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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 1/2	-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

<u>Descriptive Term</u>	<u>Range of Proportions</u>
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

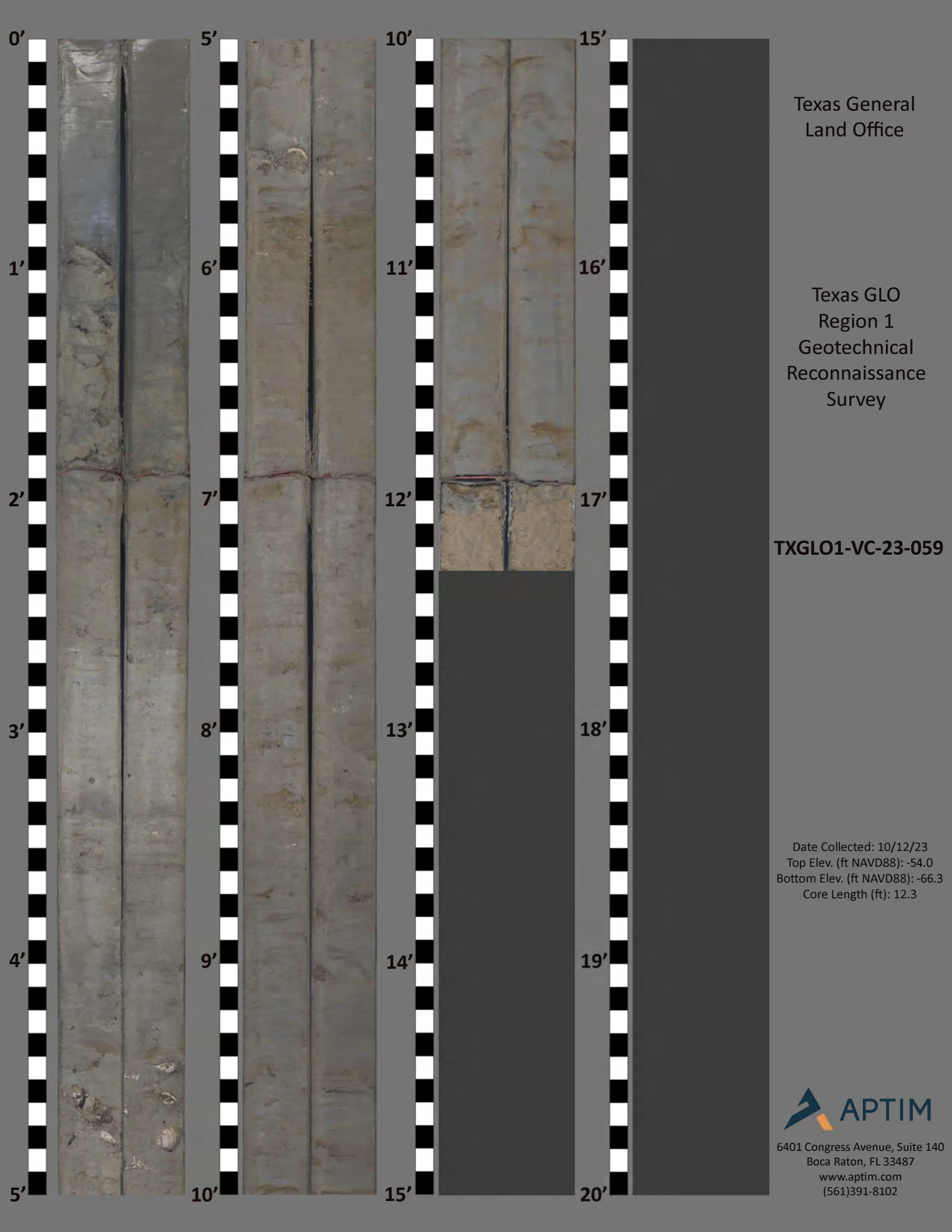
Refers to the Army Corps of Engineers Unified Soils Classification System. Class types are defined primarily by grain size, sorting and percent of material passing the #200 sieve. Classification of materials on the core logs based on visual field examinations are identified on the core logs under the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

GW		Well graded gravels or gravel-sand mixtures, little or no fines	ML		Inorganic silts and very fine sands, rock flour, sandy silts or clayey silts with slight plasticity
GP		Poorly graded gravels or gravel-sand mixtures, w/ little or no fines	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soil, elastic silts
GM		Silty gravels, gravel-sand-silt mixtures	OL		Organic silts and organic silt-clays of low plasticity
GC		Clayey gravels, gravel-sand-clay mixtures	OH		Organic clays of medium to high plasticity, organic silts
SW		Well graded sands or gravelly sands, little or no fines	CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
SP		Poorly graded sands or gravelly sands, little or no fines	CH		Inorganic clays of high plasticity, fat clays
SM		Silty sands, sand-silt mixtures	PT		Peat and other highly organic soils
SC		Clayey sands, sand-clay mixtures	SP-SM		Poorly-graded silty sand
SW-SM		Well-graded silty sand	SM-SC		Silty clayey sand
GW-GM		Well-graded silty gravel	ML-CL		Inorganic silty lean clay
GM-GC		Clayey silty gravel			

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

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. 				9. SIZE AND TYPE OF BIT 3.0 In.			
2. BORING DESIGNATION TXGLO1-VC-23-059				10. COORDINATE SYSTEM/DATUM Texas State Plane South		HORIZONTAL NAD 1983	
3. DRILLING AGENCY APTIM				11. MANUFACTURER'S DESIGNATION OF DRILL APTIM SEAS VC-700 Vibracore		VERTICAL NAVD88	
4. NAME OF DRILLER APTIM				12. TOTAL SAMPLES			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		14. ELEVATION GROUND WATER	
6. THICKNESS OF OVERBURDEN 0.0 Ft.				15. DATE BORING		STARTED 10-12-23 COMPLETED 10-12-23	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				16. ELEVATION TOP OF BORING -54.0 Ft.		17. TOTAL RECOVERY FOR BORING 12.3 Ft.	
8. TOTAL DEPTH OF BORING 14.7 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	
-54.0	0.0						
-54.9	0.9		LEAN CLAY, very soft, trace silt, silt distributed in laminae, olive gray (5Y-4/2), (CL).				
-56.0	2.0		FAT CLAY, stiff, trace silt, silt distributed in laminae and throughout layer, color is mottled gray (5Y-5/1) and olive (5Y-5/3), (CH).		T1	Sample #T1, Depth = 1.6'	
-56.6	2.6		FAT CLAY, very stiff, trace silt, light olive brown (2.5Y-5/3), (CH).		T2	Ave. Field Vane (tsf): 0.15	
			FAT CLAY, very stiff, trace shell hash, trace silt, 0.25" shell hash pockets @ 3.4' and 3.8', light brownish gray (2.5Y-6/2), (CH).		T3	Sample #T2, Depth = 2.3'	
-58.4	4.4		FAT CLAY, very stiff, trace shell hash, trace silt, 0.25" shell hash pockets @ 3.4' and 3.8', light brownish gray (2.5Y-6/2), (CH).		T4	Ave. Field Vane (tsf): 0.26	
-59.7	5.7		FAT CLAY, hard, little silt, trace shell fragments, trace whole shell, silt decreases with depth in layer, shell fragments are bivalve fragments up to 1.0", whole shells are whole bivalves typically up to 1.5", 2.5" pocket of whole bivalves @ 4.5', 1.75" whole bivalve @ 4.7', 1.5" pocket of whole bivalves @ 5.5', light brownish gray (2.5Y-6/2), (CH).			Sample #T3, Depth = 3.5'	
-61.7	7.7		Clayey SILT, trace sand, fine grained, quartz, trace shell hash, clay increases with depth in layer, light olive brown (2.5Y-5/4), (ML).			Ave. Field Vane (tsf): 0.20	
			FAT CLAY, hard, little rock fragments, trace sand, fine grained, quartz, trace shell hash, trace silt, hardness increases with depth in layer, sand increases with depth in layer, silt decreases with depth in layer, oxidation throughout layer, rock fragments are potentially gypsum distributed in pockets up to 2.5" decreasing with depth in layer, shell hash distributed between 7.7' & 8.2', gray (2.5Y-5/1), (CH).		T5	Sample #T4, Depth = 5.2'	
-66.0	12.0		SAND, fine grained, quartz, trace clay, trace silt, Bit sample from 11.9' to 12.3', light olive brown (2.5Y-5/6), (SP).			Ave. Field Vane (tsf): 0.41	
-66.3	12.3		No recovery.				
-68.7	14.7		End of Boring				

REGION 1 RECON GEOTECH GP.1 3/25/24



Texas General
Land Office

Texas GLO
Region 1
Geotechnical
Reconnaissance
Survey

TXGLO1-VC-23-059

Date Collected: 10/12/23
Top Elev. (ft NAVD88): -54.0
Bottom Elev. (ft NAVD88): -66.3
Core Length (ft): 12.3



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Mini Vane Shear Test Results

CORE ID	SAMPLE DEPTH (ft)	TORVANE (kg/cm ²)	TORVANE (tsf)	TORVANE (kpa)	DESCRIPTION ¹
TXGLO1-VC-23-059	1.6	1.5	0.15	147.10	Stiff
	2.3	2.5	0.26	245.17	Very Stiff
	3.5	2.0	0.20	196.13	Very Stiff
	5.2	4.0	0.41	392.27	Hard
	10.0	7.0	0.72	686.47	Hard
TXGLO1-VC-23-060	2.4	6.5	0.67	637.43	Hard
	11.1	1.5	0.15	147.10	Stiff
	13.1	6.0	0.61	588.40	Hard
	17.0	6.0	0.61	588.40	Hard
TXGLO1-VC-23-061	No Torvane Conducted				
TXGLO1-VC-23-062	1.0	0.3	0.03	24.52	Soft
	2.6	1.0	0.10	98.07	Stiff
	5.0	4.0	0.41	392.27	Hard
TXGLO1-VC-23-063	1.5	4.5	0.46	441.30	Hard
	5.0	2.5	0.26	245.17	Very Stiff
	11.0	2.8	0.28	269.68	Very Stiff
	15.0	2.5	0.26	245.17	Very Stiff
TXGLO1-VC-23-064	0.3	0.0	0.00	0.00	Very Soft
	0.7	0.5	0.05	49.03	Firm
	13.1	2.5	0.26	245.17	Very Stiff
TXGLO1-VC-23-065	1.8	2.0	0.20	196.13	Very Stiff
	6.1	1.3	0.13	122.58	Stiff
TXGLO1-VC-23-066	0.5	0.3	0.03	24.52	Soft
	3.1	1.5	0.15	147.10	Stiff
	13.0	5.5	0.56	539.37	Hard
TXGLO1-VC-23-067	0.1	0.0	0.00	0.00	Very Soft
	3.0	0.5	0.05	49.03	Firm
TXGLO1-VC-23-068	0.3	0.3	0.03	24.52	Soft
	3.5	1.5	0.15	147.10	Stiff
	7.4	3.0	0.31	294.20	Very Stiff
	11.2	7.8	0.79	760.02	Hard
	15.0	8.0	0.82	784.53	Hard
TXGLO1-VC-23-069	0.4	0.0	0.00	0.00	Very Soft
	3.5	0.8	0.08	73.55	Firm
TXGLO1-VC-23-070	0.7	0.3	0.03	24.52	Soft
	1.9	2.0	0.20	196.13	Very Stiff
	3.3	2.0	0.20	196.13	Very Stiff
	5.5	3.5	0.36	343.23	Hard
	11.9	0.0	0.00	0.00	Very Soft