Aptim Environmental & Infrastructure, LLC
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Legend for Geotechnical Data

Grain Size Scale for Sediments

Unified Soil Classification System (USCS) (ASTM D2487/2488)		APTIM Standard Sieve Stack		
		Sieve Number	Size (phi)	Size (mm)
Gravel	Coarse Gravel	3/4	-4.25	19.03
	Fine Gravel	5/8	-4.00	16.00
		7/16	-3.50	11.20
		5/16	-3.00	8.00
		3 ½	-2.50	5.60
		4	-2.25	4.75
Sand	Coarse Sand	5	-2.00	4.00
		7	-1.50	2.80
		10	-1.00	2.00
	Medium Sand	14	-0.50	1.40
		18	0.00	1.00
		25	0.50	0.71
		35	1.00	0.50
	Fine Sand	45	1.50	0.36
		60	2.00	0.25
		80	2.50	0.18
		120	3.00	0.13
		170	3.50	0.09
		200	3.75	0.08
Fines	Silt/Clay	230	4.00	0.06

Proportional Definition of Descriptive Terms

Descriptive Term	Range of Proportions
Sandy, gravelly, etc.	35 % to 50 %
Some	20 % to 35 %
Little	10 % to 20 %
Trace	1 % to 10 %

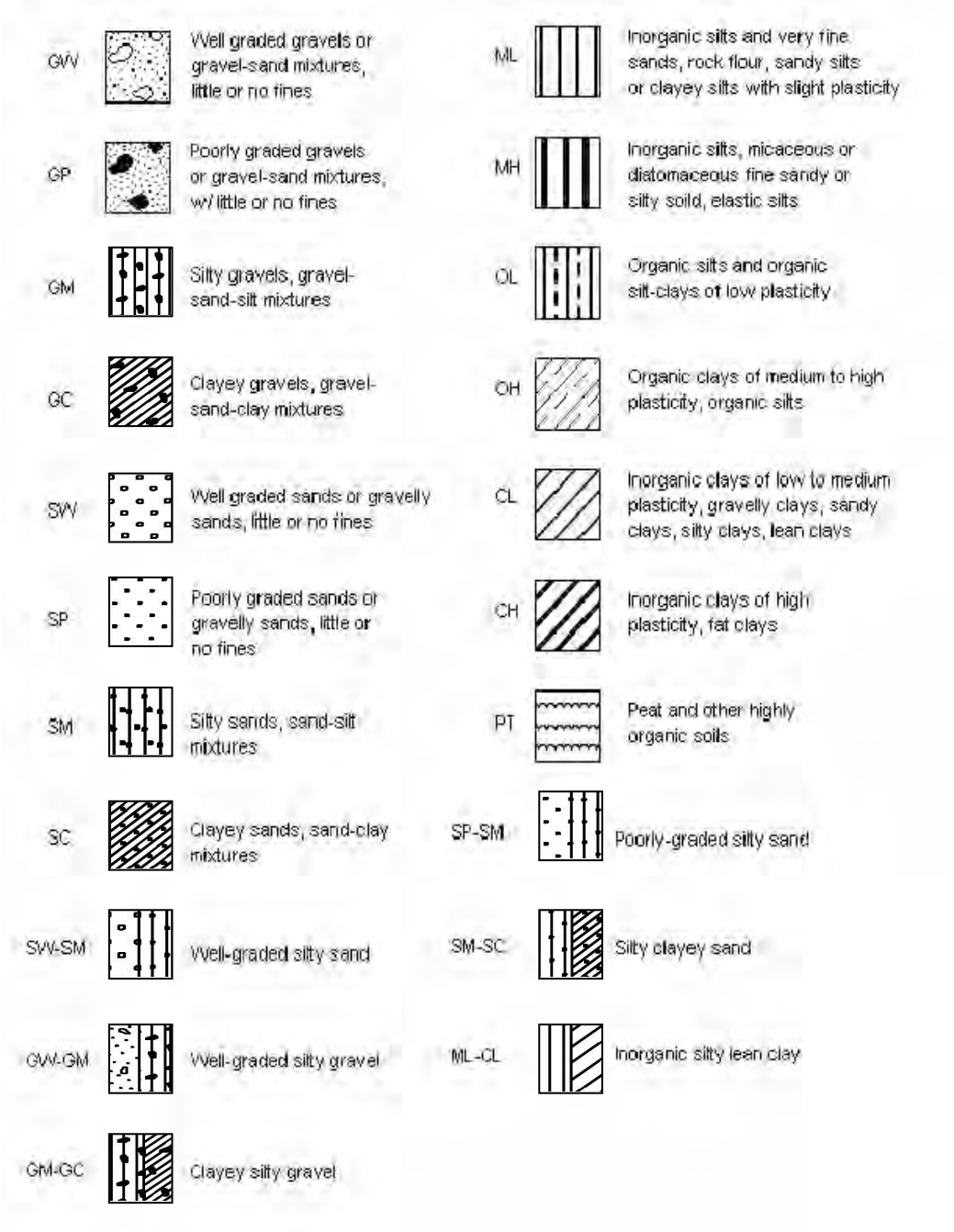
Consistency of Cohesive Soils

Description	Consistency Index	Approximate Undrained Shear Strength (kPa)	Field Identification
Hard		Over 300	Indented with difficulty by thumbnail, brittle.
Very Stiff	>1	150-300	Readily indented by thumbnail, still very tough.
Stiff	0.75-1	75-150	Readily indented by thumb but penetrated only with difficulty. Cannot be moulded in the fingers.
Firm	0.5-0.75	40-75	Can be penetrated several centimeters by thumb with moderate effort and moulded in fingers by strong pressure.
Soft	< 0.5	20-40	Easily penetrated several centimeters by thumb, easily moulded.
Very Soft		Less than 20	Easily penetrated several centimeters by fist, exudes between fingers when squeezed in fist.

Source: Engineering Properties of Soils and Rocks, Fourth Edition by Fred G. Bell

USCS Classifications

Refers to the Army Corps of Engineers Unified Soils Classification System. Class types are defined primarily by grain size, sorting and percent of material passing the #200 sieve. Classification of materials on the core logs based on visual field examinations are identified on the core logs under the Classification of Materials Description. Classifications based on laboratory sieve analyses are identified on the core logs in the Legend and under Remarks.



Note: Information is after ACOE Atlantic Division Manual # 1110-1-1 titled *Engineering and Design Geotechnical Manual for Surface and Subsurface Investigations*

Boring Designation TXGLO1-VC-23-005

DRILLING LOG

DIVISION

INSTALLATION

SHEET 1 OF 1 SHEETS

1. PROJECT
TX GLO Region 1 Recon Geotechnical Sand Search
Jefferson, Chambers, Galveston and Brazoria Co.

APTIM

9. SIZE AND TYPE OF BIT 3.0 In.

10. COORDINATE SYSTEM/DATUM: Texas State Plane South | HORIZONTAL: NAD 1983 | VERTICAL: NAVD88

2. BORING DESIGNATION: TXGLO1-VC-23-005
LOCATION COORDINATES (ft): X = 3,552,230 Y = 13,794,398

11. MANUFACTURER'S DESIGNATION OF DRILL: APTIM SEAS VC-700 Vibracore
☐ AUTO HAMMER ☐ MANUAL HAMMER

3. DRILLING AGENCY: APTIM
CONTRACTOR FILE NO.:

12. TOTAL SAMPLES: DISTURBED 0 | UNDISTURBED (UD) 4

4. NAME OF DRILLER: APTIM

13. TOTAL NUMBER CORE BOXES

5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL:
BEARING:

14. ELEVATION GROUND WATER

15. DATE BORING: STARTED 10-06-23 | COMPLETED 10-06-23

6. THICKNESS OF OVERBURDEN 0.0 Ft.

16. ELEVATION TOP OF BORING -28.4 Ft.

7. DEPTH DRILLED INTO ROCK 0.0 Ft.

17. TOTAL RECOVERY FOR BORING 19.3 Ft.

8. TOTAL DEPTH OF BORING 19.4 Ft.

18. SIGNATURE AND TITLE OF INSPECTOR: SM

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS The USCS classification system defines silt as the percent passing the No.200 (0.075 mm) sieve
-28.4	0.0					
-30.0	1.6		LEAN CLAY, very soft, trace shell hash, trace silt, silt distributed in laminae, shell hash lamina @ 1.2', very dark grayish brown (2.5Y-3/2), (CL).			
-32.3	3.9		LEAN CLAY, soft, some silt, trace shell fragments, trace shell hash, trace whole shell, silt decreases with depth in layer, shell hash distributed in silt pockets up to 1.0", 0.5" whole shell @ 2.3', (0.75" x 1.0") shell fragment @ 3.3', (0.25" x 0.5") whole shell @ 3.8', dark gray (2.5Y-4/1), (CL).			
			FAT CLAY, hard, trace rock fragments, trace sand, fine grained, quartz, trace silt, sand increases with depth in layer, rock fragments are fragments of partially lithified clay up to 0.75" between 3.9' & 4.1', very soft clay laminae between 3.9' & 6.7', color is mottled greenish gray (5GY-5/1) and light yellowish brown (2.5Y-6/3), (CH).		T1	Sample #T1, Depth = 4.8' Ave. Field Vane (tsf): 0.61
					T2	Sample #T2, Depth = 7.5' Ave. Field Vane (tsf): 0.51
-36.9	8.5					
-38.8	10.4		Sandy LEAN CLAY, stiff, little organics, trace silt, sand component is fine grained quartz, sand decreases with depth in layer, oxidation throughout layer, organics increase with depth in layer, color is mottled very dark gray (2.5Y-3/1) and light brownish gray (2.5Y-6/2), (CL).			
-41.4	13.0		FAT CLAY, firm, trace sand, fine grained, quartz, trace silt, sand increases with depth in layer, oxidation throughout layer, color is mottled greenish gray (5GY-5/1) and yellowish brown (10YR-5/4), (CH).			
-42.6	14.2		FAT CLAY, hard, trace sand, fine grained, quartz, trace silt, possible bioturbation between 13.4' & 14.2', greenish gray (10Y-5/1), (CH).		T3	Sample #T3, Depth = 13.5' Ave. Field Vane (tsf): 0.56
			Organic FAT CLAY, hard, trace sand, fine grained, quartz, trace silt, organic component increases with depth in layer, sand lamina @ 14.6', 1.0" silt pocket @ 14.7', Bit sample from 19.0' to 19.3', very dark gray (2.5Y-3/1), (OH).		T4	Sample #T4, Depth = 16.5' Ave. Field Vane (tsf): 0.36
-47.7	19.3					
-47.8	19.4		No recovery.			
			End of Boring			

0 5 10 15 20 25

REGION1_RECON_GEOTECH.GPJ 3/25/24

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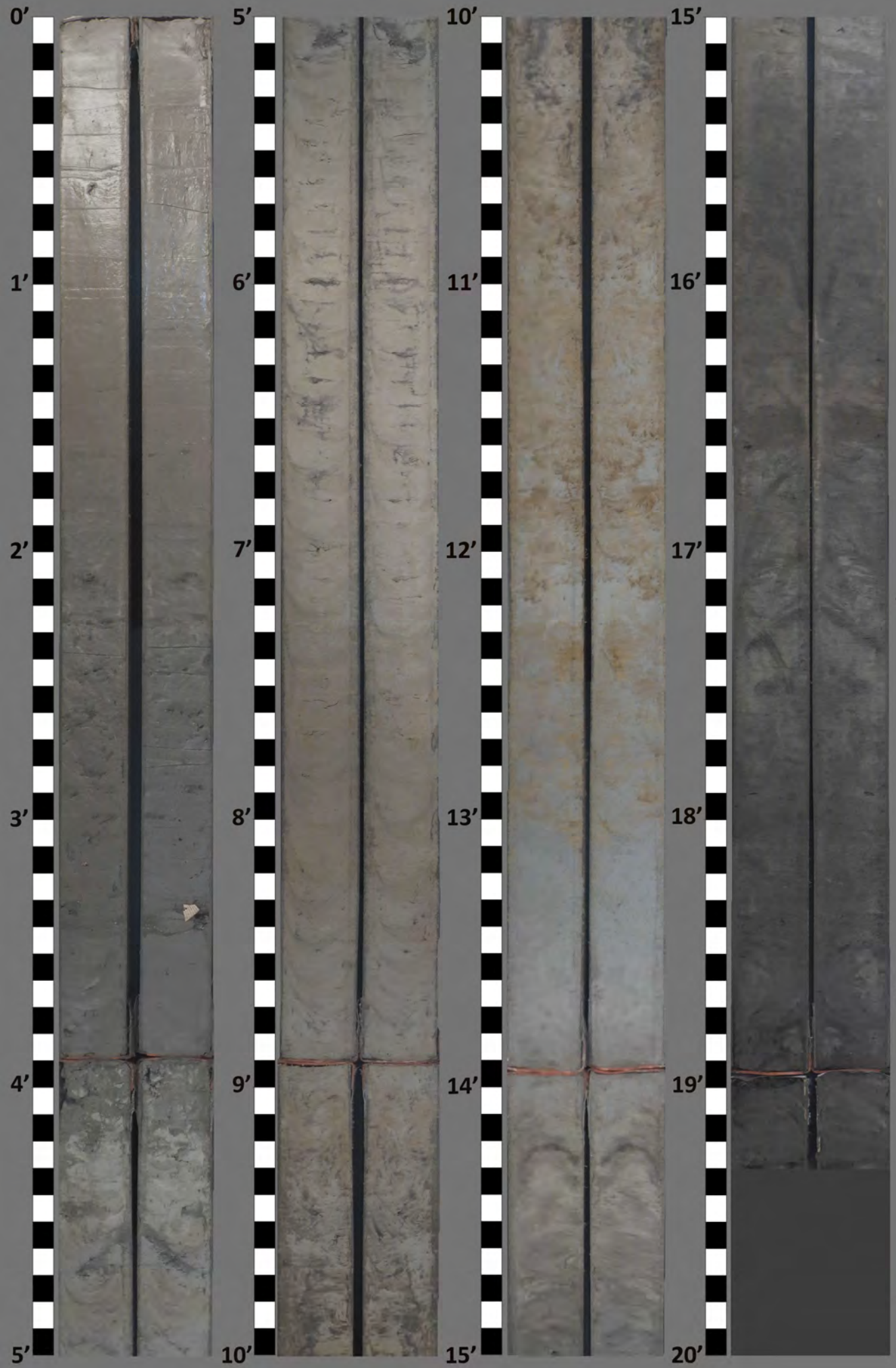

Texas General Land Office

Texas GLO Region 1 Geotechnical Reconnaissance Survey

TXGLO1-VC-23-005

Date Collected: 10/6/23
Top Elev. (ft NAVD88): -28.4
Bottom Elev. (ft NAVD88): -47.7
Core Length (ft): 19.3

APTIM
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Mini Vane Shear Test Results

CORE ID	SAMPLE DEPTH (ft)	TORVANE (kg/cm²)	TORVANE (tsf)	TORVANE (kpa)	DESCRIPTION[1]
TXGLO1-VC-23-001	No Torvane Conducted				
TXGLO1-VC-23-002	3.0	1.5	0.15	147.10	Stiff
	6.0	1.0	0.10	98.07	Stiff
TXGLO1-VC-23-003	10.3	4.5	0.46	441.30	Hard
	13.4	5.5	0.56	539.37	Hard
	16.3	2.5	0.26	245.17	Very Stiff
TXGLO1-VC-23-004	9.1	3.0	0.31	294.20	Very Stiff
	11.9	5.0	0.51	490.33	Hard
	14.1	6.0	0.61	588.40	Hard
TXGLO1-VC-23-005	4.8	6.0	0.61	588.40	Hard
	7.5	5.0	0.51	490.33	Hard
	13.5	5.5	0.56	539.37	Hard
	16.5	3.5	0.36	343.23	Hard
TXGLO1-VC-23-006	No Torvane Conducted				
TXGLO1-VC-23-007	9.0	5.5	0.56	539.37	Hard
	15.1	1.5	0.15	147.10	Stiff
TXGLO1-VC-23-008	7.1	5.5	0.56	539.37	Hard
	8.1	9.0	0.92	882.60	Hard
	10.2	8.0	0.82	784.53	Hard
	16.0	8.0	0.82	784.53	Hard
TXGLO1-VC-23-009	No Torvane Conducted				
TXGLO1-VC-23-010	8.0	7.0	0.72	686.47	Hard
	10.0	8.5	0.87	833.57	Hard
	12.5	9.5	0.97	931.63	Hard
TXGLO1-VC-23-011	4.4	5.5	0.56	539.37	Hard
	16.0	6.5	0.67	637.43	Hard
TXGLO1-VC-23-012	0.8	0.0	0.00	0.00	Very Soft
	2.6	1.0	0.10	98.07	Stiff
TXGLO1-VC-23-013	3.0	2.5	0.26	245.17	Very Stiff
	6.4	3.0	0.31	294.20	Very Stiff
	13.7	8.0	0.82	784.53	Hard
TXGLO1-VC-23-014	0.8	0.0	0.00	0.00	Very Soft
	1.9	2.0	0.20	196.13	Very Stiff
	5.0	2.5	0.26	245.17	Very Stiff
	10.0	2.8	0.28	269.68	Very Stiff
	18.0	3.0	0.31	294.20	Very Stiff
TXGLO1-VC-23-015	No Torvane Conducted				
TXGLO1-VC-23-016	2.4	7.0	0.72	686.47	Hard
	5.5	7.5	0.77	735.50	Hard