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U. S. ARMY CORPS OF ENGINEERS

LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA

DESIGN MEMORANDUM NO. 12

SOURCES OF CONSTRUCTION MATERIALS

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VICKSBURG, MISSISSIPPI

Prepared in the Office of the District Engineer
New Orleans District, Corps of Engineers
New Orleans, Louisiana

June 1966

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1966

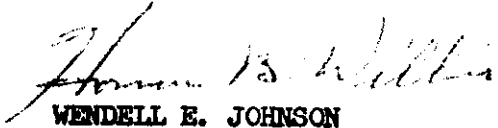
ENGCW-EZ (27 Jun 66) 2nd Ind
SUBJECT: Lake Pontchartrain and Vicinity, Louisiana, Sources of
Construction Materials, Design Memorandum No. 12

DA, CofEngrs, Washington, D. C., 20315, 30 August 1966

TO: Division Engineer, Lower Mississippi Valley Division

Approved, subject to the comments of the Division Engineer.

FOR THE CHIEF OF ENGINEERS:



WENDELL E. JOHNSON
Chief, Engineering Division
Civil Works

Incl wd

LMVED-TD (NOD 27 Jun 66) 3d Ind

DA, Lower Miss. Valley Div, CE, Vicksburg, Miss. 39180 2 Sep 66

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

Referred to note approval, subject to comments in 1st Indorsement.

FOR THE DIVISION ENGINEER:



A. J. DAVIS
Chief, Engineering Division

LMVED-TD (NOD 27 Jun 66) 1st Ind
SUBJECT: Lake Pontchartrain and Vicinity, Louisiana, Sources of
Construction Materials, Design Memorandum No. 12

DA, Lower Miss. Valley Div, CE, Vicksburg, Miss. 39180 22 Jul 66

TO: Chief of Engineers, ATTN: ENGCW-V/ENGCW-E

1. Subject design memorandum is forwarded for review and approval, pursuant to pars 6a and 20a, EM 1110-2-1150. Approval is recommended, subject to the minor correction in red on Plate 3 and to the following comments.

2. Par 2, page 1. The last sentence in this paragraph should be deleted since materials other than natural earth are included in this report.

3. Par 5a, page 2. The last sentence of this paragraph states that production capabilities for all sources checked were verified except Nos. 2, 3, 4, 7, 8, and 16. This does not agree with the column on Source Status Chart No. 1 titled, "Production Capability Verified". This conflict should be resolved.

4. Par 7c, page 6. The gradation of Type B riprap is too coarse for a 12-in. layer. If stone of this size is needed, the layer thickness should be increased. If this stone is for wavewash protection, it should comply with gradation requirements in EM 1110-2-2300.

5. Par 8b, page 8. In the first sentence, the words, "source status chart No. 2" should be deleted and "Plate 4" substituted therefor.

6. The adequacy of earth materials for levee construction cannot be determined at this time because no design memos have been submitted which show the required levee section, stability berms (if any), and construction procedure.

FOR THE DIVISION ENGINEER:



A. J. DAVIS
Chief, Engineering Division

1 Incl (5 cy)
wd 7 cy

Copy furnished:
New Orleans District
ATTN: LMNED-PP w/marked cy incl



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

IN REPLY REFER TO
LMVED-PP

27 June 1966

SUBJECT: Lake Pontchartrain and Vicinity, Louisiana, Sources of
Construction Materials, Design Memorandum No. 12

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

1. Forwarded herewith for review and approval, in accordance with the provisions of EM 1110-2-1150, is the subject design memorandum.
2. Approval of this memorandum is recommended.

1 Incl (12 cys)
D.M. No. 12

THOMAS J. BOWEN
Colonel, CE
District Engineer

LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA
HURRICANE PROTECTION

DESIGN MEMORANDUM NO. 12
SOURCES OF CONSTRUCTION MATERIALS

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PLATES

<u>No.</u>	<u>Title</u>
1	Authorized plan of improvement
2	Generalized geology and location map
3	Source table No. 1
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5	Source table No. 2

LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA
HURRICANE PROTECTION

DESIGN MEMORANDUM NO. 12
SOURCES OF CONSTRUCTION MATERIALS

SECTION I - GENERAL

1. Project authorization. This project is authorized under Public Law 298, 89th Congress, 1st Session, approved 27 October 1965.

2. Purpose. This memorandum presents the essential data resulting from investigations to determine available sources of materials suitable for the construction of the Lake Pontchartrain hurricane protection project.

3. Previous reports. General information and basic data on the entire project are available in House Document No. 231, 89th Congress, 1st Session.

4. Project plan. The authorized project plan provides for the following:

a. A barrier levee along U. S. Highway 90 from the existing New Orleans East levee to and eastward of the Rigolets;

b. A barrier structure at Chef Menteur Pass consisting of a gated control structure, navigation channel and floodgate, closure dam, and flanking and connecting levees;

c. A barrier structure at the Rigolets with a closure dam, control structure, navigation channel and lock, and flanking and connecting levees;

d. A control structure at Seabrook consisting of a navigation lock and rockfill connecting dikes;

e. A new 5.5-mile levee from Bonnet Carre' Spillway to the east St. Charles Parish boundary and a lateral return levee of 3.8 miles along the St. Charles-Jefferson parish line with a drainage structure;

f. An extension of existing riprap slope protection along the Jefferson Parish front levee;

g. Improvements of existing lakefront levees and Inner Harbor Navigation Canal levees and construction of new levees in Orleans Parish;

4.h.

h. Strengthening of the existing seawall at Mandeville;
and

i. Construction of new levees and drainage structures
and improvements to existing levees in the Chalmette area.

The features of the plan are shown on plate 1.

SECTION II - INVESTIGATIONS

5. Sources. The investigation established the sources of major developments of sand and gravel within a 200-mile radius and of riprap and derrick rock within a 600-mile radius. Shell, backfill material, and levee construction material were determined to be available in the general usage area. A map showing the generalized geology within the locations of the sand and gravel pits and rock quarries is included as plate 2. Table 1, plates 3 and 4, is a summary of field examinations and/or laboratory test of the materials, while table 2, plate 5, summarizes the locations of shell backfill material and levee construction materials.

a. Fine and coarse aggregate. The investigative status of available material sources for fine and coarse aggregate for use in concrete, filter blankets, and pervious fill, within a 200-mile radius, is shown in source status chart No. 1. Locations, quantities, and transportation facilities for all sources except Nos. 23 and 30 were field checked. Production capabilities for all sources checked were verified except Nos. 2, 3, 4, 7, 8, and 16 which were found to be inoperative.

b. Riprap and derrick stone. The sources under investigation for riprap and derrick stone are included in the attached tables and plates. Source status chart No. 2 reflects the extent of investigation for the required riprap and derrick stone.

c. Shell. Local commercial sources can supply clamshells for the entire project. The following is a random partial list of local sources:

- (1) Jahncke Service, Inc. - Industrial Canal,
New Orleans, La.
- (2) Louisiana Materials - Industrial Canal, New
Orleans, La.
- (3) Ayers Materials Co., Inc. - Peters Road,
Harvey, La.
- (4) Radcliff Materials - France Road, New Orleans,
La.

SOURCE STATUS CHART NO. 1

Source	* : Tested as : status : acceptable :	Production : capability : verified :	Tested as : acceptable : by : NOD :	Complete : testing : req'd : by WES :	Not in : operation :
1	x	x			
2					x
3					x
4					x
5		x	x	x	
6	x	x			
7					x
8					x
9		x	x	x	
10	x	x			
11		x	x	x	
12		x	x	x	
13		x	x	x	
14	x	x			
15	x	x			
16					x
17	x	x			
18	x	x			
19			x	x	
20	x	x			
21		x	x	x	
22		x	x	x	
23			x**	x	
24	x	x			
25	x	x			
26	x	x			
27	x	x			
28	x	x			
29	x	x			
30			x	x	

* See plate 2 for name and address of producer or owner.

**Sample not available, but quality believed to be acceptable.

5.d.

SOURCE STATUS CHART NO. 2

Source by No.	* Source status:	Stone type: and weight in #/cu.ft.	Tests required by WES or NOD	: Tested as acceptable: by WES	: Tested as acceptable: by NOD	: Supply verified as adequate
31		Nepheline syenite 163	x			x
32		Crystalline limestone 164			x	x
33		Limestone 169		x		x
34		Crystalline limestone 167			x	
35		Crystalline limestone 170			x	x
36		Crystalline limestone 169			x	x

*See plate 2 for name and address of producer or owner.

d. Borrow materials. Borrow materials for construction of levees are available from Recent and Pleistocene deposits in Lake Pontchartrain; Recent deposits along the levee lines; and Recent alluvial deposits in the Bonnet Carre' Spillway. A complete list of the available sources and locations is shown in table 2, plate 5.

e. Cement. Adequate supplies of cement are available from commercial sources within an economic distance of the project area. A random partial list of available sources follows:

- (1) Ideal Cement Co. - France Road, New Orleans, La.
- (2) Lone Star Cement Co. - France Road, New Orleans, La.
- (3) Louisiana Cement Co. - Michoud, La.
- (4) Southern Cement Co. - Chalmette, La.

f. Water. The municipal water supply of the city of New Orleans is adequate for supplying the water needed for mixing and curing concrete for the Seabrook structure and structures along the Inner Harbor Navigation Canal. Water needed for the structures at the Rigolets and Chef Menteur may be supplied from water wells, 400 to 600 feet deep, and/or Lake Pontchartrain itself. The Cl^- content of Lake Pontchartrain in the vicinity of the Rigolets and Chef Menteur varies between 100 and 10,000 ppm. This Cl^- content is acceptable for use in mixing and curing concrete; however, complete testing should be performed by the U. S. Army Engineer Waterways Experiment Station, Concrete Division, before approval of this source. Further, if this source is to be used, provision should be made for continued testing throughout the period of use. Water needed for the two control structures in the Chalmette area will have to be brought in by barge since salinities in the Mississippi River-Gulf Outlet are frequently excessive and the likelihood of obtaining suitable water from deep wells is remote.

SECTION III - MATERIAL REQUIREMENTS

6. Quantities. The estimated quantities of all natural earth materials required for the entire project are as follows:

<u>Material</u>	<u>Subtotals</u>	<u>Totals</u>
Riprap	902,650 tons	902,650 tons
Derrick stone	15,980 tons	15,980 tons
Gravel (filter)	3,675 cu.yds.	
Gravel (concrete)	55,096 cu.yds.	99,781 cu.yds.
Gravel (drain)	90 cu.yds.	
Gravel (graded)	40,920 cu.yds.	
Sand (filter)	4,918 cu.yds.	
Sand (concrete)	33,410 cu.yds.	38,528 cu.yds.
Sand (drain)	30 cu.yds.	
Sand (graded)	170 cu.yds.	
Backfill (clay)	167,100 cu.yds.	
Backfill (random)	2,300 cu.yds.	208,100 cu.yds.
Backfill (riversand)	38,700 cu.yds.	
Shell	330,667 cu.yds.	330,667 cu.yds.
Hydraulic pumped material	18,795,250 cu.yds.	18,795,250 cu.yds.
Hauled material	324,430 cu.yds.	324,430 cu.yds.
Cast material	1,510,500 cu.yds.	1,510,500 cu.yds.
Clay blanket	1,520 cu.yds.	1,520 cu.yds.

7.

7. Quality. The construction materials must meet the following grading requirements and be of satisfactory quality:

a. Fine aggregate.

<u>U.S. Standard sieve size</u>	<u>Percent by weight passing</u>
No. 4	95-100
No. 8	80-90
No. 16	55-75
No. 30	30-60
No. 50	12-30
No. 100	3-10

b. Coarse aggregate.

<u>U.S. Standard sieve size</u>	<u>Percent by weight passing</u>
1-1/2"	100
1"	90-97
1/2"	40-60
No. 4	0-6

c. Riprap.

<u>Weight of pieces in lbs.</u>		<u>Percent of total weight</u>
Type A	Type B	
24" layers	18" layers	
800-1400	350-600	15
400-800	200-350	20
150-400	60-200	25
35-150	15-60	25
Less than 35	Less than 15	15
Type C		
12" layers		
75-150		Not more than 10
25-75		50
6-25		30
Under 6		Not more than 15

The least dimension of any stone shall not be less than one-third its greatest dimension.

d. Derrick stone. The least dimension of any stone shall not be less than one-third its greatest dimension.

Minimum size

500 lbs.

Maximum size

2 tons

At least 70% of the stones shall be heavier than 1,500 lbs.

e. Filter material. The filter material must meet the physical requirements for fine and coarse aggregates and the grain size requirements needed to protect the soil.

f. Drainage blanket. The drainage blanket shall consist of clean, free-draining sand and gravel with not more than 25% retained on the No. 4 sieve and not more than 5% passing the No. 200 sieve.

g. Pervious fill. Pervious fill shall consist of moderately free-draining sand with not more than 5% passing the No. 200 sieve.

SECTION IV - SUMMARY AND RECOMMENDATIONS

8. Recommendations.

a. The following list of sources for fine and coarse aggregate is in the order of their estimated economic advantage and capacity to produce. Materials from these sources generally require low alkali cement. Approval of these sources, for inclusion in the specifications for the project, is recommended subject to further testing and verification where required.

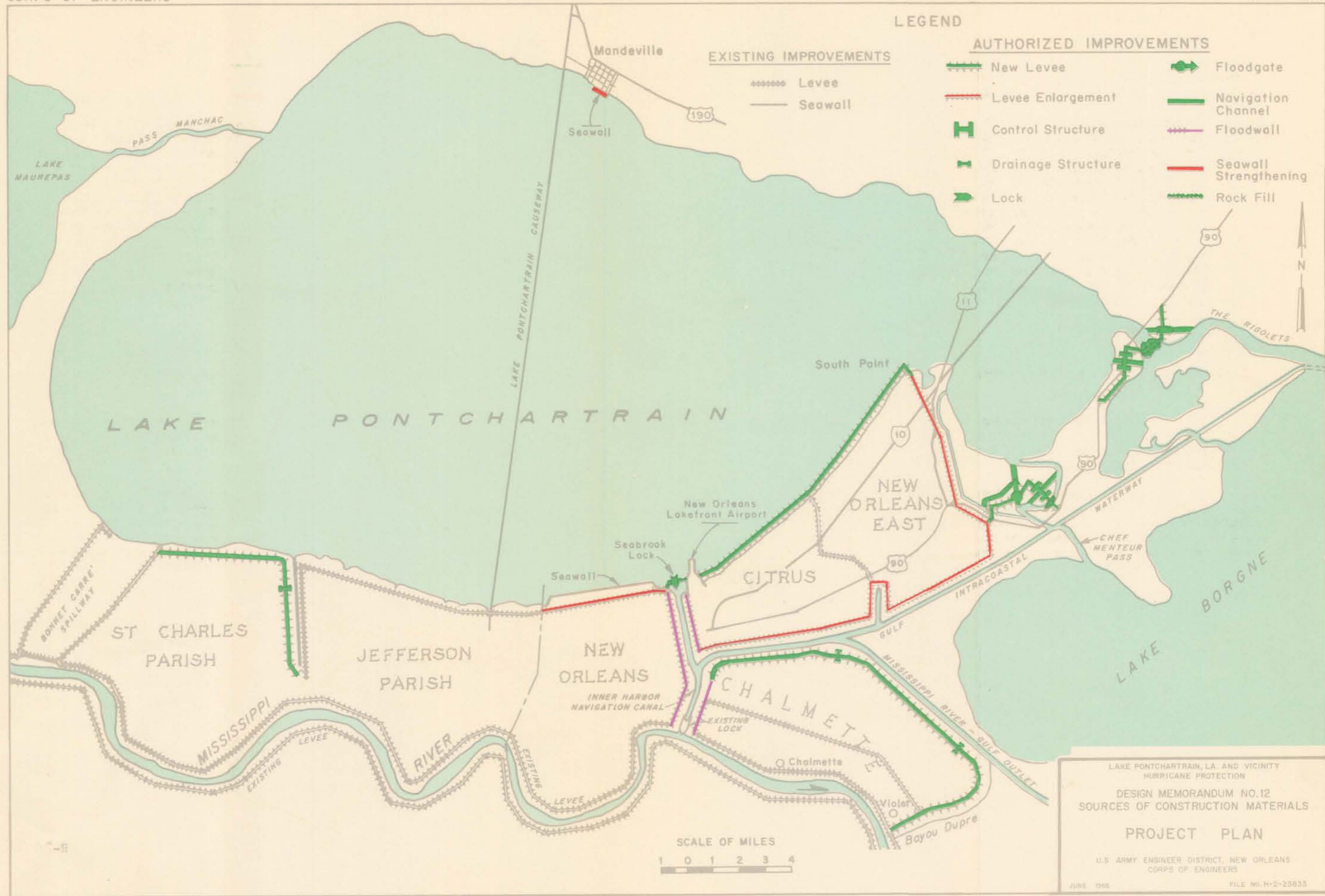
8.a.

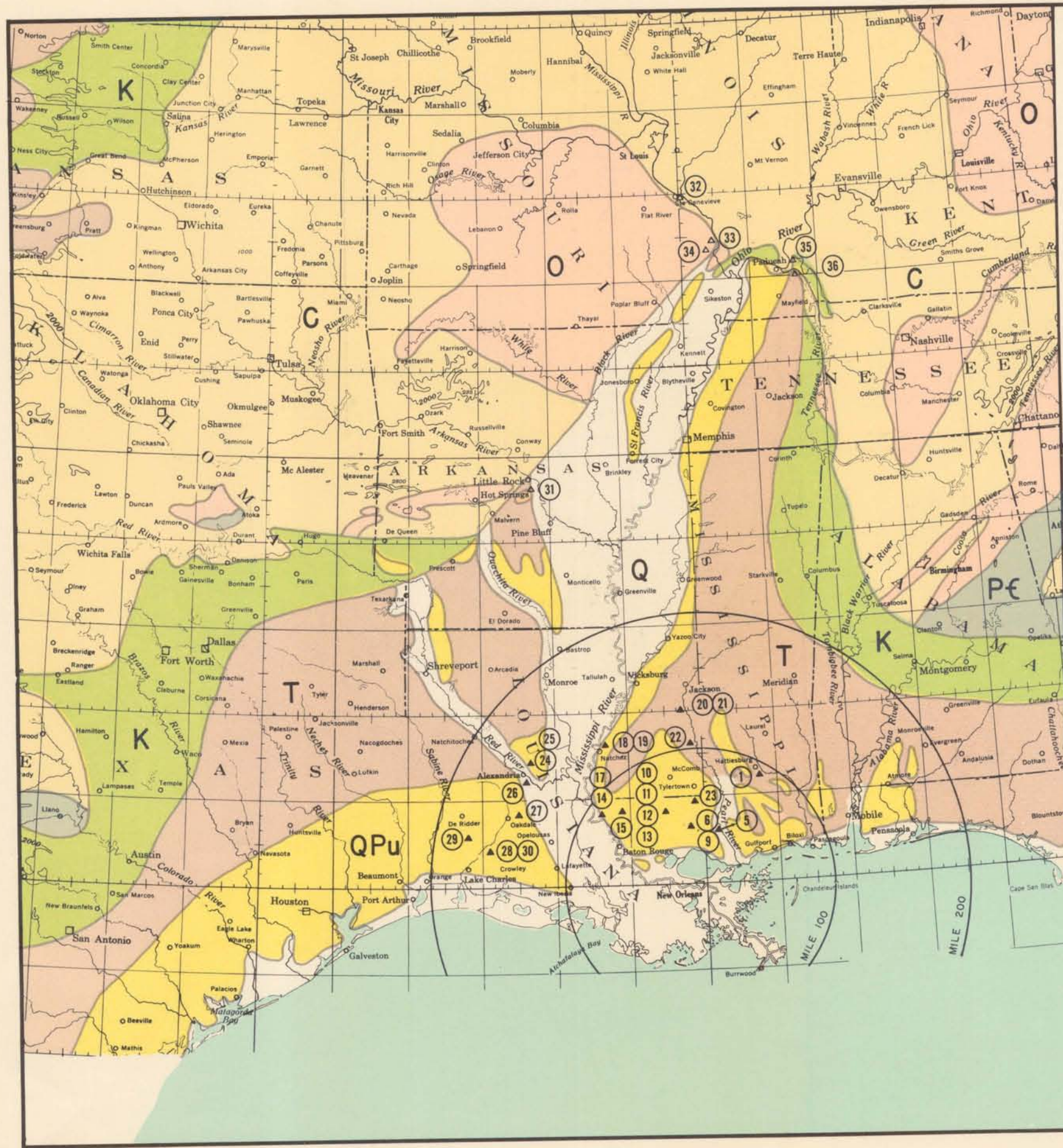
<u>Source No.</u>		<u>Source No.</u>	
a.	5 - Jahncke Service	m.	21 - Traxler Gravel Co.
b.	11 - Louisiana Industries	n.	20 - Greene Brothers
c.	10 - Jahncke Service	o.	1 - American Sand & Gravel Co.
d.	9 - Louisiana Industries	p.	24 - Louisiana Industries
e.	6 - Dixie Sand & Gravel Co.	q.	26 - Mid State Gravel Co.
f.	13 - Anderson Gravel Co.	r.	30 - Gifford-Hill Co.
g.	12 - Morse-Ory	s.	28 - Trinity Concrete Products Co.
h.	23 - Greene Bros. Sand & Gravel Co. *	t.	25 - Central Mtls. Co.
i.	17 - Lambert Gravel Co.	u.	27 - Gifford-Hill Co.
j.	15 - Feliciana Sand & Gravel Co.	v.	29 - Trinity Concrete Products Co.
k.	14 - Holloway Sand & Gravel Co.	w.	22 - Greene Brothers
l.	18 - St. Catherine Sand & Gravel Co.	x.	19 - Natchez Gravel Co.

*Quality and production capability estimated--subject to further testing and verification.

b. Derrick stone and riprap sources are shown on plate 4. Approval of these sources for inclusion in the specifications for the project is recommended subject to further testing and verification where required.

c. Adequate quantities of water are available for the project. Water from the municipal water supply of the city of New Orleans is suitable for general use without further testing. Water wells and Lake Pontchartrain are other generally satisfactory sources, but their use should be conditioned on further testing.





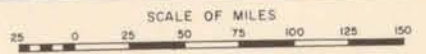
GEOLOGIC SECTION AND LEGEND

ERA	SYSTEM	SERIES	SYMBOL	ALL UNDIFFERENTIATED
CENOZOIC	QUATERNARY	Recent	Q	
		Pleistocene	QPu	
	TERTIARY	Pliocene	T	
		Oligocene		
		Eocene Paleocene		
MESOZOIC	CRETACEOUS	Upper Lower	K	
	JURASSIC** TRIASSIC**		C	
PALEOZOIC	PERMIAN** PENNSYLVANIAN MISSISSIPPIAN			
	DEVONIAN SILURIAN ORDOVICIAN CAMBRIAN			
	PROTEROZOIC	PRE-CAMBRIAN		P€

** Absent in the area.

NO.	NAME AND ADDRESS OF PRODUCER OR OWNER	LOCATION OF PIT OR QUARRY
▲ = AGGREGATE SOURCES		
1	American Sand & Gravel Co., Hattiesburg, Miss.	Sec. 13, T. 4 N.-R. 13 W., Forrest County, 2.5 miles NE of Hattiesburg
2*	American Sand & Gravel Co., Hattiesburg, Miss.	N1/2NW1/4 sec. 33, T. 5 N.-R. 13 W., Forrest County, Miss.
3*	American Sand & Gravel Co., Hattiesburg, Miss.	NW1/2 sec. 34, T. 5 N.-R. 13 W., Forrest County, Miss.
4*	Jahneke Service, New Orleans, La.	Approx 1/2 mile above Lock 2, east side of Pearl River Navigation Canal
5	Jahneke Service, New Orleans, La.	South side La. Hwy 16 at Sun, La.
6	Dixie Sand & Gravel Co., Box 230, Bogalusa, La.	Sec. 16, T. 4 S.-R. 12 E., Washington Parish, 15 miles SW of Franklinton on La. Hwy 16
7*	Jahneke Service, New Orleans, La.	Bluff Creek, La., 1 1/4 miles from intersection of La. Hwys 37 & 125
8*	Gulf Sand & Gravel Co., Amite, La.	Amite, La.
9	Louisiana Industries, Box 319, Bogalusa, La.	T. 4 S.-R. 12 E., sec. 16, Washington Parish, 15 miles SW of Franklinton on La. Hwy 16
10	Jahneke Service, New Orleans, La.	East side U. S. Hwy 51, 1 mile south of Tangipahoa, La.
11	Louisiana Industries, New Orleans, La.	East side U. S. Hwy 51, 1 mile south of Tangipahoa, La.
12	Morse - Ory, Amite, La.	East side U. S. Hwy 51, 5 miles north of Amite, La.
13	Anderson Gravel Co., Amite, La.	East side U. S. Hwy 51 at Velma, La.
14	Holloway Sand & Gravel Co., Baton Rouge, La.	T. 3 S.-R. 1 W., East Feliciana Parish, Thompsons Creek near St. Francisville, La.
15	Feliciana Sand & Gravel Co., Jackson, La.	1 mile west of Jackson, La., along East Fork of Feliciana Creek, La.
16*	Martin Gravel Co., St. Francisville, La.	East of Weyanoke, La.
17	Lambert Gravel Co., P. O. Drawer G, St. Francisville, La.	Shoanbed of Bayou Sara, Plant on La. Hwy 66, 2 miles west of Bains, La.
18	St. Catherine Sand & Gravel Co., Natchez, Miss.	R. 1 W.-T. 6 N., 3.1 miles from intersection of U. S. Hwys 61 & 84, Adams County, Miss.
19	Natchez Gravel Co., Natchez, Miss.	Sec. 33, R. 10 E.-T. 5 N., Adams County, Miss.
20	Greene Brothers Sand & Gravel Co., Crystal Springs, Miss.	7 miles south of Crystal Springs on Miss. Hwy 27
21	Traxler Gravel Co., Crystal Springs, Miss.	1.5 mile east of Crystal Springs on Miss. Hwy 27
22	Greene Brothers Sand & Gravel Co. (Lakeview Sand & Gravel Co.), Crystal Springs, Miss.	1.5 miles north of Monticello, Miss., on U. S. Hwy 84 at Pearl River
23	Greene Brothers Sand & Gravel Co. (Standard Gravel Co.), Box 17, Franklinton, La.	1 mile north of Clifton, La., on Hwy 25, west side of road
24	Louisiana Industries, New Orleans, La.	Sec. 34, T. 7 N.-R. 1 E., 5 miles east of Pollock, La., adjacent to La. Hwy 8, Grant Parish, La.
25	Central Materials Co., P. O. Box 4082, Alexandria, La.	Sec. 22, T. 5 N.-R. 1 E., 5 miles from Pineville, La., Rapides Parish, 10 miles NE of Alexandria, La.
26	Mid State Gravel Co., Alexandria, La.	Sec. 30, T. 7 N.-R. 1 W., Valde Rouge Plant, 2 miles southwest of Woodworth, La.
27	Gifford - Hill Co., 2064 Lee St., Alexandria, La.	Turkey Creek Plant, 2 miles west of Turkey Creek, La.
28	Trinity Concrete Prod. Co., Box 790, Lake Charles, La.	NW sec. 22, T. 7 S.-R. 6 W., 10 miles southwest of Kinder on La. Hwy 383, Jefferson Davis Parish
29	Trinity Concrete Prod. Co., Box 790, Lake Charles, La.	6 miles east of Longville, La., on La. Hwy 110
30	Gifford - Hill Co., Box 488, Kinder, La.	Just off La. Hwy 383 at Indian Village, La.
▲ = ROCK SOURCES		
31	Big Rock Stone & Material Co., Foot of Ashley St., Little Rock, Ark.	5 miles south of Little Rock, Ark.
32	Cliffhale Quarry & Manufacturing Co., Charles Busson, Box 201, St. Genevieve, Mo.	On Mississippi River at mile 127 above Cairo, Ill.
33	Federal Materials Co., Cape Girardeau, Mo.	On Mississippi River at mile 50 above Ohio River at Cape Girardeau, Mo.
34	West Lake Quarry & Materials Co., Rt. 1, Box 206, Bridgton, Mo.	At Illinois, Mo., mile 46.2, above Ohio River on Mississippi River
35	Three Rivers Rock Co., Box 218, Smithland, Ky.	On Cumberland River, 7 miles from Ohio River
36	Reed Crush Stone Co., Box 35, Gilbertsville, Ky.	At Gilbertsville, Ky.

* Location not shown. Pit abandoned.



LAKE PONTCHARTRAIN, LA. AND VICINITY
HURRICANE PROTECTION
DESIGN MEMORANDUM NO. 12
SOURCES OF CONSTRUCTION MATERIALS
GENERALIZED GEOLOGY AND LOCATION MAP
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
JUNE 1966 FILE NO. H-2-23633

TABLE NO. 1
SOURCES OF SAND, GRAVEL, AND ROCK

No.	Name and address of Prod. or owner	Location of pit or quarry	Type	Quantity	Plant Cap.	Trans.	Approx. Dist.	Vol.	Lat.	Long.	Index	Used at	Accep.	Remarks
1	American Sand & Gravel Co., Hattiesburg, Miss.	Sec 13, T4N, RL3W, Forrest Co., 2.9 mi. NE Hattiesburg	Sand and gravel	Plentiful	2000 yds.Gr. 2000 yds.Sd.	Truck	110 mi.	IV	31	89	2(supp)	NASA Test. Holt Dam	Yes	Tested in 1961; source & quantity chk. in 1966
2	American Sand & Gravel Co., Hattiesburg, Miss.	Forrest Co., N 1/2, NW 1/4, Sec 33, T5N, RL3W, Mississippi	Gravel	Unknown	-	Truck	110 mi.	IV	31	89	1(rev)	Keesler AFB	Quest.	Pit no longer in operation
3	American Sand & Gravel Co., Hattiesburg, Miss.	NW 1/2, Sec 34, T5N, RL3W, Forrest Co., Miss.	Sand and gravel	Unknown	-	Truck	110 mi.	IV	31	89	2(rev 2)	Key Field	Quest.	Pit no longer in operation
4	Jahncke Service, New Orleans, La.	Approx. 1/2 mi. above Lock #2; E. side Pearl River Nav. Canal	Sand and gravel	Unknown	-	-	50 mi.	IV	30	89	8	Wax Lake E. Pump. Sta.	Quest.	Pit no longer in operation
5	Jahncke Service, New Orleans	S. side La. Hwy. 16 at Sun. La.	Sand and gravel	Plentiful	1000 yds.Gr. 1000 yds.Sd.	Truck & barge	55 mi.	-	30	89	-	-	Yes	Smpl. from a form. similar in composition to site #6; complete testing by WES required
6	Dixie Sand & Gravel Co., Box 230, Bogalusa, La.	T4S, RL2E, Sec 16, Washington Ph; 15 mi. SW Franklinton on La.16	Sand and gravel	Plentiful	500 to 1000 cu.yds.	Truck	55 mi.	IV	30	89	9	Siphons in NOD	Yes	Tested in 1963, source & quantity chk. in 1966
7	Jahncke Service, New Orleans, La.	Bluff Creek, La.; 1-1/4 mi. from inter. Rt. 37 and 125	Sand and gravel	Unknown	-	-	70 mi.	III	30	90	2(supp 3)	Bayou Yokely	Quest.	Pit no longer in operation
8	Gulf Sand & Gravel Co., Amite, La.	Amite, La.	Sand and gravel	Unknown	-	-	60 mi.	III	30	90	3(supp)	RR Bridge at Algiers	Quest.	Company out of business
9	Louisiana Indust. Box 319 Bogalusa, La.	T4S, RL2E, Sec 16, Washington Ph., 15 mi. SW Franklinton on La.16	Sand and gravel	Plentiful	500-1000 yd.Gr. 1000 yds.Sd.	Railroad	60 mi.	-	30	89	-	-	Yes	Same geologic form. as #6; accept. subject to WES testing
10	Jahncke Service, New Orleans, La.	E. side US 51; 1 mi. S. of Tangipahoa, La.	Sand and gravel	Plentiful	1000 yds.Gr. 1000 yds.Sd.	Railroad	70 mi.	III	30	90	-	Freshwater Bayou Lock	Yes	Tested in 1965; source and quantity chk. in 1966
11	Louisiana Indust. New Orleans, La.	E. side US 51; 1 mi. S. of Tangipahoa, La.	Sand and gravel	Plentiful	1000 yds.Gr. 1000 yds.Sd.	Railroad	70 mi.	-	30	90	-	-	Yes	Same geologic form. as #10; accept. subject to WES testing
12	Morse-Ory Amite, La.	E. side US 51; 6 mi. N. of Amite, La.	Sand and gravel	Plentiful	700 yds.Gr. 1000 yds.Sd.	Railroad	65 mi.	-	30	90	-	-	Yes	Same geologic form. as #10 and 11, accept. subj. to WES testing
13	Anderson Gravel Co. Amite, La.	E. side US 51; at Velma, La.	Sand and gravel	Plentiful	800 yds.Gr. 1000 yds.Sd.	Railroad	65 mi.	-	30	90	-	-	Yes	Same geologic form. as #10, #11, & #12; accept. subj. to WES testing
14	Holloway Sand & Gravel Co., Baton Rouge, La.	T3S, RLW, E.Feliciana Ph., Thompson's Crk. near St.Francisville	Sand and gravel	Plentiful	700 yds.Gr. 1000 yds.Sd.	Truck	90 mi.	III	30	91	2(supp)	St.Francis. Cast.Yard	Yes	Tested in 1962; source and quantity chk. in 1966
15	Feliciana Sand & Gravel Co., Jackson, La.	1 mi.W. of Jackson, La., along east fork of Feliciana Creek	Sand and gravel	Plentiful	2000 yds.Gr. 2000 yds.Sd.	Truck	85 mi.	III	30	91	0(rev)	Port Allen Lock, St. Francis. Cast.Yard	Yes	Tested in 1961; source and quantity chk. in 1966
16	Martin Gravel Co. St. Francisville, La.	East of Weyancke, La.	Sand and gravel	Unknown	-	-	90 mi.	III	30	91	3	-	Quest.	Comp. bought out; pit abandoned
17	Lambert Gravel Co. P. O. Drawer G St. Francisville, La.	Stream bed of B.Sara, Plant on La.Hwy.66; 2 mi. W.Bains, La.	Sand and gravel	Plentiful	2000 yds.Gr. 1000 yds.Sd.	Railroad Truck	90 mi.	III	30	91	1(supp)	Old River Bridge	Yes	Tested in 1963; source and quantity chk. in 1966
18	St.Catherine Sand & Gravel Co., Natchez, Miss.	RLW, T6N, 3.1 mi. from inter. of US 61 & 84 in Adams Co., Miss.	Sand and gravel	Plentiful	2000 yds.Gr. 2000 yds.Sd.	Truck Barge	135 mi.	III	31	91	10(supp)	Old River Bridge Appr.)	Yes	Tested in 1963; source and quantity chk. in 1966
19	Natchez Gravel Co. Natchez, Miss.	Sec 33, RL0E, T6N, Adams Co., Miss.	Sand and gravel	Plentiful	500 yds.Gr. 500 yds.Sd.	Truck	135 mi.	-	31	91	-	-	Quest.	Supply is adequate but cap. and trans. quest.; same geologic form as #18. Test by WES needed.

TABLE NO. 1 (cont'd)
SOURCES OF SAND, GRAVEL, AND ROCK

No.	Name and address of Prod. or owner	Location of pit or quarry	Type	Quantity	Plant Cap.	Trans.	Approx. Dist.	Vol.	Lat.	Long.	Index	Used at	Accep.	Remarks
20	Greene Brothers Sand & Gravel Co., Crystal Springs, Miss.	7 mi. S of Crystal Springs on St.Hwy.27	Sand and gravel	Plentiful	1000 yds.Gr. 1000 yds.Sd.	Railroad Truck	145 mi.	III	31	90	3(rev)	-	Yes	Tested in 1960; source and quantity chk. in 1966
21	Traxler Gravel Co., Crystal Springs, Miss.	1 mi. east of Crystal Springs on St.Hwy.27	Sand and gravel	Plentiful	2000 yds.Gr. 2000 yds.Sd.	Railroad Truck	145 mi.	-	31	90	-	-	Yes	Same geologic form as #20; accept.subject to WES testing
22	Greene Brothers Sand & Gravel Co., (Lakeview Sd.&Gr.Co.) Crystal Springs, Miss.	1.5 miles from Menticello on US 84 at Pearl River	Sand and gravel	Plentiful	600 yds.Gr. 600 yds.Sd.	Truck	110 mi.	-	31	90	-	-	Yes	Plant is new and will expand; smpl.meets grad.req.; accept. subj.to WES testing
23	Green Brothers Sand & Gravel Co.(Standard Gravel Co.) Box 17, Franklinton, La.	1 mi. N. Clifton on St.Hwy.25; W side of road	Sand and gravel	Plentiful	1000 yds.Gr. 1000 yds.Sd.	Railroad Truck	65 mi.	-	30	89	-	-	Prob.	New pit - no sample; plant to be in operation in April or May '66
24	Louisiana Indust. New Orleans, La.	5 mi. E of Pollock, La., adj. to La.Hwy.#8, Sec 34, T1N, R1E, Grant Ph.	Sand and gravel	Plentiful	2500 yds.Gr. 2500 yds.Sd.	Railroad Truck	165 mi.	III	31	92	2(supp)	Old River Nav.Lock	Yes	Tested in 1960; source and quantity chk. in 1966; new owner; grad. chk.
25	Central Mats. Co. P. O. Box 4082 Alexandria, La.	5 mi. from Pineville, La., Sec 22, T5N, R1E, Rapides Ph., 10 mi. NE Alexandria	Sand and gravel	Plentiful	600 yds.Gr. 1000 yds.Sd.	Truck	165 mi.	III	31	92	6(rev#3)	Old River Nav.Lock	Yes	Tested in 1960; source and quantity chk. in 1966; grad. chk.
26	Mid State Gravel Co. Alexandria, La.	Valde Rouge Plant; 2 mi. SW Woodworth, La.; Sec 30, T2N, R1N	Sand and gravel	Plentiful	1000 yds.Gr. 1000 yds.Sd.	Railroad Truck	165 mi.	III	31	92	1(supp)	Old River Nav.Lock	Yes	Tested in 1960; source and quantity chk. in 1966; grad. chk.
27	Gifford-Hill Co. 2064 Lee St. Alexandria, La.	Turkey Creek Plant, 2 mi. W of Turkey Creek, La.	Sand and gravel	Plentiful	1000 yds.Gr. 1000 yds.Sd.	Truck	150 mi.	III	30	92	1(supp2)	-	Yes	Tested in 1960; source and quantity chk. in 1966; grad. chk.
28	Trinity Conc.Prod.Co. Box 790 Lake Charles, La.	10 mi. SW of Kinder on St.383, NW 1/4, Sec 22, T7S, R6W, Jeff.Dav. Ph.	Sand and gravel	Plentiful	700 yds.Gr. 1000 yds.Sd.	Railroad Truck	170 mi.	III	30	92	-	Calcasieu Salt W.Bar.	Yes	Tested in 1965; source and quantity chk. in 1966
29	Trinity Conc.Prod.Co. Box 790 Lake Charles, La.	6 mi. E of Longville, La. on St.110	Sand and gravel	Plentiful	1000 yds.Gr. 1000 yds.Sd.	Truck	180 mi.	III	30	93	-	Calcasieu Salt W.Bar.	Yes	Tested in 1966
30	Gifford-Hill Co. Box 488 Kinder, La.	Just off St.383 at Indian Village, La.	Sand and gravel	Plentiful	2500 yds.Gr. 2500 yds.Sd.	Railroad Truck	170 mi.	-	30	92	-	-	Yes	Same geologic form. as #28; accept. subj.to WES testing

ROCK

No.	Name and address of Prod. or owner	Location of pit or quarry	Type	Approx. plant cap.	Trans.	Specific gravity	Unit Weight	Remarks
31	Big Rock Stone & Mtl. Co., Ft.of Ashley St., Little Rock, Ark.	5 mi. south of Little Rock, Ark.	Nepheline syenite	15,000 to 20,000 tons/day	Railroad	2.61	163#/cf	The supply is adequate; tests by comp. are positive; acceptable subject to tests by NOD
32	Cliffdale Quarry & Mfg. Co., Charles Bussen, Box 201, St. Genevieve, Mo.	On Miss.River. at Mi. 127 above Cairo, Ill.	Crystalline limestone	1,000 tons/day	-	2.63	164#/cf	The supply is adequate and tests by NOD indicate the rock to be acceptable
33	Federal Mats. Co. Cape Girardeau, Mo.	On Miss. River at Mi. 50 above Ohio River (at Cape Girardeau)	Limestone	2,500 tons/day	Railroad & barge	2.71	169#/cf	The supply is adequate; tests by WES are positive; acceptable subject to tests by NOD
34	West Lake Quarry & Mtls.Co., Route 1, Box 206, Bridgeton, Mo.	At Illmo, Mo., mile 46.2 above Ohio River on Miss. River.	Crystalline limestone	-	-	2.68	167#/cf	Tested in 1963 by NOD; acceptable subject to supply status.
35	Three Rivers Rock Co. Box 218 Smithland, Kentucky	On Cumberland River 7 miles from Ohio River	Crystalline limestone	19,000 to 24,000 tons/day	Barge	2.72	170#/cf	Supply is adequate and tests by NOD indicate the rock to be acceptable
36	Reed Crushed Stone Co., Box 35, Gilbertsville, Ky.	At Gilbertsville, Ky.	Crystalline limestone	-	Barge	2.71	169#/cf	Supply is adequate and tests by NOD indicate the rock to be acceptable

TABLE NO. 2

SOURCES OF BACKFILL, SHELL, AND LEVEE MATERIAL

I T E M	S O U R C E
<u>CHEF MENTEUR BARRIER STRUCTURE</u>	
Random backfill Clay blankets Sand backfill Clay cutoffs Gulfside levee at west end for highway protection Tie-in levees and highway approach embankment Closure dam Graded filter	Excavation spoils and approach channel areas Selected excavation spoils and approach channel areas (10 to 20-foot surface layer of fat clay) Selected excavation spoils (10 to 15-foot sand stratum underlies the control structure, navigation channel, and floodgate at -20 to 30 feet) Selected excavation spoils (10 to 20-foot surface layer of fat clay found at floodgate site) Gulfside borrow areas in the immediate vicinity of the project Hydraulic pump material (Recent and Pleistocene) from channel and structure excavations and adjacent lakeside borrow areas Hydraulic pump material (Recent and Pleistocene) from channel and structure excavations and adjacent lakeside borrow areas Selected material from sand backfill, and concrete sand from sources on table No. 1.
<u>RIGOLETS BARRIER STRUCTURE</u>	
Random backfill Clay blankets Sand backfill Clay cutoffs Gulfside levee on east and west end for highway protection Tie-in levees and highway approach embankment Closure dam Graded filter	Excavation spoils and approach channel areas Selected excavation spoils and approach channel areas (10 to 20-foot surface layer of fat clay) Selected excavation spoils (25-37-foot sand stratum underlies the lock site and part of approach channels -20 feet m.s.l.) Selected excavation spoils (10 to 20-foot surface layer of fat clay) Gulfside borrow areas in immediate vicinity of the project Hydraulic pump material (Recent and Pleistocene) from channel and structure excavations and adjacent lakeside borrow areas. Hydraulic pump material (Recent and Pleistocene) from channel and structure excavations and adjacent lakeside borrow areas Selected material from sand backfill, and concrete sand sources on table No. 1
<u>ST. CHARLES PARISH LEVEE</u>	
	Hydraulic pump material (Pleistocene) from adjacent borrow areas in lake, riprap from sources shown on table No. 1
<u>JEFFERSON PARISH LEVEE</u>	
	Shell from commercial sources; riprap sources as shown on table No. 1
<u>ORLEANS PARISH LEVEE</u>	
Jefferson Parish to Inner Harbor Navigation Canal Citrus Area New Orleans East	Hauled material from spillway and/or Mississippi River bature; shell from commercial sources; riprap sources as shown on table No. 1 Hydraulic pump material (Pleistocene) from adjacent borrow areas in lake; hauled material from spillway or Mississippi River bature; riprap as on table No. 1 Hydraulic pump material (Pleistocene) from adjacent borrow areas in lake; riprap sources as shown on table No. 1
<u>CHALMETTE</u>	
Along Gulf Intracoastal Waterway and Mississippi River-Gulf Outlet Mississippi River-Gulf Outlet to Violet Lock	Existing spoil along Mississippi River-Gulf Outlet on the south and material resulting from enlargement of Mississippi River-Gulf Outlet; riprap as shown on table No. 1 Hydraulic pump material from borrow areas on Lake Borgne side of Bayou Dupre
<u>MANDEVILLE</u>	
	Shell from commercial sources; riprap from sources as shown on table No. 1
<u>SEABROCK LOCK</u>	
	Shell from commercial sources; riprap and derrick stone as shown on table No. 1
<u>SHELL</u>	
	Shell for the entire project may be obtained from nearby commercial sources.