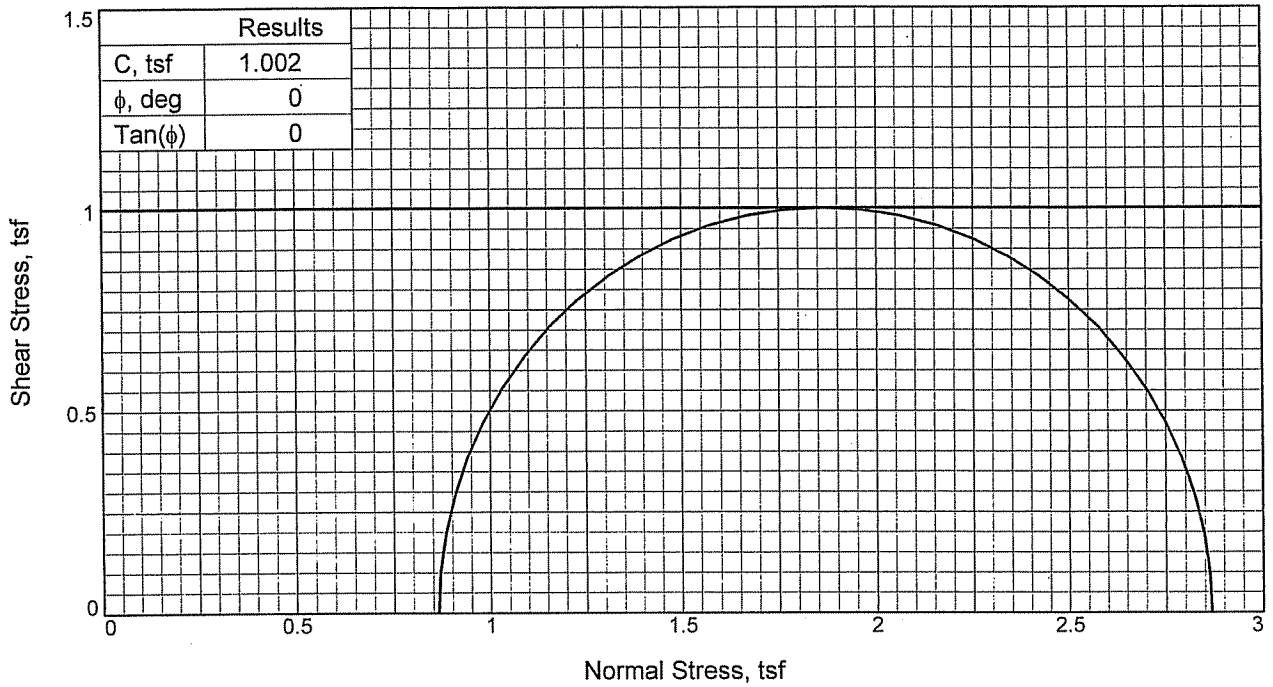
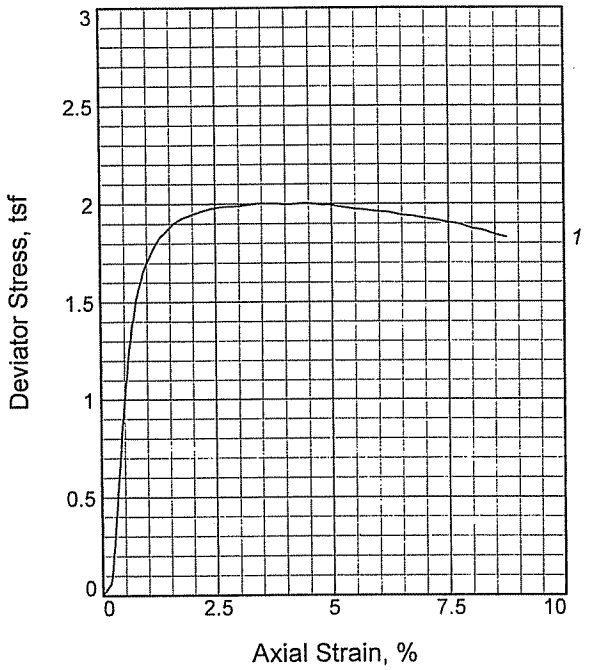
	2	2-4	Gray FAT CLAY	CH	27.1	94.5								
	3	4-6	Tan and gray FAT CLAY	OH	31.5	89.5								
	4	6-8	Tan and gray FAT CLAY; calcareous nodules	CH	27.7	95.9								
	5	8-10	Reddish-brown and gray FAT CLAY	CH	40.2	83.0								
	6	10-12	Reddish-brown and gray FAT CLAY	CH	30.5	91.4	75	23	52	99.4	0.50	0.6	11	Slickensided
	7	12-14	Reddish-brown and gray FAT CLAY	CH	30.3	89.2								
	8	14-16	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	29.3	91.5								
	9	16-18	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	30.7	93.0								
	10	18-20	Tan and gray FAT CLAY; ferrous nodules	CH	19.5	107.1								
08-89			**El. 9.75, E=3183894 N=13645807**											
	2	2-4	Gray and tan FAT CLAY	CH	30.9	88.3								
	3	4-6	Tan and gray FAT CLAY; ferrous nodules	CH	27.0	95.0								
	4	6-8	Tan and reddish-brown FAT CLAY; calcareous nodules	CH	23.4	102.0								
	5	8-10	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	25.4	98.4								
	6	10-12	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	27.5	97.1								
	7	12-14	Reddish-brown and gray FAT CLAY	CH	28.4	93.7	67	21	46	99.8	1.72	14.5	12	Slickensided
	8	14-16	Reddish-brown and gray FAT CLAY	CH	28.8	93.9								
	9	16-18	Reddish-brown and gray FAT CLAY	CH	28.5	97.2								
	10	18-20	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	29.3	94.6								
08-90			**El. 9.75, E=3184808 N=13645601**											
	2	2-4	Gray and tan FAT CLAY; calcareous nodules	CH	24.1	100.0								
	3	4-6	Tan and reddish-brown FAT CLAY; calcareous nodules	CH	21.2	108.7								
	4	6-8	Reddish-brown and gray FAT CLAY	CH	21.2	107.1								
	5	8-10	Reddish-brown and gray FAT CLAY	CH	25.4	98.9								
	6	10-12	Reddish-brown and gray FAT CLAY	CH	26.5	96.2								
	7	12-14	Reddish-brown and gray FAT CLAY	CH	28.1	96.1	70	22	48	99.4	2.00	4.4	12	45 degree
	8	14-16	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	26.8	97.0								
	9	16-18	Reddish-brown and gray FAT CLAY	CH	24.8	98.2	69	22	47	97.5	1.75	2.3		Slickensided
08-91			**El. 8.75, E=3185612 N=13645555**											
	2	2-4	Gray FAT CLAY	CH	19.9	107.5	55	20	35	93.4	3.49	6	5	60 degree
	3	4-6	Tan and gray FAT CLAY	CH	27.0		61	20	41	95.0				
	4	6-8	Tan and gray FAT CLAY	CH	26.9	98.0	60	20	40	97.1	1.55	9.7		60 degree
	5	8-10	Reddish-brown and gray FAT CLAY	CH	25.8	100.1	65	21	44	99.6	1.02	6.7	9	60 degree
	6	10-12	Reddish-brown and gray FAT CLAY	CH	27.4	97.0	68	21	47	99.3	1.51	2.2		Slickensided
	7	12-14	Reddish-brown and gray FAT CLAY	CH	28.8	95.0	67	21	46	98.7	1.44	1.9	12	Slickensided
	8	14-16	Reddish-brown and gray FAT CLAY	CH	25.9	97.4	66	21	45	99.5	1.47	1.9		Slickensided
	9	16-18	Reddish-brown and gray FAT CLAY	CH	28.7	96.8	72	22	50	98.6	1.42	5.1	15	Slickensided
	10	18-20	Reddish-brown and gray FAT CLAY	CH	23.7	101.2	67	21	46	97.5	2.43	14.6		45 degree
	11	20-22	Reddish-brown FAT CLAY	CH	22.1	105.6	60	21	39	89.7	2.41	14.5	18	45 degree
	12	22-24	Reddish-brown and gray FAT CLAY with SAND	CH	22.4					82.0				
	13	24-26	Reddish-brown FAT CLAY	CH	26.0	97.9	69	21	48	98.3	1.97	8	21	45 degree
	14	26-28	Reddish-brown and gray FAT CLAY	CH	25.2	97.2	65	21	44	97.5	1.09	1.2		Slickensided
	15	28-30	Reddish-brown FAT CLAY	CH	23.0	102.4	70	22	48	99.7	2.32	6.2	24	60 degree
	16	30-32	Gray and tan CLAYEY SAND	SC	19.0	106.8	37	17	20	46.4	1.16	5.2		Vertical shear
	17	32-34	Brown FAT CLAY	CH	24.8	100.3	66	21	45	90.5	2.30	8.5	28	60 degree
	18	34-36	Gray and tan LEAN CLAY with SAND; calcareous deposits	CL	18.5	112.9	43	17	26	84.1	1.52	5.7		Vertical shear
	19	36-38	Brown CLAYEY SAND	SC	18.2	111.7	23	15	8	46.7	1.43	11	31	Bulge
	20	38-40	Tan POORLY GRADED SAND	SP	18.5					4.9				
08-92			**El. 8.25, E=3186327 N=13646253**											
	2	2-4	Tan and gray SANDY LEAN CLAY	CL	18.2	108.7								
	3	4-6	Reddish-brown and gray FAT CLAY	CH	25.2	101.3								
	4	6-8	Tan and gray FAT CLAY	CH	21.2	109.3								
	5	8-10	Reddish-brown and gray FAT CLAY	CH	25.5	97.6								
	6	10-12	Reddish-brown FAT CLAY	CH	28.7	95.4	68	21	47	98.3	1.64	14.2	11	Slickensided
	8	14-16	Tan and gray LEAN CLAY with SAND	CL	20.9	107.0	33	16	17	80.8	0.85	14.7	14	Bulge
	9	16-18	Reddish-brown and gray FAT CLAY	CH	21.8	102.7								
	10	18-20	Reddish-brown and tan CLAYEY SAND; calcareous nodules	SC	19.1	110.5								
08-93			**El. 10.25, E=3185920 N=13646861**											
	1	0-2	Gray SANDY LEAN CLAY	CL	11.2	107.3								
	2	2-4	Tan and gray SANDY LEAN CLAY	CL	17.3	112.0								
	3	4-6	Tan and gray LEAN CLAY with SAND	CL	21.2	104.0								
	4	6-8	Reddish-brown and gray FAT CLAY	CH	28.9	91.4					1.33	8.2		45 degree





Sample No.		1
Initial	Water Content, %	28.1
	Dry Density, pcf	96.1
	Saturation, %	98.4
	Void Ratio	0.7866
	Diameter, in.	2.85
	Height, in.	6.00
At Test	Water Content, %	28.6
	Dry Density, pcf	96.1
	Saturation, %	99.9
	Void Ratio	0.7866
	Diameter, in.	2.85
	Height, in.	6.00
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		0.86
Fail. Stress, tsf		2.00
Ult. Stress, tsf		
σ_1 Failure, tsf		2.87
σ_3 Failure, tsf		0.86

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Reddish-brown and gray FAT CLAY

LL= 70 **PL=** 22 **PI=** 48

Assumed Specific Gravity= 2.75

Remarks:

Test method: ASTM D 2850

Pocket pen; tsf: 2.75

Failure type: 45 degree

Client: United States Army Corps of Engineers

Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079

Source of Sample: 08-90 **Depth:** 12-14

Sample Number: 7

Proj. No.: 08.18.921 **Date Sampled:** 8/14/08

TRIAXIAL SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

8/19/2008
1:25 PM

Date: 8/14/08
Client: United States Army Corps of Engineers
Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079
Project No.: 08.18.921
Location: 08-90
Depth: 12-14 **Sample Number:** 7
Description: Reddish-brown and gray FAT CLAY
Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 2.75
Failure type: 45 degree
Type of Sample: Undisturbed
Assumed Specific Gravity=2.75 **LL=**70 **PL=**22 **PI=**48
Test Method: ASTM D 2850

Parameters for Specimen No. 1

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	151.750	111.700
Moisture content: Dry soil+tare, gms.	125.400	93.950
Moisture content: Tare, gms.	31.750	31.840
Moisture, %	28.1	28.6
Moist specimen weight, gms.	1236.1	
Diameter, in.	2.85	
Area, in.^{2}	6.38	
Height, in.	6.00	
Wet Density, pcf	123.1	
Dry density, pcf	96.1	
Void ratio	0.7866	
Saturation, %	98.4	

Test Readings for Specimen No. 1

Membrane modulus = .130 kN/cm^2
Membrane thickness = .031 cm
Cell pressure = 12.00 psi (0.864 tsf)
Back pressure = 0.00 psi (0.000 tsf)
Strain rate, %/min. = 1.00
Fail. Stress = 2.004 tsf **at reading no.** 51

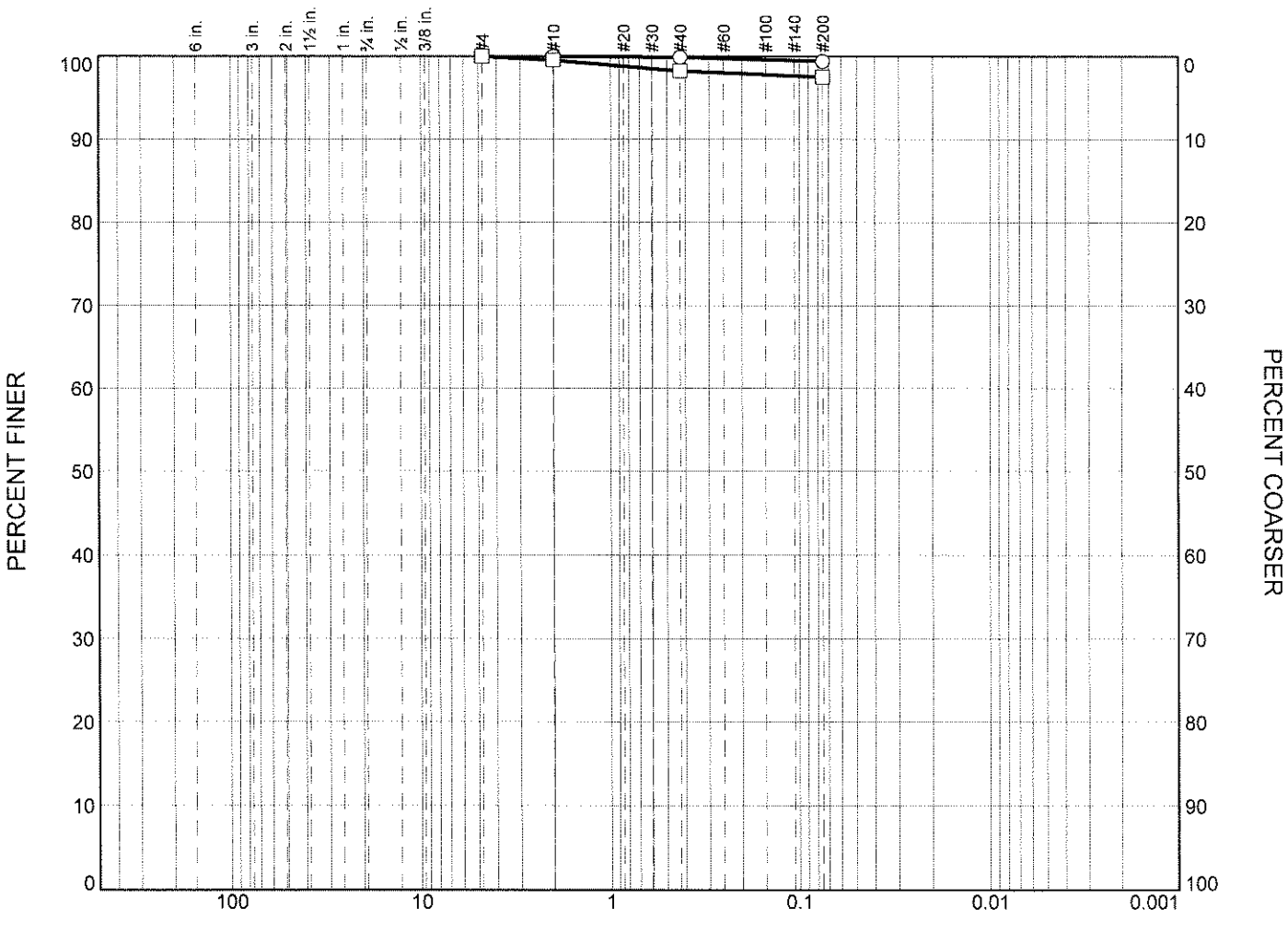
Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
0	0.0279	0.000	0.0	0.0	0.000	0.864	0.864	1.00	0.864	0.000
1	0.0382	4.935	4.9	0.2	0.056	0.864	0.920	1.06	0.892	0.028
2	0.0398	7.418	7.4	0.2	0.084	0.864	0.948	1.10	0.906	0.042
3	0.0411	10.830	10.8	0.2	0.122	0.864	0.986	1.14	0.925	0.061
4	0.0424	17.201	17.2	0.2	0.194	0.864	1.058	1.22	0.961	0.097
5	0.0444	24.134	24.1	0.3	0.272	0.864	1.136	1.31	1.000	0.136
6	0.0456	31.841	31.8	0.3	0.358	0.864	1.222	1.41	1.043	0.179
7	0.0476	39.212	39.2	0.3	0.441	0.864	1.305	1.51	1.085	0.221
8	0.0489	45.989	46.0	0.3	0.517	0.864	1.381	1.60	1.123	0.259
9	0.0501	52.846	52.8	0.4	0.594	0.864	1.458	1.69	1.161	0.297
10	0.0521	60.742	60.7	0.4	0.683	0.864	1.547	1.79	1.205	0.341
11	0.0534	68.184	68.2	0.4	0.766	0.864	1.630	1.89	1.247	0.383
12	0.0547	75.602	75.6	0.4	0.849	0.864	1.713	1.98	1.289	0.425
13	0.0568	82.003	82.0	0.5	0.921	0.864	1.785	2.07	1.325	0.461
14	0.0580	87.885	87.9	0.5	0.987	0.864	1.851	2.14	1.357	0.493
15	0.0593	93.838	93.8	0.5	1.054	0.864	1.918	2.22	1.391	0.527
16	0.0614	99.844	99.8	0.6	1.121	0.864	1.985	2.30	1.424	0.560
17	0.0627	105.804	105.8	0.6	1.187	0.864	2.051	2.37	1.458	0.594
18	0.0639	110.632	110.6	0.6	1.241	0.864	2.105	2.44	1.485	0.621
19	0.0659	115.457	115.5	0.6	1.295	0.864	2.159	2.50	1.511	0.647
20	0.0672	119.418	119.4	0.7	1.339	0.864	2.203	2.55	1.533	0.669
21	0.0685	123.162	123.2	0.7	1.381	0.864	2.245	2.60	1.554	0.690
22	0.0705	126.307	126.3	0.7	1.415	0.864	2.279	2.64	1.572	0.708
23	0.0718	130.036	130.0	0.7	1.457	0.864	2.321	2.69	1.592	0.728
24	0.0731	133.492	133.5	0.8	1.495	0.864	2.359	2.73	1.612	0.748
25	0.0751	136.621	136.6	0.8	1.530	0.864	2.394	2.77	1.629	0.765
26	0.0764	138.984	139.0	0.8	1.556	0.864	2.420	2.80	1.642	0.778
27	0.0797	142.982	143.0	0.9	1.600	0.864	2.464	2.85	1.664	0.800
28	0.0810	145.004	145.0	0.9	1.622	0.864	2.486	2.88	1.675	0.811
29	0.0823	147.373	147.4	0.9	1.648	0.864	2.512	2.91	1.688	0.824
30	0.0843	149.259	149.3	0.9	1.669	0.864	2.533	2.93	1.698	0.834
31	0.0869	151.549	151.5	1.0	1.694	0.864	2.558	2.96	1.711	0.847
32	0.0902	154.057	154.1	1.0	1.721	0.864	2.585	2.99	1.724	0.860
33	0.0935	156.792	156.8	1.1	1.750	0.864	2.614	3.03	1.739	0.875
34	0.0961	158.736	158.7	1.1	1.771	0.864	2.635	3.05	1.750	0.886
35	0.1052	164.232	164.2	1.3	1.830	0.864	2.694	3.12	1.779	0.915
36	0.1117	166.557	166.6	1.4	1.854	0.864	2.718	3.15	1.791	0.927
37	0.1232	171.124	171.1	1.6	1.901	0.864	2.765	3.20	1.814	0.950
38	0.1355	173.945	173.9	1.8	1.928	0.864	2.792	3.23	1.828	0.964
39	0.1477	175.897	175.9	2.0	1.946	0.864	2.810	3.25	1.837	0.973
40	0.1599	177.740	177.7	2.2	1.962	0.864	2.826	3.27	1.845	0.981
41	0.1721	179.394	179.4	2.4	1.976	0.864	2.840	3.29	1.852	0.988
42	0.1843	180.529	180.5	2.6	1.984	0.864	2.848	3.30	1.856	0.992
43	0.1959	181.186	181.2	2.8	1.988	0.864	2.852	3.30	1.858	0.994
44	0.2082	181.666	181.7	3.0	1.989	0.864	2.853	3.30	1.858	0.994
45	0.2203	182.654	182.7	3.2	1.995	0.864	2.859	3.31	1.862	0.998
46	0.2325	183.596	183.6	3.4	2.001	0.864	2.865	3.32	1.865	1.001

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
47	0.2448	183.973	184.0	3.6	2.001	0.864	2.865	3.32	1.865	1.001
48	0.2569	184.407	184.4	3.8	2.002	0.864	2.866	3.32	1.865	1.001
49	0.2691	184.351	184.4	4.0	1.997	0.864	2.861	3.31	1.862	0.998
50	0.2813	185.008	185.0	4.2	2.000	0.864	2.864	3.31	1.864	1.000
51	0.2935	185.764	185.8	4.4	2.004	0.864	2.868	3.32	1.866	1.002
52	0.3050	185.838	185.8	4.6	2.000	0.864	2.864	3.32	1.864	1.000
53	0.3173	185.649	185.6	4.8	1.994	0.864	2.858	3.31	1.861	0.997
54	0.3231	186.124	186.1	4.9	1.997	0.864	2.861	3.31	1.863	0.999
55	0.3354	185.584	185.6	5.1	1.987	0.864	2.851	3.30	1.858	0.994
56	0.3567	185.095	185.1	5.5	1.974	0.864	2.838	3.29	1.851	0.987
57	0.3714	185.065	185.1	5.7	1.969	0.864	2.833	3.28	1.849	0.985
58	0.3868	184.758	184.8	6.0	1.960	0.864	2.824	3.27	1.844	0.980
59	0.4015	184.957	185.0	6.2	1.957	0.864	2.821	3.27	1.843	0.979
60	0.4169	184.021	184.0	6.5	1.942	0.864	2.806	3.25	1.835	0.971
61	0.4316	184.061	184.1	6.7	1.937	0.864	2.801	3.24	1.833	0.969
62	0.4470	183.539	183.5	7.0	1.927	0.864	2.791	3.23	1.827	0.963
63	0.4617	183.122	183.1	7.2	1.917	0.864	2.781	3.22	1.823	0.959
64	0.4771	182.366	182.4	7.5	1.904	0.864	2.768	3.20	1.816	0.952
65	0.4918	182.148	182.1	7.7	1.897	0.864	2.761	3.20	1.812	0.948
66	0.5073	180.648	180.6	8.0	1.876	0.864	2.740	3.17	1.802	0.938
67	0.5220	180.130	180.1	8.2	1.865	0.864	2.729	3.16	1.797	0.933
68	0.5374	178.631	178.6	8.5	1.845	0.864	2.709	3.14	1.786	0.922
69	0.5521	177.633	177.6	8.7	1.830	0.864	2.694	3.12	1.779	0.915

Particle Size Analysis - ASTM D 422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.1	0.5	99.4	
□	0.0	0.0	0.0	0.5	1.2	0.8	97.5	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	08-90	7	12-14	Reddish-brown and gray FAT CLAY	CH
□	08-90	9	16-18	Reddish-brown and gray FAT CLAY	CH

Tolunay-Wong Engineers, Inc.
Houston, Texas

Client: United States Army Corps of Engineers
Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079
Project No.: 08.18.921