



## Aptim Environmental & Infrastructure, LLC

6401 Congress Avenue, Suite 140

Boca Raton, Florida 33487

Phone # 1-561-391-8102

### Legend for Geotechnical Data

#### Grain Size Scale for Sediments

| Unified Soil Classification System (USCS)<br>(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<br>OF 1 SHEETS                                                                                            |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------|--|
| <b>1. PROJECT</b><br>TX GLO Region 1 Recon Geotechnical Sand Search<br>Jefferson, Chambers, Galveston and Brazoria Co.  |               |          |                                                                                                                                                                                                                        | <b>9. SIZE AND TYPE OF BIT</b> 3.0 In.                                        |                  |                                                                                                                   |  |
| <b>2. BORING DESIGNATION</b><br>TXGLO1-VC-23-061                                                                                                                                                         |               |          |                                                                                                                                                                                                                        | <b>10. COORDINATE SYSTEM/DATUM</b><br>Texas State Plane South                 |                  | <b>HORIZONTAL</b><br>NAD 1983                                                                                     |  |
| <b>3. DRILLING AGENCY</b><br>APTIM                                                                                                                                                                       |               |          |                                                                                                                                                                                                                        | <b>11. MANUFACTURER'S DESIGNATION OF DRILL</b><br>APTIM SEAS VC-700 Vibracore |                  | <b>VERTICAL</b><br>NAVD88                                                                                         |  |
| <b>4. NAME OF DRILLER</b><br>APTIM                                                                                                                                                                       |               |          |                                                                                                                                                                                                                        | <b>12. TOTAL SAMPLES</b>                                                      |                  |                                                                                                                   |  |
| <b>5. DIRECTION OF BORING</b><br><input checked="" type="checkbox"/> VERTICAL<br><input type="checkbox"/> INCLINED                                                                                       |               |          |                                                                                                                                                                                                                        | <b>13. TOTAL NUMBER CORE BOXES</b>                                            |                  | <b>14. ELEVATION GROUND WATER</b>                                                                                 |  |
| <b>6. THICKNESS OF OVERBURDEN</b> 0.0 Ft.                                                                                                                                                                |               |          |                                                                                                                                                                                                                        | <b>15. DATE BORING</b>                                                        |                  | <b>STARTED</b> 10-14-23<br><b>COMPLETED</b> 10-14-23                                                              |  |
| <b>7. DEPTH DRILLED INTO ROCK</b> 0.0 Ft.                                                                                                                                                                |               |          |                                                                                                                                                                                                                        | <b>16. ELEVATION TOP OF BORING</b> -33.6 Ft.                                  |                  |                                                                                                                   |  |
| <b>8. TOTAL DEPTH OF BORING</b> 19.3 Ft.                                                                                                                                                                 |               |          |                                                                                                                                                                                                                        | <b>17. TOTAL RECOVERY FOR BORING</b> 17 Ft.                                   |                  |                                                                                                                   |  |
|                                                                                                                                                                                                          |               |          |                                                                                                                                                                                                                        | <b>18. SIGNATURE AND TITLE OF INSPECTOR</b><br>BF                             |                  |                                                                                                                   |  |
| ELEV.<br>(ft)                                                                                                                                                                                            | DEPTH<br>(ft) | LEGEND   | CLASSIFICATION OF MATERIALS<br>Depths and elevations based on measured values                                                                                                                                          | %<br>REC.                                                                     | BOX OR<br>SAMPLE | REMARKS<br>The USCS classification system defines silt as the percent passing the No.200 (0.075 mm) sieve         |  |
| -33.6                                                                                                                                                                                                    | 0.0           |          |                                                                                                                                                                                                                        |                                                                               |                  |                                                                                                                   |  |
| -34.2                                                                                                                                                                                                    | 0.6           |          | LEAN CLAY, soft, little rock fragments, trace sand, fine grained, quartz, trace shell hash, rock fragments are fragments of lithified clay up to 0.25", very dark greenish gray (10Y-3/1), (CL).                       |                                                                               |                  |                                                                                                                   |  |
| -35.5                                                                                                                                                                                                    | 1.9           |          | Sandy FAT CLAY, soft, trace shell hash, trace silt, sand component is fine grained quartz, color is mottled very dark greenish gray (10Y-3/1) and brown (7.5YR-5/2), (CH).                                             |                                                                               |                  |                                                                                                                   |  |
| -39.9                                                                                                                                                                                                    | 6.3           |          | Silty SAND, fine grained, quartz, trace clay, trace organics, clay distributed in pockets up to 1.0", organics distributed in laminae, color is mottled very dark greenish gray (10Y-3/1) and brown (7.5YR-4/4), (SM). |                                                                               | 1                | Sample #1, Depth = 4.4'<br>Mean (mm): 0.09, Phi Sorting: 0.33<br>Fines (230): 46.01%<br>Fines (200): 55.62% (ML)  |  |
| -45.1                                                                                                                                                                                                    | 11.5          |          | SAND, fine grained, quartz, some silt, color is mottled brown (7.5YR-4/4) and yellowish brown (10YR-5/4), (SM).                                                                                                        |                                                                               | 2                | Sample #2, Depth = 8.5'<br>Mean (mm): 0.11, Phi Sorting: 0.42<br>Fines (230): 29.72%<br>Fines (200): 36.61% (SM)  |  |
| -47.2                                                                                                                                                                                                    | 13.6          |          | SAND, fine grained, quartz, some clay, little silt, color is mottled light brownish gray (10YR-6/2) and brown (7.5YR-4/4), (SC).                                                                                       |                                                                               | 3                | Sample #3, Depth = 12.5'<br>Mean (mm): 0.11, Phi Sorting: 0.60<br>Fines (230): 42.25%<br>Fines (200): 49.42% (SC) |  |
| -50.6                                                                                                                                                                                                    | 17.0          |          | SAND, fine grained, quartz, little clay, trace silt, 5.0" clayey pocket @ 16.0', 1.5" clay pocket @ 16.9', color is mottled brown (7.5YR-4/4) and brown (7.5YR-5/4), (SC).                                             |                                                                               | 4                | Sample #4, Depth = 15.3'<br>Mean (mm): 0.18, Phi Sorting: 0.67<br>Fines (230): 17.41%<br>Fines (200): 19.44% (SC) |  |
| -52.9                                                                                                                                                                                                    | 19.3          |          | No recovery.                                                                                                                                                                                                           |                                                                               |                  |                                                                                                                   |  |
|                                                                                                                                                                                                          |               |          | End of Boring                                                                                                                                                                                                          |                                                                               |                  |                                                                                                                   |  |

REGION 1 RECON GEOTECH.GPJ 3/25/24

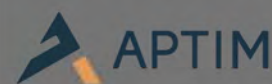


Texas General  
Land Office

Texas GLO  
Region 1  
Geotechnical  
Reconnaissance  
Survey

**TXGLO1-VC-23-061**

Date Collected: 10/14/23  
Top Elev. (ft NAVD88): -33.6  
Bottom Elev. (ft NAVD88): -50.6  
Core Length (ft): 17.0



6401 Congress Avenue, Suite 140  
Boca Raton, FL 33487  
www.aptim.com  
(561)391-8102

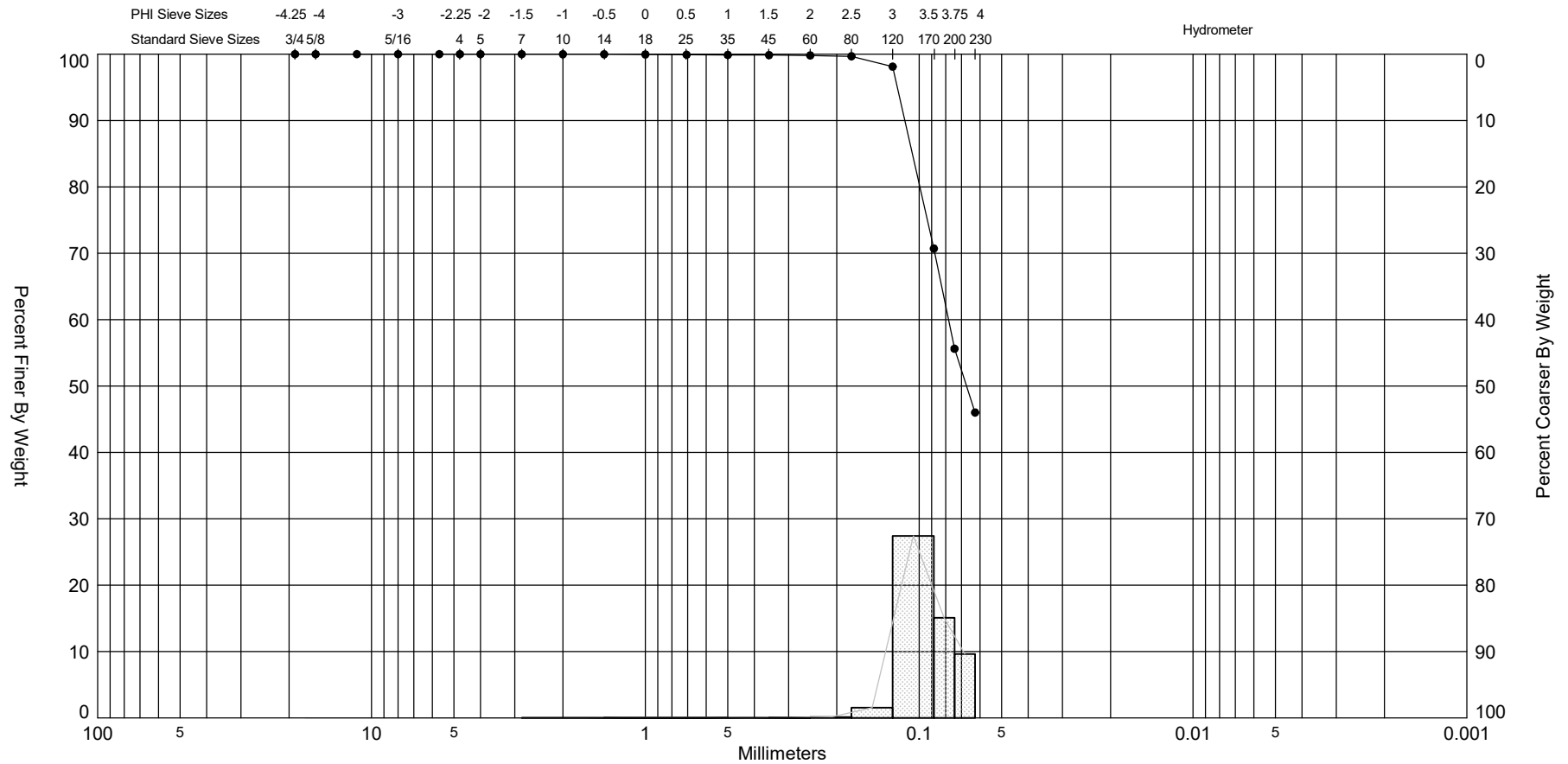
| Granularmetric Report                                        |                  |                                                                   |                 | <br><b>APTIM</b><br>6401 Congress Avenue, Suite 140<br>Boca Raton, FL 33487<br>ph (561) 391-8102 |                     |                      |                 |
|--------------------------------------------------------------|------------------|-------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|-----------------|
| Depths and elevations based on measured values               |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Project Name: TX GLO Region 1 Recon Geotechnical Sand Search |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Sample Name: TXGLO1-VC-23-061 #1                             |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Analysis Date: 02-05-24                                      |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Analyzed By: WMM                                             |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Easting (ft):                                                |                  | Northing (ft):                                                    |                 | Coordinate System:                                                                                                                                                                  |                     | Elevation (ft):      |                 |
| 3,242,936                                                    |                  | 13,615,729                                                        |                 | Texas State Plane South                                                                                                                                                             |                     | -38.0 NAVD88         |                 |
| USCS:                                                        |                  | Munsell: Wet - 7.5YR-4/4<br>Dry - 7.5YR-5/6<br>Washed - 7.5YR-8/3 |                 | Comments:                                                                                                                                                                           |                     |                      |                 |
| ML                                                           |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Dry Weight (g):                                              | Wash Weight (g): | Pan Retained (g):                                                 | Sieve Loss (%): | Fines (%):                                                                                                                                                                          | Organics (%):       | Carbonates (%):      | Shell Hash (%): |
| 109.93                                                       | 65.59            | 6.27                                                              | 0.00            | #200 - 55.62<br>#230 - 46.01                                                                                                                                                        |                     |                      |                 |
| Sieve Number                                                 | Sieve Size (Phi) | Sieve Size (Millimeters)                                          | Grams Retained  | % Weight Retained                                                                                                                                                                   | Cum. Grams Retained | C. % Weight Retained |                 |
| 3/4"                                                         | -4.25            | 19.03                                                             | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5/8"                                                         | -4.00            | 16.00                                                             | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 7/16"                                                        | -3.50            | 11.31                                                             | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5/16"                                                        | -3.00            | 8.00                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 3.5                                                          | -2.50            | 5.66                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 4                                                            | -2.25            | 4.76                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5                                                            | -2.00            | 4.00                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 7                                                            | -1.50            | 2.83                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 10                                                           | -1.00            | 2.00                                                              | 0.01            | 0.01                                                                                                                                                                                | 0.01                | 0.01                 |                 |
| 14                                                           | -0.50            | 1.41                                                              | 0.01            | 0.01                                                                                                                                                                                | 0.02                | 0.02                 |                 |
| 18                                                           | 0.00             | 1.00                                                              | 0.03            | 0.03                                                                                                                                                                                | 0.05                | 0.05                 |                 |
| 25                                                           | 0.50             | 0.71                                                              | 0.03            | 0.03                                                                                                                                                                                | 0.08                | 0.08                 |                 |
| 35                                                           | 1.00             | 0.50                                                              | 0.04            | 0.04                                                                                                                                                                                | 0.12                | 0.12                 |                 |
| 45                                                           | 1.50             | 0.35                                                              | 0.02            | 0.02                                                                                                                                                                                | 0.14                | 0.14                 |                 |
| 60                                                           | 2.00             | 0.25                                                              | 0.05            | 0.05                                                                                                                                                                                | 0.19                | 0.19                 |                 |
| 80                                                           | 2.50             | 0.18                                                              | 0.14            | 0.13                                                                                                                                                                                | 0.33                | 0.32                 |                 |
| 120                                                          | 3.00             | 0.13                                                              | 1.71            | 1.56                                                                                                                                                                                | 2.04                | 1.88                 |                 |
| 170                                                          | 3.50             | 0.09                                                              | 30.12           | 27.40                                                                                                                                                                               | 32.16               | 29.28                |                 |
| 200                                                          | 3.75             | 0.07                                                              | 16.60           | 15.10                                                                                                                                                                               | 48.76               | 44.38                |                 |
| 230                                                          | 4.00             | 0.06                                                              | 10.56           | 9.61                                                                                                                                                                                | 59.32               | 53.99                |                 |
|                                                              |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Phi 5                                                        | Phi 16           | Phi 25                                                            | Phi 50          | Phi 75                                                                                                                                                                              | Phi 84              | Phi 95               |                 |
|                                                              |                  |                                                                   | 3.90            | 3.42                                                                                                                                                                                | 3.26                | 3.06                 |                 |
| Moment                                                       | Mean Phi         | Mean mm                                                           | Sorting         | Skewness                                                                                                                                                                            | Kurtosis            |                      |                 |
| Statistics                                                   | 3.44             | 0.09                                                              | 0.33            | -2.69                                                                                                                                                                               | 30.87               |                      |                 |

| Granularmetric Report                                        |                  |                                                       |                 | <br><b>APTIM</b><br>6401 Congress Avenue, Suite 140<br>Boca Raton, FL 33487<br>ph (561) 391-8102 |                     |                      |                 |
|--------------------------------------------------------------|------------------|-------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|-----------------|
| Depths and elevations based on measured values               |                  |                                                       |                 |                                                                                                                                                                                     |                     |                      |                 |
| Project Name: TX GLO Region 1 Recon Geotechnical Sand Search |                  |                                                       |                 |                                                                                                                                                                                     |                     |                      |                 |
| Sample Name: TXGLO1-VC-23-061 #2                             |                  |                                                       |                 |                                                                                                                                                                                     |                     |                      |                 |
| Analysis Date: 02-05-24                                      |                  |                                                       |                 |                                                                                                                                                                                     |                     |                      |                 |
| Analyzed By: WMM                                             |                  |                                                       |                 |                                                                                                                                                                                     |                     |                      |                 |
| Easting (ft):                                                |                  | Northing (ft):                                        |                 | Coordinate System:                                                                                                                                                                  |                     | Elevation (ft):      |                 |
| 3,242,936                                                    |                  | 13,615,729                                            |                 | Texas State Plane South                                                                                                                                                             |                     | -42.1 NAVD88         |                 |
| USCS:                                                        |                  | Munsell:                                              |                 | Comments:                                                                                                                                                                           |                     |                      |                 |
| SM                                                           |                  | Wet - 10YR-5/4<br>Dry - 10YR-5/6<br>Washed - 10YR-8/2 |                 |                                                                                                                                                                                     |                     |                      |                 |
| Dry Weight (g):                                              | Wash Weight (g): | Pan Retained (g):                                     | Sieve Loss (%): | Fines (%):                                                                                                                                                                          | Organics (%):       | Carbonates (%):      | Shell Hash (%): |
| 109.58                                                       | 81.54            | 4.53                                                  | 0.02            | #200 - 36.61<br>#230 - 29.72                                                                                                                                                        |                     |                      |                 |
| Sieve Number                                                 | Sieve Size (Phi) | Sieve Size (Millimeters)                              | Grams Retained  | % Weight Retained                                                                                                                                                                   | Cum. Grams Retained | C. % Weight Retained |                 |
| 3/4"                                                         | -4.25            | 19.03                                                 | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5/8"                                                         | -4.00            | 16.00                                                 | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 7/16"                                                        | -3.50            | 11.31                                                 | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5/16"                                                        | -3.00            | 8.00                                                  | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 3.5                                                          | -2.50            | 5.66                                                  | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 4                                                            | -2.25            | 4.76                                                  | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5                                                            | -2.00            | 4.00                                                  | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 7                                                            | -1.50            | 2.83                                                  | 0.02            | 0.02                                                                                                                                                                                | 0.02                | 0.02                 |                 |
| 10                                                           | -1.00            | 2.00                                                  | 0.03            | 0.03                                                                                                                                                                                | 0.05                | 0.05                 |                 |
| 14                                                           | -0.50            | 1.41                                                  | 0.03            | 0.03                                                                                                                                                                                | 0.08                | 0.08                 |                 |
| 18                                                           | 0.00             | 1.00                                                  | 0.04            | 0.04                                                                                                                                                                                | 0.12                | 0.12                 |                 |
| 25                                                           | 0.50             | 0.71                                                  | 0.07            | 0.06                                                                                                                                                                                | 0.19                | 0.18                 |                 |
| 35                                                           | 1.00             | 0.50                                                  | 0.05            | 0.05                                                                                                                                                                                | 0.24                | 0.23                 |                 |
| 45                                                           | 1.50             | 0.35                                                  | 0.04            | 0.04                                                                                                                                                                                | 0.28                | 0.27                 |                 |
| 60                                                           | 2.00             | 0.25                                                  | 0.13            | 0.12                                                                                                                                                                                | 0.41                | 0.39                 |                 |
| 80                                                           | 2.50             | 0.18                                                  | 1.42            | 1.30                                                                                                                                                                                | 1.83                | 1.69                 |                 |
| 120                                                          | 3.00             | 0.13                                                  | 17.30           | 15.79                                                                                                                                                                               | 19.13               | 17.48                |                 |
| 170                                                          | 3.50             | 0.09                                                  | 41.35           | 37.73                                                                                                                                                                               | 60.48               | 55.21                |                 |
| 200                                                          | 3.75             | 0.07                                                  | 8.96            | 8.18                                                                                                                                                                                | 69.44               | 63.39                |                 |
| 230                                                          | 4.00             | 0.06                                                  | 7.55            | 6.89                                                                                                                                                                                | 76.99               | 70.28                |                 |
|                                                              |                  |                                                       |                 |                                                                                                                                                                                     |                     |                      |                 |
| Phi 5                                                        | Phi 16           | Phi 25                                                | Phi 50          | Phi 75                                                                                                                                                                              | Phi 84              | Phi 95               |                 |
|                                                              |                  |                                                       | 3.43            | 3.10                                                                                                                                                                                | 2.95                | 2.60                 |                 |
| Moment                                                       | Mean Phi         | Mean mm                                               | Sorting         | Skewness                                                                                                                                                                            | Kurtosis            |                      |                 |
| Statistics                                                   | 3.21             | 0.11                                                  | 0.42            | -2.16                                                                                                                                                                               | 21.4                |                      |                 |

| Granularmetric Report                                        |                  |                                                                   |                 | <br><b>APTIM</b><br>6401 Congress Avenue, Suite 140<br>Boca Raton, FL 33487<br>ph (561) 391-8102 |                     |                      |                 |
|--------------------------------------------------------------|------------------|-------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|-----------------|
| Depths and elevations based on measured values               |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Project Name: TX GLO Region 1 Recon Geotechnical Sand Search |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Sample Name: TXGLO1-VC-23-061 #3                             |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Analysis Date: 02-05-24                                      |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Analyzed By: WMM                                             |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Easting (ft):                                                |                  | Northing (ft):                                                    |                 | Coordinate System:                                                                                                                                                                  |                     | Elevation (ft):      |                 |
| 3,242,936                                                    |                  | 13,615,729                                                        |                 | Texas State Plane South                                                                                                                                                             |                     | -46.1 NAVD88         |                 |
| USCS:                                                        |                  | Munsell: Wet - 7.5YR-4/4<br>Dry - 7.5YR-5/4<br>Washed - 7.5YR-8/2 |                 | Comments:                                                                                                                                                                           |                     |                      |                 |
| SC                                                           |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Dry Weight (g):                                              | Wash Weight (g): | Pan Retained (g):                                                 | Sieve Loss (%): | Fines (%):                                                                                                                                                                          | Organics (%):       | Carbonates (%):      | Shell Hash (%): |
| 108.27                                                       | 67.99            | 5.46                                                              | 0.02            | #200 - 49.42<br>#230 - 42.25                                                                                                                                                        |                     |                      |                 |
| Sieve Number                                                 | Sieve Size (Phi) | Sieve Size (Millimeters)                                          | Grams Retained  | % Weight Retained                                                                                                                                                                   | Cum. Grams Retained | C. % Weight Retained |                 |
| 3/4"                                                         | -4.25            | 19.03                                                             | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5/8"                                                         | -4.00            | 16.00                                                             | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 7/16"                                                        | -3.50            | 11.31                                                             | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5/16"                                                        | -3.00            | 8.00                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 3.5                                                          | -2.50            | 5.66                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 4                                                            | -2.25            | 4.76                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5                                                            | -2.00            | 4.00                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 7                                                            | -1.50            | 2.83                                                              | 0.06            | 0.06                                                                                                                                                                                | 0.06                | 0.06                 |                 |
| 10                                                           | -1.00            | 2.00                                                              | 0.14            | 0.13                                                                                                                                                                                | 0.20                | 0.19                 |                 |
| 14                                                           | -0.50            | 1.41                                                              | 0.30            | 0.28                                                                                                                                                                                | 0.50                | 0.47                 |                 |
| 18                                                           | 0.00             | 1.00                                                              | 0.21            | 0.19                                                                                                                                                                                | 0.71                | 0.66                 |                 |
| 25                                                           | 0.50             | 0.71                                                              | 0.14            | 0.13                                                                                                                                                                                | 0.85                | 0.79                 |                 |
| 35                                                           | 1.00             | 0.50                                                              | 0.13            | 0.12                                                                                                                                                                                | 0.98                | 0.91                 |                 |
| 45                                                           | 1.50             | 0.35                                                              | 0.04            | 0.04                                                                                                                                                                                | 1.02                | 0.95                 |                 |
| 60                                                           | 2.00             | 0.25                                                              | 0.19            | 0.18                                                                                                                                                                                | 1.21                | 1.13                 |                 |
| 80                                                           | 2.50             | 0.18                                                              | 1.63            | 1.51                                                                                                                                                                                | 2.84                | 2.64                 |                 |
| 120                                                          | 3.00             | 0.13                                                              | 10.67           | 9.85                                                                                                                                                                                | 13.51               | 12.49                |                 |
| 170                                                          | 3.50             | 0.09                                                              | 35.04           | 32.36                                                                                                                                                                               | 48.55               | 44.85                |                 |
| 200                                                          | 3.75             | 0.07                                                              | 6.20            | 5.73                                                                                                                                                                                | 54.75               | 50.58                |                 |
| 230                                                          | 4.00             | 0.06                                                              | 7.76            | 7.17                                                                                                                                                                                | 62.51               | 57.75                |                 |
|                                                              |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Phi 5                                                        | Phi 16           | Phi 25                                                            | Phi 50          | Phi 75                                                                                                                                                                              | Phi 84              | Phi 95               |                 |
|                                                              |                  |                                                                   | 3.72            | 3.19                                                                                                                                                                                | 3.05                | 2.62                 |                 |
| Moment                                                       | Mean Phi         | Mean mm                                                           | Sorting         | Skewness                                                                                                                                                                            | Kurtosis            |                      |                 |
| Statistics                                                   | 3.19             | 0.11                                                              | 0.6             | -3.89                                                                                                                                                                               | 26.53               |                      |                 |

| Granularmetric Report                                        |                  |                                                                   |                 | <br><b>APTIM</b><br>6401 Congress Avenue, Suite 140<br>Boca Raton, FL 33487<br>ph (561) 391-8102 |                     |                      |                 |
|--------------------------------------------------------------|------------------|-------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|-----------------|
| Depths and elevations based on measured values               |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Project Name: TX GLO Region 1 Recon Geotechnical Sand Search |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Sample Name: TXGLO1-VC-23-061 #4                             |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Analysis Date: 02-05-24                                      |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Analyzed By: MS                                              |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Easting (ft):                                                |                  | Northing (ft):                                                    |                 | Coordinate System:                                                                                                                                                                  |                     | Elevation (ft):      |                 |
| 3,242,936                                                    |                  | 13,615,729                                                        |                 | Texas State Plane South                                                                                                                                                             |                     | -48.9 NAVD88         |                 |
| USCS:                                                        |                  | Munsell: Wet - 7.5YR-5/4<br>Dry - 7.5YR-6/4<br>Washed - 7.5YR-8/2 |                 | Comments:                                                                                                                                                                           |                     |                      |                 |
| SC                                                           |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Dry Weight (g):                                              | Wash Weight (g): | Pan Retained (g):                                                 | Sieve Loss (%): | Fines (%):<br>#200 - 19.44<br>#230 - 17.41                                                                                                                                          | Organics (%):       | Carbonates (%):      | Shell Hash (%): |
| 110.79                                                       | 92.79            | 1.27                                                              | 0.02            |                                                                                                                                                                                     |                     |                      |                 |
| Sieve Number                                                 | Sieve Size (Phi) | Sieve Size (Millimeters)                                          | Grams Retained  | % Weight Retained                                                                                                                                                                   | Cum. Grams Retained | C. % Weight Retained |                 |
| 3/4"                                                         | -4.25            | 19.03                                                             | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5/8"                                                         | -4.00            | 16.00                                                             | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 7/16"                                                        | -3.50            | 11.31                                                             | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5/16"                                                        | -3.00            | 8.00                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 3.5                                                          | -2.50            | 5.66                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 4                                                            | -2.25            | 4.76                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 5                                                            | -2.00            | 4.00                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 7                                                            | -1.50            | 2.83                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 10                                                           | -1.00            | 2.00                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 14                                                           | -0.50            | 1.41                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 18                                                           | 0.00             | 1.00                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 25                                                           | 0.50             | 0.71                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 35                                                           | 1.00             | 0.50                                                              | 0.00            | 0.00                                                                                                                                                                                | 0.00                | 0.00                 |                 |
| 45                                                           | 1.50             | 0.35                                                              | 0.72            | 0.65                                                                                                                                                                                | 0.72                | 0.65                 |                 |
| 60                                                           | 2.00             | 0.25                                                              | 26.12           | 23.58                                                                                                                                                                               | 26.84               | 24.23                |                 |
| 80                                                           | 2.50             | 0.18                                                              | 24.89           | 22.47                                                                                                                                                                               | 51.73               | 46.70                |                 |
| 120                                                          | 3.00             | 0.13                                                              | 9.91            | 8.94                                                                                                                                                                                | 61.64               | 55.64                |                 |
| 170                                                          | 3.50             | 0.09                                                              | 23.61           | 21.31                                                                                                                                                                               | 85.25               | 76.95                |                 |
| 200                                                          | 3.75             | 0.07                                                              | 4.00            | 3.61                                                                                                                                                                                | 89.25               | 80.56                |                 |
| 230                                                          | 4.00             | 0.06                                                              | 2.25            | 2.03                                                                                                                                                                                | 91.50               | 82.59                |                 |
|                                                              |                  |                                                                   |                 |                                                                                                                                                                                     |                     |                      |                 |
| Phi 5                                                        | Phi 16           | Phi 25                                                            | Phi 50          | Phi 75                                                                                                                                                                              | Phi 84              | Phi 95               |                 |
|                                                              |                  | 3.45                                                              | 2.68            | 2.02                                                                                                                                                                                | 1.83                | 1.59                 |                 |
| Moment                                                       | Mean Phi         | Mean mm                                                           | Sorting         | Skewness                                                                                                                                                                            | Kurtosis            |                      |                 |
| Statistics                                                   | 2.51             | 0.18                                                              | 0.67            | 0.27                                                                                                                                                                                | 1.76                |                      |                 |

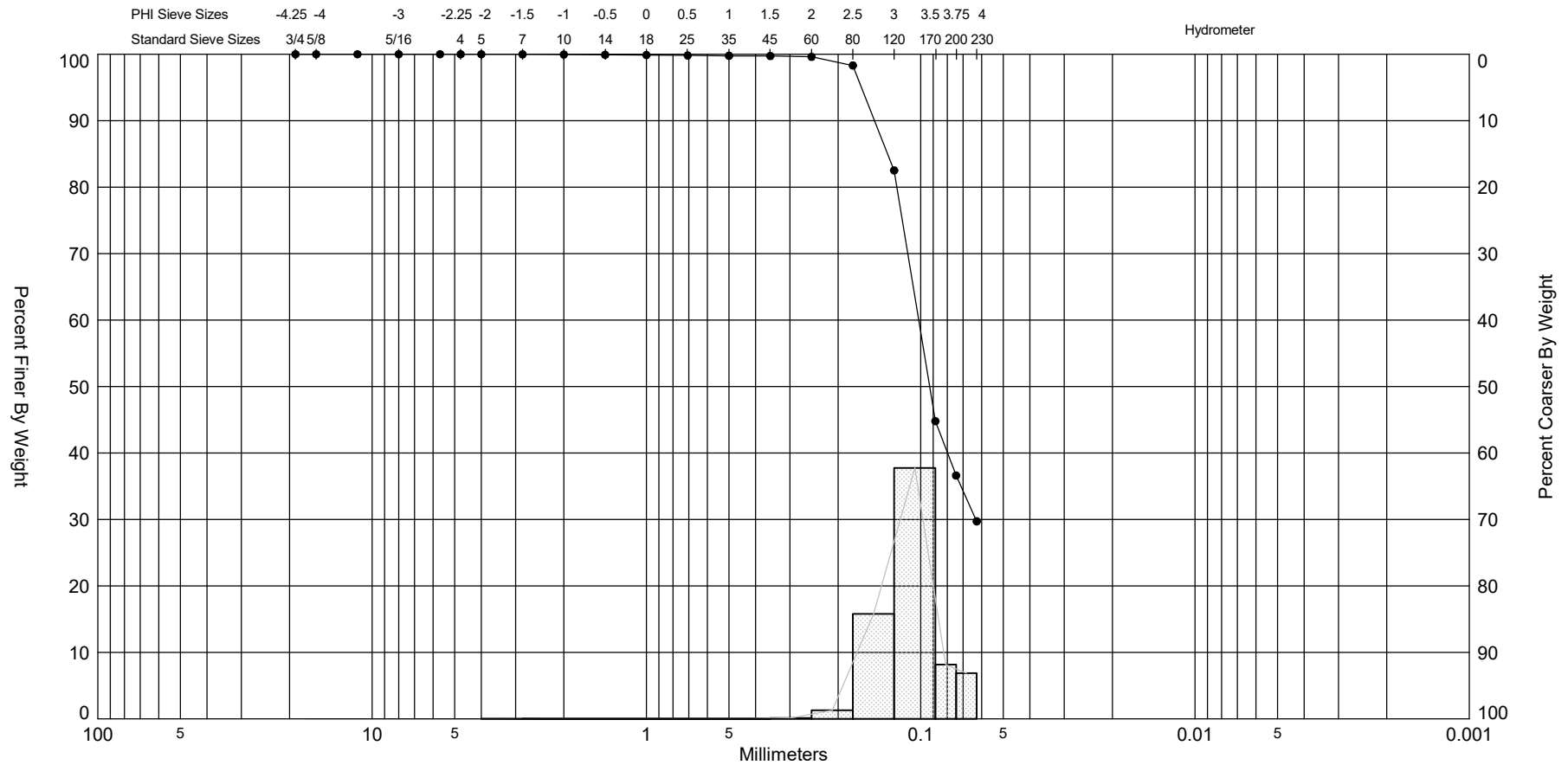
REGION1\_RECON\_GEOTECH.GPJ 3/6/24



| Gravel |      | Sand   |        |      | Silt and Clay |
|--------|------|--------|--------|------|---------------|
| Coarse | Fine | Coarse | Medium | Fine |               |

| Sample                                                                              | Symbol | Elev. (ft) | USCS | % Fines                      | % Organics | % Carbonates | Median                          | Mean | Skew  | Kurt  | Sort | Sample Information |                                                |
|-------------------------------------------------------------------------------------|--------|------------|------|------------------------------|------------|--------------|---------------------------------|------|-------|-------|------|--------------------|------------------------------------------------|
| TXGLO1-VC-23-061 #1                                                                 | —●—    | -38.0      | ML   | #200 - 55.62<br>#230 - 46.01 |            |              | 3.9                             | 3.44 | -2.69 | 30.87 | 0.33 | Project Name:      | TX GLO Region 1 Recon Geotechnical Sand Search |
| Comments:                                                                           |        |            |      |                              |            |              |                                 |      |       |       |      | Analysis Date:     | 02-05-24                                       |
| Depths and elevations based on measured values                                      |        |            |      |                              |            |              |                                 |      |       |       |      | Analyzed By:       | WMM                                            |
|  |        |            |      |                              |            |              | APTIM                           |      |       |       |      |                    |                                                |
|                                                                                     |        |            |      |                              |            |              | 6401 Congress Avenue, Suite 140 |      |       |       |      |                    |                                                |
|                                                                                     |        |            |      |                              |            |              | Boca Raton, FL 33487            |      |       |       |      |                    |                                                |
|                                                                                     |        |            |      |                              |            |              | ph (561) 391-8102               |      |       |       |      |                    |                                                |
|                                                                                     |        |            |      |                              |            |              |                                 |      |       |       |      | Easting (X, ft):   | 3,242,936                                      |
|                                                                                     |        |            |      |                              |            |              |                                 |      |       |       |      | Northing (Y, ft):  | 13,615,729                                     |
|                                                                                     |        |            |      |                              |            |              |                                 |      |       |       |      | Horizontal Datum:  | NAD 1983                                       |
|                                                                                     |        |            |      |                              |            |              |                                 |      |       |       |      | Vertical Datum:    | NAVD88                                         |

REGION1\_RECON\_GEOTECH.GPJ 3/6/24



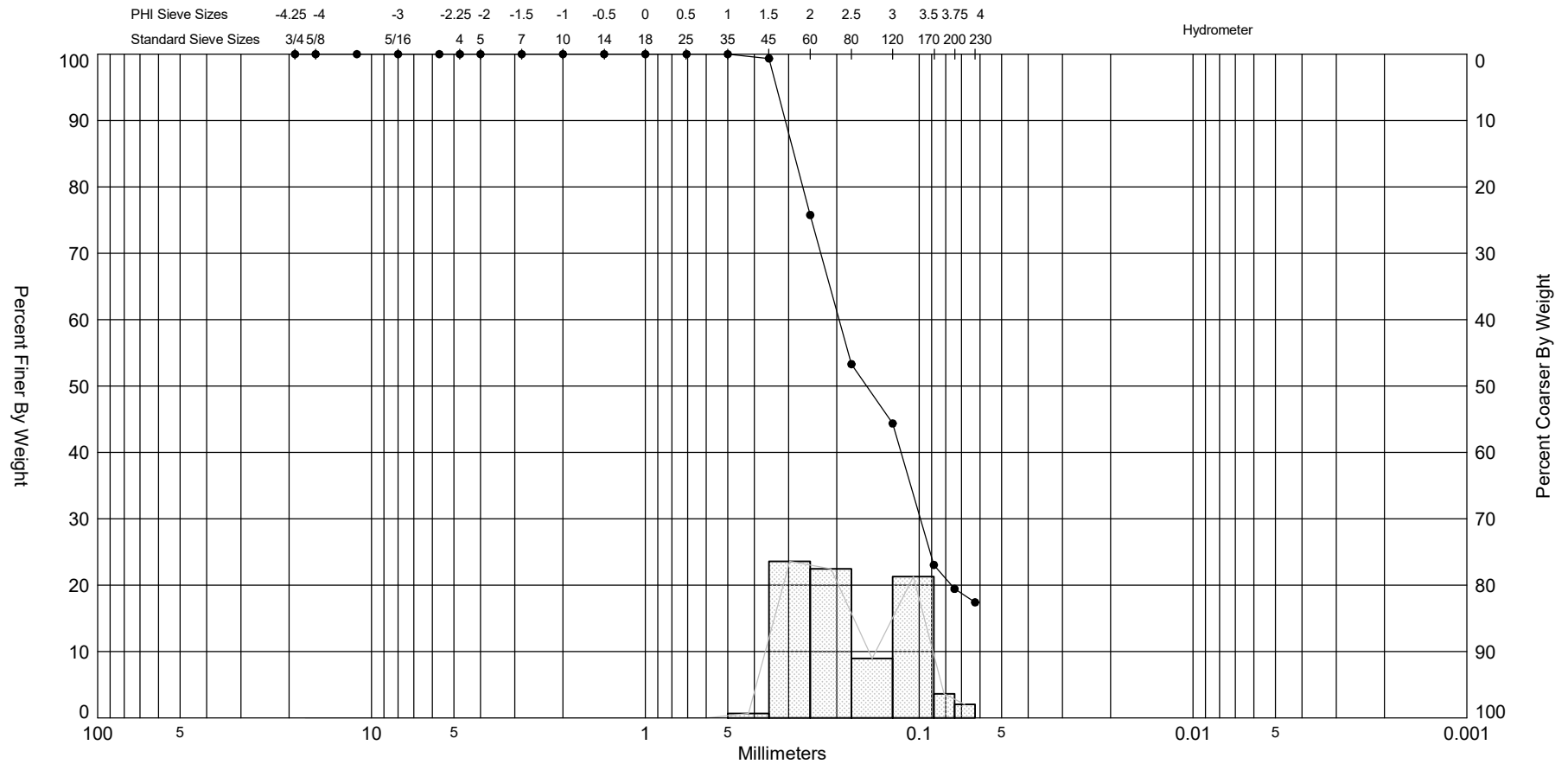
| Gravel |      | Sand   |        |      | Silt and Clay |
|--------|------|--------|--------|------|---------------|
| Coarse | Fine | Coarse | Medium | Fine |               |

| Sample                                                                              | Symbol                                                                              | Elev. (ft) | USCS | % Fines                      | % Organics | % Carbonates                                                                          | Median | Mean | Skew  | Kurt | Sort | Sample Information |                                                |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------|------|------------------------------|------------|---------------------------------------------------------------------------------------|--------|------|-------|------|------|--------------------|------------------------------------------------|
| TXGLO1-VC-23-061 #2                                                                 |  | -42.1      | SM   | #200 - 36.61<br>#230 - 29.72 |            |                                                                                       | 3.43   | 3.21 | -2.16 | 21.4 | 0.42 | Project Name:      | TX GLO Region 1 Recon Geotechnical Sand Search |
| Comments:                                                                           |                                                                                     |            |      |                              |            |                                                                                       |        |      |       |      |      | Analysis Date:     | 02-05-24                                       |
| Depths and elevations based on measured values                                      |                                                                                     |            |      |                              |            |                                                                                       |        |      |       |      |      | Analyzed By:       | WMM                                            |
|  |                                                                                     |            |      |                              |            | APTIM<br>6401 Congress Avenue, Suite 140<br>Boca Raton, FL 33487<br>ph (561) 391-8102 |        |      |       |      |      | Easting (X, ft):   | 3,242,936                                      |
|                                                                                     |                                                                                     |            |      |                              |            |                                                                                       |        |      |       |      |      | Northing (Y, ft):  | 13,615,729                                     |
|                                                                                     |                                                                                     |            |      |                              |            |                                                                                       |        |      |       |      |      | Horizontal Datum:  | NAD 1983                                       |
|                                                                                     |                                                                                     |            |      |                              |            |                                                                                       |        |      |       |      |      | Vertical Datum:    | NAVD88                                         |



| Sample                                                                              | Symbol                                                                              | Elev. (ft) | USCS | % Fines                      | % Organics | % Carbonates                                                                          | Median | Mean | Skew  | Kurt  | Sort | Sample Information |                                                |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------|------|------------------------------|------------|---------------------------------------------------------------------------------------|--------|------|-------|-------|------|--------------------|------------------------------------------------|
| TXGLO1-VC-23-061 #3                                                                 |  | -46.1      | SC   | #200 - 49.42<br>#230 - 42.25 |            |                                                                                       | 3.72   | 3.19 | -3.89 | 26.53 | 0.6  | Project Name:      | TX GLO Region 1 Recon Geotechnical Sand Search |
| Comments:                                                                           |                                                                                     |            |      |                              |            |                                                                                       |        |      |       |       |      | Analysis Date:     | 02-05-24                                       |
| Depths and elevations based on measured values                                      |                                                                                     |            |      |                              |            |                                                                                       |        |      |       |       |      | Analyzed By:       | WMM                                            |
|  |                                                                                     |            |      |                              |            | APTIM<br>6401 Congress Avenue, Suite 140<br>Boca Raton, FL 33487<br>ph (561) 391-8102 |        |      |       |       |      | Easting (X, ft):   | 3,242,936                                      |
|                                                                                     |                                                                                     |            |      |                              |            |                                                                                       |        |      |       |       |      | Northing (Y, ft):  | 13,615,729                                     |
|                                                                                     |                                                                                     |            |      |                              |            |                                                                                       |        |      |       |       |      | Horizontal Datum:  | NAD 1983                                       |
|                                                                                     |                                                                                     |            |      |                              |            |                                                                                       |        |      |       |       |      | Vertical Datum:    | NAVD88                                         |

REGION1\_RECON\_GEOTECH.GPJ 3/6/24



| Gravel |      | Sand   |        |      | Silt and Clay |
|--------|------|--------|--------|------|---------------|
| Coarse | Fine | Coarse | Medium | Fine |               |

| Sample                                                                              | Symbol | Elev. (ft) | USCS | % Fines                      | % Organics | % Carbonates | Median                          | Mean | Skew | Kurt | Sort | Sample Information |                                                |
|-------------------------------------------------------------------------------------|--------|------------|------|------------------------------|------------|--------------|---------------------------------|------|------|------|------|--------------------|------------------------------------------------|
| TXGLO1-VC-23-061 #4                                                                 | —●—    | -48.9      | SC   | #200 - 19.44<br>#230 - 17.41 |            |              | 2.68                            | 2.51 | 0.27 | 1.76 | 0.67 | Project Name:      | TX GLO Region 1 Recon Geotechnical Sand Search |
| Comments:                                                                           |        |            |      |                              |            |              |                                 |      |      |      |      | Analysis Date:     | 02-05-24                                       |
| Depths and elevations based on measured values                                      |        |            |      |                              |            |              |                                 |      |      |      |      | Analyzed By:       | MS                                             |
|  |        |            |      |                              |            |              | APTIM                           |      |      |      |      | Easting (X, ft):   | 3,242,936                                      |
|                                                                                     |        |            |      |                              |            |              | 6401 Congress Avenue, Suite 140 |      |      |      |      | Northing (Y, ft):  | 13,615,729                                     |
|                                                                                     |        |            |      |                              |            |              | Boca Raton, FL 33487            |      |      |      |      | Horizontal Datum:  | NAD 1983                                       |
|                                                                                     |        |            |      |                              |            |              | ph (561) 391-8102               |      |      |      |      | Vertical Datum:    | NAVD88                                         |