traffic in crude petroleum, shells, seafood, and general commodities. The turning basins are integral parts of the navigation facilities in the area.

74. Present Federal policies relative to maintenance of navigation projects generally provide for Federal construction and maintenance of channels and turning basins subject to the usual requirements of local cooperation in furnishing lands and rights-of-way and holding the Government free from damages resulting from the work. Accordingly, it is proposed that the estimated annual maintenance costs of \$4,000 for turning basins No's. 1 and 2, presently borne by local interests, be made a responsibility of the United States.

75. Local interests have offered to cooperate on the proposed improvements by furnishing all necessary lands, rights-of-way and spoil-disposal areas, and furnishing assurances that they will hold the United States free from damages due to construction of the improvement.

76. Additional information called for by Senate Resolution 148, 85th Congress, adopted January 28, 1958 is contained in an attachment to this report.

## CONCLUSIONS

77. Based upon the findings of this investigation, it is concluded that:

a. Enlargement of the Channel to Palacios to provide a channel 12 feet deep and 125 feet wide extending from the main channel of the Gulf Intracoastal Waterway in Matagorda Bay to the turning basins at Palacios; deepening the locally-dredged turning basins No's. 1 and 2 to a depth of 12 feet and constructing protective breakwaters at the entrance to the turning basins would provide substantial benefits to existing and prospective commerce on the channel. Benefits would result from a reduction in transportation costs achieved by efficient operation of larger vessels on the channel and from a reduction in navigation hazards. The proposed improvement would be justified with estimated annual charges of \$47,500, average annual equivalent benefits of \$55,000, and a benefits to costs ratio of 1.2.

b. The total Federal first cost of the improvements recommended herein is estimated at \$868,000, of which \$11,000 has been expended for preauthorization survey and study costs. The remaining total of \$857,000 would be apportioned to the Corps of Engineers and the U. S. Coast Guard in the amounts of \$818,000 and \$39,000, respectively. The estimated additional cost of maintenance resulting from construction of the proposed improvements is \$20,000, excluding the cost of maintenance of the existing turning basins No's. 1 and 2. The additional cost of maintenance would be apportioned in the amounts of \$15,000 to the Corps of Engineers and \$5,000 to the U. S. Coast Guard.

c. In recent years, Federal policies have provided for the construction and maintenance of project turning basins to be apportioned as Federal costs. The two locally dredged turning basins at Palacios, constructed and presently maintained by local interests are well established parts of the overall navigation facilities and serve the needs of general commerce. The United States would be justified in deepening and maintaining the turning basins. The annual maintenance cost of the existing turning basins is estimated at \$4,000.

d. Local interests should be required to:

- (1) Furnish all rights-of-way and spoil disposal areas;
- (2) Accomplish all necessary relocations; and
- (3) Hold and save the United States free from any damages that may result from construction of the improvements.

## RECOMMENDATIONS

78. Accordingly, it is recommended that the existing project for the Gulf Intracoastal Waterway, Channel to Palacios, Texas be modified to provide for Federal construction and maintenance of the following improvements, generally as described in this report:

a. A channel 12 feet deep and 125 feet wide extending from the main channel of the Gulf Intracoastal Waterway in Matagorda Bay to the turning basins at Palacios, Texas, including two protective breakwaters at the entrance to the turning basins.

b. Two turning basins and a connecting channel 12 feet deep at Palacios, with dimensions of 200 by 700 feet in turning basin No. 1, 300 by 1,150 feet in turning basin No. 2, and 150 to 480 feet wide by about 450 feet long in the connecting channel.

All of the above to be constructed at an estimated first cost to the United States of \$818,000 for new work and an estimated increase of \$19,000 in the cost of annual maintenance, including \$4,000 for maintenance of the existing turning basins No's. 1 and 2.

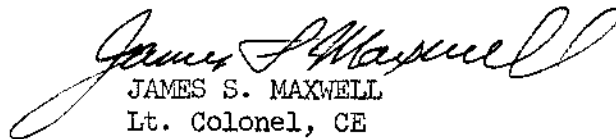
79. The foregoing recommendations shall be subject to the conditions that the local interest shall agree to:

a. Provide without cost to the United States all lands, easements and rights-of-way required for construction and subsequent maintenance of the project and of aids to navigation upon the request of the Chief of Engineers including suitable areas determined by the Chief of Engineers to be required in the general public interest for initial and subsequent disposal of spoil and necessary retaining dikes, bulkheads and embankments therefor or the costs of such retaining works;

b. Accomplish, without cost to the United States, all alterations of pipelines, powerlines, utility lines, cables and highway facilities, when and as required for construction of the project; and

c. Hold and save the United States free from any damage claims that may result from construction of the modified project.

80. The foregoing shall be subject to the condition that no dredging shall be done within 50 feet of any established pierhead line, wharf, or structure.

  
JAMES S. MAXWELL  
Lt. Colonel, CE  
Acting District Engineer

[First endorsement]


SWDGW-4

SUBJECT: Review of Reports on Gulf Intracoastal Waterway, Channel to  
Palacios, Texas

United States Army Engineer Division, Southwestern, Dallas, Texas,  
November 17, 1961

TO: Chief of Engineers, Department of the Army, Washington, D.C.

I concur in the conclusions and recommendations of the District  
Engineer.

  
ROBERT J. FLEMING, JR.  
Major General, USA  
Division Engineer



REVIEW OF REPORTS  
ON  
GULF INTRACOASTAL WATERWAY  
CHANNEL TO PALACIOS, TEXAS

SECTION III  
COMMENTS BY OTHER AGENCIES

SECTION III  
APPENDIX  
R 11-21-61



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE

P. O. BOX 1308  
ALBUQUERQUE, NEW MEXICO

November 15, 1961

SOUTHWEST REGION  
(REGION 2)  
ARIZONA  
COLORADO  
KANSAS  
NEW MEXICO  
OKLAHOMA  
TEXAS  
UTAH  
WYOMING

ADDRESS ONLY THE  
REGIONAL DIRECTOR

District Engineer  
Corps of Engineers, U. S. Army  
P. O. Box 1229  
Galveston, Texas

Dear Sir:

This letter, prepared in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), constitutes our report on the proposed improvements to the Gulf Intracoastal Waterway, tributary Channel to Palacios in Matagorda and Tres Palacios Bays, Texas, and is intended to accompany the Corps of Engineers' survey report. This report has been coordinated with the Bureau of Commercial Fisheries and has the concurrence of the Texas Game and Fish Commission by telegram dated November 13, 1961, signed by Mr. Eugene A. Walker, Assistant Director.

The existing project for the Gulf Intracoastal Waterway, Channel to Palacios, Texas, provides for a channel 9 feet deep and 100 feet wide from the Gulf Intracoastal Waterway in Matagorda Bay, across Matagorda Bay and Tres Palacios Bay, to inshore turning basins on the west side of the City of Palacios. The tributary channel joins the main channel of the Gulf Intracoastal Waterway at a point about 465 channel miles from New Orleans, Louisiana. The dredged portion of the tributary channel has a length of about 6 miles, and the remaining section of 7.5 miles traverses a portion of Matagorda Bay with natural depths of 9 to 10 feet.

The proposed work consists of deepening and widening the existing Channel to Palacios from 9 feet deep and 100 feet wide to 12 feet deep and 125 feet wide, and extending the channel by one of two alternate routes. Alternate Route No. 1 will extend southeasterly approximately 2.5 miles from the end of the existing dredged channel to join the proposed main channel of the Gulf Intracoastal Waterway at a point 1.5 miles northwest of Palacios Point. Alternate Route No. 2 will extend southwesterly approximately 4 miles in the same direction as the existing channel to a bay depth of 12 feet. From this point the channel will extend southerly to join with either (a) the proposed main channel of the Gulf Intracoastal Waterway at a point approximately 2.5 miles west of a piling which marks



the outermost limits of Halfmoon Reef, or (b) the existing main channel of the Gulf Intracoastal Waterway near channel marker No. 47, approximately 1.25 miles northwest of Matagorda Island. The route selected will be dredged to a depth of 12 feet and a width of 125 feet. Spoil will be placed in the bays.

Spoil areas along the existing Channel to Palacios are generally below the surface of the water. Three 1,000-foot openings have been provided in the spoil bank at Stations 88+00 to 98+00, 166+00 to 176+00, and 244+00 to 254+00. Our maintenance dredging report dated September 28, 1961, recommended an additional 1,000-foot opening centered at Station 215+00 in the Channel to Palacios, to insure productivity of an oyster reef in that vicinity. Under these conditions, adequate water circulation will prevail in the area of the existing dredged channel, and a valuable marine fishery will be maintained.

Approximately 218,000 pounds of finfish and 1,800,000 pounds of shellfish and crustaceans, valued at \$545,000, were taken from Matagorda and Tres Palacios Bays in 1958 by commercial fishermen. Heavy use is made of the high-quality sport fishery found in these bays. Principal species taken by commercial and sport fishermen are red and black drum, flounder, spotted squeteague, blue crab, oyster, and shrimp.

Important nursery areas for shrimp and finfish are located along the northwest and southeast shores of Tres Palacios Bay. The quality of a portion of this habitat along the northwest shore of the bay has been reduced by siltation and spoil deposition from previous dredgings, primarily between Stations 25+00 to 88+00. Highly productive oyster reefs occur on the east side of the channel between Stations 65+00 to 155+41, on both sides of the channel between Stations 210+00 to 235+00, and on spoil slopes facing existing openings. Productive oyster reefs are also located southeast of Turtle Point in Tres Palacios Bay and off Palacios Bayou in Matagorda Bay.

Deepening and widening the channel as proposed will result in additional spoil deposition. Disposal areas, presently under water, may be built up above the surface of the water, thus impeding water circulation vital to the existence of nursery areas and oyster reefs on both sides of the channel. It is, therefore, imperative that the four 1,000-foot openings be maintained between Stations 88+00 to 98+00, 166+00 to 176+00, 210+00 to 220+00, and 244+00 to 254+00. To prevent further destruction through siltation of the nursery areas located off the northwest shore of Tres Palacios Bay, spoil

dredged from Stations 00+00 to 35+00 should be placed on shore.

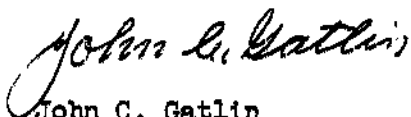
Extension of the channel will create new spoil banks in Matagorda Bay. Siltation from the original dredging and subsequent maintenance dredgings together with changes in water circulation caused by new spoil banks will affect the bay fishery. Alternate Route No. 1 will be dredged closer to productive fishery areas along the coast and oyster reefs off Palacios Bayou than Alternate Route No. 2. Alternate Route No. 2 will disturb a greater area of bay bottom than Alternate Route No. 1. Spoil placed in the bay from Alternate Route No. 1 may provide areas of substratum for the establishment of new oyster reefs, whereas spoil from Alternate Route No. 2 will be located in deeper water in an area less favorable for the establishment of oysters. Openings should be provided in the disposal area of the route chosen to insure proper water circulation.

To avoid adverse effects on fisheries in Matagorda and Tres Palacios Bays, precautionary measures should be taken in the placement of spoil. It is recommended:

1. That spoil taken from Stations 00+00 to 35+00 be placed on shore above the high waterline.
2. That spoil from the existing channel and proposed extension be placed on the west side of the channel.
3. That existing openings of 1,000 feet be maintained between Stations 88+00 to 98+00, 166+00 to 176+00, 210+00 to 220+00, and 244+00 to 254+00.
4. That an opening of 1,500 feet be provided at the end of existing channel and the beginning of the extension channel.
5. That material dredged from the extension channel be deposited in 3,000-foot banks, with openings of 1,500 feet between disposal areas.

This report is based on information available to us by your office as of August 8, 1961.

Sincerely yours,



John C. Gatlin  
Regional Director

Copies 10

Distribution:

- (2) Executive Secretary, Texas Game and Fish Commission, Austin, Texas
- (2) Commissioner, U. S. Study Commission - Texas, Houston, Texas
- (2) Chairman, Southwest Field Committee, U. S. Department of the Interior, Muskogee, Oklahoma
- (2) Regional Director, Region IV, Bureau of Mines, Bartlesville, Oklahoma
- (2) Regional Director, Region 2, Bureau of Commercial Fisheries, St. Petersburg Beach, Florida.
- (2) Director, Biological Laboratory, Bureau of Commercial Fisheries, Galveston, Texas
- (2) Field Supervisor, Branch of River Basin Studies, Bureau of Sport Fisheries and Wildlife, Fort Worth, Texas

REVIEW OF REPORTS  
ON  
GULF INTRACOASTAL WATERWAY  
CHANNEL TO PALACIOS, TEXAS

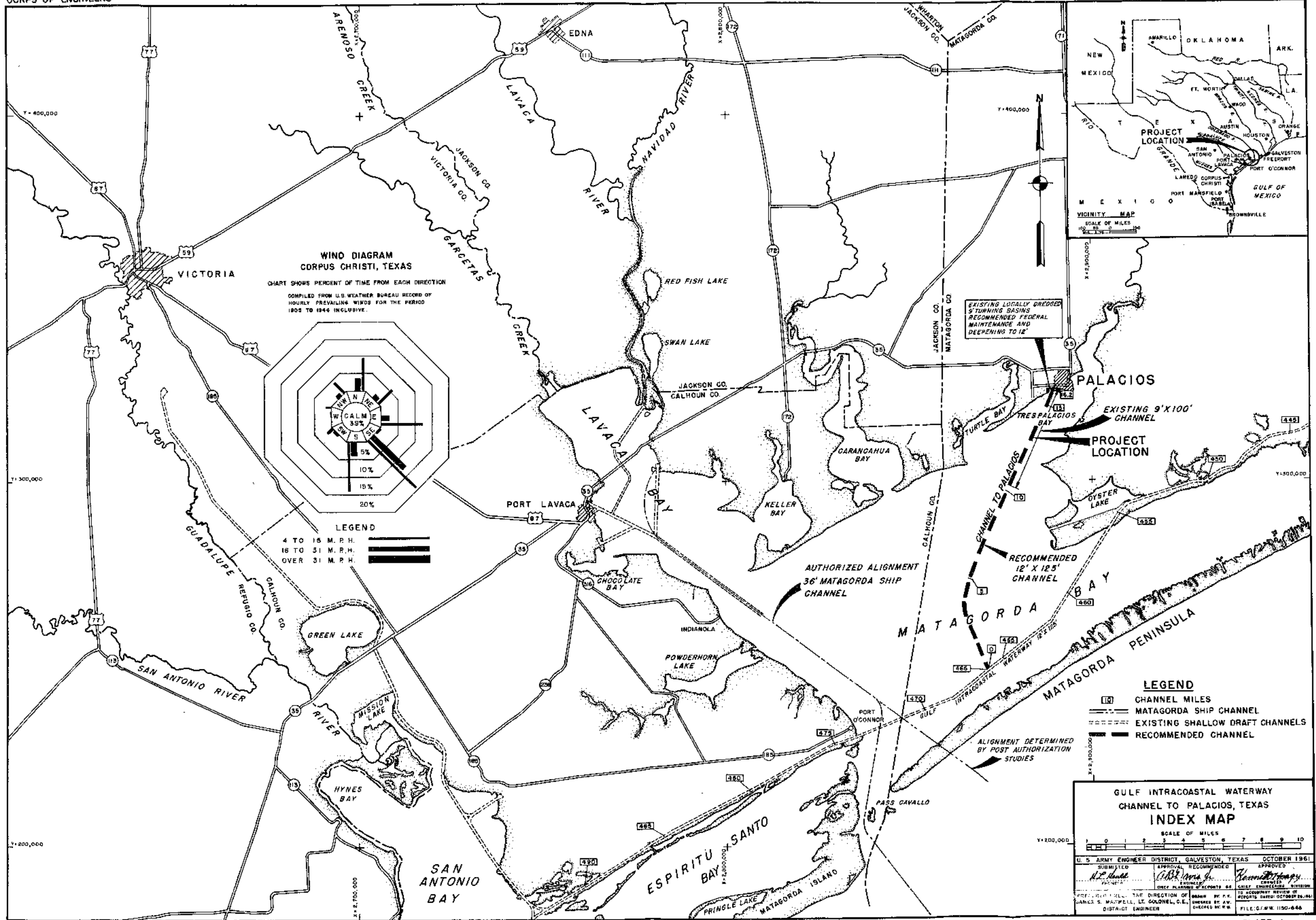
INFORMATION CALLED FOR BY  
SENATE RESOLUTION 148, 85th CONGRESS,  
ADOPTED JANUARY 28, 1958

1. Authority.- The following information is furnished in response to Senate Resolution 148, 85th Congress, adopted January 28, 1958.

2. Requests of local interests.- At the public hearing in Palacios, Texas, on February 14, 1961, and in subsequent conferences, local interests requested enlargement of the Gulf Intracoastal Waterway, Channel to Palacios from 9x100 feet to 12x125 feet from Palacios to the main channel of the Gulf Intracoastal Waterway; deepening of the locally dredged turning basins No's. 1 and 2 from 9 feet to 12 feet, and future maintenance of the basins at Federal expense; and such works as necessary to convert turning basin No. 2 into a harbor of refuge. Since conversion of turning basin No. 2 into a harbor of refuge would restrict if not prohibit further use of the basin for commercial shipping purposes, local interests subsequently withdrew their request for necessary structures to convert turning basin No. 2 into a harbor of refuge, but desired that a breakwater be provided at the Palacios harbor entrance.

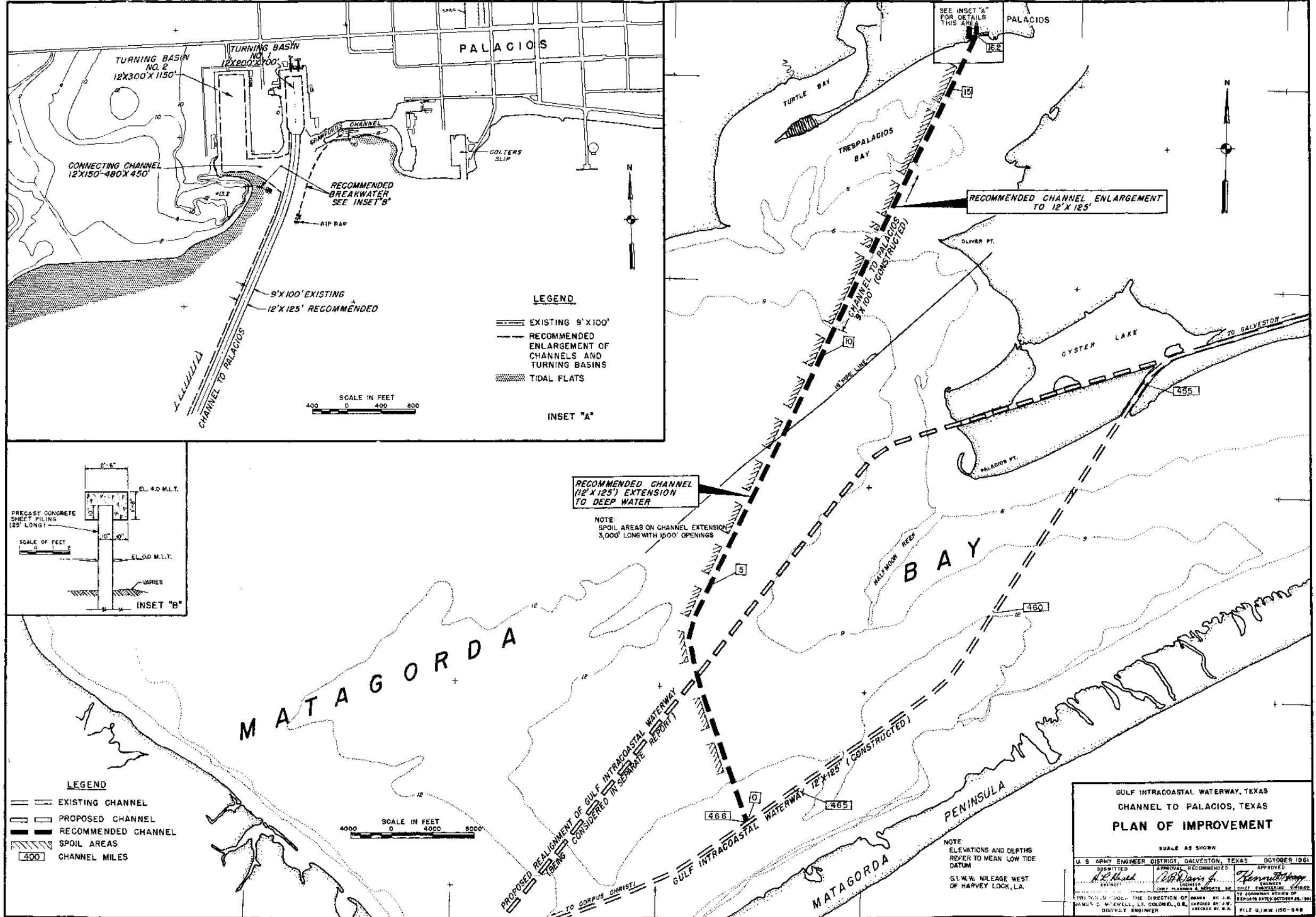
3. Improvements considered.- The report considers all improvements requested by local interests, and substantially all items are recommended for adoption.





87778 O-62 (Face p. 40) No. 1





**LEGEND**

- EXISTING 9' X 100'
- RECOMMENDED ENLARGEMENT OF CHANNELS AND TURNING BASINS
- TIDAL FLATS

INSET "A"

SCALE IN FEET  
 400 0 400 800

**LEGEND**

- EXISTING CHANNEL
- PROPOSED CHANNEL
- SPOIL AREAS
- CHANNEL MILES

SCALE IN FEET  
 4000 0 4000 8000

RECOMMENDED CHANNEL (12' X 125') EXTENSION TO DEEP WATER

NOTE: SPOIL AREAS ON CHANNEL EXTENSION 3,000' LONG WITH 1500' OPENINGS

NOTE: ELEVATIONS AND DEPTHS REFER TO MEAN LOW TIDE DATUM

G.I.W.W. MILEAGE WEST OF HARVEY LOCK, L.A.

GULF INTRACOASTAL WATERWAY, TEXAS  
 CHANNEL TO PALACIOS, TEXAS  
**PLAN OF IMPROVEMENT**

SCALE AS SHOWN

U. S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS      OCTOBER 1961			
SUBMITTED	APPROVAL	RECOMMENDED	APPROVED
<i>H. S. Hall</i>	<i>W. B. Davis</i>	<i>W. M. ...</i>	<i>W. M. ...</i>
ENGINEER	ENGINEER	ENGINEER	ENGINEER
SUPERVISOR OF DISTRICT ENGINEERS		DISTRICT ENGINEER	
FOR THIS PROJECT THE DIRECTION OF REPORTING IS TO THE DISTRICT ENGINEER DISTRICT ENGINEER      CHECKED BY: J.E. TO ACCOMPANY REVIEW OF REPORTS DATED OCTOBER 25, 1961 FILE G.I.W.W. 150-548			

