Number 9 Original

In the Supreme Court of the United States

OCTOBER TERM 1968

UNITED STATES OF AMERICA,
Plaintiff,

v.

STATE OF LOUISIANA, ET AL.

Appendix G, Map Exhibits and Related Materials for Brief of the State of Louisiana in Support of its Motion for Entry of Supplemental Decree No. 2

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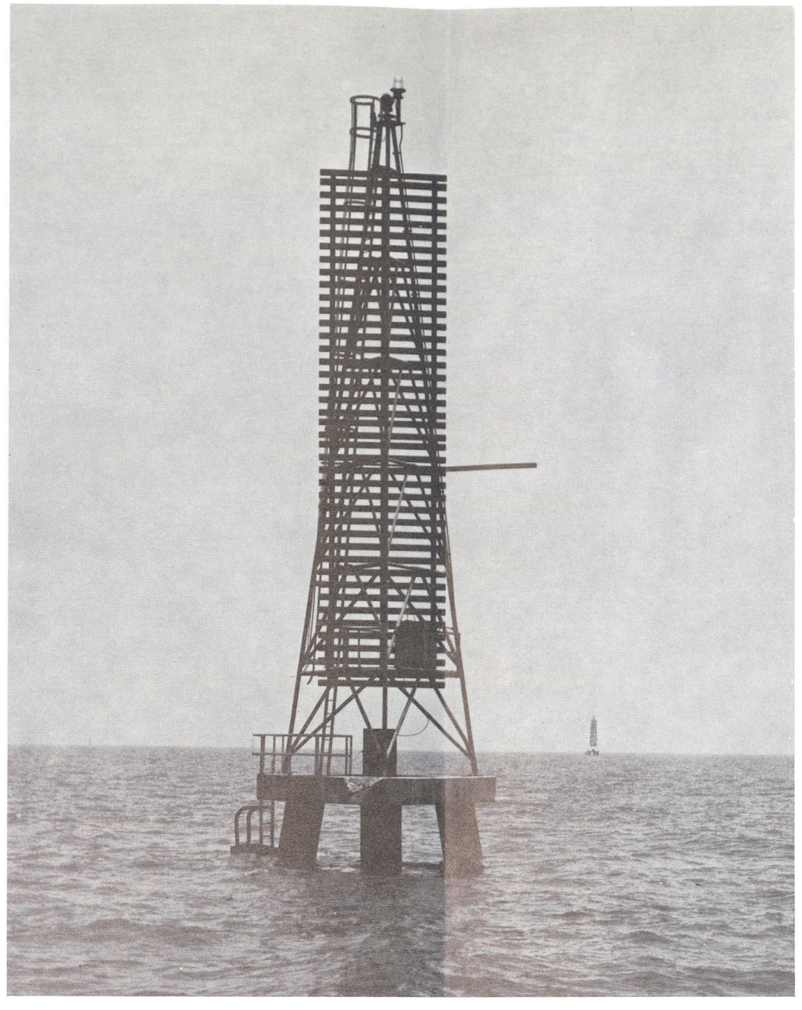
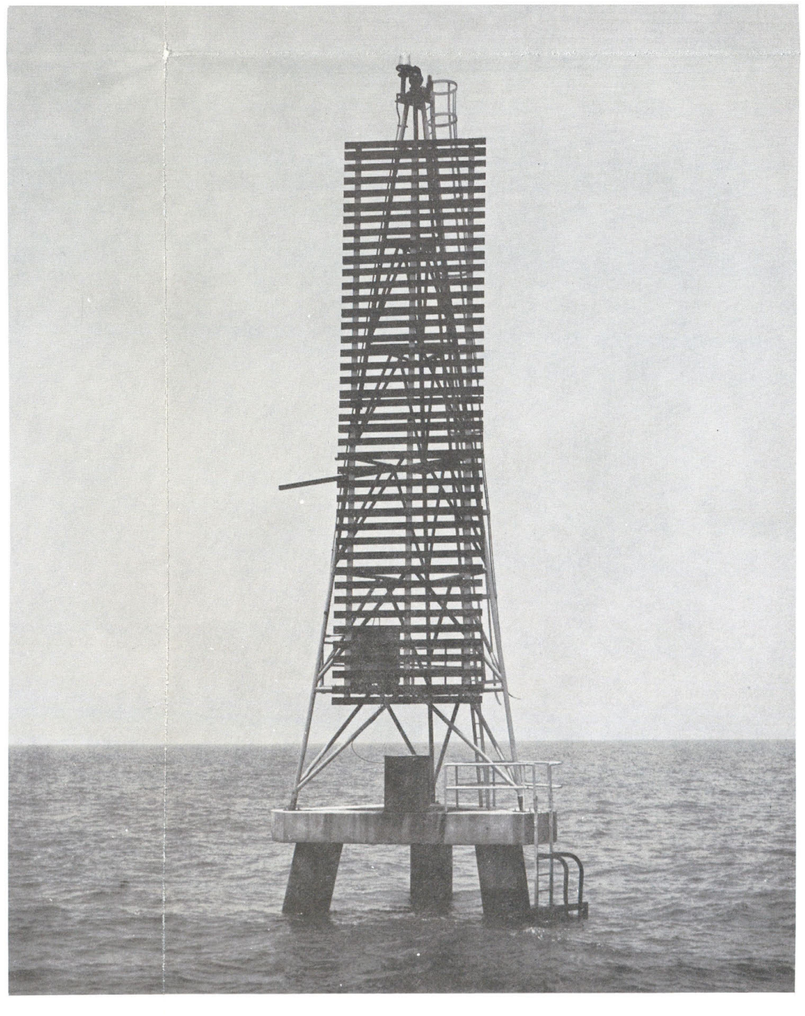
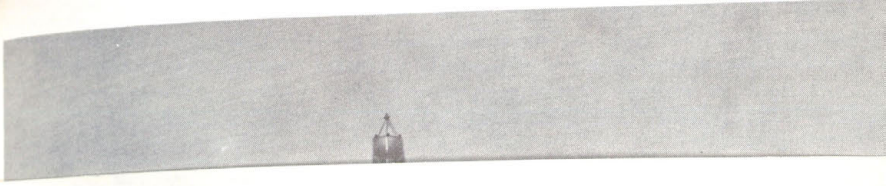
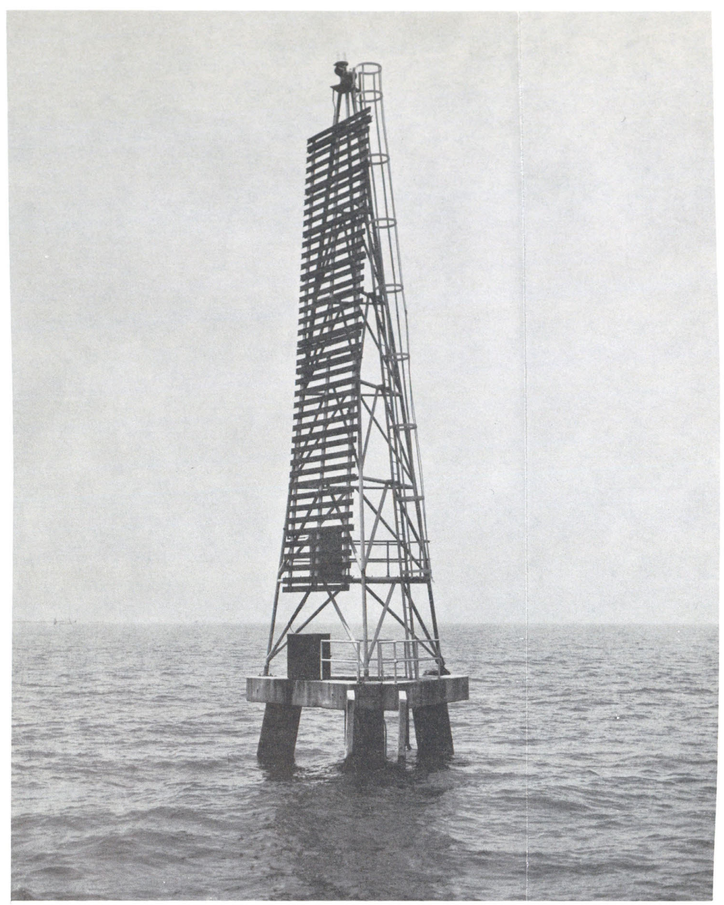
EXHIBITS 77-87

EXHIBIT 77, Page 1









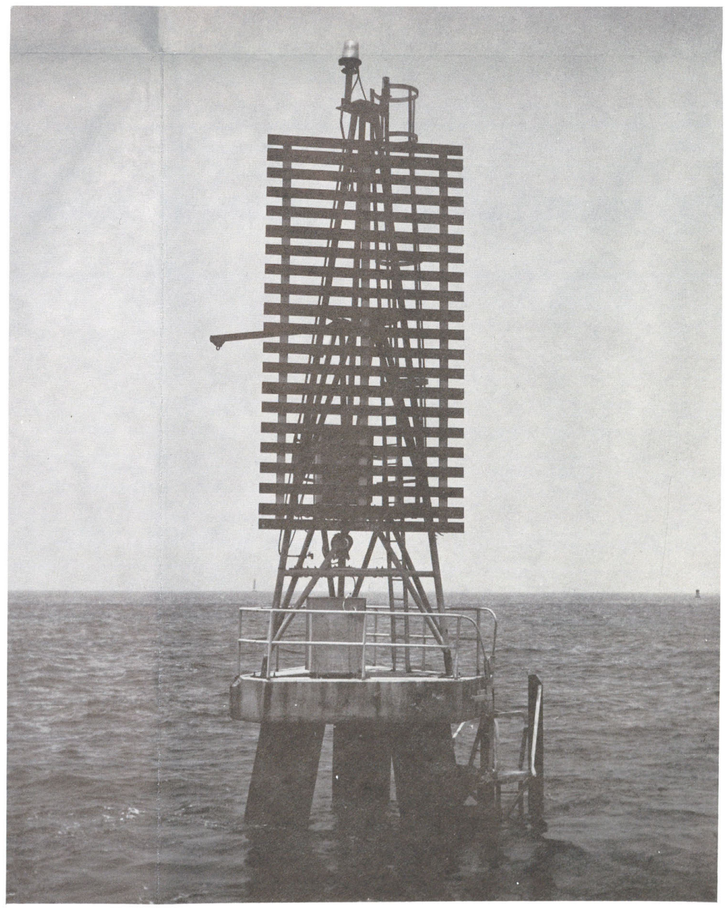
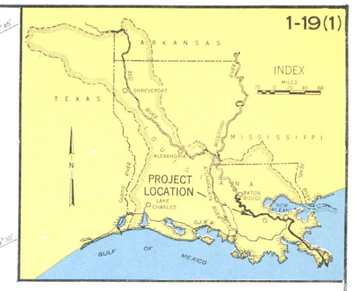


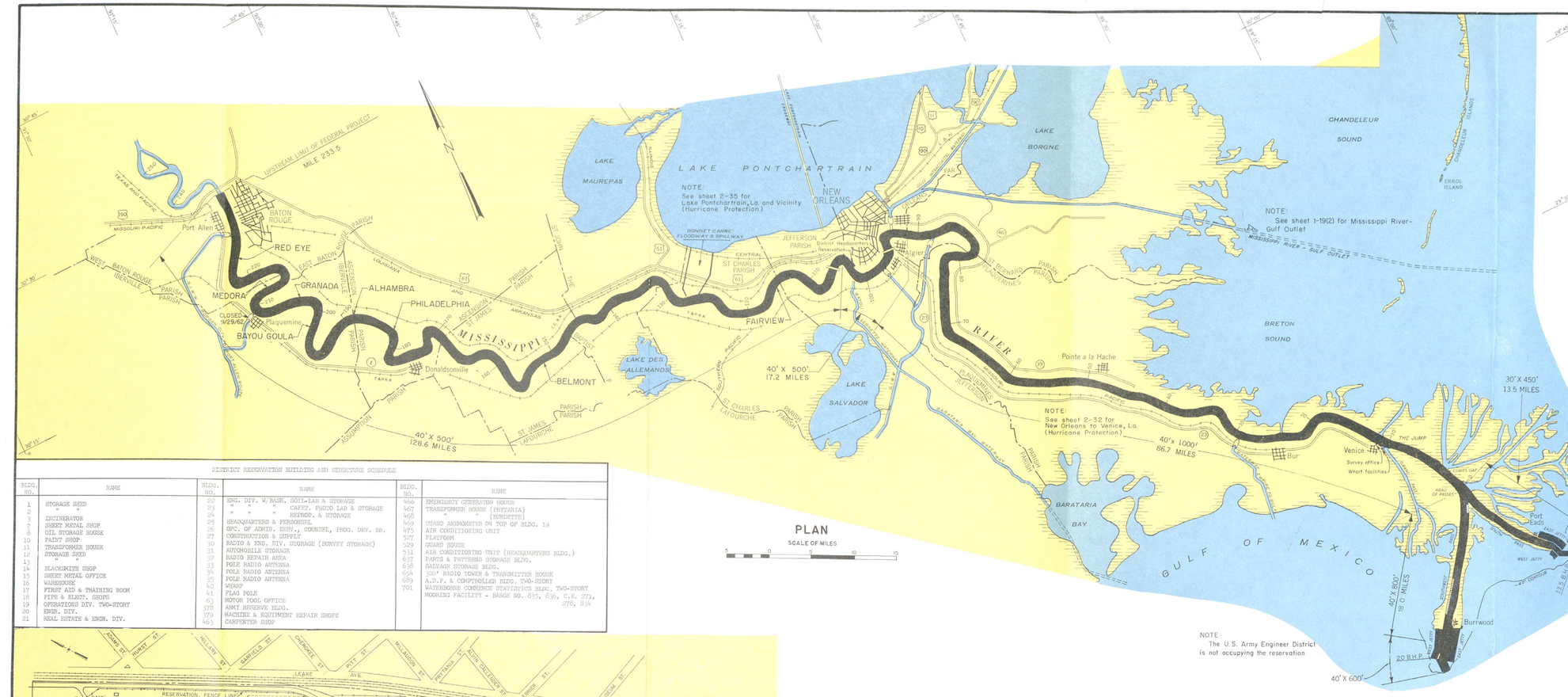
EXHIBIT 78, PAGE 1

CORPS OF ENGINEERS

U.S. ARMY

1-19(1)

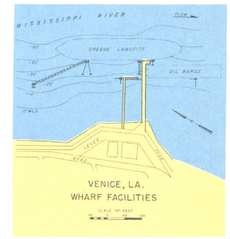




PLAN

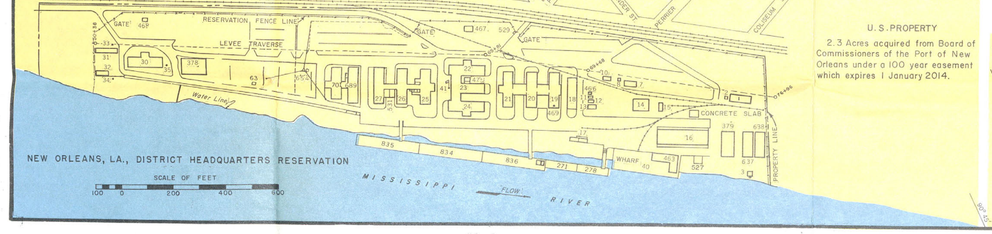
SCALE OF MILES

5 0 5 10 15



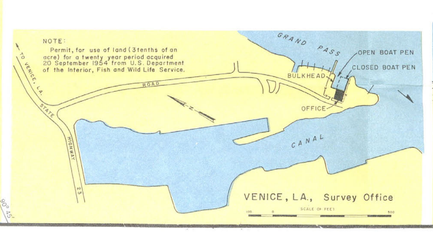
DISTRICT RESERVATION BUILDING AND STRUCTURE SCHEDULE

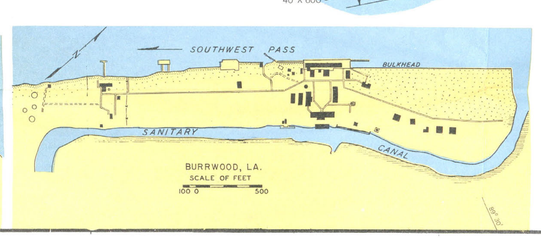
BLDG. NO.	NAME	BLDG. NO.	NAME	BLDG. NO.	NAME
1	STORAGE SHED	22	ENG. DIV. W/BASE. SOIL-LAB & STORAGE	466	EMERGENCY GENERATOR HOUSE
2	" "	23	" " " CAFFT. PHOTO LAB & STORAGE	467	TRANSFORMER HOUSE (FRYEANIA)
3	INCINERATOR	24	" " " REPROD. & STORAGE	468	" " (BURDETTE)
7	SHEET METAL SHOP	25	HEADQUARTERS & PERSONNEL	469	STAND ANEMOMETER ON TOP OF BLDG. 19
8	OIL STORAGE HOUSE	26	OFC. OF ADMIN. SERV., COUNSEL, PROG. DEV. BR.	475	AIR CONDITIONING UNIT
10	PAINT SHOP	27	CONSTRUCTION & SUPPLY	507	PLAYPORM
11	TRANSFORMER HOUSE	30	RADIO & ENG. DIV. STORAGE (SURVEY STORAGE)	509	GUARD HOUSE
12	STORAGE SHED	31	AUTOMOBILE STORAGE	511	AIR CONDITIONING UNIT (HEADQUARTERS BLDG.)
13	"	32	RADIO REPAIR AREA	637	PAINTS & PAINTBRUSH STORAGE BLDG.
14	BLACKSMITH SHOP	33	POLE RADIO ANTENNA	638	SALVAGE STORAGE BLDG.
15	SHEET METAL OFFICE	34	POLE RADIO ANTENNA	654	300' RADIO TOWER & TRANSMITTER HOUSE
16	WAREHOUSE	35	POLE RADIO ANTENNA	689	A.D.P. & COMPTROLLER BLDG. TWO-STORY
17	FIRST AID & TRAINING ROOM	40	WHARF	701	WATERBORNE COMMERCE STATISTICS BLDG. TWO-STORY
18	PIPE & ELECT. SHOPS	41	FLAG POLE		MOORING FACILITY - BARGE NO. 835, 836, C.R. 271, 278, 834
19	OPERATIONS DIV. TWO-STORY	63	MOTOR POOL OFFICE		
20	ENGR. DIV.	378	ARMY RESERVE BLDG.		
21	REAL ESTATE & ENGR. DIV.	379	MACHINE & EQUIPMENT REPAIR SHOPS		
		463	CARPENTER SHOP		



U.S. PROPERTY

2.3 Acres acquired from Board of Commissioners of the Port of New Orleans under a 100 year easement which expires 1 January 2014.





LEGEND

- Improvements completed
- Improvements authorized

STATE PLANE COORDINATES

SOUTH PASS

Landward End of Channel
x= 2,702,235.52
y= 123,923.52

Seaward End of Channel
x= 2,707,781.33
y= 121,342.40

SOUTHWEST PASS

Landward End of Channel
x= 2,608,462.93
y= 91,631.05

Seaward End of Channel
x= 2,608,554.84
y= 84,421.63

LOWER MISSISSIPPI VALLEY DIVISION WORK
RIVER AND HARBOR IMPROVEMENTS

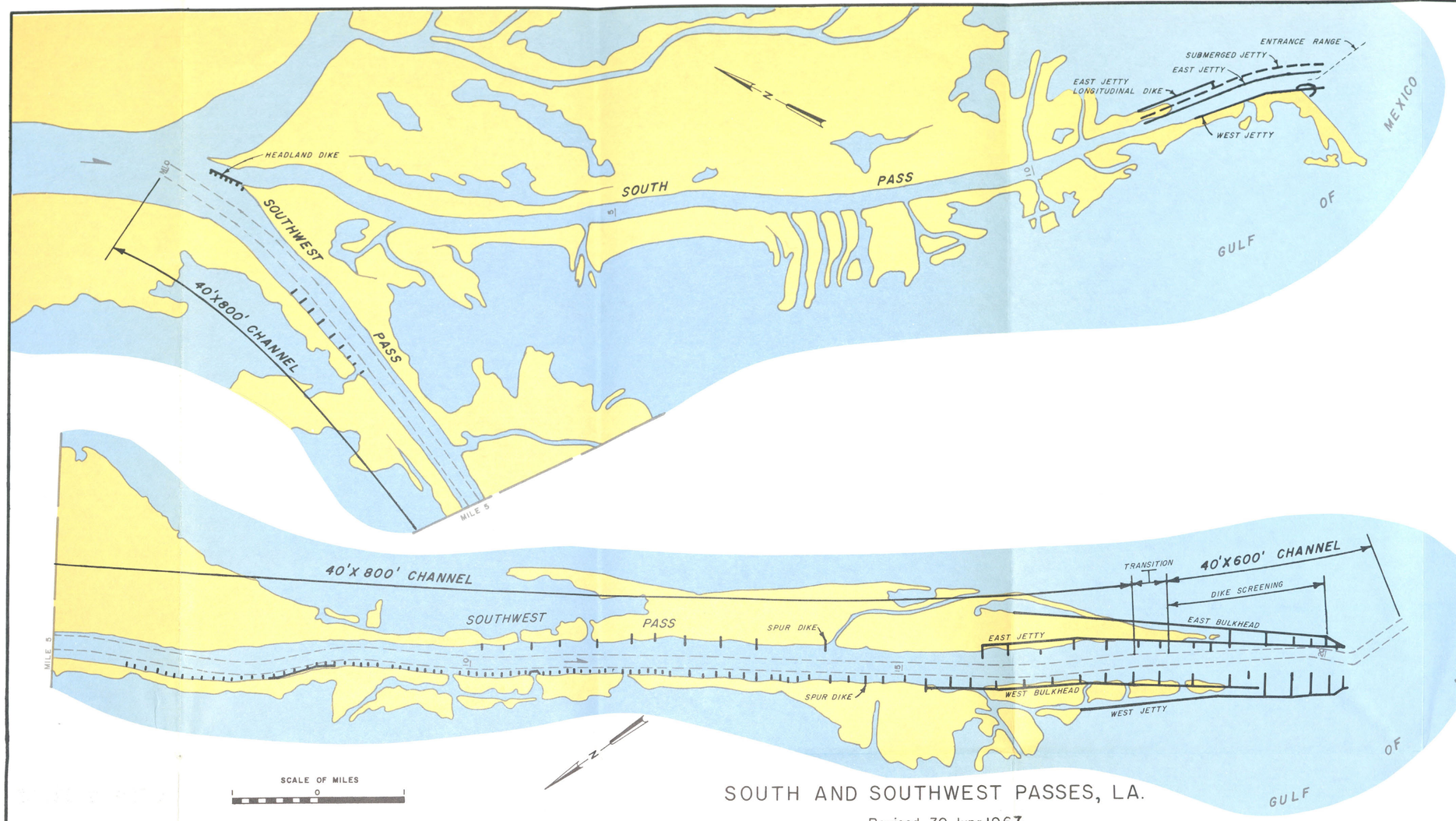
MISSISSIPPI RIVER, BATON ROUGE TO THE GULF OF MEXICO, LA.

SCALES AS SHOWN

OFFICE OF THE DISTRICT ENGINEER, NEW ORLEANS, LA.

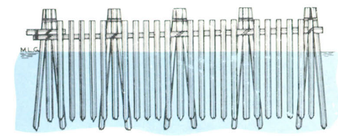
Revised 30 June 1967

EXHIBIT 78, PAGE 1

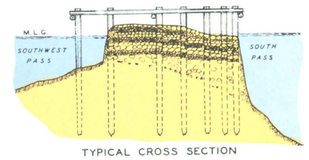


SOUTH AND SOUTHWEST PASSES, LA.

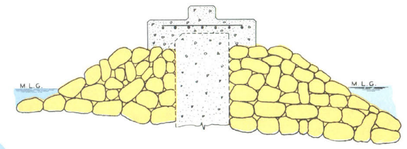
Revised 30 June 1967



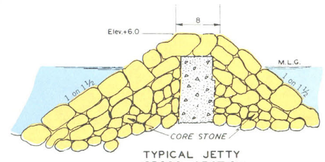
TYPICAL SPUR DIKE
MISSISSIPPI RIVER
VICINITY MILE 2 (AHP)



TYPICAL CROSS SECTION
HEADLAND DIKE



TYPICAL CROSS SECTION
INNER EAST JETTY
SOUTH PASS



TYPICAL JETTY
CROSS SECTION
SOUTHWEST PASS

EXHIBIT 79

MISSISSIPPI RIVER BATON ROUGE TO THE GULF OF MEXICO, LA. CONDITION OF IMPROVEMENT, 30 JUNE 1966

Project

River and Harbor Act of 2 March 1945, House Document 215, 76th Congress, 1st Session, and prior River and Harbor Acts, provide for channel dimensions as follows: Baton Rouge to New Orleans Section, 35 ft. deep (m.l.g.) by 500 ft. wide, 128.6 miles long; within limits of the Port of New Orleans Section 35 feet deep (m.l.g.) by 1,500 ft. wide, 17.2 miles long; lower limits of the Port of New Orleans to Head of Passes Section, 40 ft. deep (m.l.g.) by 1,000 ft. wide, 86.7 miles long; Southwest Pass, 40 ft. deep (m.l.g.) by 800 ft. wide, 20.1 miles long; Southwest Pass Bar Channel, 40 ft. deep (m.l.g.) by 600 ft. wide; South Pass, 30 ft. deep (m.l.g.) by 450 ft. wide, 13.5 miles long; South Pass Bar Channel, 30 ft. deep (m.l.g.) by 600 ft. wide. Plane of reference is mean low water.

River and Harbor Act of 29 March 1956, House Document 245, 82nd Congress, 1st Session, provides for the construction of a seaway canal 36 feet deep and 500 feet wide from Micheaud to Chandeleur Islands and increasing gradually to a width of 600 feet and depth of 38 feet to the 38-foot contour in the Gulf of Mexico, with protective jetties at entrance, a permanent retention dike through Chandeleur Sound and a wing dike along islands as required. It also provides for an inner tidewater harbor con-

sisting of a 1,000-by 2,000-foot turning basin 36 feet deep and a connecting channel 36 feet deep and 500 feet wide to the Inner Harbor Navigation Canal including construction of a suitable highway bridge with approaches to carry Louisiana State Highway No. 47 over the channel. The plan further provides for future construction, when economically justified, of a channel and lock at Meraux to furnish an additional connection between tidewater harbor and the Mississippi River. (Note: The protective jetties at the entrance and the wing dike along the islands were not included for construction in the design memorandum.)

River and Harbor Act of 23 October 1962 (Public Law No. 87-874, Senate Document No. 36, 87th Congress, 1st Session) provides for a channel 40 feet deep and 500 feet wide from Baton Rouge to the upper limits of the Port of New Orleans and also 40 feet deep for a width of 500 feet within the presently authorized 35-by 1,500-foot channel in the port limits of New Orleans.

Physical Data

Normal range of tide at mouth is one foot; tide due to storms is 2 to 6 feet. During low river discharge, tidal variations are 0.8 foot at New Orleans and 0.2 foot at Baton Rouge. Maximum stages from spring floods on the Mississippi River are 20 feet above (m.s.l.) at New Orleans and 45 feet above (m.s.l.) at Baton Rouge.

Controlling depth mean low Gulf, June 1964, Baton Rouge to New Orleans, New Orleans Harbor

and New Orleans to Head of Passes, 40 ft.; SOUTHWEST PASS: Entrance channel into Head of Passes, 40 ft.; through pass from head to Gulf end of jetties, 40 ft.; through bar channel at mouth of pass, 40 ft.; SOUTH PASS: A good 30-foot channel throughout the length of the pass 30 June 1964 and 30 feet over bar at Gulf entrance to pass.

Progress of Work

Work authorized under the Acts prior to 1945 is complete.

Work authorized under the modifications in Acts of 1945, 1956 and 1962 is in progress, as follows:

Mississippi River, Baton Rouge to New Orleans

Work authorized under the Act of 1962:

	Complete
Required dredging at 8 crossings:	
Red Eye, Medora, Granada, Bayou Goula, Alhambra, Philadephia, Belmont and Fairview	8 Aug 63

Mississippi River, New Orleans to Head of Passes

Work authorized under the Act of 1945:

Project dimensions obtained at time of authorization.

Southwest Pass

Work authorized under the Act of 1945:

Lateral Pile Dikes, West Bank, Mi. 1.80 to Mi. 3.08	30 Jul 63

Lateral Pile Dikes, West Bank, Mi. 1.8 to Mi. 2.8	(Not started)
Lateral Pile Dikes, West Bank, Mi. 5.98 to Mi. 9.01	19 Nov 63
Lateral Pile Dikes, West Bank, Mi. 9.14 to Mi. 15.53	15 Apr 62
Lateral Pile Dikes, West Bank, Mi. 10.1 to Mi. 14.4	(Not started)
Longitudinal Bulkhead, West Bank, 4,200 ft., Mi. 15.25 to Mi. 16.0	12 Jan 61
Lateral Pile Dikes, West Bank, Mi. 17.31 to Mi. 18.99	19 Nov 63
Lateral Pile Dikes, West Bank, Mi. 18.7 to Mi. 20.1	7 Nov 61
Lateral Pile Dikes, West Bank, Mi. 19.1 to Mi. 20.2	(Not started)
Realignment and deepening of Jetty Channel to interim depth of —35.0 m.l.g., Mi. 18.0 to Mi. 20.2	20 Sep 60
Dredging to —42 m.l.g., Mi. 1.1 AHP to Mi. 20 BHP	20 Sep 63
Dredging to —42 m.l.g., Mi. 20 to —42-ft. contour in Gulf of Mexico (Hopper Dredge)	31 Jul 62

NOTE: Mi. BHP except as noted.

South Pass

Work authorized under the Act of 1945:

Project dimensions obtained at time of authorization.

Controlling channel conditions on 30 June 1965 were 31 feet over bar channel, at Gulf entrance to Pass. Minimum width of channel was 250 feet in lower jetty channel, vicinity mile 13.3 below Head of Passes.

Mississippi River-Gulf Outlet

Work authorized under the Act of 1956.
Work initiated 17 March 1958.

Access Channel (18 by 149 feet), G.I.W.W. to Breton Sound	27 Mar 61
Interim Channel (36 by 250 feet), Paris Road to Gulf of Mexico	5 Jul 63
Project Channel (36 by 500 feet)	
Inner Harbor Navigation Canal to Vicinity of Paris Road	7 May 59
Vicinity of Paris Road to Mile —9.4	14 Mar 65
Turning Basin (Vic. mile 66.0) and appurtenant work is physically complete.	
Plug at Paris Road to be removed upon completion of high level bridge	
High level bridge (Louisiana State Highway 47), initiated 1 June 1964, is 76% complete.	
Retention Dikes:	
Shell Core and Riprap (both dikes))	26 Aug 61
Capping (both dikes)) to Mile 20.2	29 Oct 62
Rockfacing (both dikes))	3 Nov 63

Extension of Southwest Dike to Mile 15.0 (Sta. 2700) 15% complete.	
Remaining dike across Breton Sound not yet started.	
4 Prefabricated steel towers and 25 timber pile station markers	23 Jun 61
3 Concrete survey towers and 25 timber pile station markers	24 Jul 61

Work authorized under Act dated 2 March 1945, 98% complete; under Act dated 29 March 1956, 58% complete; and under Act dated 23 October 1962, 100% complete.

Cost

Previous Projects	$ 1,729,989
Baton Rouge to Gulf, Act of 2 March 1945	31,846,582
Mississippi River-Gulf Outlet, Act of 29 March 1956	50,694,011
Baton Rouge to New Orleans, Act of 23 October 1962	1,340,426
Total	$85,611,008

EXHIBIT 79

EXHIBIT 80, Page 1

HISTORICAL SUMMARY GIVING SCOPE OF PREVIOUS PROJECTS FOR IMPROVEMENT OF RIVERS AND HARBORS IN THE NEW ORLEANS (LA.) DISTRICT

1 and 2.
South Pass and Southwest Pass, Mississippi River

The first appropriation of $75,000 for improvement of the entrances to the Mississippi River was made by River and Harbor Act of July 4, 1836, and provided for closing some of the passages out of it by cutting a ship channel, or by any other means which would be deemed expedient after the necessary survey was made. The next appropriation, $210,000, for improvement of entrances to the river, was made by River and Harbor Act of March 3, 1837, and upon recommendation of a board of engineers attempts were made to open Southwest Pass by using the ordinary bucket drag. No permanent improvement was effected, however, as a single storm sufficed to obliterate all the work which had been done.

Nothing further was done until an appropriation of $75,000 was made by the River and Harbor Act of August 30, 1852, for opening a ship channel of sufficient capacity to accommodate the wants of commerce, the work to be done by contract. A mixed board of one Naval and three Army Engineer officers was convened to decide how the appropriation should be applied. This board reported that under the limited

1852 appropriation no other plan than that of stirring up the bottom seemed adequate for obtaining any important results. In accordance with this report a contract was entered into with the Towboat Association, by which a channel through the bar to Southwest Pass 18 feet deep and 300 feet wide was made. The harrowing and dragging process, employed by the Towboat Association, proved successful, and a channel 18 feet deep was maintained for a whole year.

The report of the 1852 board is published in Executive Document No. 16, Thirty-third Congress, first session. This board reported that there were several methods by which the ship channel might be improved, and stated them in the order of their simplicity, ease of work, and initial cost, as follows:

First. Stirring up the material of the channel bed by various means so that the river currents might carry away such material while in suspension.

Second. Assisting the stirring method by dredging and by carrying the dredged materials away by barges, etc., for special deposit outside of the channel.

Third. By narrowing, revetting, and jettying the mouths of the passes selected for ship channels and then closing the other passes.

Fourth. In case the above methods proved unsuccessful, then by connecting the deep-river channel at some suitable point between New Orleans and the passes by a ship canal to deep water in the adjoining Gulf.

The board recommended that these methods be tried in the order above given and that such work, being of experimental nature, should be done by government forces rather than by contract. The first and second methods were considered doubtful as to permanent results but worth trying. In their discussion of the third method, that of jettying the pass selected for ship channels and closing minor passes, the board stated that "the project of jetties is based upon the simple fact that by confining the waters, which now escape uselessly in lateral directions, to a narrow channel, the depth in this narrow channel must be increased; in other words, the existing bar must be cut away." The fourth method, by the construction of a ship canal, was not recommended for trial until after the failure of the prior methods (the evident reason being that it would be more expensive and not as desirable as an open channel).

The 18-foot channel secured by the 1852 appropriation having disappeared, the sum of $330,000 was appropriated by the River and Harbor Act of July 8, 1856, for opening and keeping open a ship channel of sufficient capacity to accommodate the wants of commerce through Southwest Pass and Pass a Loutre, and required that such work should be done by contract. A board of engineers recommended that the bid of the Towboat Association be accepted for keeping open Southwest Pass by stirring up the bottom and that the method of keeping open the pass by jetties and closure of lateral passes be applied to both passes, and a contract was accordingly made to do this work.

Work under the contract was begun at Southwest Pass by building a jetty about a mile long on the west side of the proposed channel. The appropriation being small in proportion to the work required for good results, the jetty was necessarily of light construction and consisted of a single row of pile planks strengthened at intervals by round piles. The structure was entirely too frail, and, after it had been seriously damaged by storm, the plan was abandoned, and the contractors were permitted to resort to the stirring-up process, which resulted in securing and maintaining, as long as that process was continued, an 18-foot channel. Further appropriations for work under the jetty method were prevented for several years by the advent of the Civil War.

By River and Harbor Act of March 2, 1867, and appropriation of $200,000 was made, and the construction of two dredges was authorized for this improvement. Under this authority the government built a powerful dredge boat of special design, with a powerful cutter and deflector, which was operated under the very best of conditions, but since it simply functioned by stirring up the material and deflecting it into the current, it did not succeed in maintaining a much deeper channel than that formerly secured by the simpler and less costly machines.

An act approved March 3, 1873, appropriated $34,988.53 to pay for work done by Horace Taylor, or by his authority, on the bar at the mouth of the Mississippi River, and for all claims under and by virtue of a contract entered into between him and

Bvt. Lieut. Col. M. D. McAlester, of the date of November 5, 1866.

The necessities of commerce made it imperative that a better channel connection with the Mississippi River be obtained at an early date, and under a resolution of the House of Representatives of March 14, 1871, the Secretary of War was requested to cause an examination and survey, with plans and estimate of cost, to be made by an officer of the engineers for a ship canal to connect the Mississippi River with the Gulf of Mexico, or the navigable waters thereof, suitable in location and dimensions for military, naval, and commercial purposes, and that he report upon the feasibility of the same to the House of Representatives.

The survey and estimates for the canal, near Fort St. Philip, were submitted by a board of engineer officers, who reported that the construction of the canal with a depth of 27 feet and bottom width of 200 feet, having at the river end a lock with chamber 500 feet long, 60 feet wide, and depth over sill of 25 feet, was feasible and desirable, and was estimated to cost $10,273,000. A minority of the board (Gen. Barnard) reported that the experience gained with the jetties was sufficient to warrant still better results, and that the advantages of an open river were sufficient to warrant further experiments in this method at Southwest Pass, and he reasoned that the success of the jetty system, as applied to the mouth of the Danube, presaged even greater success if applied at South Pass.

The report of the board upon the canal project and the jetty method was followed by a proposition of Mr. James B. Eads, in February, 1874, to improve the entrance to the Mississippi River by jetties at Southwest Pass, for the sum of $10,000,000, payment to begin after a depth of 20 feet was secured and continuing as certain greater depths were secured until 28 feet had been secured and $5,000,000 had been paid, the remaining $5,000,000 to be paid in installments of $500,000 each, conditional upon the permanence of the channel for 10 years.

A controversy resulted as a consequence of this proposition between the advocates of the canal on one side and the supporters of the jetty system on the other side, and since a part of the discussion was theoretical, it was impossible to decide which was the better until further investigation of the jetty method could be had. Accordingly, on June 23, 1874, an act was passed, constituting a commission to investigate and report upon the improvement of the mouth of the Mississippi River. The report of this board was submitted January 13, 1875. (Report printed in Annual Report, 1875, p. 948.)

The board investigated the question of a canal below New Orleans, and estimated the cost of construction at $10,296,500 and $60,885 per annum for maintenance.

This board also considered the question of jetties, taking into consideration South Pass, Pass a Loutre, and Southwest Pass, and recommended construction of jetties at South Pass, at an estimated cost of $5,-

342,110 and annual cost of extensions, etc., $130,000; for Southwest Pass estimated first cost for jetties $8,253,124 and annual cost for extensions, etc., $390,-000.

The proposition of Mr. Eads, for the construction of the jetties at South Pass for $5,250,000, was accepted by the United States in 1875, and was along the lines of the recommendations made by this board. Work under his contract was commenced June 2, 1875, and completed in 1879. The maintenance period ended January 28, 1901. The total cost of the work, with maintenance, was $8,000,000.

The act of February 17, 1898, allotted $10,000 from the appropriation of $250,000 made by the River and Harbor Act of February 26, 1897, for the closing of a crevasse in Pass a Loutre, for the purpose of making a survey to determine the practicability of securing a navigable channel of adequate width and 35 feet in depth at mean low water of the Gulf of Mexico, through the Southwest Pass of the Mississippi River. The board was composed of three Engineer officers, and their report was printed in House Document No. 142, Fifty-fifth Congress, third session.

The board proposed the construction of parallel jetties in prolongation of the channel beyond the crest of the bar, and in addition to these, certain auxiliary works were provided, including the construction of two dredges, all at a total estimated cost of $13,-000,000.

South Pass

At the end of the 20-year maintenance period granted Eads by statute in South Pass Channel, the Act of June 6, 1900 authorized the Secretary of War to assume maintenance of this channel.

The project, created by the Act of March 3, 1875, and amended by the Acts of June 19, 1878, and March 3, 1899, was continued in operation until 1945. There was no major new work during this time. The jetties were increased in height due to subsidence and high-wave action, but for the most part the activity was confined to maintenance and upkeep.

There was no contract given or plan made to deepen South Pass while under Federal maintenance, but the controlling depth of the channel, its shallowest point, increased from 25 feet to 28 feet after the federal government took over maintenance of the channel as a result of the constant dredging to maintain the channel.

The only active plan to deepen any part of the channel was authorized by Act of May 28, 1908, which authorized the dredging of a "channel 35 feet deep in the 3.5 miles span from Cubits Gap to Head-of-Passes."

By the end of fiscal 1923 the total expenditures on South Pass amounted to: (1) $8,000,000 paid to Eads for new construction and maintenance under the 1875 contract, (2) $3,727,568 spent in maintenance by the federal government since it took over maintenance of the project in 1910. This amounted

to a total of $11,727,568.15 for all expenditures on the channel for the entire project adopted by the Act of March 3, 1875.

In 1936 the two passes, South and Southwest, were combined into a single project.

The last year that South Pass is listed as a separate project shows continued maintenance with no new work. In fact the only new work done on South Pass between 1886 and 1935 was the shoreward extension of the east jetty for a distance of 872 linear feet. The total cost of new construction and maintenance in South Pass up to the end of fiscal 1935 was $14,252,659.12.

The Act of March 2, 1945, which adopted the recommendations in H. Doc. 215, 76th Cong., 1st Sess., combined various projects which placed the entire river from Baton Rouge to the Gulf of Mexico under one project. This combination makes it difficult to compile cost figures for the entire amount spent on the South Pass project from its inception to date. The figure for the average annual maintenance costs given in that report was $151,217.82. This figure reflects maintenance costs from the date the federal government began maintenance to the date the report was written, a span of 35 years.

Since that time South Pass has been maintained at the project dimension of 30 by 450 feet and the South Pass Bar Channel at 30 by 600 feet.

Essentially then, the present channel in South Pass is the same as when it was constructed by Eads

between 1875 and 1886. Since that time extensive maintenance work has been done to maintain a deep-water channel and to maintain the jetties extending into the Gulf, but, there has been no new work of any consequence performed on this channel since the completion of the Eads project in 1886.

Southwest Pass

The Southwest Pass project was begun as a result of a feasibility study completed in 1902 by the Corps of Engineers. This study recommended the construction of jetties extending into the Gulf and dredging and maintaining a 35-foot channel of "practical" width, later set at 1,000 feet.

The initial cost of the project was estimated to be $6,000,000 with an annual maintenance cost estimate of $150,000.

This recommendation was adopted by the Rivers and Harbors Act of June 13, 1902, and work on the jetties commenced in 1903 and 1904. Construction of the east jetty began on Dec. 31, 1903 and on the west jetty on Aug. 30, 1904. The construction of the jetties was completed on Jan. 5, 1908.

In addition to the construction of these jetties, the Corps dammed up 11 small streams leading out of Southwest Pass in order to increase the volume of water flowing out of the Pass into the Gulf.

Dredging had been begun in 1904 and continued in an effort to construct a channel 35 feet deep by 1,000 feet wide. In addition, Congress, by Act of May 28, 1908, allowed use of funds from this project ap-

propriation to dredge the shoal area between Head-of-Passes and Cubits Gap where necessary to get the desired 35-foot channel.

By the end of fiscal year 1909, this project had cost $4,596,604.99. At the end of fiscal 1911, these costs had increased to $5,620,278.88. During this same year, 1911, work was begun on the extension of the Southwest Pass jetties. These jetty extensions were to add 3,000 feet to the east jetty and 3,750 feet to the west jetty. These increases were necessary due to the advance of the crest of the bar at Southwest Pass. The estimated increase of the cost of the jetties at the time that the contract was let for the extension was $465,000.

In 1916 a study was carried out to determine the feasibility of extending the jetties across the deep-water bar at the entrance to the Pass, in order to lessen the necessity of dredging this bar. The study recommended this course of action, and the recommendation was subsequently approved.

By 1918 the jetties extended some distance from land. The Corps report, p. 911, lists the distance from Head-of-Passes to the Gulf as 19½ miles with the jetties, 15 miles without the jetties. The west jetty is listed as being 3½ miles long, and east jetty 4½ miles long.

A plan of improvement of the Southwest Pass channel was adopted in 1923. This plan was authorized by the 1902 Act which allowed the Secretary of War to modify the details of the work done on

the channel. The modification called for the narrowing of the Southwest Pass channel to an overall width of 1750 feet for the lower 8.3 miles of its length. The average width of the channel prior to the narrowing was 2,000 feet, ranging from a maximum of 3,100 feet to a minimum of 1,190 feet. The expected result was simplification of the maintenance on the channel and an increase of the center depth to approximately 35 feet.

The cost of work for the year, 1923, amounted to $1,919,567.63 of which $1,340,878.97 was for new construction, including the narrowing of the channel and $578, 688.66 for maintenance of the existing project.

The total project expenditures that were listed by the Corps in 1923 were, $13,533,513.33 for new work and $8,892,292.56 for maintenance, for a grand total of $22,425,805.89.

In 1928, the estimate of cost of new work on the completed project was increased to $14,500,000 with two annual maintenance estimates; for a 500 ft. wide channel, $415,000; for a channel 1,000 ft. wide, $680,000.

In 1934 the Secretary of War again used the prerogative given him in the authorizing Act of 1902 to modify the details of the project and authorized the contraction of the lower mile of the jetty channel width to 1420 feet. To implement this modification, six spur-dikes were constructed in 1935.

The latest authorization for new work in South-

west Pass was the Act of March 3, 1945 which approved a Corps plan to deepen Southwest Pass to 40 feet.

The work authorized by this Act was finally begun in 1958 with the expenditure of $160,056 for, ". . . advance engineering and design, model study and report, publication of data on Southwest Pass, and geological investigations and report, ..." (1958 Corps Report, p. 542.)

In 1959 this preliminary work was complete. In 1960 the plans for the deepening of this channel were approved and work was commenced, resulting in the expenditure of $654,365 for new work on Southwest Pass for the fiscal year. In 1961 the cost for the continuation of this work was $1,777,466.

In 1962 dikes to stabilize the pass and to prevent further erosion of the banks by winds and wave action were constructed in Southwest Pass costing $372,-469. They were constructed between mile 9.14 to mile 15.53. Dredging to deepen the channel cost $1,693,-096 for a total new work cost of $2,065,565 for the year. This work continued the following year at a cost of $1,497,763.

This project was completed on September 29, 1963. The cost for the year was $1,184,974; $559,-028 dredging, and $625,946 for dike construction.

The total cost of this new work amounted to $160,056 for preliminary work; $2,703,945 for dredging, $998,415 for dike construction and $1,497,763 for work for which there was no breakdown. Thus

the grand total for the new work on Southwest Pass between 1958 and 1964, which was authorized in 1945, amounted to $5,360,179.

This project, like the one at South Pass is an old project. It originated in 1902 and for all intents and purposes, it was completed with the contraction of the lower 8.3 miles of the channel as authorized by the Secretary of War in 1923. Since that time there has been constant and costly maintenance work done, consisting mostly of dredging the channels and recapping the jetties as they become damaged by constant water action. There have also been some modifications of the project, but basically it has not been changed since the first plans were approved in 1902.

Note of possible interest: The 1942 Corps report indicates that some repair work was necessitated by damages resulting from what was believed to be a torpedo fired by a German submarine.

MAINTENANCE COST
MISSISSIPPI RIVER
BATON ROUGE TO THE GULF

Year	*South Pass*	*Southwest Pass*	*Entire Project For Year*	*Total Cost to End Fiscal Year*
1966	$346,573	$3,715,392	$6,773,865	$66,404,917
1965	664,736	1,797,584	3,909,429	59,631,052
1964	*	*	3,144,227	55,721,623
1963	73,220	1,053,451	1,880,773	52,577,396
1962	11,405	805,615	2,000,508	50,696,623
1961	320,378	1,406,707	2,232,319	48,696,115

Year	*South Pass*	*Southwest Pass*	*Entire Project For Year*	*Total Cost To End Fiscal Year*
1960	122,822	1,326,182	1,896,938	46,463,796
1959	32,393	868,890	1,655,028	44,566,858
1958	14,545	1,047,295	1,959,639	42,911,830
1957	91,665	1,783,557	2,215,174	40,952,191
1956	146,872	845,563	1,510,964	38,737,017
1955	241,520	686,380	1,220,781	37,226,053
1954	47,539	993,340	1,459,752	36,005,272
1953	241,836	1,150,236	1,806,707	34,247,237
1952	26,154	1,664,608	2,166,210	32,440,530
1951	24,721	1,485,668	1,896,146	30,274,320
1950	52,077	1,732,225	2,261,102	28,378,173

*Figures on maintenance not broken down by area.

APPENDIX II
Traffic Tonnage Using Mississippi

Year	*In Transit thru Passes*	*Port of New Orleans*
1965	66,213,967	88,876,872
1964	65,031,392	83,496,920
1963	61,209,684	79,130,710
1962	59,055,059	71,569,913
1961	50,396,135	61,313,877
1960	47,227,687	56,671,652
1959	40,844,832	50,441,941
1958	39,714,520	51,711,671
1957	41,277,900	56,140,927
1956	35,247,220	50,708,096
1955	30,603,589	47,082,734
1954	26,440,800	40,560,350

Year	*In Transit thru Passes*	*Port of New Orleans*
1953	25,802,324	39,691,253
1952	24,450,659	39,547,301
1951	25,562,646	38,165,705
1950	23,324,735	35,125,047
1949	22,090,710	29,745,885
1948	20,808,707	28,549,628
1947	20,004,025	29,988,400
1946	15,114,532	24,207,733
1945	13,387,186	25,204,532
1944	9,963,446	23,948,506
1943	7,024,752	21,328,687
1942	8,199,720	22,637,215
1941	13,533,148	20,907,269
1940	15,806,606	19,795,599
1939	15,597,453	16,304,530
1938	16,318,896	17,224,526
1937	16,906,177	17,173,058
1936	14,964,653	14,331,737
1935	13,571,713	12,918,623
1934	12,097,890	11,900,733
1933	13,044,833	12,713,675
1932	11,075,013	10,491,084
1931	12,111,984	12,163,915
1930[1]	13,833,921	12,723,453
1929	17,441,570	15,995,374

[1]Note the traffic through the Passes declines during the early depression years, begins to build up in the late 1930's, begins to decline again in 1939 when World War II began in Europe, and drops drastically in the years 1942, 1943, and 1944, the United States War years.

Year	*In Transit thru Passes*	*Port of New Orleans*
1928	17,107,964	16,248,172
1927	16,681,478	15,270,038
1926	18,962,769	14,374,938
1925	18,016,052	14,260,695
1924	15,976,301	13,609,603
1923	13,624,712	12,345,004
1922	12,863,999	10,109,513
1921	12,933,530	11,622,826
1920[2]		11,823,863
1919		8,895,681
1918		9,087,084
1917		8,014,543
1916		7,300,432
1915		6,536,132
1914		6,273,012
1913		6,442,932
1912		5,059,830
1911		4,487,726
1910		3,964,109
1909		3,368,722
1908		3,088,472
1907		3,527,097
1906		4,036,594
1905		3,478,976
1904		2,853,686
1903		3,062,506

[2]From 1920-1892 the Reports of the Corps of Engineers list Port of New Orleans and Passes of the Mississippi tonnage as being identical.

Year	*In Transit thru Passes*	*Port of New Orleans*
1902		3,385,686
1901		4,213,869
1900		2,773,645
1899		3,176,740
1898		4,236,663
1897		3,774,688
1896		2,140,396
1895		3,142,202
1894		2,074,118
1893		2,962,798
1892		3,542,599

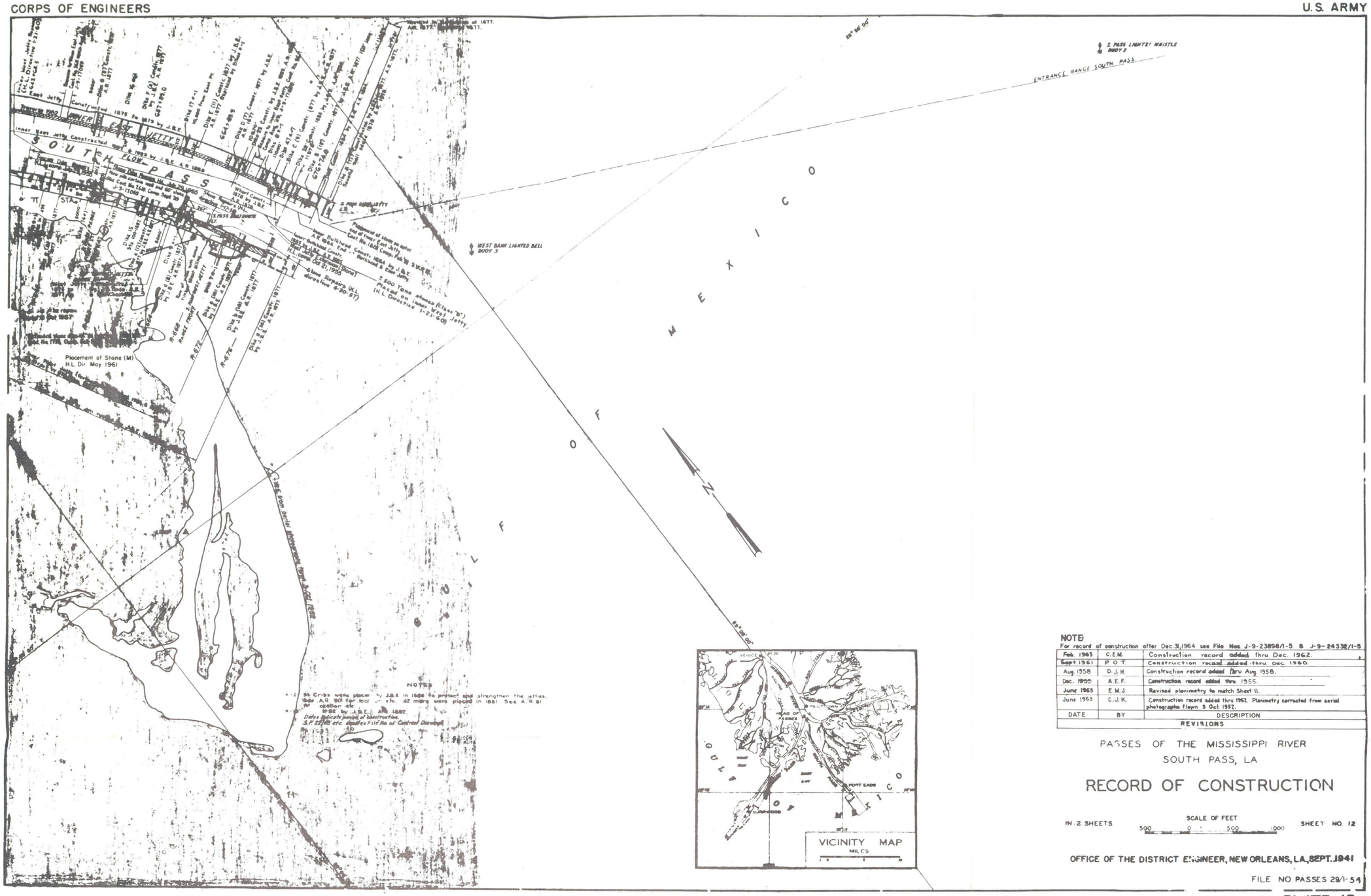
APPENDIX III
COST OF NEW WORK ON SOUTHWEST PASS UNDER LATEST CONSTRUCTION

Year	*Cost*
1958	$ 160,056
1959	
1960	654,365
1961	1,777,466
1962	2,065,565
1963	1,497,763
1964	1,184,974

EXHIBIT 81

CORPS OF ENGINEERS

U.S. ARMY



NOTE:
For record of construction after Dec 31, 1964 see File Nos. J-9-23898/1-5 & J-9-24332/1-5

DATE	BY	DESCRIPTION
Feb. 1965	C.E.M.	Construction record added thru Dec. 1962.
Sept 1961	P.O.T.	Construction record added thru Dec. 1960.
Aug. 1958	D.J.H.	Construction record added thru Aug. 1958.
Dec. 1955	A.E.F.	Construction record added thru. 1955.
June 1965	E.M.J.	Revised planimetry to match Sheet 11.
June 1953	C.J.K.	Construction record added thru 1952. Planimetry corrected from aerial photographs flown 3 Oct. 1952.

REVISIONS

PASSES OF THE MISSISSIPPI RIVER
SOUTH PASS, LA

RECORD OF CONSTRUCTION

IN 2 SHEETS

SCALE OF FEET
500 0 500 1000

SHEET NO. 12

OFFICE OF THE DISTRICT ENGINEER, NEW ORLEANS, LA, SEPT. 1941

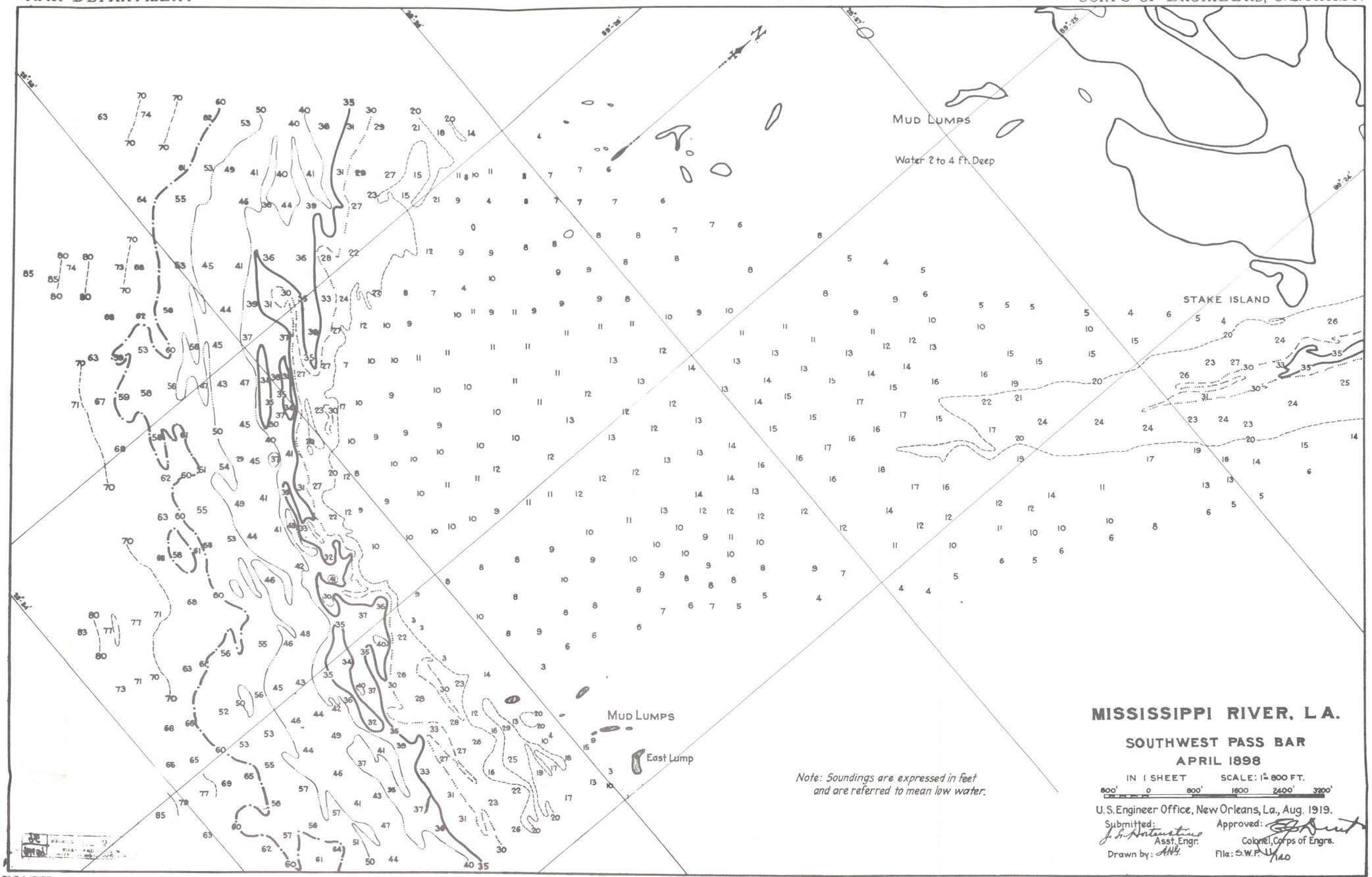
FILE NO. PASSES 29/1-54

PLATE 15
EXHIBIT 81

EXHIBIT 82

WAR DEPARTMENT

CORPS OF ENGINEERS, U.S. ARMY.



Note: Soundings are expressed in feet and are referred to mean low water.

MISSISSIPPI RIVER, L.A.

SOUTHWEST PASS BAR

APRIL 1898

IN 1 SHEET SCALE: 1" = 800 FT.

800' 0 800' 1600 2400' 3200'

U.S. Engineer Office, New Orleans, La., Aug. 1919.

Submitted: J. L. Antoustine, Asst. Engr.

Approved: Colonel, Corps of Engrs.

Drawn by: ANL

File: S.W.P. 11/140

EXHIBIT 82

EXHIBIT 83

War Department

Corps of Engineers, U.S. Army

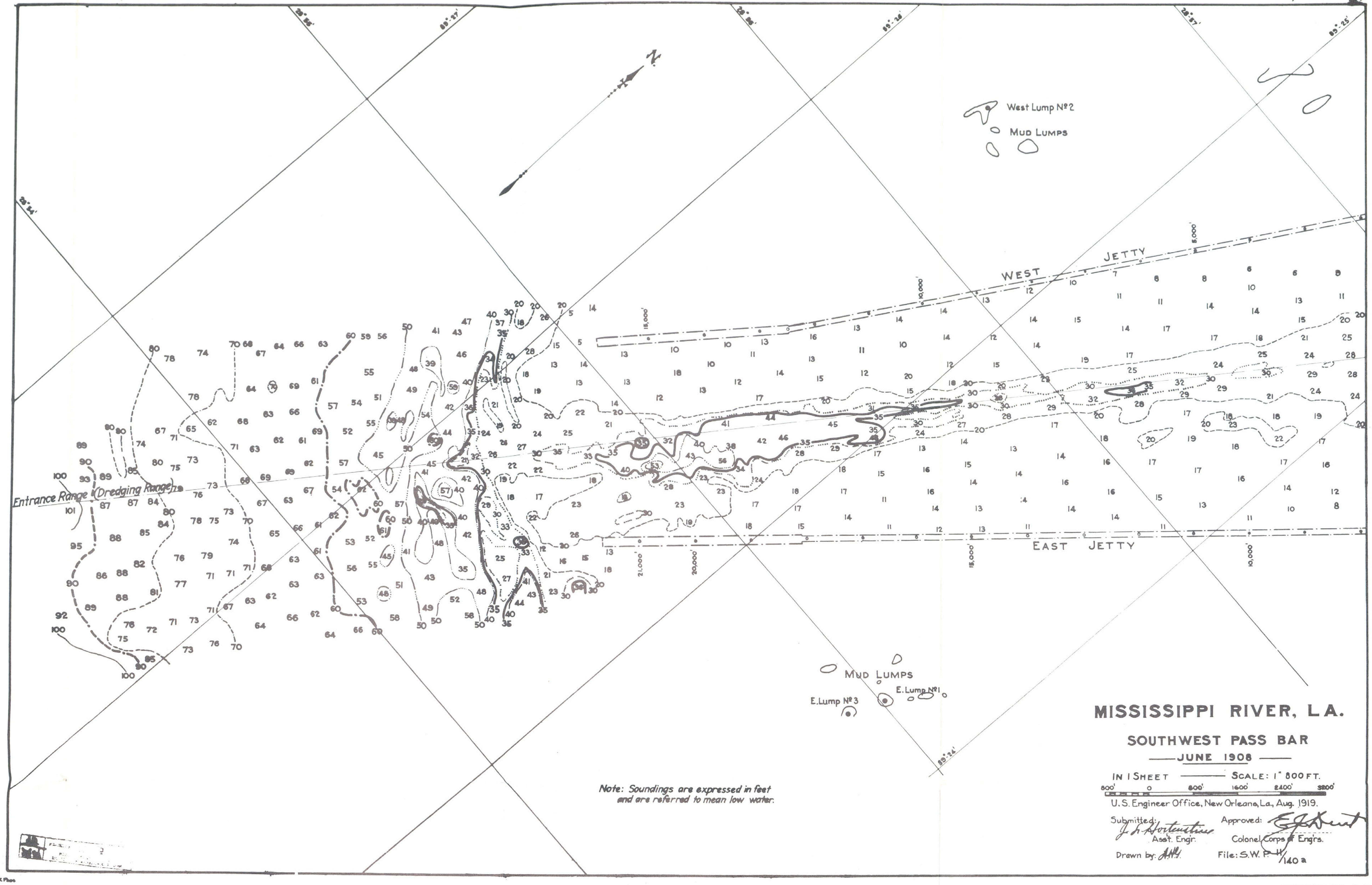

West Lump No 2
Mud Lumps
West Jetty
East Jetty
Entrance Range (Dredging Range)
Mud Lumps
E. Lump No 1
E. Lump No 3
Note: Soundings are expressed in feet and are referred to mean low water.
MISSISSIPPI RIVER, LA.
SOUTHWEST PASS BAR
JUNE 1908
IN 1 SHEET
SCALE: 1" 800 FT.
800' 0 800' 1600' 2400' 3200'
U.S. Engineer Office, New Orleans, La., Aug. 1919.
Submitted:
Asst. Engr.
Approved:
Colonel, Corps of Engrs.
Drawn by:
File: S.W.P. 11/140 a

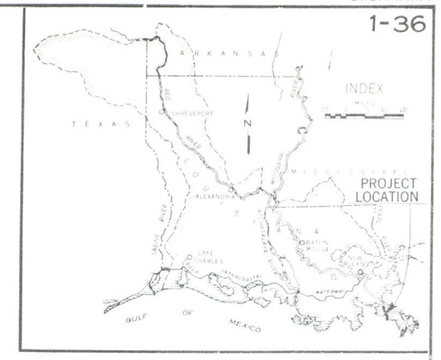
EXHIBIT 83

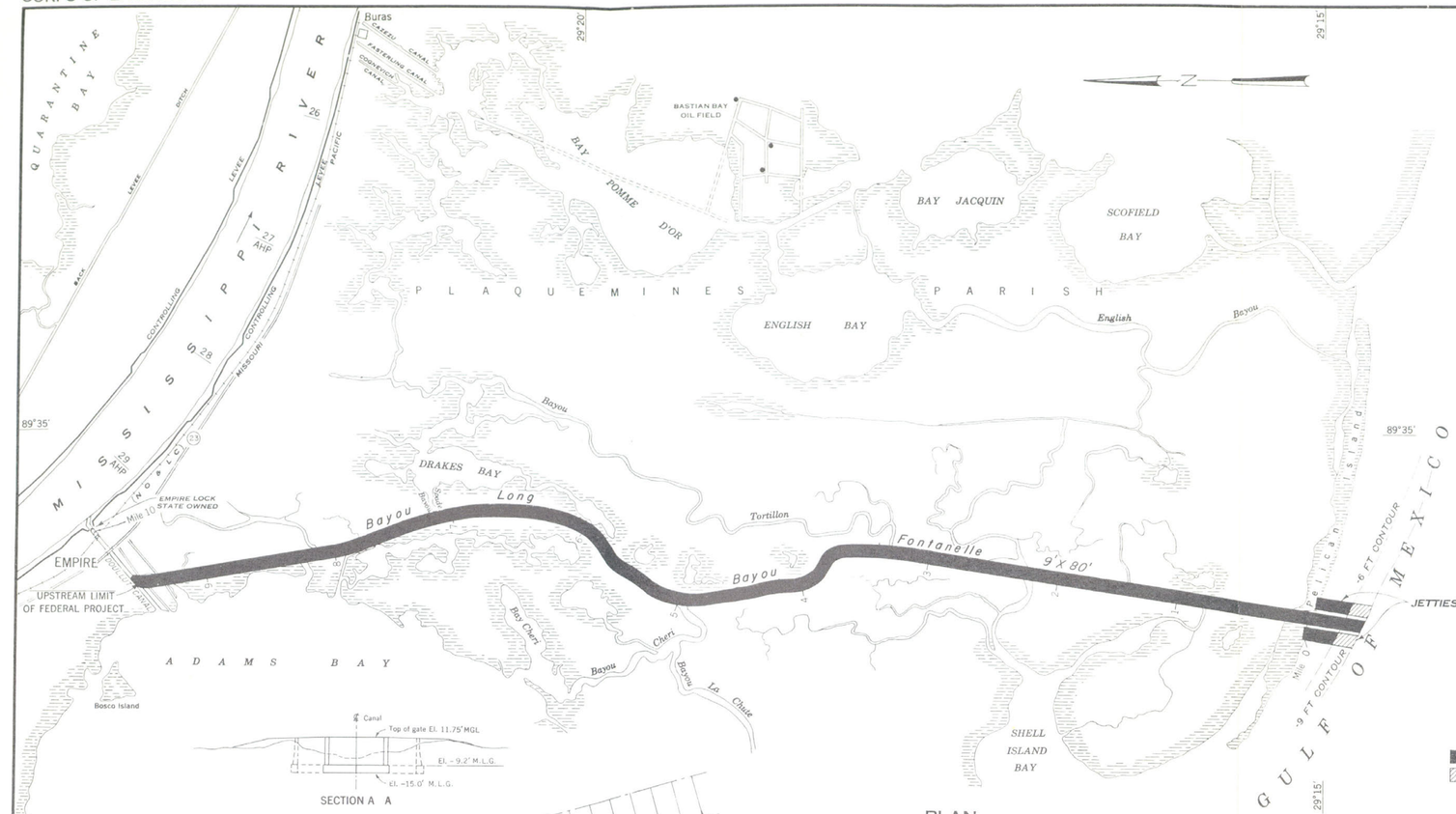
EXHIBIT 84

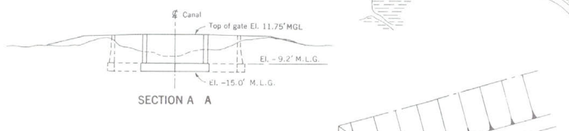
CORPS OF ENGINEERS

U. S. ARMY

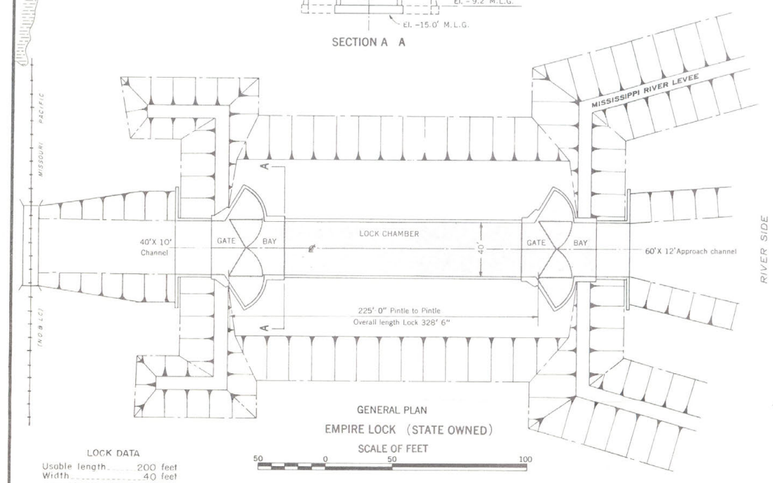
1-36







SECTION A A



GENERAL PLAN

EMPIRE LOCK (STATE OWNED)

SCALE OF FEET

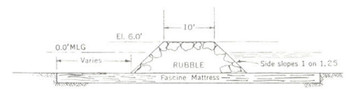
50 0 50 100

LOCK DATA

Usable length.....200 feet
Width.....40 feet
Elev. of sill...-9.2 feet M.L.G.

PLAN

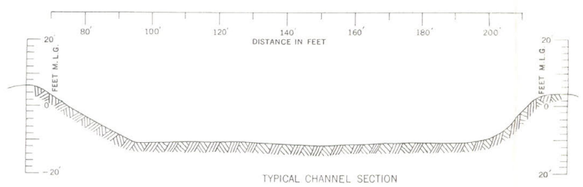
SCALE OF MILES



TYPICAL SECTION

ENTRANCE JETTIES

NOT TO SCALE



TYPICAL CHANNEL SECTION

STATE PLANE COORDINATES

Landward End of Channel
x=2,550,097.11
y= 216,119.05

Seaward End of Channel
x=2,549,687.19
y= 213,855.95

LOWER MISSISSIPPI VALLEY DIVISION WORK

RIVER AND HARBOR IMPROVEMENTS

WATERWAY FROM EMPIRE, LA. TO THE GULF OF MEXICO

SCALES AS SHOWN

OFFICE OF THE DISTRICT ENGINEER, NEW ORLEANS, LA.

Revised 30 June 1965

EXHIBIT 84

WATERWAY FROM EMPIRE, LA. TO THE GULF OF MEXICO CONDITION OF IMPROVEMENT, 30 JUNE 1961

Project

River and Harbor Act of 24 July 1946 provides for a navigable channel 9 by 80 feet from Empire, La. to the Gulf of Mexico, with construction of rubble stone jetties to the 6 foot depth contour; extension of jetties to the 9 foot depth contour is provided if and when it becomes necessary. Length of improvement is 10 miles.

Range of Tide

Normal tide ranges from 16 inches to 40 inches; hurricane tides may exceed 6 feet.

Controlling Depth Below Mean Low Gulf Level

(May 1960) Empire to jetties, 6.0 ft.; thru jetties, 10.0 ft.; bar channel, 8.5 ft.

Progress of Work

The jetties were completed to the 6-foot depth contour in February 1950, and the channel was completed to the 9-foot depth contour in June 1950. Cooperation with local interests for obtaining right-of-way has been completed.

Status

The project is physically complete unless at a later date it is found necessary to extend the jetties to the 9-foot depth contour.

Cost

$1,068,142.

EXHIBIT 85

EXHIBIT 85

EXHIBIT 86

WATERWAY FROM EMPIRE TO THE GULF OF MEXICO

The waterway from Empire, Louisiana to the Gulf of Mexico is 10 miles in length extending out to the 9-foot contour in the Gulf. It has "rubble stone" jetties which extend to the 6-foot contour "with landward extensions thereof as required to prevent flanking." The project authorizes the extension of the jetties seaward to the 9-foot contour if this would be more economical than maintaining the channel between the 6 and 9 foot contour by dredging. To date this has not been done.

The project, a 9x80 foot channel, was authorized, by adoption of House Doc. 697, 78th Cong., 2d Sess., by the River and Harbor Act of July 24, 1946.

The original cost estimate for the project was $900,000, with the annual maintenance estimated at $25,000. The cost of extending the jetties, if found necessary, was estimated at $600,000.

The route decided on by the Corps was to begin at the state-owned Empire Canal connecting Empire and Buras and extending to the Gulf through Bayou Long and Bayou Fontanella with a landcut crossing Pelican Island.

The excavation necessary to complete the project was estimated to be 2,100,000 cubic yards prior to commencement of operations in 1948.

In 1949 work was commenced on the project. By the end of fiscal 1949 the channel was 90% com-

plete, 1,858,530 cubic yards of material having been removed, and work was begun on the construction of the jetties. The entire project was listed as 11% complete. This completion figure includes construction of the jetties to the 9-foot contour.

The project was completed in fiscal 1950, exclusive of extending the jetties from the 6 to 9-foot contour which was not then contemplated. During the year the new work consisted of removal of 264,-309 cubic yards of material, and the construction of 3736 linear feet of jetties, the east jetty being 1,818 feet and the west jetty 1,918 feet in length.

Also during that year maintenance began with the expenditure of $419.97.

After the completion of the channel in 1950, there were still some listings of expenditures for new work. This consisted, in 1951 of carry-over payments on prior completed contracts and payments for labor in right-of-way acquisition. Subsequent new work expenditures were for the expenses of right-of-way acquisition.

Since completion of the project there have been sporatic maintenance operations on this waterway. Primarily they are concerned with restoration dredging and dredging of the bar channel, although some maintenance expenditures go toward reconnaissance surveys as did the 1963 expenditures.

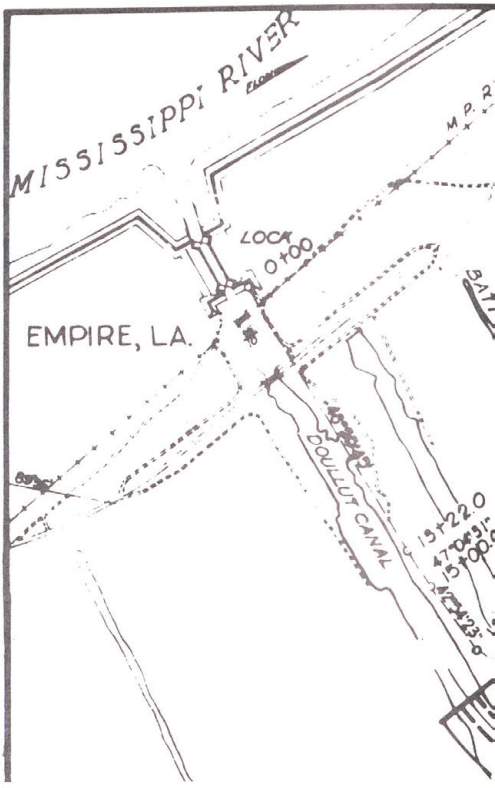
As yet it has not been found feasible to extend the jetties to the 9-foot contour.

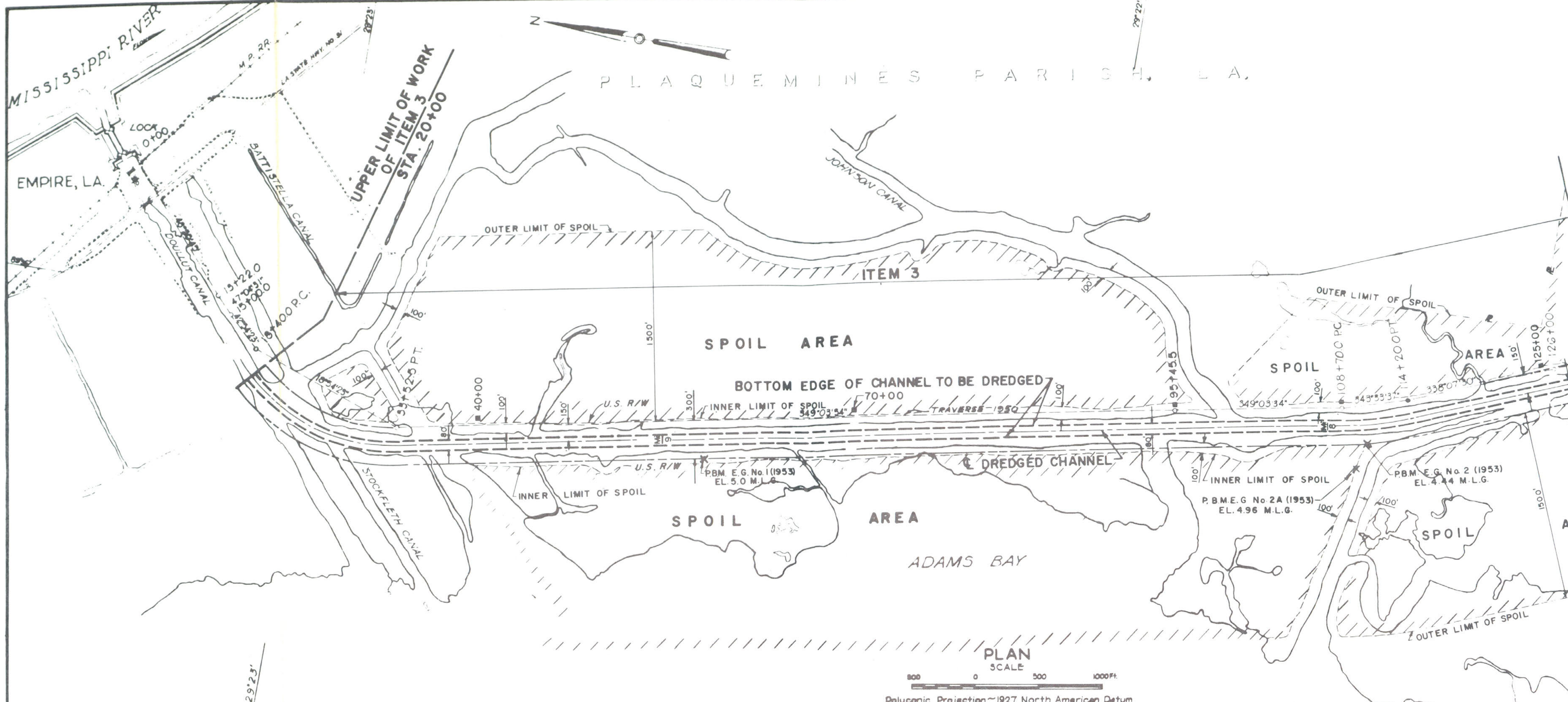
APPENDIX I

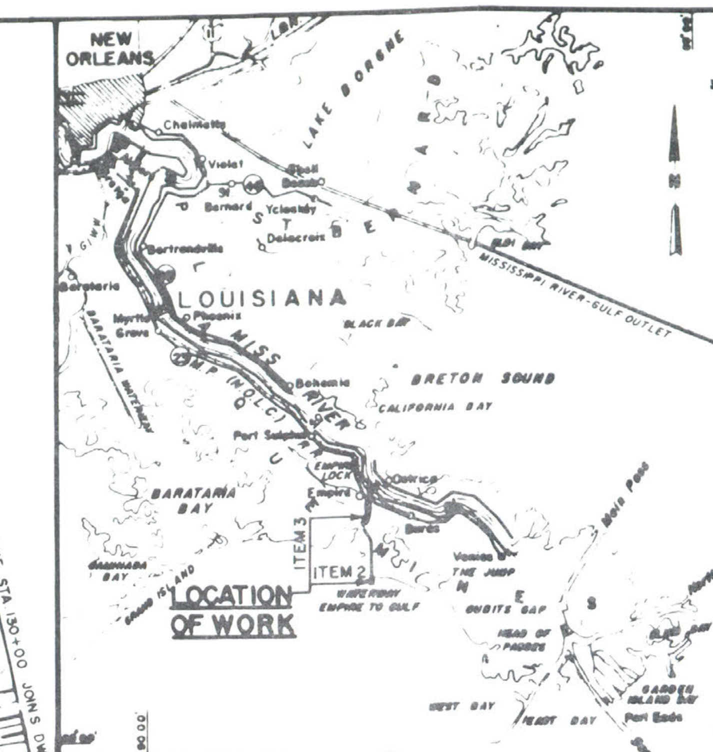
Year	*Construction Appropriated*	*Maintenance Cost*	*Maintenance Appropriated*	*Maintenance Cost*	*Commerce In Tons*
1947	$ 12,000	.....	.....	.....	None
1948	250,000	$ 15.94	.....	.....	None
1949	220,000	243,567	.....	.....	$ 43,963
1950	600,000	809,045	$ 800	$ 419	51,594
1951	18,000	3,590	.....	.....	102,853
1952	.....	1,880	43,000	39,699	130,811
1953	.....	7,036	—6,500	—3,201	92,589
1954	.....	1,053	27,300	24,318	120,233
1955	.....	895	51,900	54,458	138,182
1956	.....	1,057	55,356	55,783	166,106
1957	†	†	8,000	7,368	291,985
1958	.....	.....	468	1,080	395,518
1959	.....	.....	3,000	2,747	430,712
1960	.....	.....	— 273	.....	511,413
1961	.....	.....	58,652	58,652	582,184
1962	.....	.....	11	11	1,183,185
1963	.....	.....	56,300	10,476	722,448
1964	.....	.....	— 50	45,774	646,317
1965	.....	.....	‡	‡	827,677
1966	.....	.....	‡	‡	

†No further appropriations or expenditures for new work.
‡No report of expenditures.

EXHIBIT 86


MISSISSIPPI RIVER
EMPIRE, LA.
LOCK
0+00
BOUILLUT CANAL
15+220

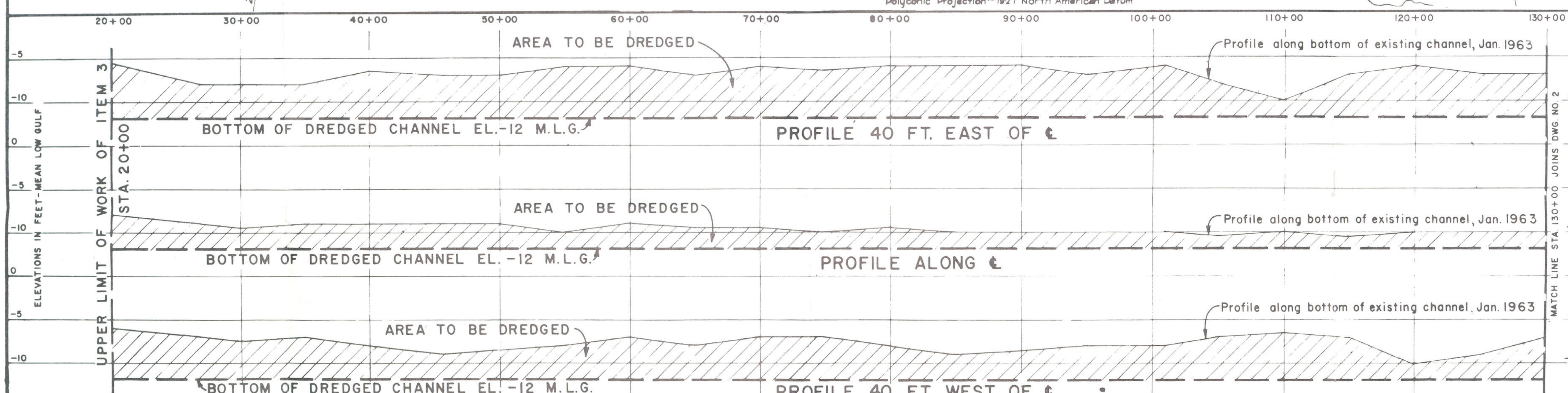




VICINITY MAP
SCALE OF MILES
10 0 10

DISTANCE IN FEET BETWEEN BASE LINE AND ℄ OF CHANNEL (RANGES NORMAL TO CANAL)

Range	Distance	Range	Distance	Range	Distance
DRAWING NO. 1		80+00	200'	140+00	200'
20+00	150'	85+00	200'	145+00	200'
27+00	250'	90+00	200'	150+00	200'
30+00	200'	95+00	200'	155+00	200'
35+00	250'	101+00	200'	160+00	200'
40+00	200'	105+00	200'	165+00	200'
45+70	200'	110+00	200'	170+00	200'
50+00	200'	115+00	200'	175+00	200'
55+00	200'	119+50	200'	180+00	200'
60+00	200'	125+00	200'	185+00	200'
65+00	200'	130+00	200'	190+00	200'
70+00	200'	DRAWING NO. 2		195+00	200'
75+00	200'	135+00	200'	200+00	200'
				205+00	150'



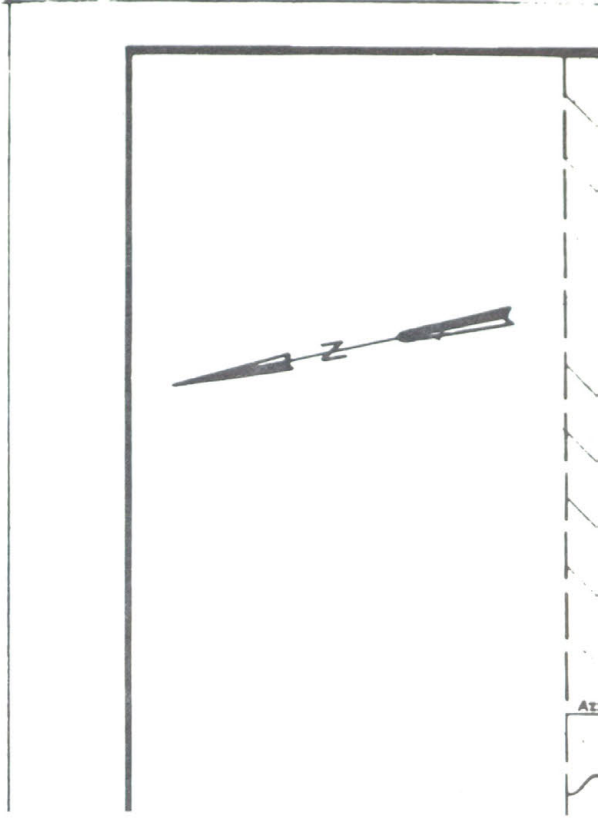
LEGEND
- Concrete Monument
- Creosote Post

DRAWN BY	TRACED BY	CHECKED BY	
D.A.S.	D.A.S.	R.V.M.	U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS CORPS OF ENGINEERS NEW ORLEANS, LA

SUBMITTED: R. J. [signature] — CHIEF, DESIGN BRANCH
DATE: APRIL 1963
APPROVED: [signature] — CHIEF, ENGINEERING DIVISION
APPROVED: [signature] — COLONEL, CE, DISTRICT ENGINEER

WATERWAY FROM EMPIRE, LA. TO THE GULF OF MEXICO
MAINTENANCE DREDGING
ITEM 2 - STA. 543+00 TO STA. 563+00
ITEM 3 - STA. 20+00 TO STA. 205+00

CODE IDENT No | SIZE | FILE No H-16-22745
SCALE AS SHOWN | SPEC No CIVENG-16-047-63-132 | DWG. NO. 1 of 5



N

M a r s h

ISLAND

John E. Pottharst, Sr.
Tracts 29 & 29A

Slough

528+23.0

INNER LIMIT OF SPOIL AREA

Az. 111°08'

U.S. R/w

EAST JETTY

C.W.E. March 1960

250'

300'

90'

90'

250'

100'

CHANNEL

W.E. March 1960

U.S. R/w

200' TRANSITION

WEST JETTY

500'

R-520+00 — R-526+00 — R-528+00 — R-530+00 — R-532+00 — R-534+00 — R-536+00 — R-538+00 — R-540+00

INNER LIMIT OF SPOIL AREA

Slough

John E. Pottharst, Sr.
Tracts 29 & 29A

Marsh

PELICAN

SEC. 35 T21S-R28E

ITEM 2

UPPER LIMIT OF WORK OF ITEM 2
STA 543+00

STA 563+00
LOWER LIMIT OF WORK OF ITEM 2

BOTTOM EDGE OF CHANNEL TO BE DREDGED

℄ DREDGED CHANNEL

Channel Light

R-542+00 — R-544+00 — R-546+00 — R-548+00 — R-550+00 — R-552+00 — R-554+00 — R-556+00 — R-558+00 — R-560+00 — R-562+00 — R-564+00

500'

-11.5 -11.5 -11.0 -10.5 -10.5 -10.5 -10.5 -9.5 -9.5 -9.0 -8.5 -8.5 -8.5 -8.5 -8.5 -9.0 -9.0 -9.0 -9.5 -9.5 -10.0 -10.0 -10.0 -10.5 -10.5 -10.5 -10.5 -11.0 -10.5

MEXICO

GULF OF

SCALE 1:2000

SPOIL AREA SHOWN THUS

540+00 550+00 560+00

ELEVATIONS IN FEET-MEAN LOW GULF

0 -5 -10 -15

UPPER LIMIT OF WORK OF ITEM 2
STA 543+00

STA 563+00
LOWER LIMIT OF WORK OF ITEM 2

Profile along bottom of existing channel

AREA TO BE DREDGED

18 Dec 1962

BOTTOM EDGE OF CHANNEL
TO BE DREDGED EL-12.0 M.L.G.

PROFILE ALONG ℄

CODE IDENT No	SIZE	FILE No.
		H-16-22745
SCALE AS SHOWN	SPEC No. CIVENG-16-047-63-132	SHEET NO. 3 of 5