












## **APPENDICES I THROUGH V**

**APPENDIX I**  
**LOGS OF BORINGS**



LEGEND AND NOTES FOR  
LOG OF BORING AND TEST RESULTS

|         |   |   |        |   |      |   |            |   |           |   |              |   |
|---------|---|---|--------|---|------|---|------------|---|-----------|---|--------------|---|
| PP      | Pocket penetrometer: Resistance in tons per square foot   |   |        |   |      |   |            |   |           |   |              |   |
| SPT     | Standard Penetration Test: Number of blows of a 140-lb hammer dropped 30 inches required to drive 2-in. O.D., 1.4-in. I.D. sampler a distance of 1 foot into the soil after first seating it 6 inches |   |        |   |      |   |            |   |           |   |              |   |
| SPLR    | Type of Sampling  |  | Shelby |  | SPT  |  | Auger      |  | Vibracore |  | No sample    |   |
| SYMBOL  | Clay  |  | Silt   |  | Sand |  | Peat/Humus |    | Shells    |  | Stone/Gravel |  |
|         | Predominant type shown heavy; Modifying type shown light  |   |        |   |      |   |            |   |           |   |              |   |
| USC     | Unified Soil Classification   |   |        |   |      |   |            |   |           |   |              |   |
| DENSITY | Unit weight in pounds per cubic foot  |   |        |   |      |   |            |   |           |   |              |   |

SHEAR TESTS

TYPE

|    |   |
|----|---|
| UC | Unconfined compression shear  |
| OB | Unconsolidated undrained triaxial compression shear on one specimen confined at the approximate overburden pressure |
| UU | Unconsolidated undrained triaxial compression shear   |
| CU | Consolidated undrained triaxial compression shear   |
| DS | Direct shear  |

|        |                                       |
|--------|---------------------------------------|
| $\phi$ | Angle of internal friction in degrees |
| c      | Cohesion in pounds per square foot    |

ATTERBERG LIMITS

|    |                  |
|----|------------------|
| LL | Liquid Limit     |
| PL | Plastic Limit    |
| PI | Plasticity Index |

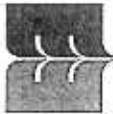
OTHER TESTS

|     |   |
|-----|---|
| CON | Consolidation   |
| PD  | Particle size distribution (sieve and/or hydrometer)  |
| k   | Coefficient of permeability in centimeters per second |
| SP  | Swelling pressure in pounds per square foot           |

Other laboratory test results reported on separate figures

GENERAL NOTES

- (1) If a ground water depth is shown on the boring log, these observations were made at the time of drilling and were measured below the existing ground surface. These observations are shown on the boring logs. However, ground water levels may vary due to seasonal fluctuations and other factors. If important to construction, the depth to ground water should be determined by those persons responsible for construction immediately prior to beginning work.
- (2) While the individual logs of borings are considered to be representative of subsurface conditions at their respective locations on the dates shown, it is not warranted that they are representative of subsurface conditions at other locations and times.



False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348  
Date: 10/28/2013

# LOG OF BORING AND TEST RESULTS

## B-1

Latitude: 30.60765 Elevation: 14.0  
Longitude: -91.42850 Datum:  
Water Depth: See Text  
Total Depth: 60.0 ft

EUSTIS ENGINEERING

| Scale in Feet | PP   | SPT    | S<br>P<br>L<br>R | Symbol | Visual Classification   | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |   |     | Atterberg Limits |    |    | Other Tests |
|---------------|------|--------|------------------|--------|---|-----|---------------|---------------|-----------------------|---------|-----|-------------|---|-----|------------------|----|----|-------------|
|               |      |        |                  |        |   |     |               |               |                       | Dry     | Wet | Type        | φ | C   | LL               | PL | PI |             |
| 0             |      |        |                  |        |   | CH  | 1             | 1             | 103                   | 46      | 91  | OB          | 0 | 19  |                  |    |    |             |
| 5             | 0.25 |        |                  |        | Extremely soft gray clay w/silt pockets, traces of decayed wood, & silty sand pockets |     | 2             | 3             | 99                    | 48      | 93  | UC          | - | 34  |                  |    |    |             |
| 10            | 0.25 |        |                  |        |   |     | 3             | 6             | 95                    | 41      | 88  | OB          | 0 | 83  |                  |    |    |             |
| 15            | 0.50 |        |                  |        |   |     | 4             | 9             | 117                   | 42      | 89  | UC          | - | 38  |                  |    |    |             |
| 20            | 0.50 |        |                  |        |   |     | 5             | 12            | 111                   | 51      | 95  | OB          | 0 | 59  |                  |    |    |             |
| 25            |      |        |                  |        |   |     | 6             | 18            | 87                    | 65      | 104 | UC          | - | 144 |                  |    |    |             |
| 30            |      | 15     |                  |        | Medium dense gray silty sand  | SM  | 7             | 23            | 69                    |         |     |             |   |     |                  |    |    |             |
| 35            |      | 19     |                  |        | Medium dense gray clayey sand   | SC  | 8             | 28.5          | 18                    |         |     |             |   |     |                  |    |    |             |
| 40            |      | 20     |                  |        | Medium dense gray silty sand  | SM  | 9             | 31.5          | 25                    |         |     |             |   |     |                  |    |    |             |
| 45            |      | 33     |                  |        | Dense gray & brown silty sand w/traces of gravel                                      | SM  | 10            | 34.5          | 21                    |         |     |             |   |     |                  |    |    |             |
| 50            |      | 41     |                  |        | Dense gray silty sand w/gravel  | SM  | 11            | 37.5          | 20                    |         |     |             |   |     |                  |    |    |             |
| 55            |      | 50-4.5 |                  |        |   | SM  | 12            | 43.5          | 21                    |         |     |             |   |     |                  |    |    |             |
| 60            |      |        |                  |        |   | SM  | 13            | 48.5          | 19                    |         |     |             |   |     |                  |    |    |             |

NOTES:



False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348  
Date: 10/28/2013

# LOG : BORING AND TEST RESULTS

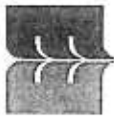
**B-1**

Latitude: 30.60765 Elevation: 14.0  
Longitude: -91.42850 Datum:  
Water Depth: See Text  
Total Depth: 60.0 ft

EUSTIS ENGINEERING

| Scale in Feet | PP | SPT   | S<br>P<br>L<br>R | Symbol | Visual Classification   | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |   |   | Atterberg Limits |    |    | Other Tests |
|---------------|----|-------|------------------|--------|---|-----|---------------|---------------|-----------------------|---------|-----|-------------|---|---|------------------|----|----|-------------|
|               |    |       |                  |        |   |     |               |               |                       | Dry     | Wet | Type        | φ | C | LL               | PL | PI |             |
| 50            |    |       |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 55            |    | 50-5" | ⊗                |        | Very dense gray & tan silty sand w/gravel & trace of decayed wood | SM  | 14            | 63.5          | 19                    |         |     |             |   |   |                  |    |    |             |
| 60            |    | 50-7" | ⊗                |        |   |     | 15            | 60.5          | 18                    |         |     |             |   |   |                  |    |    |             |
| 65            |    |       |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 70            |    |       |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 75            |    |       |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 80            |    |       |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 85            |    |       |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 90            |    |       |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 95            |    |       |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 100           |    |       |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |

NOTES:



False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348

EUSTIS ENGINEERING

Date: 10/22/2013

LOG OF BORING AND TEST RESULTS

B-2

Latitude: 30.60767 Elevation: 14.5  
Longitude: -91.42717 Datum:  
Water Depth: See Text  
Total Depth: 15.0 ft

| Scale in Feet | PP | SPT | S<br>P<br>L<br>R | Symbol | Visual Classification   | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |   |   | Atterberg Limits |    |    | Other Tests |
|---------------|----|-----|------------------|--------|---|-----|---------------|---------------|-----------------------|---------|-----|-------------|---|---|------------------|----|----|-------------|
|               |    |     |                  |        |   |     |               |               |                       | Dry     | Wet | Type        | φ | C | LL               | PL | PI |             |
| 0             |    |     |                  |        |   |     | 1AA           | 0             | 105                   |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        | Extremely soft to very soft gray clay w/silty sand pockets & decayed wood | CH  | 1AB           | 0.875         | 77                    |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        | No recovery   |     | 1AC           | 1.75          | 55                    |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        | Extremely soft to very soft gray clay w/silt pockets                      | CH  | 1AD           | 2.625         | 105                   |         |     |             |   |   |                  |    |    |             |
| 5             |    |     |                  |        |   |     | 1A            | 5             | 110                   |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        |   |     | 1B            | 6             | 85                    |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        |   |     | 1C            | 7             | 94                    |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        |   |     | 1D            | 8             | 63                    |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        |   |     | 1E            | 9             | 83                    |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        |   |     | 2A            | 10            | 68                    |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        |   |     | 2B            | 11            | 83                    |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        |   |     | 2C            | 12            | 59                    |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        |   |     | 2D            | 13            | 59                    |         |     |             |   |   |                  |    |    |             |
|               |    |     |                  |        | Very soft brown & gray clay w/fine sand pockets                           | CH  | 2E            | 14            | 54                    |         |     |             |   |   |                  |    |    |             |
| 15            |    |     |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 20            |    |     |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 25            |    |     |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 30            |    |     |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 35            |    |     |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 40            |    |     |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 45            |    |     |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 50            |    |     |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |

NOTES: Samples were retrieved via vibrocore sampling.



False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348  
Date: 10/28/2013

# LOG . . BORING AND TEST RESULTS

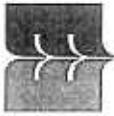
**B-3**

Latitude: 30.60770 Elevation: 15.0  
Longitude: -91.42520 Datum:  
Water Depth: See Text  
Total Depth: 60.0 ft

EUSTIS ENGINEERING

| Scale in Feet | PP   | SPT   | S<br>P<br>L<br>R | Visual Classification   | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |   |     | Atterberg Limits |    |    | Other Tests |
|---------------|------|-------|------------------|---|-----|---------------|---------------|-----------------------|---------|-----|-------------|---|-----|------------------|----|----|-------------|
|               |      |       |                  |   |     |               |               |                       | Dry     | Wet | Type        | φ | C   | LL               | PL | PI |             |
| 0             |      |       |                  | Extremely soft gray clay w/decayed wood & silt lenses               | CH  | 1             | 1             | 55                    | 67      | 105 |             |   |     |                  |    |    |             |
| 5             |      |       |                  |   |     | 2             | 3             | 92                    | 48      | 88  | LC          | - | 42  |                  |    |    |             |
| 10            | 0.50 |       |                  |   |     | 3             | 6             | 85                    | 81      | 96  | OB          | 0 | 38  |                  |    |    |             |
| 15            | 0.50 |       |                  | Very soft gray clay w/trace of silt pockets & trace of decayed wood | CH  | 4             | 9             | 98                    | 46      | 82  | LC          | - | 47  |                  |    |    |             |
| 20            | 0.50 |       |                  | Extremely soft gray clay w/trace of silt pockets                    | CH  | 6             | 12            | 99                    |         |     |             |   |     |                  |    |    |             |
| 25            | 0.50 |       |                  |   |     | 7             | 18            | 108                   |         |     |             |   |     |                  |    |    |             |
| 30            | 0.50 |       |                  | Extremely soft gray & brown clay w/silt pockets                     | CH  | 8             | 23            | 83                    | 51      | 98  | OB          | 0 | 54  |                  |    |    |             |
| 35            |      | 13    | ⊗                | Medium dense gray silty sand w/trace of gravel                      | SM  | 9             | 28            | 64                    | 61      | 100 | LC          | - | 123 |                  |    |    |             |
| 40            |      | 14    | ⊗                | Medium dense gray & brown silty sand w/clay pockets                 | SM  | 10            | 30.5          | 22                    |         |     |             |   |     |                  |    |    |             |
| 45            |      | 18    | ⊗                | Dense gray silty sand w/clay pockets & trace of gravel              | SM  | 11            | 33.5          | 22                    |         |     |             |   |     |                  |    |    |             |
|               |      | 23    | ⊗                |   |     | 12            | 36.5          | 25                    |         |     |             |   |     |                  |    |    |             |
|               |      | 40    | ⊗                |   |     | 13            | 39.5          | 21                    |         |     |             |   |     |                  |    |    |             |
|               |      | 50=1" | ⊗                |   |     | 14            | 43.5          | 21                    |         |     |             |   |     |                  |    |    |             |
| 50            |      |       |                  |   | SM  | 14            | 48.5          | 21                    |         |     |             |   |     |                  |    |    |             |

NOTES:



False River Ecosystem Restoration  
 Phase I  
 South Flats  
 Pointe Coupee Parish, Louisiana  
 Project No: 22348  
 Date: 10/28/2013

LOG OF BORING AND TEST RESULTS

**B-3**

Latitude: 30.60770 Elevation: 15.0  
 Longitude: -91.42520 Datum:  
 Water Depth: See Text  
 Total Depth: 60.0 ft

EUSTIS ENGINEERING

| Scale in Feet | PP | SPT   | S<br>P<br>L<br>R | Symbol | Visual Classification                                | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |        |   | Atterberg Limits |    |    | Other Tests |
|---------------|----|-------|------------------|--------|--|-----|---------------|---------------|-----------------------|---------|-----|-------------|--------|---|------------------|----|----|-------------|
|               |    |       |                  |        |  |     |               |               |                       | Dry     | Wet | Type        | $\phi$ | C | LL               | PL | PI |             |
| 50            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 55            |    | 60-4" | X                |        | Very dense gray & brown silty sand w/trace of gravel | SM  | 15            | 53.5          | 21                    |         |     |             |        |   |                  |    |    |             |
| 60            |    | 50-8" | X                |        |  |     | 16            | 59.5          | 21                    |         |     |             |        |   |                  |    |    |             |
| 65            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 70            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 75            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 80            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 85            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 90            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 95            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 100           |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |

NOTES:





False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348  
Date: 10/21/2013

LOG OF BORING AND TEST RESULTS

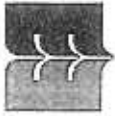
B-4

Latitude: 30.60636 Elevation: 15.0  
Longitude: -91.42536 Datum:  
Water Depth: See Text  
Total Depth: 15.0 ft

EUSTIS ENGINEERING

| Scale in Feet | PP | SPT | S<br>P<br>L<br>R | Symbol | Visual Classification   | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |   |   | Atterberg Limits |    |    | Other Tests |  |
|---------------|----|-----|------------------|--------|---|-----|---------------|---------------|-----------------------|---------|-----|-------------|---|---|------------------|----|----|-------------|--|
|               |    |     |                  |        |   |     |               |               |                       | Dry     | Wet | Type        | φ | C | LL               | PL | PI |             |  |
| 0             |    |     |                  |        |   |     | 1A            | 0             | 103                   |         |     |             |   |   |                  |    |    |             |  |
| 0.3           |    |     |                  |        | Extremely soft to very soft gray clay with decayed wood, silt pockets, traces of shell fragments, & trace of organic matter | CH  | 1B            | 0.3           | 66                    |         |     |             |   |   |                  |    |    |             |  |
| 1.6           |    |     |                  | 1C     |   |     | 1.6           | 87            |                       |         |     |             |   |   |                  |    |    |             |  |
| 2.4           |    |     |                  | 1D     |   |     | 2.4           | 81            |                       |         |     |             |   |   |                  |    |    |             |  |
| 3.2           |    |     |                  | 1E     |   |     | 3.2           | 71            |                       |         |     |             |   |   |                  |    |    |             |  |
| 4             |    |     |                  | 2A     |   |     | 4             | 70            |                       |         |     |             |   |   |                  |    |    |             |  |
| 5             |    |     |                  | 3A     |   |     | 5             | 74            |                       |         |     |             |   |   |                  |    |    |             |  |
| 6             |    |     |                  | 3B     |   |     | 6             | 80            |                       |         |     |             |   |   |                  |    |    |             |  |
| 7             |    |     |                  | 3C     |   |     | 7             | 92            |                       |         |     |             |   |   |                  |    |    |             |  |
| 8             |    |     |                  | 3D     |   |     | 8             | 99            |                       |         |     |             |   |   |                  |    |    |             |  |
| 9             |    |     |                  | 3E     |   |     | 9             | 82            |                       |         |     |             |   |   |                  |    |    |             |  |
| 10            |    |     |                  | 4A     |   |     | 10            | 97            |                       |         |     |             |   |   |                  |    |    |             |  |
| 10.8          |    |     |                  | 4B     |   |     | 10.8          | 89            |                       |         |     |             |   |   |                  |    |    |             |  |
| 11.6          |    |     |                  | 4C     |   |     | 11.6          | 68            |                       |         |     |             |   |   |                  |    |    |             |  |
| 12.4          |    |     |                  | 4D     |   |     | 12.4          | 75            |                       |         |     |             |   |   |                  |    |    |             |  |
| 13.2          |    |     |                  | 4E     | 13.2  | 82  |               |               |                       |         |     |             |   |   |                  |    |    |             |  |
| 14            |    |     |                  | 5      | 14  | 61  |               |               |                       |         |     |             |   |   |                  |    |    |             |  |
| 15            |    |     |                  |        | Medium stiff brown & gray clay w/silt pockets   | CH  |               |               |                       |         |     |             |   |   |                  |    |    |             |  |

NOTES: Samples were retrieved via vibracore sampling.



False River Ecosystem Restoration  
 Phase I  
 South Flats  
 Pointe Coupee Parish, Louisiana  
 Project No: 22348  
 Date: 10/29/2013

# LOG OF BORING AND TEST RESULTS

**B-5**

Latitude: 30.60595 Elevation: 15.0  
 Longitude: -91.42513 Datum:  
 Water Depth: See Text  
 Total Depth: 60.0 ft

EUSTIS ENGINEERING

| Scale in Feet | PP   | SPT   | S<br>L<br>R | Symbol | Visual Classification  | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |   |    | Atterberg Limits |    |    | Other Tests |
|---------------|------|-------|-------------|--------|--|-----|---------------|---------------|-----------------------|---------|-----|-------------|---|----|------------------|----|----|-------------|
|               |      |       |             |        |  |     |               |               |                       | Dry     | Wet | Type        | φ | C  | LL               | PL | PI |             |
| 0             |      |       |             |        |  | CH  | 1             | 0             | 57                    | 60      | 101 | UC          | - | 58 |                  |    |    |             |
| 5             |      |       |             |        | Extremely soft gray & tan clay w/sand pockets & trace of decayed wood            | CH  | 2             | 3             | 63                    | 63      | 102 | OB          | 0 | 33 |                  |    |    |             |
| 10            | 0.25 |       |             |        | Extremely soft gray clay w/organic matter, silt pockets & lenses, & decayed wood |     | 3             | 6             | 86                    | 51      | 95  | UC          | - | 54 |                  |    |    |             |
| 15            | 0.25 |       |             |        |  |     | 4             | 9             | 105                   | 44      | 90  | OB          | 0 | 55 |                  |    |    |             |
| 20            | 0.25 |       |             |        |  |     | 5             | 12            | 108                   | 44      | 91  | UC          | - | 69 |                  |    |    |             |
| 25            | 0.25 | 17    |             |        | Medium dense gray & tan fine sand  | SP  | 6             | 18            | 93                    | 48      | 83  | OB          | 0 | 91 |                  |    |    |             |
| 30            |      | 18    |             |        | Medium dense gray clayey sand  | SC  | 7             | 23            | 91                    | 49      | 84  | UC          | - | 83 |                  |    |    |             |
| 35            |      | 21    |             |        | Medium dense gray & tan silty sand   | SM  | 8             | 25.5          | 21                    |         |     |             |   |    |                  |    |    |             |
| 40            |      | 25    |             |        | Medium dense tan & gray fine sand  | SP  | 9             | 28.5          | 21                    |         |     |             |   |    |                  |    |    |             |
| 45            |      | 32    |             |        | Dense gray & tan silty sand w/some gray clay pockets                             | SM  | 10            | 31.5          | 20                    |         |     |             |   |    |                  |    |    |             |
|               |      | 45    |             |        |  |     | 11            | 34.5          | 22                    |         |     |             |   |    |                  |    |    |             |
|               |      | 50-3" |             |        |  |     | 12            | 37.5          | 27                    |         |     |             |   |    |                  |    |    |             |
|               |      |       |             |        |  |     | 13            | 38.5          | 22                    |         |     |             |   |    |                  |    |    |             |
|               |      |       |             |        |  |     | 14            | 40.5          | 22                    |         |     |             |   |    |                  |    |    |             |
|               |      |       |             |        |  |     |               | 43.5          | 19                    |         |     |             |   |    |                  |    |    |             |
|               |      |       |             |        |  |     |               | 46.5          | 22                    |         |     |             |   |    |                  |    |    |             |
|               |      |       |             |        |  |     |               | 48.5          | 21                    |         |     |             |   |    |                  |    |    |             |

NOTES:



False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348  
Date: 10/29/2013

LOG BORING AND TEST RESULTS

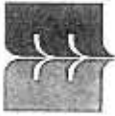
D-5

Latitude: 30.60595 Elevation: 15.0  
Longitude: -91.42513 Datum:  
Water Depth: See Text  
Total Depth: 60.0 ft

EUSTIS ENGINEERING

| Scale in Feet | PP | SPT   | S<br>P<br>L<br>R | Symbol | Visual Classification                                  | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |        |   | Atterberg Limits |    |    | Other Tests |
|---------------|----|-------|------------------|--------|--|-----|---------------|---------------|-----------------------|---------|-----|-------------|--------|---|------------------|----|----|-------------|
|               |    |       |                  |        |  |     |               |               |                       | Dry     | Wet | Type        | $\phi$ | C | LL               | PL | PI |             |
| 50            |    |       |                  |        |  |     |               | 40.5          |                       |         |     |             |        |   |                  |    |    |             |
| 55            |    | 92    | X                |        | Very dense gray & tan silty sand w/some organic matter | SM  | 15            | 53.5          |                       |         |     |             |        |   |                  |    |    |             |
| 60            |    | 50-5' | X                |        | Very dense gray & tan fine sand                        | SP  | 16            | 58.5          |                       |         |     |             |        |   |                  |    |    |             |
| 65            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 70            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 75            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 80            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 85            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 90            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 95            |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 100           |    |       |                  |        |  |     |               |               |                       |         |     |             |        |   |                  |    |    |             |

NOTES:



False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348

EUSTIS ENGINEERING

Date: 10/29/2013

# LOG OF BORING AND TEST RESULTS

## B-6

Latitude: 30.60818 Elevation: 15.0  
Longitude: -91.42415 Datum:  
Water Depth: See Text  
Total Depth: 60.0 ft

| Scale in Feet | PP   | SPT | S<br>P<br>L<br>R | Symbol | Visual Classification              | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |   |     | Atterberg Limits |    |    | Other Tests |
|---------------|------|-----|------------------|--------|------------------------------------|-----|---------------|---------------|-----------------------|---------|-----|-------------|---|-----|------------------|----|----|-------------|
|               |      |     |                  |        |                                    |     |               |               |                       | Dry     | Wet | Type        | φ | C   | LL               | PL | PI |             |
| 0             |      |     |                  |        |                                    |     | 1             | 0             | 63                    | 63      | 102 | CB          | 0 | 98  |                  |    |    |             |
| 5             |      |     |                  |        |                                    |     | 2             | 3             | 60                    | 104     | 104 | UC          | - | 42  |                  |    |    |             |
| 10            | 0.25 |     |                  |        |                                    |     | 3             | 6             | 74                    | 98      | 98  | CB          | 0 | 89  |                  |    |    |             |
| 15            | 0.25 |     |                  |        |                                    |     | 4             | 9             | 101                   | 92      | 92  | UC          | - | 01  |                  |    |    |             |
| 20            | 1.25 |     |                  |        |                                    |     | 5             | 12            | 101                   | 91      | 91  | CB          | 0 | 53  |                  |    |    |             |
| 25            | 0.25 |     |                  |        |                                    |     | 6             | 18            | 88                    | 95      | 95  | UC          | - | 46  |                  |    |    |             |
| 30            |      |     |                  |        |                                    |     | 7             | 23            | 85                    | 95      | 95  | CB          | 0 | 157 |                  |    |    |             |
| 35            |      | 16  |                  |        | Medium dense tan & gray fine sand  | SP  | 8             | 25.5          | 21                    |         |     |             |   |     |                  |    |    |             |
| 40            |      | 16  |                  |        | Medium dense tan & gray silty sand | SM  | 9             | 28.5          | 22                    |         |     |             |   |     |                  |    |    |             |
| 45            |      | 20  |                  |        | Medium dense tan & gray fine sand  | SP  | 10            | 31.5          | 22                    |         |     |             |   |     |                  |    |    |             |
| 50            |      | 20  |                  |        | Medium dense tan & gray fine sand  | SP  | 11            | 34.5          | 23                    |         |     |             |   |     |                  |    |    |             |
|               |      | 23  |                  |        | Medium dense tan & gray silty sand | SM  | 12            | 37.5          | 21                    |         |     |             |   |     |                  |    |    |             |
|               |      | 39  |                  |        | Dense tan & gray silty sand        | SM  | 13            | 38.5          | 22                    |         |     |             |   |     |                  |    |    |             |
|               |      | 40  |                  |        | Dense tan & gray fine sand         | SP  | 14            | 40.5          | 22                    |         |     |             |   |     |                  |    |    |             |
|               |      |     |                  |        |                                    |     |               | 43.5          | 22                    |         |     |             |   |     |                  |    |    |             |
|               |      |     |                  |        |                                    |     |               | 47.5          | 21                    |         |     |             |   |     |                  |    |    |             |
|               |      |     |                  |        |                                    |     |               | 48.5          |                       |         |     |             |   |     |                  |    |    |             |

NOTES:



False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348  
Date: 10/29/2013

LOG BORING AND TEST RESULTS

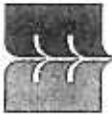
D-6

Latitude: 30.60818 Elevation: 15.0  
Longitude: -91.42415 Datum:  
Water Depth: See Text  
Total Depth: 60.0 ft

EUSTIS ENGINEERING

| Scale in Feet | PP | SPT | S<br>P<br>L<br>R | Symbol | Visual Classification       | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |   |   | Atterberg Limits |    |    | Other Tests |
|---------------|----|-----|------------------|--------|-----------------------------|-----|---------------|---------------|-----------------------|---------|-----|-------------|---|---|------------------|----|----|-------------|
|               |    |     |                  |        |                             |     |               |               |                       | Dry     | Wet | Type        | φ | C | LL               | PL | PI |             |
| 50            |    |     |                  |        |                             |     |               | 50.5          | 20                    |         |     |             |   |   |                  |    |    |             |
| 55            |    | 42  | X                |        | Dense tan & grey silty sand | SM  | 15            | 53.5          |                       |         |     |             |   |   |                  |    |    |             |
| 60            |    | 47  | X                |        | Dense gray fine sand        | SP  | 16            | 50.5          |                       |         |     |             |   |   |                  |    |    |             |
| 65            |    |     |                  |        |                             |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 70            |    |     |                  |        |                             |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 75            |    |     |                  |        |                             |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 80            |    |     |                  |        |                             |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 85            |    |     |                  |        |                             |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 90            |    |     |                  |        |                             |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 95            |    |     |                  |        |                             |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 100           |    |     |                  |        |                             |     |               |               |                       |         |     |             |   |   |                  |    |    |             |

NOTES:



False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348

EUSTIS ENGINEERING

Date: 10/21/2013

# LOG OF BORING AND TEST RESULTS

## B-7

Elevation: 15.0

Latitude: 30.60922

Longitude: -91.42456

Datum: See Text

Water Depth: See Text

Total Depth: 15.0 ft

| Scale in Feet | PP | SPT | S<br>P<br>L<br>R | Symbol | Visual Classification | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |        |   | Atterberg Limits |    |    | Other Tests |
|---------------|----|-----|------------------|--------|-----------------------|-----|---------------|---------------|-----------------------|---------|-----|-------------|--------|---|------------------|----|----|-------------|
|               |    |     |                  |        |                       |     |               |               |                       | Dry     | Wet | Type        | $\phi$ | C | LL               | PL | PI |             |
| 0             |    |     |                  |        |                       |     | 1AA           | 0             | 102                   |         |     |             |        |   |                  |    |    |             |
| 1             |    |     |                  |        |                       |     | 1AB           | 1             | 98                    |         |     |             |        |   |                  |    |    |             |
| 2             |    |     |                  |        |                       |     | 1AC           | 2             | 72                    |         |     |             |        |   |                  |    |    |             |
| 2.5           |    |     |                  |        |                       |     | 1A            | 2.5           | 97                    |         |     |             |        |   |                  |    |    |             |
| 3.75          |    |     |                  |        |                       |     | 1B            | 3.75          | 67                    |         |     |             |        |   |                  |    |    |             |
| 3.5           |    |     |                  |        |                       |     | 2A            | 3.5           | 51                    |         |     |             |        |   |                  |    |    |             |
| 5             |    |     |                  |        |                       |     | 2B            | 5             | 70                    |         |     |             |        |   |                  |    |    |             |
| 6             |    |     |                  |        |                       |     | 2C            | 6             | 74                    |         |     |             |        |   |                  |    |    |             |
| 7             |    |     |                  |        |                       |     | 2D            | 7             | 108                   |         |     |             |        |   |                  |    |    |             |
| 8             |    |     |                  |        |                       |     | 2E            | 8             | 95                    |         |     |             |        |   |                  |    |    |             |
| 9             |    |     |                  |        |                       |     | 3A            | 9             | 100                   |         |     |             |        |   |                  |    |    |             |
| 10            |    |     |                  |        |                       |     | 3B            | 10            | 94                    |         |     |             |        |   |                  |    |    |             |
| 11            |    |     |                  |        |                       |     | 3C            | 11            | 94                    |         |     |             |        |   |                  |    |    |             |
| 12            |    |     |                  |        |                       |     | 4             | 12            | 90                    |         |     |             |        |   |                  |    |    |             |
| 13            |    |     |                  |        |                       |     | 5             | 13            | 81                    |         |     |             |        |   |                  |    |    |             |
| 14            |    |     |                  |        |                       |     |               | 14            |                       |         |     |             |        |   |                  |    |    |             |
| 15            |    |     |                  |        |                       |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 20            |    |     |                  |        |                       |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 25            |    |     |                  |        |                       |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 30            |    |     |                  |        |                       |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 35            |    |     |                  |        |                       |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 40            |    |     |                  |        |                       |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 45            |    |     |                  |        |                       |     |               |               |                       |         |     |             |        |   |                  |    |    |             |
| 50            |    |     |                  |        |                       |     |               |               |                       |         |     |             |        |   |                  |    |    |             |

NOTES: Samples were retrieved via vibrocore sampling.



False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348  
Date: 10/22/2013

# LOG BORING AND TEST RESULTS

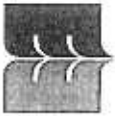
**B-8**

Latitude: 30.60964 Elevation: 15.0  
Longitude: -91.42558 Datum:  
Water Depth: See Text  
Total Depth: 15.0 ft

EUSTIS ENGINEERING

| Scale in Feet | PP | SPT | S<br>P<br>L<br>R | Symbol | Visual Classification  | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |   |   | Atterberg Limits |    |    | Other Tests |
|---------------|----|-----|------------------|--------|--|-----|---------------|---------------|-----------------------|---------|-----|-------------|---|---|------------------|----|----|-------------|
|               |    |     |                  |        |  |     |               |               |                       | Dry     | Wet | Type        | φ | C | LL               | PL | PI |             |
| 0             |    |     |                  |        |  |     | 1AA           | 0             | 109                   |         |     |             |   |   |                  |    |    |             |
| 0.9           |    |     |                  |        | Extremely soft to very soft gray clay w/few silt pockets & trace of decayed wood | CH  | 1AB           | 0.9           | 82                    |         |     |             |   |   |                  |    |    |             |
| 1.8           |    |     |                  |        |  |     | 1AC           | 1.8           | 54                    |         |     |             |   |   |                  |    |    |             |
| 2.7           |    |     |                  |        |  |     | 1AD           | 2.7           | 50                    |         |     |             |   |   |                  |    |    |             |
| 3.6           |    |     |                  |        |  |     | 1AE           | 3.6           | 68                    |         |     |             |   |   |                  |    |    |             |
| 4.5           |    |     |                  |        |  |     | 1A            | 4.5           | 118                   |         |     |             |   |   |                  |    |    |             |
| 4.84          |    |     |                  |        |  |     | 1B            | 4.87          | 76                    |         |     |             |   |   |                  |    |    |             |
| 5             |    |     |                  |        | Extremely soft to very soft gray clay  | CH  | 2A            | 5             | 88                    |         |     |             |   |   |                  |    |    |             |
| 6             |    |     |                  |        |  |     | 3A            | 6             | 91                    |         |     |             |   |   |                  |    |    |             |
| 7             |    |     |                  |        |  |     | 3C            | 7             | 59                    |         |     |             |   |   |                  |    |    |             |
| 8             |    |     |                  |        |  |     | 3D            | 8             | 57                    |         |     |             |   |   |                  |    |    |             |
| 9             |    |     |                  |        |  |     | 3E            | 9             | 73                    |         |     |             |   |   |                  |    |    |             |
| 10            |    |     |                  |        |  |     | 4A            | 10            | 101                   |         |     |             |   |   |                  |    |    |             |
| 11            |    |     |                  |        |  |     | 4B            | 11            | 93                    |         |     |             |   |   |                  |    |    |             |
| 12            |    |     |                  |        |  |     | 4C            | 12            | 86                    |         |     |             |   |   |                  |    |    |             |
| 13            |    |     |                  |        |  |     | 4D            | 13            | 97                    |         |     |             |   |   |                  |    |    |             |
| 14            |    |     |                  |        |  |     | 4E            | 14            | 85                    |         |     |             |   |   |                  |    |    |             |
| 15            |    |     |                  |        |  |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 20            |    |     |                  |        |  |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 25            |    |     |                  |        |  |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 30            |    |     |                  |        |  |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 35            |    |     |                  |        |  |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 40            |    |     |                  |        |  |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 45            |    |     |                  |        |  |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 50            |    |     |                  |        |  |     |               |               |                       |         |     |             |   |   |                  |    |    |             |

NOTES: Samples were retrieved via vibracore sampling.



False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348  
Date: 10/30/2013

# LOG OF BORING AND TEST RESULTS

**B-9**

Latitude: 30.60942 Elevation: 14.5  
Longitude: -91.42667 Datum:  
Water Depth: See Text  
Total Depth: 60.0 ft

EUSTIS ENGINEERING

| Scale in Feet | PP   | SPT | S<br>P<br>L<br>R | Symbol | Visual Classification   | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |   |    | Atterberg Limits |    |    | Other Tests |
|---------------|------|-----|------------------|--------|---|-----|---------------|---------------|-----------------------|---------|-----|-------------|---|----|------------------|----|----|-------------|
|               |      |     |                  |        |   |     |               |               |                       | Dry     | Wet | Type        | φ | C  | LL               | PL | PI |             |
| 0             |      |     |                  |        | Extremely soft gray clay w/organic matter & few silt pockets                  | CH  | 1             | 0             | 94                    | 48      | 93  | OB          | 0 | 34 |                  |    |    |             |
| 5             |      |     |                  |        | Extremely soft gray & brown clay w/few silt lenses & trace of shell fragments | CH  | 2             | 3             | 63                    | 60      | 100 | UC          | - | 48 |                  |    |    |             |
| 10            | 0.25 |     |                  |        | Extremely soft gray clay w/trace of silt pockets                              | CH  | 3             | 6             | 70                    | 59      | 100 | OB          | 0 | 60 |                  |    |    |             |
| 15            | 0.25 |     |                  |        | Extremely soft gray & brown clay w/organic matter & few silt lenses           | CH  | 4             | 9             | 74                    | 56      | 99  | UC          | - | 41 |                  |    |    |             |
| 20            | 0.25 |     |                  |        | Extremely soft gray clay w/organic matter & trace of silt pockets             | CH  | 5             | 12            | 97                    | 47      | 92  | OB          | 0 | 52 |                  |    |    |             |
| 25            | 0.25 |     |                  |        | Medium dense gray & tan silty sand w/clay pockets & organic matter            | SM  | 6             | 18            | 99                    | 46      | 92  | UC          | - | 71 |                  |    |    |             |
| 30            |      | 15  |                  |        | Medium dense gray fine sand   | SP  | 7             | 23            | 88                    | 51      | 95  | OB          | 0 | 52 |                  |    |    |             |
| 35            |      | 18  |                  |        | Dense gray silty sand w/clay pockets  | SM  | 8             | 25.5          | 20                    |         |     |             |   |    |                  |    |    |             |
| 40            |      | 22  |                  |        | Dense gray & tan silty sand w/clay pockets & trace of gravel                  | SM  | 9             | 28.5          | 19                    |         |     |             |   |    |                  |    |    |             |
| 45            |      | 34  |                  |        | Dense gray & tan fine sand  | SP  | 10            | 31.5          | 19                    |         |     |             |   |    |                  |    |    |             |
| 50            |      | 36  |                  |        |   |     | 11            | 34.5          | 21                    |         |     |             |   |    |                  |    |    |             |
|               |      | 40  |                  |        |   |     | 12            | 37.5          | 20                    |         |     |             |   |    |                  |    |    |             |
|               |      | 40  |                  |        |   |     | 13            | 38.5          | 22                    |         |     |             |   |    |                  |    |    |             |
|               |      | 40  |                  |        |   |     | 14            | 40.5          | 20                    |         |     |             |   |    |                  |    |    |             |
|               |      | 40  |                  |        |   |     | 13            | 43.5          | 20                    |         |     |             |   |    |                  |    |    |             |
|               |      | 40  |                  |        |   |     | 14            | 46.5          | 23                    |         |     |             |   |    |                  |    |    |             |
|               |      | 63  |                  |        |   |     | 14            | 48.5          | 20                    |         |     |             |   |    |                  |    |    |             |

NOTES:





False River Ecosystem Restoration  
Phase I  
South Flats  
Pointe Coupee Parish, Louisiana  
Project No: 22348

EUSTIS ENGINEERING

Date: 10/30/2013

LOG BORING AND TEST RESULTS

B-9

Elevation: 14.5

Latitude: 30.60942

Longitude: -91.42667

Datum:

Water Depth: See Text

Total Depth: 60.0 ft

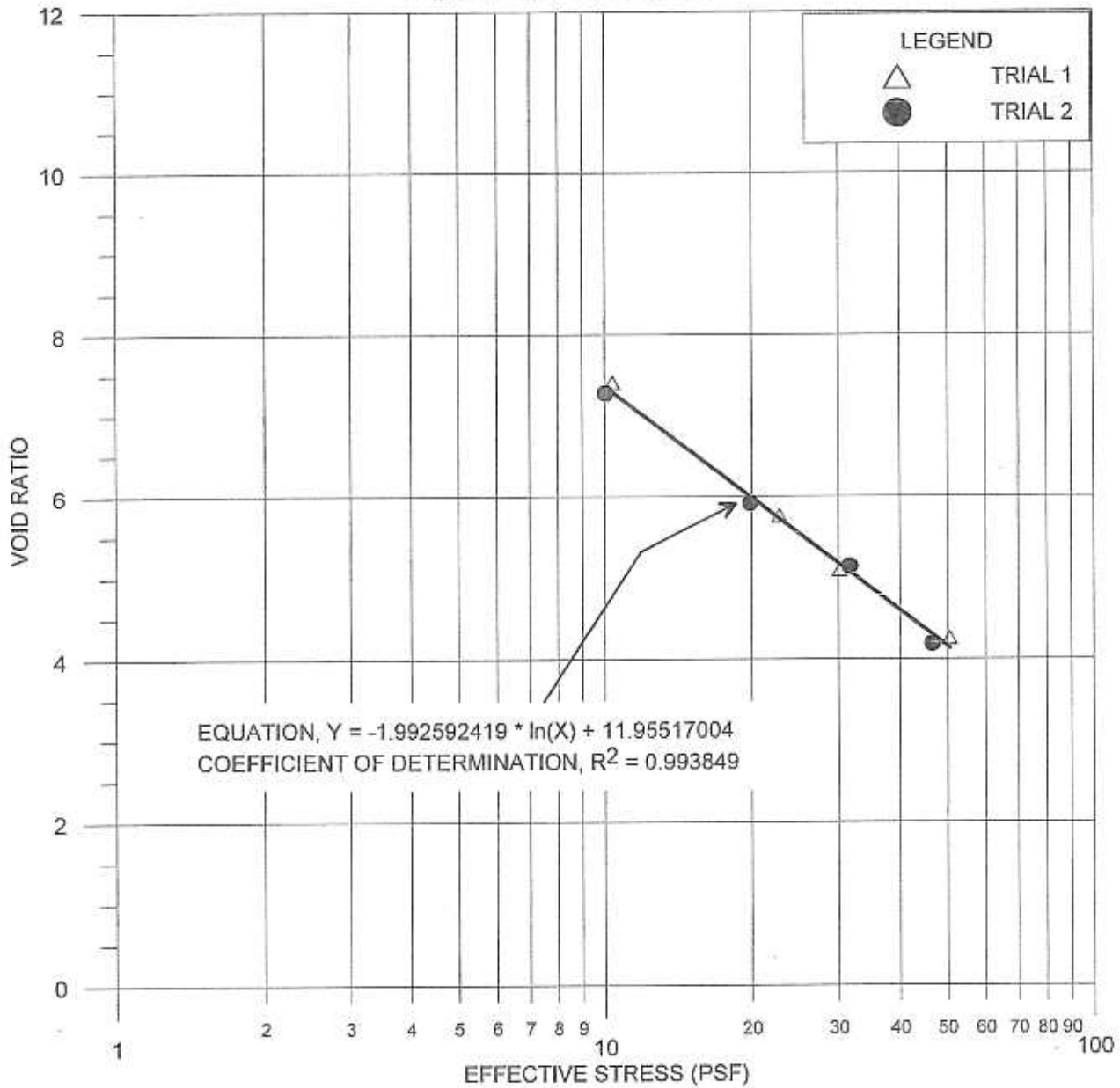
| Scale in Feet | PP | SPT  | S<br>P<br>L<br>K | Symbol | Visual Classification   | USC | Sample Number | Depth in Feet | Water Content Percent | Density |     | Shear Tests |   |   | Atterberg Limits |    |    | Other Tests |
|---------------|----|------|------------------|--------|---|-----|---------------|---------------|-----------------------|---------|-----|-------------|---|---|------------------|----|----|-------------|
|               |    |      |                  |        |   |     |               |               |                       | Dry     | Wet | Type        | φ | C | LL               | PL | PI |             |
| 50            |    |      |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 55            |    | 52   |                  |        | Very dense gray silty sand w/ clay pockets & traces of gravel | SM  | 15            | 53.5          |                       |         |     |             |   |   |                  |    |    |             |
| 60            |    | 50-# |                  |        | Very dense gray & tan fine sand                               | SP  | 16            | 60.5          |                       |         |     |             |   |   |                  |    |    |             |
| 65            |    |      |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 70            |    |      |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 75            |    |      |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 80            |    |      |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 85            |    |      |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 90            |    |      |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 95            |    |      |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |
| 100           |    |      |                  |        |   |     |               |               |                       |         |     |             |   |   |                  |    |    |             |

NOTES:

**APPENDIX II**  
**SELF WEIGHT CONSOLIDATION TEST RESULTS**

SELF-WEIGHT CONSOLIDATION TEST RESULTS  
VOID RATIO VS. EFFECTIVE STRESS

SC-1, TRIAL 1 AND TRIAL 2



**NOTE:**

\*) THE SELF-WEIGHT CONSOLIDATION TEST WAS PERFORMED IN A COMPOSITE SAMPLE OBTAINED FROM THE PROPOSED ISLAND TERRACE LOCATION.



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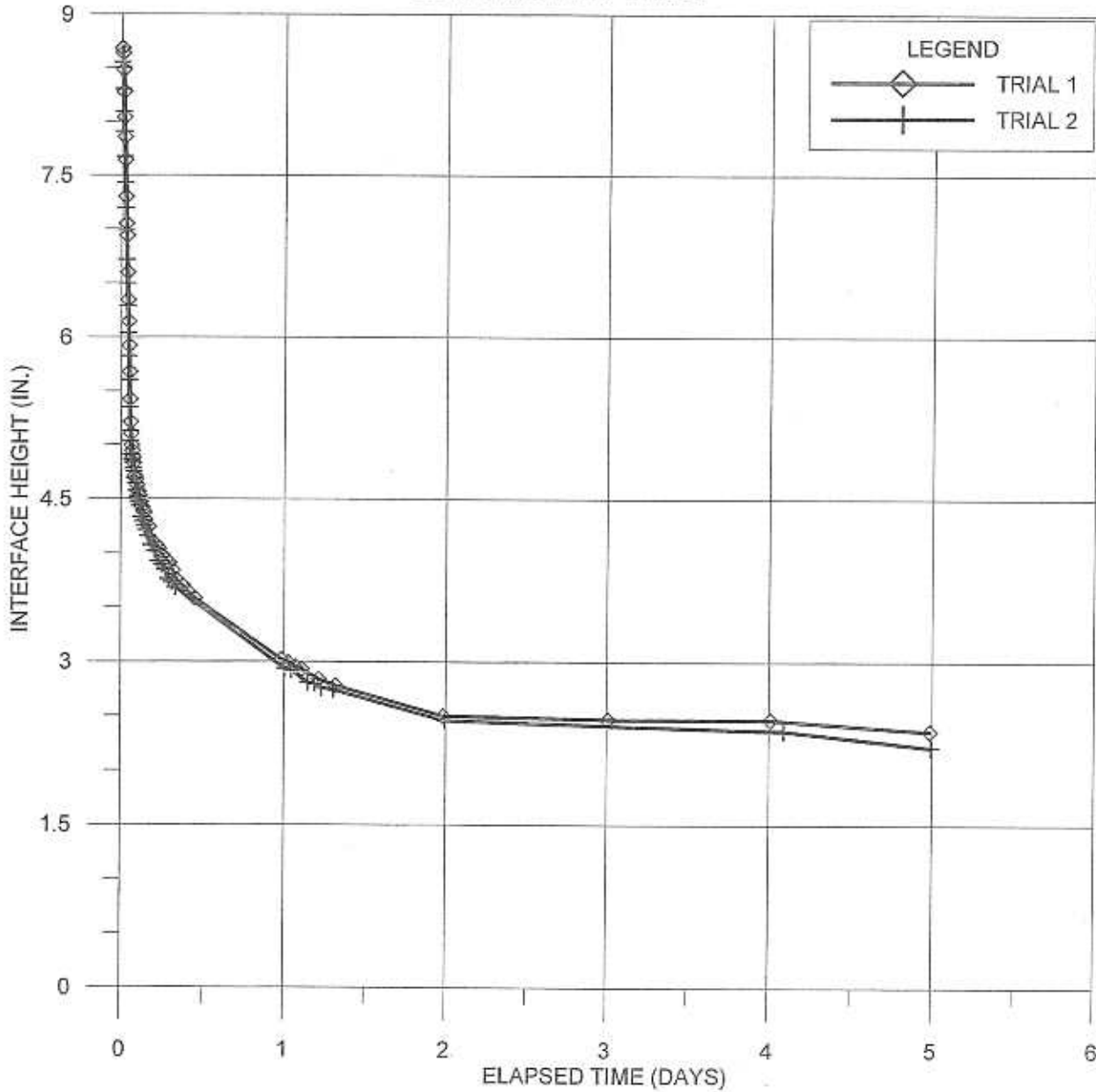
SELF-WEIGHT CONSOLIDATION TEST RESULTS  
 VOID RATIO VS. EFFECTIVE STRESS

FALSE RIVER ECOSYSTEM RESTORATION  
 PHASE I, SOUTH FLATS  
 POINTE COUPEE PARISH, LOUISIANA

|                    |                 |   |
|--------------------|-----------------|---|
| DRAWN BY: J.F.M.   | 4 FEBRUARY 2014 | FILE: VOID RATIO VS. EFFECTIVE STRESS.GRP |
| CHECKED BY: J.J.H. | JOB NO.: 22348  | APPENDIX II                               |

SELF-WEIGHT CONSOLIDATION TEST RESULTS  
INTERFACE HEIGHT VS. ELAPSED TIME

SC-1, TRIAL 1 AND TRIAL 2



**NOTE:**

1) THE SELF-WEIGHT CONSOLIDATION TEST WAS PERFORMED ON A COMPOSITE SAMPLE OBTAINED FROM THE PROPOSED ISLAND TERRACE LOCATION.



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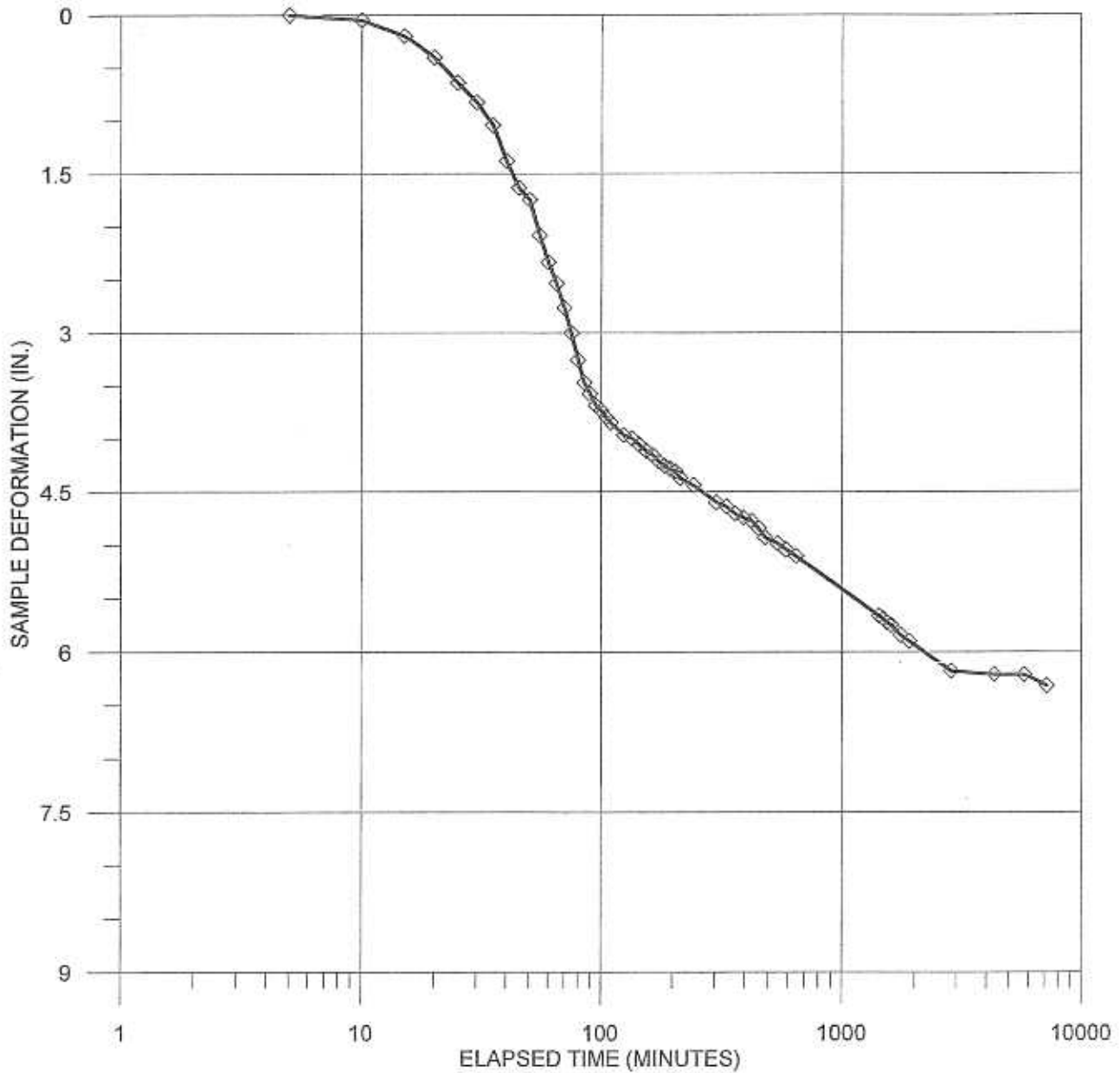
SELF-WEIGHT CONSOLIDATION TEST RESULTS  
SETTLEMENT WITH TIME

FALSE RIVER ECOSYSTEM RESTORATION  
PHASE I, SOUTH FLATS  
POINTE COUPEE PARISH, LOUISIANA

|                    |                 |                            |
|--------------------|-----------------|----------------------------|
| DRAWN BY: J.F.M.   | 4 FEBRUARY 2014 | FILE: SETTLEMENT CURVE.GRF |
| CHECKED BY: J.J.H. | JOB NO.: 22348  | APPENDIX II                |

SELF-WEIGHT CONSOLIDATION TEST RESULTS  
DEFORMATION VS. LOG TIME

SC-1, TRIAL 1



**NOTE:**

1) THE SELF-WEIGHT CONSOLIDATION TEST WAS PERFORMED IN A COMPOSITE SAMPLE OBTAINED FROM THE PROPOSED ISLAND TERRACE LOCATION.



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SELF-WEIGHT CONSOLIDATION TEST RESULTS  
DEFORMATION WITH TIME

FALSE RIVER ECOSYSTEM RESTORATION  
PHASE I, SOUTH FLATS  
POINTE COUPEE PARISH, LOUISIANA

|                    |                 |   |
|--------------------|-----------------|---|
| DRAWN BY: J.F.M.   | 4 FEBRUARY 2014 | FILE: SC-1-1 DEFORMATION VS. LOG TIME.GRF |
| CHECKED BY: J.J.H. | JOB NO.: 22348  | APPENDIX II                               |

Self-Weight Consolidation Test Results

|                 |             |             |           |
|-----------------|-------------|-------------|-----------|
| EEE Project No. | 22348       | Sample No.  | SC-1      |
| Location        | False River | Trial No.   | 1         |
| Start Date      | 1/16/2014   | End Date    | 1/21/2014 |
| Analyzed By:    | J.F.M.      | Checked By: | J.J.H.    |

|                           |         |                        |         |
|---------------------------|---------|------------------------|---------|
| Ht. of Soil + Water (in.) | 8.27325 | Soil Column Ht. (in.)  | 2.3675  |
| Temperature (°C)          | 21.3    | Water Thickness (in.)  | 5.90575 |
| Specific Gravity          | 2.604   | Density of Water (pcf) | 62.30   |
| Salinity (ppt)            | ND      | Percent Fines (%)      | 98.50   |

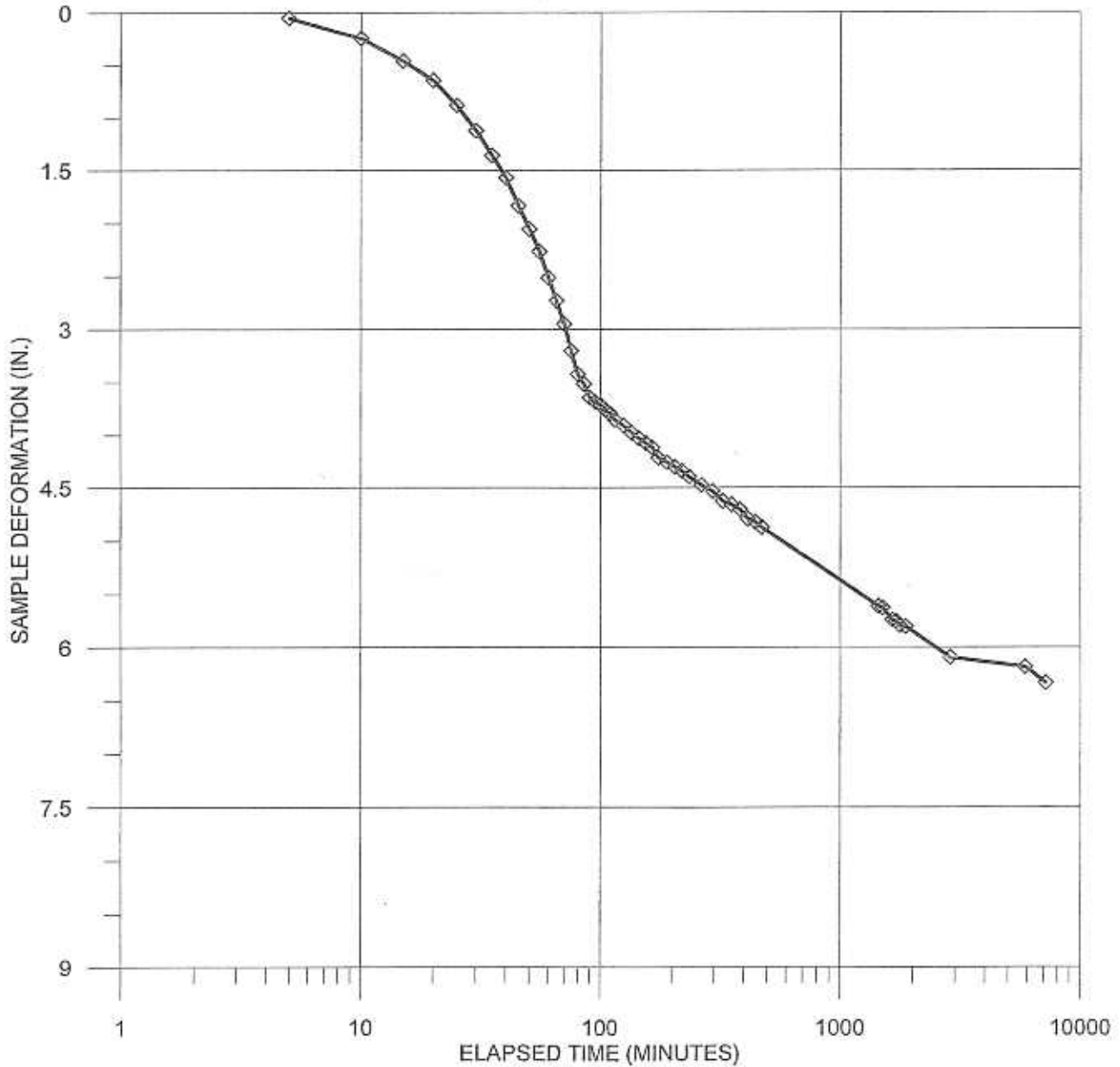
| Disc No. | Cum. Soil Thickness (in.) | Cum. Water Thickness (in.) | Sample Volume, V (in <sup>3</sup> ) | Weight of Solids, Ws (lb) | Weight of Water, Ww (lb) | Moisture Content, w (%) | Unit Weight, Y (pcf) | Dry Unit Weight, Yd (pcf) | Volume of Solids, Vs (cu. in.) | Volume of Water, Vw (cu. in.) | Volume of Air, Va (cu. in.) | Volume of Voids, Vv (cu. in.) | Void Ratio, e | Porosity, n (%) | Degree of Saturation, S (%) | Total Stress, σ (psf) | Effective Stress, σ' (psf) |
|----------|---------------------------|----------------------------|-------------------------------------|---------------------------|--------------------------|-------------------------|----------------------|---------------------------|--------------------------------|-------------------------------|-----------------------------|-------------------------------|---------------|-----------------|-----------------------------|-----------------------|----------------------------|
| 1 (TOP)  | 0                         | 0                          | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 2        | 0                         | 0.32785                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 3        | 0                         | 0.82245                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 4        | 0                         | 1.31995                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 5        | 0                         | 1.81725                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 6        | 0                         | 2.31505                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 7        | 0                         | 2.81335                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 8        | 0                         | 3.31085                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 9        | 0                         | 3.80485                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 10       | 0                         | 4.30075                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 11       | 0                         | 4.79705                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 12       | 0                         | 5.29265                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 13       | 0                         | 5.79045                    | -                                   | -                         | -                        | -                       | -                    | -                         | -                              | -                             | -                           | -                             | -             | -               | -                           | -                     | -                          |
| 14       | 0.3792                    | 5.90575                    | 10.7134                             | 31.41                     | 110.36                   | 351.35                  | 50.41                | 0.14                      | 0.72                           | 6.75                          | 3.24                        | 9.99                          | 13.66         | 93.27           | 67.54                       | 367.04                | 0.00                       |
| 15       | 0.8743                    | -                          | 13.9860                             | 72.41                     | 199.86                   | 276.01                  | 74.46                | 0.27                      | 1.86                           | 12.22                         | 0.10                        | 12.32                         | 7.41          | 88.12           | 59.17                       | 452.76                | 10.37                      |
| 16       | 1.3721                    | -                          | 14.0809                             | 90.66                     | 200.59                   | 221.26                  | 78.91                | 0.36                      | 2.08                           | 12.27                         | -0.29                       | 11.98                         | 5.76          | 85.20           | 102.39                      | 476.19                | 22.79                      |
| 17       | 1.8701                    | -                          | 14.0889                             | 100.51                    | 199.23                   | 169.27                  | 78.46                | 0.41                      | 2.31                           | 11.57                         | 0.19                        | 11.76                         | 5.10          | 83.60           | 98.38                       | 514.64                | 30.22                      |
| 18       | 2.3675                    | -                          | 14.0529                             | 116.44                    | 192.20                   | 165.06                  | 63.67                | 0.50                      | 2.67                           | 11.75                         | -0.37                       | 11.38                         | 4.26          | 80.96           | 103.28                      | 566.01                | 50.59                      |

Notes:

- 1) Cumulative soil and water thicknesses are measured from the top of disc 1 to the bottom of each disc
- 2) Sample volumes are calculated from pre-measured disc dimensions
- 3) Stresses are measured at the bottom of each disc

SELF-WEIGHT CONSOLIDATION TEST RESULTS  
DEFORMATION VS. LOG TIME

SC-1, TRIAL 2



**NOTE:**

THE SELF-WEIGHT CONSOLIDATION TEST WAS PERFORMED  
A COMPOSITE SAMPLE OBTAINED FROM THE PROPOSED  
ISLAND TERRACE LOCATION.



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SELF-WEIGHT CONSOLIDATION TEST RESULTS  
SETTLEMENT WITH TIME

FALSE RIVER ECOSYSTEM RESTORATION  
PHASE I, SOUTH FLATS  
POINTE COUPEE PARISH, LOUISIANA

|                    |                 |   |
|--------------------|-----------------|---|
| DRAWN BY: J.F.M.   | 4 FEBRUARY 2014 | FILE: SSC-1-2 DEFORMATION WITH TIME.GIF |
| CHECKED BY: J.J.H. | JOB NO.: 22348  | APPENDIX II                             |

Self-Weight Consolidation Test Results

|                |             |             |           |
|----------------|-------------|-------------|-----------|
| EE Project No. | 22348       | Sample No.  | SC-1      |
| Location       | FALSE RIVER | Trial No.   | 2         |
| Start Date     | 1/22/2014   | End Date    | 1/27/2014 |
| Analyzed By:   | J.F.M.      | Checked By: | J.J.H.    |

| Disc No. | Cum. Soil Thickness (in.) | Cum. Water Thickness (in.) | Sample Volume, V (in <sup>3</sup> ) | Weight of Solids, Ws (g) | Weight of Water, Ww (g) | Mixture Content, w (%) | Unit Weight, γ (pcf) | Dry Unit Weight, γd (pcf) | Volume of Solids, Vs (cu. in.) | Volume of Water, Vw (cu. in.) | Volume of Air, Va (cu. in.) | Volume of Voids, Vv (cu. in.) | Void Ratio, e | Porosity n (%) | Degree of Saturation, S (%) | Total Stress, σ (psf) | Effective Stress, σ' (psf) |
|----------|---------------------------|----------------------------|-------------------------------------|--------------------------|-------------------------|------------------------|----------------------|---------------------------|--------------------------------|-------------------------------|-----------------------------|-------------------------------|---------------|----------------|-----------------------------|-----------------------|----------------------------|
| 1 (TOP)  | 0                         | 0                          | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 2        | 0                         | 0.3611                     | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 3        | 0                         | 0.8557                     | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 4        | 0                         | 1.3532                     | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 5        | 0                         | 1.8505                     | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 6        | 0                         | 2.3483                     | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 7        | 0                         | 2.8466                     | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 8        | 0                         | 3.3441                     | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 9        | 0                         | 3.8381                     | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 10       | 0                         | 4.334                      | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 11       | 0                         | 4.8303                     | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 12       | 0                         | 5.3259                     | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 13       | 0                         | 5.8237                     | -                                   | -                        | -                       | -                      | -                    | -                         | -                              | -                             | -                           | -                             | -             | -              | -                           | -                     | -                          |
| 14       | 0.3087                    | 6.0095                     | 6,1900                              | 28.15                    | 67.98                   | 241.48                 | 70.66                | 0.29                      | 0.65                           | 4.16                          | 0.39                        | 4.54                          | 7.03          | 87.65          | 81.51                       | 398.08                | 2.85                       |
| 15       | 0.8036                    | -                          | 13.9850                             | 73.57                    | 206.96                  | 275.15                 | 74.78                | 0.27                      | 1.89                           | 12.29                         | 0.01                        | 12.30                         | 7.28          | 87.92          | 89.98                       | 434.40                | 10.04                      |
| 16       | 1.3016                    | -                          | 14.0809                             | 88.51                    | 197.67                  | 225.33                 | 77.54                | 0.35                      | 2.03                           | 12.09                         | -0.06                       | 12.03                         | 5.92          | 86.55          | 100.51                      | 475.22                | 19.85                      |
| 17       | 1.7996                    | -                          | 14.0689                             | 99.81                    | 195.11                  | 195.48                 | 79.86                | 0.41                      | 2.29                           | 11.93                         | -0.16                       | 11.78                         | 5.14          | 83.71          | 101.33                      | 518.01                | 31.83                      |
| 18       | 2.297                     | -                          | 14.0529                             | 117.97                   | 198.58                  | 158.16                 | 82.66                | 0.52                      | 2.71                           | 11.41                         | -0.07                       | 11.34                         | 4.19          | 80.73          | 100.90                      | 563.94                | 46.57                      |

Notes:

- 1) Cumulative soil and water thicknesses are measured from the top of disc 1 to the bottom of each disc
- 2) Sample volumes are calculated from pre-measured disc dimensions
- 3) Stresses are measured at the bottom of each disc



**APPENDIX III**  
**SETTLING COLUMN TEST RESULTS**



# SETTLING COLUMN DATA SHEET

**Project ID:** False River Ecosystem Restoration      **Date:** 1/31/2014  
Eustis Engineering Project No. 22348  
**Analyst:** J. MERRITT      **Initial Conc:** 106.5 g/L  
**Salinity:** ND ppt      **Specific Gravity:** 2.664

| Date      | Time  | Elapsed Time Minutes | Surface Water Height | Solids Interface Height | TSS & Turb Sample Numbers | Ports Sampled/ Type of Analysis |
|-----------|-------|----------------------|----------------------|-------------------------|---------------------------|---------------------------------|
| 1/16/2014 | 10:35 | 150                  | 6.43                 | 6.09                    |                           |                                 |
| 1/16/2014 | 10:40 | 155                  | 6.43                 | 6.07                    |                           |                                 |
| 1/16/2014 | 10:45 | 160                  | 6.43                 | 6.06                    |                           |                                 |
| 1/16/2014 | 10:50 | 165                  | 6.43                 | 6.05                    |                           |                                 |
| 1/16/2014 | 10:55 | 170                  | 6.43                 | 6.03                    |                           |                                 |
| 1/16/2014 | 11:00 | 175                  | 6.43                 | 6.02                    |                           |                                 |
| 1/16/2014 | 11:05 | 180                  | 6.43                 | 6.01                    |                           |                                 |
| 1/16/2014 | 11:10 | 185                  | 6.43                 | 5.99                    |                           |                                 |
| 1/16/2014 | 11:15 | 190                  | 6.43                 | 5.98                    |                           |                                 |
| 1/16/2014 | 11:20 | 195                  | 6.43                 | 5.97                    |                           |                                 |
| 1/16/2014 | 11:25 | 200                  | 6.43                 | 5.95                    |                           |                                 |
| 1/16/2014 | 11:30 | 205                  | 6.43                 | 5.94                    |                           |                                 |
| 1/16/2014 | 11:35 | 210                  | 6.43                 | 5.93                    |                           |                                 |
| 1/16/2014 | 11:40 | 215                  | 6.43                 | 5.91                    |                           |                                 |
| 1/16/2014 | 11:45 | 220                  | 6.43                 | 5.9                     |                           |                                 |
| 1/16/2014 | 11:50 | 225                  | 6.43                 | 5.89                    |                           |                                 |
| 1/16/2014 | 11:55 | 230                  | 6.43                 | 5.88                    |                           |                                 |
| 1/16/2014 | 12:00 | 235                  | 6.43                 | 5.86                    |                           |                                 |
| 1/16/2014 | 12:05 | 240                  | 6.43                 | 5.85                    |                           |                                 |
| 1/16/2014 | 12:10 | 245                  | 6.43                 | 5.84                    |                           |                                 |
| 1/16/2014 | 12:15 | 250                  | 6.43                 | 5.83                    |                           |                                 |
| 1/16/2014 | 12:20 | 255                  | 6.43                 | 5.81                    |                           |                                 |
| 1/16/2014 | 12:25 | 260                  | 6.43                 | 5.8                     |                           |                                 |
| 1/16/2014 | 12:30 | 265                  | 6.43                 | 5.79                    |                           |                                 |
| 1/16/2014 | 12:35 | 270                  | 6.43                 | 5.77                    |                           |                                 |
| 1/16/2014 | 12:40 | 275                  | 6.43                 | 5.76                    |                           |                                 |
| 1/16/2014 | 12:45 | 280                  | 6.43                 | 5.74                    |                           |                                 |
| 1/16/2014 | 12:50 | 285                  | 6.43                 | 5.72                    | #1                        | 6' Port - TSS & Turbidity       |
| 1/16/2014 | 13:00 | 295                  | 6.41                 | 5.7                     |                           | After Sampling                  |
| 1/16/2014 | 13:15 | 310                  | 6.41                 | 5.66                    |                           |                                 |



# SETTLING COLUMN DATA SHEET

**Project ID:** False River Ecosystem Restoration      **Date:** 1/31/2014  
Eustis Engineering Project No. 22348  
**Analyst:** J. MERRITT      **Initial Conc:** 106.5 g/L  
**Salinity:** ND ppt      **Specific Gravity:** 2.664

| Date      | Time  | Elapsed Time Minutes | Surface Water Height | Solids Interface Height | TSS & Turb Sample Numbers | Ports Sampled/ Type of Analysis |
|-----------|-------|----------------------|----------------------|-------------------------|---------------------------|---------------------------------|
| 1/17/2014 | 9:05  | 1500                 | 6.22                 | 2.82                    |                           |                                 |
| 1/17/2014 | 10:05 | 1560                 | 6.22                 | 2.80                    |                           |                                 |
| 1/17/2014 | 11:05 | 1620                 | 6.22                 | 2.78                    |                           |                                 |
| 1/17/2014 | 12:05 | 1680                 | 6.22                 | 2.76                    |                           |                                 |
| 1/17/2014 | 13:05 | 1740                 | 6.22                 | 2.74                    |                           |                                 |
| 1/17/2014 | 14:05 | 1800                 | 6.22                 | 2.72                    |                           |                                 |
| 1/17/2014 | 15:05 | 1860                 | 6.22                 | 2.71                    |                           |                                 |
| 1/17/2014 | 16:05 | 1920                 | 6.22                 | 2.69                    |                           |                                 |
| 1/17/2014 | 17:05 | 1980                 | 6.22                 | 2.67                    |                           |                                 |
| 1/18/2014 | 8:05  | 2880                 | 6.22                 | 2.52                    | #13                       | 6' Port - TSS & Turbidity       |
| 1/18/2014 | 8:10  | 2885                 | 6.20                 | 2.52                    | #14                       | 5.5' Port - TSS & Turbidity     |
| 1/18/2014 | 8:15  | 2890                 | 6.18                 | 2.52                    | #15                       | 5' Port - TSS & Turbidity       |
| 1/18/2014 | 8:20  | 2895                 | 6.16                 | 2.52                    | #16                       | 4.5' Port - TSS & Turbidity     |
| 1/18/2014 | 8:25  | 2900                 | 6.14                 | 2.52                    | #17                       | 4' Port - TSS & Turbidity       |
| 1/18/2014 | 8:30  | 2905                 | 6.12                 | 2.52                    | #18                       | 3.5' Port - TSS & Turbidity     |
| 1/18/2014 | 8:35  | 2910                 | 6.10                 | 2.52                    | #19                       | 3' Port - TSS & Turbidity       |
| 1/19/2014 | 8:05  | 4320                 | 6.10                 | 2.36                    | #20                       | 6' Port - TSS & Turbidity       |
| 1/19/2014 | 8:10  | 4325                 | 6.09                 | 2.36                    | #21                       | 5.5' Port - TSS & Turbidity     |
| 1/19/2014 | 8:15  | 4330                 | 6.07                 | 2.36                    | #22                       | 5' Port - TSS & Turbidity       |
| 1/19/2014 | 8:20  | 4335                 | 6.04                 | 2.36                    | #23                       | 4.5' Port - TSS & Turbidity     |
| 1/19/2014 | 8:25  | 4340                 | 6.03                 | 2.36                    | #24                       | 4' Port - TSS & Turbidity       |
| 1/19/2014 | 8:30  | 4345                 | 6.01                 | 2.36                    | #25                       | 3.5' Port - TSS & Turbidity     |
| 1/19/2014 | 8:35  | 4350                 | 6.00                 | 2.36                    | #26                       | 3' Port - TSS & Turbidity       |
| 1/19/2014 | 8:40  | 4355                 | 5.99                 | 2.36                    |                           | After Sampling                  |
| 1/20/2014 | 8:05  | 5760                 | 5.98                 | 2.25                    | #27                       | 6' Port - TSS & Turbidity       |
| 1/20/2014 | 8:10  | 5765                 | 5.98                 | 2.25                    | #28                       | 5.5' Port - TSS & Turbidity     |
| 1/20/2014 | 8:15  | 5770                 | 5.97                 | 2.25                    | #29                       | 5' Port - TSS & Turbidity       |
| 1/20/2014 | 8:20  | 5775                 | 5.97                 | 2.25                    | #30                       | 4.5' Port - TSS & Turbidity     |
| 1/20/2014 | 8:25  | 5780                 | 5.94                 | 2.25                    | #31                       | 4' Port - TSS & Turbidity       |
| 1/20/2014 | 8:30  | 5785                 | 5.92                 | 2.25                    | #32                       | 3.5' Port - TSS & Turbidity     |





## SETTLING COLUMN DATA SHEET

**Project ID:** False River Ecosystem Restoration **Date:** 1/31/2014  
Eustis Engineering Project No. 22348  
**Analyst:** J. MERRITT **Initial Conc:** 106.5 g/L  
**Salinity:** ND ppt **Specific Gravity:** 2.664

| Date      | Time | Elapsed Time Minutes | Surface Water Height | Solids Interface Height | TSS & Turb Sample Numbers | Ports Sampled/ Type of Analysis |
|-----------|------|----------------------|----------------------|-------------------------|---------------------------|---------------------------------|
| 1/30/2014 | 8:00 | 20155                | 5.45                 | 1.73                    |                           |                                 |
| 1/31/2014 | 8:00 | 21595                | 5.44                 | 1.70                    | #56                       | 5' Port - TSS & Turbidity       |
| 1/31/2014 | 8:04 | 21599                | 5.42                 | 1.70                    | #57                       | 4.5' Port - TSS & Turbidity     |
| 1/31/2014 | 8:08 | 21603                | 5.39                 | 1.70                    | #58                       | 4' Port - TSS & Turbidity       |
| 1/31/2014 | 8:14 | 21609                | 5.36                 | 1.70                    | #59                       | 3.5' Port - TSS & Turbidity     |
| 1/31/2014 | 8:24 | 21619                | 5.34                 | 1.70                    | #60                       | 3' Port - TSS & Turbidity       |
| 1/31/2014 | 8:28 | 21623                | 5.32                 | 1.70                    | #61                       | 2.5' Port - TSS & Turbidity     |
| 1/31/2014 | 8:34 | 21629                | 5.30                 | 1.70                    | #62                       | 2' Port - TSS & Turbidity       |

# TOTAL SUSPENDED SOLIDS REPORT SHEET

Project ID: False River Ecosystem Restoration (EE Project No. 22340)

Sample Test Dates: \_\_\_\_\_

Analyst: J. Merritt

|                             |               |               |               |                 |               |               |                 |               |                 |                |
|-----------------------------|---------------|---------------|---------------|-----------------|---------------|---------------|-----------------|---------------|-----------------|----------------|
| Sample ID and Ports Sampled | #1<br>5' Port | #2<br>5' Port | #3<br>6' Port | #4<br>5.5' Port | #5<br>6' Port | #6<br>6' Port | #7<br>5.5' Port | #8<br>5' Port | #9<br>4.5' Port | #10<br>4' Port |
| TSS in mg/L                 | 105           | 58            | 42.5          | 87.5            | 160           | 21.5          | 41              | 87            | 47.5            | 45.5           |
| Turbidity (NTU)             | 134.0         | 301.0         | 75.7          | 83.7            | 131.0         | 41.9          | 71.5            | 64.9          | 89.1            | 70.4           |

|                             |                  |                |                |                  |                |                  |                |                  |                |                |
|-----------------------------|------------------|----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
| Sample ID and Ports Sampled | #11<br>3.0' Port | #12<br>3' Port | #13<br>6' Port | #14<br>5.5' Port | #15<br>6' Port | #16<br>4.5' Port | #17<br>4' Port | #18<br>3.5' Port | #19<br>3' Port | #20<br>2' Port |
| TSS in mg/L                 | 103              | 132            | 26             | 31.5             | 60             | 91               | 34.9           | 40.5             | 30.5           | 17.5           |
| Turbidity (NTU)             | 97.2             | 125.0          | 45.5           | 49.3             | 107.6          | 68.2             | 59.5           | 50.5             | 50.4           | 37.3           |

|                             |                  |                |                  |                |                  |                |                |                  |                |                  |
|-----------------------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|------------------|----------------|------------------|
| Sample ID and Ports Sampled | #21<br>5.0' Port | #22<br>6' Port | #23<br>4.0' Port | #24<br>4' Port | #25<br>3.5' Port | #26<br>3' Port | #27<br>6' Port | #28<br>5.5' Port | #29<br>5' Port | #30<br>4.5' Port |
| TSS in mg/L                 | 32.5             | 124            | 45               | 46             | 35               | 43             | 13             | 13               | 21.5           | 29.5             |
| Turbidity (NTU)             | 60.6             | 81.3           | 94.8             | 53.5           | 55.2             | 51.3           | 36.8           | 31.5             | 35.0           | 52.7             |

|                             |                |                  |                |                  |                |                  |                |                  |                |                  |
|-----------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|
| Sample ID and Ports Sampled | #31<br>4' Port | #32<br>3.0' Port | #33<br>3' Port | #34<br>5.5' Port | #35<br>6' Port | #36<br>4.5' Port | #37<br>4' Port | #38<br>3.5' Port | #39<br>3' Port | #40<br>2.5' Port |
| TSS in mg/L                 | 16.5           | 11.5             | 41.5           | 25.5             | 29             | 11               | 8.5            | 12.5             | 14             | 30.5             |
| Turbidity (NTU)             | 32.2           | 41.6             | 83.9           | 33.2             | 51.3           | 59.8             | 25.3           | 37.8             | 19.8           | 25.3             |

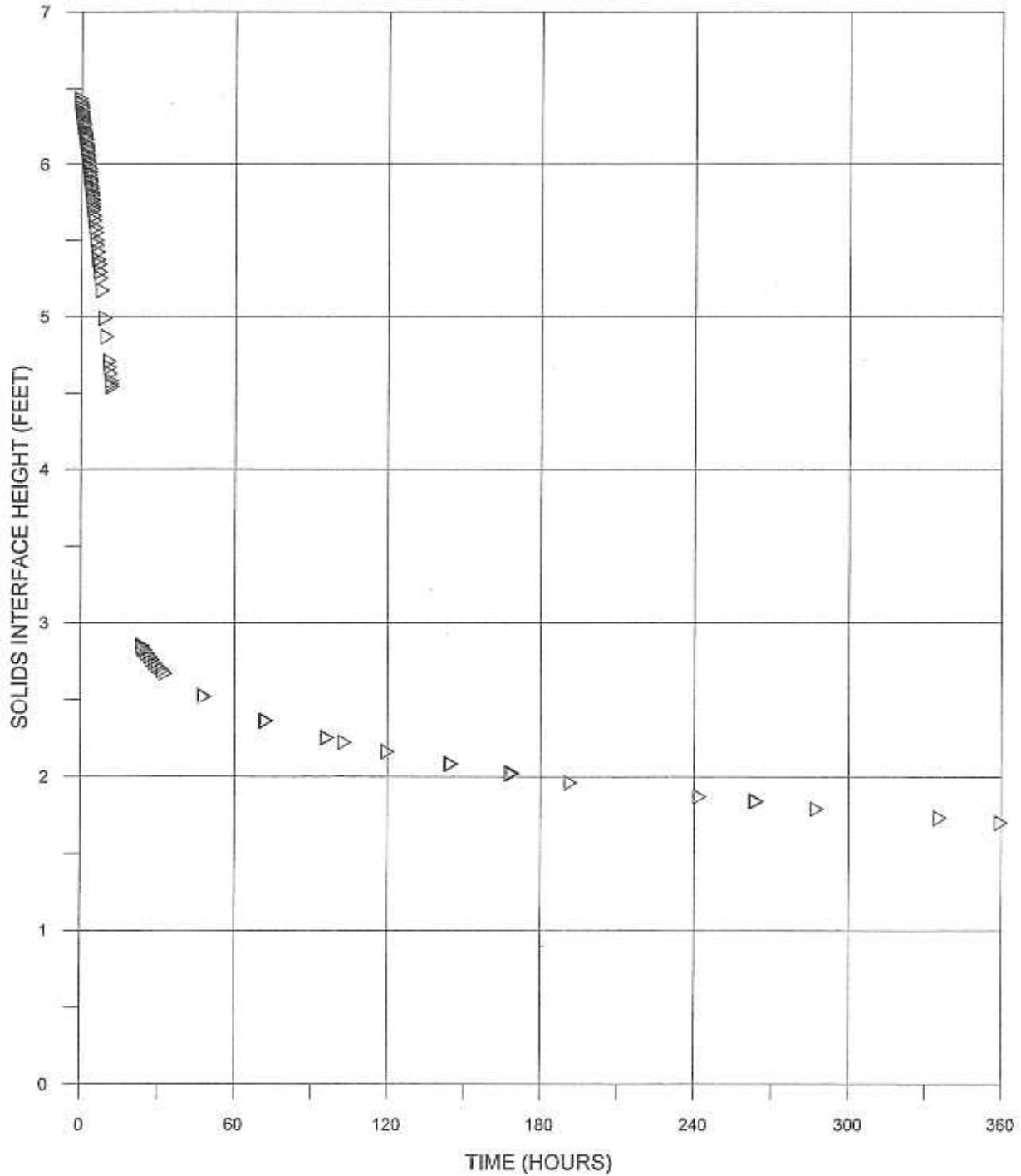
|                             |                  |                |                  |                |                  |                |                  |                  |                |                  |
|-----------------------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|------------------|----------------|------------------|
| Sample ID and Ports Sampled | #41<br>5.5' Port | #42<br>6' Port | #43<br>4.5' Port | #44<br>4' Port | #45<br>3.0' Port | #46<br>3' Port | #47<br>2.5' Port | #48<br>5.0' Port | #49<br>5' Port | #50<br>4.5' Port |
| TSS in mg/L                 | 5.5              | 15.5           | 6.5              | 8              | 3.5              | 8.5            | 37               | 0                | 31.5           | 0                |
| Turbidity (NTU)             | 27.7             | 29.4           | 21.0             | 30.9           | 25.6             | 20.1           | 26.5             | 6.78             | 7.52           | 7.18             |

|                             |                |                  |                |                  |                |                |                  |                |                  |                |
|-----------------------------|----------------|------------------|----------------|------------------|----------------|----------------|------------------|----------------|------------------|----------------|
| Sample ID and Ports Sampled | #51<br>4' Port | #52<br>3.0' Port | #53<br>3' Port | #54<br>2.0' Port | #55<br>2' Port | #56<br>5' Port | #57<br>4.0' Port | #58<br>4' Port | #59<br>3.0' Port | #60<br>3' Port |
| TSS in mg/L                 | 12.5           | 4.5              | 6.05           | 25.0             | 44.5           | 7.00           | 0                | 9.50           | 4.00             | 4.00           |
| Turbidity (NTU)             | 9.45           | 7.81             | 19.2           | 7.05             | 58.5           | 16.1           | 11.6             | 12.1           | 33.3             | 18.4           |

|                             |                  |                |          |             |             |  |  |  |  |  |
|-----------------------------|------------------|----------------|----------|-------------|-------------|--|--|--|--|--|
| Sample ID and Ports Sampled | #61<br>2.5' Port | #62<br>2' Port | #63<br>0 | #64<br>38.5 | #65<br>38.0 |  |  |  |  |  |
| TSS in mg/L                 | 0                | 38.5           |          |             |             |  |  |  |  |  |
| Turbidity (NTU)             | 15.1             | 38.0           |          |             |             |  |  |  |  |  |



SETTLING COLUMN TEST RESULTS  
ZONE SETTLING CURVE



**NOTE:**

1) THE SETTLING COLUMN TEST WAS PERFORMED ON A COMPOSITE SAMPLE OBTAINED FROM THE PROPOSED ISLAND TERRACE LOCATION.



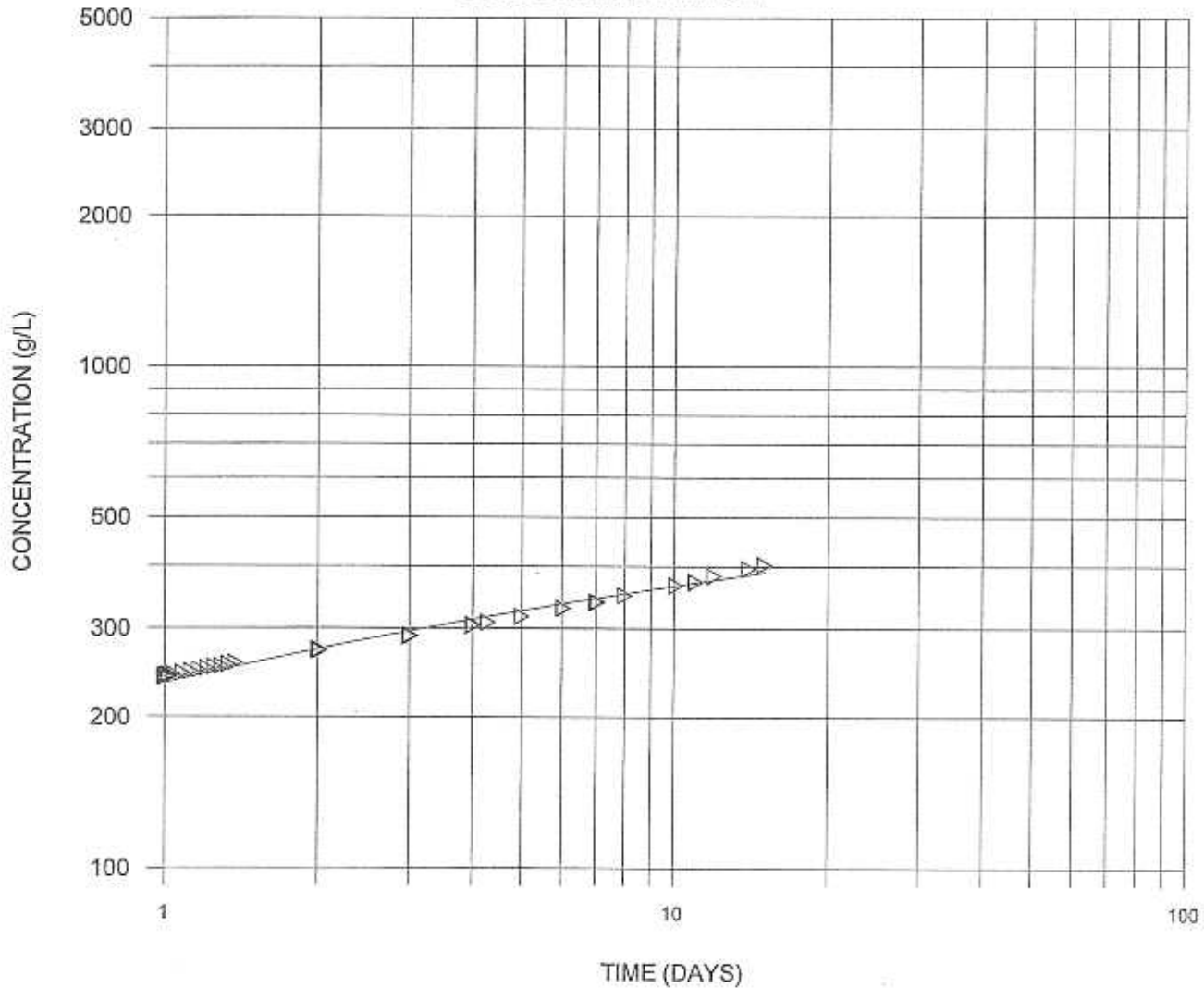
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SETTLING COLUMN TEST RESULTS  
ZONE SETTLING CURVE

FALSE RIVER ECOSYSTEM RESTORATION  
PHASE I, SOUTH FLATS  
POINTE COUPEE PARISH, LOUISIANA

|                    |                 |                               |
|--------------------|-----------------|-------------------------------|
| DRAWN BY: J.F.M.   | 4 FEBRUARY 2014 | FILE: ZONE SETTLING CURVE.GRF |
| CHECKED BY: J.J.H. | JOB NO.: 22348  | APPENDIX III                  |

**SETTLING COLUMN TEST RESULTS  
PERCENT OF INITIAL TOTAL SUSPENDED  
SOLIDS CONCENTRATION**



**NOTES:**

1) THE SETTLING COLUMN TEST WAS PERFORMED ON A COMPOSITE SAMPLE OBTAINED FROM THE PROPOSED ISLAND TERRACE LOCATION

2) THE INITIAL SUSPENDED SOLIDS CONCENTRATION WAS 106.5 GRAMS PER LITER. THIS MEASUREMENT WAS MADE AT A TIME OF ZERO DAYS.

3) IN ACCORDANCE WITH CHAPTER 3 OF THE USACE ENGINEERING MANUAL EM 1110-2-5207, THE CONCENTRATIONS FOR VARIOUS INTERFACE HEIGHTS WERE CALCULATED USING EQUATION 3-11,  $C_t = (C_o H_i) / H_t$ , WHERE  $C_t$  IS THE SLURRY CONCENTRATION AT TIME  $t$ ,  $C_o$  IS THE INITIAL SLURRY CONCENTRATION,  $H_i$  IS THE INITIAL SLURRY HEIGHT, AND  $H_t$  IS THE HEIGHT OF THE INTERFACE AT TIME  $t$ .



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**SETTLING COLUMN TEST RESULTS  
CONCENTRATION WITH TIME**

FALSE RIVER ECOSYSTEM RESTORATION  
PHASE I, SOUTH FLATS  
POINTE COUPEE PARISH, LOUISIANA

|                    |                 |                                   |
|--------------------|-----------------|-----------------------------------|
| DRAWN BY: J.F.M.   | 4 FEBRUARY 2014 | FILE: CONCENTRATION WITH TIME.GRF |
| CHECKED BY: J.J.H. | JOB NO.: 22348  | APPENDIX III                      |

SUMMARY OF SETTLING COLUMN TEST RESULTS  
TOTAL SUSPENDED SOLIDS CONCENTRATION  
FALSE RIVER ECOSYSTEM RESTORATION  
PHASE I, SOUTH FLATS  
POINTE COUPEE PARISH, LOUISIANA

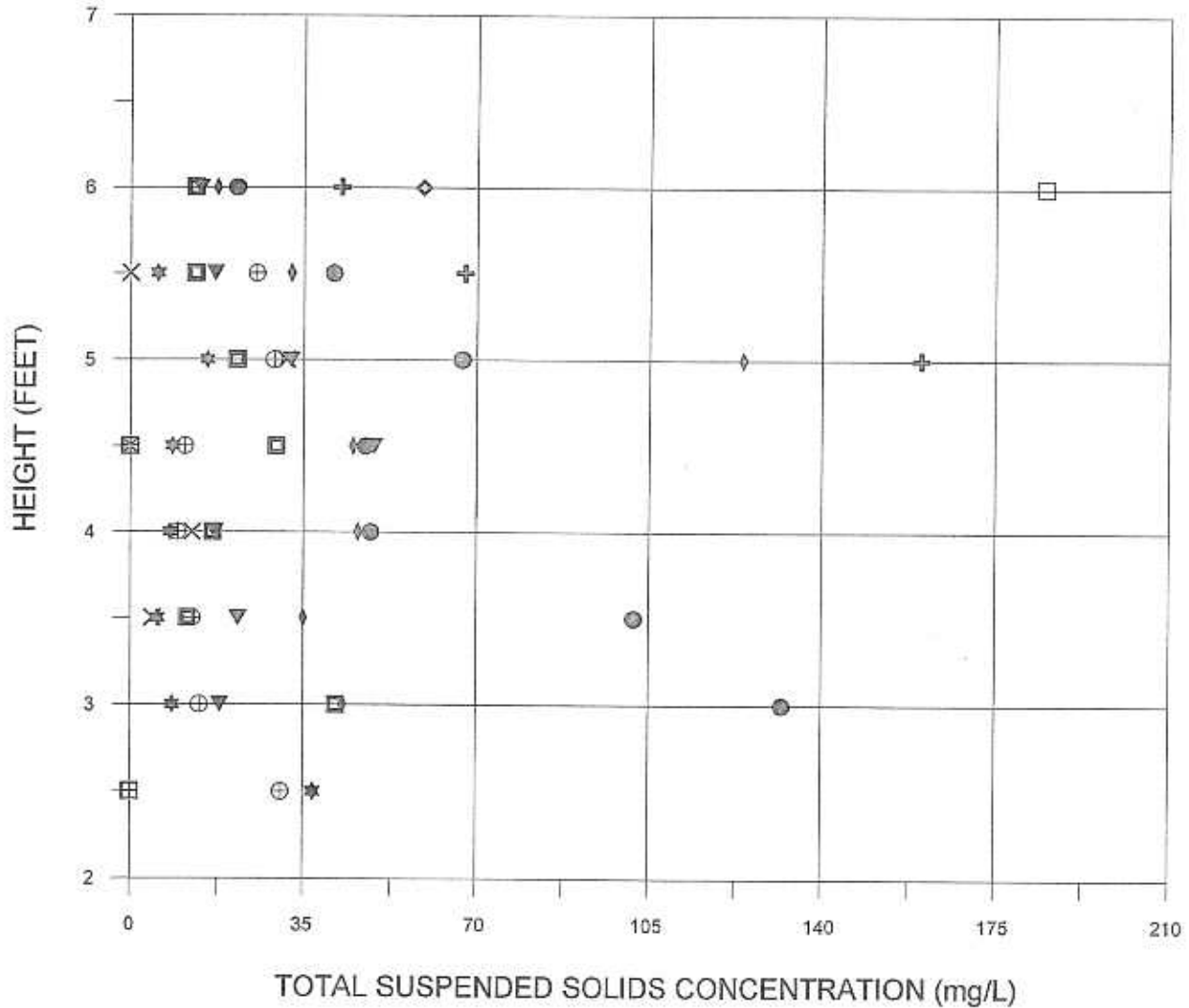
| TSS Concentration in mg/L |                                |    |     |     |    |     |    |     |     |      |     |
|---------------------------|--------------------------------|----|-----|-----|----|-----|----|-----|-----|------|-----|
| Port Height in feet       | Time of Port Sampling in hours |    |     |     |    |     |    |     |     |      |     |
|                           | 4.75                           | 7  | 12  | 24  | 48 | 72  | 96 | 145 | 169 | 264  | 360 |
| 2                         | BI                             | BI | BI  | BI  | BI | BI  | BI | BI  | BI  | 45   | 39  |
| 2.5                       | BI                             | BI | BI  | BI  | BI | BI  | BI | 31  | 37  | 25   | 0   |
| 3                         | BI                             | BI | BI  | 132 | 34 | 43  | 42 | 14  | 9   | 6    | 4   |
| 3.5                       | BI                             | BI | BI  | 102 | 41 | 35  | 12 | 13  | 6   | 4.5  | 4   |
| 4                         | BI                             | BI | BI  | 49  | 32 | 46  | 17 | 10  | 8   | 12.5 | 9.5 |
| 4.5                       | BI                             | BI | BI  | 48  | 91 | 45  | 30 | 11  | 9   | 0    | 0   |
| 5                         | BI                             | BI | 160 | 67  | 60 | 124 | 22 | 29  | 16  | 31.5 | 7   |
| 5.5                       | BI                             | BI | 68  | 41  | 32 | 33  | 13 | 26  | 6   | 0    | --  |
| 6                         | 185                            | 59 | 43  | 22  | 26 | 18  | 13 | --  | --  | --   | --  |

| Initial Concentration = 185 mg/L (i.e. concentration of first sample taken at the highest port) |                                |    |    |    |    |    |    |     |     |     |     |
|---|--------------------------------|----|----|----|----|----|----|-----|-----|-----|-----|
| Percent of Initial TSS Concentration  |                                |    |    |    |    |    |    |     |     |     |     |
| Port Height in feet   | Time of Port Sampling in hours |    |    |    |    |    |    |     |     |     |     |
|   | 4.75                           | 7  | 12 | 24 | 48 | 72 | 96 | 145 | 169 | 264 | 360 |
| 2   | BI                             | BI | BI | BI | BI | BI | BI | BI  | BI  | 24  | 21  |
| 2.5   | BI                             | BI | BI | BI | BI | BI | BI | 16  | 20  | 14  | 0   |
| 3   | BI                             | BI | BI | BI | 18 | 23 | 22 | 8   | 5   | 3   | 2   |
| 3.5   | BI                             | BI | BI | 55 | 22 | 19 | 6  | 7   | 3   | 2   | 2   |
| 4   | BI                             | BI | BI | 26 | 17 | 25 | 9  | 5   | 4   | 7   | 5   |
| 4.5   | BI                             | BI | BI | 26 | 49 | 24 | 16 | 6   | 5   | 0   | 0   |
| 5   | BI                             | BI | 86 | 36 | 32 | 67 | 12 | 16  | 8   | 17  | 4   |
| 5.5   | BI                             | BI | 36 | 22 | 17 | 18 | 7  | 14  | 3   | 0   | --  |
| 6   | 100                            | 32 | 23 | 12 | 14 | 9  | 13 | --  | --  | --  | --  |

BI = Port is Below Interface, and no sample was collected at the time of interval.

-- = Sample not collected nor tested at this time of interval.

**SETTLING COLUMN TEST RESULTS  
TOTAL SUSPENDED SOLIDS CONCENTRATION**




|   |            |
|---|------------|
| □ | 4.75 hours |
| ◇ | 7 hours    |
| + | 12 hours   |
| ● | 24 hours   |
| ▼ | 48 hours   |
| ◆ | 72 hours   |
| ◻ | 96 hours   |
| ⊕ | 145 hours  |
| ★ | 169 hours  |
| × | 264 hours  |
| ⊞ | 360 hours  |

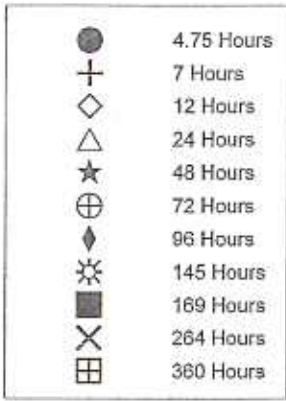
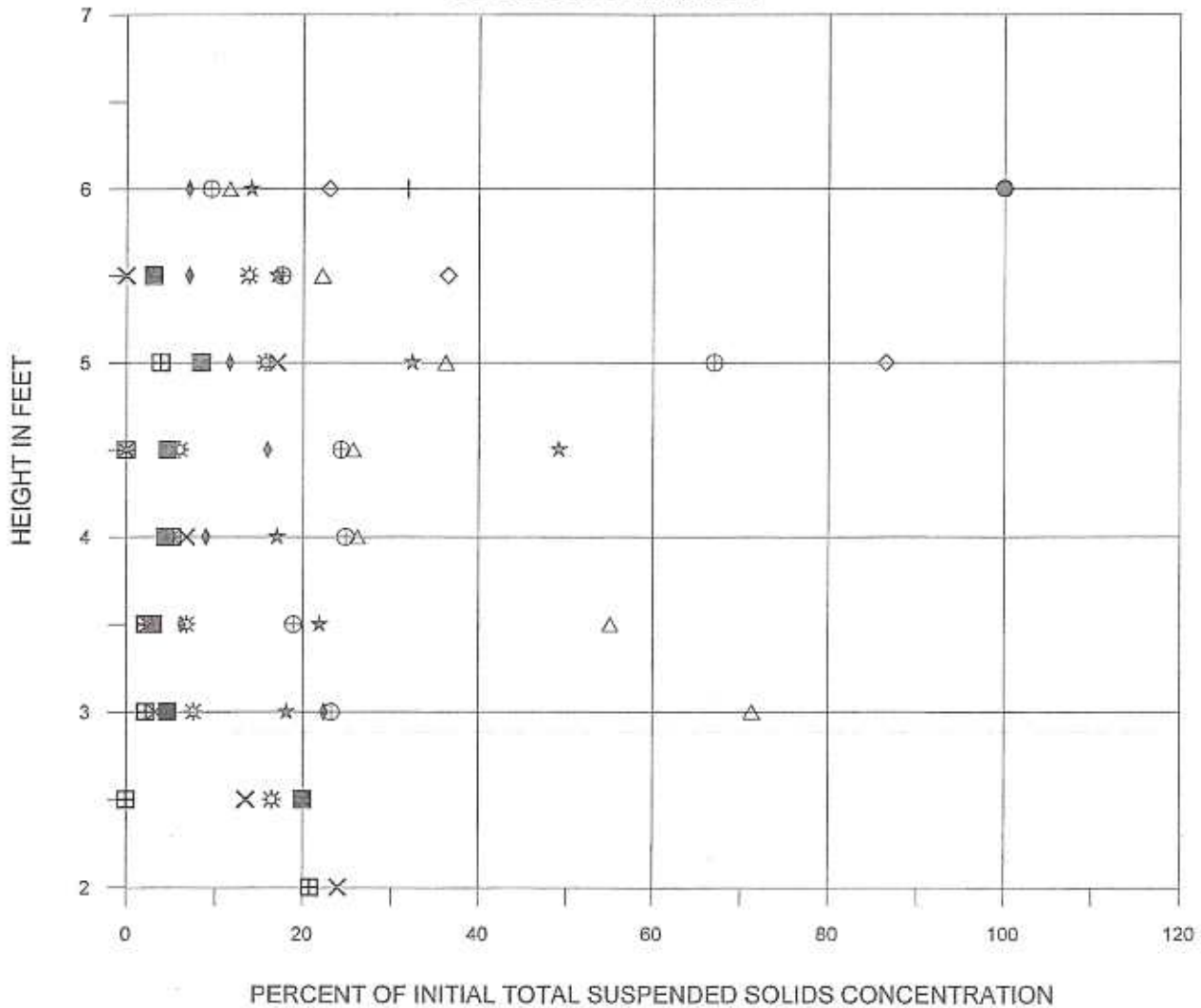
**NOTES:**

1) TOTAL SUSPENDED SOLIDS CONCENTRATIONS WERE DETERMINED FROM A SETTLING COLUMN TEST. THE TEST WAS PERFORMED ON A COMPOSITE SAMPLE OBTAINED FROM THE PROPOSED ISLAND TERRACE LOCATION

2) PORTS WERE SAMPLED AT THE FOLLOWING HEIGHTS WITHIN THE 8-FT HIGH COLUMN: 2.5, 3.0, 3.5, 4.0, 4.5, 5.5, AND 6.0 FEET.

|  |                 |                    |
|--|-----------------|--------------------|
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| SETTLING COLUMN TEST RESULTS<br>TOTAL SUSPENDED SOLIDS CONCENTRATION<br>FALSE RIVER ECOSYSTEM RESTORATION<br>PHASE I, SOUTH FLATS<br>POINTE COUPEE PARISH, LOUISIANA                                     |                 |                    |
| DRAWN BY: J.F.M.   | 4 FEBRUARY 2014 | FILE: TSS PLOT.GRF |
| CHECKED BY: J.J.H.   | JOB NO.: 22348  | APPENDIX III       |

**SETTLING COLUMN TEST RESULTS  
PERCENT OF INITIAL TOTAL SUSPENDED  
SOLIDS CONCENTRATION**



**NOTES:**

1) TOTAL SUSPENDED SOLIDS CONCENTRATIONS WERE DETERMINED FROM A SETTLING COLUMN TEST. THE TEST WAS PERFORMED ON A COMPOSITE SAMPLE OBTAINED FROM THE PROPOSED ISLAND TERRACE LOCATION.

2) PORTS WERE SAMPLED AT THE FOLLOWING HEIGHTS WITHIN THE 8-FT HIGH COLUMN: 2.5, 3.0, 3.5, 4.0, 5.5, AND 6.0 FEET.

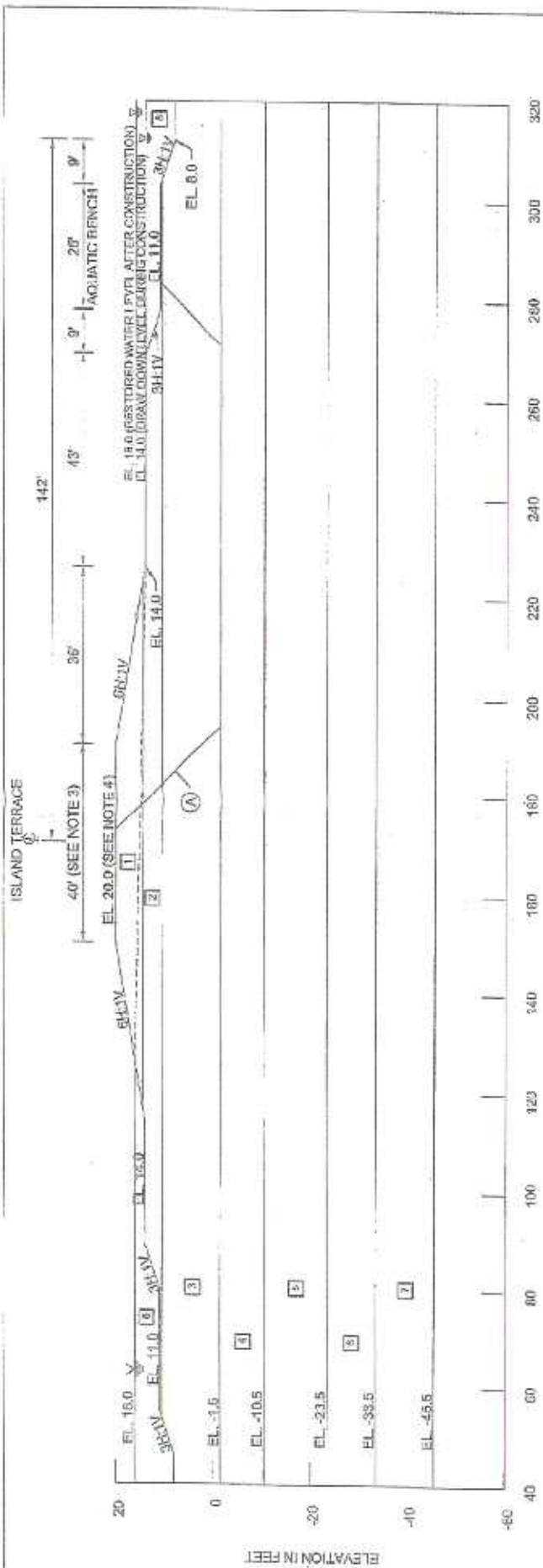
3) INITIAL TSS CONCENTRATION CORRESPONDS TO THE CONCENTRATION IN THE FIRST SAMPLE TAKEN AT THE HIGHEST PORT.

|                    |  |                               |
|--------------------|--|-------------------------------|
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|                    | SETTLING COLUMN TEST RESULTS<br>PERCENT OF INITIAL TOTAL SUSPENDED<br>SOLIDS CONCENTRATION<br><hr/> FALSE RIVER ECOSYSTEM RESTORATION<br>PHASE I, SOUTH FLATS<br>POINTE COUPEE PARISH, LOUISIANA |                               |
| DRAWN BY: J.F.M.   | 4 FEBRUARY 2014  | FILE: PERCENT TSS<br>PLOT.GRF |
| CHECKED BY: J.J.H. | JOB NO.: 22348   | APPENDIX III                  |

## **APPENDIX IV**

**SLOPE STABILITY ANALYSES FIGURES 5 AND 6  
FROM REPORT DATED 9 DECEMBER 2013**





D. DISTANCE IN FEET

| SOIL NO. | DESCRIPTION | FRICTION ANGLE ON CIRCLES | UNIT WEIGHT IN PCF | COHESION IN PCF | Avg | BASE |
|----------|-------------|---------------------------|--------------------|-----------------|-----|------|
| 1        | CLAY        | 0                         | 120                | 200             | 240 |      |
| 2        | CLAY        | 0                         | 98                 | 70              | 75  |      |
| 3        | CLAY        | 0                         | 120                | 75              | 75  |      |
| 4        | CLAY        | 0                         | 98                 | 125             | 125 |      |
| 5        | SAND        | 30                        | 130                | 0               | 0   |      |
| 6        | SAND        | 32                        | 130                | 0               | 0   |      |
| 7        | SAND        | 31                        | 130                | 0               | 0   |      |
| 8        | WATER       | 0                         | 62.4               | 0               | 0   |      |

| SOIL NO. AND DESIGNATION | TYPE OF SEARCH  | SLUR REQUIRED | MINIMUM AVAILABLE FACTOR OF SAFETY | REQUIRED FACTOR OF SAFETY | FACTOR OF SAFETY |
|--------------------------|-----------------|---------------|------------------------------------|---------------------------|------------------|
| 1                        | EXTENDED SEARCH | 1.0           | 1.0                                | 1.1                       | 1.1              |

- NOTES:
1. SLOPE STABILITY ANALYSES PERFORMED BY APPROXIMATE METHOD USING SLOPEWAT/EXTENDED SEARCH, VERSION 7.20.
  2. PRELIMINARY ANALYSES PERFORMED TO ACHIEVE A FACTOR OF SAFETY OF APPROXIMATELY 1.10.
  3. THE WIDTH OF THE ISLAND TERRACE CAN BE GREATER THAN OR LESS THAN 40 FEET AND THIS WILL NOT AFFECT THE MINIMUM REQUIRED FACTOR OF SAFETY SHOWN IN THIS FIGURE.
  4. SEE MECHANISM ACCURATELY CONSTRUCTED AT EL. 20 TO ACHIEVE A NET GRADE OF EL. 13.9 APPROXIMATELY TWO YEARS AFTER CONSTRUCTION.

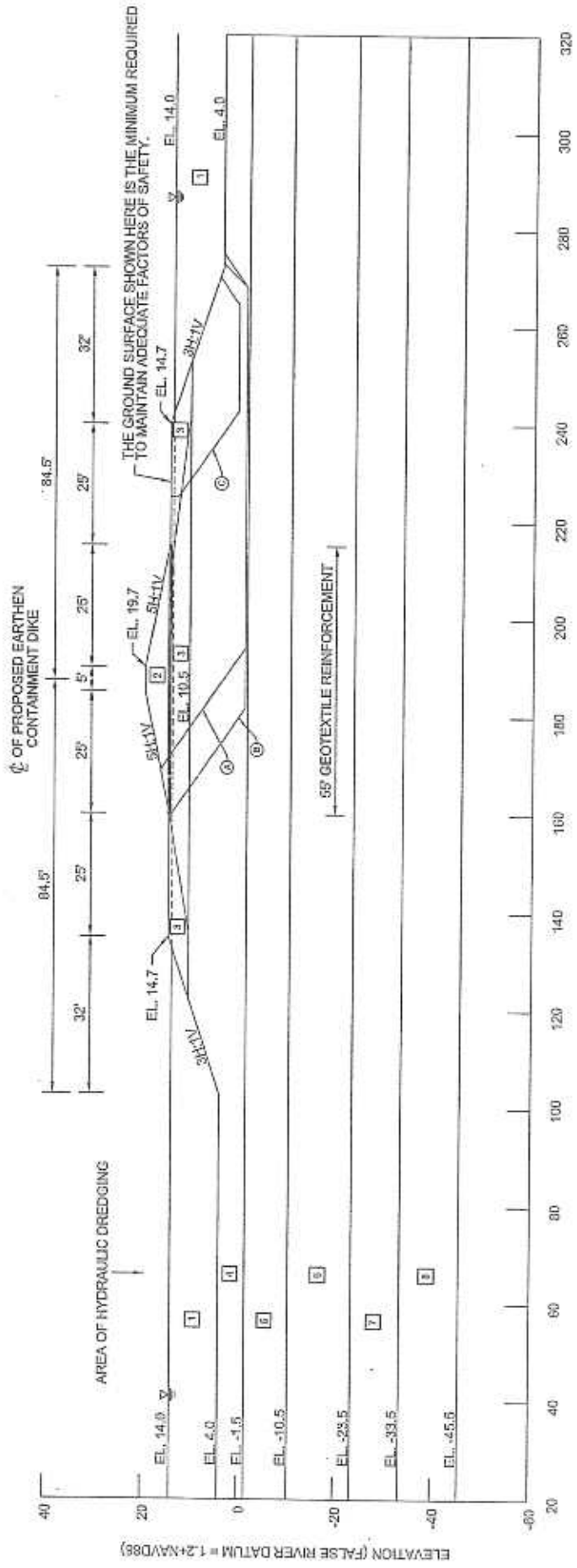
**EUSTIS ENGINEERING SERVICES, LLC**  
REGISTERED PROFESSIONAL ENGINEERS  
BOULEVARD  
MONROE, LOUISIANA 70001

PROJECT NO.: 22048  
DRAWN BY: J.L.S.  
CHECKED BY: J.L.H.  
DATE: 8 DEC 15  
SCALE: AS SHOWN

ISLAND TERRACE CROSS SECTION  
 SLOPE STABILITY ANALYSES  
 TO ACHIEVE FACTOR OF SAFETY OF 1.10  
 FALSE RIVER ECOSYSTEM RESTORATION  
 MONROE, LOUISIANA



**APPENDIX V**  
**SLOPE STABILITY ANALYSES COMPUTER OUTPUTS**



55' GEOTEXTILE REINFORCEMENT

AREA OF HYDRAULIC DREDGING

THE GROUND SURFACE SHOWN HERE IS THE MINIMUM REQUIRED TO MAINTAIN ADEQUATE FACTORS OF SAFETY.

84.5'

32'

25'

25'

32'

EL. 14.7

EL. 19.7

EL. 10.5

EL. 14.7

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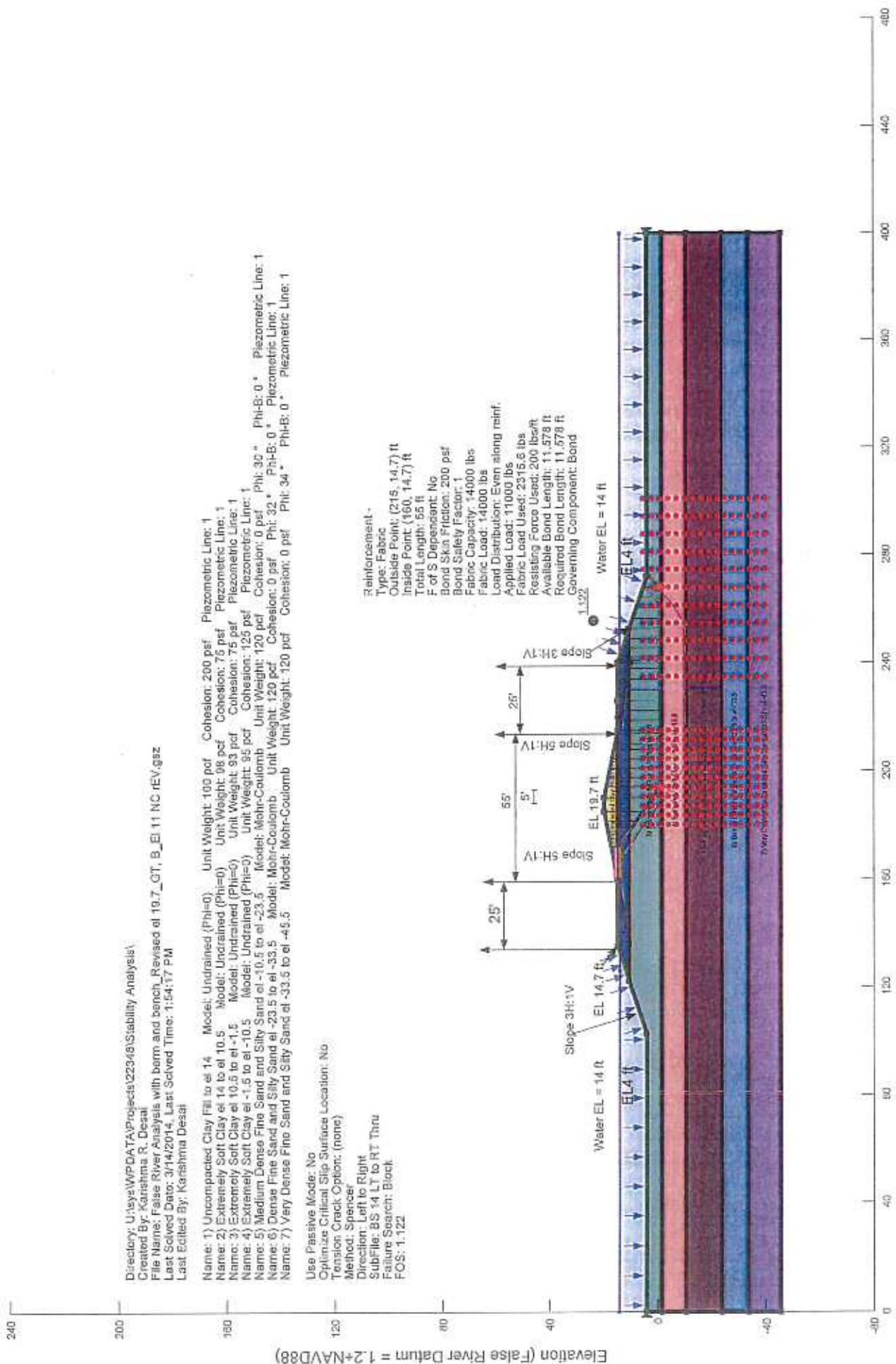
EL. 14.7

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Directory: U:\sys\Wp\DATA\Projects\223\48\Stability Analysis\  
 Created By: Karishma R. Desai  
 File Name: False River Analysis with berm and bench\_Revise of 19.7\_OT\_B\_EL 11 NC REV.gns  
 Last Solved Date: 3/14/2014, Last Solved Time: 1:54:17 PM  
 Last Edited By: Karishma Desai

Name: 1) Uncompacted Clay Fill to el 14 Model: Undrained (Phi=0) Unit Weight: 100 pcf Cohesion: 200 psf Piezometric Line: 1  
 Name: 2) Extremely Soft Clay el 14 to el 10.5 Model: Undrained (Phi=0) Unit Weight: 98 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 3) Extremely Soft Clay el 10.5 to el -1.5 Model: Undrained (Phi=0) Unit Weight: 93 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 4) Extremely Soft Clay el -1.5 to el -10.5 Model: Undrained (Phi=0) Unit Weight: 95 pcf Cohesion: 125 psf Piezometric Line: 1  
 Name: 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30° Phi-B: 0° Piezometric Line: 1  
 Name: 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 32° Phi-B: 0° Piezometric Line: 1  
 Name: 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 34° Phi-B: 0° Piezometric Line: 1

Use Passive Mode: No  
 Optimize Critical Slip Surface Location: No  
 Tension Crack Option: (none)  
 Method: Spencer  
 Direction: Left to Right  
 SubFile: BS 14 LT to RT Thru  
 Failure Search: Block  
 FOS: 1.122

Reinforcement -  
 Type: Fabric  
 Outside Point: (215, 14.7) ft  
 Inside Point: (160, 14.7) ft  
 Total Length: 55 ft  
 F of S Dependent: No  
 Bond Skin Friction: 200 psf  
 Bond Safety Factor: 1  
 Fabric Capacity: 14000 lbs  
 Fabric Load: 14000 lbs  
 Load Distribution: Even along reinf.  
 Applied Load: 11000 lbs  
 Fabric Load Used: 2316.8 lbs  
 Resisting Force Used: 200 lbf/ft  
 Available Bond Length: 11.578 ft  
 Required Bond Length: 11.578 ft  
 Governing Component: Bond

Water EL = 14 ft

Water EL = 19.7 ft

Water EL = 4 ft

Distance in Feet

Elevation (False River Datum = 1.2+NAVD88)

# BS 14 LT to RT Thru

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## File Information

Title: False River  
Created By: Karishma R. Desai  
Revision Number: 169  
Last Edited By: Karishma Desai  
Date: 3/14/2014  
Time: 1:53:48 PM  
File Name: False River Analysis with berm and bench\_Revised el 19.7\_GT, B\_EI 11 NC rEV.gsz  
Directory: U:\sys\WPDATA\Projects\22348\Stability Analysis\  
Last Solved Date: 3/14/2014  
Last Solved Time: 1:54:17 PM

## Project Settings

Length(L) Units: feet  
Time(t) Units: Seconds  
Force(F) Units: lbf  
Pressure(p) Units: psf  
Strength Units: psf  
Unit Weight of Water: 62.4 pcf  
View: 2D

## Analysis Settings

### BS 14 LT to RT Thru

Kind: SLOPE/W  
Method: Spencer  
Settings  
Apply Phreatic Correction: No  
PWP Conditions Source: Piezometric Line  
Use Staged Rapid Drawdown: No  
Slip Surface  
Direction of movement: Left to Right  
Use Passive Mode: No  
Slip Surface Option: Block  
Critical slip surfaces saved: 1  
Optimize Critical Slip Surface Location: No  
Tension Crack  
Tension Crack Option: (none)  
FOS Distribution  
FOS Calculation Option: Constant  
Restrict Block Crossing: Yes

## Advanced

Number of Slices: 30  
Optimization Tolerance: 0.01  
Minimum Slip Surface Depth: 0.1 ft  
Optimization Maximum Iterations: 2000  
Optimization Convergence Tolerance: 1e-007  
Starting Optimization Points: 8  
Ending Optimization Points: 16  
Complete Passes per Insertion: 1  
Driving Side Maximum Convex Angle: 5 °  
Resisting Side Maximum Convex Angle: 1 °

## Materials

### 1) Uncompacted Clay Fill to el 14

Model: Undrained (Phi=0)  
Unit Weight: 100 pcf  
Cohesion: 200 psf  
Pore Water Pressure  
Piezometric Line: 1

### 2) Extremely Soft Clay el 14 to el 10.5

Model: Undrained (Phi=0)  
Unit Weight: 98 pcf  
Cohesion: 75 psf  
Pore Water Pressure  
Piezometric Line: 1

### 3) Extremely Soft Clay el 10.5 to el -1.5

Model: Undrained (Phi=0)  
Unit Weight: 93 pcf  
Cohesion: 75 psf  
Pore Water Pressure  
Piezometric Line: 1

### 4) Extremely Soft Clay el -1.5 to el -10.5

Model: Undrained (Phi=0)  
Unit Weight: 95 pcf  
Cohesion: 125 psf  
Pore Water Pressure  
Piezometric Line: 1

### 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5

Model: Mohr-Coulomb  
Unit Weight: 120 pcf  
Cohesion: 0 psf  
Phi: 30 °  
Phi-B: 0 °  
Pore Water Pressure



Piezometric Line: 1

### 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5

Model: Mohr-Coulomb

Unit Weight: 120 pcf

Cohesion: 0 psf

Phi: 32 °

Phi-B: 0 °

Pore Water Pressure

Piezometric Line: 1

### 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5

Model: Mohr-Coulomb

Unit Weight: 120 pcf

Cohesion: 0 psf

Phi: 34 °

Phi-B: 0 °

Pore Water Pressure

Piezometric Line: 1

## Slip Surface Limits

Left Coordinate: (0, 4) ft

Right Coordinate: (400, 4) ft

## Slip Surface Block

Left Grid

Upper Left: (180, 5) ft

Lower Left: (180, -40) ft

Lower Right: (215, -40) ft

X Increments: 10

Y Increments: 15

Starting Angle: 135 °

Ending Angle: 145 °

Angle Increments: 2

Right Grid

Upper Left: (235, 5) ft

Lower Left: (235, -40) ft

Lower Right: (301, -40) ft

X Increments: 10

Y Increments: 15

Starting Angle: 35 °

Ending Angle: 45 °

Angle Increments: 2

## Piezometric Lines

## Piezometric Line 1

### Coordinates

|  | X (ft) | Y (ft) |
|--|--------|--------|
|  | 0      | 14     |
|  | 126    | 14     |
|  | 210    | 14     |
|  | 400    | 14     |

## Reinforcements

### Reinforcement 1

Type: Fabric  
 Outside Point: (215, 14.7) ft  
 Inside Point: (160, 14.7) ft  
 Slip Surface Intersection: (171.58, 14.7) ft  
 Total Length: 55 ft  
 Reinforcement Direction: 0 °  
 Applied Load Option: Variable  
 F of S Dependent: No  
 Bond Skin Friction: 200 psf  
 Bond Safety Factor: 1  
 Bond Resistance: 200 lbs/ft  
 Fabric Capacity: 14000 lbs  
 Fabric Safety Factor: 1  
 Fabric Load: 14000 lbs  
 Load Distribution: Even along reinf.  
 Load Orientation: 0  
 Applied Load: 11000 lbs  
 Fabric Load Used: 2315.6 lbs  
 Resisting Force Used: 200 lbs/ft  
 Available Bond Length: 11.578 ft  
 Required Bond Length: 11.578 ft  
 Governing Component: Bond

## Regions

|          | Material  | Points                   | Area (ft <sup>2</sup> ) |
|----------|---|--------------------------|-------------------------|
| Region 1 | 3) Extremely Soft Clay el 10.5 to el -1.5                     | 1,18,2,24,23,28,27,5,7,6 | 3173.375                |
| Region 2 | 4) Extremely Soft Clay el -1.5 to el -10.5                    | 6,7,9,8                  | 3600                    |
| Region 3 | 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 | 8,9,11,10                | 5200                    |
| Region 4 | 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5        | 10,11,13,12              | 4000                    |

|          |   |                     |        |
|----------|---|---------------------|--------|
| Region 5 | 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5 | 12,13,15,14         | 4800   |
| Region 6 | 2) Extremely Soft Clay el 14 to el 10.5                     | 2,3,25,24           | 81.06  |
| Region 7 | 2) Extremely Soft Clay el 14 to el 10.5                     | 17,16,4,26,21,23,28 | 89.61  |
| Region 8 | 2) Extremely Soft Clay el 14 to el 10.5                     | 25,24,23,21,26      | 323.25 |
| Region 9 | 1) Uncompacted Clay Fill to el 14                           | 25,20,19,4,26       | 150    |

## Points

|          | X (ft) | Y (ft) |
|----------|--------|--------|
| Point 1  | 0      | 4      |
| Point 2  | 122.4  | 10.5   |
| Point 3  | 135    | 14.7   |
| Point 4  | 215    | 14.7   |
| Point 5  | 400    | 4      |
| Point 6  | 0      | -1.5   |
| Point 7  | 400    | -1.5   |
| Point 8  | 0      | -10.5  |
| Point 9  | 400    | -10.5  |
| Point 10 | 0      | -23.5  |
| Point 11 | 400    | -23.5  |
| Point 12 | 0      | -33.5  |
| Point 13 | 400    | -33.5  |
| Point 14 | 0      | -45.5  |
| Point 15 | 400    | -45.5  |
| Point 16 | 226    | 14.7   |
| Point 17 | 240    | 14.7   |
| Point 18 | 102.8  | 4      |
| Point 19 | 190    | 19.7   |
| Point 20 | 185    | 19.7   |
| Point 21 | 238    | 11     |
| Point 22 | 240    | 10     |
| Point 23 | 241    | 10.5   |
| Point 24 | 136    | 10.5   |
| Point 25 | 160    | 14.7   |
| Point 26 | 208    | 14.7   |
| Point 27 | 272.1  | 4      |
| Point 28 | 252.6  | 10.5   |

## Critical Slip Surfaces



|   | Slip Surface | FOS   | Center (ft)      | Radius (ft) | Entry (ft)         | Exit (ft) |
|---|--------------|-------|------------------|-------------|--------------------|-----------|
| 1 | 2658         | 1.122 | (222.13, 19.626) | 42.473      | (169.006, 16.5011) | (273, 4)  |

### Slices of Slip Surface: 2658

|    | Slip Surface | X (ft)    | Y (ft)    | PWP (psf)  | Base Normal Stress (psf) | Frictional Strength (psf) | Cohesive Strength (psf) |
|----|--------------|-----------|-----------|------------|--------------------------|---------------------------|-------------------------|
| 1  | 2658         | 170.29195 | 15.600575 | -99.875359 | -7.1275397               | 0                         | 200                     |
| 2  | 2658         | 172.07795 | 14.35     | -21.840148 | 229.54524                | 0                         | 75                      |
| 3  | 2658         | 175.07705 | 12.25     | 109.20076  | 492.01385                | 0                         | 75                      |
| 4  | 2658         | 179.4322  | 9.200467  | 299.49245  | 868.83926                | 0                         | 75                      |
| 5  | 2658         | 183.14405 | 6.601401  | 461.6743   | 1182.4777                | 0                         | 75                      |
| 6  | 2658         | 187.5     | 3.551349  | 651.99587  | 1500.8012                | 0                         | 75                      |
| 7  | 2658         | 192       | 0.400415  | 848.6211   | 1752.0844                | 0                         | 75                      |
| 8  | 2658         | 195.75    | -1        | 936        | 1867.2857                | 0                         | 75                      |
| 9  | 2658         | 199.25    | -1        | 936        | 1797.2857                | 0                         | 75                      |
| 10 | 2658         | 202.75    | -1        | 936        | 1727.2857                | 0                         | 75                      |
| 11 | 2658         | 206.25    | -1        | 936        | 1657.2857                | 0                         | 75                      |
| 12 | 2658         | 209       | -1        | 936        | 1602.65                  | 0                         | 75                      |
| 13 | 2658         | 211.83785 | -1        | 935.99109  | 1545.5116                | 0                         | 75                      |
| 14 | 2658         | 214.33785 | -1        | 936.02472  | 1496.3106                | 0                         | 75                      |
| 15 | 2658         | 216.83335 | -1        | 935.99991  | 1481.7817                | 0                         | 75                      |
| 16 | 2658         | 220.5     | -1        | 935.99991  | 1481.7817                | 0                         | 75                      |
| 17 | 2658         | 224.16665 | -1        | 935.99991  | 1481.7817                | 0                         | 75                      |
| 18 | 2658         | 228       | -1        | 936        | 1481.8                   | 0                         | 75                      |
| 19 | 2658         | 232       | -1        | 936        | 1481.8                   | 0                         | 75                      |
| 20 | 2658         | 236       | -1        | 936        | 1481.8                   | 0                         | 75                      |
| 21 | 2658         | 239       | -1        | 936        | 1481.8                   | 0                         | 75                      |
| 22 | 2658         | 240.5     | -1        | 936        | 1465.5                   | 0                         | 75                      |
| 23 | 2658         | 241.55    | -1        | 936        | 1431.1818                | 0                         | 75                      |
| 24 | 2658         | 243.85    | -1        | 936        | 1392.5429                | 0                         | 75                      |
| 25 | 2658         | 247.35    | -1        | 936        | 1351.2857                | 0                         | 75                      |
| 26 | 2658         | 250.85    | -1        | 936        | 1310                     | 0                         | 75                      |
| 27 | 2658         | 254.525   | -1        | 936        | 1269.8701                | 0                         | 75                      |
| 28 | 2658         | 258.375   | -1        | 936        | 1230.8831                | 0                         | 75                      |
| 29 | 2658         | 262.225   | -1        | 936        | 1191.8701                | 0                         | 75                      |
| 30 | 2658         | 266.075   | -1        | 936        | 1152.8831                | 0                         | 75                      |
| 31 | 2658         | 270.05    | 1.05      | 808.08502  | 999.64196                | 0                         | 75                      |
| 32 | 2658         | 272.55    | 3.55      | 652.07827  | 741.49586                | 0                         | 75                      |

240  
200  
180  
160  
140  
120  
100  
80  
60  
40  
20  
0  
-20  
-40  
-60

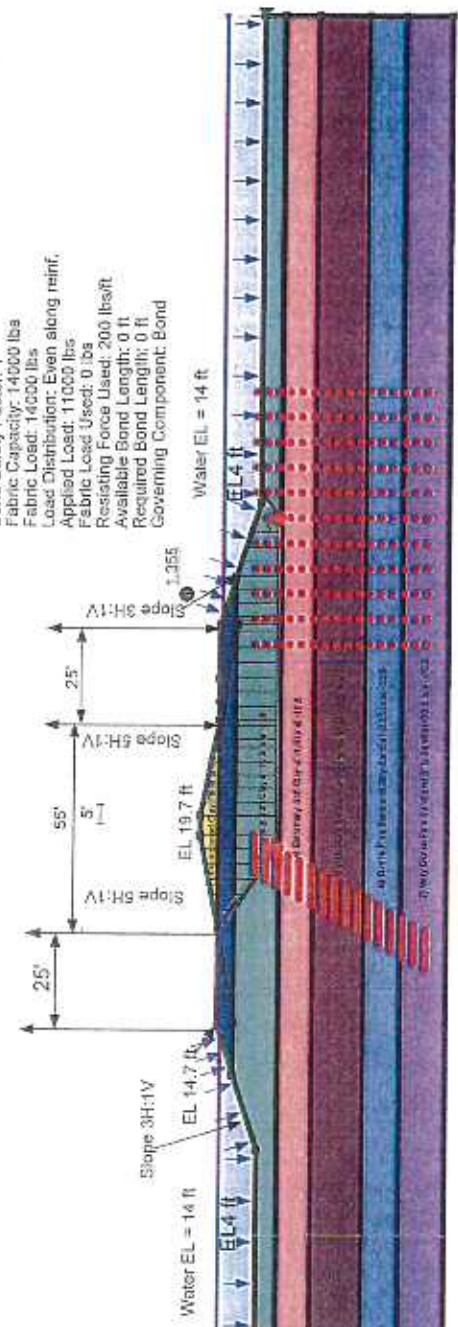
Elevation (False River Datum = 1.2+NAVD88)

Directory: U:\sys\WPDATA\Projects\2234\B\Stability Analysis  
 Created By: Karishma R. Desai  
 File Name: False River Analysis with berm and bench, Revised el 19.7\_GT, B\_EI\_11 NC rEV.gsz  
 Last Solved Date: 3/14/2014, Last Solved Time: 1:56:31 PM  
 Last Edited By: Karishma Desai

Name: 1) Uncompacted Clay Fill to el 14 Model: Undrained (Phi=0) Unit Weight: 100 pcf Cohesion: 200 psf Piezometric Line: 1  
 Name: 2) Extremely Soft Clay el 14 to el 10.5 Model: Undrained (Phi=0) Unit Weight: 98 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 3) Extremely Soft Clay el 10.5 to el -1.5 Model: Undrained (Phi=0) Unit Weight: 93 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 4) Extremely Soft Clay el -1.5 to el -10.5 Model: Undrained (Phi=0) Unit Weight: 95 pcf Cohesion: 125 psf Piezometric Line: 1  
 Name: 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30° Piezometric Line: 1  
 Name: 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 32° Piezometric Line: 1  
 Name: 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 34° Piezometric Line: 1

Use Passive Mode: No  
 Optimize Critical Slip Surface Location: No  
 Tension Crack Option: (none)  
 Method: Spencer  
 Direction: Left to Right  
 Subfile: BS 14 LT to RT Around  
 Failure Search: Block  
 FOS: 1.355

Reinforcement -  
 Type: Fabric  
 Outside Point: (215, 14.7) ft  
 Inside Point: (160, 14.7) ft  
 Total Length: 55 ft  
 F of S Dependent: No  
 Bond Skin Friction: 200 psf  
 Bond Safety Factor: 1  
 Fabric Capacity: 14000 lbs  
 Fabric Load: 14000 lbs  
 Load Distribution: Even along reinf.  
 Applied Load: 11000 lbs  
 Fabric Load Used: 0 lbs  
 Resisting Force Used: 200 lbs/ft  
 Available Bond Length: 0 ft  
 Required Bond Length: 0 ft  
 Governing Component: Bond



480  
440  
400  
360  
320  
280  
240  
200  
160  
120  
80  
40  
0  
-40  
-60

Distance in Feet



240  
200  
160  
120  
80  
40  
0  
-40  
-80

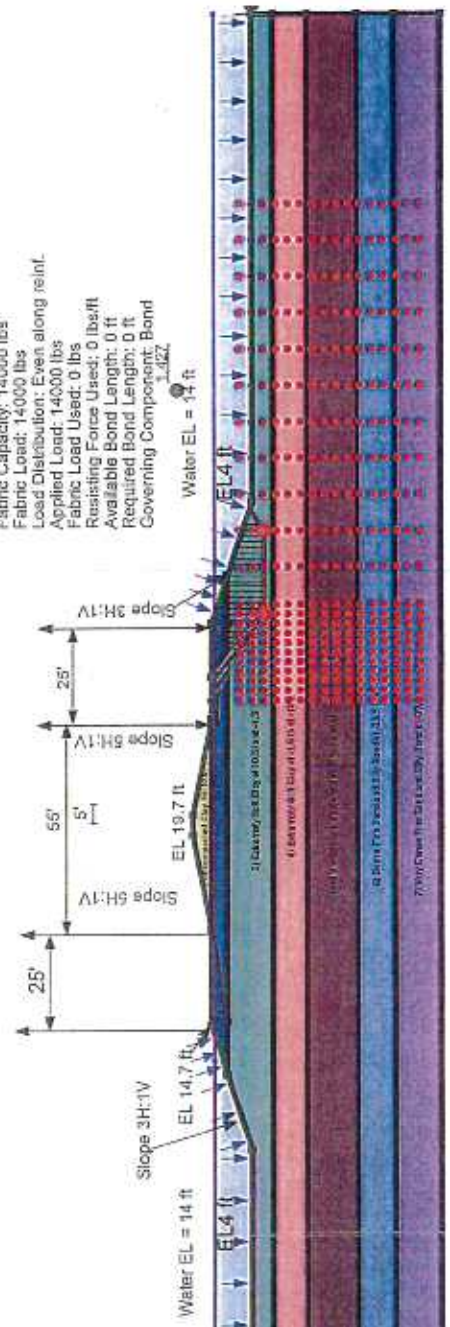
Elevation (False River Datum = 1.2+NAVD88)

Directory: U:\s\WPDATA\Projects\23348\Stability Analysis\st  
 Created By: Karishma R. Desai  
 File Name: False River Analysis with berm and bench\_Revised at 19.7\_GT, B\_EI 11 NC IEV.gsz  
 Last Solved Date: 3/12/2014, Last Solved Time: 8:37:14 PM  
 Last Edited By: Karishma Desai

Name: 1) Uncompacted Clay Fill to el 14 Model: Undrained (Phi=0) Unit Weight: 100 pcf Cohesion: 200 psf Piezometric Line: 1  
 Name: 2) Extremely Soft Clay el 14 to el 10.5 Model: Undrained (Phi=0) Unit Weight: 99 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 3) Extremely Soft Clay el 10.5 to el -1.5 Model: Undrained (Phi=0) Unit Weight: 93 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 4) Extremely Soft Clay el -1.5 to el -10.5 Model: Undrained (Phi=0) Unit Weight: 95 pcf Cohesion: 125 psf Piezometric Line: 1  
 Name: 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30° Phi-B: 0° Piezometric Line: 1  
 Name: 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 32° Phi-B: 0° Piezometric Line: 1  
 Name: 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 34° Phi-B: 0° Piezometric Line: 1

Use Passive Mode: No  
 Optimize Critical Slip Surface Location: No  
 Tension Crack Option: Tension Crack Line  
 Method: Spencer  
 Direction: Left to Right  
 SubFile: BS 14 LT to RT local  
 Failure Search: Block  
 FOS: 1.427

Reinforcement -  
 Type: Fabric  
 Outside Point: (215, 14.7) ft  
 Inside Point: (160, 14.7) ft  
 Total Length: 55 ft  
 F of S Dependent: No  
 Bend Skin Friction: 200 psf  
 Bond Safety Factor: 1  
 Fabric Capacity: 14000 lbs  
 Fabric Load: 14000 lbs  
 Load Distribution: Even along reinf.  
 Applied Load: 14000 lbs  
 Fabric Load Used: 0 lbs  
 Resisting Force Used: 0 lbs/ft  
 Available Bond Length: 0 ft  
 Required Bond Length: 0 ft  
 Governing Component: Bond



480  
440  
400  
360  
320  
280  
240  
200  
160  
120  
80  
40  
0

Distance in Feet



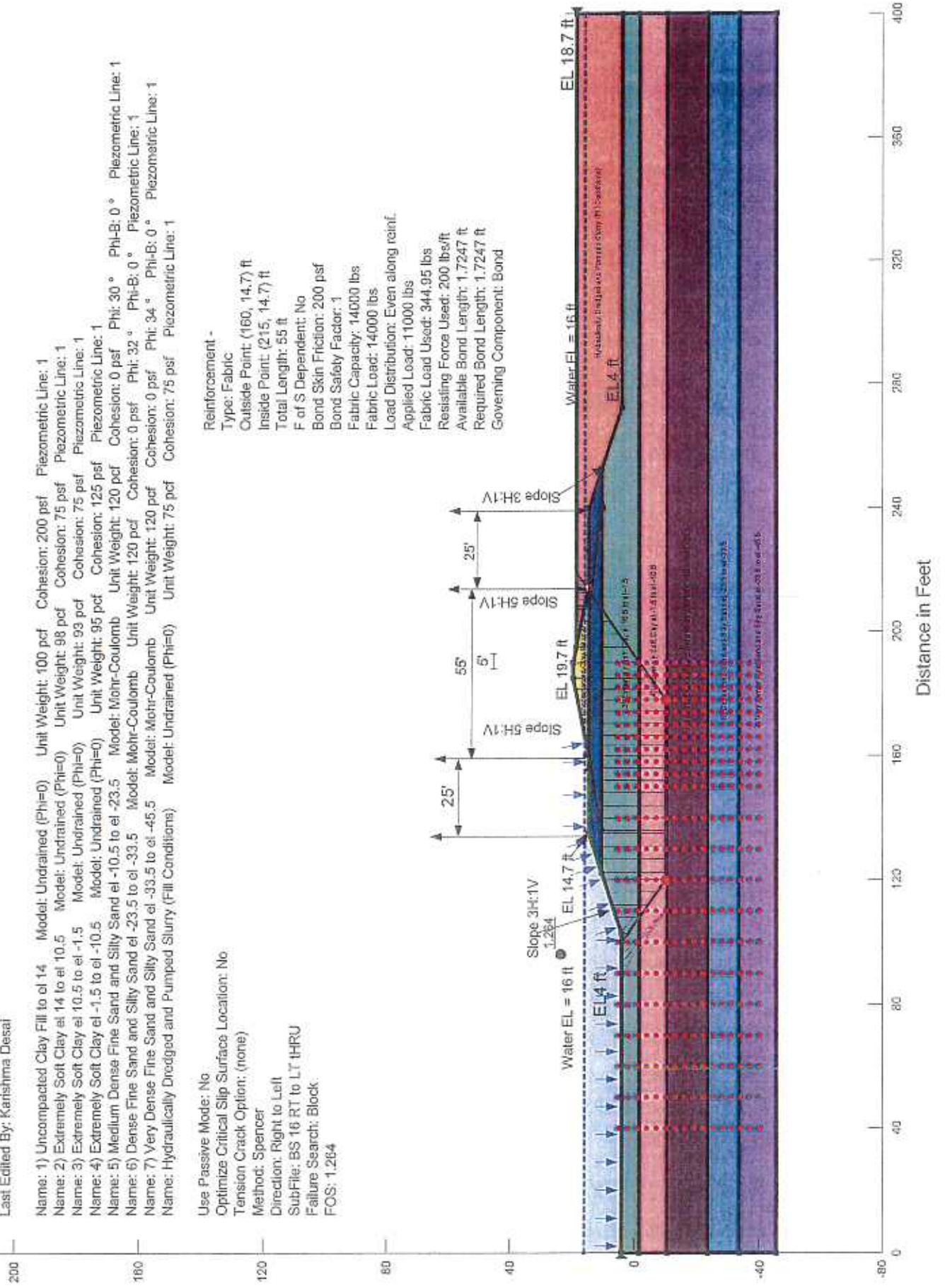
Directory: U:\sys\WPDATA\Projects\22348\Stability Analysis\ Analysis  
 Created By: Karishma R. Desai  
 File Name: 22348\_False River\_el 19.7\_GT, Bench with HP slurry.gsz  
 Last Solved Date: 3/14/2014, Last Solved Time: 1:52:10 PM  
 Last Edited By: Karishma Desai

Name: 1) Uncompacted Clay Fill to el 14 Model: Undrained (Phi=0) Unit Weight: 100 pcf Cohesion: 200 psf Piezometric Line: 1  
 Name: 2) Extremely Soft Clay el 14 to el 10.5 Model: Undrained (Phi=0) Unit Weight: 98 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 3) Extremely Soft Clay el 10.5 to el -1.5 Model: Undrained (Phi=0) Unit Weight: 93 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 4) Extremely Soft Clay el -1.5 to el -10.5 Model: Undrained (Phi=0) Unit Weight: 95 pcf Cohesion: 125 psf Piezometric Line: 1  
 Name: 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30° Phi-B: 0° Piezometric Line: 1  
 Name: 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 32° Phi-B: 0° Piezometric Line: 1  
 Name: 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 34° Phi-B: 0° Piezometric Line: 1  
 Name: Hydraulically Dredged and Pumped Slurry (Fill Conditions) Model: Undrained (Phi=0) Unit Weight: 75 pcf Cohesion: 75 psf Piezometric Line: 1

Use Passive Mode: No  
 Optimize Critical Slip Surface Location: No  
 Tension Crack Option: (none)  
 Method: Spencer  
 Direction: Right to Left  
 SubFile: BS 16 RT to LT THRU  
 Failure Search: Block  
 FOS: 1.264

Elevation (False River Datum = 1.2+NAVD88)

Reinforcement -  
 Type: Fabric  
 Outside Point: (160, 14.7) ft  
 Inside Point: (215, 14.7) ft  
 Total Length: 55 ft  
 F of S Dependent: No  
 Bond Skin Friction: 200 psf  
 Bond Safety Factor: 1  
 Fabric Capacity: 14000 lbs  
 Fabric Load: 14000 lbs  
 Load Distribution: Even along reinf.  
 Applied Load: 11000 lbs  
 Fabric Load Used: 344.95 lbs  
 Resisting Force Used: 200 lbs/ft  
 Available Bond Length: 1.7247 ft  
 Required Bond Length: 1.7247 ft  
 Governing Component: Bond





# BS 16 RT to LT tHRU

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## File Information

Title: False River  
Created By: Karishma R. Desai  
Revision Number: 182  
Last Edited By: Karishma Desai  
Date: 3/14/2014  
Time: 1:51:44 PM  
File Name: 22348\_False River\_el 19.7\_GT, Bench with HP slurry.gsz  
Directory: U:\sys\WPDATA\Projects\22348\Stability Analysis\  
Last Solved Date: 3/14/2014  
Last Solved Time: 1:52:10 PM

## Project Settings

Length(L) Units: feet  
Time(t) Units: Seconds  
Force(F) Units: lbf  
Pressure(p) Units: psf  
Strength Units: psf  
Unit Weight of Water: 62.4 pcf  
View: 2D

## Analysis Settings

### BS 16 RT to LT tHRU

Kind: SLOPE/W  
Method: Spencer  
Settings  
Apply Phreatic Correction: No  
PWP Conditions Source: Piezometric Line  
Use Staged Rapid Drawdown: No  
Slip Surface  
Direction of movement: Right to Left  
Use Passive Mode: No  
Slip Surface Option: Block  
Critical slip surfaces saved: 1  
Optimize Critical Slip Surface Location: No  
Tension Crack  
Tension Crack Option: (none)  
FOS Distribution  
FOS Calculation Option: Constant  
Restrict Block Crossing: Yes

**Advanced**

Number of Slices: 30  
Optimization Tolerance: 0.01  
Minimum Slip Surface Depth: 0.1 ft  
Optimization Maximum Iterations: 2000  
Optimization Convergence Tolerance: 1e-007  
Starting Optimization Points: 8  
Ending Optimization Points: 16  
Complete Passes per Insertion: 1  
Driving Side Maximum Convex Angle: 5 °  
Resisting Side Maximum Convex Angle: 1 °

**Materials****1) Uncompacted Clay Fill to el 14**

Model: Undrained (Phi=0)  
Unit Weight: 100 pcf  
Cohesion: 200 psf  
Pore Water Pressure  
Piezometric Line: 1

**2) Extremely Soft Clay el 14 to el 10.5**

Model: Undrained (Phi=0)  
Unit Weight: 98 pcf  
Cohesion: 75 psf  
Pore Water Pressure  
Piezometric Line: 1

**3) Extremely Soft Clay el 10.5 to el -1.5**

Model: Undrained (Phi=0)  
Unit Weight: 93 pcf  
Cohesion: 75 psf  
Pore Water Pressure  
Piezometric Line: 1

**4) Extremely Soft Clay el -1.5 to el -10.5**

Model: Undrained (Phi=0)  
Unit Weight: 95 pcf  
Cohesion: 125 psf  
Pore Water Pressure  
Piezometric Line: 1

**5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5**

Model: Mohr-Coulomb  
Unit Weight: 120 pcf  
Cohesion: 0 psf  
Phi: 30 °  
Phi-B: 0 °  
Pore Water Pressure

Piezometric Line: 1

**6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5**

Model: Mohr-Coulomb  
Unit Weight: 120 pcf  
Cohesion: 0 psf  
Phi: 32 °  
Phi-B: 0 °  
Pore Water Pressure  
Piezometric Line: 1

**7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5**

Model: Mohr-Coulomb  
Unit Weight: 120 pcf  
Cohesion: 0 psf  
Phi: 34 °  
Phi-B: 0 °  
Pore Water Pressure  
Piezometric Line: 1

**Hydraulically Dredged and Pumped Slurry (Fill Conditions)**

Model: Undrained (Phi=0)  
Unit Weight: 75 pcf  
Cohesion: 75 psf  
Pore Water Pressure  
Piezometric Line: 1

**Slip Surface Limits**

Left Coordinate: (0, 4) ft  
Right Coordinate: (400, 18.7) ft

**Slip Surface Block**

Left Grid

Upper Left: (40, 5) ft  
Lower Left: (40, -40) ft  
Lower Right: (140, -40) ft  
X Increments: 10  
Y Increments: 15  
Starting Angle: 135 °  
Ending Angle: 145 °  
Angle Increments: 2

Right Grid

Upper Left: (150, 5) ft  
Lower Left: (150, -40) ft  
Lower Right: (190, -40) ft  
X Increments: 10  
Y Increments: 15  
Starting Angle: 35 °



Ending Angle: 45 °  
 Angle Increments: 2

## Piezometric Lines

### Piezometric Line 1

#### Coordinates

|  | X (ft) | Y (ft) |
|--|--------|--------|
|  | 0      | 16     |
|  | 160    | 16     |
|  | 210    | 16     |
|  | 400    | 16     |

## Reinforcements

### Reinforcement 1

Type: Fabric  
 Outside Point: (160, 14.7) ft  
 Inside Point: (215, 14.7) ft  
 Slip Surface Intersection: (213.28, 14.7) ft  
 Total Length: 55 ft  
 Reinforcement Direction: 180 °  
 Applied Load Option: Variable  
 F of S Dependent: No  
 Bond Skin Friction: 200 psf  
 Bond Safety Factor: 1  
 Bond Resistance: 200 lbs/ft  
 Fabric Capacity: 14000 lbs  
 Fabric Safety Factor: 1  
 Fabric Load: 14000 lbs  
 Load Distribution: Even along reinf.  
 Load Orientation: 0  
 Applied Load: 11000 lbs  
 Fabric Load Used: 344.95 lbs  
 Resisting Force Used: 200 lbs/ft  
 Available Bond Length: 1.7247 ft  
 Required Bond Length: 1.7247 ft  
 Governing Component: Bond

## Regions

|          | Material                                   | Points                   | Area (ft <sup>2</sup> ) |
|----------|--|--------------------------|-------------------------|
| Region 1 | 3) Extremely Soft Clay el 10.5 to el -1.5  | 1,18,2,24,23,28,27,5,7,6 | 3173.375                |
| Region 2 | 4) Extremely Soft Clay el -1.5 to el -10.5 | 6,7,9,8                  | 3600                    |

|           |   |                       |          |
|-----------|---|-----------------------|----------|
| Region 3  | 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 | 8,9,11,10             | 5200     |
| Region 4  | 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5        | 10,11,13,12           | 4000     |
| Region 5  | 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5   | 12,13,15,14           | 4800     |
| Region 6  | 2) Extremely Soft Clay el 14 to el 10.5                       | 2,3,25,24             | 81.06    |
| Region 7  | 2) Extremely Soft Clay el 14 to el 10.5                       | 17,16,4,26,21,23,28   | 89.61    |
| Region 8  | 2) Extremely Soft Clay el 14 to el 10.5                       | 25,24,23,21,26        | 323.25   |
| Region 9  | 1) Uncompacted Clay Fill to el 14                             | 25,20,19,29,4,26      | 150      |
| Region 10 | Hydraulically Dredged and Pumped Slurry (Fill Conditions)     | 29,30,5,27,28,17,16,4 | 2320.265 |

## Points

|          | X (ft) | Y (ft) |
|----------|--------|--------|
| Point 1  | 0      | 4      |
| Point 2  | 122.4  | 10.5   |
| Point 3  | 135    | 14.7   |
| Point 4  | 215    | 14.7   |
| Point 5  | 400    | 4      |
| Point 6  | 0      | -1.5   |
| Point 7  | 400    | -1.5   |
| Point 8  | 0      | -10.5  |
| Point 9  | 400    | -10.5  |
| Point 10 | 0      | -23.5  |
| Point 11 | 400    | -23.5  |
| Point 12 | 0      | -33.5  |
| Point 13 | 400    | -33.5  |
| Point 14 | 0      | -45.5  |
| Point 15 | 400    | -45.5  |
| Point 16 | 226    | 14.7   |
| Point 17 | 240    | 14.7   |
| Point 18 | 102.8  | 4      |
| Point 19 | 190    | 19.7   |
| Point 20 | 185    | 19.7   |
| Point 21 | 238    | 11     |
| Point 22 | 240    | 10     |
| Point 23 | 241    | 10.5   |
| Point 24 | 136    | 10.5   |
| Point 25 | 160    | 14.7   |
| Point 26 | 208    | 14.7   |
| Point 27 | 272.1  | 4      |
| Point 28 | 252.6  | 10.5   |
|          |        |        |

|             |     |      |
|-------------|-----|------|
| Point<br>29 | 195 | 18.7 |
| Point<br>30 | 400 | 18.7 |

### Critical Slip Surfaces

|   | Slip Surface | FOS   | Center (ft)       | Radius (ft) | Entry (ft)      | Exit (ft)    |
|---|--------------|-------|-------------------|-------------|-----------------|--------------|
| 1 | 6325         | 1.264 | (158.135, 22.375) | 52.175      | (218.988, 18.7) | (100.006, 4) |

### Slices of Slip Surface: 6325

|    | Slip Surface | X (ft)    | Y (ft)     | PWP (psf) | Base Normal Stress (psf) | Frictional Strength (psf) | Cohesive Strength (psf) |
|----|--------------|-----------|------------|-----------|--------------------------|---------------------------|-------------------------|
| 1  | 6325         | 101.40295 | 3.021785   | 809.83731 | 903.94649                | 0                         | 75                      |
| 2  | 6325         | 105.33035 | 0.271785   | 981.44634 | 1199.6714                | 0                         | 75                      |
| 3  | 6325         | 109.88395 | -2.916665  | 1180.4    | 1581.9778                | 0                         | 125                     |
| 4  | 6325         | 113.9304  | -5.75      | 1357.21   | 1898.5312                | 0                         | 125                     |
| 5  | 6325         | 117.9768  | -8.583335  | 1533.9998 | 2215.0847                | 0                         | 125                     |
| 6  | 6325         | 121.2     | -10        | 1622.4167 | 2261.7083                | 0                         | 125                     |
| 7  | 6325         | 124.5     | -10        | 1622.4048 | 2298.0952                | 0                         | 125                     |
| 8  | 6325         | 128.7     | -10        | 1622.4048 | 2346.9762                | 0                         | 125                     |
| 9  | 6325         | 132.9     | -10        | 1622.4048 | 2395.9524                | 0                         | 125                     |
| 10 | 6325         | 135.5     | -10        | 1622.4    | 2419.4                   | 0                         | 125                     |
| 11 | 6325         | 138       | -10        | 1622.4    | 2419.425                 | 0                         | 125                     |
| 12 | 6325         | 142       | -10        | 1622.4    | 2419.425                 | 0                         | 125                     |
| 13 | 6325         | 146       | -10        | 1622.4    | 2419.425                 | 0                         | 125                     |
| 14 | 6325         | 150       | -10        | 1622.4    | 2419.425                 | 0                         | 125                     |
| 15 | 6325         | 154       | -10        | 1622.4    | 2419.425                 | 0                         | 125                     |
| 16 | 6325         | 158       | -10        | 1622.4    | 2419.425                 | 0                         | 125                     |
| 17 | 6325         | 161.625   | -10        | 1622.4    | 2432.2462                | 0                         | 125                     |
| 18 | 6325         | 164.875   | -10        | 1622.4    | 2456.4308                | 0                         | 125                     |
| 19 | 6325         | 168.41665 | -10        | 1622.4001 | 2506.8263                | 0                         | 125                     |
| 20 | 6325         | 172.25    | -10        | 1622.4001 | 2583.4959                | 0                         | 125                     |
| 21 | 6325         | 176.08335 | -10        | 1622.4001 | 2660.0872                | 0                         | 125                     |
| 22 | 6325         | 179.75    | -8.774637  | 1545.9272 | 2490.6903                | 0                         | 125                     |
| 23 | 6325         | 183.25    | -6.3239105 | 1393.0032 | 2331.611                 | 0                         | 125                     |
| 24 | 6325         | 187.5     | -3.3480285 | 1207.3154 | 2089.3292                | 0                         | 125                     |
| 25 | 6325         | 192.5     | 0.153009   | 988.84757 | 1744.4662                | 0                         | 75                      |
| 26 | 6325         | 197.04615 | 3.3362735  | 790.21904 | 1396.1444                | 0                         | 75                      |
| 27 | 6325         | 201.1385  | 6.201764   | 611.40992 | 1115.6104                | 0                         | 75                      |
| 28 | 6325         | 205.23085 | 9.0672545  | 432.60079 | 835.07645                | 0                         | 75                      |
| 29 | 6325         | 207.6385  | 10.753115  | 327.40434 | 669.51559                | 0                         | 75                      |
| 30 | 6325         | 208.25    | 11.18128   | 300.69433 | 625.89769                | 0                         | 75                      |
| 31 | 6325         | 209.25    | 11.881485  | 256.99528 | 553.03681                | 0                         | 75                      |



|    |      |           |           |            |           |   |     |
|----|------|-----------|-----------|------------|-----------|---|-----|
| 32 | 6325 | 211.2426  | 13.27673  | 169.93247  | 409.47147 | 0 | 75  |
| 33 | 6325 | 212.88025 | 14.42341  | 98.379574  | 292.15979 | 0 | 75  |
| 34 | 6325 | 213.46685 | 14.834155 | 72.749031  | 184.16102 | 0 | 200 |
| 35 | 6325 | 214.3951  | 15.484155 | 32.18891   | 196.98181 | 0 | 75  |
| 36 | 6325 | 217.0598  | 17.35     | -84.239266 | 60.170297 | 0 | 75  |

Directory: U:\sys\WPDATA\Projects\22348\Stability Analysis\1  
 Created By: Karishma R. Desai  
 File Name: 22348\_False River\_el 19.7\_GT\_Bench with HP slurry.gisz  
 Last Solved Date: 3/14/2014, Last Solved Time: 1:59:00 PM  
 Last Edited By: Karishma Desai

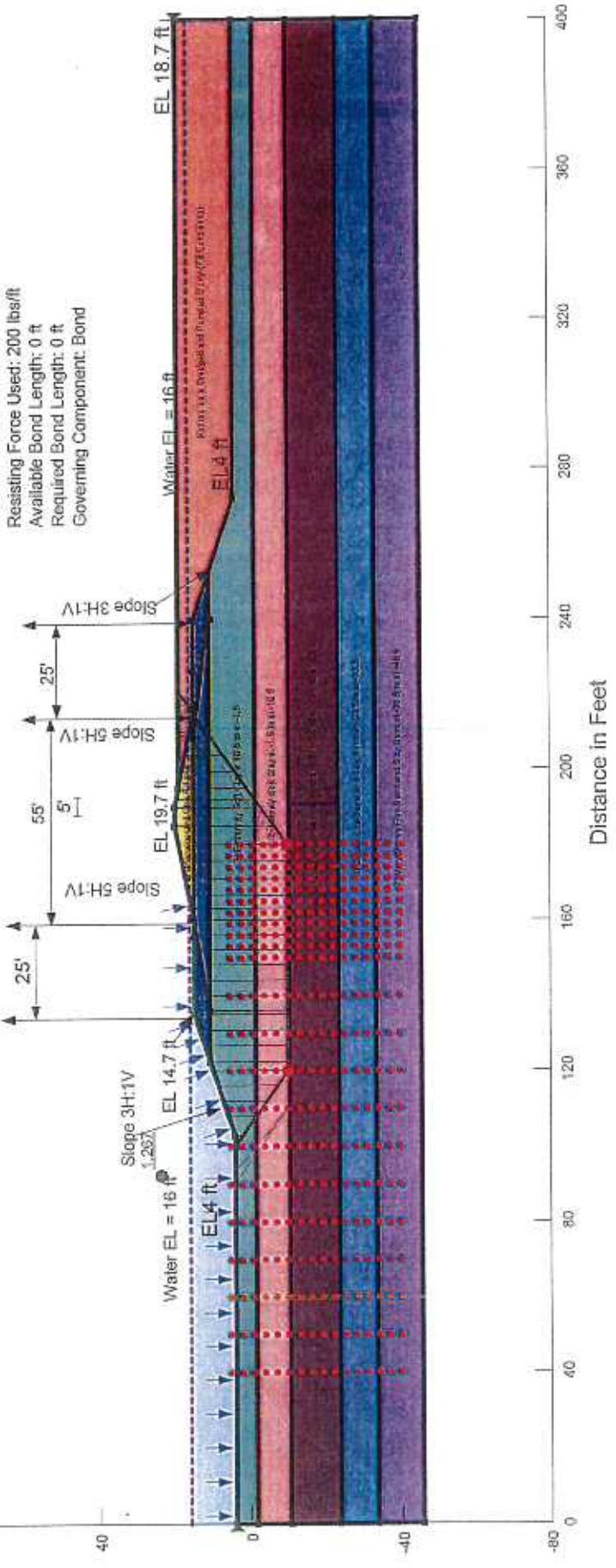
Name: 1) Uncompacted Clay Fill to el 14 Model: Undrained (Phi=0) Unit Weight: 100 pcf Cohesion: 200 psf Piezometric Line: 1  
 Name: 2) Extremely Soft Clay el 14 to el 10.5 Model: Undrained (Phi=0) Unit Weight: 98 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 3) Extremely Soft Clay el 10.5 to el -1.5 Model: Undrained (Phi=0) Unit Weight: 93 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 4) Extremely Soft Clay el -1.5 to el -10.5 Model: Undrained (Phi=0) Unit Weight: 95 pcf Cohesion: 125 psf Piezometric Line: 1  
 Name: 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30° Phi-B: 0° Piezometric Line: 1  
 Name: 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 32° Phi-B: 0° Piezometric Line: 1  
 Name: 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 34° Phi-B: 0° Piezometric Line: 1  
 Name: Hydraulically Dredged and Pumped Slurry (Fill Conditions) Model: Undrained (Phi=0) Unit Weight: 75 pcf Cohesion: 75 psf Piezometric Line: 1

Use Passive Mode: No  
 Optimize Critical Slip Surface Location: No  
 Tension Crack Option: (none)  
 Method: Spencer  
 Direction: Right to Left  
 SubFile: BS 16 RT to LT aROUND  
 Failure Search: Block  
 FOS: 1.267

Elevation (False River Datum = 1.2+NAVD88)

Reinforcement -

Type: Fabric  
 Outside Point: (160, 14.7) ft  
 Inside Point: (215, 14.7) ft  
 Total Length: 55 ft  
 F of S Dependent: No  
 Bond Skin Friction: 200 psf  
 Bond Safety Factor: 1  
 Fabric Capacity: 14000 lbs  
 Fabric Load: 14000 lbs  
 Load Distribution: Even along reinf.  
 Applied Load: 11000 lbs  
 Fabric Load Used: 0 lbs  
 Resisting Force Used: 200 lbs/ft  
 Available Bond Length: 0 ft  
 Required Bond Length: 0 ft  
 Governing Component: Bond



Directory: U:\sys\WPDATA\Projects\22348\Stability Analysis\

Created By: Karishma R. Desai

File Name: 22348\_False River\_el 19.7\_GT\_Bench with HP slurry.gsz

Last Solved Date: 3/13/2014, Last Solved Time: 10:29:26 AM

Last Edited By: Karishma Desai

- Name: 1) Uncompacted Clay Fill to el 14 Model: Undrained (Phi=0) Unit Weight: 100 pcf Cohesion: 200 psf Piezometric Line: 1
- Name: 2) Extremely Soft Clay el 14 to el 10.5 Model: Undrained (Phi=0) Unit Weight: 98 pcf Cohesion: 75 psf Piezometric Line: 1
- Name: 3) Extremely Soft Clay el 10.5 to el -1.5 Model: Undrained (Phi=0) Unit Weight: 93 pcf Cohesion: 75 psf Piezometric Line: 1
- Name: 4) Extremely Soft Clay el -1.5 to el -10.5 Model: Undrained (Phi=0) Unit Weight: 95 pcf Cohesion: 125 psf Piezometric Line: 1
- Name: 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30° Phi-B: 0° Piezometric Line: 1
- Name: 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 32° Phi-B: 0° Piezometric Line: 1
- Name: 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 34° Phi-B: 0° Piezometric Line: 1
- Name: Hydraulically Dredged and Pumped Slurry (Fill Conditions) Model: Undrained (Phi=0) Unit Weight: 75 pcf Cohesion: 75 psf Piezometric Line: 1

Use Passive Mode: No

Optimize Critical Slip Surface Location: No

Tension Crack Option: (none)

Method: Spencer

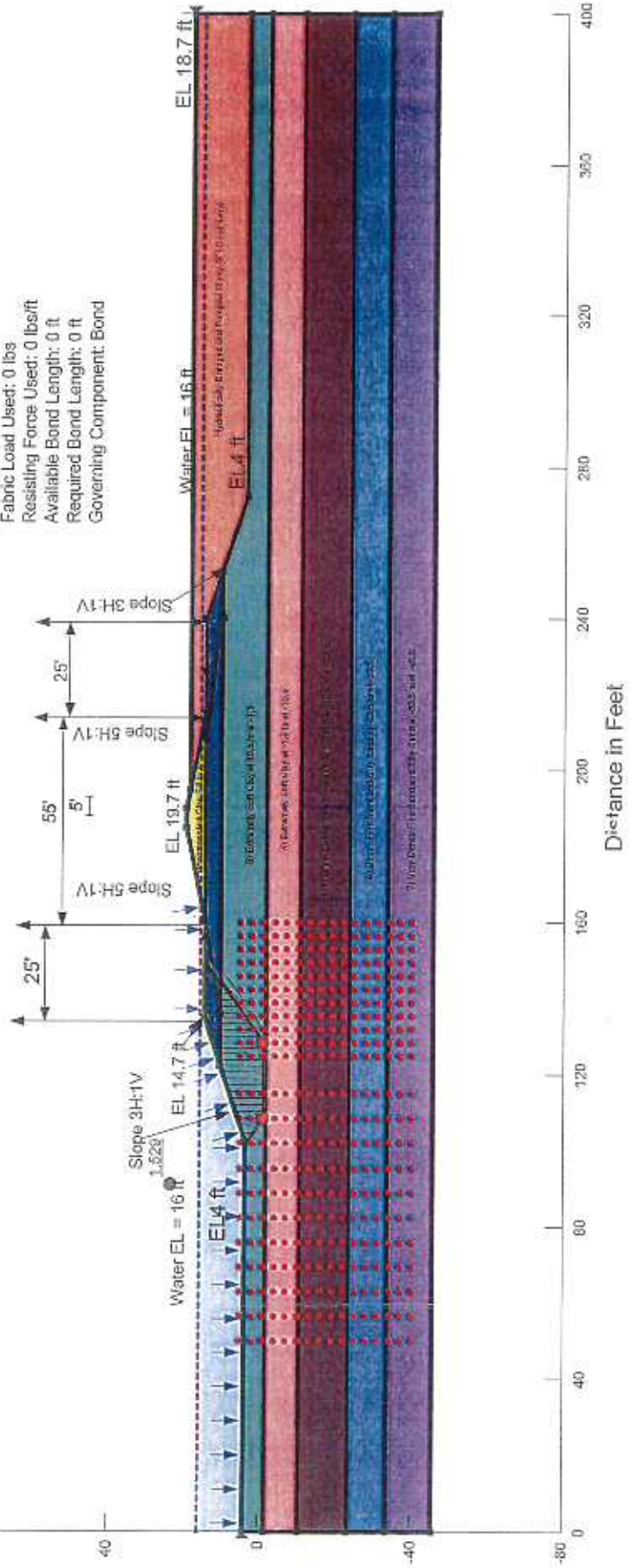
Direction: Right to Left

SubFile: BS 16 RT to L.T.local

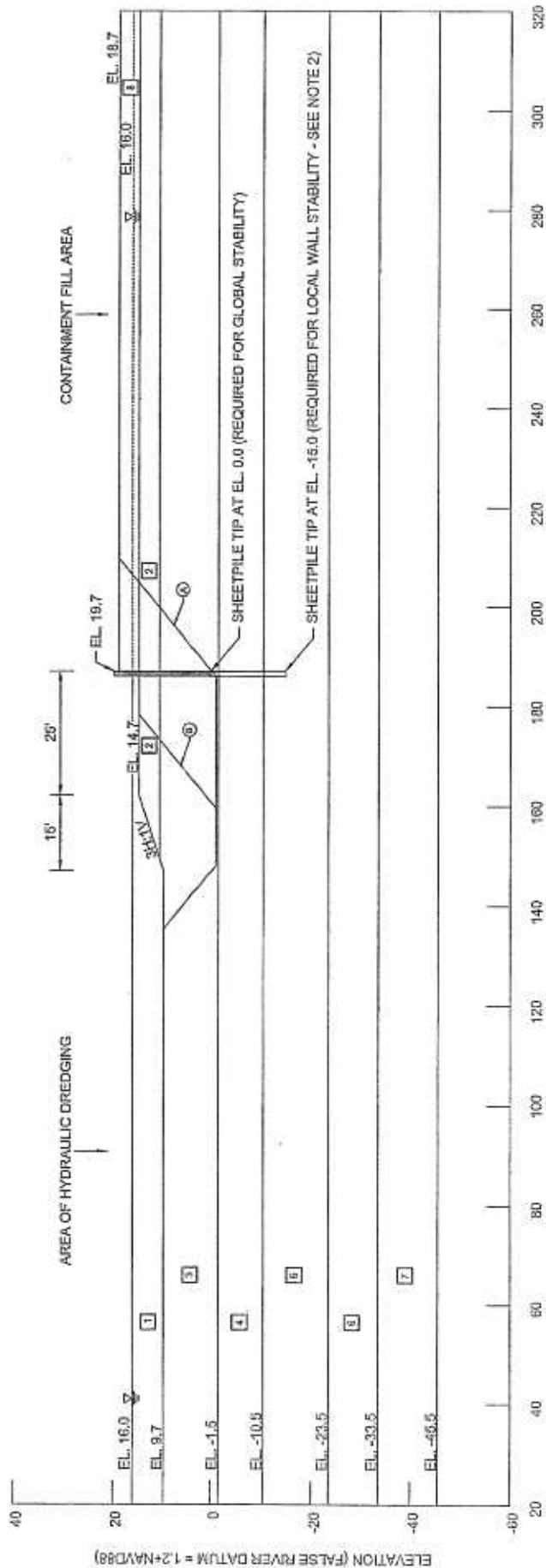
Failure Search: Block

FOS: 1.529

Elevation (False River Datum = 1.2+NAVD88)







| SOIL NO. | DESCRIPTION                         | FRICTION ANGLE IN DEGREES | UNIT WEIGHT IN PCF | COHESION IN PSF |      |
|----------|-------------------------------------|---------------------------|--------------------|-----------------|------|
|          |                                     |                           |                    | AVG.            | BASE |
| 1        | WATER                               | 0                         | 62.4               | 0               | 0    |
| 2        | CLAY                                | 0                         | 98                 | 75              | 75   |
| 3        | CLAY                                | 0                         | 93                 | 75              | 75   |
| 4        | CLAY                                | 0                         | 96                 | 125             | 125  |
| 5        | SAND                                | 30                        | 120                | 0               | 0    |
| 6        | SAND                                | 32                        | 120                | 0               | 0    |
| 7        | SAND                                | 34                        | 120                | 0               | 0    |
| 8        | HYDRAULICALLY DREDGED PLUMED SLURRY | 0                         | 75                 | 75              | 75   |

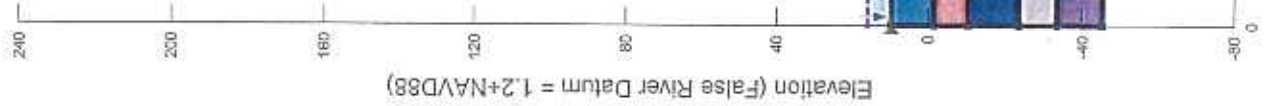
| SLIP SURFACE DESIGNATION | TYPE OF SURFACE | FACTOR OF SAFETY | FILE NAME   | DESIGN INCL. FACTOR (C, S, E) |
|--------------------------|-----------------|------------------|---|-------------------------------|
| (A)                      | BLOCK SPECIFIED | 1.30             | 3238 FALSE RIVER EL. 19.7 OT BENCH WITH SP. SLURRY SHEETPILE 165 16 FT TO 175.00Z | 1.00                          |
| (B)                      | BLOCK SPECIFIED | 2.37             | 3238 FALSE RIVER EL. 19.7 OT BENCH WITH SP. SLURRY SHEETPILE 165 16 FT TO 175.00Z | 1.00                          |

- NOTES:
- SLOPE STABILITY ANALYSES WERE PERFORMED BY SPENCER'S METHOD USING SLOPEW SOFTWARE, VERSION 7.23.
  - SHEETPILE TIP DETERMINED BASED ON GLOBAL SLOPE STABILITY IS PRESENTED HERE. THE INTERNAL STABILITY (I.E. LOCAL WALL STABILITY) GOVERNS THE SHEETPILE DESIGN, AND A TIP AT EL. -15 IS RECOMMENDED. THIS IS A 35.7-FT SHEETPILE. WE DETERMINED THIS TIP ELEVATION USING THE CIVALSH PROGRAM. CONVENTIONAL EARTHEN PRESSURE THEORY, AND A FACTOR OF SAFETY OF 1.30 APPLIED TO THE SOIL STRENGTHS. THIS ALSO RESULTS IN A MAXIMUM BENDING MOMENT OF 15 KIP-FT.

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SLOPE STABILITY ANALYSIS - SHEETPILE ALTERNATIVE  
 FINAL CONSTRUCTION  
 FALSE RIVER ECOSYSTEM RESTORATION  
 PHASE 1 SOUTH LEG  
 FORTIÈ COURÉE PARISH, LOUISIANA

DRAWN BY: J.L.L.    PLOT DATE: 14 MAR 14    SHEET NO: WAL024    FIGURE 7  
 CHECKED BY: K.R.A.    JOB NO.: 22240



Directory: U:\sys\WPDATA\Projects\22348\Stability Analysis\

Created By: Karishma R. Desai

File Name: 22348\_False River\_el 19.7\_GT\_Bench with HP slurry\_Sheetpile.gsz

Last Solved Date: 3/14/2014, Last Solved Time: 2:17:06 PM

Last Edited By: Karishma Desai

Name: 2) Extremely Soft Clay el 14 to el 10.5 Model: Undrained (Phi=0) Unit Weight: 98 pcf Cohesion: 75 psf Piezometric Line: 1

Name: 3) Extremely Soft Clay el 10.5 to el -1.5 Model: Undrained (Phi=0) Unit Weight: 95 pcf Cohesion: 125 psf Piezometric Line: 1

Name: 4) Extremely Soft Clay el -1.5 to el -10.5 Model: Undrained (Phi=0) Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30° Piezometric Line: 1

Name: 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 32° Piezometric Line: 1

Name: 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 34° Piezometric Line: 1

Name: 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 34° Piezometric Line: 1

Name: Hydraulically Dredged and Pumped Slurry (Fill Conditions) Model: Undrained (Phi=0) Unit Weight: 75 pcf Cohesion: 75 psf Piezometric Line: 1

Name: Steel Model: Undrained (Phi=0) Unit Weight: 91 pcf Cohesion: 4e+006 psf Piezometric Line: 1

Use Passive Model: No

Optimize Critical Slip Surface Location: No

Tension Crack Option: (none)

Method: Spencer

Direction: Right to Left

SubFile: BS 16 RT to LT BS

Failure Search: Block

FOS: 1.301



# BS 16 RT to LT BS

Report generated using GeoStudio 2007, version 7.17. Copyright © 1991-2010 GEO-SLOPE International Ltd.

## File Information

Title: False River  
Created By: Karishma R. Desai  
Revision Number: 235  
Last Edited By: Karishma Desai  
Date: 3/14/2014  
Time: 2:16:01 PM  
File Name: 22348\_False River\_el 19.7\_GT, Bench with HP slurry\_Sheetpile.gsz  
Directory: U:\sys\WPDATA\Projects\22348\Stability Analysis\  
Last Solved Date: 3/14/2014  
Last Solved Time: 2:17:06 PM

## Project Settings

Length(L) Units: feet  
Time(t) Units: Seconds  
Force(F) Units: lbf  
Pressure(p) Units: psf  
Strength Units: psf  
Unit Weight of Water: 62.4 pcf  
View: 2D

## Analysis Settings

### BS 16 RT to LT BS

Kind: SLOPE/W  
Method: Spencer  
Settings  
Apply Phreatic Correction: No  
PWP Conditions Source: Piezometric Line  
Use Staged Rapid Drawdown: No  
Slip Surface  
Direction of movement: Right to Left  
Use Passive Mode: No  
Slip Surface Option: Block  
Critical slip surfaces saved: 1  
Optimize Critical Slip Surface Location: No  
Tension Crack  
Tension Crack Option: (none)  
FOS Distribution  
FOS Calculation Option: Constant  
Restrict Block Crossing: Yes

**Advanced**

Number of Slices: 30  
Optimization Tolerance: 0.01  
Minimum Slip Surface Depth: 0.1 ft  
Optimization Maximum Iterations: 2000  
Optimization Convergence Tolerance: 1e-007  
Starting Optimization Points: 8  
Ending Optimization Points: 16  
Complete Passes per Insertion: 1  
Driving Side Maximum Convex Angle: 5 °  
Resisting Side Maximum Convex Angle: 1 °

**Materials****2) Extremely Soft Clay el 14 to el 10.5**

Model: Undrained (Phi=0)  
Unit Weight: 98 pcf  
Cohesion: 75 psf  
Pore Water Pressure  
Piezometric Line: 1

**3) Extremely Soft Clay el 10.5 to el -1.5**

Model: Undrained (Phi=0)  
Unit Weight: 93 pcf  
Cohesion: 75 psf  
Pore Water Pressure  
Piezometric Line: 1

**4) Extremely Soft Clay el -1.5 to el -10.5**

Model: Undrained (Phi=0)  
Unit Weight: 95 pcf  
Cohesion: 125 psf  
Pore Water Pressure  
Piezometric Line: 1

**5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5**

Model: Mohr-Coulomb  
Unit Weight: 120 pcf  
Cohesion: 0 psf  
Phi: 30 °  
Phi-B: 0 °  
Pore Water Pressure  
Piezometric Line: 1

**6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5**

Model: Mohr-Coulomb  
Unit Weight: 120 pcf  
Cohesion: 0 psf  
Phi: 32 °

Phi-B: 0 °  
Pore Water Pressure  
Piezometric Line: 1

### 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5

Model: Mohr-Coulomb  
Unit Weight: 120 pcf  
Cohesion: 0 psf  
Phi: 34 °  
Phi-B: 0 °  
Pore Water Pressure  
Piezometric Line: 1

### Hydraulically Dredged and Pumped Slurry (Fill Conditions)

Model: Undrained (Phi=0)  
Unit Weight: 75 pcf  
Cohesion: 75 psf  
Pore Water Pressure  
Piezometric Line: 1

### Steel

Model: Undrained (Phi=0)  
Unit Weight: 91 pcf  
Cohesion: 4e+006 psf  
Pore Water Pressure  
Piezometric Line: 1

### Slip Surface Limits

Left Coordinate: (0, 9.7) ft  
Right Coordinate: (400, 18.7) ft

### Slip Surface Block

#### Left Grid

Upper Left: (100, 5) ft  
Lower Left: (100, -25) ft  
Lower Right: (175, -25) ft  
X Increments: 10  
Y Increments: 15  
Starting Angle: 145 °  
Ending Angle: 155 °  
Angle Increments: 2

#### Right Grid

Upper Left: (180, 5) ft  
Lower Left: (180, -25) ft  
Lower Right: (220, -25) ft  
X Increments: 30  
Y Increments: 15  
Starting Angle: 35 °

Ending Angle: 45 °  
Angle Increments: 2

## Piezometric Lines

### Piezometric Line 1

#### Coordinates

|  | X (ft) | Y (ft) |
|--|--------|--------|
|  | 0      | 16     |
|  | 187    | 16     |
|  | 210    | 16     |
|  | 400    | 16     |

## Regions

|           | Material  | Points                 | Area (ft <sup>2</sup> ) |
|-----------|---|------------------------|-------------------------|
| Region 1  | 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5   | 12,40,41,13,15,14      | 4800                    |
| Region 2  | Steel   | 29,30,42,23,31         | 5                       |
| Region 3  | Steel   | 31,23,33,32            | 4.2                     |
| Region 4  | 2) Extremely Soft Clay el 14 to el 10.5                       | 31,3,2,22,32           | 127.26                  |
| Region 5  | 2) Extremely Soft Clay el 14 to el 10.5                       | 23,24,4,16,17,26,21,33 | 249.06                  |
| Region 6  | 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5        | 40,41,39,38            | 10                      |
| Region 7  | 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 | 38,39,37,36            | 13                      |
| Region 8  | 4) Extremely Soft Clay el -1.5 to el -10.5                    | 48,35,34,47            | 2.8                     |
| Region 9  | 3) Extremely Soft Clay el 10.5 to el -1.5                     | 33,50,35,7,5,25,26,21  | 2556                    |
| Region 10 | 4) Extremely Soft Clay el -1.5 to el -10.5                    | 35,48,37,9,7           | 1917                    |
| Region 11 | 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 | 37,39,11,9             | 2769                    |
| Region 12 | 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5        | 39,41,13,11            | 2130                    |
| Region 13 | 3) Extremely Soft Clay el 10.5 to el -1.5                     | 32,49,34,6,1,18,2,22   | 2113.44                 |
| Region 14 | 4) Extremely Soft Clay el -1.5 to el -10.5                    | 36,8,6,34,47           | 1674                    |
| Region 15 | 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 | 36,38,10,8             | 2418                    |
| Region 16 | 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5        | 38,40,12,10            | 1860                    |
|           | 2) Extremely Soft Clay el 14 to el 10.5                       | 17,26,25,5,45          | 645.54                  |



|           |   |                              |      |
|-----------|---|------------------------------|------|
| Region 17 |   |                              |      |
| Region 18 | Hydraulically Dredged and Pumped Slurry (Fill Conditions) | 42,27,28,46,45,17,16,4,24,23 | 852  |
| Region 19 | 4) Extremely Soft Clay el -1.5 to el -10.5                | 47,48,37,36                  | 6.2  |
| Region 20 | 3) Extremely Soft Clay el 10.5 to el -1.5                 | 49,34,35,50                  | 1.5  |
| Region 21 | Steel   | 49,32,33,50                  | 10.5 |

## Points

|          | X (ft) | Y (ft) |
|----------|--------|--------|
| Point 1  | 0      | 9.7    |
| Point 2  | 149.4  | 10.5   |
| Point 3  | 162    | 14.7   |
| Point 4  | 215    | 14.7   |
| Point 5  | 400    | 10.5   |
| Point 6  | 0      | -1.5   |
| Point 7  | 400    | -1.5   |
| Point 8  | 0      | -10.5  |
| Point 9  | 400    | -10.5  |
| Point 10 | 0      | -23.5  |
| Point 11 | 400    | -23.5  |
| Point 12 | 0      | -33.5  |
| Point 13 | 400    | -33.5  |
| Point 14 | 0      | -45.5  |
| Point 15 | 400    | -45.5  |
| Point 16 | 226    | 14.7   |
| Point 17 | 240    | 14.7   |
| Point 18 | 147    | 9.7    |
| Point 19 | 190    | 19.7   |
| Point 20 | 185    | 19.7   |
| Point 21 | 241    | 10.5   |
| Point 22 | 163    | 10.5   |
| Point 23 | 187    | 14.7   |
| Point 24 | 208    | 14.7   |
| Point 25 | 272.1  | 10.5   |
| Point 26 | 252.6  | 10.5   |
| Point 27 | 195    | 18.7   |
| Point 28 | 400    | 18.7   |
| Point 29 | 186    | 19.7   |
| Point 30 | 187    | 19.7   |
| Point 31 | 186    | 14.7   |

|          |     |       |
|----------|-----|-------|
| Point 32 | 186 | 10.5  |
| Point 33 | 187 | 10.5  |
| Point 34 | 186 | -1.5  |
| Point 35 | 187 | -1.5  |
| Point 36 | 186 | -10.5 |
| Point 37 | 187 | -10.5 |
| Point 38 | 186 | -23.5 |
| Point 39 | 187 | -23.5 |
| Point 40 | 186 | -33.5 |
| Point 41 | 187 | -33.5 |
| Point 42 | 187 | 18.7  |
| Point 43 | 163 | 16    |
| Point 44 | 400 | 4.7   |
| Point 45 | 400 | 14.7  |
| Point 46 | 400 | 16    |
| Point 47 | 186 | -4.3  |
| Point 48 | 187 | -4.3  |
| Point 49 | 186 | 0     |
| Point 50 | 187 | 0     |

### Critical Slip Surfaces

|   | Slip Surface | FOS   | Center (ft)      | Radius (ft) | Entry (ft)      | Exit (ft)      |
|---|--------------|-------|------------------|-------------|-----------------|----------------|
| 1 | 11177        | 1.301 | (172.848, 20.95) | 32.451      | (210.144, 18.7) | (137.219, 9.7) |

### Slices of Slip Surface: 11177

|  | Slip Surface | X (ft) | Y (ft) | PWP (psf) | Base Normal Stress (psf) |  |  |
|--|--------------|--------|--------|-----------|--------------------------|--|--|
|  |              |        |        |           |                          |  |  |

|    |       |           |             |            |            | Frictional Strength (psf) | Cohesive Strength (psf) |
|----|-------|-----------|-------------|------------|------------|---------------------------|-------------------------|
| 1  | 11177 | 138.44145 | 8.8438925   | 446.54298  | 526.00284  | 0                         | 75                      |
| 2  | 11177 | 140.88675 | 7.131678    | 553.3716   | 688.70796  | 0                         | 75                      |
| 3  | 11177 | 143.33205 | 5.4194635   | 660.23372  | 851.37958  | 0                         | 75                      |
| 4  | 11177 | 145.77735 | 3.7072485   | 767.06235  | 1014.0847  | 0                         | 75                      |
| 5  | 11177 | 148.2     | 2.010892    | 872.9089   | 1191.5932  | 0                         | 75                      |
| 6  | 11177 | 150.95    | 0.0853215   | 993.07658  | 1405.2422  | 0                         | 75                      |
| 7  | 11177 | 153.6875  | -1          | 1060.8     | 1467.9158  | 0                         | 75                      |
| 8  | 11177 | 156.0625  | -1          | 1060.8     | 1495.5789  | 0                         | 75                      |
| 9  | 11177 | 158.4375  | -1          | 1060.8     | 1523.2842  | 0                         | 75                      |
| 10 | 11177 | 160.8125  | -1          | 1060.8     | 1550.9474  | 0                         | 75                      |
| 11 | 11177 | 162.5     | -1          | 1060.8     | 1564       | 0                         | 75                      |
| 12 | 11177 | 164.2778  | -1          | 1060.7868  | 1563.9649  | 0                         | 75                      |
| 13 | 11177 | 166.83335 | -1          | 1060.7868  | 1563.9649  | 0                         | 75                      |
| 14 | 11177 | 169.3889  | -1          | 1060.7868  | 1563.9649  | 0                         | 75                      |
| 15 | 11177 | 171.94445 | -1          | 1060.7868  | 1563.9649  | 0                         | 75                      |
| 16 | 11177 | 174.5     | -1          | 1060.7868  | 1563.9649  | 0                         | 75                      |
| 17 | 11177 | 177.05555 | -1          | 1060.7868  | 1563.9649  | 0                         | 75                      |
| 18 | 11177 | 179.6111  | -1          | 1060.7868  | 1563.9649  | 0                         | 75                      |
| 19 | 11177 | 182.16665 | -1          | 1060.7868  | 1563.9649  | 0                         | 75                      |
| 20 | 11177 | 184.7222  | -1          | 1060.7868  | 1563.9649  | 0                         | 75                      |
| 21 | 11177 | 186.33335 | -1          | 1060.7999  | 1889.8499  | 0                         | 75                      |
| 22 | 11177 | 186.83335 | -0.86015005 | 1052.0624  | 1780.7544  | 0                         | 75                      |
| 23 | 11177 | 188.33335 | 0.39849945  | 973.54676  | 1564.5979  | 0                         | 75                      |
| 24 | 11177 | 191       | 2.6360985   | 833.90643  | 1361.6728  | 0                         | 75                      |
| 25 | 11177 | 193.66665 | 4.8736975   | 694.29483  | 1158.7476  | 0                         | 75                      |
| 26 | 11177 | 196.34295 | 7.1193725   | 554.15883  | 955.07549  | 0                         | 75                      |
| 27 | 11177 | 199.02885 | 9.373124    | 413.52284  | 750.69555  | 0                         | 75                      |
| 28 | 11177 | 201.62315 | 11.55       | 277.68119  | 548.14479  | 0                         | 75                      |
| 29 | 11177 | 204.12585 | 13.65       | 146.64128  | 347.44201  | 0                         | 75                      |
| 30 | 11177 | 206.15185 | 15.35       | 40.559898  | 199.56083  | 0                         | 75                      |
| 31 | 11177 | 208.46325 | 17.289495   | -80.464623 | 57.711509  | 0                         | 75                      |
| 32 | 11177 | 210.0721  | 18.639495   | -164.70657 | -41.023925 | 0                         | 75                      |



Directory: U:\sys\WPDATA\Projects\22348\Stability Analysis  
 Created By: Kanishma R. Desai  
 File Name: 22348\_False River\_el 19.7\_GT\_Bench with HP slurry\_Sheepile.gsz  
 Last Solved Date: 3/13/2014, Last Solved Time: 7:20:50 PM  
 Last Edited By: Kanishma Desai

Name: 2) Extremely Soft Clay el 14 to el 10.5 Model: Undrained (Phi=0) Unit Weight: 98 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 3) Extremely Soft Clay el 10.5 to el -11.5 Model: Undrained (Phi=0) Unit Weight: 93 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: 4) Extremely Soft Clay el -11.5 to el -10.5 Model: Undrained (Phi=0) Unit Weight: 95 pcf Cohesion: 125 psf Piezometric Line: 1  
 Name: 5) Medium Dense Fine Sand and Silty Sand el -10.5 to el -23.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 30° Phi-B: 0° Piezometric Line: 1  
 Name: 6) Dense Fine Sand and Silty Sand el -23.5 to el -33.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 32° Phi-B: 0° Piezometric Line: 1  
 Name: 7) Very Dense Fine Sand and Silty Sand el -33.5 to el -45.5 Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 0 psf Phi: 34° Phi-B: 0° Piezometric Line: 1  
 Name: Hydraulically Dredged and Pumped Slurry (Fill Conditions) Model: Undrained (Phi=0) Unit Weight: 75 pcf Cohesion: 75 psf Piezometric Line: 1  
 Name: Steel Model: Undrained (Phi=0) Unit Weight: 48+006 pcf Cohesion: 0 psf Piezometric Line: 1

Use Passive Mode: No  
 Optimize Critical Slip Surface Location: No  
 Tension Crack Option: (none)  
 Method: Spencer  
 Direction: Right to Left  
 Subfile: BS 16 RT to LT BS local  
 Failure Search: Block  
 FOS: 2.367

