



Quaternary Resource Investigations, LLC  
13588 Florida Boulevard  
Baton Rouge, LA 70820  
Telephone: 225-292-1400  
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# BORING NUMBER 13-B142

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|                                                                              |                                                                         |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <b>CLIENT</b> USACE-Galveston District                                       | <b>PROJECT NAME</b> Sabine Neches Placement Area 8                      |
| <b>PROJECT NUMBER</b> W912HY-13-D-0001-DY05                                  | <b>PROJECT LOCATION</b> Port Arthur, TX                                 |
| <b>DATE STARTED</b> 2/5/2014 2:40:00 PM <b>COMPLETED</b> 2/6/2014 2:30:00 PM | <b>GROUND ELEVATION</b> 19.2529 ft <b>HOLE SIZE</b> 8.25 inches         |
| <b>DRILLING CONTRACTOR</b> QRI                                               | <b>NORTHING</b> 13874044.91 ft <b>EASTING</b> 3569459.585 ft            |
| <b>DRILLING METHOD</b> Hollow Stem Auger                                     | <b>DRILLING RIG MAKE/MODEL</b> Mobile B57 on Gemco Articulated Platform |
| <b>LOGGED BY</b> Pete Herold <b>TOTAL DEPTH</b> 80 ft                        | <b>GROUND WATER LEVEL</b> ▽ AT TIME OF DRILLING 18.50 ft / Elev 0.75 ft |
| <b>WEATHER</b> cloudy to clear, windy, 40s to 30s                            | <b>▽ 15 MINUTES AFTER DRILLING</b> 15.40 ft / Elev 3.85 ft              |

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| 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, light brown, firm                                                               | 0          | ST          | 10            |                           | 2.4               |                     | 80                 | 39                   | 72           | 25            | 47               | 93                           | 0.83                       | 4                  |                          |
|             |             | light brown and dark gray mottled, stiff                                                  |            | ST          | 9             |                           | 1.9               |                     |                    | 48                   |              |               |                  |                              |                            |                    |                          |
|             |             | firm                                                                                      | 5          | ST          | 16            |                           | 1.4               |                     | 79                 | 42                   |              |               |                  |                              |                            |                    |                          |
|             |             | soft                                                                                      |            | ST          | 19            |                           | 1.9               |                     | 75                 | 42                   | 110          | 35            | 75               | 87                           | 0.36                       | 7                  | 6                        |
|             |             | stiff                                                                                     |            | ST          | 14            |                           | 1.9               |                     |                    | 38                   |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                           | 10         | NR          |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             | dark gray, soft                                                                           |            | ST          | 18            |                           | 1.4               |                     | 55                 | 80                   |              |               |                  | 99                           | 0.35                       | 2                  |                          |
|             |             | ▽                                                                                         | 15         | NR          |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             | ▽ dark gray and greenish gray mottled, with shell fragments, stiff                        |            | ST          | 18            |                           | 1.7               |                     |                    | 40                   | 62           | 21            | 41               |                              |                            |                    |                          |
|             |             |                                                                                           | 20         | NR          |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             | SC          | Clayey SAND, fine grained, dark gray, with a trace of shell fragments 23'-28', very loose | 25         | SS          | 15            | 0-1-2 (3)                 | 0                 | 0                   |                    |                      |              |               |                  | 35                           |                            |                    |                          |
|             |             | loose to medium dense                                                                     |            | ST          | 11            |                           | 1.8               |                     |                    | 38                   |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                           |            | NR          |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             | CH          | CLAY, dark gray and light brown mottled, soft, shell fragments 30'-38'                    | 30         | ST          | 19            |                           | 1.75              |                     | 87                 | 36                   |              |               |                  | 90                           | 0.38                       | 7                  | 18                       |
|             |             |                                                                                           |            | NR          |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             | less sand, greenish gray and light brown mottled, very stiff                              |            | ST          | 17            |                           | 4.4               |                     |                    | 20                   |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                           | 35         |             |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |

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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

| 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 (%) | COMPRESSIVE STRENGTH (tsf) | FAILURE STRAIN (%) | CONFINING PRESSURE (psi) |
|-------------|-------------|--------------------------------------------------------------------------------------------|------------|-------------|---------------|---------------------------|-------------------|---------------------|--------------------|----------------------|--------------|---------------|------------------|------------------------------|----------------------------|--------------------|--------------------------|
|             | CH          | CLAY, dark gray and light brown mottled, soft, shell fragments 30'-38' (continued)         | 35         | ○ NR        |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             | CL          | Lean CLAY with SAND, greenish gray and light brown mottled, stiff, with sand seams 38'-68' | 40         | ■ ST        | 15            |                           | 1.5               |                     | 105                | 24                   | 35           | 18            | 17               | 81                           |                            |                    |                          |
|             |             |                                                                                            |            | ○ NR        |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            |            | ■ ST        | 19            |                           | 2.6               |                     |                    | 35                   |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            | 45         | ○ NR        |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            |            | ■ ST        | 18            |                           | 3.0               |                     | 97                 | 26                   |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            | 50         | ○ NR        |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            |            | ■ ST        | 17            |                           | 3.3               |                     | 89                 | 33                   |              |               |                  | 99                           | 1.89                       | 6                  |                          |
|             |             |                                                                                            | 55         | ○ NR        |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            |            | ■ ST        | 17            |                           | 2.2               |                     |                    | 41                   |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            | 60         | ○ NR        |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            |            | ■ ST        | 19            |                           | 2.6               |                     |                    | 50                   |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            | 65         | ○ NR        |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            |            | ■ ST        | 20            |                           | 2.2               |                     | 91                 | 33                   | 54           | 20            | 34               | 90                           | 1.44                       | 6                  |                          |
|             |             |                                                                                            | 70         | ○ NR        |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            |            | ■ ST        | 20            |                           | 2.1               |                     |                    | 35                   |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            |            | ○ NR        |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             |                                                                                            |            | ■ ST        | 19            |                           | 1.1               |                     | 98                 | 30                   |              |               |                  |                              |                            |                    |                          |
|             | CH          | Lean CLAY, dark gray, stiff with shell fragments and sand seams 70'-80'                    | 75         | ○ NR        |               |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |
|             |             | firm                                                                                       |            | ■ ST        | 19            |                           |                   |                     |                    |                      |              |               |                  |                              |                            |                    |                          |

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| 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) |
|-----------------------------------------------------------------------------------|-------------|---------------------------------------------------|------------|--------------------------------------------------------------------------------------|---------------|---------------------------|-------------------|---------------------|--------------------|----------------------|------------------|---------------|------------------|------------------------------|----------------------------|--------------------|--------------------------|
|                                                                                   |             |                                                   |            |                                                                                      |               |                           |                   |                     |                    |                      | LIQUID LIMIT     | PLASTIC LIMIT | PLASTICITY INDEX |                              |                            |                    |                          |
|  | CH          | Lean CLAY, dark gray, stiff (continued)           | 75         |  NR |               |                           |                   |                     |                    |                      |                  |               |                  |                              |                            |                    |                          |
|                                                                                   |             | greenish gray and light brown mottled, very stiff | 80         |  ST | 17            |                           | 3.1               |                     |                    | 26                   |                  |               |                  |                              |                            |                    |                          |

Bottom of borehole at 80.0 feet.