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 %

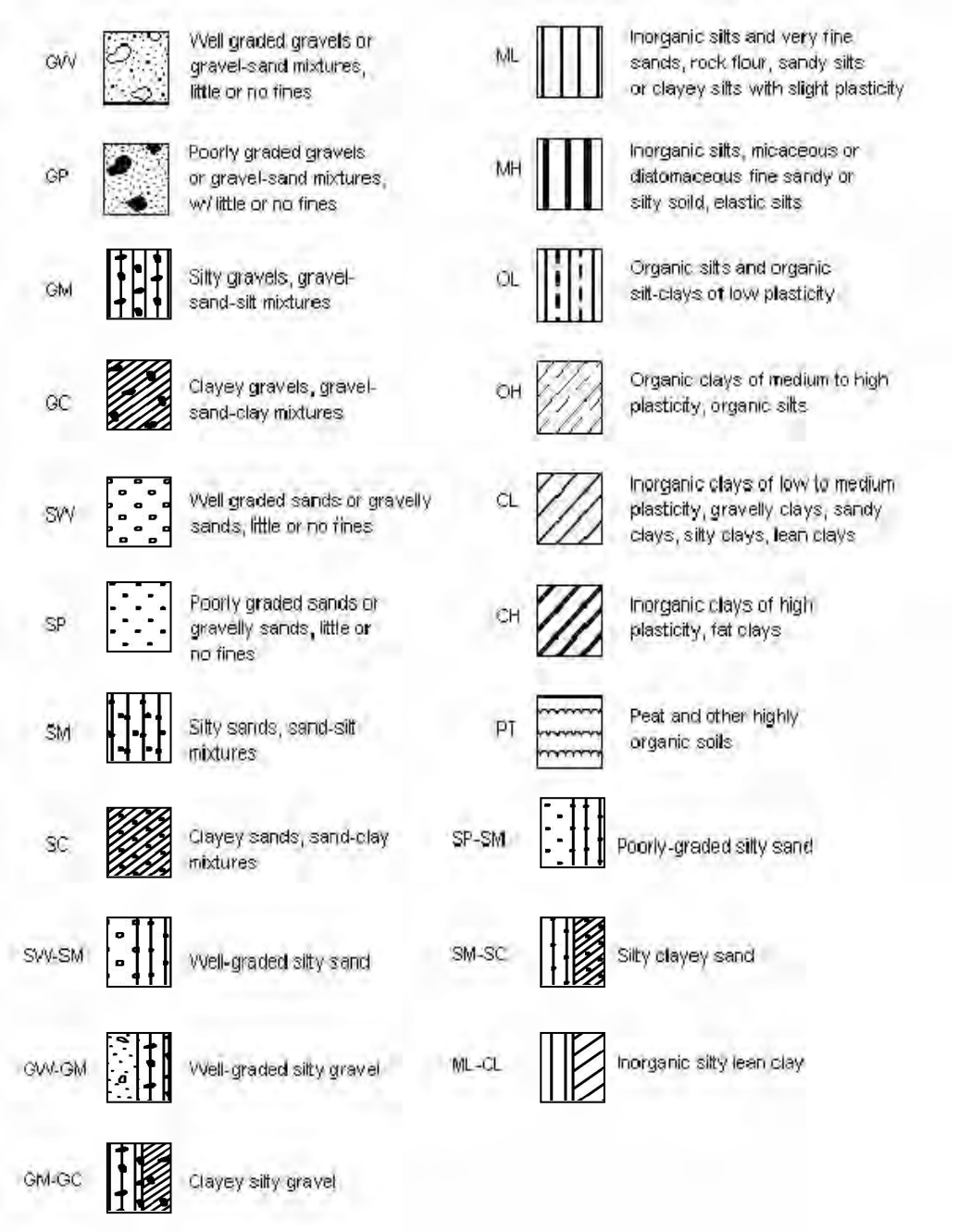
Consistency of Cohesive Soils

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-23-004

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

2. BORING DESIGNATION: TXGLO1-VC-23-004
LOCATION COORDINATES (ft): X = 3,561,429 Y = 13,791,405

3. DRILLING AGENCY: APTIM
CONTRACTOR FILE NO.:

4. NAME OF DRILLER: APTIM

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

6. THICKNESS OF OVERBURDEN: 0.0 Ft.

7. DEPTH DRILLED INTO ROCK: 0.0 Ft.

8. TOTAL DEPTH OF BORING: 19.1 Ft.

9. SIZE AND TYPE OF BIT: 3.0 In.

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

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

12. TOTAL SAMPLES: DISTURBED: 0 UNDISTURBED (UD): 3

13. TOTAL NUMBER CORE BOXES:

14. ELEVATION GROUND WATER:

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

16. ELEVATION TOP OF BORING: -30.2 Ft.

17. TOTAL RECOVERY FOR BORING: 18.1 Ft.

18. SIGNATURE AND TITLE OF INSPECTOR: SF

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
-30.2	0.0					
-33.8	3.6		LEAN CLAY, very soft, trace silt, silt distributed in laminae, dark gray (10YR-4/1), (CL).			
-38.0	7.8		LEAN CLAY, soft, some silt, trace sand, fine grained, quartz, trace shell fragments, trace shell hash, silt distributed in laminae and throughout layer, sand distributed in laminae, (1.0" x 1.5") bivalve fragment @ 5.3', dark gray (5Y-4/1), (CL).			
-39.6	9.4		LEAN CLAY, very stiff, little sand, fine grained, quartz, trace organics, trace shell fragments, shell fragments are bivalve fragments up to 0.25", color is mottled light olive brown (2.5Y-5/4) and greenish gray (10Y-6/1),(CL).		T1	Sample #T1, Depth = 9.1' Ave. Field Vane (tsf): 0.31
-44.9	14.7		FAT CLAY, hard, little organics, little sand, fine grained, quartz, trace shell fragments, trace silt, trace whole shell, sand typically distributed in laminae, shell fragments are bivalve fragments typically up to 1.0", 2.0" sand pocket @ 10.4', 1.5" bivalve fragment @ 13.0', (1.5" x 1.75") whole articulated bivalve @ 14.3', light brownish gray (2.5Y-6/2), (CH).		T2	Sample #T2, Depth = 11.9' Ave. Field Vane (tsf): 0.51
					T3	Sample #T3, Depth = 14.1' Ave. Field Vane (tsf): 0.61
-48.3	18.1		Sandy FAT CLAY, very stiff, little organics, trace shell fragments, trace silt, trace whole shell, sand component is fine grained quartz in wavy bedding, shell fragments are bivalve fragments up to 0.75", (1.5" x 1.75") whole articulated bivalve @ 15.0', (0.75" x 1.25") whole articulated bivalve @ 15.4', (1.5" x 1.75") whole bivalve @ 17.2', color is mottled white (2.5Y-8/1), yellowish brown (10YR-5/4) and light brownish gray (2.5Y-6/2), (CH).			
-49.3	19.1		No recovery.			
			End of Boring			

0 5 10 15 20 25

REGION1_RECON_GEOTECH.GPJ 3/25/24

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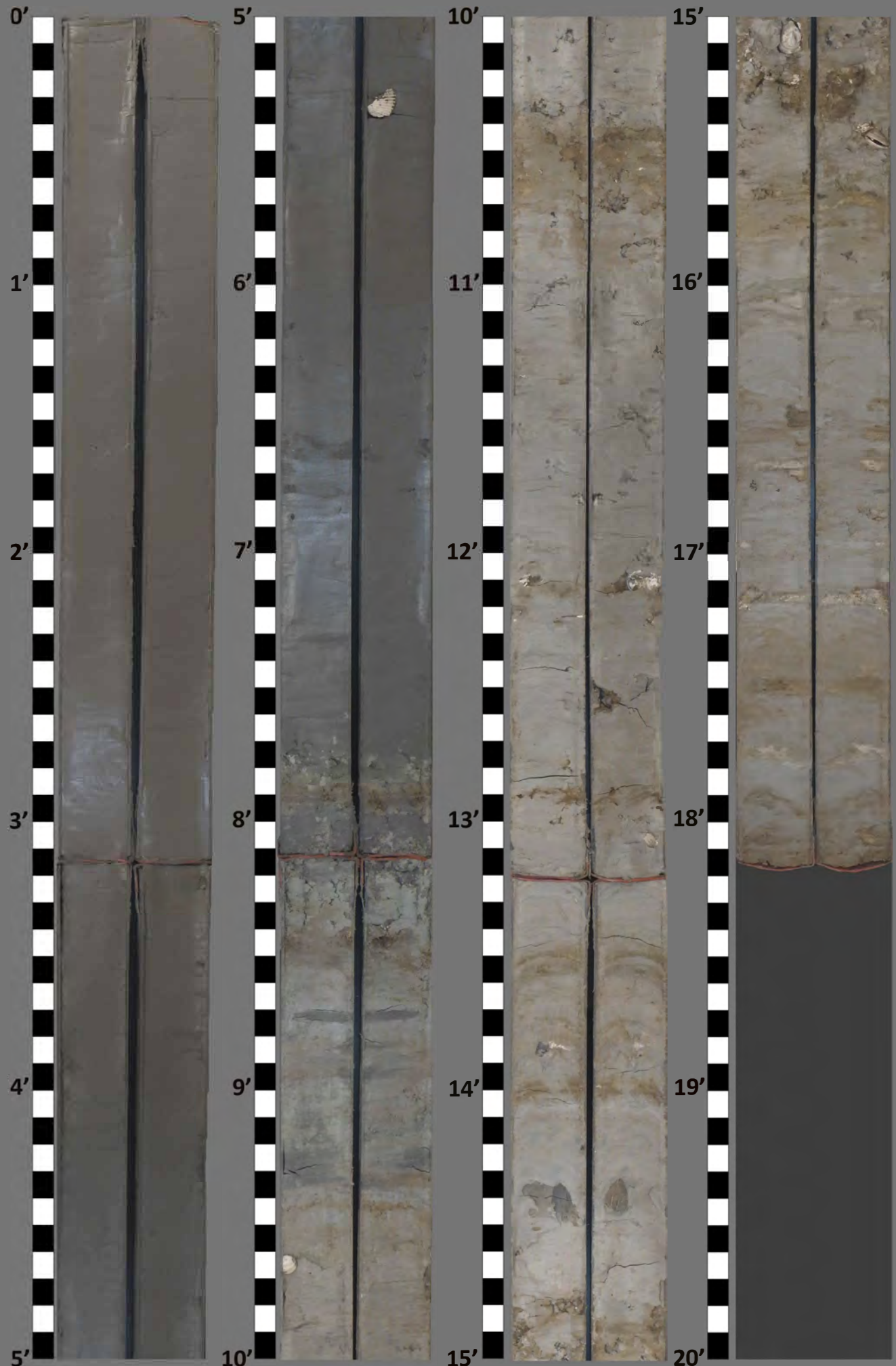

Texas General Land Office

Texas GLO Region 1 Geotechnical Reconnaissance Survey

TXGLO1-VC-23-004

Date Collected: 10/6/23
Top Elev. (ft NAVD88): -30.2
Bottom Elev. (ft NAVD88): -48.3
Core Length (ft): 18.1

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