PORT ISABEL-SAN BENITO NAVIGATION DISTRICT OF CAMERON COUNTY, TEXAS

# RECEIVED OCT - 6 1937 GENERAL LAHD OFFICE

San Benito, Texas, October 5, 1937.

123

Hon. Wm. H. McDonald, Commissioner, General Land Office. Austin, Texas.

Dear Sir:

Enclosed herewith is a copy of document Number 32, Committee on Rivers and Harbors, House of Representatives, 75th Congress 1st session, which is a copy of a letter by the Chief of Engineers, United States Army, to the Chairman of the Committee on Rivers and Harbors, under date of May 13, 1937, and exhibits accompanying that letter. Your particular attention is directed to page 10 of this document which relates to water surface elevation in the southerly end of Laguna Madre.

sent you under separate cover is a map prepared by the U. S. Geological Survey, International Boundary Commission and Air Corp, U. S. Army, upon which Mr. J. V. Clark, State licensed land surveyor, has delineated the south and a part of the east boundary lines of the Santa Isabel Grant and a part of the north and east boundary lines of the San Martin Grant.

From this map and page 10 of the congressional document enclosed you will see that it is not unusual for water to be of a depth of one foot 3.6 inches in the Bahia Grande. The documents mentioned are furnished for your information and to use as you may see fit.

Keep with Cameron Co. Rolled sk. No. 10. counter \$1749

Respectfully,

uner G. Touthan

James Q. Louthan.

JQL:MB Enc.

CAMERON CO. Rolled Sketch No IOA



75TH CONGRESS ] COMMITTEE ON RIVERS AND HARBORS, 1st Session HOUSE OF REPRESENTATIVES, U. S.

Keep with Cameron Co. Rolled 12

( DOCUMENT No. 32

# BRAZOS ISLAND HARBOR, TEX.

# LETTER

### FROM

# THE CHIEF OF ENGINEERS, UNITED STATES ARMY

### TRANSMITTING

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS ON REVIEW OF REPORTS HERETOFORE SUBMITTED ON BRAZOS ISLAND HARBOR, TEX., WITH ILLUSTRATION

> WAR DEPARTMENT, OFFICE OF THE CHIEF OF ENGINEERS, Washington, May 13, 1937.

Hon. J. J. MANSFIELD.

S

GHIRRIF.

5

# Chairman, Committee on Rivers and Harbors,

House of Representatives, Washington, D. C.

My DEAR MR. MANSFIELD: 1. The Committee on Rivers and Harbors of the House of Representatives, by a resolution adopted December 7, 1936, requested the Board of Engineers for Rivers and Harbors to review the reports on Brazos Island Harbor, Tex., printed in Rivers and Harbors Committee Document No. 16, Seventy-first Congress, second session, and subsequent reports, with a view to determining if modification of the existing project at Brownsville, Tex., is advisable at the present time. I enclose herewith the report of the Board in response thereto.

2. Brazos Island Harbor is on the south coast of Texas, 8 miles from the mouth of the Rio Grande. The project for improvement provides for an entrance channel 25 feet deep and 300 feet wide through Brazos Santiago Pass, with jetty protection, for inner channels of the same depth and 100 feet wide extending to and including a turning basin at Port Isabel and one near Brownsville. The expenditures to February 1, 1937, were \$5,398,749.71 for new work, of which \$1,683,257.70 was contributed by local interests, and \$452,542.78 was for maintenance. The estimated annual cost of maintenance is \$150,000. Local interests now request enlargement of the channels and of the Port Isabel turning basin. Judge Luilhan counter 73862

144967-37-1

3. The harbor serves an agricultural and oil-producing area along the lower Rio Grande in which there is a population of about 175,000. Brownsville and Port Isabel have constructed port facilities and have rail and highway connections to the interior. A refinery at Port Isabel receives oil through pipe line and ships its refined products and crude oil by water. The entrance channel to the harbor was only completed in 1935, and prior to that year there was no commerce of importance. The total commerce for 1936 was 318,000 tons, the Port Isabel Channel having developed 279,000 in its first full year of operation and the Brownsville Channel 39,000 after its completion in February of the same year. The principal traffic was oil and gasoline, and the records show that it was carried in vessels with drafts ranging from 18 to 26 feet.

4. The reporting officers find that the present channels have insufficient depth for the vessels engaged in transporting the commerce of the harbor and believe that the entrance channel should have a depth of 31 feet and the inner channels and basins a depth of 28 feet, which is estimated to cost \$584,366, with no increase in the present maintenance cost.

5. The Board of Engineers for Rivers and Harbors, after a full consideration of the reports of the district and division engineers, finds that a depth of 31 feet in the entrance channel and 28 feet in the inner channels is warranted at this time but that the present traffic and that now in prospect is not sufficient to warrant widening of the channels. The Board accordingly recommends that the existing project for Brazos Island Harbor be modified to provide for a depth of 31 feet in the entrance channel and 28 feet in the inner channels and in the turning basins at Brownsville and Port Isabel, at a cost to the United States of \$585,000 for new work, with no increased cost for maintenance.

6. After due consideration of these reports, I concur in the views and recommendations of the Board.

Very truly yours,

2

E. M. MARKHAM, Major General, Chief of Engineers.

counter 43863

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS

WAR DEPARTMENT,

THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS, Washington, May 10, 1937.

Subject: Brazos Island Harbor, Tex.

To: The Chief of Engineers, United States Army.

1. This report is in response to the following resolution, adopted December 7, 1936:

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 Brazos Island Harbor, Texas, printed in Rivers and Harbors Committee Document 16, Seventy-first Congress, second session, and subsequent reports, with a view to determining if modification of the existing project at Brownsville, Texas, is advisable at the present time.

3. The harbor serves an agricultural and oil-producing area along a lower Rio Grande in which there is a population of about 175,000, cowneville and Purt Isabel have constructed port facilities and have it and highwar connections to the unterior. A refinery at Port Isabel by water. The entrance channel to the harbor was only completed 1935, and prior to that year there was no commerce of importance, it age developed 279,000 in its first full year of importance, visg developed 279,000 in its first full year of importance, its geven. The principal instific was all and gasoline, and the records on year. The principal instific was all and gasoline, and the records on total to march 49,000 after its completion in February of the one year. The principal instific was all and gasoline, and the records on the total is an energial instific was all and gasoline, and the records on that it was curred in vessels with durits ranging from 18 to 26 ow that it was curred in vessels with durits ranging from 18 to 26

1. The reporting officers find that the present channels have insufficed depth for the vessels engaged in transporting the commerce of harber and believe that the entrance channel should have a depth of 31 feet and the inner channels and basins a depth of 28 feet, which estimated to east \$554,306, with no increase in the present maintees.

5. The Board of Engineers for Rivers and Harbors, after a full nucleution of the reports of the district and division enginees, dis that a depth of 31 feet in the entrance channel and 28 feet in the net channels is warranted at this time but that the present traffic d that now in prospect is not sufficient to warrant widening of the americs. The Board accordingly necommends that the existing of ect for Brazes Island Harbor be modified to provide for a cipth of the training basing at Brather hand 28 feet in the americant is not the training basing at Brather hand 26 feet in the americant for the attended basing at Brather hand and 26 feet in the anner channels and the training basing at Brather hand and 26 feet in the attended to the the training basing at Brather new work, with no increased cost for

 After dureconsidential of these reports, I concur in the views direconsticadations of the Bound.

M. Markham, Mejor General, Chief of Engineers

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS

The Board or Everyears son Rivers and Hansons, Heather Monthly 10 19

for The Chird of Engineers, United States Army.

becember 7, 1928: ---

mains balance. That is meaning an Hinder and Harbert of the Hause of Processitations, mains balance. That is been set of Engineers for Birerra and Dathers meaters under whereas of the Hirs with the boost Act, supervised have IR, 1992, be, and is morelyquested to environ the reports on items is larger to the theory. To me mained in Recent of hollows formerities formations 18, Second schedule. Conserve second associated software formerities formations and the second schedules and the data strengthen formerities with a reserve former productions of the existing offer at Hyperseville, Texas is addisable of the second strengtheness.

2. Brazos Island Harbor is on the south coast of Texas, 8 miles north of the mouth of the Rio Grande. It is entered through Brazos-Santiago Pass, a natural opening in the coastal sand barrier separating Laguna Madre and the Gulf of Mexico. The ship channel has a westerly course for 1½ miles through the pass, then turns southwesterly in crossing the lagoon to Long Island, 2½ miles, then branches, one channel taking a southwesterly course through lowlands and shallowwater areas for 14 miles to a turning basin near Brownsville, and another taking a northwesterly direction for 1½ miles to a basin at Port Isabel. The lagoon is shallow and extends 111 miles north and 4 miles south of the pass. The normal tidal range in the lower end is 11/2 feet. Abnormal fluctuations, however, are caused by prolonged north and south winds which drive the water toward the ends of the lagoon and cause high velocities in the pass. The pass is between Padre Island on the north and Brazos Island on the south, both of which are narrow sand-barrier formations. The existing project for improvement provides for an entrance channel 25 feet deep and 300 feet wide with jetty protection, for inner channels of the same depth and 100 feet wide extending to and including a turning basin 600 feet wide by 700 feet long at Port Isabel, and one 1,000 feet wide by 1,300 feet long in the vicinity of Brownsville. The expenditures to February 1, 1937, were \$5,398,749.71 for new work, of which \$1,683,257.70 was contributed by local interests, and \$452,542.78 was for maintenance. The approved annual maintenance cost is \$150,000.

3. Brazos Island Harbor serves an agricultural and oil-producingarea along the Lower Rio Grande, in which there is a population of about 175,000. Brownsville, with 22,000, is the largest city. It has rail and highway connection to the interior of Texas and Mexico. Port Isabel had a population of 1,177 in 1930 and has rail and highway connection to Brownsville. A refinery at the port receives oil through pipe line from the Sam Fordyce oil field in Hidalgo County, and all refined products and crude oil are shipped out by water. Terminal facilities include wharves, a transit shed, a warehouse for perishable products, a corn elevator, and excellent facilities for bunkering vessels. At Brownsville concrete wharves, transit sheds, and an oil dock havebeen constructed. The entrance channel to the harbor was completed in 1935, and prior to that year there was no commercial traffic of importance. The commerce of Port Isabel in 1935 amounted to 85,965 tons, and in 1936 to 278,616 tons, 95 percent of the latter being oil and gasoline. The Brownsville Channel was completed in February 1936 and in that year developed 39,193 tons. The records show 66 in-bound and 66 out-bound vessel trips for the Brownsville Channel in 8 months of operation. The maximum draft was over 24 feet. The Port Isabel channel had 89 in-bound and 87 out-bound vessels in 1936, of which 18 out-bound had a draft of over 24 feet. Thirty-five tankers carried out-bound approximately 1,500,000 barrels of petroleum products, with drafts ranging from 18 to 26 feet.

4. Local interests requested various enlargements of the channels up to a depth of 35 feet and a width of 300 feet, and also enlargement of the Port Isabel turning basin. They claim that the present channels are inadequate for the commerce which is developing. The Port Isabel-San Benito Navigation District first requested that the United States provide a depth of 34 feet in the channel through the pass, 32 feet in the channels from the pass to and including the Port

counter \$3864

4

AZOS ISLAND HARMELTE

Isabel turning basin, channel widening at the junction with the Brownsville Channel, and enlargement of the Port Isabel Basin to 800 feet square. Later it requested that the Government provide a depth of 34 feet in the channel through the pass and 32 feet in the channel to the junction of the Brownsville and Port Isabel Channels, upon condition that local interests furnish funds to defray the cost of providing a depth of 32 feet in either one of the branch channels.

5. The district engineer believes that deepening of the inside channels and the turning basins to 28 feet and the entrance channel to 31 feet will be adequate for handling the present traffic and such additional traffic as may be expected reasonably to develop in the next few years. He estimates the cost as \$584,366 for new work and no increase in maintenance. The total annual carrying charge is \$27,202. He finds that less than 5 percent of the tankers engaged in the Gulf oil trade can safely navigate the present channels when fully loaded, whereas a 28-foot depth would accommodate about 60 percent. On the basis of oil movements in tankers of 70,000-barrel capacity which could navigate the 28-foot channel, as compared to 50,000-barrel capacity on the 25-foot channel, the district engineer estimates a saving of 2 cents per barrel of oil, or an annual saving on present oil traffic of \$30,000 to \$40,000. Although the oil traffic originated at Port Isabel, he thinks that additional developments in the oil fields may result in use of the Brownsville Channel for oil transportation and that potential development of other cargo is considerably greaterfor Brownsville than for Port Isabel. He therefore concludes that deepening of both channels is warranted, but that the present vessel movements in the harbor, averaging two per day, are insufficient to warrant any widening. He recommends that the project be modified to provide a depth of 31 feet in the channel between the jetties and a depth of 28 feet in the inside channels and turning basins. The division engineer concurs.

6. Local interests were advised of the partially adverse conclusions of the reporting officers and invited to present additional information to the Board. Careful consideration was given to the communications received.

VIEWS AND RECOMMENDATIONS OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS

7. The Board concurs in general with the reporting officers. The present channels are not of sufficient depth to accommodate the vessels now engaged in the commerce of the port, which results in partial loading and relatively higher costs for transportation. It is believed that a depth of 31 feet in the entrance channel and 28 feet in the inner channels is warranted at this time, but that the present traffic and that now in prospect is not sufficient to warrant greater channel widths. The Board therefore recommends that the existing project for Brazos Island Harbor be modified to provide for a depth of 31 feet in the entrance channel and 28 feet in the turning basins at Brownsville and Port Isabel, at a cost to the United States of \$585,000 for new work, with no increased cost for maintenance.

For the Board:

G. B. PILLSBURY, Brigadier General, Corps of Engineers, Senior Member.

counter 13865

Brackel turning basen channel widening as the junction with the browns tills Channel, and entargement of the Port Isabel Basin to depth of 34 feat in the channel through the pass and 32 feet in the abannel to the innetion of the Brownsville and Port Isabel Channels, abannel to the innetion of the Brownsville and Port Isabel Channels, appon condition that bord interests formish funds to detray the cost of providing a depth of 32 feet in either one of the branch channels. The intrinst enginese believes that deepening of the inside chanaber with the adequate for handling the present traffic and such additional traffic as may be expected reasonably to develop in the next few thous traffic as may be expected reasonably to develop in the next few trease in manitements the cost as \$534,306 for new work and no intrease in manitements. The total singual carrying charge is \$27,202. Trease in manitements the cost as \$534,306 for new work and no intrease in manitements the cost as \$534,306 for new work and no intrease in an antitements the cost as \$534,306 for new work and no intrease in an antitements the cost as \$534,306 for new work and no invibures as \$25,002 depth would accounted about 60 percent. On whereas a \$28-front depth would accounted about 60 percent. On the pasts of our movements in tankers of 70,000-harrel equation which any result on the \$27,000 doin, or an annual saving on present of the pasts of our movements in tankers of 70,000-harrel equation which any result in use of the Brownsville Channel for oil transportation any result in the harbot, averaging two per day, are insolution for Brownsville than her additional developments in the oil fields any result in the harbot, averaging two per day, are insolution in that potential development of other engineer estimates a may result in the harbot, averaging two per day, are insolution in the provincing a depth channel is warming the oil fields in the provincing the harbot, averaging two per day, are insolution in the provincing a depth is a fort

Local interests were advised of the particulty advires conclusions be monthing pilicets and invited to present additional information in Boards. Carclul cossideration was given to the communications ingde......

EFE AND RECOMMENDATIONS OF THE BOARD OF ENGLNERES FOR HIVERS AND RAEBORS

5. The Board concurs in general with the reporting officers. The effect channels are not of sufficient depth to recommodate the vescel channels are not of sufficient depth to recommodate the vescel and contained in the commerce of the port, which results in partial ording and rotatively higher costs for transportation. It is believed that a depth of 31 feet in the entrance channel and 28 feet in the interval that the resisting project for Brazos downeds is waraanted, at this time, but that the existing project for Brazos are been a prospect is not sufficient to warrant greater channel widths. The Board therefore recommends that the existing project for Brazos dand flarbor be medified to provide fer a depth of 31 feet in the tuning state channels and in the tuning states of the transport is the tuning based is a cost to the interval and that the existing project for Brazos dand flarbor be medified to provide fer a depth of 31 feet in the tuning science channel and 28 feet in the inner channels and in the tuning science and in the tuning science and fort leaded, at a cost to the limited states of science and based are the science channels and in the tuning science the new work, with an a linear sequence and in the tuning science of the period based cost to the limited states of the science of the transport science and in the tuning science of the new work. With an increased cost to the limited states of the science of the

Brigatiar General, Carps of Bagiasera Secure Member

### BRAZOS ISLAND HARBOR, TEX.

# REPORT OF THE DIVISION ENGINEER

#### SYLLABUS

The division engineer recommends modification of the existing project for Brazos Island Harbor to provide a depth of 31 feet in the entrance channel and a depth of 28 feet in the inside channels and turning basins, with easement of bends and curves, at a cost for new work of \$585,000, with no increased cost for maintenance, subject to the conditions (1) that local interests shall furnish, freeof cost to the United States, necessary rights-of-way and spoil-disposal areas, and (2) that no dredging shall be done at public expense within 50 feet of an established pierhead line or any wharf or structure.

> WAR DEPARTMENT, OFFICE OF THE DIVISION ENGINEER, GULF OF MEXICO DIVISION, New Orleans, La., April 17, 1937.

Subject: Review of reports on Brazos Island Harbor, Tex. To: The Chief of Engineers, United States Army.

1. Authority.—This report, submitted in compliance with instructions from the Chief of Engineers dated December 14, 1936 is authorized by the following resolution adopted December 7, 1936:

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 Brazos Island Harbor, Texas, printed in Rivers and Harbors Committee Document Numbered 16, Seventy-first Congress, second session, and subsequent reports, with a view to determining if modification of the existing project at Brownsville, Texas, is advisable at the present time. 2. Description.—Brazos Island Harbor comprehends all the im-

provements at and inside Brazos-Santiago Pass which is a natural inlet from the Gulf of Mexico to Laguna Madre between Brazos Island on the south and Padre Island on the north about 8 miles north of the mouth of the Rio Grande. These islands are low, narrow ridges of sand which have a meridian bearing between the lagoon and Gulf. The channel through the pass is protected by jetties in the Gulf, and inside extends about 17 miles southwest to the Brownsville turning basin. About 2.5 miles from the pass the channel branches to the north around the south end and along the west side of Long Island, 1½ miles to the Port Isabel turning basin. The normal tidal range is about 1.5 feet, but during storms the water surface may be elevated as much as 4 feet and hurricanes may raise it 12 feet or more. This part of the coast is alined with the principal direction of strong winds which prevail for long periods. As the pass is near the south end of Laguna Madre which is closed except for the intermittent outlet, Boca Chico, the south wind depresses the water causing a prolonged flow of high velocity from the Gulf while a north wind produces the opposite effect. These winds and currents and limiting channel depths constitute the principal difficulties attending navigation. No bridge crosses any channel of the harbor and navigation is unobstructed by any other obstacle. A map showing the harbor and its environs accompanies the district engineer's report herewith, and the coastal area including the harbor is found on United States Coast and Geodetic Survey Chart No. 1288.

3. Existing project.—The existing project, authorized in 1930, provides for a channel 25 feet deep and 300 feet wide through Brazos-Santiago Pass with jetty protection at an estimated cost of \$2,358,000

#### REPORT OF THE DIVISION ENGINEER.

STLLABUS

The division engineer recommends modification of the existing project for wave laund flattor to provide a depit of 31 feet in the entrance channel and a prio of 28 feet in the inside channels and furning basins, with concision of ands and curves, at a cost for new work at \$350,000, with no increased cost for mintenance, subject to the conditions (1) third local interests shall furnish, free cost to the United States necessary rights-of-way and agoil-disposit areas, and that an dracking shall be done at public expense within 50 feet of an established entert in the area we had be done at public expense within 50 feet of an established.

WAR DEPARTMENT, OWNER OF THE DIVISION EXCERT. OULT OF MERICA DIVISION, OULT OF MERICS, LA. April 17, 1967.

# set. Review of reports on Brazos Feland Harbor, Two. The Chief of Eugeneeus, United States Army.

 Authority, This report, submitted in compliance with instrucins from the Chief of Engineers dated December 14, 1936 is authoreffy the following resolution idouted December 7, 1936;

resolved on the Committee on Rivers and Horbors of the theory of Representations, dot. States, That the Board of Engineers for Revers and Harbors evolved under tion 3 of the Hiver and Harbor Act appreved June 13, 1903, but and is heaving constel to review the reports on Branes Island Harbor, Texts, printed in Hivers I Harbors Committee Downment Numbered 15, Scienty first, Congress, account ion, and subsequent reports, with a view to therminicant if modification of the airer, nodes at Bergments With a view to therminicant if anotheration of the airer notion at Bergment Reports.

2. Besergates Brazos Estand Harbor comprehends all the inimorements at and inside Brazos-Santiago Pass which is a natural let from the Gulf of Mexico to Lagran Madre between Brazos dated en the south and Fadre Island on the morth about 8 miles north the mouth of the Kio Grande. These islands are low marrow ridges essait which have a meridian bearing between the lagnon and Gulf he channel through the pass is protected by jetties in the Gulf, and saite estands about 17 miles southwest. to the Brownswile turning estime estands about 17 miles southwest. to the Brownswile turning saite estands about 17 miles southwest. The demuel branches, to the saite estands through the pass is protected by jetties in the Gulf, and saite estands about 17 miles southwest. The demuel branches, to the saite estands the south cut and aboig the west saite of Long Island, in argund the south cut and aboig the west saite of Long Island, is index to the fort issaid turning basis. The nermet total range is a much as 4 here and hurrieuses may raise if 12 heel or more. This is much as 4 here and hurrieuses may raise if 12 heel or more on a thigh tele quark the principal direction of strong winds is much as 4 here and hurrieuses may raise if 12 heel or more. This agram Madre which is closed except for the intermittent outlet, one of high tele quarks which the principal direction of strong winds appeate effect. These winds and currents and functing channel deplace onstitute the apprecial difficulties attending navigation. No bridge onstitute the apprecial difficulties attending navigation. No bridge onstitute the difficulties attending the truth of the polace of the obstack. A map aboving the bather and its cut uous companies the district engencer's report berewith, and the constal proses and chart the district engencer's report berewith, and the constal companies the district engencer's report berewith, and the constal prove Chart No. 1283.

3. Existing project — The existing project, authorized in 1930, movides for a channel 25 feet deep and 300 was while through Brazosiantingo Pass with jetty protection at an estimated cost of \$2,255,000

# BRAZOS ISLAND HARBOR, TEX.

6

with \$60,000 annually for maintenance, and a channel 25 feet deep and 100 feet wide from the pass to a turning basin 1,000 feet square near Brownsville, and branching south of Long Island to a turning basin 500 feet square at Port Isabel, at a total estimated cost of \$4,783,000, with \$150,000 annually for maintenance. On February 20, 1937, the Chief of Engineers, acting under section 5, River and Harbor Act of March 4, 1915, authorized increasing the depth of the entrance channel to 28 feet. The total cost of the existing project has been \$5,052,075.52 of which \$2,916,275.04 was Federal funds expended for new work and \$452,542.78 for maintenance, while contributed funds amount to \$1,683,257.70, all spent for new work.

4. Other improvements.—In 1933 a channel 12 feet deep by 120 feet wide, to connect the turning basin at Port Isabel with the private channel along the south side of Port Isabel and the yacht basin was completed by local interests at a cost of \$9,000.

5. Tributary area.-Brazos Island Harbor, situated between Corpus Christi 125 miles north and Tampico 260 miles south, serves the lower Rio Grande Valley; an area which includes the very fertile and productive counties of Cameron, Willacy, Hidalgo, and Starr at the southern extremity of Texas, and part of the States of Tamaulipas, Nuevo Leon, and Coahuila in northeastern Mexico. The four counties named had a population of 176,452 in 1930 and have a combined area of 4,317 square miles, practically all of which is susceptible of irrigation. Canals from the Rio Grande now serve a large portion. The principal crops are citrus fruits, cotton, and vegetables. Starr and Hidalgo Counties contain producing oil fields. Brownsville, population 22,021 in 1930, is the largest town in the area. It is situated on the Rio Grande 20 miles from the mouth and 22 miles from Brazos-Santiago Pass. It is a port of entry and is served by the National Railways of Mexico with terminals in Matamoras across the river, the Southern Pacific and Missouri Pacific Railway Systems, Pan American Airways, and improved highways. Port Isabel, situated 21/2 miles from the pass, had a population of 1,177 in 1930. It is served by paved highways and the Port Isabel and Rio Grande Railway. Both terminals are provided with modern facilities adequate for the character and volume of traffic. The tributary area in Mexico is noted principally. for its mining and cotton production but considerable industrial activity centers in Monterrey, 180 miles directly west of Brownsville, and about 100 miles closer to Brownsville than to Tampico, the nearest Mexican port. Monterrey had a population of 132,577 in 1930 and ranked as the third largest city in Mexico.

6. Commerce, vessel traffic.—Before 1934 the traffic of Brazos Island Harbor consisted of small fishing boats. The Port Isabel channel was completed to a depth of 25 feet September 15, 1933, but the controlling depth in the entrance channel was 14 feet in 1933 and 22 feet in 1935. The commerce is given as follows:

Year	Tons	Value
1934 1	<sup>1</sup> 417, 845	<sup>1</sup> \$1, 292, 559
1935	85, 965	1, 734, 779
1936	278, 616	3, 797, 411

i Practically all 1934 commerce was receipt of materials used in constructing jettics and channels.

counter \$3867

#### XIT MOSALI DZALSI SONAM

A 100 feet wire from the pass to a furthing basin i 000 feet deep and 100 feet wire from the pass to a furthing basin i 000 feet square an Brownsville, and branching south of Long fehmal to a furning basin 500 fort square at Port feabel, at a total estimated cust of 1.283,000, why \$150,000 annually for maintenance. On February arbor Act of March 4, 1915, anthorized increpsing the depth of the trance channel to 28 feet. The total cost of the existing paper has then \$3,052,073532 of which \$2,2016 275 0f was Federal funds expended that work and \$452,542.78 for maintenance, while contributed attack annount to \$1,688,257.70 all spent for act work.

e. to connect the turning busin at Fort Isabel with the private and along the south side of Fort Isabel and the yacht basin was opleted by local interests at a cost of \$9,000

a. Tributory area — Hipagos Island Harbor, altuated between Corpus misti 125 miles north and Tampiro 260 miles south, service the lower of Grande Valley: an area which includes the very fertile, and property econties of Cameron, Wilber, Hidalgo, and Starr ni the south to contremity of Texas, and part of the States of Tamaulipus, Nuevo ob, and Coshufta in northeastern Mexico. The four-connutes named at a population of 176,452 in 1930 and have a combined area of a population of 176,452 in 1930 and have a combined area of a population of transitically all of which is susceptible of itrigation. The four-connutes named area of a population of transition were a finite pottam. The principal makes then the Kon the Kon the Mater a finite pottam. The principal area of the space to the file of transition of the south and vegetables. Starr and tidalgo and the 20 miles from the mouth and vegetables. Starr and tidalgo and edge are catrue fruits, contant in the area. It is situated on the Kinder and the mouth and 22 miles from Brazos-Santingo and Atissoori Pacific Railway Systems, Pan American Attways of an provided with terminals in Matanorus arreas the river, the Southern the state and the and 23 miles from the contain producing the file Grande Railways of a norrowed bigiways. Port Isabel, situated 29 miles from the transporter is a norrowed bigiways. Port Isabel, situated 29 miles from the reas of the reas the river, the Southern the state and the Pose Testel and Rio Grande Railway. Both torminals is provided to the considerable industrial active and the Pose Testel and Rio Grande Railway. Both torminals areas and the fear Testel and Rio Grande Railways. Both torminals are state and the Pose Testel and Rio Grande Railway. Both torminals are provided with modern facilities adequate for the character and the reas tormines closer to Brownsville, and the anterior in the more and the Roas Testel and Rio Grande Railway. Both torminals active and the Roas Testel and Rio Grande Railways. Both torminals area and the Roas Testel

	and the manufacture of the		

About 95 percent of the 1936 commerce was petroleum products. The traffic to Brownsville for 7½ months in 1936, following the opening of the Brownsville Channel in May of that year, was 39,193 tons, valued at \$4,335,176, making a total for the harbor last year of 318,000 tons, valued at over \$8,000,000. There were 31 steamers and 3 motor vessels with out-bound drafts greater than 20 feet and 3 steamers with drafts greater than 26 feet. Of 35 tankers loading out of Port Isabel during 1936, 15 were loaded to drafts or capacities less than those for which they were designed, 13 of these partial loadings being apparently due to insufficient depths in the channels provided. These 13 cases showed loaded drafts varying from 19.5 to 23 feet, with designed drafts varying from 24.3 to 26.7 feet. The average designed draft which was not utilized in these 13 cases was 4.24 feet. The total cargo which was actually loaded in these 13 tankers was 271,000 barrels less than their total designed capacity.

7. Improvement desired.—The consensus of opinion at a public hearing held at Brownsville on January 20, 1937, was that the existing project is inadequate and increases in depth to 30 or 35 feet and in width to 200 or 300 feet with enlargement of the Port Isabel turning basin were requested. Local interests claim that the present inside channels are not deep enough, nor wide enough, and in addition are adversely affected by existing bends, so as to prevent navigation by ships of sufficient size to develop the commerce of the area tributary to Brazos Island Harbor in competition with other ports. No local cooperation is offered but local interests state that the rights-of-way and spoil disposal areas which they provided when they dredged the existing inside channels should be sufficient to accommodate the modifications desired.

8. Special subjects.—There is no question of water power, flood control, irrigation, drainage or shore-line changes involved in the improvement requested.

9. Views and recommendations of the district engineer .- Though no great immediate increase of commerce through Brazos Island Harbor is anticipated by the district engineer, he does believe that a steady and appreciable increase will occur. He considers the 1936 commerce a good showing for a newly opened waterway and believes the growth of industry, agriculture, and mineral production in the Rio Grande Valley will continue. The tonnage predicted by local interests in former briefs appear to him to be as susceptible of ultimate development as ever. He notes that actual oil shipments totaled in 1936 nearly 2,000,000 barrels, and that an equal amount is under contract for shipment in 1937 and 1938. The claims of local interests, that sufficient channel depth to accommodate the average tanker engaged in the Gulf trade would effect material savings in the transportation of petroleum products, seem to him well founded. In the absence of definite evaluation by local interests of the benefits from greater channel depth, the district engineer made a study of current shipping conditions in the Gulf oil trade and finds that less than 5 percent of the tankers can safely navigate the existing 25-foot channels fully loaded, whereas a 28-foot depth would accommodate 60 percent. He estimates that provision of the latter depth would involve an expenditure for new work of \$585,000 and no increase for maintenance, with annual carrying charges for this work of \$27,000. He concludes also that 70,000-barrel tankers could navigate the

counter 43868

7

About 95 perfects of this 1956 commone was percentian parameter in traffic to Brownsville for 75 months in 1936, following the opening of the Brownsville Channel in May of that year, was 39,193 tons ones, valued at orear \$8,000,090. These were 31 steamens and 3 motor reservation out-housed duality greater than 20 feet and 3 steamers with easing 1936, 15 wave loaded to duality or extraching out of Fort Isabel taine 1936, 15 wave loaded to duality or extraching out of Fort Isabel taine to its firm 26 feet of 35 tankers loading out of Fort Isabel taine 1936, 15 wave loaded to duality or extraching tass than those for the taine to send for the optimal is the optimal statement to the the sending out of these partial loading these than those for the taine the sended to duality or extraching these than those for the taine to sendific the task of these partial loading the fort Isabel to the taine that the starting these last, with designed that the variang from 24.3 to 28,7 desk. The reserverse designed that y are and the tait the set of these 13 the tails with designed that the tart was not utilized in these 13 these was 4.24 level. The total cargo which was not utilized in these 13 these starts was 271,000 harrels level

T. Insurveinent desired. The consenses of appliant is independent aring held at Brownsville on January 20, 1937, was that the existing of eff is inadequate and increases in doubt to 30 or 35 feet and in the to 200 or 305 heet with enlargement of the Port Isahri thering of a wave requested: Associal interests chain that the present inside muchs are not deep enough, nor wide anough, and in addition ere versely affected by existing bends, so as to prevent inside bas of sufficient size to develop the connects state the inside frames labered Hurber in connection with other nerves. No local prevation is offered but for a interests state that the replice-of-wave apprention is offered but for a interests state that the replice-of-wave prevation is offered but for a interests state that the replice-of-wave the prevent interests should be sufficient to avoid model the story inside that chaptele abound he sufficient to avoid model the story inside chaptele abound he sufficient to avoid model the

er at subjects .- There is no question of water power, flood

9. Views shad reconsistent of the district sources—"Rhouch o great immediate increase of commerce through Brazos Island harbor is variespaced by the district emissor, he does believes that is variespaced by the district emissor, he does believes distants with appreciable increases will occur. He considers the third distance is good showing for a newly optical waterway and believes is growth of industry, ascreditors, and mineral groduction in the second former brais varies of the fourtage predicted by local distances in former brais appear to him to be as waterpride of ultitherests in the continue. The tourage predicted by local diste divelopment as ever, he notes that eaturd an simplements therests, that sufficient channels 1937 and 1938. The chine of local ander construct for single-south 1937 and 1938. The chine of local disted in the Guil brained would effect material average in the reaction of the fourter brais (built trade would effect material average in the nearbor target of be tankers and south offect material average in the terms of the tankers are the district material average in the heat of percent of the tankers and south dister material average in the heat of percent of the tankers and south district material average in the heat of percent of the tankers and south an equila anount the absence of the tankers and south offert material average in the heat of percent of the tankers and a south offert material average in the heat of percent of the tankers and south material average in the heat of percent of the tankers and a south offert material average in the heat of percent of the tankers and south material average in the heat of percent of the tankers and a south material average in the south of the tankers and a south material average in the south of the tankers and a south material average is noted as a study of heat and a south of the tankers and a south would accommendate information of the tankers and a south material average for information of the tankers and a south of the tankers of \$27

# BRAZOS ISLAND HARBOR, TEX.

8

28-foot channels as compared to the 50,000-barrel maximum loading in the 25-foot channels, at a saving of 2 cents a barrel or \$40,000 annually. He considers the volume of traffic-insufficient to warrant further widening of the channels at this time, as the maximum delay for any vessel would be about 2 hours at Port Isabel and 4 hours at Brownsville. While there is no tanker traffic with Brownsville at present, a considerably greater volume of other commerce appears to him as more probable of development there than at Port Isabel with the additional possibility of future petroleum traffic. He recognizes the inability of local interests, burdened with relatively large financial obligations in behalf of the existing project, to achieve this development or to make any substantial cash contribution toward it. In his opinion, since the United States is committed to the prosecution of the existing project in the hope that sufficient commerce would develop to justify such action, the Government should take the requisite additional steps to accomplish its purpose. The district engineer concludes that further deepening and widening of the harbor channels is necessary to insure the continued growth of commerce through the harbor and that deepening of the channels is warranted at the present time. He recommends, therefore, that the depth of the entrance channel be increased to 31 feet and the depth of the inside channels and turning basins be increased to 28 feet with easements of existing bends and curves at a total cost for new work of \$584,366, and no increased cost of maintenance, subject to the condition that no dredging shall be done by the Federal Government within 50 feet of an established pierhead line, wharf or structure, and provided that local interests shall furnish, free of cost to the United States, all necessary rights-of-way and spoil-disposal areas.

10. Views of the division engineer .- The conclusion of the district engineer that increased channel depth is essential to the commercial growth of Brazos Island Harbor is concurred in by the division engineer. The prospect of considerable growth in the commerce of the harbor is, he believes, indicated by the increasing development of the lower Rio Grande Valley. He finds that the development of oil fields, agriculture, mining, and industry have reached a point where their further progress depends upon the ability of their products to compete commercially with those from areas tributary to adjacent ports. He further finds that an increase of 3 feet in the depth of the inside channels would afford a material saving in transportation costs, the saving on oil alone being estimated at \$40,000 annually, and assist greatly in developing an increased commerce for the waterway. He believes that further widening of the interior channels will ultimately be necessary, but that such widening being relatively quite expensive, can well await the development of increased commerce anticipated to follow the deepening recommended herein, in which case, if commerce develops as anticipated, the additional cost of widening might be justified at a later date.

11. Recommendation.—The division engineer recommends modification of the existing project for Brazos Island Harbor to provide a depth of 31 feet in the entrance channel and a depth of 28 feet in the inside channels and turning basins with easement of bends and curves at a cost for new work of \$585,000, with no increased cost for maintenance, subject to the conditions (1) that local interests shall furnish, free of cost to the United States, necessary rights-of-way and spoil disposal

counter 73869

28-foot elemends as compared to the 30,000 herrel maximum londing in the 25-feot channels, at a saving of 2 cents a tourrel or \$40,000 further widening of the channels at this time, as the maximum delay for nuv vessel would be about 2 hours at. Fort Isabel and 4 henry for nuv vessel would be about 2 hours at. Port Isabel and 4 henry gresset, a considerably greater volume of other commerce appears to him as more probable of development there than at Port Isabel with the additional possibility of future potroleum traffic. He recegbizes the fashility of head interests, burdened with relatively large development in the state to make there there there the states the fashility of head interests, burdened with relatively large bizes the fashility of head interests, burdened with relatively large of the velopment in the hole disterest is committed to the prosecution additional steps to make any substantial cash contribution toward in additional steps to make any substantial cash contribution toward in additional steps to accompish its purpose. The district engineer conelades that further depending and widening of the inside the requisito additional steps to accompish its purpose. The district engineer contine. He recommends the continue the objet the harbor channels is actioned to insume the continue of the content should take the requesito additional steps to accompish its purpose. The district engineer contense that further deepening and widening of the harbor channels is actioned the invessed to 31 feet hand the depth of the cannels is additional steps to accompish its purpose. The district engineer contense to an transect to 31 feet hand the depth of the entrance in the transect cosi of maintenance, subject to the condition that no beneds and curves at a total cest for new work of \$584,366, and no beneds and curves at a total cest for new work of \$584,366, and no beneds and curves at a total cest for new work of \$584,366, and no beneds and curves at a total cest for new work of \$584,366, and no increased

10. Universal the division canoner plane the conclusion of the district angineer that increased channel depth is essential to the commercial growth of Erazos Island Harbor is concurred in by the division engineet. The invaport of considerable growth in the commerce of the arbor is, he believes, indicated by the increasing development of the own dis-dirande Vailey. Its finds that the development of all fields, and the progress depends poon the ability of their products to confide their progress depends poon the ability of their products to confide the progress depends promote a stributary to subject products to confide annuarcially with those from areas tributary to adjacent ports. He further undating and industry have reached a point where their connactially with those from areas tributary to adjacent ports, the annuarcially with those from areas tributary to adjacent ports, the dust her finder an interease of 3 fast in the depth of the inside chanther there are a material as sing in transportation costs, the saving and alone being estimated at \$10,000 annually, and assist greatly in developing an increased connerces for the waterway. He believes that the developing an increased connerces for the waterway in the believes the developing an increased connerce for the waterway. He believes the developing an increased connerce for the waterway is believes the developing an increased connerce for the waterway. He believes the developing an increased connerce for the waterway is believes the developing an increased connerce for the waterway is an acting the developing and that such widening being relatively quite expensive can well await and the developing at the interval of the interval of the believes the dependence for the seduitional cost of widening might he justified at a

11. Recommendation — The division argineer recommends modification of the existing protect for Brazes Island Harban to provide a depth of 31 feet in the entrance channel and a depth of 23 feet in the inside channels and turning bases with casement of rends and curves at a cost for new work of \$586,000, with no increased cost for maintenance abject to the conditions (1) that local interests shall furnish. Iree of cost to the 1 mined States accesser mining of way and should disposed

# BRAZOS ISLAND HARBOR, TEX.

areas, and (2) that no dredging shall be done at public expense within 50 feet of an established pierbead line or any wharf or structure.

F. B. WILBY, Colonel, Corps of Engineers, Division Engineer.

# REPORT OF THE DISTRICT ENGINEERS.

# SYLLABUS

The district engineer concludes that the project known as Brazos Island Harbor, Tex., is worthy of further improvement by the Federal Government. He recommends that the project depth of the jettied entrance channel be increased to 31 feet; that the project depth of the connecting channels and the turning basins at Brownsville and Port Isabel, Tex., be increased to 28 feet; and that the bends in the connecting channels be eased.

# WAR DEPARTMENT, UNITED STATES ENGINEER OFFICE, Galveston, Tex., March 12, 1937.

Subject: Review of Reports on Brazos Island Harbor, Tex.

To: The Division Engineer, Gulf of Mexico Division, New Orleans, La.

1. Authority.—This review of reports on Brazos Island Harbor, Tex., is submitted in accordance with instructions from the Chief of Engineers, United States Army, dated December 14, 1936, and a letter, dated December 7, 1936, from the Hon. J. J. Mansfield, Chairman, Committee on Rivers and Harbors, United States House of Representatives, transmitting a resolution adopted December 7, 1936, by the said committee, as follows:

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 Brazos Island Harbor, Texas, printed in Rivers and Harbors Committee Document, Numbered 16, Seventy-first Congres & second session, and subsequent reports, with a view to determining if modification of the existing project at Brownsville, Texas, is advisable at the present time.

2. Scope.—The existing project at Brownsville, Tex., consists of a turning basin 1,000 by 1,300 feet by 25 feet deep. Since no useful navigation purpose would be served by any modification of the turning basin alone; and, further, since the reports to be reviewed covered the entire Brazos Island Harbor project, it has been assumed that it was the intention of the House Committee on Rivers and Harbors to request a review of the reports heretofore made on Brazos Island Harbor, Tex., with a view to determining if modification of the existing project is advisable at the present time. Therefore, the scope of this report is considered to cover the entire project.

3. Description.—The Brazos Island Harbor project includes all the navigation improvements at and westward of the Brazos-Santiago Pass. This pass is a natural outlet from the southern portion of Laguna Madre into the Gulf of Mexico. It is located about 8 miles north of the mouth of the Rio Grande and approximately 125 miles south of Aransas Pass. Padre Island, a long, narrow sand barrier formation separating Laguna Madre from the Gulf of Mexico lies to the north of the pass. Brazos Island, a like formation, lies to the south of the pass and extends to Boca Chica, a small natural outlet

9

10

# BRAZOS ISLAND HARBOR, TEX.

reas, and (2) that no dredging shall be done at public expense within 9 feet of an established pierbead line or any wharf or structure.

Colond, Corps of Eugineers. Dirision Engine

## REPORT OF THE DISTRICT LINGINGERS

STLLABUS

The district and near concludes that the project known as Brazes Island Harbor. Tex., is worthy of further improvement by the Federal Government. He reveauments that the project depth of the jettied entrance channel be increased to 31 bet; that the project (depth of the connecting channels and the turning basins and frownsville and four lands. Fex., be hereased to 28 feet; and that the terms in

WAN DEFARMENER, UNITED STATES EXAMENER OFFICE, Galorston, Fer., March 12, 193

ibject: Review of Reports on Brazos Island Harbor, Tez. o: The Division Engineer, Gulf of Mexico Division, New Orleans,

 . Author dy.— This review of reports on Brazos Island Harbor, ex., is submitted in accordance with instructions from the Chief of agineers, United States Army, dated December 14, 1936, and a tior, dated December 7, 1936, from the Hon, J. J. Mansfield, Chairan, Committee on Rivers and Harbors, United States House of epresentatives, transmitting a resolution adopted December 7, 1936, the said committee as follows:

(a) is the Controllier on Rivers and Harbert of the House of Representations, Nates, That the Board of Engineers for Rivers and Harbors created ander a di the River and Harbor Ant, approved traves 13, 1902, its and is hereby, end to review the reports on Brazers Island Harbor, Texass printed a Hirver at to review the reports on Brazers Island Harbor, Texass printed a Hirver approve Coamilities Document, Numbered 16, Sevents first Coagress approves and atherement sequents, with a view to determining if modification approves the provincially. Focus, is advisable at the present time.

2. Scope. The existing project at Brownsville, Tex., consists of a ruing basin 1,000 by 1,300 feet by 25 feet deep. Since no ascful vigotion purpose would be served by any multification of the ruing basin alone; and, further, since the reports to be reviewed a cred the entire Brazos Island Harbor project, it has been assumed at it was the intention of the House Committee on Rivers and arbors to request a review of the reports heretofore make on Brazos land Harbor. Tex., with a view to determining if modification of the isting project is advisable at the present time. Therefore, the scope

3. Description: — The Brazos Island Harbor project, includes all the avigation improvements at and westward of the Brazos-Sautiago any avigation improvements at and westward of the Brazos-Sautiago ass. This pass is a natural cutlat from the southern portion of aguna Mudre into the Gulf of Mexico. If is located about 8 miles orth of the mouth of the Kin Grande and approximately 125 miles ut of Aranass Pass. Padre Island, a long, narrow sand harrier rintation separating Lagrana Madre from the Gulf of Mexico lies of the approximately 125 miles ut of Aranass Pass. Padre Island, a long, narrow sand harrier rintation separating Lagrana Madre from the Gulf of Mexico lies ut of the pass and cyteries to the rint of the pass and extends to Bea Chien, a small natural outlet with of the pass and extends to Bea Chien, a small natural outlet

# BRAZOS ISLAND HARBOR, TEX.

at the lower end of Laguna Madre. Boca Chica is about 3 miles north of the mouth of the Rio Grande. It, like many other small outlets along the Gulf coast, opens up during hurricane tides but soon recloses under normal conditions, usually remaining open no longer than 1 year. At Brazos-Santiago Pass there is maintained a channel 25 feet in depth with a bottom width of 300 feet. This channel which is protected by jetties leads from deep water in the Gulf of Mexico to deep water inside the pass. Inside the pass a channel 25 feet deep by 100 feet wide extends in a generally southwestern direction for about 16½ miles to a turning basin near Brownsville. At Long Island, about 21/2 miles from the pass, a similar channel takes off to the westward curving northwest along the western edge of Long Island to end at the Port Isabel turning basin after covering a total distance of about 1½ miles. The Brownsville turning basin, 1,300 feet long by 1,000 feet wide with a depth of 25 feet, and the Brownsville Channel were completed in February 1936; the Port Isabel turning basin, which is 700 feet long by 600 feet wide and 25 feet deep, and the channel thereto were completed in September 1933

4. The normal tidal range is about 1½ feet, but strong winds which frequently blow along this portion of the coast cause a much greater range in water surface elevations. This portion of the coast lies practically north and south and is parallel to the strongest winds. Prolonged south winds drive the water northward in Laguna Madre which results in a depression of the water surface in the lower end of the laguna. As these winds normally cause a piling up of the water along the Gulf shore, water rushes in from the Gulf through Brazos-Santiago Pass resulting in high velocities in the pass. The reverse condition is obtained in the case of strong north winds. The water is driven from the upper end of the laguna into the land-locked lower end below the pass and the water surface there is sometimes raised as much as 3 feet above normal. The resulting difference in head between the water in the lower part of the laguna and that in the Gulf, which has been depressed below its normal level by the norther. causes an outward discharge of high velocity through the pass. On the wane of the northers unusually low water surface elevations are found in the vicinity of the pass, the depression sometimes being as much as 2 feet below mean low tide and at such times high velocities again occur in the pass as water rushes in to restore the partially emptied laguna to its normal level. Hurricanes sometimes cause even greater variation-water surface elevations 12 feet above normal have been known to occur. Strong coastwise winds cause the water in the exposed pass and in that portion of the channel to the east of Long Island to become quite rough and at times difficult of navigation. The Brownsville Channel and the Port Isabel Channel are both somewhat protected and do not become so rough as the more exposed portions of the waterway.

5. The location of the various channels of the waterway with respect to other points mentioned in this report are shown on the map, File No. 11-7-32, which is attached as Appendix No. 1. The southern part of Laguna Madre and the adjacent coastal areas are shown on United States Coast and Geodetic Survey Chart No. 1288.

6. Tributary area.—The Brazos Island Harbor project is located near the extreme southern tip of Texas, about 125 miles south of the port of Corpus Christi and about 260 miles north of the Mexican port

### BRANDS ISLAND HARBOR. TEX.

to location of the various channels of the waters of with respect r points mentioned in this report are shown on the map. File 7-32, which is attached as Appendix No. 1. The southern I sound Mades and the adjucent constal measure shown op

I States Coast and Georetic Survey Charton project is located foliations area.—The Etraxos Islami Harbor project is located he extreme southarn tip of Texas, about 125 miles south of the of barrow Christiana about 260 miles north of the Mexican port of Tampico. The area which lies nearer to the ports of Brownsville and Port Isabel than to the adjacent Gulf ports includes all of Cameron, Hidalgo, and Starr Counties and a part of Willacy, Brooks, Jim Hogg, and Zapata Counties in the State of Texas, and a large area in northeastern Mexico within the States of Tamaulipas, Nuevo Leon, and Coahuila.

7. Cameron, Hidalgo, Starr, and Willacy Counties in the lower Rio Grande Valley are remarkably fertile and highly productive agriculturally. These counties have a combined area of 4,317 square miles, and had in 1930 a combined population of 176,452. Practically the entire area is subject to irrigation, and a large portion is now provided with canals leading to the Rio Grande which furnish water to the developed portion. Principal agricultural products are citrus fruits, cotton, and vegetables, including large quantities of tomatoes and cabbages. There are producing oil fields in Starr County in the vicinity of Rio Grande City and in Hidalgo County near Sam Fordyce, Mission, and Mercedes. Principal cities and towns within this area and their 1930 populations are as follows:

County	City	1930 pop- ulation	County	City	1930 pop- ulation
Cameron Do Do Do Do Hidalgo Do	Brownsville San Benito La Feria Harlingen Port Isabel Donna McAllen	10,753 1,594 12,124 1,177	Hidalgo Do Do Do Do Starr Willacy	Pharr Edinburg Mission Mercedes Weslaco Rio Grande City Raymondville	5, 12

Brownsville, the county seat of Cameron County, is the largest and most active city commercially of those listed. It is located at the southwestern end of the Brownsville Channel about 22 miles inland from the pass, and on the Rio Grande about 20 miles from the Gulf. It is not only an increasingly active Gulf port, but also a port of entry and a gateway into Mexico, being connected to the interior by the National Railways of Mexico, which has a terminal in the city of Matamoras just across the river from Brownsville, as well as by improved highways. The Southern Pacific and the Missouri Pacific Railroads serve the city, and it is connected to other points in the valley by a system of hard-surfaced highways. Port Isabel, the other terminal point on the waterway, is only about 21/2 miles distant from the pass. It is connected to Brownsville, and there with the other railroads serving that city, by the Port Isabel & Rio Grande Railroad, and is served by concrete highways connecting with every community in the Valley. The Coastal Refineries, Inc., has a refinery at Port Isabel. The output of the Sam Fordyce oil field is transported by pipe line to this refinery. The other cities listed are modern growing communities. They and the area surrounding them are amply served by railroads and concrete highways, and have ready access by these means to the turning basins at Brownsville and Port Isabel.

8. That portion of northeastern Mexico which is geographically tributary to the waterway is only partially developed. There is a considerable area devoted to cotton production in the lower Rio Grande Valley. Monterrey, the capitol of the State of Nuevo Leon, ice. The area which has banker to the ports of brownsould i, leaded than to the adjacent Gulf ports includes all of litchign, and Starr Counties and a part of Willacy, Brooks, g, and Zapata Counties in the State of Texas, and a large orthogeneric Mexico within the States of Tamaufipas, Nucco

neron, Hidaigo, Starr, and Willacy Counties in the lower ade Valley are remarkably fertile and furthy predictive agriv. These counties have a combined area of 4,37 square is had in 12.29 a combined population of 176,452. Fractically e area is subject to irrightion and a large postire is new nerth canals leading to the Rio Grande which furnish water to deped cortion. Fencipal agricultural products are citra of tea and verstables, including large quantities of tomators or serves. There are producing of helds in Starr County in the and Min Grande Citri and in Hubigo County near Sam Fordyre, and Merceles. Proceeding in Hubigo County near Sam Fordyre, and Merceles. Proceeding in the serve of towardy or and Merceles. Proceeding in the serve of towardy or and Merceles. Proceeding in the serve of towardy or and a fin Grande Citri and in Hubigo County near Sam Fordyre, and Merceles. Proceeding in the serve of towardy or and a serve of towardy or an in the serve of towardy or and and Merceles. Proceeding in the serve of towardy area for a serve of the server of the server of towardy or and the server and Mercelets. Proceeding in the server of towardy or and the server of the serv

		* 90	

wnewille, the county seat of Cambron County, is the is past and active city commercially of three listed. It is forcated at the restern and of the Brownsville Channel about 22 miles mission the pass and on the Brownsville Channel about 22 miles mission of only an moreheatingly active that post, but also a pert of easing gateway into Matrico, build connected to the matrice by the main Mathemys of Mexico, build connected to the matrice by the optimizer failbary of Mexico, which has a terminal in the edv of motus just across the river from Brownstills, as well as by motus just across the river from Brownstills, as well as by and sarve the edg, pad it is connected to other points in the over highways. The Sommern Parsite and the Missoner Pacific by a system of funct-surfaced inflying s. For Isabel, the other and as arreading the two points of the three states in the and as a register of Brownsville, and them with the other and is served to Brownsville, and them with the other and is served to Brownsville, and them with the other and is served to Brownsville, and them with the other and is served by concrete highways. For Isabel, the other and is served to Brownsville, and them with the other and is served to Brownsville, and them with the other and is served to Brownsville, and them with the other and is served by concrete highways, and the transto ther basing the to the Sam Forder on the faile of the and is served by concrete highways. Inc., mas a teturant is served by concrete highways, and the transto there is the second to Brownsville, and there with the other and is served by the second to Brownsville, and there with the other and bas are teturter to be the second to be an employer, and any condition with the second to be an employer and the second to the part leader of the second to be the second for area surrounding them and y served by tailoades and concrete lighways, and have cendy the there are the basin to be the turning basines at brownsville and

That portion of northeastern Mexico which is geographically arv to the waterway is only postially developed. There is a levelable area devoted to cotton groduction in the lower life in Valley. Monterry, the capitol of the Slate of Nurse Leon.

# BRAZOS ISLAND HARBOR, TEX.

12

is one of the most important industrial centers in Mexico. With a population of 132,577 in 1930, it was the third largest city of Mexico. It is reported that there are over 500 factories located there. Perhaps the largest single industry in the Mexican tributary area is mining. Minerals and ores which are exported include gold and silver bullion, refined lead and zinc, lead and zinc ore, iron ore, and copper matte. Some of the mines are operated in conjunction with smelters; the ores from others are shipped by rail to smelters or to seaports for export to foreign smelters or refineries. Major shipping points within the tributary area are the cities of Saltillo, Torreon, Parral, and Monterrey. Although these points located on the National Railways of Mexico are closer to Brownsville than to the Mexican port of Tampico it appears doubtful if much of the mineral products will be available for export from Brownsville. It appears reasonable to expect, rather, that the Mexican Government will take every possible action to prevent deflection from the port of Tampico of the commerce of this area within its borders.

9. Within the immediate tributary area there are numerous cotton gins, vegetable packing and canning plants, fruit packing plants, fruit-juice extraction plants, ice and cold-storage plants and several small crude-oil refineries (topping plants).

10. Bridges .- There are no bridges over the waterway.

11. Prior reports .- The report printed in Rivers and Harbors Committee Document No. 16, Seventy-first Congress, second session, was a review of reports previously submitted on Brazos Island Harbor, Tex., by the Board of Engineers for Rivers and Harbors. The Board's report submitted January 15, 1930, recommended the provision of a channel 25 feet deep and 300 feet wide through Brazos-Santiago Pass, with jetty protection; a channel 25 feet deep and 100 feet wide from the pass to a point on the westerly side of Long Island; a channel 25 feet deep and 100 feet wide from the end of the Brazos-Santiago Pass-Long Island Channel to and including a turning basin 500 feet square at Port Isabel; and a channel 25 feet deep and 100 feet wide from the end of the Brazos-Santiago Pass-Long Island Channel to and including a turning basin 1,000 feet square in the vicinity of Brownsville. Provision of the above channels was to be subject to certain conditions of local cooperation including the donation of either or both of the sums of \$2,175,000 before work would be undertaken on the channel to Brownsville, and \$450,000 before work would be undertaken on the channel to Port Isabel. This recommendation was approved by the Chief of Engineers and a project embodying the features recommended was incorporated in the River and Harbor Act passed by Congress on July 3, 1930.

12. There have been two subsequent reports on Brazos Island Harbor as follows:

(1) The report printed in House Document No. 10, Seventy-second Congress, first session, was a review of reports heretofore submitted with a view to determining whether the provision in the project adopted July 3, 1930, requiring the contribution of specific sums of money might be eliminated substituting therefor the provision that local interests contribute funds sufficient for the execution of either or both the channels to Port Isabel and to Brownsville, all other conditions of local cooperation heretofore established to remain in full force and effect. The district engineer's report submitted February

of the most important industrial centers in Mexico. With a atton of 132,577 in 1530, it was the third hugest city of Mexico. woorted that there, are over 500 factories located there. Ferthe largest single industry in the Mexican tributary area is Minerals and ores which are exported include gold and silver is refined lead and zine, lead and zine ore, iron are, and conver bound of the unites are operated in conjunction with smotress: bound of the unites are operated in conjunction with smotress is the foreign smollars or refuence. Major shipping points to foreign smollars or refuences Major shipping points to foreign smollars or refuences. Major shipping points arey. Mithough these points located on the National Haitways arey. Mithough these points located on the National Haitways are spect from Brownsville than to the Mexican port of Tamare spects from Brownsville. It appears reasonable to export, the the the form brownsville than to the Mexican port of Tamare spects from Brownsville. It appears reasonable to export, the the the form the port of the tameral products will be aread to espect from Brownsville. It appears reasonable to export, that the Mexican formetiment will take every possible action would the Mexican from the port of the commerce of

his the intunctions tributory area there are numerous cotton etable packing and canning plants, truit packing plants, e extraction plants, ice and cold-storage plants and several de-oil adments (turning plants)

ridges -- There are no bridges over the waterman

Prime remorks "The report printed in Rivers and Harbors outtoe Docurrent No. 16, Seventy-first Congress, second session review of reports previously submitted on Ernzes Island of Tex, by the Board of Engineers for Rivers and Harbars board's report submittied deep and 360 feet wide through Brazesion of a channel 25 feet deep and 360 feet wide through Brazesrego Pass, with jetty protection; a channel 25 feet deep and at wide from the pass to a point on the westerly side of Long et wide from the pass to a point on the westerly side of the soft feet sequence at Port Island Channel to and molecting a turning of set wide from the pass to a point on the westerly side of the systematic Pass-long Island Channel to and molecting a turning of wide from the read of the Brazos-Santiago Pass-Long Island and to and including a turning basin 1.000 feet square in the virmor wide from the read of the Brazos-Santiago Pass-Long Island of the sola including a turning basin 1.000 feet square in the virmor wide from the read of the Brazos-Santiago Pass-Long Island bein and the families of the above channels was to be subject thrownestile. Provision of the above channels was to be subject train conditions of local cooperation including the domation of the channel to Browneytile, and standed per function of both of the same of 82.175,000 before work would be underlevence by the Chief of Ergineers and a project embodying the dertakes on the channel to Browneytile, and stabled This recommendation of both of the same of 82.175,000 before work would be under-

thave been two subsequent reports on Brazos Island

The report printed in House Document No. 16, Seventy-second ress, first session, was a review of reports heretofore submitted a view to determining whether the provision in the project ted July 3, 1939, requiring the contribution of specific sums of runght be eliminated substituting therefor the provision that intervats centribute finds sufficient for the evicution of either all the channels to Port Isabet and to Brownsville, all either thious of local responstion heretofore established to remain in full and effect. The district conjucer's report submitted February 29, 1932, recommended the proposed modification of the project. This recommendation was concurred in by the division engineer, the Board of Engineers for Rivers and Harbors, and the Chief of Engineers. The Public Works Administration, May 24, 1934, and the River and Harbor Act of August 30, 1935, modified the project as recommended. (2) A review of reports with a view to determining if further im-

(2) A review of reports with a view to determining it interfer inteprovement of the harbor were advisable at that time was made by the district engineer under date of May 20, 1935. He recommended that the existing project be modified to provide for a depth of 28 feet in the jetty channel through Brazos-Santiago Pass, and that the deepening of the inside channels (the latter was the modification sought by local interests) await the completion and tryout of the existing project. This recommendation received the approval of the division engineer; the Board of Engineers for Rivers and Harbors while agreeing that the pass channel should be deepened to 28 feet expressed the opinion that this work could be provided under the existing project, and no modification of the existing project would be required. This opinon was based upon section 5 of the River and Harbor Act approved March 4, 1915, which reads in part as follows:

\* \* \* and the channel dimensions specified shall be understood to admit of such increase at the entrances, bends, sidings, and turning basins as may be necessary to allow of the free movement of boats.

The Chief of Engineers concurred in this opinion, and under date of February 20, 1937, authorized an increase in the dimensions of the channel at the entrance to Brazos Island Harbor to provide a depth of 28 feet.

13. Existing project.-The history of Federal assistance in improvement of the Brazos Island Harbor dates back to 1878, when an appropriation was made for removing a wreck from the channel between Padre Island and Brazos Island. The original project for improvement adopted in 1881 contemplated the construction of two jetties extending out into the Gulf of Mexico about 1,500 feet apart. Work was suspended in October 1884, and the subject of a new improvement was reported on by a board of engineers. The new project reported provided for two parallel jetties about 1,100 feet apart. Appropriations ceased in 1888. During the fiscal year 1905 a channel 70 feet wide on the bottom, with a least depth of 10 feet, was excavated from deep water inside the bar on a straight line across the Laguna Madre to the end of the railroad wharf at Port Isabel with a turning basin at its inner end. The River and Harbor Act of March 2, 1919, adopted a project providing for dredging a channel 18 feet deep at mean low tide and 400 feet wide through the entrance and its maintenance for a period of 5 years, the question of continuing or modifying the improvement to be then determined. Under this project two short stone dikes extending out into the Gulf were completed June 1927, one 1,400 feet long from Brazos Island and one 1,700 feet long from Padre Island. Some dredging was done between them and across the bar with a seagoing dredge to form the channel, but as the channel opened by this dredging soon shoaled up again the dredge was stopped January 1928, and no further dredging was done under the project. The costs on the original and modified projects prior to the adoption of the existing project in 1930 were \$675,855.30. In addition, \$123,361.67 was expended from contributed funds for new work.

14

BU 2008 ISLAND HARMON, TH

accommendation was concurred in by the division engineer, the recommendation was concurred in by the division engineer, the of Engineers for Rivers and Harbors and the Chief of Engineers, "ubic Warks Advantartion May 24, 1934, and the River and a 'Act of August 30, 1935, modified the propert as promumended. A review of reparts with a view to determining if further immont of the histor were advisable at that thus was made by attrict angueer mider date of May 20, 1935. He recommended he existing project he modified to provide for a depth of 28 het a jetty channel through Brazos-Santiago Pass, and that the origin of the inside channels (the latter was the modification at the cost interests) await the completion and type to be grouped. This recommendation received the approval of the agroect. This recommendation received the approval of the agroect the pass channels (the batter was the approval of the agroect in the pass channels (the provide to a depth of 28 het agroect in the pass channel should be deepened to 28 feet agroect. This recommendation received the approval of the agroect is point the pass channel should be deepened to 28 feet agroect is pass the pass the modification of engineers the Board of Engineers for Hivers and Harbors agroect is pass the pass channel should be deepened to 28 feet agroect is passed of the approval of the agroect is approved the this work could be provided under the agroect is passed the modification of the existing project would be agroect in the board of the existing project would be

\* and the channel dimensions specified shall be understood to admit of more at the enhances, bends, sidings, and turning basins as may be nec-

Chief of Engineers concurred in this opinion, and under data of ury 20, 1037, authorized an increase in the dimensions of the data the entrance to Brazos Island Harbor to provide a depth

Area the propert - The history of Federal assistance in improveof the Brazes Isiand Ifactor dates back to 1878, when an approtation was made for removing a wreck from the channel between adopted in 1881 contemplated the construction of two iptices dates can into the Guld of Mexico about 1,500 feet apars. Work appended in Detöcker 1884, and the subject of a new inprove contect on by a board of angineers. The new inproved reported dad for two partially jettics about 1,100 feet apart. Approprincessed in 1888. During the first year 1995 a channel 70 feet on the bottom, with a least depth of th feet, was excervited from and the bottom. The first year 1995 a channel 70 feet or and a the taile between a straight bur wross the Laguna Madro inner sud. The River and Harbar Act of March 2, 1319, adopted and 400 feet waits through the entrance and its maintenance for and 400 feet waits for and the straight bur wross the Laguna Madro inner sud. The River and Harbar Act of March 2, 1319, adopted at a 10 5 years. The question of continuing or monifying the imand 400 feet waits through the entrance and its maintenance for a straight bur wross the laguna Madro and 400 feet waits through the entrance and its maintenance for a do 1 5 years. The question of continuing or monifying the imant to be than determined. Under this project two short stone is dradging was done between them and across the bar with a strain on further dotaing was done between them and across the bar with a set of dedging was done between them and across the bar with a strain on further dotaing was done when the degree was stopped immary 1925, and in 1930 were stores to a dot on the dop at a many 1925, and in 1930 were stores to a strained the actions. The costs on a state that across the bar with a strained across the bar with a strained and an 1,700 feet long from the table. 14. The existing project for the waterway was authorized by the River and Harbor Act of July 3, 1930, which provided for the creation of a harbor for deep-draft vessels at Brazos Island, Tex., in accordance with the report submitted in Rivers and Harbors Committee Document No. 16, Seventy-first Congress, second session. The project so authorized provides for an entrance channel through Brazos-Santiago Pass 25 feet deep and 300 feet wide with jetty protection; for a channel 25 feet deep and 100 feet wide across the shallow waters of Laguna Madre to Long Island; thence branch channels 25 feet deep and 100 feet wide, one to Port Isabel with a 500-foot square turning basin at its extremity and the other about 14 miles in length to the vicinity of Brownsville with a 1,000-foot square turning basin at its extremity. The project was adopted subject to the following conditions of local cooperation:

(a) That local interests donate to the United States the north end of Brazos Island from a due east and west line 2,000 feet south of the old Coast Guard station, and the south end of Padre Island from a due east and west line 500 feet north of the quarantine station.

(b) That local interests give assurances satisfactory to the Chief of Engineers and the Secretary of War that suitable terminal facilities would be made available.

(c) That no work should be undertaken on the channel to Brownsville until the sum of \$2,175,000 had been contributed to the cost of the project and the necessary rights-of-way and spoil-disposal areas had been furnished free of cost to the United States.

(d) That no work should be undertaken on the channel to Port Isabel until the sum of \$450,000 had been contributed to the cost of the project and necessary rights-of-way and spoil-disposal areas had been furnished free of cost to the United States.

(e) That no work should be undertaken on any part of the project until local interests had contributed either or both of the sums aforesaid.

15. The act further provided that no expense should be incurred for the acquiring of any lands required to be donated to the United States for the purpose of this improvement or for other purposes; that the channel from the inner side of the pass to Long Island and thence to the turning basin near Brownsville should be situated entirely in what is known as the Brownsville navigation district, and should take the most direct practicable route toward Brownsville; that if both the Brownsville and Port Isabel channels and turning basins were to be constructed, the amount to be contributed in cash by local interests should be the sum of \$2,425,000 thus avoiding duplication of the expense of constructing the channel from the inner side of the Pass to Long Island, estimated at \$200,000; and that the width of any or all inner channels may be widened at any time provided such proposed widening meets the approval of the Chief of Engineers and all expense incident thereto is paid by local interests.

16. Holding that the sums of money specified for their contribution to the cost of the project represented the cost of the interior channels, local interests requested modification of the project authorized by the act so as to eliminate the provision requiring the contribution of specific sums of money and to provide in lieu thereof that local interests contribute funds sufficient to cover the entire cost of the original dredging of all channels and turning basins inside the entrance channel

13

# BRAZOS ISLAND HARBOR, TEX.

14. The existing project for the waterway was authorized by the ver and Harbor Act of July 3, 1930, which provided for the erration a harbor for deep-draft vessels at Brazos Island. Tex., in accordance the the report submitted in Rivers and Harbors Committee Docuant No. 16, Secenty-first Congress, second session. The project so therized provides for an entrance channel through Brazos-Sanihago (25) feet deep and 300 feet wide with jeity protection; for a chaner 25 feet deep and 100 feet wide with jeity protection; for a chandre to Long Island; thence branch channels 25 feet deep and 100 wide to Long Island; thence branch channels 25 feet deep and 100 wide to Long Island; thence branch channels 25 feet deep and 100 featively with a 500-foot square turning basin at extremity and the other about 14 miles in length to the vicinity Brownsville with a 1,000-foot square turning basin at Brownsville with a 1,000-foot square turning basin at the project was adopted subject to the fellowing conditions of local provides the statice to the fellowing conditions of local

c) That lecal inforests domate to the United States the north end brazos Island from a due east and west line 2,000 fort south of the Coast Guard station, and the south end of Padre Island from a line 200 feet method of the mutanting station.

) That local interests give assumices satisfactory to the Chief of meers and the Secretary of War that suitable terminal facilities to be a satisfied.

) That so work should be undertaken on the channel to Brownsuntil the sum of \$2,175,000 had been contributed to the cost of project and the necessary rights-of-way and spoil-disposal areas been formished free of cost to the United States.

hat no work should be undertaken on the channel to Port mult the sum of \$450,000 had been contributed to the cost of feel and necessary rights-of-way and spoil-disposal areas had

Fast no work should be undertaken on any part of the project cal interests had contributed either or both of the sums afore-

The act further provided that no expense small be incurred a acquiring of any lands required to be donated to the United be channel from the inner side of the pass to Long Island and be channel from the inner side of the pass to Long Island and by in what is known as the Brownsville anvigation district, and by in what is known as the Brownsville anvigation district, and d bath the Brownsville and Fort Isabel channels and turning a vere to be constructed, the amount to be contributed in cash intervention of the expense of constructing the channel from the invercal intercests should be the sum of \$2,\$25,000 thats avoiding ation of the expense of constructing the channel from the inveration of the Pass to Long Island estimated at \$200,000 and that the of any or all inner channels may be with the four the Chief of a such proposed widening meets the approval of the Chief of ever to the proposed widening meets the approval of the Chief of a such proposed widening meets the approval of the Chief of a such proposed widening meets the approval of the Chief of ever to the proposed to money specified for their contribution of any or all inner channels may be with the bas avoiding as to clining that the sums of money specified for their contribution ever to the proposed the provision requiring the contribution of any or all expense incident thereto is paid by local interests. A cost of the project represented the cost of the unterimeters of as to eliminate the provision requiring the contribution of as to eliminate the provision requiring the contribution of a contribute tunds affective in liner the contribution of a super dimension of the project sufficient of an ordinate the provision of a super of money and the provision requiring the contribution of a super dimension of the project sufficient of the original is contribute tunds affective the contribution of a super dimension of the project sufficient of the original to a super dimension of the project of the original to be a sufficient of the original to be a super through Brazos-Santiago Pass. The Chief of Engineers recommended the proposed modification under date of April 2, 1932, as set forth in House Document No. 10, Seventy-second Congress, first session, providing that no work should be undertaken on the channel through the Pass until local interests had contributed sufficient funds for the execution of either or both the channels to Port Isabel and to Brownsville, all other conditions of local cooperation previously established to remain in full force. The Public Works Administration, May 24, 1934, and the River and Harbor Act of August 30, 1935, modified the project as recommended.

17. As set out in paragraph 12 (2), the Chief of Engineers under date of February 20, 1937, authorized an increase in the dimensions of the channel at the entrance to Brazos Island Harbor to provide a depth of 28 feet without modification of the existing project.

18. Under this project the channel from inside Brazos-Santiago Pass to Long Island, and thence to a turning basin 600 feet wide and 700 feet long at Port Isabel, was completed in September 1933 with funds contributed by the Port Isabel and San Benito Navigation District including funds necessary for increasing the size of the turning basin from 500 feet by 500 feet to 600 feet by 700 feet. The jetties were completed in February 1935 and the jetty channel was completed in the summer of 1935 under the Public Works program authorized by the National Industrial Recovery Act. The dredging of the Brownsville Channel, carried on with funds contributed by the Brownsville Navigation District, was completed in February 1936. This dredging included a 1,000-foot wide by 1,300-foot long turning basin near Brownsville: Under the adopted project the Government is charged with the maintenance of the several channels of the waterway. The channel between Port Isabel and the pass was redredged in February and March 1935 for the first time since its completion at a total cost of \$80,606.08. It is probable that the necessity for a major part of this maintenance dredging resulted from storm damage as this channel experienced three tropical hurricanes during the summer of 1933. Again in January 1936 the channels from Port Isabel to Long Island and from Long Island to the pass were redredged, this time at a cost of \$41,899.33. In February and March 1936 the point between the Port Isabel and Brownsville Channels was dredged away at a total cost of \$18,305.31. Subsequent to its completion in February 1936 a dredge was employed in maintenance of the Brownsville Channel from March to June at a cost of \$133,290.47. The total cost of permanent work on Brazos Island Harbor to February 1, 1937, was \$5,851,292.49 of which \$5,398,749.71 was for new work and \$452,542.78 was for maintenance; these sums include all funds, both governmental and contributed, for both the existing and previous projects. Costs of the present project include Government funds of \$2,916,275.04 for new work and \$452,542.78 for maintenance, and contributed funds of \$1,683,257.70 for new work. The approved annual maintenance cost of the adopted project is \$150,000.

19. Local cooperation.—The River and Harbor Act of July 3, 1930, which authorized the project for a 25-foot channel for the waterways of the Brazos Island Harbor required that certain local cooperation be provided as a condition precedent to beginning work on the project. The items required are listed in paragraphs 14 and 15. Subsequently, that provision which required that specified sums of money Incompt Manzos-Summing Pass. The Coher of Engineer's recommended the proposed modification under date of April 2, 1932, as set forth in House Document No. 10, Seventy-second Congress, first session, providing that no work should be undertaken on the channel through the Pass until local interests had contributed sufficient funds for the execution of either or both the channels to Port Isabel and to Brownsfile, all other conditions of local cooperation put the brownsremain in full force. The Public Works Administration, Xiay 24, 1934, and the River and Harbor Act of August 30, 1935, modified the project as recommended.

17. As set out in paragraph 12 (2), the Chief of Engineers under late of February 20, 1937, authorized an increase in the dimensions of he channel at the entrance to Brazos Island Harbor to provide a cuth of 28 feet without modification of the existing project.

18. Under this project the channel from inside Brazos-Saftinge bass to Long Isiand, and Iliance to a turning basin 600 feet wide and 00 feet long at Port Isabel, was completed in September 1923 with muck contributed by the Port Isabel and San Bemito Navigation on the summer of 1935 under the Polkic Works program authorized by are completed in February 1925, and the jetty channel was completed in the summer of 1935 under the Polkic Works program authorized by a the summer of 1935 under the Polkic Works program authorized by de Channel, carried on with funds contributed by the Brownsde Channel, carried on with funds contributed by the Brownsing Channel, carried on with funds contributed by the Brownsde Channel, carried on with funds contributed by the Brownsde Channel, and the several channels in Schwarzy 1935. This dredging a binded a 1,000-foot wide by 1,300 foot fung Leming basin near thill the maintenance of the several channels of the Wavery of the brownset the theory of the several channels of the wateryary. The distribute the several channels of the wateryary is a first the maintenance of the several channels of the wateryary. The distribute matter for the adopted from store damage as the channel distributes are channels that the necessity for a major part of distributes are the several than store damage as the consperienced three tropical that the necessity for a major part of distributes are belowed in matteriang the summer of 1953 and from Lamy 1830 (3). Subsequent to its completion in February and from Lamy 1830 the phase were redreiged, this time at a cost of distributes are sheared to the pass were redreiged, the time at a cost of distribute three tropical mantenance of the Brows at a total cost of \$853,336,31. Subsequent to its completion in February 1935 and distribute to the seven of stars 200 fr. The total east of permanent mat from the total mantenance of the Brows with ether and total distributes the stars of \$133,390 fr. The total east of permanent mat from the stars (\$853,236,31. Ne

19. Local cooperation. — The River and Hurber Act of July 3, 1930, birth authorized the project for a 25-foot channel for the waterways the Brazos Island Harber required that certain local cooperation of Brazos Island Harber required to beginning work on the projection to the items required are fisted in paragraphs 14 and 15. Sabsectively, that provision which required that specified sums of money.

# BRAZOS ISLAND HARBOR, TEX.

be contributed to the cost of the project was modified upon recommendation of the Chief of Engineers under the Public Works program, as contained in House Document No. 10, Seventy-second Congress, first session, to provide that instead of specific sums of money local interests should contribute funds sufficient to cover the entire cost of the original dredging of all channels and turning basins inside the entrance channel at Brazos-Santiago Pass. This recommended modification provided further that no work should be undertaken on the channel through the pass until local interests had contributed sufficient funds for the execution of either or both the channels to Port Isabel and to Brownsville. As modified, all the requirements for local cooperation were complied with.

20. Other improvements.—In addition to finishing the shipping terminal, the Port Isabel-San Benito Navigation District, at a cost of about \$9,000, completed in September 1933, a channel 12 feet deep and 120 feet wide, connecting the turning basin with the private channel along the south side of the town of Port Isabel and the yacht basin, a distance of about one-half mile.

21. Terminal and transfer facilities.—Terminal facilities located along the Port Isabel turning basin include a steel sheet-pile wharf about 550 feet long provided with a 100 by 300-foot sheet-metal transit shed, a corn elevator of 50,000 bushels capacity, a 100 by 300-foot sheet-metal warehouse, a concrete and sheet-metal plant for precooling perishable products with a capacity of 24 cars every 10 hours. An oil refinery of 5,000-barrel capacity and a tank farm with a storage capacity of 264,000 barrels are located near the turning basin. The refinery is served by a pipe line with a capacity of 6,000 barrels per day from the oil fields at San Fordyce in Hidalgo County. There is an oil dock 300 feet long on the turning basin equipped for receiving and loading oil cargoes.

22. Terminal facilities at Brownsville include three concrete wharves each approximately 400 feet long along the north side of the turning basin, two of which are provided with sheet-metal transit sheds each approximately 80 feet wide and 400 feet long. To the eastward of the general cargo terminal there is a creosoted-pile oildock for loading and unloading both crude oil and refined oil cargoes. Departmental permits have been issued for the construction of another 440-foot wharf at the west end of the turning basin and it is understood that a 120- by 400-foot transit shed is to be built at this wharf.

23. All docks and wharves at both of the terminals are equipped with fresh water and electricity. The Port Isabel terminal has excellent facilities for bunkering ships. Both terminals have railroad and highway connections and are open to the public on equal terms.

24. Improvements desired.—In order to allow all interested parties to present their views concerning modification of the existing project for Brazos Island Harbor and to develop what local cooperation could be relied upon the district engineer held a public hearing in the city of Brownsville, Tex., on January 20, 1937. Notices of the hearing, dated December 24, 1936, were sent to all organizations, agencies, and persons believed to be interested.

25. A full report of this hearing is presented as appendix  $2^{1}$  herewith. Exhibit  $1^{-1}$  of the report is a copy of the notice of public hearing and a list of parties to whom the notice was sent. A list of those present at

counter 73877

<sup>1</sup> Not printed.

16

### RAZOS ISLAND, HARBOR, TEX.

be contributed to the cost of the project was maduated upon recommendation of the Chief of Engineers maler the Public Works program, as contained in House Document No. 10, reventy-second Congress, first session, to provide that instead of specific sums of money local interests should contribute funds sufficient to cover the entire cost of the original 'dredging of all clannels and turning basins inside the entrance channel at Brazos-Santiago Pass. This recommended modification provided further that no work should be indertaken on sufficient funds for the cast of the channels to cover the entire cost of sufficient funds of the pass with local interests had contributed the channel through the pass with local interests had contributed sufficient funds for the execution of either or both the channels to Port local cooperation were complied with.

20. Other improvements. In addition to limiting the shipping terminal, the Fort Isabel-San Benito Navigation Eastriet, at a cost of about \$9,000, completed in September 1933, a channel 12 feet deep and 120 feet write, connecting the turning basin with the private channel slong the south side of the town of Fort Isabel and the yacht basin, a distance of about one-half mile.

21. Terminal and transfer facilities.—Terminal facilities located along the Port Isabel turning basin include a steel sheet-pile wharf about 550 feet long provided with a 100 by 300-foot sheet-metal transit shed, a corn elevator of 50,000 bushels capacity, a 100, by 300-foot sheet-metal warehouse, a concrete and sheet-metal plant for precooling perishable products with a capacity of 24 ears every 10 hours. An oil refinery of 5,000-barrel capacity and a tank farm with a storage capacity of 264,000 barrels are located near the turning basin. The refinery is served by a pipe line with a capacity of 6,000 barrels per day from the oil fields at 5an Fordive in Hadalgo County. There is an oil dock 300

22. Terminal facilities at Brownsville include three concrete wharves each approximately 400 feet long along the north side of the turning basin, two of which are provided with sheet-metal transit sheds each approximately 80 feet wide and 400 feet long. To the eastward of the general cargo terminal there is a creesoted-pile oildock for loading and unloading both crude oil and refined oil cargoes. Departmental permits have been issued for the construction of another 440-foot wharf at the west end of the turning basin and it is understood that a 120 for the what have been issued for the construction of another sto-foot of the west end of the turning basin and it is understood that a

23. All docks and wharves at both of the terminals are equipped with fresh water and electricity. The Port Isabel terminal has excellent facilities for bunkering ships. Both terminals have railroad and high-

24. Laprecements desired — In order to allow all interested parties to present their views concerning modification of the existing purject for Brazos Island Harbor and to develop what local cooperation could be relied upon the alisticit engineer hold a public hearing in the city of Brownsville, Tex., on January 20, 1937. Notices of the hearing, dated December 24, 1936, were sent to all organizations, agencies, and

25. A full report of this hearing is presented as appendix 2' herewith. Schibit 1 ' of the report is a copy of the notice of public hearing and a ist of parties to view the notice was sent. A list of those present at the hearing is contained in a preface <sup>1</sup> to the report which presents in full the evidence developed at the hearing. Attached thereto as exhibits 2 to 7,<sup>1</sup> inclusive, are the letters and briefs submitted in support of statements made at the hearing, or forwarded for inclusion by parties unable to be present.

26. The manager of the Continental Steamship Co. in a letter (enclosed as exhibit 2)<sup>2</sup> stated that vessels of this company which operates tankers between various Gulf and North Atlantic ports had during 1936 made 13 trips into Port Isabel to load. These tankers, with an average loaded draft of approximately 28 feet and an average width of 55 feet, due to the shallowness of the channel had been forced to restrict their draft to 25 feet; on several occasions the vessel had been forced to go to Corpus Christi to complete loading. Such restriction had thus resulted in 2 days' lost time on the ship for each such trip, considerable additional port charges, and to Port Isabel a reduction in cargo shipments. He, therefore, advanced the opinion that a channel less than 35 feet deep and 300 feet wide is inadequate for tanker service, and that, as a result of their inadequate channels, the ports of Brownsville and Port Isabel are at a distinct disadvantage as compared to other Gulf ports.

27. A letter from Moore & McCormack Co., Inc., steamship agents, of New York City, who have a branch agency in Brownsville is enclosed as exhibit 3.1 In this letter it is stated that as operators and owners of the Mooremack Gulf Lines-a steamship freight service which operates a total of 12 or 13 ships between United States Atlantic and Gulf ports-they are keenly interested in the enlargement and deepening of the channel through the pass, the channels to Port Isabel and Brownsville, and their turning basins. Their larger steamers are vessels of 8,000 tons deadweight capacity, approximately 400 feet in length, with a draft of over 27 feet aft when loaded. Under their present schedule (a copy of their January schedule is attached to the letter) they have at least one ship into Brownsville and Port Isabel each week. These vessels, it is stated, have experienced considerable difficulty and delay because of the limited depth of the channels, particularly in the pass during rough weather, and because the narrow inside channels preclude vessels passing each other. The narrow width together with the channels being unlighted, it is stated, prevent navigation of these waters by night.

28. Exhibit 4<sup>4</sup> is a letter dated January 12, 1937, from the Coastal Refineries, Inc., which, since December 1935 has been operating a refinery with a plant capacity in excess of 150,000 barrels per month. This refinery handles the entire output of the Sam Fordyce oil field. In 1936 it shipped by water from Port Isabel 1,776,650.70 barrels of petroleum and petroleum products. It states that under existing contracts it will purchase all crude oil produced in the Sam Fordyce field for the 2 years beginning January 1, 1937, and will transport this oil by pipe line to Port Isabel whence its products will be shipped by water. It expects such shipments to approximate 2,000,000 barrels per year. Due to the limiting depth of 25 feet, tankers engaged in this shipping during 1936 were forced to move out only partly loaded. The average tanker, it is stated, has a capacity of 75,000 barrels and a draft up to 32 feet when fully loaded. Tankers cannot load more

counter 13878

L1 No. printed.

<sup>144967-37-2</sup> 

reiderable additional port charges, and to Port Lantet a reduction of go shipmarts. Als, therefore, advanced the opinion that a channes than 35 dect deep and 300 feet wide is incidents for tanker ser

than 53,000 barrels or to a draft exceeding 25 feet, with the existing channel depths. This results in increased transportation charges, and the ports of Port Isabel and Brownsville cannot properly compete with other Gulf ports. The company therefore recommends that the channels to Brownsville and Port Isabel be deepened to a minimum depth of 34 feet so as to provide a minimum of 32 feet usable water, and that the turning basin at Port Isabel be both widened and lengthened so as to permit the safe maneuvering of vessels at least 485 feet in length.

29. A letter from C. D. Mallory & Co. (exhibit 5)<sup>1</sup> states that this company operates 17 large oil tankers, each capable of carrying over 1,000,000 barrels of oil a year in the United States Gulf to north of Hatteras trade. One of these vessels is now under charter to the Petroleum Heat & Power Co., Inc., which is interested in the move-ment of oil from Port Isabel. The company states in the letter that it had been advised by an oil company that if the channel were deepened sufficiently to permit deep-draft vessels to load full cargoes, production would be increased to a volume requiring the services of this and several other large tankers. C. D. Mallory & Co., therefore, urges that this channel be deepened to a minimum draft of 30 feet, as it is an improvement which should result in the increasing of shipments of petroleum, and its products, and dry cargoes from the Browns-

30. Mr. R. F. Ransome, attorney for the Brownsville Navigation District, presented at the hearing a brief prepared by that organization requesting the deepening and widening of the Brownsville Channel. This brief, attached as exhibit 6,1 outlines specific instances from actual experience in the use of the channel, during the 8 months since its opening, where extra depth and width has seemed to be necessary. Enclosed as a part of the brief are letters from interested

(a) The Board of Underwriters of New York through its surveyor at Brownsville, recommends the widening by at least 100 feet, deepening to 32 feet and cutting away of points of sharp turns of the Brownsville Channel, citing specific instances of delays occasioned by the inability of ships to pass in the present channel, and the difficulties imposed by the 25-foot depth. It states that from an insurance point of view the hazard to ship and cargo would be greatly reduced by the proposed improvements.

(b) Capt. Joe A. Kelly, branch pilot of the Brazos-Santiago pilots, urges the same improvements as recommended by the Board of Underwriters of New York, stating that on several occasions the pilots had been forced in the interest of safety, on account of the shallow narrow channels combined with unfavorable wind and tide conditions, to hold up ships that were waiting to enter the Pass or leave the port.

(c) Capt. A. D. Shaw, another branch pilot of the Brazos-Santiago pilots, stated that with the present width it is very difficult to navigate the channel during a moderate to hard breeze because of the danger of the ship sheering into the bank, and that it is, therefore, often deemed advisable to delay the ship movement until favorable weather occurs for navigating the channel. Further delay is frequent because the channel is too narrow for ships to pass each other. There are three turns in the channel where, with its present width, it is very

counter \$3879

1 Not printed.

18

than 25 the barrels of to a draft exceeding 25 feet, will the existing channel depths. This results in increased transportations charting the table other Guid parts. The company therefore recommends that the chanother Guid parts. The company therefore recommends that the chanor of 34 feet act as to provide a and Port Isabel by deciprote valid of 34 feet act as to provide a minimum of 32 feet usable water, and that the tuming basin at Port Isabel be both wildowed and tengthened so 28 A tetter from C. D. Mallory & Co. (exhibit b) states that this common operates to increase of unkers, each canable water and that 1 000 000 barrels of all a year in the Lonted States that this 4 fatters trade. One of these ressols is arow under charter to the 1 and 000 000 barrels of all a year in the Lonted States that this 4 fatters trade. One of these ressols is arow under charter to the 1 and the differents that for the states of the movies of the trade of the state restored in the Lonted States that this 1 and the differents of the state of these ressols is arow under charter to the 1 and the different from C. D. Mallory & Co. (exhibit b) states that this 1 and the differents that this the state is the there to the 1 and the different form the ball of the company states in the leater that 1 ind been advised by an oil company that if the charter to the 1 ind second the interpreted to a volume that this envices all the 1 ind second the interpreted to a volume that the envices at the 1 ind second the interpreted to a volume that the services at his 1 ind second the interpreted to a volume the states in the leater that 1 is a the this charmed by the behavior of the services at his 1 is an induction would be interpreted to a volume that the services at his 1 is an interpreted of the interpreted to a volume the interpreted of the 1 and services that this charmed be deepended to a water and the services at his 1 and services that the charmed be behavior of the signal result in the interpreted of the 1 and services that the charme

30. Mr R F Ransome, althoritor for the Brownsville, Natignation District presented at the behavior a brief prepared by that organize that requesting the deepening and subjening of the Brownsvelle Chanbel This brief, attached as axidenia is, conduces specific instances reas argued experimence in the one of the channel, furthg the S months are: Fredomer, where extra depth and width inst secured to be necestary. Knelosed as a part of the brief are letters from interested partice as follows:

(a) The Board of Unicervitiens of New York through its surveyor at Brownsvills, preminends the widening by at least 100 feet, deepemmy to 32 feet and cutting ewery of points of sharp times of the Brownsville Chandel, citing specific instances of delays occasioned by the installity of sings to mass in the present channel, and the difficulties imposed by the 25-foot depth. It states that from an inspirative point of view the hazard to ship and rargo would be greatly reduced by the proposed impure engents.

(6) Capt. Lee A. Kelly, branch pilot of the Brazos-Sentiago pilots, urves the same nuprocements as recommended by the Board of the traces the same nuprocements as recommended by the Board of pilots that been forest in the interest of safety, on account of the shallow narrow channels combined with unformable wind and tida conditions, to hold up ships that were waiting to caller the Pass or how with unformable wind.

(c) Cant A. P. Shan, another branch pilot of the Benzos Santiarer pilots stated that write he greecut width it is very difficult to masignto the channel during strateher greecut width it is very difficult to masign of the ship sheeting untoughe bank, and that it is, therefore, often berned advisable to delay, or ship novement until favorable eventher oversitier maxignore the groomed. Further delay is frequent here use the channel is too masing or sings to pass cuff other. There are drive turns in the channel when with its unseend width. It is tree former are the stated of the place with the unseend width. It is tree the channel is too masing or sings to pass cuff other, this is tree drive turns in the channel where with its unseend width. It is tree in the state turns in the channel where with its unseend width. difficult and hazardous to ravigate with a long ship of deep draft. He, therefore, recommends increasing the depth to 32 feet below mean low tide, increasing the bottom width an additional 100 feet, and easing the turns.

(d) The master of the steamship *Texas Trader*, of the Newtex Steamship Corporation, recommends the widening of the channel to permit two-way traffic.

(e) Lallier & Co., steamship agents, with offices in Brownsville and Port Isabel, in a series of letters to the director of the port at Brownsville cites specific instances of difficulties encountered in navigating the channel by ships chartered by them, and difficulties experienced in chartering refrigerator ships for exporting citrus fruits to European ports; all because of the limiting width and depth of the channel. They recommend a 32-foot channel with sufficient width to permit two full-sized ships to pass each other.

(f) Philen, Miller & Co., steamship agents, with headquarters in Brownsville, relate similar difficulties in persuading steamship lines to make Brownsville a port of call, and relate specific instances of difficulties encountered by ships operating under their charter. They anticipate that a channel with a 200-foot bottom width, 32-foot depth; and with easy turns would solve their difficulties.

31. In view of the difficulties cited by these letters and other difficulties not cited, and in view of the fact that the tonnage handled through the port of Brownsville in the 8 months of its use had exceeded the anticipations, as set forth in the original brief covering the request presented at the hearing held in 1929 for the construction of the port (the brief submitted in connection with the proposed further improvement of Brazos Island Harbor which was covered in the district engineer's report dated May 20, 1935, contained a transcript of the proceedings of this hearing. A copy of this brief was included as an exhibit to the current brief by the Brownsville navigation district), and further considering that considerable additional business (principally goods for export to foreign countries, in which traffic boats drawing from 26 to 30 feet or more are necessary for safe navigation) tendered the port had to be refused because of the inadequacy of the channel, the Brownsville navigation district feels the improvement of the Brownsville Channel to be justified and recommends that the channel be deepened to 32 feet and widened sufficiently to permit the ready passage of ships.

They point out the fact that the cooperation promised in the construction of the present channel to Brownsville and through Brazos-Santiago Pass had been fully complied with, that the promised terminal facilities had been provided and construction now being pushed would increase the capacity 33½ percent or more. They state that the district had borrowed from the Federal Emergency Administration of Public Works moneys needed for terminal facilities and the contributions to the costs of the channels and, having pledged a large part of its future taxes and income to take care of this obligation, it was without funds to contribute to the proposed channel improvements. Mr. Ransome stated that the district could, however, be counted upon to provide the rights-of-way and spoil-disposal areas necessary to the proposed improvement. They also point out that their competing ports, Tampico and Vera Cruz in Mexico, and their

1 Not printed.

war mennen uzvist sozvat

difficult and hazardons to 1 avigate with a tong sam of deep draft. Flo, therefore, recommends increasing the depth to 32 feet below mean low tide, increasing the bottom width an additional 100 feet, and easing the turns.

(d) The master of the steamship *Pears* Trader, of the NewLey, Steamship Corporation, recommends the widening of the channel to account motivary traffic

(c) Lalliet & Co., steamship agents, with affeces in Brownsville and Port Isabek in a series of letters to the director of the port at Brownsrille cites specific instances of difficitlities encountered in navigating the channel by ships chartered by them, and difficulties experienced reflactoring refrigerator ships for experience of the future of the orts; all because of the luming width and depths of the channel. They recommend a 32-foot channel with sufficient width to period.

(i) Philes, Miller & Co., Stemiship agents, with hendeparters in newnsville, relate similar difficulties in persuading steamship lines to aske Brownsville a port of cali, and relate specific instances of diffiulties encountered by ships operating under their churter. They attice that a channel with a 200-foot bottom width, 32-foot depth.

ud with easy brins would save iter numerates 31. In view of the difficulties divel by these letters and other diffiinterest and ented, and in X iew of the fact that the bounge handled brough the port of Brownsville in the S honths of its its had not evereded its anticipations, as sat forth in the original brief covering the request the brief sthadilied in connection with the proposed further improvenear of Brakos Island Harlor which was covered in the district engitert of Brakos Island Harlor which was covered in the district enginear of Brakos Island Harlor which was covered in the district engiectings of this iscening. A copy of this brief vas included as an thilling to the current brief by the Brownsville mavigation district), and farther considering that considerable additional trainics (purposition the current brief by the Brownsville mavigation district), and farther considering that considerable additional trainic bouts in farther considering that considerable additional trainic bound there is the Browns is the toright of the encodes of the intertext there is the Browns is the considerable additional the surest there is the Browns is the considerable additional theores (purposition district), and the second to for the encodes and the promaterial the Browns is the osting the terms of the intertext on the sectored the post had to be refused because of the intertion of the problement, the Browns is the osting the average of the intertext of the themes, the Browns is the osting of the district (ode the improvement future is second to 52 feet and widened sufficiently to permit the

They point out the fact that the cooperation promised in the construction of the present channel to Brownsville and through Brazos-Stantiago Pass had been provided and construction now being thrannal facilities had been provided and construction now being pushed would increase the capacity 3.7% percent or more. They shate that the district had borrowed from the Federal Emergency A fiministration of Pablic Works moneys medeed for terminal facilities and the contributions to the costs of the channels and, having pledged is large part of its fature taxes and income to take care of this abligation, it was without funds to contribute to the proposed channel improvements. Mr. Ransone stated that the district could, however, the counted apon to provide the rights-of-way and spoil-disposal areas an eccessary to the proposed improvement. They also point out that the counted apon to provide the rights-of-way and spoil-disposal areas BRAZOS ISLAND HARBOR, TEX,

20

domestic competitors, the ports of Houston, Galveston, and Corpus Christi, all have greater depths largely paid for by the respective Federal governments.

32. Judge James Q. Louthan, counsel and general manager for the Port Isabel-San Benito navigation district, submitted a brief covering the improvements desired by this district. This brief, attached as exhibit 7,<sup>1</sup> urges that (1) the channel through Brazos-Santiago Pass be dredged to and maintained at a depth of 34 feet; (2) the channel from the pass to and including the turning basin at Port Isabel be dredged and maintained at a depth of 32 feet; (3) the Port Isabel Channel be widened between stations 14+000 and 17+000; and (4) the turning basin area be increased to the east and south to provide a basin 800 feet square.

33. In support of their contention that these improvements are needed and justified the district points out—

(a) That the bar at Brazos-Santiago Pass is considered one of the roughest on the Texas coast and that during rough weather the water level in the pass is subject to sudden changes of as much as 5 or 6 feet, and during strong northerly winds the water surface in that portion of the channel in Laguna Madre may be depressed as much as 2 feet below mean low tide. Capt. A. D. Shaw, branch pilot of the Brazos-Santiago pilots, stated at the hearing that navigation during rough weather was very difficult and dangerous and recommended as necessary for safe navigation the deepening of the channel in the pass to 35 feet, easing of the turn at the inner end of the pass, deepening of the channel from the pass to Port Isabel to 32 feet, and widening it at least another 100 feet. He further recommended enlarging the Port Isabel turning basin to the same size as that at Brownsville.

(b) That since October 23, 1935, 69 vessels have called at Port Isabel for petroleum and petroleum products. The loaded capacities of these vessels ranged from 30,000 to 90,000 barrels with lengths up to 435 feet and drafts to 29 feet. The 25-foot channel prevented their loading to capacity, and the tankers with a total capacity of 2,437,000 barrels were loaded with only 1,831,223.7 barrels, a loss of more than a fourth of their capacity. Coastal Refineries, Inc., have the only refinery and the only pipe line in the valley. Mr. James L. Sewell, manager, stated at the hearing that this refinery was handling all the oil now produced in the Sam Fordyce field and would process any additional oil it could secure. Its pipe line with a present capacity of 6,000 barrels per day could be altered to carry as much as 10 or 12 thousand barrels if the allowable production for the field were inereased, or if new fields should be developed.

(c) That Port Isabel has more than adequate terminal facilities, that it has the only precooling plant for vegetables on the Texas coast, and is equipped to handle properly the increased commerce which it anticipates the improved channel would bring. Having practically exhausted its funds in providing these facilities, and in making its contribution toward the costs of the existing channels, the district states that it cannot contribute funds for the proposed improvements but that the rights-of-way and areas for spoil disposal provided for the existing channel are available and sufficient for the proposed work. 34. In a letter to the district engineer doted Fabrers of the district for the proposed work.

<sup>34</sup>. In a letter to the district engineer dated February 25, 1937, the Port Isabel-San Benito navigation district supplemented the state-

counter 73881

W.F

# BRANSS INLAND HARDER, TEX.

mestic competitors, the parts of Houston, Galveston, and Corpus risit, all have greater depths largely paid for by the respective detal governments.

32. Judge James Q. Louthan, counsel and general manager for the ort Isabel-San Benute navigation district, submitted a brief, envering a unprovements desired by this district. This brief, entarched as dainst 7 arges that (1) the channel through Brages-Santiago Pass of the desired to and mantained at a depth of 34 feet; (2) the channel on the pass to and including the turning basis at Port isabel he edged and maintained at a depth of 32 feet; (3) the Port Isabel manuel be widened between stations 14-4000 and 17-4000; and (4) e turning basis area be increased to the cast and south to provide a entroing basis area be increased to the cast and south to provide a run S00 fort equare.

3. In support of their contention that these improvements are ded and justified the district names out i.

(a) That the bar at Brazos-Santiago Pass is considered one of the applest on the Texas coast and that during rough weather the orter level in the pass is subject to addee changes of as much as not level in the pass is subject to addee changes of as much as or 6 feet, and during strong northerly winds the water surface in all portion of the channel in Laguna Matire mux he depressed as not bars? For being mean low tide, Capt. A. D. Shaw, humen here or of the Brazos-Santiago pilots, stated at the hearing that navigation of the Brazos-Santiago pilots, stated at the hearing that navigation and during rough weather was very difficult and dangerous and commended as necessary for safe mygation the deepaning of the texand in the pass to 35 leet ceasing of the turn at the inner cud of the bass, deepening of the channel from the pass to Port Label to the the and widening it at best another 100 feet. He further recombrace and widening the Port Isabel turning basin to the same size as the forward recombrace and the same size as the forward recombrace and the turn at the further recombrace and widening the Port Isabel turning the fort label turning the the fort label to the turn at the further recombrace and widening the Port Isabel turning the Port Isabel turning the turn the turn at the further recombrace and the turn at turn at the turn at t

(b) That since October 23, 1935, 60 vessels have called at Port ibel for petroleans and petroleum products. The loadest capacities these vessels ranged from 30,000 to 90,000 harrels with lengths ap 435, feet and drafts to 29 feet. The 25-doot channel pertanted ar loading to capacity, and the trankers with a total capacity of 37,000 harrels were loaded with only 1,831,223.7 harrels a loss of are than a fourth of their capacity. Coastal Refineries, Inc., have be only reflucey and the only pipe line in the valley. Mr James L, weil, manager, stand at the bearing that this refinery was handling to only reflucey and the only pipe line in the valley. Mr James L, and in one produced in the Som, Fordyce field and would process to only refluce per day could be affered to carry as much as 10 or 12 weak and herrels for the could be affered to carry as much as 10 or 12 magnet herrols for day could be affered to carry as much as 10 or 12

e) That Fort isaitely has more than adequate terminal facilities, is it has the only preceding plant for vegetables on the Texas coast, it is canipped to immelic properly the increased commerce which it incipates the immoved channel would bring. Having practically acosted the function providing these facilities, and in making its derivation toward the costs of the existing channels, the district is that it connot contribute funds for the proposed improvements whing that the rights-of-yay god areas for the proposed improvements wing channel are available and sufficient for the proposed work. ments made in its brief with reference to local cooperation by suggesting that:

\* \* \* if the funds necessary to be expended in making the whole requested improvement are not at this time available, the Government proposes to provide a depth of 34 feet of water through Brazos Santiago Pass and 32 feet through the waters of Laguna Madre and to the west side of Long Island, upon condition that Port Isabel furnish the funds to defray the cost of providing a depth of 32 feet of water through its separate channel from Long Island to and including its turning basin or that Brownsville furnish the funds to defray the cost of providing a depth of 32 feet of water through its separate channel from Long Island to and including its turning basin.

35. Commerce.—Prior to 1934 the only traffic in the vicinity of Brazos Island Harbor was carried on by the small fishing boats operated in the Laguna Madre. During 1934 there was some traffic through the partly completed channel through the Pass and through the completed inside channel to Port Isabel. Considerable traffic was handled over the inside channel from the Pass to Port Isabel by the contractors engaged in the construction of the jetties and lighthouse structures and in the dredging contracts. The total freight traffic utilizing the Port Isabel Channel since its opening is as follows:

Year	Tons	Value
1934 1935 1936	417, 845 85, 965 278, 616	\$1, 292, 559 1, 734, 779 3, 797, 411

The principal items included in the above-listed tonnage are as shown in the following table:

And all must fame institute	Tonnage and value						
Character of cargo	193	и	196	35	193	6	
Concession of pre-based	Short tons	Value	Short tons	Value	Short tons	Value	
FOREIGN Exports: Nonmetallic minerals: Oil, crude			26, 661	\$180, 518	6, 481	\$47, 765	
DOMESTIC Coastwise receipts:							
Nonmetallic minerals: Oil: Gas and fuel Lubricating		\$3, 580	36, 946	234, 470		1,900	
Ores, metals, and manufactures of: Iron and steel, rolled forms of: Bars, bands, rods, etc Structural.					21 81	903 2, 916	
Plates and sheets Tubular products and fittings. Tin and tinware				34, 885 197, 307 1, 530	153 10	10, 863 3, 960	
Machinery, miscellaneous Autos and parts Wood and paper: Lumber		/	32	10, 250 3, 429	153	61, 200	
Vegetable food products: Beverages. Rice					17 10	3, 834 880	

1 All materials used in construction of waterway and harbor improvement.

counter 73882

### BRAZOS ISLAND HARBOR, TEX. \*

ents made in its brief with reference to focul cooperation by sug- i sting that:

if the funds heressary to be expecteded in mating the whole behavior revenues are not at this time available, the forecrement proposes to provide with of 31 feet of water theman Brows Santiago Peas and 32 feet through the end of 31 feet of water theman Brows Santiago Peas and 32 feet through the terms of have the terms ide of Long teland, upware condition that is is a solution to the terms to the terms of the terms of the feet of the terms of the terms of the terms of the terms to define the terms of the term terms of the terms of terms of the terms of term

is: Commerce — Prior to [1934] the only traffic in the victure of races Island Harbor was carried on by the small fishing hoats opered in the Laguna Madre. Duritg 1034 there was some visible rough the partly completed channel through the Pass and through . i.e. completed inside channel to Port Isabel. Considerable traffic as handled over the iaside channel from the Pass to Port Isabel by the contractors engaged in the construction of the jettics and lightouse structures and in the drafting contracts. The total freight affic utilizing the Port Isabel Channel since its opening is as follows:

The principal items included in the above-listed formage are as

Chartedet of catigo			
protise Normeetile intransic Oil, arade			
strain bas story			

All manages much in construction of a storage and had been dependent.

State State States	Tonnage and value						
/ -Character of cargo	-19	34	,195	15	1936		
	Short tons	Value	Short tons	Value	Short tons	Value	
DGMESTIC-continued					The second		
Coastwise receipts-Continued.			173	\$5, 225			
Unclassified: General merchandise Miscellaneous Roofing, asphalt			16	6,400	165 1, 253	\$57,750	
					117	374, 841 6, 201	
Total	685	\$8, 580	40,038	.493, 496	2,030	525, 248	
Internal receipts: 1 Wood and paper:							
Logs.	4,600	103,000					
Lumber Nonmetallic minerals: Gasoline	1, 200 310	- 44, 600 10, 000					
Oil: Lubricating	50	3, 479					
All other	10	200					
Stone (for jetties). Ores, metals and manufactures of: Iron and steel:	410,000	1, 100, 000					
Rolled forms and structural		1			The second		
steel. Tubular products	50 200	\$3, 200 3, 000					
All other	740	16, 500					
. Total	417, 160	1, 283, 979					
Coastwise shipments:	1000			CALCULATION CONTRACTOR			
Animals and animal products: Hides and skins			18	3, 699		1. 19 29	
Vegetable food products;							
Canned goods Fruits			356	62, 838	2,332	410, 433 91, 153	
Vegetables			15, 919	F19 0.01	1,399	83, 940	
Corn. Corn, kafir.			306	513, 861 5, 359			
Milo maize All other			· 33 15	484 695			
Vegetable products, inedible: Broom- corn		A States	659				
Wood and paper: Paper, miscellan- eous			000	59, 729			
Nonmetallic minerals:					. 52	8, 47	
Gasoline Oil:					15, 349	275, 36	
Bunker. Gas and fuel.					22, 227	137, 80	
Unclassified: Miscellaneous					207, 156	1,677,96 309,42	
Total			17, 306	646, 665	250, 149	2, 994, 55	
Local:		and state of the state of the		Distance in Fernance of	-		
Wood and paper: Lumber Nonmetallic minerals: Oil:					17	37	
Bunker.					2, 578	15,88	
Gas and fuel. Ores, metals, and manufactures of iron and steel, rolled forms of: Castinger and fuel forms of:					17, 100	138, 51	
iron and steel, rolled forms of: Castings and forgings.	Posta,	Piertes.	<b>pathoins</b>	ped cal	S. COL	00.0020	
Structural All other					3 27	30 97	
Machinery and vehicles: Machinery					22	1, 79	
Animals and animal products:			5	5,000	55	17, 49	
Shrimp			1,605	353, 100			
Unclassified:			350	56; 000			
General merchandise Miscellaneous					117	43, 87,	
Total			+	110.100	37	10, 65	
Grand total, all traffic	2 417, 845	1 000 000	1,960	414, 100	19,956	229, 84	
total, in trancesses.	- 417, 845	1, 292, 559	1 85, 965	1, 734, 779	278, 616	3, 797, 41	

<sup>3</sup> Excludes 2,315 tons bunker oil, value \$14,098. <sup>3</sup> Excludes 6,389 tons bunker oil, value \$35,993.

counter 73883

36. The port at Brownsville was opened for traffic May 16, 1936. Total traffic utilizing the port in 1936 amounted to 39,193 tons valued at \$4,335,176. Principal classes of products included in this traffic were as follows:

Classes of cargo	Short tons	Value
Imports: Nonmetallic minerals: Coke	4, 475 1, 030	\$22, 733 36, 503
Total	5, 505	59, 236
Exports: Vegetable food products: Cottonseed cake	2, 163 5, 954	49,056 1,471,012
Total	8, 117	1, 520, 068
Coastwise receipts: Animals and animal products. Vegetable food products. Vegetable products, inedible. Pextiles. Wood and paper. Nonmetallic minerals. Ores, metals, and manufactures of. Machinery and vehicles. Chemicals. Unclassified.	$\begin{array}{r} 12\\ 2,833\\ 93\\ 100\\ 548\\ 12,183\\ 2,593\\ 652\\ 1,195\\ 353\\ 20,672\\ \end{array}$	25, 468 527, 815 23, 251, 108, 010, 90, 062 247, 604 402, 253 263, 638 114, 384 98, 970
v Total		
Coastwise shipments: Animals and animal products	139 476 31 618 4 4 27	$\begin{array}{r} {}^{+}64,525\\ 552,687\\ 21,684\\ 53,760\\ 1,452\\ 142,274\\ 370\\ 1,354\\ 504\\ -,6,110\end{array}$
Total	1 222	844, 819
Grand total, all traffic		4, 335, 170

Since the port at Brownsville has been in operation only since May 1936, there are no records of other years' traffic for comparison. For this reason the various commodities under the different classes were not listed; for no comparison being possible, it would give no information as to cargo trends. The class "Vegetable food products" under coastwise receipts included beverages, canned goods, coffee, feeds, prepared and mixed, rice, sirup, sugar refined, vegetables, and other products. The same classification under coastwise shipments included canned goods, kafir-corn, fruits, cottonseed cake, cottonseed meal, sirup, and vegetables.

37. Though there are available records of the traffic handled through the port of Port Isabel for 3 years, because of the fact that most of the freight handled in 1934 was that used by the contractors engaged in work on the waterway, and that the refinery began its shipments only in 1936, the records are of little value in predicting future cargo trends. It is of interest to note that the considerable receipts of oil, gas, and fuel, in 1935 were followed by no receipts of these commodities in 1936, because the refinery could supply these products. The movement of grains in 1935 was discontinued in 1936 indicating that this shipment is likely to be spasmodic. There was a considerable in-

counter 43887

The port at Brownsville was opened for traffic May 16, 1936, raffic utilizing the port in 1936 amounted to 39,193 tons valued 35,176. Principal classes of products included in this traffic

10.1         1.2 <th>Also Acad generation (1997)         A. 442, 512           (a)         (2)           (a)         (2)           (b)         (2)           (c)         (2)</th> <th></th> <th></th>	Also Acad generation (1997)         A. 442, 512           (a)         (2)           (a)         (2)           (b)         (2)           (c)         (2)		
1         25,26           2         25,26           2         25,26           2         25,26           2         25,26           2         25,26           2         25,26           2         25,26           2         25,26           2         26,26           2         26,26           2         26,26           2         26,26           2         26,26           2         26,26           2         26,26           2         26,26           2         26,26           2         26,26           2         26,26           2         26,27           2         26,27           2         27,27           2         27,27           2         27,27           2         27,27           2         27,27           2         28,27           2         28,27           2         27,27           2         27,27           2         27,27           2         27,27           2	1         25,000           and source second seco		
abile not embeddeet         1,2,8,4         1,22,8,4           bable feed products         100,000         100,000           bable         100,000         100,000           bable         100,000         100,000           bable         100,000         100,000           bable         11,000         100,000           bable         11,000         11,000           bab	10.0         20.0 <td< td=""><td></td><td></td></td<>		
فیلم (new) synolacity	Inbia feve versite         12         22, 231           Inbia products, inclifia         12         22, 231           Inbia products, inclifia         12         23, 231           Inbia products, inclifia         12         23, 231           Inbia products, and manufactures of         12         23, 231           Inbia products, and manufactures of         12         23, 100           Inbia products, and manufactures of         12         23, 03           Inbia products, and manufactures of         23, 232         33, 33           Inbia products, and manufactures of         23, 232         34, 23           Inbia products, and manufactures         23, 432         1, 84, 23           Inbia products, and manufactures         23, 432         1, 23, 23           Inbia products, and products         1, 23         23, 23           Inbia products, bashibia         1, 23         23           Inbia products, bashibia         1, 23         23           Inbia products, bashibia         1, 23         23           Inbia products, bashibi		
20.1 c productive, functione,         192         192         192         193         193           di auri jupace,         112, 153         20, 700         215, 253         20, 700           internative ruthermale,         12, 153         20, 700         215, 253         20, 250           interregenere, and         11, 100         112, 253         20, 250         216, 253         216, 253         216, 253         216, 253         216, 253         216, 253         216, 253         216, 253         216, 253         216, 253         216, 253         216, 253         216, 253         216, 253         216, 253         215, 254         216, 253         215, 254         215, 253         215, 253         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         215, 256         216, 256         216, 256         216, 256         216, 256         216, 256         216, 256         216, 256         216, 256         216, 256         216, 256         216, 256         216, 256         216, 256         216, 256         216, 256         216, 256	Lable products, the Julie         100         100         100           Lable products, the Julie         112         155         90,000           Lable products, and anuminerutes of the Julie         12         150         217,000           Lable products, and anuminerutes of the Julie         12         150         216,000         216,000           Lable products         11         100         112         150         216,000 </td <td></td> <td></td>		
Bit         10.         10.         90.05           Martingand         1.2.         10.         90.05           And She waterdamules of         1.2.         5.0.         10.2.         20.05           Martingan         1.2.         5.0.         10.2.         20.05         100.2.         20.05         100.2.         20.05         100.2.         20.05         100.2.         20.05         100.2.         20.05         100.2.         20.05         100.2.         20.05         100.2.         20.05         100.2.         20.05         100.2.         20.05         100.2.         20.05         100.2.         100.05         100.2.         100.05         100.2.         100.05         100.2.         100.05         100.2.         100.05         100.2.         100.05         100.2.         100.05         100.2.         100.05         100.2.         100.05	Int         1.1.         1.0.         90.05           Intri tanget         1.2.         1.5.         90.05           Intri tanget         1.2.         1.5.         90.05           Intri tanget         1.2.         1.5.         90.05           Intri tanget         1.0.         1.2.         1.5.         90.05           Intri tanget         1.0.         1.2.         1.0.		
at and Jupace.         12 [03         241.00           at and Jupace.         12 [03         241.00           at and an and anomeneut en of         12 [03         241.00           at and anomeneut en of         12 [03         241.00           at and anomeneut en of         235.00         241.00           another start extracted         235.00         243.00           another start extracted         235.00         243.00           another protocols         240.00         240.00           another protocols         240.00         240.00           another protocols         240.00         240.00           another protocols         240.00         240.00           another protocols         240.00         24.00           another protocols         24.0	1 and junat         12 [20]         21 [20]         21 [20]           1 and junation allocation         12 [20]         221 [20]         221 [20]           1 and results         12 [20]         221 [20]         221 [20]         221 [20]           1 and results         12 [20]         221 [20]         221 [20]         221 [20]         221 [20]           1 and results         230 [20]         231 [20]         231 [20]         231 [20]         231 [20]           1 and results         230 [20]         231 [20]         231 [20]         232 [20]         231 [20]           1 and results         230 [20]         231 [20]         231 [20]         241 [20]         241 [20]           1 and results         231 [20]         241 [20]         241 [20]         241 [20]         241 [20]           1 and results         24 [20]         241 [20]         241 [20]         241 [20]         241 [20]           1 and results         24 [20]         24 [20]         24 [20]         241 [20]         241 [20]           24 [20]         24 [20]         24 [20]         24 [20]         24 [20]         24 [20]         24 [20]         24 [20]         24 [20]         24 [20]         24 [20]         24 [20]         25 [20]         25 [20]         25		
Interstite ruterstation         1         200         800         200	1         200		
102         201 cs           1100rr % and rollides         1 100           111         201 cs           111         2	102         205 cs           111         111      111		
Alaberty and Vebeles         1 100         11.100           Insortie         3.8         08.47           Insortied         3.8         0.8.27           Insortied         3.8         0.8.28           Insortied         3.7         0.8.23           Insortied         3.7         0.8.23           Insortied         3.8         0.8           Insortied         1.8         1.8           Intoried         1.8         1	Interference         1 (100         112,15           Interference         338         08,47           Interference         39,472         1,412,05           Interference         39,472         1,412,05           Interference         39,472         1,412,05           Interference         39,472         1,412,05           Interference         32,370         325,07           Interference         32,370         325,07           Interference         32,370         325,07           Interference         32,320         325,07           Interference         32,320         325,02           Interference         34,47         34,17           Interference         34,19         34,17           Interference         34,19         34,17           Interference         34,163         34,17           Interference         34,17         34,17           Interference         34,17         34,17           Interference         34,17         34,17           Interference         35,17         34,17           Interference         34,17         34,17           Interference         34,17         34,17           I		
hadhad. Sea eige and seinair an binerenter an bi	nadibad bili		
and intersection are subinated as an intersection are based as final products are based products are b	Mai		
and protocolor analytical antibular presidents and protocolor protocols and protocol protocol and	es biniments mass and summal prestants analysis could produce the second products and the products the second products the second products and apply products the second s		
ante produzione de la contrada ana live producta, conditione el contrada de la contrada el contrada e	and grand Archited (2) and Sale for definition and Sale products, itselfibility and sale grand grand and sale grand and s		
un Ale foor products an for products and and and and and and and and and and	arshio faor products (andritic 11 ga 11 ga 21 ga 24 7		
and the products, totalible         and         bit         bit<	and the products, idealible		
atter at	tiby at acid priver an acid priver and acid priver the comparison of the comparison of the comparison of the comparison of the comparison of the comparison the comparison		
ad seed priver and shire informets a start shire informets a start shire manufacture of chirors, and vehicles and a start shire fragments fragment	st spirit priver interaction university of the second sec		
Andread Net and America Andread States of Angree Angr	A second se		
<ul> <li>A finitely, and munified are of the second se</li></ul>	<ul> <li>a. Anotolo, and manufacture of Chinese and vehicles</li> <li>2</li> <li>3</li> <li>4</li> <li>4</li> <li>5</li> <li>6</li> </ul>		

the port at Brownsville has been in operation only since May , there are no records of other years' traffic for comparison. For reason the various commodities under the different classes were isted; for no comparison being possible, it would give no informaas to cargo trends. The class 'Vegetable food products'' under twise treepipts included beverages, canned goods, coffee, feeds, ared and mixed, rice, sirup, sugar refixed, vegetables, and other nots. The same dassification under constwise shipments innots. The same dassification faits, cottonseed eake, cottonseed ed canned goods, kafir-corn, fraits, cottonseed eake, cottonseed

37. Though there are available recentls of the traffic handled through the post of Port Isabel for 3 years, because of the fact that most of the fixeth handled in 1934 was that used by the contractors engaged work on the waterway, and that the relinexy began its shipments in the postering for the considerable receipts of oil, it is 1950, the records are of little value in predicting future cargo and and that the considerable receipts of oil, and the set and the three products. The move, the set of the set of the receipts of the receipts of oil, and the three products. The move, and the three products. The move, the reline the thirs in 1935 was discontinued in 1936 undicating that this of meant is likely to be spasmodic. There was a considerable in-

#### BRAZOS ISLAND HARBOR, TEX.

24

crease in the coastwise shipments of vegetable food products in 1936 over 1935, and it appears probable that there will continue to be some increase in future years. Of the total tonnage of cargo handled at Port Isabel in 1936, over 95 percent was oil and oil products. The refinery at Port Isabel refined the greater part of the oil produced by valley fields during 1936, and its manager stated, at the hearing, that it would process any additional oil it could secure. It does not appear probable that any appreciable increase in the allowable production of the existing fields will be made in the near future, so any large increase in the amount of oil for processing and, subsequently, for shipment will have to come from the development of new fields. It appears, then, that increase in oil-cargo movement at the port of Port Isabel is speculative.

38. Lacking records for determination of the trends in cargo movement for the port of Brownsville, it is necessary to consider the tributary area and to base estimates of future increase of traffic upon its potentialities. A cursory examination of the resources and possibilities of development within the tributary area indicates that the port of Brownsville may expect a gradual increase in its shipping. General business recovery will aid in this, as will the continued development of the several quite progressive towns in the valley. No large or rapid increase in general cargo tonnage is indicated, and the prospect of diverting large ore shipments from the Mexican ports to the port of 'Brownsville is believed not probable.

39. No statements as to freight savings already made or as to anticipated additional savings which might result from the proposed improvement were made at the hearing. Local interests had made statements in connection with previous reports that a saving of 20 cents per barrel in freight rates on oil would be effected by providing a project depth of 30 feet and estimated a saving of about \$4,000,000 per annum on prospective commerce. This estimate of savings and the estimates of prospective commerce on which it was based were worked up in detail by the Brownsville navigation district for presentation before the Board of Engineers for Rivers and Harbors on June 18, 1929, in connection with their petition that the construction of a channel to Brownsville be undertaken. The prospective commerce of several classes and the estimated savings on each were listed as follows:

Item	Tonnage	Saving to shippers	Saving per ton
Exports from northern Mexico Imports into northern Mexico Exports from the valley Imports into the valley	50,000	\$1, 689, 000 415, 000 1, 723, 000 306, 000	\$3. 38 8. 30 10. 45 5. 10
Total	775,000	4, 133, 000	5. 34

The brief submitted by the district in 1935 listed additional prospective tonnage based on the development of the tributary area in the interim as follows:

Additional prospective Mexican tonnage:	Tons
Sulphur Industrial and agricultural Additional prospective domestic tonnage: Oil (allowable)	187, 500
Additional prospective domestic tonnage: Oil (allowable)	100,000 292,000
Total additional 1935 over 1929	579, 500

counter 73885

	Experts from methers (Lorbo) Internet from methers (Mairo) Properts from the value Properts from the value

(Principality)

It estimated the potential oil production at 18,250,000 tons annually. Savings to shippers on the new prospective tonnages were estimated to be at essentially the same rate as set out for similar items in the 1929 estimate.

40. The present waterway is amply large for the small fishing boats, motor boats, yachts, or other pleasure boats that have occasion to use it.

41. Vessel classification.—The following vessel classification shows the draft of all steamers, sailing vessels, tugs, barges, and launches using the waterway after the opening of the 25-foot channels, through 1936:

Trips and drafts of vessels

PORT ISABEL CHANNEL

	ADV TIME AND		I	n-boun	d		Out-bound				
Year	Draft	Steam- ers Vessels ing B		Barges	Tugs	Steam- ers	Motor vessels	Sail- ing	Barges	Tugs	
1934	Under 18 feet		1 8		1, 390 468, 430	21 1,008		1 8		1, 390 468, 430	20 960
1935	22 to 24 feet 20 to 22 feet 18 to 20 feet Under 18 feet	1 3 13		3	197	190			3	198	191
	Total	<sup>1</sup> 17 42,955		3 60	197 200, 801	190 4, 020	<sup>1</sup> 17 42, 949		$\frac{3}{60}$	198 200, 961	191 4, 120
	(26 to 28 feet 24 to 26 feet 22 to 24 feet 20 to 22 feet										
1936	18 to 20 feet Under 18 feet	16 64		1	107	98	19 31	8		108	95
	Total	<sup>2</sup> 80 193, 925	9 1, 682	1 500	$\begin{matrix}107\\13,600\end{matrix}$	98 9, 840	<sup>2</sup> 79 190, 338	8 1,700	1 500	108 13, 800	£5 9,600

# BROWNSVILLE CHANNEL

1936	(24 to 26 feet 22 to 24 feet 20 to 22 feet 18 to 20 feet Under 18 feet Total Tons 1	2 9 45 <sup>3</sup> 56 109, 252	1 2 1 6 3 10 18, 205	 4	4	2 9 45 100 252	1 2 1 6 3 10	 4	4
- all page	(Tons 1	109, 252	18, 205	 2, 428	300	109, 252	18, 205	 2, 428	300

# BRAZOS ISLAND HARBOR

# [Includes vessels to both Brownsville and Port Isabel]

1936 22 1936 22 1936 0	6 to 28 feet 4 to 26 feet 12 to 24 feet 10 to 22 feet 10 der 18 feet Total Cons 1	2 25 109 4 136 303, 177	1 2 1 15 (19) 19, 887,	1 1 500	111 111 16, 028	102 10, 140	3 15 2 11 28 76 4 135 299,590	1 2 1 14 4 18 13,905	1 1 1	112 112 16, 228	99 99 9,900	
------------------------------	---	-------------------------------------	---------------------------------------	---------------	-----------------------	----------------	---	-------------------------------------	-------------	-----------------------	-------------------	--

<sup>1</sup> Total net tonnage, figures for 1934 were partly estimated.
 <sup>1</sup> Includes S steamers, net registered tonnage of 33,528 tons, of foreign registry:
 <sup>2</sup> Foreign vessels included were 2 steamers, net registered tonnage of 6,620 tons:
 <sup>3</sup> Foreign vessels included were 4 steamers, net registered tonnage of 13,180 tons, and 10 motor vessels, net registered tonnage of 32,050 tons.
 <sup>4</sup> Foreign vessels included were 6 steamers, net registered tonnage 19,800 tons, and 10 motor vessels, net registered tonnage 32,050 tons.

counter 73886

malinen to

26

# BRAZOS ISLAND HARBOR, TEX.

As has already been pointed out, the Brownsville Channel was opened to traffic for only 8 months during 1936. Since only the Port Isabel Channel was open prior to 1936, the trips and drafts of vessels for Brazos Island Harbor for 1934 and 1935 would be the same as shown for the Port Isabel Channel.

42. The vessel drafts shown in the above tabulation are not necessarily fully loaded drafts but rather actual drafts. Local interests at Brownsville state that a number of ships, particularly refrigerator ships, have refused to navigate the channel because of its shallow depth. And local interests at Port Isabel believe that the 25-foot channel by preventing average-sized tankers from loading to capacity works a hardship upon the shippers of oil products. The following list is a record of all tankers used in the shipment of refinery products from Port Isabel during 1936, as furnished by the Port Isabel-San Benito navigation district:

Name of ship	Date of	Designed	Designed	As loaded		
Availe of ship	sailing	draft, feet :	capacity, barrels (	Approxi- mate draft	Refined	
E. J. Nicklos.	Jan. 2	07.1		1 1 1 1 1		
Lecco.		25.1	51, 895	21.5	40, 375	
E. J. NICKIOS	Jan. 25	25.7	70,000	20.0	39,045	
r ucoio.	Jan. 30	25.1	51, 895	22.0	42,478	
E. J. Nicklos	Feb. 20	24.3	46, 625	17.7	22, 266	
r uenjo	Feb. 23	25.1	51, 895	20.0	37, 789	
AHRMED	Mar. 13	24.3	46, 625	20.0	23, 817	
E. J. Nicklos	Mar. 14	20.6	23,000	20.2	26,971	
rueolo.	Mar. 24	25.1	51, 895	20.5	36, 235	
	Mar. 24	24.3	46, 625	20.5	31, 812	
D. J. NICKIOS	Apr. 15	26.5	77,000	19.5	35, 561	
		25.1	51, 895	20, 4	36, 938	
ARWIWORIG	Apr. 27 Apr. 30	25.1	51, 895	22.0	43, 174	
		26.7	80,000	22.0	53, 257	
	May 10 May 26	23.5	50, 290	24.5	42, 565	
acia y or, izawes.		25, 1	51,895	25.7	53,092	
L LEOCHEX.		24.9	51, 340	25, 0	45, 367	
E. J. INICKIOS	June 13 June 14	26.0	77.024	23.0	40, 027	
	July 3	25.1	51,895	25.7	52,007	
Genry M. Dawes		25.1	51, 895	25, 8	52, 337	
C IIIOII	July 8 July 19	24.9	51, 340	25.5	47, 106	
L. J. NICKIOS	July 25	25.2	49, 783	25.0	51, 494	
	Aug. 7	25, 1	51, 895	25.5	50, 855	
.J. COREY		25.2	49.783	26, 0	56, 651	
	Aug. 12 Aug. 16	24.4	52, 941	22.0	25, 020	
C Mapora a second a s	Aug. 16 Aug. 26	25.1	51, 895	25.2	50, 568	
L'U	Sept. 16	25. 2	49, 783	26.2	53, 669	
		25, 2	49, 783	26.0	51,959	
a. J. INDUKIOS	Sept. 22 Sept. 28	22.8	51, 190	25.2	39, 702	
	Oct. 5	25.1	51, 895	25.5	51, 564	
S. J. INICKIOS	Oct. 19	25.2	49, 783	25.3	35, 684	
	Nov. 27	25.1	51,895	25.4	52, 125	
		25. 2	49.783	26.0	56, 714	
Suwaru L. Doneny	Dec. 18 Dec. 24	25.2	49.783	26.0	52, 189	
Caloria		26.9	63,000	16.5	26, 475	
		22.8	51, 190	24.9	40, 054	
Total		-	1 001 00			
Average			1,861,306		1, 497, 946	
		24.9		23, 2		

<sup>1</sup> Taken from Standard Oil Co.'s Register of Tankers.

43. Difficulties attending navigation.—In addition to the difficulties imposed by the 25-foot channel, it is stated that navigation is made hazardous to ships over 400 feet long because of the three bends in the Brownsville Channel and the difficult entrance to the Port Isabel Channel. The present 100-foot width precludes the safe passage of two full-sized ships in the channel and port authorities, recognizing

counter 13887

#### BRANDS ISLAND HARDOR, TEX.

It estimated the potential oil production al 18,250,000 tons annually. Savings to shippers on the new prospective tonnages were estimated to be at essentially the same rate as set out for similar items in the 1929 estimates.

40. The present waterway is supply large for the small flaming yours, motor boats, rachts, or other pleasure boats that have occasion to

41. I used elessification. The following ressel classification shows the draft of all strangers, safing ressels, tags, harges, and launches using the waterway after the opening of the 25-foot channels, through

## Trips and drafts of creates

#### PORT ISANEL CHANNEL

									1	top at an are build be at an and at an are and at an are build be and an build be and an		

A Set but			
			. 25
			0.25
ward L. Doheny			
		1.10	
TotaT			
A 767100			

this, refuse to permit two such ships moving in opposite directions in the channel at the same time.

44. Survey .- No field survey was made for this report as the necessary information could be obtained from surveys made in connection with the existing improvements. A map entitled "Brazos Island Harbor, Tex. (file no. 11-7-32)", prepared to illustrate the existing waterway is enclosed as appendix 1.

45. Plan of improvement.-As has been set out in paragraphs 26 to 34 several different plans for improvement were proposed by the local interests. A composite plan which incorporates most of the items proposed by the local interests has been set up for the purpose of estimating the cost of the proposed work. This plan includes the following modifications of the existing project: Deepening of all inside channels, including the turning basins, to 32 feet and widening the inside channels to a 200-foot bottom width; easing the turn at the inner end of the jetty channel; and deepening the jetty channel to 35 feet. An estimate of the cost of executing this plan with Federal funds is as follows:

(a) Federal investment:

(1) Construction costs: Dredging 22,185,100 cubic yards, \$2, 132, 806, 00 (2) Interest during construction (improvement would be completed within 1 year) (3)Total Federal investment 2, 132, 806, 00 (b) Federal annual carrying charges: (1) Interest on Federal investments: 4 percent of \$2,-132,806\_ 85, 312, 24 (2) Amortization in 50 years: 0.655 percent of \$2,132,-806 13, 969, 88 (3) Increased cost of operation and maintenance..... 120, 000, 00 (4) Total annual carrying charges..... 219, 282, 12

46. An alternate plan of improvement based upon what is considered necessary for adequately handling the present traffic and such additional traffic as may be expected reasonably to develop within the next few years was given consideration. This plan entails deepening all inside channels, including the turning basins, to 28 feet; easing the turn at the inner end of the jetty channel, the curve at station 13+250, which is the entrance to the Port Isabel Channel. and the bends at stations 21+954, 34+447, and 62+986; deepening the jetty channel to 31 feet. The estimated costs of executing this plan, using Federal funds, is as follows:

(a) Federal investment:

(b)

	Construction cost: Dredging 5,182,300 cubic yards, at \$0.1128	584, 366. 00
(3)	Total Federal investment	584, 366. 00
(1) (2)	annual carrying charges: Interest on Federal investment: 4 percent of \$584,366_ Amortization in 50 years: 0.655 percent of \$584,366_ Increased cost of operation and maintenance	23, 374. 64 3, 827. 60
(4)	The state -	

Total annual carrying charges (4)27, 202. 24

counter 73888

47. It will be noted that neither of the above plans of improvement include the item of enlarging the Port Isabel Turning Basin, which

56. A 32-foot depth for the Brazos Island Harbor project, such as was requested by local interests, is believed to be greater than is warranted at present. It is estimated as set out in paragraph 45 that a project involving a 32-foot depth for the inside channels and other requisite accompanying improvements would require a Federal investment of \$2,132,806 and would involve annual carrying charges of \$219,218.12. However, in view of the present oil shipments from Port Isabel and the potential additional commerce in oil and general cargo, it appears that a channel depth of 28 feet, which is adequate to accommodate about 60 percent of the tankers in the Gulf trade would be justified. Adoption of a complete plan of improvement with 28-foot deep inside channels as described in paragraph 46 would involve an investment of \$584,366 and annual carrying charges of \$27,202,24. An examination of the drafts of the tankers regularly engaged in the Gulf trade reveals that they range from about 20 feet to about 32 feet. If it be assumed that the existing 25-foot project channel provides for a safe navigation depth of 24 feet, this examination shows that less than 5 percent of the tankers engaged in the Gulf Atlantic trade can use the channel fully loaded. The possibilities offered by a 27-foot project channel were studied in some detail. Such a project would involve an investment of \$430,334 and annual carrying charges of \$20,032.05. However, if it be considered as providing safe navigation for ships with a maximum draft of 26 feet, it would accommodate only about 20 percent of the tankers. In view of the fact that a 28-foot channel would accommodate nearly three times as great a part of the tankers and would cost only about a third more for construction and would require carrying charges about a third greater, it appears that it would be more economically feasible for oil transportation than the 27-foot channel. With respect to the general-cargo ships trading at Brownsville the 28-foot project would also give considerable advantage over the 27-foot project since a relatively large percentage of general-cargo ships have drafts between 26 and 27 feet.

57. Though no adequate estimate can be made of monetary benefits which a 28-foot channel would provide, it appears that the benefits would be definitely greater than the annual carrying costs for such a project. In fact, studies of the economics of tanker transportation of oil from Gulf ports indicate that the savings on the shipment of the existing oil tonnage from Port Isabel, alone, would be great enough to warrant serious consideration of the proposed improvement. The existing 25-foot project channel permits safe navigation by 50,000barrel capacity tankers and the proposed 28-foot project would provide for ready navigation by tankers of approximately 70,000-barrel capacity: investigation of the operating costs of tankers of these two sizes indicates that the 28-foot project would result in a saving in transportation costs of approximately 2 cents per barrel of oil. This saving applied to the 1,500,000 to 2,000,000 barrels to be shipped annually would result in an annual saving of \$30,000 to \$40,000 and in addition to this monetary saving the shipper would be given an appreciable commercial advantage in securing charters.

58. The amount of traffic using the channels is considered not sufficient to warrant further widening at this time. It may be noted that a total of only 734 yessels, in-bound and out-bound, of all sizes used the channels in 1936, an average of 2 per day. Not more than 4 hours delay should be occasioned to ships traveling the 16<sup>1</sup>/<sub>2</sub> miles to

counter \$3889

nduse to permit two such ships moving in opposite direction

14. Survey — No field survey was tande for this report as the nearest are information could be obtained from screevs made in contraction with the existing improvements. A map entitled "Brazos Island Inchor, Tex. (file no. 11-7-32)", prepared to illustrate the existing partments is appendix i.

15. Phan at improvement. As has been set out in puragraphs 26 to 34 several different plans for improvement were proposed by the local interests. A composite plan which incorporates most of the items proposed by the local interests has been set up for the purpose of estimating the cost of the proposed work. This plan includes the following modifications of the existing project: Deepening of all inside channels, including the luminig basins, to 32 feet and widening the inside channels to a 200-foot bottom width; causing the turn at the inside channels to a 200-foot bottom width; causing the turn at the inside channels to a string channel; and deepening the jetty classed to be inside as follows:

(a) Rederal Investment

30

Construction rests: Directing 22,185,100 suble sards.
 81 80 0901
 82 13
 83 13

completed within 1 years .....

(3) Total Four about 200 and 200

Federal manual chief our charges.
 (1) Interest an Federal interationate: 4-percent of 82.-

(2) Amortizations do su venice device a sectore

6 B10

46. An alternate plan of improvement based upon what is considerad necessary for adequately handling the present traffe and such additional traffic as may be expected reasonably to develop within the next few years was given consideration. This plan emails deep energy all inside channels, invluding the turning basins, to 28 leet easing the tup, at the inner end of the jetty channel, the euro at station  $13 \pm 250$ , which is the entrance to the Fort leabel Channel, and the bends at stations  $21 \pm 954$ , 34-1447, and  $62 \pm 986$ : deepening the jetty channel to 31 feet. The estimated costs of executing this plan, using Federal funds, is as follows:

> (1) Construction cost: Drodging 5,182,300 cubic pards, no 80,1128

notion ten

Total Federal lavestment .....

) Federal annual correlps charged (1) Interation Ecology investments 4 partent of 8584.366, 23, 374 64 (2) Annutication in 50 years, 0.655 percent of 8584.366, 2, 827, 60 (3) Interpret cas of operation and mainfunance.

47. It will be noted that unitier of the above plans of improvement include the item of calarging the Port Isabel Tarming Basin, which

misite accompanying, improvements would require a Federal in-statent of \$2,132,860 and would involve annual carrying, charges of 19,218,12. However, in view of the present oil shipments from Fort restment at \$430.331 and annual carrent a charges of schulz the overer, if it is considered as providing sule partuation for shine with other that bankers in view of the fact thet a 28-boat channel would constability meads there rimes as great a part of the tarkers and ould cost only short a third more for construction and would remain trying charges about a third greater, it appears that it would be more

roicet. In fact, studies of the recommiss of tasker transportat f oil from Guif norts indicate that the savings on the shipment of visiting oil fromage from Fort Isabel, alone, would be great enou

Brownsville nor more than an hour to those traversing the 4 miles of \*100-foot channel to Fort Isabel. Considering these facts with the fact that the widening of the channel to even a 125-foot bottom width would cost, it is estimated, at least \$250,000 and involve a considerable additional annual maintenance cost, it is believed that the proposed widening is not warranted.

59. While the port of Brownsville does not have the tanker traffic which constitutes the major portion of the traffic of the Port Isabel Channel, it appears that the potential development of other cargo for this port is considerably greater than for Port Isabel, and there is the very reasonable possibility that additional developments in the valley oil fields may also result in the use of the Brownsville Channel for oil transportation.

60. It will be noted that the estimates of cost prepared for the. 28-foot project anticipate no contribution of funds by local interests. On account of the large contributions that have been made by local interests toward the existing project and the financial burdens which they have assumed, in order to make these contributions, it appears that all new work recommended herein and the subsequent maintenance costs should be undertaken wholly at Federal expense. As set out in paragraph 34 the Port Isabel-San Benito navigation district offered to furnish the funds for providing 32 feet of water through the Port Isabel Channel and in the turning basin if the Government would provide a depth of 34 feet through Brazos-Santiago pass and a depth of 32 feet thence to the west side of Long Island. No effort has been made to determine whether the district would contribute to the cost of providing a 28-foot project depth as herein recommended. In lieu of requiring their contribution to such cost, it has appeared better from the standpoint of the whole project to expect the authorities at Port Isabel to use any available local funds for enlarging their turning basin, which will be more needed than heretofore with the advent of larger ships, than to require local contributions toward the proposed enlargement of the ship channels.

61. Water power.-The waterway under consideration in this report is wholly tidal, and the desired improvements are such that the question of water power does not enter into consideration.

62. Other special subjects .- There are no questions of land reclamation, flood protection, drainage, or other special features which would have material bearing on the proposed improvements. The proposed improvements would cause no change in the configuration of the shore

63. Conclusion .- The district engineer concludes that there is a considerable potential traffic for the waterway in the tributary area, which the improvement of the waterway should assist in developing; that the present depth of the Port Isabel Channel is not sufficient to permit the average sized tankers operating in the Gulf to load to capacity; and that the traffic already developed within the short life of the project indicates a need for improved shipping facilities in this area. He believes that the further improvement of this waterway is warranted and that such improvement would assist in attracting new shipping operators, and, ultimately, through lower freight rates or better shipping services, in the attraction of new industries to the immediate tributary area. In view of the fact that such improvement is predicated largely upon future development, he believes it is

counter 73890

32

unnecessary to provide, at this time, a waterway sufficient to care for the ultimate traffic. Although it is possible that a 30- or 32-foot channel may eventually be necessary to care for available shipping he believes that a channel of the present width with a project depth of 28 feet in the inside channels and turning basins, and a project depth of 31 feet in the jetty channel will be adequate for such traffic as will develop in the near future. The short delay caused to a few ships by their inability to pass in the channels he considers not sufficient justification for the widening of the channels and believes that most of the delay is a result of the channels not being lighted. He considers that the easing of the bends in the present channel alinement is justifiable as an aid to navigation and as a safety measure. He further concludes that the enlarging of the turning basin at Port Isabel should be done by local interests.

64. Recommendations.-The district engineer recommends that the existing project for Brazos Island Harbor be modified to provide a depth of 31 feet in the channel between the jetties and a depth of 28 feet in the inside channels and turning basins, and that the bends and curves in the present channel be eased to eliminate the navigation hazards which they now offer, at a total cost of \$584,366, with no increase in the present allotment for maintenance. He further recommends that all new work required to deepen the waterways and maintain the modified project be undertaken at Federal expense subject to the condition that no dredging shall be done by the Federal Government within 50 feet of an established pierhead line or within 50 feet of any wharf or structure; and that local interests shall furnish, free of cost to the United States, all necessary rights-of-way and suitable areas for the disposal of material excavated in the enlargement and in future maintenance as and when needed, and shall, as required by the Chief of Engineers, furnish releases from adjacent landowners covering damage to their property that may result from the excavation and disposal of the material.

E. H. MARKS, Lieutenant Colonel, Corps of Engineers, United States Army, District Engineer.

0

counter +3891

100-feet shannel to Fort Isabel. Considering these fraversing the 4 miles of that the widening of the channel. to even a 125-foot bottom width would cost, it is estimated, at least \$250,000 and involve a consider-able relational numuel maintenance cost, it is believed that the proposed widening is not warmated.

which constitutes the major or histownscrift does not have the tanker traffic there is constituted to a portion of the traffic of the Port Isabel or this pert is considerably greater than for Port Isabel, and there is he very reasonable possibility that a delitional developments in the alley oil fields may also result in the use of the Brownsville Channel or oil transportation.

60 it will be noted that the estimate of cost prepared for the 28-toot project anticipate no constribution of funds by ioral inferences to an order the investment of the large contributions (but have been made by local interests toward) the large contributions (but have been made by local have been to take large contributions, it appears they have assidted, in order to make these commutations, it appears that all new work recemmended berein and the funnelia subsequent maintenation or the matched berein and the subsequent maintenation or the interests toward) be undertaken wholly at Federal exponse. As after our an paragraph 34 the forth babel-Son Bonto navgation is strict offered to furnish the funds for providing 32 feet of water is and a depth of 22 feet there is the subsequent would be undertaken by the west side of the substance of the order as and a depth of 22 feet there is the babel of the west side of the project to order the advected by 25-toot project dotted as incredue to the west side of the substance of the matched bere interesting the substance of the substance

ton, flood protection, drainage or other are no questions of land reclamaton, flood protection, drainage or other special features which would ave material hearing on the proposed improvements. The proposed inprovaments would cause no change in the configuration of the shore mo.

reconsiderable potential traffic for the waterway in the tributary area, which the improvement of the waterway should assist in developing that the present depth of the waterway should assist in developing permit the average sized tankers operating in the Calf to load to capactly; and that the traffic already developed within the short file of the project indicates a need for improved shipping facilities in this area, the believes that the fort more would assist in developing project indicates a need for improved shipping facilities in this area, anted and that such improvement of this waterway is warnetted and that such improvement would assist in altracting new hipping operators, and, altimately, through lower freight rates or netter shipping averages, in the attraction of new industries to the mendiate tributary area. In view of the fact that said inprovement of predicates in the attraction of new industries to the predicate tributary area. In view of the fact that said inprovement

#### BRAZOS ISLAND HARBOR, TEX.

unnecessary to provide, at this time, a waterwar sufficient to care for the ultimate traffic. Although it is possible that a 3d, or 32-foot thannel may eventually be necessary to care for available slapping as believes that a channel of the present yidth with a project depth of 28 feet in the inside channels and turring basins, and a project bepth of 31 fast in the inside channels will be adequate for such traffic to will develop in the near future. The short delay cansed to a less bepth of 31 fast in the near future. The short delay cansed to a less this by their inability to pass in the channels he considers not be ufficient justification for the widening of the elemets not being lighted, ufficient justification for the widening of the elemets not being lighted, be considers that the casing of the backs in the present channel incoments is instituable as an aid to pavigation and as a safety measure. To be the considers that the entarging of the turning basin at fort incoments is instituable as an aid to pavigation and as a safety measure.

64 Recompendations - The district engineer recommends that the visiting project for Brazos Island Harbor be madined to provide a capth of 31 feet in the channel between the jeffices and a depth of 35 set in the binite channels and thraine basins, and that the bends and arres in the present channel be eased to eliminate the matigation arres in the present channel be eased to eliminate the matigation errors in the present allofment for mainteners. The further necrosses in the present allofment for mainteners, the further nemanents the modified project to undertaken at Federal expense subaminan the modified project to undertaken at Federal expense subect to the condition that no dedging shall be done by the Federal overnment within 50 feet of evestablished pierhead late or within an the free of eest to the Easter and that focal interests shall furert and the tree of east to the Easter and that focal interests shall furorem and in future mainteners, and that focal interests shall furater and the tree of east to the Easter state all necessary rights-of-way and intable areas for the disposai of material excavated in the enlargeter and in thure maintenance event when reded, and shall, as and and in thure maintenance event when reded, and shall, as and and in thure maintenance event when reded, and shall, as and and in thure maintenance to their property that and y result from and and in the of the gameers, forms heleases from adjacent excavation and disposal of the material excavated in an event from and state.

R. H. MARKS,

Loculenant Columet, Curps of Engineers, Entited States Army, District Engineer was requested by local interests. This item was omitted because it appears that such enlargement of this basin as may be required should be done by local interests as set forth hereafter.

48. Discussion.—An examination of the improvements proposed by the several interests at the hearing reveals that those interests were unanimous in asking for wider and deeper channels for the waterway. They differed, however, as to how much deepening and widening is needed; proposed depths ranged from 30 to 35 feet, and proposed widths from a width sufficient to permit passage of two ships to 300 feet. Channels 35 feet deep by 300 feet wide are obviously unwarranted at this time, for these dimensions are greater than those of any of the inland channels along the Texas coast.

49. In their briefs the local interests represented at the hearing stated that the proposed improvements were needed or warranted because:

(a) The present channel with a 100-foot bottom width is not wide enough to permit passage of two full-sized ships. Because of this several hours' delay is often caused to ships utilizing the channels. And this condition, coupled with the fact that the channel is unlighted, and navigation by night is unsafe, sometimes causes delays of the greater part of a day.

(b) Most foreign boats or foreign-bound American boats need depths of 26 to 30 feet for safe navigation. The limiting depth of 25 feet in Brazos Island Harbor prevents partially loaded foreignbound ships from completing their cargoes there, and prevents ships with drafts greater than 25 feet from taking on full cargoes.

(c) The tonnage already developed in the 8 months of operation of the Brownsville Channel has exceeded anticipations as set out in earlier briefs. A large amount of additional tonnage tendered the port could not be handled, partly because of the limiting size of the channel.

(d) Efforts to develop new markets for the citrus fruits produced in the Rio Grande Valley by exporting such fruits to Europe on refrigerated ships have been handicapped because the dratts of such ships exceed the depth available.

(e) Tankers used in the shipment of oil from Port Isabel have largely been unable to carry full loads. Nearly 2,000,000 barrels of oil were shipped from the refinery at Port Isabel in 1936, and an equal amount is under contract for 1937 and 1938. Brownsville interests stated that there appears to be an excellent chance of the construction of a refinery near their turning basin.

(f) The Ports of Brownsville and Port Isabel are at a distinct disadvantage as compared to their competitors, the ports of Tampico and Vera Cruz in Mexico and the domestic ports of Corpus Christi, Galveston, and Houston, which have deeper channels largely provided with Federal funds.

50. The above statements contain the reasons set forth as warranting the proposed improvement. No statements were made as to the actual monetary benefits derived from the existing project in the savings on freight charges or of anticipated benefits other than general statements that additional shipping would be attracted and shipping delays and difficulties in navigation would be largely eliminated. 51. Though no great immediate increase in the

51. Though no great immediate increase in traffic is anticipated for the project, it does appear likely that a steady and appreciable in-

counter \$3892

he the several interacts at the bearing reveals that these interests

crease will occur. All of the major ports along the Texas coast have a record of continued growth. The area adjacent to the coast has been developing at a rapid rate, and continued development is indicated. It is altogether reasonable to believe that there will be a continuation of the growth of industry and agriculture in the valley, and that the underdeveloped area in northern Mexico which is tributary to the project will share in this general growth. The oil fields in the valley have been opened up, only, within the past few years, and their possibilities have not been determined.

52. Since the Government was committed to the development of the present project upon the premise that sufficient commerce would develop to justify its construction, it appears fitting that the Government take such additional steps as necessary to expedite and assist this development. The traffic utilizing the project in 1936 might be considered a very good showing for a newly opened waterway. Local interests believe that improvement of the existing channel would attract new shipping operators and would permit the handling of additional cargoes such as have already been tendered, but have had to be refused because of inadequate depth of water to accommodate

53. The estimated potential tonnages set forth by local interests in previous briefs appear to be as capable of ultimate development as ever. The available oil tonnage which is principally a function of the allowable rate of production set up by the Texas Railroad Commission has been materially increased since 1935. Present allowable production for the Sam Fordyce field is between 6,500 and 7,000 barrels per day or nearly double that in 1935 (set out in the 1935 brief as 3,710 barrels per day). This field is at present the principal producer in the valley, but other smaller fields have a combined allowable production of several hundred barrels per day, and extensive drilling opera-

54. The claims made by the Port Isabel-San Benito navigation district and by the Coastal Refineries, Inc., that a channel with sufficient depth to accommodate the average tankers engaged in the Gulf trade would effect material savings in the transportation of the products of the refinery appears to be well founded. Detailed analyses of the drafts and capacities of tankers used in the Gulf trade made in connection with other studies show the average draft to be approximately 27 feet and the average capacity about 77,000 barrels. Thus, it is apparent that the tankers using the channel to Port Isabel must be smaller than the average or else they must load to less than full draft and capacity which obviously makes the transportation more expensive. The list of tankers which carried cargoes of refined oil from Port Isabel in 1936, set out in paragraph 42, shows that the actual loaded draft of over 50 percent of the 35 vessels was greater than 24 feet which is normally the limit of safe draft for ships in a channel with 25-foot depth. This overloading was made possible by taking advantage of the overdepth dredging which was available during a part of

55. The Port Isabel-San Benito navigation district proposes that the Port Isabel Channel be deepened to 32 feet and offers to contribute funds necessary for constructing the channel from Long Island to Port Isabel to that depth if the Government will provide a channel of like depth across Laguna Madre to the point of connection with the Port Isabel Channel and a depth of 24 feet in the jetty channel.

counter \$ 3893