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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 % |

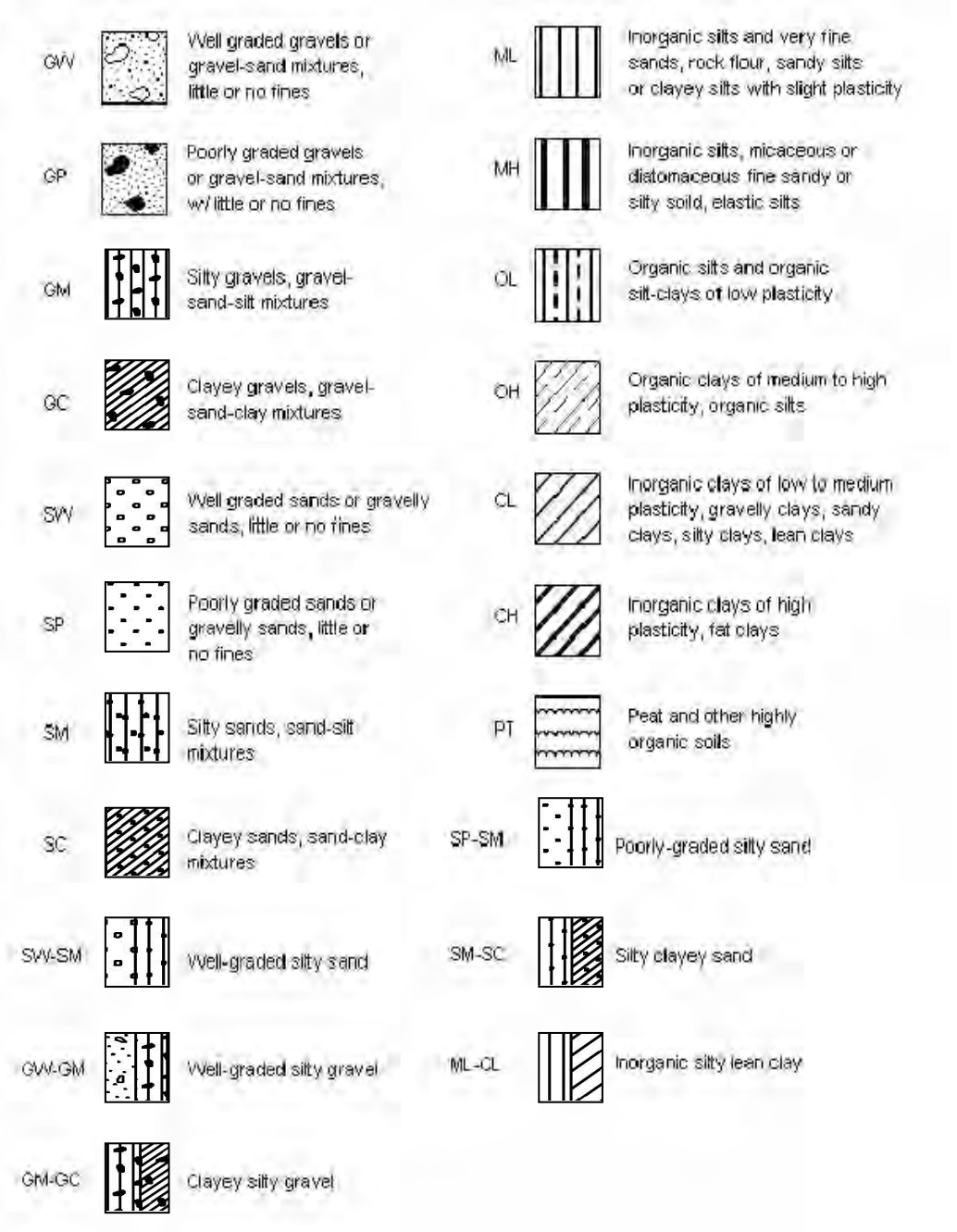
## Consistency of Cohesive Soils

| 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-23-018

# 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-23-018
LOCATION COORDINATES (ft): X = 3,507,315 Y = 13,799,192

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): 5

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: 10-07-23 | COMPLETED: 10-07-23

6. THICKNESS OF OVERBURDEN: 0.0 Ft.

16. ELEVATION TOP OF BORING: -25.0 Ft.

7. DEPTH DRILLED INTO ROCK: 0.0 Ft.

17. TOTAL RECOVERY FOR BORING: 18 Ft.

8. TOTAL DEPTH OF BORING: 17.9 Ft.

18. SIGNATURE AND TITLE OF INSPECTOR: WMM

| 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 |
|---|---|---|---|---|---|---|
| -25.0 | 0.0 | | | | | |
| -25.8 | 0.8 | | LEAN CLAY, very soft, trace organics, trace rock fragments, rock fragments are fragments of partially lithified clay up to 0.08", dark gray (2.5Y-4/1), (CL). | | | |
| -26.5 | 1.5 | | LEAN CLAY, soft, some rock fragments, rock fragments are fragments of partially lithified clay up to 1.5", color is mottled dark gray (2.5Y-4/1) and light yellowish brown (2.5Y-6/3), (CL). | | T1 | Sample #T1, Depth = 2.1' Ave. Field Vane (tsf): 0.56 |
| -27.7 | 2.7 | | FAT CLAY, hard, little organics, little rock fragments, rock fragments are fragments of partially lithified clay up to 0.08", color is mottled black (2.5Y-2.5/1), light greenish gray (10Y-7/1) and yellowish brown (10YR-5/4), (CH). | | T2 | Sample #T2, Depth = 3.3' Ave. Field Vane (tsf): 0.51 |
| -28.8 | 3.8 | | | | T3 | Sample #T3, Depth = 4.5' Ave. Field Vane (tsf): 0.61 |
| -29.8 | 4.8 | | | | | |
| -30.3 | 5.3 | | FAT CLAY, hard, trace organics, trace rock fragments, organics decrease with depth in layer, rock fragments are fragments of partially lithified clay up to 0.08", color is mottled light greenish gray (10Y-7/1) and yellowish brown (10YR-5/6), (CH). | | | |
| -30.9 | 5.9 | | | | T4 | Sample #T4, Depth = 8.3' Ave. Field Vane (tsf): 0.92 |
| -34.0 | 9.0 | | FAT CLAY, hard, little organics, trace rock fragments, trace sand, fine grained, quartz, rock fragments are fragments of partially lithified clay up to 0.08", (1.0" x 1.5") organic pocket @ 4.1', color is mottled black (2.5Y-2.5/1), light greenish gray (10Y-7/1) and yellowish brown (10YR-5/4), (CH). | | | |
| -35.4 | 10.4 | | FAT CLAY, stiff, some sand, fine grained, quartz, trace organics, trace silt, light greenish gray (10Y-7/1), (CH). | | | |
| | | | FAT CLAY, stiff, trace sand, fine grained, quartz, oxidation throughout layer, color is mottled dark yellowish brown (10YR-4/6), light greenish gray (10Y-7/1) and yellowish brown (10YR-5/6), (CH). | | | |
| | | | FAT CLAY, hard, some sand, fine grained, quartz, little rock fragments, oxidation throughout layer, rock fragments are fragments of lithified clay typically up to 0.08", (0.75" x 1.25") rock fragment @ 7.3', (0.5" x 2.5") rock fragment @ 7.7', color is mottled light greenish gray (10Y-7/1) and yellowish brown (10YR-5/6), (CH). | | T5 | Sample #T5, Depth = 12.9' Ave. Field Vane (tsf): 0.77 |
| -42.4 | 17.4 | | Sandy LEAN CLAY, stiff, trace rock fragments, sand component is fine grained quartz, bioturbation throughout layer, rock fragments are fragments of partially lithified clay, color is mottled light greenish gray (10Y-7/1) and yellowish brown (10YR-5/4), (CL). | | | |
| -43.0 | 18.0 | | FAT CLAY, hard, trace rock fragments, trace sand, fine grained, quartz, sand increases with depth in layer, rock fragments are fragments of partially lithified clay up to 0.75", color is mottled light greenish gray (10Y-7/1) and light yellowish brown (10YR-6/4), (CH). | | | |
| | | | Sandy LEAN CLAY, stiff, trace rock fragments, sand component is fine grained quartz, bioturbation throughout layer, rock fragments are fragments of partially lithified clay, (0.5" x 0.75") rock fragment @ 17.5', expansion from 17.9' to 18.0', yellowish brown (10YR-5/4), (CL). | | | |
| | | | End of Boring | | | |

0 5 10 15 20 25

REGION1_RECON_GEOTECH.GPJ 3/25/24

SAJ FORM 1836
JUN 04


Texas General Land Office

Texas GLO Region 1 Geotechnical Reconnaissance Survey

**TXGLO1-VC-23-018**

Date Collected: 10/7/23
Top Elev. (ft NAVD88): -25.0
Bottom Elev. (ft NAVD88): -43.0
Core Length (ft): 18.0

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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-23-017 | 2.3 | 2.5 | 0.26 | 245.17 | Very Stiff |
| | 4.3 | 3.5 | 0.36 | 343.23 | Hard |
| | 7.0 | 3.0 | 0.31 | 294.20 | Very Stiff |
| | 10.2 | 1.5 | 0.15 | 147.10 | Stiff |
| TXGLO1-VC-23-018 | 2.1 | 5.5 | 0.56 | 539.37 | Hard |
| | 3.3 | 5.0 | 0.51 | 490.33 | Hard |
| | 4.5 | 6.0 | 0.61 | 588.40 | Hard |
| | 8.3 | 9.0 | 0.92 | 882.60 | Hard |
| | 12.9 | 7.5 | 0.77 | 735.50 | Hard |
| TXGLO1-VC-23-019 | 3.0 | 2.0 | 0.20 | 196.13 | Very Stiff |
| | 6.2 | 3.0 | 0.31 | 294.20 | Very Stiff |
| | 13.2 | 5.5 | 0.56 | 539.37 | Hard |
| TXGLO1-VC-23-020 | 2.8 | 0.5 | 0.05 | 49.03 | Firm |
| TXGLO1-VC-23-021 | 2.8 | 2.5 | 0.26 | 245.17 | Very Stiff |
| | 13.0 | 3.0 | 0.31 | 294.20 | Very Stiff |
| | 16.8 | 2.5 | 0.26 | 245.17 | Very Stiff |
| TXGLO1-VC-23-022 | 2.8 | 2.5 | 0.26 | 245.17 | Very Stiff |
| | 9.5 | 1.0 | 0.10 | 98.07 | Stiff |
| TXGLO1-VC-23-023 | 2.0 | 7.0 | 0.72 | 686.47 | Hard |
| | 4.5 | 7.5 | 0.77 | 735.50 | Hard |
| | 6.1 | 5.5 | 0.56 | 539.37 | Hard |
| | 7.6 | 7.5 | 0.77 | 735.50 | Hard |
| | 10.3 | 8.0 | 0.82 | 784.53 | Hard |
| | 12.4 | 8.5 | 0.87 | 833.57 | Hard |
| TXGLO1-VC-23-024 | 6.1 | 4.0 | 0.41 | 392.27 | Hard |
| | 9.7 | 3.5 | 0.36 | 343.23 | Hard |
| | 15.6 | 6.5 | 0.67 | 637.43 | Hard |
| TXGLO1-VC-23-025 | 0.6 | 0.5 | 0.05 | 49.03 | Firm |
| | 14.5 | 1.5 | 0.15 | 147.10 | Stiff |
| | 17.9 | 3.0 | 0.31 | 294.20 | Very Stiff |
| TXGLO1-VC-23-026 | 0.8 | 1.5 | 0.15 | 147.10 | Stiff |
| | 17.9 | 2.5 | 0.26 | 245.17 | Very Stiff |
| TXGLO1-VC-23-027 | 0.7 | 3.0 | 0.31 | 294.20 | Very Stiff |
| | 2.4 | 2.0 | 0.20 | 196.13 | Very Stiff |
| | 5.2 | 2.5 | 0.26 | 245.17 | Very Stiff |
| | 6.5 | 3.8 | 0.38 | 367.75 | Hard |
| | 14.9 | 3.8 | 0.38 | 367.75 | Hard |
| | 16.5 | 4.5 | 0.46 | 441.30 | Hard |
| TXGLO1-VC-23-028 | No Torvane Conducted | | | | |