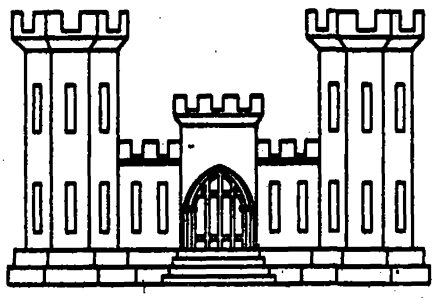
MISSISSIPPI RIVER - GULF OUTLET

117

NEW LOCK AND CONNECTING CHANNELS

SITE SELECTION REPORT



DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

MARCH 1975

INCL 13

LMVED-TD (NOD 31 Mar 75) 3d Ind
SUBJECT: Mississippi River-Gulf Outlet--New Lock and Connecting Channels Site Selection Report

DA, Lower Mississippi Valley Division, Corps of Engineers, Vicksburg, Miss. 39180 22 Nov 76

TO: District Engineer, New Orleans, ATTN: LMNED-MP

Referred to note approval subject to the comments in the previous indorsements and the following comment:

2d Ind, para 2a(1). This statement should be interpreted to mean "must be economically justified."

F. P. KOISCH
Major General, USA
Division Engineer

2 Incl
nc

CF wo incl:
DAEN-CWE-B

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P. O. BOX 60267
NEW ORLEANS, LOUISIANA 70160

IN REPLY REFER TO
LMNED-MP

31 March 1975

SUBJECT: Mississippi River-Gulf Outlet--New Lock and Connecting Channels
Site Selection Report

Division Engineer, Lower Mississippi Valley
ATTN: LMVED-TD

1. Reference is made to the following correspondence (inclosed as appendix "D") concerning authority for and the content of subject report:

a. LMVDD 1st Ind dated 2 Mar 71 to NOD basic of 18 Feb 71, para 2;

b. LMNED-PP 2d Ind dated 12 Mar 71 to NOD basic of 18 Feb 71, para 2;

c. LMVED-TD 3d Ind dated 13 Jul 71 to NOD basic of 18 Feb 71.

2. Inclosed herewith is material that is intended to be included as an appendix to the General Design Memorandum (GDM) now under preparation and scheduled for submittal in June 1975. It is felt that details of site selection are separable and, as such, can be reviewed and resolved prior to GDM submission.

3. Present loss to navigation interests due to delays at the existing antiquated lock aggregates to $11.9 million annually. If the present planning and construction schedule can be maintained, beneficial completion could be realized in late 1980. In that year, loss to navigation is projected to be $18.9 million. A 1- or 2-year delay would aggregate additional losses of $19.4 million and $19.9 million, respectively. Delay in site plan resolution and approval past June 1975 would impact project completion on a month for month basis.

3. Therefore, It is recommended that appendix "A", Site Selection, Design Memorandum No. 3 - General, Part I, Mississippi River-Gulf Outlet, Louisiana, be approved.

1 Incl (16 cy) fwd sep
Site Selection Report

for E. R. HEIBERG III
Colonel, CE
District Engineer

LMVED-TD (NOD 31 Mar 75) 1st Ind
SUBJECT: Mississippi River-Gulf Outlet - New Lock and Connecting Channels Site Selection Report

DA, Lower Mississippi Valley Division, Corps of Engineers, Vicksburg, Miss. 39180 18 Feb 76

TO: HQDA (DAEN-CWE-B) WASH DC 20314

1. I have carefully reviewed the recommendations of the District Engineer and have personally met with the Governor of Louisiana, the Board of Commissioners of the Port of New Orleans (the Dock Board), and the St. Bernard Parish Police Jury to discuss with them the findings of the District Engineer and to obtain their views regarding the subject report. I am convinced that a replacement ship lock is needed, and that the Lower Site below Violet, La. in St. Bernard Parish, is the optimum location for the new ship lock and connecting channels between the Mississippi River and the MR-GO. The St. Bernard Parish Police Jury is opposed to the Violet site because a project at that location would sever the parish into two parts and because it questions that the local economy will be benefited by the project. The Dock Board, which is the state agency serving as the project sponsor, favors the Violet Site. There is not unanimous support at the local level for the proposed site nor is there unanimous support for any of the sites studied by the District Engineer. The Violet site is cost effective, it will cause a minimum of social disruption, and while it will cause some environmental damage, on balance it is the most acceptable location for the project.

2. I also believe that a barge channel is needed to connect the tailbay of the lock to the Gulf Intracoastal Waterway as one of the "suitable connections" as mentioned in PL 84-455. The necessity for the barge channel is evident when the following factors are considered:

a. The present Inner Harbor Navigation Canal (Industrial Canal) Lock passed 25,490,000 tons of barged cargo in 1974. Projected tonnages for a new lock are expected to increase from approximately 24,500,000 tons in 1975 to 85,000,000 tons in 2035, of which it is estimated that 75 percent will move over the barge channel going to or coming from points east via the Gulf Intracoastal Waterway (GIWW).

b. The growth of the proposed "Centroport" area will generate a great amount of ship and barge activity on the Mississippi River-Gulf Outlet (MR-GO) between the Industrial Canal on the west and the confluence of the GIWW and the MR-GO to the east. This area will be a prime location for a deep draft anchorage system when justified by future traffic and it would be desirable to route through traffic around this heavily congested area from both a safety and efficiency of operations standpoint.

c. This reach of the GIWW must accommodate one way passage of 1180 ft long by 78 ft wide tows, therefore, necessitating easy curves and sheltered water. The maneuvers required by the alternate barge canal route near the confluence of the MR-GO and GIWW are less than desirable from a safety and operations view and the risk of a barge collision near the proposed deep draft anchorage area is inherent in that alignment. A connecting channel through Lake Borgne would be subject to storm wind and waves, as well as a shifting bottom which could result in frequent groundings and/or damage to the tows due to rough water. Therefore, the most desirable navigation connection between the GIWW and the new ship lock will lie between these extremes. An alignment along the western shore of Lake Borgne seems to be the most promising solution at this time.

d. Finally, in anticipation of the limited future use of the existing IHNC Lock, consideration must be given to the eventual rerouting of that reach of the GIWW now contained in the Industrial Canal to the new connection. This action would of itself necessitate the barge channel as a suitable connection.

3. The environmental impacts for the barge channel are recognized to be sufficient enough to warrant development of a mitigation plan. If the mitigation plan results in a recommendation for land acquisition, Congressional approval will be required. A separate report would be prepared for submission to Congress for that purpose and would accompany the environmental impact statement and the General Design Memorandum.

4. I have some reservations concerning the District Engineer's recommendations on the disposition of the existing IHNC Lock. Federal purchase of the old lock to insure its optimum disposition has not been satisfactorily demonstrated to be necessary. Other options may be available such as obtaining assurances from the owners of the lock (the Board of Commissioners of the Port of New Orleans) that it would be operated in accordance with the recommendations of the District Engineer, or continuation of the present lease agreement with modifications thereto to permit the Corps to operate the lock only as required in times of emergency or as considered necessary by the District Engineer. In addition, the disposition of the existing IHNC lock must result in maintaining the integrity of the MR&T flood protection system in the vicinity of the lock. Alternatives to Federal acquisition of the lock to insure its optimum disposition should be considered in future studies and resolved in the GDM.

LMVED-TD (NOD 31 Mar 75) 1st Ind 18 Feb 76
SUBJECT: Mississippi River-Gulf Outlet - New Lock and Connecting Channels Site Selection Report

5. I am concerned about the requirements of local cooperation for the construction of bridges required by this project. The report of the Chief of Engineers contained in House Document No. 245, 82d Congress, provides for Federal construction of a highway bridge across the MR-GO to carry Louisiana State Highway 61 (Paris Road) over the channel, but that local interests be required to provide and maintain any other bridges required over the waterway. The wording of PL 84-455 specifically requires ". ... That the conditions of local cooperation specified in House Document Numbered 245, 82nd Congress, shall likewise apply to the construction of said lock and connection channels." Since the connecting ship channel between the Mississippi River and the MR-GO will sever the Louisiana Southern Railroad and Louisiana State Highway 39, new bridges will be required. Louisiana Highway 39 is the highway route connecting the lower portion of St. Bernard Parish to the New Orleans Metropolitan Area. A high level bridge is presently planned because of the inconvenience and delays being imposed on vehicular traffic by movable span bridges at the existing IHNC lock. This bridge will serve as the evacuation route from the parishes south of the ship lock channel during hurricanes and other emergencies and will be operational prior to severing any existing access routes. Non-Federal construction costs for the recommended site based on July 1974 price levels, are estimated at $87,922,000, which is approximately 33% of the total project construction cost of $266,072,000. The estimated cost for new railroad and highway bridges is $54,200,000. If these bridges are constructed at Federal expense, local interest participation would be reduced to $33,722,000, or approximately 13 percent of the total project construction cost. It should be noted that local interests in the State of Louisiana are responsible for contributions in an estimated amount of $156,000,000 for three on-going hurricane protection projects in addition to normal contributions for other on-going flood control and navigation projects. I think these bridges should be a Federal responsbility because the requirements for the bridges tend to be in areas now being considered as Federal responsibilities. The highway bridge is the type of primary evacuation facility that is now being evaluated for Federal responsibility under the General Investigation entitled "GIWW, La. Section, High Level Highway Crossings." I am also aware that changes of responsibility for major bridges over the Tennessee-Tombigbee Waterway Project are being evaluated, and I believe the cost sharing problems for the ship lock are similar. In addition, I believe the bridges should be constructed at Federal expense as was the case in connection with the construction of the GIWW alternate connection in the vicinity of Algiers, Louisiana, authorized by the River and Harbor Act of 2 March 1945, Public Law No. 14 - 79th Congress, First Session, in accordance with the recommendation of the Chief of Engineers and the Board of Rivers and Harbors, set out

in Senate Document No. 188, 78th Congress, Second Session. This precedent for bridge construction, both highway and railroad, is considered pertinent in view of the fact that the new lock and connecting channels is in fact a rerouting of the GIWW traffic, with the lock having sufficient capacity to also accommodate ocean shipping. For these reasons, I believe the responsibility for the costs of the bridges should be reviewed, and I request guidance on the procedures that will expeditiously address and resolve the question without delaying the initiation of the overall project.

6. The authorization for the MR-GO states "That when economically justified by obsolescence of the existing industrial canal lock, or by increased traffic, replacement of the existing lock or an additional lock with suitable connections is hereby approved to be constructed in the vicinity of Meraux, Louisiana, ..." In response to that authorizaiton, I conclude that the existing ship lock is approaching obsolescence, that present traffic exceeds its practical capacity, and that its replacement is economically justified; that the Lower Site below Violet, La., is the optimum location for the new ship lock; and that a barge channel connecting the lock tailbay to the GIWW is required. These conclusions are, of course, subject to change as may be indicated as a result of studies required by NEPA and Sections 122 and 209 of PL 91-611. We are proceeding with preparation of the GDM and EIS on the basis of these conclusions. I recommend approval of this course of action, and request your comments on the inclosed report as the basis for completing the GDM and EIS.

7. Technical comments on the site selection report which can be resolved during future detail planning studies are attached as Incl 2.

FP Koisch

2 Incl
wd 4 cy incl 1
Added 1 incl
2. LMVD Comments

F. P. KOISCH
Major General, USA
Division Engineer

DAEN-CWE-B (LMNED-MP, 31 Mar 75) 2nd Ind
SUBJECT: Mississippi River-Gulf Outlet--New Lock and Connecting Channels Site Selection Report

DA, Office of the Chief of Engineers, Washington, D.C. 20314 11 AUG 1976

TO: Division Engineer, Lower Mississippi Valley, ATTN: LMVED-TD

1. I approve the subject report as a basis for the further studies necessary to complete preparation of the Phase I General Design Memorandum (GDM) and the Environmental Impact Statement (EIS). These documents should cover all alternative plans and should be sent out in draft form for review prior to final selection of a recommended site and completion of the final Phase I GDM and EIS. I am furnishing comments in the following paragraphs for guidance and appropriate action.

2. 1st Indorsement.

a. Paragraph 1. Subject report does not document the selection of the recommended plan for a ship lock and canal (Lower Site) from the alternative plans considered to the extent required for the Phase I GDM and EIS. Both the Site Selection Report and the subsequent Phase I GDM and EIS must demonstrate conclusively that any plan recommended (1) offers the greatest excess of benefits over costs, (2) is an essential unit in the future navigation scheme, and (3) minimizes environmental impacts and considers local opposition as well as support related to location.

b. Paragraph 1. In spite of past studies concerning a deep-draft connecting channel and lock and previous OCE views and statements, an in-depth study of future marine transportation operations within port areas and probable commodity traffic patterns is essential to demonstrating a need for the deep-draft connecting channel. A speculative growth of traffic using the channel, based upon a projected growth in commodity movement through the port area in general, does not demonstrate a solid need for the particular increased channel dimensions. A well-documented marine traffic study is required to demonstrate "need."

c. Paragraph 2. Concur that a barge channel connecting the Mississippi River and Gulf Intracoastal Waterway is needed. However, documentation of economic justification, cost estimates, and size and type of barge channel should be included in the subsequent Phase I GDM or appendix thereto.

d. Paragraphs 2d and 4 and Inclosure No. 2, paragraph 1b. 33 U.S.C. 591 provides that the Secretary of the Army may acquire "any land, right-of-way or material needed to enable him to maintain, operate or prosecute works for the improvement of rivers and harbors for which provision has

been made by law." However, the Site Selection Report proposes to (1) acquire the Inner Harbor Navigation Canal (IHNC) Lock only in order to mothball it for possible contingency marine use and (2) to mitigate vehicular traffic problems that will be caused by the new ship lock and canal. These purposes are not considered to be within the purview of 33 U.S.C. 591. Public Law 455, 84th Congress 2nd Session, 29 March 1976, authorizes replacement of the existing lock or construction of an additional lock with suitable connections in the vicinity of Mereaux, Louisiana. This legislation does not provide for acquisition of the existing IHNC Lock. Accordingly, we concur with the Division Engineer in paragraph 4 of the 1st Indorsement that alternatives to Federal acquisition of the lock should be considered and resolved in the Phase I GDM to insure optimum disposition. If purchase of the lock is still found to be the most prudent course of action, Congress must authorize the acquisition.

e. Paragraph 3. Any plan for mitigation of project-induced fish and wildlife losses which includes land acquisition will require Congressional authorization based upon submission of a feasibility report.

f. Paragraph 5. As indicated by the Lower Mississippi Valley Division Engineer, the project document provided for highway crossings of the new channel at non-Federal expense. Current Corps policy for apportioning the costs of existing highway crossings over an artifical (land-cut) navigation waterway is that construction costs for a least-costly type of crossing would be at Federal expense. Authority for the Corps to assume full responsibility for bridge construction costs must be obtained from Congress. Legislation has been introduced in Congress (S3252) that would modify the Mississippi River-Gulf Outlet project to provide that "construction of any bridge required as a result of construction of any channel ---" shall be at Federal expense.

3. I am inclosing for your consideration a copy of the official presentation, April 1976, of the governing authority and the people of St. Bernard Parish, which presents their viewpoint on construction of the ship lock and canal within St. Bernard Parish.

FOR THE CHIEF OF ENGINEERS:

DRAKE WILSON
Brigadier General, USA
Acting Director of Civil Works

2 Incl
wd Incl 1
Added 1 Incl
3. as

LMVD Review Comments

SUBJECT: Mississippi River - Gulf Outlet, New Lock and Connecting Channels, Site Selection Report

1. The following comments should be resolved in the General Design Memorandum:

a. General. As the result of the recent lowering of the datum plane in the New Orleans area by approximately 0.6 ft, the elevations shown in the report are in error. This error has no bearing on the conclusions and recommendations contained in this report, but the datum adjustment should be recognized and all subsequent design memorandum should reflect the new datum.

b. Para 9-1, page 53 and Para 9-7, 9-8, page 55. The necessity to purchase the existing lock in order to exercise control of its ultimate disposition (mothballing for emergency use only) has not been satisfactorily demonstrated. Other alternatives may be available such as obtaining assurances from the owners of the lock that it will be operated in a manner to be determined by the District Engineer or a revised lease agreement could be negotiated permitting the Corps to mothball and operate the lock when and as required.

c. Para 12-3, page 71. The environmental mitigation plans presented in the report should be presented as possibilities only. Alternative approaches to the fee acquisition of lands, such as a lesser interest or long-term lease in the name of a State agency, should be considered. Consideration should be given to the need for salt-water intrusion control in the Miss. River-Gulf Outlet. This alternative would more truly mitigate fish and wildlife adverse impacts than the improvement of public use as evaluated under the land acquisition plan. As recommended, the mitigation aspect should be completely studied and, if necessary, a report to support additional authorization prepared.

d. Page 75, Table 16, Item 4. The $6,000,000 allowance for lock purchase does not agree with the $5,000,000 shown in Table 14. This discrepancy should be corrected.

2. The following comments are applicable to Appendix A and should be resolved in future design memorandums only if further consideration is given to constructing the lock at the IHNC sites:

a. App A, Para 2-08, and 2-09a. Since the feasibility of constructing a new lock at the IHNC sites depends to a large extent on the stability of the excavation slopes, the most critical failure plane for each stability analyses cited in these paras should be shown.

b. App A, Para 2-09b. The draft EM cited in the first sentence should be EM 1110-2-2906 instead of EM 1110-2-1902.

Incl 2

c. App A, Secs III and IV. No information is presented on how the guidewalls would be constructed for the "Pipe Frame Scheme" and "Cellular Cofferdam Scheme." For both construction schemes the guidewalls are located outside of the proposed cofferdam area; therefore, it cannot be assumed that conventional guidewall construction will be used. The type of guidewall construction that will be used for each scheme should be presented.

d. App A, Para 3-01b, and Plate III-2. Para 3-01b states that appropriate dewatering equipment would be installed to relieve uplift pressures beneath the lock floor during lock construction and for later unwatering purposes. The success of the pipe frame scheme for constructing the MR-GO Lock during construction sequences 7 and 8 (See Plate III-2) depends upon continuous functioning of the dewatering system. Should the dewatering system fail and the maximum potential uplift pressures develop during certain stages of construction sequences 7 and 8, the structure would not be stable with respect to uplift. A contingency plan should be presented which discusses the procedures that can be followed to safeguard the structure should the dewatering system fail during these construction sequences.

e. Para 4-03g and Plate IV-5. In the planned construction sequence, the excavation would be flooded before the sand backfill is placed. However, to permit adequate compaction, the backfill would have to be placed in the dry before the lock area is flooded.

f. Plate IV-3 and IV-5. The feasibility of placing an effective clay blanket underwater would have to be reexamined. Some form of impervious membrane material may have to be considered. Also driving the outboard sheets of the cofferdam cells completely through the sand backfill to serve as a cutoff should be considered.

g. Plates IV-4 and IV-5. If the configuration of the top of the lock walls shown on Plates IV-4 and IV-5 is used in the final design, backfill would have to be placed before the tops of the walls are constructed in order that the backfill could be properly compacted. It would be impossible to compact the backfill adjacent to the top of the walls if the entire walls were constructed prior to backfill placement as shown on Plate IV-4. Revision of the wall configuration to eliminate such a condition should be considered.

OFFICIAL PRESENTATION OF THE GOVERNING AUTHORITY AND THE PEOPLE OF ST. BERNARD PARISH OPPOSING THE CONSTRUCTION OF A SHIP LOCK AND CANAL WITHIN ST. BERNARD PARISH, STATE OF LOUISIANA.

April, 1976

SUMMARY

The proposed ship lock and canal is related to a previous Corps of Engineers' project, namely, the Mississippi River-Gulf Outlet. This latter project was completed in 1968 and, to this day, little or none of its projected economic benefits have been realized. St. Bernard Parish itself has not gained one new job nor derived one dollar of economic benefit from the existence of the outlet. Ironically, all of the foreseen ecological and environmental destruction has taken place, most notably the devastating flood of 1965 which impacted over 20,000 residents of this community and resulted in an estimated $35 million in property damages. (The Corps of Engineers did not include levees along the channel as part of the initial project! Levees, of course, are now under construction, thanks to federal benevolence and approximately $15 million in local contributions.) As an arm of the sea, the MRGO acts not only as a path for storm tidal surges, but also allows for easy and uncontrollable "salt water" intrusion into otherwise fresh, and brackish, water, marshes, causing serious adverse ecological alterations to the Lake Borgne estuary system.

Basic objections to the proposed project stem from the apparent lack of consideration given to St. Bernard Parish in terms of disruption of transportation, utilities, drainage patterns and community development. Additionally, the Corps of Engineers has yet to demonstrate a need for a new ship lock or thoroughly evaluate other workable alternatives. It is the contention of the governing authority of St. Bernard Parish, and an overwhelming number of its citizens, that if a new lock can be supported, that it be located at a site contiguous to the existing Industrial Canal where a natural and more efficient water transportation corridor is already established.

It is therefore requested that Congress not appropriate any moneys for implementation of the proposed ship lock and canal as requested by the U. S. Army Corps of Engineers. It is believed that the Corps has not given adequate study and consideration to the overall water transportation needs of this area, nor has it demonstrated a sufficient appreciation of local community input and participation in such a vast and far-reaching project. This is evident in the fact that it has ignored a petition of 14,000 residents and property owners, signed in one day, in opposition to the project. It is further requested that before any further appropriations are considered, that the U. S. Army Corps of Engineers be required to hold adequate and meaningful public hearings in an effort to inform the community and to solicit the community's involvement and support for all such future projects.

NO DEMONSTRABLE NEED FOR PROJECT

The Corps of Engineers states that delays at the Industrial Canal Lock are costly and that a new lock is needed. It contends that the economic viability of the Port of New Orleans depends heavily upon the existence of an adequate connection between the Mississippi River-Gulf Outlet and the Mississippi River. ~~It has not~~ proven, however, that the connection requires a deep draft ship lock.

All indications are that the Mississippi River is and will remain the deep draft access route to the Port of New Orleans. The New Orleans District Engineer himself has recently supported this contention by recommending that Southwest Pass be deepened to 50 feet and serve as the deep draft access to the river instead of MRGO.

It would appear, then, that the tidewater area of New Orleans, sometimes referred to as "Centroport", will continue to attract barge type water traffic and low draft vessels. This is supported by the fact that ship lockages in the Industrial Canal Lock have declined from 517 in 1961 to 297 in 1974. Even the New Orleans Dock Board Board projects a tremendous growth in barge tonnage through the existing Industrial Canal Lock. (Approximately 24½ million tons in 1975 to 85 million tons in 2035.) Clearly, then, a new barge lock is probably justified. It would also appear logical and economically expedient to locate the lock in the existing corridor rather than lower St. Bernard Parish which would create a 28-mile detour to and from the tidewater area.

As stated earlier, the Mississippi River-Gulf Outlet is not a deep draft access facility and, therefore, cannot accommodate deep draft vessels. There also appears to be severe environmental, economic and engineering factors which militate against ever deepening MRGO to a 50-foot depth. ~~It appears,~~ therefore, that the Corps' insistence of a 50-foot deep ship lock is unwarranted and insupportable.

LOCATION

After the Corps "demonstrated" the alleged "need" for new ship lock, it proceeded by directing most of its efforts toward establishment of the "Lower Site" as the most advantageous. Despite these efforts, the Corps has not succeeded in mitigating the many disadvantages to its preferred location. The project would virtually cut the Parish in half, severing a projected 20,000 persons from the rest of the urbanized area. In addition to the physical fragmentation of the community, the social and psycological disruption of the Parish's lifestyle will be assured. The orderly planned growth of the community will also be impeded by this man-made barrier and will negate the Parish's expressed goal of preserving its spatial integrity and community cohesiveness. In addition, disruption of transportation sewerage and water systems and drainage patterns will be severly altered and necessitate extensive modification and redesign, and represent a considerable financial burden to the community.

The location and size of the MR-GO leads to other problems: 1. Strong winds blowing from Lake Borgne and continual shoaling of channel banks has caused numerous groundings of ships in the MR-GO. 2. Lack of sufficient channel width restricts ship maneuverability. 3. Construction of a new lock at the "Lower Site" will create a 28-mile circuitous route to and from "Centroport". (It is difficult to understand how this will prove to be of economic benefit to navigational interests.) 4. The proposed -50 foot sill and subsequent dredging of MR-GO to a like depth will permit the concentration of deep-draft ships at the convergence of MR-GO and the proposed channel. (These ships will be vulnerable to strong winds and tidal surges off of Lake Borgne and will not be provided safe harbor in times of storms. Even worse, these large and cumbersome vessels would pose a serious threat to the integrity of the levee system under turbulent weather conditions.)

Because the proposed ship lock and canal intersects the existing MR-GO, the new project may result in additional flooding of the urbanized area of St. Bernard. It is not enough that MR-GO acts as an arm of the sea during hurricanes, now the Corps proposes to add a deadly finger to this already threatening situation. Additionally, the preferred location will require the construction of approximately 10 miles of new levees in an area already severely burdened by excessive construction maintenance costs. Unstable soil conditions make stabilization

of levees a never ending and costly process.

Along with the development of the proposed ship lock comes additional costs. The federal government requires that all necessary vehicular and railway crossings and utility relocations must be completed before actual channel construction can be undertaken, and further, that the cost of these items must be borne by local interests. The State of Louisiana and its assuring agency, the New Orleans Dock Board, has no funds to carry out the local responsibilities. Neither has the assuring agency appropriated any funds for its share of the local cost, nor does it have any likely prospect for securing these monies in the foreseeable future. The State Highway Department has actually gone on record as not having any funds for, or interest in, providing the necessary roadway and bridge connections.

The Corps contends that placement of this project in lower St. Bernard Parish will dramatically increase economic and social benefits. It, and the New Orleans Dock Board touted this line at the initiation of the MR-GO project. A glowing picture of new jobs, industrial expansion and increased revenues was painted. However, St. Bernard Parish has not experienced any of the projected economic growth, but rather it has suffered the loss of such viable industries as trapping, fishing, oyster harvesting, etc. - all brought about by the unparalleled devastation of the environment caused by that project. It is no wonder that the people of this community view with cynicism the benefits projected by the Corps.

It is believed that an efficient water transportation corridor already exists connecting the Mississippi River to related port activity in the tidewater area and that it is this corridor which should be maximized to satisfy all future demands.

ENVIRONMENTAL IMPACT

The existing Mississippi River-Gulf Outlet has already destroyed in excess of 23,500 acres of fresh and brackish water marshes. The proposed ship lock and canal and the related barge channel, along the northwest boundary of Lake Borgne, will consume in excess of 7,000 additional acres of viable marsh, forest and pasture lands.

The Corps of Engineers is cognizant of the vast destruction that its activities have caused to the ecosystem of the Lake Borgne Basin and, in an effort to mitigate the inestimable losses in fish nurseries, wild-life habitat and recreational areas, proposes to create a wild-life conservation area elsewhere in the vicinity. The Corps has not been authorized to implement such a proposal nor is it believed, in view of its past record, that it has the necessary appreciation of the problem to effectively carry it out. Rather than spend its energies "mitigating", the Corps would do well to dedicate itself toward mitigating the adverse effects on the existing 42,000 acre wild-life management area which is suffering from salt water intrusion caused by the MRGO.

The Corps has suggested that the proposed ship lock and canal would be an effective means of introducing fresh (river) water into the Lake Borgne Basin thereby restoring its fresh and brackish water characteristics. Surely the Corps must be aware that the Environmental Protection Agency has determined that the waters of the Mississippi River contain organic chemicals and toxic metals in high concentrations. Therefore, rather than work to effectively restore the deteriorated St. Bernard marsh-estuary system, the proposed project would merely be another means of introducing more pollutants into the area.

Also, the Corps, in agreeing with the New Orleans Dock Board proposes that extensive industrial development take place along the proposed channel and existing MRGO on lands that were once abundant with fish and wildlife. Is it to be believed that such industrial concentrations will also benefit the ecology of the Lake Borgne Basin?

Salt water intrusion and marsh land erosion are only two causes of environmental destruction. Another principal factor is the creation of spoil areas necessary in channel construction. In addition to the thousands of acres of marsh and swamp land already smothered by tons of sandy muck, the current proposal would require an additional three thousand acres of marsh and pasture land for spoil disposal. It is this "new" land that the

Corps and assuring agency offer for future industrial and community expansion, unmindful that St. Bernard and the region would be far richer had its delicate environmental fabric not been violated.

POSSIBLE LEGAL IMPEDIMENTS

A "Public Hearing" was held on the proposed project in 1960. At that time, the Corps admitted that it could not show justification for a new lock. The meeting, therefore, amounted to one of informational purposes only. It could not count as a public hearing, as required by law, since the law states that, only after need is justified, the Corps of Engineers can proceed with project planning. Such planning includes the full public hearing procedure.

Since 1960, however, no public hearings were held until 1972. None were held in 1966, when the Corps announced that justification for the proposed deep-draft ship lock had been determined. No public hearing was held in 1969, when the Corps undertook full-scale planning of a new lock at the existing Industrial Canal Site. No public hearing was held later in 1969, when the Corps, at the urging of the New Orleans Dock Board and Congressman F. Edward Hebert, switched full-scale planning from the Industrial Canal site to the "Lower Site" in St. Bernard Parish. In summary, no public hearing was held from the time of the "alleged justification" in 1966 until 1972.

A two-part public hearing was held on November 29, 1972 and on December 9-10, 1972. At this hearing, the Corps failed to produce and display information on all proposed alternatives for the new lock. Instead, it concentrated its energies on a presentation of the already chosen, tenative plan.

In addition to the above, the Corps has yet to produce a final environmental assessment of its proposed plan even though its preliminary data admits that the project will produce large scale destruction. Related to this, the Corps has failed to produce the necessary environmental impact statement, nor has it demonstrated that it has employed a systematic multi-disciplinary approach in the study of the project.

There are also elements of the Corps' recommended plan which have no congressional authorization though they are integrally related. It is believed, for instance, that Public Law 455 did not necessarily authorize a ship lock. Nor has the Corps been authorized to acquire lands for wild-life management as an attempt to mitigate admitted environmental disadvantages inherent in this project; nor has the Corps been authorized to include a barge channel along the southwest shore of Lake Borgne in its overall proposal. And finally, the Corps in an effort to appease and

sell local interests, strongly suggests that Congress might be persuaded to assume all local costs related to the project.

These and other technical defects will form the basis for costly and time consuming litigation. Should this occur, it could put the port of New Orleans in limbo, while other Gulf ports vigorously pursue new port development. This situation must be avoided if the full economic potential of metropolitan New Orleans is to be realized. Misspent millions on an illogically located lock will not benefit anyone.

MISSISSIPPI RIVER-GULF OUTLET
NEW LOCK AND CONNECTING CHANNELS

SITE SELECTION REPORT

Prepared By

US ARMY ENGINEER DISTRICT
NEW ORLEANS
CORPS OF ENGINEERS

MARCH 1975

NEW ORLEANS, LOUISIANA

Mississippi River-Gulf Outlet
New Lock and Connecting Channels
Site Selection Report
Summary

This report summerizes the results of studies and investigations made pursuant to site selection by chronological review of available data from February 1960 to late 1972, and by reanalysis of old and additional sites with new parameters as suggested by testimony received during the public meetings of 1972.

Public Law 455, 84th Congress, provided for the construction of the Mississippi River-Gulf Outlet (MR-GO), and additionally provided, "... that when economically justified by obsolescence of the existing Industrial Canal Lock, or by increased traffic, replacement of the existing lock, or an additional lock with suitable connections is hereby approved to be constructed in the vicinity of Meraux, Louisiana...."

Construction of the main 36 foot deep by 500 foot wide tidewater channel was essentially completed in July 1965, and extends from the Inner Harbor Navigation Canal in New Orleans to the Gulf of Mexico, a distance of some 76 miles. The channel is connected to the Mississippi River by a portion of the Inner Harbor Navigation Canal (IHNC) with a single navigation lock in the east bank of the Mississippi River at mile 92.6 above head of passes (AHP).

Traffic through the existing antiquated, dimensionally obsolete, and congested ship lock exceeded its practical capacity in 1971. As traffic continues to increase, waiting times will increase to the point where alternative modes or alternative routes will have to be used. Based on projected tonnages, this condition will occur this year, and provides economic justification for a new ship lock and connecting channels.

The first public meeting on the lock and connecting channels phase of the MR-GO Project was held in February 1960. Local opinion was against a St. Bernard Parish location, however the general attitude was that if it were inevitable, the Lower Site below Violet, La. would be preferred.

Based on just historical data, studies made between 1961 and 1964 justified a barge (only) lock. However, the chief of engineers determined that the MR-GO legislation pertained to a ship/barge lock, and that no authority existed for the preparation of a survey report for a barge (only) lock. After a restudy in 1964, it was determined that historical growth of deep-draft tonnage was being drastically depressed due to the old lock's inadequate size, the physical congestion in the Industrial Canal, and the ever increasing delays. Completion of the MR-GO also contributed to this decline in ship usage. Studies were therefore instituted as to the feasibility of a IHNC location. Soils analysis

showed that (using conventional construction methods) the new lock could not be practically located closer than 750 feet east of the old lock. This necessitated traumatic industrial and social relocations (estimated at 4,100 people), and the assuring agency withdrew the State of Louisiana's support for this site and requested that those sites in St. Bernard be reevaluated.

Site selection studies, during the period 1969-72, developed information that the Lower Site was the least costly, it impacted the community the least, it had the smallest population living below, and it was acceptable to navigation interests as well as being adequate for navigation in all respects. The St. Bernard Parish Police Jury, in May 1969, took a position[1] favoring the location of the "connecting link" in the parish if a bridge across same was available, but subsequent communications developed further opposition to a St. Bernard location. After many delays, public meetings were held in Orleans and St. Bernard Parishes in November and December 1972, respectively.

In general, the opposition was comprised of the political leadership and some interested citizens of St. Bernard and Plaquemines Parishes, a number of environmental organizations, and a small segment of the local shallow draft barge industry. Proponents included the Governor of Louisiana backed by all state agencies (with exception of the La. State Wild Life & Fisheries Commission, which took no position)[2], the Board of Commissioners of the Port of New Orleans, Congressman F. Edward Hebert, the Mayor of New Orleans, organized labor, the deep and shallow draft industry, and numerous widespread shipping firms, politicians, civic groups, and individuals.

The major objections voiced were: lack of quantification or resolution of environmental damage, the generation of two lines of access disruption and inconvenience, a paranoid fear of increased danger of future flooding, concern that the future disposition of the IHNC Lock and bridges were not resolved, and that St. Bernard would have to pay for flood protection and relocations. The proponants' position was that the future viability of the Port of New Orleans depends on this lock and the "Centroport" concept, and that this connection affects the national economic interest and defense posture. The State of Louisiana supported the Lower Site provided: there are no interruptions to utilities or access, that adequate flood protection is provided at federal expense, that the Environmental Impact Statement is approved by local, state, and federal agencies prior to initiation of construction, that the land adjacent to the connecting channels be placed under the jurisdiction of appropriate St. Bernard Parish authorities, and that a high level highway bridge be provided over the cut at Federal expense.

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[1]Police Jurors Favor Locating Tidewater Channel River Connecting Link in St. Bernard Parish, Newspaper article, St. Bernard Voice, Arabi, La., 9 May 1969.

[2]The La. State Wildlife & Fisheries Commission has subsequently gone on record favoring an Industrial Canal Site on environmental grounds.

Based on the information gathered from the above mentioned public meetings, studies were made of 14 site plans which were comprised of 7 sites. Comparative site plan analysis confirmed the superiority of the lower site as the best overall location, however, a detailed plan comparison was made with the IHNC Site because it is the existing corridore and because the Lower Site opponents propose it as a viable alternative. These two plans included proposals for the ultimate disposition of the old IHNC lock and canal, the utilization of a new barge canal as an extension of the Gulf Intracoastal Waterway (GIWW), comparative bridge studies, and provision of ecological mitigation. This comparison was evaluated on 28 points of the socio-economic-environmental spectrum, resulting in a recommendation of the 1974 Lower Site Plan, which includes the provision of a ship channel and lock just below Violet, Louisiana, a barge canal to connect the lock tailbay with the GIWW, mothballing of the old IHNC Lock and provision of ecological mitigation.

Based on these detailed deliberations and the sheer weight of evidence, the 1974 Lower Site Plan is considered to provide the best solution of the total problem, and one that offers the most effective means of achieving the purposes of the authorized project; furthermore, this plan is believed to contain the necessary elements for the eventual resolution of the ongoing controversy.

MISSISSIPPI RIVER-GULF OUTLET
NEW LOCK AND CONNECTING CHANNELS

SITE SELECTION REPORT

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MISSISSIPPI RIVER-GULF OUTLET
NEW LOCK AND CONNECTING CHANNELS
SITE SELECTION REPORT

1. INTRODUCTION

1-1. Purpose. This report summarizes the results of studies and investigations which have been made pursuant to selection of a site for the New Lock and Connecting Channels feature of the Mississippi River-Gulf Outlet (MR-GO) project.

1-2. Scope. These site studies have been made in order to update all information on sites previously studied, and to analyze other possible sites suggested by testimony received during the 1972 public meetings. Detailed information has been developed for the comparison of all sites to the degree deemed appropriate and responsive to the strong local controversy and distinct possibility of litigation, regardless of the site selected. Furthermore, plans are developed for the ultimate disposition of the old Inner Harbor Navigation Canal (IHNC) lock, the utilization of connecting barge canals or routes between the MR-GO and the Gulf Intracoastal Waterway, and other peripheral considerations which do have a direct impact on comparative logic, but which may be valid only for the purpose of this report.

1-3. Need for the Project.

(a) The Industrial Canal lock is the only lock on the Lower Mississippi River connecting it and the Gulf Intracoastal Waterway (GIWW) to other waterways to the east, and particularly to the Mississippi River-Gulf Outlet. This lock is antiquated, too small, and has limited dependable life remaining without extensive renovation in the near future. Its failure or closure for a protracted period would seriously disrupt deep and shallow draft traffic moving through and within the Port of New Orleans, and consequently adversely impact the nation's economy and possibly its defense posture.

(b) Traffic through the existing lock exceeded its practical capacity of about 23 million tons[1] in 1971. As traffic continues to increase, waiting time for lockage will increase to the point where alternative modes of transportation or alternate routes will have to be used. The cost of delays at the existing lock by ships and barge tows, as well as the added costs incurred by traffic using either alternate routes or alternative modes of transportation over the 50-year life of the replacement or additional lock, provides its economic justification.

[1]Total tonnage through lock in 1974 was 26,232,370. This increased capacity is attributed to more efficient operation.

2. AUTHORIZATION

2-1. Report authorization. Authority for this report is contained in the following chain of correspondence: (a) LMVED 1st Ind dated 2 March 1971 to NOD basic of 18 February 1971, para 2; (b) LMNED-PP 2d Ind dated 12 March 1971 to NOD basic of 18 February 1971, para 2: (c) LMVED 3d Ind dated 13 July 1971 to NOD basic of 18 February 1971. This correspondence is included in Appendix "D" for convenient reference.

2-2. Project Authorization. The Mississippi River-Gulf Outlet, a tidewater channel from New Orleans, La., to the Gulf of Mexico, was authorized by Public Law 455 (84th Congress, 2d Session) approved 29 March 1956. (The location of the authorized project is shown on plate 1.) The authorizing act is entitled, "An Act to Authorize Construction of the Mississippi River-Gulf Outlet" and reads as follows:

> "BE IT ENACTED BY THE SENATE AND HOUSE OF REPRESENTATIVES OF THE UNITED STATES OF AMERICA IN CONGRESS ASSEMBLED, that the existing project for Mississippi River, Baton Rouge to the Gulf of Mexico, is hereby modified to provide for the Mississippi River-Gulf outlet [sic] to be prosecuted under the direction of the Secretary of the Army and supervision of the Chief of Engineers, substantially in accordance with the recommendation of the Chief of Engineers contained in House Document Numbered 245, Eighty-second Congress, at an estimated cost of $88,000,000: PROVIDED, That when economically justified by obsolescence of the existing industrial canal lock, or by increased traffic, replacement of the existing lock or an additional lock with suitable connections is hereby approved to be constructed in the vicinity of Meraux, Louisiana, with type, dimensions, and cost estimates to be approved by the Chief of Engineers: PROVIDED FURTHER, That the conditions of local cooperation specified in House Document Numbered 245, Eighty-second Congress, shall likewise apply to the construction of said lock and connection [sic] channels."

3. LOCAL COOPERATION

3-1. Designation of local interests. The Board of Commissioners of the Port of New Orleans was designated by the Governor of the State of Louisiana on 10 December 1956 as the State agency to furnish assurances of local cooperation on the project. The Governor, in his Act of Designation stated, "by virtue of the authority vested in me by Section 81, Title 38, Louisiana Revised Statutes of 1950, I do hereby designate the Board of Commissioners of the Port of New Orleans to the extent to which they are lawfully empowered to acquire and furnish to the United States of America as required such lands, servitudes, and rights-of-way as are or may become necessary to the construction and maintenance of the Mississippi River-Gulf Outlet and to furnish to the United States the assurances of local participation required by said Public Law 455, 84th Congress."

3-2. Requirements. That, prior to initiation of construction, local interests assure the Secretary of the Army that they will:

(a) Furnish free of cost to the United States all lands, easements, rights-of-way, and spoil disposal area for the initial construction and when and as required for subsequent maintenance; (and as modified by PL 455-84 to include rights-of-way and spoil disposal areas for the initial construction of the lock and suitable connections, and when and as required for subsequent maintenance);

(b) Accept ownership of the La. Highway 47 (Paris Road) bridge and approaches upon completion of construction, together with maintenance, operation and future replacement or alteration as may be required;

(c) Provide and maintain any other bridges required over the waterway and accomplish all necessary utility and other highway relocations and alterations and the maintenance thereof;

(d) Construct, maintain, and operate terminal facilities commensurate with requirements of the expanded port; and

(e) Hold and save the United States free from all claims for damages due to construction, maintenance, and operation of the project.

(f) Public Law 91-611 is considered not applicable to this project as construction commenced prior to 1 January 1972.

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[1] Local interest, within the context of furnishing local cooperation in this document, refers to the State of Louisiana, acting through its agency(s), and not to any smaller governmental subdivision.

(g) A constitutional amendment was provided by the Louisiana legislature on 1 February 1972 allowing local agencies to comply with Public Law 91-646.

3-3. Current Status of Assurances. Assurances of local cooperation were executed by the Board of Commissioners, Port of New Orleans, on 4 April 1957 and accepted by the United States on 29 August 1957 for all features of the project including the lock and suitable connections. The Board of Commissioners was requested to furnish supplemental assurances covering the provisions of Public Law 91-646 on 4 January 1973. These supplemental assurances were executed by the assuring agency on 3 March 1975 and approved on behalf of the United States on 21 April 1975.

3-4. Local Cooperation Requirements for the GIWW. It is deemed appropriate to include the requirements of local interests for the GIWW including that reach contained in the Industrial Canal by authority of the River and Harbor Act of 23 July 1942 (H.D. 96, 79th Congress, 1st Session), GIWW, from Mobile, Alabama, to New Orleans, Louisiana. The existing project for the GIWW provides that local interests furnish, free of cost to the United States, all rights-of-way and spoil disposal areas required for the improvement and to defray the cost of alteration or reconstruction of highway bridges; in addition, regarding the Industrial Canal, that local interests convey to the United States satisfactory rights to control, operate, and maintain the necessary Inner Harbor Navigation Canal facilities and to comply with all other conditions of local cooperation to which the modified project may be subject, and that such compliance will be effected promptly as required, and that they will assume the costs of all rights-of-way, easements, and flowage damages and major repairs to the lock and shall furnish, free of cost to the United States, suitable spoil disposal areas required for construction and future maintenance, and shall hold and save the United States free from damage claims incident to or growing out of the improvement and operation of the waterway.

4. Status of Project

4-1. Status of Construction. The project consists generally of three main items: the main channel, protective jetties and dikes, and the new ship lock and connecting channels. Construction of the main tidewater ship channel was essentially completed in July 1965 and the last restriction was removed in 1968. The channel extends from the

Inner Harbor Navigation Canal (IHNC) in New Orleans, a distance of 76 miles to the Gulf of Mexico. The minimum bottom width of the channel is 500 feet at a depth of 36 feet m.l.g. with the outer 9 miles being an eased entrance widening from 500 feet to 600 feet at Chandeleur Island and continuing with a bottom width of 600 feet to the -38-foot contour of the Gulf of Mexico. Protective parallel dikes have been constructed 3 miles beyond lands end (from mile 23.2 to mile 20.2) and the south dike extends an additional 5.4 miles (to mile 14.8). No part of the third portion of the project, the lock and connecting channels, has entered into the construction phase.

4-2. Status of Planning. In relation to the New Lock and Connecting Channels feature of the project, planning is in the postauthorization, preconstruction phase. Prior to initiation of construction, general and feature design memorandums and an environmental impact statement are required. Contingent on approval of this site selection report by January 1976, construction could commence as early as the first quarter of Fiscal Year 1978.

5. STUDY SETTING

5-1. Location. The study area is located in southeastern Louisiana in the vicinity of New Orleans and includes the parishes of Orleans, St. Bernard, and Plaquemines. The Mississippi River bounds the area to the south. The dominant topographic feature to the north is Lake Pontchartrain. This shallow lake connects through Lake Borgne and the Mississippi Sound to the Gulf of Mexico on the east. The IHNC connects the Mississippi River at mile 92.6 above Head of Passes (AHP) to Lake Pontchartrain and is the western boundary; while a north-south tangent intersecting the river at mile 43.1 AHP, just below Bohemia, La., bounds the eastern extremity of the study area. The immediate area, traversed by the 7 possible sites, is characterized by a strip of drained and protected land, approximately 1¼ miles wide adjacent to the Mississippi River containing most of the population and development of the area; and by swamp and marshland containing shallow lakes and bays further to the north and east.

5-2. Tributary area. Because of its unique location near the mouth of the Mississippi River, New Orleans is the natural gateway to the entire Mississippi Valley. The economy of the area is based primarily on oil and gas production, manufacturing, agricultural production, and trade. Waterborne commerce is of major importance to the Greater New Orleans Area and the state. New Orleans is the world's largest grain port and ranks as the second largest seaport in the United States and third in the world in terms of dollar value and of waterborne tonnage handled. The tonnage put through the Port of New Orleans in 1972 was 125,700,000 tons,[1] an increase of 121 percent over that reported in 1960. More than 4,500 ships call at its docks each year. The Port of New Orleans, as well as the rapidly expanding industrial developments along the Mississippi

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[1] Waterborne Commerce of the United States, 1972, Part 2, US Army Corps of Engineers.

River between the Head of Passes and Baton Rouge, serves as a transhipment terminal for shallow draft commerce utilizing the vast network of inland waterways formed by the river, its tributaries, and connecting streams. Internal barge traffic in 1972 accounted for approximately 65 million tons. At any given time, approximately one of every four barges in the United States is in the New Orleans Area. There are 25 miles of facilities spread over three waterways: the river, the Industrial Canal, and the MR-GO. The Board of Commissioners of the Port of New Orleans estimates that about 37,000 people work in port services or facilities.

5-3. Centroport USA.

(a) Three and one-half years ago, the New Orleans Dock Board launched a long-range development plan designed to provide the Port with facilities to service the new container, LASH/SEABEE, and giant cargo ships now coming into world trade. This 30-year, $395-million combined tidewater and Mississippi River development is called "Centroport USA[1]". Centroport is expected to emulate the Port of Rotterdam in the United States. All modes of transportation--ship, barge, rail, highway, and air--are involved. The Centroport Master Plan includes a partial move from the congested banks of the Mississippi to the tidewater area along the MR-GO. An adequate connection between the Mississippi River and the MR-GO is considered the keystone to the successful development of this vast tidewater industrial-transportation complex.

(b) Figure "A" shows Centroport as it is expected to look in the year 2000. A container, combination, and two breakbulk terminals are shown located along the west bank of the Industrial Canal at its intersection with the tidewater harbor. Proceeding in an eastwardly direction, two more breakbulk, a steel, and a banana-handling terminal are shown situated on the north shore of the MR-GO. The sites surrounding the Public Bulk Terminal are reserved for industries utilizing bulk cargoes. Four LASH terminals are shown on the MR-GO, near Paris Road; however, this type of terminal may ultimately be located on the river. Henry Clay, Nashville Avenue and Napoleon Avenue wharves, as well as other speciality terminals will continue to utilize the river. An 1800-acre tract to the rear of the MR-GO terminals is reserved for industry. Medium and light manufacturing industries will be located on the west side of the tract, while heavy industry would occupy the area surrounding and eastward of the Public Bulk Terminal.

(c) One roll on-roll off (RO-RO) and two container berths had been completed on the Industrial Canal by the end of 1973. These facilities and their special handling equipment represent an investment of $22.9 million. To date, $21.8 million have been spent on the initial construction, enlargement, and modernization of the MR-GO Public Bulk Terminal. In April 1974, the Board of Commissioners announced the authorization for financing and construction of the third container berth on the Industrial Canal. This facility with equipment is estimated to cost $6.5 million.

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[1]Master Plan for Long Range Development of the Port of New Orleans, Bechtel Corp., 1970.

Negotiations are presently underway with the private sector, for the the possible construction of a regional food center and a cold storage facility on the MR-GO.[1]

(d) As mentioned before, the total cost of the Centroport project will be approximately $395 million (1970 price levels). Of this, $223.6 million will be for port facilities, $99.4 million for industrial development, and $72.0 million for other purposes[2].

5-4. Existing locks and channels.

(a) The Mississippi River-Gulf Outlet and the eastern Gulf Intracoastal Waterway (GIWW) are at present connected to the Mississippi River by a single lock in the left descending bank of the river at mile 92.6 AHP. (See figure 1.) The lock was constructed by the Board of Commissioners of the Port of New Orleans in 1923, as a unit of the Industrial Canal, and has a usable[3] length of 640 feet, a width of 75 feet, and a depth at mean low gulf datum (m.l.g.) of 31.5 feet over the sill. The canal, which extends from the Mississippi River to Lake Pontchartrain, a distance of 5.5 miles, provides a channel with a controlling depth of 30 feet over bottom widths varying from 125 feet to 300 feet.

(b) The Industrial Canal and Lock served as a toll-link in the Intracoastal Waterway from Mobile, Alabama, to New Orleans, Louisiana, (via The Rigolets and Lake Pontchartrain) until enlargement of the Waterway was authorized by the River and Harbor Act of 23 July 1942 (House Document No. 96, 79th Congress, 1st Session). Under this authorization, the Intracoastal Waterway was rerouted and enlarged so as to provide a 12- by 150-foot land-locked channel east of Lake Pontchartrain from the Industrial Canal to the mouth of The Rigolets. The act of 23 July 1942 also authorized acquisition of control from the Board of Commissioners of the Port of New Orleans, by the Corps of Engineers, of that part of the Industrial Canal between the Mississippi River and the point where the Intracoastal Waterway turns east toward Mobile, Alabama, a distance of about 2.25 miles; together with the lock, and lock forebay, and the St. Claude Avenue and Florida Avenue bridges. After acquisition of control as described above, and completion of the enlargement and rerouting of the Intracoastal Waterway, tolls were no longer required of vessels traveling to and from points east of the Mississippi River on the GIWW. The Industrial Canal lock now serves as the only connection to and from the Mississippi River for traffic using the Mississippi River-Gulf Outlet, the Intracoastal Waterway from Mobile, Alabama, to New Orleans, Louisiana, docks along the Industrial Canal, and traffic to and from Lake Pontchartrain.

5-5. Population.

(a) The tributary area parishes directly and/or indirectly impacted by the location of this project in the study area are shown with their populations[4] in Table 1:

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[1]Data contributed by assuring agency, April 1974.

[2]Bechtel Corp. Op. Cit.

[3]Recommended usable dimensions for usual operation are 626 ft. in length by 74 ft. 2 inches in width.

[4]General Population Characteristics, La., 1970, US Dept. of Commerce.

TABLE 1

Population of Affected Parishes
1950-1970

Parish	Land Area Sq. Mi.	Populations 1950	1960	1970
Jefferson	331	103,873	208,769	337,568
Orleans	205	570,445	627,525	593,471
St. Bernard	514	11,087	32,186	51,185
Plaquemines	1,030	14,239	22,545	25,225
Totals	2,080	699,644	891,025	1,007,449

(b) The population (1970 census) directly affected by locating the project within the previously described study area could be as many as 86,965 persons. This figure includes 32,665 persons in the lower Ninth Ward of Orleans Parish; 51,185 in St. Bernard Parish; and 3,115 on the East Bank of Plaquemines Parish.

5-6. Affected projects in the study area.

(a) Bayou Dupre. The existing project, authorized by the River and Harbor Act of 26 August 1937, provides for a channel 6 feet deep and 80 feet wide from the Louisiana State Highway 39 Bridge (culvert) at Violet to Lake Borgne; thence by a channel 6 feet deep and 100 feet wide to the 6-foot contour in the Lake; and a turning basin 6 feet deep and 100 by 200 feet at Violet. Length of improvement is 7.3 miles. This project was completed in 1939.

(b) Lake Pontchartrain, La., and Vicinity. This hurricane flood protection project was authorized by the Flood Control Act of 1965 and is presently under construction. The Chalmette Area plan (see plate 3) consists of a levee along the south shore of the MR-GO from the IHNC to a point approximately 6 miles southeast of Bayou Dupre, thence southwest to Verret, Louisiana; thence west to Caernarvon, Louisiana; the improvement of the existing levee along the east side of the IHNC; construction of navigable floodgates in the levee at Bayous Bienvenue and Dupre; and construction of a drainage structure approximately 3 miles west of Verret, Louisiana. For purposes of this report, this project has been assumed as being completed.

(c) Judge Perez Drive. Local interests are presently constructing a 4-lane highway on an alinement loosely parallel to Louisiana State 39 and about 3/4 to 1 mile northward (see plate 3). This roadway is designed to become a major vehicular artery connecting St. Bernard with New Orleans via the existing Claiborne Avenue bridge crossing the Industrial Canal. Present plans show that this roadway will terminate at La. Highway 45 near Poydras, Louisiana. However, as of this time, the roadway actually ends in the vicinity of Meraux, Louisiana. As mentioned above, this project was assumed as being completed for purposes of this report.

5-7. Historical Data.

(a) The following tabulation indicates ship traffic[1] through the IHNC lock for the years 1961 through 1974:

TABLE 2
Historical Ship Traffic Through IHNC Lock
(1961-1974)

Year	Ships Locked
1961	517
1962	405
1963	493
1964	316
1965	246
1966	252
1967	229
1968	304 (1)
1969	277 (1)
1970	261
1971	242 (2)
1972	199 (3)
1973	244 (4)
1974	297

(1) Dock strike from 20 December 1968 through 22 February 1969 effectively stopped ship traffic.
(2) Dock strike from 30 September 1971 through 28 October 1971.
(3) Lock closed from 9 April to 23 April 1972 due to accident which damaged river end gates.
(4) Closed 12 April 1973 to 12 May 1973 for bridge repairs.

(b) While ship traffic has shown a decline, barge tonnage has registered major increases. This has resulted in increased delays in transiting the lock. Barge tonnage[2] handled by the lock from 1961 through 1974 is shown below:

TABLE 3
Historical Barge Tonnage Through IHNC Lock
(1961-1974)

Year	Barge Tonnage
1961	10,577,000
1962	10,230,000
1963	11,346,000
1964	13,490,000
1965	16,212,000
1966	17,160,000
1967	17,575,000
1968	20,192,000
1969	19,383,000
1970	21,337,000
1971	23,259,000
1972	23,642,000 (1)
1973	22,913,000 (2)
1974	25,490,000

[1]Corps of Engineers, New Orleans District - IHNC lockage records
[2]Ibid.

(1) Lock closed from 9 April to 23 April 1972.
(2) Lock closed from 12 April to 12 May 1973.

5-8. Shallow Draft Projections and Benefits.

(a) Barge tonnage through the lock has been projected[1] at the following amounts between 1975 and 2035:

TABLE 4
Projected Barge Tonnage Through New Lock
(1975-2035)

Year	Projected Barge Tonnage
1975	24,505,000
1980	28,772,000
1985	33,707,000
1990	39,605,000
1995	46,596,000
2000	54,891,000
2005	57,572,000
2010	60,693,000
2015	64,327,000
2020	68,564,000
2025	73,507,000
2030	79,000,000
2035	85,000,000

(b) Actual growth of shallow draft tonnage through the lock in the past has consistently exceeded projections. As tonnage increases, delays at the lock increase. When delays at the lock are of sufficient duration to produce waiting costs equivalent to the profit to be derived, traffic will be forced to seek other modes of transportation for movement. Based on projected tonnages, this will occur in 1975, when barge traffic delays are projected to involve a total delay cost of $11,832,000. At this time, diversion of traffic to modes of transportation other than barge will restrain further increases in tonnage. Therefore, the average annual costs of future barge delays through the lock will remain constant at $11,832,000 annually.

(c) Diversion of barge traffic to other modes of transportation will result in increased transportation costs. A commodity-by-commodity analysis of the increased transportation costs indicates an average increase in transportation costs of 3.91 mills per ton-mile.

(d) Current distribution of barge traffic through the lock is 60 percent to-and-from the Mississippi River and tributaries, 30 percent to-and-from the GIWW (west of New Orleans), and 10 percent intraport. The intraport traffic was eliminated from benefit calculations on the grounds that it could be handled by other means not involving use of the new lock.

[1]Corps of Engineers, New Orleans District - Projections by Commodity.

(e) It was also indicated that completion of the Tennessee-Tombigbee Waterway some time in 1985 would capture 17.7 percent of the tonnage to and from the Mississippi River and tributaries. Consequently, traffic to and from the Mississippi River and tributaries was decreased by 17.7 percent after 1985 to reflect the diversion of traffic due to the operation of the Tennessee-Tombigbee Waterway.

(f) Benefits to barge traffic which, in the absence of the new lock, would be diverted to other means of transportation were computed on the basis of a savings of 3.91 mills per ton-mile and an average line haul of 119 miles. This resulted in the following savings on barge traffic which would otherwise be diverted to other means:

Source of traffic	Average annual savings
Traffic to and from Mississippi River and tributaries and traffic to and from Gulf Intracoastal Waterway west of New Orleans	$10,440,000

5-9. Deep-Draft Projected Lockages.

(a) As previously stated, ship traffic through the existing lock has been depressed since the completion of the MR-GO. With lock delays eliminated, and facilities installed on the MR-GO, ship traffic through the new lock will grow. The Board of Commissioners of the Port of New Orleans has adopted the "Centroport" plan for the future development of the Port of New Orleans. Under the "Centroport" plan, all older wharf facilities on the Mississippi River would be replaced by new facilities which will be constructed on the MR-GO. In addition to the transfer of general cargo wharves to the MR-GO, plans call for construction on the MR-GO of special handling facilities such as berths for barge carriers, docks designed specifically for the handling of steel, plywood, and automobiles, and container ship berths. Construction is now underway on the container ship berthing areas and construction of other facilities will begin in the near future.

(b) Any estimate of future ship use of the lock must recognize the development of "Centroport" facilities, because as facilities for handling various types of cargo are developed on the MR-GO, the need for ships to lock through into the Mississippi River will increase.[1] The need for lockage into the Mississippi River will be generated by ships destined to and from Mississippi River wharves to reach or leave facilities on the MR-GO.

(c) Predicated on the construction of planned facilities along the MR-GO, estimates of the future need for ships to lock have been prepared. The estimates of ship usage for the years 1980 through 2030 are shown in Table 5. Derivation of lock usage by the various vessel classes are contained in the subsequent paragraphs.

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[1]Chief of Engineers, Para 4, 2d Ind, 8 Dec 66 to New Orleans District Lock Study Report, Sep 66, suggests this approach to be valid.

Table 5

PROJECTED ANNUAL SHIP AND LOCK TRAFFIC IN THE PORT OF NEW ORLEANS
(1980-2030)

Class of Vessel	NUMBER OF SHIPS CALLING AT PORT						POTENTIAL SINGLE LOCKAGES					
	1980	1990	2000	2010	2020	2030	1980	1990	2000	2010	2020	2030
Conventional Freighters	2680	1860	1340	1260	1200	1100	670	465	335	315	300	275
Barge Carriers	170	260	390	510	690	930	170	260	390	510	690	930
Combination ships	220	220	220	220	220	220	44	44	44	44	44	44
Container ships	350	430	430	510	620	750	-	-	-	-	-	-
Special cargo-Steel, plywood & automobiles	170	220	350	400	475	630	34	44	70	80	95	126
Dry bulk	119	123	138	158	170	197	23	25	28	32	34	40
TOTAL LOCKAGES:							941	838	867	981	1163	1415

(d) Conventional Freighters: Centroport plans a gradual phasing out of older breakbulk terminals and the construction of new terminals in the tidewater area. It may be expected that during this phaseover period, conventional freighters making first call at the river or tidewater area, would cross in either direction to pick up additional cargos such as grain, petroleum coke, soybean meal, fertilizer, containers or perhaps the products of the expected plants in the proposed new industrial area behind the Port.

(1) Ship traffic through the existing lock has decreased from 923 to 1957 to 199 ships per year in 1972, or from about 20 to 4 percent of the total port ship traffic. For the most part, this decrease can be traced to the inadequacies of the present lock, i.e., delay, marine congestion, dangerous operating conditions and physical constraints of lock size. The construction of the MR-GO completed in 1965, and the Public Bulk Terminal completed later that same year, have offsetting effects on the use of the lock. The use of the MR-GO continues to increase while the use of the lock by ships continues to be depressed.

(2) In the future, however, three factors will contribute toward greater lock usage - the opening of a new lock not subject to the congestion problems of the existing lock; the existence of port facilities in the River and Tidewater areas as projected in the Centroport plan; the growth of industry in the tidewater area.

(3) On the basis of the first factor, i.e., the provision of an adequate lock, it would be expected that lock traffic would revert to that percentage of total port traffic as of the middle 1950's before the lock became such a problem. This amount is 20 percent. Additionally, the developement of port facilities on either side of the lock, and captured cargo from industrial development[1] would add greater inducements to cross between Centroport's River and Tidewater areas. On that basis, it is projected that lock traffic would increase significantly. For the purpose of this analysis, lock traffic for conventional freighters whose first call terminal is on the river will be estimated at 25 percent of port traffic.

(4) As shown in Table 5, lockages of conventional freighters would vary from 670 in 1980 to 275 in 2030. This represents an increase of approximately 400 lockages per year over current traffic in the early years, and a gradual decrease to about the current levels in later years.

(e) LASH and SEABEE vessels:

(1) From interviews with ship owners who are operating or have on order LASH and SEABEE vessels, as well as the naval architect who created the barge-carrier concept, it is projected that most barge-carriers will carry up to 20 percent of their cargo in containers above decks. River terminals have insufficient back-up space to permit efficient operation of specialized container cranes, therefore, some barge carriers will find it advantageous to cross the lock and load containers at France Road Container Terminal.

(2) At the river, containers may be loaded at a rate of approximately five per hour. At the France Road Terminal the container rate approaches thirty per hour. Allowing five to six hours to move a barge-carrier from the river to France Road and back, the ship would have to transfer at least fifty to sixty containers to make the trip worthwhile. At an average of 10 tons per container, barge carriers exchanging more than 500 to 600 tons of container carge thus may then be expected to use the France Road Terminal.

(3) It is estimated that an average cargo exchange from barge-carriers would amount to 12,000 to 15,000 tons.[2] Of this, 2,400 to 3,000 tons (20 percent) would be exchanged in containers. Due to the newness of this mode of handling cargo, historical data upon which to base a projection are lacking. However, it is reasonable to assume that a ship owner will utilize the capability of his ship as fully as possible.

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[1]Bechtel Corp., Op Cit., Chapt. 5
[2]Bechtel Corp., Op. Cit., p. 73, Table XXI.

Experience of the Port of New Orleans for those lines that have already converted to LASH/SEABEE indicated that they would like a terminal capable of jointly handling breakbulk cargo, containers, and LASH cargo. Therefore, considering growth in ship sizes, continued industrial development in the port, and industrial growth in the State of Louisiana and the Southeastern region of the United States, it is reasonable to expect that a large portion of the barge-carrier ships will exchange more than 500 tons of container cargo. For the purpose of this study, an estimate of 50% will be taken; and these will be double lockages.

(f) Combination and Container-Ships:

(1) Continued growth of containership cargo is projected in the years ahead. However, it is unlikely that these ships will have any reason to cross the lock. As deeper draft containerships enter the trade, and considering the probable deepening of Southwest Pass, but not the MR-GO, it is possible that some ships would be forced to use the lock to gain access to the France Road Terminal. While this category of ship may not be important in the near future, it should be recognized as potentially significant at a later date.

(2) It is possible that some combination ships will cross to pick up additional cargo, such as machinery, fertilizer, flour or grain at the river terminals. The amount of such traffic will probably be higher in the earlier years, decreasing as the port transition is accomplished. At the present time, though, the existence of special equipment for handling heavy machinery and the use of certain wharves for specialty cargo will reinforce this tendency.

(3) It is not expected that much traffic will move in this fashion over the long run. However, considering past history for freighters, it is estimated that as much as 20 percent of this category of traffic would move through the lock.

(g) Specialty Ships: A portion of the port's import cargo will be carried by specialty ships, e.g., steel, plywood, automobiles. Some of these will enter the port via the MR-GO and will cross the lock to load export cargo. Following the above reasoning, 20 percent of specialty ship traffic should cross the lock.

(h) Dry Bulk Vessels: Based on the existing 36-foot channel in the MR-GO, it is expected that vessels handling dry bulk commodities will call at the bulk facilities located on the MR-GO in the numbers shown in Table 5. In keeping with the present method of operation, only the smaller ships handling bulk commodities will require lockage into the river in order to reach cargo facilities along the Mississippi River from New Orleans to Baton Rouge. This segment of the ships will be estimated at 20 percent of the total vessels calling at the bulk facility.

5-10. Deep Draft Benefits.

(a) It is estimated that a vessel will require approximately 16 hours to travel from the "Centroport" tidewater area to the Gulf of Mexico, through the Gulf to Southwest Pass and then up the Mississippi River. By the year 1980, the costs of waiting time at the existing lock, plus lockage time, and tug hire will exceed the costs for the 16 hours of steaming time required for traveling the circuitous route. Therefore, with the existing lock, ships traveling between the MR-GO and the Mississippi River or vice versa would be forced by considerations of economy and physical limitations of the existing lock to travel the circuitous route. Consequently, the cost for such operation compared to the costs of similar operation with the new lock will be the measure of benefits to ship traffic.

(b) The average annual transportation costs for ships with the existing lock amounts to $9,396,000. With a new lock the transportation costs for ships will amount to an average annual cost of $1,972,000, or a savings in transportation costs of $7,424,000.

5-11. Summary of Navigation Benefits.

(a) Construction of the proposed new lock would eliminate all of the costs perviously outlined. The average annual benefit assignable to the new lock is, therefore, the sum of those costs, or $29,696,000. The following table summarizes the benefits which would accrue from construction of the new lock:

Table 6
Summary of Navigable Benefits

Item	Annual Benefit
Elimination of delays - barge traffic utilizing the existing lock	$11,832,000
Elimination of additional costs associated with ships utilizing the circuitous route via the river, the Gulf, and the Mississippi River-Gulf Outlet, due to excessive delays at the existing lock	7,424,000
Elimination of additional costs associated with the movement of potential barge commerce by other modes to avoid excessive delays at the existing lock	10,440,000
Total Average Annual Benefits	$29,696,000

6. ENVIRONMENTAL SETTING

6-1. General.

(a) The study area, including the 7 alternate sites, and barge connections, extends from the existing Inner Harbor Navigation Canal (IHNC) southeasterly along the Mississippi River to the birdfoot delta and along the MR-GO to Breton Sound. Extensive wetlands are involved with all sites except those along the IHNC. (See plate 1)

(b) Residential and commercial lands are extensive along the IHNC, whereas natural lands are not present along the IHNC near the Mississippi River. Natural lands are areas which have not been modified by man's activities.

(c) The six remaining sites would require a cut through wetlands. Swamp; intermediate, brackish, and saline marshes would be required for channel and spoil right-of-ways. The only site involved with alteration of saline marsh is the Bohemia alternative. Associated with these sites are drained portions of the study area which involve batture, pastureland, and frontwoods.

(d) The triangle of wetland bordered by the GIWW, the MR-GO, and the western shore of Lake Borgne is vegetated with brackish marsh species, and although affected by saltwater intrusion from the MR-GO, is considered important to the productivity of fishery resources in the surrounding waters.

6-2. Drained area.

(a) Land use. The drained land lies between the east bank mainline levee of the Mississippi River and the back protection levees (adjacent to the 40 Arpent Canal) constructed generally east of and parallel to the Mississippi River levees. This protected strip varies in width from 1-3/4 miles along the IHNC at the North End, to about ½ mile at Bohemia, La., in Plaquemines Parish. Another drained area, oriented lengthwise east-west, is located in St. Bernard Parish. This area is approximately 3/4 mile wide, is bisected by Louisiana State Hwy. 46, and extends between Poydras, La., and Verret, La. (see plate 3). Most of the drained area is developed or subject to being developed for urban type uses including industrial and commerical. Land related resources of the drained portions of the project area include small gardens, pastureland, and minimum amounts of farming. Crops are mostly garden crops such as turnips, mustard, cabbage, and occasional satsuma orchards. Some cattle are produced in the area. The oil industry is well represented both from the production and refinery standpoints. The ridge areas are forested but limited forest resources are harvested from the area. The major portion of the economy is not based on the direct land use of this area; but on the fish, shrimp, oyster, crab, oil and cargo industries.

(b) Flora. The flora of the drained portions of the study area is dictated by land use. Fields are primarily pasture-land covered with grasses such as winter rye, winter blue grass, and bermuda grass. The portions of the drained land within the study area not in urban or commercial development, or fields, are forested. The woody vegetation varies from a mature forest to brushy thickets. The only areas supporting extensive areas of such woody vegetation is between the Mississippi River and Caernarvon-Verret levee on the west and south, respectively, and the back protection levee from Chalmette to Verret on the east. Evergreen oak forests are found in the eastern part of the area and cypress-gum swamps are in the western portion of the drained area. Predominant overstory plants include live oak, sweetgum, green ash, pumpkin ash, and tupelo-gum. Understory vegetation includes seedlings of the overstory plus palmetto, switchcane, smilaxes, buttonbush, peppervine, trumpet creeper, poison ivy, muscadine, wild grape, roughleaf dogwood, blackberry and marsh elder. Existing project areas such as road-sides, levees, and spoil areas support primarily marsh elder, elderberry, giant ragweed, fireweed, switchcane, roseau, blackberry, dewberry, cranesbill, bedstraw, morning glory, chickweed, ironweed, dock, bermuda grass, nut grass, smut grass, and sedges. Aquatic vegetation includes duckweed, waterfern, alligatorweed, water hyacinth, coontail, spatter-dock, water shield, and numerous blue and green algae.

(c) Fauna. Mammals include the white-tailed deer, swamp, and cottontail rabbits, grey and fox squirrels, opossums, raccoons, grey and red fox, skunk; several species of bats, mice and rats, and armadillo; and domestic cattle, pigs, dogs, and cats. Birds inhabiting the drained area include numerous songbirds; mourning doves, both migratory and resident; a few bobwhite quail; wintering woodcock; two species of vultures; several species of hawks and owls; and some wintering migratory snipe in wet pastures. Snakes, frogs, and turtles are present in the drained portion of the study area.

6-3. Swamp and marsh areas.

(a) Flora.

(1) The undrained part of the study area includes all of the land lying between the back protection levee and Gulf Intra-coastal Waterway, Lake Borgne, Mississippi River-Gulf Outlet and Breton Sound. The flora of the undrained portions of the study areas is dictated by land elevation, drainage patterns, tidal fluctuations, and salinity patterns. Plant communities present in the undrained portions of the study area include freshwater cypress-tupelo swamp, and intermediate (5-10 o/oo) and brackish (10-15 o/oo) and saline (15 o/oo and higher) marshes.

(2) The only extensive areas of cypress-tupelo swamp are along the east and north sides of the back protection levee from Cypress Gardens to Verret. The overstory is primarily cypress and tupelo-gum (many of which are dead.) Understory is almost completely marsh elder and palmetto. The cypress-tupelo forest extends from the back protection levee toward the MR-GO approximately 1 mile and joins the marsh. The marshes along the west side of the MR-GO in the vicinity of Bayou Bienvenue down to the Verret levee are intermediate marshes occuring farthest from the MR-GO. The remaining marshes in the study area are brackish and saline marsh types.

(3) Vegetation of the intermediate marsh includes wiregrass, bulltongue, giant foxtail, marsh elder, deep pea, waterhyssop, spikerush, cyperus and three cornered grass. It is thought by many (Follow up report on the Mississippi River-Gulf Outlet Project, Louisiana, 1971; Fontenot and Rogillio, 1970; Lemaire, 1960; Rounsefell, 1964; Texas A&M Research Foundation, 1961; Valentine, 1968; and Wright et al, 1970)[1] that the line of demarcation between fresh and brackish marsh is currently changing due to encroachment of salt water from the MR-GO. Vegetation tolerant of increased salinities, namely, wiregrass, oystergrass, and saltgrass, is appearing in areas that previously supported vegetation characteristic of fresh marsh. Grasses present on the immediate bank of the MR-GO include oystergrass, wiregrass, and saltgrass, all of which are tolerable of salinities up to 20+ o/oo.

(4) Marshes within the hurricane protection levee (Chalmette Area Plan)[2] have tidal exchange with the MR-GO and western marshes at Bayous Bienvenue and Dupre only, because of spoil placement. Marshes to the east of the MR-GO have free tidal exchange with Lake Borgne and the channel.

(5) The intermediate marsh southeast of Bayou Dupre is probably the only intermediate marsh left in the study area. A vegetative map by Texas A&M Research Foundation (1961) recorded this same area as fresh water marsh in their pre-MR-GO construction study.

(6) The brackish type marsh covers much of the study area. Predominant vegetation of the brackish marshes includes wiregrass, coco, widgeon grass, and three cornered grass. Some portions of the brackish marshes near the MR-GO have also shown increased occurrence of salt marsh plants such as saltgrass and oystergrass. All the marshes in the study area east of the MR-GO and south to Bayou LaLoutre are brackish marshes. Saline marshes dominate the area farther south.

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[1]Specific works contained in para 6-10, literature cited.

[2]See para 5-6; Lake Pontchartrain and Vicinity Hurricane Protection Project, Chalmette Area Plan.

(7) Natural levees, spoil areas, and middens in the marshes support mostly marsh elder, hogcane, blackberry, eastern baccharis, roseau cane, a few live oaks, and few other annual forbes and grasses. The difference of a few inches in elevation or a few parts per thousand in salinity can cause drastic changes in vegetative types.

(b) Wildlife--Game.

(1) The swamp-marsh zone supports populations of fur-bearers including the mink, nutria, alligator, muskrat, and otter with nutria being the most abundant. Bullfrogs are present in the swamps and fresh marshes, Also, the area is utilized by considerable numbers of migratory waterfowl. Dabbling ducks include the mallard, pintail, blue and green-winged teal, baldpate, gadwall, shoveler, and a few wood ducks, both migratory and resident, in the swamp area. A small flock (approx. 5,000) of blue and snow geese that winter anywhere from the mouth of the Pearl River to the Mississippi River delta marshes occasionally use the marshes of the study area. Diving ducks that habitually use the marshes and open areas of water during winter include the canvasback, redhead, lesser scaup, ringnecked duck, and an occasional goldeneye and bufflehead. Other miscellaneous wild fowl sought by sportsmen include the ruddy duck, coot; king clapper sora and Virginia rail; American, redbreasted, and hooded merganser; snipe; and purple and Florida gallinule.

(2) The marsh and swamp areas support high populations of the muskrat, nutria, swamp and cottontail rabbit, opossum, raccoon, and a few white-tailed deer. A very few grey and fox squirrels are present in the cypress-tupelo swamps.

(c) Widllife--Nongame. The most esthetically valued nongame wildlife of the study area are the wading, shore, and songbirds. The glossy, white faced and white ibis; American and cattle egret; Louisiana green, great blue, little blue, yellow-crowned night and black-crowned night herons; and the American and least bittern are present in the study area. Other birds including the killdeer, several species of gulls, terns, sandpipers and plovers; and black skimmer, water turkey, avocet, and occasional doublecrested cormorant; many fish crows; the marsh hawks; and pied-billed and horned grebe use the study area. Frogs, snakes, and turtles are numerous in the swamps and marshes. Common snakes are the water moccasin, common water snake, and graham's water snake. The common snapping turtle, longear and redear turtles are present. Several species of leopard frogs, tree frogs, and peepers are present.

(d) Wildlife--Recreation. Data upon which an evaluation of wildlife resources are made are available from a study conducted by an interagency group, "The Fish and Wildlife Study of Coastal Louisiana and the Atchafalaya Basin Floodway." The study area is located within Units 1 and 2 of the above-referenced study and basic data relating to those are used in the evaluation. The total area of estuarine marsh in units 1 and 2 is 660,700 acres. The level of sports hunting pressure on the Louisiana coast is such that it is reasonable to assume that any reduction in acreage will be reflected in a corresponding reduction in recreational or commercial activities. The referred study indicates that estuarine marshes in units 1 and 2 are capable of producing wildlife to support 0.18 man-days annually of small game hunting per acre, 0.15 man-days of large game and waterfowl hunting per acre, and 0.26 man-days of wildlife oriented recreation for a total of 0.59 man-days of sports hunting and wildlife oriented recreation. These recreation days have a value of $1.50, $6.00, and $1.50 respectively, for a total value of $1.56 per acre per year.

(e) Wildlife--Commercial. The level of commercial trapping pressure on the Louisiana coast is such that it is reasonable to assume that any reduction in productivity will be reflected in a corresponding reduction in harvest. The referenced study indicated that during the 1967-1973 trapping season, a total of 3,002,043 pelts and 10,480,000 pounds of meats were harvested in the state. The total value of pelts and meats was $6,855,700. Since nutria and muskrats comprised most of the total value and the bulk of the harvest of these two species is from the coastal area, the entire state catch is attributed to the coastal marshes. Using this logic, the study indicated that estuarine marsh in coastal Louisiana is capable of producing marketable commercial wildlife at an average of 0.67 pelts and 2.78 pounds of meat per acre per year. The modification of an acre of estaurine marsh would thus engender a loss of commercial wildlife by 0.67 pelts x $2.41 = $1.62, and 2.78 pounds x $.085 = $.25. This loss represents a value of $1.87 per acre per year.

6-4. Water Quality.

(a) The surface water in the study area varies from fresh to brackish. The distribution of salt water in the estuary and marsh areas is dependent on the direction and intensity of lunar and wind tides and the influence of surface water runoff from the urbanized agricultural and marshlands in the drainage basin.

(b) The quality of the water in the study area is dependent to a large extent on the storm water and dry weather surface runoff. In some locations sewage effluents receiving

various degrees of treatment and industrial wastes enter the natural and man-made waterways which drain the urbanized areas. These storm and surface runoff waters are beneficial from the standpoint of adding fresh water to the marsh and slowing the destruction of marsh areas by saltwater intrusion. From the standpoint of the introduction of pollutants and other undesirable detritus, these runoff waters are presently a detriment to the environment of the study area.

(c) The average salinity in the study area has increased approximately five fold from the 1958-1961 period to the 1962-1966 period. At one station in the Gulf Intracoastal Waterway at the Paris Road Bridge, mean annual salinities for these time periods increased from 1.18 to 5.99 chlorides in 1,000 parts per million. These salinity increases have been caused by many factors which give waters of the Gulf of Mexico more direct access to the study area. Introduction of fresh water into the basin is needed in the marsh area to reverse the saltwater encroachment trend.

(d) The water of the Mississippi River contains heavy metals and other toxic substances and frequently harbors significant concentrations of undesirable bacteria. Silt and sediments have pesticides adsorbed by particles which are harmful to the biota. It is reasonable to expect that in view of recent legislation and current emphasis on "clean water," that water quality in the Mississippi River below New Orleans will progressively improve in the future.

(e) The water quality of the study area has been affected in recent years by the urbanization and industrialization of the area and adjacent areas. The recent closure of a portion of the oyster leases in Lake Borgne because of high bacterial level in the growing waters is a point in example. Under suspect are the highly contaminated surface water runoff from New Orleans, surface runoff from outlying surburban areas, and sewage treatment plant effluents that discharge in navigational and drainage waterways. A diversion of the runoff from New Orleans has improved the situation some but not sufficiently to reopen the oyster leases to harvesting. Problems of this sort will reoccur with increasing frequency as the area develops and becomes more populated.

6-5. Fishery Resources.

(a) Data upon which an evaluation of fishery resources are made are also available from the previously mentioned study conducted by an interagency group, "The Fish and Wildlife Study of Coastal Louisiana and the Atchafalaya Basin Floodway."[1] While no definite analysis of the relationship of marsh area to productivity in the fishery resource is available (and the complexity

[1]See para 6-4(d), Wildlife Recreation

of the relationship is such that the relationship is unlikely to be defined with any precision in the foreseeable future) it is reasonable to assume that should there be no marsh at all, there would be no fishery harvest, since the productivity while perhaps not zero, would nevertheless be so reduced as to make harvest impracticable.

(b) The spotted weakfish, fringed flounder, southern flounder, sheephead, Atlantic croaker, black drum, and red drum comprise the majority of the sportfish catch in the study area. Rounsefell (1964) conducted fish surveys in and around the study area between 1959 and 1962. He predicted that due to construction of the MR-GO, the average salinity would rise by about 2 to 3 o/oo and as a result, marine fish species would increase in numbers and fresh water species would decrease in numbers. Fresh water fish species in the study area are limited to regions previously mentioned. Species present include the blue, channel, flathead catfish; yellow, warmouth and largemouth bass; orangespotted, redear and spotted sunfish; bluegill; and chain pickerel. Fontenot and Rogillio (1970)[1] report that fresh water species mentioned above are no longer present in the Biloxi Marsh Complex immediately east of the study area.

(c) The reduction in productivity in the fisheries resources has implications in the area of recreation on sports fishing. Reduced production of sports species may be reflected in reduced sports catches. However, since the size of the catch is only part of the attraction, and in view of the small percentage reduction that modification of a small part to the total available estuarine marsh would produce, and in view of the fact that a large surplus of sports fishing potential exists in the area, it is unlikely that any measurable reduction in the overall recreation potential of the area, insofar as sports fishing is concerned can be assigned to each acre of marsh.

6-6. Commercial Fishery.

(a) Commercial fishing is an important part of the economy in the study area. Also, the marsh, estuary, and sound areas outside the study area serve as an intricate part of the ecological complex contributing the production within the study area. The Louisiana Wild Life and Fisheries Commission has designated the study area as well as some surrounding waters a menhaden nursery area and prohibits menhaden fishing within the nursery area. Species dependent on the study area and surrounding production areas that are harvested commercially within the study area include oysters; brown, white, and pink shrimp; blue crabs; and the brackish water sportfish previously mentioned. The total oyster lease acreage in the study area is estimated to be 20,000 acres.

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[1]Specific work contained in para 6-10 literature cited.

(b) Considering the marsh a necessity with respect to commercial fishery harvest, it is reasonable, if imprecise, to assume that each portion of marsh contributes to that harvest in proportion to its areal extent. On that basis, an acre of marsh in units 1 and 2 results in the harvest of 291.6 pounds per acre of commercial seafood with a value of $21.11 per acre.

6-7. Archeological and Historical Research.

(a) Considerable archeological and historical research has been conducted in the study area both by professional and amateur interests. The oldest sites known to be associated with natural levees of the St. Bernard Delta distributaries are of Marksville age. Sites in Orleans, St. Bernard, and Plaquemines Parish that are listed in National Register of Historic Places and the Louisiana State Plan have been identified. The unique past and present culture centered around the fur, shrimp, oyster, crab, and boat building in the area should be considered as part of the historical and cultural aspects of the area.

(b) Neuman (1970)[1] conducted an archeological survey of the Lake Pontchartrain Hurricane Protection project which included the Chalmette Area Plan. Middens and mounds in this area have been identified.

(c) The National Register of Historic Places and the Louisiana State Plan have been received and no sites will be affected by the proposed plan.

6-8. Archeological and Historical Sites.

(a) Orleans Parish.

(1) An aboriginal shell midden along the left descending bank and near the mouth of Bayou Bienvenue.

(2) Fort McComb at Chef Menteur Pass. Construction started in 1818. The fort was utilized intermittently until 1867 (Lemann, 1969). There is also an aboriginal deposit at this site.

(3) Buried shell midden, which is the type site for prehistorical Bayou Jasmine phase of Poverty Point culture, approximately 3,200 years old (Gagliano and Saucier, 1963).

(b) St. Bernard Parish.

(1) An aboriginal shell midden along the banks of Shell Beach Bayou.

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[1]Specific work contained in para 6-10, literature cited.

(2) An aboriginal shell midden along the southwest shore of Lake Borgne.

(3) Martello Castle, the remains of fort built in 1828 (Lemann, 1969).[1]

6-9. Other Project Reports and Studies.

(a) Final Environmental Impact Statements which have been or are being prepared for US Army Corps of Engineers projects in the study area are: Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana; Mississippi River-Gulf Outlet, Michoud Canal, Louisiana; and New Orleans to Venice, Louisiana, Hurricane Protection Project. Draft Environmental Impact Statements are being prepared on the Mississippi River-Gulf Outlet Louisiana, construction, operation and maintenance features; and a Deep Draft Access to the Ports of New Orleans and Baton Rouge, Louisiana. General investigations on the project Bayous LaLoutre, St. Malo and Ycloskey, Louisiana have been conducted in the study area. These studies and reports have included substantial information on environmental impacts within the study area.

6-10. Literature Cited.

(a) Follow up report on the Mississippi River-Gulf Outlet Project, Louisiana, 1971. (Author unknown). Received from: Bureau of Sport Fisheries and Wildlife, Vicksburg, Mississippi.

(b) Fontenot, Bennie J. and H. E. Rogillio, 1970. "A study of estaurine sportfishes in the Biloxi Marsh Complex, Louisiana." La. Wild Life and Fisheries Commission Fish. Bull No. 9 (incomplete) in final report on, Preliminary Environmental Assessment of the Marsh Area Between Bayou Bienvenue and Bayou Dupre. Prepared by the Staff Members of Center of Wetlands Resources, Louisiana State University, Baton Rouge, Louisiana, for Fromherz Engineers, 1539 Jackson Ave., New Orleans, Louisiana. Unpublished manuscript, 30 pp.

(c) Gagliano, Sherwood M., and Roger Saucier, 1963. "Poverty Point sites in Southeastern Louisiana," Amer. Antiquity, 28 (3), Salt Lake City.

(d) Lemaire, R. J., 1960. Preliminary Report of Marsh Vegetation Study Mississippi River-Gulf Outlet Navigation Project, Orleans, and St. Bernard Parishes, Louisiana. Bureau of Sport Fisheries and Wildlife (mimeograph report).

(e) Lemann, B., 1969. Historic sites inventory. Regional Planning Commission, Jefferson, Orleans, and St. Bernard Parishes of Louisiana, New Orleans, Louisiana.

[1]Specific work contained in para 6-10, literature cited.

(f) Neuman, Robert W., 1970. Archaeological Survey of the Lake Pontchartrain Hurricane Project Area, Southeast Louisiana. Department of Geography and Anthropology, Louisiana State University, Baton Rouge, Louisiana.

(g) Rounsefell, G. A., 1964. "Preconstruction Study of the Fisheries of the Estuarine Areas Traversed by the Mississippi River-Gulf Outlet Project." Fishery Bulletin, Vol. 63, No. 2 (1964) pp. 373-393.

(h) Texas A&M Research Foundation, 1961. Hydrological and Biological Studies of the Mississippi River-Gulf Outlet Project (final report). US Fish and Wildlife Service Contract No. 14-17-008-119. Texas A&M Project 236. Reference 61-20F.

(i) Valentine, J. M. Jr., 1968. The Vegetation of Upper Plaquemines and St. Bernard Parishes. Bureau of Sport Fisheries and Wildlife (Mimeograph).

(j) Wright, L. D., F. J. Swaye, and J. M. Coleman, 1970. "Effects of Hurricane Camille on the Landscape of the Breton-Chandeleur Island Chain and The Eastern Portion of the Lower Mississippi Delta." Technical Report 76. Coastal Studies Bulletin No. 4, Coastal Studies Institute, Louisiana State University.

7. PLANNING CHRONOLOGY

7-1. Public Meeting, February 1960.

(a) Planning on the ship lock and connecting channels, the third part of the project, commenced with a public meeting held in the courthouse in Chalmette, La. (St. Bernard Parish) on 1 February 1960. Varied opinions were expressed regarding the proposed location of the lock. The site in the vicinity of Meraux mentioned in the authorizing legislation was not satisfactory because of industrial development and adverse river conditions due to a bend in the river (see plate 2). The site below Violet, La. (Lower Site), was also objectionable to navigation interests because the river entrance would be near to an acute bend in the river which might prove to be hazardous to navigation. Barge and steamship operators preferred the site at Docville, La. (Upper Site), because it offered superior visability.

(b) St. Bernard Parish officials and representatives were opposed to any site located in St. Bernard Parish and expressed the opinion that the site should be located adjacent to the existing IHNC lock. They were unalterably opposed to the "Upper Site" near Docville, La., because it would involve and inconvenience a large number of St. Bernard Parish residents,

would interrupt land and traffic to and from areas below the lock site, decrease land values below the site, and necessitate relocation of drainage, sewerage, and water facilities. While the "Lower Site" was also objectionable for the same reasons as the "Upper Site," the magnitude of the undesirable features would be less. Therefore, the St. Bernard Parish interests stated at the public meeting that if they were forced to accept construction of a lock in St. Bernard Parish that the site be located below Violet, La. (Lower Site).

(c) Representatives of the Board of Commissioners of the Port of New Orleans, expressed no preference between the upper and lower sites but stated that they would attempt to secure the necessary rights-of-way along either route.

(d) Representative F. Edward Hebert, after hearing the testimony presented stated, "We have to accept the realities of life there, but I am fully convinced that there is only one place for such a lock if and when it is to be constructed, and that is below the Violet Canal."

7-2. Lock Study Report, March 1961.

(a) Studies made specifically for this report covered three sites--one adjacent to the existing Industrial Canal lock, and one above and one below Violet, La. (See Plate 2.) The site in the vicinity of Meraux was eliminated after preliminary study because of the industrial development in the area and certain adverse river conditions which made this location impracticable. The study found the site above Violet, La. (Upper Site), to have an economic advantage over the site below Violet, La. (Lower Site), because the distances involved via a lock at that site were less. Delays to highway traffic at the Upper Site would be greater than at the Lower Site; however, the savings to navigation at the Upper Site exceeded the additional costs to vehicular traffic.

(b) The report stated that the most desirable location for an additional lock would be as near to the existing Industrial Canal lock as economically feasible and practical. However, the forebay of the existing lock was considered to be too short for construction of an additional lock adjacent to the existing lock. The report also recognized that major difficulties would be encountered in providing vehicular traffic detours, continuation of existing drainage during construction, and that abandonment of some of the existing facilities and industrial sites along the IHNC would be required.

(c) This study also developed economic justification for a barge lock; and one of the recommendations was that a barge lock be constructed at the Upper Site in St. Bernard Parish. The Chief of Engineers' 2d Ind of 1 November 1961 to New Orleans District basic of 21 March 1961 contained the following comments regarding this subject: "...Recommendation "c" concerns the necessity of obtaining authorization for preparation of a survey report in order to obtain congressional authorization of a new barge lock and canal. A survey investigation would be necessary. Local interests should be informed that there is no outstanding authority under which a survey study may be made."

(d) The above report was thoroughly reviewed, and in January 1962, New Orleans District informed the assuring agency of the finding, i.e., that no authority existed for the construction of a barge lock or for the preparation of a survey report which could lead to its authorization. Planning was therefore curtailed until late 1964 when the assuring agency requested that the New Orleans District reinstitute planning for a ship lock based on new data.

7-3. Lock Study Report, September 1966.

(a) The Board of Commissioners of the Port of New Orleans furnished new ship lock justification data in June 1966 and requested that a new ship lock be considered near the existing lock. In September 1966, New Orleans District submitted a report entitled "Mississippi River, Baton Rouge to the Gulf of Mexico, Mississippi River-Gulf Outlet, Report on Need for New Ship Lock." Within this study, it was recommended that a general design memorandum (GDM) be prepared as soon as practicable for a new ship lock at the Inner Harbor Navigation Canal location. By 2d indorsement dated 8 December 1966, The Chief of Engineers authorized preparation of a GDM subject to the resolution of certain comments regarding size and alternate alinements.

(b) The Chief of Engineers' 2d Ind of 8 December 1966, paragraph 4 contained a very interesting comment pertaining to the historical statistics showing a steady decline in ship lockages as follows:

"It also appears doubtful that the statistical data on the proportions of barge traffic and ship traffic through the existing lock and channel represent a very reliable basis for projecting future traffic. The limitations on vessel size imposed by the present small lock has in all probability reduced its value to shippers and has caused ship traffic to remain at a fairly low level.

However, the question arises of what traffic projections would show if the lock and narrow canal did not constitute a restriction on traffic, i.e., if it is assumed that the canal is widened and adequate size [sic] locks are provided. The report does not adequately cover such questions. Much more detailed study of anticipated traffic, growth of port activity, and growth of industry[1] should be made to support any conclusion as to what the most feasible and desirable plan should be and as to what size lock should be adopted."

7-4. Industrial Canal Studies (1967-1969).

(a) Background. During 1967, three alinements relatively adjacent to the Industrial Canal were investigated. The site which was 375 feet downstream from the existing lock was called the "Basic Plan"; that which was 500 feet downstream was called the "Modified Basic Plan"; and that which was 1,750 feet downstream was called the "Idealized Plan". On 25 and 26 January 1968, a conference was held regarding the size, location, and justification of the project. During the meeting, a representative of the Dock Board reported the Board would not participate in the "Idealized Plan" due to the vast disruption of the community that would result. The concensus of the conference was that the "Modified Basic Plan" would be further developed, provided it could be demonstrated that rail traffic over the channel would not impair its utility. It was further decided to continue work on the economic justification data for the project.

(b) Site development. Coincident with the allocation of sufficient funds, planning on the project at the Inner Harbor Navigation Canal location began to gather momentum during the last half of 1968. Contracts were let to perform surveys in the Industrial Canal area and to accomplish the rail-marine traffic interference study. Vicksburg District was assigned and began prosecution of the work needed for part of the GDM. On 31 December 1968, a combined 7-year planning-construction schedule was approved by Division. The Dock Board initiated its sphere of responsibility. Coordination was maintained with the Dock Board, the Louisiana Departments of Highways, and Public Works and with navigation interests. In July 1969, the Dock Board was informed that, due to foundation considerations, and using conventional construction methods, a new lock could be constructed no closer to the existing structure than 750 feet (centerline to centerline distance). This lock alinement was evaluated by the assuring agency in relation to its responsibilities to provide all real estate, easements, bridges, and other relocations along with the public welfare. The social and economic impact on the adjacent community would have been tremendous. All east bank canalside industries, comprising

[1]Underscoring by author. Para 5-9, "Deep Draft Projected Lockages," is responsive to these comments.

some 11 marine-oriented businesses, and 989 families in 673 dwellings, (about 4,100 people) would have to be moved and relocated. Additionally, one church, one school, two auto repair shops, and eight retail stores would have to be acquired. Also, this alinement would require the modification and/or replacement of three vehicular bridges and one railroad bridge. These bridge relocations would seriously impede vehicular and railroad traffic from 6 to 11½ years, depending on funding, and adversely affect the lives of the 87,000 residents of the New Orleans Lower Ninth Ward, the St. Bernard and east-bank Plaquemines Parishes. The cost to local interests (based on July 1973 price levels) would have been $236,400,000, while the Federal cost was $141,300,000, for a total of $377,700,000. The assuring agency informed us that these socioeconomic impacts were, in their view, excessive and withdrew the State of Louisiana's support for the Industrial Canal site. They requested at the same time, that sites in St. Bernard Parish be reevaluated in accordance with the authorizing legislation.

7-5. St. Bernard Parish Studies And Sites (1969-1971)

(a) Saxonholm Site. (See plate 2) The first step taken in evaluating potential St. Bernard Parish sites for a new lock and connecting channels was to begin an updating of those locations studies in 1961, namely, the "Upper" and "Lower Sites". During September 1969, representatives from the Dock Board suggested that a new site within the parish might be worthy of investigation, namely, the Saxonholm Site. This site river entrance is near the Saxonholm navigation light (mile 85.7 AHP) and terminates near the confluence of the MR-GO and the GIWW. It was pointed out that this alinement would disturb very little development, was the optimum azimuth for navigation during severe winter weather, and was adaptable at an early date into the expansion of the port. All but one of the navigation interests who expressed themselves reacted most favorably towards this site. It is notable that this site is the most upstream of the three St. Bernard Parish locations which received consideration. As such, more of the parish population reside downstream of this site than reside below the other sites. This fact is most important from the point of view of the local residents, who attest that the Saxonholm Site would be the most disruptive of the three locations to the orderly development of St. Bernard Parish. Another factor which influenced consideration of this site was the obvious conflict between it and the proposed route for I-410. The final selection of this interstate route would render the Saxonholm Site impractical, particularly when it is observed that bridge crossings would be required not only in the vicinity of the Gulf outlet disposal area, but across the Mississippi River at the entrance of the Saxonholm channel. Due to the relatively greater impact on the local residents by this alinement and conflict with the proposed I-410, this route was never further refined.

(b) Upper Site. The alinement next downstream from the Saxonholm Site which is being considered for project location is called the "Upper Site". The present "Upper Site" alinement is distinct from that studied in 1961 although the river entrances are relatively at the same point. In the invervening years, some subdivision development has occurred, particularly to the northwest of the river end of the original alinement. A modified river entrance was required for the new "Upper Site" in order to reduce its effects on the immediate community. The MR-GO intersection of the new route remained essentially equal to the old one. The resulting ship channel alinement, therefore, consists of two tangents and a curve, plus a possible barge channel or route between the MR-GO and the GIWW. Of the three St. Bernard Parish project location studies, the "Upper Site" is most restrictive in available width next to the river. The river anchorage zone would be in hazardous conflict with the river entrance of the Upper Site. The proposed route for I-410 would conflict with the "Upper Site" in that its new river bridge piers would tend to screen downstream bound river traffic from being seen by traffic emerging from the lock forebay. Additionally, the proposed I-410 alinement would restrict areas available for railroad relocation and would require a southerly shift in the ship channel in the vicinity of the existing tidewater channel. Concerning the latter factor, very much of a southerly shift of the new ship channel would increase the project cost over $1 million for a major pipeline relocation. Aside from the required displacement of the river anchorage area, navigation interests find that this site is acceptable.

(c) Lower Site. Of all four sites studies (that is, the Industrial Canal as well as the three locations in St. Bernard Parish), the "Lower Site" is the farthest downstream. Therefore, fewer people will be affected by this alinement compared with the others. Although the river entrance to the "Lower Site" is markedly similar to that presented in 1961, the remainder was influenced by a hurricane protective structure, Bayou Dupre Control Gate, which will be in place by the time construction at the Lower Site could be commenced. The MR-GO end of the new ship channel has been placed northward of its original terminus so as not to interfere with the Bayou Dupre structure. Ships and tows will generally have to enter the forebay after heading upstream. A turnaround for traffic originating upstream could normally be expected to be performed downstream of the Lower Site. Thus, ships moored in the river anchorage area will form a very minor restriction to the river entrance of a new ship channel at this location. All of the navigation interests have stated that the Lower Site would be acceptable.

7-6. Site Studies (1971-1972).

(a) During this period the proposal was met with wholesale opposition from citizen groups and political entities in St. Bernard Parish. Opposition was of such intensity that it was necessary to cancel a public meeting on the matter. Congressman F. Edward Hebert, by letter dated 29 January 1971, requested a further delay of the public meeting in order for the Corps to develop more "...definitive information on the project with which to resolve the questions of the people of St. Bernard....". He also urged "...full-scale planning to proceed at the Lower Site in St. Bernard Parish where the impact on the community would be least so that the urgent economic and national defense need for the project could be expeditiously satisfied....".

(b) New Orleans District generated a letter request to LMVD dated 18 February 1971 for permission to proceed. Permission was granted by Division's 2d Indorsement thereto, dated 2 March 1971, and the District immediately commenced on the 7-year combined planning-construction schedule for the ship lock located at the "Lower Site" in St. Bernard Parish. Division, on 22 March 1971, approved a lock size of 110 feet wide and 1,200 feet long with a sill at -45 feet mean low gulf, to be used in GDM preparation. The assuring agency and navigation interests went on record as preferring a wider and deeper lock. Work directly related to the lock was halted in December 1971 pursuant to the determination of size. OCE advised by letter dated 16 June 1972 that all planning would be based on a lock 150 feet wide, 1,200 feet long, with a sill 50 feet below mean low gulf. This decision was based on data presented by the Maritime Administration and the assuring agency.

(c) In our 1971 reevaluation site studies between the Industrial Canal site in Orleans Parish and the Saxonholm, "Upper", and "Lower Sites" in St. Bernard Parish, we considered the most important social, economic, and environmental impacts. Our studies showed that:

(1) The "Lower Site" is the least costly;

(2) It has the smallest population living below;

(3) It impacts the adjacent community the least in relation to relocations of people;

(4) It commits a reasonably beneficial amount of acreage to transportation and associated developmental usage of those sites located in St. Bernard Parish.

(5) It is adequate for navigation in all respects; and last,

(6) It is adequate for the construction of features which:

--will provide for enhanced flood and hurricane protection;

--and will provide for uninterrupted utilities during and after construction.

(d) The St. Bernard Parish Police Jury had made its position known on several occastions as being against locating the ship lock and connecting channels anywhere in St. Bernard Parish; however, this same body passed a unanimous resolution in May 1969 supporting a location at the Lower Site (Violet, La.). Furthermore, the Greater New Orleans Chamber of Commerce, the Metropolitan New Orleans Safety Council, the Commandant, Eighth Naval District, the Council for a Better Louisiana, the Metropolitan Area Committee, the Tidewater Development Association, and the Seafarer International Union, to name a few, had also gone on record as supporting a new lock in St. Bernard Parish.

(e) Considering all these factors, it was our opinion that the Lower Site in St. Bernard Parish was the most favorable location for this project.

7-7. Public Meetings 29 November and 9 December 1972.

(a) A public meeting which was scheduled for April 1972 was postponed at the request of St. Bernard Parish officials so that they could study the proposed plan further. The public meeting was rescheduled to be held in Chalmette, La., on 15 November 1972, but was temporarily postponed when the St. Bernard Parish Police Jury again demanded that the meeting be cancelled and that only alternate sites be the topic of such meeting. Stalling tactics on the part of St. Bernard officials were obvious. The meeting was again rescheduled and held on 29 November 1972 in New Orleans, La.[1] Another meeting was held in Chalmette, La., on 9 December 1972.[2] Both sessions were well attended, totaling about 1,600 persons. Voluminous and vociferous testimony was presented. These were marathon sessions; the first lasting 12 hours and the latter lasting from 10 a.m. on Saturday, 9 December 1972 until 1:15 a.m. the following day. Both sessions were continued until no persons remained to testify.

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[1]New Orleans District, US Army Corps of Engineers, Record of Public Meeting on the Mississippi River-Gulf Outlet, New Lock and Connecting Channels, and High Level Highway Bridges, held in New Orleans, La., 29 Nov 72 - Vol. 1

[2]Ibid. Vol. II, Record of Public Meeting continued in Chalmette, La., 9 Dec 72.

(b) In general, the opposition which is comprised of the political leadership and citizens of St. Bernard and Plaquemines Parishes, a number of environmental organizations, and a small segment of local shallow-draft barge interests was numerous, well organized, and very vocal. Petitions against this project being located in St. Bernard Parish with over 18,000 names[1] were presented by the President of the St. Bernard Parish Police Jury and other police jurymen. The major objections voiced were the fear of environmental damage to wetlands, disruption of transportation and utilities by cutting the parish in half, and a truly paranoid fear of increased danger of future flooding.

(c) The proponents included the Governor of the State of Louisiana backed by all state agencies (with exception of the Louisiana State Wild Life and Fisheries Commission which took no position), the Board of Commissioners of the Port of New Orleans, Congressman F. Edward Hebert, the Mayor of New Orleans, organized labor, the shallow-draft industry (AWO), numerous shipping firms, civic groups and individuals. The proponents' position is that the future viability of the Port of New Orleans depends on this lock and the "Centroport" tidewater area.

(d) Proponents for a ship lock far outweigh the number of opponents. For example: 172 exhibits[2] were received supporting a ship lock at the Lower Site. The 18,000 names in petition received from St. Bernard were against a St. Bernard location only. The official position of St. Bernard recommends an IHNC site alternative. An additional 20 exhibits[2] received propose either a barge lock and/or another site. Only 38 exhibits were received in total opposition to the project as a whole. (See Appendix E)

7-8. Positions.

(a) The official statement[3] of the State of Louisiana formally recommended the construction of a deep-draft lock at the Violet Site provided the following conditions are met:

(1) That a 4-lane, high-level highway bridge be constructed at Federal expense over the channel which will be dug to connect the Mississippi River and the Mississippi River-Gulf Outlet.

(2) All other utilities, such as gas and water lines and railroads, be revised or relocated so that there will be no interruption of services to the residents of St. Bernard Parish by the construction of the connecting channel.

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[1]Ibid., Vol. III.

[2]Includes speakers who did not submit written statements.

[3]New Orleans District, US Army Corps of Engineers, Loc., Cit., Vol. I., Exhibit 3.

(3) That construction of the lock and connecting channel not commence[1] until construction of the bridge and relocation of all utilities and traffic arteries have been completed and placed in service.

(4) That the levees along the connecting channel be constructed to project grade and section to withstand the Project Hurricane, and that these levees be completed before the protection levees on the Mississippi River and Gulf Outlet are cut.

(5) That the environmental impact statement be prepared prior to the start of construction of the lock and channel so that it may be thoroughly considered and reviewed by all appropriate state agencies to insure that every precaution has been taken to protect our marsh and marine resources.

(6) That upon completion of the project, the connecting channel and the land immediately adjacent to the channel is placed under the jurisdiction and control of the appropriate St. Bernard Parish authorities.[2]

(b) The formal statement of the State of Louisiana further provided that: If these six provisions are met, the Violet Site will be acceptable to the State of Louisiana, "...not as the optimum solution we would have wished for, but looking at our problems realistically, the only solution available...." (Attached to the State of Louisiana's formal statement were attachments from the La. State Department of Commerce and Industry, Department of Health, Office of State Planning, Stream Control Commission, and Wild Life and Fisheries Commission).

(c) The formal statement[3] of the St. Bernard Parish Police Jury declared that "...The Jury stands unanimous in its opposition to the construction of any new lock within the boundaries of St. Bernard... Its construction within our parish would destroy our most valuable resource, our marshlands, and would create hazards for and problems to every citizen...." The St. Bernard Parish Police Jury reserved the right to file suits challenging any phase of the project. They further stated that the long term impact (to St. Bernard) would indicate that any site other than the IHNC Site, "...is so disasterous that it prohibits any further consideration by reasonable men...."

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[1]This provision is construed to mean those portions of the construction which would interrupt vehicular or railroad access, or cut existing drainage or utilities.

[2]This would require the Governor of Louisiana to reappoint a new assuring agency, and the proper execution of assurances acceptable to the Federal Government for the items of local cooperation specified in H.D. 245

[3]NOD, USA C of E, Loc. Cit., Vol. I, Exhibit 6(a).

(d) Major points of opposition as contained in the St. Bernard Parish Police Jury Report[1] are as follows:

(1) The elapsed time between the passage of the authorization and the present (almost 18 years) is so great that the initial site selection of St. Bernard is no longer valid and that the impact to the presently planned community growth would be disasterous.

(2) No economic analysis was made to show the irretrievable value of the destroyed ecology compared to the savings to waterborne traffic.

(3) The term "Local Cooperation" is misconstrued to mean cooperation of the St. Bernard Parish Police Jury rather than the duly authorized state agency, the Board of Commissioners of the Port of New Orleans. They therefore redeclared their opposition and stated that they withhold "local cooperation" for a lock in St. Bernard.

(4) They state that the future disposition of the IHNC and the existing lock and its existing obsolete bridges has not been sufficiently addressed. They also reason that construction of the new lock at the IHNC site would solve the present inadequate marine and land transportation problems that presently exist. They further reason that a St. Bernard site would create two areas of inconvenience for a segment of the population.

(5) They note that the IHNC site's construction cost increase as compared to the Lower Site is largely that of local interests. They contend that these costs, both first and annual, are largely highway and drainage; costs which will be expended irrespective of the site selected. They reason that these costs are not therefore chargeable to the (IHNC) project.

(6) They contend that the marsh is relatively unstable in comparison to the IHNC for channel and levee maintenance and that the difference in maintenance costs had not been considered.

(7) They contend that St. Bernard will have to pay for flood protection, drainage, utility, and school relocations. They argue that their bonding capacity has all but been exhausted and that the various state departments would not meet these "Local Cooperation" obligations.

(8) They state that the danger of flooding from hurricane is heightened due to the increased length of levees caused by the project.

(9) The Police Jury contends that the location of this project in St. Bernard would extract immediate loss of marsh and swamp area and lead to future loss of these natural resources from which the community makes its livelihood.

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[1]Ibid. Exhibit 6(b).

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SECTION 8 - 1973 SITE STUDIES

8-1. Initial post public meeting studies.

(a) In view of the strong controversy raised by St. Bernard Parish officials and other opponents to a St. Bernard Site, it was decided to look at some possible new sites suggested during the 1972 public meetings, and reappraise the old ones. The sites which were chosen for study were (refer to plate no. 1, and figures 1 thru 8): (1) Inner Harbor Navigation Canal, Orleans Parish; (2) Saxonholm site, St. Bernard Parish; (3) Upper Site, St. Bernard Parish; (4) Lower Site, St. Bernard Parish; (5) Caernarvon Site, St. Bernard and Plaquemines Parishes; (6) Scarsdale Site, St. Bernard and Plaquemines Parishes; and (7) the Bohemia Site, Plaquemines Parish.

(b) A conference with representatives of the Chief of Engineers Office; the Board of Engineers for Rivers and Harbors; Lower Mississippi Valley Division; and Vicksburg and New Orleans Districts was held on 18 January 1973 in NOD to discuss the relative merits of additional sites under study by NOD as a result of the public meetings held in November and December 1972. Fourteen (14) plans[1] comprising the above mentioned seven sites were presented as follows:

8-2. The IHNC Existing Lock Site with Baptiste Collette Alternate Route (see plate 5). This plan consisted of closing the IHNC for about 6 years, demolishing the existing lock and replacing it in the exact location between St. Claude and Claiborne Avenues; replacing the St. Claude and Florida Avenue bridges with semi-highlevel bridges (no increase in traffic lanes or railroad tracks), moving the east bank industries away between Claiborne and Florida Avenues, and back (east) north of Florida Avenue. During the 6-year construction period east-west shallow draft traffic would be forced to use Baptiste Collette Bayou (see figure 8), a 150-foot-wide by 14-foot-deep channel, which connects Breton Sound with the Mississippi River at mile 11.4 AHP. Deep draft marine traffic would be required to use the South or Southwest Passes of the river. The eastern take-line would be mid-block (Jordan Avenue - Deslonde Street) along the reach bounded by the river and St. Claude Avenue, and along Sister Street between St. Claude and Claiborne Avenues.

8-3. The IHNC Site--east of old lock (see plate 6, site "A". This plan consisted of building the new lock within a self-contained cofferdam as close to the existing lock as possible to minimize adverse social impact. Navigation would be continued during the 6 years of construction with interruptions of short duration only.

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[1] Tables 8 thru 13, starting on page 47, contain basic data on all site plans.

New semi-highlevel bridges would be required at St. Claude, Claiborne, and Florida Avenues[1]. The eastern take-line is that marked "1973 take-line" on plate 5. All east side industries would require relocation between St. Claude Avenue and the MR-GO. A full discussion of the technical aspects of the proposed method of construction is contained in appendix "A". The method used for estimating purposes is the "pipe-frame" cofferdam scheme.

8-4. IHNC Site center channel (opposite Galvez Street wharf). (Refer to plate 5.) This plan contemplates locating the new lock within a self-contained cofferdam on the centerline of the present channel adjacent and parallel to the Galvez Street wharf. This alinement would provide for use of the canal by deep and shallow draft traffic for a majority of the construction time. However, the canal would require closure for perhaps 2 years of the 6-year construction time; the longest single period being about 1 year. New semi-highlevel bridges would be required at St. Claude and Florida Avenues. Claiborne Avenue bridge could be used as is, but the vertical clearance would be less than 40 feet above high water. Galvez Street wharf, estimated by local interests to be worth about $24,000,000, would be lost as well as the east bank industries. The eastern take-line would be at mid-block between Jordan Avenues and Deslonde Street, bounded by the river and Claiborne Avenue, and thence along Jordan Avenue between Claiborne Avenue and the MR-GO/GIWW. The method of construction used for estimating purposes is the "cellular cofferdam scheme." A full discussion of its technical aspects is contained in appendix "A".

8-5. IHNC Site east of center channel (see plate 7, site "B".) This plan consists of constructing the new lock in a self-contained cofferdam east of the channel centerline (opposite Galvez Street wharf) to allow practically continuous use of the IHNC by marine traffic during construction and to minimize social impacts. East side real estate would be required within the "1973 take-line" as shown on plate 5. New semi-highlevel bridges would be required at St. Claude, Claiborne, and Florida Avenues. A full discussion of the technical aspects of the proposed methods of construction is contained in appendix "A".

8-6. Saxonholm Site (see figure 2 and plate 3) would be described in the prepublic meeting studies, paragraph 7-5(a). Additionally, the tailbay would require realinement so that its connection with the MR-GO would be approximately 90 degrees and pass eastward of Bayou Bienvenue floodgate. This proposed alinement would necessitate additional dredging of a short barge canal immediately eastward of the anchorage proposed for location at the confluence of the MR-GO and GIWW. A highlevel bridge at the intersection

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[1]Florida Avenue bridge relocation is envisioned as a combined railroad low-level and vehicular semi-highlevel bridge.

of I-410 and the lock tailbay would be required as well as a realinement of I-410 or the lock forebay at the Mississippi River terminus to minimize mutual interference. Realinement of either would produce a greater social impact due to the proximity of the communities of Cypress Gardens upstream and St. Bernard Grove downstream. The features would also include forebay and tailbay channels and levees, the lock, a 4-lane highlevel vehicular bridge at Judge Perez Drive, and a low-level railroad bridge over the tailbay, and utility and other relocations. See Appendix "B" for foundation studies.

8-7. Upper Site (see figure 3 and plate 3). The considerations remain essentially as described in paragraph 7-5(b). All studies were made including a 150-foot-wide by 12-foot-deep barge connection between the MR-GO and the GIWW. The major features as described above for the Saxonholm site apply for the Upper Site.

8-8. Lower Site (see figure 4 and plates 3, 13, 14, and 15). As expected from the discussion contained in paragraph 7-5(c), more detailed information is available on this site as it is the recommended plan and more detailed work has been accomplished on it. Its salient features include fore- and tailbay channel and levees, the lock, a 4-lane highlevel vehicular bridge at Judge Perez Drive and a low-level railroad bridge over the tailbay, and utility and other relocations; a barge channel (150 feet wide by 12 feet deep) located in the marsh adjacent to the west shore of Lake Borgne, and a 56-foot-wide by 10-foot-deep navigable floodgate at Violet Canal replacing the same sized floodgate at Bayou Dupre in the hurricane protection levee along the MR-GO.

8-9. Lower Site barrier plan (see plate 4). This plan utilized the alinement of the Lower Site ship and Lake Borgne barge channels. The major hurricane protection levees under construction along the MR-GO were to be connected to the Chef Menteur Barrier west levee via the west shore of Lake Borgne. This levee was to connect across the MR-GO with a 400-foot-wide by 50-foot deep navigable floodgate. A relatively low levee was to be constructed along the tailbay to contain tides of perhaps 10-year frequency. The hurricane protection would have been affected by closing the floodgates across the MR-GO, Bayou Bienvenue, and the Chef Menteur Complex.

8-10. The Caernarvon Site (see figure 5 and plate 1) was located immediately downstream of and parallel to the Caernarvon to Verret to MR-GO levee reaches of the Chalmette Hurricane Protection Plan. The plan requires river protection levees in the forebay. However, only low levees or dikes are required past the 40-arpent canal to prevent rapid siltation from periodic tidal flooding. A 2-lane semi-highlevel bridge and a 4-lane highlevel bridge would be required, relocating State Highways 39 and 46, respectively, as well as a low-level railroad bridge. A barge channel along the western shore of Lake Borgne is contemplated to reduce the distance between

the GIWW and the river. The unwanted curve in the forebay and the proximity of two river bends above and below the entrance gave impetus to the next plan.

8-11. Scarsdale Site (see figure 6 and plate 1). This plan is similar to the previously described Caernarvon Site with exceptions of being farther downstream, having a straighter forebay, and a better entrance condition for navigation. Similar bridge, utility and other relocations would be required; however, a railroad bridge would not be required.

8-12. Bohemia Site (see figure 7 and plate 1). This site is downstream of the terminus of Louisiana State Highway 39. A 4-lane highlevel highway bridge would be required at Louisiana State 46 over the tailbay near Reggio, Louisiana, or alternatively, the remaining communities along Louisiana 46 and 624, east of the tailbay would have to be acquired. The bridge was utilized as the plan feature to minimize social dislocations. This site was investigated due to its being mentioned in the public meeting and does impact the population the least. However, it is the most circuitous and would also require a barge connection along the west shore of Lake Borgne. For example, the Lower Site intercepts the river at mile 83.03 AHP while this site enters at mile 43.1, another 40 miles downstream.

8-13. IHNC land bridge with Lower Site (see plates 10, 11, and 12) explores the possible plan of reconnecting the majority of the population of lower 9th Ward New Orleans and St. Bernard Parish to New Orleans as a mitigation measure. This would be accomplished by accomplished by constructing ground level boulevards and streets after filling the IHNC between St. Claude and Claiborne Avenues. This plan would be put into construction after the new lock is operating at the Lower Site (see figure 4). The land bridge plan would include river and hurricane flood protection, bridge and lock demolishing, utility relocations, Coast Guard facility relocations, and possibly the construction of a public park. It is contemplated that this park area could be utilized in the future as an additional lock site.

8-14. IHNC land bridge with Caernarvon Site (see plates 10, 11, and 12) explores the same possible plan of mitigation as described immediately above. However, the new lock site would at Caernarvon (see figure 5).

8-15. IHNC land bridge with Scarsdale Site (see plates 10, 11, and 12) explores the same possible plan of mitigation, except the new lock would be located at the Scarsdale Site (see figure 6).

8-16. Study Responsibility. It was agreed that these numerous plans would be screened and reduced by New Orleans District and that studies would be made by Vicksburg District to

determine the feasibility of constructing a lock in a self-contained cofferdam at the IHNC in an attempt to minimize the required real estate and hence the socioeconomic impact of this existing transportation corridor. Coordination with operations experts, navigation interests, and the assuring agency developed information that the IHNC centerline locations were totally unacceptable and that Vicksburg District should study the two east side locations (see plate 5, sites "A" and "B").

8-17. Comparative site plan analysis.

(a) The previously listed 14 site plans were independently compared by experts of the US Army Corps of Engineers and the Assuring Agency in 10 major categories by utilizing an equally weighted numerical rating system. The most desirable site plan from the standpoint of a category was rated first, while the least desirable was scored fourteenth[1]. This analysis is presented in table 7, page 43, while the criteria applied by each of the participants to each category is discussed in subsequent paragraphs.

(b) Cost: The Assuring Agency evaluated the cost of relocations excluding the cost of highway bridges[2]. The US Army Corps of Engineers evaluated the total project construction cost (see table 10, page 49).

(c) Construction difficulty: The Assuring Agency included the amount and difficulty of real estate acquisitions and construction of local interest items, excluding highway bridges . The US Army Corps of Engineers evaluated the total spectrum of construction difficulties including relocations difficulty, their interrelation with and effects on the new construction, new construction feature relationships, access, contractor operations and plant, subcontractor mutual interference, funding and certain legal implications.

(d) Navigation benefits: The Assuring Agency considered the relative degrees of congestion and delays for both deep and shallow draft traffic for the following types:

(1) Port traffic--cargo originating or terminating at the Port of New Orleans;

(2) Intraport traffic--cargo originating and terminating at different points within the Port of New Orleans; and

(3) Thru traffic--cargo neither originating nor terminating in the Port of New Orleans, but passing through the Port on the Mississippi River, MR-GO, or GIWW.

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[1] In a few cases, two sites were rated equally high; however, the subsequent site retained its proper position by skipping the numeral following the tie rating.

[2] This is consistent with the State of Louisiana's position on responsibility of funding for bridges. See paragraph 7-8, Positions.

Also included were factors of distance, economy, and safety. The US Army Corps of Engineers ratings were made by a comparison of mileages. The distances which barge and ship traffic would have to travel were determined and related to the expected national monetary navigation benefits in order to secure an approximate benefit for each of the alternatives. The navigation benefits published[1] in the 1972 public meetings for the Lower Site were used as the base. The monetary values resulting from the difference in mileage for the other alternatives were either added to or subtracted from the basic benefits.

(e) Navigation adequacy: The Assuring Agency included this subject, i.e., the safe and efficient operation of the lock(s) connecting channels and other watercourses comprising the Port of New Orleans under one heading. The same ratings were therefore assigned to navigation benefits and adequacy. The US Army Corps of Engineers has included separate ratings and has considered port congestion, marine traffic patterns for inter- and intraport shallow and deep draft vessels, safety and efficiency in lock and channel operation, and vehicular of railway bridge interference with navigation.

(f) Local economics: The Assuring Agency considered economic enhancement, destruction or dislocation of existing industry and transportation facilities, attraction of new industry, and impacts to the local job market. The US Army Corps of Engineers rated this category on the basis of additional deepened channel with adjacent flood protected land which each alternative could make available for future industrial and marine-oriented development.

(g) Relocations: The Assuring Agency included social and business dislocations, difficulty, cost, time requirements, and the probability of accomplishment without undue delay to the project. The US Army Corps of Engineers also considered the number, complexity, cost, access interruption, and construction interference aspects.

(h) Social impacts: Considerations of the fear of flooding of the local populace, relocations of people, isolation of people, and disruptions to business were the criteria used by the assuring agency in evaluating this category. The US Army Corps of Engineers evaluated population dislocations, vehicular access interference during construction and the population projected to live below (eastward) the site thorugh the year 2020 (see tables 12 and 13, pages 51 and 52).

(i) Ecological impacts: The assuring agency considered the type and amount of land affected and the possible effects on the natural flora and fauna of the area. The US Army Corps of Engineers

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[1]New Orleans District, US Army Corps of Engineers Announcement of Public Meeting, Mississippi River-Gulf Outlet--New Lock and Connecting Channels, 15 September 1972.

TABLE 7
SITE PLAN RATINGS

SITE PLAN	(a) BAPTISTE COLLETTE-IHNC SITE		(b) BOHEMIA SITE		(c) SCARSDALE SITE		(d) CAERNARVON SITE		(e) LOWER SITE		(f) LOWER SITE-BARRIER		(g) UPPER SITE	
No. CATEGORY	D.B.[1]	C.E.[2]	D. B.	C. E.	D. B.	C. E.	D. B.	C. E.	D. B.	C. E.	D. B.	C. E.	D. B.	C. E.
1. COST	11	2	1	1	3	7	7	8	5	3	10	14	8	4
2. CONSTRUCTION DIFFICULTY	11	10	1	1	3	3	5	2	7	5	8	11	9	4
3. NAVIGATION BENEFITS	14	1	11	14	10	12	9	10	3	7	4	7	2	6
4. NAVIGATION ADEQUACY	14	5	11	14	10	9	9	8	3	2	4	7	2	3
5. LOCAL ECONOMICS	14	6	10	10	9	10	8	10	3	1	2	1	4	4
6. RELOCATIONS	11	11	1	1	3	3	8	4	6	2	5	5	9	9
7. SOCIAL IMPACTS	11	11	1	1	3	6	8	8	6	3	5	3	9	9
8. ECOLOGICAL IMPACTS	1	1	14	14	13	12	11	9	7	7	5	11	8	5
9. O. & M. DIFFICULTIES	6	4	14	14	13	13	10	12	4	8	5	11	2	9
10. PUBLIC SENTIMENT	6	1	1	3	4	6	5	8	12	10	11	12	13	13
TOTALS	99	52	65	73	71	81	80	79	56	48	59	82	66	66
RATINGS	13	3	4	5	8	10	10	8	2	1	3	12	5	4
CONSENSUS	7		4		8		10		2		5		3	

TABLE 7 (CONTINUED)
SITE PLAN RATINGS

SITE PLAN	(h) SAXONHOLM SITE		(i) IHNC SITE EAST OF OLD LOCK		(j) IHNC SITE CENTER CHANNEL		(k) IHNC SITE EAST OF CENTER CHANNEL		(l) IHNC LAND BRIDGE WITH LOWER SITE		(m) IHNC LAND BRIDGE WITH CAERNARVON SITE		(n) IHNC LAND BRIDGE WITH SCARSDALE SITE	
No. CATEGORY	D.B.[1]	C.E.[2]	D. B.	C. E.	D. B.	C. E.	D. B.	C. E.	D. B	C. E.	D. B.	C. E.	D. B.	C. E.
1. COST	9	6	12	10	14	13	13	9	4	5	6	11	2	12
2. CONSTRUCTION DIFFICULTY	10	6	13	13	12	12	14	14	6	7	4	8	2	9
3. NAVIGATION BENEFITS	1	5	6	1	5	1	7	1	8	7	12	10	13	12
4. NAVIGATION ADEQUACY	1	4	6	11	5	6	7	10[3]	8	1	12	12	13	13
5. LOCAL ECONOMICS	5	5	12	6	11	6	13	6	1	1	6	10	7	10
6. RELOCATIONS	10	10	14	12	12	13	13	14	4	6	7	8	2	7
7. SOCIAL IMPACTS	10	10	14	13	12	12	13	14	4	2	7	7	2	5
8. ECOLOGICAL IMPACTS	9	6	3	3	2	1	4	3	6	8	10	10	12	13
9. O. & M. DIFFICULTIES	1	10	9	6	7	7	8	5[3]	3	1	11	2	12	3
10. PUBLIC SENTIMENT	14	14	8	4	7	2	9	5	10	11	3	9	2	7
TOTALS	70	76	97	79	87	73	101	81	54	49	78	87	67	91
RATINGS	7	7	12	8	11	5	14	10	1	2	9	13	6	14
CONSENSUS	6		13		11		14		1		12		9	

[1] DOCK BOARD RATING.
[2] NEW ORLEANS DISTRICT, CORPS OF ENGINEERS RATING.
[3] A SINGLE LOCK OPERATION SCORES 4 AND 3 FOR NAVIGATION ADEQUACY AND O. & M. RESPECTIVELY.

rated the 14 sites based mainly on the total right-of-way required for channel and placement of excavated material, type and amount of land indirectly affected and effects on the flora and fauna. The total acreage of wetlands (swamp and marsh) affected was the primary factor used in assessing the environmental impacts for each alternative. Environmental impacts for any of the alternatives will be felt both within and without the study area. All sites exclusive of those in or adjacent to the existing Industrial Canal would involve major adverse impacts on the natural environment (see table 9, page 48).

(j) O&M difficulties: The assuring agency's criteria was limited to possible overdredging and maintenance of bridges. The Corps of engineers' criteria were the number of people required for the operation and maintenance of one or two locks, the mode of lock operation, and the amount of levees, floodgates, and channels which would require maintenance (see table 11, page 40).

(k) Public sentiment: The assuring agency stated they considered the interest of the State of Louisiana and National considerations versus local opposition to the project. The Corps of Engineers considered local opposition as determined from the public meetings, i.e., opposition is related to the number of people who might reside below one or two canals in all three parishes, and is directly related to the number of people dislocated. Weight was given to the expressed desires of the navigation and transportation interests.

8-18. Planning conference, 27-28 March 1973. A conference was held in the office of LMVD on 27-28 March 1973 with technical representatives of the Office of Chief of Engineers; Lower Mississippi Valley Division; Vicksburg District, and New Orleans District to study the concepts of cofferdam construction proposed for the IHNC Site and to discuss site selection study progress. The consensus of expert technical opinion was that by using unique cofferdam construction methods, a ship lock 150 feet wide by 1,200 feet long and 50 feet deep could be constructed on the east side of the IHNC within the real estate limitations set forth; i.e., along Jordan Avenue between the MR-GO and St. Calude Avenue and mid-block (between Jordan Avenue and Deslonde Street) bounded by the Mississippi River and St. Claude Avenue. (Appendix "A" contains a full report on these studies). Chief of Engineers office representatives advised that it would be desirable to continue to utilize the existing lock; therefore, Vicksburg District made their studies including this possibility.

8-19. Screenings of the original 14 plans. Successive screenings left the following plans under primary consideration:

(a) IHNC Site--east of old lock; (b) IHNC Site--west of center channel (opposite Galvez St. wharf); (c) Lower Site with IHNC land bridge; and (d) Lower Site. The screenings showed generally

that the sites located in Plaquemines Parish should be rejected as being simply too circuituous for practicality and irretrievably damaging to unacceptably large areas of productive marshland. The Lower Site Barrier Plan should be rejected on the basis of first cost and the potentially great ecological damage to all the marshland west of Lake Borgne. In considering the St. Bernard Parish sites, a review was made of all the factors which were presented as recommending the Lower Site as the most desirable at the 1972 public meetings. (Appendix "B" contains a preliminary foundation analysis for these sites.) The review indicated that foundation conditions at the Lower Site are markedly better than at the Saxonholm and Upper Sites, which in turn, produces a smaller first cost for the Lower Site. Refinement of real estate requirements along with the addition of the barge channel connection now shows the Lower Site utilizes 5,960 gross acres, while the Saxonholm and Upper Sites utilize 6,265 and 4,927 gross acres, respectively. A requirement for a wider forebay (see plate 15) due to railroad relocation revetment and Mississippi River levee interference has increased the number of homes and families to be relocated from one to four, which is still well below the social dislocations of the other St. Bernard sites. Therefore, taking into consideration the factors of navigation adequacy, construction cost, public sentiment, and social disruption; the Lower Site is still regarded as the best of those sites located in St. Bernard Parish. A review of the rationale developed in the 1971-72 studies, paragraphs 7-6(a) through 7-6(g), affords more than sufficient grounds to delete the Saxonholm and Upper Sites from further consideration. The two Orleans Parish Industrial Canal Sites proposed for the existing canal centerline were rejected on the basis of stopping or interrupting marine traffic for an excessive amount of time, the great loss of national monetary benefits resulting, as well as the attendant loss of port business and regional benefits.

8-20. Site Plans for Detailed Comparison. Although the Industrial Canal Site scored poorly in the ratings, the very fact that it is the existing corridor, and that it received strong support from the Lower Site opponents, mandated that it be one of the final sites for detailed comparison. The other, as the screenings and plan rating comparison showed, would be the Lower Site with Industrial Canal Land Bridge. Additional synthesis of these two remaining sites is discussed in Section 10, 1974 Site Plans.

8-21. Coordination letter of 17 August 1973. An interim report, containing relative considerations of various plans and modes of operation for the new lock located at the Lower and IHNC Sites, was sent to city, parish, state, and Federal agencies and officials directly concerned or representing a segment of the public impacted by this project (including the St. Bernard Parish Police Jury and Planning Commission). Additionally, navigation, port, and conservation interests were afforded this report requesting comments within 30 days. Of the 72 letters mailed, 27 responses were received. Congressman F. Edward Hebert continues to support the Lower site; Congresswoman Lindy Boggs states that she would rely heavily on the

US Army Corps of Engineers' judgment; the Governor of Louisiana maintains his position in favor of the Lower Site; however, Mr. J. Burton Angelle, Director of the State of Louisiana Wild Life and Fisheries Commission, supports the IHNC Site on ecological grounds; the Assuring Agency supports the Lower Site with modified operation of the IHNC lock; and the St. Bernard Parish Planning Commission and St. Bernard representatives maintain their support for an IHNC Site. In general, those persons locally representing or living in St. Bernard and Plaquemines Parishes, and ecologists are against a St. Bernard Site; while those persons living and locally representing Orleans Parish and elsewhere geographically, or associated with the State of Louisiana, or the transportation industry were for a St. Bernard Site. Selected responses, providing a general overview of the positions taken by these interested parties, are inclosed in appendix"C".

TABLE 8
DIMENSIONS FOR EVALUATION OF RIGHTS-OF-WAY
FOR COMPARATIVE ANALYSIS OF 14 SITE/PLANS

1. Baptiste Collette Alt. Route w/new lock at IHNC at site of Old lock: IHNC - Take line at west edge of Jordan Ave. between Miss. River and MR-GO.

2. Bohemia site:[1] Forebay 2,600' wide. Tail bay 5,000' wide.

3. Scarsdale site:[1] Forebay and tail bay up to St. Bernard Parish line--2,950' wide; tail bay from 40 arpent canal to MR-GO--5,000' wide.

4. Caernarvon site: [1] Same as Scarsdale site.

5. Lower site: Forebay and tail bay up to 40 arpent canal--2,950' wide; tail bay from 40 arpent canal to MR-GO--10,500' wide. The barge canal between MR-GO and GIWW takes a width of 1,300'. [1]

6. Lower site-barrier: Forebay and tail bay up to 40 arpent canal--2,950' wide; tail bay from 40 arpent canal to MR-GO--6,000' wide; barge channel and levee between MR-GO and GIWW takes a width of 6,000'.

7. Upper site: [2] Same as Lower site, except for barge channel alinement.

8. Saxonholm site: Same as Lower site, no barge channel required.

9. IHNC site-east of existing site: Take line located mid-block between Jordan Ave. and Deslande St. from the Miss. River to St. Claude Avenue and at the edge of the east roadway of Jordan Avenue from St. Claude Avenue to the MR-GO.

10. IHNC site-center channel (opposite Galvez St. wharf): Same as no. 1.

11. IHNC site-east of center channel (opposite Galvez St. wharf): Same as no. 9.

12. IHNC land bridge w/Lower site: Fill in IHNC between St. Claude and Claiborne Ave.; construct divided ground level roads at these avenues and a park between, bounded on the west by the Coast Guard station property and on the east by Sister St. Lower site takes area as described in no. 5.

13. IHNC land bridge + Caernarvon site: No. 4 + No. 12.

14. IHNC land bridge + Scarsdale site: No. 3 + No. 12.

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[1] Include barge channel adjacent to west bank of Lake Borgne between MR-GO and GIWW, width of R/W is 1,300'.

[2] Include direct barge canal connection. Width of R/W is 1,300'.

TABLE 9
QUANTITIES FOR EVALUATION OF ECOLOGICAL FACTORS
FOR COMPARATIVE ANALYSIS OF 14 SITE/PLANS
(AREA IN ACRES)

	Site/Plan	Pasture[1]	Swamp	Marsh	Spoil Land	Total
1.	New lock @ location of old IHNC lock	101.8	0	0	550.0[3]	651.8
2.	Bohemia Site	630.0	0	14,056.0	459.0	15,175.0
3.	Scarsdale site	1,184.0	0	7,576.0	459.0	9,219.0
4.	Caernarvon site	913.0	0	5,739.0	459.0	7,111.0
5.	Lower site	542.0	482.0	4,526.0[2]	964.0	6,514.0[2]
6.	Lower site - barrier	542.0	275.0	5,723.0[2]	551.0	7,091.0[2]
7.	Upper site	474.0	964.0	3,086.0[2]	964.0	5,488.0[2]
8.	Saxonholm site	610.0	0	4,580.0	482.0	5,672.0
9.	IHNC - east of old lock	125.4	0	0	1,013.0[3]	1,138.4
10.	IHNC - ctr. channel	101.8	0	0	550.0[3]	651.8
11.	IHNC - east of ctr. channel	125.4[4]	0	0	1,013.0[3]	1,138.4
12a	IHNC land bridge w/Lower site	(SAME AS LOWER SITE) + Increase of 12.1 acres of pasture.				
12b	IHNC alt. land bridge w/Lower site	(SAME AS LOWER SITE)				
13.	IHNC land bridge w/Caernarvon site	(SAME AS CAERNARVON SITE) + Increase of 12.1 acres of pasture.				
14.	IHNC land bridge w/Scarsdale site	(SAME AS SCARSDALE SITE) + Increase of 12.1 acres of pasture.				

[1]Includes terrestrial land for farming, pasture, residences and commercial uses.
[2]Includes barge channel (marsh) acreage between MR-GO and GIWW of 1,150, 3,795, and 1,157 acres, respectively.
[3]Includes 50 acres required for contractor operations during construction only. Located on east side of MR-GO/GIWW and IHNC intersection.
[4]Single lock plan requires an additional 33 acres of pasture on west bank IHNC.

TABLE 10
REAL ESTATE & CONSTRUCTION COSTS
FOR
COMPARATIVE ANALYSIS OF 14 SITE/PLANS
(July 1972 Price Levels)

SITE	FEDERAL COST	LOCAL COST			TOTAL PROJECT COST*
		HIGHWAY BRIDGES	OTHER	TOTAL LOCAL COST	
	$	$	$	$	$
1. Baptiste Collette Alternate Route (lock at IHNC present site)	141,400,000	14,534,000	46,361,000	60,895,000	202,295,000
2. Bohemia site	137,600,000	36,194,000	13,963,000	50,157,000	187,757,000
3. Scarsdale site	132,500,000	77,518,000	24,377,000	101,895,000	234,395,000
4. Caernarvon site	117,700,000	77,642,000	39,089,000	116,731,000	234,431,000
5. Lower site	131,000,000	37,375,000	37,851,000	75,226,000	206,226,000
6. Lower site barrier	205,700,000	37,000,000	40,000,000	77,000,000	282,700,000
7. Upper site	132,500,000	37,000,000	39,000,000	76,000,000	208,500,000
8. Saxonholm site	152,500,000	37,000,000	39,000,000	76,000,000	228,500,000
9. IHNC site--east of existing lock	138,200,000	59,919,000	46,926,000	106,845,000	245,045,000
10. IHNC site--center channel	154,100,000	21,300,000	80,000,000	101,300,000	255,400,000
11. IHNC site--east of center channel	148,950,000	36,400,000	53,495,000	89,895,000	238,845,000
12. IHNC land bridge with lower site	144,700,000	37,375,000	37,851,000	75,226,000	219,926,000
13. IHNC land bridge with Caernarvon site	131,400,000	77,642,000	39,089,000	116,731,000	248,131,000
14. IHNC land bridge with Scarsdale site	146,200,000	77,518,000	24,377,000	101,895,000	248,095,000

*Considered reconnaissance scope

TABLE 11
ANNUAL OPERATION AND MAINTENANCE COSTS[1]
FOR
COMPARATIVE ANALYSIS OF 14 SITE/PLANS
(July 1973 Price Levels)

	Site	Channels	Levees	New Lock	Old Lock	Other Structures	Total $
1.	Baptiste Collette w/new lock at old site	152,000	1,700	500,000	-	-	653,700
2.	Bohemia	1,150,000	-	500,000	500,000	-	2,150,000
3.	Scarsdale	736,000	6,400	500,000	500,000	-	1,742,400
4.	Caernarvon	570,000	4,400	500,000	500,000	-	1,574,400
5.	Lower Site	214,000	21,200	500,000	500,000	27,000[2]	1,262,200
6.	Lower Site barrier	214,000	37,400	500,000	500,000	27,000[2] 27,000[3] 72,000[4] 55,000[5]	1,432,400
7.	Upper Site	215,000	19,200	500,000	500,000	-	1,234,000
8.	Saxonholm	240,000	24,000	500,000	500,000	-	1,264,000
9.	IHNC - east of old lock	72,000	1,700	500,000	500,000	-	1,073,700
10.	IHNC - center channel	90,000	1,700	500,000	-	-	591,700
11.	IHNC - east of ctr. channel	90,000	1,700	500,000	-	-	1,091,700
12a.	IHNC - land bridge w/lower site	S A M E A S N O. 5					
12b.	IHNC - renovate existing lock w/lower site (operation or standby)	264,000 or 254,000	22,900 or 22,900	500,000 or 500,000	500,000 or 200,000	27,000 or 27,000	1,313,900 or 1,003,000
13.	IHNC - land bridge w/Caernarvon	S A M E A S N O. 4					
14.	IHNC - land bridge w/Scarsdale	S A M E A S N O. 3					

[1]Navigation and flood control structures only
[2]Floodgate at Violet Canal
[3]Floodgate at Bayou Bienvenue
[4]Floodgate at GIWW
[5]Floodgate at MR-GO

TABLE 12
POPULATION PROJECTIONS*BELOW EACH SITE
COMPARATIVE ANALYSIS OF 14 SITE/PLANS
(Between the Mississippi River and the MR-GO)

Population from:	1970	1980	1990	2000	2010	2020	2030
IHNC to Gulf	86,971	93,100	103,200	108,600	113,200	116,000	118,800
Saxonholm to the Gulf	14,215	15,600	18,000	19,300	21,900	22,700	24,200
Upper Site to the Gulf	12,660	13,500	15,000	15,700	17,300	17,800	18,900
Lower Site to the Gulf	9,302	9,500	10,000	10,300	10,800	11,100	11,500
Caernarvon to the Gulf	5,263	5,300	5,500	5,700	5,900	6,100	6,300
Scarsdale to the Gulf	4,800	4,800	5,000	5,100	5,300	5,400	5,600
Bohemia to the Gulf	1,000	1,000	1,000	1,100	1,100	1,200	1,200

* The population projections for the subject area have been developed primarily by way of a disaggregation of projections prepared by the Bureau of Economic Analysis, Department of Commerce. Data for Orleans and St. Bernard Parishes were disaggregated from projections for the New Orleans Standard Metropolitan Statistical Area (SMSA) as published in "1972 OBERS Projections, Regional Economic Activity in the US, Series E Population (Volume 5)." Also taken into consideration were population projections for a larger area, Water Resource Subarea 0809 Mississippi Delta, published in "1972 OBERS Projections, Regional Economic Activity in the US," Volume 3.

TABLE 13
SOCIAL DISLOCATIONS
FOR
COMPARATIVE ANALYSIS OF 14 SITE/PLANS

	Site/Plan	(a) People	(b) Dwellings	(c) Public Facilities or Businesses	(d) Schools	(e) Churches
1.	Baptiste Collette w/new lock at old site	105[1]	19	0	0	0
2.	Bohemia	0	0	0	0	0
3.	Scarsdale	37	8	2	0	0
4.	Caernarvon	166	36	6	0	0
5.	Lower Site	16	4	2	1	0
6.	Lower Site-Barrier	16	4	2	1	0
7.	Upper Site	344	88	4	0	0
8.	Saxonholm	332	85	2	1	0
9.	IHNC-east of old lock (A)	811[1]	151	16	1	0
10.	IHNC-center channel	1,138	204	15	1	0
11.	IHNC-east of center channel (B)	825[1]	154	21	2	0
12.	IHNC-land bridge w/ Lower Site	16	4	2	1	0
13.	IHNC land bridge w/ Caernarvon	166	36	6	0	0
14.	IHNC land bridge w/ Scarsdale	37	8	2	0	0

[1]Does not include a possible dislocation of 173 persons in 48 dwellings riverward of St. Claude Avenue for a temporary bridge and approaches to facilitate the construction of a new semi-highlevel bridge on the St. Claude Avenue alinement.

9. DISPOSITION OF (OLD) IHNC LOCK

9-1. Mitigation of Social Adverse Impacts.

(a) It is evident, based on testimony gathered in the public meetings of February 1960, November 1972, and December 1972, and a significant amount of the correspondence received since late 1969, that a large segment of the local population feels that the Industrial Canal has played a major divisive role in the community. These objections, however, do not mitigate the vital necessity of its existence to the shallow-and-deep-draft marine commerce which benefits this Nation so greatly, nor does this faction publicly recognize the historical fact that there was little to no population evident in the proximity or below the Industrial Canal at the time of its construction in 1923. But as it stands today, it is contributing to a decreased quality of life of the residents surrounding it due to the lack of a buffer zone, and of all the residents of the Lower Ninth Ward in Orleans Parish, and the total east bank populations of St. Bernard and Plaquemines Parishes due to the continual interruption in vehicular access. As stated before, this population totals about 87,000 persons by the 1970 census. Therefore, it must be recognized that no matter which solution is the most advantageous to the Nation's economy, the final choice of site/plan will most certainly be tempered by it's effects on the local population, and that the Industrial Canal will require an investment as an intrinsic part of this project, regardless of the site chosen. It was therefore necessary to determine the optimum disposition of the existing Industrial Canal lock, and to attach this disposition solidly to the site selected. In order to insure this disposition, it will be recommended that assuring agency control be assumed by the Federal Government through purchasing the existing lock, and requiring rights-of-way in perpetuity over the existing watercourse.

(b) The existing IHNC lock options which we investigated were (see Table 14, page 56):

OPTION 1: Full operation

OPTION 2: Modified (partial) operation

OPTION 3: Mothballing

OPTION 4: Demolition

These options are considered as part of the IHNC or Lower site plans.

9-2. Full operation of IHNC lock (Option 1). In determining the feasibility of continuing full operation of the existing IHNC lock, it was assumed that the existing lock would handle 20,000,000 tons of barge traffic annually to advantage with the new lock in place. Of this amount, approximately

10,000,000 tons will be Lake Pontchartrain and intraport traffic while the remaining 10,000,000 tons will be "through" traffic. The former traffic would realize a saving in distance of 24.8 miles over the Lower Site for an annual benefit of $1,109,000, while the 10,000,000 tons of the through traffic would realize annual benefits of $385,000 due to the 8.6 miles shorter distance over the Lower Site. The total annual benefits accruing to the continued operation of the existing lock amount to $1,417,200. The annual charges are shown in Table 14, option 1. A 4-lane semi-high level vehicular bridge was deemed to be required at St. Claude Avenue, consistent with mitigation of vehicular traffic interference.

9-3. Modified operation of IHNC lock (Option 2). An analysis was made on the economic feasibility of keeping the existing lock operating during all periods other than between the hours 6 a.m. to 9 a.m. and 3 p.m. to 6 p.m., the peak vehicular traffic hours. Since there would be two waiting periods per day, it was assumed that traffic will be continually available for lockage; and using the factors developed in the "Systems Analysis of the Gulf Intracoastal Waterway (Louisiana section) and Associated Connections" report of 2,506 tons per average lockage, 40 minutes per lockage, and 360 days per year the lock could theoretically pass 24,880,000 tons per year. However, practicality dictates the usage of no more than the previously assumed 20,000,000 tons per year for comparison. The annual navigation savings and charges for this mode of operation are shown in Table 14, option 2(a). A similar analysis was made for a 12 hour/day operation (see Table 14, option 2(b)).

9-4. Maintain IHNC lock in standby condition (Option 3). An analysis was made on the feasibility of keeping the existing IHNC lock on a (mothballed) standby basis for use in the event of an emergency closure of the new lock at the Lower Site. It was assumed that such an emergency would occur once every 5 years, requiring a shutdown for a period of 15 days. As mentioned in the "full operation" analysis, the existing lock could probably handle in excess of 20,000,000 tons annually to advantage (55,600 tons daily). The savings in delay cost that would accrue to the existing lock operation during such a 15-day period emergency amounts to $2,636,500/5 years, or $527,300 annually. The annual charges for using the existing lock on a standby basis are shown in Table 14, option 3.

9-5. Demolition (Option 4). This option was included for comparison in the form of the IHNC Land Bridge plan and is described in Sections 8-13 and 10-4 as well as Plates 10, 11, and 12. It is the base option providing unimpeded vehicular access and does provide a measure of environmental mitigation for the surrounding neighborhood, but it is the most expensive and least flexible of those proposed. The alternative to this option is the standby (mothball) option in regards to providing uninterrupted vehicular access.

9-6. Conclusions.

(a) Consistent with mitigation of vehicular traffic interference, option 1 - full operation, was assumed to require a 4-lane, semi-high level vehicular bridge over the IHNC at St. Claude Avenue. An economic analysis of this operation produced an unfavorable benefit-cost ratio, and therefore was rejected. Options 2 and 3, modified operation and mothballing, were investigated and found to have benefit-cost ratios above unity. Minimum geometric requirements for navigation of the forebay would require demolition of the old lock if the IHNC site "b" were chosen.

(b) It was concluded that the optimum disposition of the Old IHNC lock is the (mothball) standby option, based on initial cost, O&M costs, credibility to the local population, 24-hour vehicular access, and impetus for local interests to upgrade vehicular crossings over the existing canal. This option was used in later studies between the IHNC and Lower Site Plans.

9-7. Authority. It is viewed that ultimately congressional approval, in one form or another, may be required for the purchase of the old Industrial Canal lock. But a reasonable interpretation of Public Law 84-455 regarding the ultimate disposition of that lock could be continued full operation under the existing agreement with the assuring agency (authorized by Public Law 77-675) or no operation, under the same agreement and authority, once the (additional) new lock is completed, as well as any combination of operating modes which best benefits the local and national interests. If the position is taken (in the language of Public Law 84-455) that in order to adequately and economically accommodate present and future navigation the New Ship Lock is viewed as "...an additional lock with suitable connections..." and that (in the language of Public Law 77-675) Federal Government acquisition of "...fee simple title to the facilities (IHNC and lock) is desired and can be acquired by the United States at a price satisfactory to the Federal Government...", then it would appear congressional authority does exist for embarking on this course of action.

9-8. Recommendation. In view of current events surrounding need for reaffirmation of existing authorization (previously) granted the Chief of Engineers, our recommendation for purchase of the lock in this report, is one of authorization to continue studies and preparation of reports pursuant to completing (approval and funding) this transaction.

TABLE 14

NAVIGATION BENEFIT-COST RATIO OF IHNC OPTIONS

(JULY 1973 PRICE LEVELS)

ITEM	OPTION NO. 1 Full Operation @ IHNC (New Semi-High Level Bridge @ St. Claude Avenue)		OPTION NO. 2(a) Modified Operation @ IHNC (18 Hr/Day)		OPTION NO. 2(b) Modified Operation @IHNC (12 Hr/Day)		OPTION NO. 3 Mothball (Standby)		OPTION NO. 4 Close and Fill IHNC	
1. Costs:									FED. $2,293,000*	
a. Lock Purchase	$ 5,000,000		$ 5,000,000		$ 5,000,000		$ 5,000,000		Local Int.Furnish	
b. Lock Renovation	7,624,000		7,624,000		7,624,000		---		Demolition	
c. Lock Preservation	---		---		---		1,000,000		---	
d. Bridge Const.(4-lane)	15,204,000		---		---		---		---	
e. Blvd. & Street Const.	---		---		---		---		Local: 17,074,000	
f. Sub-total	$27,828,000		$12,624,000		$12,624,000		$ 6,000,000		$19,367,000	
g. Int. During Const. or Preservation(2 5/8%)										
(3 yr)	1,095,700	(3 yr)	497,000	(3 yr)	497,000	(1 yr)	158,000	(3 yr)	762,000	
h. Net Investment	$28,923,700		$13,121,000		$13,121,000		$ 6,158,000		$20,129,000	
2. Annual Charges:										
a. Int. & Amort., 50 yrs. (.03614)	$ 1,045,300		$ 474,200		$ 474,200		$ 222,600		$ 727,500	
b. O&M Costs	702,700		590,700		590,700		280,700		69,000**	
c. Total Annual Charges	$ 1,748,000		$ 1,064,900		$ 1,064,900		$ 503,300		$ 796,500	
3. Annual Navigation Benefits	$ 1,417,200		$ 1,417,200		$ 1,150,800		$ 527,300		No Navigation benefits	
4. Benefit to Cost Ratio	0.81:1		1.33:1		1.08:1		1.05:1		---	
5. Net Annual Benefit	-($330,800)		$ 352,300		$85,900		$24,000		-($796,500)	
6. Annual Tonnage	20,000,000		20,000,000		16,240,000		166,800		None	

* Flood Protection

** Levees, Floodwalls, Streets, Channel and Fla. Ave. Bridge.

SECTION 10. SITE PLANS - 1974

10-1. The Remaining Plans. The studies made during 1973, as described in Section 8, formed the basis for eliminating all sites with exception of the Industrial Canal and Lower Sites. The plan termed, Lower Site with IHNC Land Bridge scored first in the consensus ratings (Table 7), while the Plan IHNC Site East of Center Channel (Site B), apparently scored a dismal last in the consensus, but the Corps of Engineers rating was tenth. Additional coordination with operations and maintenance experts developed a better rating by adding the single lock concept (see footnote 3, Table 7). These Site/Plans are believed, at this time, to be the only two real possibilities, regardless of the 1973 ratings outcome. The principle reason the Industrial Canal is considered the only other alternative is due to the St. Bernard Police Jury's stance to this effect as provided in their testimony at both public meetings (see Section 7-8, Positions). The following sections describe the synthesis of the final plan elements.

10-2. The Inner Harbor Navigation Canal Site "B"--(east of channel center--opposite Galvez Street wharf) - See plate 5. Since the public meetings, great engineering effort has been expended in an attempt to significantly reduce the required rights-of-way and the resulting socioeconomic impact of the 1969 IHNC plan. This has been largely achieved. This newfound capability stems from the use of imaginative construction techniques, the application of which was not obvious as recently as August 1969. These construction methods have enabled the pulling in of the required east side rights-of-way to mid-block between Jourdan Avenue and Deslonde Street in the forebay; i.e., the reach bounded by the Mississippi River and St. Claude Avenue, and to Jourdan Avenue in the tail bay; i.e., the reach bounded by St. Claude Avenue and the Mississippi River-Gulf Outlet. We have worked quite closely with the assuring agency's engineers on the relocations required by this proposed plan. Each proposed relocation item has been retested for authenticity under the "relocations" definition. In so doing, the first cost of bridge and utility relocations has been optimized. As a part of this plan, the old lock would be demolished to allow for an adequate forebay to handle large ships and tows in a safe and efficient manner. The lock has been sized to handle all marine traffic efficiently for its economic life. Some west side relocations will be required to accommodate a new river flood protection levee (see plates 8 and 9, and figure 1-A).

10-3. The Inner Harbor Navigation Canal Site "A"--(east of the old lock) - See plate 5. This plan which placed the new lock in a cofferdam alongside the old lock and provided for dual operation or the mothballing of the old lock was rejected on the basis of an inadequate forebay. In order to safely and efficiently handle the

projected deep and shallow-draft traffic, a minimum forebay of 3,600 feet is required. This plan would provide only 2,400 feet at best, and was considered potentially dangerous and inefficient by operations experts (see plate 6 and figure 1).

10-4. The Lower Site with an IHNC land bridge:

(a) The philosophy of this proposed plan is to move the Industrial Canal operation away from the heavily populated center city location to the more sparsely populated Lower Site in St. Bernard Parish, and thereby reconnect the majority of the 87,000 residents now living below the canal back to the New Orleans metropolitan area with uninterrupted vehicular access. In its purest form, the land bridge concept might consist of filling that portion of the Industrial Canal which lies between St. Claude and North Claiborne Avenues with earth, dismantling the existing bridges, and constructing ground-level boulevards thereon (see plates 10, 11, and 12). Additionally, a park could be constructed in this same reach between these major thoroughfares to benefit the adjacent residential community. Nevertheless, it is anticipated that marine interests will object to irretrievably closing an existing lock and channel in view of the periodic requirement for shutting down the new lock for maintenance and the ever-present fear that an accident, such as the "GALAXY FAITH" and "EMERGENCY BRIDGE REPAIR" incidents, would close the new lock for a protracted period. A compromise alternative to actually filling the Industrial Canal would be to refurbish the existing lock and retain it in custodial care on a standby status. It would then be utilized only when the new ship lock was closed for maintenance and/or repair. The existing bridges would thereby afford, practically speaking, equivalent uninterrupted vehicular acdess.

(b) The alternative IHNC land bridge is judged to be the most practical and viable solution for mitigating vehicular access interference. In order to achieve this, mothballing of the existing lock is considered best, based on initial cost, operation and maintenance costs, 24-hour vehicular traffic access, and impetus for upgrading vehicular crossings over the existing canal. We believe a change in status from mothballed to full operation should hinge on the provision of sufficient vehicular crossings by the State of Louisiana or others in the future.

10-5. The Lower Site with Ecological Mitigation. The ship lock and channel will utilize about 5,400 acres within an area already surrounded by hurricane protection levees and which can predictably be earmarked for residential and commercial development sometime within the next 50 years. We will require only about 2,500 of those acres for navigation, flood control, and maintenance purposes. On the other hand, the barge channel takes 1,150 acres out of the marsh

west of Lake Borgne in perpetuity. We also visualize progressive deterioration to the marsh west of Lake Borgne due to adverse impacts on circulation patterns. These factors were included in the computation of monetary fish and wildlife losses[1]. In order to mitigate these estimated losses, we are investigating a proposal to purchase an appropriate area of marsh within the Lake Borgne-Breton Sound complex for management by the Louisiana Wild Life and Fisheries Commission, as well as other methods to compensate for anticipated ecological damages. This proposal would require agreements from the State of Louisiana and possibly Congressional authorization.

10-6. The Lower Site with Lake Borgne Barge Canal.

(a) Two barge routes have been under study to connect the GIWW with the Mississippi River via the new ship lock. The "Lake Borgne" plan is a 12-foot by 150-foot channel skirting the western edge of Lake Borgne. This channel would provide a savings of 5.2 miles over the basic route. The "Alternate" channel would provide a 1.46-mile short cut near the confluence of the MR-GO and GIWW over the existing available route. Preliminary annual charges and benefits (including fish and wildlife losses) have been computed with the result that average annual net benefits for the Lake Borgne plan are significantly larger, about 2.6 to 1, than the alternate route's net benefits. On the basis of maximization of benefits and efficient and safe navigation, the Lake Borgne barge canal has been included as part of the basic Lower Site plan for the site selection purposes. Table 15 shows the annual charges and benefits of the plans considered.

(b) At the time Public Law 84-455 was enacted (29 March 1956) the location shown in HD 245, in the vicinity of Meraux, Louisiana, resulted in the tailbay terminating at the confluence of the GIWW and the MR-GO which required no further connection to accommodate the GIWW barge traffic. But the present location, which is farther downstream, requires an extension of the tailbay (barge channel) to accomplish the same results. This is viewed as just another feature of the particular alinement much like the Violet Canal floodgate and the hurricane protection levees, and the exact lengths of the tailbay and forebay.

(c) The present lock passed 25,490,000 tons of barged cargo in 1974. Projected tonnages between 1975 and 2035 vary from

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[1]Specifics are developed in Section 12, Ecological Mitigation.

TABLE 15
BARGE CHANNEL COMPARISON
(July 1973 Price Levels)

	Lake Borgne Barge Channel		Alternate Barge Route
	Economic Plan[1]	Mitigation Plan[2]	
Federal Cost	$1,250,000	$2,955,300	$685,600
Local Cost (R/E)	802,000	768,000	300,100
Total Cost	$2,052,000	$3,724,300	$985,700
Average Annual Benefits:	$ 617,700	$ 617,700	$179,000
Charges:			
Int. & Amort.	$ 79,400	$ 144,100	$ 37,600
O&M	76,000	70,700	18,400
Fish & W. L.	142,900	133,200	2,600
Total Charges	$ 298,300	$ 348,000	$ 58,600
B/C ratio	2.1 to 1	1.8 to 1	3.1 to 1
Net benefits	$ 319,400	$ 269,700	$120,400

[1]This economic plan spoils a width of 1,300 feet adjacent to the channel R/W (see plate 13).
[2]The mitigation plan provides for spoiling on previously spoiled-on land south of the MR-GO and on levee protected land, north of the GIWW.

24,505,000 to 85,000,000 tons. Of these projected tonnages, it is estimated that 75 percent will move over the barge channel going to or coming from points east via the GIWW.

(d) This reach of the GIWW must accommodate one way passage of 1,180-foot long by 78-foot long wide tows, therefore, necessitating easy curves and sheltered water. The maneuvers required by the alternate route are less than desirable from a safety and operations view point. A channel through Lake Borgne is subject to storm wind and waves, as well as a shifting bottom which could result in frequent groundings and/or damage to the tows due to rough water.

(e) The growth of the proposed "Centroport" area will generate a great amount of ship/barge activity on the MR-GO between the Industrial Canal on the west and the confluence of the GIWW and MR-GO to the east. It is also expected that this would be a prime location for a deep draft anchorage when justified by traffic. It is desirable to route through-traffic around the above described heavy traffic areas both from a safety and efficiency of operation standpoint.

(f) In anticipation of the mothballing of the existing Industrual Canal lock, consideration must be given to the eventual rerouting of that reach of the GIWW now contained in the Industrial Canal to the new connection. This consideration alone would seem to support the barge channel as a suitable channel provided for under Public Law 84-455.

10-7. Lower Site Plan Features: (See plates 13, 14, and 15, and figure 4). The Federal features include: a 500-foot-wide ship channel between the Mississippi River and the Mississippi River-Gulf Outlet; this ship channel is divided into two bays; that is, the forebay which is the 5,000-foot-long reach between the lock and the Mississippi River and the tailbay which is the 4.1-mile reach between the lock and the gulf outlet; the new 150-foot-wide by 1,200-foot-long ship lock with a sill at 50 feet below m.l.g.; the forebay-river protection levees at minimum net grade of 20.5 feet above mean sea level (m.s.l.); the tailbay hurricane protection levees with minimum net grades varying generally from 15.0 m.s.l. at the lock to 17.5 feet m.s.l. at the MR-GO: and a navigable floodgate at Violet Canal, 56 feet wide with a sill at -10.0 feet m.l.g., which will normally remain open to provide access for navigation but will be closed to afford protection against flooding due to abnormally high tides from hurricanes or other causes. Additional significant features requested

by navigation interests and the assuring agency to be studied for feasibility, are: a 150-foot-wide by 12-foot-deep barge canal, approximately 7 miles long, connecting the Gulf Intracoastal Waterway (GIWW) more directly with the lock tailbay; (deep-draft anchorages proposed to be located at the confluence of the GIWW and the MR-GO and on the right descending bank of the Mississippi River between miles 85.0 and 83.0 above Head of Passes were not evaluated for site selection.) Non-Federal features include: all lands and damages, vehicular and railroad bridge relocations, and utility relocations.

Elements common to both plans.

10-8. Flood and hurricane protection: The forebay and tailbay return levees and/or floodwalls will be constructed and maintained totally at Federal expense. The forebay-river flood protection levees will provide the same degree of flood protection as the existing Mississippi River levees. The tailbay hurricane protection levees and/or floodwalls will provide flood protection from hurricane wind-tide levels to the same degree as those levees now under construction as part of the Lake Pontchartrain, Louisiana, and Vicinity, hurricane protection project.

10-9. Bridges. A Federal study has been authorized by a resolution adopted 7 June 1972, sponsored by the late Senator Allen J. Ellender, which provides for the review of the MR-GO project with a view to determining whether the existing project should be modified in any way at this time, with particular reference to providing highlevel highway crossings over the connecting links between the Mississippi River and the Mississippi River-Gulf Outlet. In September 1972, this study was combined with the ongoing Gulf Intracoastal Waterway, Louisiana Section, Highlevel Highway Crossings study. Several public meetings have already been held. The Louisiana Department of Public Works, the Louisiana Department of Highways, the Board of Commissioners of the Port of New Orleans, local agencies and other interests have requested semi-high and highlevel bridges when bridges were to be modified at the Industrial Canal and/or when new bridges were to be required for a new connecting channel. The authorizing legislation for the MR-GO project would require modification to permit Federal assumption of bridges. This and other items of local cooperation are specifically mentioned as pertaining to the lock and connecting channels in Public Law 455 and House Document No. 245, 82d Congress and requires local interests to "...Provide and maintain any other bridges required over the waterway...." The assuring agency has commenced seeking this change in legislation. The Lower Site Plan, as previously stated, includes a highlevel, 4-lane fixed vehicular bridge at Judge Perez Drive and a vertical lift, lowlevel railroad bridge across the tailbay. The IHNC site plan includes semi-highlevel, 4-lane movable span bridges at St. Claude and Claiborne Avenues and a

combined semi-highlevel vehicular, lowlevel railroad, movable span bridge at Florida Avenue. Funds for these bridges have been included by the assuring agency in the cost estimates for the appropriate plan.

10-10. Utilities: The assuring agency has the responsibility for relocating all utilities. This includes gas, water, drainage, and sewerage lines, electricity and telephone services at no cost to either parish. The Federal Government's position is that these relocations must be completed without interruption of services before the channel can be constructed through their existing locations.

Section 11. BRIDGE STUDY

11-1 Louisiana Highway Dept. Bridge Data.

(a) Before we compared the two plans as developed in Section 10, we studied the bridge problem which would evolve to local interests depending on the site selection.

(b) Coordination with the Louisiana State Highway Department has verified that the St. Claude Avenue, Claiborne Avenue, and Florida Avenue bridges over this reach of the IHNC are now obsolete in respect to traffic density. In fact, the average daily traffic (ADT) counts reported in early 1973 were 31,280 and 42,990 for St. Claude Avenue and Claiborne Avenue bridges, respectively. Louisiana State Highway standards call for six lanes when ADT exceeds 12,000. These existing bridges support a total of ten (10) lanes.

(c) The Louisiana State Highway Dept. has studied the feasibility of constructing a six lane semihigh-level vehicular bridge at Florida Avenue (Florida Avenue bridge is presently two-laned, but has a projected ADT of 36,000 by 1985)[1]. This bridge is to be constructed under Act 304 of the 1970 session of the Louisiana Legislature which established hurricane evacuation routes. A letter from Mr. David S. Huval, Bridge Design Engineer, to Mr. Blaise M. Carrier, Director, Dept. of Streets for New Orleans, dated 2 September 1971, outlined that $10,000,000 had been allocated for this structure. However, the construction cost was estimated at $13,000,000. The Florida Avenue and St. Claude Avenue bridges were constructed in 1923. They are at the end of their economic life, although with increased maintenance they could probably be utilized safely for 75 years (or longer). The Claiborne Avenue bridge, a divided four lane, semihigh-level bridge was constructed in 1957. Highway Department sources say that present plans for new and replacement bridges over the IHNC have been scheduled indefinitely in the future.

(d) For site selection purposes (only) it is considered appropriate to assume that no matter which site is selected, the State of Louisiana will go through with its planned bridge construction at Florida Avenue. The only difference being the width of the span for navigation. For full, uninterrupted lock operation, a similar four laned structure would be required at St. Claude Avenue. It can similarly be assumed that the Claiborne Avenue bridge would not require replacement before the year 2030, based on a 75-year life. Using the above, the following relationships were formulated:

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[1]Presentation by Mr. S. L. Poleynard, engineer for La. Dept. of Highways on 23 June 1969 to representatives of New Orleans Dock Board and their consultants, Fromherz Engineers & documented by memorandum dated 26 June 1969.

11-2 Bridge Requirements If Lower Site is Selected.

(a) If the lock is constructed at the lower site the following bridges would require construction before or during the 1st 10 years of operation (assuming old lock is mothballed or under modified operation):

(b) Lower Site Bridges. (July 1973 price levels)

1. 4-lane high level vehicular bridge	$38,310,000
2. Single track low level RR. bridge and approaches	$12,280,000
Sub-Total	$50,590,000

(c) IHNC Bridges.

3. 4-lane semi-high level @ St. Claude Avenue (Existing)
(May require semi-high level replacement by yr. 2000)

4. 4-lane semi-high level @ Claiborne Avenue (Existing)
(Will not require replacement until 2030)

5. 6-lane semi-high level bridge, 200' clr. navigation span @ Florida Ave. $18,377,000
(Does not include tie-in roadways)

6. Fla. Ave. RR. Bridge, single track (Existing)
(Will require replacement by yr. 2000)

Sub-Total	$18,377,000
TOTAL	$68,967,000
Say	($69,000,000)*

*Does not include present worth of bridge replacements in year 2000.

11-3 Bridge Requirements If IHNC Site is Selected.

(a) If the lock is constructed at the IHNC site the following bridges would require construction before or during the 1st 10 years of operation (single lock operation).

1. 4-lane semi-high level, 500' clr. navigation span and temporary crossing at St. Claude Ave.	$21,820,000
2. 4-lane semi-high level, 150' clr. navigation span at Claiborne Ave.	$15,820,000

3.	6-lane semi-high level, 500' clr. navigation span at Florida Ave.	$21,409,000
	-and-	
4.	2-track, low level vert. lift RR. bridge, 500' clr. navigation span	$15,400,000
	TOTAL	$74,449,000
	Say	(74,500,000)*

*Does not include present worth of bridge replacements in year 2000.

11-4 Present Worth of Future IHNC Bridge Replacements.

2. The present worth of replacing the existing bridges at St. Claude and Florida Avenues in the year 2000 is described below:

July 1973 estimated replacement costs.

a.	Florida Ave. - 2-track, low level, bascule with 200' clr. navigation span	$ 7,350,000
b.	St. Claude Ave. - 4-lane, semi-high level, double bascule span	$12,460,000
	TOTAL	$19,810,000

PRESENT WORTH

Total 1973 Const. Cost =	$19,810,000
Discount rate = 6 7/8%	
Time: 27 years (0.16609)	X(0.16609)
Present worth	$ 3,290,000
Say	($ 3,300,000)

11-5 Bridge Cost Comparison.

(a) The comparison of optimum bridge construction costs and other factors in July 1973 dollars for the lower site and IHNC plans are as follows:

ITEM	IHNC SITE	LOWER SITE
Initial Bridge Construction	$74,500,000	$69,000,000
Future Bridge Construction	None	3,300,000
TOTAL	$74,500,000	$72,300,000

(b) Number of Bridges: 4 6

(c) Operation & Maintenance: $548,000/yr. $860,000/yr

(d) Local interest's gross investment for bridges over the life of the project would include present worth of both construction and O&M costs. The economic life of the project is the 50-year period between 1980 and 2030. All costs are in July 1973 dollars. A discount rate of 6 7/8% was used.

ITEM	IHNC SITE	LOWER SITE
1980 Gross value of O&M (14.02195)	$ 7,684,000	$12,059,000
1973 Gross value of O&M (0.62787)	$ 4,824,000	$ 7,571,000
1973 Gross Construction Cost	$74,500,000	$72,300,000
TOTAL GROSS INVESTMENT	$79,324,000	$79,871,000

Difference: Nil

11-6. Conclusions. It would appear neither plan is significantly better from the viewpoint of gross investment for bridges over the life of the project although the lower site offers the advantages of less initial investment and disruption of traffic. On the other hand, the IHNC site, although intensely disruptive to traffic initially and with a slightly higher first cost would solve the transportation problems at the IHNC sooner. It was therefore concluded that local interest bridge costs would not be a dominant factor in site selection.

SECTION 12. ECOLOGICAL MITIGATION

12 - 1. The need for mitigation measures. The Mississippi River-Gulf Outlet New Lock and Connecting Channels project, as authorized, did not include any provisions for the purchase and/or management of additional land for mitigation. Recognizing potential fish and wildlife losses associated with impacts as a result of the project, an acceptable plan to adequately mitigate these losses is needed. The proposed project plan, if amended to include appropriate mitigation measures, can insure the preservation of hunting and fishing opportunities as well as provide the economic benefits for which the project was originally authorized.

12 - 2. Losses.

a. Ship lock and connecting channels.

(1) General. The construction of the lock, excavation of the connecting channel from the river to the MR-GO and the placement of dredged material will require 542 acres of pasture, 482 acres of swamp, 3,376 acres of marsh, and 964 acres of lands previously used for dredged materials. For the purposes of this report, it is assumed that the fish and wildlife resources supported by these areas will suffer a total change of 100 percent loss. Since the 964 acres of land previously used for dredge material has already suffered a total loss, no further losses are applicable.

(2) Commercial fisheries. The fish and wildlife study of coastal Louisiana and the Atchafalaya Basin Floodway has indicated that estuarine marsh and swamp in the project area is capable of producing marketable fish and shellfish at the rate of 291.6 pounds per acre per year. The level of commercial fishing pressure on the Louisiana coast is such that it is reasonable to assume that any reduction in productivity will be reflected in a corresponding reduction in harvest. The average value, per pound, of the marketable species taken in the area of project influence, is about 0.0724. The modification of 3,376 acres of marsh and 482 acres of swamp through deep excavation and filling with dredged material will thus engender a loss in the commercial fishing of $81,442.38 per year on the average. (291.6 lbs/acre x $0.0724 x 3,858 acres = $81,442.38). The 3,858-acre parcel involved is located within the area to be protected by the Chalmette Area Plan of the Lake Pontchartrain, Louisiana, and Vicinity, hurricane protection project, now under construction. A substantial portion of the entire

protected area will likely be converted to urban-type uses in the future. The parcel in question is, however,not very favorably situated within the protected area insofar as potential for development within the project is concerned. It is estimated that its future existence as a viable estuarine marsh would, in the absence of the project, be sustained for 50 years. Thus the loss chargeable to the project over its 50-year life would be $81,440 per year.

(3) Sports fisheries. The reduction in productivity in the fisheries resource has implications in the area of recreation. Reduced production of sports species will be reflected in reduced sports catches. However, since the size of the catch is only part of the attraction, and in view of the small percentage reduction that modification of only part (less than 10 percent) of the total available estuarine marsh would produce, it is unlikely that any measurable reduction in the recreation potential of the area would be engendered by the project.

(4) Commercial wildlife. The 3,858 acres of marsh and swamp and 542 acres of pasture supports a variety of commercial wildlife, including, importantly, nutria and muskrat. These animals are harvested for fur and the carcasses are processed into animal feeds. The average annual production of the entire coastal area, on a per-acre basis, has a value of about $1.87 per acre per year. The modification of the 4,400 acres of marsh and swamp would destroy its productivity insofar as this resource is concerned. Applying the methodology outlined for determining the loss in commercial fisheries, the loss in the commercial wildlife resource attributable to the project would be $8,230 per year. ($1.87 x 4,400 = $8,228).

(5) Sports wildlife. The estuarine marsh supports numerous species in the sport wildlife category. Based on the studies of coastal Louisiana previously referred to, the marsh area is capable of supporting recreation relating to sport wildlife at a rate of 0.6 man-days per acre per year. The estimated average unit value of this recreational opportunity is $3.75 per man-day. The recreational opportunity would be lost as a result of the project. The dollar loss chargeable to the project would be $9,900 per year. ($2.25 x 4,400 = $9,900).

(6) The aggregate average annual loss, in the fish and wildlife resource, as developed above, for the Lower Site, amounts to $99,570 per year.

b. Barge channel - direct damages.

(1) General. The construction of the barge channel connecting the MR-GO with the GIWW and the placement of dredged material will require 1,150 acres of marsh. In this area, the fish and wildlife resources

will suffer virtually a total or 100 percent loss. In contrast with the lands committed for the lock and connecting channels, these lands would likely remain undeveloped in the absence of the project, thus the loss would be sustained in perpetuity. As described above for the lock and channel, these resources have an average annual value per acre.

(2) Commercial fisheries. The average annual loss to construction activities will be $24,280. (291.6 lbs/acre x $0.0724 x 1,150 acres = $24,278.62).

(3) Commercial wildlife. The average annual loss of construction activities will be $2,150. ($1.87 x 1,150 acres = $2,150.50).

(4) Sports wildlife. The average annual loss to construction activities will be $2,590 ($2.25 x 1,150 acres = $2,587).

(5) This 1,150 acres of natural marsh is located outside of any area of existing or proposed protection and is unlikely to be developed in the absence of the project. Thus, these losses would be sustained in perpetuity. The amortized value over a 50-year project life would be $29,020 x 28.57143 x .04263 = $35,346.

c. Barge channel - indirect damages.

(1) Marsh changes would occur in the triangle surrounded by the MR-GO, GIWW, and Lake Borgne, in addition to those direct construction changes described above, if the barge channel is constructed. The triangular marsh area would be surrounded by a deep channel, 12 by 125 feet or greater, thus promoting inclosed intrusion of saltwater into the marsh area. Small bayou routes from Lake Borgne to the marsh, which are traversed by marine organisms using the area for nursery purposes, would be intercepted by the barge channel. Flow patterns between the marsh and Lake Borgne will be altered with major flows following the larger channels and this alteration will directly affect the distribution of nutrients. It is estimated that this triangle of marsh, consisting of 6,950 acres (8,100 - 1,150 acres) would, as a result of all of the above be reduced in its effective productivity in the fish and wildlife resources by 50 percent and that this loss would be sustained in perpetuity. This average annual loss which would be chargeable to the barge channel, would by $88,160. ($24.54/acre x .5 x 6,950 acres = $85,280). The amortized value over a 50-year project life would be $85,280 x 28.57143 x .04263 = $103,871.

d. Losses summary. The total losses to the fish and wildlife resources attributable to the project amount to $239,000 as summarized below.

Feature	Average Annual Loss - $
Lock & connecting channels	$ 99,570
Barge channel - direct	35,346
Barge channel - indirect	103,871
Total	$238,787
	Say ($239,000)

12 - 3. Alternatives considered. Several alternatives to mitigate fish and wildlife losses were considered. These alternatives are as follows:

a. Severed land acquisition. The project will result in the severance of 542 acres of pasture, 482 acres of swamp, 4,526 acres of marsh, and 964 acres of lands previously used for disposal of dredged materials. Since the ability of these severed lands to support fish and wildlife resources will be severely impaired, the severed land acquisition plan would not comprise a viable mitigation plan.

b. Diversion of supplemental freshwater from the Mississippi River to marsh lands in the project area. It has been established in numerous studies that salinity regimes in Lake Borgne and its associated estuarine complex are higher than optimum. Since 1965, a Federal project has been authorized to provide supplemental freshwater to these areas. For a number of reasons, it has been impossible to implement this project. Impediments to implementation include inability to reach agreement on diversion sites and the extent of local participation, concern among some environmentalists over possible adverse effects in terms of commitment of marsh lands for the associated channels, and the presence of biological and chemical pollutants in the Mississippi's flow. In view of these difficulties with respect to the authorized improvements, consideration of additional diversions as a measure in mitigation for fish and wildlife losses associated with the new ship lock would serve no useful purpose.

c. Land acquisition at alternate sites.

(1) The desirability of acquisition for intensive management was explored for a number of sites. Considerable interest has been exhibited

in the triangular-shaped marsh area formed by the Gulf Intracoastal Waterway (GIWW) - Mississippi River Gulf Outlet intersection, and the western shore of Lake Borgne. In discussions of this site with management experts, however, it was developed that the site offered poor prospects for effective management.

(2) The Louisiana Wild Life and Fisheries Commission currently manages, under a 10-year lease management, a 40,000-acre tract on the eastern shore of Lake Borgne. Because of the lack of assurances of long-term availability, the lease management has tended to limit the extent of management, so that the full potentials of this area have not been realized. Fee acquisition of this site for management by the Wild Life and Fisheries Commission would insure that the areas existing productivity would be preserved indefinitely. Moreover, such acquisition would make practicable the implementation of more intensive management measures, thus generating an increase in the overall productivity of the area.

12 - 4. Benefits accruing from proposed plan. The proposed plan is to acquire 40,000 acres for mitigating monetary losses chargeable to the project. The existing use of the area is 0.07 man-days/acre of waterfowl hunting, 0.04 man-days/acre of small game hunting, and 0.70 man-days/acre of fishing, which have an annual value of $61,000. Existing commercial fishery production is $816,000 annually. Over a period of 50 years this would increase to $959,000. This increase would make the annual worth at 2.5 8 percent, equal to $910,000 over the 50-year period. With public ownership and intensive management the present use would increase to 0.14 man-days/acre of waterfowl hunting, 0.08 man-days/acre of small game hunting, and 0.70 man-days/acre of fishing, which would have an annual value of $80,000. Commercial fishery production would be increased by 10 percent to $897,000. Over a period of 50 years this use would increase to $1,467,000. This increase would make the annual worth, at 2.5 8 percent, equal to 1,129,000. Accordingly the annual benefit to public ownership and intensive management would be $1,129,000 - $910,000 = $219,000 per annum.

12 - 5. Annual O&M costs. Annual operation and maintenance costs required in order to guarantee future environmental stability would cost about $20,000. This work would involve the operation of a network of wiers to control water levels and salinity in order to intensively manage marshlands.

12 - 6. Benefits/cost summary.

Real Estate (including 25% contingencies)	$3,765,000
Annual losses	239,000
Annual charge	137,300
Annual O&M Costs	20,000
Total Annual Costs	157,300
Total Annual Benefits	219,000
Benefit/cost ratio	1.39

SECTION 13. SITE PLAN COMPARISON

13-1. Comparison. The Lower site and IHNC site "B" (single lock) plans are compared in detail in Table 16. Refer to Section 10 for a detailed explanation of the elements of these two remaining site plans.

13-2. Conclusions.

(a) The District Engineer, New Orleans District, has reviewed and evaluated, in light of the overall public interest, available data and information concerning the site selection for this deepwater lock and connecting channels, and in particular, the Lower Site and Industrial Canal Plans compared in Table 16. He has considered the stated views of other agencies and the concerned public relative to this selection, in particular as regards the possible consequences of the alternatives according to their environmental, social well-being, and economic effects with respect to both regional and national development. Based on these deliberations and the sheer weight of evidence, he considers the Lower Site Plan to provide the best solution to the total problem, and one that offers the most effective means of achieving the purposes of the authorized project.

(b) The following points were considered the most salient supporting this selection: (1) The Lower Site Plan is between $25-$30 million less expensive to construct (depending on cost of ecological mitigation), and this factor was evaluated using bridge relocations at the IHNC with no increase in traffic lanes; (2) It is superior for navigation efficiency due to the minimization of marine congestion and the availability of a standby lock for emergency usage; (3) It provides national, regional, and local monetary benefits without initial disruption to industry, essentially equal to the IHNC site, and provides some 2,500 acres of waterfront property for transportational and industrial development; (4) It is significantly less disruptive to the existing adjacent population (16 vs. 1,000 people) and furthermore, the implementation of the IHNC mothball option, as well as the construction of a highlevel bridge over the Violet Site would provide a rapid solution to the vehicular access problem; (5) It provides for future full utilization of the old IHNC lock for navigation when the State and Parish solve their traffic lane deficiencies; (6) It provides a federally controlled site for future lock replacement in an area where acquisition of a new locksite might become impossible; (7) It provides a site where conventional construction techniques can be utilized, and where the planning is at least 2 years ahead of the alternative; and (8) it is the site that the State of Louisiana can better afford--the difference being that the Lower Site plan is about $53 million cheaper in relocations costs.

TABLE 16

DETAILED PLAN COMPARISON

	Item for Consideration	Site/Plans	
1.	Site of New Lock	Lower Site, St. Bernard Parish	IHNC Site "B" Orleans Parish
2.	Disposition of Old IHNC Lock: (Authorizing legislation calls for replacement or an additional lock).	Mothball (Standby)	Demolition
3.	Plan:	Construct new lock & ship channel and Lake Borgne barge canal at Lower Site. Provide mitigation of adverse social impact to vehicular access at IHNC by closing (mothballing) old lock. Federal Government to purchase, preserve, and mothball old lock. Local Assuring agency to provide perpetual R/W in Industrial Canal. Provide ecological mitigation.	Construct new lock at Site "B" (385' east of IHNC--opposite Galvez St. Wharf) and demolish old lock to provide adequate forebay. Local assuring agency to provide perpetual R/W in Industrial Canal and old lock as part of R/W requirements.
4.	Construction cost (Jul 74):		
	a. Federal: (Basic Features)	$171,150,000	$147,818,000
	IHNC Lock Purchase Allowance	6,000,000	N/A
	IHNC Lock preservation (demolition)	1,000,000	(7,182,000)
	Total Federal Cost	$178,150,000	$155,000,000
	b. Non-Federal costs		
	Hwy Bridge(s) Relocations	$41,016,000	$56,788,000
	Old Lock Book Value	N/A	6,000,000
	Other Relocations, Lands & Damages	46,906,000	78,092,000
	Total Non-Federal Cost	$87,922,000	$140,880,000
	c. Total Project Construction Cost	$266,072,000	$295,880,000
5.	Benefit-Cost Ratio:		
	a. Annual Charges: Int. & Amort.	$10,723,900	$12,473,500
	Maintenance & Operation	1,029,300	1,140,500
	Fish and Wildlife	239,000*	--
	Subtotal	$11,992,200	$13,614,000
	Existing IHNC Lock	325,600	--
	Total Annual Charges	$12,317,800	$13,614,000
	b: Benefits (Navigation)	$29,696,000	$31,372,000
	Barge Canal	717,000	--
	Old IHNC Lock	611,000	--
	Total Annual Navigation Benefits	$31,024,000	$31,372,000
	c. Benefit-Cost Ratio	2.52	2.30
	*This amount would be compensated by intensive marsh management or other mitigative methods.		
6.	Net Annual Benefits:	$18,702,200	$17,758,000

TABLE 16

DETAILED PLAN COMPARISON

Item for Consideration	Lower Site	IHNC Site "B"
7. Land Requirements:		
a. Lock & Ship Channel		
Pasture	542.0 acres	158.0 acres
Swamp	482.0 acres	-
Marsh	3,376.0 acres	-
Spoil Land	964.0 acres	1,013.0 acres
Total	5,364.0 acres	1,171.0 acres
b. Barge Canal		
Marsh	1,150.0 acres	-
Gross Total (Construction)	6,514.0 acres	1,171.0 acres
Net Total (Permanent)	3,650.0 acres	1,121.0 acres
8. Ecological Impacts		
a. Habitat Modification	Lock & ship channel initially cause significant loss in estaurine marsh and swampland; but in the long run, since this total area in inclosed and protected by hurricane levees, a substantial portion of the area would likely be converted to urban-type uses in the future. Barge channel affects 1,150 acres primarily and totally. Ecological mitigation would provide increased productivity to compensate for losses. Other measures are under study.	Insignificant in primary sense, but the displacement of numerous homes, businesses and industries would generate a greater use of land as these businesses and industries relocated and planned for future expansion; and as homeowners upgraded their living standards using relocation funds.
b. Freshwater Bypass	Initially questionably beneficial as river water is relatively poor quality; however, if projected improvement in river water quality is realized, diversion of large amounts of freshwater flows would significantly improve salinity regimens in large areas of marsh, thus improving the marsh and increasing production of the entire Lake Borgne-Chandeleur Sound Complex.	Questionably beneficial as the distance between the lock and marsh is great and the dilution in the MR-GO would possibly nullify the beneficial effects of the freshwater flows.
9. Navigation	Substantially beneficial as through traffic can bypass Centroport tidewater area. Lake Pontchartrain and intraport traffic will be initially inconvenienced, but thru traffic can take the route with the least congestion. Two locks insure continued functioning of port during maintenance periods or breakdowns as an added benefit. National Defense benefits with two locks through dispersion of facilities. Efficient lockages due to absence of wharves or facilities within 5,000 feet of lock.	Moderately beneficial from standpoint of distance traveled by interport traffic; however, adverse as to continued congestion in the tidewater Centroport area. Single lock operation requires stoppage of river and tidewater, inter- and intraport traffic or imposition of a circuitous route on the average of 3 days per year. Minor reduction in lockage efficiency due to bridges and wharves in close proximity.

TABLE 16 - DETAILED PLAN COMPARISON (cont'd)

Item for Consideration	Lower Site	IHNC Site "B"
10. Construction		
a. Time (from Jan 75)		
Preconstruction planning	1 year(s)	2 year(s)
Construction	5 year(s)	6 year(s)
Total	6 years [1]	8 years [1]
Earliest Completion	Late 1980	Late 1982
b. Difficulties	Lower Site offers large areas for contractor operation and conventional methods. Difficulties can be kept to a minimum. A moderate quantity of floating equipment can be utilized, while less expensive conventional equipment can be utilized to the fullest.	Every facet of construction will be difficult due to the paucity of working space; and the unconventional methods required to contain construction in this area will produce unforseen problems. Much floating equipment will be required.
[1] A question of possible litigation delaying the Lower Site construction schedule and not the IHNC Site is considered invalid due to the difference in degree of opposition exposure at this time. A pronouncement of selection of the IHNC Site would most certainly draw equivalent legal entanglements thereby negating this factor's relativity.		
11. Relocations, Lands & Damages	Relatively moderate in difficulty and number. These include pipeline, utility, highway, railroad, and flood protection features. Available large working area reduces difficulty. One highlevel, 4-lane highway bridge and one lowlevel RR bridge comprise transportation relocation. No impact on existing transportation facilities during construction. Interference with construction of lock and associated features is minor. Initial cost is $53 million less than the IHNC Site.	Extremely difficult and numerous. Utilities and pipeline relocations will interfere with navigation. Limited construction area compounds problem as the 4-bridge relocations require much floating equipment which when combined with other equipment making utility and pipeline crossings, would practically paralyze the canal for lengthy periods of time. Substantial adverse impact on vehicular transportation facilities during extensive construction period. Interference with lock and associated features is major.
12. Social Considerations		
a. Population Below Site--		
year 1970 (census)	9,302 persons	86,971 persons
year 2000 (projected)	10,300 persons	108,600 persons
year 2030 (projected)	11,500 persons	118,800 persons
	Very minor disruption of vehicular or railroad access anticipated during construction; none in future. Present Hwy 39 (2 lanes) to be replaced with highlevel bridge (4 lanes) on Judge Perez alinement. Continued vehicular access interference	Major disruption of access during possibly 6 to 11 1/2-year period for reconstruction of new bridges. Reduction of presently overloaded traffic lanes for at least 2 years.
	(continued on next page)	(continued on next page)

TABLE 16 - DETAILED PLAN COMPARISON (cont'd)

Item for Consideration		Lower Site	IHNC Site "B"
12a.	Social Considerations (Cont'd)	at IHNC during 5-year construction period. Then mothballing of IHNC lock would relegate traffic access interference to minor impact. Present IHNC bridges are now obsolete by traffic count. St. Claude and Fla. Ave. bridges will require structural replacement by year 2000. Act 304, 1970 Louisiana Legislature, provides for Fla. Avenue bridge replacement with a 6-lane semi-highlevel structure by year 1990; 14 traffic lanes will be provided by high and/or semi-highlevel bridges at IHNC at less cost due to horizontal span considerations. Vehicular and RR bridge costs would be about $69 million.	Population could be served by 14 semi-highlevel traffic lanes by year 1990;however, bridge costs could be as high as $74.5 million for two 4-lane and one 6-lane semi-highlevel vehicular bridges and one low level railroad bridge spanning the 500-foot channel. Traffic disruption would be relegated to a minor impact 10 years earlier than Lower Site plan; however, mothballing the IHNC lock would mitigate this difference during that period.
b.	Displacements of people	Approximately 16 people, i.e. 4 families in as many dwellings.	Approximately 903 persons in 160 dwellings by lock and channel plus 173 persons in 48 dwellings due to bridge construction.
c.	Displacement of businesses or Public Facilities	Two businesses and one school.	11 canalside industries on east side, and 9 on west side, plus US Coast Guard reservation and 2 schools.
d.	Displacement of Farms	Approximately 200 acres of pasture has been used for farming.	None.
e.	Community Growth	If vigorously promoted locally, major transportation, industrial and urban growth would be facilitated in St. Bernard Parish. St. Bernard representatives state that this is inconsistent with their future plans.	Project would promote moderate, more orderly industrial and urban development below New Orleans.
f.	Regional Growth	Modernization of the obsolescent existing lock would enhance the prospects for desirable regional growth in an area historically deficient economically relative to the remainder of the US.	Modernization of the obsolescent lock would enhance the prospects for desirable regional growth in an area historically deficient economically relative to the remainder of the US.
g.	Personal Income and Employment	Project construction related employment and income would help to alleviate high unemployment rates and the paucity of jobs in St. Bernard Parish. Postproject induced development would infuse new employment and income also.	Project construction related employment would relieve somewhat the high unemployment levels in the NOSMSA. Postproject induced development would infuse new employment income also.

TABLE 16 - DETAILED PLAN COMPARISON (cont'd)

Item for Consideration	Lower Site	IHNC Site "B"
h. Community Cohesion	Initially adverse, attenuating with time and prosperity of local residents, achieved through more orderly development and transportation efficiencies.	Initially adverse, attenuating with time as esthetic benefits, more orderly development, and transportation efficiencies are realized.
i. Water Quality	Moderate pollution during construction, during maintenance dredging of the barge channel, and from induced development. Compliance with Federal, state, and local regulations should restrict pollution to acceptable levels.	Moderate pollution during construction and from induced development. Compliance with Federal, state, and local regulations should restrict pollution to acceptable levels.
j. Air and Noise Quality	Moderate deterioration in quality during construction and during maintenance dredging of the barge channel. Induced development should be in compliance with Federal, state, and local regulations, holding pollutions to acceptable levels.	Moderate deterioration in quality during construction. Induced development should be in compliance with Federal, state, and local regulations; holding pollutions to acceptable levels.
k. Esthetic Values	Moderate adverse impact related to loss of marsh; however, properly zoned and planned urban developments with adequate green spaces would be esthetically pleasing.	Moderate improvement to residents in vicinity of IHNC with orderly, planned, and zoned developments and adequate green spaces.
l. Emergency Preparedness	In addition to a new, adequate lock, provision of a mothballed lock constitutes a back-up transportation route in times of national and/or local emergencies.	The new lock would provide adequate facilities in the event of a national and/or local emergency.
m. Security of Life, Health, and Safety	Improved land and water transportation routes would contribute to greater security of persons and property and enhance health and safety.	Improved land and water transportation routes would contribute to greater security of persons and property and enhance health and safety.

SECTION 14. RECOMMENDATIONS

14-1 Recommendations.

(a) When all the above factors are taken into consideration, we conclude the following recommendations are warranted and fully supportable:

1. That the Lower Site, just below Violet, La., in St. Bernard Parish is the optimum location for an additional ship lock and connecting channels between the Mississippi River and the MR-GO.

2. That a barge channel, located along the western shore of Lake Borgne and connecting the MR-GO and GIWW, is required for safe and efficient navigation and that it has benefits of such magnitude as to make it an intrinsic part of the Lower Site Plan.

3. That the old Industrial Canal lock be purchased and mothballed by the Federal Government to provide contingency marine access to the inland waterways east of the Mississippi and to initially mitigate local vehicular access problems of the 87,000 residents now living below the Industrial Canal.

4. That the provision of ecological mitigation through intensive marsh management or other appropriate means is both necessary and consistent with the National interest.

(b) In this regard we recommend approval of continuing general design memorandum, feature design memorandum, and environmental studies with the project located as recommended, including the features described in 1 and 2 above, and further that authority be granted for the preparation of reports pursuant to funding and completing the necessary transactions described in 3 and 4 above.

(c) Anticipating approval of Item (a)3, it is deemed appropriate and necessary to consider the redesignation of that reach of the Gulf Intracoastal Waterway now contained in the Industrial Canal by authority of the River and Harbor Act of 23 July 1942 (H.D. 96, 79th Congress, 1st), GIWW, from Mobile, Ala., to New Orleans, La., etc., to an alternate route status, and to designate the Lower Site Ship Lock and Channel, and the Lake Borgne barge channel as the primary route. We therefore additionally recommend that a study be authorized as part of the general design memorandum to determine Federal and local interest participation, if any, which might be involved in relocating this reach of the GIWW.

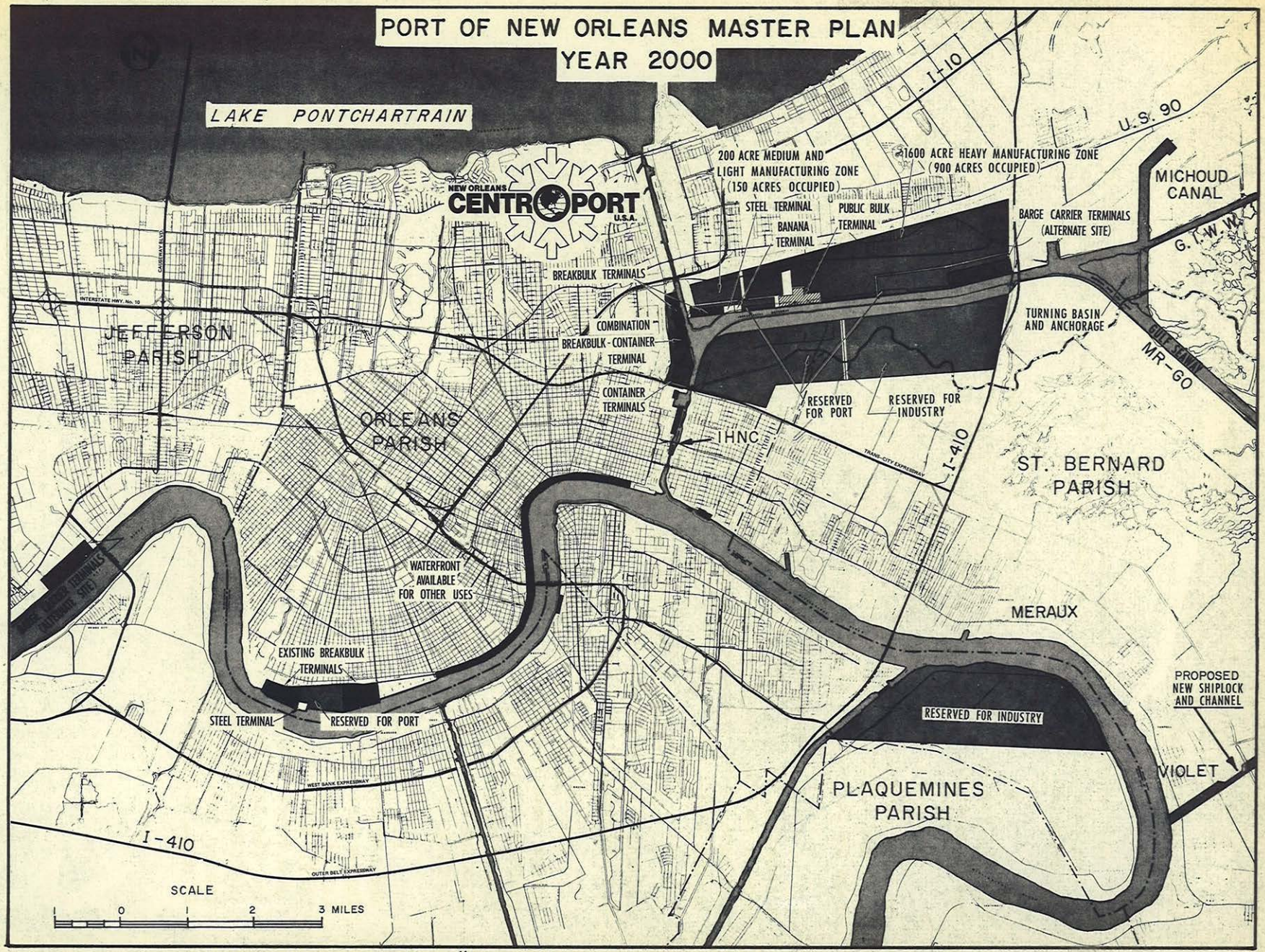
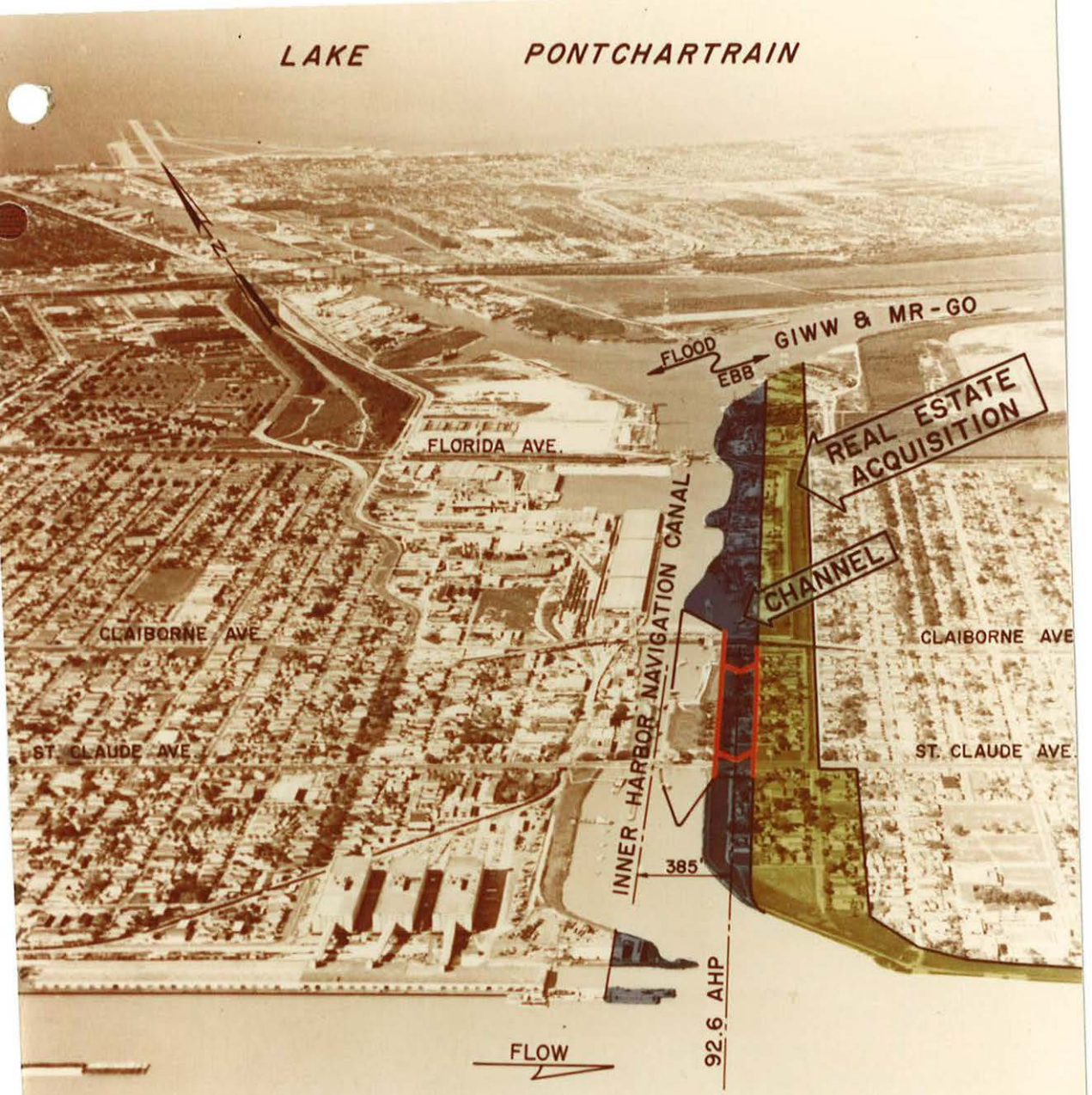


FIGURE "A"

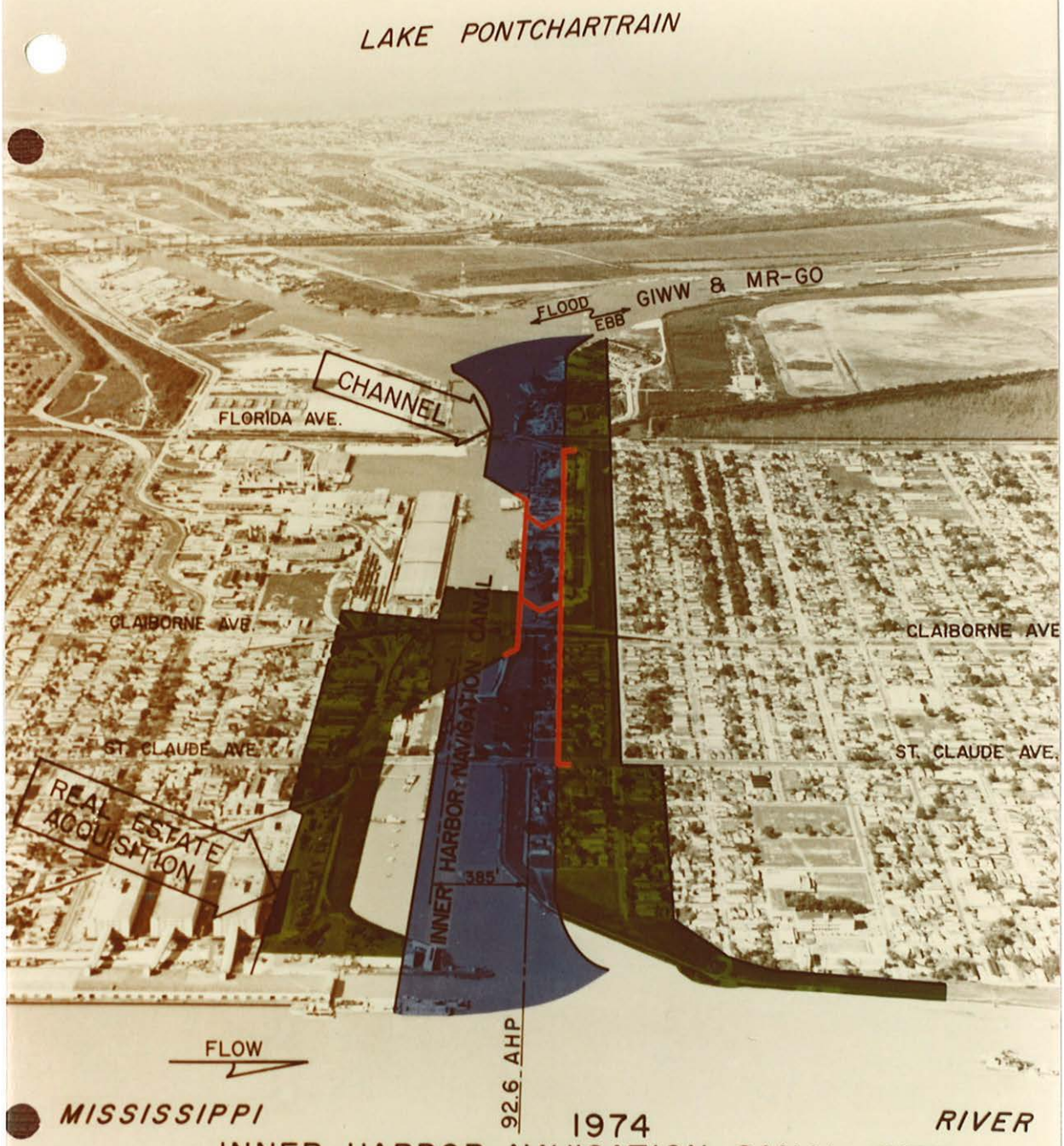
REPRODUCED FROM "MASTER PLAN FOR LONG RANGE DEVELOPMENT FOR THE PORT OF NEW ORLEANS" BY BECHTEL CORPORATION.



1973
INNER HARBOR NAVIGATION CANAL SITE
ORLEANS PARISH, LOUISIANA

PHOTOGRAPH TAKEN 9 APRIL 1973

FIGURE 1



1974

INNER HARBOR NAVIGATION CANAL SITE

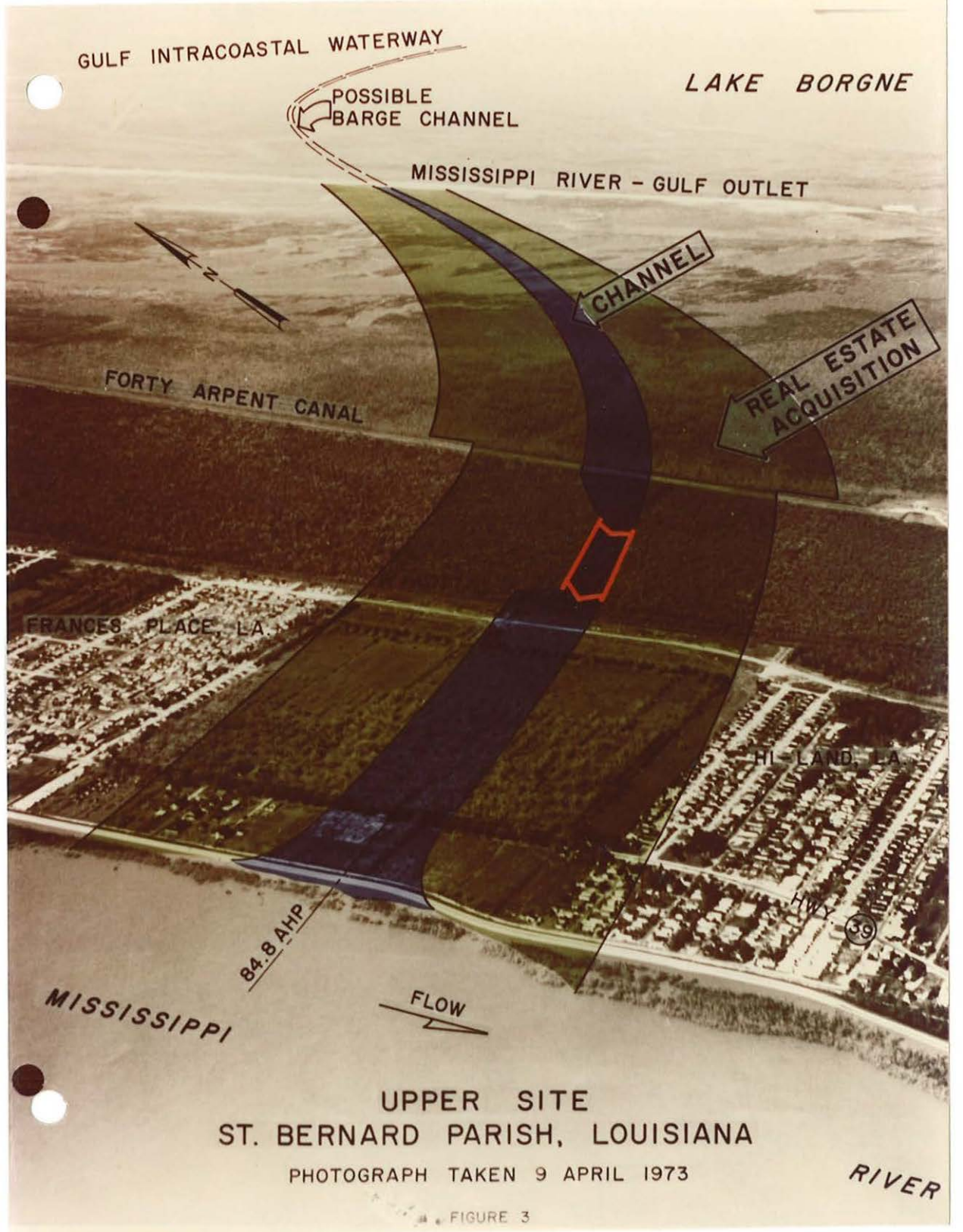
ORLEANS PARISH, LOUISIANA

SINGLE LOCK

PHOTOGRAPH TAKEN 9 APRIL 1973

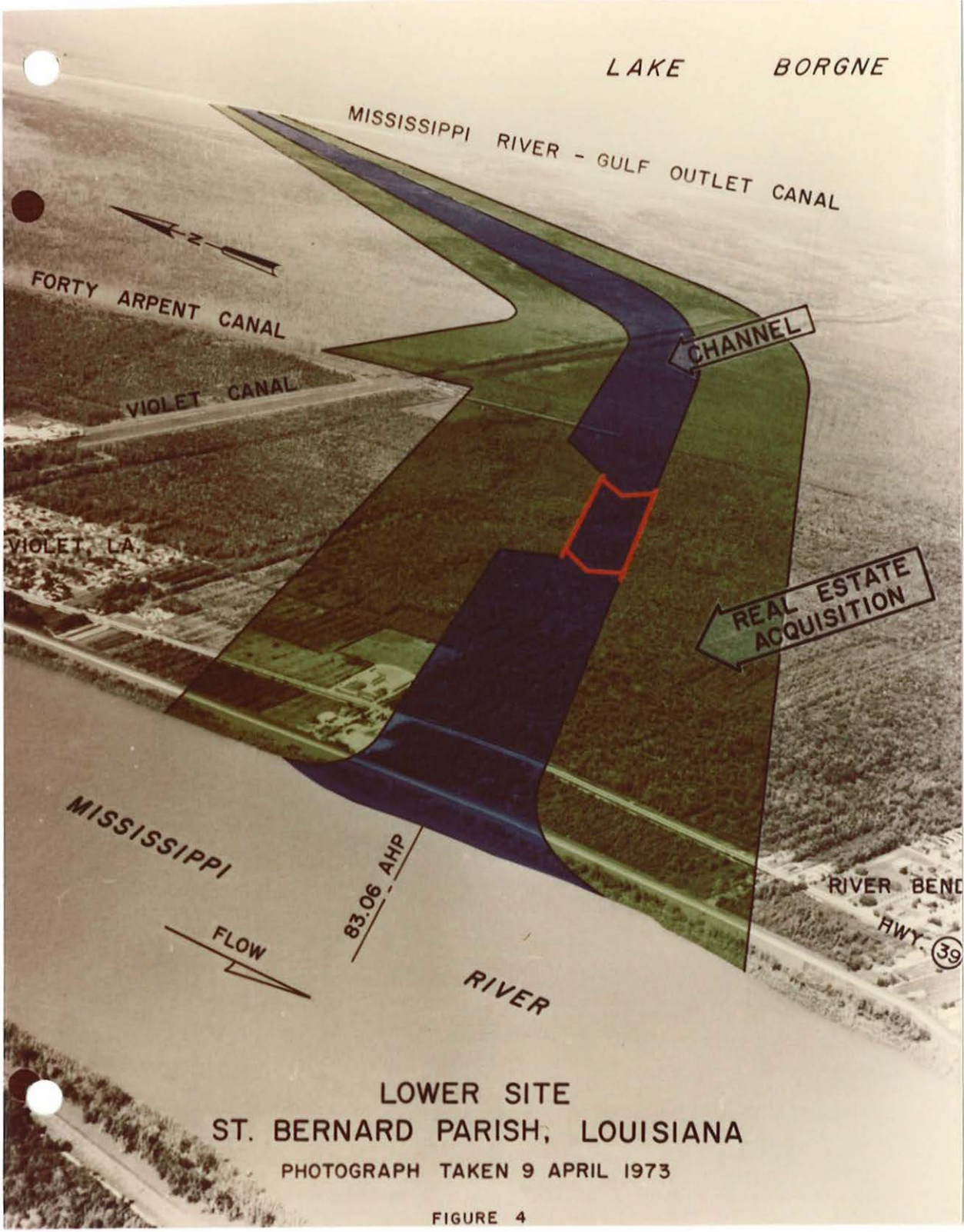
FIGURE 1-A

SAXONHOLM SITE
ST. BERNARD PARISH, LOUISIANA
PHOTOGRAPH TAKEN 9 APRIL 1973 FIGURE 2



UPPER SITE
ST. BERNARD PARISH, LOUISIANA
PHOTOGRAPH TAKEN 9 APRIL 1973

FIGURE 3



LOWER SITE
ST. BERNARD PARISH, LOUISIANA
PHOTOGRAPH TAKEN 9 APRIL 1973

FIGURE 4

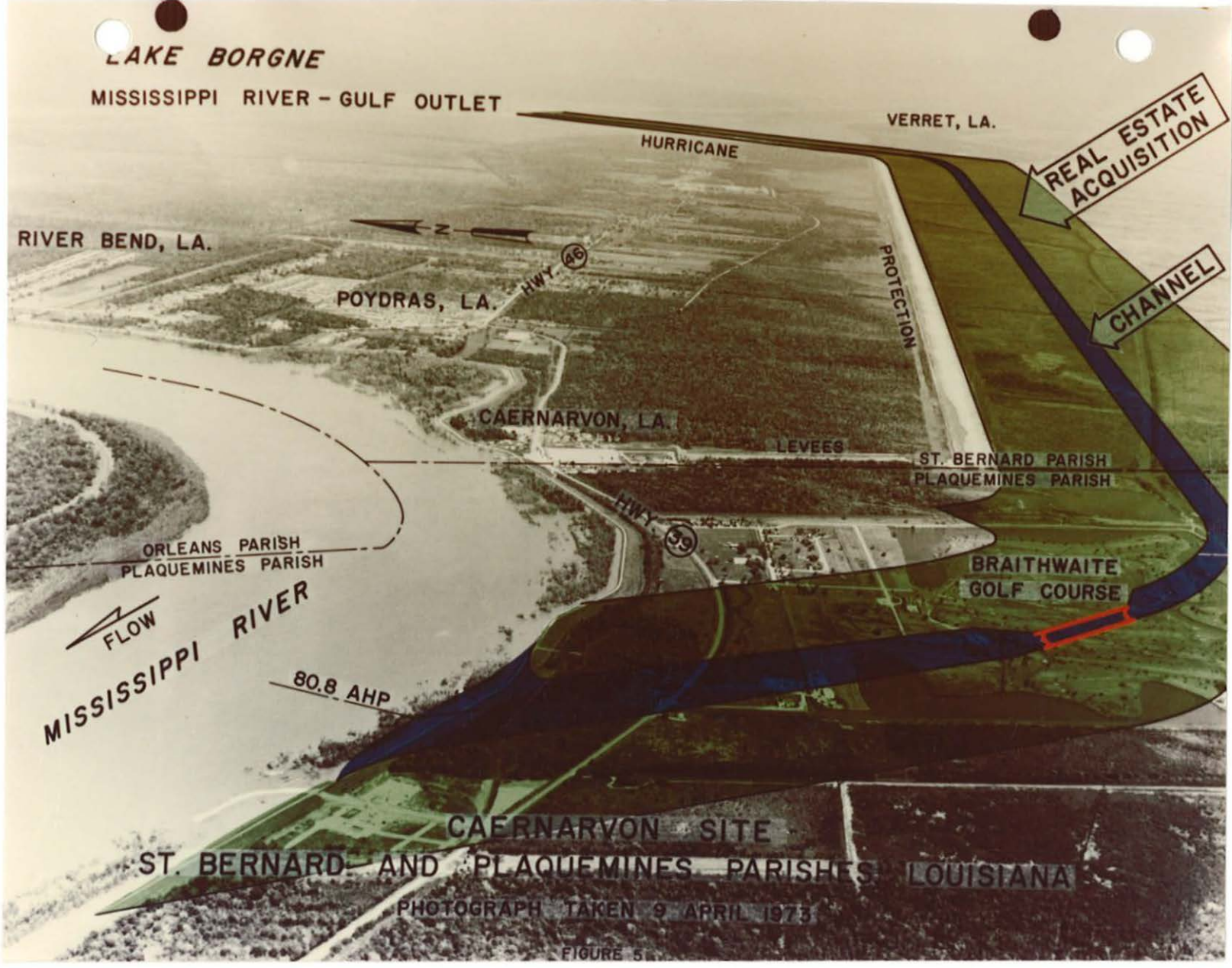
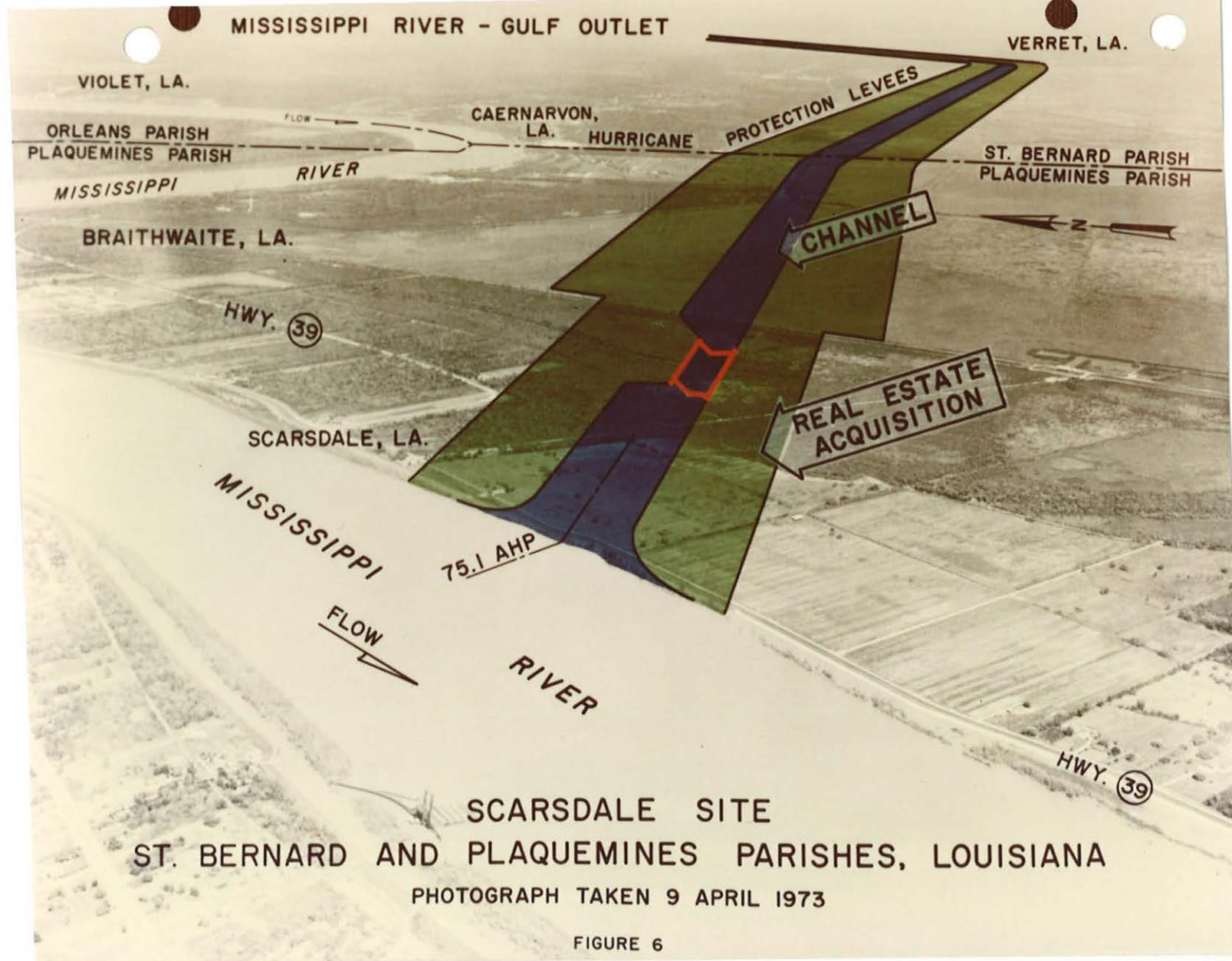

LAKE BORGNE
MISSISSIPPI RIVER - GULF OUTLET
VERRET, LA.
HURRICANE
REAL ESTATE ACQUISITION
CHANNEL
PROTECTION
RIVER BEND, LA.
N
POYDRAS, LA.
HWY. 46
CAERNARVON, LA.
LEVEES
ST. BERNARD PARISH
PLAQUEMINES PARISH
HWY. 39
ORLEANS PARISH
PLAQUEMINES PARISH
BRAITHWAITE
GOLF COURSE
FLOW
MISSISSIPPI RIVER
80.8 AHP
CAERNARVON SITE
ST. BERNARD AND PLAQUEMINES PARISHES LOUISIANA
PHOTOGRAPH TAKEN 9 APRIL 1973

FIGURE 5

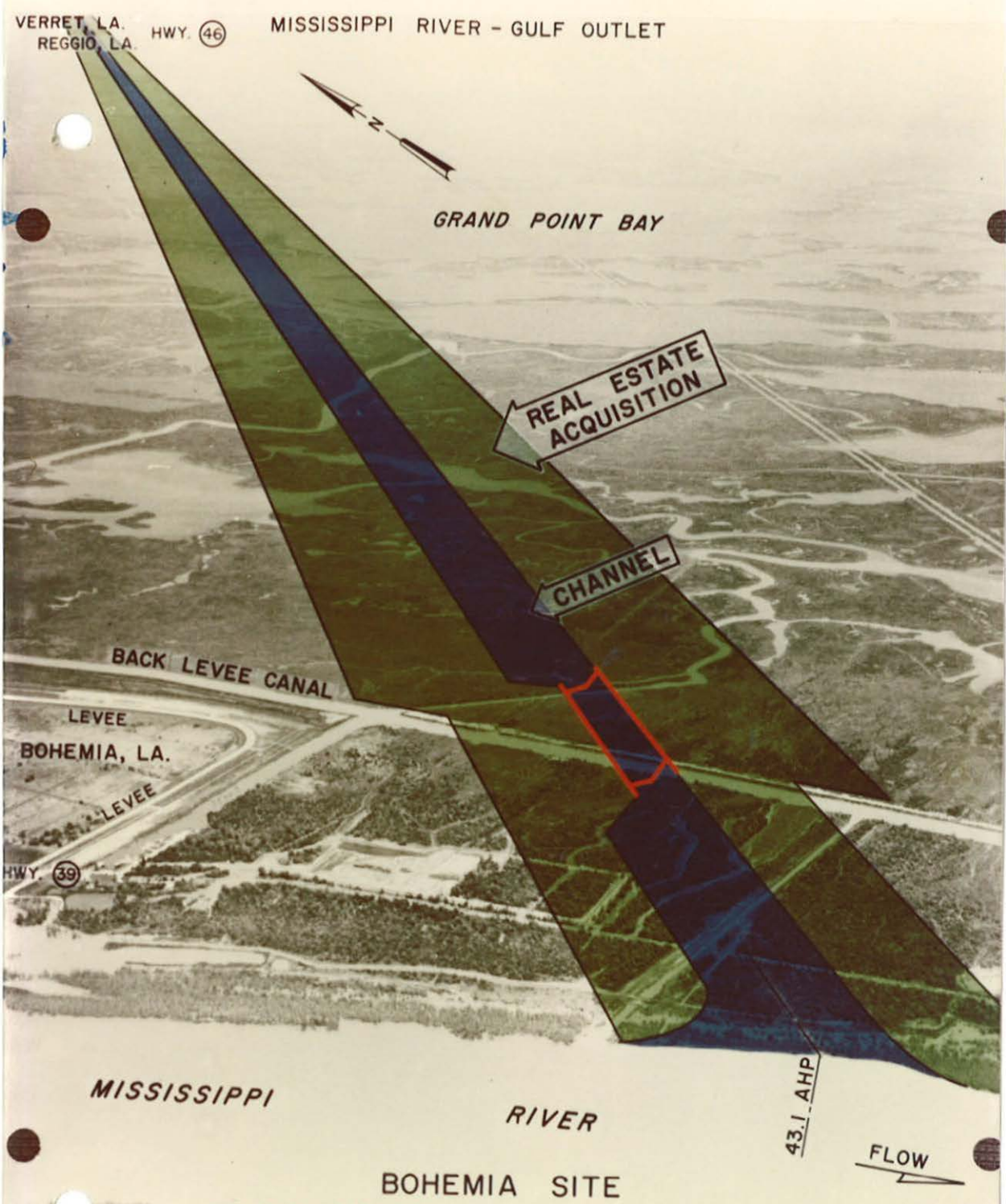


SCARSDALE SITE

ST. BERNARD AND PLAQUEMINES PARISHES, LOUISIANA

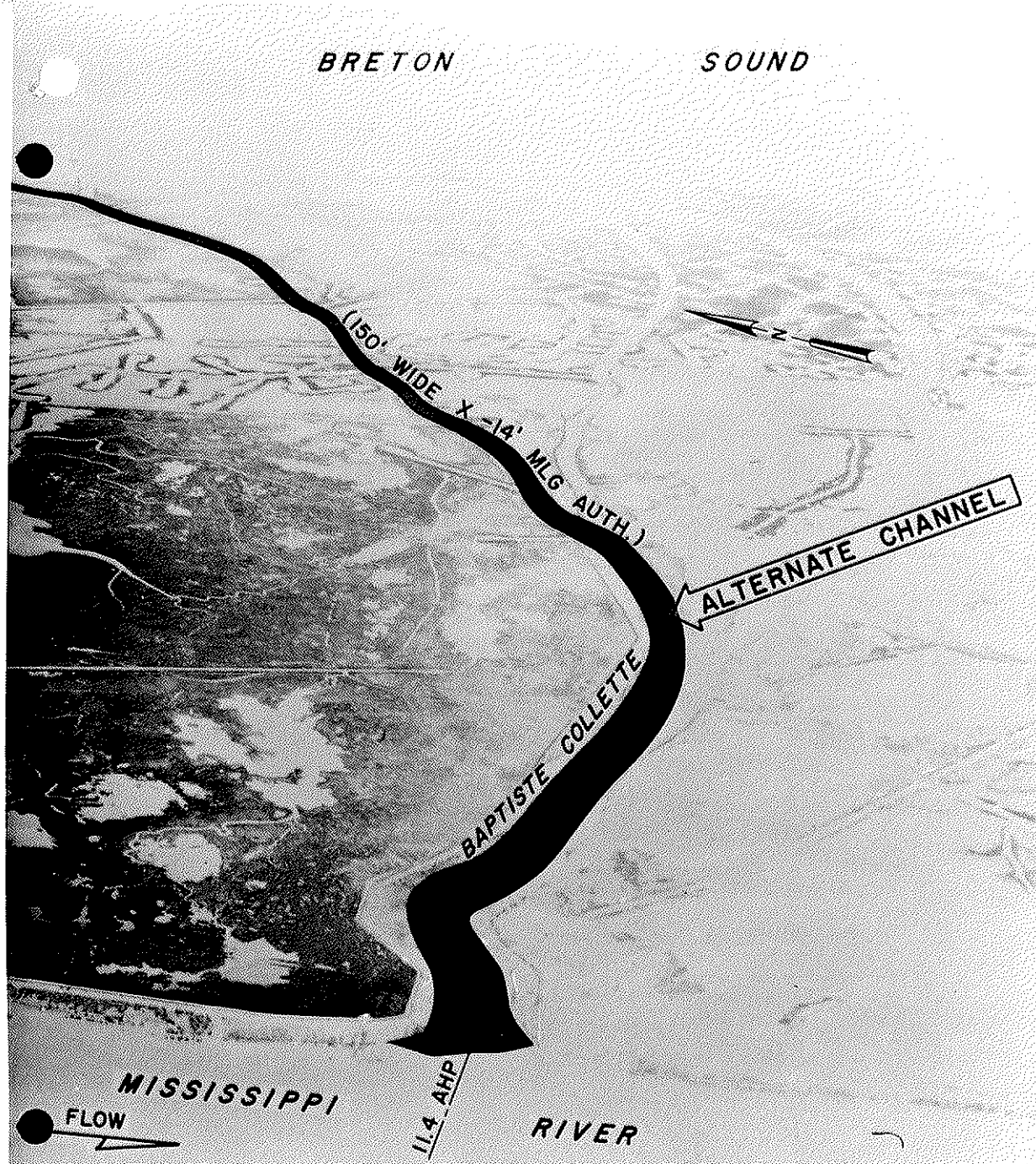
PHOTOGRAPH TAKEN 9 APRIL 1973

FIGURE 6



BOHEMIA SITE
PLAQUEMINES PARISH, LOUISIANA
PHOTOGRAPH TAKEN 9 APRIL 1973

HWY. 23 HAPPY JACK, LA. FIGURE 7

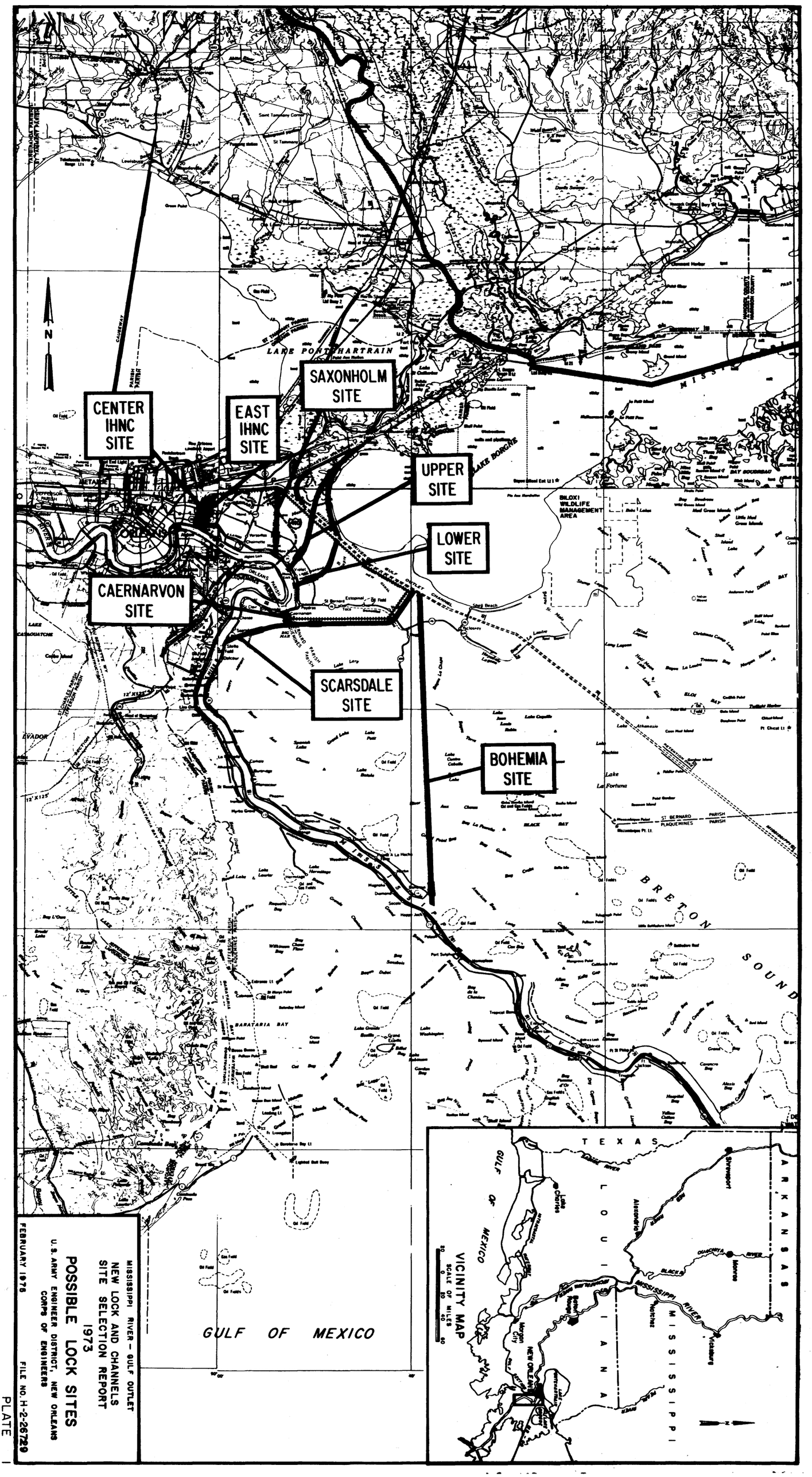


BAPTISTE COLLETTE ALTERNATE ROUTE
PLAQUEMINES PARISH, LOUISIANA

PHOTOGRAPH TAKEN 9 APRIL 1973

VENICE, LA.

FIGURE 8


CENTER IHNC SITE
EAST IHNC SITE
SAXONHOLM SITE
UPPER SITE
LOWER SITE
CAERNARVON SITE
SCARSDALE SITE
BOHEMIA SITE
LAKE PONTCHARTRAIN
LAKE BORGNE
MISSISSIPPI RIVER GULF OUTLET
BRETON SOUND
BARATARIA BAY
GULF OF MEXICO
BILOXI WILDLIFE MANAGEMENT AREA
VICINITY MAP
SCALE OF MILES
TEXAS
LOUISIANA
MISSISSIPPI
ARKANSAS
Shreveport
Vicksburg
Natchez
Baton Rouge
NEW ORLEANS
Lake Charles
Alexandria
Monroe
MISSISSIPPI RIVER GULF OUTLET
MISSISSIPPI RIVER - GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973
POSSIBLE LOCK SITES
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
FEBRUARY 1976
FILE NO. H-2-26729
PLATE 1

LAKE PONTCHARTRAIN

INNER HARBOR NAVIGATION CANAL SITE

INNER HARBOR NAV. CANAL

NEW ORLEANS

SOUTHERN

INDUSTRIAL CANAL LOCK

GULF INTRACOASTAL WATERWAY

Bayou Bienvenue

Bayou Villere

PARIS ROAD

CONNECTING CHANNEL

MISSISSIPPI RIVER

SOUTHERN NATURAL GAS PIPELINE

MISSISSIPPI RIVER - GULF OUTLET

BARGE CONNECTION 12' X 150'

LAKE BORGNE

Meraux

SOUTHERN

UPPER SITE

Docville

Violet

Lake Borgne Canal

Bayou Dupre

CONNECTING CHANNEL

LOWER SITE

Poydras

Shell Beach

Bayou Yscloskey

HARVEY CANAL LOCK

ALGIERS CANAL LOCK

HARVEY CANAL

ALGIERS CANAL

Scarsdale

Stella

MILE 6.2 HARVEY CANAL
MILE 8.5 ALGIERS CANAL

SCALE IN FEET

6,000 0 6,000 12,000

MISSISSIPPI RIVER - GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973
1961 LOCK SITES

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

FEBRUARY 1975 FILE NO. H-2-26729

PLATE 2

LAKE PONTCHARTRAIN

N

NEW ORLEANS

10

410

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

HURRICANE

POSSIBLE ANCHORAGE

POSSIBLE ALTERNATE BARGE ROUTE 12' X 300'

POSSIBLE 12' X 150' BARGE CHANNEL

BY-PASS

LAKE BORGNE

BAYOU BIENVENUE FLOODGATE

IHNC SITE

BARGE CANAL

PROTECTION

SAXONHOLM SITE

UPPER SITE

BAYOU DUPRE FLOODGATE

NAVIGABLE FLOODGATE

LEVEE

MISSISSIPPI RIVER

PROPOSED INTERSTATE

TAILBAY 500'x36'

LOWER SITE

SHIP LOCK

FOREBAY 500'x36'

U.S. COAST GUARD RESERVATION

U.S. NAVAL AIR STATION (ALVIN CALLENDER FIELD)

SCALE

1 0 1 2 3 MILES

3000 0 3000 6000 9000 12000 15000 FEET

MISSISSIPPI RIVER – GULF OUTLET

NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973

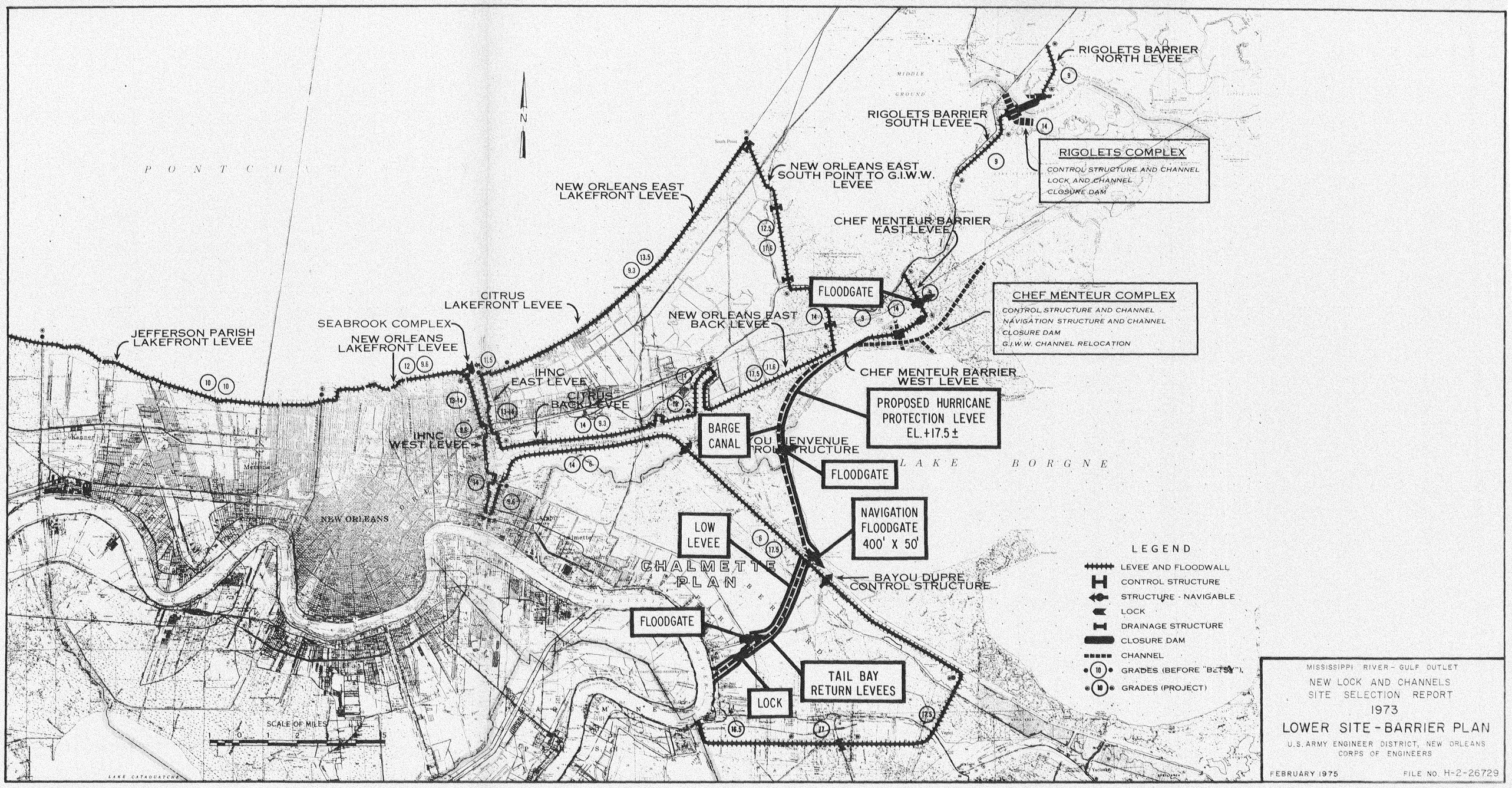
ORLEANS AND ST. BERNARD LOCK SITE ALINEMENTS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

FEBRUARY 1975

FILE NO. H-2-26729

PLATE 3



MISSISSIPPI RIVER - GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973
LOWER SITE - BARRIER PLAN
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
FEBRUARY 1975 FILE NO. H-2-26729

PLATE 4

SITE A

SITE B

385'

-50' MLG

INNER HARBOR NAVIGATION CANAL

INNER HARBOR NAVIGATION CANAL

GULF INTRACOASTAL WATERWAY

PROPOSED MEDIUM-LEVEL BRIDGES

1973
TAKE LINE

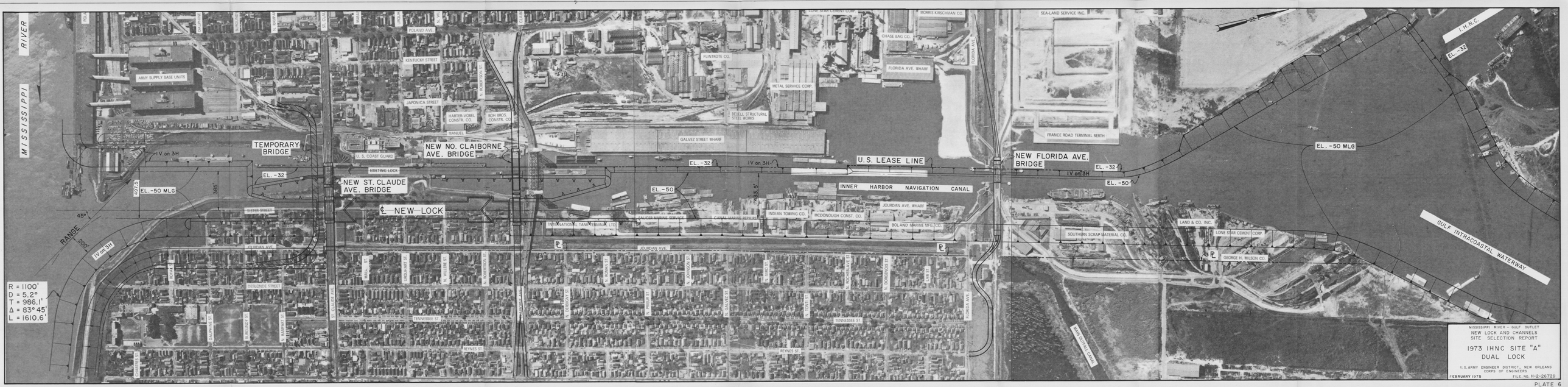
1969
TAKE LINE

MISSISSIPPI RIVER - GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973
INNER HARBOR NAVIGATION CANAL
LOCK SITES

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

FEBRUARY 1975 FILE NO. H-2-26729

PLATE 5

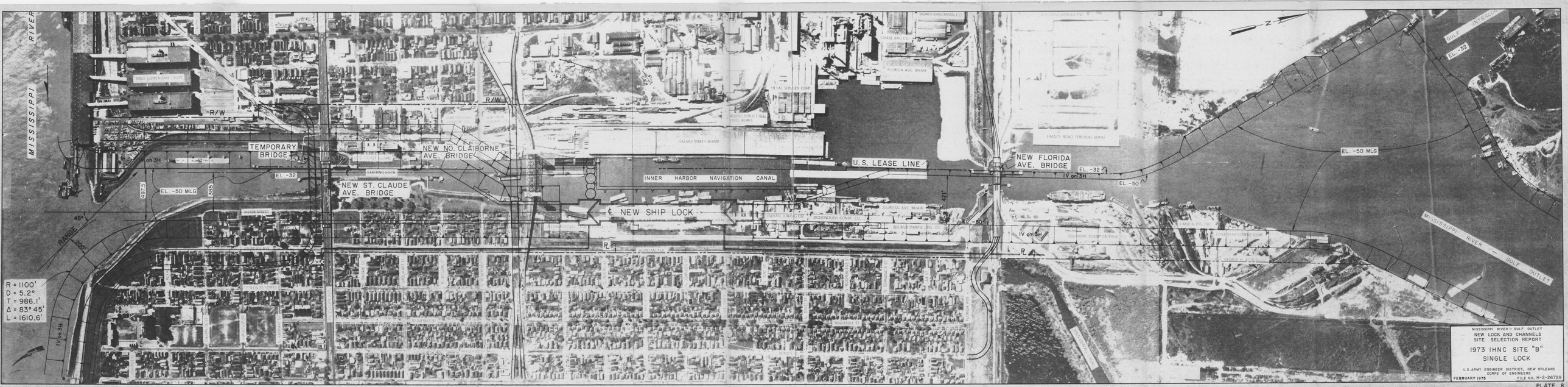


MISSISSIPPI RIVER - GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973 IHNC SITE "A"
DUAL LOCK
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
FEBRUARY 1975
FILE NO. H-2-26720

PLATE 6


MISSISSIPPI RIVER
ARMY SUPPLY BASE UNITS
POLAND AVE.
KENTUCKY STREET
JAPONICA STREET
MARTER-VOREL CONSTR. CO.
BOH BROS. CONSTR. CO.
TRANSIT
U. S. COAST GUARD
EXISTING LOCK
TEMPORARY BRIDGE
NEW NO. CLAIBORNE AVE. BRIDGE
NEW ST. CLAUDE AVE. BRIDGE
1V on 3H
EL. -32
EL. -50 MLG
497.5
585'
SISTER STREET
45°
RANGE
200'
JOURDAN AVE.
DESLONDE STREET
TENNESSEE ST.
REYNES ST.
R = 1100'
D = 5.2°
T = 986.1'
Δ = 83° 45'
L = 1610.6'
FLINTKOTE CO.
METAL SERVICE CORP.
BEDELL STRUCTURAL STEEL WORKS
GALVEZ STREET WHARF
MORRIS KIRSCHMAN CO.
CHASE BAG CO.
FLORIDA AVE. WHARF
FLORIDA AVE.
SEA-LAND SERVICE INC.
FRANCE ROAD TERMINAL BERTH
U.S. LEASE LINE
INNER HARBOR NAVIGATION CANAL
℄ NEW SHIP LOCK
INTERNATIONAL MATERIAL LTD.
INDIAN TOWING CO.
McDONOUGH CONST. CO.
JOURDAN AVE. WHARF
BOLAND MARINE MFG. CO.
471'
EL. -50
NEW FLORIDA AVE. BRIDGE
EL. -32
1V on 3H
EL. -50
LAND & CO. INC.
LONE STAR CEMENT CORP.
SOUTHERN SCRAP MATERIAL CO.
GEORGE H. JUDSON CO.
I. H. N. C.
EL. -32
EL. -50 MLG
GULF INTRACOASTAL WATERWAY
SOUTH CENTRAL CEM.
N
MISSISSIPPI RIVER – GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973 IHNC SITE "B"
DUAL LOCK
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
FEBRUARY 1975
FILE NO. H-2-26729

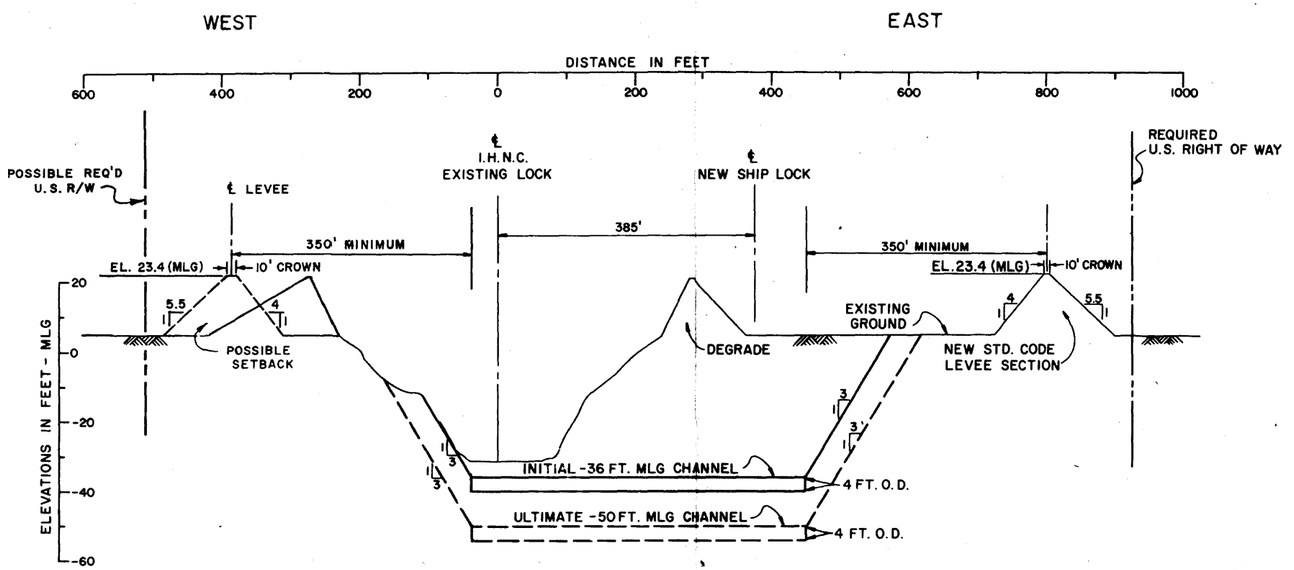
PLATE 7



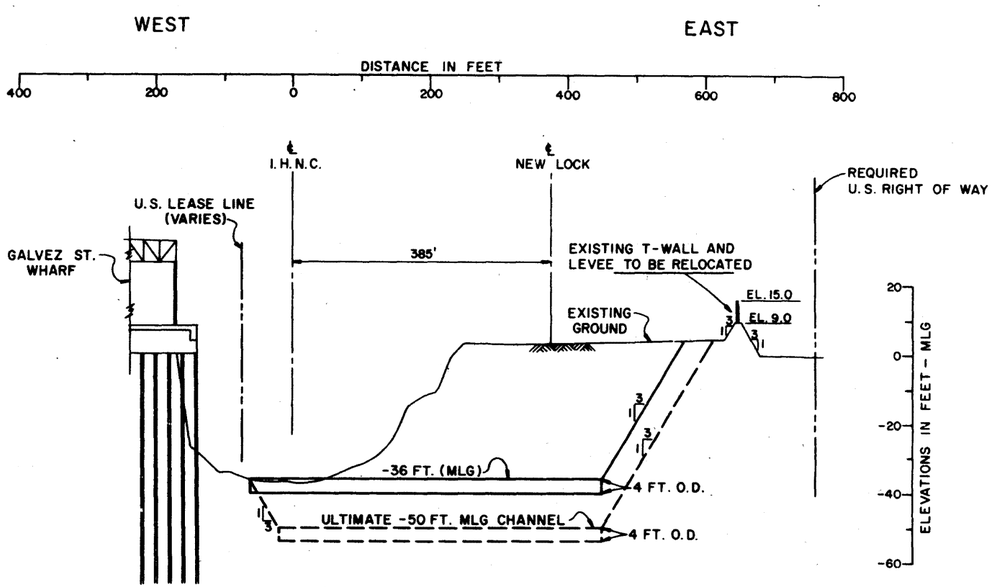
MISSISSIPPI RIVER – GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973 IHNC SITE "B"
SINGLE LOCK

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
FEBRUARY 1975 FILE NO. H-2-26729

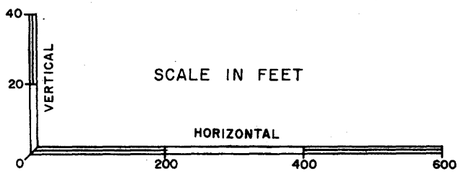
PLATE 8



I.H.N.C. SITE FOREBAY SECTION



SECTION THROUGH TAILBAY

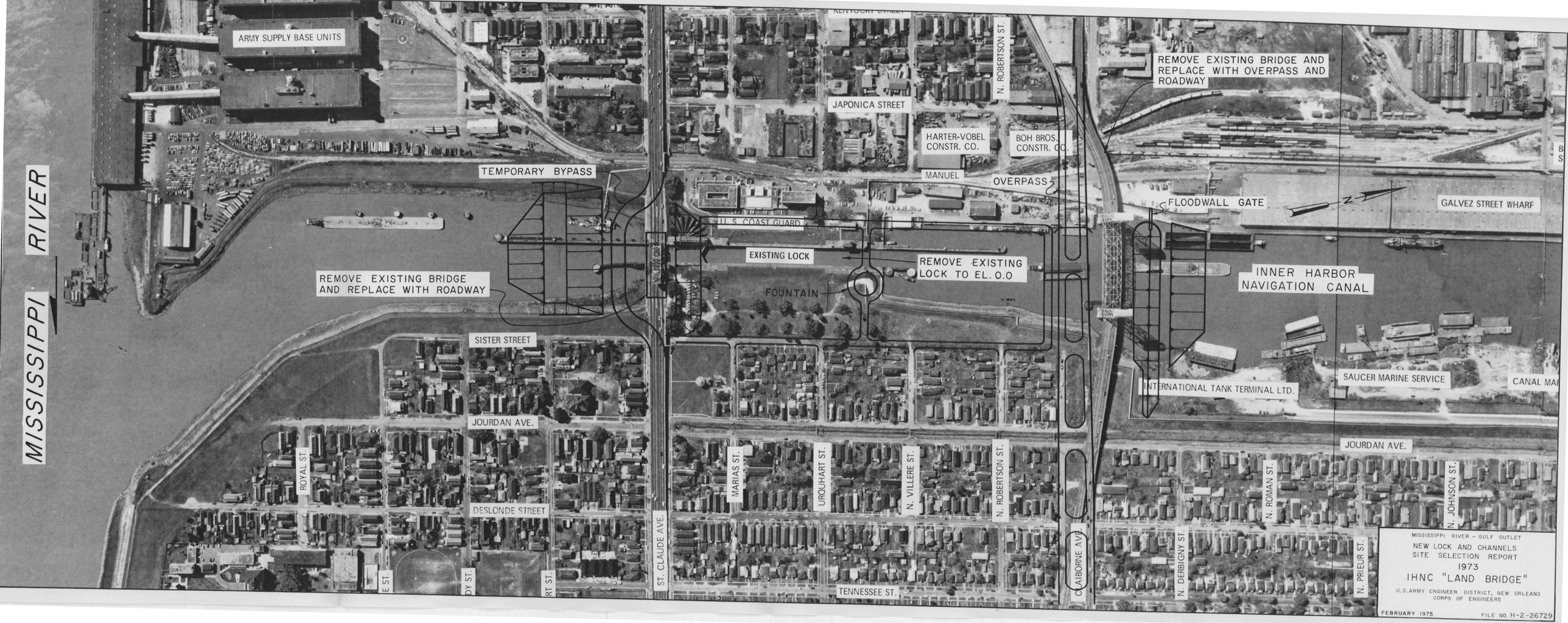


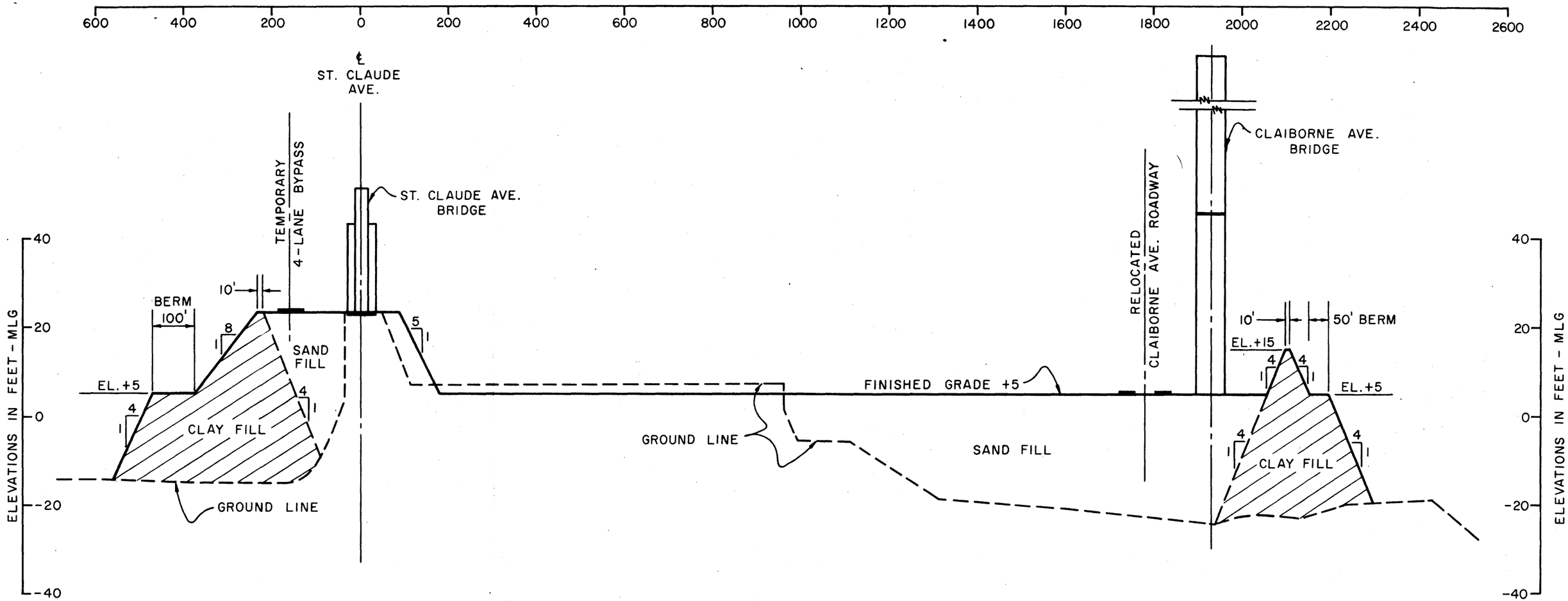
MISSISSIPPI RIVER – GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973

INNER HARBOR NAVIGATION CANAL CHANNEL & LEVEE X-SECTIONS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

FEBRUARY 1975 FILE NO. H-2-26729


MISSISSIPPI RIVER
ARMY SUPPLY BASE UNITS
TEMPORARY BYPASS
REMOVE EXISTING BRIDGE AND REPLACE WITH ROADWAY
SISTER STREET
JOURDAN AVE.
DESLONDE STREET
ROYAL ST.
E ST.
DY ST.
RT ST.
ST. CLAUDE AVE.
JAPONICA STREET
N. ROBERTSON ST.
HARTER-VOBEL CONSTR. CO.
BOH BROS. CONSTR. CO.
MANUEL
OVERPASS
U.S. COAST GUARD
EXISTING LOCK
REMOVE EXISTING LOCK TO EL. 0.0
FOUNTAIN
MARIAS ST.
UROUHART ST.
N. VILLERE ST.
N. ROBERTSON ST.
TENNESSEE ST.
REMOVE EXISTING BRIDGE AND REPLACE WITH OVERPASS AND ROADWAY
FLOODWALL GATE
GALVEZ STREET WHARF
INNER HARBOR NAVIGATION CANAL
INTERNATIONAL TANK TERMINAL LTD.
SAUCER MARINE SERVICE
CANAL MA
JOURDAN AVE.
N. ROMAN ST.
N. JOHNSON ST.
CLAIBORNE AVE.
N. DERBIGNY ST.
N. PRIEUR ST.
MISSISSIPPI RIVER – GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973
IHNC "LAND BRIDGE"
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
FEBRUARY 1975
FILE NO. H-2-26729

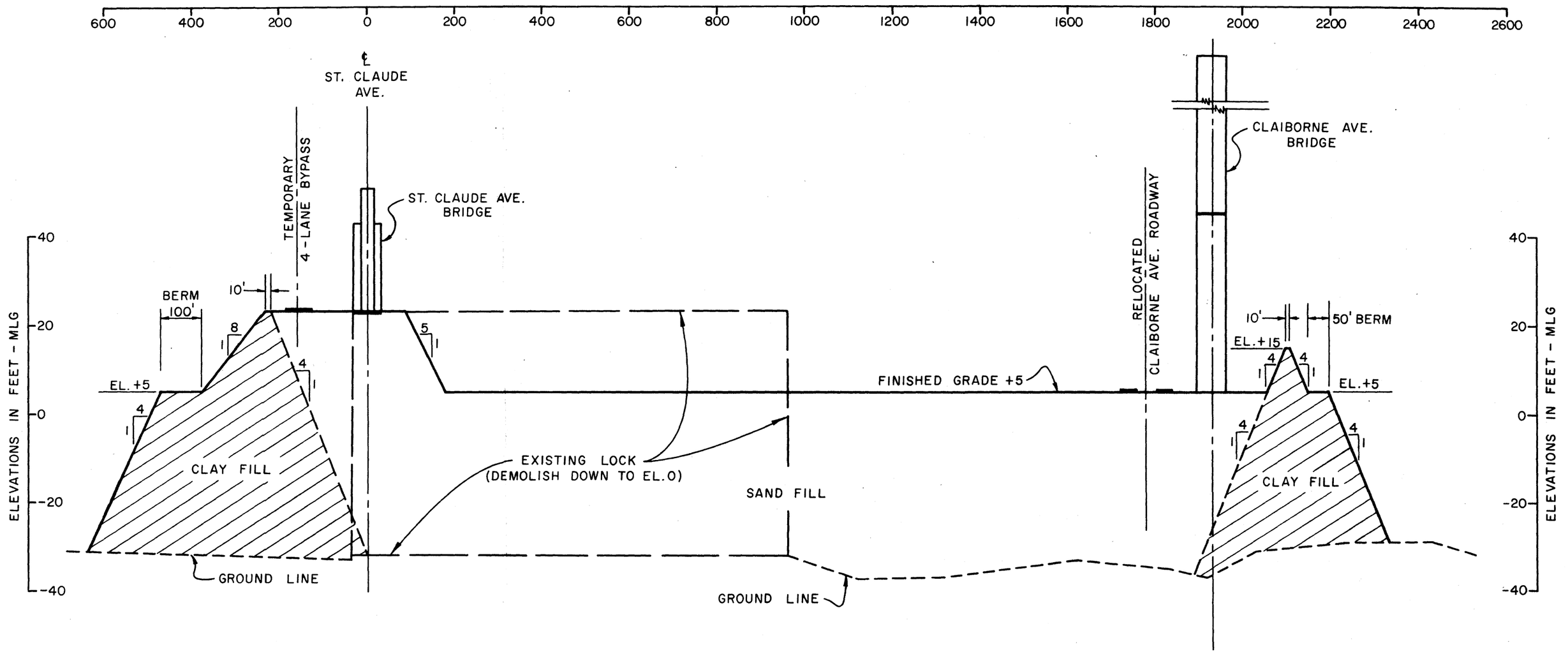


I. H. N. C. LAND BRIDGE

SECTION AT ℄ PARK

MISSISSIPPI RIVER – GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973
IHNC LAND BRIDGE
X-SECTION AT ℄ PARK
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
FEBRUARY 1975 FILE NO. H-2-26729

PLATE 11



I. H. N. C. LAND BRIDGE
SECTION AT ℄ CHANNEL

MISSISSIPPI RIVER – GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973
IHNC LAND BRIDGE
X-SECTION AT ℄ CHANNEL
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
FEBRUARY 1975 FILE NO. H-2-26729

PLATE 12

LAKE PONTCHARTRAIN

LAKE PONTCHARTRAIN

LAKE ST. CATHERINE

NEW ORLEANS

CHEF MENTEUR BY-PASS

POSSIBLE BARGE CHANNEL 12'X150'

BAYOU BIENVENUE FLOODGATE

POSSIBLE ANCHORAGE

POSSIBLE ALTERNATE BARGE ROUTE 12' X 300'

LAKE BORGNE

MICHOUD DISP.

MR-GO MAINT. DISP.

HURRICANE

POSSIBLE ANCHORAGE SPOIL AREAS

FORTY ARPENT CANAL

BAYOU DUPRE FLOODGATE

NAVIGABLE FLOODGATE

SPOIL

PROTECTION LEVEE

MISSISSIPPI

(PROPOSED INTERSTATE)

SEE INSERT

500' X 36' CONNECTING CHANNEL

LOWER SITE

SHIP LOCK

U.S. COAST GUARD RESERVATION

ENGLISH TURN BEND

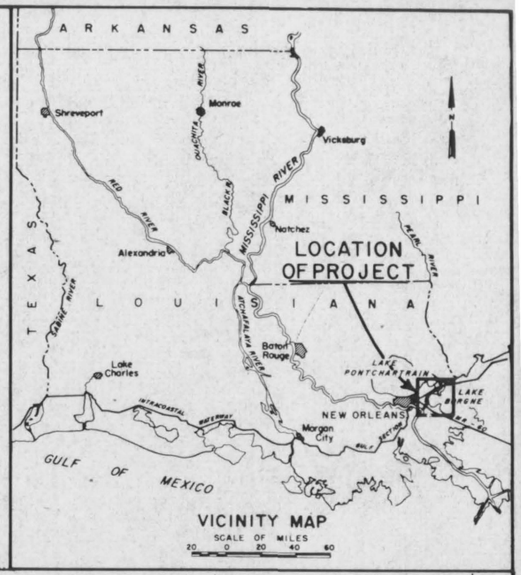
BIG BAR

LEVEE

SPOIL AREA

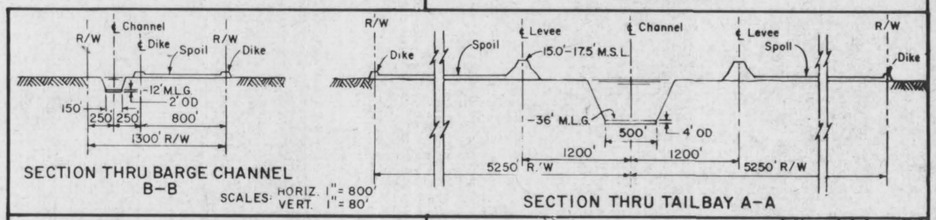
LEGEND

- Hurricane protection levee
- Canal return levee (Ties to river levees)
- Proposed Lock
- Mileage (Mississippi River)



VICINITY MAP

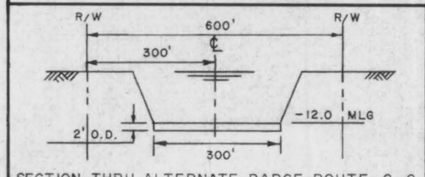
SCALE OF MILES 20 0 20 40 60



SECTION THRU BARGE CHANNEL B-B

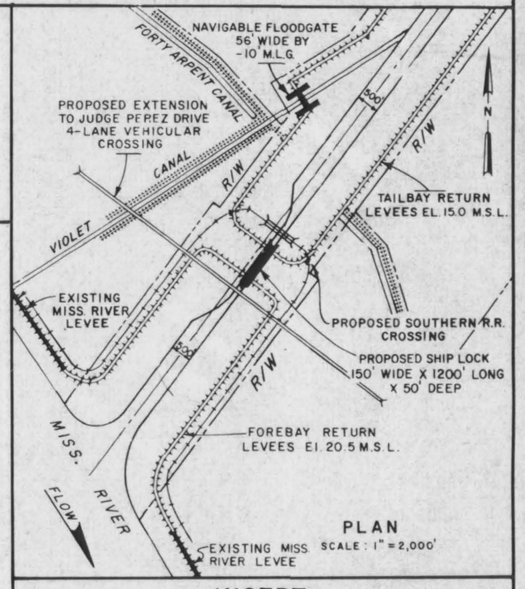
SCALES: HORIZ. 1" = 800' VERT. 1" = 80'

SECTION THRU TAILBAY A-A



SECTION THRU ALTERNATE BARGE ROUTE C-C

SCALE: HORIZ. 1" = 400', VERT. 1" = 40'



PLAN

SCALE: 1" = 2,000'

INSERT

SCALE

1 0 1 2 3 MILES

3000 0 3000 6000 9000 12000 15000 FEET

MISSISSIPPI RIVER – GULF OUTLET

NEW LOCK AND CHANNELS SITE SELECTION REPORT 1973

LOWER SITE, ST. BERNARD PARISH, LA.

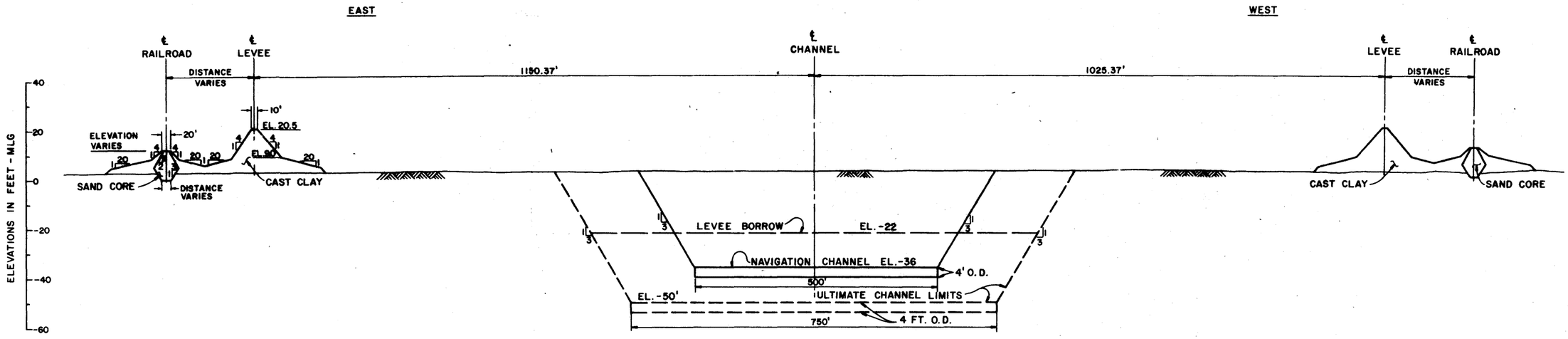
DESCRIPTION OF PROJECT

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

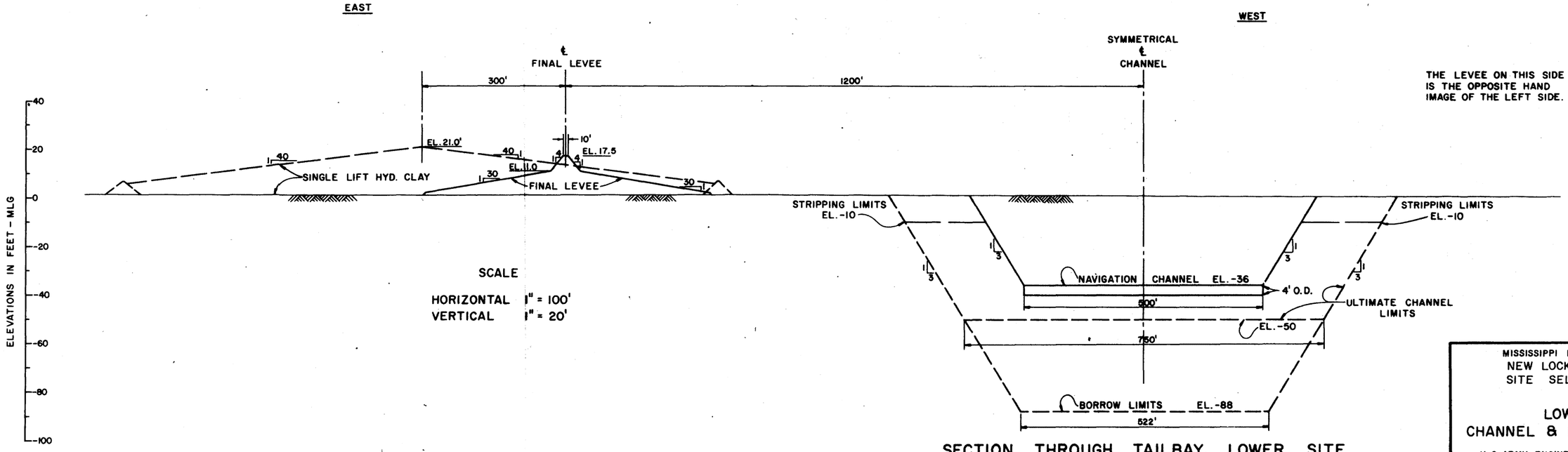
FEBRUARY 1975

FILE NO. H-2-26729

PLATE 13



SECTION THROUGH FOREBAY, LOWER SITE



SECTION THROUGH TAILBAY, LOWER SITE

MISSISSIPPI RIVER – GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973
LOWER SITE
CHANNEL & LEVEE X-SECTIONS

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
FEBRUARY 1975 FILE NO. H-2-26729

PLATE 14

MISSISSIPPI RIVER - GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT
1973
LOWER

Mississippi River-Gulf Outlet
New Lock and Connecting Channels

Site Selection Report

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

Appendix A

New Orleans District, Corps of Engineers
New Orleans, Louisiana

Prepared By
Vicksburg District, Corps of Engineers
Vicksburg, Mississippi

May 1973

Mississippi River-Gulf Outlet
New Ship Lock

INVESTIGATIONS FOR CONSTRUCTION OF LOCK
AT INNER HARBOR NAVIGATION CANAL SITES

Appendix A

TABLE OF CONTENTS

TABLE OF CONTENTS (CONT.)

TABLE FOR COST ESTIMATES

PLATES

Mississippi River-Gulf Outlet
New Ship Lock
Inner Harbor Navigation Canal Site
PERTINENT DATA SUMMARY

Item	Unit	
Location		
Inner Harbor Navigation Canal Entrance into Mississippi River	Mile	93
Waterway Data		
Normal Head (Project Design)		
River Stage	ft mlg	18.4
IHNC Stage	ft mlg	-1.6
Reverse Head (Project Design)		
River Stage	ft mlg	-0.8
IHNC Stage (SPH)	ft mlg	13.8
Average River Stage	ft mlg	3.1
Average IHNC Stage	ft mlg	0.3
Lock Features		
**Structure Type	U-Frame	
Gate Types	Miter	
Lock Dimensions		
Chamber (LXW)	ft	1200 X 150
Minimum Draft (Throughout)	ft	50
Length Main Lock Structure	ft	1831.4
*Guidewall Lengths (River End)	ft	1200 and 400
*Guidewall Lengths (Lake End)	ft	1200 and 400
Top of Lockwall	ft mlg	24.0
Lock Floor	ft mlg	-50.0
Channel Dimensions		
Inner Harbor Navigation Canal at Galvez St. Wharf:		
Depth to Thalweg	ft	37±
Width Zero Stage	ft	550±
Approach Channels Proposed Lock		
Bottom Elevation	ft mlg	-50.0
Bottom Width (min)	ft	150
Sides Slopes		
River Approach (West)		1 on
River Approach (East)		1 on 3
Lake Approach (West)		1 on 4
Lake Approach (East)		1 on 3

Notes: (1) AHP - River miles above Head of Passes
(2) msl - Mean sea level
(3) mlg - Mean low gulf datum (zero mlg=-0.78 ft., msl)
(4) SPH - Standard Project Hurricane

** Some variations between different schemes.

* Assumed for estimating purposes, final site selection may result in variation.

SECTION I - GENERAL

1-01. Purpose. The purpose of this report is to present results of investigations made to determine the economic and engineering feasibility of constructing the proposed Mississippi River-Gulf Outlet New Ship Lock at the Inner Harbor Navigation Canal (IHNC) site utilizing a minimum amount of right-of-way. The construction schemes receiving detailed treatment in this report were used for the purposes of this study and are not intended to represent proposed construction techniques or proposed lock layouts. Detailed treatment was given only to the schemes which showed considerable promise and could be adequately analyzed within the time period allotted for this study. Other suitable methods, no doubt, are available and will be considered in detail and presented in subsequent memorandums as required for the IHNC site.

1-02. Scope. Primarily, this report is limited to the consideration of design and costs of the lock and required cofferdamming arrangements. Other monetary considerations were made on items which were peculiar to a particular lock concept.

1-03. Definition of Problems. The proposed U-frame lock is to have a chamber 1200 feet long by 150 feet wide. It is to have a minimum draft of 50 feet. The approach channels will have a bottom width of at least 150 feet and will provide a minimum 50-foot draft. Theoretically, the lock could be built in an open excavation and generally landward of the existing levee protection system. This location would minimize cofferdamming requirements and permit use of less expensive construction techniques. Such location, however, would require an unacceptably large amount of urban right-of-way, displacing numerous families and business establishments. The basic criteria for these investigations are to arrive at lock arrangements which can be constructed within certain boundaries and which will minimize disruption of traffic using St. Claude and Claiborne Avenues. The boundaries which affect lock construction are the approximate centerline of IHNC on the west and Jourdan Avenue on the east (see Plate I-1).

1-04. Previous Investigations. One of the earlier concepts for building a lock at this site consisted of utilizing a cofferdam arrangement; however, only limited engineering investigations were made since the concept was still in the planning stage. Detailed investigations revealed that the concept was not completely sound and considerable revisions were necessary. These revisions resulted in the requirement for more right-of-way than originally planned.

Other studies were made considering construction of the lock in an open excavation and this too revealed the necessity for excessive amounts of urban right-of-way. These earlier studies were for a lock with a chamber 1200 feet long by 110 feet wide and having a 45-foot minimum draft. Since that time, the lock was widened to 150 feet and draft increased to 50 feet, to care for the trend of shipping interests' use of increasingly larger sized vessels. The larger lock dimensions resulted in the requirement of even more right-of-way.

1-05. Lock Schemes Considered. a. General. Numerous lock and cofferdam schemes were investigated, many requiring untried construction techniques with others requiring more conventional methods. The two schemes receiving detailed treatment in this report involve use of a pipe frame cofferdam with precast concrete sides and a sheet pile cell cofferdam. Detailed descriptions of the schemes are given in Sections III and IV.

b. Pipe Frame Cofferdam. This procedure involves use of bulkheads, pipe frames, and concrete placed underwater for construction of a cofferdam. In this scheme the lock area is excavated in the wet, such that the steepest possible excavation slopes can be used. A cofferdam box is built in the excavation with concrete forming the bottom and with the bulkheads and pipe frames forming the sides. A detailed description of this scheme is covered in Section III. This cofferdam approach has some significant advantages, some of which are:

(1) All of the required techniques have been used with success in numerous other applications by the construction industry.

(2) Excavation can be accomplished by dredge.

(3) Inherent problems associated with the relatively poor soils conditions are minimized.

(4) The cofferdam floor will be used for the lock floor.

(5) The overall cost for this lock and cofferdam arrangement are at least comparable in cost to some of the other arrangements considered and in some cases less expensive.

(6) No disruption of critical traffic arteries during construction of the main lock structure.

There are some disadvantages associated with this cofferdam arrangement. Some of them are:

(1) While the construction techniques have been used for other types of construction, they have not been used for construction of a navigation lock.

(2) A major portion of the lock floor must be placed underwater.

(3) If portions of the frames are left in place and are not adequately encased, they would be subject to corrosion; however, if necessary, wall sections could be placed between frames and then supplemental shoring could be provided such that the frame could be removed between wall sections.

(4) Generally, the overall lock construction procedures will be more complicated than with the use of the sheet pile cell arrangement.

c. Sheet Pile Cell Cofferdam. This cofferdamming arrangement requires that a deep excavation be made for the lock area in the wet. Sand and gravel backfill is placed in the excavated area to form a base for the lock structure and sheet pile cofferdam. Details of the cofferdam arrangement are covered in Section IV. The advantages offered by this scheme are:

(1) Nearly all of the required construction techniques for the lock and cofferdam are conventional.

(2) The ability to construct a lock of conventional design completely in the dry.

(3) Excavation can be accomplished by dredge.

(4) No disruption of critical traffic arteries during construction of the main lock structure.

(5) Cost of this scheme somewhat less than the cost of the pipe frame scheme.

(6) Overland access to construction area for construction equipment.

The disadvantages associated with this concept include:

(1) The navigation clearance between Galvez Street Wharf and the sheet pile cofferdam will be less than that offered with the use of a pipe frame cofferdam by approximately 90 feet.

(2) Staying within Jourdan Avenue with this scheme is somewhat dependent on the required excavation slopes, i.e., if a more thorough soils investigation reveals the necessity for flatter excavation slopes, it would be more difficult to stay within Jourdan Avenue than with the pipe frame scheme. All available soils data, however, indicate that the need for flatter excavation slopes is remote.

d. Other Schemes. Numerous other schemes were considered in varying amounts of detail. Some show definite indications of offering realistic solutions; however, time limitations precluded their detailed consideration. Two schemes utilizing structural elements placed in trenches excavated by the slurry trench method were considered in detail. One of these schemes could be located adjacent to the old lock providing several navigational advantages; however, full scale field tests would be required before this scheme could be properly evaluated. Some of the other schemes considered are as follows:

(1) Lock Floated in Place. Several chamber lock monolith arrangements were made which would float; however, the required draft was slightly greater than the depth of channels available for floating the monolith in place. Restricted horizontal clearances for navigational traffic also limit the size and type of floating plant that could be used to transport and position the units. It is probable, however, that a suitable floating scheme could be developed for use. This possibility will be investigated further and results of these investigations will be presented later as may be required in subsequent memorandums pertaining to the IHNC site.

(2) Construction of Individual Walls within Cofferdams. Excavation for this scheme would be accomplished in the wet in order to use the steepest possible excavation slopes. Sheet piles would then be driven around the periphery of each lockwall location. After this, concrete would be placed underwater in the bottom of the excavation to the required lock floor elevation. Next, bracing would be placed between sheet piles to dewater wall areas. The lock walls would then be constructed in these unwatered areas. Due to the hazards and problems associated with working in such a congested area, this cofferdam approach was modified to the pipe frame scheme discussed in Section III.

(3) Caisson Method. In this scheme, the lock area would be pre-excavated in the wet and backfilled with sand to facilitate jetting. The lock monoliths would be constructed on top of the sandfill, with the floor in the form of a grid system, and jetted down. Due to the enormous size and number of monoliths, it is considered

that obtaining proper alignment would be a rather difficult problem. The caisson method does, however, appear to have definite possibilities and probably warrants further investigation before a construction scheme is selected.

(4) Slurry Trench Construction with Space Frame Braces. This scheme would be located at a canal site. The canal bank would be degraded to the level of the channel bottom. Sand islands would then be constructed to receive the slurry trench walls. These sand islands would be constructed within sheet pile cells. Bearing piles would then be driven between the cofferdam walls with followers. The sheet pile cell-sand islands would be constructed in short lengths in order that the sheet piles could be used to place the slurry wall in incremental lengths. After completion of the slurry trench walls, these walls would be braced at the top with space frames. Earth inside of the cofferdam would then be excavated below the proposed lock bottom. After excavation, a concrete seal would be placed underwater at the bottom of the excavation so that a lock of conventional design could be built in the dry. One major problem with the scheme is the difficulty in placement of slurry trench walls within sheet pile cofferdams. The height of the wall also resulted in some structural design problems. It was further determined that if the lock were not completely of conventional design with a portion of the cofferdam forming a part of the final lock structure, money could be saved. To accomplish these savings, this scheme would have to be modified to the cofferdam type described in subparagraph (5) below.

(5) Slurry Trench Construction with Cantilevered Walls. This method consisted of forming H-type structural reinforced concrete walls in slurry trenches. These walls would form the walls of the cofferdam and would be incorporated as the final lock walls in the chamber section. Transverse struts would be placed in slurry trenches below the elevation of the lock floor and would brace the "H" walls until the floor could be placed. The "H" walls would extend below the strut braces and would derive their stability partly from the penetration into the soil and partly from the struts. The soil between the walls would then be excavated in the wet and part of the final lock floor would be placed underwater providing the additional restraint needed for stability. End closure would be made by use of stoplogs and emergency closure equipment which is normally provided at locks. The cofferdam area would then be unwatered and the remainder of the floor as well as the walls in the gate bays and manifold areas would be constructed in the dry. Soil between the flanges of the "H" walls would be excavated and the culverts would be constructed utilizing blockouts formed into the webs of the "H" walls. This scheme was investigated in detail and the mechanics of the structural and soils

analyses solved. The scheme is believed to offer less promise than the two presented in paragraph 1-05b and 1-05c for the following reasons:

(a) The cofferdam construction will require a specialty contractor who would be pioneering in several areas that would be advancing the "state-of-the-art" with respect to slurry trench construction.

(b) Exacting techniques must be employed to assure construction success.

(c) There is no real clear-cut method available at present to analyze the stability of an excavation held open by bentonite slurry.

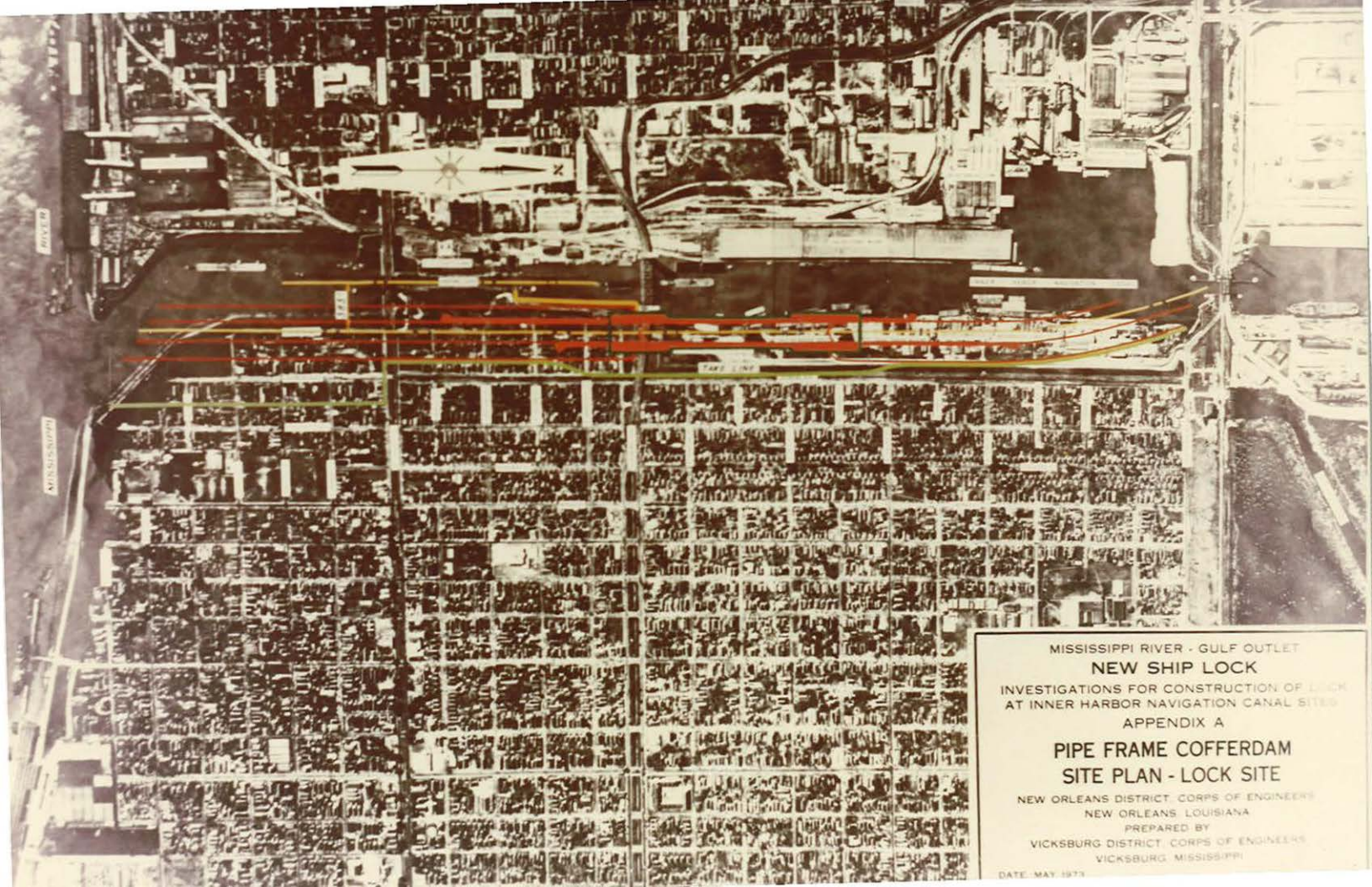
(d) The procedure is relatively expensive.

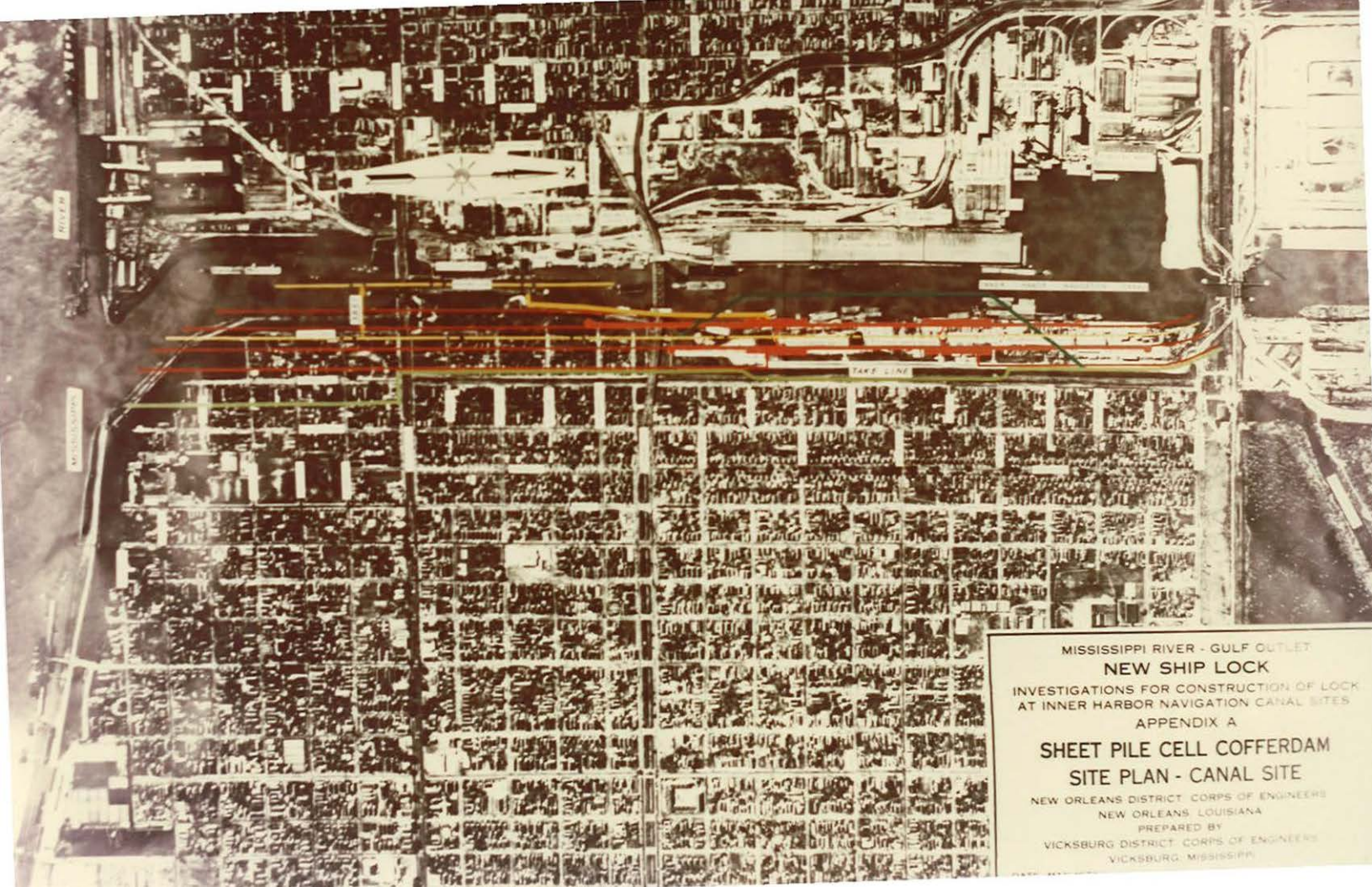
Assuming that the questions pertaining to the stability of slurry supported trenches could be suitably answered, this concept could be very promising for placement of a new lock adjacent to the old lock.

1-06. Sites Considered. a. General. The general area stipulated for locating the lock is on the east side of the IHNC. Sites adjacent to the old lock and north of Claiborne Avenue are the better of possible sites (see Plates I-1 through I-3). Locating the lock too close to the Mississippi River would require degrading of river levees for lock construction; however, such location would require a minimum of new river levees. A lock located north of Claiborne Avenue would require the greatest amount of river levees and the longest approach channel from the river to the lock. The method of construction in general dictates the exact lock site. Some of the lock schemes considered can, however, be built at two different general locations.

b. Pipe Frame Scheme. The two most promising locations for this construction concept are shown on Plates I-1 and I-2. The most northerly of the sites is probably the better of the two since less excavation will be required for installation of the cofferdam and underpinning will not be required for the Claiborne Avenue bridge. Shorter river levees would be an advantage offered by the other site; however, underpinning would be required for the Claiborne Avenue bridge.

c. Sheet Pile Cofferdam Scheme. A site north of Claiborne Avenue provides the least critical right-of-way problem for this cofferdam concept (see Plate I-3 for location). Like the northernmost pipe frame site, this site eliminates the need for underpinning Claiborne Avenue bridge. This location offers more promise for construction of a lock of conventional design and by conventional techniques than do other sites.


MISSISSIPPI RIVER - GULF OUTLET
NEW SHIP LOCK
INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES
APPENDIX A
PIPE FRAME COFFERDAM
SITE PLAN - LOCK SITE
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
DATE: MAY 1973



MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

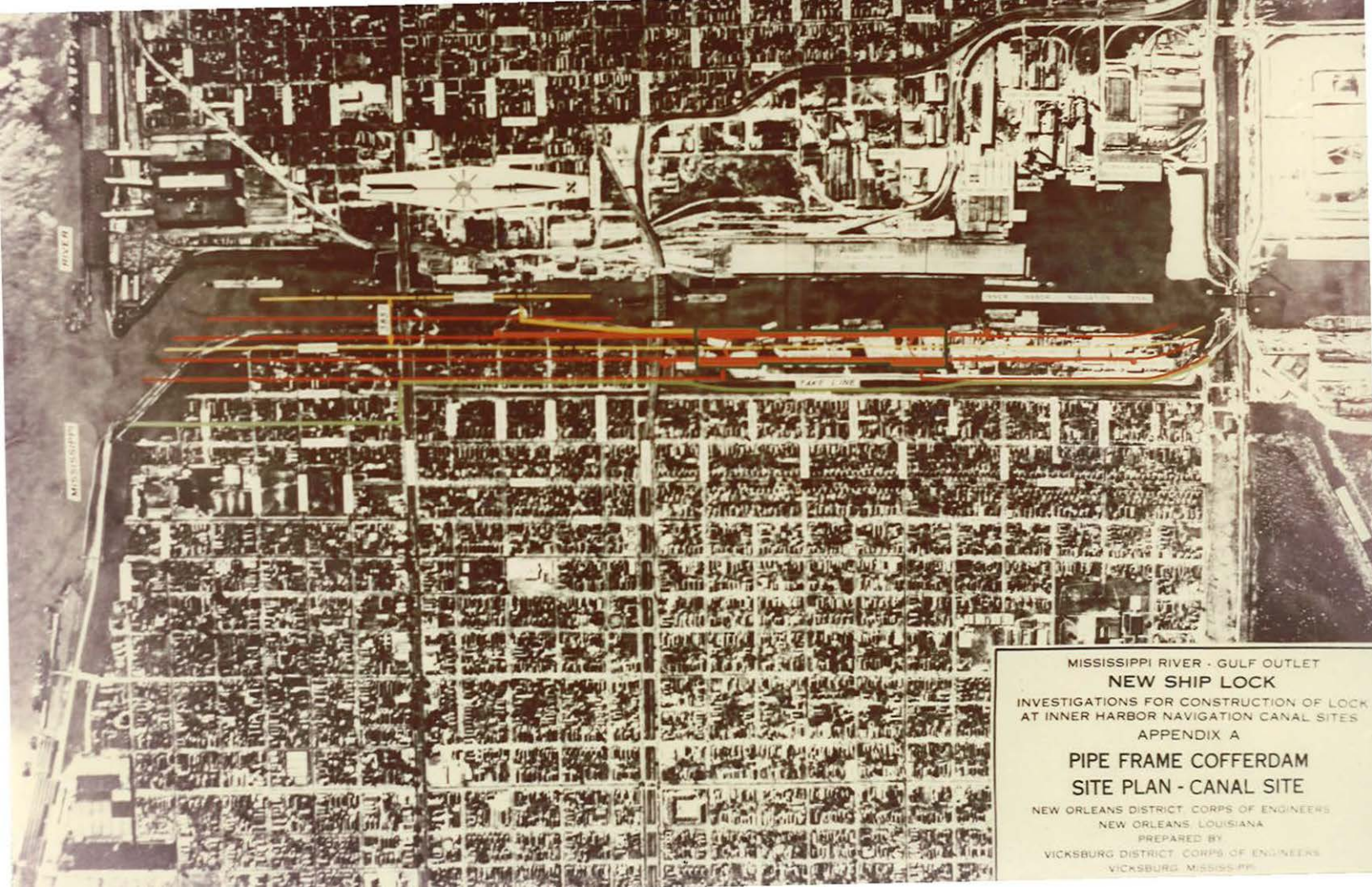
INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

SHEET PILE CELL COFFERDAM

SITE PLAN - CANAL SITE

NEW ORLEANS DISTRICT CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI


MISSISSIPPI RIVER - GULF OUTLET
NEW SHIP LOCK
INVESTIGATIONS FOR CONSTRUCTION OF LOCK
AT INNER HARBOR NAVIGATION CANAL SITES
APPENDIX A
PIPE FRAME COFFERDAM
SITE PLAN - CANAL SITE
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

SECTION II - GEOLOGY AND GENERAL SOILS INFORMATION

2-01. Geology. a. General. The area is situated on the natural levee of the Mississippi River. Generally, the surface of the region is from 8 to 10 feet above Gulf level adjacent to the river, and slopes generally downward away from the river to elevation 2 to 4 feet above Gulf level in the vicinity of the proposed lock site. The subsurface of the region is composed of Recent Fluvial and Marine Deltaic deposits, 70 to over 160 feet thick, underlain by Pleistocene deposits estimated to be over 1000 feet thick. The soils of the Recent deposits generally are grey to dark grey and are relatively soft and compressible. In comparison with the Recent deposits, the underlying Pleistocene deposits are firmer, much less compressible, lighter in color, and have zones of very firm mottled light grey and yellow weathered soils in the upper part.

b. Recent Deposits. Based on the environments of deposition, the various Recent soil strata comprising the subsurfaces at the lock site are shown on Plate II-1 and are classified and described as follows:

(1) Natural levee deposits, extend in depth from the ground surface to approximate elevation -7 m.s.l. This stratum consists predominantly of dark grey clay and was formed by sedimentation from flood waters that overflowed the banks of the river.

(2) Marsh deposits consisting of highly organic clays lie beneath the natural levee stratum and extend in depth to elevation -15.0. This deposit was formed by sedimentation in a marsh environment.

(3) Interdistributary deposits extend in depth from beneath the organic clay stratum to approximate elevation -26.0. The deposits consist predominantly of clay, with minor layers or zones of silt and fine sand, which were deposited in a basin between ancient distributaries of the river.

(4) Prodelta deposits extend from approximate elevation -26.0 to approximate elevation -53.0 m.s.l. These deposits consist of a homogeneous fat clay which was deposited offshore in shallow water near the mouth of an active distributary of the river.

(5) Nearshore gulf deposits, consisting of sand with numerous layers of silt and clay in the upper part and predominantly of sand in the lower part, extend between approximate elevation -53.0 and -66.0. These deposits lie directly on the Pleistocene deposits. They were laid down at the border of a transgressing sea, and contain numerous shell fragments.

c. Pleistocene Deposits. The Pleistocene deposits on which the lock will be founded, consist principally of stiff, highly plastic clay which is highly laminated with small seams of silt and sand, and contain a few small strata of silty sand. Natural water contents of the Pleistocene clays vary from about 35 to 50 percent.

2-02. Scope of Soils Investigation. The scope of the soils investigation performed for this report was limited to accessing factors which influenced the concept and estimated cost of each scheme. Refinement analyses were, therefore, beyond the scope of the investigation and further limited by availability of boring and test data from within the area.

2-03. Borings. Locations of borings made by the New Orleans District in the general area of the Inner Harbor Navigation Canal (IHNC) site are shown on Plate II-1. All borings were made prior to 1969, some in connection with previous site investigations for the MRGO Lock and the remainder in connection with other District work in the area. Depths of these borings vary from 80 to 150 feet except boring 9UL which extends to a depth of 250 feet. Some of the boring profiles have been arranged into cross sections of the area and are presented on Plates II-3 through II-6. Individual boring profiles of those most pertinent to the site are shown on Plates II-8 through II-12. A boring legend is included as Plate II-2.

2-04. Laboratory Tests. Laboratory tests of samples from the undisturbed borings included Atterberg Limits, unconfined compression (UC) tests, unconsolidated-undrained (Q) triaxial tests, consolidated-drained (S) direct shear tests, and consolidated tests. The complete testing program was performed on select samples from all undisturbed borings except 9UL. Consolidation and S tests were not performed on samples from 9UL. Plots of shear strength versus depth, wet density versus depth, and effective overburden pressure and preconsolidation pressure versus depth are presented on Plate II-7.

2-05. Evaluation of Boring and Test Data. An evaluation of soils information available in the area indicates that, for the scope of this investigation, sufficient boring data are available to assess soil conditions for recent deposits except along and within the IHNC. For purposes of this investigation, it was assumed that Recent deposits in the entire area were similar. Less information is available on the Pleistocene than on Recent deposits since only one boring, 9UL, extends beneath -150. Based on available data, the upper 15 to 20 feet of the Pleistocene appears to have a dessicated crust. This crust is indicated by both the shear strength and the plots of effective normal stress versus elevation and estimated past pressure versus elevation shown on

Plate II-7. The latter plot shows the crust to have an overconsolidation ratio of about two. Beneath the crust, the data exhibit a decreasing indication of overconsolidation with depth.

2-06. Selection of Design Strengths. Unconsolidated-undrained shear strengths utilized in all analyses were selected based on the composite plot of shear strength versus elevation shown on Plate II-7. The design strengths were arrived at during a conference in March 1973 with representatives of LMVD, NOD, and VXD.

2-07. Soil Conditions Pertinent to Stability Analyses. Based on the available shear strength data, sliding stability analyses indicated two strata to have a pronounced influence on sliding stability: (1) the Prodelta clays with a potential sliding surface at about elevation -53 and (2) the stratum of Pleistocene clay beneath the crust with a potential sliding plane at about elevation -140. It was determined that for excavations of about 70 to 75 feet deep, both strata have an approximate equal degree of influence on sliding stability. For successively shallower excavations, the deeper stratum diminished in influence. The reverse held for deeper excavations.

2-08. Pipe Frame Scheme. a. General. Slope stability analyses were performed for two cases: IA, excavation to elevation -70 with water in the channel to elevation -2.5 and IB, the U-frame cofferdam structure completed with the concrete floor at elevation -50.0 and the structure unwatered. The resulting underwater slope would be 1V to 3H and is shown on Plate III-1.

b. Case IA. The analysis from Case IA was performed with the LMVD Method of Planes. The water surface was taken at elevation -2.5 and saturated unit weights were used above this elevation, whereas, submerged unit weights were used below elevation -2.5. The minimum factor of safety for this analysis was 2.20.

c. Case IB.

(1) The analyses for Case IB were performed by two different approaches. In both approaches, the slope will remain submerged and will not be affected by unwatering the structure. The main consideration then becomes stability against deep seated sliding beneath the structure. In order to reduce uplift acting on the structure floor, a sand blanket will be placed directly beneath the floor and will be dewatered as required during construction. With respect to deep seated slides, this will provide a piezometric grade line approximately coincident with the water surface (elevation -2.5) from the excavated slope over to the structure. The piezometric grade line will then be approximately coincident with the outer wall of the structure down to the

elevation of the structure base. In each of the two approaches for Case IB, the concrete was assumed to have no shear strength and a unit weight of 150 pounds per cubic foot. Also, the water between the outer wall of the structure and the excavation slope was included in the analyses as an additional soil with no shear strength and a unit weight of 62.5 pounds per cubic foot.

(2) The first approach for Case IB consisted of performing an analysis with total forces and uplift using the wedge method presented in EM 1110-2-1902, December 1960, (computer program SS3039) with uplift coincident with the above described piezometric grade line. The minimum factor of safety for this analysis was 1.46.

(3) The second approach for Case IB consisted of performing an analysis by the wedge method presented in EM 1110-2-1902, December 1960, (computer program SSW028) using saturated unit weights above elevation -70 and submerged unit weights below elevation -70. No uplift pressures were used in this analysis. The minimum factor of safety for the second approach of analysis for Case IB was 1.50.

2-09. Cellular Cofferdam Scheme. a. Slope Stability.

(1) The sliding stability of the slopes was checked for two conditions. The first condition was to assume that the slope would be excavated to elevation -110 m.l.g. by dredge. The analysis was performed for the submerged case using the strengths as shown on Plate II-7. The resulting minimum factor of safety was 1.88. The second condition analyzed was after the sand and gravel backfill had been placed, the excavation unwatered and the piezometric level lowered to elevation -80.0 m.l.g. The factor of safety for a potential deep seated slide at elevation -140.0 m.l.g. is 1.32 and for the potential shallow slide at elevation -53.0 m.l.g. is 1.29.

(2) The combination sand and gravel backfill mat was used in this case because the 10-foot layer of gravel gives more weight and more passive resistance than a like amount of sand. This type of combination was used to insure that the east slope could be made stable and still exit inside the Jourdan Avenue boundary and the structure could be built from a conventional approach.

(3) There are also several other ways that the excavation can be made stable where the construction slopes will remain inside the bounds of Jourdan Avenue, but since the primary objective of this study was to insure the scheme could be built inside Jourdan Avenue, refinements were considered beyond the scope of this investigation.

(4) Several possibilities that could be used in lieu of the gravel mat are (1) backfill the excavation to elevation -50 with sand, then excavate to elevation -70 for alternate monoliths by holding the sand that is left in place with cross-tied sheet pile walls. The sheet pile could be pulled after the monoliths have been poured, the sand removed and the in-between monolith poured; (2) another possibility would be to pour a 10-foot-thick tremie seal concrete mat on top of the sand mat. The tremie seal would extend from elevation -70 to -60.

b. Analysis of Cellular Cofferdam. The stability analysis of the circular cells was performed as described in Appendix A of the draft of EM 1110-2-1902, Design of Pile Structures and Foundations, and also the information that is presented in a state-of-the-art paper presented at the 1970 ASCE Specialty Conference on Earth Retaining Structures. The paper is entitled "Design, Construction, and Performance of Cellular Cofferdams" by Yves LaCroix, Melvin I. Esrig, and Ulrich Luscher. The cell and berm configuration that is shown on Plates IV-1 and IV-3 was computed assuming a condition of blocked drainage or that the cell fill material was fully saturated and seepage forces were acting on the berm to reduce its available resistance to overturning and sliding. These two conditions are considered to be the worst condition that could occur. The cell was also checked assuming full water pressure to the top of the cell as would occur during a hurricane. By using dewatering wells placed through the cells, the piezometric level could be controlled and the length of the berm could be possibly shortened.

2-10. Foundation Analyses. a. Summary. Preliminary foundation analyses indicate that bearing piles will not be required for support of the lock using either the pipe frame or cellular cofferdam scheme of construction.

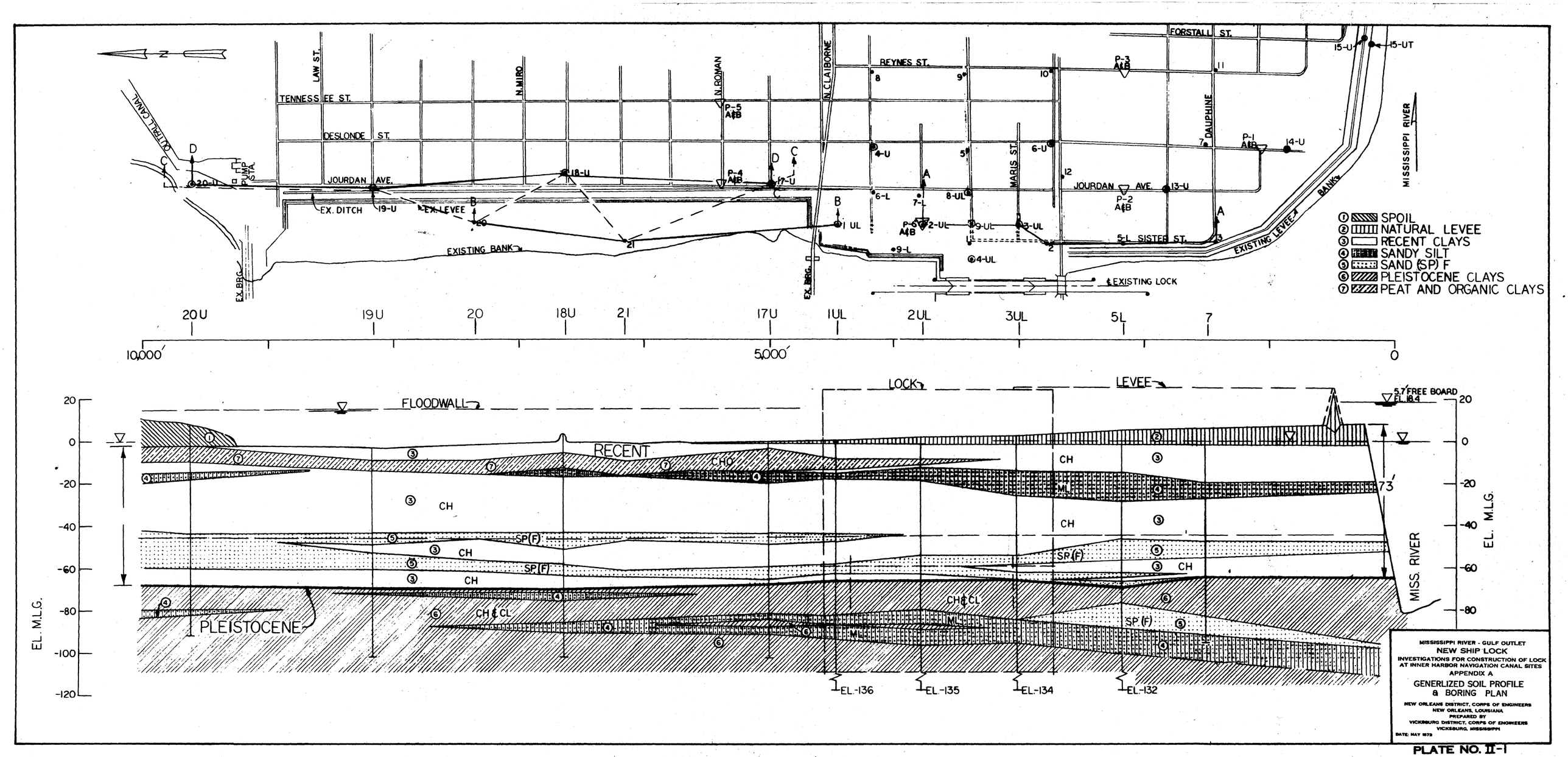
b. Analyses. Preliminary analyses performed were: (1) bearing capacity, (2) sliding stability and (3) a comparison of the changes in effective stresses that would cause settlements. Since the structure will be founded directly on the Pleistocene crust in the pipe frame scheme and on a 40-foot-thick densified sand and gravel mat in the cellular cofferdam scheme, bearing capacity will not be a problem. Preliminary sliding stability analyses indicate that for both schemes, the gate bay can be made stable for the extreme loading case resulting from high differential heads. Plots of the effective stresses estimated to occur after excavation and after the structure is complete and operative are shown superimposed on the plot of effective overburden pressure versus elevation shown on Plate II-7. This plot, which also shows the estimated preconsolidation pressures that were taken from consolidation tests, indicates that the final effective stresses will be less than the preconsolidation pressures. This would mean that settlement should not be detrimental.

c. Other Factors. Other factors in addition to the analyses which influenced the conclusion that bearing piles will not be required for support of the lock are discussed in the following paragraphs:

(1) Pipe Frame Scheme. For the pipe frame scheme, the piles would have to be driven under water. It would not be practical to preexcavate to avoid heave and displacements. Hence, driving piles through the Pleistocene crust would cause appreciable movements of the soil mass, would remold the soil, would probably lead to negative skin friction on the foundation piles and would form a disturbed bottom on which the sand filter and base slab would have to be placed.

(2) Cellular Cofferdam Scheme. The sand and gravel mat would be densified so as to control differential settlements between monoliths. All resulting settlement beneath the base of the mat would be a gross settlement. This would have no detrimental effect on operation of the lock provided the gross settlement was allowed for in structure design.

2-11. Channel Adjacent to Existing Lock. The stability of the channel along side of the existing lock was checked. Backfill along side of the lock was assumed to be degraded to a 1V on 3-1/2H slope with a 40-foot berm at elevation 0 then 1V on 3H slopes to elevation -50 m.l.g. This configuration resulted in a factor of safety of 1.25 for the construction case with water at -2.5. The opposite slope was computed to be 1V on 3H. This resulted in a factor of safety of 1.43 for the construction case. Plate II-13 shows the proposed section, assumed strengths, and resulting safety factors.



MISSISSIPPI RIVER - GULF OUTLET
NEW SHIP LOCK
INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES
APPENDIX A
GENERLIZED SOIL PROFILE & BORING PLAN
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
DATE: MAY 1973

PLATE NO. II-1

UNIFIED SOIL CLASSIFICATION

MAJOR DIVISION		TYPE	LETTER SYMBOL	GRAPH SYMBOL	TYPICAL NAMES
COARSE - GRAINED SOILS More than half of material is larger than No. 200 sieve size	GRAVELS More than half of coarse fraction is larger than No 4 sieve size.	CLEAN GRAVEL (Little or No Fines)	GW		GRAVEL, Well Graded, gravel-sand mixtures, little or no fines
			GP		GRAVEL, Poorly Graded, gravel-sand mixtures, little or no fines
		GRAVEL WITH FINES (Appreciable Amount of Fines)	GM		SILTY GRAVEL, gravel-sand-silt mixtures
			GC		CLAYEY GRAVEL, gravel-sand-clay mixtures
	SANDS More than half of coarse fraction is smaller than No. 4 sieve size.	CLEAN SAND (Little or No Fines)	SW		SAND, Well-Graded, gravelly sands
			SP		SAND, Poorly-Graded, gravelly sands
		SANDS WITH FINES (Appreciable Amount of Fines	SM		SILTY SAND, sand-silt mixtures
			SC		CLAYEY SAND, sand-clay mixtures
FINE - GRAINED SOILS More than half the material is smaller than No. 200 sieve size.		SILTS AND CLAYS (Liquid Limit <50)	ML		SILT & very fine sand, silty or clayey fine sand or clayey silt with slight plasticity
			CL		LEAN CLAY; Sandy Clay; Silty Clay; of low to medium plasticity
			OL		ORGANIC SILTS and organic silty clays of low plasticity
		SILTS AND CLAYS (Liquid Limit >50)	MH		SILT, fine sandy or silty soil with high plasticity
			CH		FAT CLAY, inorganic clay of high plasticity
			OH		ORGANIC CLAYS of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt		PEAT, and other highly organic soil
WOOD			Wd		WOOD
SHELLS			Sl		SHELLS
NO SAMPLE					

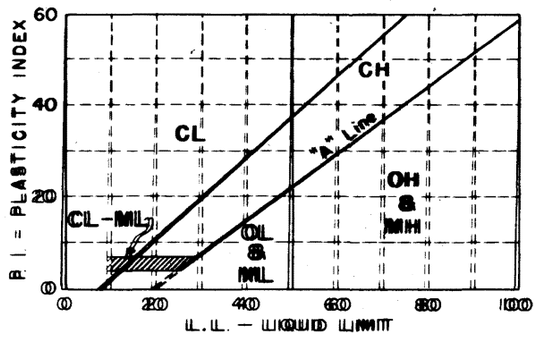
NOTE: Soils possessing characteristics of two groups are designated by combinations of group symbols

DESCRIPTIVE SYMBOLS

COLOR	
COLOR	SYMBOL
TAN	T
YELLOW	Y
RED	R
BLACK	BK
GRAY	Gr
LIGHT GRAY	lGr
DARK GRAY	dGr
BROWN	Br
LIGHT BROWN	lBr
DARK BROWN	dBr
BROWNISH-GRAY	br Gr
GRAYISH-BROWN	gy Br
GREENISH-GRAY	gn Gr
GRAYISH-GREEN	gy Gn
GREEN	Gn
BLUE	Bl
BLUE-GREEN	Bl Gn
WHITE	Wh
MOTTLED	Mot

CONSISTENCY FOR COHESIVE SOILS		
CONSISTENCY	COHESION IN LBS./SQ.FT. FROM UNCONFINED COMPRESSION TEST	SYMBOL
VERY SOFT	< 250	vSo
SOFT	250 - 500	So
MEDIUM	500 - 1000	M
STIFF	1000 - 2000	St
VERY STIFF	2000 - 4000	vSt
HARD	> 4000	H

MODIFICATIONS	
MODIFICATION	SYMBOL
Traces	Tr-
Fine	F
Medium	M
Coarse	C
Concretions	cc
Rootlets	rt
Lignite fragments	lg
Shale fragments	sh
Sandstone fragments	sds
Shell fragments	slf
Organic matter	O
Clay strata or lenses	CS
Silt strata or lenses	SIS
Sand strata or lenses	SS
Sandy	S
Gravelly	G
Boulders	B
Slickensides	SL
Wood	Wd
Oxidized	Ox



PLASTICITY CHART

For classification of fine - grained soils

NOTES:

FIGURES TO LEFT OF BORING UNDER COLUMN "W OR D_{10}"

Are natural water contents in percent dry weight

When underlined denotes D_{10} size in mm *

FIGURES TO LEFT OF BORING UNDER COLUMNS "LL" AND "PL"

Are liquid and plastic limits, respectively

SYMBOLS TO LEFT OF BORING

▽	Ground-water surface and date observed
(C)	Denotes location of consolidation test **
(S)	Denotes location of consolidated-drained direct shear test **
(R)	Denotes location of consolidated-undrained triaxial compression test **
(Q)	Denotes location of unconsolidated-undrained triaxial compression test **
(T)	Denotes location of sample subjected to consolidation test and each of the above three types of shear tests **
FW	Denotes free water encountered in boring or sample

FIGURES TO RIGHT OF BORING

Are values of cohesion in lbs./sq.ft. from unconfined compression tests

In parenthesis are driving resistances in blows per foot determined with a standard split spoon sampler ($1\frac{3}{8}$" I.D., 2" O.D.) and a 140 lb. driving hammer with a 30" drop

Where underlined with a solid line denotes laboratory permeability in centimeters per second of undisturbed sample

Where underlined with a dashed line denotes laboratory permeability in centimeters per second of sample remoulded to the estimated natural void ratio

* The D_{10} size of a soil is the grain diameter in millimeters of which 10% of the soil is finer, and 90% coarser than size D_{10}.

**Results of these tests are available for inspection in the U.S. Army Engineer District Office, if these symbols appear beside the boring logs on the drawings.

GENERAL NOTES:

While the borings are representative of subsurface conditions at their respective locations and for their respective vertical reaches, local variations characteristic of the subsurface materials of the region are anticipated and, if encountered, such variations will not be considered as differing materially within the purview of clause 4 of the contract.

Ground-water elevations shown on the boring logs represent ground-water surfaces encountered on the dates shown. Absence of water surface data on certain borings implies that no ground-water data is available, but does not necessarily mean that ground water will not be encountered at the locations or within the vertical reaches of these borings.

Consistency of cohesive soils shown on the boring logs is based on driller's log and visual examination and is approximate, except within those vertical reaches of the borings where shear strengths from unconfined compression tests are shown.

33	55-33-731	ADDITIONAL UPPER PLASTIC LIMIT (UPPER LIMIT OF CONSISTENCY CHANGE)	UNNAMED--CL (LEAN CLAY WITH SAND)
22	55-88-6844	SYMMETRICAL FRAY, KNOTTED FREE ENDED	OVERALL FRACTURE UNMARKED 55 JUNE 188544
11	59-177-6833	BEST FRAME OF CONFIDENTIAL KNOTTED FREE ENDED	UNMARKED PLASTIC LIMIT (LEAN CLAY), CONTINUED 55 SEPT., 188820
FREE ENDED	CONTRE	DISCONTINUATION	BY

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

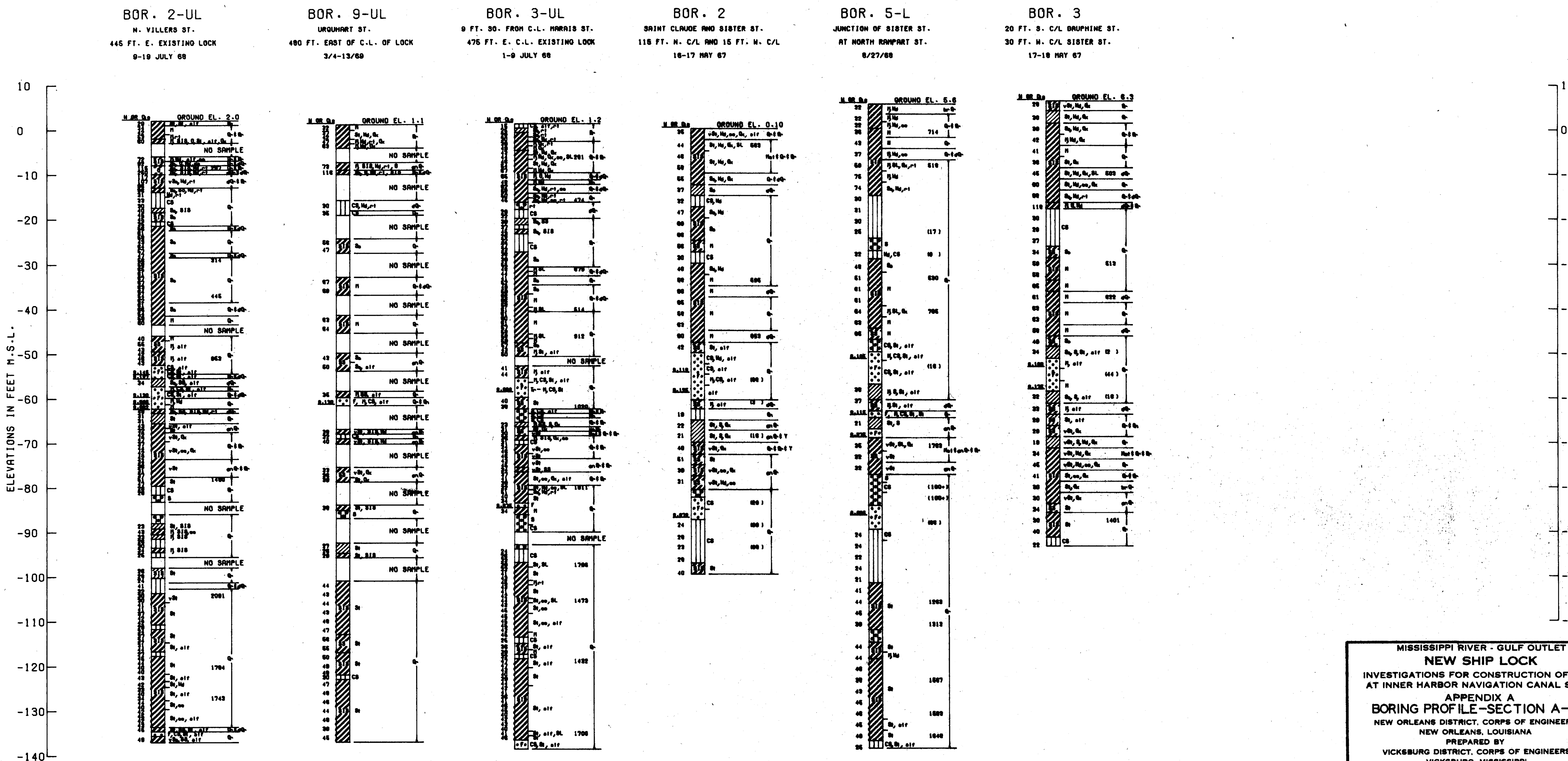
INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

BORING LEGEND

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

CONTRE: MAY 188733



MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

BORING PROFILE-SECTION A-A

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

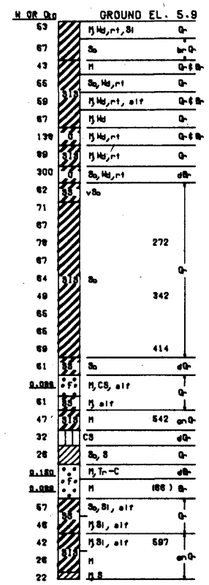
DATE: MAY 1973

BOR. 20

N. TONTI ST. EXT.

200 FT. W. EXISTING LEVEE

9-10-68

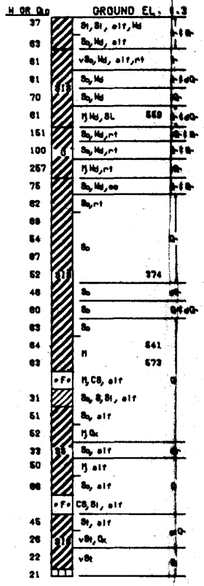


BOR. 21

JOHNSON ST. EXT.

275 FT. W. EXISTING LEVEE

9-11-68

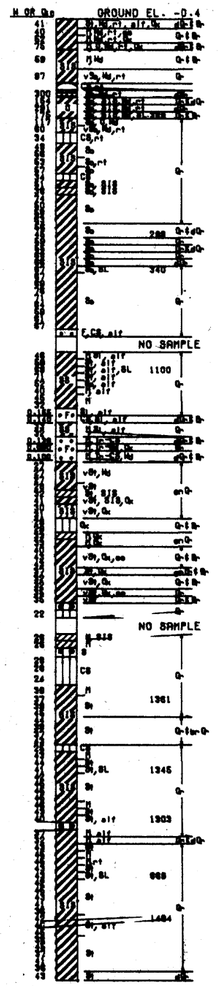


BOR. 1-UL

N. CLAIBORNE ST.

475 FT. E. EXISTING LOCK

9-17 JULY 68



ELEVATIONS IN FEET M.S.L.

10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140

ELEVATIONS IN FEET M.S.L.

10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

BORING PROFILE - SECTION B-B

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS

NEW ORLEANS, LOUISIANA

PREPARED BY

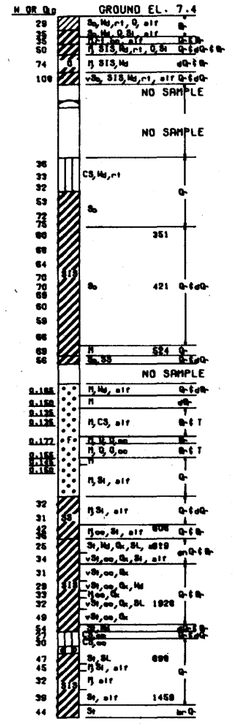
VICKSBURG DISTRICT, CORPS OF ENGINEERS

VICKSBURG, MISSISSIPPI

DATE MAY 1973

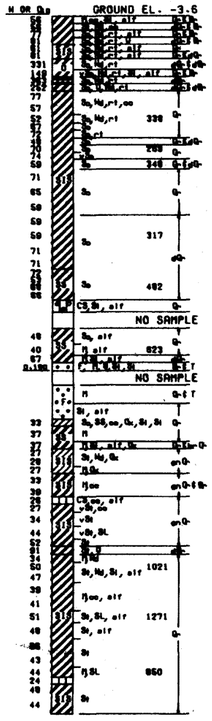
BOR. 20-U

JOURDAN AVE. EXT. 700 FT.
NORTH OF FLORIDA AVE.
6-14 AUG. 1968



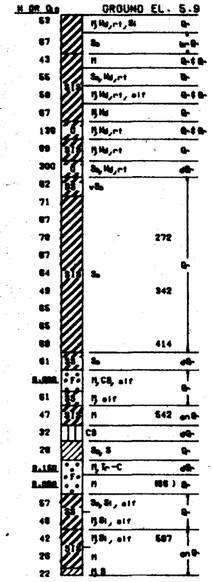
BOR. 19-U

N. DORGENOIS ST. AT JOURDAN AVE.
14-16 AUG. 1968



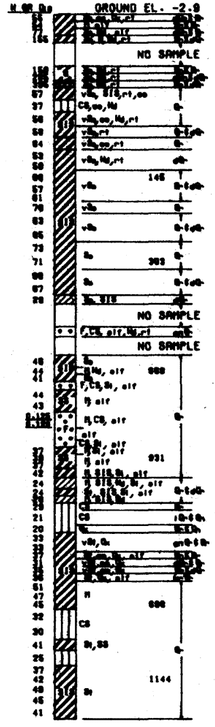
BOR. 20

N. TONTI ST. EXT.
200 FT. W. EXISTING LEVEE
9-10-68



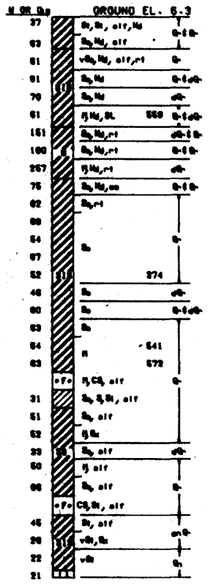
BOR. 18-U

100 FT. EAST OF C/L JOURDAN AVE.
12 FT. SO. OF C/L N. GALVEZ ST.
5-7 AUG. 1968



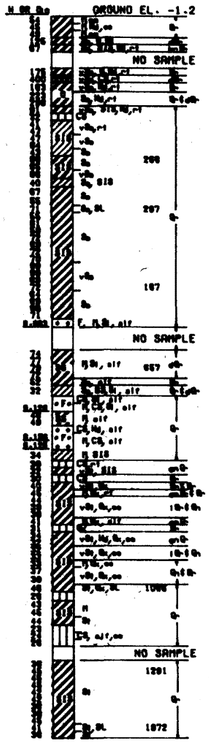
BOR. 21

JOHNSON ST. EXT.
275 FT. W. EXISTING LEVEE
9-11-68



BOR. 17-U

INTERSECTION JOURDAN + DERBIGNY ST
28-30 JULY 68



MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK
AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

BORING PROFILE-SECTION C-C

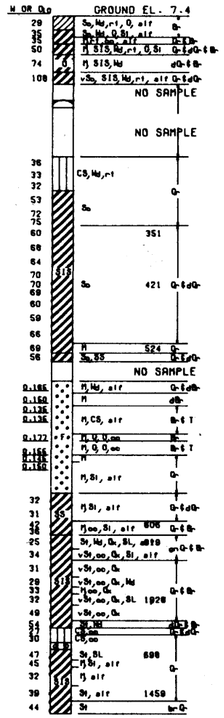
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

DATE: MAY 1973

PLATE II-5

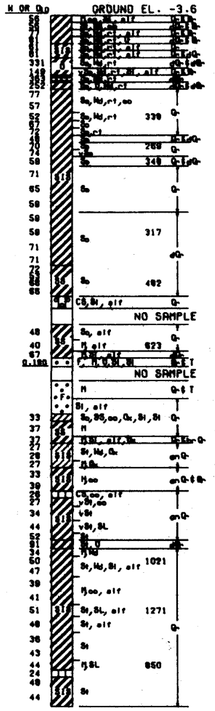
BOR. 20-U

JOURDAN AVE. EXT. 700 FT.
NORTH OF FLORIDA AVE.
8-14 AUG. 1968



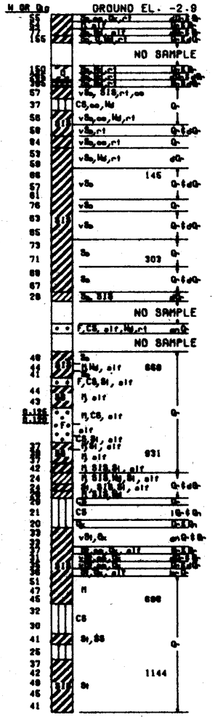
BOR. 19-U

N. DORGENOIS ST. AT JOURDAN AVE.
14-16 AUG. 1968



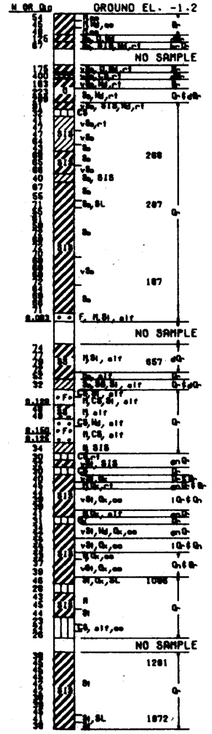
BOR. 18-U

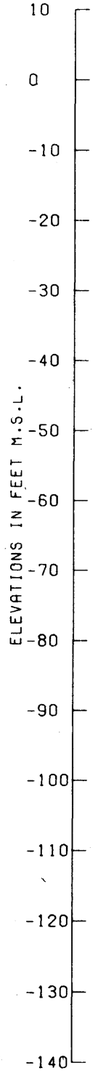
100 FT. EAST OF C/L JOURDAN AVE.
12 FT. SO. OF C/L N. GALVEZ ST.
5-7 AUG. 1968

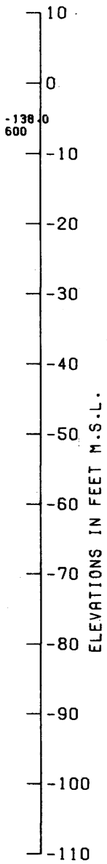


BOR. 17-U

INTERSECTION JOURDAN + DERBIGNY ST
29-30 JULY 68







MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK
AT INNER HARBOR NAVIGATION CANAL SITES

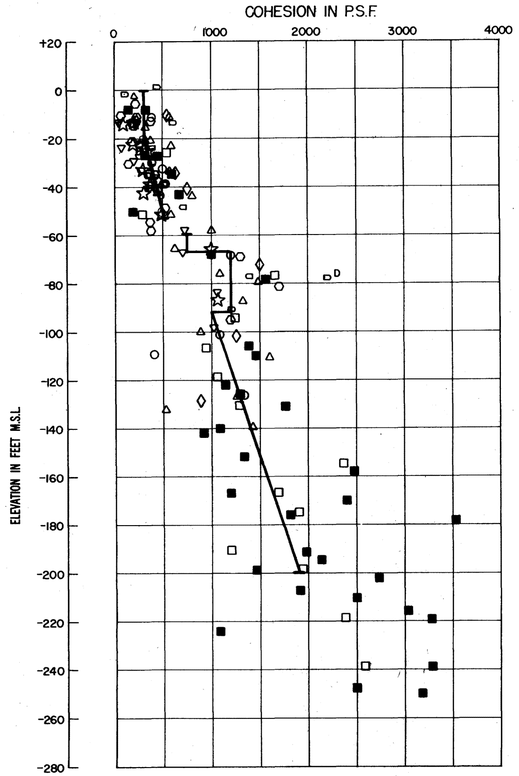
APPENDIX A

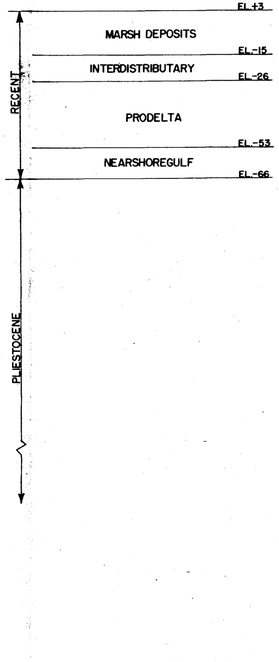
BORING PROFILE-SECTION D-D

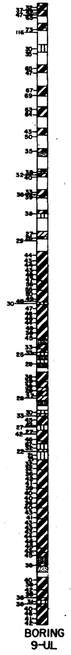
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

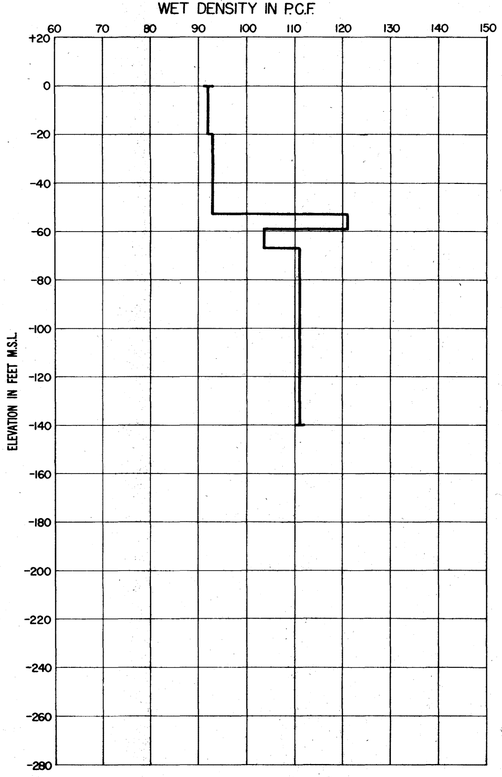
DATE: MAY 1973

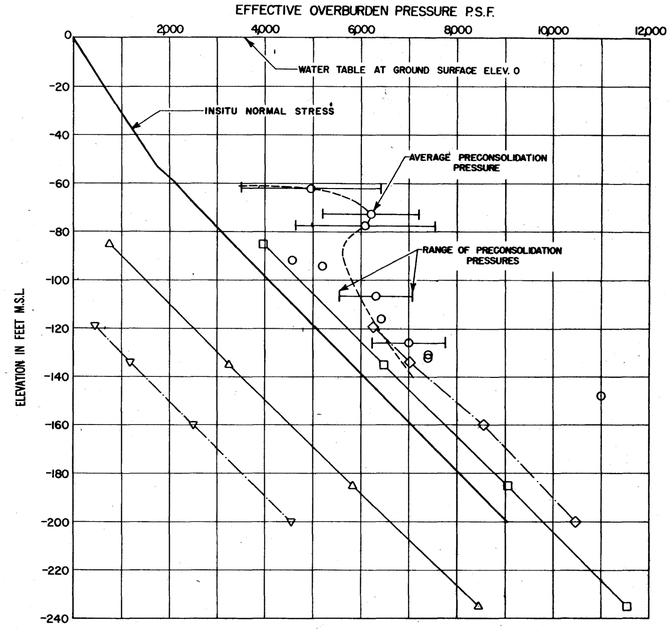
PLATE II-6











LEGEND

TRIAXIAL "Q" TEST	UNCONFINED COMPRESSION TEST
D 1-UL	■ 9-UL
□ 2-UL	
◇ 3-UL	
△ 4-UL	
○ 8-UL	
□ 9-UL	
◇ 17-U	
▽ 18-U	
☆ 19-U	
□ 20-U	

LEGEND

PIPE FRAME SCHEME
AFTER EXCAVATION PRESSURES △—△
FINAL PRESSURES □—□

CELL & SAND BACKFILL SCHEME
AFTER EXCAVATION PRESSURES ▽---▽
FINAL PRESSURES ◇---◇

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

SHEAR STRENGTH, DENSITY AND EFFECTIVE OVERBURDEN PRESSURE PLOTS

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

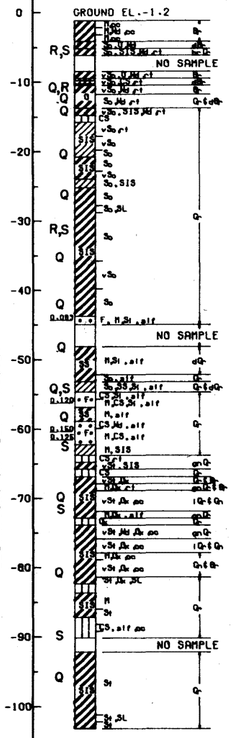
DATE: MAY 1973

PLATE NO. II-7

BOR. 17-U

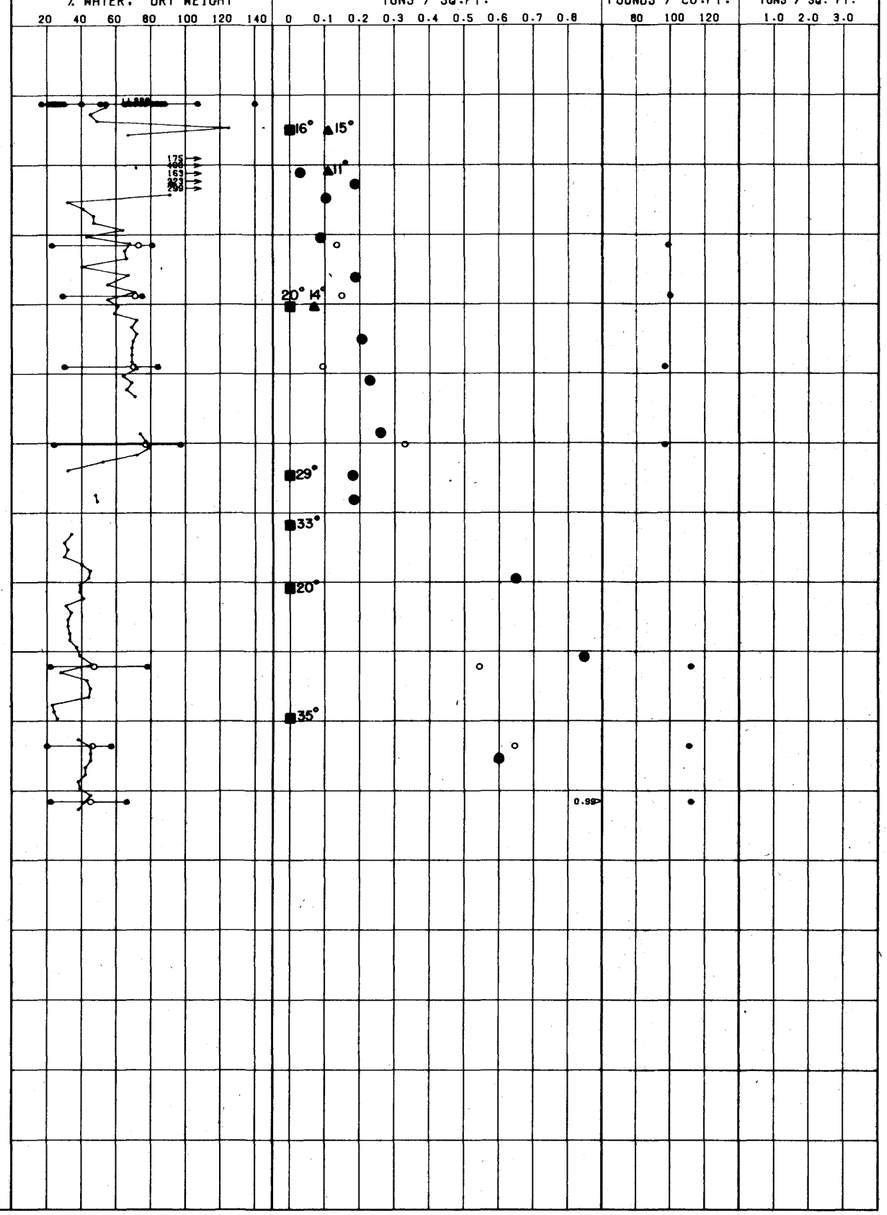
INTERSECTION JOURDAN + DERBIGNY ST

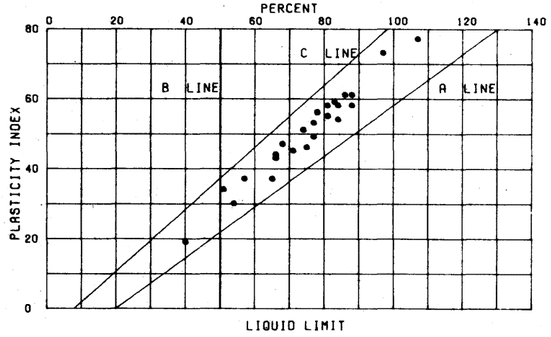
29-30 JULY 68



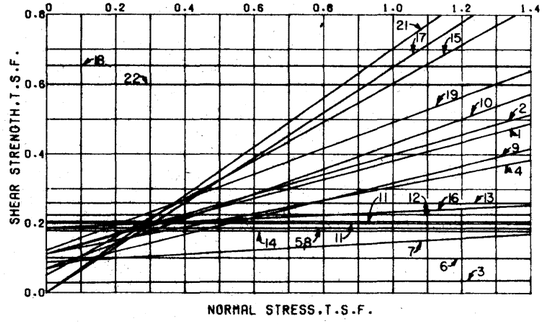
ELEVATIONS IN FEET - M.S.L.

TEST DATA



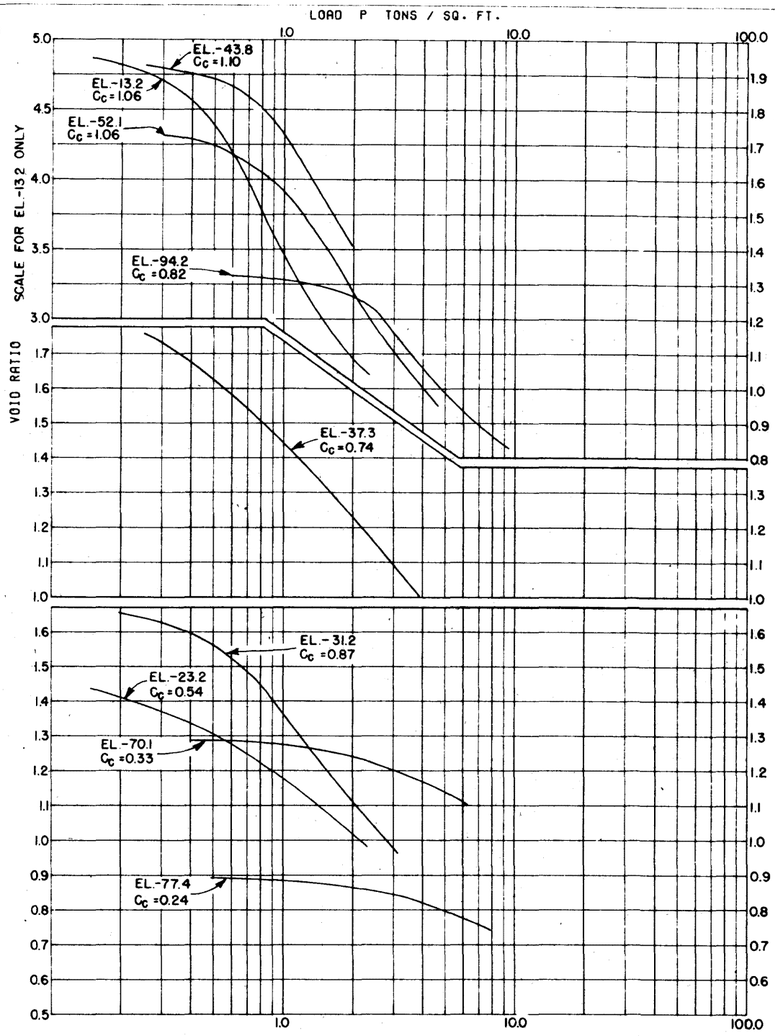


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	EL.	TYPE	STRENGTH Φ	STRENGTH C - TSF	CLASS
1	-5.5	R	15°	.11	CH
2	-5.5	S	16°	.11	CH
3	-10.8	Q	0	.03	CH
4	-10.8	R	11°	.11	CH
5	-12.4	Q	0	.185	CH
6	-14.2	Q	0	.10	CH
7	-20.6	Q	3°	.089	CH
8	-26.3	Q	0	.185	CH
9	-30.4	R	14°	.07	CH
10	-30.4	S	20°	.07	CH
11	-35.0	Q	0	.205	CH
12	-41.3	Q	0	.225	CH
13	-48.6	Q	0	.26	CH
14	-54.2	Q	0	.18	CL
15	-54.2	S	29°	.05	CL
16	-57.9	Q	2.5°	.185	CH
17	-61.8	S	33°	0	SM
18	-69.2	Q	0	.65	CH
19	-71.0	S	20°	.12	CH
20	-80.9	Q	0	.85	CH
21	-89.8	S	35°	0	ML
22	-95.1	Q	0	.60	CH



CONSOLIDATION DATA

● - (UC) UNCONFINED COMPRESSION TEST

● - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST

▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST

■ - (S) CONSOLIDATED - DRAINED SHEAR TEST

BORINGS WERE TAKEN WITH A 5 INCH DIAMETER STEEL TUBE PISTON TYPE SAMPLER

FOR SOIL BORING LEGEND SEE PLATE A

FOR LOCATION OF BORINGS SEE PLATE

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

BORING 17-U

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS

NEW ORLEANS, LOUISIANA

PREPARED BY

VICKSBURG DISTRICT, CORPS OF ENGINEERS

VICKSBURG, MISSISSIPPI

DATE: MAY 1973

BOR. 18-U

100 FT. EAST OF C/L JOURDAN AVE.

12 FT. SO. OF C/L N. GALVEZ ST.

S-7 AUG. 1968

GROUND EL.-2.9

NO SAMPLE

NO SAMPLE

NO SAMPLE

ELEVATIONS IN FEET - M.S.L.

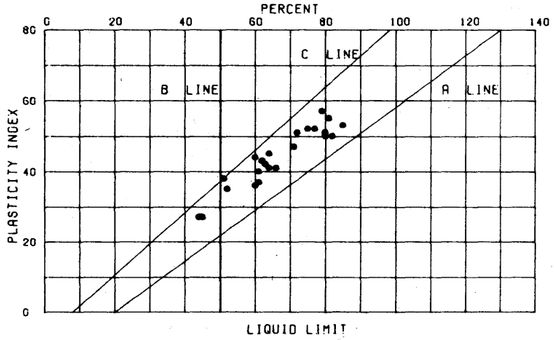
TEST DATA

WATER CONTENT
% WATER. DRY WEIGHT

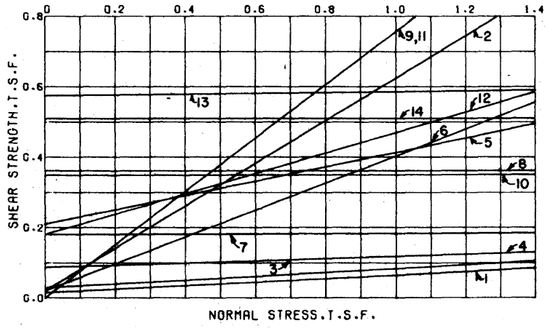
SHEAR STRENGTH
TONS / SQ.FT.

WET DENSITY
POUNDS / CU.FT.

NORMAL STRESS
TONS / SQ. FT.

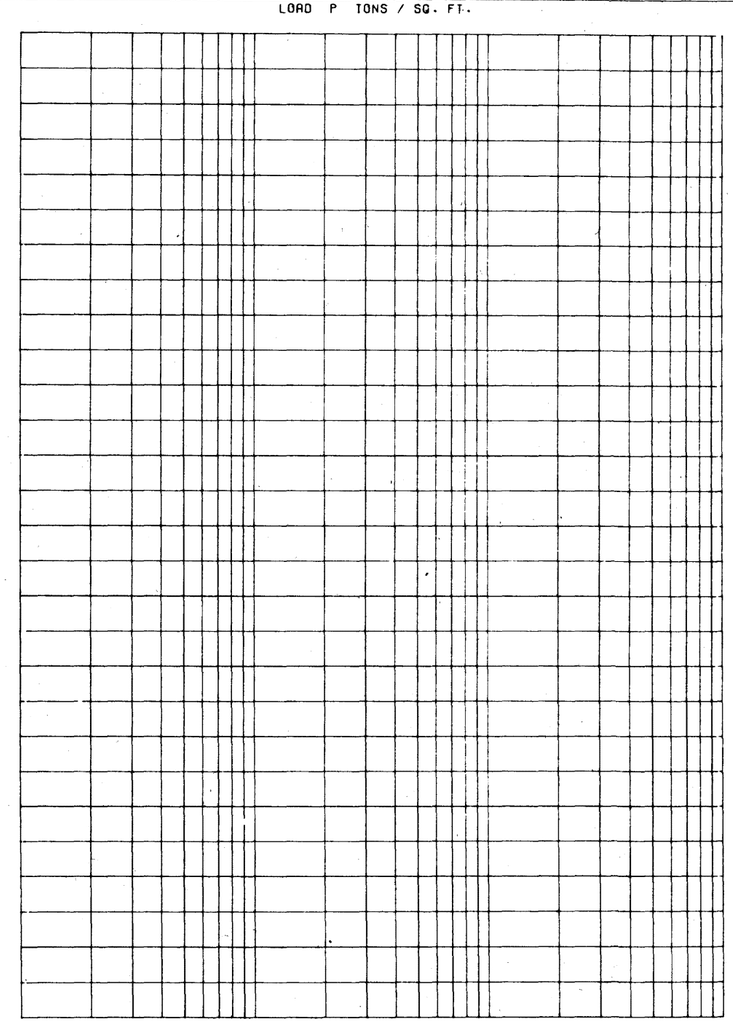


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	ENVELOPE EL.	TYPE	STRENGTH Φ	STRENGTH C - TSF	CLASS
1	-13.9	Q	3°	.015	C H
2	-16.2	S	31°	.02	C L
3	-24.0	Q	2.75°	.03	C H
4	-29.6	Q	.75°	.09	C H
5	-36.1	R	11°	.21	C H
6	-36.3	S	21°	.02	C H
7	-40.2	Q	0°	.18	C H
8	-57.8	Q	0°	.36	C H
9	-59.8	S	37°	0	S P
10	-67.3	Q	0°	.35	C H
11	-73.8	S	37°	0	S M
12	-83.1	S	18°	.18	C H
13	-83.5	Q	.5°	.575	C H
14	-98.1	Q	0°	.51	C H



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST

● - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST

▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST

■ - (S) CONSOLIDATED - DRAINED SHEAR TEST

BORINGS WERE TAKEN WITH A 5 INCH DIAMETER STEEL TUBE PISTON TYPE SAMPLER

FOR SOIL BORING LEGEND SEE PLATE A

FOR LOCATION OF BORINGS SEE PLATE

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

BORING 18-U

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

DATE: MAY 1973

BOR. 19-U

N. DORGENOIS ST. AT JOURDAN AVE.

14-16 AUG. 1968

TEST DATA

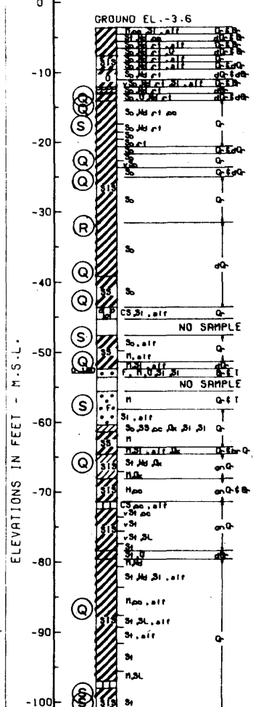
WATER CONTENT % WATER, DRY WEIGHT

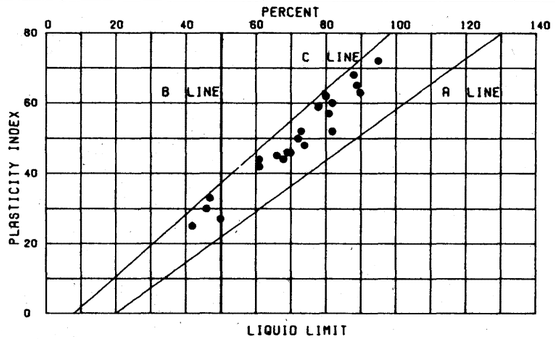
SHEAR STRENGTH TONS / SQ.FT.

WET DENSITY POUNDS / CU.FT.

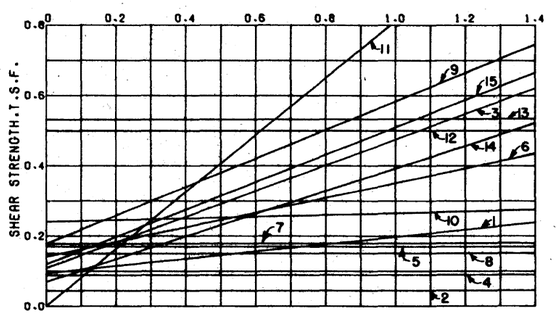
NORMAL STRESS TONS / SQ. FT.

ELEVATIONS IN FEET - M.S.L.



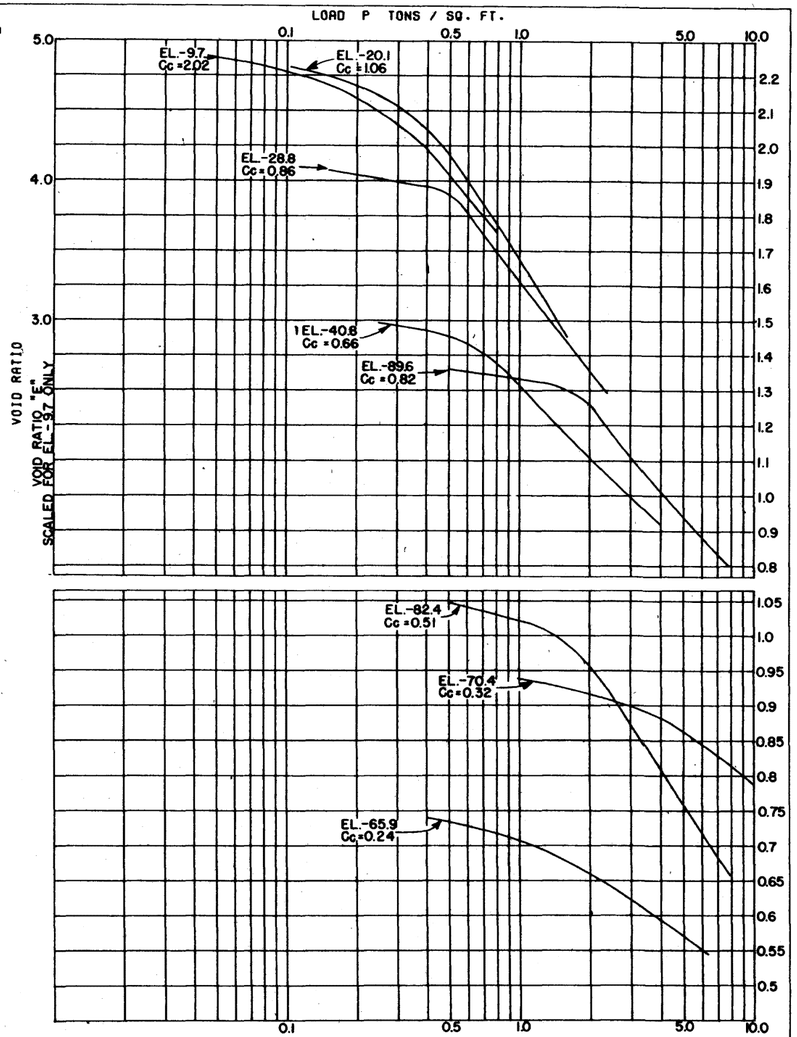


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	ENVELOPE EL.	TYPE	STRENGTH Φ	STRENGTH C - TSF	CLASS
1	-13.8	Q	8.0°	.095	CH
2	-14.3	Q	0	.045	CH
3	-17.5	S	20°	.11	CH
4	-22.3	Q	0	.09	CH
5	-25.6	Q	0	.17	CH
6	-32.8	R	12°	.14	CH
7	-38.6	Q	0	.18	CH
8	-42.5	Q	0	.15	CH
9	-48.1	S	22°	.18	CH
10	-51.8	Q	1.5	.24	CH
11	-57.7	S	39°	.0	SP
12	-65.5	Q	0	.5	CL
13	-86.5	Q	0	.53	CH
14	-98.3	S	18°	.07	CH
15	-98.3	S	22°	.12	CL



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST

● - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST

▲ - (R) CONSOLIDATED - UNDRAINED SHEAR TEST

■ - (S) CONSOLIDATED - DRAINED SHEAR TEST

BORINGS WERE TAKEN WITH A 5 INCH DIAMETER STEEL TUBE PISTON TYPE SAMPLER

FOR SOIL BORING LEGEND SEE PLATE A

FOR LOCATION OF BORINGS SEE PLATE

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

BORING 19-U

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

PREPARED BY

VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

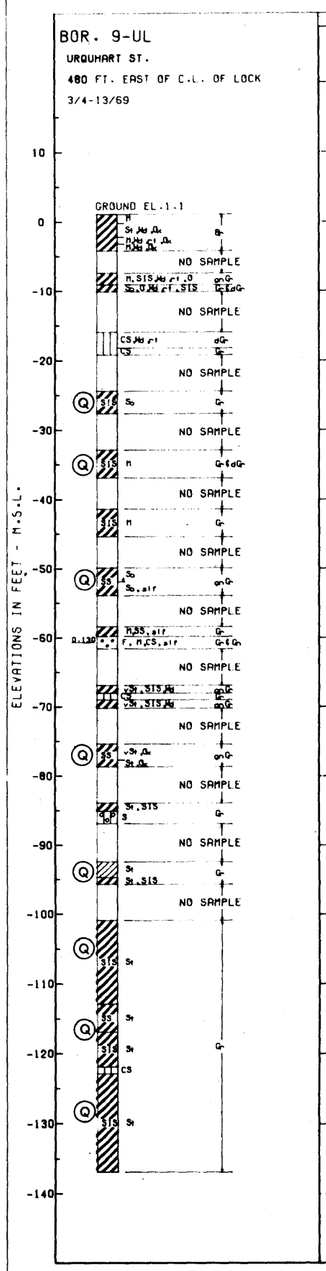
DATE: MAY 1973

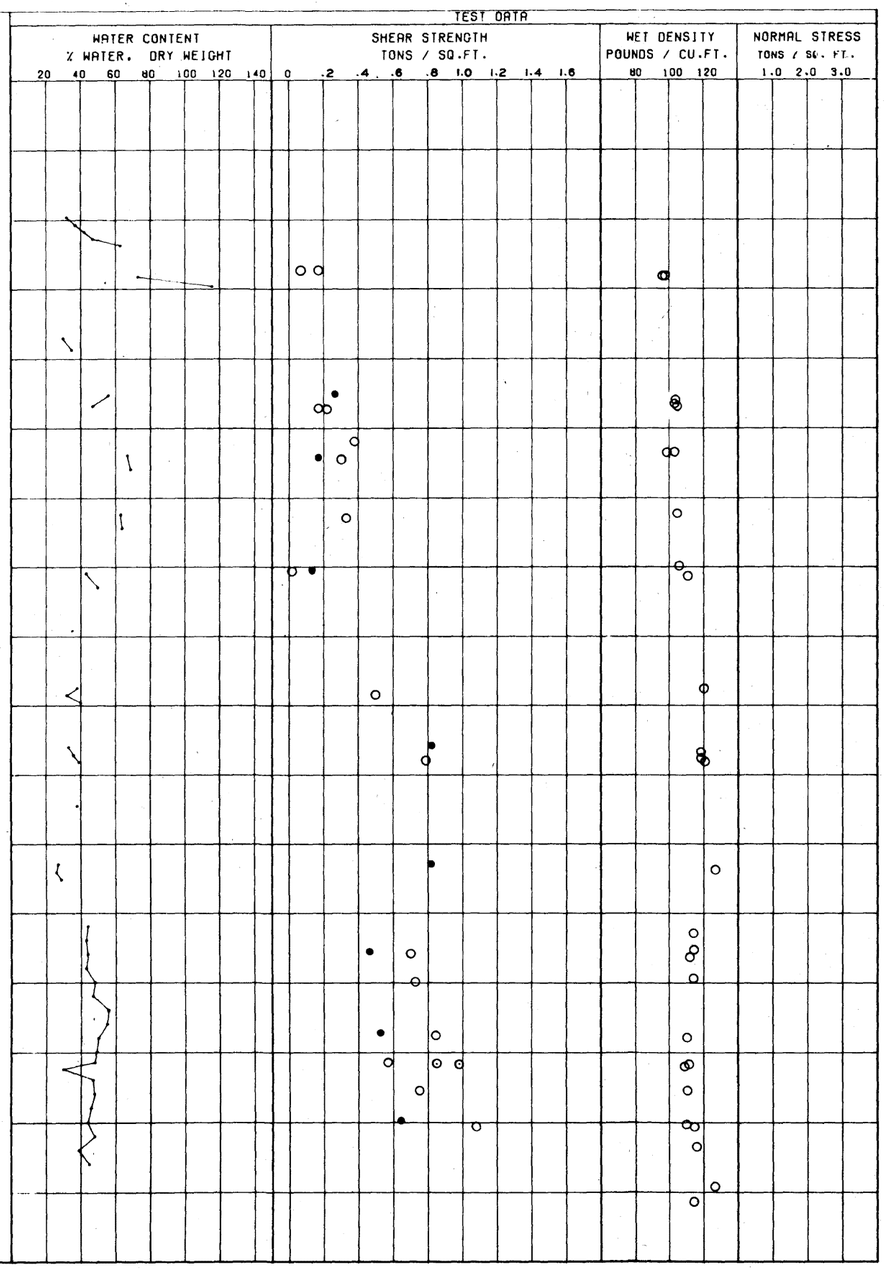
BOR. 9-UL

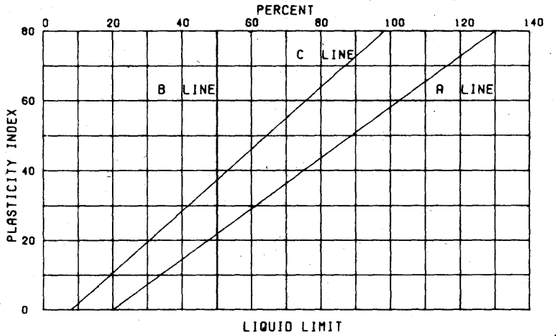
URQUHART ST.

480 FT. EAST OF C.L. OF LOCK

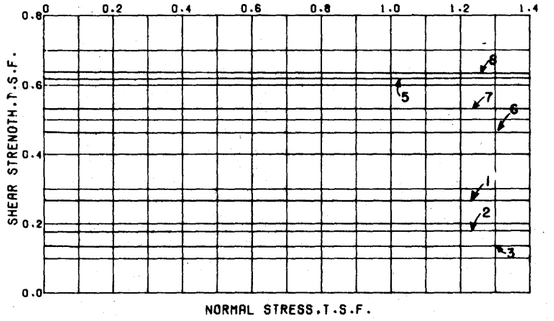
3/4-13/69





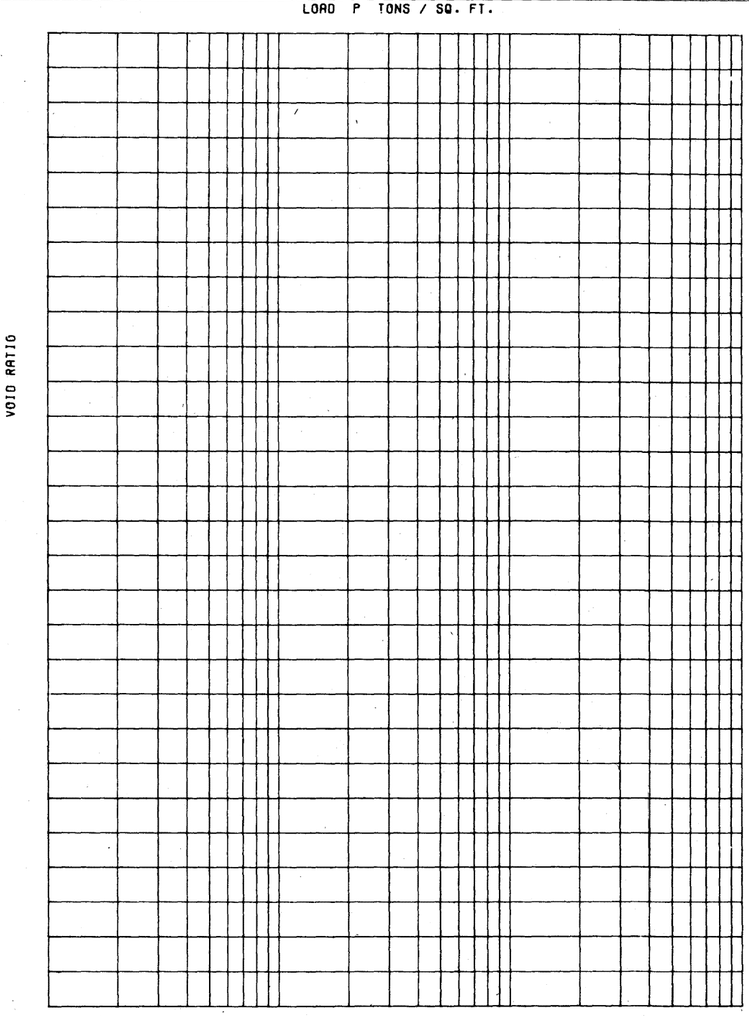


PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	ENVELOPE EL.	TYPE	STRENGTH Φ	STRENGTH C - TSF	CLASS
1	-25.3	Q	0	.27	CH
2	-33.9	Q	0	.18	CH
3	-50.9	Q	0	.14	CH
4	-76.3	Q	2.0	.83	CH
5	-93.3	Q	0	.62	CH
6	-105.7	Q	0	.47	CH
7	-117.8	Q	0	.53	CH
8	-129.8	Q	0	.64	CH



CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST

● - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST

- (R) CONSOLIDATED - UNDRAINED SHEAR TEST

- (S) CONSOLIDATED - DRAINED SHEAR TEST

BORINGS WERE TAKEN WITH A 5 INCH DIAMETER STEEL TUBE PISTON TYPE SAMPLER

FOR SOIL BORING LEGEND SEE PLATE A

FOR LOCATION OF BORINGS SEE PLATE

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

BORING 9-UL

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

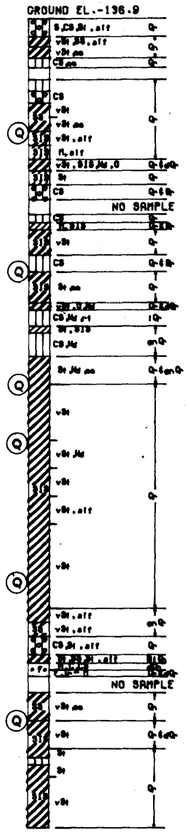
PREPARED BY

VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

DATE: MAY 1973

BOR 9-UL

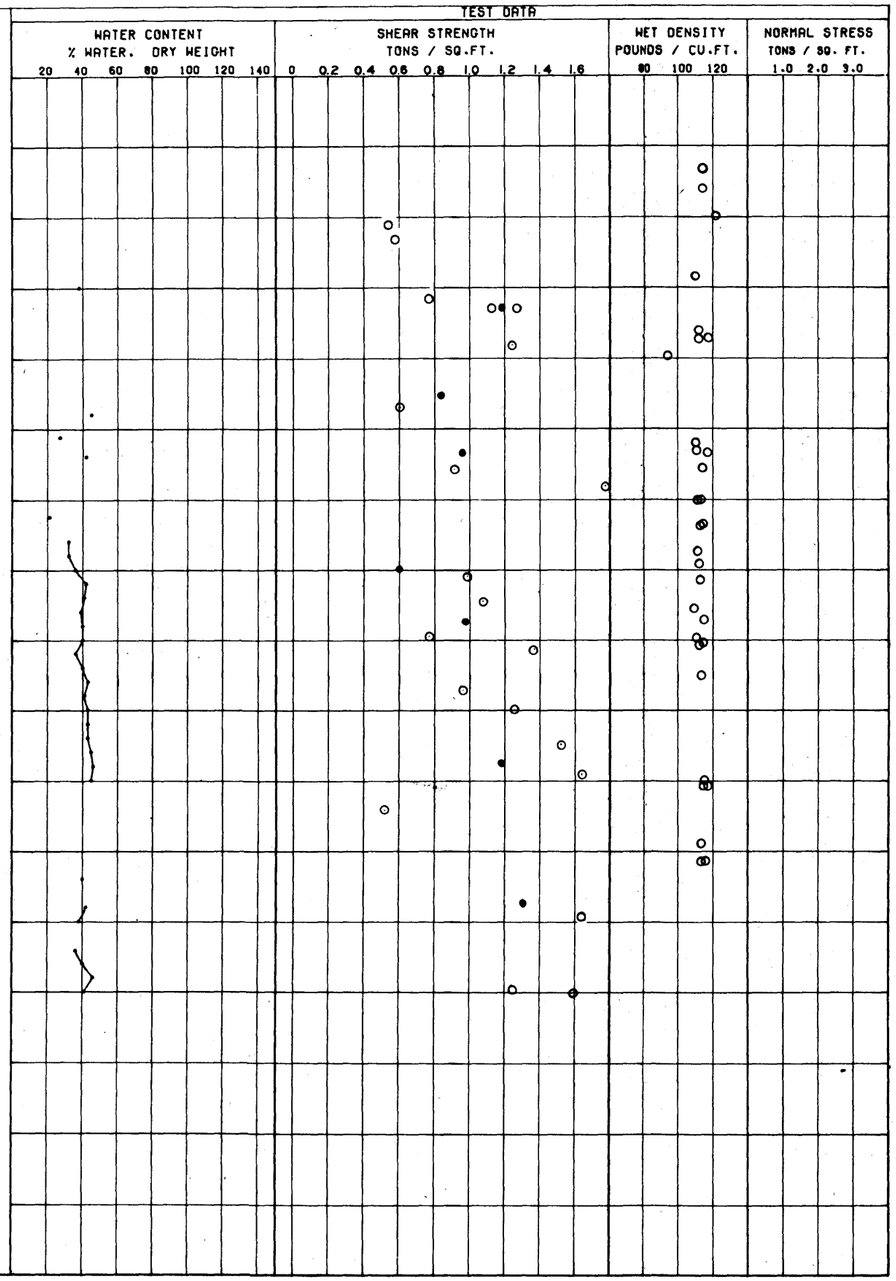
CONTINUED

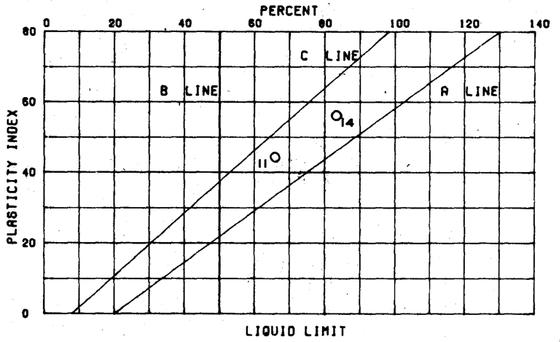


ELEVATIONS IN FEET - M.S.L.

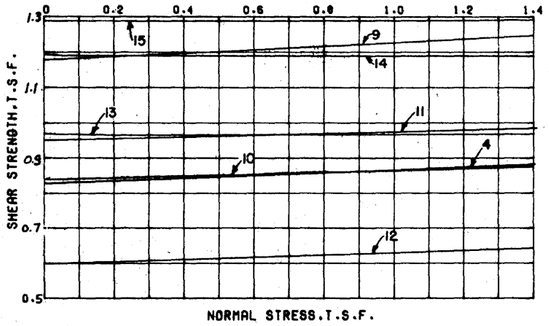
-130 -140 -150 -160 -170 -180 -190 -200 -210 -220 -230 -240 -250 -260 -270 -280

TEST DATA





PLASTICITY CHART



SHEAR STRENGTH DATA

ENVELOPE NO.	ENVELOPE EL.	TYPE	STRENGTH Φ	STRENGTH C - TSF	CLASS
9	-153.8	Q	3.0	1.18	CH
10	-165.8	Q	1.0	0.84	CH
11	-173.8	Q	1.0	0.95	CH
12	-189.8	Q	2.0	.6	CH
13	-197.8	Q	0	.97	CH
14	-217.8	Q	0	1.19	CH
15	-237.8	Q	0	1.29	CH

LOAD P TONS / SQ. FT.

VOID RATIO

CONSOLIDATION DATA

○ - (UC) UNCONFINED COMPRESSION TEST
● - (Q) UNCONSOLIDATED - UNDRAINED SHEAR TEST
- (R) CONSOLIDATED - UNDRAINED SHEAR TEST
- (S) CONSOLIDATED - DRAINED SHEAR TEST

BORINGS WERE TAKEN WITH A 6 INCH DIAMETER STEEL TUBE PISTON TYPE SAMPLER

FOR SOIL BORING LEGEND SEE PLATE A

FOR LOCATION OF BORINGS SEE PLATE

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

BORING 9-UL

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
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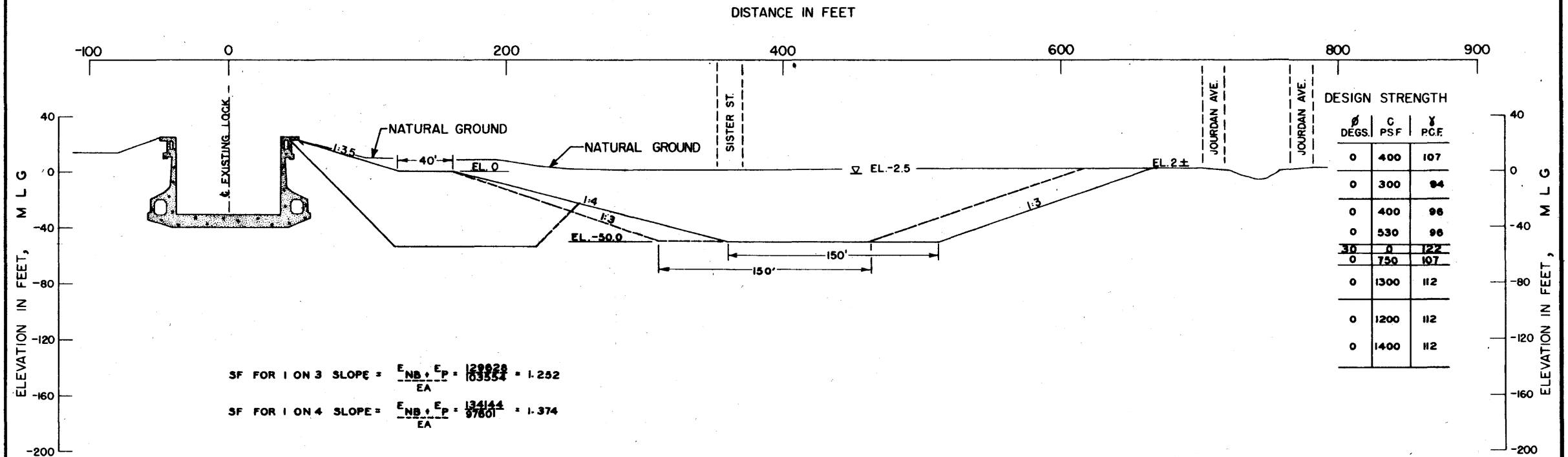
VICKSBURG, MISSISSIPPI

DATE: MAY 1973

PLATE II-12



MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK
AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

CHANNEL ADJ. TO EXIST. LOCK
SLOPE STABILITY ANALYSIS

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
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VICKSBURG, MISSISSIPPI

DATE: MAY 1973

PLATE II-13

SECTION III - PIPE FRAME SCHEME

3-01. Detailed Description of Scheme. a. General. This section describes the design and installation of a cofferdam scheme utilizing precast, prestressed concrete panels supported by rigid steel frames. The lower portion of these frames would be encased in the lock floor slab which would be placed underwater. Construction steps are described in the following text and are illustrated on Plates III-1 through III-6.

b. Construction Details. Prior to cofferdam construction, temporary hurricane protection would be provided along the side of the construction site. Excavation for this scheme would then be accomplished by dredging, thus allowing much steeper side slopes than would be required if the excavation were performed in the dry. The stability analyses of these slopes are presented in paragraph 2-08. Excavation would extend approximately 5 feet below the bottom grade of the lock floor. This 5-foot space would be backfilled with sand to facilitate relief of uplift pressures. Next, appropriate dewatering equipment would be installed to relieve uplift pressures beneath the lock floor during lock construction and for later unwatering purposes. A sheetpile cutoff wall would be placed around the periphery of the slab to reduce pumping requirements and to maintain existing pore pressures in the soils adjacent to the lock construction. Next, pipe piles would be driven to serve as guides for placement of the prefabricated steel wall frames. The frames, which utilize 48-inch diameter steel pipes for the two main members, would then be placed by threading the pipes over the guide piles. A thin layer of concrete would be placed over the entire cofferdam area to provide a firm base for the floor reinforcement. Prefabricated cages of reinforcing steel would next be positioned. Then, cross bracing between frames would be installed underwater. After this, precast concrete panels which would serve as the retaining surface would be installed in guides previously fabricated to the outer wall frame members. The floor concrete would be placed underwater, forming a U-frame cofferdam structure. This concrete could be placed by either the tremie method or by the preplaced aggregate method. The end monolith walls on both ends of the lock would be cast in individual cofferdams. These cofferdams would be formed by placing concrete panels around the periphery of the frames at the end monoliths as shown on Plate III-3. The end monolith walls would be constructed to receive stoplogs which would provide the end closures. The concrete panels around these monoliths would be removed, and the stoplogs which would normally be provided, modified as necessary, would be installed in the slots, thus completing the

main cofferdam. Finally, the cofferdam would be unwatered and the remainder of the lock constructed in the dry. After completion of the lock, the concrete panels and portions of the steel frames extending into the lock chamber would be removed. The remaining portions of the frames which would be encased in concrete would serve as reinforcement.

3-02. Factors Influencing Location and Layout. a. General. The area to be cofferdammed, utilizing the pipe frame scheme is comparatively narrow, thus providing considerable flexibility in determining the most suitable lock location. This narrowness makes it easier to satisfy right-of-way requirements and reduces excavation and backfill quantities. Two sites were considered; one site is in the edge of IHNC across from the Galvez Street Wharf and another south of this site such that the upstream end of the lock is closer to the existing lock, thus reducing the length of connecting levee and Mississippi River levee (see Plates I-1 and I-2).

b. Canal Site. Orientation of the lock at this site was governed by the following criteria:

(1) The lock location is such that underpinning is not required for the Claiborne Avenue bridge.

(2) Stability conditions at the existing lock allow the centerline of the approach channel to be located approximately 385 feet from the centerline of the existing lock. This allows an east-west lock alignment such that excavation can be accomplished without intercepting Jourdan Avenue.

(3) A 300-foot clearance between Galvez Street Wharf and the cofferdam was maintained to facilitate traffic using the existing lock.

c. Lock Site. This alternate site (see Plate I-1) makes it possible to place a new lock closer to the existing lock, thus reducing the length of the connecting levee. Other factors affecting this site are:

(1) Based on studies thus far, it appears that a lock of this concept could not be located completely adjacent to the old lock because of lack of space. It is possible, however, that more detailed studies could reveal a way to locate a lock of this concept at such site.

(2) The lock could have been shifted a little further south; however, it is not desirable to have the lock chamber under a major bridge because of fire hazards and because the bridge would have to remain open while large vessels are in the chamber.

(3) Underpinning of Claiborne Avenue bridge could be accomplished by constructing temporary piers on either side of the cofferdam and trussing the existing bridge ramps to these temporary piers. It is considered that the existing lift span bridge tower can be underpinned by encircling the pier with a structural concrete wall, possibly placed in a slurry trench, constructed in an artificial sand island.

3-03. Criteria for Analyses. a. Scope. This portion of the report covers the design analyses of the concrete and structural steel components of the cofferdam and portions of the cofferdam which are to become a part of the final lock structure. Soils and foundation analyses are covered in paragraph 2-08.

b. References. The following guides were used in the analysis of the various cofferdam components.

(1) ACI 318-71, Building Code Requirements for Reinforced Concrete.

(2) AISC Steel Construction Manual.

(3) EM 1110-1-2101, Working Stresses for Structural Design.

(4) Placement of Tremie Concrete, Ben C. Gerwick, Jr.

(5) Concrete in Maritime Works, R.T.L. Allen, MA (Cantab), FICE, M Inst HE.

(6) Report of Prepakt Construction, Camden Drydock Project for Merritt Chapman Scott Corp., New York Shipbuilding Corporation by Prepakt Concrete Co., Cleveland, Ohio.

(7) EM 1110-2-2000, Standard Practice for Concrete.

c. Material Properties. The structural steel components of the cofferdam were analyzed using steel having a minimum yield stress of 36,000 p.s.i. The prestressed, precast concrete panels which make up the retaining walls of the cofferdam were proportioned for 5,000 p.s.i. concrete with 270 k.s.i. prestressing tendons. The cofferdam floor was analyzed assuming 4,000 p.s.i. concrete

(minimum strengths of 4,000 p.s.i. to 8,000 p.s.i. are indicated by reference 3.03b(4)) while 3,000 p.s.i. concrete was considered for all other concrete. Reinforcing steel bars with a minimum yield stress of 40,000 p.s.i. were considered for all reinforcement other than for prestressing.

3-04. Loading Cases. A general description of loading cases analyzed is as follows:

a. Case I Loadings-Construction. These loadings are basically applicable to the cofferdam and take into account applicable water, earth and gravity loads. Boat impact was also considered since the cofferdam would be vulnerable to such impact in the IHNC. A maximum IHNC stage of Elevation 10.0 m.l.g. was considered for cofferdam unwatering and design purposes. The cofferdam would be allowed to flood when stages exceeded Elevation 10.

b. Case II Loadings-Normal Operating. Since the cofferdam floor will become a major portion of the lock floor, the floor was analyzed as being part of a finished lock structure. The usual lock design loadings were applied to the structure.

c. Case III Loadings-Extreme Operating. Like Case II, the cofferdam floor is to be a part of the final lock structure; consequently, the usual loads for an unwatered condition were applied.

3-05. Structural Design. a. General. The various components of the cofferdam were analyzed for the loading conditions listed in paragraph 3-04. Operating conditions were considered only for portions of the cofferdam which will be incorporated into the final lock structure, such as the floor.

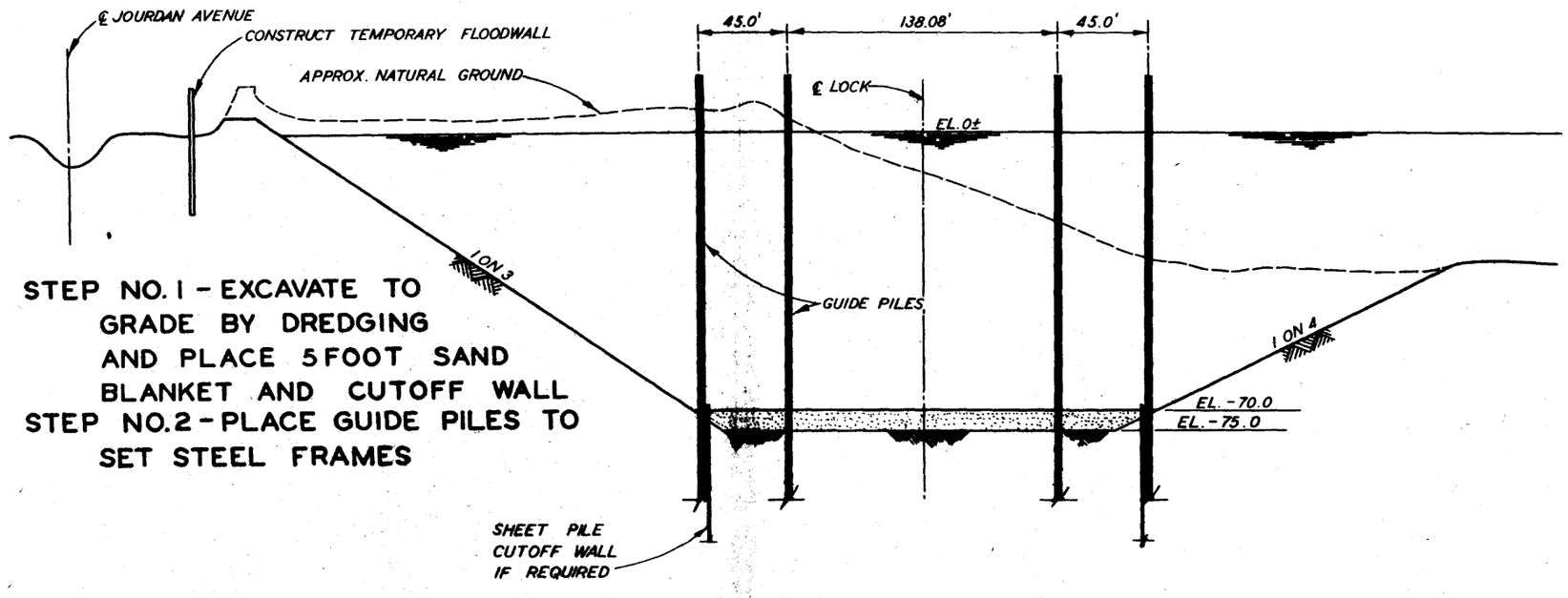
b. Wall Frames. The wall frames were analyzed using the GE 635 series computer. A two-dimensional, non-orthogonal plane frame analyses program was used which analyzes frames by the stiffness method, accounting for bending and axial deformations. Output consists of vertical, horizontal and rotational deflections of the joints; and axial loads, bending moments and shears at the ends of each member. The individual members were then designed to resist the combined bending and axial load. The frames were also investigated for a 120 kip boat load applied to the top joint and found to be adequate.

c. Precast Concrete Panels. It is desirable that all of the panels be of two standard sizes to facilitate construction, eliminate placement errors, and to obtain overall economy. The typical panels would be of prestressed-precast concrete construction

21 feet high by 25 feet long. The lower two panels would be 22 inches thick and the upper two 18 inches thick. A 1-foot wide strip at mid-height of the middle two panels were designed to resist a uniform load equal to the horizontal water pressure at that elevation (Case I Loading). The only function of the bottom panel is to serve as a concrete form for floor construction. Although the panels at the top of the cofferdam can withstand substantial boat impact, it would probably be necessary to provide minimal fendering protection.

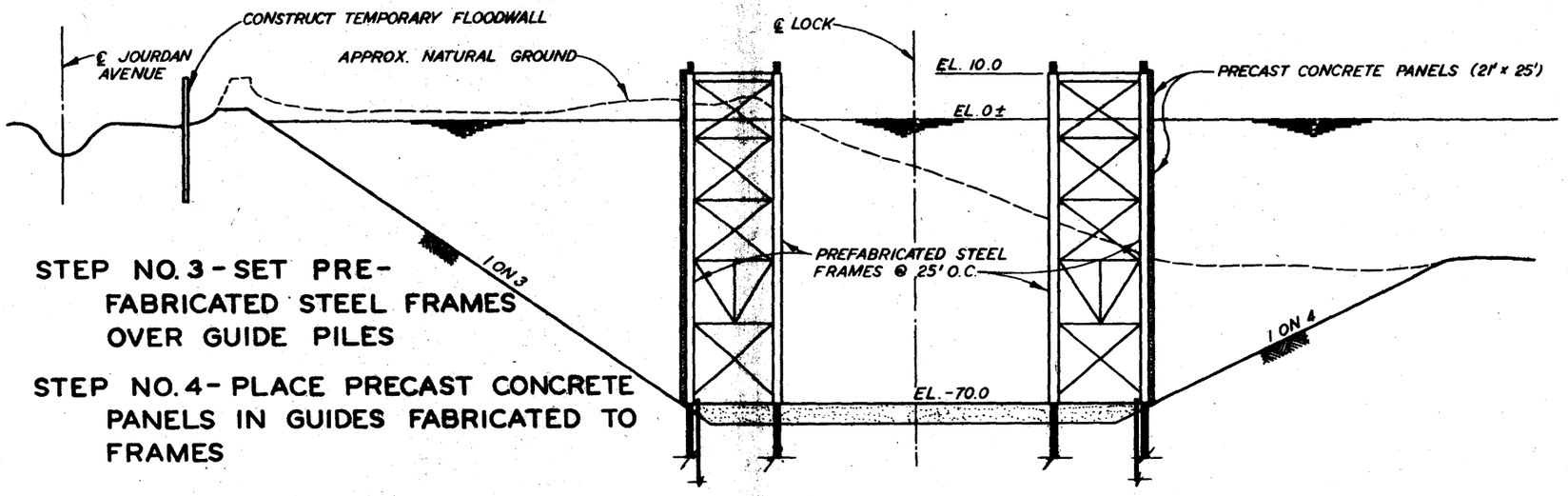
d. Floor. The floor of the cofferdam, which would be incorporated into the final lock structure, was analyzed for Loading Cases I, II and III. Bearing pressures were considered to be uniformly distributed. The assumed floor thickness was found to be of adequate proportions.

3-06. Conclusions. It is concluded that the proposed lock could be constructed utilizing structural steel frames incorporated into a concrete floor to support precast concrete panels. Fabrication and erection of the steel frames is considered to be only a slight modification of conventional construction methods used by the oil industry in the New Orleans area. The site across from Galvez Street Wharf is considered superior in that it offers the least interference with Jourdan Avenue and no modifications are required to the Claiborne Avenue bridge.



STEP NO. 1 - EXCAVATE TO GRADE BY DREDGING AND PLACE 5 FOOT SAND BLANKET AND CUTOFF WALL

STEP NO. 2 - PLACE GUIDE PILES TO SET STEEL FRAMES



STEP NO. 3 - SET PRE-FABRICATED STEEL FRAMES OVER GUIDE PILES

STEP NO. 4 - PLACE PRECAST CONCRETE PANELS IN GUIDES FABRICATED TO FRAMES

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

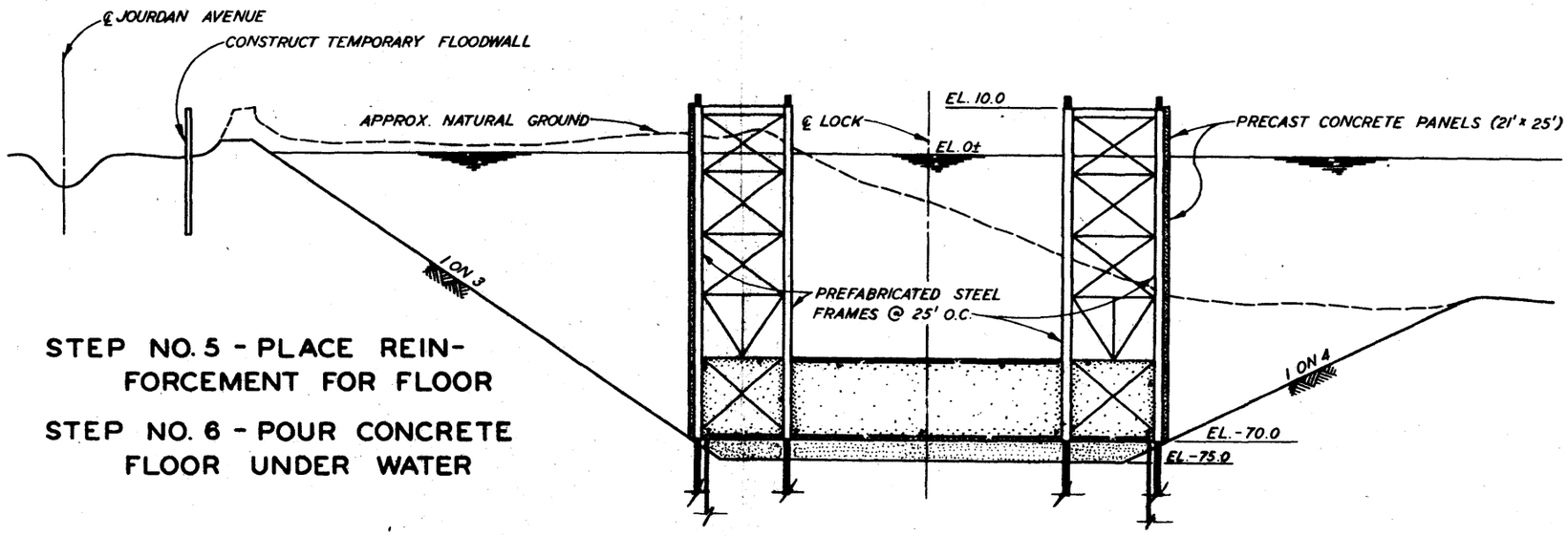
INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

PIPE FRAME COFFERDAM CONSTRUCTION, SEQUENCE-I

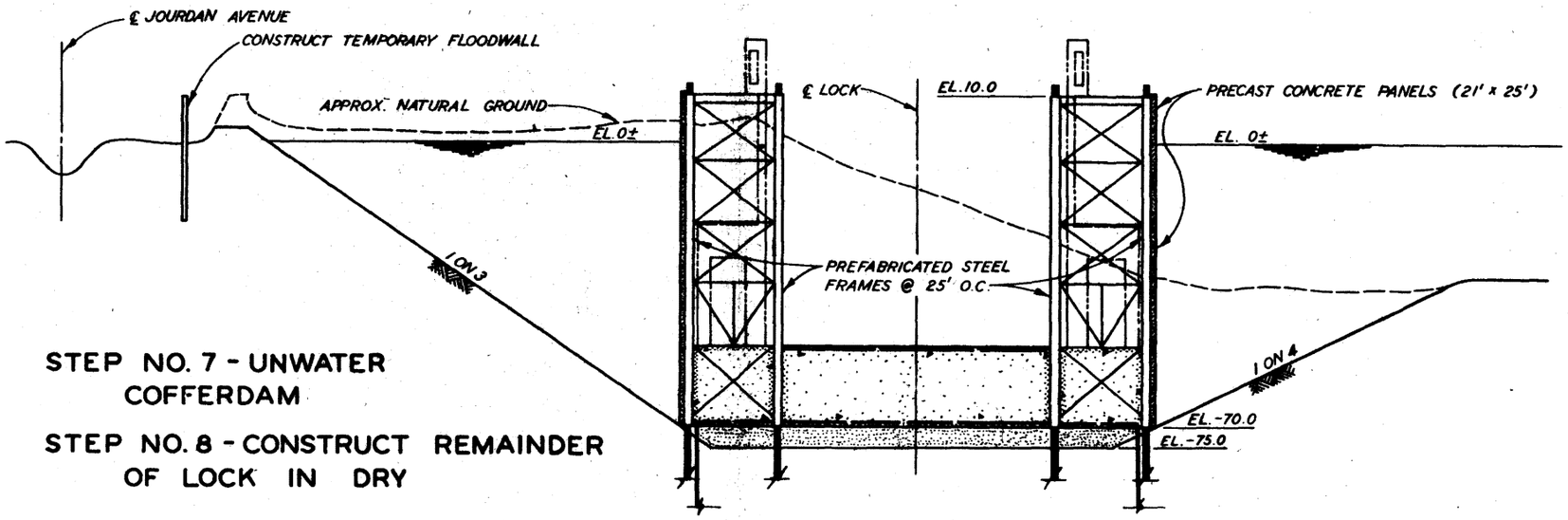
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

DATE: MAY 1973



STEP NO. 5 - PLACE REINFORCEMENT FOR FLOOR

STEP NO. 6 - POUR CONCRETE FLOOR UNDER WATER



STEP NO. 7 - UNWATER COFFERDAM

STEP NO. 8 - CONSTRUCT REMAINDER OF LOCK IN DRY

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

PIPE FRAME COFFERDAM CONSTRUCTION SEQUENCE-II

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
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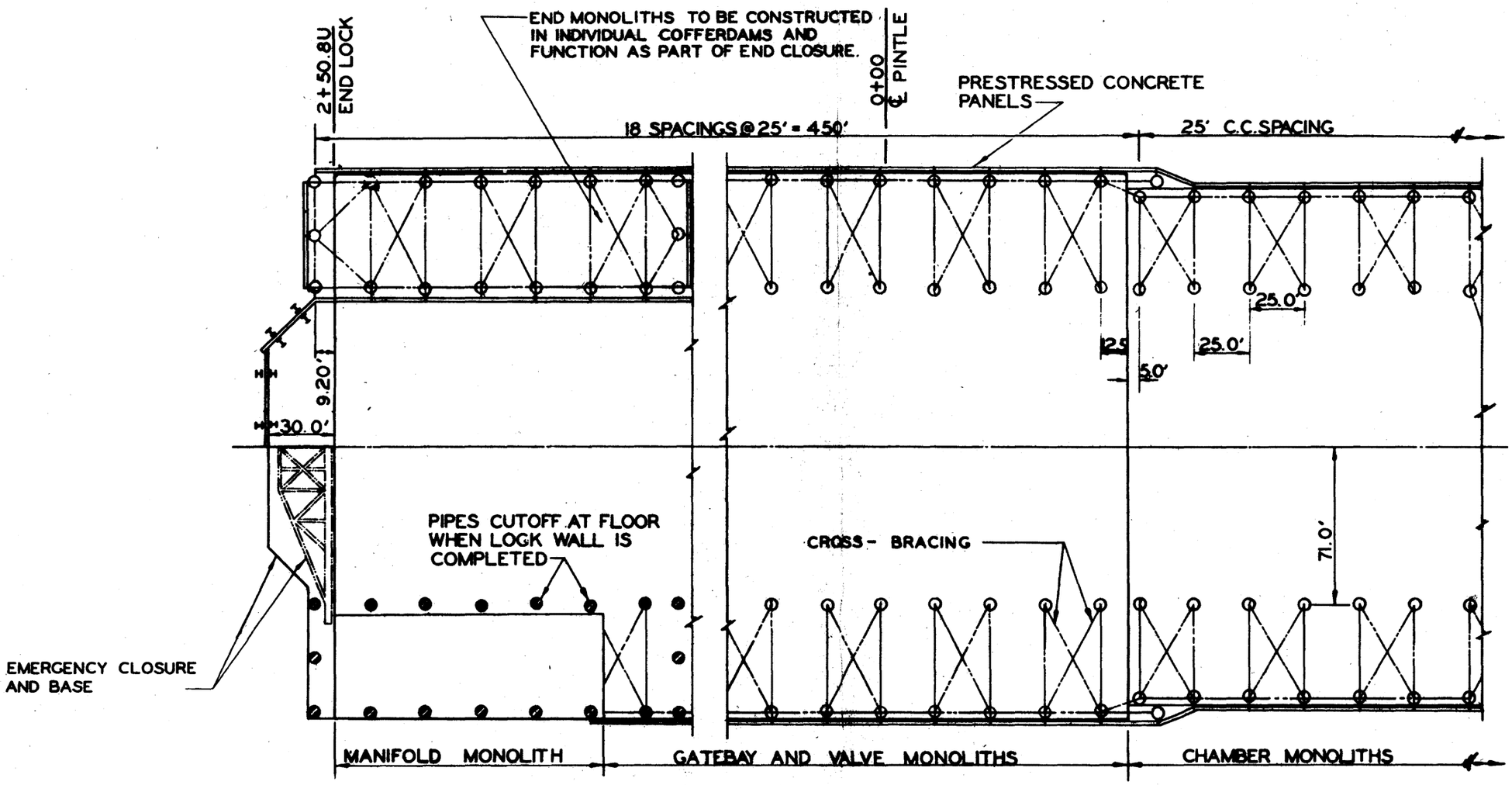


PLAN

(RIVER END SHOWN - LAKE END SIMILAR)

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

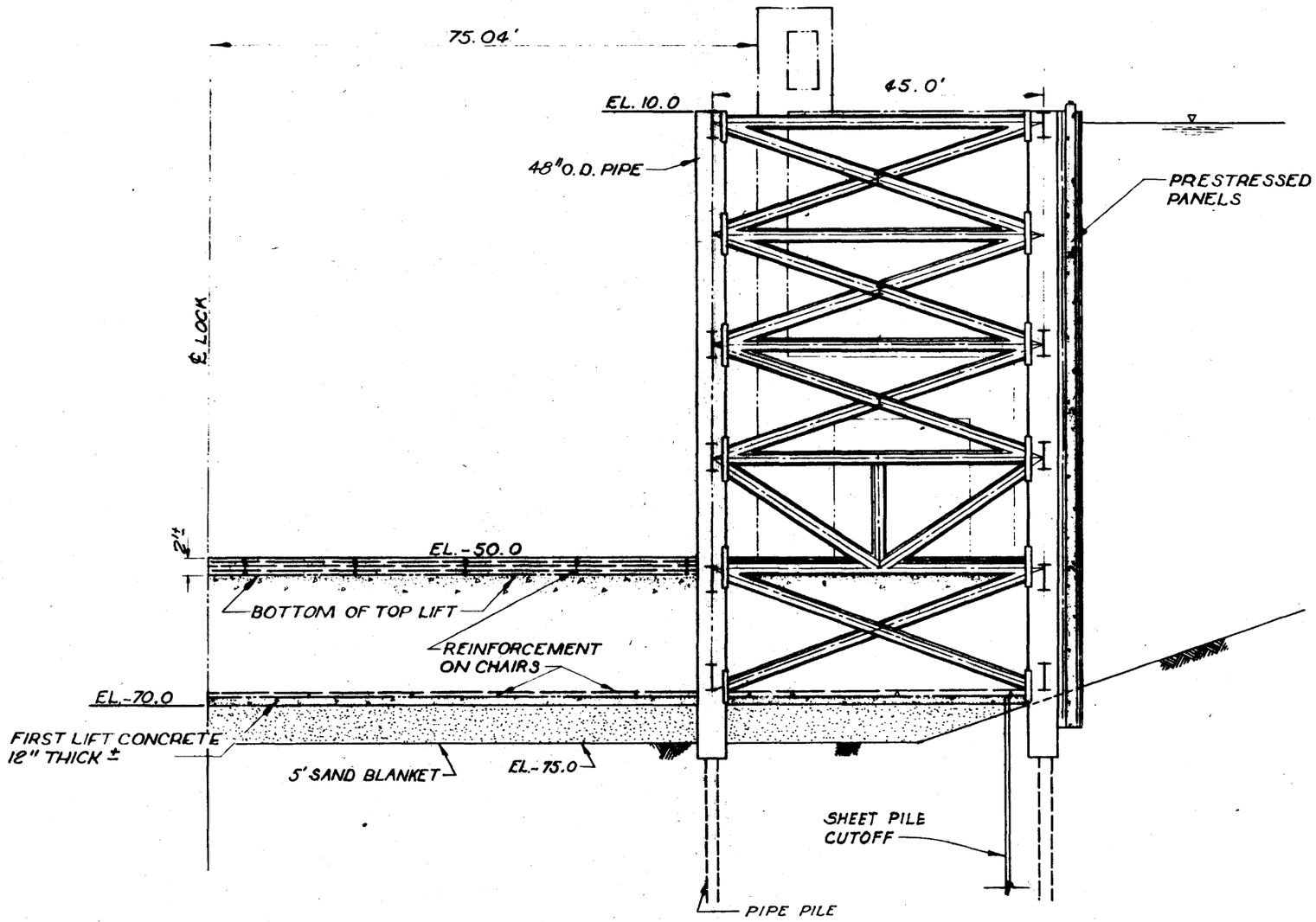
APPENDIX A

PIPE FRAME COFFERDAM

PLAN

NEW ORLEANS DISTRICT; CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

DATE: MAY 1973



SECTION THRU COFFERDAM
(CHAMBER)

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

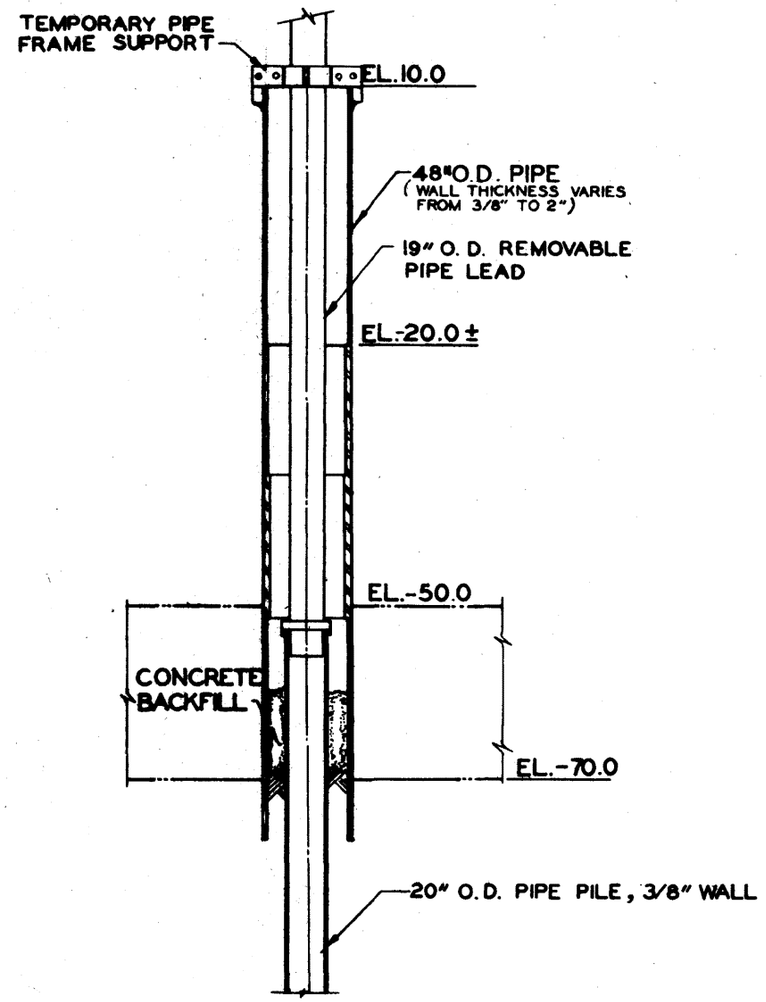
APPENDIX A

PIPE FRAME COFFERDAM

TYPICAL SECTION

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

DATE: MAY 1973



SECTION THRU FRAME PIPE

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

PIPE FRAME COFFERDAM
PIPE ALIGNMENT DETAILS

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
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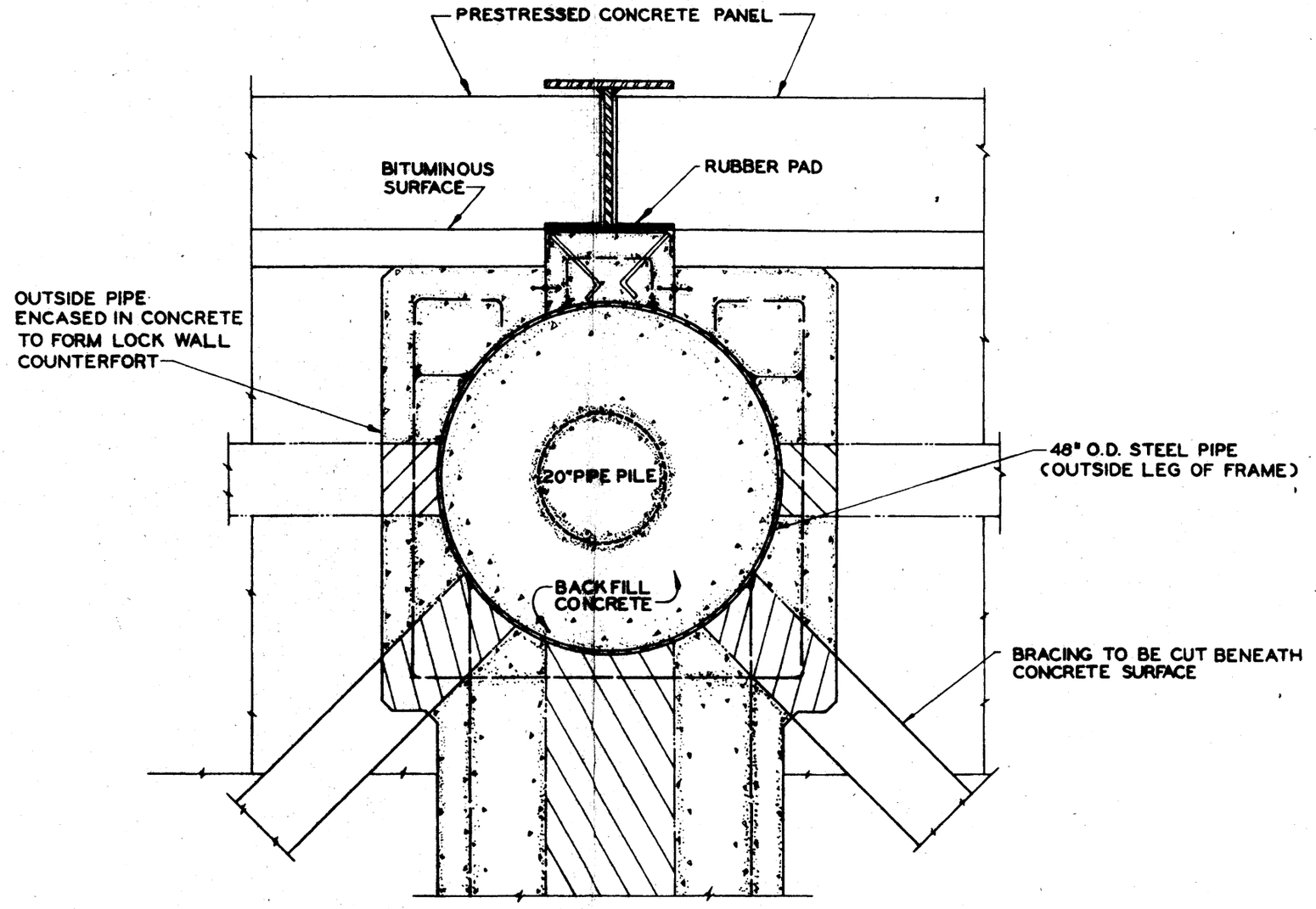
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

DATE: MAY 1973



SECTIONAL PLAN ABOVE CULVERTS

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

PIPE FRAME COFFERDAM

PIPE DETAILS

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

DATE: MAY 1973

SECTION IV - SHEET PILE CELLULAR COFFERDAM SCHEME

4-01. Description of Scheme. The sand and gravel mat and cellular cofferdam method of construction consist of over excavation of the construction area by dredging and the replacement of the excavated clay with sand and gravel. A cellular cofferdam would then be constructed to protect the area. The sand and gravel mat would add stability to the excavation slopes and also serve as the foundation for the cellular cofferdam and lock.

4-02. Location. The proposed site is between Florida and Claiborne Avenues on the east side of the Inner Harbor Navigation Canal. Right-of-way-requirements for construction would include all land on the canal side of Jourdan Avenue between North Touti Street and Claiborne Avenue. Plate IV-1 shows the site and excavation in plan.

4-03. Construction Sequence. A step-by-step construction procedure would be as follows:

a. Construct temporary hurricane protection along side of construction site, parallel to Jourdan Avenue, tied to present flood construction at each end of site and construct slurry cutoff wall around top of east side of construction site to cutoff ground water.

b. Dredge excavation to elevation -110 as shown on Plate IV-2.

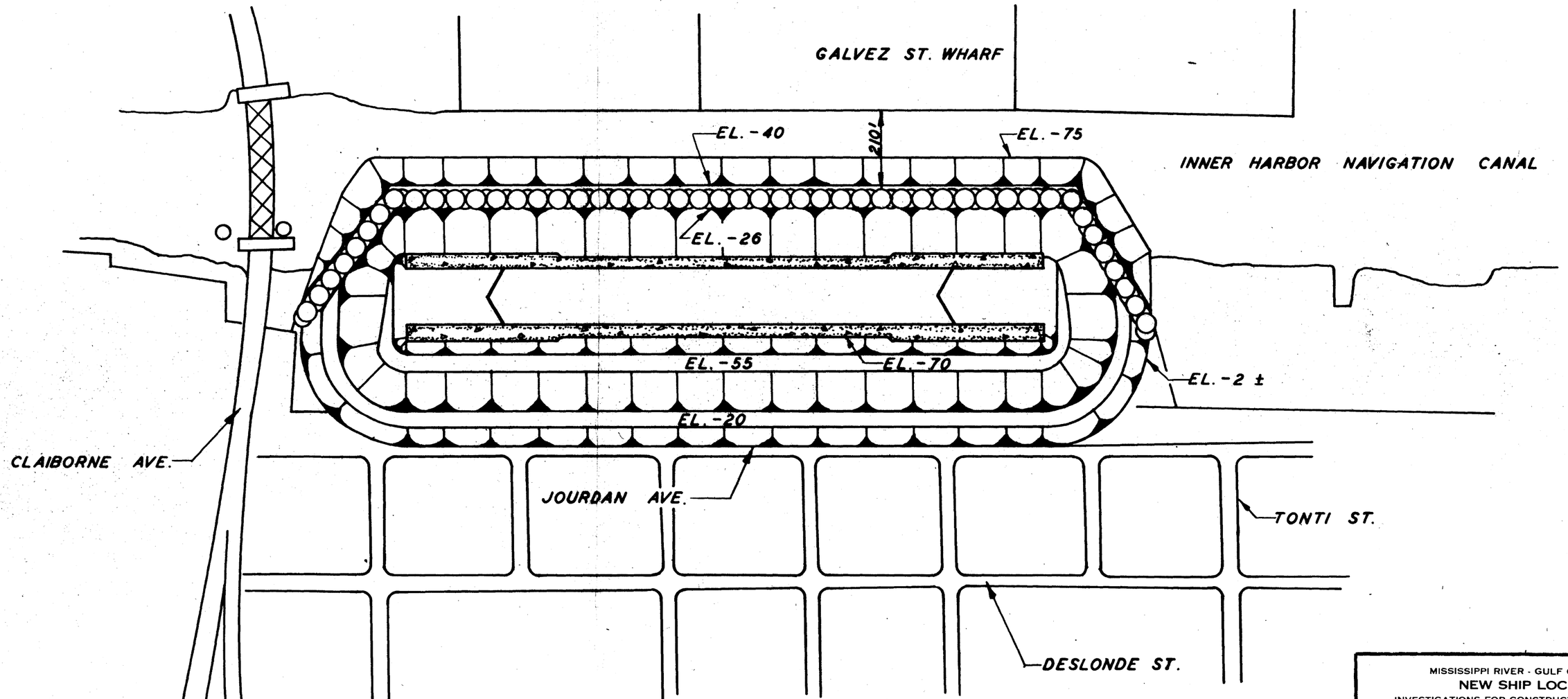
c. Fill excavation with sand and gravel to configuration shown on Plate IV-3.

d. Construct cellular cofferdam as shown on Plate IV-3 and unwater construction area.

e. Densify sand and gravel mat under lock by vibroflotation or some other comparable method. Densified area is shown on Plate IV-3.

f. Construct lock by conventional method as shown on Plate IV-4.

g. Flood lock area, disassemble cells, salvage sheet piles and use sand from cell as backfill around lock as shown on Plate IV-5.



MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK
AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

SHEET PILE CELL COFFERDAM

PLAN

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
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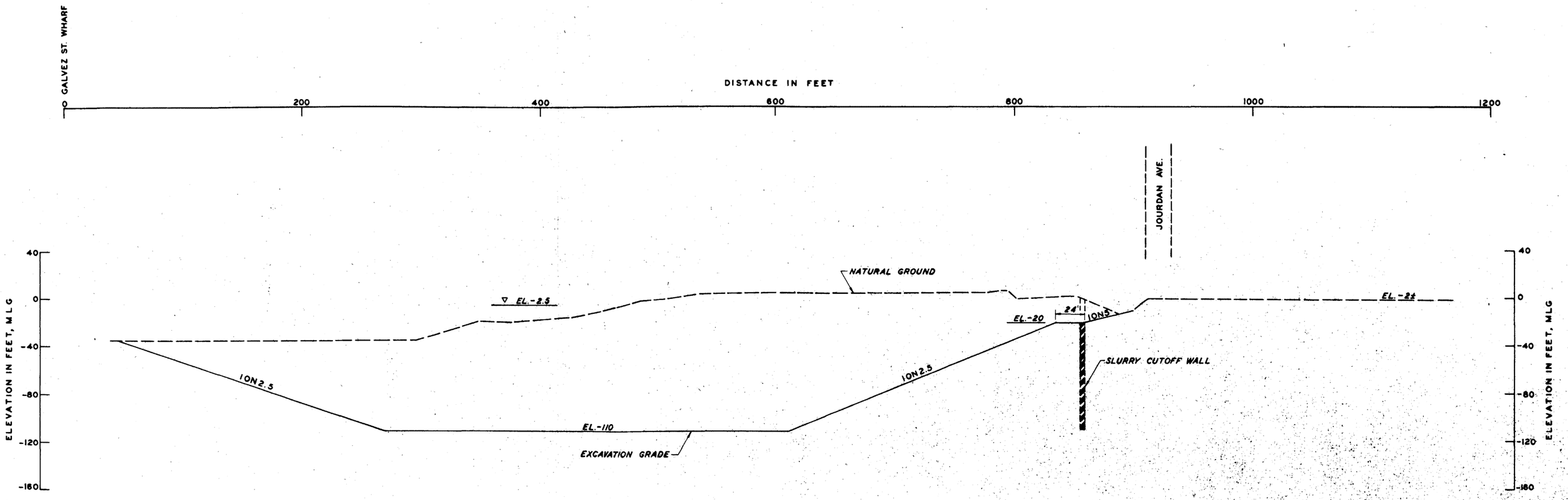
VICKSBURG, MISSISSIPPI

DATE: MAY 1973



STEP NO.1 – CONSTRUCT SLURRY CUTOFF WALL
STEP NO.2 – EXCAVATE TO ELEVATION -110

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

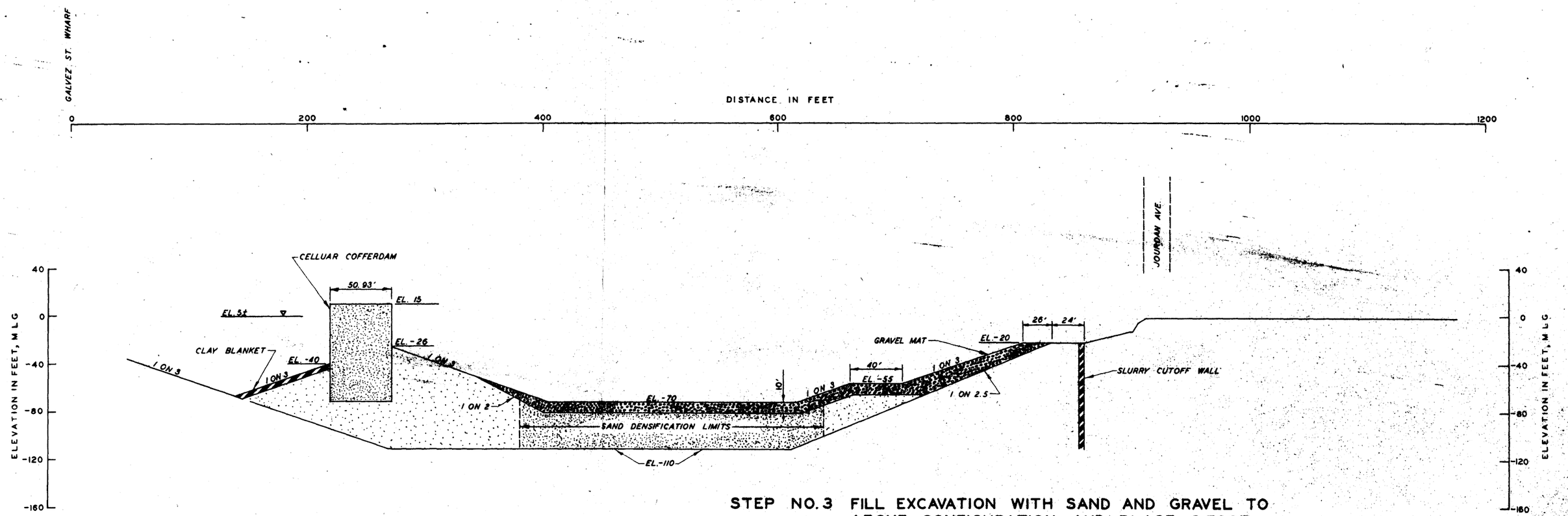
INVESTIGATIONS FOR CONSTRUCTION OF LOCK
AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

SHEET PILE CELL COFFERDAM CONSTRUCTION SEQUENCE-I

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

DATE: MAY 1973



STEP NO. 3 FILL EXCAVATION WITH SAND AND GRAVEL TO ABOVE CONFIGURATION AND PLACE 3 FOOT CLAY BLANKET ON CHANNEL SIDE OF SAND BACKFILL SLOPE

STEP NO. 4 CONSTRUCT CELLUAR COFFERDAM

STEP NO. 5 DENSIFY SAND UNDER LOCK

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

SHEET PILE CELL COFFERDAM CONSTRUCTION SEQUENCE-II

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
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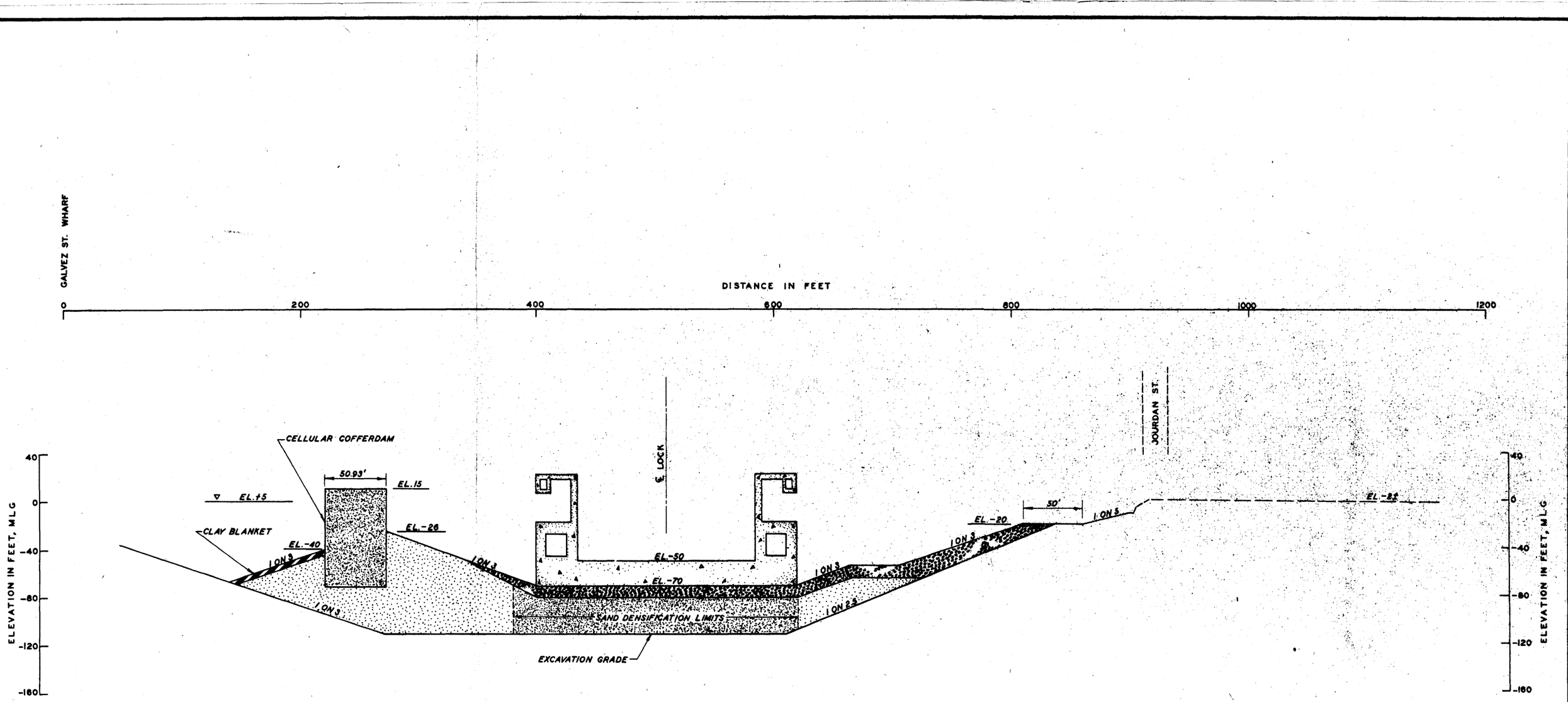
VICKSBURG, MISSISSIPPI

DATE: MAY 1973



STEP NO. 6 – CONSTRUCT LOCK

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK AT INNER HARBOR NAVIGATION CANAL SITES

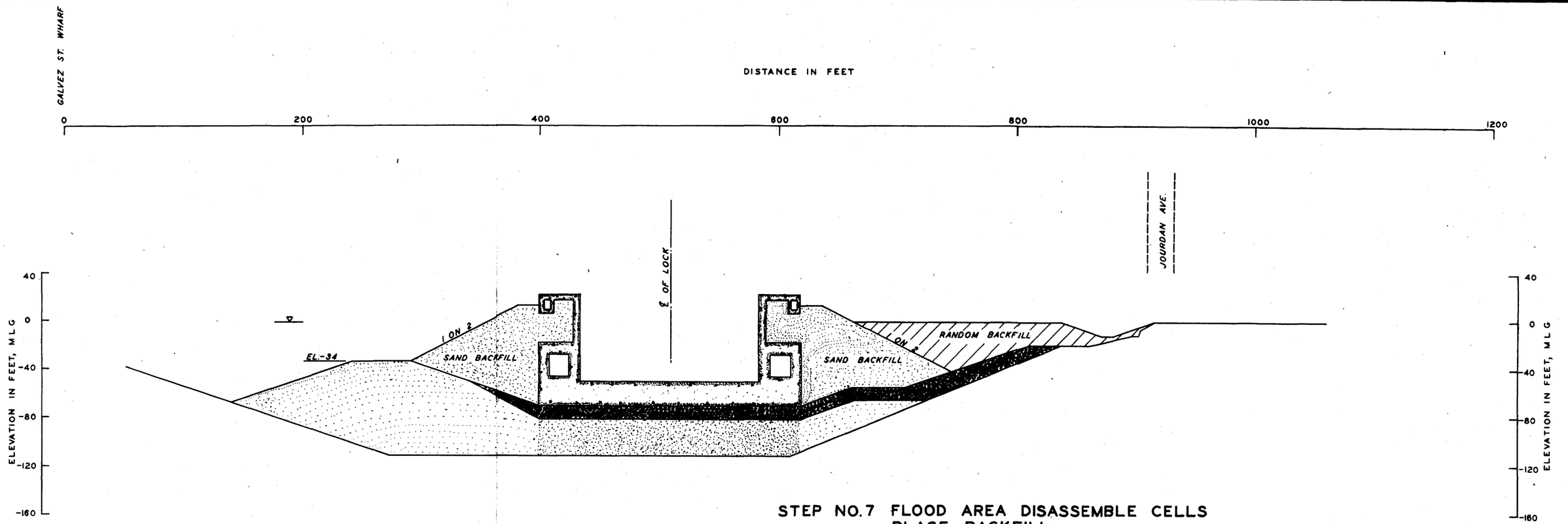
APPENDIX A

SHEET PILE CELL COFFERDAM CONSTRUCTION SEQUENCE-III

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

DATE: MAY 1973

PLATE IV-4



STEP NO.7 FLOOD AREA DISASSEMBLE CELLS
PLACE BACKFILL

MISSISSIPPI RIVER - GULF OUTLET

NEW SHIP LOCK

INVESTIGATIONS FOR CONSTRUCTION OF LOCK
AT INNER HARBOR NAVIGATION CANAL SITES

APPENDIX A

SHEET PILE CELL COFFERDAM
CONSTRUCTION SEQUENCE-IV

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA
PREPARED BY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

DATE: MAY 1973

SECTION V - COST ESTIMATES

5-01. General. The estimates presented in this section are based on the different construction schemes and sites which were given detailed treatment in this report. The cost estimates are in six basic phases; namely, the main lock, guidewalls, cofferdam, connecting levees[1], temporary flood protection and others. The main lock estimate is broken into six basic subdivisions. The cost shown for each were arrived at through detailed cost estimates. No costs for right-of-way, approach channels, or channel levees are included. The last item, others, reflects cost of items not classifiable in the other phases, such as cost for underpinning bridges. It should be noted that some of the costs may be applicable to two or more phases but are only applied to the one deemed most applicable. Where portions of the cofferdam are incorporated into the final lock structure, the additional cost above that required for a conventional structure, constructed by conventional means, was charged to the cofferdam.

5-02. Pipe Frame Scheme. a. Lock Site. The costs for the phases of construction described in paragraph 5-01 are presented in Table 5-1.

Table 5-1

Construction Phase	Cost*
1. Main Lock Structure	
a. Excavation, Backfill, Foundation Treatment, Etc.	$ 7,602,000
b. Reinforced Concrete Structure	45,009,000
c. Gates, Operating Machinery and Miscellaneous Metals	14,254,000
d. Control Houses	98,000
e. Instrumentation	175,000
f. Mechanical and Electrical Systems	5,734,000
SUBTOTAL-MAIN LOCK STRUCTURE	$ 72,872,000

[1] This item is for the Mississippi River levee connnection required between the proposed and existing lock.

Table 5-1 (Cont.)

Construction Phase	Cost*
2. Guidewalls **	$ 7,900,000
3. Connecting Levee	1,050,000
4. Cofferdam	24,665,000
5. Temporary Flood Protection	945,000
6. Other	7,210,000
TOTAL	$114,642,000

* Includes 25% contingencies
** Does not include any excavation costs

b. Canal Site. The cost for the phases of construction described in paragraph 5-01 are presented in Table 5-2.

Table 5-2

Construction Phase	Cost*
1. Main Lock Structure	
a. Excavation, Backfill, Foundation Treatment, Etc.	$ 6,400,000
b. Reinforced Concrete Structure	45,121,000
c. Gates, Operating Machinery and Miscellaneous Metals	14,254,000
d. Control Houses	98,000
e. Instrumentation	175,000
f. Mechanical and Electrical Systems	5,734,000
SUBTOTAL-MAIN LOCK STRUCTURE	$ 71,782,000
2. Guidewalls **	7,900,000
3. Connecting Levee	6,750,000
4. Cofferdam	24,365,000
5. Temporary Flood Protection	778,000
TOTAL	$111,575,000

* Includes 25% contingencies
** Does not include any excavation costs

5-03. Sheet Pile Cell Scheme. The cost for the phases of construction described in paragraph 5-01 are presented in Table 5-3.

Table 5-3

Construction Phase	Cost*
1. Main Lock Structure	
a. Excavation, Backfill, Foundation Treatment, Etc.	$ 5,434,000
b. Reinforced Concrete Structure	41,419,000
c. Gates, Operating Machinery and Miscellaneous Metals	14,254,000
d. Control Houses	98,000
e. Instrumentation	175,000
f. Mechanical and Electrical Systems	5,734,000
SUBTOTAL-MAIN LOCK STRUCTURE	$ 67,114,000
2. Guidewalls **	7,900,000
3. Connecting Levee	6,750,000
4. Cofferdam	18,530,000
5. Temporary Flood Protection	1,025,000
TOTAL	$101,319,000

* Includes 25% contingencies
** Does not include any excavation costs

SECTION VI - SUMMARY

6-01. General. The purpose of this report was to show whether or not the proposed MR-GO New Ship Lock could be constructed at an IHNC site and within certain boundaries; namely, Jourdan Avenue on the east and the approximate centerline of the Inner Harbor Navigation Canal on the west. Two promising construction methods and two basic locations were discussed in detail in preceeding sections of this appendix. Alternate construction methods and locations were also mentioned some of which have definite possibilities.

6-02. Lock Sites. Sites just north of Claiborne Avenue bridge (see Plates I-1 through I-3) offer excellent possibilities for construction of the lock concepts discussed in Sections III and IV. The possibility exists that a new lock can be located adjacent to the old lock.

6-03. Cofferdam Concepts. a. General. Several cofferdam concepts were investigated in varying amounts of detail. The two concepts, which could be more expediently evaluated, were presented in detail in Sections III and IV. Alternate methods were discussed in Section I.

b. Pipe Frame Cofferdam. Excavation for the lock and cofferdam would be accomplished by dredging. This cofferdam utilizes structural steel frames encased in concrete to retain prestressed concrete panel walls. Practically all of the cofferdam will be installed in the wet. Construction of a lock with this method would be unique and somewhat more complicated than conventional lock construction. Placement of steel frames for offshore drilling platforms in the New Orleans area makes the aspect of frame placement appear practicable. Also, concrete has been placed underwater in numerous applications in this country, notably the New York Shipbuilding Company Drydock in Camden, New Jersey where the preplaced-aggregate method was used. This cofferdam concept is somewhat more expensive than the sheet pile cell concept; however, its design and actual location are more flexible than that of the sheet pile cell arrangement.

c. Sheet Pile Cell Cofferdam. Excavation for this scheme is also accomplished by dredging. A sand and gravel base is placed in this excavation to serve as a base for a sheet pile cell cofferdam and for the lock. This procedure offers excellent possibilities for construction of the lock completely in the dry and by conventional methods. The procedure is also less expensive than most of the other cofferdam types considered. About the only disadvantage associated with the concept is that there is very little flexibility for adjusting the lock site.

SECTION VII - GENERAL CONCLUSIONS

7-01. From the studies described in this report, it was determined that a lock could be built at an Inner Harbor Navigation Canal site and within the right-of-way limitations set forth. Costs for two possible methods of construction are presented in Section V. It is considered that further study will reveal other suitable construction methods and lock sites; consequently, the recommendation of particular concepts is beyond the scope of this report.

Mississippi River-Gulf Outlet
New Lock and Connecting Channels

Site Selection Report

SOIL CONDITIONS AT PROPOSED ST. BERNARD PARISH SITES

Appendix B

Table of Contents

List of Tables

List of Plates

Mississippi River-Gulf Outlet
New Lock and Channels
Appendix "B" to Site Selection Report
Soil Conditions at Proposed St. Bernard Parish Sites

Introduction

1. In April-June 1970 a deep undisturbed boring was made at each of three proposed sites for the Mississippi River-Gulf Outlet (MRGO) New Ship Lock: Saxonholm, Upper Violet, and Lower Violet. The purposes of these borings were to determine:

a. General soil conditions below el -150 and establish excavation slope requirements and pile lengths if needed.

b. Consolidation characteristics of the foundation soils in order to predict settlements and determine whether a pile foundation is required.

c. Thickness and sequence of pervious aquifers for evaluation of dewatering requirements.

Locations of the borings are shown in plate B-1. Logs of the three borings are shown in plates B2-B4. Borings made previously at the Upper Violet and Lower Violet sites are contained in a preliminary New Orleans District report entitled "Lock Study," dated March 1961.

Laboratory tests

2. Visual classifications and water content determinations were made on all samples. A sufficient number of unconsolidated-undrained (Q) triaxial compression tests were performed to determine the distribution of undrained shear strength for the entire depth of boring. Consolidated, undrained (R) triaxial compression and consolidated-drained (S) direct shear tests were performed on representative samples. Consolidation tests were performed on representative samples below the elevation of the base of the proposed lock (el -61). Mechanical analyses were performed

on representative samples of Nearshore Gulf silty sands from all three sites and samples of Pleistocene sands from the Lower Violet site. Water contents and the results of Q and consolidation tests are shown in plates 2-4. Results of R and S tests are shown in plate B-5.

Soil condition

3. Geologic interpretations of the soil borings are shown adjacent to the logs of borings in plates B2-B4. In general, foundation soils consist of recent deposits to depths of approximately 80 to 100 ft underlain by Pleistocene deposits.

4. Recent deposits. Recent deposits are somewhat similar at all three sites. With the exception of the Swamp Marsh and Nearshore Gulf deposits, the recent deposits consist principally of fat clays with water content of 30 to 60 percent and a few layers of silt and silty sand. The Swamp Marsh deposits are organic fat clay with water contents of about 60 to 178 percent at the Saxonholm site, and about 60 to 100 percent at the other two sites. The Nearshore Gulf deposits are principally silty sand with about 10 to 20 percent passing no. 200 sieve. Shear strengths of the recent clays generally increase with depth and vary from about 200 to 950 psf (see plates B2-B4).

5. Pleistocene deposits. At Saxonholm and Upper Violet, Pleistocene deposits consist principally of fat clays with water contents generally varying between 30 and 45 percent. Layers of lean clay, silt, and silty sand are encountered below el -150. The top 10 to 15 ft of clays are believed to be overconsolidated as indicated by low water content, high shear strength, and high preconsolidation pressures from consolidation tests. Clays below that depth are normally consolidated. With the

exception of the overconsolidated layer, the shear strength of the clays generally increases with depth with a "c/p" ratio of 0.25 at Saxonholm and 0.27 at Upper Violet.

6. At Lower Violet, the upper 12 ft of Pleistocene is clay underlain by about 60 ft of silty sand. Below the silty sand stratum are alternate layers of clays, silts, and silty sands.

Settlement analysis

7. Settlement analysis was made for the U-frame lock chamber assuming that the structure is founded directly on soil foundation without the use of piles. It was assumed in the analysis that the weight of the chamber monoliths was distributed uniformly over the base.

8. Settlements were computed at the center line and at the outer edges of the structure using the pressure-void curves obtained from laboratory consolidation tests on the three deep borings. In these tests (see plates 2-4) the samples were loaded to the existing overburden pressures, unloaded to the estimated stresses after excavation, then reloaded to complete the tests. Three cases were analyzed:

Case IA: Lock complete, no backfill, no uplift pressures.

Case IB: Lock and backfill complete, no water in lock, no uplift.

Case II: Lock and backfill complete, water in lock to el -0, uplift to el -0.

Cases IA and IB are construction conditions. Case II is a normal operating condition.

9. Results of the settlement analysis are shown in table 1. At all three sites the maximum computed settlements were found to occur for Case IB. Computations were made only for ultimate settlement. No computations were made to estimate the percentage of ultimate settlement which would occur for the particular cases.

Bearing capacity

10. Studies were made to determine the factor of safety with respect to bearing capacity for a gate bay founded on the soil foundation without the use of piles. Computed factors of safety for various loading conditions are shown in table 2. Note that factors of safety using Q strengths vary from 1.4 to 1.8 for Saxonholm and from 2.0 to 2.5 for Upper Violet. These factors of safety are considered marginal; therefore, piles would be required at both these sites. The computed factors of safety for the Lower Violet site are above 20 for all cases analyzed.

Required pile length

11. Pile lengths were computed for each of the three sites assuming that they would be required at each site. The required lengths of 14-in. steel pile were computed for a design load of 100 tons and a factor of safety of 2.0. For piles bearing in clay (Saxonholm and Upper Violet) the equation used was:

$$Q_u = 9cA + CL_c c_a + KCL_s f_s$$

where:

c = cohesion of clay at tip

A = cross section area of pile

L_c = length of pile in clay

C = circumference of pile

c_a = adhesion between pile and clay*

K = coefficient of lateral earth pressure (1.5)

L_s = length of pile in sand

* Values of c_a were obtained from "The Adhesion of Piles Driven in Clay Soils," by M. J. Tomlinson, Proceedings of the Fourth International Conference on Soil Mechanics and Foundation Engineering, Vol II, 1957.

f_s = frictional resistance of sand = $\gamma' D \tan \delta$

γ' = submerged unit weight of soil

D = average depth of sand strata

tan δ = coefficient of friction between sand and piling

For the piles at Lower Violet which bear in sand, the term $A\gamma'DNq$ was used for end bearing instead of 9cA where Nq=Terzaghi bearing capacity factor.

12. The computed pile lengths were 110 ft for the Saxonholm site, 113 ft for the Upper Violet site, and 59 ft for the Lower Violet site.

Excavation slopes

13. Preliminary slope stability analysis indicates that 1 on 10 excavation slopes will be required for the Saxonholm site, and 1 on 5 slopes will be required for the Upper Violet and Lower Violet sites. The preliminary computations were made for the construction condition using the design shear strengths shown in plates B2-B4 and a factor of safety of 1.3.

Dewatering requirements

14. Dewatering of the silty sand strata in the Nearshore Gulf deposits will be required during structural excavation of all three sites. However, as the silty sand strata are relatively thin and the permeability of the sands are relatively low, dewatering of these strata should not present a major problem. At Saxonholm, the sand stratum is only about 13 ft thick, and only minimal dewatering will be required. At the Upper Violet site, there are two strata of silty sands between el -60 and -100, with thicknesses of 15 and 8 ft, respectively. Dewatering can be accomplished with a wellpoint system. At the Lower Violet site, more extensive dewatering will be required, as the 40- to 50-ft stratum of silty sand in the Pleistocene deposits will also require dewatering.

Comparison of sites

15. A summary of the advantages and disadvantages of each of the three proposed lock sites is given below.

16. Saxonholm. Extremely flat (about 1 on 10) excavation slopes will be required. Without piles, the structure will experience large settlements, and the gate bays will have only a marginal factor of safety with respect to bearing capacity; therefore, a pile foundation will be required. Dewatering requirements at this site will be minimal.

17. Upper Violet. Excavation slopes of about 1 on 5 will be required. Without piles, the structure will experience large settlements; and the gate bays will have only a marginal factor of safety with respect to bearing capacity; therefore, a pile foundation will be required. Dewatering of the silty sand strata in the Nearshore Gulf deposits between el -60 and -100 will be required during excavation. However, as the strata are not very thick and the permeability of the sands is relatively low, dewatering can be accomplished by a well-point system.

18. Lower Violet. Excavation slopes of about 1 on 5 will be required. Without piles, the factors of safety of the gate bays with respect to bearing capacity are adequate. Although estimated settlements are considerably smaller than at the other two sites, they are sufficiently large to cause concern. On the basis of the limited analysis made for this study, a pile foundation would have to be considered. However, a more detailed study may indicate that piles can be eliminated. If piles are needed, required lengths are considerably less than those at the other two sites. Dewatering requirements will be somewhat greater at this site due to the presence of a thick stratum of Pleistocene silty sands.

19. Conclusion. On the basis of the above comparisons, it is considered that the Lower Violet site is the most suitable site for the construction of the MRGO New Ship Lock.

Appendix "B"

Table 1

Computed Rebounds and Settlements

Site	Computed Rebound (ft) Center	Edges	Case	Computed Settlement (ft) Center	Edges
Saxonholm	0.94	0.77			
			IA	1.14	0.53
			IB	2.78	4.59
			II	0.84	0.97
Upper Violet	0.78	0.48			
			IA	0.87	0.46
			IB	2.43	3.62
			II	0.73	0.79
Lower Violet	0.33	0.30			
			IA	0.40	0.18
			IB	0.91	1.55
			II	0.23	0.27

NOTE: Case IA - Lock complete, no backfill, no uplift.

Case IB - Lock and backfill complete, no water in lock, no uplift.

Case II - Lock and backfill complete, water to el 0.0, uplift to el 0.0.

Table 2

Bearing Capacity factors of Safety for Gate Bay Monolith

Site	Case	Q Strength $\phi = 0$, c = 1000 psf	S Strength $\phi = 18^{\circ}$, c = 260 psf
Saxonholm	IA	1.65	
(Boring 1-AU)	IB	1.44	
	II	1.80	23.76
	III	1.57	20.74
		$\phi = 0$, c = 1500 psf	$\phi = 24^{\circ}$, c = 0
Upper Violet	IA	2.33	
(Boring 2-AU	IB	2.03	
	II	2.55	23.21
	III	2.22	20.26
			$\phi = 30^{\circ}$, c = 0
Lower Violet	IA		23.72
(Boring 3-AU)	IB		20.70
	II		25.92
	III		22.62

NOTE: Case IA: Lock complete, no backfill, no uplift.

Case IB: Lock and backfill complete, no water in lock, no uplift.

Case II: Lock and backfill complete, water to el 0.0, uplift to el 0.0.

Case III: Lock and backfill complete, water to el 16.2, uplift to el 0.0.

Appendix "B"

LAKE PONTCHARTRAIN

LAKE BORGNE

NEW ORLEANS

HURRICANE

BY-PASS

POSSIBLE ALTERNATE BARGE ROUTE 12' X 300'

POSSIBLE 12' X 150' BARGE CHANNEL

POSSIBLE ANCHORAGE

BAYOU BIENVENUE FLOODGATE

BARGE CANAL

PROTECTION

SAXONHOLM SITE

UPPER SITE

1-AU

2-AU

3-AU

NAVIGABLE FLOODGATE

BAYOU DUPRE FLOODGATE

LEVEE

TAILBAY 500'x36'

LOWER SITE

SHIP LOCK

FOREBAY 500'x36'

PROPOSED INTERSTATE

MISSISSIPPI RIVER

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

U.S. COAST GUARD RESERVATION

U.S. NAVAL AIR STATION (ALVIN CALLENDER FIELD)

BIG MAR

ARKANSAS

TEXAS

LOUISIANA

MISSISSIPPI

Shreveport

Monroe

Vicksburg

Alexandria

Natchez

Baton Rouge

Lake Charles

Morgan City

LOCATION OF PROJECT

GULF OF MEXICO

VICINITY MAP

SCALE OF MILES 20 0 20 40 60

SCALE

1 0 1 2 3 MILES

3000 0 3000 6000 9000 12000 15000 FEET

MISSISSIPPI RIVER – GULF OUTLET

NEW LOCK AND CHANNELS

SITE SELECTION REPORT

1973

LOCATIONS OF BORINGS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

FEBRUARY 1975

FILE NO. H-2-26729

PLATE B-1

BORING 1-AU

ELEVATION IN FEET, MSL

(NATURAL LEVEE)
(SWAMP MARSH)
(INTRADELTA)
RECENT
(PRODELTA)
(NEARSHORE GULF)
(PLEISTOCENE),
(PLEISTOCENE)$_2$

No Sample

WATER CONTENT, % DRY WT

LIQUID LIMIT
PLASTIC LIMIT
NATURAL WATER CONTENT

UNDRAINED SHEAR STRENGTH, PSF

LEGEND
● THREE POINT Q TEST
○ ONE POINT Q TEST

400 PSF
200 PSF
250 PSF
DESIGN
400 PSF
SILTY & CLAYEY SAND
ϕ=30°, C=0
950 PSF
1600 PSF
SILTY AND CLAYEY SAND
ϕ=30°, C=0
6000
3800

WET DENSITY, PCF

84
DESIGN

VERTICAL STRESS, KSF

AVERAGE OVERBURDEN PRESSURE

PRESSURE, TSF

VOID RATIO, e

EL -101.8
EL -161.5
EL -212.2
EL -82.7

PRESSURE, TSF

VOID RATIO, e

EL -121.2
EL -188.4

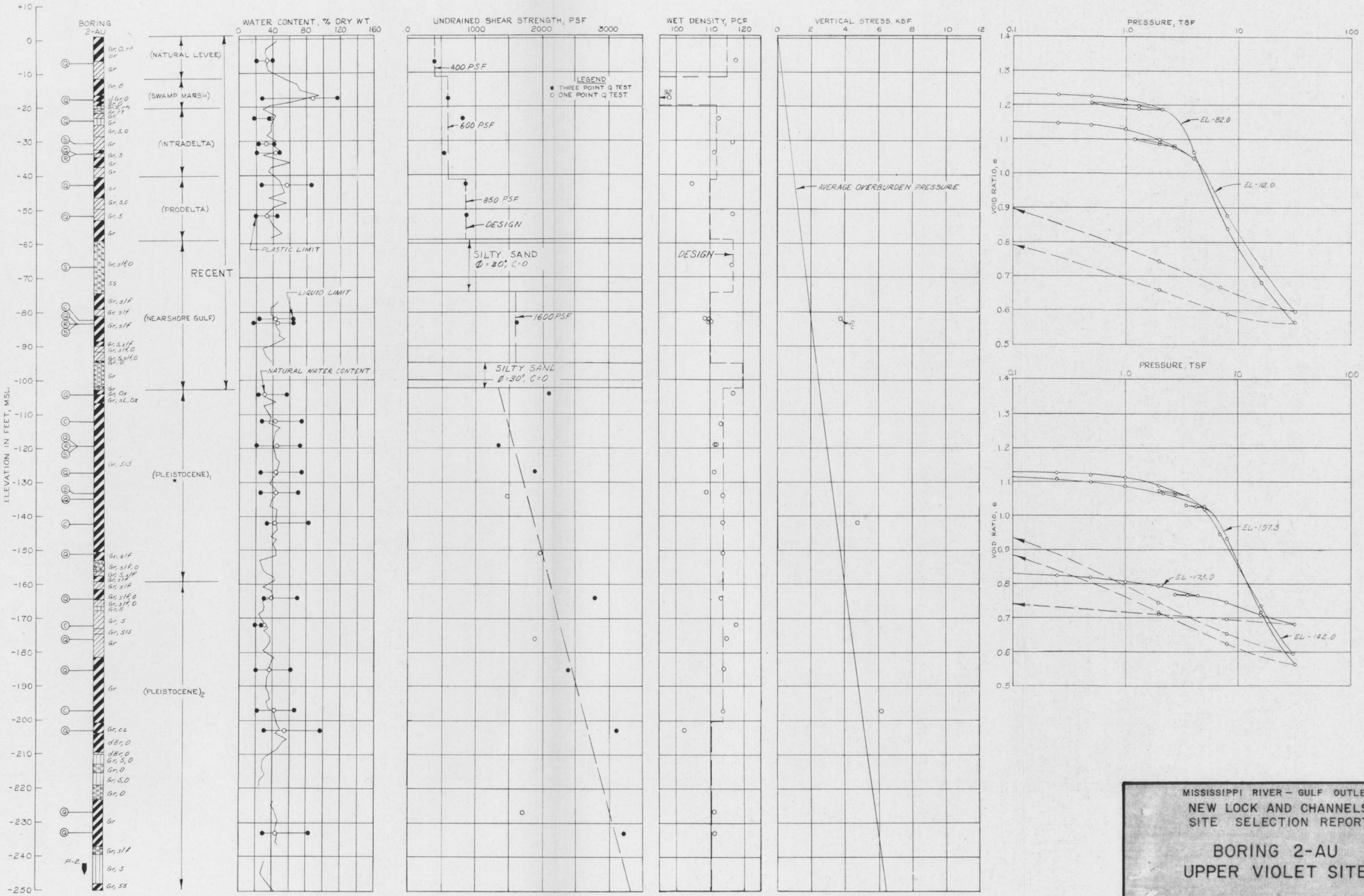
MISSISSIPPI RIVER - GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT

BORING 1-AU
SAXONHOLM SITE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

FEBRUARY 1975 FILE NO. H-2-26729

PLATE B-2



MISSISSIPPI RIVER – GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT

BORING 2-AU
UPPER VIOLET SITE

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

FEBRUARY 1975 FILE NO. H-2-26729

BORING 3-AU

ELEVATION IN FEET, MSL

(NATURAL LEVEE)
(SWAMP MARSH)
(INTERDISTRIBUTARY)
(PRODELTA)
RECENT
(NEARSHORE GULF)
(PLEISTOCENE)
(PLEISTOCENE)$_2$

WATER CONTENT, % DRY WT

PLASTIC LIMIT
LIQUID LIMIT
NATURAL WATER CONTENT

UNDRAINED SHEAR STRENGTH, PSF

LEGEND
● THREE POINT Q TEST
○ ONE POINT Q TEST

600 PSF
350 PSF
SILTY AND CLAYEY SAND
$\phi = 30°, C = 0$
500 PSF
DESIGN
850 PSF
SILTY AND CLAYEY SAND
$\phi = 30°, C = 0$
1600 PSF
1250 PSF
SILTY SAND
$\phi = 30°, C = 0$
SILTY SAND
SILTY AND CLAY SAND AND SAND
$\phi = 30°, C = 0$
3700

WET DENSITY, PCF

DESIGN

VERTICAL STRESS, KSF

AVERAGE OVERBURDEN PRESSURE
P_c

PRESSURE, TSF

VOID RATIO, e

EL-167.7
EL-100.7
EL-81.4

S-TESTS

REF. NO.	SAMPLE	DEPTH, FT.
1	15	21.1-23.1
2	32	46.5-47.4
3	48	69.0-70.2
4	57	83.4-84.2
5	68	102.2-103.2

$\phi = 34°, C = 0$
$\phi = 32°, C = 0$
$\phi = 23°, C = 0.03$ TSF
$\phi = 21°, C = 0.12$ TSF
$\phi = 20°, C = 0.15$ TSF

SHEAR STRENGTH, TONS/SQ FT.
NORMAL STRESS, TONS/SQ FT.

R-TESTS

REF. NO.	SAMPLE	DEPTH, FT
1	14	21.1-22.0
2	32	46.4-46.8

$\phi = 15°, C = 0$
$\phi = 8°, C = 0.1$ TSF

SHEAR STRENGTH, TONS/SQ FT.
NORMAL STRESS, TONS/SQ FT.

SHEAR STRENGTH DATA

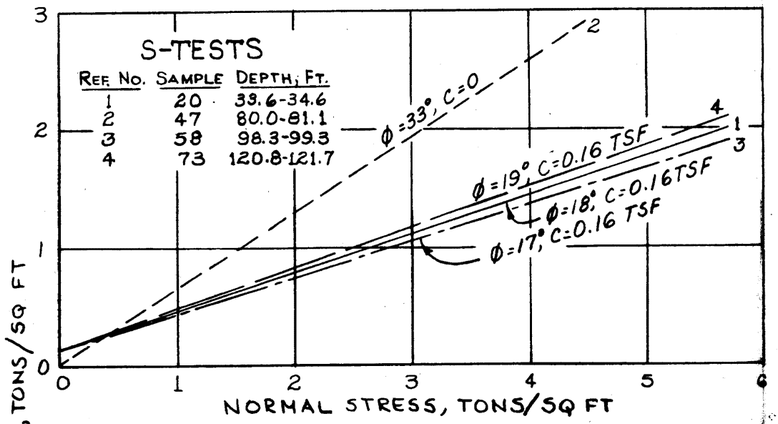
MISSISSIPPI RIVER – GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT

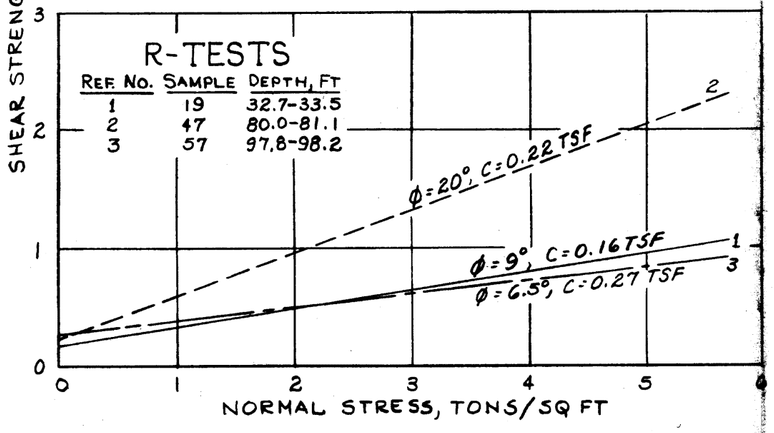
BORING 3-AU
LOWER VIOLET SITE

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

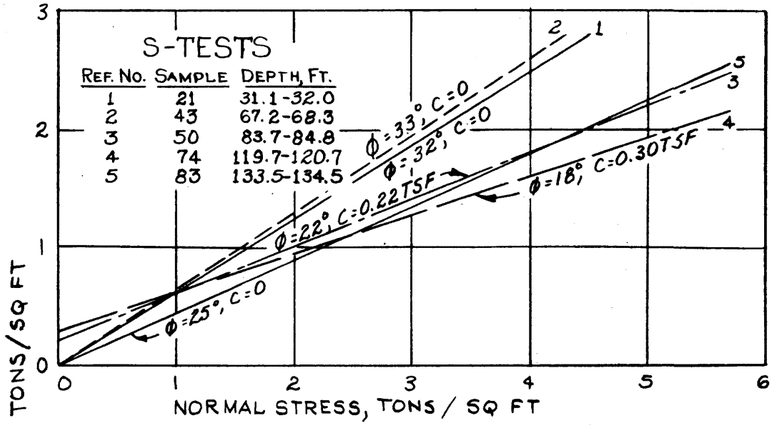
FEBRUARY 1975 FILE NO. H-2-26729

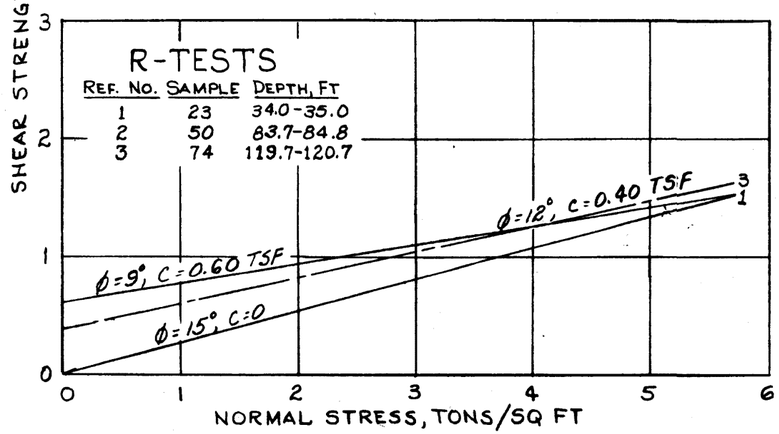
PLATE B-4



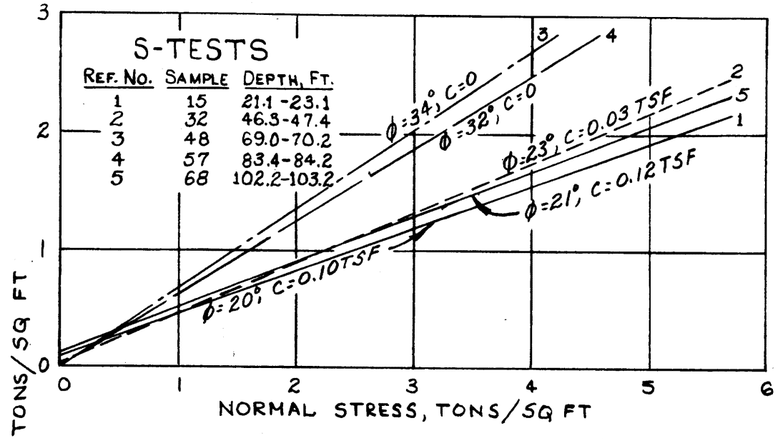


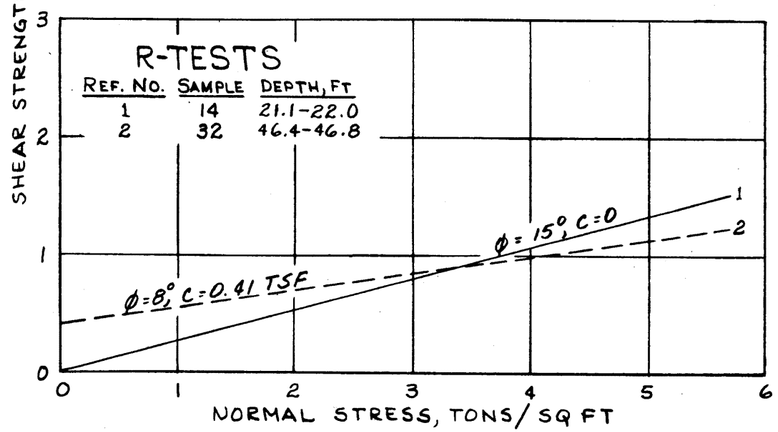
BORING 1-AU





BORING 2-AU





BORING 3-AU

MISSISSIPPI RIVER – GULF OUTLET
NEW LOCK AND CHANNELS
SITE SELECTION REPORT

R AND S TEST RESULTS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

FEBRUARY 1975 FILE NO. H-2-26729

Mississippi River-Gulf Outlet
New Lock and Connecting Channels

Site Selection Report

SELECTED RESPONSES TO THE 17 AUGUST 1973
INTERIM COORDINATION REPORT

Appendix C

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Mississippi River-Gulf Outlet
New Lock and Connecting Channels

Site Selection Report

SELECTED RESPONSES TO THE 17 AUGUST 1973
INTERIM COORDINATION REPORT

Appendix C

Table of Contents (cont'd)

F. EDWARD HÉBERT
1ST DISTRICT, LOUISIANA

COMMITTEES:
ARMED SERVICES—CHAIRMAN
STANDARDS OF OFFICIAL CONDUCT
(ETHICS)

MARY SWANN
ADMINISTRATIVE ASSISTANT

VIRGINEA BURGUIERES
EXECUTIVE SECRETARY
DISTRICT OFFICE

Congress of the United States

House of Representatives

Washington, D.C. 20515

August 22, 1973

Colonel Richard L. Hunt
District Engineer
N. O. District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

Thank you for your letter of August 17 and enclosures concerning the studies being made in order to update all information on sites previously studied, and to analyze all possible sites suggested by testimony presented at the public meetings held on the Mississippi River-Gulf Outlet--New Lock and Channels project.

I appreciate your letting me have the benefit of this information. However, my personal position remains the same as to location, and my official position remains the same, also, that I will accept the decision of the Corps of Engineers.

Sincerely yours,

F. Edw. Hébert

FEH:ms

LINDY (MRS. HALE) BOGGS, M.C.
2D DISTRICT, LOUISIANA

COMMITTEE:
BANKING AND CURRENCY

WASHINGTON OFFICE:
1507 LONGWORTH BUILDING
WASHINGTON, D.C. 20515

BARBARA RATHE
EXECUTIVE SECRETARY

Congress of the United States
House of Representatives
Washington, D.C. 20515

September 13, 1973

Colonel Richard L. Hunt
District Engineer
Department of the Army
New Orleans District Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

I am writing in regard to the interim report on the Mississippi Gulf Outlet/New Lock and Channels project, dated August 17, 1973, which you so kindly forwarded to me.

For a final selection of a site for this project I must rely heavily on your judgement along with that of the local assuring agencies.

Thank you for forwarding this information to me. I commend you and your staff for the thoroughness of the studies that have been made to date, and I look forward to receiving additional information as your studies continue.

All good wishes and warm regards.

Sincerely,

Lindy

Lindy (Mrs. Hale) Boggs, M.C.

LB:Ecd

State of Louisiana

EXECUTIVE DEPARTMENT

Baton Rouge

EDWIN EDWARDS
GOVERNOR

August 31, 1973

Col. Richard L. Hunt
District Engineer
U. S. Army Corps of Engineers
New Orleans District
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Col.Hunt:

The additional exhaustive site selection studies on the Mississippi River-Gulf Outlet New Lock and Channels Project contained in your letter of August 17, 1973, have been carefully reviewed. The Corps of Engineers is to be complimented on the preparation of these additional studies.

After considering the additional information, the State of Louisiana's position remains that which was presented in brief at the hearing in New Orleans, Louisiana, on November 29, 1972, held by your office.

We appreciate the opportunity of being able to comment.

Yours very truly,

EDWIN EDWARDS

HBM/cjh

NEW ORLEANS CENTROPORT U.S.A.

July 13, 1973

Colonel Richard L. Hunt
District Engineer
Department of the Army
New Orleans District
Corps of Engineers
P.O. Box 60267
New Orleans, La. 70160

Subject: MR-GO - NEW SHIP LOCK - LMNED-MP

Dear Colonel Hunt:

Your letter of June 15, 1973, outlining the present status of the lock site evaluation has been reviewed. We concur, as the State's designated assuring agency for this Federal project, in your evaluation of the various sites and agree that only the lower site and the sites adjacent to the existing lock were worthy of further consideration. We have reviewed this letter with the Louisiana Department of Public Works and the Office of the Governor of Louisiana and they concur in its contents.

It is our evaluation that social, navigation and economic considerations indicate that the lock at the lower site with the IH-NC Lock remaining in continued operation (your Plan #1) should be the recommended plan with the Federal government responsible for all vehicular bridges. This plan would permit the diversion of a portion of the present marine traffic through the existing lock and will expedite interport movement without unduly interrupting surface communications across the IH-NC and the lock. With the construction of the new lock, it is believed that specific time periods can be set aside exclusively for vehicular traffic crossing the existing Industrial Canal. During these times, waterway traffic through the Industrial Canal can be interrupted without imposing an undue burden on the waterway operators.

We feel that although the lower site with land bridge or with alternate land bridge has certain merits, it is our judgment that these advantages will not compensate for the added inconvenience experienced by marine operations nor the possibility (under plan 2a) of complete cessation of this and all intercoastal marine traffic should the new lock be damaged as was the case when the existing lock was put out of operation by the "Galaxy Faith".

C-4

With regard to the two plans for construction of a lock within the confines of the present Inner Harbor-Navigation Canal, we feel that the additional local interest costs are excessive. It is our considered judgment that a cost in the magnitude of $60,000,000 or more to the State of Louisiana for which is apparently a less than optimum solution to the problem of providing a new lock for the ever-increasing waterborne commerce would be imprudent, not in the public interest, and impossible to obtain. Furthermore, relocation of large numbers of residents of the 9th Ward of New Orleans would impose an undue and unwarranted burden on these citizens of our State. This is especially evident when consideration is given to the fact that the lower site is almost devoid of human population.

There has been concern expressed over the construction of the lock at the lower site. We feel that this genuine apprehensiveness on the part of the residents of St. Bernard is not supported by a realistic evaluation of the conditions which will exist at the time of the lock construction. It has been said that construction of the lock will increase the danger of flooding from hurricanes. The Corps has recently indicated that the Chalmette portion of the Hurricane Protection Plan will be completed in 1978, completely protecting the areas in St. Bernard Parish. This date is several years prior to the earliest time at which the lock could be completed. Furthermore, it has been established as a criteria for the lock construction that these hurricane protection levees will not be breached until the levees alongside the connecting channel have been completed. Therefore, the entire area would be secure against hurricane induced flooding, to the same degree as that afforded by the Hurricane Protection Plan.

The ecological aspect of the lock construction will have no added adverse effect upon the marshes adjacent to the construction site as it had been firmly established that the construction of the hurricane protection levees will have already rendered these marshes inoperative. This area, which is being protected against hurricane induced floods, will no longer be a viable marsh land, but will become suitable for agriculture, human habitation, or woodlands.

Provision of the uninterrupted access across the lock certainly will enhance access to the lower portion of St. Bernard and the early development of usable land areas created by the fill will foster rapid growth of the Parish's economic base. The claim that the Parish will be cut in two is not factually correct. The Parish is already cut by the Violet Canal and the new canal will be constructed in close proximity to this existing channel. The lock and connecting channels will be much less of an impediment to communications than is the present Violet Canal and we know of no plans to fill this channel. In fact, careful consideration has been taken, at considerable expense, to maintain the viability of this canal and the industries located thereon. The new four lane high-level vehicular bridge will with the same structure cross the new connecting channel, new lock and the Violet Canal. The bridge presently under design over the Violet Canal will

BOARD OF COMMISSIONERS OF THE PORT OF NEW ORLEANS • POST OFFICE BOX 60046 • NEW ORLEANS, LOUISIANA 70160
Tel: 504-522-2551 An Agency of the State of Louisiana Cable: CENTROPORT

become an integral part of the new bridge. The construction schedule for the new lock furthermore provides that at no time will access to lower St. Bernard be lessened by this construction. It is hard to believe that the construction of such a much needed facility, engendering as it would a tremendous financial impact upon the locality, could be conceived as an impediment to the growth of the Parish either at the initial construction or in the future.

The Board of Commissioners of the Port of New Orleans, on September 19, 1972, passed a formal resolution reaffirming the previous statement of intent and willingness to relinquish any legal control upon completion of the project over the areas involved in the construction and operation of the new lock and connecting channel between the Mississippi River-Gulf Outlet and the Mississippi River. The Board by this resolution indicated its willingness and desire to turn such control over to an agency of St. Bernard Parish as would be acceptable to the Governor of the State of Louisiana, U.S. Army Corps of Engineers, and the governing body of St. Bernard Parish. The obligations with which this Board is burdened as assuring agency will essentially be fulfilled when the lock is built. As the responsibility and costs of the construction and maintenance of the levees along the connecting channels are being assumed by the U.S. Army Corps of Engineers, the only remaining obligation for St. Bernard Parish to assume is that of providing permanent spoil areas and it is believed that this obligation can readily be transferred.

It is our hope that, as indicated in your letter, a site recommendation can be made at your level and forwarded to higher headquarters by September 1973 without any further public meeting inasmuch as Plan 1 was thoroughly reviewed at the two public meetings held in 1972. It is further hoped that a final decision can be made and publicly announced by the end of this calendar year. The imperative need for a new lock is evidenced by the up to 48 hour delays recently experienced at the existing lock. In 1972, the existing lock handled 23,830,000 tons which is effectively its maximum capacity. The demand, however, is continuing to increase. Based upon your projections, this increase is at a rate of one million tons per year and this increase will continue at this rate for at least 50 years. Already the development of the Port is being hampered due to this deficiency. Additionally, the proper planning for the orderly development of the Port is being delayed until this matter is resolved.

The Port of New Orleans is the second Port of the nation. Its annual financial impact on the State is almost two billion dollars. In the metropolitan area alone 37,000 jobs and 62% of every dollar earned are port-related. The continued viability of the Port, its role in maintaining and improving the Nation's competitive position in world markets, which is directly related to the international value of the dollar, is being jeopardized by the lack of decision on the new lock site and the construction schedule. We deem that resolution of this problem is of highest priority to the State and the Nation.

C-6

The outstanding cooperation by you and your staff with this Board at arriving at an early solution on this vitally important project is most sincerely appreciated.

Sincerely,

Edward S. Reed
Executive Port Director
and General Manager

C-7

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ST. BERNARD PARISH PLANNING COMMISSION

ST. BERNARD COURTHOUSE ANNEX CHALMETTE, LA. 70043

ANTHONY FERNANDEZ, CHAIRMAN -:- JOSEPH M. MERAUX, VICE-CHAIRMAN -:- HARRY M. FISHER -:- HAROLD W. LAGARDE, SR. -:- TED TEDESCO

September 17, 1973

Colonel Richard L. Hunt
District Engineer
U. S. Army Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

We appreciate the opportunity to review and comment on the interim report on the River-Gulf Outlet--New Lock and Channel project as prepared by your office.

We note with gratification the thoroughness of your approach on this project, however, we are not at this time convinced of the need for the ship lock. Our position relative to the continued viability of the Port of New Orleans rests on the contention that its greatest potential for growth lies in the continued development of the riverfront and not Centroport. However, we recognize that if the Centroport concept cannot, or will not, be abandoned by reason of political or bureaucratic momentum, then our primary concern must be with the location of deep draft access to the Centroport complex.

Based on our extensive studies, St. Bernard Parish recommends adoption of either Plan 3 or 4 of your submitted plans. It is believed that when all factors are considered, either of these plans will provide the greatest benefit at the least cost. You acknowledged that the existence of IHNC site has played a major divisive role in the community, but you justified the choice of its location by stating "there was little to no population evident in the proximity or below the Industrial Canal at the time of its construction in 1923", and you go on to acknowledge that it continues to contribute a decreased quality of life for those residents located to the east of it. Surely, you must recognize that location of a new lock in St. Bernard would duplicate and compound this undesirable situation. Of course it is true that the lower site location is sparsley developed at this time, but this is a rather short-sighted view which doesn't recognize that even at the present stage of development, more than 10,000 residents are located below the lower site and they would suffer "a decreased quality of life". We believe it makes far more sense to utilize the existing connecting corridor with its already established, negative sociological and physical impacts than to create still

another one. In so doing, extensive sociological and environmental trauma will be avoided and the old sociological and geographic trauma could be mitigated by improved vehicular crossings and other technological improvements that the new lock project could include.

We are pleased to note that in evaluating the cost of the various alternatives, you stress that the true measure of the cost is the total investment over the life of the project and not simply the first construction cost. This is precisely our position, especially as it relates to loss of renewable, productive wetlands and recreational scenic resources as stated in our presentation at the public meeting of August 30, 1973. We insist that a dollar value be placed on these losses over the life of the project. Our economic and environmental consultants conservatively estimate this figure to be $850 million. When this amount is added to the total investment over the life of the project, the benefit to cost ratio will certainly be unfavorable.

While the interim study is only directly concerned with the ship lock and channel project, you cannot divorce this proposal from the proposed deepening and widening of the MRGO. As you know, a good percentage of the opposition voiced at the November and December, 1972 public meetings was directly concerned with the MRGO and its adverse demonstrable environmental impact. The problems of maintenance and navigation hazards caused by erosion and shoaling of the sides are documented and only too well known by the Corps of Engineers. Our environmental consultant has already documented, through field observation, that the MRGO already exceeds 1,000 ft. in surface width in many places and continues to widen. It takes no great engineering expertise to know that increasing the bottom width to 750 ft. and the depth to 50 ft. will compound erosion and shoaling problems and increase flood hazards during storm conditions. Additionally, as surface width increases, greater fusion with Lake Borgne will be accelerated, thereby increasing hazards to shipping and port related industry under storm and high water conditions.

We, therefore, submit that, with the location of the new lock adjacent to the IHNC and the deepening of the Mississippi River to 50 ft., the abandonment of the MRGO from the Michoud Slip to the Gulf is not only feasible, but realistic. Even the assuring agency for the MRGO, i.e., the Board of Commissioners of the Port of New Orleans, through its representative, Mr. Hebert Haar, stated at the August 30, 1973 meeting that the continued maintenance of MRGO as a deep draft access to Centroport was not necessary and that its only justification was for an alternate means of ingress and egress during times of emergency. Presumably, emergency here means an accident in, or malfunction of, the locks. This being

the case, the users of the emergency access would be only those ships requiring a 36 ft. draft and wishing to enter Centroport from the Gulf, or caught in Centroport and wishing to proceed up river or exit by way of the Gulf. At any rate, we believe that the statistical probability of both the existing 31 ft. deep lock and the proposed new 55 ft. deep lock being inoperative at the same time, coupled with the number of ships in the position described above at the time of this dual emergency situation is so low as to render the argument for the continued costly maintenance of the MRGO absurd.

We wish to stress that, as public officials, we are indeed mindful of the importance of the Port of New Orleans to both the local and national economies, and that we will support any rational means of insuring and enhancing its viability. We believe that Proposals 3 or 4 are sound and offer decided advantages over the other alternatives under consideration. St. Bernard Parish urges that the Corps of Engineers abandon all other proposals and concentrate on the speedy conclusion of the project based on the more positive and productive plans as outlined in Alternatives 3 or 4.

Yours truly,

Angelo Chetta

ANGELO CHETTA
DIRECTOR-SECRETARY

AC/la

State of Louisiana

WILD LIFE AND FISHERIES COMMISSION
400 ROYAL STREET
NEW ORLEANS 70130

J. BURTON ANGELLE
DIRECTOR

EDWIN EDWARDS
GOVERNOR

August 19, 1973

Colonel Richard L. Hunt
District Engineer
U. S. Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160

RE: LMNED-MP

Dear Colonel Hunt:

In reply to your letter of August 17, 1973, in which you ask for further review of proposed site studies concerning the Mississippi River-Gulf Outlet new lock and channel project, we have the following comments to make.

In October of 1972, we submitted a rather lengthy preliminary evaluation of the effects of this project to the Louisiana Department of Public Works for inclusion in the State's presentation at the Public Hearing of November 29, 1972. A copy of this statement is herein included since it states our basic position on this project. In addition to our original statement, we include some additional comments as follows.

Your letter of August 17, 1973, indicates that all state agencies concur in favoring the project. There is some question as to whether such a statement is absolutely accurate since our attached statement would indicate that we have certain reservations with respect to the development of locks or canals at the lower site in St. Bernard Parish; and in particular with the associated effects and ramifications which might occur outside of the project area. Certainly we would like to reiterate that any project which calls for the expansion, widening, or deepening of the present Mississippi River-Gulf Outlet would not be ecologically acceptable since widespread damages and high salinities can be anticipated from such a proposal.

It is clear that the cost of the construction of the project at the inner harbor navigation site would be initially more expensive than at the lower site planned in St. Bernard Parish. However, we

might point out that the true measure of the cost of any plan is the total investment for the life of the project. Thus, if the cost of the loss in nursery grounds and natural resources production throughout the lower marshes and associated areas were prorated over the life of this project, in all probability the inner harbor site would prove to be the cheapest in the long run. Certainly, any project of the magnitude proposed here in the lower marshes with the associated dredging and canalling requirements that may be necessary outside of the area could result in the loss of natural resources that would be extremely high.

Fishery production and marine commerce are now and always have been inseparably linked as to benefits accrued to this nation. However, it does not follow that environmental alterations that appear to enhance one also are advantageous to the other. In this particular case, dredging channels, spoiling marshes, construction of locks, and the industrialization, commercialization, and residential development that will follow would most certainly adversely affect the renewable resources of this state. Many of the original settlers of Louisiana were fishermen and were engaged in rudimentary marine commerce. However marine commerce has overshadowed the originators of this important commercial endeavor and in many cases to the detriment of the fishermen.

Reversing this trend is long overdue. Substantial consideration should be given to the populace that depends on the fishing industry for subsistence when reviewing the impact of such projects constructed in or near the wetlands of this state and nation. In addition, the aesthetics of viewing fertile marshland in lieu of a barge terminal lock or spoil area cannot be valued enough.

In conclusion, it is suggested that if at all possible the inner harbor site be utilized and the Mississippi River-Gulf Outlet itself not be scheduled to be increased in size since this latter operation could possibly be the most detrimental project of all.

We appreciate the opportunity to comment of this project.

Sincerely yours,

J. Burton Angelle
Director

JBA:jsf

PRELIMINARY STATEMENT OF THE LOUISIANA WILDLIFE AND FISHERIES COMMISSION CONCERNING THE CONSTRUCTION OF THE PROPOSED MISSISSIPPI RIVER - GULF OUTLET NEW SHIP LOCK AND CONNECTING CHANNELS

OCTOBER 26, 1972

INTRODUCTION

The technical personnel of the Louisiana Wild Life and Fisheries Commission have been in close consultation with members of the Dock Board, the U. S. Corps of Engineers, the Louisiana Departments of Health and Public Works as well as with private consultants concerning questions that must be answered by an environmental impact statement prepared for the ship and barge canal and lock proposed for St. Bernard Parish. These discussions have been going on for nearly a year and the Wild Life and Fisheries Commission has made its position clear as to the types of questions which should be answered in the completed impact statement. At this point in time the complete statement has not been prepared and only a preliminary survey and assessment of the various problems has been reached concerning the effects of this project. It is hoped that sufficient field work and research data will be developed by the Corps of Engineers and private consulting firms to answer these questions in the completed impact statement. The following discussion outlines some of the more specific problems that should be answered if the environmental

impact studies are to seek to avoid detrimental environmental impacts, meet the requirements of the present Federal laws, and if the project is to be carried out without serious litigation from opposing groups.

GENERAL DISCUSSION

An examination of the proposed barge and ship lock canal connecting the Mississippi River - Gulf Outlet and the Mississippi River will indicate that several types of effects may be anticipated from the construction of such a project. These may be outlined as follows:

1) An assessment of damages or effects within the rights-of-way of the project and of the adjacent spoil areas.
2) The temporary and permanent effects in a localized area around the construction project.
3) The effects of an accessory proposed barge canal in the marsh area to the east of the Mississippi River-Gulf Outlet and connecting the Outlet to the Intracoastal Canal in order to bypass areas of congestion at the inner port site.
4) The hydrologic changes in water circulation associated with operation of the canal and lock.
5) Pollution problems which may be associated with the introduction of Mississippi River water into the Lake Borgne - Gulf Outlet system as well as increased

pollution associated with the proposed port itself.

6) Effects which may occur in the areas well away from the project site as a result of introduced hydrologic effects and other construction and maintenance procedures necessary for the port area to function properly.

With respect to the direct effects of the construction of the project, while a complete evaluation of the effects of this work has not yet been made, all of the activity falls within an area already encircled by hurricane-protection levees and which has been deprived of water circulation and, for the most part, degraded as an ecosystem. It is not generally assumed that this area enclosed by the hurricane-protection system would be greatly damaged by the project construction and it is possible that water diverted from the project into this area might be developed into beneficial purposes.

Most of the real problems associated with the proposed project result from the activities outside of the principal project area and those which will be associated with the operational procedures of the project. For example, the proposed canal connecting the Mississippi River - Gulf Outlet to the Intracoastal system designed to eliminate barge traffic problems in the Centraport area itself, will disrupt several thousand acres of marshland and nursery ground associated with Lake Borgne. This

possible damage has been recognized by all private and public consulting groups and should be avoided if at all possible.

Operational procedures of the lock and canal may cause the greatest initial problem throughout the entire area. It has been estimated as much as 25 acre-feet of river water will enter the Mississippi River - Gulf Outlet and Lake Borgne complex with each lock operation. The Louisiana State Board of Health has pointed out that the polluted river water would very likely cause extensive water pollution throughout the Lake Borgne area and possibly down the Gulf Outlet channel to more removed areas. This pollution problem would be compounded by the fact that more ships and industrial activities are expected to occur in the proposed Centraport area along the Industrial Canal and Intra-coastal system. This problem of course is predicated on the fact that the Mississippi River water is totally unusable at this time. If it can be assumed that within a reasonable length of time, the river water can be elevated in quality to a point where it will not contaminate seafood and seawater, the operation of the lock as a system of injecting fresh water into a too saline area could be turned into a beneficial activity. The Wildlife and Fisheries Commission of course can only conjecture the outcome of using Mississippi River water in such a manner. The State Board of Health would be the controlling agency with respect to the actual acceptance of river water in such a management plan.

Possibly of greatest concern and that which remains to be evaluated are the total hydrographic and hydrologic changes that will result from this project. Conceivably beneficial effects might be anticipated provided water circulation tended to restore some of the fresh water to the marsh areas south and east of the project area. Conversely, however, if it becomes necessary to deepen or widen the Mississippi River - Gulf Outlet in order to make this project function in an efficient manner, then the reverse could be expected since excessive salinities probably would develop throughout the entire Lake Borgne - Lake Pontchartrain and Louisiana marsh complex. This condition is already apparent from the existing Mississippi River-Gulf Outlet project and any further developments along these lines might be disastrous. On the other hand, if the system can be developed using principally the Mississippi River as a major route of navigation for deep-draft vessels, then it may be assumed that excepting for the pollution problem involved, the total project might not be expected to create excessive ecological impacts.

CONCLUSION

In conclusion, the Wild Life and Fisheries Commission wishes to reiterate that these are preliminary positions and we reserve the right to reexamine these positions in the light

of the final impact statement when completed. The Wild Life and Fisheries Commission, of course, neither intends to support or oppose such projects but merely to present all of the factual data available concerning the effects of such projects so that the public and the governing bodies of this State can make intelligent decisions with respect to the environmental impact of industrial developments in valuable areas of Louisiana."

Plaquemines Parish Commission Council

POINTE-A-LA-HACHE, LA. 70082

September 19, 1973

Re: LMNED-MP

THE MISSISSIPPI RIVER-GULF OUTLET
NEW LOCK AND CONNECTION CHANNELS
BETWEEN THE MISSISSIPPI RIVER AND
THE MISSISSIPPI RIVER-GULF OUTLET

Col. Richard L. Hunt, C.E.
District Engineer
Department of the Army
New Orleans District
Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160

Dear Col. Hunt:

In reply to your letter dated 17 August 1973, concerning the above captioned project we are herewith enclosing three copies of statement of the undersigned on the subject forwarded you via telecopier on September 17, 1973.

Advice relative to future developments covering the project will be appreciated.

Yours very truly,

Plaquemines Parish Commission Council

President

COP:sb
encls.

C-19

STATEMENT OF
CHALIN O. PEREZ, PRESIDENT
OF
PLAQUEMINES PARISH COMMISSION COUNCIL
CONCERNING
THE MISSISSIPPI RIVER-GULF OUTLET NEW LOCK AND
CONNECTING CHANNELS BETWEEN THE MISSISSIPPI RIVER AND
THE MISSISSIPPI RIVER-GULF OUTLET

September 14, 1973

This statement is in response to your invitation for comments concerning the above subject matter contained in your letter of 17 August 1973. On behalf of the Plaquemines Parish Commission Council, I reiterate the comments contained in my statement of November 29, 1972 on the same subject matter, copy of which is attached.

In addition your statement that further engineering effort has proved that you can significantly reduce the required rights of way and the resulting socioeconomic impact of the 1969 IHNC plan further supports my earlier position that an additional lock should be constructed at the present site of the IHNC instead of constructing a new channel through St. Bernard Parish with its resultant disadvantages.

I submit therefore that either of the plans numbered 3 or 4 in your letter of 17 August 1973 should be decided upon instead of the plans numbered 1 and 2.

Respectfully submitted,

Plaquemines Parish Commission Council

President

STATEMENT OF
CHALIN O. PEREZ, PRESIDENT
OF
PLAQUEMINES PARISH COMMISSION COUNCIL
AT
PUBLIC MEETING TO DISCUSS THE MISSISSIPPI RIVER-GULF OUTLET
NEW LOCK AND CONNECTING CHANNELS AND HIGH LEVEL HIGHWAY CROSSINGS
OVER THE CONNECTING LINKS BETWEEN THE MISSISSIPPI RIVER
AND THE MISSISSIPPI RIVER-GULF OUTLET

NOVEMBER 29, 1972

My remarks today will be primarily directed to the adverse effects of the construction of a new ship channel in St. Bernard Parish which will bisect the Parish of St. Bernard and to a practical solution to the problem of transporting material over water in the New Orleans area; that is, the addition of a barge lock at the Industrial Canal in New Orleans.

We in Plaquemines Parish have extensive experience with the advantages and disadvantages of the construction of a canal which bisects or cuts land masses and particularly the effect on those living downriver from such channel.

The construction of the alternate link of the Intracoastal waterway through Belle Chasse has brought about substantial industrial development along the banks of this canal; but, at the same time, has stymied the development of our highway system in that area and has caused interminable delays in highway transportation over the Belle Chasse semi-high-level bridge. When this bridge was designed only a few years ago, according to the detailed study and survey made by the Louisiana Highway Department, 80% of the water borne traffic was to have been able to navigate under the bridge, but by the time the bridge was completed we found that only approximately 20% of the vessels passed under the bridge without requiring it to be opened. In addition to the inconvenience and thousands of man-hours lost every year as the result of bridge openings, that portion of Plaquemines Parish upriver from the waterway is in great jeopardy because of the danger of the bridge being open when fires or other emergencies occur. Fire trucks, ambulances and police cars, most of which are stationed downriver from the Intracoastal waterway, are frequently delayed because of these openings.

At present, we need two additional highways which would cross the Intracoastal waterway; one, a bypass behind the Belle Chasse community, and the other, a connecting link between Louisiana State Route 39 below Belle Chasse and the Lafitte-Larose road. The cost of these two projects is prohibitive because of the high cost of constructing semi-high-level or high-level bridges or tunnels across the Intracoastal waterway. As a result, all traffic must be routed through the heavily developed area of Belle Chasse where the Louisiana Highway Department surveys show that in spite of the fact that we just completed a four-lane highway through this community, a six-lane highway is already needed.

Plaquemines Parish is also cut off from the New Orleans business and shopping district on the east side of the river by the existing Industrial Canal. I am sure that when the old Industrial Canal bridge was built, and later when the Judge Seeber Bridge was built, the design engineers predicted that these bridges would adequately take care of the vehicular traffic. But as so many of us who use these bridges in peak hours know, we experience interminable delays and the unnecessary loss of man-hours due to the limited crossings over the Industrial Canal.

With the construction of Judge Perez Drive downriver there will undoubtedly be a tremendous increase in the number of people living below Violet in St. Bernard and Plaquemines Parishes. The east side of the river in Plaquemines Parish is a sleeping giant where in the next few years there will be unprecedented industrial and residential growth. One of the major hard mineral companies has recently announced that it will reopen and double the size of the Port Nickel plant at Braithwaite which will require thousands of construction workers and many hundreds of plant employees, which in turn will add thousands of additional highway users in the Violet area.

This is but one of the many industries which has recently shown interest in locating in Plaquemines Parish which, in turn, will bring about a vast increase in our east river bank population.

Before the new ship channel could be completed and a high-level bridge constructed over the proposed new ship channel, the new bridge would be inadequate. Then local interests and the State would be required

to wrestle with the problem of finding funds to build new bridges at a cost of many millions of dollars.

Just as Plaquemines Parish is being choked on the West side of the River by the alternate Intracoastal Canal link at Belle Chasse and as access is choked on the East side of the River at the Industrial Canal, the construction of another unnecessary channel in the vicinity of Violet would further inhibit the growth and economic development of lower St. Bernard and the East bank of Plaquemines Parish.

Last year, out of a total of 23,649,869 tons of shipping and 65,867 water bottoms that used the Industrial Canal locks only 1,694,000 tons and 242 water bottoms were deep draft vessels, (or 7% of total tonnage and 0.37% of total water bottoms were deep draft vessels).

I am informed that the cost of construction of a new barge lock adjacent to the ship lock at the Industrial Canal would be only a fraction of what a new ship channel and river locks would cost at Violet. At the same time, highway traffic across the Industrial Canal would be vastly improved if a new bridge were constructed in the place of the antiquated Industrial Canal bridge, thus accomplishing three laudable objectives: one, of adequately solving water borne traffic problems; two, of improving highway traffic across the existing Industrial Canal; and, three, of avoiding bisecting the land mass one more time.

There are others better versed on the subject of handling cargo who will testify to the need or lack of need of an additional ship channel, but as a practical matter, it appears that the solution to moving cargo and materials between the Mississippi River and the ship channel would be to bring the cargo to the ships by rail, truck or barge instead of moving ships from the ship channel to the River or vice versa to load cargo. "Bring Muhammad to the mountain, not the mountain to Muhammad."

Attached hereto is a copy of the resolution unanimously adopted by the Plaquemines Parish Commission Council in which it supports the position taken herein for the construction of an additional barge lock at the Industrial Canal instead of a ship channel in the vicinity of Violet.

Respectfully submitted,

PLAQUEMINES PARISH COMMISSION COUNCIL

/s/ C. O. Perez

Chalin O. Perez
President

PRIDE BUILDS NEW ORLEANS

MOON LANDRIEU
MAYOR

CITY OF NEW ORLEANS

OFFICE OF THE MAYOR

September 11, 1973

Col. Richard L. Hunt
U. S. Army Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Col. Hunt:

The past decade has seen tremendous technological advances in shipping methods used in New Orleans, and throughout the world. These changes have caused affected agencies to review their present facilities to accomodate new vessels and their unique procedures of loading and unloading.

It is generally agreed that if New Orleans is to keep up, on a competitive basis, with other U. S. and world ports, certain changes to our port conditions must be effected. Therefore, the concept of the "Centroport" is one that I endorse.

It is my understanding that the creation of the large docking facilities in the eastern sector of the city would necessitate the construction of a deep-water connection between the Mississippi River and the Gulf outlet. This connection seems feasible provided that the environmental impact statement proves to be affirmative and documents no serious environmental damage to the ecological system of the area.

I would further hope that such a plan would be accepted by the people of St. Bernard who have been made aware of every aspect of the "Centroport" concept and its resulting impact.

Thank you for your attention.

Sincerely,

Moon Landrieu

Moon Landrieu
Mayor

ML:jc:bd

C-24

"An Equal Opportunity Employer"

PRIDE BUILDS NEW ORLEANS

CITY OF NEW ORLEANS

MOON LANDRIEU
MAYOR

September 24, 1973

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ALBERT J. SAPUTO

Colonel Richard L. Hunt
District Engineer
Department of the Army
New Orleans District, Corps of Engineers
P.O. Box 60267
New Orleans, Louisiana 70160

Re: MR-GO New Lock and Channels Project--LMNED-MP

Dear Colonel Hunt:

Enclosed for your information is a copy of the official minutes of the City Planning Commission meeting of September 19, 1973, pertaining to the captioned subject. These are the comments of the Commission you have requested on the Mississippi River-Gulf Outlet New Lock and Channels project.

If I can be of any further assistance to you concerning this matter, please contact me.

Sincerely,

Harold R. Katner/BB

Harold R. Katner
Director-Secretary

CH:gw

C-25

Semi-Monthly Planning Meeting
Wednesday, September 19, 1973

CONSIDERATION - MISSISSIPPI RIVER - GULF OUTLET NEW LOCK AND CHANNEL PROJECT

PROPOSAL:

The Corps of Engineers has asked the City Planning Commission to comment on the proposal to construct a new ship/barge channel and new lock between the Mississippi River and the Gulf Outlet. The following letter has been submitted by the Corps of Engineers for comment:

DEPARTMENT OF THE ARMY
New Orleans District Corps of Engineers
17 August 1973

Mr. Harold R. Katner, Director
New Orleans Planning Commission
City Hall
New Orleans, Louisiana 70112

Dear Mr. Katner:

C-26

Since the public meetings of 29 November 1972 in New Orleans and 9 December 1972 in St. Bernard Parish concerning the Mississippi River-Gulf Outlet--New Lock and Channels project, we have been conducting additional exhaustive site selection studies. These studies are being made in order to update all information on sites previously studied, and to analyze all possible sites suggested by testimony presented at the public meetings. We offer this letter as an interim report principally because the selection of any of the site plans now under primary consideration would directly concern yourself or the people you represent. We therefore solicit your views and comments within the next 30 days.

The above mentioned public meetings were attended by approximately 1,600 people. All factions were well represented in person and/or by written statements. The transcript and 252 exhibits filled three large volumes. The opposition to the Lower Site plan was comprised of the political leadership and citizens of St. Bernard and Plaquemines Parishes, a number of environmental organizations, and a small segment of local shallow-draft barge interests. Petitions against this project being located in St. Bernard Parish with over 18,000 names were presented by the President of the St. Bernard Parish Police Jury and other police jurymen. The major objections voiced were the fear of environmental damage in the adjacent wetlands and the fear of increased danger of future flooding. Proponents included the Governor of Louisiana backed by all state agencies, the Board of Commissioners of the Port of New Orleans, Congressman F. Edward Hebert, the Mayor of New Orleans, organized labor, the shallow-draft industry (AWO), numerous shipping firms, civic groups, and individuals. The proponents' position is that the future viability of the Port of New Orleans and its favorable economic impact on the State and Nation depend on the provision of a new ship/barge lock.

LMNED-MP 17 August 1973

STATUS

Post-public meeting site/plan studies were immediately undertaken by this district. Fourteen possible plans resulting from information received in those public meetings have been under study since December 1972. These 14 plans, comprising 7 sites (see inclosure 1) located in the parishes of Orleans, St. Bernard, and Plaquemines, included: (1) Baptiste Collette alternate route with new lock in the location of the existing lock; (2) Bohemia Site; (3) Scarsdale Site; (4) Caernarvon Site; (5) Lower Site; (6) Lower Site barrier plan; (7) Upper Site; (8) Saxonholm Site; (9) IHNC Site - east of old lock; (10) IHNC Site - center channel (opposite Galvez Street wharf); (11) IHNC Site - east of center channel (opposite Galvez Street wharf); (12) IHNC land bridge with Lower Site; (13) IHNC land bridge with Caernarvon Site; and (14) IHNC land bridge with Scarsdale Site. These plans were compared as to construction cost, construction difficulties, navigation benefits, local economics, relocations, social impacts, ecological impacts, maintenance, and public sentiment. Deliberations to date, inclusive of the voluminous amount of testimony received at the public meetings have suggested certain new concepts and priorities germane to the future planning of this project. These developments are outlined in the following paragraphs.

We are presently working on the fourth screening of possible sites with information more detailed than previous examinations. The previous screenings showed generally that the sites located in Plaquemines Parish should be rejected as being simply too circuitous for practicality and irretrievably damaging to unacceptably large areas of productive marshland. Our presentation at the 1972 public meetings on the St. Bernard lock sites established the basis for rejecting the Saxonholm and Upper Sites. The Lower Site barrier plan was rejected on the basis of excessive first cost and potentially great ecological damage to all the marshland west of Lake Borgne. The two Orleans Parish Industrial Canal sites proposed for the existing canal centerline were rejected on the basis of stopping or interrupting marine traffic for an excessive amount of time, the great loss of national monetary benefits resulting, as well as the attendant loss of port business and regional benefits.

SITE PLANS

There are four plans utilizing two sites now remaining in contention out of the original 14. These remaining plans are listed below only in their essential features for your consideration:

1. The Lower Site plan - IHNC to be concurrently operated (see inclosure 2). This proposed plan has been modified from that presented at the public meetings as follows: The barge canal connecting the Mississippi River-Gulf Outlet with the Gulf Intracoastal Waterway would be included to satisfactorily accommodate the vast shallow-draft tonnage transiting east and west. Any alternate route over existing waterways would be excessively circuitous. The plan further includes a semihigh-level vehicular crossing over the IHNC at St. Claude Avenue for environmental reasons. This will be discussed more fully later on.

2. The Lower Site with a IHNC land bridge. The philosophy of this proposed plan is to move the Industrial Canal operation away from the heavily populated center city location to the more sparsely populated Lower Site in St. Bernard Parish, and thereby reconnect the majority of the 87,000 residents now living below the canal back to the New Orleans metropolitan area with uninterrupted vehicular access. In its purest form, the land bridge concept might consist of filling that portion of the Industrial Canal which lies between St. Claude and North Claiborne Avenues with earth, dismantling the existing bridges, and constructing ground-level boulevards thereon. Additionally, a park could be constructed in this same reach between these major thoroughfares to benefit the adjacent residential community. Nevertheless, it is anticipated that marine interests will object to irretrievably closing an existing lock and channel in view of the periodic requirement for shutting down the new lock for maintenance and the ever-present fear that an accident, such as the "GALAXY FAITH" and "EMERGENCY BRIDGE REPAIR" incidents, would close the new lock for a protracted period. A compromise alternative to actually filling the Industrial Canal might be to refurbish the existing lock and retain it in custodial care or a standby status. It would then be utilized only when the new ship lock was closed for maintenance and/or repair. The existing bridges would thereby afford, practically speaking, equivalent uninterrupted vehicular access. It is understood that shallow-draft navigation interests, with the assistance of the Port Commissions' engineering staff, have recently investigated the feasibility of an overland conveyor belt system for moving bulk materials, such as shell and gravel, which are obtainable in the vicinity of Lake Pontchartrain. These commodities accounted for over 3 million tons (about 13 percent) of the total tonnage which passed through the existing lock in 1972. Such a system might logically be included as part of the cost of the IHNC land bridge concept in lieu of this traffic going via the Lower Site as the least costly alternative.

3. The Inner Harbor Navigation Canal Site - east of the old lock (inclosure 3 - Plate A). Since the public meetings, great engineering effort has been expended in an attempt to significantly reduce the required rights-of-way and the resulting socioeconomic impact of the 1969 IHNC plan. This has been largely achieved. This newfound capability stems from the use of new construction techniques, the application of which was not obvious as recently as August 1969. These new techniques which utilize the present advanced state-of-the-art of soils mechanics coupled with unique foundation engineering, have enabled the pulling in of the required east side rights-of-way to mid-block between Jourdan Avenue and Deslonde Street in the forebay; i.e., the reach bounded by the Mississippi River and St. Claude Avenue, and to Jourdan Avenue in the tail bay; i.e., the reach bounded by St. Claude Avenue and the Mississippi River-Gulf Outlet. We have worked quite closely with the assuring agency's engineers on the relocations required by this proposed plan. Each proposed relocation item has been retested for authenticity under the "relocations" definition. In so doing, the first cost of bridge and utility relocations has been optimized. As a part of this plan, the old lock would be refurbished and operated dually with the new lock to optimize the handling of small barge tows and the numerous small craft now compounding the IHNC marine traffic problem. Further justification for this dual mode of operation is contained in the rationale of the alternate IHNC land bridge plan.

4. The Inner Harbor Navigation Canal Site-east of channel center - opposite the Galvez Street wharf (inclosure 4 - Plate B). The rights-of-way required for this plan are essentially the same as those described in the preceding IHNC Site plan. However, the location of the new lock, north and east of the old lock, allows some economies in cofferdam and lock construction along with a desirable increase in forebay length. The same principles, as previously described, were applied to relocations. The old lock would likewise be refurbished and operated in conjunction with the new lock for the same reasons as described above.

NEW CONCEPTS

It is evident, based on testimony gathered in the public meetings of February 1960, November 1972, and December 1972, and a significant amount of the correspondence received since late 1969, that a large segment of the local population feels that the Industrial Canal has played a major divisive role in the community. These objections, however, do not mitigate the vital necessity of its existence to the shallow-and deep-draft marine commerce which benefits this Nation so greatly, nor does this faction publicly recognize the historical fact that there was little to no population evident in the proximity

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or below the Industrial Canal at the time of its construction in 1923. But as it stands today, it is contributing to a decreased quality of life of the residents surrounding it due to the lack of a buffer zone, and of all the residents of the Lower Ninth Ward in Orleans Parish and the total east bank populations of St. Bernard and Plaquemines Parishes due to the continual interruption in vehicular access. As stated before, this population totals about 87,000 persons by the 1970 census. Therefore, it must be recognized that no matter which solution is the most advantageous to the Nation's economy, the final choice of site/plan will most certainly be tempered by the effects on the local population and that the Industrial Canal will require an investment as an intrinsic part of this project regardless of the site chosen.

FLOOD AND HURRICANE PROTECTION

The forebay and tailbay return levees and/or floodwalls will be constructed and maintained totally at Federal expense. The forebay-river flood protection levees will provide the same degree of flood protection as the existing Mississippi River levees. The tailbay hurricane protection levees and/or floodwalls will provide flood protection from hurricane wind-tide levels to the same degree as those levees now under construction as part of the Lake Pontchartrain, Louisiana and Vicinity, hurricane protection project.

BRIDGES

A Federal study has been authorized by a resolution adopted 7 June 1972, sponsored by the late Senator Allen J. Ellender, which provides for the review of the MR-GO project with a view to determining whether the existing project should be modified in any way at this time, with particular reference to providing high-level highway crossings over the connecting links between the Mississippi River and the Mississippi River-Gulf Outlet. In September 1972 this study was combined with the ongoing Gulf Intracoastal Waterway, Louisiana Section, High Level Highway Crossings study. Several public meetings have already been held. The Louisiana Department of Public Works, the Louisiana Department of Highways, the Board of Commissioners of the Port of New Orleans, local agencies and other interests have requested semihigh and high-level bridges when bridges were to be modified at the Industrial Canal and/or when new bridges were to be required for a new connecting channel.

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The Lower Site plan, as previously stated, includes a high-level, four-lane fixed vehicular bridge at Judge Perez Drive and a vertical lift, low level railroad bridge across the tailbay; and a semihigh level, four-lane movable span vehicular bridge over the existing Industrial Canal at St. Claude Avenue. The IHNC site plans include semihigh-level, four-lane, movable span bridges at St. Claude and Claiborne Avenues and a combined semihigh-level vehicular, low level railroad, movable span bridge at Florida Avenue.

In any event, the Federal Government's position is that replacement of vehicular and railway bridges must be complete, including the connecting rail and roadways, before the channel can be constructed through existing roads and railways.

UTILITIES

The assuring agency has the responsibility for relocating all utilities. This includes gas, water, drainage, and sewerage lines; electricity and telephone services.

The Federal Government's position is that these relocations must be completed without interruption of services before the channel can be constructed through their existing locations.

INDUSTRIAL CANAL LOCK

The Federal Government is considering the assumption of control of the existing Industrial Canal Lock as part of the alternative plans.

COSTS

We have inclosed our latest cost estimates. Please note that these costs include items of different confidence levels, but all are based on 1 January 1973 price levels. It should also be pointed out that the true measure of the cost of each plan is the total investment over the life of the project and not simply the first construction cost. It is becoming apparent, however, that as more complete cost data are included the remaining plans under study are drawing closer in first cost.

COMPARATIVE CONSTRUCTION COSTS
(COST BASIS: JAN 1973)

Plan		Federal Cost	Non-Federal Cost	Total Const. Cost
1.	Lower Site (IHNC lock open)	152,277,000	90,680,000[1]	242,957,000
2a.	Lower Site w/IHNC Land Bridge	142,317,000	99,263,000[3]	241,580,000
2b.	Lower Site w/Alternate IHNC Land Bridge Concept	152,277,000	76,226,000[2,4]	228,503,000
3.	IHNC Site "A" - East of Existing Lock (dual lock op.)	165,125,000	111,114,000	276,239,000
4.	IHNC Site "S" - East of Outer Channel (dual lock oper)	147,094,000	111,314,000	258,408,000

[1]Includes a semihigh-level bridge at St. Claude Avenue over the IHNC.
[2]Includes $250,000 for modification of IHNC Coast Guard facilities.
[3]Does not include $3,962,000 bulk conveyor system to move Lake Pontchartrain commodities.
[4]Does not include $3,650,000 bulk conveyor system to move Lake Pontchartrain commodities.

ECONOMICS

As of this date, no substantive input from any governmental or private agency, group, or individual has provided a satisfactory basis for recommending anything less than the construction of a ship/barge lock. The cost of delays at the existing lock by barges and ships, as well as added costs that would be incurred by traffic using either alternate routes or alternative modes of transportation over the 50-year project life period represents an average annual loss of $31,715,000, and aggregates to over $1.5 billion over the life of the project (July 1973 price levels). Construction of a new SHIP/BARGE LOCK would prevent this loss and is economically justified thereby.

ENVIRONMENTAL CONSIDERATION

Environmental concerns are continuing to receive special attention during the study. A comprehensive environmental impact statement covering all features of the project will be completed well before the start of any construction, and will be circulated to all interested parties for comment and then to the President's Council on Environmental Quality as required by the National Environmental Policy Act. The information which will comprise the Environmental Impact Statement (EIS) is being developed concurrently with the site plan studies, and although not in an EIS format, will be fully considered in the site selection.

A concise environmental summary was circulated as attachment 2 to the notice of a public meeting dated 15 September 1972. This summary compared the Saxonholm, Upper, and Lower sites in St. Bernard Parish and the Inner Harbor Navigation Canal site in Orleans Parish as to ecological and plan impacts. Presently, a total area of 5,300 acres would be utilized during construction of the lock, ship channel and flood protection works at the Lower Site. Of this figure, about 1,850 acres and 670 acres, respectively, are permanently required for project improvements and channel maintenance. The remainder would be turned back to the owners after completion of construction. The breakdown of acreage is estimated as follows: commercial, residential and pasture - 5%; march* - 75%; woodland and cypress swamp - 20%. The proposed barge canal would commit about 1,150 acres of marshland for permanent channel and channel maintenance right-of-way.

The sociological impact of the Lower Site plan remains the relocation of one family in one dwelling, two businesses, and one school. However, in order to construct the semihigh-level bridge at St. Claude Avenue over the IHNC, a displacement of about 173 persons in 48 dwellings would be necessary so that vehicular traffic would not be stopped during the bridge construction period. These relocations would occur on the river side of St. Claude Avenue.

The IHNC sites, in either case, would transfer approximately 131 acres from residential, commercial, and industrial usage to ship channel, lock, and flood protection works usage. The sociological impact of the presently proposed IHNC site is the displacement and relocation of approximately 689 persons in 157 dwellings, and 11 canal side businesses.

*This marsh area has, for all practical purposes, been removed from production by the hurricane protection levees and floodgates now under construction along the MR-GO.

LMNED-MP 17 August 1973

In any event the Federal Government would insure the equitable treatment of persons displaced from their homes or businesses through Public Law 91-646, 91st Congress, 1st Session. Local interests, however, are required to provide the actual relocations.

EVALUATION

Lastly, the procedure to evaluate all information relevant to choosing a site from the remaining plans will be a comprehensive systematic analysis including, but not limited to, the following factors: initial construction cost, total investment, construction difficulties, safety, national monetary navigational benefits, local monetary benefits, relocation difficulties, relocation costs, long-term social impacts, immediate social impacts, operational and maintenance difficulties, social views, long-term ecological impacts, and immediate ecological impacts. Each of the above considerations is being independently evaluated for all proposed plans.

COMMENT

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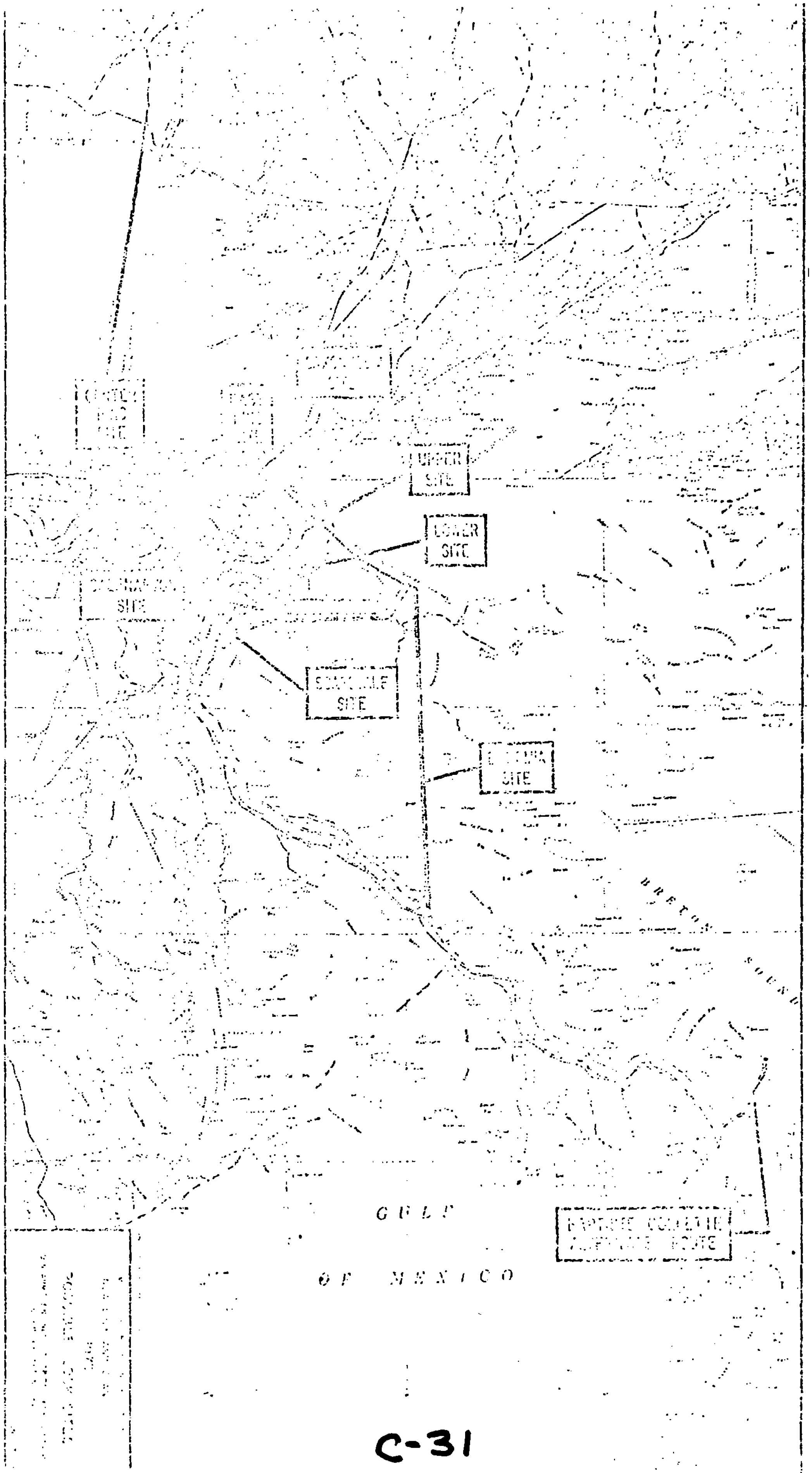
It is desired that your views and comments concerning this proposed facility be fully considered in the continuing definition of the optimum site plan. Accordingly, your views and comments are requested not later than 17 September 1973.

We earnestly solicit your continued cooperation and advice.

Sincerely yours,

RICHARD L. HUNT
Colonel, CE
District Engineer

3 Inclosures
1. Post-public meeting lock sites - 1973
2. Map - Lower Site plan
3. 1973 - LMNC lock sites



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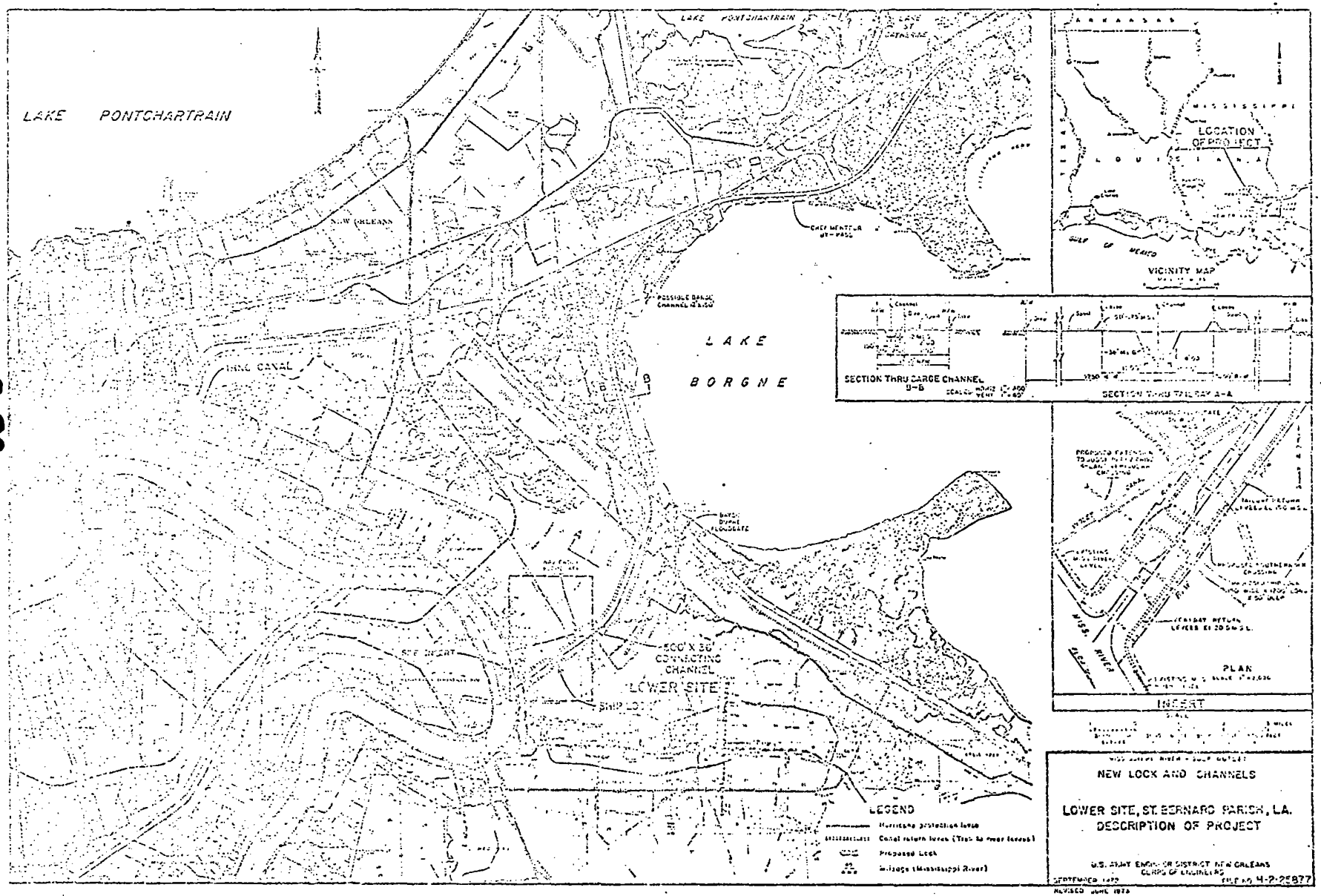
LAKE PONTCHARTRAIN
LAKE BORGNE
INNER HARBOR NAVIGATION CANAL
NEW ORLEANS
CHEF MENTEUR PASS
POSSIBLE BARGE CHANNEL ACCESS
MISSISSIPPI RIVER GULF OUTLET
1500' X 36' CONNECTING CHANNEL
LOWER SITE
SHIP LOCK
SITE INSERT
LOCATION OF PROJECT
VICINITY MAP
SECTION THRU CARGE CHANNEL B-B
SECTION THRU TAILBAY A-A
PLAN
INSERT
LEGEND
Hurricane protection levee
Canal return levee (Top to river levees)
Proposed Lock
Mileage (Mississippi River)
NEW LOCK AND CHANNELS
LOWER SITE, ST. BERNARD PARISH, LA.
DESCRIPTION OF PROJECT
U.S. ARMY ENGINEER DISTRICT NEW ORLEANS
CORPS OF ENGINEERS
SEPTEMBER 1972
FILE NO. 4-2-25877
REVISED JUNE 1973

ANALYSIS:

Of the four plans utilizing two sites now under construction by the Corps of Engineers, an evaluation of the social, navigation, economic and environmental considerations indicates that the Lower Site Plan (Plan No. 1) with the Inner Harbor Navigation Canal (IHNC) lock remaining in continued operation is the best of the four alternatives with two reservations. The Lower Site Plan would permit the diversion of a portion of the present marine traffic through the existing lock and will expedite interport movement, thereby eliminating the delays presently experienced at the existing lock. Some concern has been expressed with the proposed semi-high level bridge over the IHNC at St. Claude Avenue included in this plan. The need to improve the vehicular crossing is evident but taking into account the displacement factor and the interference to vehicular movement by use of a semi-high level bridge, consideration should be given to using a tunnel crossing of the IHNC at St. Claude Avenue. Another reservation with Plan No. 1 is the proposed barge channel adjacent to the Lake Borgne shoreline which would cause great ecological damage to the area. It is felt that the alternate barge channel route to connect the Mississippi River Gulf Outlet with the Intracoastal Waterway would have less of an environmental impact than the proposed route as well as be considerably less expensive. The lock construction under Plan No. 1 will have no added adverse effect upon the marshes adjacent to the construction site as it has been firmly established that the construction of the hurricane protection levees will have already rendered these marshes inoperative.

C-33

Although Plan No. 2 (Lower Site with a IHNC land bridge) would have a lesser impact than Plan No. 1, it is believed that closing an existing lock and channel or limiting its use only on an emergency basis is not a feasible alternative. It is felt that in order to maintain and improve the Port's competitive position, both locks and channels must be in operation.

The two IHNC Sites (Plans 3 and 4) are believed to be excessive in terms of cost and social impact. The relocation of large numbers of residents and businesses adjacent to the IHNC would impose an unwarranted burden on these citizens when consideration is given to the fact that the Lower Site Plan would require a minimal amount of displacement because of its location in an unpopulated area.

DISCUSSION:

The Principal Planner presented the proposed alternatives to construct a new ship/barge channel and new lock between the Mississippi River and the Mississippi River Gulf Outlet.

The Corps of Engineers submitted four alternatives for the Commission's consideration. They include (1) the Lower Site plan, (2) the Lower Site with an IHNC Land Bridge, (3) the Inner Harbor Navigation Canal Site, and (4) the Inner Harbor Navigation Canal Site.

An evaluation of the social, navigation, economic and environmental considerations indicates that the Lower Site Plan (Plan 1) with the Inner Harbor Navigation Canal (IHNC) lock remaining in continued operation would produce the least adverse impacts and therefore is the most acceptable of the four alternatives with two reservations. One such reservation is the proposed semi-high level bridge over the IHNC at St. Claude Avenue. This proposal should be further studied to include the possibility of a tunnel and the impacts of either facility should be clearly and completely defined to permit a proper evaluation. Additionally, the proposed alternate barge channel would apparently cause less adverse environmental impact on the Lake Borgne Shoreline and would therefore be the most acceptable alternate.

Upon receipt of the outlined report and the above discussion, the following motion was made by Mr. Grandbouche, seconded by Mr. Favort, and adopted.

MOTION:

Be it moved by the City Planning Commission that upon consideration of the alternatives for the Mississippi River - Gulf Outlet New Lock and Channel Project the Commission concurs with the Lower Site Plan and the alternate barge channel and the maintenance of the Inner Harbor Navigational Canal Lock and also recommends further study of the proposed St. Claude Bridge to include a possible tunnel and to fully describe the impacts of such facilities; and be it further moved that the Director/Secretary is hereby authorized and directed to notify the Corps of Engineers of said action.

YEAS: Barnett, Dent, Favrot, Montelepre, Grandbouche
NAYS: None
RECUSALS: None
ABSENT: Miller, Perez, Saputo
The Chairman, Mr. Gaeb, not voting.

PRIDE BUILDS
NEW ORLEANS

MOON LANDRIEU
MAYOR

MEMBERS
TEDDY GABB, JR.
Chairman
WILLIAM B. BARNETT
Vice - Chairman
DR. ALBERT W. DENT
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ALBERT J. SAPUTO

CITY OF NEW ORLEANS

September 13, 1973

Colonel Richard L. Hunt
District Engineer
Department of the Army
New Orleans District, Corps of Engineers
P.O. Box 60267
New Orleans, Louisiana 70160

Re: Mississippi River-Gulf Outlet New Ship/Barge Lock and Channel--LMNED - MP

Dear Colonel Hunt:

The City of New Orleans has supported the proposed Mississippi River-Gulf Outlet New Lock and Channel project as a vitally needed project to maintain and improve the viability of the Port of New Orleans. The economy of the City of New Orleans is dependent on the Port of New Orleans. This fact is recognized in the current and long-range improvement plans of Port facilities of which this project is an essential element.

We have contacted the Board of Commissioners of the Port of New Orleans concerning its evaluation of the captioned project. Although official consideration by the City Planning Commission on this matter will not occur until its meeting of September 19, 1973, these comments are based on previous actions taken by the City. This is general concurrence with the Dock Board position that the Lower Site Plan (Plan No. 1) is the best of the four site plans under consideration with two reservations. Some concern has been expressed with the proposed semi-high level bridge over the Inner Harbor Navigation Canal (IHNC) at St. Claude Avenue included in the plan. The need to improve this vehicular crossing is evident but taking into account the displacement factor and the interference to vehicular movement by use of a semi high-level bridge, consideration should be given to using a tunnel crossing of the IHNC at St. Claude Avenue.

Also the alternate barge channel route as identified on map H-2-25877 to connect the Mississippi River Gulf Outlet with the Intracoastal Waterway would have less of an environmental impact.

Thank you for the opportunity to comment on this project and I will forward to you the official action of the City Planning Commission upon its review of this project at its regular meeting scheduled for September 19, 1973

Sincerely,

Harold R. Kather
Director-Secretary

CH:gw

COMMUNITY IMPROVEMENT AGENCY
in and for the City of New Orleans
823 Perdido Street • New Orleans, La. 70112 • 581-7017

PRIDE BUILDS NEW ORLEANS

September 17, 1973

Colonel Richard L. Hunt
District Engineer
New Orleans District
Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

We have evaluated the information which we have received from the Corps as well as from the Dock Board and their engineers over the past year or so. We have met with Dock Board representatives and their Engineers, and with neighborhood representatives. We have discussed the matter at length with our planning consultants, as well as with our Board of Commissioners and various City Departments and agencies. In all of these discussions, we have addressed ourselves not to the full scope of the Corps of Engineers' study of where the new barge or ship channel should be, but, in keeping with our Agency's role, to the question of whether or not the Industrial Canal should be widened as is proposed under one of the alternative solutions.

We have evaluated this question and the information received against the background of previous trauma and general problems experienced by residents of the Lower Ninth Ward Project Area, and the considerable investment, past and projected, in creating a viable community in the Lower Ninth Ward Project Area. This investment amounts to some 16 million already made by the Agency, the City, and others; and 15 - 20 million projected to be made on the basis of our planning and that of Model Cities and other agencies, not to mention private interests.

On these bases, we cannot but conclude that the widening of the Industrial Canal, either for a barge or ship channel, would have a severely detrimental effect on the area, and would be a severe impediment to its continued improvement. Such improvement depends ultimately on the perception of the residents as to the future of their area, and that perception would suffer greatly if the Canal widening were to take place. It would be seen as a continued attitude of the "powers that be" toward the Lower Ninth Ward as an expendable area.

- continued -

C-36

We thank you for the opportunity to convey the feelings and concerns of this Agency toward the proposed canal locations.

Sincerely,

Francis P. Keevers
HMS

Francis P. Keevers
Executive Director

FPK/HMS/rns

L9 WC

Lower Ninth Ward Neighborhood Council, Inc.
2101 Flood Street • (504) 944-0172
New Orleans, Louisiana 70117

SERVICES OFFERED:
- Area Beautification
- Education & Social Services
- Housing
- Manpower & Economic Development
- Housing Development Corporation
- Credit Union
- Project Area Committee
- Community Improvement Agency
- Health Care For Elderly
- Antibuse Program
- Methadone Clinic
- Health Clinic
- Family Development Center
- Child Development Center
- Community Transportation
- Community Organization

October 8, 1973

Richard L. Hunt
Colonel, CE
District Engineer
Department of the Army
New Orleans District Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel:

The Board of Directors of the Lower Ninth Ward Neighborhood Council have reviewed the latest plans and evaluation of the Corps of Engineers as to the location of new locks to be constructed in Orleans, St. Bernard and Plaquemine Parish areas.

We concluded, at our October 2, 1973 Board meeting, that we are still opposed to Site A, the Inner Harbor Navigation Canal and Site B, the Inner Harbor Navigation Canal Site - east of Channel Center opposite the Galvez Street Wharf.

We would also like to request that we be notified of and invited to all public meetings and meetings on a staff level involving staff from your office and other agencies involved in any planning for the Lower Ninth Ward Area.

Sincerely,

Isaac Reynolds

Isaac Reynolds,
Executive Director

IR/be

cc:
Congressman F. Edward Herbert
Mayor Moon Landrieu
Rep. Teddy Marchand
Senator Nat Kiefer
Board Members - Lower Ninth Ward Council, Inc.

C-38

new orleans steamship association

319 CARONDELET STREET, NEW ORLEANS, LOUISIANA 70130 • 504—522-9392

September 28, 1973

Re: Your File LMNED-MP

Colonel Richard L. Hunt, District Engineer
Corps of Engineers, New Orleans District
Department of the Army
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

We appreciate receiving your letter of August 17, 1973 in which a comprehensive interim report is given on the status of various sites for the proposed new lock connecting the Mississippi River and the Mississippi River - Gulf Outlet.

At the public meeting before the New Orleans District, Corps of Engineers, on November 29, 1972, this Association recorded the position of its Board of Directors as expressed in the following resolution adopted at its meeting on October 11, 1972:

> "The New Orleans Steamship Association urges the Chief of Engineers to undertake without delay and to complete on an accelerated schedule the construction of an additional lock 1200' x 150' x 50' in size connecting the East Bank of the Mississippi River with the Gulf Intracoastal Waterway and the Mississippi River - Gulf Outlet, all in accordance with an authorized project therefor, to relieve existing hazardous congestion and costly delays to navigation and to enable the economic growth and development of water-oriented industries along such waterways and to maintain the viability and promote the future growth of the Port of New Orleans. It is further recommended that the lock be located in accordance with the findings of the Corps of Engineers at the November 29, 1972 public hearing."

We have reviewed the interim report on the four plans utilizing two sites that remain in contention, and, after considering all facts, this Association supports Plan No. 1 - The Lower Site Plan with the Inner Harbor Navigation Canal Lock to be concurrently operated.

The need for the two lock concept has been proven by the recent damage to the lock gate, which caused the lock to be inoperative for nineteen days. We wish to point out that with two cuts and locks in completely different areas, navigational safety would be greatly enhanced by the separation of ships and tows awaiting lockage and would also relieve traffic congestion in the forebay and tailbay areas of the locks.

We urge the New Orleans District of the U.S. Corps of Engineers to recommend that Plan No. 1 be undertaken without delay inasmuch as it will fulfill navigation needs with the least effect on the public and the environment.

Yours very truly,

New Orleans Steamship Association

S. Giallanza
Senior Vice President

SG/waf

THE AMERICAN WATERWAYS OPERATORS, INC.

EXECUTIVE OFFICES

1250 CONNECTICUT AVENUE • SUITE 502 • WASHINGTON, D. C. 20036

JAMES R. SMITH, President

Telephone: 296-0320

September 27, 1973

Dear Colonel Hunt:

The American Waterways Operators, Inc., appreciates very much this opportunity to respond to your letter of August 17 and to respond after September 17 in order for our Board of Directors to consider your interim report of the Mississippi River-Gulf Outlet--New Lock and Channels Project.

At our Board of Directors meeting, on the recommendation of the Special New Orleans Area Lock Committee and the Legislative Committee, The American Waterways Operators, Inc. reiterated its position as follows:

> "The American Waterways Operators, Inc. urges the Chief of Engineers to undertake without delay and to complete on an accelerated schedule the construction of an additional lock of adequate size connecting the Mississippi River with the Gulf Intracoastal Waterway east of New Orleans and the Mississippi River Gulf Outlet to relieve existing hazardous congestion and costly delays to navigation. AWO further urges that a shallow draft lock that would accomplish this purpose be studied by the Corps of Engineers now, not in preference to, but as an alternative to a ship lock should construction of a ship lock be not feasible."

The Board went on to say that it believes the choice between the two sites, Inner Harbor Navigation Canal and the Lower Site, is of much less importance than the selection of that site which would bring about the realization of a lock at the earliest possible date.

In order to clear any possible misunderstanding concerning paragraph two of your letter, and the inference that the "shallow-draft industry (AWO)" favors a "ship-barge lock," it should be

pointed out that AWO has not specifically endorsed a ship-barge lock but rather, "urges that a shallow draft lock be studied by the Corps of Engineers now, not in preference to, but as an alternative to a ship lock should construction of a ship lock be not feasible."

Thank you very much for this opportunity to comment.

Yours very truly,

James R. Smith
President

Colonel Richard L. Hunt
District Engineer
U. S. Army Engineer District, New Orleans
P. O. Box 60627
New Orleans, Louisiana 70160

Mississippi River-Gulf Outlet
New Lock and Connecting Channels

Site Selection Report

AUTHORIZING CORRESPONDENCE

Appendix D

Table of Contents

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P. O. BOX 60267
NEW ORLEANS, LOUISIANA 70160

LMNED-PP 18 February 1971

SUBJECT: Mississippi River-Gulf Outlet--New Ship Lock

Division Engineer, Lower Mississippi Valley
ATTN: LMVED-TD

1. Inclosed herewith is a letter from Honorable F. Edward Hebert dated 29 January 1971 and our reply dated 4 February 1971 relative to the subject. Congressman Hebert suggests that planning on the Lower Site continue and that areas of concern to the people of St. Bernard be resolved before the rescheduling of a public hearing. Prior to presenting what might be done to conform with these suggestions, it appears appropriate to review the project status.

2. On 17 May 1968, OCE approved preparation of the GDM for a lock located at the IHNC subject to additional studies. The requested studies have been submitted and the survey and boring programs completed for the IHNC site. Additionally, the general designs of the required excavation and structure and local interest items were essentially completed for this location. In fact, the estimates of work and cost were advanced to the stage where the local assuring agency, the Board of Commissioners of the Port of New Orleans (Dock Board), on 14 August 1969, determined that the costs and impact on the community at the IHNC were excessive and requested that sites in St. Bernard Parish be investigated. Three sites in St. Bernard Parish have been studied sufficiently to establish that costs and construction conditions and benefits are essentially the same.

3. The preparation of the project design memorandums and plans and specifications has been assigned to the Vicksburg District. NOD was informed by VXD letter dated 10 July 1970 that all VXD work on the lock was to be curtailed that would be affected by a change in lock size. The size of the lock has still not been finalized. Reactivation of the design studies requires that an early decision be reached on the lock size.

4. A 7-year planning and construction schedule for the project was established and was being adhered to until the IHNC location proved unacceptable to local interests. Work since that time has been aimed

at site selection and has been general in nature. A major restraint, in addition to the resolution of lock size, has been lack of local support for a St. Bernard Parish location for the project. Should there be adequate promise for early resolution of the site and size problems, the 7-year schedule can again be put into effect. Although much of the work which has been accomplished will be salvageable, it is the type of work which would usually be done during the same time period with GDM field studies which would be necessary to further develop any of the three St. Bernard sites. VXD has substantially completed the hydraulic design of the emptying and filling system and the general structural design. This would normally represent 9 months of time in the design sequence. However, surveys and soils investigations of the final selected site have not been available for concurrent development. Consequently, when GDM studies are resumed, a 7-year schedule would still be required. Thus, if approval would be rendered to resume full scale planning by mid-March 1971, completion of planning could be expected by mid-September 1974, and construction could be terminated by mid-March 1978. Such a schedule is dependent on availability of funds and the timely resolution of site and size. Schedule of activities for the 7-year schedule is attached.

5. To conform to the request of Congressman Hebert that we continue planning, the following actions are proposed for the Lower Site:

a. That the alignment of the connecting channel be refined and referenced to points on the ground.

b. That surveys be initiated so that sufficient data can be obtained for further development of design details and cost estimates.

c. That a boring program be defined and initiated for design and cost estimate purposes.

d. That coordination be continued in effort to resolve outstanding concerns that have been expressed by the people of St. Bernard Parish relative to the project.

6. Your concurrence is requested for the actions proposed in previous paragraph.

Herbert R. Haar, Jr.

HERBERT R. HAAR, JR.
Colonel, CE
District Engineer

3 Incl
1. Cy ltr 29 Jan 71
2. Cy ltr 4 Feb 71
3. Schedule

LMVDD (NOD 18 Feb 71) 1st Ind
SUBJECT: Mississippi River-Gulf Outlet--New Ship Lock

DA, Lower Mississippi Valley Division, Corps of Engineers, Vicksburg, Miss. 39180 2 Mar 71

TO: District Engineer, New Orleans, ATTN: LMNED-PP

1. The proposals contained in para 5 of basic letter are approved.

2. The design memorandum covering site selection should describe the impact of the various sites considered from the standpoints of dislocation of homes, disruption of traffic, and other effects on St. Bernard Parish as well as engineering feasibility.

3. Prior to sending survey parties and boring crews into the area containing the Lower Site, this office, OCE, Congressman Hebert, and the Presidents of the St. Bernard Parish Police Jury and the New Orleans Dock Board should be advised. This office also should be kept informed as to any unfavorable response of local interests to your consideration of the Lower Site.

FOR THE DIVISION ENGINEER:

Ferd E. Anderson Jr.

wd all incl

FERD E. ANDERSON, JR.
Colonel, CE
Deputy

CF:
OCE-ENGCW-V
w cy bsc ltr & incl

LMNED-PP (18 Feb 71) 2d Ind
SUBJECT: Mississippi River-Gulf Outlet--New Ship Lock

DA, New Orleans District, Corps of Engineers, PO Box 60267, New Orleans, La. 70160 12 Mar 71

TO: Division Engineer, Lower Mississippi Valley, ATTN: LMVDD

1. The following paragraphs are in response to the like-numbered paragraphs of the 1st Ind.

2. It is intended that consideration of community impact as well as engineering feasibility be presented in appropriate sections of the general design memorandum as bases for site selection.

3. Before survey parties or boring crews will be sent to the Lower Site, LMVD, OCE, Congressman Hebert, and the Presidents of the St. Bernard Parish Police Jury and the Board of Commissioners of the Port of New Orleans will be advised. Inclosed for your information are copies of unfavorable local interest response during the recent past regarding the project.

29 Incl
Added 29 incl
4-32 as

HERBERT R. HAAR, JR.
Colonel, CE
District Engineer

LMVED-TD (NOD 18 Feb 71) 3d Ind
SUBJECT: Mississippi River-Gulf Outlet--New Ship Lock

DA, Lower Mississippi Valley Division, Corps of Engineers, Vicksburg, Miss. 39180 13 Jul 71

TO: District Engineer, New Orleans, ATTN: LMNED-PP

Described action is satisfactory.

FOR THE DIVISION ENGINEER:

A. J. DAVIS
Chief, Engineering Division

wd all incl

CF:
OCE-ENGCW-V w cy
2d Ind & incl

Mississippi River-Gulf Outlet
New Lock and Connecting Channels

Site Selection Report

LIST OF PROPONENTS AND OPPONENTS ON RECORD
AT THE 1972 PUBLIC MEETINGS

Appendix E

TABLE OF CONTENTS

Prepared By
New Orleans District, Corps of Engineers
New Orleans, Louisiana

PROPONENTS
(For new ship lock at Lower Site)

1. Lloyd Strickland, Vice President, Lykes Bros. Steamship Co., Inc.

2. Harry M. Mack, President, The Ohio Valley Improvement Association, Inc.

3. Berry Wood, Terminal Director- Operation and Sales, Johnson Motor Lines, Inc.

4. C. W. Herbert, Executive Director, The Greater Baton Rouge Port Commission

5. Colonel (Ret) Robert H. Allen, Executive Director and General Manager of The Louisville and Jefferson County Riverport Authority

6. Stan Matzke, Director, Department of Economic Development

7. H. G. Miller, General Manager Distribution, Diamond Crystal Salt Co.

8. Grace J. Smith, Supervisor - Water Distribution Systems, International Minerals & Chemical Corp.

9. F. X. McNerney, Maritime Administration

10. John R. Dodson, Finance & Risk Capital Specialist, The Ozarks Regional Commission

11. George D. Gettinger, Wabash Valley Interstate Commission

12. Wallace I. McElroy, Vice President, Ohio Barge Line, Inc.

13. Philip J. Meloy, President, Central Truck Lines

14. C. J. Harriss, Vice President, Transportation, Continental Grain Co.

15. C. M. Keeney, President, Equitable Equipment Co., Inc.

16. Ronnie Lemay, Valley Towing Service, Inc.

17. William C. McNeal, Executive Vice President, Oil Transport Co.

18. F. L. Murdock, Manager - Vessel Operations, Sea-Land Service, Inc.

19. J. T. Lykes, Jr., Chairman, Lykes Bros. Steamship Co., Inc.

20. E. M. Ornelles, Vice President, Ingram Ocean Systems, Inc.

21. R. E. Wockmer, East West Shipping Agencies, Inc.

22. Edward W. Stagg, Executive Director, Council for a Better Louisiana

23. J. B. Marks, Director of Operations, Nilo Barge Line, Inc.

24. Allen P. Bebee, President, St. Louis Terminals Corporation

25. Captain C. M. Lynch, Manager-Marine Transportation, Atlantic Richfield Company

26. Roger E. Ohnsman, Assistant Director, Ohio Bureau of International Trade

27. L. C. Ludwig, Manager, Fuel Procurement & Transportation, Southern Services, Inc.

28. D. B. Wood, Manager, Reynolds Metals Company Marine Division

29. T. W. Harrelson, Assistant to the President, Delta Steamship Lines, Inc.

30. Burgess Thomasson, President, Mississippi Shell Producers Assn.

31. Ralph L. Haynes, Consolidated Aluminum Corporation

32. Peter Babin, Business Representative, I.U.O.E., Local 406

33. D. P. Laborde, Sr., Executive Secretary, Carpenters District Council of New Orleans & Vic.

34. Pierre Hjartberg, Executive Director, Chamber of Commerce of New Orleans

35. Sam Israel, Jr., A. C. & Leon Israel Coffee Co.,

36. Donald H. Inskip, Port Director, Greater Port of Pascagoula

37. J. G. Baird, Union Oil Co. of California

38. W. C. Brodhead, Vice President, Gulf Oil Co., Transportation

39. L. J. Fitzpatrick, Vice President, Finance, Lykes Bros. Steamship Co., Inc.

40. E. M. Rowley, President, Metropolitan Area Committee

41. William B. Patton, Sr., President, Tex-Tow, Inc.

42. H. Calvert Anderson, Executive Vice President, Pacific Northwest Waterways Assn.

43. James A. Pierce, Director of Transportation, Coastal Chemical Corp.

44. Colie B. Whitaker, Jr., President, Whitaker Oil Co.

45. J. N. Skidmore, Port Director, Port of Vicksburg

46. Douglas G. Drennan, President, New Orleans Board of Trade

47. James A. Pierce, Director of Transportation, Miss. Chemical Corp.

48. Donald C. Scafidi, President, New Orleans Chapter, U. S. Merchant Marine Academy

49. F. M. Seed, President, Cargill, Inc.

50. H. C. Wynn, Operations Manager, Triangle Refineries, Inc.

51. Kenneth Gormin, Tidewater Development Assn.

52. J. F. Pawlikowski, Manager, Marine Trans, E. I. DuPont De Nemours & Co.

53. Louis L. Toups, Big T. Marine Towing & Sales, Inc.

54. M. Barschdorf, Port Director, Greenville Port Commission

55. Rodney Blackman, Coastal Towing Corp.

56. Mr. McElroy, Warrior & Gulf Navigation

57. Robert D. Ray, Governor of Iowa

58. Stephen P. McLean, Tennessee Exec. Ofc, Industrial Repr, Division for Industrial Development.

59. E. S. Finley, President, International Commodities Export Co.

60. Robert L. Manard, Chamber of Commerce of New Orleans

61. James J. Doyle, Manager, Dist. Operations, Baroid Division

62. Jack E. Hemphill, Acting Regional Director, U. S. Fish & Wildlife Service

63. E. J. Hagstette, Jr., Gen. Manager, Baroid Division

64. Tom Adams, Lieutenant Governor, State of Florida

65. William Rottenberger, Chairman, Port Authority Committee, Cincinnati Chamber of Commerce

66. E. H. Jensen, Vice President, Standard Oil Co.

67. Dale Bumpers, Governor of Arkansas

68. Robert T. Marland, Chairman, Nebraska Railway Commission

69. William H. Heard, Exec. Vice President, Newport Arkansas Chamber of Commerce

70. Peter A. Low, Gulf Manager, Hellenic Lines Limited

71. R. H. Curlette, Director of Distribution, Tennant

72. Raymond S. Clark, President, Canton Co. of Baltimore

73. M. I. Summerlin, Asst. Mgr., Texaco

74. Harold E. Cook, Exec. Vice President, New Orleans East, Inc.

75. Leon Irwin III

76. D. W. Pray, President, Mid-Ark. Valley Development Assn. Inc.

77. Theo. H. Huffman, Jr., Pres. & David H. Scholtz, Secy-Treasurer, The Propeller Club of the U. S.

78. Harley W. Ladd, Port Director, Tulsa Port of Catoosa

79. Leslie B. Lampton, President, Egon, Inc.

80. Bill Waller, Governor of Mississippi

81. James B. Allen, U. S. Senator

82. Howard A. Watters, Vice President, Central Soya

83. George F. Bradford, Manager, Transportation, FMC Corp.

84. Edwin D. Dodd, Owens-Illinois

85. Walter G. Arader, Secy, Commonwealth of Pennsylvania Dept. of Commerce

86. Dennis J. Banta, Mgr, Gateway Marine, Inc.

87. R. L. Temme, Headquarters, 8th Naval District.

88. J. W. Clark, President, Delta Line, Inc.

89. Walton H. Rice, Jr., Traffic Mgr, Dundee Cement Co.

90. Herbert R. Haar, Jr., Asso. Port Director, Centroport

91. John Dodson, The Ozarks Regional Commission, Little Rock, Ark.

92. J. R. Cordaro, Exec. Vice President, Sioux City & New Orleans Barge Lines, Inc.

93. Robert F. Henry, President, Coosa Ala. River Improvement Assn.

94. W. E. Brandt, Traffic Mgr, Marine-Morton Salt Co.

95. C. M. Kilian, Exec. Vice President, Warrior Tombigbee Development Assn.

96. R. L. Miller, Coordinator, Vessel Operations, National Marine Service

97. O. M. Prigmore, Cabot Corp.

98. Robert Day, President, & Wm. J. Walter, Chairman, Propeller Club, Port of Paducah

99. George C. Wallace, Governor of Alabama

100. Mr. E. C. (Ernie) Ross, director of distribution, Swift Agricultural Chemicals Div, Chicago, Ill.

101. David Hall, Governor of Oklahoma

102. Greater Baton Rouge Port Commission

103. Earl C. Rose, Jr., President, Rose Barge Line, Inc.

104. H. K. Thatcher, Exec. Vice President, Ouachita River Valley Assn.

105. F. W. Jacobanis

106. Emmett Humble, General Mgr, Humble Oil & Refining Co., Houston, Tex

107. Vernon Behrhorst, Exec VP, LISA

108. Jerry T. Gonsoulin, Secy-Treas, LeBeouf Bros. Towing Co., Inc.

109. Neville Levy, The Mississippi River Bridge Authority

110. James E. Chaney, Terminal Mgr, Bulk Transport, Inc.

111. Edward M. Hensley, Security Barge Line, Inc.

112. L. F. Delmerico, Mgr, Stauffer Chemical Co.

113. Honorable Richard F. Kneip, Governor of South Dakota

114. Scott Chotin, President, Chotin Transportation, Inc.

115. Gale H. Chapman, VP, Upper Mississippi Towing Corp.

116. H. E. Pittard, Asst. VP, Peabody Coal Company

117. T. J. Stahl, A. L. Mechling Barge Lines, Inc.

118. Grace J. Smith, Supervisor, International Minerals & Chemical Corp.

119. Ben A. Thames, Traffic Mgr, Ingalls Shipbuilding Div, Litton Systems, Inc.

120. Louis Dreyfus Corp.

121. Donald H. Inskip, Port Director, Port of Pascagoula

122. Ernest C. Ross, Chairman, Domestic Water Sub-committee, The Fertilizer Institute

123. Board of Commissioners of the Port of New Orleans

124. Tennessee-Tombigbee Waterway Development Authority

125. Allen P. Bebee, Treasurer, Water Resources Congress

126. O. Lincoln Cone, Coordinator of Operations, American Institute of Merchant Shipping

127. Mayor of the City of New Orleans

128. F. X. McNerney, Maritime Administration

129. Edwin W. Edwards, Governor of Louisiana

130. Representative F. Edward Hebert

131. Louisiana Dept. of Public Works

132. Louisiana Dept. of Highways

133. Carl M. Corbin, MAC Exec. VP, Metropolitan Area Committee

134. John D. Geary, VP, Operations, Ohio River Co.

135. Capt. J. W. Clark, President, Delta Steamship Lines, INc.

136. Charles F. Lehman, American Commercial Barge Line Co.

137. Clayton L. Nairne, President, New Orleans Tidewater Development Asan.

138. McVey F. Ward, American Waterways Operators, Inc.

139. John J. Dardis, President, New Orleans Jaycees

140. Harry M. Mack, President, Ohio Valley Improvement Assn, Inc.

141. Greater New Orleans AFL-CIO, Maritime Council of Greater New Orleans and Vicinity, Seafarers' International Union of North America

142. J. H. Colle, Colle Towing Co., Inc.

143. Peter Fanchi, Jr., President, Federal Barge Lines, Inc.

144. Leland Bowman, VP, Gulf Intracoastal Canal Assn.

145. Robert C. Engram, Port Director, Miss. State Port Authority at Gulfport

146. Reuben E. Wheelis, Director & Chief Executive Officer, Alabama State Docks Department

147. A. R. Seligman, President, Southern Shipbuilding Corp, Slidell, La.

148. Greater Baton Rouge Port Commission

149. Edward N. Lennox, VP, Radcliff Materials, Inc.

150. Joseph M. Bertucci, Southeast Louisiana Building & Construction Trades Council

151. Raymond Lapino, Secy-Treasurer, Teamsters Local No. 270

152. Metropolitan New Orleans Safety Council, Inc.

153. William A. Weber, Aluminum Company of America

154. Joseph Guidry, Sr., Business Agent of Teamsters Local 270

155. Charles L. Sloan, Chief Engineer, Prestressed Concrete Products, Co., Inc.

156. James C. Ludwig, Mgr, Fuel Dept, Southern Services, Inc.

157. J. Clarke Berry, VP, Canal Barge Co., Inc.

158. George Douglass, Jr., Exec. VP, Ayers Materials Co., Inc.

159. Louisiana Materials Co., Inc.

160. Ed. S. Bagley, Terriberry, Carroll, Yancey & Farrell

161. Carlos J. Lozano, Jr., President, The Propeller Club

162. Raymond Lapino, Secy-Treas, The Teamster Local No. 270

163. Neville L. Rogers, Terminal Mgr, Jack Cole-Dixie Highway Co.

164. Harold Binyon, Pres, N.O. Assn. of Motor Carriers, Inc.

165. Arthur Viterito, Gen. Traffic Mgr, Tennant

166. Giles L. Evans, Jr., Mgr, Canal Authority of the State of Florida

167. Greater New Orleans AFL-CIO, Maritime Council of Greater New Orleans Vic, Seafarers' International Union of North America

168. Walton H. Rice, Jr., Traffic Mgr, Dundee Cement Company

169. David C. Sweet, Director, Ohio Dept. of Economic and Community Development

170. Joseph M. Bertucci, Southeast La. Bldg. & Construction Trades Council

171. Joseph Guidry, Sr., Business Agent for Teamsters Local 270

172. Earl C. Rose, Jr., Chairman/President of Rose Barge Line

OPPONENTS WITH STIPULATIONS

1. St. Bernard Parish Police Jury resolutions of 22 Aug 72 and 29 Aug 72 support the project but stipulate a location other than St. Bernard Parish and recommend a barge (only) lock.

2. Plaquemines Parish Commission Council resolution of 4 Oct 72 supports the project but stipulates a location other than St. Bernard Parish and recommends a barge (only) lock.

3. Miss Beulah E. Brown, spokesman for all property owners and homes to be taken (lower 9th Ward), letter of 15 Nov 72, supports the project but stipulates a location in St. Bernard Parish or down the center of the Industrial Canal or on the Poland St. side of the Industrial Canal.

4. Preston Smith, Governor of Texas, supports the need for a barge lock.

5. Chalin Perez, President, Plaquemines Parish Commission Council, supports need for a barge lock at the Industrial Canal, and not a ship lock in St. Bernard Parish.

6. Henry C. Schindler, Jr., President, St. Bernard Parish Police Jury, favors lock only at the Industrial Canal site.

7. Bailey T. DeBardeleben, President, Bailey Coke Transport, Inc. - If a ship lock cannot be built starting next year, build a barge lock at IHNC.

8. William C. McNeal, favors shallow-draft lock adjacent to IHNC lock.

9. Lake Borgne Levee District opposes proposed ship lock and channel anywhere in St. Bernard Parish.

10. John Kern, VP, Simms Bros. Towing Co., Inc., favor barge lock only.

11. Mobile Area Chamber of Commerce favors barge lock.

12. J. Daniel Roebuck, Exec. Director, Ark. Industrial Development Commission, favors barge lock.

13. Edwin M. Roy, Editor of St. Bernard Voice, does not oppose building a canal, but opposes building the structure in St. Bernard.

14. Buccaneer Villa Civic Improvement Assn, Inc., Wm. J. Gilmore, Jr., President, stipulates the lock should be placed parallel to the present IHNC lock at St. Claude Ave. in Orleans Parish; and Project Flood Control Committee.

15. Rev. Floyd McBride, New Orleans, speaking for the Lower 9th Ward, does not object to building a lock in the Industrial Canal as long as their old homes are replaced with new homes and a new high-level bridge is built at St. Claude.

OPPONENTS WITH STIPULATIONS (cont'd)

16. Andre' Neff, St. Bernard Parish Planning Commission, favors only the IHNC site.

17. Nick Cusimano, Police Juror, Ward 3, St. Bernard Parish, favors the Industrial Canal site only.

18. Celestine Melerine, Police Juror, Ward 4, St. Bernard Parish, states the proposed facility be built adjacent to existing Industrial Canal site.

19. Warren G. Preble suggests the lock be located at Carrollton Ave. and the Miss. River

20. Harvey Loumiet, Jr., favors barge lock at IHNC.

OPPONENTS

1. Mr. Joseph E. Vidal, Jr., 1903 Alexander Ave., Arabi, La., letters of 31 Oct 72, 29 Sep 72, 15 Nov 72, 22 Nov 72, & 5 Dec 72, opposes the project entirely.

2. Mr. Clifford L. Spuhler, 6729 West Laverne St, New Orleans, La., ltr dtd Nov 72 opposes project.

3. Rep. Bert Rowley, Chalmette, La., opposes project (there is no need for an add'l deep-draft harbor; does favor locks for shallow-draft vessels at IHNC)

4. Senator Samuel B. Nunez, Jr.

5. Concerned Citizens of St. Bernard Parish, Wm. J. Gilmore, President, opposes construction of a ship canal across St. Bernard Parish

6. Friends of the Earth

7. Orleans Audubon Society & Louisiana Wildlife Federation

8. Sierra Club, Delta Chapter & Louisiana Wildlife Federation

9. State Representative Frank Patti

10. Louis P. Munster, Third Ward Police Juror

11. Frances J. Nunez, President, Land Investment Co., Inc.

12. C. A. Larsen, Sr.

13. Roy Blazio, spokesman for St. Bernard Sportsmen's League, opposes project in St. Bernard Parish

14. Frederick J. Sigur, Real Estate Co., Arabi, La.

15. Joseph L. Holmes, Chalmette (Mr. & Mrs.) object to St. Bernard location

16. Mr. & Mrs. D. Castillo object to St. Bernard location

17. Pat Johnson objects to St. Bernard location

18. Mr. & Mrs.Glen J. Taylor object to St. Bernard location

19. Mr. & Mrs. Clyde W. Taylor object to St. Bernard location

20. Mr. & Mrs. Warren A. Thomas object to St. Bernard location

21. Mr. & Mrs. Charles J. Borne object to St. Bernard location

OPPONENTS (cont'd)

22. Mrs. Jos. LoCicero, Jr., Pres., American Ass. of University Women, Chalmette Branch, opposes project in St. Bernard Parish

23. Mr. & Mrs. Donald J. Neill, Chalmette, oppose project in St. Bernard

24. St. Bernard Sportsmen's League opposes project anywhere in St. Bernard; suggests IHNC site.

25. George Francke, Jr., Violet, La., opposes project in St. Bernard Parish; suggests Orleans Parish.

26. Lloyd Estopinal, St. Bernard Civic League, objects to cutting St. Bernard in half.

27. Harold W. Lagarde, Sr., Arabi, La., opposes ship channel in St. Bernard; suggested New Orleans

28. Chalmette High School Parents Assn, Harold Lagarde, Sr., President, opposes ship channel in St. Bernard.

29. John Metzler, Police Juror, Ward 3, St. Bernard Parish, objects to ship lock at Violet.

30. Peter Perniciaro, Police Juror, Ward 2, St. Bernard Parish, opposes Violet location.

31. Bert Odinet, Police Juror, Ward 1, St. Bernard Parish

32. Henry C. Schindler, President, St. Bernard Parish Police Jury, opposes project in St. Bernard.

33. Roy Gonzales, Police Juror, Ward 2, St. Bernard Parish

34. Claude S. Mumphrey, Police Juror, Ward 4, St. Bernard Parish, opposes project in St. Bernard.

35. R. J. Bergeron, Police Juror, Ward 5, St. Bernard Parish, opposes location in St. Bernard

36. Peter Tybusuk, opposes ship lock and channel in St. Bernard.

37. Wm. Madary, representing the Independent Democrats for Education, Action and Law, opposes location anywhere in St. Bernard Parish.

38. Walter Scott Molero, Police Juror, Ward 5, St. Bernard Parish

Petitions of opposition to proposed ship lock and canal in St. Bernard Parish

Group of petitions with 689 names
Group of petitions handed in by Mr. Bourgeois with 184 names
Group of petitions handed in by Claude Mumphrey with 1,340 names
Group of petitions handed in by R. J. Bergeron with 521 names
Group of petitions handed in by Louis Munster with 508 names
Group of petitions handed in by Joseph Vidal with 690 names
Group of petitions handed in by Bert Odinet with 505 names
Group of petitions handed in by Mr. Masutta with 408 names
Group of petitions handed in by Mr. Pedepau with 744 names
Group of petitions handed in by Mr. Hutton with 620 names
Group of petitions handed in by Mr. Chunn with 764 names
Group of petitions handed in by Mr. Schiro with 620 names
Petitions from Reggio, Florrisant, Verret, Hopedale, Yscloskey, & Shell Beach with 943 names

Total = 8,536 names

Petitions by residents of St. Bernard Parish opposing to location of river connection and locks of MR-GO channel in 4th & 5th wards of St. Bernard Parish petitioning the Police Jury of St. Bernard to do everything in its power to defeat project. (handed in by Mr. Schindler)

Total = 4,398 names

Petitions of opposition to proposed ship and/or barge lock and canal in St. Bernard Parish (handed in by Mr. Schindler)

Approx. 18,813 names