



Quaternary Resource Investigations, LLC  
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# BORING NUMBER 13-B157

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**CLIENT** USACE-Galveston District **PROJECT NAME** Sabine Neches Placement Area 8  
**PROJECT NUMBER** W912HY-13-D-0001-DY05 **PROJECT LOCATION** Port Arthur, TX  
**DATE STARTED** 12/3/2013 12:28:00 PM **COMPLETED** 12/4/2013 8:00:00 AM **GROUND ELEVATION** 11.7154 ft **HOLE SIZE** 8.25 inches  
**DRILLING CONTRACTOR** QRI **NORTHING** 13893521.28 ft **EASTING** 3575349.262 ft  
**DRILLING METHOD** Hollow Stem Auger **DRILLING RIG MAKE/MODEL** Mobile B57 on Gemco Articulated Platform  
**LOGGED BY** Pete Herold **TOTAL DEPTH** 60 ft **GROUND WATER LEVEL** ▽ AT TIME OF DRILLING 13.30 ft / Elev -1.58 ft  
**WEATHER** cloudy, foggy, 60s to 70s, light wind, clearing **▽ 15 MINUTES AFTER DRILLING** 11.70 ft / Elev 0.02 ft

COPY OF PEGGY LAKE GEOTECH BH - PEGGY LAKE TEMPLATE.GDT - 7/15/14 13:10 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\SABINE NECHES PA 8 FINAL EDITED.GPJ

| GRAPHIC LOG | USCS SYMBOL | MATERIAL DESCRIPTION                                                          | DEPTH (ft) | SAMPLE TYPE | RECOVERY (in) | SPT BLOW COUNTS (N VALUE) | POCKET PEN. (tsf) | FIELD TORVANE (tsf) | DRY UNIT WT. (pcf) | MOISTURE CONTENT (%) | LIQUID LIMIT | PLASTIC LIMIT | PLASTICITY INDEX | MINUS #200 SIEVE CONTENT (%) | COMPRESSION STRENGTH (tsf) | FAILURE STRAIN (%) | CONFINING PRESSURE (psi) |
|-------------|-------------|-------------------------------------------------------------------------------|------------|-------------|---------------|---------------------------|-------------------|---------------------|--------------------|----------------------|--------------|---------------|------------------|------------------------------|----------------------------|--------------------|--------------------------|
|             | CH          | Fat CLAY, dark gray and light brown, very stiff, with shell fragments 28'-30' | 0          | ST          | 12            |                           | 3.1               |                     | 104                | 24                   | 60           | 22            | 38               | 78                           | 3.16                       | 9                  |                          |
|             |             | stiff                                                                         |            | ST          | 8             |                           | 2.8               |                     |                    | 20                   |              |               |                  |                              |                            |                    |                          |
|             |             | more sand, greenish gray and light brownish gray, firm, with sand seams 4'-6' | 5          | ST          | 12.5          |                           | 1.2               |                     | 100                | 20                   |              |               |                  |                              |                            |                    |                          |
|             |             | less sand, greenish gray, soft                                                |            | ST          | 20            |                           | 0.75              | 3.0                 | 75                 | 44                   |              |               |                  | 96                           | 0.36                       | 1                  | 6                        |
|             |             | stiff                                                                         |            | ST          | 14            |                           | 1.7               |                     |                    | 39                   |              |               |                  |                              |                            |                    |                          |
|             |             | ▽                                                                             |            | NR          |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             | ▽ firm                                                                        |            | ST          | 18            |                           | 1.0               |                     | 75                 | 42                   | 79           | 26            | 53               | 98                           |                            |                    |                          |
|             |             |                                                                               | 15         | NR          |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                               |            | ST          | 18            |                           | 1.2               |                     |                    | 42                   |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                               | 20         | NR          |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             | CL          | very stiff                                                                    |            | ST          | 20            |                           | 2.9               |                     | 109                | 20                   |              |               |                  |                              | 2.69                       | 11                 |                          |
|             |             |                                                                               | 25         | NR          |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             | more sand, light brown, firm                                                  |            | ST          | 15            |                           | 1.0               |                     |                    | 24                   |              |               |                  |                              |                            |                    |                          |
|             |             | Lean CLAY with SAND, fine grained, light brown, stiff                         | 30         | ST          | 19            |                           | 2.0               |                     | 96                 | 27                   |              |               |                  | 75                           |                            |                    |                          |
|             | CH          |                                                                               |            | NR          |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             | Lean CLAY, greenish gray, stiff                                               | 35         | SS          | 15            | 8-5-7 (12)                | 1.6               |                     |                    | 36                   |              |               |                  |                              |                            |                    |                          |

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PROJECT NUMBER W912HY-13-D-0001-DY05

PROJECT LOCATION Port Arthur, TX

| GRAPHIC LOG                                                                        | USCS SYMBOL | MATERIAL DESCRIPTION                                                                                                                      | DEPTH (ft) | SAMPLE TYPE | RECOVERY (in) | SPT BLOW COUNTS (N VALUE) | POCKET PEN. (tsf) | FIELD TORVANE (tsf) | DRY UNIT WT. (pcf) | MOISTURE CONTENT (%) | ATTERBERG LIMITS |               |                  | MINUS #200 SIEVE CONTENT (%) | COMPRESSIVE STRENGTH (tsf) | FAILURE STRAIN (%) | CONFINING PRESSURE (psi) |
|------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|---------------|---------------------------|-------------------|---------------------|--------------------|----------------------|------------------|---------------|------------------|------------------------------|----------------------------|--------------------|--------------------------|
|                                                                                    |             |                                                                                                                                           | 35         |             |               |                           |                   |                     |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                              |                            |                    |                          |
|  | CH          | Lean CLAY, greenish gray, stiff (continued)<br>light brown and greenish gray mottled, firm,<br>with sand seams 35'-53' and cracks 35'-53' |            | ST          | 19            |                           | 1.5               |                     | 87                 | 36                   | 52               | 21            | 31               | 98                           | 0.82                       | 6                  | 19                       |
|                                                                                    |             |                                                                                                                                           |            | NR          |               |                           |                   |                     |                    |                      |                  |               |                  |                              |                            |                    |                          |
|                                                                                    |             | light brown, stiff                                                                                                                        |            | ST          | 19            |                           | 1.5               |                     |                    |                      | 39               |               |                  |                              |                            |                    |                          |
|                                                                                    |             |                                                                                                                                           |            | NR          |               |                           |                   |                     |                    |                      |                  |               |                  |                              |                            |                    |                          |
|                                                                                    |             | firm                                                                                                                                      |            | ST          | 20            |                           | 1.2               |                     |                    |                      | 33               |               |                  |                              |                            |                    |                          |
|                                                                                    |             |                                                                                                                                           |            | NR          |               |                           |                   |                     |                    |                      |                  |               |                  |                              |                            |                    |                          |
|                                                                                    |             | less sand, greenish gray, stiff                                                                                                           |            | ST          | 20            |                           | 1.5               |                     |                    | 85                   | 38               |               |                  |                              | 100                        | 1.11               | 14                       |
|                                                                                    |             |                                                                                                                                           |            | NR          |               |                           |                   |                     |                    |                      |                  |               |                  |                              |                            |                    |                          |
|                                                                                    |             | less sand                                                                                                                                 |            | ST          | 19            |                           | 1.5               |                     |                    |                      | 51               |               |                  |                              |                            |                    |                          |
|                                                                                    |             |                                                                                                                                           |            | NR          |               |                           |                   |                     |                    |                      |                  |               |                  |                              |                            |                    |                          |
|                                                                                    |             | firm                                                                                                                                      |            | ST          | 19            |                           | 1.4               |                     |                    |                      | 56               |               |                  |                              |                            |                    |                          |
|                                                                                    |             |                                                                                                                                           |            |             | 60            |                           |                   |                     |                    |                      |                  |               |                  |                              |                            |                    |                          |

Bottom of borehole at 60.0 feet.