TOLUNAY-WONG ENGINEERS, INC.

SUMMARY OF LABORATORY TESTS

Project Number: 07.18.922
Project: House Tract Placement Area
Contract No. DACW64-03-D-0008, Task Order 0067

Client U.S. Army Corps of Engineers

Boring No.	Sample No.	Sample Depth (feet)	Elevation (feet)	Pocket Pen. (tsf)	Soil Description	USCS	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	Finer than No. 200 (%)	Unit Dry Weight (pcf)	Dev./Compr. Stress (tsf)	Failure Strain (%)	Confining Pressure (psi)	Failure Type
07-01	N 13838559.93, E 3154330.32		62.82													
	1	0-2	60.82		Reddish-brown FAT CLAY; shell fragments	CH		72	22	50	86.4					
	2	2-4	58.82	3.00	Reddish-brown FAT CLAY; sand seams and shell fragments	CH	25.2									
	3	4-6	56.82	2.50	Reddish-brown and gray FAT CLAY; sand pockets	CH	23.3	52	23	29		102.7	1.37	4.2		Vertical shear
	4	6.5-8	54.82		Gray and tan SILTY SAND; shell fragments and gravel	SM					15.2					
	5	8.5-10	52.82		Tan and gray SAND with SILT	SP-SM					10.9					
	6	10.5-12	50.82		Gray and tan SILTY SAND; organics	SM					45.0					
	7	12.5-14	48.82		Dark gray and tan SILTY SAND	SM					28.1					
07-02	N 13838913.22, E 3154878.37		60.26													
	1	0-2	58.26		Gray SANDY LEAN CLAY	CL					66.8					
	3	4.5-6	54.26		Tan and gray SILTY SAND; rotten tree roots	SM					12.0					
	5	8.5-10	50.26		Gray SILTY SAND; organics	SM					40.7					
	6	10.5-12	48.26		Tan and gray SILTY SAND; rotten roots	SM					37.4					
	7	12.5-14	46.26		Tan and gray SILTY SAND	SM					22.7					
07-04	N 13838855.09, E 3155525.84		57.42													
	1	0-2	55.42		Gray and tan SILTY SAND; shell fragments	SM					29.7					
	3	4.5-6	51.42		Tan and gray SANDY SILT; clay balls	ML					55.2					
	4	6.5-8	49.42		Gray and tan SILTY SAND	SM					47.5					
	6	10.5-12	45.42		Tan and gray SILTY SAND; rotten roots	SM					19.7					
	7	12.5-14	43.42		Tan and reddish-brown SILTY SAND; organics	SM					21.2					
07-05	N 13839300.31, E 3155178.40		56.65													
	2	2.5-4	52.65		Gray and tan SAND with SILT	SP-SM					5.9					
	4	6.5-8	48.65		Gray and tan SAND with SILT; shell fragments	SP-SM					9.6					
	5	8.5-10	46.65		Gray and reddish-brown SILTY SAND	SM					46.2					
	6	10.5-12	44.65		Gray and tan SILTY SAND; shell fragments	SM					24.2					
	7	12.5-14	42.65		Gray and tan SAND with SILT	SW-SM					9.0					
07-11	N 13839468.05, E 3154269.19		58.35													
	2	2.5-4	54.35		Tan SILTY SAND	SM					19.7					
	3	4.5-6	52.35		Gray and tan SILTY SAND	SM					23.2					
	4	6.5-8	50.35		Reddish-brown ELASTIC SILT	MH	36.6	55	36	19	85.8					
	5	8.5-10	48.35		Gray SANDY SILT	ML					55.5					
07-21	N 13842633.92, E 3153578.42		55.65													
	1	0-2	53.65	1.75	Reddish-brown and gray FAT CLAY	CH	30.6									
	2	2-4	51.65	2.50	Reddish-brown and gray FAT CLAY	CH	30.1									
	3	4-6	49.65	3.50	Gray and reddish-brown FAT CLAY	CH	19.7									
	4	6-8	47.65	4.00	Gray and reddish-brown FAT CLAY; sand pockets	CH	19.4									
	5	8-10	45.65	2.25	Gray FAT CLAY	CH	22.5									
	6	10-12	43.65	4.00	Gray and reddish-brown FAT CLAY; shell fragments	CH	17.8									
	7	12-14	41.65	3.75	Gray and tan FAT CLAY; calcareous and shell fragments	CH	19.6									
	8	14-15	40.65	4.50	Dark gray FAT CLAY; shell fragments	CH	15.8									
	9	15-17	38.65	4.50	Gray and tan FAT CLAY	CH	21.4									
	10	17-19	36.65	4.50	Gray and reddish-brown FAT CLAY	CH	22.1									
	11	19-21	34.65	4.50	Gray and reddish-brown FAT CLAY	CH	21.3									
	12	21-23	32.65	1.50	Tan and gray FAT CLAY	CH	32.4									
	13	23-25	30.65	1.00	Dark gray and tan FAT CLAY; organics and hydrocarbon odor	CH	44.1									
	14	25-27	28.65	2.00	Gray and tan FAT CLAY; hydrocarbon odor	CH	29.5									
	15	27-29	26.65	1.50	Gray FAT CLAY; silt seams	CH	43.9									
	16	29-31	24.65	2.25	Gray and tan FAT CLAY	CH	24.4									
	17	31-33	22.65	2.25	Gray and tan FAT CLAY	CH	23.2	73	21	52		99.3	2.17	14.0		Bulge
	18	33-35	20.65	3.25	Gray and tan FAT CLAY with SAND	CH	21.9									
	19	35-37	18.65	3.00	Gray and tan FAT CLAY; calcareous nodules	CH	22.8									
	20	37-39	16.65	1.50	Gray and tan FAT CLAY; calcareous nodules	CH	26.1									

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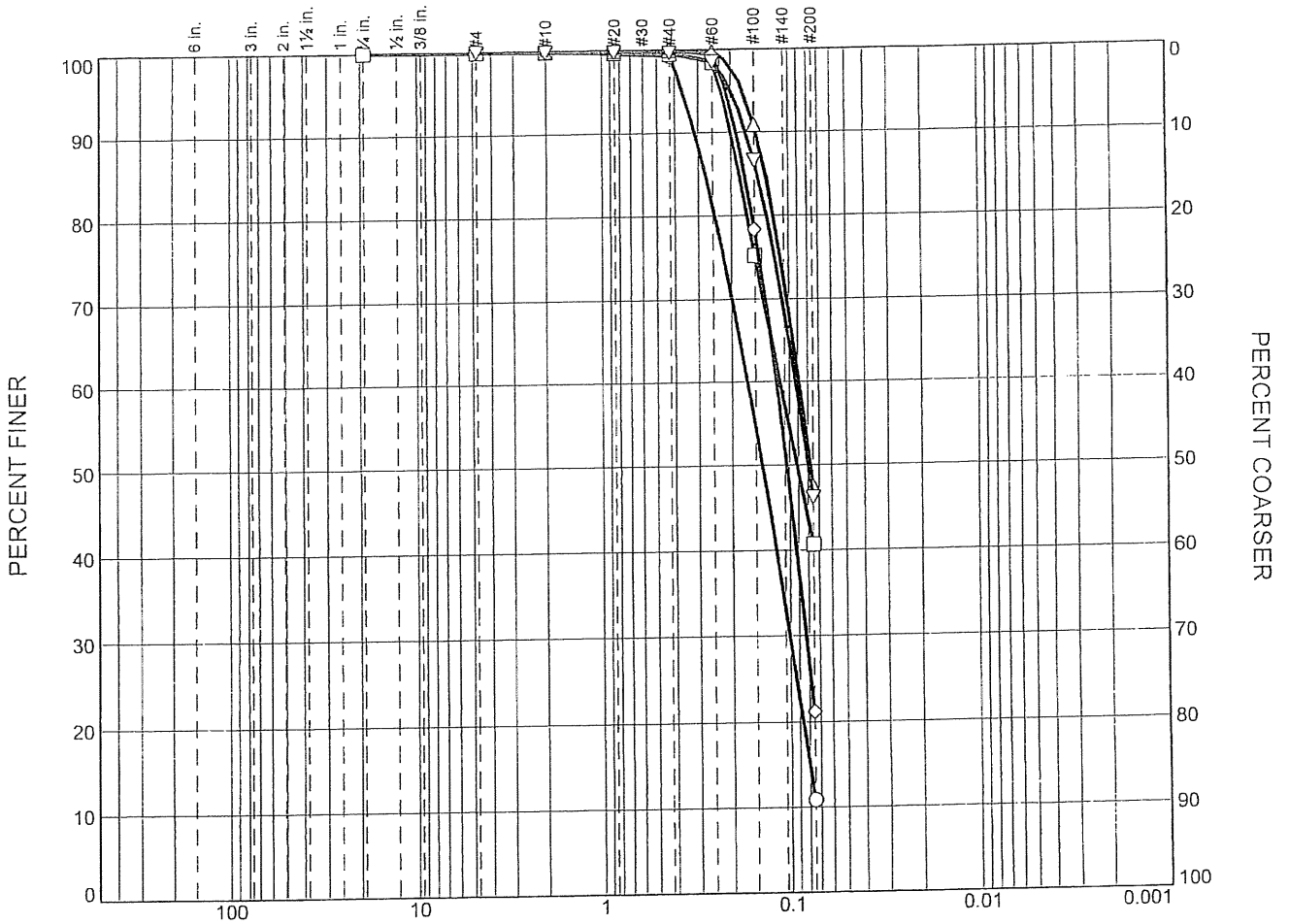
Grain Size Analysis - ASTM D 422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.1	0.6	88.4	10.9	
□	0.0	0.0	0.0	0.1	0.4	58.8	40.7	
△	0.0	0.0	0.0	0.0	0.0	52.5	47.5	
◇	0.0	0.0	0.0	0.0	0.0	78.8	21.2	
▽	0.0	0.0	0.0	0.1	0.2	53.5	46.2	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	07-01	5	8.5-10	Tan and gray SAND with SILT	SP-SM
□	07-02	5	8.5-10	Gray SILTY SAND; organics	SM
△	07-04	4	6.5-8	Gray and tan SILTY SAND	SM
◇	07-04	7	12.5-14	Tan and reddish-brown SILTY SAND; organics	SM
▽	07-05	5	8.5-10	Gray and reddish-brown SILTY SAND	SM

Tolunay-Wong Engineers, Inc.
Houston, Texas

Client: U. S. Army Corps of Engineers

Project: House Tract Placement Area
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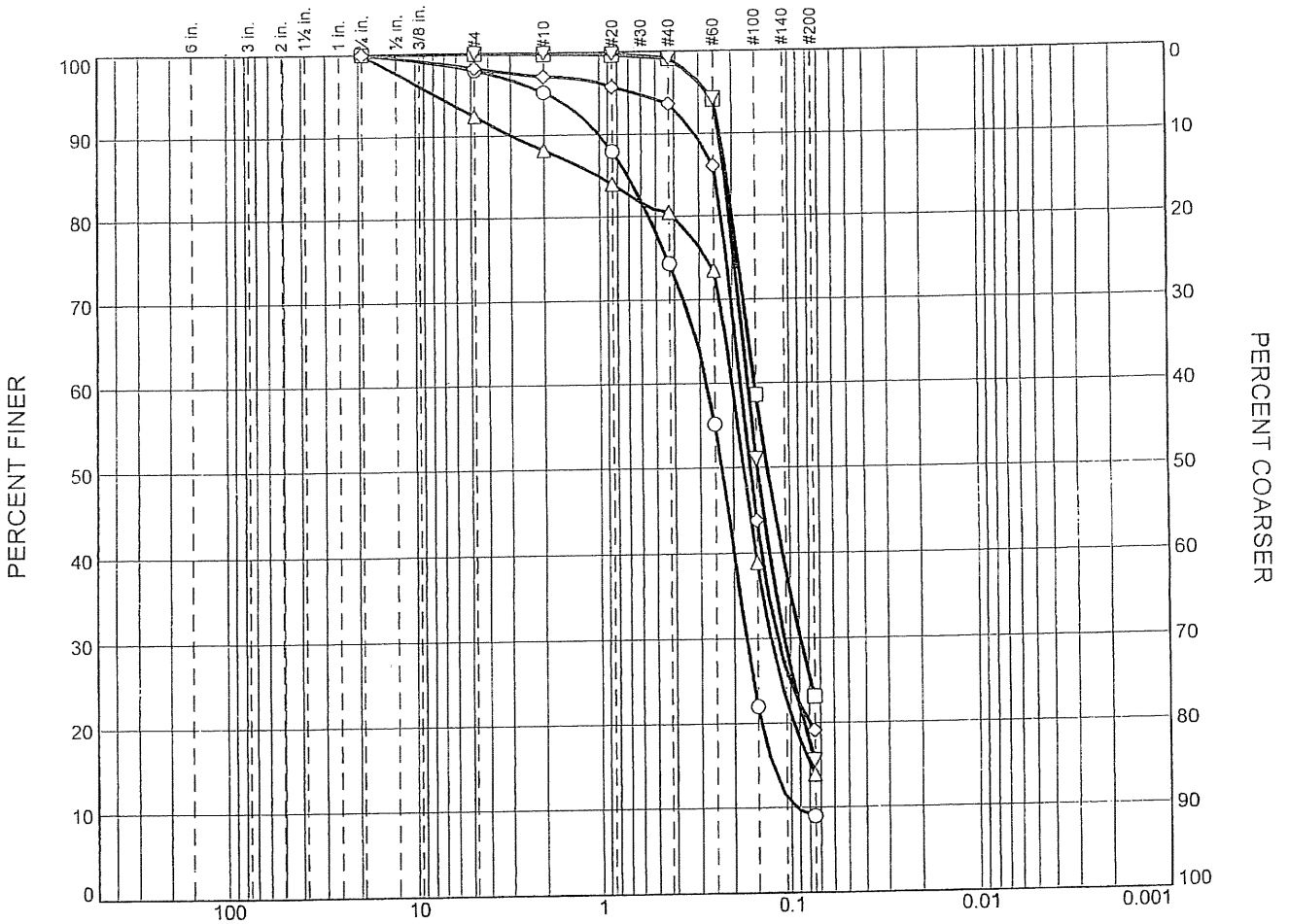
Grain Size Analysis - ASTM D 422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	2.0	2.8	20.9	65.3	9.0	
□	0.0	0.0	0.1	0.1	0.7	75.9	23.2	
△	0.0	0.0	7.6	4.2	7.7	66.6	13.9	
◇	0.0	0.0	1.8	1.0	3.5	74.6	19.1	
▽	0.0	0.0	0.0	0.1	0.7	83.6	15.6	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	07-05	7	12.5-14	Gray and tan Well graded SAND with SILT	SW-SM
□	07-11	3	4.5-6	Gray and tan SILTY SAND	SM
△	07-39	3	4.5-6	Tan and gray SILTY SAND; organics	SM
◇	07-40	2	2.5-4	Dark gray SILTY SAND; organics	SM
▽	07-41	2	2.5-4	Tan and gray SILTY SAND	SM

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Hole No. 07-05

BORING LOG	DISTRICT	INSTALLATION	SHEET 1 OF 1 SHEETS

1. PROJECT House Tract Placement Area	7. ELEVATION OF HOLE 56.21 ft
2. LOCATION (Coordinates or Station) N=13844870.34 E=3155085.93	8. DATUM FOR ELEVATION
3. DRILLING AGENCY T.R.I.	9. ELEVATION OF GROUNDWATER ▽ TOD: 52.21 ft ▼ 24-HR:
4. LABORATORY TESTING AGENCY Tolunay-Wong Engineers, Inc.	10. DRILLING DATE and TIME STARTED: 4/24/07 COMPLETED: 4/24/07
5. DEPTH OF WATER ▽ TOD: 4 ft ▼ 24-HR:	11. CLASSIFICATION REFERENCE
6. DEPTH OF HOLE 14 ft	12. ENGINEER

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	NUMBER	RECOVERY (%)	SPT (N)	PENETROMETER (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (% <200)
			POORLY GRADED SAND w/ SILT(SP-SM), loose, tan & gray		1									
					2		5							5.9
5			-medium dense, w/ shell fragment below 4.5'		3		11							
	48.2				4		15							9.6
			SILTY SAND(SM), medium dense, gray & reddish brown, w/ shell fragments		5		11							46.2
10			-loose, gray & tan below 10.5'		6		9							24.2
	44.2		**POORLY GRADED SAND w/ SILT(SP-SM)**, loose, gray & tan, w/ shell fragment		7		9							9
	42.2		Boring terminated at 14 ft.											
15														
20														
25														
30														

SWG 1836 BOR 03.14.859-057.GPJ TOLUNAY-WONG ENGINEERS.GDT 3/4/08

ENG FORM: SWG 1836 BOR

NOTE:
FOR BORING LOG NOTES AND CLASSIFICATIONS, SEE DRAWING NO. F-46.

SOLICITATION NO.
W912HY-
08-B-0016

US Army Corps of Engineers
Galveston District

Rev.	Description	Date	By

TIME:$TIME$
DATE:$DATE$
BY:$USER$

Drawn by:
Designed by: SK,SL,RB
Checked by: SL,RB
Submitted by: LORI K. THOMAS, P.E. Date/Section & Structure Section
Approved by: PETE G. PEREZ, P.E. Chief, Engineering and Construction Division
Date: APRIL, 2008
Scale: AS SHOWN
Rev. --
Approval Recommended: HARRISON T. SUTCLIFFE, P.E. Chief, Engineering Branch

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

PREPARED UNDER THE DIRECTION OF
DAVID C. WESTON, COL., C.E.
DISTRICT COMMANDER

HOUSTON SHIP CHANNEL, TEXAS
HOUSE TRACT PLACEMENT AREA
INTERIOR REHABILITATION, EXTERIOR LEVEE
REHABILITATION, AND DRAINAGE DITCH REPAIR

LOGS OF BORINGS

Drawing No.:
F-43
Sheet 46 of 49

File:$FILE$

File No. HSC 401-515

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