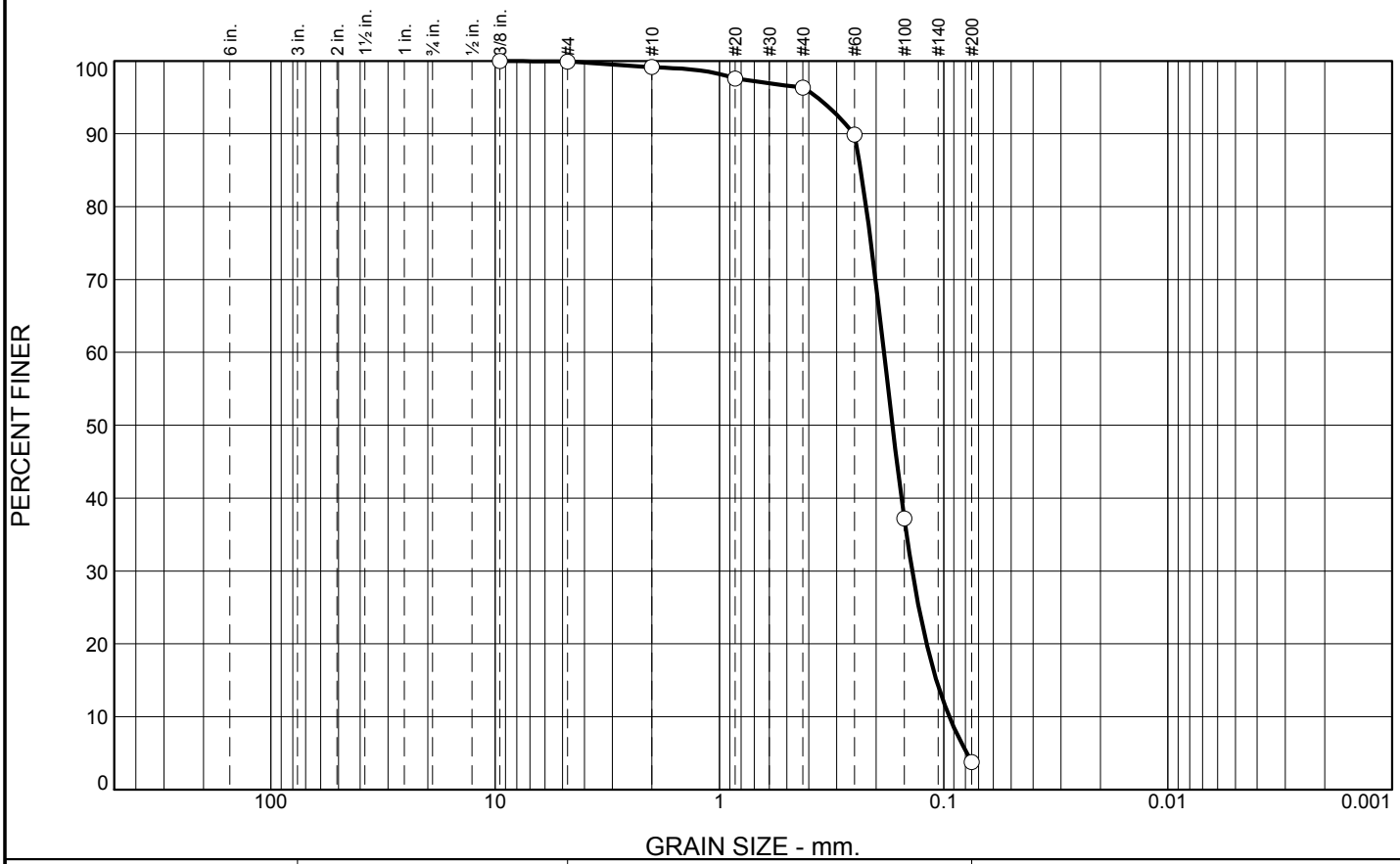
# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.7 | 2.9 | 92.5 | 3.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.2 | | |
| #20 | 97.6 | | |
| #40 | 96.3 | | |
| #60 | 89.9 | | |
| #100 | 37.2 | | |
| #200 | 3.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2517 $D_{85}$= 0.2343 $D_{60}$= 0.1846
$D_{50}$= 0.1693 $D_{30}$= 0.1381 $D_{15}$= 0.1078
$D_{10}$= 0.0944 $C_u$= 1.96 $C_c$= 1.09

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-20-10C
**Sample Number:** TE Lab ID: 4488.07 **Depth:** 11.4 - 14.2 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

## Boring Designation BI-MS-21-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Mississippi Sound | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-MS-21-10 — LOCATION COORDINATES: E = 934,745 N = 267,974 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 21 Ft. |
| | 15. DATE BORING — STARTED: 05-14-10 — COMPLETED: 05-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -19.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 12.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.3 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 6/1-gray<br>D50: 0.1678 mm % Fines: 3.6 |
| | | | | B | Classification: SP-SM Color: 2.5Y 6/1-gray<br>D50: 0.1481 mm % Fines: 5.6 |
| -28.8 | 9.5 | | | | |
| -30.3 | 11.0 | | CLAY, lean, dark gray (CL) | NS | |
| -32.1 | 12.8 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, brown (SM) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

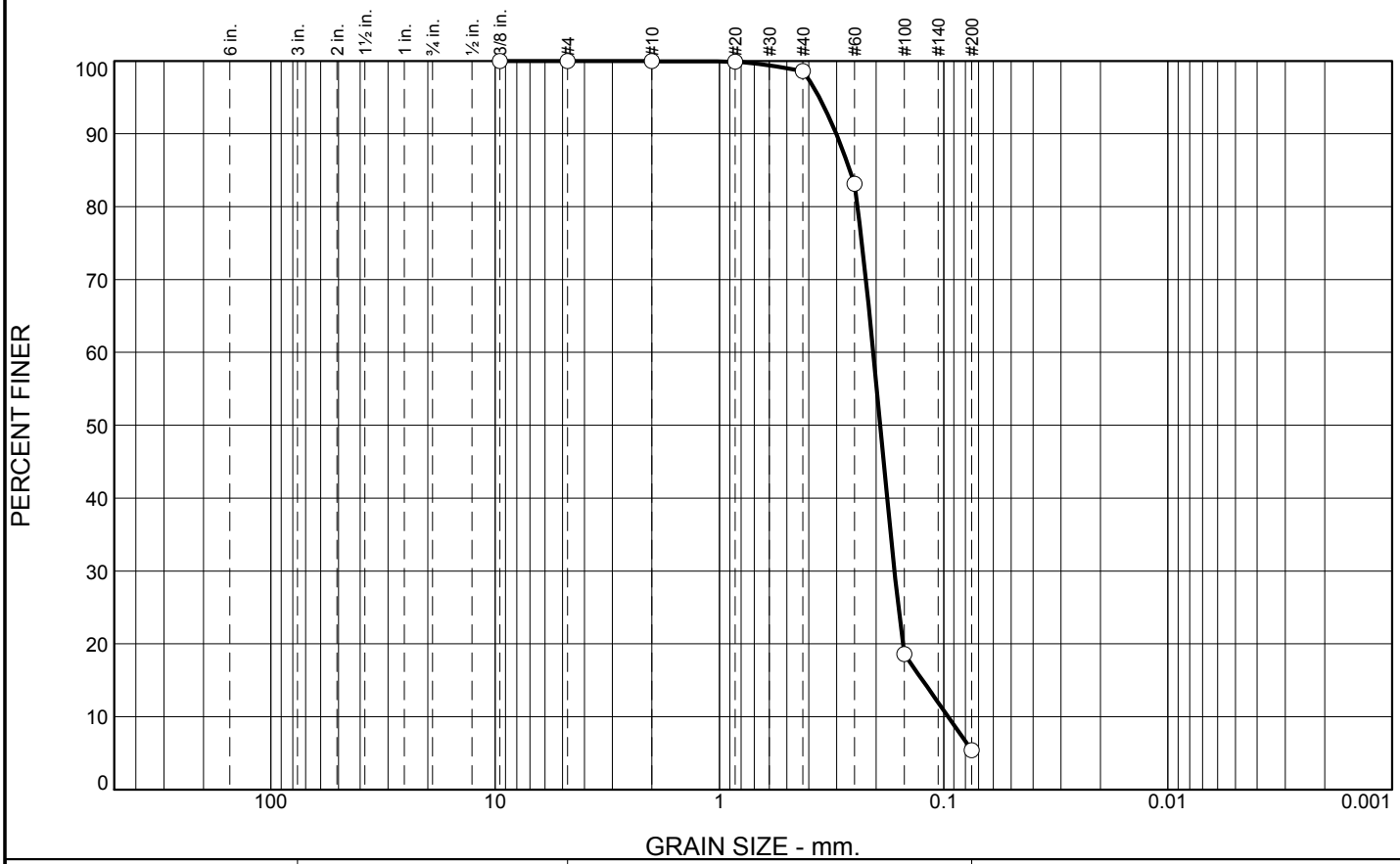
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.23678° Long = -88.9901°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 93.2 | 5.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 98.6 | | |
| #60 | 83.1 | | |
| #100 | 18.6 | | |
| #200 | 5.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3014 $D_{85}$= 0.2620 $D_{60}$= 0.2061
$D_{50}$= 0.1920 $D_{30}$= 0.1658 $D_{15}$= 0.1242
$D_{10}$= 0.0955 $C_u$= 2.16 $C_c$= 1.40

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-21-10A
**Sample Number:** TE Lab ID: 4461.32 **Depth:** 0.0 - 5.0 (ft) **Date:** 5/13/10

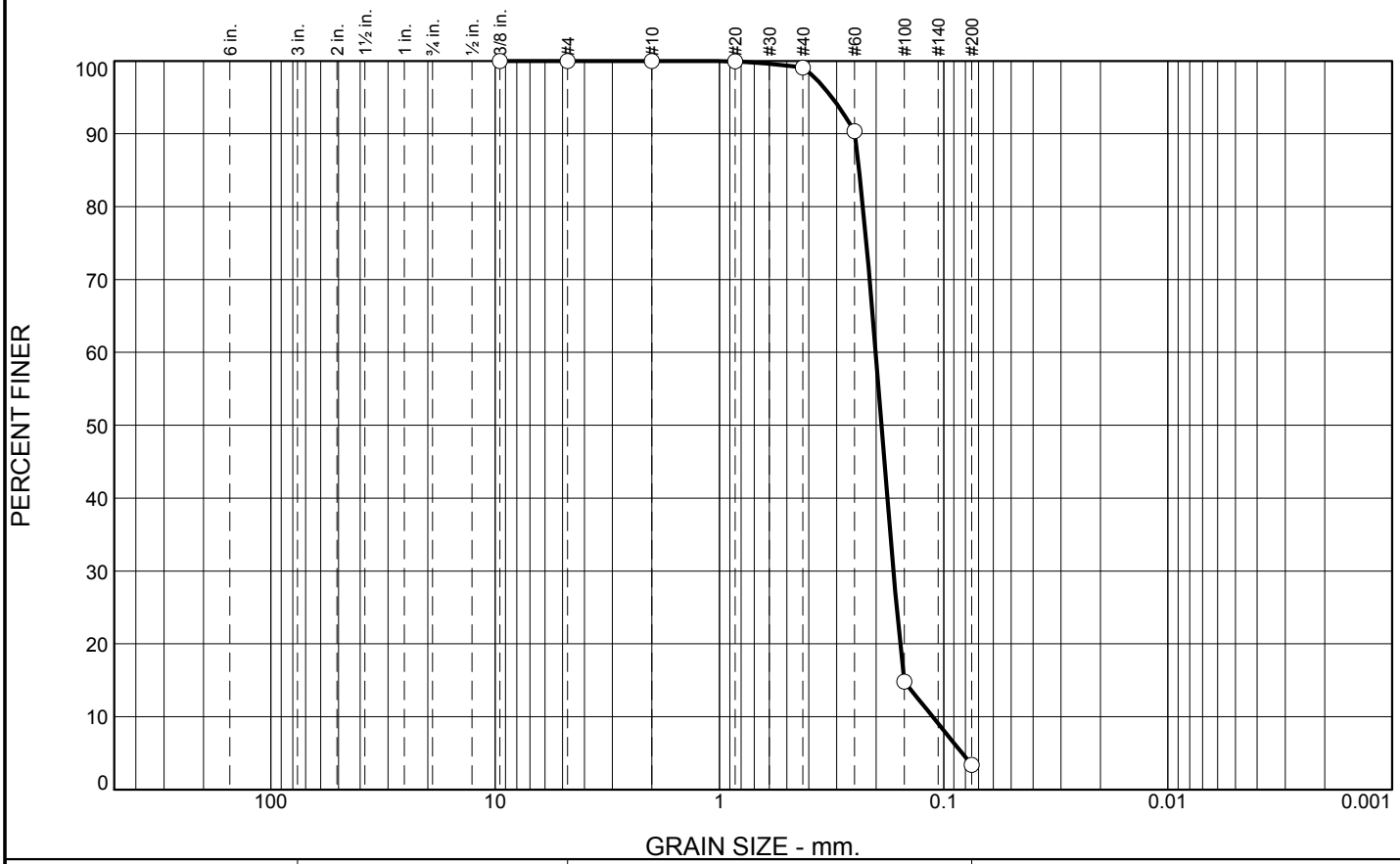
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Mississippi Barrier Island Restoration Project
Contract No. W91278-10-D-0026 - Task 03
**Project No:** 1021230009 **Figure**

**Tested By:** J.Maddox/L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 95.7 | 3.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 99.1 | | |
| #60 | 90.3 | | |
| #100 | 14.8 | | |
| #200 | 3.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2492 $D_{85}$= 0.2382 $D_{60}$= 0.2011
$D_{50}$= 0.1894 $D_{30}$= 0.1675 $D_{15}$= 0.1502
$D_{10}$= 0.1120 $C_u$= 1.80 $C_c$= 1.25

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-21-10B
**Sample Number:** TE Lab ID: 4461.33 **Depth:** 5.0 - 10.0 (ft) **Date:** 5/13/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Mississippi Barrier Island Restoration Project
Contract No. W91278-10-D-0026 - Task 03
**Project No:** 1021230009 **Figure**

**Tested By:** J.Maddox/L.Stokes **Checked By:** R.Byrd

## Boring Designation BI-MS-22-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Mississippi Sound | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-MS-22-10 — LOCATION COORDINATES: E = 933,373 N = 266,895 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 19 Ft. |
| | 15. DATE BORING — STARTED: 05-13-10 — COMPLETED: 05-13-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -17.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 11.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -17.7 | 0.0 | | | | |
| -18.7 | 1.0 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, gray (SM) | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 5Y 5/2-olive gray<br>D50: 0.1722 mm % Fines: 6.1 |
| | | | | B | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.2009 mm % Fines: 3.2 |
| -27.9 | 10.2 | | | | |
| -28.7 | 11.0 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | NS | |
| -29.1 | 11.4 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

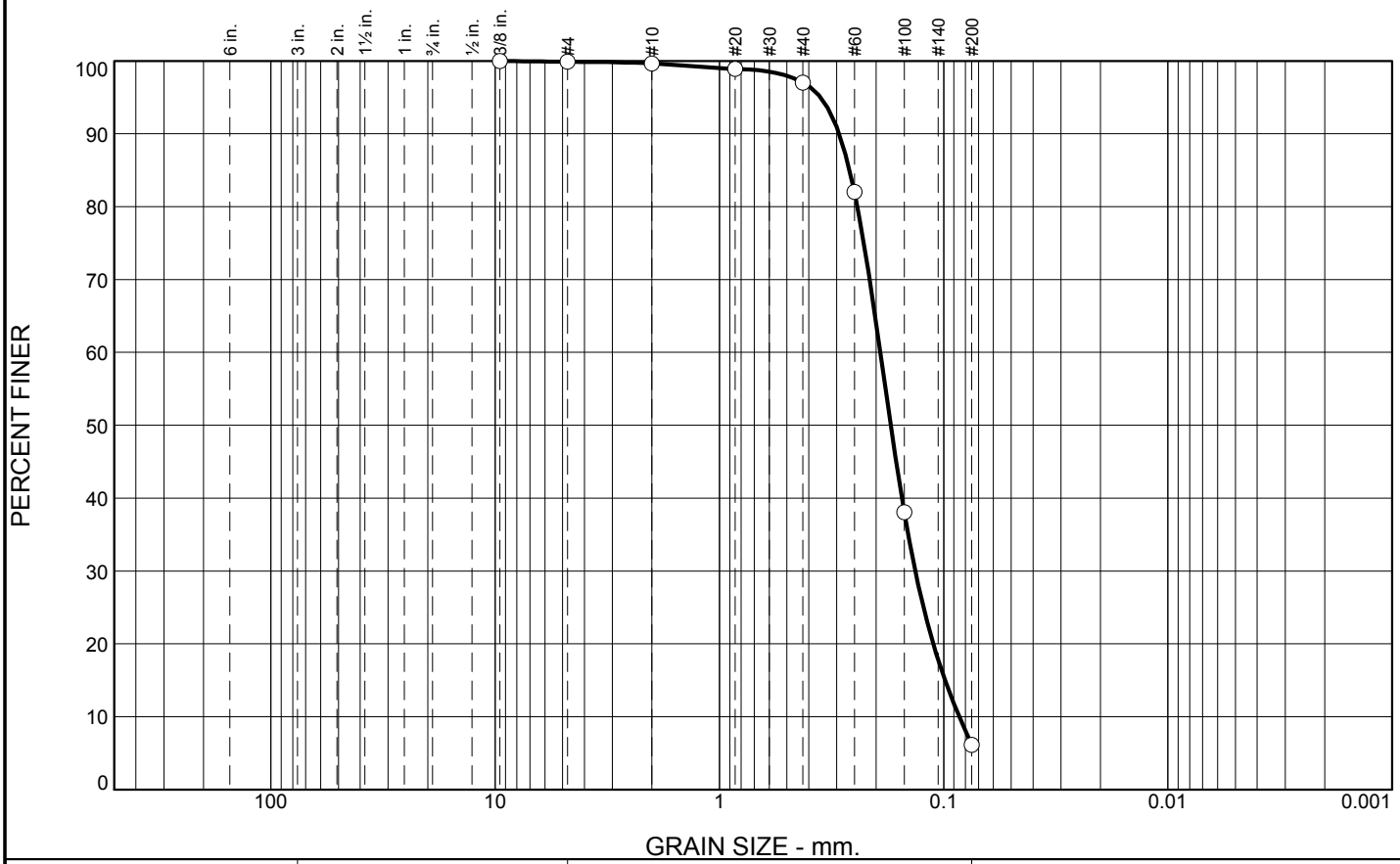
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.23381° Long = -88.99444°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.2 | 2.7 | 90.9 | 6.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.7 | | |
| #20 | 98.9 | | |
| #40 | 97.0 | | |
| #60 | 82.0 | | |
| #100 | 38.1 | | |
| #200 | 6.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM)

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2925 $D_{85}$= 0.2627 $D_{60}$= 0.1917
$D_{50}$= 0.1722 $D_{30}$= 0.1339 $D_{15}$= 0.0987
$D_{10}$= 0.0852 $C_u$= 2.25 $C_c$= 1.10

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-22-10A
**Sample Number:** TE Lab ID: 4488.08 **Depth:** 0.0 - 5.0 (ft.) **Date:** 5/27/10

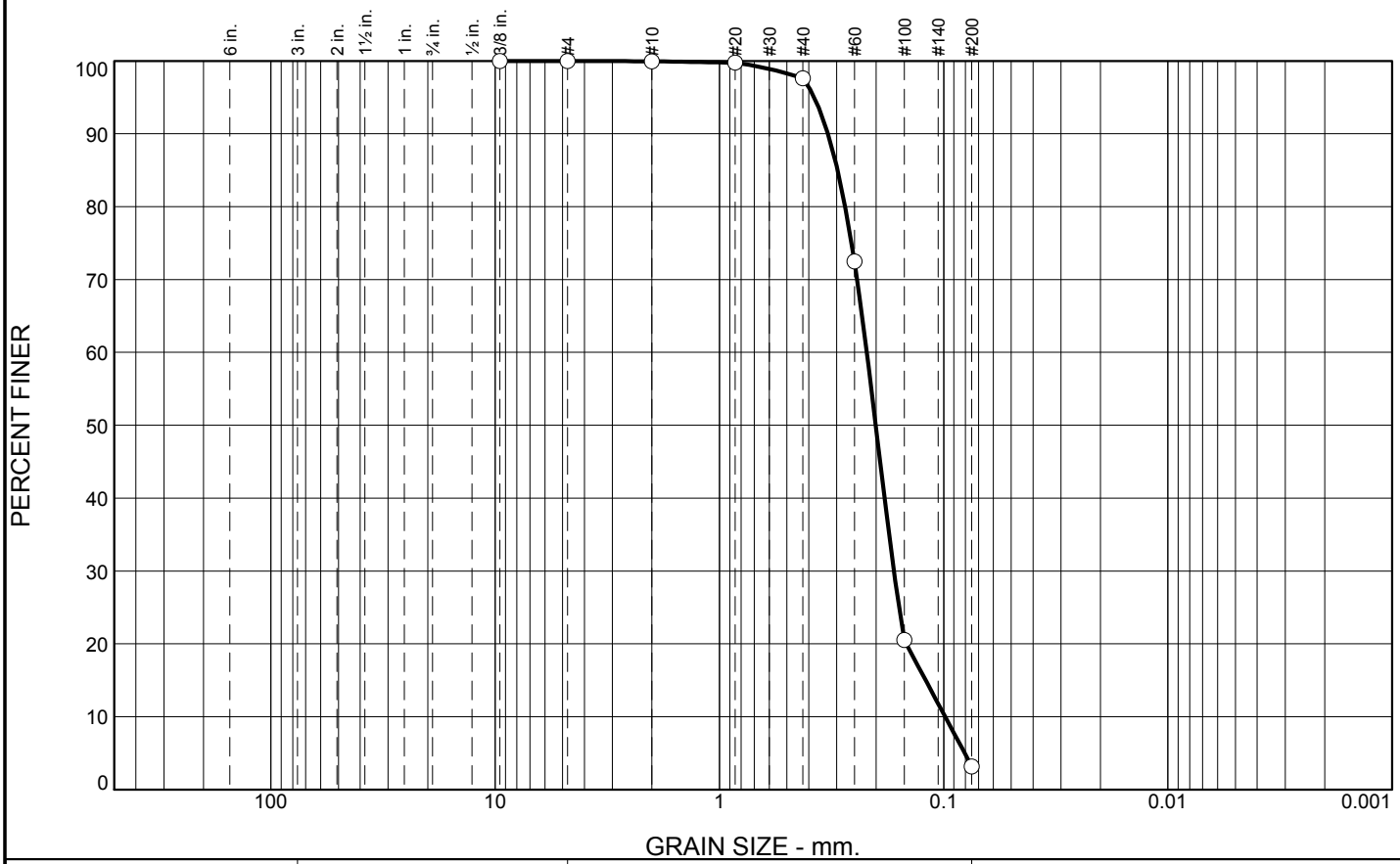
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.3 | 94.4 | 3.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 97.6 | | |
| #60 | 72.5 | | |
| #100 | 20.5 | | |
| #200 | 3.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3280 $D_{85}$= 0.2972 $D_{60}$= 0.2202
$D_{50}$= 0.2009 $D_{30}$= 0.1668 $D_{15}$= 0.1203
$D_{10}$= 0.0985 $C_u$= 2.24 $C_c$= 1.28

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-22-10B
**Sample Number:** TE Lab ID: 4488.09 **Depth:** 5.0 - 10.0 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

**Boring Designation BI-MS-23-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Mississippi Sound | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-MS-23-10 — LOCATION COORDINATES: E = 934,905 N = 267,032 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 22 Ft. |
| | 15. DATE BORING — STARTED: 05-14-10 — COMPLETED: 05-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -20.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.6 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -20.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 5Y 6/1-gray<br>D50: 0.1867 mm % Fines: 3.8 |
| | | | | B | Classification: SP Color: 5Y 6/1-gray<br>D50: 0.1827 mm % Fines: 3.7 |
| | | | | C | Classification: SP-SM Color: 5Y 6/1-gray<br>D50: 0.1797 mm % Fines: 6.8 |
| -36.4 | 16.2 | | | | |
| -36.8 | 16.6 | | SAND, clayey, mostly fine to medium-grained sand-sized quartz, some clay, trace shell fragments, gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

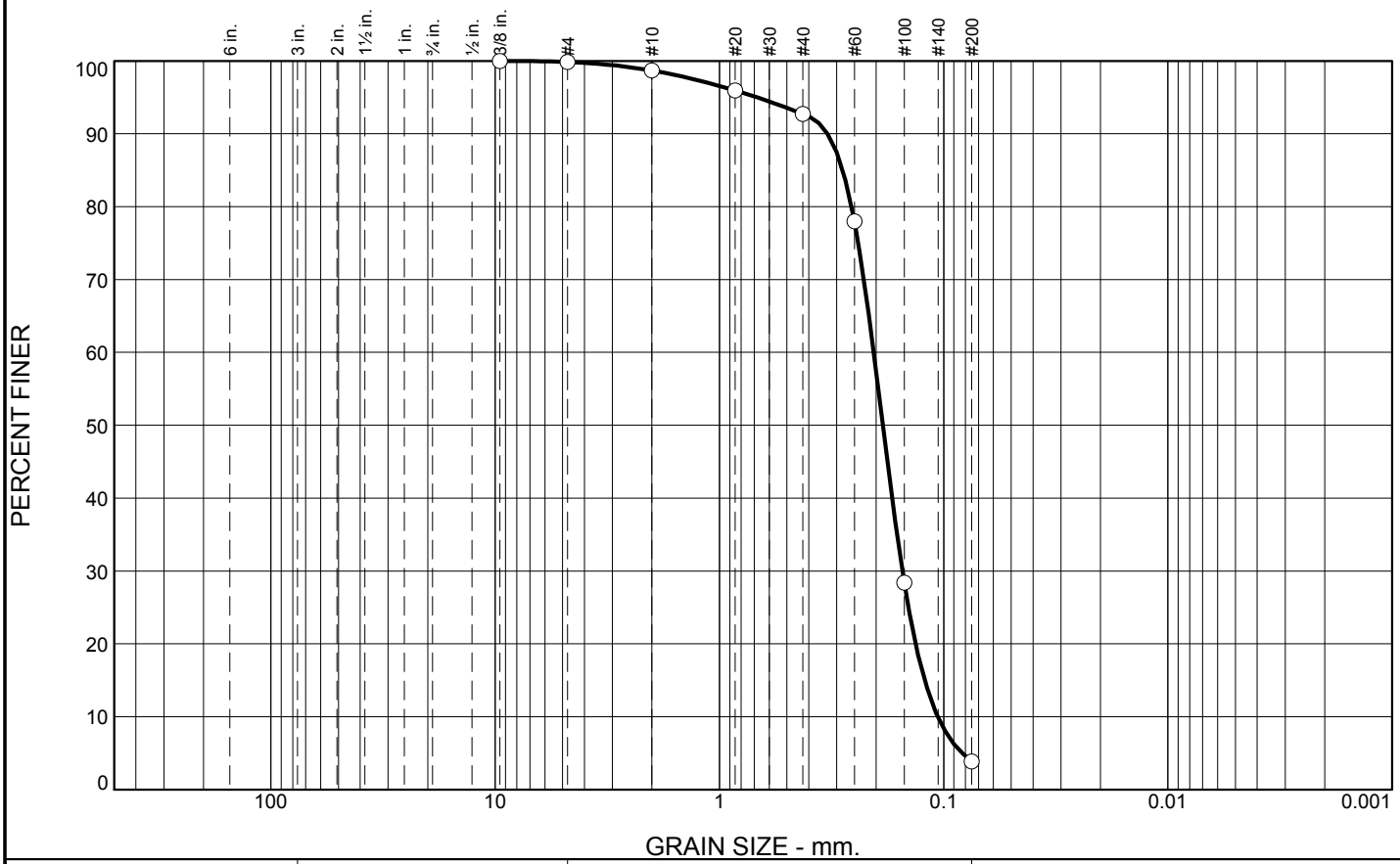
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.23419° Long = -88.98959°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 1.2 | 6.0 | 88.9 | 3.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 98.7 | | |
| #20 | 95.9 | | |
| #40 | 92.7 | | |
| #60 | 78.0 | | |
| #100 | 28.4 | | |
| #200 | 3.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3292 $D_{85}$= 0.2821 $D_{60}$= 0.2052
$D_{50}$= 0.1867 $D_{30}$= 0.1528 $D_{15}$= 0.1215
$D_{10}$= 0.1063 $C_u$= 1.93 $C_c$= 1.07

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-23-10A
**Sample Number:** TE Lab ID: 4488.12 **Depth:** 0.0 - 5.0 (ft.) **Date:** 5/27/10

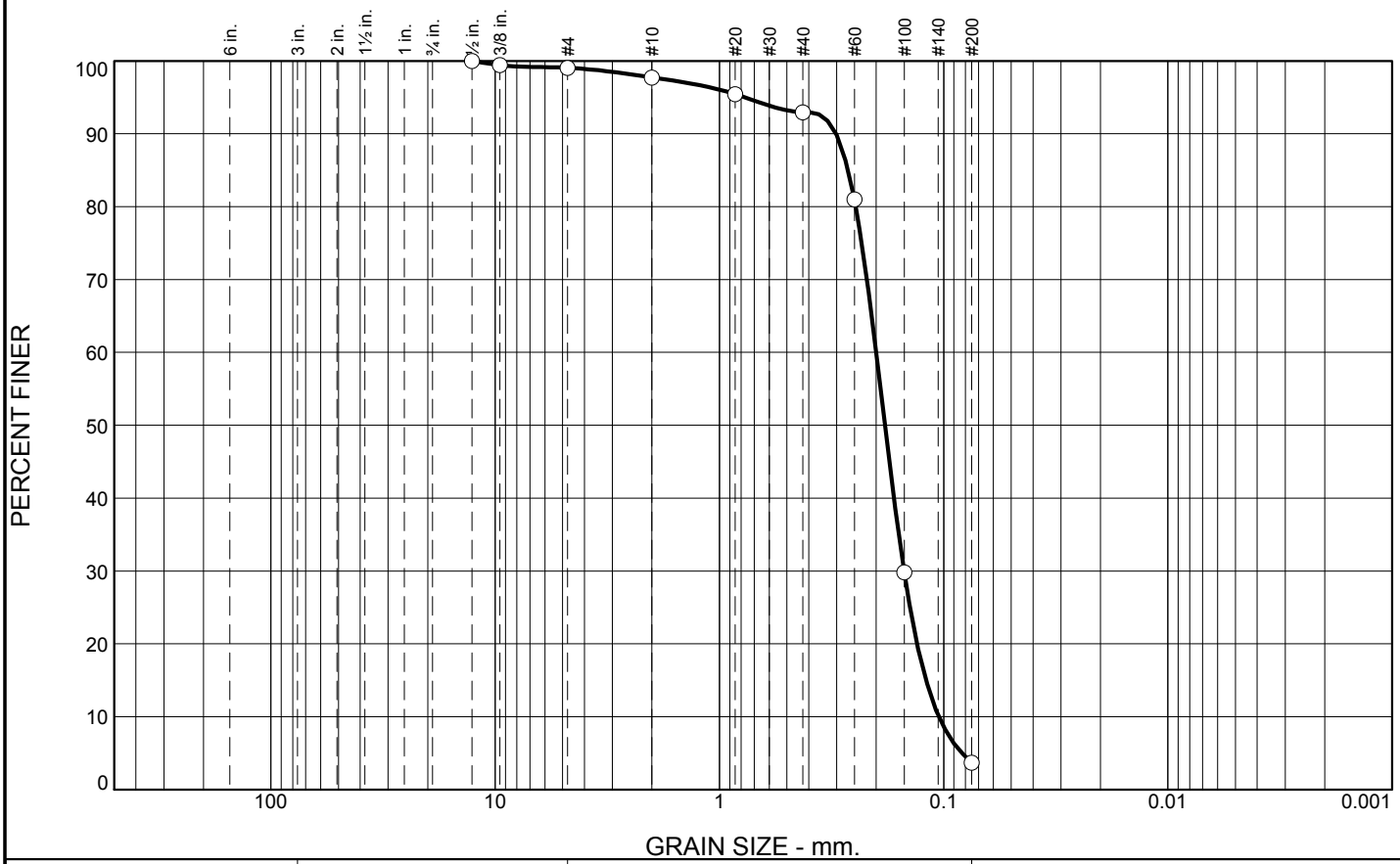
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.9 | 1.4 | 4.7 | 89.3 | 3.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.4 | | |
| #4 | 99.1 | | |
| #10 | 97.7 | | |
| #20 | 95.4 | | |
| #40 | 93.0 | | |
| #60 | 81.0 | | |
| #100 | 29.8 | | |
| #200 | 3.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3021 $D_{85}$= 0.2666 $D_{60}$= 0.2000
$D_{50}$= 0.1827 $D_{30}$= 0.1504 $D_{15}$= 0.1198
$D_{10}$= 0.1051 $C_u$= 1.90 $C_c$= 1.08

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-23-10B
**Sample Number:** TE Lab ID: 4488.13 **Depth:** 5.0 - 10.0 (ft.) **Date:** 5/27/10

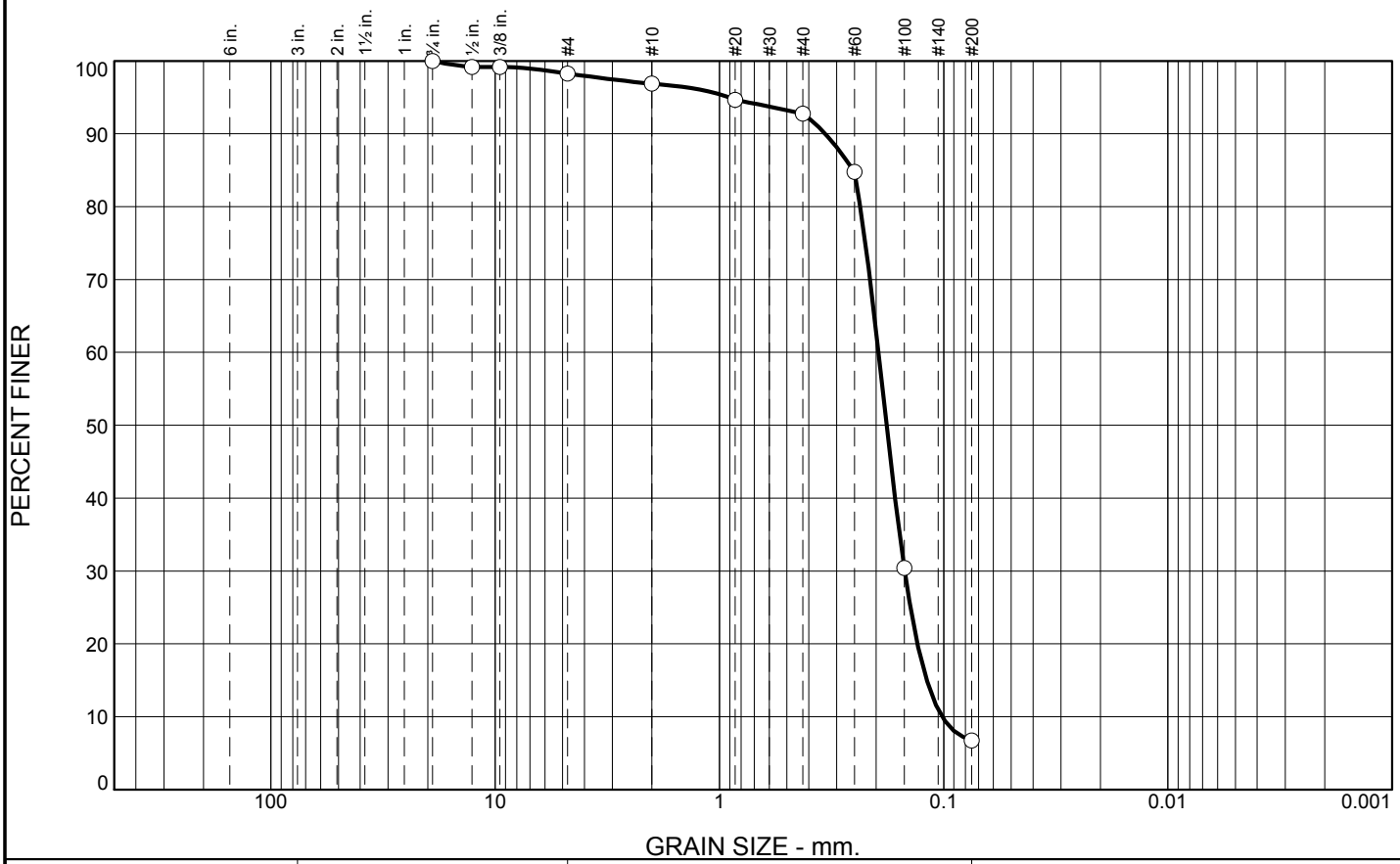
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.7 | 1.4 | 4.1 | 86.0 | 6.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .750 | 100.0 | | |
| .500 | 99.2 | | |
| .375 | 99.2 | | |
| #4 | 98.3 | | |
| #10 | 96.9 | | |
| #20 | 94.7 | | |
| #40 | 92.8 | | |
| #60 | 84.8 | | |
| #100 | 30.4 | | |
| #200 | 6.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3378 $D_{85}$= 0.2530 $D_{60}$= 0.1954
$D_{50}$= 0.1797 $D_{30}$= 0.1494 $D_{15}$= 0.1189
$D_{10}$= 0.1017 $C_u$= 1.92 $C_c$= 1.12

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-23-10C
**Sample Number:** TE Lab ID: 4488.14 **Depth:** 10.0 - 16.3 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

**Boring Designation BI-MS-24-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Mississippi Sound | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-MS-24-10 — LOCATION COORDINATES: E = 932,701 N = 269,428 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 19 Ft. |
| | 15. DATE BORING — STARTED: 05-15-10 — COMPLETED: 05-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -17.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -17.0 | 0.0 | | | | |
| -19.3 | 2.3 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SP-SM Color: 5Y 6/1-gray<br>D50: 0.1577 mm % Fines: 10.7 |
| -30.7 | 13.7 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | B | Classification: SP-SM Color: 5Y 6/1-gray<br>D50: 0.1382 mm % Fines: 6 |
| | | | | C | Classification: SP-SM Color: 2.5Y 6/1-gray<br>D50: 0.1569 mm % Fines: 5.6 |
| -32.5 | 15.5 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

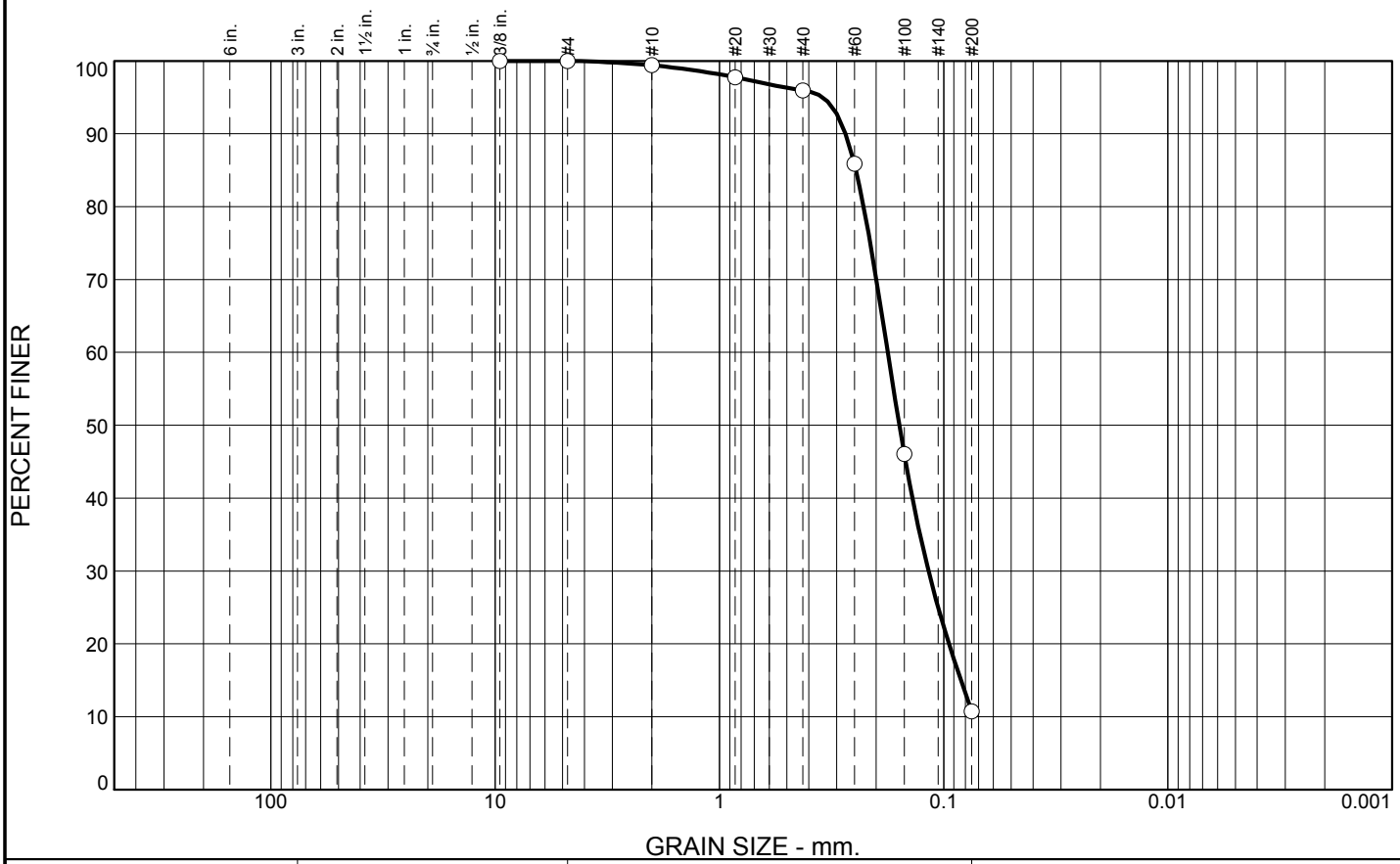
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.24077° Long = -88.99658°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.6 | 3.5 | 85.2 | 10.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.4 | | |
| #20 | 97.8 | | |
| #40 | 95.9 | | |
| #60 | 85.9 | | |
| #100 | 46.0 | | |
| #200 | 10.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2740 $D_{85}$= 0.2461 $D_{60}$= 0.1776
$D_{50}$= 0.1577 $D_{30}$= 0.1168 $D_{15}$= 0.0838
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-24-10A
**Sample Number:** TE Lab ID: 4488.21 **Depth:** 0.0 - 5.0 (ft.) **Date:** 5/27/10

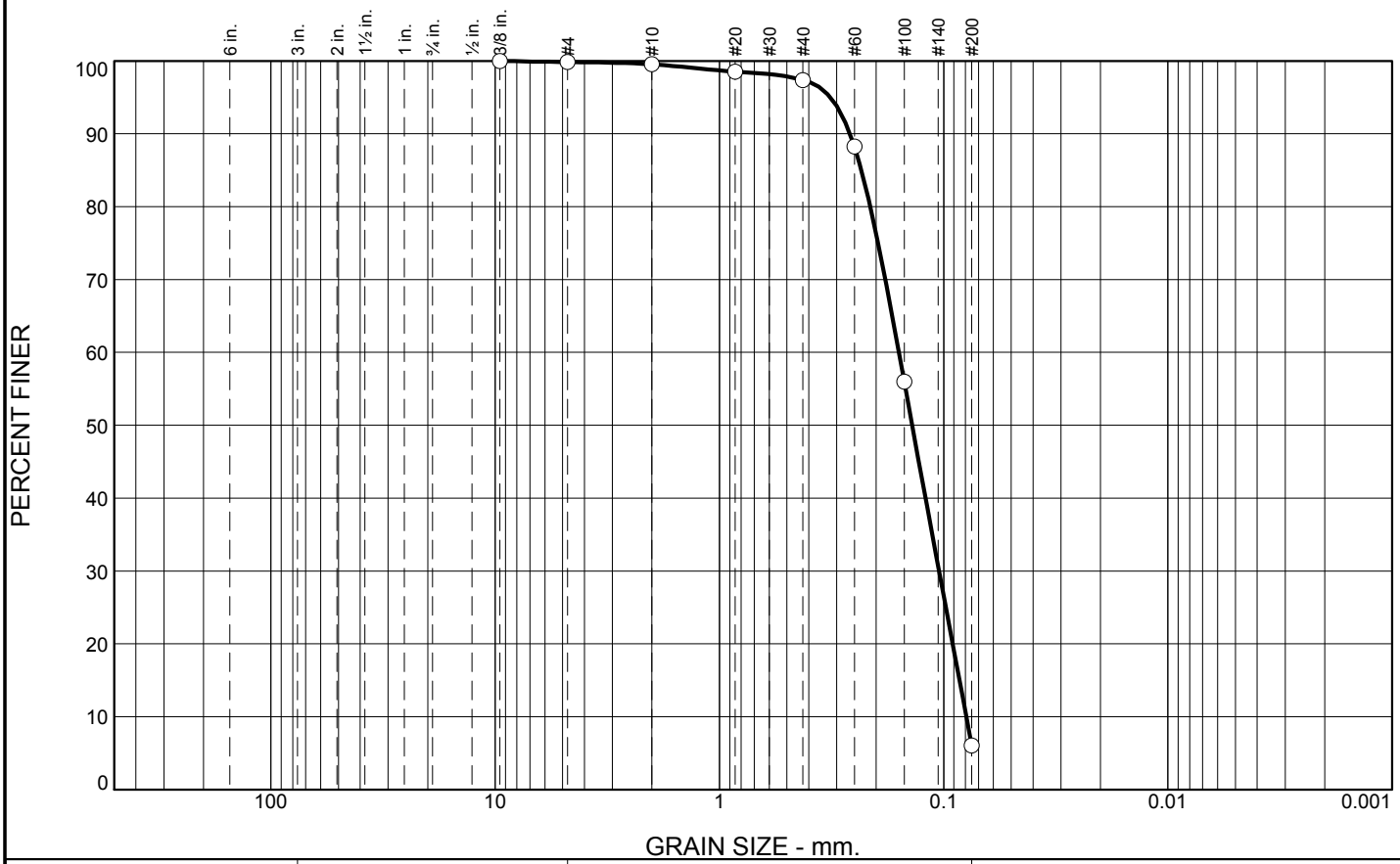
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.3 | 2.1 | 91.4 | 6.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.5 | | |
| #20 | 98.5 | | |
| #40 | 97.4 | | |
| #60 | 88.3 | | |
| #100 | 56.0 | | |
| #200 | 6.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2616 $D_{85}$= 0.2328 $D_{60}$= 0.1585
$D_{50}$= 0.1382 $D_{30}$= 0.1049 $D_{15}$= 0.0850
$D_{10}$= 0.0793 $C_u$= 2.00 $C_c$= 0.88

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-24-10B
**Sample Number:** TE Lab ID: 4488.22 **Depth:** 5.0 - 10.0 (ft.) **Date:** 5/27/10

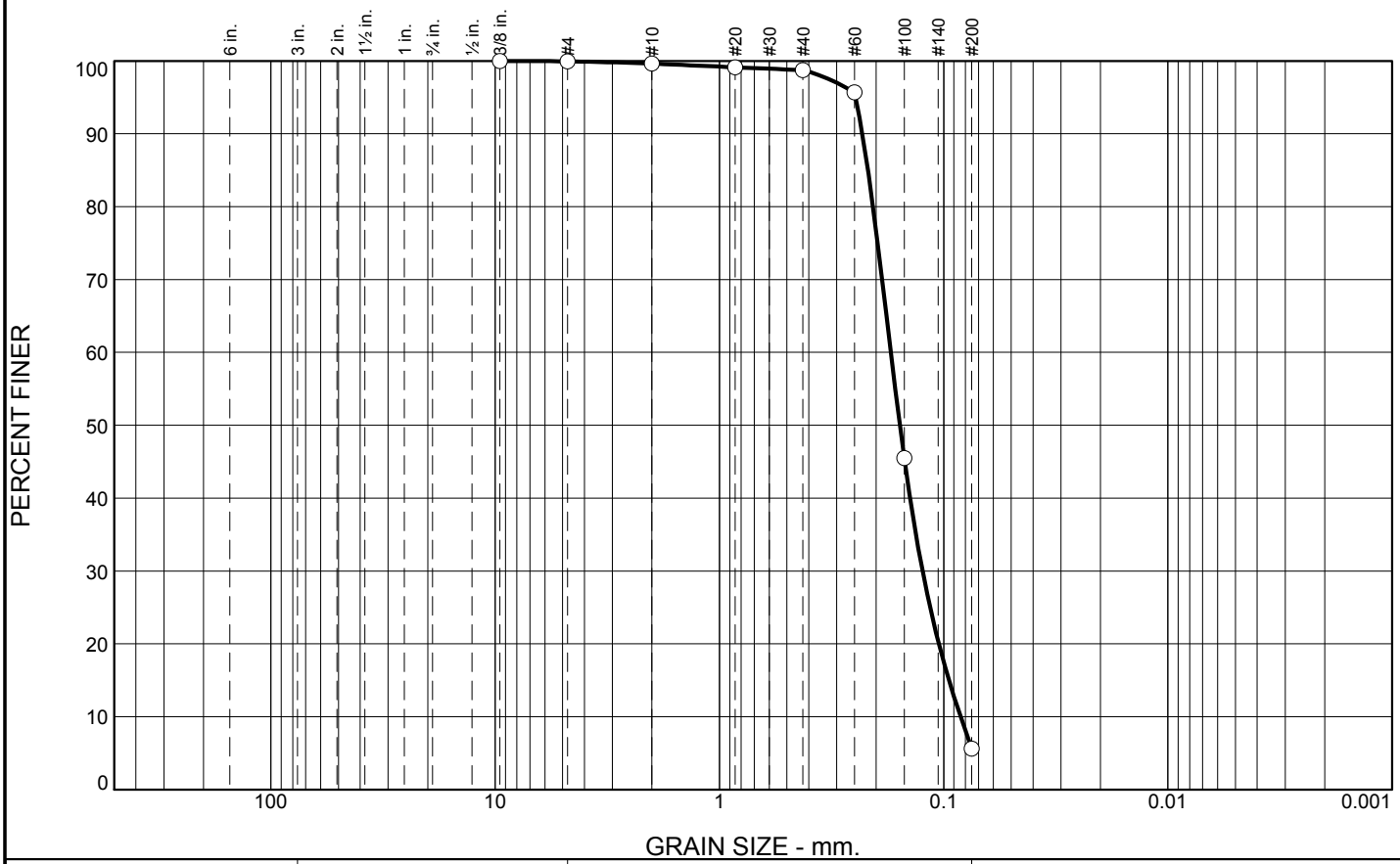
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.3 | 0.9 | 93.1 | 5.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.6 | | |
| #20 | 99.1 | | |
| #40 | 98.7 | | |
| #60 | 95.7 | | |
| #100 | 45.5 | | |
| #200 | 5.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2304 $D_{85}$= 0.2176 $D_{60}$= 0.1721
$D_{50}$= 0.1569 $D_{30}$= 0.1242 $D_{15}$= 0.0947
$D_{10}$= 0.0840 $C_u$= 2.05 $C_c$= 1.07

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-24-10C
**Sample Number:** TE Lab ID: 4488.23 **Depth:** 10.0 - 13.7 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

**Boring Designation BI-MS-25-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Mississippi Sound | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-MS-25-10 — LOCATION COORDINATES: E = 934,068 N = 264,414 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 4 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 23 Ft. |
| | 15. DATE BORING — STARTED: 05-18-10 — COMPLETED: 05-18-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -22.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Ed Herman, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -22.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, some shell fragments, gray (SP) | A | Classification: SP Color: 5Y 6/1-gray<br>D50: 0.2529 mm % Fines: 3.7 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2133 mm % Fines: 3.8 |
| -32.6 | 10.4 | | | | |
| | | | SAND, silty, mostly medium-grained sand-sized quartz, some shell fragments, gray (SM) | C | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.196 mm % Fines: 6.2 |
| -35.6 | 13.4 | | | | |
| | | | SILT, inorganic-L, some medium-grained sand-sized quartz, with clay zones, dark gray (ML) | D | Classification: SM Color: 5Y 5/1-gray<br>D50: 0.0947 mm % Fines: 38 |
| -41.1 | 18.9 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22699° Long = -88.99223°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 934,068 Y = 264,414 | ELEVATION TOP OF BORING -22.2 Ft. | | |

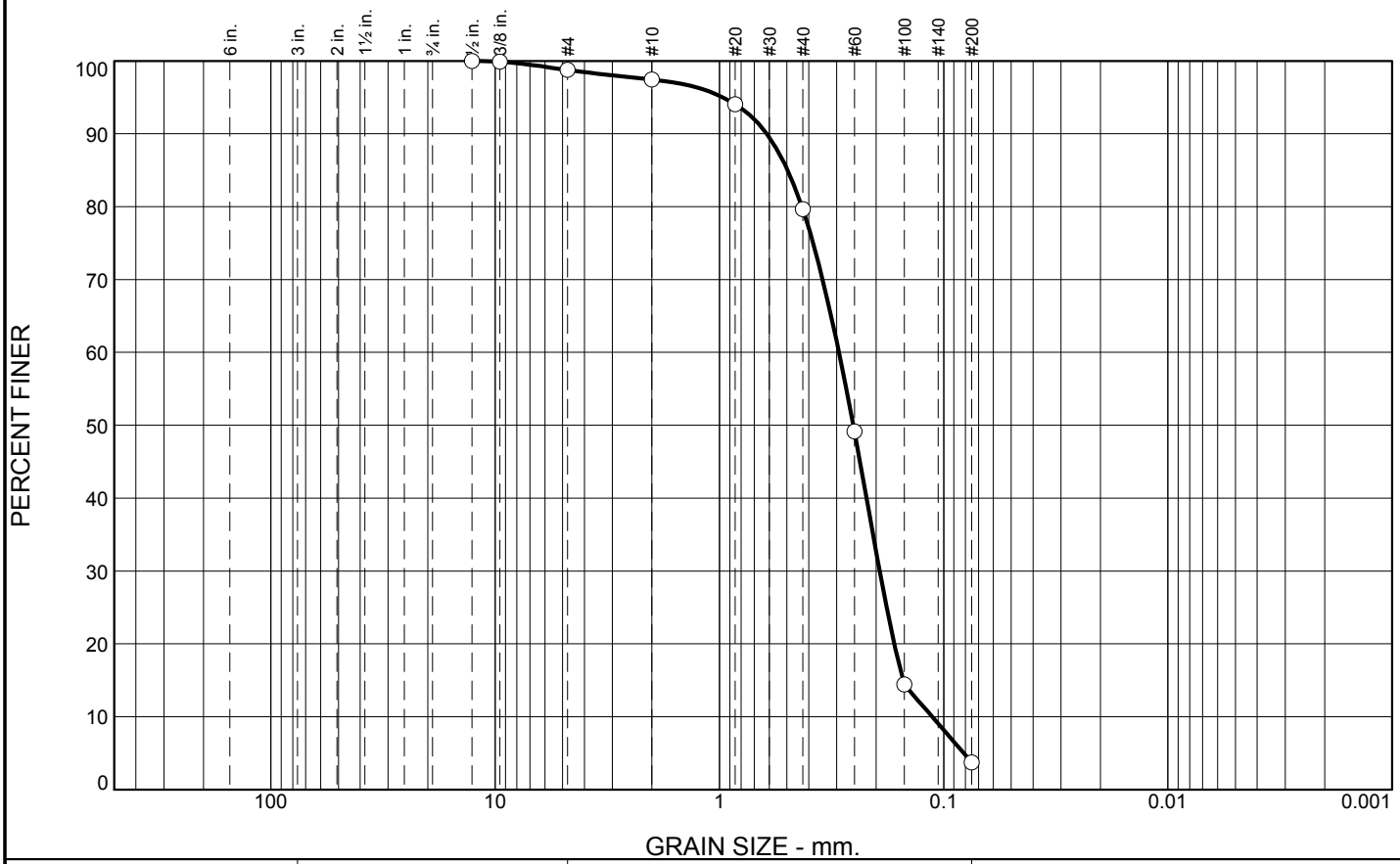
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22699° Long = -88.99223°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.2 | 1.4 | 17.8 | 75.9 | 3.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.9 | | |
| #4 | 98.8 | | |
| #10 | 97.4 | | |
| #20 | 94.0 | | |
| #40 | 79.6 | | |
| #60 | 49.2 | | |
| #100 | 14.4 | | |
| #200 | 3.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.6151 $D_{85}$= 0.4964 $D_{60}$= 0.2929
$D_{50}$= 0.2529 $D_{30}$= 0.1930 $D_{15}$= 0.1518
$D_{10}$= 0.1125 $C_u$= 2.60 $C_c$= 1.13

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-25-10A
**Sample Number:** TE Lab ID: 4488.24 **Depth:** 0.0 - 5.0 (ft.) **Date:** 5/27/10

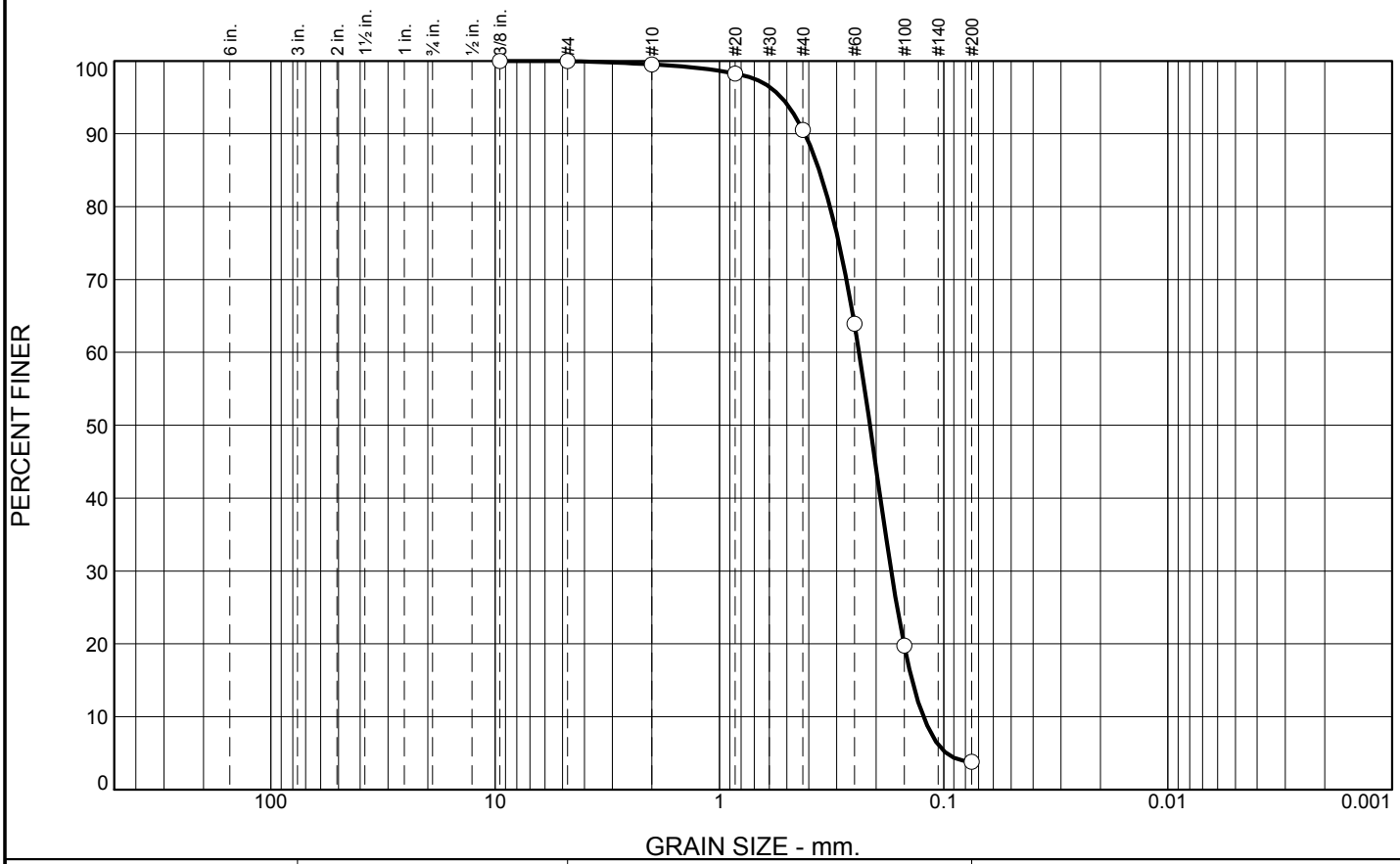
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.5 | 9.0 | 86.7 | 3.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.5 | | |
| #20 | 98.3 | | |
| #40 | 90.5 | | |
| #60 | 63.9 | | |
| #100 | 19.7 | | |
| #200 | 3.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4166 $D_{85}$= 0.3590 $D_{60}$= 0.2384
$D_{50}$= 0.2133 $D_{30}$= 0.1715 $D_{15}$= 0.1384
$D_{10}$= 0.1231 $C_u$= 1.94 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-25-10B
**Sample Number:** TE Lab ID: 4488.25 **Depth:** 5.0 - 10.4 (ft.) **Date:** 5/27/10

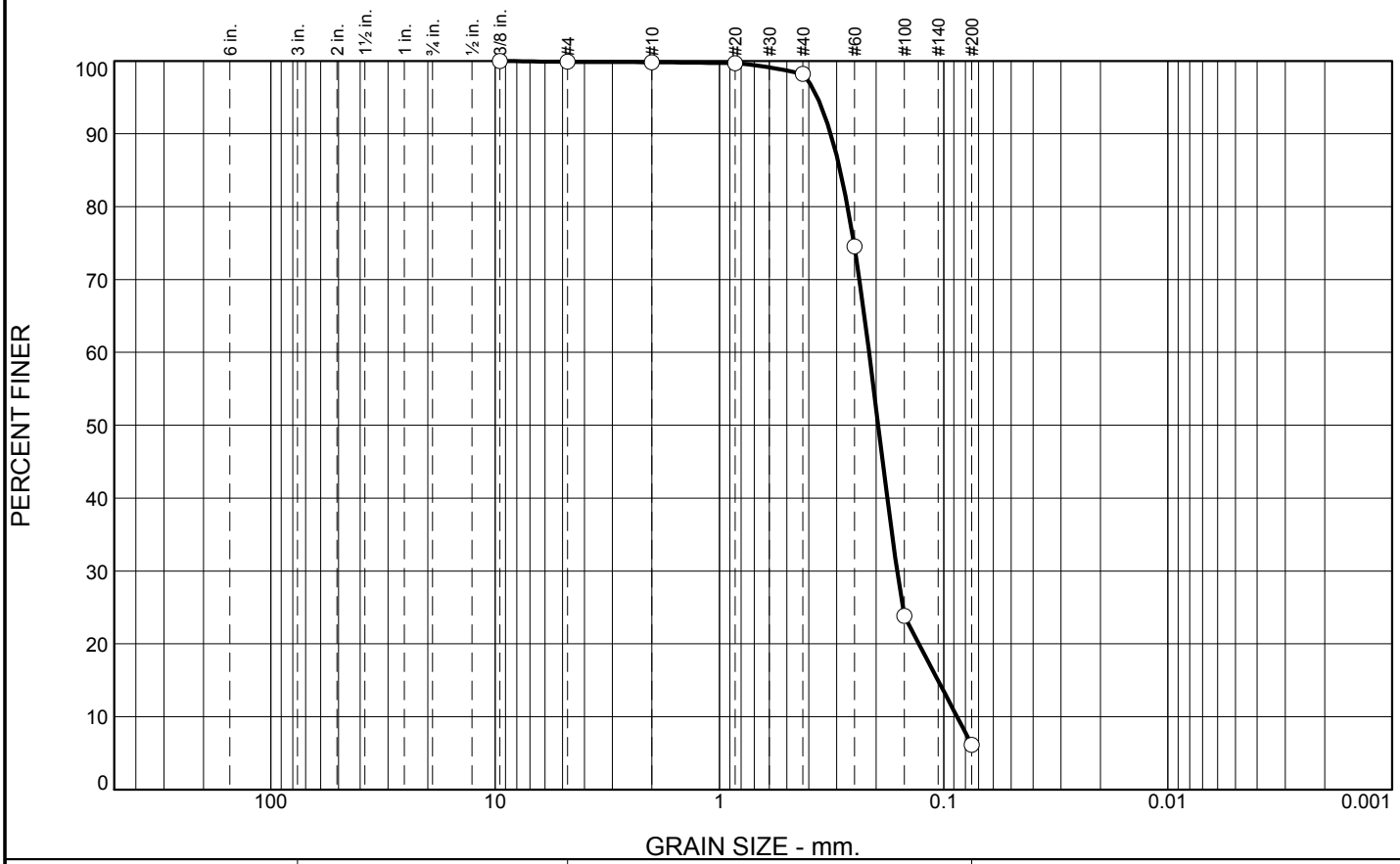
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 1.6 | 92.0 | 6.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 99.7 | | |
| #40 | 98.2 | | |
| #60 | 74.5 | | |
| #100 | 23.8 | | |
| #200 | 6.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3188 $D_{85}$= 0.2894 $D_{60}$= 0.2151
$D_{50}$= 0.1960 $D_{30}$= 0.1613 $D_{15}$= 0.1061
$D_{10}$= 0.0872 $C_u$= 2.47 $C_c$= 1.39

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-25-10C
**Sample Number:** TE Lab ID: 4488.26 **Depth:** 10.4 - 13.5 (ft.) **Date:** 5/27/10

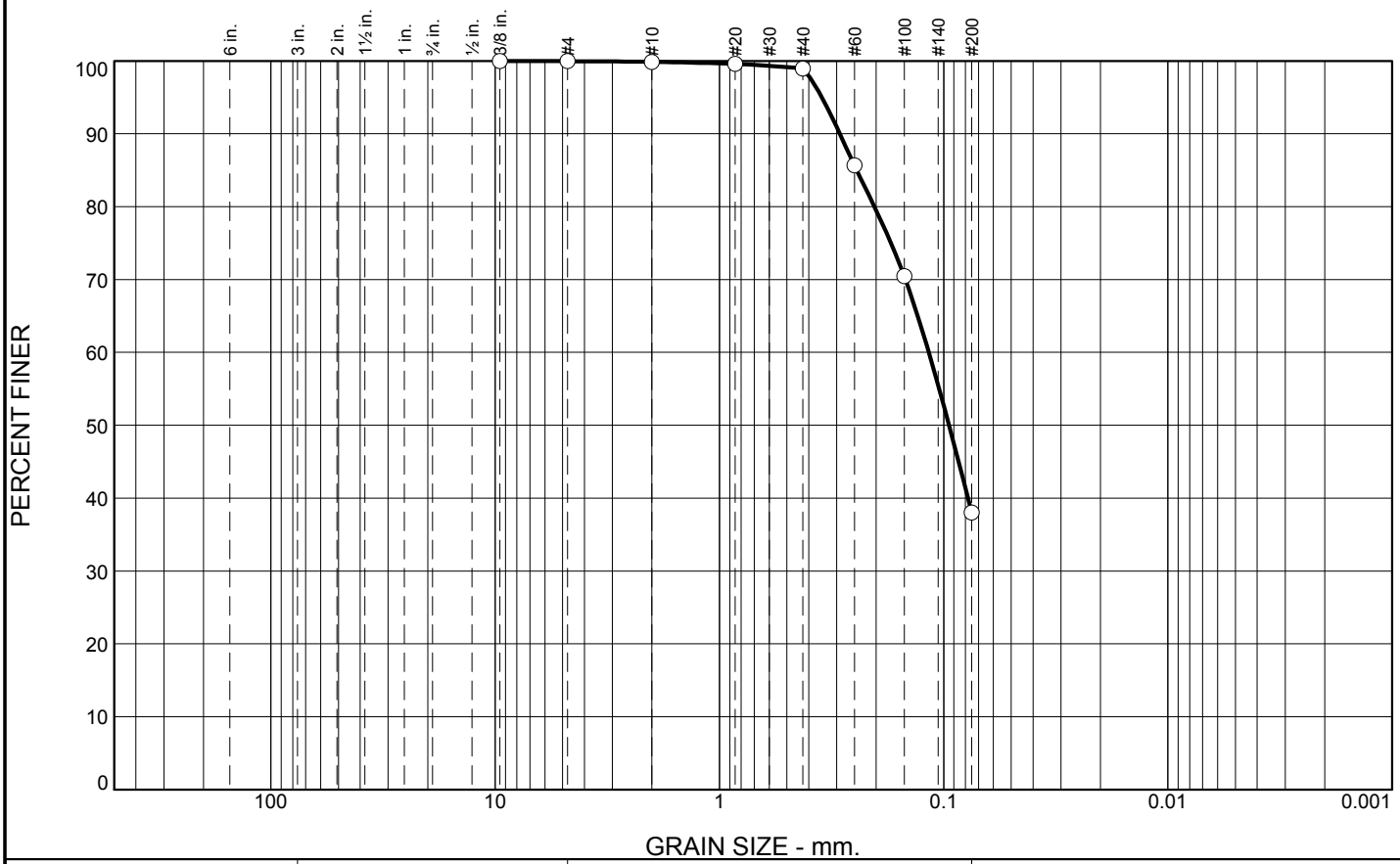
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 0.9 | 61.0 | 38.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 99.0 | | |
| #60 | 85.7 | | |
| #100 | 70.4 | | |
| #200 | 38.0 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2904 $D_{85}$= 0.2441 $D_{60}$= 0.1165
$D_{50}$= 0.0947 $D_{30}$= $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-25-10D
**Sample Number:** TE Lab ID: 4488.27 **Depth:** 13.5 - 18.9 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

**Boring Designation BI-MS-26-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 2 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Mississippi Sound |
| 2. BORING DESIGNATION | BI-MS-26-10 |
| LOCATION COORDINATES | E = 935,474 N = 264,685 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 19.3 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 21 Ft. |
| 15. DATE BORING | STARTED 05-14-10 / COMPLETED 05-14-10 |
| 16. ELEVATION TOP OF BORING | -19.2 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace clay, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 6/2-light brownish gray<br>D50: 0.2363 mm % Fines: 3.2 |
| | | | | B | Classification: SP Color: 5Y 6/1-gray<br>D50: 0.2042 mm % Fines: 2.6 |
| | | | | C | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1934 mm % Fines: 2.7 |
| | | | | D | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.191 mm % Fines: 5.9 |
| -38.5 | 19.3 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22774° Long = -88.98778°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 935,474 Y = 264,685 | ELEVATION TOP OF BORING -19.2 Ft. | | |

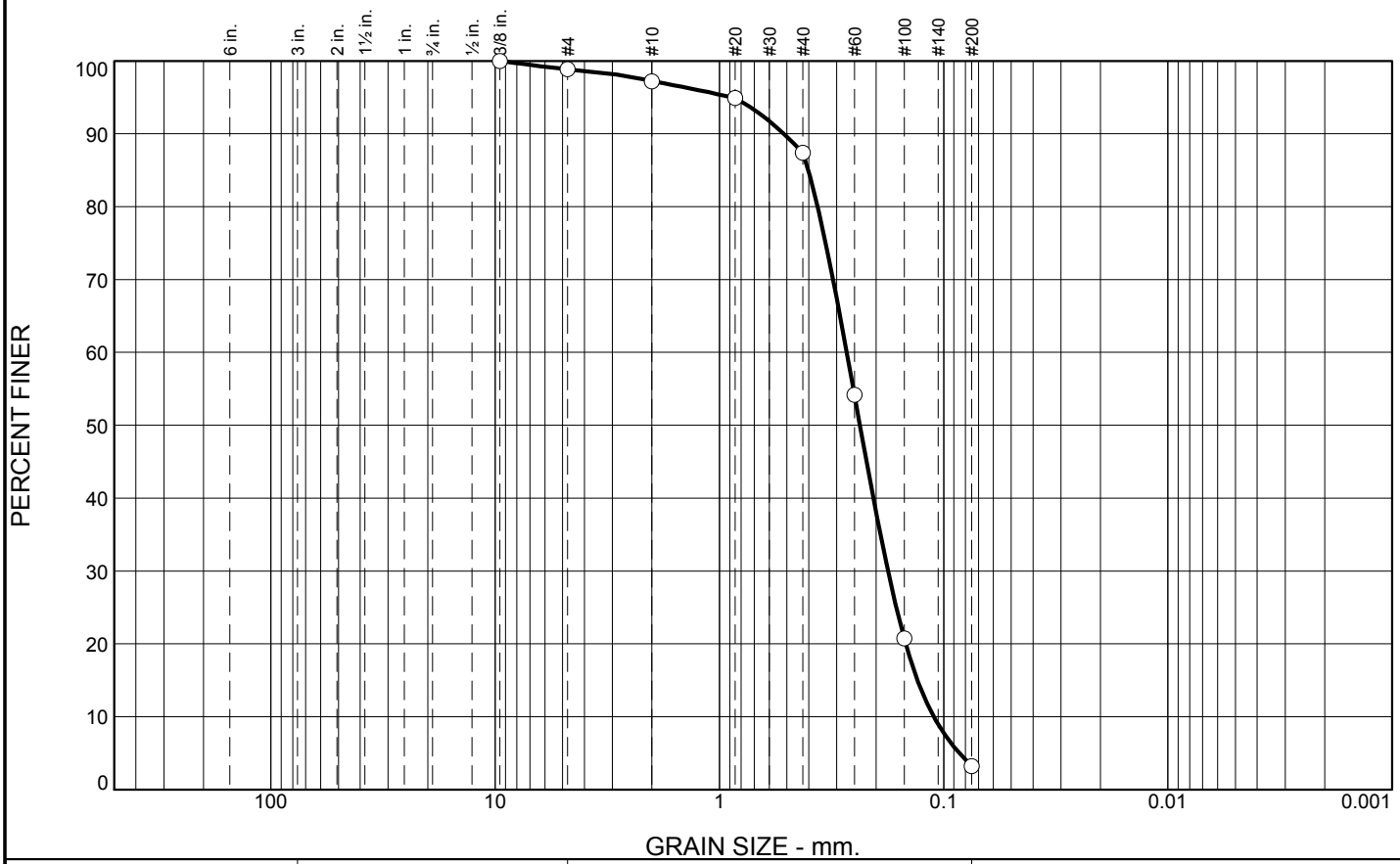
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22774° Long = -88.98778°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.2 | 1.6 | 9.8 | 84.2 | 3.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 98.8 | | |
| #10 | 97.2 | | |
| #20 | 94.9 | | |
| #40 | 87.4 | | |
| #60 | 54.2 | | |
| #100 | 20.7 | | |
| #200 | 3.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5164 $D_{85}$= 0.4021 $D_{60}$= 0.2706
$D_{50}$= 0.2363 $D_{30}$= 0.1771 $D_{15}$= 0.1308
$D_{10}$= 0.1107 $C_u$= 2.44 $C_c$= 1.05

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-26-10A
**Sample Number:** TE Lab ID: 4488.105 **Depth:** 0.0 - 5.0 (ft.) **Date:** 5/27/10

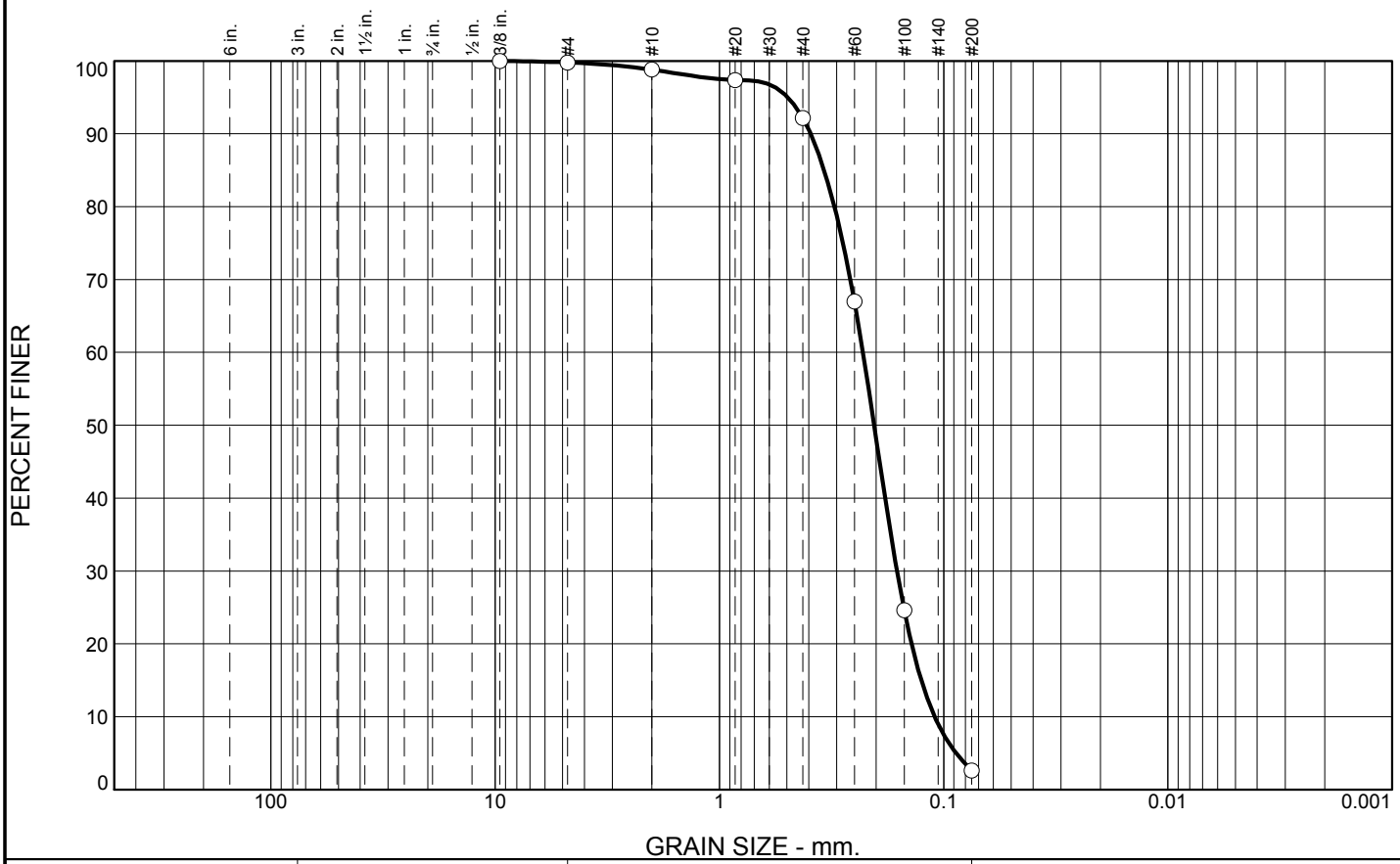
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 1.0 | 6.6 | 89.6 | 2.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 98.8 | | |
| #20 | 97.4 | | |
| #40 | 92.2 | | |
| #60 | 67.0 | | |
| #100 | 24.6 | | |
| #200 | 2.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3923 $D_{85}$= 0.3412 $D_{60}$= 0.2291
$D_{50}$= 0.2042 $D_{30}$= 0.1616 $D_{15}$= 0.1259
$D_{10}$= 0.1098 $C_u$= 2.09 $C_c$= 1.04

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-26-10B
**Sample Number:** TE Lab ID: 4488.106 **Depth:** 5.0 - 10.0 (ft.) **Date:** 5/27/10

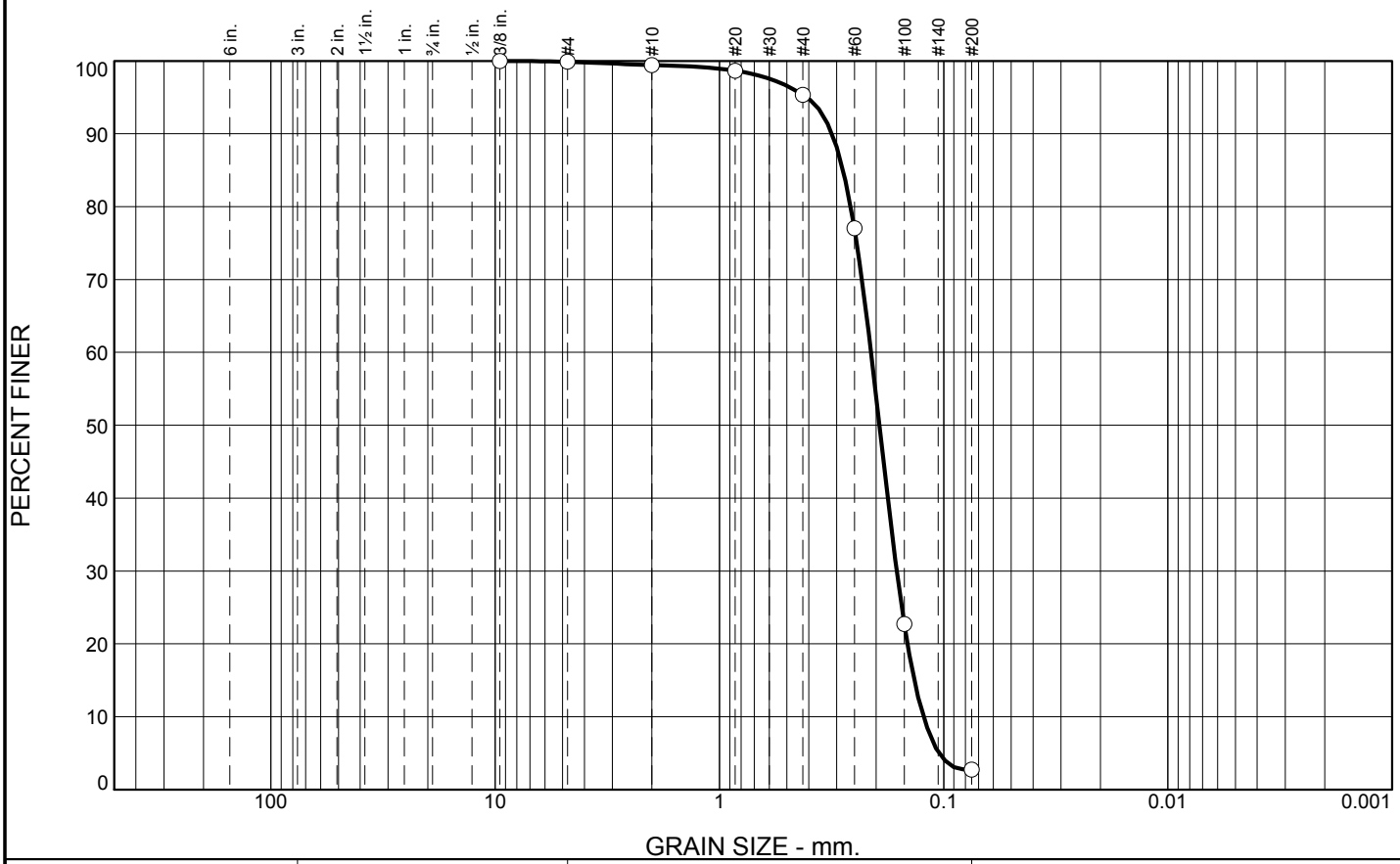
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.5 | 4.0 | 92.7 | 2.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.4 | | |
| #20 | 98.7 | | |
| #40 | 95.4 | | |
| #60 | 77.1 | | |
| #100 | 22.7 | | |
| #200 | 2.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3146 $D_{85}$= 0.2809 $D_{60}$= 0.2109
$D_{50}$= 0.1934 $D_{30}$= 0.1620 $D_{15}$= 0.1352
$D_{10}$= 0.1230 $C_u$= 1.71 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-26-10C
**Sample Number:** TE Lab ID: 4488.107 **Depth:** 10.0 - 15.0 (ft.) **Date:** 5/27/10

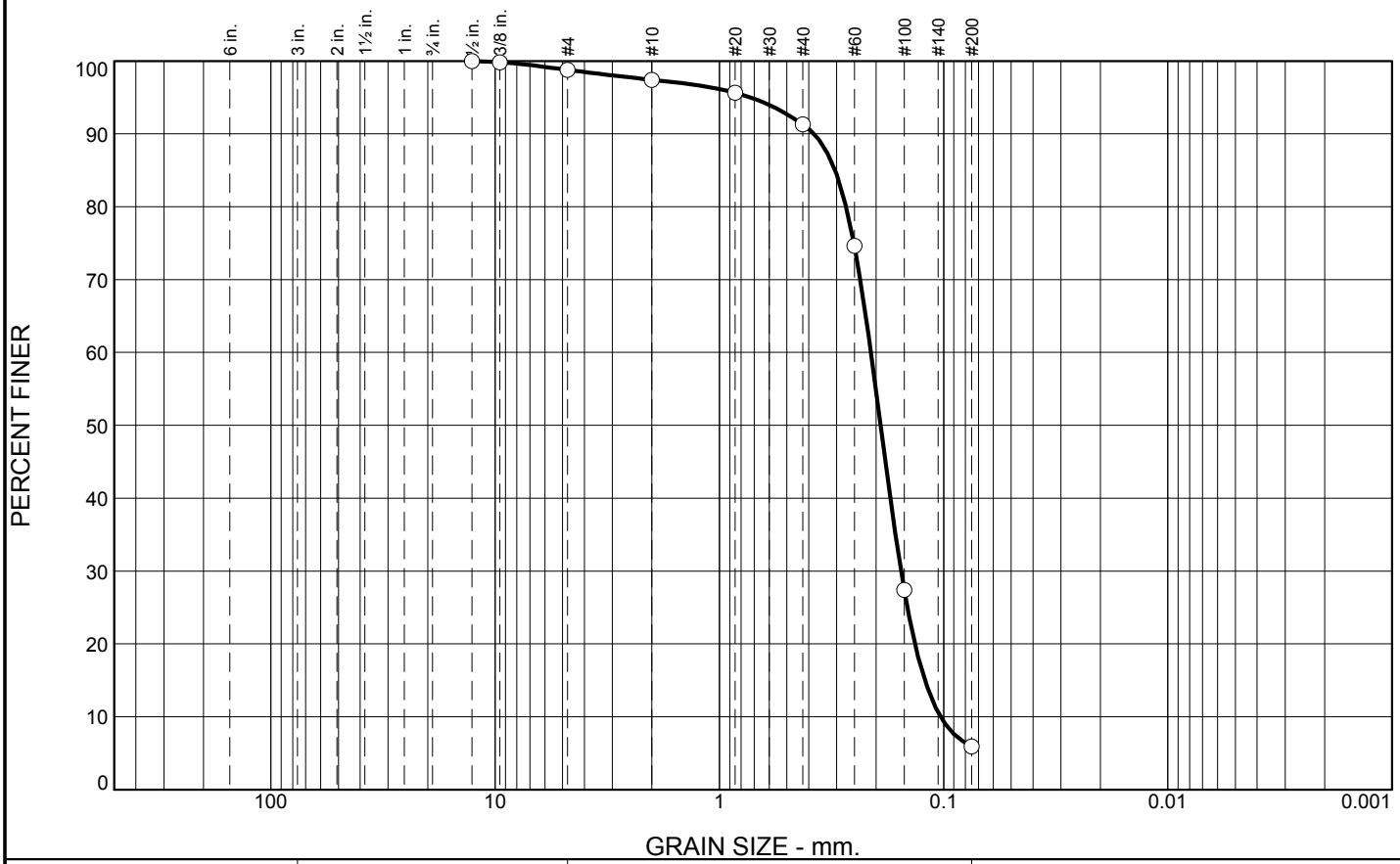
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.2 | 1.4 | 6.1 | 85.4 | 5.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.8 | | |
| #4 | 98.8 | | |
| #10 | 97.4 | | |
| #20 | 95.6 | | |
| #40 | 91.3 | | |
| #60 | 74.6 | | |
| #100 | 27.4 | | |
| #200 | 5.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3788 $D_{85}$= 0.3048 $D_{60}$= 0.2111
$D_{50}$= 0.1910 $D_{30}$= 0.1549 $D_{15}$= 0.1212
$D_{10}$= 0.1033 $C_u$= 2.04 $C_c$= 1.10

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

Mislabeled. Should be sample BI-MS-26-10D

**Location:** USACE Sample # BI-MS-26-10B
**Sample Number:** TE Lab ID: 4488.108 **Depth:** 15.0 - 19.3 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

## Boring Designation BI-MS-27-10

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Mississippi Sound |
| 2. BORING DESIGNATION | BI-MS-27-10 |
| LOCATION COORDINATES | E = 934,309 N = 262,726 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 14.7 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 4 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 22.5 Ft. |
| 15. DATE BORING | STARTED 05-18-10 / COMPLETED 05-18-10 |
| 16. ELEVATION TOP OF BORING | -21.6 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Ed Herman, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -21.6 | 0.0 | | | | |
| | | | SAND, poorly-graded, little silt, little shell fragments, gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2328 mm % Fines: 2.3 |
| | | | At El. -26.6 Ft., some shell fragments, gray | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2597 mm % Fines: 1.7 |
| | | | At El. -31.6 Ft., little silt, little shell fragments, gray | C | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.1973 mm % Fines: 4 |
| -34.7 | 13.1 | | | | |
| -36.3 | 14.7 | | SAND, silty, with clay zones, dark gray (SM) | D | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.1044 mm % Fines: 27.5 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

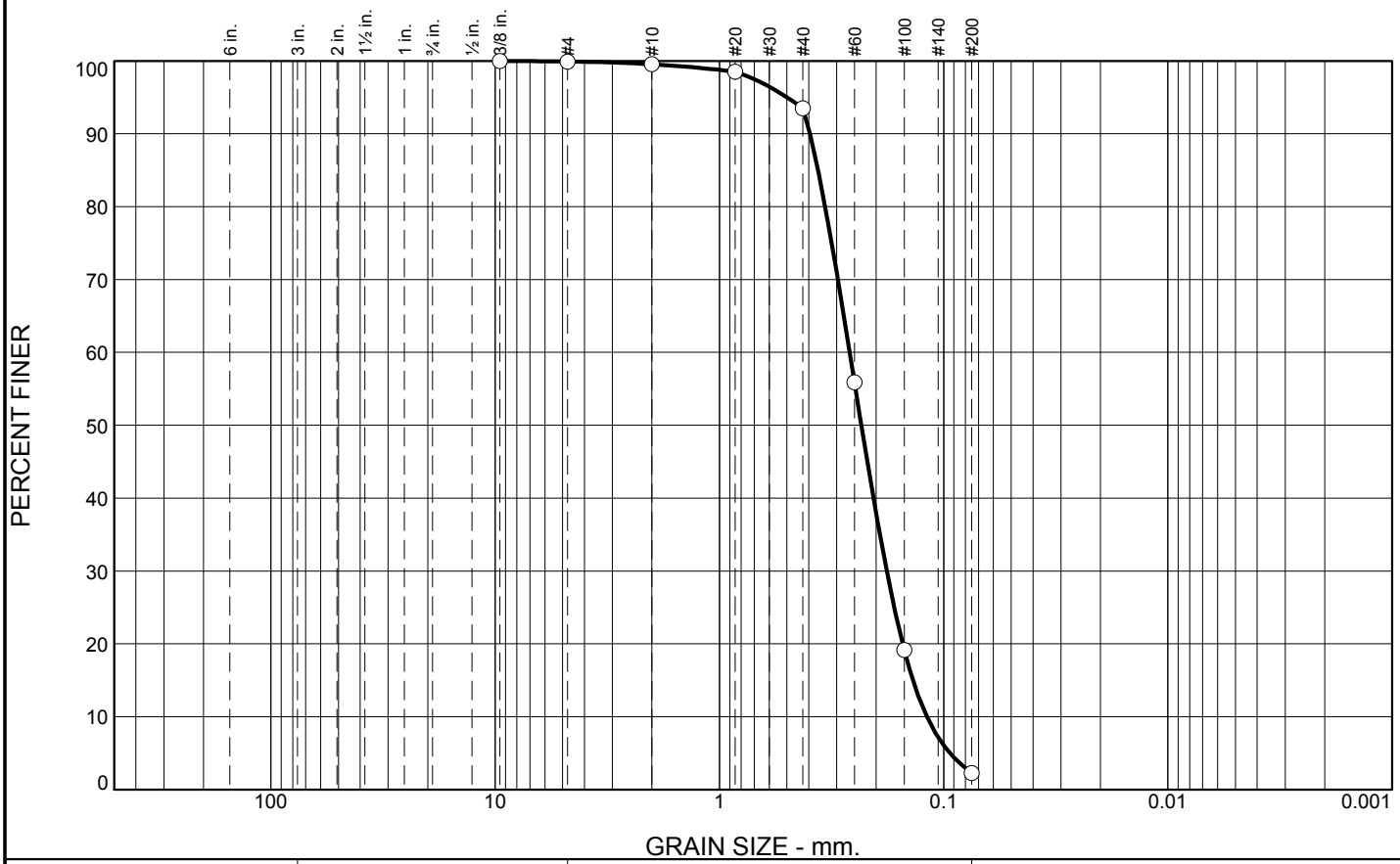
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22235° Long = -88.99146°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.4 | 6.0 | 91.2 | 2.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.5 | | |
| #20 | 98.5 | | |
| #40 | 93.5 | | |
| #60 | 55.9 | | |
| #100 | 19.1 | | |
| #200 | 2.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3952 $D_{85}$= 0.3632 $D_{60}$= 0.2625
$D_{50}$= 0.2328 $D_{30}$= 0.1794 $D_{15}$= 0.1371
$D_{10}$= 0.1188 $C_u$= 2.21 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-27-10A
**Sample Number:** TE Lab ID: 4488.28 **Depth:** 0.0 - 5.0 (ft.) **Date:** 5/27/10

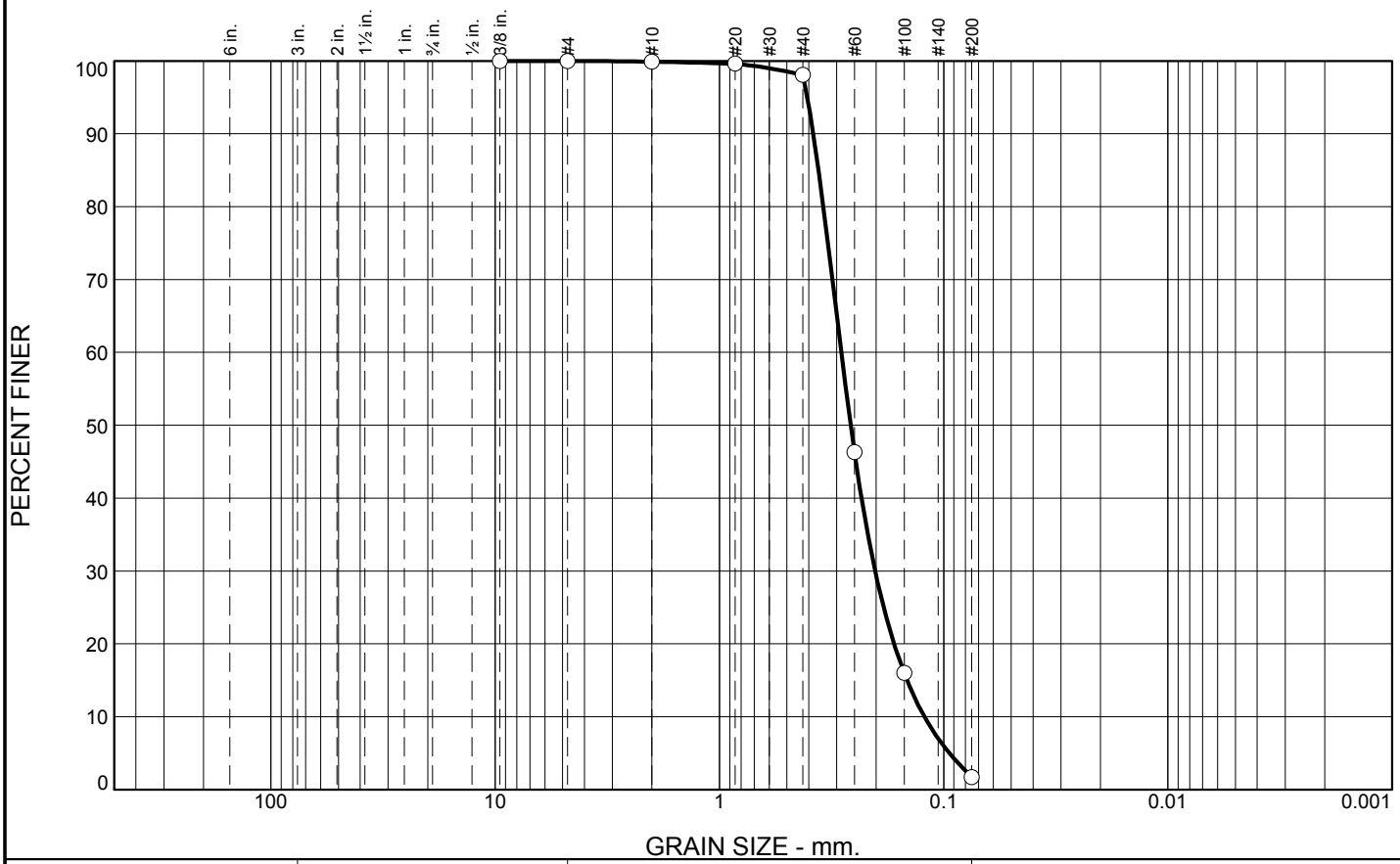
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.8 | 96.4 | 1.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 98.1 | | |
| #60 | 46.3 | | |
| #100 | 16.0 | | |
| #200 | 1.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3817 $D_{85}$= 0.3616 $D_{60}$= 0.2859
$D_{50}$= 0.2597 $D_{30}$= 0.2022 $D_{15}$= 0.1456
$D_{10}$= 0.1219 $C_u$= 2.34 $C_c$= 1.17

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-27-10B
**Sample Number:** TE Lab ID: 4488.29 **Depth:** 5.0 - 10.0 (ft.) **Date:** 5/27/10

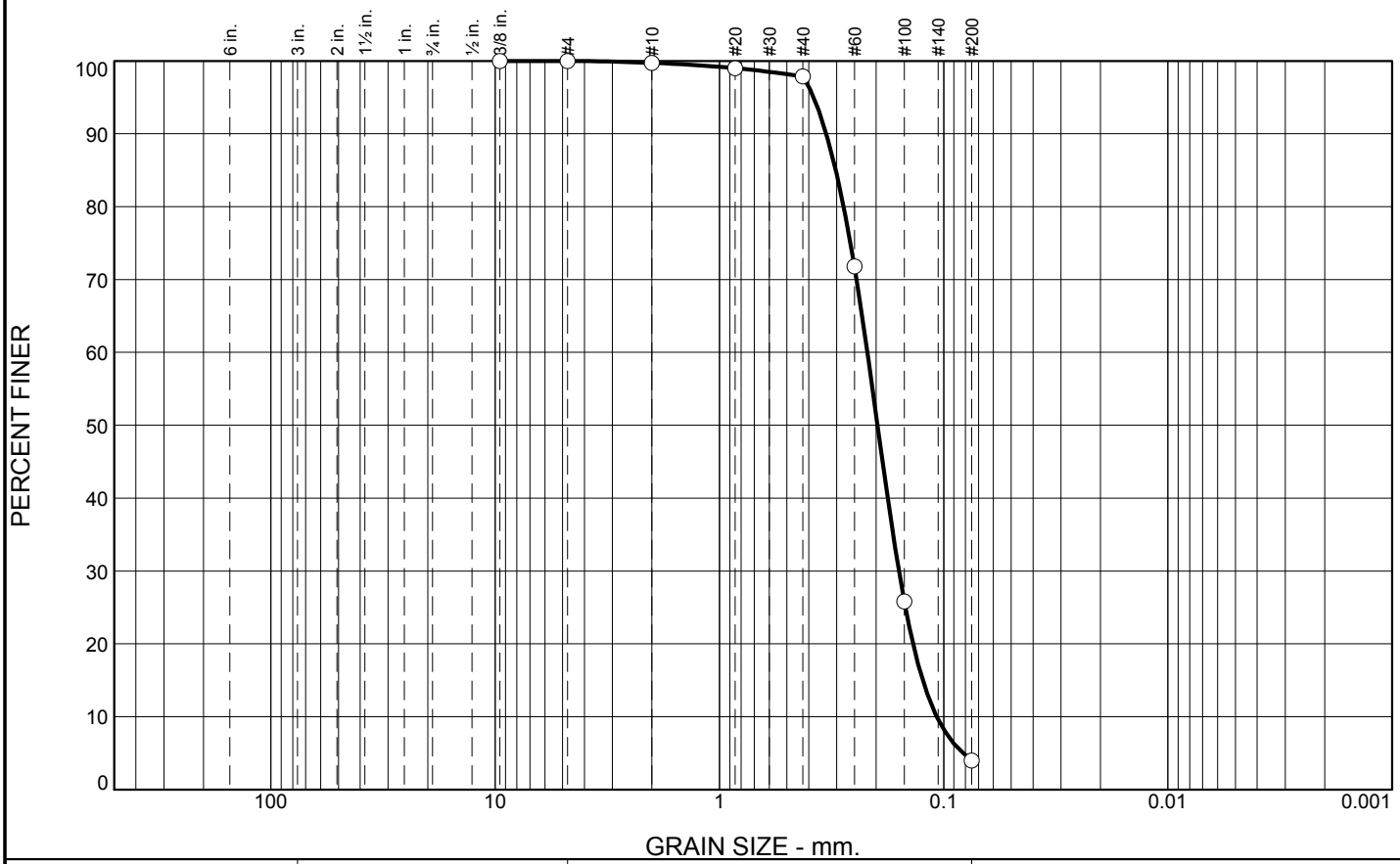
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 1.8 | 93.9 | 4.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.0 | | |
| #40 | 97.9 | | |
| #60 | 71.8 | | |
| #100 | 25.8 | | |
| #200 | 4.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3338 $D_{85}$= 0.3027 $D_{60}$= 0.2189
$D_{50}$= 0.1973 $D_{30}$= 0.1584 $D_{15}$= 0.1239
$D_{10}$= 0.1074 $C_u$= 2.04 $C_c$= 1.07

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-27-10C
**Sample Number:** TE Lab ID: 4488.30 **Depth:** 10.0 - 13.1 (ft.) **Date:** 5/27/10

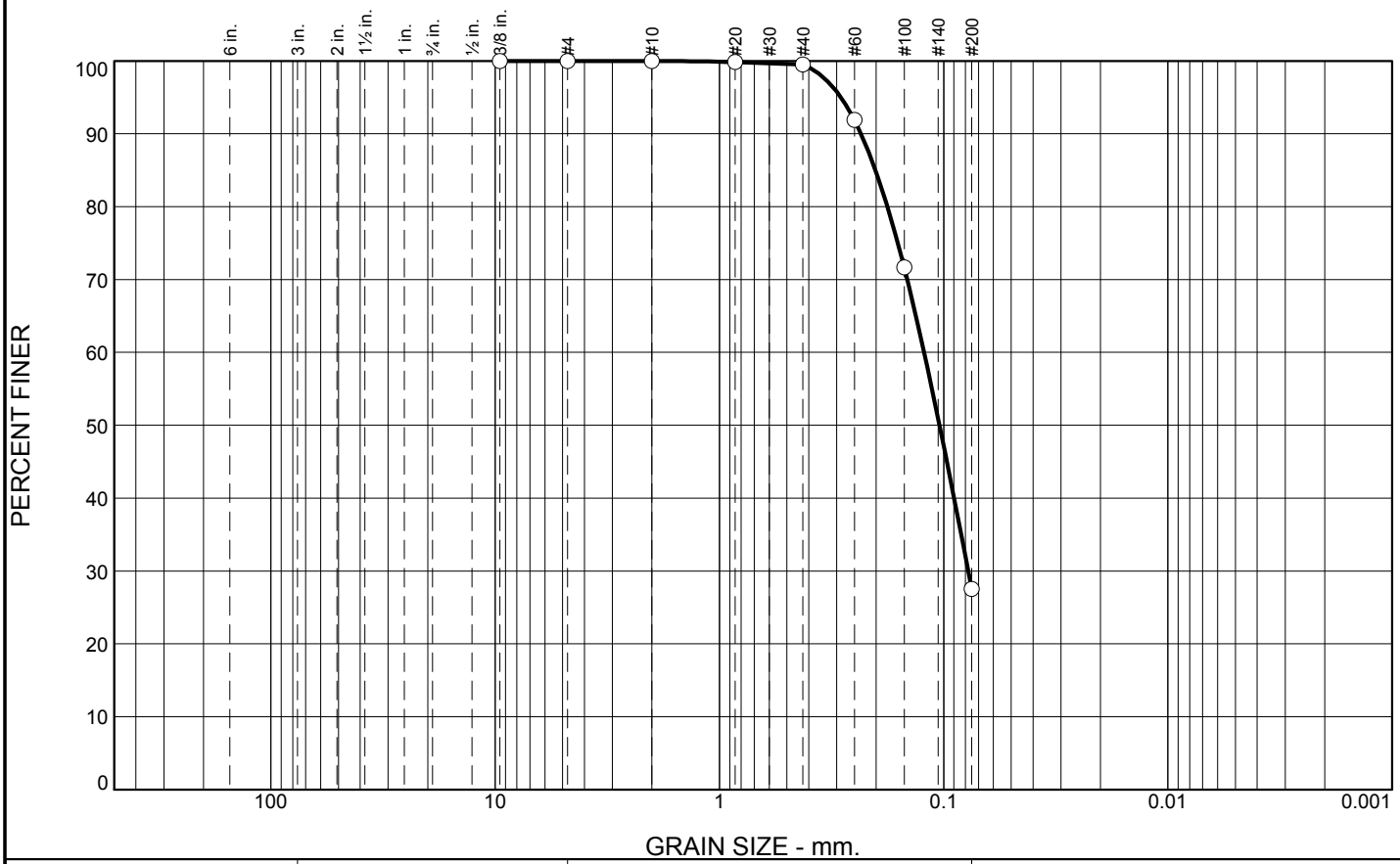
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 72.0 | 27.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.8 | | |
| #40 | 99.5 | | |
| #60 | 91.9 | | |
| #100 | 71.6 | | |
| #200 | 27.5 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2337 $D_{85}$= 0.2016 $D_{60}$= 0.1223
$D_{50}$= 0.1044 $D_{30}$= 0.0777 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-27-10D
**Sample Number:** TE Lab ID: 4488.31 **Depth:** 13.1 - 14.7 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

**Boring Designation BI-MS-28-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 2 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Mississippi Sound |
| 2. BORING DESIGNATION | BI-MS-28-10 |
| LOCATION COORDINATES | E = 935,837 N = 262,899 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 19.0 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 4 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 25 Ft. |
| 15. DATE BORING | STARTED 05-14-10 / COMPLETED 05-14-10 |
| 16. ELEVATION TOP OF BORING | -23.5 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -23.5 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace clay, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 5Y 6/1-gray<br>D50: 0.237 mm % Fines: 4.1 |
| | | | | B | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.2412 mm % Fines: 2.5 |
| | | | | C | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.2564 mm % Fines: 3 |
| | | | | D | Classification: SP-SM Color: 5Y 7/1-light gray<br>D50: 0.2016 mm % Fines: 5.7 |
| -42.5 | 19.0 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22283° Long = -88.98662°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 935,837 Y = 262,899 | ELEVATION TOP OF BORING -23.5 Ft. | | |

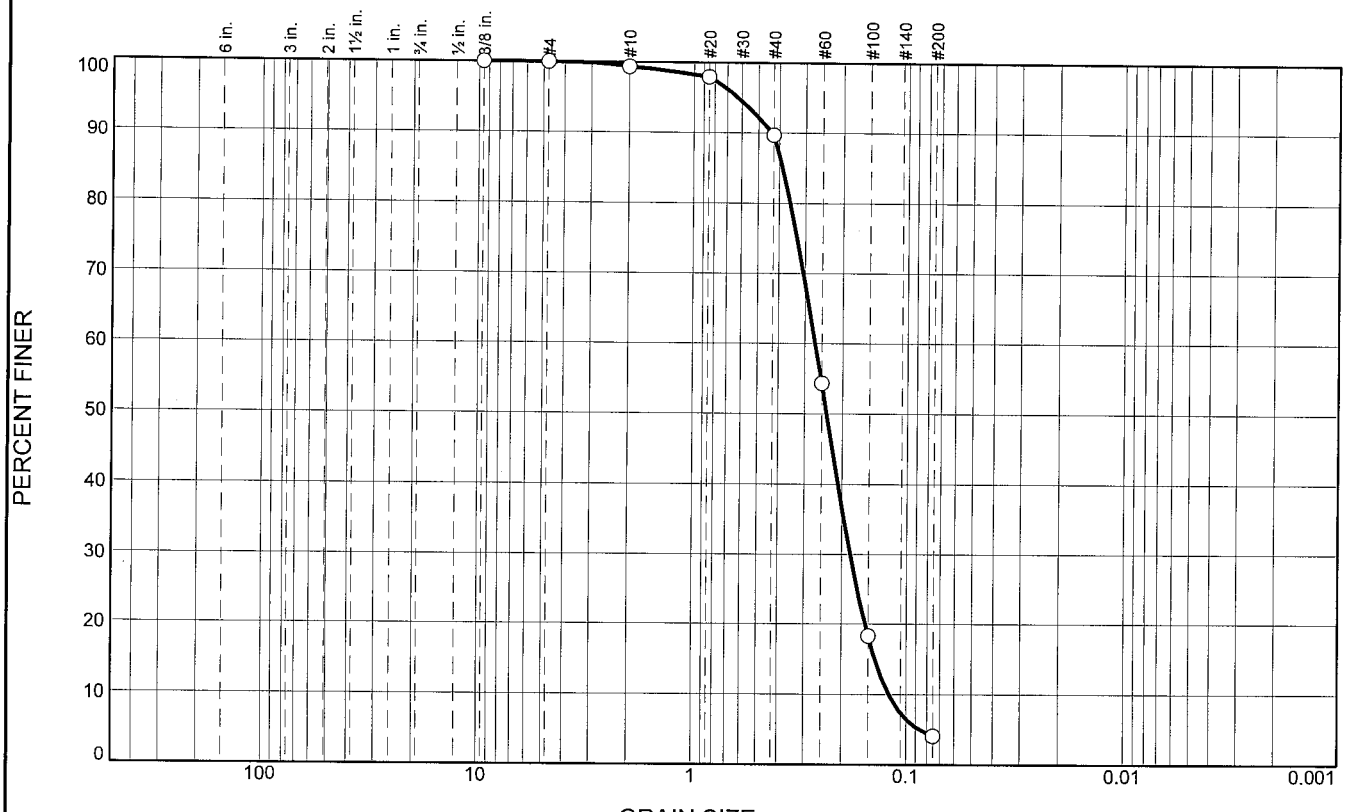
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22283° Long = -88.98662°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.7 | 9.6 | 85.6 | 4.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.3 | | |
| #20 | 98.0 | | |
| #40 | 89.7 | | |
| #60 | 54.3 | | |
| #100 | 18.3 | | |
| #200 | 4.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4337 $D_{85}$= 0.3858 $D_{60}$= 0.2686
$D_{50}$= 0.2370 $D_{30}$= 0.1822 $D_{15}$= 0.1395
$D_{10}$= 0.1200 $C_u$= 2.24 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-28-10A
**Sample Number:** TE Lab ID: 4488.15 **Depth:** 0.0 - 5.0 (ft.) **Date:** 5/27/10

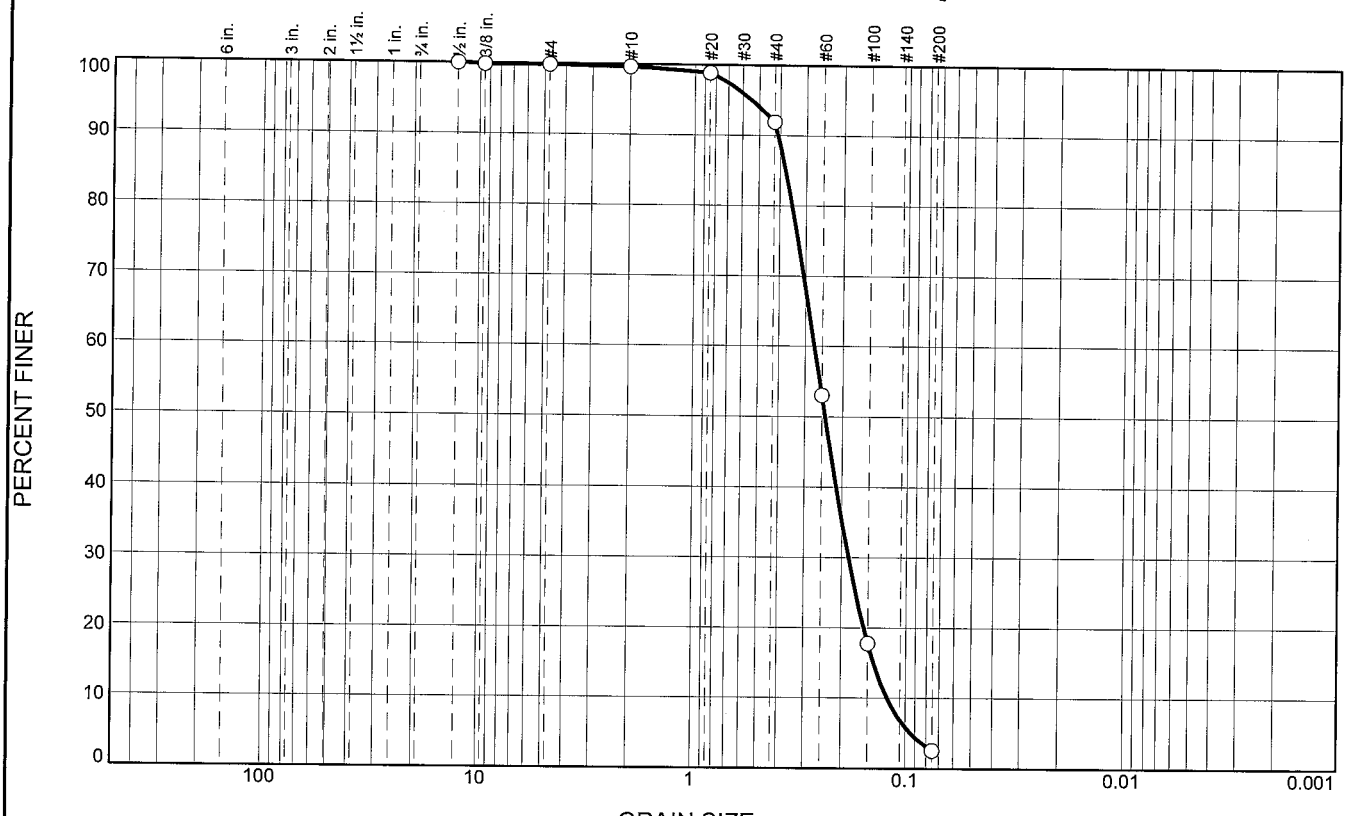
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.2 | 7.7 | 89.4 | 2.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.8 | | |
| #4 | 99.8 | | |
| #10 | 99.6 | | |
| #20 | 98.8 | | |
| #40 | 91.9 | | |
| #60 | 53.0 | | |
| #100 | 17.8 | | |
| #200 | 2.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4090 $D_{85}$= 0.3755 $D_{60}$= 0.2719
$D_{50}$= 0.2412 $D_{30}$= 0.1851 $D_{15}$= 0.1408
$D_{10}$= 0.1216 $C_u$= 2.24 $C_c$= 1.04

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-28-10B
**Sample Number:** TE Lab ID: 4488.16 **Depth:** 5.0 - 10.0 (ft.) **Date:** 5/27/10

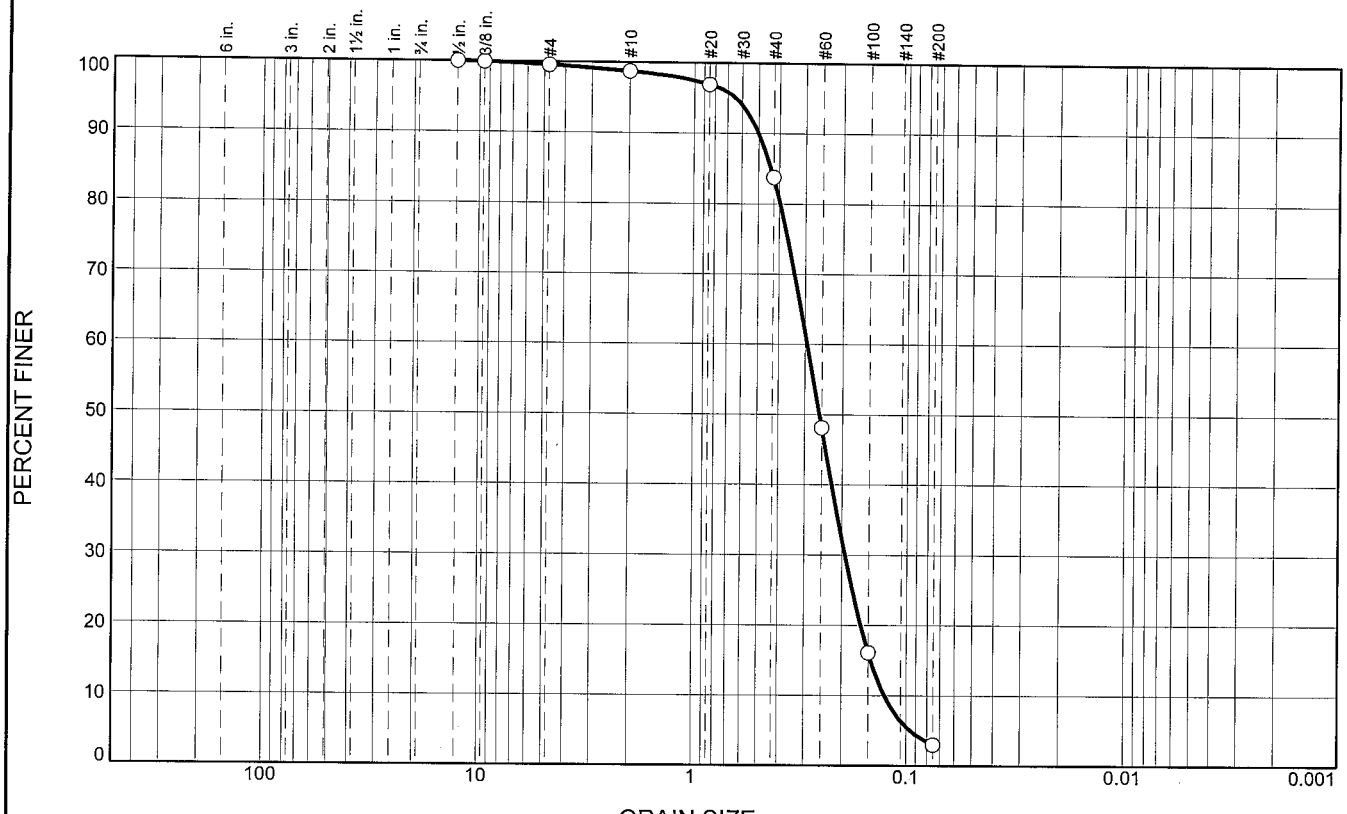
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.8 | 15.0 | 80.7 | 3.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.9 | | |
| #4 | 99.5 | | |
| #10 | 98.7 | | |
| #20 | 96.9 | | |
| #40 | 83.7 | | |
| #60 | 48.1 | | |
| #100 | 16.1 | | |
| #200 | 3.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5007 $D_{85}$= 0.4370 $D_{60}$= 0.2930
$D_{50}$= 0.2564 $D_{30}$= 0.1934 $D_{15}$= 0.1461
$D_{10}$= 0.1259 $C_u$= 2.33 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-28-10C
**Sample Number:** TE Lab ID: 4488.17 **Depth:** 10.0 - 15.0 (ft.) **Date:** 5/24/10

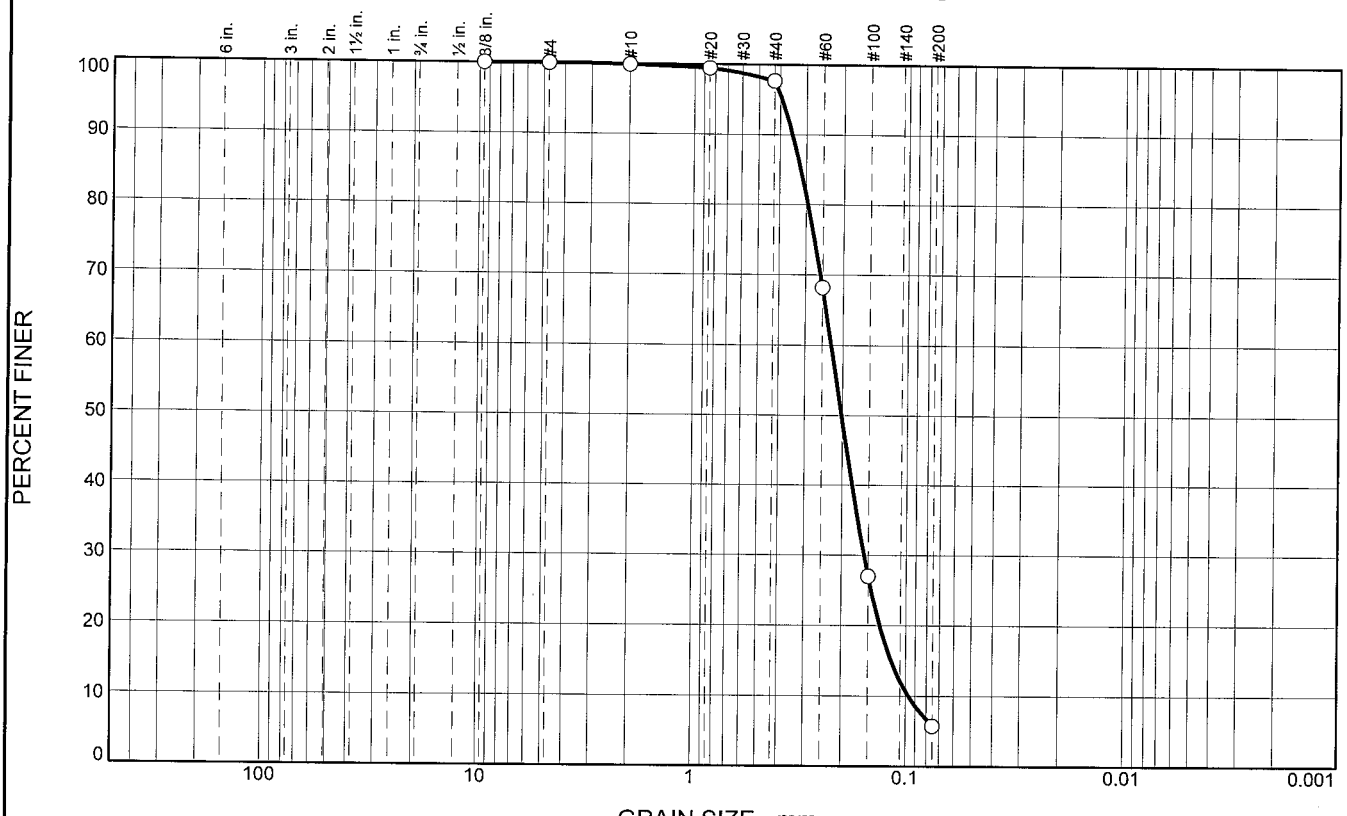
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L. Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 2.1 | 92.0 | 5.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.4 | | |
| #40 | 97.7 | | |
| #60 | 68.2 | | |
| #100 | 27.0 | | |
| #200 | 5.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3490 $D_{85}$= 0.3182 $D_{60}$= 0.2264
$D_{50}$= 0.2016 $D_{30}$= 0.1570 $D_{15}$= 0.1166
$D_{10}$= 0.0969 $C_u$= 2.34 $C_c$= 1.12

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-28-10D
**Sample Number:** TE Lab ID: 4488.18 **Depth:** 15.0 - 19.0 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L. Stokes **Checked By:** R.Byrd

**Boring Designation BI-MS-29-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Mississippi Sound |
| 2. BORING DESIGNATION | BI-MS-29-10 |
| LOCATION COORDINATES | E = 934,739 N = 261,151 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 15.2 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 4 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 24 Ft. |
| 15. DATE BORING | STARTED 05-18-10 / COMPLETED 05-18-10 |
| 16. ELEVATION TOP OF BORING | -22.9 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Ed Herman, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -22.9 | 0.0 | | | | |
| -26.9 | 4.0 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, some shell fragments, gray (SP) | A | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.2525 mm % Fines: 3.3 |
| -28.9 | 6.0 | | SAND, silty, mostly fine-grained sand-sized quartz, with clay layers, dark gray (SM) | B | Classification: SM Color: 5Y 5/1-gray<br>D50: 0.095 mm % Fines: 33.3 |
| -33.5 | 10.6 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, some shell fragments, gray (SP) | C | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.179 mm % Fines: 3.8 |
| -38.1 | 15.2 | | SAND, silty, mostly medium-grained sand-sized quartz, some shell fragments, dark gray (SM) | D | Classification: SP-SM Color: 5Y 6/1-gray<br>D50: 0.2116 mm % Fines: 8.1 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

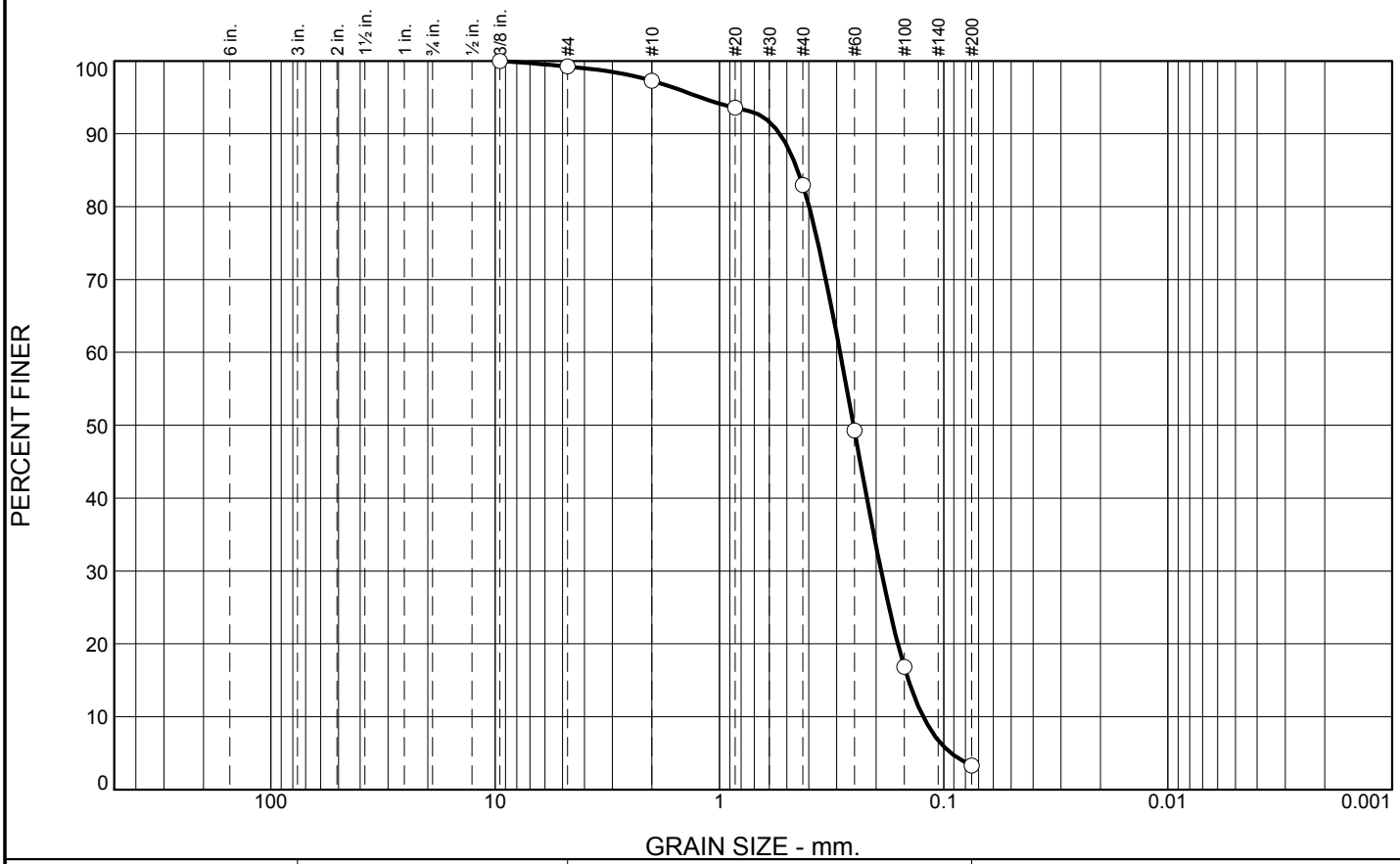
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21802° Long = -88.99009°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.8 | 1.9 | 14.3 | 79.7 | 3.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.2 | | |
| #10 | 97.3 | | |
| #20 | 93.6 | | |
| #40 | 83.0 | | |
| #60 | 49.3 | | |
| #100 | 16.8 | | |
| #200 | 3.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5380 $D_{85}$= 0.4477 $D_{60}$= 0.2896
$D_{50}$= 0.2525 $D_{30}$= 0.1901 $D_{15}$= 0.1436
$D_{10}$= 0.1234 $C_u$= 2.35 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-29-10A
**Sample Number:** TE Lab ID: 4488.32 **Depth:** 0.0 - 4.0 (ft.) **Date:** 5/27/10

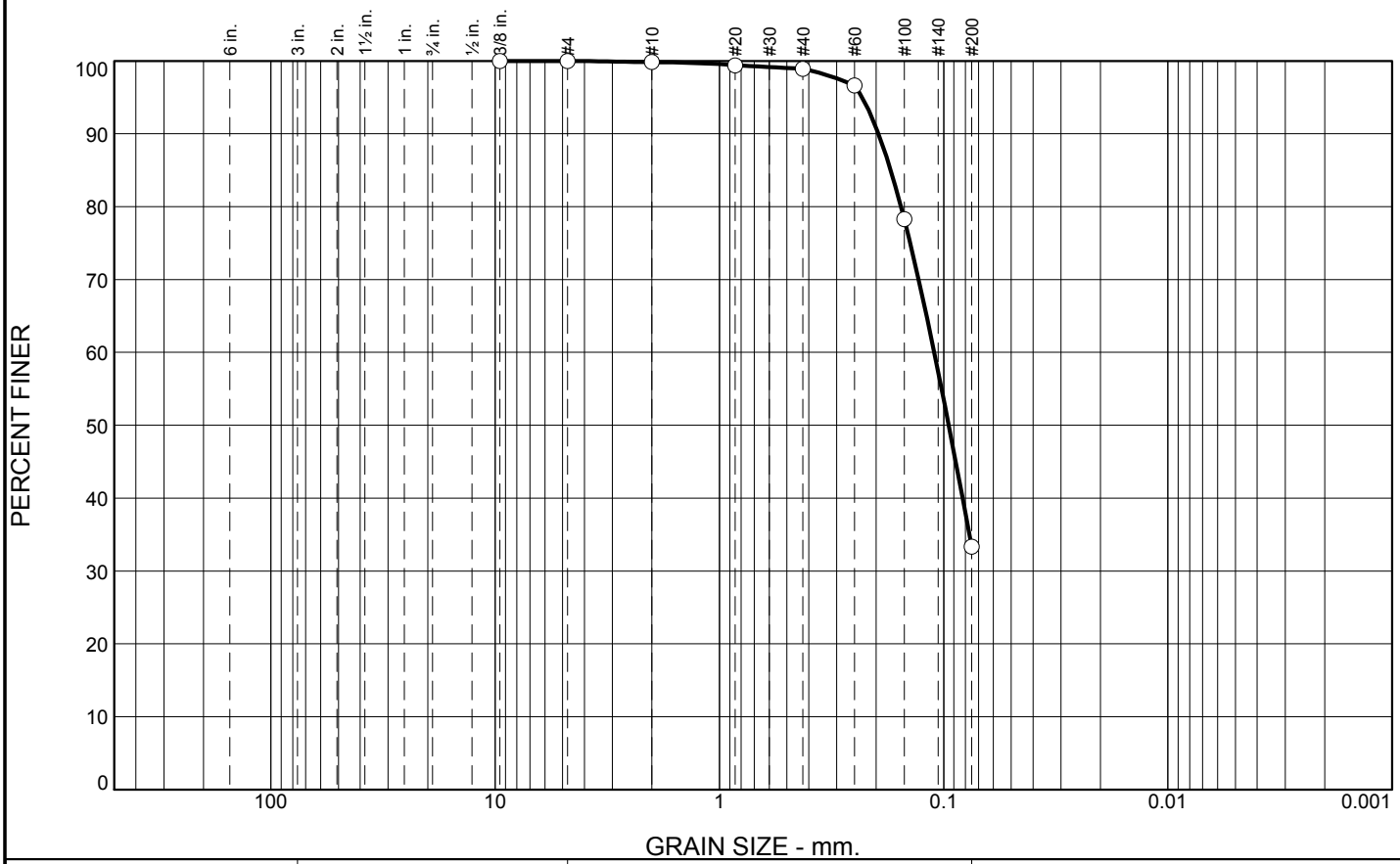
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 0.9 | 65.6 | 33.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.4 | | |
| #40 | 98.9 | | |
| #60 | 96.6 | | |
| #100 | 78.3 | | |
| #200 | 33.3 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.1954 $D_{85}$= 0.1724 $D_{60}$= 0.1102
$D_{50}$= 0.0950 $D_{30}$= $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-29-10B
**Sample Number:** TE Lab ID: 4488.33 **Depth:** 4.0 - 6.0 (ft.) **Date:** 5/27/10

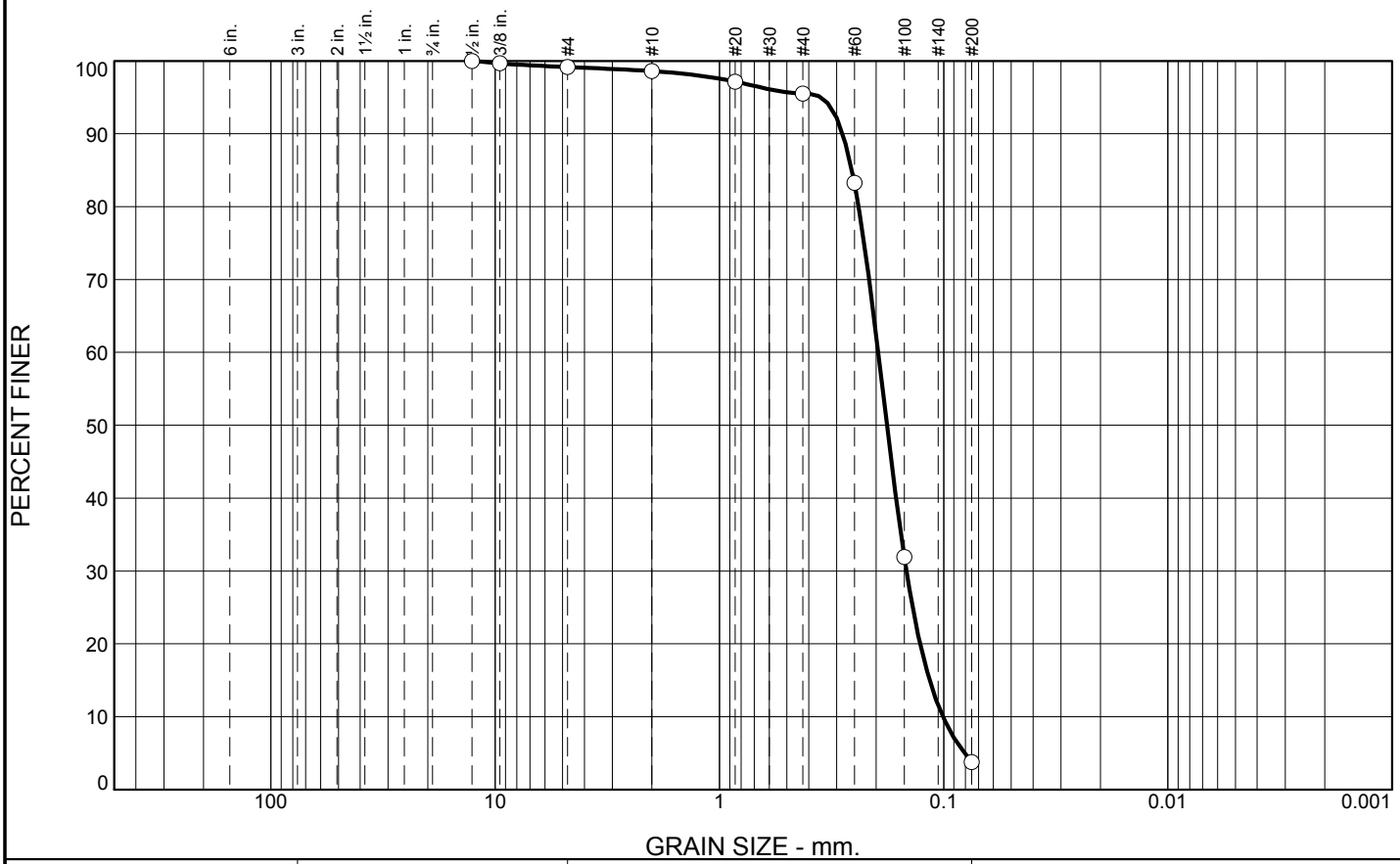
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.9 | 0.5 | 3.1 | 91.7 | 3.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.7 | | |
| #4 | 99.1 | | |
| #10 | 98.6 | | |
| #20 | 97.2 | | |
| #40 | 95.5 | | |
| #60 | 83.3 | | |
| #100 | 31.9 | | |
| #200 | 3.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2821 $D_{85}$= 0.2565 $D_{60}$= 0.1959
$D_{50}$= 0.1790 $D_{30}$= 0.1467 $D_{15}$= 0.1156
$D_{10}$= 0.1008 $C_u$= 1.94 $C_c$= 1.09

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-29-10C
**Sample Number:** TE Lab ID: 4488.34 **Depth:** 6.0 - 10.6 (ft.) **Date:** 5/27/10

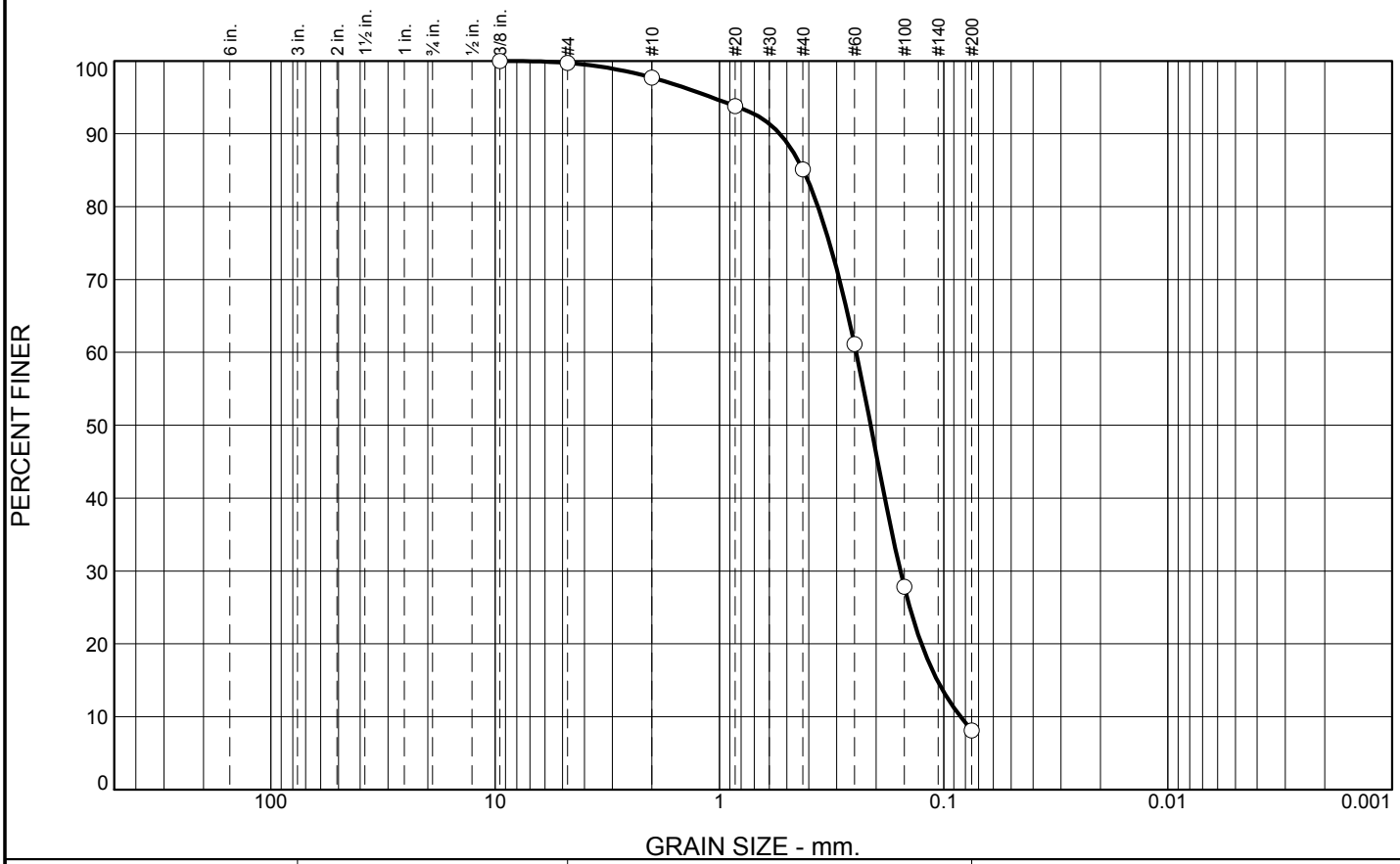
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 2.0 | 12.6 | 77.0 | 8.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 97.7 | | |
| #20 | 93.8 | | |
| #40 | 85.1 | | |
| #60 | 61.1 | | |
| #100 | 27.8 | | |
| #200 | 8.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5375 $D_{85}$= 0.4234 $D_{60}$= 0.2456
$D_{50}$= 0.2116 $D_{30}$= 0.1560 $D_{15}$= 0.1069
$D_{10}$= 0.0840 $C_u$= 2.92 $C_c$= 1.18

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-29-10D
**Sample Number:** TE Lab ID: 4488.35 **Depth:** 10.6 - 15.2 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

**Boring Designation BI-MS-30-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Mississippi Sound | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-MS-30-10 — LOCATION COORDINATES: E = 935,813 N = 261,226 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 4 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 27 Ft. |
| | 15. DATE BORING — STARTED: 05-18-10 — COMPLETED: 05-18-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -25.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Ed Herman, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -25.7 | 0.0 | | | | |
| -30.2 | 4.5 | | SAND, silty, mostly fine-grained sand-sized quartz, some shell fragments, with clay lenses, dark gray (SM) | A | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.1601 mm % Fines: 17.4 |
| -35.7 | 10.0 | | SAND, silty, mostly fine-grained sand-sized quartz, with clay lenses, gray (SM) | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.155 mm % Fines: 7.2 |
| -41.2 | 15.5 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, some shell fragments, gray (SP) | C | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2532 mm % Fines: 7 |
| -44.8 | 19.1 | | SAND, silty, mostly fine-grained sand-sized quartz, with clay lenses, dark gray (SM) | D | Classification: SP-SM Color: 5Y 3/1-very dark gray<br>D50: 0.1651 mm % Fines: 20.1 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21823° Long = -88.98669°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 935,813 Y = 261,226 | ELEVATION TOP OF BORING -25.7 Ft. | | |

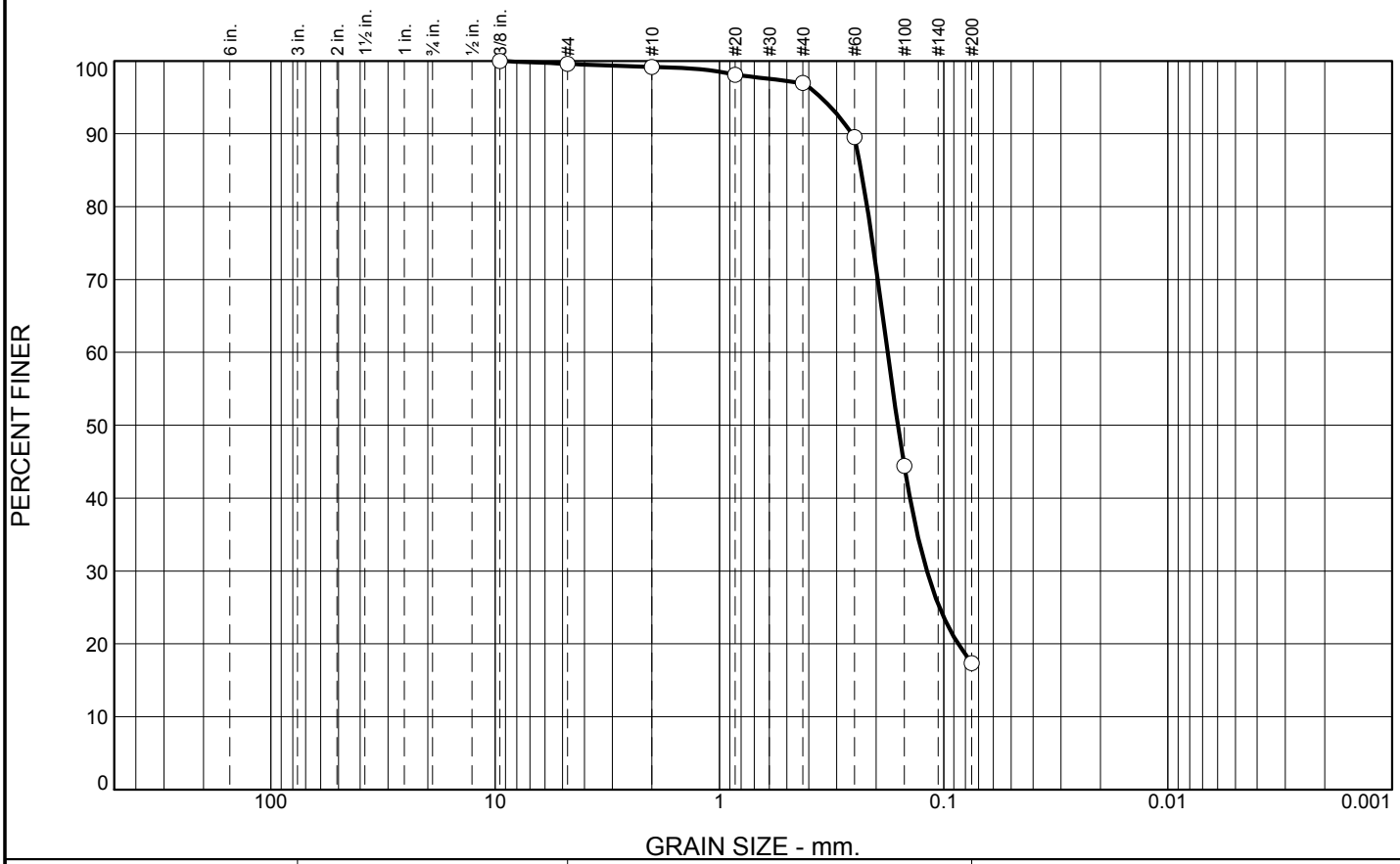
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.21823° Long = -88.98669°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.4 | 2.2 | 79.6 | 17.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.2 | | |
| #20 | 98.1 | | |
| #40 | 97.0 | | |
| #60 | 89.5 | | |
| #100 | 44.4 | | |
| #200 | 17.4 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2560 $D_{85}$= 0.2335 $D_{60}$= 0.1778
$D_{50}$= 0.1601 $D_{30}$= 0.1188 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-30-10A
**Sample Number:** TE Lab ID: 4488.36 **Depth:** 0.0 - 4.5 (ft.) **Date:** 5/27/10

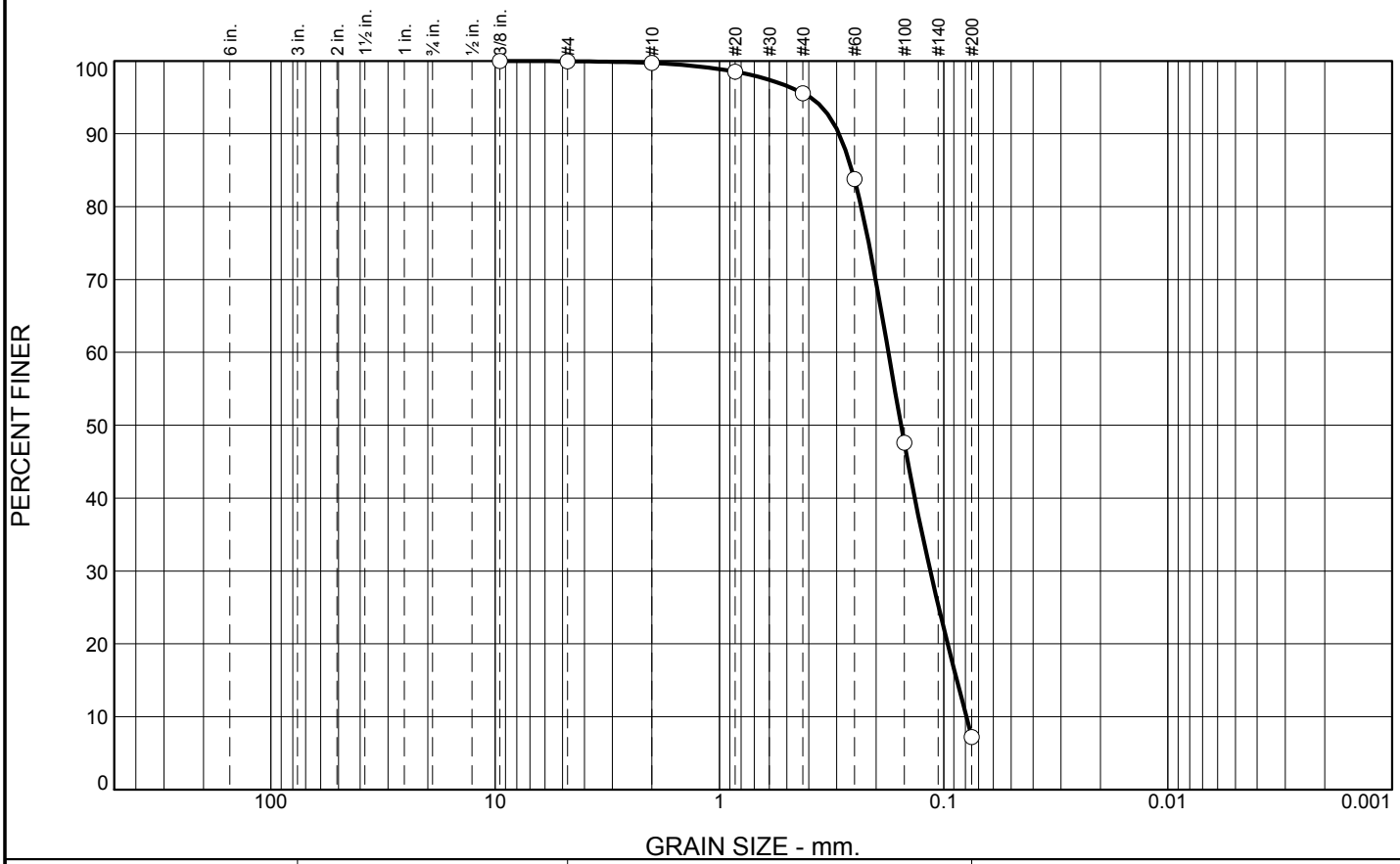
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.2 | 4.1 | 88.4 | 7.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.7 | | |
| #20 | 98.5 | | |
| #40 | 95.6 | | |
| #60 | 83.8 | | |
| #100 | 47.6 | | |
| #200 | 7.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained, with clay nodules and trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2928 $D_{85}$= 0.2563 $D_{60}$= 0.1765
$D_{50}$= 0.1550 $D_{30}$= 0.1147 $D_{15}$= 0.0873
$D_{10}$= 0.0792 $C_u$= 2.23 $C_c$= 0.94

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-30-10B
**Sample Number:** TE Lab ID: 4488.37 **Depth:** 4.5 - 10.0 (ft.) **Date:** 5/27/10

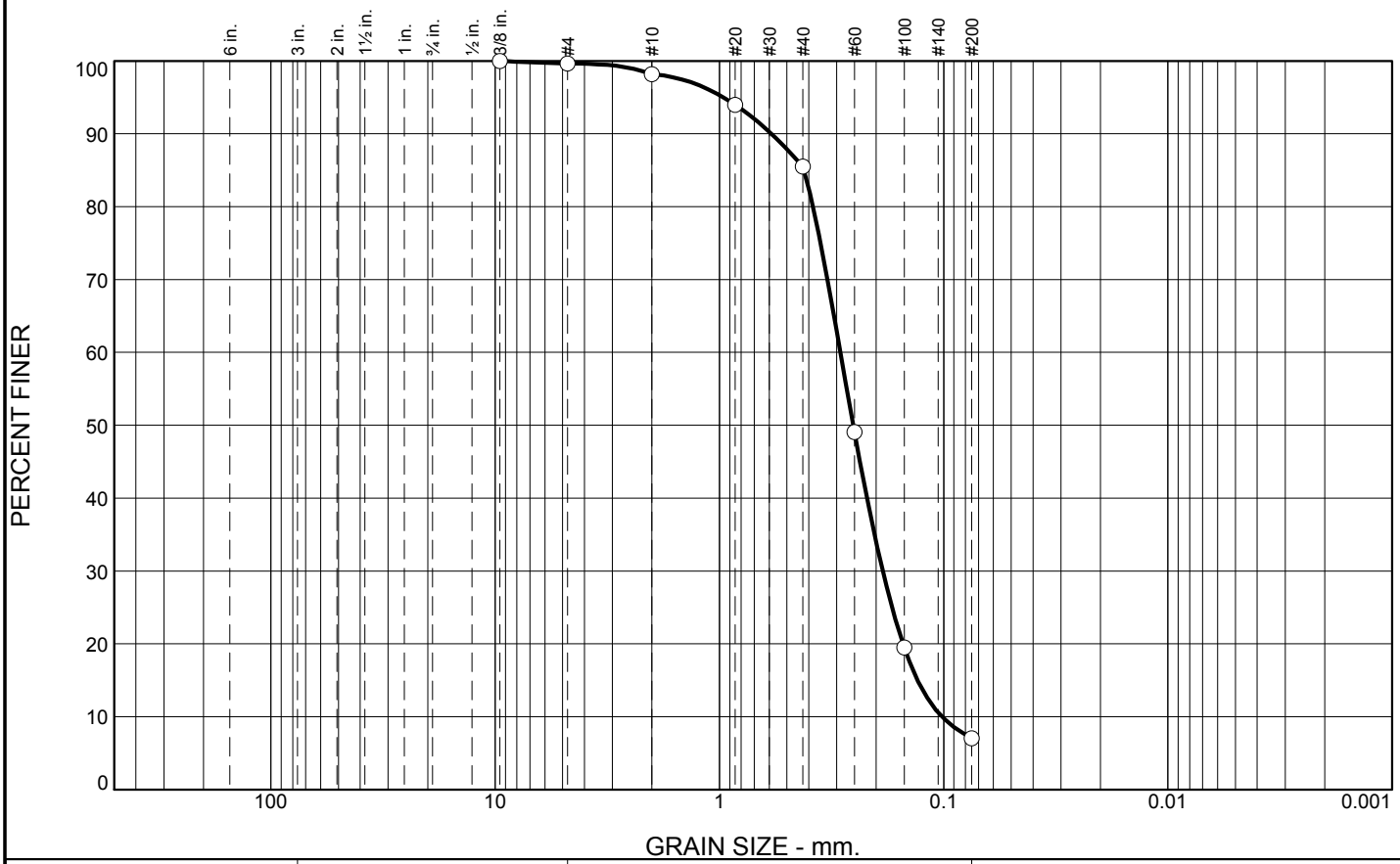
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 1.5 | 12.7 | 78.5 | 7.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 98.2 | | |
| #20 | 94.0 | | |
| #40 | 85.5 | | |
| #60 | 49.1 | | |
| #100 | 19.5 | | |
| #200 | 7.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine garined, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5862 $D_{85}$= 0.4204 $D_{60}$= 0.2887
$D_{50}$= 0.2532 $D_{30}$= 0.1869 $D_{15}$= 0.1307
$D_{10}$= 0.1017 $C_u$= 2.84 $C_c$= 1.19

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-30-10C
**Sample Number:** TE Lab ID: 4488.38 **Depth:** 10.0 - 15.5 (ft.) **Date:** 5/27/10

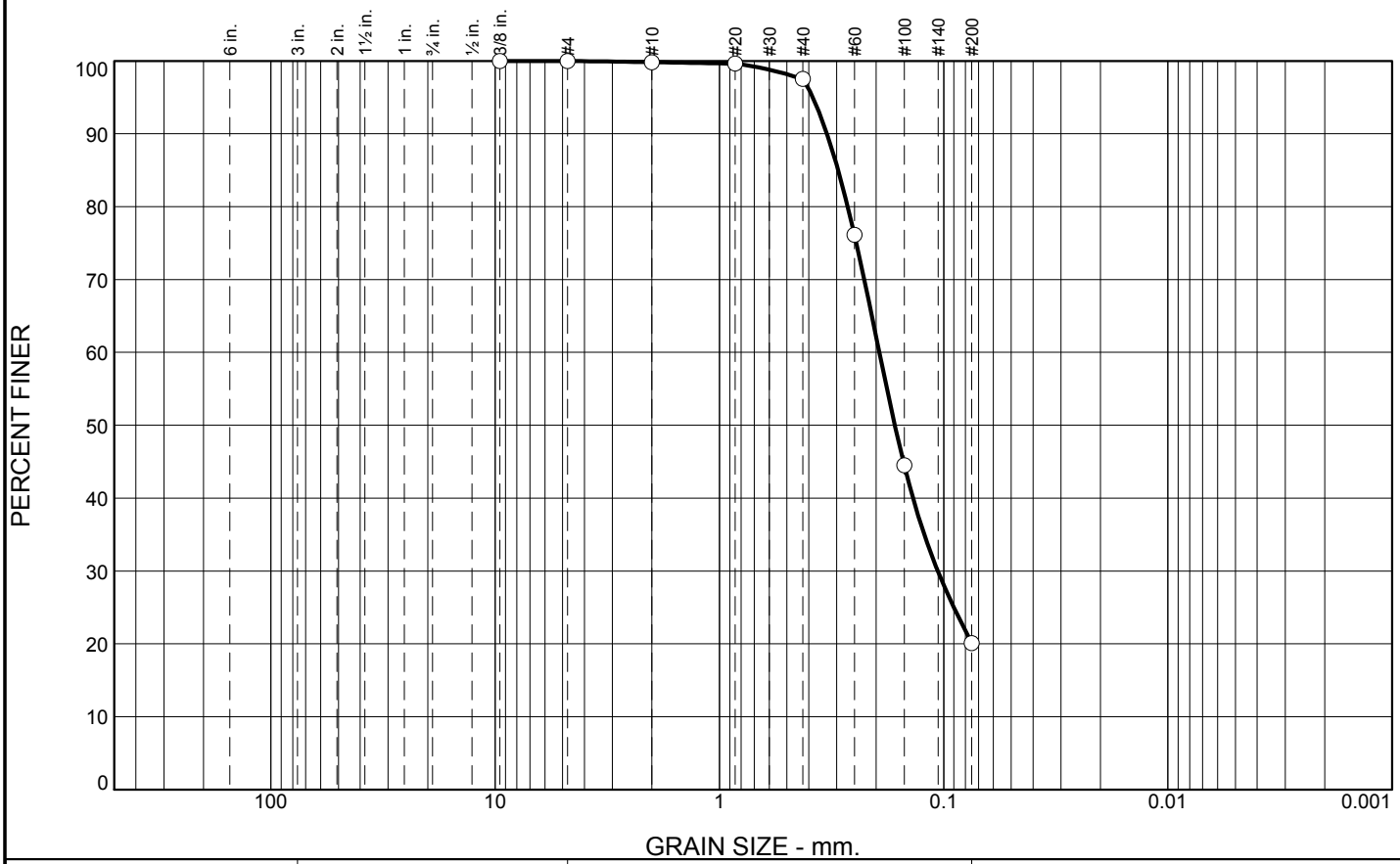
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 2.3 | 77.4 | 20.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.6 | | |
| #40 | 97.5 | | |
| #60 | 76.1 | | |
| #100 | 44.5 | | |
| #200 | 20.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3314 $D_{85}$= 0.2955 $D_{60}$= 0.1936
$D_{50}$= 0.1651 $D_{30}$= 0.1063 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-MS-30-10D
**Sample Number:** TE Lab ID: 4488.39 **Depth:** 15.5 - 19.1 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Appendix E

# Ship Island Pass Vibracores and Lab Results

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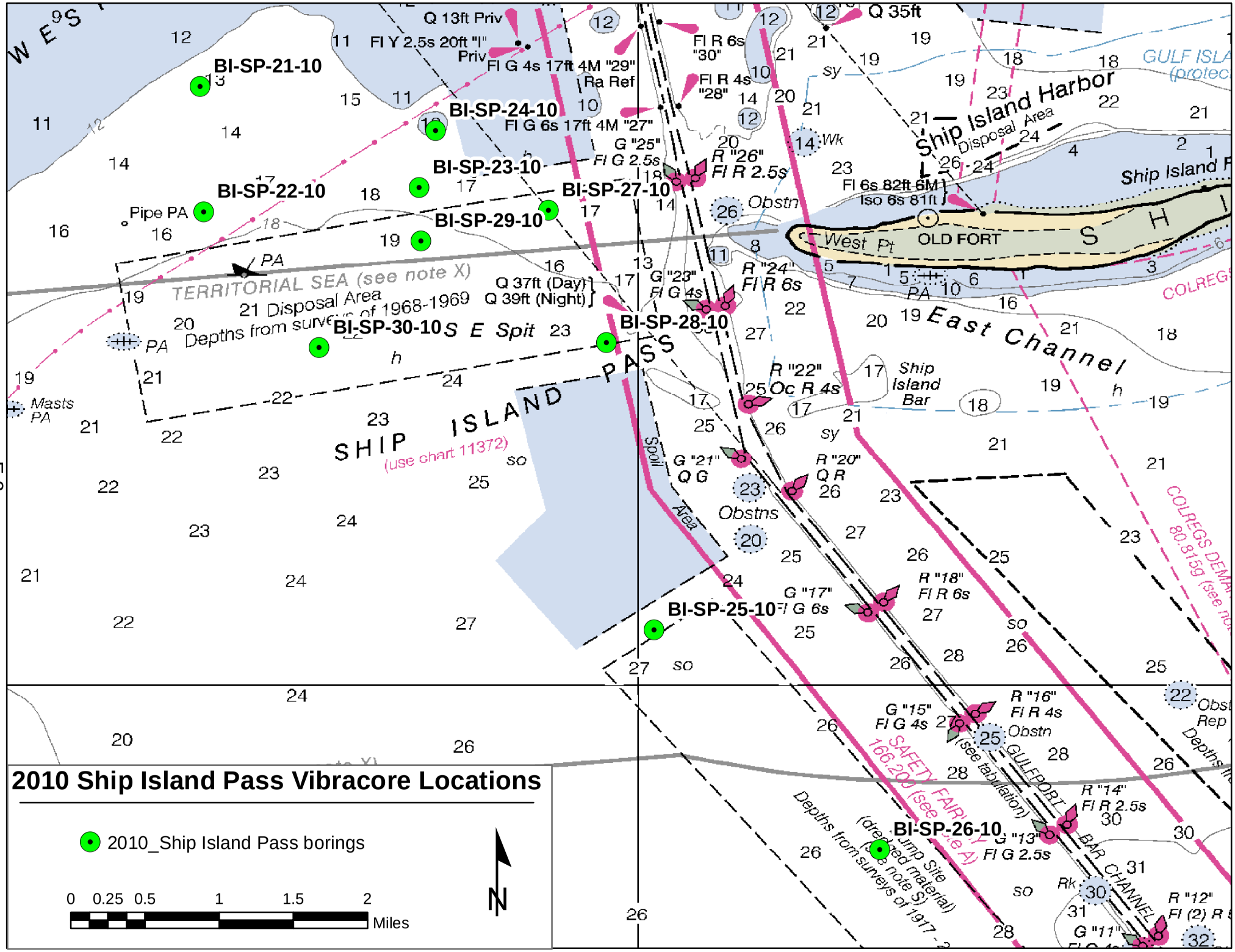
2010 Ship Island Pass Vibracore Locations
2010_Ship Island Pass borings
0 0.25 0.5 1 1.5 2
Miles
N
BI-SP-21-10
BI-SP-24-10
BI-SP-23-10
BI-SP-22-10
BI-SP-27-10
BI-SP-29-10
BI-SP-30-10
BI-SP-28-10
BI-SP-25-10
BI-SP-26-10
Ship Island Harbor
Disposal Area
Ship Island Pass
East Channel
OLD FORT
West Pt
TERRITORIAL SEA (see note X)
21 Disposal Area
Depths from surveys of 1968-1969
S E Spit
Ship Island Bar
Spoil Area
Q 13ft Priv
Fl Y 2.5s 20ft "I" Priv
Fl G 4s 17ft 4M "29" Ra Ref
Fl G 6s 17ft 4M "27"
Fl R 6s "30"
Fl R 4s "28"
Q 35ft
Fl 6s 82ft 6M
Iso 6s 81ft
Q 37ft (Day)
Q 39ft (Night)
G "25" Fl G 2.5s
R "26" Fl R 2.5s
G "23" Fl G 4s
R "24" Fl R 6s
R "22" Oc R 4s
G "21" Q G
R "20" Q R
G "17" Fl G 6s
R "18" Fl R 6s
G "15" Fl G 4s
R "16" Fl R 4s
R "14" Fl R 2.5s
G "13" Fl G 2.5s
R "12" Fl (2) R
G "11"
Pipe PA
Masts PA
Obstn
Obstns
Rep
GULFPORT BAR CHANNEL
SAFETY FAIRWAY 166.200 (see note A)
Depths from surveys of 1917
(see tabulation)
(use chart 11372)
COLREGS DEMA 80.815g (see no

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| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI-SP-21-10** | SHIP ISLAND PASS | 2010 | 5/6/2010 | 2:45 PM | 30.22499 | -89.04251 | 263712.48100 | 918187.10270 | 20-ft Vibracore | 15.6 | 13.2 | | | | | | | | | | | | | | | | | |
| **BI-SP-21-10A** | SHIP ISLAND PASS | 2010 | 5/6/2010 | 2:45 PM | 30.22499 | -89.04251 | 263712.48100 | 918187.10270 | 20-ft Vibracore | 15.6 | 13.2 | 0.0 - 5.0 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 10YR 5/1 | 5 | GRAY | 10YR 5/1 | 5 | NO | 0.19 | 0.19 | 5.4 | 2.2 | 1.4 |
| **BI-SP-21-10B** | SHIP ISLAND PASS | 2010 | 5/6/2010 | 2:45 PM | 30.22499 | -89.04251 | 263712.48100 | 918187.10270 | 20-ft Vibracore | 15.6 | 13.2 | 5.0 - 10.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 10YR 6/1 | 6 | GRAY | 10YR 6/1 | 6 | NO | 0.19 | 0.19 | 3.4 | 1.8 | 1.2 |
| **BI-SP-22-10** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 2:28 PM | 30.21275 | -89.04214 | 259260.77990 | 918295.79260 | 20-ft Vibracore | 20.0 | 18.2 | | | | | | | | | | | | | | | | | |
| **BI-SP-22-10A** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 2:28 PM | 30.21275 | -89.04214 | 259260.77990 | 918295.79260 | 20-ft Vibracore | 20.0 | 18.2 | 0.0 - 6.3 | 6.3 | CH | CL | CLAY FINES | VERY DK GRAY | 5Y 3/1 | 3 | GRAY | 2.5Y 5/1 | 5 | NO | - | #VALUE! | 95.3 | #VALUE! | #VALUE! |
| **BI-SP-22-10B** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 2:28 PM | 30.21275 | -89.04214 | 259260.77990 | 918295.79260 | 20-ft Vibracore | 20.0 | 18.2 | 6.3 - 12.5 | 6.2 | SC | SM | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | YES | 0.09 | #VALUE! | 21.9 | #VALUE! | #VALUE! |
| **BI-SP-22-10C** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 2:28 PM | 30.21275 | -89.04214 | 259260.77990 | 918295.79260 | 20-ft Vibracore | 20.0 | 18.2 | 12.5 - 18.2 | 5.7 | SC | SM | CLAY FINES | DK OLIVE GRAY | 5Y 3/2 | 3 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.08 | #VALUE! | 48.8 | #VALUE! | #VALUE! |
| **BI-SP-23-10** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 1:58 PM | 30.21513 | -89.02116 | 260114.80320 | 924924.02940 | 20-ft Vibracore | 21.0 | 14.9 | | | | | | | | | | | | | | | | | |
| **BI-SP-23-10A** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 1:58 PM | 30.21513 | -89.02116 | 260114.80320 | 924924.02940 | 20-ft Vibracore | 21.0 | 14.9 | 0.0 - 5.0 | 5.0 | CH | CL | CLAY FINES | VERY DK GRAY | 5Y 3/1 | 3 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | - | #VALUE! | 88.7 | #VALUE! | #VALUE! |
| **BI-SP-23-10B** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 1:58 PM | 30.21513 | -89.02116 | 260114.80320 | 924924.02940 | 20-ft Vibracore | 21.0 | 14.9 | 5.0 - 9.5 | 4.5 | SM | SP-SM | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/1 | 6 | NO | 0.13 | 0.14 | 11.9 | #VALUE! | #VALUE! |
| **BI-SP-23-10C** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 1:58 PM | 30.21513 | -89.02116 | 260114.80320 | 924924.02940 | 20-ft Vibracore | 21.0 | 14.9 | 9.5 - 14.9 | 5.4 | SC | SM | CLAY FINES | DK OLIVE GRAY | 5Y 3/2 | 3 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.09 | #VALUE! | 36.9 | #VALUE! | #VALUE! |
| **BI-SP-24-10** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 3:14 PM | 30.22068 | -89.01957 | 262132.42010 | 925429.54160 | 20-ft Vibracore | 18.0 | 14.6 | | | | | | | | | | | | | | | | | |
| **BI-SP-24-10A** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 3:14 PM | 30.22068 | -89.01957 | 262132.42010 | 925429.54160 | 20-ft Vibracore | 18.0 | 14.6 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.19 | 0.21 | 3.8 | 2.4 | 1.0 |
| **BI-SP-24-10B** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 3:14 PM | 30.22068 | -89.01957 | 262132.42010 | 925429.54160 | 20-ft Vibracore | 18.0 | 14.6 | 5.0 - 11.1 | 6.1 | SP | SP | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.20 | 0.21 | 4.0 | 2.2 | 1.3 |
| **BI-SP-24-10C** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 3:14 PM | 30.22068 | -89.01957 | 262132.42010 | 925429.54160 | 20-ft Vibracore | 18.0 | 14.6 | 11.1 - 14.6 | 0.0 | SC | SM | CLAY FINES | VERY DK GRAY | 5Y 3/1 | 3 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.08 | #VALUE! | 48.8 | #VALUE! | #VALUE! |
| **BI-SP-25-10** | SHIP ISLAND PASS | 2010 | 6/15/2010 | 8:20 AM | 30.17198 | -88.99827 | 244410.73810 | 932131.23890 | 20-ft Vibracore | 25.5 | 13.9 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-SP-26-10** | SHIP ISLAND PASS | 2010 | 6/15/2010 | 8:50 AM | 30.15056 | -88.97627 | 236611.33160 | 939073.31880 | 20-ft Vibracore | 26.0 | 12.9 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-SP-27-10** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 1:05 PM | 30.21290 | -89.00952 | 259297.91280 | 928599.33120 | 20-ft Vibracore | 17.0 | 13.7 | | | | | | | | | | | | | | | | | |
| **BI-SP-27-10A** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 1:05 PM | 30.21290 | -89.00952 | 259297.91280 | 928599.33120 | 20-ft Vibracore | 17.0 | 13.7 | 0.0 - 5.5 | 5.5 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 2.5Y 7/1 | 7 | YES | 0.20 | 0.22 | 3.6 | 2.6 | 1.0 |
| **BI-SP-27-10B** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 1:05 PM | 30.21290 | -89.00952 | 259297.91280 | 928599.33120 | 20-ft Vibracore | 17.0 | 13.7 | 5.5 - 13.7 | 8.2 | CH | CL | CLAY FINES | VERY DK GRAY | 5Y 3/1 | 3 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | - | #VALUE! | 70.8 | #VALUE! | #VALUE! |
| **BI-SP-28-10** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 12:40 PM | 30.20001 | -89.00292 | 254606.88080 | 930677.04240 | 20-ft Vibracore | 19.0 | 16.5 | | | | | | | | | | | | | | | | | |
| **BI-SP-28-10A** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 12:40 PM | 30.20001 | -89.00292 | 254606.88080 | 930677.04240 | 20-ft Vibracore | 19.0 | 16.5 | 0.0 - 4.3 | 4.3 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 2.5Y 7/1 | 7 | YES | 0.20 | 0.21 | 4.2 | 2.4 | 1.1 |
| **BI-SP-28-10B** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 12:40 PM | 30.20001 | -89.00292 | 254606.88080 | 930677.04240 | 20-ft Vibracore | 19.0 | 16.5 | 4.3 - 9.0 | 4.7 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.26 | 0.27 | 3.8 | 2.0 | 1.0 |
| **BI-SP-28-10C** | SHIP ISLAND PASS | 2010 | 5/18/2010 | 12:40 PM | 30.20001 | -89.00292 | 254606.88080 | 930677.04240 | 20-ft Vibracore | 19.0 | 16.5 | 9.0 - 16.5 | 7.5 | CH | CL | CLAY FINES | VERY DK GRAY | 5Y 3/1 | 3 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | - | #VALUE! | 77.5 | #VALUE! | #VALUE! |
| **BI-SP-29-10** | SHIP ISLAND PASS | 2010 | 6/17/2010 | 8:15 AM | 30.20991 | -89.02098 | 258216.28450 | 924977.75470 | 20-ft Vibracore | 20.0 | 19.7 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-SP-30-10** | SHIP ISLAND PASS | 2010 | 6/17/2010 | 8:55 AM | 30.19953 | -89.03090 | 254446.55900 | 921837.75400 | 20-ft Vibracore | 22.0 | 12.8 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

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## Boring Designation BI-SP-21-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SP-21-10 — LOCATION COORDINATES: E = 918,187 N = 263,712 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 15.6 Ft. |
| | 15. DATE BORING — STARTED: 05-06-10 — COMPLETED: 05-06-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -14.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 13.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: J. Krick, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -14.9 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, gray (SP) | A | Classification: SP Color: 10YR 5/1-gray<br>D50: 0.192 mm % Fines: 5.4 |
| | | | | B | Classification: SP Color: 10YR 6/1-gray<br>D50: 0.1894 mm % Fines: 3.4 |
| -24.9 | 10.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SP) | NS | |
| -28.1 | 13.2 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

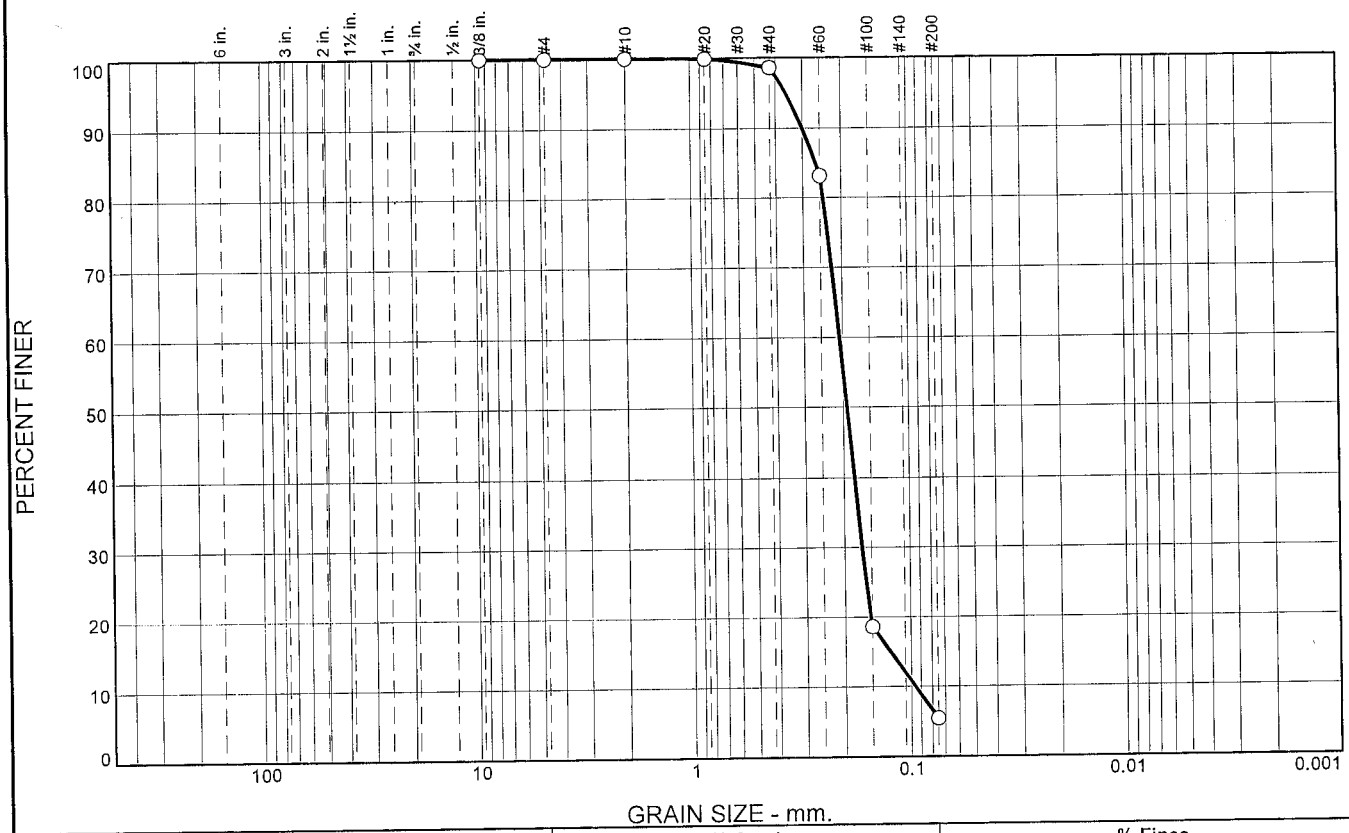
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22499° Long = -89.04251°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 93.2 | 5.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 98.6 | | |
| #60 | 83.1 | | |
| #100 | 18.6 | | |
| #200 | 5.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3014 $D_{85}$= 0.2620 $D_{60}$= 0.2061
$D_{50}$= 0.1920 $D_{30}$= 0.1658 $D_{15}$= 0.1242
$D_{10}$= 0.0955 $C_u$= 2.16 $C_c$= 1.40

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-21-10A
**Sample Number:** TE Lab ID: 4461.32 **Depth:** 0.0 - 5.0 (ft) **Date:** 5/13/10

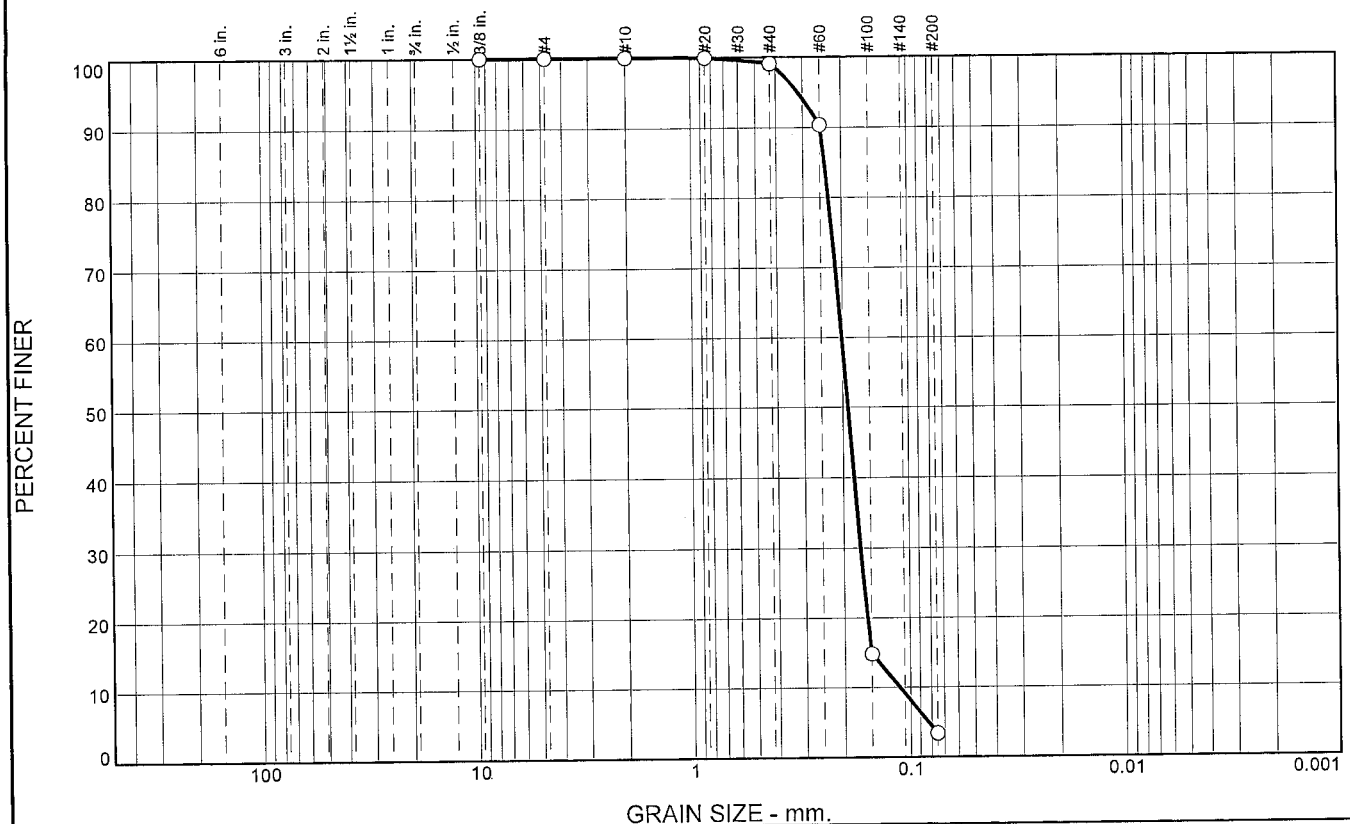
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Mississippi Barrier Island Restoration Project
Contract No. W91278-10-D-0026 - Task 03
**Project No:** 1021230009 **Figure**

**Tested By:** J.Maddox/L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 95.7 | 3.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 99.1 | | |
| #60 | 90.3 | | |
| #100 | 14.8 | | |
| #200 | 3.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2492 $D_{85}$= 0.2382 $D_{60}$= 0.2011
$D_{50}$= 0.1894 $D_{30}$= 0.1675 $D_{15}$= 0.1502
$D_{10}$= 0.1120 $C_u$= 1.80 $C_c$= 1.25

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-21-10B
**Sample Number:** TE Lab ID: 4461.33 **Depth:** 5.0 - 10.0 (ft) **Date:** 5/13/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Mississippi Barrier Island Restoration Project
Contract No. W91278-10-D-0026 - Task 03
**Project No:** 1021230009 **Figure**

**Tested By:** J.Maddox/L.Stokes **Checked By:** R.Byrd

**Boring Designation BI-SP-22-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SP-22-10 — LOCATION COORDINATES: E = 918,296 N = 259,261 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 20 Ft. |
| | 15. DATE BORING — STARTED: 05-18-10 — COMPLETED: 05-18-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -18.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Ed Herman, Geologist |

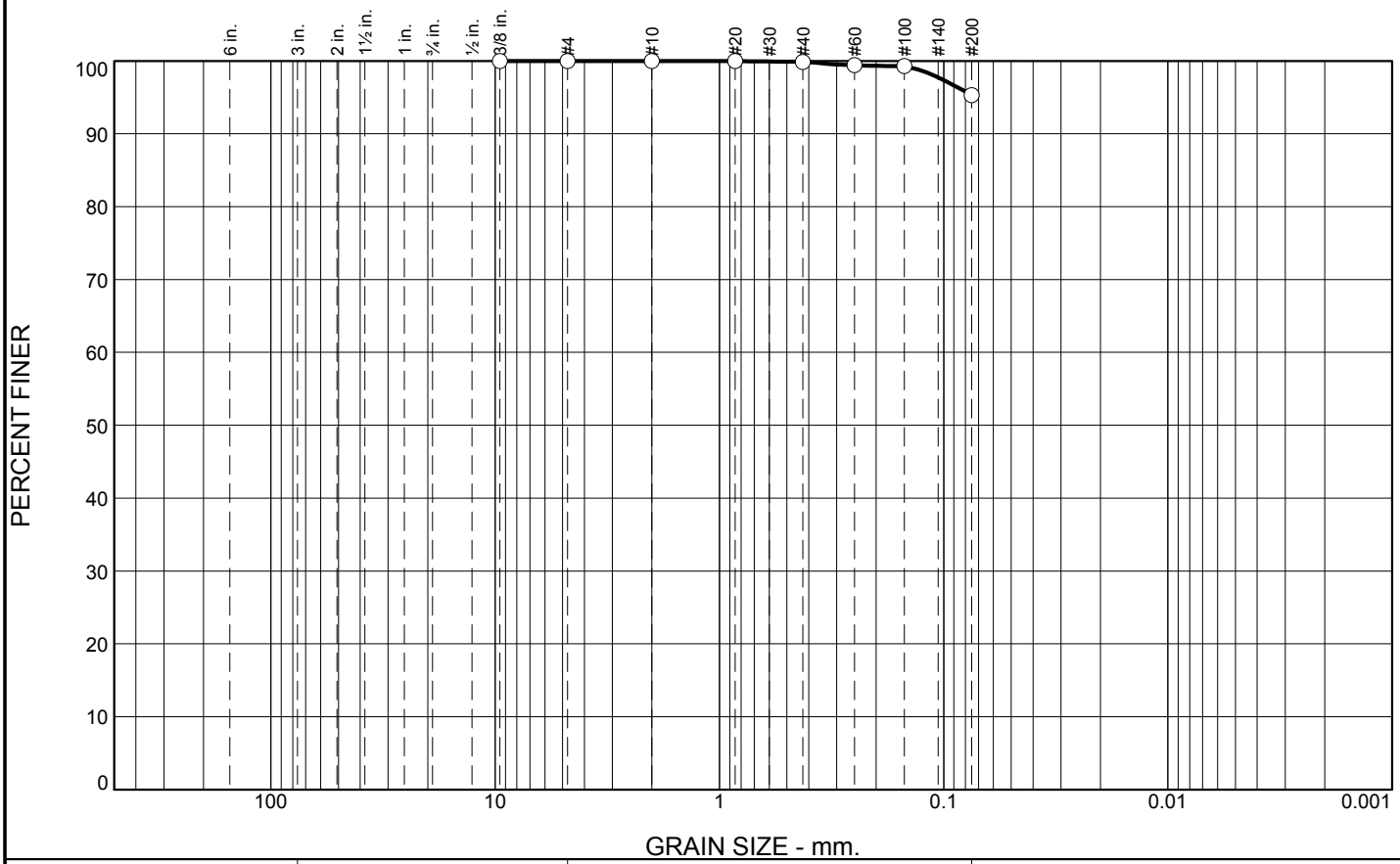
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -18.5 | 0.0 | | | | |
| -24.8 | 6.3 | | CLAY, fat, dark gray (CH) | A | Classification: CL Color: 2.5Y 5/1-gray<br>D50: mm % Fines: 95.3 |
| -36.7 | 18.2 | | SAND, clayey, mostly fine to medium-grained sand-sized quartz, dark gray (SC) | B | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.0932 mm % Fines: 21.9 |
| | | | | C | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.0762 mm % Fines: 48.8 |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21275° Long = -89.04214°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 4.6 | 95.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 100.0 | | |
| #40 | 99.9 | | |
| #60 | 99.4 | | |
| #100 | 99.3 | | |
| #200 | 95.3 | | |

* (no specification provided)

**Material Description**

CLAY, (CL)

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= $D_{85}$= $D_{60}$=
$D_{50}$= $D_{30}$= $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= CL AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-22-10A
**Sample Number:** TE Lab ID: 4488.48 **Depth:** 0.0 - 6.3 (ft.) **Date:** 5/27/10

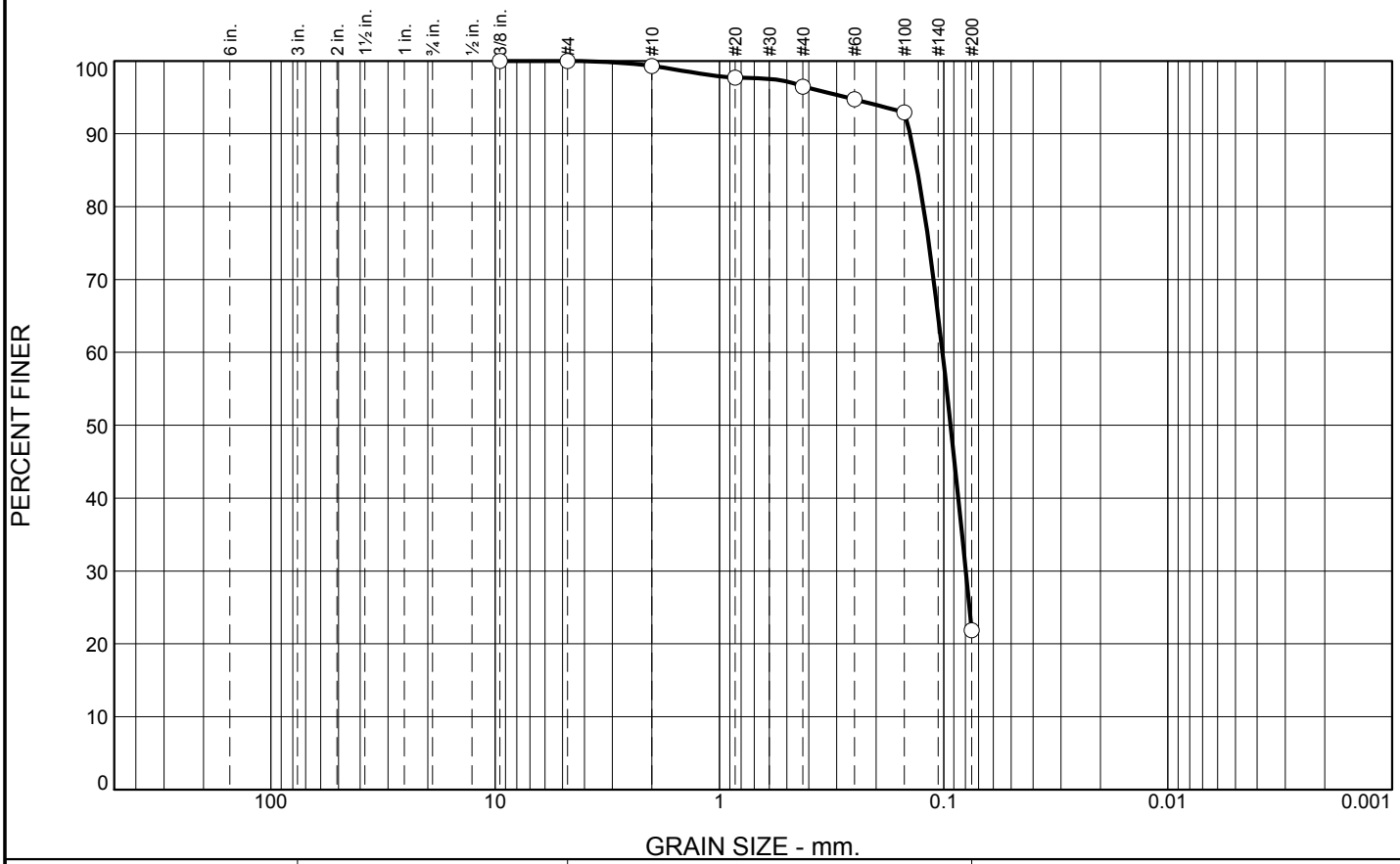
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.7 | 2.8 | 74.6 | 21.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.3 | | |
| #20 | 97.7 | | |
| #40 | 96.5 | | |
| #60 | 94.7 | | |
| #100 | 92.9 | | |
| #200 | 21.9 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.1414 $D_{85}$= 0.1310 $D_{60}$= 0.1013
$D_{50}$= 0.0932 $D_{30}$= 0.0798 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-22-10B
**Sample Number:** TE Lab ID: 4488.49 **Depth:** 6.3 - 12.5 (ft.) **Date:** 5/27/10

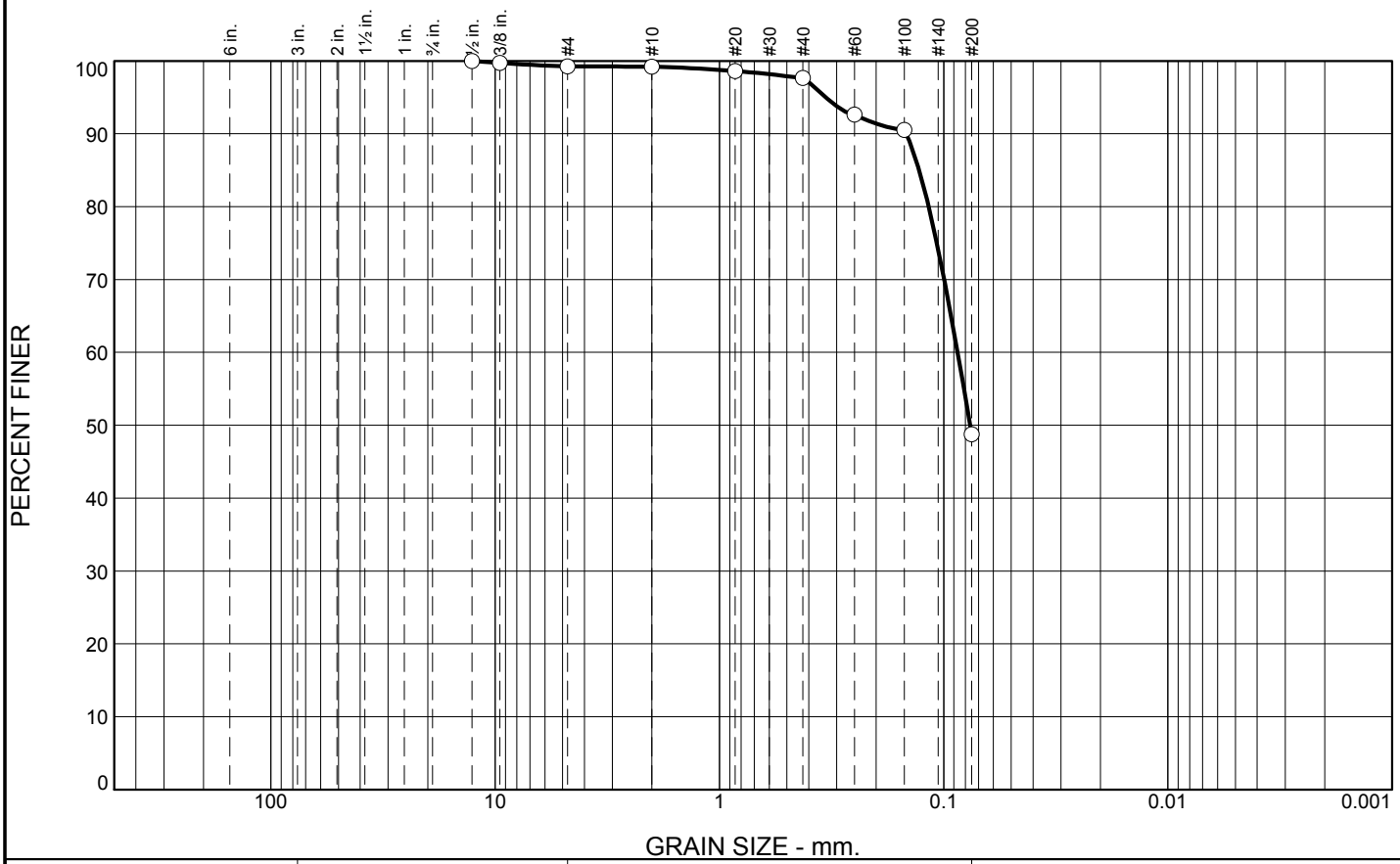
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.7 | 0.1 | 1.6 | 48.8 | 48.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.7 | | |
| #4 | 99.3 | | |
| #10 | 99.2 | | |
| #20 | 98.6 | | |
| #40 | 97.6 | | |
| #60 | 92.6 | | |
| #100 | 90.5 | | |
| #200 | 48.8 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with trace shell and clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.1470 $D_{85}$= 0.1286 $D_{60}$= 0.0867
$D_{50}$= 0.0762 $D_{30}$= $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-22-10C
**Sample Number:** TE Lab ID: 4488.50 **Depth:** 12.5 - 18.2 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

**Boring Designation BI-SP-23-10**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SP-23-10 — LOCATION COORDINATES: E = 924,924 N = 260,115 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 21 Ft. |
| | 15. DATE BORING — STARTED: 05-18-10 — COMPLETED: 05-18-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -19.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 14.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Ed Herman, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.5 | 0.0 | | | | |
| -24.5 | 5.0 | | CLAY, fat, dark gray (CH) | A | Classification: CL Color: 2.5Y 5/2-grayish brown<br>D50: mm % Fines: 88.7 |
| -29.0 | 9.5 | | SAND, silty, mostly fine-grained sand-sized quartz, little shell fragments, dark gray (SM) | B | Classification: SP-SM Color: 2.5Y 61/-<br>D50: 0.1275 mm % Fines: 11.9 |
| -34.4 | 14.9 | | SAND, clayey, mostly fine-grained sand-sized quartz, dark gray (SC) | C | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.0943 mm % Fines: 36.9 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

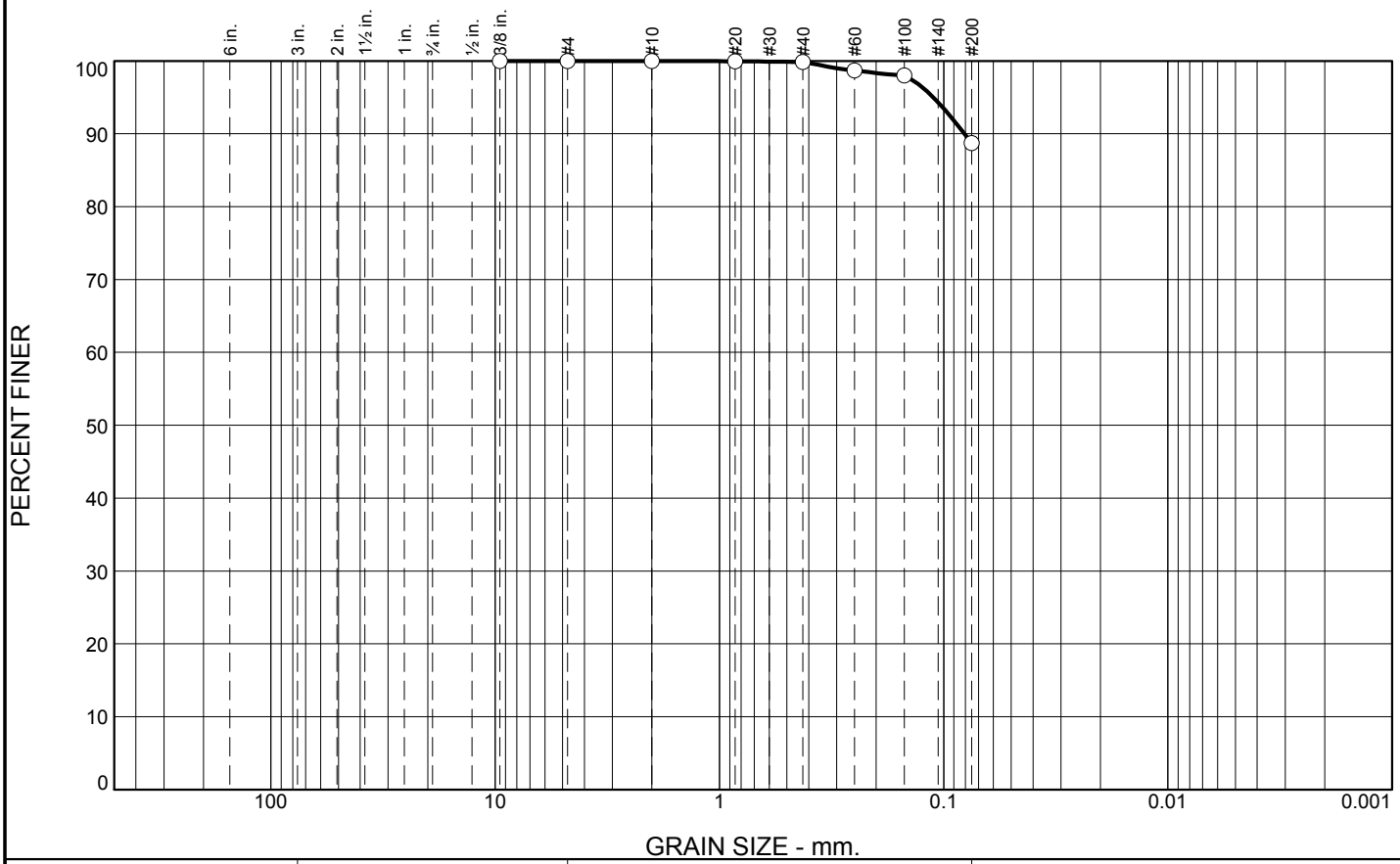
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21513° Long = -89.02116°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 11.2 | 88.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 100.0 | | |
| #40 | 99.9 | | |
| #60 | 98.7 | | |
| #100 | 98.0 | | |
| #200 | 88.7 | | |

* (no specification provided)

**Material Description**

CLAY, (CL)

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.0808 $D_{85}$= $D_{60}$=
$D_{50}$= $D_{30}$= $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= CL AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-23-10A
**Sample Number:** TE Lab ID: 4488.45 **Depth:** 0.0 - 5.0 (ft.) **Date:** 5/27/10

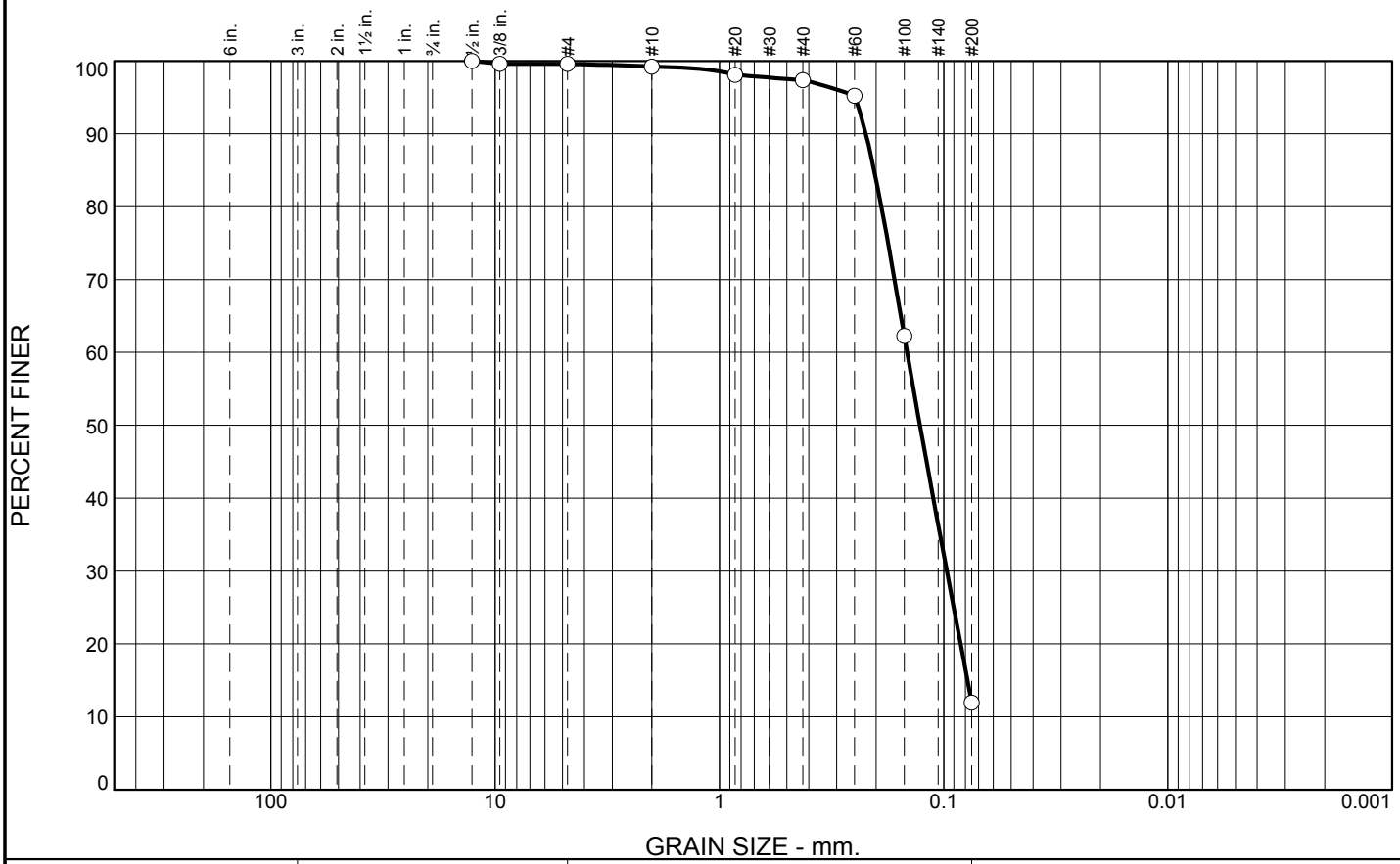
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.4 | 1.9 | 85.4 | 11.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.6 | | |
| #4 | 99.6 | | |
| #10 | 99.2 | | |
| #20 | 98.1 | | |
| #40 | 97.3 | | |
| #60 | 95.2 | | |
| #100 | 62.3 | | |
| #200 | 11.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2223 $D_{85}$= 0.2042 $D_{60}$= 0.1456
$D_{50}$= 0.1275 $D_{30}$= 0.0968 $D_{15}$= 0.0783
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-23-10B
**Sample Number:** TE Lab ID: 4488.46 **Depth:** 5.0 - 9.5 (ft.) **Date:** 5/27/10

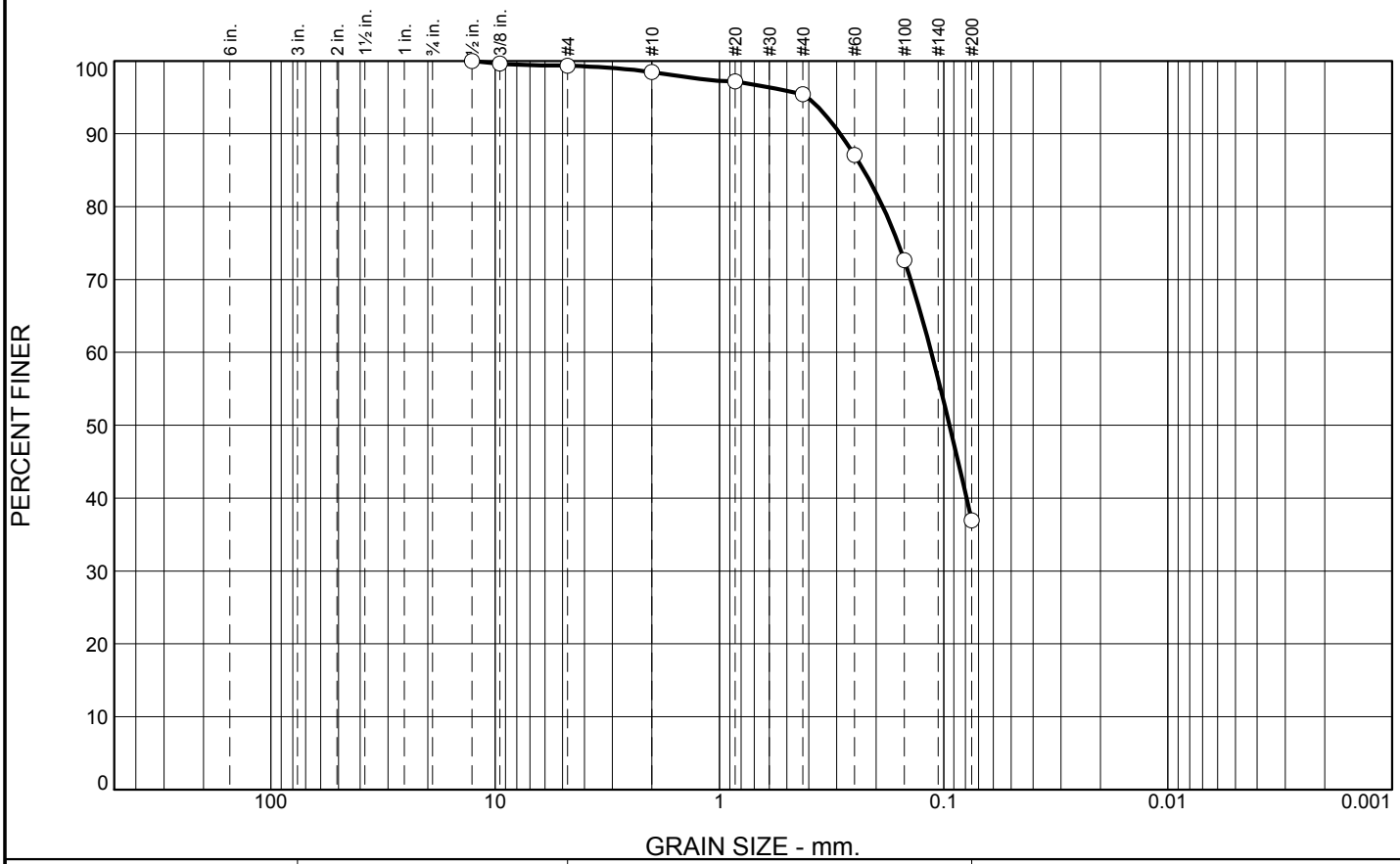
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.7 | 0.8 | 3.1 | 58.5 | 36.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.6 | | |
| #4 | 99.3 | | |
| #10 | 98.5 | | |
| #20 | 97.2 | | |
| #40 | 95.4 | | |
| #60 | 87.1 | | |
| #100 | 72.6 | | |
| #200 | 36.9 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained, with trace shell and clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2895 $D_{85}$= 0.2273 $D_{60}$= 0.1136
$D_{50}$= 0.0943 $D_{30}$= $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-23-10C
**Sample Number:** TE Lab ID: 4488.47 **Depth:** 9.5 - 14.9 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

**Boring Designation BI-SP-24-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | | | |
|---|---|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Ship Island Pass | | 9. SIZE AND TYPE OF BIT N/A | |
| | | 10. COORDINATE SYSTEM/DATUM<br>State Plane, MSE (U.S. Ft.) | HORIZONTAL<br>NAD83 / VERTICAL<br>NAVD88 |
| 2. BORING DESIGNATION<br>BI-SP-24-10 | LOCATION COORDINATES<br>E = 925,430 N = 262,132 | 11. MANUFACTURER'S DESIGNATION OF DRILL<br>Vibracore | ☐ AUTO HAMMER<br>☐ MANUAL HAMMER |
| 3. DRILLING AGENCY<br>Corps of Engineers - CESAM | CONTRACTOR FILE NO. | 12. TOTAL SAMPLES | DISTURBED: 3<br>UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER<br>Construction Solutions International, Inc. | | 13. TOTAL NUMBER CORE BOXES | |
| 5. DIRECTION OF BORING<br>☒ VERTICAL<br>☐ INCLINED | DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 18 Ft. | |
| | | 15. DATE BORING | STARTED: 05-18-10<br>COMPLETED: 05-18-10 |
| 6. THICKNESS OF OVERBURDEN N/A | | 16. ELEVATION TOP OF BORING -16.6 Ft. | |
| 7. DEPTH DRILLED INTO ROCK N/A | | 17. TOTAL RECOVERY FOR BORING 100% | |
| 8. TOTAL DEPTH OF BORING 14.6 Ft. | | 18. SIGNATURE AND TITLE OF INSPECTOR<br>Ed Herman, Geologist | |

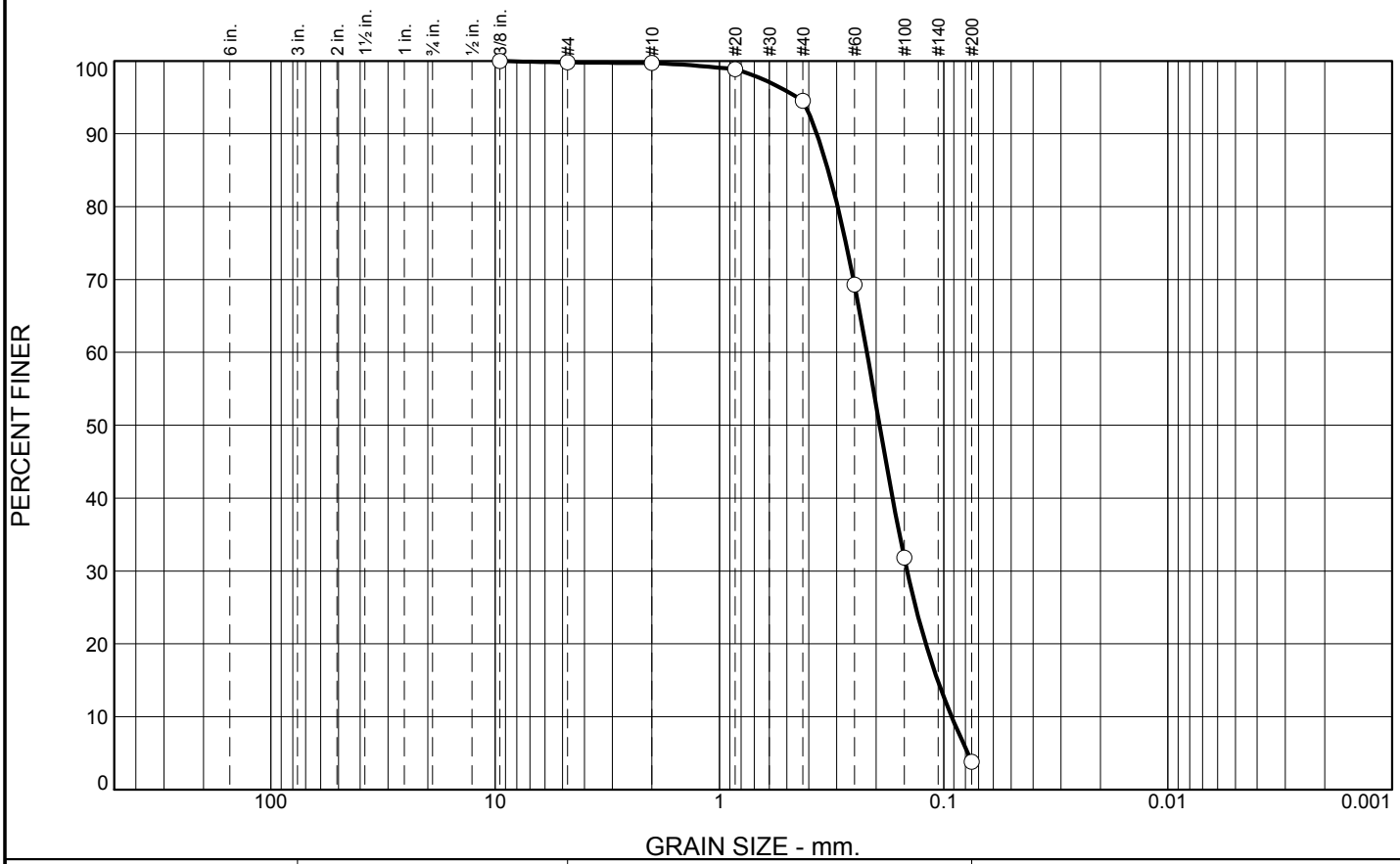
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -16.6 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, some shell fragments, gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.1931 mm % Fines: 3.8 |
| | | | | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.1992 mm % Fines: 4 |
| -27.7 | 11.1 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, with clay zones, dark gray (SC) | C | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.0763 mm % Fines: 48.8 |
| -31.2 | 14.6 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22068° Long = -89.01957°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.1 | 5.2 | 90.7 | 3.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.7 | | |
| #20 | 98.9 | | |
| #40 | 94.5 | | |
| #60 | 69.3 | | |
| #100 | 31.8 | | |
| #200 | 3.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP). fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3680 $D_{85}$= 0.3272 $D_{60}$= 0.2199
$D_{50}$= 0.1931 $D_{30}$= 0.1456 $D_{15}$= 0.1064
$D_{10}$= 0.0921 $C_u$= 2.39 $C_c$= 1.05

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-24-10A
**Sample Number:** TE Lab ID: 4488.51 **Depth:** 0.0 - 5.0 (ft.) **Date:** 5/27/10

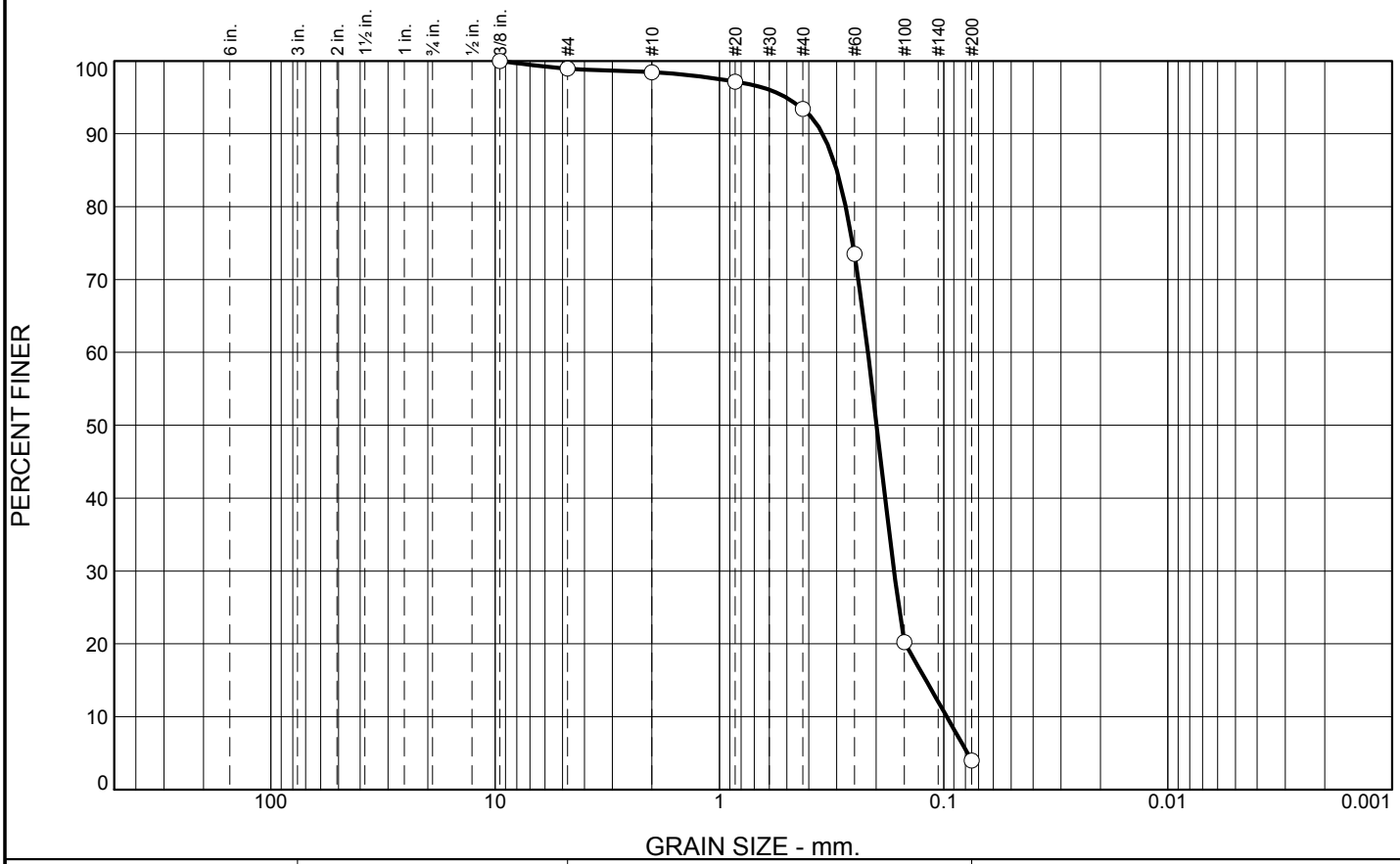
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.1 | 0.5 | 5.0 | 89.4 | 4.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 98.9 | | |
| #10 | 98.4 | | |
| #20 | 97.1 | | |
| #40 | 93.4 | | |
| #60 | 73.5 | | |
| #100 | 20.2 | | |
| #200 | 4.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3466 $D_{85}$= 0.2998 $D_{60}$= 0.2177
$D_{50}$= 0.1992 $D_{30}$= 0.1665 $D_{15}$= 0.1200
$D_{10}$= 0.0969 $C_u$= 2.25 $C_c$= 1.31

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-24-10B
**Sample Number:** TE Lab ID: 4488.52 **Depth:** 5.0 - 11.1 (ft.) **Date:** 5/27/10

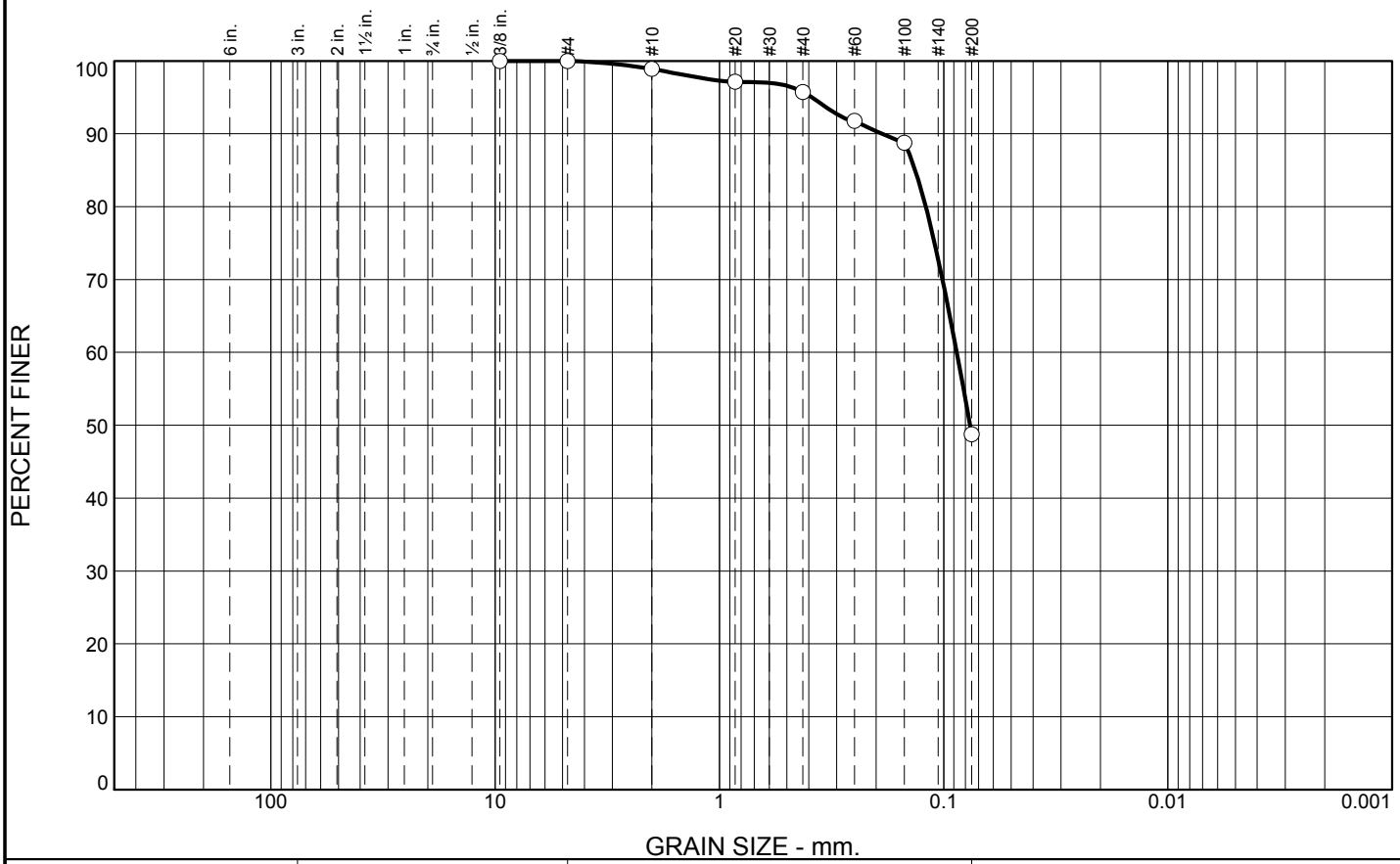
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 1.1 | 3.2 | 46.9 | 48.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 98.9 | | |
| #20 | 97.1 | | |
| #40 | 95.7 | | |
| #60 | 91.8 | | |
| #100 | 88.8 | | |
| #200 | 48.8 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.1883 $D_{85}$= 0.1339 $D_{60}$= 0.0875
$D_{50}$= 0.0763 $D_{30}$= $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-24-10C
**Sample Number:** TE Lab ID: 4488.53 **Depth:** 11.1 - 14.6 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

**Boring Designation BI-SP-25-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | | | |
|---|---|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Ship Island Pass | | 9. SIZE AND TYPE OF BIT N/A | |
| | | 10. COORDINATE SYSTEM/DATUM<br>State Plane, MSE (U.S. Ft.) | HORIZONTAL<br>NAD83 / VERTICAL<br>NAVD88 |
| 2. BORING DESIGNATION<br>BI-SP-25-10 | LOCATION COORDINATES<br>E = 932,131 N = 244,411 | 11. MANUFACTURER'S DESIGNATION OF DRILL<br>Vibracore | ☐ AUTO HAMMER<br>☐ MANUAL HAMMER |
| 3. DRILLING AGENCY<br>Corps of Engineers - CESAM | CONTRACTOR FILE NO. | 12. TOTAL SAMPLES | DISTURBED 0 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER<br>Construction Solutions International, Inc. | | 13. TOTAL NUMBER CORE BOXES | |
| 5. DIRECTION OF BORING<br>☒ VERTICAL<br>☐ INCLINED | DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 25.5 Ft. | |
| | | 15. DATE BORING | STARTED 06-15-10 / COMPLETED 06-15-10 |
| 6. THICKNESS OF OVERBURDEN N/A | | 16. ELEVATION TOP OF BORING -24.4 Ft. | |
| 7. DEPTH DRILLED INTO ROCK N/A | | 17. TOTAL RECOVERY FOR BORING 100% | |
| 8. TOTAL DEPTH OF BORING 13.9 Ft. | | 18. SIGNATURE AND TITLE OF INSPECTOR<br>Marty Gates, Geologist | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -24.4 | 0.0 | | | | |
| -25.7 | 1.3 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | | |
| -27.2 | 2.8 | | CLAY, lean, dark gray (CL) | | |
| -27.8 | 3.4 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -38.3 | 13.9 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17198° Long = -88.99827°**

Boring Designation BI-SP-26-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island Pass | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SP-26-10 / LOCATION COORDINATES E = 939,073 N = 236,611 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES DISTURBED 0 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 26 Ft. |
| | 15. DATE BORING STARTED 06-15-10 / COMPLETED 06-15-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -24.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 12.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -24.9 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -37.8 | 12.9 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.15056° Long = -88.97627°

**Boring Designation BI-SP-27-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SP-27-10 — LOCATION COORDINATES: E = 928,599 N = 259,298 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 17 Ft. |
| | 15. DATE BORING — STARTED: 05-18-10 — COMPLETED: 05-18-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -15.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 13.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Ed Herman, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -15.5 | 0.0 | | | | |
| -21.0 | 5.5 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, some shell fragments, occasional clay balls, gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.203 mm % Fines: 3.6 |
| -29.2 | 13.7 | | CLAY, fat, dark gray (CH) | B | Classification: CL Color: 2.5Y 5/2-grayish brown<br>D50: mm % Fines: 70.8 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

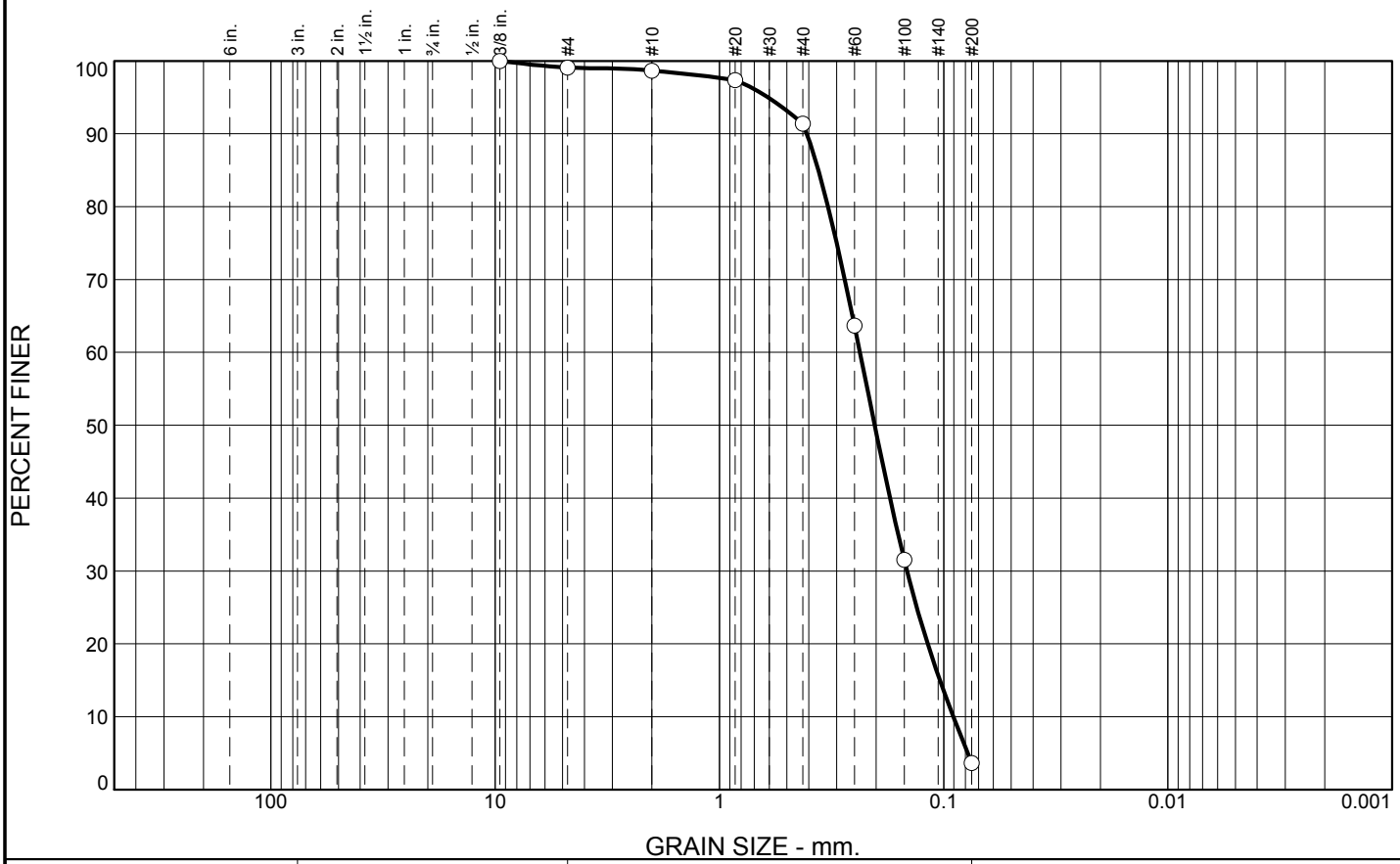
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21290° Long = -89.00952°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.9 | 0.5 | 7.2 | 87.8 | 3.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.1 | | |
| #10 | 98.6 | | |
| #20 | 97.4 | | |
| #40 | 91.4 | | |
| #60 | 63.7 | | |
| #100 | 31.5 | | |
| #200 | 3.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4082 $D_{85}$= 0.3618 $D_{60}$= 0.2363
$D_{50}$= 0.2030 $D_{30}$= 0.1458 $D_{15}$= 0.1040
$D_{10}$= 0.0905 $C_u$= 2.61 $C_c$= 0.99

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-27-10A
**Sample Number:** TE Lab ID: 4488.43 **Depth:** 0.0 - 5.5 (ft.) **Date:** 5/27/10

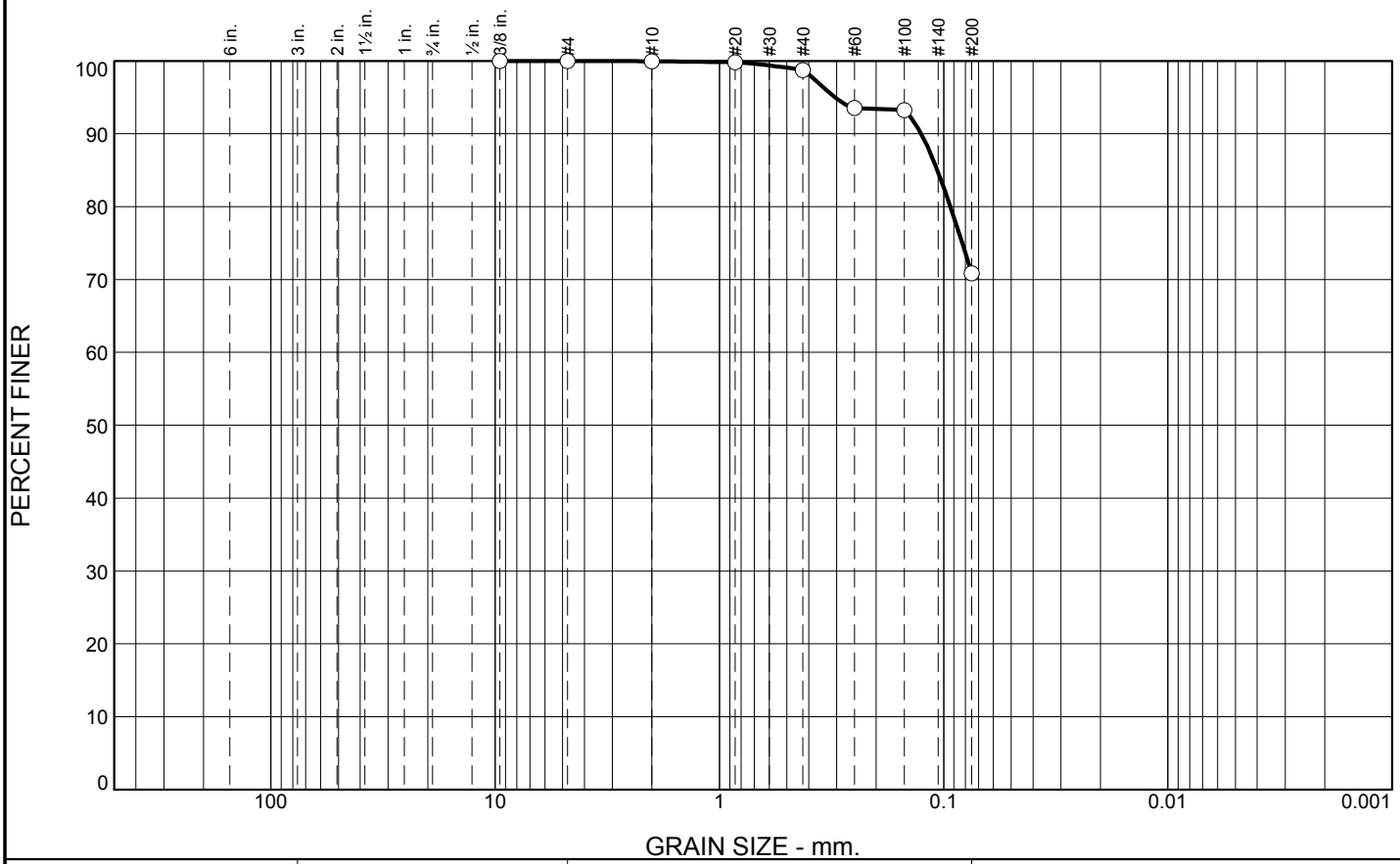
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 27.9 | 70.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.8 | | |
| #40 | 98.7 | | |
| #60 | 93.5 | | |
| #100 | 93.3 | | |
| #200 | 70.8 | | |

* (no specification provided)

**Material Description**

CLAY, (CL)

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.1259 $D_{85}$= 0.1067 $D_{60}$=
$D_{50}$= $D_{30}$= $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= CL AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-27-10B
**Sample Number:** TE Lab ID: 4488.44 **Depth:** 5.5 - 13.7 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

**Boring Designation BI-SP-28-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | | | |
|---|---|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Ship Island Pass | | 9. SIZE AND TYPE OF BIT N/A | |
| | | 10. COORDINATE SYSTEM/DATUM<br>State Plane, MSE (U.S. Ft.) | HORIZONTAL<br>NAD83 / VERTICAL<br>NAVD88 |
| 2. BORING DESIGNATION<br>BI-SP-28-10 | LOCATION COORDINATES<br>E = 930,677 N = 254,607 | 11. MANUFACTURER'S DESIGNATION OF DRILL<br>Vibracore | ☐ AUTO HAMMER<br>☐ MANUAL HAMMER |
| 3. DRILLING AGENCY<br>Corps of Engineers - CESAM | CONTRACTOR FILE NO. | 12. TOTAL SAMPLES | DISTURBED: 3<br>UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER<br>Construction Solutions International, Inc. | | 13. TOTAL NUMBER CORE BOXES | |
| 5. DIRECTION OF BORING<br>☒ VERTICAL<br>☐ INCLINED | DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 19 Ft. | |
| | | 15. DATE BORING | STARTED: 05-18-10<br>COMPLETED: 05-18-10 |
| 6. THICKNESS OF OVERBURDEN N/A | | 16. ELEVATION TOP OF BORING -17.6 Ft. | |
| 7. DEPTH DRILLED INTO ROCK N/A | | 17. TOTAL RECOVERY FOR BORING 100% | |
| 8. TOTAL DEPTH OF BORING 16.5 Ft. | | 18. SIGNATURE AND TITLE OF INSPECTOR<br>Ed Herman, Geologist | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -17.6 | 0.0 | | | | |
| -21.9 | 4.3 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, some shell fragments, gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1991 mm % Fines: 4.2 |
| -26.6 | 9.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, some shell fragments, gray (SP) | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2619 mm % Fines: 3.8 |
| -34.1 | 16.5 | | CLAY, fat, occasional sand, dark gray (CH) | C | Classification: CL Color: 2.5Y 5/2-grayish brown<br>D50: mm % Fines: 77.5 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

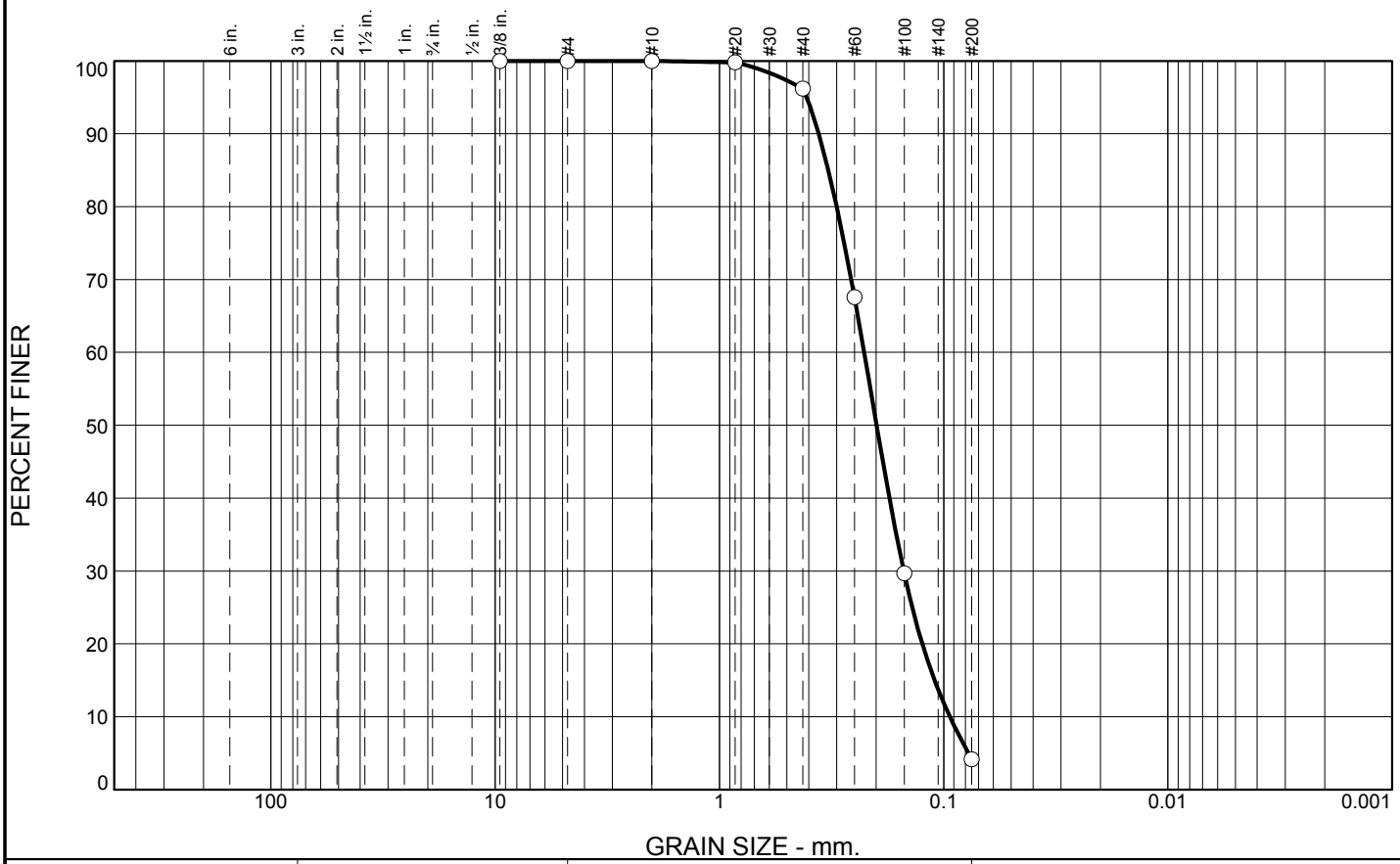
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20001° Long = -89.00292°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 3.8 | 92.0 | 4.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.8 | | |
| #40 | 96.2 | | |
| #60 | 67.6 | | |
| #100 | 29.7 | | |
| #200 | 4.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3608 $D_{85}$= 0.3269 $D_{60}$= 0.2262
$D_{50}$= 0.1991 $D_{30}$= 0.1507 $D_{15}$= 0.1099
$D_{10}$= 0.0939 $C_u$= 2.41 $C_c$= 1.07

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-28-10A
**Sample Number:** TE Lab ID: 4488.40 **Depth:** 0.0 - 4.3 (ft.) **Date:** 5/27/10

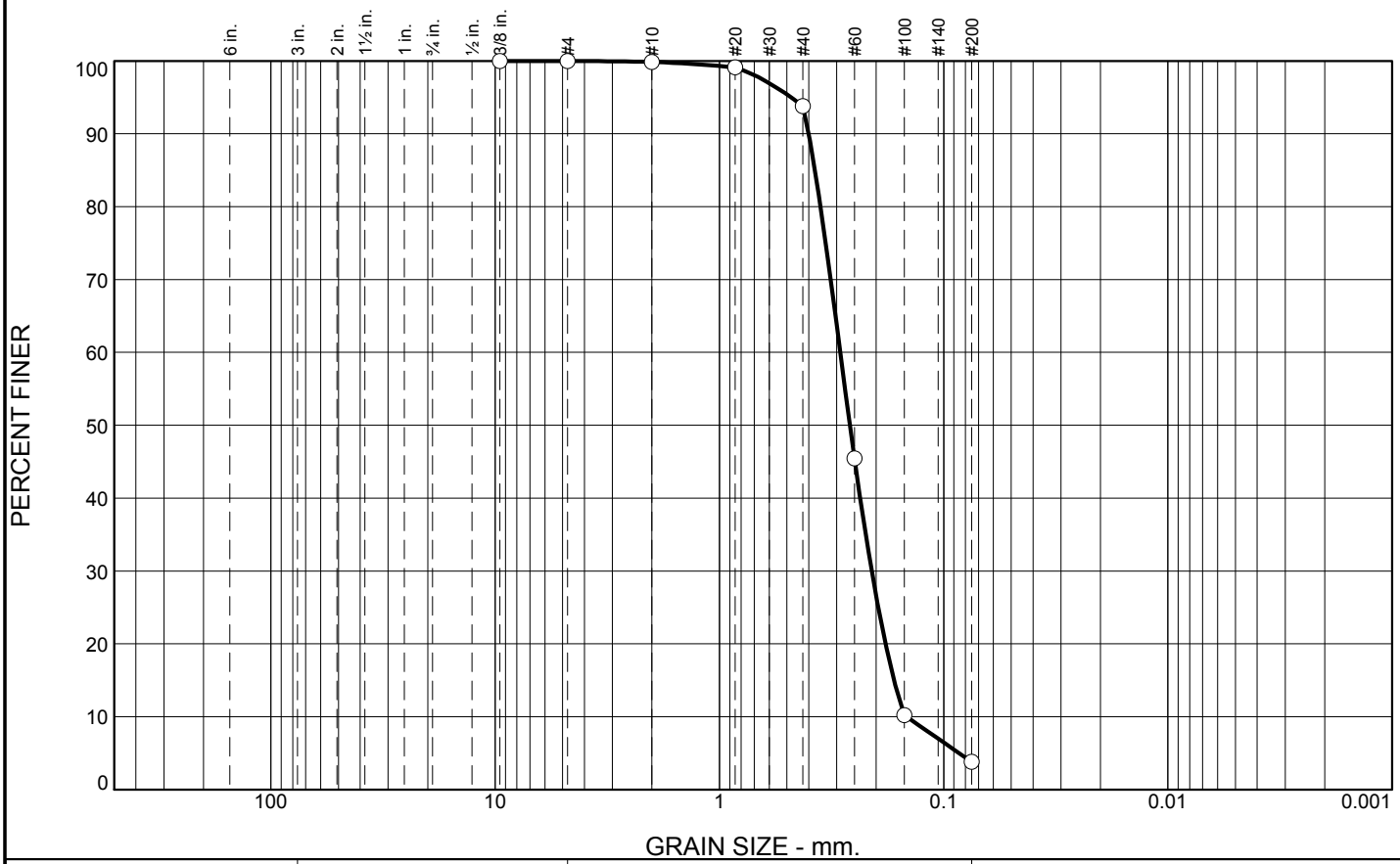
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 6.1 | 90.0 | 3.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.1 | | |
| #40 | 93.8 | | |
| #60 | 45.5 | | |
| #100 | 10.2 | | |
| #200 | 3.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4007 $D_{85}$= 0.3753 $D_{60}$= 0.2891
$D_{50}$= 0.2619 $D_{30}$= 0.2094 $D_{15}$= 0.1665
$D_{10}$= 0.1466 $C_u$= 1.97 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-28-10B
**Sample Number:** TE Lab ID: 4488.41 **Depth:** 4.3 - 9.0 (ft.) **Date:** 5/27/10

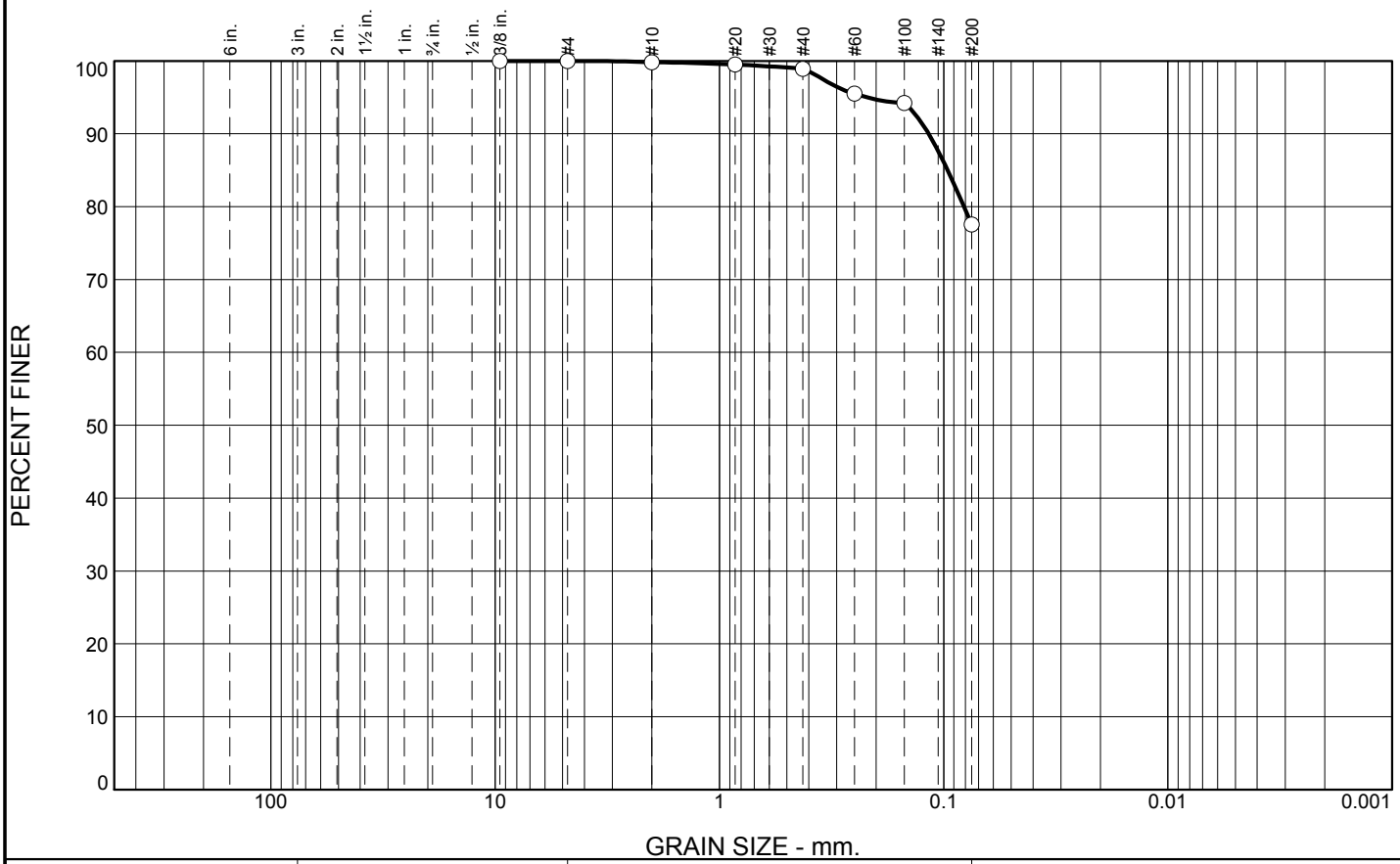
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 0.9 | 21.4 | 77.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.5 | | |
| #40 | 98.9 | | |
| #60 | 95.5 | | |
| #100 | 94.2 | | |
| #200 | 77.5 | | |

* (no specification provided)

**Material Description**

CLAY, (CL)

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.1167 $D_{85}$= 0.0961 $D_{60}$=
$D_{50}$= $D_{30}$= $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= CL AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SP-28-10C
**Sample Number:** TE Lab ID: 4488.42 **Depth:** 9.0 - 16.5 (ft.) **Date:** 5/27/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** L.Stokes **Checked By:** R.Byrd

Boring Designation BI-SP-29-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island Pass | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SP-29-10 / LOCATION COORDINATES E = 924,978 N = 258,216 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES / DISTURBED / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 20 Ft. |
| | 15. DATE BORING / STARTED 06-17-10 / COMPLETED 06-17-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -19.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 19.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.3 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | | |
| | | | At El. -29.4 Ft., trace silt, dark gray | NS | |
| | | | At El. -34.6 Ft., trace fine-grained sand-sized quartz, trace silt, gray | | |
| -37.7 | 18.4 | | | | |
| -39.0 | 19.7 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz (SP) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20991° Long = -89.02098°

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 924,978 Y = 258,216 | ELEVATION TOP OF BORING -19.3 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | applying NOAA tidal gauge data conversion factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20991° Long = -89.02098°

**Boring Designation BI-SP-30-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SP-30-10 — LOCATION COORDINATES: E = 921,838 N = 254,447 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 22 Ft. |
| | 15. DATE BORING — STARTED: 06-17-10 — COMPLETED: 06-17-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -21.4 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 12.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -21.4 | 0.0 | | | | |
| | | | CLAY, lean, some fine-grained sand-sized quartz, some silt, dark gray (CL) | NS | |
| -32.6 | 11.2 | | | | |
| -34.2 | 12.8 | | SAND, silty, some fine-grained sand-sized quartz, some silt, gray (SM) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19953° Long = -89.0309°**

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# Appendix F

# Ship Island Vibracores and Lab Results

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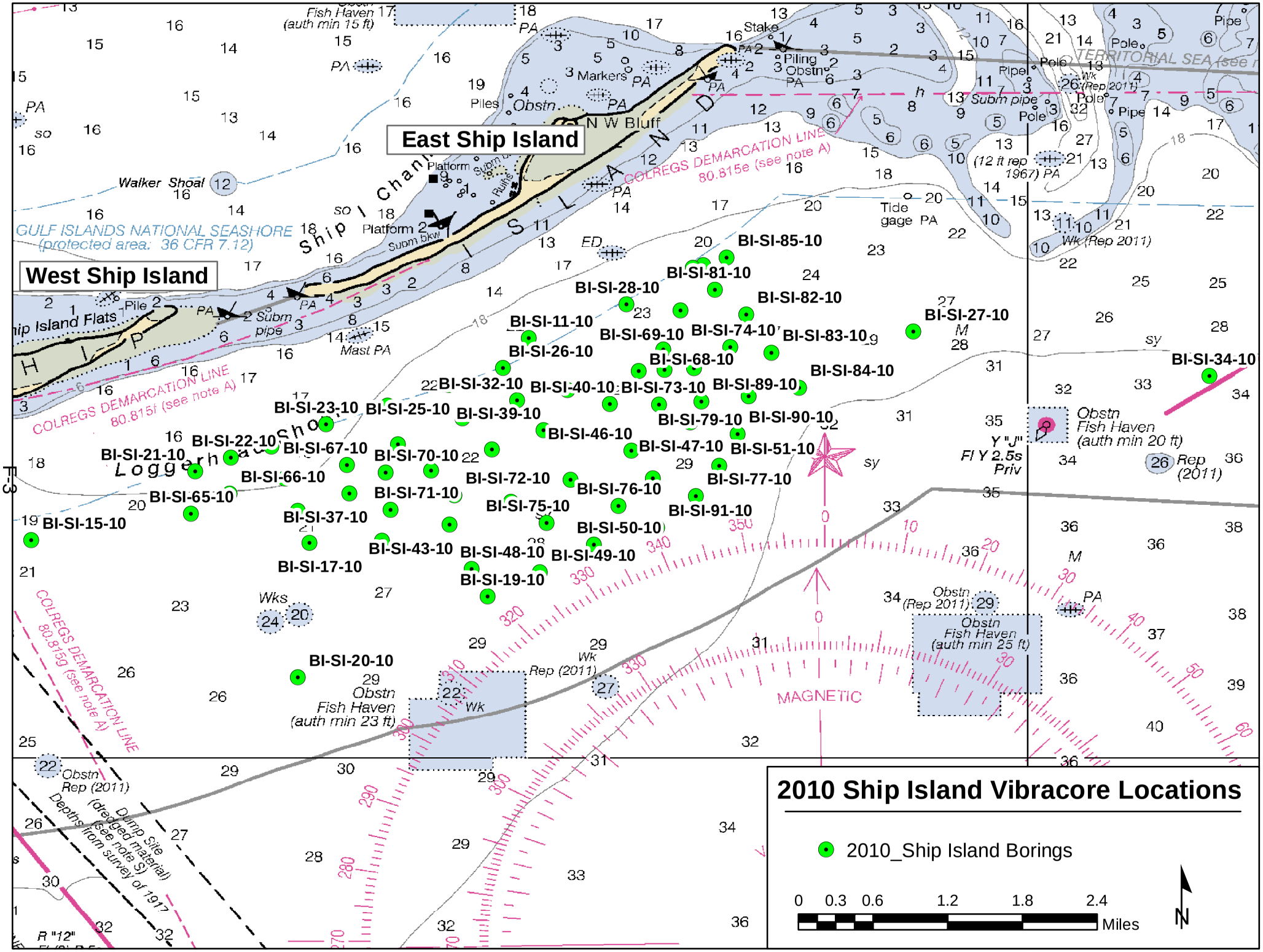
2010 Ship Island Vibracore Locations
2010_Ship Island Borings
0 0.3 0.6 1.2 1.8 2.4
Miles
N
East Ship Island
West Ship Island
Ship Island Flats
Walker Shoal
GULF ISLANDS NATIONAL SEASHORE
(protected area: 36 CFR 7.12)
COLREGS DEMARCATION LINE
80.815e (see note A)
COLREGS DEMARCATION LINE
80.815f (see note A)
COLREGS DEMARCATION LINE
80.815g (see note A)
TERRITORIAL SEA (see
Fish Haven
(auth min 15 ft)
Obstn
Fish Haven
(auth min 20 ft)
Obstn
Fish Haven
(auth min 25 ft)
Obstn
Fish Haven
(auth min 23 ft)
Dump Site
(dredged material)
(see note S)
Depths from survey of 1917
MAGNETIC
BI-SI-85-10
BI-SI-81-10
BI-SI-28-10
BI-SI-82-10
BI-SI-27-10
BI-SI-11-10
BI-SI-69-10
BI-SI-74-10
BI-SI-83-10
BI-SI-26-10
BI-SI-68-10
BI-SI-84-10
BI-SI-34-10
BI-SI-32-10
BI-SI-40-10
BI-SI-73-10
BI-SI-89-10
BI-SI-23-10
BI-SI-25-10
BI-SI-39-10
BI-SI-79-10
BI-SI-90-10
BI-SI-46-10
BI-SI-22-10
BI-SI-21-10
BI-SI-67-10
BI-SI-70-10
BI-SI-47-10
BI-SI-51-10
BI-SI-66-10
BI-SI-72-10
BI-SI-76-10
BI-SI-77-10
BI-SI-65-10
BI-SI-71-10
BI-SI-75-10
BI-SI-91-10
BI-SI-15-10
BI-SI-37-10
BI-SI-50-10
BI-SI-43-10
BI-SI-48-10
BI-SI-49-10
BI-SI-17-10
BI-SI-19-10
BI-SI-20-10

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| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI-SI-10-10** | SHIP ISLAND | 2010 | 6/1/2010 | 3:10 PM | 30.20275 | -88.92101 | 255574.14680 | 956553.44900 | 20-ft Vibracore | 23.0 | 17.9 | | | | | | | | | | | | | | | | | |
| **BI-SI-10-10A** | SHIP ISLAND | 2010 | 6/1/2010 | 3:10 PM | 30.20275 | -88.92101 | 255574.14680 | 956553.44900 | 20-ft Vibracore | 23.0 | 17.9 | 0.0 - 2.0 | 2.0 | SP | SP | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.19 | 0.19 | 2.5 | 2.2 | 1.3 |
| **BI-SI-10-10B** | SHIP ISLAND | 2010 | 6/1/2010 | 3:10 PM | 30.20275 | -88.92101 | 255574.14680 | 956553.44900 | 20-ft Vibracore | 23.0 | 17.9 | 2.0 - 4.4 | 2.4 | SM | SM | SUBANGULAR TO ROUNDED | DK OLIVE GRAY | 5Y 4/2 | 4 | LT OLIVE GRAY | 5Y 6/2 | 6 | YES | 0.15 | #VALUE! | 21.0 | #VALUE! | #VALUE! |
| **BI-SI-10-10C** | SHIP ISLAND | 2010 | 6/1/2010 | 3:10 PM | 30.20275 | -88.92101 | 255574.14680 | 956553.44900 | 20-ft Vibracore | 23.0 | 17.9 | 4.4 - 11.0 | 6.6 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.18 | 0.19 | 5.2 | 1.8 | 1.1 |
| **BI-SI-11-10** | SHIP ISLAND | 2010 | 6/1/2010 | 4:35 PM | 30.21540 | -88.89114 | 260168.69620 | 965991.54640 | 20-ft Vibracore | 29.0 | 16.7 | | | | | | | | | | | | | | | | | |
| **BI-SI-11-10A** | SHIP ISLAND | 2010 | 6/1/2010 | 4:35 PM | 30.21540 | -88.89114 | 260168.69620 | 965991.54640 | 20-ft Vibracore | 29.0 | 16.7 | 0.0 - 5.0 | 5.0 | SM | SM | SUBANGULAR TO ROUNDED | DK OLIVE GRAY | 5Y 4/2 | 4 | LT OLIVE GRAY | 5Y 6/2 | 6 | YES | 0.19 | 0.19 | 12.5 | #VALUE! | #VALUE! |
| **BI-SI-11-10B** | SHIP ISLAND | 2010 | 6/1/2010 | 4:35 PM | 30.21540 | -88.89114 | 260168.69620 | 965991.54640 | 20-ft Vibracore | 29.0 | 16.7 | 5.0 - 11.5 | 6.5 | SP-SM | SP-SM | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.17 | 0.18 | 6.4 | 2.3 | 1.1 |
| **BI-SI-12-10** | SHIP ISLAND | 2010 | 6/1/2010 | 4:00 PM | 30.19998 | -88.90254 | 254562.73070 | 962387.40450 | 20-ft Vibracore | 29.0 | 19.7 | | | | | | | | | | | | | | | | | |
| **BI-SI-12-10A** | SHIP ISLAND | 2010 | 6/1/2010 | 4:00 PM | 30.19998 | -88.90254 | 254562.73070 | 962387.40450 | 20-ft Vibracore | 29.0 | 19.7 | 0.0 - 4.7 | 4.7 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.19 | 0.20 | 3.2 | 1.8 | 1.0 |
| **BI-SI-12-10B** | SHIP ISLAND | 2010 | 6/1/2010 | 4:00 PM | 30.19998 | -88.90254 | 254562.73070 | 962387.40450 | 20-ft Vibracore | 29.0 | 19.7 | 4.7 - 8.5 | 3.8 | SM | SP-SM | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.16 | 0.16 | 10.3 | #VALUE! | #VALUE! |
| **BI-SI-13-10** | SHIP ISLAND | 2010 | 6/1/2010 | 5:00 PM | 30.21170 | -88.87539 | 258820.89070 | 970965.74680 | 20-ft Vibracore | 31.0 | 18.9 | | | | | | | | | | | | | | | | | |
| **BI-SI-13-10A** | SHIP ISLAND | 2010 | 6/1/2010 | 5:00 PM | 30.21170 | -88.87539 | 258820.89070 | 970965.74680 | 20-ft Vibracore | 31.0 | 18.9 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.25 | 0.26 | 2.3 | 2.1 | 1.0 |
| **BI-SI-13-10B** | SHIP ISLAND | 2010 | 6/1/2010 | 5:00 PM | 30.21170 | -88.87539 | 258820.89070 | 970965.74680 | 20-ft Vibracore | 31.0 | 18.9 | 5.0 - 10.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.20 | 0.22 | 2.3 | 1.9 | 1.0 |
| **BI-SI-13-10C** | SHIP ISLAND | 2010 | 6/1/2010 | 5:00 PM | 30.21170 | -88.87539 | 258820.89070 | 970965.74680 | 20-ft Vibracore | 31.0 | 18.9 | 10.0 - 13.2 | 3.2 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 5Y 7/2 | 7 | NO | 0.17 | 0.17 | 5.9 | 2.1 | 1.1 |
| **BI-SI-14-10** | SHIP ISLAND | 2010 | 6/8/2010 | 12:45 PM | 30.19906 | -88.87673 | 254224.11370 | 970540.73520 | 20-ft Vibracore | 30.0 | 19.5 | | | | | | | | | | | | | | | | | |
| **BI-SI-14-10A** | SHIP ISLAND | 2010 | 6/8/2010 | 12:45 PM | 30.19906 | -88.87673 | 254224.11370 | 970540.73520 | 20-ft Vibracore | 30.0 | 19.5 | 0.0 - 4.0 | 4.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 5Y 7/1 | 7 | NO | 0.22 | 0.24 | 6.5 | 2.3 | 1.3 |
| **BI-SI-14-10B** | SHIP ISLAND | 2010 | 6/8/2010 | 12:45 PM | 30.19906 | -88.87673 | 254224.11370 | 970540.73520 | 20-ft Vibracore | 30.0 | 19.5 | 4.0 - 8.0 | 4.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.18 | 0.18 | 6.3 | 2.3 | 1.4 |
| **BI-SI-14-10C** | SHIP ISLAND | 2010 | 6/8/2010 | 12:45 PM | 30.19906 | -88.87673 | 254224.11370 | 970540.73520 | 20-ft Vibracore | 30.0 | 19.5 | 8.0 - 12.0 | 4.0 | SM | SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.15 | 0.15 | 13.9 | #VALUE! | #VALUE! |
| **BI-SI-14-10D** | SHIP ISLAND | 2010 | 6/8/2010 | 12:45 PM | 30.19906 | -88.87673 | 254224.11370 | 970540.73520 | 20-ft Vibracore | 30.0 | 19.5 | 12.0 - 16.5 | 4.5 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAY | 5Y 4/1 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.16 | #VALUE! | 19.8 | #VALUE! | #VALUE! |
| **BI-SI-15-10** | SHIP ISLAND | 2010 | 6/1/2010 | 2:27 PM | 30.19191 | -88.94900 | 251639.73230 | 947707.56190 | 20-ft Vibracore | 28.0 | 16.5 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-SI-16-10** | SHIP ISLAND | 2010 | 6/1/2010 | 1:20 PM | 30.18987 | -88.96874 | 250904.69420 | 941470.23920 | 20-ft Vibracore | 25.0 | 15.3 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-SI-17-10** | SHIP ISLAND | 2010 | 6/1/2010 | 8:50 AM | 30.19159 | -88.91666 | 251514.43170 | 957924.62040 | 20-ft Vibracore | 28.0 | 19.7 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-SI-18-10** | SHIP ISLAND | 2010 | 6/15/2010 | 9:45 AM | 30.17764 | -88.95805 | 246453.02260 | 944842.72380 | 20-ft Vibracore | 28.0 | 15.5 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-SI-19-10** | SHIP ISLAND | 2010 | 6/8/2010 | 2:05 PM | 30.18535 | -88.89590 | 249240.86450 | 964482.07910 | 20-ft Vibracore | 30.0 | 19.5 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-SI-20-10** | SHIP ISLAND | 2010 | 6/8/2010 | 2:50 PM | 30.17595 | -88.91795 | 245826.76780 | 957512.84740 | 20-ft Vibracore | 29.0 | 19.1 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-SI-21-10** | SHIP ISLAND | 2010 | 6/9/2010 | 8:00 AM | 30.19969 | -88.92995 | 254463.56590 | 953728.40950 | 20-ft Vibracore | 21.0 | 14.3 | | | | | | | | | | | | | | | | | |
| **BI-SI-21-10A** | SHIP ISLAND | 2010 | 6/9/2010 | 8:00 AM | 30.19969 | -88.92995 | 254463.56590 | 953728.40950 | 20-ft Vibracore | 21.0 | 14.3 | 0.0 - 4.0 | 4.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5.5/1 | 6 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.20 | 0.22 | 7.3 | 2.6 | 1.2 |
| **BI-SI-21-10B** | SHIP ISLAND | 2010 | 6/9/2010 | 8:00 AM | 30.19969 | -88.92995 | 254463.56590 | 953728.40950 | 20-ft Vibracore | 21.0 | 14.3 | 4.0 - 8.3 | 4.3 | SP | SP-SM | SUBANGULAR TO ROUNDED | LT GRAY | 5Y 7/1 | 7 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.28 | 0.27 | 6.5 | 2.9 | 1.4 |
| **BI-AI-21-10C** | SHIP ISLAND | 2010 | 6/9/2010 | 8:00 AM | 30.19969 | -88.92995 | 254463.56590 | 953728.40950 | 20-ft Vibracore | 21.0 | 14.3 | 8.3 - 11.2 | 2.9 | SM | SM | CLAY FINES | OLIVE GRAY | 5Y 4/2 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | 0.16 | #VALUE! | 29.6 | #VALUE! | #VALUE! |
| **BI-SI-22-10** | SHIP ISLAND | 2010 | 6/9/2010 | 8:40 AM | 30.20147 | -88.92578 | 255109.82580 | 955046.25520 | 20-ft Vibracore | 21.0 | 13.9 | | | | | | | | | | | | | | | | | |
| **BI-SI-22-10A** | SHIP ISLAND | 2010 | 6/9/2010 | 8:40 AM | 30.20147 | -88.92578 | 255109.82580 | 955046.25520 | 20-ft Vibracore | 21.0 | 13.9 | 0.0 - 4.0 | 4.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.22 | 0.23 | 6.8 | 2.3 | 1.3 |
| **BI-S-22-10B** | SHIP ISLAND | 2010 | 6/9/2010 | 8:40 AM | 30.20147 | -88.92578 | 255109.82580 | 955046.25520 | 20-ft Vibracore | 21.0 | 13.9 | 4.0 - 8.0 | 8.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | DK GRAY | 5Y 4.5/1 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.19 | 0.19 | 9.4 | 2.6 | 1.7 |
| **BI-SI-22-10C** | SHIP ISLAND | 2010 | 6/9/2010 | 8:40 AM | 30.20147 | -88.92578 | 255109.82580 | 955046.25520 | 20-ft Vibracore | 21.0 | 13.9 | 8.0 - 9.6 | 1.6 | SM | SM | CLAY FINES | DK GRAY | 5Y 4/1 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | 0.17 | #VALUE! | 23.7 | #VALUE! | #VALUE! |
| **BI-SI-23-10** | SHIP ISLAND | 2010 | 6/9/2010 | 9:05 AM | 30.20538 | -88.91467 | 256529.14370 | 958556.90210 | 20-ft Vibracore | 21.0 | 14.0 | | | | | | | | | | | | | | | | | |
| **BI-SI-23-10A** | SHIP ISLAND | 2010 | 6/9/2010 | 9:05 AM | 30.20538 | -88.91467 | 256529.14370 | 958556.90210 | 20-ft Vibracore | 21.0 | 14.0 | 0.0 - 2.4 | 2.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5.5/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.22 | 0.23 | 5.5 | 1.6 | 1.0 |
| **BI-SI-23-10B** | SHIP ISLAND | 2010 | 6/9/2010 | 9:05 AM | 30.20538 | -88.91467 | 256529.14370 | 958556.90210 | 20-ft Vibracore | 21.0 | 14.0 | 2.4 - 5.6 | 3.2 | SM | SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.18 | #VALUE! | 15.1 | #VALUE! | #VALUE! |
| **BI-SI-24-10** | SHIP ISLAND | 2010 | 6/9/2010 | 9:35 AM | 30.20754 | -88.90753 | 257313.15620 | 960812.83910 | 20-ft Vibracore | 23.0 | 7.7 | | | | | | | | | | | | | | | | | |
| **BI-SI-24-10A** | SHIP ISLAND | 2010 | 6/9/2010 | 9:35 AM | 30.20754 | -88.90753 | 257313.15620 | 960812.83910 | 20-ft Vibracore | 23.0 | 7.7 | 0.0 - 4.0 | 4.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.20 | 0.22 | 5.7 | 1.9 | 1.2 |
| **BI-SI-24-10B** | SHIP ISLAND | 2010 | 6/9/2010 | 9:35 AM | 30.20754 | -88.90753 | 257313.15620 | 960812.83910 | 20-ft Vibracore | 23.0 | 7.7 | 4.0 - 7.7 | 3.7 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.22 | 0.23 | 7.5 | 2.7 | 1.4 |
| **BI-SI-25-10** | SHIP ISLAND | 2010 | 6/9/2010 | 10:35 AM | 30.20993 | -88.90041 | 258180.96090 | 963062.40940 | 20-ft Vibracore | 22.0 | 10.4 | | | | | | | | | | | | | | | | | |
| **BI-SI-25-10A** | SHIP ISLAND | 2010 | 6/9/2010 | 10:35 AM | 30.20993 | -88.90041 | 258180.96090 | 963062.40940 | 20-ft Vibracore | 22.0 | 10.4 | 0.0 -3.5 | 3.5 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.22 | 0.24 | 3.9 | 2.2 | 1.2 |
| **BI-SI-25-10B** | SHIP ISLAND | 2010 | 6/9/2010 | 10:35 AM | 30.20993 | -88.90041 | 258180.96090 | 963062.40940 | 20-ft Vibracore | 22.0 | 10.4 | 3.5 - 7.0 | 3.5 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.19 | 0.20 | 4.5 | 1.9 | 1.3 |
| **BI-SI-25-10C** | SHIP ISLAND | 2010 | 6/9/2010 | 10:35 AM | 30.20993 | -88.90041 | 258180.96090 | 963062.40940 | 20-ft Vibracore | 22.0 | 10.4 | 7.0 - 8.3 | 1.3 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAY | 5Y 4/1 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.16 | 0.15 | 14.1 | #VALUE! | #VALUE! |
| **BI-SI-26-10** | SHIP ISLAND | 2010 | 6/9/2010 | 11:00 AM | 30.21192 | -88.89412 | 258903.57250 | 965049.62630 | 20-ft Vibracore | 26.0 | 16.2 | | | | | | | | | | | | | | | | | |
| **BI-SI-26-10A** | SHIP ISLAND | 2010 | 6/9/2010 | 11:00 AM | 30.21192 | -88.89412 | 258903.57250 | 965049.62630 | 20-ft Vibracore | 26.0 | 16.2 | 0.0 - 6.0 | 6.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.23 | 0.25 | 3.5 | 1.6 | 0.9 |
| **BI-SI-26-10B** | SHIP ISLAND | 2010 | 6/9/2010 | 11:00 AM | 30.21192 | -88.89412 | 258903.57250 | 965049.62630 | 20-ft Vibracore | 26.0 | 16.2 | 6.0 - 12.0 | 6.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.18 | 0.17 | 7.4 | 2.3 | 1.5 |
| **BI-SI-26-10C** | SHIP ISLAND | 2010 | 6/9/2010 | 11:00 AM | 30.21192 | -88.89412 | 258903.57250 | 965049.62630 | 20-ft Vibracore | 26.0 | 16.2 | 12.0 - 16.2 | 4.2 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAY | 5Y 4/1 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | 0.19 | #VALUE! | 21.5 | #VALUE! | #VALUE! |
| **BI-SI-27-10** | SHIP ISLAND | 2010 | 6/9/2010 | 12:35 PM | 30.21618 | -88.84640 | 260447.96980 | 980122.87700 | 20-ft Vibracore | 26.0 | 14.7 | | | | | | | | | | | | | | | | | |
| **BI-SI-27-10A** | SHIP ISLAND | 2010 | 6/9/2010 | 12:35 PM | 30.21618 | -88.84640 | 260447.96980 | 980122.87700 | 20-ft Vibracore | 26.0 | 14.7 | 0.0 - 1.2 | 1.2 | SM | SM | CLAY FINES | VERY DK GRAY | 2.5Y 3/1 | 3 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.20 | #VALUE! | 32.3 | #VALUE! | #VALUE! |
| **BI-SI-27-10B** | SHIP ISLAND | 2010 | 6/9/2010 | 12:35 PM | 30.21618 | -88.84640 | 260447.96980 | 980122.87700 | 20-ft Vibracore | 26.0 | 14.7 | 1.2 - 6.6 | 5.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | DK GRAY | 2.5Y 4/1 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.20 | 0.21 | 11.3 | #VALUE! | #VALUE! |
| **BI-SI-27-10C** | SHIP ISLAND | 2010 | 6/9/2010 | 12:35 PM | 30.21618 | -88.84640 | 260447.96980 | 980122.87700 | 20-ft Vibracore | 26.0 | 14.7 | 8.3 - 11.7 | 3.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.27 | 0.26 | 10.0 | #VALUE! | #VALUE! |
| **BI-SI-28-10** | SHIP ISLAND | 2010 | 6/9/2010 | 1:15 PM | 30.21930 | -88.87977 | 261585.41310 | 969583.38270 | 20-ft Vibracore | 25.0 | 17.9 | | | | | | | | | | | | | | | | | |
| **BI-SI-28-10A** | SHIP ISLAND | 2010 | 6/9/2010 | 1:15 PM | 30.21930 | -88.87977 | 261585.41310 | 969583.38270 | 20-ft Vibracore | 25.0 | 17.9 | 0.0 - 1.3 | 1.3 | SM | SM | CLAY FINES | VERY DK GRAY | 5Y 3/1 | 3 | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | YES | 0.09 | #VALUE! | 40.6 | #VALUE! | #VALUE! |
| **BI-SI-28-10B** | SHIP ISLAND | 2010 | 6/9/2010 | 1:15 PM | 30.21930 | -88.87977 | 261585.41310 | 969583.38270 | 20-ft Vibracore | 25.0 | 17.9 | 1.3 - 5.1 | 3.8 | SM | SP-SM | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.27 | 0.26 | 10.8 | #VALUE! | #VALUE! |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BI-SI-28-10C | SHIP ISLAND | 2010 | 6/9/2010 | 1:15 PM | 30.21930 | -88.87977 | 261585.41310 | 969583.38270 | 20-ft Vibracore | 25.0 | 17.9 | 5.1 - 10.0 | 4.9 | SP | SM | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | YES | 0.21 | 0.22 | 12.2 | #VALUE! | #VALUE! |
| BI-SI-28-10D | SHIP ISLAND | 2010 | 6/9/2010 | 1:15 PM | 30.21930 | -88.87977 | 261585.41310 | 969583.38270 | 20-ft Vibracore | 25.0 | 17.9 | 10.0 - 14.0 | 4.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 5Y 7/1 | 7 | NO | 0.24 | 0.26 | 8.6 | 2.9 | 1.5 |
| BI-SI-29-10 | SHIP ISLAND | 2010 | 6/12/2010 | 8:40 AM | 30.19908 | -88.91947 | 254239.06440 | 957038.91690 | 20-ft Vibracore | 23.0 | 14.2 | | | | | | | | | | | | | | | | | |
| BI-SI-29-10A | SHIP ISLAND | 2010 | 6/12/2010 | 8:40 AM | 30.19908 | -88.91947 | 254239.06440 | 957038.91690 | 20-ft Vibracore | 23.0 | 14.2 | 0.0 - 4.0 | 4.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.21 | 0.22 | 2.8 | 2.0 | 1.0 |
| BI-SI-29-10B | SHIP ISLAND | 2010 | 6/12/2010 | 8:40 AM | 30.19908 | -88.91947 | 254239.06440 | 957038.91690 | 20-ft Vibracore | 23.0 | 14.2 | 4.0 - 8.5 | 4.5 | SM | SM | SUBANGULAR TO ROUNDED | DK OLIVE GRAY | 5Y 3/2 | 3 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | 0.15 | #VALUE! | 20.0 | #VALUE! | #VALUE! |
| BI-SI-30-10 | SHIP ISLAND | 2010 | 6/12/2010 | 9:00 AM | 30.20303 | -88.90634 | 255672.70870 | 961187.68370 | 20-ft Vibracore | 25.0 | 19.8 | | | | | | | | | | | | | | | | | |
| BI-SI-30-10A | SHIP ISLAND | 2010 | 6/12/2010 | 9:00 AM | 30.20303 | -88.90634 | 255672.70870 | 961187.68370 | 20-ft Vibracore | 25.0 | 19.8 | 0.0 - 5.0 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.18 | 0.19 | 5.6 | 2.1 | 1.1 |
| BI-SI-30-10B | SHIP ISLAND | 2010 | 6/12/2010 | 9:00 AM | 30.20303 | -88.90634 | 255672.70870 | 961187.68370 | 20-ft Vibracore | 25.0 | 19.8 | 5.0 - 10.0 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.21 | 0.23 | 5.9 | 2.1 | 1.1 |
| BI-SI-30-10C | SHIP ISLAND | 2010 | 6/12/2010 | 9:00 AM | 30.20303 | -88.90634 | 255672.70870 | 961187.68370 | 20-ft Vibracore | 25.0 | 19.8 | 10.0 - 13.0 | 3.0 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAY | 5Y 4/1 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.15 | #VALUE! | 15.6 | #VALUE! | #VALUE! |
| BI-SI-31-10 | SHIP ISLAND | 2010 | 6/12/2010 | 9:50 AM | 30.20604 | -88.89898 | 256765.97530 | 963513.28980 | 20-ft Vibracore | 26.0 | 17.1 | | | | | | | | | | | | | | | | | |
| BI-SI-31-10A | SHIP ISLAND | 2010 | 6/12/2010 | 9:50 AM | 30.20604 | -88.89898 | 256765.97530 | 963513.28980 | 20-ft Vibracore | 26.0 | 17.1 | 0.0 - 5.0 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.21 | 0.23 | 7.3 | 2.3 | 1.1 |
| BI-SI-31-10B | SHIP ISLAND | 2010 | 6/12/2010 | 9:50 AM | 30.20604 | -88.89898 | 256765.97530 | 963513.28980 | 20-ft Vibracore | 26.0 | 17.1 | 5.0 - 10.5 | 5.5 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.19 | 0.20 | 4.1 | 1.9 | 1.0 |
| BI-SI-31-10C | SHIP ISLAND | 2010 | 6/12/2010 | 9:50 AM | 30.20604 | -88.89898 | 256765.97530 | 963513.28980 | 20-ft Vibracore | 26.0 | 17.1 | 10.5 - 13.5 | 3.0 | SM | SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.13 | 0.13 | 13.5 | #VALUE! | #VALUE! |
| BI-SI-32-10 | SHIP ISLAND | 2010 | 6/12/2010 | 10:10 AM | 30.20814 | -88.89248 | 257528.58200 | 965566.93070 | 20-ft Vibracore | 28.0 | 18.9 | | | | | | | | | | | | | | | | | |
| BI-SI-32-10A | SHIP ISLAND | 2010 | 6/12/2010 | 10:10 AM | 30.20814 | -88.89248 | 257528.58200 | 965566.93070 | 20-ft Vibracore | 28.0 | 18.9 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.21 | 0.23 | 3.3 | 2.1 | 1.0 |
| BI-SI-32-10B | SHIP ISLAND | 2010 | 6/12/2010 | 10:10 AM | 30.20814 | -88.89248 | 257528.58200 | 965566.93070 | 20-ft Vibracore | 28.0 | 18.9 | 5.0 - 10.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.16 | 0.17 | 4.6 | 2.1 | 1.0 |
| BI-SI-32-10C | SHIP ISLAND | 2010 | 6/12/2010 | 10:10 AM | 30.20814 | -88.89248 | 257528.58200 | 965566.93070 | 20-ft Vibracore | 28.0 | 18.9 | 10.0 - 15.3 | 5.3 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 5Y 7/1 | 7 | NO | 0.15 | 0.15 | 7.1 | 2.1 | 1.0 |
| BI-SI-32-10D | SHIP ISLAND | 2010 | 6/12/2010 | 10:10 AM | 30.20814 | -88.89248 | 257528.58200 | 965566.93070 | 20-ft Vibracore | 28.0 | 18.9 | 15.3 - 18.9 | 3.6 | SM | SM | CLAY FINES | DK GRAY | 5Y 4/1 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | YES | 0.16 | 0.18 | 12.9 | #VALUE! | #VALUE! |
| BI-SI-33-10 | SHIP ISLAND | 2010 | 6/9/2010 | 3:05 PM | 30.20933 | -88.88662 | 257960.44960 | 967418.17250 | 20-ft Vibracore | 26.0 | 13.3 | | | | | | | | | | | | | | | | | |
| BI-SI-33-10A | SHIP ISLAND | 2010 | 6/9/2010 | 3:05 PM | 30.20933 | -88.88662 | 257960.44960 | 967418.17250 | 20-ft Vibracore | 26.0 | 13.3 | 0.0 - 4.7 | 4.7 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 5Y 7/1 | 7 | NO | 0.22 | 0.23 | 5.5 | 2.3 | 1.1 |
| BI-SI-33-10B | SHIP ISLAND | 2010 | 6/9/2010 | 3:05 PM | 30.20933 | -88.88662 | 257960.44960 | 967418.17250 | 20-ft Vibracore | 26.0 | 13.3 | 4.7 - 9.4 | 4.7 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.16 | 0.16 | 4.8 | 2.1 | 1.0 |
| BI-SI-33-10C | SHIP ISLAND | 2010 | 6/9/2010 | 3:05 PM | 30.20933 | -88.88662 | 257960.44960 | 967418.17250 | 20-ft Vibracore | 26.0 | 13.3 | 9.4 - 13.3 | 3.9 | SM | SM | SUBANGULAR TO ROUNDED | VERY DK GRAY | 5Y 3/1 | 3 | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | NO | 0.16 | 0.17 | 12.6 | #VALUE! | #VALUE! |
| BI-SI-34-10 | SHIP ISLAND | 2010 | 6/9/2010 | 2:13 PM | 30.21101 | -88.81200 | 258568.12810 | 990988.51240 | 20-ft Vibracore | 27.0 | 14.2 | | | | | | | | | | | | | | | | | |
| BI-SI-34-10A | SHIP ISLAND | 2010 | 6/9/2010 | 2:13 PM | 30.21101 | -88.81200 | 258568.12810 | 990988.51240 | 20-ft Vibracore | 27.0 | 14.2 | 0.0 - 3.6 | 3.6 | SM | SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.20 | #VALUE! | 15.8 | #VALUE! | #VALUE! |
| BI-SI-34-10B | SHIP ISLAND | 2010 | 6/9/2010 | 2:13 PM | 30.21101 | -88.81200 | 258568.12810 | 990988.51240 | 20-ft Vibracore | 27.0 | 14.2 | 3.6 - 8.0 | 4.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.20 | 0.19 | 9.2 | 2.7 | 1.6 |
| BI-SI-34-10C | SHIP ISLAND | 2010 | 6/9/2010 | 2:13 PM | 30.21101 | -88.81200 | 258568.12810 | 990988.51240 | 20-ft Vibracore | 27.0 | 14.2 | 8.0 - 13.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.19 | 0.18 | 4.8 | 2.2 | 1.4 |
| BI-SI-35-10 | SHIP ISLAND | 2010 | 6/9/2010 | 1:42 PM | 30.21406 | -88.87554 | 259679.19790 | 970918.68510 | 20-ft Vibracore | 27.0 | 16.0 | | | | | | | | | | | | | | | | | |
| BI-SI-35-10A | SHIP ISLAND | 2010 | 6/9/2010 | 1:42 PM | 30.21406 | -88.87554 | 259679.19790 | 970918.68510 | 20-ft Vibracore | 27.0 | 16.0 | 0.6 - 5.0 | 4.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 5Y 7/1 | 7 | NO | 0.24 | 0.26 | 10.5 | #VALUE! | #VALUE! |
| BI-SI-35-10B | SHIP ISLAND | 2010 | 6/9/2010 | 1:42 PM | 30.21406 | -88.87554 | 259679.19790 | 970918.68510 | 20-ft Vibracore | 27.0 | 16.0 | 5.0 - 10.0 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.24 | 0.26 | 8.1 | 2.8 | 1.4 |
| BI-SI-35-10C | SHIP ISLAND | 2010 | 6/9/2010 | 1:42 PM | 30.21406 | -88.87554 | 259679.19790 | 970918.68510 | 20-ft Vibracore | 27.0 | 16.0 | 10.0 - 13.4 | 3.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.21 | 0.23 | 9.5 | 2.6 | 1.3 |
| BI-SI-36-10 | SHIP ISLAND | 2010 | 6/12/2010 | 8:15 AM | 30.19534 | -88.91796 | 252878.53860 | 957514.92450 | 20-ft Vibracore | 26.0 | 16.8 | | | | | | | | | | | | | | | | | |
| BI-SI-36-10A | SHIP ISLAND | 2010 | 6/12/2010 | 8:15 AM | 30.19534 | -88.91796 | 252878.53860 | 957514.92450 | 20-ft Vibracore | 26.0 | 16.8 | 0.0 - 3.5 | 3.5 | SM | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.17 | 0.17 | 9.7 | 2.4 | 1.3 |
| BI-SI-37-10 | SHIP ISLAND | 2010 | 6/14/2010 | 10:20 AM | 30.19732 | -88.91199 | 253597.27590 | 959401.45200 | 20-ft Vibracore | 26.0 | 17.0 | | | | | | | | | | | | | | | | | |
| BI-SI-37-10A | SHIP ISLAND | 2010 | 6/14/2010 | 10:20 AM | 30.19732 | -88.91199 | 253597.27590 | 959401.45200 | 20-ft Vibracore | 26.0 | 17.0 | 0.0 - 5.7 | 5.7 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAY | 5Y 4/1 | 4 | GRAY | 2.5Y 5/1 | 5 | NO | 0.17 | #VALUE! | 19.7 | #VALUE! | #VALUE! |
| BI-SI-38-10 | SHIP ISLAND | 2010 | 6/14/2010 | 11:00 AM | 30.20245 | -88.89542 | 255459.72760 | 964637.12420 | 20-ft Vibracore | 27.0 | 15.5 | | | | | | | | | | | | | | | | | |
| BI-SI-38-10A | SHIP ISLAND | 2010 | 6/14/2010 | 11:00 AM | 30.20245 | -88.89542 | 255459.72760 | 964637.12420 | 20-ft Vibracore | 27.0 | 15.5 | 0.0 - 2.0 | 2.0 | SM | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.18 | 0.18 | 5.8 | 2.2 | 1.5 |
| BI-SI-38-10B | SHIP ISLAND | 2010 | 6/14/2010 | 11:00 AM | 30.20245 | -88.89542 | 255459.72760 | 964637.12420 | 20-ft Vibracore | 27.0 | 15.5 | 4.5 - 9.5 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.19 | 0.20 | 5.3 | 2.1 | 1.4 |
| BI-SI-38-10C | SHIP ISLAND | 2010 | 6/14/2010 | 11:00 AM | 30.20245 | -88.89542 | 255459.72760 | 964637.12420 | 20-ft Vibracore | 27.0 | 15.5 | 9.5 - 12.8 | 3.3 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.17 | 0.16 | 9.1 | 2.2 | 1.3 |
| BI-SI-38-10D | SHIP ISLAND | 2010 | 6/14/2010 | 11:00 AM | 30.20245 | -88.89542 | 255459.72760 | 964637.12420 | 20-ft Vibracore | 27.0 | 15.5 | 12.8 - 15.9 | 3.1 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAY | 2.5Y 4/1 | 4 | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | YES | 0.15 | #VALUE! | 25.5 | #VALUE! | #VALUE! |
| BI-SI-39-10 | SHIP ISLAND | 2010 | 6/14/2010 | 12:00 PM | 30.20470 | -88.88942 | 256277.02780 | 966532.89830 | 20-ft Vibracore | 28.0 | 15.6 | | | | | | | | | | | | | | | | | |
| BI-SI-39-10A | SHIP ISLAND | 2010 | 6/14/2010 | 12:00 PM | 30.20470 | -88.88942 | 256277.02780 | 966532.89830 | 20-ft Vibracore | 28.0 | 15.6 | 0.0 - 6.0 | 6.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.20 | 0.21 | 6.0 | 2.2 | 1.4 |
| BI-SI-39-10B | SHIP ISLAND | 2010 | 6/14/2010 | 12:00 PM | 30.20470 | -88.88942 | 256277.02780 | 966532.89830 | 20-ft Vibracore | 28.0 | 15.6 | 6.0 - 12.0 | 6.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.18 | 0.17 | 8.9 | 2.5 | 1.5 |
| BI-SI-39-10C | SHIP ISLAND | 2010 | 6/14/2010 | 12:00 PM | 30.20470 | -88.88942 | 256277.02780 | 966532.89830 | 20-ft Vibracore | 28.0 | 15.6 | 12.0 - 15.6 | 3.6 | SM | SP-SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | YES | 0.20 | 0.20 | 11.4 | #VALUE! | #VALUE! |
| BI-SI-40-10 | SHIP ISLAND | 2010 | 6/14/2010 | 12:20 PM | 30.20777 | -88.81680 | 257389.54690 | 989472.51820 | 20-ft Vibracore | 30.0 | 17.1 | | | | | | | | | | | | | | | | | |
| BI-SI-40-10A | SHIP ISLAND | 2010 | 6/14/2010 | 12:20 PM | 30.20777 | -88.81680 | 257389.54690 | 989472.51820 | 20-ft Vibracore | 30.0 | 17.1 | 0.0 - 6.5 | 6.5 | SP | SP-SM | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.23 | 0.24 | 5.1 | 1.7 | 0.9 |
| BI-SI-40-10B | SHIP ISLAND | 2010 | 6/14/2010 | 12:20 PM | 30.20777 | -88.81680 | 257389.54690 | 989472.51820 | 20-ft Vibracore | 30.0 | 17.1 | 6.5 - 13.2 | 6.7 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.19 | 0.18 | 6.8 | 2.3 | 1.5 |
| BI-SI-40-10C | SHIP ISLAND | 2010 | 6/14/2010 | 12:20 PM | 30.20777 | -88.81680 | 257389.54690 | 989472.51820 | 20-ft Vibracore | 30.0 | 17.1 | 13.2 - 17.1 | 3.9 | SM | SP-SM | SUBANGULAR TO ROUNDED | DK GRAY | 5Y 4/1 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.22 | 0.23 | 10.5 | #VALUE! | #VALUE! |
| BI-SI-41-10 | SHIP ISLAND | 2010 | 6/14/2010 | 1:00 PM | 30.21190 | -88.87193 | 258893.24000 | 972058.66640 | 20-ft Vibracore | 30.0 | 16.7 | | | | | | | | | | | | | | | | | |
| BI-SI-41-10A | SHIP ISLAND | 2010 | 6/14/2010 | 1:00 PM | 30.21190 | -88.87193 | 258893.24000 | 972058.66640 | 20-ft Vibracore | 30.0 | 16.7 | 0.0 - 5.0 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.24 | 0.24 | 10.4 | #VALUE! | #VALUE! |
| BI-SI-41-10B | SHIP ISLAND | 2010 | 6/14/2010 | 1:00 PM | 30.21190 | -88.87193 | 258893.24000 | 972058.66640 | 20-ft Vibracore | 30.0 | 16.7 | 5.0 - 11.4 | 6.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | LT GRAY | 2.5Y 7/1 | 7 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.22 | 0.23 | 6.0 | 2.3 | 1.3 |
| BI-SI-42-10 | SHIP ISLAND | 2010 | 6/8/2010 | 3:50 PM | 30.19185 | -88.90818 | 251607.12910 | 960603.76830 | 20-ft Vibracore | 27.0 | 20.0 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| BI-SI-43-10 | SHIP ISLAND | 2010 | 6/14/2010 | 4:40 PM | 30.19371 | -88.90035 | 252282.03560 | 963077.89080 | 20-ft Vibracore | 28.5 | 18.2 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| BI-SI-44-10 | SHIP ISLAND | 2010 | 6/14/2010 | 4:10 PM | 30.19637 | -88.89318 | 253248.16620 | 965343.56760 | 20-ft Vibracore | 29.0 | 15.4 | | | | | | | | | | | | | | | | | |
| BI-SI-44-10A | SHIP ISLAND | 2010 | 6/14/2010 | 4:10 PM | 30.19637 | -88.89318 | 253248.16620 | 965343.56760 | 20-ft Vibracore | 29.0 | 15.4 | 0.0 - 4.0 | 4.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.18 | 0.17 | 6.7 | 2.3 | 1.4 |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BI-SI-44-10B | SHIP ISLAND | 2010 | 6/14/2010 | 4:10 PM | 30.19637 | -88.89318 | 253248.16620 | 965343.56760 | 20-ft Vibracore | 29.0 | 15.4 | 4.0 - 8.5 | 4.5 | SP | SP | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.22 | 0.23 | 3.9 | 1.6 | 1.0 |
| BI-SI-44-10C | SHIP ISLAND | 2010 | 6/14/2010 | 4:10 PM | 30.19637 | -88.89318 | 253248.16620 | 965343.56760 | 20-ft Vibracore | 29.0 | 15.4 | 12.0 - 15.4 | 3.4 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | 0.21 | 0.23 | 12.0 | #VALUE! | #VALUE! |
| BI-SI-45-10 | SHIP ISLAND | 2010 | 6/14/2010 | 3:40 PM | 30.19892 | -88.88628 | 254174.47410 | 967523.80940 | 20-ft Vibracore | 30.0 | 15.9 | | | | | | | | | | | | | | | | | |
| BI-SI-45-10A | SHIP ISLAND | 2010 | 6/14/2010 | 3:40 PM | 30.19892 | -88.88628 | 254174.47410 | 967523.80940 | 20-ft Vibracore | 30.0 | 15.9 | 0.0 - 5.0 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.21 | 0.22 | 6.6 | 2.1 | 1.3 |
| BI-SI-45-10B | SHIP ISLAND | 2010 | 6/14/2010 | 3:40 PM | 30.19892 | -88.88628 | 254174.47410 | 967523.80940 | 20-ft Vibracore | 30.0 | 15.9 | 5.0 - 9.4 | 4.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | 0.19 | 0.19 | 7.5 | 2.4 | 1.5 |
| BI-SI-45-10C | SHIP ISLAND | 2010 | 6/14/2010 | 3:40 PM | 30.19892 | -88.88628 | 254174.47410 | 967523.80940 | 20-ft Vibracore | 30.0 | 15.9 | 11.5 - 15.9 | 4.4 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAY | 2.5Y 4/1 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | 0.19 | #VALUE! | 15.7 | #VALUE! | #VALUE! |
| BI-SI-46-10 | SHIP ISLAND | 2010 | 6/14/2010 | 2:00 PM | 30.20233 | -88.87922 | 255413.66010 | 969754.60840 | 20-ft Vibracore | 31.0 | 15.4 | | | | | | | | | | | | | | | | | |
| BI-SI-46-10A | SHIP ISLAND | 2010 | 6/14/2010 | 2:00 PM | 30.20233 | -88.87922 | 255413.66010 | 969754.60840 | 20-ft Vibracore | 31.0 | 15.4 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.23 | 0.24 | 4.9 | 1.7 | 1.0 |
| BI-SI-46-10B | SHIP ISLAND | 2010 | 6/14/2010 | 2:00 PM | 30.20233 | -88.87922 | 255413.66010 | 969754.60840 | 20-ft Vibracore | 31.0 | 15.4 | 5.0 - 11.4 | 6.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.19 | 0.19 | 8.1 | 2.6 | 1.5 |
| BI-SI-46-10C | SHIP ISLAND | 2010 | 6/14/2010 | 2:00 PM | 30.20233 | -88.87922 | 255413.66010 | 969754.60840 | 20-ft Vibracore | 31.0 | 15.4 | 11.4 - 15.4 | 4.0 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | 0.19 | #VALUE! | 16.0 | #VALUE! | #VALUE! |
| BI-SI-47-10 | SHIP ISLAND | 2010 | 6/14/2010 | 1:30 PM | 30.20559 | -88.87237 | 256598.45520 | 971918.89910 | 20-ft Vibracore | 31.0 | 15.6 | | | | | | | | | | | | | | | | | |
| BI-SI-47-10A | SHIP ISLAND | 2010 | 6/14/2010 | 1:30 PM | 30.20559 | -88.87237 | 256598.45520 | 971918.89910 | 20-ft Vibracore | 31.0 | 15.6 | 0.7 - 5.0 | 4.3 | SP | SP-SM | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.27 | 0.27 | 6.4 | 1.9 | 1.0 |
| BI-SI-47-10B | SHIP ISLAND | 2010 | 6/14/2010 | 1:30 PM | 30.20559 | -88.87237 | 256598.45520 | 971918.89910 | 20-ft Vibracore | 31.0 | 15.6 | 5.0 - 9.7 | 4.7 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LY GRAY | 2.5Y 7/1 | 7 | NO | 0.20 | 0.20 | 6.8 | 2.4 | 1.5 |
| BI-SI-48-10 | SHIP ISLAND | 2010 | 6/14/2010 | 10:35 AM | 30.18855 | -88.89783 | 250404.98260 | 963872.95470 | 20-ft Vibracore | 31.0 | 19.5 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| BI-SI-49-10 | SHIP ISLAND | 2010 | | 11:00 AM | 30.18820 | -88.88981 | 250276.34930 | 966406.72690 | 20-ft Vibracore | 32.0 | 19.5 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| BI-SI-50-10 | SHIP ISLAND | 2010 | 6/15/2010 | 11:50 AM | 30.19141 | -88.88363 | 251442.84980 | 968359.75560 | 20-ft Vibracore | 32.0 | 16.9 | | | | | | | | | | | | | | | | | |
| BI-SI-50-10A | SHIP ISLAND | 2010 | 6/15/2010 | 11:50 AM | 30.19141 | -88.88363 | 251442.84980 | 968359.75560 | 20-ft Vibracore | 32.0 | 16.9 | 3.7 - 9.8 | 6.1 | SM | SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.18 | #VALUE! | 15.7 | #VALUE! | #VALUE! |
| BI-SI-51-10 | SHIP ISLAND | 2010 | 6/15/2010 | 12:25 PM | 30.20059 | -88.86903 | 254779.70160 | 972973.38550 | 20-ft Vibracore | 33.0 | 18.2 | | | | | | | | | | | | | | | | | |
| BI-SI-51-10A | SHIP ISLAND | 2010 | 6/15/2010 | 12:25 PM | 30.20059 | -88.86903 | 254779.70160 | 972973.38550 | 20-ft Vibracore | 33.0 | 18.2 | 1.8 - 5.0 | 3.2 | SM | SP-SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.19 | 0.20 | 5.7 | 1.7 | 1.2 |
| BI-SI-51-10B | SHIP ISLAND | 2010 | 6/15/2010 | 12:25 PM | 30.20059 | -88.86903 | 254779.70160 | 972973.38550 | 20-ft Vibracore | 33.0 | 18.2 | 5.0 - 10.4 | 5.4 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.17 | #VALUE! | 15.5 | #VALUE! | #VALUE! |
| BI-SI-62-10 | SHIP ISLAND | 2010 | 6/15/2010 | 2:20 PM | 30.22386 | -88.87085 | 263242.76650 | 972401.23400 | 20-ft Vibracore | 24.0 | 12.6 | | | | | | | | | | | | | | | | | |
| BI-SI-62-10A | SHIP ISLAND | 2010 | 6/15/2010 | 2:20 PM | 30.22386 | -88.87085 | 263242.76650 | 972401.23400 | 20-ft Vibracore | 24.0 | 12.6 | 0.0 - 2.0 | 2.0 | SM | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | YES | 0.25 | 0.25 | 9.6 | 3.4 | 1.8 |
| BI-SI-62-10B | SHIP ISLAND | 2010 | 6/15/2010 | 2:20 PM | 30.22386 | -88.87085 | 263242.76650 | 972401.23400 | 20-ft Vibracore | 24.0 | 12.6 | 2.0 - 7.0 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | LT GRAY | 2.5Y 7/1 | 7 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.27 | 0.27 | 5.2 | 1.9 | 1.1 |
| BI-SI-62-10C | SHIP ISLAND | 2010 | 6/15/2010 | 2:20 PM | 30.22386 | -88.87085 | 263242.76650 | 972401.23400 | 20-ft Vibracore | 24.0 | 12.6 | 7.0 - 12.6 | 5.6 | SP | SP | SUBANGULAR TO ROUNDED | LT GRAY | 2.5Y 7/1 | 7 | WHITE | 2.5Y 8/1 | 8 | NO | 0.30 | 0.30 | 3.7 | 1.7 | 1.1 |
| BI-SI-65-10 | SHIP ISLAND | 2010 | 6/17/2010 | 10:20 AM | 30.19500 | -88.93044 | 252758.03180 | 953572.16250 | 20-ft Vibracore | 21.0 | 10.9 | | | | | | | | | | | | | | | | | |
| BI-SI-65-10A | SHIP ISLAND | 2010 | 6/17/2010 | 10:20 AM | 30.19500 | -88.93044 | 252758.03180 | 953572.16250 | 20-ft Vibracore | 21.0 | 10.9 | 0.0 - 6.1 | 6.1 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAY | 2.5Y 4/1 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.21 | 0.21 | 12.7 | #VALUE! | #VALUE! |
| BI-SI-66-10 | SHIP ISLAND | 2010 | 6/17/2010 | 10:40 AM | 30.19732 | -88.92593 | 253600.58610 | 954997.64350 | 20-ft Vibracore | 21.0 | 17.7 | | | | | | | | | | | | | | | | | |
| BI-SI-66-10A | SHIP ISLAND | 2010 | 6/17/2010 | 10:40 AM | 30.19732 | -88.92593 | 253600.58610 | 954997.64350 | 20-ft Vibracore | 21.0 | 17.7 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.24 | 0.25 | 3.5 | 1.7 | 0.9 |
| BI-SI-66-10B | SHIP ISLAND | 2010 | 6/17/2010 | 10:40 AM | 30.19732 | -88.92593 | 253600.58610 | 954997.64350 | 20-ft Vibracore | 21.0 | 17.7 | 5.0 - 8.6 | 3.6 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.26 | 0.27 | 4.4 | 1.8 | 1.0 |
| BI-SI-67-10 | SHIP ISLAND | 2010 | 6/17/2010 | 11:55 AM | 30.20066 | -88.91232 | 254812.04390 | 959298.04350 | 20-ft Vibracore | 21.0 | 14.1 | | | | | | | | | | | | | | | | | |
| BI-SI-67-10A | SHIP ISLAND | 2010 | 6/17/2010 | 11:55 AM | 30.20066 | -88.91232 | 254812.04390 | 959298.04350 | 20-ft Vibracore | 21.0 | 14.1 | 0.0 - 3.7 | 3.7 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.26 | 0.26 | 4.7 | 1.8 | 1.0 |
| BI-SI-68-10 | SHIP ISLAND | 2010 | 6/16/2010 | 1:05 PM | 30.21160 | -88.87840 | 258784.88630 | 970014.97690 | 20-ft Vibracore | 29.0 | 15.5 | | | | | | | | | | | | | | | | | |
| BI-SI-68-10A | SHIP ISLAND | 2010 | 6/16/2010 | 1:05 PM | 30.21160 | -88.87840 | 258784.88630 | 970014.97690 | 20-ft Vibracore | 29.0 | 15.5 | 0.0 - 4.0 | 4.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.30 | 0.30 | 4.1 | 1.8 | 1.1 |
| BI-SI-68-10B | SHIP ISLAND | 2010 | 6/16/2010 | 1:05 PM | 30.21160 | -88.87840 | 258784.88630 | 970014.97690 | 20-ft Vibracore | 29.0 | 15.5 | 4.0 - 8.0 | 4.0 | SP | SP | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.29 | 0.29 | 3.3 | 1.9 | 1.1 |
| BI-SI-68-10C | SHIP ISLAND | 2010 | 6/16/2010 | 1:05 PM | 30.21160 | -88.87840 | 258784.88630 | 970014.97690 | 20-ft Vibracore | 29.0 | 15.5 | 8.0 - 12.2 | 4.2 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.22 | 0.23 | 3.9 | 2.4 | 1.2 |
| BI-SI-69-10 | SHIP ISLAND | 2010 | 6/16/2010 | 12:20 PM | 30.21860 | -88.87349 | 261330.08100 | 971566.77650 | 20-ft Vibracore | 26.0 | 18.2 | | | | | | | | | | | | | | | | | |
| BI-SI-69-10A | SHIP ISLAND | 2010 | 6/16/2010 | 12:20 PM | 30.21860 | -88.87349 | 261330.08100 | 971566.77650 | 20-ft Vibracore | 26.0 | 18.2 | 1.4 - 5.4 | 4.0 | SP | SP | SUBANGULAR TO ROUNDED | LT GRAY | 2.5Y 7/1 | 7 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.20 | 0.21 | 4.1 | 1.9 | 1.2 |
| BI-SI-69-10B | SHIP ISLAND | 2010 | 6/16/2010 | 12:20 PM | 30.21860 | -88.87349 | 261330.08100 | 971566.77650 | 20-ft Vibracore | 26.0 | 18.2 | 5.4 - 9.4 | 4.0 | SP | SM | SUBANGULAR TO ROUNDED | LT GRAY | 2.5Y 7/1 | 7 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.19 | #VALUE! | 21.4 | #VALUE! | #VALUE! |
| BI-SI-69-10C | SHIP ISLAND | 2010 | 6/16/2010 | 12:20 PM | 30.21860 | -88.87349 | 261330.08100 | 971566.77650 | 20-ft Vibracore | 26.0 | 18.2 | 9.4 - 13.3 | 3.9 | SP | SP | SUBANGULAR TO ROUNDED | LT GRAY | 2.5Y 7/1 | 7 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.19 | 0.19 | 4.7 | 2.1 | 1.4 |
| BI-SI-70-10 | SHIP ISLAND | 2010 | 6/17/2010 | 12:25 PM | 30.19978 | -88.90777 | 254491.03620 | 960735.18370 | 20-ft Vibracore | 21.0 | 15.4 | | | | | | | | | | | | | | | | | |
| BI-SI-70-10A | SHIP ISLAND | 2010 | 6/17/2010 | 12:25 PM | 30.19978 | -88.90777 | 254491.03620 | 960735.18370 | 20-ft Vibracore | 21.0 | 15.4 | 0.0 - 4.5 | 4.5 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.18 | 0.18 | 3.9 | 2.1 | 1.4 |
| BI-SI-71-10 | SHIP ISLAND | 2010 | 6/17/2010 | 1:16 PM | 30.19547 | -88.90723 | 252923.45870 | 960904.75490 | 20-ft Vibracore | 27.0 | 17.5 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| BI-SI-72-10 | SHIP ISLAND | 2010 | 6/17/2010 | 1:50 PM | 30.19716 | -88.89977 | 253536.62830 | 963261.85790 | 20-ft Vibracore | 26.0 | 17.5 | | | | | | | | | | | | | | | | | |
| BI-SI-72-10A | SHIP ISLAND | 2010 | 6/17/2010 | 1:50 PM | 30.19716 | -88.89977 | 253536.62830 | 963261.85790 | 20-ft Vibracore | 26.0 | 17.5 | 10.4 - 12.5 | 2.1 | SP | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.16 | #VALUE! | 15.3 | #VALUE! | #VALUE! |
| BI-SI-72-10B | SHIP ISLAND | 2010 | 6/17/2010 | 1:50 PM | 30.19716 | -88.89977 | 253536.62830 | 963261.85790 | 20-ft Vibracore | 26.0 | 17.5 | 0.0 - 6.7 | 6.7 | SM | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.21 | 0.22 | 3.5 | 2.1 | 1.2 |
| BI-SI-73-10 | SHIP ISLAND | 2010 | 6/21/2010 | 11:25 AM | 30.20769 | -88.87598 | 257362.59570 | 970778.83990 | 20-ft Vibracore | 27.0 | 17.4 | | | | | | | | | | | | | | | | | |
| BI-SI-73-10A | SHIP ISLAND | 2010 | 6/21/2010 | 11:25 AM | 30.20769 | -88.87598 | 257362.59570 | 970778.83990 | 20-ft Vibracore | 27.0 | 17.4 | 0.3 - 5.3 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.19 | 0.19 | 4.9 | 2.0 | 1.3 |
| BI-SI-73-10B | SHIP ISLAND | 2010 | 6/21/2010 | 11:25 AM | 30.20769 | -88.87598 | 257362.59570 | 970778.83990 | 20-ft Vibracore | 27.0 | 17.4 | 5.3 - 11.3 | 6.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | YES | 0.18 | 0.18 | 4.4 | 2.2 | 1.4 |
| BI-SI-73-10C | SHIP ISLAND | 2010 | 6/21/2010 | 11:25 AM | 30.20769 | -88.87598 | 257362.59570 | 970778.83990 | 20-ft Vibracore | 27.0 | 17.4 | 11.3 - 14.9 | 3.6 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | OLIVE BROWN | 2.5Y 4/3 | 4 | YES | 0.16 | #VALUE! | 19.1 | #VALUE! | #VALUE! |
| BI-SI-74-10 | SHIP ISLAND | 2010 | 6/16/2010 | 11:55 AM | 30.21438 | -88.86775 | 259794.74820 | 973379.25450 | 20-ft Vibracore | 30.0 | 17.0 | | | | | | | | | | | | | | | | | |
| BI-SI-74-10A | SHIP ISLAND | 2010 | 6/16/2010 | 11:55 AM | 30.21438 | -88.86775 | 259794.74820 | 973379.25450 | 20-ft Vibracore | 30.0 | 17.0 | 1.3 - 6.3 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.18 | 0.17 | 5.7 | 2.1 | 1.5 |
| BI-SI-74-10B | SHIP ISLAND | 2010 | 6/16/2010 | 11:55 AM | 30.21438 | -88.86775 | 259794.74820 | 973379.25450 | 20-ft Vibracore | 30.0 | 17.0 | 6.3 - 12.0 | 5.7 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.18 | 0.17 | 6.1 | 2.2 | 1.5 |
| BI-SI-75-10 | SHIP ISLAND | 2010 | 6/17/2010 | 2:15 PM | 30.19397 | -88.88910 | 252374.67750 | 966632.07190 | 20-ft Vibracore | 30.0 | 18.7 | | | | | | | | | | | | | | | | | |
| BI-SI-75-10A | SHIP ISLAND | 2010 | 6/17/2010 | 2:15 PM | 30.19397 | -88.88910 | 252374.67750 | 966632.07190 | 20-ft Vibracore | 30.0 | 18.7 | 0.0 - 5.5 | 5.5 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.19 | 0.20 | 1.4 | 1.7 | 1.2 |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI-SI-75-10B** | SHIP ISLAND | 2010 | 6/17/2010 | 2:15 PM | 30.19397 | -88.88910 | 252374.67750 | 966632.07190 | 20-ft Vibracore | 30.0 | 18.7 | 15.9 - 18.7 | 2.8 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAY | 2.5Y 4/1 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.17 | 0.18 | 12.5 | #VALUE! | #VALUE! |
| **BI-SI-75-10C** | SHIP ISLAND | 2010 | 6/17/2010 | 2:15 PM | 30.19397 | -88.88910 | 252374.67750 | 966632.07190 | 20-ft Vibracore | 30.0 | 18.7 | 5.5 - 11.0 | 5.5 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.17 | 0.17 | 4.9 | 1.9 | 1.1 |
| **BI-SI-76-10** | SHIP ISLAND | 2010 | 6/16/2010 | 4:09 PM | 30.19591 | -88.88074 | 253079.02280 | 969273.47540 | 20-ft Vibracore | 31.0 | 16.2 | | | | | | | | | | | | | | | | | |
| **BI-SI-76-10A** | SHIP ISLAND | 2010 | 6/16/2010 | 4:09 PM | 30.19591 | -88.88074 | 253079.02280 | 969273.47540 | 20-ft Vibracore | 31.0 | 16.2 | 0.7 - 6.0 | 5.3 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2/5Y 7/1 | 7 | NO | 0.22 | 0.24 | 3.3 | 1.6 | 0.9 |
| **BI-SI-76-10B** | SHIP ISLAND | 2010 | 6/16/2010 | 4:09 PM | 30.19591 | -88.88074 | 253079.02280 | 969273.47540 | 20-ft Vibracore | 31.0 | 16.2 | 6.0 - 11.2 | 5.2 | SP | SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.16 | #VALUE! | 24.1 | #VALUE! | #VALUE! |
| **BI-SI-77-10** | SHIP ISLAND | 2010 | 6/16/2010 | 3:35 PM | 30.19704 | -88.87171 | 253488.90840 | 972126.33560 | 20-ft Vibracore | 32.5 | 16.1 | | | | | | | | | | | | | | | | | |
| **BI-SI-77-10A** | SHIP ISLAND | 2010 | 6/16/2010 | 3:35 PM | 30.19704 | -88.87171 | 253488.90840 | 972126.33560 | 20-ft Vibracore | 32.5 | 16.1 | 2.3 - 8.6 | 6.3 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.15 | 0.15 | 10.7 | #VALUE! | #VALUE! |
| **BI-SI-77-10B** | SHIP ISLAND | 2010 | 6/16/2010 | 3:35 PM | 30.19704 | -88.87171 | 253488.90840 | 972126.33560 | 20-ft Vibracore | 32.5 | 16.1 | 12.2 - 16.1 | 3.9 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | YES | 0.25 | 0.26 | 6.9 | 2.9 | 1.4 |
| **BI-SI-79-10** | SHIP ISLAND | 2010 | 6/16/2010 | 10:40 AM | 30.20866 | -88.86558 | 257714.28680 | 974064.07520 | 20-ft Vibracore | 31.0 | 11.3 | | | | | | | | | | | | | | | | | |
| **BI-SI-79-10A** | SHIP ISLAND | 2010 | 6/16/2010 | 10:40 AM | 30.20866 | -88.86558 | 257714.28680 | 974064.07520 | 20-ft Vibracore | 31.0 | 11.3 | 1.3 - 4.4 | 3.1 | SP | SP-SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.18 | 0.18 | 9.3 | 2.2 | 1.3 |
| **BI-SI-79-10B** | SHIP ISLAND | 2010 | 6/16/2010 | 10:40 AM | 30.20866 | -88.86558 | 257714.28680 | 974064.07520 | 20-ft Vibracore | 31.0 | 11.3 | 4.4 - 8.9 | 4.5 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.14 | #VALUE! | 26.6 | #VALUE! | #VALUE! |
| **BI-SI-80-10** | SHIP ISLAND | 2010 | 6/22/2010 | 2:10 PM | 30.22362 | -88.87210 | 263155.61500 | 972006.42080 | 20-ft Vibracore | 24.0 | 20.0 | | | | | | | | | | | | | | | | | |
| **BI-SI-80-10A** | SHIP ISLAND | 2010 | 6/22/2010 | 2:10 PM | 30.22362 | -88.87210 | 263155.61500 | 972006.42080 | 20-ft Vibracore | 24.0 | 20.0 | 2.8 - 7.8 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.22 | 0.24 | 4.7 | 1.6 | 1.0 |
| **BI-SI-80-10B** | SHIP ISLAND | 2010 | 6/22/2010 | 2:10 PM | 30.22362 | -88.87210 | 263155.61500 | 972006.42080 | 20-ft Vibracore | 24.0 | 20.0 | 7.8 - 12.8 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | NO | 0.20 | 0.20 | 5.4 | 2.0 | 1.3 |
| **BI-SI-80-10C** | SHIP ISLAND | 2010 | 6/22/2010 | 2:10 PM | 30.22362 | -88.87210 | 263155.61500 | 972006.42080 | 20-ft Vibracore | 24.0 | 20.0 | 12.8 - 15.2 | 2.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 5/1 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.19 | 0.19 | 5.5 | 2.0 | 1.4 |
| **BI-SI-81-10** | SHIP ISLAND | 2010 | 6/22/2010 | 1:40 PM | 30.22103 | -88.86949 | 262213.40590 | 972830.43140 | 20-ft Vibracore | 26.0 | 18.1 | | | | | | | | | | | | | | | | | |
| **BI-SI-81-10A** | SHIP ISLAND | 2010 | 6/22/2010 | 1:40 PM | 30.22103 | -88.86949 | 262213.40590 | 972830.43140 | 20-ft Vibracore | 26.0 | 18.1 | 2.3 - 7.3 | 5.0 | SP-SM | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/2 | 7 | YES | 0.20 | 0.20 | 10.6 | #VALUE! | #VALUE! |
| **BI-SI-81-10B** | SHIP ISLAND | 2010 | 6/22/2010 | 1:40 PM | 30.22103 | -88.86949 | 262213.40590 | 972830.43140 | 20-ft Vibracore | 26.0 | 18.1 | 7.3 - 13.3 | 6.0 | SP-SM | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 5/1 | 5 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.19 | 0.18 | 9.7 | 2.6 | 1.7 |
| **BI-SI-82-10** | SHIP ISLAND | 2010 | 6/22/2010 | 1:20 PM | 30.21817 | -88.86584 | 261172.92650 | 973982.93500 | 20-ft Vibracore | 27.0 | 19.1 | | | | | | | | | | | | | | | | | |
| **BI-SI-82-10A** | SHIP ISLAND | 2010 | 6/22/2010 | 1:20 PM | 30.21817 | -88.86584 | 261172.92650 | 973982.93500 | 20-ft Vibracore | 27.0 | 19.1 | 2.0 - 8.4 | 6.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.18 | 0.18 | 5.9 | 2.2 | 1.5 |
| **BI-SI-82-10B** | SHIP ISLAND | 2010 | 6/22/2010 | 1:20 PM | 30.21817 | -88.86584 | 261172.92650 | 973982.93500 | 20-ft Vibracore | 27.0 | 19.1 | 8.4 - 13.3 | 4.9 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.16 | #VALUE! | 22.7 | #VALUE! | #VALUE! |
| **BI-SI-83-10** | SHIP ISLAND | 2010 | 6/22/2010 | 12:55 PM | 30.21373 | -88.86298 | 259557.93100 | 974885.83100 | 20-ft Vibracore | 29.0 | 18.7 | | | | | | | | | | | | | | | | | |
| **BI-SI-83-10A** | SHIP ISLAND | 2010 | 6/22/2010 | 12:55 PM | 30.21373 | -88.86298 | 259557.93100 | 974885.83100 | 20-ft Vibracore | 29.0 | 18.7 | 1.5 - 5.0 | 3.5 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.18 | 0.18 | 12.1 | #DIV/0! | #DIV/0! |
| **BI-SI-84-10** | SHIP ISLAND | 2010 | 6/21/2010 | 1:00 PM | 30.20967 | -88.85976 | 258081.13180 | 975902.55460 | 20-ft Vibracore | 30.0 | 19.3 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-SI-85-10** | SHIP ISLAND | 2010 | 6/22/2010 | 2:40 PM | 30.22480 | -88.86817 | 263584.35920 | 973247.75430 | 20-ft Vibracore | 24.0 | 16.1 | | | | | | | | | | | | | | | | | |
| **BI-SI-85-10A** | SHIP ISLAND | 2010 | 6/22/2010 | 2:40 PM | 30.22480 | -88.86817 | 263584.35920 | 973247.75430 | 20-ft Vibracore | 24.0 | 16.1 | 0.0 - 1.5 | 1.5 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAY | 7.5YR 4/1 | 4 | GRAY | 2.5Y 5/1 | 5 | YES | 0.15 | #VALUE! | 16.7 | #VALUE! | #VALUE! |
| **BI-SI-85-10B** | SHIP ISLAND | 2010 | 6/22/2010 | 2:40 PM | 30.22480 | -88.86817 | 263584.35920 | 973247.75430 | 20-ft Vibracore | 24.0 | 16.1 | 5.4 - 10.9 | 5.5 | SM | SM | SUBANGULAR TO ROUNDED | VERY DK GRAY | 7.5YR 3/1 | 3 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.18 | 0.17 | 12.9 | #VALUE! | #VALUE! |
| **BI-SI-89-10** | SHIP ISLAND | 2010 | 6/21/2010 | 12:10 PM | 30.20807 | -88.87110 | 257500.25050 | 972320.37230 | 20-ft Vibracore | 27.0 | 19.3 | | | | | | | | | | | | | | | | | |
| **BI-SI-89-10A** | SHIP ISLAND | 2010 | 6/21/2010 | 12:10 PM | 30.20807 | -88.87110 | 257500.25050 | 972320.37230 | 20-ft Vibracore | 27.0 | 19.3 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | YES | 0.20 | 0.21 | 2.8 | 1.5 | 1.0 |
| **BI-SI-89-10B** | SHIP ISLAND | 2010 | 6/21/2010 | 12:10 PM | 30.20807 | -88.87110 | 257500.25050 | 972320.37230 | 20-ft Vibracore | 27.0 | 19.3 | 5.0 - 10.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 5/1 | 5 | LT GRAY | 2.5Y 7/1 | 7 | YES | 0.19 | 0.20 | 3.7 | 1.9 | 1.3 |
| **BI-SI-89-10C** | SHIP ISLAND | 2010 | 6/21/2010 | 12:10 PM | 30.20807 | -88.87110 | 257500.25050 | 972320.37230 | 20-ft Vibracore | 27.0 | 19.3 | 10.0 - 13.5 | 3.5 | SP | SP | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.18 | 0.18 | 4.7 | 2.1 | 1.4 |
| **BI-SI-89-10D** | SHIP ISLAND | 2010 | 6/21/2010 | 12:10 PM | 30.20807 | -88.87110 | 257500.25050 | 972320.37230 | 20-ft Vibracore | 27.0 | 19.3 | 13.5 - 18.3 | 4.8 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | OLIVE BROWN | 2.5Y 4/3 | 4 | YES | 0.17 | #VALUE! | 20.3 | #VALUE! | #VALUE! |
| **BI-SI-90-10** | SHIP ISLAND | 2010 | 6/21/2010 | 12:37 PM | 30.20428 | -88.86686 | 256121.47780 | 973659.28580 | 20-ft Vibracore | 30.0 | 12.7 | | | | | | | | | | | | | | | | | |
| **BI-SI-90-10A** | SHIP ISLAND | 2010 | 6/21/2010 | 12:37 PM | 30.20428 | -88.86686 | 256121.47780 | 973659.28580 | 20-ft Vibracore | 30.0 | 12.7 | 1.6 - 4.9 | 3.3 | SM | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.17 | 0.16 | 9.9 | 2.5 | 1.4 |
| **BI-SI-91-10** | SHIP ISLAND | 2010 | 6/17/2010 | 2:42 PM | 30.19342 | -88.87624 | 252172.89350 | 970694.75650 | 20-ft Vibracore | 32.0 | 15.7 | | | | | | | | | | | | | | | | | |
| **BI-SI-91-10A** | SHIP ISLAND | 2010 | 6/17/2010 | 2:42 PM | 30.19342 | -88.87624 | 252172.89350 | 970694.75650 | 20-ft Vibracore | 32.0 | 15.7 | 2.9 - 5.9 | 3.0 | SC | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.17 | 0.17 | 6.2 | 1.9 | 1.1 |
| **BI-SI-91-10B** | SHIP ISLAND | 2010 | 6/17/2010 | 2:42 PM | 30.19342 | -88.87624 | 252172.89350 | 970694.75650 | 20-ft Vibracore | 32.0 | 15.7 | 5.9 - 11.7 | 5.8 | SC | SP-SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.15 | 0.15 | 7.3 | 2.1 | 1.0 |
| **BI-SI-91-10C** | SHIP ISLAND | 2010 | 6/17/2010 | 2:42 PM | 30.19342 | -88.87624 | 252172.89350 | 970694.75650 | 20-ft Vibracore | 32.0 | 15.7 | 11.7 - 15.7 | 4.0 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | 0.12 | 0.14 | 12.2 | #VALUE! | #VALUE! |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

**Boring Designation BI-SI-10-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-10-10 — LOCATION COORDINATES: E = 956,553 N = 255,574 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 23 Ft. |
| | 15. DATE BORING — STARTED: 06-01-10 — COMPLETED: 06-01-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -21.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -21.7 | 0.0 | | | | |
| -23.7 | 2.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.192 mm % Fines: 2.5 |
| -26.1 | 4.4 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | B | Classification: SM Color: 5Y 6/2-light olive gray<br>D50: 0.1477 mm % Fines: 21 |
| -32.7 | 11.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | C | Classification: SP-SM Color: 2.5Y 7/2-light gray<br>D50: 0.1847 mm % Fines: 5.2 |
| -39.6 | 17.9 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

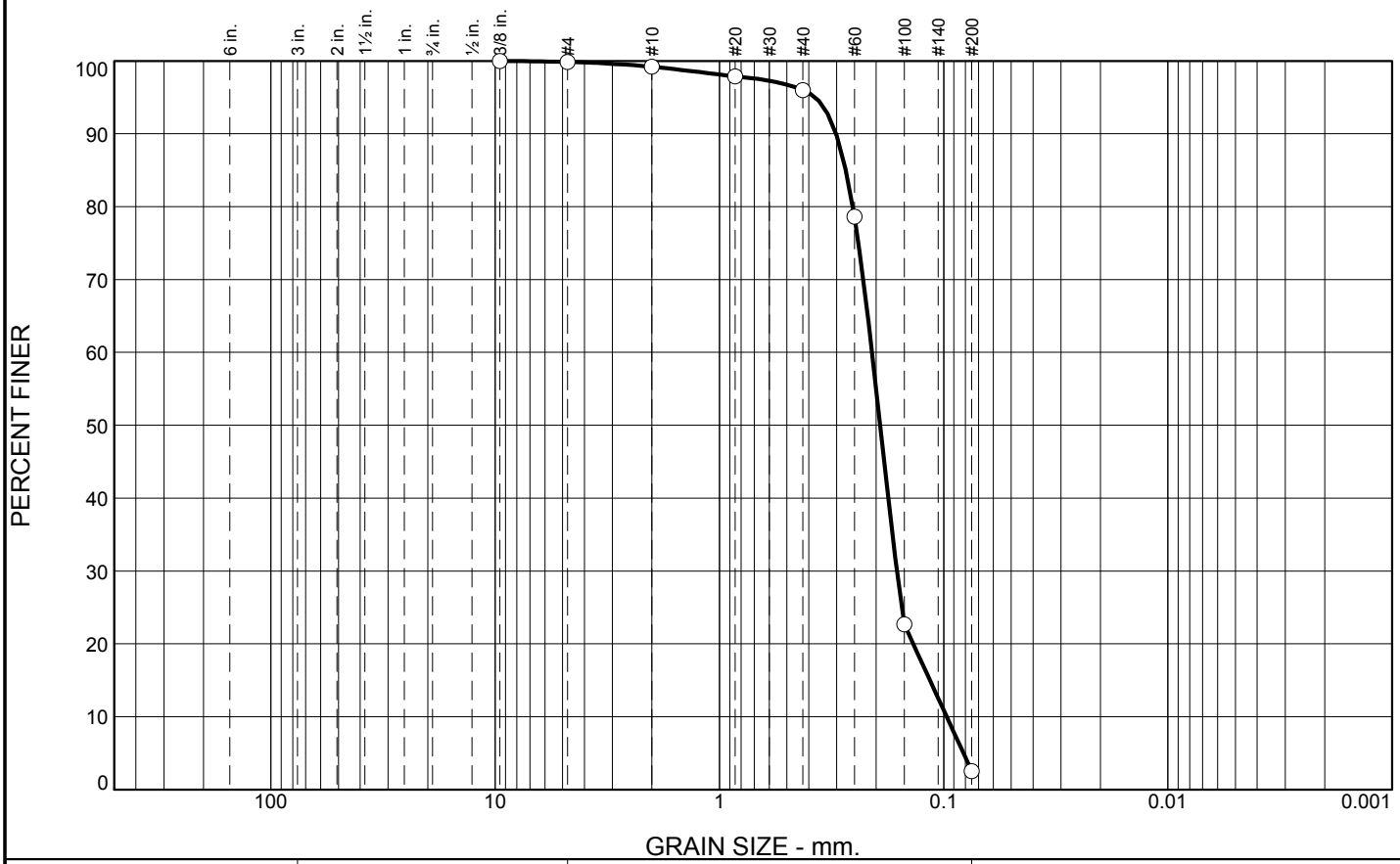
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20275° Long = -88.92101°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.7 | 3.2 | 93.5 | 2.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.2 | | |
| #20 | 97.9 | | |
| #40 | 96.0 | | |
| #60 | 78.6 | | |
| #100 | 22.7 | | |
| #200 | 2.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3021 $D_{85}$= 0.2731 $D_{60}$= 0.2088
$D_{50}$= 0.1920 $D_{30}$= 0.1616 $D_{15}$= 0.1152
$D_{10}$= 0.0969 $C_u$= 2.15 $C_c$= 1.29

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-10-10A
**Sample Number:** TE Lab ID: 4519.19 **Depth:** 0.0 - 2.0 (ft.) **Date:** 6/12/10

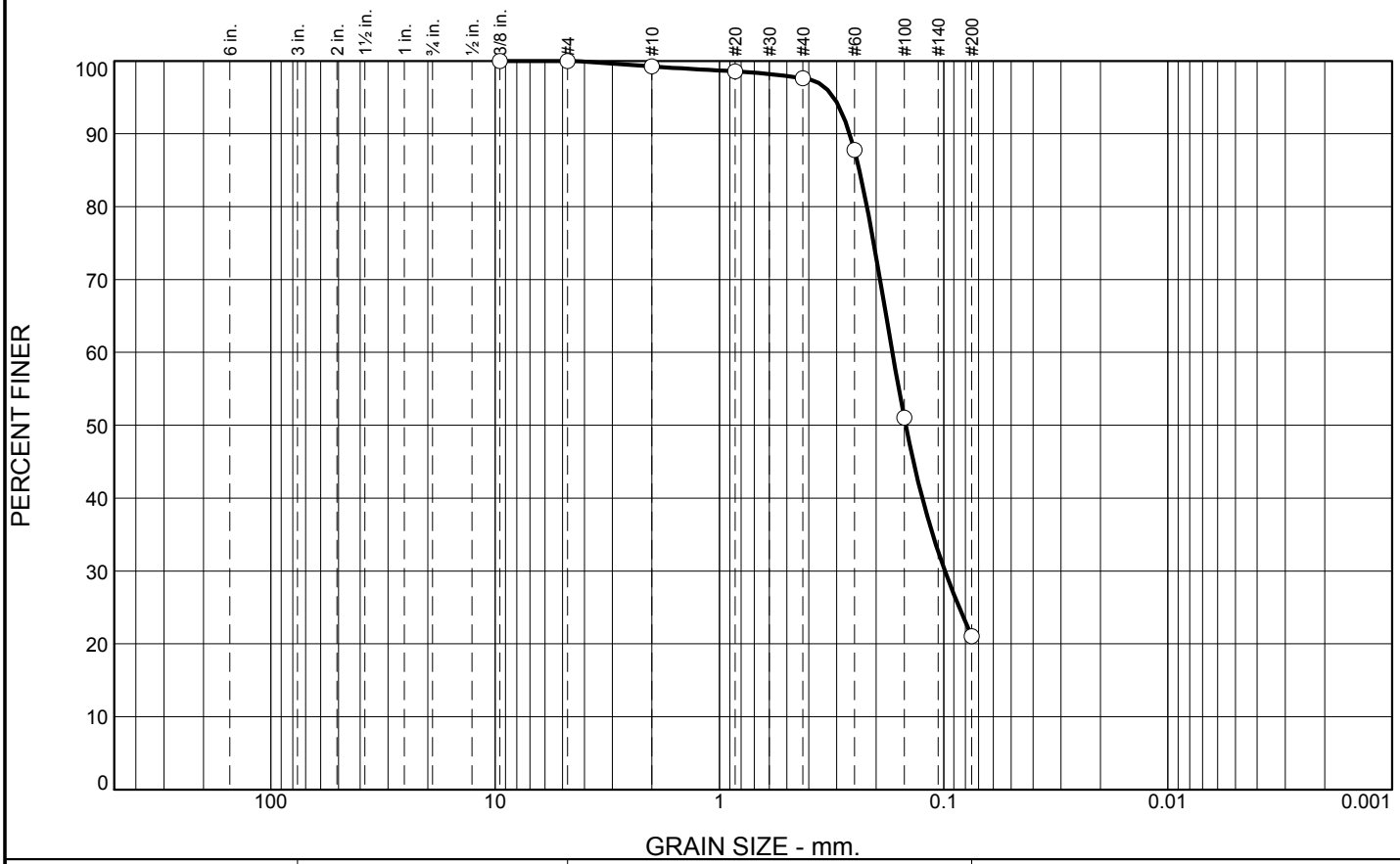
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.8 | 1.6 | 76.6 | 21.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.2 | | |
| #20 | 98.6 | | |
| #40 | 97.6 | | |
| #60 | 87.8 | | |
| #100 | 51.0 | | |
| #200 | 21.0 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2623 $D_{85}$= 0.2377 $D_{60}$= 0.1694
$D_{50}$= 0.1477 $D_{30}$= 0.0987 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-10-10B
**Sample Number:** TE Lab ID: 4519.20 **Depth:** 2.0 - 4.4 (ft.) **Date:** 6/12/10

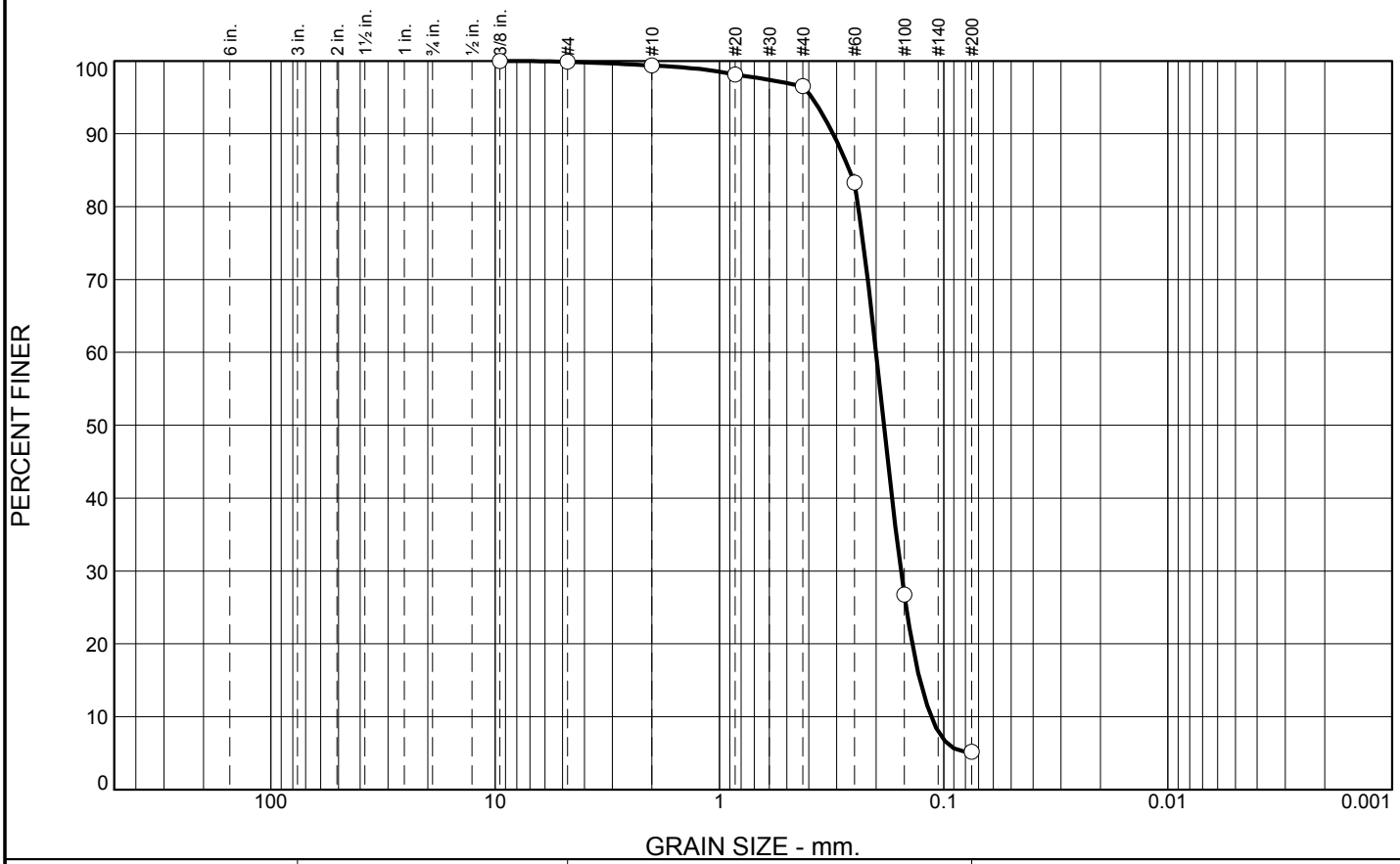
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.5 | 2.9 | 91.3 | 5.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.4 | | |
| #20 | 98.1 | | |
| #40 | 96.5 | | |
| #60 | 83.3 | | |
| #100 | 26.8 | | |
| #200 | 5.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3110 $D_{85}$= 0.2630 $D_{60}$= 0.2003
$D_{50}$= 0.1847 $D_{30}$= 0.1551 $D_{15}$= 0.1275
$D_{10}$= 0.1137 $C_u$= 1.76 $C_c$= 1.06

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-10-10C
**Sample Number:** TE Lab ID: 4519.21 **Depth:** 4.4 - 11.0 (ft.) **Date:** 6/12/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-SI-11-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-11-10 — LOCATION COORDINATES: E = 965,992 N = 260,169 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 29 Ft. |
| | 15. DATE BORING — STARTED: 06-01-10 — COMPLETED: 06-01-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -28.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.0 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | A | Classification: SM Color: 5Y 6/2-light olive gray<br>D50: 0.1853 mm % Fines: 12.5 |
| | | | | B | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1726 mm % Fines: 6.4 |
| -39.5 | 11.5 | | | | |
| -40.5 | 12.5 | | CLAY, lean, dark gray (CL) | | |
| -41.0 | 13.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | NS | |
| | | | CLAY, lean, dark gray (CL) | | |
| -44.7 | 16.7 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

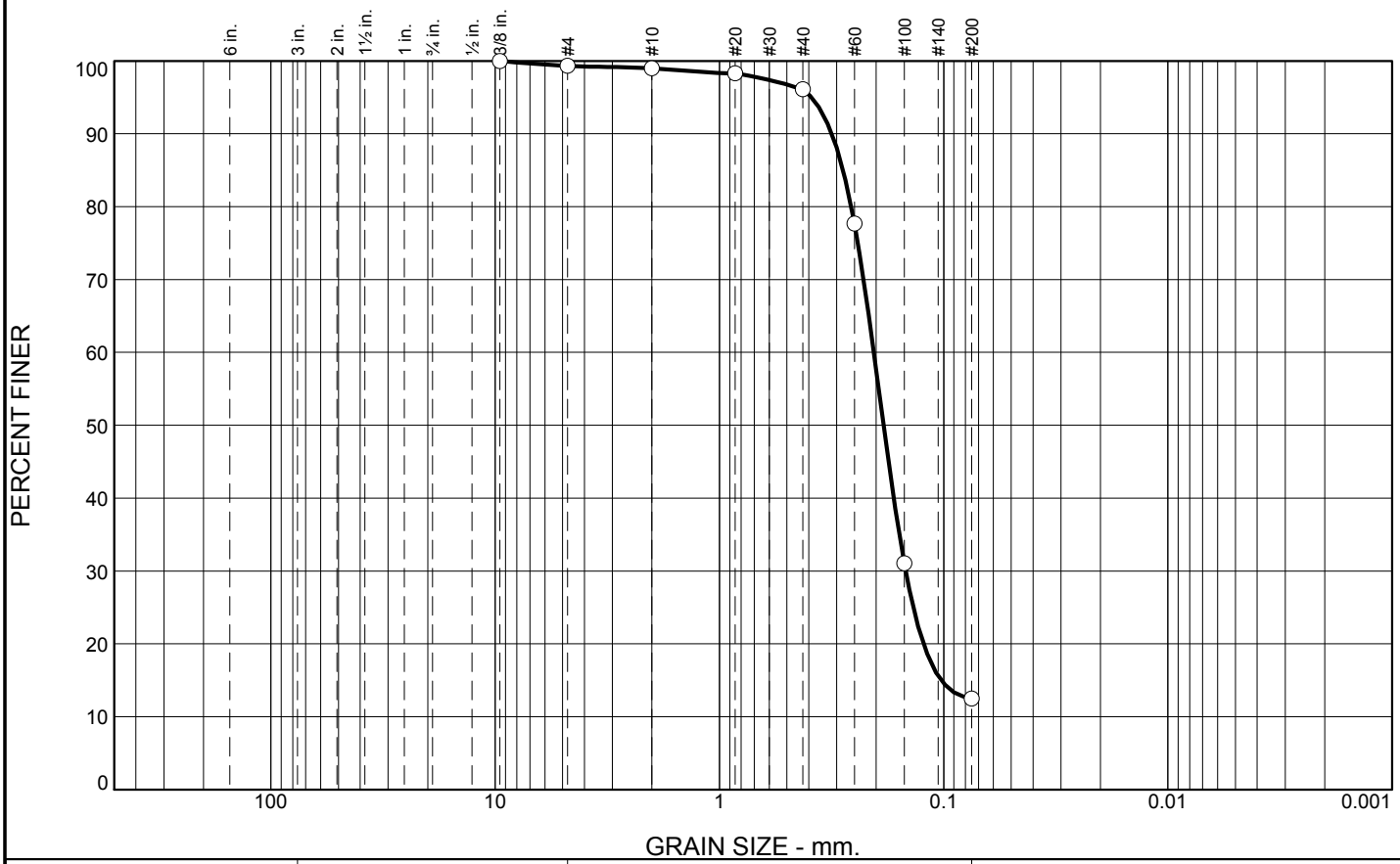
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21540° Long = -88.89114°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.7 | 0.3 | 2.9 | 83.6 | 12.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.3 | | |
| #10 | 99.0 | | |
| #20 | 98.3 | | |
| #40 | 96.1 | | |
| #60 | 77.7 | | |
| #100 | 31.1 | | |
| #200 | 12.5 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3153 $D_{85}$= 0.2809 $D_{60}$= 0.2049
$D_{50}$= 0.1853 $D_{30}$= 0.1478 $D_{15}$= 0.1026
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-11-10A
**Sample Number:** TE Lab ID: 4519.13 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/12/10

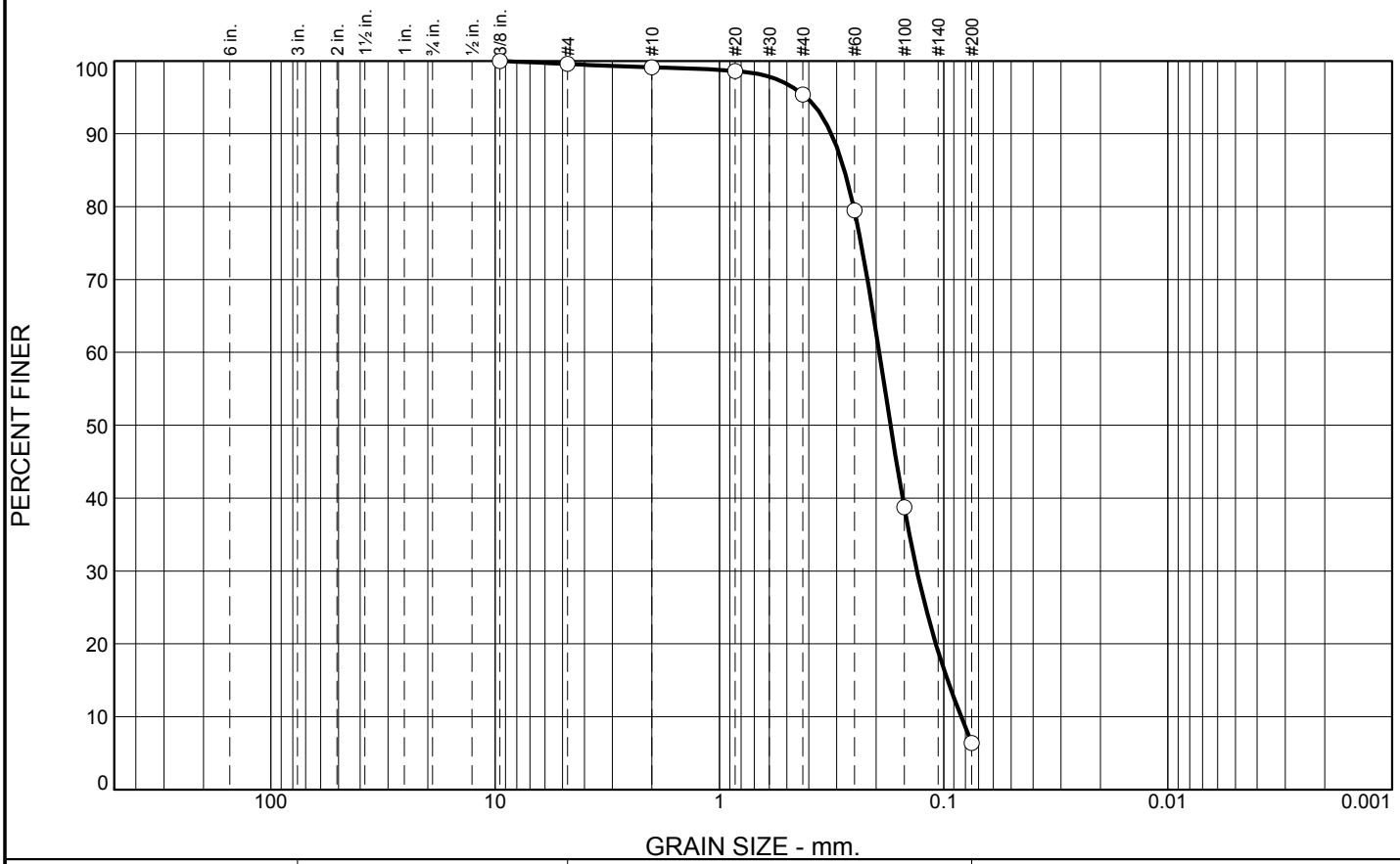
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.5 | 3.7 | 89.0 | 6.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.1 | | |
| #20 | 98.6 | | |
| #40 | 95.4 | | |
| #60 | 79.5 | | |
| #100 | 38.7 | | |
| #200 | 6.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3167 $D_{85}$= 0.2771 $D_{60}$= 0.1939
$D_{50}$= 0.1726 $D_{30}$= 0.1315 $D_{15}$= 0.0960
$D_{10}$= 0.0836 $C_u$= 2.32 $C_c$= 1.07

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-11-10B
**Sample Number:** TE Lab ID: 4519.14 **Depth:** 5.0 - 11.5 (ft.) **Date:** 6/12/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-SI-12-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-12-10 — LOCATION COORDINATES: E = 962,387 N = 254,563 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO.: | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES: |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 29 Ft. |
| | 15. DATE BORING — STARTED: 06-01-10 — COMPLETED: 06-01-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -27.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -27.8 | 0.0 | | | | |
| -32.5 | 4.7 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1948 mm % Fines: 3.2 |
| -36.1 | 8.3 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, gray (SM) | B | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1609 mm % Fines: 10.3 |
| -41.8 | 14.0 | | CLAY, lean, dark gray (CL) | NS | |
| -42.8 | 15.0 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, gray (SM) | | |
| -47.5 | 19.7 | | CLAY, lean, dark gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19998° Long = -88.90254°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 962,387 Y = 254,563 | ELEVATION TOP OF BORING -27.8 Ft. | | |

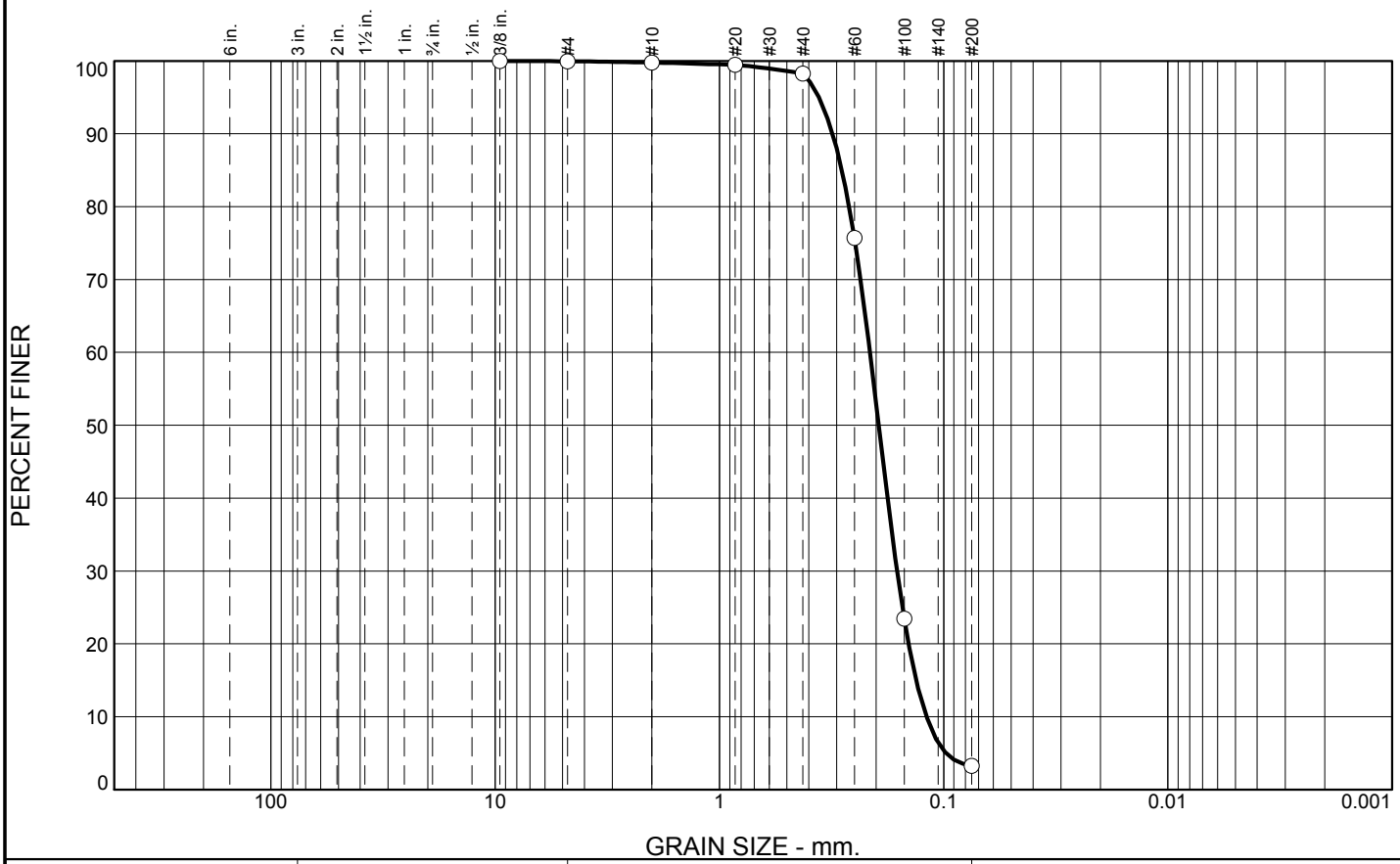
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | applying NOAA tidal gauge data conversion factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19998° Long = -88.90254°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 1.5 | 95.1 | 3.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 99.5 | | |
| #40 | 98.3 | | |
| #60 | 75.7 | | |
| #100 | 23.4 | | |
| #200 | 3.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3127 $D_{85}$= 0.2843 $D_{60}$= 0.2132
$D_{50}$= 0.1948 $D_{30}$= 0.1614 $D_{15}$= 0.1326
$D_{10}$= 0.1192 $C_u$= 1.79 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-12-10A
**Sample Number:** TE Lab ID: 4519.01 **Depth:** 0.0 - 4.7 (ft.) **Date:** 6/12/10

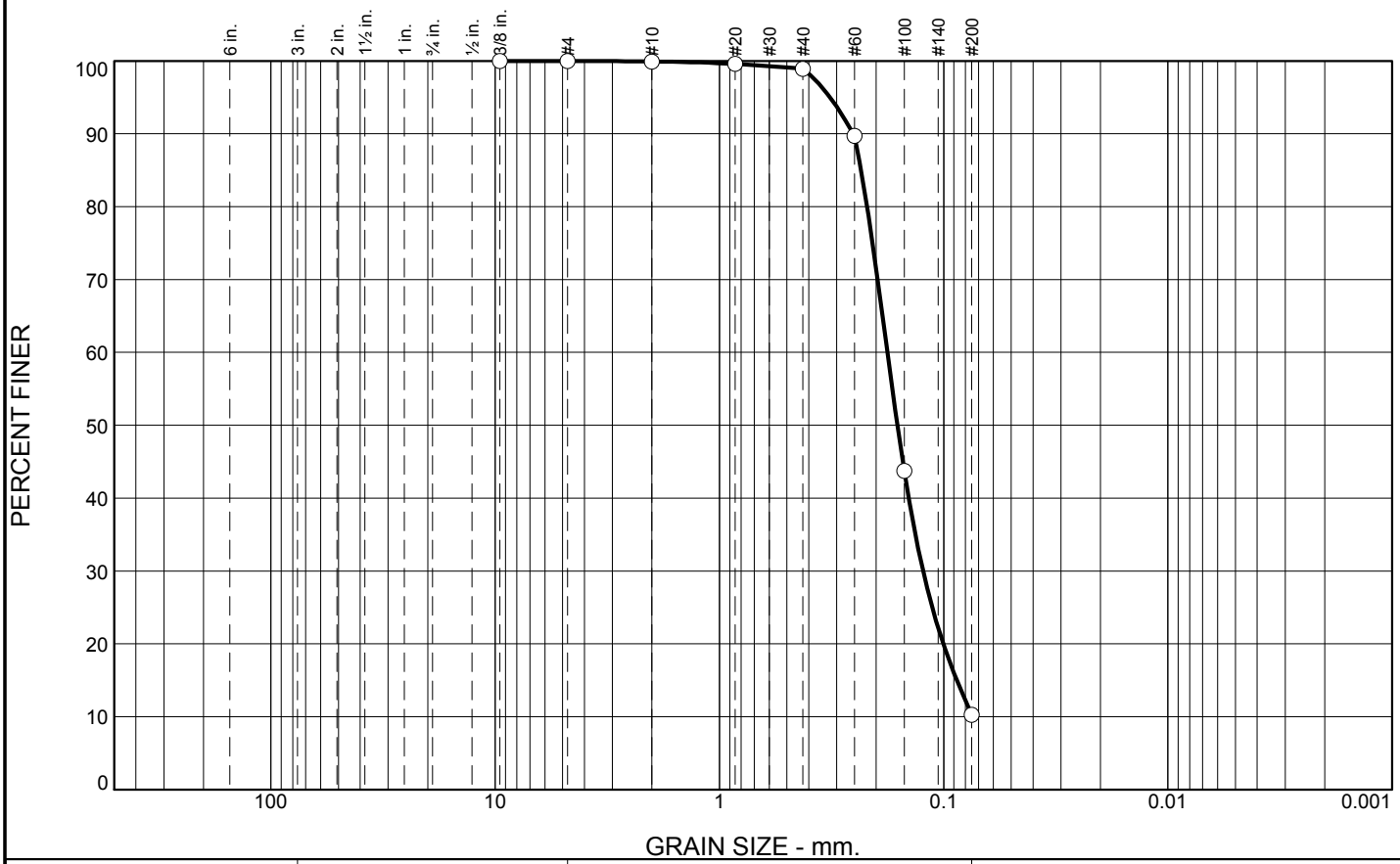
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 88.6 | 10.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 98.9 | | |
| #60 | 89.7 | | |
| #100 | 43.7 | | |
| #200 | 10.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2531 $D_{85}$= 0.2334 $D_{60}$= 0.1783
$D_{50}$= 0.1609 $D_{30}$= 0.1236 $D_{15}$= 0.0874
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-12-10B
**Sample Number:** TE Lab ID: 4519.02 **Depth:** 4.7 - 8.5 (ft.) **Date:** 6/12/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-SI-13-10**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-13-10 |
| LOCATION COORDINATES | E = 970,966 N = 258,821 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 18.9 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 31 Ft. |
| 15. DATE BORING | STARTED 06-01-10 / COMPLETED 06-01-10 |
| 16. ELEVATION TOP OF BORING | -28.5 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.5 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2476 mm % Fines: 2.3 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2046 mm % Fines: 2.3 |
| -41.7 | 13.2 | | | C | Classification: SP-SM Color: 5Y 7/2-light gray<br>D50: 0.165 mm % Fines: 5.9 |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -47.4 | 18.9 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

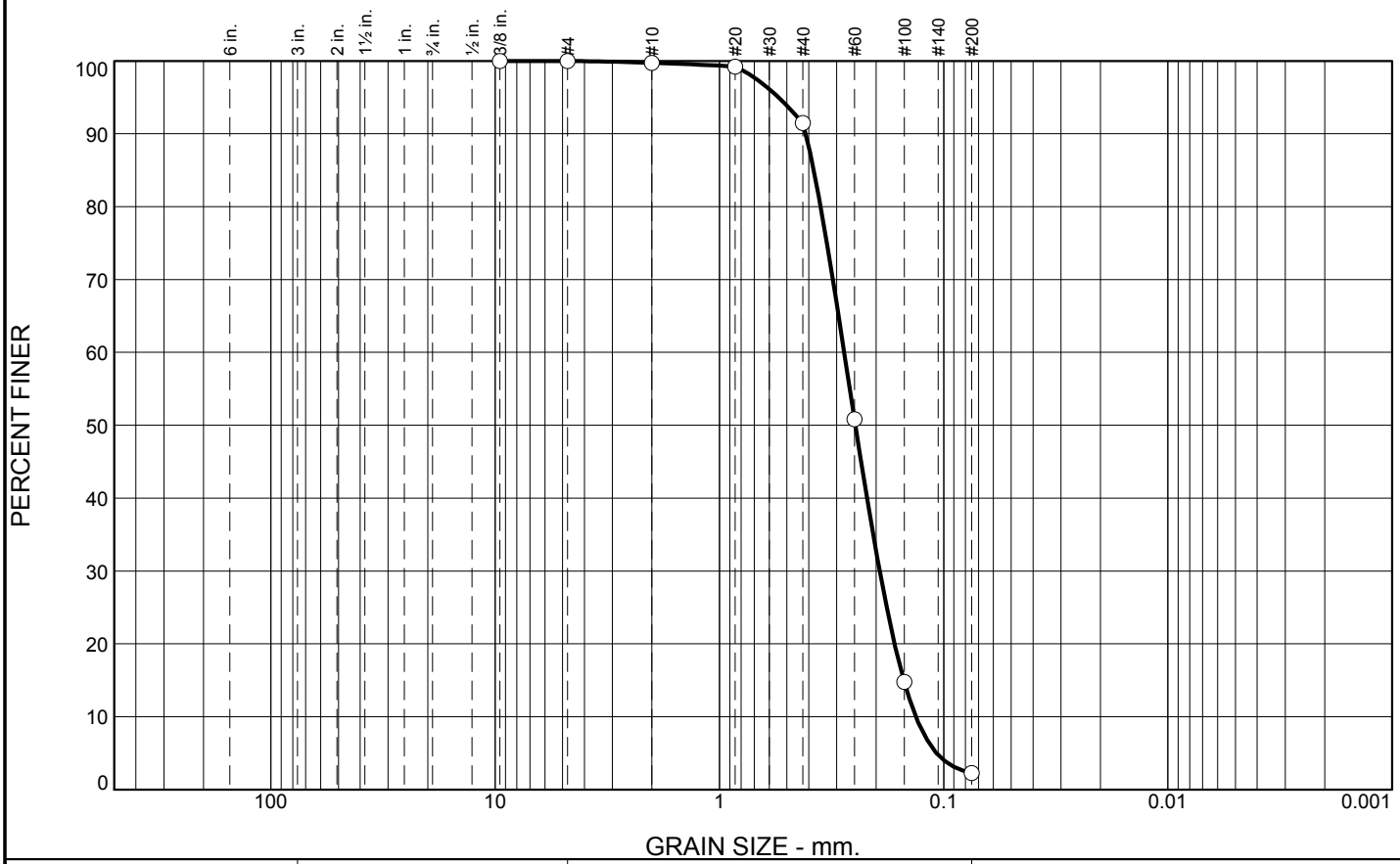
3. Seafloor elevation determined from USACE hydrographic survey completed 2010.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21170° Long = -88.87539°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 8.2 | 89.2 | 2.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.2 | | |
| #40 | 91.5 | | |
| #60 | 50.8 | | |
| #100 | 14.8 | | |
| #200 | 2.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4131 $D_{85}$= 0.3799 $D_{60}$= 0.2777
$D_{50}$= 0.2476 $D_{30}$= 0.1929 $D_{15}$= 0.1507
$D_{10}$= 0.1330 $C_u$= 2.09 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-13-10A
**Sample Number:** TE Lab ID: 4519.10 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/12/10

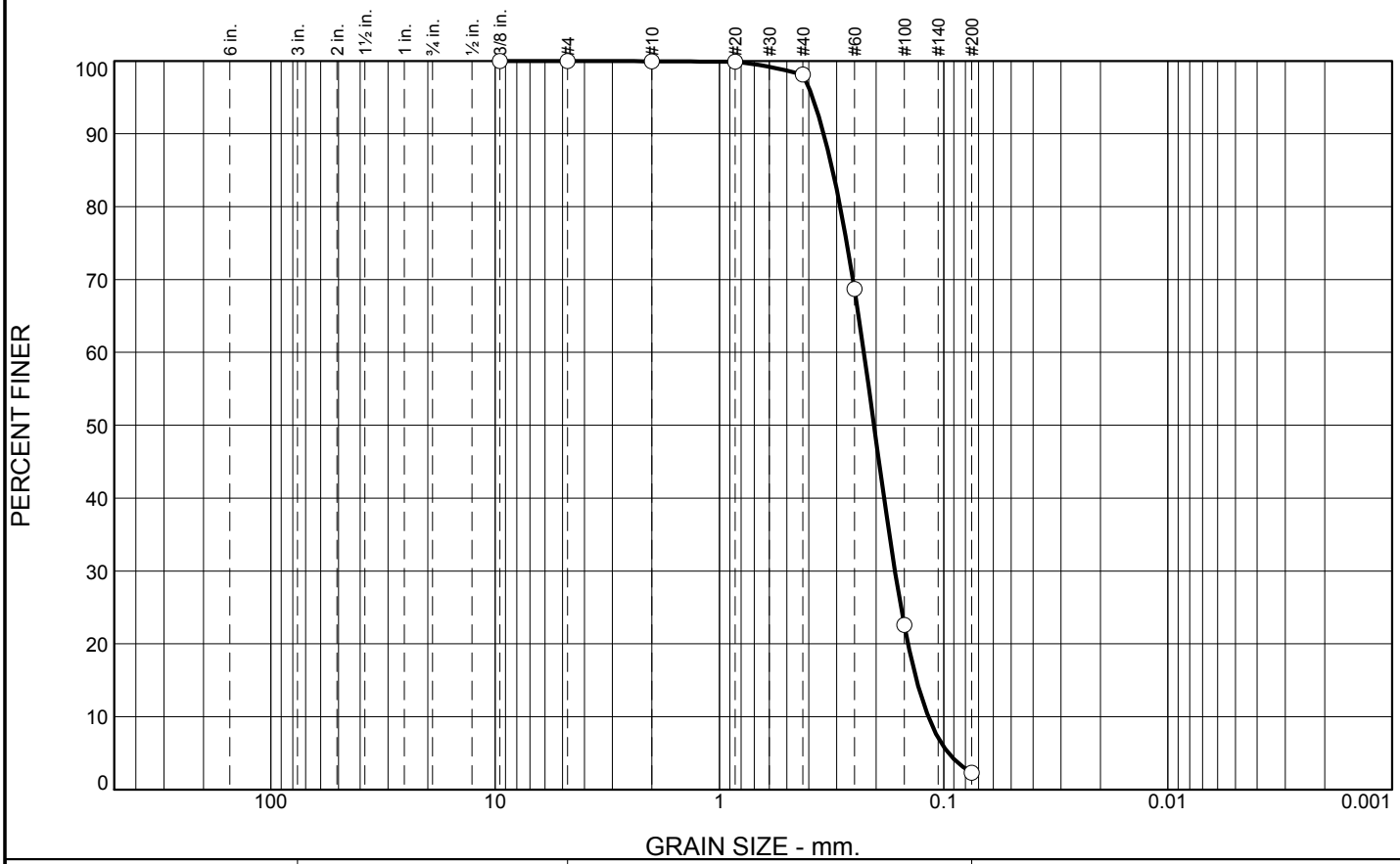
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.8 | 95.8 | 2.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.9 | | |
| #40 | 98.1 | | |
| #60 | 68.7 | | |
| #100 | 22.6 | | |
| #200 | 2.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3426 $D_{85}$= 0.3127 $D_{60}$= 0.2270
$D_{50}$= 0.2046 $D_{30}$= 0.1650 $D_{15}$= 0.1320
$D_{10}$= 0.1170 $C_u$= 1.94 $C_c$= 1.02

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-13-10B
**Sample Number:** TE Lab ID: 4519.11 **Depth:** 5.0 - 10.0 (ft.) **Date:** 6/12/10

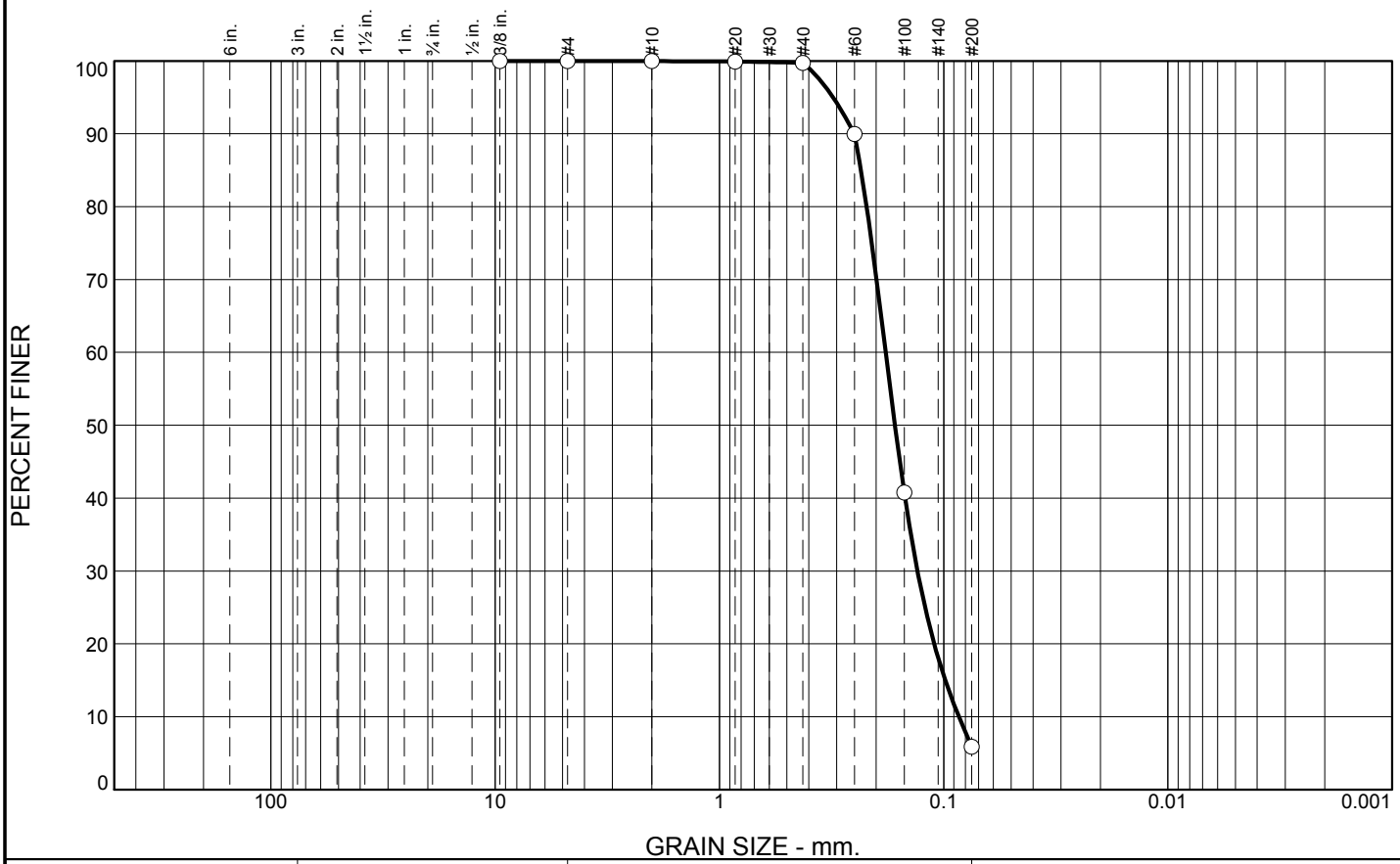
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 93.8 | 5.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 99.7 | | |
| #60 | 90.0 | | |
| #100 | 40.8 | | |
| #200 | 5.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2503 $D_{85}$= 0.2336 $D_{60}$= 0.1814
$D_{50}$= 0.1650 $D_{30}$= 0.1309 $D_{15}$= 0.0984
$D_{10}$= 0.0856 $C_u$= 2.12 $C_c$= 1.10

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-13-10C
**Sample Number:** TE Lab ID: 4519.12 **Depth:** 10.0 - 13.2 (ft.) **Date:** 6/12/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-SI-14-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-14-10 — LOCATION COORDINATES: E = 970,541 N = 254,224 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 4 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 30 Ft. |
| | 15. DATE BORING — STARTED: 06-08-10 — COMPLETED: 06-08-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.0 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 5Y 7/1-light gray<br>D50: 0.2196 mm % Fines: 6.5 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.1838 mm % Fines: 6.3 |
| -37.0 | 8.0 | | | | |
| | | | SAND, silty, some silt, trace shell fragments, gray (SM) | C | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1542 mm % Fines: 13.9 |
| | | | | D | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.1646 mm % Fines: 19.8 |
| -45.5 | 16.5 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -48.5 | 19.5 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and | | |

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**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19906° Long = -88.87673°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 970,541 Y = 254,224 | ELEVATION TOP OF BORING -29.0 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | applying NOAA tidal gauge data conversion factor. | | |

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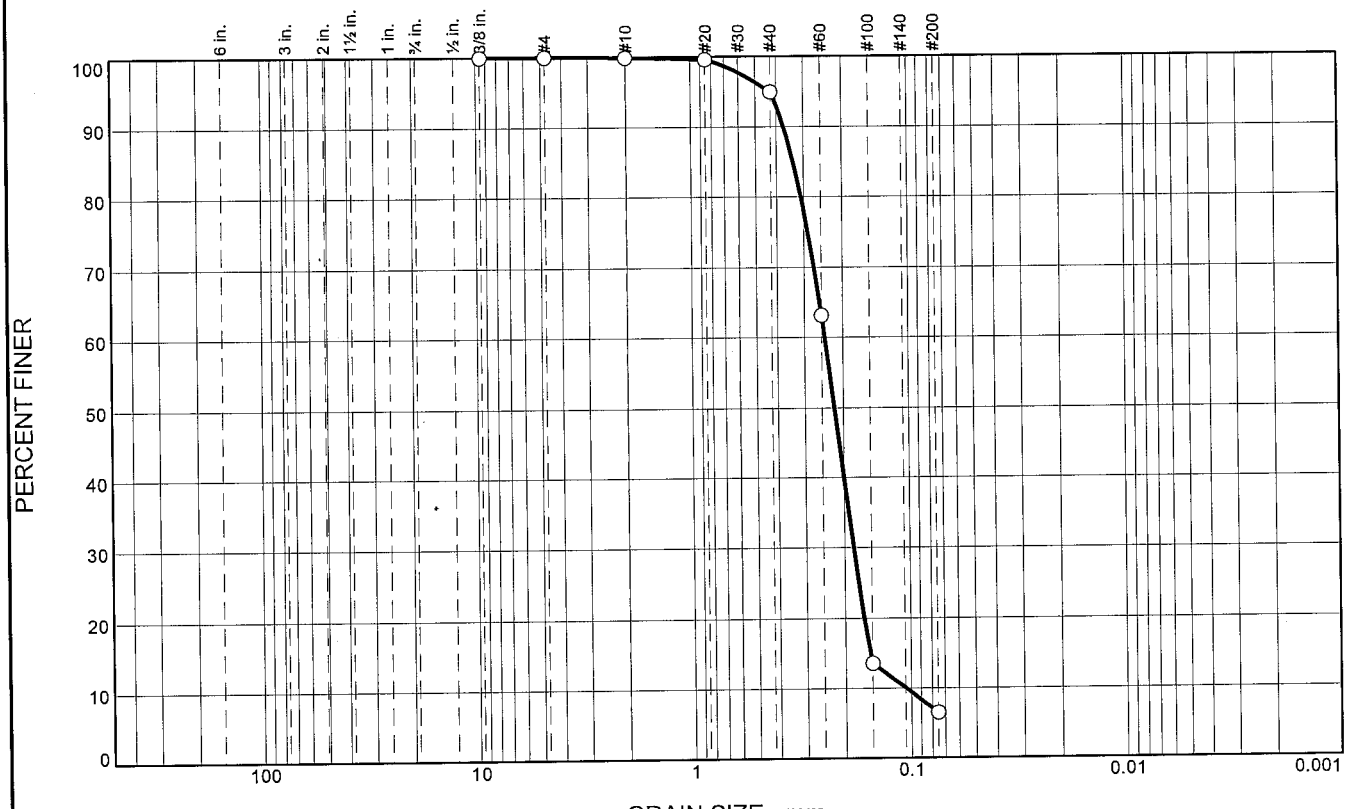
SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19906° Long = -88.87673°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 4.9 | 88.5 | 6.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 95.0 | | |
| #60 | 63.1 | | |
| #100 | 13.6 | | |
| #200 | 6.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3709 $D_{85}$= 0.3355 $D_{60}$= 0.2420
$D_{50}$= 0.2196 $D_{30}$= 0.1816 $D_{15}$= 0.1531
$D_{10}$= 0.1056 $C_u$= 2.29 $C_c$= 1.29

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE =CH10D965

**Location:** USACE Sample # BI-SI-14-10A
**Sample Number:** TE Lab ID: 4538.04 **Depth:** 0.0 - 4.0 (ft.) **Date:** 6/19/10

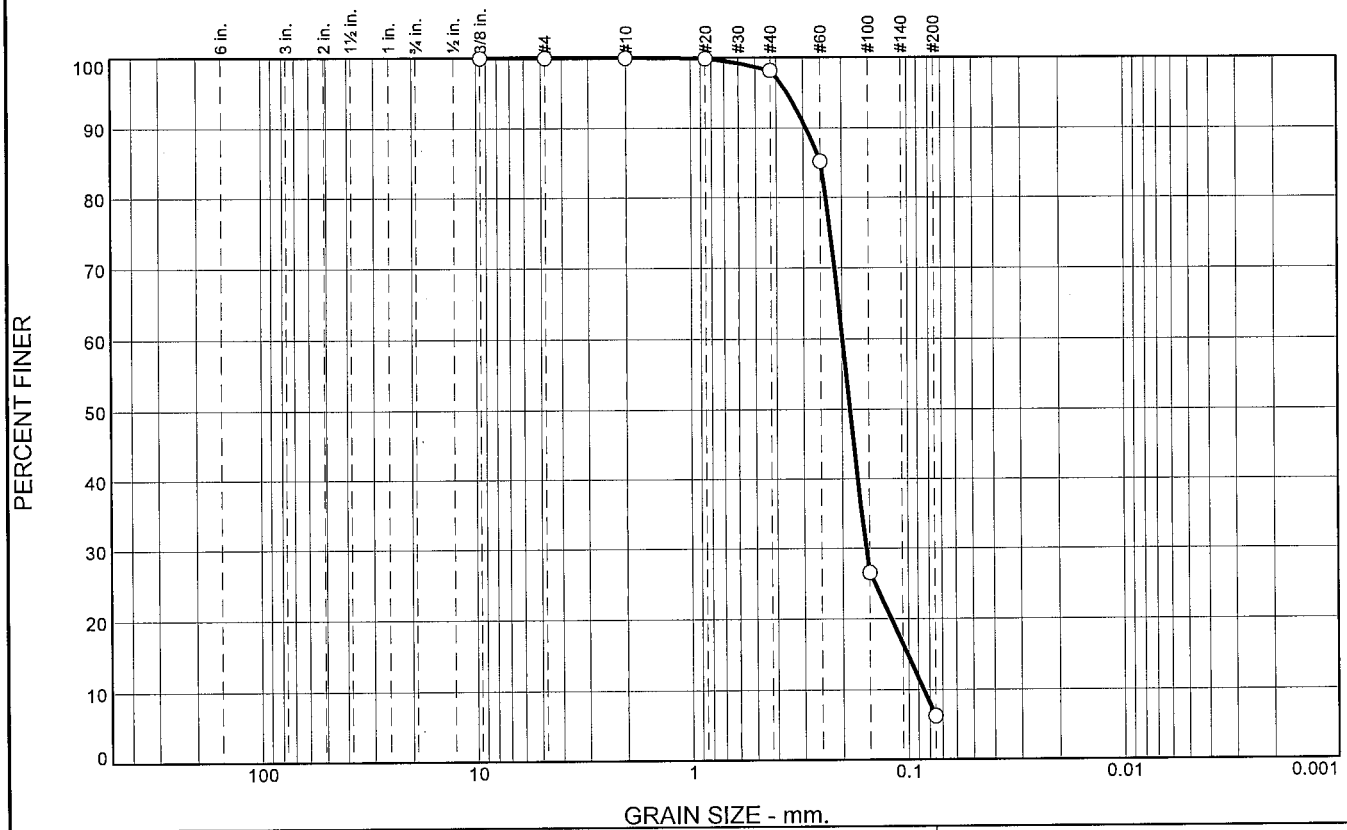
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 91.9 | 6.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 98.2 | | |
| #60 | 85.1 | | |
| #100 | 26.6 | | |
| #200 | 6.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2918 $D_{85}$= 0.2496 $D_{60}$= 0.1988
$D_{50}$= 0.1838 $D_{30}$= 0.1553 $D_{15}$= 0.1011
$D_{10}$= 0.0852 $C_u$= 2.33 $C_c$= 1.42

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-14-10B
**Sample Number:** TE Lab ID: 4538.05 **Depth:** 4.0 - 8.0 (ft.) **Date:** 6/19/10

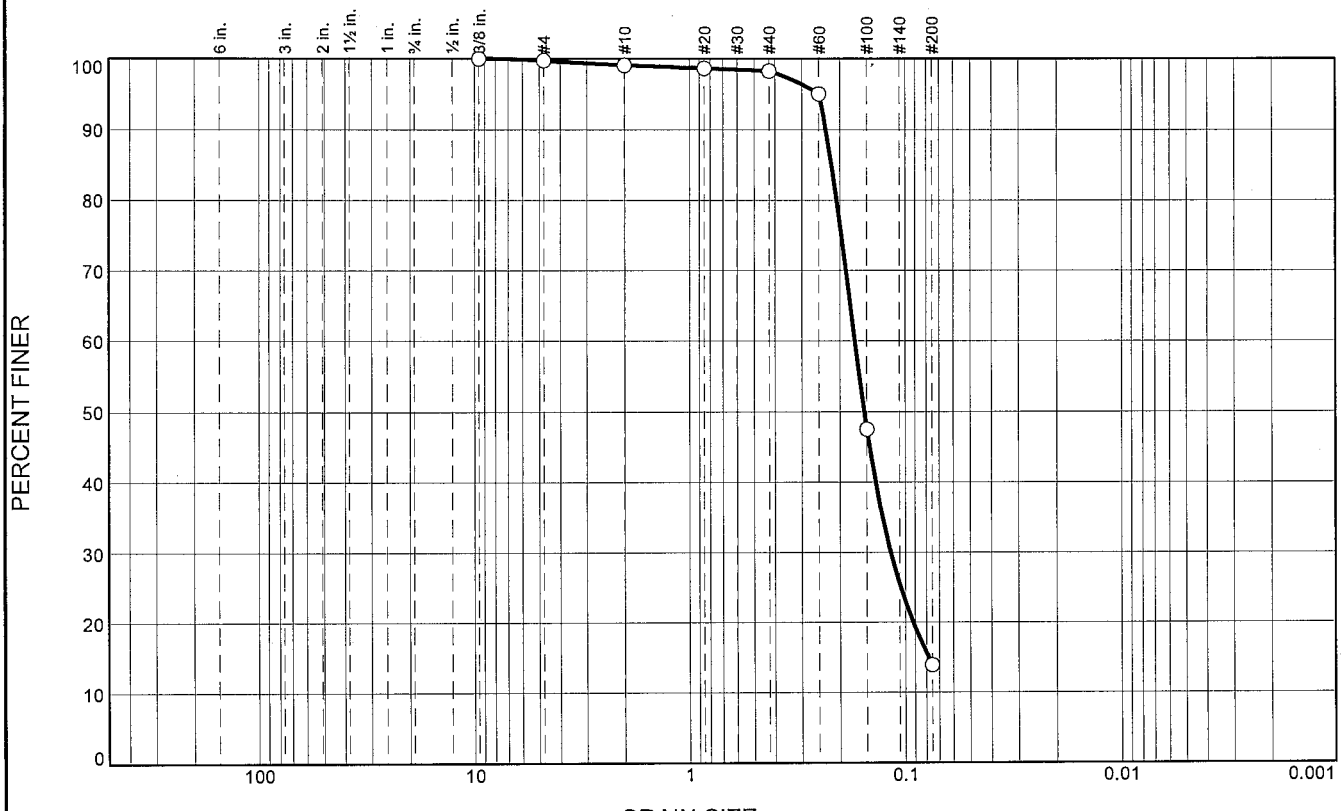
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.6 | 0.8 | 84.4 | 13.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.1 | | |
| #20 | 98.7 | | |
| #40 | 98.3 | | |
| #60 | 95.0 | | |
| #100 | 47.5 | | |
| #200 | 13.9 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2317 $D_{85}$= 0.2182 $D_{60}$= 0.1704
$D_{50}$= 0.1542 $D_{30}$= 0.1168 $D_{15}$= 0.0781
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-14-10C
**Sample Number:** TE Lab ID: 4538.72 **Depth:** 8.0 - 12.0 (ft.) **Date:** 6/26/10

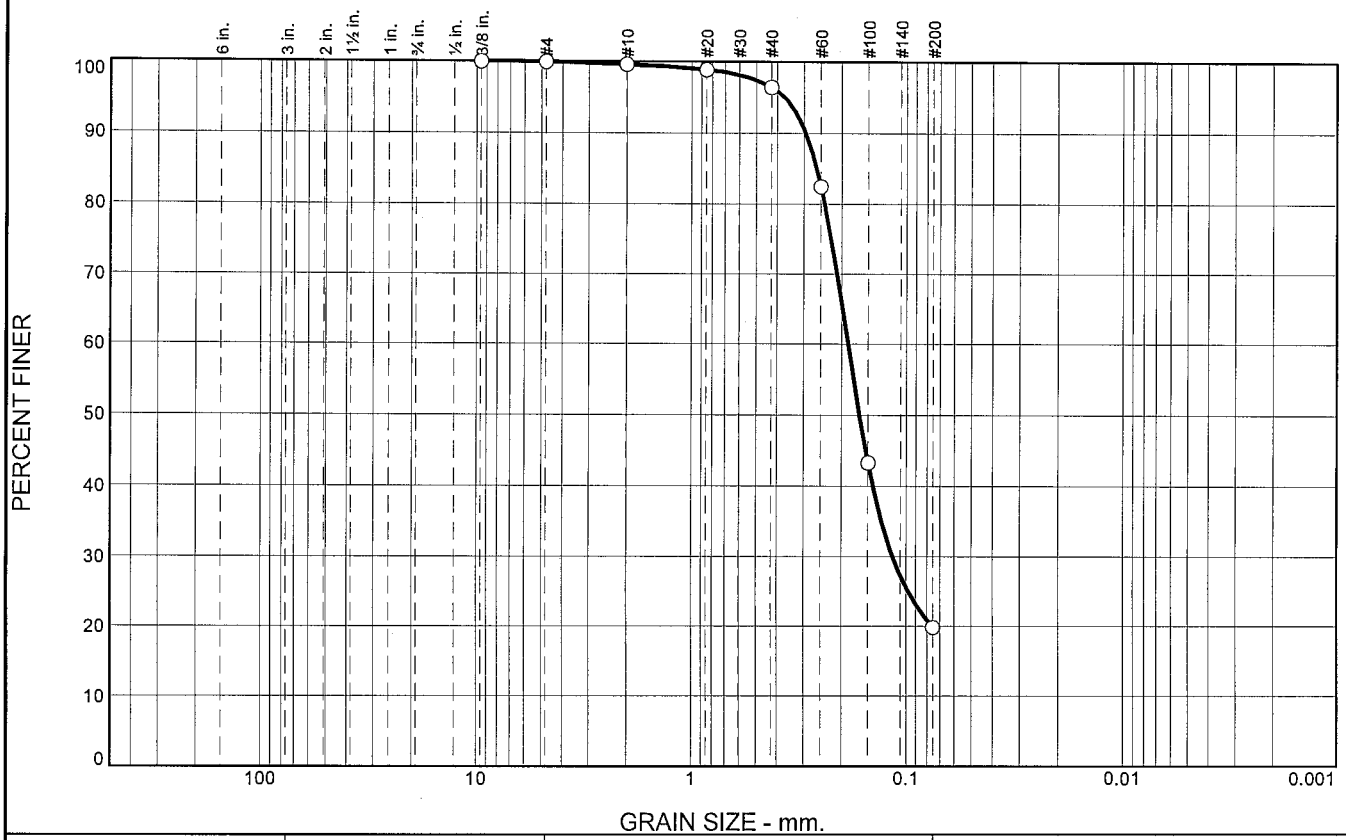
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.3 | 3.2 | 76.6 | 19.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.6 | | |
| #20 | 98.9 | | |
| #40 | 96.4 | | |
| #60 | 82.5 | | |
| #100 | 43.2 | | |
| #200 | 19.8 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2946 $D_{85}$= 0.2617 $D_{60}$= 0.1860
$D_{50}$= 0.1646 $D_{30}$= 0.1156 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-14-10D
**Sample Number:** TE Lab ID: 4538.73 **Depth:** 12.0 - 16.5 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

Boring Designation BI-SI-15-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SI-15-10 / LOCATION COORDINATES E = 947,708 N = 251,640 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES DISTURBED 0 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 28 Ft. |
| | 15. DATE BORING STARTED 06-01-10 / COMPLETED 06-01-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -26.6 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 16.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -26.6 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -43.1 | 16.5 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

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SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19191° Long = -88.949°

Boring Designation BI-SI-16-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) — HORIZONTAL NAD83 — VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SI-16-10 — LOCATION COORDINATES E = 941,470 N = 250,905 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED 0 — UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH 25 Ft. |
| | 15. DATE BORING — STARTED 06-01-10 — COMPLETED 06-01-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -23.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 15.3 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -23.5 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -38.8 | 15.3 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

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SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18987° Long = -88.96874°

Boring Designation BI-SI-17-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SI-17-10 / LOCATION COORDINATES E = 957,925 N = 251,514 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES / DISTURBED / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 28 Ft. |
| | 15. DATE BORING / STARTED 06-01-10 / COMPLETED 06-01-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -27.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 19.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -27.2 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -46.9 | 19.7 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and | | |

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SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19159° Long = -88.91666°

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 957,925 Y = 251,514 | ELEVATION TOP OF BORING -27.2 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | applying NOAA tidal gauge data conversion factor. | | |

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SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19159° Long = -88.91666°

Boring Designation BI-SI-18-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SI-18-10 / LOCATION COORDINATES E = 944,843 N = 246,453 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES / DISTURBED / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 28 Ft. |
| | 15. DATE BORING / STARTED 06-15-10 / COMPLETED 06-15-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -27.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 15.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -27.2 | 0.0 | | | | |
| -42.7 | 15.5 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

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SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.17764° Long = -88.95805°

Boring Designation BI-SI-19-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SI-19-10 / LOCATION COORDINATES E = 964,482 N = 249,241 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES / DISTURBED / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 30 Ft. |
| | 15. DATE BORING / STARTED 06-08-10 / COMPLETED 06-08-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -29.4 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 19.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.4 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -48.9 | 19.5 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and | | |

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18535° Long = -88.8959°

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 964,482 Y = 249,241 | ELEVATION TOP OF BORING -29.4 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | applying NOAA tidal gauge data conversion factor. | | |

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SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18535° Long = -88.8959°

Boring Designation BI-SI-20-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SI-20-10 / LOCATION COORDINATES E = 957,513 N = 245,827 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES / DISTURBED / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 29 Ft. |
| | 15. DATE BORING / STARTED 06-08-10 / COMPLETED 06-08-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -28.6 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 19.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.6 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -47.7 | 19.1 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion | | |

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.17595° Long = -88.91795°

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 957,513 Y = 245,827 | ELEVATION TOP OF BORING -28.6 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.17595° Long = -88.91795°

**Boring Designation BI-SI-21-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-21-10; LOCATION COORDINATES: E = 953,728 N = 254,464 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 3; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 21 Ft. |
| | 15. DATE BORING: STARTED 06-09-10; COMPLETED 06-09-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -19.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 14.3 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

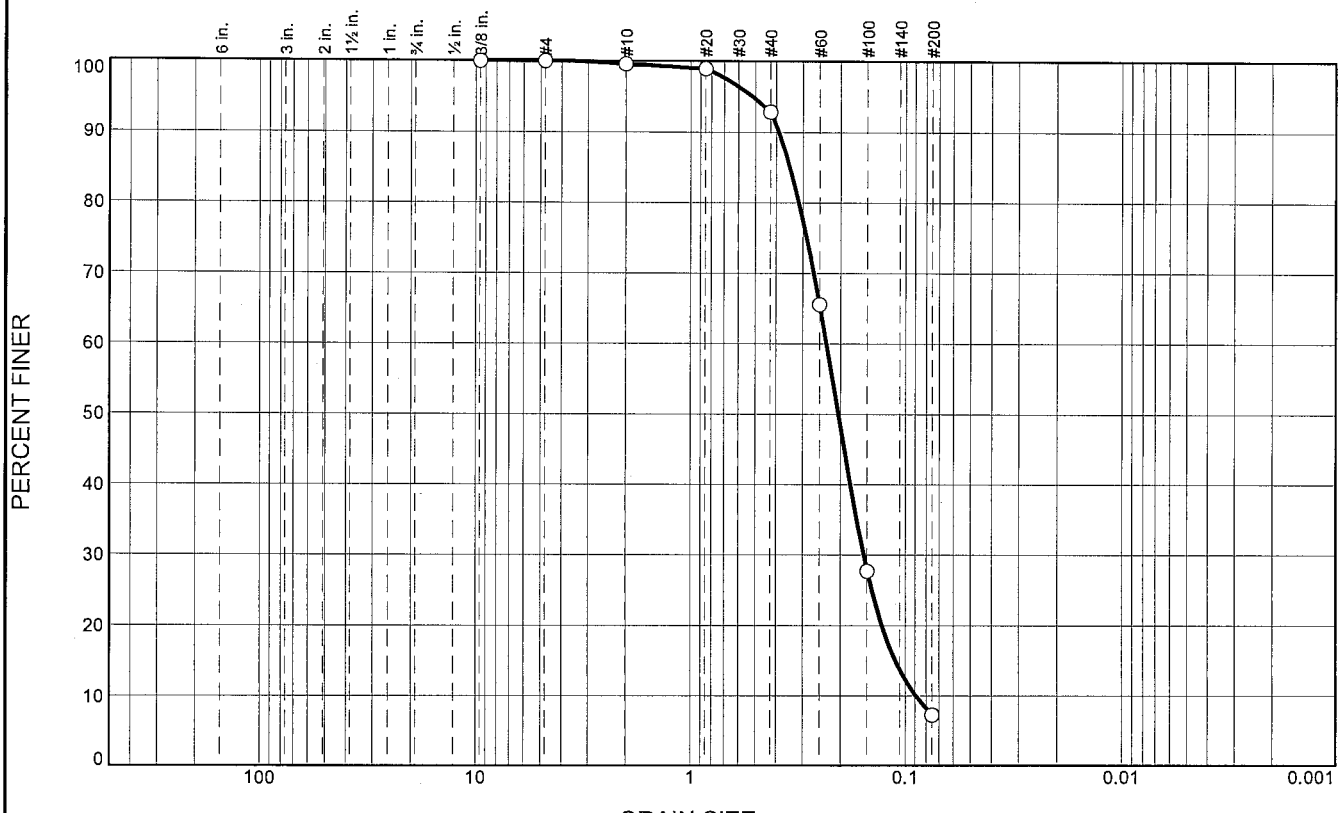
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.2043 mm % Fines: 7.3 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.2756 mm % Fines: 6.5 |
| -27.5 | 8.3 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SM Color: 2.5Y 5/2-grayish brown D50: 0.1631 mm % Fines: 29.6 |
| -30.4 | 11.2 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -33.5 | 14.3 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19969° Long = -88.92995°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.5 | 6.6 | 85.6 | 7.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.5 | | |
| #20 | 98.9 | | |
| #40 | 92.9 | | |
| #60 | 65.6 | | |
| #100 | 27.7 | | |
| #200 | 7.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3894 $D_{85}$= 0.3457 $D_{60}$= 0.2321
$D_{50}$= 0.2043 $D_{30}$= 0.1557 $D_{15}$= 0.1113
$D_{10}$= 0.0892 $C_u$= 2.60 $C_c$= 1.17

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-21-10A
**Sample Number:** TE Lab ID: 4538.06 **Depth:** 0.0 - 4.0 (ft.) **Date:** 6/19/10

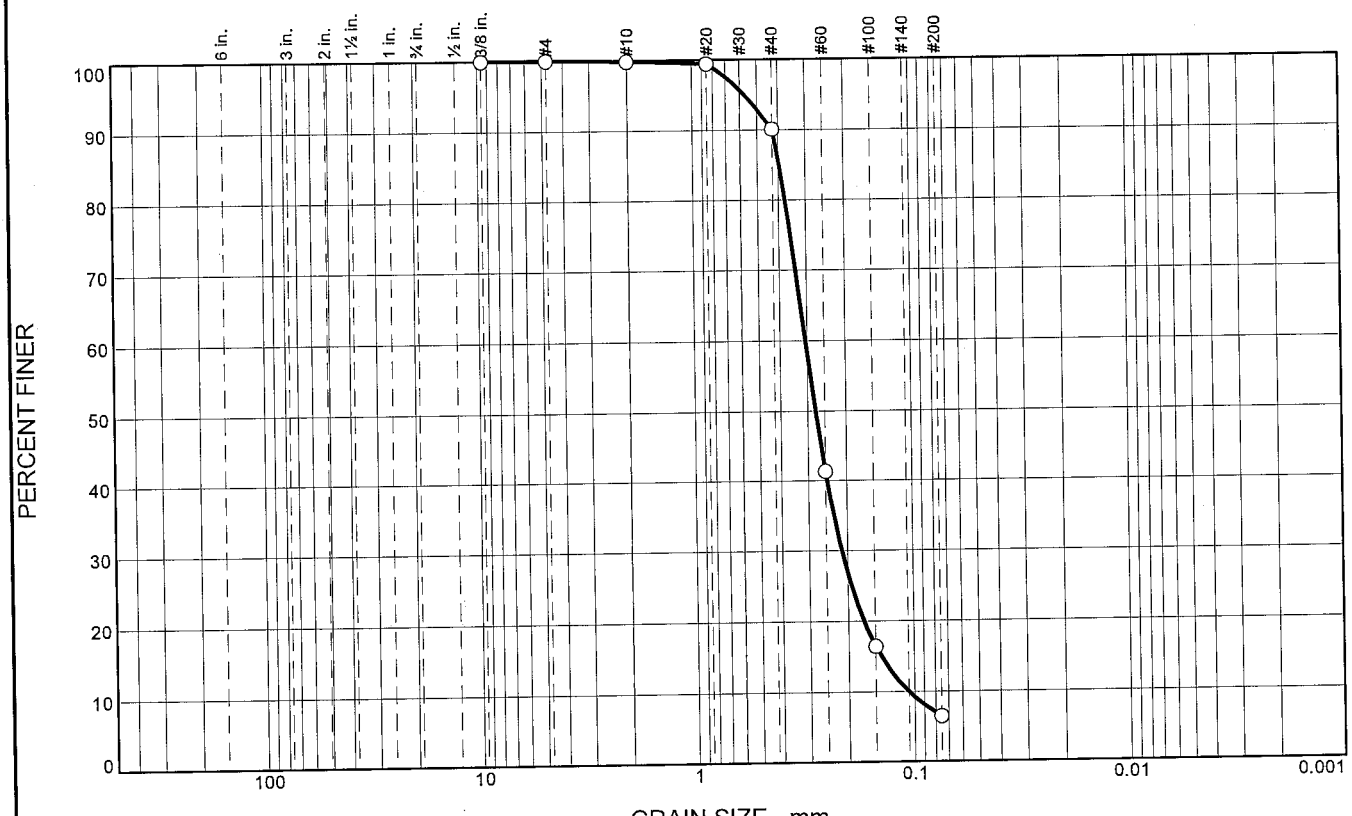
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 9.8 | 83.5 | 6.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.4 | | |
| #40 | 90.0 | | |
| #60 | 41.3 | | |
| #100 | 16.4 | | |
| #200 | 6.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4247 $D_{85}$= 0.3965 $D_{60}$= 0.3048
$D_{50}$= 0.2756 $D_{30}$= 0.2125 $D_{15}$= 0.1414
$D_{10}$= 0.1061 $C_u$= 2.87 $C_c$= 1.40

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-21-10B
**Sample Number:** TE Lab ID: 4538.07 **Depth:** 4.0 - 8.3 (ft.) **Date:** 6/19/10

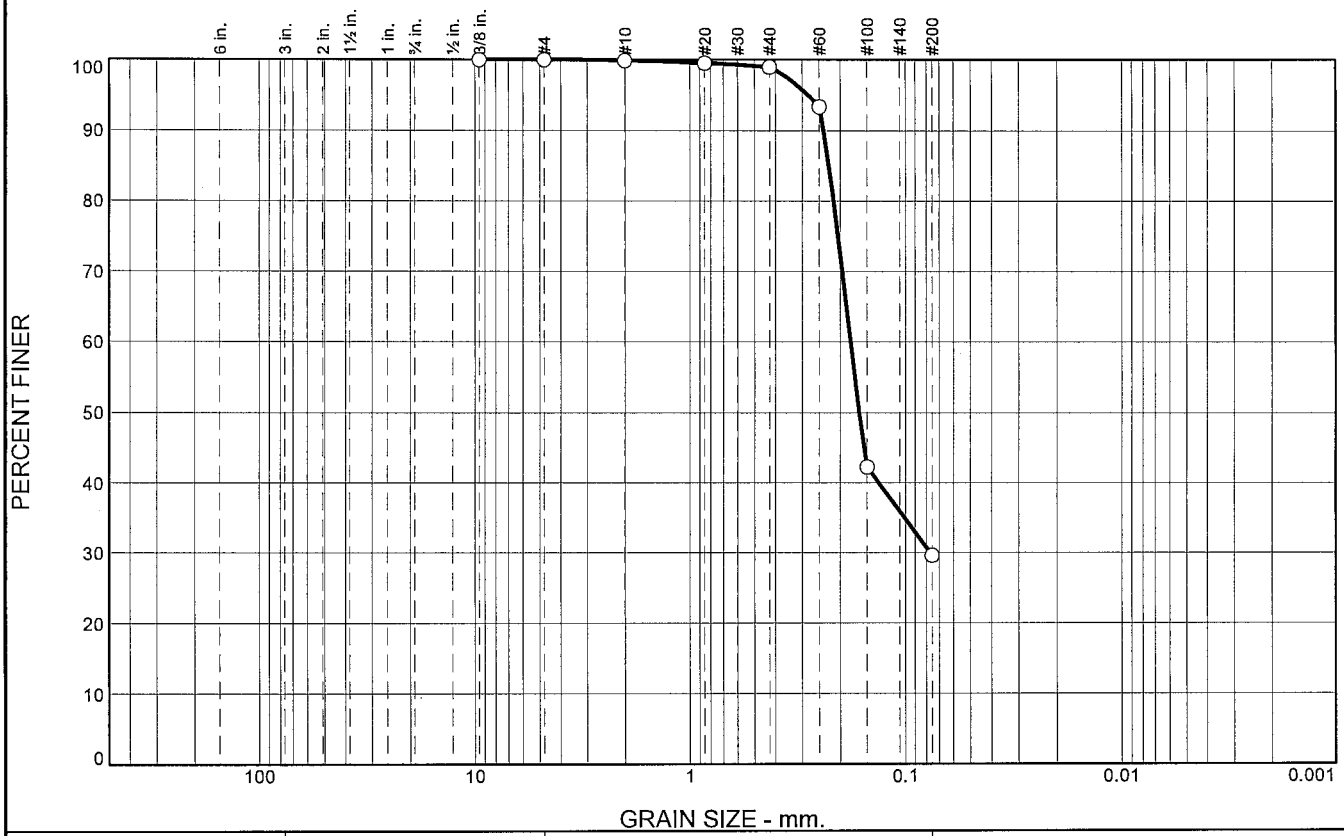
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 0.9 | 69.4 | 29.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.5 | | |
| #40 | 99.0 | | |
| #60 | 93.4 | | |
| #100 | 42.3 | | |
| #200 | 29.6 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2387 $D_{85}$= 0.2254 $D_{60}$= 0.1791
$D_{50}$= 0.1631 $D_{30}$= 0.0768 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-21-10C
**Sample Number:** TE Lab ID: 4538.74 **Depth:** 8.3 - 11.2 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-SI-22-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-22-10 — LOCATION COORDINATES: E = 955,046 N = 255,110 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 21 Ft. |
| | 15. DATE BORING — STARTED: 06-09-10 — COMPLETED: 06-09-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -19.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 13.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.216 mm % Fines: 6.8 |
| | | | | B | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1913 mm % Fines: 9.4 |
| -27.2 | 8.0 | | | | |
| -28.8 | 9.6 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.1741 mm % Fines: 23.7 |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -33.1 | 13.9 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

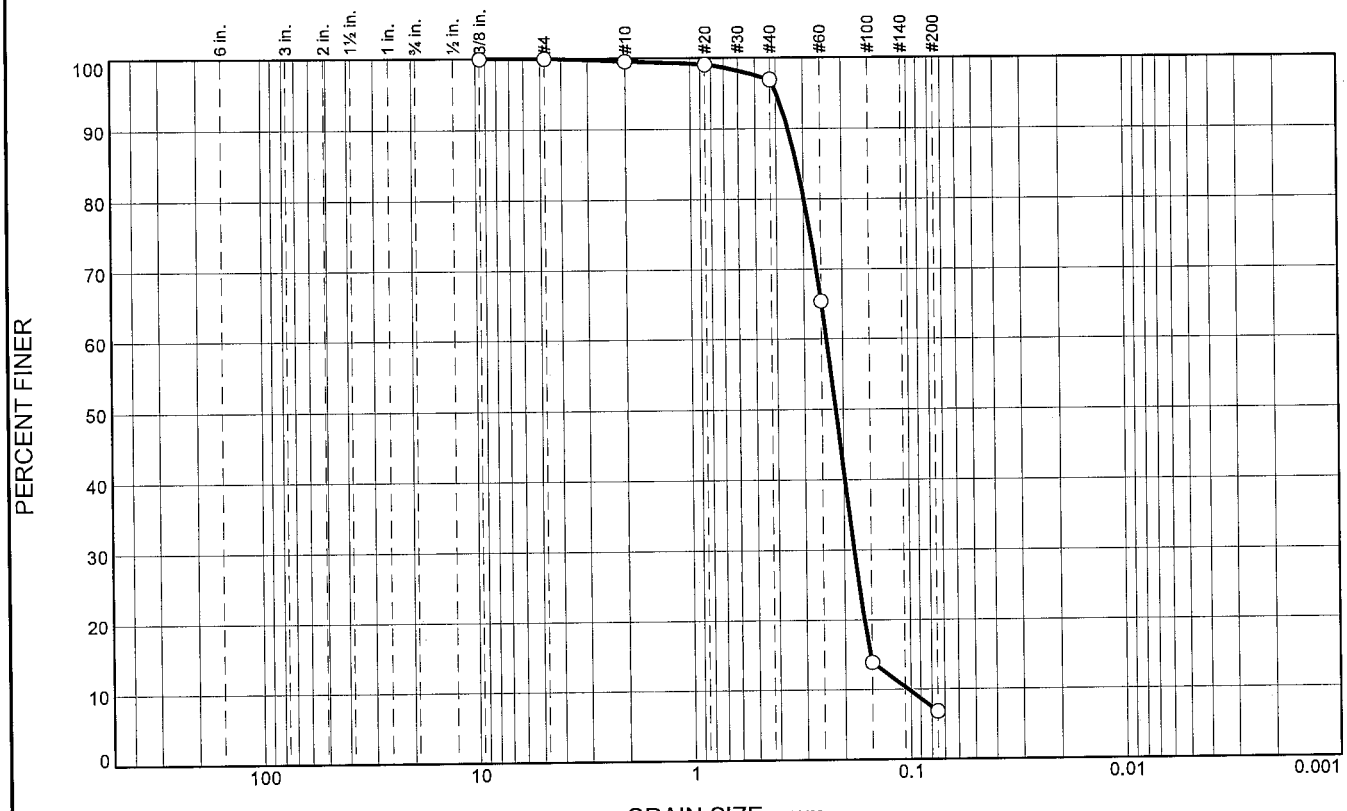
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20147° Long = -88.92578°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 2.7 | 90.1 | 6.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 99.1 | | |
| #40 | 96.9 | | |
| #60 | 65.4 | | |
| #100 | 13.8 | | |
| #200 | 6.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3526 $D_{85}$= 0.3216 $D_{60}$= 0.2370
$D_{50}$= 0.2160 $D_{30}$= 0.1799 $D_{15}$= 0.1525
$D_{10}$= 0.1028 $C_u$= 2.31 $C_c$= 1.33

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-22-10A
**Sample Number:** TE Lab ID: 4538.21 **Depth:** 0.0 - 4.0 (ft.) **Date:** 6/19/10

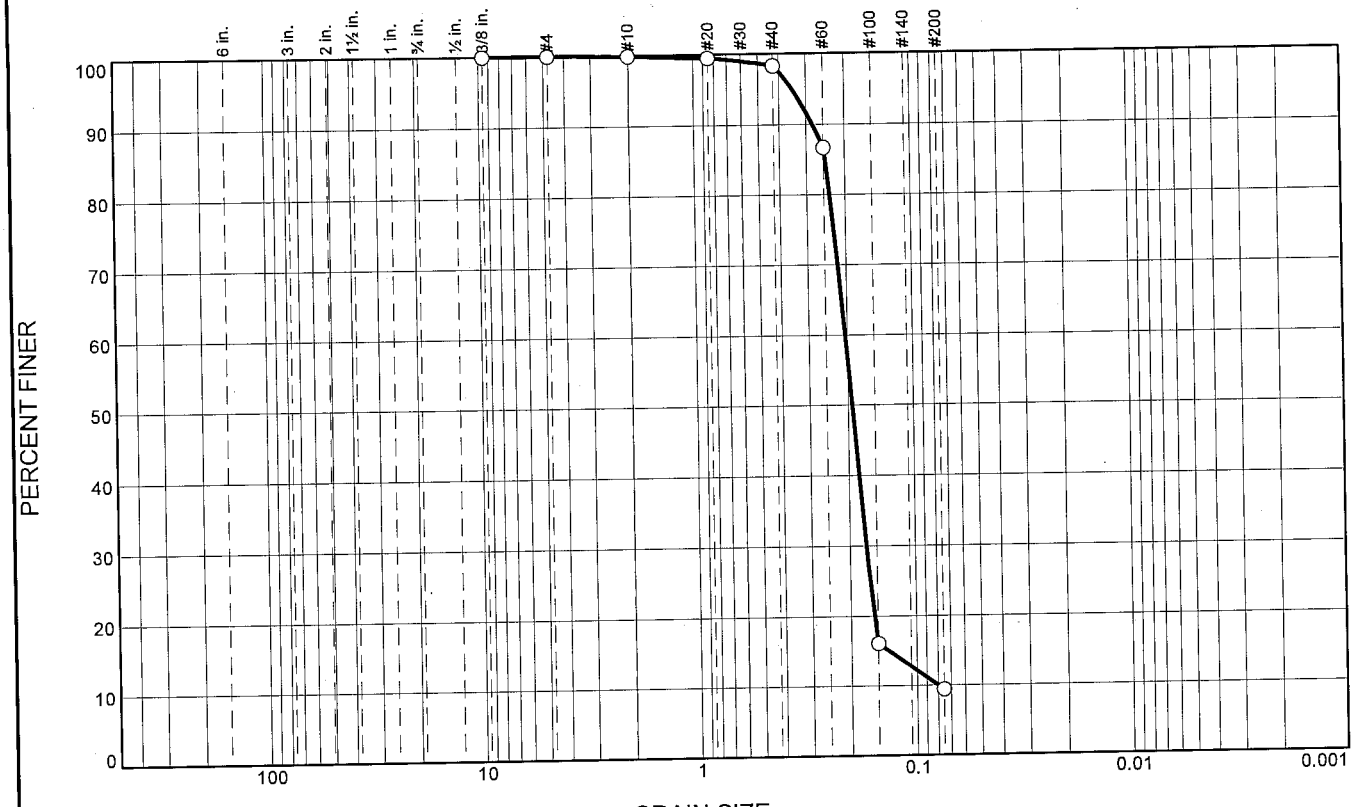
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 1.5 | 88.9 | 9.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.5 | | |
| #40 | 98.3 | | |
| #60 | 86.6 | | |
| #100 | 16.1 | | |
| #200 | 9.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2810 $D_{85}$= 0.2460 $D_{60}$= 0.2040
$D_{50}$= 0.1913 $D_{30}$= 0.1677 $D_{15}$= 0.1343
$D_{10}$= 0.0800 $C_u$= 2.55 $C_c$= 1.72

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-22-10B
**Sample Number:** TE Lab ID: 4538.22 **Depth:** 4.0 - 8.0 (ft.) **Date:** 6/19/10

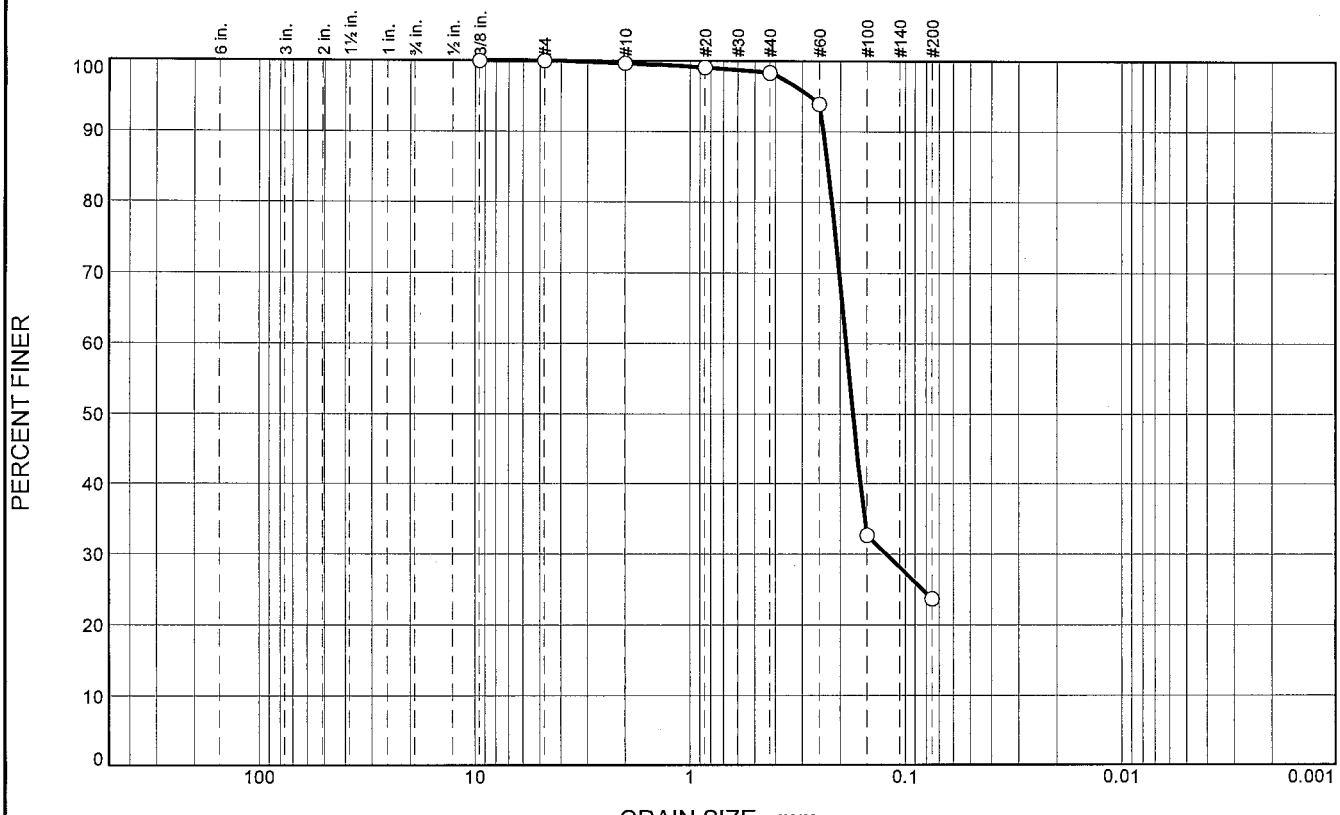
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 1.2 | 74.7 | 23.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 99.1 | | |
| #40 | 98.4 | | |
| #60 | 93.9 | | |
| #100 | 32.6 | | |
| #200 | 23.7 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2390 $D_{85}$= 0.2277 $D_{60}$= 0.1875
$D_{50}$= 0.1741 $D_{30}$= 0.1223 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-22-10C
**Sample Number:** TE Lab ID: 4538.75 **Depth:** 8.0 - 9.6 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-SI-23-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | | | |
|---|---|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Ship Island | | 9. SIZE AND TYPE OF BIT N/A | |
| | | 10. COORDINATE SYSTEM/DATUM<br>State Plane, MSE (U.S. Ft.) | HORIZONTAL<br>NAD83 / VERTICAL<br>NAVD88 |
| 2. BORING DESIGNATION<br>BI-SI-23-10 | LOCATION COORDINATES<br>E = 958,557 N = 256,529 | 11. MANUFACTURER'S DESIGNATION OF DRILL<br>Vibracore | ☐ AUTO HAMMER<br>☐ MANUAL HAMMER |
| 3. DRILLING AGENCY<br>Corps of Engineers - CESAM | CONTRACTOR FILE NO. | 12. TOTAL SAMPLES | DISTURBED 2 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER<br>Construction Solutions International, Inc. | | 13. TOTAL NUMBER CORE BOXES | |
| 5. DIRECTION OF BORING<br>☒ VERTICAL<br>☐ INCLINED | DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 21 Ft. | |
| | | 15. DATE BORING | STARTED 06-09-10 / COMPLETED 06-09-10 |
| 6. THICKNESS OF OVERBURDEN N/A | | 16. ELEVATION TOP OF BORING -19.2 Ft. | |
| 7. DEPTH DRILLED INTO ROCK N/A | | 17. TOTAL RECOVERY FOR BORING 100% | |
| 8. TOTAL DEPTH OF BORING 14.0 Ft. | | 18. SIGNATURE AND TITLE OF INSPECTOR<br>Marty Gates, Geologist | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.2 | 0.0 | | | | |
| -21.6 | 2.4 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.2174 mm % Fines: 5.5 |
| -25.0 | 5.8 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | B | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1837 mm % Fines: 15.1 |
| -33.2 | 14.0 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

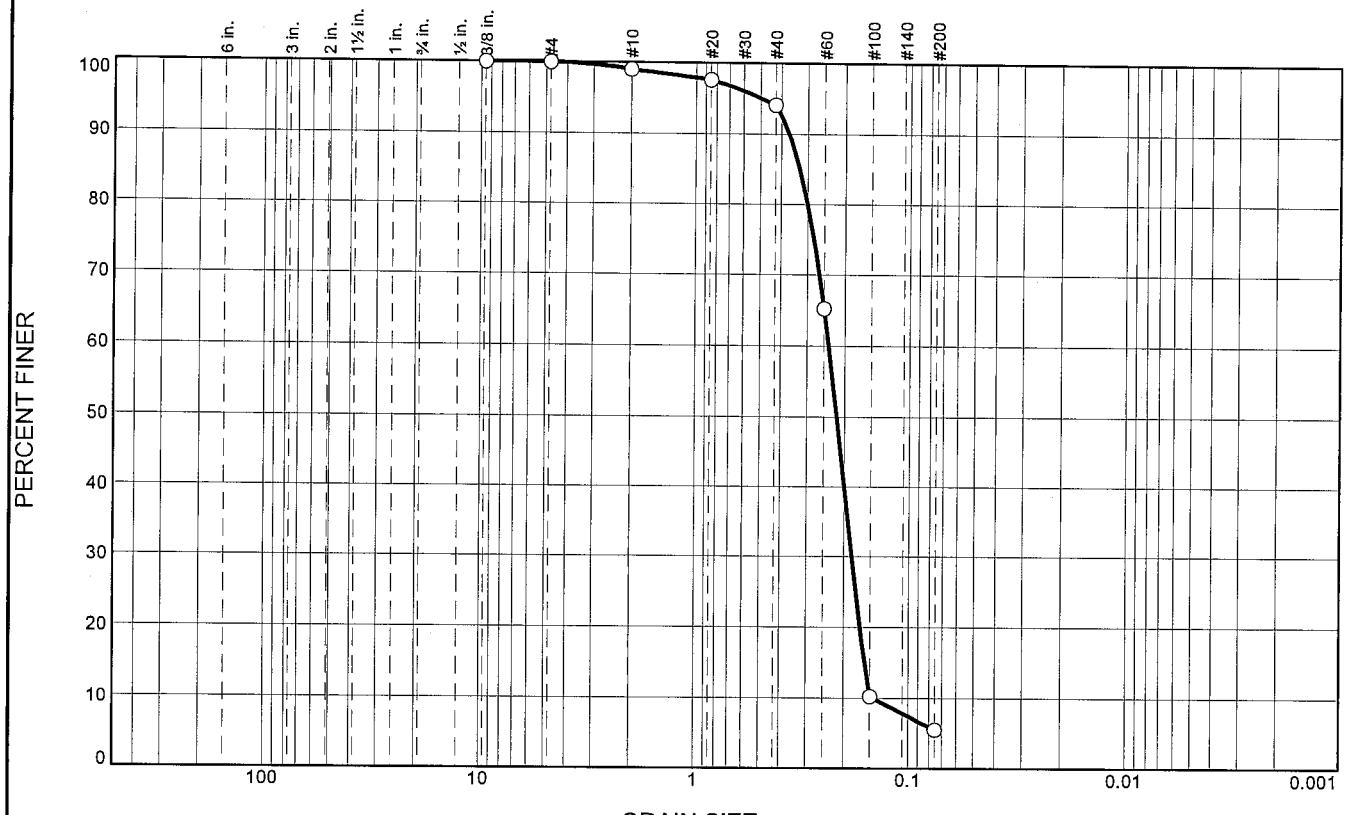
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20538° Long = -88.91467°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 1.0 | 4.9 | 88.6 | 5.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.0 | | |
| #20 | 97.6 | | |
| #40 | 94.1 | | |
| #60 | 65.2 | | |
| #100 | 10.2 | | |
| #200 | 5.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3685 $D_{85}$= 0.3281 $D_{60}$= 0.2376
$D_{50}$= 0.2174 $D_{30}$= 0.1836 $D_{15}$= 0.1589
$D_{10}$= 0.1456 $C_u$= 1.63 $C_c$= 0.97

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-23-10A
**Sample Number:** TE Lab ID: 4538.23 **Depth:** 0.0 - 2.4 (ft.) **Date:** 6/19/10

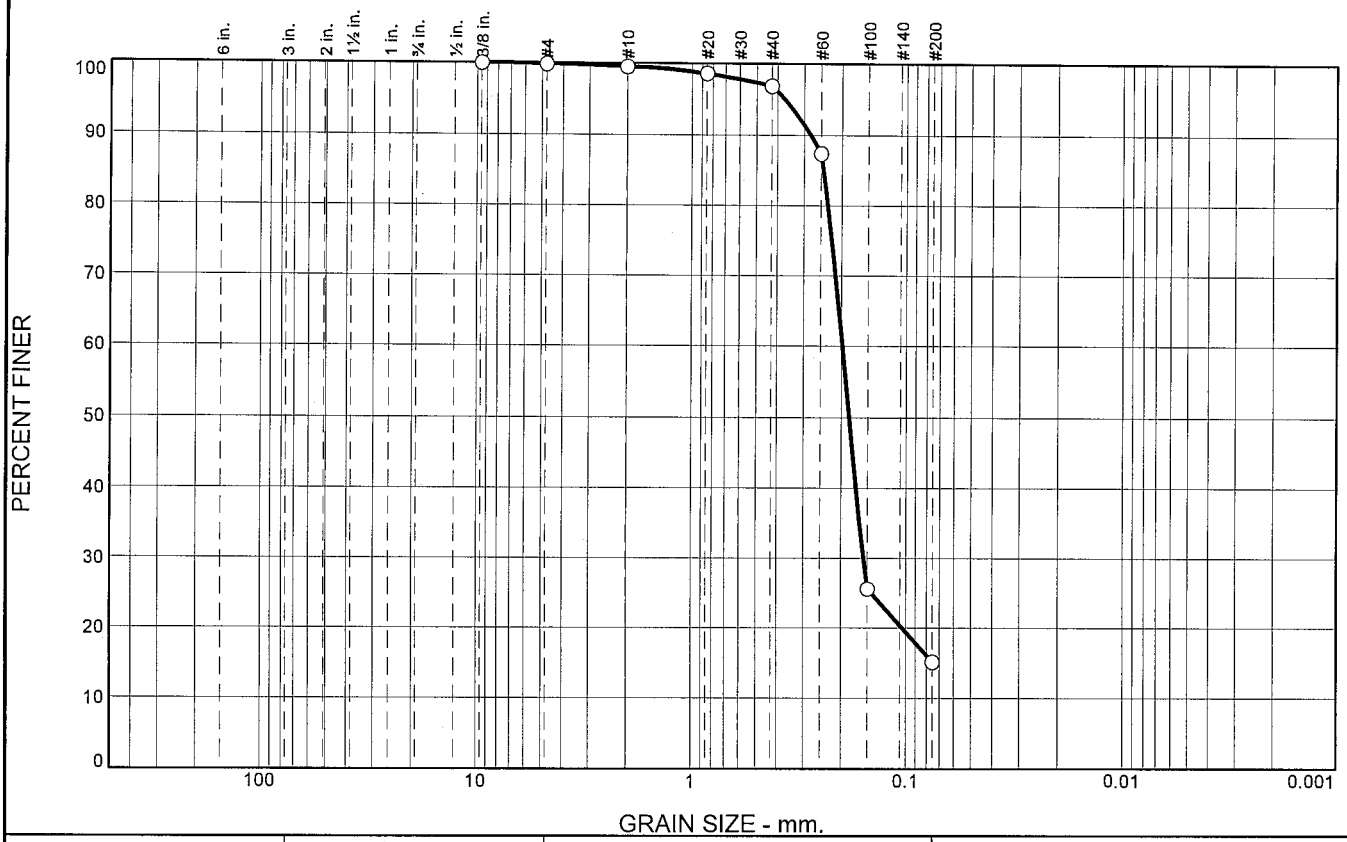
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.4 | 2.6 | 81.8 | 15.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.5 | | |
| #20 | 98.6 | | |
| #40 | 96.9 | | |
| #60 | 87.4 | | |
| #100 | 25.6 | | |
| #200 | 15.1 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2798 $D_{85}$= 0.2433 $D_{60}$= 0.1976
$D_{50}$= 0.1837 $D_{30}$= 0.1566 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-23-10B
**Sample Number:** TE Lab ID: 4538.76 **Depth:** 2.4 - 5.6 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

Boring Designation BI-SI-24-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SI-24-10 / LOCATION COORDINATES E = 960,813 N = 257,313 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES DISTURBED 2 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 23 Ft. |
| | 15. DATE BORING STARTED 06-09-10 / COMPLETED 06-09-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -21.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 7.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -21.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.2043 mm % Fines: 5.7 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.2187 mm % Fines: 7.5 |
| -28.9 | 7.7 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

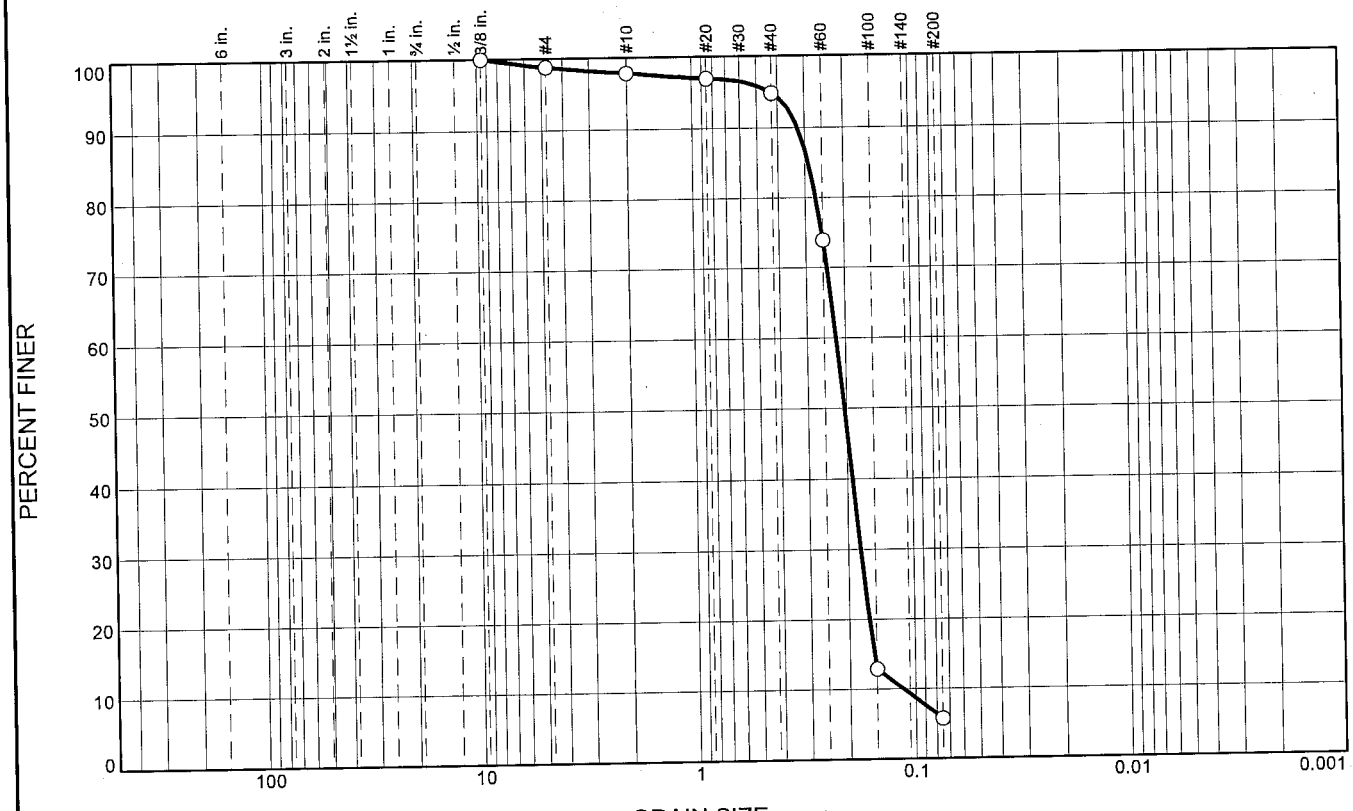
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20754° Long = -88.90753°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.2 | 1.0 | 3.0 | 89.1 | 5.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 98.8 | | |
| #10 | 97.8 | | |
| #20 | 96.9 | | |
| #40 | 94.8 | | |
| #60 | 73.9 | | |
| #100 | 12.9 | | |
| #200 | 5.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3241 $D_{85}$= 0.2897 $D_{60}$= 0.2207
$D_{50}$= 0.2043 $D_{30}$= 0.1754 $D_{15}$= 0.1535
$D_{10}$= 0.1136 $C_u$= 1.94 $C_c$= 1.23

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-24-10A
**Sample Number:** TE Lab ID: 4538.24 **Depth:** 0.0 - 4.0 (ft.) **Date:** 6/19/10

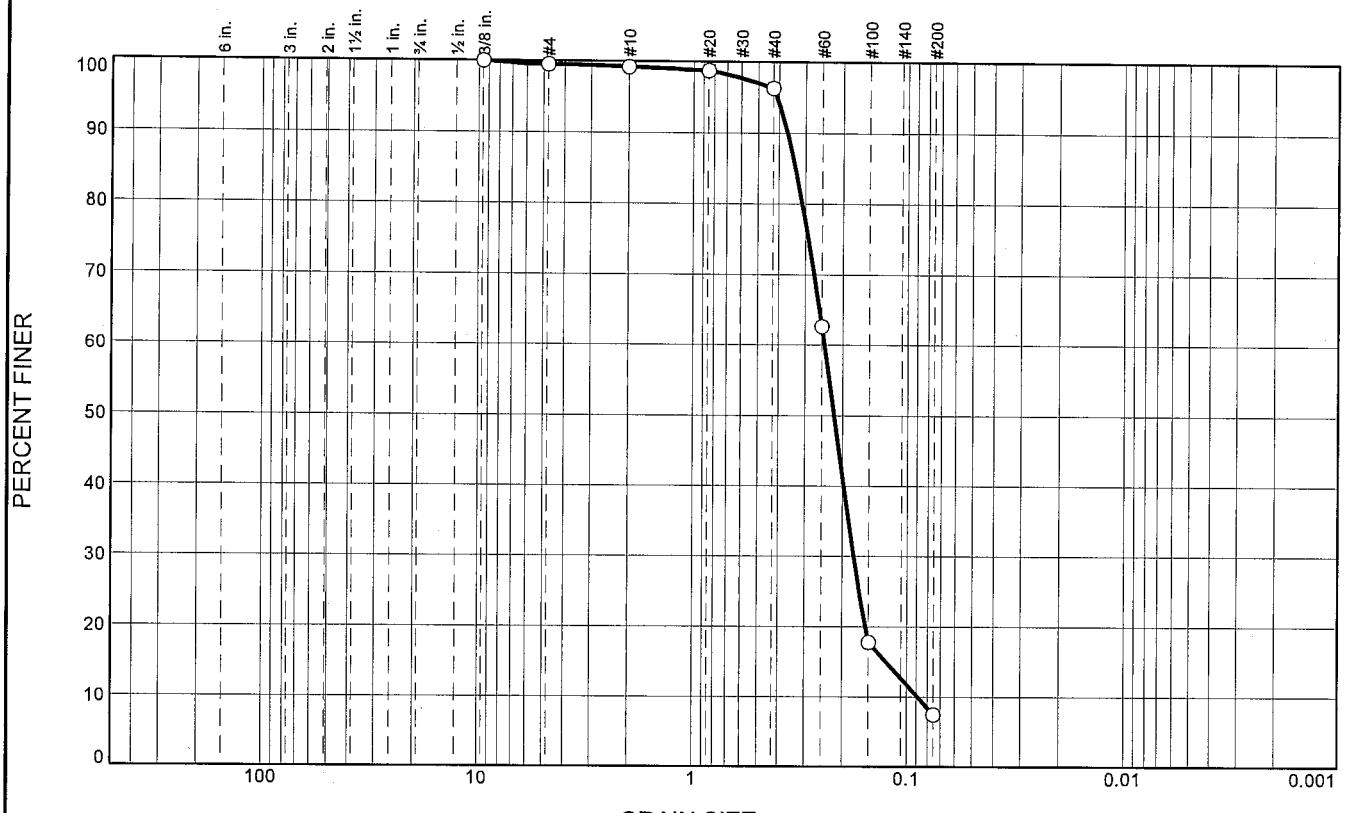
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.3 | 2.9 | 88.8 | 7.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 99.2 | | |
| #20 | 98.7 | | |
| #40 | 96.3 | | |
| #60 | 62.6 | | |
| #100 | 17.8 | | |
| #200 | 7.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3654 $D_{85}$= 0.3345 $D_{60}$= 0.2429
$D_{50}$= 0.2187 $D_{30}$= 0.1766 $D_{15}$= 0.1245
$D_{10}$= 0.0889 $C_u$= 2.73 $C_c$= 1.44

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-24-10B
**Sample Number:** TE Lab ID: 4538.25 **Depth:** 4.0 - 7.7 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-25-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-25-10 |
| LOCATION COORDINATES | E = 963,062 N = 258,181 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 10.4 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 22 Ft. |
| 15. DATE BORING | STARTED 06-09-10 / COMPLETED 06-09-10 |
| 16. ELEVATION TOP OF BORING | -20.2 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -20.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 6/2-light brownish gray<br>D50: 0.2183 mm % Fines: 3.9 |
| | | | | B | Classification: SP Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1942 mm % Fines: 4.5 |
| -27.2 | 7.0 | | | | |
| -28.5 | 8.3 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1592 mm % Fines: 14.1 |
| -30.6 | 10.4 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

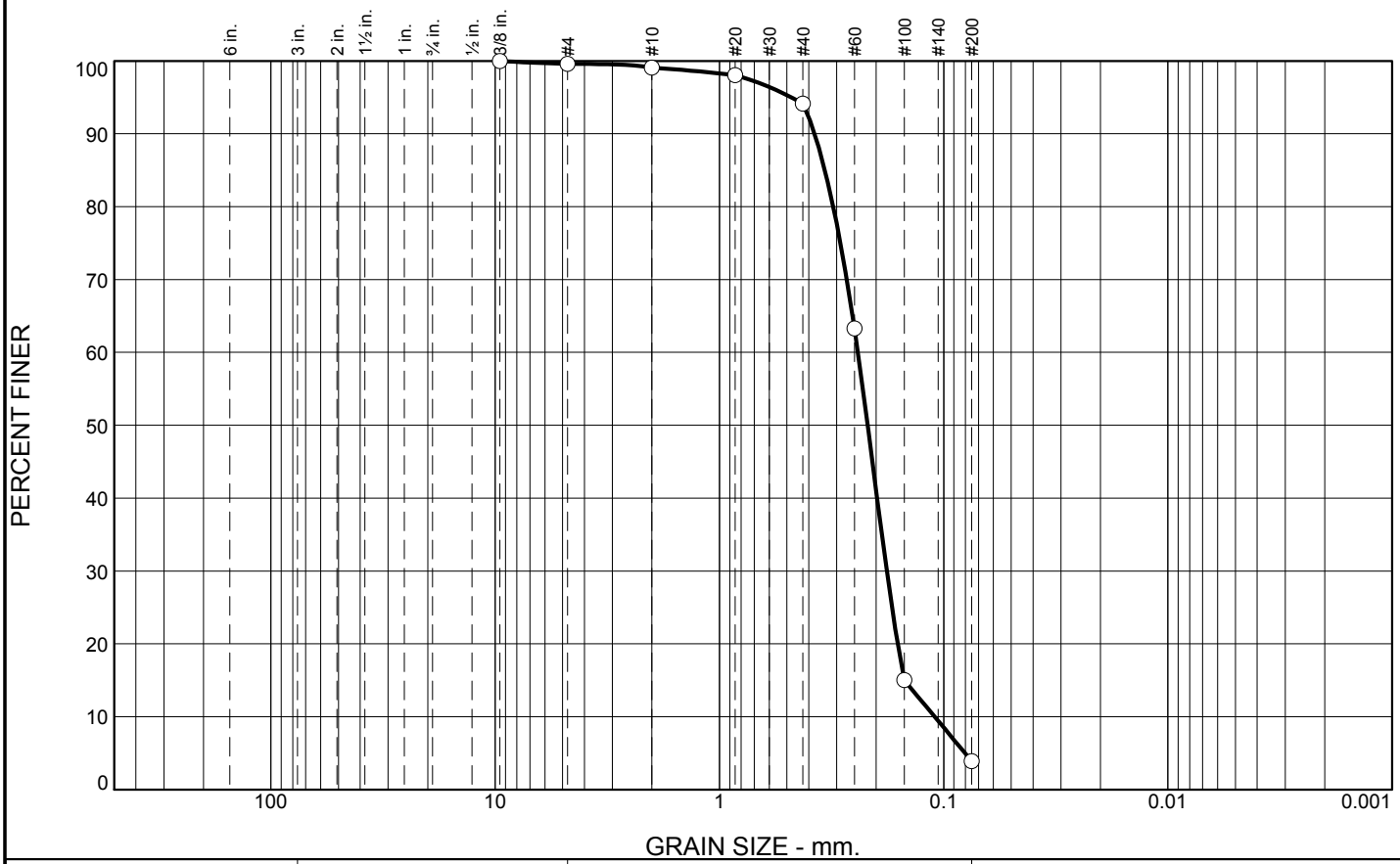
2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20993° Long = -88.90041°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.5 | 4.9 | 90.3 | 3.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.1 | | |
| #20 | 98.0 | | |
| #40 | 94.2 | | |
| #60 | 63.3 | | |
| #100 | 15.0 | | |
| #200 | 3.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3766 $D_{85}$= 0.3386 $D_{60}$= 0.2414
$D_{50}$= 0.2183 $D_{30}$= 0.1793 $D_{15}$= 0.1499
$D_{10}$= 0.1097 $C_u$= 2.20 $C_c$= 1.21

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-25-10A
**Sample Number:** TE Lab ID: 4538.77 **Depth:** 0.0 -3.5 (ft.) **Date:** 6/26/10

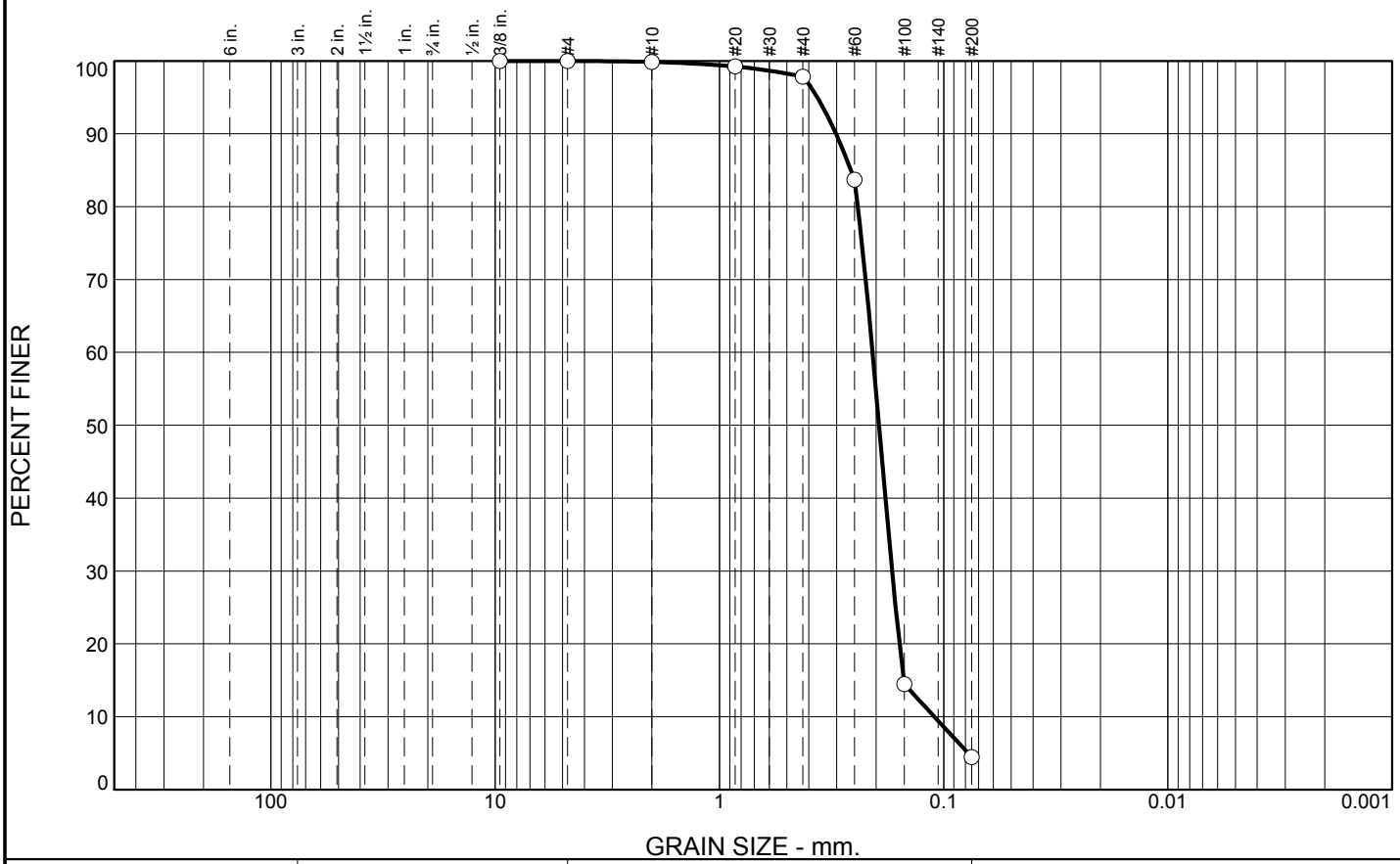
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.1 | 93.3 | 4.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.3 | | |
| #40 | 97.8 | | |
| #60 | 83.7 | | |
| #100 | 14.5 | | |
| #200 | 4.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3017 $D_{85}$= 0.2591 $D_{60}$= 0.2076
$D_{50}$= 0.1942 $D_{30}$= 0.1699 $D_{15}$= 0.1507
$D_{10}$= 0.1100 $C_u$= 1.89 $C_c$= 1.26

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-25-10B
**Sample Number:** TE Lab ID: 4538.78 **Depth:** 3.5 - 7.0 (ft.) **Date:** 6/26/10

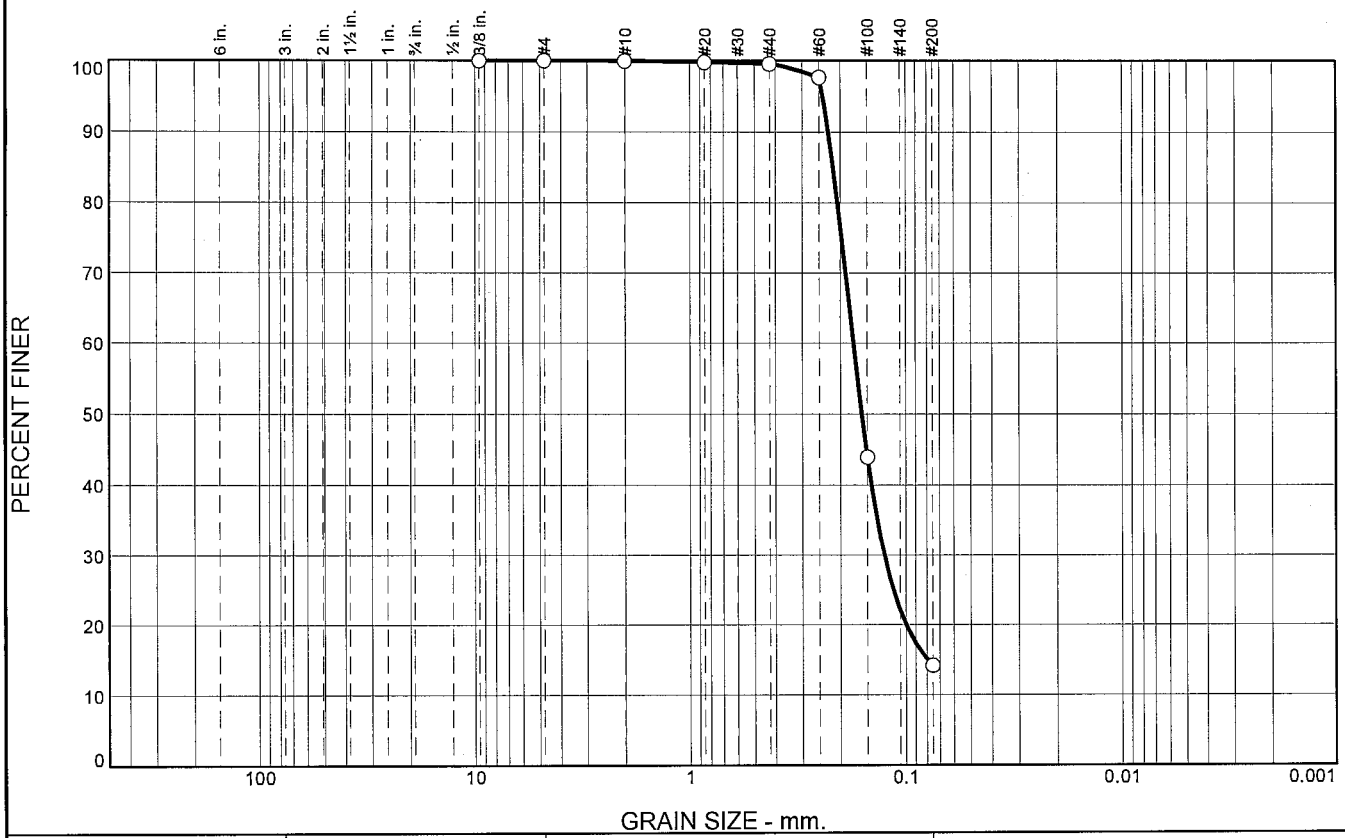
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 85.5 | 14.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.8 | | |
| #40 | 99.6 | | |
| #60 | 97.7 | | |
| #100 | 43.9 | | |
| #200 | 14.1 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2266 $D_{85}$= 0.2154 $D_{60}$= 0.1737
$D_{50}$= 0.1592 $D_{30}$= 0.1255 $D_{15}$= 0.0793
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-25-10C
**Sample Number:** TE Lab ID: 4538.26 **Depth:** 7.0 - 8.3 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-26-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-26-10 — LOCATION COORDINATES: E = 965,050 N = 258,904 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 26 Ft. |
| | 15. DATE BORING — STARTED: 06-09-10 — COMPLETED: 06-09-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -24.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

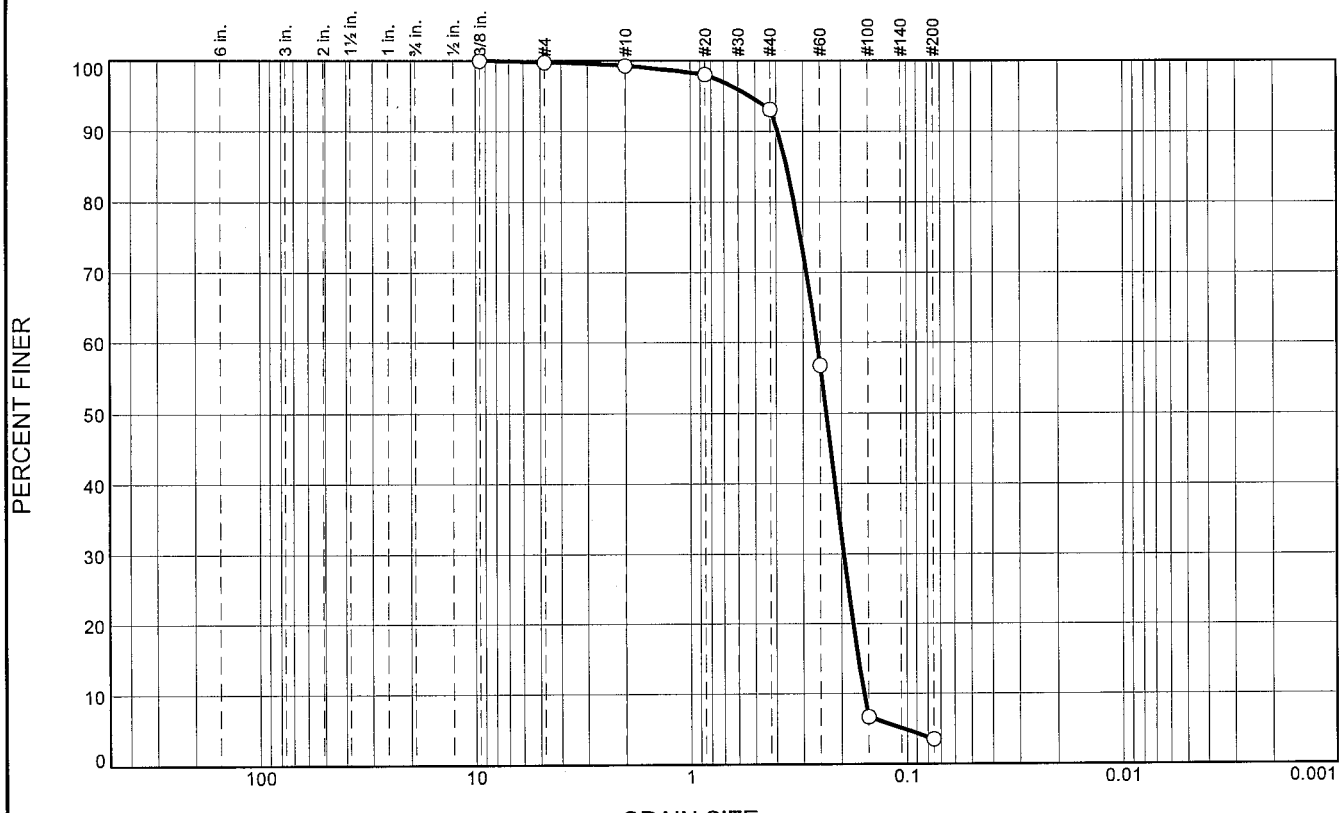
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -24.3 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2343 mm % Fines: 3.5 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.1792 mm % Fines: 7.4 |
| -36.3 | 12.0 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments (SM) | C | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.1856 mm % Fines: 21.5 |
| -40.5 | 16.2 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21192° Long = -88.89412°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.5 | 6.2 | 89.6 | 3.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.3 | | |
| #20 | 98.0 | | |
| #40 | 93.1 | | |
| #60 | 56.7 | | |
| #100 | 6.7 | | |
| #200 | 3.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3933 $D_{85}$= 0.3570 $D_{60}$= 0.2585
$D_{50}$= 0.2343 $D_{30}$= 0.1948 $D_{15}$= 0.1672
$D_{10}$= 0.1573 $C_u$= 1.64 $C_c$= 0.93

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-26-10A
**Sample Number:** TE Lab ID: 4538.79 **Depth:** 0.0 - 6.0 (ft.) **Date:** 6/26/10

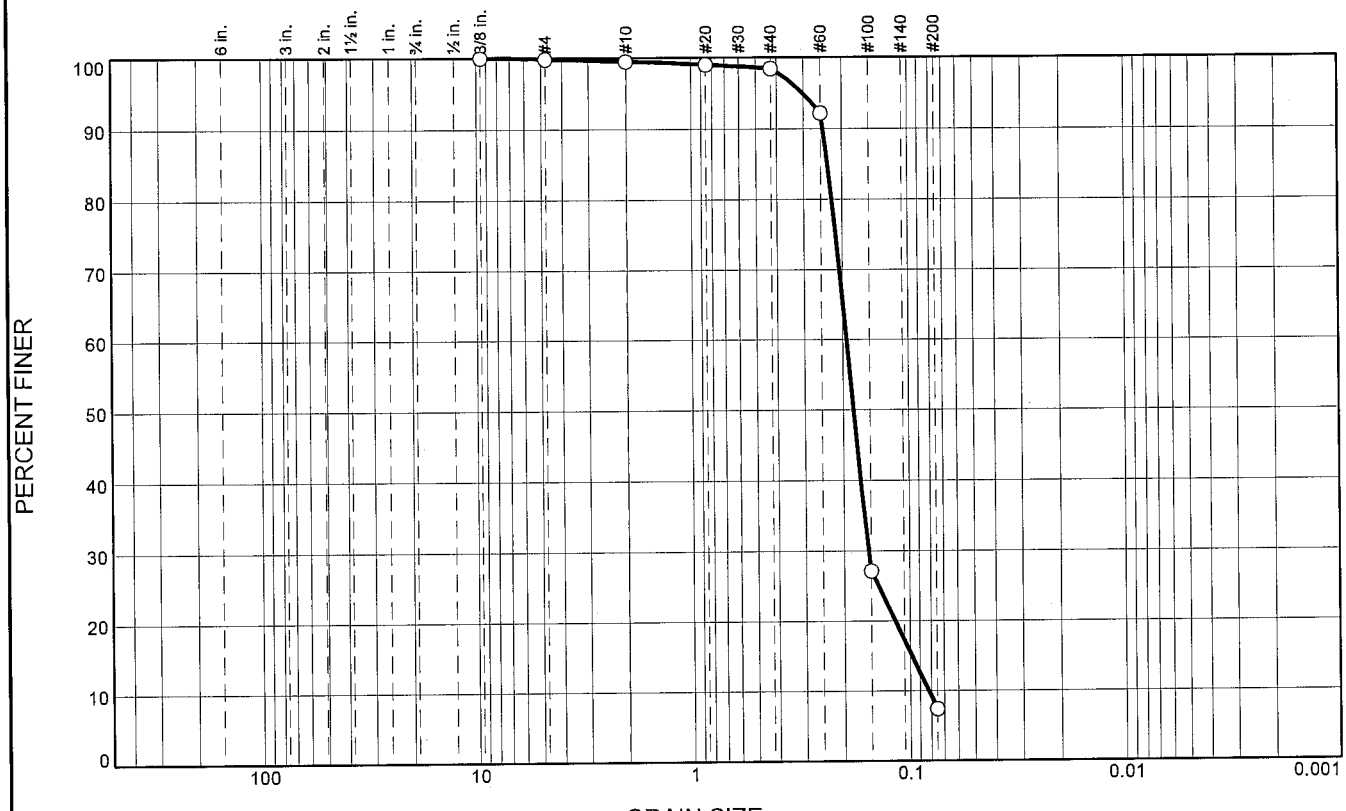
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.3 | 1.1 | 91.0 | 7.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.5 | | |
| #20 | 99.0 | | |
| #40 | 98.4 | | |
| #60 | 92.2 | | |
| #100 | 27.1 | | |
| #200 | 7.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2439 $D_{85}$= 0.2322 $D_{60}$= 0.1921
$D_{50}$= 0.1792 $D_{30}$= 0.1540 $D_{15}$= 0.0980
$D_{10}$= 0.0822 $C_u$= 2.34 $C_c$= 1.50

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-26-10B
**Sample Number:** TE Lab ID: 4538.80 **Depth:** 6.0 - 12.0 (ft.) **Date:** 6/26/10

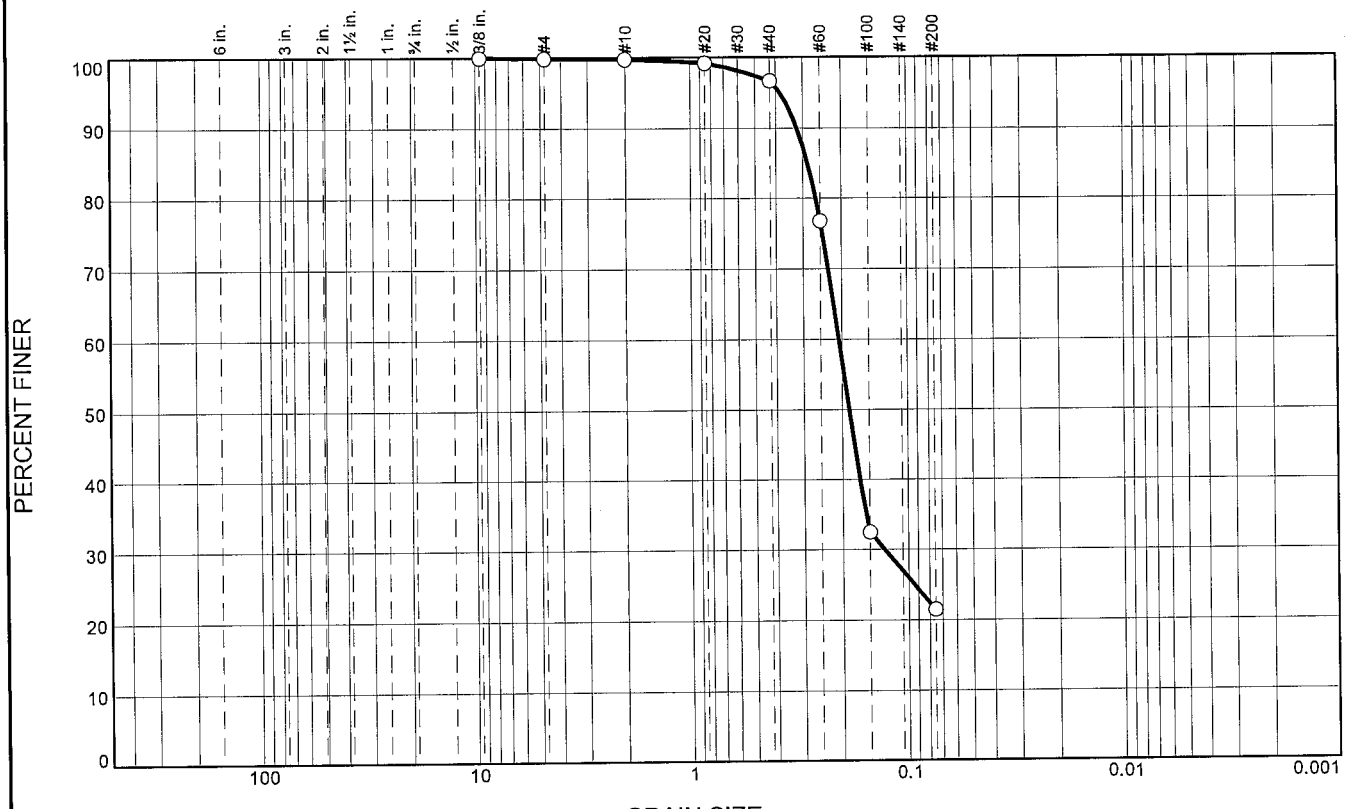
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 3.1 | 75.2 | 21.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 99.2 | | |
| #40 | 96.7 | | |
| #60 | 76.7 | | |
| #100 | 32.4 | | |
| #200 | 21.5 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3194 $D_{85}$= 0.2853 $D_{60}$= 0.2062
$D_{50}$= 0.1856 $D_{30}$= 0.1286 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-26-10C
**Sample Number:** TE Lab ID: 4538.81 **Depth:** 12.0 - 16.2 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-SI-27-10**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-27-10 |
| LOCATION COORDINATES | E = 980,123 N = 260,448 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 14.7 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 26 Ft. |
| 15. DATE BORING | STARTED 06-09-10 / COMPLETED 06-09-10 |
| 16. ELEVATION TOP OF BORING | -24.7 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -24.7 | 0.0 | | | | |
| -25.9 | 1.2 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.2002 mm % Fines: 32.3 |
| -31.3 | 6.6 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | B | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.2039 mm % Fines: 11.3 |
| -33.0 | 8.3 | | CLAY, lean, dark gray (CL) | NS | |
| -36.4 | 11.7 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | C | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.2659 mm % Fines: 10 |
| -39.4 | 14.7 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

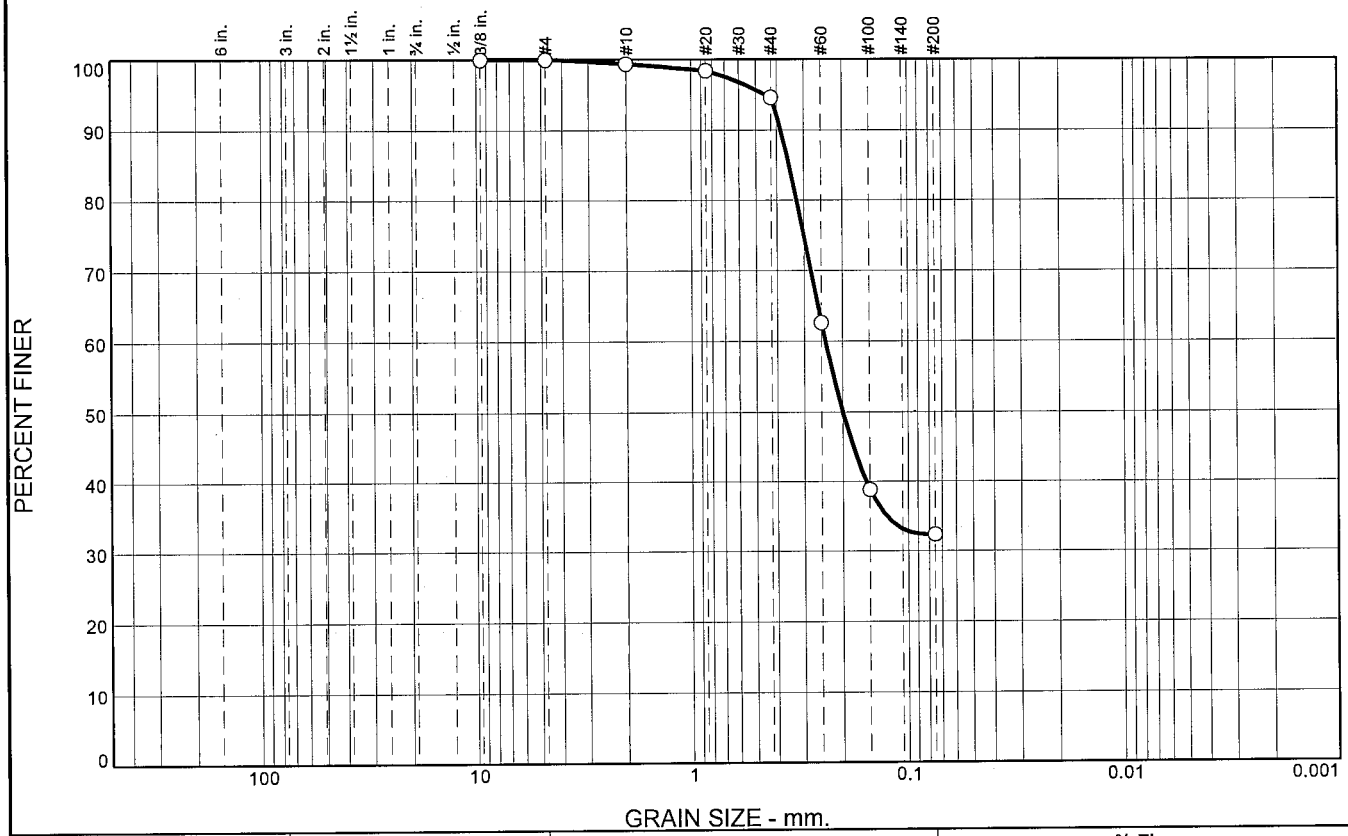
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21618° Long = -88.8464°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.6 | 4.8 | 62.3 | 32.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.4 | | |
| #20 | 98.4 | | |
| #40 | 94.6 | | |
| #60 | 62.6 | | |
| #100 | 38.8 | | |
| #200 | 32.3 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3837 $D_{85}$= 0.3512 $D_{60}$= 0.2399
$D_{50}$= 0.2002 $D_{30}$= $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-27-10A
**Sample Number:** TE Lab ID: 4538.08 **Depth:** 0.0 - 1.2 (ft.) **Date:** 6/19/10

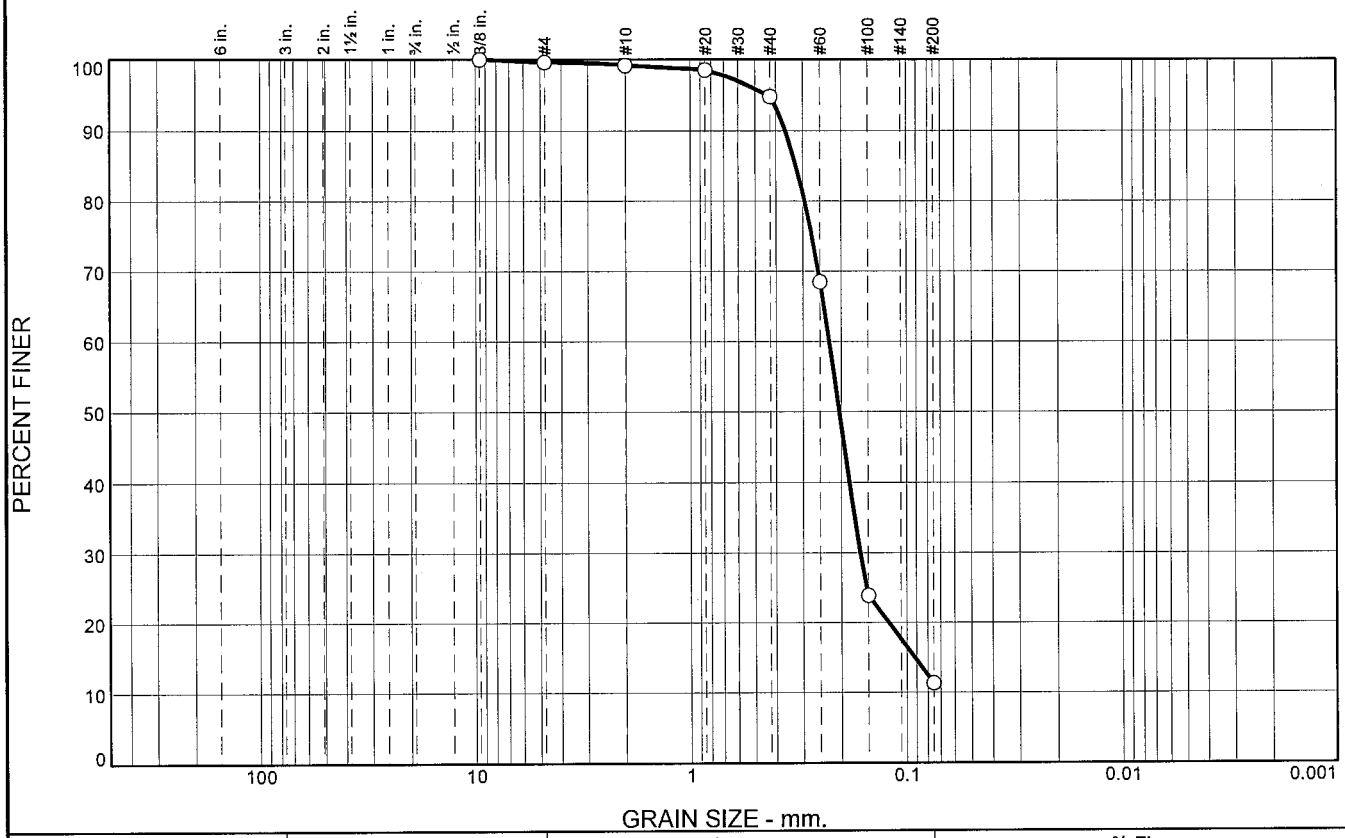
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.4 | 4.4 | 83.5 | 11.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.2 | | |
| #20 | 98.5 | | |
| #40 | 94.8 | | |
| #60 | 68.4 | | |
| #100 | 23.9 | | |
| #200 | 11.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3621 $D_{85}$= 0.3228 $D_{60}$= 0.2268
$D_{50}$= 0.2039 $D_{30}$= 0.1632 $D_{15}$= 0.0919
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-27-10B
**Sample Number:** TE Lab ID: 4538.09 **Depth:** 1.2 - 6.6 (ft.) **Date:** 6/19/10

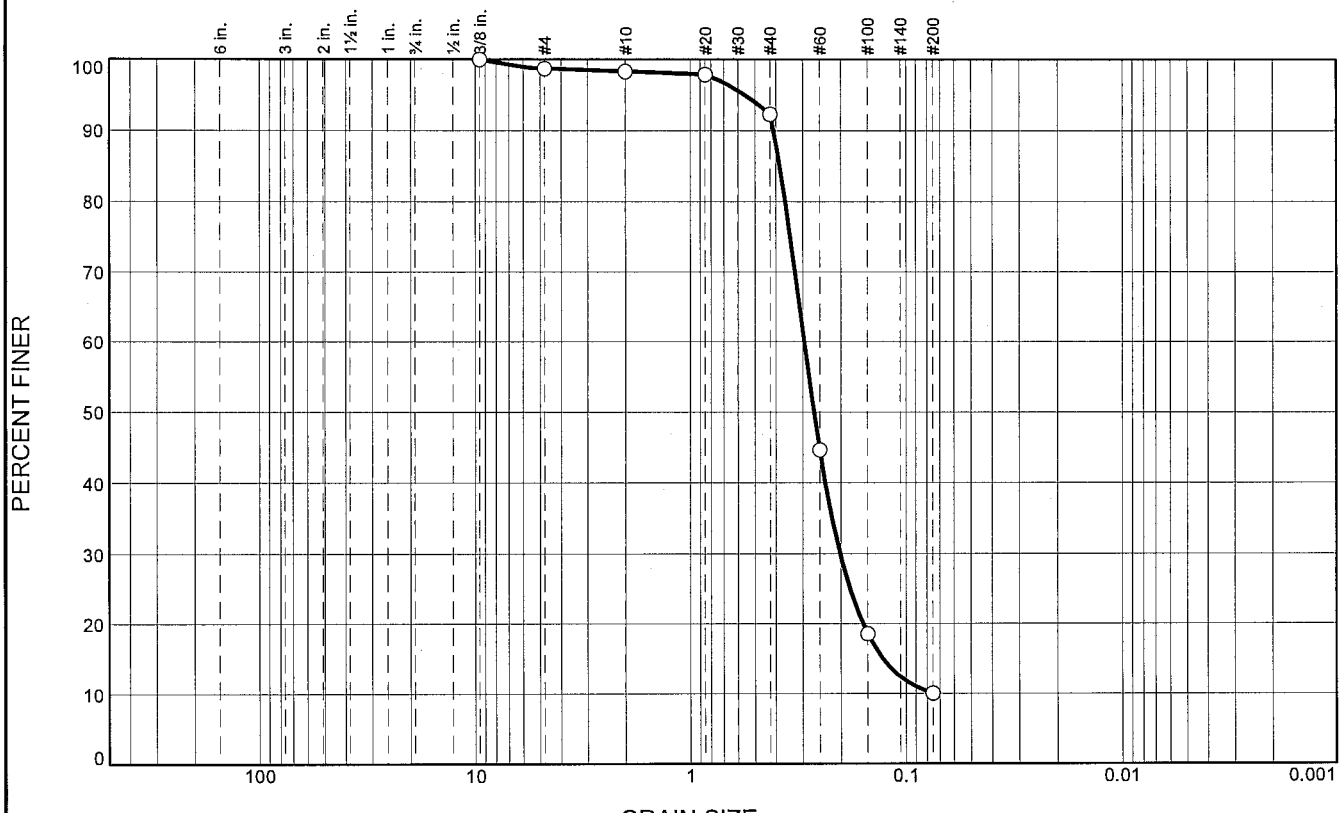
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.3 | 0.4 | 6.0 | 82.3 | 10.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 98.7 | | |
| #10 | 98.3 | | |
| #20 | 97.9 | | |
| #40 | 92.3 | | |
| #60 | 44.6 | | |
| #100 | 18.5 | | |
| #200 | 10.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4101 $D_{85}$= 0.3838 $D_{60}$= 0.2950
$D_{50}$= 0.2659 $D_{30}$= 0.2017 $D_{15}$= 0.1279
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-27-10C
**Sample Number:** TE Lab ID: 4538.10 **Depth:** 8.3 - 11.7 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-28-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-28-10; LOCATION COORDINATES: E = 969,583 N = 261,585 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 4; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 25 Ft. |
| | 15. DATE BORING: STARTED 06-09-10; COMPLETED 06-09-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -23.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

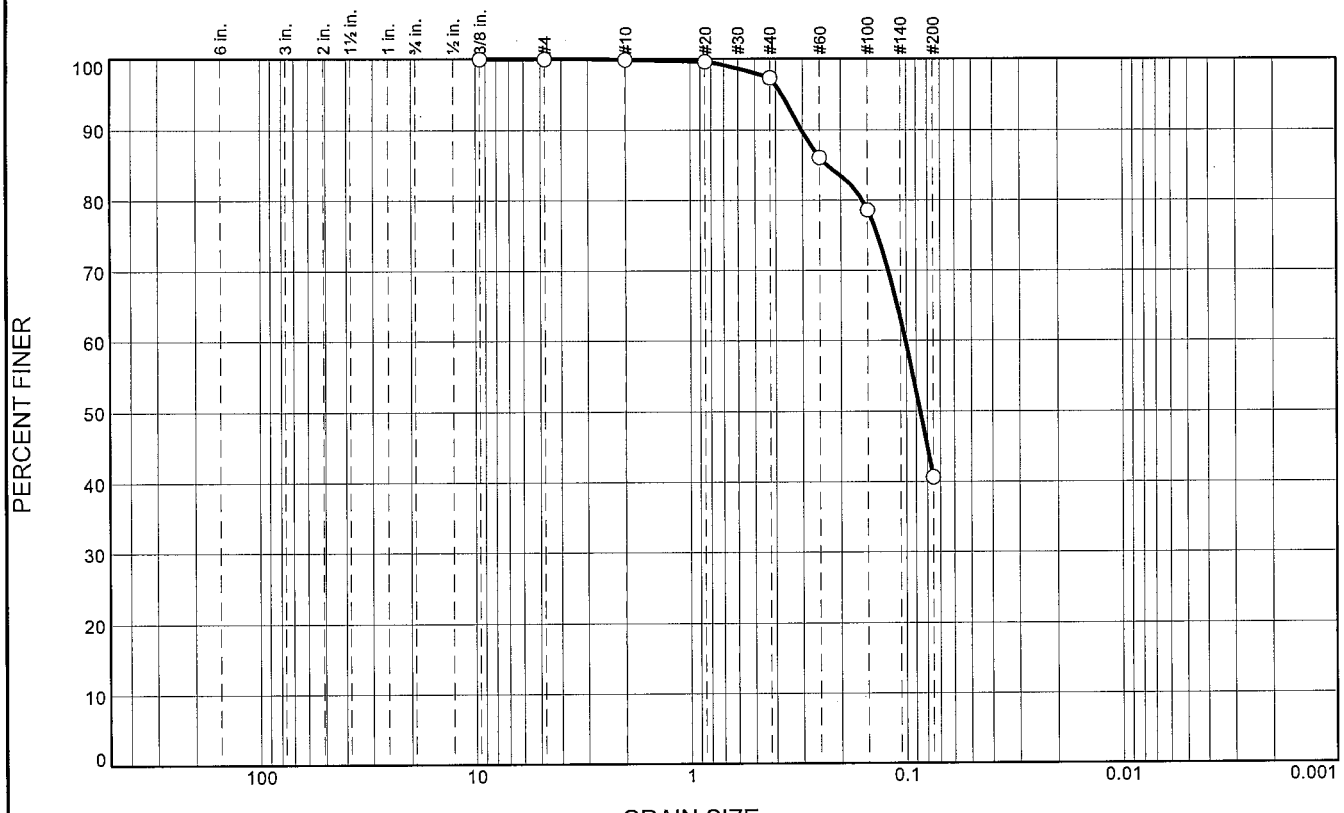
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -23.9 | 0.0 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SM Color: 2.5Y 4/2-dark grayish brown D50: 0.0862 mm % Fines: 40.6 |
| | | | | B | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.2735 mm % Fines: 10.8 |
| -29.0 | 5.1 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | C | Classification: SM Color: 2.5Y 7/1-light gray D50: 0.2149 mm % Fines: 12.2 |
| | | | | D | Classification: SP-SM Color: 5Y 7/1-light gray D50: 0.243 mm % Fines: 8.6 |
| -37.9 | 14.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -41.8 | 17.9 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.21930° Long = -88.87977°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.6 | 56.7 | 40.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 97.3 | | |
| #60 | 86.1 | | |
| #100 | 78.5 | | |
| #200 | 40.6 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3039 $D_{85}$= 0.2314 $D_{60}$= 0.1009
$D_{50}$= 0.0862 $D_{30}$= $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-28-10A
**Sample Number:** TE Lab ID: 4538.11 **Depth:** 0.0 - 1.3 (ft.) **Date:** 6/19/10

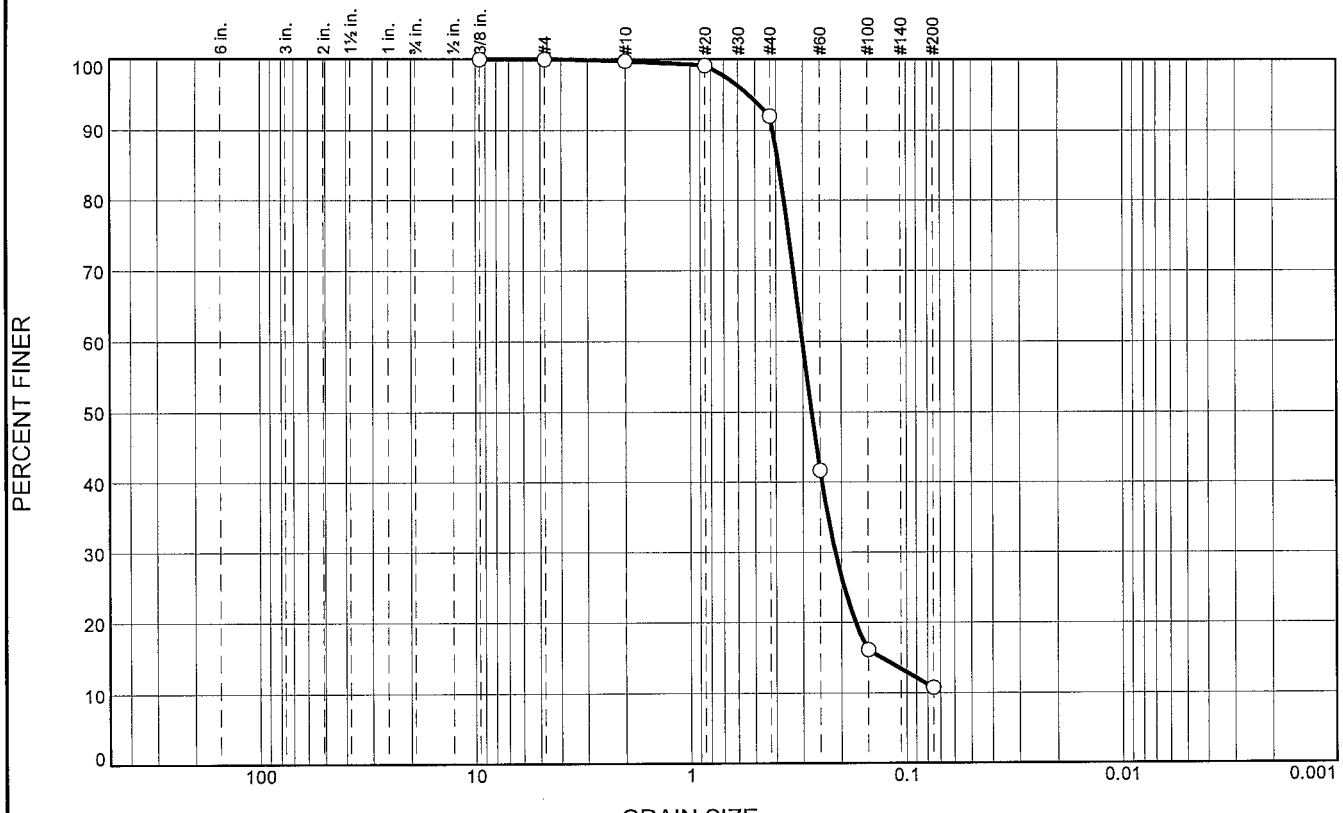
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 7.6 | 81.3 | 10.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.1 | | |
| #40 | 92.1 | | |
| #60 | 41.6 | | |
| #100 | 16.1 | | |
| #200 | 10.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4125 $D_{85}$= 0.3873 $D_{60}$= 0.3015
$D_{50}$= 0.2735 $D_{30}$= 0.2132 $D_{15}$= 0.1301
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-28-10B
**Sample Number:** TE Lab ID: 4538.12 **Depth:** 1.3 - 5.1 (ft.) **Date:** 6/19/10

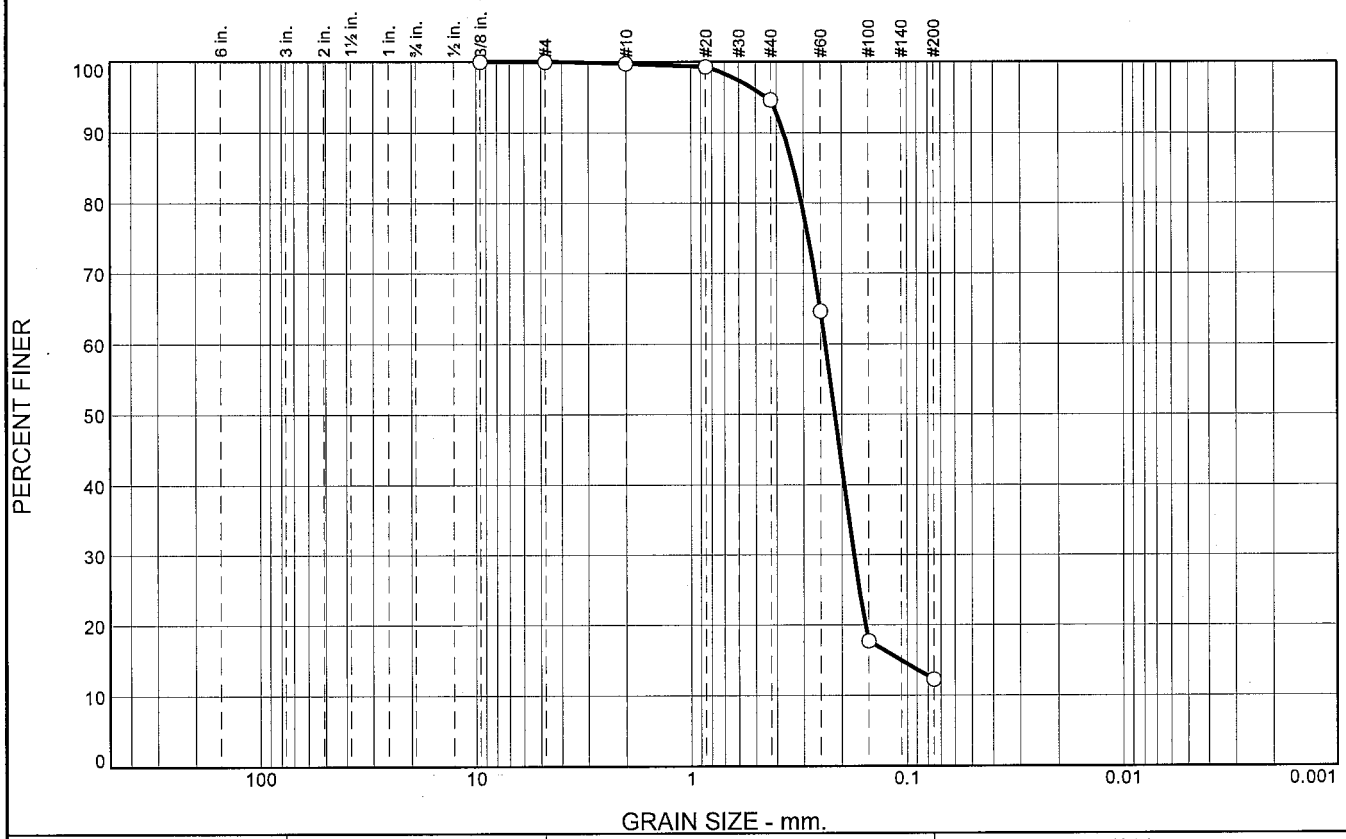
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 5.1 | 82.4 | 12.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.3 | | |
| #40 | 94.6 | | |
| #60 | 64.6 | | |
| #100 | 17.7 | | |
| #200 | 12.2 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3716 $D_{85}$= 0.3340 $D_{60}$= 0.2378
$D_{50}$= 0.2149 $D_{30}$= 0.1754 $D_{15}$= 0.1066
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-28-10C
**Sample Number:** TE Lab ID: 4538.13 **Depth:** 5.1 - 10.0 (ft.) **Date:** 6/19/10

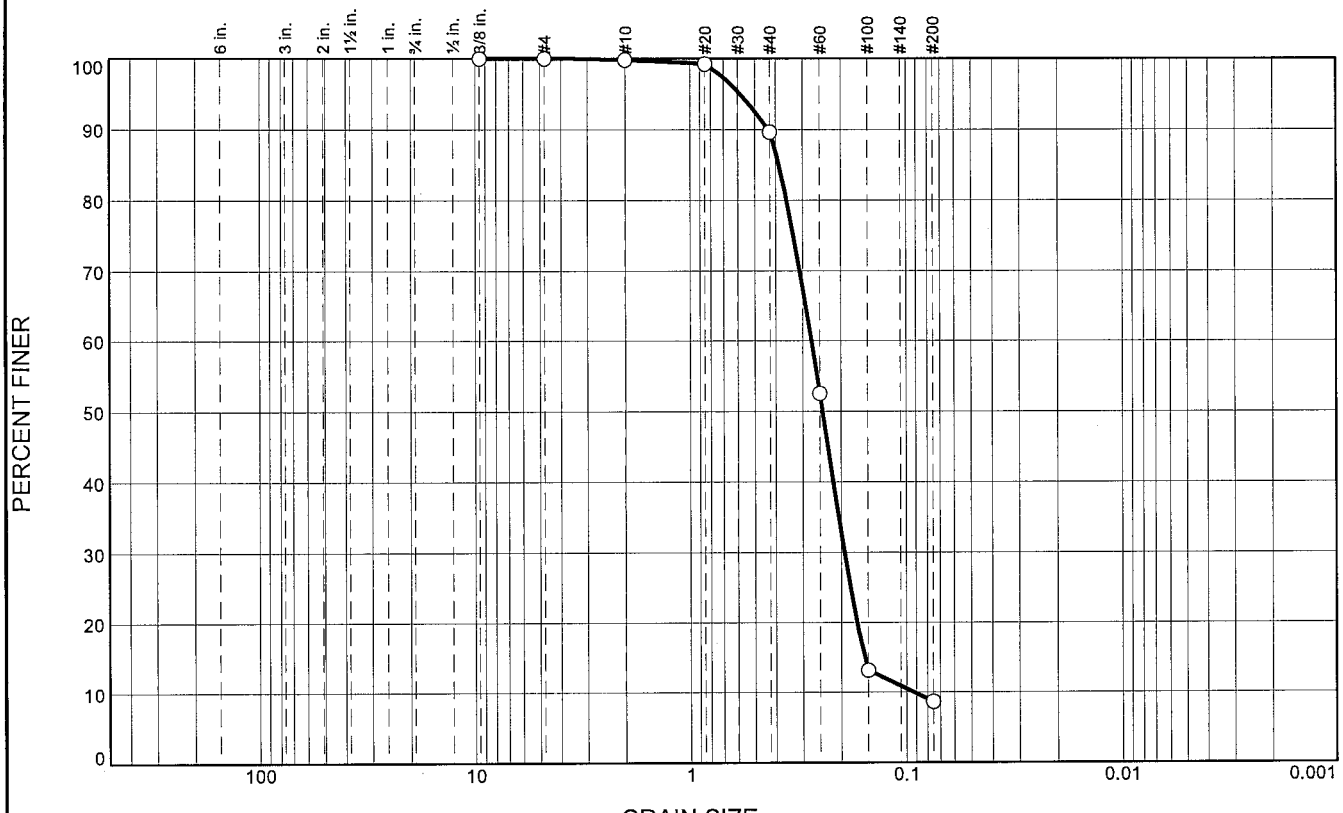
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 10.2 | 81.0 | 8.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.2 | | |
| #40 | 89.6 | | |
| #60 | 52.5 | | |
| #100 | 13.1 | | |
| #200 | 8.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4330 $D_{85}$= 0.3872 $D_{60}$= 0.2729
$D_{50}$= 0.2430 $D_{30}$= 0.1929 $D_{15}$= 0.1555
$D_{10}$= 0.0926 $C_u$= 2.95 $C_c$= 1.47

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-28-10D
**Sample Number:** TE Lab ID: 4538.14 **Depth:** 10.0 - 14.0 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-29-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-29-10; LOCATION COORDINATES: E = 957,039 N = 254,239 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 2; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 23 Ft. |
| | 15. DATE BORING: STARTED 06-12-10; COMPLETED 06-12-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -20.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 14.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -20.8 | 0.0 | | | | |
| -24.8 | 4.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 6/2-light brownish gray<br>D50: 0.2063 mm % Fines: 2.8 |
| -29.3 | 8.5 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | B | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.1523 mm % Fines: 20 |
| -35.0 | 14.2 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

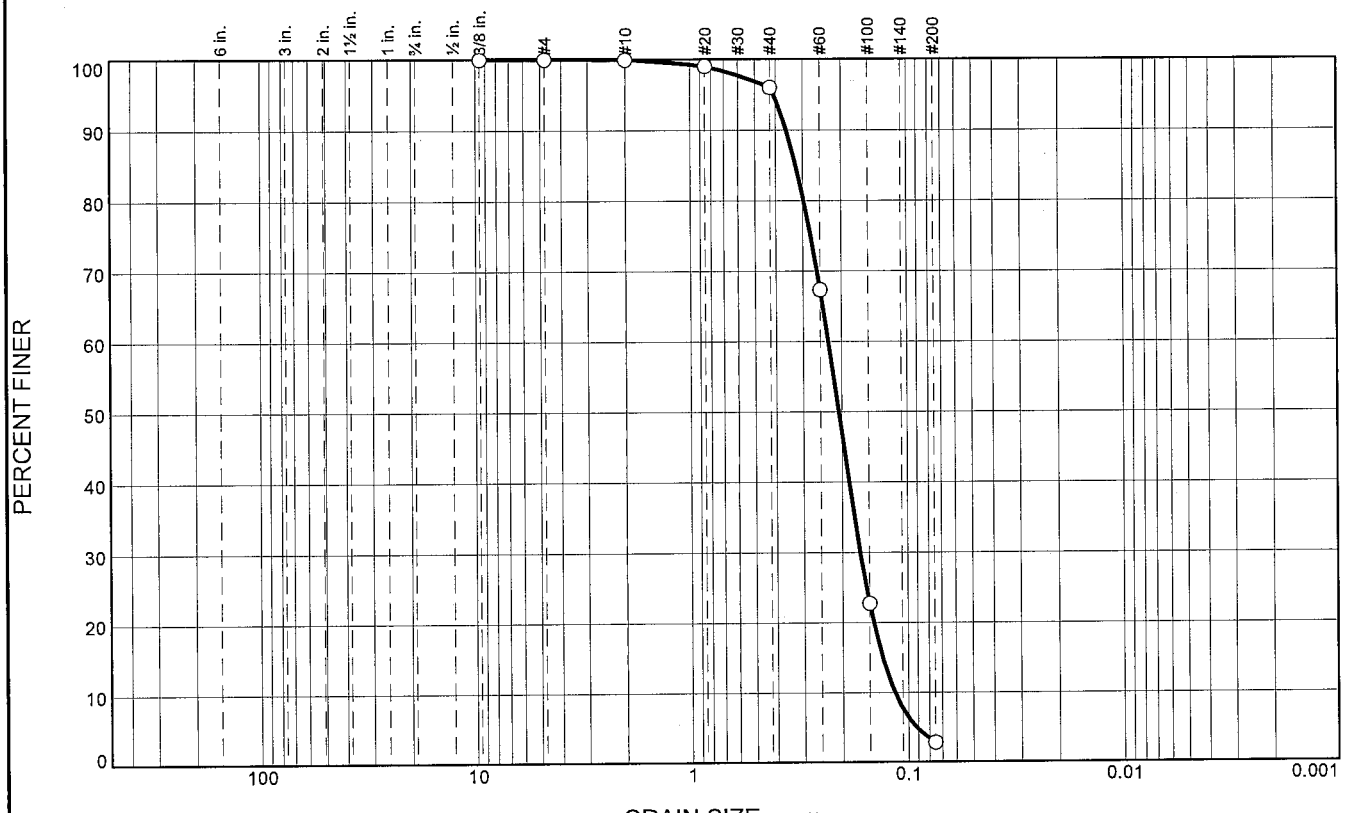
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19908° Long = -88.91947°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 3.9 | 93.2 | 2.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.0 | | |
| #40 | 96.0 | | |
| #60 | 67.3 | | |
| #100 | 22.7 | | |
| #200 | 2.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3580 $D_{85}$= 0.3234 $D_{60}$= 0.2298
$D_{50}$= 0.2063 $D_{30}$= 0.1652 $D_{15}$= 0.1310
$D_{10}$= 0.1153 $C_u$= 1.99 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-29-10A
**Sample Number:** TE Lab ID: 4538.46 **Depth:** 0.0 - 4.0 (ft.) **Date:** 6/19/10

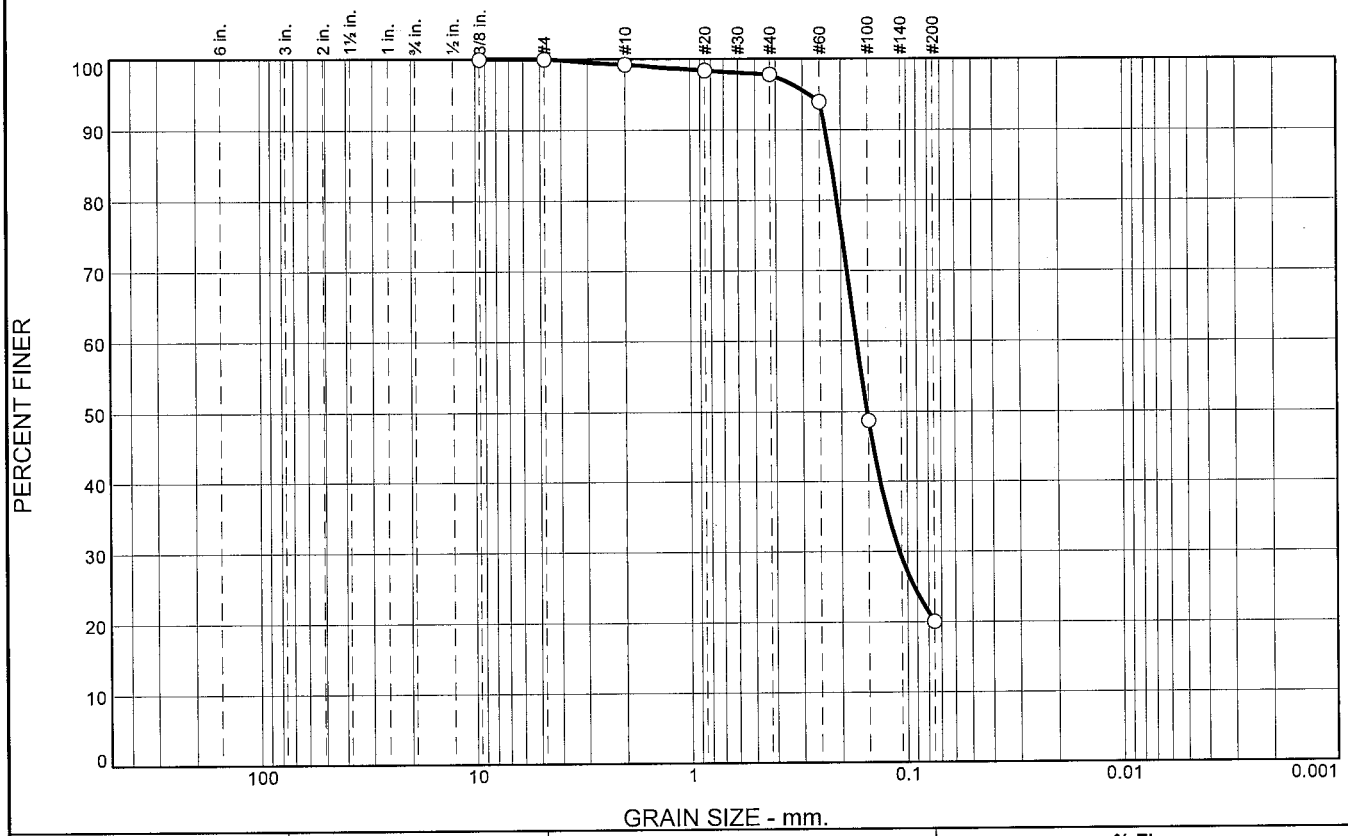
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.8 | 1.4 | 77.8 | 20.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.2 | | |
| #20 | 98.4 | | |
| #40 | 97.8 | | |
| #60 | 94.0 | | |
| #100 | 48.7 | | |
| #200 | 20.0 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2347 $D_{85}$= 0.2200 $D_{60}$= 0.1697
$D_{50}$= 0.1523 $D_{30}$= 0.1090 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-29-10B
**Sample Number:** TE Lab ID: 4538.47 **Depth:** 4.0 - 8.5 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-SI-30-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-30-10; LOCATION COORDINATES: E = 961,188 N = 255,673 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 3; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 25 Ft. |
| | 15. DATE BORING: STARTED 06-12-10; COMPLETED 06-12-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -22.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -22.8 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.183 mm % Fines: 5.6 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.2146 mm % Fines: 5.9 |
| -32.8 | 10.0 | | | | |
| -34.1 | 11.3 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SM Color: 2.5Y 7/1-light gray D50: 0.1547 mm % Fines: 15.6 |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -42.6 | 19.8 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20303° Long = -88.90634°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 961,188 Y = 255,673 | ELEVATION TOP OF BORING -22.8 Ft. | | |

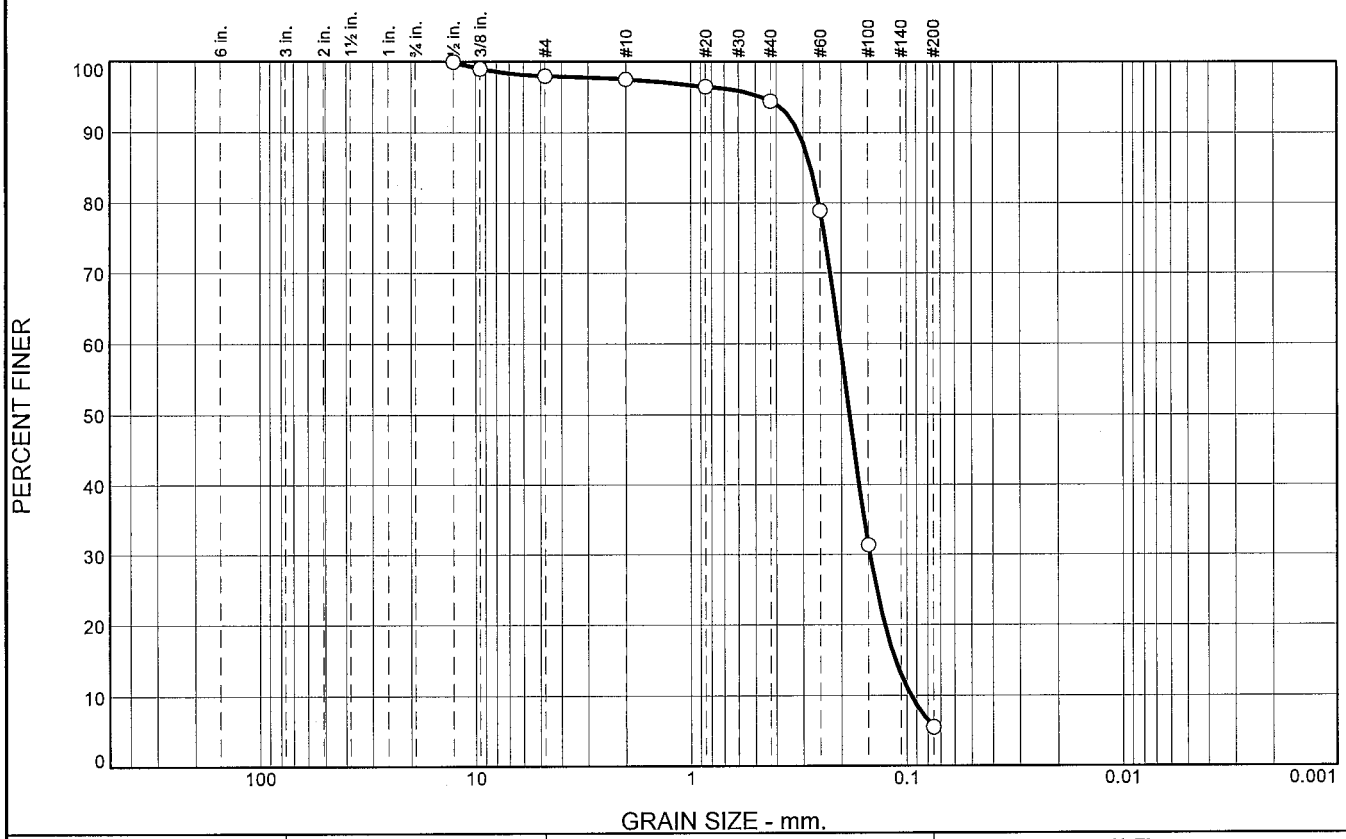
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | applying NOAA tidal gauge data conversion factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20303° Long = -88.90634°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.0 | 0.5 | 3.1 | 88.8 | 5.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.0 | | |
| #4 | 98.0 | | |
| #10 | 97.5 | | |
| #20 | 96.5 | | |
| #40 | 94.4 | | |
| #60 | 78.9 | | |
| #100 | 31.4 | | |
| #200 | 5.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3151 $D_{85}$= 0.2769 $D_{60}$= 0.2019
$D_{50}$= 0.1830 $D_{30}$= 0.1474 $D_{15}$= 0.1128
$D_{10}$= 0.0956 $C_u$= 2.11 $C_c$= 1.13

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-30-10A
**Sample Number:** TE Lab ID: 4538.49 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/19/10

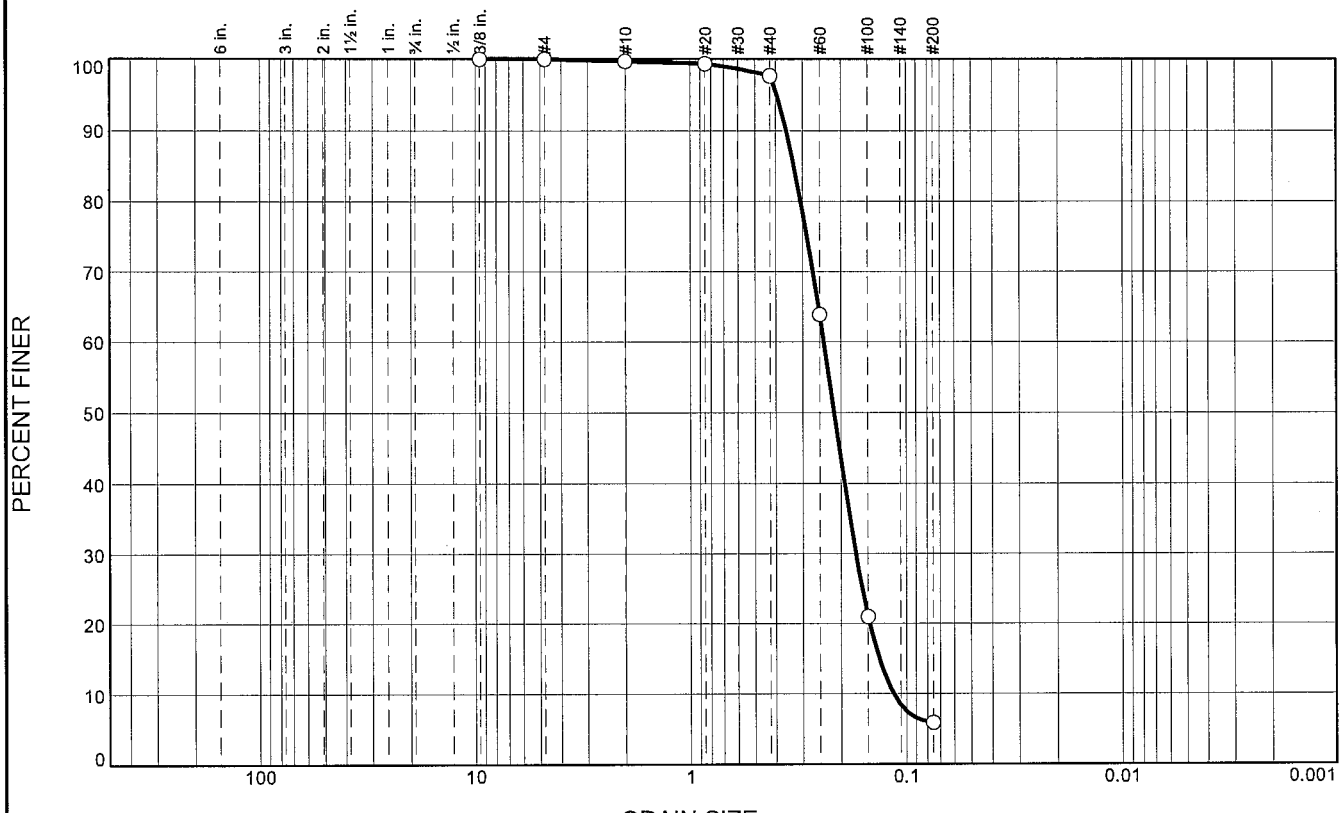
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 2.1 | 91.7 | 5.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.3 | | |
| #40 | 97.6 | | |
| #60 | 63.8 | | |
| #100 | 20.9 | | |
| #200 | 5.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3576 $D_{85}$= 0.3290 $D_{60}$= 0.2395
$D_{50}$= 0.2146 $D_{30}$= 0.1706 $D_{15}$= 0.1336
$D_{10}$= 0.1149 $C_u$= 2.08 $C_c$= 1.06

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-30-10B
**Sample Number:** TE Lab ID: 4538.50 **Depth:** 5.0 - 10.0 (ft.) **Date:** 6/19/10

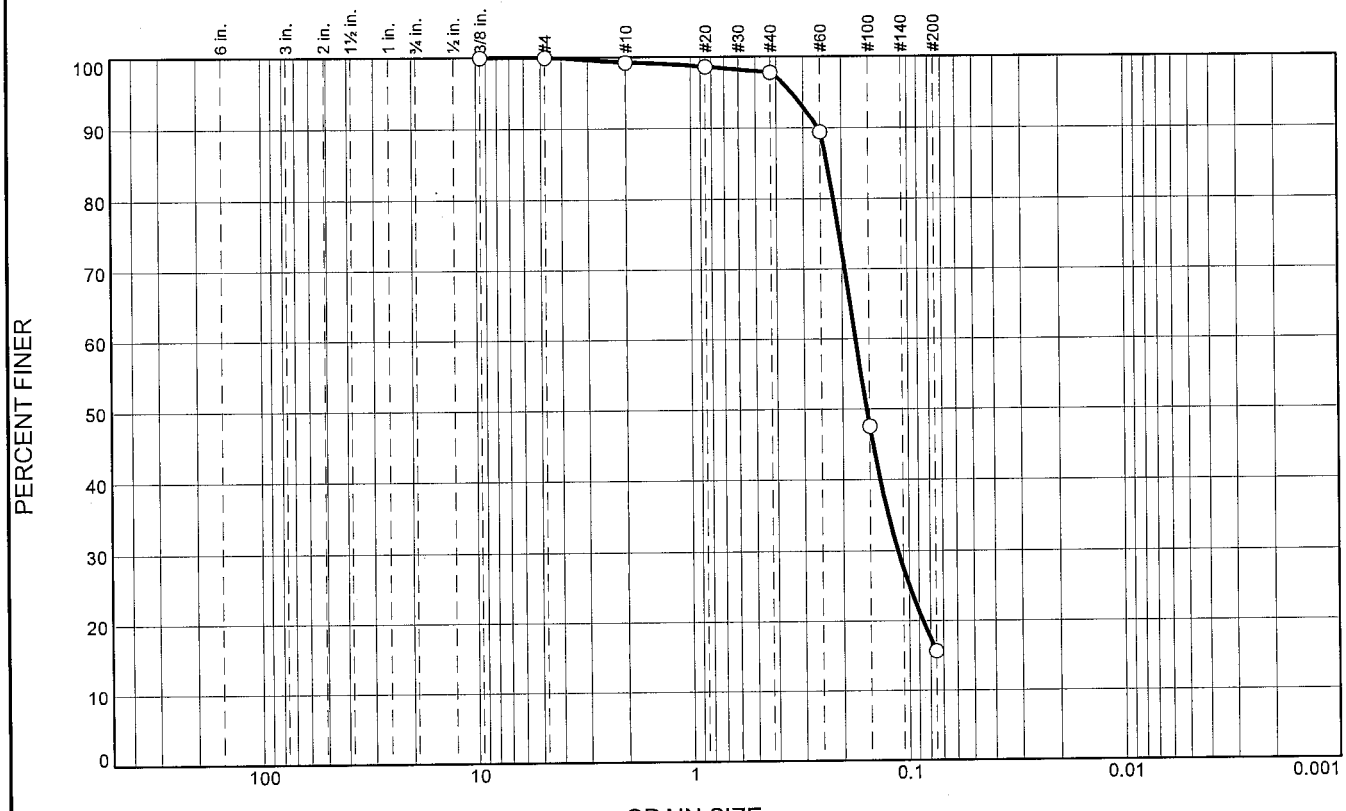
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.7 | 1.5 | 82.2 | 15.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.3 | | |
| #20 | 98.6 | | |
| #40 | 97.8 | | |
| #60 | 89.4 | | |
| #100 | 47.5 | | |
| #200 | 15.6 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2574 $D_{85}$= 0.2331 $D_{60}$= 0.1736
$D_{50}$= 0.1547 $D_{30}$= 0.1124 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-30-10C
**Sample Number:** TE Lab ID: 4538.51 **Depth:** 10.0 - 13.0 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

## Boring Designation BI-SI-31-10

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-31-10 |
| LOCATION COORDINATES | E = 963,513 N = 256,766 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 17.1 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 26 Ft. |
| 15. DATE BORING | STARTED 06-12-10 / COMPLETED 06-12-10 |
| 16. ELEVATION TOP OF BORING | -23.7 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

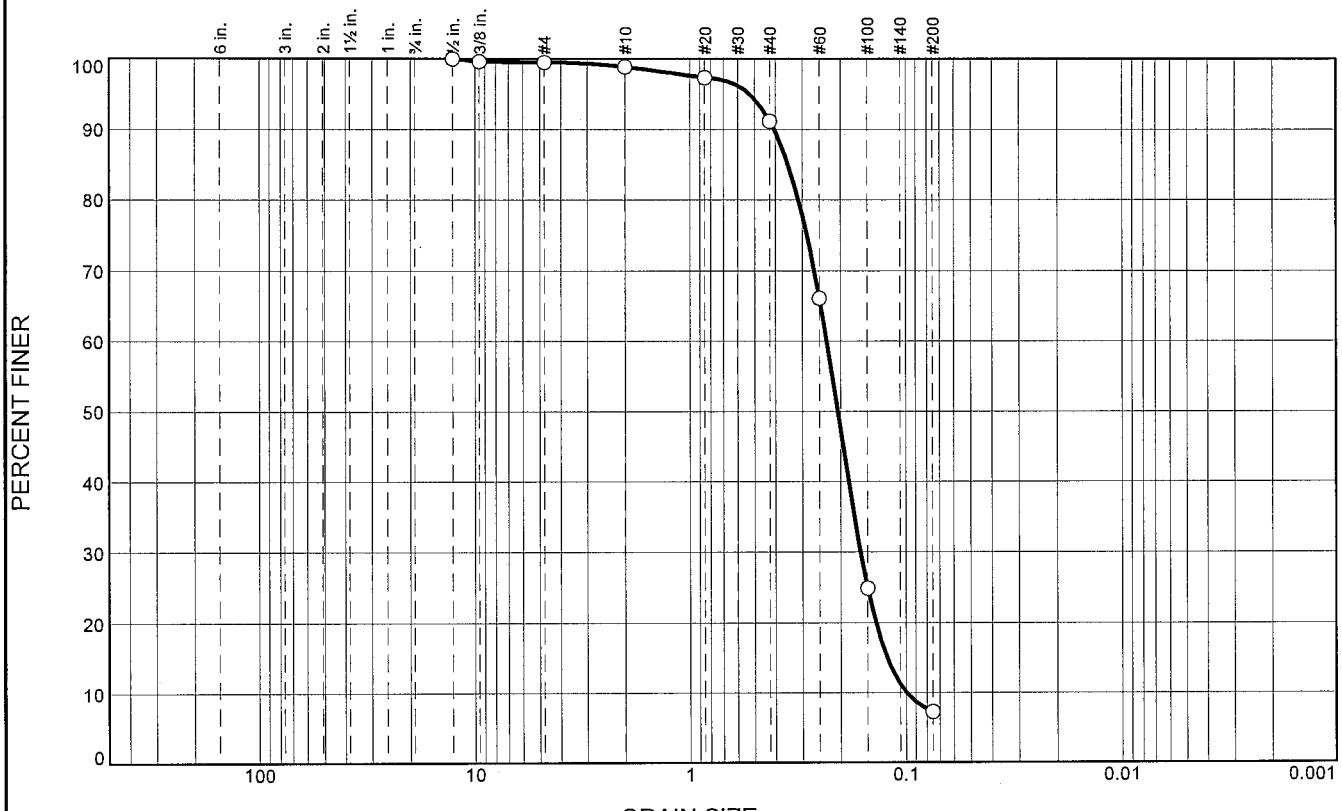
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -23.7 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2057 mm % Fines: 7.3 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1912 mm % Fines: 4.1 |
| -34.2 | 10.5 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1271 mm % Fines: 13.5 |
| -37.2 | 13.5 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -40.8 | 17.1 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20604° Long = -88.89898°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.6 | 0.6 | 7.6 | 83.9 | 7.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.6 | | |
| #4 | 99.4 | | |
| #10 | 98.8 | | |
| #20 | 97.3 | | |
| #40 | 91.2 | | |
| #60 | 66.1 | | |
| #100 | 24.9 | | |
| #200 | 7.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4064 $D_{85}$= 0.3502 $D_{60}$= 0.2313
$D_{50}$= 0.2057 $D_{30}$= 0.1617 $D_{15}$= 0.1221
$D_{10}$= 0.0995 $C_u$= 2.32 $C_c$= 1.14

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-31-10A
**Sample Number:** TE Lab ID: 4538.52 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/19/10

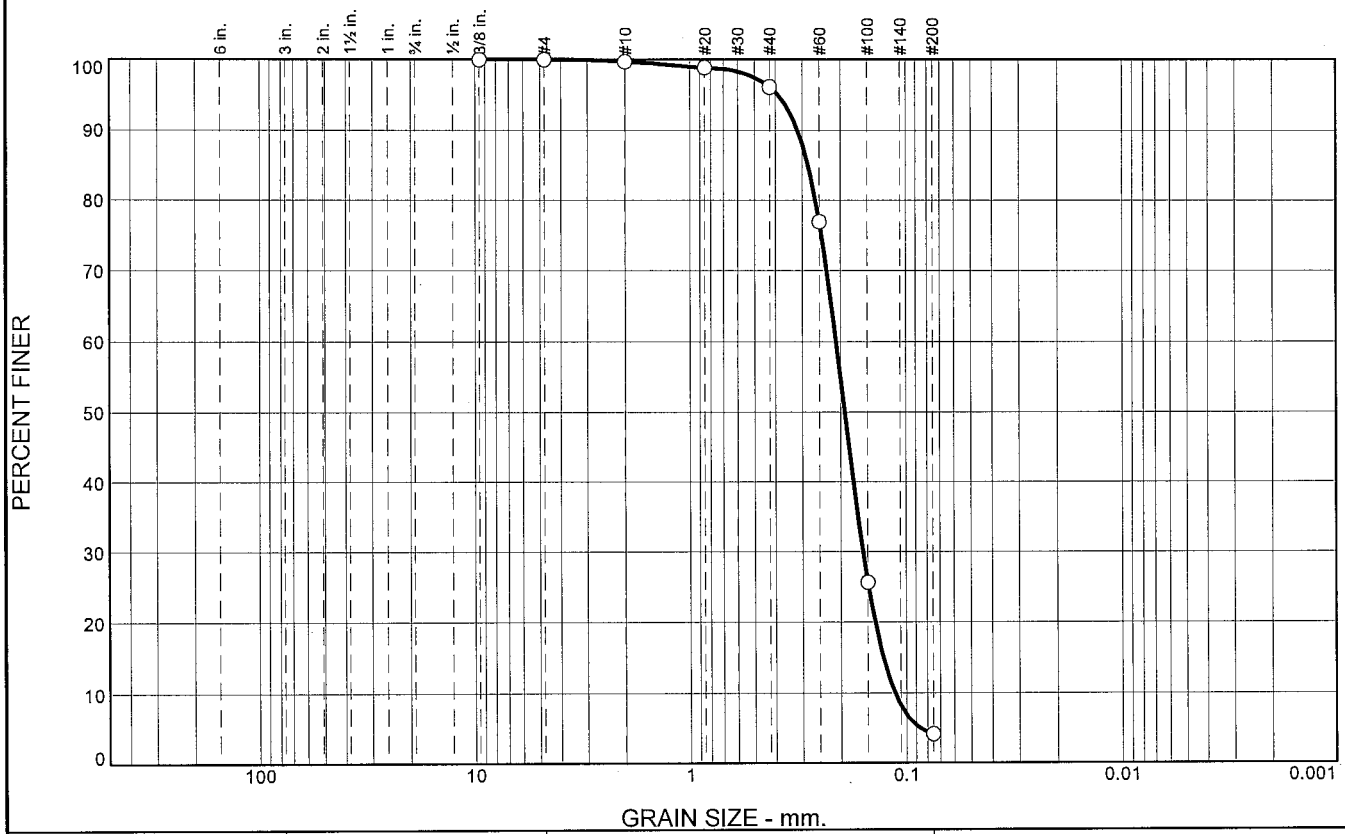
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 3.5 | 92.1 | 4.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 98.8 | | |
| #40 | 96.2 | | |
| #60 | 76.9 | | |
| #100 | 25.6 | | |
| #200 | 4.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3154 $D_{85}$= 0.2823 $D_{60}$= 0.2096
$D_{50}$= 0.1912 $D_{30}$= 0.1577 $D_{15}$= 0.1277
$D_{10}$= 0.1131 $C_u$= 1.85 $C_c$= 1.05

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-31-10B
**Sample Number:** TE Lab ID: 4538.53 **Depth:** 5.0 - 10.5 (ft.) **Date:** 6/19/10

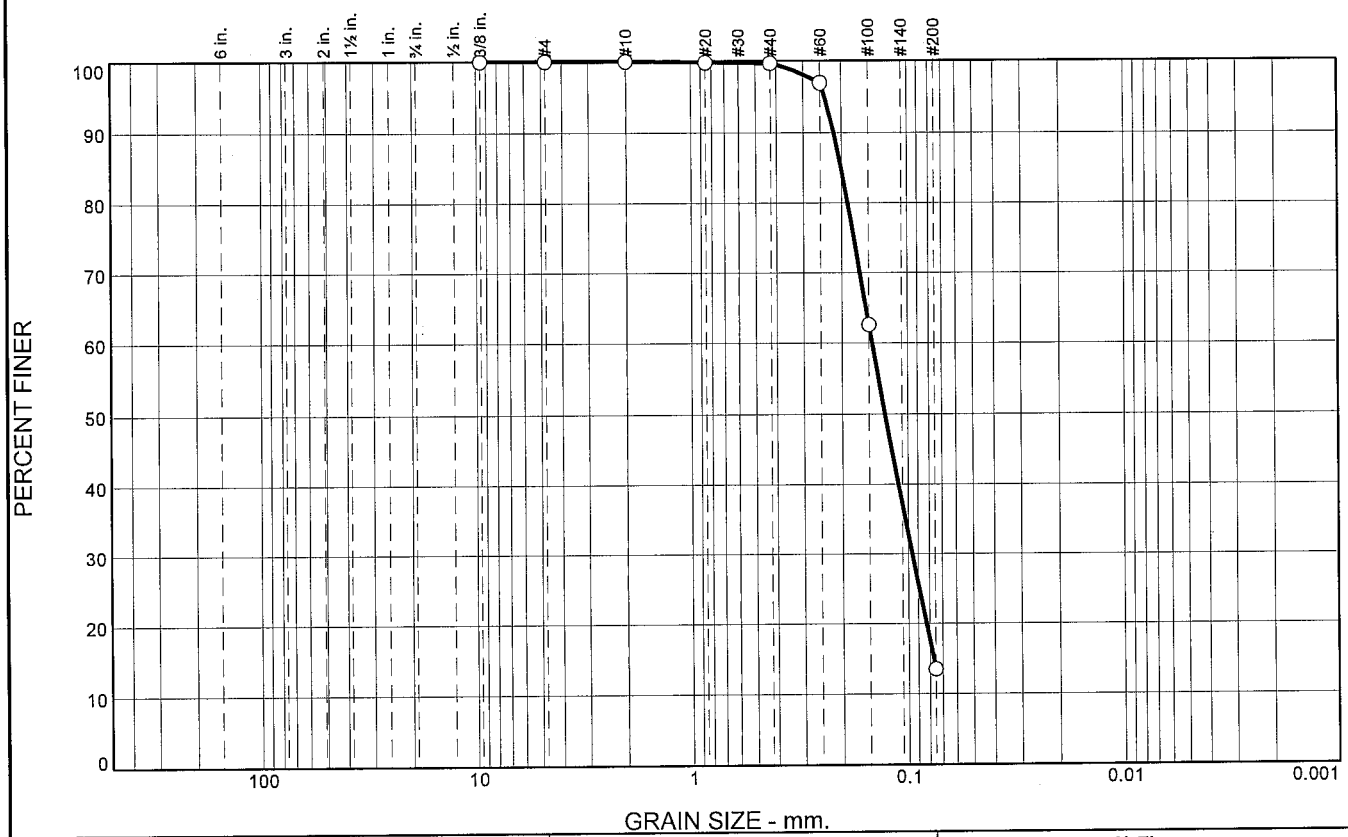
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 86.2 | 13.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.8 | | |
| #40 | 99.7 | | |
| #60 | 97.0 | | |
| #100 | 62.6 | | |
| #200 | 13.5 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2170 $D_{85}$= 0.2008 $D_{60}$= 0.1451
$D_{50}$= 0.1271 $D_{30}$= 0.0958 $D_{15}$= 0.0767
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-31-10C
**Sample Number:** TE Lab ID: 4538.54 **Depth:** 10.5 - 13.5 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

## Boring Designation BI-SI-32-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-32-10; LOCATION COORDINATES: E = 965,567 N = 257,529 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 4; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 28 Ft. |
| | 15. DATE BORING: STARTED 06-12-10; COMPLETED 06-12-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -25.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -25.7 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace wood debris, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2115 mm % Fines: 3.3 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1631 mm % Fines: 4.6 |
| -41.0 | 15.3 | | | C | Classification: SP-SM Color: 5Y 7/1-light gray<br>D50: 0.1496 mm % Fines: 7.1 |
| -44.6 | 18.9 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | D | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1601 mm % Fines: 12.9 |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20814° Long = -88.89248°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 965,567 Y = 257,529 | ELEVATION TOP OF BORING -25.7 Ft. | | |

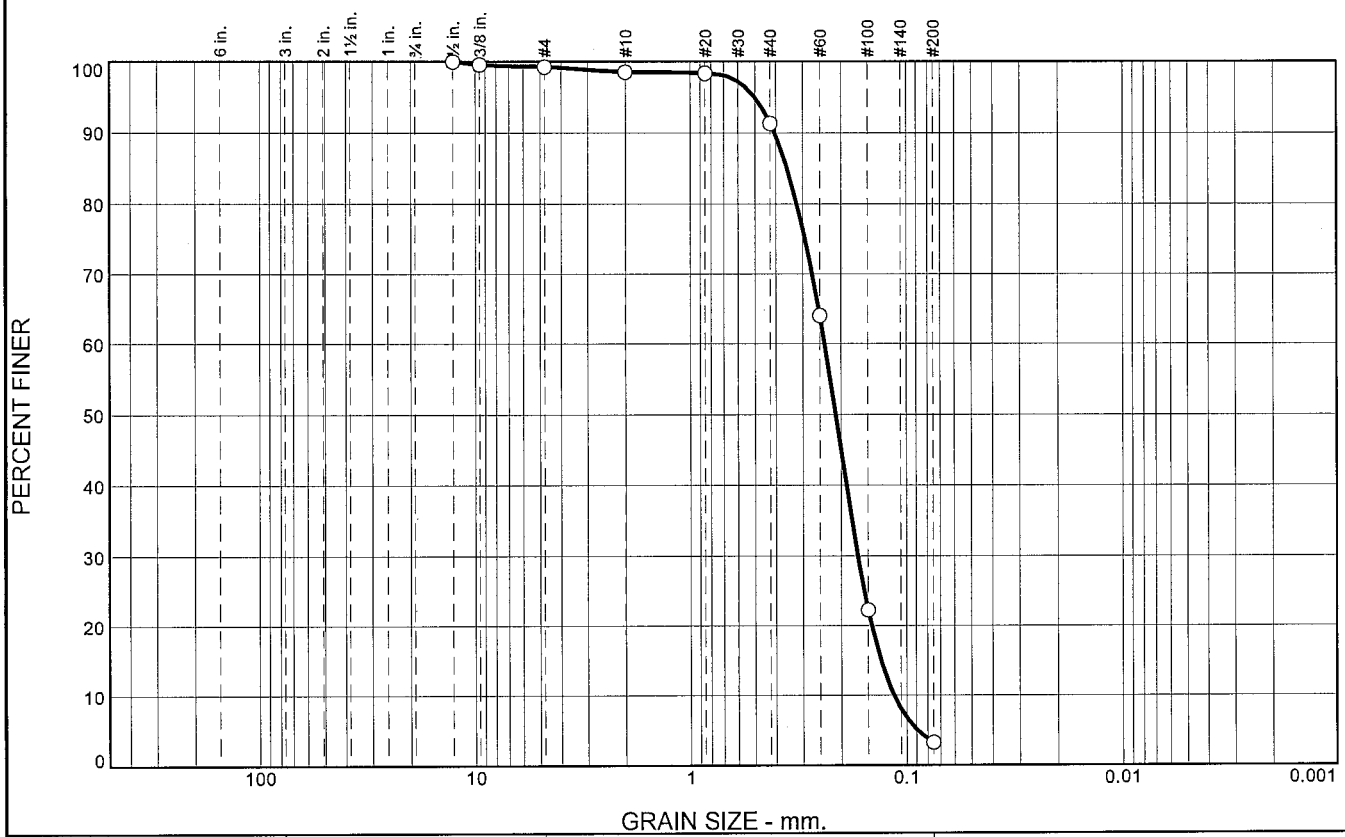
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20814° Long = -88.89248°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.8 | 0.7 | 7.2 | 88.0 | 3.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.5 | | |
| #4 | 99.2 | | |
| #10 | 98.5 | | |
| #20 | 98.4 | | |
| #40 | 91.3 | | |
| #60 | 64.0 | | |
| #100 | 22.2 | | |
| #200 | 3.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4071 $D_{85}$= 0.3560 $D_{60}$= 0.2378
$D_{50}$= 0.2115 $D_{30}$= 0.1672 $D_{15}$= 0.1312
$D_{10}$= 0.1145 $C_u$= 2.08 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-32-10A
**Sample Number:** TE Lab ID: 4538.55 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/19/10

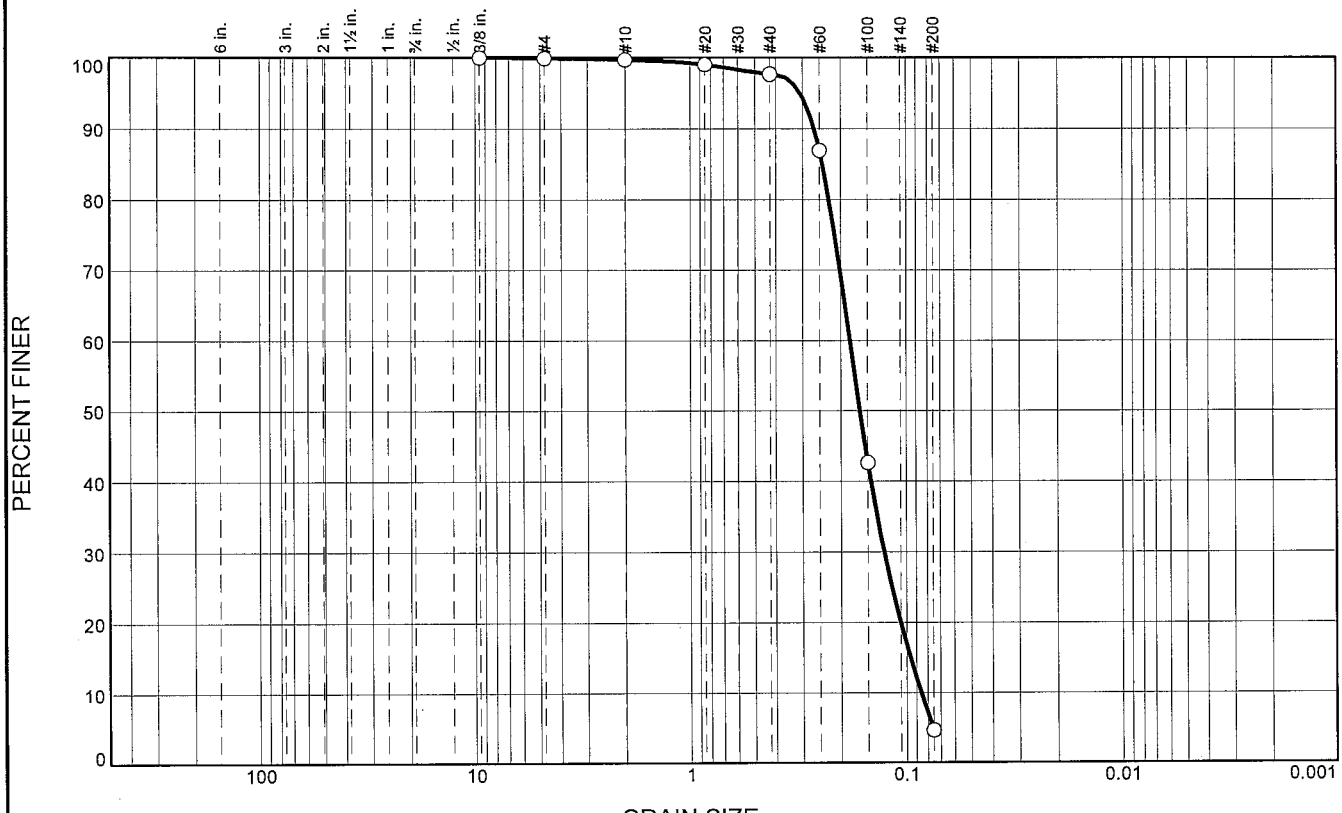
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.2 | 2.0 | 93.1 | 4.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.7 | | |
| #20 | 99.0 | | |
| #40 | 97.7 | | |
| #60 | 86.9 | | |
| #100 | 42.6 | | |
| #200 | 4.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2652 $D_{85}$= 0.2427 $D_{60}$= 0.1812
$D_{50}$= 0.1631 $D_{30}$= 0.1265 $D_{15}$= 0.0960
$D_{10}$= 0.0856 $C_u$= 2.12 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-32-10B
**Sample Number:** TE Lab ID: 4538.56 **Depth:** 5.0 - 10.0 (ft.) **Date:** 6/19/10

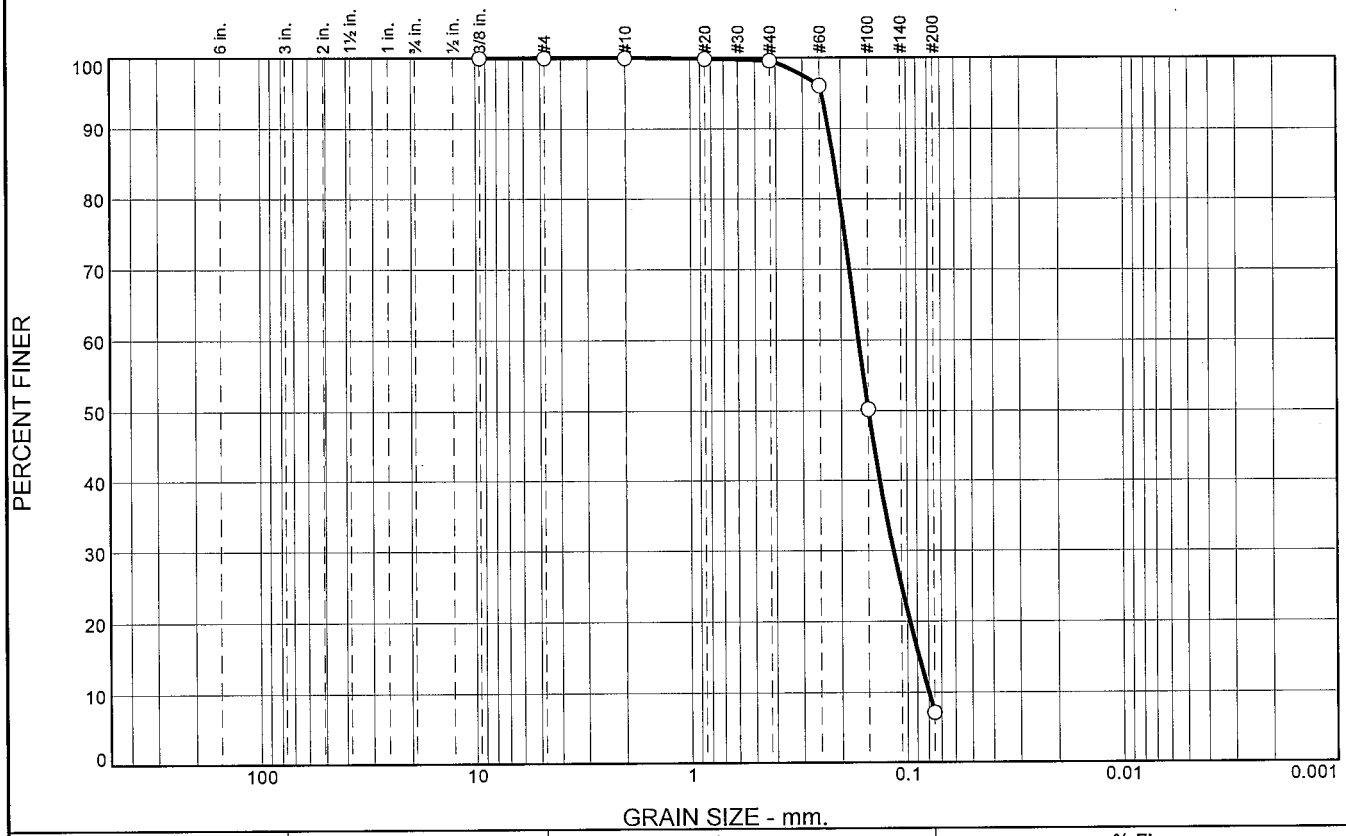
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 92.5 | 7.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 99.6 | | |
| #60 | 96.1 | | |
| #100 | 50.2 | | |
| #200 | 7.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2275 $D_{85}$= 0.2139 $D_{60}$= 0.1659
$D_{50}$= 0.1496 $D_{30}$= 0.1154 $D_{15}$= 0.0883
$D_{10}$= 0.0797 $C_u$= 2.08 $C_c$= 1.01

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-32-10C
**Sample Number:** TE Lab ID: 4538.57 **Depth:** 10.0 - 15.3 (ft.) **Date:** 6/19/10

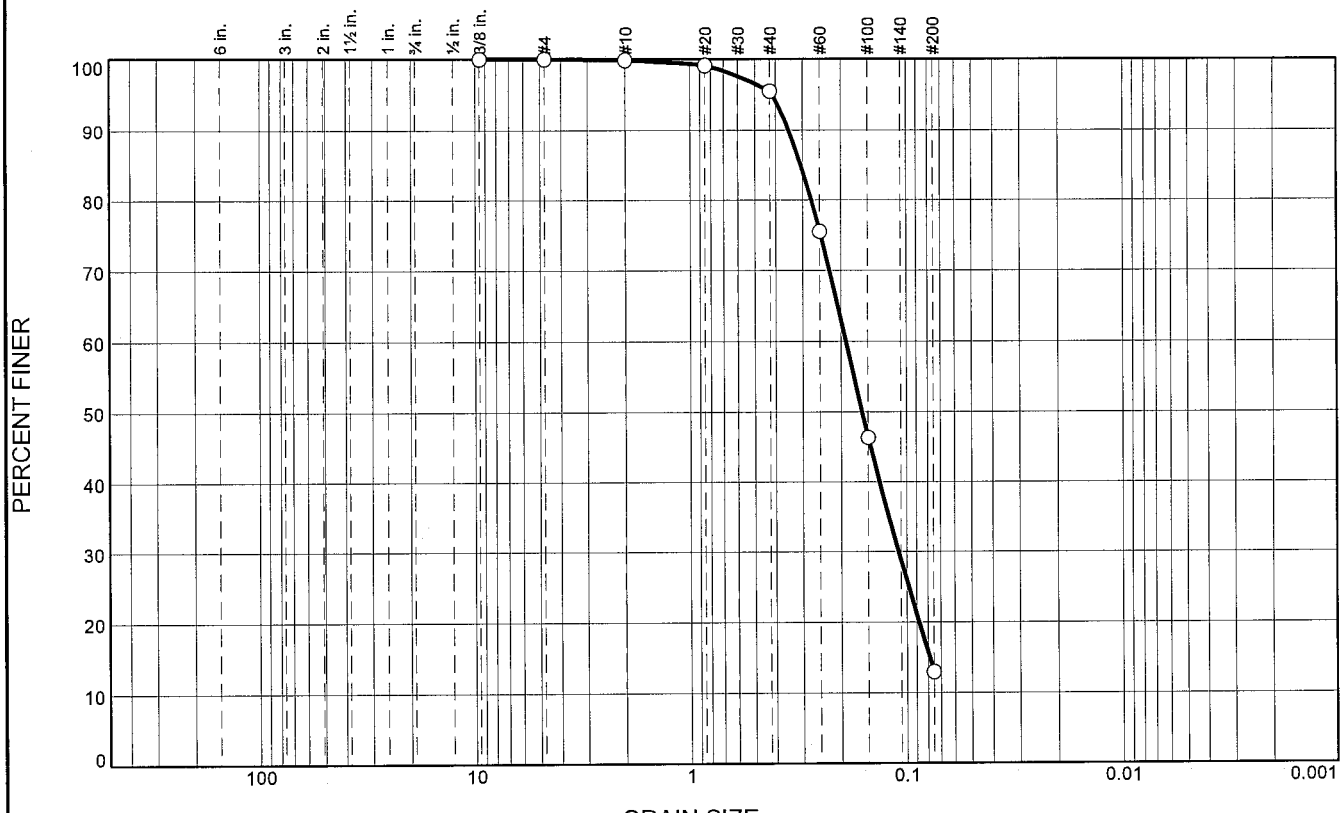
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 4.3 | 82.6 | 12.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.1 | | |
| #40 | 95.5 | | |
| #60 | 75.5 | | |
| #100 | 46.3 | | |
| #200 | 12.9 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3485 $D_{85}$= 0.3058 $D_{60}$= 0.1900
$D_{50}$= 0.1601 $D_{30}$= 0.1090 $D_{15}$= 0.0786
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-32-10D
**Sample Number:** TE Lab ID: 4538.58 **Depth:** 15.3 - 18.9 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

## Boring Designation BI-SI-33-10

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-33-10 |
| LOCATION COORDINATES | E = 967,418 N = 257,960 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 13.3 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 26 Ft. |
| 15. DATE BORING | STARTED 06-09-10 / COMPLETED 06-09-10 |
| 16. ELEVATION TOP OF BORING | -27.3 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -27.3 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 5Y 7/1-light gray<br>D50: 0.2204 mm % Fines: 5.5 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1598 mm % Fines: 4.8 |
| -36.7 | 9.4 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SM Color: 2.5Y 4/2-dark grayish brown<br>D50: 0.1591 mm % Fines: 12.6 |
| -40.6 | 13.3 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

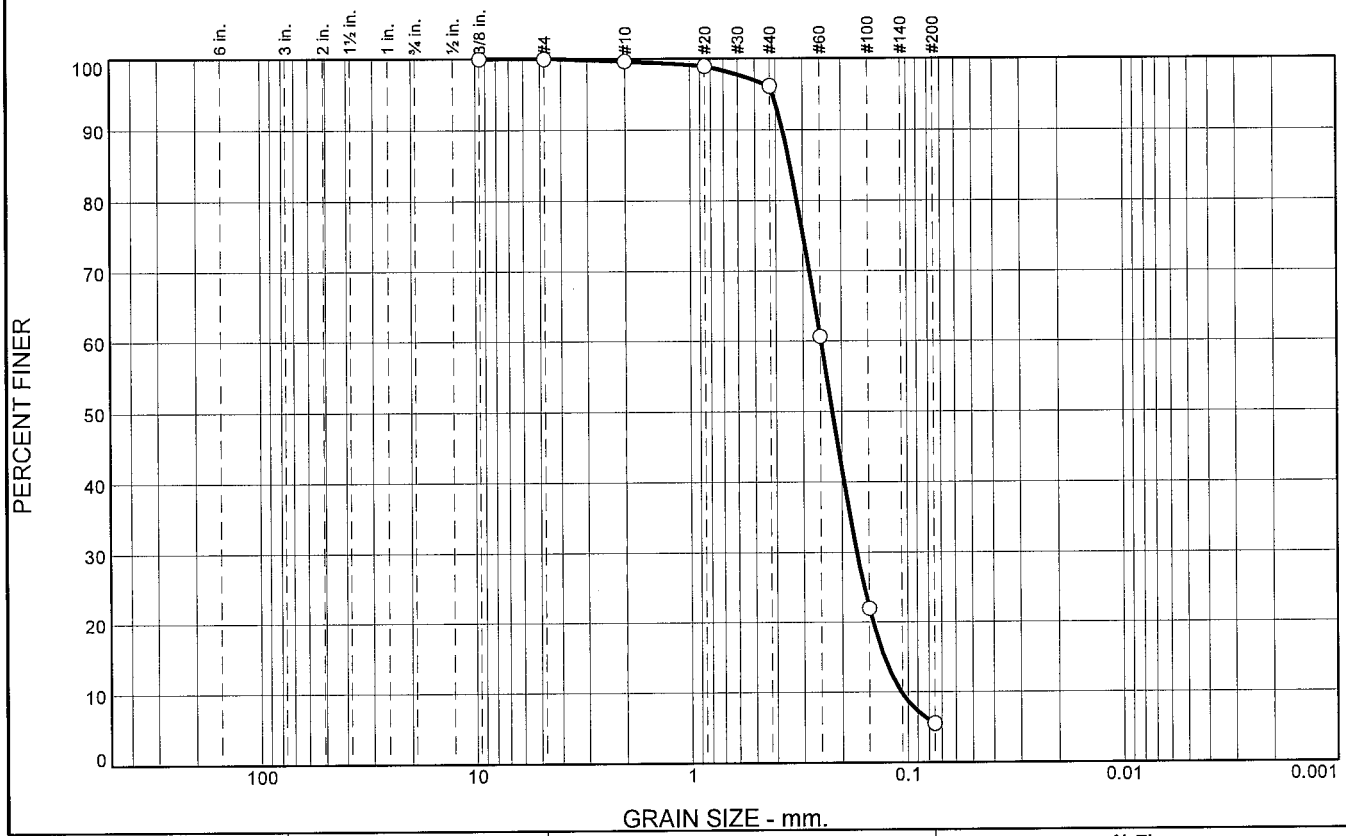
3. Seafloor elevation determined from USACE hydrographic survey completed 2010.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20933° Long = -88.88662°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 3.4 | 90.7 | 5.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 98.9 | | |
| #40 | 96.2 | | |
| #60 | 60.6 | | |
| #100 | 21.9 | | |
| #200 | 5.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3725 $D_{85}$= 0.3431 $D_{60}$= 0.2481
$D_{50}$= 0.2204 $D_{30}$= 0.1707 $D_{15}$= 0.1285
$D_{10}$= 0.1075 $C_u$= 2.31 $C_c$= 1.09

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-33-10A
**Sample Number:** TE Lab ID: 4538.27 **Depth:** 0.0 - 4.7 (ft.) **Date:** 6/19/10

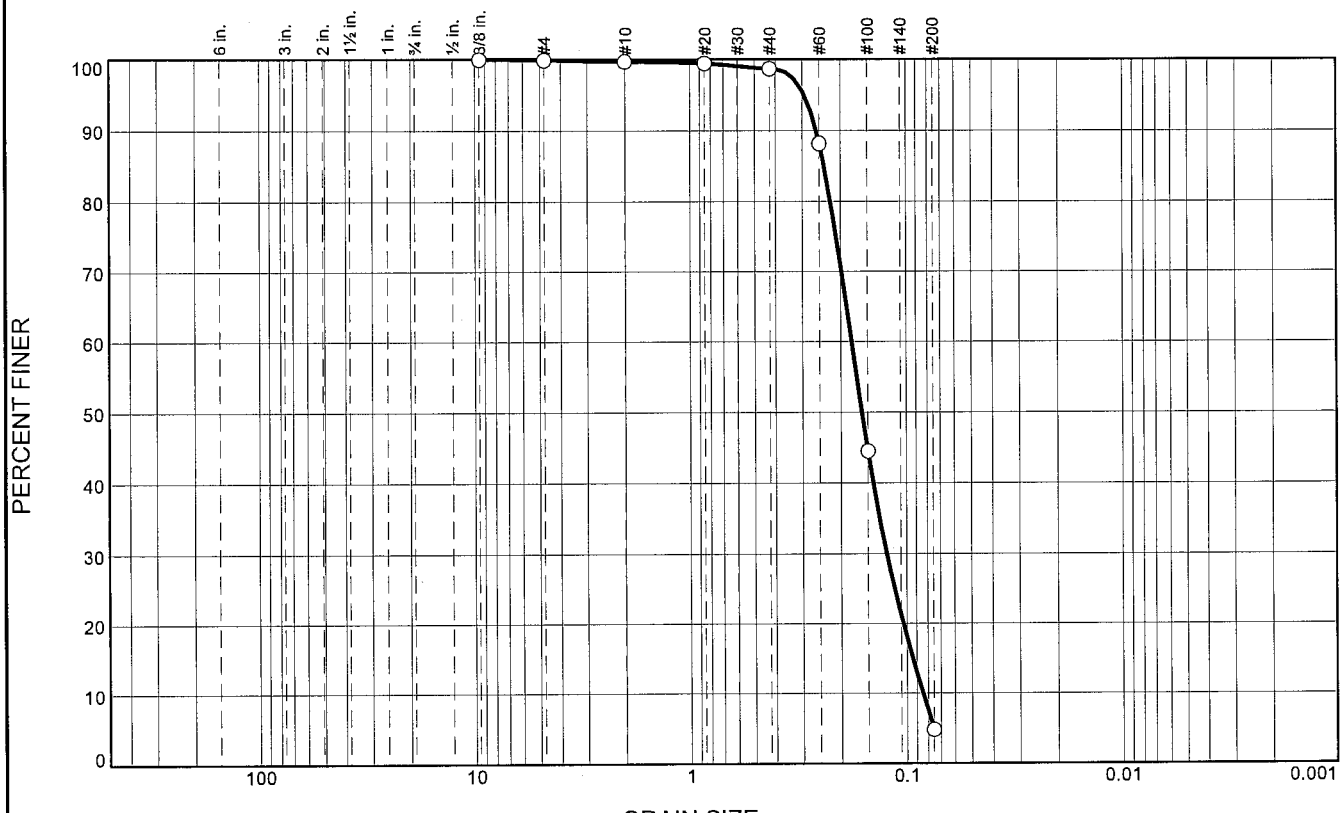
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.2 | 1.0 | 93.9 | 4.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.7 | | |
| #20 | 99.4 | | |
| #40 | 98.7 | | |
| #60 | 88.2 | | |
| #100 | 44.5 | | |
| #200 | 4.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2586 $D_{85}$= 0.2379 $D_{60}$= 0.1779
$D_{50}$= 0.1598 $D_{30}$= 0.1233 $D_{15}$= 0.0940
$D_{10}$= 0.0844 $C_u$= 2.11 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-33-10B
**Sample Number:** TE Lab ID: 4538.28 **Depth:** 4.7 - 9.4 (ft,) **Date:** 6/19/10

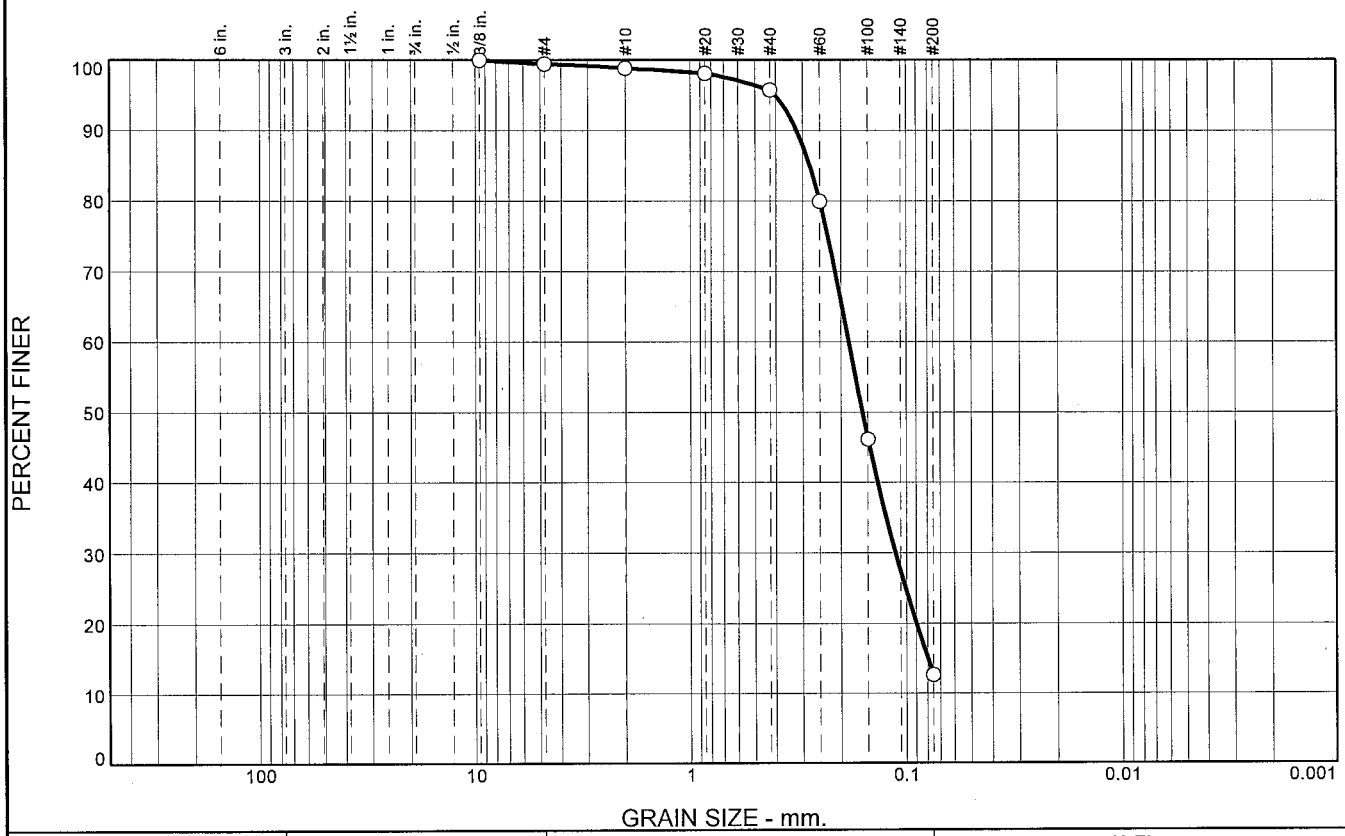
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.6 | 0.6 | 3.1 | 83.1 | 12.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.4 | | |
| #10 | 98.8 | | |
| #20 | 98.1 | | |
| #40 | 95.7 | | |
| #60 | 79.9 | | |
| #100 | 46.1 | | |
| #200 | 12.6 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3201 $D_{85}$= 0.2782 $D_{60}$= 0.1837
$D_{50}$= 0.1591 $D_{30}$= 0.1122 $D_{15}$= 0.0796
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-33-10C
**Sample Number:** TE Lab ID: 4538.29 **Depth:** 9.4 - 13.3 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-SI-34-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-34-10; LOCATION COORDINATES: E = 990,989 N = 258,568 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 3; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 27 Ft. |
| | 15. DATE BORING: STARTED 06-09-10; COMPLETED 06-09-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -26.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 14.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -26.3 | 0.0 | | | | |
| -29.9 | 3.6 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1999 mm % Fines: 15.8 |
| -39.3 | 13.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.1952 mm % Fines: 9.2 |
| | | | | C | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1871 mm % Fines: 4.8 |
| -40.5 | 14.2 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

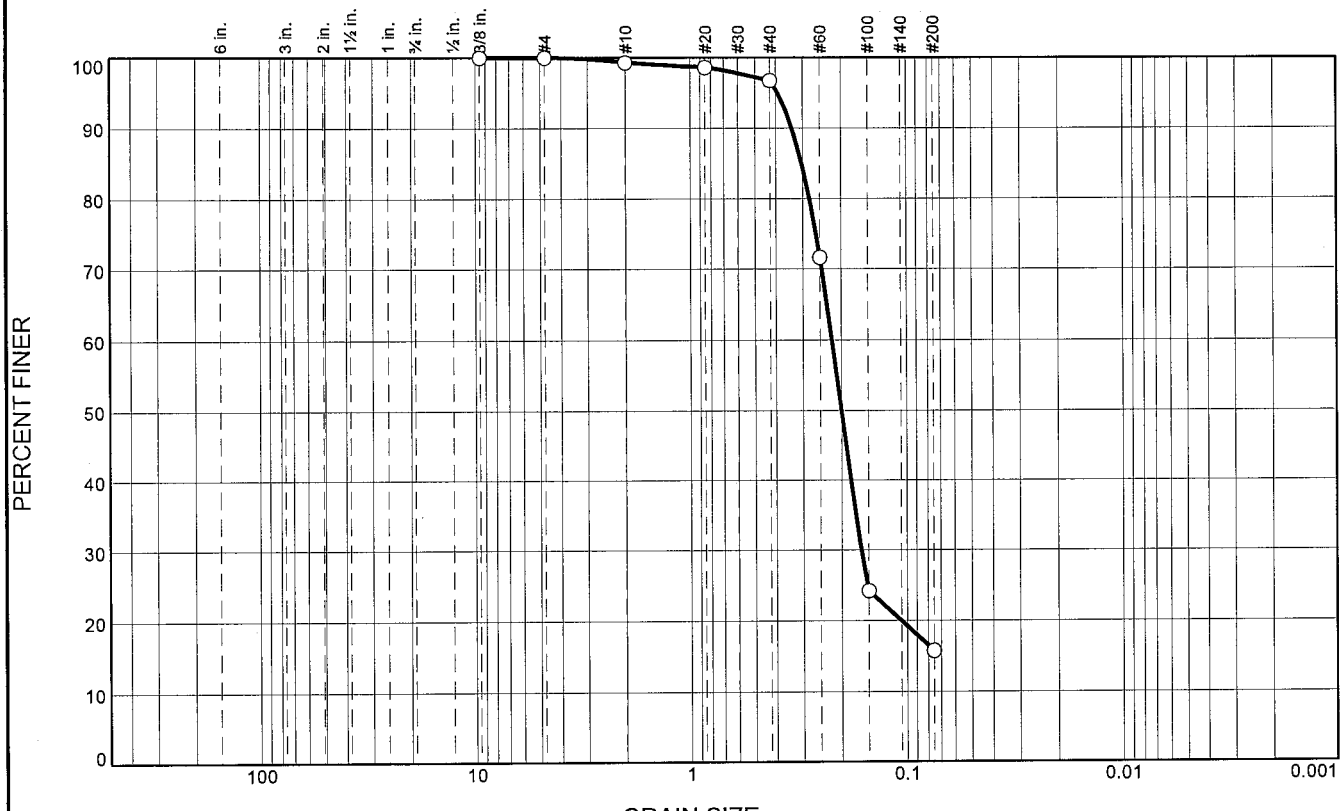
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21101° Long = -88.812°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.7 | 2.5 | 81.0 | 15.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.3 | | |
| #20 | 98.6 | | |
| #40 | 96.8 | | |
| #60 | 71.6 | | |
| #100 | 24.2 | | |
| #200 | 15.8 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3374 $D_{85}$= 0.3038 $D_{60}$= 0.2206
$D_{50}$= 0.1999 $D_{30}$= 0.1621 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-34-10A
**Sample Number:** TE Lab ID: 4538.18 **Depth:** 0.0 - 3.6 (ft.) **Date:** 6/19/10

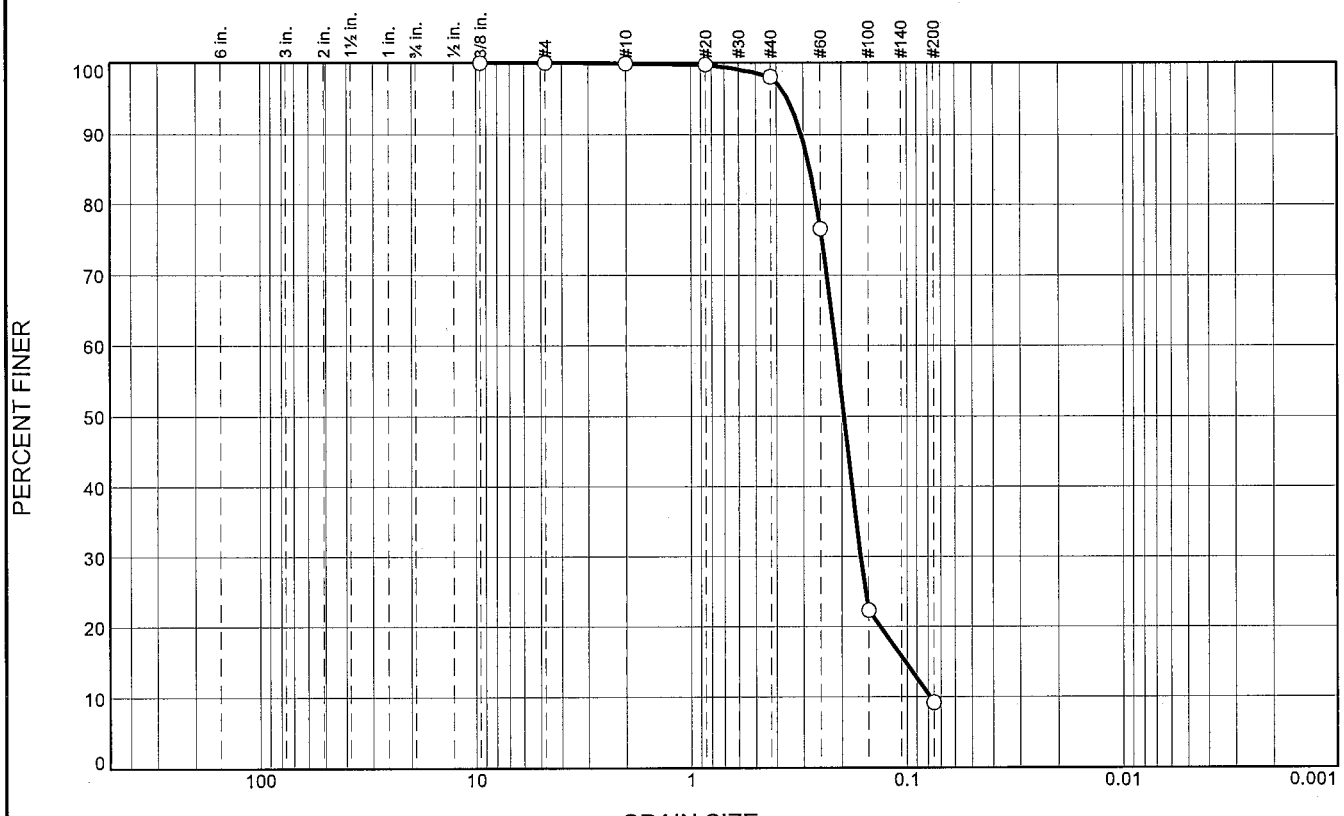
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.8 | 88.9 | 9.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 98.1 | | |
| #60 | 76.6 | | |
| #100 | 22.3 | | |
| #200 | 9.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3074 $D_{85}$= 0.2799 $D_{60}$= 0.2128
$D_{50}$= 0.1952 $D_{30}$= 0.1632 $D_{15}$= 0.1019
$D_{10}$= 0.0782 $C_u$= 2.72 $C_c$= 1.60

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-34-10B
**Sample Number:** TE Lab ID: 4538.19 **Depth:** 3.6 - 8.0 (ft.) **Date:** 6/19/10

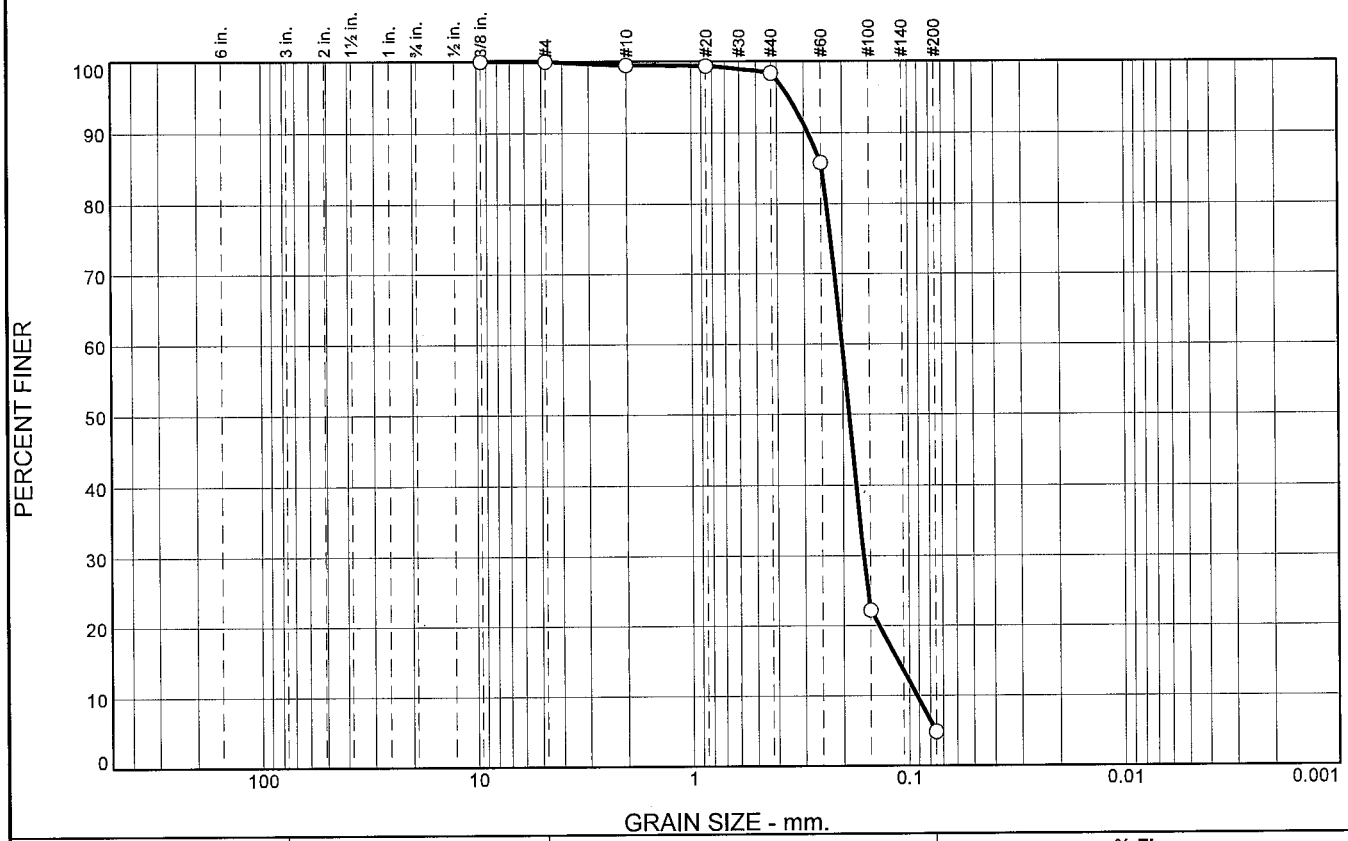
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.5 | 1.2 | 93.5 | 4.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.5 | | |
| #20 | 99.3 | | |
| #40 | 98.3 | | |
| #60 | 85.8 | | |
| #100 | 22.2 | | |
| #200 | 4.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2869 $D_{85}$= 0.2479 $D_{60}$= 0.2011
$D_{50}$= 0.1871 $D_{30}$= 0.1609 $D_{15}$= 0.1126
$D_{10}$= 0.0922 $C_u$= 2.18 $C_c$= 1.40

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-34-10C
**Sample Number:** TE Lab ID: 4538.20 **Depth:** 8.0 - 13.0 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-35-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-35-10 |
| LOCATION COORDINATES | E = 970,919 N = 259,679 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 16.0 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 27 Ft. |
| 15. DATE BORING | STARTED 06-09-10 / COMPLETED 06-09-10 |
| 16. ELEVATION TOP OF BORING | -28.0 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.0 | 0.0 | | | | |
| -28.6 | 0.6 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | NS | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments (SP) | A | Classification: SP-SM Color: 5Y 7/1-light gray<br>D50: 0.2383 mm % Fines: 10.5 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2374 mm % Fines: 8.1 |
| | | | | C | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2054 mm % Fines: 9.5 |
| -41.4 | 13.4 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -44.0 | 16.0 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

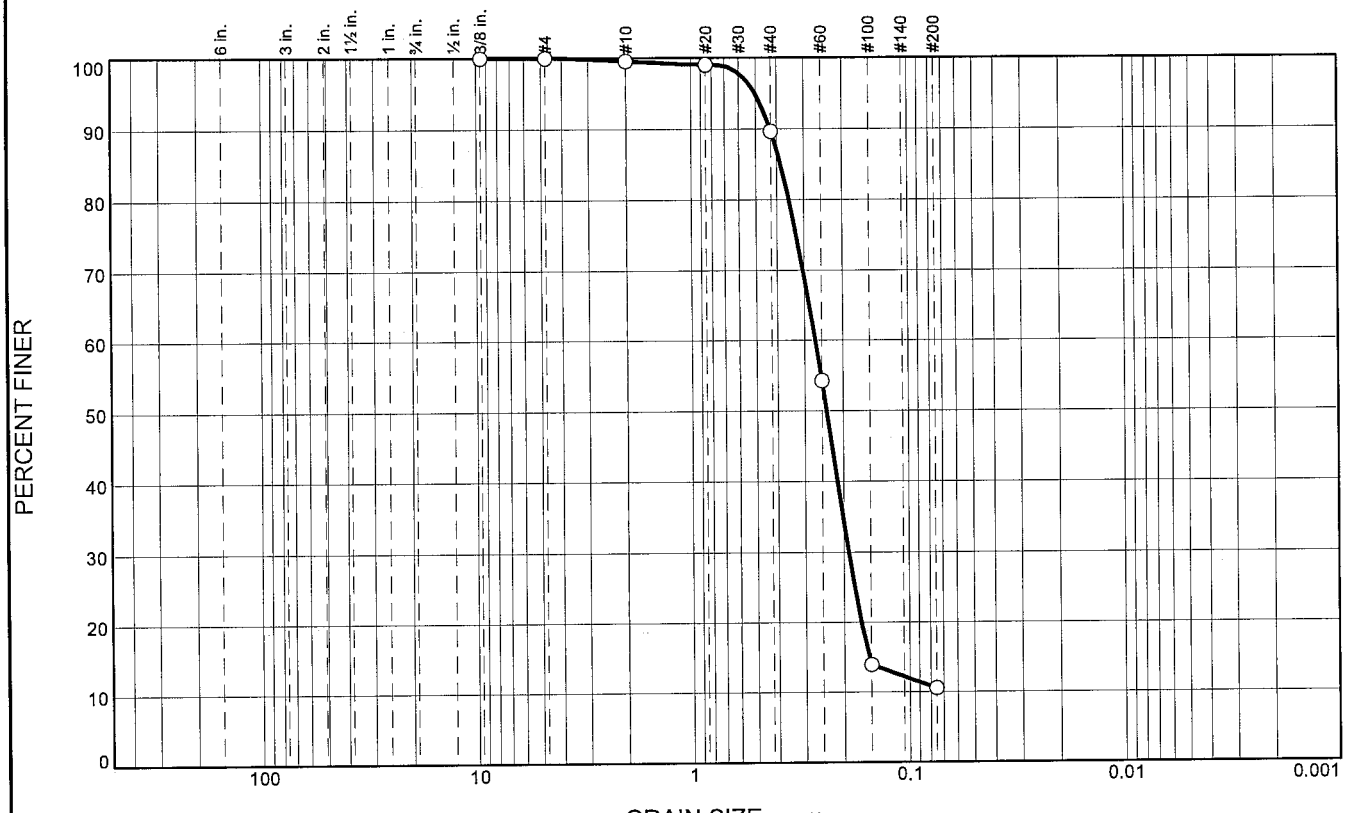
3. Seafloor elevation determined from USACE hydrographic survey completed 2010.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21406° Long = -88.87554°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 9.9 | 79.2 | 10.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 99.1 | | |
| #40 | 89.7 | | |
| #60 | 54.2 | | |
| #100 | 13.9 | | |
| #200 | 10.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4283 $D_{85}$= 0.3845 $D_{60}$= 0.2677
$D_{50}$= 0.2383 $D_{30}$= 0.1897 $D_{15}$= 0.1531
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-35-10A
**Sample Number:** TE Lab ID: 4538.15 **Depth:** 0.6 - 5.0 (ft.) **Date:** 6/19/10

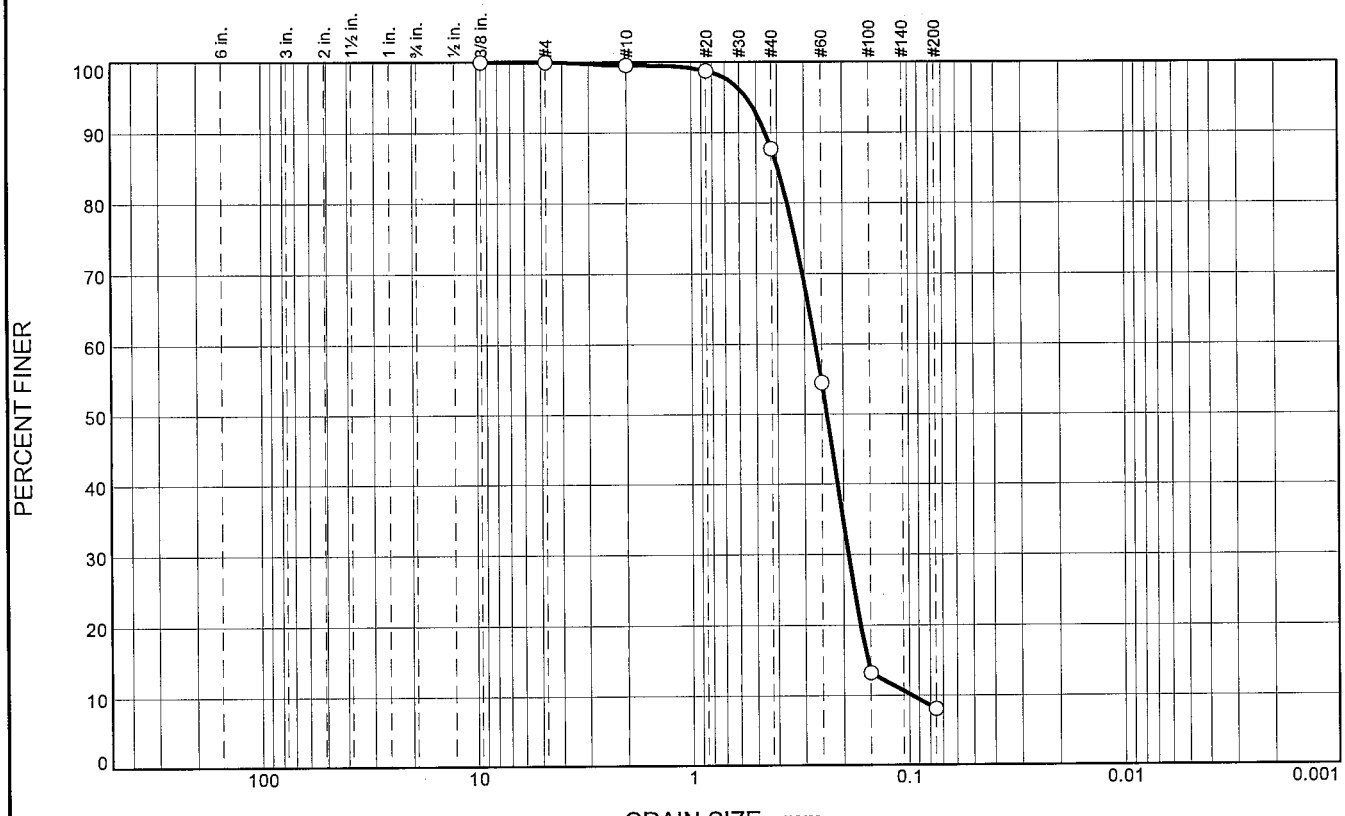
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.5 | 11.8 | 79.6 | 8.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.5 | | |
| #20 | 98.7 | | |
| #40 | 87.7 | | |
| #60 | 54.5 | | |
| #100 | 13.2 | | |
| #200 | 8.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4535 $D_{85}$= 0.3988 $D_{60}$= 0.2675
$D_{50}$= 0.2374 $D_{30}$= 0.1895 $D_{15}$= 0.1547
$D_{10}$= 0.0971 $C_u$= 2.75 $C_c$= 1.38

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-35-10B
**Sample Number:** TE Lab ID: 4538.16 **Depth:** 5.0 - 10.0 (ft.) **Date:** 6/19/10

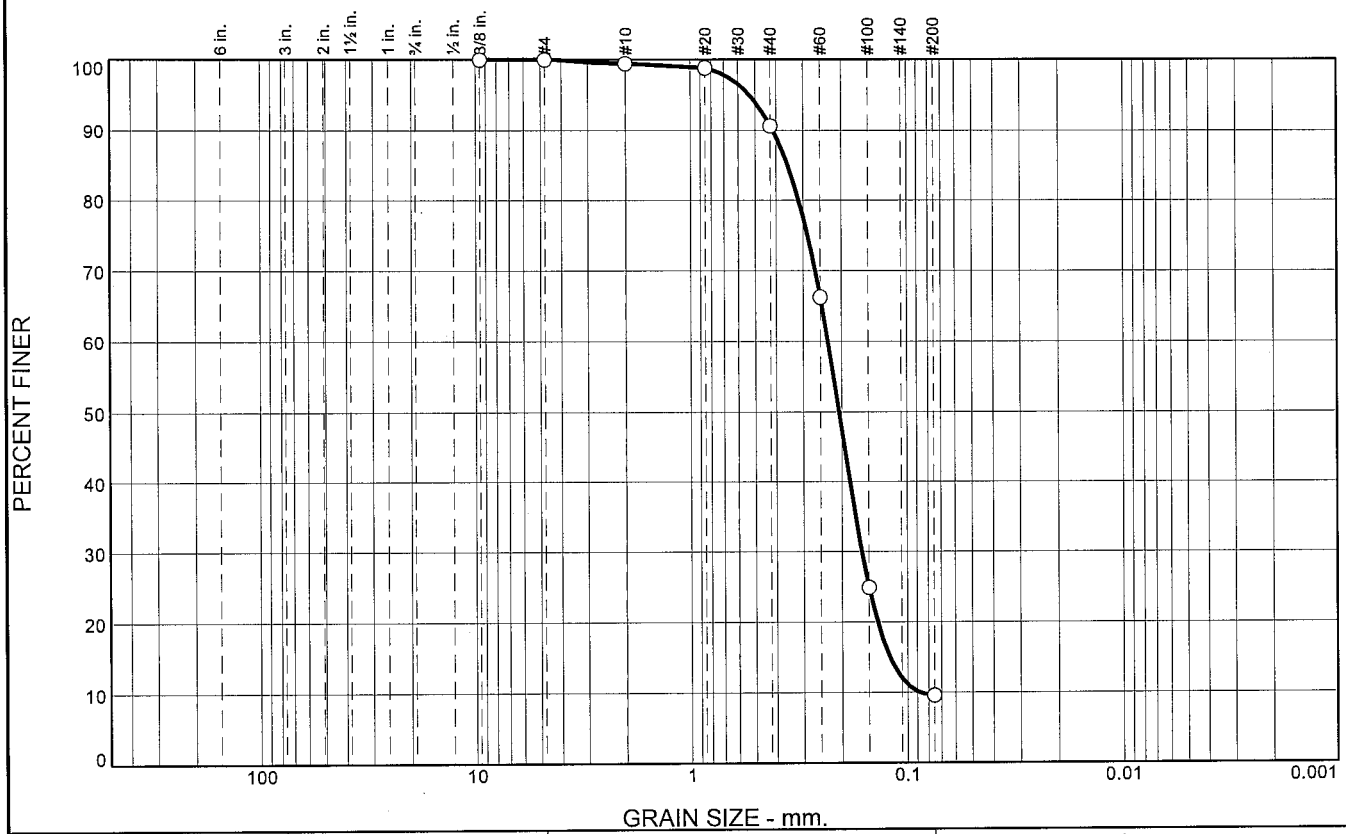
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.6 | 8.8 | 81.1 | 9.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.4 | | |
| #20 | 98.8 | | |
| #40 | 90.6 | | |
| #60 | 66.2 | | |
| #100 | 24.9 | | |
| #200 | 9.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4148 $D_{85}$= 0.3540 $D_{60}$= 0.2308
$D_{50}$= 0.2054 $D_{30}$= 0.1617 $D_{15}$= 0.1208
$D_{10}$= 0.0878 $C_u$= 2.63 $C_c$= 1.29

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-35-10C
**Sample Number:** TE Lab ID: 4538.17 **Depth:** 10.0 - 13.4 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-36-10**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-36-10 — LOCATION COORDINATES: E = 957,515 N = 252,879 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 1 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 26 Ft. |
| | 15. DATE BORING — STARTED: 06-12-10 — COMPLETED: 06-12-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -23.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -23.9 | 0.0 | | | | |
| -27.4 | 3.5 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.1671 mm % Fines: 9.7 |
| -40.7 | 16.8 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

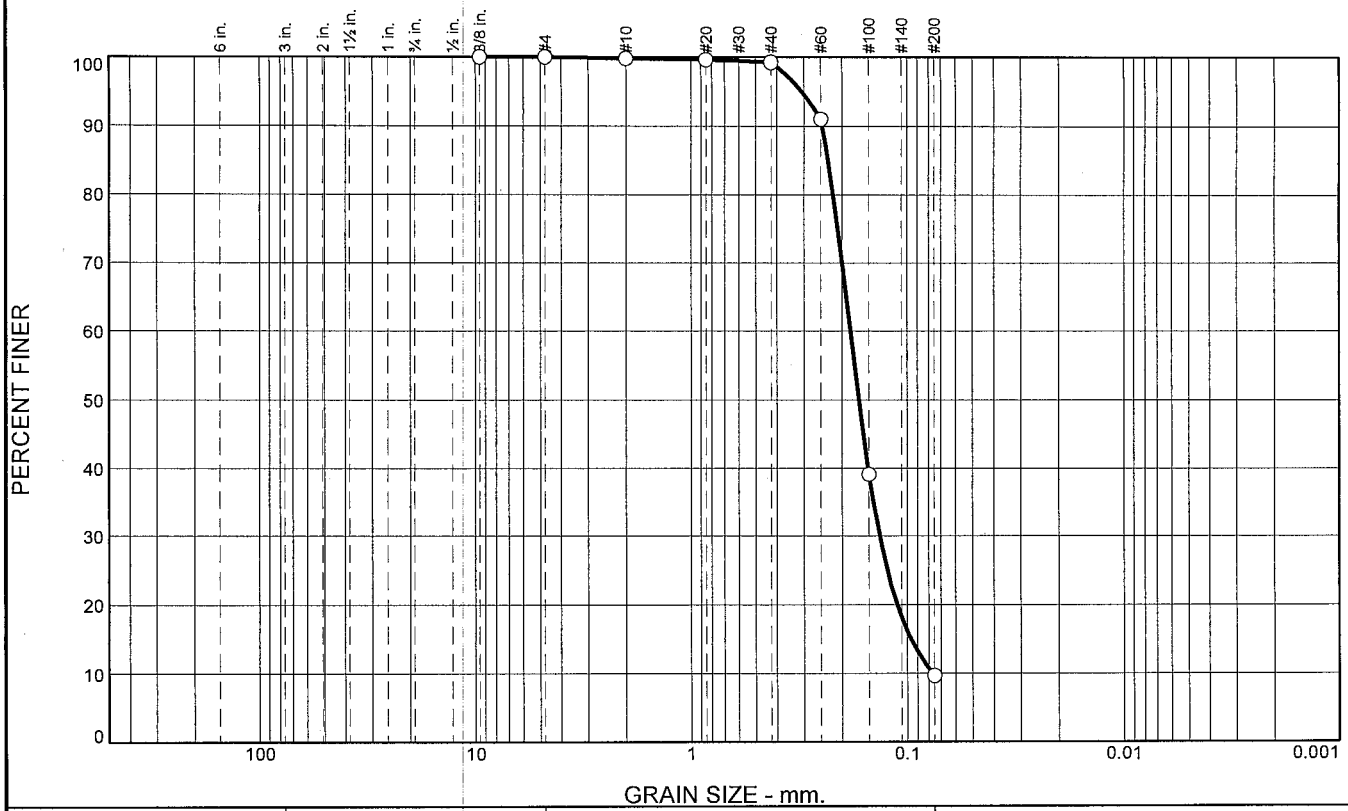
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19534° Long = -88.91796°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 0.5 | 89.6 | 9.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.6 | | |
| #40 | 99.3 | | |
| #60 | 91.0 | | |
| #100 | 39.1 | | |
| #200 | 9.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2465 $D_{85}$= 0.2316 $D_{60}$= 0.1827
$D_{50}$= 0.1671 $D_{30}$= 0.1340 $D_{15}$= 0.0966
$D_{10}$= 0.0765 $C_u$= 2.39 $C_c$= 1.28

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-36-10A
**Sample Number:** TE Lab ID: 4538.48 **Depth:** 0.0 - 3.5 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** R.Martin **Checked By:** R.Byrd

Boring Designation BI-SI-37-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-37-10 |
| LOCATION COORDINATES | E = 959,401 N = 253,597 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 17.0 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 26 Ft. |
| 15. DATE BORING | STARTED 06-14-10 / COMPLETED 06-14-10 |
| 16. ELEVATION TOP OF BORING | -24.0 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

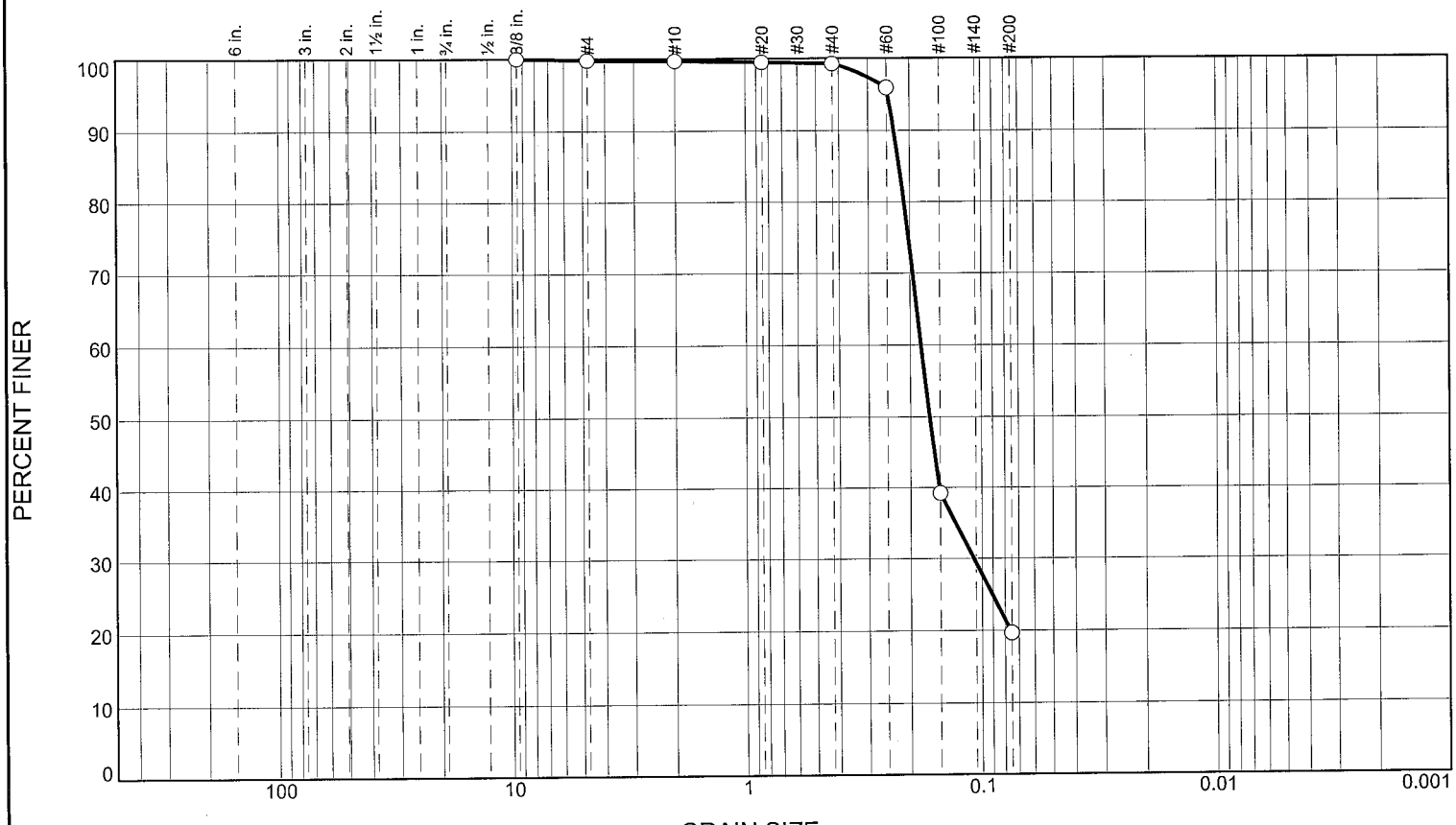
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -24.0 | 0.0 | | | | |
| -29.7 | 5.7 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SM Color: 2.5Y 5/1-gray<br>D50: 0.1658 mm % Fines: 19.7 |
| -41.0 | 17.0 | | CLAY, lean, dark gray (CL) | NS | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19732° Long = -88.91199°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.1 | 0.5 | 79.5 | 19.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.7 | | |
| #20 | 99.5 | | |
| #40 | 99.2 | | |
| #60 | 95.9 | | |
| #100 | 39.2 | | |
| #200 | 19.7 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2326 $D_{85}$= 0.2213 $D_{60}$= 0.1800
$D_{50}$= 0.1658 $D_{30}$= 0.1082 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-37-10A
**Sample Number:** TE Lab ID: 4549.01 **Depth:** 0.0 - 5.7 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-38-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-38-10 — LOCATION COORDINATES: E = 964,637 N = 255,460 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 4 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 27 Ft. |
| | 15. DATE BORING — STARTED: 06-14-10 — COMPLETED: 06-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -24.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -24.8 | 0.0 | | | | |
| -26.8 | 2.0 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.1831 mm % Fines: 5.8 |
| -29.3 | 4.5 | | CLAY, lean, dark gray (CL) | NS | |
| -37.6 | 12.8 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | B | Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.1926 mm % Fines: 5.3 |
| | | | | C | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.1673 mm % Fines: 9.1 |
| -40.3 | 15.5 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | D | Classification: SM Color: 2.5Y 4/2-dark grayish brown D50: 0.1499 mm % Fines: 25.5 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

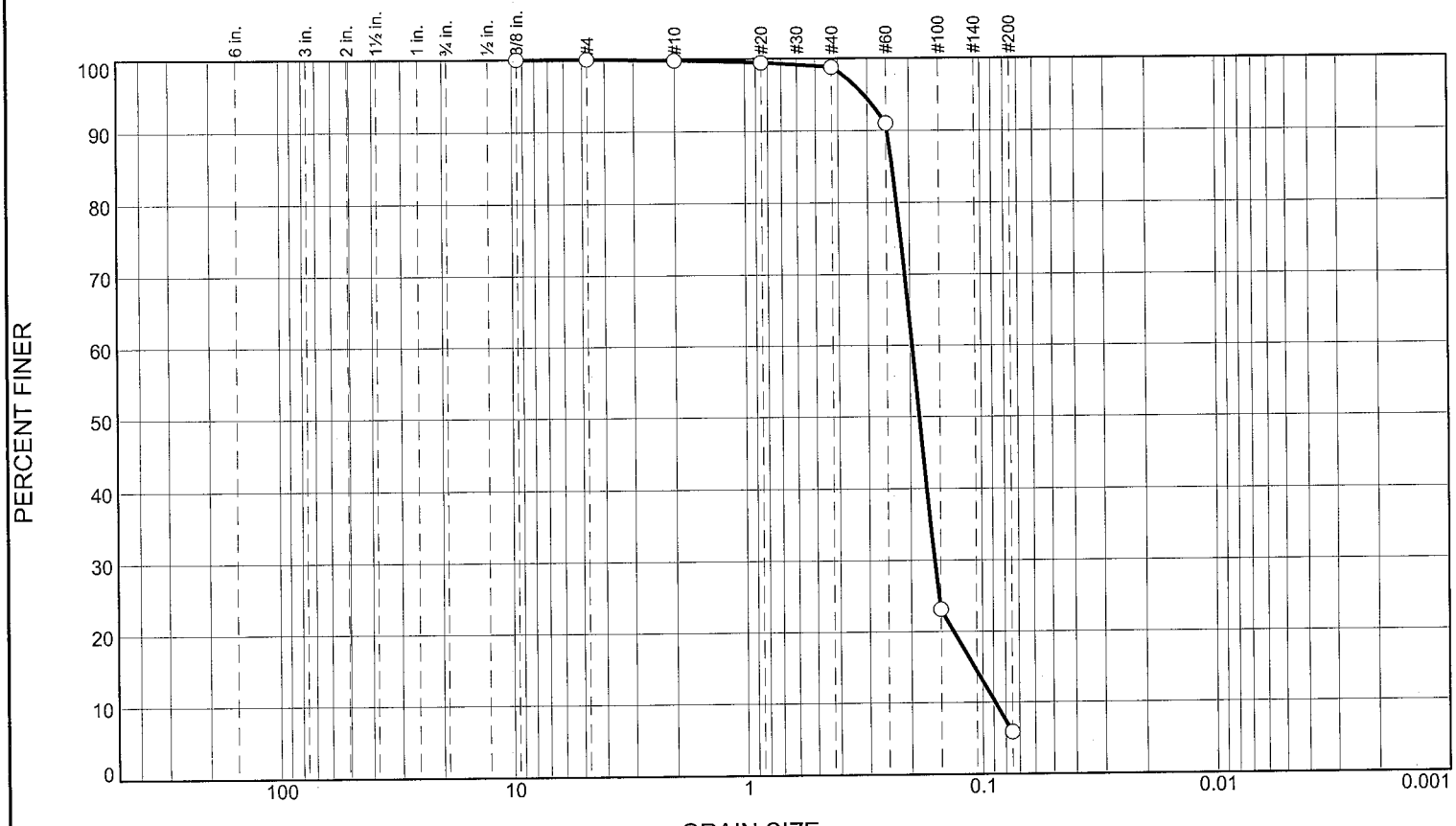
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20245° Long = -88.89542°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 1.0 | 93.0 | 5.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.4 | | |
| #40 | 98.8 | | |
| #60 | 91.0 | | |
| #100 | 23.1 | | |
| #200 | 5.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2472 $D_{85}$= 0.2355 $D_{60}$= 0.1957
$D_{50}$= 0.1831 $D_{30}$= 0.1590 $D_{15}$= 0.1083
$D_{10}$= 0.0886 $C_u$= 2.21 $C_c$= 1.46

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-38-10A
**Sample Number:** TE Lab ID: 4549.02 **Depth:** 0.0 - 2.0 (ft.) **Date:** 6/26/10

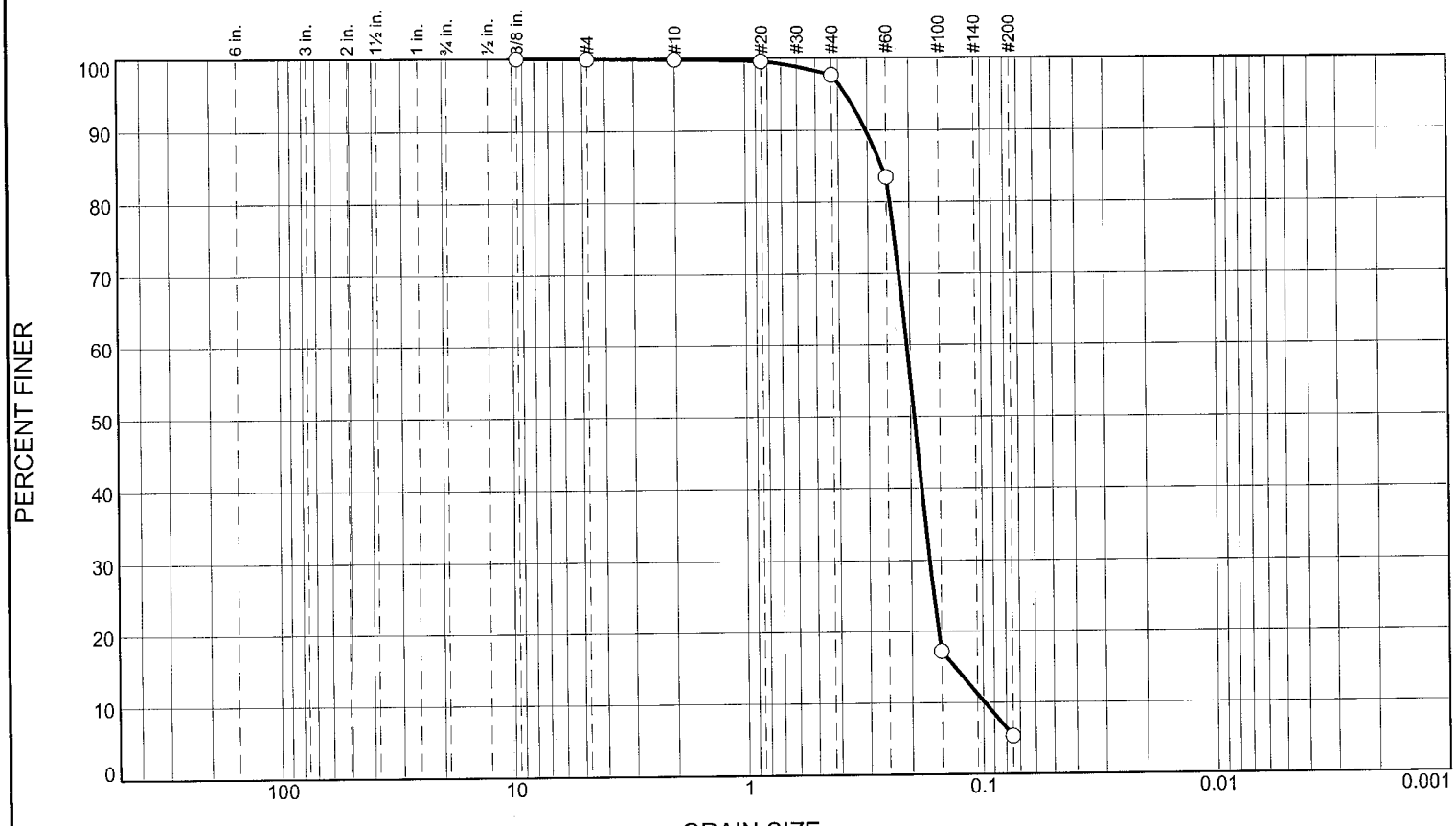
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 2.2 | 92.3 | 5.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 99.6 | | |
| #40 | 97.6 | | |
| #60 | 83.4 | | |
| #100 | 17.2 | | |
| #200 | 5.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3046 $D_{85}$= 0.2610 $D_{60}$= 0.2064
$D_{50}$= 0.1926 $D_{30}$= 0.1672 $D_{15}$= 0.1320
$D_{10}$= 0.0987 $C_u$= 2.09 $C_c$= 1.37

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-38-10B
**Sample Number:** TE Lab ID: 4549.03 **Depth:** 4.5 - 9.5 (ft.) **Date:** 6/26/10

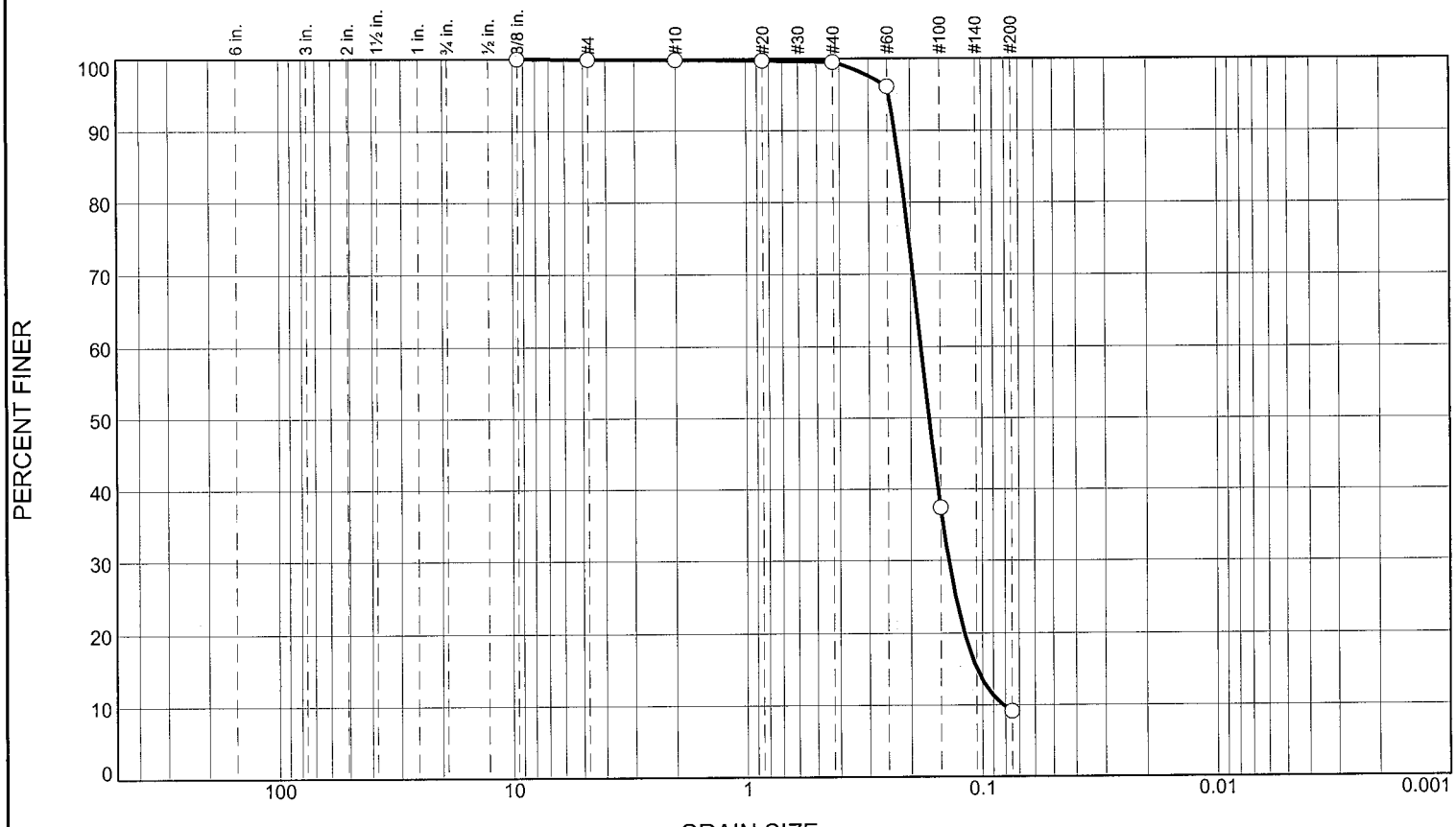
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 0.3 | 90.4 | 9.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 99.7 | | |
| #40 | 99.5 | | |
| #60 | 96.1 | | |
| #100 | 37.5 | | |
| #200 | 9.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2322 $D_{85}$= 0.2212 $D_{60}$= 0.1809
$D_{50}$= 0.1673 $D_{30}$= 0.1384 $D_{15}$= 0.1054
$D_{10}$= 0.0816 $C_u$= 2.22 $C_c$= 1.30

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-38-10C
**Sample Number:** TE Lab ID: 4549.04 **Depth:** 9.5 - 12.8 (ft.) **Date:** 6/26/10

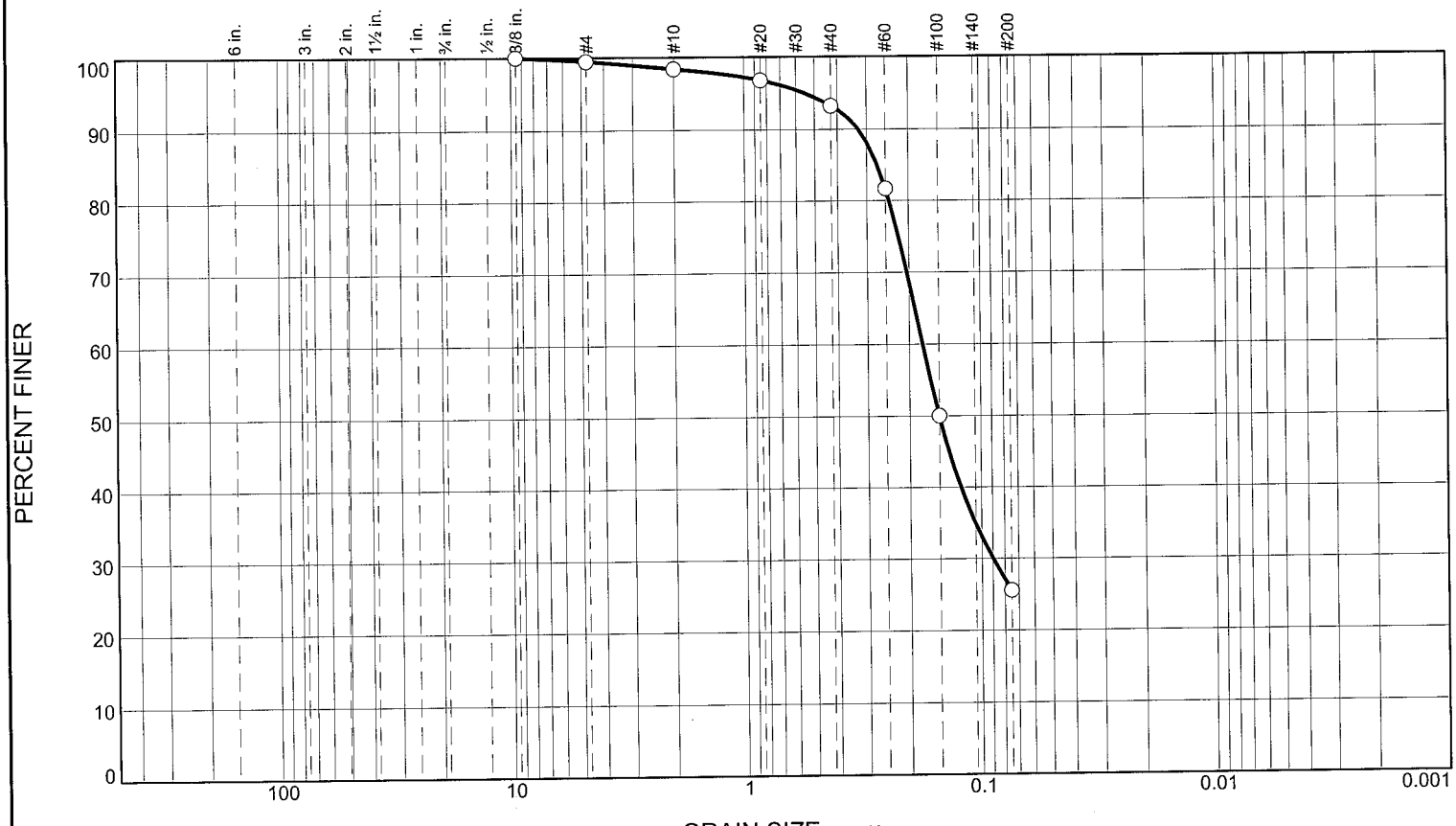
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 1.1 | 5.1 | 67.8 | 25.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 98.4 | | |
| #20 | 96.8 | | |
| #40 | 93.3 | | |
| #60 | 81.7 | | |
| #100 | 50.0 | | |
| #200 | 25.5 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3252 $D_{85}$= 0.2707 $D_{60}$= 0.1757
$D_{50}$= 0.1499 $D_{30}$= 0.0896 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-38-10D
**Sample Number:** TE Lab ID: 4549.05 **Depth:** 12.8 - 15.9 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-39-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-39-10 — LOCATION COORDINATES: E = 966,533 N = 256,277 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 28 Ft. |
| | 15. DATE BORING — STARTED: 06-14-10 — COMPLETED: 06-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -27.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.6 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

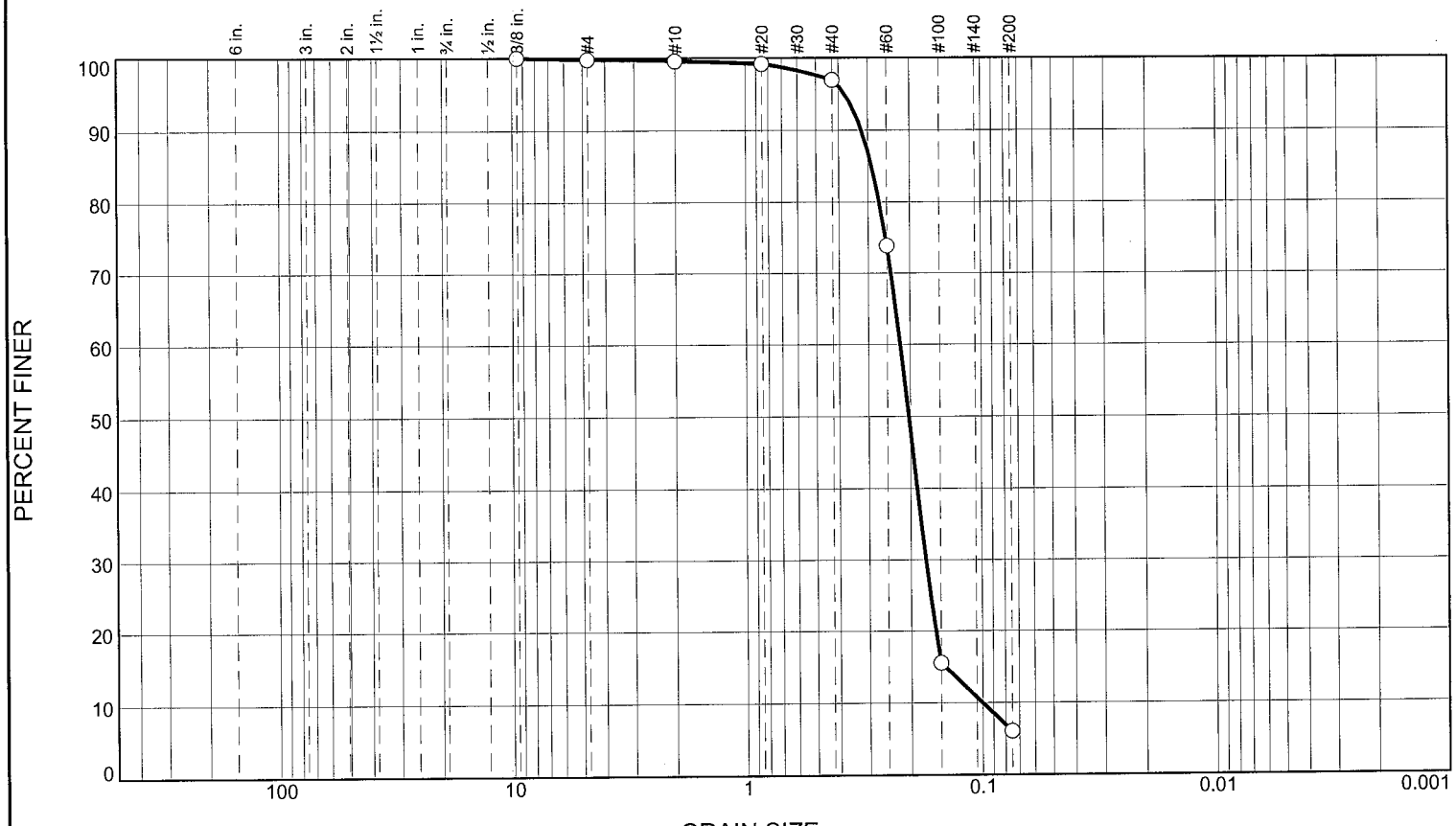
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -27.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.203 mm % Fines: 6 |
| | | | | B | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1798 mm % Fines: 8.9 |
| -39.2 | 12.0 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1994 mm % Fines: 11.4 |
| -42.8 | 15.6 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed 2010. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20470° Long = -88.88942°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.2 | 2.6 | 91.0 | 6.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.6 | | |
| #20 | 99.2 | | |
| #40 | 97.0 | | |
| #60 | 73.8 | | |
| #100 | 15.5 | | |
| #200 | 6.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3190 $D_{85}$= 0.2891 $D_{60}$= 0.2201
$D_{50}$= 0.2030 $D_{30}$= 0.1727 $D_{15}$= 0.1444
$D_{10}$= 0.1003 $C_u$= 2.19 $C_c$= 1.35

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-39-10A
**Sample Number:** TE Lab ID: 4549.06 **Depth:** 0.0 - 6.0 (ft.) **Date:** 6/26/10

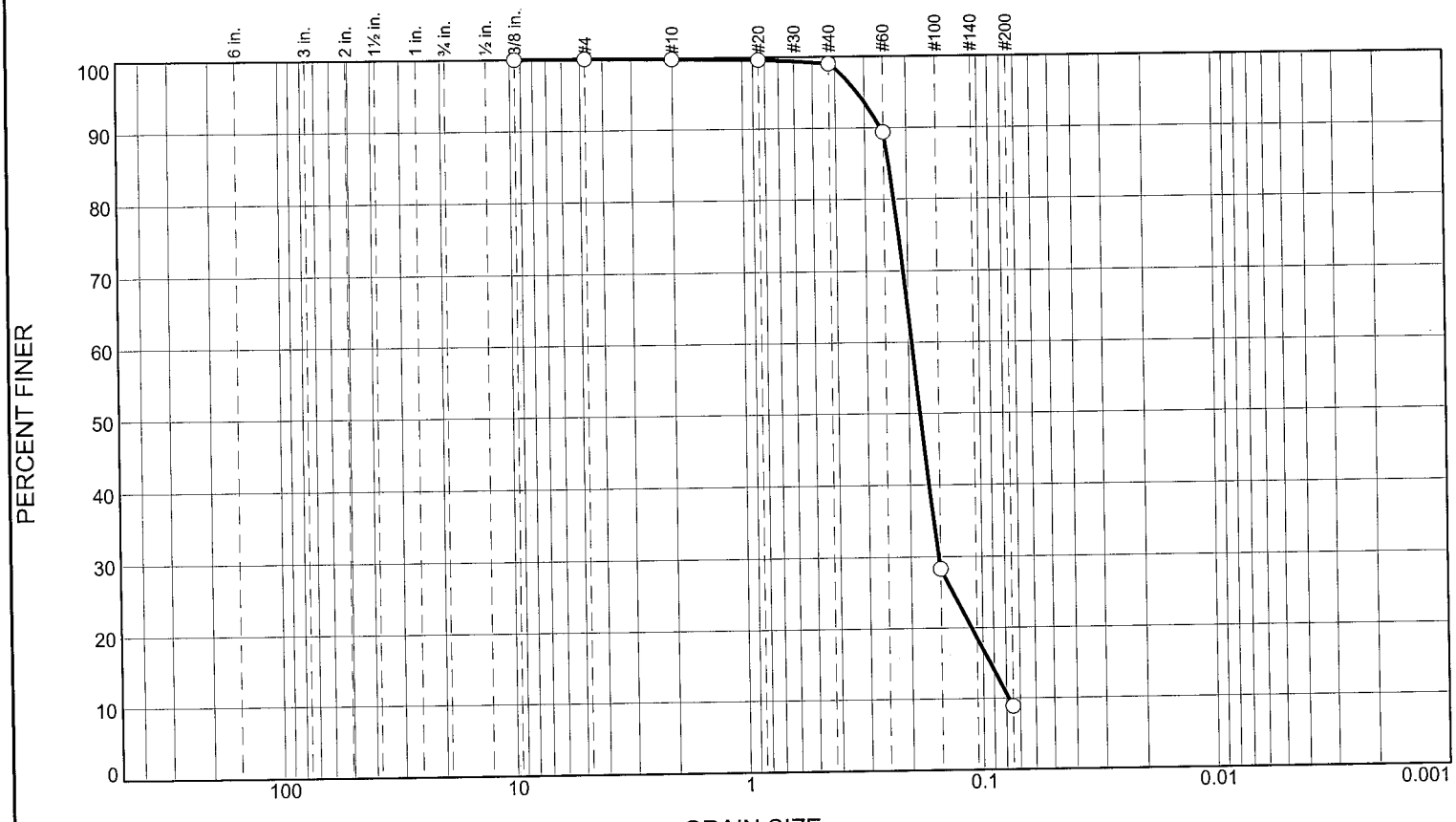
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 0.8 | 90.1 | 8.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.6 | | |
| #40 | 99.0 | | |
| #60 | 89.4 | | |
| #100 | 28.3 | | |
| #200 | 8.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2563 $D_{85}$= 0.2382 $D_{60}$= 0.1937
$D_{50}$= 0.1798 $D_{30}$= 0.1525 $D_{15}$= 0.0934
$D_{10}$= 0.0781 $C_u$= 2.48 $C_c$= 1.54

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-39-10B
**Sample Number:** TE Lab ID: 4549.07 **Depth:** 6.0 - 12.0 (ft.) **Date:** 6/26/10

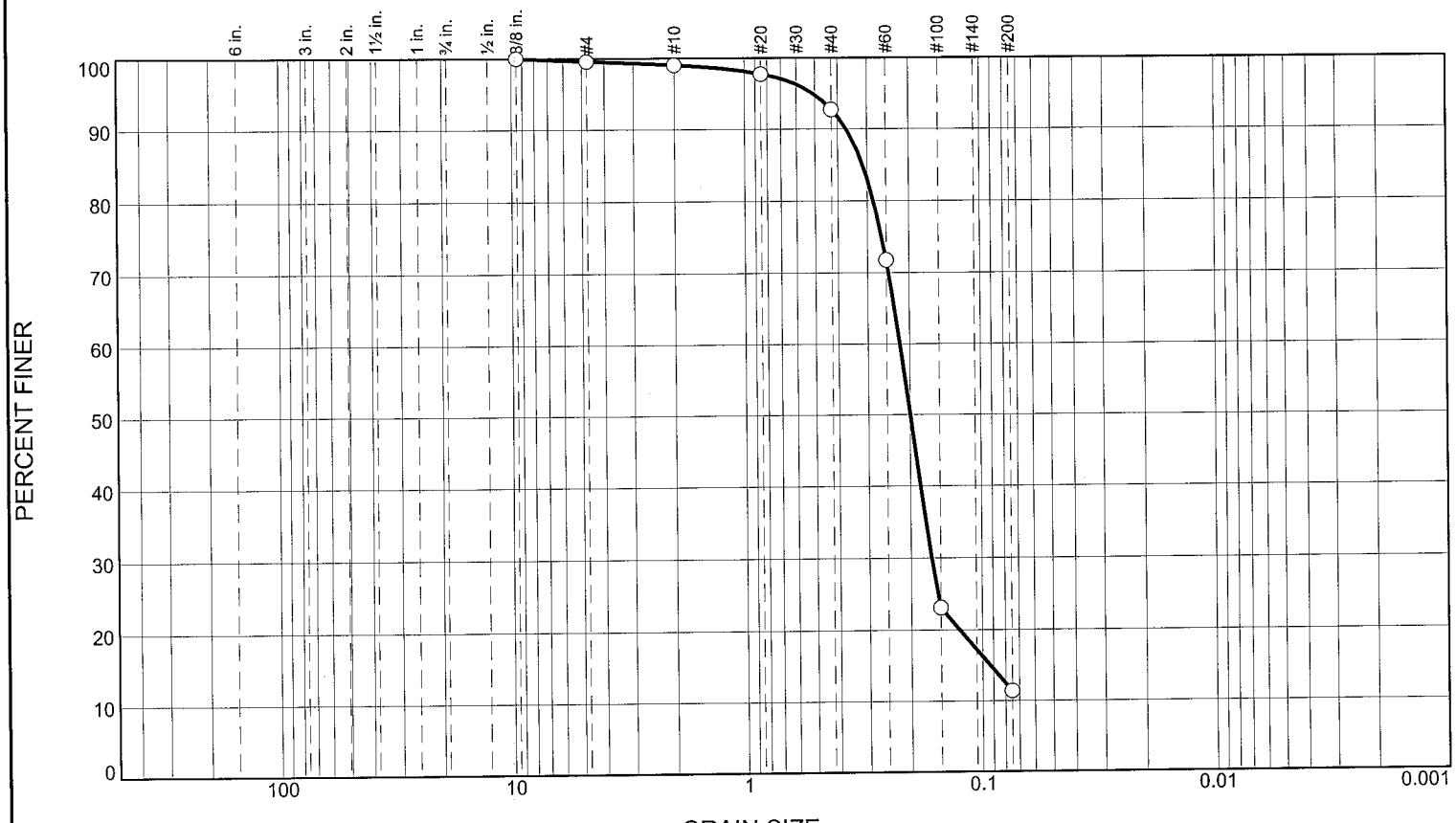
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.6 | 6.3 | 81.3 | 11.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.0 | | |
| #20 | 97.7 | | |
| #40 | 92.7 | | |
| #60 | 71.7 | | |
| #100 | 23.1 | | |
| #200 | 11.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3677 $D_{85}$= 0.3133 $D_{60}$= 0.2197
$D_{50}$= 0.1994 $D_{30}$= 0.1633 $D_{15}$= 0.0928
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-39-10C
**Sample Number:** TE Lab ID: 4549.08 **Depth:** 12.0 - 15.6 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-40-10

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-40-10 |
| LOCATION COORDINATES | E = 989,473 N = 257,390 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 17.1 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 30 Ft. |
| 15. DATE BORING | STARTED 06-14-10 / COMPLETED 06-14-10 |
| 16. ELEVATION TOP OF BORING | -28.2 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

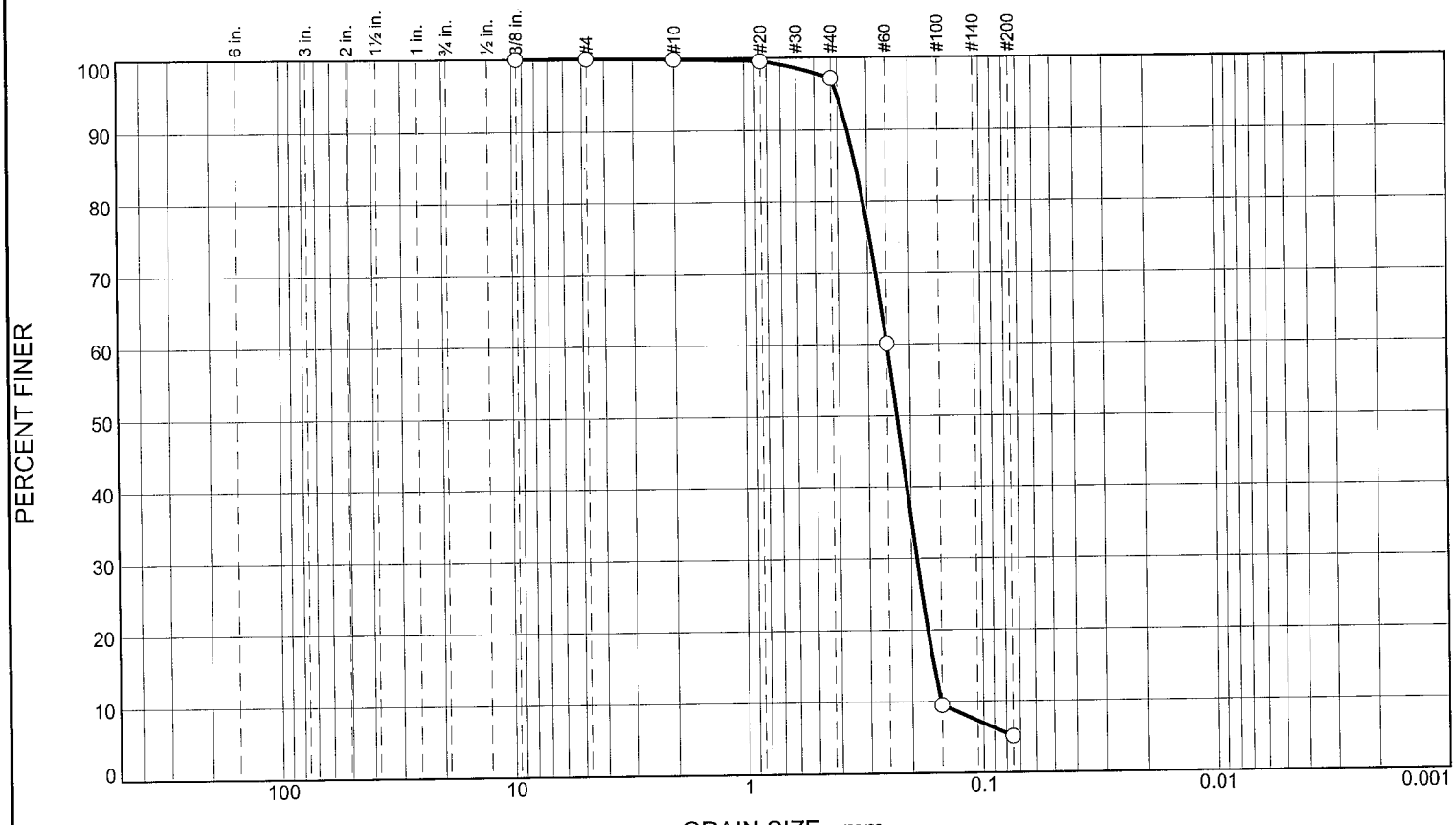
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/2-light gray<br>D50: 0.2273 mm % Fines: 5.1 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/2-light gray<br>D50: 0.1872 mm % Fines: 6.8 |
| -41.4 | 13.2 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SP-SM Color: 2.5Y 5/2-<br>D50: 0.2159 mm % Fines: 10.5 |
| -45.3 | 17.1 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed 2010. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20777° Long = -88.8168°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.8 | 92.0 | 5.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.5 | | |
| #40 | 97.1 | | |
| #60 | 60.1 | | |
| #100 | 9.5 | | |
| #200 | 5.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3633 $D_{85}$= 0.3350 $D_{60}$= 0.2498
$D_{50}$= 0.2273 $D_{30}$= 0.1893 $D_{15}$= 0.1616
$D_{10}$= 0.1512 $C_u$= 1.65 $C_c$= 0.95

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-40-10A
**Sample Number:** TE Lab ID: 4549.09 **Depth:** 0.0 - 6.5 (ft.) **Date:** 6/26/10

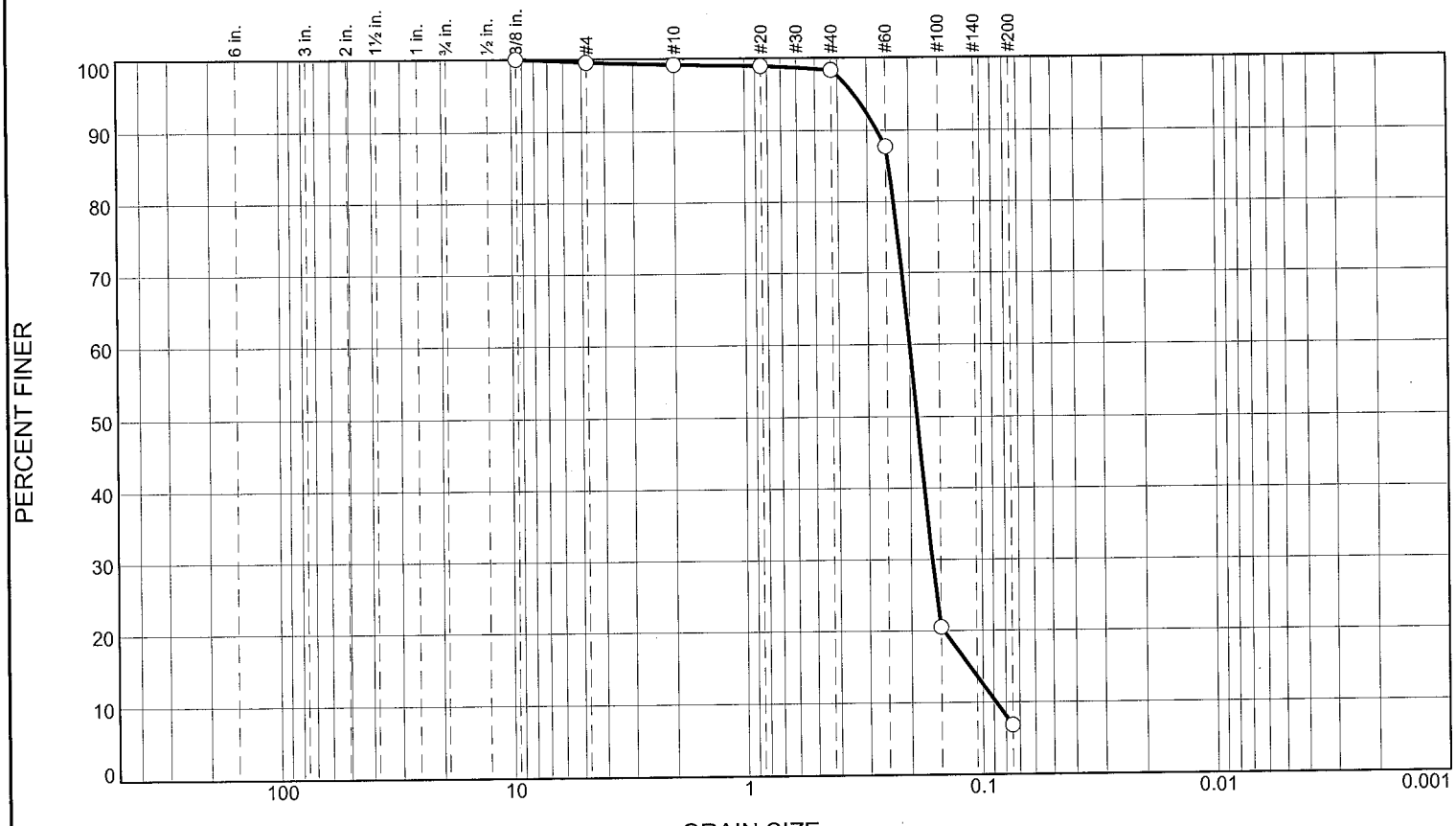
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.3 | 0.9 | 91.5 | 6.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 99.2 | | |
| #20 | 98.9 | | |
| #40 | 98.3 | | |
| #60 | 87.8 | | |
| #100 | 20.5 | | |
| #200 | 6.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2718 $D_{85}$= 0.2430 $D_{60}$= 0.2003
$D_{50}$= 0.1872 $D_{30}$= 0.1626 $D_{15}$= 0.1136
$D_{10}$= 0.0881 $C_u$= 2.27 $C_c$= 1.50

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-40-10B
**Sample Number:** TE Lab ID: 4549.10 **Depth:** 6.5 - 13.2 (ft.) **Date:** 6/26/10

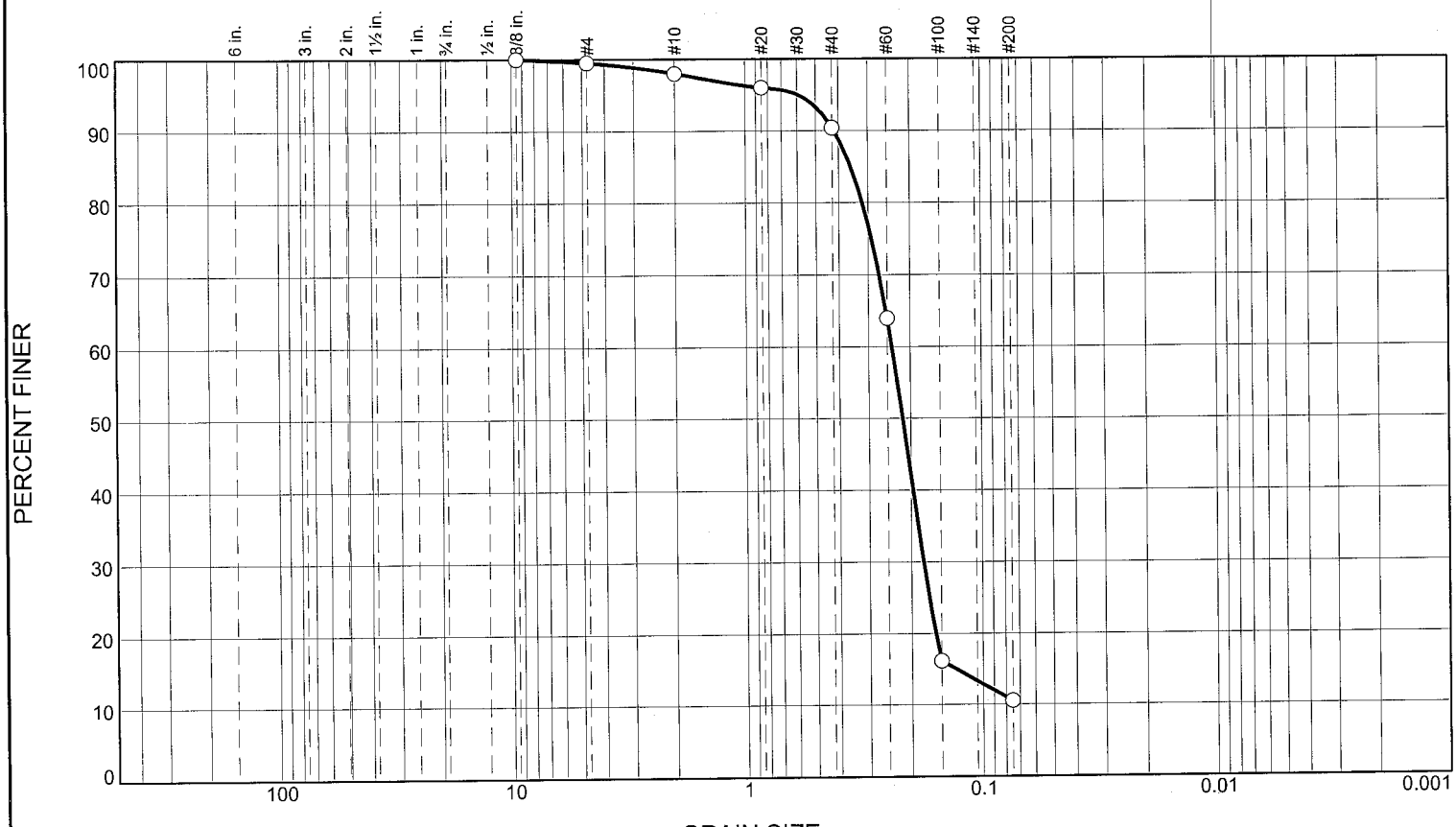
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 1.5 | 7.6 | 79.9 | 10.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 98.0 | | |
| #20 | 96.0 | | |
| #40 | 90.4 | | |
| #60 | 64.0 | | |
| #100 | 16.2 | | |
| #200 | 10.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4179 $D_{85}$= 0.3550 $D_{60}$= 0.2391
$D_{50}$= 0.2159 $D_{30}$= 0.1773 $D_{15}$= 0.1301
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-40-10C
**Sample Number:** TE Lab ID: 4549.11 **Depth:** 13.2 - 17.1 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-41-10**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-41-10 — LOCATION COORDINATES: E = 972,059 N = 258,893 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 30 Ft. |
| | 15. DATE BORING — STARTED: 06-14-10 — COMPLETED: 06-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -28.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

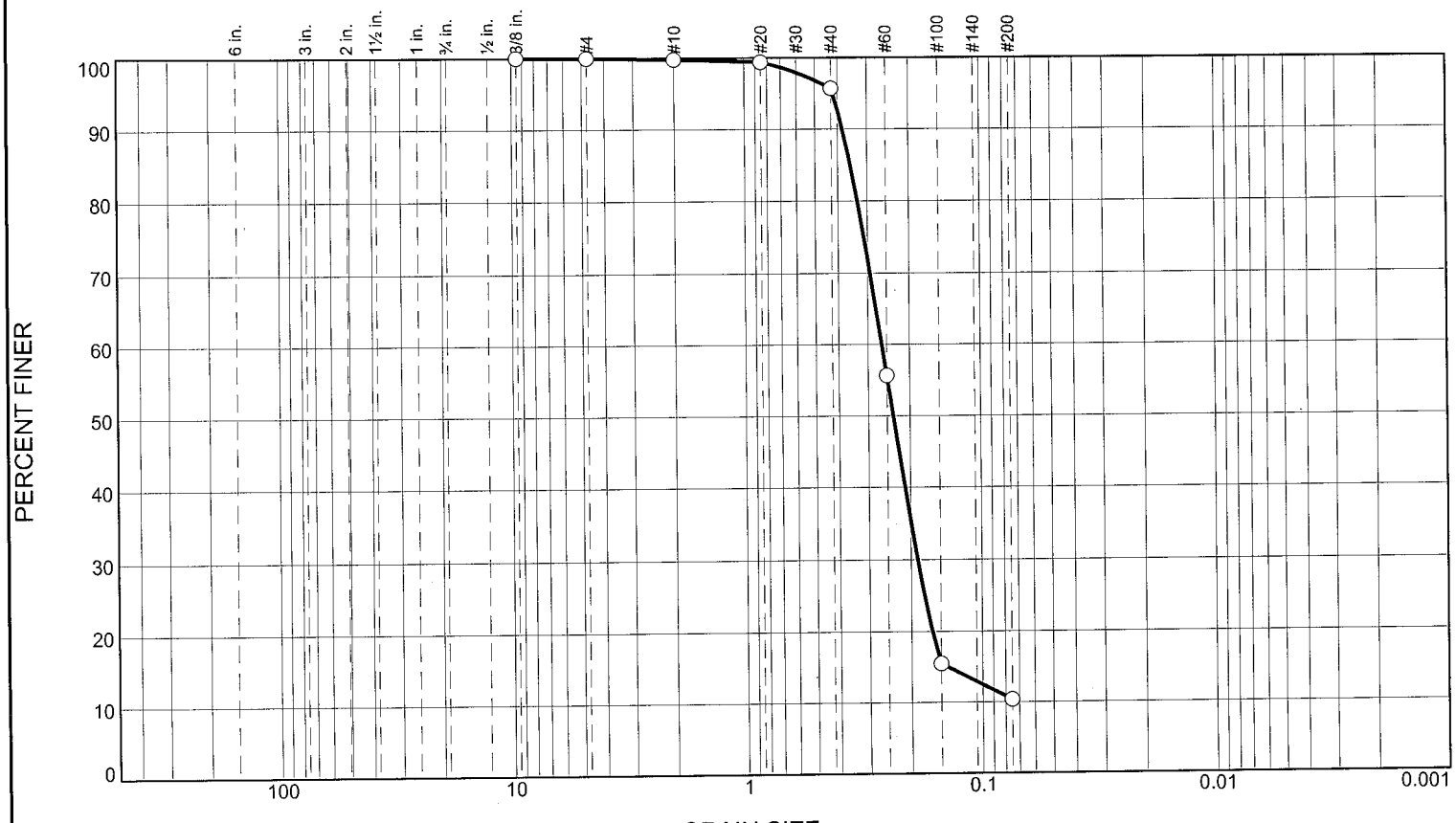
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.9 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2353 mm % Fines: 10.4 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2164 mm % Fines: 6 |
| -40.3 | 11.4 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -45.6 | 16.7 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed 2010. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21190° Long = -88.87193°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 4.1 | 85.3 | 10.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.4 | | |
| #40 | 95.7 | | |
| #60 | 55.6 | | |
| #100 | 15.4 | | |
| #200 | 10.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3810 $D_{85}$= 0.3532 $D_{60}$= 0.2621
$D_{50}$= 0.2353 $D_{30}$= 0.1873 $D_{15}$= 0.1413
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-41-10A
**Sample Number:** TE Lab ID: 4549.12 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/26/10

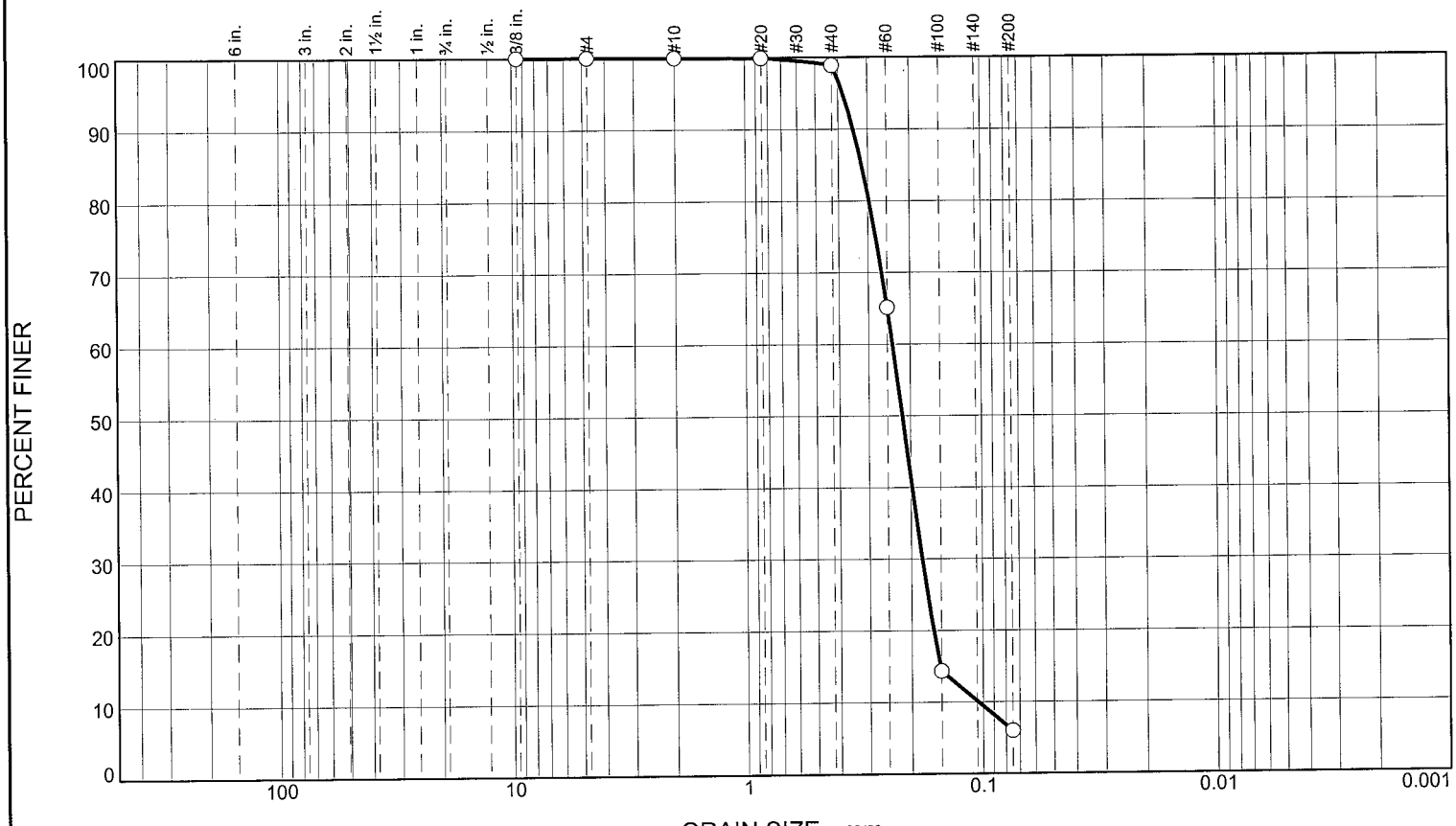
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 92.9 | 6.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.9 | | |
| #40 | 98.9 | | |
| #60 | 65.1 | | |
| #100 | 14.4 | | |
| #200 | 6.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3449 $D_{85}$= 0.3180 $D_{60}$= 0.2376
$D_{50}$= 0.2164 $D_{30}$= 0.1796 $D_{15}$= 0.1514
$D_{10}$= 0.1047 $C_u$= 2.27 $C_c$= 1.30

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-41-10B
**Sample Number:** TE Lab ID: 4549.13 **Depth:** 5.0 - 11.4 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

Boring Designation BI-SI-42-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SI-42-10 / LOCATION COORDINATES E = 960,604 N = 251,607 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES DISTURBED 0 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 27 Ft. |
| | 15. DATE BORING STARTED 06-08-10 / COMPLETED 06-08-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -26.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 20.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -26.8 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -41.0 | 14.2 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |
| -46.8 | 20.0 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling | | |

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19185° Long = -88.90818°

Boring Designation BI-SI-42-10

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 960,604 Y = 251,607 | ELEVATION TOP OF BORING -26.8 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19185° Long = -88.90818°

Boring Designation BI-SI-43-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-43-10 |
| LOCATION COORDINATES | E = 963,078 N = 252,282 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 18.2 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 0 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 28.5 Ft. |
| 15. DATE BORING | STARTED 06-14-10 / COMPLETED 06-14-10 |
| 16. ELEVATION TOP OF BORING | -27.2 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -27.2 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -42.4 | 15.2 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |
| -45.4 | 18.2 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19371° Long = -88.90035°

**Boring Designation BI-SI-44-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | | | |
|---|---|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Ship Island | | 9. SIZE AND TYPE OF BIT N/A | |
| | | 10. COORDINATE SYSTEM/DATUM<br>State Plane, MSE (U.S. Ft.) | HORIZONTAL<br>NAD83 / VERTICAL<br>NAVD88 |
| 2. BORING DESIGNATION<br>BI-SI-44-10 | LOCATION COORDINATES<br>E = 965,344 N = 253,248 | 11. MANUFACTURER'S DESIGNATION OF DRILL<br>Vibracore | ☐ AUTO HAMMER<br>☐ MANUAL HAMMER |
| 3. DRILLING AGENCY<br>Corps of Engineers - CESAM | CONTRACTOR FILE NO. | 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER<br>Construction Solutions International, Inc. | | 13. TOTAL NUMBER CORE BOXES | |
| 5. DIRECTION OF BORING<br>☒ VERTICAL<br>☐ INCLINED | DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 29 Ft. | |
| | | 15. DATE BORING | STARTED 06-14-10 / COMPLETED 06-14-10 |
| 6. THICKNESS OF OVERBURDEN N/A | | 16. ELEVATION TOP OF BORING -27.6 Ft. | |
| 7. DEPTH DRILLED INTO ROCK N/A | | 17. TOTAL RECOVERY FOR BORING 100% | |
| 8. TOTAL DEPTH OF BORING 15.4 Ft. | | 18. SIGNATURE AND TITLE OF INSPECTOR<br>Marty Gates, Geologist | |

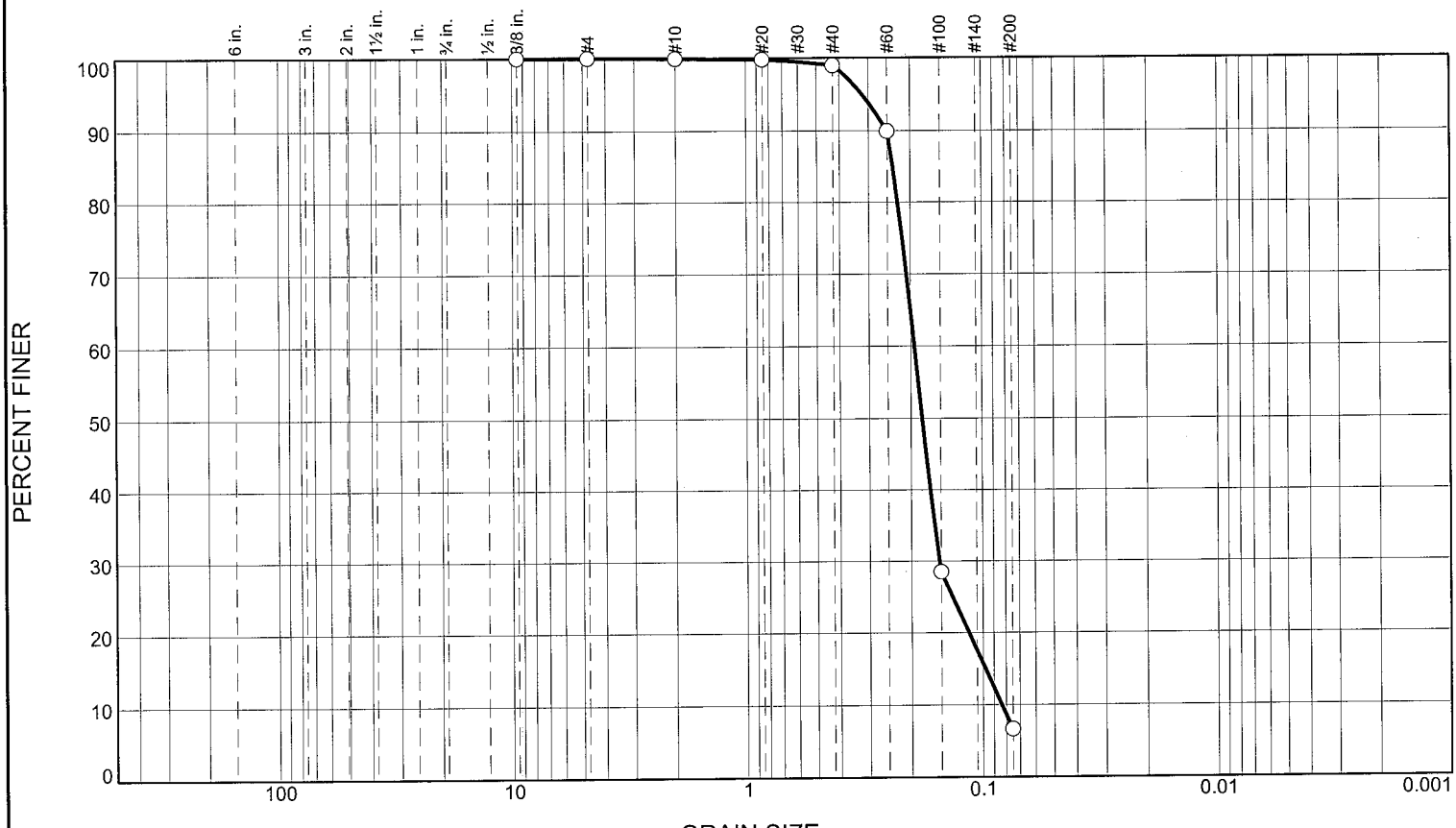
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -27.6 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1791 mm % Fines: 6.7 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2159 mm % Fines: 3.9 |
| -36.1 | 8.5 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -39.6 | 12.0 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.2105 mm % Fines: 12 |
| -43.0 | 15.4 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19637° Long = -88.89318°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 0.9 | 92.3 | 6.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.8 | | |
| #40 | 99.0 | | |
| #60 | 89.9 | | |
| #100 | 28.5 | | |
| #200 | 6.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2509 $D_{85}$= 0.2368 $D_{60}$= 0.1929
$D_{50}$= 0.1791 $D_{30}$= 0.1522 $D_{15}$= 0.0977
$D_{10}$= 0.0834 $C_u$= 2.31 $C_c$= 1.44

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-44-10A
**Sample Number:** TE Lab ID: 4549.22 **Depth:** 0.0 - 4.0 (ft.) **Date:** 6/26/10

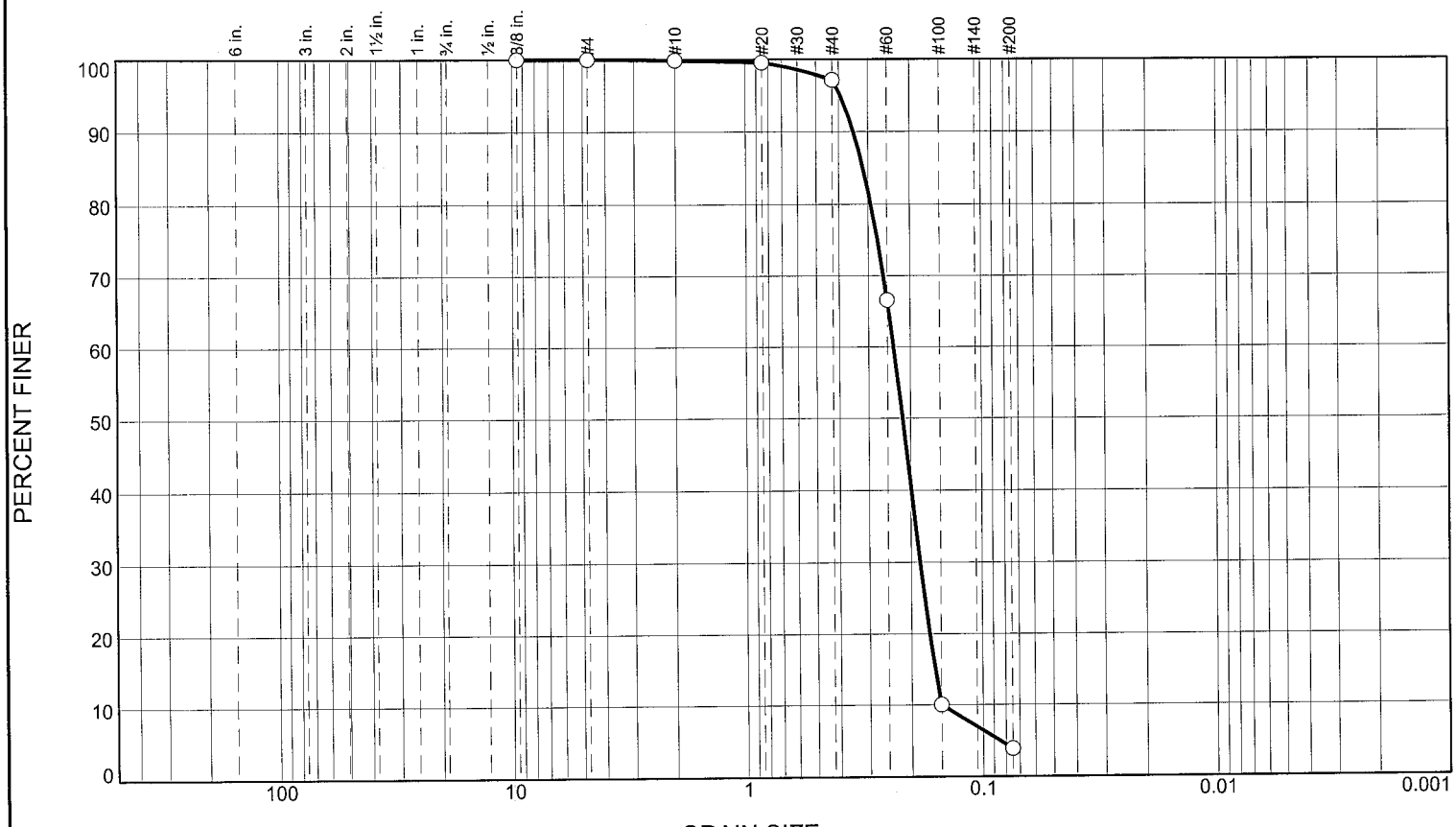
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.8 | 93.2 | 3.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 97.1 | | |
| #60 | 66.6 | | |
| #100 | 10.0 | | |
| #200 | 3.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3454 $D_{85}$= 0.3146 $D_{60}$= 0.2351
$D_{50}$= 0.2159 $D_{30}$= 0.1830 $D_{15}$= 0.1590
$D_{10}$= 0.1497 $C_u$= 1.57 $C_c$= 0.95

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-44-10B
**Sample Number:** TE Lab ID: 4549.23 **Depth:** 4.0 - 8.5 (ft.) **Date:** 6/26/10

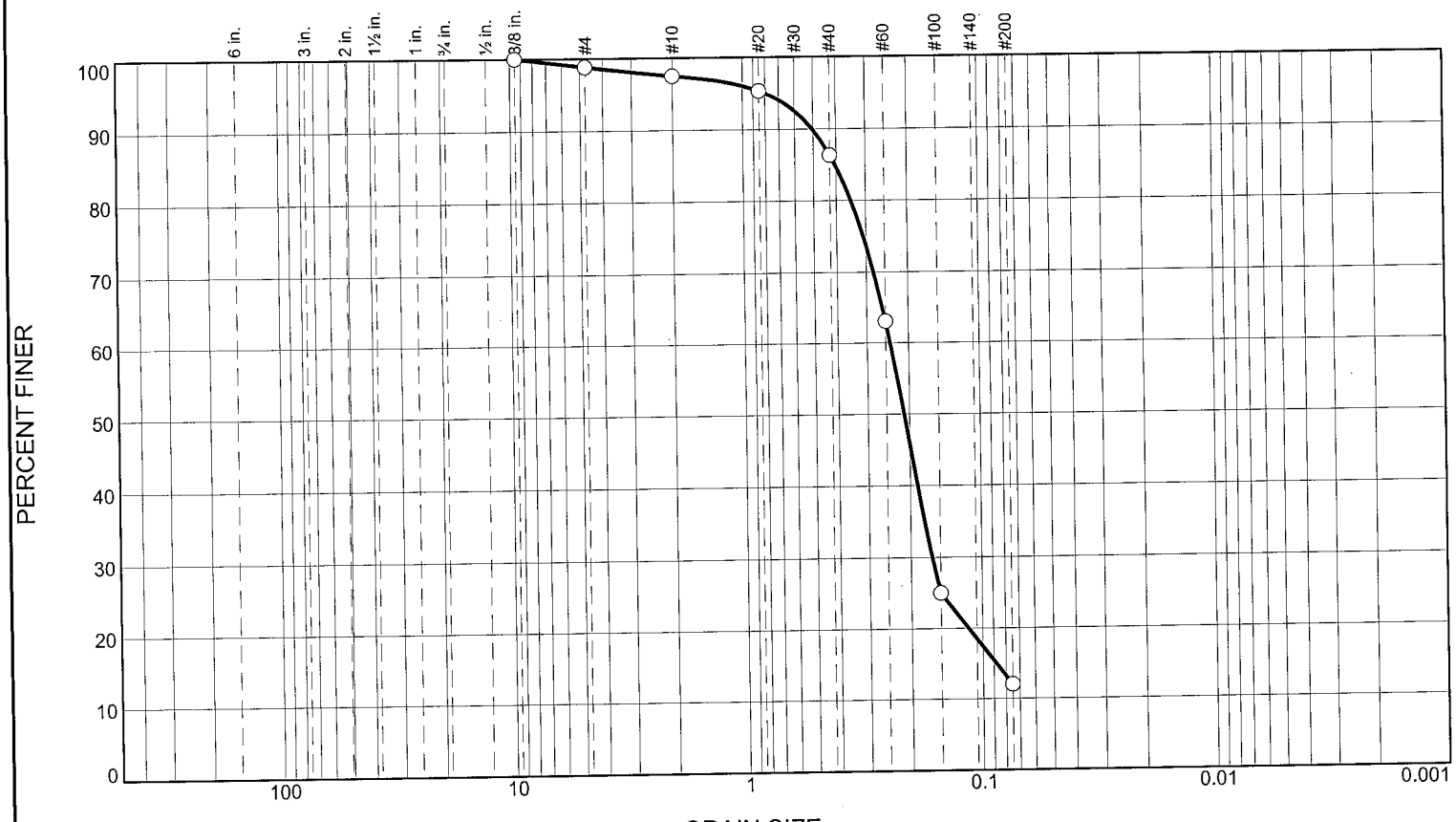
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.2 | 1.3 | 11.2 | 74.3 | 12.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 98.8 | | |
| #10 | 97.5 | | |
| #20 | 95.3 | | |
| #40 | 86.3 | | |
| #60 | 63.0 | | |
| #100 | 25.0 | | |
| #200 | 12.0 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained, with trace gravel

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5048 $D_{85}$= 0.4039 $D_{60}$= 0.2395
$D_{50}$= 0.2105 $D_{30}$= 0.1625 $D_{15}$= 0.0879
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-44-10C
**Sample Number:** TE Lab ID: 4549.24 **Depth:** 12.0 - 15.4 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-45-10**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-45-10 — LOCATION COORDINATES: E = 967,524 N = 254,174 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 30 Ft. |
| | 15. DATE BORING — STARTED: 06-14-10 — COMPLETED: 06-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -28.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.9 | 0.0 | | | | |
| -38.3 | 9.4 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2102 mm % Fines: 6.6 |
| | | | | B | Classification: SP-SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.1895 mm % Fines: 7.5 |
| -40.4 | 11.5 | | CLAY, lean, dark gray (CL) | NS | |
| -44.8 | 15.9 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.1884 mm % Fines: 15.7 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

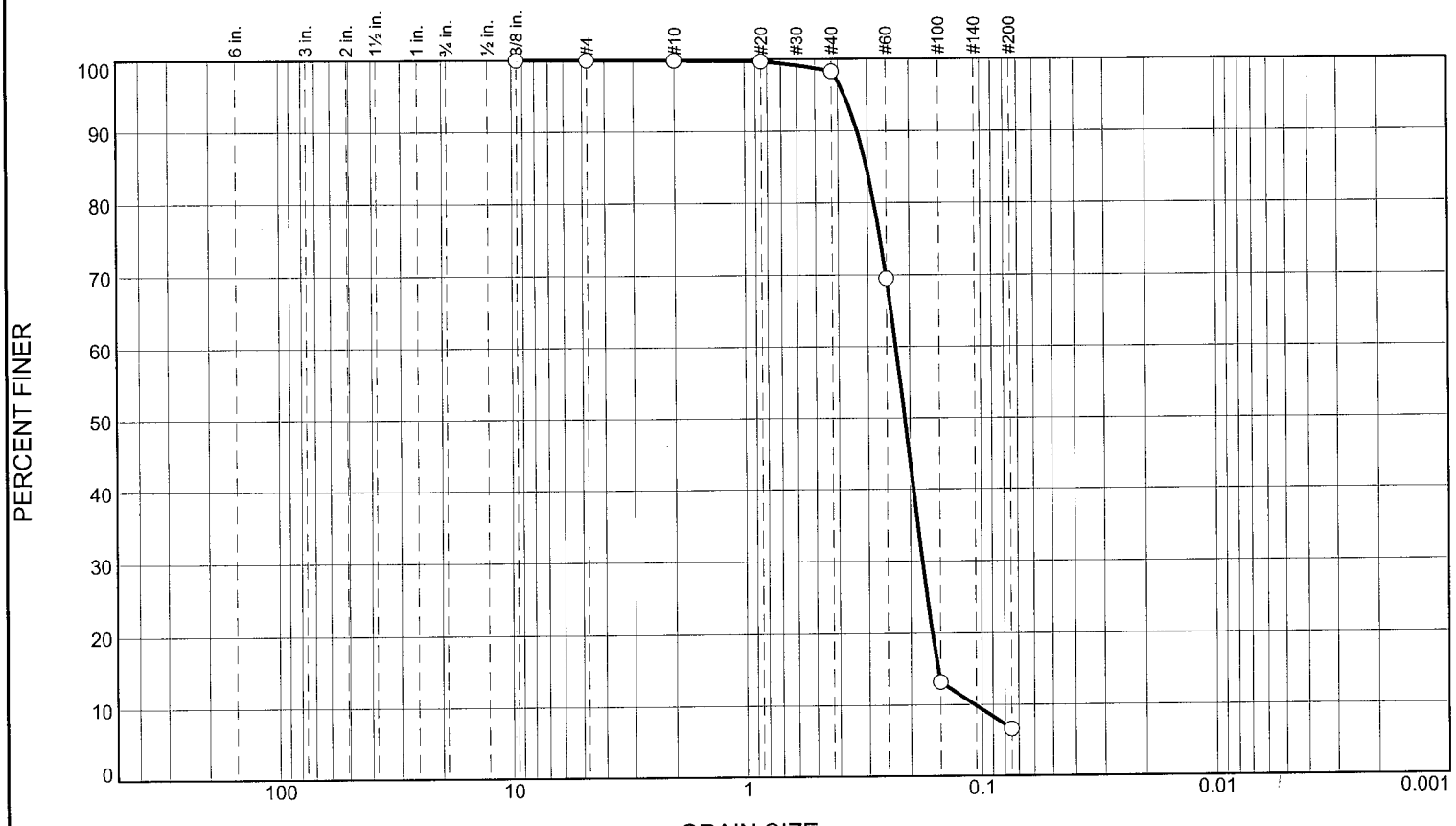
3. Seafloor elevation determined from USACE hydrographic survey completed 2010.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19892° Long = -88.88628°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.6 | 91.7 | 6.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 98.3 | | |
| #60 | 69.5 | | |
| #100 | 13.2 | | |
| #200 | 6.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3314 $D_{85}$= 0.3030 $D_{60}$= 0.2288
$D_{50}$= 0.2102 $D_{30}$= 0.1779 $D_{15}$= 0.1533
$D_{10}$= 0.1072 $C_u$= 2.13 $C_c$= 1.29

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-45-10A
**Sample Number:** TE Lab ID: 4549.19 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/26/10

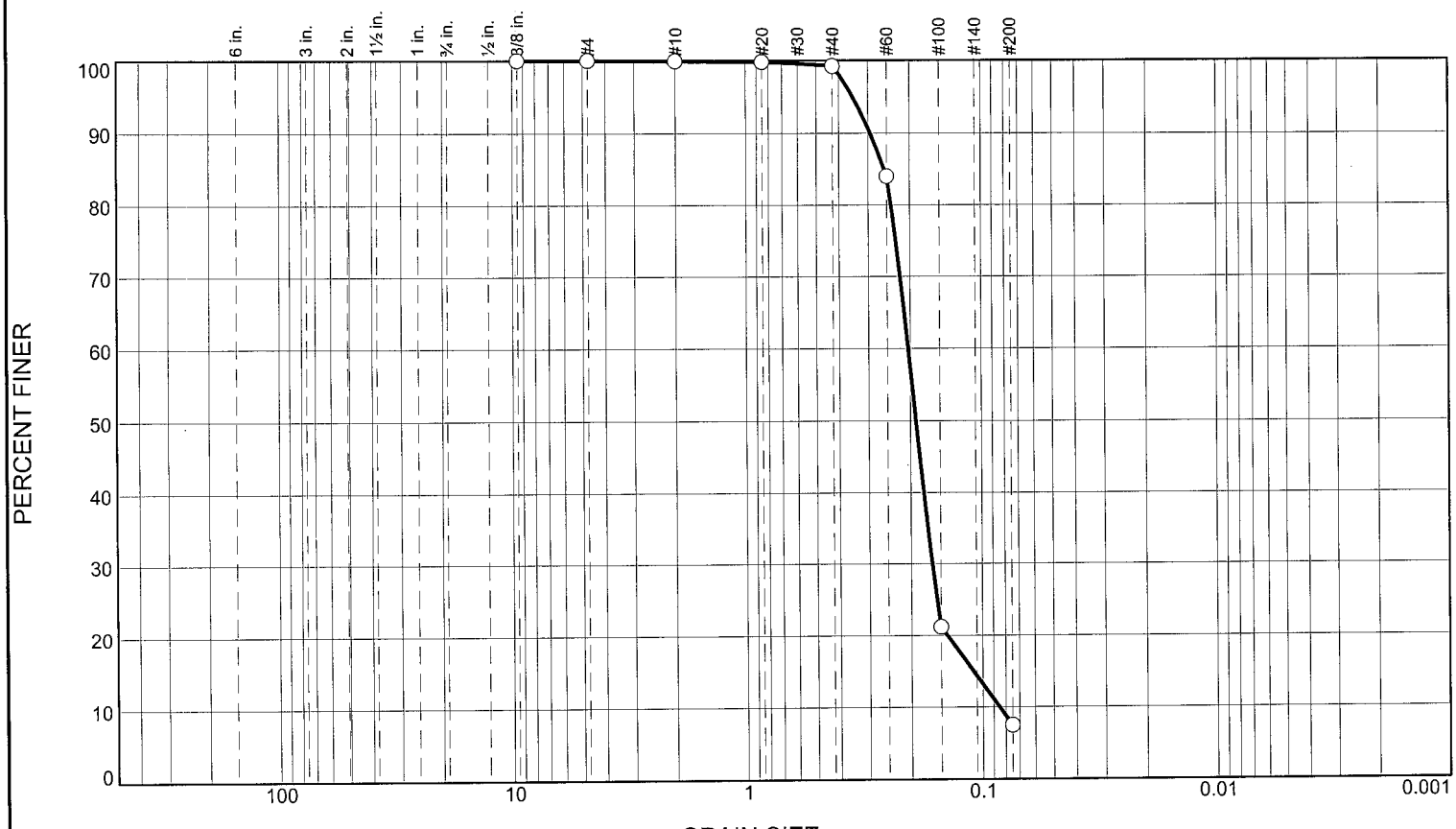
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 0.7 | 91.7 | 7.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.8 | | |
| #40 | 99.2 | | |
| #60 | 84.0 | | |
| #100 | 21.2 | | |
| #200 | 7.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2937 $D_{85}$= 0.2561 $D_{60}$= 0.2038
$D_{50}$= 0.1895 $D_{30}$= 0.1627 $D_{15}$= 0.1096
$D_{10}$= 0.0851 $C_u$= 2.40 $C_c$= 1.53

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-45-10B
**Sample Number:** TE Lab ID: 4549.20 **Depth:** 5.0 - 9.4 (ft.) **Date:** 6/26/10

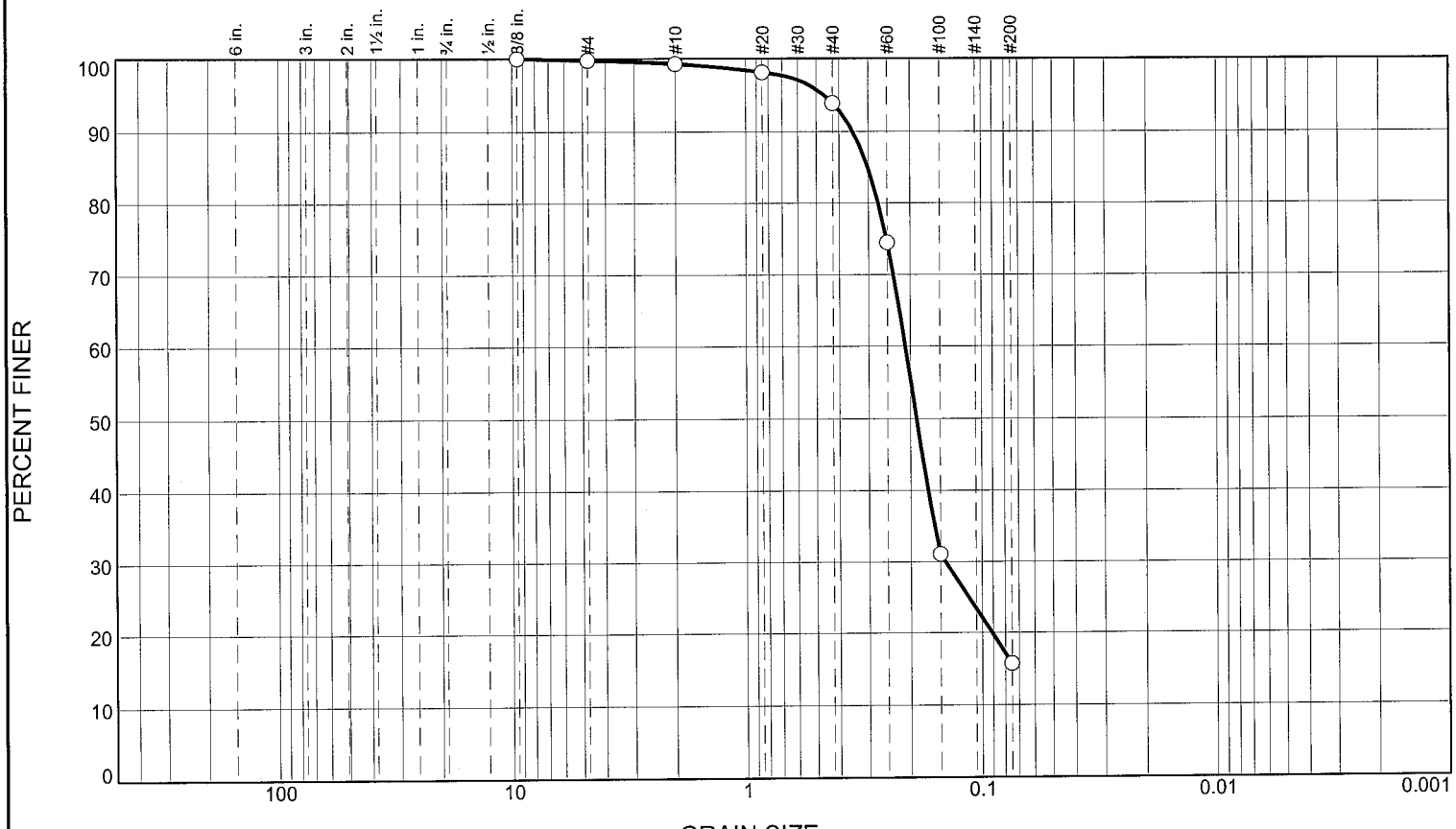
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.5 | 5.5 | 78.1 | 15.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.3 | | |
| #20 | 98.1 | | |
| #40 | 93.8 | | |
| #60 | 74.5 | | |
| #100 | 31.1 | | |
| #200 | 15.7 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3494 $D_{85}$= 0.3016 $D_{60}$= 0.2099
$D_{50}$= 0.1884 $D_{30}$= 0.1427 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-45-10C
**Sample Number:** TE Lab ID: 4549.21 **Depth:** 11.5 - 15.9 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-46-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-46-10 — LOCATION COORDINATES: E = 969,755 N = 255,414 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 31 Ft. |
| | 15. DATE BORING — STARTED: 06-14-10 — COMPLETED: 06-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.7 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.226 mm % Fines: 4.9 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.1903 mm % Fines: 8.1 |
| -41.1 | 11.4 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.1904 mm % Fines: 16 |
| -45.1 | 15.4 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

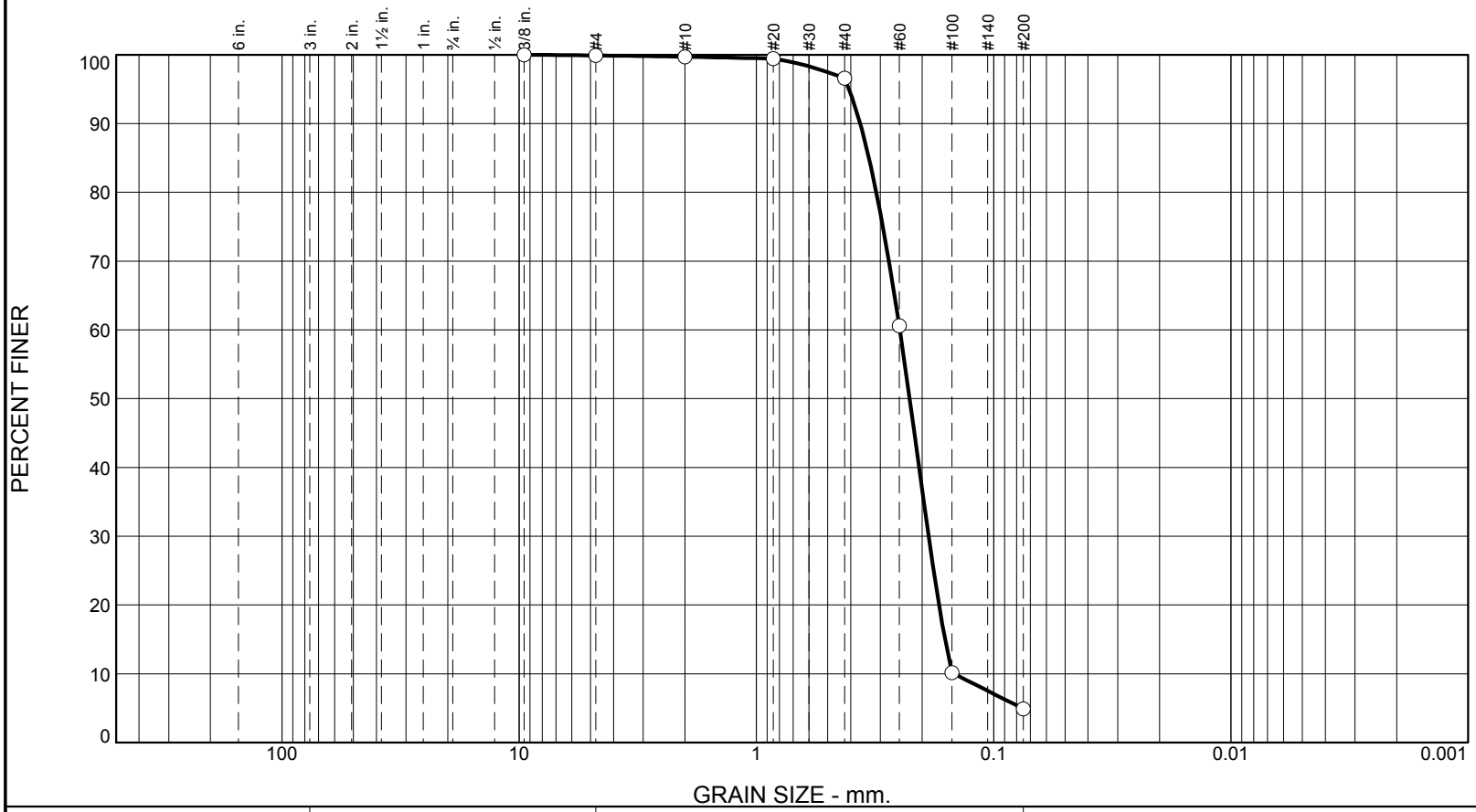
3. Seafloor elevation determined from USACE hydrographic survey completed 2010.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20233° Long = -88.87922°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.2 | 3.1 | 91.7 | 4.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.7 | | |
| #20 | 99.4 | | |
| #40 | 96.6 | | |
| #60 | 60.6 | | |
| #100 | 10.2 | | |
| #200 | 4.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3651 $D_{85}$= 0.3355 $D_{60}$= 0.2485
$D_{50}$= 0.2260 $D_{30}$= 0.1879 $D_{15}$= 0.1602
$D_{10}$= 0.1470 $C_u$= 1.69 $C_c$= 0.97

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-46-10A
**Sample Number:** TE Lab ID: 4549.16 **Depth:** 0.0 - 5.0 (FT.) **Date:** 6/26/10

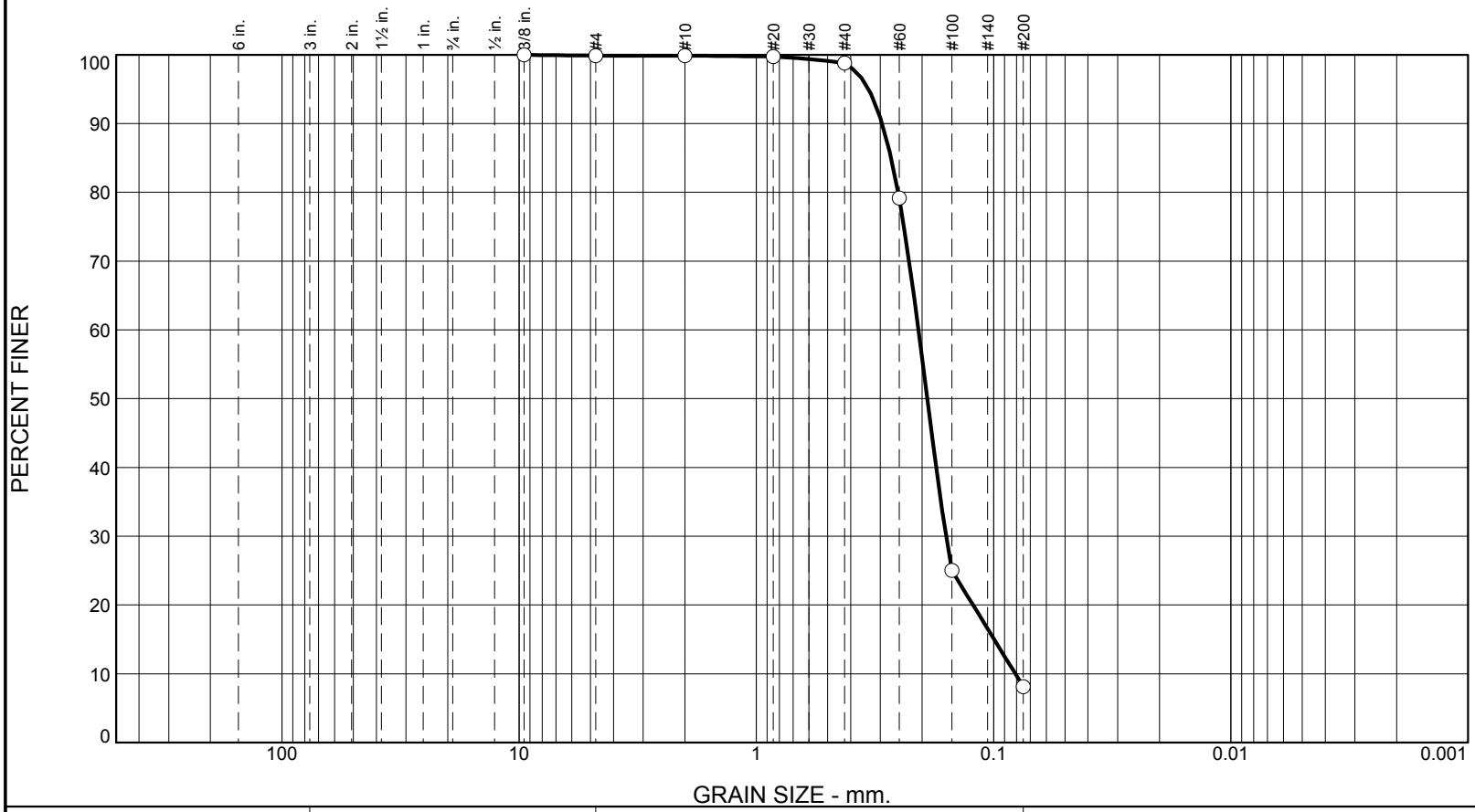
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.0 | 1.1 | 90.7 | 8.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 98.8 | | |
| #60 | 79.2 | | |
| #100 | 25.0 | | |
| #200 | 8.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2947 $D_{85}$= 0.2701 $D_{60}$= 0.2074
$D_{50}$= 0.1903 $D_{30}$= 0.1585 $D_{15}$= 0.0995
$D_{10}$= 0.0810 $C_u$= 2.56 $C_c$= 1.50

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-46-10B
**Sample Number:** TE Lab ID: 4549.17 **Depth:** 5.0 - 11.4 (ft.) **Date:** 6/26/10

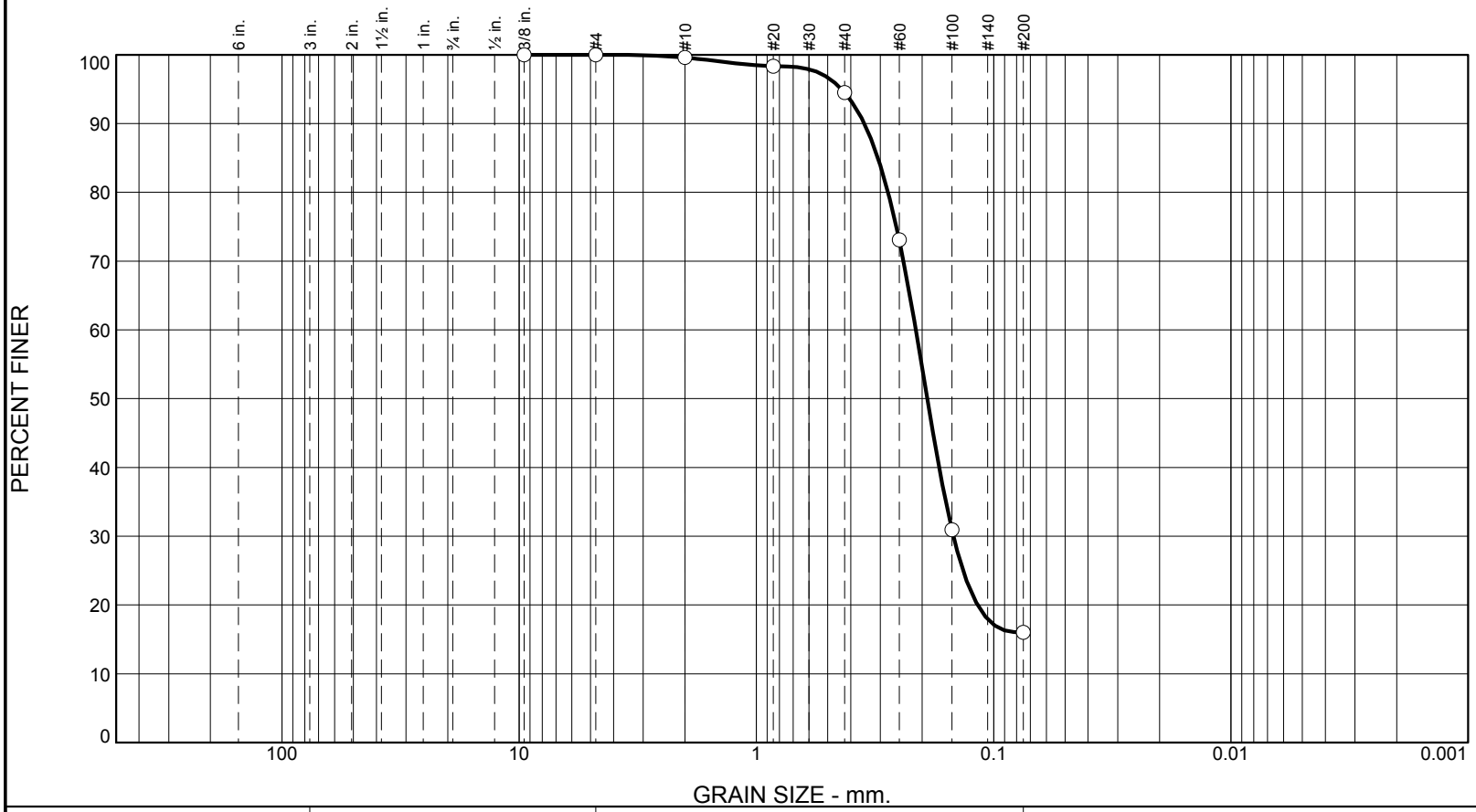
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 5.1 | 78.5 | 16.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 98.4 | | |
| #40 | 94.5 | | |
| #60 | 73.1 | | |
| #100 | 30.9 | | |
| #200 | 16.0 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3509 $D_{85}$= 0.3072 $D_{60}$= 0.2129
$D_{50}$= 0.1904 $D_{30}$= 0.1478 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-46-10C
**Sample Number:** TE Lab ID: 4549.18 **Depth:** 11.4 - 15.4 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-47-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-47-10; LOCATION COORDINATES: E = 971,919 N = 256,598 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 2; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 31 Ft. |
| | 15. DATE BORING: STARTED 06-14-10; COMPLETED 06-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -30.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.6 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -30.3 | 0.0 | | | | |
| -31.0 | 0.7 | | CLAY, lean, dark gray (CL) | NS | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2676 mm % Fines: 6.4 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.1967 mm % Fines: 6.8 |
| -40.0 | 9.7 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -45.9 | 15.6 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

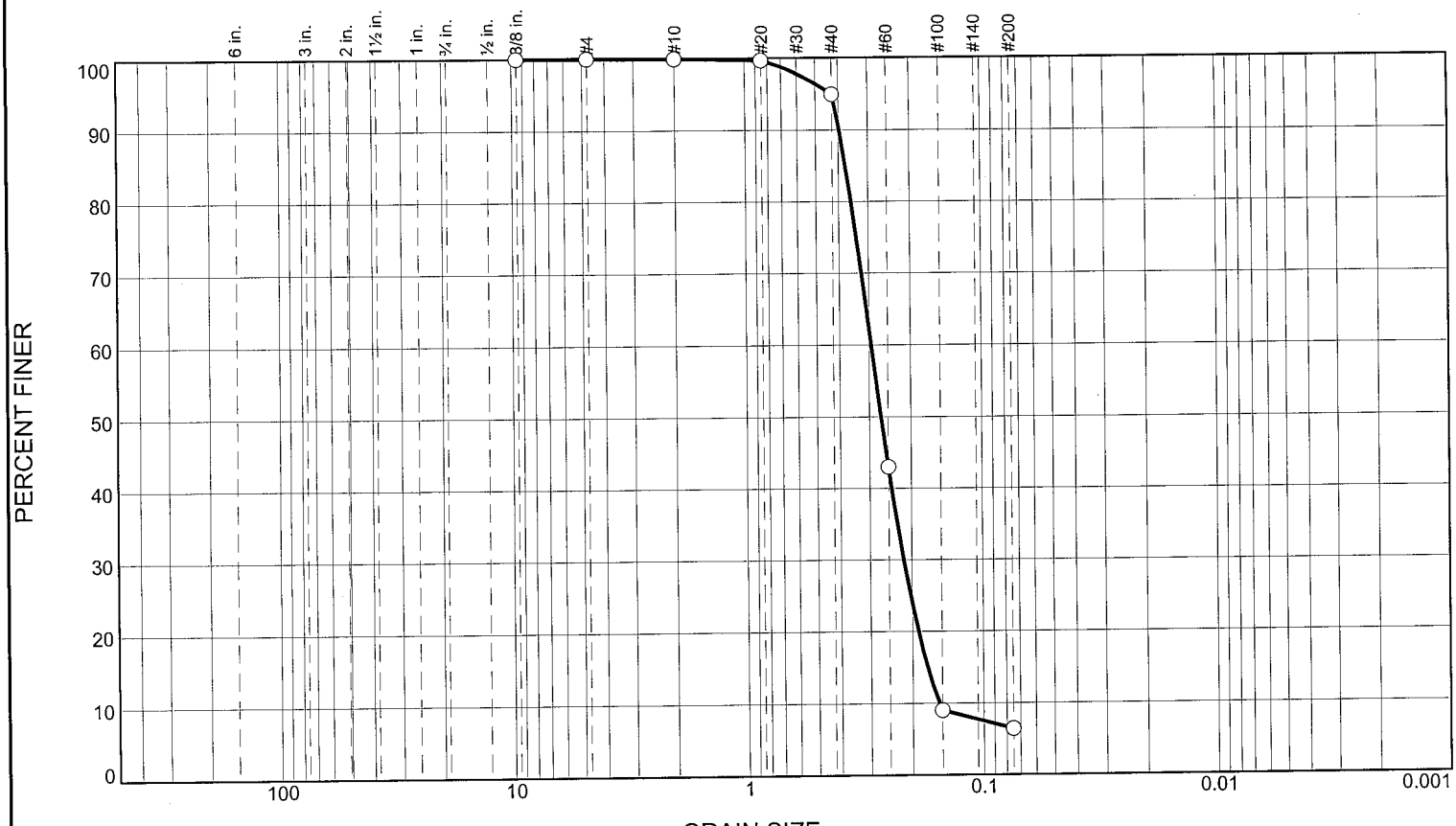
3. Seafloor elevation determined from USACE hydrographic survey completed 2010.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20559° Long = -88.87237°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 5.0 | 88.5 | 6.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 94.9 | | |
| #60 | 43.0 | | |
| #100 | 9.0 | | |
| #200 | 6.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3963 $D_{85}$= 0.3736 $D_{60}$= 0.2935
$D_{50}$= 0.2676 $D_{30}$= 0.2163 $D_{15}$= 0.1725
$D_{10}$= 0.1542 $C_u$= 1.90 $C_c$= 1.03

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-47-10A
**Sample Number:** TE Lab ID: 4549.14 **Depth:** 0.7 - 5.0 (ft.) **Date:** 6/26/10

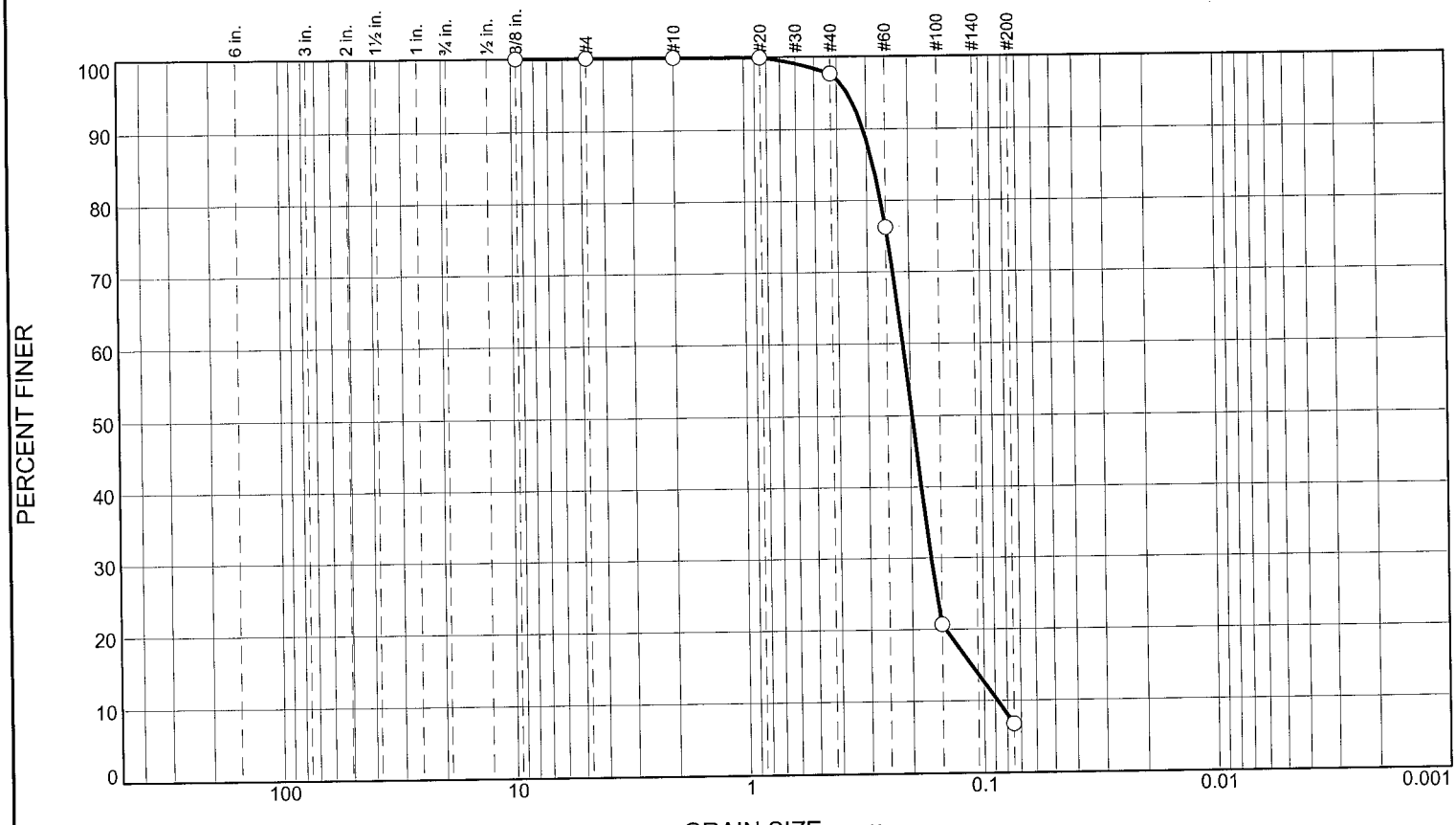
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 2.4 | 90.8 | 6.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 97.6 | | |
| #60 | 76.3 | | |
| #100 | 20.7 | | |
| #200 | 6.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3093 $D_{85}$= 0.2811 $D_{60}$= 0.2140
$D_{50}$= 0.1967 $D_{30}$= 0.1654 $D_{15}$= 0.1129
$D_{10}$= 0.0880 $C_u$= 2.43 $C_c$= 1.45

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-47-10B
**Sample Number:** TE Lab ID: 4549.15 **Depth:** 5.0 - 9.7 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

Boring Designation BI-SI-48-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SI-48-10 / LOCATION COORDINATES E = 963,873 N = 250,405 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES / DISTURBED / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 31 Ft. |
| | 15. DATE BORING / STARTED 06-15-10 / COMPLETED 06-15-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -29.1 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 19.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.1 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -46.5 | 17.4 | | | | |
| -48.6 | 19.5 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18855° Long = -88.89783°

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 963,873 Y = 250,405 | ELEVATION TOP OF BORING -29.1 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | applying NOAA tidal gauge data conversion factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18855° Long = -88.89783°

Boring Designation BI-SI-49-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) \| HORIZONTAL NAD83 \| VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SI-49-10 \| LOCATION COORDINATES E = 966,407 N = 250,276 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM \| CONTRACTOR FILE NO. | 12. TOTAL SAMPLES \| DISTURBED 0 \| UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED \| DEG. FROM VERTICAL \| BEARING | 14. WATER DEPTH 32 Ft. |
| | 15. DATE BORING \| STARTED 06-15-10 \| COMPLETED 06-15-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -29.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 19.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.9 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -47.2 | 17.3 | | | | |
| -49.4 | 19.5 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and | | |

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18820° Long = -88.88981°

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 966,407 Y = 250,276 | ELEVATION TOP OF BORING -29.9 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | applying NOAA tidal gauge data conversion factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18820° Long = -88.88981°

**Boring Designation BI-SI-50-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-50-10 — LOCATION COORDINATES: E = 968,360 N = 251,443 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 1 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 32 Ft. |
| | 15. DATE BORING — STARTED: 06-15-10 — COMPLETED: 06-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.8 | 0.0 | | | | |
| -33.5 | 3.7 | | CLAY, lean, dark gray (CL) | NS | |
| -39.6 | 9.8 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SM Color: 2.5Y 6/2-light brownish gray D50: 0.1757 mm % Fines: 15.7 |
| -43.8 | 14.0 | | CLAY, lean, dark gray (CL) | NS | |
| -46.7 | 16.9 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |
| | | | At El. -45.8 Ft., mostly medium-grained sand-sized quartz, some silt, trace shell fragments, brown | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

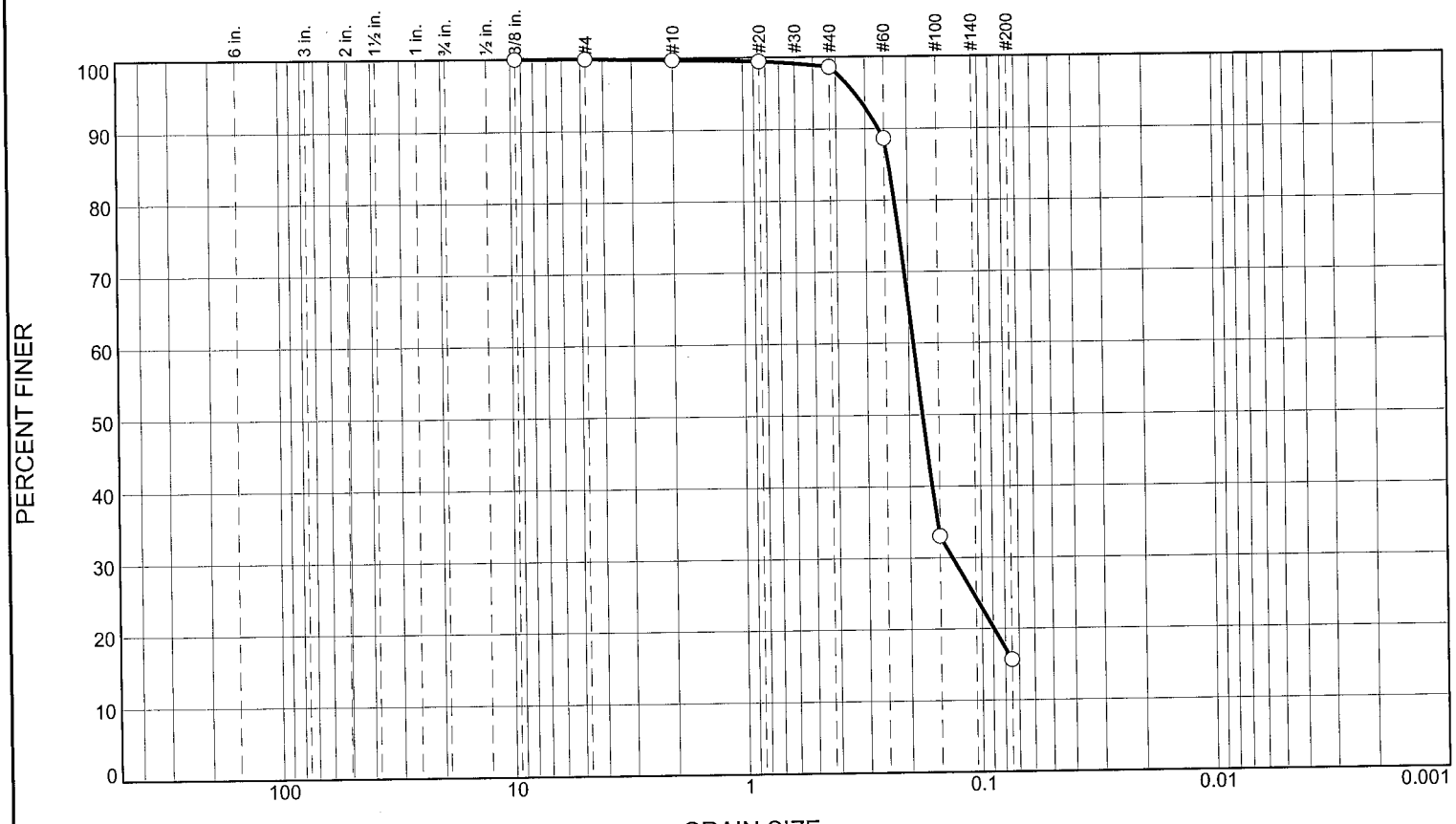
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19141° Long = -88.88363°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 1.1 | 82.9 | 15.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.5 | | |
| #40 | 98.6 | | |
| #60 | 88.7 | | |
| #100 | 33.1 | | |
| #200 | 15.7 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2635 $D_{85}$= 0.2392 $D_{60}$= 0.1908
$D_{50}$= 0.1757 $D_{30}$= 0.1327 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-50-10A
**Sample Number:** TE Lab ID: 4549.25 **Depth:** 3.7 - 9.8 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-51-10**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-51-10; LOCATION COORDINATES: E = 972,973 N = 254,780 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 2; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 33 Ft. |
| | 15. DATE BORING: STARTED 06-15-10; COMPLETED 06-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -30.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -30.8 | 0.0 | | | | |
| -32.6 | 1.8 | | CLAY, lean, dark gray (CL) | NS | |
| -41.2 | 10.4 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, lt. gray (SM) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.1931 mm % Fines: 5.7 |
| | | | | B | Classification: SM Color: 2.5Y 6/2-light brownish gray D50: 0.174 mm % Fines: 15.5 |
| -47.0 | 16.2 | | CLAY, lean, dark gray (CL) | NS | |
| -49.0 | 18.2 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, brown (SM) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

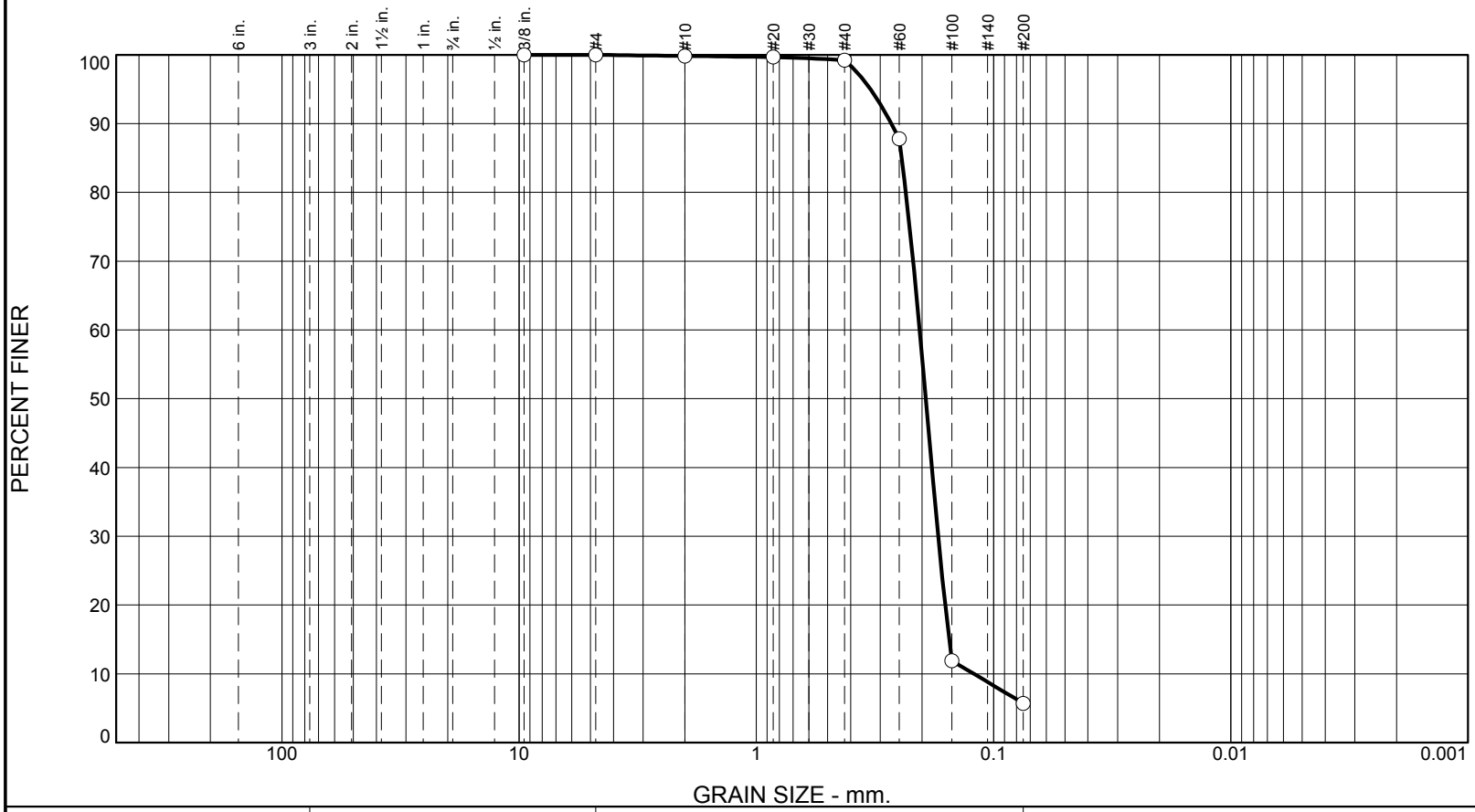
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20059° Long = -88.86903°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 0.6 | 93.5 | 5.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.7 | | |
| #40 | 99.2 | | |
| #60 | 87.8 | | |
| #100 | 11.9 | | |
| #200 | 5.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2694 $D_{85}$= 0.2437 $D_{60}$= 0.2050
$D_{50}$= 0.1931 $D_{30}$= 0.1710 $D_{15}$= 0.1539
$D_{10}$= 0.1212 $C_u$= 1.69 $C_c$= 1.18

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-51-10A
**Sample Number:** TE Lab ID: 4549.26 **Depth:** 1.8 - 5.0 (ft.) **Date:** 6/26/10

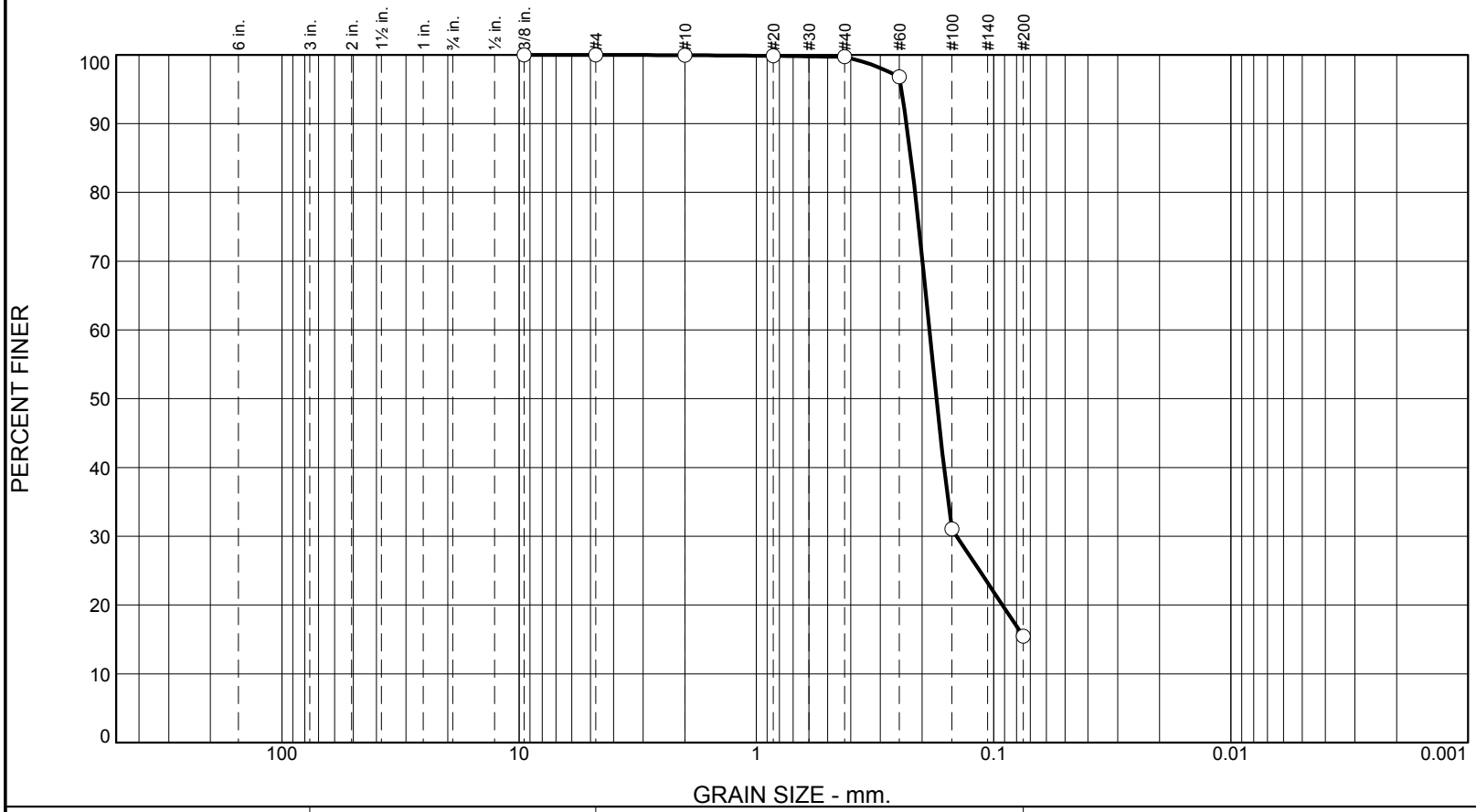
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 84.2 | 15.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.9 | | |
| #40 | 99.7 | | |
| #60 | 96.8 | | |
| #100 | 31.1 | | |
| #200 | 15.5 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2328 $D_{85}$= 0.2230 $D_{60}$= 0.1864
$D_{50}$= 0.1740 $D_{30}$= 0.1431 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-51-10B
**Sample Number:** TE Lab ID: 4549.27 **Depth:** 5.0 - 10.4 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-62-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-62-10; LOCATION COORDINATES: E = 972,401 N = 263,243 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 3; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 24 Ft. |
| | 15. DATE BORING: STARTED 06-16-10; COMPLETED 06-16-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -22.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 12.6 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -22.3 | 0.0 | | | | |
| -24.3 | 2.0 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, lt. gray (SM) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.2472 mm % Fines: 9.6 |
| -34.9 | 12.6 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, lt. gray (SP) | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2734 mm % Fines: 5.2 |
| | | | | C | Classification: SP Color: 2.5Y 8/1-white<br>D50: 0.2996 mm % Fines: 3.7 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

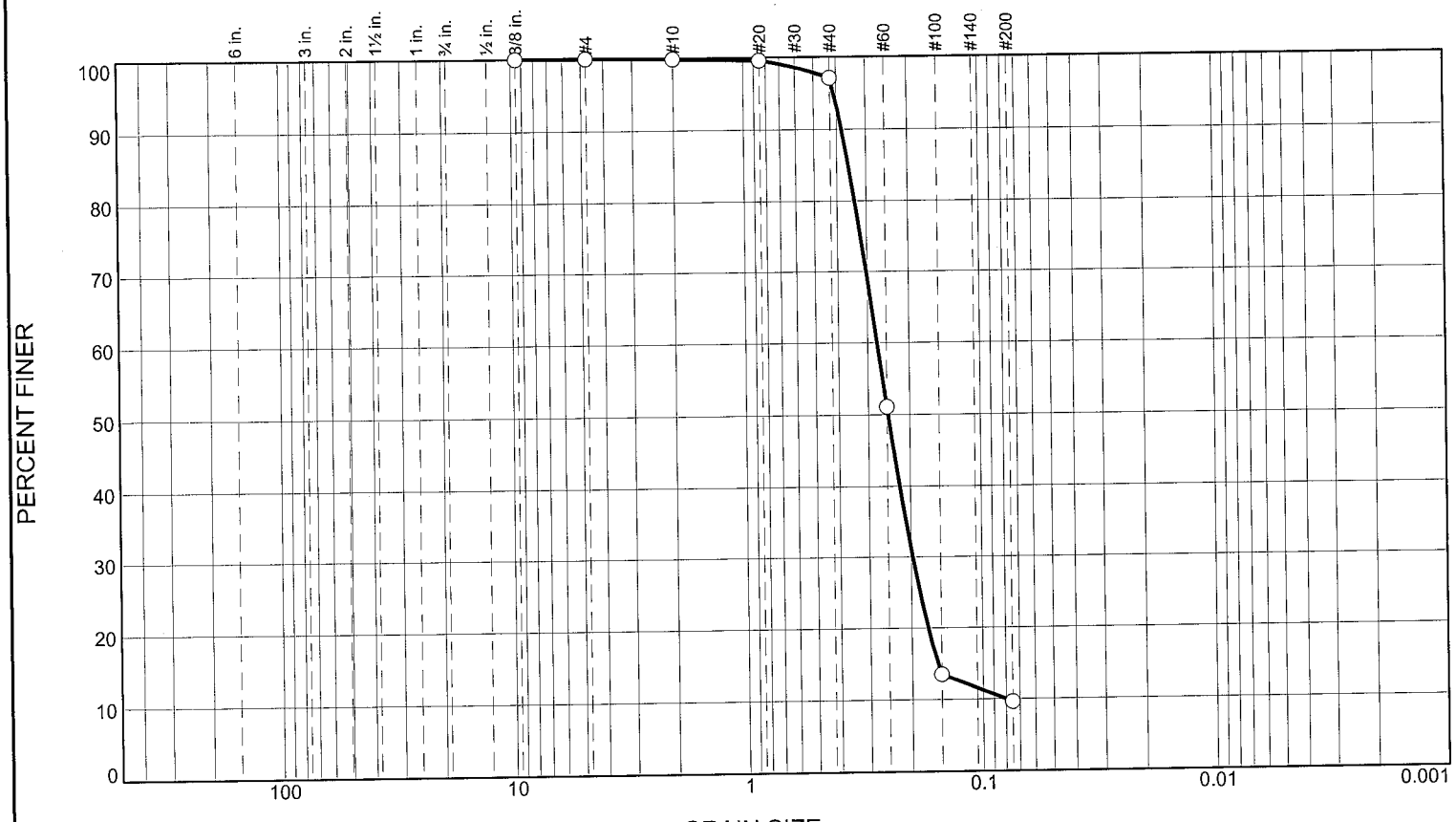
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22386° Long = -88.87085°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 2.7 | 87.5 | 9.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.6 | | |
| #40 | 97.1 | | |
| #60 | 51.1 | | |
| #100 | 13.5 | | |
| #200 | 9.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3797 $D_{85}$= 0.3563 $D_{60}$= 0.2736
$D_{50}$= 0.2472 $D_{30}$= 0.1968 $D_{15}$= 0.1552
$D_{10}$= 0.0804 $C_u$= 3.41 $C_c$= 1.76

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-62-10A
**Sample Number:** TE Lab ID: 4549.36 **Depth:** 0.0 - 2.0 (ft.) **Date:** 6/26/10

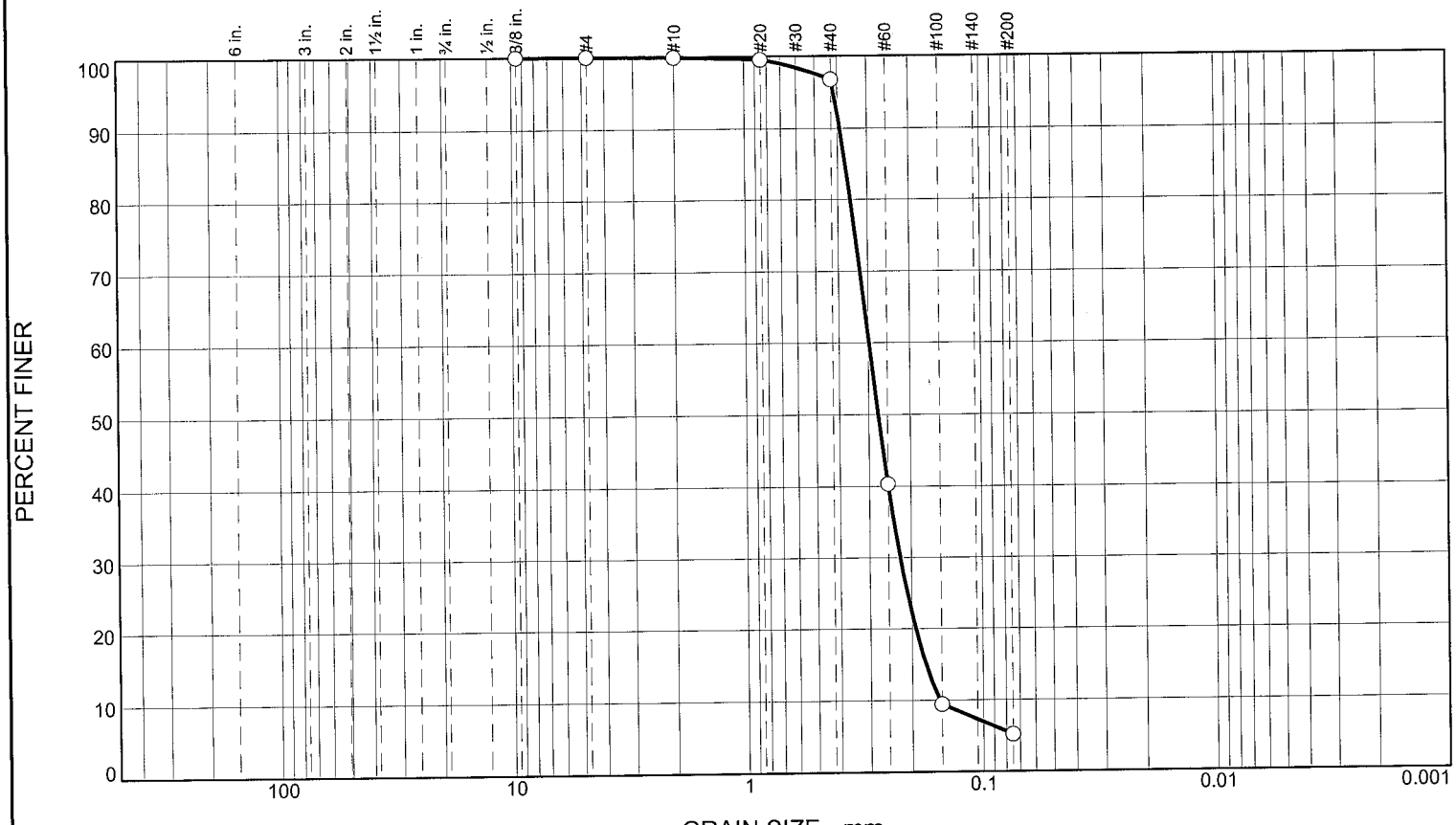
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 3.1 | 91.6 | 5.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.5 | | |
| #40 | 96.8 | | |
| #60 | 40.4 | | |
| #100 | 9.4 | | |
| #200 | 5.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3905 $D_{85}$= 0.3708 $D_{60}$= 0.2978
$D_{50}$= 0.2734 $D_{30}$= 0.2228 $D_{15}$= 0.1748
$D_{10}$= 0.1529 $C_u$= 1.95 $C_c$= 1.09

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-62-10B
**Sample Number:** TE Lab ID: 4549.37 **Depth:** 2.0 - 7.0 (ft.) **Date:** 6/26/10

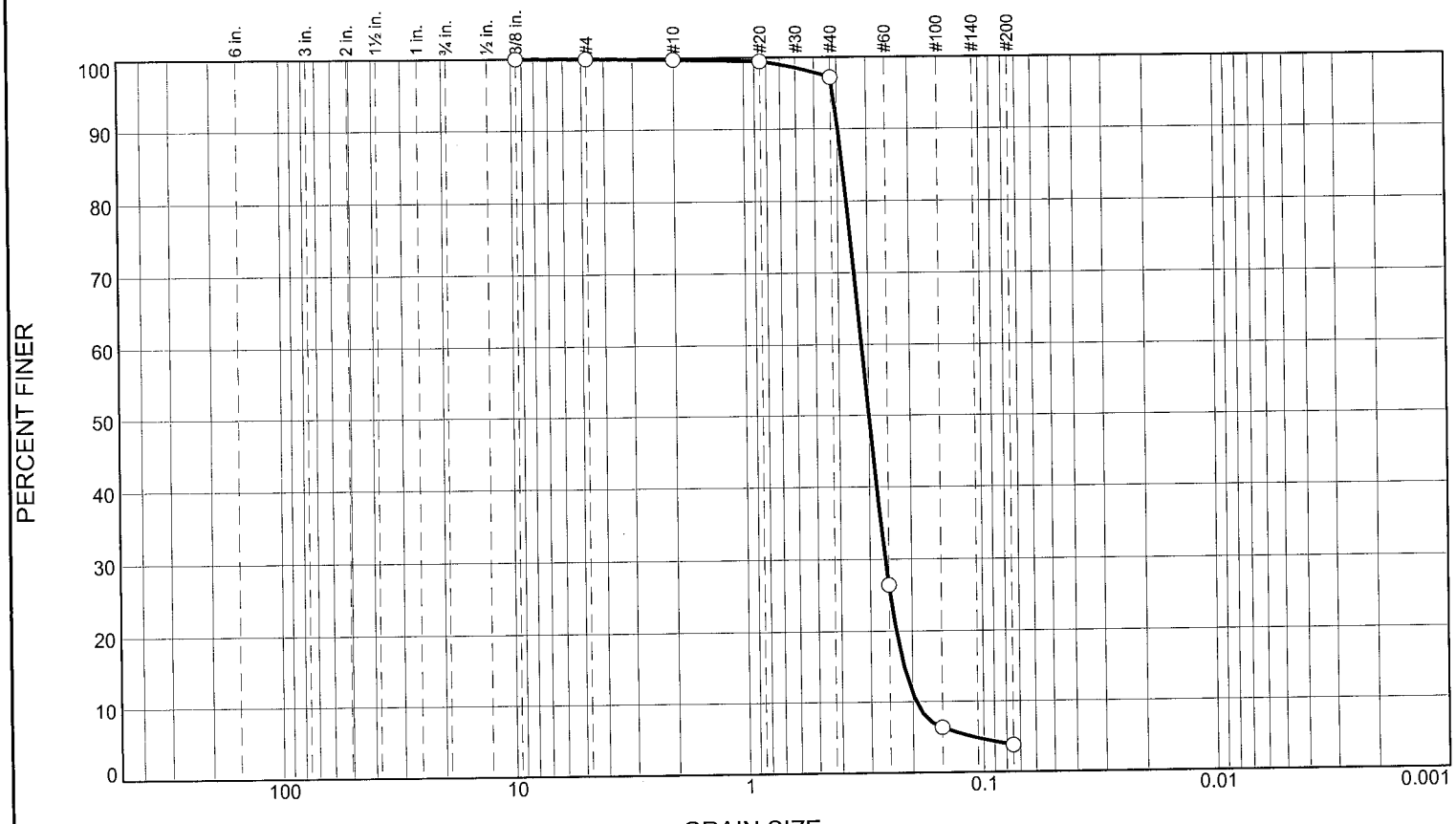
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 2.6 | 93.5 | 3.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 99.5 | | |
| #40 | 97.2 | | |
| #60 | 26.4 | | |
| #100 | 6.3 | | |
| #200 | 3.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3967 $D_{85}$= 0.3809 $D_{60}$= 0.3202
$D_{50}$= 0.2996 $D_{30}$= 0.2583 $D_{15}$= 0.2167
$D_{10}$= 0.1933 $C_u$= 1.66 $C_c$= 1.08

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-62-10C
**Sample Number:** TE Lab ID: 4549.38 **Depth:** 7.0 - 12.6 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

Boring Designation BI-SI-65-10

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | | | |
|---|---|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Ship Island | | 9. SIZE AND TYPE OF BIT N/A | |
| | | 10. COORDINATE SYSTEM/DATUM<br>State Plane, MSE (U.S. Ft.) | HORIZONTAL<br>NAD83 / VERTICAL<br>NAVD88 |
| 2. BORING DESIGNATION<br>BI-SI-65-10 | LOCATION COORDINATES<br>E = 953,572 N = 252,758 | 11. MANUFACTURER'S DESIGNATION OF DRILL<br>Vibracore | ☐ AUTO HAMMER<br>☐ MANUAL HAMMER |
| 3. DRILLING AGENCY<br>Corps of Engineers - CESAM | CONTRACTOR FILE NO. | 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER<br>Construction Solutions International, Inc. | | 13. TOTAL NUMBER CORE BOXES | |
| 5. DIRECTION OF BORING<br>☒ VERTICAL<br>☐ INCLINED | DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 21 Ft. | |
| | | 15. DATE BORING | STARTED 06-17-10 / COMPLETED 06-17-10 |
| 6. THICKNESS OF OVERBURDEN N/A | | 16. ELEVATION TOP OF BORING -20.0 Ft. | |
| 7. DEPTH DRILLED INTO ROCK N/A | | 17. TOTAL RECOVERY FOR BORING 100% | |
| 8. TOTAL DEPTH OF BORING 10.9 Ft. | | 18. SIGNATURE AND TITLE OF INSPECTOR<br>Brad Johnson, Geologist | |

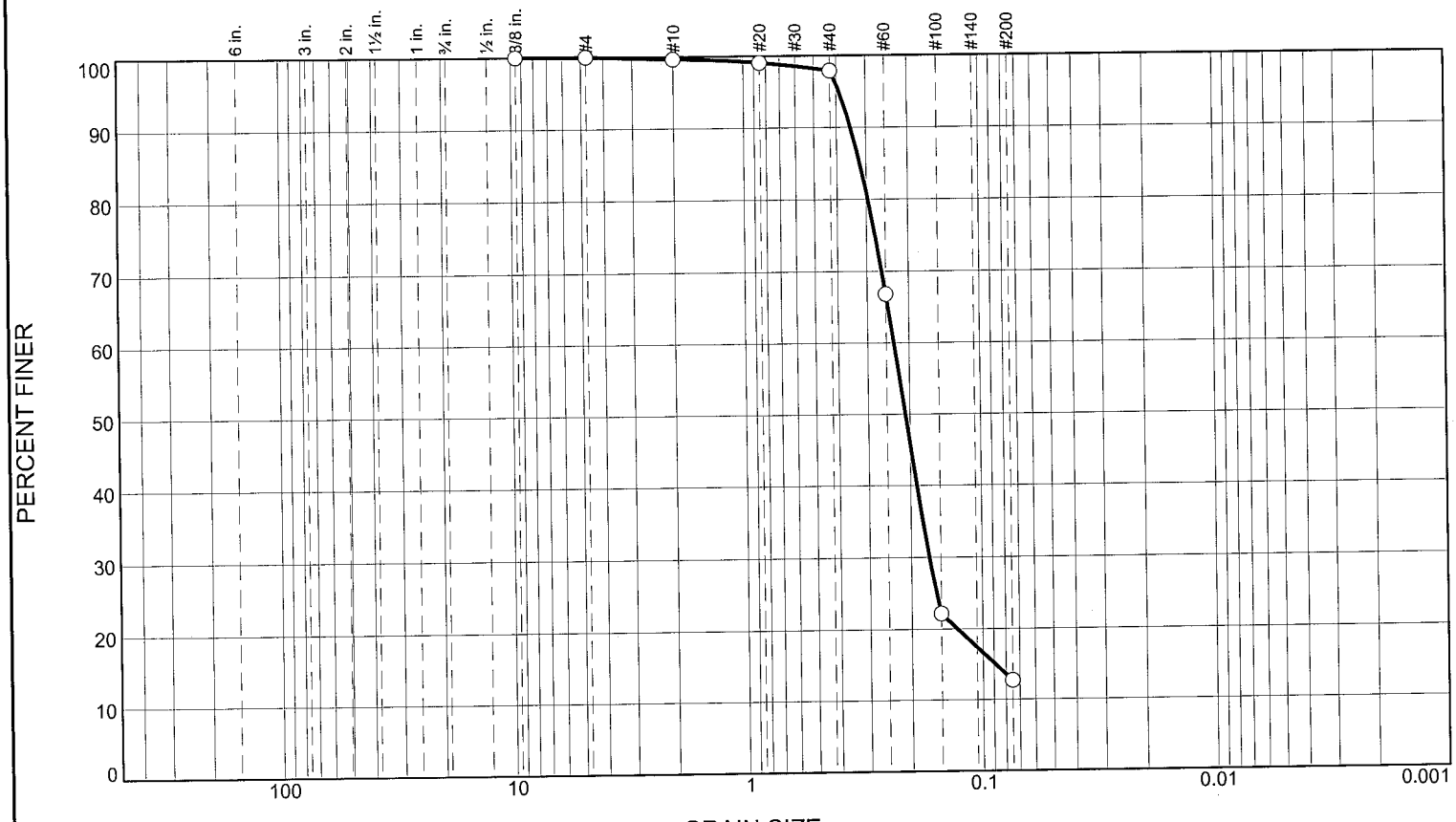
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -20.0 | 0.0 | | | | |
| -26.1 | 6.1 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.2089 mm % Fines: 12.7 |
| -30.9 | 10.9 | | CLAY, lean, some silt, dark gray (CL) | NS | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19500° Long = -88.93044°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 1.7 | 85.2 | 12.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 99.1 | | |
| #40 | 97.9 | | |
| #60 | 66.8 | | |
| #100 | 22.1 | | |
| #200 | 12.7 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3481 $D_{85}$= 0.3187 $D_{60}$= 0.2319
$D_{50}$= 0.2089 $D_{30}$= 0.1675 $D_{15}$= 0.0889
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-65-10A
**Sample Number:** TE Lab ID: 4549.39 **Depth:** 0.0 - 6.1 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-66-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-66-10; LOCATION COORDINATES: E = 954,998 N = 253,601 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 2; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 21 Ft. |
| | 15. DATE BORING: STARTED 06-17-10; COMPLETED 06-17-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -20.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Brad Johnson, Geologist |

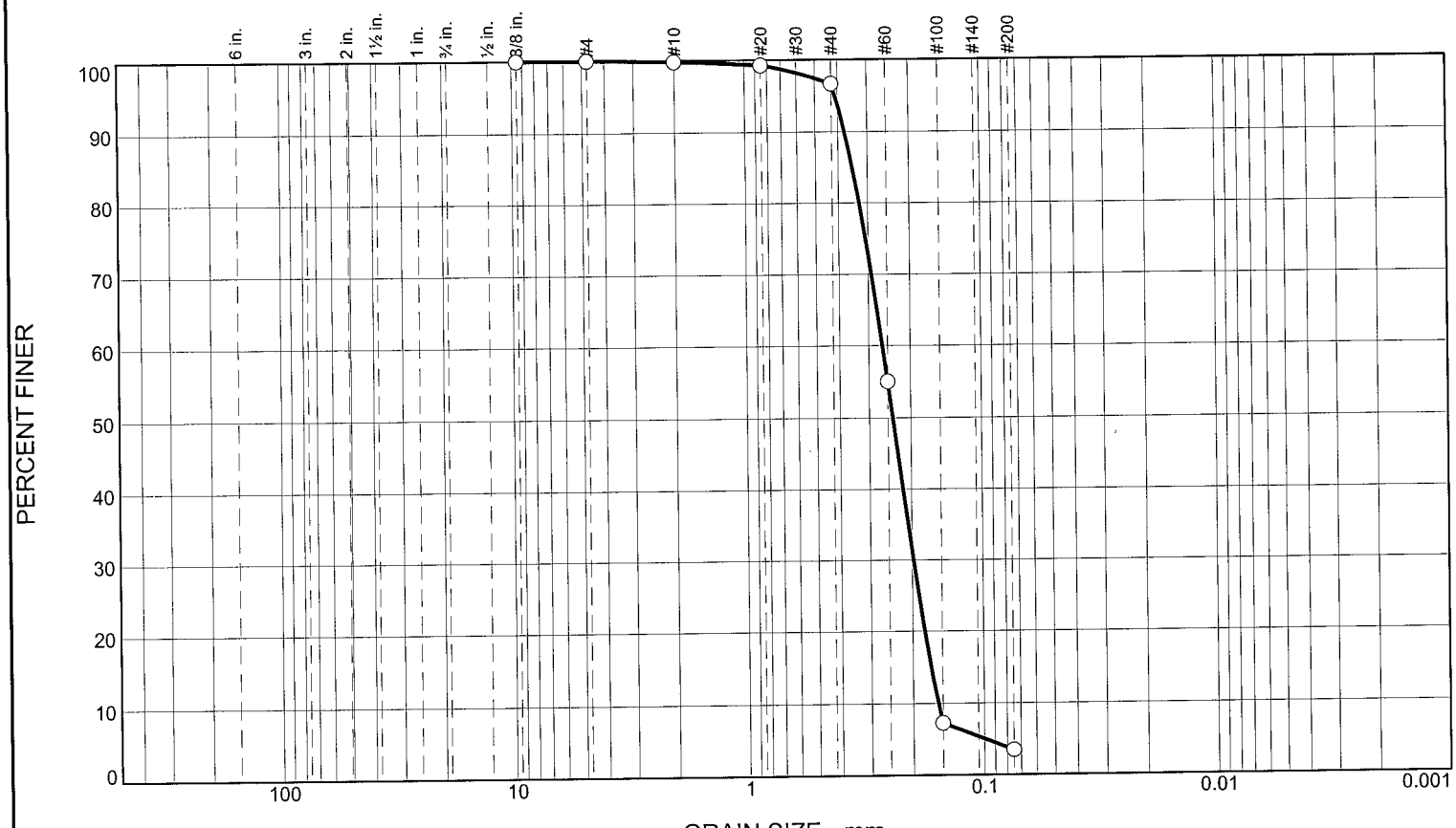
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -20.0 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2383 mm % Fines: 3.5 |
| | | | | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2635 mm % Fines: 4.4 |
| -28.6 | 8.6 | | | | |
| | | | SAND, clayey, some silt, some sand (SC) | NS | |
| -33.2 | 13.2 | | | | |
| | | | CLAY, lean (CL) | | |
| -37.7 | 17.7 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19732° Long = -88.92593°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 3.1 | 93.2 | 3.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.3 | | |
| #40 | 96.7 | | |
| #60 | 55.0 | | |
| #100 | 7.3 | | |
| #200 | 3.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3741 $D_{85}$= 0.3477 $D_{60}$= 0.2624
$D_{50}$= 0.2383 $D_{30}$= 0.1970 $D_{15}$= 0.1674
$D_{10}$= 0.1566 $C_u$= 1.68 $C_c$= 0.95

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-66-10A
**Sample Number:** TE Lab ID: 4549.40 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/26/10

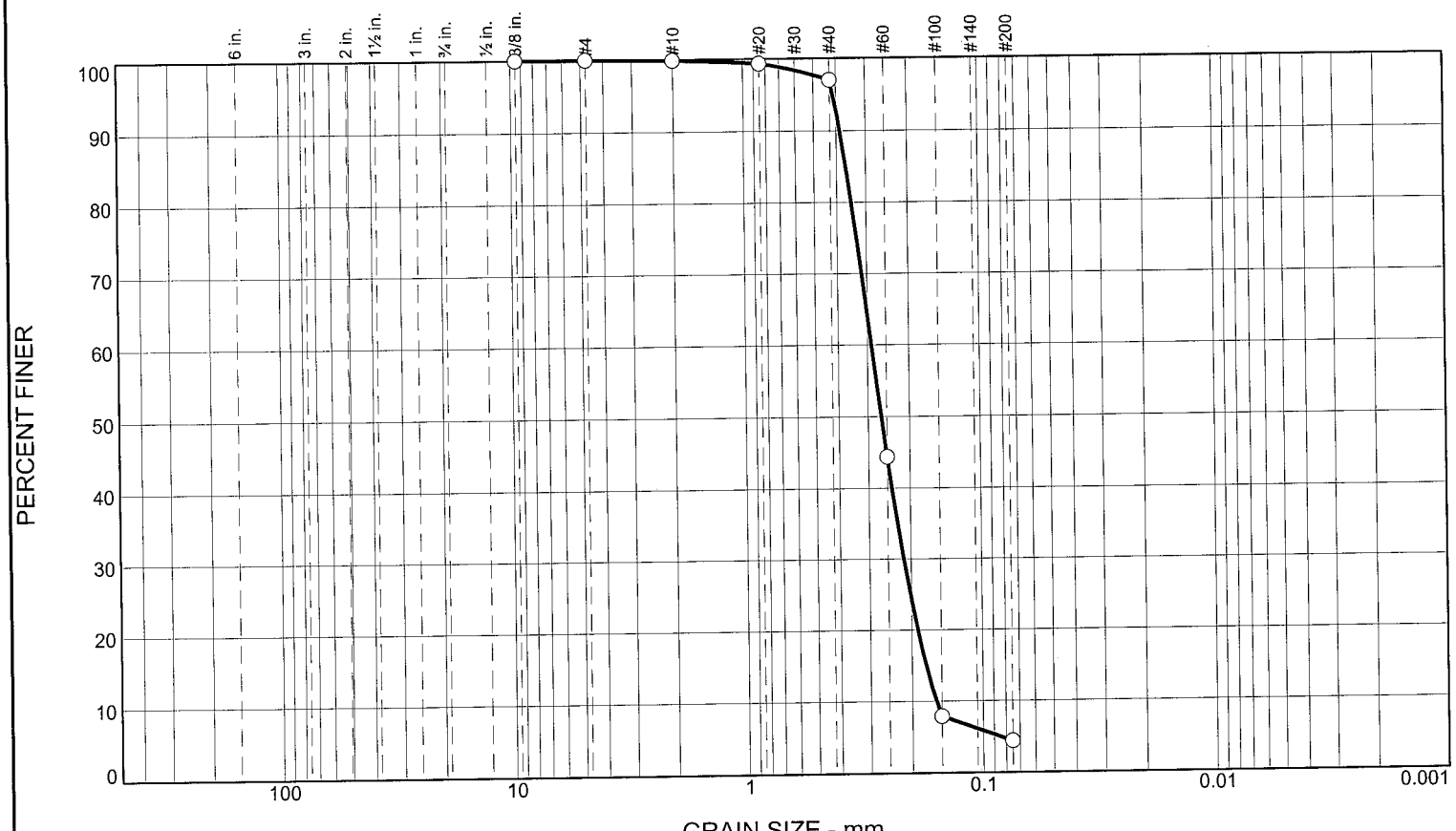
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.9 | 92.6 | 4.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.3 | | |
| #40 | 97.0 | | |
| #60 | 44.4 | | |
| #100 | 7.9 | | |
| #200 | 4.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3859 $D_{85}$= 0.3648 $D_{60}$= 0.2884
$D_{50}$= 0.2635 $D_{30}$= 0.2145 $D_{15}$= 0.1740
$D_{10}$= 0.1579 $C_u$= 1.83 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-66-10B
**Sample Number:** TE Lab ID: 4549.41 **Depth:** 5.0 - 8.6 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

Boring Designation BI-SI-67-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-67-10 |
| LOCATION COORDINATES | E = 959,298 N = 254,812 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 14.1 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 21 Ft. |
| 15. DATE BORING | STARTED 06-17-10 / COMPLETED 06-17-10 |
| 16. ELEVATION TOP OF BORING | -19.7 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.7 | 0.0 | | | | |
| -23.4 | 3.7 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2558 mm % Fines: 4.7 |
| -24.3 | 4.6 | | CLAY, lean, some sand, dark gray (CL) | NS | |
| -25.9 | 6.2 | | SILT, inorganic-L, some sand, dark gray (ML) | | |
| -33.8 | 14.1 | | CLAY, lean, dark gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

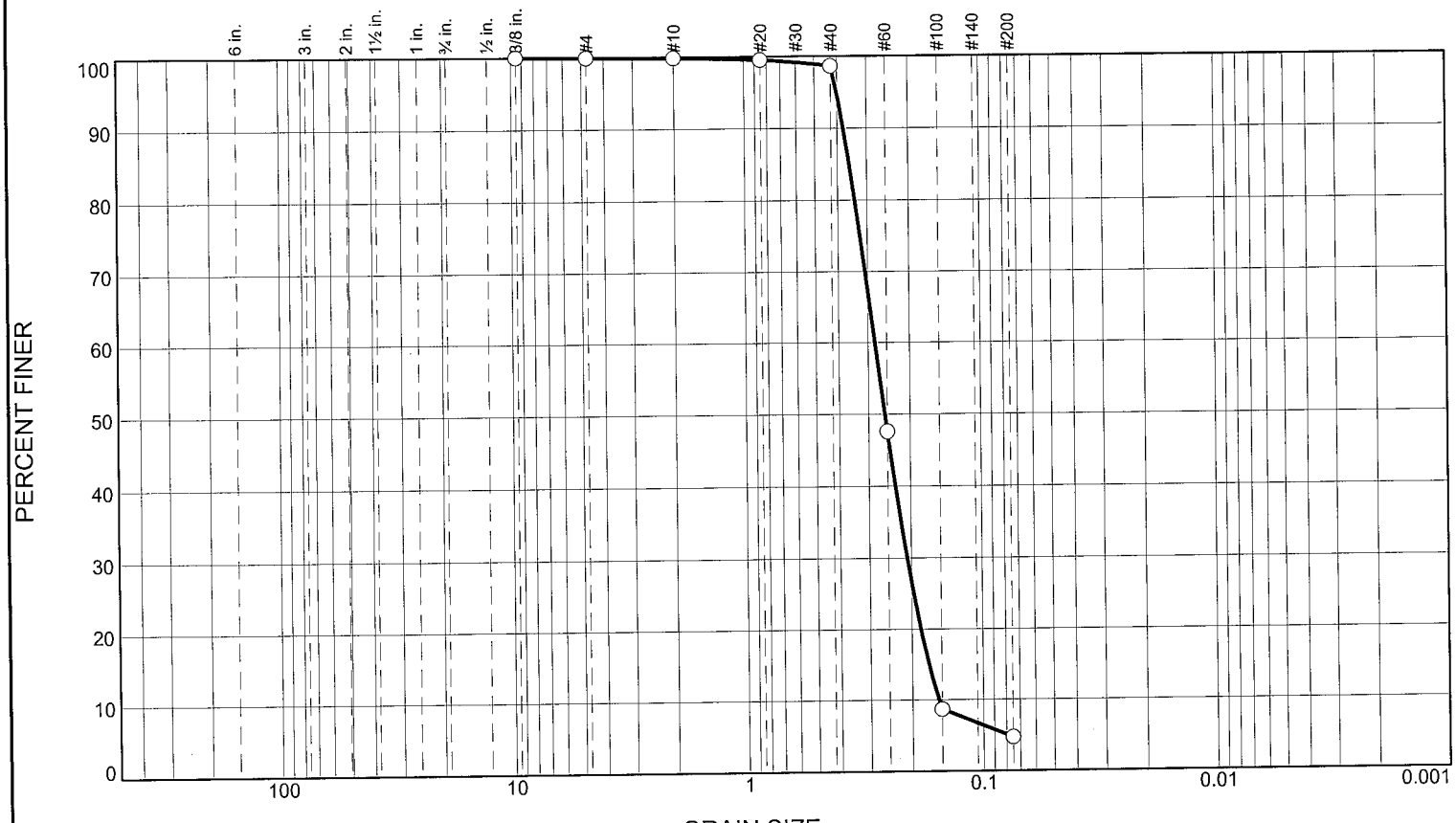
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20066° Long = -88.91232°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 1.2 | 93.9 | 4.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99:9 | | |
| #10 | 99.8 | | |
| #20 | 99.5 | | |
| #40 | 98.6 | | |
| #60 | 47.6 | | |
| #100 | 8.7 | | |
| #200 | 4.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3764 $D_{85}$= 0.3558 $D_{60}$= 0.2804
$D_{50}$= 0.2558 $D_{30}$= 0.2080 $D_{15}$= 0.1697
$D_{10}$= 0.1545 $C_u$= 1.81 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-67-10A
**Sample Number:** TE Lab ID: 4549.42 **Depth:** 0.0 - 3.7 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-68-10

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-68-10 |
| LOCATION COORDINATES | E = 970,015 N = 258,785 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 15.5 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 29 Ft. |
| 15. DATE BORING | STARTED 06-16-10 / COMPLETED 06-16-10 |
| 16. ELEVATION TOP OF BORING | -28.2 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2992 mm % Fines: 4.1 |
| | | | | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2942 mm % Fines: 3.3 |
| | | | | C | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2232 mm % Fines: 3.9 |
| -40.4 | 12.2 | | | | |
| | | | SAND, clayey, dark gray (SC) | NS | |
| -43.7 | 15.5 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

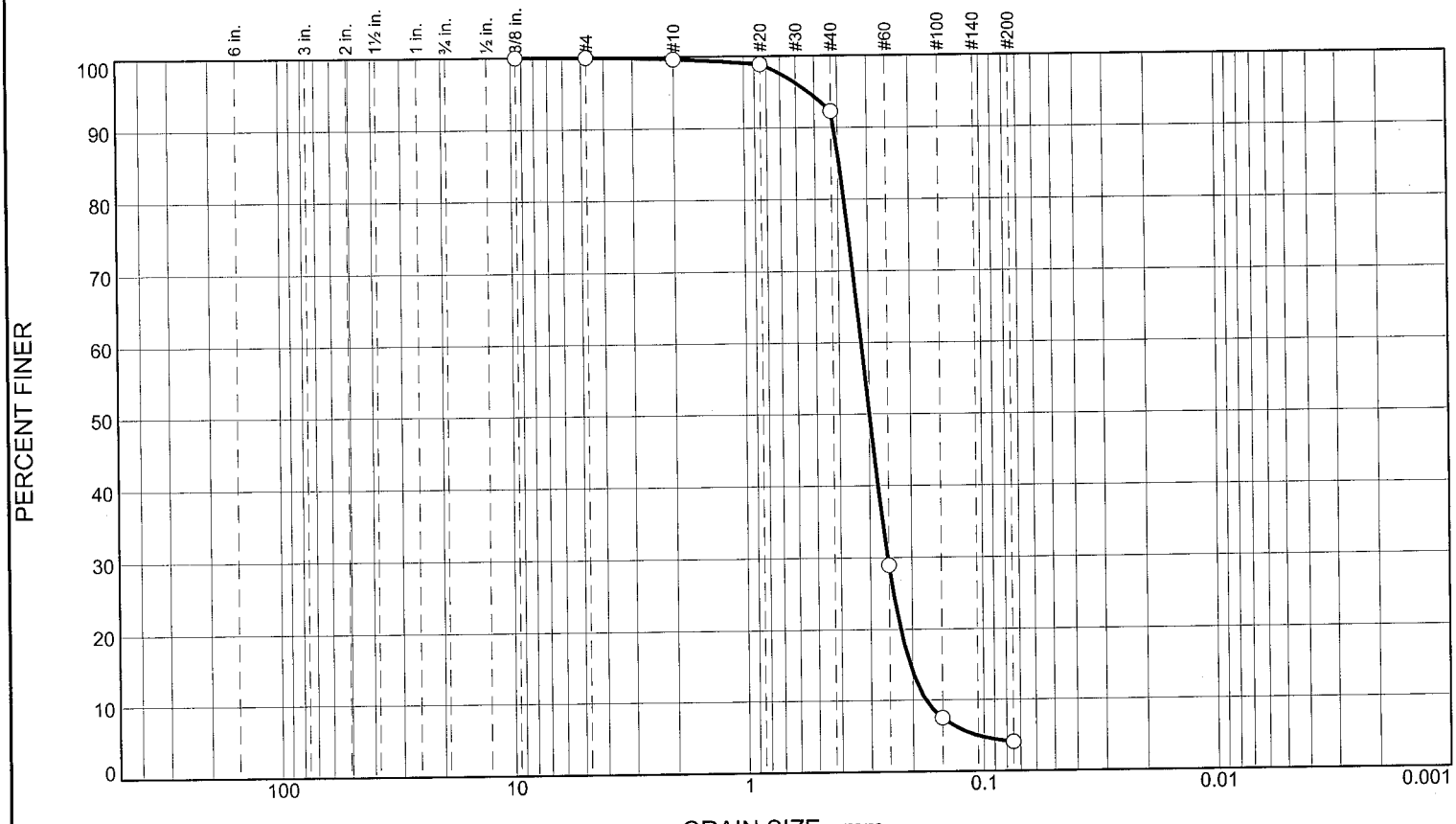
3. Seafloor elevation determined from USACE hydrographic survey completed 2010.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21160° Long = -88.8784°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 7.4 | 88.1 | 4.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 98.9 | | |
| #40 | 92.2 | | |
| #60 | 28.9 | | |
| #100 | 7.5 | | |
| #200 | 4.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4144 $D_{85}$= 0.3941 $D_{60}$= 0.3225
$D_{50}$= 0.2992 $D_{30}$= 0.2527 $D_{15}$= 0.2045
$D_{10}$= 0.1760 $C_u$= 1.83 $C_c$= 1.13

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-68-10A
**Sample Number:** TE Lab ID: 4549.43 **Depth:** 0.0 - 4.0 (ft.) **Date:** 6/26/10

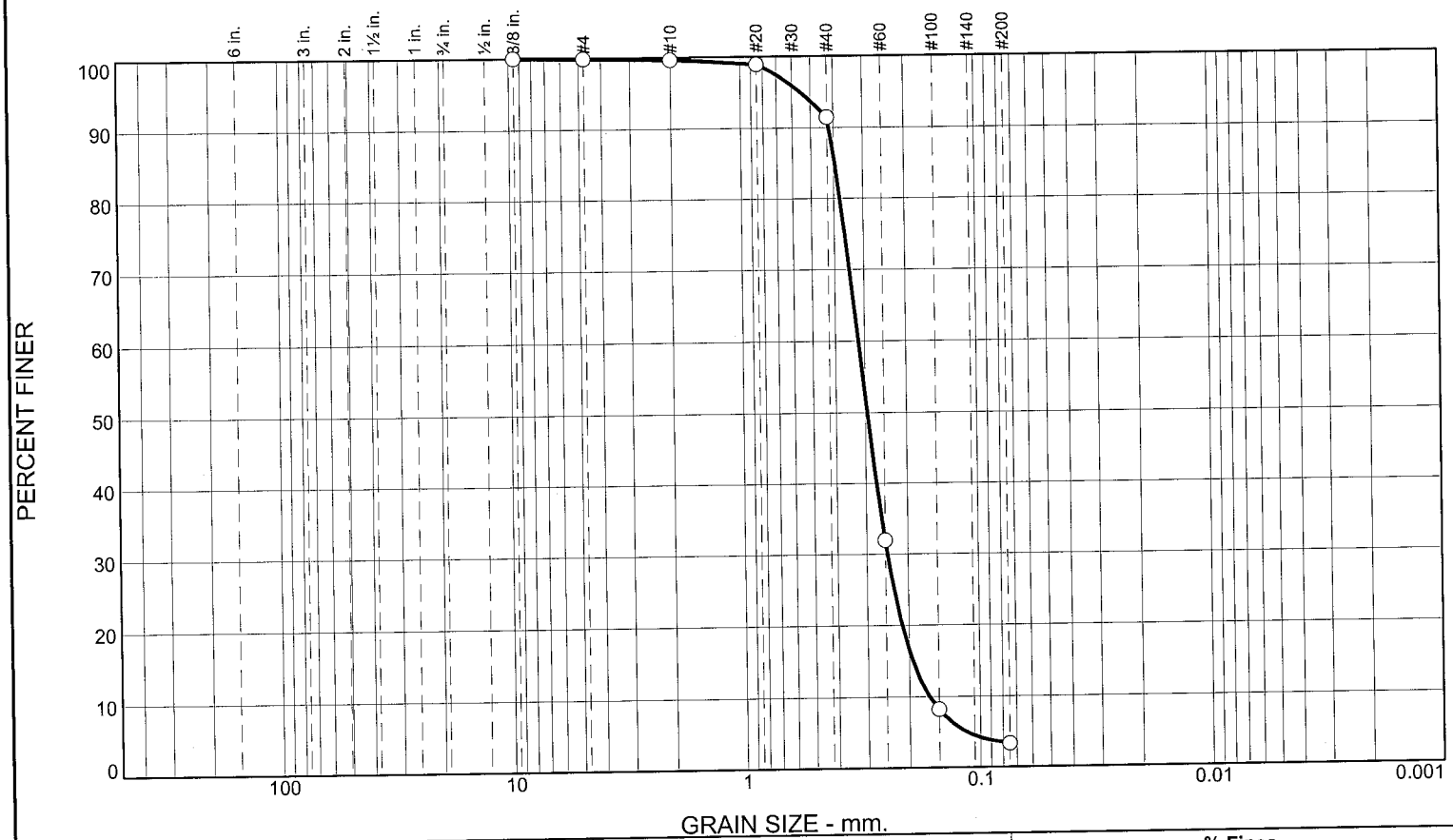
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.3 | 8.2 | 88.1 | 3.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.6 | | |
| #20 | 98.9 | | |
| #40 | 91.4 | | |
| #60 | 31.9 | | |
| #100 | 8.2 | | |
| #200 | 3.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4175 $D_{85}$= 0.3953 $D_{60}$= 0.3189
$D_{50}$= 0.2942 $D_{30}$= 0.2448 $D_{15}$= 0.1931
$D_{10}$= 0.1644 $C_u$= 1.94 $C_c$= 1.14

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-68-10B
**Sample Number:** TE Lab ID: 4549.44 **Depth:** 4.0 - 8.0 (ft.) **Date:** 6/26/10

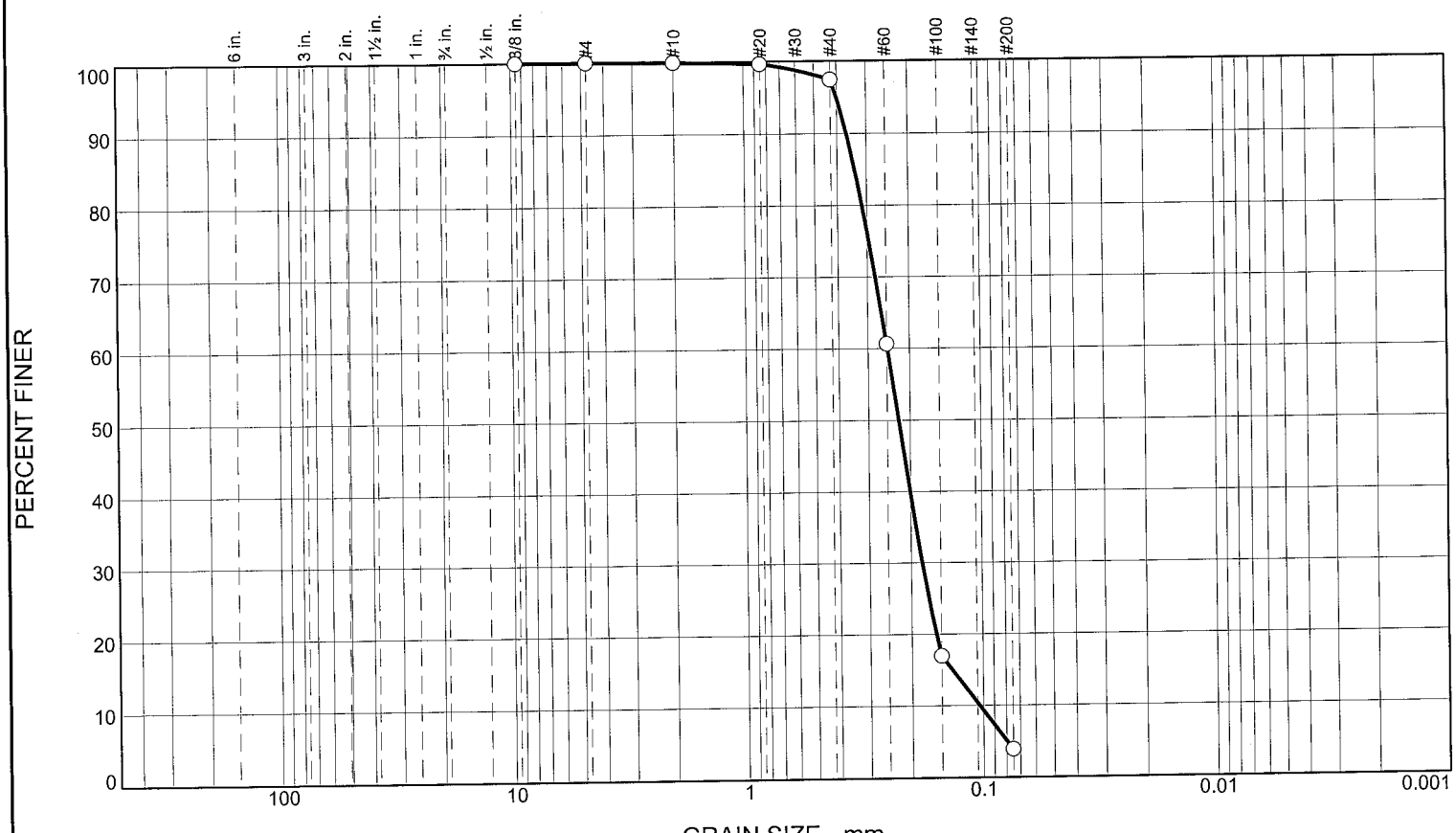
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.5 | 93.5 | 3.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 97.4 | | |
| #60 | 60.6 | | |
| #100 | 17.0 | | |
| #200 | 3.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3642 $D_{85}$= 0.3367 $D_{60}$= 0.2483
$D_{50}$= 0.2232 $D_{30}$= 0.1793 $D_{15}$= 0.1353
$D_{10}$= 0.1037 $C_u$= 2.39 $C_c$= 1.25

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-68-10C
**Sample Number:** TE Lab ID: 4549.45 **Depth:** 8.0 - 12.2 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-69-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-69-10 — LOCATION COORDINATES: E = 971,567 N = 261,330 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 26 Ft. |
| | 15. DATE BORING — STARTED: 06-16-10 — COMPLETED: 06-16-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -26.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -26.5 | 0.0 | | | | |
| -27.9 | 1.4 | | SAND, clayey, dark gray (SC) | NS | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2027 mm % Fines: 4.1 |
| | | | | B | Classification: SM Color: 2.5Y 7/1-light gray<br>D50: 0.1891 mm % Fines: 21.4 |
| -39.8 | 13.3 | | | C | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1907 mm % Fines: 4.7 |
| -44.7 | 18.2 | | SAND, clayey, dark gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

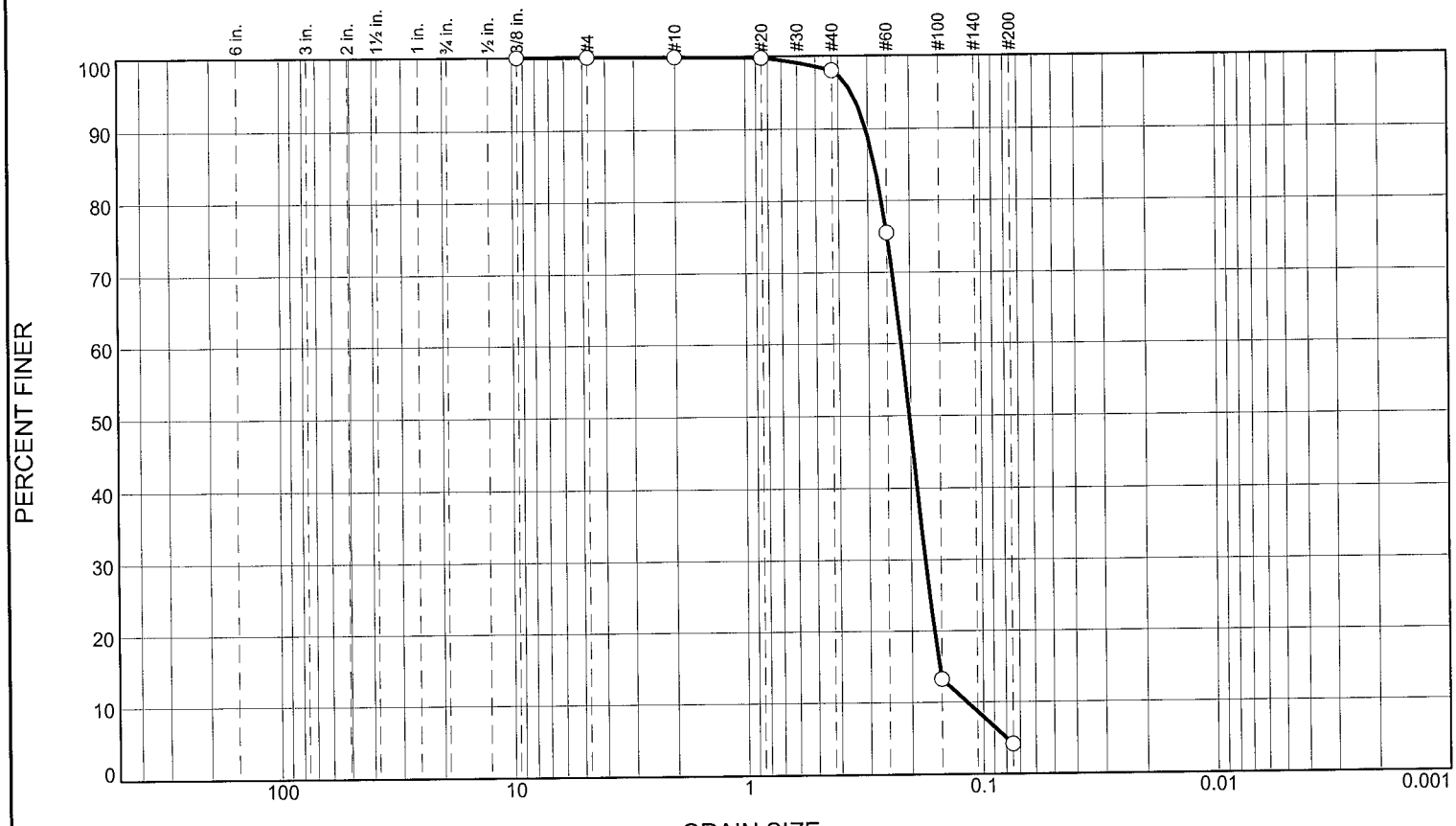
3. Seafloor elevation determined from USACE hydrographic survey completed 2010.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21860° Long = -88.87349°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.9 | 93.9 | 4.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.8 | | |
| #40 | 98.0 | | |
| #60 | 75.5 | | |
| #100 | 13.2 | | |
| #200 | 4.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3060 $D_{85}$= 0.2804 $D_{60}$= 0.2186
$D_{50}$= 0.2027 $D_{30}$= 0.1744 $D_{15}$= 0.1529
$D_{10}$= 0.1174 $C_u$= 1.86 $C_c$= 1.19

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-69-10A
**Sample Number:** TE Lab ID: 4549.46 **Depth:** 1.4 - 5.4 (ft.) **Date:** 6/26/10

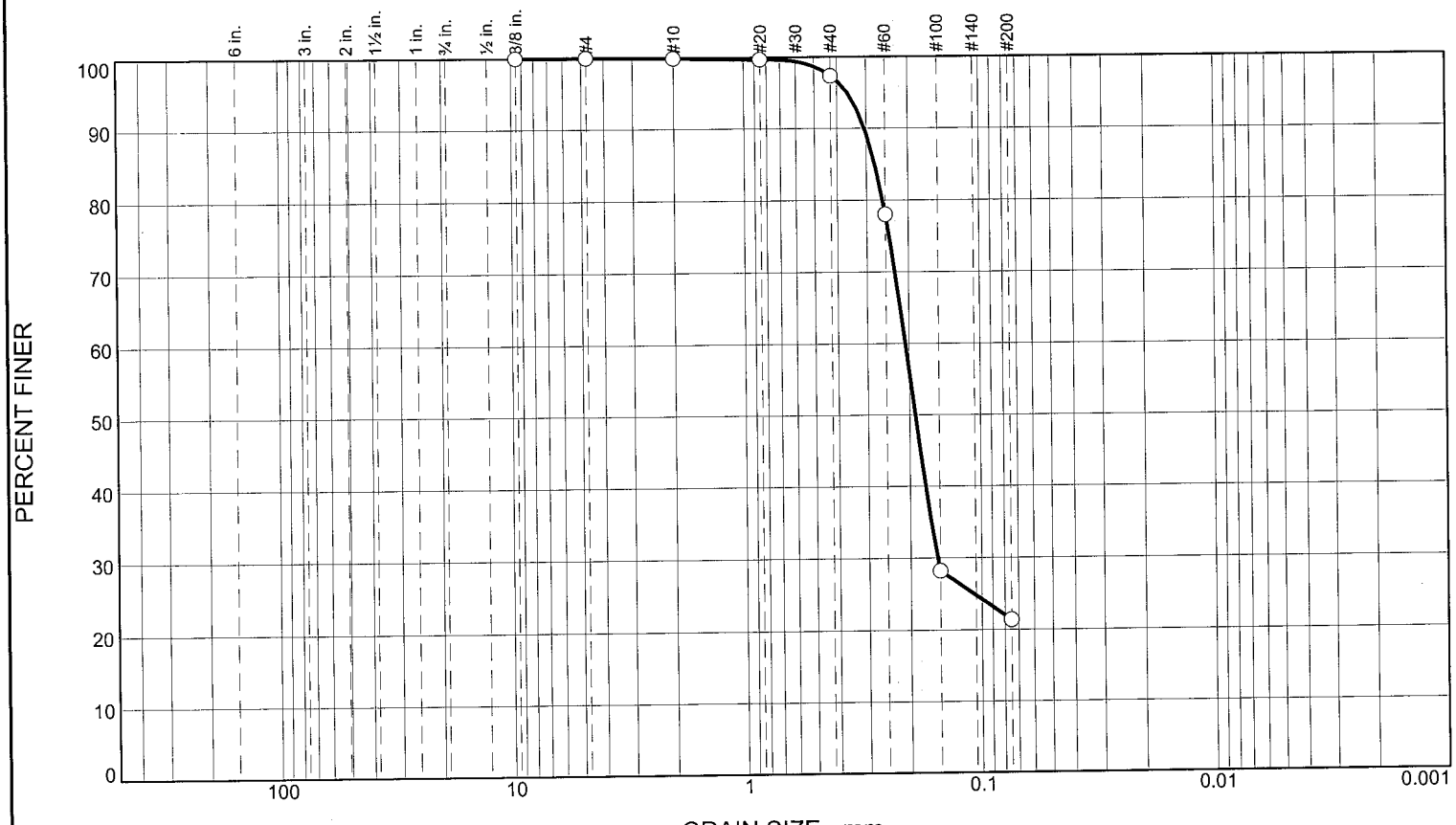
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.5 | 76.0 | 21.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 97.4 | | |
| #60 | 78.0 | | |
| #100 | 28.2 | | |
| #200 | 21.4 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3055 $D_{85}$= 0.2764 $D_{60}$= 0.2074
$D_{50}$= 0.1891 $D_{30}$= 0.1537 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-69-10B
**Sample Number:** TE Lab ID: 4549.47 **Depth:** 5.4 - 9.4 (ft.) **Date:** 6/26/10

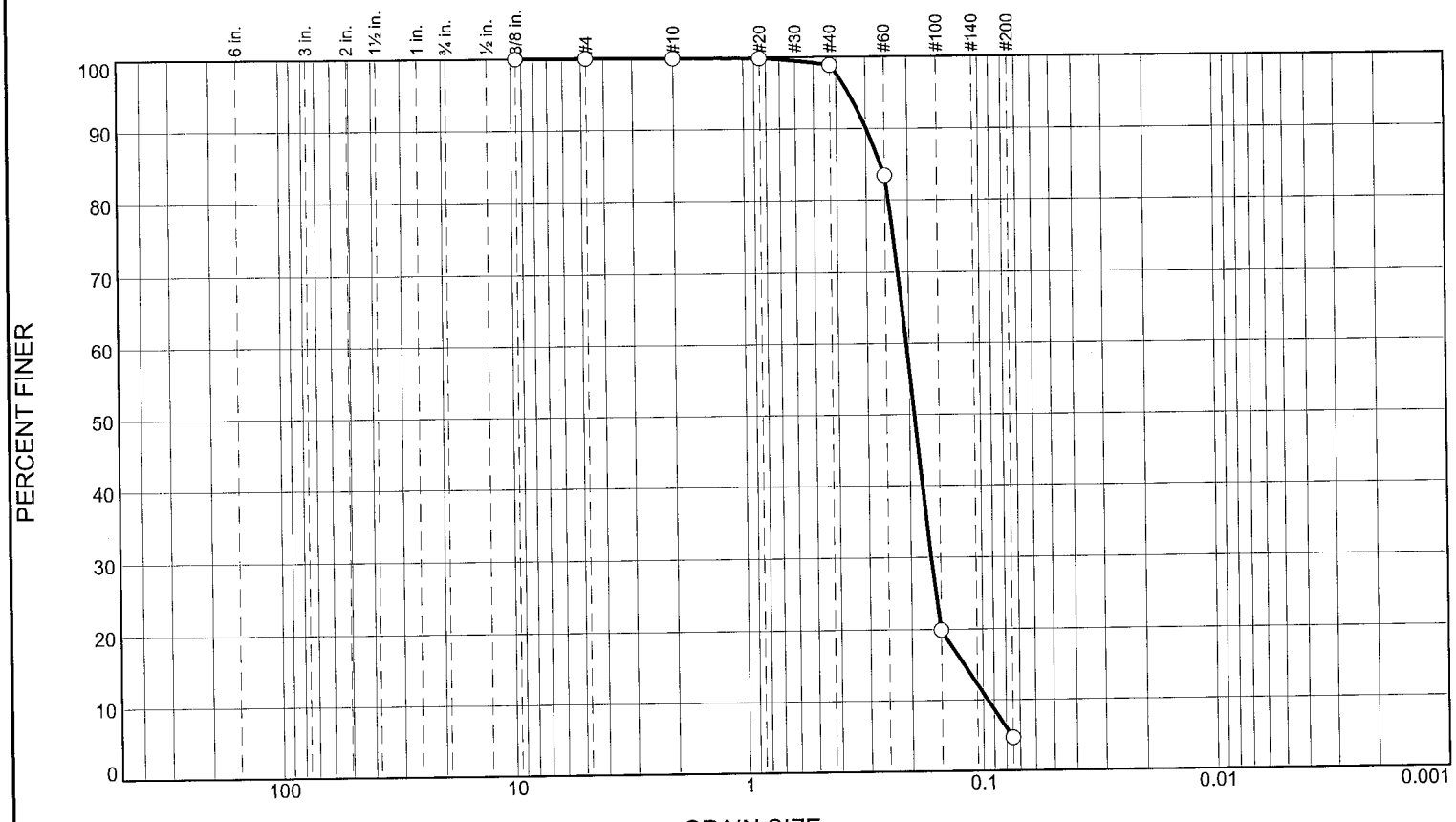
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 94.2 | 4.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.9 | | |
| #40 | 98.9 | | |
| #60 | 83.4 | | |
| #100 | 19.9 | | |
| #200 | 4.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2985 $D_{85}$= 0.2599 $D_{60}$= 0.2051
$D_{50}$= 0.1907 $D_{30}$= 0.1642 $D_{15}$= 0.1201
$D_{10}$= 0.0956 $C_u$= 2.14 $C_c$= 1.38

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-69-10C
**Sample Number:** TE Lab ID: 4549.48 **Depth:** 9.4 13.3 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

Boring Designation BI-SI-70-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Ship Island | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-SI-70-10 / LOCATION COORDINATES E = 960,735 N = 254,491 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 21 Ft. |
| | 15. DATE BORING STARTED 06-17-10 / COMPLETED 06-17-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -19.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 15.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.7 | 0.0 | | | | |
| -24.2 | 4.5 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray D50: 0.1831 mm % Fines: 3.9 |
| -35.1 | 15.4 | | CLAY, lean, some sand, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

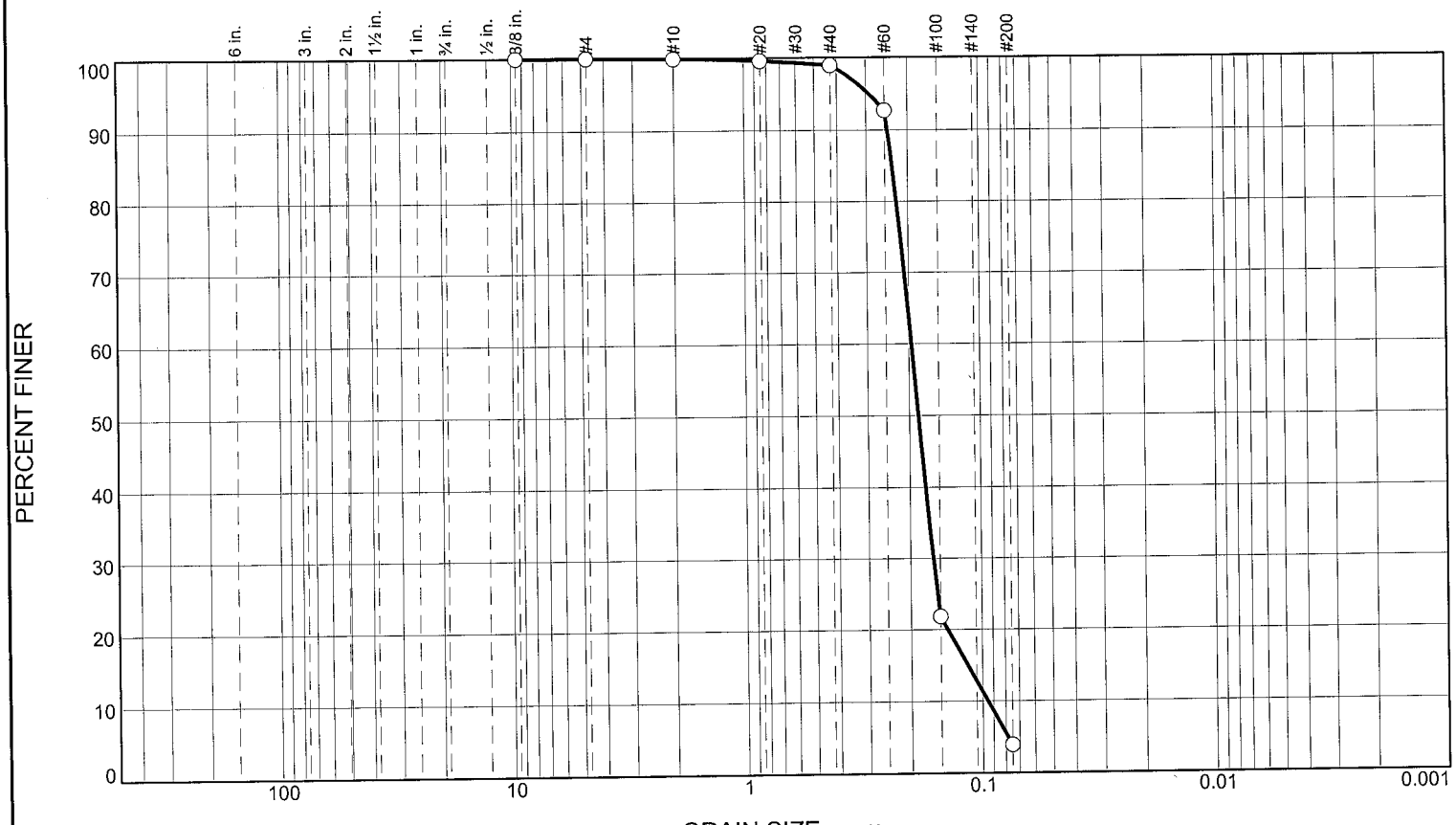
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19978° Long = -88.90777°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 95.0 | 3.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 98.9 | | |
| #60 | 92.7 | | |
| #100 | 21.8 | | |
| #200 | 3.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2431 $D_{85}$= 0.2325 $D_{60}$= 0.1951
$D_{50}$= 0.1831 $D_{30}$= 0.1601 $D_{15}$= 0.1152
$D_{10}$= 0.0950 $C_u$= 2.05 $C_c$= 1.38

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-70-10A
**Sample Number:** TE Lab ID: 4549.49 **Depth:** 0.0 - 4.5 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

Boring Designation BI-SI-71-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-71-10; LOCATION COORDINATES: E = 960,905 N = 252,923 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 0; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 27 Ft. |
| | 15. DATE BORING: STARTED 06-17-10; COMPLETED 06-17-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -25.6 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -25.6 | 0.0 | | | | |
| -31.0 | 5.4 | | SAND, silty, mostly fine-grained sand-sized quartz, some clay, dark gray (SM) | | |
| -43.1 | 17.5 | | CLAY, lean, sand layers (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19547° Long = -88.90723°

## Boring Designation BI-SI-72-10

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-72-10 |
| LOCATION COORDINATES | E = 963,262 N = 253,537 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 17.5 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 2 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 26 Ft. |
| 15. DATE BORING | STARTED 06-17-10 / COMPLETED 06-17-10 |
| 16. ELEVATION TOP OF BORING | -24.5 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -24.5 | 0.0 | | | | |
| -31.2 | 6.7 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.2112 mm % Fines: 3.5 |
| -34.9 | 10.4 | | CLAY, lean, some sand, dark gray (CL) | NS | |
| -42.0 | 17.5 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, some clay, dark gray (SM) | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1573 mm % Fines: 15.3 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

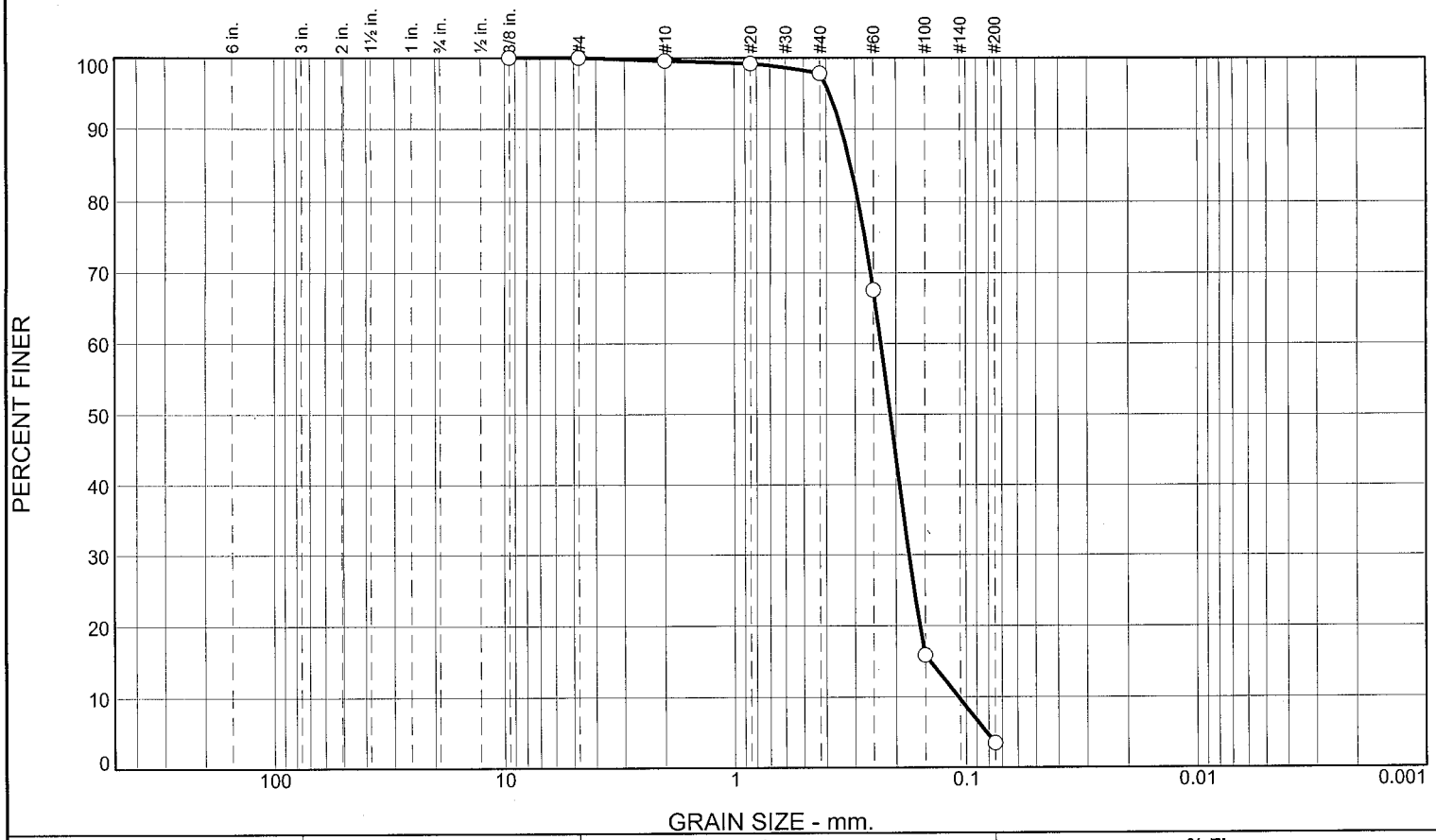
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19716° Long = -88.89977°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 1.8 | 94.3 | 3.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 99.2 | | |
| #40 | 97.8 | | |
| #60 | 67.6 | | |
| #100 | 15.9 | | |
| #200 | 3.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3426 $D_{85}$= 0.3129 $D_{60}$= 0.2317
$D_{50}$= 0.2112 $D_{30}$= 0.1756 $D_{15}$= 0.1428
$D_{10}$= 0.1080 $C_u$= 2.15 $C_c$= 1.23

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

Mislabeled; should be BI-SI-72-10A

**Location:** USACE Sample # BI-SI-72-10B
**Sample Number:** TE Lab ID: 4549.51 **Depth:** 0.0 - 6.7 (ft.) **Date:** 6/26/10

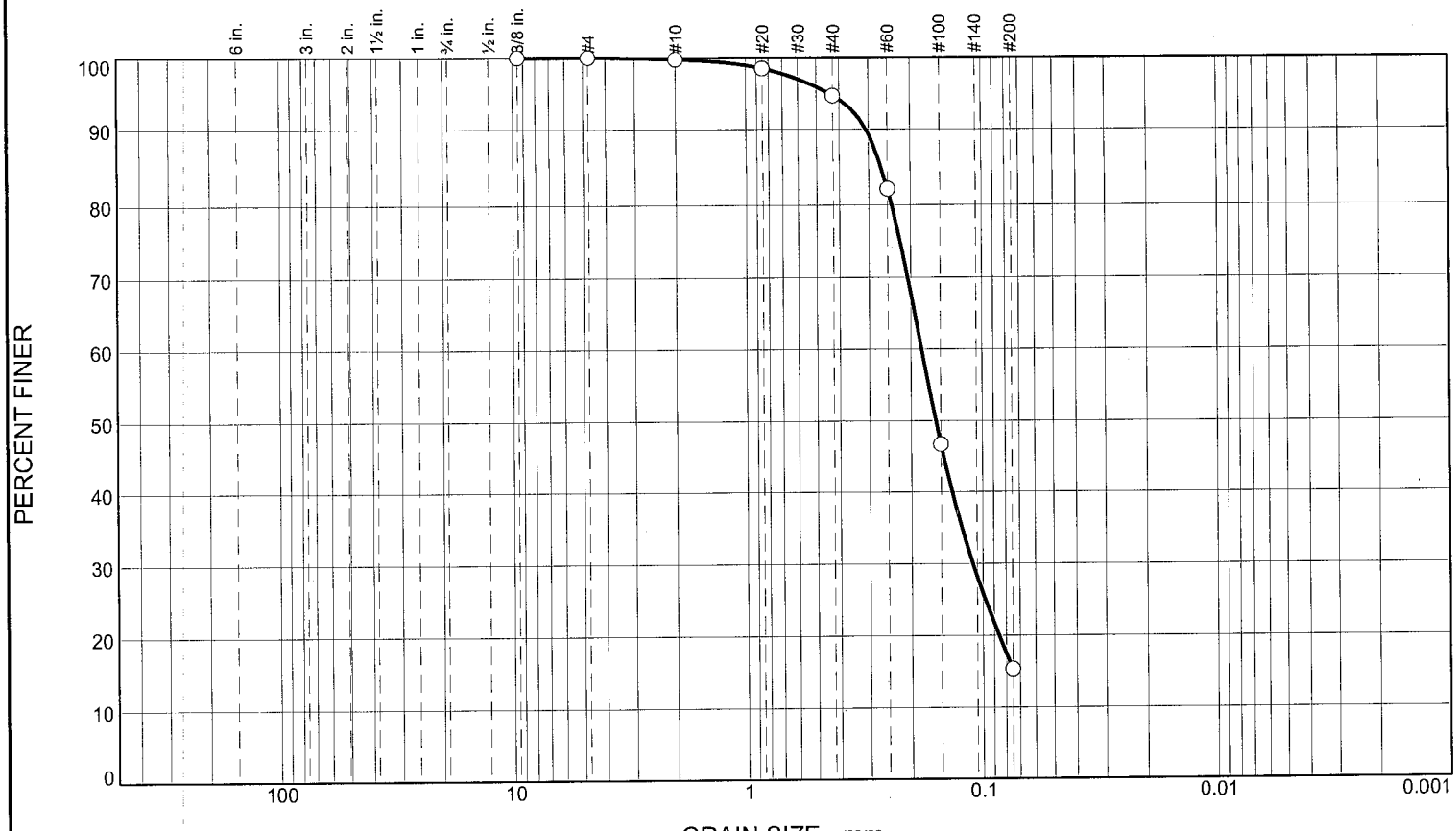
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 5.0 | 79.4 | 15.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 98.5 | | |
| #40 | 94.7 | | |
| #60 | 82.2 | | |
| #100 | 46.7 | | |
| #200 | 15.3 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3076 $D_{85}$= 0.2651 $D_{60}$= 0.1801
$D_{50}$= 0.1573 $D_{30}$= 0.1104 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-72-10A Mislabeled; should be BI-SI-72-10B
**Sample Number:** TE Lab ID: 4549.50 **Depth:** 10.4 - 12.5 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-73-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-73-10; LOCATION COORDINATES: E = 970,779 N = 257,363 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 3; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 27 Ft. |
| | 15. DATE BORING: STARTED 06-21-10; COMPLETED 06-21-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.3 | 0.0 | | | | |
| -29.6 | 0.3 | | CLAY, lean, dark gray (CL) | NS | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.192 mm % Fines: 4.9 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1835 mm % Fines: 4.4 |
| -40.6 | 11.3 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, gray (SM) | C | Classification: SM Color: 2.5Y 4/3-olive brown<br>D50: 0.1636 mm % Fines: 19.1 |
| -44.2 | 14.9 | | CLAY, lean, trace wood debris, dark gray (CL) | NS | |
| -46.7 | 17.4 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

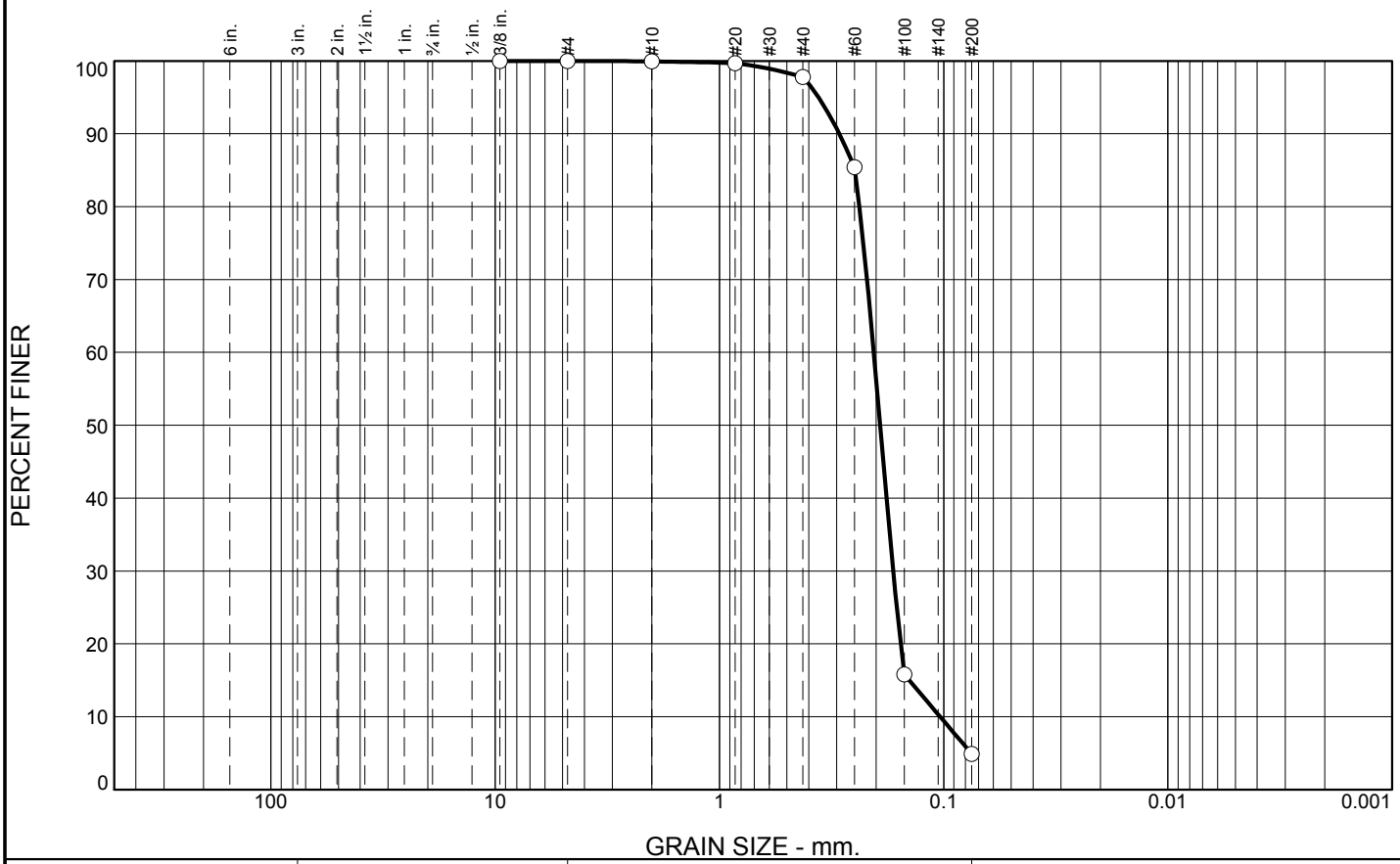
3. Seafloor elevation determined from USACE hydrographic survey completed 2010.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20769° Long = -88.87598°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.1 | 92.9 | 4.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 97.8 | | |
| #60 | 85.4 | | |
| #100 | 15.8 | | |
| #200 | 4.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2918 $D_{85}$= 0.2489 $D_{60}$= 0.2050
$D_{50}$= 0.1920 $D_{30}$= 0.1680 $D_{15}$= 0.1424
$D_{10}$= 0.1037 $C_u$= 1.98 $C_c$= 1.33

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-73-10A
**Sample Number:** TE Lab ID: 4557.01 **Depth:** 0.3 - 5.3 (ft.) **Date:** 7/3/10

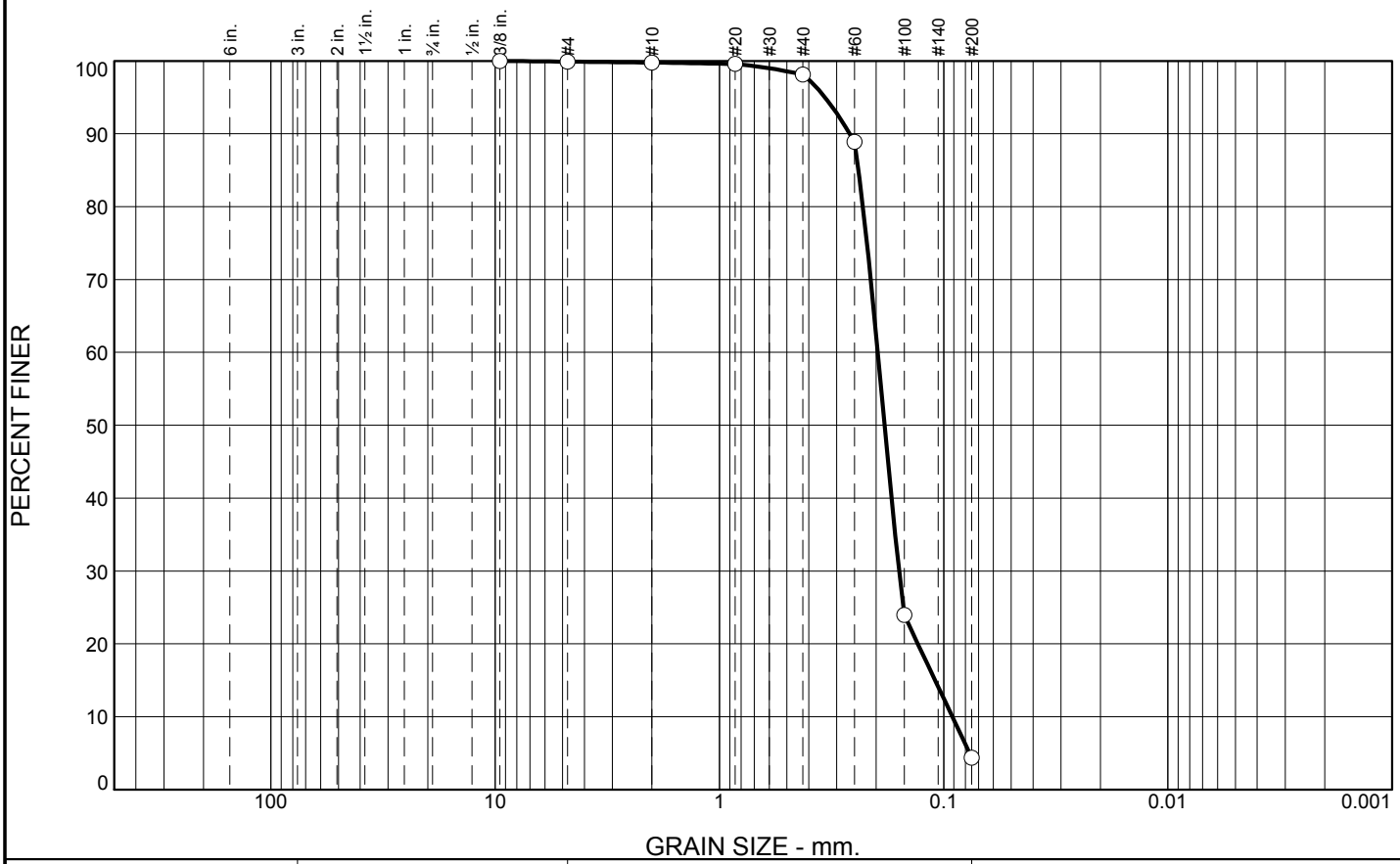
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 1.7 | 93.7 | 4.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 99.6 | | |
| #40 | 98.1 | | |
| #60 | 88.9 | | |
| #100 | 24.0 | | |
| #200 | 4.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2623 $D_{85}$= 0.2398 $D_{60}$= 0.1968
$D_{50}$= 0.1835 $D_{30}$= 0.1582 $D_{15}$= 0.1092
$D_{10}$= 0.0915 $C_u$= 2.15 $C_c$= 1.39

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-73-10B
**Sample Number:** TE Lab ID: 4557.02 **Depth:** 5.3 - 11.3 (ft.) **Date:** 7/3/10

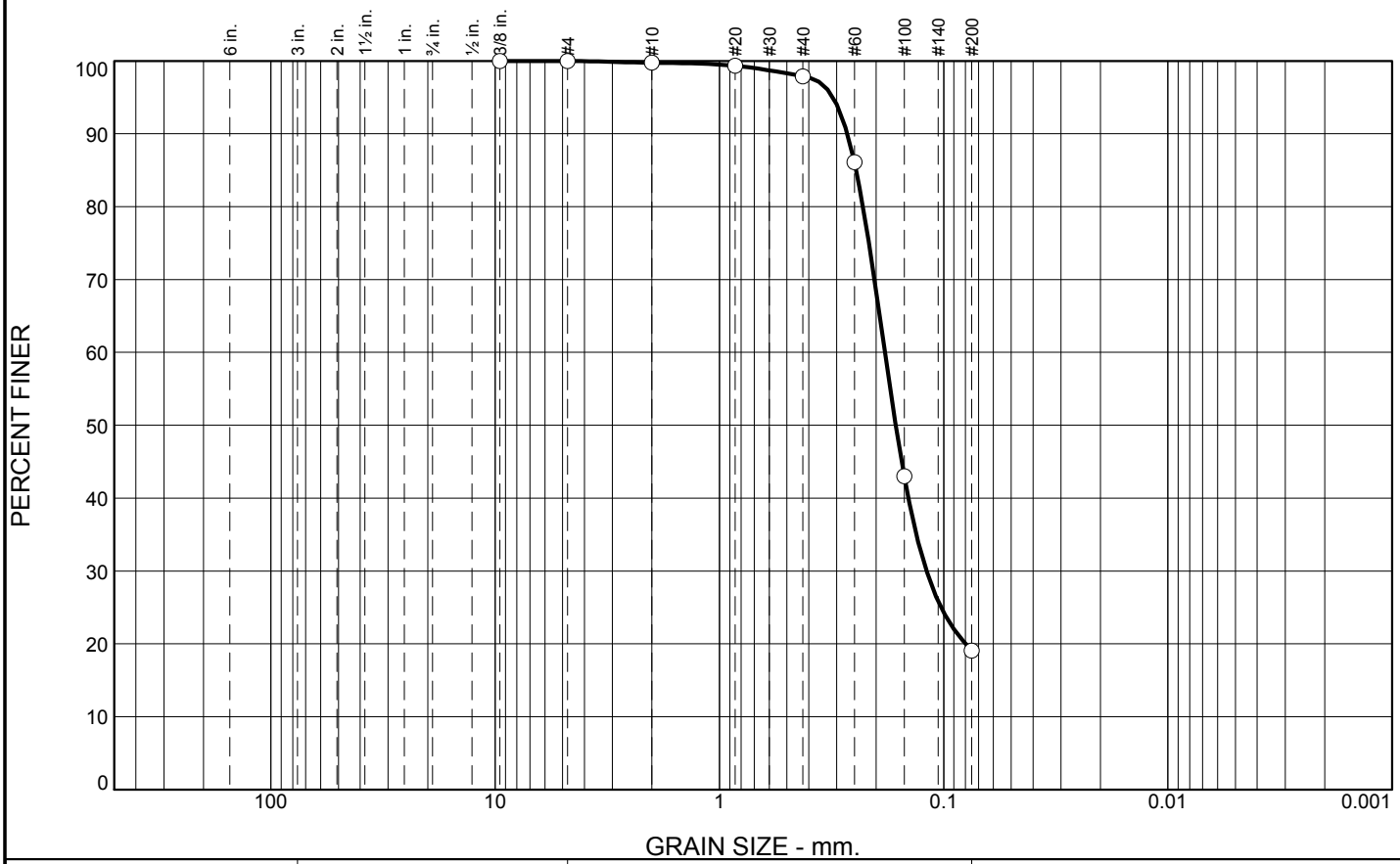
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 1.9 | 78.8 | 19.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.3 | | |
| #40 | 97.9 | | |
| #60 | 86.1 | | |
| #100 | 43.0 | | |
| #200 | 19.1 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2687 $D_{85}$= 0.2456 $D_{60}$= 0.1828
$D_{50}$= 0.1636 $D_{30}$= 0.1192 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-73-10C
**Sample Number:** TE Lab ID: 4557.03 **Depth:** 11.3 - 14.9 (ft.) **Date:** 7/3/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-74-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-74-10; LOCATION COORDINATES: E = 973,379 N = 259,795 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 2; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 30 Ft. |
| | 15. DATE BORING: STARTED 06-16-10; COMPLETED 06-16-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -28.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.3 | 0.0 | | | | |
| -29.6 | 1.3 | | CLAY, lean, trace sand, gray (CL) | NS | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.1821 mm % Fines: 5.7 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.1775 mm % Fines: 6.1 |
| -40.3 | 12.0 | | | | |
| -45.3 | 17.0 | | CLAY, lean, trace sand, trace silt, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

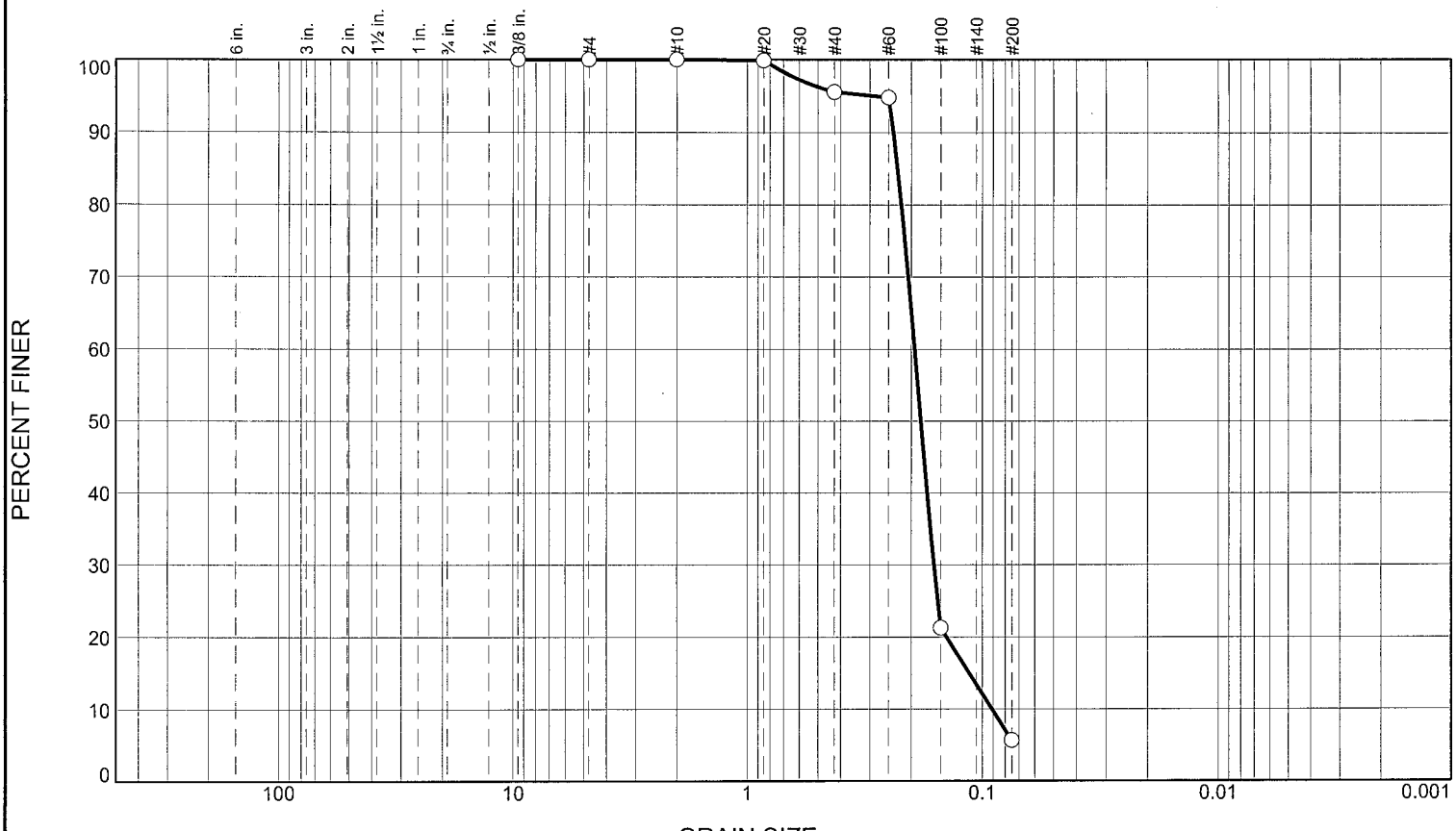
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21438° Long = -88.86775°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 4.4 | 89.9 | 5.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 95.6 | | |
| #60 | 94.8 | | |
| #100 | 21.3 | | |
| #200 | 5.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2381 $D_{85}$= 0.2284 $D_{60}$= 0.1934
$D_{50}$= 0.1821 $D_{30}$= 0.1603 $D_{15}$= 0.1135
$D_{10}$= 0.0909 $C_u$= 2.13 $C_c$= 1.46

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-74-10A
**Sample Number:** TE Lab ID: 4549.52 **Depth:** 1.3 - 6.3 (ft.) **Date:** 6/26/10

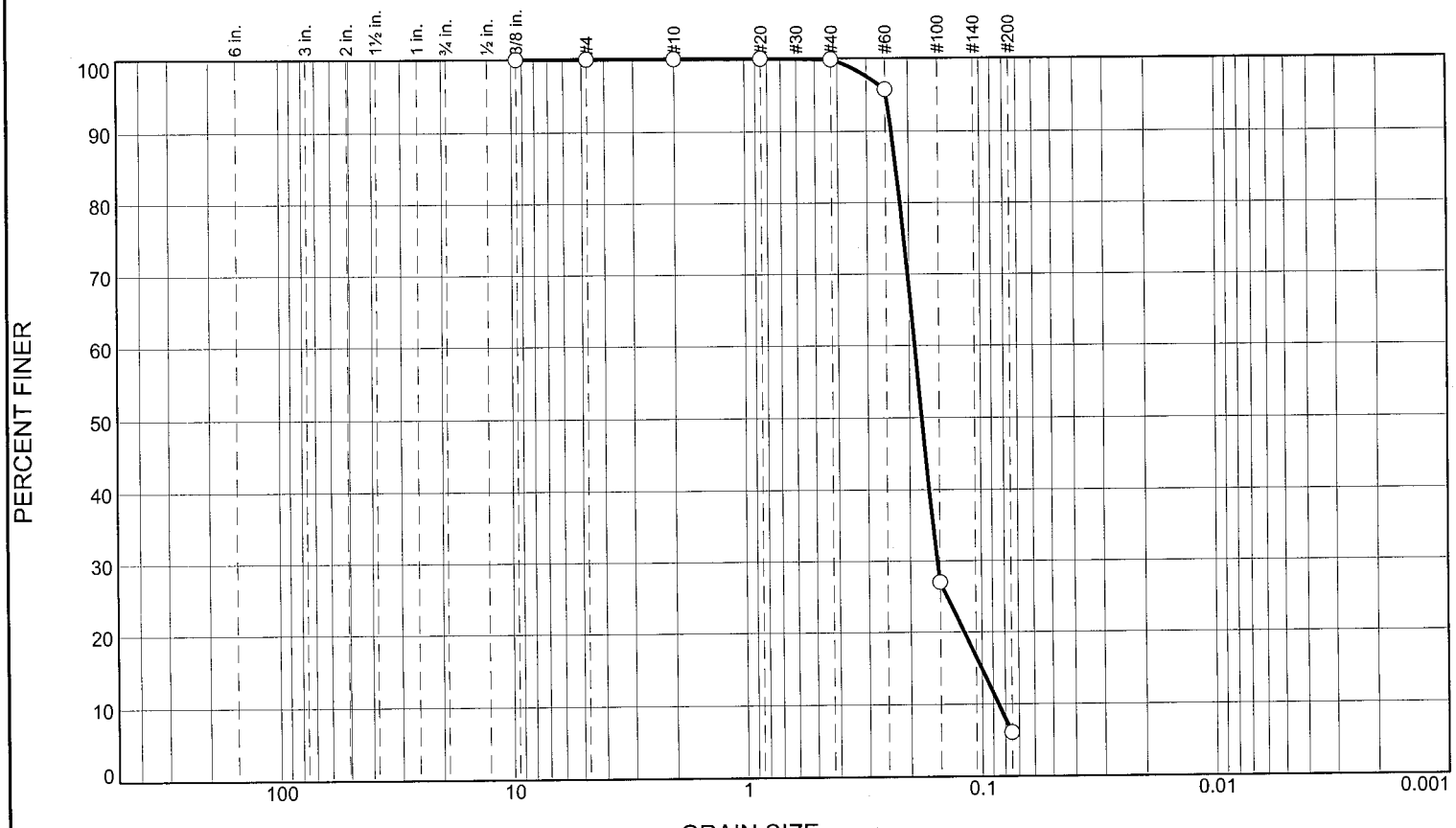
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 93.7 | 6.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 100.0 | | |
| #40 | 99.8 | | |
| #60 | 95.8 | | |
| #100 | 27.0 | | |
| #200 | 6.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2356 $D_{85}$= 0.2258 $D_{60}$= 0.1895
$D_{50}$= 0.1775 $D_{30}$= 0.1538 $D_{15}$= 0.1007
$D_{10}$= 0.0853 $C_u$= 2.22 $C_c$= 1.46

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-74-10B
**Sample Number:** TE Lab ID: 4549.53 **Depth:** 6.3 - 12.0 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-75-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-75-10 — LOCATION COORDINATES: E = 966,632 N = 252,375 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 30 Ft. |
| | 15. DATE BORING — STARTED: 06-17-10 — COMPLETED: 06-17-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -28.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.5 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1929 mm % Fines: 1.4 |
| | | | | B | Classification: SP Color: 2.5Y 5/2-grayish brown<br>D50: 0.1698 mm % Fines: 4.9 |
| -39.5 | 11.0 | | | | |
| -41.2 | 12.7 | | SILT, inorganic-L, gray (ML) | NS | |
| -44.4 | 15.9 | | CLAY, lean, dark gray (CL) | | |
| -47.2 | 18.7 | | SAND, silty (SM) | C | Classification: SM Color: 2.5Y 7/1-light gray<br>D50: 0.1746 mm % Fines: 12.5 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

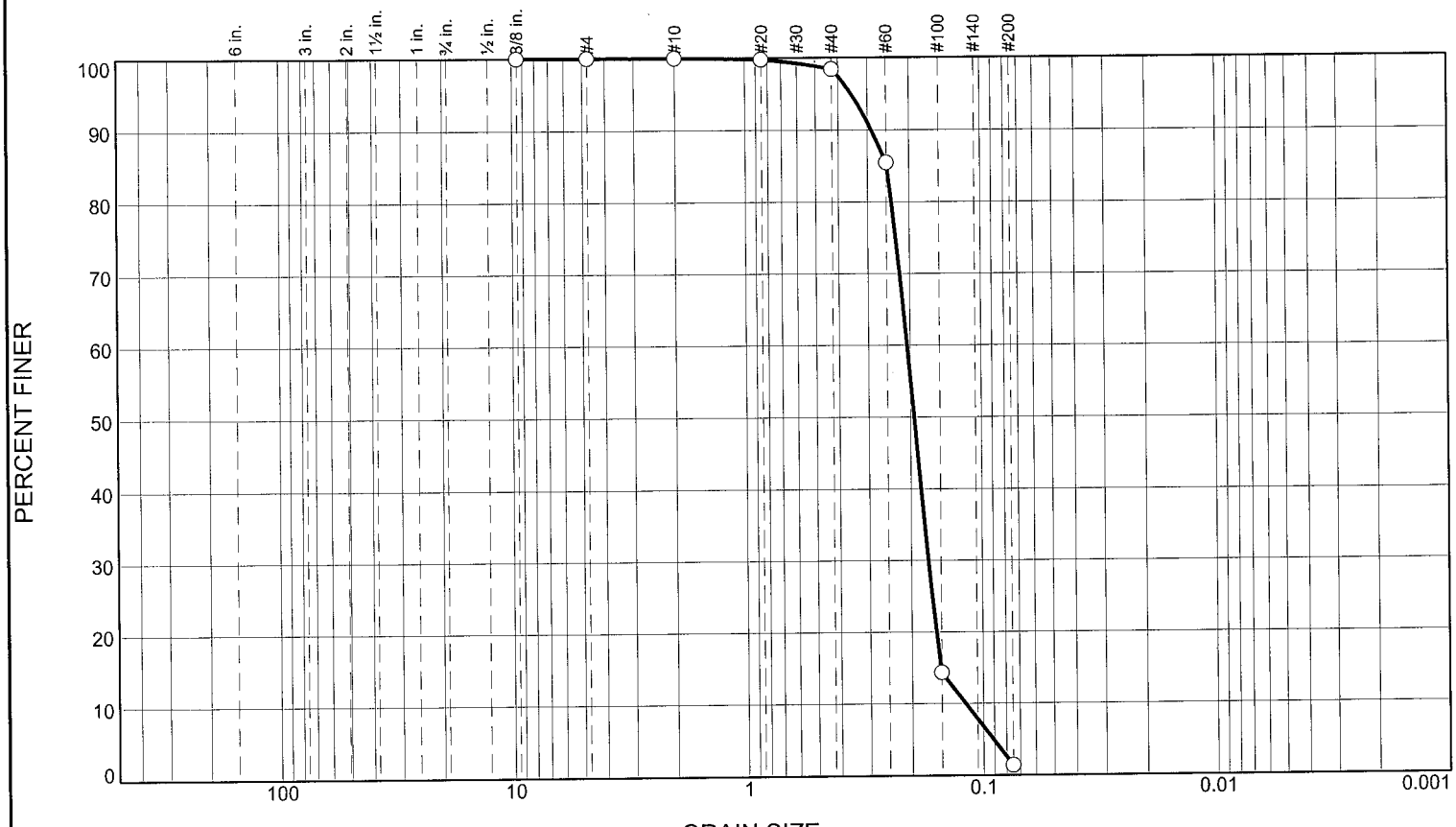
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19397° Long = -88.8891°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 1.6 | 97.0 | 1.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.8 | | |
| #40 | 98.4 | | |
| #60 | 85.5 | | |
| #100 | 14.3 | | |
| #200 | 1.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2886 $D_{85}$= 0.2488 $D_{60}$= 0.2057
$D_{50}$= 0.1929 $D_{30}$= 0.1693 $D_{15}$= 0.1509
$D_{10}$= 0.1191 $C_u$= 1.73 $C_c$= 1.17

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-75-10A
**Sample Number:** TE Lab ID: 4549.54 **Depth:** 0.0 - 5.5 (ft.) **Date:** 6/26/10

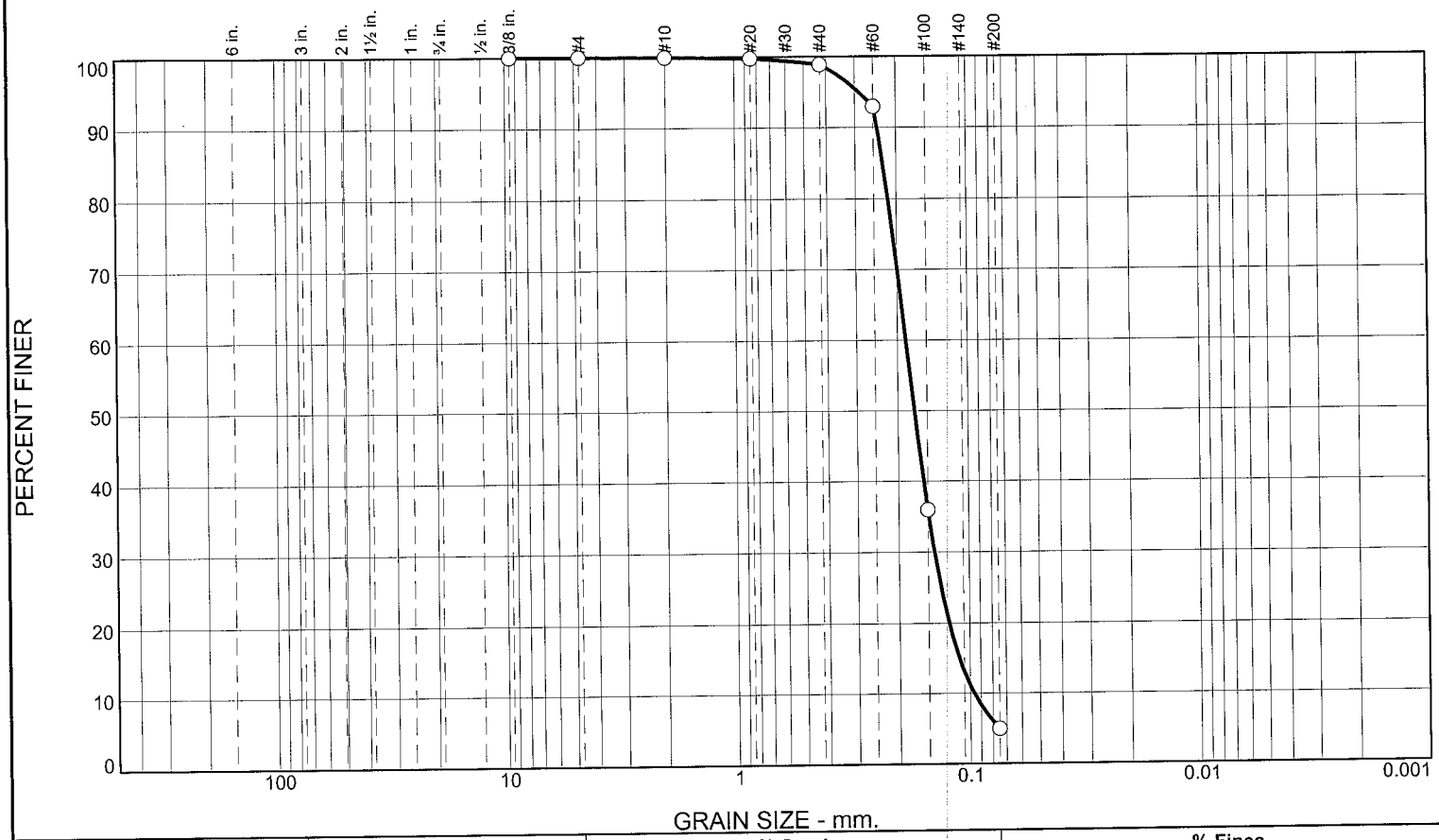
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 94.0 | 4.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 98.9 | | |
| #60 | 92.9 | | |
| #100 | 36.0 | | |
| #200 | 4.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2407 $D_{85}$= 0.2279 $D_{60}$= 0.1840
$D_{50}$= 0.1698 $D_{30}$= 0.1407 $D_{15}$= 0.1109
$D_{10}$= 0.0962 $C_u$= 1.91 $C_c$= 1.12

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

Mislabeled; should be BI-SI-75-10B

**Location:** USACE Sample # BI-SI-75-10C
**Sample Number:** TE Lab ID: 4549.56 **Depth:** 5.5 - 11.0 (ft.) **Date:** 6/26/10

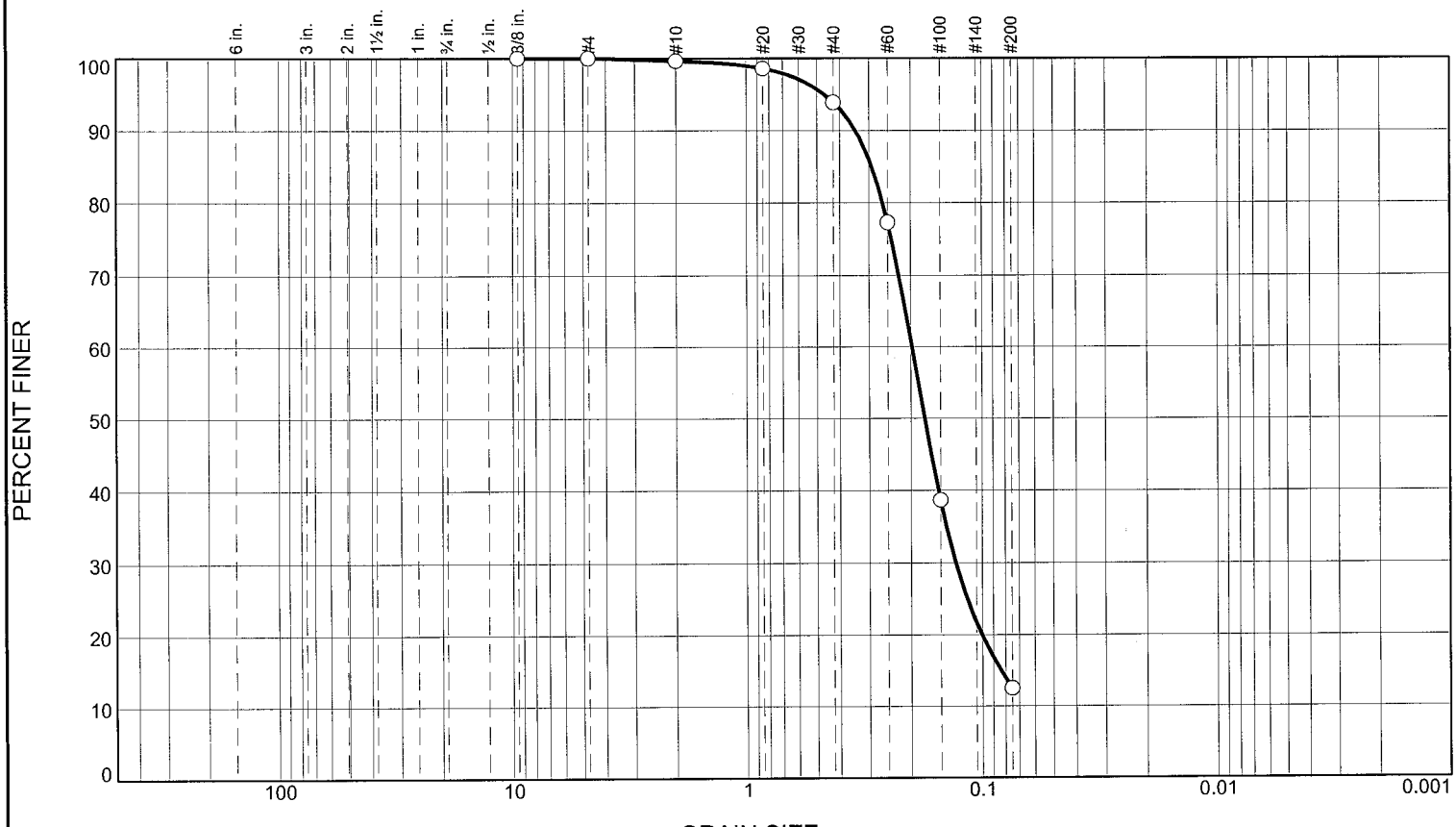
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 5.8 | 81.3 | 12.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 98.6 | | |
| #40 | 93.8 | | |
| #60 | 77.3 | | |
| #100 | 38.7 | | |
| #200 | 12.5 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3424 $D_{85}$= 0.2920 $D_{60}$= 0.1974
$D_{50}$= 0.1746 $D_{30}$= 0.1293 $D_{15}$= 0.0834
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

Mislabeled; should be BI-SI-75-10C

**Location:** USACE Sample # BI-SI-75-10B
**Sample Number:** TE Lab ID: 4549.55 **Depth:** 15.9 - 18.7 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-76-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-76-10; LOCATION COORDINATES: E = 969,273 N = 253,079 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 2; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 31 Ft. |
| | 15. DATE BORING: STARTED 06-16-10; COMPLETED 06-16-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.7 | 0.0 | | | | |
| -30.4 | 0.7 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, some silt, lt. gray (SC) | | |
| | | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, lt. gray (SP) | A | Classification: SP Color: 2/5Y 7/1- D50: 0.2245 mm % Fines: 3.3 |
| | | | | B | Classification: SM Color: 2.5Y 7/1-light gray D50: 0.1591 mm % Fines: 24.1 |
| -40.9 | 11.2 | | | | |
| | | | CLAY, lean, some sand, some silt, dark gray (CL) | NS | |
| -44.0 | 14.3 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, dark gray (SP) | | |
| -45.9 | 16.2 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

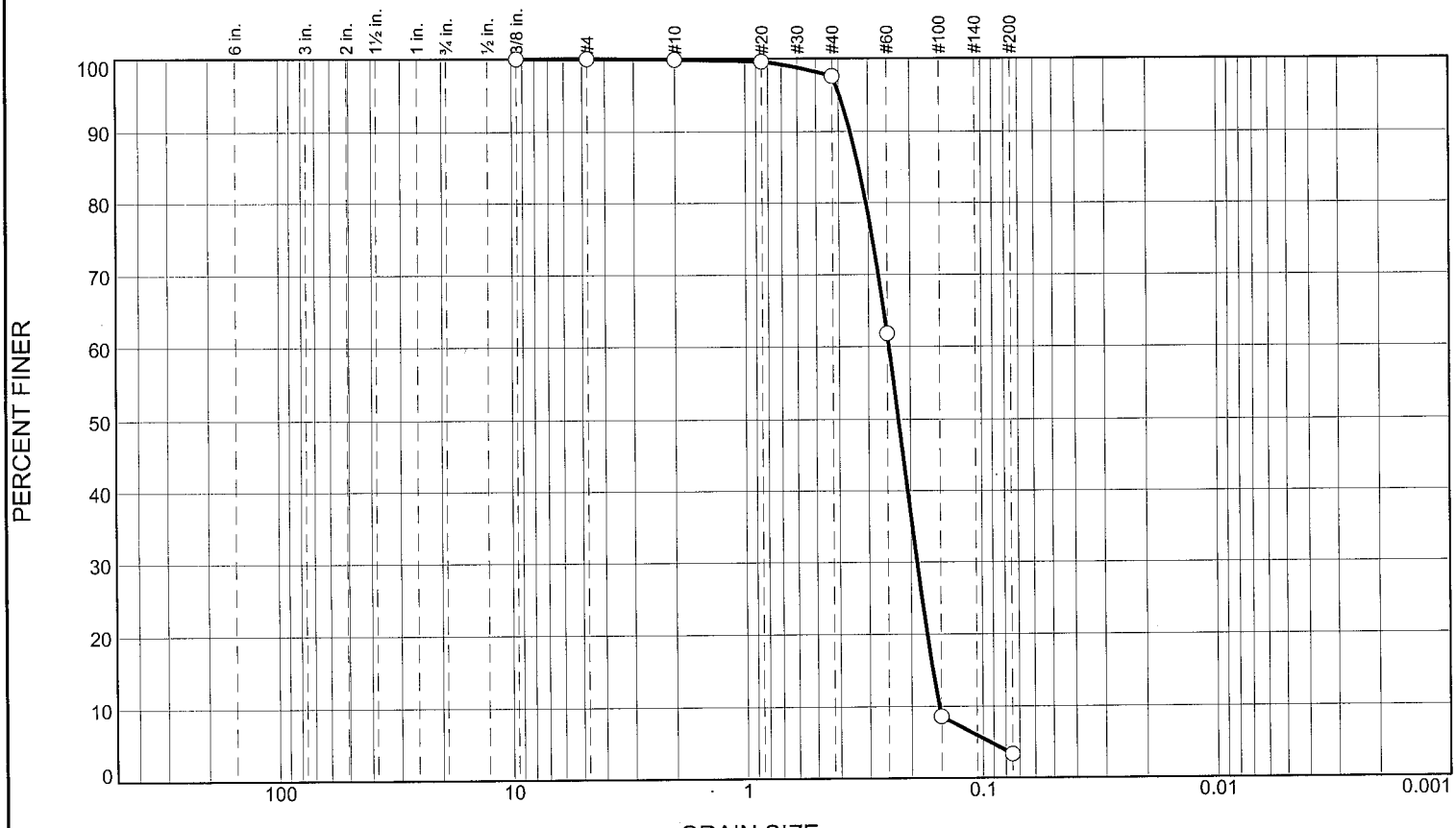
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19591° Long = -88.88074°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.3 | 94.3 | 3.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 97.6 | | |
| #60 | 61.8 | | |
| #100 | 8.6 | | |
| #200 | 3.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3565 $D_{85}$= 0.3284 $D_{60}$= 0.2457
$D_{50}$= 0.2245 $D_{30}$= 0.1885 $D_{15}$= 0.1625
$D_{10}$= 0.1529 $C_u$= 1.61 $C_c$= 0.95

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-76-10A
**Sample Number:** TE Lab ID: 4549.57 **Depth:** 0.7 - 6.0 (ft.) **Date:** 6/26/10

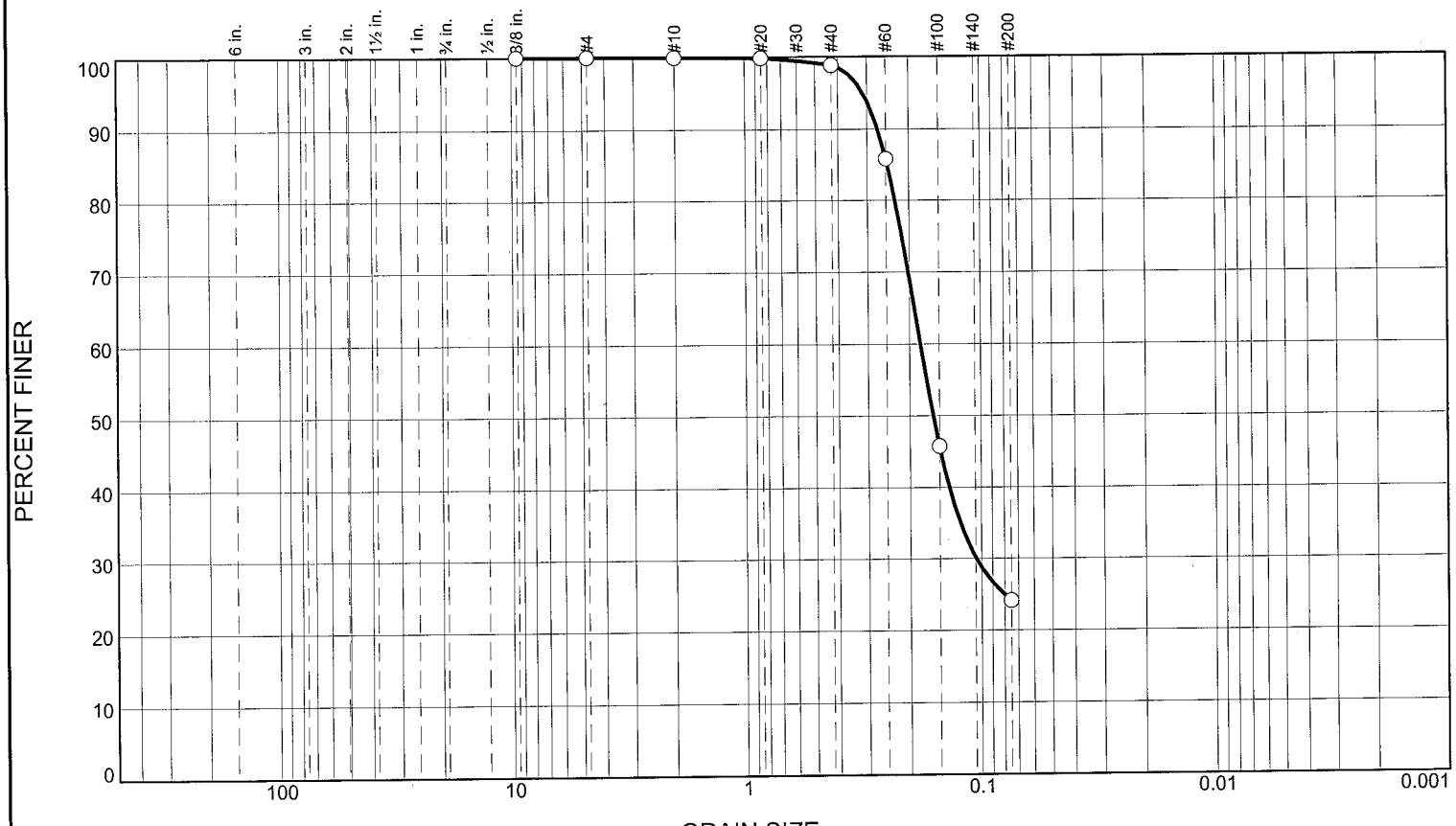
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.1 | 74.7 | 24.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.8 | | |
| #40 | 98.8 | | |
| #60 | 85.9 | | |
| #100 | 45.8 | | |
| #200 | 24.1 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2706 $D_{85}$= 0.2465 $D_{60}$= 0.1799
$D_{50}$= 0.1591 $D_{30}$= 0.1053 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-76-10B
**Sample Number:** TE Lab ID: 4549.58 **Depth:** 6.0 - 11.2 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-77-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-77-10; LOCATION COORDINATES: E = 972,126 N = 253,489 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 2; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 32.5 Ft. |
| | 15. DATE BORING: STARTED 06-16-10; COMPLETED 06-16-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -31.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -31.0 | 0.0 | | | | |
| -33.3 | 2.3 | | CLAY, lean, trace sand, trace silt, dark gray (CL) | NS | |
| -39.6 | 8.6 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.154 mm % Fines: 10.7 |
| -43.2 | 12.2 | | CLAY, lean, some sand, dark gray (CL) | NS | |
| -47.1 | 16.1 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, trace shell fragments (SP) | B | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.2548 mm % Fines: 6.9 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

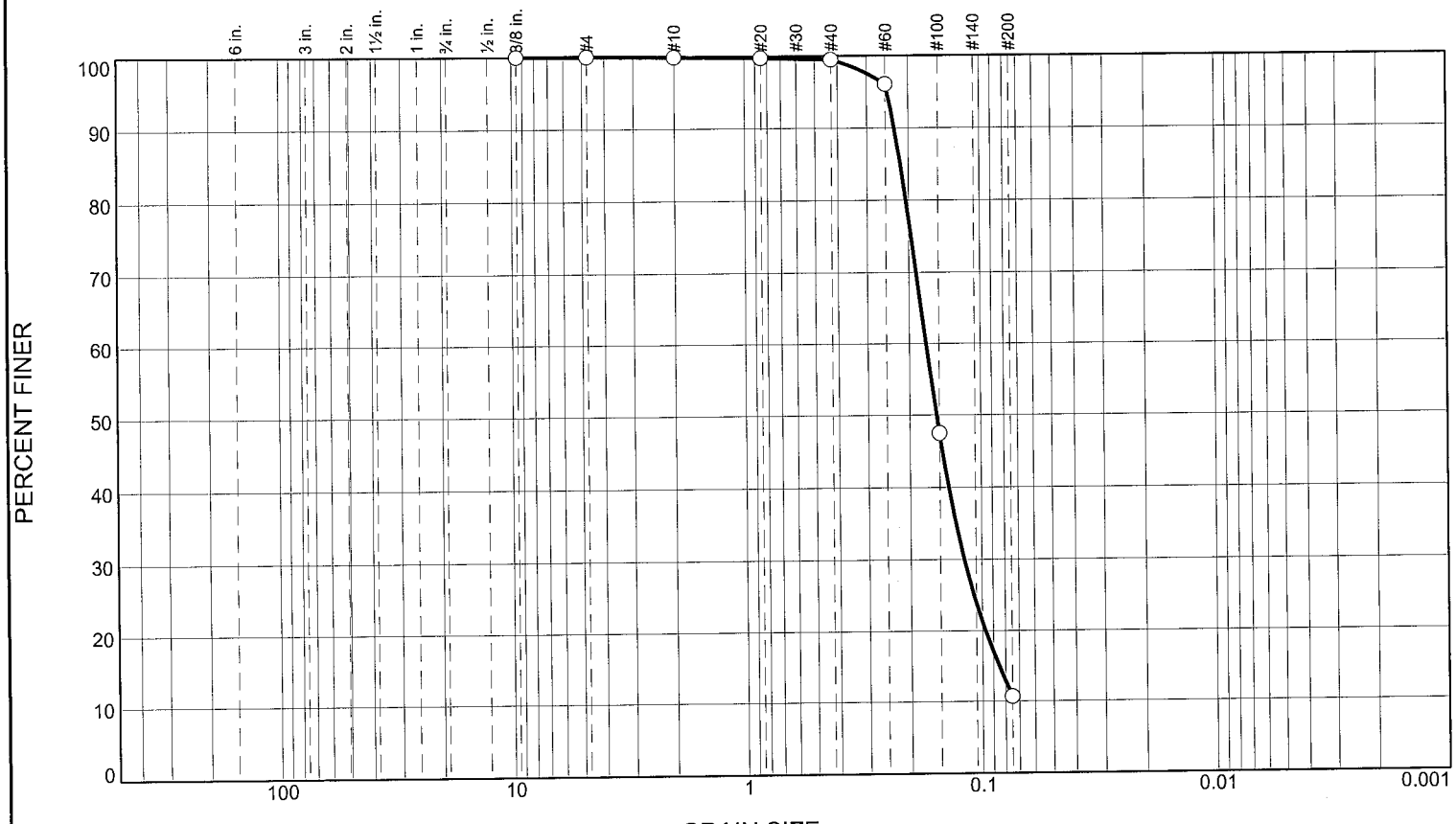
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19704° Long = -88.87171°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 0.4 | 88.8 | 10.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 99.5 | | |
| #60 | 96.0 | | |
| #100 | 47.5 | | |
| #200 | 10.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2291 $D_{85}$= 0.2161 $D_{60}$= 0.1698
$D_{50}$= 0.1540 $D_{30}$= 0.1187 $D_{15}$= 0.0851
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-77-10A
**Sample Number:** TE Lab ID: 4549.59 **Depth:** 2.3 - 8.6 (ft.) **Date:** 6/26/10

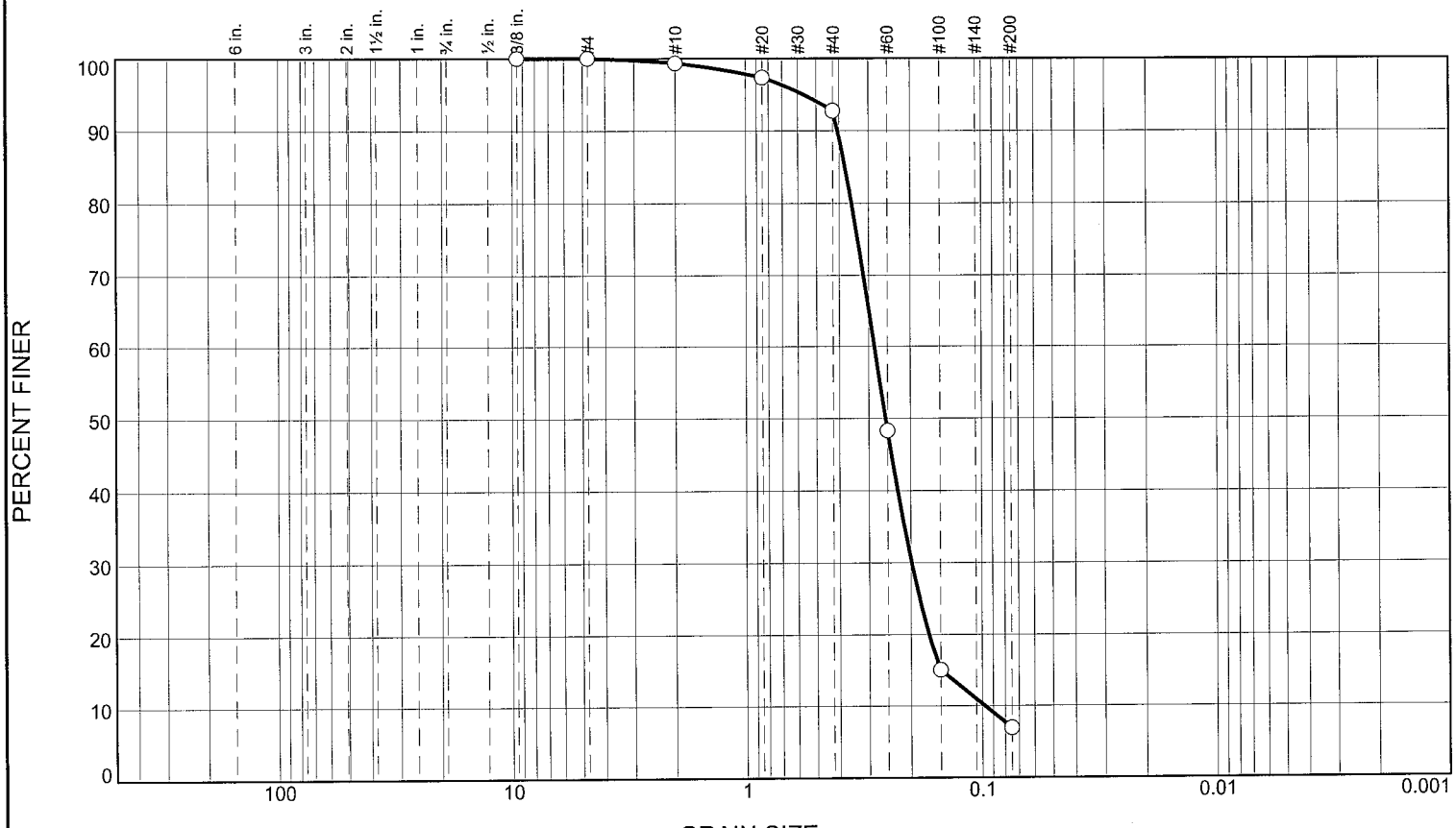
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.7 | 6.6 | 85.8 | 6.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.3 | | |
| #20 | 97.4 | | |
| #40 | 92.7 | | |
| #60 | 48.3 | | |
| #100 | 15.0 | | |
| #200 | 6.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4052 $D_{85}$= 0.3766 $D_{60}$= 0.2838
$D_{50}$= 0.2548 $D_{30}$= 0.1982 $D_{15}$= 0.1496
$D_{10}$= 0.0975 $C_u$= 2.91 $C_c$= 1.42

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-77-10B
**Sample Number:** TE Lab ID: 4549.60 **Depth:** 12.2 - 16.1 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-79-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-79-10; LOCATION COORDINATES: E = 974,064 N = 257,714 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 2; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 31 Ft. |
| | 15. DATE BORING: STARTED 06-16-10; COMPLETED 06-16-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 11.3 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.5 | 0.0 | | | | |
| -30.8 | 1.3 | | CLAY, lean, dark gray (CL) | NS | |
| -33.9 | 4.4 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.1757 mm % Fines: 9.3 |
| -38.4 | 8.9 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | B | Classification: SM Color: 2.5Y 5/2-grayish brown D50: 0.1408 mm % Fines: 26.6 |
| -40.8 | 11.3 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

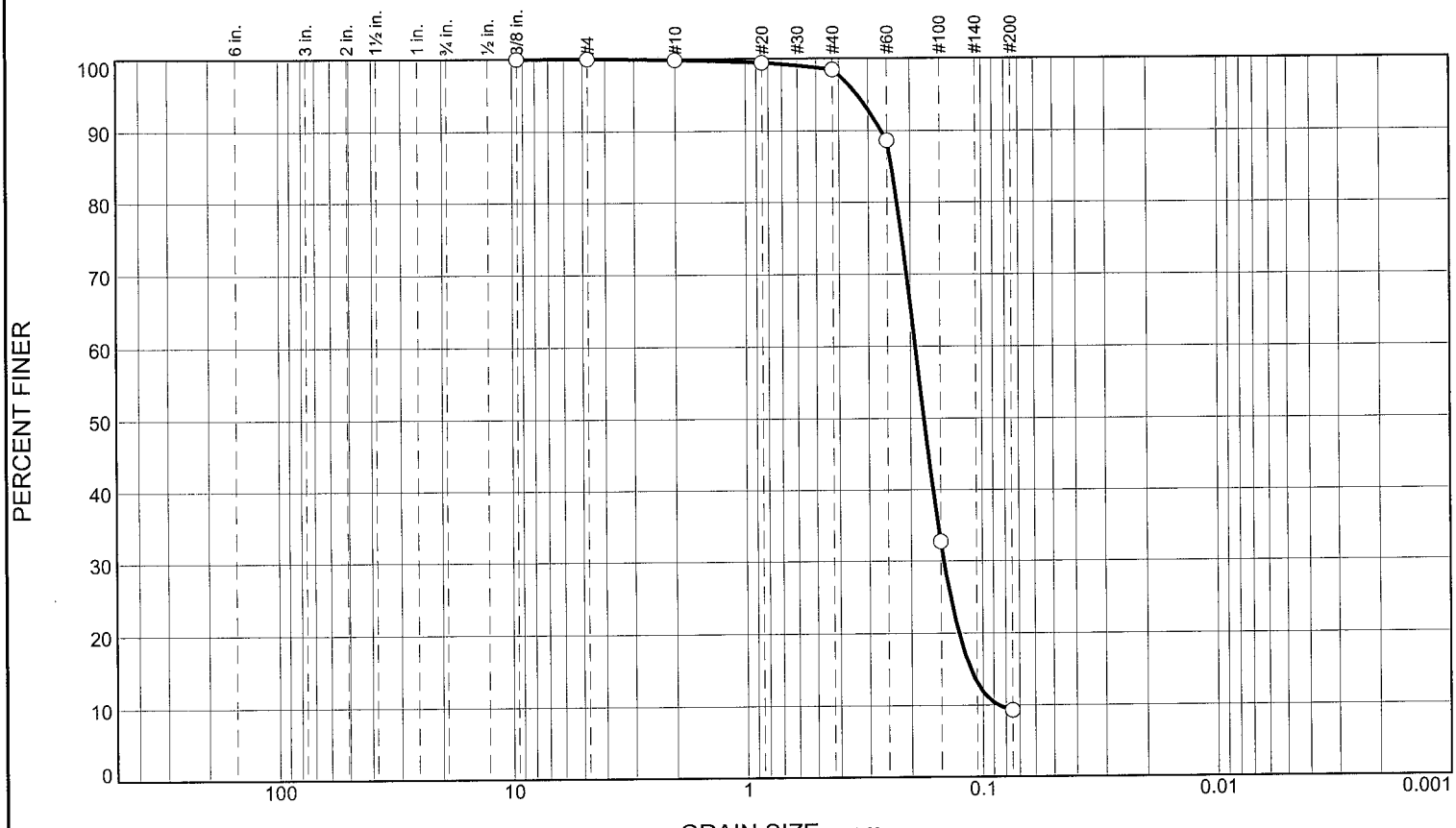
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20866° Long = -88.86558°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 1.4 | 89.1 | 9.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.4 | | |
| #40 | 98.4 | | |
| #60 | 88.6 | | |
| #100 | 32.7 | | |
| #200 | 9.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2642 $D_{85}$= 0.2392 $D_{60}$= 0.1907
$D_{50}$= 0.1757 $D_{30}$= 0.1456 $D_{15}$= 0.1125
$D_{10}$= 0.0863 $C_u$= 2.21 $C_c$= 1.29

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-79-10A
**Sample Number:** TE Lab ID: 4549.61 **Depth:** 1.3 - 4.4 (ft.) **Date:** 6/26/10

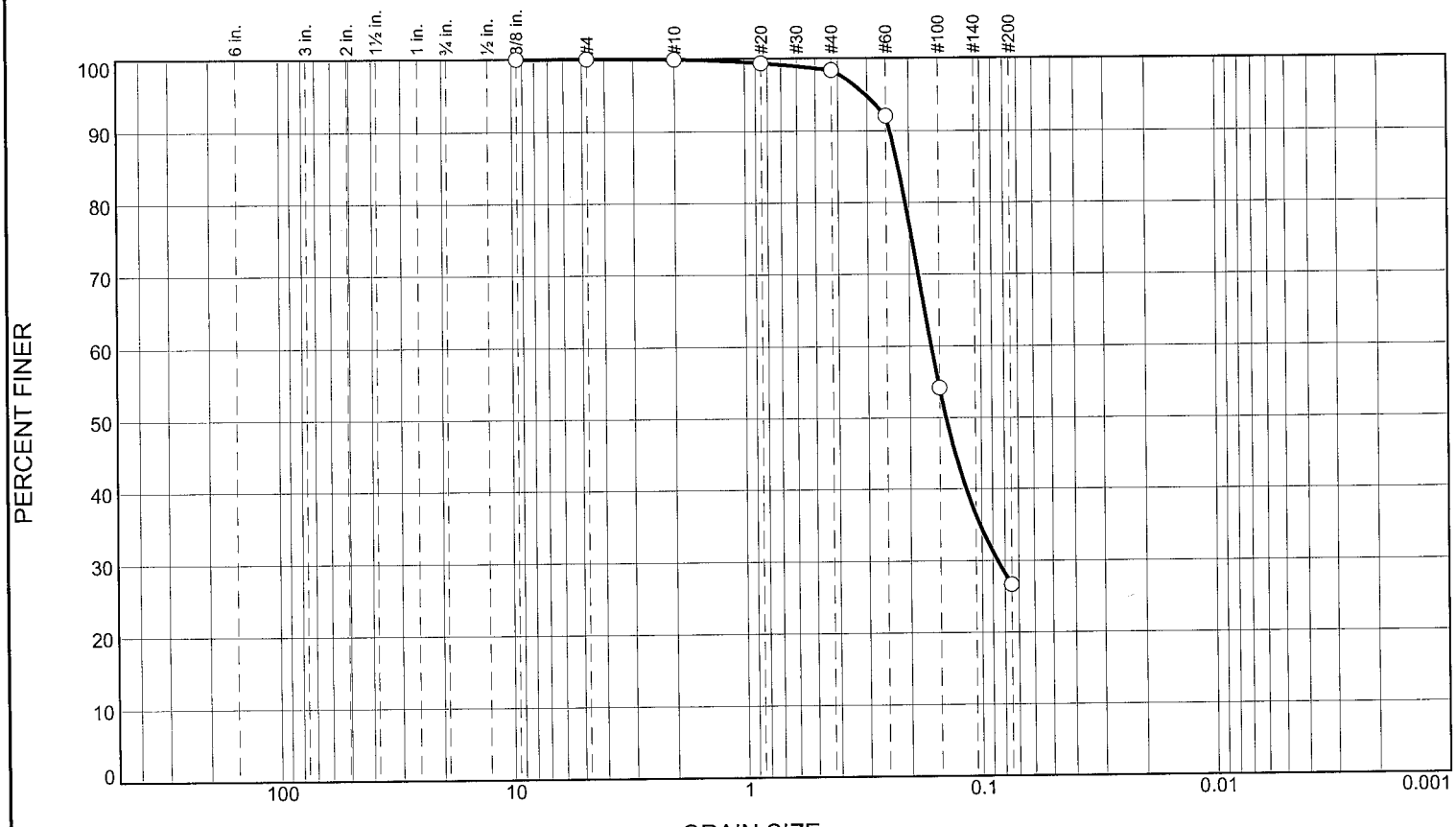
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.5 | 71.8 | 26.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.3 | | |
| #40 | 98.4 | | |
| #60 | 92.1 | | |
| #100 | 54.2 | | |
| #200 | 26.6 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2404 $D_{85}$= 0.2221 $D_{60}$= 0.1622
$D_{50}$= 0.1408 $D_{30}$= 0.0858 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-79-10B
**Sample Number:** TE Lab ID: 4549.62 **Depth:** 4.4 - 8.9 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

Boring Designation BI-SI-80-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-80-10; LOCATION COORDINATES: E = 972,006 N = 263,156 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 3; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 24 Ft. |
| | 15. DATE BORING: STARTED 06-22-10; COMPLETED 06-22-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -23.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 20.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -23.2 | 0.0 | | | | |
| -26.0 | 2.8 | | CLAY, lean, dark gray (CL) | NS | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2219 mm % Fines: 4.7 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/2-light gray<br>D50: 0.1965 mm % Fines: 5.4 |
| -38.4 | 15.2 | | | C | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.1902 mm % Fines: 5.5 |
| -43.2 | 20.0 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22362° Long = -88.8721°

Boring Designation BI-SI-80-10

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 972,006 Y = 263,156 | ELEVATION TOP OF BORING -23.2 Ft. | | |

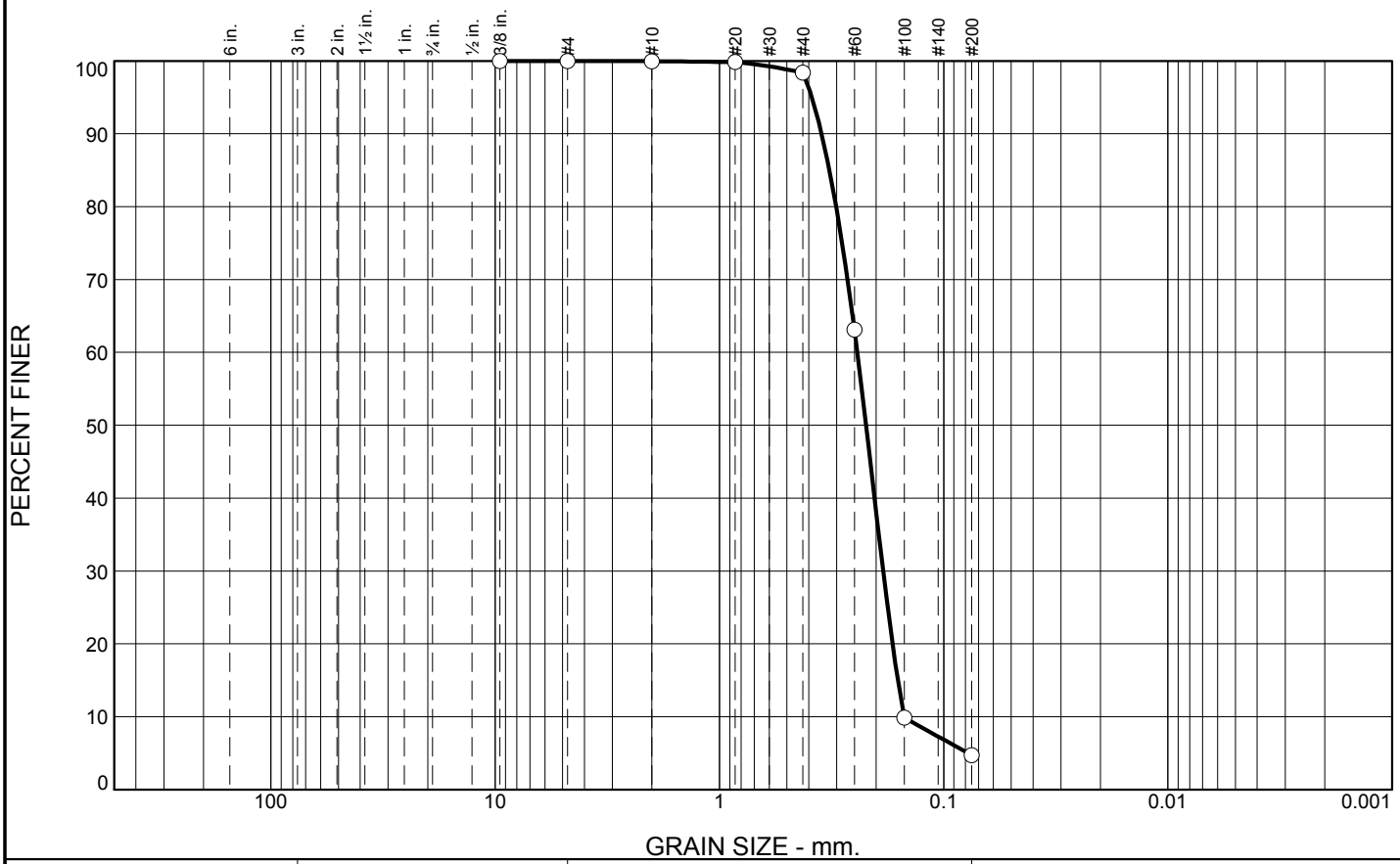
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22362° Long = -88.8721°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 1.6 | 93.7 | 4.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.8 | | |
| #40 | 98.4 | | |
| #60 | 63.1 | | |
| #100 | 9.9 | | |
| #200 | 4.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3502 $D_{85}$= 0.3231 $D_{60}$= 0.2427
$D_{50}$= 0.2219 $D_{30}$= 0.1862 $D_{15}$= 0.1602
$D_{10}$= 0.1503 $C_u$= 1.62 $C_c$= 0.95

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-80-10A
**Sample Number:** TE Lab ID: 4557.14 **Depth:** 2.8 - 7.8 (ft.) **Date:** 7/3/10

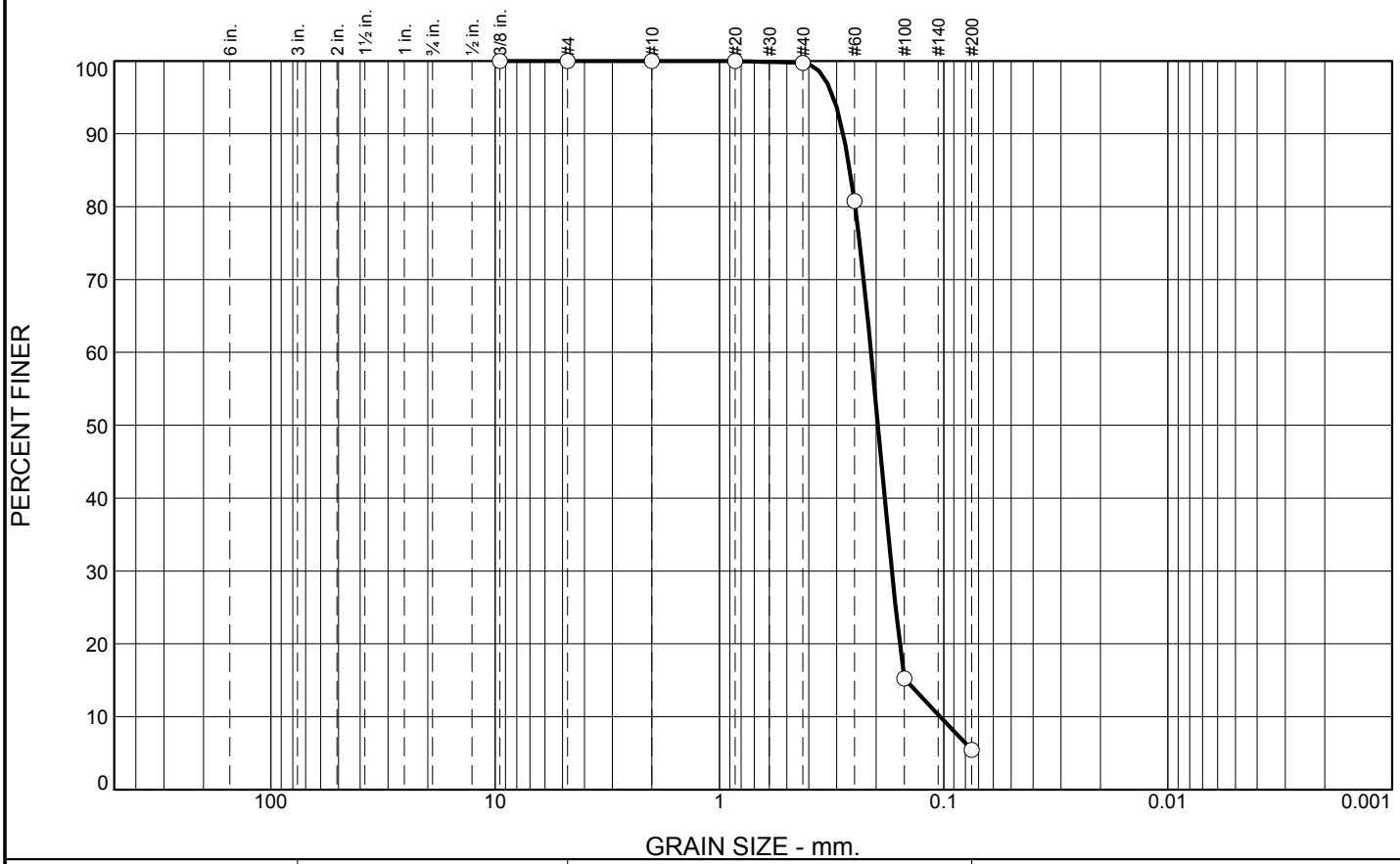
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 94.3 | 5.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 100.0 | | |
| #40 | 99.7 | | |
| #60 | 80.8 | | |
| #100 | 15.2 | | |
| #200 | 5.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2805 $D_{85}$= 0.2618 $D_{60}$= 0.2109
$D_{50}$= 0.1965 $D_{30}$= 0.1703 $D_{15}$= 0.1474
$D_{10}$= 0.1036 $C_u$= 2.04 $C_c$= 1.33

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-80-10B
**Sample Number:** TE Lab ID: 4557.15 **Depth:** 7.8 - 12.8 (ft.) **Date:** 7/3/10

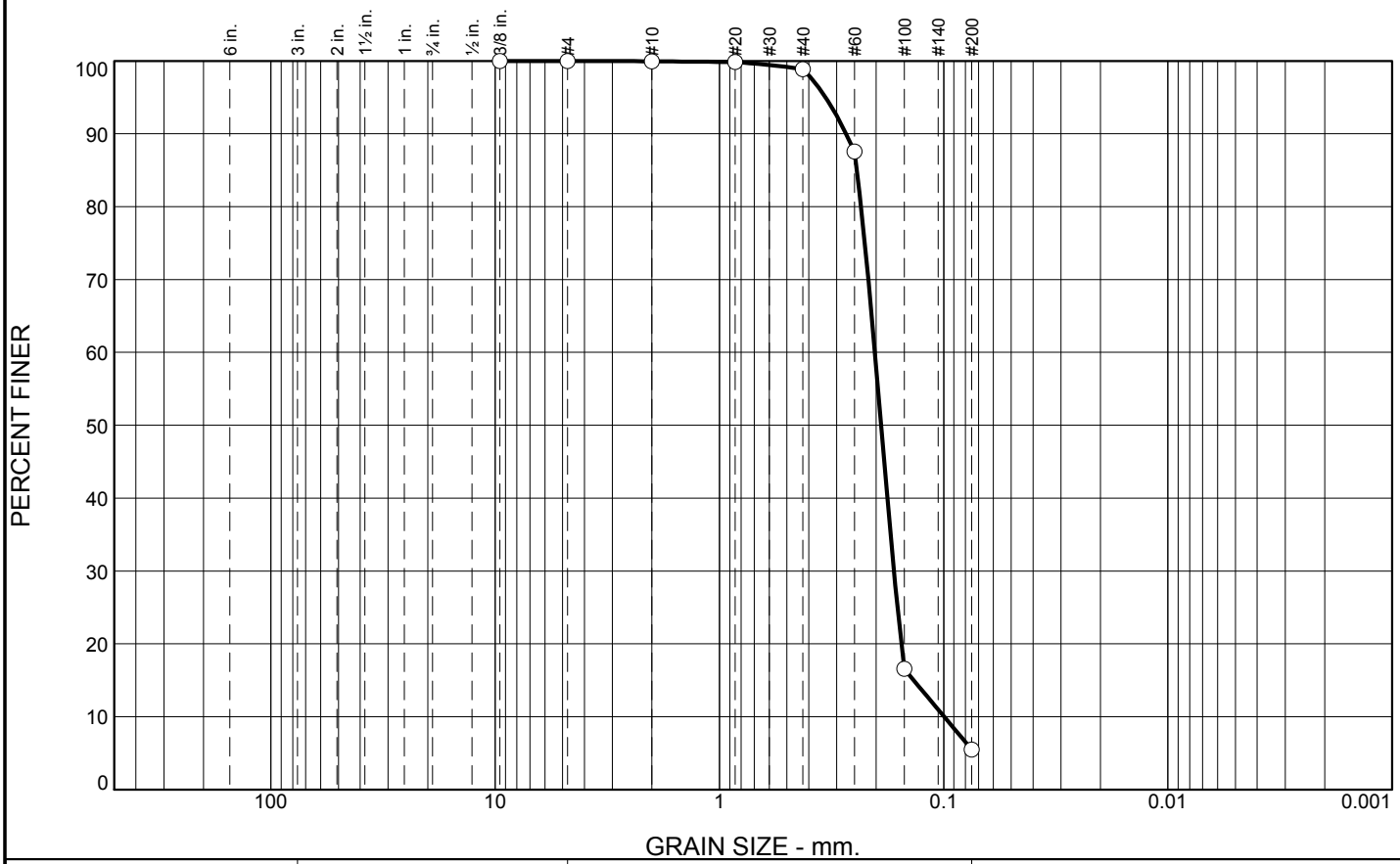
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 93.4 | 5.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.8 | | |
| #40 | 98.9 | | |
| #60 | 87.6 | | |
| #100 | 16.6 | | |
| #200 | 5.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2723 $D_{85}$= 0.2438 $D_{60}$= 0.2027
$D_{50}$= 0.1902 $D_{30}$= 0.1667 $D_{15}$= 0.1360
$D_{10}$= 0.0995 $C_u$= 2.04 $C_c$= 1.38

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-80-10C
**Sample Number:** TE Lab ID: 4557.16 **Depth:** 12.8 - 15.2 (ft.) **Date:** 7/3/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-81-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-81-10 — LOCATION COORDINATES: E = 972,830 N = 262,213 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 26 Ft. |
| | 15. DATE BORING — STARTED: 06-22-10 — COMPLETED: 06-22-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -25.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -25.2 | 0.0 | | | | |
| -27.5 | 2.3 | | CLAY, lean, dark gray (CL) | NS | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/2-light gray D50: 0.1986 mm % Fines: 10.6 |
| -38.5 | 13.3 | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.1859 mm % Fines: 9.7 |
| -43.3 | 18.1 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

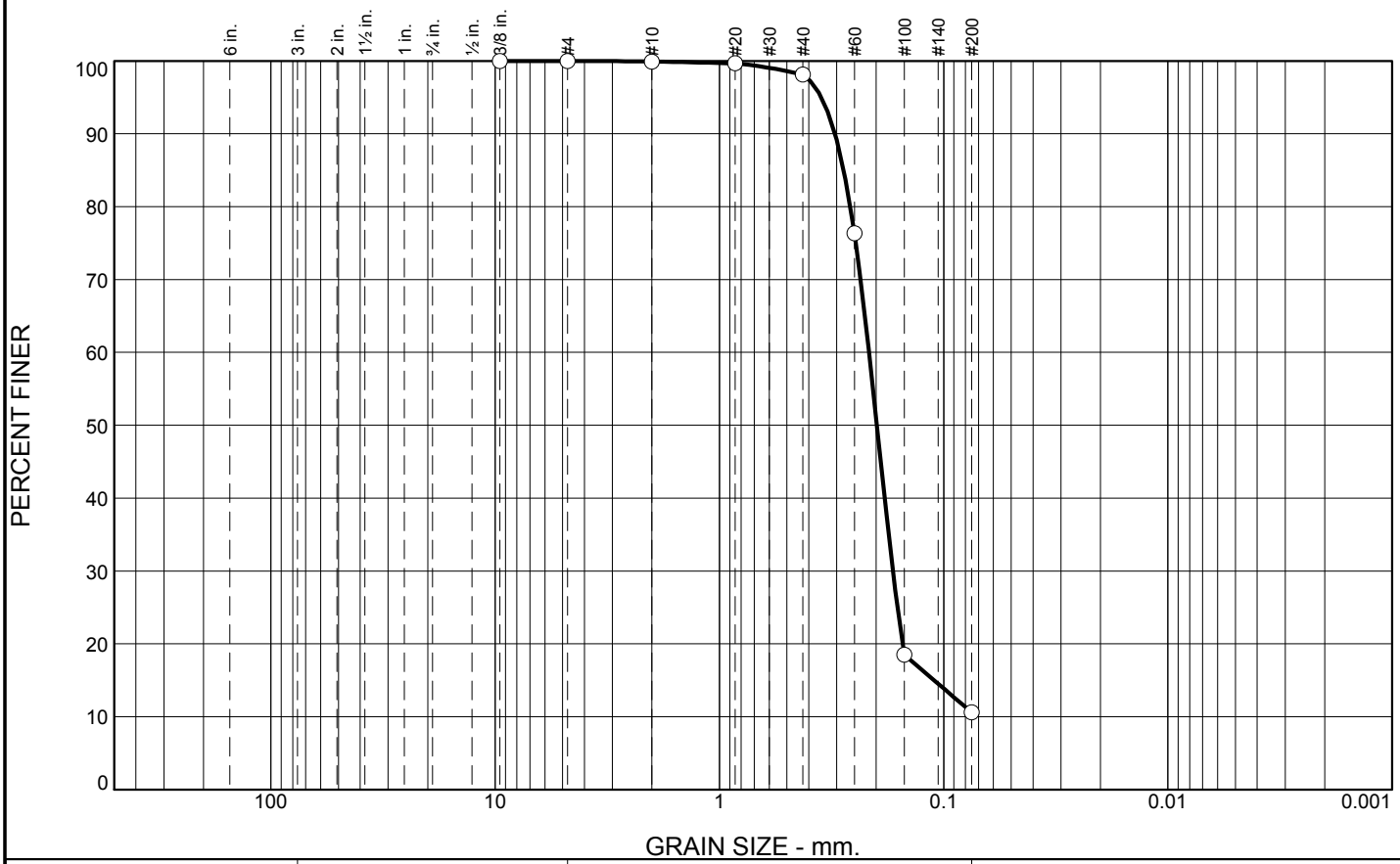
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22103° Long = -88.86949°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.8 | 87.5 | 10.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 98.1 | | |
| #60 | 76.3 | | |
| #100 | 18.5 | | |
| #200 | 10.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3051 $D_{85}$= 0.2791 $D_{60}$= 0.2153
$D_{50}$= 0.1986 $D_{30}$= 0.1685 $D_{15}$= 0.1104
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-81-10A
**Sample Number:** TE Lab ID: 4557.12 **Depth:** 2.3 - 7.3 (ft.) **Date:** 7/3/10

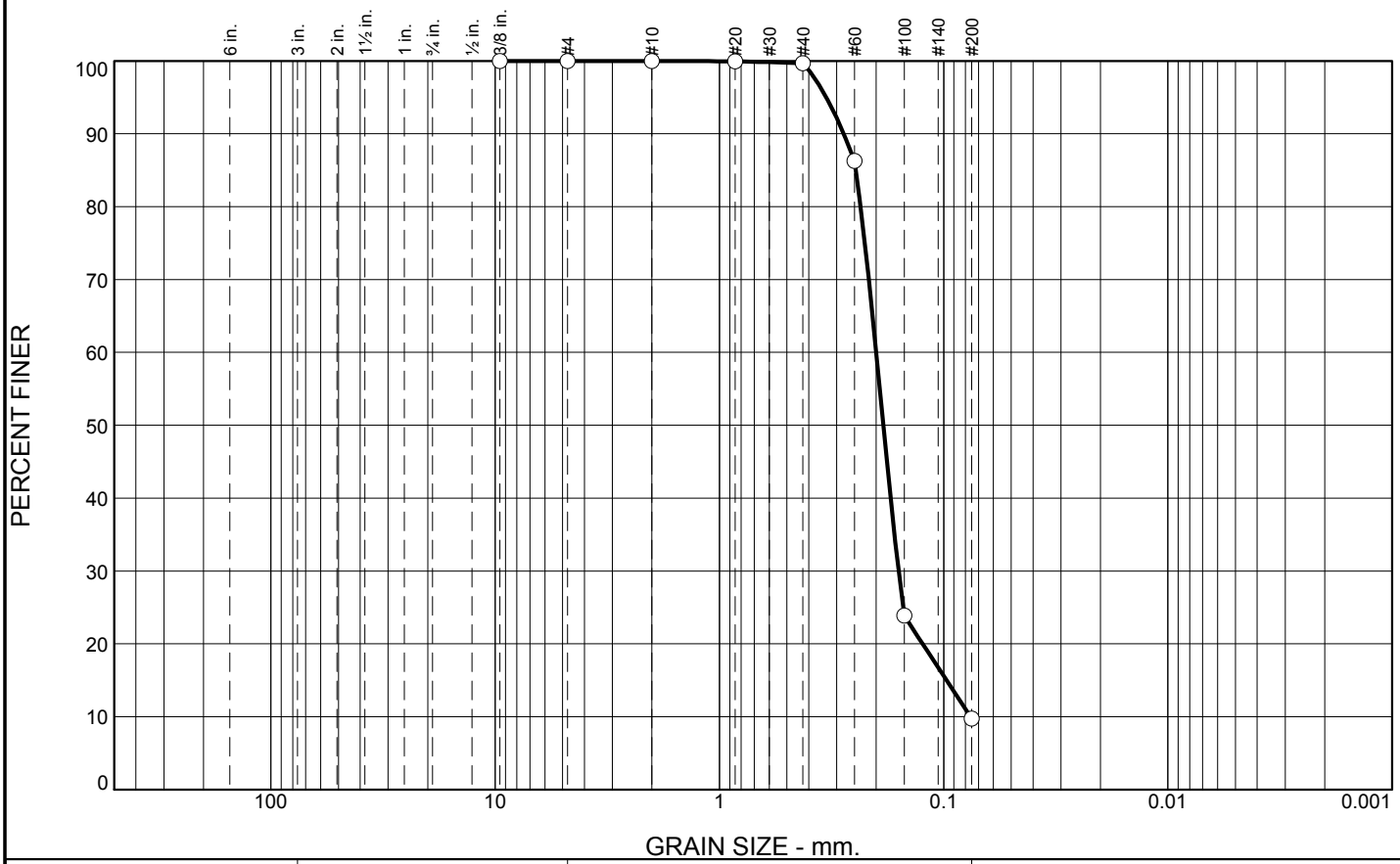
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 90.0 | 9.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 99.7 | | |
| #60 | 86.3 | | |
| #100 | 23.9 | | |
| #200 | 9.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2790 $D_{85}$= 0.2465 $D_{60}$= 0.1999
$D_{50}$= 0.1859 $D_{30}$= 0.1590 $D_{15}$= 0.0971
$D_{10}$= 0.0760 $C_u$= 2.63 $C_c$= 1.66

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-81-10B
**Sample Number:** TE Lab ID: 4557.13 **Depth:** 7.3 - 13.3 (ft.) **Date:** 7/3/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-82-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-82-10; LOCATION COORDINATES: E = 973,983 N = 261,173 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 2; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 27 Ft. |
| | 15. DATE BORING: STARTED 06-22-10; COMPLETED 06-22-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -26.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -26.0 | 0.0 | | | | |
| -28.0 | 2.0 | | CLAY, lean, dark gray (CL) | NS | |
| -34.4 | 8.4 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.1829 mm % Fines: 5.9 |
| -39.3 | 13.3 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, lt. gray (SM) | B | Classification: SM Color: 2.5Y 6/2-light brownish gray D50: 0.162 mm % Fines: 22.7 |
| -45.1 | 19.1 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21817° Long = -88.86584°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 973,983 Y = 261,173 | ELEVATION TOP OF BORING -26.0 Ft. | | |

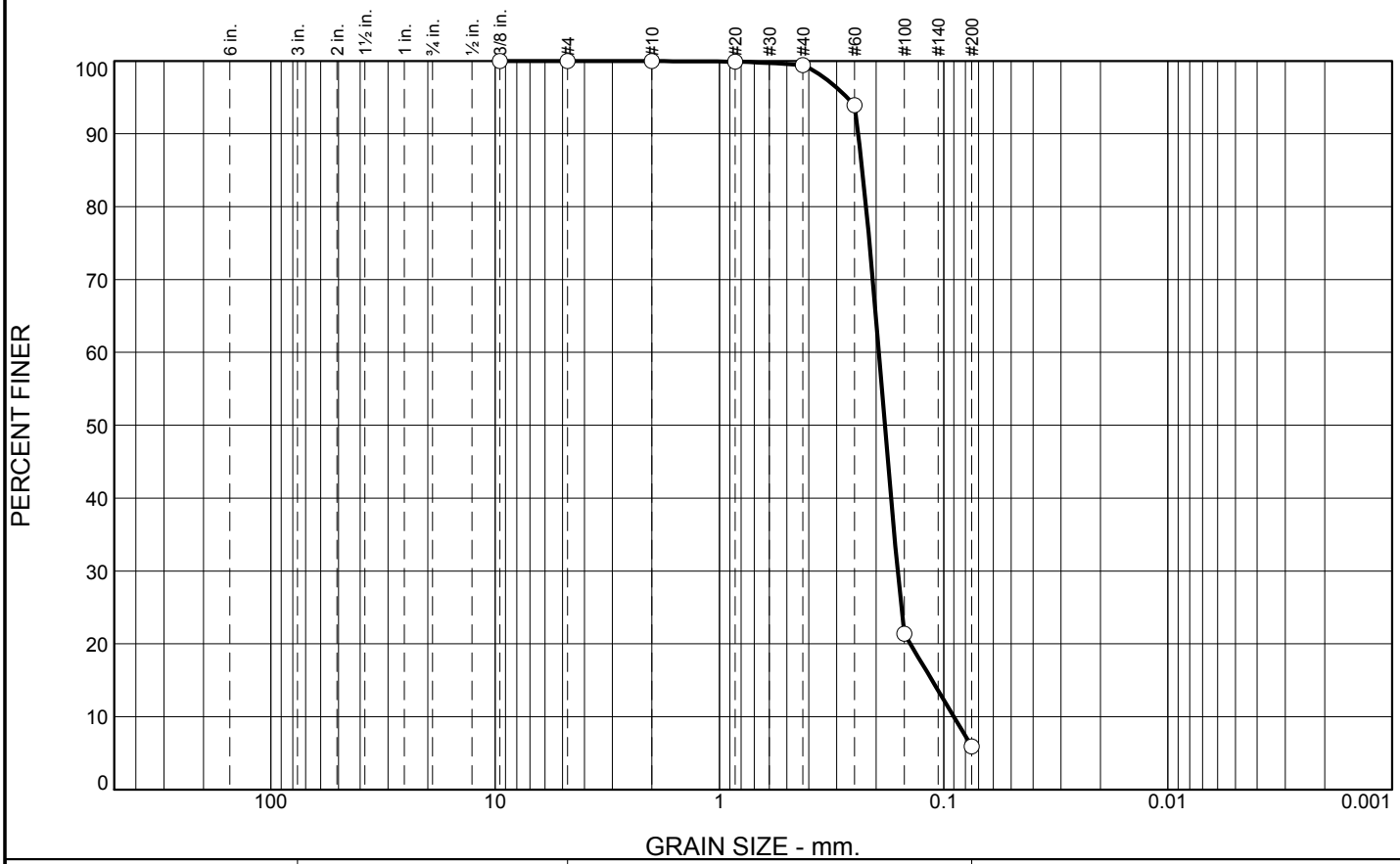
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.21817° Long = -88.86584°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 93.5 | 5.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 99.4 | | |
| #60 | 93.9 | | |
| #100 | 21.4 | | |
| #200 | 5.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2404 $D_{85}$= 0.2304 $D_{60}$= 0.1946
$D_{50}$= 0.1829 $D_{30}$= 0.1604 $D_{15}$= 0.1127
$D_{10}$= 0.0901 $C_u$= 2.16 $C_c$= 1.47

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-82-10A
**Sample Number:** TE Lab ID: 4557.10 **Depth:** 2.0 - 8.4 (ft.) **Date:** 7/3/10

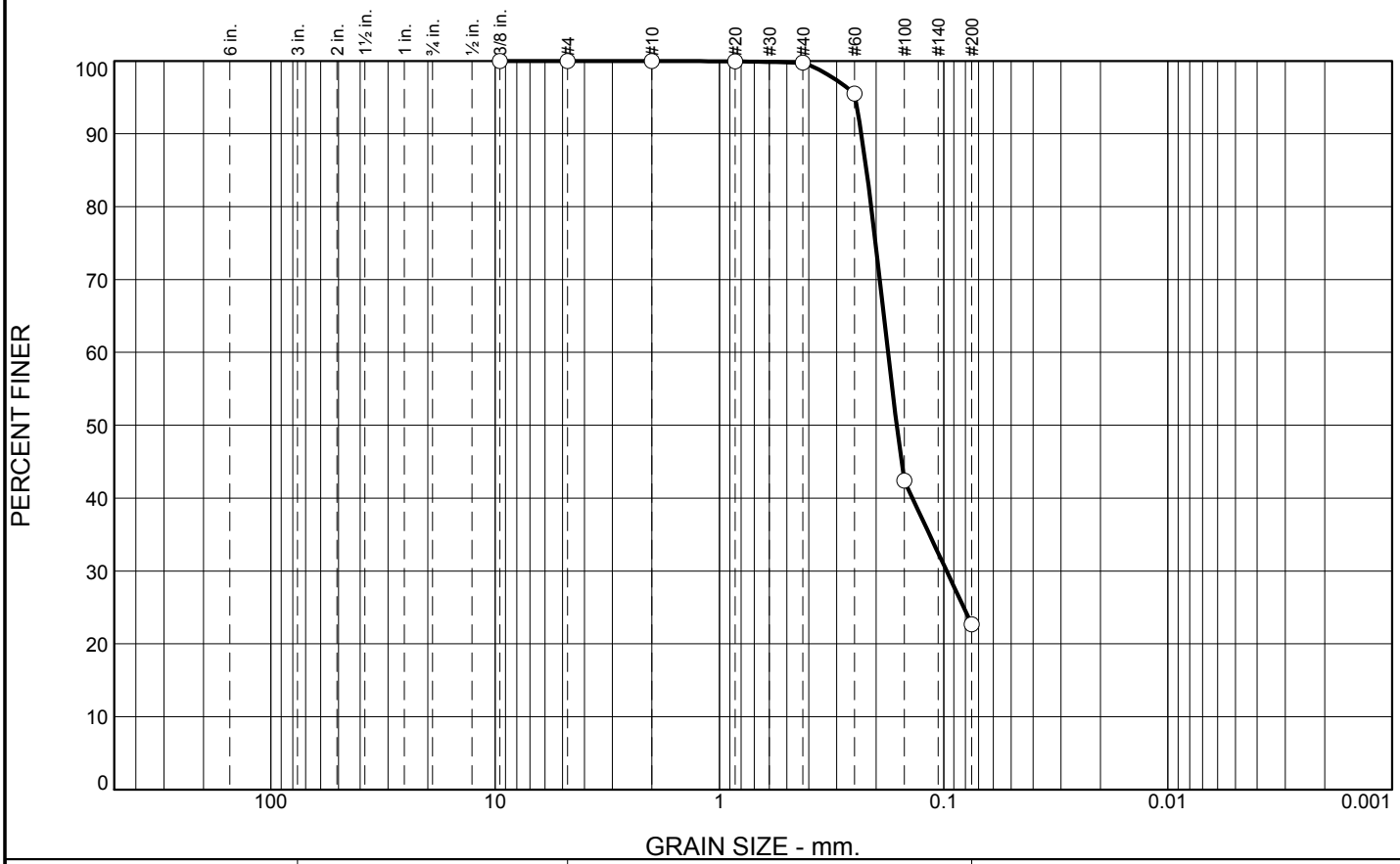
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 77.1 | 22.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 99.8 | | |
| #60 | 95.5 | | |
| #100 | 42.4 | | |
| #200 | 22.7 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2328 $D_{85}$= 0.2208 $D_{60}$= 0.1771
$D_{50}$= 0.1620 $D_{30}$= 0.0970 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-82-10B
**Sample Number:** TE Lab ID: 4557.11 **Depth:** 8.4 - 13.3 (ft.) **Date:** 7/3/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-83-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-83-10; LOCATION COORDINATES: E = 974,886 N = 259,558 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 1; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 29 Ft. |
| | 15. DATE BORING: STARTED 06-22-10; COMPLETED 06-22-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -28.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.0 | 0.0 | | | | |
| -29.5 | 1.5 | | CLAY, lean, dark gray (CL) | NS | |
| -33.0 | 5.0 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, gray (SM) | A | Classification: SM Color: 2.5Y 6/2-light brownish gray D50: 0.1764 mm % Fines: 12.1 |
| -46.7 | 18.7 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

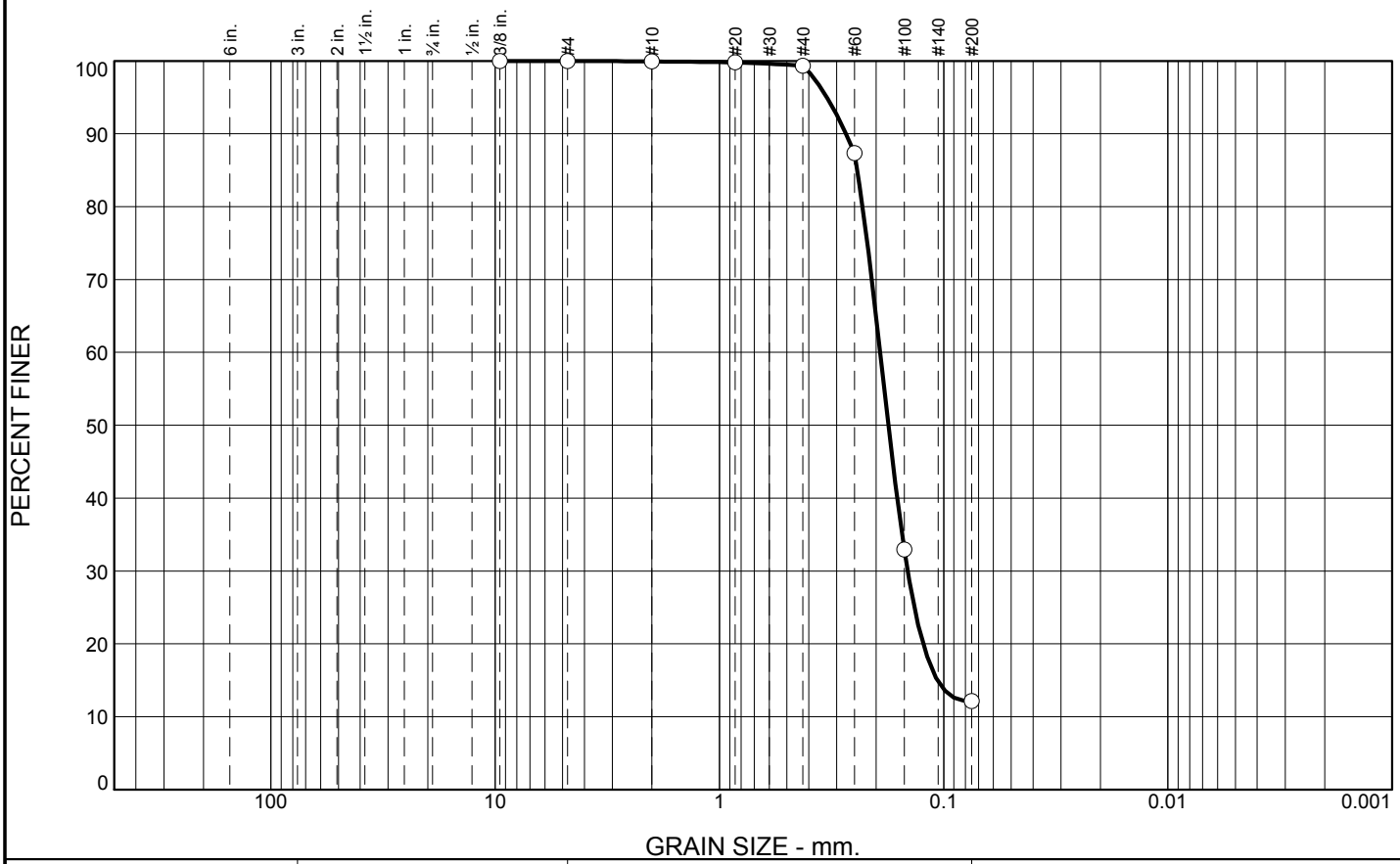
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21373° Long = -88.86298°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 0.6 | 87.2 | 12.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.8 | | |
| #40 | 99.3 | | |
| #60 | 87.3 | | |
| #100 | 33.0 | | |
| #200 | 12.1 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2728 $D_{85}$= 0.2428 $D_{60}$= 0.1920
$D_{50}$= 0.1764 $D_{30}$= 0.1448 $D_{15}$= 0.1066
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-83-10A
**Sample Number:** TE Lab ID: 4557.09 **Depth:** 1.5 - 5.0 (ft.) **Date:** 7/3/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-84-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 2 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Ship Island |
| 2. BORING DESIGNATION | BI-SI-84-10 |
| LOCATION COORDINATES | E = 975,903 N = 258,081 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 19.3 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 0 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 30 Ft. |
| 15. DATE BORING | STARTED 06-21-10 / COMPLETED 06-21-10 |
| 16. ELEVATION TOP OF BORING | -29.5 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.5 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -46.5 | 17.0 | | | | |
| -48.8 | 19.3 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20967° Long = -88.85976°**

Boring Designation BI-SI-84-10

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 975,903 Y = 258,081 | ELEVATION TOP OF BORING -29.5 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20967° Long = -88.85976°

**Boring Designation BI-SI-85-10**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-85-10; LOCATION COORDINATES: E = 973,248 N = 263,584 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 2; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 24 Ft. |
| | 15. DATE BORING: STARTED 06-22-10; COMPLETED 06-22-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -23.4 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -23.4 | 0.0 | | | | |
| -24.9 | 1.5 | | SAND, silty, mostly medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SM Color: 2.5Y 5/1-gray D50: 0.1522 mm % Fines: 16.7 |
| -28.8 | 5.4 | | CLAY, lean, dark gray (CL) | NS | |
| -34.3 | 10.9 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, gray (SM) | B | Classification: SM Color: 2.5Y 5/2-grayish brown D50: 0.1807 mm % Fines: 12.9 |
| -39.5 | 16.1 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

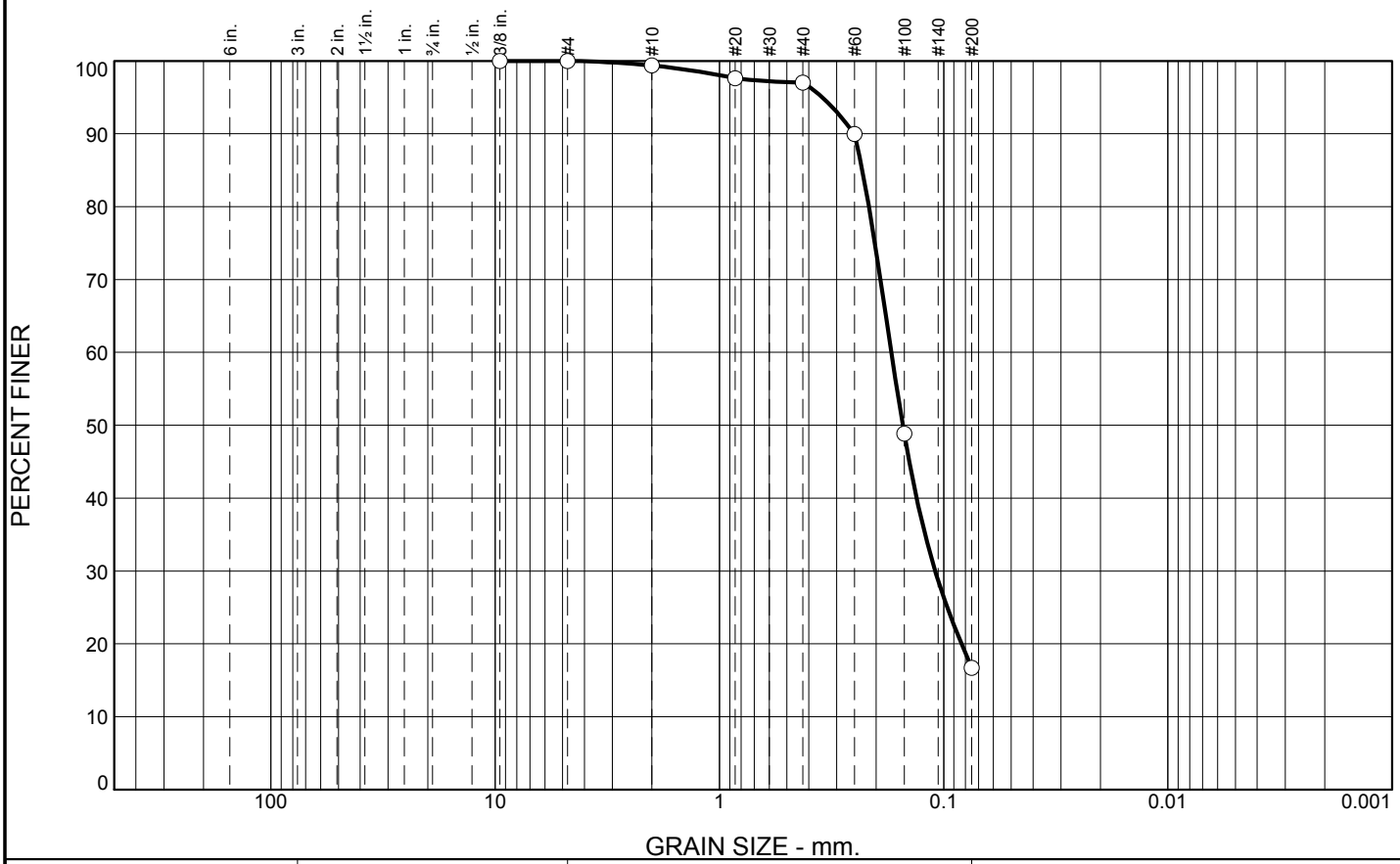
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22480° Long = -88.86817°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.6 | 2.4 | 80.3 | 16.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.4 | | |
| #20 | 97.6 | | |
| #40 | 97.0 | | |
| #60 | 90.0 | | |
| #100 | 48.9 | | |
| #200 | 16.7 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2506 $D_{85}$= 0.2305 $D_{60}$= 0.1712
$D_{50}$= 0.1522 $D_{30}$= 0.1091 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-85-10A
**Sample Number:** TE Lab ID: 4557.17 **Depth:** 0.0 - 1.5 (ft.) **Date:** 7/3/10

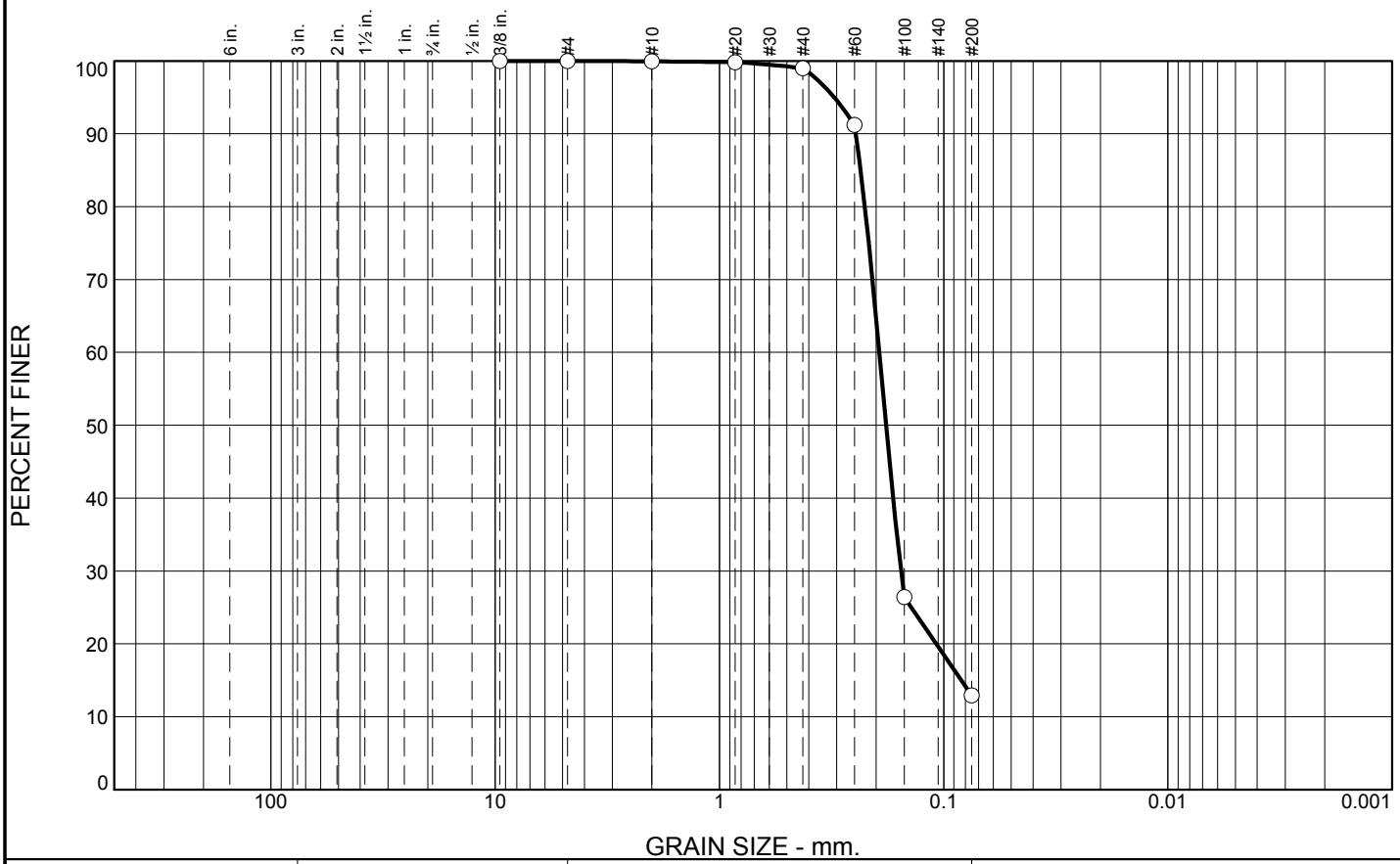
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 0.9 | 86.1 | 12.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.8 | | |
| #40 | 99.0 | | |
| #60 | 91.2 | | |
| #100 | 26.4 | | |
| #200 | 12.9 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2465 $D_{85}$= 0.2345 $D_{60}$= 0.1937
$D_{50}$= 0.1807 $D_{30}$= 0.1551 $D_{15}$= 0.0835
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-85-10B
**Sample Number:** TE Lab ID: 4557.18 **Depth:** 5.4 - 10.9 (ft.) **Date:** 7/3/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-89-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-89-10; LOCATION COORDINATES: E = 972,320 N = 257,500 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 4; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 27 Ft. |
| | 15. DATE BORING: STARTED 06-21-10; COMPLETED 06-21-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -30.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.3 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -30.0 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace wood debris, trace silt, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2027 mm % Fines: 2.8 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1924 mm % Fines: 3.7 |
| -43.5 | 13.5 | | | C | Classification: SP Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1844 mm % Fines: 4.7 |
| -48.3 | 18.3 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | D | Classification: SM Color: 2.5Y 4/3-olive brown<br>D50: 0.1732 mm % Fines: 20.3 |
| -49.3 | 19.3 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

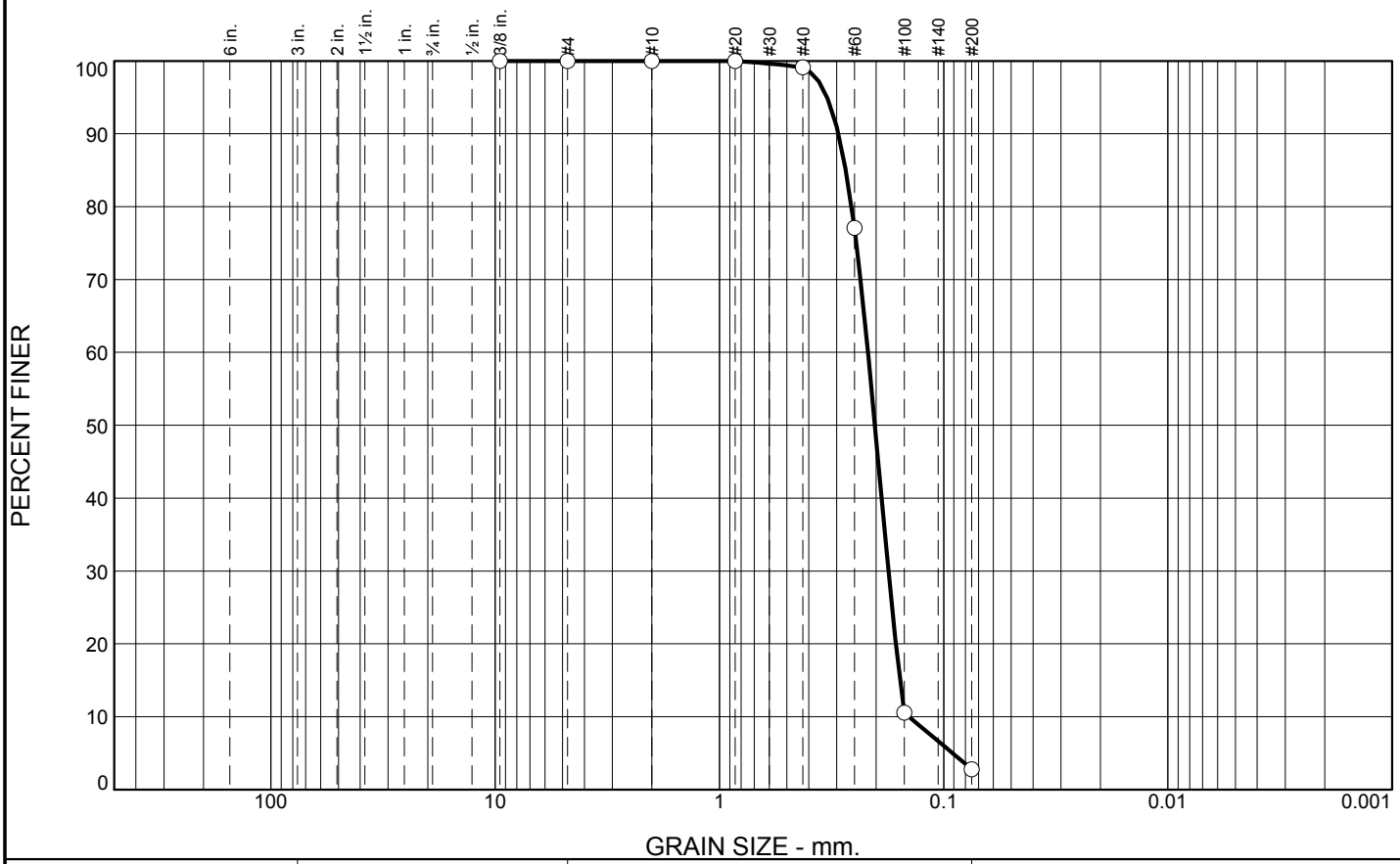
3. Seafloor elevation determined from USACE hydrographic survey completed 2010.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20807° Long = -88.8711°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 96.3 | 2.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 100.0 | | |
| #40 | 99.1 | | |
| #60 | 77.1 | | |
| #100 | 10.6 | | |
| #200 | 2.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2947 $D_{85}$= 0.2731 $D_{60}$= 0.2176
$D_{50}$= 0.2027 $D_{30}$= 0.1764 $D_{15}$= 0.1566
$D_{10}$= 0.1427 $C_u$= 1.52 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-89-10A
**Sample Number:** TE Lab ID: 4557.04 **Depth:** 0.0 - 5.0 (ft.) **Date:** 7/3/10

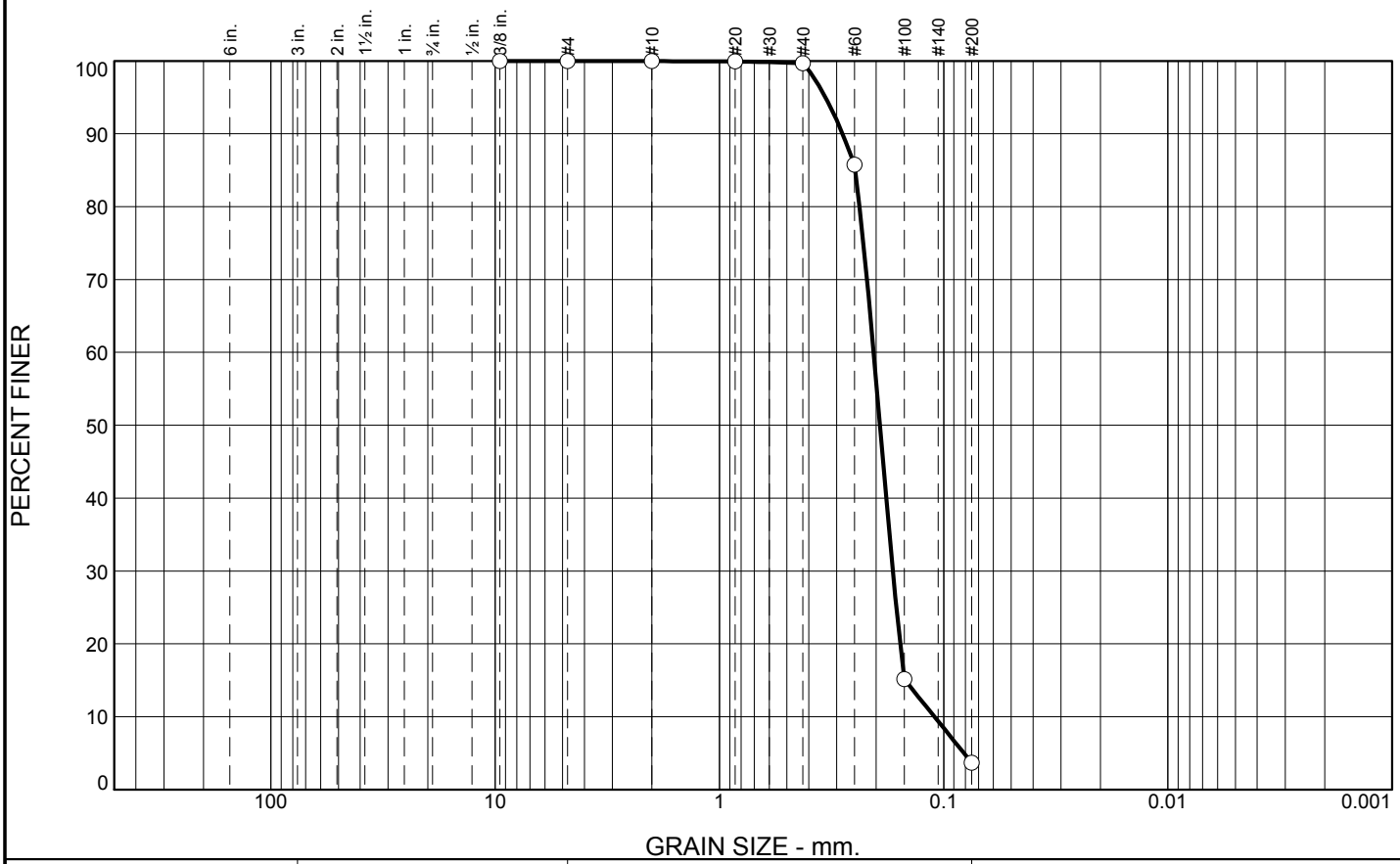
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 96.0 | 3.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 99.7 | | |
| #60 | 85.7 | | |
| #100 | 15.2 | | |
| #200 | 3.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2824 $D_{85}$= 0.2482 $D_{60}$= 0.2053
$D_{50}$= 0.1924 $D_{30}$= 0.1686 $D_{15}$= 0.1486
$D_{10}$= 0.1099 $C_u$= 1.87 $C_c$= 1.26

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-89-10B
**Sample Number:** TE Lab ID: 4557.05 **Depth:** 5.0 - 10.0 (ft.) **Date:** 7/3/10

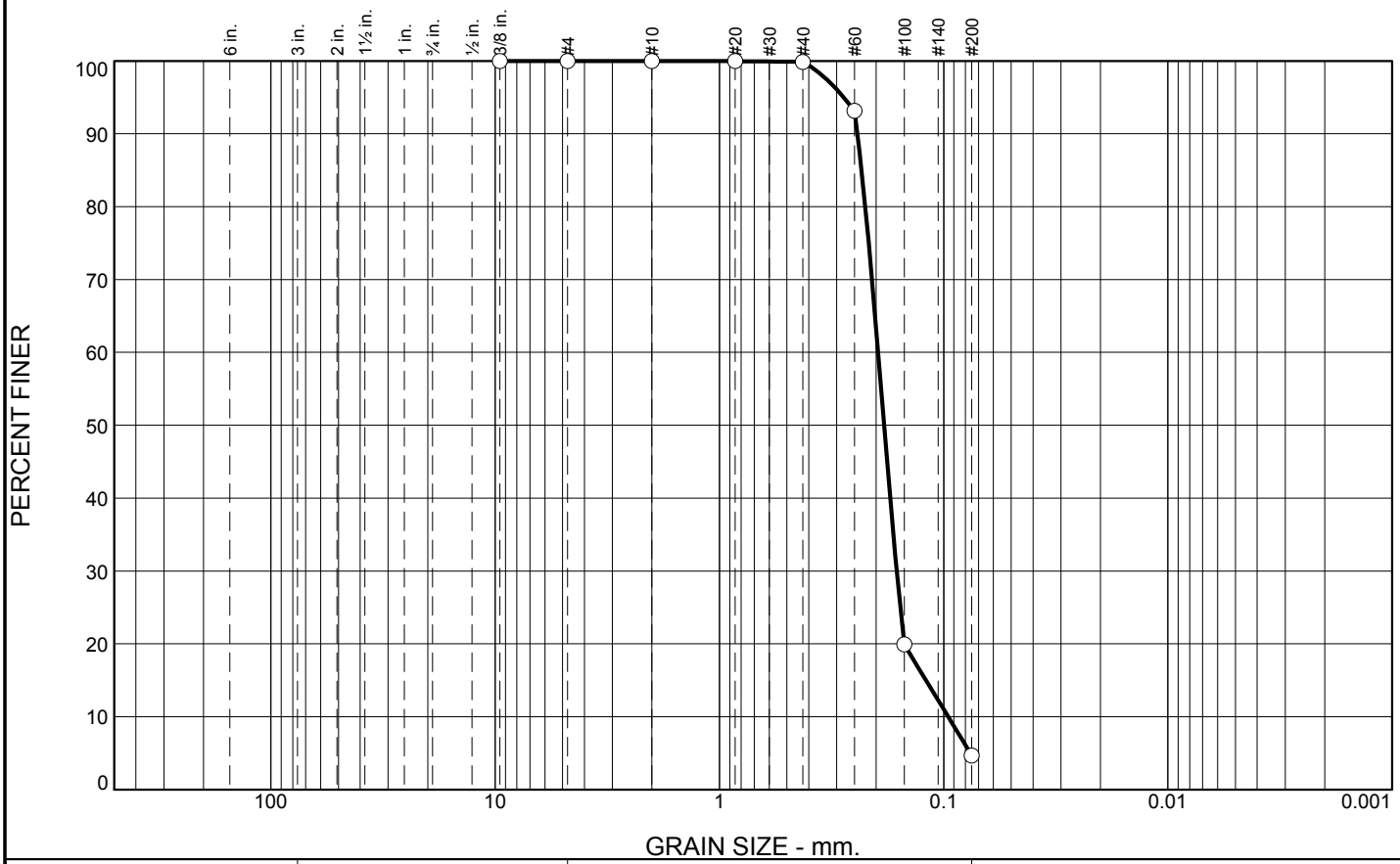
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 95.2 | 4.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 100.0 | | |
| #40 | 99.9 | | |
| #60 | 93.1 | | |
| #100 | 19.9 | | |
| #200 | 4.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2423 $D_{85}$= 0.2322 $D_{60}$= 0.1961
$D_{50}$= 0.1844 $D_{30}$= 0.1621 $D_{15}$= 0.1199
$D_{10}$= 0.0955 $C_u$= 2.05 $C_c$= 1.40

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-89-10C
**Sample Number:** TE Lab ID: 4557.06 **Depth:** 10.0 - 13.5 (ft.) **Date:** 7/3/10

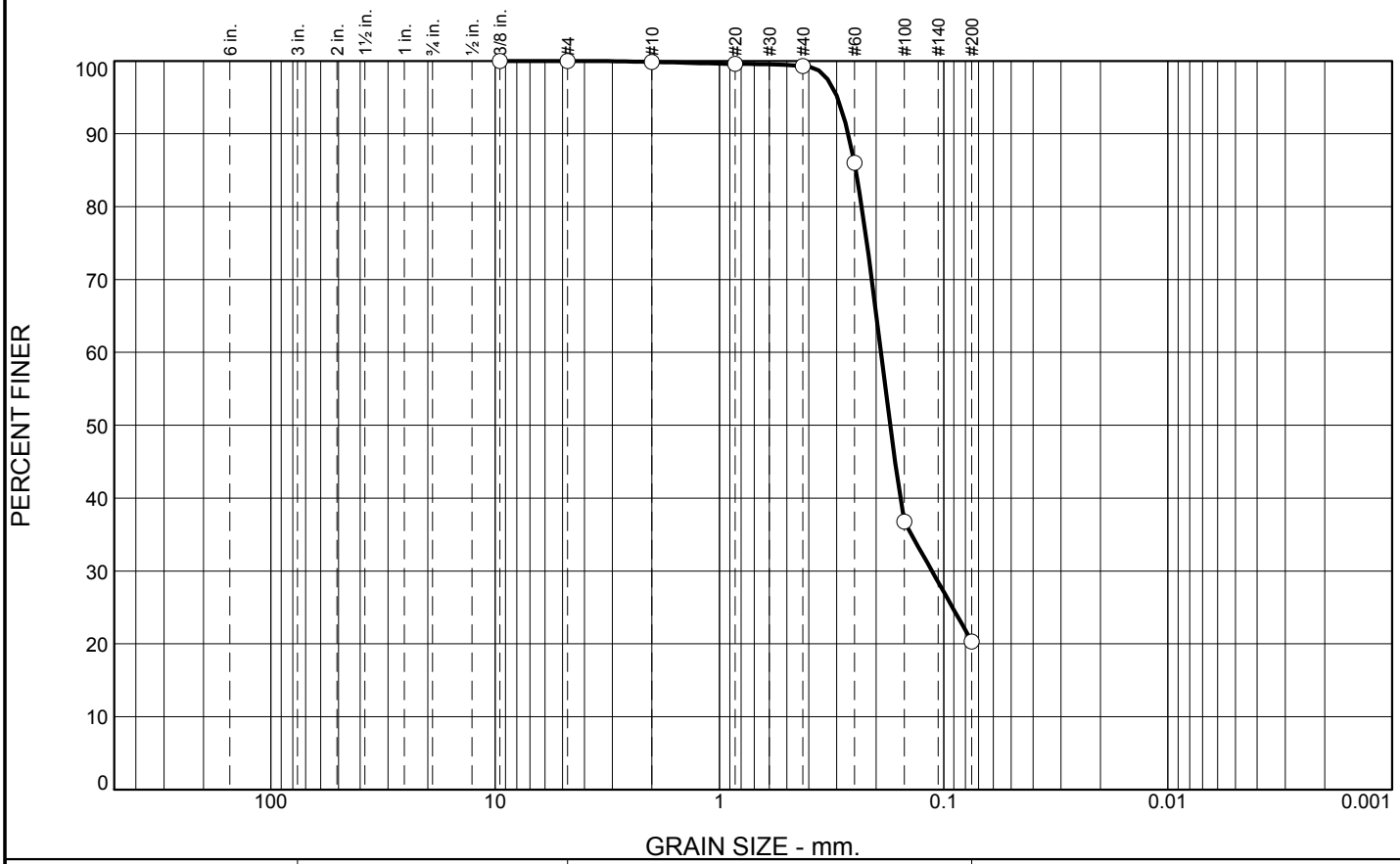
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 0.6 | 79.0 | 20.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 99.3 | | |
| #60 | 86.0 | | |
| #100 | 36.8 | | |
| #200 | 20.3 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2661 $D_{85}$= 0.2466 $D_{60}$= 0.1904
$D_{50}$= 0.1732 $D_{30}$= 0.1128 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-89-10D
**Sample Number:** TE Lab ID: 4557.07 **Depth:** 13.5 - 18.3 (ft.) **Date:** 7/3/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-SI-90-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-90-10; LOCATION COORDINATES: E = 973,659 N = 256,121 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 1; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 30 Ft. |
| | 15. DATE BORING: STARTED 06-21-10; COMPLETED 06-21-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 12.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.3 | 0.0 | | | | |
| -30.9 | 1.6 | | CLAY, lean, dark gray (CL) | NS | |
| -34.2 | 4.9 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, gray (SM) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.1727 mm % Fines: 9.9 |
| -35.3 | 6.0 | | CLAY, lean, dark gray (CL) | NS | |
| -37.3 | 8.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, lt. gray (SP) | | |
| -42.0 | 12.7 | | CLAY, lean, dark gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

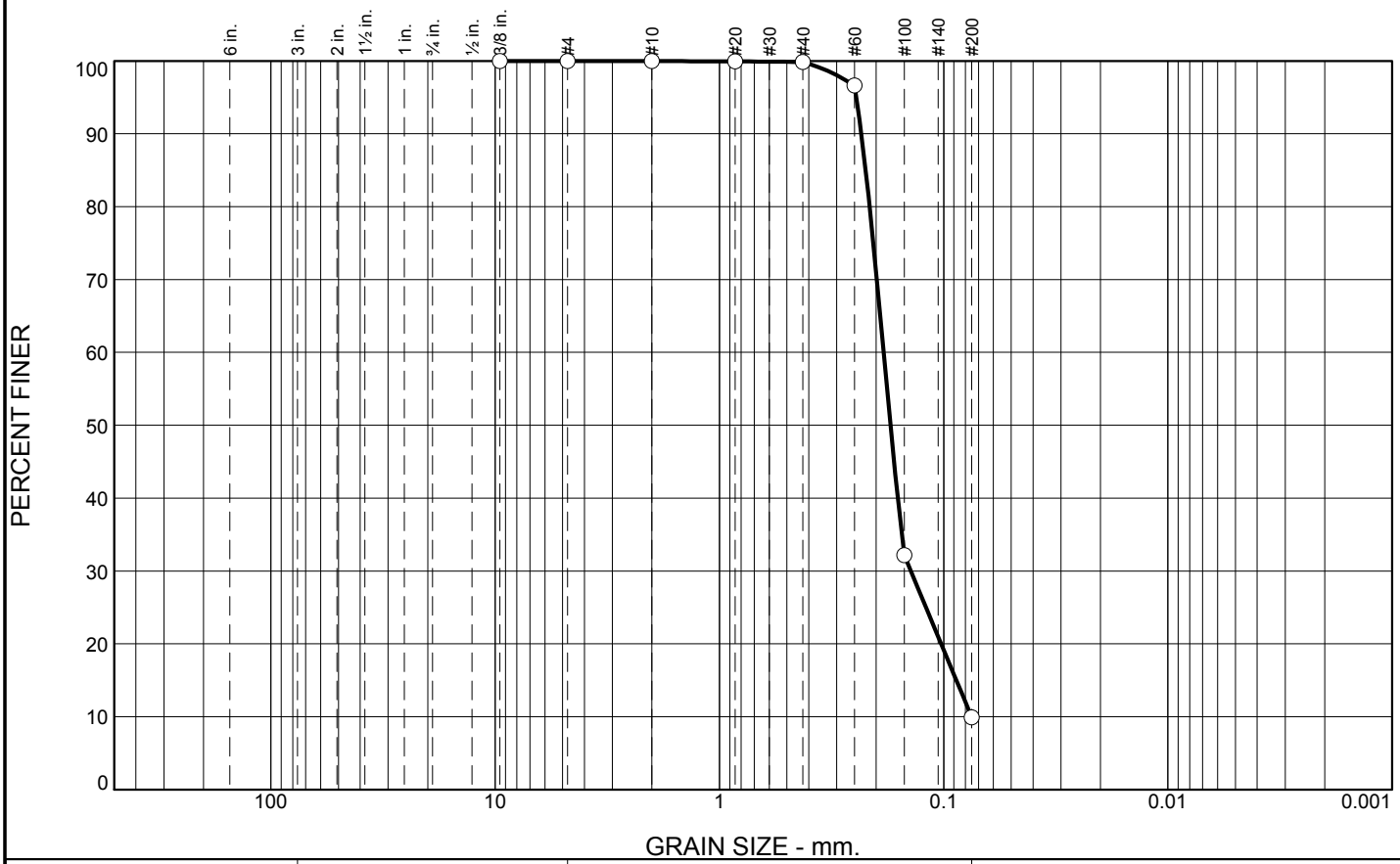
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20428° Long = -88.86686°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 89.9 | 9.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 99.8 | | |
| #60 | 96.6 | | |
| #100 | 32.2 | | |
| #200 | 9.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2327 $D_{85}$= 0.2226 $D_{60}$= 0.1853
$D_{50}$= 0.1727 $D_{30}$= 0.1402 $D_{15}$= 0.0878
$D_{10}$= 0.0752 $C_u$= 2.46 $C_c$= 1.41

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-90-10A
**Sample Number:** TE Lab ID: 4557.08 **Depth:** 1.6 - 4.9 (ft.) **Date:** 7/3/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-SI-91-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Ship Island | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-SI-91-10; LOCATION COORDINATES: E = 970,695 N = 252,173 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore; ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM; CONTRACTOR FILE NO. | 12. TOTAL SAMPLES: DISTURBED 3; UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING | 14. WATER DEPTH: 32 Ft. |
| | 15. DATE BORING: STARTED 06-17-10; COMPLETED 06-17-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -30.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Brad Johnson, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -30.5 | 0.0 | | | | |
| -33.4 | 2.9 | | CLAY, lean, dark gray (CL) | NS | |
| -38.6 | 8.1 | | SAND, clayey, mostly fine to medium-grained sand-sized quartz, some clay, gray (SC) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.1738 mm % Fines: 6.2 |
| | | | | B | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.1533 mm % Fines: 7.3 |
| -42.2 | 11.7 | | CLAY, lean, some silt, some sand, gray (CL) | NS | |
| -46.2 | 15.7 | | SAND, silty, some silt, some clay, gray (SM) | C | Classification: SM Color: 2.5Y 5/2-grayish brown D50: 0.1179 mm % Fines: 12.2 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

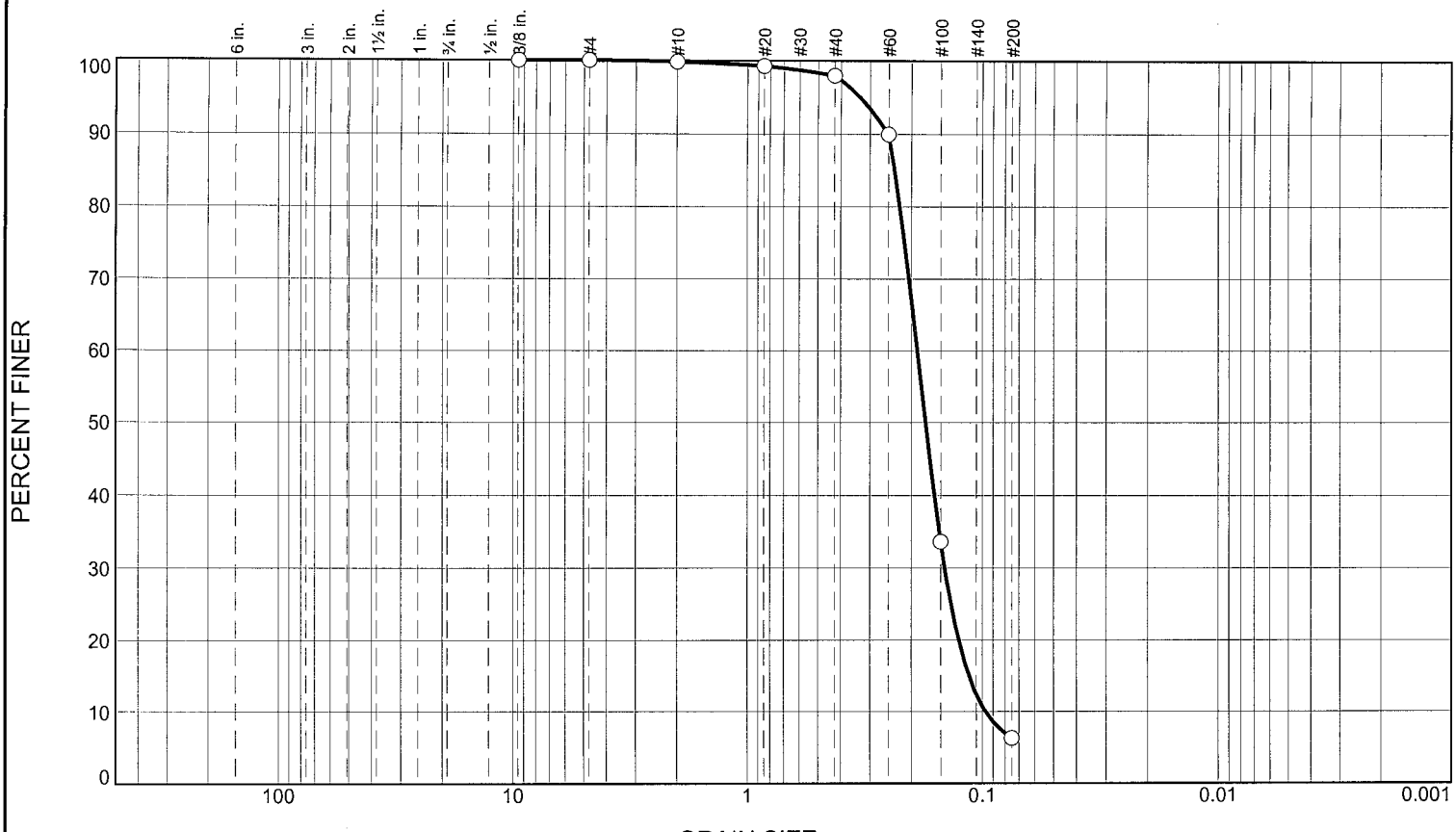
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19342° Long = -88.87624°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 1.9 | 91.7 | 6.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.3 | | |
| #40 | 97.9 | | |
| #60 | 89.9 | | |
| #100 | 33.6 | | |
| #200 | 6.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2510 $D_{85}$= 0.2355 $D_{60}$= 0.1885
$D_{50}$= 0.1738 $D_{30}$= 0.1443 $D_{15}$= 0.1138
$D_{10}$= 0.0970 $C_u$= 1.94 $C_c$= 1.14

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-91-10A
**Sample Number:** TE Lab ID: 4549.63 **Depth:** 2.9 - 5.9 (ft.) **Date:** 6/26/10

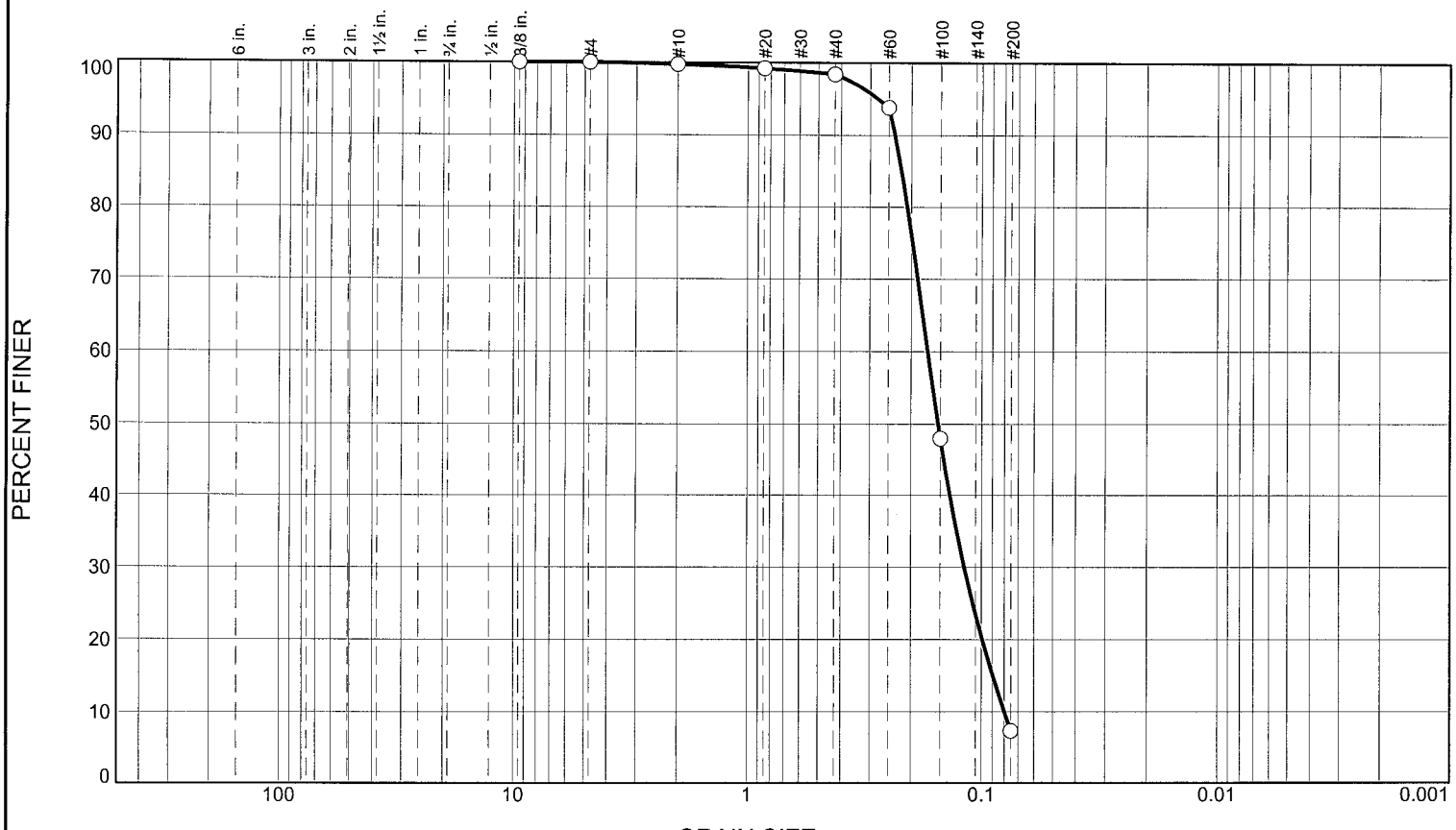
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 1.3 | 91.1 | 7.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.2 | | |
| #40 | 98.4 | | |
| #60 | 93.8 | | |
| #100 | 48.0 | | |
| #200 | 7.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2350 $D_{85}$= 0.2202 $D_{60}$= 0.1699
$D_{50}$= 0.1533 $D_{30}$= 0.1184 $D_{15}$= 0.0893
$D_{10}$= 0.0798 $C_u$= 2.13 $C_c$= 1.03

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-91-10B
**Sample Number:** TE Lab ID: 4549.64

**Date:** 6/26/10

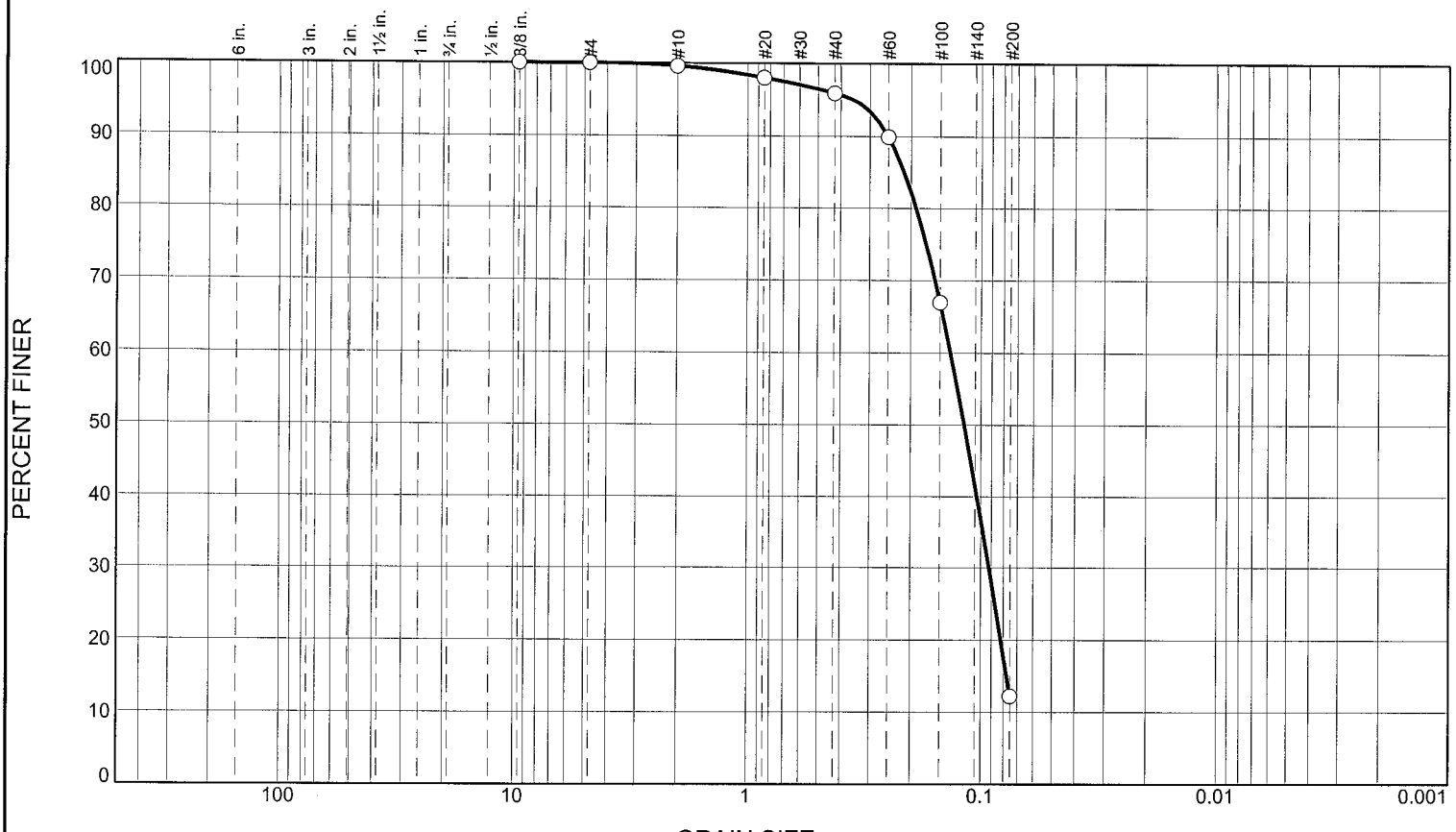
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 3.7 | 83.7 | 12.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 98.0 | | |
| #40 | 95.9 | | |
| #60 | 89.9 | | |
| #100 | 67.0 | | |
| #200 | 12.2 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2508 $D_{85}$= 0.2141 $D_{60}$= 0.1351
$D_{50}$= 0.1179 $D_{30}$= 0.0922 $D_{15}$= 0.0774
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-SI-91-10C
**Sample Number:** TE Lab ID: 4549.65 **Depth:** 11.7 - 15.7 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

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# Appendix G

# Dog Keys Pass Vibracores and Lab Results

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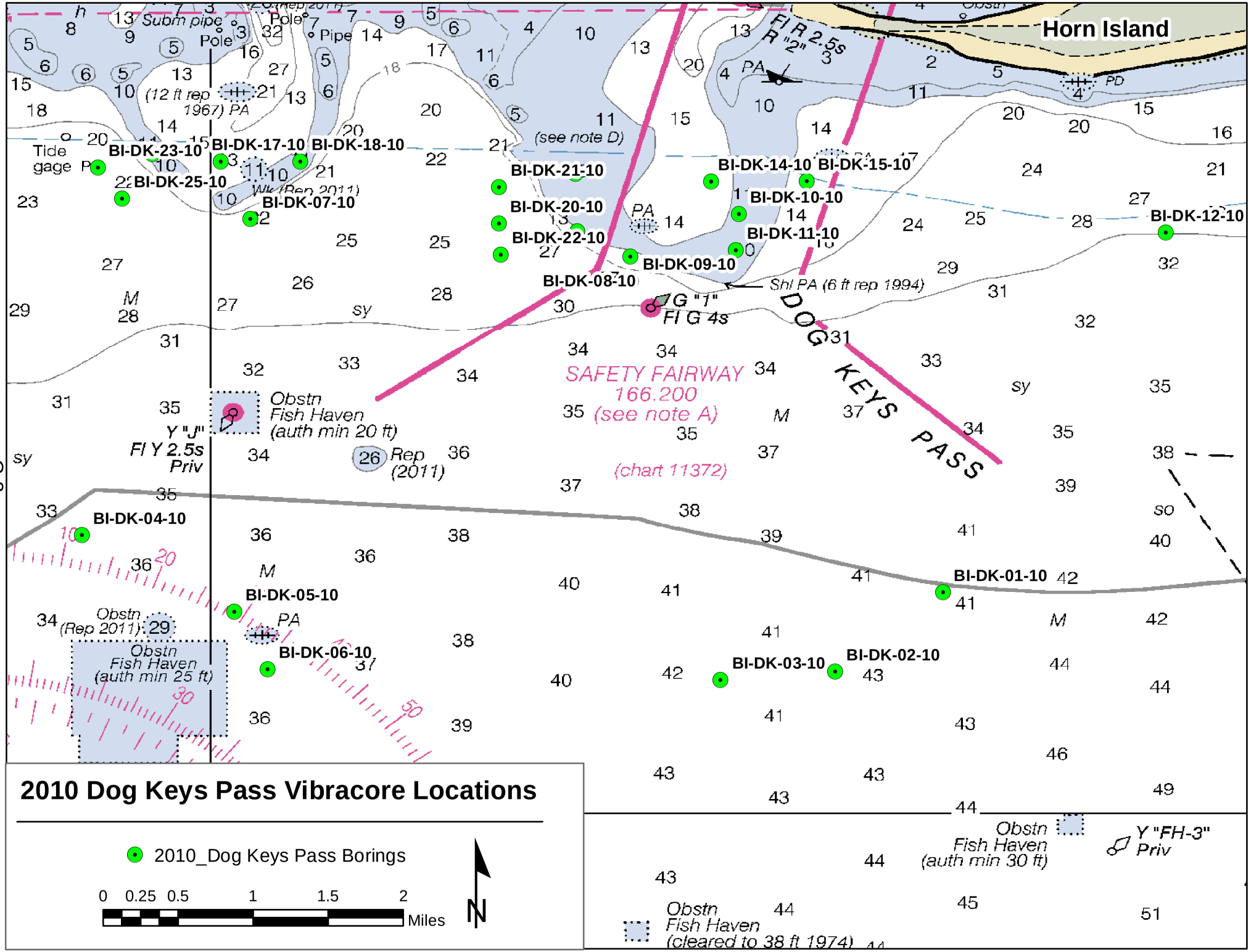
Horn Island
Fl R 2.5s
R "2"
Subm pipe
Pole
Pipe
(12 ft rep 1967) PA
Tide gage
BI-DK-23-10
BI-DK-25-10
BI-DK-17-10
BI-DK-18-10
BI-DK-07-10
(see note D)
BI-DK-21-10
BI-DK-20-10
BI-DK-22-10
BI-DK-08-10
BI-DK-09-10
BI-DK-14-10
BI-DK-15-10
BI-DK-10-10
BI-DK-11-10
BI-DK-12-10
Shl PA (6 ft rep 1994)
G "1"
Fl G 4s
DOG KEYS PASS
SAFETY FAIRWAY
166.200
(see note A)
(chart 11372)
Obstn
Fish Haven
(auth min 20 ft)
Y "J"
Fl Y 2.5s
Priv
Rep (2011)
BI-DK-04-10
BI-DK-05-10
BI-DK-06-10
BI-DK-01-10
BI-DK-03-10
BI-DK-02-10
Obstn (Rep 2011)
Obstn
Fish Haven
(auth min 25 ft)
Obstn
Fish Haven
(auth min 30 ft)
Y "FH-3"
Priv
Obstn
Fish Haven
(cleared to 38 ft 1974)
2010 Dog Keys Pass Vibracore Locations
2010_Dog Keys Pass Borings
0 0.25 0.5 1 1.5 2
Miles
N

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| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI-DK-1-10** | DOG KEYS PASS | 2010 | 6/15/2010 | 4:00 PM | 30.18796 | -88.76256 | 250191.58810 | 1006610.22600 | 20-ft Vibracore | 43.0 | 19.1 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-DK-2-10** | DOG KEYS PASS | 2010 | 6/15/2010 | 3:10 PM | 30.18029 | -88.77293 | 247400.27270 | 1003335.39200 | 20-ft Vibracore | 40.0 | 17.1 | | | | | | | | | | | | | | | | | |
| **BI-DK-2-10A** | DOG KEYS PASS | 2010 | 6/15/2010 | 3:10 PM | 30.18029 | -88.77293 | 247400.27270 | 1003335.39200 | 20-ft Vibracore | 40.0 | 17.1 | 5.6 - 10.5 | 4.9 | SM | SM | CLAY FINES | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.17 | #VALUE! | 16.9 | #VALUE! | #VALUE! |
| **BI-DK-2-10B** | DOG KEYS PASS | 2010 | 6/15/2010 | 3:10 PM | 30.18029 | -88.77293 | 247400.27270 | 1003335.39200 | 20-ft Vibracore | 40.0 | 17.1 | 12.0 - 14.0 | 2.0 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | 0.28 | #VALUE! | 17.3 | #VALUE! | #VALUE! |
| **BI-DK-2-10C** | DOG KEYS PASS | 2010 | 6/15/2010 | 3:10 PM | 30.18029 | -88.77293 | 247400.27270 | 1003335.39200 | 20-ft Vibracore | 40.0 | 17.1 | 14.0 - 17.2 | 3.2 | SP | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.18 | 0.17 | 14.9 | #VALUE! | #VALUE! |
| **BI-DK-3-10** | DOG KEYS PASS | 2010 | 6/15/2010 | 2:40 PM | 30.17949 | -88.78397 | 247107.64880 | 999847.25400 | 20-ft Vibracore | 43.0 | 18.2 | | | | | | | | | | | | | | | | | |
| **BI-DK-3-10A** | DOG KEYS PASS | 2010 | 6/15/2010 | 2:40 PM | 30.17949 | -88.78397 | 247107.64880 | 999847.25400 | 20-ft Vibracore | 43.0 | 18.2 | 7.6 - 13.0 | 5.4 | SM | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.19 | 0.18 | 8.4 | 2.6 | 1.5 |
| **BI-DK-3-10B** | DOG KEYS PASS | 2010 | 6/15/2010 | 2:40 PM | 30.17949 | -88.78397 | 247107.64880 | 999847.25400 | 20-ft Vibracore | 43.0 | 18.2 | 13.0 - 18.2 | 5.2 | SP | SP-SM | CLAY FINES | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.20 | 0.21 | 5.7 | 1.9 | 1.3 |
| **BI-DK-4-10** | DOG KEYS PASS | 2010 | 6/15/2010 | 1:10 PM | 30.19348 | -88.84560 | 252192.37040 | 980374.66880 | 20-ft Vibracore | 37.5 | 19.7 | | | | | | | | | | | | | | | | | |
| **BI-DK-4-10A** | DOG KEYS PASS | 2010 | 6/15/2010 | 1:10 PM | 30.19348 | -88.84560 | 252192.37040 | 980374.66880 | 20-ft Vibracore | 37.5 | 19.7 | 10.0 - 13.5 | 3.5 | SM | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 5/1 | 5 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.22 | 0.24 | 7.9 | 2.9 | 1.5 |
| **BI-DK-4-10B** | DOG KEYS PASS | 2010 | 6/15/2010 | 1:10 PM | 30.19348 | -88.84560 | 252192.37040 | 980374.66880 | 20-ft Vibracore | 37.5 | 19.7 | 13.5 - 17.7 | 4.2 | SM | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | GRAYISH BROWN | 2.5Y 5/2 | 5 | YES | 0.22 | 0.24 | 8.0 | 2.8 | 1.5 |
| **BI-DK-4-10C** | DOG KEYS PASS | 2010 | 6/15/2010 | 1:10 PM | 30.19348 | -88.84560 | 252192.37040 | 980374.66880 | 20-ft Vibracore | 37.5 | 19.7 | 17.2 - 19.7 | 2.5 | SP | SP-SM | CLAY FINES | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | GRAYISH BROWN | 2.5Y 5/2 | 5 | NO | 0.28 | 0.28 | 10.6 | #VALUE! | #VALUE! |
| **BI-DK-5-10** | DOG KEYS PASS | 2010 | 6/15/2010 | 1:40 PM | 30.18607 | -88.83091 | 249497.29580 | 985015.64580 | 20-ft Vibracore | 40.0 | 19.5 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-DK-6-10** | DOG KEYS PASS | 2010 | 6/2/2010 | 1:40 PM | 30.18053 | -88.82766 | 247482.54310 | 986042.57520 | 20-ft Vibracore | 42.0 | 20.0 | | | | | | | | | | | | | | | | | |
| **BI-DK-6-10A** | DOG KEYS PASS | 2010 | 6/2/2010 | 1:40 PM | 30.18053 | -88.82766 | 247482.54310 | 986042.57520 | 20-ft Vibracore | 42.0 | 20.0 | 14.5 - 16.5 | 2.0 | SM | SM | CLAY FINES | VERY DK GRAY | 2.5Y 3/1 | 3 | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | NO | 0.13 | #VALUE! | 24.6 | #VALUE! | #VALUE! |
| **BI-DK-6-10B** | DOG KEYS PASS | 2010 | 6/2/2010 | 1:40 PM | 30.18053 | -88.82766 | 247482.54310 | 986042.57520 | 20-ft Vibracore | 42.0 | 20.0 | 16.5 - 20.0 | 3.5 | SP | SM | CLAY FINES | VERY DK GRAY | 2.5Y 3/1 | 3 | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | NO | 0.17 | 0.17 | 12.9 | #VALUE! | #VALUE! |
| **BI-DK-7-10** | DOG KEYS PASS | 2010 | 6/2/2010 | 10:20 AM | 30.22398 | -88.82932 | 263284.47810 | 985517.51630 | 20-ft Vibracore | 26.0 | 15.9 | | | | | | | | | | | | | | | | | |
| **BI-DK-7-10A** | DOG KEYS PASS | 2010 | 6/2/2010 | 10:20 AM | 30.22398 | -88.82932 | 263284.47810 | 985517.51630 | 20-ft Vibracore | 26.0 | 15.9 | 0.0 - 4.3 | 4.3 | SP | SP | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT GRAY | 5Y 7/1 | 7 | NO | 0.17 | 0.17 | 4.3 | 2.0 | 1.1 |
| **BI-DK-8-10** | DOG KEYS PASS | 2010 | 6/2/2010 | 11:15 AM | 30.22033 | -88.79269 | 261959.30610 | 997086.70940 | 20-ft Vibracore | 17.0 | 12.4 | | | | | | | | | | | | | | | | | |
| **BI-DK-8-10A** | DOG KEYS PASS | 2010 | 6/2/2010 | 11:15 AM | 30.22033 | -88.79269 | 261959.30610 | 997086.70940 | 20-ft Vibracore | 17.0 | 12.4 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | LT OLIVE GRAY | 5Y 6/2 | 6 | LT GRAY | 5Y 7/1 | 7 | NO | 0.19 | 0.20 | 1.6 | 1.7 | 1.0 |
| **BI-DK-8-10B** | DOG KEYS PASS | 2010 | 6/2/2010 | 11:15 AM | 30.22033 | -88.79269 | 261959.30610 | 997086.70940 | 20-ft Vibracore | 17.0 | 12.4 | 5.0 - 10.5 | 5.5 | SP | SP-SM | SUBANGULAR TO ROUNDED | LT OLIVE GRAY | 5Y 6/2 | 6 | LT GRAY | 5Y 7/1 | 7 | YES | 0.15 | 0.16 | 7.0 | 2.2 | 1.0 |
| **BI-DK-8-10C** | DOG KEYS PASS | 2010 | 6/2/2010 | 11:15 AM | 30.22033 | -88.79269 | 261959.30610 | 997086.70940 | 20-ft Vibracore | 17.0 | 12.4 | 10.5 - 12.4 | 1.9 | SM | SP-SM | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | YES | 0.12 | 0.13 | 9.9 | 1.7 | 0.9 |
| **BI-DK-9-10** | DOG KEYS PASS | 2010 | 6/2/2010 | 12:00 PM | 30.21798 | -88.79262 | 261104.66040 | 997109.12370 | 20-ft Vibracore | 31.0 | 17.9 | | | | | | | | | | | | | | | | | |
| **BI-DK-9-10A** | DOG KEYS PASS | 2010 | 6/2/2010 | 12:00 PM | 30.21798 | -88.79262 | 261104.66040 | 997109.12370 | 20-ft Vibracore | 31.0 | 17.9 | 0.0 - 2.8 | 2.8 | SM | SP-SM | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | YES | 0.13 | 0.14 | 9.8 | 1.9 | 0.9 |
| **BI-DK-10-10** | DOG KEYS PASS | 2010 | 6/8/2010 | 7:35 AM | 30.22446 | -88.78223 | 263462.64660 | 1000389.70100 | 20-ft Vibracore | 13.0 | 13.9 | | | | | | | | | | | | | | | | | |
| **BI-DK-10-10A** | DOG KEYS PASS | 2010 | 6/8/2010 | 7:35 AM | 30.22446 | -88.78223 | 263462.64660 | 1000389.70100 | 20-ft Vibracore | 13.0 | 13.9 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.24 | 0.25 | 1.7 | 1.7 | 0.9 |
| **BI-DK-10-10B** | DOG KEYS PASS | 2010 | 6/8/2010 | 7:35 AM | 30.22446 | -88.78223 | 263462.64660 | 1000389.70100 | 20-ft Vibracore | 13.0 | 13.9 | 5.0 - 10.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 5Y 7/1 | 7 | NO | 0.20 | 0.20 | 3.9 | 1.9 | 1.2 |
| **BI-DK-10-10C** | DOG KEYS PASS | 2010 | 6/8/2010 | 7:35 AM | 30.22446 | -88.78223 | 263462.64660 | 1000389.70100 | 20-ft Vibracore | 13.0 | 13.9 | 10.0 - 13.9 | 3.9 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 5Y 7/1 | 7 | YES | 0.18 | 0.18 | 5.9 | 2.3 | 1.4 |
| **BI-DK-11-10** | DOG KEYS PASS | 2010 | 6/8/2010 | 10:00 AM | 30.22095 | -88.78249 | 262186.08380 | 1000308.15700 | 20-ft Vibracore | 12.5 | 8.6 | | | | | | | | | | | | | | | | | |
| **BI-DK-11-10A** | DOG KEYS PASS | 2010 | 6/8/2010 | 10:00 AM | 30.22095 | -88.78249 | 262186.08380 | 1000308.15700 | 20-ft Vibracore | 12.5 | 8.6 | 0.0 - 4.3 | 4.3 | SP | SP | SUBANGULAR TO ROUNDED | LT GRAY | 2.5Y 7/2 | 7 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.16 | 0.16 | 4.1 | 2.0 | 1.1 |
| **BI-DK-11-10B** | DOG KEYS PASS | 2010 | 6/8/2010 | 10:00 AM | 30.22095 | -88.78249 | 262186.08380 | 1000308.15700 | 20-ft Vibracore | 12.5 | 8.6 | 4.3 - 8.6 | 4.3 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 5Y 7/1 | 7 | NO | 0.19 | 0.19 | 3.3 | 1.7 | 1.0 |
| **BI-DK-12-10** | DOG KEYS PASS | 2010 | 6/7/2010 | 11:30 AM | 30.22268 | -88.74105 | 262823.48320 | 1013395.89600 | 20-ft Vibracore | 30.0 | 18.7 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-DK-13-10** | DOG KEYS PASS | 2010 | 6/7/2010 | 2:35 PM | 30.22833 | -88.79799 | 264868.20880 | 995411.86440 | 20-ft Vibracore | 13.0 | 12.5 | | | | | | | | | | | | | | | | | |
| **BI-DK-13-10A** | DOG KEYS PASS | 2010 | 6/7/2010 | 2:35 PM | 30.22833 | -88.79799 | 264868.20880 | 995411.86440 | 20-ft Vibracore | 13.0 | 12.5 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.24 | 0.25 | 2.0 | 1.7 | 0.9 |
| **BI-DK-13-10B** | DOG KEYS PASS | 2010 | 6/7/2010 | 2:35 PM | 30.22833 | -88.79799 | 264868.20880 | 995411.86440 | 20-ft Vibracore | 13.0 | 12.5 | 5.0 - 10.6 | 5.6 | SP | SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 5Y 7/1 | 7 | NO | 0.22 | 0.21 | 13.4 | #VALUE! | #VALUE! |
| **BI-DK-14-10** | DOG KEYS PASS | 2010 | 6/7/2010 | 1:55 PM | 30.22758 | -88.78490 | 264596.96820 | 999545.96580 | 20-ft Vibracore | 15.5 | 17.1 | | | | | | | | | | | | | | | | | |
| **BI-DK-14-10A** | DOG KEYS PASS | 2010 | 6/7/2010 | 1:55 PM | 30.22758 | -88.78490 | 264596.96820 | 999545.96580 | 20-ft Vibracore | 15.5 | 17.1 | 0.0 - 4.0 | 4.0 | SP | SP | SUBANGULAR TO ROUNDED | LT GRAY | 2.5Y 7/2 | 7 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.23 | 0.25 | 1.8 | 1.6 | 0.9 |
| **BI-DK-14-10B** | DOG KEYS PASS | 2010 | 6/7/2010 | 1:55 PM | 30.22758 | -88.78490 | 264596.96820 | 999545.96580 | 20-ft Vibracore | 15.5 | 17.1 | 4.0 - 8.0 | 4.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 5Y 7/1 | 7 | NO | 0.21 | 0.22 | 3.1 | 1.7 | 1.1 |
| **BI-DK-14-10C** | DOG KEYS PASS | 2010 | 6/7/2010 | 1:55 PM | 30.22758 | -88.78490 | 264596.96820 | 999545.96580 | 20-ft Vibracore | 15.5 | 17.1 | 8.0 - 11.4 | 3.4 | SM | SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | YES | 0.16 | #VALUE! | 15.4 | #VALUE! | #VALUE! |
| **BI-DK-15-10** | DOG KEYS PASS | 2010 | 6/7/2010 | 1:00 PM | 30.22761 | -88.77568 | 264609.23580 | 1002457.77400 | 20-ft Vibracore | 15.0 | 14.1 | | | | | | | | | | | | | | | | | |
| **BI-DK-15-10A** | DOG KEYS PASS | 2010 | 6/7/2010 | 1:00 PM | 30.22761 | -88.77568 | 264609.23580 | 1002457.77400 | 20-ft Vibracore | 15.0 | 14.1 | 0.0 - 4.0 | 4.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 5Y 6.5/1 | 7 | LT GRAY | 2.5Y 7/1 | 7 | YES | 0.21 | 0.22 | 5.6 | 2.5 | 1.3 |
| **BI-DK-15-10B** | DOG KEYS PASS | 2010 | 6/7/2010 | 1:00 PM | 30.22761 | -88.77568 | 264609.23580 | 1002457.77400 | 20-ft Vibracore | 15.0 | 14.1 | 4.0 - 8.2 | 4.2 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAT | 5Y 5/1 | 5 | LT GRAY | 5Y 7/1 | 7 | YES | 0.19 | 0.18 | 5.9 | 2.3 | 1.4 |
| **BI-DK-16-10** | DOG KEYS PASS | 2010 | 6/8/2010 | 11:00 AM | 30.23025 | -88.83878 | 265564.78800 | 982529.90840 | 20-ft Vibracore | 13.0 | 14.3 | | | | | | | | | | | | | | | | | |
| **BI-DK-16-10A** | DOG KEYS PASS | 2010 | 6/8/2010 | 11:00 AM | 30.23025 | -88.83878 | 265564.78800 | 982529.90840 | 20-ft Vibracore | 13.0 | 14.3 | 0.0 - 5.2 | 5.2 | SP | SP | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.25 | 0.26 | 2.0 | 1.7 | 0.9 |
| **BI-DK-16-10B** | DOG KEYS PASS | 2010 | 6/8/2010 | 11:00 AM | 30.23025 | -88.83878 | 265564.78800 | 982529.90840 | 20-ft Vibracore | 13.0 | 14.3 | 5.2 - 9.0 | 3.8 | SM | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | NO | 0.17 | 0.17 | 10.5 | #VALUE! | #VALUE! |
| **BI-DK-17-10** | DOG KEYS PASS | 2010 | 6/7/2010 | 4:40 PM | 30.22951 | -88.83221 | 265295.62320 | 984604.75840 | 20-ft Vibracore | 14.0 | 16.4 | | | | | | | | | | | | | | | | | |
| **BI-DK-17-10A** | DOG KEYS PASS | 2010 | 6/7/2010 | 4:40 PM | 30.22951 | -88.83221 | 265295.62320 | 984604.75840 | 20-ft Vibracore | 14.0 | 16.4 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 6/1 | 6 | LT GRAY | 5Y 7/1 | 7 | NO | 0.21 | 0.23 | 2.6 | 2.0 | 1.2 |
| **BI-DK-18-10** | DOG KEYS PASS | 2010 | 6/7/2010 | 3:50 PM | 30.22952 | -88.82453 | 265299.36580 | 987030.16860 | 20-ft Vibracore | 15.5 | 11.7 | | | | | | | | | | | | | | | | | |
| **BI-DK-18-10A** | DOG KEYS PASS | 2010 | 6/7/2010 | 3:50 PM | 30.22952 | -88.82453 | 265299.36580 | 987030.16860 | 20-ft Vibracore | 15.5 | 11.7 | 0.0 - 3.5 | 3.5 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 5Y 7/1 | 7 | NO | 0.19 | 0.20 | 2.9 | 1.8 | 1.2 |
| **BI-DK-19-10** | DOG KEYS PASS | 2010 | 6/24/2010 | 7:40 AM | 30.22280 | -88.79779 | 262857.06290 | 995475.65500 | 20-ft Vibracore | 17.0 | 14.1 | | | | | | | | | | | | | | | | | |
| **BI-DK-19-10A** | DOG KEYS PASS | 2010 | 6/24/2010 | 7:40 AM | 30.22280 | -88.79779 | 262857.06290 | 995475.65500 | 20-ft Vibracore | 17.0 | 14.1 | 0.0 - 6.0 | 6.0 | SP | SP | SUBANGULAR TO ROUNDED | LT GRAY | 2.5Y 7/1 | 7 | WHITE | 7.5YR 8/1 | 8 | NO | 0.33 | 0.34 | 1.3 | 1.8 | 1.0 |
| **BI-DK-19-10B** | DOG KEYS PASS | 2010 | 6/24/2010 | 7:40 AM | 30.22280 | -88.79779 | 262857.06290 | 995475.65500 | 20-ft Vibracore | 17.0 | 14.1 | 6.0 - 12.4 | 6.4 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | NO | 0.30 | 0.32 | 2.7 | 2.0 | 1.0 |
| **BI-DK-19-10C** | DOG KEYS PASS | 2010 | 6/24/2010 | 7:40 AM | 30.22280 | -88.79779 | 262857.06290 | 995475.65500 | 20-ft Vibracore | 17.0 | 14.1 | 12.4 - 14.1 | 1.7 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | YES | 0.15 | #VALUE! | 18.8 | #VALUE! | #VALUE! |
| **BI-DK-20-10** | DOG KEYS PASS | 2010 | 6/24/2010 | 8:40 AM | 30.22355 | -88.80536 | 263129.15780 | 993084.75390 | 20-ft Vibracore | 28.0 | 18.4 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-DK-21-10** | DOG KEYS PASS | 2010 | 6/24/2010 | 9:20 AM | 30.22705 | -88.80534 | 264402.04890 | 993090.75740 | 20-ft Vibracore | 26.0 | 15.9 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI-DK-22-10** | DOG KEYS PASS | 2010 | 6/24/2010 | 8:15 AM | 30.22053 | -88.80519 | 262030.84980 | 993138.71610 | 20-ft Vibracore | 30.0 | 19.0 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-DK-23-10** | DOG KEYS PASS | 2010 | 6/24/2010 | 10:25 AM | 30.22896 | -88.84407 | 265095.75580 | 980859.24880 | 20-ft Vibracore | 25.0 | 16.5 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-DK-25-10** | DOG KEYS PASS | 2010 | 6/24/2010 | 10:00 AM | 30.22596 | -88.84169 | 264004.64430 | 981610.79750 | 20-ft Vibracore | 27.0 | 18.5 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

**Boring Designation BI-DK-01-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-01-10 — LOCATION COORDINATES: E = 1,006,610 N = 250,192 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 0 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 43 Ft. |
| | 15. DATE BORING — STARTED: 06-15-10 — COMPLETED: 06-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -41.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -41.3 | 0.0 | | | | |
| -47.6 | 6.3 | | CLAY, lean, dark gray (CL) | | |
| -49.7 | 8.4 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |
| -55.3 | 14.0 | | CLAY, lean, brown (CL) | NS | |
| -60.4 | 19.1 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, brown (SP) | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18796° Long = -88.76256°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 1,006,610 Y = 250,192 | ELEVATION TOP OF BORING -41.3 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18796° Long = -88.76256°

**Boring Designation BI-DK-02-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-02-10 — LOCATION COORDINATES: E = 1,003,335 N = 247,400 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 40 Ft. |
| | 15. DATE BORING — STARTED: 06-15-10 — COMPLETED: 06-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -38.1 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -38.1 | 0.0 | | | | |
| -43.7 | 5.6 | | CLAY, lean, dark gray (CL) | NS | |
| -48.6 | 10.5 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.1694 mm % Fines: 16.9 |
| -50.1 | 12.0 | | SILT, inorganic-L, brown (ML) | NS | |
| -52.1 | 14.0 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | B | Classification: SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.2772 mm % Fines: 17.3 |
| -55.2 | 17.1 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, brown (SP) | C | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1817 mm % Fines: 14.9 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

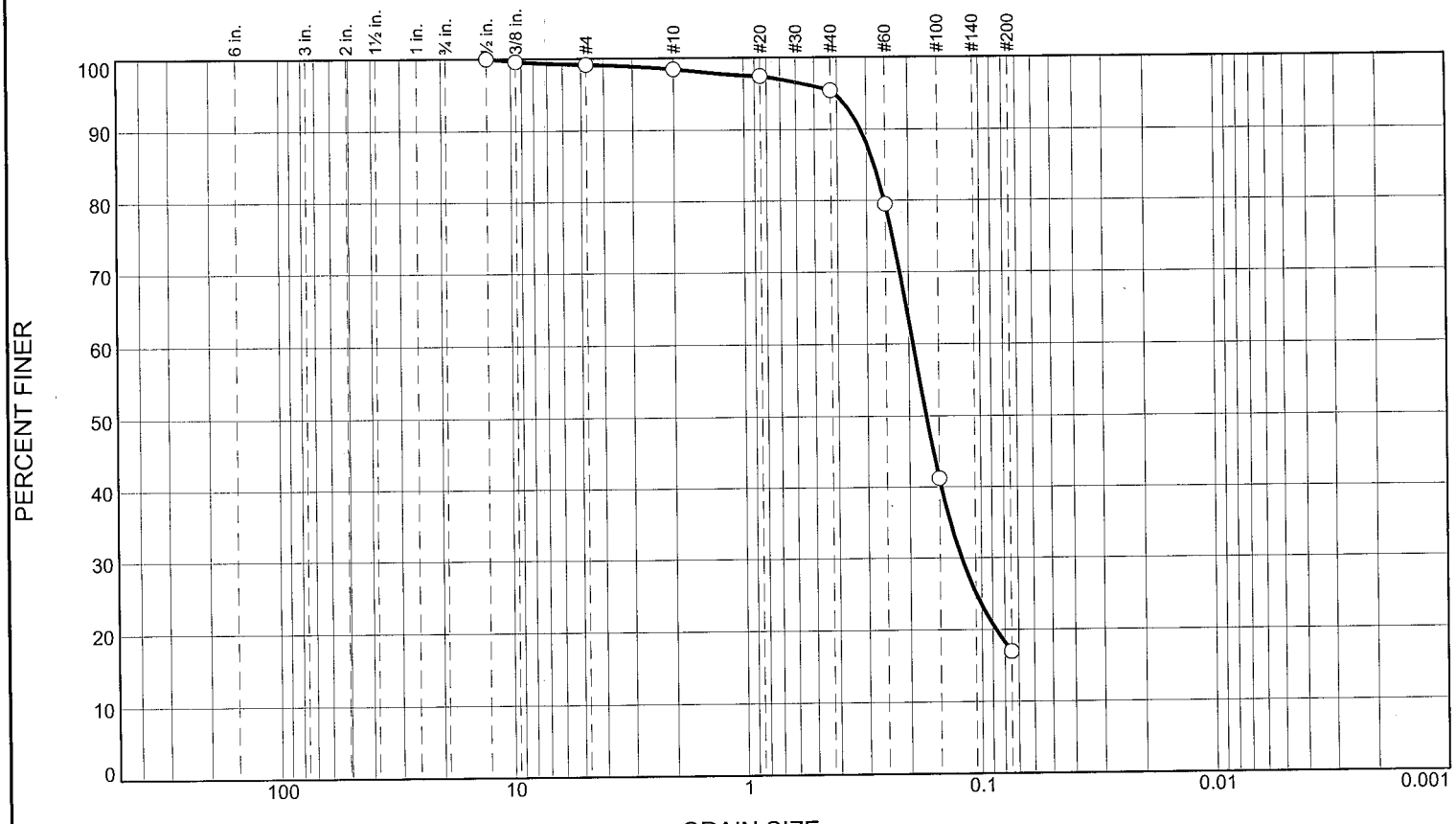
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18029° Long = -88.77293°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.9 | 0.6 | 3.1 | 78.5 | 16.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.6 | | |
| #4 | 99.1 | | |
| #10 | 98.5 | | |
| #20 | 97.4 | | |
| #40 | 95.4 | | |
| #60 | 79.5 | | |
| #100 | 41.2 | | |
| #200 | 16.9 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with trace gravel and clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3176 $D_{85}$= 0.2777 $D_{60}$= 0.1920
$D_{50}$= 0.1694 $D_{30}$= 0.1213 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-2-10A
**Sample Number:** TE Lab ID: 4549.33 **Depth:** 5.6 - 10.5 (ft.) **Date:** 6/26/10

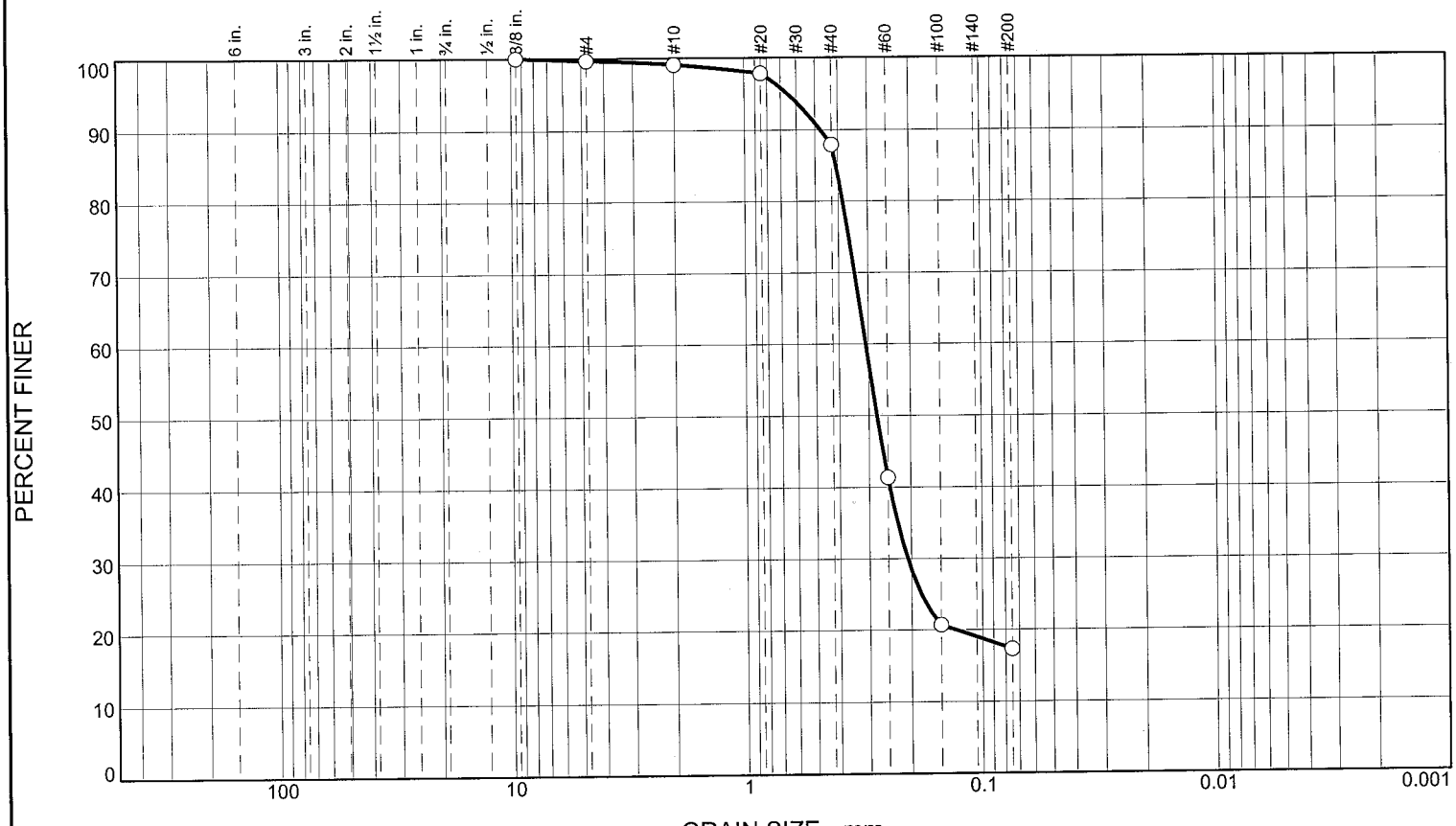
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.5 | 11.2 | 70.6 | 17.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.1 | | |
| #20 | 97.8 | | |
| #40 | 87.9 | | |
| #60 | 41.4 | | |
| #100 | 20.7 | | |
| #200 | 17.3 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay pockets and trace organics

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4741 $D_{85}$= 0.4073 $D_{60}$= 0.3082
$D_{50}$= 0.2772 $D_{30}$= 0.2069 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-2-10B
**Sample Number:** TE Lab ID: 4549.34 **Depth:** 12.0 - 14.0 (ft.) **Date:** 6/26/10

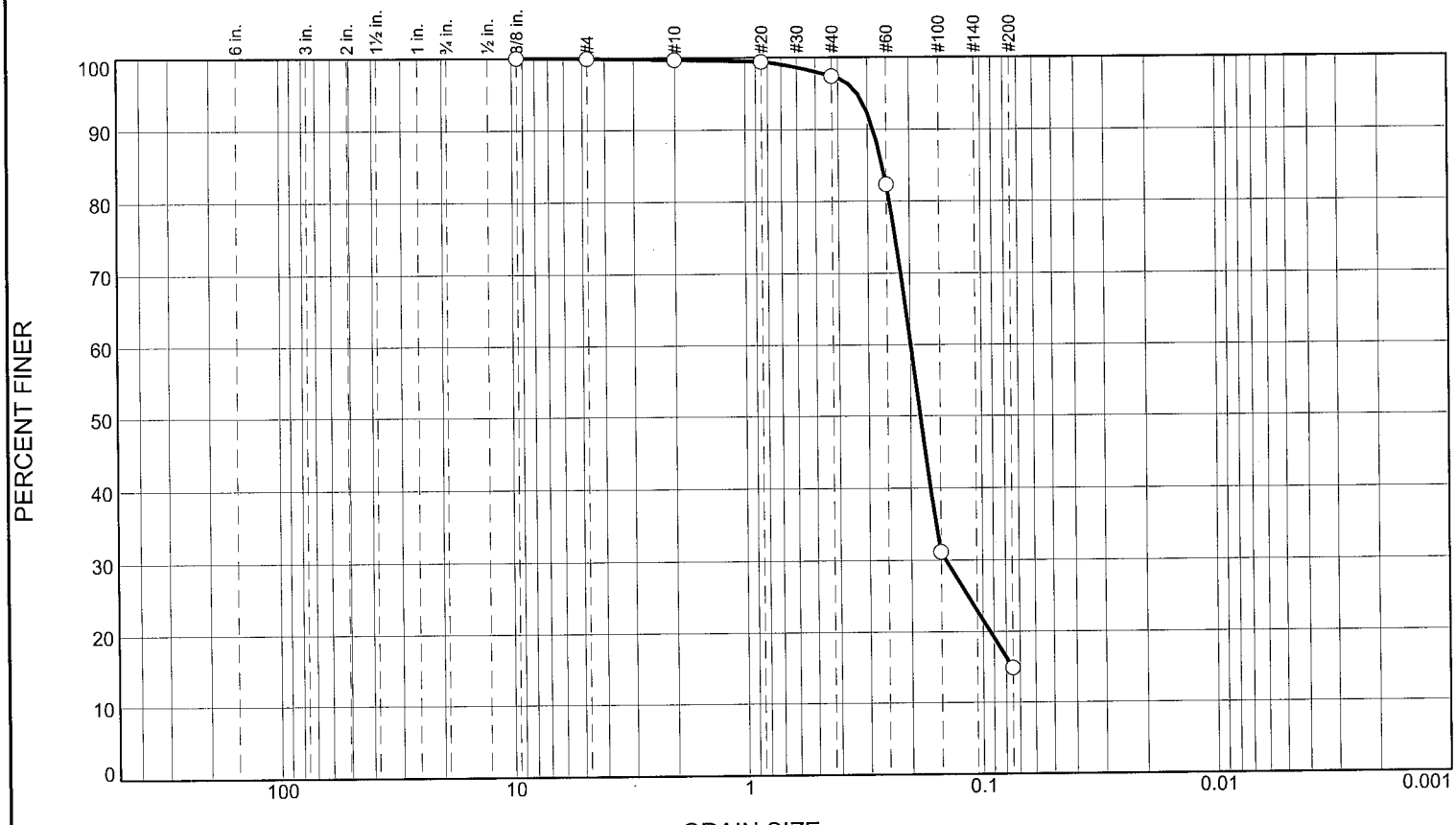
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.2 | 2.4 | 82.4 | 14.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.7 | | |
| #20 | 99.4 | | |
| #40 | 97.3 | | |
| #60 | 82.4 | | |
| #100 | 31.1 | | |
| #200 | 14.9 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2839 $D_{85}$= 0.2595 $D_{60}$= 0.1988
$D_{50}$= 0.1817 $D_{30}$= 0.1429 $D_{15}$= 0.0754
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-2-10C
**Sample Number:** TE Lab ID: 4549.35 **Depth:** 14.0 - 17.2 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-DK-03-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-03-10 — LOCATION COORDINATES: E = 999,847 N = 247,108 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 43 Ft. |
| | 15. DATE BORING — STARTED: 06-15-10 — COMPLETED: 06-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -41.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -41.0 | 0.0 | | | | |
| -48.6 | 7.6 | | CLAY, lean, dark gray (CL) | NS | |
| -54.0 | 13.0 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments (SM) | A | Classification: SP-SM Color: 2.5Y 5/2-grayish brown<br>D50: 0.1874 mm % Fines: 8.4 |
| -59.2 | 18.2 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments (SP) | B | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1995 mm % Fines: 5.7 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

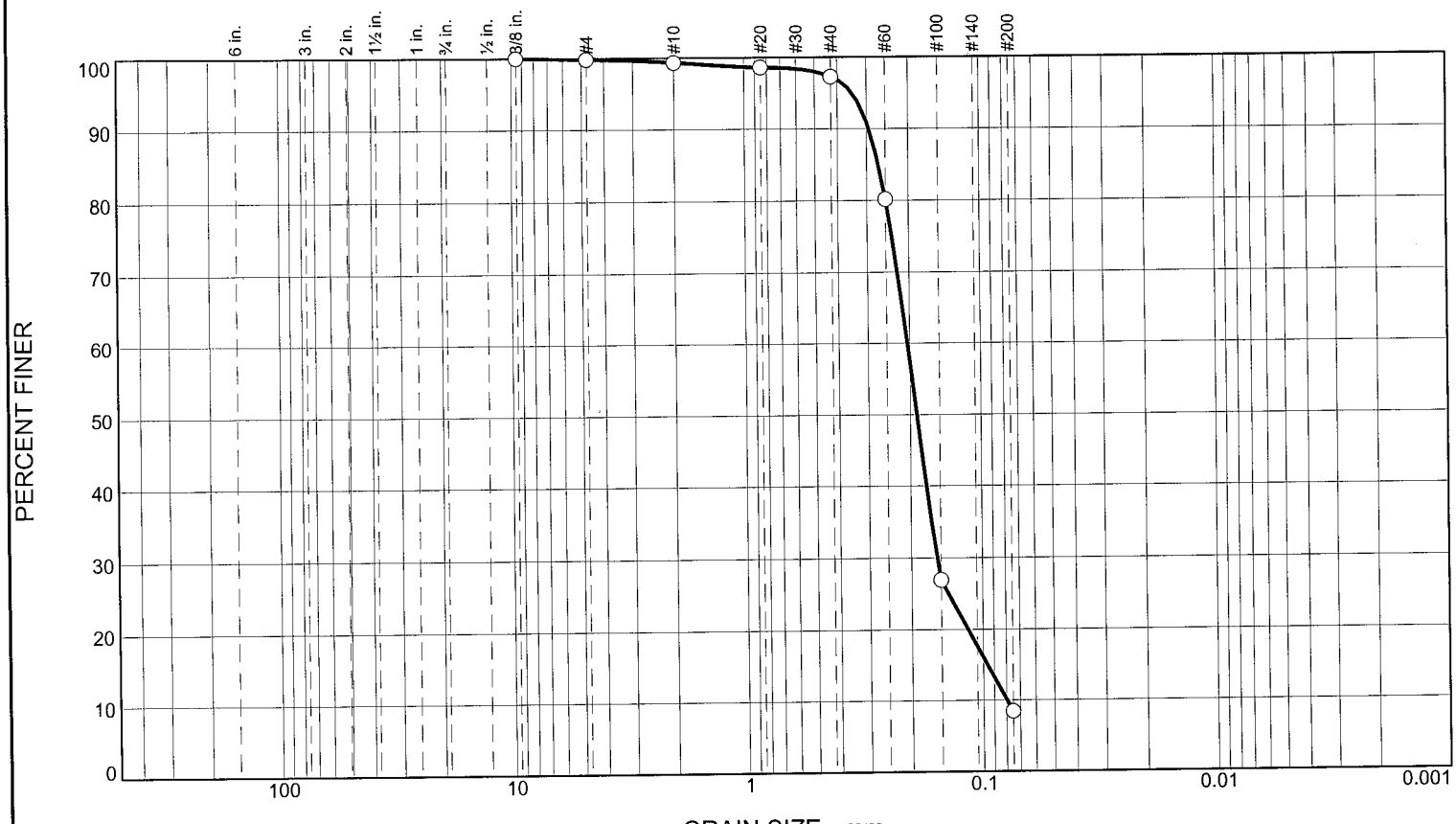
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17949° Long = -88.78397°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.5 | 2.0 | 88.9 | 8.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.3 | | |
| #20 | 98.6 | | |
| #40 | 97.3 | | |
| #60 | 80.2 | | |
| #100 | 26.9 | | |
| #200 | 8.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2935 $D_{85}$= 0.2674 $D_{60}$= 0.2045
$D_{50}$= 0.1874 $D_{30}$= 0.1553 $D_{15}$= 0.0959
$D_{10}$= 0.0795 $C_u$= 2.57 $C_c$= 1.48

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-3-10A
**Sample Number:** TE Lab ID: 4549.31 **Depth:** 7.6 - 13.0 (ft.) **Date:** 6/26/10

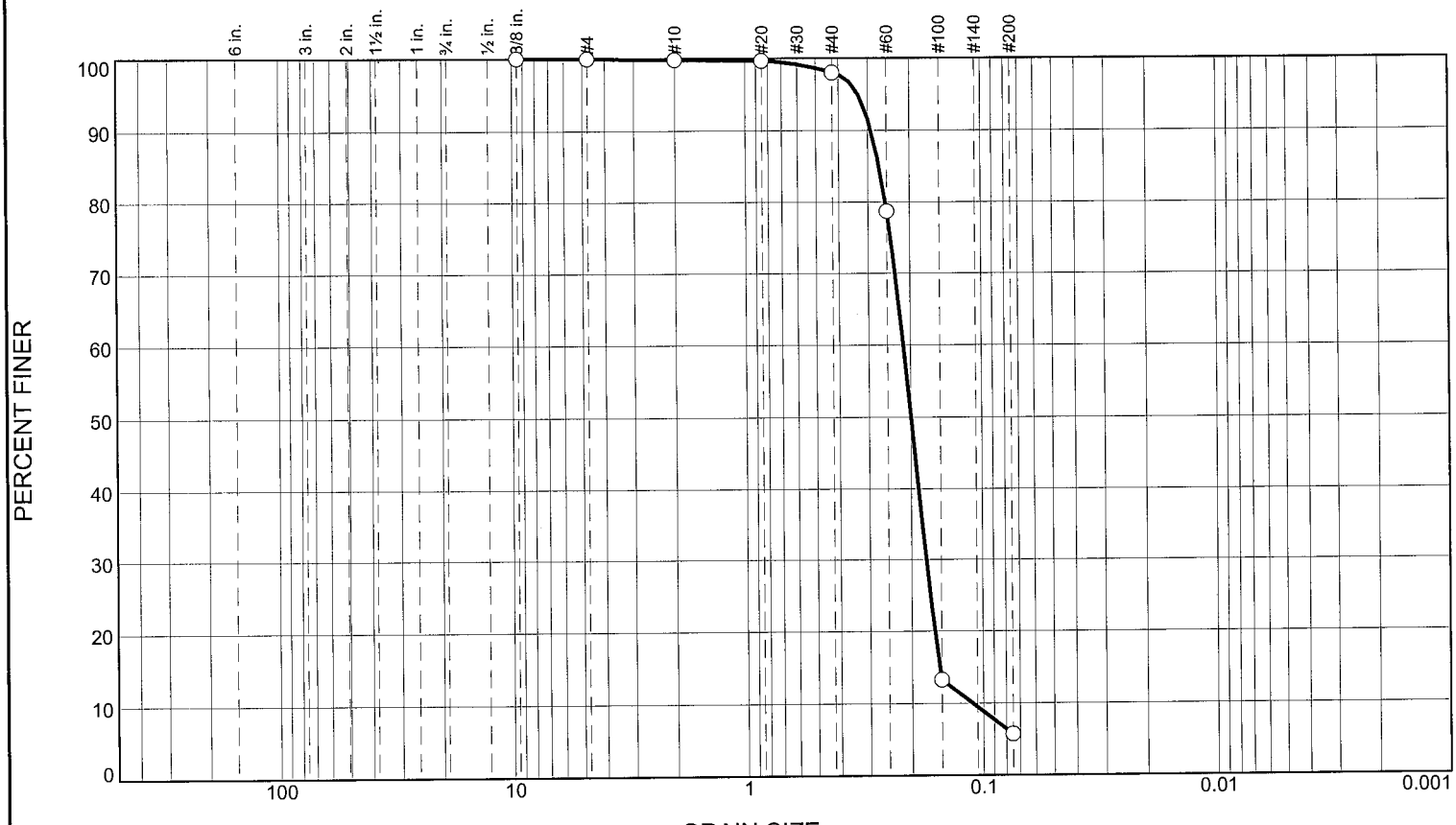
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 1.8 | 92.3 | 5.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.7 | | |
| #40 | 98.0 | | |
| #60 | 78.7 | | |
| #100 | 13.3 | | |
| #200 | 5.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2905 $D_{85}$= 0.2688 $D_{60}$= 0.2142
$D_{50}$= 0.1995 $D_{30}$= 0.1731 $D_{15}$= 0.1527
$D_{10}$= 0.1111 $C_u$= 1.93 $C_c$= 1.26

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-3-10B
**Sample Number:** TE Lab ID: 4549.32 **Depth:** 13.0 - 18.2 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-DK-04-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-04-10 — LOCATION COORDINATES: E = 980,375 N = 252,192 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 37.5 Ft. |
| | 15. DATE BORING — STARTED: 06-15-10 — COMPLETED: 06-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -35.4 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -35.4 | 0.0 | | | | |
| -45.4 | 10.0 | | CLAY, lean, dark gray (CL) | NS | |
| -52.6 | 17.2 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.2235 mm % Fines: 7.9 |
| | | | | B | Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.2245 mm % Fines: 8 |
| -55.1 | 19.7 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, brown (SP) | C | Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.2778 mm % Fines: 10.6 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19348° Long = -88.8456°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 980,375 Y = 252,192 | ELEVATION TOP OF BORING -35.4 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | applying NOAA tidal gauge data conversion factor. | | |

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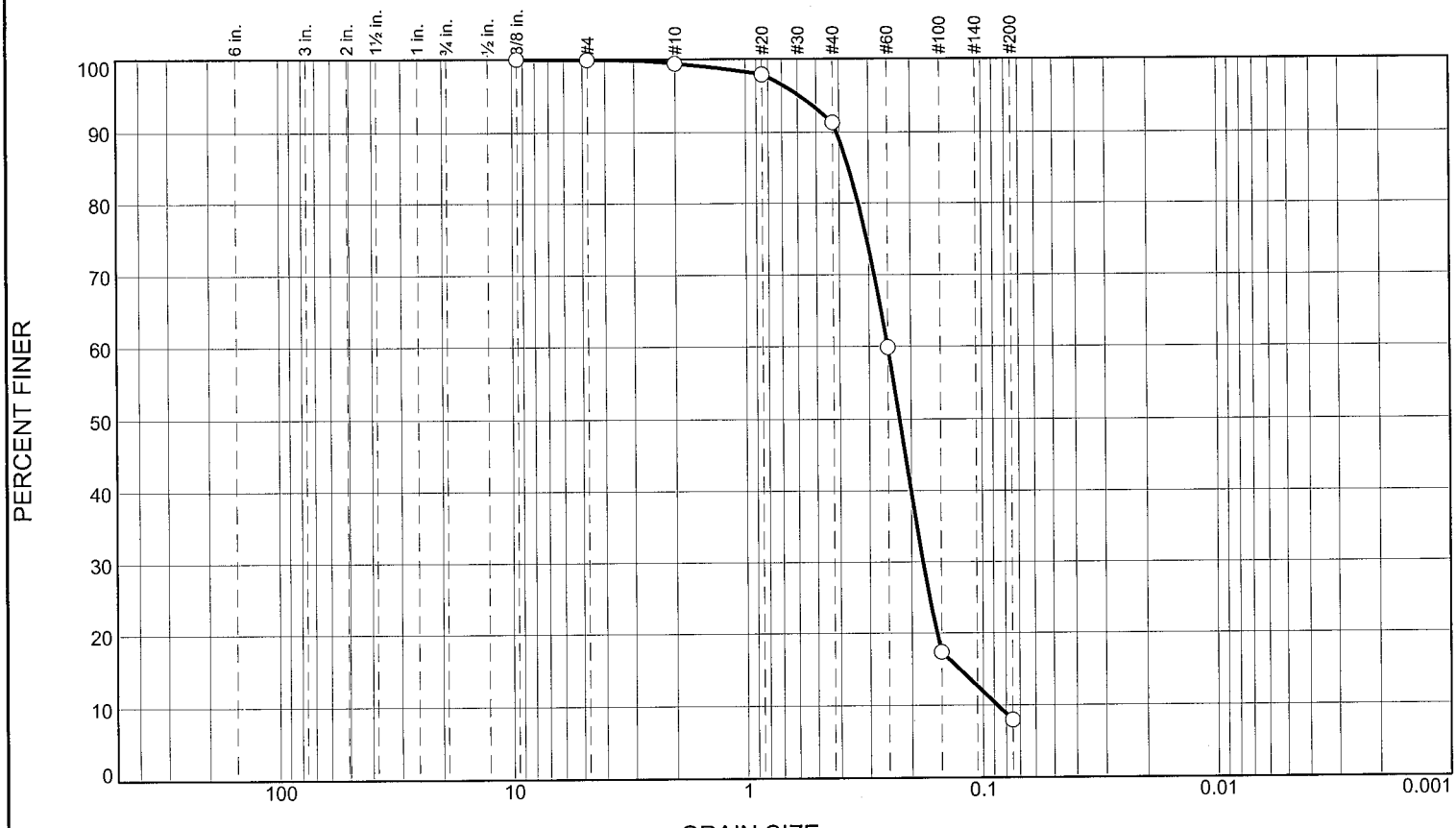
SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19348° Long = -88.8456°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.5 | 8.1 | 83.4 | 7.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.4 | | |
| #20 | 97.9 | | |
| #40 | 91.3 | | |
| #60 | 59.9 | | |
| #100 | 17.4 | | |
| #200 | 7.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4090 $D_{85}$= 0.3639 $D_{60}$= 0.2503
$D_{50}$= 0.2235 $D_{30}$= 0.1787 $D_{15}$= 0.1262
$D_{10}$= 0.0874 $C_u$= 2.87 $C_c$= 1.46

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-4-10A
**Sample Number:** TE Lab ID: 4549.28 **Depth:** 10.0 - 13.5 (ft.) **Date:** 6/26/10

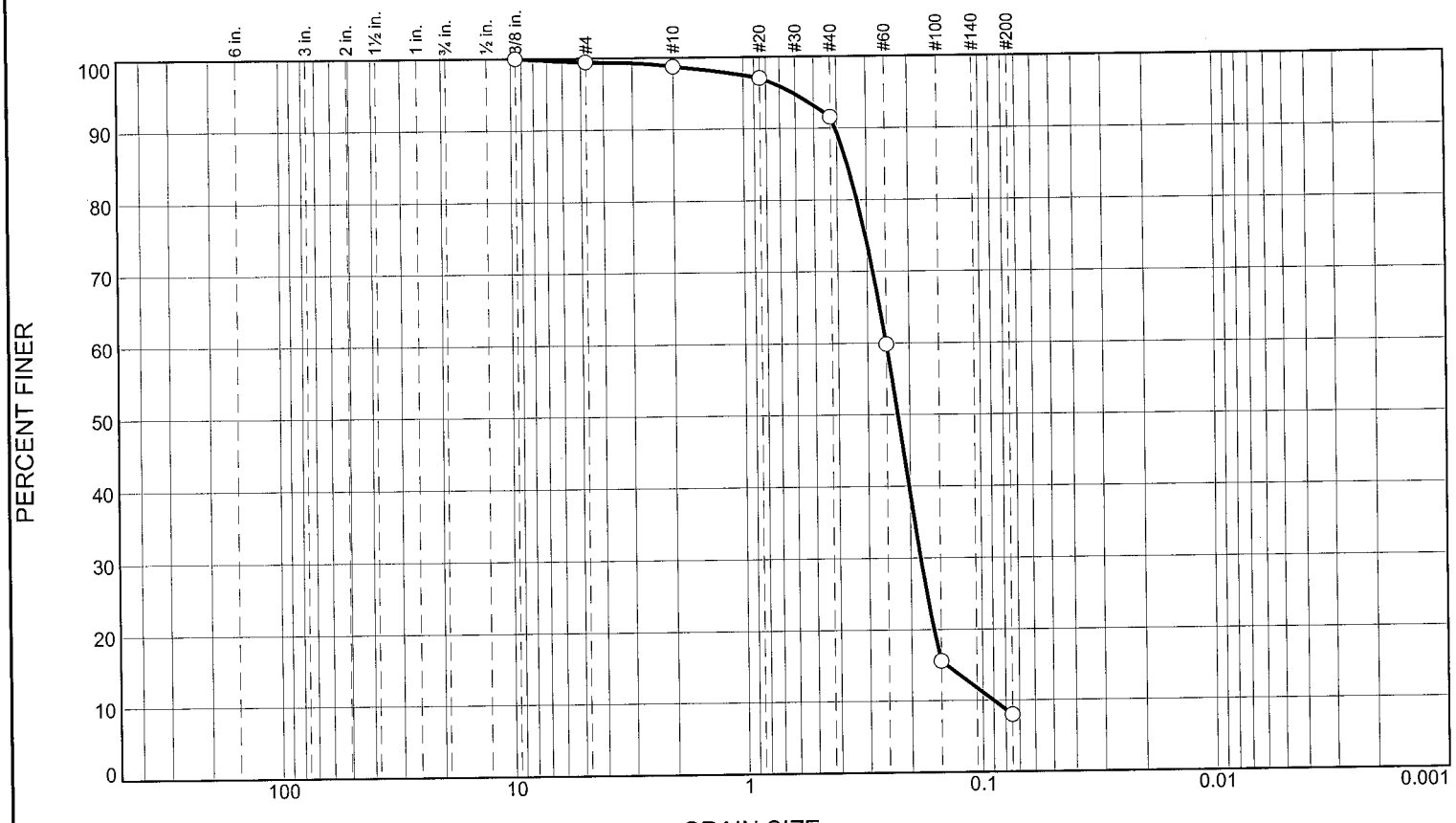
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.8 | 7.1 | 83.6 | 8.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 98.7 | | |
| #20 | 97.1 | | |
| #40 | 91.6 | | |
| #60 | 59.9 | | |
| #100 | 15.6 | | |
| #200 | 8.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4059 $D_{85}$= 0.3611 $D_{60}$= 0.2504
$D_{50}$= 0.2245 $D_{30}$= 0.1814 $D_{15}$= 0.1422
$D_{10}$= 0.0902 $C_u$= 2.78 $C_c$= 1.46

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-4-10B
**Sample Number:** TE Lab ID: 4549.29 **Depth:** 13.5 - 17.7 (ft.) **Date:** 6/26/10

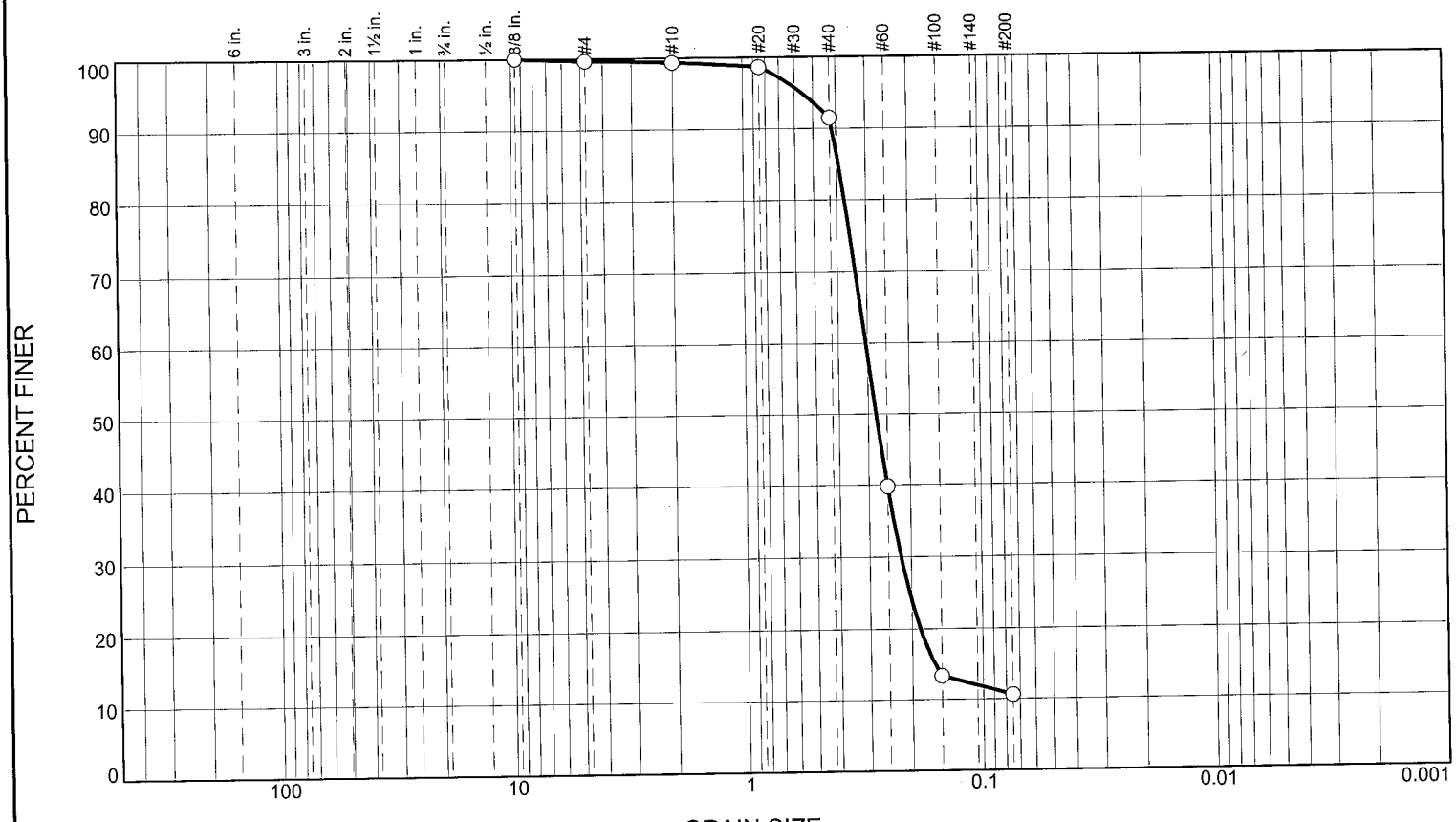
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.3 | 7.9 | 80.8 | 10.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.3 | | |
| #20 | 98.6 | | |
| #40 | 91.4 | | |
| #60 | 39.8 | | |
| #100 | 13.3 | | |
| #200 | 10.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4163 $D_{85}$= 0.3907 $D_{60}$= 0.3051
$D_{50}$= 0.2778 $D_{30}$= 0.2207 $D_{15}$= 0.1602
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-4-10C
**Sample Number:** TE Lab ID: 4549.30 **Depth:** 17.2 - 19.7 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-DK-05-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-05-10 — LOCATION COORDINATES: E = 985,016 N = 249,497 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 0 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 40 Ft. |
| | 15. DATE BORING — STARTED: 06-15-10 — COMPLETED: 06-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -37.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -37.9 | 0.0 | | | | |
| -46.3 | 8.4 | | CLAY, lean, dark gray (CL) | | |
| -49.2 | 11.3 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | NS | |
| -55.0 | 17.1 | | CLAY, lean, dark gray (CL) | | |
| -57.4 | 19.5 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, brown (SM) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18607° Long = -88.83091°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 985,016 Y = 249,497 | ELEVATION TOP OF BORING -37.9 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | applying NOAA tidal gauge data conversion factor. | | |

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SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18607° Long = -88.83091°

**Boring Designation BI-DK-06-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-06-10 — LOCATION COORDINATES: E = 986,043 N = 247,483 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 42 Ft. |
| | 15. DATE BORING — STARTED: 06-02-10 — COMPLETED: 06-02-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -40.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 20.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -40.2 | 0.0 | | | | |
| -54.7 | 14.5 | | CLAY, lean, dark gray (CL) | NS | |
| -56.7 | 16.5 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SM Color: 2.5Y 4/2-dark grayish brown D50: 0.1337 mm % Fines: 24.6 |
| -60.2 | 20.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, brown (SP) | B | Classification: SM Color: 2.5Y 4/2-dark grayish brown D50: 0.1703 mm % Fines: 12.9 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18053° Long = -88.82766°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 986,043 Y = 247,483 | ELEVATION TOP OF BORING -40.2 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

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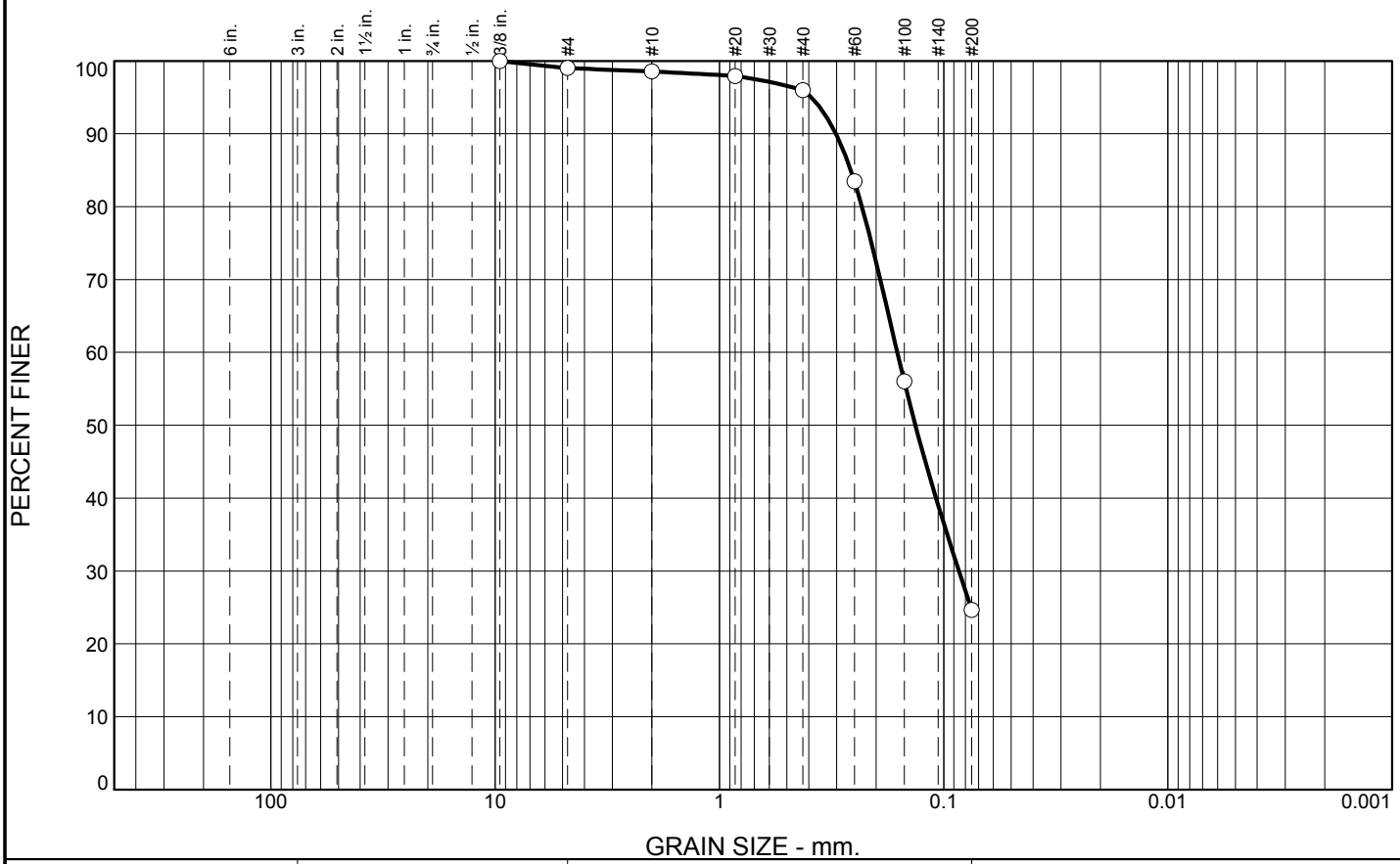
SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18053° Long = -88.82766°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.9 | 0.6 | 2.5 | 71.4 | 24.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.1 | | |
| #10 | 98.5 | | |
| #20 | 97.9 | | |
| #40 | 96.0 | | |
| #60 | 83.5 | | |
| #100 | 56.0 | | |
| #200 | 24.6 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay pockets

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3022 $D_{85}$= 0.2595 $D_{60}$= 0.1611
$D_{50}$= 0.1337 $D_{30}$= 0.0855 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-6-10A
**Sample Number:** TE Lab ID: 4519.08 **Depth:** 14.5 - 16.5 (ft.) **Date:** 6/12/10

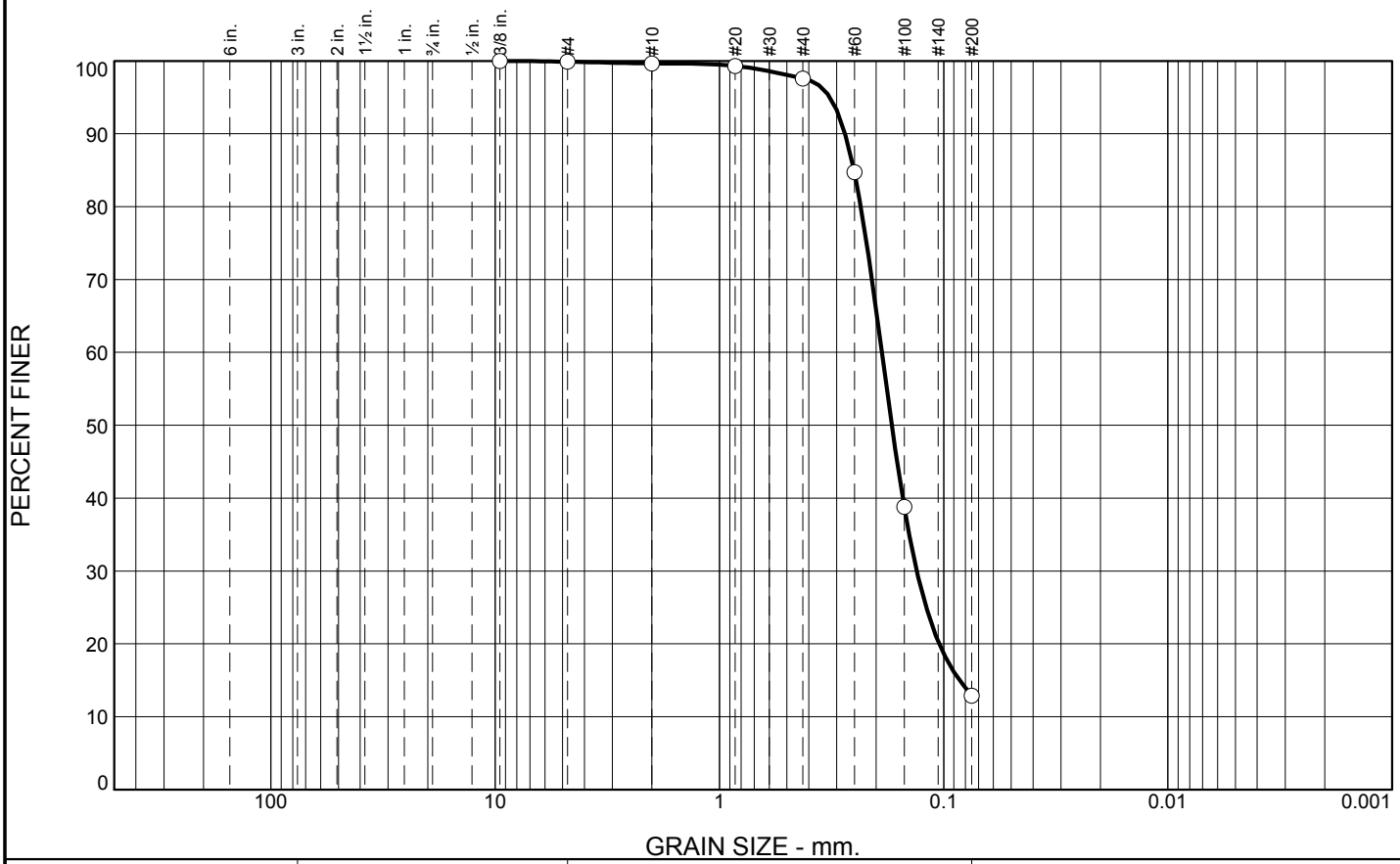
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.3 | 2.0 | 84.7 | 12.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.6 | | |
| #20 | 99.3 | | |
| #40 | 97.6 | | |
| #60 | 84.7 | | |
| #100 | 38.8 | | |
| #200 | 12.9 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2752 $D_{85}$= 0.2511 $D_{60}$= 0.1886
$D_{50}$= 0.1703 $D_{30}$= 0.1319 $D_{15}$= 0.0849
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-6-10B
**Sample Number:** TE Lab ID: 4519.09 **Depth:** 16.5 - 20.0 (ft.) **Date:** 6/12/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-DK-07-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | | | |
|---|---|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Dog Keys Pass | | 9. SIZE AND TYPE OF BIT N/A | |
| | | 10. COORDINATE SYSTEM/DATUM<br>State Plane, MSE (U.S. Ft.) | HORIZONTAL<br>NAD83 / VERTICAL<br>NAVD88 |
| 2. BORING DESIGNATION<br>BI-DK-07-10 | LOCATION COORDINATES<br>E = 985,518 N = 263,284 | 11. MANUFACTURER'S DESIGNATION OF DRILL<br>Vibracore | ☐ AUTO HAMMER<br>☐ MANUAL HAMMER |
| 3. DRILLING AGENCY<br>Corps of Engineers - CESAM | CONTRACTOR FILE NO. | 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER<br>Construction Solutions International, Inc. | | 13. TOTAL NUMBER CORE BOXES | |
| 5. DIRECTION OF BORING<br>☒ VERTICAL<br>☐ INCLINED | DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 26 Ft. | |
| | | 15. DATE BORING | STARTED 06-02-10 / COMPLETED 06-02-10 |
| 6. THICKNESS OF OVERBURDEN N/A | | 16. ELEVATION TOP OF BORING -25.1 Ft. | |
| 7. DEPTH DRILLED INTO ROCK N/A | | 17. TOTAL RECOVERY FOR BORING 100% | |
| 8. TOTAL DEPTH OF BORING 15.9 Ft. | | 18. SIGNATURE AND TITLE OF INSPECTOR<br>Marty Gates, Geologist | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -25.1 | 0.0 | | | | |
| -29.4 | 4.3 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.1696 mm % Fines: 4.3 |
| -41.0 | 15.9 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

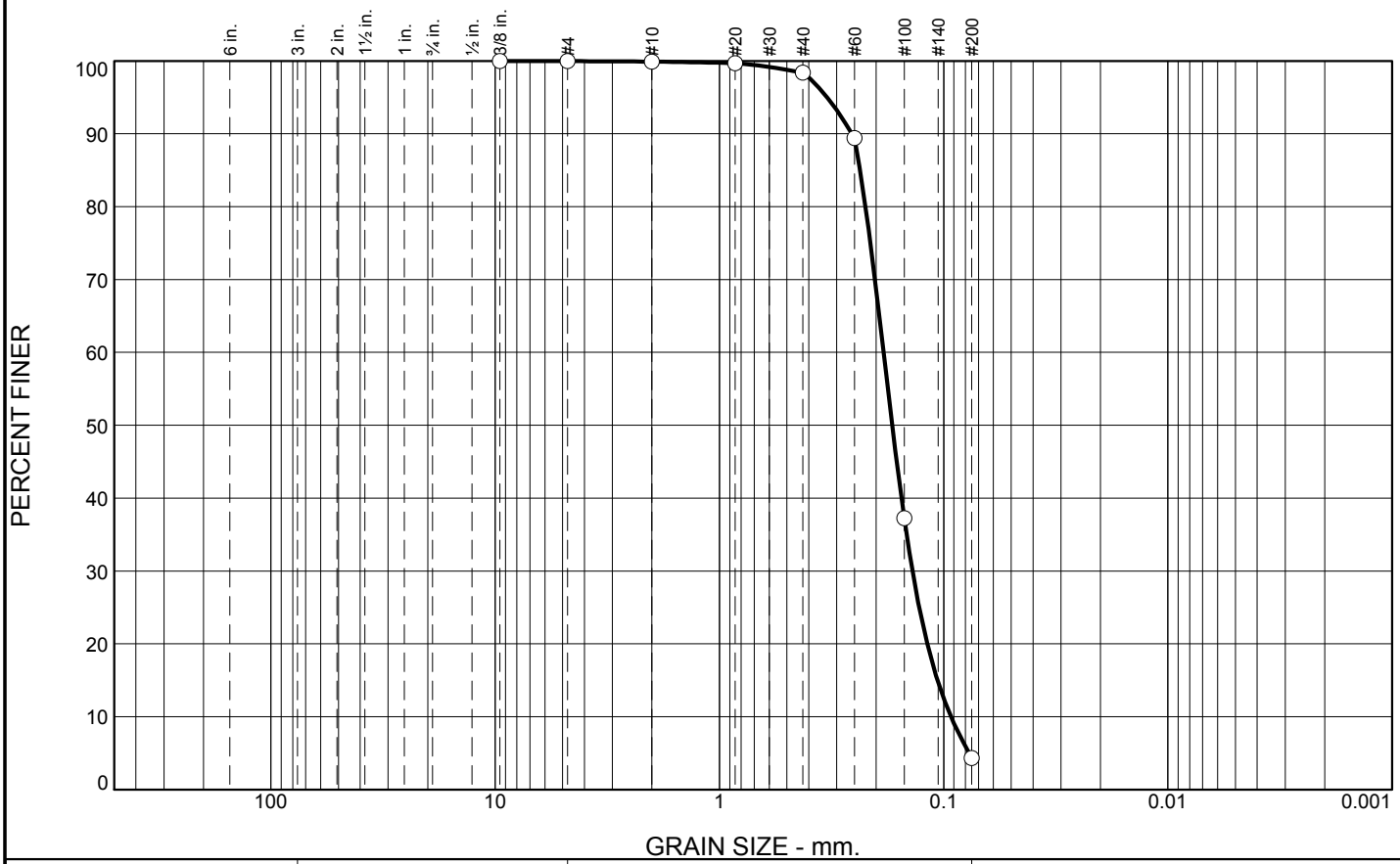
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22398° Long = -88.82932°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.5 | 94.1 | 4.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 98.4 | | |
| #60 | 89.4 | | |
| #100 | 37.3 | | |
| #200 | 4.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2565 $D_{85}$= 0.2359 $D_{60}$= 0.1853
$D_{50}$= 0.1696 $D_{30}$= 0.1378 $D_{15}$= 0.1066
$D_{10}$= 0.0928 $C_u$= 2.00 $C_c$= 1.10

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-7-10A
**Sample Number:** TE Lab ID: 4519.07 **Depth:** 0.0 - 4.3 (ft.) **Date:** 6/12/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-DK-08-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-08-10 — LOCATION COORDINATES: E = 997,087 N = 261,959 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 17 Ft. |
| | 15. DATE BORING — STARTED: 06-02-10 — COMPLETED: 06-02-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -15.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 12.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -15.9 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.1923 mm % Fines: 1.6 |
| | | | | B | Classification: SP-SM Color: 5Y 7/1-light gray<br>D50: 0.1542 mm % Fines: 7 |
| -26.4 | 10.5 | | | | |
| -28.3 | 12.4 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | C | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1154 mm % Fines: 9.9 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

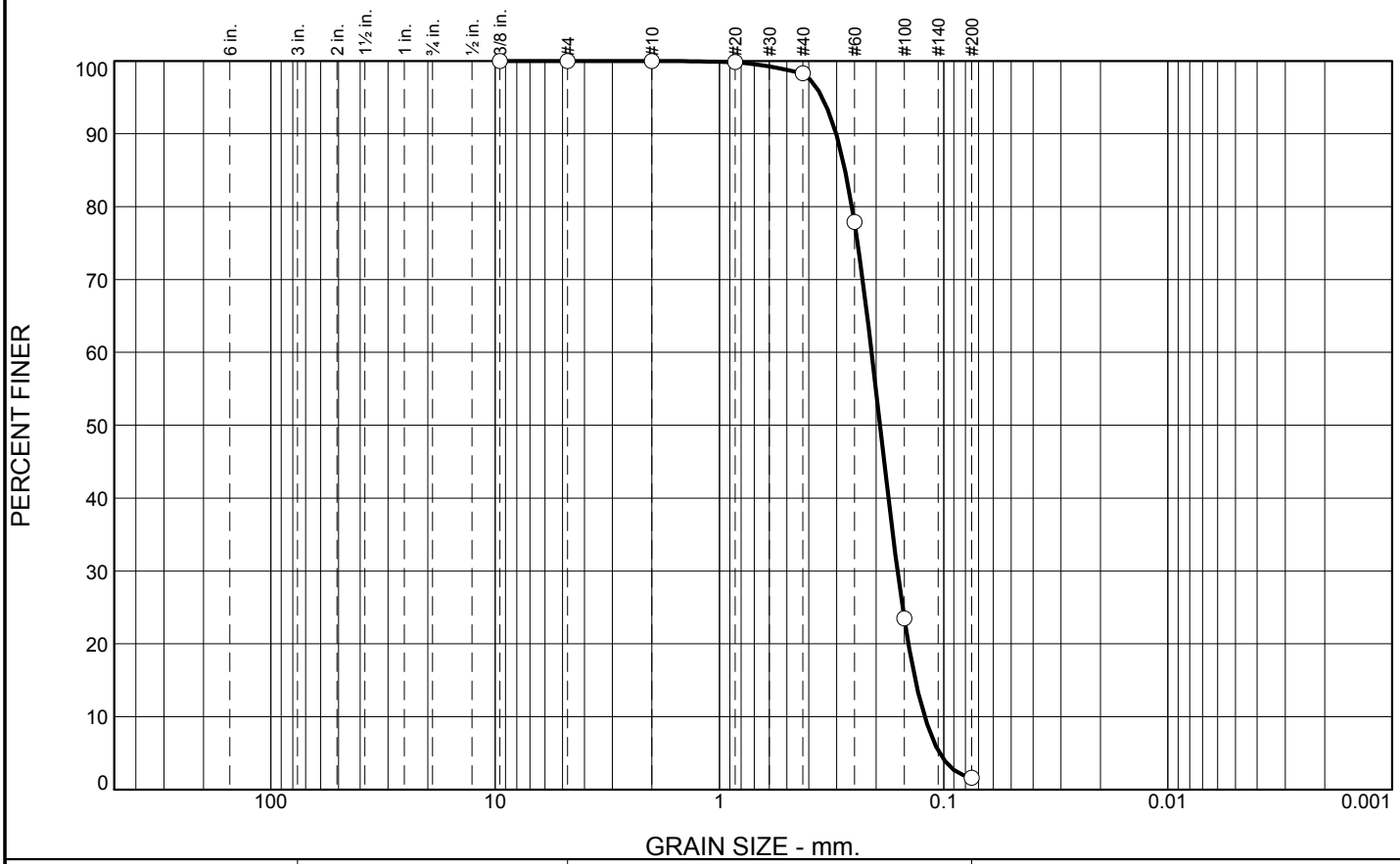
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22033° Long = -88.79269°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 1.7 | 96.7 | 1.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 98.3 | | |
| #60 | 77.9 | | |
| #100 | 23.5 | | |
| #200 | 1.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3017 $D_{85}$= 0.2752 $D_{60}$= 0.2097
$D_{50}$= 0.1923 $D_{30}$= 0.1607 $D_{15}$= 0.1336
$D_{10}$= 0.1215 $C_u$= 1.73 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-8-10A
**Sample Number:** TE Lab ID: 4519.04 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/12/10

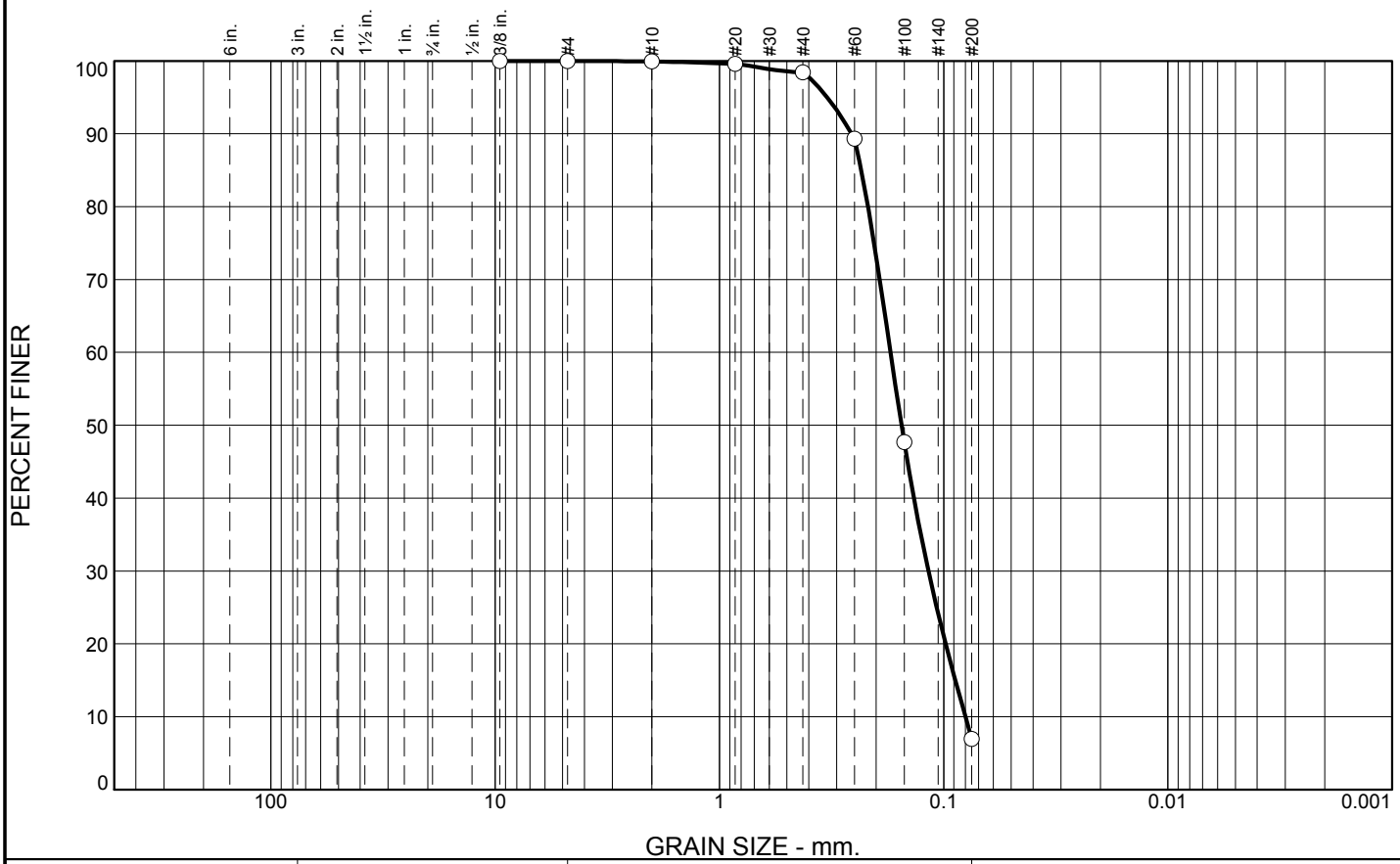
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.5 | 91.4 | 7.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 98.4 | | |
| #60 | 89.3 | | |
| #100 | 47.7 | | |
| #200 | 7.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2575 $D_{85}$= 0.2329 $D_{60}$= 0.1727
$D_{50}$= 0.1542 $D_{30}$= 0.1170 $D_{15}$= 0.0888
$D_{10}$= 0.0800 $C_u$= 2.16 $C_c$= 0.99

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-8-10B
**Sample Number:** TE Lab ID: 4519.05 **Depth:** 5.0 - 10.5 (ft.) **Date:** 6/12/10

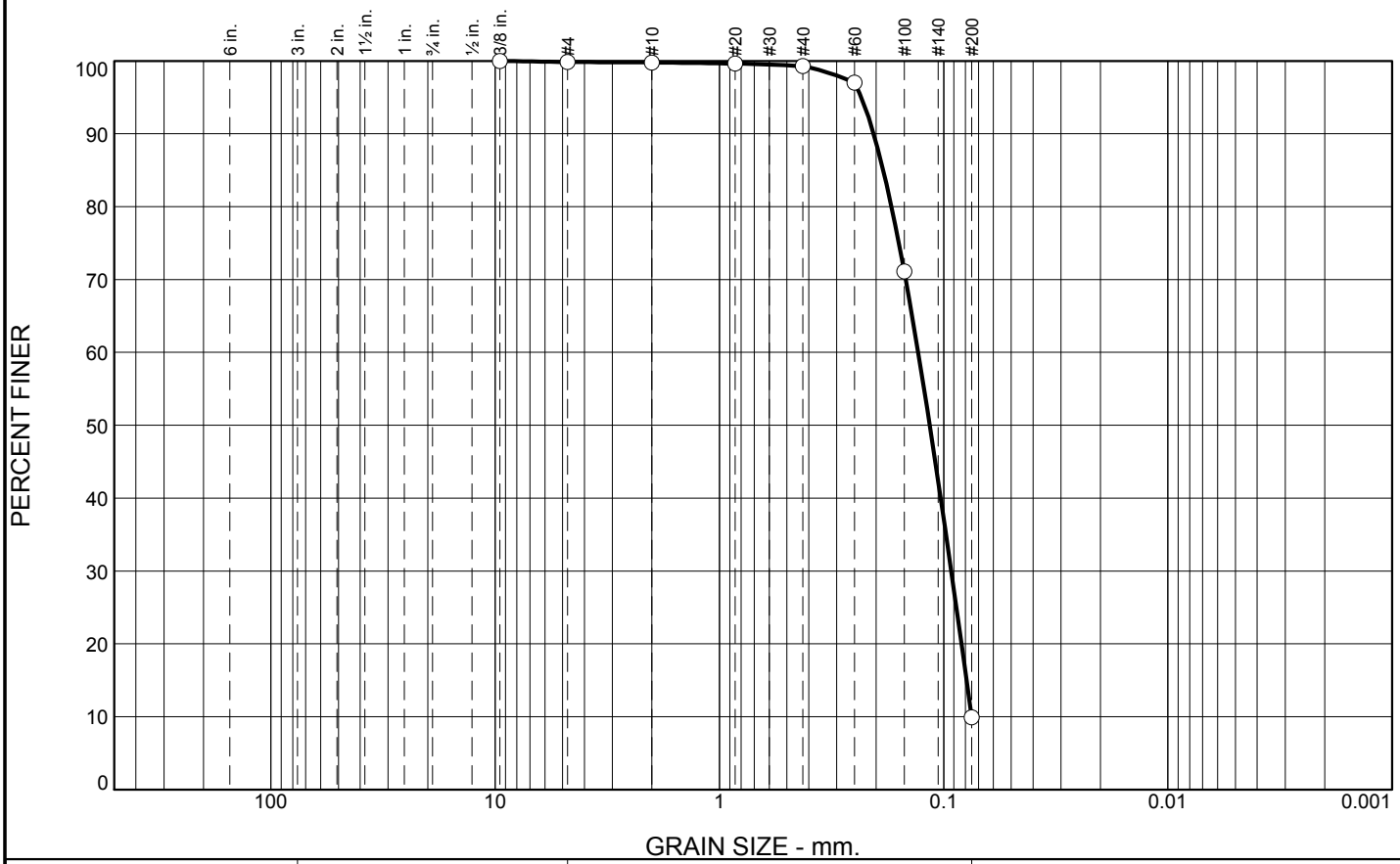
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.0 | 0.5 | 89.4 | 9.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.8 | | |
| #20 | 99.6 | | |
| #40 | 99.3 | | |
| #60 | 97.0 | | |
| #100 | 71.1 | | |
| #200 | 9.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2053 $D_{85}$= 0.1861 $D_{60}$= 0.1299
$D_{50}$= 0.1154 $D_{30}$= 0.0926 $D_{15}$= 0.0791
$D_{10}$= 0.0751 $C_u$= 1.73 $C_c$= 0.88

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-8-10C
**Sample Number:** TE Lab ID: 4519.06 **Depth:** 10.5 - 12.4 (ft.) **Date:** 6/12/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-DK-09-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | | | |
|---|---|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Dog Keys Pass | | 9. SIZE AND TYPE OF BIT N/A | |
| | | 10. COORDINATE SYSTEM/DATUM<br>State Plane, MSE (U.S. Ft.) | HORIZONTAL<br>NAD83 / VERTICAL<br>NAVD88 |
| 2. BORING DESIGNATION<br>BI-DK-09-10 | LOCATION COORDINATES<br>E = 997,109 N = 261,105 | 11. MANUFACTURER'S DESIGNATION OF DRILL<br>Vibracore | ☐ AUTO HAMMER<br>☐ MANUAL HAMMER |
| 3. DRILLING AGENCY<br>Corps of Engineers - CESAM | CONTRACTOR FILE NO. | 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER<br>Construction Solutions International, Inc. | | 13. TOTAL NUMBER CORE BOXES | |
| 5. DIRECTION OF BORING<br>☒ VERTICAL<br>☐ INCLINED | DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 31 Ft. | |
| | | 15. DATE BORING | STARTED 06-02-10 / COMPLETED 06-02-10 |
| 6. THICKNESS OF OVERBURDEN N/A | | 16. ELEVATION TOP OF BORING -29.8 Ft. | |
| 7. DEPTH DRILLED INTO ROCK N/A | | 17. TOTAL RECOVERY FOR BORING 100% | |
| 8. TOTAL DEPTH OF BORING 17.9 Ft. | | 18. SIGNATURE AND TITLE OF INSPECTOR<br>Marty Gates, Geologist | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.8 | 0.0 | | | | |
| -32.6 | 2.8 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1257 mm % Fines: 9.8 |
| -47.7 | 17.9 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

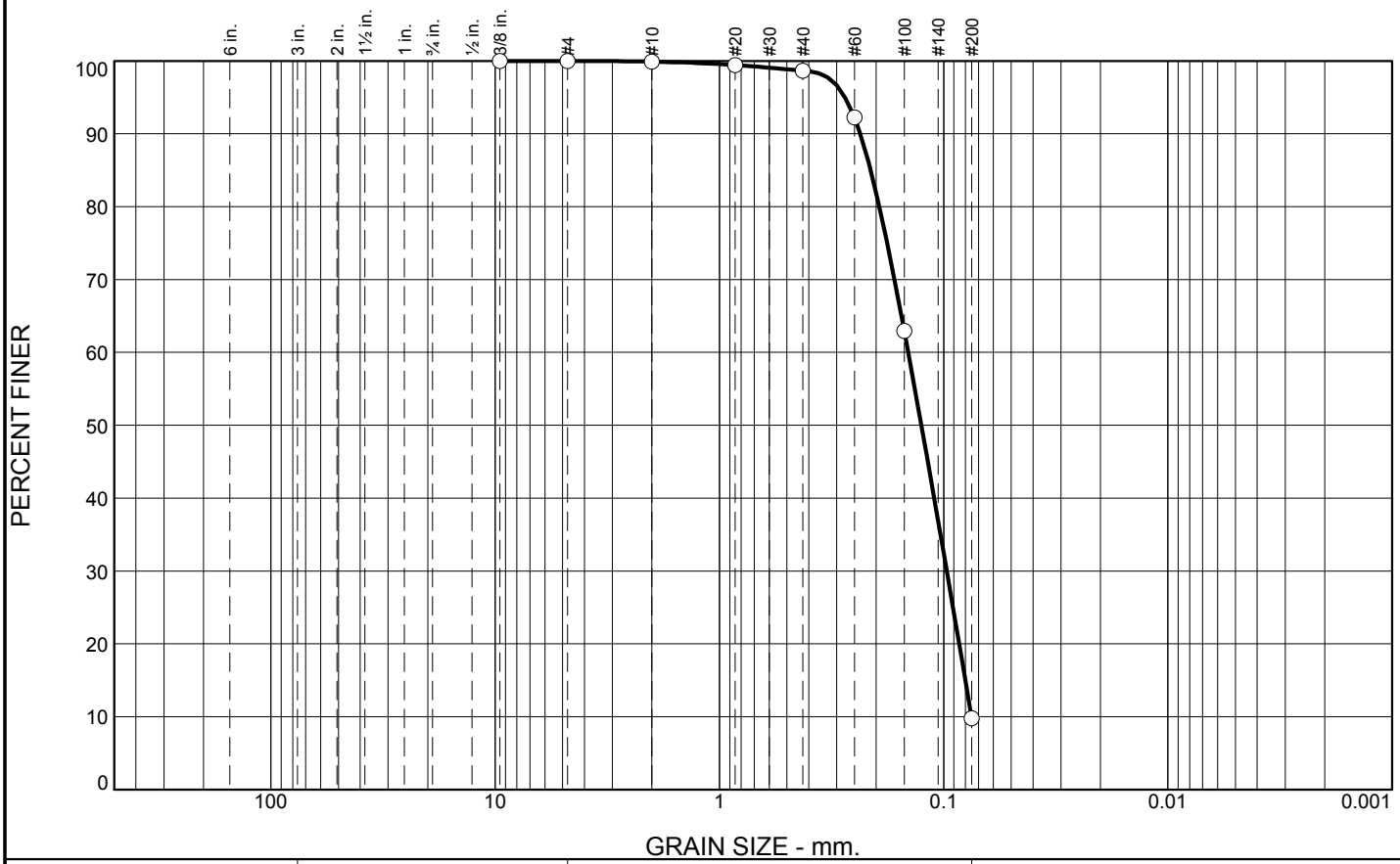
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21798° Long = -88.79262°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.2 | 88.9 | 9.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.4 | | |
| #40 | 98.7 | | |
| #60 | 92.2 | | |
| #100 | 63.0 | | |
| #200 | 9.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2356 $D_{85}$= 0.2118 $D_{60}$= 0.1440
$D_{50}$= 0.1257 $D_{30}$= 0.0969 $D_{15}$= 0.0801
$D_{10}$= 0.0752 $C_u$= 1.92 $C_c$= 0.87

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-9-10BA
**Sample Number:** TE Lab ID: 4519.03 **Depth:** 0.0 - 2.8 (ft.) **Date:** 6/12/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-DK-10-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-10-10 — LOCATION COORDINATES: E = 1,000,390 N = 263,463 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 13 Ft. |
| | 15. DATE BORING — STARTED: 06-08-10 — COMPLETED: 06-08-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -11.1 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 13.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -11.1 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace organic matter, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2376 mm % Fines: 1.7 |
| | | | | B | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.1972 mm % Fines: 3.9 |
| -25.0 | 13.9 | | | C | Classification: SP-SM Color: 5Y 7/1-light gray<br>D50: 0.1844 mm % Fines: 5.9 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

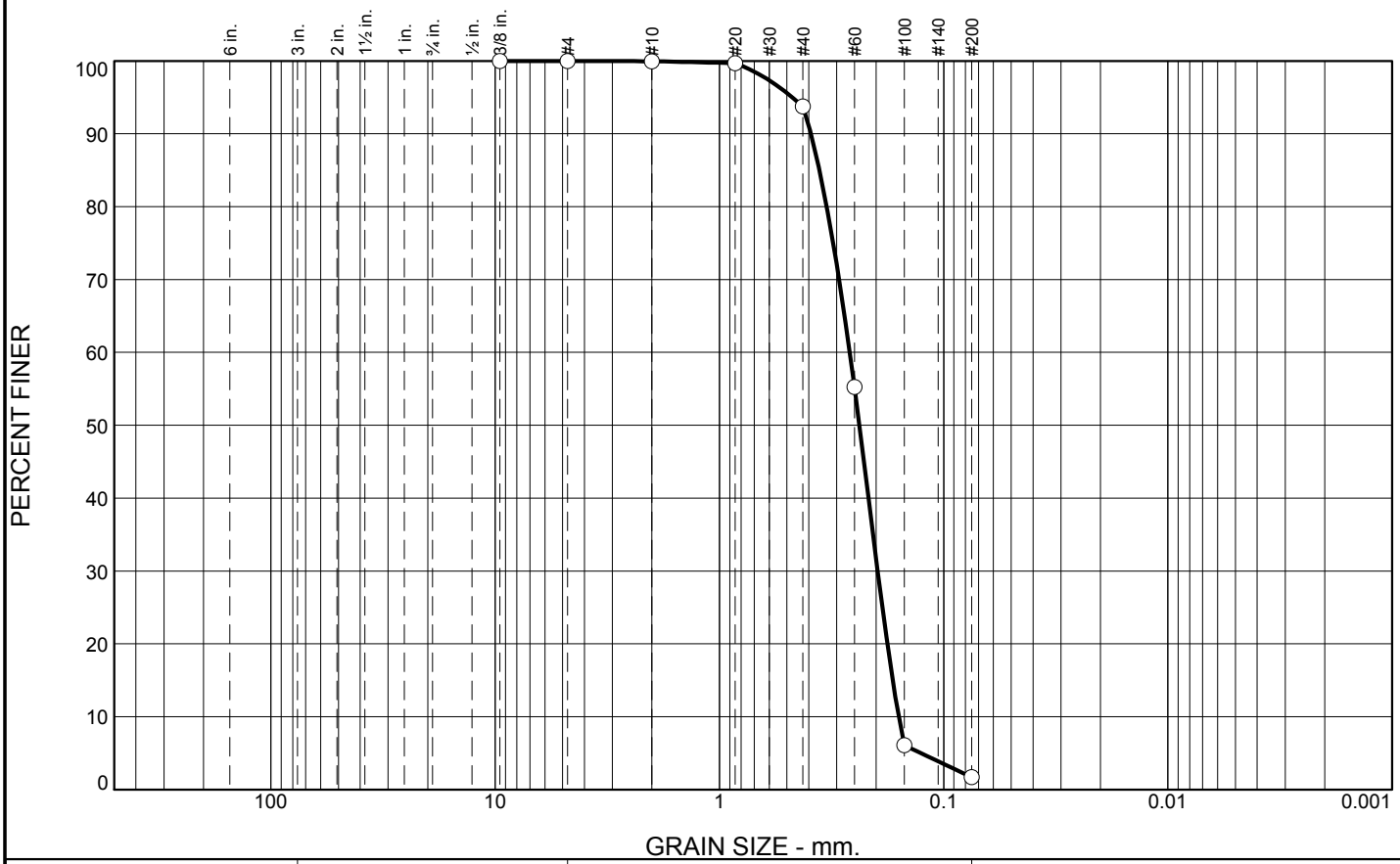
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22446° Long = -88.78223°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 6.2 | 92.0 | 1.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 93.7 | | |
| #60 | 55.3 | | |
| #100 | 6.1 | | |
| #200 | 1.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3912 $D_{85}$= 0.3581 $D_{60}$= 0.2623
$D_{50}$= 0.2376 $D_{30}$= 0.1970 $D_{15}$= 0.1688
$D_{10}$= 0.1587 $C_u$= 1.65 $C_c$= 0.93

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

This sample is actually BI-DK-10-10A

**Location:** USACE Sample # BI-DK-11-10A
**Sample Number:** TE Lab ID: 4538.66 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/26/10

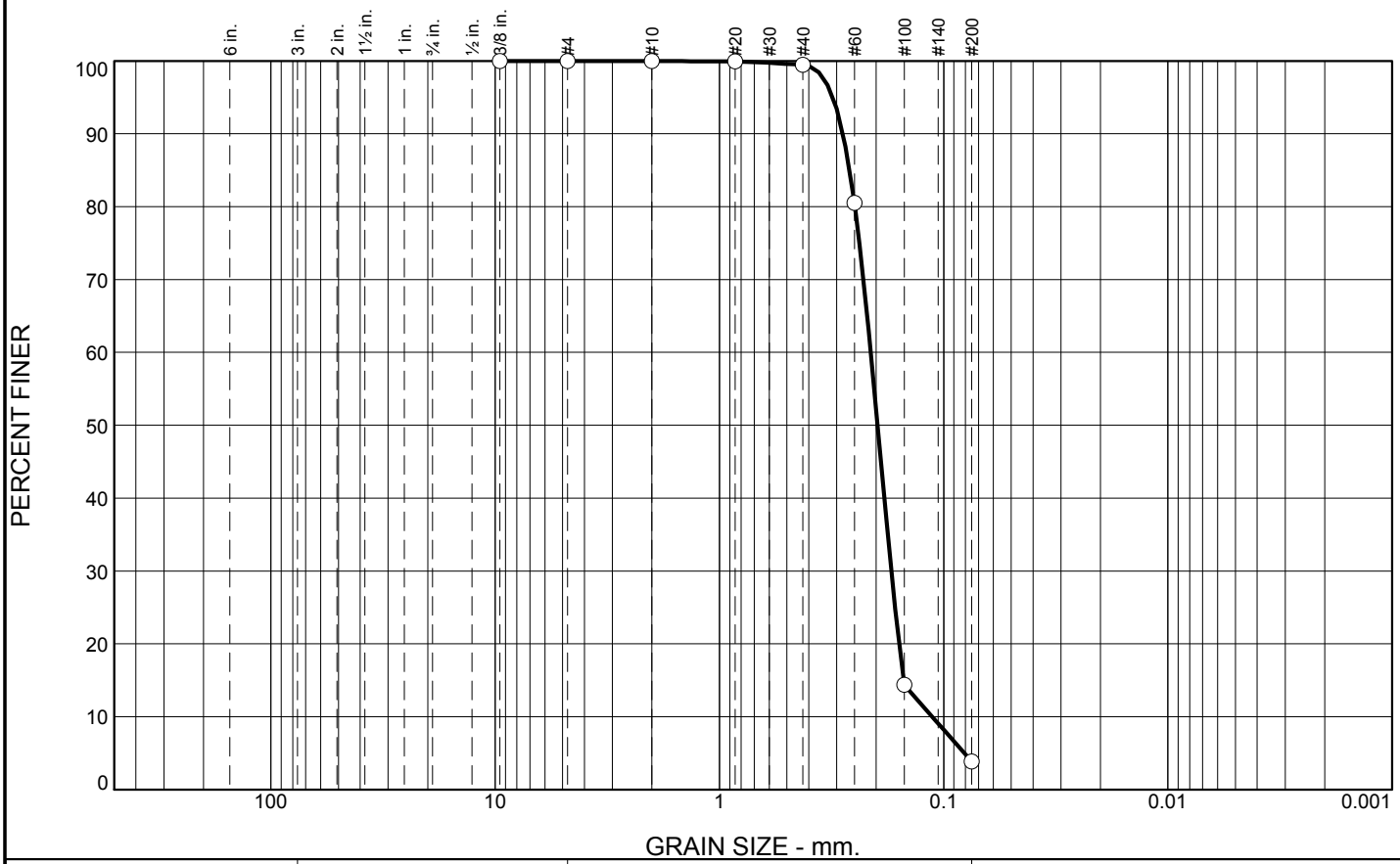
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 95.5 | 3.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 99.4 | | |
| #60 | 80.5 | | |
| #100 | 14.4 | | |
| #200 | 3.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2814 $D_{85}$= 0.2626 $D_{60}$= 0.2115
$D_{50}$= 0.1972 $D_{30}$= 0.1712 $D_{15}$= 0.1510
$D_{10}$= 0.1125 $C_u$= 1.88 $C_c$= 1.23

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

This sample is actually BI-DK-10-10B

**Location:** USACE Sample # BI-DK-11-10B
**Sample Number:** TE Lab ID: 4538.67 **Depth:** 5.0 - 10.0 (ft.) **Date:** 6/26/10

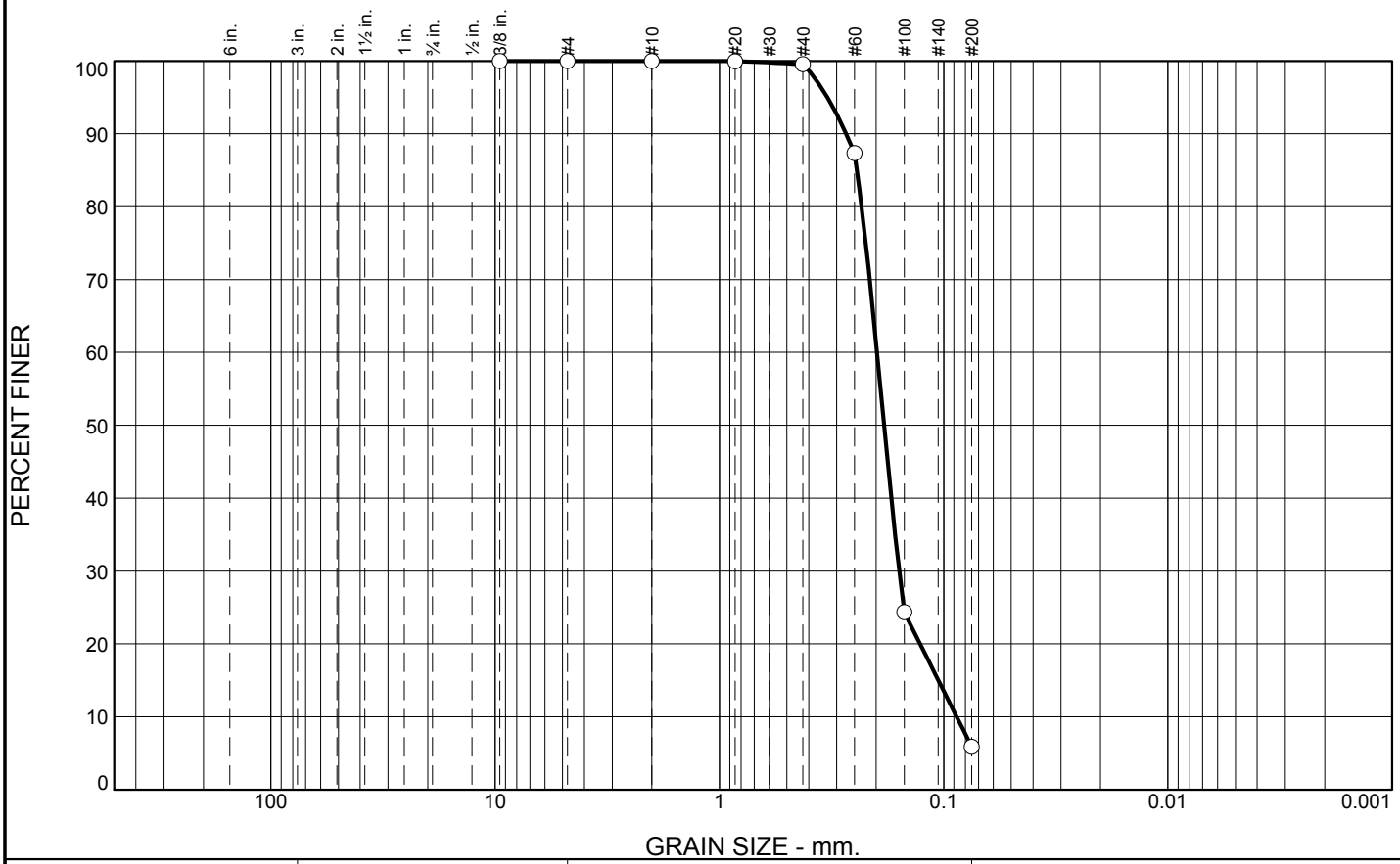
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 93.6 | 5.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 100.0 | | |
| #40 | 99.5 | | |
| #60 | 87.3 | | |
| #100 | 24.4 | | |
| #200 | 5.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2723 $D_{85}$= 0.2437 $D_{60}$= 0.1983
$D_{50}$= 0.1844 $D_{30}$= 0.1580 $D_{15}$= 0.1056
$D_{10}$= 0.0876 $C_u$= 2.26 $C_c$= 1.44

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

This sample is actually BI-DK-10-10C

**Location:** USACE Sample # BI-DK-11-10C
**Sample Number:** TE Lab ID: 4538.68 **Depth:** 10.0 - 13.9 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

Boring Designation BI-DK-11-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Dog Keys Pass |
| 2. BORING DESIGNATION | BI-DK-11-10 |
| LOCATION COORDINATES | E = 1,000,308 N = 262,186 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 8.6 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 2 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 12.5 Ft. |
| 15. DATE BORING | STARTED 06-08-10 / COMPLETED 06-08-10 |
| 16. ELEVATION TOP OF BORING | -10.9 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -10.9 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace organic matter, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.1633 mm % Fines: 4.1 |
| | | | | B | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.1863 mm % Fines: 3.3 |
| -19.5 | 8.6 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

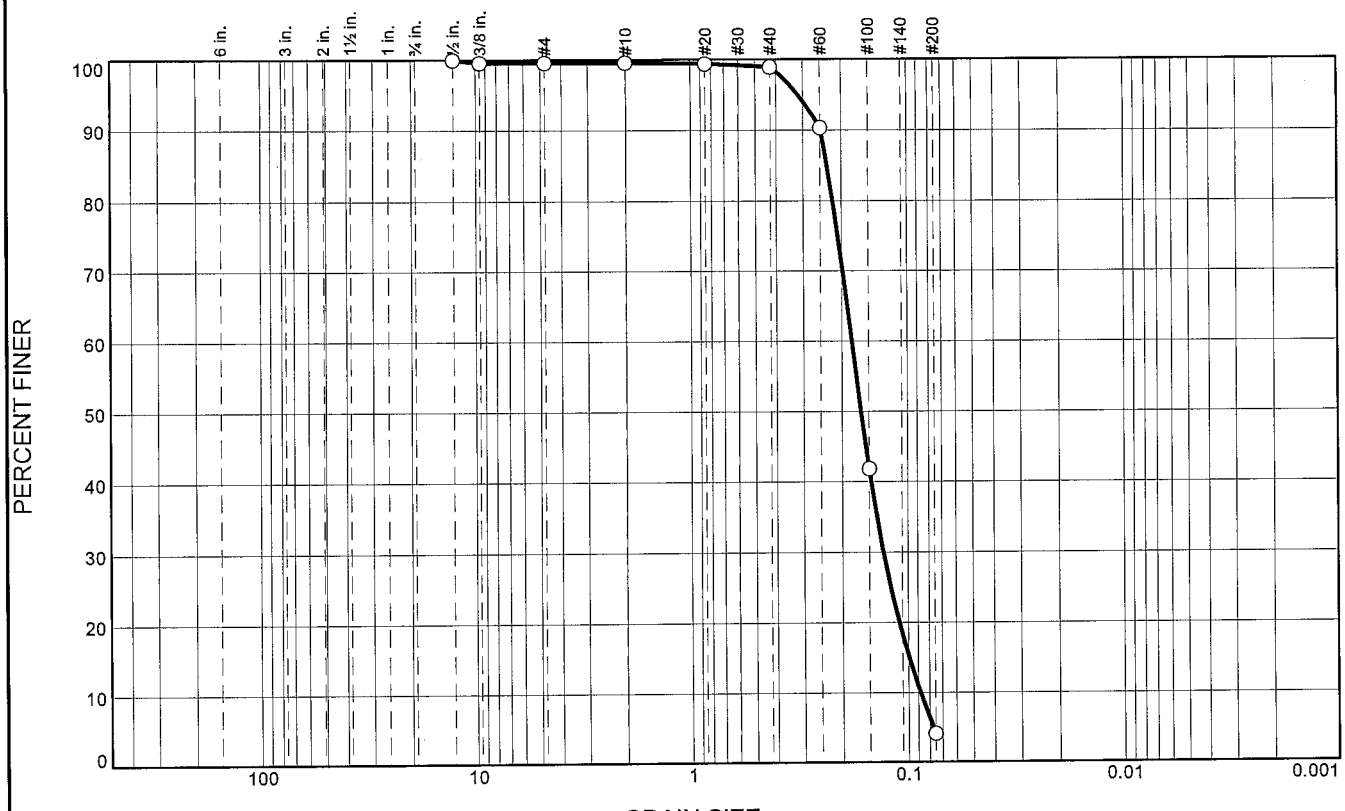
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22095° Long = -88.78249°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.0 | 0.6 | 94.8 | 4.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.5 | | |
| #4 | 99.5 | | |
| #10 | 99.5 | | |
| #20 | 99.4 | | |
| #40 | 98.9 | | |
| #60 | 90.3 | | |
| #100 | 41.8 | | |
| #200 | 4.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2487 $D_{85}$= 0.2321 $D_{60}$= 0.1797
$D_{50}$= 0.1633 $D_{30}$= 0.1295 $D_{15}$= 0.0991
$D_{10}$= 0.0879 $C_u$= 2.04 $C_c$= 1.06

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = VH10D965

This sample is actually BI-DK-11-10A

**Location:** USACE Sample # BI-DK-10-10A
**Sample Number:** TE Lab ID: 4538.69 **Depth:** 0.0 - 4.3 (ft.) **Date:** 6/26/10

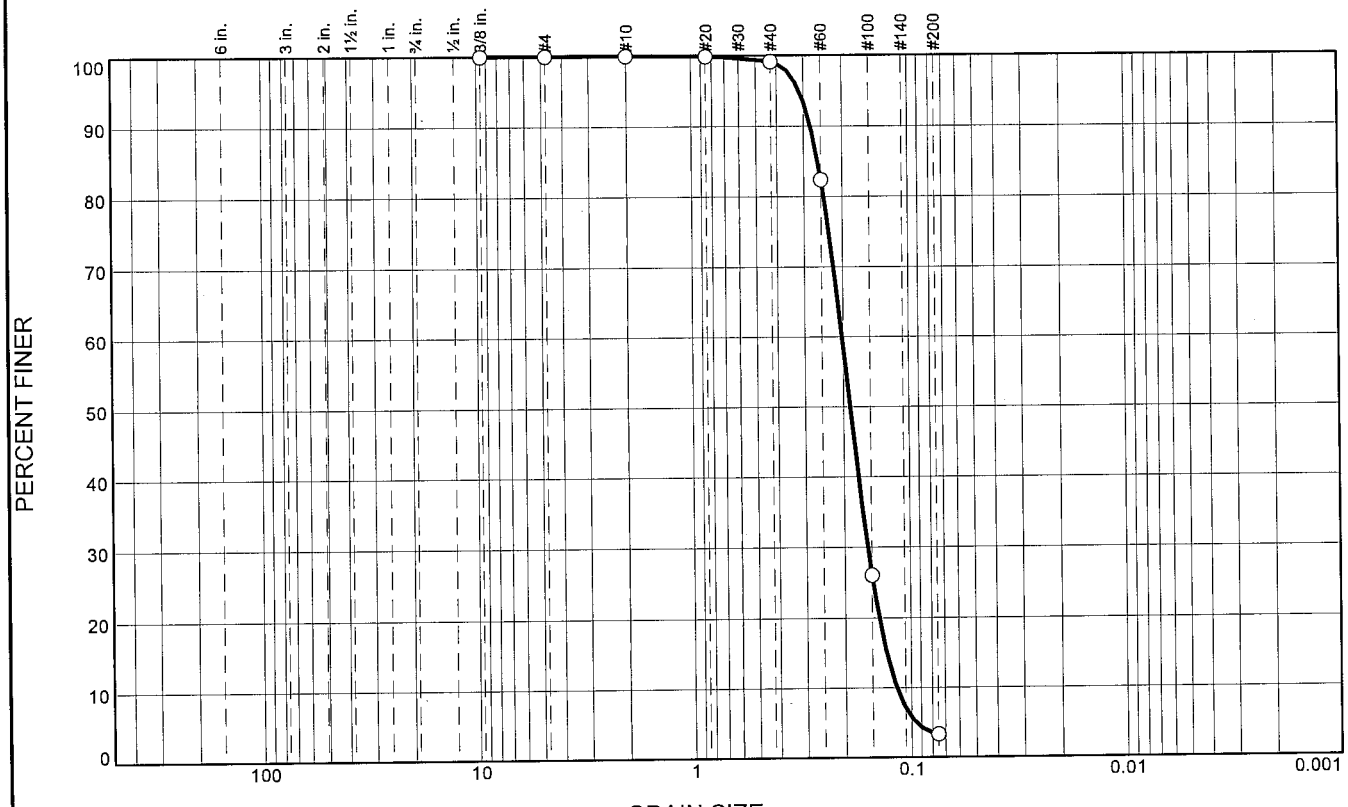
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 95.8 | 3.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 99.1 | | |
| #60 | 82.4 | | |
| #100 | 26.0 | | |
| #200 | 3.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2795 $D_{85}$= 0.2585 $D_{60}$= 0.2023
$D_{50}$= 0.1863 $D_{30}$= 0.1563 $D_{15}$= 0.1292
$D_{10}$= 0.1164 $C_u$= 1.74 $C_c$= 1.04

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

This sample is actually BI-DK-11-10B

**Location:** USACE Sample # BI-DK-10-10B
**Sample Number:** TE Lab ID: 4538.03 **Depth:** 4.3 - 8.6 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-DK-12-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-12-10 — LOCATION COORDINATES: E = 1,013,396 N = 262,823 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 0 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 30 Ft. |
| | 15. DATE BORING — STARTED: 06-07-10 — COMPLETED: 06-07-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.0 | 0.0 | | | | |
| -43.2 | 14.2 | | CLAY, lean, dark gray (CL) | NS | |
| -45.2 | 16.2 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |
| -47.7 | 18.7 | | CLAY, lean, dark gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22268° Long = -88.74105°**

**Boring Designation BI-DK-13-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-13-10 — LOCATION COORDINATES: E = 995,412 N = 264,868 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 13 Ft. |
| | 15. DATE BORING — STARTED: 06-07-10 — COMPLETED: 06-07-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -12.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 12.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -12.5 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2361 mm % Fines: 2 |
| | | | | B | Classification: SM Color: 5Y 7/1-light gray<br>D50: 0.2167 mm % Fines: 13.4 |
| -23.1 | 10.6 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -25.0 | 12.5 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

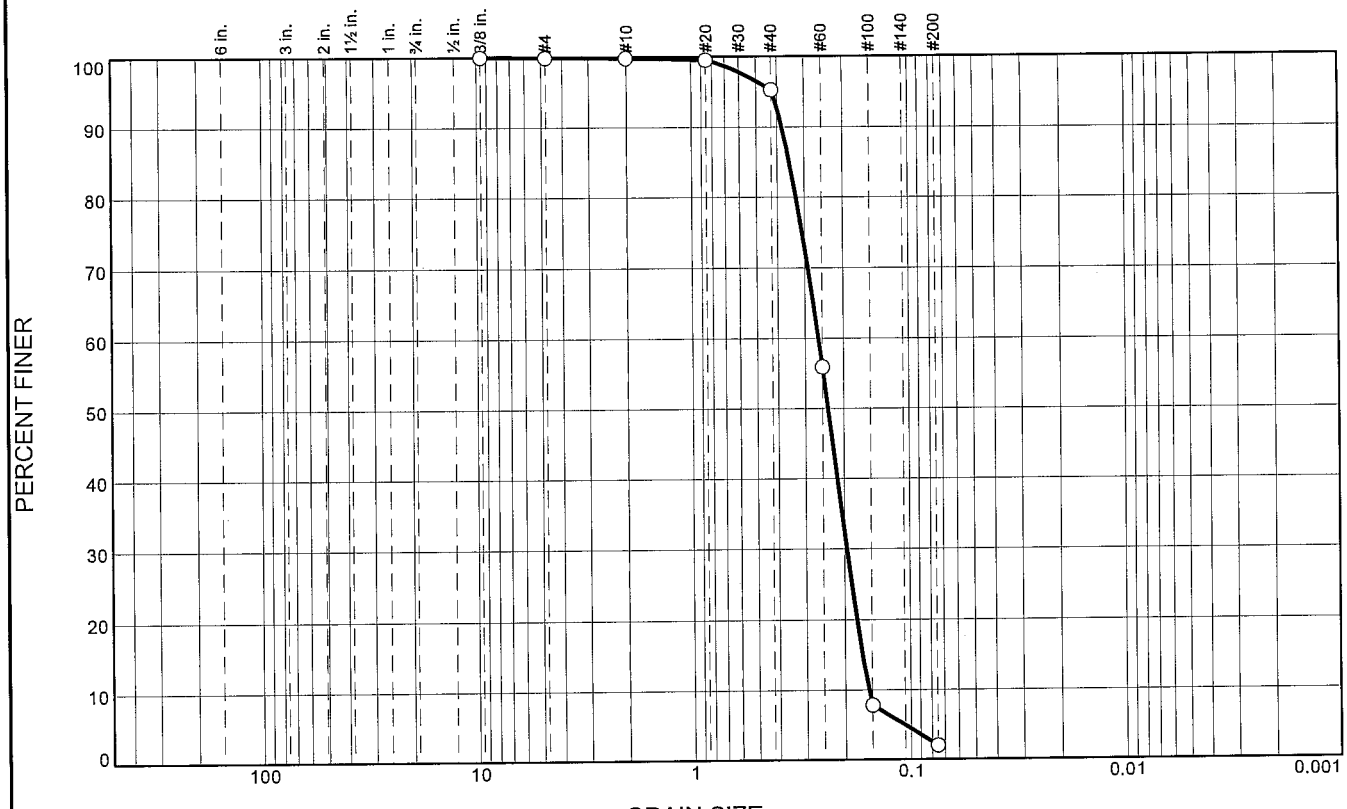
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22833° Long = -88.79799°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 4.6 | 93.2 | 2.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 99.5 | | |
| #40 | 95.2 | | |
| #60 | 55.9 | | |
| #100 | 7.8 | | |
| #200 | 2.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3810 $D_{85}$= 0.3513 $D_{60}$= 0.2605
$D_{50}$= 0.2361 $D_{30}$= 0.1950 $D_{15}$= 0.1658
$D_{10}$= 0.1551 $C_u$= 1.68 $C_c$= 0.94

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-13-10A
**Sample Number:** TE Lab ID: 4538.63 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/26/10

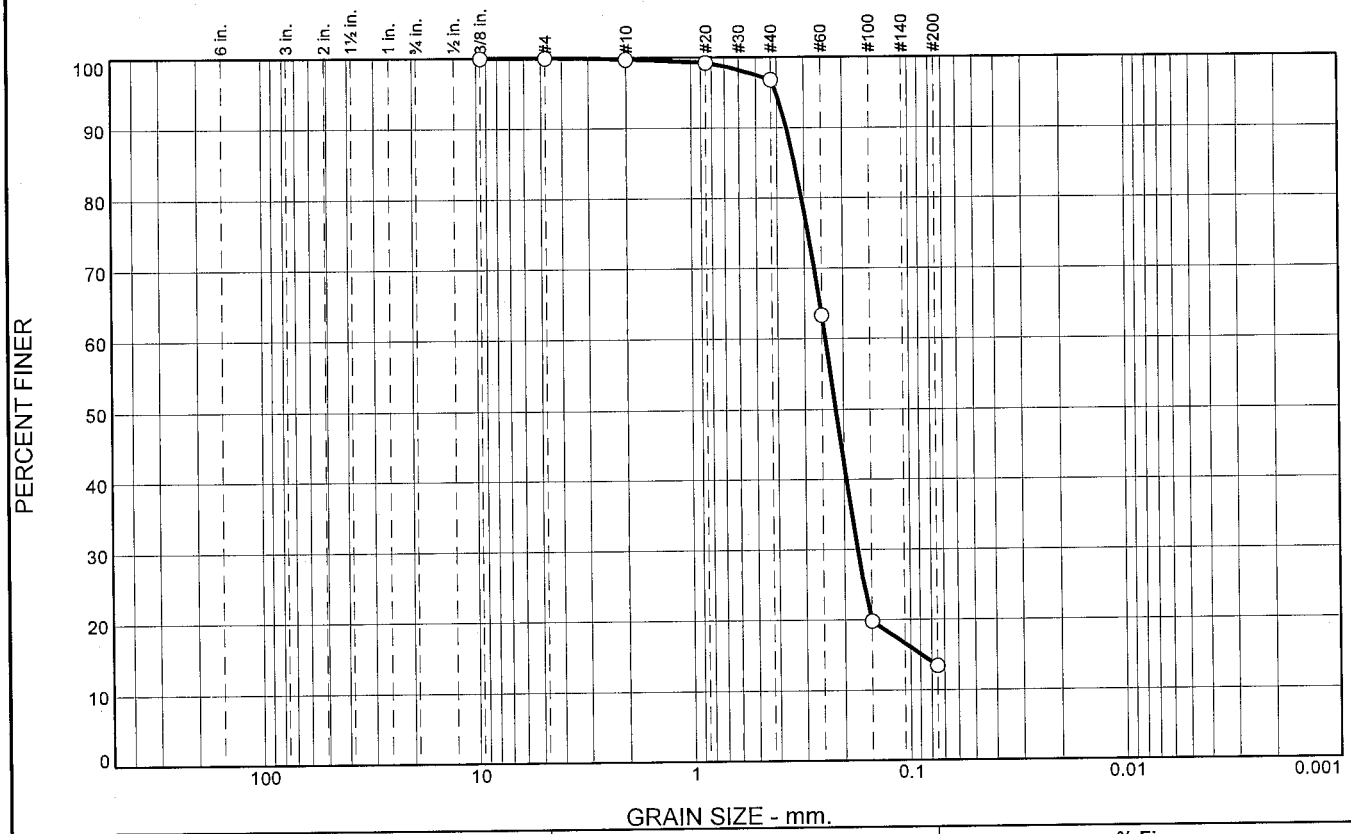
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 2.9 | 83.5 | 13.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.3 | | |
| #40 | 96.9 | | |
| #60 | 63.3 | | |
| #100 | 19.8 | | |
| #200 | 13.4 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3617 $D_{85}$= 0.3317 $D_{60}$= 0.2410
$D_{50}$= 0.2167 $D_{30}$= 0.1736 $D_{15}$= 0.0893
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-13-10B
**Sample Number:** TE Lab ID: 4538.02 **Depth:** 5.0 - 10.6 (ft.) **Date:** 6/19/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-DK-14-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-14-10 — LOCATION COORDINATES: E = 999,546 N = 264,597 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 15.5 Ft. |
| | 15. DATE BORING — STARTED: 06-07-10 — COMPLETED: 06-07-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -14.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

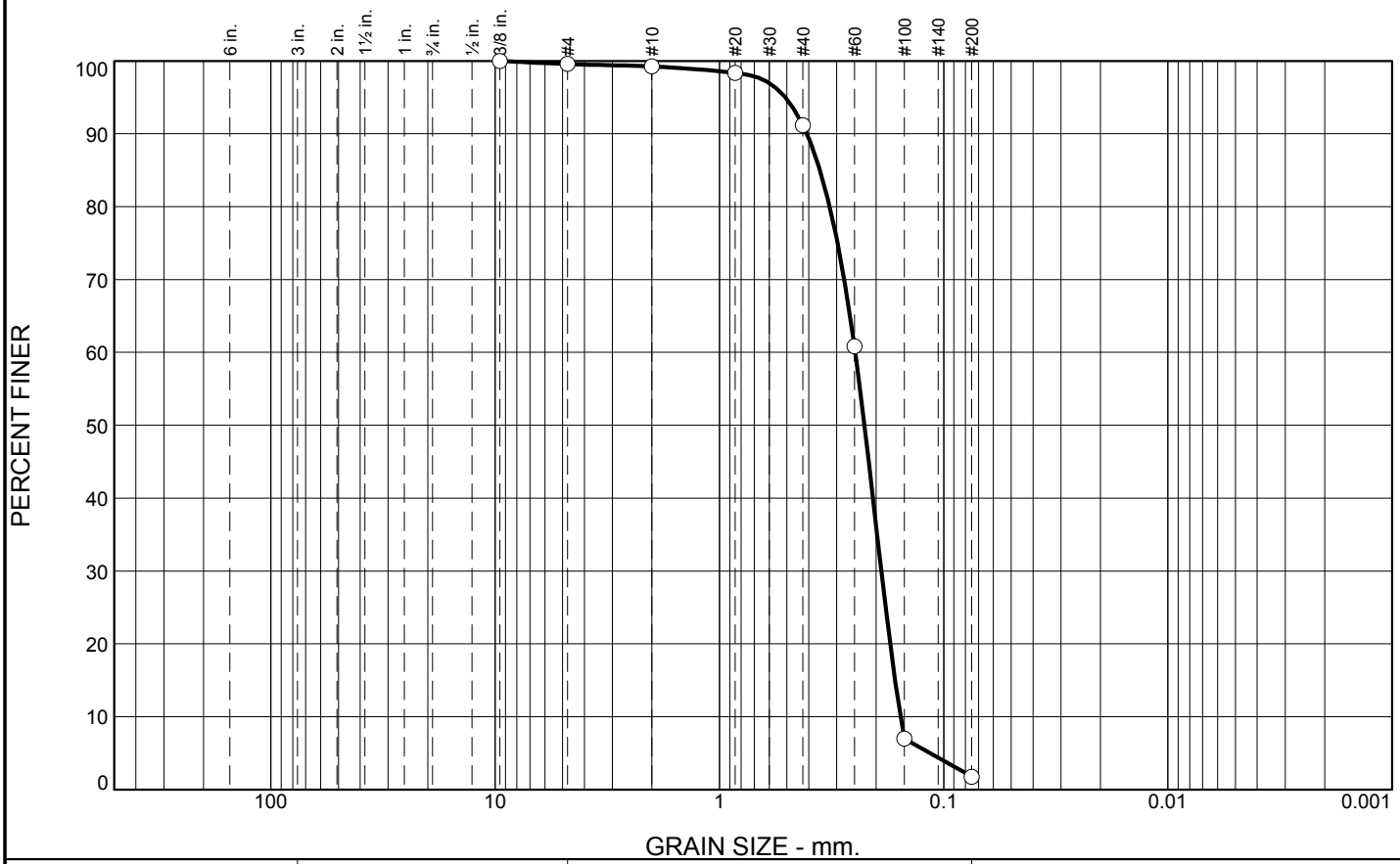
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -14.9 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2256 mm % Fines: 1.8 |
| | | | | B | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.2119 mm % Fines: 3.1 |
| -22.9 | 8.0 | | | | |
| | | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, gray (SM) | C | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.156 mm % Fines: 15.4 |
| -26.3 | 11.4 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -32.0 | 17.1 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22758° Long = -88.7849°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.4 | 8.0 | 89.4 | 1.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.2 | | |
| #20 | 98.3 | | |
| #40 | 91.2 | | |
| #60 | 60.8 | | |
| #100 | 7.0 | | |
| #200 | 1.8 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4080 $D_{85}$= 0.3563 $D_{60}$= 0.2479
$D_{50}$= 0.2256 $D_{30}$= 0.1897 $D_{15}$= 0.1648
$D_{10}$= 0.1559 $C_u$= 1.59 $C_c$= 0.93

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-14-10A
**Sample Number:** TE Lab ID: 4538.60 **Depth:** 0.0 - 4.0 (ft.) **Date:** 6/26/10

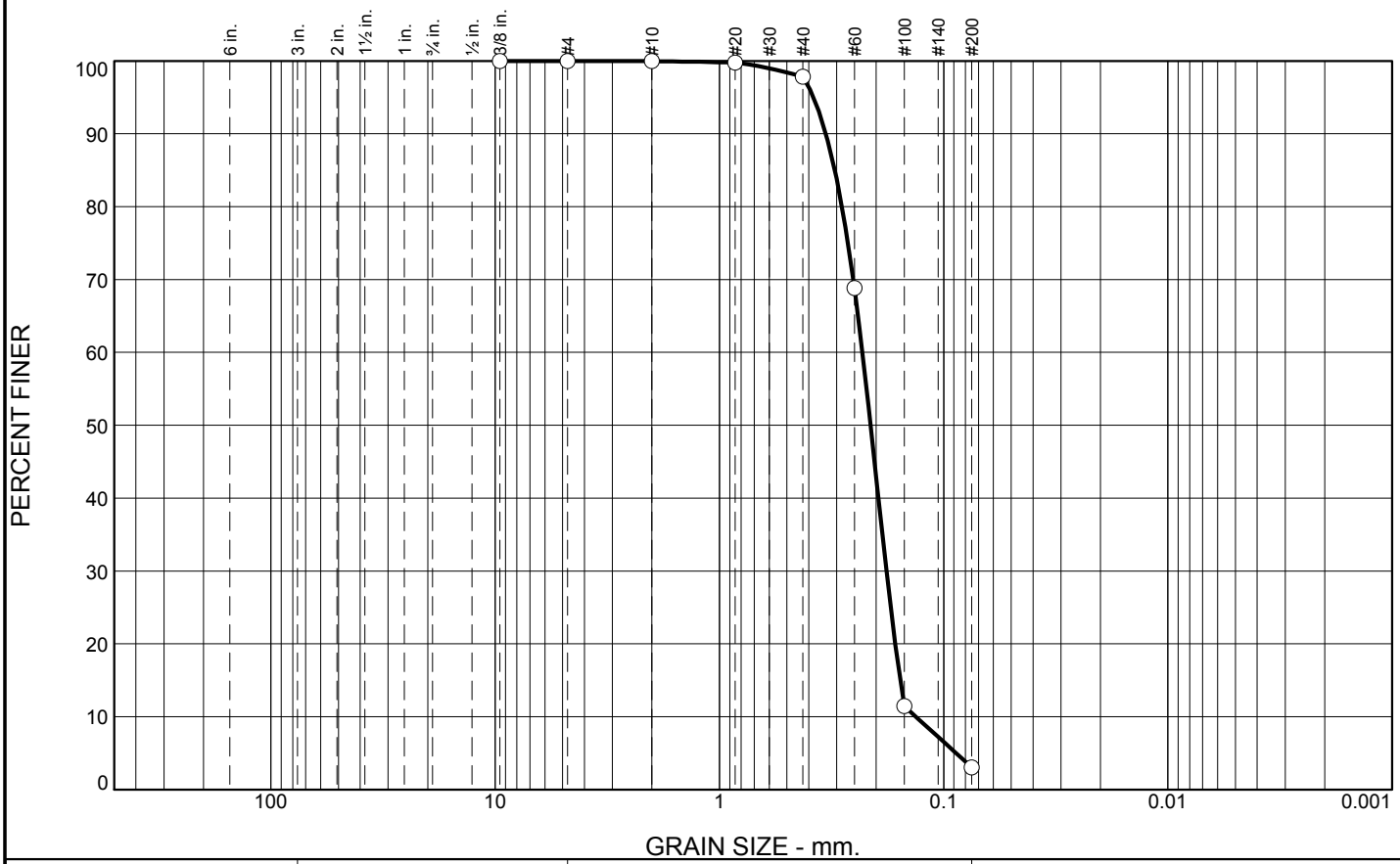
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 2.2 | 94.7 | 3.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.8 | | |
| #40 | 97.8 | | |
| #60 | 68.8 | | |
| #100 | 11.5 | | |
| #200 | 3.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3351 $D_{85}$= 0.3057 $D_{60}$= 0.2304
$D_{50}$= 0.2119 $D_{30}$= 0.1800 $D_{15}$= 0.1563
$D_{10}$= 0.1330 $C_u$= 1.73 $C_c$= 1.06

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-14-10B
**Sample Number:** TE Lab ID: 4538.61 **Depth:** 4.0 - 8.0 (ft.) **Date:** 6/26/10

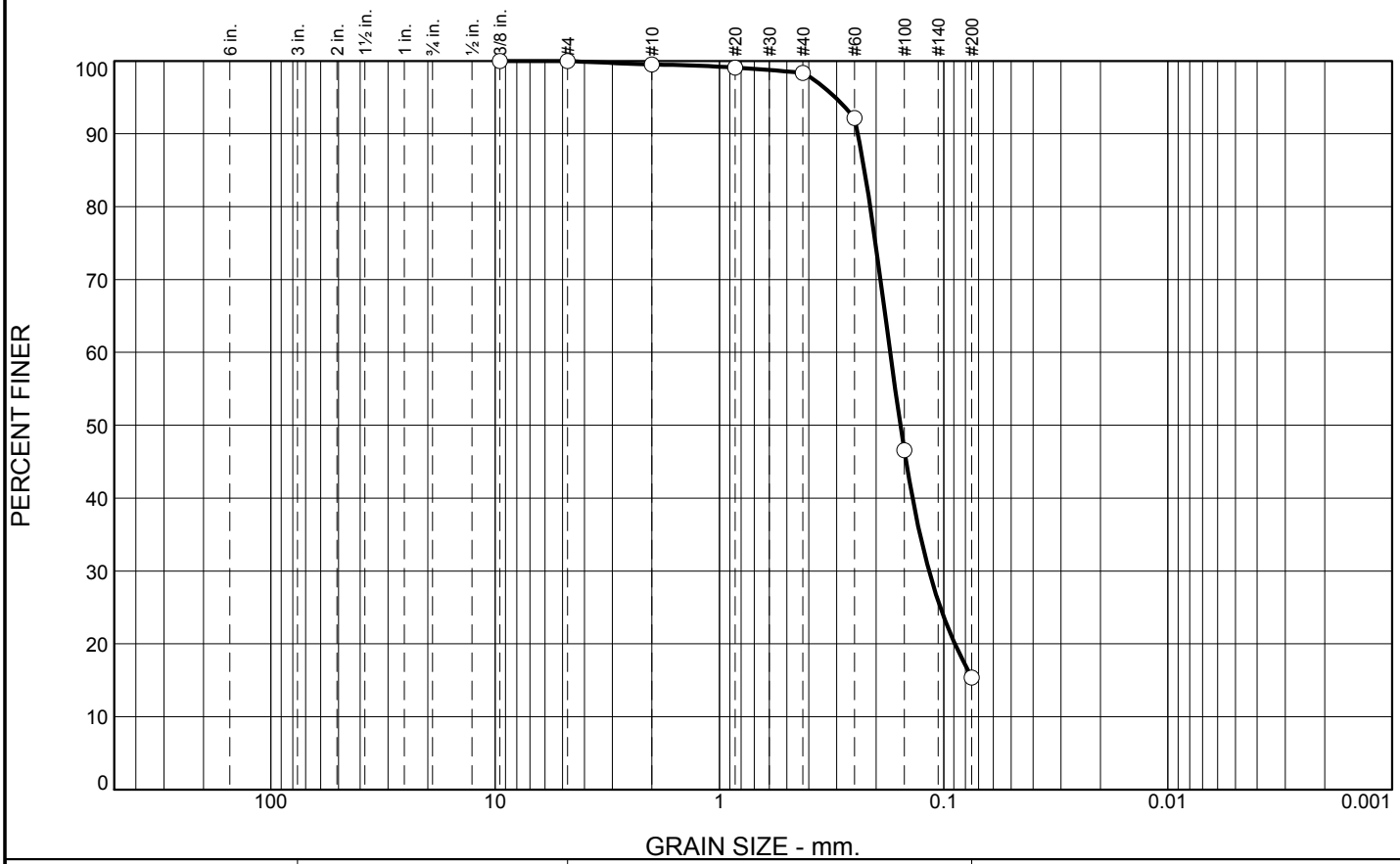
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.5 | 1.2 | 82.9 | 15.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.5 | | |
| #20 | 99.1 | | |
| #40 | 98.3 | | |
| #60 | 92.1 | | |
| #100 | 46.6 | | |
| #200 | 15.4 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2414 $D_{85}$= 0.2256 $D_{60}$= 0.1733
$D_{50}$= 0.1560 $D_{30}$= 0.1162 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-14-10C
**Sample Number:** TE Lab ID: 4538.62 **Depth:** 8.0 - 11.4 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-DK-15-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-15-10 — LOCATION COORDINATES: E = 1,002,458 N = 264,609 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 15 Ft. |
| | 15. DATE BORING — STARTED: 06-07-10 — COMPLETED: 06-07-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -14.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 14.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

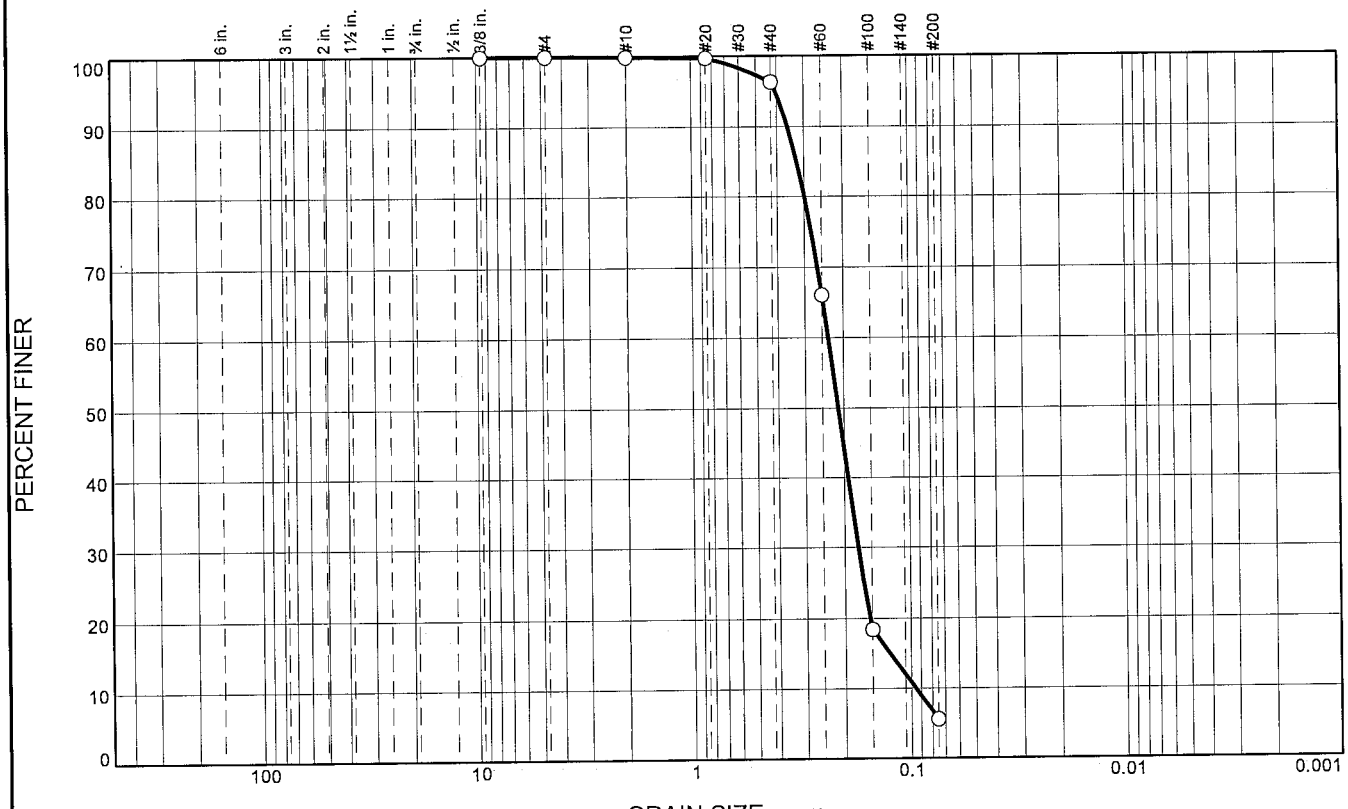
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -14.3 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace organic matter, lt. gray (SP) | A | Classification: SP-SM Color: 5Y 7/1-light gray<br>D50: 0.2119 mm % Fines: 5.6 |
| | | | | B | Classification: SP-SM Color: 5Y 7/1-light gray<br>D50: 0.1869 mm % Fines: 5.9 |
| -22.5 | 8.2 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -28.4 | 14.1 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22761° Long = -88.77568°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 3.6 | 90.7 | 5.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.7 | | |
| #40 | 96.3 | | |
| #60 | 66.0 | | |
| #100 | 18.4 | | |
| #200 | 5.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3573 $D_{85}$= 0.3243 $D_{60}$= 0.2343
$D_{50}$= 0.2119 $D_{30}$= 0.1731 $D_{15}$= 0.1246
$D_{10}$= 0.0951 $C_u$= 2.46 $C_c$= 1.34

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-15-10A
**Sample Number:** TE Lab ID: 4538.01 **Depth:** 0.0 - 4.0 (ft.) **Date:** 6/19/10

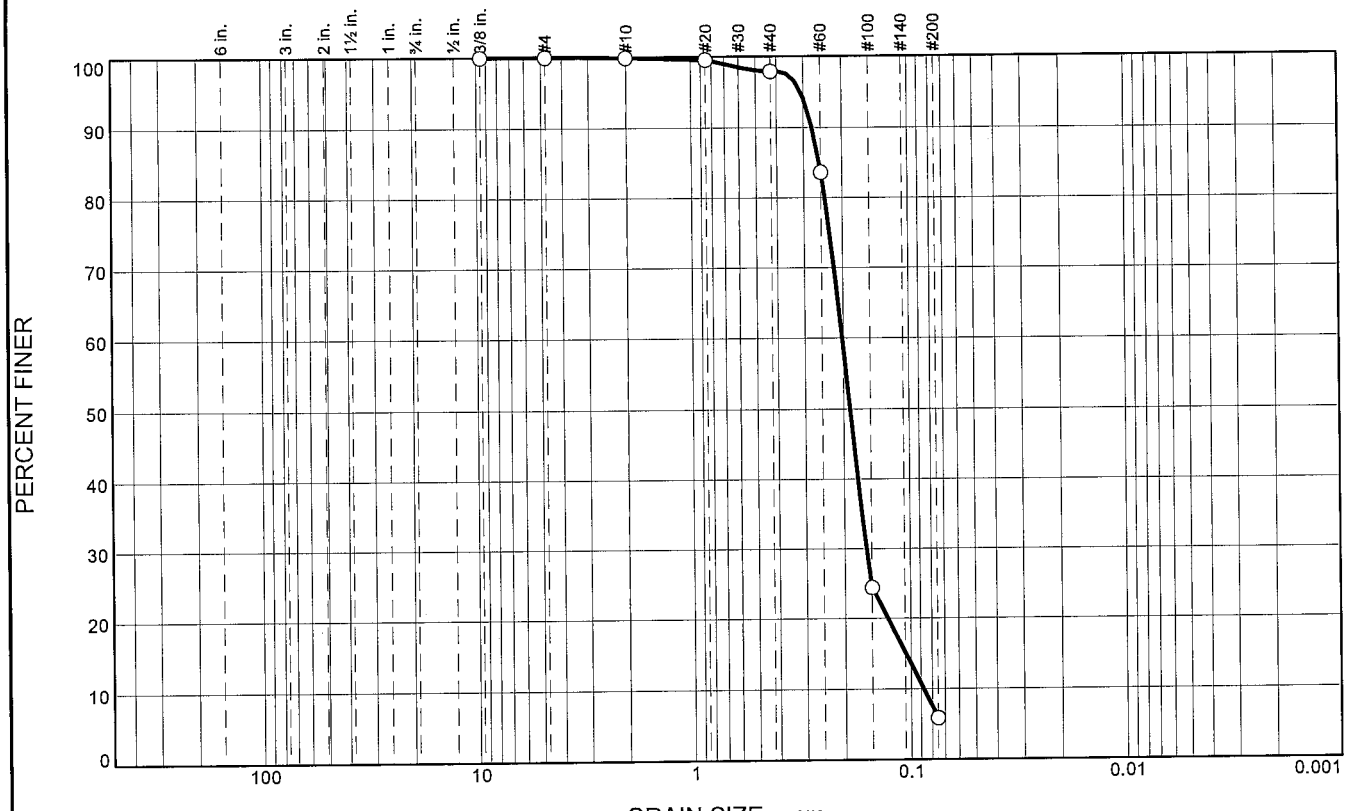
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.0 | 92.0 | 5.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 97.9 | | |
| #60 | 83.6 | | |
| #100 | 24.4 | | |
| #200 | 5.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2741 $D_{85}$= 0.2545 $D_{60}$= 0.2020
$D_{50}$= 0.1869 $D_{30}$= 0.1585 $D_{15}$= 0.1055
$D_{10}$= 0.0875 $C_u$= 2.31 $C_c$= 1.42

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-15-10B
**Sample Number:** TE Lab ID: 4538.59 **Depth:** 4.0 - 8.2 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-DK-16-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-16-10 — LOCATION COORDINATES: E = 982,530 N = 265,565 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 13 Ft. |
| | 15. DATE BORING — STARTED: 06-08-10 — COMPLETED: 06-08-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -11.6 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 14.3 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -11.6 | 0.0 | | | | |
| -16.8 | 5.2 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2467 mm % Fines: 2 |
| -20.6 | 9.0 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | B | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1741 mm % Fines: 10.5 |
| -21.2 | 9.6 | | CLAY, lean, dark gray (CL) | NS | |
| -22.8 | 11.2 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |
| -23.5 | 11.9 | | CLAY, lean, dark gray (CL) | | |
| -25.9 | 14.3 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments (SM) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

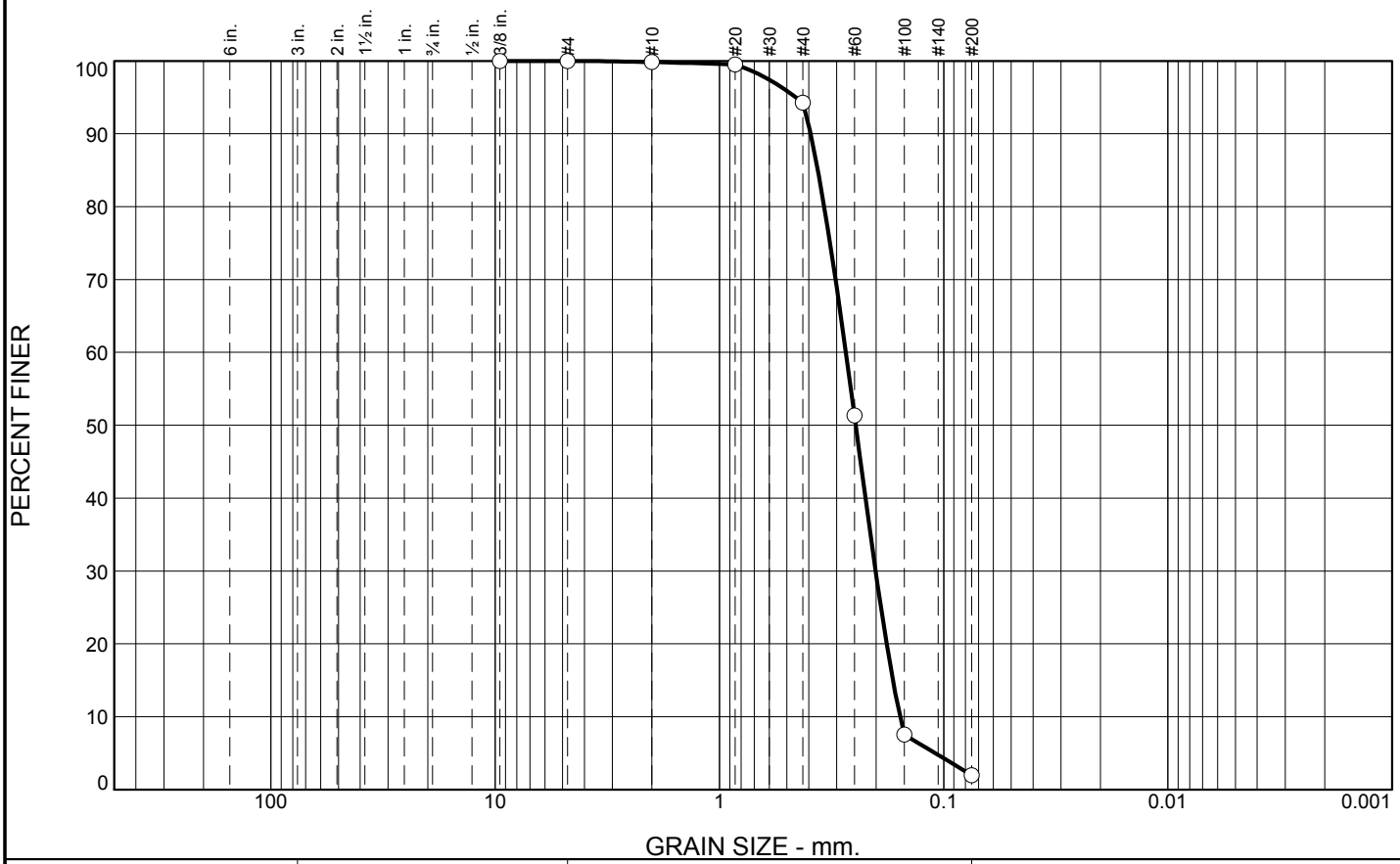
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.23025° Long = -88.83878°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 5.5 | 92.3 | 2.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.5 | | |
| #40 | 94.3 | | |
| #60 | 51.3 | | |
| #100 | 7.6 | | |
| #200 | 2.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3925 $D_{85}$= 0.3640 $D_{60}$= 0.2729
$D_{50}$= 0.2467 $D_{30}$= 0.2012 $D_{15}$= 0.1685
$D_{10}$= 0.1565 $C_u$= 1.74 $C_c$= 0.95

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-16-10A
**Sample Number:** TE Lab ID: 4538.70 **Depth:** 0.0 - 5.2 (ft.) **Date:** 6/26/10

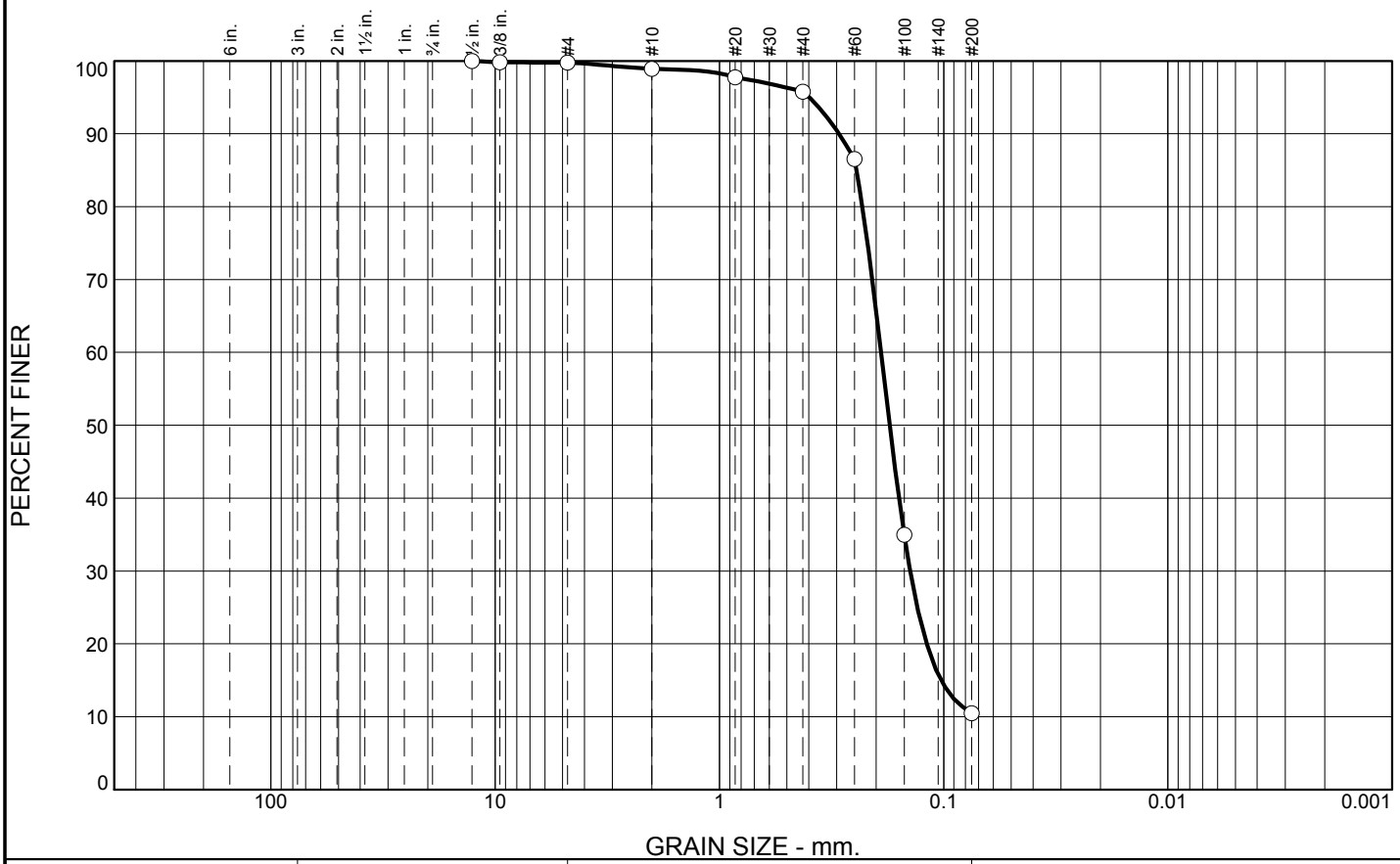
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.9 | 3.1 | 85.3 | 10.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.8 | | |
| #4 | 99.8 | | |
| #10 | 98.9 | | |
| #20 | 97.7 | | |
| #40 | 95.8 | | |
| #60 | 86.5 | | |
| #100 | 35.0 | | |
| #200 | 10.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2931 $D_{85}$= 0.2448 $D_{60}$= 0.1903
$D_{50}$= 0.1741 $D_{30}$= 0.1411 $D_{15}$= 0.1027
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-16-10B
**Sample Number:** TE Lab ID: 4538.71 **Depth:** 5.2 - 9.0 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-DK-17-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-17-10 — LOCATION COORDINATES: E = 984,605 N = 265,296 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 1 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 14 Ft. |
| | 15. DATE BORING — STARTED: 06-07-10 — COMPLETED: 06-07-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -13.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -13.7 | 0.0 | | | | |
| -18.7 | 5.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.212 mm % Fines: 2.6 |
| -19.9 | 6.2 | | CLAY, lean, dark gray (CL) | NS | |
| -21.1 | 7.4 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |
| -23.7 | 10.0 | | CLAY, lean, dark gray (CL) | | |
| -25.2 | 11.5 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |
| -28.2 | 14.5 | | CLAY, lean, dark gray (CL) | | |
| -30.1 | 16.4 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, gray (SM) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

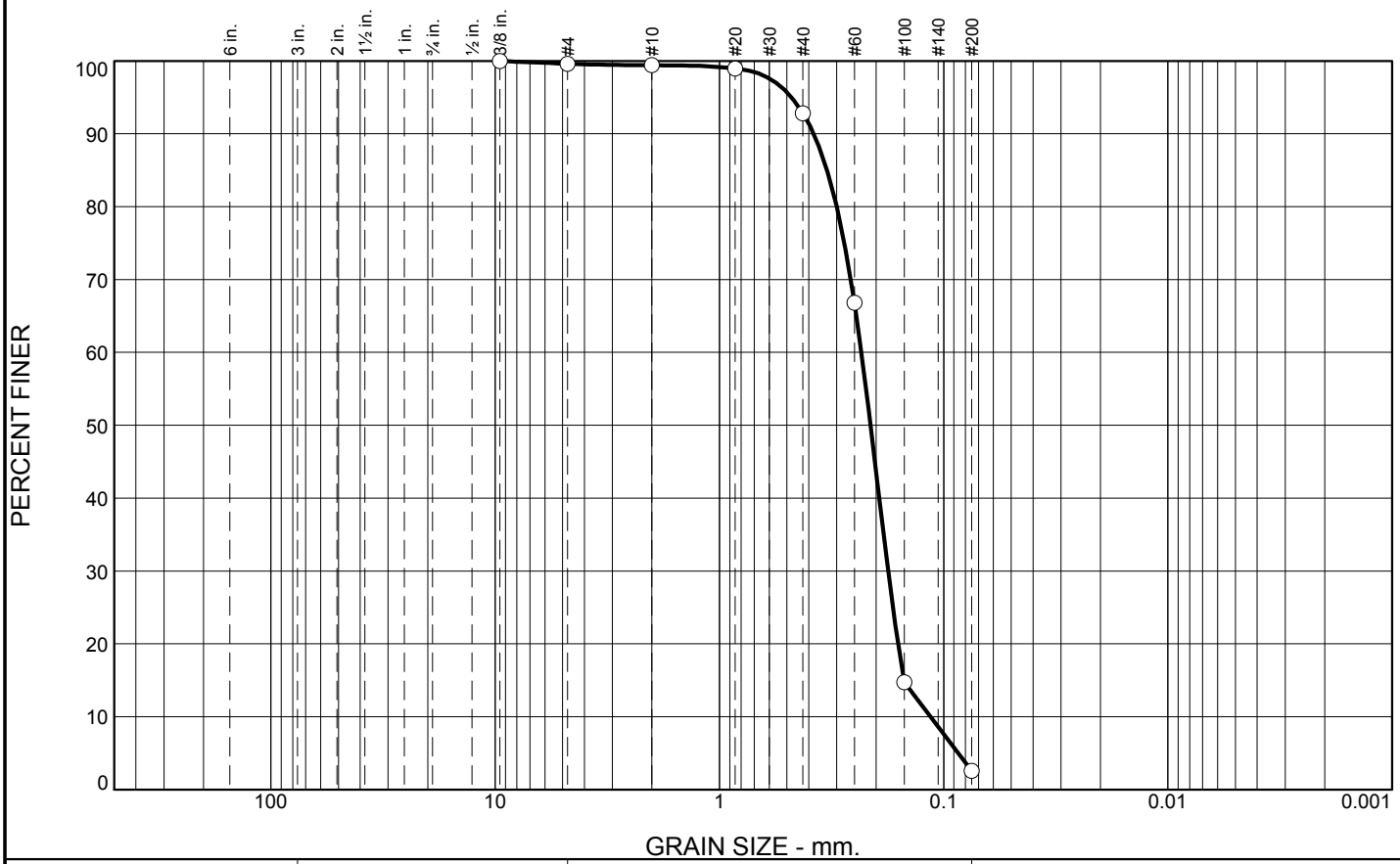
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22951° Long = -88.83221°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.2 | 6.6 | 90.2 | 2.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.4 | | |
| #20 | 98.9 | | |
| #40 | 92.8 | | |
| #60 | 66.8 | | |
| #100 | 14.7 | | |
| #200 | 2.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3802 $D_{85}$= 0.3312 $D_{60}$= 0.2328
$D_{50}$= 0.2120 $D_{30}$= 0.1768 $D_{15}$= 0.1505
$D_{10}$= 0.1145 $C_u$= 2.03 $C_c$= 1.17

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-17-10A
**Sample Number:** TE Lab ID: 4538.65 **Depth:** 0.0 - 5.0 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-DK-18-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-18-10 — LOCATION COORDINATES: E = 987,030 N = 265,299 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 15.5 Ft. |
| | 15. DATE BORING — STARTED: 06-07-10 — COMPLETED: 06-07-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -15.1 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 11.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -15.1 | 0.0 | | | | |
| -18.6 | 3.5 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.1944 mm % Fines: 2.9 |
| -22.1 | 7.0 | | CLAY, lean, dark gray (CL) | NS | |
| -23.5 | 8.4 | | SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, gray (SM) | | |
| -26.8 | 11.7 | | CLAY, lean, dark gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

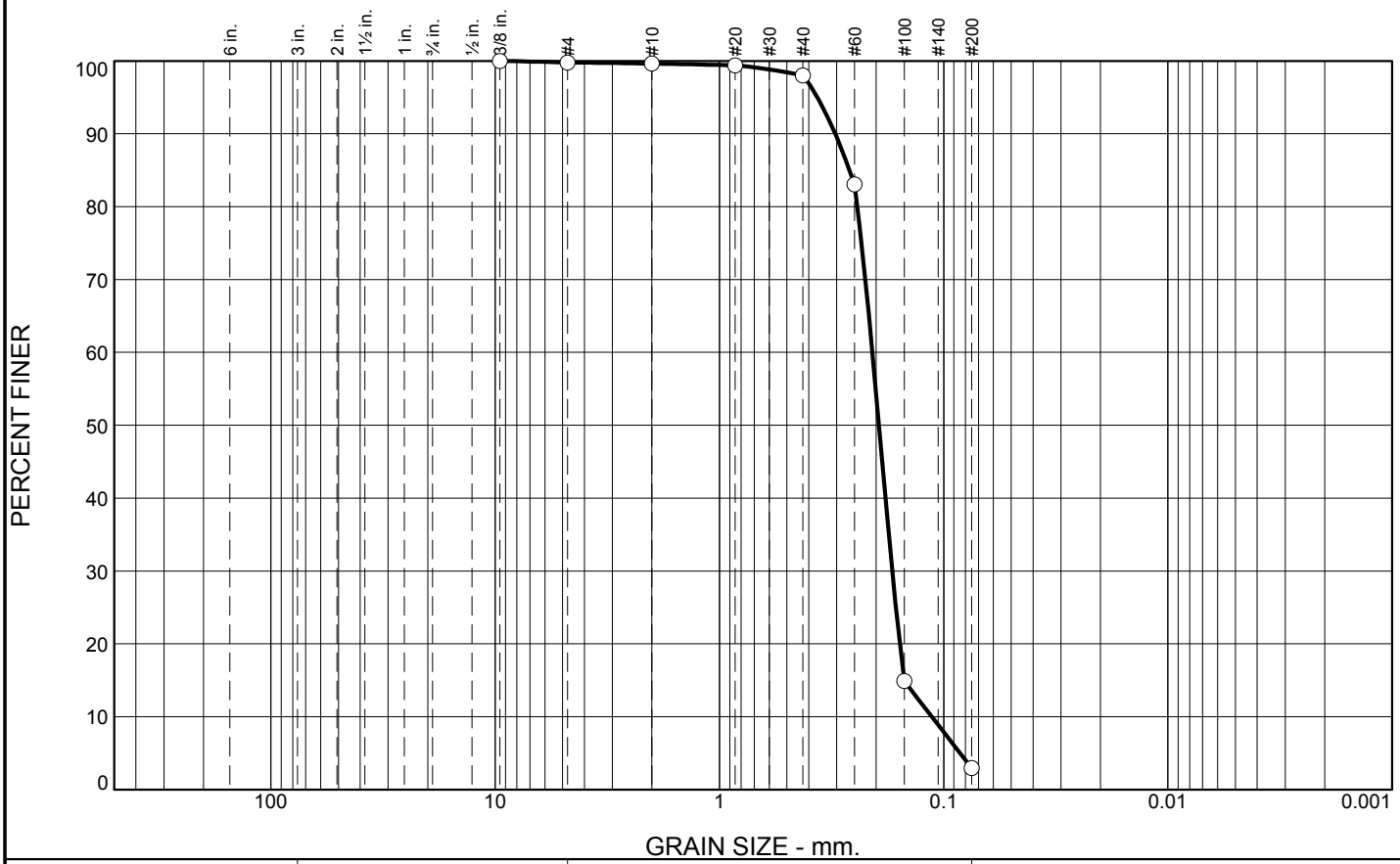
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22952° Long = -88.82453°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.2 | 1.6 | 95.1 | 2.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.6 | | |
| #20 | 99.4 | | |
| #40 | 98.0 | | |
| #60 | 83.0 | | |
| #100 | 14.9 | | |
| #200 | 2.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3043 $D_{85}$= 0.2630 $D_{60}$= 0.2080
$D_{50}$= 0.1944 $D_{30}$= 0.1696 $D_{15}$= 0.1501
$D_{10}$= 0.1129 $C_u$= 1.84 $C_c$= 1.22

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-18-10A
**Sample Number:** TE Lab ID: 4538.64 **Depth:** 0.0 - 3.5 (ft.) **Date:** 6/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** R.Martin **Checked By:** R.Byrd

**Boring Designation BI-DK-19-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Dog Keys Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DK-19-10 — LOCATION COORDINATES: E = 995,476 N = 262,857 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 17 Ft. |
| | 15. DATE BORING — STARTED: 06-24-10 — COMPLETED: 06-24-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -14.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 14.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -14.9 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, trace silt, lt. gray (SP) | A | Classification: SP Color: 7.5YR 8.5/1-white<br>D50: 0.3276 mm % Fines: 1.3 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2991 mm % Fines: 2.7 |
| -27.3 | 12.4 | | | | |
| -29.0 | 14.1 | | SAND, silty, mostly medium-grained sand-sized quartz, some silt, gray (SM) | C | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.1497 mm % Fines: 18.8 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

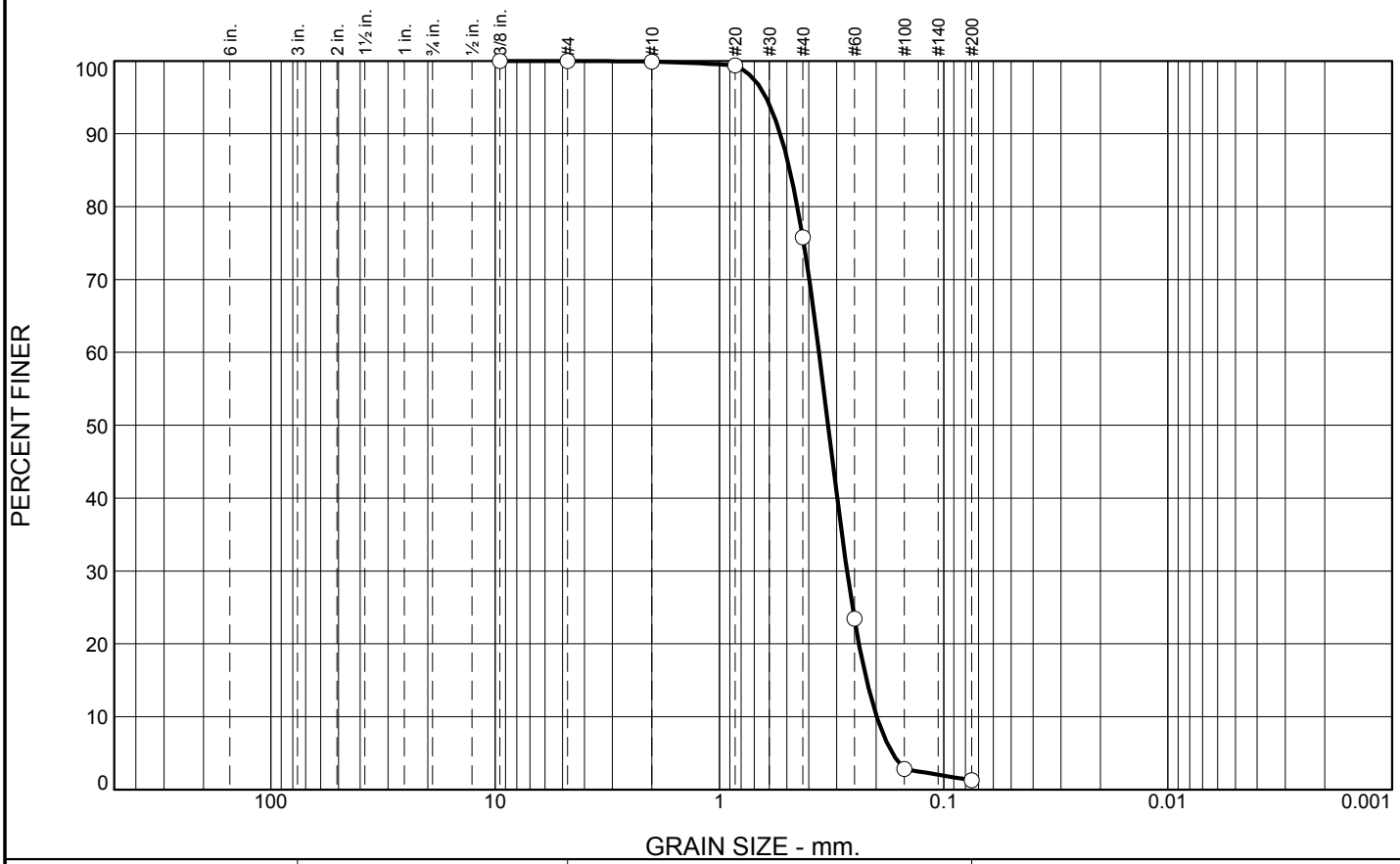
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22280° Long = -88.79779°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 24.1 | 74.5 | 1.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.4 | | |
| #40 | 75.8 | | |
| #60 | 23.4 | | |
| #100 | 2.8 | | |
| #200 | 1.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5353 $D_{85}$= 0.4850 $D_{60}$= 0.3599
$D_{50}$= 0.3276 $D_{30}$= 0.2696 $D_{15}$= 0.2207
$D_{10}$= 0.1990 $C_u$= 1.81 $C_c$= 1.02

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-19-10A
**Sample Number:** TE Lab ID: 4557.19 **Depth:** 0.0 - 6.0 (ft.) **Date:** 7/3/10

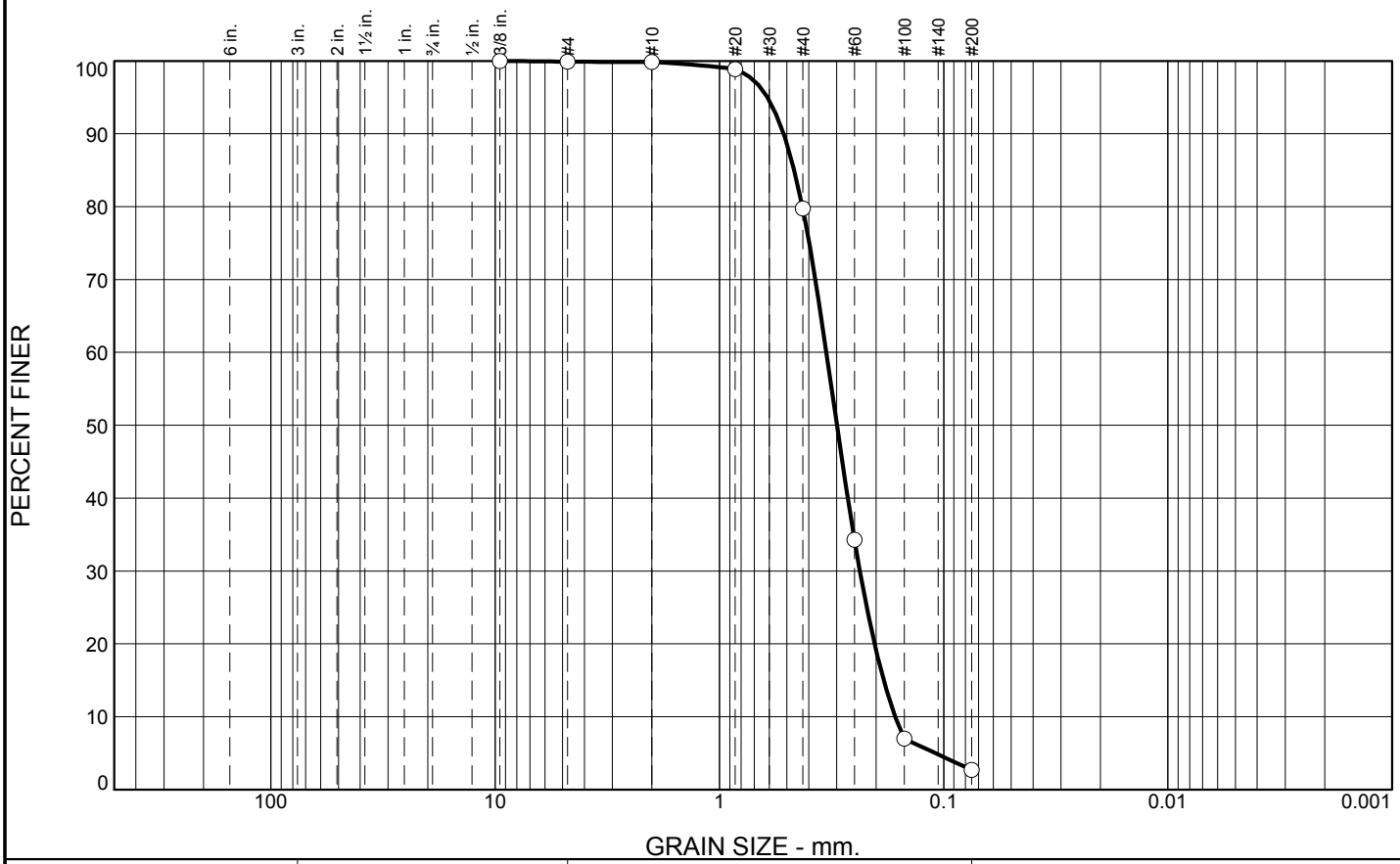
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 20.1 | 77.0 | 2.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 98.9 | | |
| #40 | 79.7 | | |
| #60 | 34.3 | | |
| #100 | 7.0 | | |
| #200 | 2.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5171 $D_{85}$= 0.4639 $D_{60}$= 0.3335
$D_{50}$= 0.2991 $D_{30}$= 0.2365 $D_{15}$= 0.1851
$D_{10}$= 0.1646 $C_u$= 2.03 $C_c$= 1.02

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-19-10B
**Sample Number:** TE Lab ID: 4557.20 **Depth:** 6.0 - 12.4 (ft.) **Date:** 7/3/10

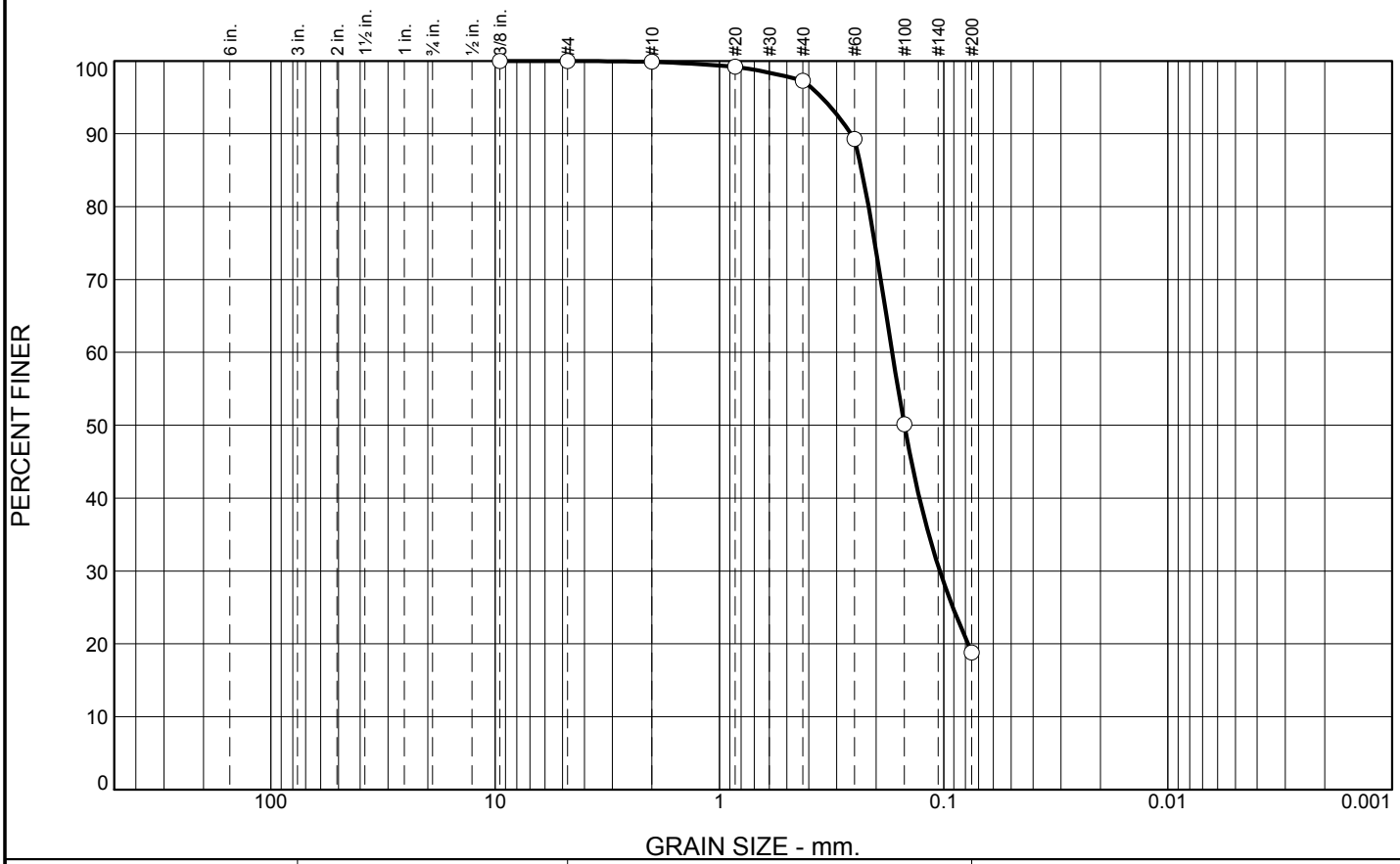
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 2.6 | 78.5 | 18.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.2 | | |
| #40 | 97.3 | | |
| #60 | 89.3 | | |
| #100 | 50.1 | | |
| #200 | 18.8 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2589 $D_{85}$= 0.2322 $D_{60}$= 0.1698
$D_{50}$= 0.1497 $D_{30}$= 0.1041 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-DK-19-10C
**Sample Number:** TE Lab ID: 4557.21 **Depth:** 12.4 - 14.1 (ft.) **Date:** 7/3/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Figure**

**Tested By:** G.Fancher **Checked By:** R.Byrd

Boring Designation BI-DK-20-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Dog Keys Pass |
| 2. BORING DESIGNATION | BI-DK-20-10 |
| LOCATION COORDINATES | E = 993,085 N = 263,129 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 18.4 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 0 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 28 Ft. |
| 15. DATE BORING | STARTED 06-24-10 / COMPLETED 06-24-10 |
| 16. ELEVATION TOP OF BORING | -25.8 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -25.8 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -44.2 | 18.4 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22355° Long = -88.80536°

Boring Designation BI-DK-21-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Dog Keys Pass | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-DK-21-10 / LOCATION COORDINATES E = 993,091 N = 264,402 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES DISTURBED 0 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 26 Ft. |
| | 15. DATE BORING STARTED 06-24-10 / COMPLETED 06-24-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -23.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 15.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -23.9 | 0.0 | | | | |
| -39.8 | 15.9 | | CLAY, lean, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22705° Long = -88.80534°

Boring Designation BI-DK-22-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Dog Keys Pass | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) — HORIZONTAL NAD83 — VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-DK-22-10 — LOCATION COORDINATES E = 993,139 N = 262,031 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED 0 — UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH 30 Ft. |
| | 15. DATE BORING — STARTED 06-24-10 — COMPLETED 06-24-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -27.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 19.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -27.9 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -46.9 | 19.0 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22053° Long = -88.80519°

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 993,139 Y = 262,031 | ELEVATION TOP OF BORING -27.9 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22053° Long = -88.80519°

Boring Designation BI-DK-23-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Dog Keys Pass | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-DK-23-10 / LOCATION COORDINATES E = 980,859 N = 265,096 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES DISTURBED 0 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 25 Ft. |
| | 15. DATE BORING STARTED 06-24-10 / COMPLETED 06-24-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -23.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 16.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -23.0 | 0.0 | | | | |
| -24.3 | 1.3 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, lt. gray (SP) | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -39.5 | 16.5 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22896° Long = -88.84407°

Boring Designation BI-DK-25-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Dog Keys Pass | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-DK-25-10 / LOCATION COORDINATES E = 981,611 N = 264,005 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO. | 12. TOTAL SAMPLES DISTURBED 0 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 27 Ft. |
| | 15. DATE BORING STARTED 06-24-10 / COMPLETED 06-24-10 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -24.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 18.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Marty Gates, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -24.9 | 0.0 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -40.9 | 16.0 | | | | |
| | | | SILT, organic-L, brown (OL) | | |
| -43.4 | 18.5 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.22596° Long = -88.84169°

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# Appendix H

# DA-10 Vibracores and Lab Results

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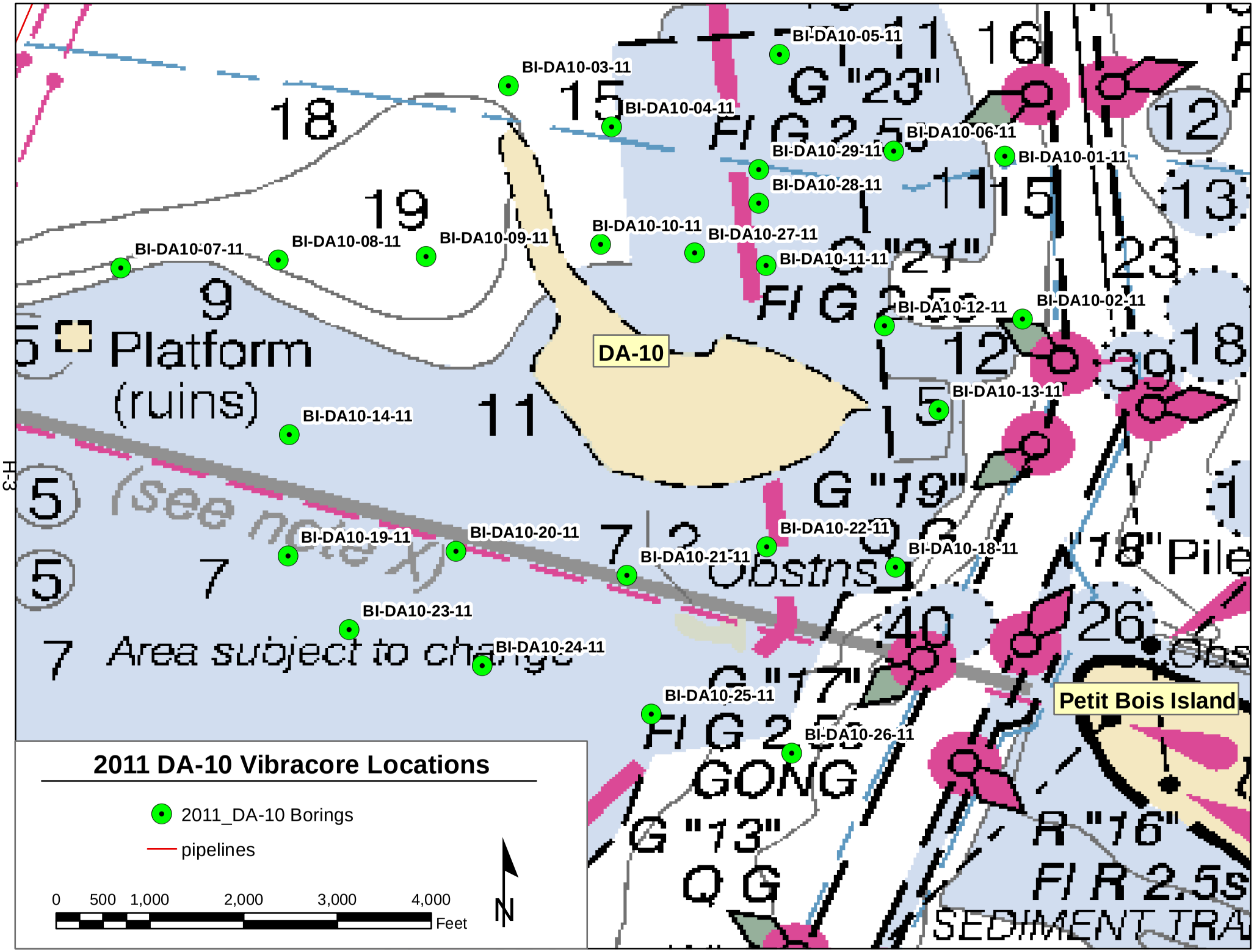

BI-DA10-05-11
BI-DA10-03-11
BI-DA10-04-11
BI-DA10-06-11
BI-DA10-29-11
BI-DA10-01-11
BI-DA10-28-11
BI-DA10-10-11
BI-DA10-27-11
BI-DA10-07-11
BI-DA10-08-11
BI-DA10-09-11
BI-DA10-11-11
BI-DA10-12-11
BI-DA10-02-11
DA-10
BI-DA10-13-11
BI-DA10-14-11
BI-DA10-19-11
BI-DA10-20-11
BI-DA10-22-11
BI-DA10-21-11
BI-DA10-18-11
BI-DA10-23-11
BI-DA10-24-11
BI-DA10-25-11
BI-DA10-26-11
Platform
(ruins)
(see note X)
Area subject to change
Obstns
Petit Bois Island
2011 DA-10 Vibracore Locations
2011_DA-10 Borings
pipelines
0 500 1,000 2,000 3,000 4,000
Feet
N

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| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BI-DA10-1-11 | DA-10 | 2011 | 6/20/2011 | 9:36 AM | 30.23021 | -88.50841 | 265696.69110 | 1086863.14900 | 20-ft Vibracore | 9.5 | 14.5 | | | | | | | | | | | | | | | | | |
| BI-DA10-1-11A | DA-10 | 2011 | 6/20/2011 | 9:36 AM | 30.23021 | -88.50841 | 265696.69110 | 1086863.14900 | 20-ft Vibracore | 9.5 | 14.5 | 0.0 - 1.5 | 1.5 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GREY | 2.5Y 6/2 | 6 | NA | 0.35 | 0.37 | 1.3 | 1.7 | 1.0 |
| BI-DA10-2-11 | DA-10 | 2011 | 6/20/2011 | 9:56 AM | 30.22545 | -88.50788 | 263966.02520 | 1087035.47900 | 20-ft Vibracore | 21.5 | 13.5 | NO SAMPLE TAKEN | | | NO SAMPLE TESTED | | | | | | | | | | | | | |
| BI-DA10-3-11 | DA-10 | 2011 | 6/20/2011 | 12:59 PM | 30.23226 | -88.52292 | 266429.45510 | 1082278.72900 | 20-ft Vibracore | 21.5 | 13.5 | NO SAMPLE TAKEN | | | NO SAMPLE TESTED | | | | | | | | | | | | | |
| BI-DA10-4-11 | DA-10 | 2011 | 6/20/2011 | 1:26 PM | 30.23107 | -88.51990 | 265999.28330 | 1083233.64400 | 20-ft Vibracore | 19.5 | 11.8 | NO SAMPLE TAKEN | | | NO SAMPLE TESTED | | | | | | | | | | | | | |
| BI-DA10-5-11 | DA-10 | 2011 | 6/20/2011 | 2:00 PM | 30.23318 | -88.51500 | 266770.95600 | 1084778.94700 | 20-ft Vibracore | 12.5 | 15.4 | | | | | | | | | | | | | | | | | |
| BI-DA10-5-11A | DA-10 | 2011 | 6/20/2011 | 2:00 PM | 30.23318 | -88.51500 | 266770.95600 | 1084778.94700 | 20-ft Vibracore | 12.5 | 15.4 | 0.0 - 2.3 | 2.3 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GREY | 2.5Y 6/2 | 6 | NA | 0.32 | 0.34 | 2.0 | 1.8 | 1.0 |
| BI-DA10-6-11 | DA-10 | 2011 | 6/20/2011 | 2:57 PM | 30.23036 | -88.51167 | 265748.31910 | 1085833.45800 | 20-ft Vibracore | 16.5 | 10.8 | NO SAMPLE TAKEN | | | NO SAMPLE TESTED | | | | | | | | | | | | | |
| BI-DA10-7-11 | DA-10 | 2011 | 6/20/2011 | 12:37 PM | 30.22694 | -88.53424 | 264485.07470 | 1078708.93500 | 20-ft Vibracore | 17.5 | 14.8 | | | | | | | | | | | | | | | | | |
| BI-DA10-7-11A | DA-10 | 2011 | 6/20/2011 | 12:37 PM | 30.22694 | -88.53424 | 264485.07470 | 1078708.93500 | 20-ft Vibracore | 17.5 | 14.8 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.40 | 0.44 | 0.7 | 1.8 | 0.9 |
| BI-DA10-8-11 | DA-10 | 2011 | 6/20/2011 | 11:25 AM | 30.22717 | -88.52965 | 264572.56110 | 1080158.32100 | 20-ft Vibracore | 25.5 | 14.8 | NO SAMPLE TAKEN | | | NO SAMPLE TESTED | | | | | | | | | | | | | |
| BI-DA10-9-11 | DA-10 | 2011 | 6/18/2011 | 3:54 PM | 30.22727 | -88.52533 | 264612.59610 | 1081522.55800 | 20-ft Vibracore | 20.0 | 16.9 | NO SAMPLE TAKEN | | | NO SAMPLE TESTED | | | | | | | | | | | | | |
| BI-DA10-10-11 | DA-10 | 2011 | 6/18/2011 | 3:00 PM | 30.22763 | -88.52022 | 264747.92660 | 1083136.02800 | 20-ft Vibracore | 17.5 | 13.5 | | | | | | | | | | | | | | | | | |
| BI-DA10-10-11A | DA-10 | 2011 | 6/18/2011 | 3:00 PM | 30.22763 | -88.52022 | 264747.92660 | 1083136.02800 | 20-ft Vibracore | 17.5 | 13.5 | 1.7 - 6.7 | 5.0 | SP | SP | SUBANGULAR TO SUBROUNDED | VERY DARK GREYISH BROWN | 2.5Y 3/2 | 3 | LT BROWNISH GREY WITH SOME YELLOW | 10YR 6/2 | 6 | NA | 0.31 | 0.33 | 3.1 | 2.1 | 1.0 |
| BI-DA10-10-11B | DA-10 | 2011 | 6/18/2011 | 3:00 PM | 30.22763 | -88.52022 | 264747.92660 | 1083136.02800 | 20-ft Vibracore | 17.5 | 13.5 | 6.7 - 7.6 | 0.9 | SP | SP | SUBANGULAR TO SUBROUNDED | BLACK | 7.5YR 2.5/1 | 3 | DARK GREYISH BROWN | 10YR 4/2 | 4 | NA | 0.27 | 0.28 | 3.0 | 1.8 | 1.0 |
| BI-DA10-10-11C | DA-10 | 2011 | 6/18/2011 | 3:00 PM | 30.22763 | -88.52022 | 264747.92660 | 1083136.02800 | 20-ft Vibracore | 17.5 | 13.5 | 8.0 - 13.5 | 5.5 | SP | SP | SUBANGULAR TO SUBROUNDED | VERY DARK GREY | 7.5YR 3/1 | 3 | DARK GREYISH BROWN | 10YR 4/2 | 4 | NA | 0.29 | 0.31 | 2.8 | 2.0 | 1.0 |
| BI-DA10-11-11 | DA-10 | 2011 | 6/18/2011 | 2:35 PM | 30.22701 | -88.51539 | 264526.67060 | 1084662.05500 | 20-ft Vibracore | 3.0 | 14.1 | | | | | | | | | | | | | | | | | |
| BI-DA10-11-11A | DA-10 | 2011 | 6/18/2011 | 2:35 PM | 30.22701 | -88.51539 | 264526.67060 | 1084662.05500 | 20-ft Vibracore | 3.0 | 14.1 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT BROWNISH GREY | 2.5Y 6/2 | 6 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.34 | 0.37 | 1.4 | 1.6 | 1.0 |
| BI-DA10-11-11B | DA-10 | 2011 | 6/18/2011 | 2:35 PM | 30.22701 | -88.51539 | 264526.67060 | 1084662.05500 | 20-ft Vibracore | 3.0 | 14.1 | 5.0 - 9.7 | 4.7 | SP | SP | SUBANGULAR TO SUBROUNDED | LT BROWNISH GREY | 2.5Y 6/2 | 6 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.34 | 0.35 | 2.4 | 1.8 | 1.1 |
| BI-DA10-12-11 | DA-10 | 2011 | 6/18/2011 | 2:01 PM | 30.22525 | -88.51193 | 263889.65330 | 1085756.59600 | 20-ft Vibracore | 6.5 | 17.4 | | | | | | | | | | | | | | | | | |
| BI-DA10-12-11A | DA-10 | 2011 | 6/18/2011 | 2:01 PM | 30.22525 | -88.51193 | 263889.65330 | 1085756.59600 | 20-ft Vibracore | 6.5 | 17.4 | 0.0 - 4.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT BROWNISH GREY | 2.5Y 6/2 | 6 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.31 | 0.31 | 2.0 | 1.8 | 1.1 |
| BI-DA10-12-11B | DA-10 | 2011 | 6/18/2011 | 2:01 PM | 30.22525 | -88.51193 | 263889.65330 | 1085756.59600 | 20-ft Vibracore | 6.5 | 17.4 | 4.0 - 8.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.30 | 0.31 | 4.1 | 2.3 | 1.2 |
| BI-DA10-12-11C | DA-10 | 2011 | 6/18/2011 | 2:01 PM | 30.22525 | -88.51193 | 263889.65330 | 1085756.59600 | 20-ft Vibracore | 6.5 | 17.4 | 8.0 - 12.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.34 | 0.37 | 3.7 | 2.2 | 1.1 |
| BI-DA10-12-11D | DA-10 | 2011 | 6/18/2011 | 2:01 PM | 30.22525 | -88.51193 | 263889.65330 | 1085756.59600 | 20-ft Vibracore | 6.5 | 17.4 | 12.0 - 17.4 | 5.4 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.33 | 0.35 | 5.2 | 2.2 | 1.2 |
| BI-DA10-13-11 | DA-10 | 2011 | 6/18/2011 | 1:35 PM | 30.22279 | -88.51033 | 262996.41750 | 1086264.45500 | 20-ft Vibracore | 6.0 | 15.8 | | | | | | | | | | | | | | | | | |
| BI-DA10-13-11A | DA-10 | 2011 | 6/18/2011 | 1:35 PM | 30.22279 | -88.51033 | 262996.41750 | 1086264.45500 | 20-ft Vibracore | 6.0 | 15.8 | 0.0 - 3.5 | 3.5 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED OLIVE BROWN | 2.5Y 5/3 | 5 | LT YELLOWISH BROWN | 2.5Y 6/3 | 6 | NA | 0.31 | 0.32 | 0.8 | 1.6 | 1.0 |
| BI-DA10-13-11B | DA-10 | 2011 | 6/18/2011 | 1:35 PM | 30.22279 | -88.51033 | 262996.41750 | 1086264.45500 | 20-ft Vibracore | 6.0 | 15.8 | 3.5 - 6.0 | 2.5 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED OLIVE BROWN | 2.5Y 5/3 | 5 | LT BROWNISH GREY | 2.5Y 6/2 | 6 | NA | 0.31 | 0.31 | 1.3 | 1.6 | 1.0 |
| BI-DA10-13-11C | DA-10 | 2011 | 6/18/2011 | 1:35 PM | 30.22279 | -88.51033 | 262996.41750 | 1086264.45500 | 20-ft Vibracore | 6.0 | 15.8 | 6.0 - 9.5 | 3.5 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GREY | 2.5Y 6/2 | 6 | NA | 0.32 | 0.34 | 3.2 | 1.9 | 1.1 |
| BI-DA10-13-11D | DA-10 | 2011 | 6/18/2011 | 1:35 PM | 30.22279 | -88.51033 | 262996.41750 | 1086264.45500 | 20-ft Vibracore | 6.0 | 15.8 | 9.5 - 13.0 | 3.5 | SP | SP | SUBANGULAR TO SUBROUNDED | LT BROWNISH GREY | 2.5Y 6/2 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.32 | 0.34 | 4.5 | 1.9 | 1.1 |
| BI-DA10-13-11E | DA-10 | 2011 | 6/18/2011 | 1:35 PM | 30.22279 | -88.51033 | 262996.41750 | 1086264.45500 | 20-ft Vibracore | 6.0 | 15.8 | 13.0 - 15.8 | 2.8 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 2.5Y 6/1 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.33 | 0.35 | 8.1 | 2.8 | 1.4 |
| BI-DA10-14-11 | DA-10 | 2011 | 6/21/2011 | 10:06 AM | 30.22206 | -88.52932 | 262714.40800 | 1080267.50500 | 20-ft Vibracore | 13.2 | 12.1 | | | | | | | | | | | | | | | | | |
| BI-DA10-14-11A | DA-10 | 2011 | 6/22/2011 | 10:06 AM | 30.22206 | -88.52932 | 262714.40800 | 1080267.50500 | 20-ft Vibracore | 13.2 | 12.1 | 0.0 - 4.6 | 4.6 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 2.5Y 6/1 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.35 | 0.37 | 0.5 | 1.7 | 1.0 |
| BI-DA10-14-11B | DA-10 | 2011 | 6/23/2011 | 10:06 AM | 30.22206 | -88.52932 | 262714.40800 | 1080267.50500 | 20-ft Vibracore | 13.2 | 12.1 | 7.0 - 12.1 | 5.1 | SP | SP | SUBANGULAR TO SUBROUNDED | LT BROWNISH GREY | 2.5Y 6/2 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.30 | 0.30 | 4.0 | 2.0 | 1.1 |
| BI-DA10-18-11 | DA-10 | 2011 | 6/18/2011 | 1:15 PM | 30.21819 | -88.51161 | 261322.32040 | 1085864.91700 | 20-ft Vibracore | 18.0 | 14.5 | | | | | | | | | | | | | | | | | |
| BI-DA10-18-11A | DA-10 | 2011 | 6/19/2011 | 1:15 PM | 30.21819 | -88.51161 | 261322.32040 | 1085864.91700 | 20-ft Vibracore | 18.0 | 14.5 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.33 | 0.35 | 1.5 | 1.7 | 1.0 |
| BI-DA10-18-11B | DA-10 | 2011 | 6/20/2011 | 1:15 PM | 30.21819 | -88.51161 | 261322.32040 | 1085864.91700 | 20-ft Vibracore | 18.0 | 14.5 | 5.0 - 10.0 | 5.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 2.5Y 6/1 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.35 | 0.38 | 2.7 | 1.9 | 1.0 |
| BI-DA10-18-11C | DA-10 | 2011 | 6/21/2011 | 1:15 PM | 30.21819 | -88.51161 | 261322.32040 | 1085864.91700 | 20-ft Vibracore | 18.0 | 14.5 | 10.0 - 14.5 | 4.5 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 2.5Y 6/1 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.34 | 0.35 | 3.6 | 1.8 | 1.1 |
| BI-DA10-19-11 | DA-10 | 2011 | 6/16/2011 | 11:54 AM | 30.21852 | -88.52937 | 261426.92110 | 1080255.15100 | 20-ft Vibracore | 13.0 | 19.2 | | | | | | | | | | | | | | | | | |
| BI-DA10-19-11A | DA-10 | 2011 | 6/16/2011 | 11:54 AM | 30.21852 | -88.52937 | 261426.92110 | 1080255.15100 | 20-ft Vibracore | 13.0 | 19.2 | 0.0 - 4.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.29 | 0.30 | 1.6 | 1.8 | 1.0 |
| BI-DA10-19-11B | DA-10 | 2011 | 6/16/2011 | 11:54 AM | 30.21852 | -88.52937 | 261426.92110 | 1080255.15100 | 20-ft Vibracore | 13.0 | 19.2 | 4.0 - 8.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY WITH SOME OLIVE | 5Y 5/1 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.28 | 0.29 | 3.5 | 1.9 | 1.0 |
| BI-DA10-19-11C | DA-10 | 2011 | 6/16/2011 | 11:54 AM | 30.21852 | -88.52937 | 261426.92110 | 1080255.15100 | 20-ft Vibracore | 13.0 | 19.2 | 8.0 - 12.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY WITH SOME OLIVE | 5Y 5/1 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.32 | 0.34 | 1.5 | 1.9 | 1.0 |
| BI-DA10-19-11D | DA-10 | 2011 | 6/16/2011 | 11:54 AM | 30.21852 | -88.52937 | 261426.92110 | 1080255.15100 | 20-ft Vibracore | 13.0 | 19.2 | 12.0 - 16.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | MED GREY | 2.5Y 5/1 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.33 | 0.36 | 1.6 | 1.9 | 1.0 |
| BI-DA10-19-11E | DA-10 | 2011 | 6/16/2011 | 11:54 AM | 30.21852 | -88.52937 | 261426.92110 | 1080255.15100 | 20-ft Vibracore | 13.0 | 19.2 | 16.0 - 19.2 | 3.2 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 2.5Y 6/1 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.34 | 0.35 | 1.9 | 1.8 | 1.0 |
| BI-DA10-20-11 | DA-10 | 2011 | 6/16/2011 | 10:26 AM | 30.21866 | -88.52444 | 261482.02840 | 1081812.13400 | 20-ft Vibracore | 11.0 | 16.0 | | | | | | | | | | | | | | | | | |
| BI-DA10-20-11A | DA-10 | 2011 | 6/16/2011 | 10:26 AM | 30.21866 | -88.52444 | 261482.02840 | 1081812.13400 | 20-ft Vibracore | 11.0 | 16.0 | 0.0 - 4.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GREY | 2.5Y 6/2 | 6 | NA | 0.32 | 0.34 | 1.1 | 1.9 | 1.0 |
| BI-DA10-20-11B | DA-10 | 2011 | 6/16/2011 | 10:26 AM | 30.21866 | -88.52444 | 261482.02840 | 1081812.13400 | 20-ft Vibracore | 11.0 | 16.0 | 4.0 - 8.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.36 | 0.38 | 1.9 | 1.9 | 1.0 |
| BI-DA10-20-11C | DA-10 | 2011 | 6/16/2011 | 10:26 AM | 30.21866 | -88.52444 | 261482.02840 | 1081812.13400 | 20-ft Vibracore | 11.0 | 16.0 | 8.0 - 12.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.32 | 0.33 | 2.7 | 1.9 | 1.1 |
| BI-DA10-20-11D | DA-10 | 2011 | 6/16/2011 | 10:26 AM | 30.21866 | -88.52444 | 261482.02840 | 1081812.13400 | 20-ft Vibracore | 11.0 | 16.0 | 12.0 - 16.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GREY | 2.5Y 6/2 | 6 | NA | 0.25 | 0.27 | 4.5 | 1.8 | 1.0 |
| BI-DA10-21-11 | DA-10 | 2011 | 6/18/2011 | 9:20 AM | 30.21795 | -88.51945 | 261228.12310 | 1083388.91500 | 20-ft Vibracore | 9.0 | 17.4 | | | | | | | | | | | | | | | | | |
| BI-DA10-21-11A | DA-10 | 2011 | 6/18/2011 | 9:20 AM | 30.21795 | -88.51945 | 261228.12310 | 1083388.91500 | 20-ft Vibracore | 9.0 | 17.4 | 0.0 - 4.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.32 | 0.34 | 1.2 | 1.7 | 1.0 |
| BI-DA10-21-11B | DA-10 | 2011 | 6/18/2011 | 9:20 AM | 30.21795 | -88.51945 | 261228.12310 | 1083388.91500 | 20-ft Vibracore | 9.0 | 17.4 | 4.0 - 8.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 2.5Y 6/1 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.33 | 0.35 | 2.4 | 1.7 | 1.0 |
| BI-DA10-21-11C | DA-10 | 2011 | 6/18/2011 | 9:20 AM | 30.21795 | -88.51945 | 261228.12310 | 1083388.91500 | 20-ft Vibracore | 9.0 | 17.4 | 8.0 - 12.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 5Y 6/1 | 6 | LT GREY WITH SOME OLIVE | 5Y 7/1 | 7 | NA | 0.33 | 0.34 | 3.1 | 2.0 | 1.1 |
| BI-DA10-21-11D | DA-10 | 2011 | 6/18/2011 | 9:20 AM | 30.21795 | -88.51945 | 261228.12310 | 1083388.91500 | 20-ft Vibracore | 9.0 | 17.4 | 12.0 - 17.4 | 5.4 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 5Y 6/1 | 6 | LT GREY WITH SOME OLIVE | 5Y 7/1 | 7 | NA | 0.28 | 0.28 | 4.2 | 2.0 | 1.0 |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI-DA10-22-11** | DA-10 | 2011 | 6/18/2011 | 9:50 AM | 30.21879 | -88.51537 | 261537.19480 | 1084676.72200 | 20-ft Vibracore | 12.5 | 11.5 | | | | | | | | | | | | | | | | | |
| **BI-DA10-22-11A** | DA-10 | 2011 | 6/18/2011 | 9:50 AM | 30.21879 | -88.51537 | 261537.19480 | 1084676.72200 | 20-ft Vibracore | 12.5 | 11.5 | 0.0 - 4.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY WITH SOME OLIVE | 5Y 5/1 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.32 | 0.35 | 1.0 | 1.7 | 1.0 |
| **BI-DA10-22-11B** | DA-10 | 2011 | 6/18/2011 | 9:50 AM | 30.21879 | -88.51537 | 261537.19480 | 1084676.72200 | 20-ft Vibracore | 12.5 | 11.5 | 4.0 - 8.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY WITH SOME OLIVE | 5Y 5/1 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.30 | 0.32 | 2.3 | 1.9 | 1.0 |
| **BI-DA10-22-11C** | DA-10 | 2011 | 6/18/2011 | 9:50 AM | 30.21879 | -88.51537 | 261537.19480 | 1084676.72200 | 20-ft Vibracore | 12.5 | 11.5 | 8.0 - 11.5 | 3.5 | SP | SP | SUBANGULAR TO SUBROUNDED | LT GREY | 5Y 7/1 | 7 | WHITE | 5Y 8/1 | 8 | NA | 0.40 | 0.44 | 4.6 | 2.4 | 1.2 |
| **BI-DA10-23-11** | DA-10 | 2011 | 6/16/2011 | 11:15 AM | 30.21637 | -88.52757 | 260646.52120 | 1080825.77400 | 20-ft Vibracore | 11.5 | 15.7 | | | | | | | | | | | | | | | | | |
| **BI-DA10-23-11A** | DA-10 | 2011 | 6/16/2011 | 11:15 AM | 30.21637 | -88.52757 | 260646.52120 | 1080825.77400 | 20-ft Vibracore | 11.5 | 15.7 | 0.0 - 4.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.30 | 0.31 | 0.9 | 1.7 | 1.0 |
| **BI-DA10-23-11B** | DA-10 | 2011 | 6/16/2011 | 11:15 AM | 30.21637 | -88.52757 | 260646.52120 | 1080825.77400 | 20-ft Vibracore | 11.5 | 15.7 | 4.0 - 8.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.31 | 0.31 | 1.2 | 1.8 | 1.0 |
| **BI-DA10-23-11C** | DA-10 | 2011 | 6/16/2011 | 11:15 AM | 30.21637 | -88.52757 | 260646.52120 | 1080825.77400 | 20-ft Vibracore | 11.5 | 15.7 | 8.0 - 12.0 | 4.0 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | GREY | 2.5Y 5/1 | 5 | LT GREY WITH SOME OLIVE | 5Y 7/1 | 7 | NA | 0.28 | 0.29 | 6.5 | 2.7 | 1.3 |
| **BI-DA10-23-11D** | DA-10 | 2011 | 6/16/2011 | 11:15 AM | 30.21637 | -88.52757 | 260646.52120 | 1080825.77400 | 20-ft Vibracore | 11.5 | 15.7 | 12.0 - 15.7 | 3.7 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | GREY | 2.5Y 5/1 | 5 | LT GREY WITH SOME OLIVE | 5Y 7/1 | 7 | NA | 0.25 | 0.28 | 5.7 | 2.2 | 1.1 |
| **BI-DA10-24-11** | DA-10 | 2011 | 6/18/2011 | 10:24 AM | 30.21532 | -88.52368 | 260267.97310 | 1082055.48000 | 20-ft Vibracore | 9.0 | 11.4 | | | | | | | | | | | | | | | | | |
| **BI-DA10-24-11A** | DA-10 | 2011 | 6/18/2011 | 10:24 AM | 30.21532 | -88.52368 | 260267.97310 | 1082055.48000 | 20-ft Vibracore | 9.0 | 11.4 | 0.0 - 4.0 | 4.0 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 2.5Y 6/1 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.28 | 0.29 | 5.0 | 2.1 | 1.1 |
| **BI-DA10-24-11B** | DA-10 | 2011 | 6/18/2011 | 10:24 AM | 30.21532 | -88.52368 | 260267.97310 | 1082055.48000 | 20-ft Vibracore | 9.0 | 11.4 | 4.0 - 8.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 2.5Y 6/1 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.27 | 0.28 | 3.6 | 1.9 | 1.0 |
| **BI-DA10-24-11C** | DA-10 | 2011 | 6/18/2011 | 10:24 AM | 30.21532 | -88.52368 | 260267.97310 | 1082055.48000 | 20-ft Vibracore | 9.0 | 11.4 | 8.0 - 11.4 | 3.4 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 2.5Y 6/1 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.24 | 0.26 | 4.9 | 2.1 | 1.1 |
| **BI-DA10-25-11** | DA-10 | 2011 | 6/18/2011 | 12:48 PM | 30.21390 | -88.51874 | 259755.81830 | 1083617.23800 | 20-ft Vibracore | 21.0 | 14.5 | | | | | | | | | | | | | | | | | |
| **BI-DA10-25-11A** | DA-10 | 2011 | 6/18/2011 | 12:48 PM | 30.21390 | -88.51874 | 259755.81830 | 1083617.23800 | 20-ft Vibracore | 21.0 | 14.5 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY WITH SOME OLIVE | 5Y 5/1 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.28 | 0.26 | 1.7 | 3.7 | 0.5 |
| **BI-DA10-25-11B** | DA-10 | 2011 | 6/18/2011 | 12:48 PM | 30.21390 | -88.51874 | 259755.81830 | 1083617.23800 | 20-ft Vibracore | 21.0 | 14.5 | 5.0 - 10.0 | 5.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY | 2.5Y 6/1 | 6 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.26 | 0.30 | 3.2 | 2.2 | 1.0 |
| **BI-DA10-25-11C** | DA-10 | 2011 | 6/18/2011 | 12:48 PM | 30.21390 | -88.51874 | 259755.81830 | 1083617.23800 | 20-ft Vibracore | 21.0 | 14.5 | 10.0 - 14.5 | 4.5 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY WITH SOME OLIVE | 5Y 5/1 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.33 | 0.36 | 1.2 | 1.6 | 1.0 |
| **BI-DA10-26-11** | DA-10 | 2011 | 6/21/2011 | 8:54 AM | 30.21276 | -88.51464 | 259344.81920 | 1084913.42800 | 20-ft Vibracore | 32.5 | 16.7 | NO SAMPLE TAKEN | | | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-DA10-27-11** | DA-10 | 2011 | 6/20/2011 | 10:27 AM | 30.22738 | -88.51747 | 264659.40520 | 1084004.77700 | 20-ft Vibracore | 9.5 | 13.1 | | | | | | | | | | | | | | | | | |
| **BI-DA10-27-11A** | DA-10 | 2011 | 6/20/2011 | 10:27 AM | 30.22738 | -88.51747 | 264659.40520 | 1084004.77700 | 20-ft Vibracore | 9.5 | 13.1 | 0.0 - 4.0 | 4.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY WITH SOME OLIVE | 5Y 5/1 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.33 | 0.34 | 1.0 | 1.6 | 1.0 |
| **BI-DA10-27-11B** | DA-10 | 2011 | 6/20/2011 | 10:27 AM | 30.22738 | -88.51747 | 264659.40520 | 1084004.77700 | 20-ft Vibracore | 9.5 | 13.1 | 4.0 - 7.5 | 3.5 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY WITH SOME OLIVE | 5Y 5/1 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.34 | 0.36 | 1.8 | 1.7 | 1.1 |
| **BI-DA10-28-11** | DA-10 | 2011 | 6/20/2011 | 10:58 AM | 30.22883 | -88.52299 | 265181.95300 | 1082260.02500 | 20-ft Vibracore | 6.5 | 11.6 | | | | | | | | | | | | | | | | | |
| **BI-DA10-28-11A** | DA-10 | 2011 | 6/20/2011 | 10:58 AM | 30.22883 | -88.52299 | 265181.95300 | 1082260.02500 | 20-ft Vibracore | 6.5 | 11.6 | 0.0 - 5.0 | 5.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY WITH SOME OLIVE | 5Y 5/1 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.31 | 0.33 | 0.7 | 1.9 | 1.1 |
| **BI-DA10-28-11B** | DA-10 | 2011 | 6/20/2011 | 10:58 AM | 30.22883 | -88.52299 | 265181.95300 | 1082260.02500 | 20-ft Vibracore | 6.5 | 11.6 | 5.0 - 9.3 | 4.3 | SP | SP | SUBANGULAR TO SUBROUNDED | LT TO MED GREY WITH SOME OLIVE | 5Y 5/1 | 5 | LT GREY WITH SOME BROWN | 2.5Y 7/2 | 7 | NA | 0.29 | 0.30 | 1.9 | 2.2 | 1.1 |
| **BI-DA10-29-11** | DA-10 | 2011 | 6/20/2011 | 2:32 PM | 30.22981 | -88.51560 | 265544.80520 | 1084592.89000 | 20-ft Vibracore | 10.1 | 13.5 | | | | | | | | | | | | | | | | | |
| **BI-DA10-29-11A** | DA-10 | 2011 | 6/20/2011 | 2:32 PM | 30.22981 | -88.51560 | 265544.80520 | 1084592.89000 | 20-ft Vibracore | 10.1 | 13.5 | 0.0 - 6.7 | 6.7 | SP | SP | SUBANGULAR TO SUBROUNDED | GREYISH BROWN | 2.5Y 5/2 | 5 | LT GREY | 2.5Y 7/1 | 7 | NA | 0.34 | 0.36 | 1.1 | 1.6 | 1.0 |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

**Boring Designation BI-DA10-01-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-01-11 |
| LOCATION COORDINATES | E = 1,086,863 N = 265,697 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 14.5 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 9.5 Ft. |
| 15. DATE BORING | STARTED 06-20-11 / COMPLETED 06-20-11 |
| 16. ELEVATION TOP OF BORING | -7.8 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -7.8 | 0.0 | | | | |
| -9.3 | 1.5 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, gray (SP) | A | Classification: SP Color: 2.5Y 6/2-light brownish gray<br>D50: 0.3492 mm % Fines: 1.3 |
| -22.3 | 14.5 | | CLAY, lean, trace fine-grained sand, gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

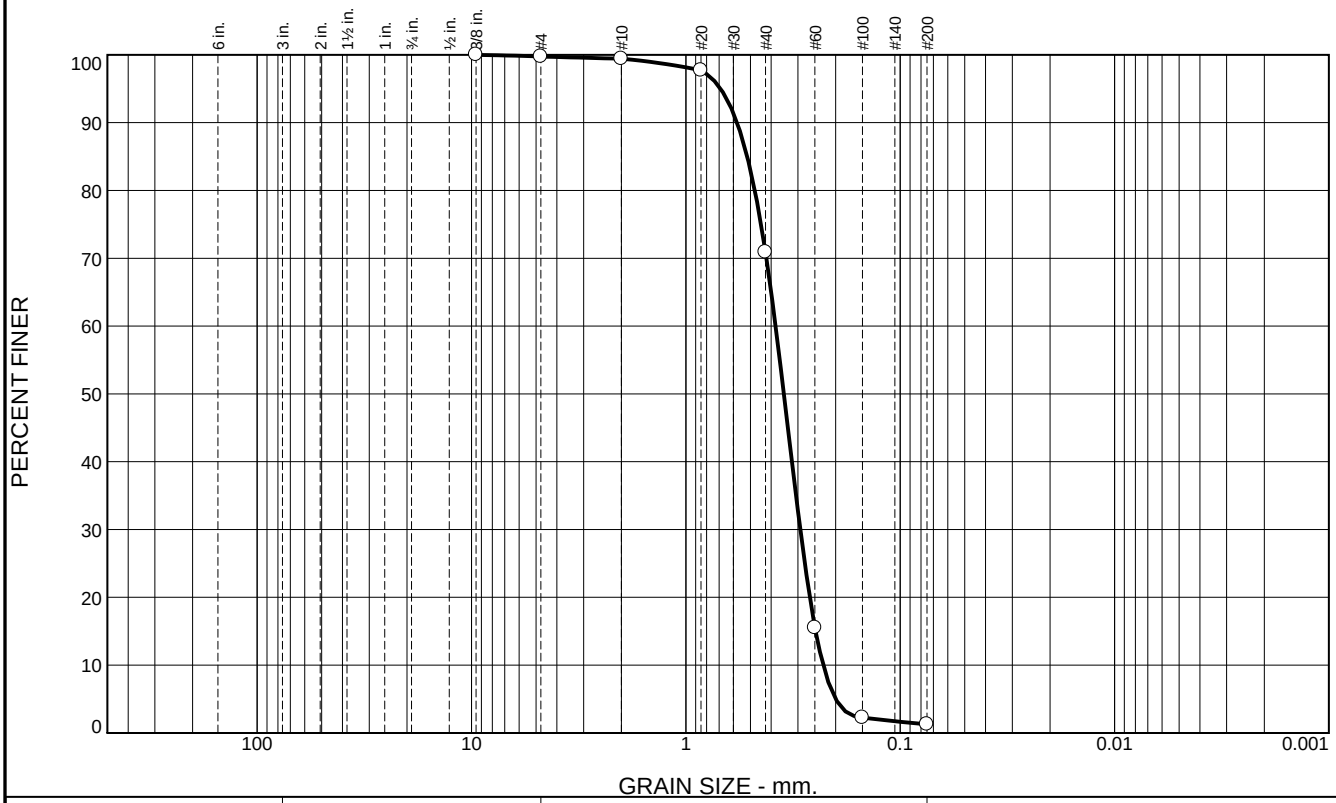
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.23021° Long = -88.50841°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.3 | 28.5 | 69.6 | 1.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.4 | | |
| #20 | 97.7 | | |
| #40 | 70.9 | | |
| #60 | 15.5 | | |
| #100 | 2.3 | | |
| #200 | 1.3 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5766 $D_{85}$= 0.5172 $D_{60}$= 0.3815
$D_{50}$= 0.3492 $D_{30}$= 0.2927 $D_{15}$= 0.2483
$D_{10}$= 0.2288 $C_u$= 1.67 $C_c$= 0.98

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # BI-DA10-1A-11
**Sample Number:** TE Lab ID: 5054.14 **Depth:** 0.0 - 1.5 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

**Boring Designation BI-DA10-02-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-02-11 |
| LOCATION COORDINATES | E = 1,087,035 N = 263,966 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 13.5 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 0 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 21.5 Ft. |
| 15. DATE BORING | STARTED 06-20-11 / COMPLETED 06-20-11 |
| 16. ELEVATION TOP OF BORING | -19.8 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.8 | 0.0 | | | | |
| -20.2 | 0.4 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, trace shell fragments, gray (SP) | | |
| -22.2 | 2.4 | | CLAY, lean, some sand, gray (CL) | | |
| -24.3 | 4.5 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, dark gray (SP) | | |
| -25.1 | 5.3 | | CLAY, lean, dark gray (CL) | | |
| -26.5 | 6.7 | | SAND, poorly-graded, mostly fine-grained quartz, gray (SP) | NS | |
| -33.3 | 13.5 | | CLAY, lean, dark gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22545° Long = -88.50788°**

Boring Designation BI-DA10-03-11

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-03-11 |
| LOCATION COORDINATES | E = 1,082,279 N = 266,429 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 13.5 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 0 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 21.5 Ft. |
| 15. DATE BORING | STARTED 06-20-11 / COMPLETED 06-20-11 |
| 16. ELEVATION TOP OF BORING | -19.5 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.5 | 0.0 | | | | |
| -24.0 | 4.5 | | CLAY, lean, dark gray (CL) | | |
| -24.5 | 5.0 | | SAND, clayey, dark gray (SC) | | |
| -26.7 | 7.2 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, lt. gray (SP) | NS | |
| -33.0 | 13.5 | | CLAY, lean, dark gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.23226° Long = -88.52292°

Boring Designation BI-DA10-04-11

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-04-11 |
| LOCATION COORDINATES | E = 1,083,234 N = 265,999 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 11.8 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 0 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 19.5 Ft. |
| 15. DATE BORING | STARTED 06-20-11 / COMPLETED 06-20-11 |
| 16. ELEVATION TOP OF BORING | -17.5 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -17.5 | 0.0 | | | | |
| | | | CLAY, lean, trace shell fragments, dark gray (CL) | | |
| | | | At El. -21.0 Ft., dark gray | NS | |
| -29.3 | 11.8 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.23107° Long = -88.5199°

**Boring Designation BI-DA10-05-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-05-11 |
| LOCATION COORDINATES | E = 1,084,779 N = 266,771 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 15.4 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 12.5 Ft. |
| 15. DATE BORING | STARTED 06-20-11 / COMPLETED 06-20-11 |
| 16. ELEVATION TOP OF BORING | -10.6 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -10.6 | 0.0 | | | | |
| -12.9 | 2.3 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, trace shell fragments, occasional clay, lt. gray (SP) | A | Classification: SP Color: 2.5Y 6/2-light brownish gray<br>D50: 0.3243 mm % Fines: 2 |
| -18.0 | 7.4 | | SAND, clayey, gray and brown (SC) | NS | |
| -20.8 | 10.2 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, lt. gray (SP) | | |
| -26.0 | 15.4 | | CLAY, fat, dark gray (CH) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

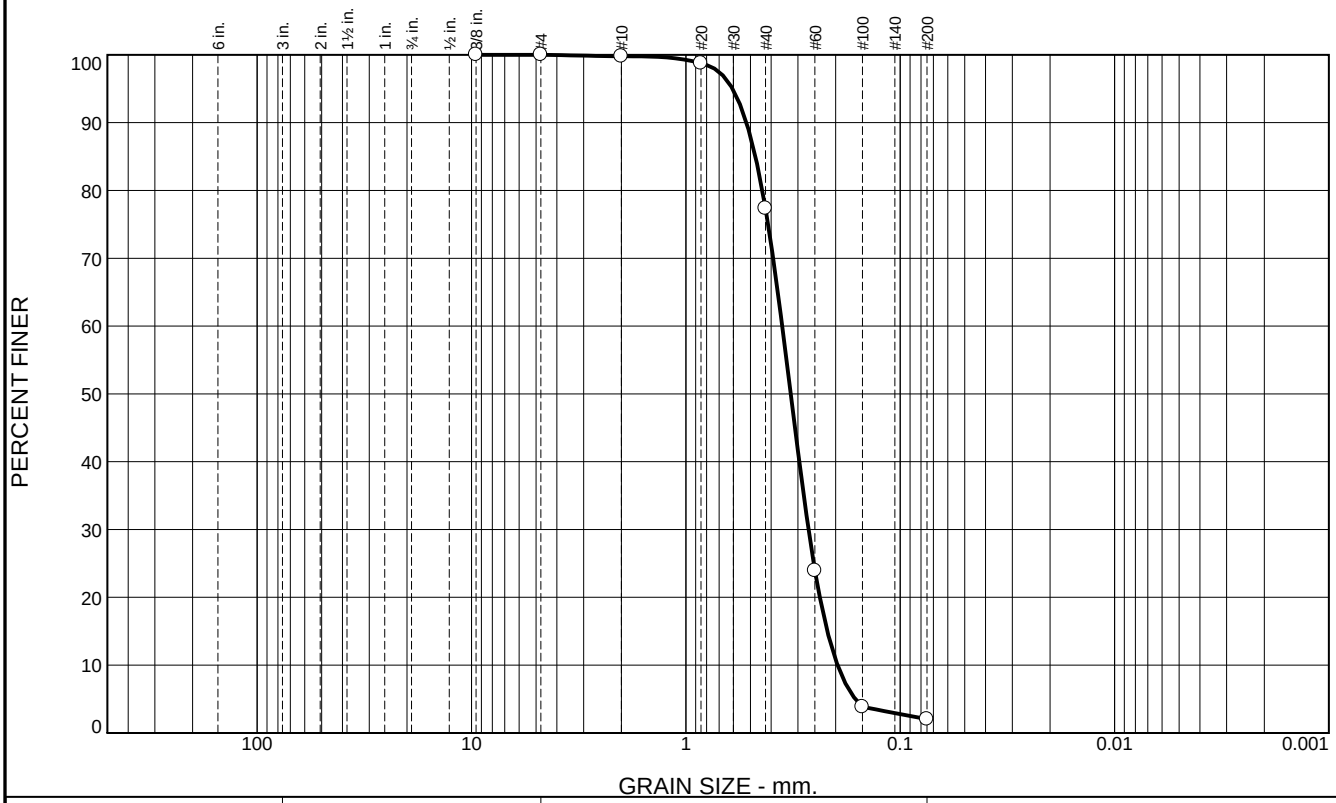
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.23318° Long = -88.515°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 22.5 | 75.3 | 2.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 98.8 | | |
| #40 | 77.3 | | |
| #60 | 23.9 | | |
| #100 | 3.8 | | |
| #200 | 2.0 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5214 $D_{85}$= 0.4735 $D_{60}$= 0.3553
$D_{50}$= 0.3243 $D_{30}$= 0.2679 $D_{15}$= 0.2188
$D_{10}$= 0.1960 $C_u$= 1.81 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # BI-DA10-5A-11
**Sample Number:** TE Lab ID: 5054.15 **Depth:** 0.0 - 2.3 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

**Boring Designation BI-DA10-06-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-06-11 |
| LOCATION COORDINATES | E = 1,085,833 N = 265,748 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 10.8 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 0 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 16.5 Ft. |
| 15. DATE BORING | STARTED 06-20-11 / COMPLETED 06-20-11 |
| 16. ELEVATION TOP OF BORING | -14.6 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -14.6 | 0.0 | | | | |
| -15.6 | 1.0 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, gray (SP) | | |
| | | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, occasional clay, gray (SM) | | |
| -19.6 | 5.0 | | | | |
| | | | CLAY, fat, dark gray (CH) | NS | |
| -25.4 | 10.8 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.23036° Long = -88.51167°**

**Boring Designation BI-DA10-07-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-07-11 |
| LOCATION COORDINATES | E = 1,078,709 N = 264,485 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 14.8 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 17.5 Ft. |
| 15. DATE BORING | STARTED 06-20-11 / COMPLETED 06-20-11 |
| 16. ELEVATION TOP OF BORING | -15.5 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -15.5 | 0.0 | | | | |
| -16.5 | 1.0 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, trace shell fragments, tan (SP) | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.4019 mm % Fines: 0.7 |
| -23.1 | 7.6 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -30.3 | 14.8 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, brown (SP) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

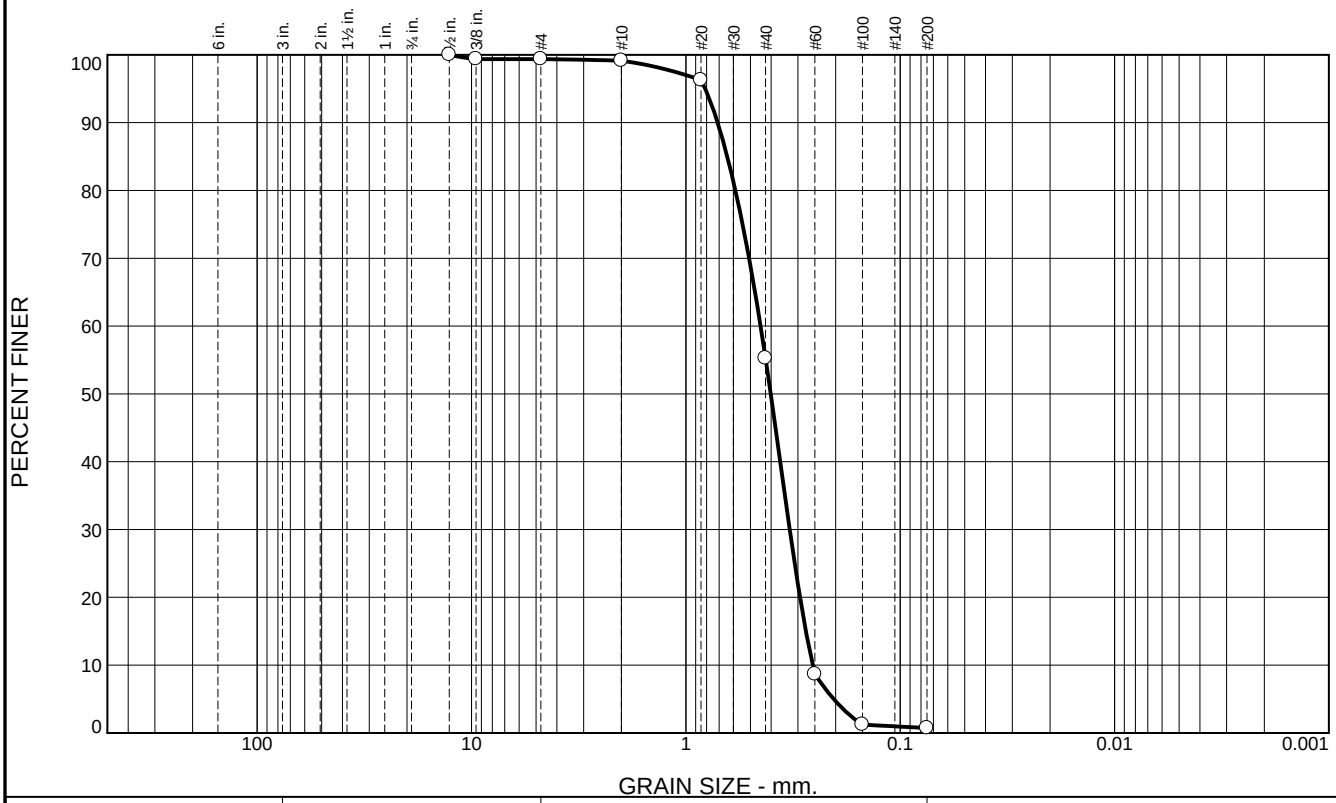
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22694° Long = -88.53424°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.6 | 0.3 | 43.8 | 54.6 | 0.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .5 | 100.0 | | |
| .375 | 99.4 | | |
| #4 | 99.4 | | |
| #10 | 99.1 | | |
| #20 | 96.3 | | |
| #40 | 55.3 | | |
| #60 | 8.7 | | |
| #100 | 1.2 | | |
| #200 | 0.7 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.7105 $D_{85}$= 0.6405 $D_{60}$= 0.4480
$D_{50}$= 0.4019 $D_{30}$= 0.3279 $D_{15}$= 0.2758
$D_{10}$= 0.2560 $C_u$= 1.75 $C_c$= 0.94

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # BI-DA10-7A-11
**Sample Number:** TE Lab ID: 5054.16 **Depth:** 0.0 - 5.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

**Boring Designation BI-DA10-08-11**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Disposal Area 10 | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DA10-08-11 — LOCATION COORDINATES: E = 1,080,158 N = 264,573 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 0 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 25.5 Ft. |
| | 15. DATE BORING — STARTED: 06-20-11 — COMPLETED: 06-20-11 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -23.6 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 14.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -23.6 | 0.0 | | | | |
| -28.9 | 5.3 | | CLAY, lean, trace sand, dark gray (CL) | NS | |
| -32.1 | 8.5 | | SAND, silty, mostly medium-grained sand-sized quartz, occasional clay, dark gray (SM) | | |
| -38.4 | 14.8 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, tan and white (SP) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22717° Long = -88.52965°**

**Boring Designation BI-DA10-09-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-09-11 |
| LOCATION COORDINATES | E = 1,081,523 N = 264,613 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 16.9 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 0 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 20 Ft. |
| 15. DATE BORING | STARTED 06-18-11 / COMPLETED 06-18-11 |
| 16. ELEVATION TOP OF BORING | -18.0 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -18.0 | 0.0 | | | | |
| -24.2 | 6.2 | | CLAY, lean, dark gray (CL) | | |
| -34.9 | 16.9 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, gray (SP)<br>At El. -26.5 Ft., lt. gray<br>At El. -27.6 Ft., brown | NS | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22727° Long = -88.52533°**

**Boring Designation BI-DA10-10-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-10-11 |
| LOCATION COORDINATES | E = 1,083,136 N = 264,748 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 13.5 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 17.5 Ft. |
| 15. DATE BORING | STARTED 06-18-11 / COMPLETED 06-18-11 |
| 16. ELEVATION TOP OF BORING | -15.3 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -15.3 | 0.0 | | | | |
| -17.0 | 1.7 | | CLAY, lean, gray (CL) | NS | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, gray (SP) | A | Classification: SP Color: 10YR 6/2-light brownish gray<br>D50: 0.306 mm % Fines: 3.1 |
| | | | At El. -21.0 Ft., brown | B | Classification: SP Color: 10YR 4/2-dark grayish brown<br>D50: 0.2718 mm % Fines: 3 |
| -22.9 | 7.6 | | | | |
| -23.3 | 8.0 | | SAND, clayey, mostly medium-grained sand-sized quartz, dark brown (SC) | NS | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, gray (SP) | C | Classification: SP Color: 10YR 4/2-dark grayish brown<br>D50: 0.2889 mm % Fines: 2.8 |
| -28.8 | 13.5 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

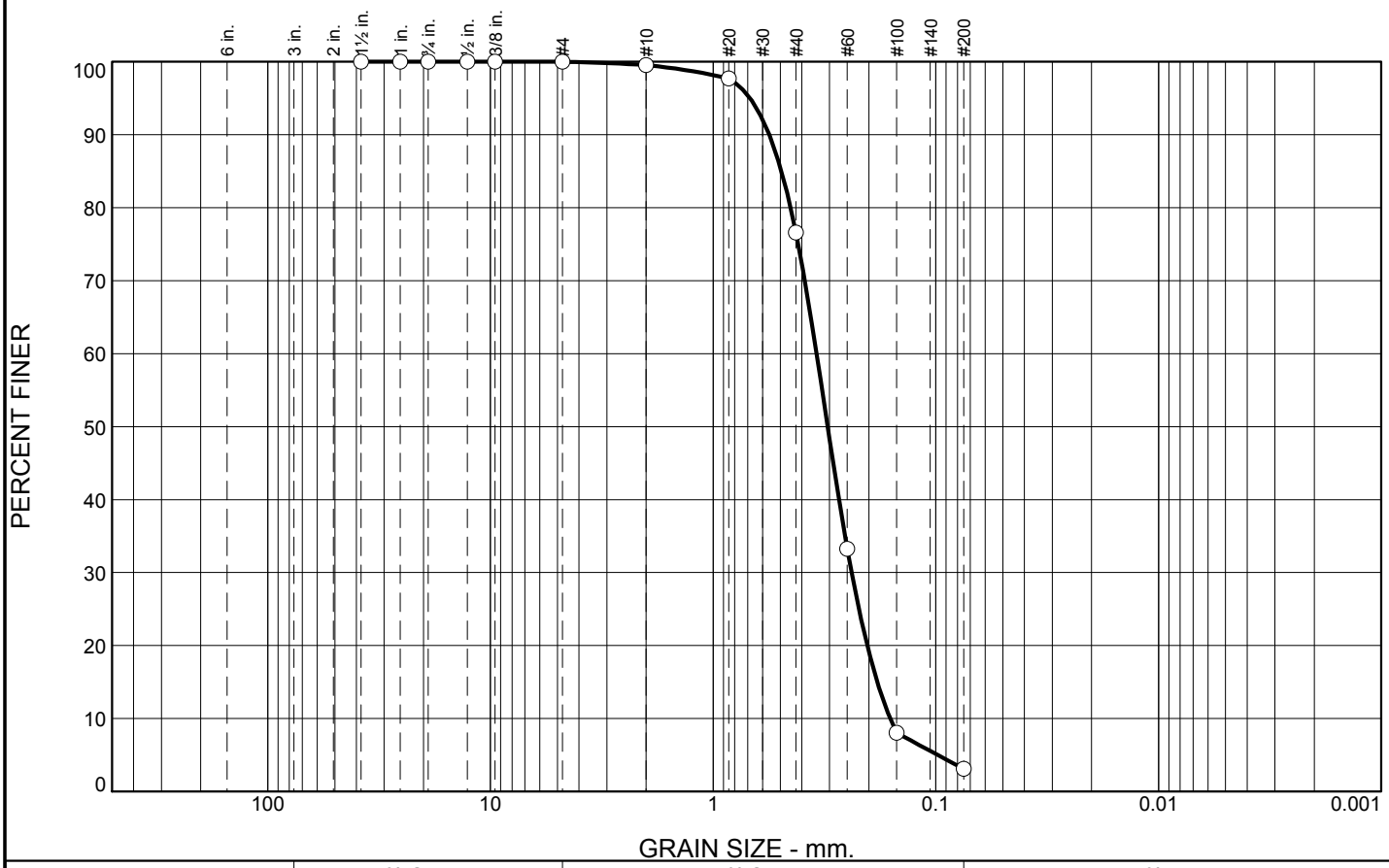
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22763° Long = -88.52022°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 23.0 | 73.5 | 3.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 97.7 | | |
| #40 | 76.6 | | |
| #60 | 33.3 | | |
| #100 | 8.0 | | |
| #200 | 3.1 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5597 $D_{85}$= 0.4937 $D_{60}$= 0.3433
$D_{50}$= 0.3060 $D_{30}$= 0.2390 $D_{15}$= 0.1833
$D_{10}$= 0.1606 $C_u$= 2.14 $C_c$= 1.04

**Classification**

USCS= SP AASHTO=

**Remarks**

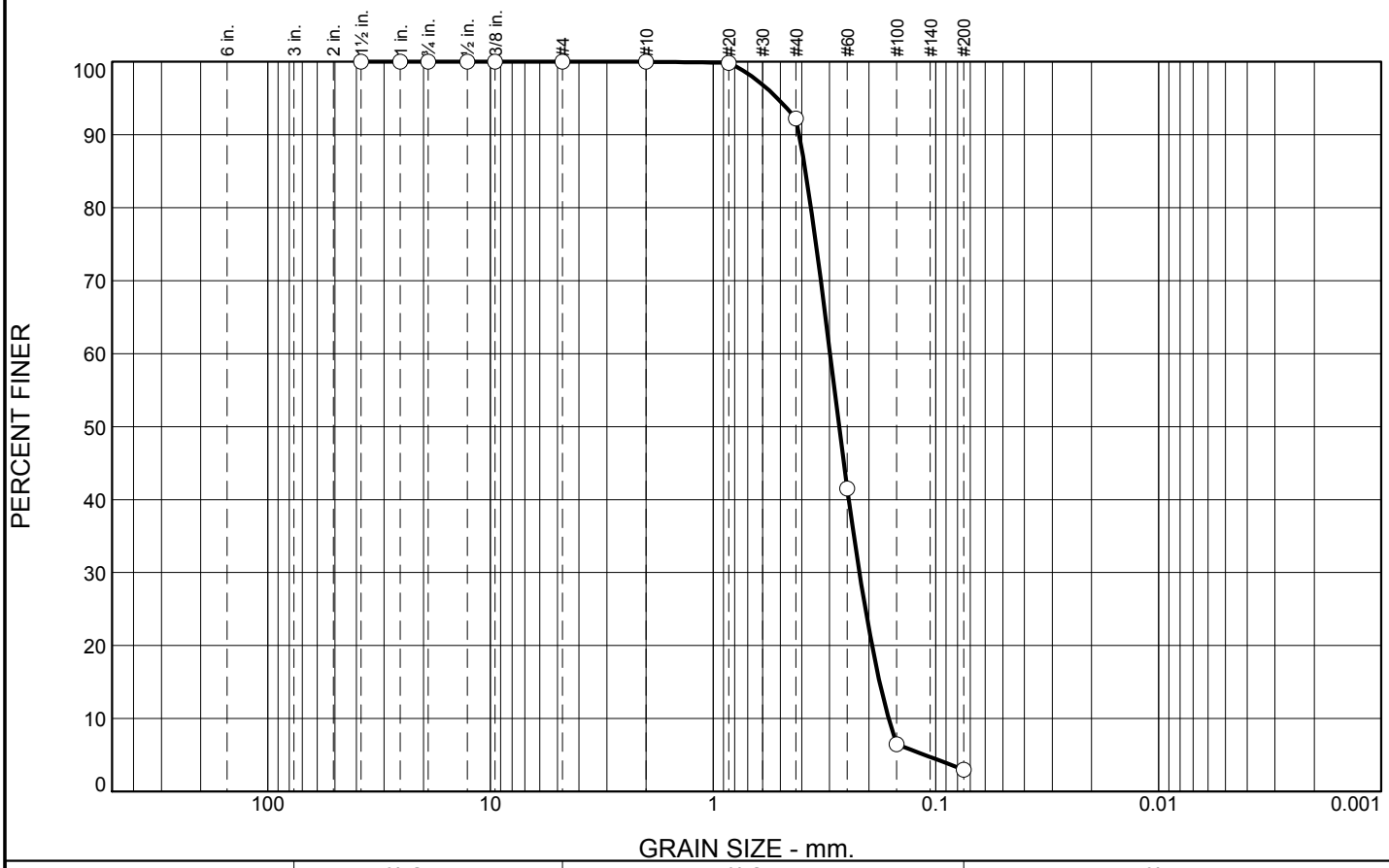
**Location:** USACE Sample # B1-DA10-10A-11
**Sample Number:** TE Lab ID: 5055.01 **Depth:** 1.7 - 5.7 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 7.8 | 89.2 | 3.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.8 | | |
| #40 | 92.2 | | |
| #60 | 41.5 | | |
| #100 | 6.5 | | |
| #200 | 3.0 | | |

* (no specification provided)

**Material Description**

SAND (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4111 $D_{85}$= 0.3852 $D_{60}$= 0.2986
$D_{50}$= 0.2718 $D_{30}$= 0.2204 $D_{15}$= 0.1791
$D_{10}$= 0.1631 $C_u$= 1.83 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

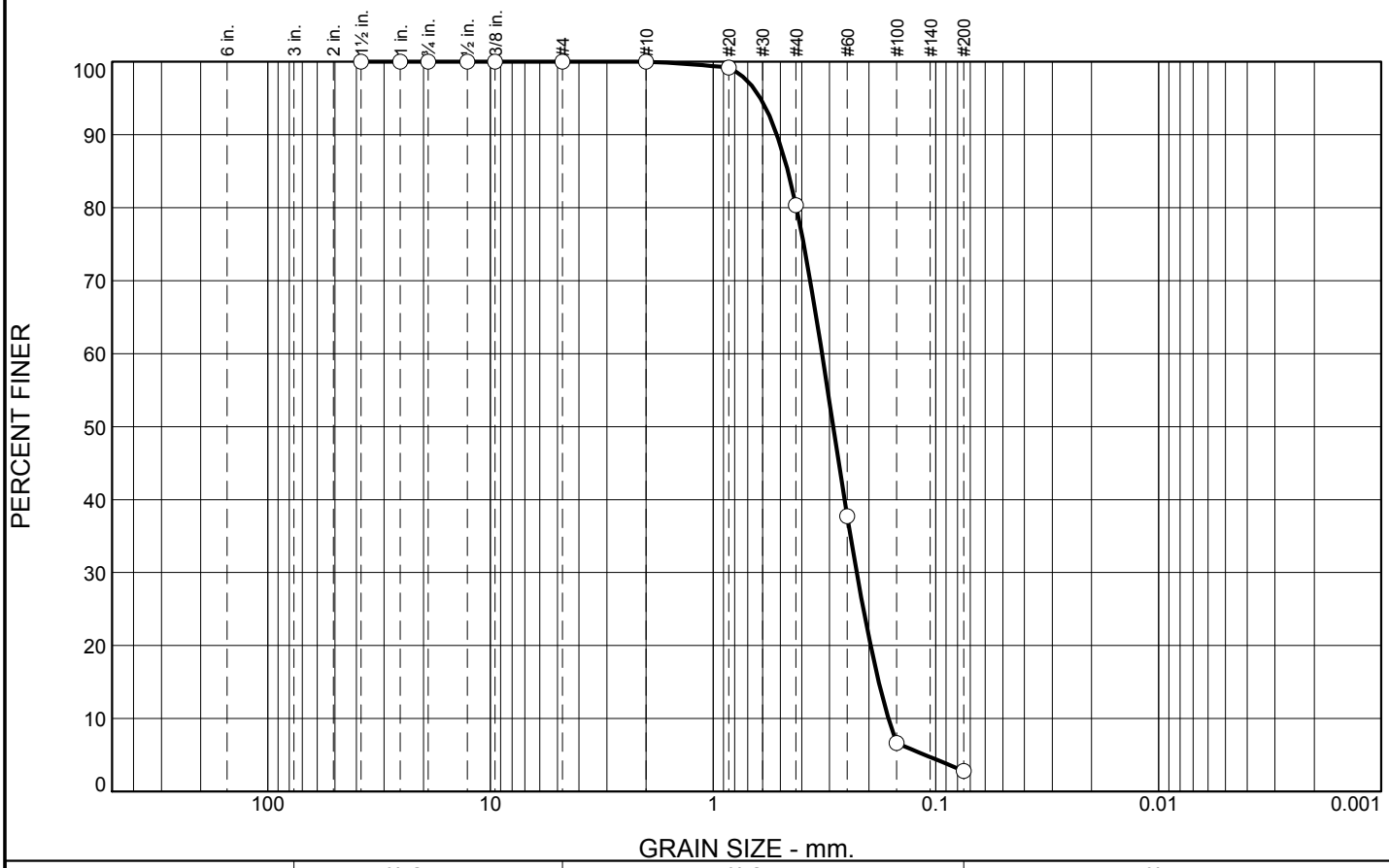
**Location:** USACE Sample # B1-DA10-10B-11
**Sample Number:** TE Lab ID: 5055.02 **Depth:** 5.7 - 7.6 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 19.6 | 77.6 | 2.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.2 | | |
| #40 | 80.4 | | |
| #60 | 37.7 | | |
| #100 | 6.6 | | |
| #200 | 2.8 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5175 $D_{85}$= 0.4618 $D_{60}$= 0.3245
$D_{50}$= 0.2889 $D_{30}$= 0.2267 $D_{15}$= 0.1805
$D_{10}$= 0.1634 $C_u$= 1.99 $C_c$= 0.97

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # B1-DA10-10C-11
**Sample Number:** TE Lab ID: 5055.03 **Depth:** 8.0 - 13.5 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

**Boring Designation BI-DA10-11-11**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Disposal Area 10 | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DA10-11-11 — LOCATION COORDINATES: E = 1,084,662 N = 264,527 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 3 Ft. |
| | 15. DATE BORING — STARTED: 06-18-11 — COMPLETED: 06-18-11 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -0.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 14.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -0.7 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.343 mm % Fines: 1.4 |
| | | | | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.338 mm % Fines: 2.4 |
| -10.4 | 9.7 | | | | |
| | | | CLAY, lean, gray (CL) | NS | |
| -13.9 | 13.2 | | | | |
| -14.8 | 14.1 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, lt. gray (SP) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

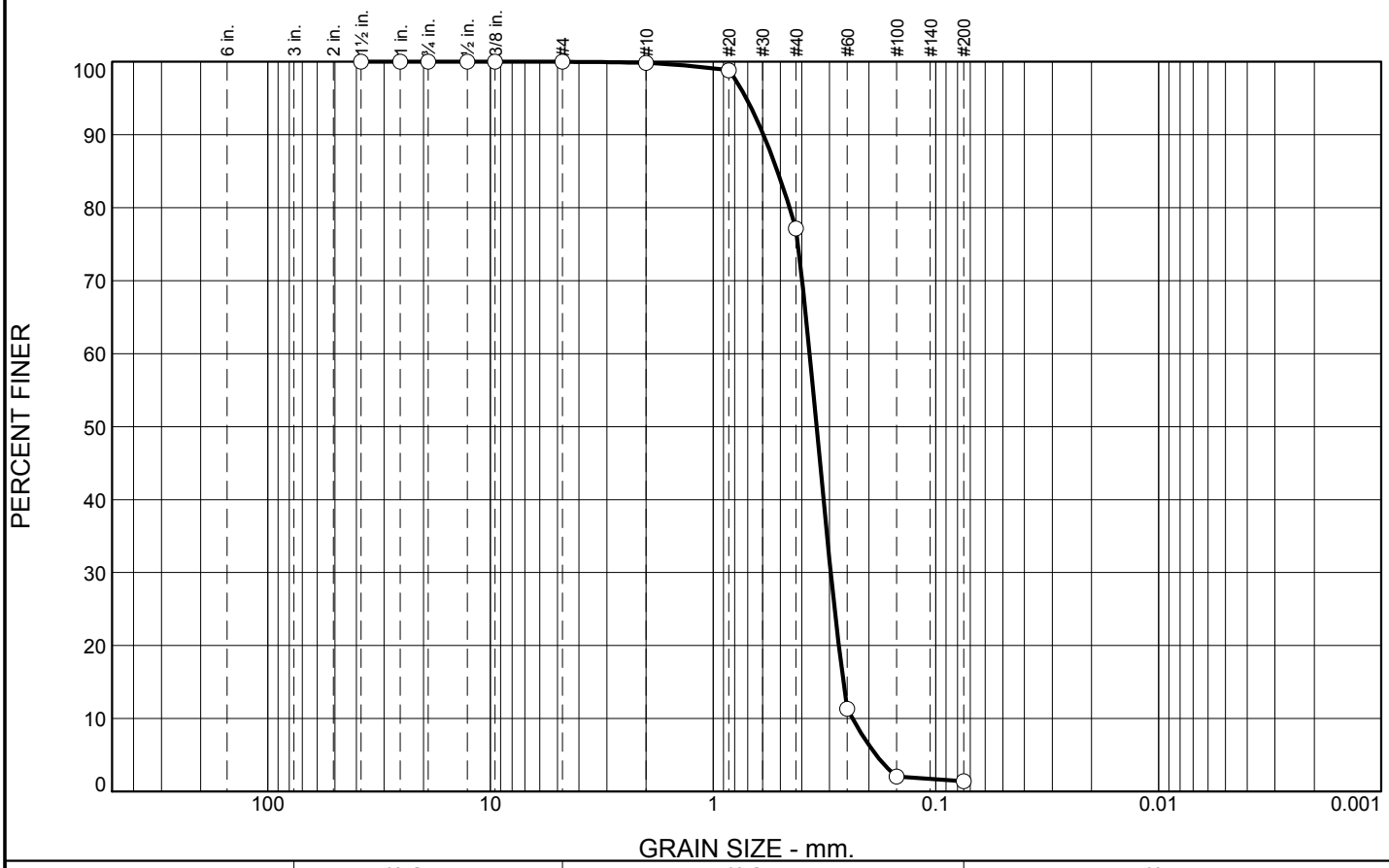
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22701° Long = -88.51539°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 22.8 | 75.7 | 1.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 98.8 | | |
| #40 | 77.1 | | |
| #60 | 11.3 | | |
| #100 | 2.0 | | |
| #200 | 1.4 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5949 $D_{85}$= 0.5146 $D_{60}$= 0.3688
$D_{50}$= 0.3430 $D_{30}$= 0.2965 $D_{15}$= 0.2604
$D_{10}$= 0.2368 $C_u$= 1.56 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

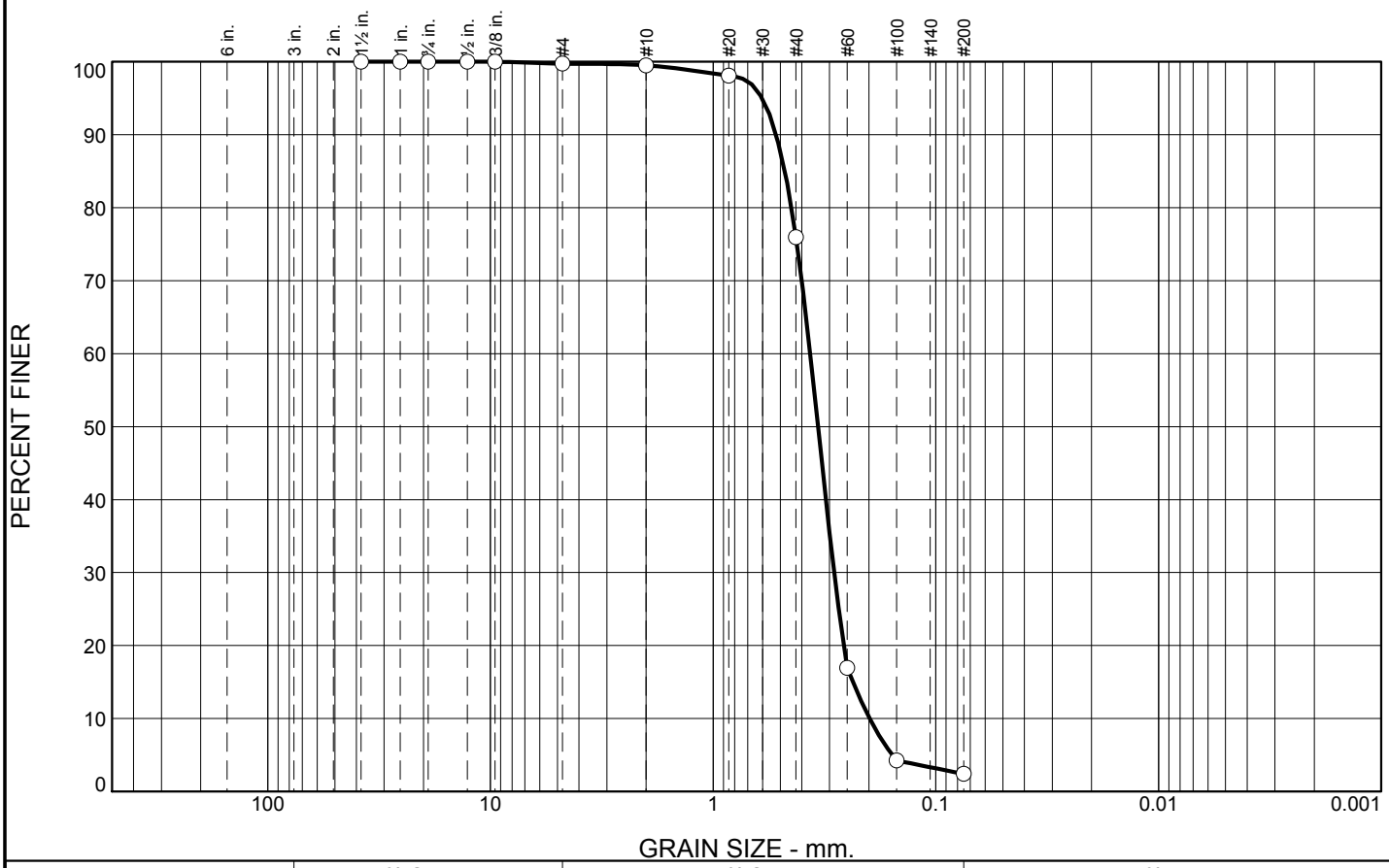
**Location:** USACE Sample # B1-DA10-11A-11
**Sample Number:** TE Lab ID: 5055.04 **Depth:** 0.0 - 5.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.2 | 23.5 | 73.6 | 2.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.5 | | |
| #20 | 98.1 | | |
| #40 | 76.0 | | |
| #60 | 17.0 | | |
| #100 | 4.2 | | |
| #200 | 2.4 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5219 $D_{85}$= 0.4769 $D_{60}$= 0.3667
$D_{50}$= 0.3380 $D_{30}$= 0.2862 $D_{15}$= 0.2357
$D_{10}$= 0.1983 $C_u$= 1.85 $C_c$= 1.13

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # B1-DA10-11B-11
**Sample Number:** TE Lab ID: 5055.05 **Depth:** 5.0 - 9.7 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

**Boring Designation BI-DA10-12-11**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration Disposal Area 10 | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DA10-12-11 — LOCATION COORDINATES: E = 1,085,757 N = 263,890 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 4 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 6.5 Ft. |
| | 15. DATE BORING — STARTED: 06-18-11 — COMPLETED: 06-18-11 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -4.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -4.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3053 mm % Fines: 2 |
| | | | | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2972 mm % Fines: 4.1 |
| | | | | C | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3417 mm % Fines: 3.7 |
| | | | | D | Classification: SP-SM Color: 2.5Y 7/2-light gray<br>D50: 0.3292 mm % Fines: 5.2 |
| -21.6 | 17.4 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

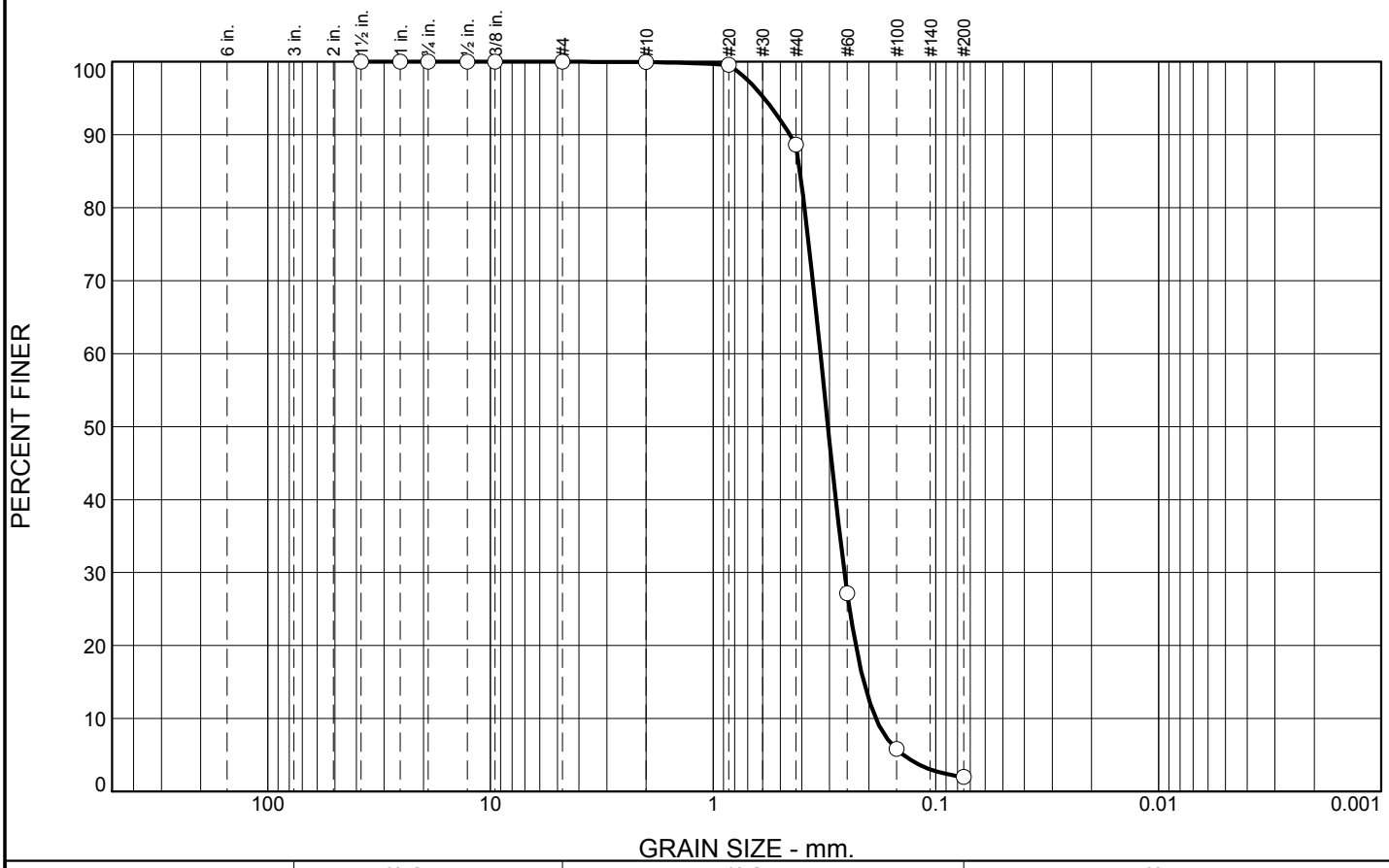
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22525° Long = -88.51194°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 11.4 | 86.6 | 2.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.6 | | |
| #40 | 88.6 | | |
| #60 | 27.2 | | |
| #100 | 5.8 | | |
| #200 | 2.0 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4522 $D_{85}$= 0.4083 $D_{60}$= 0.3298
$D_{50}$= 0.3053 $D_{30}$= 0.2574 $D_{15}$= 0.2108
$D_{10}$= 0.1862 $C_u$= 1.77 $C_c$= 1.08

**Classification**

USCS= SP AASHTO=

**Remarks**

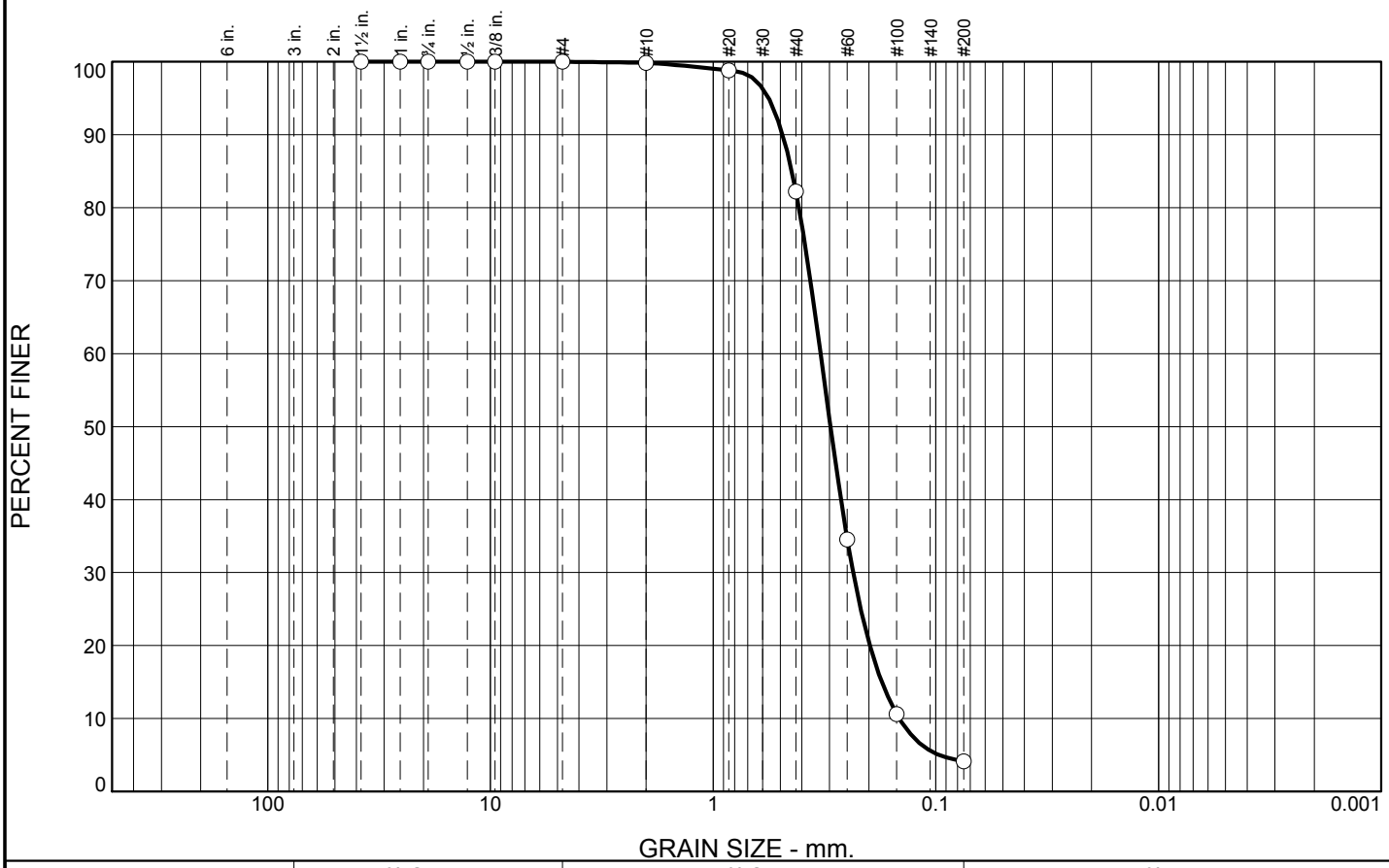
**Location:** USACE Sample # B1-DA10-12A-11
**Sample Number:** TE Lab ID: 5055.06 **Depth:** 0.0 - 4.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 17.6 | 78.1 | 4.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 98.8 | | |
| #40 | 82.2 | | |
| #60 | 34.5 | | |
| #100 | 10.6 | | |
| #200 | 4.1 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4877 $D_{85}$= 0.4437 $D_{60}$= 0.3293
$D_{50}$= 0.2972 $D_{30}$= 0.2352 $D_{15}$= 0.1750
$D_{10}$= 0.1459 $C_u$= 2.26 $C_c$= 1.15

**Classification**

USCS= SP AASHTO=

**Remarks**

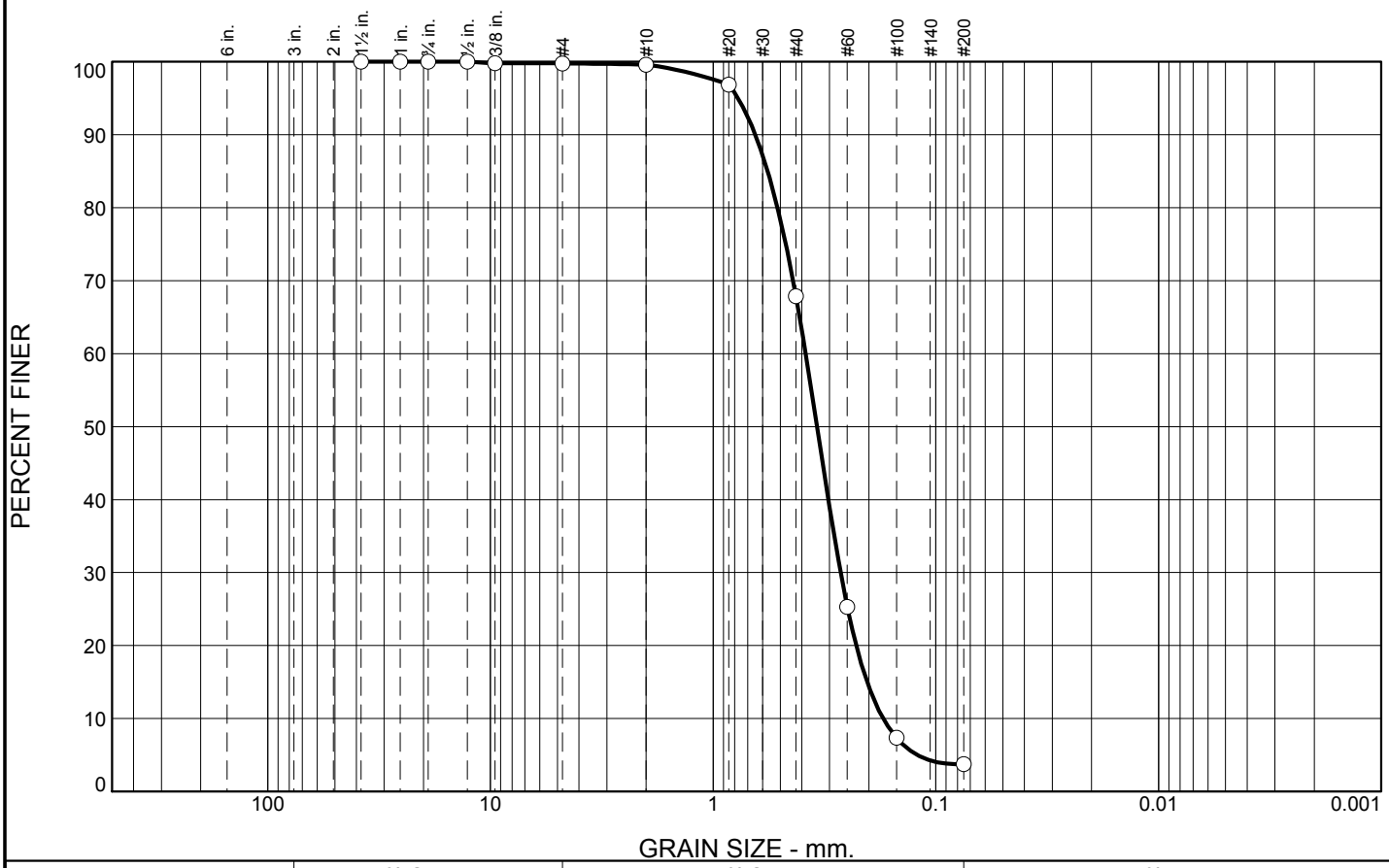
**Location:** USACE Sample # B1-DA10-12B-11
**Sample Number:** TE Lab ID: 5055.07 **Depth:** 4.0 - 8.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.2 | 31.7 | 64.2 | 3.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 99.8 | | |
| #4 | 99.8 | | |
| #10 | 99.6 | | |
| #20 | 96.9 | | |
| #40 | 67.9 | | |
| #60 | 25.3 | | |
| #100 | 7.4 | | |
| #200 | 3.7 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.6467 $D_{85}$= 0.5696 $D_{60}$= 0.3844
$D_{50}$= 0.3417 $D_{30}$= 0.2677 $D_{15}$= 0.2037
$D_{10}$= 0.1725 $C_u$= 2.23 $C_c$= 1.08

**Classification**

USCS= SP AASHTO=

**Remarks**

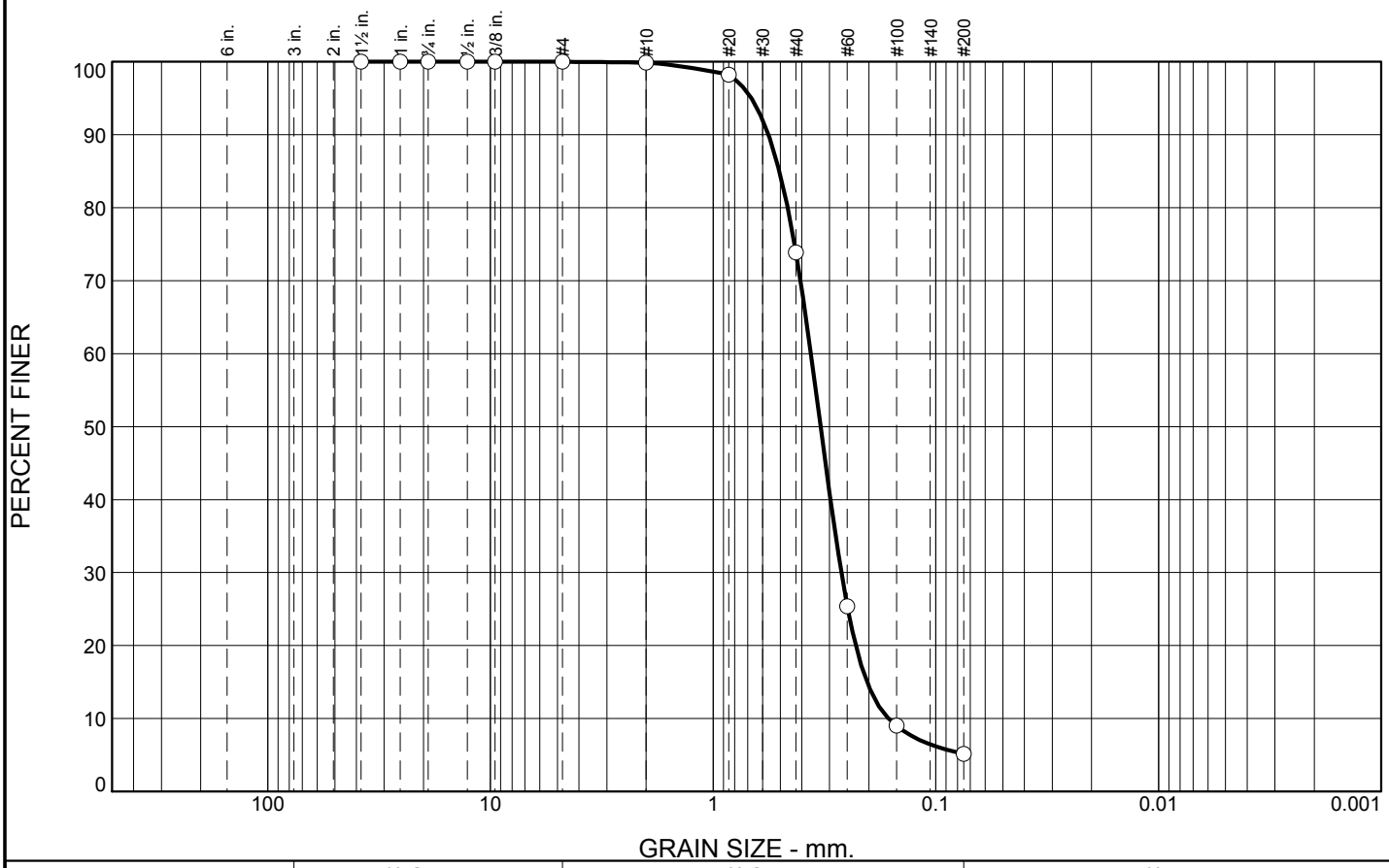
**Location:** USACE Sample # B1-DA10-12C-11
**Sample Number:** TE Lab ID: 5055.08 **Depth:** 8.0. - 12.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 26.0 | 68.7 | 5.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 98.2 | | |
| #40 | 73.9 | | |
| #60 | 25.4 | | |
| #100 | 9.0 | | |
| #200 | 5.2 | | |

* (no specification provided)

**Material Description**

Slightly silty SAND (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5647 $D_{85}$= 0.5046 $D_{60}$= 0.3640
$D_{50}$= 0.3292 $D_{30}$= 0.2658 $D_{15}$= 0.2039
$D_{10}$= 0.1632 $C_u$= 2.23 $C_c$= 1.19

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

**Location:** USACE Sample # B1-DA10-12D-11
**Sample Number:** TE Lab ID: 5055.09 **Depth:** 12.0 - 17.4 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

**Boring Designation BI-DA10-13-11**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Disposal Area 10 | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DA10-13-11 — LOCATION COORDINATES: E = 1,086,264 N = 262,996 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 5 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 6 Ft. |
| | 15. DATE BORING — STARTED: 06-18-11 — COMPLETED: 06-18-11 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -3.6 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -3.6 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, tan and gray mottled (SP) | A | Classification: SP Color: 2.5Y 6/3-light yellowish brown D50: 0.3125 mm % Fines: 0.8 |
| | | | At El. -7.1 Ft., dark gray | B | Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3058 mm % Fines: 1.3 |
| | | | | C | Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3237 mm % Fines: 3.2 |
| | | | At El. -13.0 Ft., lt. gray | D | Classification: SP Color: 2.5Y 7/1-light gray D50: 0.3204 mm % Fines: 4.5 |
| | | | | E | Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.3302 mm % Fines: 8.1 |
| -19.4 | 15.8 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

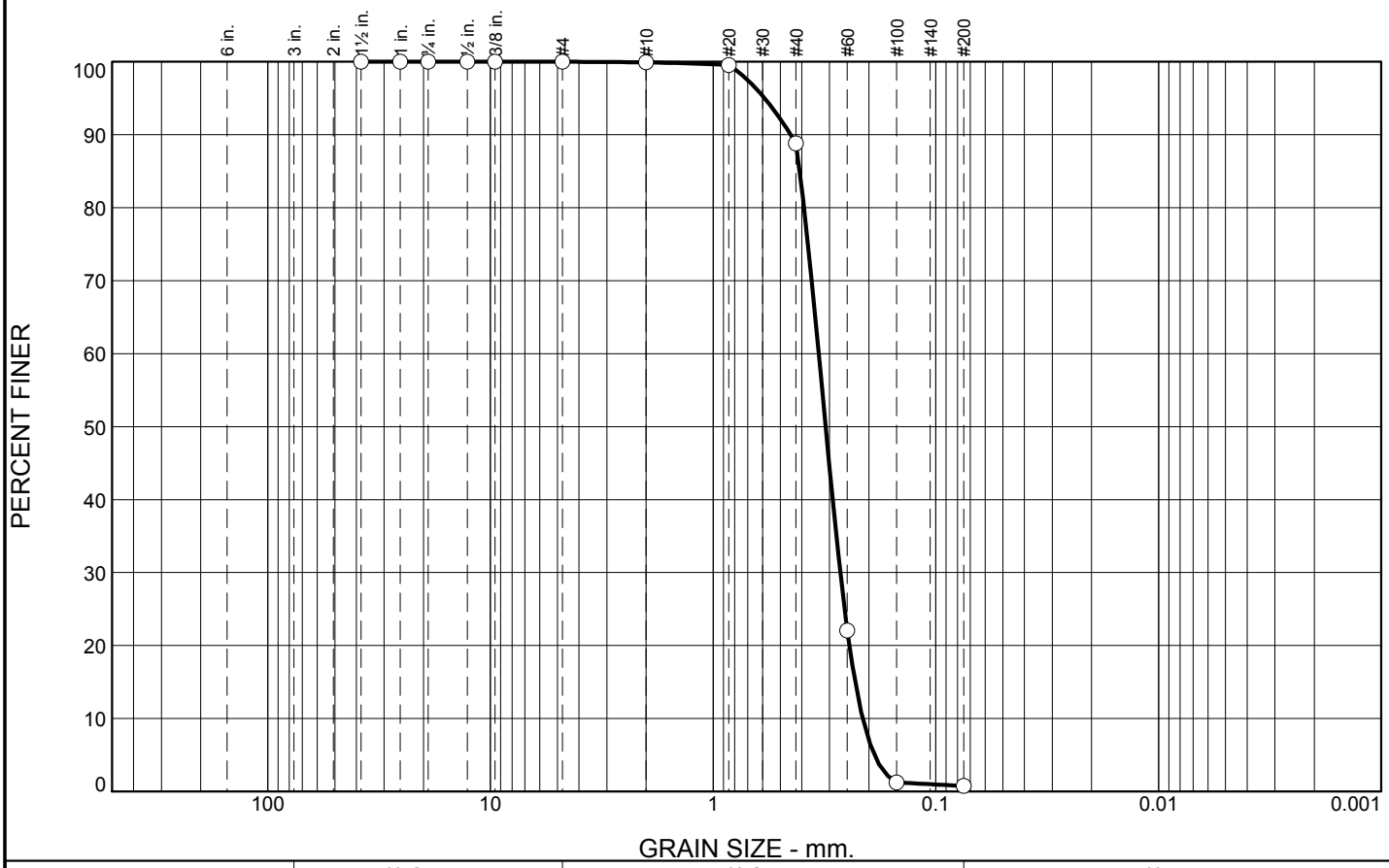
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22279° Long = -88.51033°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 11.1 | 88.0 | 0.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 88.8 | | |
| #60 | 22.1 | | |
| #100 | 1.2 | | |
| #200 | 0.8 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4491 $D_{85}$= 0.4089 $D_{60}$= 0.3355
$D_{50}$= 0.3125 $D_{30}$= 0.2687 $D_{15}$= 0.2304
$D_{10}$= 0.2131 $C_u$= 1.57 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

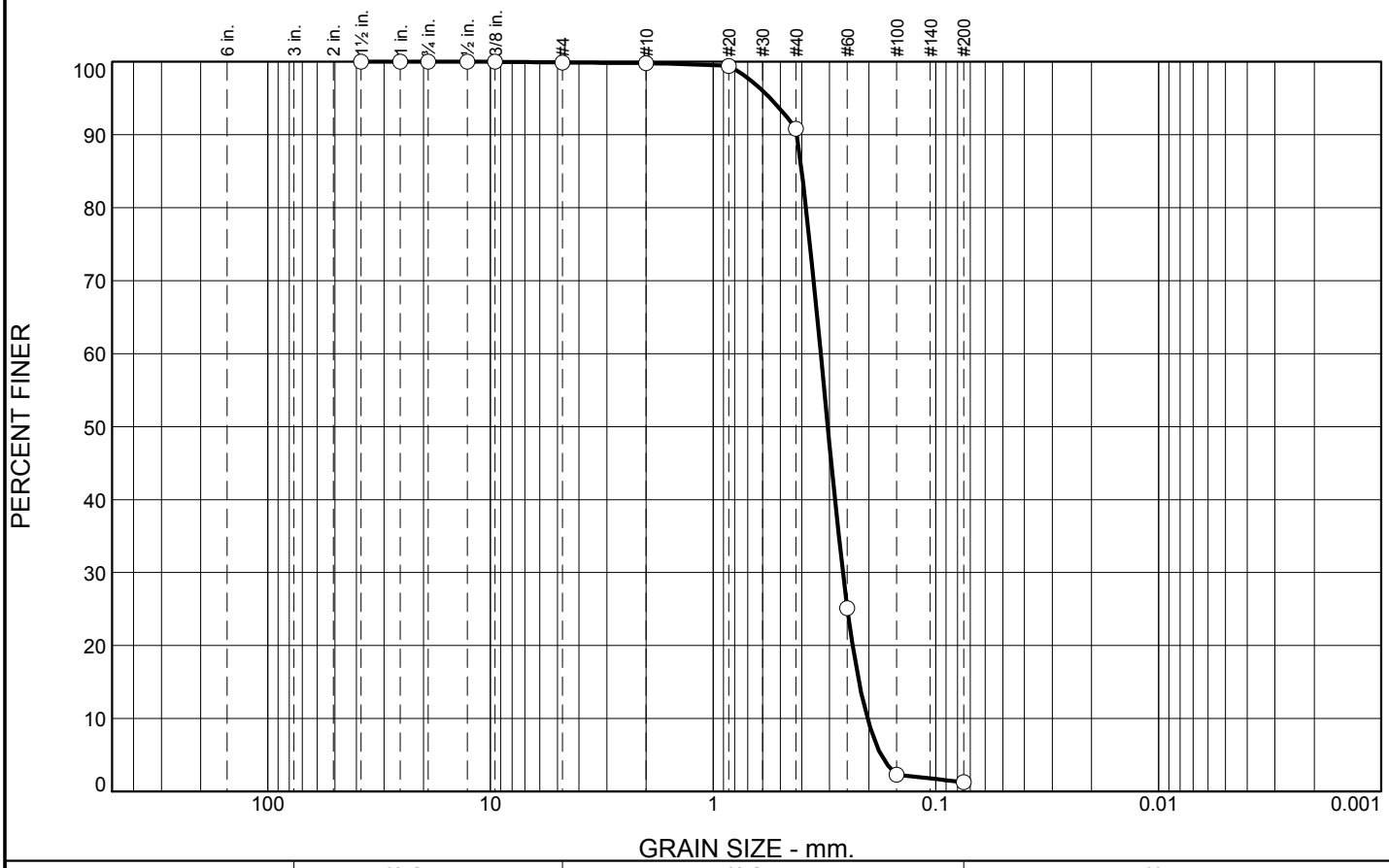
**Location:** USACE Sample # B1-DA10-13A-11
**Sample Number:** TE Lab ID: 5055.10 **Depth:** 0.0 - 3.5 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 9.0 | 89.5 | 1.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 99.4 | | |
| #40 | 90.8 | | |
| #60 | 25.1 | | |
| #100 | 2.3 | | |
| #200 | 1.3 | | |

* (no specification provided)

**Material Description**

SAND (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4212 $D_{85}$= 0.4005 $D_{60}$= 0.3287
$D_{50}$= 0.3058 $D_{30}$= 0.2616 $D_{15}$= 0.2214
$D_{10}$= 0.2029 $C_u$= 1.62 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

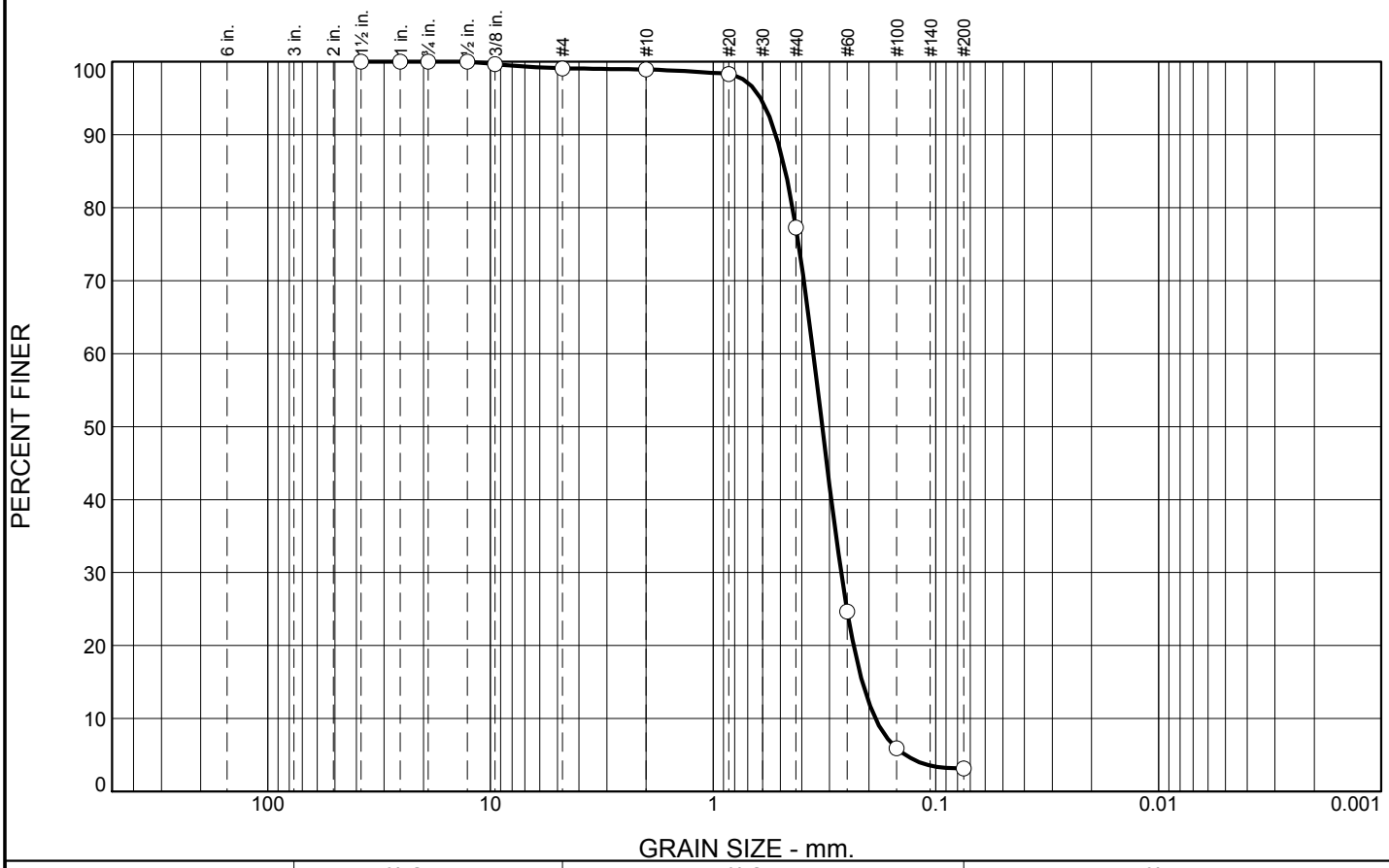
**Location:** USACE Sample # B1-DA10-13B-11
**Sample Number:** TE Lab ID: 5055.11 **Depth:** 3.5 - 6.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.9 | 0.1 | 21.7 | 74.1 | 3.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 99.7 | | |
| #4 | 99.1 | | |
| #10 | 99.0 | | |
| #20 | 98.3 | | |
| #40 | 77.3 | | |
| #60 | 24.7 | | |
| #100 | 5.9 | | |
| #200 | 3.2 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5237 $D_{85}$= 0.4745 $D_{60}$= 0.3550
$D_{50}$= 0.3237 $D_{30}$= 0.2663 $D_{15}$= 0.2139
$D_{10}$= 0.1870 $C_u$= 1.90 $C_c$= 1.07

**Classification**

USCS= SP AASHTO=

**Remarks**

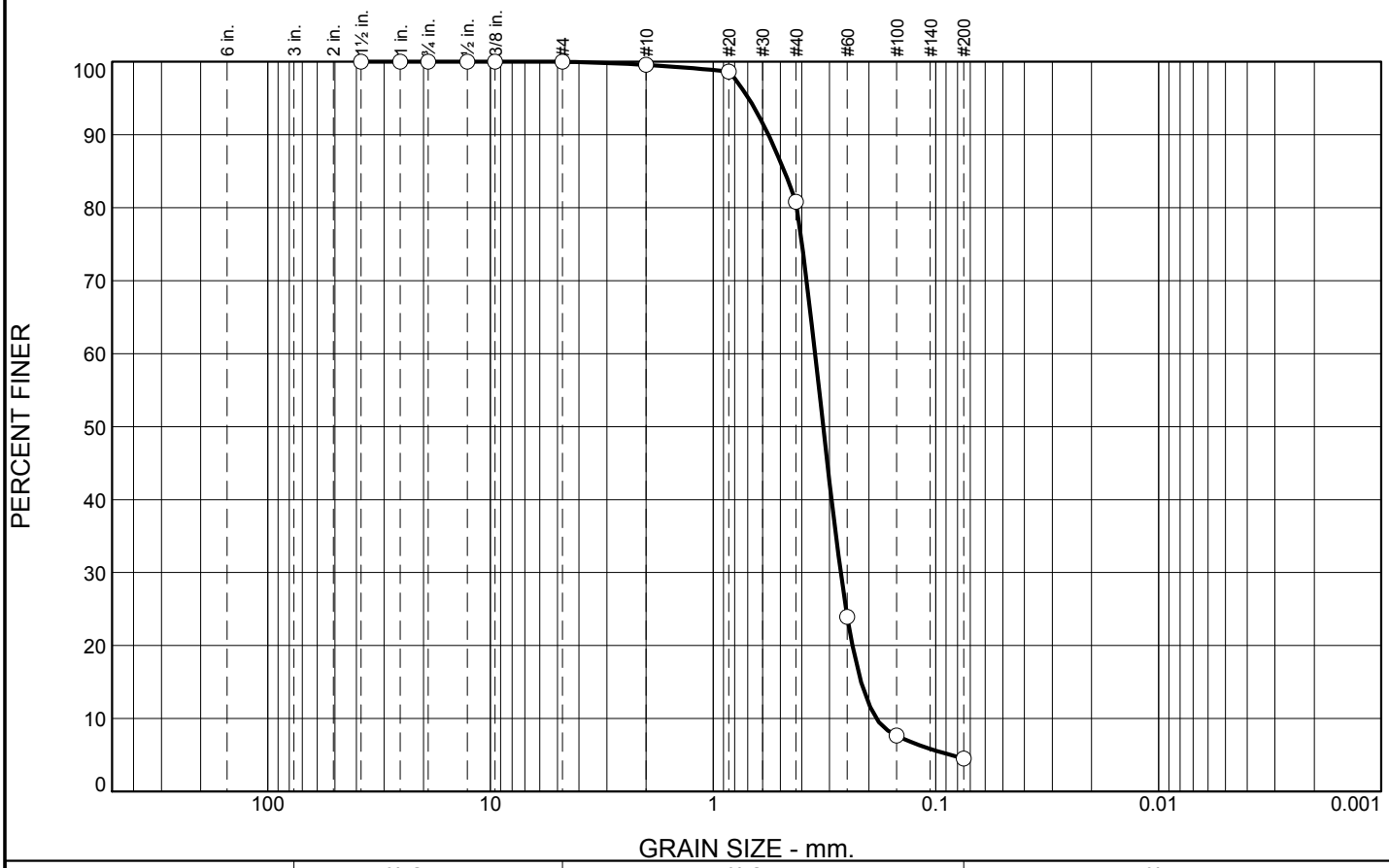
**Location:** USACE Sample # B1-DA10-13C-11
**Sample Number:** TE Lab ID: 5055.12 **Depth:** 6.0 - 9.4 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 18.8 | 76.3 | 4.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 98.6 | | |
| #40 | 80.8 | | |
| #60 | 23.9 | | |
| #100 | 7.7 | | |
| #200 | 4.5 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5654 $D_{85}$= 0.4795 $D_{60}$= 0.3486
$D_{50}$= 0.3204 $D_{30}$= 0.2676 $D_{15}$= 0.2166
$D_{10}$= 0.1850 $C_u$= 1.88 $C_c$= 1.11

**Classification**

USCS= SP AASHTO=

**Remarks**

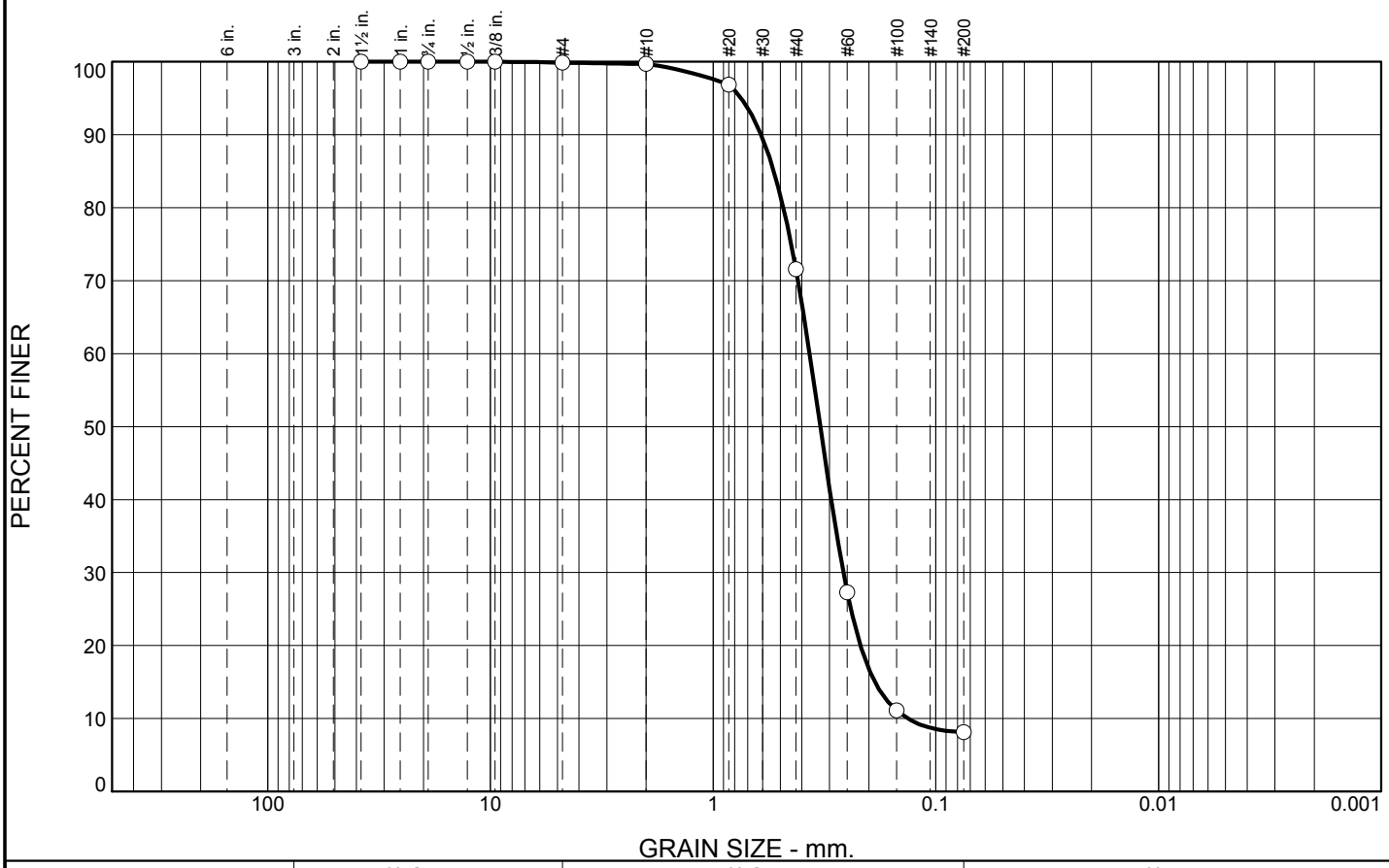
**Location:** USACE Sample # B1-DA10-13D-11
**Sample Number:** TE Lab ID: 5055.13 **Depth:** 9.4 - 13.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.2 | 28.1 | 63.5 | 8.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.7 | | |
| #20 | 96.9 | | |
| #40 | 71.6 | | |
| #60 | 27.3 | | |
| #100 | 11.1 | | |
| #200 | 8.1 | | |

* (no specification provided)

**Material Description**

Slightly silty SAND (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.6093 $D_{85}$= 0.5345 $D_{60}$= 0.3690
$D_{50}$= 0.3302 $D_{30}$= 0.2602 $D_{15}$= 0.1880
$D_{10}$= 0.1333 $C_u$= 2.77 $C_c$= 1.38

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

**Location:** USACE Sample # B1-DA10-13E-11
**Sample Number:** TE Lab ID: 5055.14 **Depth:** 13.0 - 15.8 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

**Boring Designation BI-DA10-14-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-14-11 |
| LOCATION COORDINATES | E = 1,080,268 N = 262,714 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 12.1 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 2 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 13.2 Ft. |
| 15. DATE BORING | STARTED 06-21-11 / COMPLETED 06-21-11 |
| 16. ELEVATION TOP OF BORING | -11.4 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -11.4 | 0.0 | | | | |
| -16.0 | 4.6 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, tan (SP)<br>At El. -12.2 Ft., gray | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.3497 mm % Fines: 0.5 |
| -16.9 | 5.5 | | CLAY, lean, trace fine-grained sand, gray (CL) | NS | |
| -23.5 | 12.1 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, lt. gray (SP) | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.301 mm % Fines: 4 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

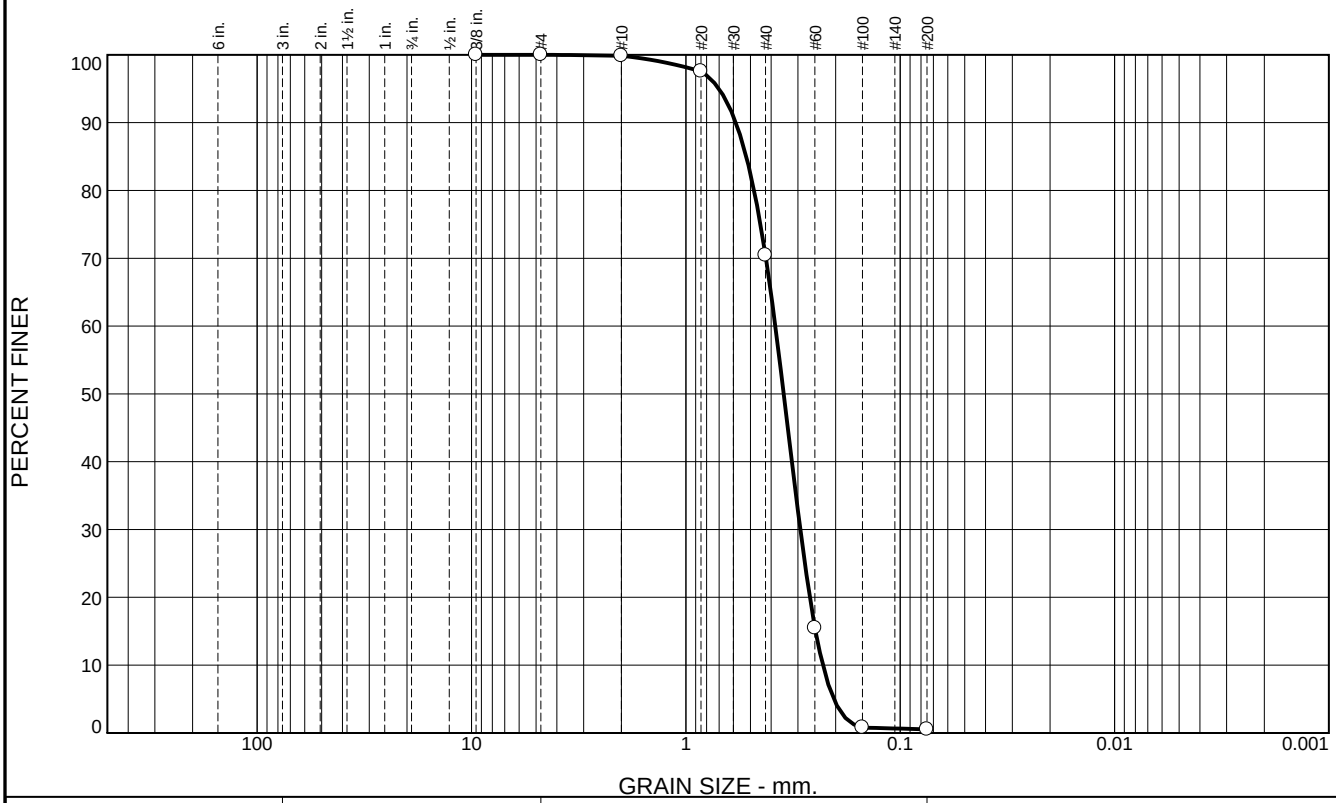
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22206° Long = -88.52932°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 29.4 | 70.0 | 0.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 97.6 | | |
| #40 | 70.5 | | |
| #60 | 15.5 | | |
| #100 | 0.8 | | |
| #200 | 0.5 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5841 $D_{85}$= 0.5224 $D_{60}$= 0.3826
$D_{50}$= 0.3497 $D_{30}$= 0.2926 $D_{15}$= 0.2484
$D_{10}$= 0.2297 $C_u$= 1.67 $C_c$= 0.97

**Classification**

USCS= SP AASHTO=

**Remarks**

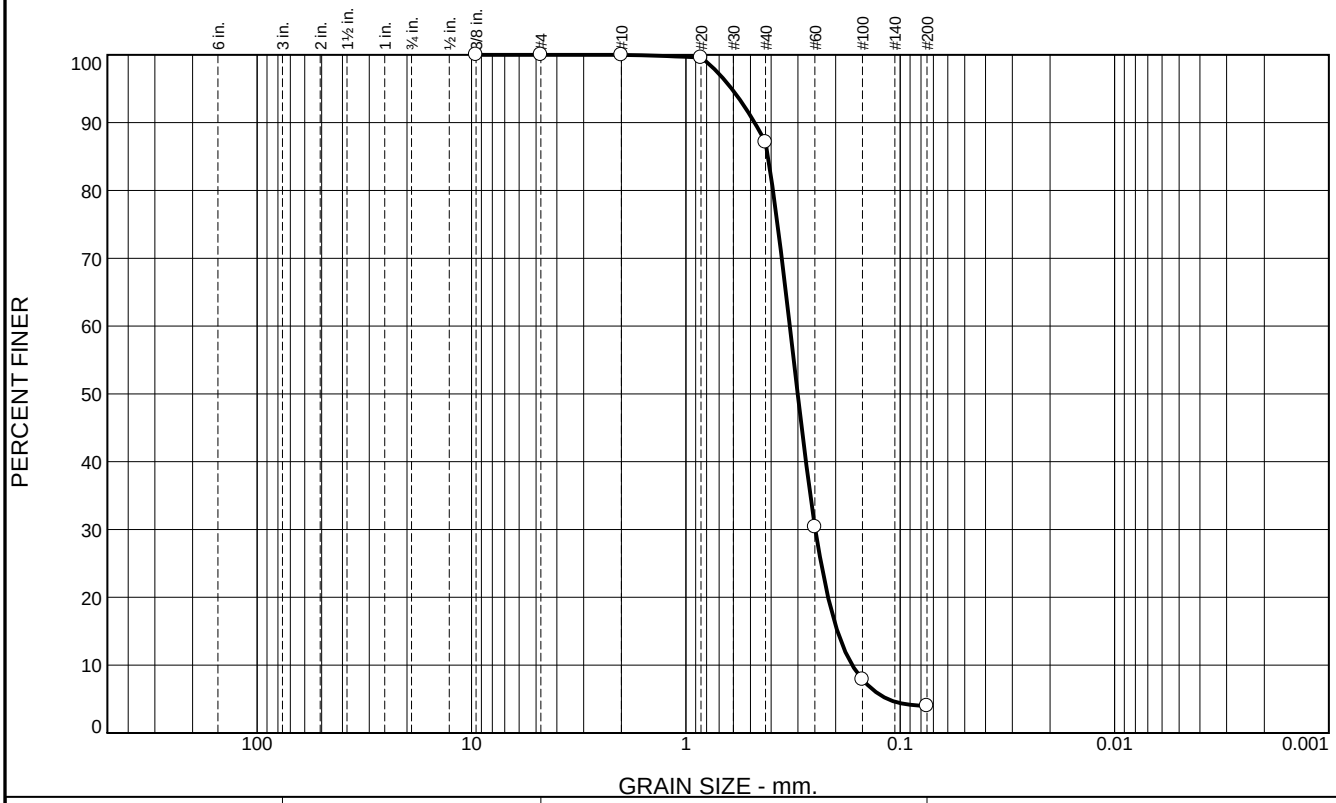
**Location:** USACE Sample # BI-DA10-14A-11
**Sample Number:** TE Lab ID: 5054.22 **Depth:** 0.0 - 4.6 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 12.9 | 83.1 | 4.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.6 | | |
| #40 | 87.1 | | |
| #60 | 30.4 | | |
| #100 | 7.9 | | |
| #200 | 4.0 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4778 $D_{85}$= 0.4141 $D_{60}$= 0.3276
$D_{50}$= 0.3010 $D_{30}$= 0.2490 $D_{15}$= 0.1962
$D_{10}$= 0.1675 $C_u$= 1.96 $C_c$= 1.13

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # BI-DA10-14B-11
**Sample Number:** TE Lab ID: 5054.23 **Depth:** 7.0 - 12.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

**Boring Designation BI-DA10-18-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-18-11 |
| LOCATION COORDINATES | E = 1,085,865 N = 261,322 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 14.5 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 18 Ft. |
| 15. DATE BORING | STARTED 06-18-11 / COMPLETED 06-18-11 |
| 16. ELEVATION TOP OF BORING | -15.6 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -15.6 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, tan and gray mottled (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3321 mm % Fines: 1.5 |
| | | | At El. -19.4 Ft., lt. gray | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.3527 mm % Fines: 2.7 |
| | | | | C | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.3366 mm % Fines: 3.6 |
| -30.1 | 14.5 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

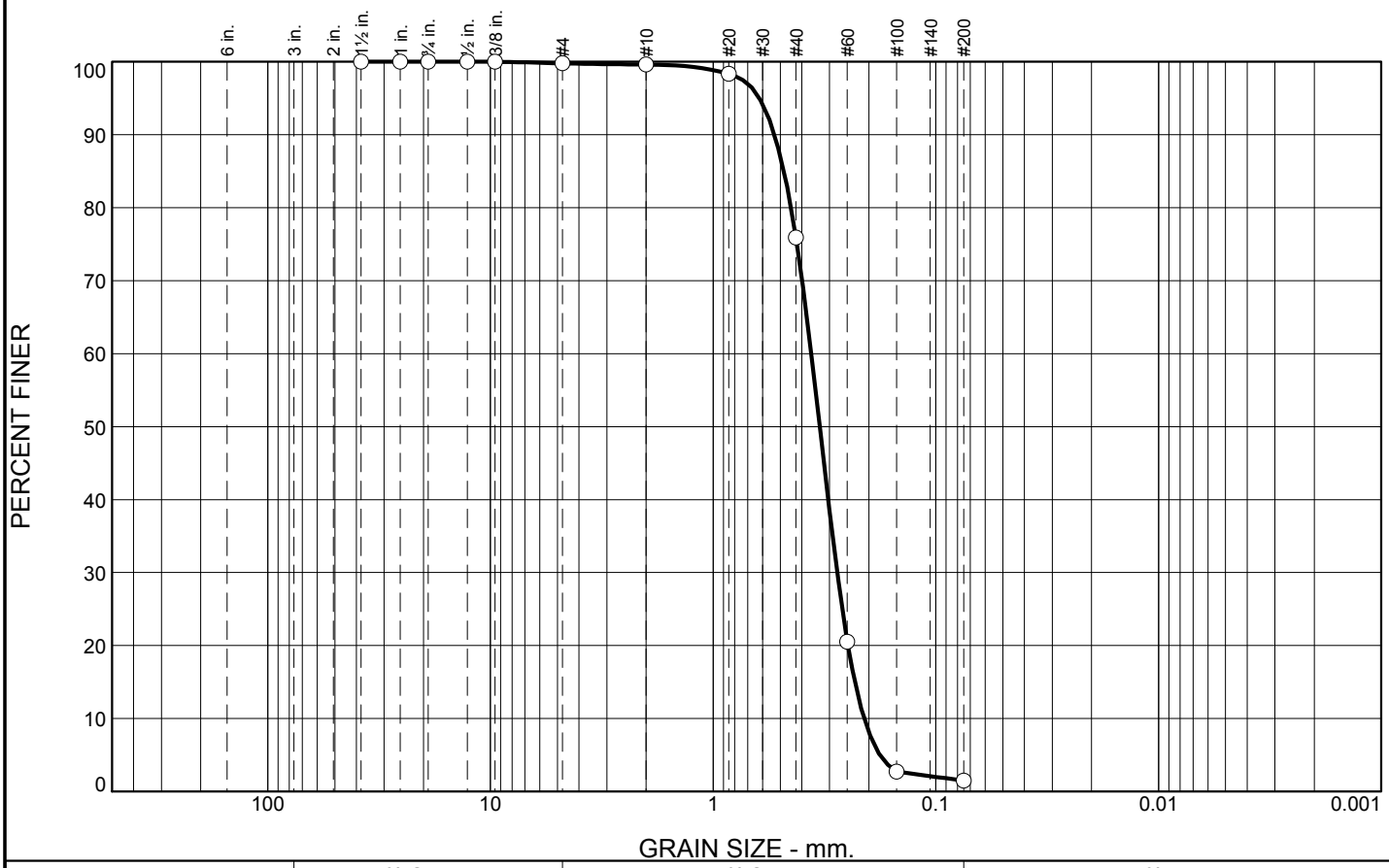
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21819° Long = -88.51161°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.2 | 23.7 | 74.4 | 1.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.6 | | |
| #20 | 98.3 | | |
| #40 | 75.9 | | |
| #60 | 20.5 | | |
| #100 | 2.7 | | |
| #200 | 1.5 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5307 $D_{85}$= 0.4815 $D_{60}$= 0.3627
$D_{50}$= 0.3321 $D_{30}$= 0.2772 $D_{15}$= 0.2312
$D_{10}$= 0.2100 $C_u$= 1.73 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

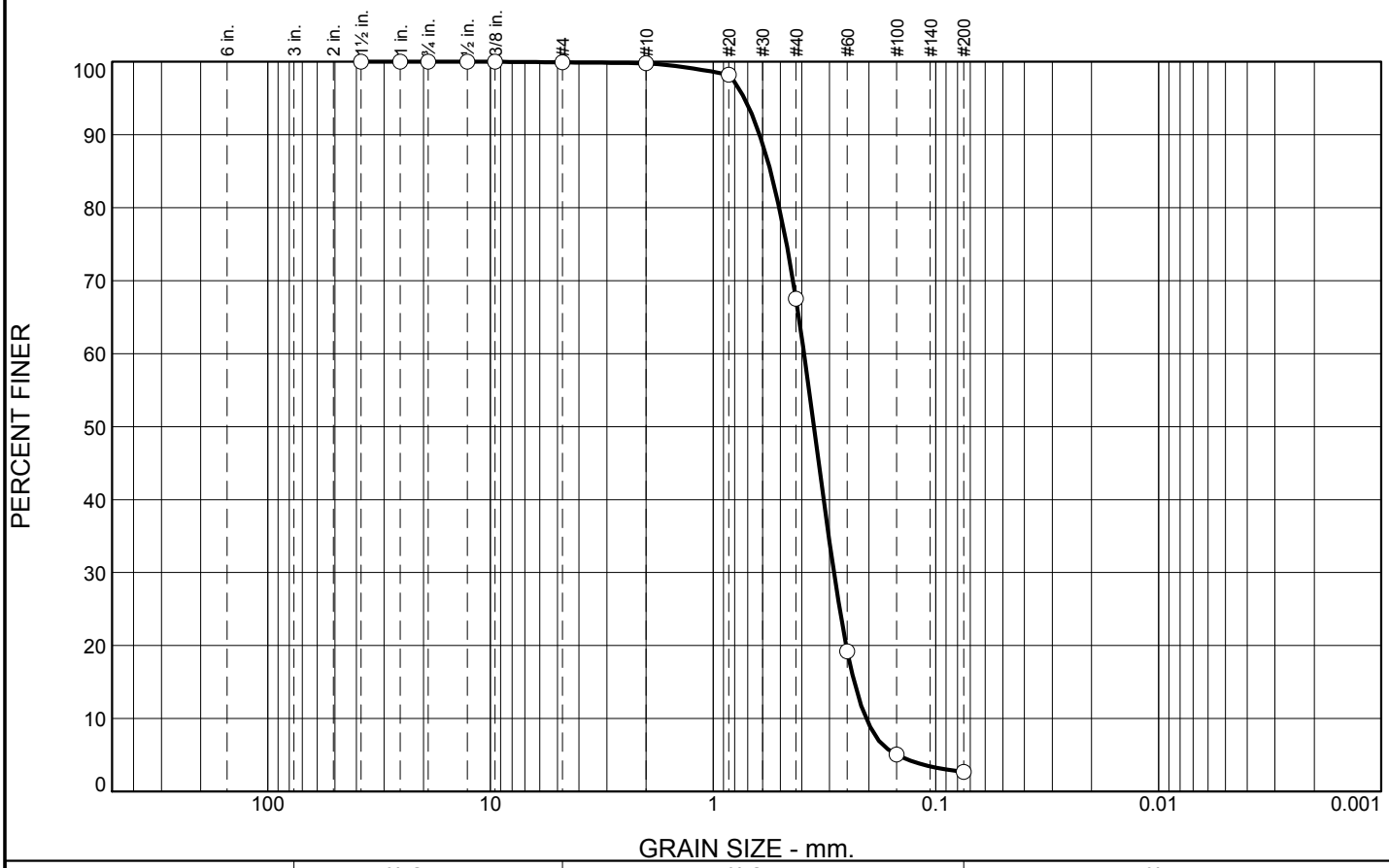
**Location:** USACE Sample # B1-DA10-18A-11
**Sample Number:** TE Lab ID: 5055.15 **Depth:** 0.0 - 5.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 32.3 | 64.8 | 2.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 98.2 | | |
| #40 | 67.5 | | |
| #60 | 19.2 | | |
| #100 | 5.1 | | |
| #200 | 2.7 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.6186 $D_{85}$= 0.5528 $D_{60}$= 0.3908
$D_{50}$= 0.3527 $D_{30}$= 0.2869 $D_{15}$= 0.2326
$D_{10}$= 0.2057 $C_u$= 1.90 $C_c$= 1.02

**Classification**

USCS= SP AASHTO=

**Remarks**

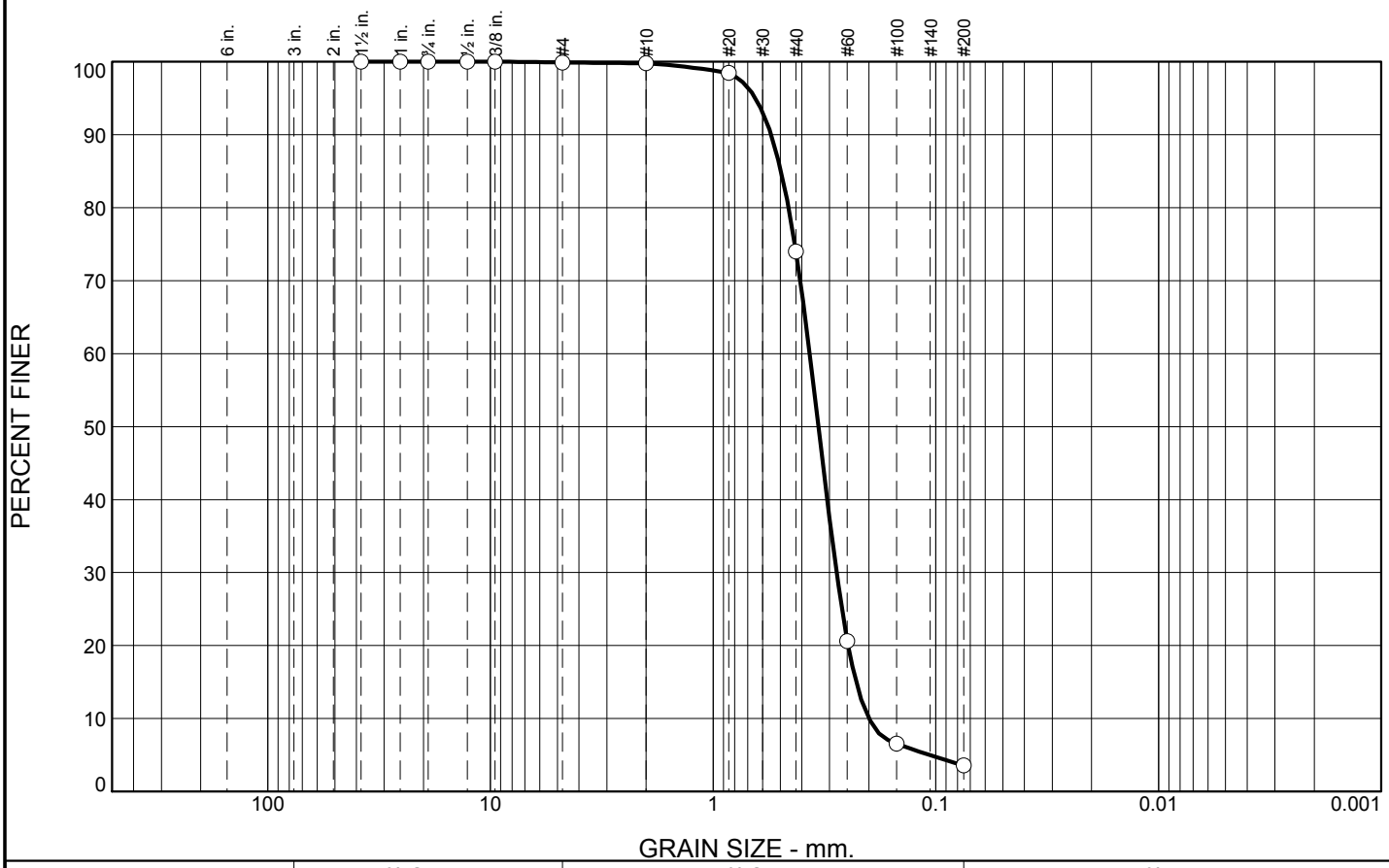
**Location:** USACE Sample # B1-DA10-18B-11
**Sample Number:** TE Lab ID: 5055.16 **Depth:** 5.0 - 10.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 25.8 | 70.4 | 3.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 98.5 | | |
| #40 | 74.0 | | |
| #60 | 20.6 | | |
| #100 | 6.5 | | |
| #200 | 3.6 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5494 $D_{85}$= 0.4959 $D_{60}$= 0.3686
$D_{50}$= 0.3366 $D_{30}$= 0.2790 $D_{15}$= 0.2281
$D_{10}$= 0.1998 $C_u$= 1.84 $C_c$= 1.06

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # B1-DA10-18C-11
**Sample Number:** TE Lab ID: 5055.17 **Depth:** 10.0 - 14.5 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

**Boring Designation BI-DA10-19-11**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Disposal Area 10 | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DA10-19-11 — LOCATION COORDINATES: E = 1,080,255 N = 261,427 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 5 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 13 Ft. |
| | 15. DATE BORING — STARTED: 06-16-11 — COMPLETED: 06-16-11 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -11.1 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -11.1 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, tan (SP)<br>At El. -11.9 Ft., gray | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2854 mm % Fines: 1.6 |
| | | | At El. -16.0 Ft., lt. gray | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.276 mm % Fines: 3.5 |
| | | | | C | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3211 mm % Fines: 1.5 |
| | | | | D | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3323 mm % Fines: 1.6 |
| | | | | E | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.335 mm % Fines: 1.9 |
| -30.3 | 19.2 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21852° Long = -88.52937°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 1,080,255 Y = 261,427 | ELEVATION TOP OF BORING -11.1 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.21852° Long = -88.52937°

# Particle Size Distribution Report

| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 15.0 | 83.3 | 1.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.0 | | |
| #40 | 84.9 | | |
| #60 | 37.4 | | |
| #100 | 4.1 | | |
| #200 | 1.6 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5149 $D_{85}$= 0.4261 $D_{60}$= 0.3160
$D_{50}$= 0.2854 $D_{30}$= 0.2298 $D_{15}$= 0.1874
$D_{10}$= 0.1718 $C_u$= 1.84 $C_c$= 0.97

**Classification**

USCS= SP AASHTO=

**Remarks**

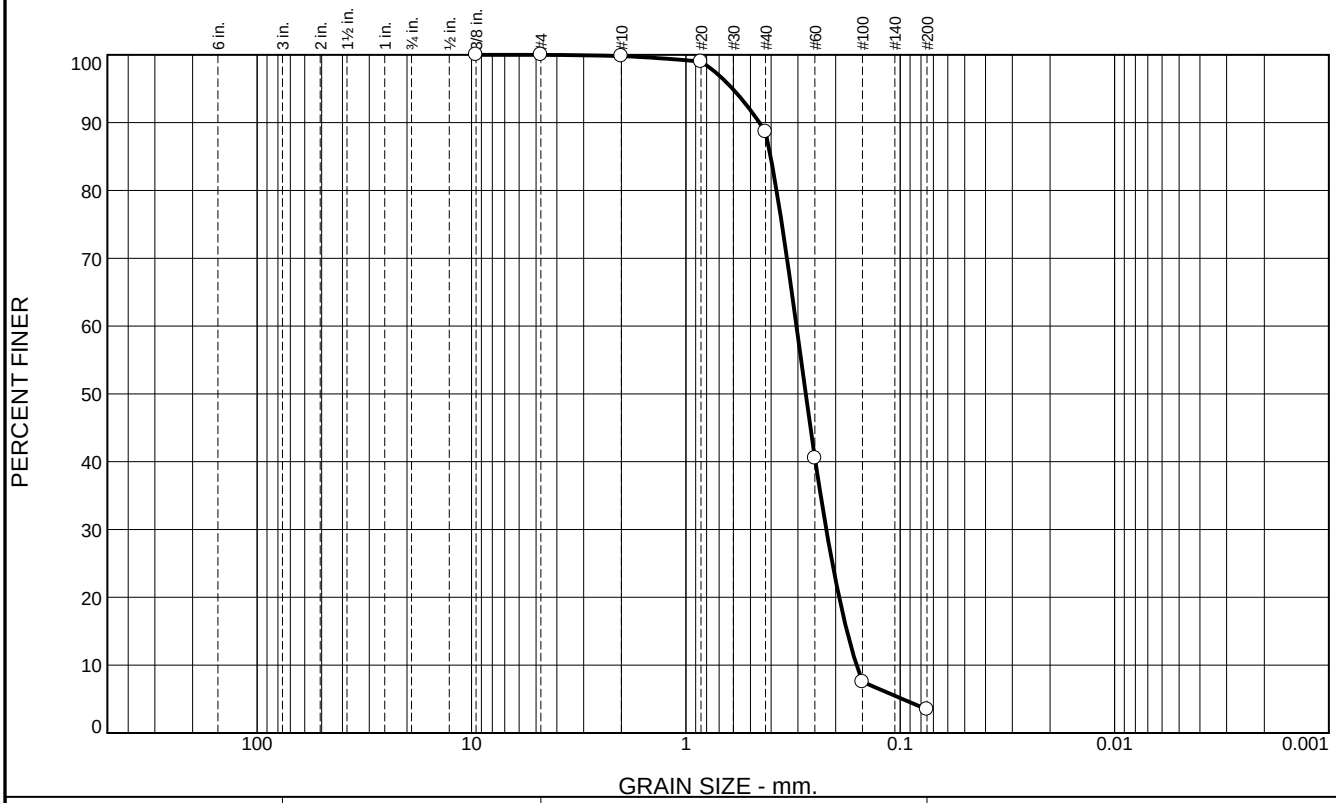
**Location:** USACE Sample # BI-DA10-19A-11
**Sample Number:** TE Lab ID: 5054.01 **Depth:** 0.0 - 4.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 11.1 | 85.2 | 3.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.0 | | |
| #40 | 88.7 | | |
| #60 | 40.5 | | |
| #100 | 7.5 | | |
| #200 | 3.5 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4536 $D_{85}$= 0.4025 $D_{60}$= 0.3050
$D_{50}$= 0.2760 $D_{30}$= 0.2212 $D_{15}$= 0.1771
$D_{10}$= 0.1599 $C_u$= 1.91 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

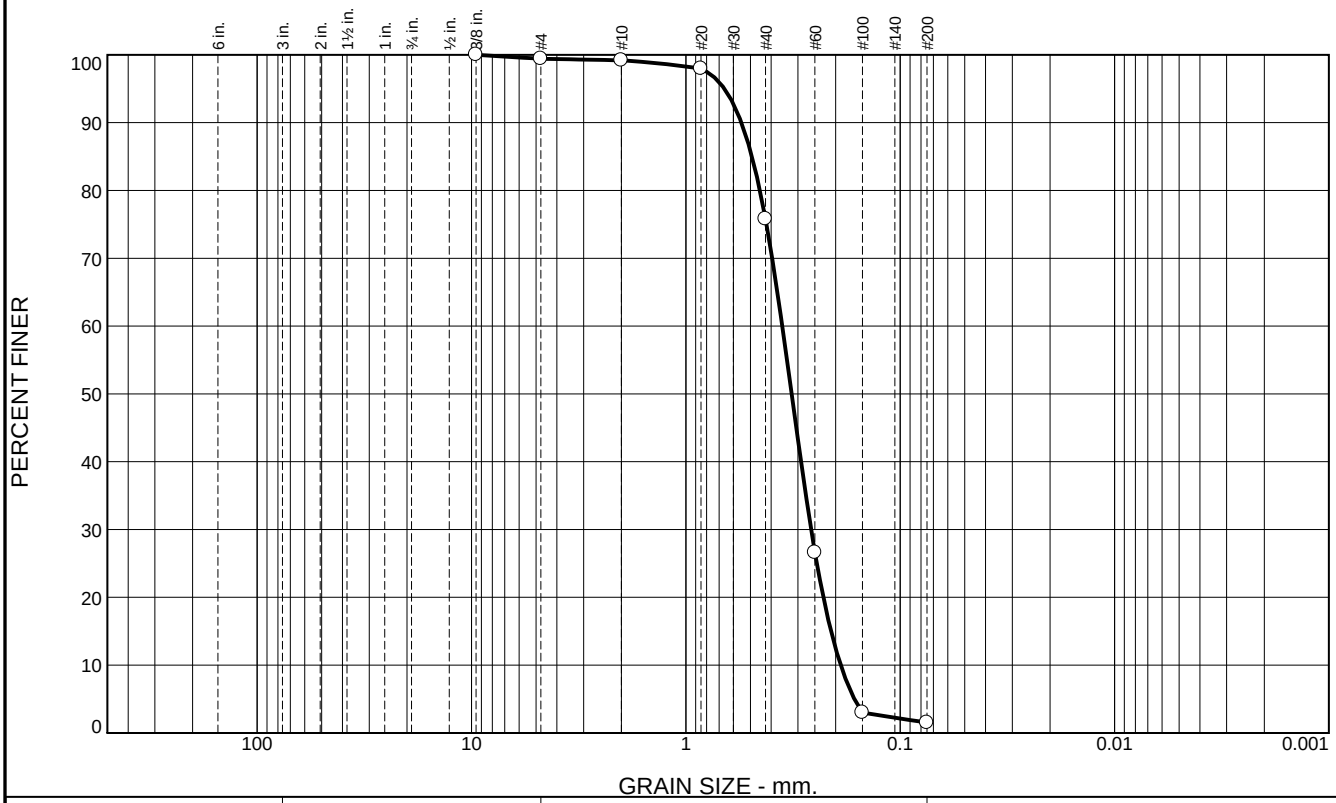
**Location:** USACE Sample # BI-DA10-19B-11
**Sample Number:** TE Lab ID: 5054.02 **Depth:** 4.0 - 8.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.6 | 0.2 | 23.4 | 74.3 | 1.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.4 | | |
| #10 | 99.2 | | |
| #20 | 98.0 | | |
| #40 | 75.8 | | |
| #60 | 26.6 | | |
| #100 | 3.0 | | |
| #200 | 1.5 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5503 $D_{85}$= 0.4916 $D_{60}$= 0.3552
$D_{50}$= 0.3211 $D_{30}$= 0.2604 $D_{15}$= 0.2102
$D_{10}$= 0.1895 $C_u$= 1.87 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # BI-DA10-19C-11
**Sample Number:** TE Lab ID: 5054.03 **Depth:** 8.0 - 12.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report

| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.1 | 0.2 | 25.8 | 71.3 | 1.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .5 | 100.0 | | |
| .375 | 98.9 | | |
| #4 | 98.9 | | |
| #10 | 98.7 | | |
| #20 | 97.3 | | |
| #40 | 72.9 | | |
| #60 | 23.6 | | |
| #100 | 3.3 | | |
| #200 | 1.6 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5812 $D_{85}$= 0.5152 $D_{60}$= 0.3676
$D_{50}$= 0.3323 $D_{30}$= 0.2702 $D_{15}$= 0.2185
$D_{10}$= 0.1958 $C_u$= 1.88 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

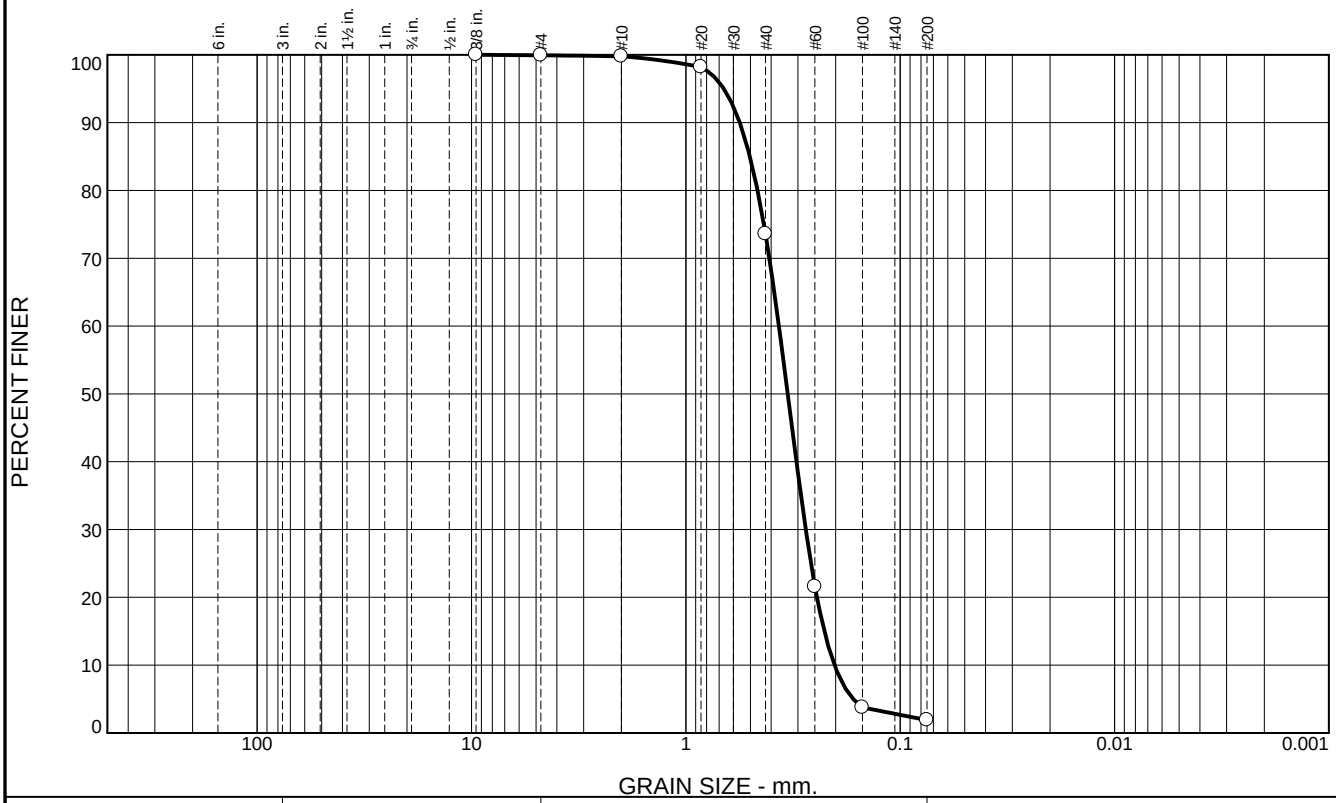
**Location:** USACE Sample # BI-DA10-19D-11
**Sample Number:** TE Lab ID: 5054.04 **Depth:** 12.0 - 16.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 26.2 | 71.7 | 1.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 98.2 | | |
| #40 | 73.6 | | |
| #60 | 21.6 | | |
| #100 | 3.8 | | |
| #200 | 1.9 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5601 $D_{85}$= 0.5026 $D_{60}$= 0.3681
$D_{50}$= 0.3350 $D_{30}$= 0.2760 $D_{15}$= 0.2261
$D_{10}$= 0.2026 $C_u$= 1.82 $C_c$= 1.02

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # BI-DA10-19E-11
**Sample Number:** TE Lab ID: 5054.05 **Depth:** 16.0 - 19.2 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

**Boring Designation BI-DA10-20-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-20-11 |
| LOCATION COORDINATES | E = 1,081,812 N = 261,482 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 16.0 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 4 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 11 Ft. |
| 15. DATE BORING | STARTED 06-16-11 / COMPLETED 06-16-11 |
| 16. ELEVATION TOP OF BORING | -9.0 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -9.0 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, gray (SP) | A | Classification: SP Color: 2.5Y 6/2-light brownish gray<br>D50: 0.3214 mm % Fines: 1.1 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.3564 mm % Fines: 1.9 |
| | | | | C | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3176 mm % Fines: 2.7 |
| | | | At El. -21.0 Ft., trace shell fragments<br>At El. -22.0 Ft., discontinue shell fragments | D | Classification: SP Color: 2.5Y 6/2-light brownish gray<br>D50: 0.2525 mm % Fines: 4.5 |
| -25.0 | 16.0 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

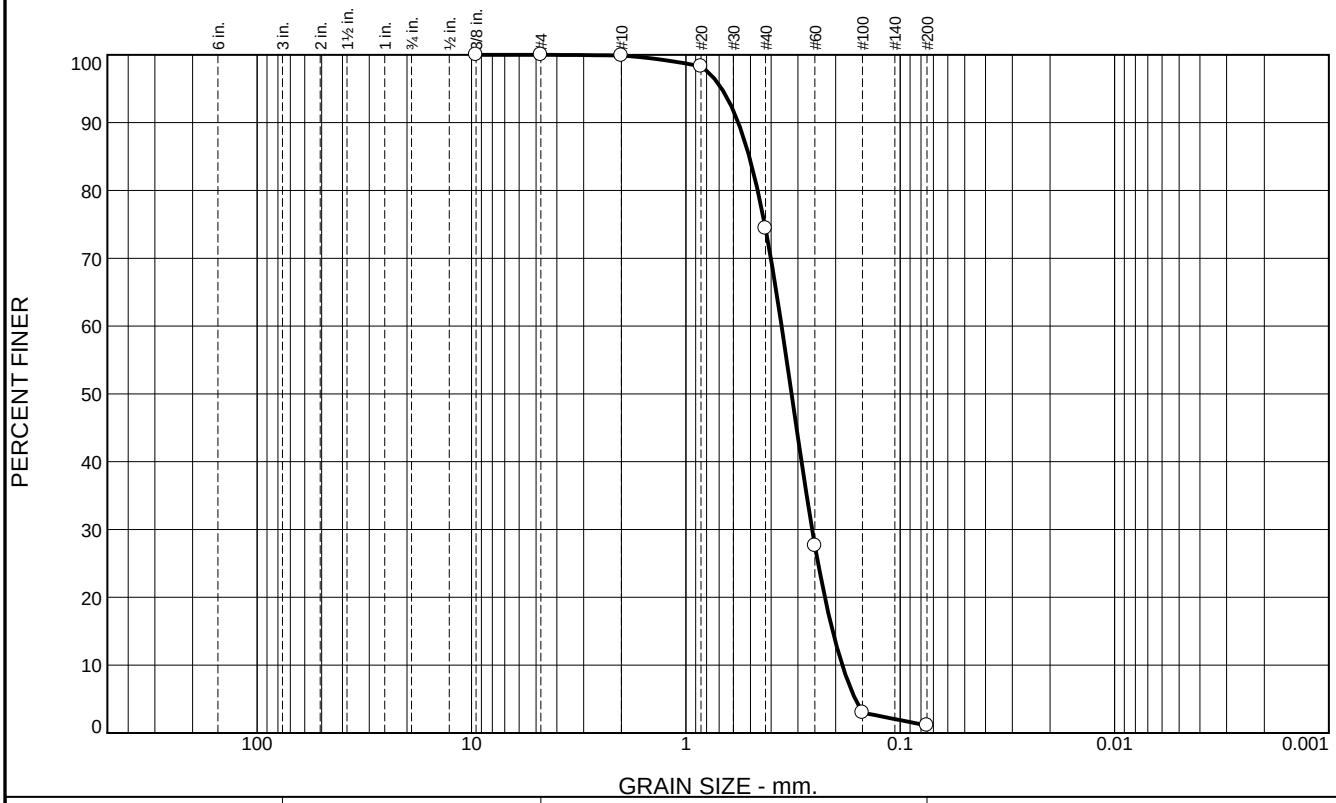
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21866° Long = -88.52444°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 25.5 | 73.3 | 1.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 98.3 | | |
| #40 | 74.4 | | |
| #60 | 27.6 | | |
| #100 | 3.0 | | |
| #200 | 1.1 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5691 $D_{85}$= 0.5060 $D_{60}$= 0.3577
$D_{50}$= 0.3214 $D_{30}$= 0.2576 $D_{15}$= 0.2065
$D_{10}$= 0.1863 $C_u$= 1.92 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

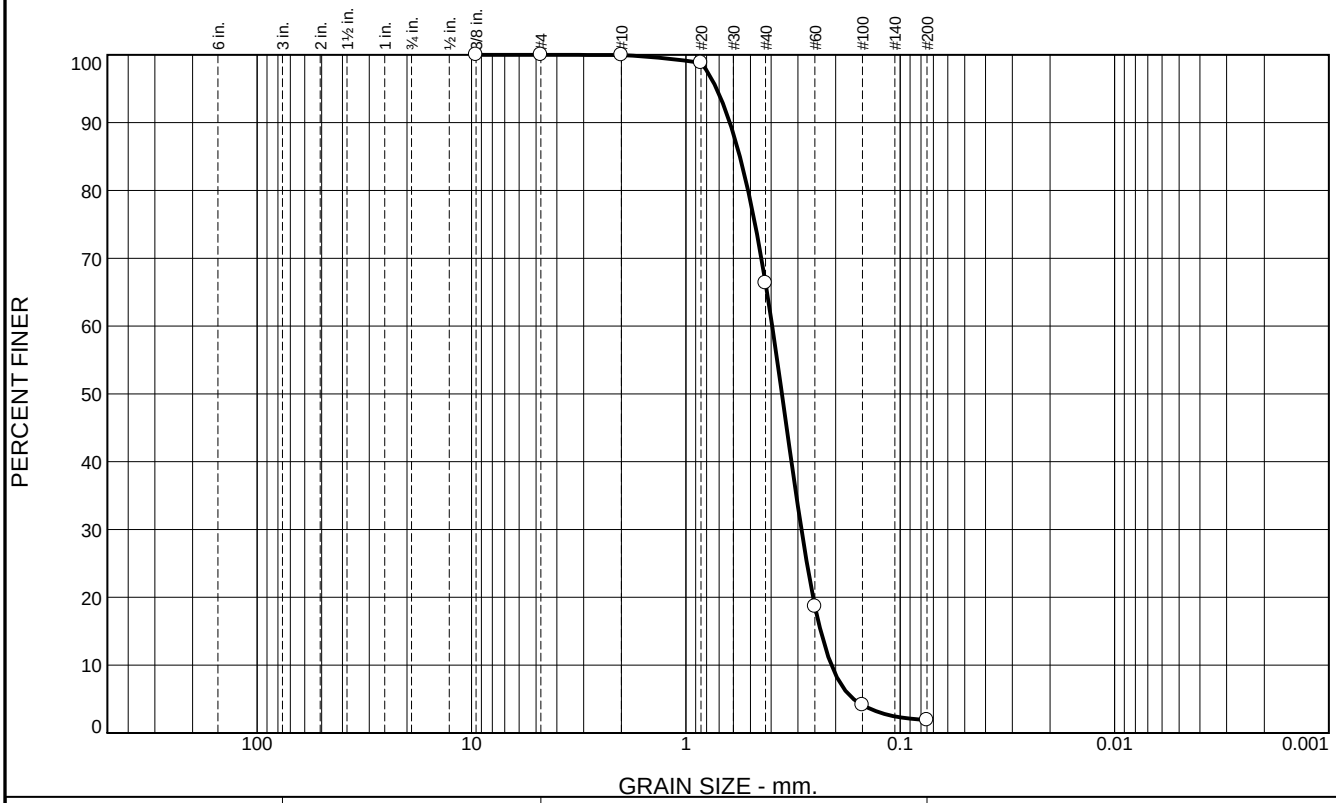
**Location:** USACE Sample # BI-DA10-20A-11
**Sample Number:** TE Lab ID: 5054.06 **Depth:** 0.0 - 4.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 33.6 | 64.5 | 1.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 98.8 | | |
| #40 | 66.4 | | |
| #60 | 18.7 | | |
| #100 | 4.1 | | |
| #200 | 1.9 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.6230 $D_{85}$= 0.5596 $D_{60}$= 0.3956
$D_{50}$= 0.3564 $D_{30}$= 0.2891 $D_{15}$= 0.2349
$D_{10}$= 0.2093 $C_u$= 1.89 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

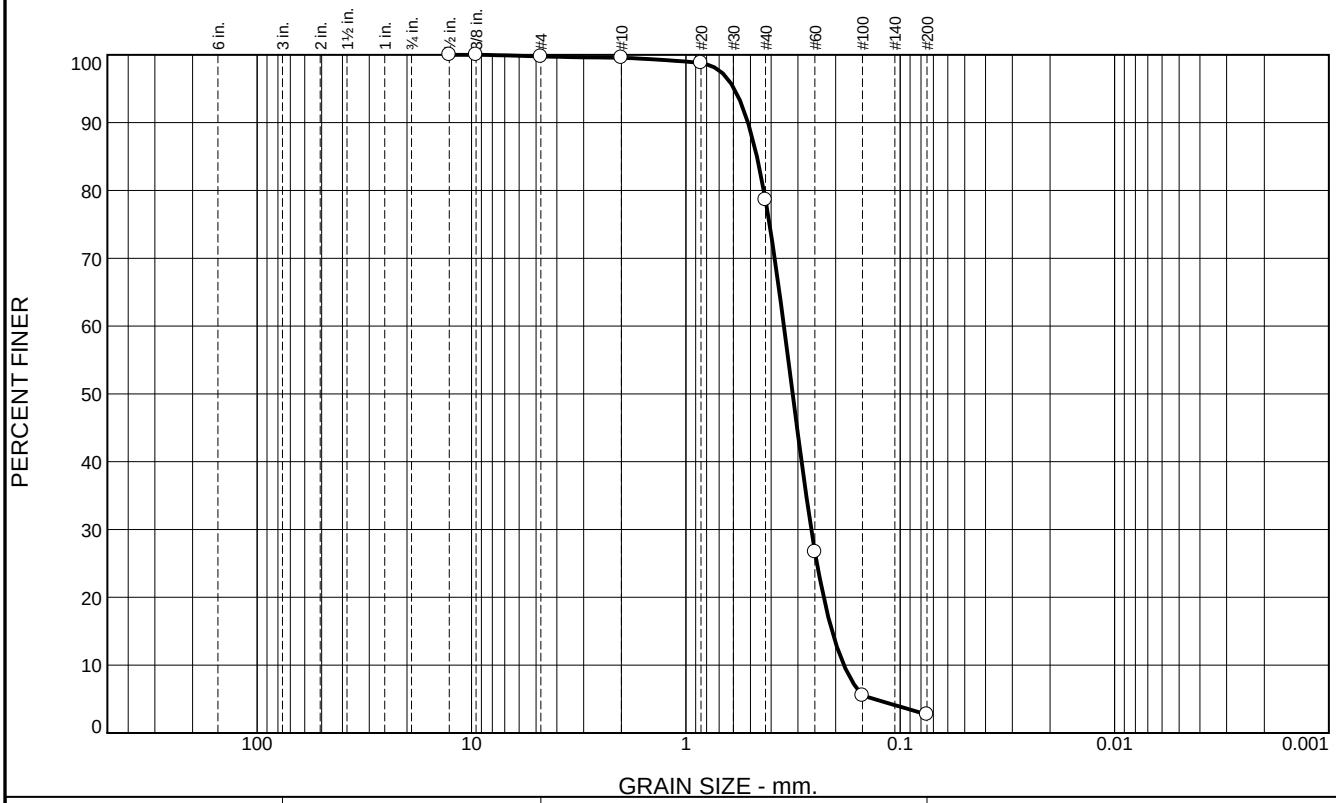
**Location:** USACE Sample # BI-DA10-20B-11
**Sample Number:** TE Lab ID: 5054.07 **Depth:** 4.0 - 8.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.2 | 21.0 | 75.9 | 2.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.6 | | |
| #20 | 98.8 | | |
| #40 | 78.6 | | |
| #60 | 26.7 | | |
| #100 | 5.5 | | |
| #200 | 2.7 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5127 $D_{85}$= 0.4659 $D_{60}$= 0.3489
$D_{50}$= 0.3176 $D_{30}$= 0.2600 $D_{15}$= 0.2079
$D_{10}$= 0.1830 $C_u$= 1.91 $C_c$= 1.06

**Classification**

USCS= SP AASHTO=

**Remarks**

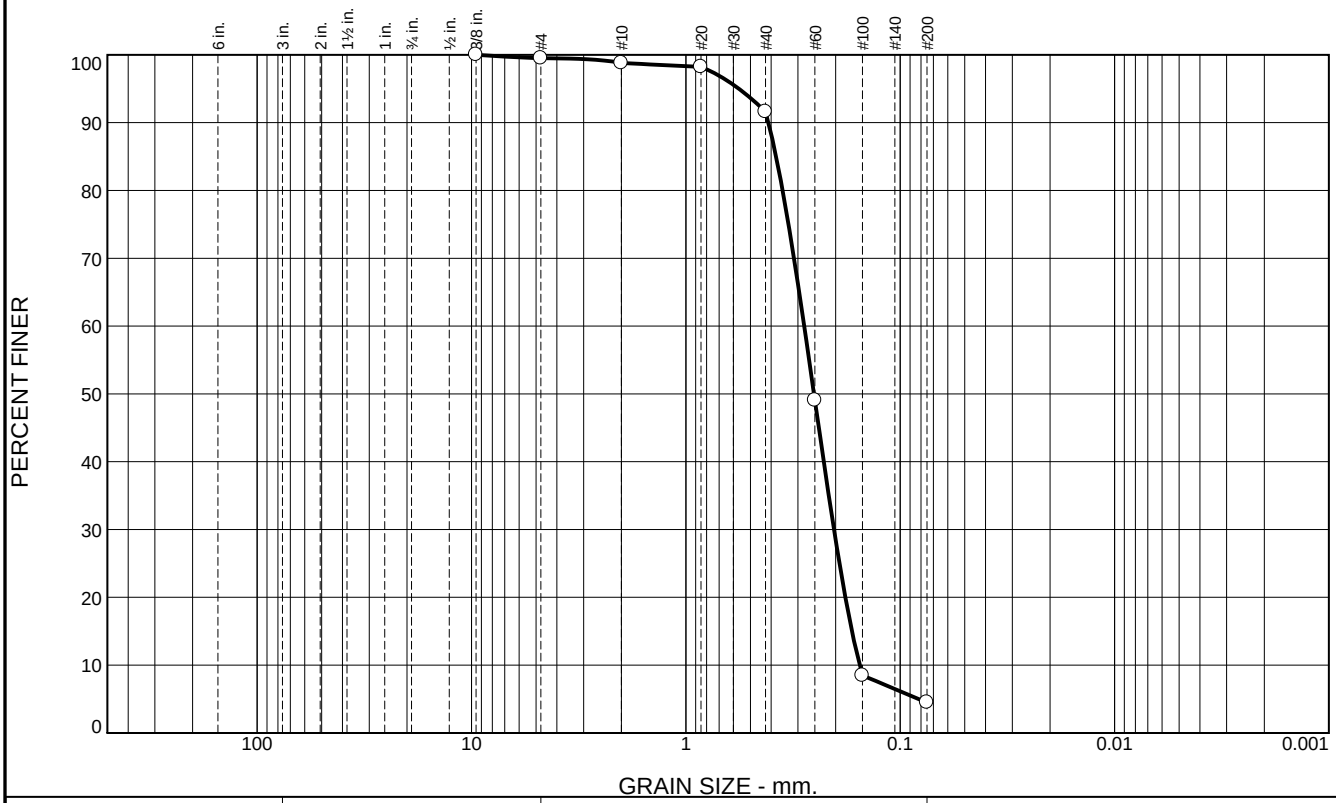
**Location:** USACE Sample # BI-DA10-20C-11
**Sample Number:** TE Lab ID: 5054.08 **Depth:** 8.0 - 12.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.7 | 7.2 | 87.1 | 4.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 98.8 | | |
| #20 | 98.2 | | |
| #40 | 91.6 | | |
| #60 | 49.0 | | |
| #100 | 8.5 | | |
| #200 | 4.5 | | |

* (no specification provided)

**Material Description**

SAND (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4119 $D_{85}$= 0.3793 $D_{60}$= 0.2806
$D_{50}$= 0.2525 $D_{30}$= 0.2036 $D_{15}$= 0.1680
$D_{10}$= 0.1546 $C_u$= 1.82 $C_c$= 0.96

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # BI-DA10-20D-11
**Sample Number:** TE Lab ID: 5054.09 **Depth:** 12.0 -16.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

**Boring Designation BI-DA10-21-11**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration Disposal Area 10 | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DA10-21-11 — LOCATION COORDINATES: E = 1,083,389 N = 261,228 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 4 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 9 Ft. |
| | 15. DATE BORING — STARTED: 06-18-11 — COMPLETED: 06-18-11 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -6.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -6.9 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3218 mm % Fines: 1.2 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.3334 mm % Fines: 2.4 |
| | | | | C | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.3256 mm % Fines: 3.1 |
| | | | | D | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.2759 mm % Fines: 4.2 |
| -24.3 | 17.4 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

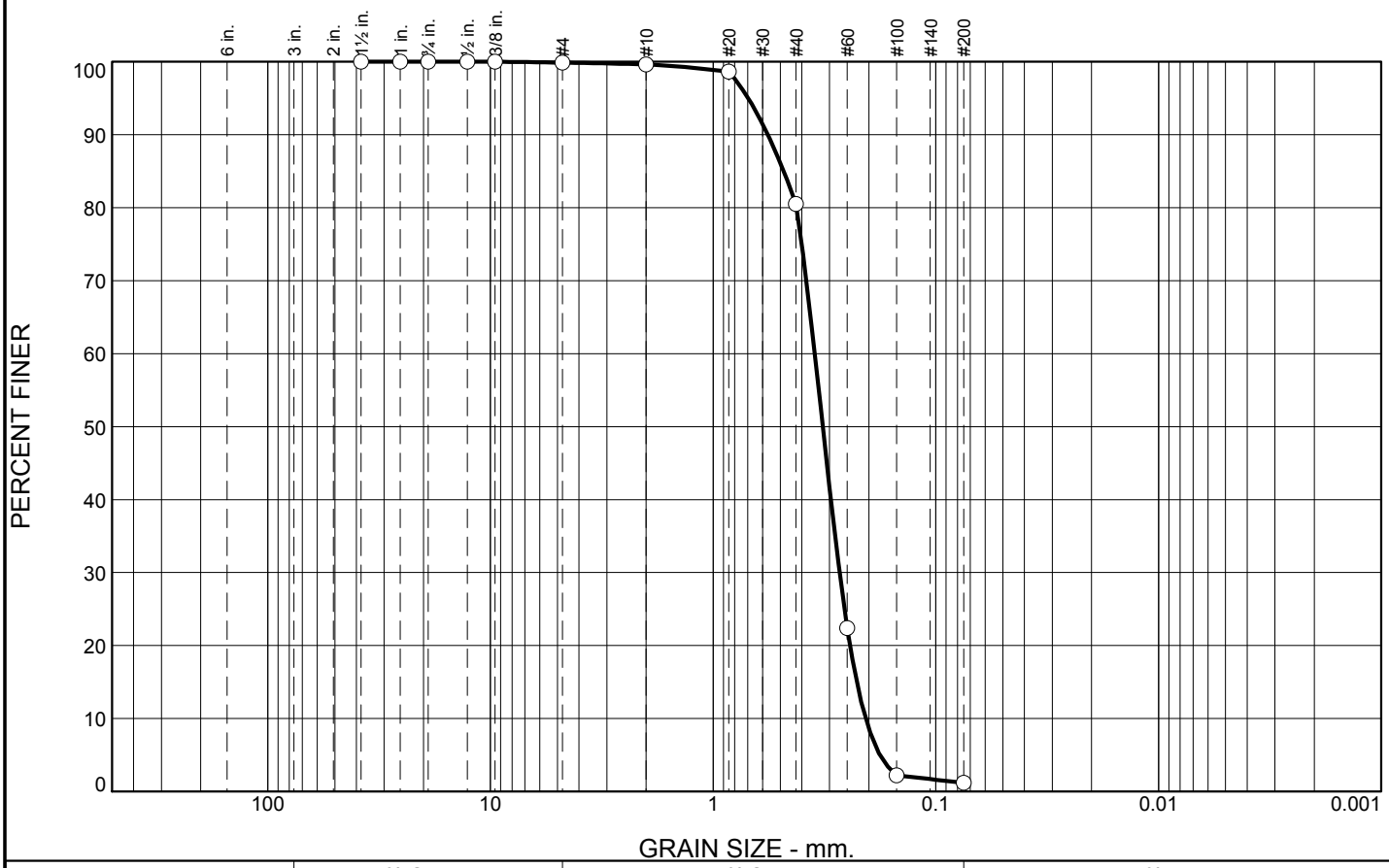
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21795° Long = -88.51945°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.3 | 19.1 | 79.3 | 1.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.6 | | |
| #20 | 98.6 | | |
| #40 | 80.5 | | |
| #60 | 22.4 | | |
| #100 | 2.2 | | |
| #200 | 1.2 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5682 $D_{85}$= 0.4825 $D_{60}$= 0.3497
$D_{50}$= 0.3218 $D_{30}$= 0.2706 $D_{15}$= 0.2266
$D_{10}$= 0.2066 $C_u$= 1.69 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

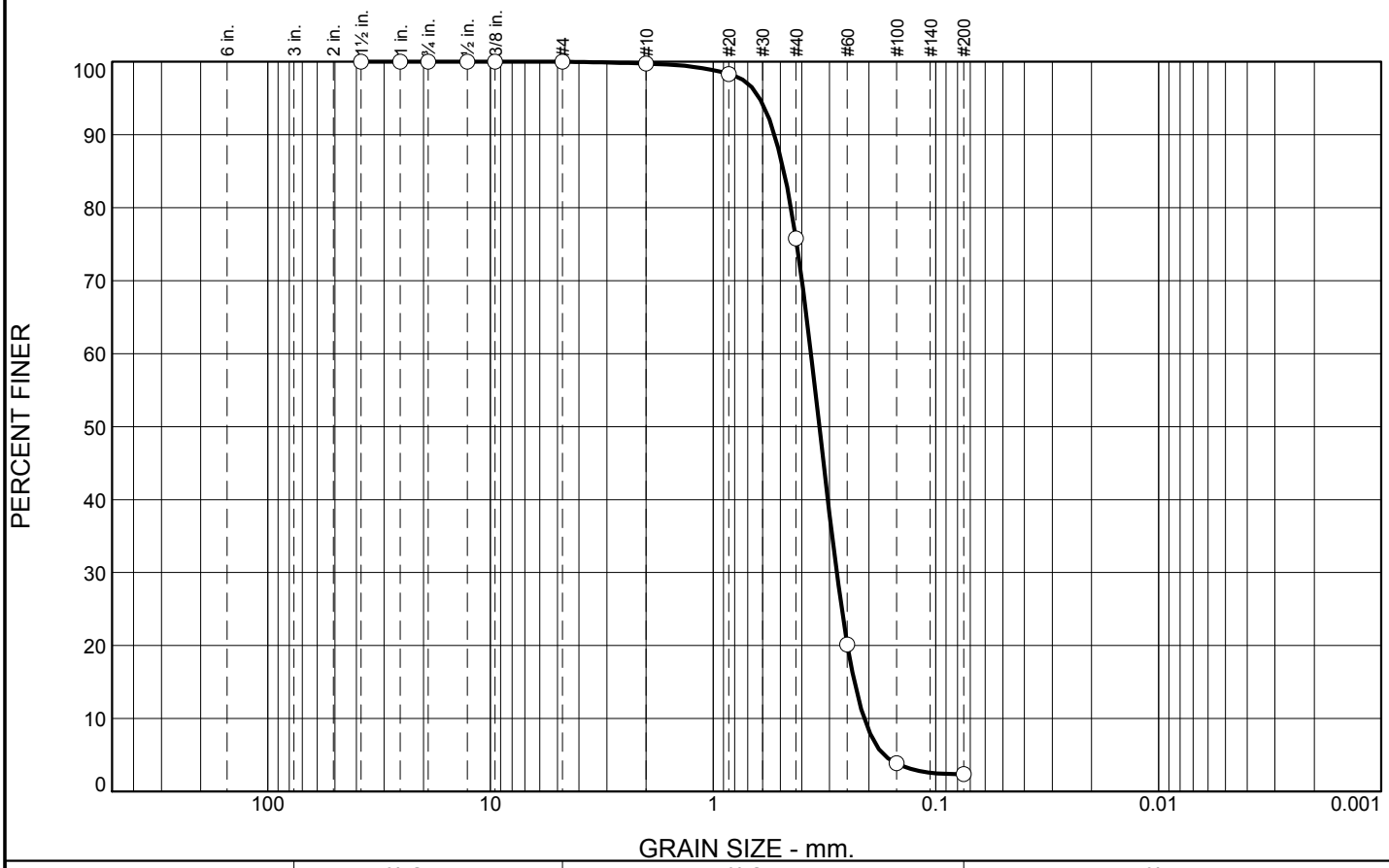
**Location:** USACE Sample # B1-DA10-21A-11
**Sample Number:** TE Lab ID: 5055.18 **Depth:** 0.0 - 4.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 23.9 | 73.4 | 2.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 98.3 | | |
| #40 | 75.8 | | |
| #60 | 20.1 | | |
| #100 | 3.9 | | |
| #200 | 2.4 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5305 $D_{85}$= 0.4817 $D_{60}$= 0.3638
$D_{50}$= 0.3334 $D_{30}$= 0.2786 $D_{15}$= 0.2322
$D_{10}$= 0.2098 $C_u$= 1.73 $C_c$= 1.02

**Classification**

USCS= SP AASHTO=

**Remarks**

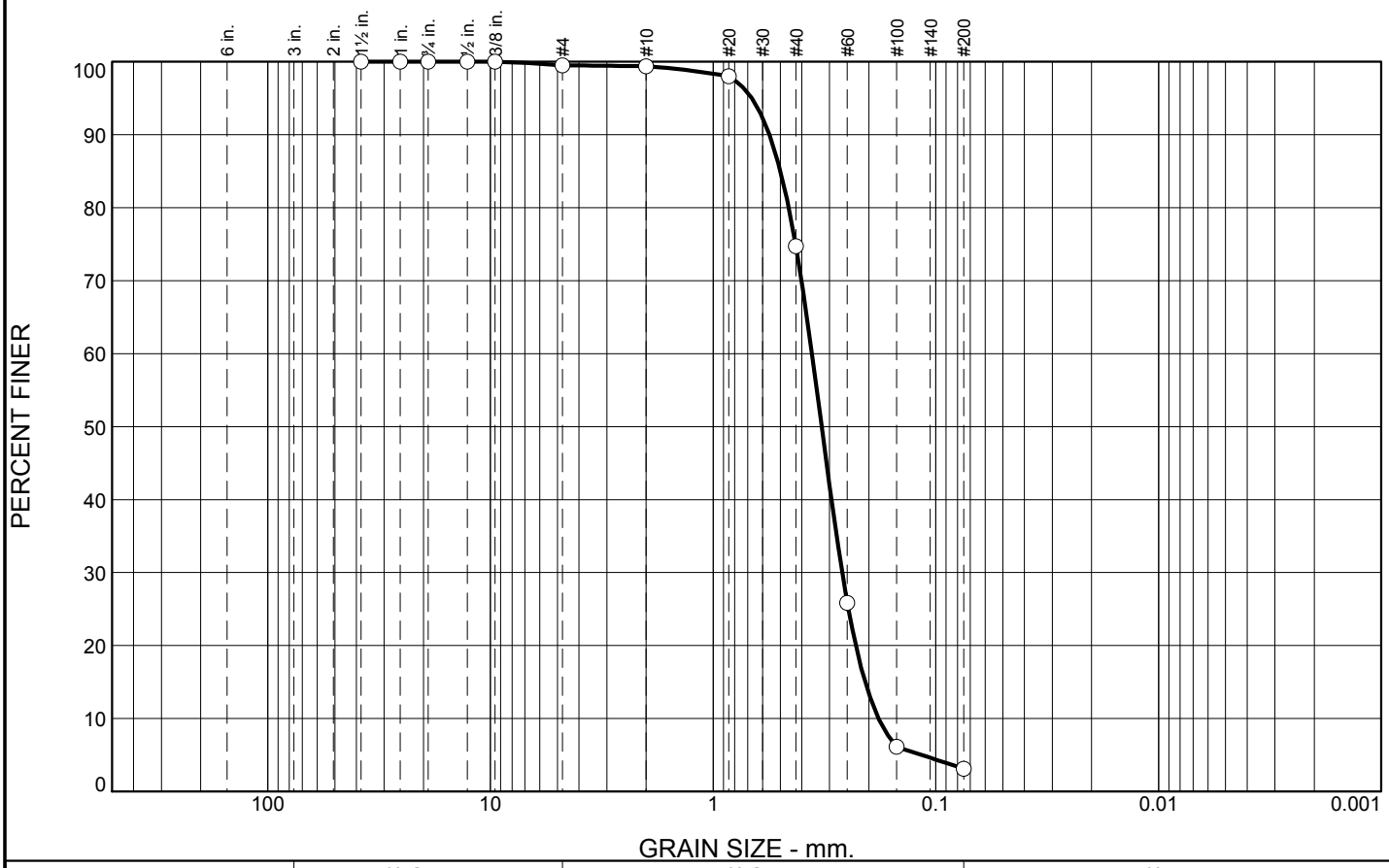
**Location:** USACE Sample # B1-DA10-21B-11
**Sample Number:** TE Lab ID: 5055.19 **Depth:** 4.0 - 8.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.1 | 24.7 | 71.6 | 3.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 99.4 | | |
| #20 | 98.0 | | |
| #40 | 74.7 | | |
| #60 | 25.9 | | |
| #100 | 6.1 | | |
| #200 | 3.1 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5592 $D_{85}$= 0.4992 $D_{60}$= 0.3601
$D_{50}$= 0.3256 $D_{30}$= 0.2634 $D_{15}$= 0.2078
$D_{10}$= 0.1808 $C_u$= 1.99 $C_c$= 1.07

**Classification**

USCS= SP AASHTO=

**Remarks**

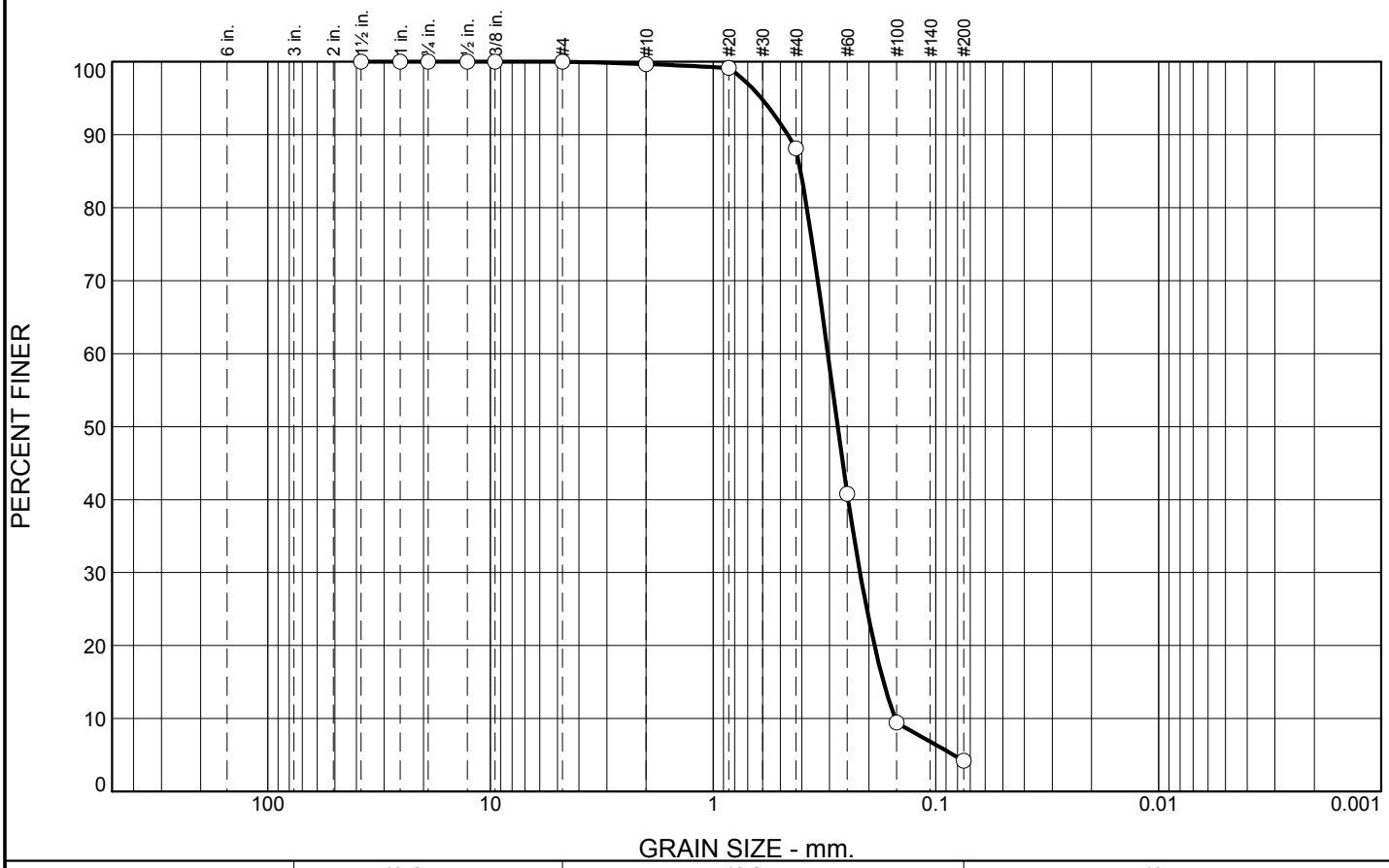
**Location:** USACE Sample # B1-DA10-21C-11
**Sample Number:** TE Lab ID: 5055.20 **Depth:** 8.0 - 12.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 11.5 | 84.0 | 4.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.2 | | |
| #40 | 88.2 | | |
| #60 | 40.8 | | |
| #100 | 9.4 | | |
| #200 | 4.2 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4624 $D_{85}$= 0.4053 $D_{60}$= 0.3056
$D_{50}$= 0.2759 $D_{30}$= 0.2191 $D_{15}$= 0.1719
$D_{10}$= 0.1525 $C_u$= 2.00 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # B1-DA10-21D-11
**Sample Number:** TE Lab ID: 5055.21 **Depth:** 12.0 - 17.4 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

**Boring Designation BI-DA10-22-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-22-11 |
| LOCATION COORDINATES | E = 1,084,677 N = 261,537 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 11.5 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 12.5 Ft. |
| 15. DATE BORING | STARTED 06-18-11 / COMPLETED 06-18-11 |
| 16. ELEVATION TOP OF BORING | -10.3 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -10.3 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3236 mm % Fines: 1 |
| | | | | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3044 mm % Fines: 2.3 |
| | | | At El. -17.3 Ft., white | C | Classification: SP Color: 5Y 8/1-white<br>D50: 0.4041 mm % Fines: 4.6 |
| -21.8 | 11.5 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

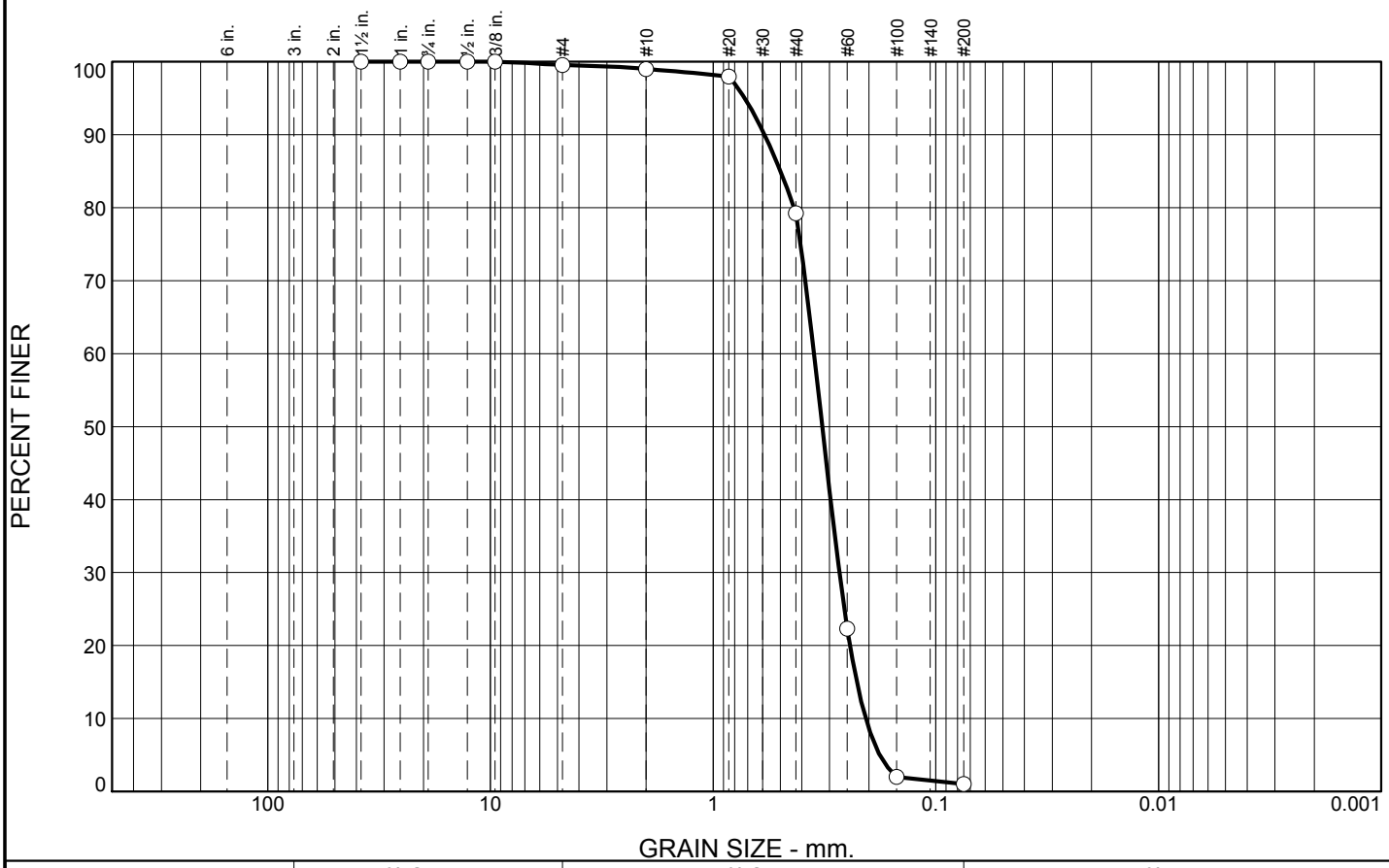
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21879° Long = -88.51537°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.6 | 19.7 | 78.3 | 1.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.0 | | |
| #20 | 98.0 | | |
| #40 | 79.3 | | |
| #60 | 22.3 | | |
| #100 | 2.0 | | |
| #200 | 1.0 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5878 $D_{85}$= 0.4989 $D_{60}$= 0.3524
$D_{50}$= 0.3236 $D_{30}$= 0.2711 $D_{15}$= 0.2265
$D_{10}$= 0.2065 $C_u$= 1.71 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

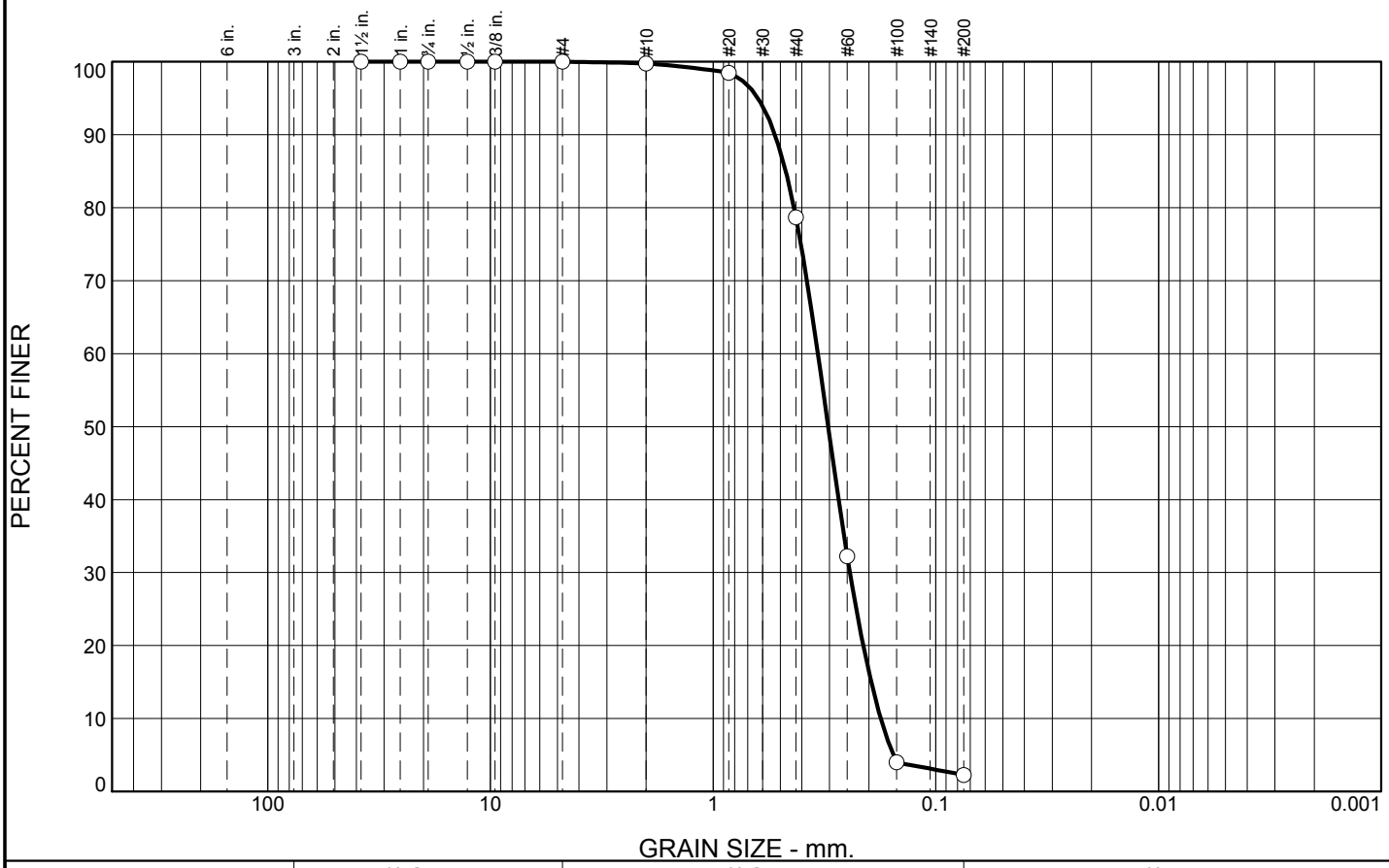
**Location:** USACE Sample # B1-DA10-22A-11
**Sample Number:** TE Lab ID: 5055.22 **Depth:** 0.0 - 4.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 21.1 | 76.4 | 2.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 98.5 | | |
| #40 | 78.7 | | |
| #60 | 32.2 | | |
| #100 | 4.0 | | |
| #200 | 2.3 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5279 $D_{85}$= 0.4721 $D_{60}$= 0.3387
$D_{50}$= 0.3044 $D_{30}$= 0.2433 $D_{15}$= 0.1952
$D_{10}$= 0.1769 $C_u$= 1.92 $C_c$= 0.99

**Classification**

USCS= SP AASHTO=

**Remarks**

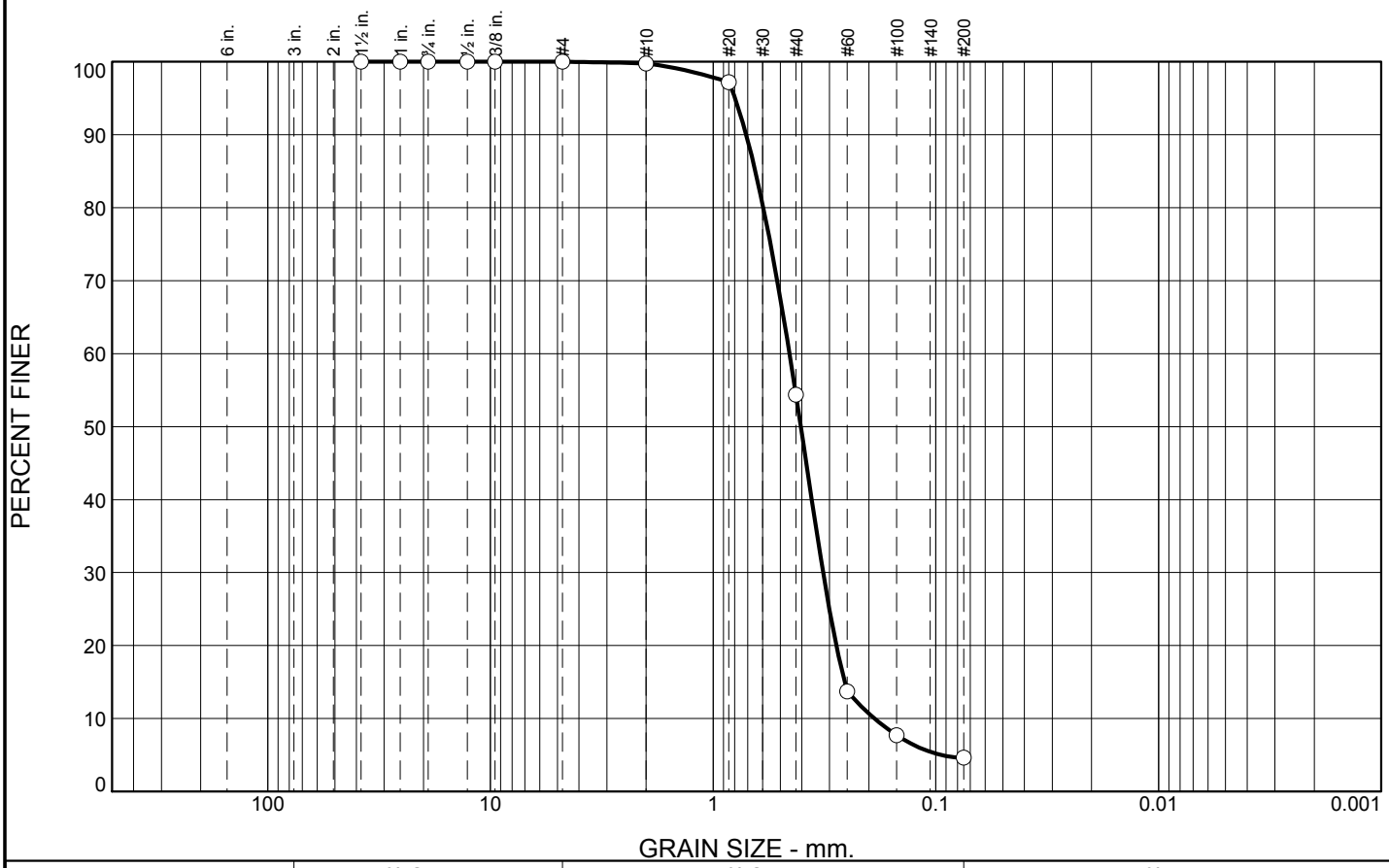
**Location:** USACE Sample # B1-DA10-22B-11
**Sample Number:** TE Lab ID: 5055.23 **Depth:** 4.0 - 8.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 45.4 | 49.8 | 4.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 97.2 | | |
| #40 | 54.4 | | |
| #60 | 13.7 | | |
| #100 | 7.7 | | |
| #200 | 4.6 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.7104 $D_{85}$= 0.6466 $D_{60}$= 0.4543
$D_{50}$= 0.4041 $D_{30}$= 0.3208 $D_{15}$= 0.2569
$D_{10}$= 0.1886 $C_u$= 2.41 $C_c$= 1.20

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # B1-DA10-22C-11
**Sample Number:** TE Lab ID: 5055.24 **Depth:** 8.0 - 11.5 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

**Boring Designation BI-DA10-23-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-23-11 |
| LOCATION COORDINATES | E = 1,080,826 N = 260,647 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 15.7 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 4 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 11.5 Ft. |
| 15. DATE BORING | STARTED 06-16-11 / COMPLETED 06-16-11 |
| 16. ELEVATION TOP OF BORING | -9.6 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -9.6 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, dark gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3011 mm % Fines: 0.9 |
| | | | At El. -13.6 Ft., lt. gray | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.3061 mm % Fines: 1.2 |
| | | | At El. -18.1 Ft., trace shell fragments, lt. gray | C | Classification: SP-SM Color: 5Y 7/1-light gray<br>D50: 0.2796 mm % Fines: 6.5 |
| | | | At El. -20.1 Ft., discontinue shell fragments, lt. gray | D | Classification: SP-SM Color: 5Y 7/1-light gray<br>D50: 0.2473 mm % Fines: 5.7 |
| -25.3 | 15.7 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

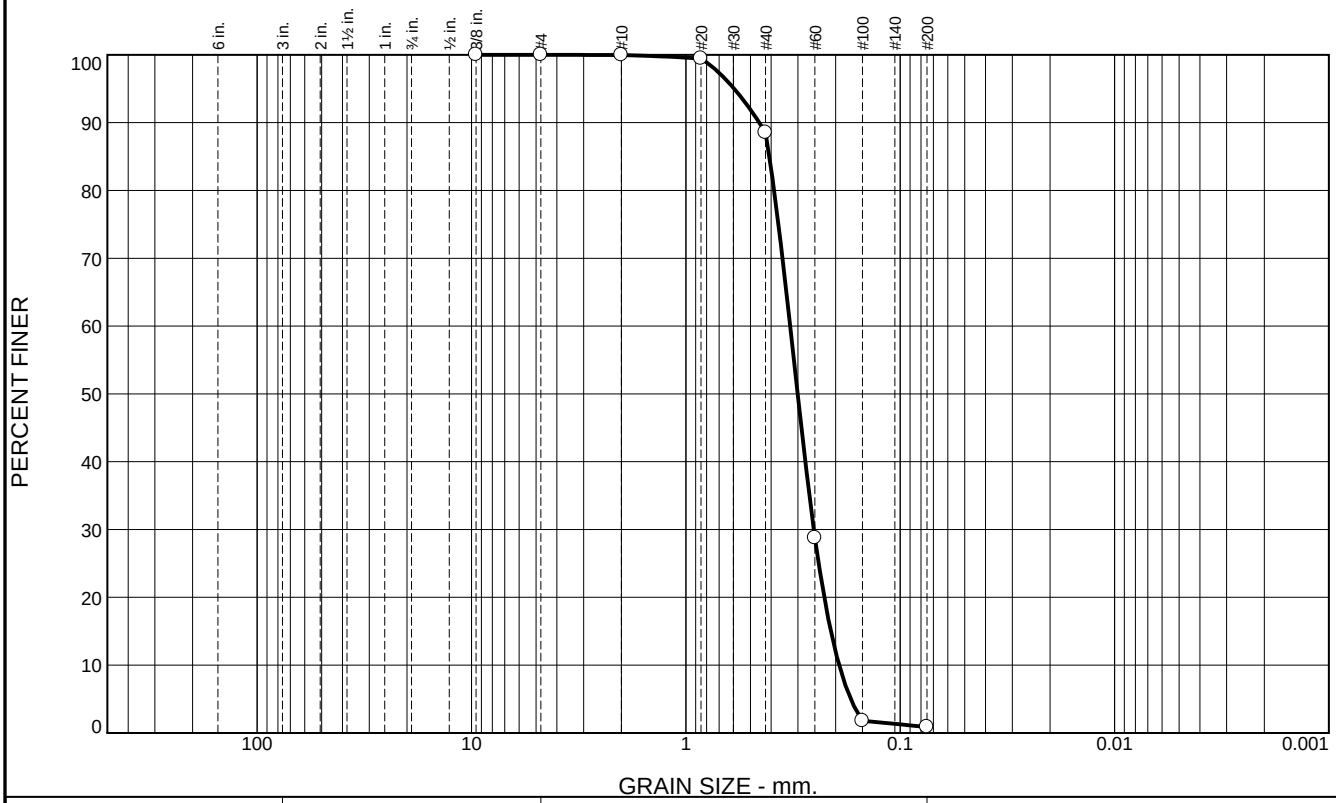
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21637° Long = -88.52757°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 11.5 | 87.6 | 0.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.5 | | |
| #40 | 88.5 | | |
| #60 | 28.8 | | |
| #100 | 1.8 | | |
| #200 | 0.9 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4544 $D_{85}$= 0.4079 $D_{60}$= 0.3263
$D_{50}$= 0.3011 $D_{30}$= 0.2531 $D_{15}$= 0.2107
$D_{10}$= 0.1927 $C_u$= 1.69 $C_c$= 1.02

**Classification**

USCS= SP AASHTO=

**Remarks**

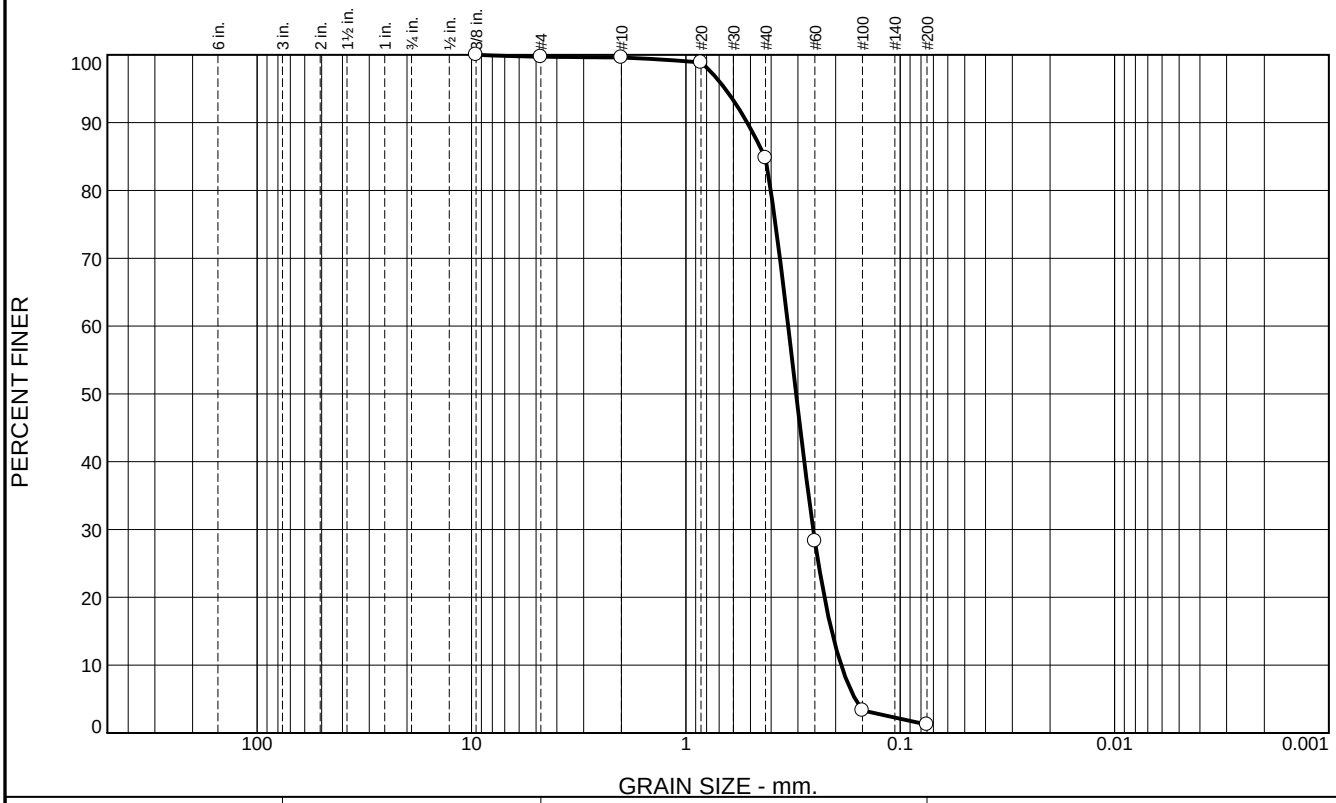
**Location:** USACE Sample # BI-DA10-23A-11
**Sample Number:** TE Lab ID: 5054.10 **Depth:** 0.0 -4.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.1 | 14.8 | 83.6 | 1.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.6 | | |
| #20 | 98.9 | | |
| #40 | 84.8 | | |
| #60 | 28.3 | | |
| #100 | 3.3 | | |
| #200 | 1.2 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5172 $D_{85}$= 0.4281 $D_{60}$= 0.3334
$D_{50}$= 0.3061 $D_{30}$= 0.2546 $D_{15}$= 0.2087
$D_{10}$= 0.1886 $C_u$= 1.77 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

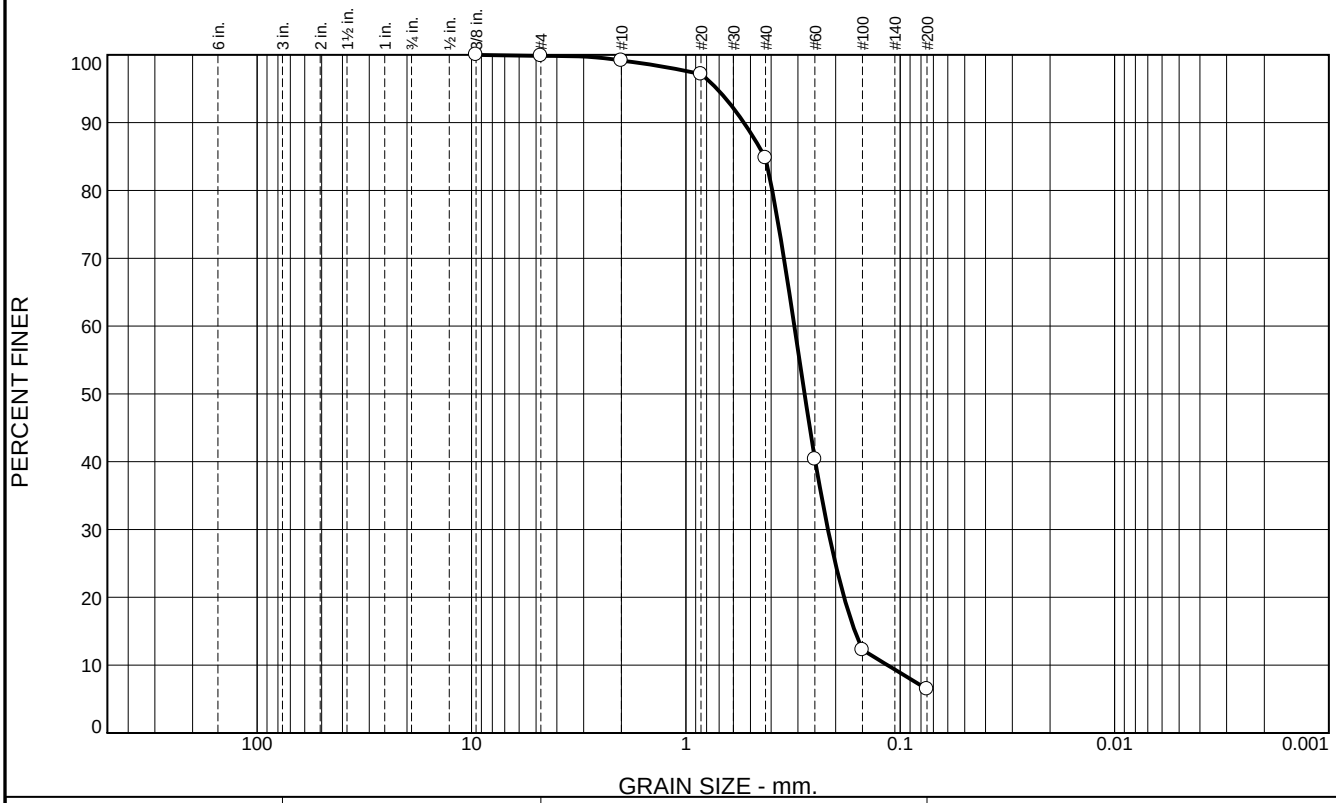
**Location:** USACE Sample # BI-DA10-23B-11
**Sample Number:** TE Lab ID: 5054.11 **Depth:** 4.0 -8.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.7 | 14.3 | 78.3 | 6.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.1 | | |
| #20 | 97.2 | | |
| #40 | 84.8 | | |
| #60 | 40.4 | | |
| #100 | 12.2 | | |
| #200 | 6.5 | | |

* (no specification provided)

**Material Description**

Slightly silty SAND (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5361 $D_{85}$= 0.4287 $D_{60}$= 0.3119
$D_{50}$= 0.2796 $D_{30}$= 0.2173 $D_{15}$= 0.1627
$D_{10}$= 0.1146 $C_u$= 2.72 $C_c$= 1.32

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

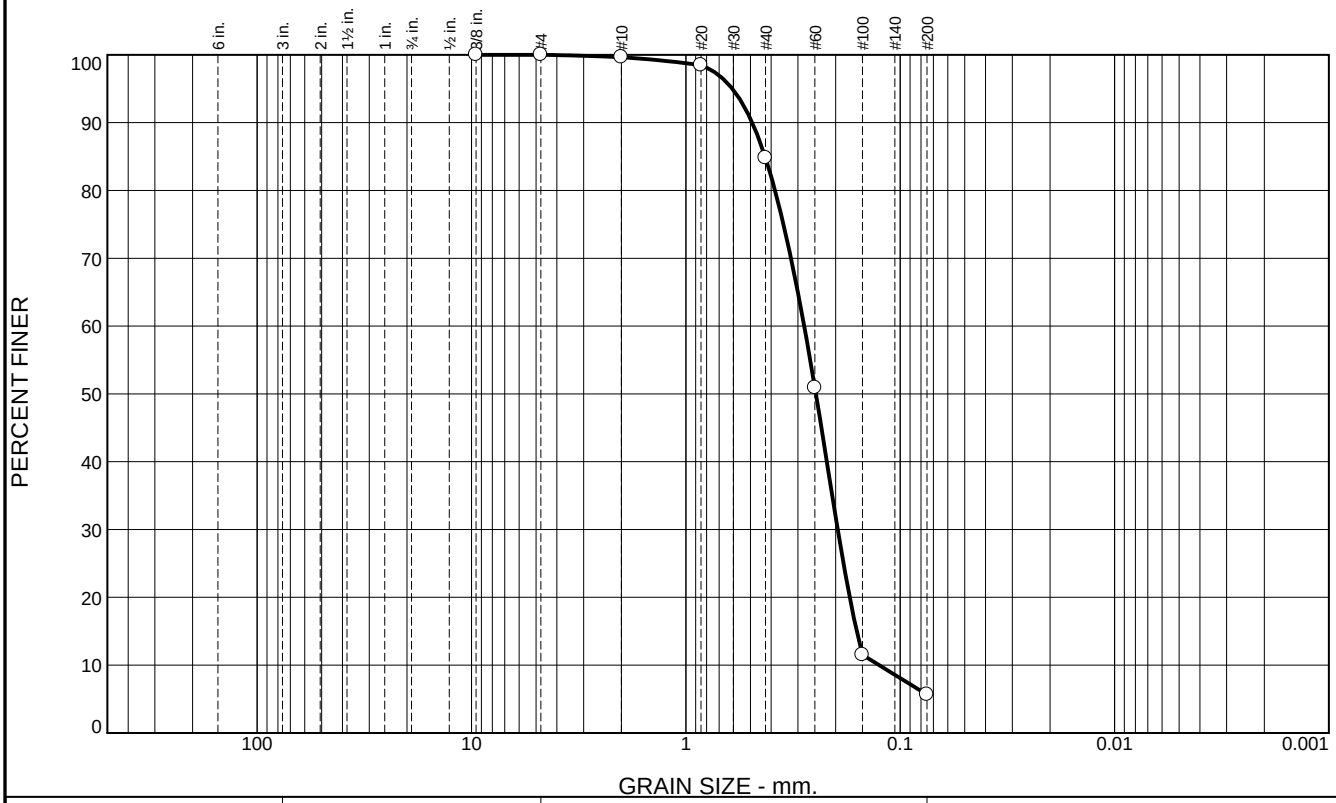
**Location:** USACE Sample # BI-DA10-23C-11
**Sample Number:** TE Lab ID: 5054.12 **Depth:** 8.0 - 12.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 14.9 | 79.1 | 5.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 98.5 | | |
| #40 | 84.8 | | |
| #60 | 50.9 | | |
| #100 | 11.5 | | |
| #200 | 5.7 | | |

* (no specification provided)

**Material Description**

Slightly silty SAND (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4901 $D_{85}$= 0.4270 $D_{60}$= 0.2805
$D_{50}$= 0.2473 $D_{30}$= 0.1956 $D_{15}$= 0.1596
$D_{10}$= 0.1254 $C_u$= 2.24 $C_c$= 1.09

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

**Location:** USACE Sample # BI-DA10-23D-11
**Sample Number:** TE Lab ID: 5054.13 **Depth:** 12.0 - 15.7 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

**Boring Designation BI-DA10-24-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-24-11 |
| LOCATION COORDINATES | E = 1,082,055 N = 260,268 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 11.4 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 3 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 9 Ft. |
| 15. DATE BORING | STARTED 06-18-11 / COMPLETED 06-18-11 |
| 16. ELEVATION TOP OF BORING | -6.7 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

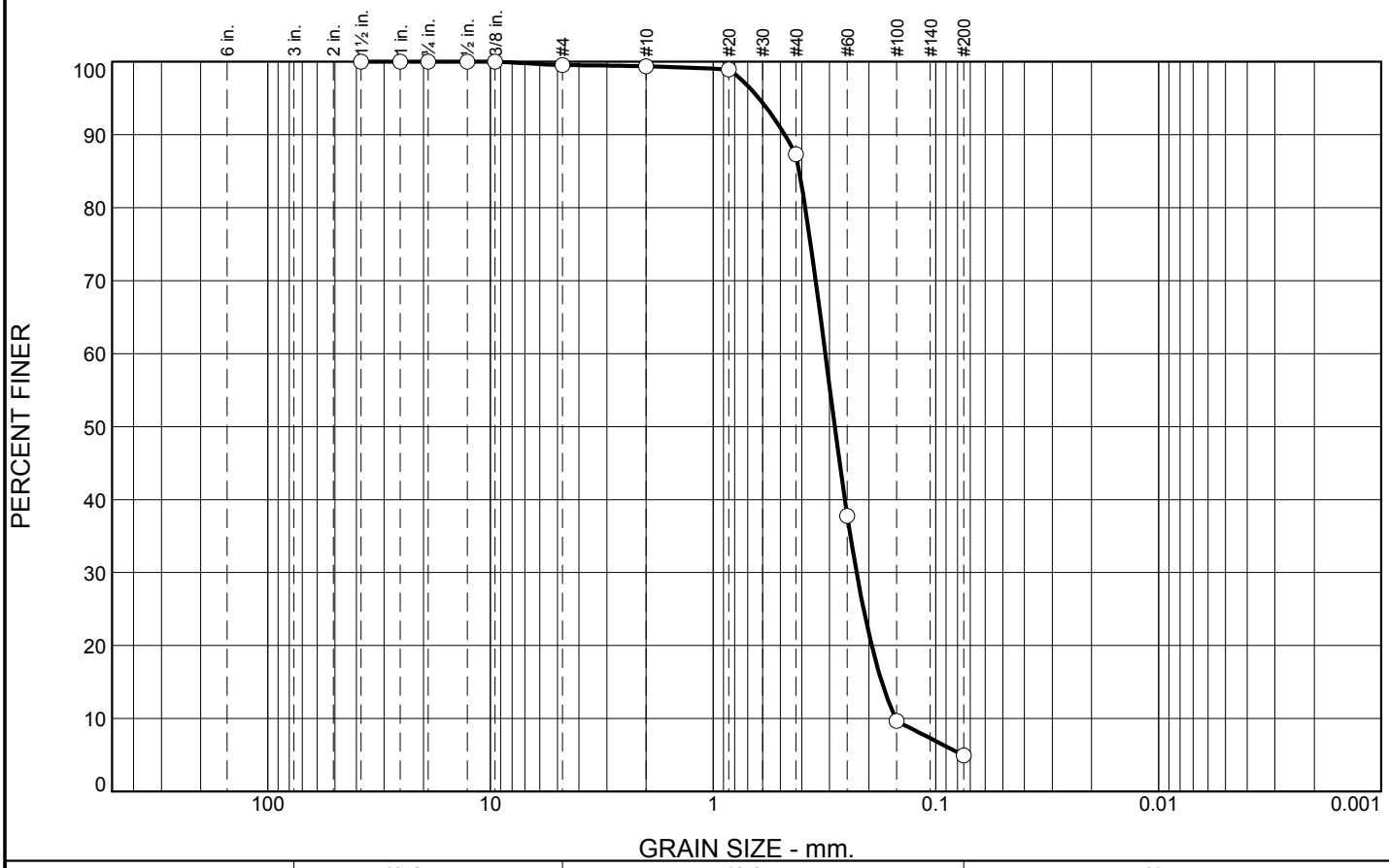
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -6.7 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, tan (SP)<br>At El. -8.7 Ft., trace shell fragments, lt. gray | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2844 mm % Fines: 5 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2657 mm % Fines: 3.6 |
| | | | | C | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2437 mm % Fines: 4.9 |
| -18.1 | 11.4 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21532° Long = -88.52368°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.1 | 12.1 | 82.3 | 5.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 99.4 | | |
| #20 | 99.0 | | |
| #40 | 87.3 | | |
| #60 | 37.8 | | |
| #100 | 9.7 | | |
| #200 | 5.0 | | |

* (no specification provided)

**Material Description**

Slightly silty SAND (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4775 $D_{85}$= 0.4110 $D_{60}$= 0.3136
$D_{50}$= 0.2844 $D_{30}$= 0.2271 $D_{15}$= 0.1750
$D_{10}$= 0.1519 $C_u$= 2.07 $C_c$= 1.08

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

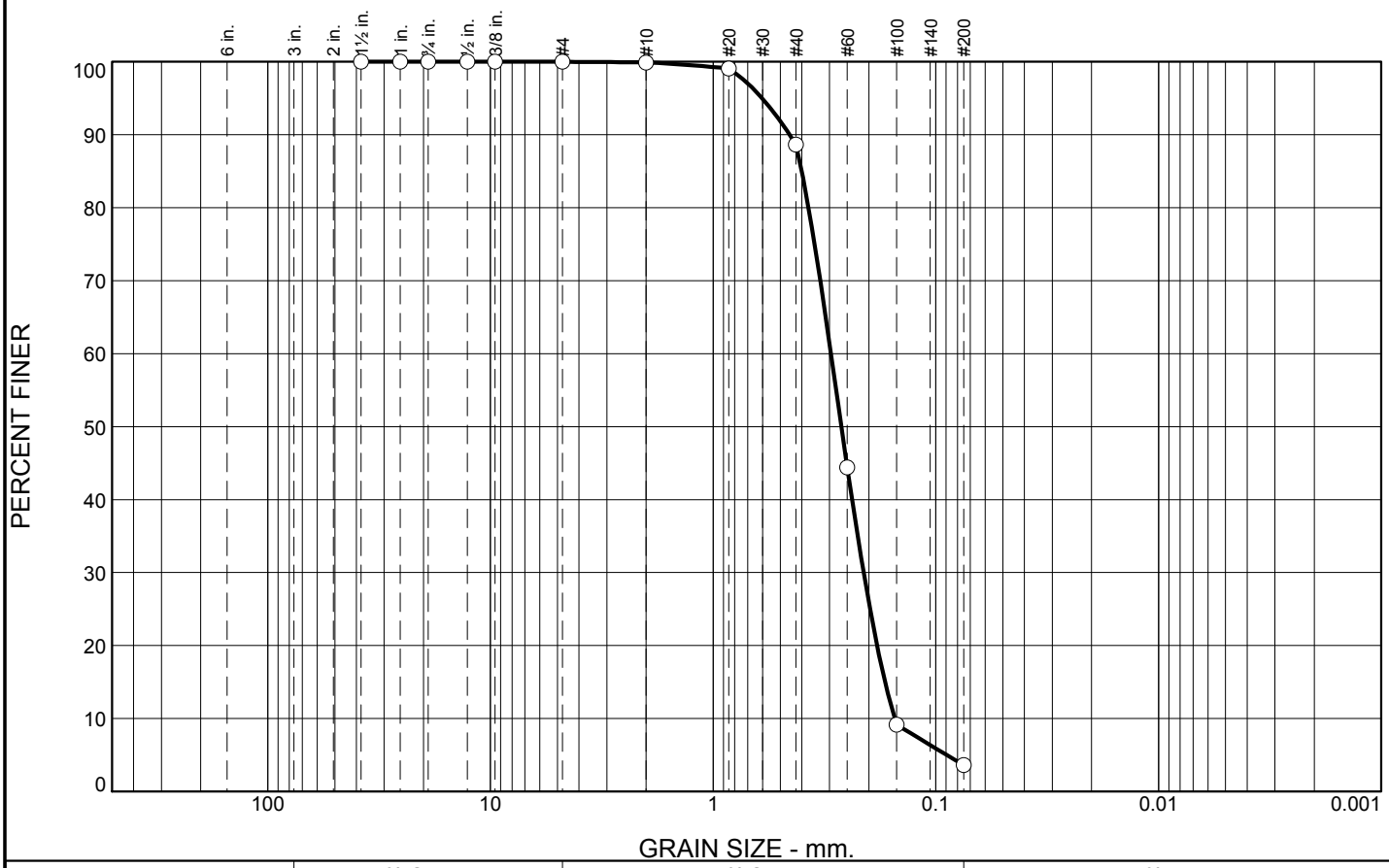
**Location:** USACE Sample # B1-DA10-24A-11
**Sample Number:** TE Lab ID: 5055.25 **Depth:** 0.0 - 4.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 11.3 | 85.0 | 3.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.1 | | |
| #40 | 88.6 | | |
| #60 | 44.4 | | |
| #100 | 9.2 | | |
| #200 | 3.6 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4537 $D_{85}$= 0.4003 $D_{60}$= 0.2959
$D_{50}$= 0.2657 $D_{30}$= 0.2109 $D_{15}$= 0.1692
$D_{10}$= 0.1531 $C_u$= 1.93 $C_c$= 0.98

**Classification**

USCS= SP AASHTO=

**Remarks**

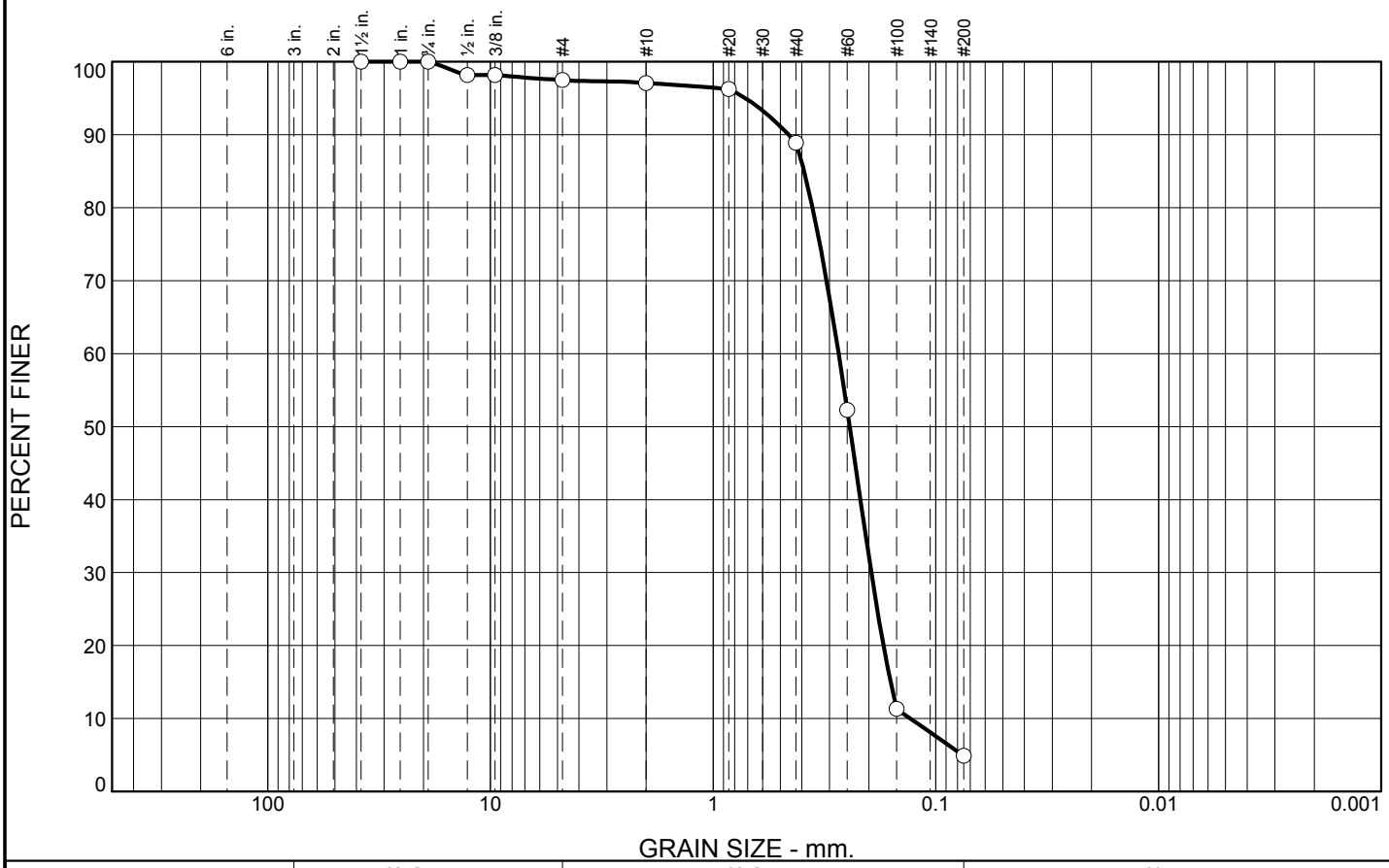
**Location:** USACE Sample # B1-DA10-24B-11
**Sample Number:** TE Lab ID: 5055.26 **Depth:** 4.0 - 8.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.5 | 0.4 | 8.2 | 84.0 | 4.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 98.2 | | |
| .375 | 98.2 | | |
| #4 | 97.5 | | |
| #10 | 97.1 | | |
| #20 | 96.3 | | |
| #40 | 88.9 | | |
| #60 | 52.3 | | |
| #100 | 11.3 | | |
| #200 | 4.9 | | |

* (no specification provided)

**Material Description**

SAND (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4584 $D_{85}$= 0.3907 $D_{60}$= 0.2733
$D_{50}$= 0.2437 $D_{30}$= 0.1949 $D_{15}$= 0.1599
$D_{10}$= 0.1302 $C_u$= 2.10 $C_c$= 1.07

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # B1-DA10-24C-11
**Sample Number:** TE Lab ID: 5055.27 **Depth:** 8.0 - 11.4 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

**Boring Designation BI-DA10-25-11**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration Disposal Area 10 | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DA10-25-11 — LOCATION COORDINATES: E = 1,083,617 N = 259,756 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 21 Ft. |
| | 15. DATE BORING — STARTED: 06-18-11 — COMPLETED: 06-18-11 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -18.4 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 14.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -18.4 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, tan (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray D50: 0.2837 mm % Fines: 1.7 |
| | | | At El. -20.9 Ft., lt. gray | B | Classification: SP Color: 2.5Y 7/1-light gray D50: 0.2558 mm % Fines: 3.2 |
| -32.9 | 14.5 | | | C | Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3322 mm % Fines: 1.2 |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

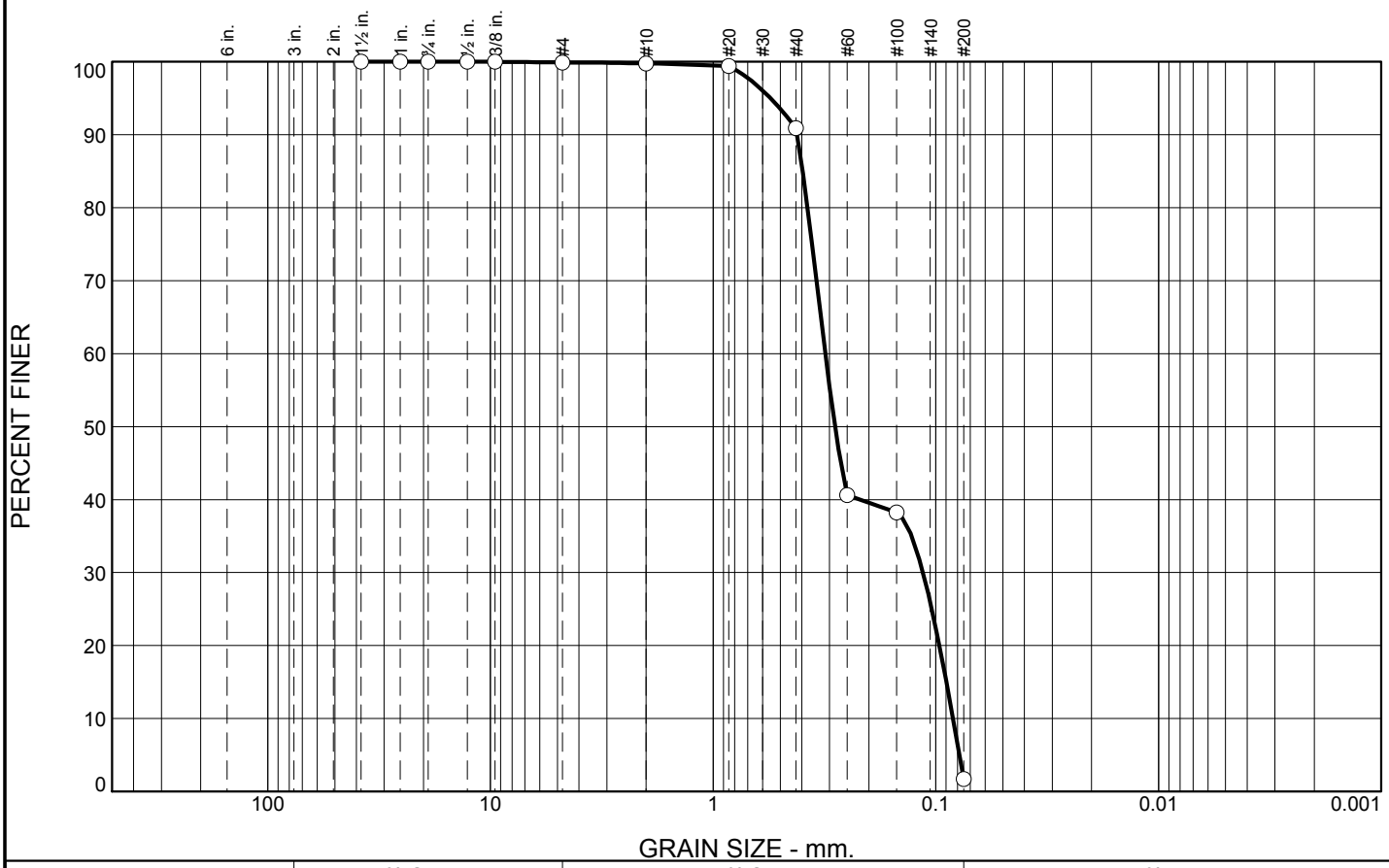
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.2139° Long = -88.51874°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.1 | 8.9 | 89.2 | 1.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.8 | | |
| #20 | 99.4 | | |
| #40 | 90.9 | | |
| #60 | 40.6 | | |
| #100 | 38.2 | | |
| #200 | 1.7 | | |

* (no specification provided)

**Material Description**

SAND (SP), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4201 $D_{85}$= 0.3966 $D_{60}$= 0.3135
$D_{50}$= 0.2837 $D_{30}$= 0.1141 $D_{15}$= 0.0897
$D_{10}$= 0.0837 $C_u$= 3.74 $C_c$= 0.50

**Classification**

USCS= SP AASHTO=

**Remarks**

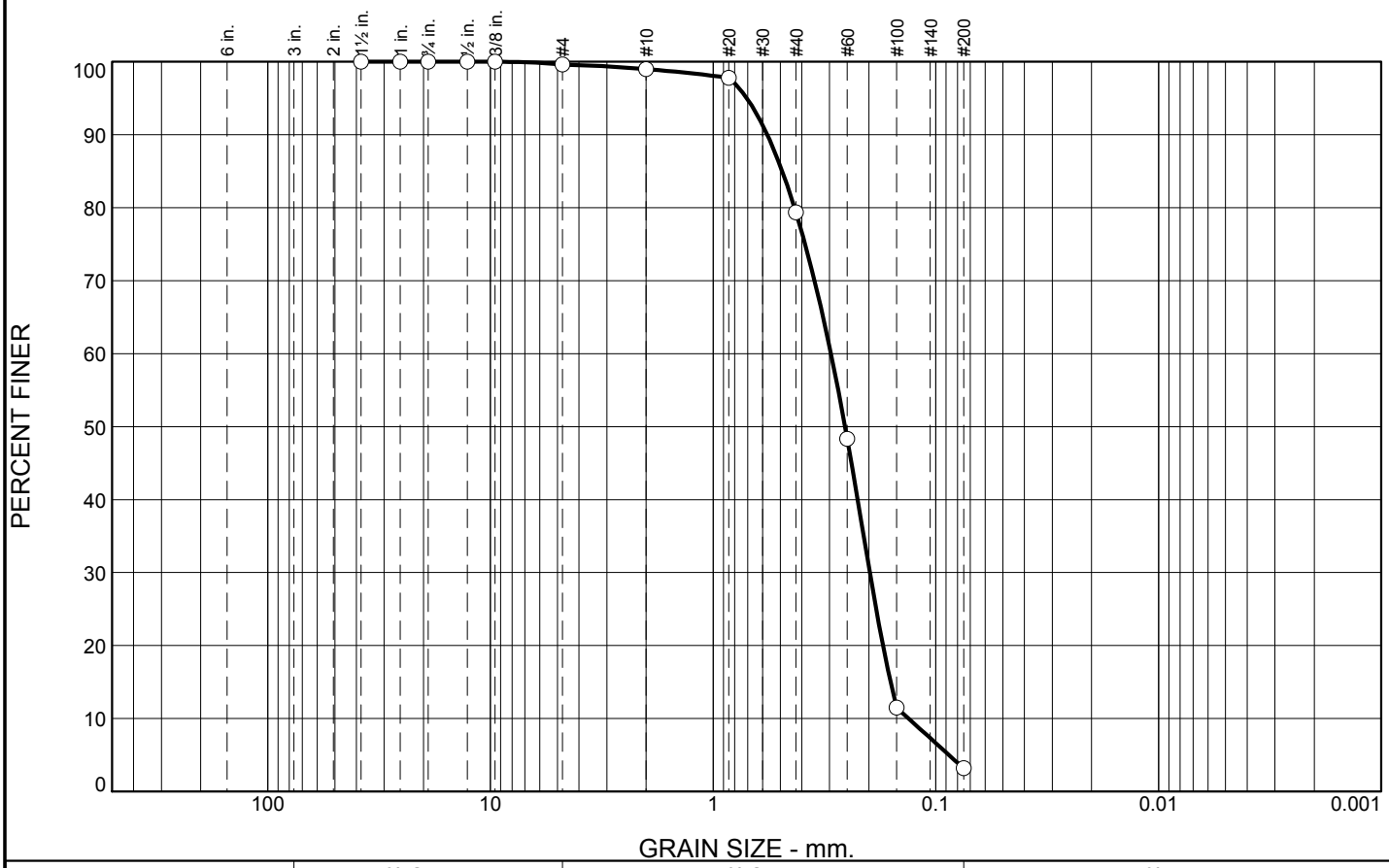
**Location:** USACE Sample # B1-DA10-25A-11
**Sample Number:** TE Lab ID: 5055.28 **Depth:** 0.0 - 5.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.6 | 19.6 | 76.2 | 3.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.0 | | |
| #20 | 97.8 | | |
| #40 | 79.4 | | |
| #60 | 48.3 | | |
| #100 | 11.5 | | |
| #200 | 3.2 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5718 $D_{85}$= 0.4898 $D_{60}$= 0.2959
$D_{50}$= 0.2558 $D_{30}$= 0.1979 $D_{15}$= 0.1600
$D_{10}$= 0.1326 $C_u$= 2.23 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

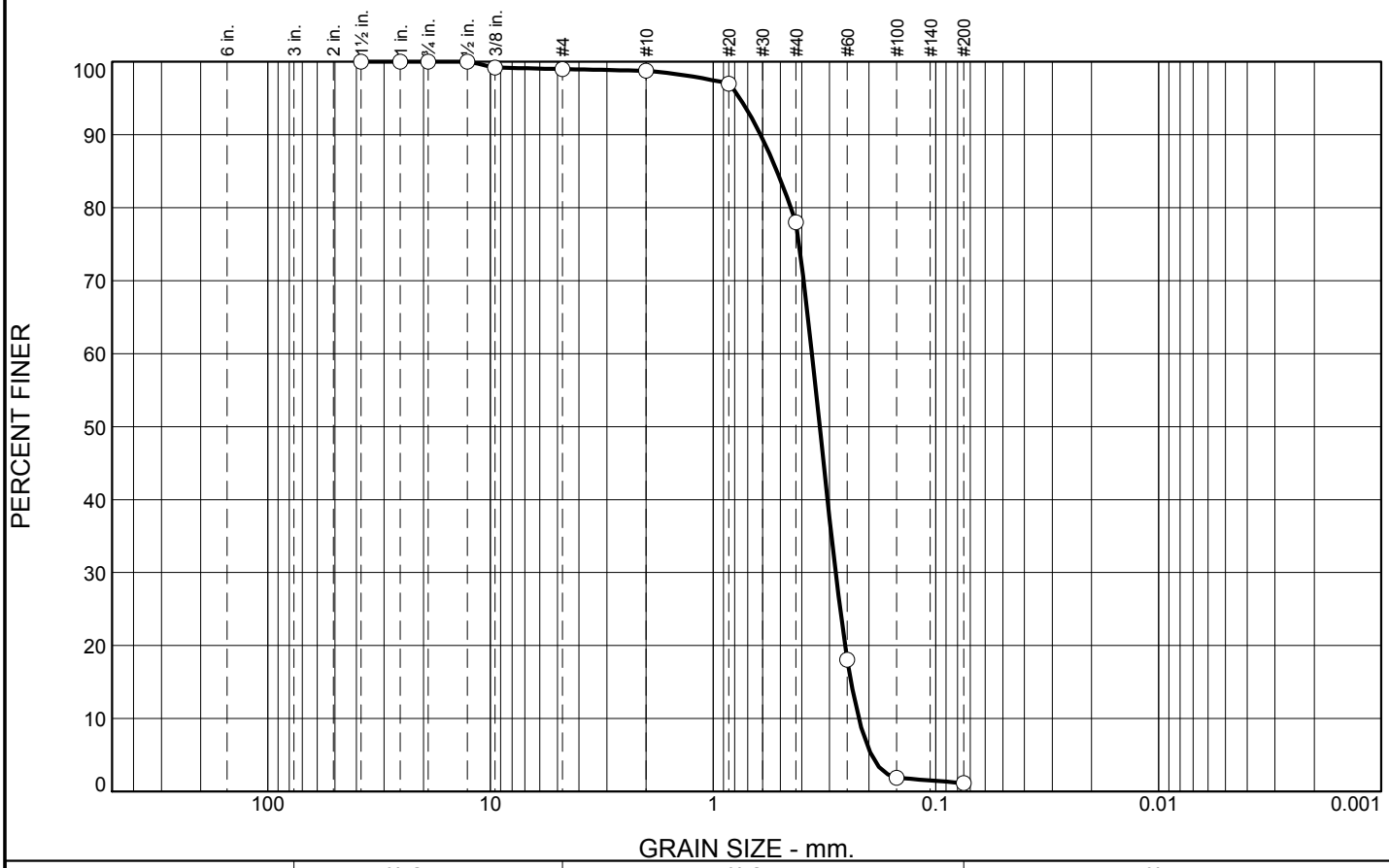
**Location:** USACE Sample # B1-DA10-25B-11
**Sample Number:** TE Lab ID: 5055.29 **Depth:** 5.0 - 10.0 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.0 | 0.2 | 20.8 | 76.8 | 1.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1.50 | 100.0 | | |
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 99.2 | | |
| #4 | 99.0 | | |
| #10 | 98.8 | | |
| #20 | 97.0 | | |
| #40 | 78.0 | | |
| #60 | 18.0 | | |
| #100 | 1.9 | | |
| #200 | 1.2 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.6130 $D_{85}$= 0.5176 $D_{60}$= 0.3600
$D_{50}$= 0.3322 $D_{30}$= 0.2818 $D_{15}$= 0.2405
$D_{10}$= 0.2219 $C_u$= 1.62 $C_c$= 0.99

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # B1-DA10-25C-11
**Sample Number:** TE Lab ID: 5055.30 **Depth:** 10.0 - 14.5 (ft) **Date:** 8/8/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Report No.**

**Boring Designation BI-DA10-26-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-26-11 |
| LOCATION COORDINATES | E = 1,084,913 N = 259,345 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 16.7 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 0 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 32.5 Ft. |
| 15. DATE BORING | STARTED 06-21-11 / COMPLETED 06-21-11 |
| 16. ELEVATION TOP OF BORING | -30.8 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -30.8 | 0.0 | | | | |
| -31.7 | 0.9 | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, lt. gray (SP) | | |
| | | | SAND, clayey, mostly medium-grained sand-sized quartz, some clay, gray (SC) | | |
| -39.3 | 8.5 | | | NS | |
| -39.8 | 9.0 | | SAND, silty, mostly quartz, dark gray (SM) | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, dark brown (SP) | | |
| -44.3 | 13.5 | | | | |
| | | | CLAY, lean, dark gray (CL) | | |
| -47.5 | 16.7 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.21276° Long = -88.51465°**

**Boring Designation BI-DA10-27-11**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration Disposal Area 10 | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DA10-27-11 — LOCATION COORDINATES: E = 1,084,005 N = 264,659 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 9.5 Ft. |
| | 15. DATE BORING — STARTED: 06-20-11 — COMPLETED: 06-20-11 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -7.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 13.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -7.8 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3266 mm % Fines: 1 |
| | | | | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3419 mm % Fines: 1.8 |
| -15.3 | 7.5 | | | | |
| | | | SAND, clayey, gray (SC) | NS | |
| -18.8 | 11.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, gray (SP) | | |
| -20.9 | 13.1 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

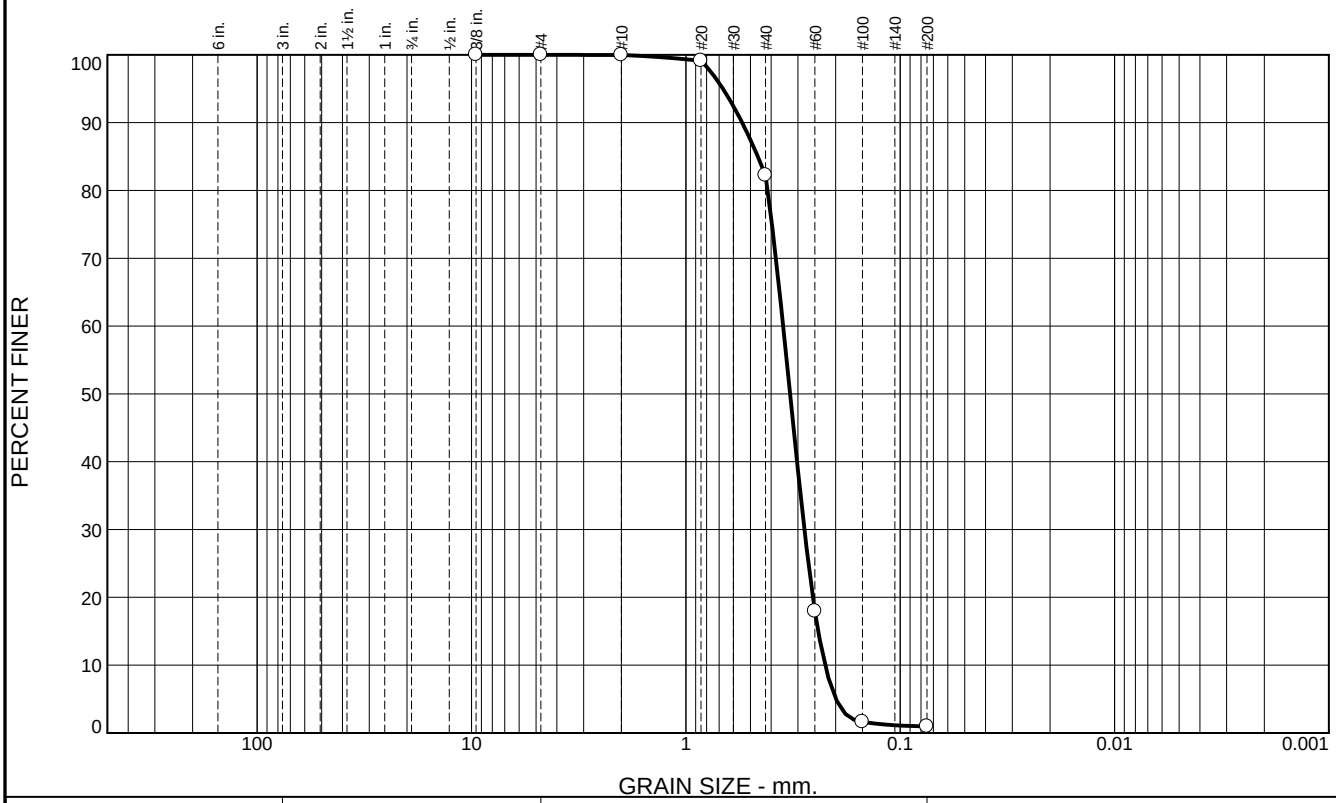
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22738° Long = -88.51747°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 17.8 | 81.2 | 1.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.1 | | |
| #40 | 82.2 | | |
| #60 | 17.9 | | |
| #100 | 1.6 | | |
| #200 | 1.0 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5457 $D_{85}$= 0.4615 $D_{60}$= 0.3517
$D_{50}$= 0.3266 $D_{30}$= 0.2801 $D_{15}$= 0.2414
$D_{10}$= 0.2241 $C_u$= 1.57 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

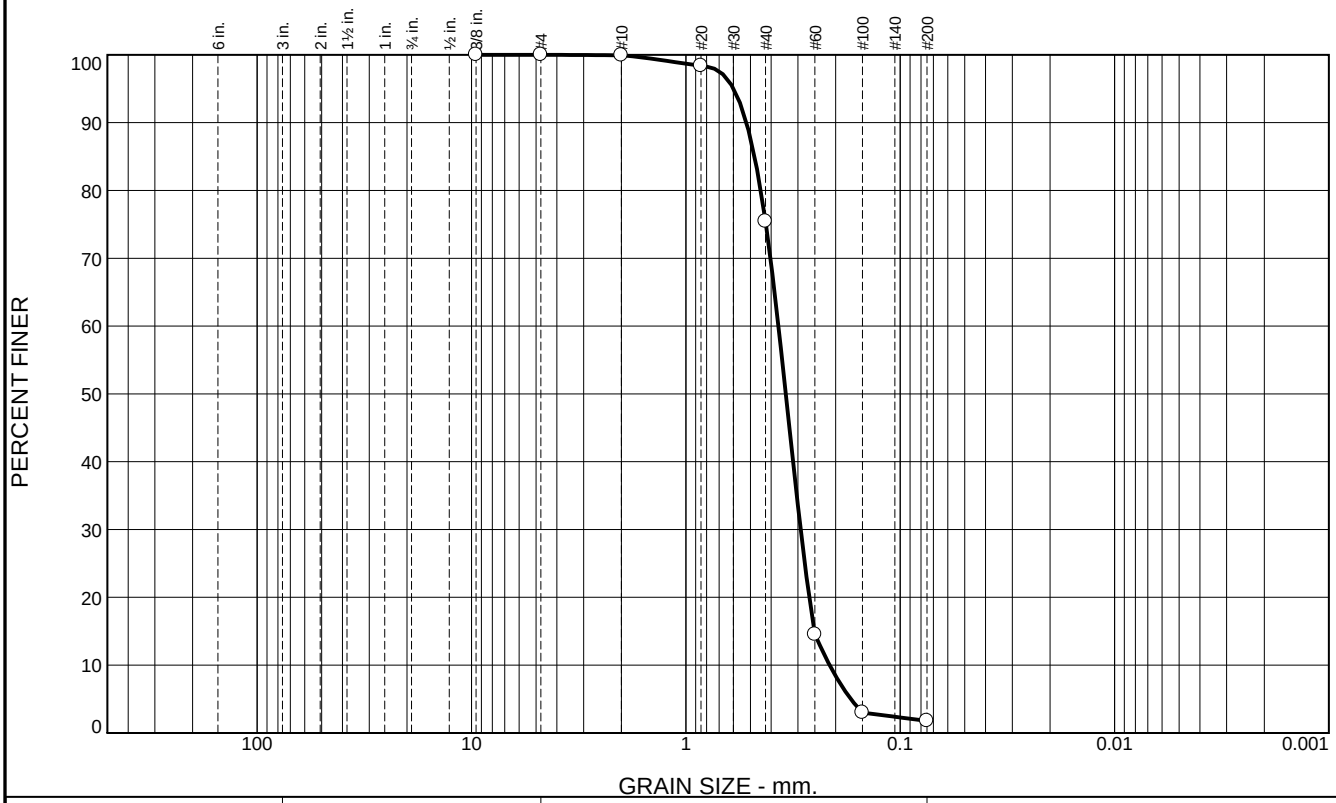
**Location:** USACE Sample # BI-DA10-27A-11
**Sample Number:** TE Lab ID: 5054.17 **Depth:** 0.0 - 4.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 24.4 | 73.7 | 1.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 98.4 | | |
| #40 | 75.5 | | |
| #60 | 14.5 | | |
| #100 | 3.0 | | |
| #200 | 1.8 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5217 $D_{85}$= 0.4781 $D_{60}$= 0.3701
$D_{50}$= 0.3419 $D_{30}$= 0.2916 $D_{15}$= 0.2515
$D_{10}$= 0.2134 $C_u$= 1.73 $C_c$= 1.08

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # BI-DA10-27B-11
**Sample Number:** TE Lab ID: 5054.18 **Depth:** 4.0 - 7.5 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

**Boring Designation BI-DA10-28-11**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Disposal Area 10 |
| 2. BORING DESIGNATION | BI-DA10-28-11 |
| LOCATION COORDINATES | E = 1,082,260 N = 265,182 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 11.6 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 2 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 6.5 Ft. |
| 15. DATE BORING | STARTED 06-20-11 / COMPLETED 06-20-11 |
| 16. ELEVATION TOP OF BORING | -4.7 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -4.7 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.309 mm % Fines: 0.7 |
| | | | | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2896 mm % Fines: 1.9 |
| -14.0 | 9.3 | | | | |
| | | | CLAY, lean, dark gray (CL) | NS | |
| -16.3 | 11.6 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

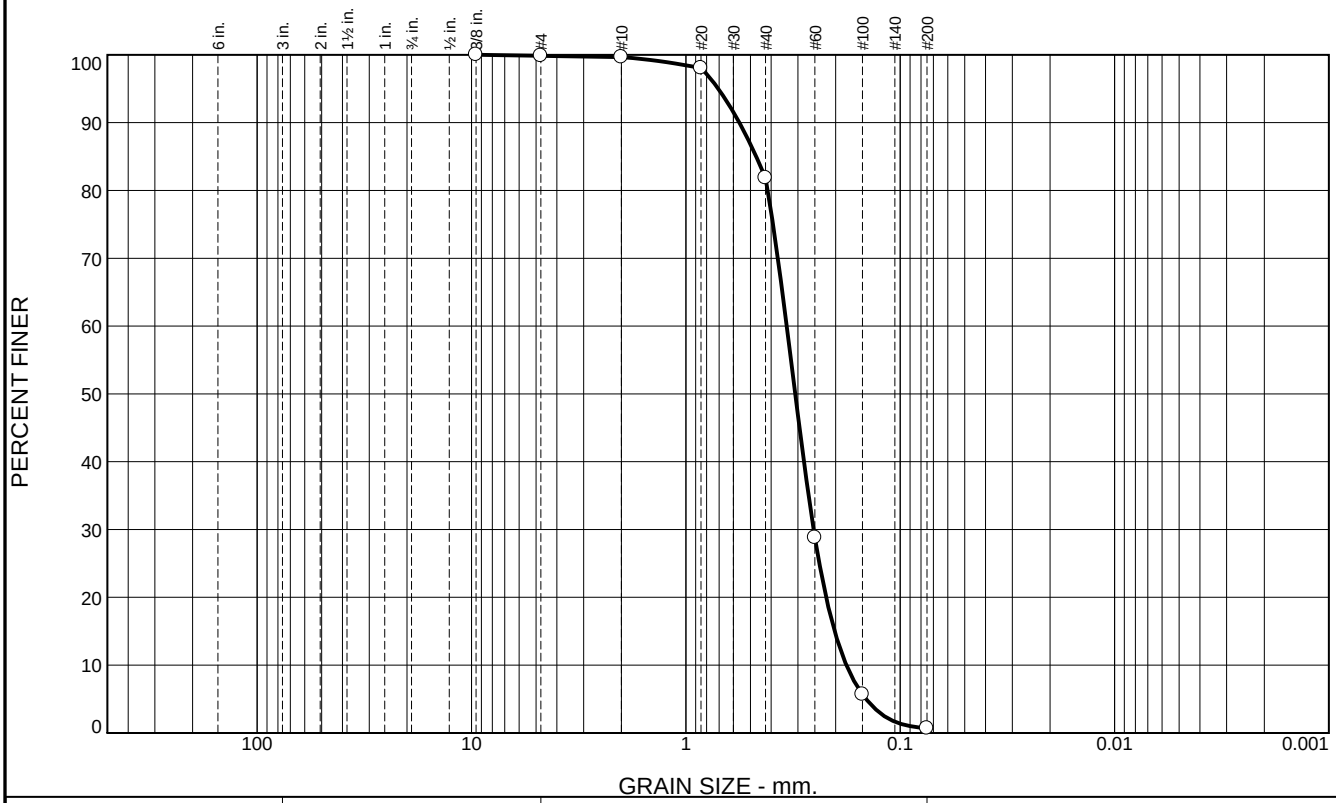
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22883° Long = -88.52299°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.2 | 17.9 | 81.1 | 0.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.7 | | |
| #20 | 98.0 | | |
| #40 | 81.8 | | |
| #60 | 28.8 | | |
| #100 | 5.7 | | |
| #200 | 0.7 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5627 $D_{85}$= 0.4697 $D_{60}$= 0.3386
$D_{50}$= 0.3090 $D_{30}$= 0.2536 $D_{15}$= 0.2022
$D_{10}$= 0.1783 $C_u$= 1.90 $C_c$= 1.07

**Classification**

USCS= SP AASHTO=

**Remarks**

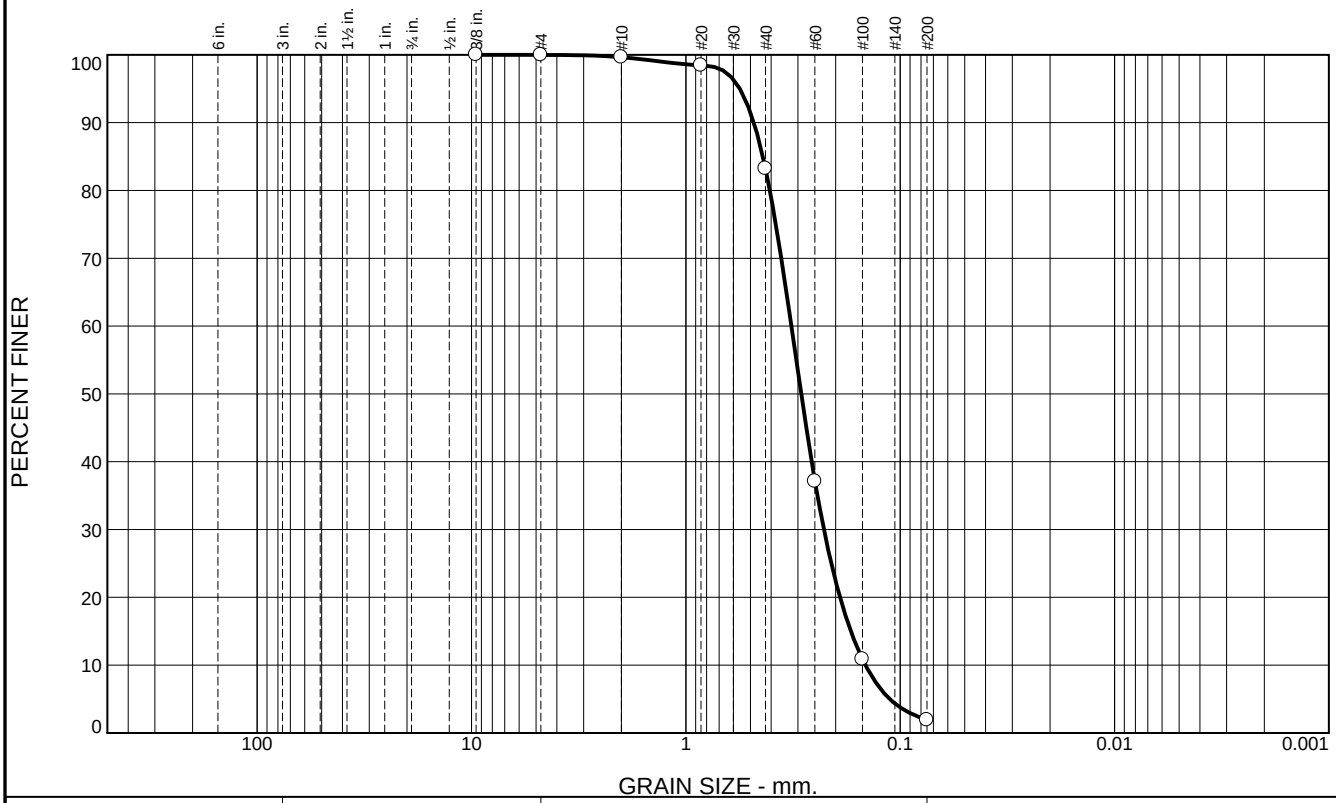
**Location:** USACE Sample # BI-DA10-28A-11
**Sample Number:** TE Lab ID: 5054.19 **Depth:** 0.0 - 5.0 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 16.4 | 81.3 | 1.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 98.4 | | |
| #40 | 83.2 | | |
| #60 | 37.1 | | |
| #100 | 10.9 | | |
| #200 | 1.9 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4816 $D_{85}$= 0.4372 $D_{60}$= 0.3220
$D_{50}$= 0.2896 $D_{30}$= 0.2270 $D_{15}$= 0.1700
$D_{10}$= 0.1453 $C_u$= 2.22 $C_c$= 1.10

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # BI-DA10-28B-11
**Sample Number:** TE Lab ID: 5054.20 **Depth:** 5.0 - 9.3 (ft) **Date:** 7/15/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

**Boring Designation BI-DA10-29-11**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Disposal Area 10 | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-DA10-29-11 — LOCATION COORDINATES: E = 1,084,593 N = 265,545 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 1 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 10.1 Ft. |
| | 15. DATE BORING — STARTED: 06-20-11 — COMPLETED: 06-20-11 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -8.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 13.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Rhonda Capes, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -8.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly medium-grained sand-sized quartz, tan (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.3426 mm % Fines: 1.1 |
| | | | At El. -12.6 Ft., trace silt, lt. gray | NS | |
| -14.9 | 6.7 | | | | |
| | | | SAND, silty, mostly fine-grained sand-sized quartz, occasional clay, dark gray (SM) | | |
| -16.8 | 8.6 | | | | |
| | | | CLAY, lean, dark gray (CL) | | |
| -21.7 | 13.5 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

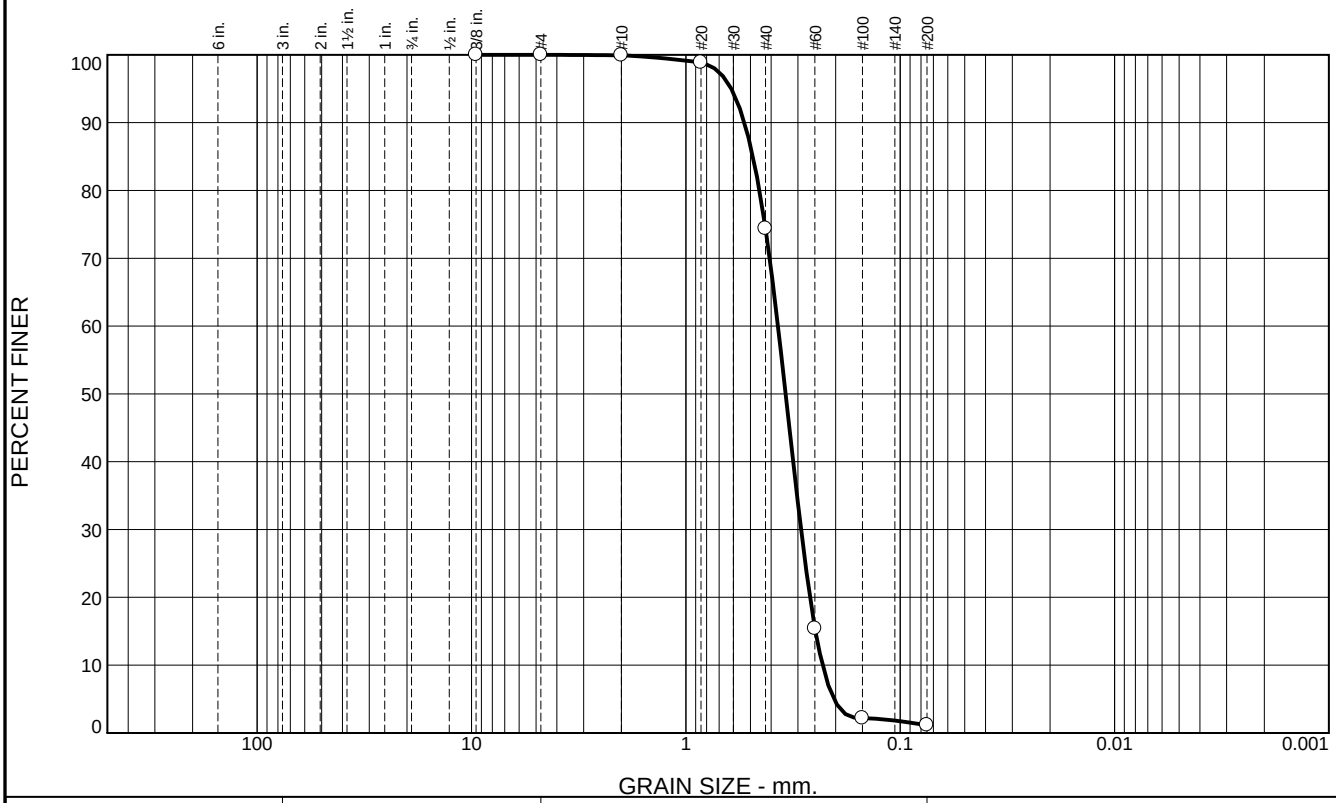
3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.22981° Long = -88.5156°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 25.5 | 73.3 | 1.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 98.9 | | |
| #40 | 74.4 | | |
| #60 | 15.4 | | |
| #100 | 2.2 | | |
| #200 | 1.1 | | |

* (no specification provided)

**Material Description**

SAND (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5329 $D_{85}$= 0.4865 $D_{60}$= 0.3719
$D_{50}$= 0.3426 $D_{30}$= 0.2903 $D_{15}$= 0.2487
$D_{10}$= 0.2305 $C_u$= 1.61 $C_c$= 0.98

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** USACE Sample # BI-DA10-29A-11
**Sample Number:** TE Lab ID: 5054.21 **Depth:** 0.0 - 4.4 (ft) **Date:** 7/18/11

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 009
Mississippi Barrier Island Restoration Project
**Project No:** 11-2116-0057 **Figure**

# Appendix I

# Horn Island Pass and Pascagoula Bar Channel

# Vibracores and Lab Results

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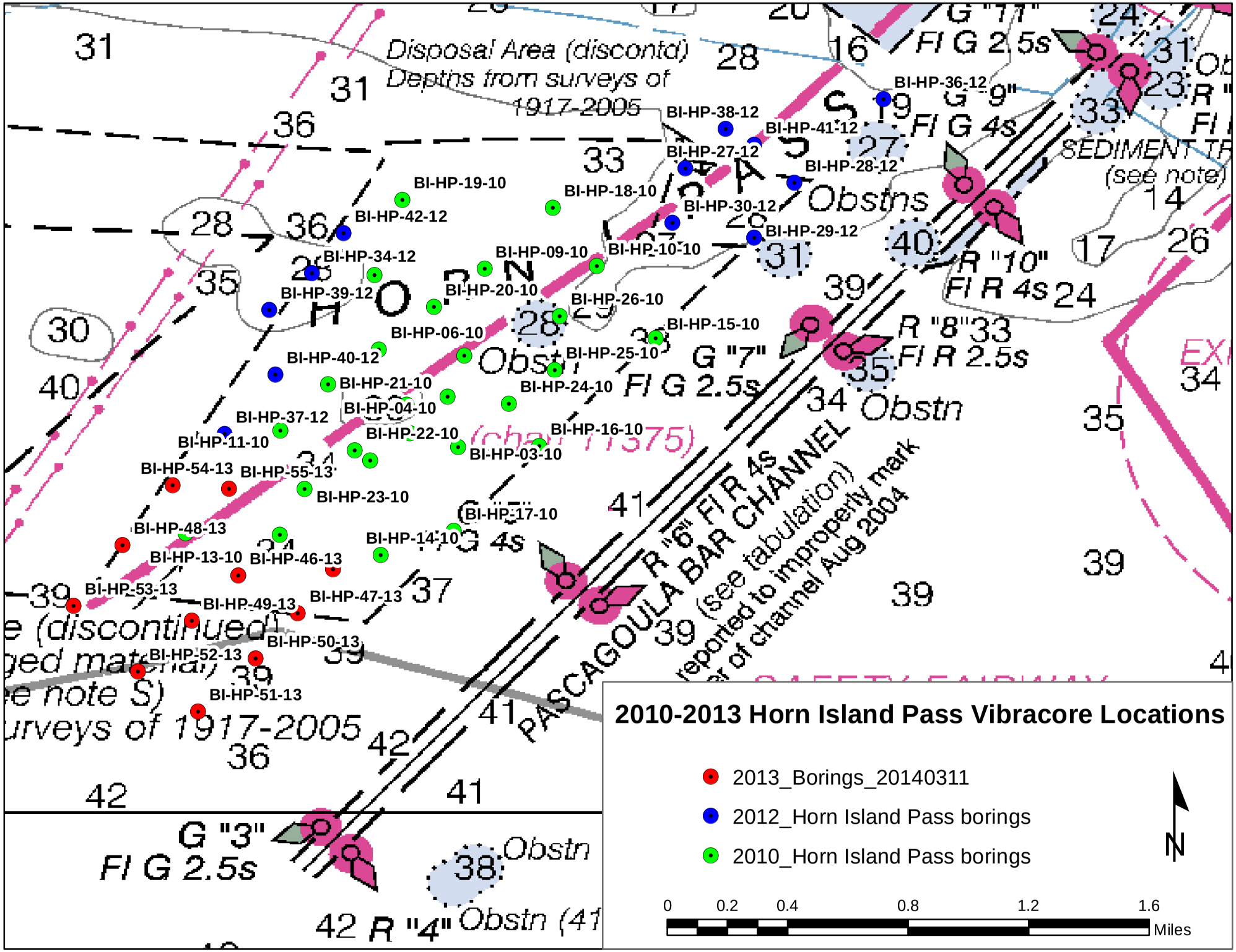
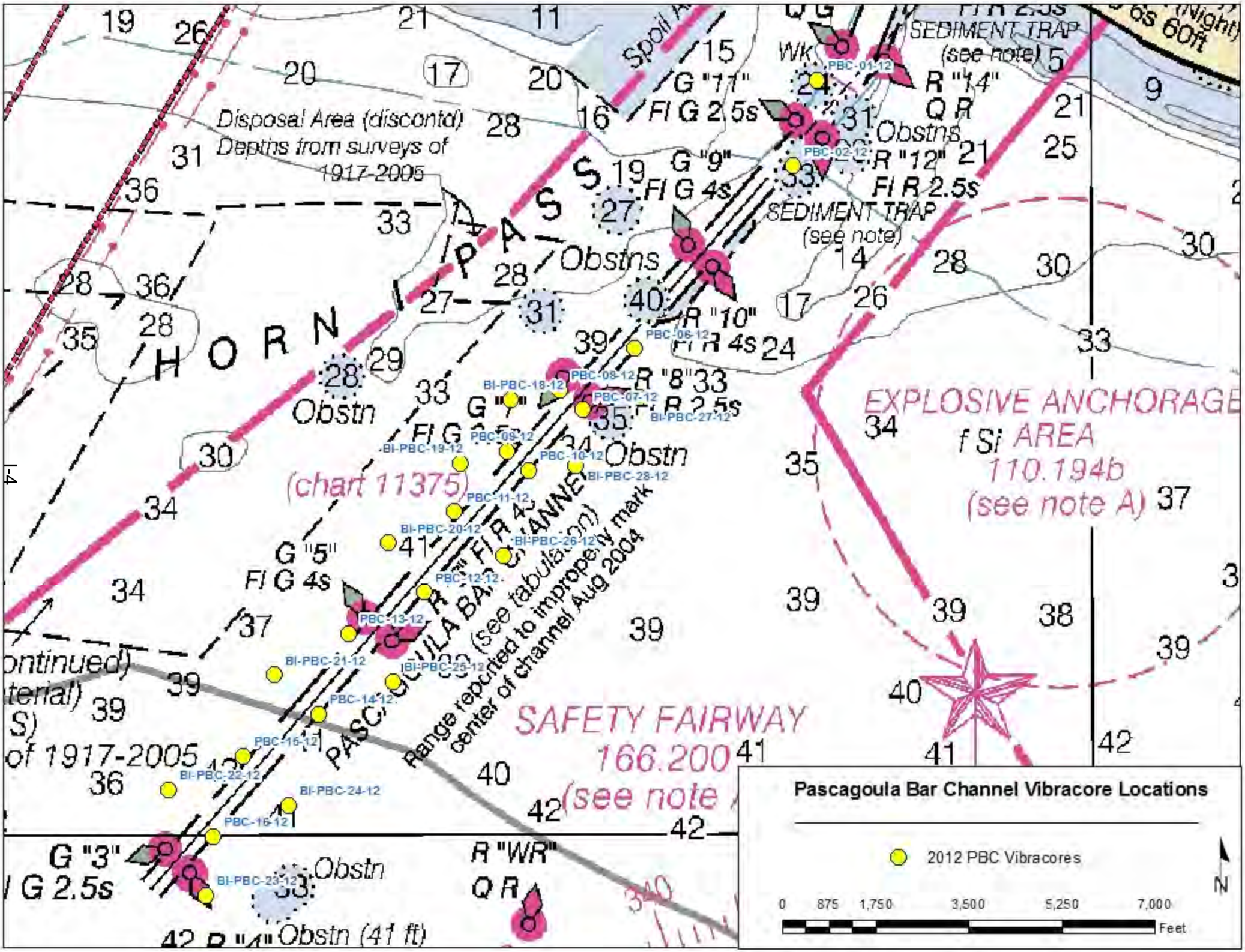

2010-2013 Horn Island Pass Vibracore Locations
2013_Borings_20140311
2012_Horn Island Pass borings
2010_Horn Island Pass borings
0
0.2
0.4
0.8
1.2
1.6
Miles
N
Disposal Area (discontd)
Depths from surveys of
1917-2005
BI-HP-36-12
BI-HP-38-12
BI-HP-41-12
BI-HP-27-12
BI-HP-28-12
BI-HP-19-10
BI-HP-18-10
BI-HP-30-12
BI-HP-42-12
BI-HP-29-12
BI-HP-34-12
BI-HP-09-10
BI-HP-10-10
BI-HP-39-12
BI-HP-20-10
BI-HP-26-10
BI-HP-15-10
BI-HP-06-10
BI-HP-25-10
BI-HP-40-12
BI-HP-21-10
BI-HP-24-10
BI-HP-04-10
BI-HP-37-12
BI-HP-22-10
BI-HP-16-10
BI-HP-11-10
BI-HP-03-10
BI-HP-54-13
BI-HP-55-13
BI-HP-23-10
BI-HP-17-10
BI-HP-48-13
BI-HP-14-10
BI-HP-13-10
BI-HP-46-13
BI-HP-53-13
BI-HP-49-13
BI-HP-47-13
BI-HP-50-13
BI-HP-52-13
BI-HP-51-13
PASCAGOULA BAR CHANNEL
(see tabulation)
reported to improperly mark
of channel Aug 2004
SEDIMENT TR
(see note)
Obstns
Obstn
G "7"
Fl G 2.5s
R "8"
Fl R 2.5s
R "10"
Fl R 4s
G "9"
Fl G 4s
G "11"
Fl G 2.5s
R "6" Fl R 4s
G "3"
Fl G 2.5s
R "4"
Obstn (41
e (discontinued)
ged material)
e note S)
urveys of 1917-2005


Pascagoula Bar Channel Vibracore Locations
2012 PBC Vibracores
0 875 1,750 3,500 5,250 7,000
Feet
N
Disposal Area (discontd)
Depths from surveys of
1917-2005
SEDIMENT TRAP
(see note)
G "11"
Fl G 2.5s
R "14"
Q R
Obstns
G "9"
Fl G 4s
R "12"
Fl R 2.5s
R "10"
Fl R 4s
R "8"
Fl R 2.5s
Obstn
EXPLOSIVE ANCHORAGE
AREA
110.194b
(see note A)
(chart 11375)
G "5"
Fl G 4s
PASCAGOULA BAR CHANNEL
Range reported to improperly mark
center of channel Aug 2004
SAFETY FAIRWAY
166.200
(see note
G "3"
Fl G 2.5s
R "WR"
Q R
Obstn (41 ft)
HORNI PASS
PBC-01-12
PBC-02-12
PBC-06-12
PBC-08-12
PBC-07-12
BI-PBC-27-12
BI-PBC-18-12
BI-PBC-19-12
PBC-09-12
PBC-10-12
BI-PBC-28-12
PBC-11-12
BI-PBC-20-12
BI-PBC-26-12
PBC-12-12
PBC-13-12
BI-PBC-21-12
BI-PBC-25-12
PBC-14-12
PBC-15-12
BI-PBC-22-12
BI-PBC-24-12
PBC-16-12
BI-PBC-23-12

| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI-HP-1-10** | HORN ISLAND PASS | 2010 | 7/13/2010 | 4:05 PM | 30.18621 | -88.55043 | 249659.15780 | 1073632.62500 | 20-ft Vibracore | 31.0 | 19.2 | | | | | | | | | | | | | | | | | |
| **BI-HP-1-10A** | HORN ISLAND PASS | 2010 | 7/13/2010 | 4:05 PM | 30.18621 | -88.55043 | 249659.15780 | 1073632.62500 | 20-ft Vibracore | 31.0 | 19.2 | 0.0 - 5.0 | 5.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 5/1 | 5 | LT GRAY | 2.5Y 7/1 | 7 | | 0.29 | 0.29 | 8.2 | 3.2 | 1.5 |
| **BI-HP-1-10B** | HORN ISLAND PASS | 2010 | 7/13/2010 | 4:05 PM | 30.18621 | -88.55043 | 249659.15780 | 1073632.62500 | 20-ft Vibracore | 31.0 | 19.2 | 5.0 - 9.9 | 4.9 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 5/1 | 5 | LT GRAY | 2.5Y 7/1 | 7 | | 0.30 | 0.32 | 2.4 | 1.9 | 1.1 |
| **BI-HP-2-10** | HORN ISLAND PASS | 2010 | 7/13/2010 | 2:35 PM | 30.18353 | -88.55217 | 248683.12770 | 1073085.27900 | 20-ft Vibracore | 34.0 | 17.6 | | | | | | | | | | | | | | | | | |
| **BI-HP-2-10A** | HORN ISLAND PASS | 2010 | 7/13/2010 | 2:35 PM | 30.18353 | -88.55217 | 248683.12770 | 1073085.27900 | 20-ft Vibracore | 34.0 | 17.6 | 0.0 - 3.3 | 3.3 | SP | SP | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | | 0.28 | 0.30 | 2.0 | 2.0 | 1.0 |
| **BI-HP-2-10B** | HORN ISLAND PASS | 2010 | 7/13/2010 | 2:35 PM | 30.18353 | -88.55217 | 248683.12770 | 1073085.27900 | 20-ft Vibracore | 34.0 | 17.6 | 3.3 - 5.9 | 2.6 | SM | SM | SUBANGULAR TO ROUNDED | VERY DK GRAYISH BROWN | 2.5Y 3/2 | 3 | GRAY | 2.5Y 5/1 | 5 | | 0.23 | #VALUE! | 15.2 | #VALUE! | #VALUE! |
| **BI-HP-3-10** | HORN ISLAND PASS | 2010 | 7/13/2010 | 2:02 PM | 30.18417 | -88.54793 | 248919.21470 | 1074424.35500 | 20-ft Vibracore | 34.0 | 18.1 | | | | | | | | | | | | | | | | | |
| **BI-HP-3-10A** | HORN ISLAND PASS | 2010 | 7/13/2010 | 2:02 PM | 30.18417 | -88.54793 | 248919.21470 | 1074424.35500 | 20-ft Vibracore | 34.0 | 18.1 | 0.0 - 2.9 | 2.9 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.30 | 0.31 | 5.6 | 2.2 | 1.2 |
| **BI-HP-3-10B** | HORN ISLAND PASS | 2010 | 7/13/2010 | 2:02 PM | 30.18417 | -88.54793 | 248919.21470 | 1074424.35500 | 20-ft Vibracore | 34.0 | 18.1 | 2.9 - 5.8 | 2.9 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 5Y 5/1 | 5 | LT GRAY | 2.5Y 7/2 | 7 | | 0.26 | 0.27 | 3.4 | 2.4 | 1.2 |
| **BI-HP-4-10** | HORN ISLAND PASS | 2010 | 7/13/2010 | 2:02 PM | 30.18659 | -88.54844 | 249798.92370 | 1074261.01800 | 20-ft Vibracore | 30.0 | 19.3 | | | | | | | | | | | | | | | | | |
| **BI-HP-4-10A** | HORN ISLAND PASS | 2010 | 7/13/2010 | 2:02 PM | 30.18659 | -88.54844 | 249798.92370 | 1074261.01800 | 20-ft Vibracore | 30.0 | 19.3 | 0.0 - 4.2 | 4.2 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/1 | 7 | | 0.28 | 0.28 | 6.6 | 3.1 | 1.4 |
| **BI-HP-4-10B** | HORN ISLAND PASS | 2010 | 7/13/2010 | 2:02 PM | 30.18659 | -88.54844 | 249798.92370 | 1074261.01800 | 20-ft Vibracore | 30.0 | 19.3 | 4.2 -8.5 | 4.3 | SP | SM | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.27 | 0.27 | 12.5 | #VALUE! | #VALUE! |
| **BI-HP-4-10C** | HORN ISLAND PASS | 2010 | 7/13/2010 | 2:02 PM | 30.18659 | -88.54844 | 249798.92370 | 1074261.01800 | 20-ft Vibracore | 30.0 | 19.3 | 8.5 - 11.2 | 2.7 | SM | SM | SUBANGULAR TO ROUNDED | BLACK | 2.5Y 2.5/1 | 3 | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | | 0.18 | #VALUE! | 29.3 | #VALUE! | #VALUE! |
| **BI-HP-5-10** | HORN ISLAND PASS | 2010 | 7/14/2010 | 8:00 AM | 30.18858 | -88.54765 | 250523.27750 | 1074508.80200 | 20-ft Vibracore | 34.0 | 17.8 | | | | | | | | | | | | | | | | | |
| **BI-HP-5-10A** | HORN ISLAND PASS | 2010 | 7/14/2010 | 8:00 AM | 30.18858 | -88.54765 | 250523.27750 | 1074508.80200 | 20-ft Vibracore | 34.0 | 17.8 | 0.0 - 4.8 | 4.8 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | | 0.28 | 0.29 | 6.7 | 2.9 | 1.3 |
| **BI-HP-6-10** | HORN ISLAND PASS | 2010 | 7/14/2010 | 8:40 AM | 30.18886 | -88.55173 | 250621.89980 | 1073219.51000 | 20-ft Vibracore | 34.0 | 17.5 | | | | | | | | | | | | | | | | | |
| **BI-HP-6-10A** | HORN ISLAND PASS | 2010 | 7/14/2010 | 8:40 AM | 30.18886 | -88.55173 | 250621.89980 | 1073219.51000 | 20-ft Vibracore | 34.0 | 17.5 | 0-4 | 4.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | VERY DK GRAYISH BROWN | 2.5Y 3/2 | 3 | GRAY | 2.5Y 6/1 | 6 | | 0.30 | 0.31 | 5.9 | 2.1 | 1.1 |
| **BI-HP-7-10** | HORN ISLAND PASS | 2010 | 7/13/2010 | 3:20 PM | 30.18484 | -88.55027 | 249161.03800 | 1073684.41500 | 20-ft Vibracore | 32.0 | 16.7 | | | | | | | | | | | | | | | | | |
| **BI-HP-7-10A** | HORN ISLAND PASS | 2010 | 7/13/2010 | 3:20 PM | 30.18484 | -88.55027 | 249161.03800 | 1073684.41500 | 20-ft Vibracore | 32.0 | 16.7 | 0.0 - 3.1 | 3.1 | SP | SP | SUBANGULAR TO ROUNDED | DK GRAY | 2.5Y 4/1 | 4 | LT GRAY | 2.5Y 7/1 | 7 | | 0.30 | 0.31 | 3.2 | 2.1 | 1.1 |
| **BI-HP-7-10B** | HORN ISLAND PASS | 2010 | 7/13/2010 | 3:20 PM | 30.18484 | -88.55027 | 249161.03800 | 1073684.41500 | 20-ft Vibracore | 32.0 | 16.7 | 3.1 - 6.2 | 3.1 | SP | SP-SM | SUBANGULAR TO ROUNDED | VERY DK GRAYISH BROWN | 2.5Y 3/2 | 3 | LT GRAY | 2.5Y 7/1 | 7 | | 0.25 | 0.26 | 6.2 | 2.6 | 1.1 |
| **BI-HP-8-10** | HORN ISLAND PASS | 2010 | 7/14/2010 | 2:00 PM | 30.19244 | -88.55197 | 251923.69740 | 1073140.46900 | 20-ft Vibracore | 33.0 | 17.4 | | | | | | | | | | | | | | | | | |
| **BI-HP-8-10A** | HORN ISLAND PASS | 2010 | 7/14/2010 | 2:00 PM | 30.19244 | -88.55197 | 251923.69740 | 1073140.46900 | 20-ft Vibracore | 33.0 | 17.4 | 0.0 - 5.1 | 5.1 | SP | SP | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT GRAY | 2.5Y 7/1 | 7 | | 0.28 | 0.29 | 1.6 | 1.8 | 1.0 |
| **BI-HP-9-10** | HORN ISLAND PASS | 2010 | 7/14/2010 | 1:18 PM | 30.19274 | -88.54668 | 252036.96860 | 1074811.45900 | 20-ft Vibracore | 36.0 | 18.7 | | | | | | | | | | | | | | | | | |
| **BI-HP-9-10A** | HORN ISLAND PASS | 2010 | 7/14/2010 | 1:18 PM | 30.19274 | -88.54668 | 252036.96860 | 1074811.45900 | 20-ft Vibracore | 36.0 | 18.7 | 0.0 - 1.4 | 1.4 | SM | SM | SUBANGULAR TO ROUNDED | VERY DK GRAYISH BROWN | 2.5Y 3/2 | 3 | GRAYISH BROWN | 2.5Y 5/2 | 5 | | 0.23 | 0.24 | 12.7 | #VALUE! | #VALUE! |
| **BI-HP-10-10** | HORN ISLAND PASS | 2010 | 7/14/2010 | 12:34 PM | 30.19288 | -88.54127 | 252092.22530 | 1076520.49900 | 20-ft Vibracore | 31.0 | 18.8 | | | | | | | | | | | | | | | | | |
| **BI-HP-10-10A** | HORN ISLAND PASS | 2010 | 7/14/2010 | 12:34 PM | 30.19288 | -88.54127 | 252092.22530 | 1076520.49900 | 20-ft Vibracore | 31.0 | 18.8 | 0.0 - 2.8 | 2.8 | SP | SP | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT GRAY | 2.5Y 7/1 | 7 | | 0.29 | 0.30 | 3.2 | 2.1 | 1.1 |
| **BI-HP-10-10B** | HORN ISLAND PASS | 2010 | 7/14/2010 | 12:34 PM | 30.19288 | -88.54127 | 252092.22530 | 1076520.49900 | 20-ft Vibracore | 31.0 | 18.8 | 2.8 - 5.6 | 2.8 | SP | SP | SUBANGULAR TO ROUNDED | DK GRAY | 2.5Y 4/1 | 4 | LT GRAY | 2.5Y 7/1 | 7 | | 0.26 | 0.28 | 3.5 | 2.2 | 1.1 |
| **BI-HP-11-10** | HORN ISLAND PASS | 2010 | 7/14/2010 | 9:15 AM | 30.18497 | -88.55648 | 249203.49640 | 1071722.23000 | 20-ft Vibracore | 36.0 | 18.0 | | | | | | | | | | | | | | | | | |
| **BI-HP-11-10A** | HORN ISLAND PASS | 2010 | 7/14/2010 | 9:15 AM | 30.18497 | -88.55648 | 249203.49640 | 1071722.23000 | 20-ft Vibracore | 36.0 | 18.0 | 0.0 - 5.1 | 5.1 | SP | SP | SUBANGULAR TO ROUNDED | DK GRAY | 2.5Y 4/1 | 4 | LT GRAY | 2.5Y 7/1 | 7 | | 0.29 | 0.29 | 4.5 | 2.7 | 1.2 |
| **BI-HP-11-10B** | HORN ISLAND PASS | 2010 | 7/14/2010 | 9:15 AM | 30.18497 | -88.55648 | 249203.49640 | 1071722.23000 | 20-ft Vibracore | 36.0 | 18.0 | 5.1 - 6.2 | 1.1 | SM | SM | SUBANGULAR TO ROUNDED | BLACK | 2.5Y 2.5/1 | 3 | GRAY | 2.5Y 5/1 | 5 | | 0.22 | #VALUE! | 16.8 | #VALUE! | #VALUE! |
| **BI-HP-12-10** | HORN ISLAND PASS | 2010 | 7/14/2010 | 10:22 AM | 30.17997 | -88.55652 | 247385.05360 | 1071714.00900 | 20-ft Vibracore | 36.0 | 17.8 | | | | | | | | | | | | | | | | | |
| **BI-HP-12-10A** | HORN ISLAND PASS | 2010 | 7/14/2010 | 10:22 AM | 30.17997 | -88.55652 | 247385.05360 | 1071714.00900 | 20-ft Vibracore | 36.0 | 17.8 | 0.0 - 3.0 | 3.0 | SP | SM | SUBANGULAR TO ROUNDED | DK GRAY | 10YR 4/1 | 4 | LT GRAY | 2.5Y 7/1 | 7 | | 0.27 | 0.27 | 12.3 | #VALUE! | #VALUE! |
| **BI-HP-12-10B** | HORN ISLAND PASS | 2010 | 7/14/2010 | 10:22 AM | 30.17997 | -88.55652 | 247385.05360 | 1071714.00900 | 20-ft Vibracore | 36.0 | 17.8 | 3.0 - 6.0 | 3.0 | SP | SP-SM | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | | 0.24 | 0.25 | 6.4 | 2.8 | 1.2 |
| **BI-HP-13-10** | HORN ISLAND PASS | 2010 | 7/14/2010 | 11:07 AM | 30.18005 | -88.56105 | 247410.70020 | 1070282.60200 | 20-ft Vibracore | 38.0 | 17.3 | | | | | | | | | | | | | | | | | |
| **BI-HP-13-10A** | HORN ISLAND PASS | 2010 | 7/14/2010 | 11:07 AM | 30.18005 | -88.56105 | 247410.70020 | 1070282.60200 | 20-ft Vibracore | 38.0 | 17.3 | 0.0 - 3.2 | 3.2 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.29 | 0.30 | 2.1 | 2.0 | 1.0 |
| **BI-HP-14-10** | HORN ISLAND PASS | 2010 | 7/14/2010 | 9:50 AM | 30.17988 | -88.55166 | 247356.08460 | 1073249.69800 | 20-ft Vibracore | 37.0 | 15.9 | | | | | | | | | | | | | | | | | |
| **BI-HP-14-10A** | HORN ISLAND PASS | 2010 | 7/14/2010 | 9:50 AM | 30.17988 | -88.55166 | 247356.08460 | 1073249.69800 | 20-ft Vibracore | 37.0 | 15.9 | 0.0 - 2.5 | 2.5 | SP | SP-SM | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | LT OLIVE GRAY | 5Y 6/2 | 6 | | 0.24 | 0.25 | 6.7 | 2.9 | 1.4 |
| **BI-HP-15-10** | HORN ISLAND PASS | 2010 | 7/14/2010 | 2:49 PM | 30.18942 | -88.53846 | 250836.16820 | 1077411.51300 | 20-ft Vibracore | 36.0 | 18.5 | NO SAMPLE TAKEN | | SC | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-HP-16-10** | HORN ISLAND PASS | 2010 | 7/14/2010 | 3:30 PM | 30.18423 | -88.54405 | 248944.12680 | 1075650.20700 | 20-ft Vibracore | 37.0 | 17.7 | | | | | | | | | | | | | | | | | |
| **BI-HP-16-10A** | HORN ISLAND PASS | 2010 | 7/14/2010 | 3:30 PM | 30.18423 | -88.54405 | 248944.12680 | 1075650.20700 | 20-ft Vibracore | 37.0 | 17.7 | 0.0 - 1.5 | 1.5 | SP | SP-SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | LT GRAY | 2.5Y 7/2 | 7 | | 0.25 | 0.27 | 7.0 | 2.8 | 1.2 |
| **BI-HP-16-10B** | HORN ISLAND PASS | 2010 | 7/14/2010 | 3:30 PM | 30.18423 | -88.54405 | 248944.12680 | 1075650.20700 | 20-ft Vibracore | 37.0 | 17.7 | 1.5 - 3.0 | 1.5 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.5Y 4/2 | 4 | OLIVE BROWN | 2.5Y 4/3 | 4 | | 0.18 | #VALUE! | 26.7 | #VALUE! | #VALUE! |
| **BI-HP-17-10** | HORN ISLAND PASS | 2010 | 7/15/2010 | 1:10 PM | 30.18016 | -88.54816 | 247460.66580 | 1074355.33500 | 20-ft Vibracore | 39.0 | 17.0 | NO SAMPLE TAKEN | 0.0 | SC | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-HP-18-10** | HORN ISLAND PASS | 2010 | 7/15/2010 | 8:00 AM | 30.19567 | -88.54340 | 253105.18280 | 1075844.99100 | 20-ft Vibracore | 34.0 | 16.5 | NO SAMPLE TAKEN | 0.0 | SC | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-HP-19-10** | HORN ISLAND PASS | 2010 | 7/15/2010 | 8:41 AM | 30.19606 | -88.55061 | 253241.29410 | 1073566.86500 | 20-ft Vibracore | 35.0 | 18.1 | NO SAMPLE TAKEN | 0.0 | SC | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-HP-20-10** | HORN ISLAND PASS | 2010 | 7/15/2010 | 9:35 AM | 30.19091 | -88.54910 | 251369.51300 | 1074048.57300 | 20-ft Vibracore | 36.0 | 17.6 | | | | | | | | | | | | | | | | | |
| **BI-HP-20-10A** | HORN ISLAND PASS | 2010 | 7/15/2010 | 9:35 AM | 30.19091 | -88.54910 | 251369.51300 | 1074048.57300 | 20-ft Vibracore | 36.0 | 17.6 | 0.0 - 1.6 | 1.6 | SP | SP-SM | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | LT GRAY | 2.5Y 7/1 | 7 | | 0.26 | 0.28 | 9.5 | 1.9 | 1.0 |
| **BI-HP-21-10** | HORN ISLAND PASS | 2010 | 7/15/2010 | 10:12 AM | 30.18721 | -88.55420 | 250019.90300 | 1072440.60700 | 20-ft Vibracore | 35.0 | 18.4 | | | | | | | | | | | | | | | | | |
| **BI-HP-21-10A** | HORN ISLAND PASS | 2010 | 7/15/2010 | 10:12 AM | 30.18721 | -88.55420 | 250019.90300 | 1072440.60700 | 20-ft Vibracore | 35.0 | 18.4 | 0.0 - 3.0 | 3.0 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 6/1 | 6 | WHITE | 2.5Y 8/1 | 8 | | 0.28 | 0.29 | 2.9 | 1.9 | 1.0 |
| **BI-HP-21-10B** | HORN ISLAND PASS | 2010 | 7/15/2010 | 10:12 AM | 30.18721 | -88.55420 | 250019.90300 | 1072440.60700 | 20-ft Vibracore | 35.0 | 18.4 | 3.0 - 5.9 | 2.9 | SP | SP-SM | SUBANGULAR TO ROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.27 | 0.27 | 7.9 | 3.3 | 1.4 |
| **BI-HP-22-10** | HORN ISLAND PASS | 2010 | 7/15/2010 | 10:45 AM | 30.18402 | -88.55291 | 248860.75600 | 1072851.03200 | 20-ft Vibracore | 34.0 | 19.1 | | | | | | | | | | | | | | | | | |
| **BI-HP-22-10A** | HORN ISLAND PASS | 2010 | 7/15/2010 | 10:45 AM | 30.18402 | -88.55291 | 248860.75600 | 1072851.03200 | 20-ft Vibracore | 34.0 | 19.1 | 0.0 - 3.0 | 3.0 | SP | SP | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | | 0.27 | 0.28 | 2.3 | 2.0 | 1.0 |
| **BI-HP-22-10B** | HORN ISLAND PASS | 2010 | 7/15/2010 | 10:45 AM | 30.18402 | -88.55291 | 248860.75600 | 1072851.03200 | 20-ft Vibracore | 34.0 | 19.1 | 3.0 - 6.4 | 3.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | | 0.25 | 0.25 | 9.2 | 3.5 | 1.4 |
| **BI-HP-23-10** | HORN ISLAND PASS | 2010 | 7/15/2010 | 12:30 PM | 30.18217 | -88.55531 | 248186.08540 | 1072094.37900 | 20-ft Vibracore | 37.0 | 16.1 | | | | | | | | | | | | | | | | | |
| **BI-HP-23-10A** | HORN ISLAND PASS | 2010 | 7/15/2010 | 12:30 PM | 30.18217 | -88.55531 | 248186.08540 | 1072094.37900 | 20-ft Vibracore | 37.0 | 16.1 | 0.0 - 3.4 | 3.4 | SP | SP | SUBANGULAR TO ROUNDED | GRAY | 2.5Y 5/1 | 5 | LT GRAY | 2.5Y 7/1 | 7 | | 0.25 | 0.27 | 3.1 | 2.1 | 1.0 |
| **BI-HP-23-10B** | HORN ISLAND PASS | 2010 | 7/15/2010 | 12:30 PM | 30.18217 | -88.55531 | 248186.08540 | 1072094.37900 | 20-ft Vibracore | 37.0 | 16.1 | 3.4 - 4.2 | 0.8 | SM | SM | SUBANGULAR TO ROUNDED | DK GRAY | 2.5Y 4/1 | 4 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | | 0.21 | 0.23 | 12.0 | #VALUE! | #VALUE! |
| **BI-HP-24-10** | HORN ISLAND PASS | 2010 | 7/15/2010 | 1:45 PM | 30.18626 | -88.54550 | 249681.24270 | 1075190.20700 | 20-ft Vibracore | 33.0 | 18.6 | | | | | | | | | | | | | | | | | |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI-HP-24-10A** | HORN ISLAND PASS | 2010 | 7/15/2010 | 1:45 PM | 30.18626 | -88.54550 | 249681.24270 | 1075190.20700 | 20-ft Vibracore | 33.0 | 18.6 | 0.0 - 3.4 | 3.4 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | | 0.26 | 0.28 | 5.5 | 2.5 | 1.2 |
| **BI-HP-24-10B** | HORN ISLAND PASS | 2010 | 7/15/2010 | 1:45 PM | 30.18626 | -88.54550 | 249681.24270 | 1075190.20700 | 20-ft Vibracore | 33.0 | 18.6 | 3.4 - 6.7 | 3.3 | SP | SP-SM | SUBANGULAR TO ROUNDED | DK GRAYISH BROWN | 2.Y 4/2 | 4 | LT GRAY | 2.5Y 7/1 | 7 | | 0.26 | 0.27 | 7.1 | 2.7 | 1.2 |
| **BI-HP-25-10** | HORN ISLAND PASS | 2010 | 7/15/2010 | 2:25 PM | 30.18788 | -88.54330 | 250272.17150 | 1075883.79500 | 20-ft Vibracore | 35.0 | 17.4 | | | | | | | | | | | | | | | | | |
| **BI-HP-25-10A** | HORN ISLAND PASS | 2010 | 7/15/2010 | 2:25 PM | 30.18788 | -88.54330 | 250272.17150 | 1075883.79500 | 20-ft Vibracore | 35.0 | 17.4 | 0.0 - 2.5 | 2.5 | SP | SP-SM | SUBANGULAR TO ROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | | 0.25 | 0.27 | 5.4 | 2.4 | 1.2 |
| **BI-HP-26-10** | HORN ISLAND PASS | 2010 | 7/15/2010 | 3:03 PM | 30.19048 | -88.54306 | 251217.94040 | 1075957.21200 | 20-ft Vibracore | 34.0 | 17.9 | | | | | | | | | | | | | | | | | |
| **BI-HP-26-10A** | HORN ISLAND PASS | 2010 | 7/15/2010 | 3:03 PM | 30.19048 | -88.54306 | 251217.94040 | 1075957.21200 | 20-ft Vibracore | 34.0 | 17.9 | 0.0 - 4.0 | 4.0 | SP | SP | SUBANGULAR TO ROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT GRAY | 2.5Y 7/1 | 7 | | 0.25 | 0.26 | 2.1 | 1.8 | 0.9 |
| **BI-HP-27-12** | HORN ISLAND PASS | 2012 | 12/4/2012 | 1:29 PM | 30.19757 | -88.53702 | 253801.36780 | 1077858.75500 | 20-ft Vibracore | 29.6 | 15.7 | | | | | | | | | | | | | | | | | |
| **BI-HP-27-12A** | HORN ISLAND PASS | 2012 | 12/4/2012 | 1:29 PM | 30.19757 | -88.53702 | 253801.36780 | 1077858.75500 | 20-ft Vibracore | 29.6 | 15.7 | 0-3.7 | 3.7 | SP | SP | SUBANGULAR TO SUBROUNDED | LT GRAY | 2.5Y 7/1 | 7 | PALE BROWN | 2.5Y 7.5/2 | 8 | | 0.33 | 0.36 | 1.6 | 1.6 | 1.0 |
| **BI-HP-27-12B** | HORN ISLAND PASS | 2012 | 12/4/2012 | 1:29 PM | 30.19757 | -88.53702 | 253801.36780 | 1077858.75500 | 20-ft Vibracore | 29.6 | 15.7 | 3.7-6 | 2.3 | SP-SM | SP-SM | SUBANGULAR TO SUBROUNDED | LT BROWNISH GRAY | 2.5Y 5.5/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.30 | 0.31 | 7.4 | 2.5 | 1.2 |
| **BI-HP-28-12** | HORN ISLAND PASS | 2012 | 12/4/2012 | 10:28 AM | 30.19687 | -88.53180 | 253551.11670 | 1079508.49400 | 20-ft Vibracore | 28.9 | 20.0 | | | SP | | | | | | | | | | | | | | |
| **BI-HP-28-12A** | HORN ISLAND PASS | 2012 | 12/4/2012 | 10:28 AM | 30.19687 | -88.53180 | 253551.11670 | 1079508.49400 | 20-ft Vibracore | 28.9 | 20.0 | 0-5.5 | 5.5 | SP | SP | SUBANGULAR TO SUBROUNDED | WHITE | 2.5Y 8/1 | 8 | WHITE | 5Y 8/1 | 8 | | 0.34 | 0.36 | 1.2 | 1.7 | 1.1 |
| **BI-HP-28-12B** | HORN ISLAND PASS | 2012 | 12/4/2012 | 10:28 AM | 30.19687 | -88.53180 | 253551.11670 | 1079508.49400 | 20-ft Vibracore | 28.9 | 20.0 | 5.5-6.3 | 0.8 | SP | SP | SUBANGULAR TO SUBROUNDED | LT BROWNISH GRAY | 2.5Y 6/1.5 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.21 | 0.23 | 4.7 | 1.9 | 1.0 |
| **BI-HP-29-12** | HORN ISLAND PASS | 2012 | 12/4/2012 | 11:15 AM | 30.19422 | -88.53372 | 252585.75490 | 1078904.47200 | 20-ft Vibracore | 32.7 | 18.5 | | | | | | | | | | | | | | | | | |
| **BI-HP-29-12A** | HORN ISLAND PASS | 2012 | 12/4/2012 | 11:15 AM | 30.19422 | -88.53372 | 252585.75490 | 1078904.47200 | 20-ft Vibracore | 32.7 | 18.5 | 0-0.9 | 0.9 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.32 | 0.34 | 6.7 | 2.2 | 1.2 |
| **BI-HP-29-12B** | HORN ISLAND PASS | 2012 | 12/4/2012 | 11:15 AM | 30.19422 | -88.53372 | 252585.75490 | 1078904.47200 | 20-ft Vibracore | 32.7 | 18.5 | 0.9-3.5 | 2.6 | SP | SP | SUBANGULAR TO SUBROUNDED | LT OLIVE GRAY | 5Y 6/2 | 6 | LT GRAY | 5Y 7/2 | 7 | | 0.28 | 0.29 | 1.3 | 1.7 | 1.0 |
| **BI-HP-29-12C** | HORN ISLAND PASS | 2012 | 12/4/2012 | 11:15 AM | 30.19422 | -88.53372 | 252585.75490 | 1078904.47200 | 20-ft Vibracore | 32.7 | 18.5 | 3.5-5.1 | 1.6 | SP | SP | SUBANGULAR TO SUBROUNDED | LT GRAY | 2.5Y 7/1.5 | 7 | PALE BROWN | 2.5Y 7.5/2 | 8 | | 0.29 | 0.30 | 1.9 | 1.9 | 1.0 |
| **BI-HP-30-12** | HORN ISLAND PASS | 2012 | 12/4/2012 | 12:00 PM | 30.19495 | -88.53765 | 252847.99990 | 1077662.20400 | 20-ft Vibracore | 29.8 | 19.0 | | | | | | | | | | | | | | | | | |
| **BI-HP-30-12A** | HORN ISLAND PASS | 2012 | 12/4/2012 | 12:00 PM | 30.19495 | -88.53765 | 252847.99990 | 1077662.20400 | 20-ft Vibracore | 29.8 | 19.0 | 0-2.4 | 2.4 | SP | SP | ANGULAR TO SUBROUNDED | LT GRAY | 2.5Y 7/2 | 7 | WHITE | 2.5Y 8/1 | 8 | | 0.31 | 0.33 | 4.5 | 2.1 | 1.1 |
| **BI-HP-30-12B** | HORN ISLAND PASS | 2012 | 12/4/2012 | 12:00 PM | 30.19495 | -88.53765 | 252847.99990 | 1077662.20400 | 20-ft Vibracore | 29.8 | 19.0 | 2.4-5.4 | 3.0 | SP-SM | SP | SUBANGULAR TO SUBROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.27 | 0.28 | 3.4 | 2.0 | 1.0 |
| **BI-HP-30-12C** | HORN ISLAND PASS | 2012 | 12/4/2012 | 12:00 PM | 30.19495 | -88.53765 | 252847.99990 | 1077662.20400 | 20-ft Vibracore | 29.8 | 19.0 | 5.4-7.9 | 2.5 | SP | SP | SUBANGULAR TO SUBROUNDED | LT BROWNISH GRAY | 2.5Y 5.5/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.32 | 0.32 | 1.7 | 1.7 | 1.0 |
| **BI-HP-31-12** | HORN ISLAND PASS | 2012 | 12/4/2012 | 2:14 PM | 30.18998 | -88.57763 | 251009.93040 | 1065035.74400 | 20-ft Vibracore | 30.3 | 13.0 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-HP-32-12** | HORN ISLAND PASS | 2012 | 12/4/2012 | 2:49 PM | 30.18370 | -88.58010 | 248724.26250 | 1064260.45700 | 20-ft Vibracore | 32.3 | 11.0 | NO SAMPLE TAKEN | | CL | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-HP-33-12** | HORN ISLAND PASS | 2012 | 12/4/2012 | 3:25 PM | 30.18580 | -88.58643 | 249483.60620 | 1062258.79700 | 20-ft Vibracore | 31.7 | 10.7 | | | | | | | | | | | | | | | | | |
| **BI-HP-33-12A** | HORN ISLAND PASS | 2012 | 12/4/2012 | 3:25 PM | 30.18580 | -88.58643 | 249483.60620 | 1062258.79700 | 20-ft Vibracore | 31.7 | 10.7 | 0-2.2 | 2.2 | SP | SP | SUBANGULAR TO SUBROUNDED | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.21 | 0.23 | 2.1 | 1.6 | 1.0 |
| **BI-HP-34-12** | HORN ISLAND PASS | 2012 | 12/21/2012 | 3:30 PM | 30.19253 | -88.55495 | 251954.11610 | 1072198.92100 | 20-ft Vibracore | 30.1 | 19.5 | | | | | | | | | | | | | | | | | |
| **BI-HP-34-12A** | HORN ISLAND PASS | 2012 | 12/21/2012 | 3:30 PM | 30.19253 | -88.55495 | 251954.11610 | 1072198.92100 | 20-ft Vibracore | 30.1 | 19.5 | 0-4.5 | 4.5 | SP | SP | SUBANGULAR TO SUBROUNDED | LT BROWNISH GRAY | 2.5y 6/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.33 | 0.35 | 0.7 | 1.8 | 1.0 |
| **BI-HP-34-12B** | HORN ISLAND PASS | 2012 | 12/21/2012 | 3:30 PM | 30.19253 | -88.55495 | 251954.11610 | 1072198.92100 | 20-ft Vibracore | 30.1 | 19.5 | 4.5-9.5 | 5.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT OLIVE GRAY | 5Y 6/2 | 6 | LT GRAY | 5Y 7/2 | 7 | | 0.29 | 0.30 | 2.9 | 1.8 | 1.0 |
| **BI-HP-34-12C** | HORN ISLAND PASS | 2012 | 12/21/2012 | 3:30 PM | 30.19253 | -88.55495 | 251954.11610 | 1072198.92100 | 20-ft Vibracore | 30.1 | 19.5 | 9.5-10.7 | 1.2 | SP | SP | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT OLIVE GRAY | 5Y 6/2 | 6 | | 0.29 | 0.31 | 1.8 | 1.9 | 1.0 |
| **BI-HP-36-12** | HORN ISLAND PASS | 2012 | 12/21/2012 | 2:16 PM | 30.20090 | -88.52752 | 255020.36690 | 1080856.67600 | 20-ft Vibracore | 19.8 | 18.8 | | | | | | | | | | | | | | | | | |
| **BI-HP-36-12A** | HORN ISLAND PASS | 2012 | 12/21/2012 | 2:16 PM | 30.20090 | -88.52752 | 255020.36690 | 1080856.67600 | 20-ft Vibracore | 19.8 | 18.8 | 0-3.8 | 3.8 | SP | SP | SUBANGULAR TO SUBROUNDED | LT OLIVE GRAY | 5Y 6/2 | 6 | LT GRAY | 5Y 7/2 | 7 | | 0.26 | 0.27 | 1.6 | 1.7 | 1.0 |
| **BI-HP-36-12B** | HORN ISLAND PASS | 2012 | 12/21/2012 | 2:16 PM | 30.20090 | -88.52752 | 255020.36690 | 1080856.67600 | 20-ft Vibracore | 19.8 | 18.8 | 3.8-8.8 | 5.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT OLIVE GRAY | 5Y 6/2 | 6 | LT GRAY | 5Y 7/1 | 7 | | 0.21 | 0.22 | 1.7 | 1.5 | 1.0 |
| **BI-HP-36-12C** | HORN ISLAND PASS | 2012 | 12/21/2012 | 2:16 PM | 30.20090 | -88.52752 | 255020.36690 | 1080856.67600 | 20-ft Vibracore | 19.8 | 18.8 | 8.8-11.8 | 3.0 | SP | SP | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT OLIVE GRAY | 5Y 6/2 | 6 | | 0.21 | 0.22 | 2.5 | 1.6 | 1.0 |
| **BI-HP-37-12** | HORN ISLAND PASS | 2012 | 1/5/2013 | 12:44 PM | 30.18480 | -88.55917 | 249139.61560 | 1070872.46600 | 20-ft Vibracore | 39.8 | 14.4 | | | | | | | | | | | | | | | | | |
| **BI-HP-37-12** | HORN ISLAND PASS | 2012 | 1/5/2013 | 12:44 PM | 30.18480 | -88.55917 | 249139.61560 | 1070872.46600 | 20-ft Vibracore | 39.8 | 14.4 | 0.0-3.0 | 3.0 | SP | SP | SUBANGULAR TO SUBROUNDED | OLIVE | 5Y 4/3 | 4 | PALE OLIVE | 5Y 6/3 | 6 | | 0.25 | 0.27 | 3.3 | 1.9 | 1.0 |
| **BI-HP-38-12** | HORN ISLAND PASS | 2012 | 12/21/2012 | 3:00 PM | 30.19947 | -88.53510 | 254493.94960 | 1078463.49900 | 20-ft Vibracore | 29.2 | 16.1 | | | | | | | | | | | | | | | | | |
| **BI-HP-38-12A** | HORN ISLAND PASS | 2012 | 12/21/2012 | 3:00 PM | 30.19947 | -88.53510 | 254493.94960 | 1078463.49900 | 20-ft Vibracore | 29.2 | 16.1 | 0-3.6 | 3.6 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT GRAY | 5Y 7/2 | 7 | | 0.30 | 0.32 | 5.3 | 2.0 | 1.1 |
| **BI-HP-39-12** | HORN ISLAND PASS | 2012 | 12/21/2012 | 4:00 PM | 30.19077 | -88.55702 | 251312.44210 | 1071546.50100 | 20-ft Vibracore | 32.0 | 17.4 | | | | | | | | | | | | | | | | | |
| **BI-HP-39-12A** | HORN ISLAND PASS | 2012 | 12/21/2012 | 4:00 PM | 30.19077 | -88.55702 | 251312.44210 | 1071546.50100 | 20-ft Vibracore | 32.0 | 17.4 | 0-2 | 2.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT OLIVE GRAY | 5Y 6/2 | 6 | LT GRAY | 5Y 7/2 | 7 | | 0.30 | 0.31 | 1.2 | 1.8 | 1.0 |
| **BI-HP-39-12B** | HORN ISLAND PASS | 2012 | 12/21/2012 | 4:00 PM | 30.19077 | -88.55702 | 251312.44210 | 1071546.50100 | 20-ft Vibracore | 32.0 | 17.4 | 2-7.2 | 5.2 | SP | SP | SUBANGULAR TO SUBROUNDED | LT OLIVE GRAY | 5Y 6/2 | 6 | LT GRAY | 5Y 7/2 | 7 | | 0.27 | 0.28 | 1.8 | 1.8 | 1.0 |
| **BI-HP-39-12C** | HORN ISLAND PASS | 2012 | 12/21/2012 | 4:00 PM | 30.19077 | -88.55702 | 251312.44210 | 1071546.50100 | 20-ft Vibracore | 32.0 | 17.4 | 7.2-9.5 | 2.3 | SP | SP | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT OLIVE GRAY | 5Y 6/2 | 6 | | 0.30 | 0.30 | 2.1 | 1.8 | 1.0 |
| **BI-HP-40-12** | HORN ISLAND PASS | 2012 | 12/21/2012 | 4:24 PM | 30.18765 | -88.55672 | 250177.98180 | 1071644.03600 | 20-ft Vibracore | 34.2 | 16.6 | | | | | | | | | | | | | | | | | |
| **BI-HP-40-12A** | HORN ISLAND PASS | 2012 | 12/21/2012 | 4:24 PM | 30.18765 | -88.55672 | 250177.98180 | 1071644.03600 | 20-ft Vibracore | 34.2 | 16.6 | 0-1.6 | 1.6 | SP | SP | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT GRAY | 5Y 7/2 | 7 | | 0.23 | 0.25 | 2.4 | 1.7 | 1.0 |
| **BI-HP-40-12B** | HORN ISLAND PASS | 2012 | 12/21/2012 | 4:24 PM | 30.18765 | -88.55672 | 250177.98180 | 1071644.03600 | 20-ft Vibracore | 34.2 | 16.6 | 1.6-4.9 | 3.3 | SP | SP | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT OLIVE GRAY | 5Y 6/2 | 6 | | 0.28 | 0.29 | 3.8 | 2.2 | 1.1 |
| **BI-HP-41-12** | HORN ISLAND PASS | 2012 | 1/5/2013 | 11:42 PM | 30.19870 | -88.53372 | 254215.05730 | 1078900.18700 | 20-ft Vibracore | 28.5 | 14.8 | | | | | | | | | | | | | | | | | |
| **BI-HP-41-12A** | HORN ISLAND PASS | 2012 | 1/5/2013 | 11:42 PM | 30.19870 | -88.53372 | 254215.05730 | 1078900.18700 | 20-ft Vibracore | 28.5 | 14.8 | 0.0-1.5 | 1.5 | SP | SP | SUBANGULAR TO SUBROUNDED | LT GRAY | 2.5Y 7/1 | 7 | WHITE | 2.5Y 8/1 | 8 | | 0.32 | 0.31 | 1.9 | 1.7 | 1.0 |
| **BI-HP-41-12B** | HORN ISLAND PASS | 2012 | 1/5/2013 | 11:42 PM | 30.19870 | -88.53372 | 254215.05730 | 1078900.18700 | 20-ft Vibracore | 28.5 | 14.8 | 1.5-4.2 | 2.7 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | GRAYISH BROWN | 2.5Y 5/2 | 5 | LT BROWNISH GRAY | 2.5Y 6/2 | 6 | | 0.29 | 0.30 | 6.4 | 2.3 | 1.1 |
| **BI-HP-41-12C** | HORN ISLAND PASS | 2012 | 1/5/2013 | 11:42 PM | 30.19870 | -88.53372 | 254215.05730 | 1078900.18700 | 20-ft Vibracore | 28.5 | 14.8 | 4.2-7.1 | 2.9 | SP | SP | SUBANGULAR TO SUBROUNDED | LT GRAYISH BROWN | 2.5Y 6/2 | 6 | LT GRAY | 2.5Y 7/2 | 7 | | 0.28 | 0.29 | 4.1 | 2.0 | 1.0 |
| **BI-HP-42-12** | HORN ISLAND PASS | 2012 | 1/5/2013 | 12:13 PM | 30.19445 | -88.55345 | 252653.54870 | 1072671.09800 | 20-ft Vibracore | 32.4 | 19.4 | | | | | | | | | | | | | | | | | |
| **BI-HP-42-12A** | HORN ISLAND PASS | 2012 | 1/5/2013 | 12:13 PM | 30.19445 | -88.55345 | 252653.54870 | 1072671.09800 | 20-ft Vibracore | 32.4 | 19.4 | 0.0-5.0 | 5.0 | SP | SP | SUBANGULAR TO SUBROUNDED | LT OLIVE GRAY | 5Y 6/2 | 6 | LT GRAY | 5Y 7/2 | 7 | | 0.30 | 0.31 | 1.9 | 1.8 | 1.0 |
| **BI-HP-42-12B** | HORN ISLAND PASS | 2012 | 1/5/2013 | 12:13 PM | 30.19445 | -88.55345 | 252653.54870 | 1072671.09800 | 20-ft Vibracore | 32.4 | 19.4 | 5.0-6.4 | 1.4 | SP | SP | SUBANGULAR TO SUBROUNDED | LT OLIVE GRAY | 5Y 6/2 | 6 | LT GRAY | 5Y 7/2 | 7 | | 0.28 | 0.28 | 2.3 | 1.9 | 1.0 |
| **BI-HP-45-13** | HORN ISLAND PASS | 2013 | 11/29/2013 | 3:50 PM | 30.17831 | -88.55396 | 246783.31470 | 1072524.36900 | 20-ft Vibracore | 40.0 | 15.0 | | | | | | | | | | | | | | | | | |
| **BI-HP-45-13A** | HORN ISLAND PASS | 2013 | 11/29/2013 | 3:50 PM | 30.17831 | -88.55396 | 246783.31470 | 1072524.36900 | 20-ft Vibracore | 40.0 | 15.0 | 0.0-0.8 | 0.8 | SP | SP | SUBANGULAR TO SUBROUNDED | Olive Gray | 5Y 5/2 | 5 | Light Greenish Gray | GLEY1 10Y 7/1 | 6 | | 0.28 | 0.29 | 4.0 | 2.1 | 0.9 |
| **BI-HP-45-13B** | HORN ISLAND PASS | 2013 | 11/29/2013 | 3:50 PM | 30.17831 | -88.55396 | 246783.31470 | 1072524.36900 | 20-ft Vibracore | 40.0 | 15.0 | 1.4-3.0 | 1.6 | SP | SP | SUBANGULAR TO SUBROUNDED | Greenish Gray | 10Y 6/1 | 6 | Gray | 2.5Y 6/1 | 6 | | 0.26 | 0.28 | 3.5 | 2.1 | 0.9 |
| **BI-HP-45-13C** | HORN ISLAND PASS | 2013 | 11/29/2013 | 3:50 PM | 30.17831 | -88.55396 | 246783.31470 | 1072524.36900 | 20-ft Vibracore | 40.0 | 15.0 | 3.0-4.2 | 1.2 | SM | SM | SUBANGULAR TO SUBROUNDED | Dark Greenish Gray | 10Y 4/1 | 4 | Gray | 2.5Y 5/1 | 5 | | 0.20 | 0.21 | 14.4 | #DIV/0! | #DIV/0! |
| **BI-HP-46-13** | HORN ISLAND PASS | 2013 | 11/29/2013 | 10:03 AM | 30.17801 | -88.55850 | 246670.72240 | 1071090.11000 | 20-ft Vibracore | 37.0 | 17.6 | | | | | | | | | | | | | | | | | |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (feet below seafloor surface ) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI-HP-46-13A** | HORN ISLAND PASS | 2013 | 11/29/2013 | 10:03 AM | 30.17801 | -88.55850 | 246670.72240 | 1071090.11000 | 20-ft Vibracore | 37.0 | 17.6 | 0.0-3.3 | 3.3 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | Light Olive Gray | 5Y 6/2 | 6 | Light Gray | 2.5Y 7/1 | 6 | | 0.28 | 0.29 | 6.3 | 2.5 | 1.1 |
| **BI-HP-46-13B** | HORN ISLAND PASS | 2013 | 11/29/2013 | 10:03 AM | 30.17801 | -88.55850 | 246670.72240 | 1071090.11000 | 20-ft Vibracore | 37.0 | 17.6 | 3.3-8.6 | 5.3 | SM | SP-SM | SUBANGULAR TO SUBROUNDED | Very Dark Greenish Gray | 10Y 3/1 | 3 | Gray | 2.5Y 5/1 | 5 | | 0.19 | 0.21 | 11.5 | #DIV/0! | #DIV/0! |
| **BI-HP-47-13** | HORN ISLAND PASS | 2013 | 11/29/2013 | 3:02 PM | 30.17620 | -88.55563 | 246014.65580 | 1071998.56200 | 20-ft Vibracore | 41.0 | 16.8 | | | | | | | | | | | | | | | | | |
| **BI-HP-47-13A** | HORN ISLAND PASS | 2013 | 11/29/2013 | 3:02 PM | 30.17620 | -88.55563 | 246014.65580 | 1071998.56200 | 20-ft Vibracore | 41.0 | 16.8 | 0.0-1.9 | 1.9 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | Olive Gray | 5Y 5/2 | 5 | Greenish Gray | GLEY1 10Y 6/1 | 6 | | 0.20 | 0.22 | 5.0 | 2.1 | 1.1 |
| **BI-HP-47-13B** | HORN ISLAND PASS | 2013 | 11/29/2013 | 3:02 PM | 30.17620 | -88.55563 | 246014.65580 | 1071998.56200 | 20-ft Vibracore | 41.0 | 16.8 | 1.9-3.0 | 1.1 | SP-SM | SM | SUBANGULAR TO SUBROUNDED | Dark Greenish Gray | 10Y 4/1 | 4 | Gray | 2.5Y 5/1 | 5 | | 0.19 | 0.19 | 14.4 | #DIV/0! | #DIV/0! |
| **BI-HP-47-13C** | HORN ISLAND PASS | 2013 | 11/29/2013 | 3:02 PM | 30.17620 | -88.55563 | 246014.65580 | 1071998.56200 | 20-ft Vibracore | 41.0 | 16.8 | 3.0-5.0 | 2.0 | SM | SM | SUBANGULAR TO SUBROUNDED | Dark Greenish Gray | 10Y 4/1 | 4 | Gray | 2.5Y 5/1 | 5 | | 0.17 | 0.14 | 15.2 | #DIV/0! | #DIV/0! |
| **BI-HP-48-13** | HORN ISLAND PASS | 2013 | 11/23/2013 | 11:14 AM | 30.17947 | -88.56406 | 247197.50490 | 1069332.03500 | 20-ft Vibracore | 40.0 | 15.2 | | | | | | | | | | | | | | | | | |
| **BI-HP-48-13A** | HORN ISLAND PASS | 2013 | 11/23/2013 | 11:14 AM | 30.17947 | -88.56406 | 247197.50490 | 1069332.03500 | 20-ft Vibracore | 40.0 | 15.2 | 0.0-2.8 | 2.8 | SP | SP | SUBANGULAR TO SUBROUNDED | Light Olive Gray | 5Y 6/2 | 6 | Light Gray | 2.5Y 7/1 | 7 | | 0.27 | 0.29 | 3.2 | 2.0 | 0.9 |
| **BI-HP-49-13** | HORN ISLAND PASS | 2013 | 11/23/2013 | 3:35 PM | 30.17584 | -88.56072 | 245879.84780 | 1070390.53300 | 20-ft Vibracore | 37.5 | 15.9 | | | | | | | | | | | | | | | | | |
| **BI-HP-49-13A** | HORN ISLAND PASS | 2013 | 11/23/2013 | 3:35 PM | 30.17584 | -88.56072 | 245879.84780 | 1070390.53300 | 20-ft Vibracore | 37.5 | 15.9 | 0.0-3.4 | 3.4 | SP | SP | SUBANGULAR TO SUBROUNDED | Light Olive Gray | 5Y 6/2 | 6 | Light Greenish Gray | GLEY1 10Y 7/1 | 7 | | 0.31 | 0.35 | 1.4 | 2.2 | 1.0 |
| **BI-HP-49-13B** | HORN ISLAND PASS | 2013 | 11/23/2013 | 3:35 PM | 30.17584 | -88.56072 | 245879.84780 | 1070390.53300 | 20-ft Vibracore | 37.5 | 15.9 | 3.4-4.1 | 0.7 | SM | SP-SM | SUBANGULAR TO SUBROUNDED | Very Dark Greenish Gray | 10Y 3/1 | 3 | Gray | 2.5Y 6/1 | 6 | | 0.21 | 0.24 | 9.3 | 3.1 | 1.3 |
| **BI-HP-50-13** | HORN ISLAND PASS | 2013 | 11/29/2013 | 12:55 PM | 30.17402 | -88.55768 | 245220.25670 | 1071352.71900 | 20-ft Vibracore | 41.0 | 16.5 | | | | | | | | | | | | | | | | | |
| **BI-HP-50-13A** | HORN ISLAND PASS | 2013 | 11/29/2013 | 12:55 PM | 30.17402 | -88.55768 | 245220.25670 | 1071352.71900 | 20-ft Vibracore | 41.0 | 16.5 | 0.0-1.2 | 1.2 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | Olive Gray | 5Y 4/2 | 4 | Gray | 2.5Y 6/1 | 6 | | 0.23 | 0.26 | 6.6 | 2.5 | 1.1 |
| **BI-HP-50-13B** | HORN ISLAND PASS | 2013 | 11/29/2013 | 12:55 PM | 30.17402 | -88.55768 | 245220.25670 | 1071352.71900 | 20-ft Vibracore | 41.0 | 16.5 | 1.2-4.0 | 2.8 | SP-SM | SM | SUBANGULAR TO SUBROUNDED | Dark Greenish Gray | 10Y 4/1 | 4 | Greenish Gray | GLEY1 10Y 5/1 | 5 | | 0.17 | 0.17 | 14.0 | #DIV/0! | #DIV/0! |
| **BI-HP-50-13C** | HORN ISLAND PASS | 2013 | 11/29/2013 | 12:55 PM | 30.17402 | -88.55768 | 245220.25670 | 1071352.71900 | 20-ft Vibracore | 41.0 | 16.5 | 4.0-9.0 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | Dark Greenish Gray | 10Y 4/1 | 4 | Greenish Gray | GLEY1 10Y 5/1 | 5 | | 0.16 | 0.13 | 18.4 | #DIV/0! | #DIV/0! |
| **BI-HP-50-13D** | HORN ISLAND PASS | 2013 | 11/29/2013 | 12:55 PM | 30.17402 | -88.55768 | 245220.25670 | 1071352.71900 | 20-ft Vibracore | 41.0 | 16.5 | 9.0-13.0 | 4.0 | SM | SM | SUBANGULAR TO SUBROUNDED | Dark Greenish Gray | 10Y 4/1 | 4 | Gray | 2.5Y 5/1 | 5 | | 0.16 | 0.13 | 22.0 | #DIV/0! | #DIV/0! |
| **BI-HP-51-13** | HORN ISLAND PASS | 2013 | 11/29/2013 | 11:39 AM | 30.17148 | -88.56044 | 244294.40650 | 1070482.80400 | 20-ft Vibracore | 43.0 | 15.9 | | | | | | | | | | | | | | | | | |
| **BI-HP-51-13A** | HORN ISLAND PASS | 2013 | 11/29/2013 | 11:39 AM | 30.17148 | -88.56044 | 244294.40650 | 1070482.80400 | 20-ft Vibracore | 43.0 | 15.9 | 0.0-0.7 | 0.7 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | Olive Gray | 5Y 4/2 | 4 | Greenish Gray | GLEY1 10Y 5/1 | 5 | | 0.19 | 0.21 | 8.4 | 2.5 | 1.3 |
| **BI-HP-51-13B** | HORN ISLAND PASS | 2013 | 11/29/2013 | 11:39 AM | 30.17148 | -88.56044 | 244294.40650 | 1070482.80400 | 20-ft Vibracore | 43.0 | 15.9 | 0.7-5.7 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | Dark Greenish Gray | 10Y 4/1 | 4 | Gray | 2.5Y 5/1 | 5 | | 0.17 | 0.14 | 15.2 | #DIV/0! | #DIV/0! |
| **BI-HP-51-13C** | HORN ISLAND PASS | 2013 | 11/29/2013 | 11:39 AM | 30.17148 | -88.56044 | 244294.40650 | 1070482.80400 | 20-ft Vibracore | 43.0 | 15.9 | 5.7-10.7 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | Very Dark Greenish Gray | 10Y 3/1 | 3 | Gray | 2.5Y 5/1 | 5 | | 0.16 | 0.13 | 18.5 | #DIV/0! | #DIV/0! |
| **BI-HP-51-13D** | HORN ISLAND PASS | 2013 | 11/29/2013 | 11:39 AM | 30.17148 | -88.56044 | 244294.40650 | 1070482.80400 | 20-ft Vibracore | 43.0 | 15.9 | 10.7-14.5 | 3.8 | SM | SM | SUBANGULAR TO SUBROUNDED | Dark Greenish Gray | 10Y 4/1 | 4 | Gray | 2.5Y 5/1 | 5 | | 0.12 | 0.11 | 26.8 | #DIV/0! | #DIV/0! |
| **BI-HP-52-13** | HORN ISLAND PASS | 2013 | 11/23/2013 | 2:40 PM | 30.17340 | -88.56332 | 244990.50840 | 1069571.08300 | 20-ft Vibracore | 40.0 | 19.2 | | | | | | | | | | | | | | | | | |
| **BI-HP-52-13A** | HORN ISLAND PASS | 2013 | 11/23/2013 | 2:40 PM | 30.17340 | -88.56332 | 244990.50840 | 1069571.08300 | 20-ft Vibracore | 40.0 | 19.2 | 0.0-1.9 | 1.9 | SM | SP | SUBANGULAR TO SUBROUNDED | Dark Greenish Gray | 10Y 4/1 | 4 | Gray | 2.5Y 6/1 | 6 | | 0.25 | 0.28 | 4.5 | 2.3 | 1.0 |
| **BI-HP-53-13** | HORN ISLAND PASS | 2013 | 11/23/2013 | 12:42 PM | 30.17655 | -88.56641 | 246133.80680 | 1068591.99200 | 20-ft Vibracore | 39.0 | 15.5 | | | | | | | | | | | | | | | | | |
| **BI-HP-53-13A** | HORN ISLAND PASS | 2013 | 11/23/2013 | 12:42 PM | 30.17655 | -88.56641 | 246133.80680 | 1068591.99200 | 20-ft Vibracore | 39.0 | 15.5 | 0.0-2.4 | 2.4 | SP | SP | SUBANGULAR TO SUBROUNDED | Greenish Gray | 10Y 6/1 | 6 | Light Gray | 2.5Y 7/1 | 7 | | 0.27 | 0.28 | 3.1 | 2.0 | 0.9 |
| **BI-HP-54-13** | HORN ISLAND PASS | 2013 | 11/22/2013 | 3:24 PM | 30.18235 | -88.56165 | 248246.71700 | 1070091.02700 | 20-ft Vibracore | 39.0 | 16.0 | | | | | | | | | | | | | | | | | |
| **BI-HP-54-13A** | HORN ISLAND PASS | 2013 | 11/22/2013 | 3:24 PM | 30.18235 | -88.56165 | 248246.71700 | 1070091.02700 | 20-ft Vibracore | 39.0 | 16.0 | 0.0-2.2 | 2.2 | SP | SP | SUBANGULAR TO SUBROUNDED | Light Greenish Gray | 10Y 7/1 | 7 | Light Greenish Gray | GLEY1 10Y 7/1 | 7 | | 0.25 | 0.27 | 3.7 | 2.1 | 0.9 |
| **BI-HP-54-13B** | HORN ISLAND PASS | 2013 | 11/22/2013 | 3:24 PM | 30.18235 | -88.56165 | 248246.71700 | 1070091.02700 | 20-ft Vibracore | 39.0 | 16.0 | 2.2-4.0 | 1.8 | SM | SM | SUBANGULAR TO SUBROUNDED | Dark Greenish Gray | 10Y 4/1 | 4 | Greenish Gray | GLEY1 10Y 5/1 | 5 | | 0.19 | 0.20 | 13.0 | #DIV/0! | #DIV/0! |
| **BI-HP-55-13** | HORN ISLAND PASS | 2013 | 11/22/2013 | 12:27 PM | 30.18218 | -88.55896 | 248186.92720 | 1070941.11100 | 20-ft Vibracore | 38.0 | 19.4 | | | | | | | | | | | | | | | | | |
| **BI-HP-55-13A** | HORN ISLAND PASS | 2013 | 12/8/2012 | 12:27 PM | 30.18218 | -88.55896 | 248186.92720 | 1070941.11100 | 20-ft Vibracore | 38.0 | 19.4 | 0.0-4.0 | 4.0 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | Greenish Gray | 10Y 6/1 | 6 | Gray | 2.5Y 6/1 | 6 | | 0.23 | 0.25 | 5.8 | 2.4 | 1.1 |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (ft) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI-PBC-1-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/21/2012 | 1:01 PM | 30.20522 | -88.51597 | 256601.46430 | 1084500.97100 | 20-ft Vibracore | 49.8 | 16.1 | NO SAMPLE TAKEN | | ML | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-PBC-2-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/21/2012 | 1:50 PM | 30.20082 | -88.51742 | 254999.98030 | 1084047.37100 | 20-ft Vibracore | 38.2 | 13.2 | NO SAMPLE TAKEN | | ML | NO SAMPLE TESTED | | | | | | | | | | | | | |
| **BI-PBC-6-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 2:28 PM | 30.19150 | -88.52677 | 251602.37740 | 1081102.80300 | 20-ft Vibracore | 42.3 | 13.9 | | | | | | | | | | | | | | | | | |
| **BI-PBC-6-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 2:28 PM | 30.19150 | -88.52677 | 251602.37740 | 1081102.80300 | 20-ft Vibracore | 42.3 | 13.9 | 0-1 | 1.0 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | OLIVE | 5Y 4/3 | 4 | OLIVE | 5Y 5/3 | 5 | | 0.17 | 0.18 | 6.6 | 1.9 | 1.1 |
| **BI-PBC-7-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 1:28 PM | 30.18837 | -88.52985 | 250461.44360 | 1080132.76300 | 20-ft Vibracore | 41.2 | 19.2 | | | | | | | | | | | | | | | | | |
| **BI-PBC-7-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 1:28 PM | 30.18837 | -88.52985 | 250461.44360 | 1080132.76300 | 20-ft Vibracore | 41.2 | 19.2 | 0.5-1.5 | 1.0 | SP | SP | SUBANGULAR TO SUBROUNDED | OLIVE | 5Y 4/3 | 4 | PALE OLIVE | 5Y 6/3 | 6 | | 0.20 | 0.21 | 3.0 | 1.7 | 1.0 |
| **BI-PBC-7-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 1:28 PM | 30.18837 | -88.52985 | 250461.44360 | 1080132.76300 | 20-ft Vibracore | 41.2 | 19.2 | 5-6 | 1.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.20 | #VALUE! | 15.7 | #VALUE! | #VALUE! |
| **BI-PBC-8-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 12:10 PM | 30.18937 | -88.53118 | 250824.01000 | 1079711.59600 | 20-ft Vibracore | 41.3 | 16.5 | | | | | | | | | | | | | | | | | |
| **BI-PBC-8-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 12:10 PM | 30.18937 | -88.53118 | 250824.01000 | 1079711.59600 | 20-ft Vibracore | 41.3 | 16.5 | 2.5-4 | 1.5 | SM | SP | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.20 | 0.22 | 0.4 | 1.7 | 1.0 |
| **BI-PBC-9-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 9:59 AM | 30.18625 | -88.53430 | 249686.71830 | 1078728.84400 | 20-ft Vibracore | 41.2 | 16.8 | | | | | | | | | | | | | | | | | |
| **BI-PBC-9-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 9:59 AM | 30.18625 | -88.53430 | 249686.71830 | 1078728.84400 | 20-ft Vibracore | 41.2 | 16.8 | 2-5 | 3.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.18 | #VALUE! | 15.9 | #VALUE! | #VALUE! |
| **BI-PBC-10-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 10:30 AM | 30.18527 | -88.53302 | 249331.37250 | 1079134.19800 | 20-ft Vibracore | 42.7 | 15.0 | | | | | | | | | | | | | | | | | |
| **BI-PBC-10-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 10:30 AM | 30.18527 | -88.53302 | 249331.37250 | 1079134.19800 | 20-ft Vibracore | 42.7 | 15.0 | 0.8-1.8 | 1.0 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | OLIVE | 5Y 4/3 | 4 | OLIVE | 5Y 5/3 | 5 | | 0.18 | 0.18 | 10.2 | #VALUE! | #VALUE! |
| **BI-PBC-11-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 2:52 PM | 30.18317 | -88.53743 | 248563.99350 | 1077742.83200 | 20-ft Vibracore | 42.3 | 15.3 | | | | | | | | | | | | | | | | | |
| **BI-PBC-11-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 2:52 PM | 30.18317 | -88.53743 | 248563.99350 | 1077742.83200 | 20-ft Vibracore | 42.3 | 15.3 | 2-4 | 2.0 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT OLIVE GRAY | 5Y 6/2 | 6 | | 0.20 | 0.21 | 7.3 | 1.8 | 1.1 |
| **BI-PBC-11-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 2:52 PM | 30.18317 | -88.53743 | 248563.99350 | 1077742.83200 | 20-ft Vibracore | 42.3 | 15.3 | 4-6 | 2.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.17 | #VALUE! | 16.1 | #VALUE! | #VALUE! |
| **BI-PBC-12-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 1:55 PM | 30.17905 | -88.53923 | 247064.14890 | 1077177.97300 | 20-ft Vibracore | 43.9 | 16.2 | | | | | | | | | | | | | | | | | |
| **BI-PBC-12-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 1:55 PM | 30.17905 | -88.53923 | 247064.14890 | 1077177.97300 | 20-ft Vibracore | 43.9 | 16.2 | 3-4 | 1.0 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.20 | 0.22 | 10.6 | #VALUE! | #VALUE! |
| **BI-PBC-12-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 1:55 PM | 30.17905 | -88.53923 | 247064.14890 | 1077177.97300 | 20-ft Vibracore | 43.9 | 16.2 | 4-8 | 4.0 | SM | SM | SUBANGULAR TO SUBROUNDED | DK OLIVE GRAY | 5Y 3/2 | 3 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.16 | #VALUE! | 18.6 | #VALUE! | #VALUE! |
| **BI-PBC-13-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 1:07 PM | 30.17693 | -88.54367 | 246289.54940 | 1075777.01800 | 20-ft Vibracore | 42.3 | 15.7 | | | | | | | | | | | | | | | | | |
| **BI-PBC-13-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 1:07 PM | 30.17693 | -88.54367 | 246289.54940 | 1075777.01800 | 20-ft Vibracore | 42.3 | 15.7 | 0.8-5.8 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.17 | #VALUE! | 17.4 | #VALUE! | #VALUE! |
| **BI-PBC-13-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 1:07 PM | 30.17693 | -88.54367 | 246289.54940 | 1075777.01800 | 20-ft Vibracore | 42.3 | 15.7 | 5.8-8 | 2.2 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.15 | #VALUE! | 19.2 | #VALUE! | #VALUE! |
| **BI-PBC-14-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 11:03 AM | 30.17283 | -88.54547 | 244797.01160 | 1075212.02200 | 20-ft Vibracore | 42.6 | 16.3 | | | | | | | | | | | | | | | | | |
| **BI-PBC-14-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 11:03 AM | 30.17283 | -88.54547 | 244797.01160 | 1075212.02200 | 20-ft Vibracore | 42.6 | 16.3 | 0.3-5.3 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.17 | #VALUE! | 15.4 | #VALUE! | #VALUE! |
| **BI-PBC-14-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 11:03 AM | 30.17283 | -88.54547 | 244797.01160 | 1075212.02200 | 20-ft Vibracore | 42.6 | 16.3 | 5.3-16.3 | 11.0 | SM-SC | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.15 | #VALUE! | 19.9 | #VALUE! | #VALUE! |
| **BI-PBC-15-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 10:06 AM | 30.17070 | -88.54992 | 244018.84560 | 1073807.78500 | 20-ft Vibracore | 41.4 | 15.4 | | | | | | | | | | | | | | | | | |
| **BI-PBC-15-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 10:06 AM | 30.17070 | -88.54992 | 244018.84560 | 1073807.78500 | 20-ft Vibracore | 41.4 | 15.4 | 0.5-5.5 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.16 | #VALUE! | 16.5 | #VALUE! | #VALUE! |
| **BI-PBC-15-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 10:06 AM | 30.17070 | -88.54992 | 244018.84560 | 1073807.78500 | 20-ft Vibracore | 41.4 | 15.4 | 5.5-10.5 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.15 | #VALUE! | 17.8 | #VALUE! | #VALUE! |
| **BI-PBC-16-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 8:59 AM | 30.16658 | -88.55172 | 242519.06730 | 1073242.68900 | 20-ft Vibracore | 42.7 | 15.7 | | | | | | | | | | | | | | | | | |
| **BI-PBC-16-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 8:59 AM | 30.16658 | -88.55172 | 242519.06730 | 1073242.68900 | 20-ft Vibracore | 42.7 | 15.7 | 0-2 | 2.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.17 | 0.17 | 14.4 | #VALUE! | #VALUE! |
| **BI-PBC-16-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 8:59 AM | 30.16658 | -88.55172 | 242519.06730 | 1073242.68900 | 20-ft Vibracore | 42.7 | 15.7 | 5-10 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.15 | #VALUE! | 16.0 | #VALUE! | #VALUE! |
| **BI-PBC-18-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 11:40 AM | 30.18888 | -88.53408 | 250643.38720 | 1078795.84100 | 20-ft Vibracore | 37.8 | 15.8 | | | | | | | | | | | | | | | | | |
| **BI-PBC-18-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 11:40 AM | 30.18888 | -88.53408 | 250643.38720 | 1078795.84100 | 20-ft Vibracore | 37.8 | 15.8 | 2-4 | 2.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.19 | #VALUE! | 16.3 | #VALUE! | #VALUE! |
| **BI-PBC-18-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 11:40 AM | 30.18888 | -88.53408 | 250643.38720 | 1078795.84100 | 20-ft Vibracore | 37.8 | 15.8 | 4-5 | 1.0 | SP | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.21 | 0.22 | 12.4 | #VALUE! | #VALUE! |
| **BI-PBC-18-12c** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 11:40 AM | 30.18888 | -88.53408 | 250643.38720 | 1078795.84100 | 20-ft Vibracore | 37.8 | 15.8 | 5-7 | 2.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.18 | #VALUE! | 15.9 | #VALUE! | #VALUE! |
| **BI-PBC-19-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 3:20 PM | 30.18565 | -88.53708 | 249466.21430 | 1077851.07300 | 20-ft Vibracore | 39.4 | 15.5 | | | | | | | | | | | | | | | | | |
| **BI-PBC-19-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 3:20 PM | 30.18565 | -88.53708 | 249466.21430 | 1077851.07300 | 20-ft Vibracore | 39.4 | 15.5 | 0-4.2 | 4.2 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.19 | #VALUE! | 16.8 | #VALUE! | #VALUE! |
| **BI-PBC-19-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 3:20 PM | 30.18565 | -88.53708 | 249466.21430 | 1077851.07300 | 20-ft Vibracore | 39.4 | 15.5 | 4.2-6 | 1.8 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 5/2 | 5 | LT OLIVE GRAY | 5Y 6/2 | 6 | | 0.22 | 0.23 | 5.1 | 1.8 | 1.1 |
| **BI-PBC-19-12c** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 3:20 PM | 30.18565 | -88.53708 | 249466.21430 | 1077851.07300 | 20-ft Vibracore | 39.4 | 15.5 | 6-9 | 3.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.17 | #VALUE! | 16.2 | #VALUE! | #VALUE! |
| **BI-PBC-20-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 1:35 PM | 30.18157 | -88.54130 | 247978.94700 | 1076521.56300 | 20-ft Vibracore | 40.8 | 14.7 | | | | | | | | | | | | | | | | | |
| **BI-PBC-20-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 1:35 PM | 30.18157 | -88.54130 | 247978.94700 | 1076521.56300 | 20-ft Vibracore | 40.8 | 14.7 | 0-0.4 | 0.4 | SP | SP | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.28 | 0.31 | 3.0 | 2.0 | 1.0 |
| **BI-PBC-20-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 1:35 PM | 30.18157 | -88.54130 | 247978.94700 | 1076521.56300 | 20-ft Vibracore | 40.8 | 14.7 | 0.4-6 | 5.6 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.17 | 0.17 | 14.9 | #VALUE! | #VALUE! |
| **BI-PBC-21-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 11:33 AM | 30.17483 | -88.54808 | 245522.30250 | 1074385.46400 | 20-ft Vibracore | 40.6 | 15.0 | | | | | | | | | | | | | | | | | |
| **BI-PBC-21-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 11:33 AM | 30.17483 | -88.54808 | 245522.30250 | 1074385.46400 | 20-ft Vibracore | 40.6 | 15.0 | 0-5 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.18 | 0.17 | 14.9 | #VALUE! | #VALUE! |
| **BI-PBC-21-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 11:33 AM | 30.17483 | -88.54808 | 245522.30250 | 1074385.46400 | 20-ft Vibracore | 40.6 | 15.0 | 5-10 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.16 | #VALUE! | 15.5 | #VALUE! | #VALUE! |
| **BI-PBC-22-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 9:33 AM | 30.16895 | -88.55433 | 243378.96510 | 1072415.79000 | 20-ft Vibracore | 41.7 | 14.4 | | | | | | | | | | | | | | | | | |
| **BI-PBC-22-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 9:33 AM | 30.16895 | -88.55433 | 243378.96510 | 1072415.79000 | 20-ft Vibracore | 41.7 | 14.4 | 0-3.5 | 3.5 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.17 | 0.17 | 13.2 | #VALUE! | #VALUE! |
| **BI-PBC-22-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 9:33 AM | 30.16895 | -88.55433 | 243378.96510 | 1072415.79000 | 20-ft Vibracore | 41.7 | 14.4 | 4-9 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.16 | #VALUE! | 15.5 | #VALUE! | #VALUE! |
| **BI-PBC-23-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 8:27 AM | 30.16355 | -88.55213 | 241416.79250 | 1073115.84200 | 20-ft Vibracore | 42.0 | 16.4 | | | | | | | | | | | | | | | | | |
| **BI-PBC-23-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 8:27 AM | 30.16355 | -88.55213 | 241416.79250 | 1073115.84200 | 20-ft Vibracore | 42.0 | 16.4 | 0-5 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.17 | 0.17 | 15.0 | #VALUE! | #VALUE! |
| **BI-PBC-23-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 8:27 AM | 30.16355 | -88.55213 | 241416.79250 | 1073115.84200 | 20-ft Vibracore | 42.0 | 16.4 | 5-10 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.16 | 0.16 | 13.9 | #VALUE! | #VALUE! |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

| Vibracore / Sample ID | Investigation Area | Sample Event | Date of Sample | Time_CST | Latitude | Longitude | Northing_Y | Easting_X | Sample Method | Water Depth (feet) | Boring Depth (ft) | Sample Depth (Feet below seafloor surface) | Sample Thickness (feet) | Field USCS | Lab USCS | Angularity | Wet Munsell Color | Wet Munsell Color Code | Wet Munsell Value | Dry Munsell Color | Dry Munsell Color Code | Dry Munsell Value | CaCO3 | D50 (mm) | Graphic Mean (mm) | % Fines | Cu (D60/D10) | Cc (D30)^2 / (D10*D60) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI-PBC-24-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 10:37 AM | 30.16817 | -88.54723 | 243100.85380 | 1074660.13000 | 20-ft Vibracore | 40.3 | 15.3 | | | | | | | | | | | | | | | | | |
| **BI-PBC-24-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 10:37 AM | 30.16817 | -88.54723 | 243100.85380 | 1074660.13000 | 20-ft Vibracore | 40.3 | 15.3 | 0-0.5 | 0.5 | SP | SP | SUBANGULAR TO SUBROUNDED | OLIVE | 5Y 4/3 | 4 | OLIVE | 5Y 5/3 | 5 | | 0.21 | 0.22 | 4.2 | 1.6 | 1.0 |
| **BI-PBC-24-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 10:37 AM | 30.16817 | -88.54723 | 243100.85380 | 1074660.13000 | 20-ft Vibracore | 40.3 | 15.3 | 0.5-5.5 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | DK OLIVE GRAY | 5Y 3/2 | 3 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.18 | #VALUE! | 15.1 | #VALUE! | #VALUE! |
| **BI-PBC-24-12c** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 10:37 AM | 30.16817 | -88.54723 | 243100.85380 | 1074660.13000 | 20-ft Vibracore | 40.3 | 15.3 | 5.5-11 | 5.5 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.16 | #VALUE! | 15.1 | #VALUE! | #VALUE! |
| **BI-PBC-25-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 12:00 PM | 30.17448 | -88.54107 | 245400.62500 | 1076600.84700 | 20-ft Vibracore | 41.2 | 14.3 | | | | | | | | | | | | | | | | | |
| **BI-PBC-25-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 12:00 PM | 30.17448 | -88.54107 | 245400.62500 | 1076600.84700 | 20-ft Vibracore | 41.2 | 14.3 | 0-5 | 5.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.19 | 0.18 | 13.7 | #VALUE! | #VALUE! |
| **BI-PBC-25-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 12:00 PM | 30.17448 | -88.54107 | 245400.62500 | 1076600.84700 | 20-ft Vibracore | 41.2 | 14.3 | 5-9 | 4.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.18 | 0.17 | 12.0 | #VALUE! | #VALUE! |
| **BI-PBC-26-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 2:21 PM | 30.18092 | -88.53453 | 247748.09810 | 1078661.25800 | 20-ft Vibracore | 40.1 | 15.7 | | | | | | | | | | | | | | | | | |
| **BI-PBC-26-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 2:21 PM | 30.18092 | -88.53453 | 247748.09810 | 1078661.25800 | 20-ft Vibracore | 40.1 | 15.7 | 1.8-4 | 2.2 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.20 | #VALUE! | 15.6 | #VALUE! | #VALUE! |
| **BI-PBC-26-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 2:21 PM | 30.18092 | -88.53453 | 247748.09810 | 1078661.25800 | 20-ft Vibracore | 40.1 | 15.7 | 4-6 | 2.0 | SP | SP-SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | LT OLIVE GRAY | 5Y 6/2 | 6 | | 0.20 | 0.21 | 6.9 | 1.8 | 1.2 |
| **BI-PBC-26-12c** | PASCAGOULA BAR CHANNEL | 2012 | 12/15/2012 | 2:21 PM | 30.18092 | -88.53453 | 247748.09810 | 1078661.25800 | 20-ft Vibracore | 40.1 | 15.7 | 6-9 | 3.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.18 | 0.18 | 13.5 | #VALUE! | #VALUE! |
| **BI-PBC-27-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 2:00 PM | 30.18898 | -88.52653 | 250686.09950 | 1081181.09400 | 20-ft Vibracore | 36.7 | 13.8 | | | | | | | | | | | | | | | | | |
| **BI-PBC-27-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 2:00 PM | 30.18898 | -88.52653 | 250686.09950 | 1081181.09400 | 20-ft Vibracore | 36.7 | 13.8 | 0-0.5 | 0.5 | SP | SM | SUBANGULAR TO SUBROUNDED | OLIVE | 5Y 4/3 | 4 | OLIVE | 5Y 5/3 | 5 | | 0.17 | #VALUE! | 19.8 | #VALUE! | #VALUE! |
| **BI-PBC-28-12** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 11:14 AM | 30.18550 | -88.53025 | 249417.33670 | 1080009.16300 | 20-ft Vibracore | 37.8 | 15.3 | | | | | | | | | | | | | | | | | |
| **BI-PBC-28-12a** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 11:14 AM | 30.18550 | -88.53025 | 249417.33670 | 1080009.16300 | 20-ft Vibracore | 37.8 | 15.3 | 2.5-4 | 1.5 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.19 | #VALUE! | 15.8 | #VALUE! | #VALUE! |
| **BI-PBC-28-12b** | PASCAGOULA BAR CHANNEL | 2012 | 12/16/2012 | 11:14 AM | 30.18550 | -88.53025 | 249417.33670 | 1080009.16300 | 20-ft Vibracore | 37.8 | 15.3 | 6-9 | 3.0 | SM | SM | SUBANGULAR TO SUBROUNDED | OLIVE GRAY | 5Y 4/2 | 4 | OLIVE GRAY | 5Y 5/2 | 5 | | 0.19 | 0.19 | 12.6 | #VALUE! | #VALUE! |

Cu: Coefficient of Uniformity
Cc: Coefficient of Curvature
The "#Value!" error message indicates that data was not available for that calculation.

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**Boring Designation BI-HP-01-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-01-10 — LOCATION COORDINATES: E = 1,073,633 N = 249,659 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 31 Ft. |
| | 15. DATE BORING — STARTED: 07-13-10 — COMPLETED: 07-13-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -31.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

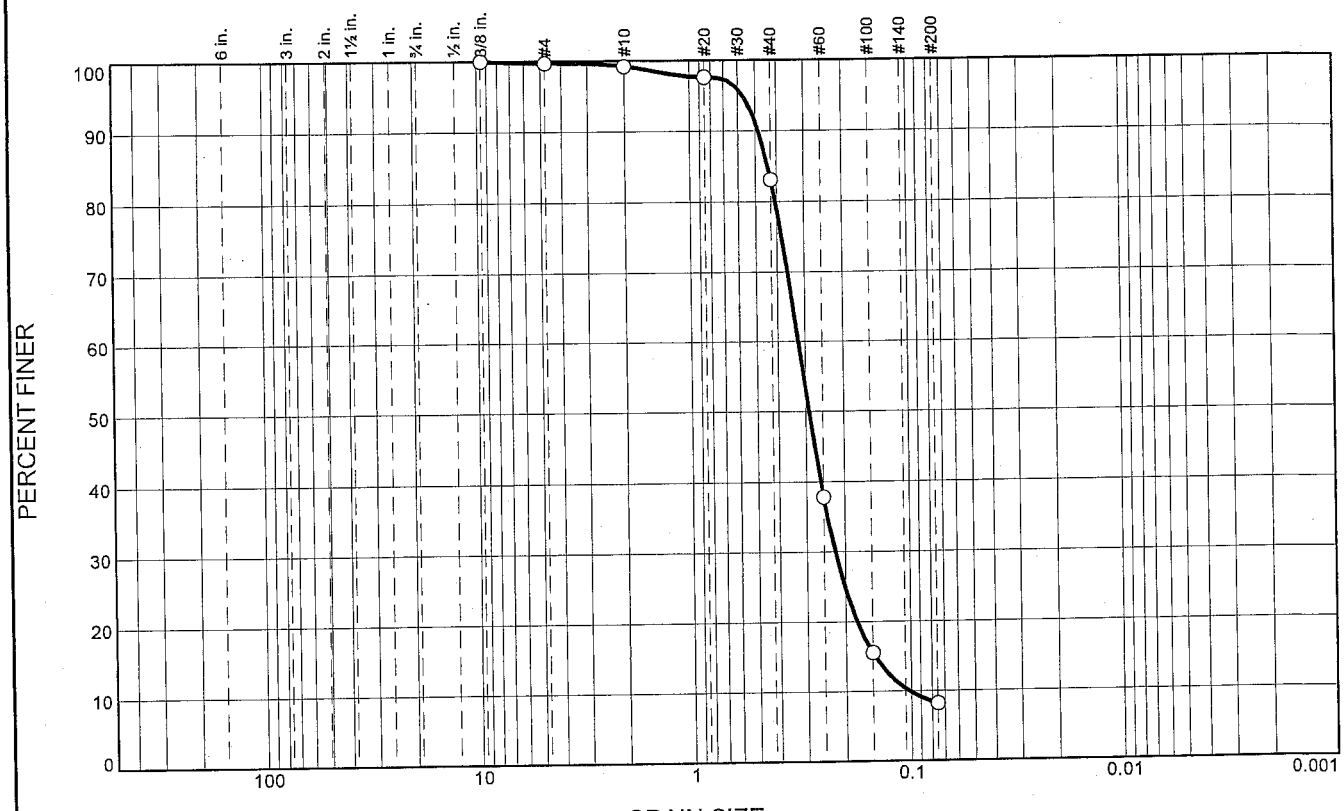
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -31.3 | 0.0 | | | | |
| | | | SAND, poorly-graded, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.289 mm % Fines: 8.2 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.3016 mm % Fines: 2.4 |
| -41.2 | 9.9 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, gray (SC) | NS | |
| -50.5 | 19.2 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed June 2014. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18621° Long = -88.55043°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.5 | 16.1 | 74.9 | 8.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.2 | | |
| #20 | 97.6 | | |
| #40 | 83.1 | | |
| #60 | 37.8 | | |
| #100 | 15.5 | | |
| #200 | 8.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4835 $D_{85}$= 0.4379 $D_{60}$= 0.3220
$D_{50}$= 0.2890 $D_{30}$= 0.2220 $D_{15}$= 0.1465
$D_{10}$= 0.1017 $C_u$= 3.17 $C_c$= 1.51

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-1-10A
**Sample Number:** TE Lab ID: 4593.29 **Depth:** 0.0 - 5.0 (ft.) **Date:** 7/26/10

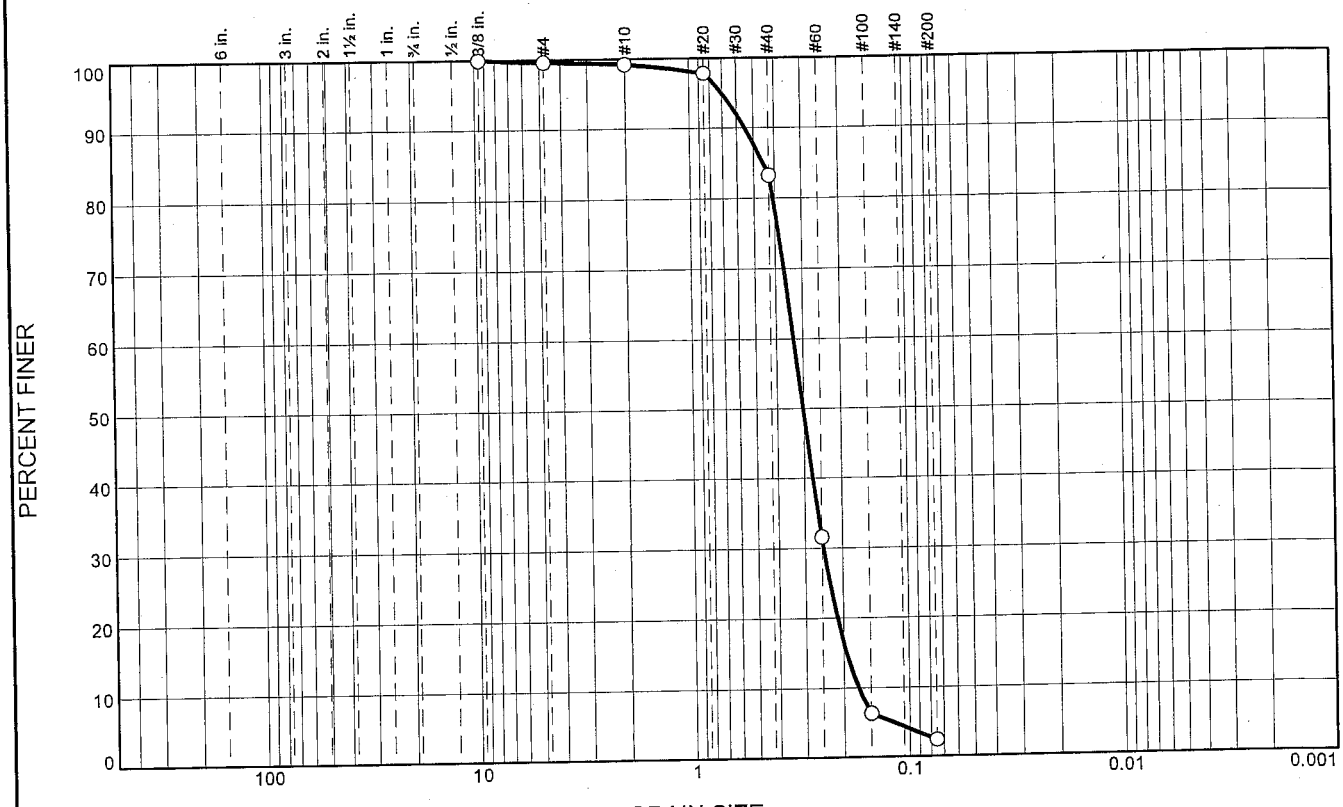
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.5 | 16.0 | 80.8 | 2.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.2 | | |
| #20 | 97.9 | | |
| #40 | 83.2 | | |
| #60 | 31.6 | | |
| #100 | 6.3 | | |
| #200 | 2.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5486 $D_{85}$= 0.4523 $D_{60}$= 0.3313
$D_{50}$= 0.3016 $D_{30}$= 0.2454 $D_{15}$= 0.1942
$D_{10}$= 0.1715 $C_u$= 1.93 $C_c$= 1.06

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-1-10B **Depth:** 5.0 - 9.9 (ft.) **Date:** 7/26/10
**Sample Number:** TE Lab ID: 4593.30

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-02-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-02-10 — LOCATION COORDINATES: E = 1,073,085 N = 248,683 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 34 Ft. |
| | 15. DATE BORING — STARTED: 07-13-10 — COMPLETED: 07-13-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -35.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.6 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -35.0 | 0.0 | | | | |
| -38.3 | 3.3 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.2829 mm % Fines: 2 |
| -40.9 | 5.9 | | SAND, silty, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SM) | B | Classification: SM Color: 2.5Y 5/1-gray D50: 0.229 mm % Fines: 15.2 |
| -42.0 | 7.0 | | CLAY, lean, some sand, gray (CL) | NS | |
| -52.6 | 17.6 | | SAND, clayey, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SC) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

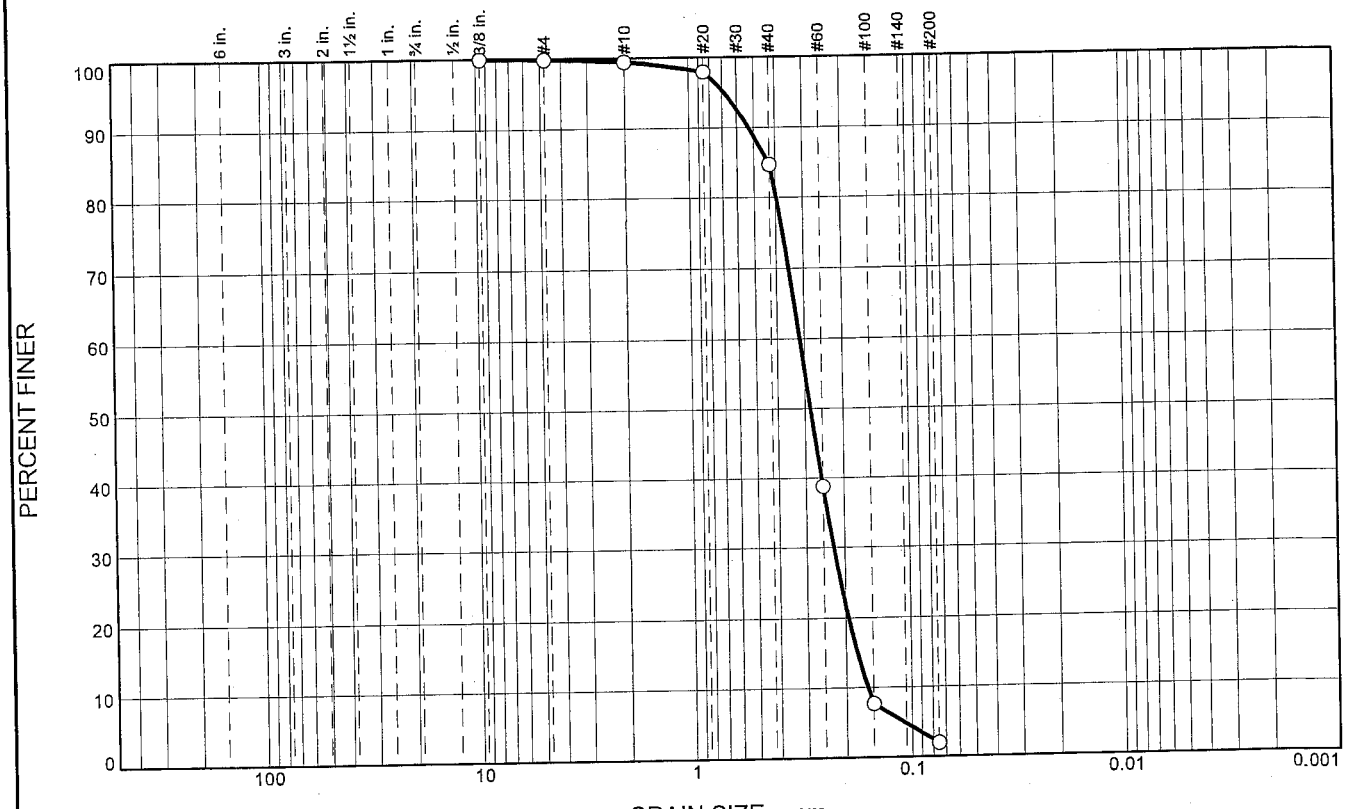
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18353° Long = -88.55217°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.4 | 14.8 | 82.7 | 2.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.5 | | |
| #20 | 98.0 | | |
| #40 | 84.7 | | |
| #60 | 38.8 | | |
| #100 | 7.7 | | |
| #200 | 2.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5277 $D_{85}$= 0.4299 $D_{60}$= 0.3144
$D_{50}$= 0.2829 $D_{30}$= 0.2245 $D_{15}$= 0.1778
$D_{10}$= 0.1597 $C_u$= 1.97 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-2-10A **Depth:** 0.0 - 3.3 (ft.) **Date:** 7/26/10
**Sample Number:** TE Lab ID: 4593.25

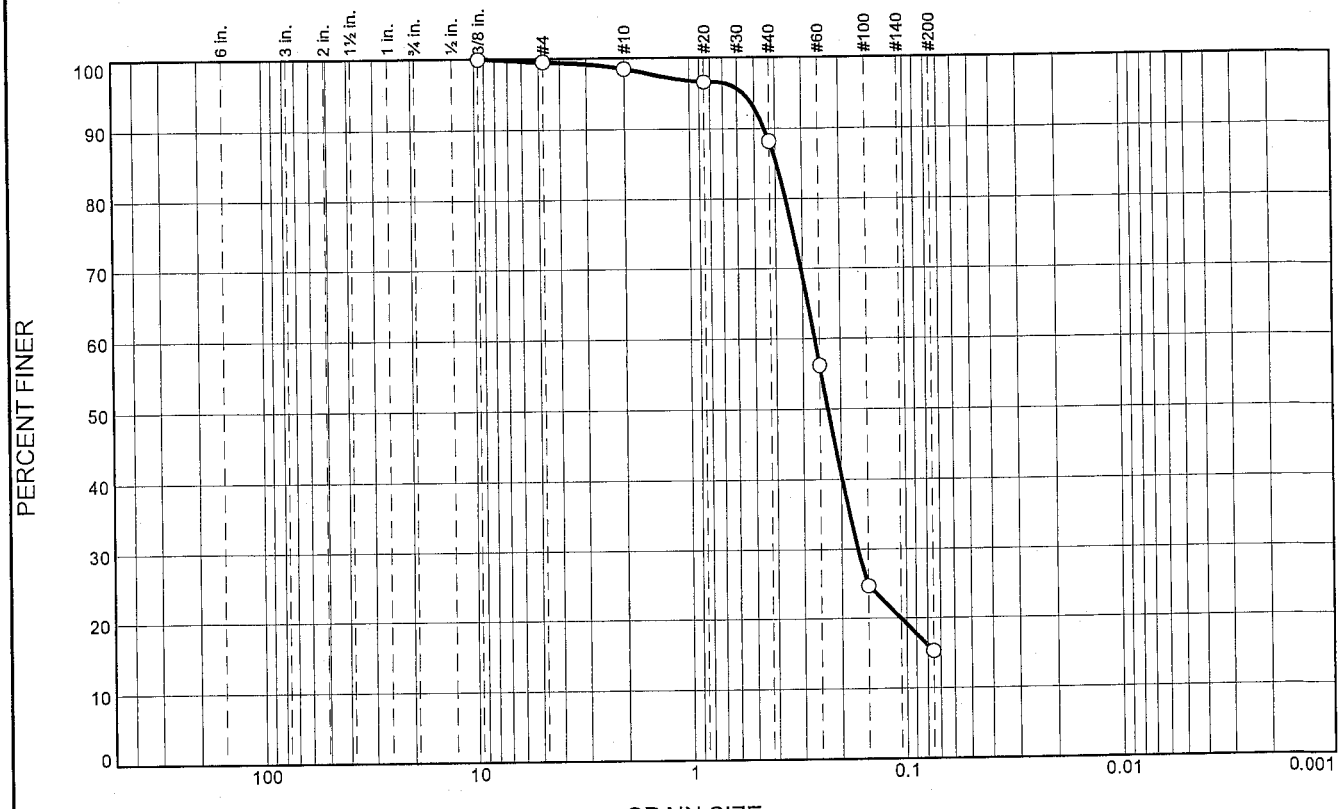
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 1.0 | 10.3 | 73.0 | 15.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 98.5 | | |
| #20 | 96.6 | | |
| #40 | 88.2 | | |
| #60 | 56.2 | | |
| #100 | 24.7 | | |
| #200 | 15.2 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4475 $D_{85}$= 0.3949 $D_{60}$= 0.2636
$D_{50}$= 0.2290 $D_{30}$= 0.1676 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-2-10B
**Sample Number:** TE Lab ID: 4593.26 **Depth:** 3.3 - 5.9 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-03-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-03-10 — LOCATION COORDINATES: E = 1,074,424 N = 248,919 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 34 Ft. |
| | 15. DATE BORING — STARTED: 07-13-10 — COMPLETED: 07-13-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -34.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -34.9 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, occ. clay balls (1' - 2"), lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/2-light gray<br>D50: 0.3041 mm % Fines: 5.6 |
| | | | | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2557 mm % Fines: 3.4 |
| -40.7 | 5.8 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SC) | NS | |
| -53.0 | 18.1 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

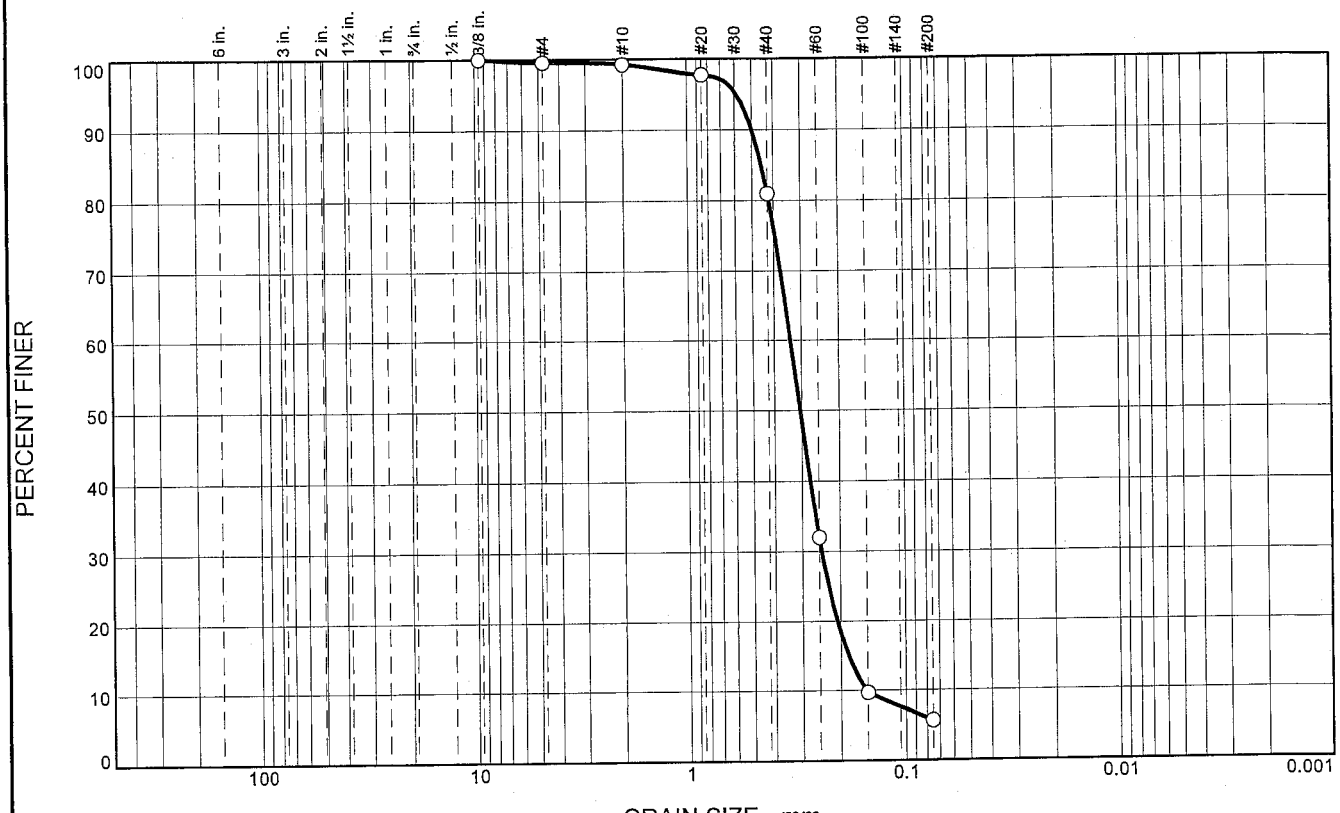
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18417° Long = -88.54793°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.4 | 18.2 | 75.4 | 5.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.2 | | |
| #20 | 97.7 | | |
| #40 | 81.0 | | |
| #60 | 32.0 | | |
| #100 | 9.7 | | |
| #200 | 5.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4986 $D_{85}$= 0.4518 $D_{60}$= 0.3358
$D_{50}$= 0.3041 $D_{30}$= 0.2436 $D_{15}$= 0.1839
$D_{10}$= 0.1527 $C_u$= 2.20 $C_c$= 1.16

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-3-10A
**Sample Number:** TE Lab ID: 4593.23 **Depth:** 0.0 - 2.9 (ft.) **Date:** 7/26/10

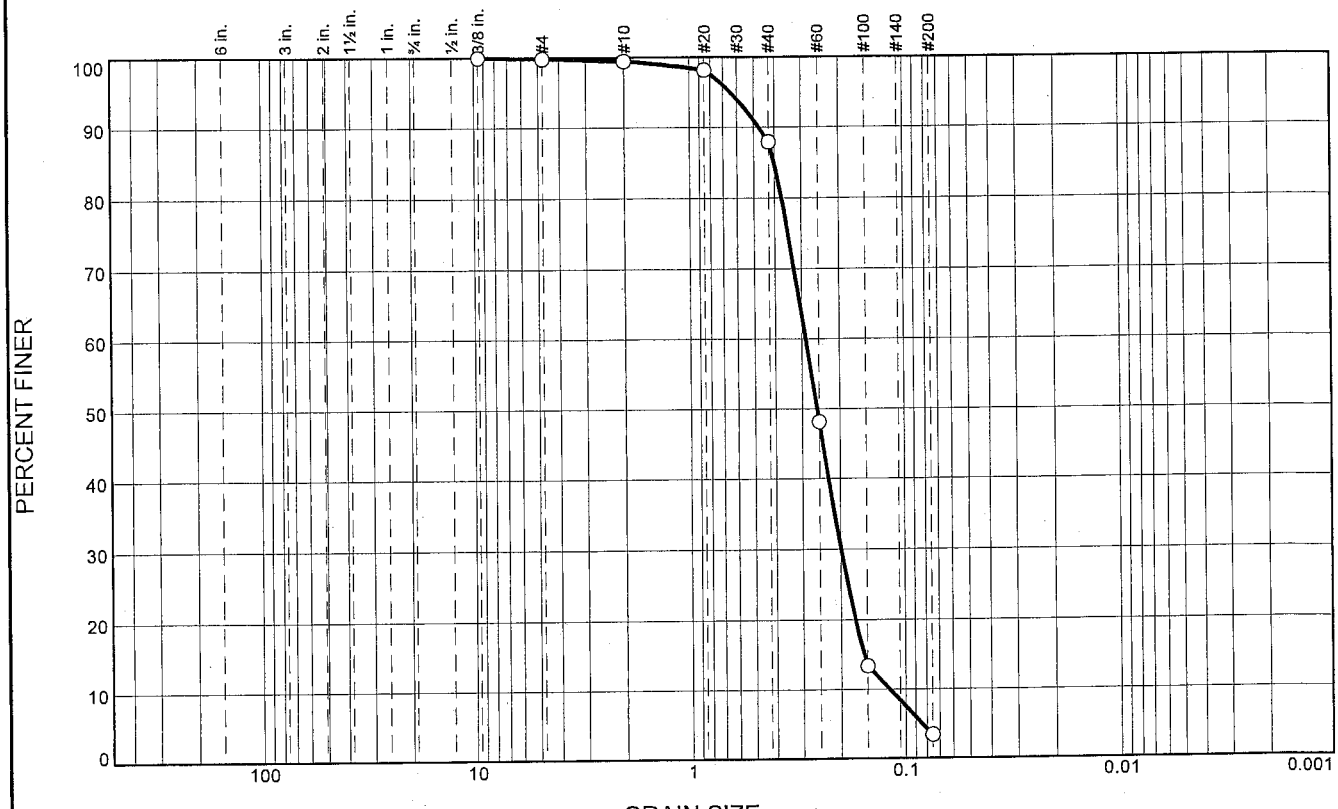
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.3 | 11.6 | 84.5 | 3.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.5 | | |
| #20 | 98.2 | | |
| #40 | 87.9 | | |
| #60 | 48.1 | | |
| #100 | 13.4 | | |
| #200 | 3.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4726 $D_{85}$= 0.4028 $D_{60}$= 0.2877
$D_{50}$= 0.2557 $D_{30}$= 0.1986 $D_{15}$= 0.1554
$D_{10}$= 0.1187 $C_u$= 2.42 $C_c$= 1.16

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-3-10B
**Sample Number:** TE Lab ID: 4593.24 **Depth:** 2.9 - 5.8 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-04-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-04-10 — LOCATION COORDINATES: E = 1,074,261 N = 249,799 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 30 Ft. |
| | 15. DATE BORING — STARTED: 07-13-10 — COMPLETED: 07-13-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -32.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.3 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -32.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.28 mm % Fines: 6.6 |
| | | | | B | Classification: SM Color: 2.5Y 7/2-light gray<br>D50: 0.2732 mm % Fines: 12.5 |
| -40.7 | 8.5 | | | | |
| -43.4 | 11.2 | | SAND, silty, mostly fine-grained sand-sized quartz, trace clay balls, gray (SM) | C | Classification: SM Color: 2.5Y 4/2-dark grayish brown<br>D50: 0.1803 mm % Fines: 29.3 |
| -51.5 | 19.3 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

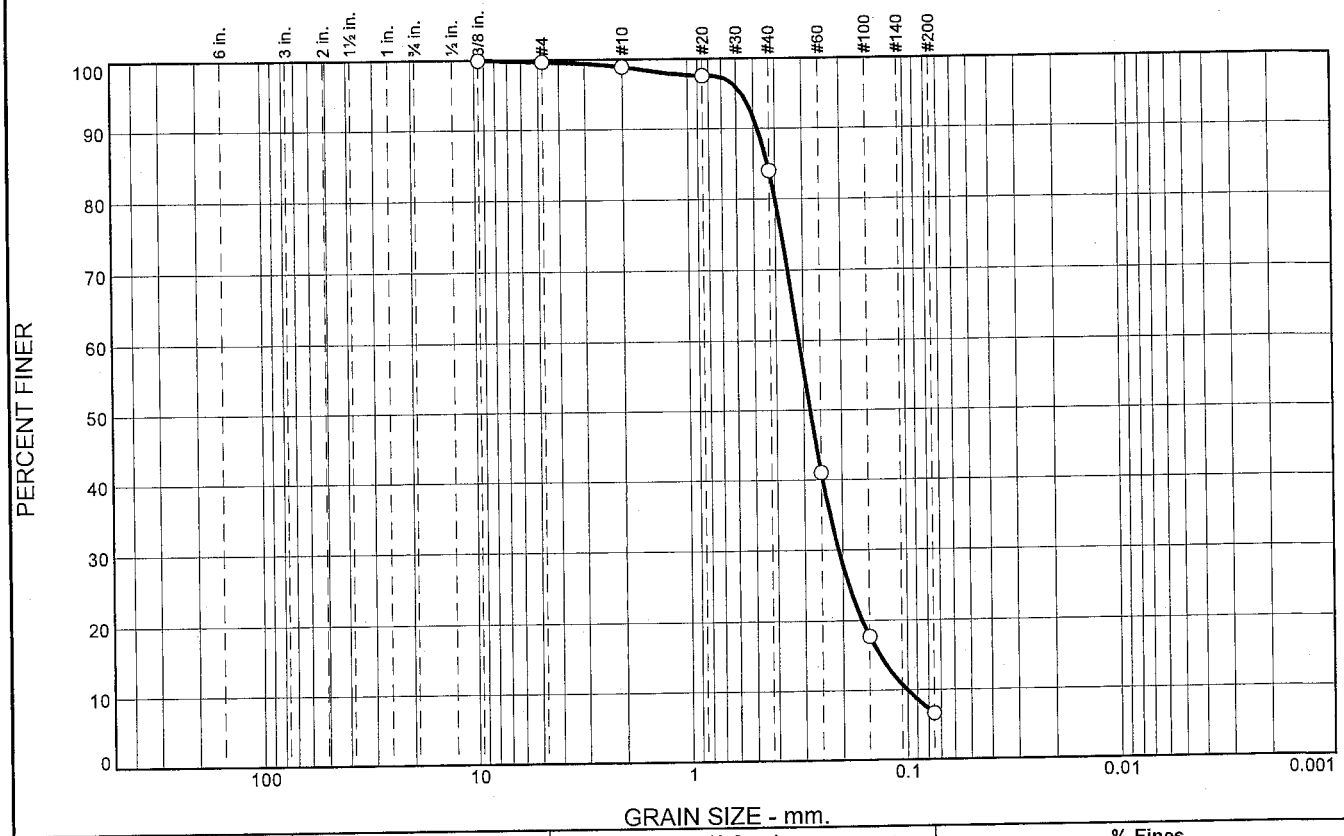
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18659° Long = -88.54844°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.8 | 14.9 | 77.4 | 6.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 98.9 | | |
| #20 | 97.6 | | |
| #40 | 84.0 | | |
| #60 | 41.0 | | |
| #100 | 17.7 | | |
| #200 | 6.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4785 $D_{85}$= 0.4324 $D_{60}$= 0.3140
$D_{50}$= 0.2800 $D_{30}$= 0.2090 $D_{15}$= 0.1342
$D_{10}$= 0.1003 $C_u$= 3.13 $C_c$= 1.39

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-4-10A
**Sample Number:** TE Lab ID: 4593.31 **Depth:** 0.0 - 4.2 (ft.) **Date:** 7/26/10

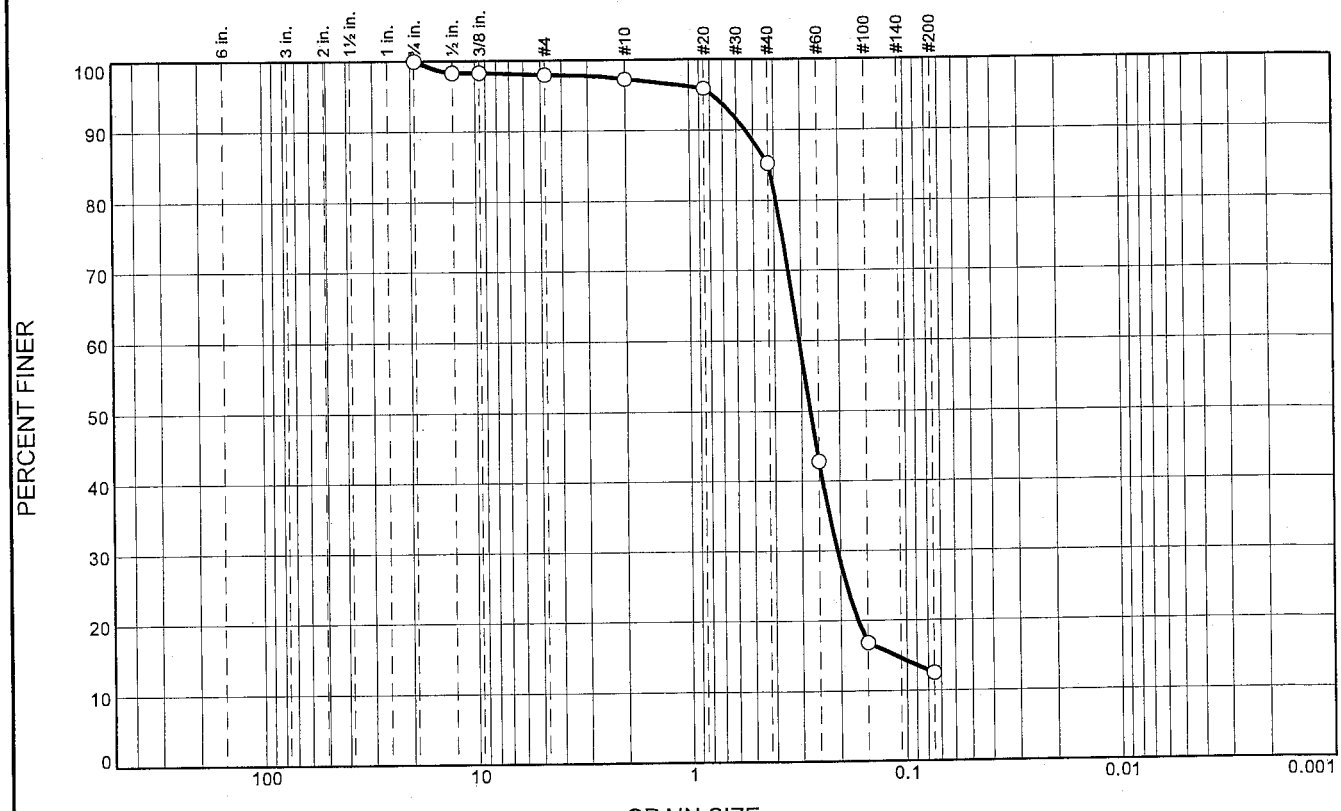
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.0 | 0.7 | 12.1 | 72.7 | 12.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .750 | 100.0 | | |
| .500 | 98.4 | | |
| .375 | 98.4 | | |
| #4 | 98.0 | | |
| #10 | 97.3 | | |
| #20 | 95.9 | | |
| #40 | 85.2 | | |
| #60 | 42.8 | | |
| #100 | 16.8 | | |
| #200 | 12.5 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained, with clay nodules and trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5436 $D_{85}$= 0.4232 $D_{60}$= 0.3065
$D_{50}$= 0.2732 $D_{30}$= 0.2065 $D_{15}$= 0.1125
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-4-10B
**Sample Number:** TE Lab ID: 4593.32 **Depth:** 4.2 -8.5 (ft.) **Date:** 7/26/10

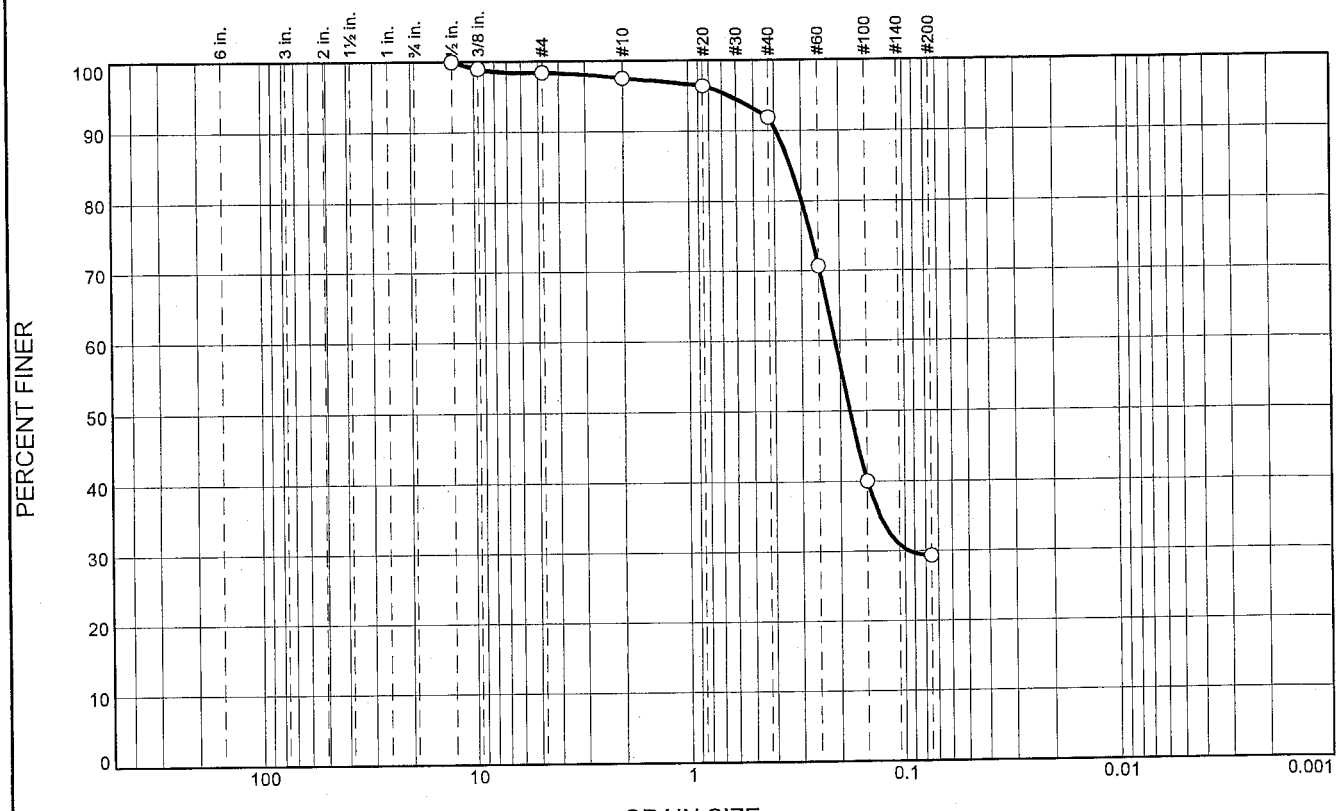
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.6 | 0.8 | 5.7 | 62.6 | 29.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.0 | | |
| #4 | 98.4 | | |
| #10 | 97.6 | | |
| #20 | 96.4 | | |
| #40 | 91.9 | | |
| #60 | 70.7 | | |
| #100 | 40.1 | | |
| #200 | 29.3 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3932 $D_{85}$= 0.3367 $D_{60}$= 0.2109
$D_{50}$= 0.1803 $D_{30}$= 0.0960 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-4-10C
**Sample Number:** TE Lab ID: 4593.33 **Depth:** 8.5 - 11.2 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-05-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Horn Island Pass |
| 2. BORING DESIGNATION | BI-HP-05-10 |
| LOCATION COORDINATES | E = 1,074,509 N = 250,523 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 17.8 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED: ; UNDISTURBED (UD): 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 34 Ft. |
| 15. DATE BORING | STARTED 07-14-10; COMPLETED 07-14-10 |
| 16. ELEVATION TOP OF BORING | -33.7 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | John Baehr, Geologist |

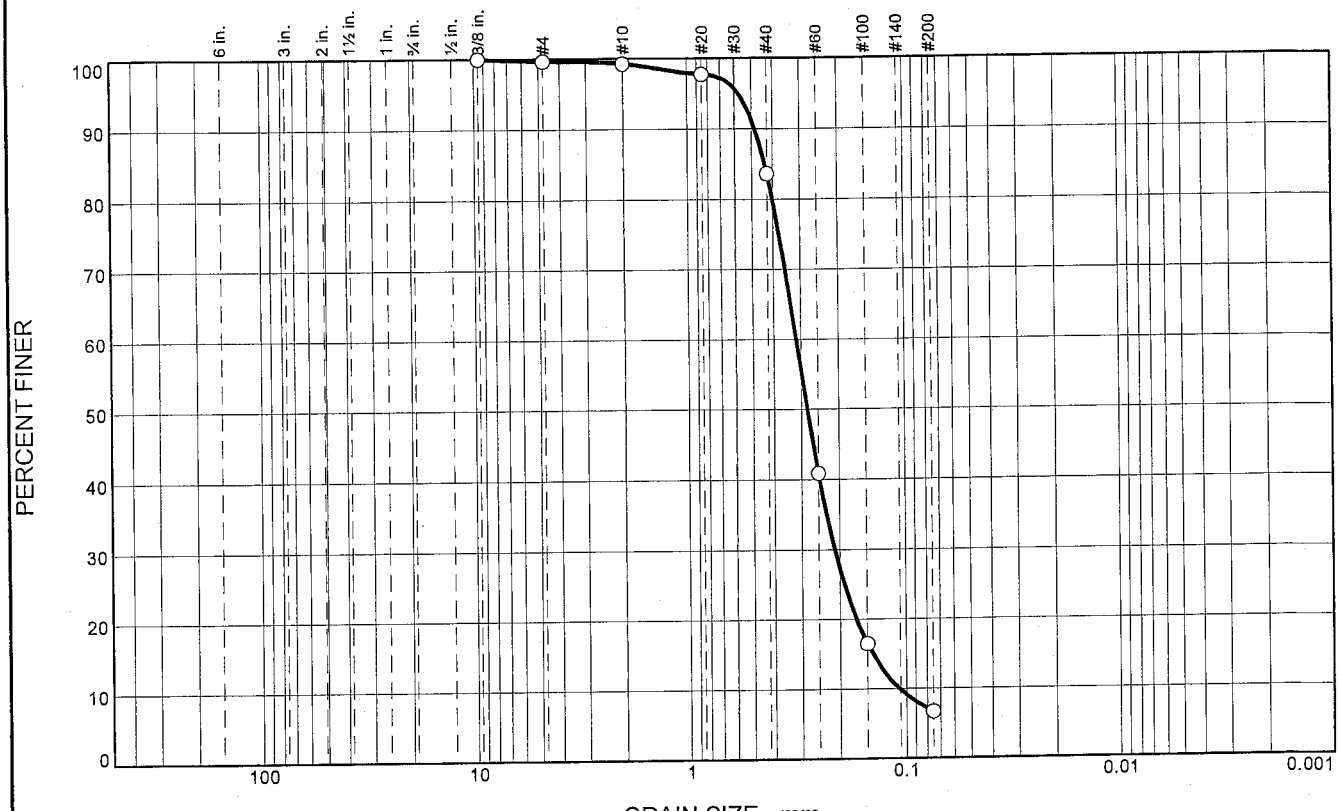
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -33.7 | 0.0 | | | | |
| -38.5 | 4.8 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace clay, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2803 mm % Fines: 6.7 |
| -51.5 | 17.8 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | B | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed June 2014. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18858° Long = -88.54765°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.4 | 15.7 | 76.9 | 6.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.3 | | |
| #20 | 97.7 | | |
| #40 | 83.6 | | |
| #60 | 40.9 | | |
| #100 | 16.5 | | |
| #200 | 6.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4832 $D_{85}$= 0.4354 $D_{60}$= 0.3146
$D_{50}$= 0.2803 $D_{30}$= 0.2110 $D_{15}$= 0.1417
$D_{10}$= 0.1073 $C_u$= 2.93 $C_c$= 1.32

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-5-10A
**Sample Number:** TE Lab ID: 4593.34 **Depth:** 0.0 - 4.8 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-HP-06-10

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Horn Island Pass |
| 2. BORING DESIGNATION | BI-HP-06-10 |
| LOCATION COORDINATES | E = 1,073,220 N = 250,622 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 17.5 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 34 Ft. |
| 15. DATE BORING | STARTED 07-14-10 / COMPLETED 07-14-10 |
| 16. ELEVATION TOP OF BORING | -34.7 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -34.7 | 0.0 | | | | |
| -38.7 | 4.0 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 6/1-gray<br>D50: 0.2996 mm % Fines: 5.9 |
| -52.2 | 17.5 | | SAND, clayey, mostly fine-grained sand-sized quartz, occasional clay balls, gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

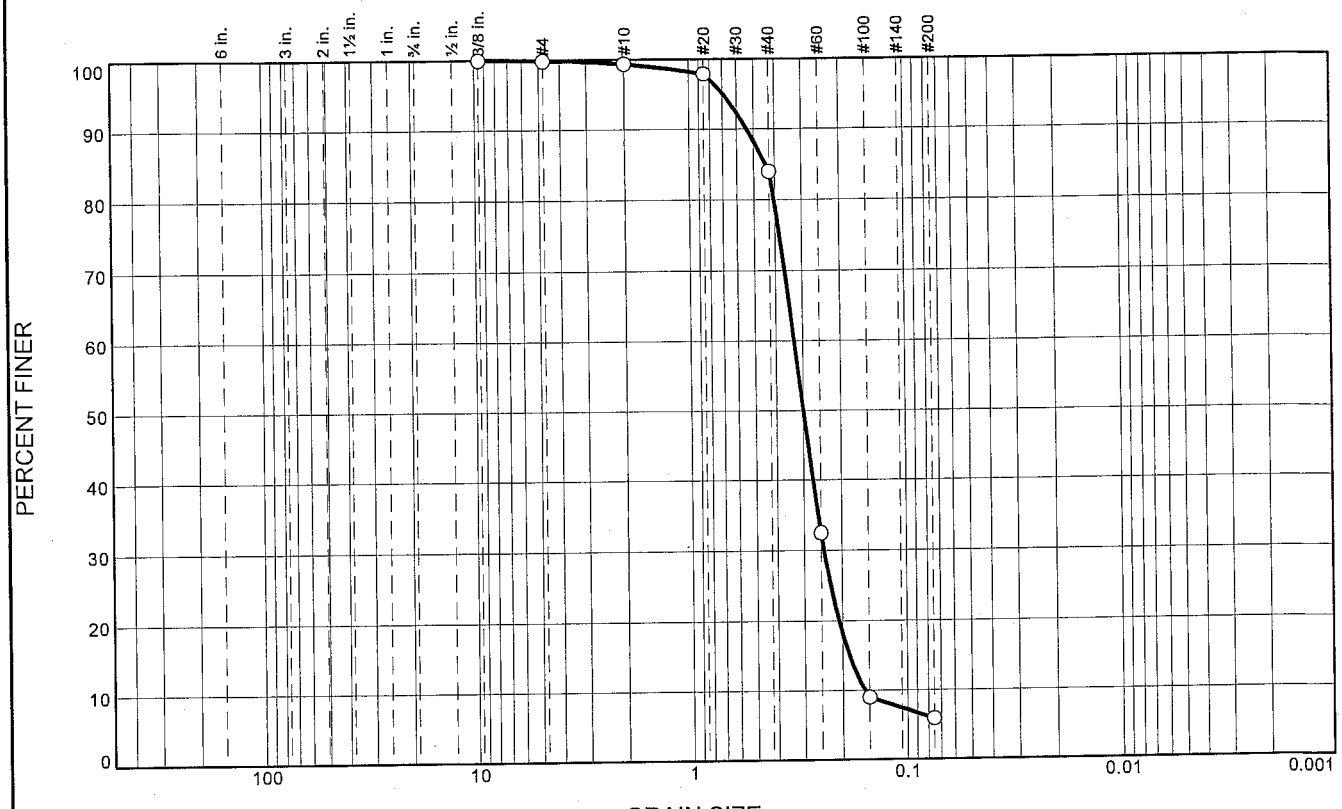
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18886° Long = -88.55173°

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.5 | 15.4 | 78.1 | 5.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.4 | | |
| #20 | 97.9 | | |
| #40 | 84.0 | | |
| #60 | 32.5 | | |
| #100 | 9.0 | | |
| #200 | 5.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5378 $D_{85}$= 0.4409 $D_{60}$= 0.3291
$D_{50}$= 0.2996 $D_{30}$= 0.2425 $D_{15}$= 0.1864
$D_{10}$= 0.1577 $C_u$= 2.09 $C_c$= 1.13

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-6-10A
**Sample Number:** TE Lab ID: 4593.35 **Depth:** 0.0 - 4.3 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-07-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-07-10 — LOCATION COORDINATES: E = 1,073,684 N = 249,161 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 32 Ft. |
| | 15. DATE BORING — STARTED: 07-13-10 — COMPLETED: 07-13-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -32.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

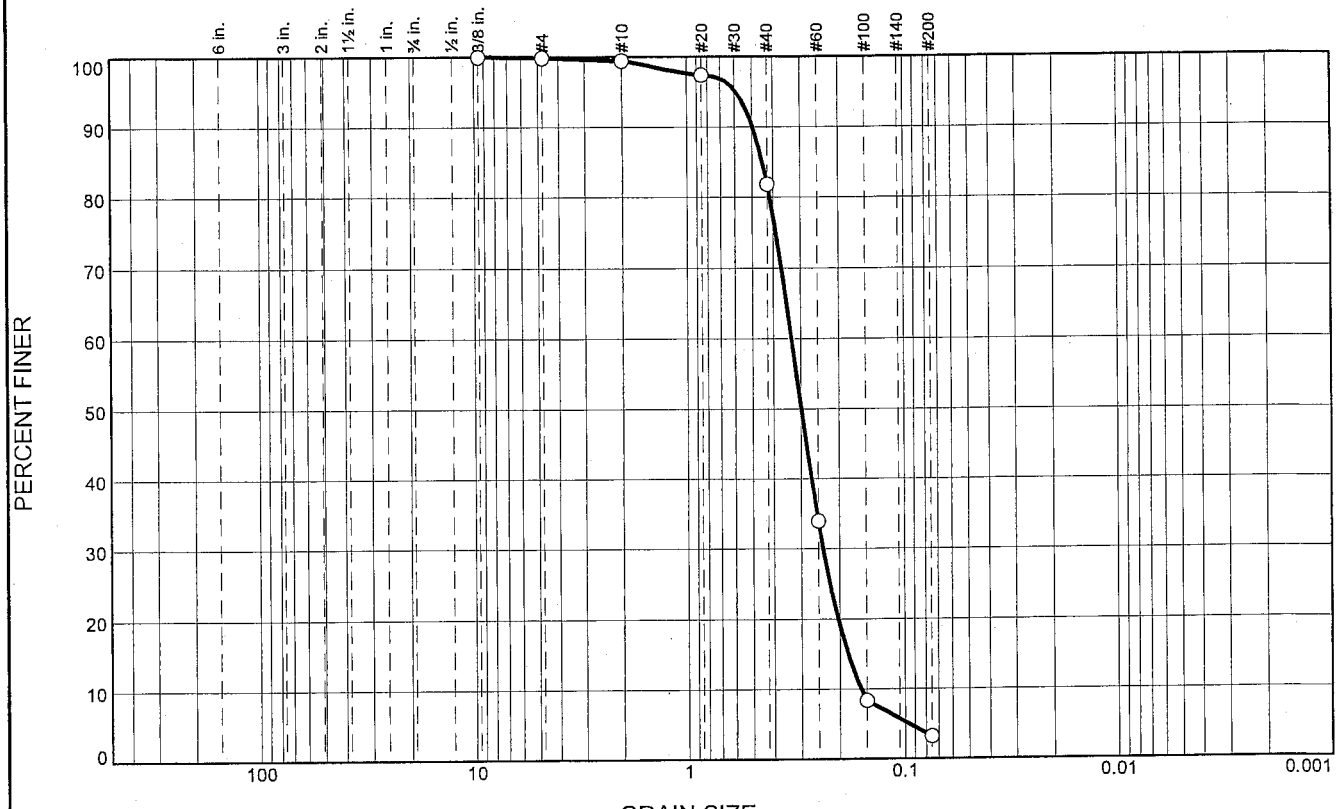
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -32.8 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, occ. clay balls (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2982 mm % Fines: 3.2 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2463 mm % Fines: 6.2 |
| -39.0 | 6.2 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |
| -49.5 | 16.7 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed June 2014. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18484° Long = -88.55027°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.5 | 17.6 | 78.6 | 3.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.4 | | |
| #20 | 97.4 | | |
| #40 | 81.8 | | |
| #60 | 33.9 | | |
| #100 | 8.3 | | |
| #200 | 3.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4948 $D_{85}$= 0.4472 $D_{60}$= 0.3301
$D_{50}$= 0.2982 $D_{30}$= 0.2378 $D_{15}$= 0.1834
$D_{10}$= 0.1595 $C_u$= 2.07 $C_c$= 1.07

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-7-10A
**Sample Number:** TE Lab ID: 4593.27 **Depth:** 0.0 - 3.1 (ft.) **Date:** 7/26/10

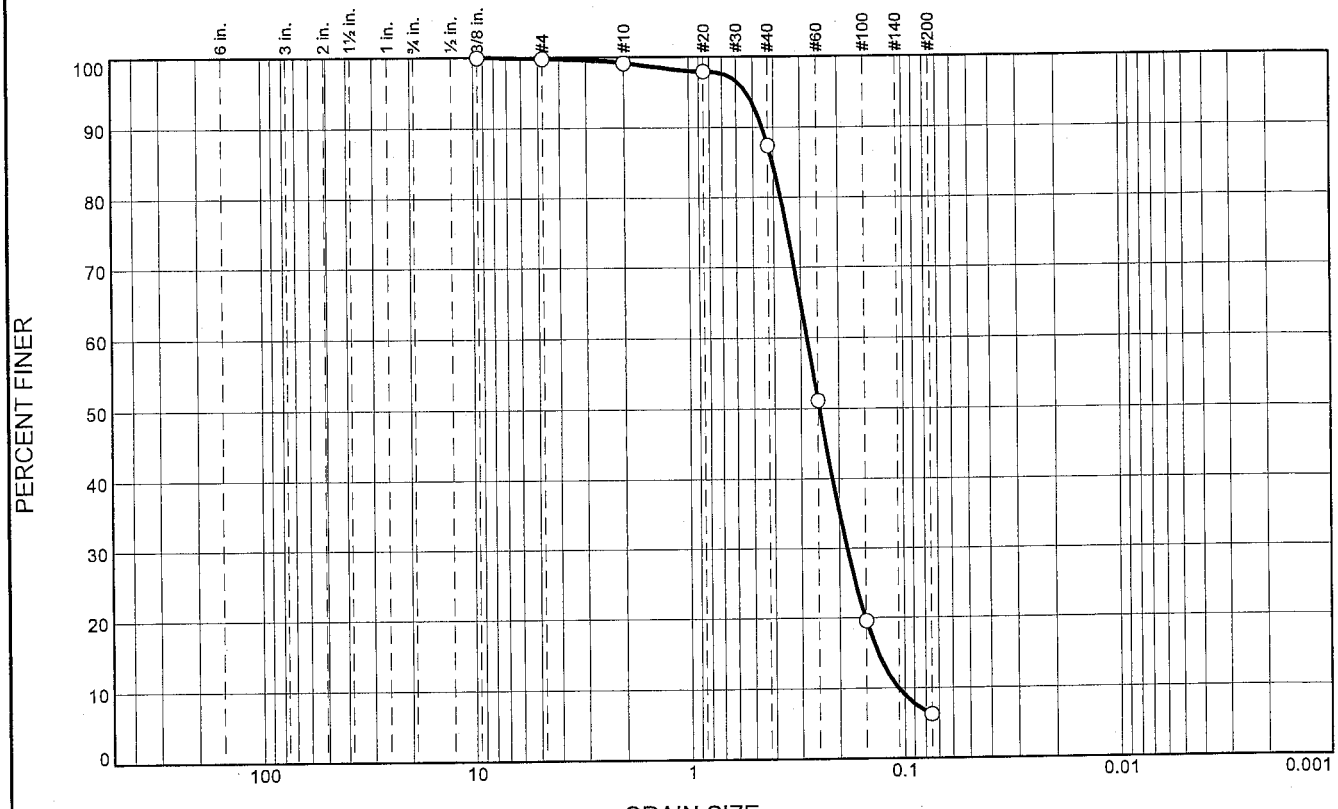
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.6 | 11.8 | 81.2 | 6.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.2 | | |
| #20 | 98.0 | | |
| #40 | 87.4 | | |
| #60 | 51.1 | | |
| #100 | 19.5 | | |
| #200 | 6.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4518 $D_{85}$= 0.4050 $D_{60}$= 0.2808
$D_{50}$= 0.2463 $D_{30}$= 0.1838 $D_{15}$= 0.1324
$D_{10}$= 0.1068 $C_u$= 2.63 $C_c$= 1.13

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-7-10B
**Sample Number:** TE Lab ID: 4593.28 **Depth:** 3.1 - 6.2 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-08-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | | | |
|---|---|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Horn Island Pass | | 9. SIZE AND TYPE OF BIT N/A | |
| | | 10. COORDINATE SYSTEM/DATUM<br>State Plane, MSE (U.S. Ft.) | HORIZONTAL<br>NAD83 / VERTICAL<br>NAVD88 |
| 2. BORING DESIGNATION<br>BI-HP-08-10 | LOCATION COORDINATES<br>E = 1,073,140 N = 251,924 | 11. MANUFACTURER'S DESIGNATION OF DRILL<br>Vibracore | ☐ AUTO HAMMER<br>☐ MANUAL HAMMER |
| 3. DRILLING AGENCY<br>Corps of Engineers - CESAM | CONTRACTOR FILE NO. | 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER<br>Construction Solutions International, Inc. | | 13. TOTAL NUMBER CORE BOXES | |
| 5. DIRECTION OF BORING<br>☒ VERTICAL<br>☐ INCLINED | DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 33 Ft. | |
| | | 15. DATE BORING | STARTED 07-14-10 / COMPLETED 07-14-10 |
| 6. THICKNESS OF OVERBURDEN N/A | | 16. ELEVATION TOP OF BORING -33.6 Ft. | |
| 7. DEPTH DRILLED INTO ROCK N/A | | 17. TOTAL RECOVERY FOR BORING 100% | |
| 8. TOTAL DEPTH OF BORING 17.4 Ft. | | 18. SIGNATURE AND TITLE OF INSPECTOR<br>John Baehr, Geologist | |

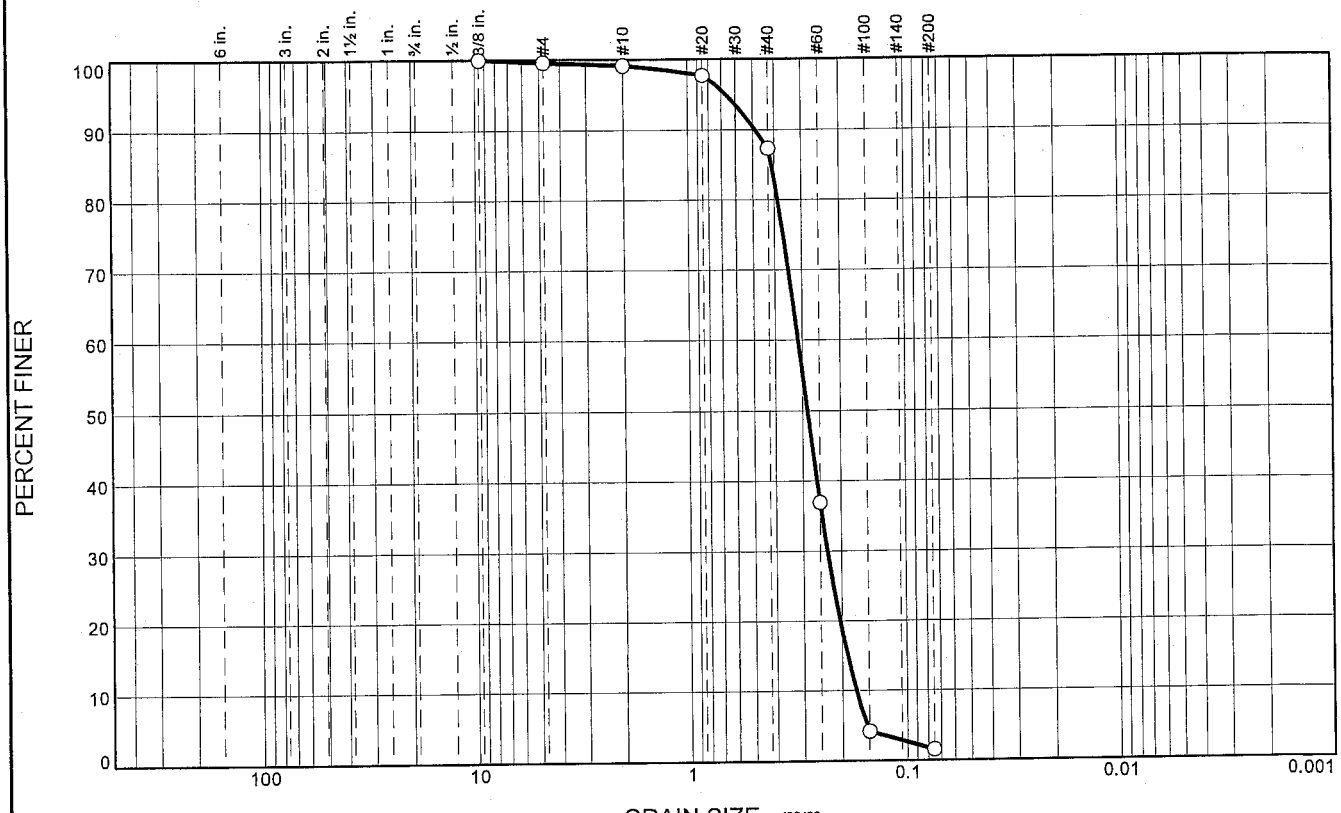
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -33.6 | 0.0 | | | | |
| -38.7 | 5.1 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2849 mm % Fines: 1.6 |
| -51.0 | 17.4 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed June 2014. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19244° Long = -88.55197°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 0.5 | 11.8 | 85.7 | 1.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 99.1 | | |
| #20 | 97.8 | | |
| #40 | 87.3 | | |
| #60 | 36.9 | | |
| #100 | 4.2 | | |
| #200 | 1.6 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4863 $D_{85}$= 0.4109 $D_{60}$= 0.3134
$D_{50}$= 0.2849 $D_{30}$= 0.2316 $D_{15}$= 0.1888
$D_{10}$= 0.1725 $C_u$= 1.82 $C_c$= 0.99

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-8-10A
**Sample Number:** TE Lab ID: 4593.45 **Depth:** 0.0 - 5.1 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-09-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-09-10 — LOCATION COORDINATES: E = 1,074,811 N = 252,037 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 1 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 36 Ft. |
| | 15. DATE BORING — STARTED: 07-14-10 — COMPLETED: 07-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -36.1 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -36.1 | 0.0 | | | | |
| -36.6 | 0.5 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SM Color: 2.5Y 7/1-light gray<br>D50: 0.2278 mm % Fines: 12.7 |
| -37.5 | 1.4 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, lt. gray (SM)<br>SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |
| -54.8 | 18.7 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

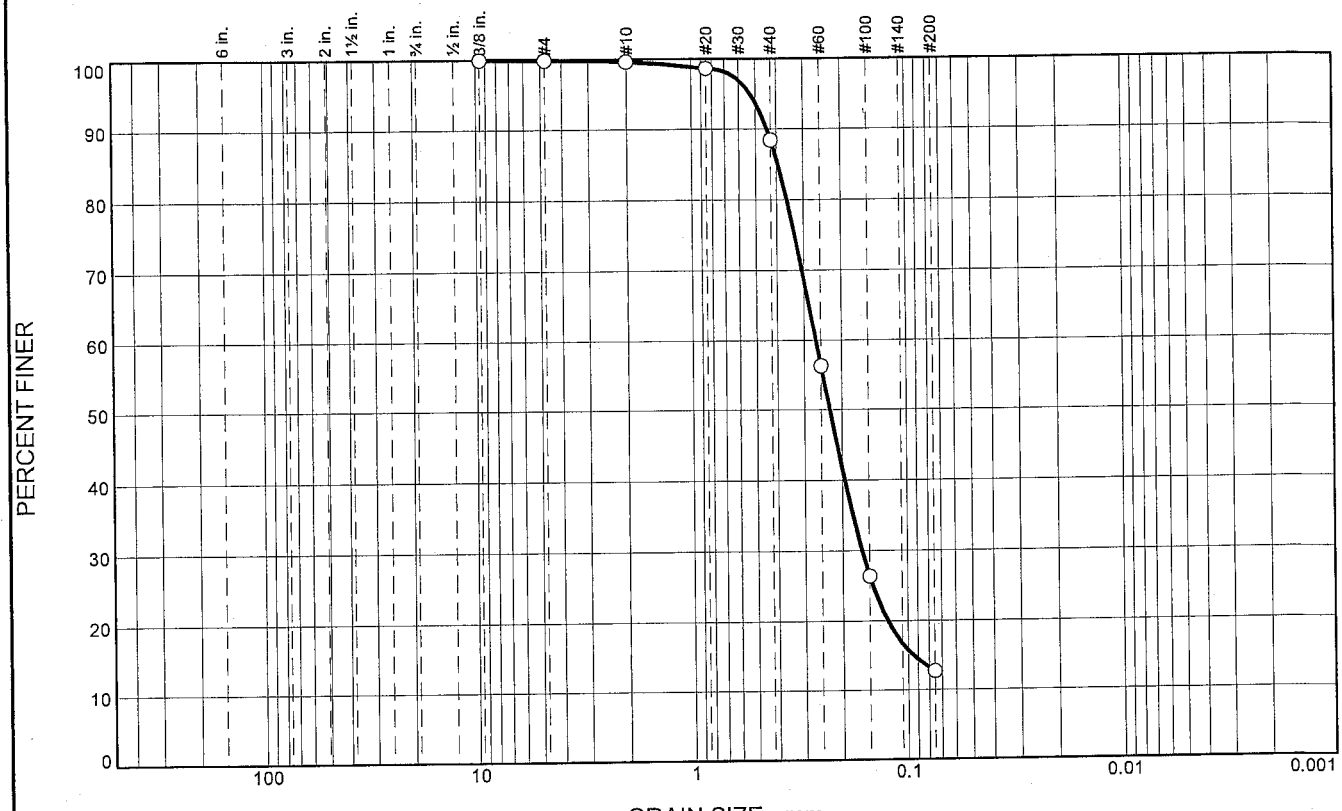
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19274° Long = -88.54668°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.2 | 11.3 | 75.7 | 12.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.7 | | |
| #20 | 98.7 | | |
| #40 | 88.4 | | |
| #60 | 56.3 | | |
| #100 | 26.3 | | |
| #200 | 12.7 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4423 $D_{85}$= 0.3940 $D_{60}$= 0.2637
$D_{50}$= 0.2278 $D_{30}$= 0.1627 $D_{15}$= 0.0944
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-9-10A
**Sample Number:** TE Lab ID: 4593.44 **Depth:** 0.0 - 1.4 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-HP-10-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-10-10 — LOCATION COORDINATES: E = 1,076,520 N = 252,092 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 31 Ft. |
| | 15. DATE BORING — STARTED: 07-14-10 — COMPLETED: 07-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -31.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

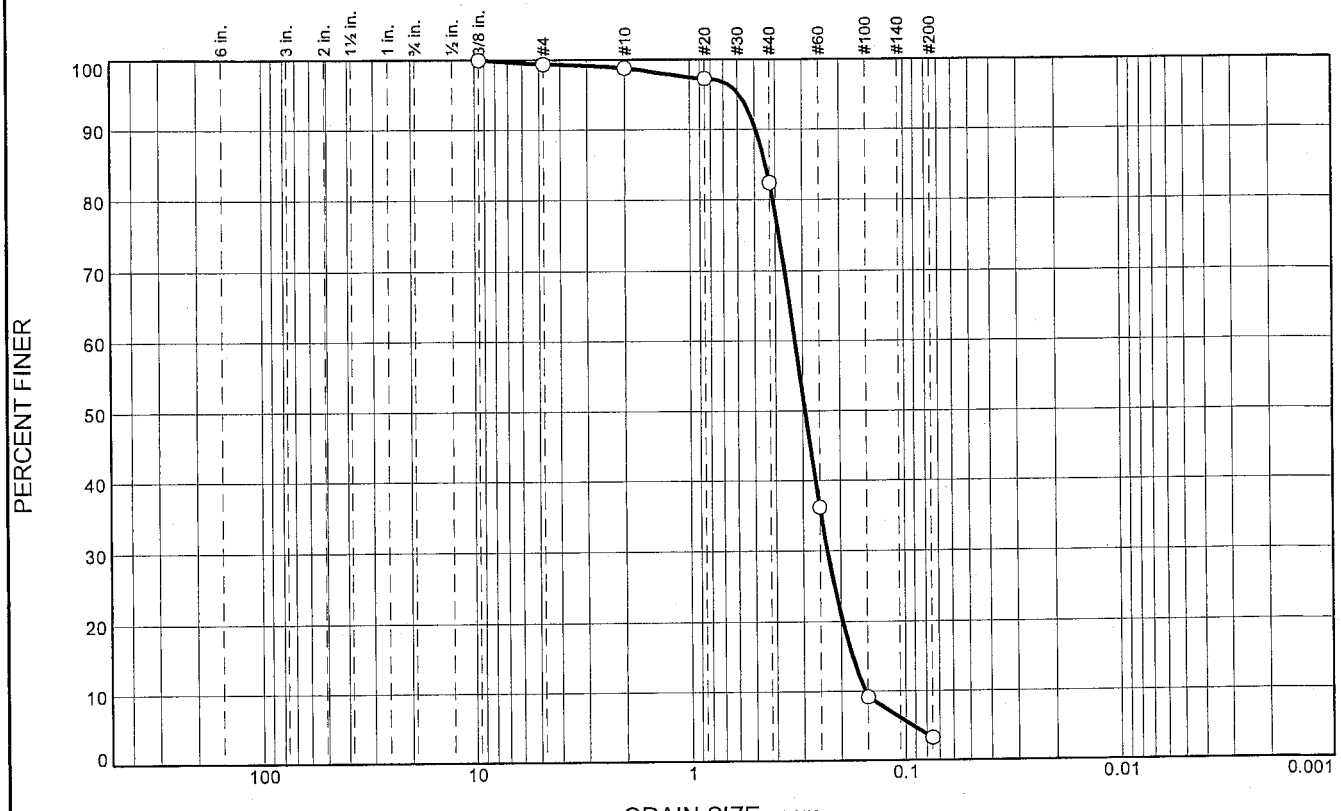
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -31.8 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2922 mm % Fines: 3.2 |
| | | | | B | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2576 mm % Fines: 3.5 |
| -37.4 | 5.6 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |
| -50.6 | 18.8 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed June 2014. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19288° Long = -88.54127°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.6 | 0.6 | 16.5 | 79.1 | 3.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.4 | | |
| #10 | 98.8 | | |
| #20 | 97.3 | | |
| #40 | 82.3 | | |
| #60 | 36.1 | | |
| #100 | 9.2 | | |
| #200 | 3.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4926 $D_{85}$= 0.4440 $D_{60}$= 0.3247
$D_{50}$= 0.2922 $D_{30}$= 0.2307 $D_{15}$= 0.1771
$D_{10}$= 0.1544 $C_u$= 2.10 $C_c$= 1.06

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-10-10A
**Sample Number:** TE Lab ID: 4593.42 **Depth:** 0.0 - 2.8 (ft.) **Date:** 7/26/10

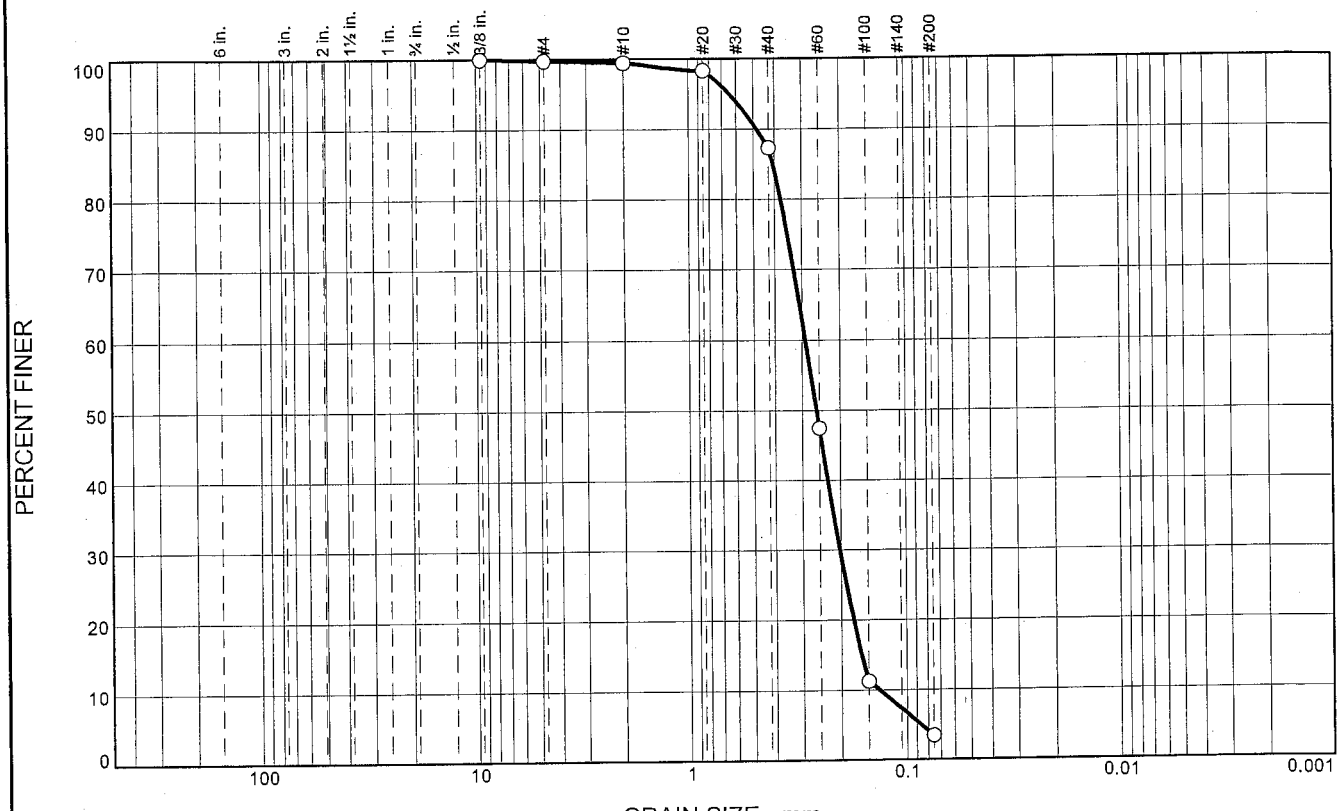
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.3 | 12.2 | 83.8 | 3.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.5 | | |
| #20 | 98.3 | | |
| #40 | 87.3 | | |
| #60 | 47.4 | | |
| #100 | 11.3 | | |
| #200 | 3.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4825 $D_{85}$= 0.4069 $D_{60}$= 0.2895
$D_{50}$= 0.2576 $D_{30}$= 0.2023 $D_{15}$= 0.1617
$D_{10}$= 0.1340 $C_u$= 2.16 $C_c$= 1.05

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-10-10B
**Sample Number:** TE Lab ID: 4593.43 **Depth:** 2.8 - 5.6 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-11-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-11-10 — LOCATION COORDINATES: E = 1,071,722 N = 249,203 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 36 Ft. |
| | 15. DATE BORING — STARTED: 07-14-10 — COMPLETED: 07-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -35.6 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -35.6 | 0.0 | | | | |
| -40.7 | 5.1 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2854 mm % Fines: 4.5 |
| -41.8 | 6.2 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, lt. gray (SM) | B | Classification: SM Color: 2.5Y 5/1-gray<br>D50: 0.2161 mm % Fines: 16.8 |
| -53.6 | 18.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

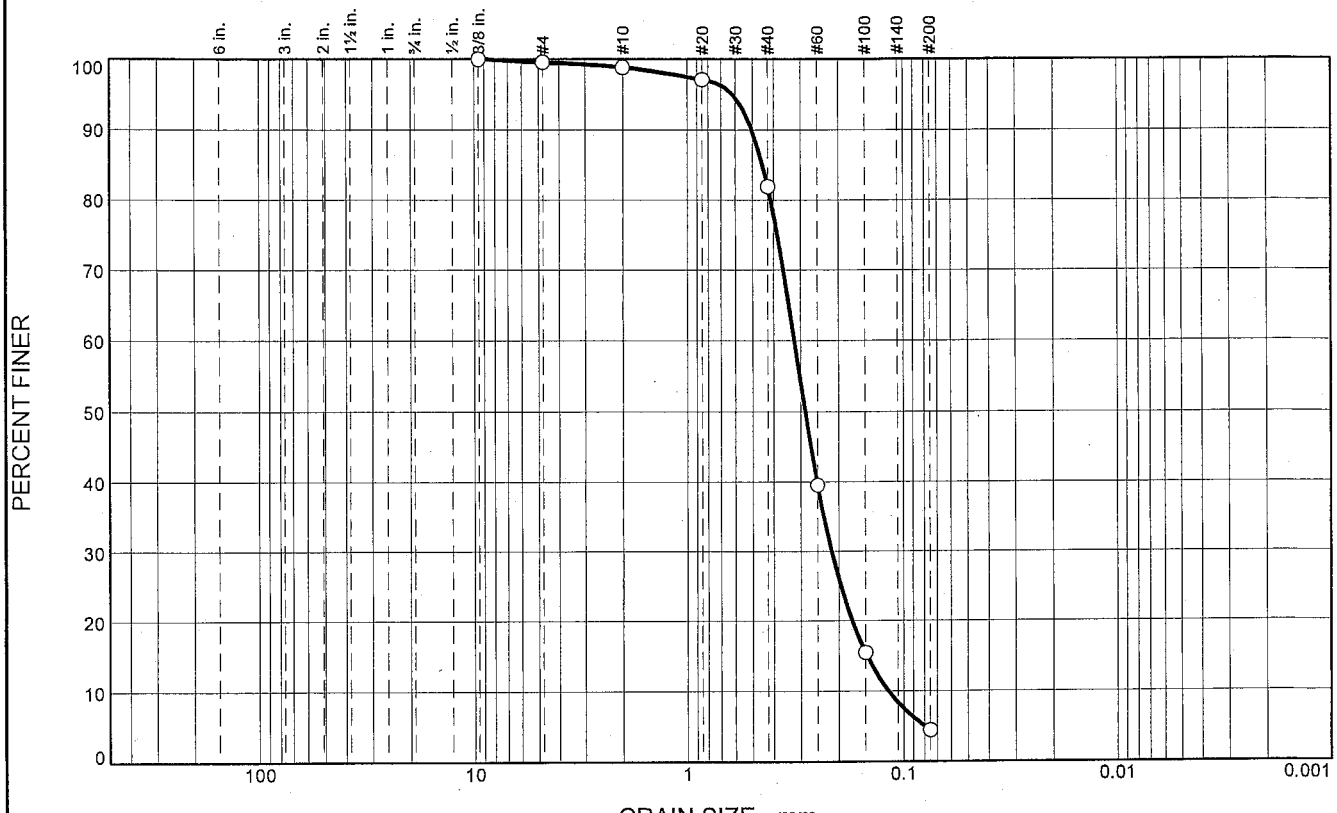
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18497° Long = -88.55648°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.6 | 17.0 | 77.4 | 4.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 98.9 | | |
| #20 | 97.1 | | |
| #40 | 81.9 | | |
| #60 | 39.5 | | |
| #100 | 15.4 | | |
| #200 | 4.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5033 $D_{85}$= 0.4490 $D_{60}$= 0.3205
$D_{50}$= 0.2854 $D_{30}$= 0.2156 $D_{15}$= 0.1478
$D_{10}$= 0.1176 $C_u$= 2.73 $C_c$= 1.23

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-11-10A
**Sample Number:** TE Lab ID: 4593.36 **Depth:** 0.0 - 5.1 (ft.) **Date:** 7/26/10

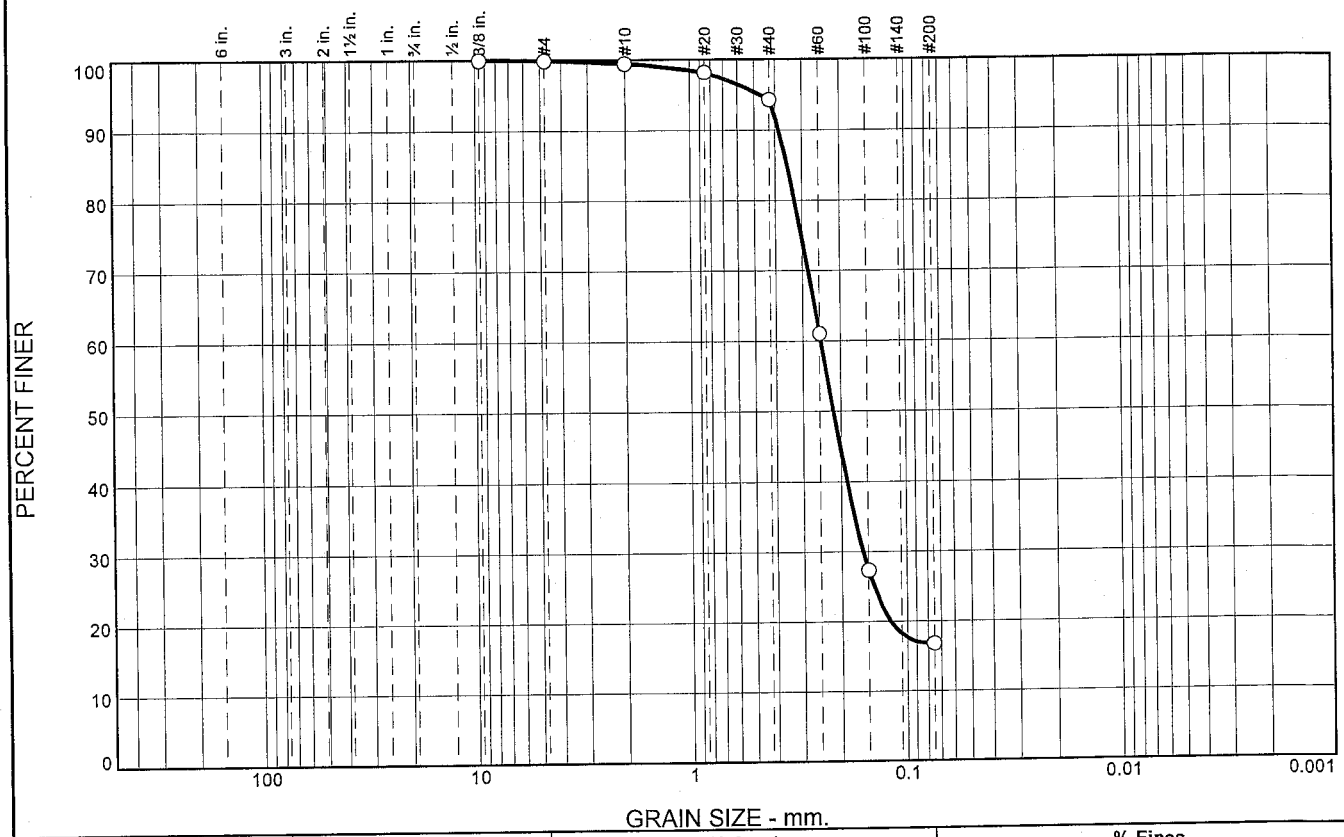
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.4 | 5.2 | 77.5 | 16.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.5 | | |
| #20 | 98.2 | | |
| #40 | 94.3 | | |
| #60 | 61.0 | | |
| #100 | 27.3 | | |
| #200 | 16.8 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3850 $D_{85}$= 0.3514 $D_{60}$= 0.2467
$D_{50}$= 0.2161 $D_{30}$= 0.1586 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-11-10B
**Sample Number:** TE Lab ID: 4593.37 **Depth:** 5.1 - 6.2 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-12-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-12-10 — LOCATION COORDINATES: E = 1,071,714 N = 247,385 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 36 Ft. |
| | 15. DATE BORING — STARTED: 07-14-10 — COMPLETED: 07-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -36.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

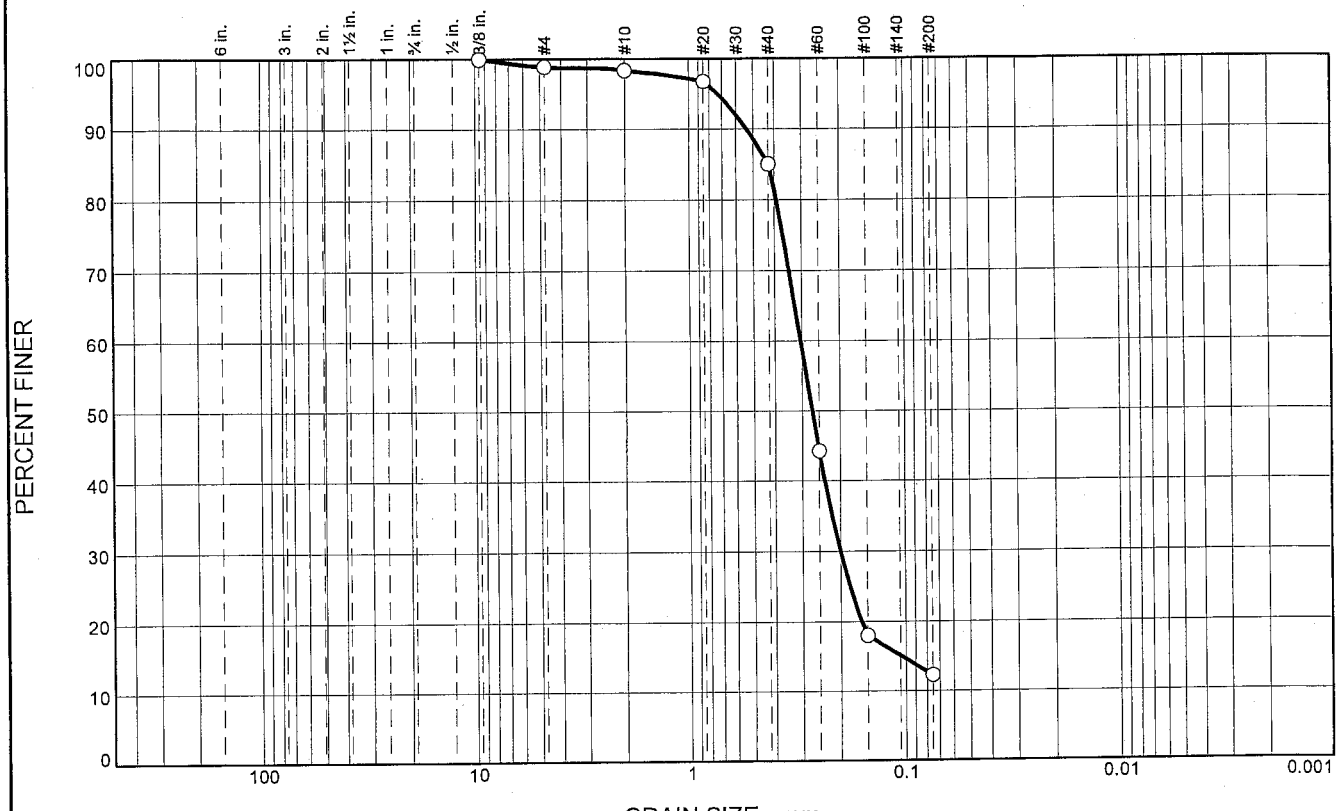
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -36.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, occ. silty zones, lt. gray (SP) | A | Classification: SM Color: 2.5Y 7/1-light gray<br>D50: 0.2691 mm % Fines: 12.3 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2371 mm % Fines: 6.4 |
| -42.2 | 6.0 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |
| -54.0 | 17.8 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from 2013 USACE survey conducted by Irvington Area Office. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17997° Long = -88.55652°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.1 | 0.5 | 13.4 | 72.7 | 12.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 98.9 | | |
| #10 | 98.4 | | |
| #20 | 96.8 | | |
| #40 | 85.0 | | |
| #60 | 44.3 | | |
| #100 | 18.0 | | |
| #200 | 12.3 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay nodules and trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5356 $D_{85}$= 0.4248 $D_{60}$= 0.3035
$D_{50}$= 0.2691 $D_{30}$= 0.2006 $D_{15}$= 0.1044
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-12-10A
**Sample Number:** TE Lab ID: 4593.39 **Depth:** 0.0 - 3.0 (ft.) **Date:** 7/26/10

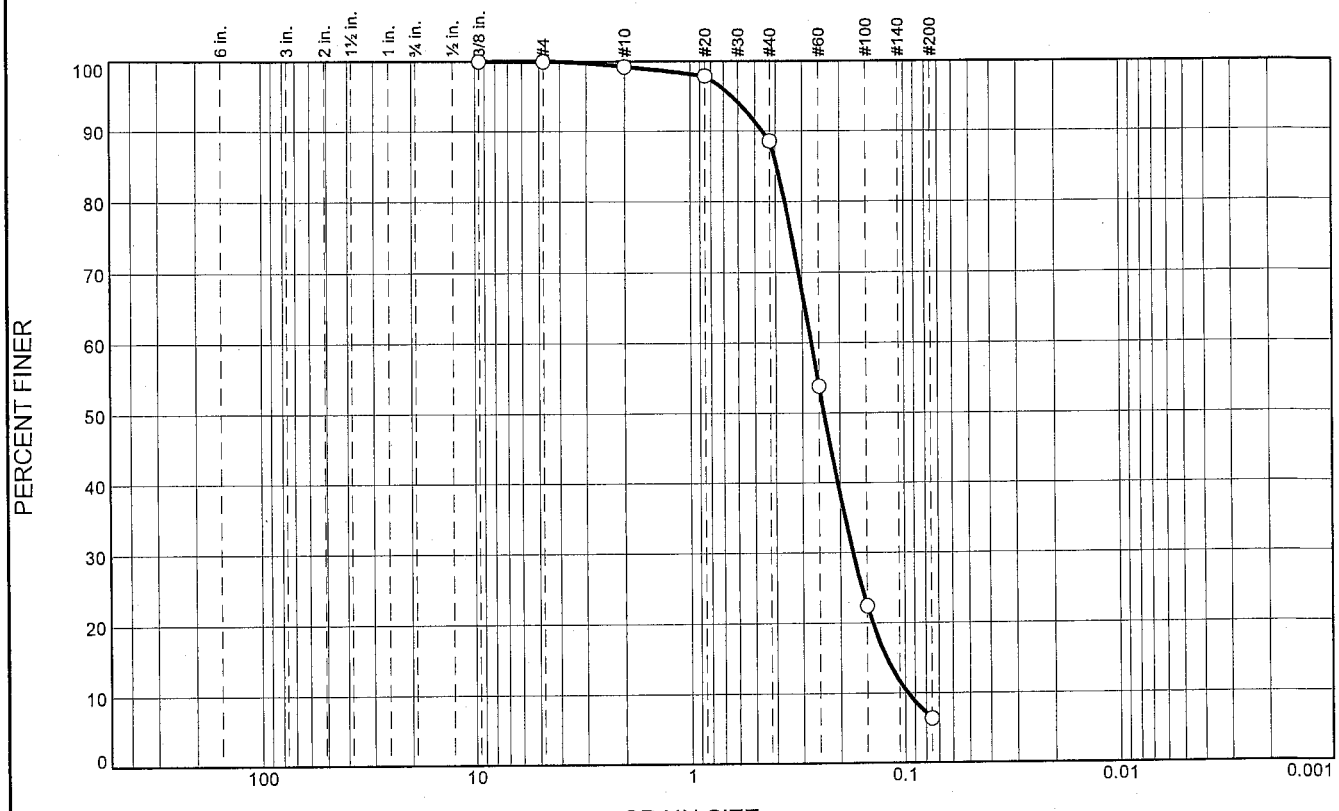
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.8 | 10.6 | 82.2 | 6.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.2 | | |
| #20 | 97.9 | | |
| #40 | 88.6 | | |
| #60 | 53.8 | | |
| #100 | 22.4 | | |
| #200 | 6.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4598 $D_{85}$= 0.3948 $D_{60}$= 0.2717
$D_{50}$= 0.2371 $D_{30}$= 0.1744 $D_{15}$= 0.1219
$D_{10}$= 0.0971 $C_u$= 2.80 $C_c$= 1.15

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-12-10B
**Sample Number:** TE Lab ID: 4593.40 **Depth:** 3.0 - 6.0 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-13-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Horn Island Pass |
| 2. BORING DESIGNATION | BI-HP-13-10 |
| LOCATION COORDINATES | E = 1,070,283 N = 247,411 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 17.3 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 38 Ft. |
| 15. DATE BORING | STARTED 07-14-10 / COMPLETED 07-14-10 |
| 16. ELEVATION TOP OF BORING | -38.0 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -38.0 | 0.0 | | | | |
| -41.2 | 3.2 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2888 mm % Fines: 2.1 |
| -55.3 | 17.3 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

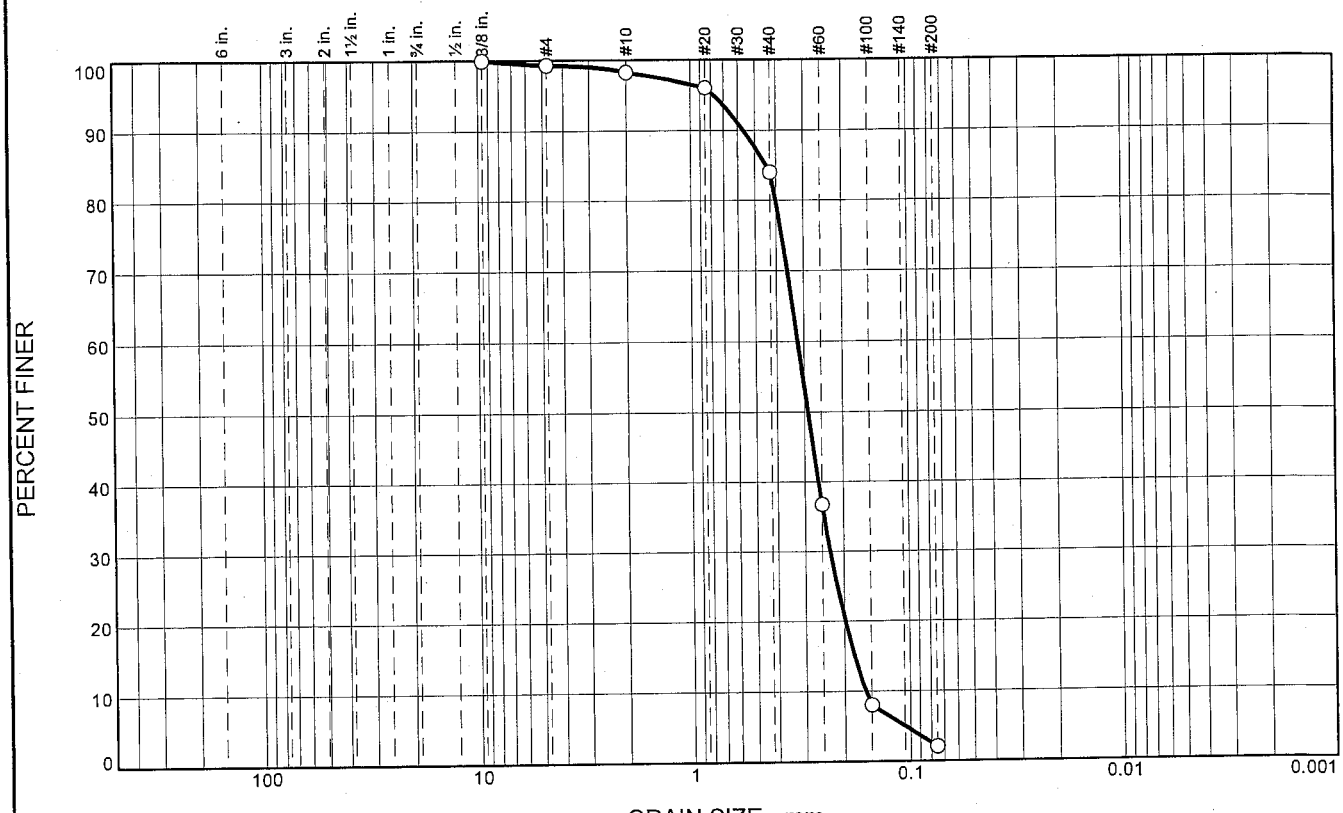
3. Seafloor elevation determined from 2013 USACE survey conducted by Irvington Area Office.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18005° Long = -88.56105°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.7 | 1.0 | 14.3 | 81.9 | 2.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.3 | | |
| #10 | 98.3 | | |
| #20 | 96.0 | | |
| #40 | 84.0 | | |
| #60 | 36.7 | | |
| #100 | 8.0 | | |
| #200 | 2.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5635 $D_{85}$= 0.4434 $D_{60}$= 0.3200
$D_{50}$= 0.2888 $D_{30}$= 0.2300 $D_{15}$= 0.1799
$D_{10}$= 0.1594 $C_u$= 2.01 $C_c$= 1.04

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-13-10A
**Sample Number:** TE Lab ID: 4593.41 **Depth:** 0.0 - 3.2 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-14-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-14-10 — LOCATION COORDINATES: E = 1,073,250 N = 247,356 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 1 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 37 Ft. |
| | 15. DATE BORING — STARTED: 07-14-10 — COMPLETED: 07-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -39.4 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -39.4 | 0.0 | | | | |
| -41.9 | 2.5 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SP-SM Color: 5Y 6/2-light olive gray<br>D50: 0.2388 mm % Fines: 6.7 |
| -55.3 | 15.9 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

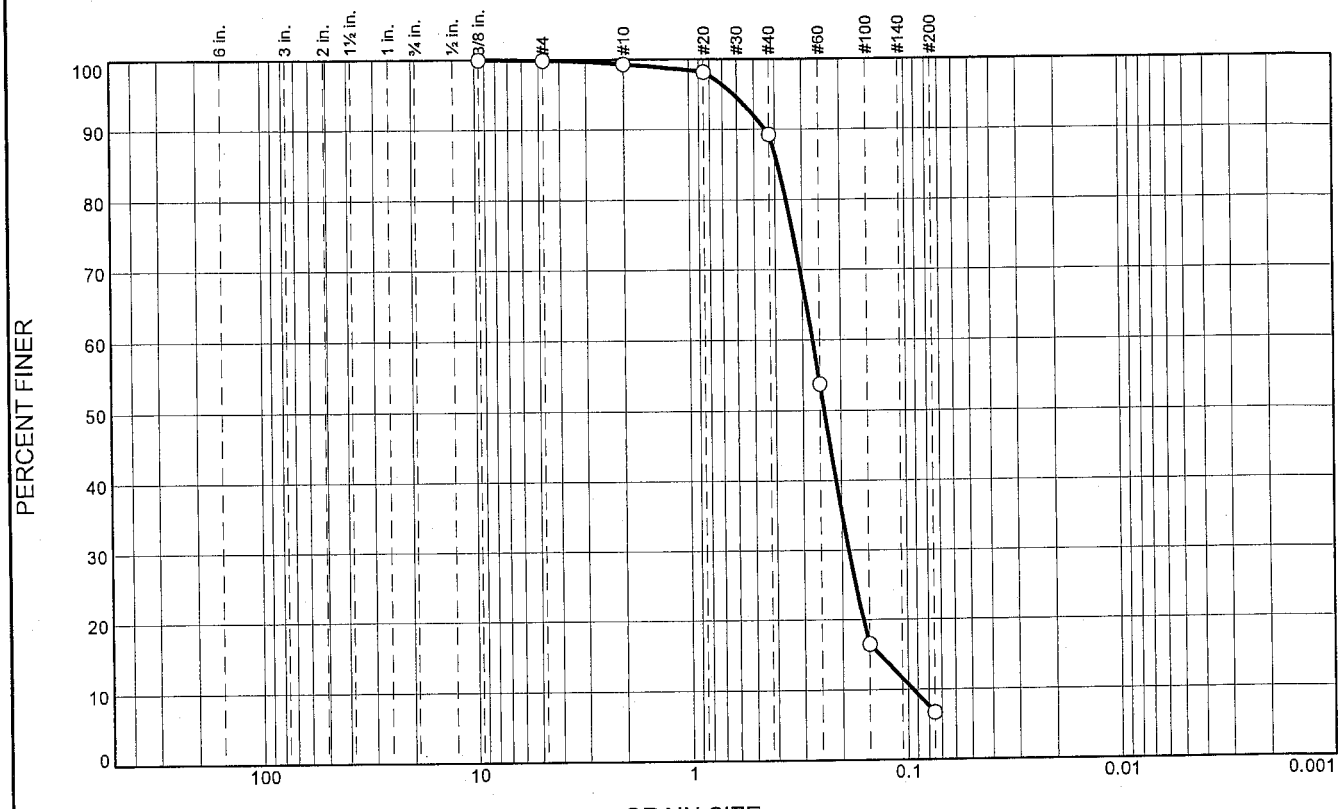
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17988° Long = -88.55166°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.6 | 10.0 | 82.6 | 6.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.3 | | |
| #20 | 98.2 | | |
| #40 | 89.3 | | |
| #60 | 53.8 | | |
| #100 | 16.5 | | |
| #200 | 6.7 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4431 $D_{85}$= 0.3886 $D_{60}$= 0.2699
$D_{50}$= 0.2388 $D_{30}$= 0.1860 $D_{15}$= 0.1349
$D_{10}$= 0.0946 $C_u$= 2.85 $C_c$= 1.35

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-14-10A
**Sample Number:** TE Lab ID: 4593.38 **Depth:** 0.0 - 2.5 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-15-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-15-10 — LOCATION COORDINATES: E = 1,077,412 N = 250,836 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 0 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 36 Ft. |
| | 15. DATE BORING — STARTED: 07-14-10 — COMPLETED: 07-14-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -36.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -36.0 | 0.0 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |
| -54.5 | 18.5 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed June 2014. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18942° Long = -88.53846°**

**Boring Designation BI-HP-16-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Horn Island Pass |
| 2. BORING DESIGNATION | BI-HP-16-10 |
| LOCATION COORDINATES | E = 1,075,650 N = 248,944 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 17.7 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 2 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 37 Ft. |
| 15. DATE BORING | STARTED 07-14-10 / COMPLETED 07-14-10 |
| 16. ELEVATION TOP OF BORING | -37.7 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -37.7 | 0.0 | | | | |
| -39.2 | 1.5 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/2-light gray<br>D50: 0.2508 mm % Fines: 7 |
| -40.7 | 3.0 | | SAND, silty, mostly fine-grained sand-sized quartz, occ. clayey zones, lt. gray (SM) | B | Classification: SM Color: 2.5Y 7/2-light gray<br>D50: 0.1831 mm % Fines: 26.7 |
| -55.4 | 17.7 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

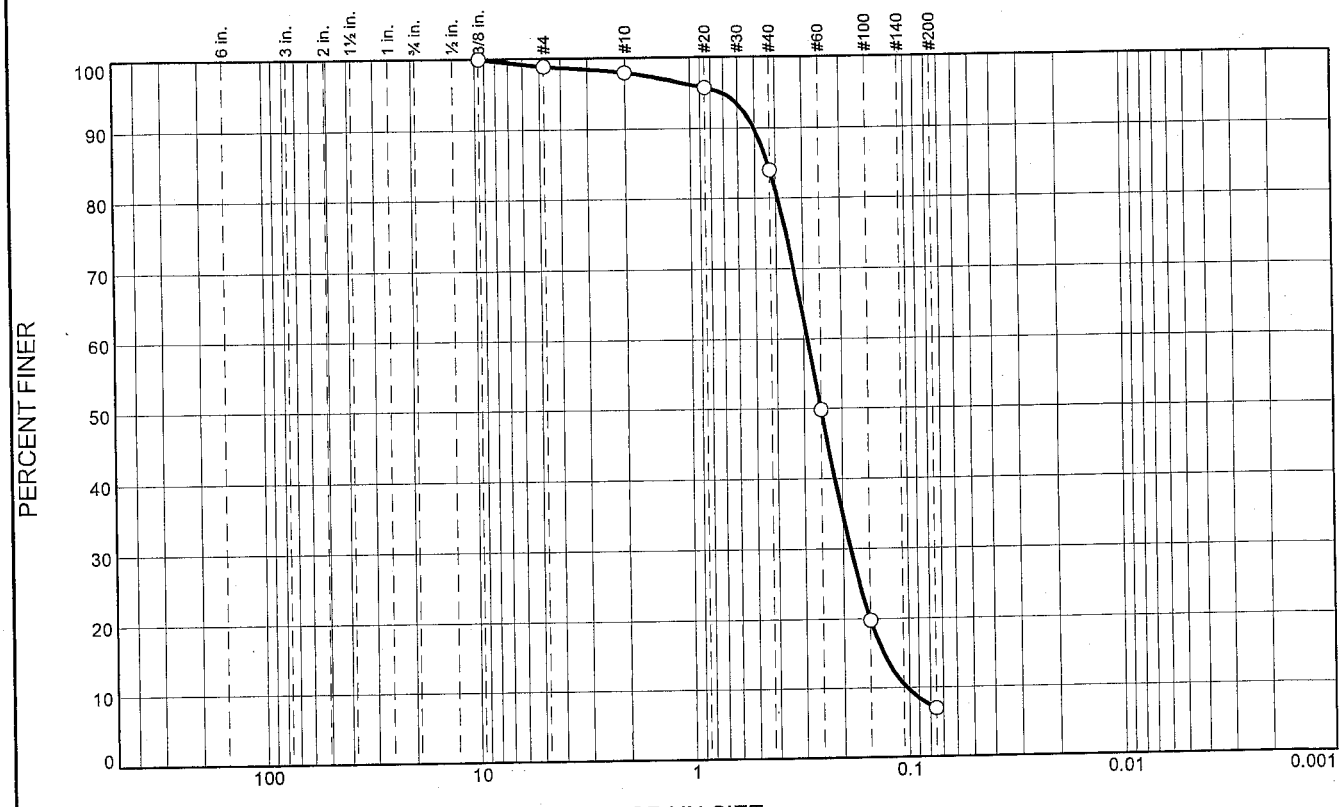
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18423° Long = -88.54405°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.1 | 1.0 | 13.9 | 77.0 | 7.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 98.9 | | |
| #10 | 97.9 | | |
| #20 | 95.7 | | |
| #40 | 84.0 | | |
| #60 | 49.8 | | |
| #100 | 19.7 | | |
| #200 | 7.0 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules and trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5037 $D_{85}$= 0.4352 $D_{60}$= 0.2883
$D_{50}$= 0.2508 $D_{30}$= 0.1846 $D_{15}$= 0.1306
$D_{10}$= 0.1026 $C_u$= 2.81 $C_c$= 1.15

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-16-10A
**Sample Number:** TE Lab ID: 4593.46 **Depth:** 0.0 - 1.5 (ft.) **Date:** 7/26/10

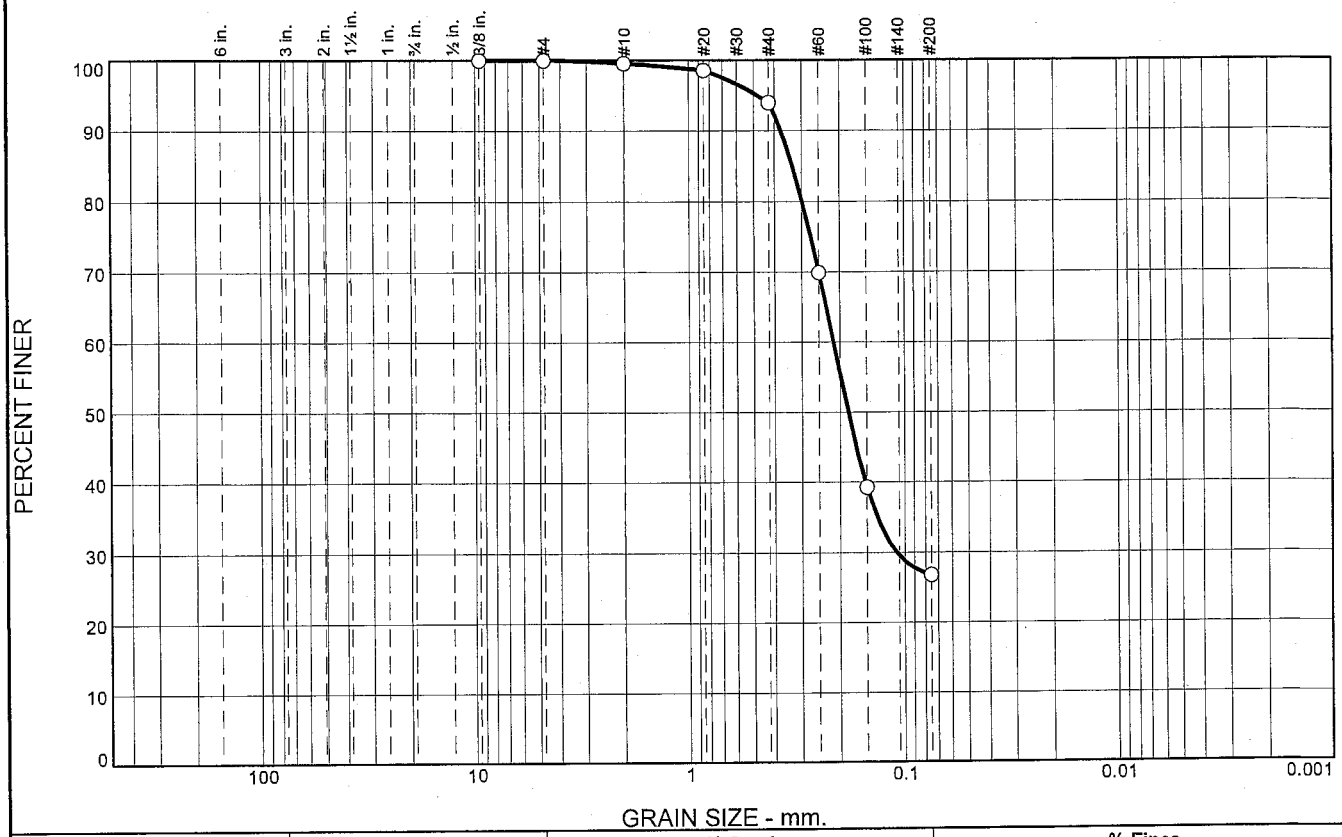
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 5.6 | 67.3 | 26.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 98.6 | | |
| #40 | 94.0 | | |
| #60 | 69.9 | | |
| #100 | 39.3 | | |
| #200 | 26.7 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3741 $D_{85}$= 0.3310 $D_{60}$= 0.2143
$D_{50}$= 0.1831 $D_{30}$= 0.1089 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-16-10B
**Sample Number:** TE Lab ID: 4593.47 **Depth:** 1.5 - 3.0 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

Boring Designation BI-HP-17-10

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Horn Island Pass |
| 2. BORING DESIGNATION | BI-HP-17-10 |
| LOCATION COORDINATES | E = 1,074,355 N = 247,461 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 17.0 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 0 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 39 Ft. |
| 15. DATE BORING | STARTED 07-15-10 / COMPLETED 07-15-10 |
| 16. ELEVATION TOP OF BORING | -40.0 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -40.0 | 0.0 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SC) | NS | |
| -57.0 | 17.0 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18016° Long = -88.54816°

## Boring Designation BI-HP-18-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-18-10 — LOCATION COORDINATES: E = 1,075,845 N = 253,105 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 0 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 34 Ft. |
| | 15. DATE BORING — STARTED: 07-15-10 — COMPLETED: 07-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -34.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -34.9 | 0.0 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, trace, gray (SC) | NS | |
| -50.0 | 15.1 | | | | |
| -51.4 | 16.5 | | CLAY, lean, yellow brown (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19567° Long = -88.5434°**

## Boring Designation BI-HP-19-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-19-10 — LOCATION COORDINATES: E = 1,073,567 N = 253,241 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 0 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 35 Ft. |
| | 15. DATE BORING — STARTED: 07-15-10 — COMPLETED: 07-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -35.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -35.9 | 0.0 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, gray (SC) | NS | |
| -54.0 | 18.1 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19606° Long = -88.55061°**

**Boring Designation BI-HP-20-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Horn Island Pass |
| 2. BORING DESIGNATION | BI-HP-20-10 |
| LOCATION COORDINATES | E = 1,074,049 N = 251,370 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 17.6 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 36 Ft. |
| 15. DATE BORING | STARTED 07-15-10 / COMPLETED 07-15-10 |
| 16. ELEVATION TOP OF BORING | -35.9 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -35.9 | 0.0 | | | | |
| -37.5 | 1.6 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, trace of clay balls, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2632 mm % Fines: 9.5 |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SC) | NS | |
| -53.5 | 17.6 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

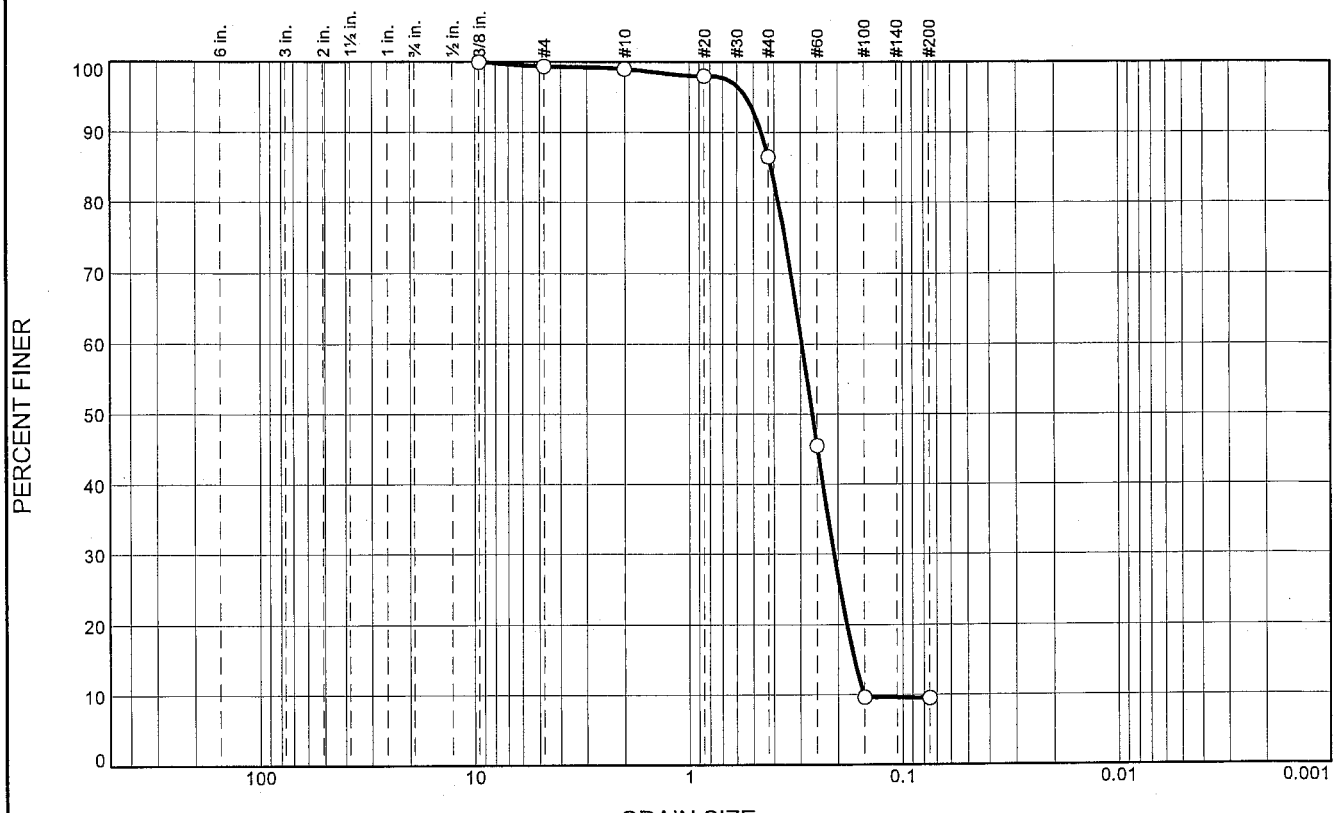
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19091° Long = -88.5491°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.6 | 0.4 | 12.5 | 77.0 | 9.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.4 | | |
| #10 | 99.0 | | |
| #20 | 98.0 | | |
| #40 | 86.5 | | |
| #60 | 45.5 | | |
| #100 | 9.6 | | |
| #200 | 9.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4590 $D_{85}$= 0.4135 $D_{60}$= 0.2950
$D_{50}$= 0.2632 $D_{30}$= 0.2082 $D_{15}$= 0.1676
$D_{10}$= 0.1514 $C_u$= 1.95 $C_c$= 0.97

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-20-10A
**Sample Number:** TE Lab ID: 4593.48 **Depth:** 0.0 - 1.6 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-21-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-21-10 — LOCATION COORDINATES: E = 1,072,441 N = 250,020 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 35 Ft. |
| | 15. DATE BORING — STARTED: 07-15-10 — COMPLETED: 07-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -34.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

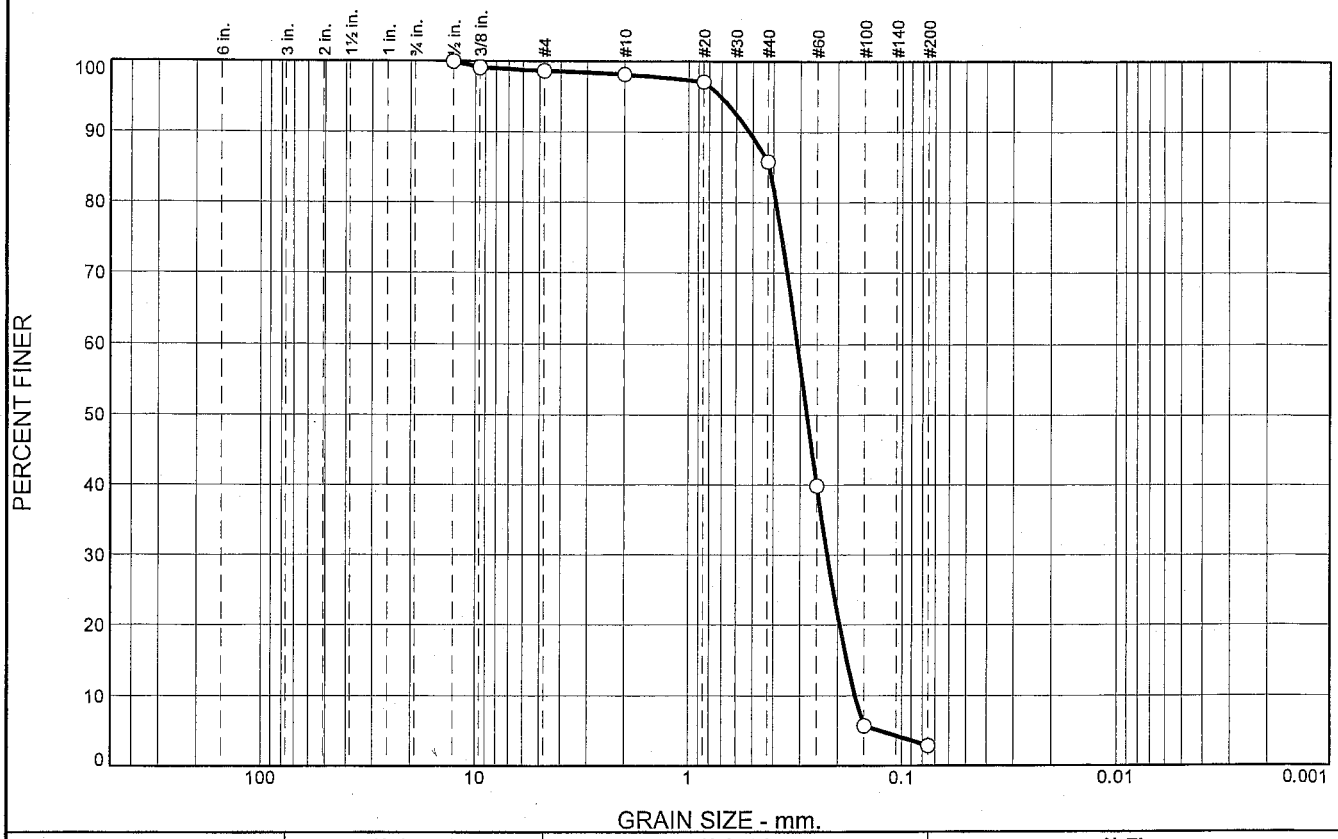
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -34.5 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, occ. clay balls, lt. gray (SP) | A | Classification: SP Color: 2.5Y 8/1-white<br>D50: 0.2786 mm % Fines: 2.9 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/2-light gray<br>D50: 0.2702 mm % Fines: 7.9 |
| -40.4 | 5.9 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, gray (SC) | NS | |
| -52.9 | 18.4 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed June 2014. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18721° Long = -88.5542°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.4 | 0.4 | 12.5 | 82.8 | 2.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .500 | 100.0 | | |
| .375 | 99.1 | | |
| #4 | 98.6 | | |
| #10 | 98.2 | | |
| #20 | 97.1 | | |
| #40 | 85.7 | | |
| #60 | 39.8 | | |
| #100 | 5.7 | | |
| #200 | 2.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained, with trace shell

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5192 $D_{85}$= 0.4198 $D_{60}$= 0.3093
$D_{50}$= 0.2786 $D_{30}$= 0.2232 $D_{15}$= 0.1811
$D_{10}$= 0.1655 $C_u$= 1.87 $C_c$= 0.97

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-21-10A
**Sample Number:** TE Lab ID: 4593.49 **Depth:** 0.0 - 3.0 (ft.) **Date:** 7/26/10

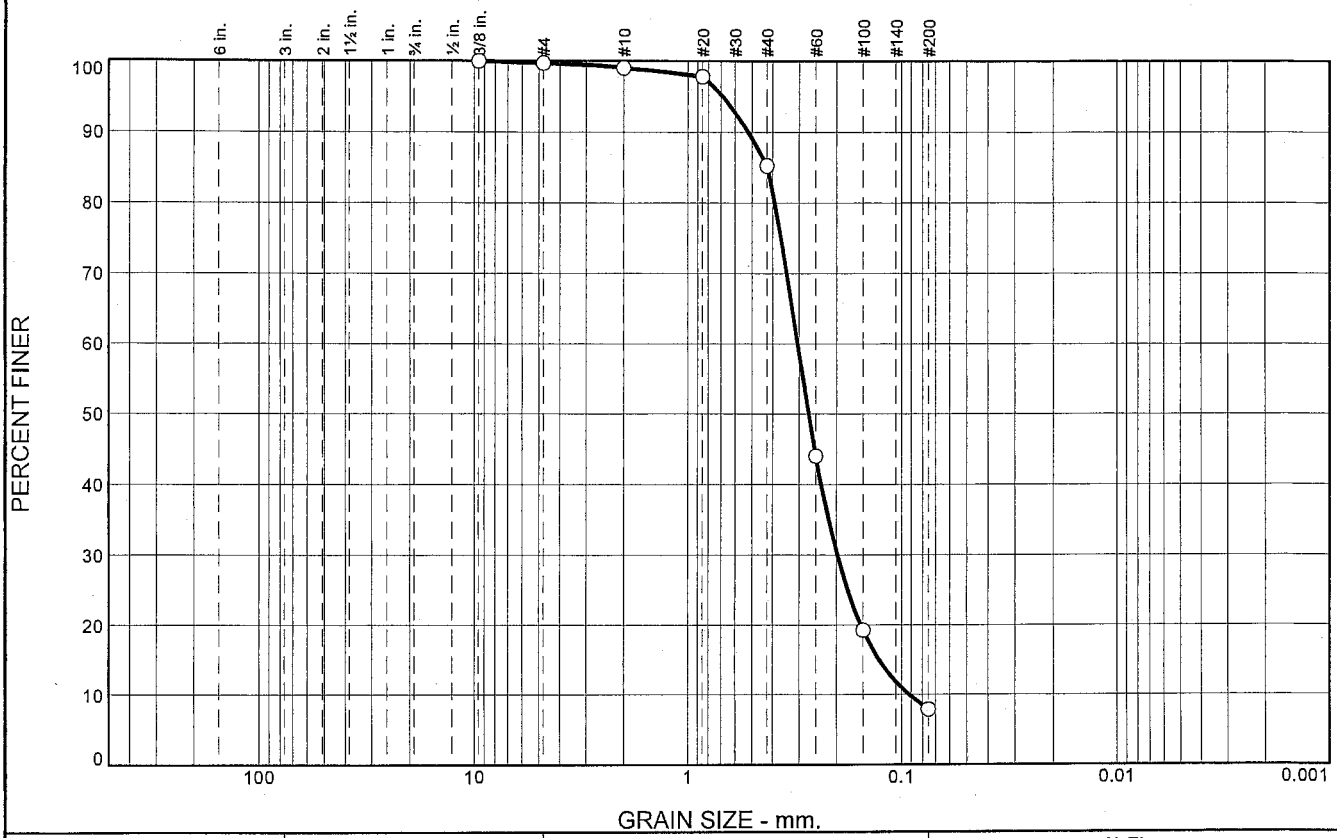
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.7 | 13.8 | 77.3 | 7.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.0 | | |
| #20 | 97.8 | | |
| #40 | 85.2 | | |
| #60 | 44.0 | | |
| #100 | 19.2 | | |
| #200 | 7.9 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5205 $D_{85}$= 0.4233 $D_{60}$= 0.3048
$D_{50}$= 0.2702 $D_{30}$= 0.1982 $D_{15}$= 0.1267
$D_{10}$= 0.0920 $C_u$= 3.31 $C_c$= 1.40

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-21-10B
**Sample Number:** TE Lab ID: 4593.50 **Depth:** 3.0 - 5.9 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-HP-22-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-22-10 — LOCATION COORDINATES: E = 1,072,851 N = 248,861 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 34 Ft. |
| | 15. DATE BORING — STARTED: 07-15-10 — COMPLETED: 07-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -34.6 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -34.6 | 0.0 | | | | |
| -37.6 | 3.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, occ. clay balls, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2733 mm % Fines: 2.3 |
| -41.0 | 6.4 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, occ. clay balls, lt. gray (SP) | B | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2499 mm % Fines: 9.2 |
| -53.7 | 19.1 | | SAND, clayey, mostly fine-grained sand-sized quartz, gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

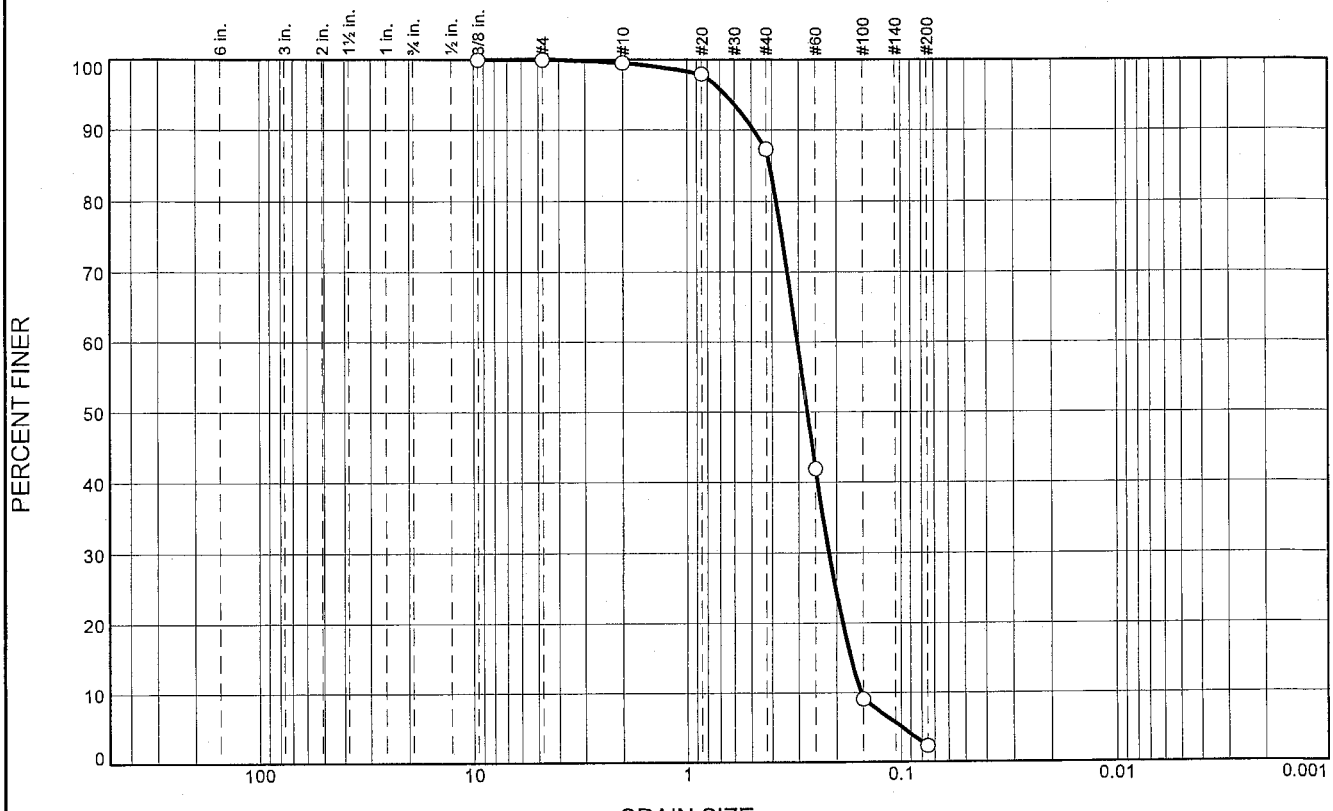
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18402° Long = -88.55291°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 12.3 | 85.0 | 2.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 98.0 | | |
| #40 | 87.3 | | |
| #60 | 41.9 | | |
| #100 | 9.0 | | |
| #200 | 2.3 | | |

* (no specification provided)

**Material Description**

SAND, (SP), medium to fine grained

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4853 $D_{85}$= 0.4094 $D_{60}$= 0.3038
$D_{50}$= 0.2733 $D_{30}$= 0.2164 $D_{15}$= 0.1714
$D_{10}$= 0.1538 $C_u$= 1.98 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-22-10A
**Sample Number:** TE Lab ID: 4593.51 **Depth:** 0.0 - 3.0 (ft.) **Date:** 7/26/10

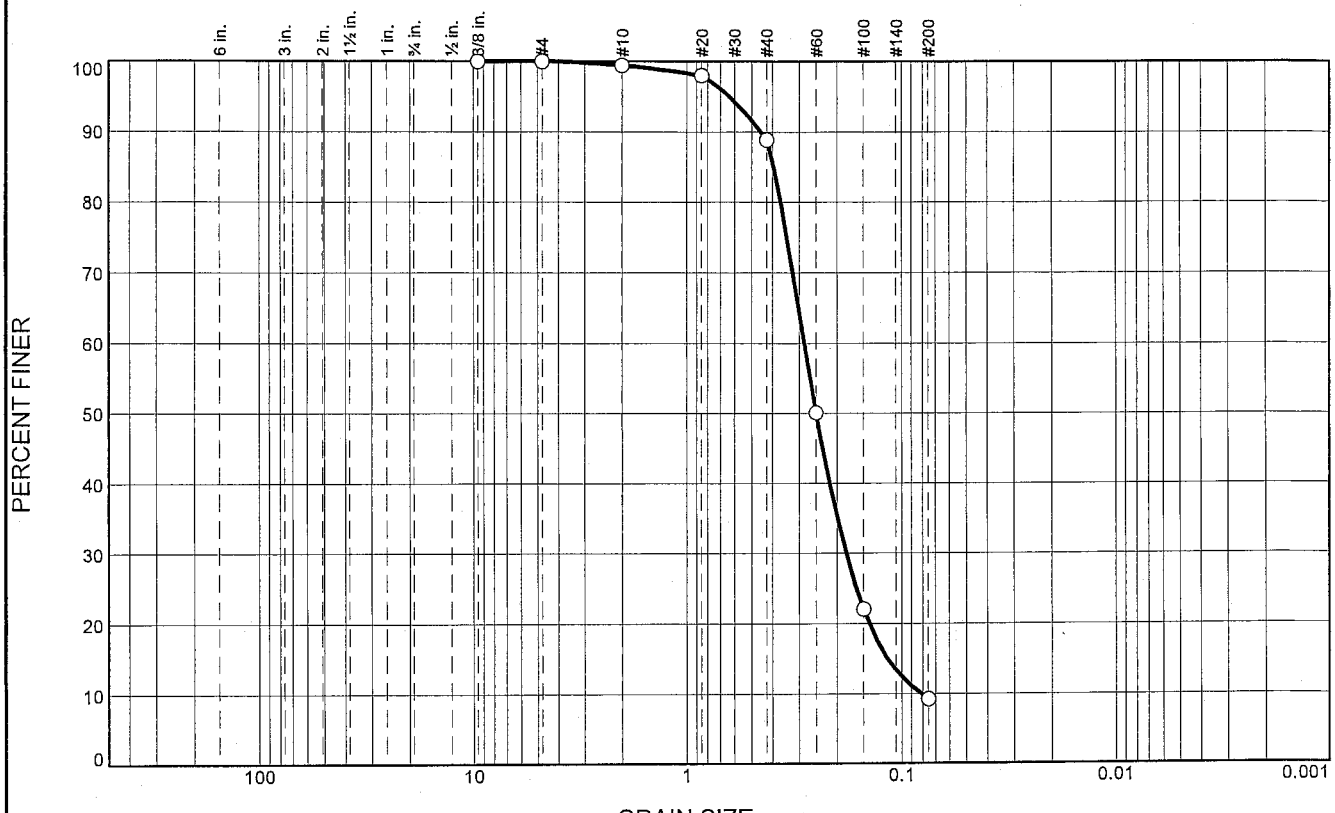
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.6 | 10.6 | 79.6 | 9.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.4 | | |
| #20 | 98.0 | | |
| #40 | 88.8 | | |
| #60 | 50.0 | | |
| #100 | 22.0 | | |
| #200 | 9.2 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4533 $D_{85}$= 0.3966 $D_{60}$= 0.2841
$D_{50}$= 0.2499 $D_{30}$= 0.1809 $D_{15}$= 0.1158
$D_{10}$= 0.0810 $C_u$= 3.51 $C_c$= 1.42

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-22-10B
**Sample Number:** TE Lab ID: 4593.52 **Depth:** 3.0 - 6.4 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-23-10**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Horn Island Pass |
| 2. BORING DESIGNATION | BI-HP-23-10 |
| LOCATION COORDINATES | E = 1,072,094 N = 248,186 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 16.1 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 2 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 37 Ft. |
| 15. DATE BORING | STARTED 07-15-10 / COMPLETED 07-15-10 |
| 16. ELEVATION TOP OF BORING | -37.3 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -37.3 | 0.0 | | | | |
| -40.7 | 3.4 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, occ. clay balls, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2524 mm % Fines: 3.1 |
| -41.5 | 4.2 | | SAND, silty, mostly fine-grained sand-sized quartz, trace shell fragments, occ. clay balls, gray (SM) | B | Classification: SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.2126 mm % Fines: 12 |
| -53.4 | 16.1 | | SAND, clayey, mostly fine-grained sand-sized quartz, trace shell fragments (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

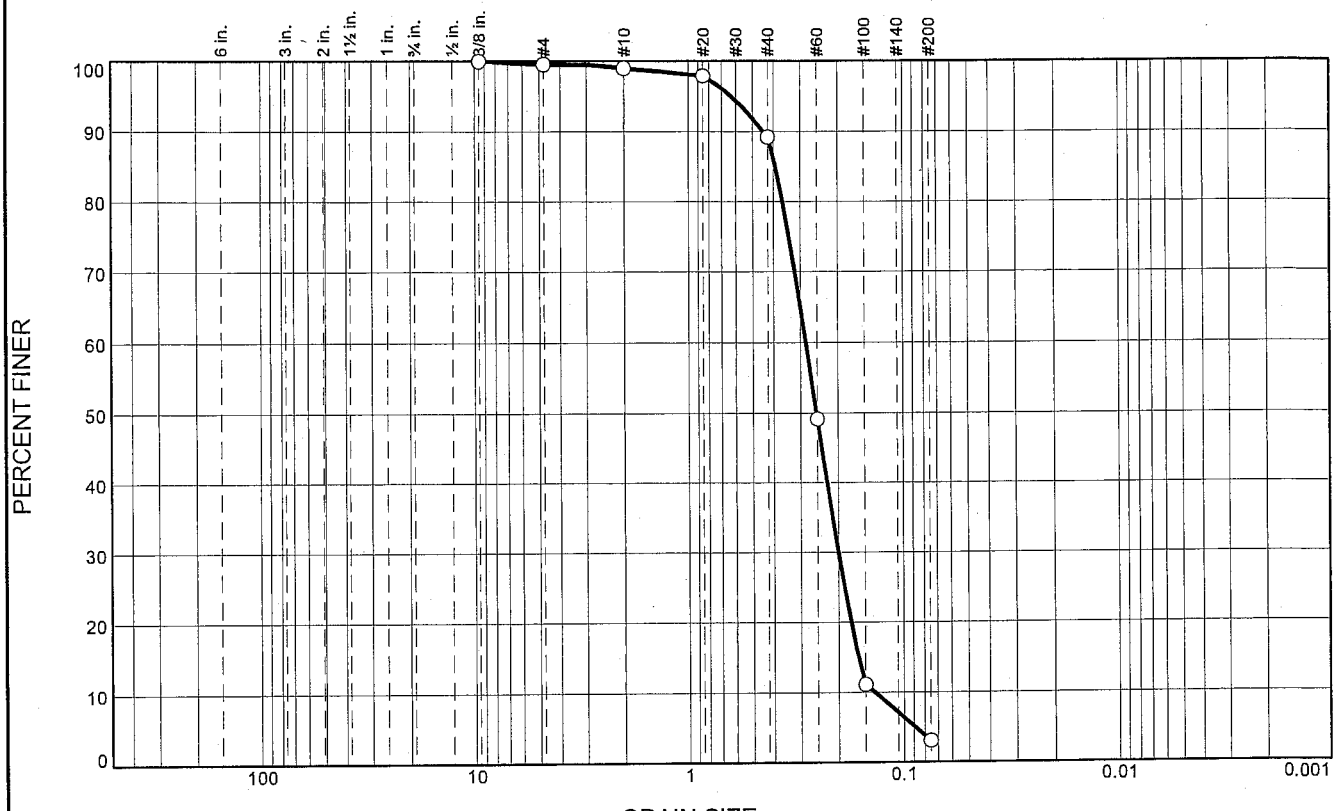
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18217° Long = -88.55531°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.5 | 9.8 | 86.1 | 3.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 99.0 | | |
| #20 | 97.9 | | |
| #40 | 89.2 | | |
| #60 | 49.2 | | |
| #100 | 11.1 | | |
| #200 | 3.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4450 $D_{85}$= 0.3929 $D_{60}$= 0.2827
$D_{50}$= 0.2524 $D_{30}$= 0.1999 $D_{15}$= 0.1614
$D_{10}$= 0.1363 $C_u$= 2.07 $C_c$= 1.04

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-23-10A
**Sample Number:** TE Lab ID: 4593.53 **Depth:** 0.0 - 3.4 (ft.) **Date:** 7/26/10

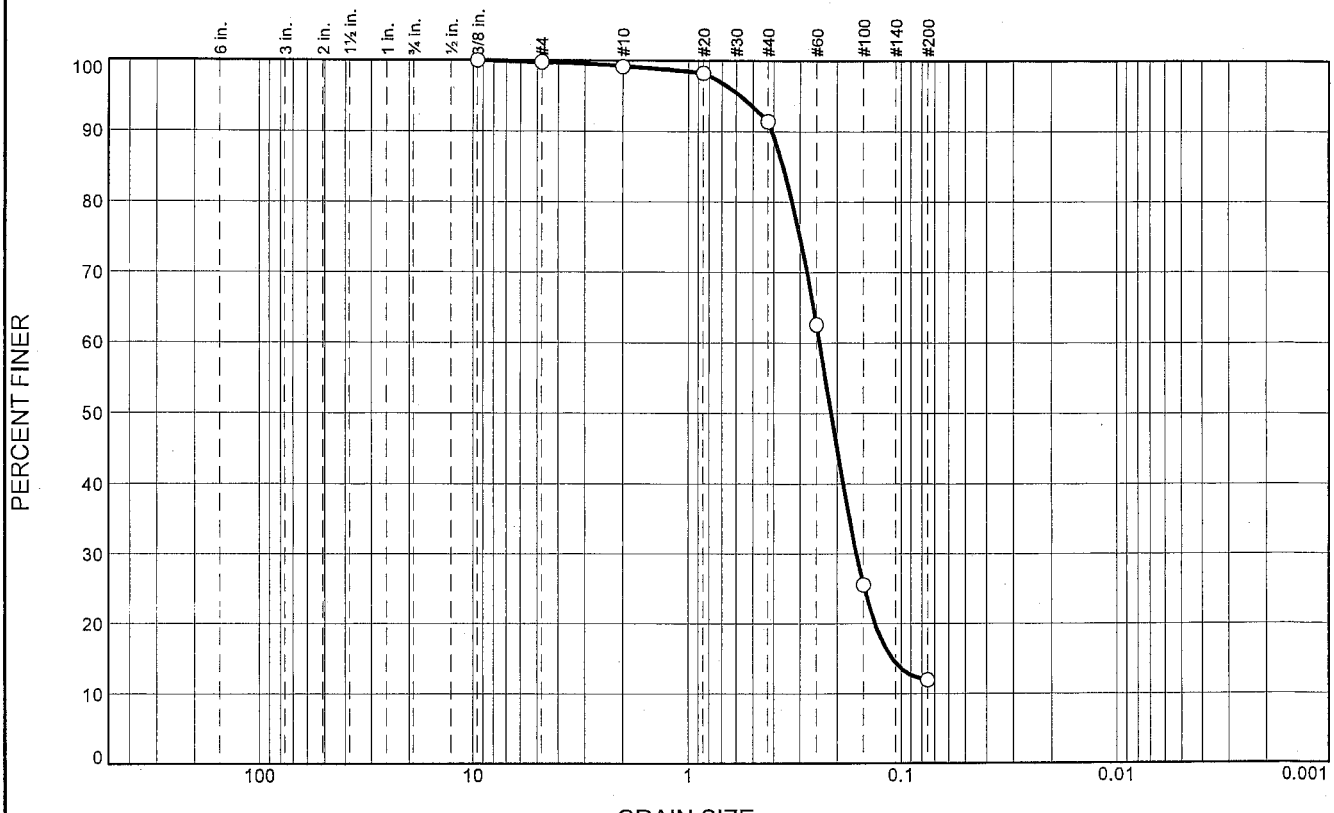
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.6 | 7.8 | 79.4 | 12.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.2 | | |
| #20 | 98.2 | | |
| #40 | 91.4 | | |
| #60 | 62.6 | | |
| #100 | 25.5 | | |
| #200 | 12.0 | | |

* (no specification provided)

**Material Description**

SILTY SAND, (SM), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4080 $D_{85}$= 0.3612 $D_{60}$= 0.2416
$D_{50}$= 0.2126 $D_{30}$= 0.1620 $D_{15}$= 0.1102
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-23-10B
**Sample Number:** TE Lab ID: 4593.54 **Depth:** 3.4 - 4.2 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

## Boring Designation BI-HP-24-10

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-24-10 — LOCATION COORDINATES: E = 1,075,190 N = 249,681 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 33 Ft. |
| | 15. DATE BORING — STARTED: 07-15-10 — COMPLETED: 07-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -33.6 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.6 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

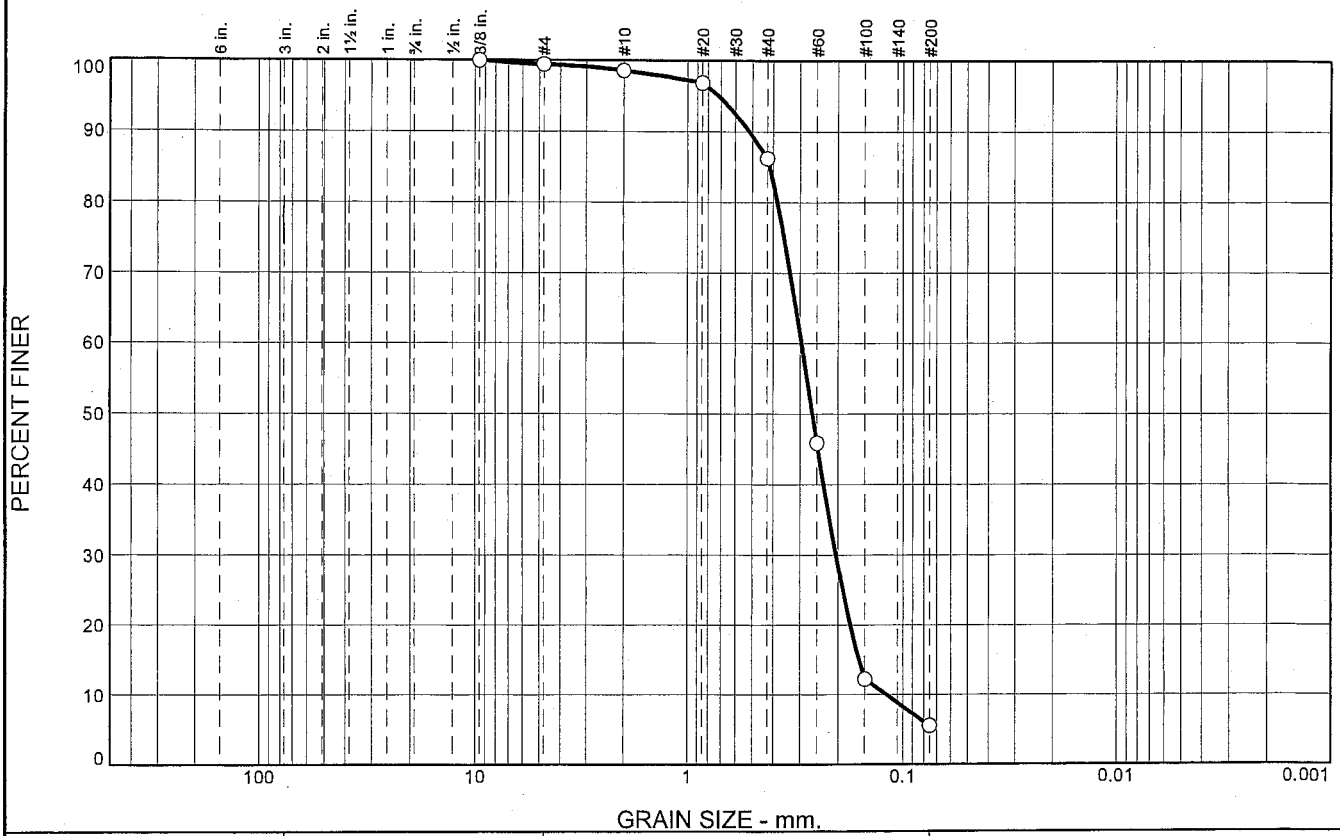
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -33.6 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, occ. clay balls, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.2625 mm % Fines: 5.5 |
| | | | | B | Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.2557 mm % Fines: 7.1 |
| -40.3 | 6.7 | | | | |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, gray (SC) | NS | |
| -52.2 | 18.6 | | | | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed June 2014. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18626° Long = -88.5455°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.6 | 0.9 | 12.3 | 80.7 | 5.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.4 | | |
| #10 | 98.5 | | |
| #20 | 96.9 | | |
| #40 | 86.2 | | |
| #60 | 45.9 | | |
| #100 | 12.2 | | |
| #200 | 5.5 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5157 $D_{85}$= 0.4157 $D_{60}$= 0.2953
$D_{50}$= 0.2625 $D_{30}$= 0.2042 $D_{15}$= 0.1597
$D_{10}$= 0.1192 $C_u$= 2.48 $C_c$= 1.18

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-24-10A
**Sample Number:** TE Lab ID: 4593.55 **Depth:** 0.0 - 3.4 (ft.) **Date:** 7/26/10

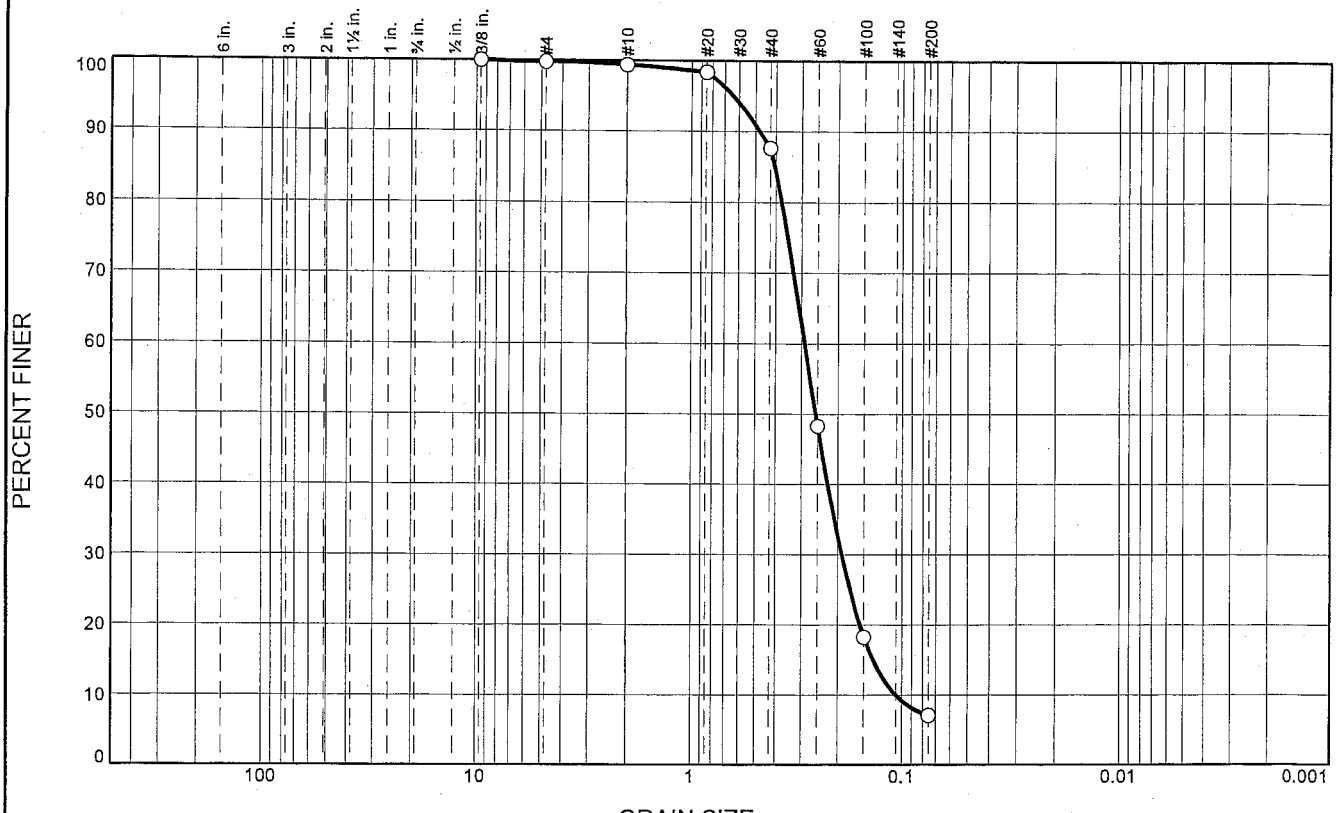
**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.4 | 11.8 | 80.5 | 7.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.4 | | |
| #20 | 98.4 | | |
| #40 | 87.6 | | |
| #60 | 48.2 | | |
| #100 | 18.3 | | |
| #200 | 7.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4764 $D_{85}$= 0.4053 $D_{60}$= 0.2894
$D_{50}$= 0.2557 $D_{30}$= 0.1913 $D_{15}$= 0.1359
$D_{10}$= 0.1069 $C_u$= 2.71 $C_c$= 1.18

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-24-10B
**Sample Number:** TE Lab ID: 4593.56 **Depth:** 3.4 - 6.7 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-25-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-25-10 — LOCATION COORDINATES: E = 1,075,884 N = 250,272 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 1 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 35 Ft. |
| | 15. DATE BORING — STARTED: 07-15-10 — COMPLETED: 07-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -34.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -34.9 | 0.0 | | | | |
| -37.4 | 2.5 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, occ. clay balls, lt. gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.2544 mm % Fines: 5.4 |
| -52.3 | 17.4 | | SAND, clayey, mostly fine-grained sand-sized quartz, gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

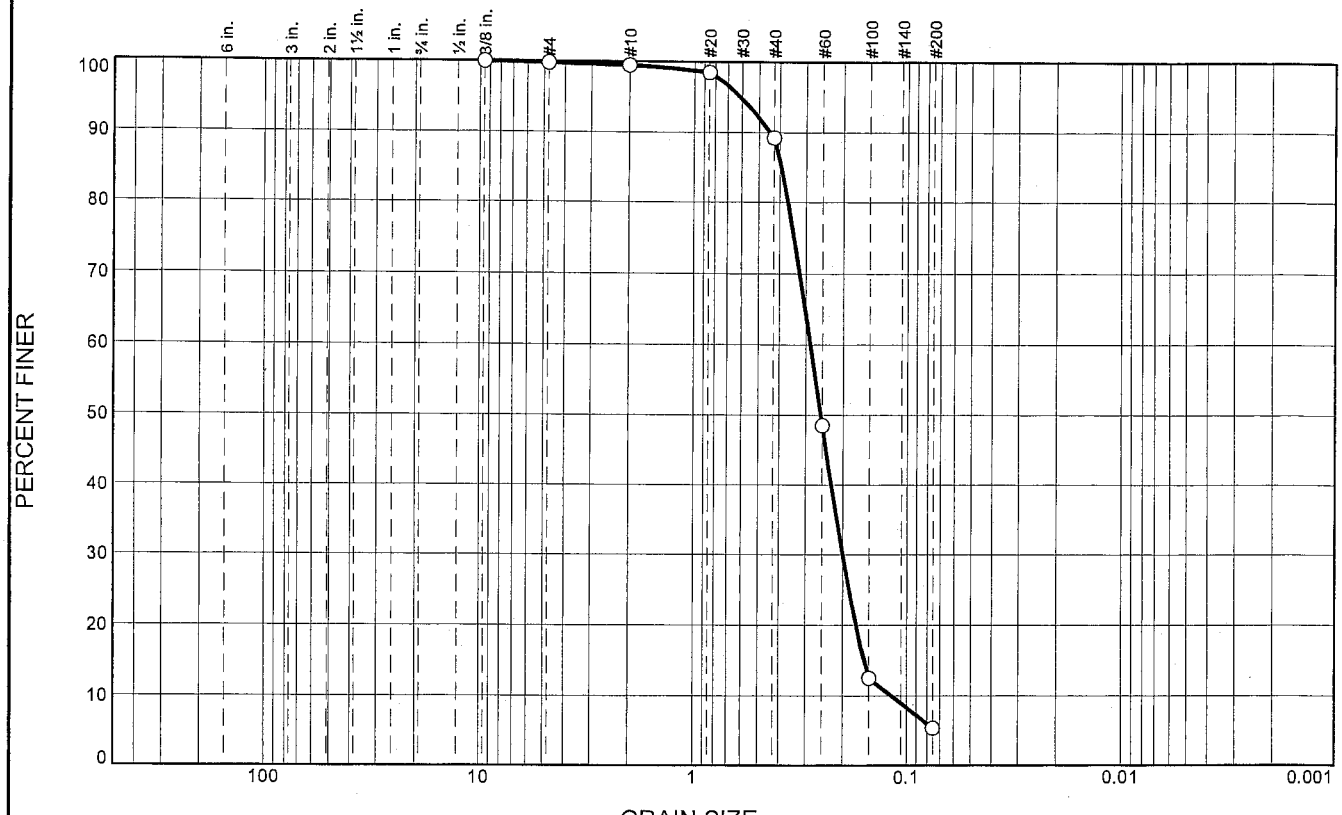
3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18788° Long = -88.5433°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.3 | 10.3 | 83.8 | 5.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.5 | | |
| #20 | 98.5 | | |
| #40 | 89.2 | | |
| #60 | 48.5 | | |
| #100 | 12.5 | | |
| #200 | 5.4 | | |

* (no specification provided)

**Material Description**

SAND, (SP-SM), medium to fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4432 $D_{85}$= 0.3940 $D_{60}$= 0.2851
$D_{50}$= 0.2544 $D_{30}$= 0.1997 $D_{15}$= 0.1582
$D_{10}$= 0.1178 $C_u$= 2.42 $C_c$= 1.19

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-25-10A
**Sample Number:** TE Lab ID: 4593.57 **Depth:** 0.0 - 2.5 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-26-10**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-26-10 — LOCATION COORDINATES: E = 1,075,957 N = 251,218 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 1 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 34 Ft. |
| | 15. DATE BORING — STARTED: 07-15-10 — COMPLETED: 07-15-10 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -33.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: John Baehr, Geologist |

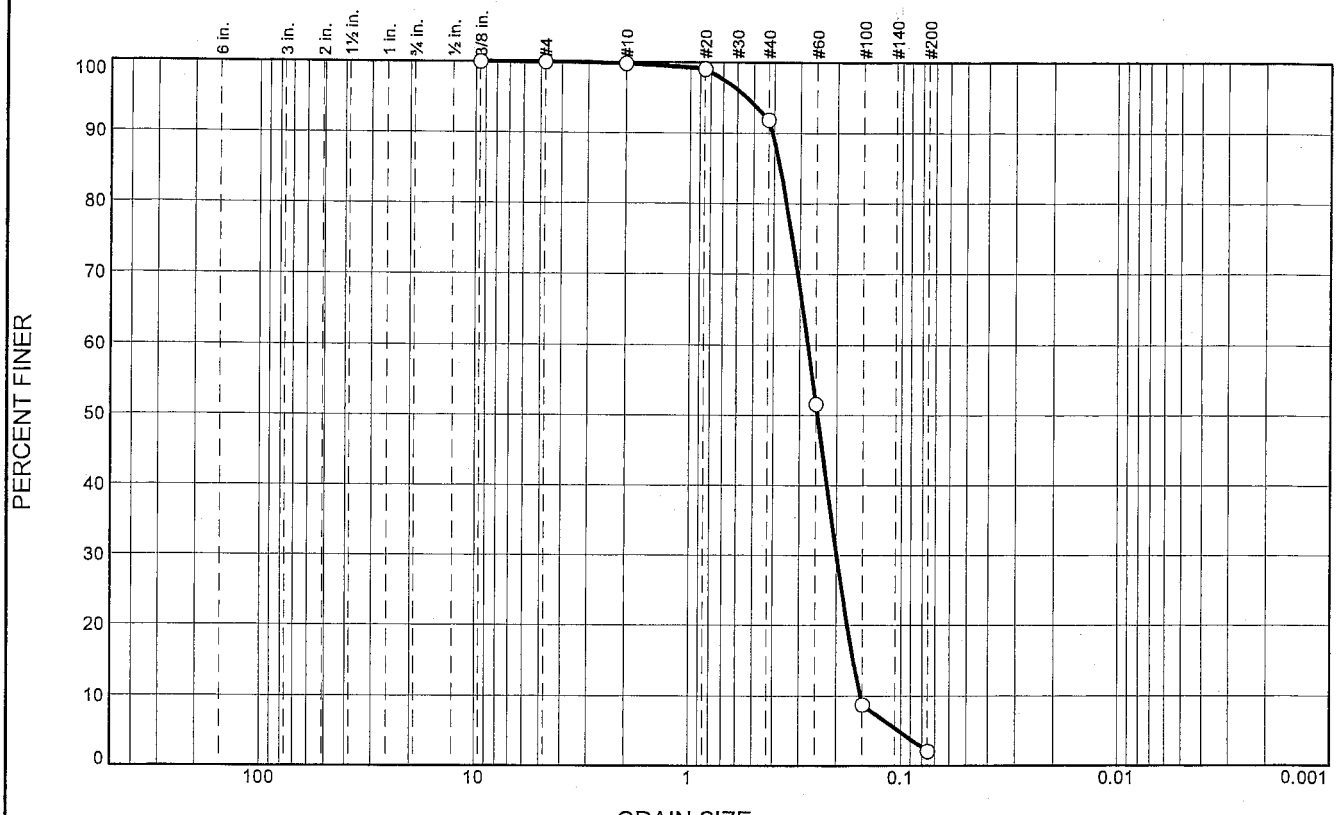
| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -33.3 | 0.0 | | | | |
| -37.3 | 4.0 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.2459 mm % Fines: 2.1 |
| -51.2 | 17.9 | | SAND, clayey, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SC) | NS | |
| | | | NOTES:<br>1. Soils are field visually classified in accordance with the Unified Soils Classification System.<br>2. NS = Sample not submitted for laboratory analysis from this interval.<br>3. Seafloor elevation determined from USACE hydrographic survey completed June 2014. | | |

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19048° Long = -88.54306°**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 7.9 | 89.8 | 2.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.1 | | |
| #40 | 91.9 | | |
| #60 | 51.6 | | |
| #100 | 8.7 | | |
| #200 | 2.1 | | |

* (no specification provided)

**Material Description**

SAND, (SP), fine grained, with clay nodules

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4088 $D_{85}$= 0.3747 $D_{60}$= 0.2735
$D_{50}$= 0.2459 $D_{30}$= 0.1991 $D_{15}$= 0.1658
$D_{10}$= 0.1535 $C_u$= 1.78 $C_c$= 0.94

**Classification**

USCS= SP AASHTO=

**Remarks**

CADD CODE = CH10D965

**Location:** USACE Sample # BI-HP-26-10A
**Sample Number:** TE Lab ID: 4593.58 **Depth:** 0.0 - 4.0 (ft.) **Date:** 7/26/10

**Thompson Engineering**

**Mobile, Alabama**

**Client:** US Army Corps of Engineers
**Project:** Contract No. W91278-10-D-0026 - Task 03
Mississippi Barrier Island Restoration Project
**Project No:** 10-2123-0009 **Report No.**

**Tested By:** G.Fancher **Checked By:** R.Byrd

**Boring Designation BI-HP-27-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-27-12 — LOCATION COORDINATES: E = 1,077,859 N = 253,801 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 29.6 Ft. |
| | 15. DATE BORING — STARTED: 12-04-12 — COMPLETED: 12-04-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.0 | 0.0 | | | | |
| -32.7 | 3.7 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, trace clay nodules, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7.5/2- D50: 0.3309 mm % Fines: 1.6 |
| -35.0 | 6.0 | | SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, little silt, trace shell fragments, little clay stringers, lt gray with gray bands (SP-SM) | B | Classification: SP-SM Color: 2.5Y 7/2-light gray D50: 0.2966 mm % Fines: 7.4 |
| -44.7 | 15.7 | | CLAY, lean, mostly clay, trace shell fragments, gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19757° Long = -88.53702°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-HP-27-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.854

**Longitude** 088 32.221

**Date** 12/04/2012

**Start Time** 13:28:18

**End Time** 13:29:12

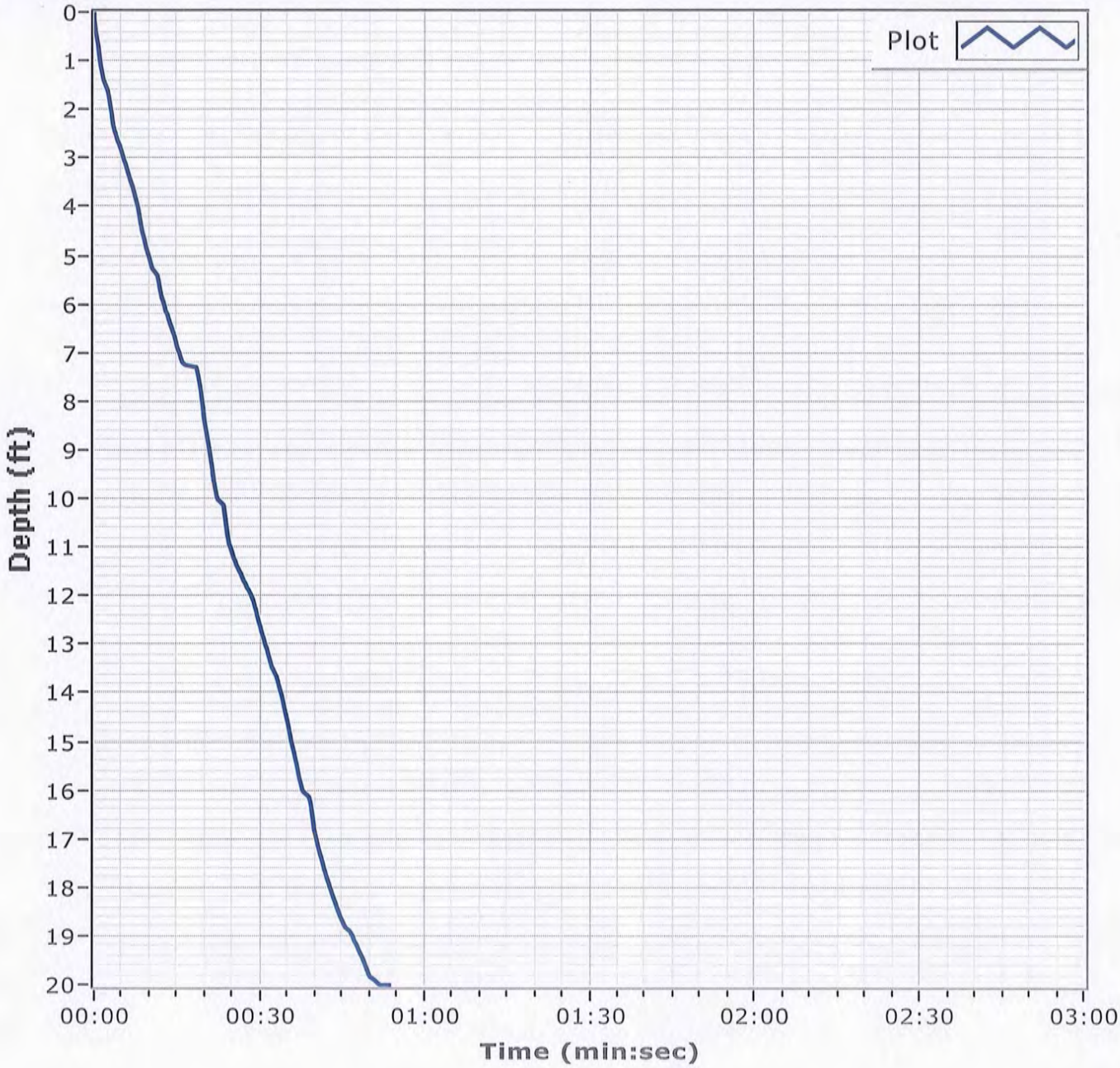
**Total Time** 00:00:54

**Water Depth** 29.6'

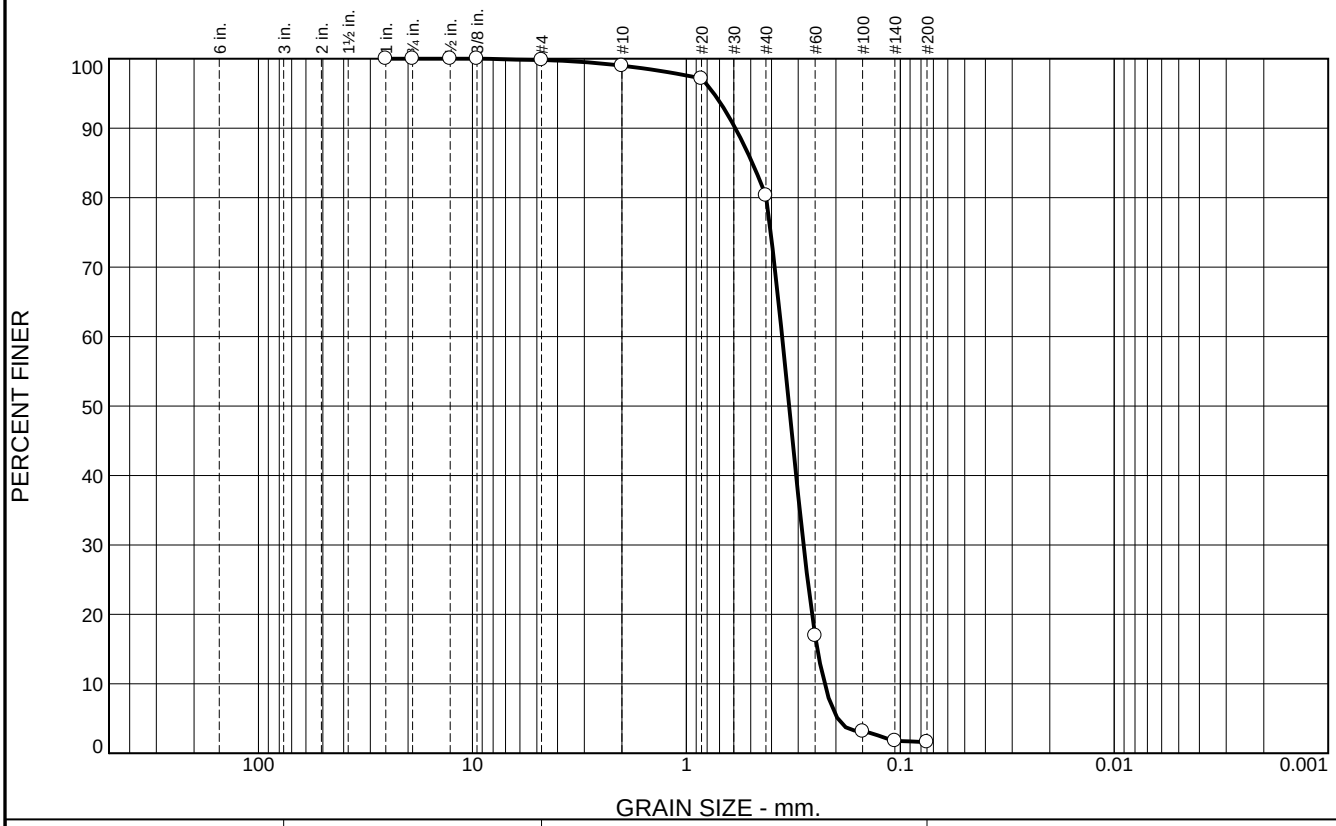
**Penetration** 20.0'

**Recovery** 15.7'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.8 | 18.7 | 78.7 | 1.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.0 | | |
| #20 | 97.2 | | |
| #40 | 80.3 | | |
| #60 | 16.9 | | |
| #100 | 3.2 | | |
| #140 | 1.8 | | |
| #200 | 1.6 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5902 $D_{85}$= 0.4919 $D_{60}$= 0.3567
$D_{50}$= 0.3309 $D_{30}$= 0.2835 $D_{15}$= 0.2441
$D_{10}$= 0.2258 $C_u$= 1.58 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

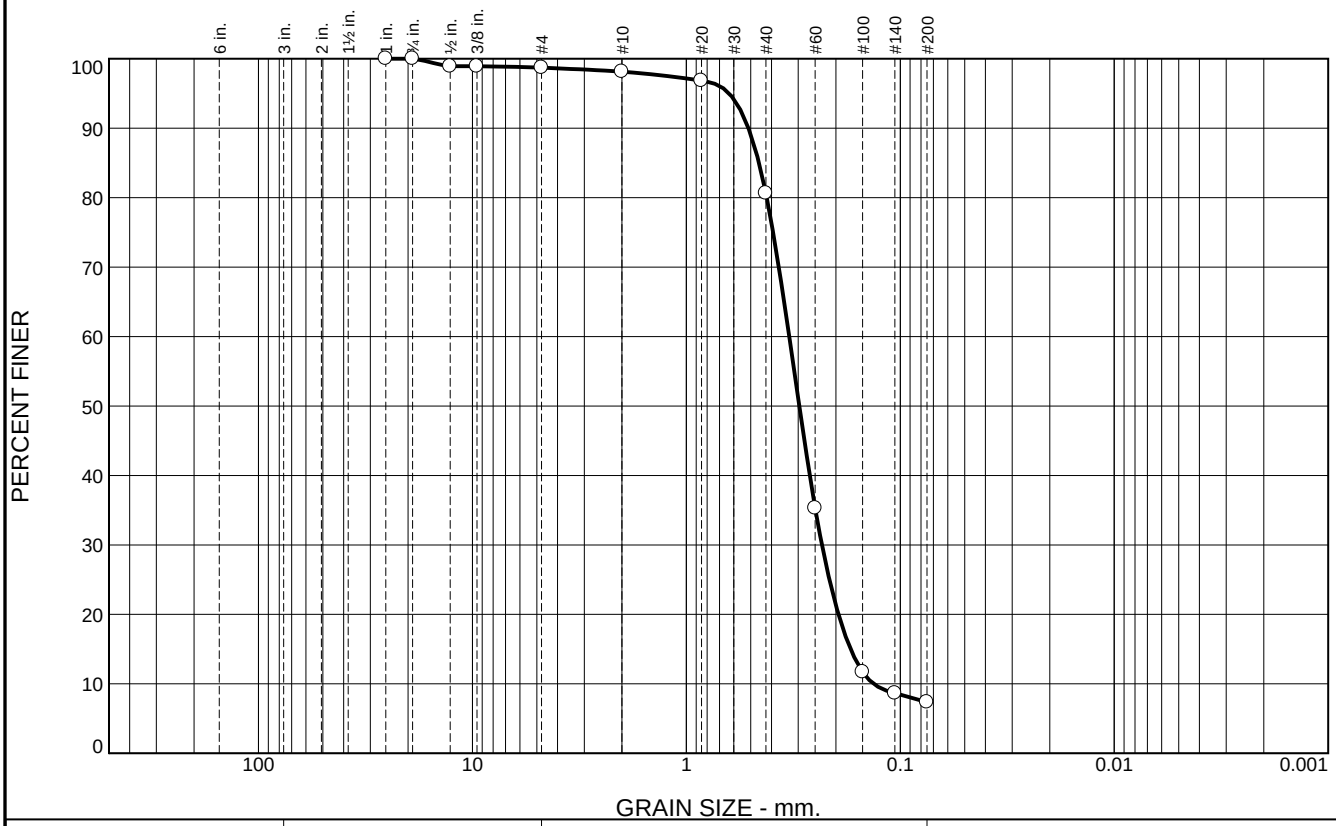
**Location:** BI-HP-27-12 A
**Sample Number:** 6480 (1) **Depth:** 0.0' **Date:** 12/07/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.3 | 0.6 | 17.5 | 73.2 | 7.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 98.9 | | |
| .375 | 98.9 | | |
| #4 | 98.7 | | |
| #10 | 98.1 | | |
| #20 | 96.8 | | |
| #40 | 80.6 | | |
| #60 | 35.3 | | |
| #100 | 11.7 | | |
| #140 | 8.7 | | |
| #200 | 7.4 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SLIGHTLY SILTY SAND, with trace SHELL

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5126 $D_{85}$= 0.4577 $D_{60}$= 0.3305
$D_{50}$= 0.2966 $D_{30}$= 0.2324 $D_{15}$= 0.1709
$D_{10}$= 0.1333 $C_u$= 2.48 $C_c$= 1.23

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

**Location:** BI-HP-27-12 B
**Sample Number:** 6480 (2) **Depth:** 3.7' **Date:** 12/07/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-28-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-28-12 — LOCATION COORDINATES: E = 1,079,508 N = 253,551 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 28.9 Ft. |
| | 15. DATE BORING — STARTED: 12-04-12 — COMPLETED: 12-04-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -30.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 20.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -30.3 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, trace silt, lt. gray to white (SP) | A | Classification: SP Color: 5Y 8/1-white<br>D50: 0.3355 mm % Fines: 1.2 |
| -35.8 | 5.5 | | | NS | |
| -36.6 | 6.3 | | SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace clay nodules, clay lens at 6.2 ft., gray (SP-SM) | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2128 mm % Fines: 4.7 |
| | | | CLAY, lean, mostly clay, some silt, trace shell fragments, gray (CL) | NS | |
| -50.3 | 20.0 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19687° Long = -88.53180°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 1,079,508 Y = 253,551 | ELEVATION TOP OF BORING -30.3 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | hydrographic survey completed June 2014. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19687° Long = -88.53180°

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

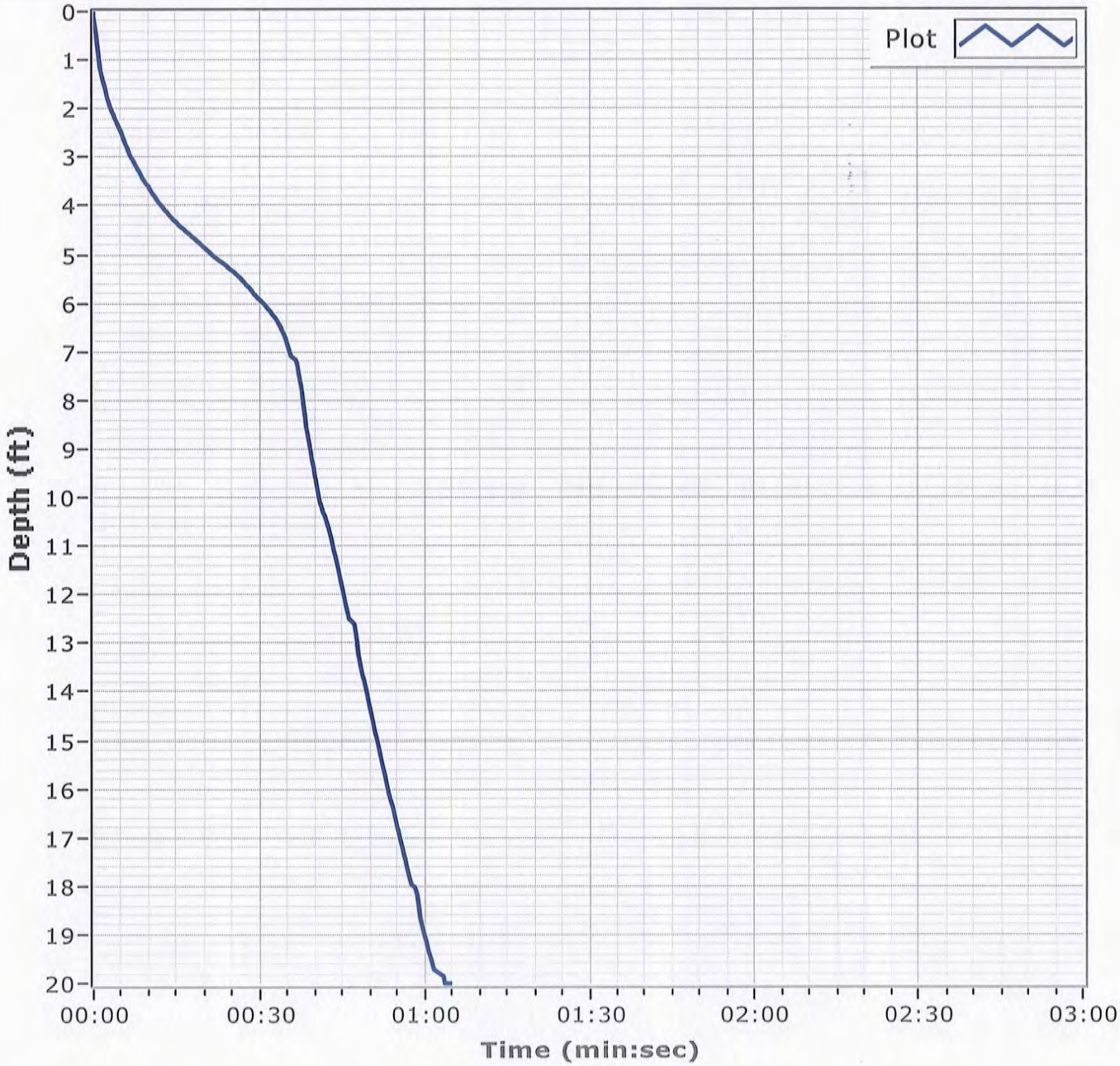
**Core Identifier** BI-HP-28-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.812
**Longitude** 088 31.908

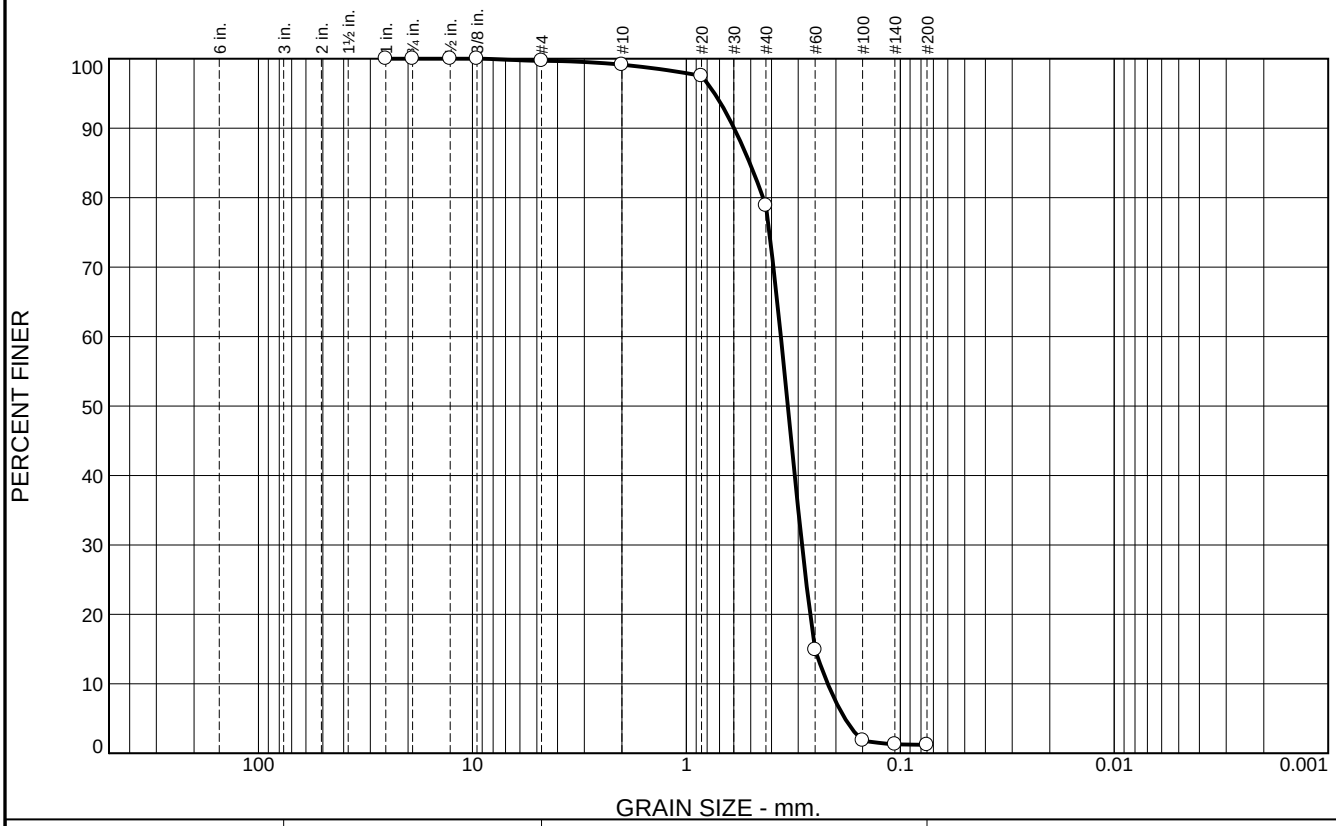
**Date** 12/04/2012
**Start Time** 10:27:43
**End Time** 10:28:48
**Total Time** 00:01:05

**Water Depth** 28.9'
**Penetration** 20.0'
**Recovery** 20.0'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.6 | 20.2 | 77.7 | 1.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.1 | | |
| #20 | 97.5 | | |
| #40 | 78.9 | | |
| #60 | 14.9 | | |
| #100 | 1.8 | | |
| #140 | 1.3 | | |
| #200 | 1.2 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5981 $D_{85}$= 0.5057 $D_{60}$= 0.3616
$D_{50}$= 0.3355 $D_{30}$= 0.2883 $D_{15}$= 0.2503
$D_{10}$= 0.2182 $C_u$= 1.66 $C_c$= 1.05

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-28-12 A
**Sample Number:** 6480 (3) **Depth:** 0.0' **Date:** 12/07/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report

| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 6.1 | 89.2 | 4.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.7 | | |
| #40 | 93.9 | | |
| #60 | 64.8 | | |
| #100 | 19.4 | | |
| #140 | 6.4 | | |
| #200 | 4.7 | | |

* (no specification provided)

**Material Description**

Fine grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3783 $D_{85}$= 0.3380 $D_{60}$= 0.2366
$D_{50}$= 0.2128 $D_{30}$= 0.1721 $D_{15}$= 0.1392
$D_{10}$= 0.1236 $C_u$= 1.91 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-28-12 B
**Sample Number:** 6480 (4) **Depth:** 5.5' **Date:** 12/07/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-29-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-29-12 — LOCATION COORDINATES: E = 1,078,904 N = 252,586 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 32.7 Ft. |
| | 15. DATE BORING — STARTED: 12-04-12 — COMPLETED: 12-04-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -32.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -32.2 | 0.0 | | | | |
| -33.1 | 0.9 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, trace wood debris, gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/2-light gray D50: 0.3244 mm % Fines: 6.7 |
| -35.7 | 3.5 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP) | B | Classification: SP Color: 5Y 7/2-light gray D50: 0.2781 mm % Fines: 1.3 |
| -37.3 | 5.1 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray to pale brown (SP) | C | Classification: SP Color: 2.5Y 7.5/2- D50: 0.2868 mm % Fines: 1.9 |
| -50.7 | 18.5 | | CLAY, lean, mostly fine-grained sand-sized clay, some silt, trace shells, trace shell fragments, alternating sandy clay and clayey sands, gray to brownish gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19422° Long = -88.53372°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

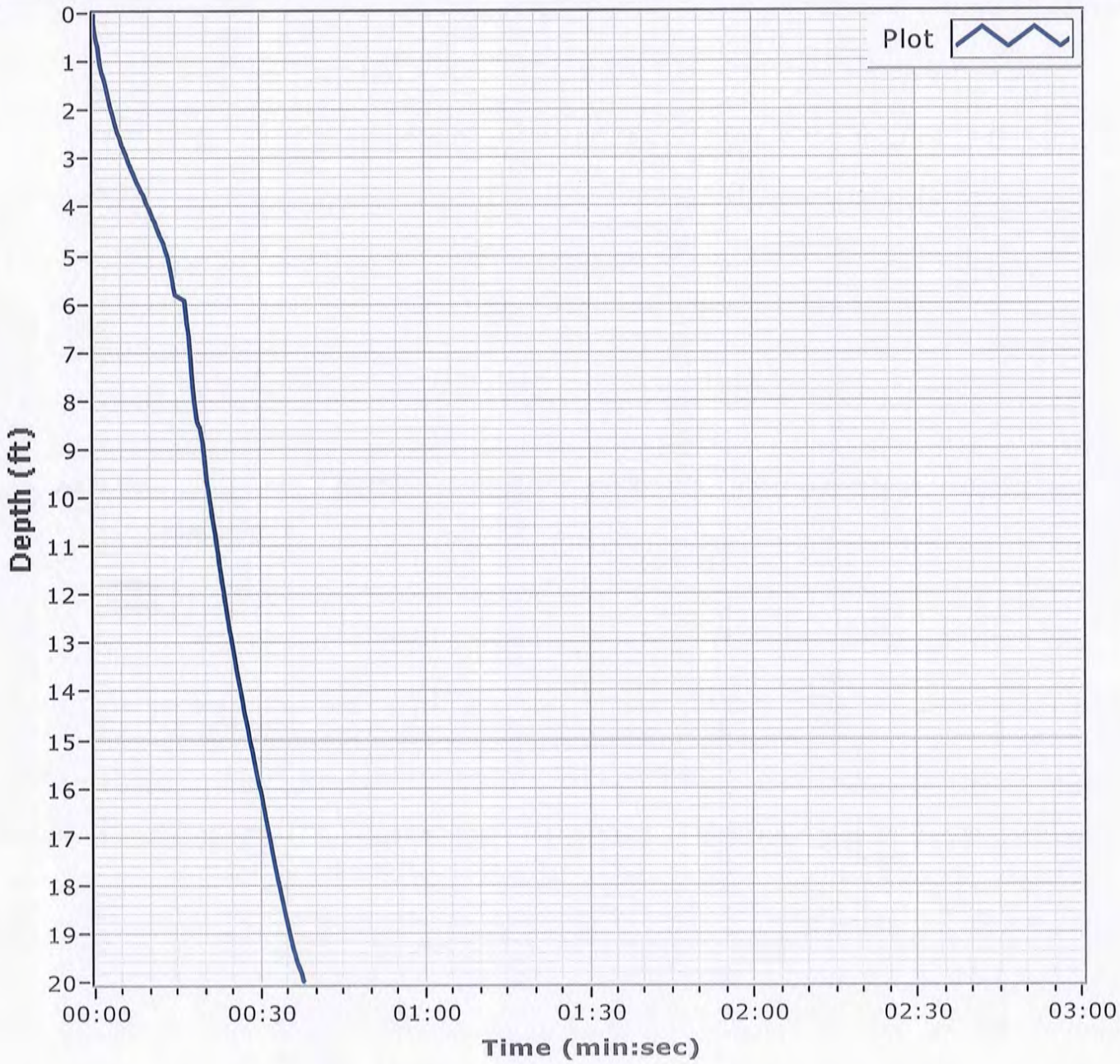
**Core Identifier** BI-HP-29-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.653
**Longitude** 088 32.023

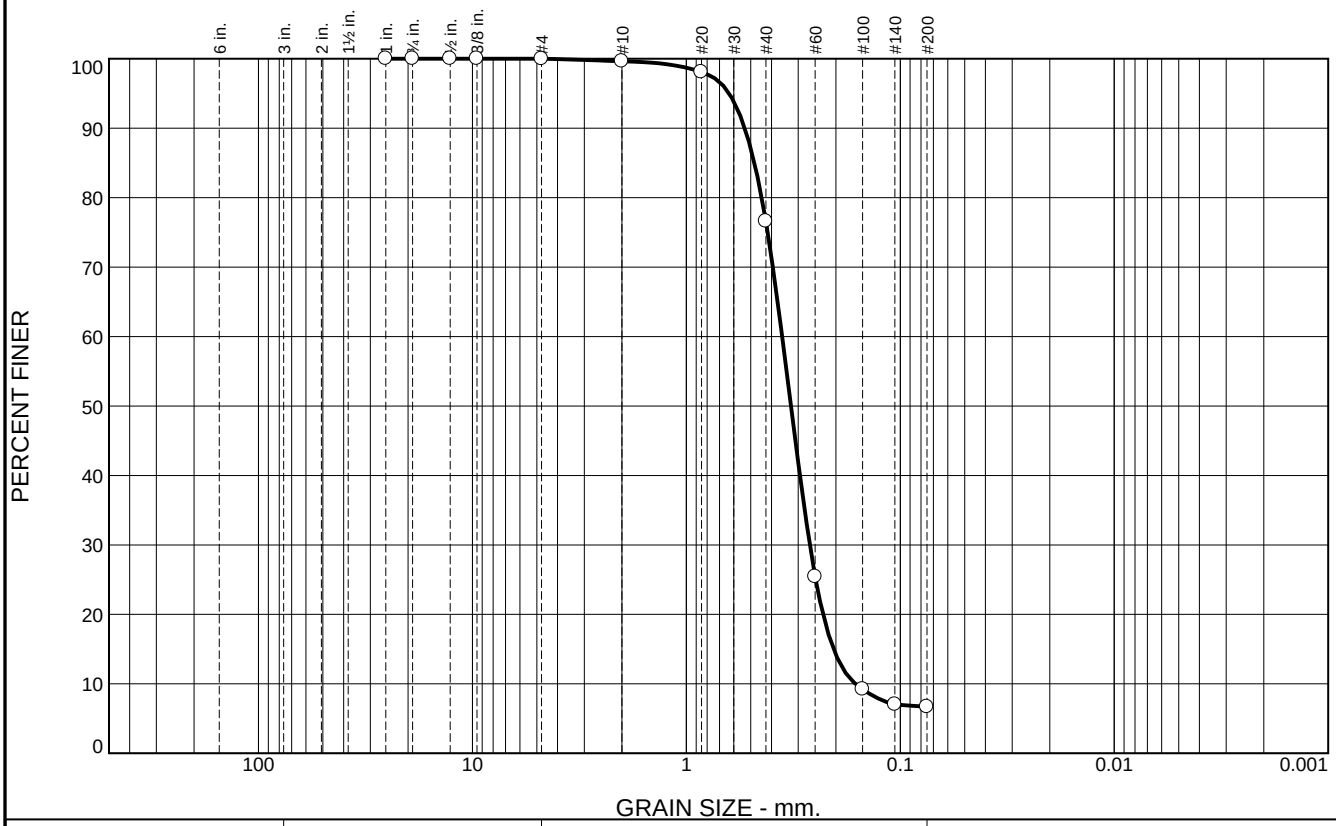
**Date** 12/04/2012
**Start Time** 11:13:56
**End Time** 11:14:34
**Total Time** 00:00:38

**Water Depth** 32.7'
**Penetration** 20.0'
**Recovery** 18.5'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 23.0 | 69.9 | 6.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 98.1 | | |
| #40 | 76.6 | | |
| #60 | 25.4 | | |
| #100 | 9.2 | | |
| #140 | 7.0 | | |
| #200 | 6.7 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SLIGHTLY SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5331 $D_{85}$= 0.4807 $D_{60}$= 0.3565
$D_{50}$= 0.3244 $D_{30}$= 0.2649 $D_{15}$= 0.2051
$D_{10}$= 0.1621 $C_u$= 2.20 $C_c$= 1.21

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

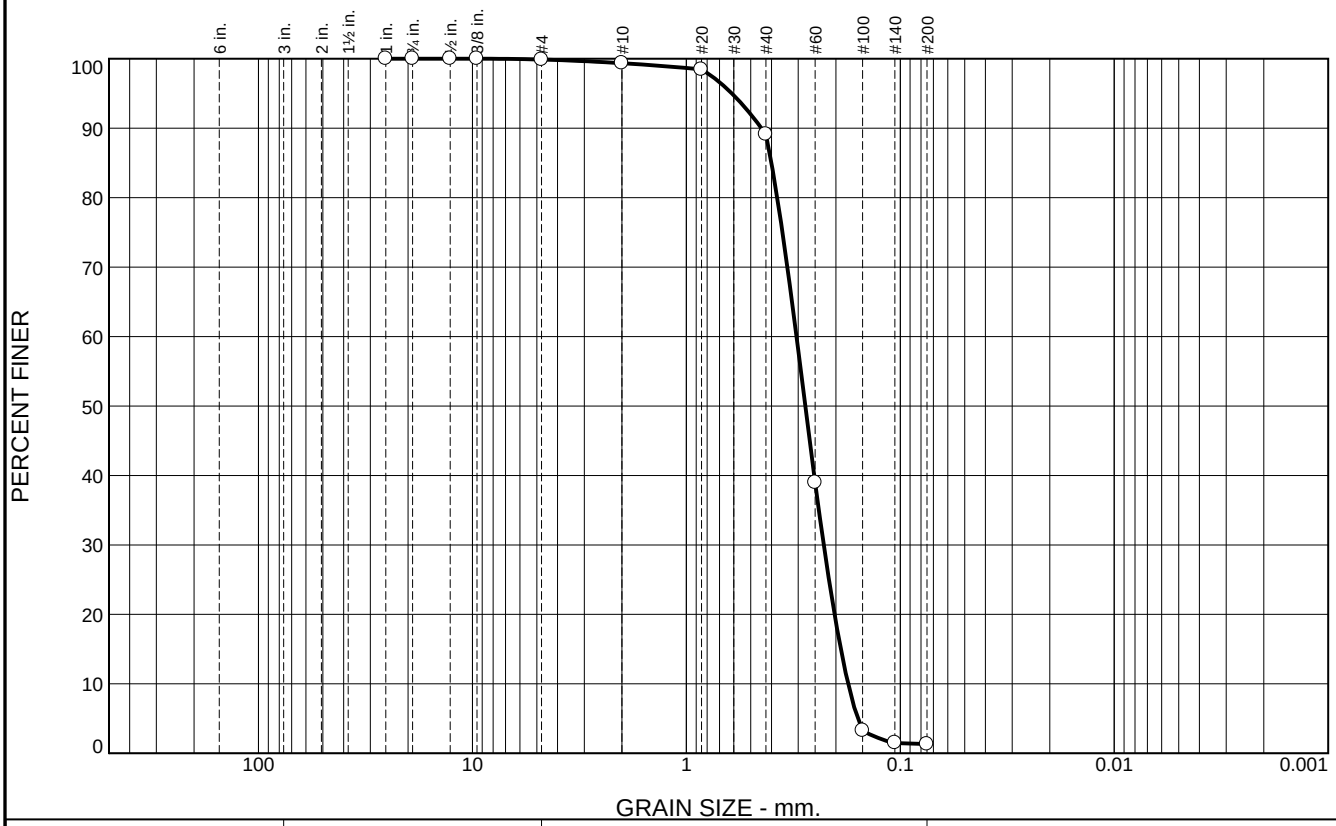
**Location:** BI-HP-29-12 A
**Sample Number:** 6480 (5) **Depth:** 0.0' **Date:** 12/07/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.5 | 10.3 | 87.8 | 1.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.4 | | |
| #20 | 98.5 | | |
| #40 | 89.1 | | |
| #60 | 39.0 | | |
| #100 | 3.3 | | |
| #140 | 1.5 | | |
| #200 | 1.3 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4461 $D_{85}$= 0.4002 $D_{60}$= 0.3057
$D_{50}$= 0.2781 $D_{30}$= 0.2279 $D_{15}$= 0.1898
$D_{10}$= 0.1754 $C_u$= 1.74 $C_c$= 0.97

**Classification**

USCS= SP AASHTO=

**Remarks**

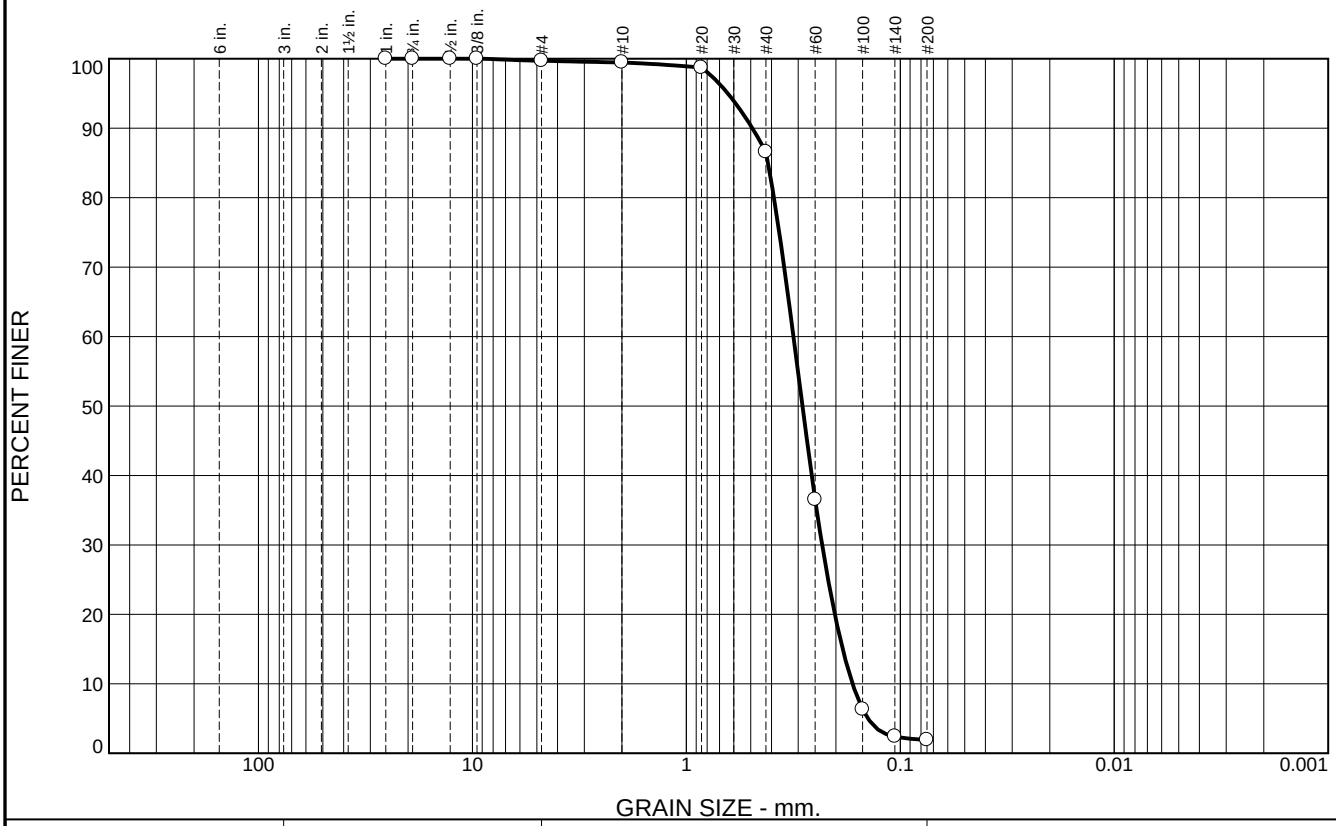
**Location:** BI-HP-29-12 B
**Sample Number:** 6480 (6) **Depth:** 0.9' **Date:** 12/07/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.2 | 12.9 | 84.7 | 1.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.5 | | |
| #20 | 98.7 | | |
| #40 | 86.6 | | |
| #60 | 36.5 | | |
| #100 | 6.3 | | |
| #140 | 2.4 | | |
| #200 | 1.9 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4918 $D_{85}$= 0.4153 $D_{60}$= 0.3159
$D_{50}$= 0.2868 $D_{30}$= 0.2319 $D_{15}$= 0.1860
$D_{10}$= 0.1673 $C_u$= 1.89 $C_c$= 1.02

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-29-12 C
**Sample Number:** 6480 (7) **Depth:** 3.5' **Date:** 12/07/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-30-12**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-30-12 — LOCATION COORDINATES: E = 1,077,662 N = 252,848 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 29.8 Ft. |
| | 15. DATE BORING — STARTED: 12-04-12 — COMPLETED: 12-04-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.2 | 0.0 | | | | |
| -31.6 | 2.4 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, trace wood debris, lt gray with pale brown at 0.7 thru 1.0 ft (SP) | A | Classification: SP Color: 2.5Y 8/1-white<br>D50: 0.3133 mm % Fines: 4.5 |
| -34.6 | 5.4 | | SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, little silt, trace shell fragments, few clay stringers throughout and a clay band at 4.2 ft., gray (SP-SM) | B | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2705 mm % Fines: 3.4 |
| -37.1 | 7.9 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace shell fragments, gray to lt. gray (SP) | C | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3164 mm % Fines: 1.7 |
| -48.2 | 19.0 | | CLAY, lean, mostly clay, trace shells, alternating clay and sandy clay layers, gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19495° Long = -88.53765°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-HP-30-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.697

**Longitude** 088 32.259

**Date** 12/04/2012

**Start Time** 11:59:24

**End Time** 12:01:03

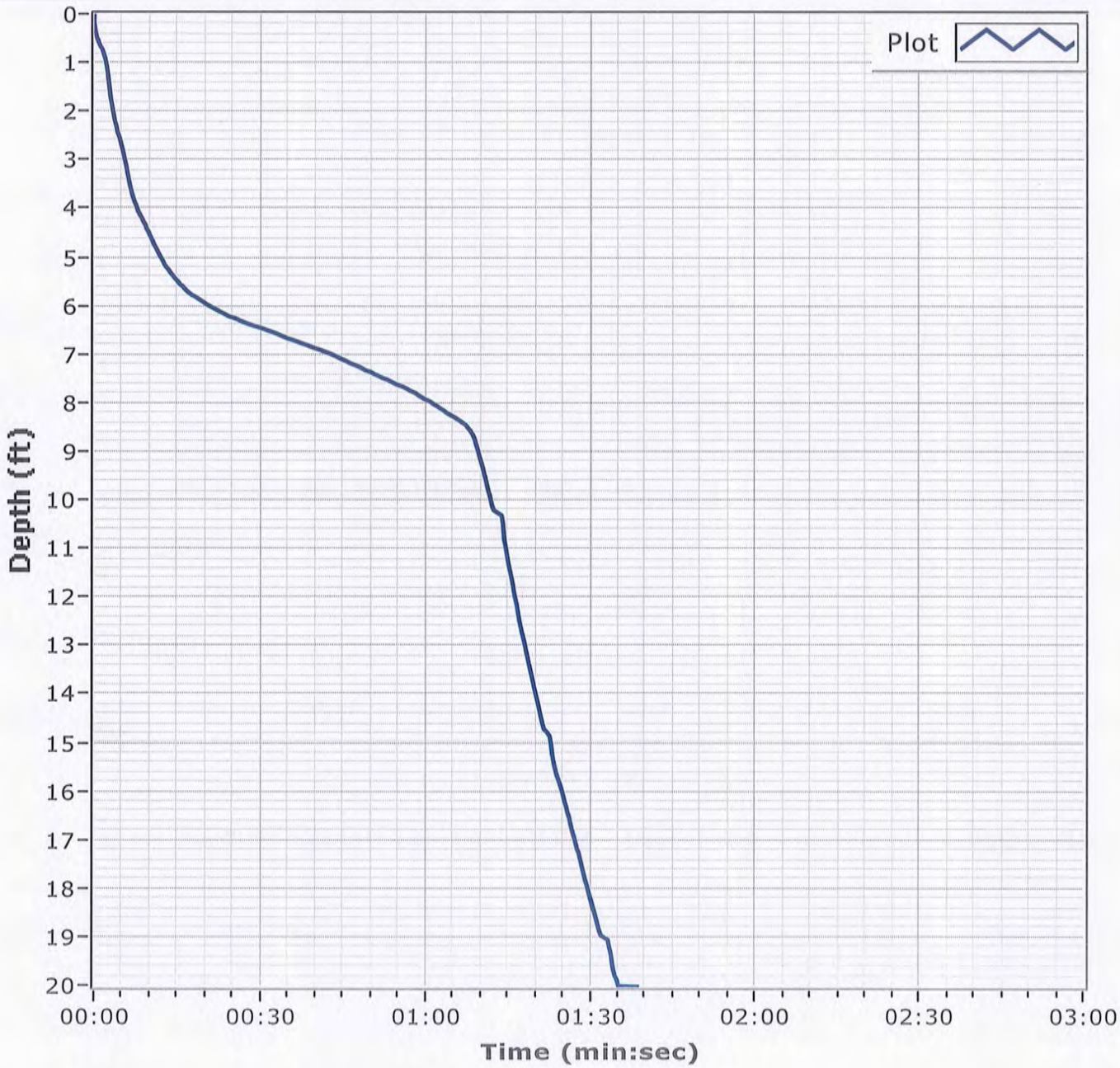
**Total Time** 00:01:39

**Water Depth** 29.8'

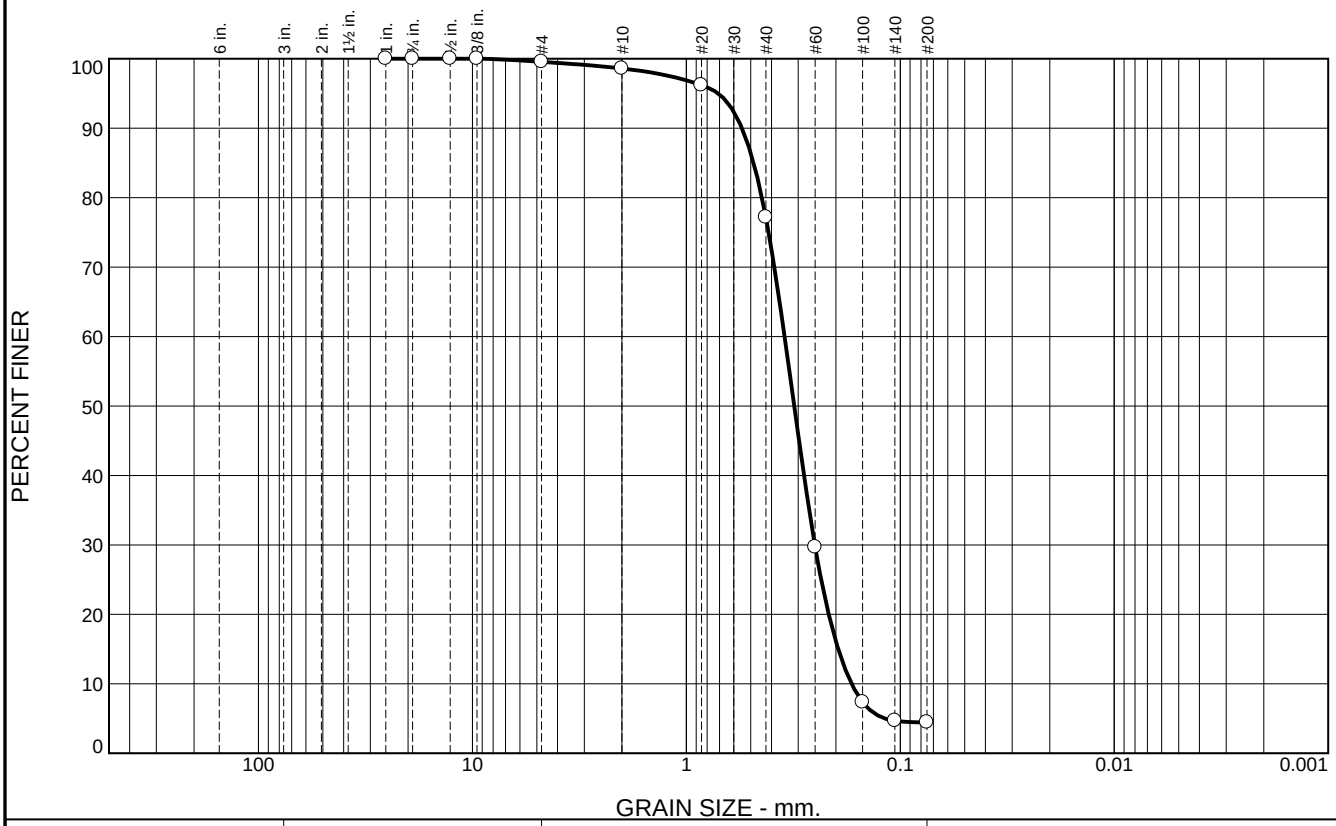
**Penetration** 20.0'

**Recovery** 19.0'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.9 | 21.4 | 72.7 | 4.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 98.6 | | |
| #20 | 96.2 | | |
| #40 | 77.2 | | |
| #60 | 29.7 | | |
| #100 | 7.4 | | |
| #140 | 4.7 | | |
| #200 | 4.5 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5496 $D_{85}$= 0.4849 $D_{60}$= 0.3474
$D_{50}$= 0.3133 $D_{30}$= 0.2510 $D_{15}$= 0.1951
$D_{10}$= 0.1690 $C_u$= 2.06 $C_c$= 1.07

**Classification**

USCS= SP AASHTO=

**Remarks**

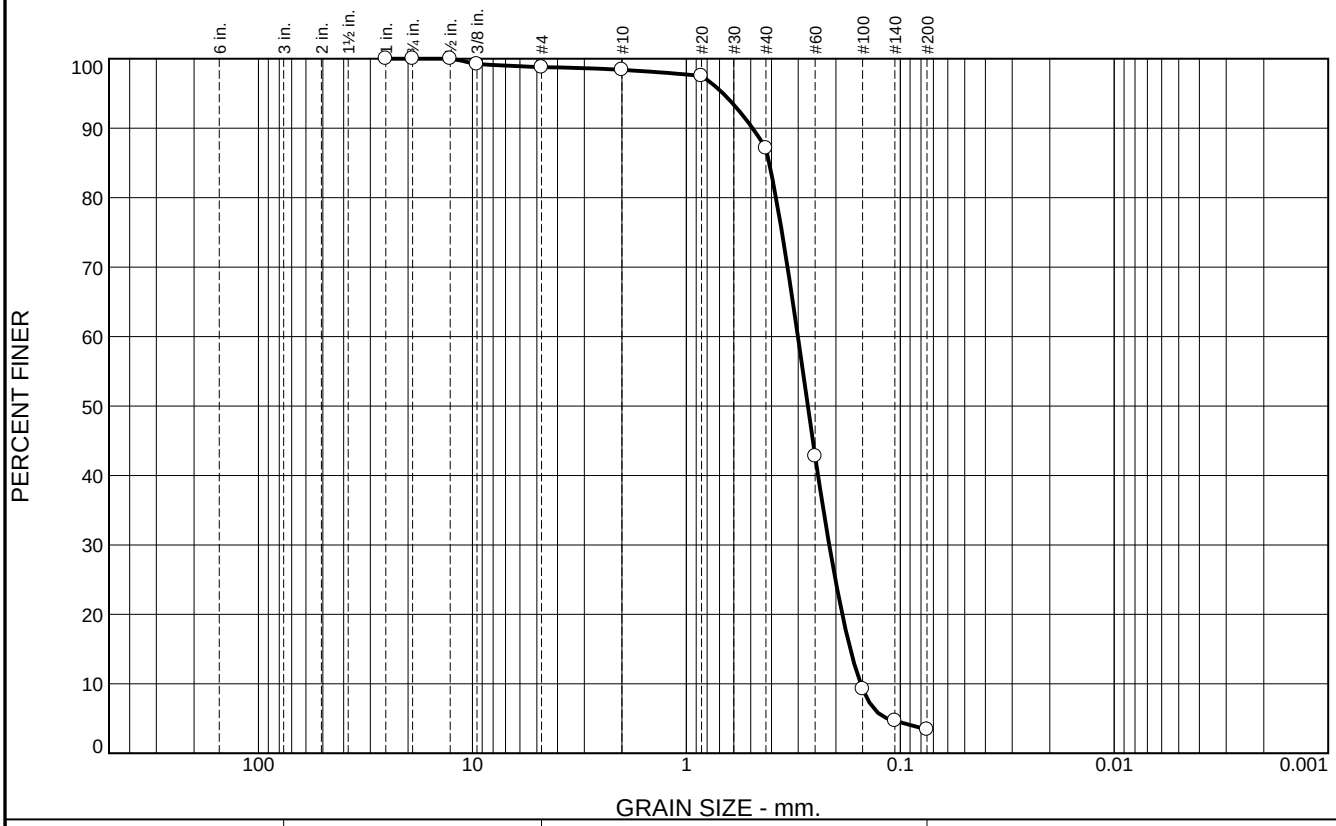
**Location:** BI-HP-30-12 A
**Sample Number:** 6480 (8) **Depth:** 0.0' **Date:** 12/07/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.2 | 0.4 | 11.3 | 83.7 | 3.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 99.2 | | |
| #4 | 98.8 | | |
| #10 | 98.4 | | |
| #20 | 97.5 | | |
| #40 | 87.1 | | |
| #60 | 42.8 | | |
| #100 | 9.3 | | |
| #140 | 4.7 | | |
| #200 | 3.4 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND, with trace SHELL

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4908 $D_{85}$= 0.4100 $D_{60}$= 0.3012
$D_{50}$= 0.2705 $D_{30}$= 0.2149 $D_{15}$= 0.1715
$D_{10}$= 0.1532 $C_u$= 1.97 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

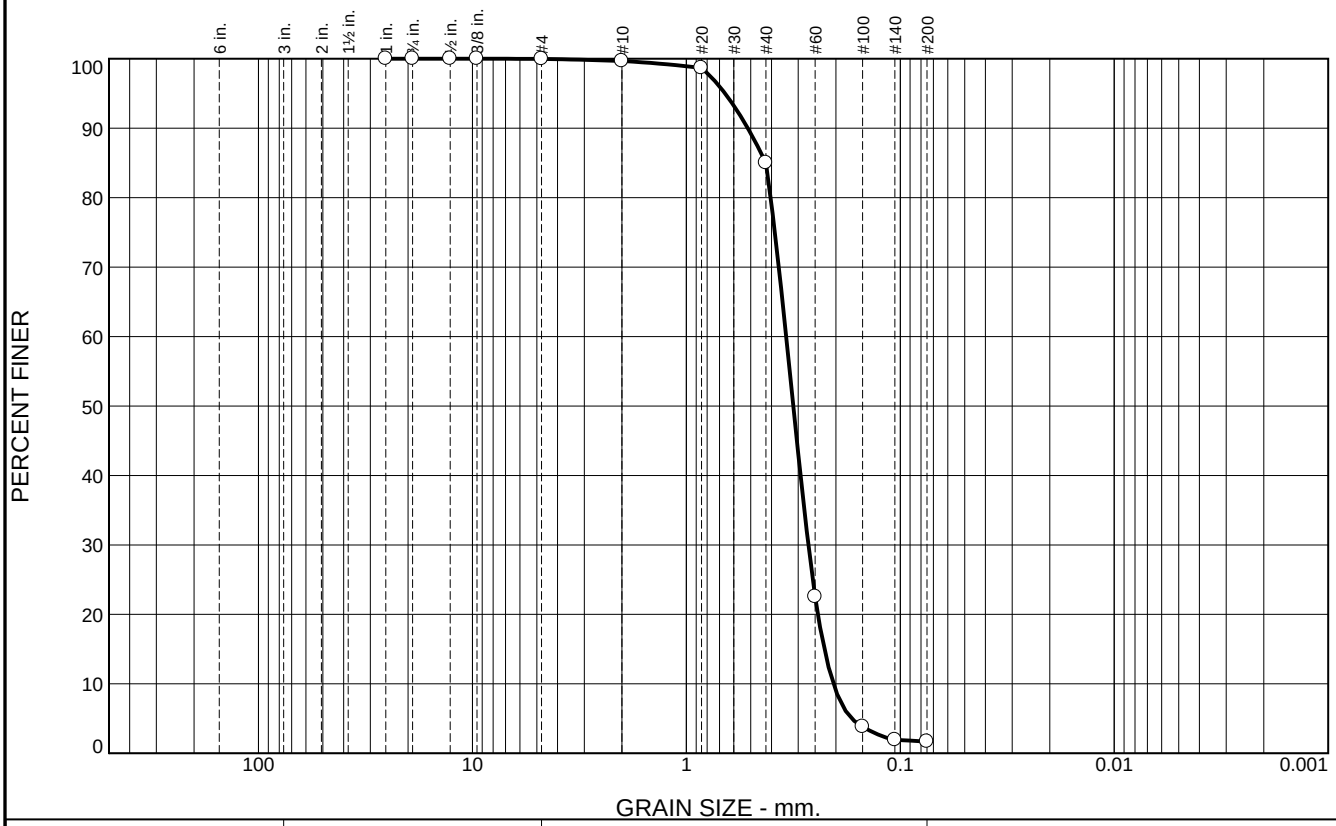
**Location:** BI-HP-30-12 B
**Sample Number:** 6480 (9) **Depth:** 2.4' **Date:** 12/07/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 14.7 | 83.3 | 1.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 98.7 | | |
| #40 | 85.0 | | |
| #60 | 22.6 | | |
| #100 | 3.8 | | |
| #140 | 1.9 | | |
| #200 | 1.7 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5164 $D_{85}$= 0.4251 $D_{60}$= 0.3415
$D_{50}$= 0.3164 $D_{30}$= 0.2691 $D_{15}$= 0.2265
$D_{10}$= 0.2055 $C_u$= 1.66 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-30-12 C
**Sample Number:** 6480 (10) **Depth:** 5.4' **Date:** 12/07/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-31-12**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-31-12 — LOCATION COORDINATES: E = 1,065,036 N = 251,010 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 30.3 Ft. |
| | 15. DATE BORING — STARTED: 12-04-12 — COMPLETED: 12-04-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.1 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 13.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.1 | 0.0 | | | | |
| -29.5 | 0.4 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, lt. brownish gray (SP) | | |
| -30.3 | 1.2 | | CLAY, lean, mostly clay, little silt, little fine-grained sand-sized quartz, trace shell fragments, dark gray (CL) | | |
| -31.7 | 2.6 | | CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace silt, high plasticity, brown, greenish gray, and gray mottle (CH) | | |
| -32.1 | 3.0 | | CLAY, lean, mostly clay, some silt, some fine-grained sand-sized quartz, low to medium plasticity, dark gray (CL) | NS | |
| -32.4 | 3.3 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, brown and gray mottle (SC) | | |
| -32.9 | 3.8 | | CLAY, fat, mostly clay, high plasticity, brown and gray mottle (CH) | | |
| -42.1 | 13.0 | | CLAY, lean, some clay, some fine-grained sand-sized quartz, alternating 0.6 ft.-thick beds of clayey sand and generally clean SP, gray and dark gray (CL) | | |
| | | | At El. -35.1 Ft., mostly clay, some fine-grained sand-sized quartz, some silt, trace shell fragments, low plasticity, dark gray | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18998° Long = -88.57763°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

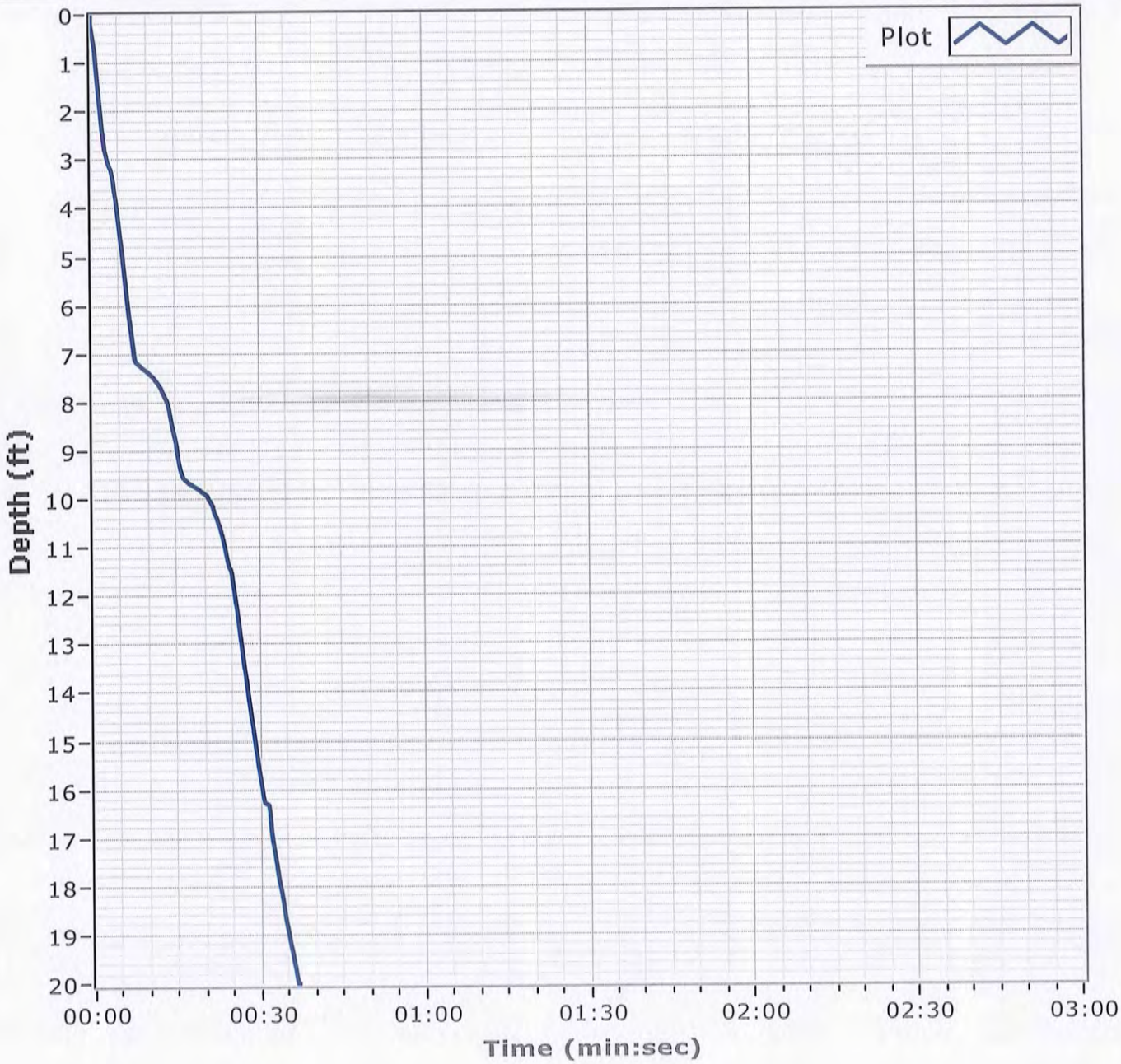
**Core Identifier** BI-HP-31-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.399
**Longitude** 088 34.658

**Date** 12/04/2012
**Start Time** 14:12:54
**End Time** 14:13:32
**Total Time** 00:00:37

**Water Depth** 30.3'
**Penetration** 20.0'
**Recovery** 13.0'

**Comments**



**Boring Designation BI-HP-32-12**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-32-12 — LOCATION COORDINATES: E = 1,064,260 N = 248,724 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 32.3 Ft. |
| | 15. DATE BORING — STARTED: 12-04-12 — COMPLETED: 12-04-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -31.1 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 11.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -31.1 | 0.0 | | | | |
| -32.1 | 1.0 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace shell fragments, lt to dark gray (SP) | NS | |
| -33.2 | 2.1 | | | | |
| -34.1 | 3.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, band of poorly graded sand at 1.7 ft, dark gray (SC) | | |
| | | | CLAY, lean, mostly clay, some fine-grained sand-sized quartz, gray (CL) | | |
| -37.5 | 6.4 | | CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace silt, high plasticity, dark gray (CH) | | |
| -38.3 | 7.2 | | SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, gray (SP-SM) | | |
| -42.1 | 11.0 | | CLAY, lean, mostly clay, little silt, trace fine-grained sand-sized quartz, trace shell fragments, gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18370° Long = -88.58010°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

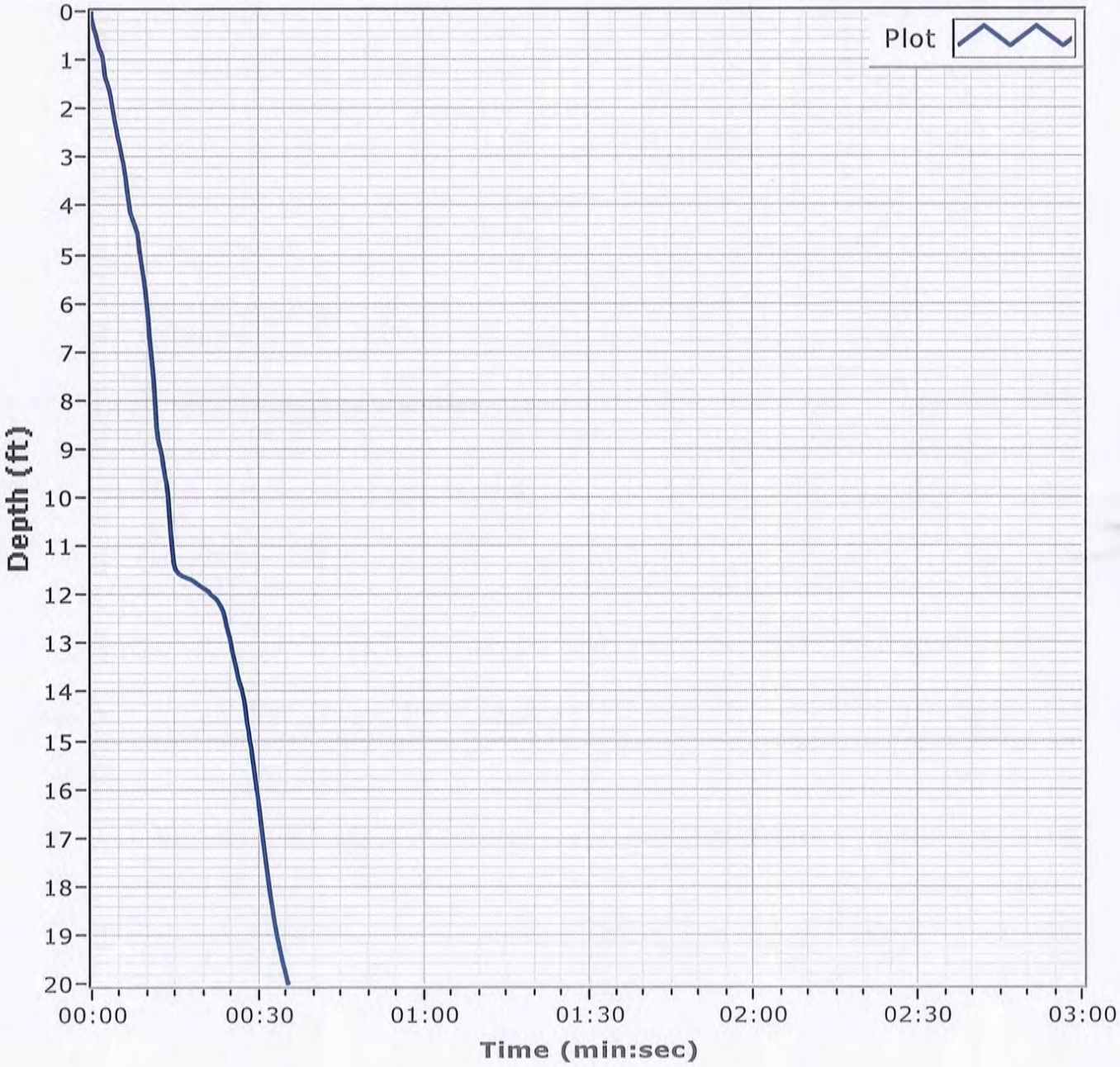
**Core Identifier** BI-HP-32-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.022
**Longitude** 088 34.806

**Date** 12/04/2012
**Start Time** 14:48:06
**End Time** 14:48:42
**Total Time** 00:00:35

**Water Depth** 32.3'
**Penetration** 20.0'
**Recovery** 11.0'

**Comments**



**Boring Designation BI-HP-33-12**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | | | |
|---|---|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Horn Island Pass | | 9. SIZE AND TYPE OF BIT N/A | |
| | | 10. COORDINATE SYSTEM/DATUM<br>State Plane, MSE (U.S. Ft.) | HORIZONTAL<br>NAD83 / VERTICAL<br>NAVD88 |
| 2. BORING DESIGNATION<br>BI-HP-33-12 | LOCATION COORDINATES<br>E = 1,062,259 N = 249,484 | 11. MANUFACTURER'S DESIGNATION OF DRILL<br>Vibracore | ☐ AUTO HAMMER<br>☐ MANUAL HAMMER |
| 3. DRILLING AGENCY<br>Corps of Engineers - CESAM | CONTRACTOR FILE NO. | 12. TOTAL SAMPLES | DISTURBED / UNDISTURBED (UD)<br>0 |
| 4. NAME OF DRILLER<br>American Vibracore Systems, Inc. | | 13. TOTAL NUMBER CORE BOXES | |
| 5. DIRECTION OF BORING<br>☒ VERTICAL<br>☐ INCLINED | DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 31.7 Ft. | |
| | | 15. DATE BORING | STARTED 12-04-12 / COMPLETED 12-04-12 |
| 6. THICKNESS OF OVERBURDEN N/A | | 16. ELEVATION TOP OF BORING -30.4 Ft. | |
| 7. DEPTH DRILLED INTO ROCK N/A | | 17. TOTAL RECOVERY FOR BORING 100% | |
| 8. TOTAL DEPTH OF BORING 10.7 Ft. | | 18. SIGNATURE AND TITLE OF INSPECTOR<br>Mike FitzHarris, Geologist | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -30.4 | 0.0 | | | | |
| -32.6 | 2.2 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace clay, lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2133 mm % Fines: 2.1 |
| -33.5 | 3.1 | | SILT, inorganic-L, mostly silt, some clay, dark gray (ML) | | |
| -41.1 | 10.7 | | CLAY, lean, mostly clay, some fine-grained sand-sized quartz, trace shell fragments, sandy clay/clayey sand strata, dark gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18580° Long = -88.58643°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-HP-33-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.148

**Longitude** 088 35.186

**Date** 12/04/2012

**Start Time** 15:24:42

**End Time** 15:25:43

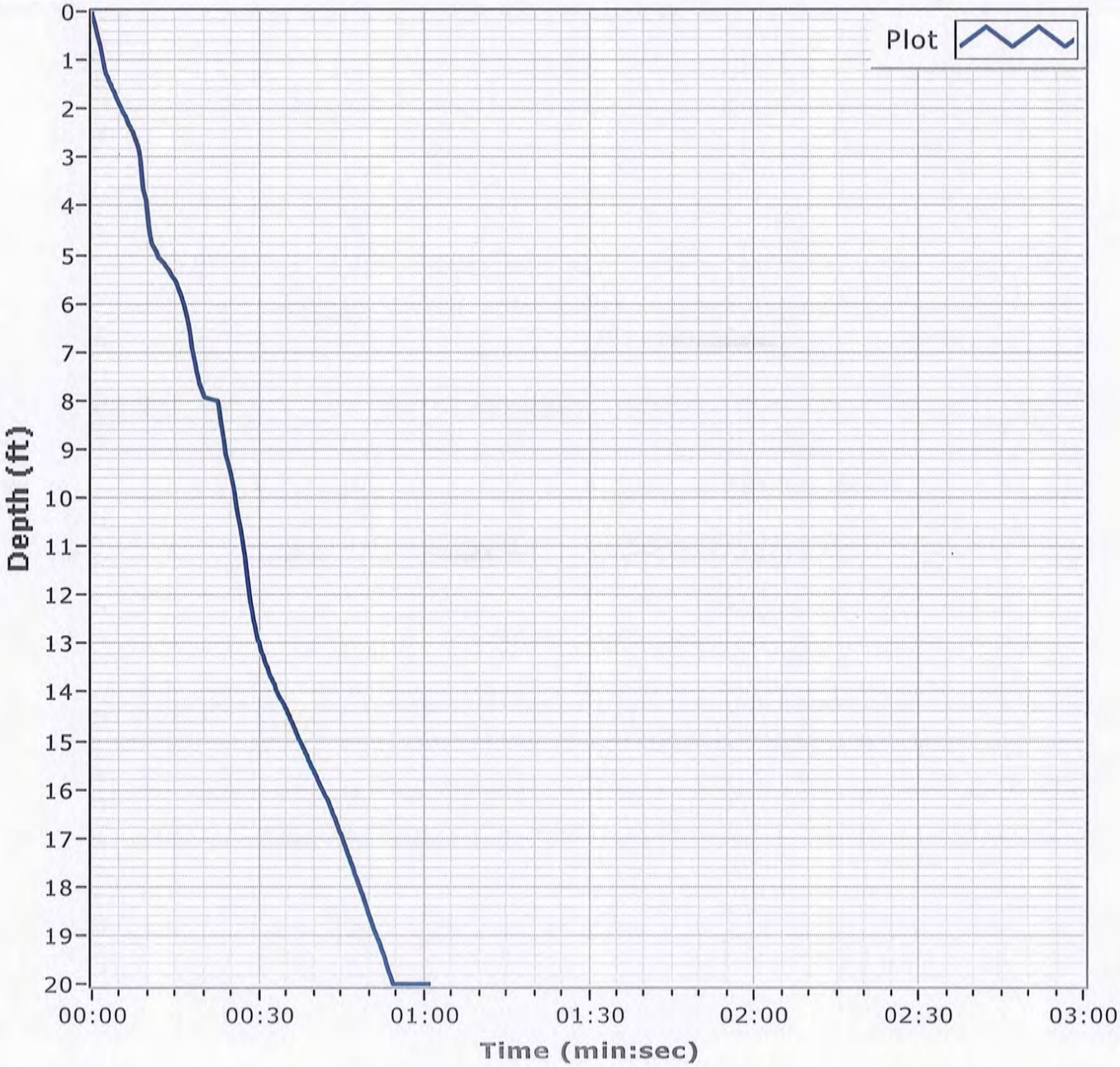
**Total Time** 00:01:01

**Water Depth** 31.7

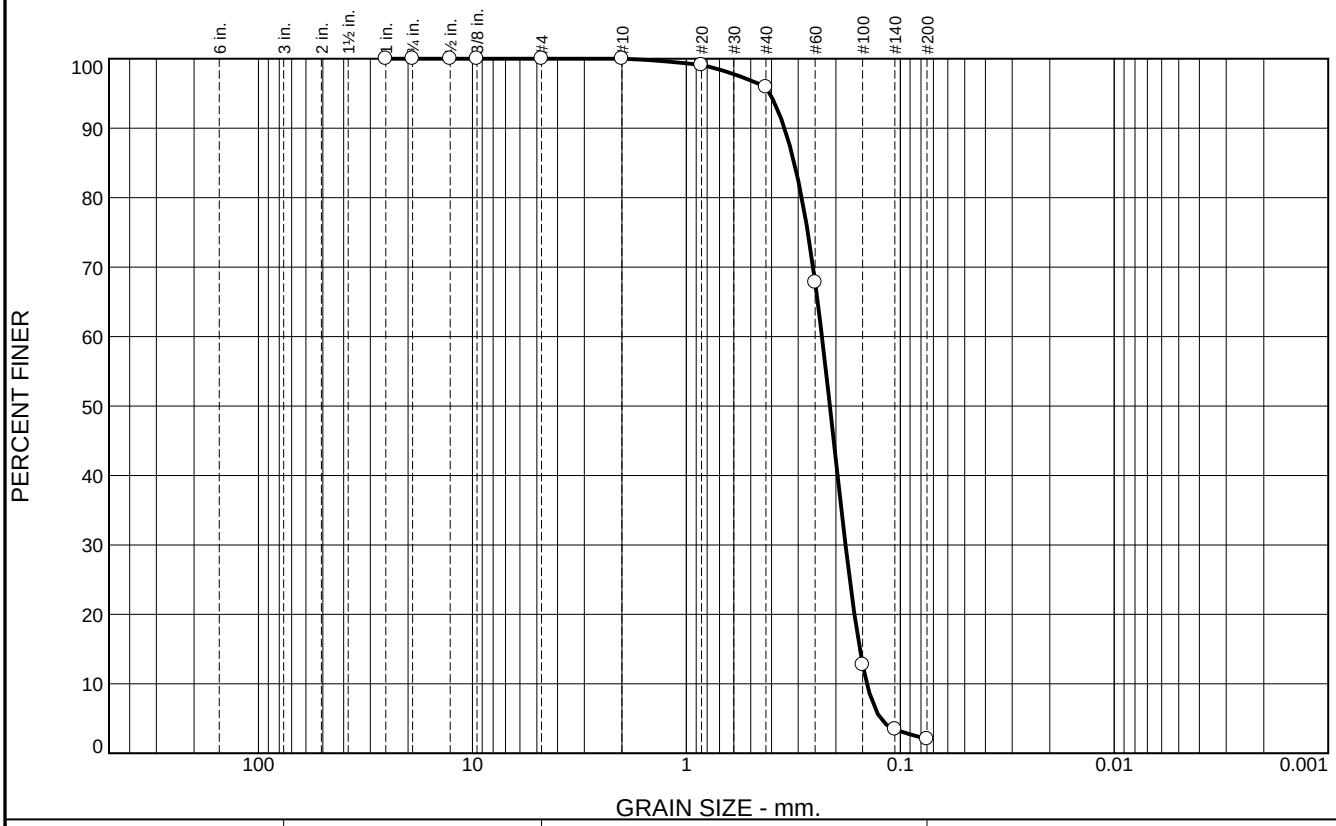
**Penetration** 20.0'

**Recovery** 10.7'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 4.1 | 93.8 | 2.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.1 | | |
| #40 | 95.9 | | |
| #60 | 67.8 | | |
| #100 | 12.7 | | |
| #140 | 3.5 | | |
| #200 | 2.1 | | |

* (no specification provided)

**Material Description**

Fine grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3476 $D_{85}$= 0.3132 $D_{60}$= 0.2323
$D_{50}$= 0.2133 $D_{30}$= 0.1804 $D_{15}$= 0.1547
$D_{10}$= 0.1433 $C_u$= 1.62 $C_c$= 0.98

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-33-12 A
**Sample Number:** 6480 (11) **Depth:** 0.0' **Date:** 12/07/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-34-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-34-12 — LOCATION COORDINATES: E = 1,072,199 N = 251,954 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 30.1 Ft. |
| | 15. DATE BORING — STARTED: 12-21-12 — COMPLETED: 12-21-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -30.1 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -30.1 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, clay ban at 7.9 ft., lt. pale brown to lt. gray (SP) | A | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.3284 mm % Fines: 0.7 |
| | | | | B | Classification: SP Color: 5Y 7/2-light gray<br>D50: 0.2909 mm % Fines: 2.9 |
| -40.8 | 10.7 | | | C | Classification: SP Color: 5Y 6/2-light olive gray<br>D50: 0.2948 mm % Fines: 1.8 |
| -49.6 | 19.5 | | SILT, inorganic-L, mostly silt, some clay, few fine-grained sand-sized quartz, few shell fragments, soft, dark gray (ML) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19253° Long = -88.55495°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

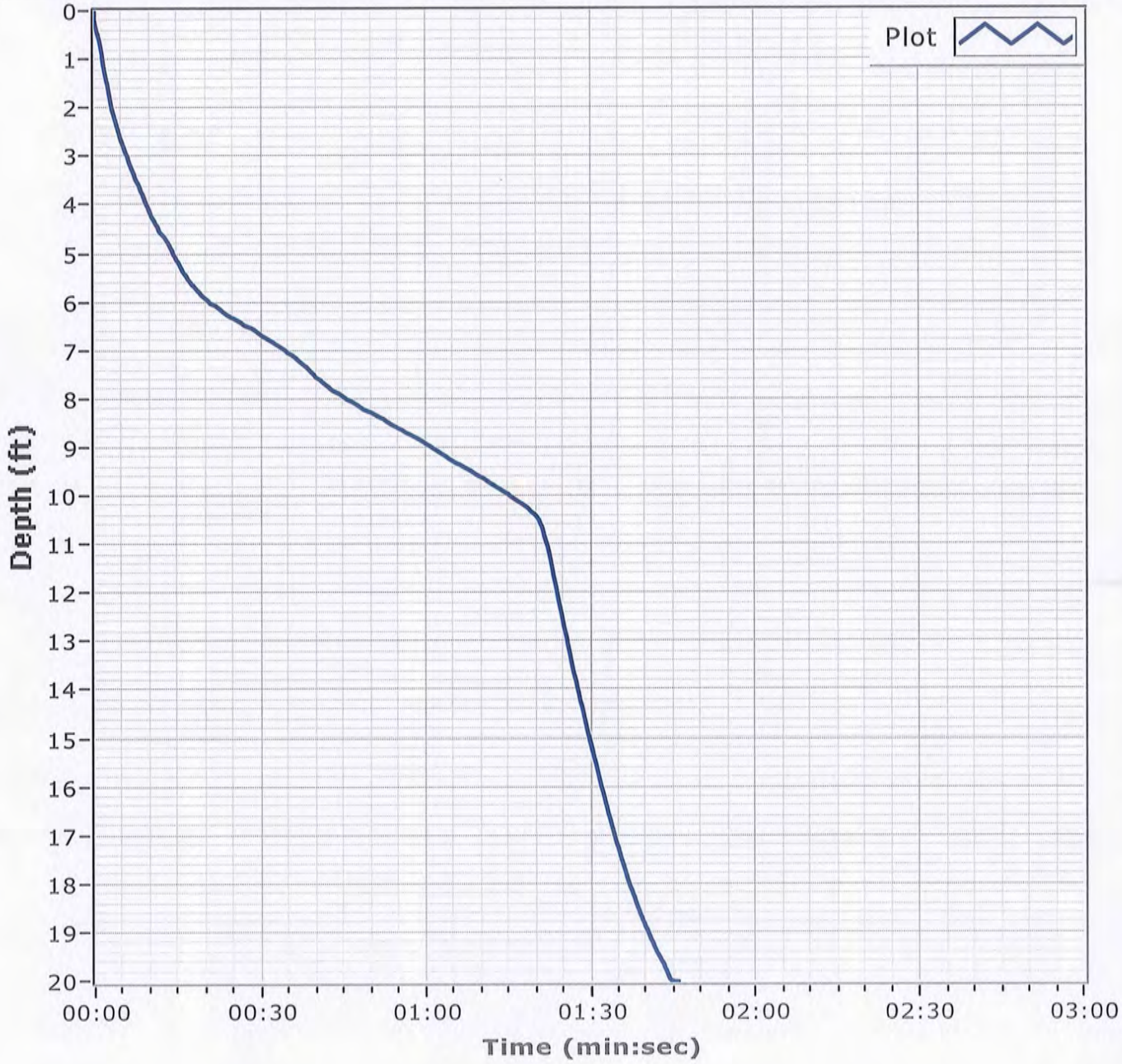
**Core Identifier** BI-HP-34-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.552 N
**Longitude** 088 33.297 W

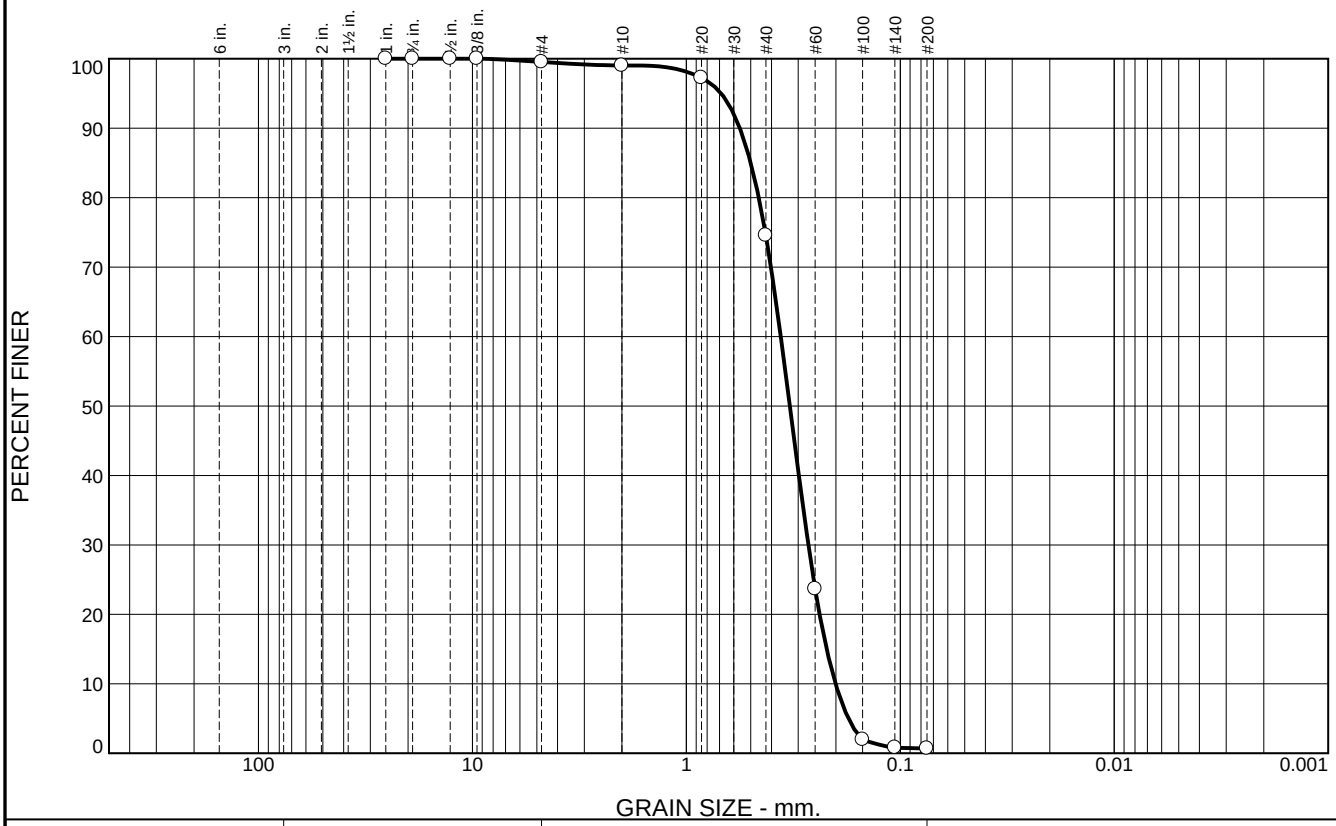
**Date** 12/21/2012
**Start Time** 15:28:34
**End Time** 15:30:20
**Total Time** 00:01:46

**Water Depth** 30.1'
**Penetration** 20.0'
**Recovery** 19.5'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.5 | 24.4 | 73.9 | 0.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 99.0 | | |
| #20 | 97.2 | | |
| #40 | 74.6 | | |
| #60 | 23.6 | | |
| #100 | 2.0 | | |
| #140 | 0.8 | | |
| #200 | 0.7 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5621 $D_{85}$= 0.5002 $D_{60}$= 0.3620
$D_{50}$= 0.3284 $D_{30}$= 0.2690 $D_{15}$= 0.2209
$D_{10}$= 0.2007 $C_u$= 1.80 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

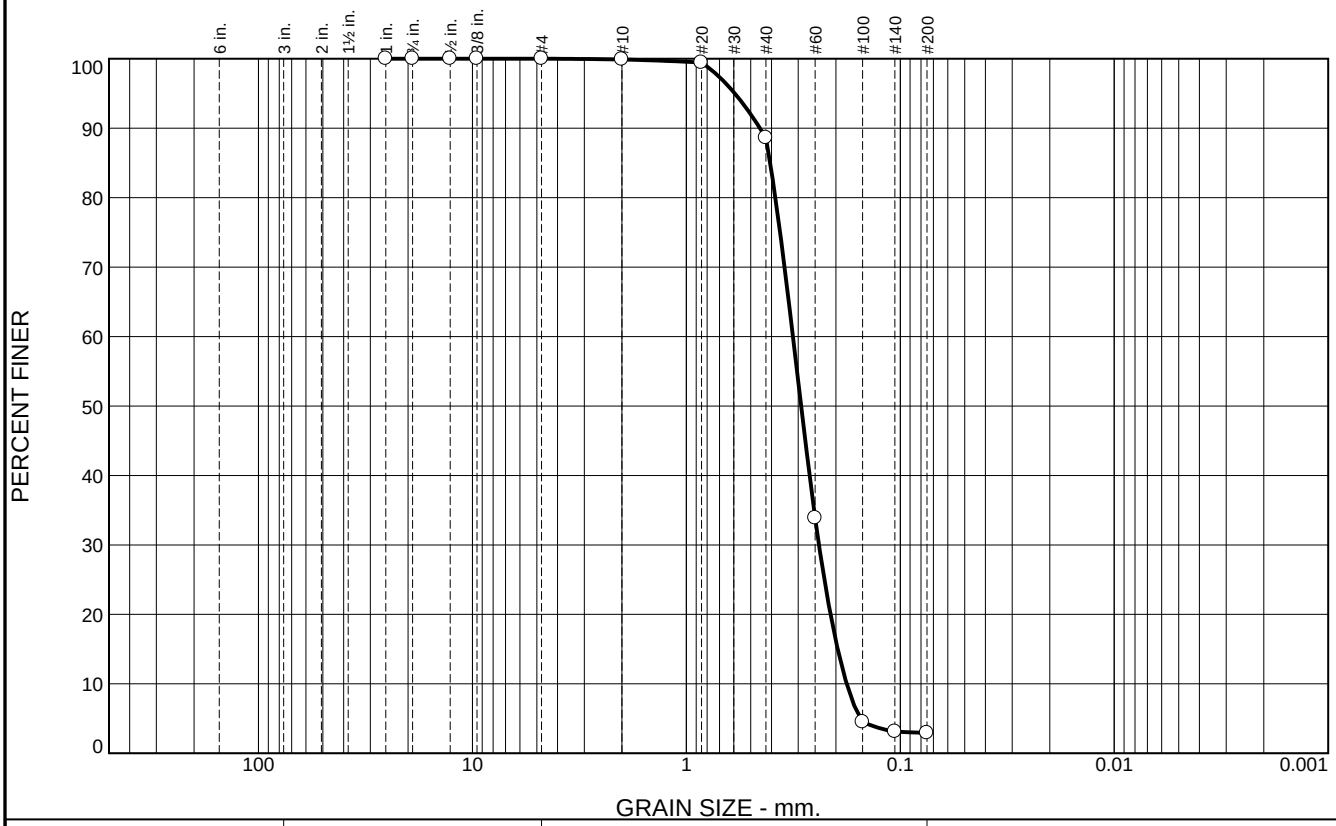
**Location:** BI-HP-34-12 A
**Sample Number:** 6495 (1) **Depth:** 0.0' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 11.3 | 85.7 | 2.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.4 | | |
| #40 | 88.6 | | |
| #60 | 33.9 | | |
| #100 | 4.5 | | |
| #140 | 3.1 | | |
| #200 | 2.9 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4531 $D_{85}$= 0.4057 $D_{60}$= 0.3176
$D_{50}$= 0.2909 $D_{30}$= 0.2399 $D_{15}$= 0.1963
$D_{10}$= 0.1782 $C_u$= 1.78 $C_c$= 1.02

**Classification**

USCS= SP AASHTO=

**Remarks**

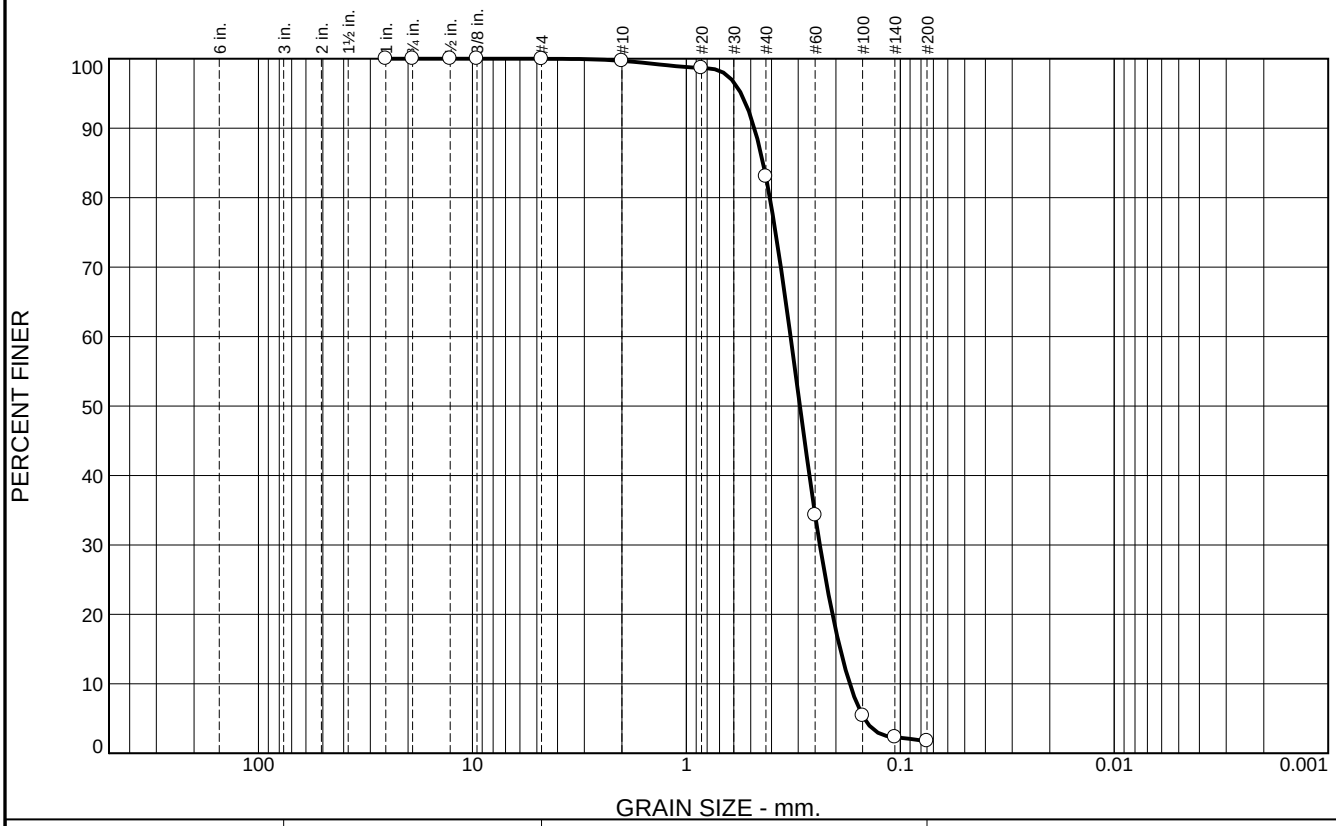
**Location:** BI-HP-34-12 B
**Sample Number:** 6495 (2) **Depth:** 4.5' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 16.6 | 81.3 | 1.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 98.7 | | |
| #40 | 83.1 | | |
| #60 | 34.3 | | |
| #100 | 5.4 | | |
| #140 | 2.3 | | |
| #200 | 1.8 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4809 $D_{85}$= 0.4379 $D_{60}$= 0.3258
$D_{50}$= 0.2948 $D_{30}$= 0.2377 $D_{15}$= 0.1910
$D_{10}$= 0.1724 $C_u$= 1.89 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-34-12 C
**Sample Number:** 6495 (3) **Depth:** 9.5' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-36-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-36-12 — LOCATION COORDINATES: E = 1,080,857 N = 255,020 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 19.8 Ft. |
| | 15. DATE BORING — STARTED: 12-21-12 — COMPLETED: 12-21-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -19.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 18.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -19.2 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray (SP) | A | Classification: SP Color: 5Y 7/2-light gray<br>D50: 0.2577 mm % Fines: 1.6 |
| | | | | B | Classification: SP Color: 5Y 7/1-light gray<br>D50: 0.2099 mm % Fines: 1.7 |
| -31.0 | 11.8 | | | C | Classification: SP Color: 5Y 6/2-light olive gray<br>D50: 0.2072 mm % Fines: 2.5 |
| -38.0 | 18.8 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, few clay bands and few pockets of poorly graded sand (SP) throughout interval, silt content increases with depth, gray to dark gray (SM) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.20090° Long = -88.52752°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-HP-36-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 12.054 N

**Longitude** 88 31.651 W

**Date** 12/21/2012

**Start Time** 14:14:41

**End Time** 14:16:43

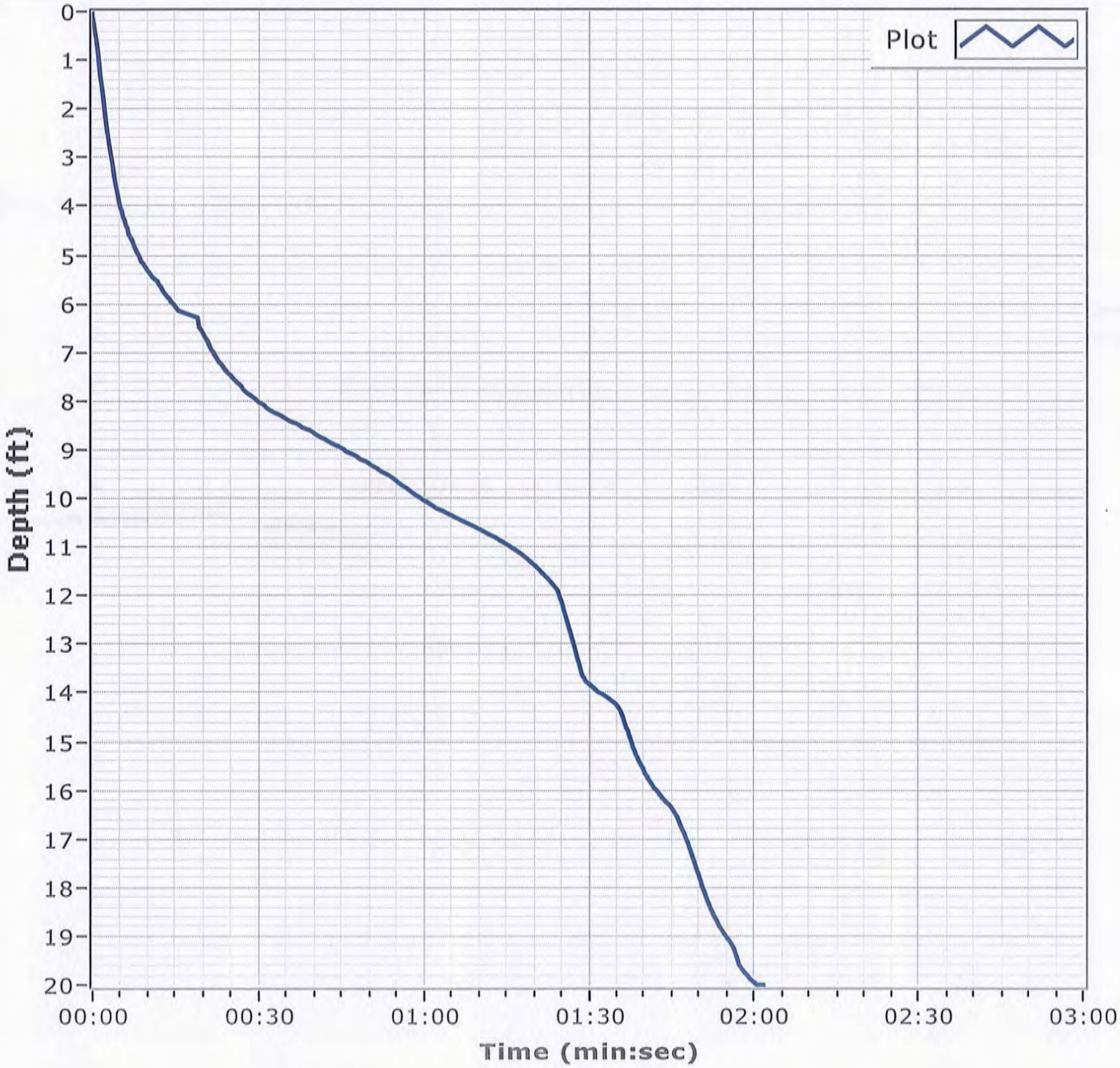
**Total Time** 00:02:02

**Water Depth** 19.8'

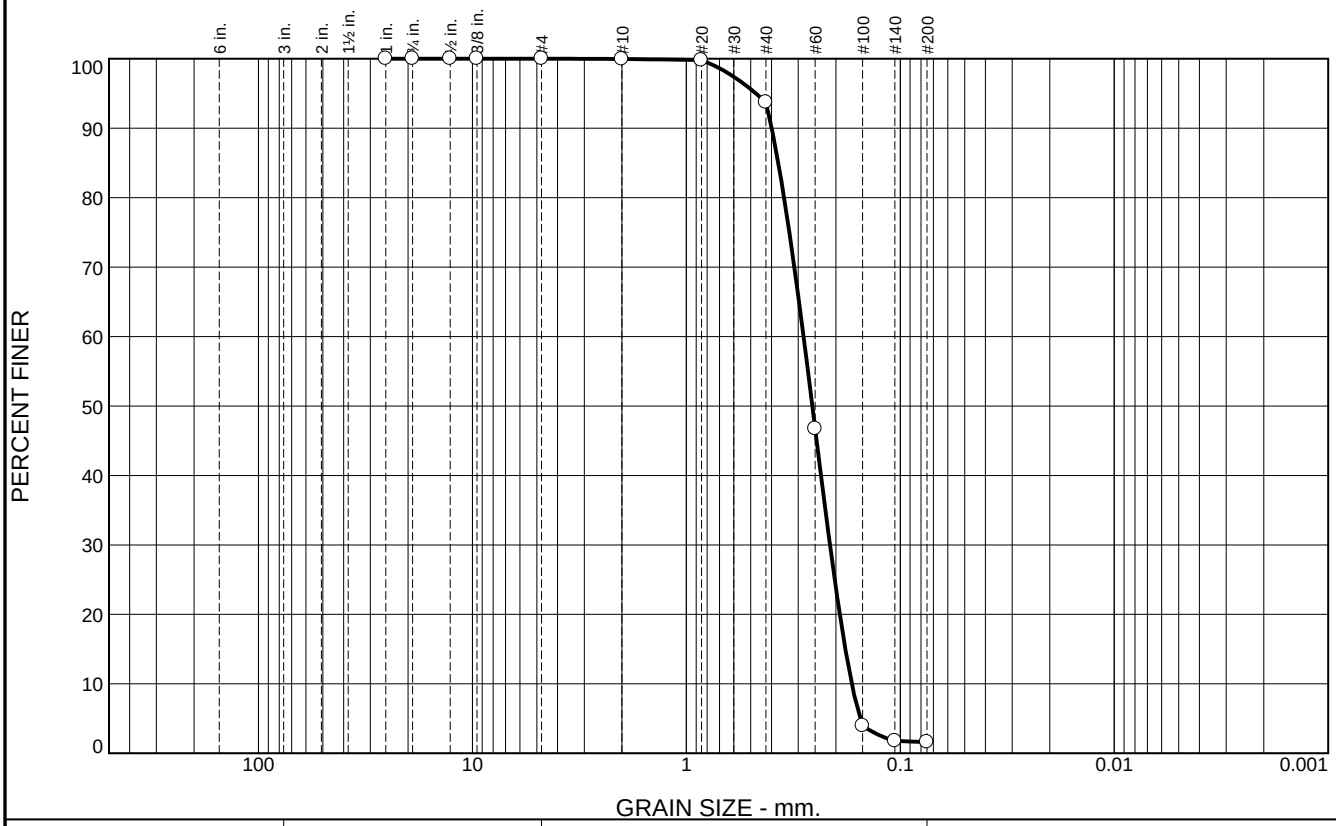
**Penetration** 20.0'

**Recovery** 18.8'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 6.3 | 92.1 | 1.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.8 | | |
| #40 | 93.7 | | |
| #60 | 46.7 | | |
| #100 | 4.0 | | |
| #140 | 1.8 | | |
| #200 | 1.6 | | |

* (no specification provided)

**Material Description**

Fine grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3989 $D_{85}$= 0.3715 $D_{60}$= 0.2833
$D_{50}$= 0.2577 $D_{30}$= 0.2132 $D_{15}$= 0.1808
$D_{10}$= 0.1687 $C_u$= 1.68 $C_c$= 0.95

**Classification**

USCS= SP AASHTO=

**Remarks**

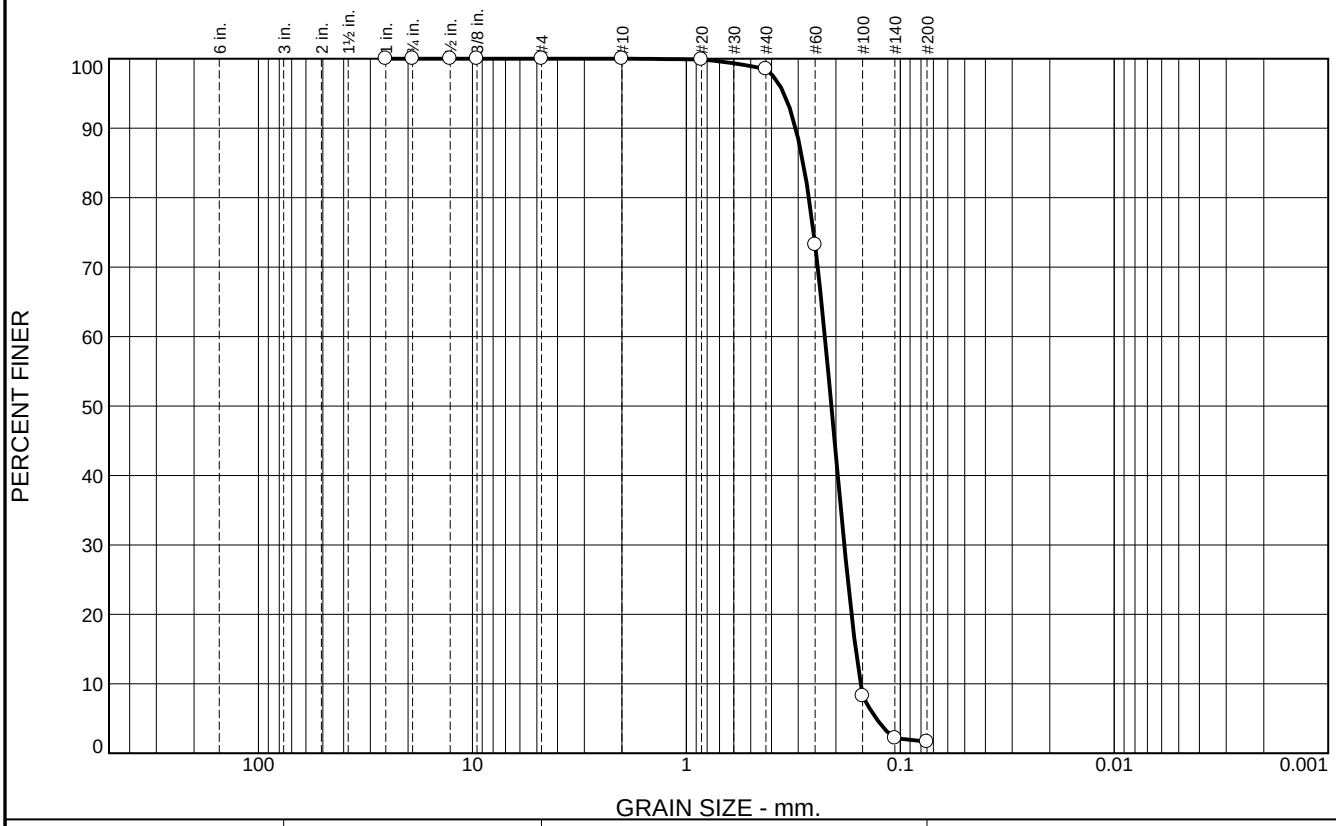
**Location:** BI-HP-36-12 A
**Sample Number:** 6495 (4) **Depth:** 0.0' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 96.8 | 1.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.9 | | |
| #40 | 98.5 | | |
| #60 | 73.2 | | |
| #100 | 8.2 | | |
| #140 | 2.2 | | |
| #200 | 1.7 | | |

* (no specification provided)

**Material Description**

Fine grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3085 $D_{85}$= 0.2846 $D_{60}$= 0.2251
$D_{50}$= 0.2099 $D_{30}$= 0.1828 $D_{15}$= 0.1618
$D_{10}$= 0.1534 $C_u$= 1.47 $C_c$= 0.97

**Classification**

USCS= SP AASHTO=

**Remarks**

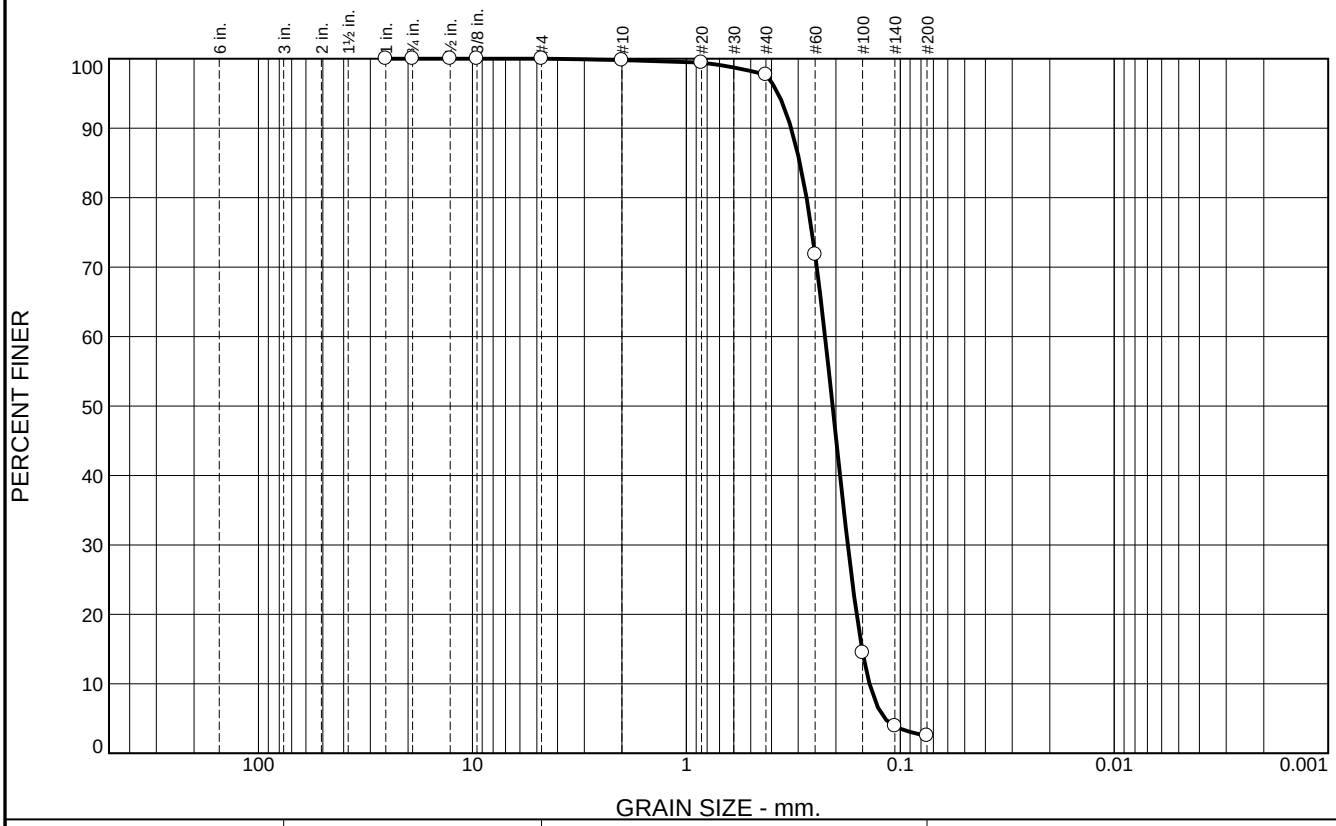
**Location:** BI-HP-36-12 B
**Sample Number:** 6495 (5) **Depth:** 3.8' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 2.1 | 95.2 | 2.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.4 | | |
| #40 | 97.7 | | |
| #60 | 71.8 | | |
| #100 | 14.5 | | |
| #140 | 3.9 | | |
| #200 | 2.5 | | |

* (no specification provided)

**Material Description**

Fine grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3237 $D_{85}$= 0.2949 $D_{60}$= 0.2247
$D_{50}$= 0.2072 $D_{30}$= 0.1761 $D_{15}$= 0.1510
$D_{10}$= 0.1393 $C_u$= 1.61 $C_c$= 0.99

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-36-12 C
**Sample Number:** 6495 (6) **Depth:** 8.8' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-37-12**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | | | |
|---|---|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Horn Island Pass | | 9. SIZE AND TYPE OF BIT N/A | |
| | | 10. COORDINATE SYSTEM/DATUM<br>State Plane, MSE (U.S. Ft.) | HORIZONTAL<br>NAD83 / VERTICAL<br>NAVD88 |
| 2. BORING DESIGNATION<br>BI-HP-37-12 | LOCATION COORDINATES<br>E = 1,070,872 N = 249,140 | 11. MANUFACTURER'S DESIGNATION OF DRILL<br>Vibracore | ☐ AUTO HAMMER<br>☐ MANUAL HAMMER |
| 3. DRILLING AGENCY<br>Corps of Engineers - CESAM | CONTRACTOR FILE NO. | 12. TOTAL SAMPLES | DISTURBED / UNDISTURBED (UD)<br>0 |
| 4. NAME OF DRILLER<br>American Vibracore Systems, Inc. | | 13. TOTAL NUMBER CORE BOXES | |
| 5. DIRECTION OF BORING<br>☒ VERTICAL<br>☐ INCLINED | DEG. FROM VERTICAL / BEARING | 14. WATER DEPTH 39.8 Ft. | |
| | | 15. DATE BORING | STARTED 01-05-13 / COMPLETED 01-05-13 |
| 6. THICKNESS OF OVERBURDEN N/A | | 16. ELEVATION TOP OF BORING -37.9 Ft. | |
| 7. DEPTH DRILLED INTO ROCK N/A | | 17. TOTAL RECOVERY FOR BORING 100% | |
| 8. TOTAL DEPTH OF BORING 14.4 Ft. | | 18. SIGNATURE AND TITLE OF INSPECTOR<br>Mike FitzHarris, Geologist | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -37.9 | 0.0 | | | | |
| -40.9 | 3.0 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, trace silty pockets, lt. gray (SP) | A | Classification: SP Color: 5Y 6/3-pale olive<br>D50: 0.2458 mm % Fines: 3.3 |
| -52.3 | 14.4 | | SILT, inorganic-L, mostly silt, some fine-grained sand-sized quartz, little clay, trace shell fragments, soft, gray (ML) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18480° Long = -88.55917°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-HP-37-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.088 N

**Longitude** 088 33.550 W

**Date** 01/05/2013

**Start Time** 12:42:36

**End Time** 12:43:07

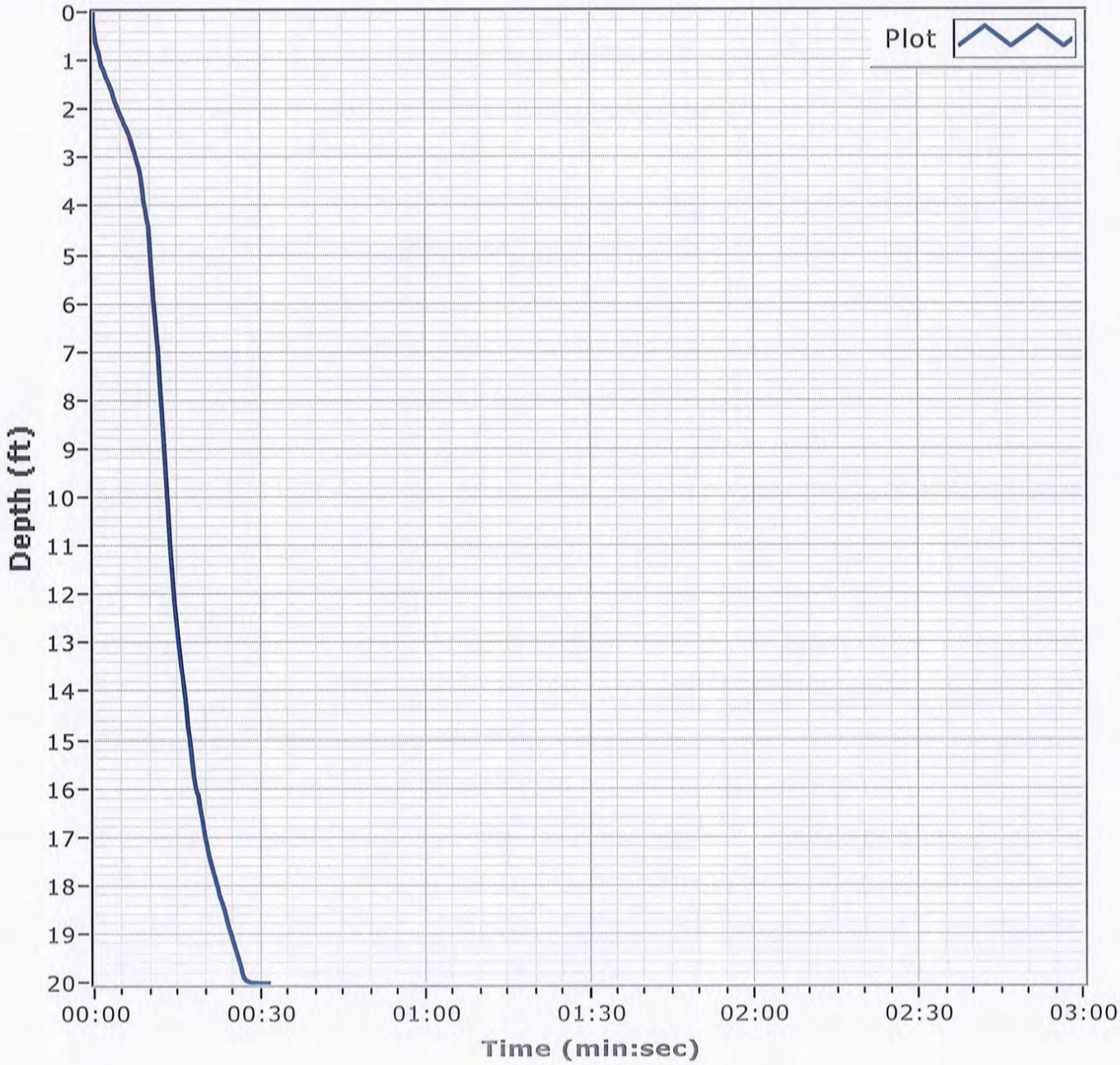
**Total Time** 00:00:31

**Water Depth** 39.8'

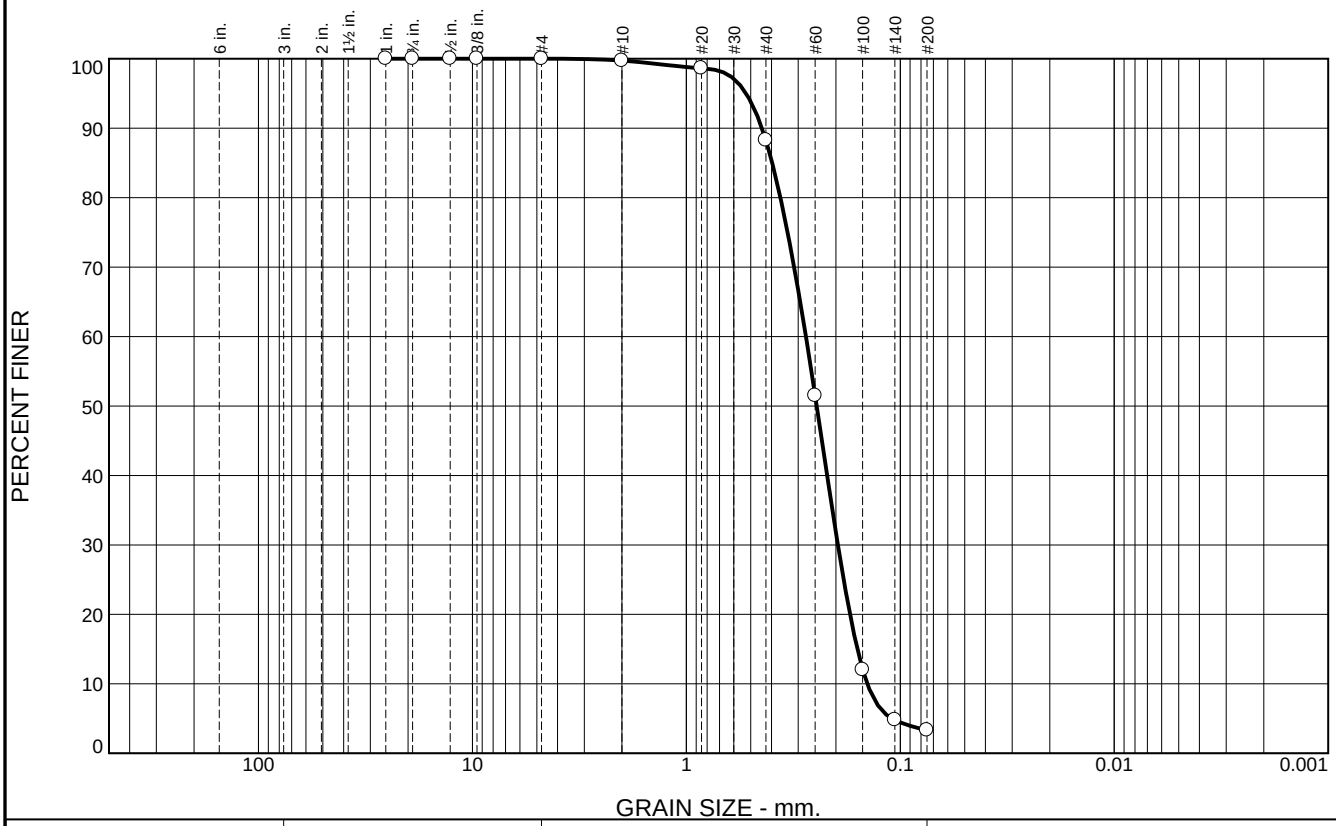
**Penetration** 20.0'

**Recovery** 14.4'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 11.4 | 85.0 | 3.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 98.6 | | |
| #40 | 88.3 | | |
| #60 | 51.5 | | |
| #100 | 12.0 | | |
| #140 | 4.8 | | |
| #200 | 3.3 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4434 $D_{85}$= 0.3969 $D_{60}$= 0.2762
$D_{50}$= 0.2458 $D_{30}$= 0.1958 $D_{15}$= 0.1589
$D_{10}$= 0.1427 $C_u$= 1.94 $C_c$= 0.97

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-37-12 A
**Sample Number:** 6503 (31) **Depth:** 0.0' **Date:** 1/08/13

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-38-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-38-12 — LOCATION COORDINATES: E = 1,078,463 N = 254,494 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 29.2 Ft. |
| | 15. DATE BORING — STARTED: 12-21-12 — COMPLETED: 12-21-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -29.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.1 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -29.8 | 0.0 | | | | |
| -33.4 | 3.6 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, trace clayey bands, pale lt. brown (SP) | A | Classification: SP-SM Color: 5Y 7/2-light gray<br>D50: 0.3044 mm % Fines: 5.3 |
| -37.8 | 8.0 | | SILT, inorganic-L, mostly silt, some clay, trace fine-grained sand-sized quartz, trace shell fragments, dark gray (ML) | | |
| -39.5 | 9.7 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, few shell fragments, trace clay, dark gray (SM) | NS | |
| -45.9 | 16.1 | | SILT, inorganic-L, mostly silt, some clay, some fine-grained sand-sized quartz, little shell fragments, dark gray (ML) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19947° Long = -88.53510°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

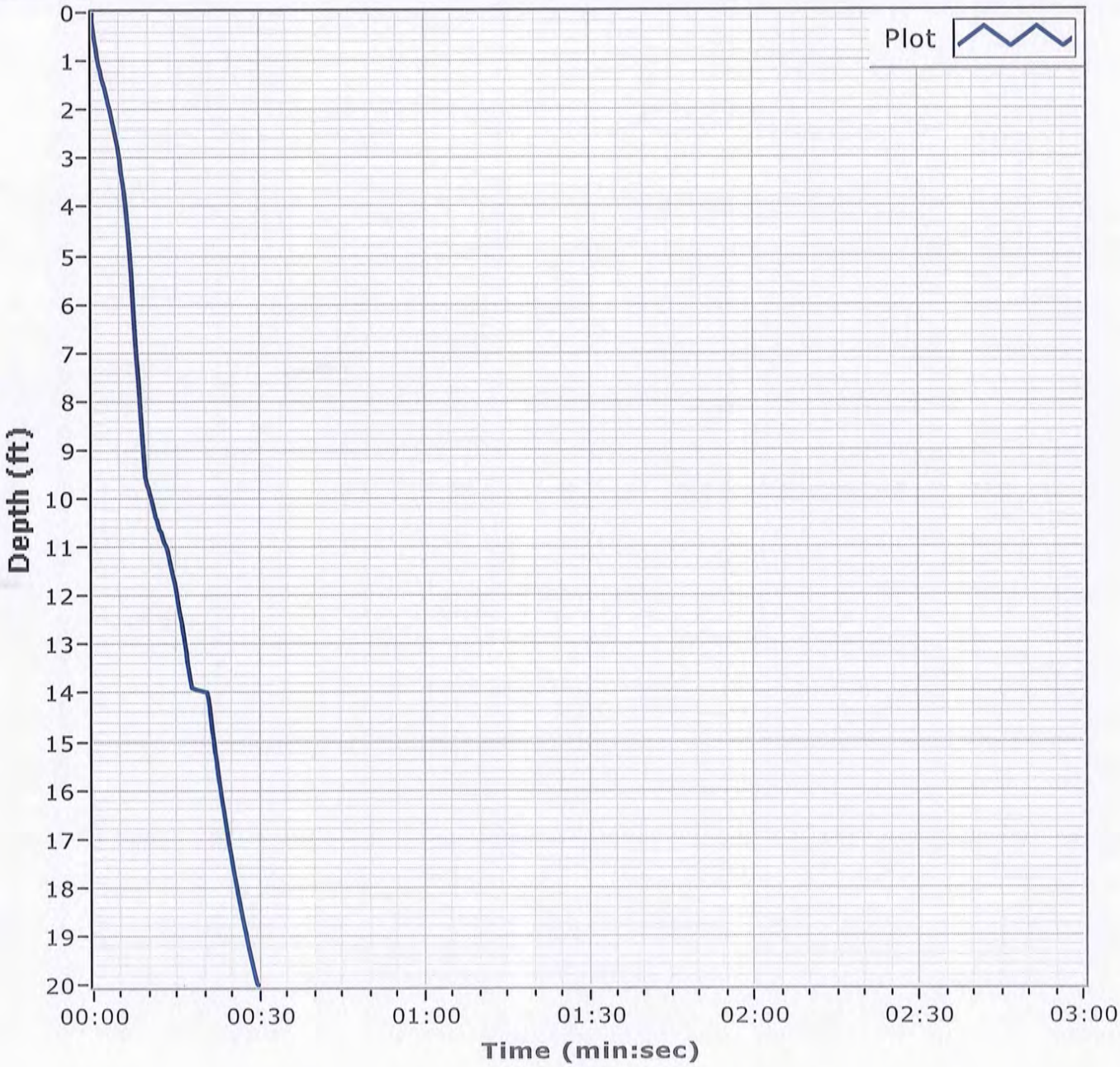
**Core Identifier** BI-HP-38-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.968 N
**Longitude** 088 32.106 W

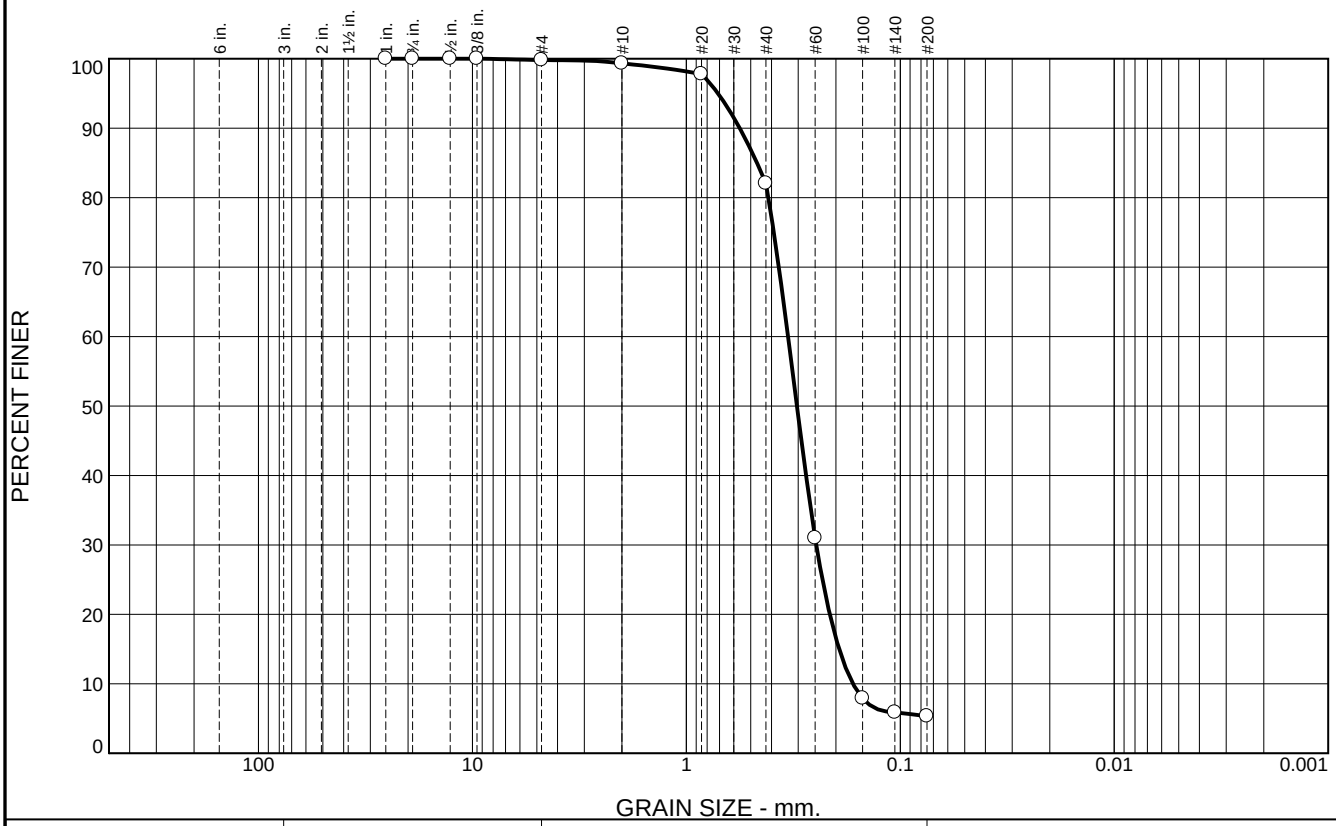
**Date** 12/21/2012
**Start Time** 14:57:56
**End Time** 14:58:26
**Total Time** 00:00:30

**Water Depth** 29.2'
**Penetration** 20.0'
**Recovery** 16.1'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.5 | 17.3 | 76.7 | 5.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.3 | | |
| #20 | 97.8 | | |
| #40 | 82.0 | | |
| #60 | 31.0 | | |
| #100 | 7.9 | | |
| #140 | 5.9 | | |
| #200 | 5.3 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SLIGHTLY SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5631 $D_{85}$= 0.4679 $D_{60}$= 0.3347
$D_{50}$= 0.3044 $D_{30}$= 0.2470 $D_{15}$= 0.1932
$D_{10}$= 0.1665 $C_u$= 2.01 $C_c$= 1.09

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

**Location:** BI-HP-38-12 A
**Sample Number:** 6495 (7) **Depth:** 0.0' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-39-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-39-12 — LOCATION COORDINATES: E = 1,071,547 N = 251,312 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 32 Ft. |
| | 15. DATE BORING — STARTED: 12-21-12 — COMPLETED: 12-21-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -31.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -31.9 | 0.0 | | | | |
| | | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, trace clayey bands and silty zones, lt. pale brown to lt. gray (SP) | A | Classification: SP Color: 5Y 7/2-light gray<br>D50: 0.2983 mm % Fines: 1.2 |
| | | | | B | Classification: SP Color: 5Y 7/2-light gray<br>D50: 0.2688 mm % Fines: 1.8 |
| -41.4 | 9.5 | | | C | Classification: SP Color: 5Y 6/2-light olive gray<br>D50: 0.2974 mm % Fines: 2.1 |
| -49.3 | 17.4 | | SILT, inorganic-L, mostly silt, some clay, some fine-grained sand-sized quartz, little shell fragments, soft, dark gray (ML) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19077° Long = -88.55702°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-HP-39-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.446 N

**Longitude** 088 33.421 W

**Date** 12/21/2012

**Start Time** 15:57:37

**End Time** 15:59:16

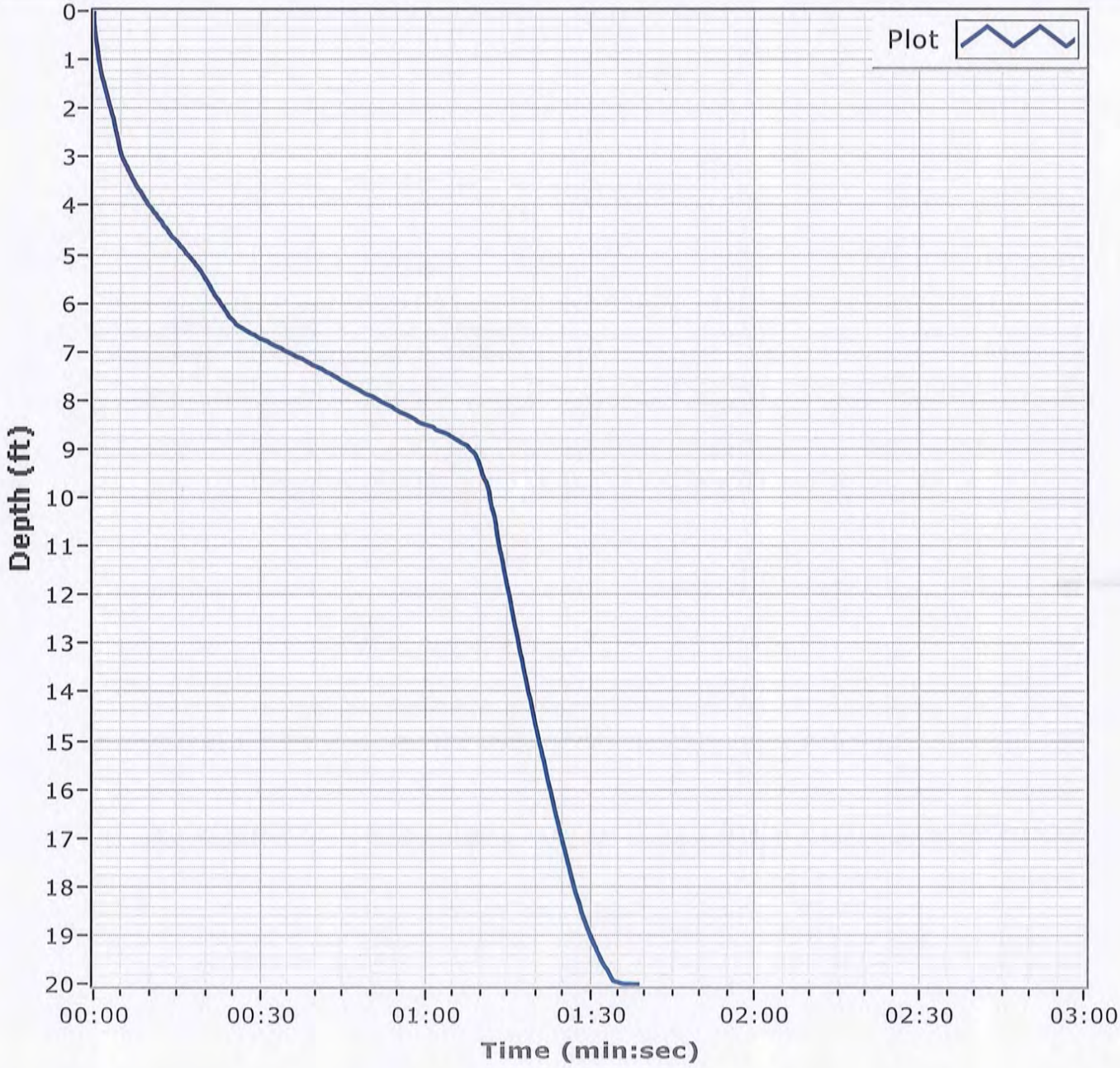
**Total Time** 00:01:38

**Water Depth** 32.0'

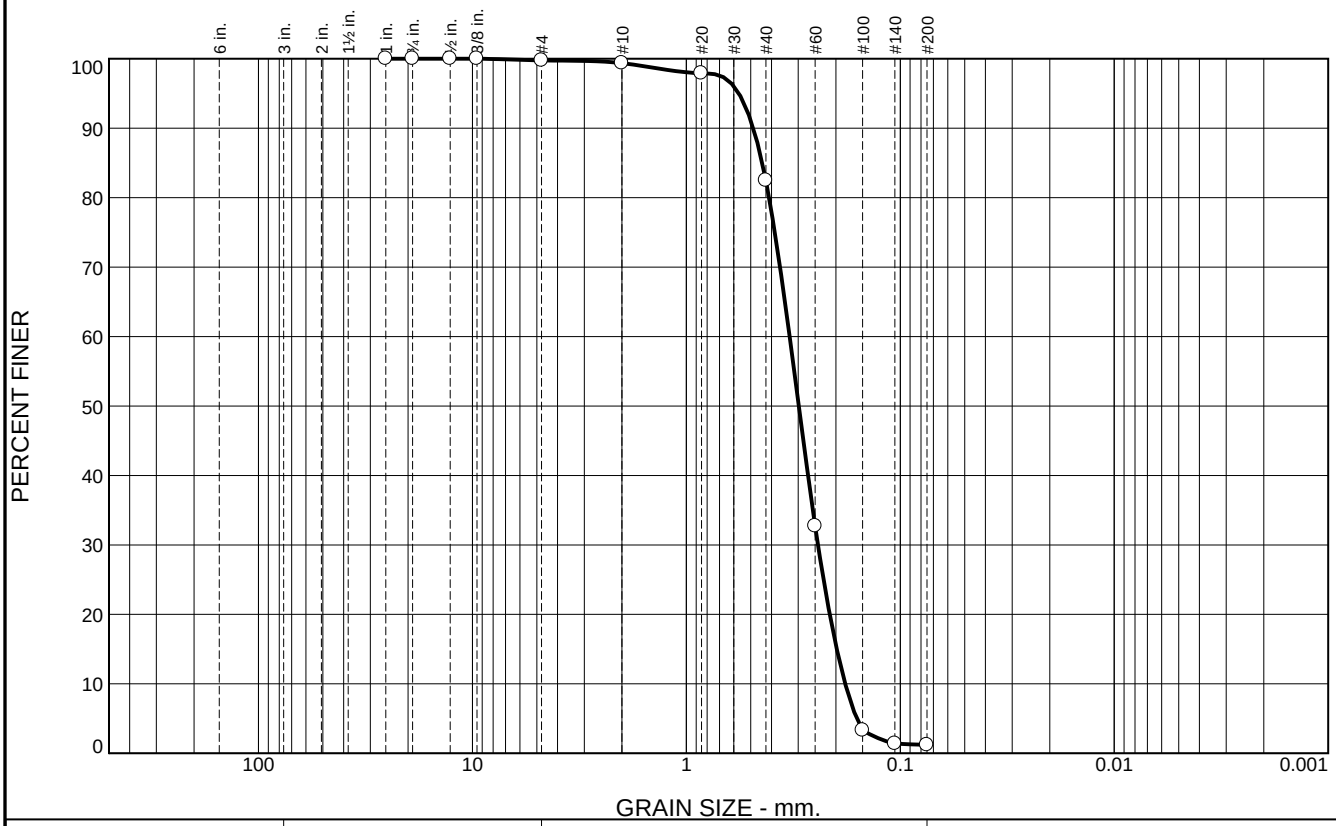
**Penetration** 20.0'

**Recovery** 17.4'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.4 | 16.9 | 81.3 | 1.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.4 | | |
| #20 | 97.9 | | |
| #40 | 82.5 | | |
| #60 | 32.7 | | |
| #100 | 3.3 | | |
| #140 | 1.4 | | |
| #200 | 1.2 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4867 $D_{85}$= 0.4420 $D_{60}$= 0.3290
$D_{50}$= 0.2983 $D_{30}$= 0.2425 $D_{15}$= 0.1982
$D_{10}$= 0.1810 $C_u$= 1.82 $C_c$= 0.99

**Classification**

USCS= SP AASHTO=

**Remarks**

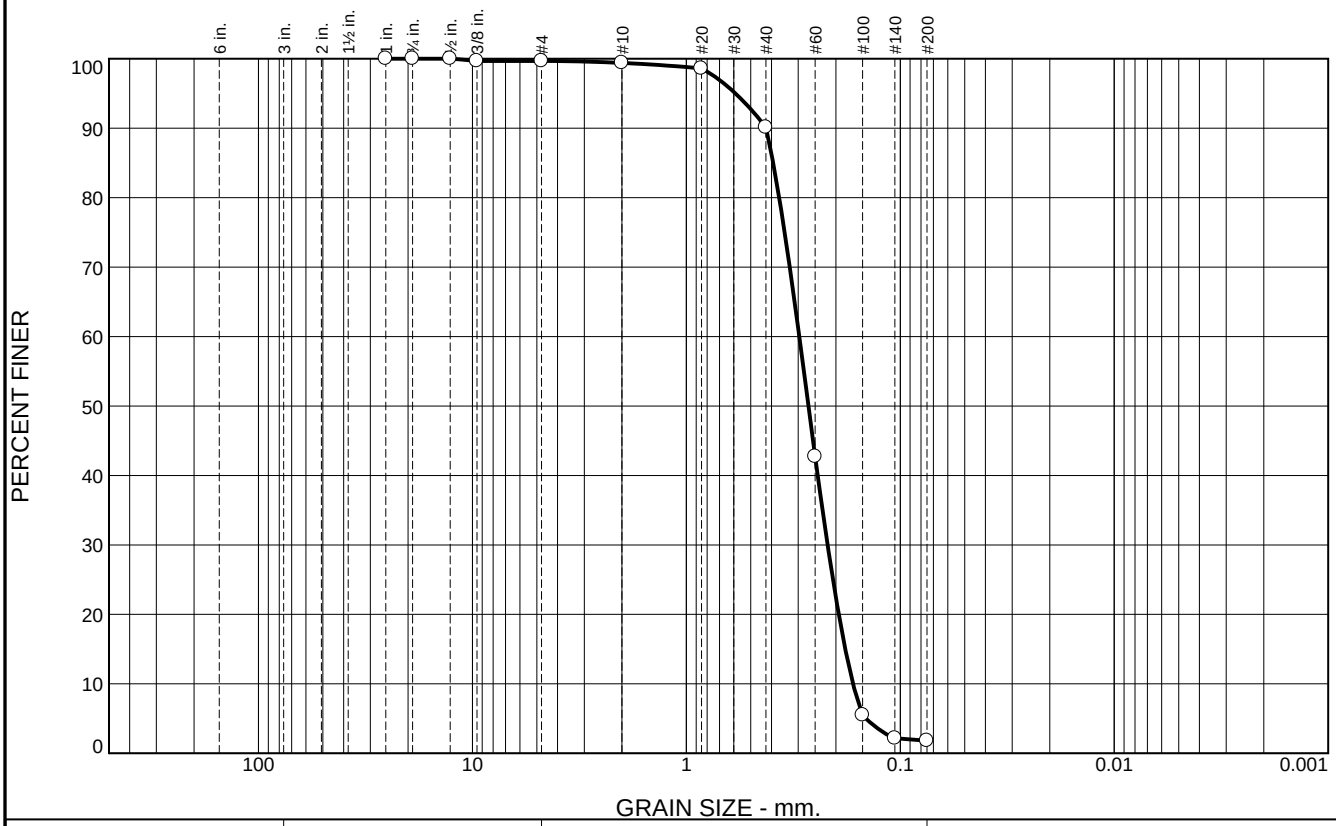
**Location:** BI-HP-39-12 A
**Sample Number:** 6495 (8) **Depth:** 0.0' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.3 | 9.3 | 88.3 | 1.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 99.7 | | |
| #4 | 99.7 | | |
| #10 | 99.4 | | |
| #20 | 98.6 | | |
| #40 | 90.1 | | |
| #60 | 42.7 | | |
| #100 | 5.5 | | |
| #140 | 2.2 | | |
| #200 | 1.8 | | |

* (no specification provided)

**Material Description**

Fine grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4241 $D_{85}$= 0.3927 $D_{60}$= 0.2967
$D_{50}$= 0.2688 $D_{30}$= 0.2186 $D_{15}$= 0.1809
$D_{10}$= 0.1665 $C_u$= 1.78 $C_c$= 0.97

**Classification**

USCS= SP AASHTO=

**Remarks**

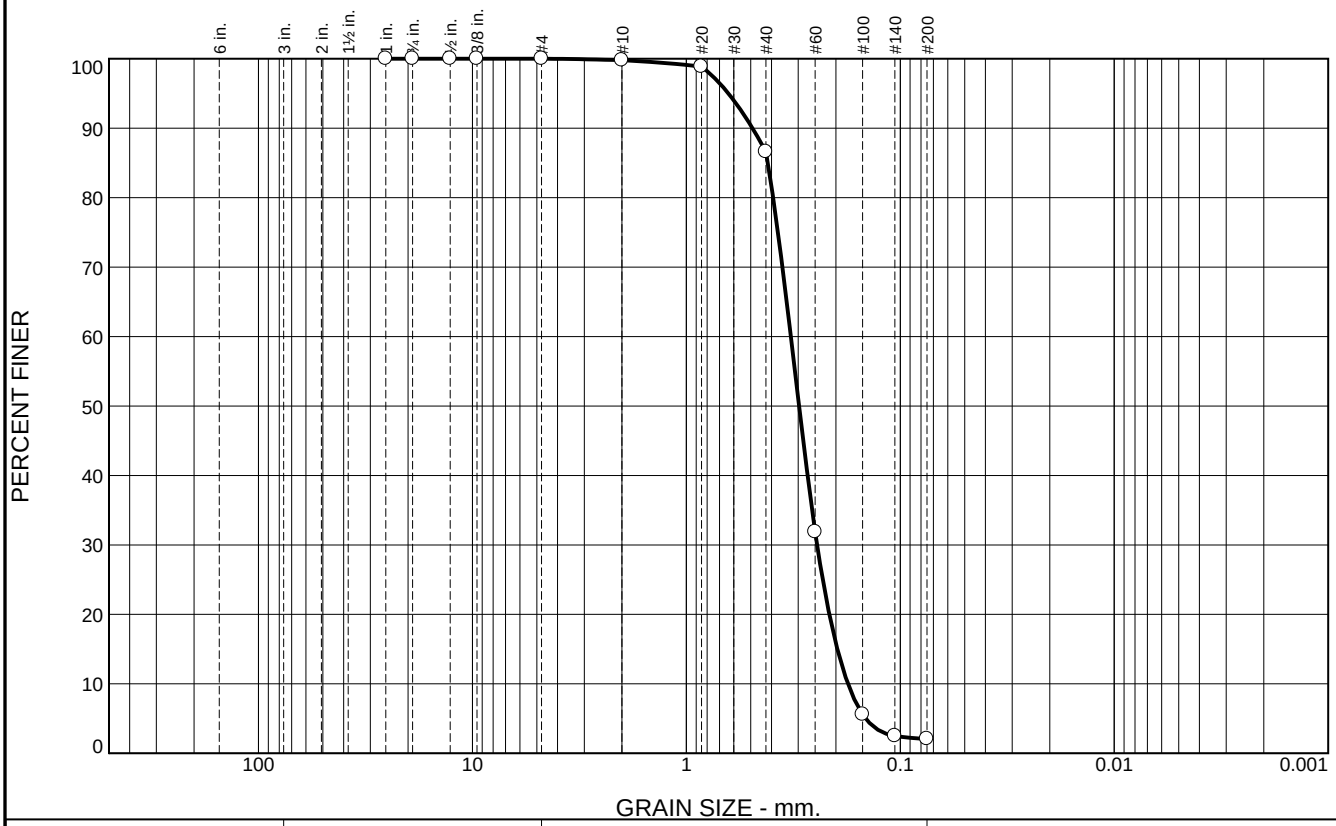
**Location:** BI-HP-39-12 B
**Sample Number:** 6495 (9) **Depth:** 2.1' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 13.2 | 84.5 | 2.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 98.9 | | |
| #40 | 86.6 | | |
| #60 | 31.9 | | |
| #100 | 5.6 | | |
| #140 | 2.5 | | |
| #200 | 2.1 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4909 $D_{85}$= 0.4163 $D_{60}$= 0.3248
$D_{50}$= 0.2974 $D_{30}$= 0.2448 $D_{15}$= 0.1970
$D_{10}$= 0.1758 $C_u$= 1.85 $C_c$= 1.05

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-39-12 C
**Sample Number:** 6495 (10) **Depth:** 7.2' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-40-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-40-12 — LOCATION COORDINATES: E = 1,071,644 N = 250,178 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 34.2 Ft. |
| | 15. DATE BORING — STARTED: 12-21-12 — COMPLETED: 12-21-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -36.1 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.6 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -36.1 | 0.0 | | | | |
| -37.7 | 1.6 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, lt. pale brown (SP) | A | Classification: SP Color: 5Y 7/2-light gray<br>D50: 0.2302 mm % Fines: 2.4 |
| -41.0 | 4.9 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, shelly at 3.7 ft., lt. gray (SP) | B | Classification: SP Color: 5Y 6/2-light olive gray<br>D50: 0.2819 mm % Fines: 3.8 |
| -52.7 | 16.6 | | SILT, inorganic-L, mostly silt, some clay, some fine-grained sand-sized quartz, some shell fragments, soft, gray (ML) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18765° Long = -88.55672°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

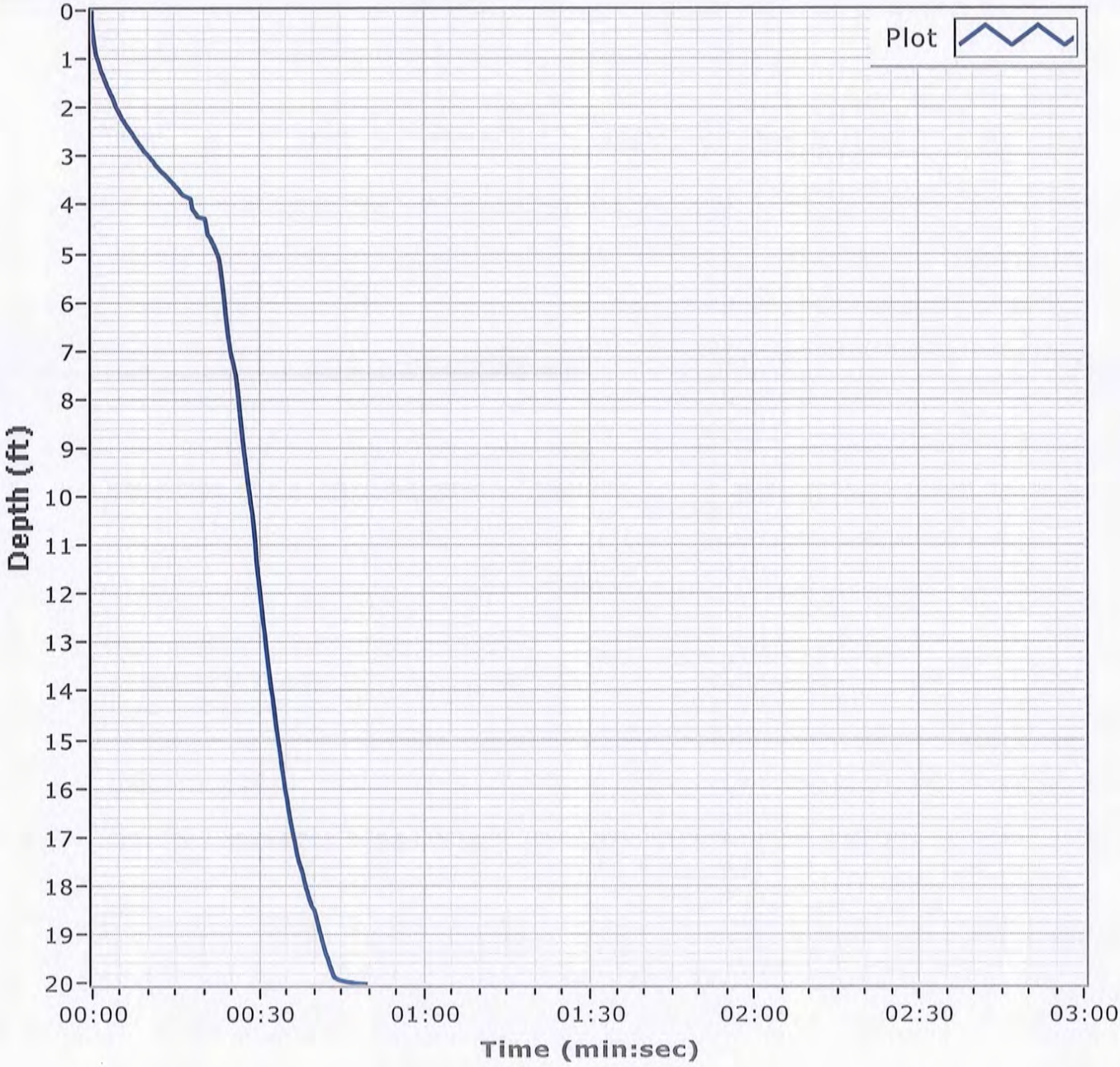
**Core Identifier** BI-HP-40-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.259 N
**Longitude** 088 33.403 W

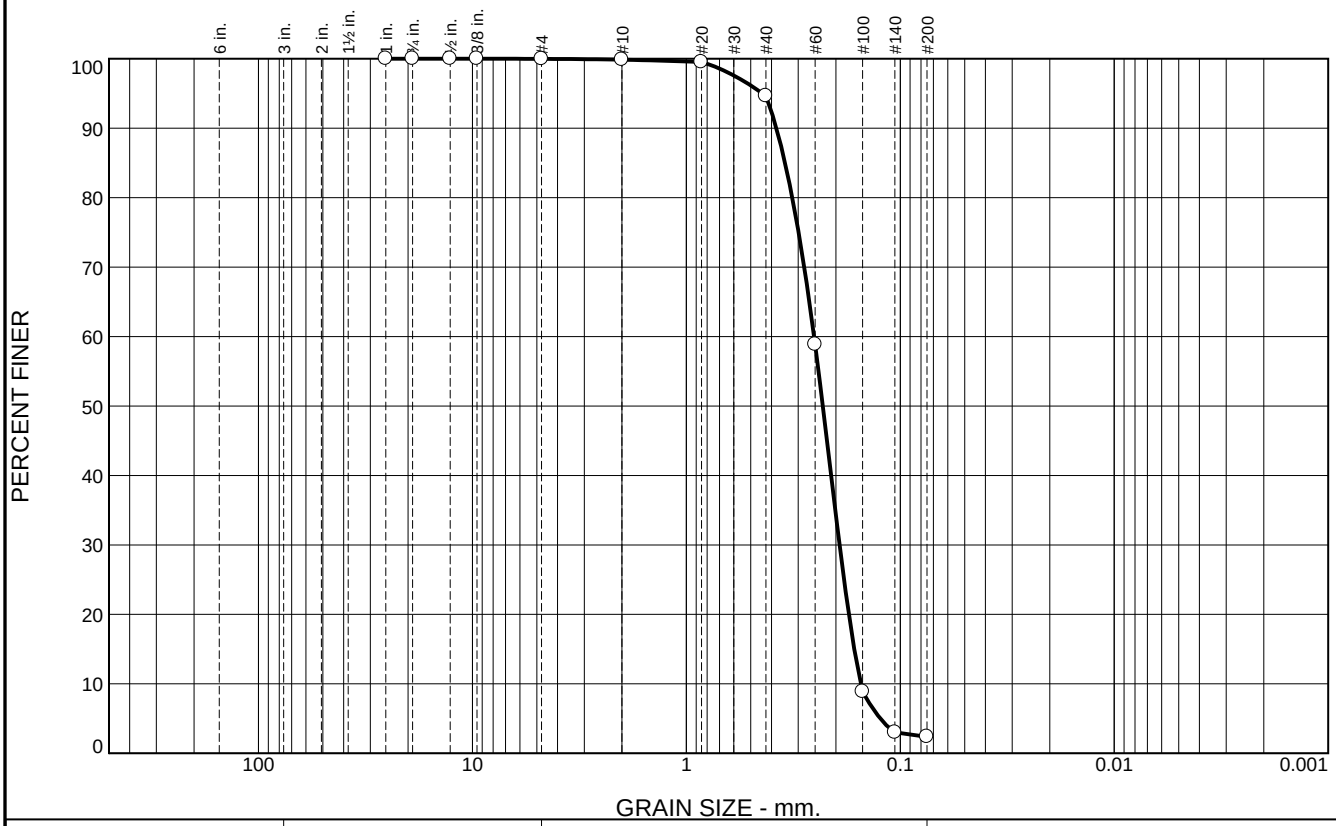
**Date** 12/21/2012
**Start Time** 16:22:32
**End Time** 16:23:21
**Total Time** 00:00:49

**Water Depth** 34.2'
**Penetration** 20.0'
**Recovery** 16.6'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 5.2 | 92.2 | 2.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.5 | | |
| #40 | 94.6 | | |
| #60 | 58.8 | | |
| #100 | 8.9 | | |
| #140 | 3.0 | | |
| #200 | 2.4 | | |

* (no specification provided)

**Material Description**

Fine grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3793 $D_{85}$= 0.3456 $D_{60}$= 0.2529
$D_{50}$= 0.2302 $D_{30}$= 0.1923 $D_{15}$= 0.1643
$D_{10}$= 0.1530 $C_u$= 1.65 $C_c$= 0.96

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-40-12 A
**Sample Number:** 6495 (11) **Depth:** 0.0' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report

| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.6 | 12.7 | 82.6 | 3.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.1 | | |
| #20 | 97.7 | | |
| #40 | 86.4 | | |
| #60 | 39.1 | | |
| #100 | 11.2 | | |
| #140 | 5.5 | | |
| #200 | 3.8 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5040 $D_{85}$= 0.4163 $D_{60}$= 0.3124
$D_{50}$= 0.2819 $D_{30}$= 0.2222 $D_{15}$= 0.1680
$D_{10}$= 0.1433 $C_u$= 2.18 $C_c$= 1.10

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-40-12 B
**Sample Number:** 6495 (12) **Depth:** 1.6' **Date:** 12/31/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

## Boring Designation BI-HP-41-12

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Horn Island Pass |
| 2. BORING DESIGNATION | BI-HP-41-12 |
| LOCATION COORDINATES | E = 1,078,900 N = 254,215 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | American Vibracore Systems, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 14.8 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED: ; UNDISTURBED (UD): 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 28.5 Ft. |
| 15. DATE BORING | STARTED 01-05-13; COMPLETED 01-05-13 |
| 16. ELEVATION TOP OF BORING | -28.2 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -28.2 | 0.0 | | | | |
| -29.7 | 1.5 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, lt. pale brown (SP) | A | Classification: SP Color: 2.5Y 8/1-white<br>D50: 0.3021 mm % Fines: 1.9 |
| -32.4 | 4.2 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, few clay lenses, lt. gray (SP) | B | Classification: SP-SM Color: 2.5Y 6/2-light brownish gray<br>D50: 0.286 mm % Fines: 6.4 |
| -35.3 | 7.1 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, trace clay lenses, lt. gray (SP) | C | Classification: SP Color: 2.5Y 7/2-light gray<br>D50: 0.2785 mm % Fines: 4.1 |
| -38.2 | 10.0 | | SILT, inorganic-L, mostly silt, some fine-grained sand-sized quartz, trace clay, trace shell fragments, soft, gray (ML) | NS | |
| -39.3 | 11.1 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, few shell fragments, gray (SM) | | |
| -43.0 | 14.8 | | SILT, inorganic-L, mostly silt, some fine-grained sand-sized quartz, few shell fragments, trace clay, soft, gray (ML) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19870° Long = -88.53372°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

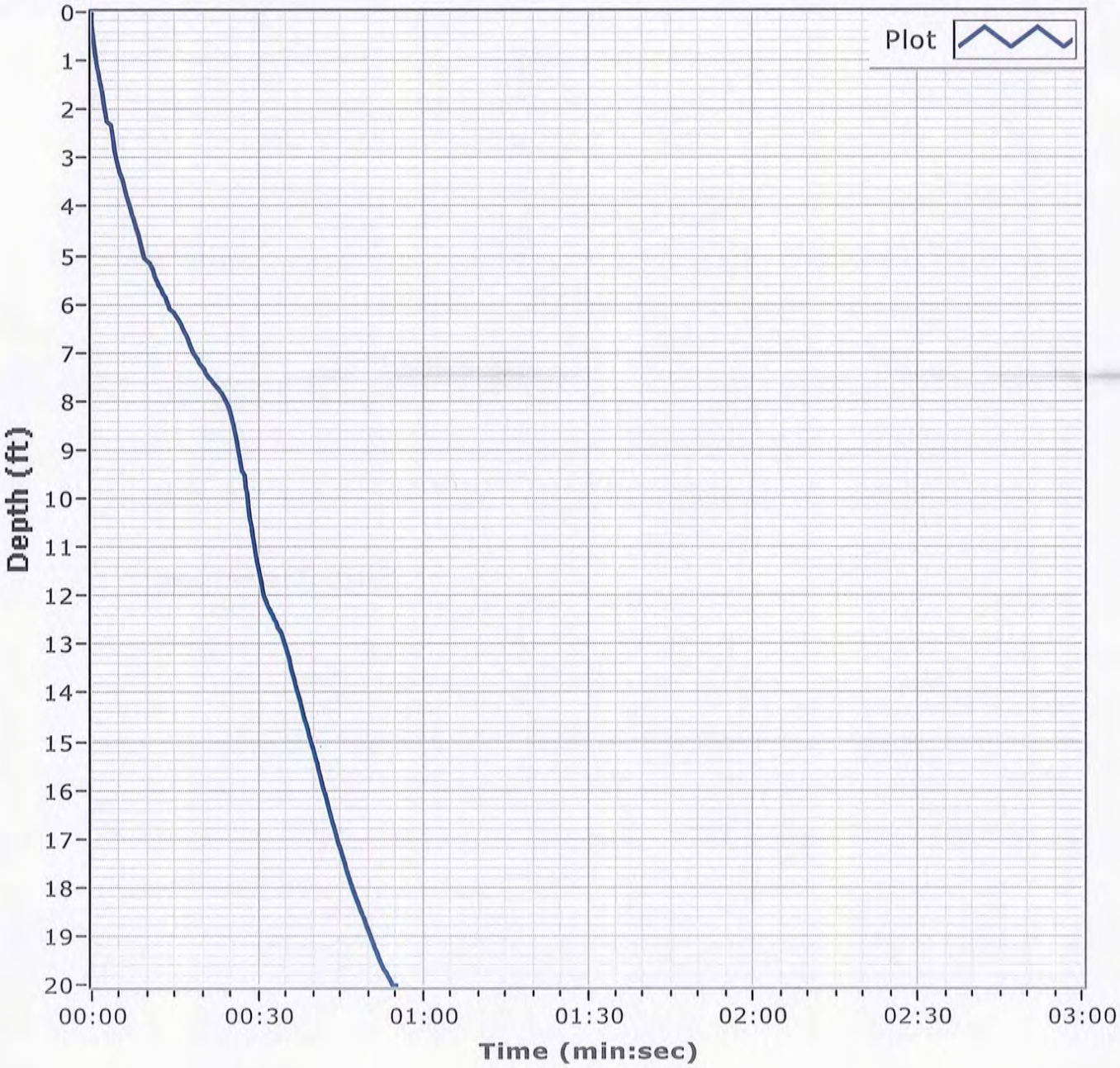
**Core Identifier** BI-HP-41-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.922 N
**Longitude** 088 32.023 W

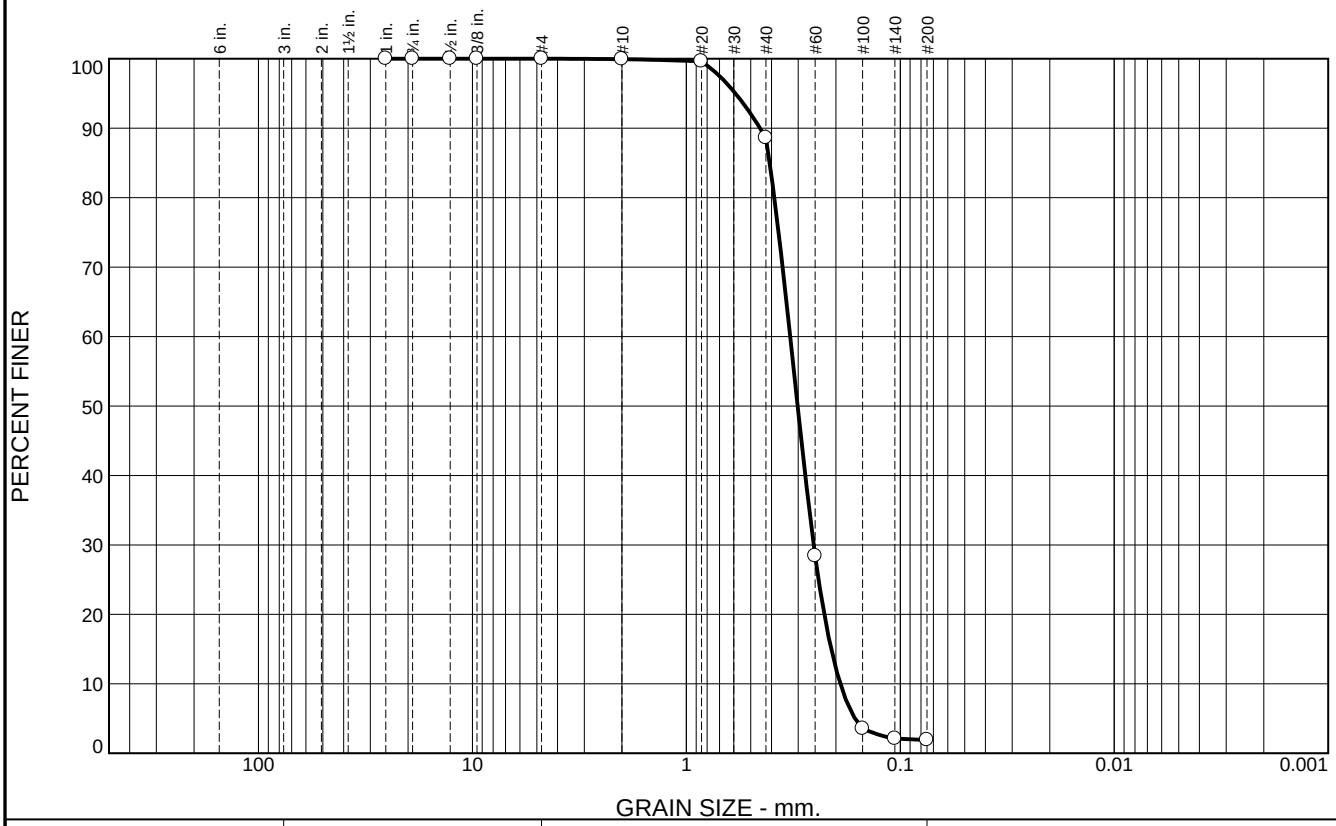
**Date** 01/05/2013
**Start Time** 11:40:13
**End Time** 11:41:09
**Total Time** 00:00:55

**Water Depth** 28.5'
**Penetration** 20.0'
**Recovery** 14.8'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 11.3 | 86.7 | 1.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 88.6 | | |
| #60 | 28.4 | | |
| #100 | 3.6 | | |
| #140 | 2.1 | | |
| #200 | 1.9 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4528 $D_{85}$= 0.4078 $D_{60}$= 0.3271
$D_{50}$= 0.3021 $D_{30}$= 0.2540 $D_{15}$= 0.2104
$D_{10}$= 0.1908 $C_u$= 1.71 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

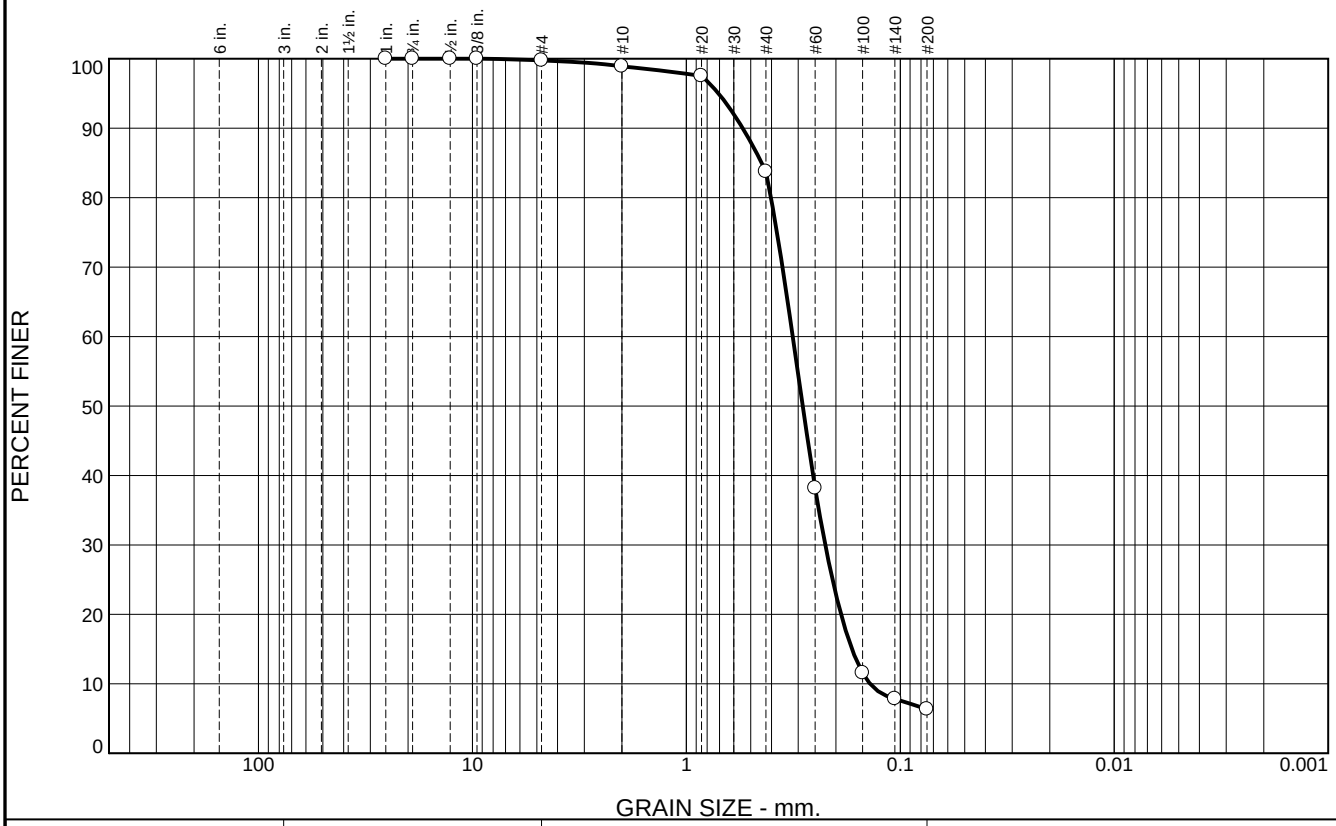
**Location:** BI-HP-41-12 A
**Sample Number:** 6503 (32) **Depth:** 0.0' **Date:** 1/08/13

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.8 | 15.2 | 77.3 | 6.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 98.9 | | |
| #20 | 97.5 | | |
| #40 | 83.7 | | |
| #60 | 38.2 | | |
| #100 | 11.6 | | |
| #140 | 7.8 | | |
| #200 | 6.4 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SLIGHTLY SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5452 $D_{85}$= 0.4450 $D_{60}$= 0.3183
$D_{50}$= 0.2860 $D_{30}$= 0.2242 $D_{15}$= 0.1684
$D_{10}$= 0.1384 $C_u$= 2.30 $C_c$= 1.14

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

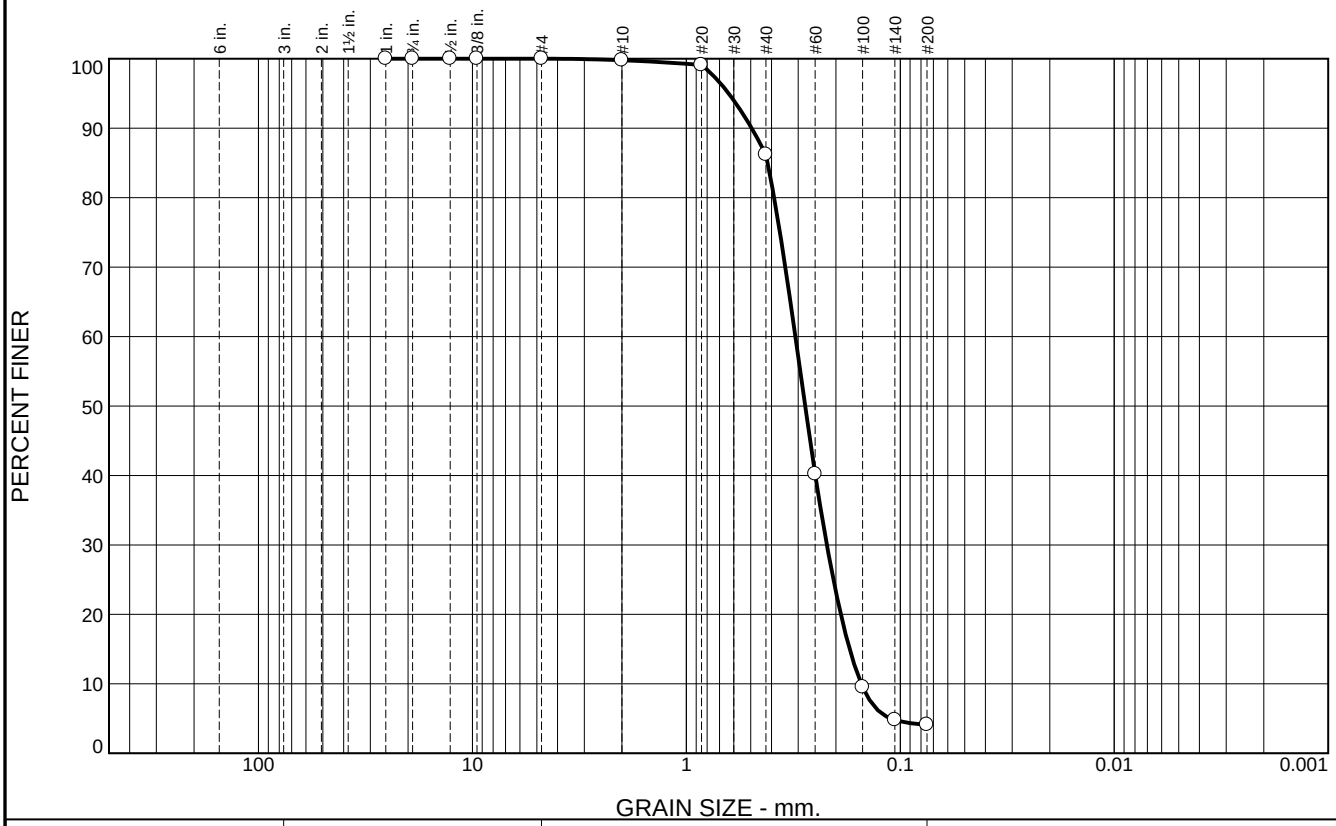
**Location:** BI-HP-41-12 B
**Sample Number:** 6503 (33) **Depth:** 1.5' **Date:** 1/08/13

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 13.6 | 82.1 | 4.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.1 | | |
| #40 | 86.2 | | |
| #60 | 40.2 | | |
| #100 | 9.5 | | |
| #140 | 4.8 | | |
| #200 | 4.1 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4954 $D_{85}$= 0.4170 $D_{60}$= 0.3094
$D_{50}$= 0.2785 $D_{30}$= 0.2204 $D_{15}$= 0.1727
$D_{10}$= 0.1522 $C_u$= 2.03 $C_c$= 1.03

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-41-12 C
**Sample Number:** 6503 (34) **Depth:** 4.2' **Date:** 1/08/13

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-42-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-42-12 — LOCATION COORDINATES: E = 1,072,671 N = 252,654 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 32.4 Ft. |
| | 15. DATE BORING — STARTED: 01-05-13 — COMPLETED: 01-05-13 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -32.0 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -32.0 | 0.0 | | | | |
| -37.0 | 5.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few shell fragments, trace fines, lt. gray (SP) | A | Classification: SP Color: 5Y 7/2-light gray<br>D50: 0.2961 mm % Fines: 1.9 |
| -38.4 | 6.4 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP) | B | Classification: SP Color: 5Y 7/2-light gray<br>D50: 0.276 mm % Fines: 2.3 |
| -51.4 | 19.4 | | SILT, inorganic-L, mostly silt, some fine-grained sand-sized quartz, few clay, trace shell fragments, soft, gray (ML) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation determined from USACE hydrographic survey completed June 2014.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19445° Long = -88.55345°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-HP-42-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.667 N

**Longitude** 088 33.207 W

**Date** 01/05/2013

**Start Time** 12:11:02

**End Time** 12:11:55

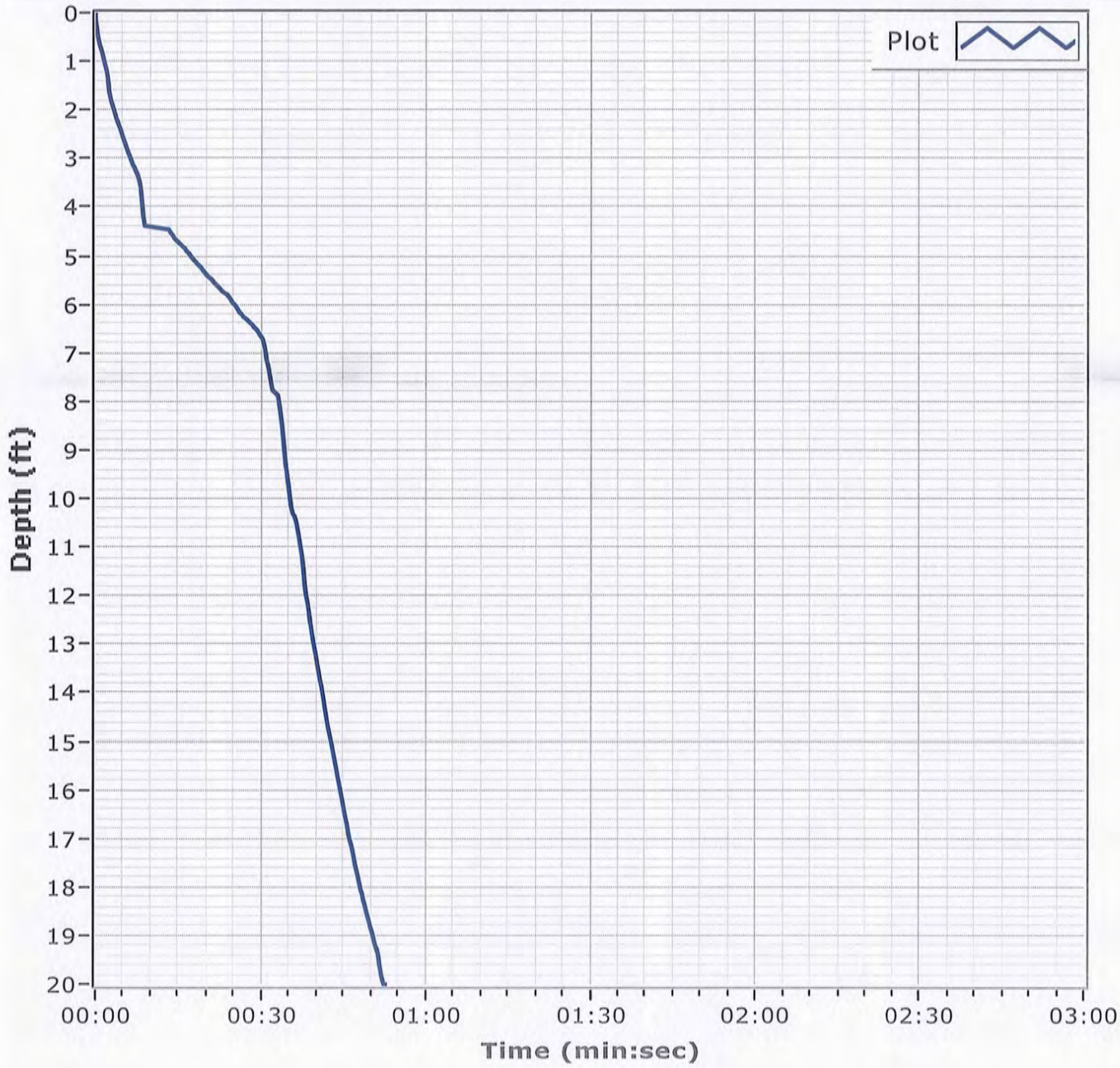
**Total Time** 00:00:53

**Water Depth** 32.4'

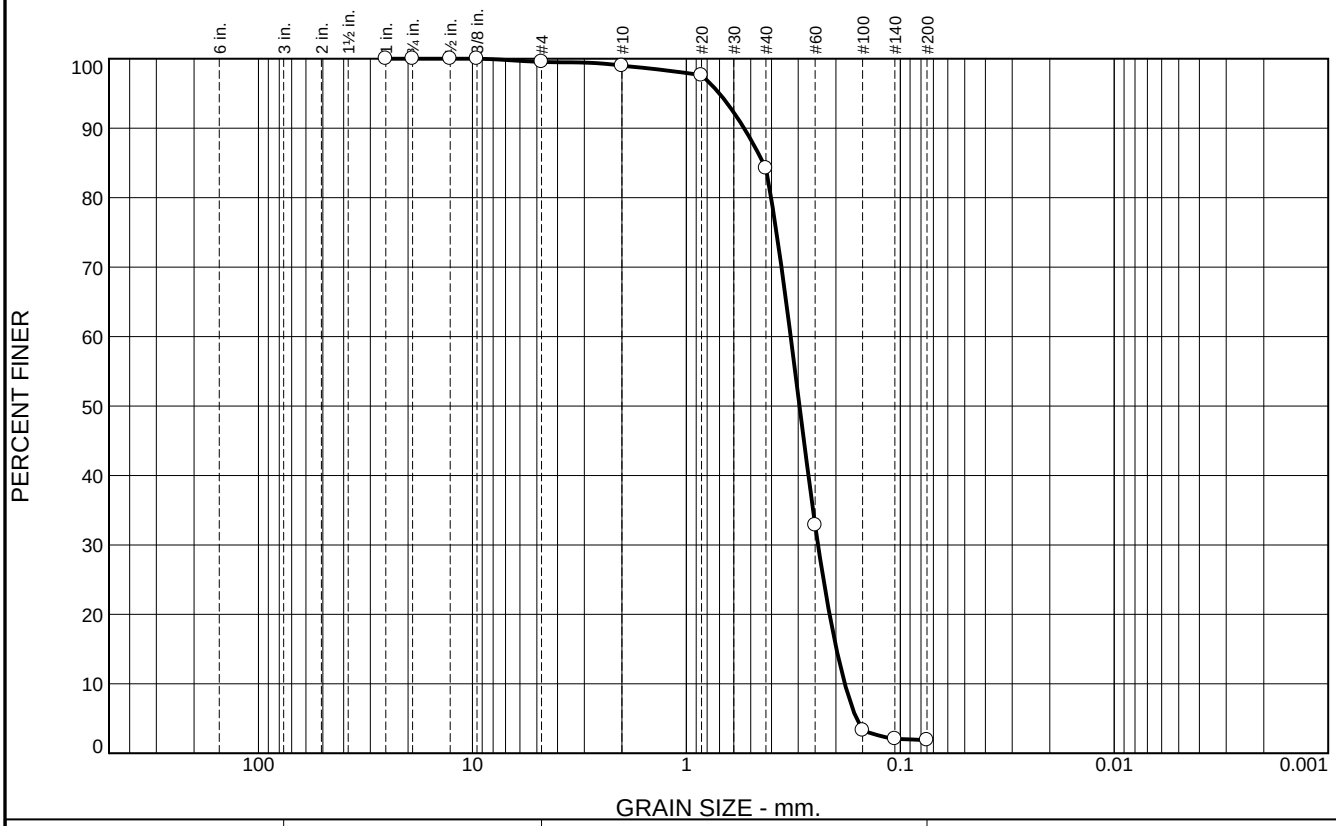
**Penetration** 20.0'

**Recovery** 19.4'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.5 | 14.8 | 82.3 | 1.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 99.0 | | |
| #20 | 97.6 | | |
| #40 | 84.2 | | |
| #60 | 32.9 | | |
| #100 | 3.3 | | |
| #140 | 2.1 | | |
| #200 | 1.9 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.5376 $D_{85}$= 0.4374 $D_{60}$= 0.3255
$D_{50}$= 0.2961 $D_{30}$= 0.2423 $D_{15}$= 0.1988
$D_{10}$= 0.1818 $C_u$= 1.79 $C_c$= 0.99

**Classification**

USCS= SP AASHTO=

**Remarks**

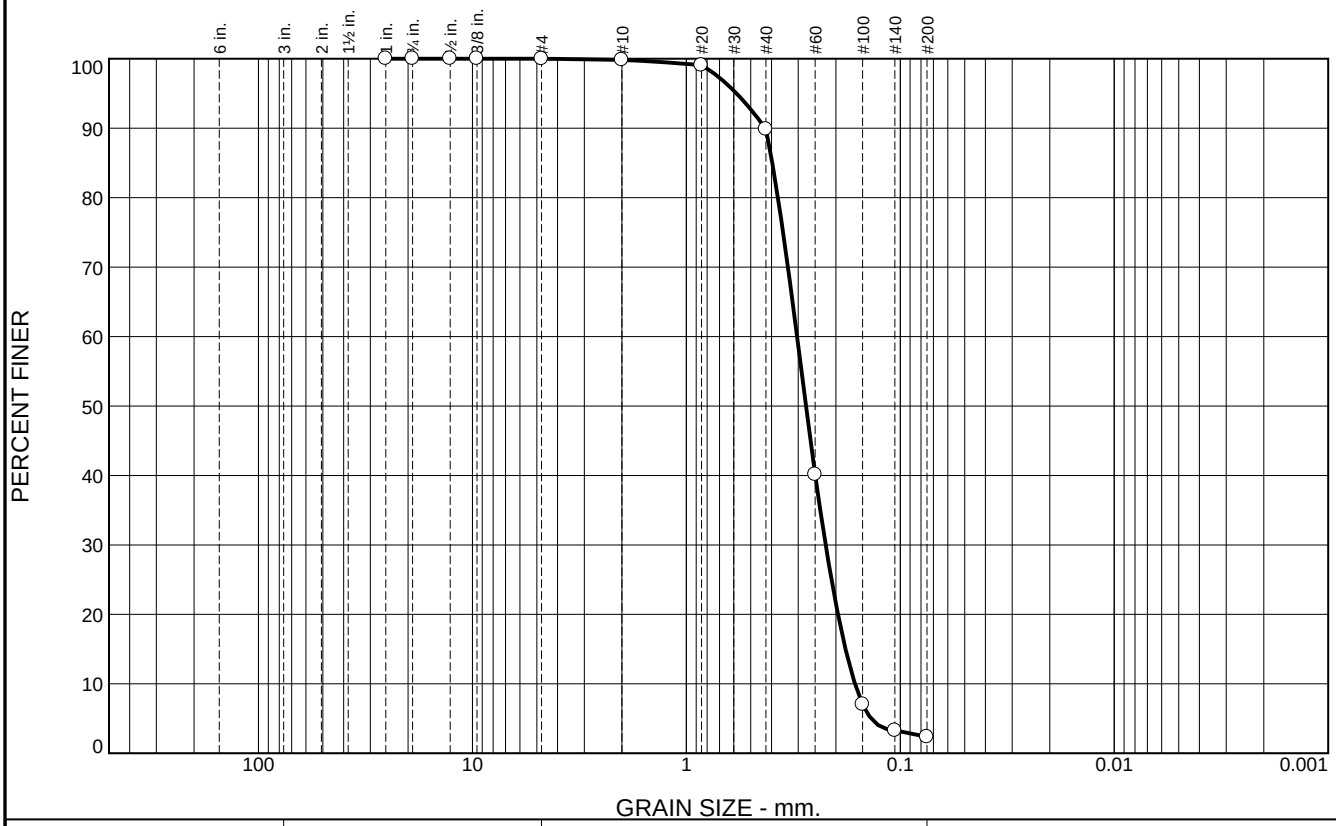
**Location:** BI-HP-42-12 A
**Sample Number:** 6503 (35) **Depth:** 0.0' **Date:** 1/08/13

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 9.9 | 87.6 | 2.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.1 | | |
| #40 | 89.9 | | |
| #60 | 40.1 | | |
| #100 | 7.0 | | |
| #140 | 3.3 | | |
| #200 | 2.3 | | |

* (no specification provided)

**Material Description**

Fine grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4284 $D_{85}$= 0.3965 $D_{60}$= 0.3039
$D_{50}$= 0.2760 $D_{30}$= 0.2233 $D_{15}$= 0.1804
$D_{10}$= 0.1630 $C_u$= 1.86 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-HP-42-12 B
**Sample Number:** 6503 (36) **Depth:** 5.0' **Date:** 1/08/13

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-HP-45-13**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-45-13 — LOCATION COORDINATES: E = 1,072,524 N = 246,783 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 40 Ft. |
| | 15. DATE BORING — STARTED: 11-29-13 — COMPLETED: 11-29-13 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -38.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Tom Powers, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -38.5 | 0.0 | | | | |
| -39.3 | 0.8 | | SAND, poorly-graded, mostly fine-grained quartz, lt. gray (SP) | A | Classification: SP Color: GLEY1 10Y 7/1- D50: 0.281 mm % Fines: 4 |
| -39.9 | 1.4 | | | NS | |
| -41.5 | 3.0 | | CLAY, lean, medium to dark gray (CL) | B | Classification: SP Color: 2.5Y 6/1-gray D50: 0.255 mm % Fines: 3.5 |
| -42.7 | 4.2 | | SAND, poorly-graded, mostly fine to medium-grained quartz, few shell, trace 1/2-inch clay lens, lt. gray (SP) | C | Classification: SM Color: 2.5Y 5/1-gray D50: 0.196 mm % Fines: 14.4 |
| -43.5 | 5.0 | | SAND, silty, medium to dark gray (SM) | | |
| | | | SAND, clayey, medium to dark gray (SC) | | |
| | | | CLAY, lean, medium to dark gray (CL) | NS | |
| -53.5 | 15.0 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation from 2013 USACE hydrographic survey.

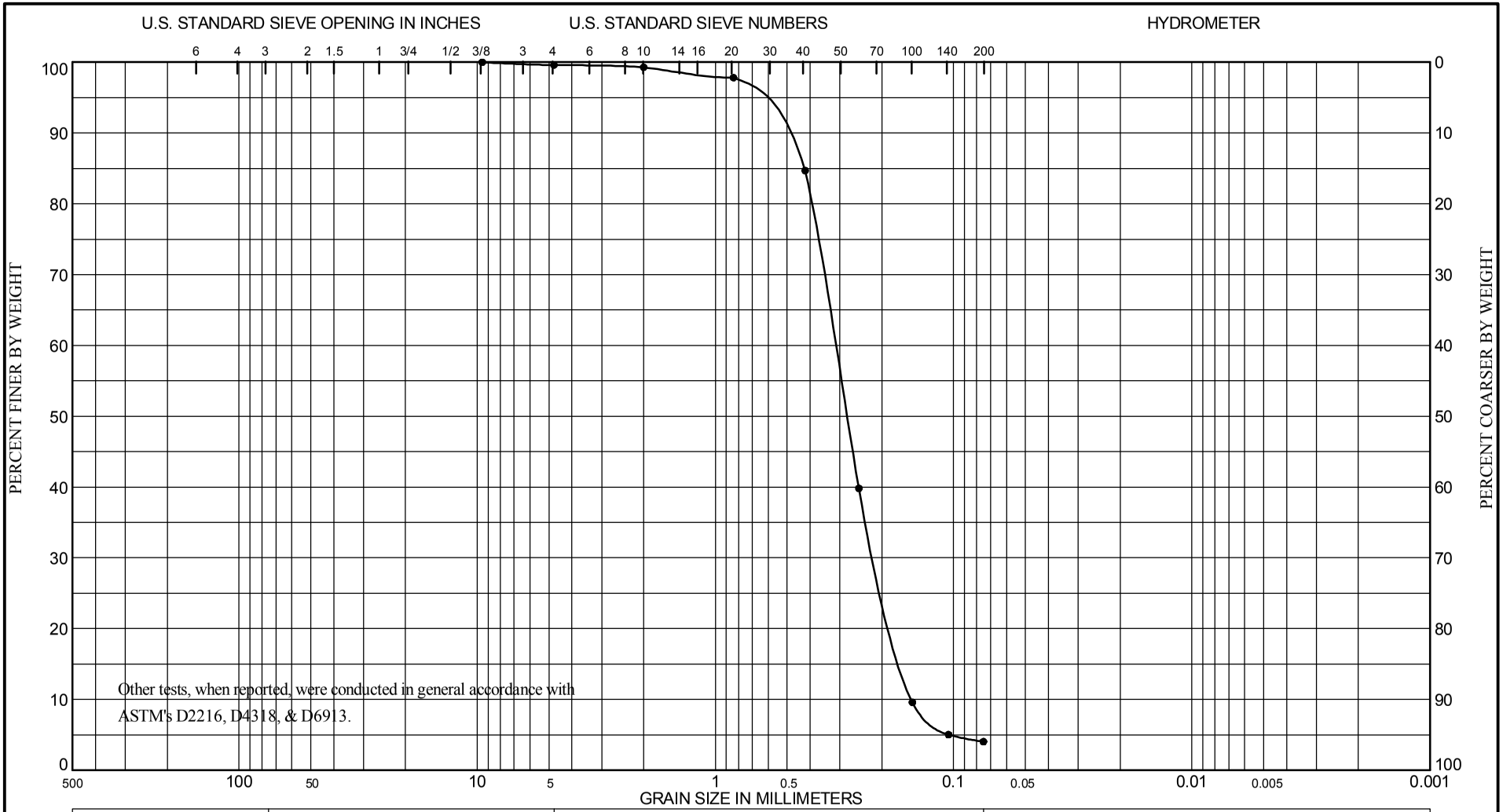
0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17831° Long = -88.55396°**

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

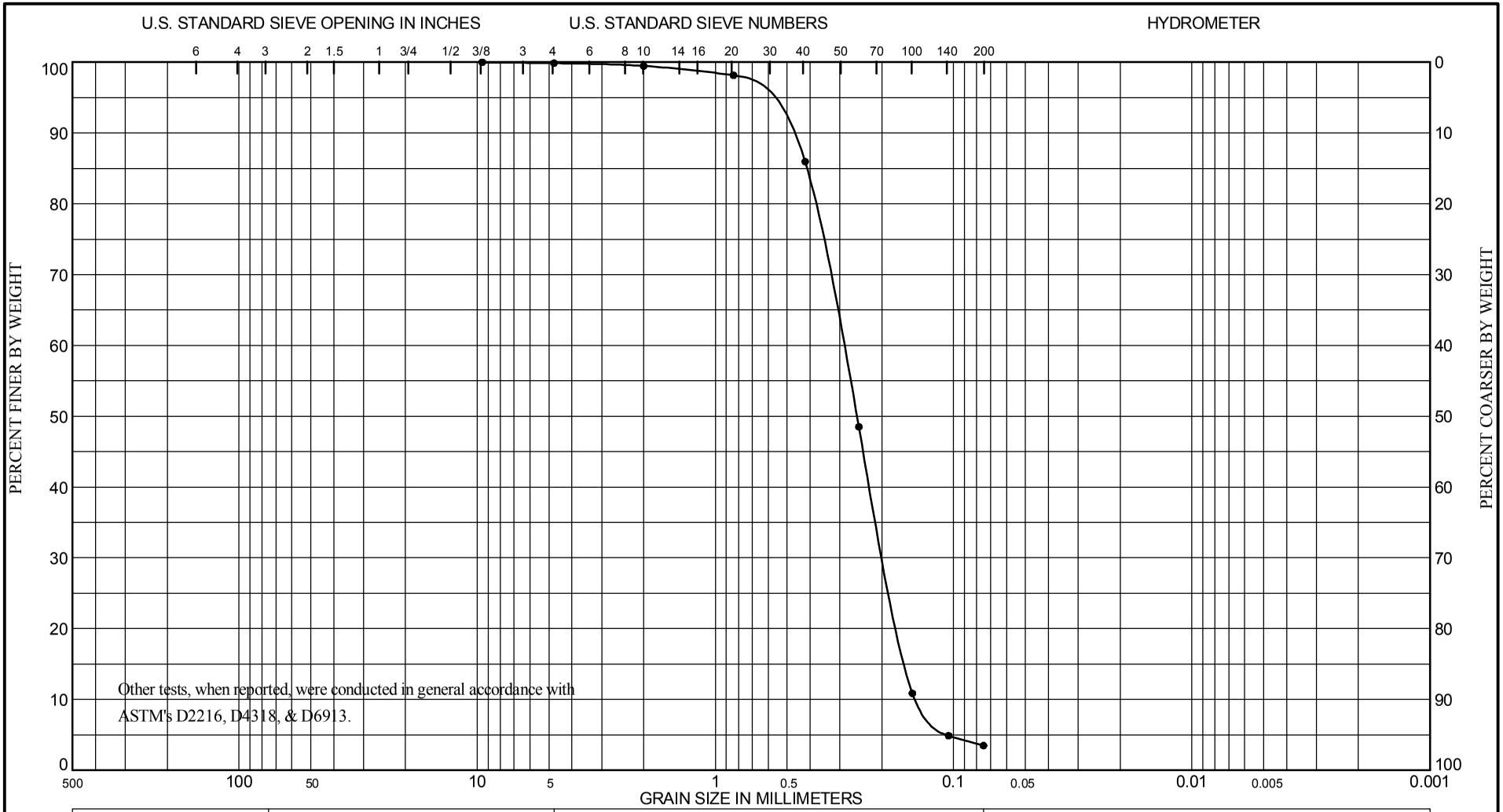
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| A | 0.0 to 0.8 | Olive Gray, Poorly Graded Sand (SP). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3875
Hole No. BI-HP-45-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

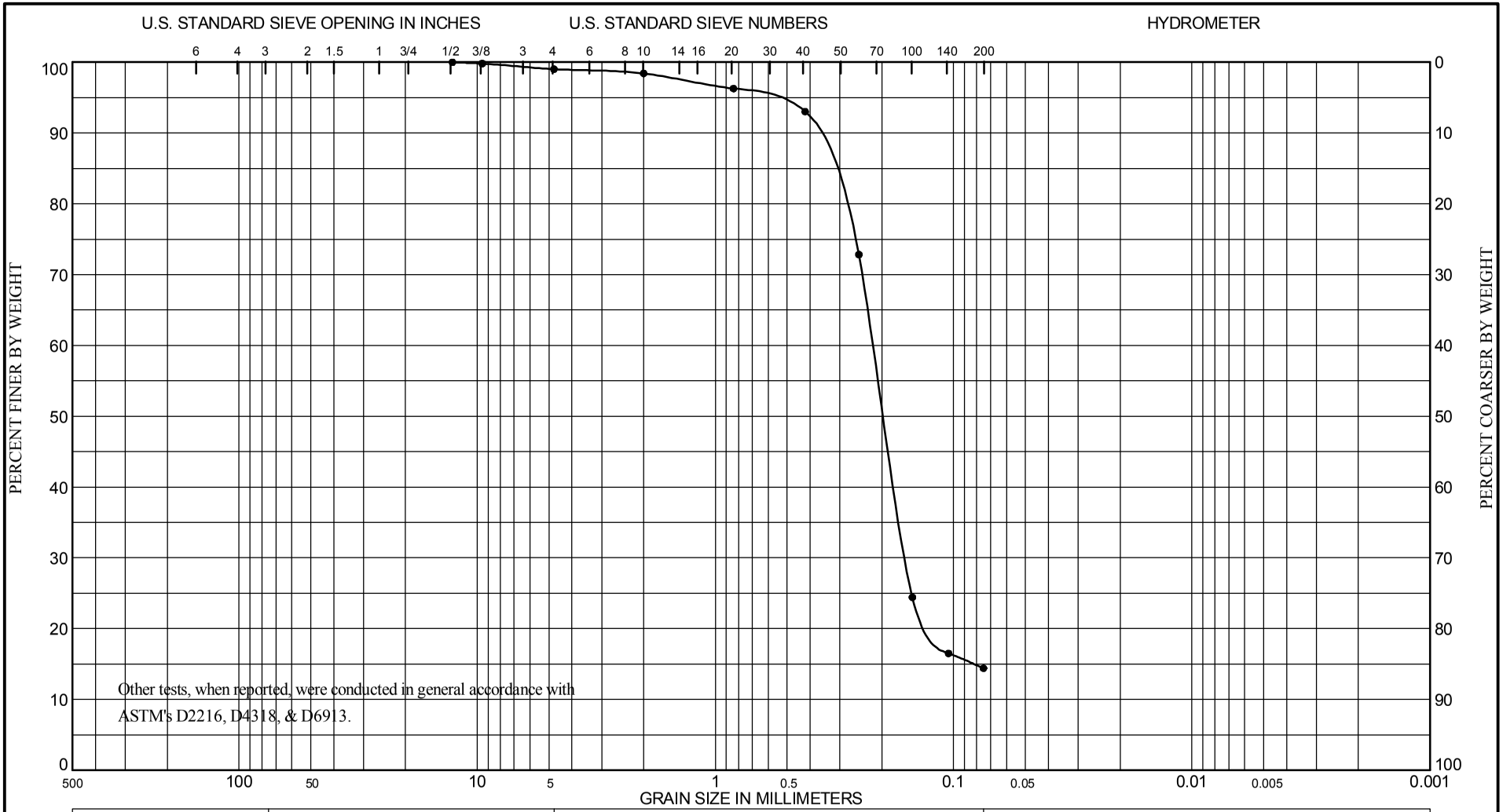
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| B | 1.4 to 3.0 | Greenish Gray, Poorly Graded Sand (SP). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3876
Hole No. BI-HP-45-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| C | 3.0 to 4.2 | Dark Greenish Gray, Silty Sand (SM), with a trace of gravel size | | | | |
| | | shell. | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3877
Hole No. BI-HP-45-13
Date 4/23/14

# GRADATION CURVES

## Boring Designation BI-HP-46-13

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-46-13 — LOCATION COORDINATES: E = 1,071,090 N = 246,671 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 37 Ft. |
| | 15. DATE BORING — STARTED: 11-29-13 — COMPLETED: 11-29-13 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -36.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 17.6 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Tom Powers, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -36.5 | 0.0 | | | | |
| -39.8 | 3.3 | | SAND, poorly-graded, mostly fine to medium-grained quartz, trace shell, single 1-inch clay lens at 1.5-ft. depth, light gray (SP) | A | Classification: SP-SM Color: 2.5Y 7/1-light gray<br>D50: 0.283 mm % Fines: 6.3 |
| -45.1 | 8.6 | | SAND, silty, few shell, several 1-inch clay lenses in upper half of sample, medium gray (SM) | B | Classification: SP-SM Color: 2.5Y 5/1-gray<br>D50: 0.19 mm % Fines: 11.5 |
| -54.1 | 17.6 | | SAND, clayey, medium gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation from 2013 USACE hydrographic survey.

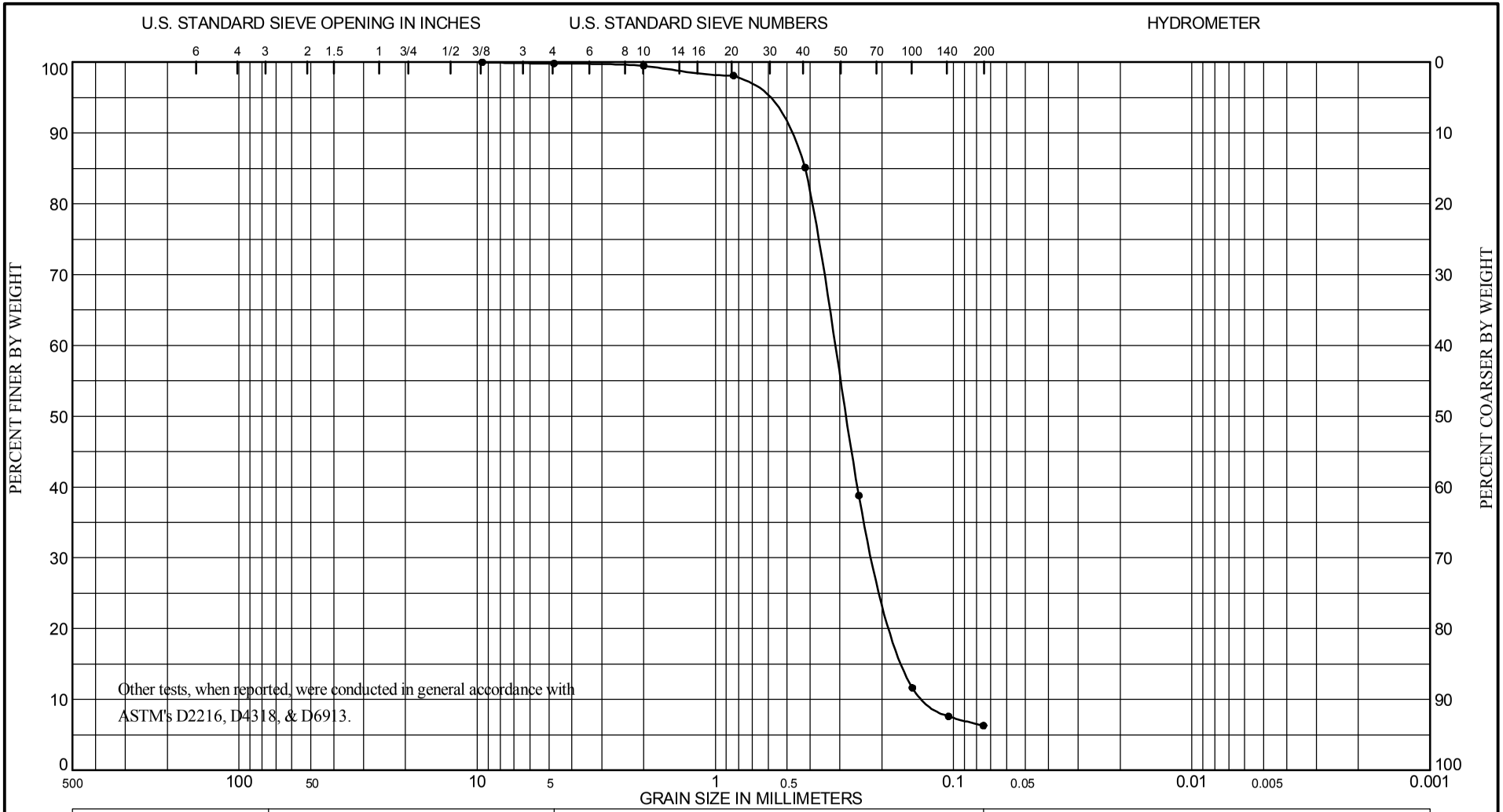
0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17801° Long = -88.55850°**

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

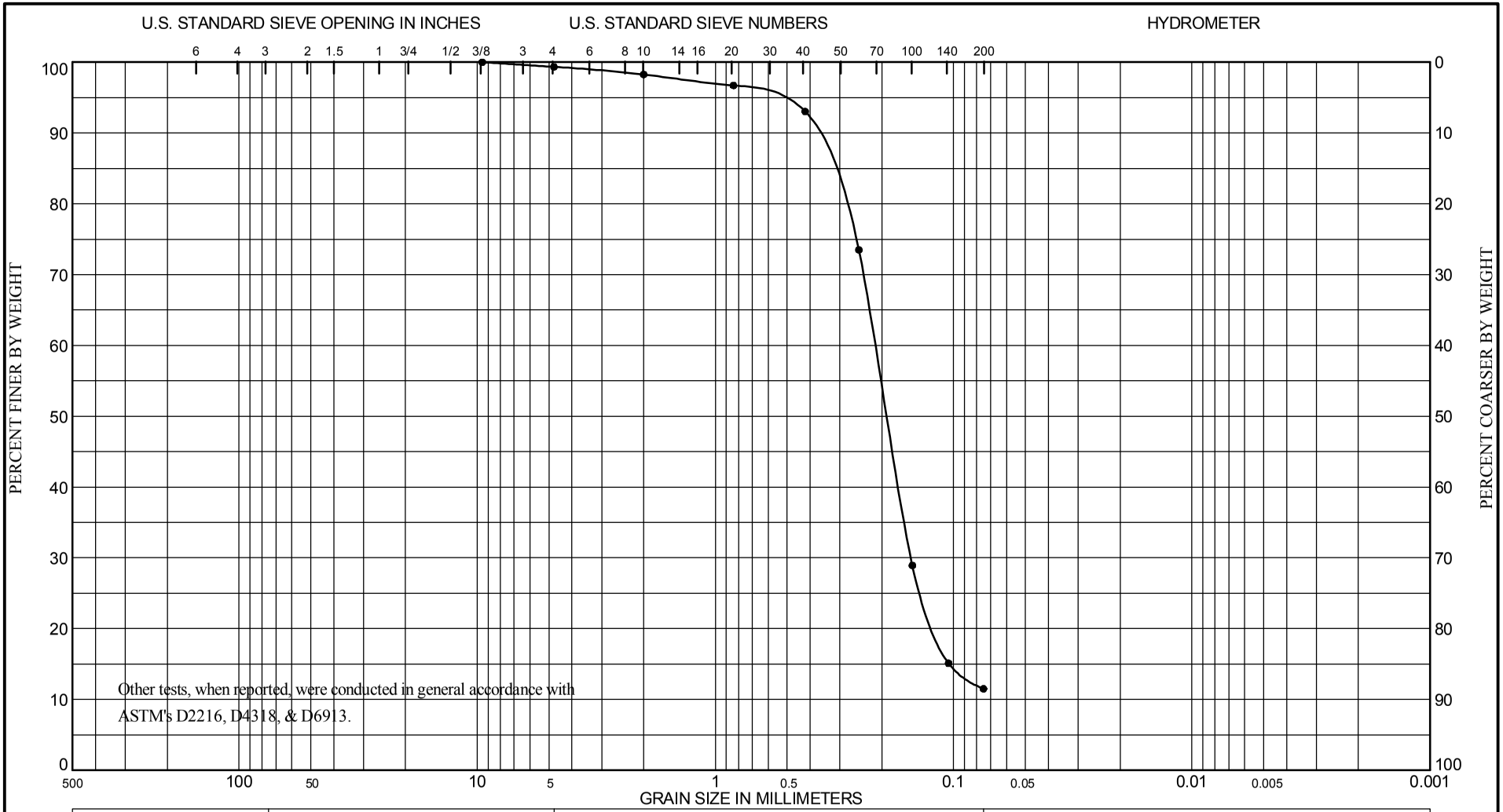
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| A | 0.0 to 3.3 | Light Olive Gray, Poorly Graded Silty Sand (SP-SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3862
Hole No. BI-HP-46-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| B | 3.3 to 8.6 | Very Dark Greenish Gray, Poorly Graded Silty Sand (SP-SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3863
Hole No. BI-HP-46-13
Date 4/23/14

# GRADATION CURVES

**Boring Designation BI-HP-47-13**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-47-13 — LOCATION COORDINATES: E = 1,071,999 N = 246,015 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 3 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 41 Ft. |
| | 15. DATE BORING — STARTED: 11-29-13 — COMPLETED: 11-29-13 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -39.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Tom Powers, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -39.8 | 0.0 | | | | |
| -41.7 | 1.9 | | SAND, poorly-graded, mostly fine-grained quartz, trace shell, lt. gray (SP) | A | Classification: SP-SM Color: GLEY1 10Y 6/1- D50: 0.201 mm % Fines: 5 |
| -42.8 | 3.0 | | SAND, poorly-graded with silt, medium gray (SP-SM) | B | Classification: SM Color: 2.5Y 5/1-gray D50: 0.189 mm % Fines: 14.4 |
| -44.8 | 5.0 | | SAND, silty, little shell, medium gray (SM) | C | Classification: SM Color: 2.5Y 5/1-gray D50: 0.171 mm % Fines: 15.2 |
| -45.8 | 6.0 | | SAND, clayey, trace shell, medium gray (SC) | NS | |
| -48.3 | 8.5 | | CLAY, lean, sandy, medium gray (CL) | | |
| -48.8 | 9.0 | | SAND, clayey, medium gray (SC) | | |
| -56.6 | 16.8 | | CLAY, lean, sandy, medium gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation from 2013 USACE hydrographic survey.

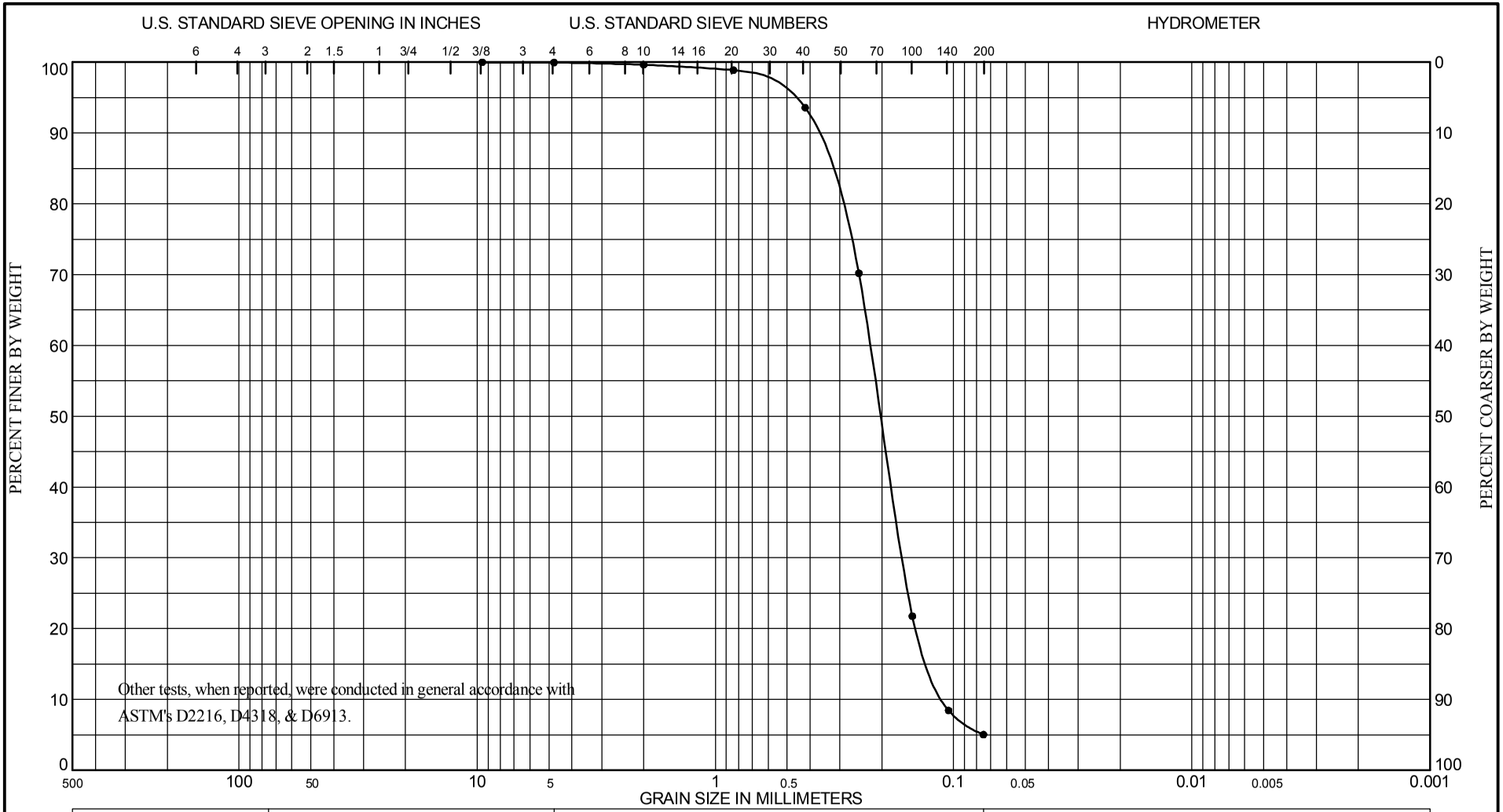
0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17620° Long = -88.55563°**

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

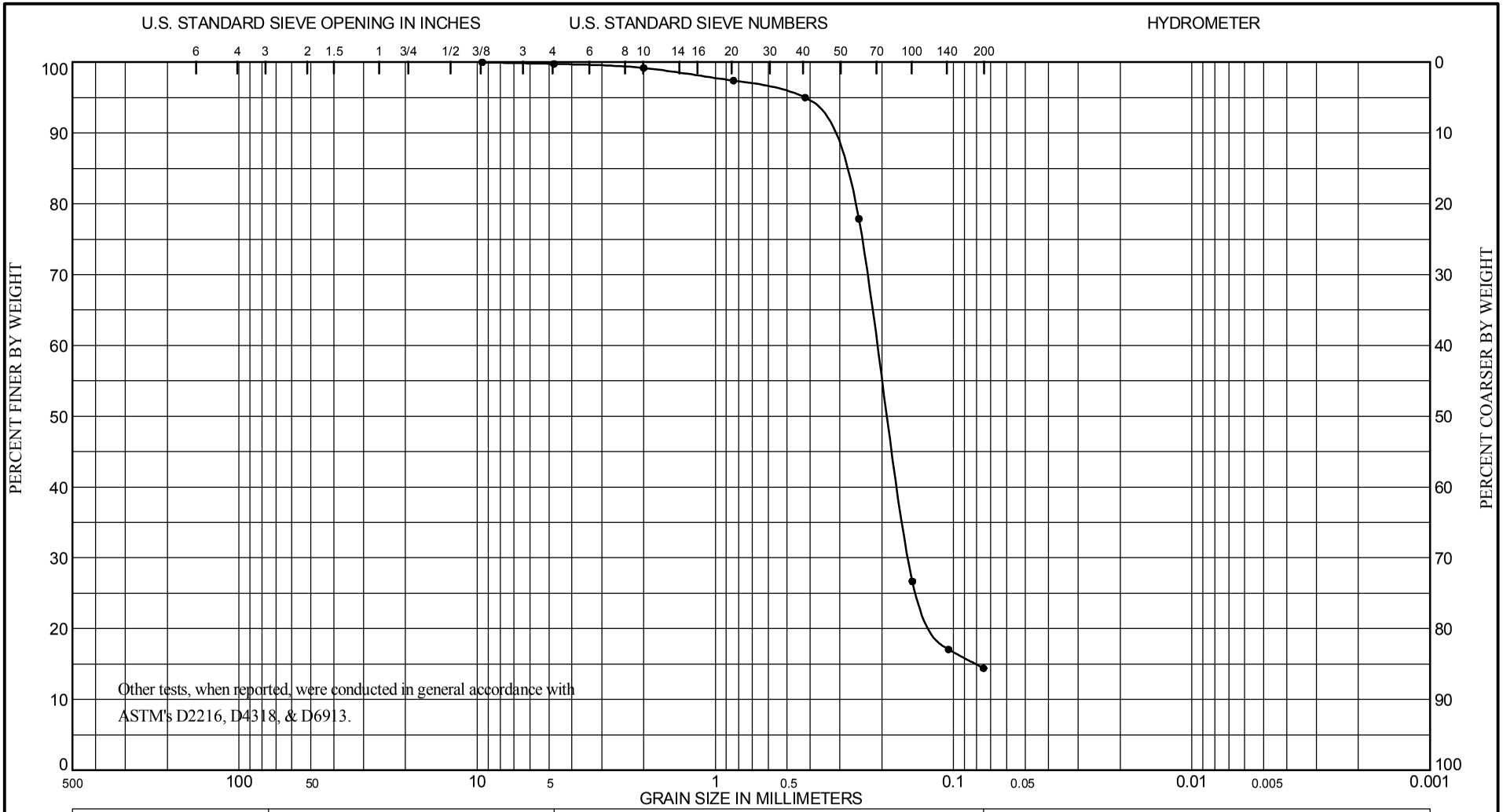
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| A | 0.0 to 1.9 | Olive Gray, Poorly Graded Silty Sand (SP-SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3872
Hole No. BI-HP-47-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

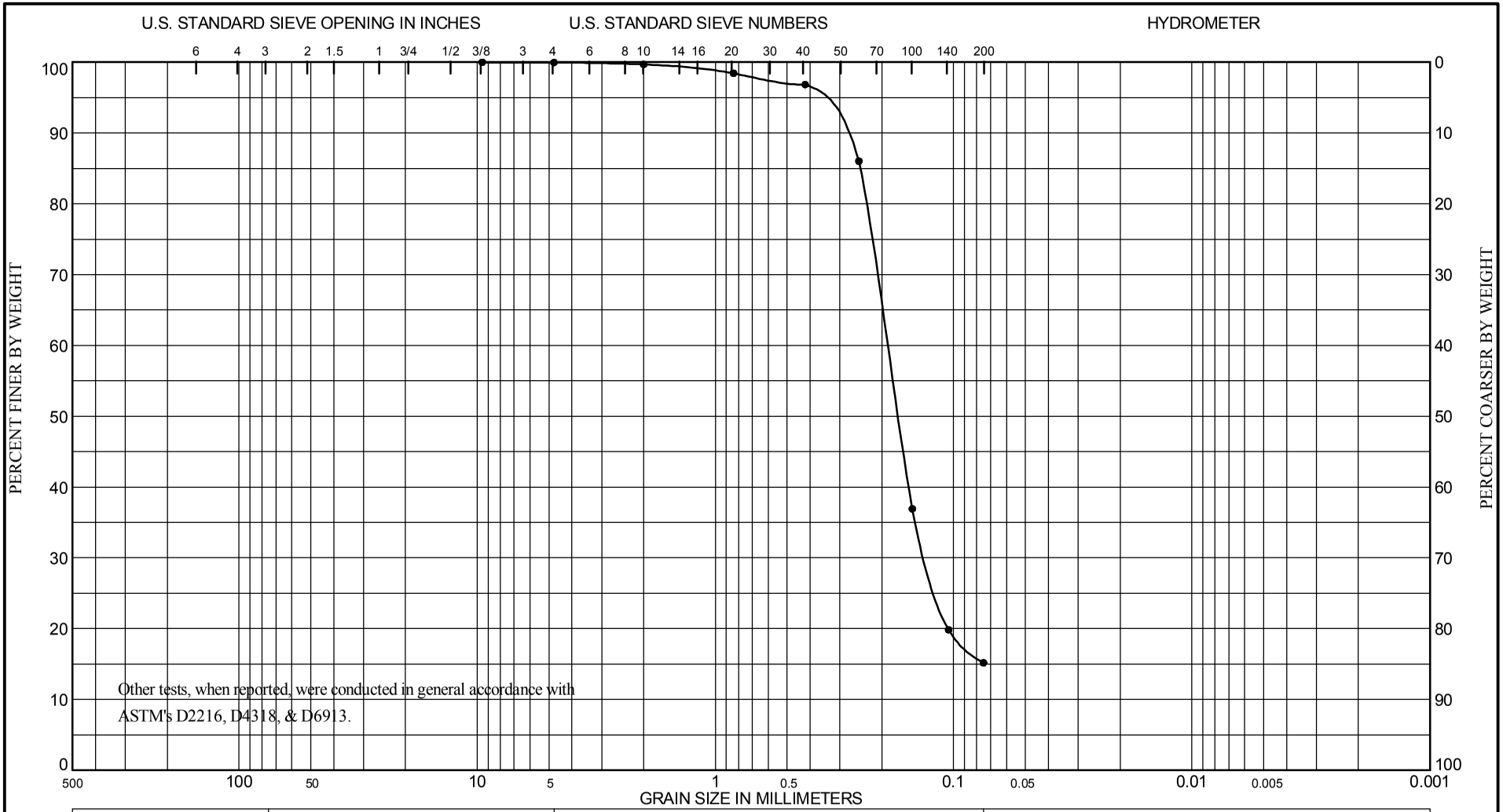
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| B | 1.9 to 3.0 | Dark Greenish Gray, Silty Sand (SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3873
Hole No. BI-HP-47-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| C | 3.0 to 5.0 | Dark Greenish Gray, Silty Sand (SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3874
Hole No. BI-HP-47-13
Date 4/23/14

# GRADATION CURVES

**Boring Designation BI-HP-48-13**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-48-13 — LOCATION COORDINATES: E = 1,069,332 N = 247,198 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 1 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 40 Ft. |
| | 15. DATE BORING — STARTED: 11-23-13 — COMPLETED: 11-23-13 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -39.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Tom Powers, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -39.5 | 0.0 | | | | |
| -42.3 | 2.8 | | SAND, poorly-graded, mostly fine to medium-grained quartz, trace fine-grained gravel, few shell fragments, light gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.272 mm % Fines: 3.2 |
| -43.5 | 4.0 | | SAND, clayey, few shell fragments, medium gray (SC) | | |
| -54.7 | 15.2 | | CLAY, lean, some quartz, sandy, little shell, medium gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation from 2013 USACE hydrographic survey.

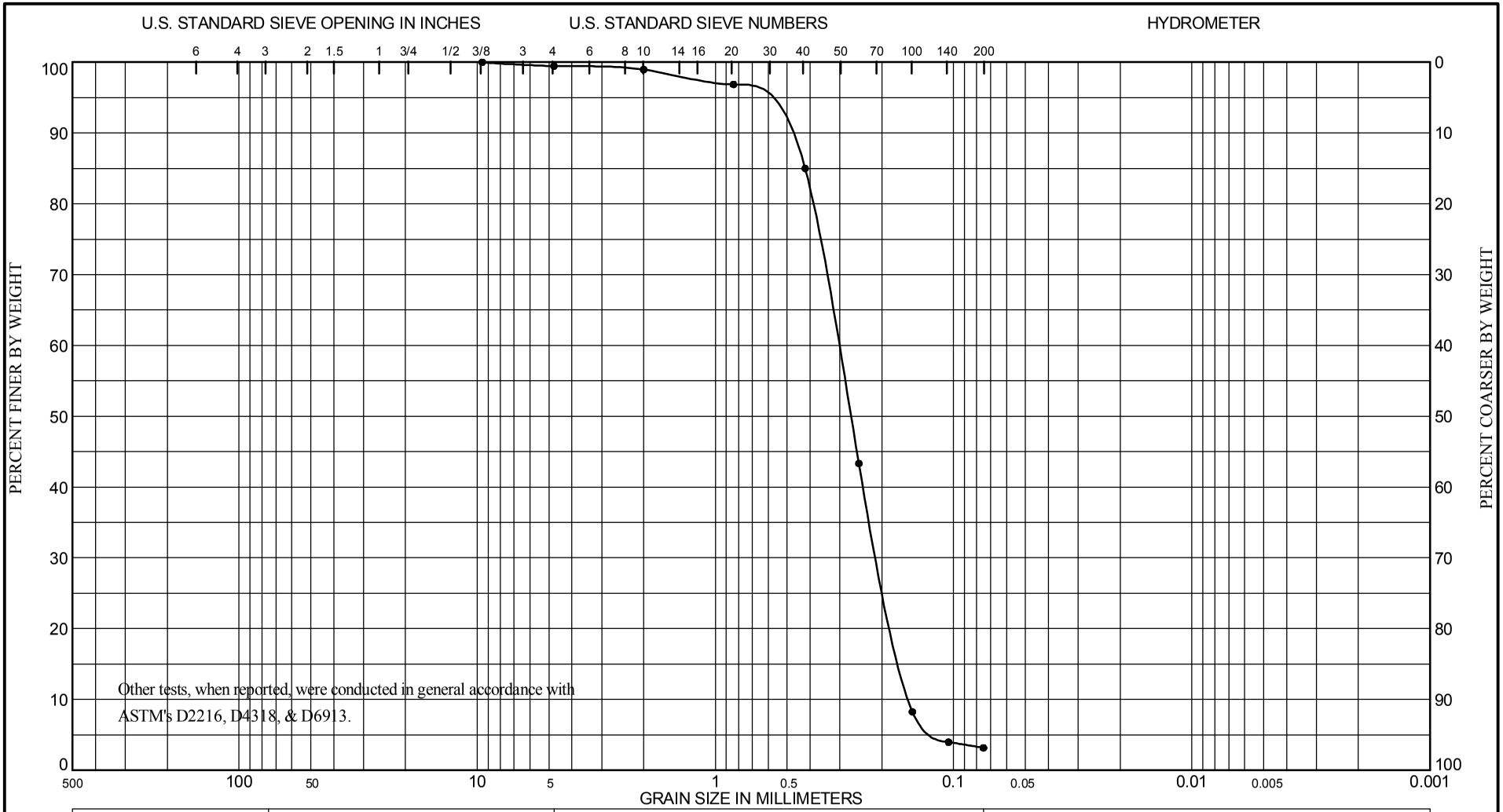
0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17947° Long = -88.56406°**

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| A | 0.0 to 2.8 | Light Olive Gray, Poorly Graded Sand (SP). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3857
Hole No. BI-HP-48-13
Date 4/23/14

# GRADATION CURVES

## Boring Designation BI-HP-49-13

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-49-13 — LOCATION COORDINATES: E = 1,070,391 N = 245,880 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 37.5 Ft. |
| | 15. DATE BORING — STARTED: 11-23-13 — COMPLETED: 11-23-13 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -38.6 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Tom Powers, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -38.6 | 0.0 | | | | |
| -42.0 | 3.4 | | SAND, poorly-graded, mostly fine to medium-grained quartz, few shell fragments, light gray (SP) | A | Classification: SP Color: GLEY1 10Y 7/1- D50: 0.308 mm % Fines: 1.4 |
| -42.7 | 4.1 | | SAND, silty, mostly fine-grained, trace shell fragments, medium gray (SM) | B | Classification: SP-SM Color: 2.5Y 6/1-gray D50: 0.214 mm % Fines: 9.3 |
| | | | SAND, clayey, little shell, medium gray (SC) | | |
| | | | At El. -47.6 Ft., interbedded clayey sand and silty sand, medium gray | NS | |
| -54.5 | 15.9 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation from 2013 USACE hydrographic survey.

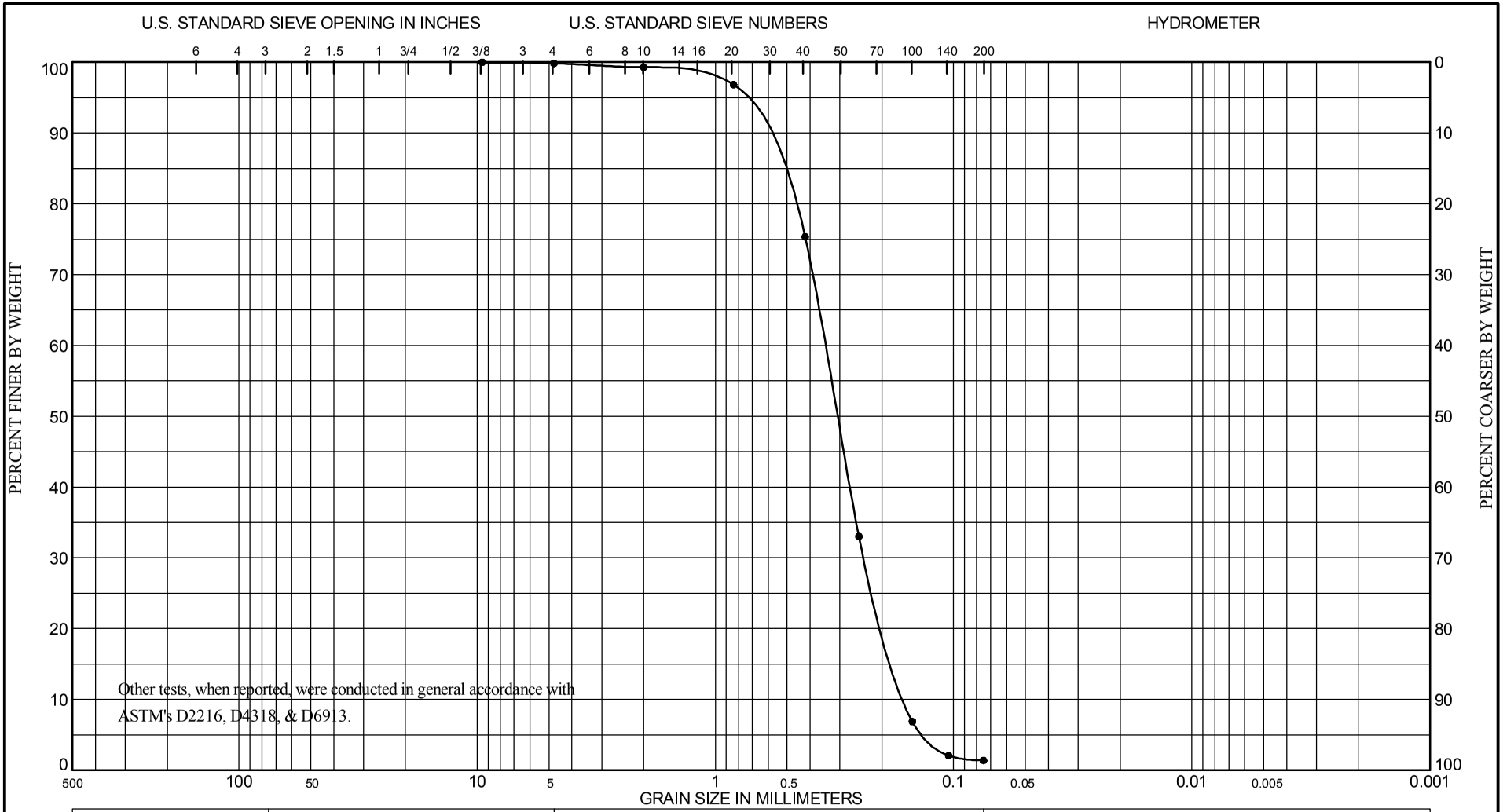
0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.17584° Long = -88.56072°

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

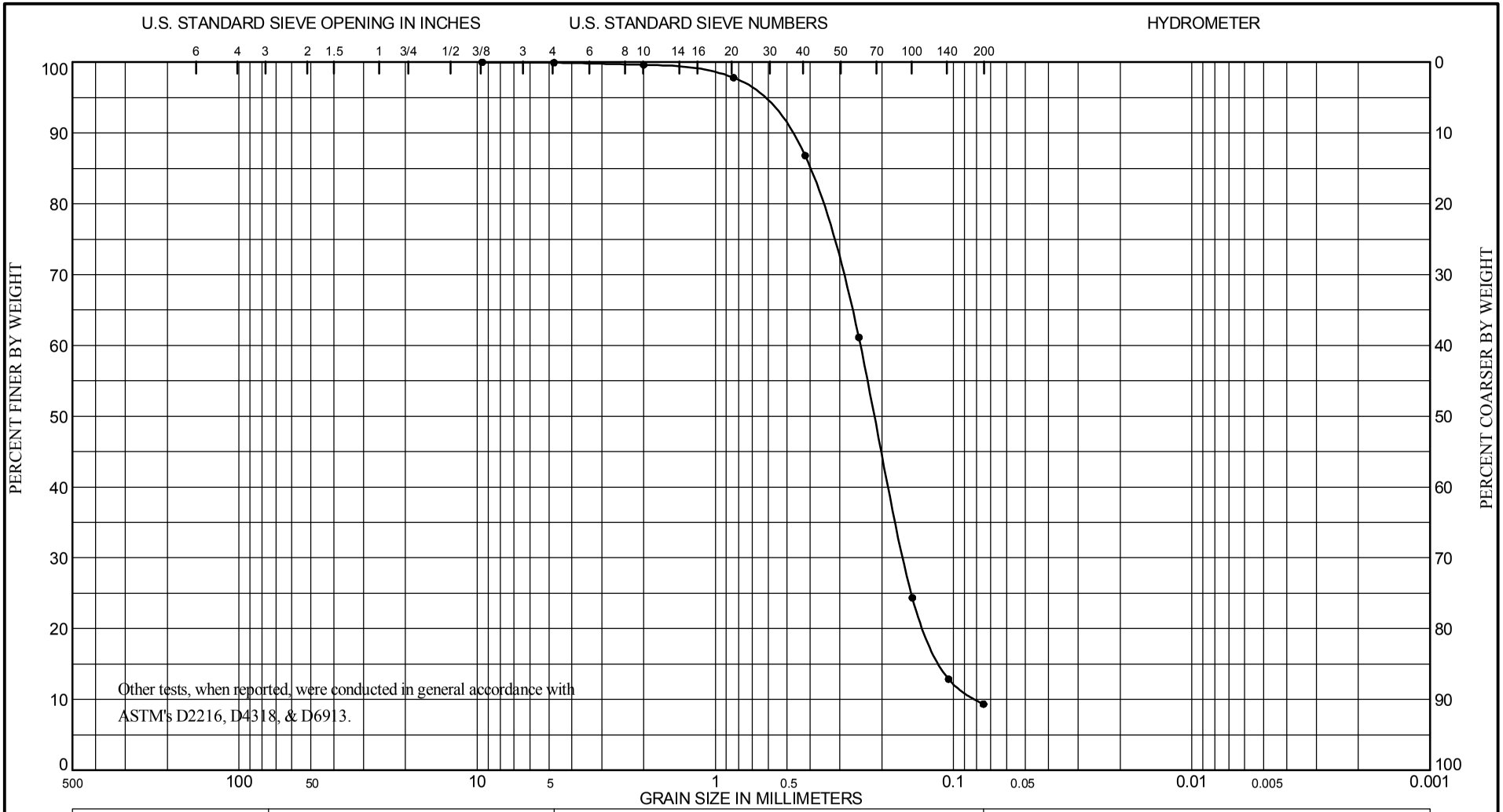
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| A | 0.0 to 3.4 | Light Olive Gray, Poorly Graded Sand (SP). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3860
Hole No. BI-HP-49-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| B | 3.4 to 4.1 | Very Dark Greenish Gray, Poorly Graded Silty Sand (SP-SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3861
Hole No. BI-HP-49-13
Date 4/23/14

# GRADATION CURVES

**Boring Designation BI-HP-50-13**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-50-13 — LOCATION COORDINATES: E = 1,071,353 N = 245,220 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 4 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 41 Ft. |
| | 15. DATE BORING — STARTED: 11-29-13 — COMPLETED: 11-29-13 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -40.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Tom Powers, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -40.5 | 0.0 | | | | |
| -41.7 | 1.2 | | SAND, poorly-graded, mostly fine-grained quartz, little shell, few 1/2-inch clay lenses, medium gray (SP) | A | Classification: SP-SM Color: 2.5Y 6/1-gray D50: 0.231 mm % Fines: 6.6 |
| -44.5 | 4.0 | | SAND, poorly-graded with silt, mostly fine-grained, little shell, medium gray (SP-SM) | B | Classification: SM Color: GLEY1 10Y 5/1- D50: 0.174 mm % Fines: 14 |
| -53.5 | 13.0 | | SAND, silty, mostly fine-grained, little shell, medium gray (SM) | C | Classification: SM Color: GLEY1 10Y 5/1- D50: 0.155 mm % Fines: 18.4 |
| | | | | D | Classification: SM Color: 2.5Y 5/1-gray D50: 0.156 mm % Fines: 22 |
| -57.0 | 16.5 | | SAND, clayey, little shell, medium gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation from 2013 USACE hydrographic survey.

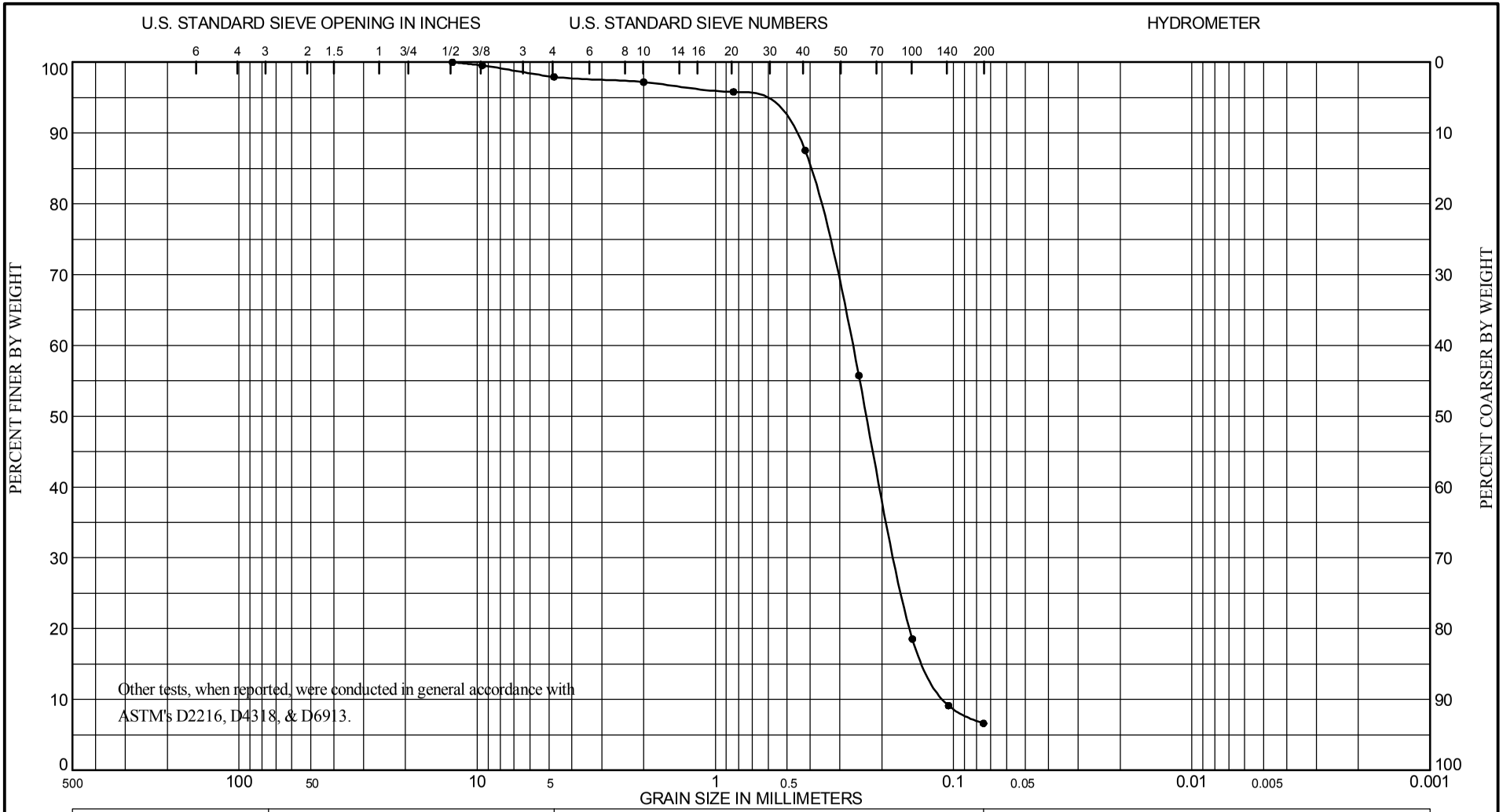
0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17402° Long = -88.55768°**

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

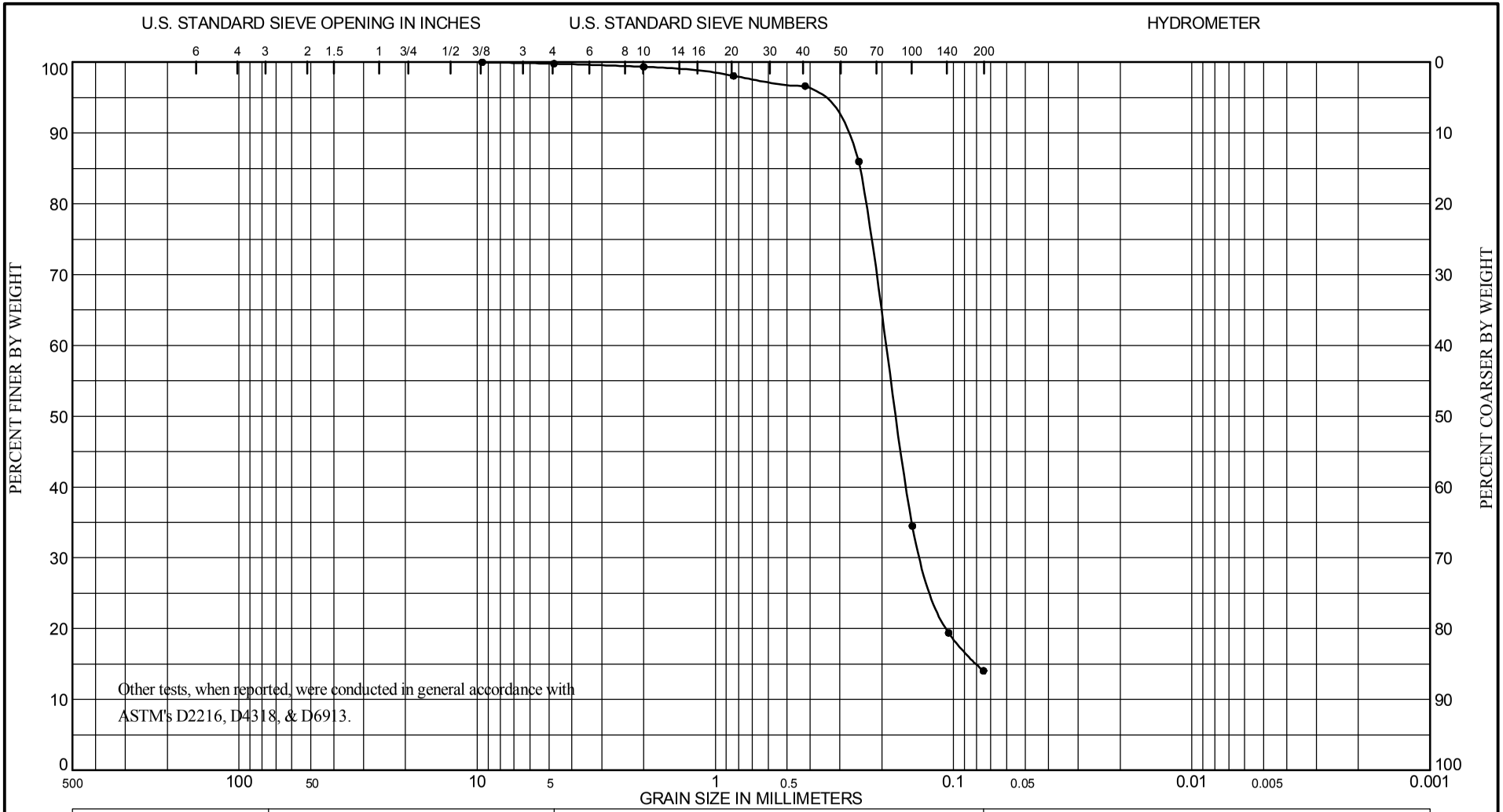
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| A | 0.0 to 1.2 | Olive Gray, Poorly Graded Silty Sand (SP-SM), with a trace of gravel | | | | |
| | | size shell. | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3868
Hole No. BI-HP-50-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

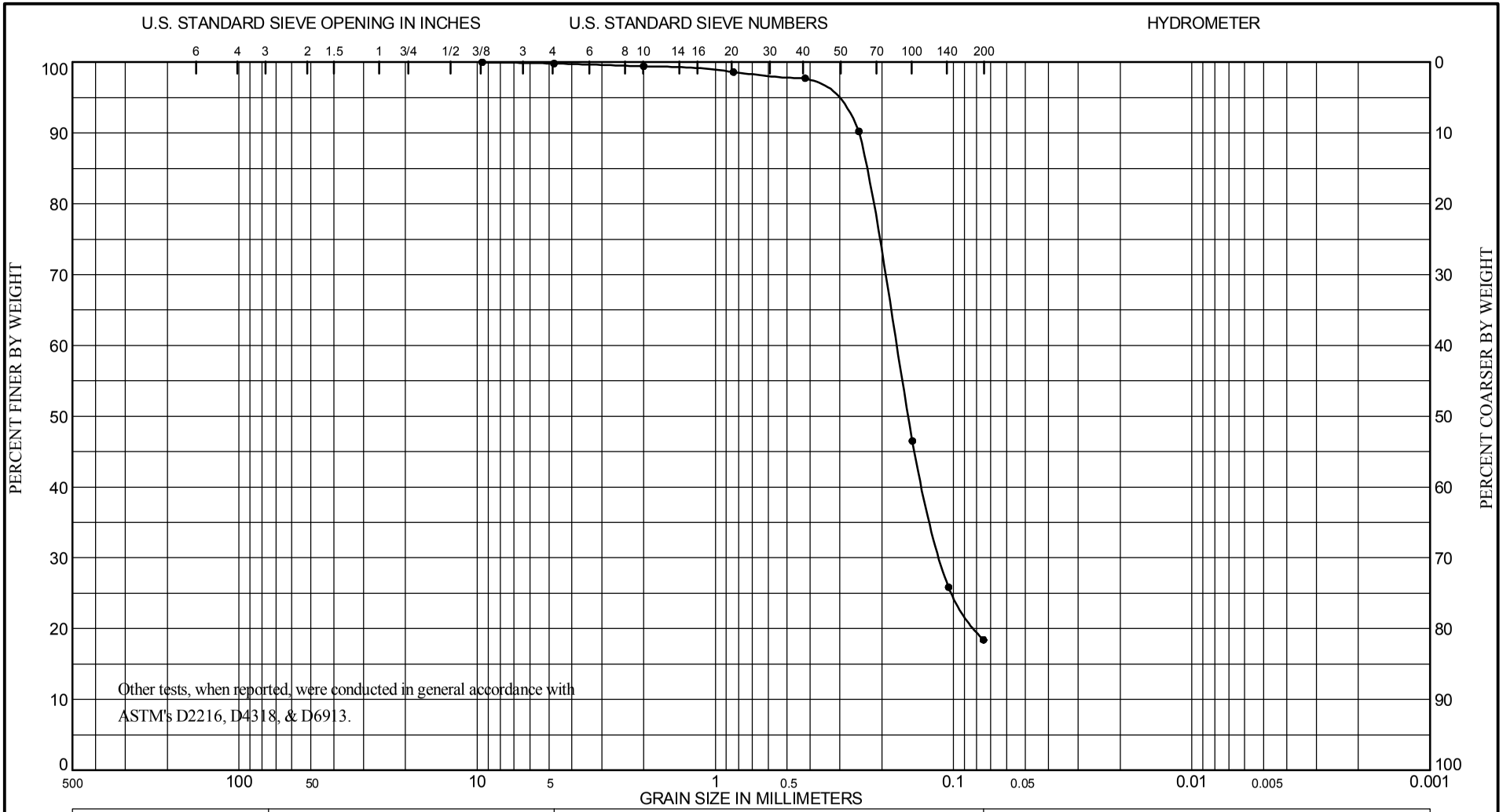
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| B | 1.2 to 4.0 | Dark Greenish Gray, Silty Sand (SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3869
Hole No. BI-HP-50-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

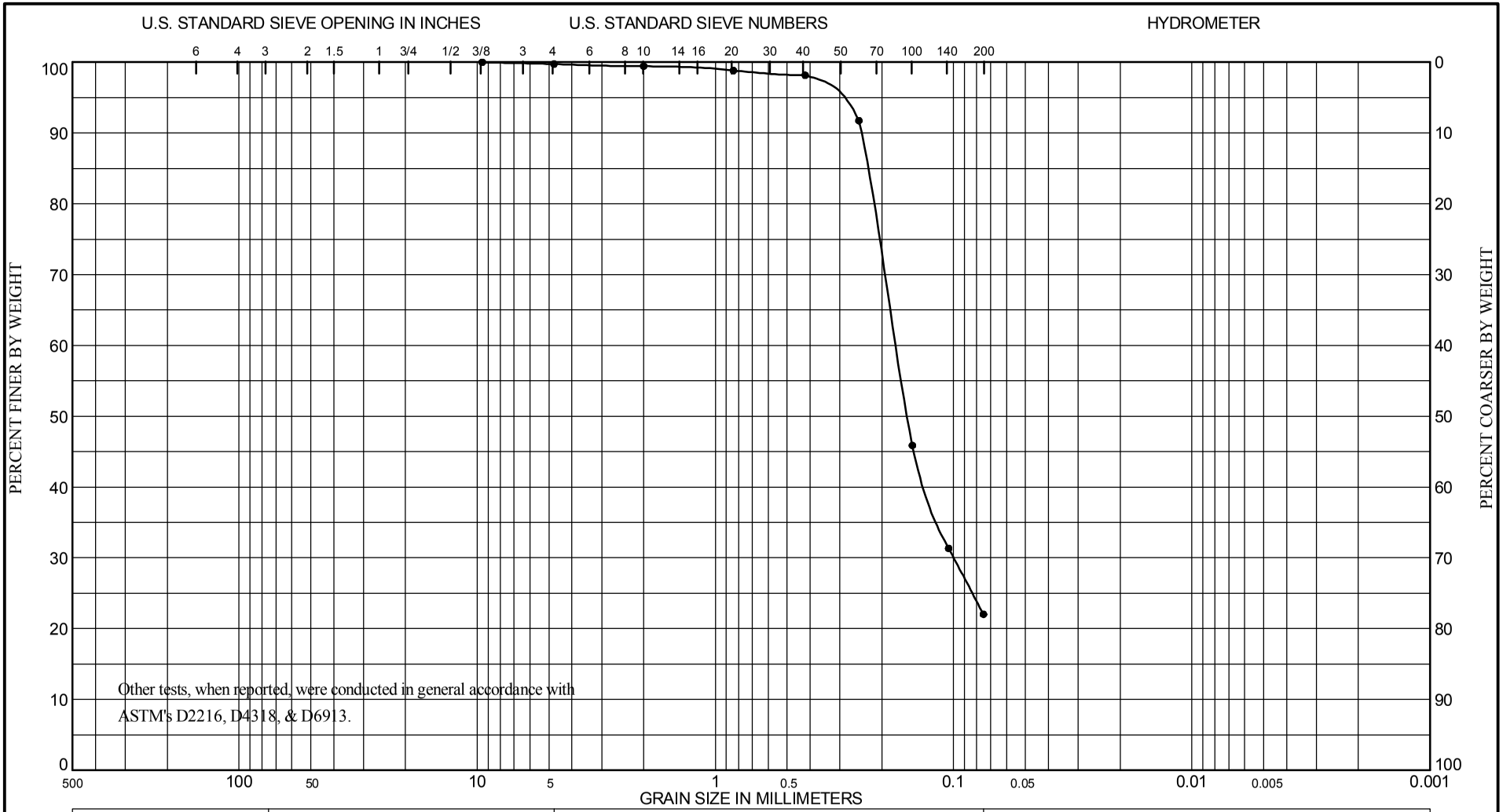
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| C | 4.0 to 9.0 | Dark Greenish Gray, Silty Sand (SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3870
Hole No. BI-HP-50-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| D | 9.0 to 13.0 | Dark Greenish Gray, Silty Sand (SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3871
Hole No. BI-HP-50-13
Date 4/23/14

# GRADATION CURVES

**Boring Designation BI-HP-51-13**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-51-13 — LOCATION COORDINATES: E = 1,070,483 N = 244,294 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 4 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 43 Ft. |
| | 15. DATE BORING — STARTED: 11-29-13 — COMPLETED: 11-29-13 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -41.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Tom Powers, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -41.8 | 0.0 | | | | |
| -42.5 | 0.7 | | SAND, poorly-graded, mostly fine-grained quartz, medium gray (SP) | A | Classification: SP-SM Color: GLEY1 10Y 5/1- D50: 0.194 mm % Fines: 8.4 |
| | | | SAND, silty, mostly fine-grained, few shell, medium gray (SM) | B | Classification: SM Color: 2.5Y 5/1-gray D50: 0.165 mm % Fines: 15.2 |
| | | | | C | Classification: SM Color: 2.5Y 5/1-gray D50: 0.157 mm % Fines: 18.5 |
| -56.3 | 14.5 | | | D | Classification: SM Color: 2.5Y 5/1-gray D50: 0.117 mm % Fines: 26.8 |
| -57.7 | 15.9 | | CLAY, lean, sandy, medium gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation from 2013 USACE hydrographic survey.

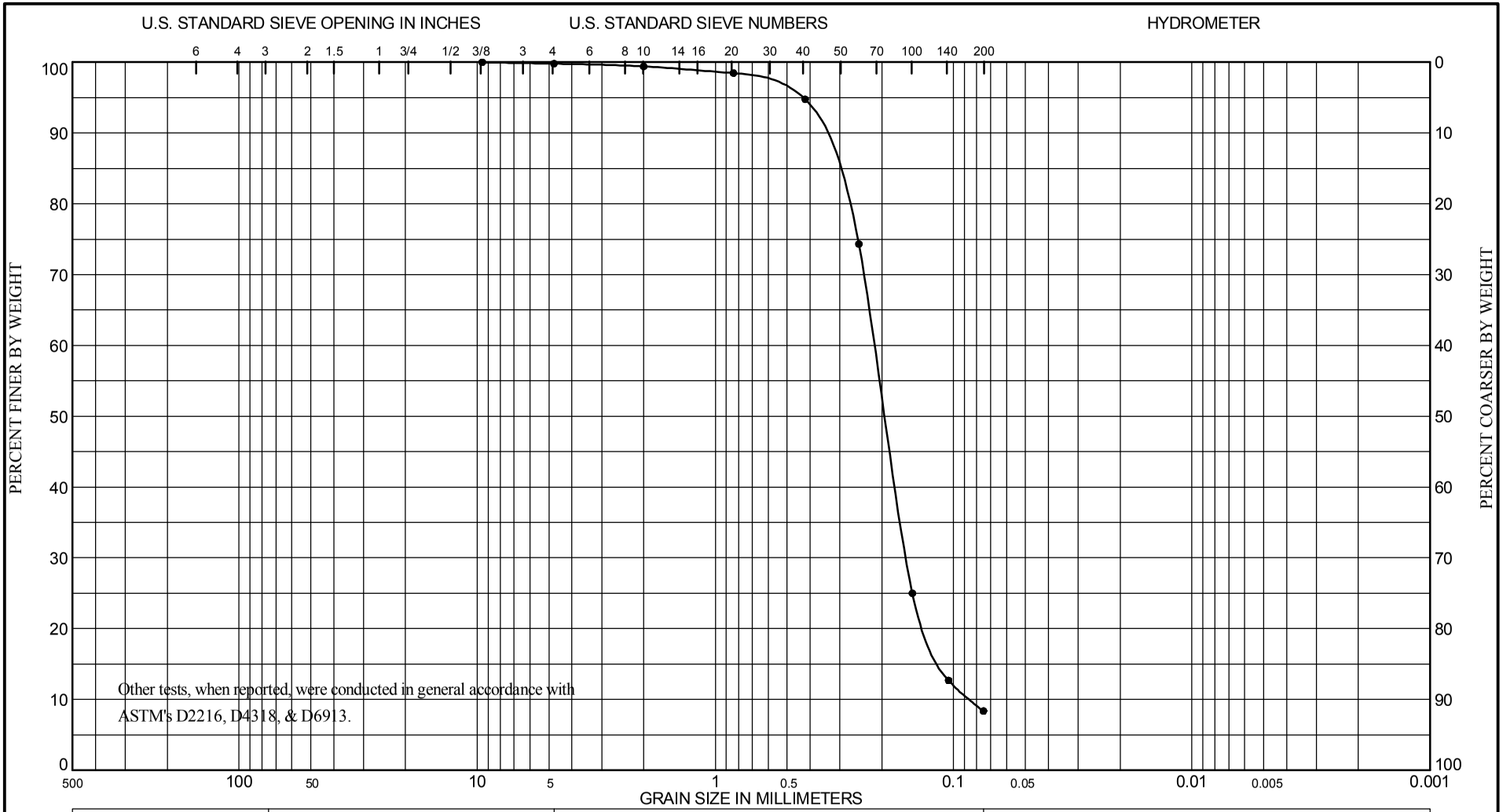
0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17148° Long = -88.56044°**

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

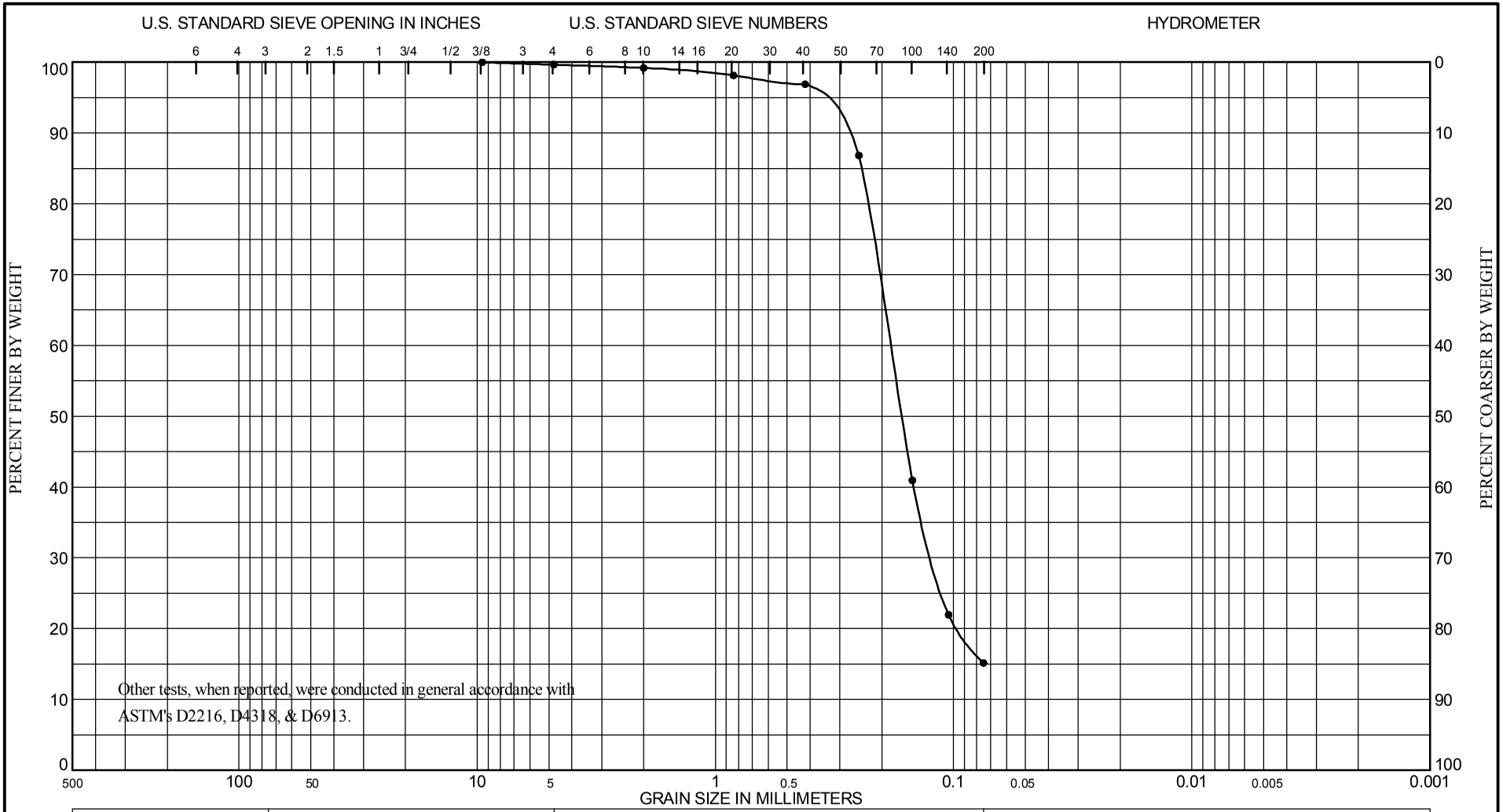
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| A | 0.0 to 0.7 | Olive Gray, Poorly Graded Silty Sand (SP-SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3864
Hole No. BI-HP-51-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

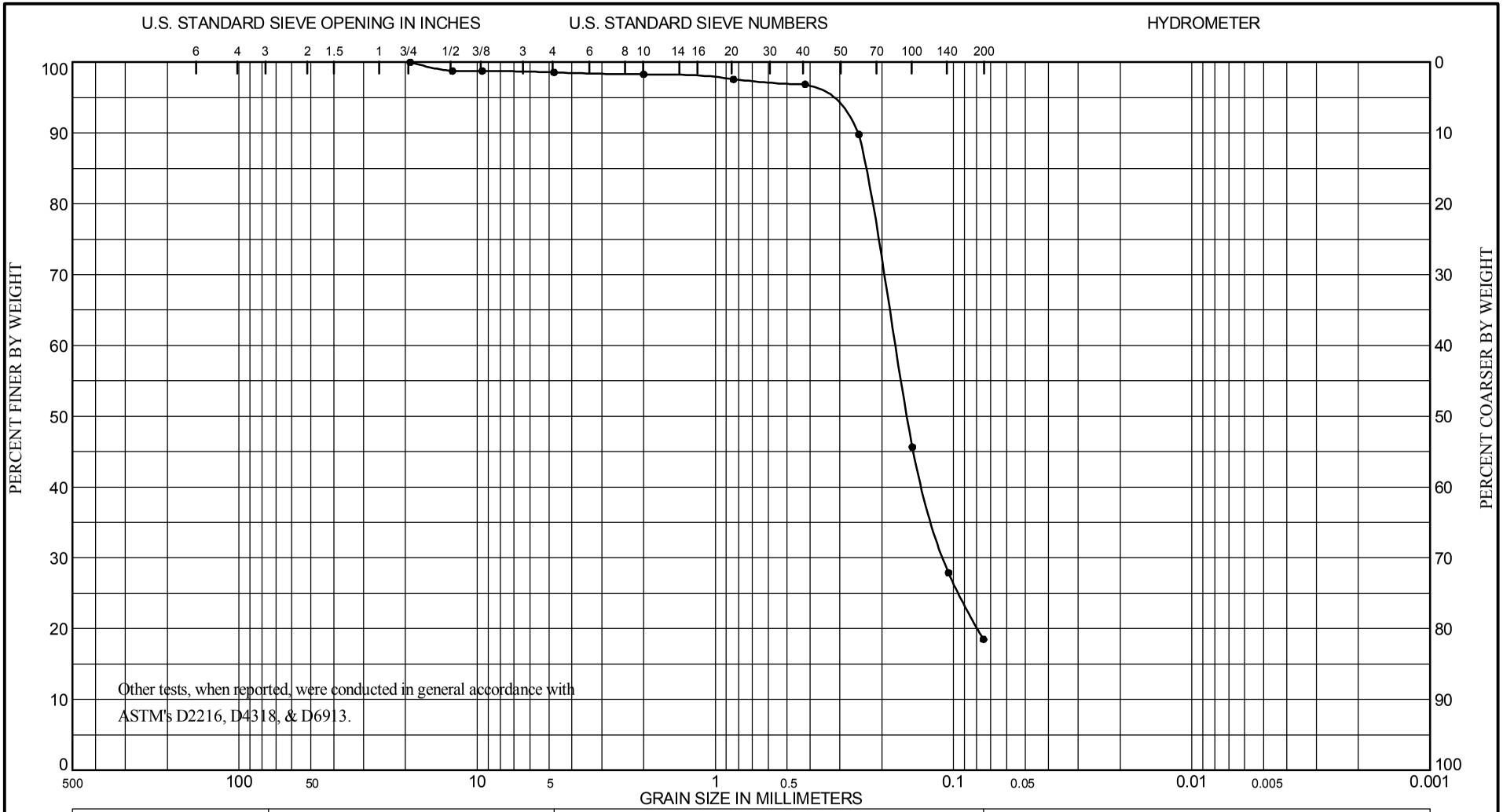
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| B | 0.7 to 5.7 | Dark Greenish Gray, Silty Sand (SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3865
Hole No. BI-HP-51-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

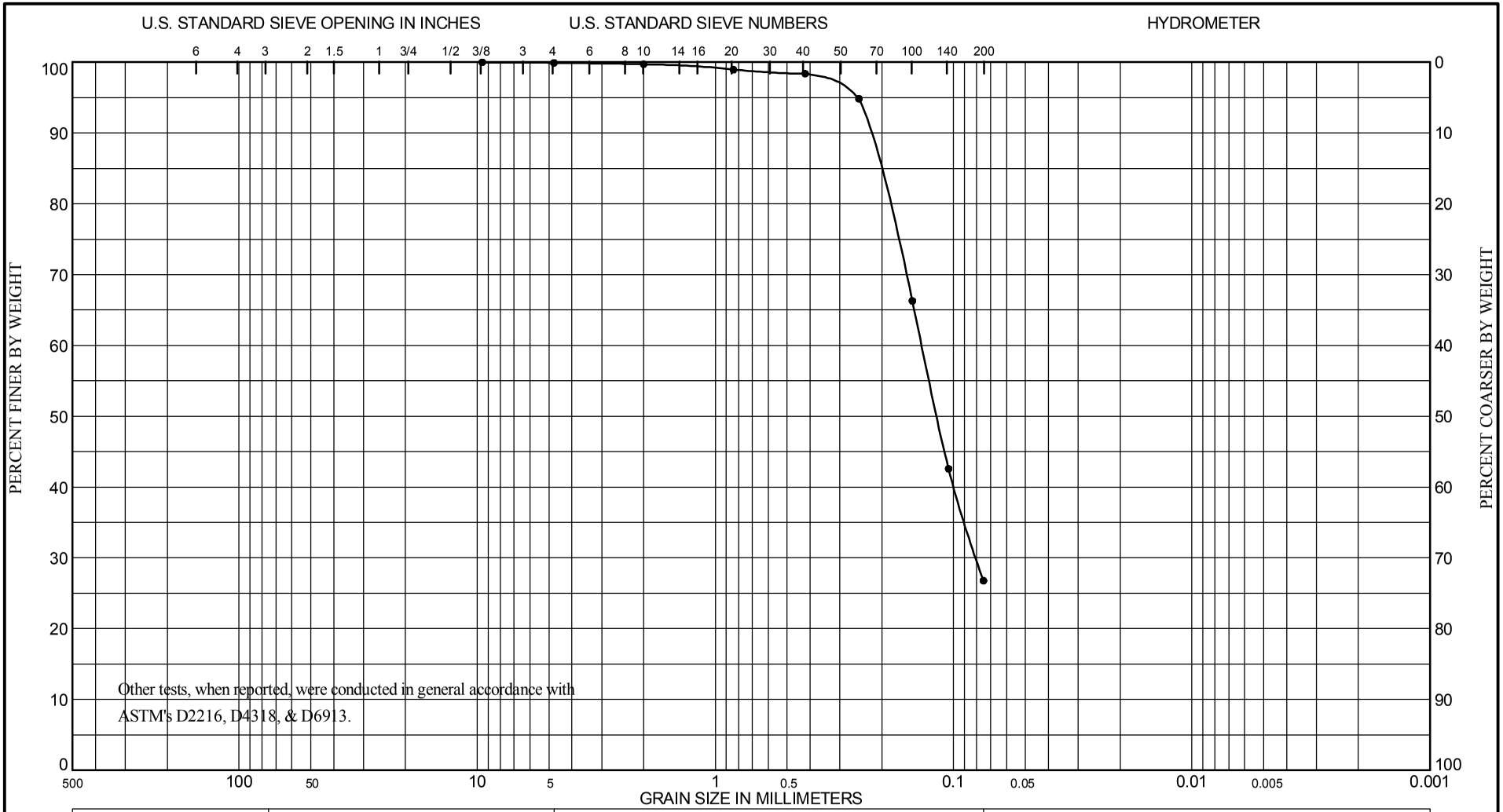
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| C | 5.7 to 10.7 | Very Dark Greenish Gray, Silty Sand (SM), with a trace of gravel size shell. | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3866
Hole No. BI-HP-51-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| D | 10.7 to 14.5 | Dark Greenish Gray, Silty Sand (SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3867
Hole No. BI-HP-51-13
Date 4/23/14

# GRADATION CURVES

**Boring Designation BI-HP-52-13**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-52-13 — LOCATION COORDINATES: E = 1,069,571 N = 244,991 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 1 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 40 Ft. |
| | 15. DATE BORING — STARTED: 11-23-13 — COMPLETED: 11-23-13 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -40.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Tom Powers, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -40.7 | 0.0 | | | | |
| -42.6 | 1.9 | | SAND, silty, mostly fine to medium-grained, little shell, medium gray (SM) | A | Classification: SP Color: 2.5YR 6/1-reddish gray D50: 0.253 mm % Fines: 4.5 |
| -44.7 | 4.0 | | CLAY, lean, sandy, little shell fragment, medium gray (CL) | NS | |
| -47.7 | 7.0 | | SAND, silty, medium gray (SM) | | |
| -54.7 | 14.0 | | SAND, clayey, medium gray (SC) | | |
| -59.9 | 19.2 | | CLAY, lean, sandy, medium gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation from 2013 USACE hydrographic survey.

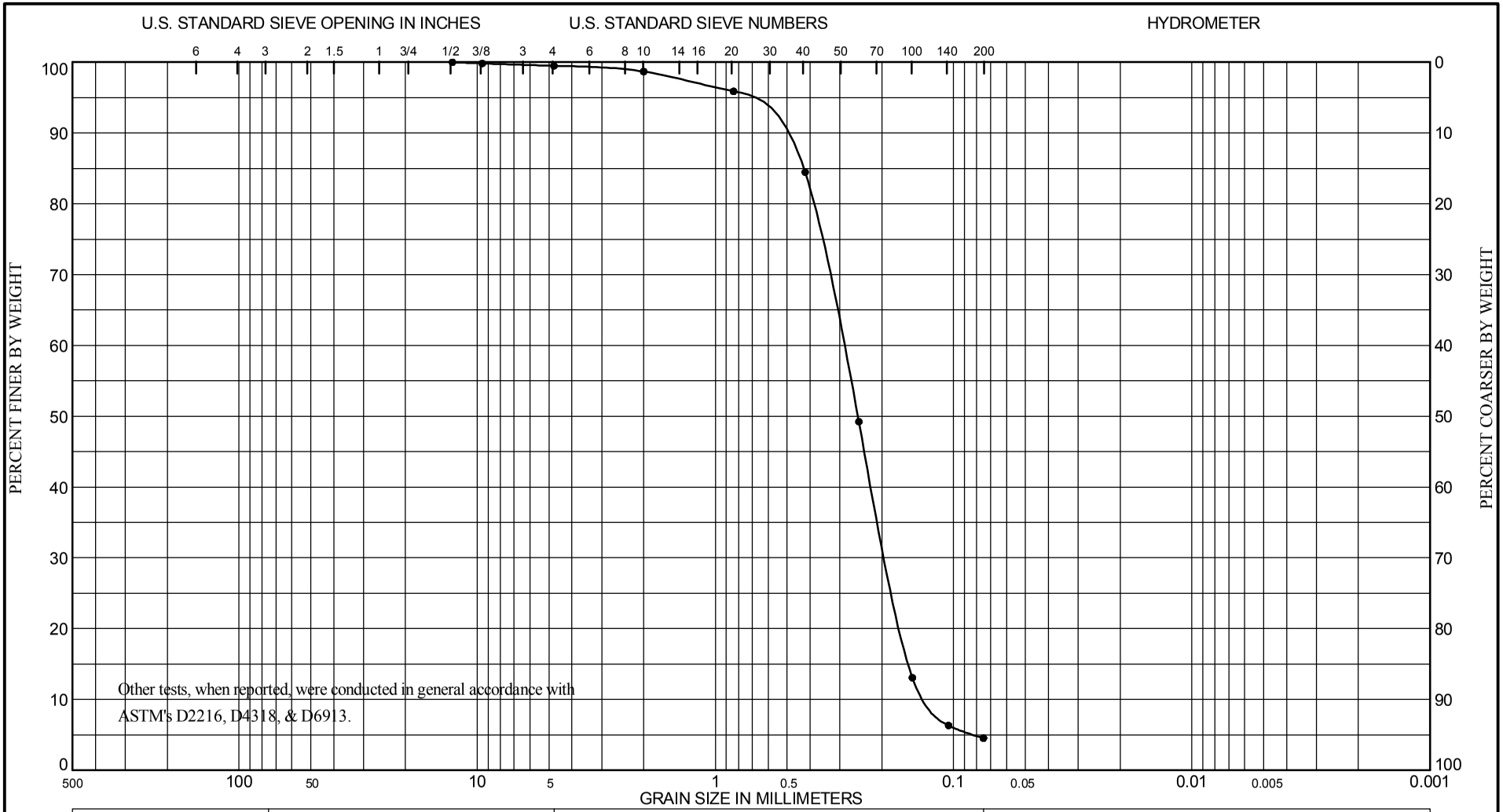
0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17340° Long = -88.56332°**

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| A | 0.0 to 1.9 | Dark Greenish Gray, Poorly Graded Sand (SP). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3859
Hole No. BI-HP-52-13
Date 4/23/14

# GRADATION CURVES

**Boring Designation BI-HP-53-13**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Horn Island Pass | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-HP-53-13 — LOCATION COORDINATES: E = 1,068,592 N = 246,134 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: 1 — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: Construction Solutions International, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING | 14. WATER DEPTH: 39 Ft. |
| | 15. DATE BORING — STARTED: 11-23-13 — COMPLETED: 11-23-13 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -39.9 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Tom Powers, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -39.9 | 0.0 | | | | |
| -42.3 | 2.4 | | SAND, poorly-graded, mostly fine to medium-grained quartz, trace shell, trace clay lenses, 0.1 ft. thick, light gray (SP) | A | Classification: SP Color: 2.5Y 7/1-light gray<br>D50: 0.265 mm % Fines: 3.1 |
| -55.4 | 15.5 | | CLAY, lean, sandy, little shell, medium gray (CL) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation from 2013 USACE hydrographic survey.

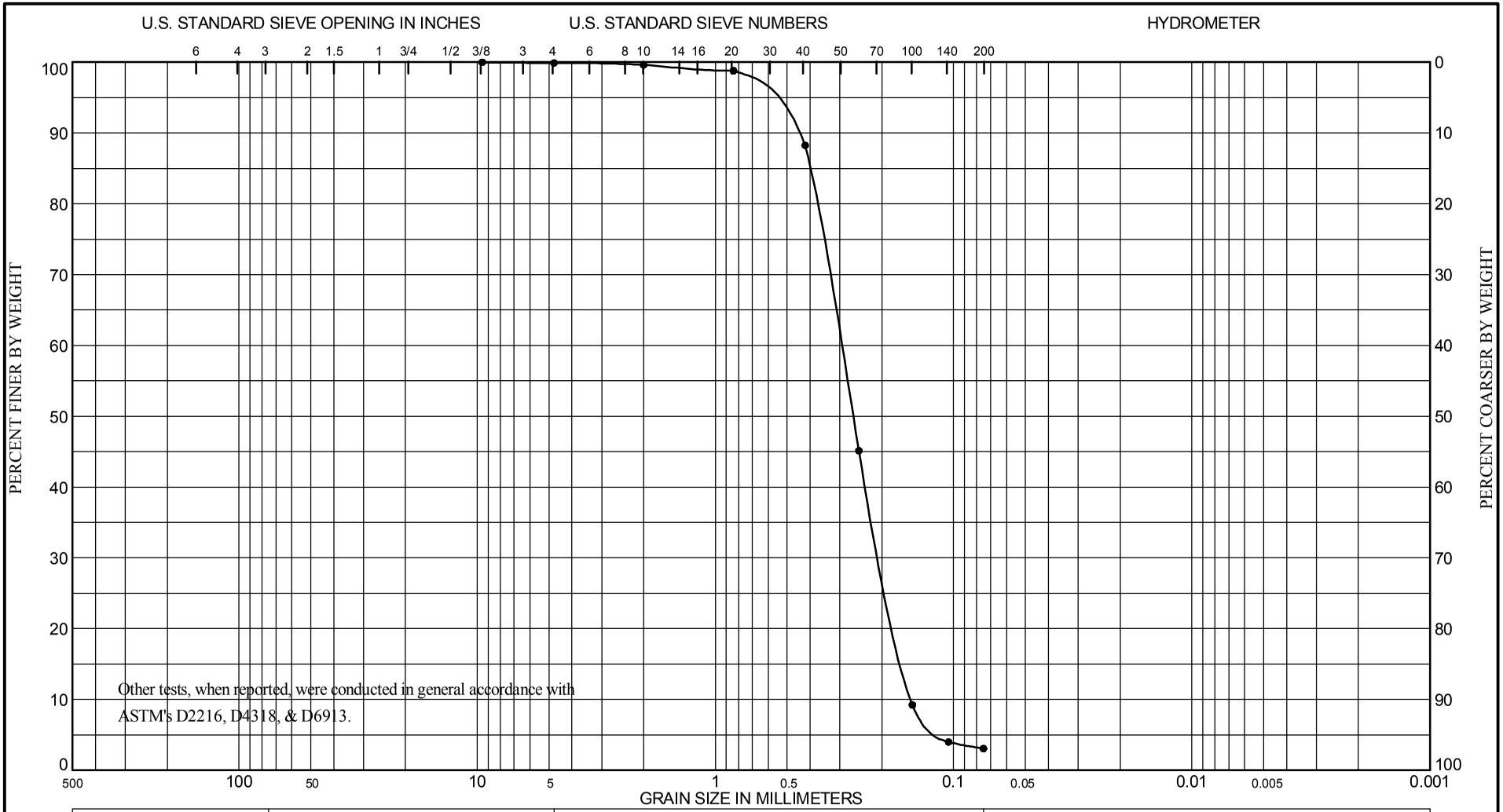
0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17655° Long = -88.56641°**

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| A | 0.0 to 2.4 | Greenish Gray, Poorly Graded Sand (SP). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3858
Hole No. BI-HP-53-13
Date 4/23/14

# GRADATION CURVES

**Boring Designation BI-HP-54-13**

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Horn Island Pass |
| 2. BORING DESIGNATION | BI-HP-54-13 |
| LOCATION COORDINATES | E = 1,070,091 N = 248,247 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 16.0 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 2 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 39 Ft. |
| 15. DATE BORING | STARTED 11-22-13 / COMPLETED 11-22-13 |
| 16. ELEVATION TOP OF BORING | -39.2 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Tom Powers, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -39.2 | 0.0 | | | | |
| -41.4 | 2.2 | | SAND, poorly-graded, mostly fine to medium-grained quartz, few shell, light gray (SP) | A | Classification: SP Color: GLEY1 10Y 7/1-<br>D50: 0.246 mm % Fines: 3.7 |
| -43.2 | 4.0 | | SAND, silty, mostly fine-grained quartz, few shell, medium gray (SM) | B | Classification: SM Color: GLEY1 10Y 5/1-<br>D50: 0.19 mm % Fines: 13 |
| -44.2 | 5.0 | | SAND, clayey, few shell, medium gray (SC) | NS | |
| -55.2 | 16.0 | | CLAY, lean, sandy, little shell, medium gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation from 2013 USACE hydrographic survey.

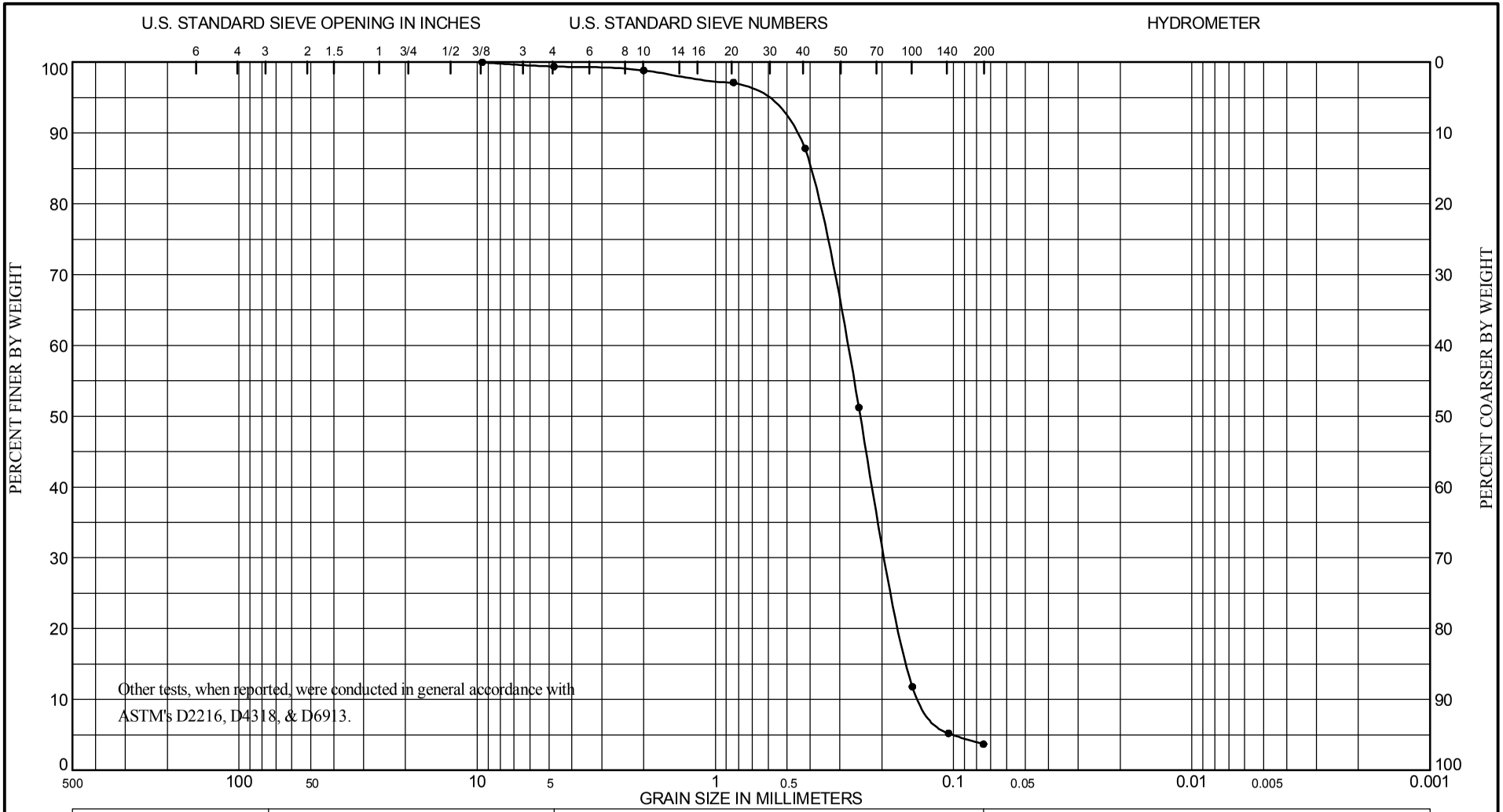
0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18235° Long = -88.56165°**

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

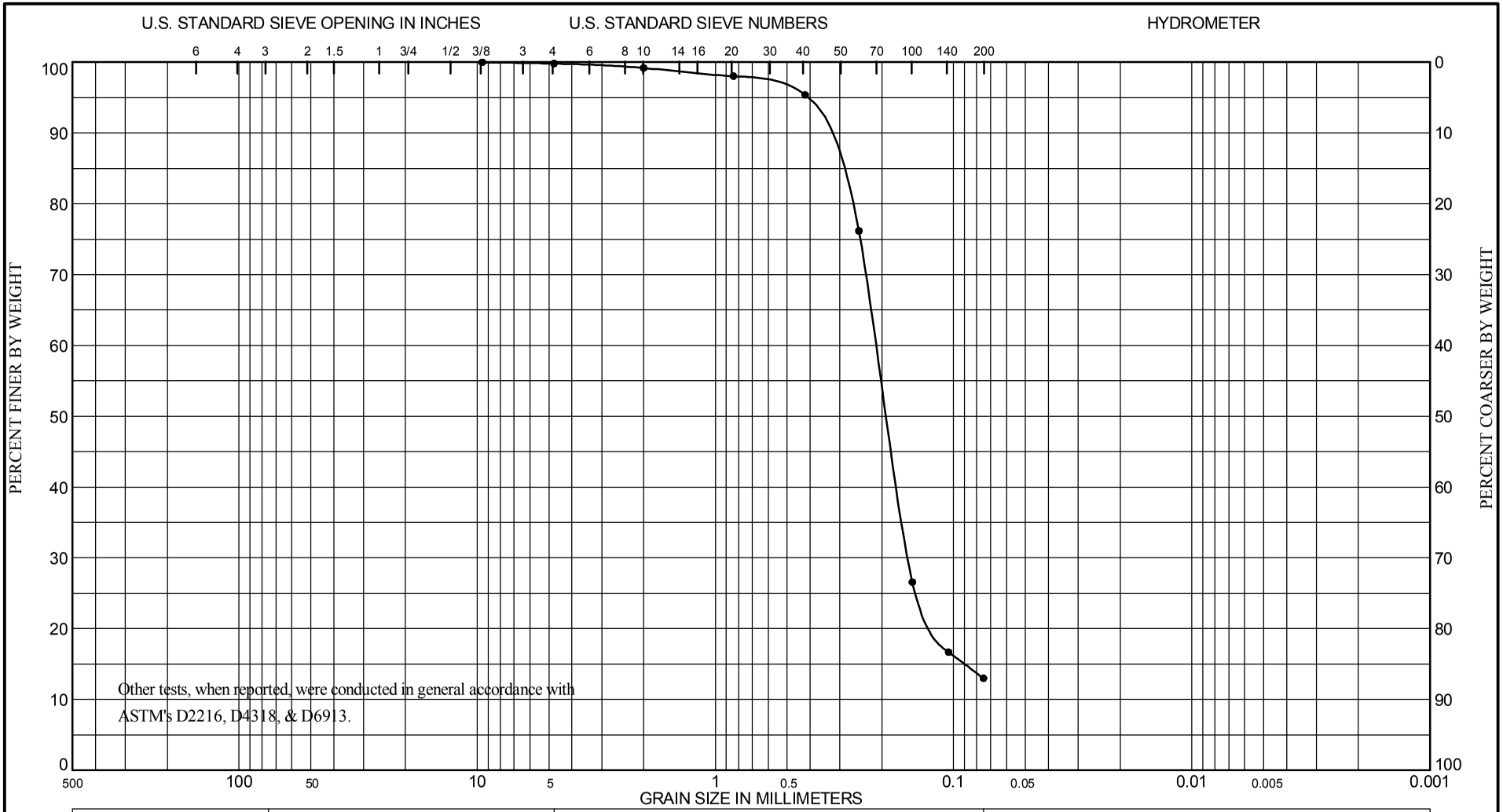
| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| A | 0.0 to 2.2 | Light Greenish Gray, Poorly Graded Sand (SP). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3855
Hole No. BI-HP-54-13
Date 4/23/14

# GRADATION CURVES

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| B | 2.2 to 4.0 | Dark Greenish Gray, Silty Sand (SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3856
Hole No. BI-HP-54-13
Date 4/23/14

# GRADATION CURVES

Boring Designation BI-HP-55-13

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Horn Island Pass |
| 2. BORING DESIGNATION | BI-HP-55-13 |
| LOCATION COORDINATES | E = 1,070,941 N = 248,187 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | Construction Solutions International, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 19.4 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED 1 / UNDISTURBED (UD) 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 38 Ft. |
| 15. DATE BORING | STARTED 11-22-13 / COMPLETED 11-22-13 |
| 16. ELEVATION TOP OF BORING | -38.3 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Tom Powers, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -38.3 | 0.0 | | | | |
| -42.3 | 4.0 | | SAND, poorly-graded, mostly fine to medium-grained quartz, little shell, light gray (SP) | A | Classification: SP-SM Color: 2.5Y 6/1-gray<br>D50: 0.231 mm % Fines: 5.8 |
| -43.3 | 5.0 | | SAND, clayey, medium gray (SC) | NS | |
| -57.7 | 19.4 | | CLAY, lean, sandy, little shell, medium to dark gray (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation from 2013 USACE hydrographic survey.

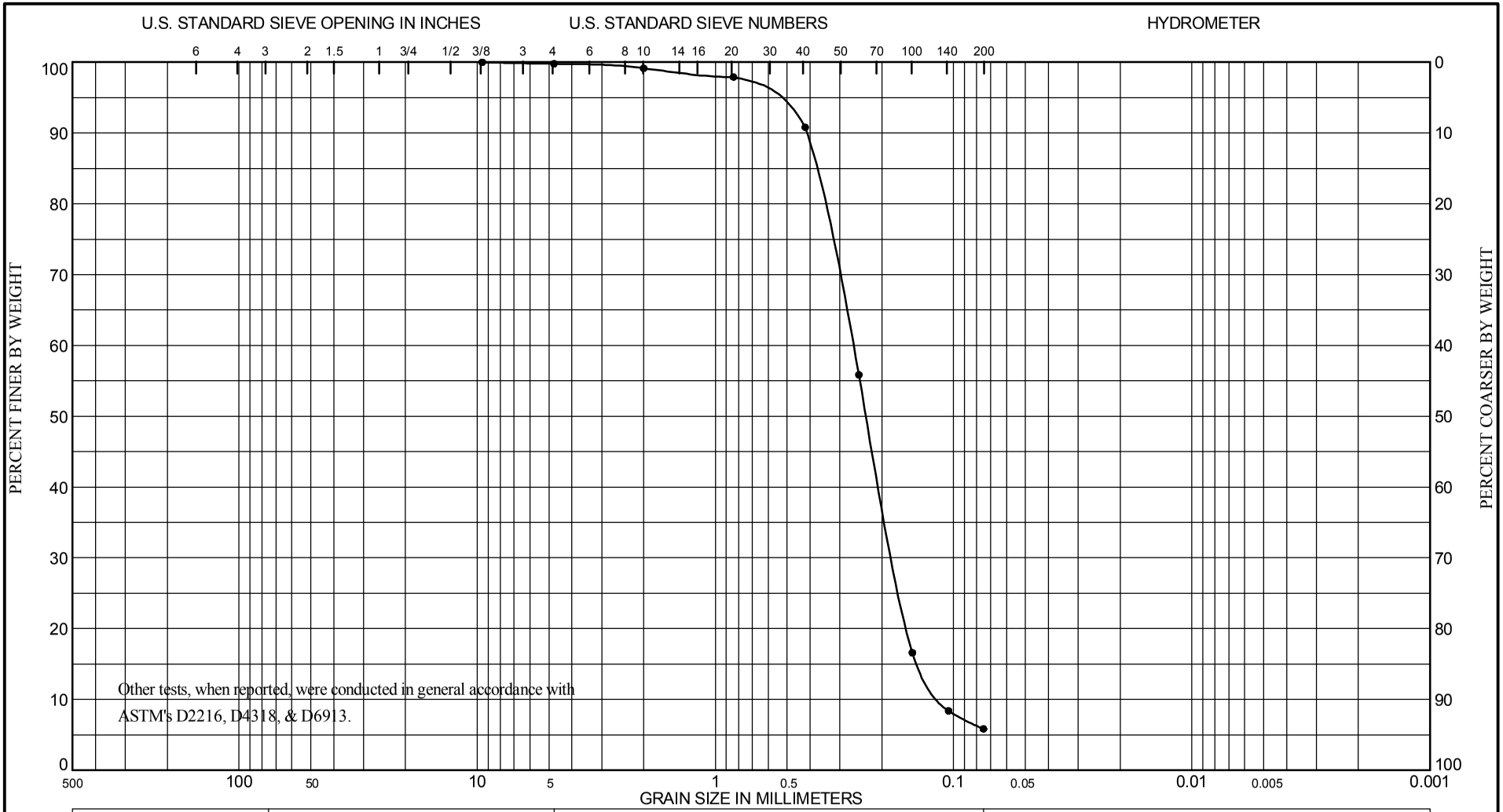
0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18218° Long = -88.55896°

**DEPARTMENT OF THE ARMY, SAVANNAH DISTRICT, ENVIRONMENTAL AND MATERIALS UNIT**
**CORPS OF ENGINEERS, 200 N. COBB PARKWAY, BLDG 400 SUITE 404, MARIETTA, GA. 30062**

WORK ORDER: 848e
REQUISITION: W33SJG32900192




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | COARSE | FINE | COARSE | MEDIUM | FINE | |

| Sample No. | Depth (ft) | ASTM D2487 Classification | Nat w% | LL | PL | PI |
|---|---|---|---|---|---|---|
| A | 0.0 to 4.0 | Greenish Gray, Poorly Graded Silty Sand (SP-SM). | | | | |

Project MsCIP Barrier Island Restoration
Vibracore Sampling Pascagoula, MS
Lab No. K5/3854
Hole No. BI-HP-55-13
Date 4/23/14

# GRADATION CURVES

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Boring Designation BI-PBC-01-12

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Pascagoula Bar Channel |
| 2. BORING DESIGNATION | BI-PBC-01-12 |
| LOCATION COORDINATES | E = 1,084,501 N = 256,601 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | American Vibracore Systems, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 16.1 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED: ; UNDISTURBED (UD): 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 49.8 Ft. |
| 15. DATE BORING | STARTED 12-21-12; COMPLETED 12-21-12 |
| 16. ELEVATION TOP OF BORING | -49.5 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -49.5 | 0.0 | | | | |
| -56.0 | 6.5 | | SILT, inorganic-L, mostly silt, some clay, few fine-grained sand-sized quartz, trace shell fragments, gray (ML) | | |
| -59.7 | 10.2 | | CLAY, fat, mostly clay, trace silt, trace shell fragments, medium to high plasticity, greenish gray (CH) | NS | |
| -62.3 | 12.8 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, gray and orange mottle (SM) | | |
| -65.6 | 16.1 | | SILT, inorganic-L, mostly silt, trace clay, gray (ML) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20522° Long = -88.51597°

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

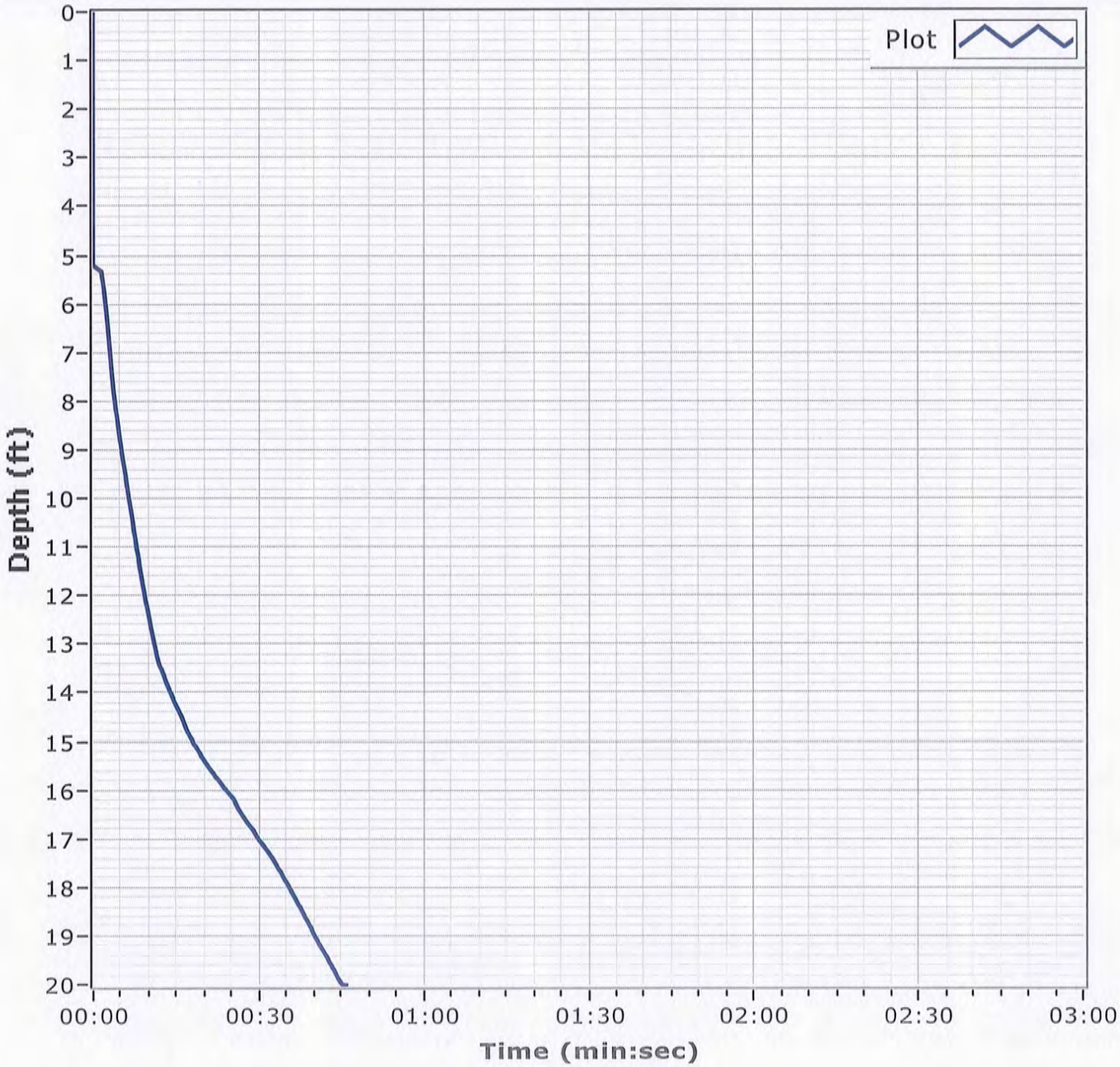
**Core Identifier** BI-PBC-1-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 12.313 N
**Longitude** 88 30.958 W

**Date** 12/21/2012
**Start Time** 12:58:54
**End Time** 12:59:40
**Total Time** 00:00:46

**Water Depth** 49.8'
**Penetration** 20.0'
**Recovery** 16.1'

**Comments**



Boring Designation BI-PBC-02-12

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT<br>MsCIP Barrier Island Restoration<br>Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT N/A<br>10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) HORIZONTAL NAD83 VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-PBC-02-12 LOCATION COORDINATES E = 1,084,047 N = 255,000 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM CONTRACTOR FILE NO. | 12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED DEG. FROM VERTICAL BEARING | 14. WATER DEPTH 38.2 Ft.<br>15. DATE BORING STARTED 12-21-12 COMPLETED 12-21-12 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -37.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 13.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Mike FitzHarris, Geologist |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -37.7 | 0.0 | | | | |
| -37.8 | 0.1 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP) | | |
| -43.1 | 5.4 | | SILT, inorganic-L, mostly silt, little shell fragments, few clay, trace fine-grained sand-sized quartz, slightly clayey, gray (ML) | | |
| -47.0 | 9.3 | | CLAY, fat, mostly clay, few shell fragments, trace silt, medium to high plasticity, gray (CH) | NS | |
| -50.9 | 13.2 | | CLAY, lean, mostly clay, trace fine-grained sand-sized quartz, trace shell fragments, low to medium plasticity, stiff, orange and gray mottle (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20082° Long = -88.51742°

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-PBC-2-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 12.049 N

**Longitude** 88 31.045 W

**Date** 12/21/2012

**Start Time** 13:47:50

**End Time** 13:48:54

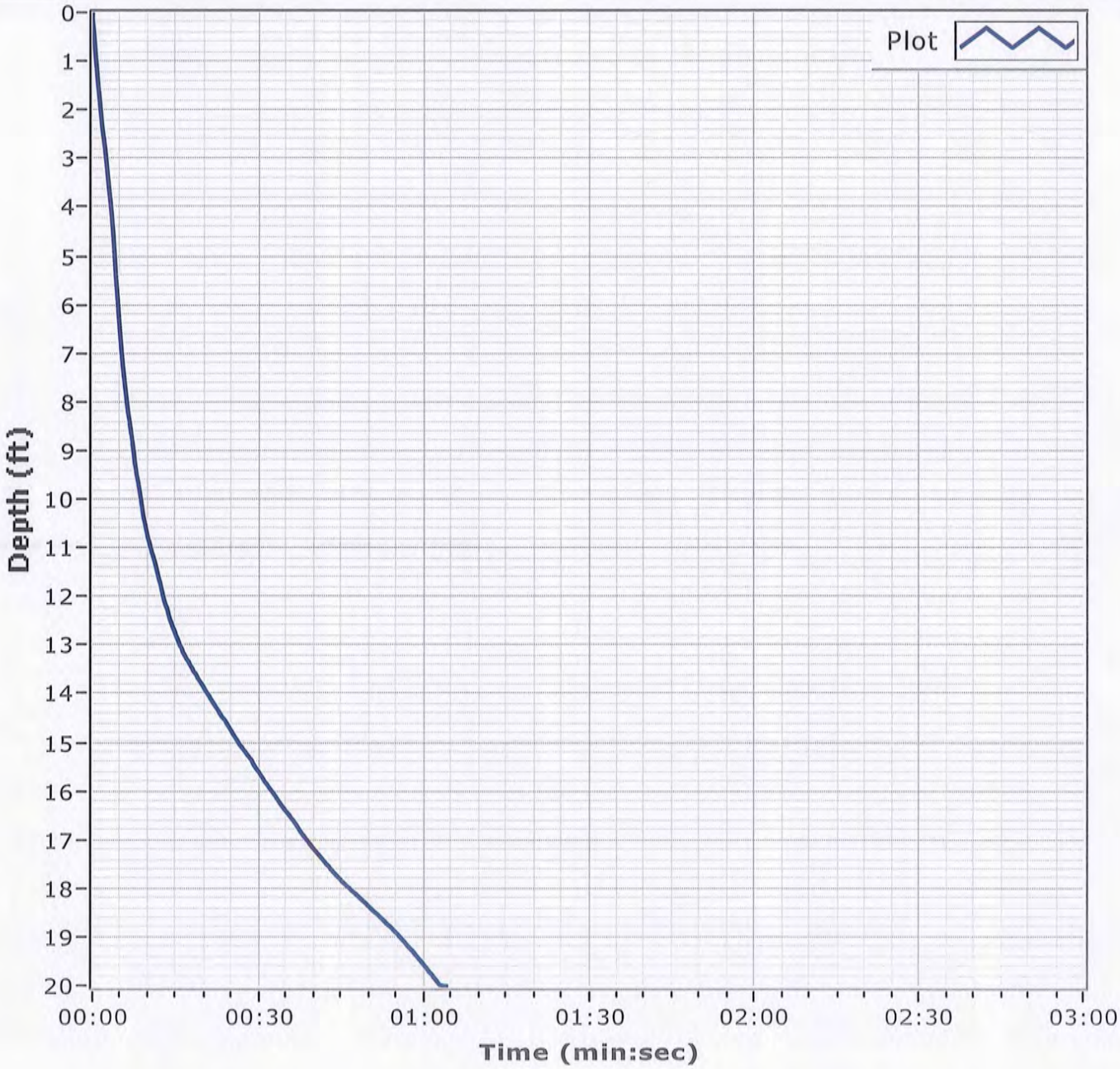
**Total Time** 00:01:04

**Water Depth** 38.2'

**Penetration** 20.0'

**Recovery** 13.2'

**Comments**



**Boring Designation BI-PBC-06-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-06-12 — LOCATION COORDINATES: E = 1,081,103 N = 251,602 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 42.3 Ft. |
| | 15. DATE BORING — STARTED: 12-16-12 — COMPLETED: 12-16-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -41.4 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 13.9 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -41.4 | 0.0 | | | | |
| -42.4 | 1.0 | | SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, lt. gray (SP) | A | Classification: SP-SM Color: 5Y 5/3-olive<br>D50: 0.1722 mm % Fines: 6.6 |
| -49.6 | 8.2 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, lenses of silty sand and trace shell fragments, gray (SC) | NS | |
| -52.4 | 11.0 | | SILT, inorganic-L, mostly silt, trace fine-grained sand-sized quartz, lt. gray and yellowish orange mottle (ML) | | |
| -55.3 | 13.9 | | CLAY, lean, mostly clay, trace fine-grained sand-sized quartz, firm, some plasticity, lt. gray and orange mottle (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.19150° Long = -88.52677°**

**Project** Missiissippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

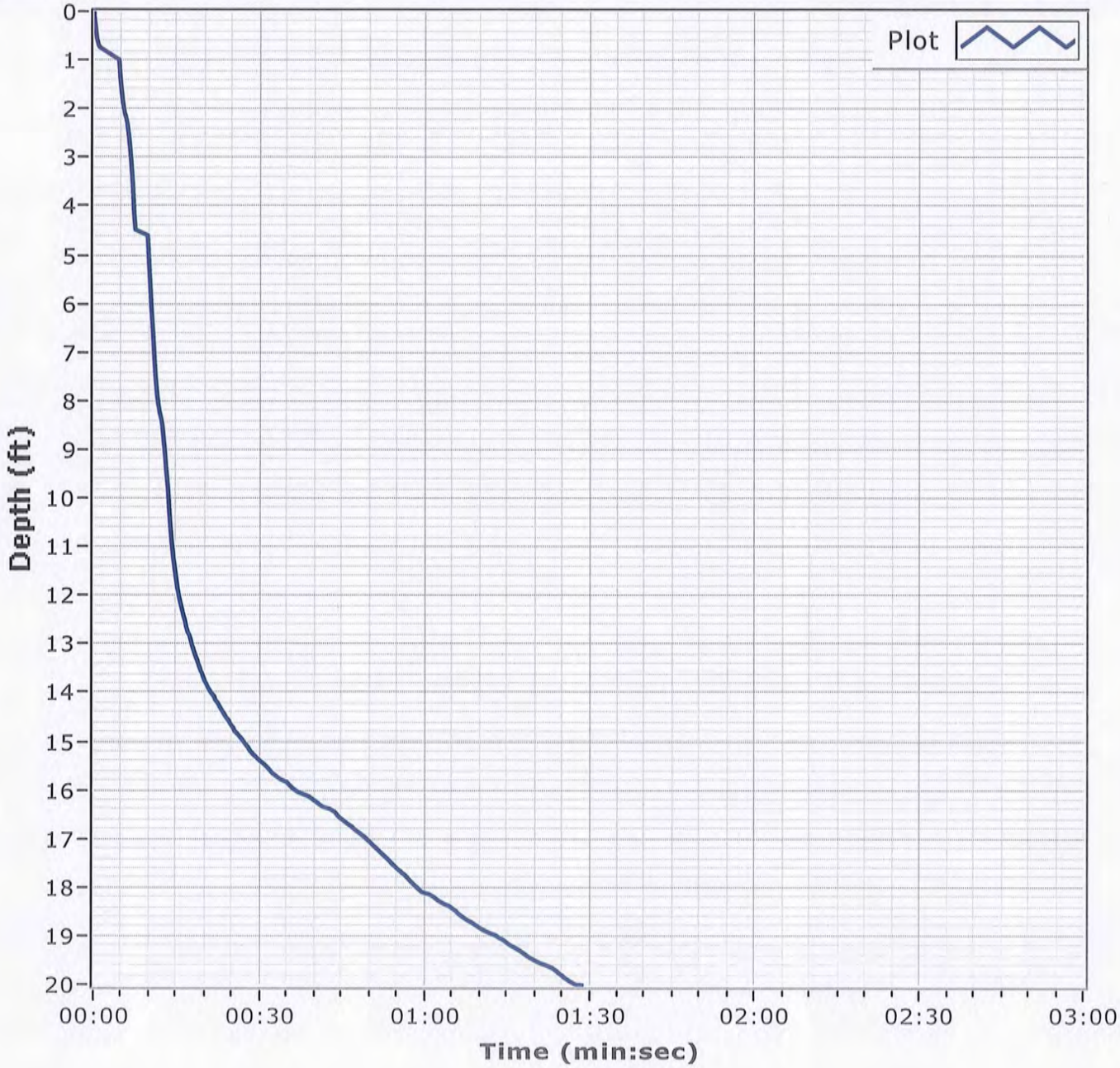
**Core Identifier** BI-PBC-6-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.490
**Longitude** 088 31.606

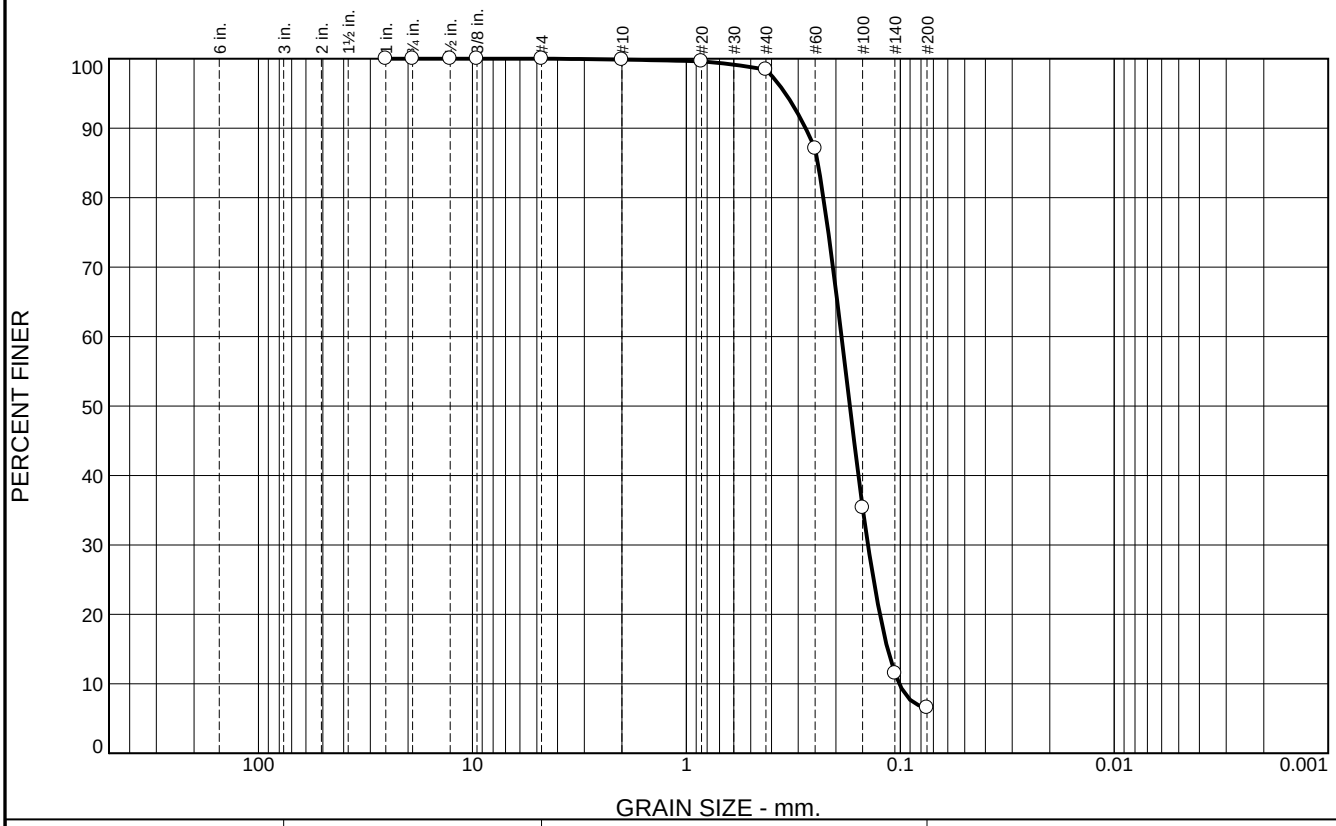
**Date** 12/16/2012
**Start Time** 14:23:50
**End Time** 14:25:19
**Total Time** 00:01:29

**Water Depth** 42.3'
**Penetration** 20.0'
**Recovery** 14.0

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 1.5 | 91.8 | 6.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.6 | | |
| #40 | 98.4 | | |
| #60 | 87.1 | | |
| #100 | 35.4 | | |
| #140 | 11.5 | | |
| #200 | 6.6 | | |

* (no specification provided)

**Material Description**

Fine grained, SLIGHTLY SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2773 $D_{85}$= 0.2429 $D_{60}$= 0.1883
$D_{50}$= 0.1722 $D_{30}$= 0.1416 $D_{15}$= 0.1146
$D_{10}$= 0.1011 $C_u$= 1.86 $C_c$= 1.05

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

**Location:** BI-PBC-6-12 A
**Sample Number:** 6494 (1) **Depth:** 0.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT

**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-07-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 2 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-07-12 — LOCATION COORDINATES: E = 1,080,133 N = 250,461 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 41.2 Ft. |
| | 15. DATE BORING — STARTED: 12-16-12 — COMPLETED: 12-16-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -40.4 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 19.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -40.4 | 0.0 | | | | |
| -40.9 | 0.5 | | | NS | |
| -41.9 | 1.5 | | CLAY, organic-H, mostly organic matter, some clay, some silt, trace fine-grained sand-sized quartz, trace shell fragments, gray to dark gray (OH) | A | Classification: SP Color: 5Y 6/3-pale olive<br>D50: 0.2002 mm % Fines: 3 |
| -45.4 | 5.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, trace silt, gray (SP) | NS | |
| -46.4 | 6.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC) | B | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1965 mm % Fines: 15.7 |
| -49.4 | 9.0 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, clay lenses, gray (SM) | | |
| -51.6 | 11.2 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC) | | |
| | | | SILT, inorganic-L, mostly silt, some fine-grained sand-sized quartz, lt. gray and orange mottle (ML) | | |
| -59.6 | 19.2 | | CLAY, fat, mostly clay, firm to soft, dark gray (CH) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18837° Long = -88.52985°**

| DRILLING LOG (Cont. Sheet) | INSTALLATION Mobile District | | SHEET 2 OF 2 SHEETS |
|---|---|---|---|
| PROJECT MsCIP Barrier Island Restoration | COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88 |
| LOCATION COORDINATES X = 1,080,133 Y = 250,461 | ELEVATION TOP OF BORING -40.4 Ft. | | |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| | | | factor. | | |

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18837° Long = -88.52985°

**Project** Missiissippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

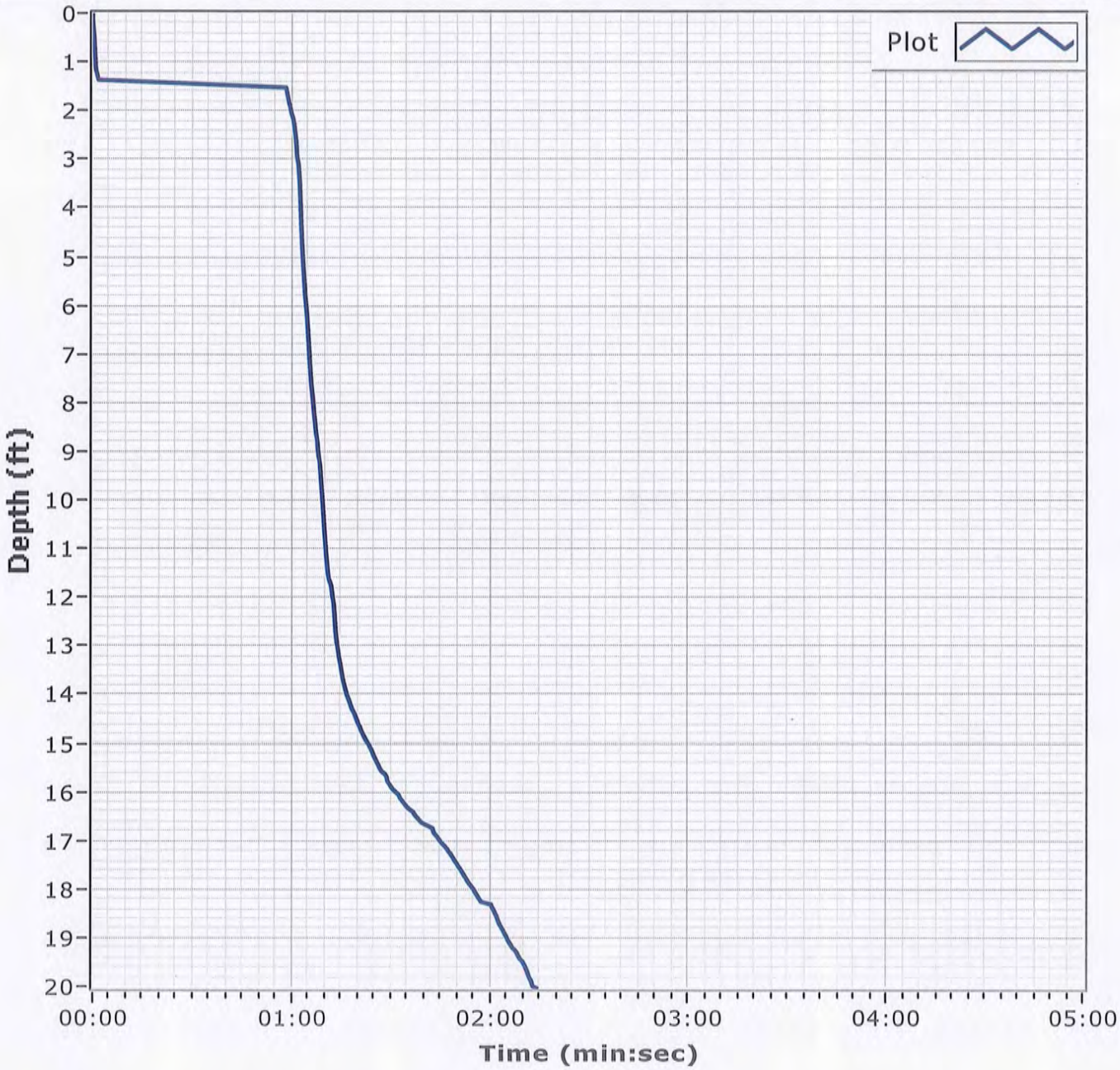
**Core Identifier** BI-PBC-7-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.303
**Longitude** 088 31.791

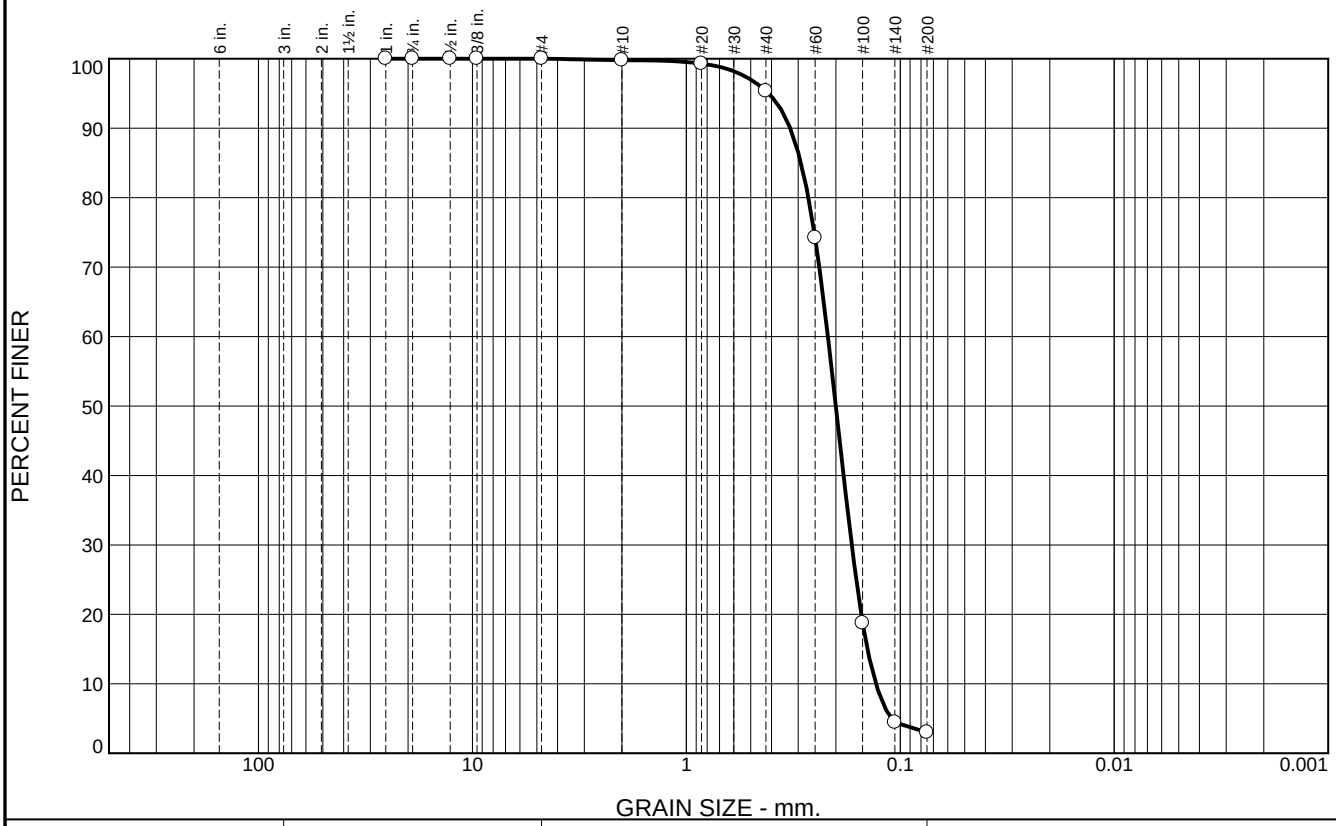
**Date** 12/16/2012
**Start Time** 13:25:25
**End Time** 13:27:39
**Total Time** 00:02:14

**Water Depth** 41.2'
**Penetration** 20.0'
**Recovery** 19.0'

**Comments**
Note: vibrator stopped and restarted at 1.4'



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 4.5 | 92.3 | 3.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.3 | | |
| #40 | 95.3 | | |
| #60 | 74.2 | | |
| #100 | 18.8 | | |
| #140 | 4.4 | | |
| #200 | 3.0 | | |

* (no specification provided)

**Material Description**

Fine grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3271 $D_{85}$= 0.2914 $D_{60}$= 0.2179
$D_{50}$= 0.2002 $D_{30}$= 0.1687 $D_{15}$= 0.1425
$D_{10}$= 0.1301 $C_u$= 1.68 $C_c$= 1.00

**Classification**

USCS= SP AASHTO=

**Remarks**

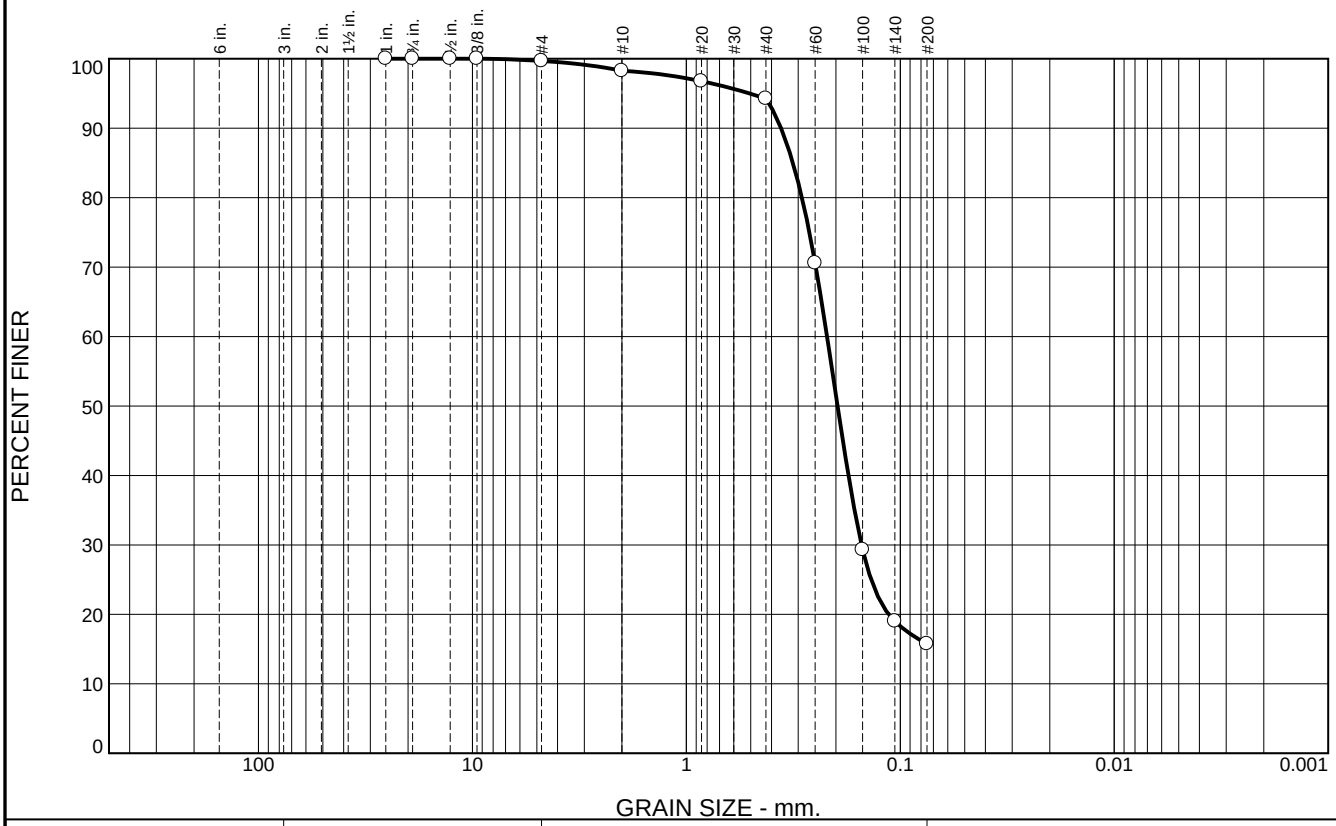
**Location:** BI-PBC-7-12 A
**Sample Number:** 6494 (2) **Depth:** 0.5' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 1.5 | 4.0 | 78.5 | 15.7 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 98.2 | | |
| #20 | 96.8 | | |
| #40 | 94.2 | | |
| #60 | 70.6 | | |
| #100 | 29.3 | | |
| #140 | 19.0 | | |
| #200 | 15.7 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3608 $D_{85}$= 0.3177 $D_{60}$= 0.2199
$D_{50}$= 0.1965 $D_{30}$= 0.1518 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

**Location:** BI-PBC-7-12 B
**Sample Number:** 6494 (3) **Depth:** 5.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-08-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-08-12 — LOCATION COORDINATES: E = 1,079,712 N = 250,824 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 41.3 Ft. |
| | 15. DATE BORING — STARTED: 12-16-12 — COMPLETED: 12-16-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -40.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -40.7 | 0.0 | | | | |
| -41.7 | 1.0 | | CLAY, organic-H, mostly organic matter, some clay, some silt, soft, gray and dark gray (OH) | NS | |
| -43.2 | 2.5 | | CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, soft, gray (CH) | | |
| -44.7 | 4.0 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, trace clayey lenses, gray (SM) | A | Classification: SP Color: 5Y 5/2-olive gray<br>D50: 0.2045 mm % Fines: 0.4 |
| -48.7 | 8.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | | |
| -49.7 | 9.0 | | SILT, inorganic-L, mostly silt, some fine-grained sand-sized quartz, lt. gray and orange (ML) | | |
| -57.2 | 16.5 | | CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, lt. gray and orange mottle (CH) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18937° Long = -88.53118°**

**Project** Missiissippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

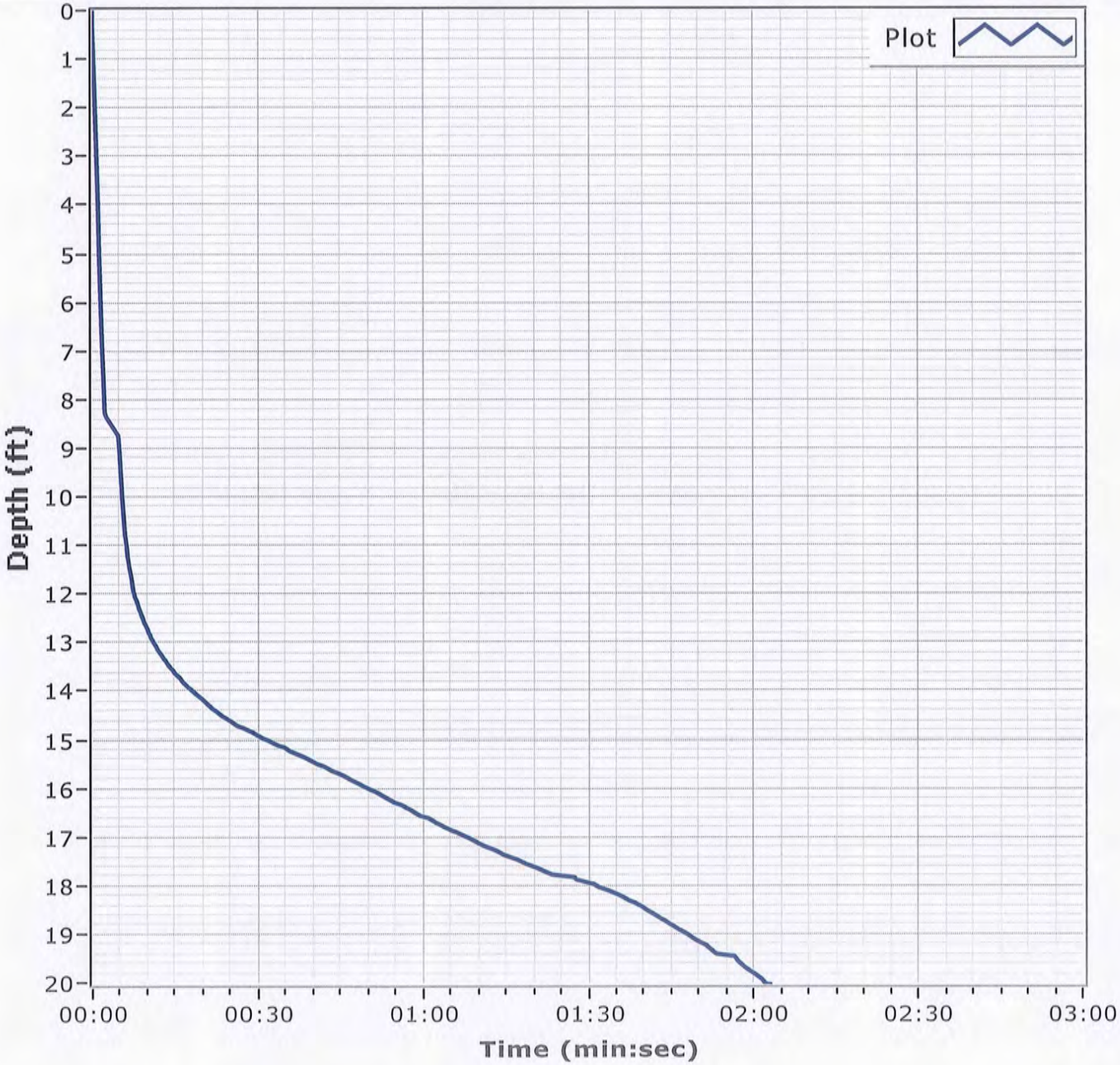
**Core Identifier** BI-PBC-8-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.362
**Longitude** 088 31.871

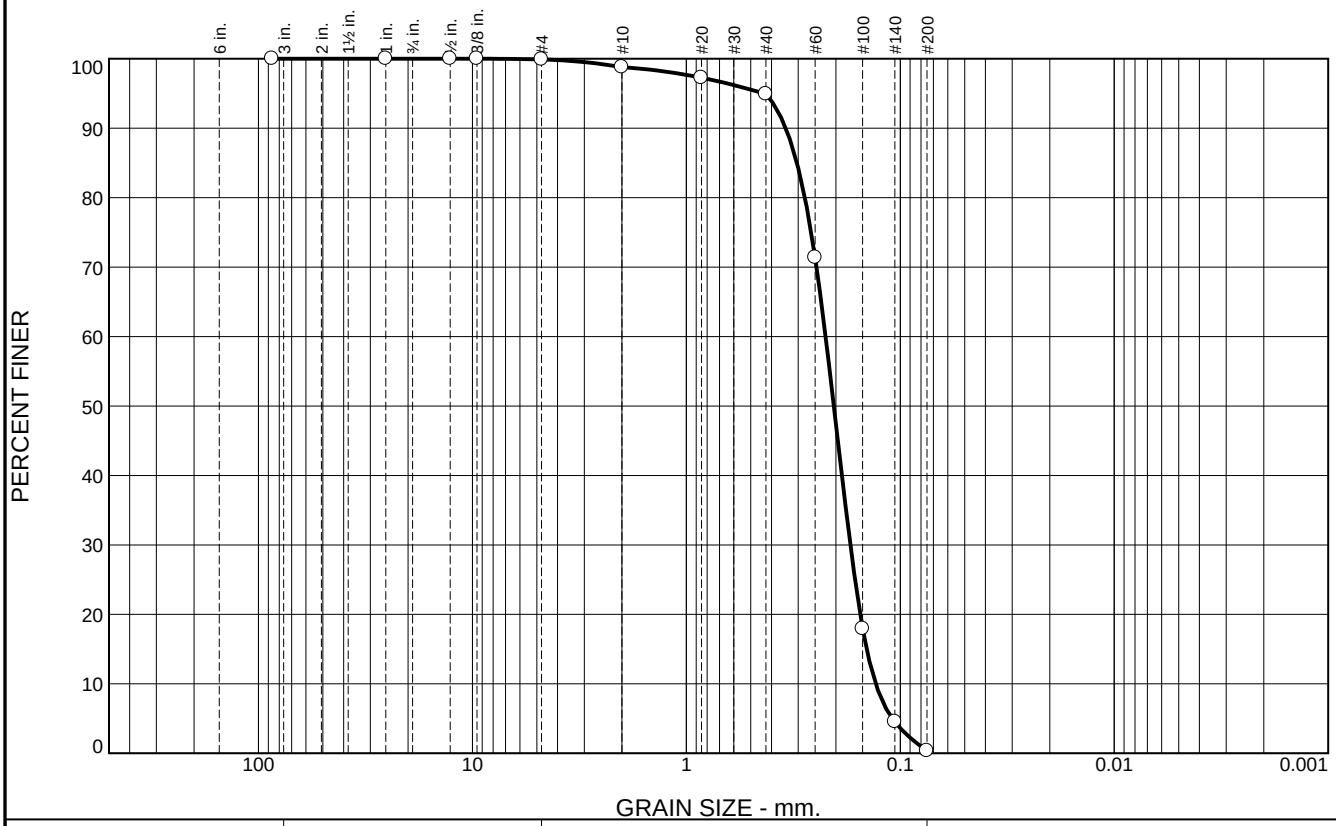
**Date** 12/16/2012
**Start Time** 12:06:54
**End Time** 12:08:57
**Total Time** 00:02:03

**Water Depth** 41.3'
**Penetration** 20.0'
**Recovery** 16.5'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 1.1 | 3.9 | 94.5 | 0.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 3.4 | 100.0 | | |
| 1 | 100.0 | | |
| 1/2 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 98.8 | | |
| #20 | 97.3 | | |
| #40 | 94.9 | | |
| #60 | 71.4 | | |
| #100 | 17.9 | | |
| #140 | 4.5 | | |
| #200 | 0.4 | | |

* (no specification provided)

**Material Description**

Fine grained, SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3429 $D_{85}$= 0.3043 $D_{60}$= 0.2234
$D_{50}$= 0.2045 $D_{30}$= 0.1712 $D_{15}$= 0.1437
$D_{10}$= 0.1304 $C_u$= 1.71 $C_c$= 1.01

**Classification**

USCS= SP AASHTO=

**Remarks**

**Location:** BI-PBC-8-12 A
**Sample Number:** 6494 (4) **Depth:** 2.5' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-09-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-09-12 — LOCATION COORDINATES: E = 1,078,729 N = 249,687 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 41.2 Ft. |
| | 15. DATE BORING — STARTED: 12-16-12 — COMPLETED: 12-16-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -40.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -40.7 | 0.0 | | | | |
| -42.7 | 2.0 | | CLAY, organic-H, mostly organic matter, some clay, some silt, dark gray to black (OH) | NS | |
| -45.7 | 5.0 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, little clay, little shell fragments, clayey lenses, gray (SM) | A | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1804 mm % Fines: 15.9 |
| -50.7 | 10.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC) | NS | |
| -52.2 | 11.5 | | CLAY, lean, mostly clay, trace fine-grained sand-sized quartz, lean, firm, lt. gray (CL) | | |
| -57.5 | 16.8 | | CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, firm, gray, yellow-orange mottle (CH) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18625° Long = -88.53430°**

**Project** Missiissippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

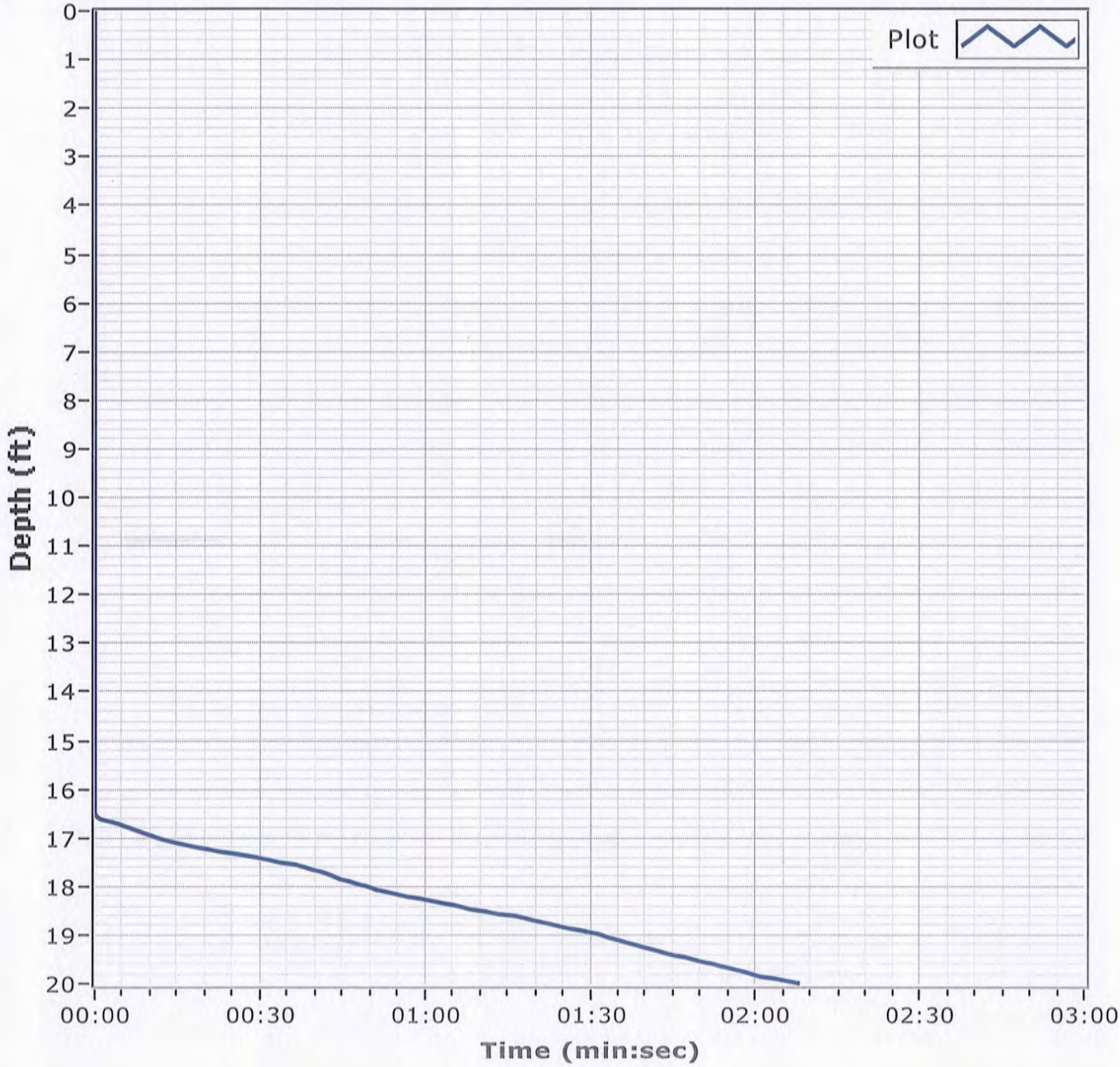
**Core Identifier** BI-PBC-9-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.175
**Longitude** 088 32.058

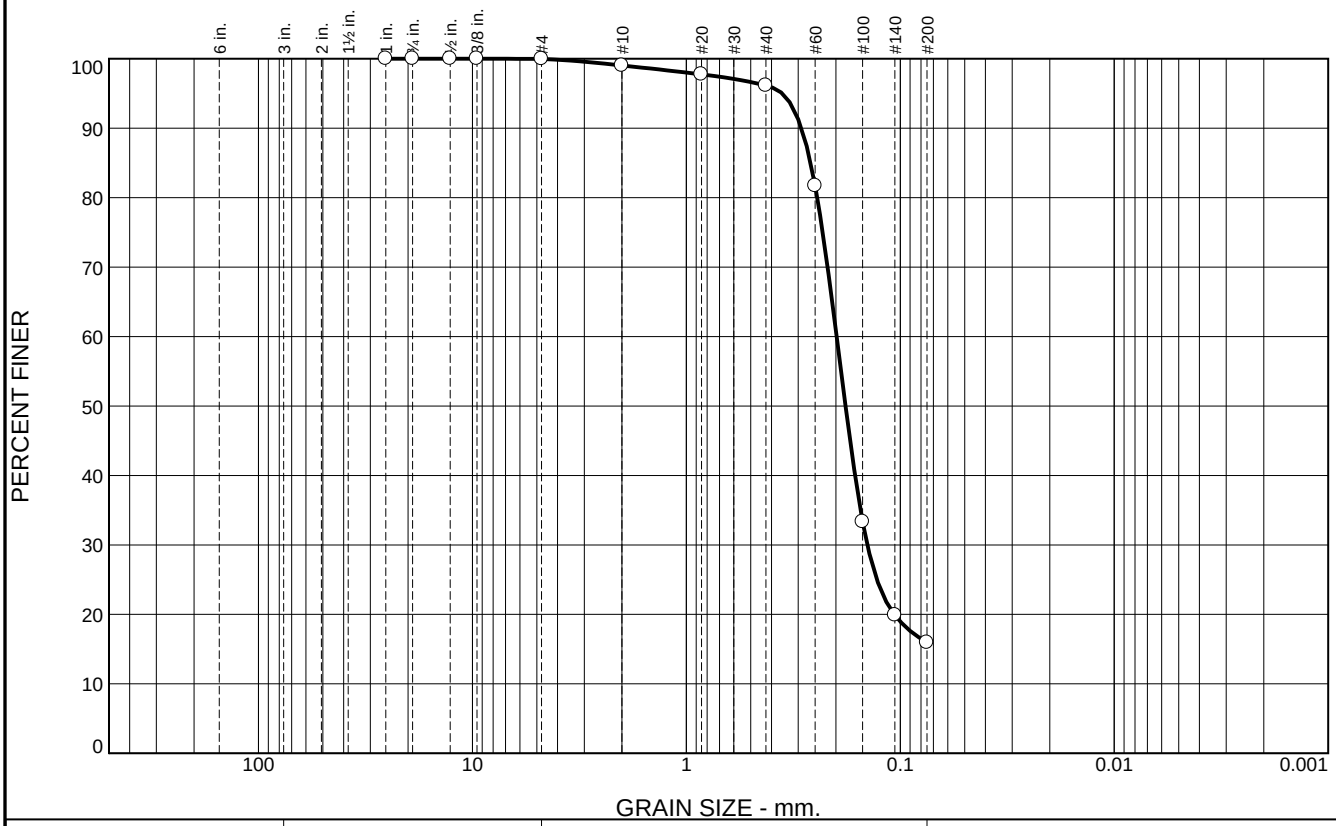
**Date** 12/16/2012
**Start Time** 09:55:29
**End Time** 09:57:37
**Total Time** 00:02:08

**Water Depth** 41.2'
**Penetration** 20.0'
**Recovery** 16.6'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 1.0 | 2.9 | 80.2 | 15.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.0 | | |
| #20 | 97.7 | | |
| #40 | 96.1 | | |
| #60 | 81.7 | | |
| #100 | 33.3 | | |
| #140 | 19.9 | | |
| #200 | 15.9 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2900 $D_{85}$= 0.2625 $D_{60}$= 0.1984
$D_{50}$= 0.1804 $D_{30}$= 0.1426 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

**Location:** BI-PBC-9-12 A
**Sample Number:** 6494 (5) **Depth:** 2.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-10-12**

| DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 1 SHEETS |
|---|---|---|---|
| | South Atlantic | Mobile District | |

| | |
|---|---|
| 1. PROJECT | MsCIP Barrier Island Restoration<br>Pascagoula Bar Channel |
| 2. BORING DESIGNATION | BI-PBC-10-12 |
| LOCATION COORDINATES | E = 1,079,134 N = 249,331 |
| 3. DRILLING AGENCY | Corps of Engineers - CESAM |
| CONTRACTOR FILE NO. | |
| 4. NAME OF DRILLER | American Vibracore Systems, Inc. |
| 5. DIRECTION OF BORING | ☒ VERTICAL ☐ INCLINED |
| DEG. FROM VERTICAL | |
| BEARING | |
| 6. THICKNESS OF OVERBURDEN | N/A |
| 7. DEPTH DRILLED INTO ROCK | N/A |
| 8. TOTAL DEPTH OF BORING | 15.0 Ft. |
| 9. SIZE AND TYPE OF BIT | N/A |
| 10. COORDINATE SYSTEM/DATUM | State Plane, MSE (U.S. Ft.) |
| HORIZONTAL | NAD83 |
| VERTICAL | NAVD88 |
| 11. MANUFACTURER'S DESIGNATION OF DRILL | Vibracore |
| ☐ AUTO HAMMER ☐ MANUAL HAMMER | |
| 12. TOTAL SAMPLES | DISTURBED: ; UNDISTURBED (UD): 0 |
| 13. TOTAL NUMBER CORE BOXES | |
| 14. WATER DEPTH | 42.7 Ft. |
| 15. DATE BORING | STARTED 12-16-12; COMPLETED 12-16-12 |
| 16. ELEVATION TOP OF BORING | -42.2 Ft. |
| 17. TOTAL RECOVERY FOR BORING | 100% |
| 18. SIGNATURE AND TITLE OF INSPECTOR | Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -42.2 | 0.0 | | | | |
| -43.0 | 0.8 | | CLAY, organic-H, mostly organic matter, some clay, some silt, soft, dark gray (OH) | NS | |
| -44.0 | 1.8 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP) | A | Classification: SP-SM Color: 5Y 5/3-olive<br>D50: 0.1764 mm % Fines: 10.2 |
| | | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |
| -51.2 | 9.0 | | | | |
| | | | CLAY, lean, mostly clay, trace fine-grained sand-sized quartz, very stiff, lt. gray and orange mottle (CL) | | |
| -57.2 | 15.0 | | | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18527° Long = -88.53302°**

**Project** Missiissippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

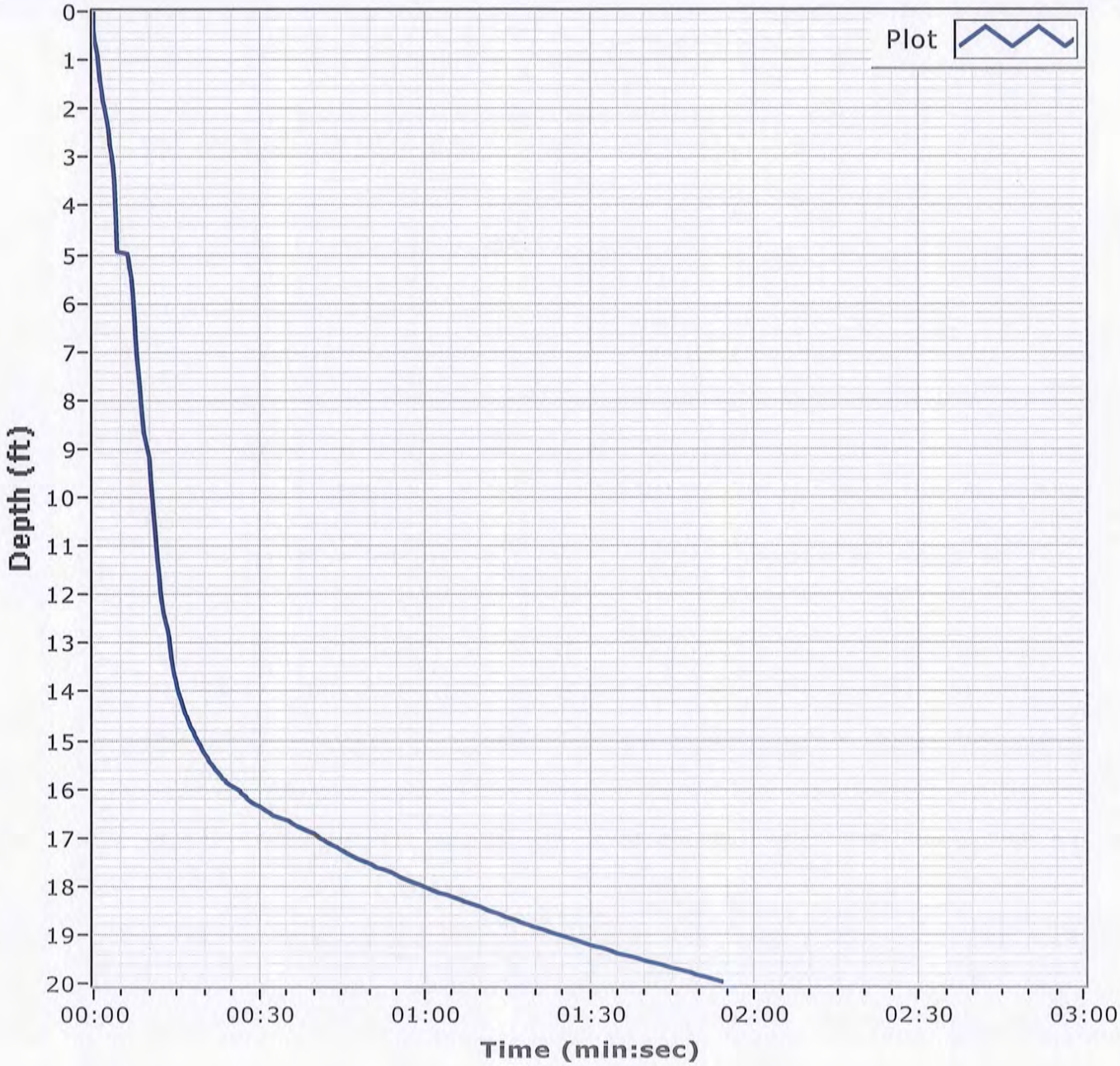
**Core Identifier** BI-PBC-10-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.116
**Longitude** 088 31.981

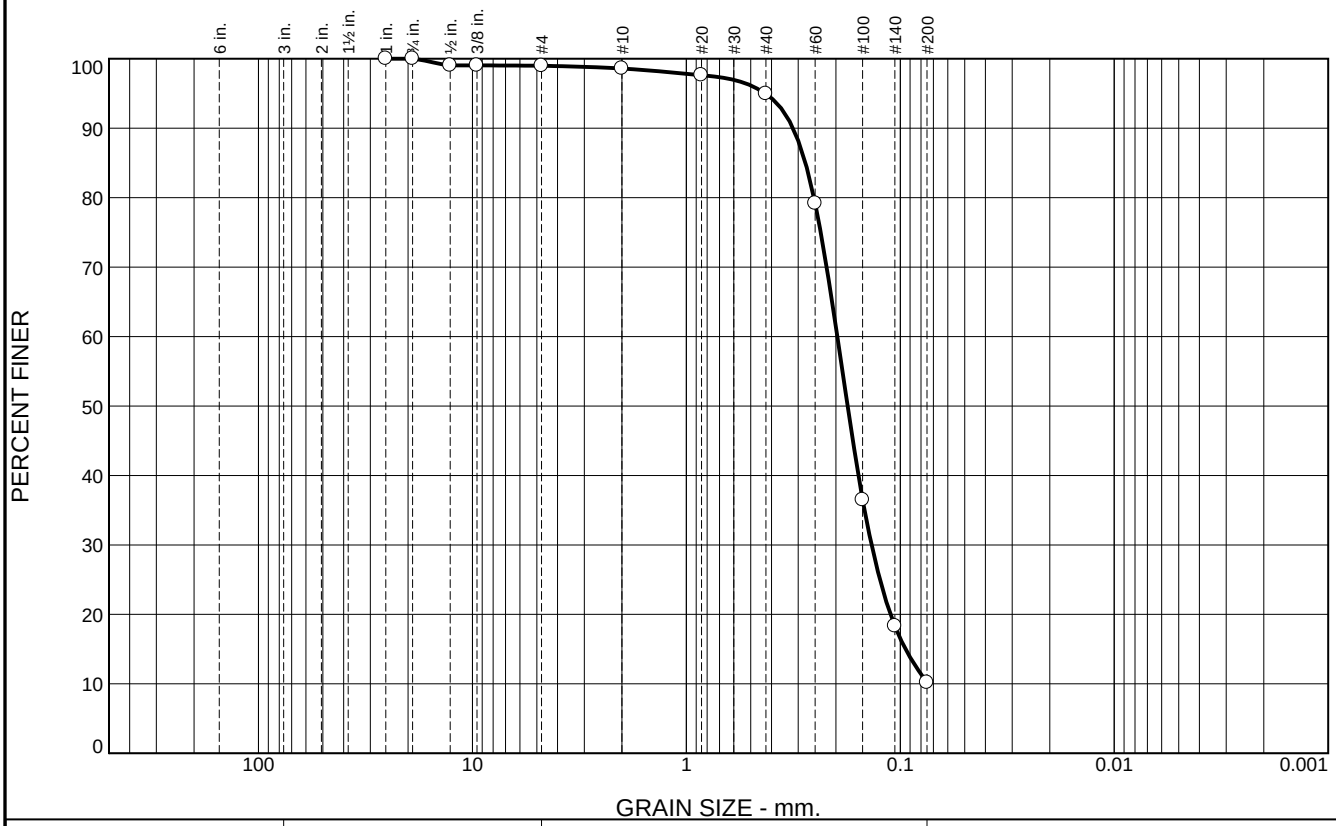
**Date** 12/16/2012
**Start Time** 10:27:33
**End Time** 10:29:27
**Total Time** 00:01:54

**Water Depth** 42.7
**Penetration** 20.0'
**Recovery** 15.0'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.0 | 0.4 | 3.7 | 84.7 | 10.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 99.0 | | |
| .375 | 99.0 | | |
| #4 | 99.0 | | |
| #10 | 98.6 | | |
| #20 | 97.6 | | |
| #40 | 94.9 | | |
| #60 | 79.2 | | |
| #100 | 36.5 | | |
| #140 | 18.3 | | |
| #200 | 10.2 | | |

* (no specification provided)

**Material Description**

Fine grained, SLIGHTLY SILTY SAND, with trace SHELL

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3175 $D_{85}$= 0.2777 $D_{60}$= 0.1970
$D_{50}$= 0.1764 $D_{30}$= 0.1363 $D_{15}$= 0.0946
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

**Location:** BI-PBC-10-12 A
**Sample Number:** 6494 (6) **Depth:** 0.8' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-11-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-11-12 — LOCATION COORDINATES: E = 1,077,743 N = 248,564 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO.: | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES: |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 42.3 Ft. |
| | 15. DATE BORING — STARTED: 12-15-12 — COMPLETED: 12-15-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -41.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.3 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -41.5 | 0.0 | | | | |
| -43.5 | 2.0 | | CLAY, fat, mostly clay, soft, gray to brown (CH) | NS | |
| -45.5 | 4.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, gray (SP) | A | Classification: SP-SM Color: 5Y 6/2-light olive gray<br>D50: 0.1992 mm % Fines: 7.3 |
| -47.5 | 6.0 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, trace clayey lenses, gray (SM) | B | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.173 mm % Fines: 16.1 |
| -53.5 | 12.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |
| -56.8 | 15.3 | | CLAY, fat, mostly clay, little fine-grained sand-sized quartz, gray (CH) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18317° Long = -88.53743°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

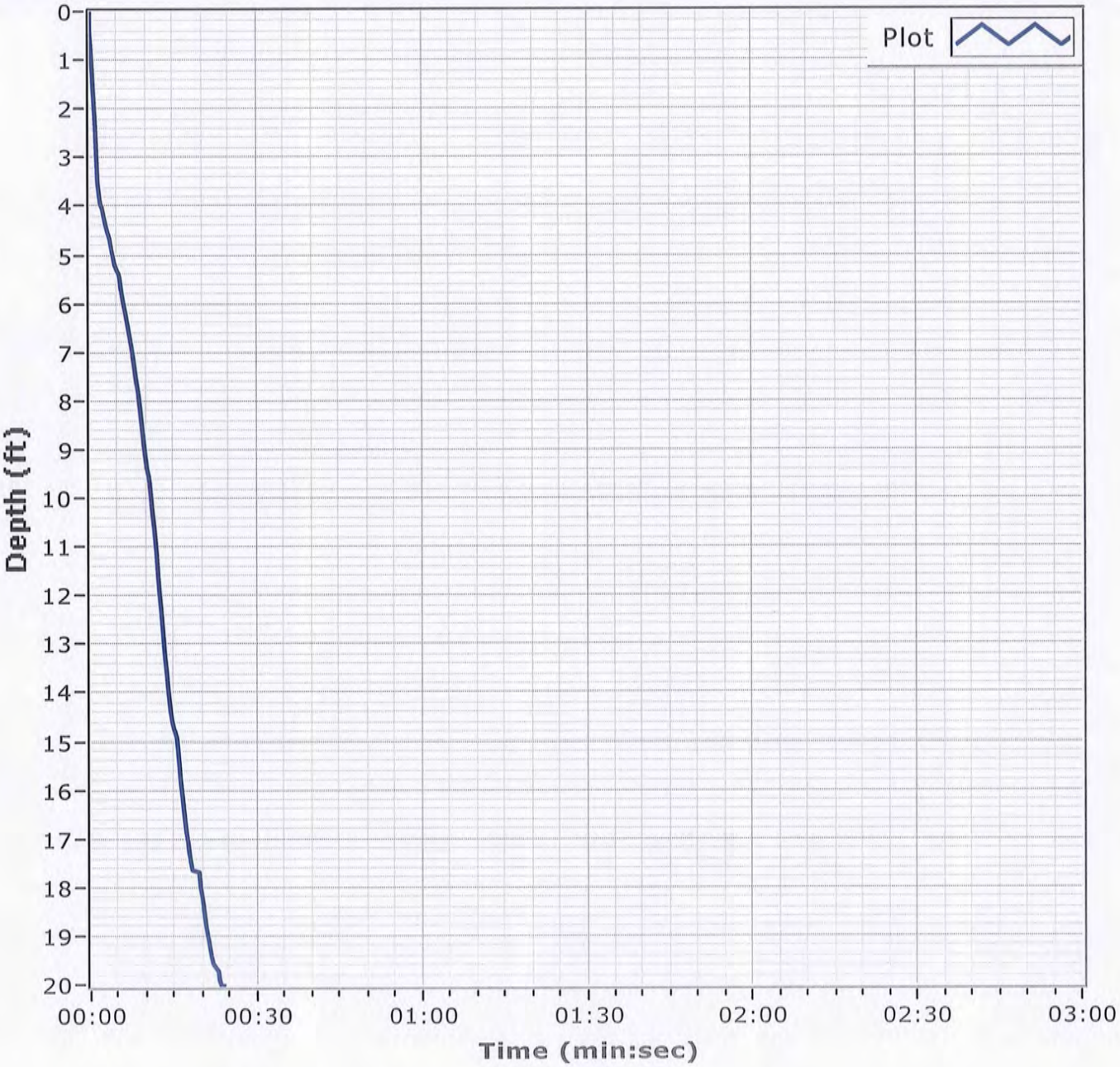
**Core Identifier** BI-PBC-11-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 10.990
**Longitude** 088 32.246

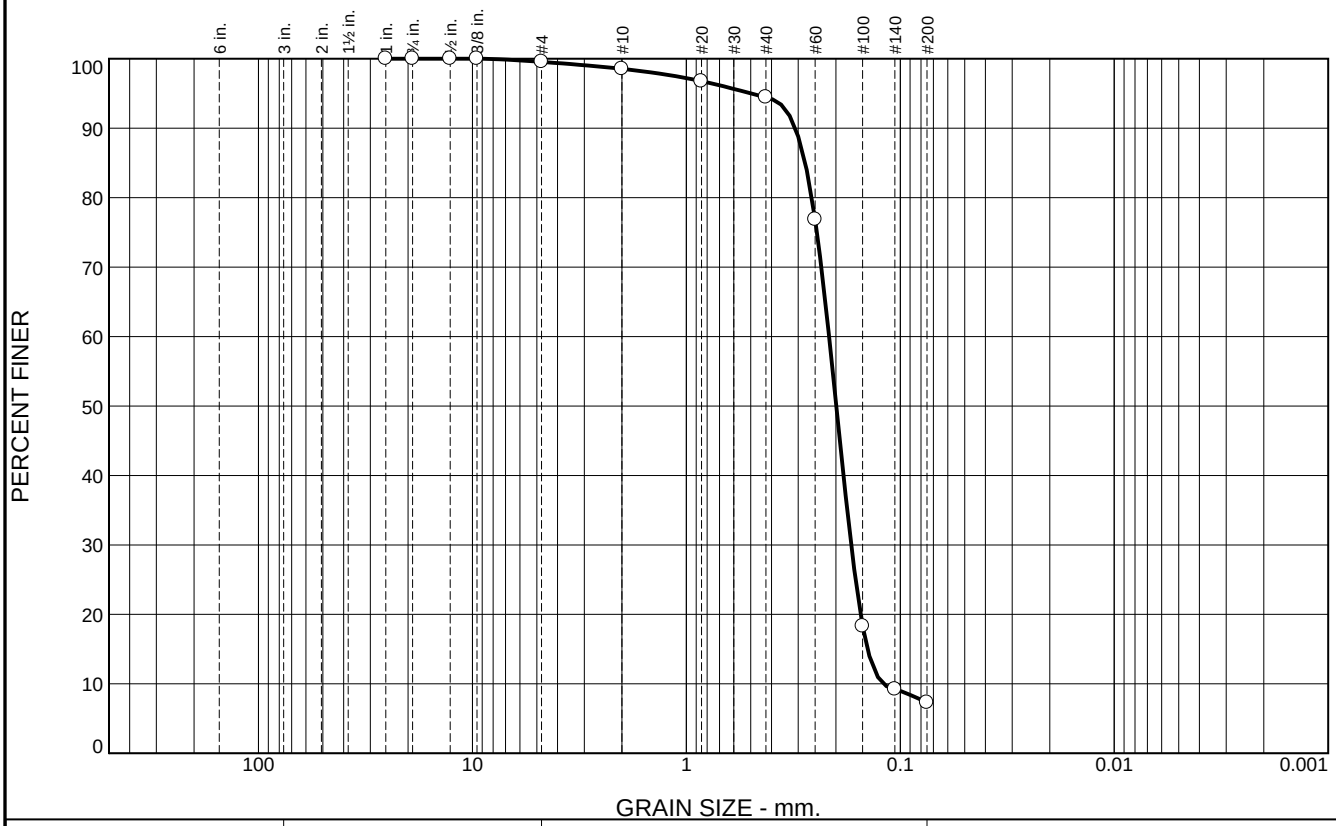
**Date** 12/15/2012
**Start Time** 14:49:37
**End Time** 14:50:01
**Total Time** 00:00:24

**Water Depth** 42.3'
**Penetration** 20.0'
**Recovery** 15.5'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 1.0 | 4.1 | 87.1 | 7.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 98.5 | | |
| #20 | 96.8 | | |
| #40 | 94.4 | | |
| #60 | 76.8 | | |
| #100 | 18.3 | | |
| #140 | 9.2 | | |
| #200 | 7.3 | | |

* (no specification provided)

**Material Description**

Fine grained, SLIGHTLY SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3098 $D_{85}$= 0.2785 $D_{60}$= 0.2152
$D_{50}$= 0.1992 $D_{30}$= 0.1697 $D_{15}$= 0.1423
$D_{10}$= 0.1201 $C_u$= 1.79 $C_c$= 1.12

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

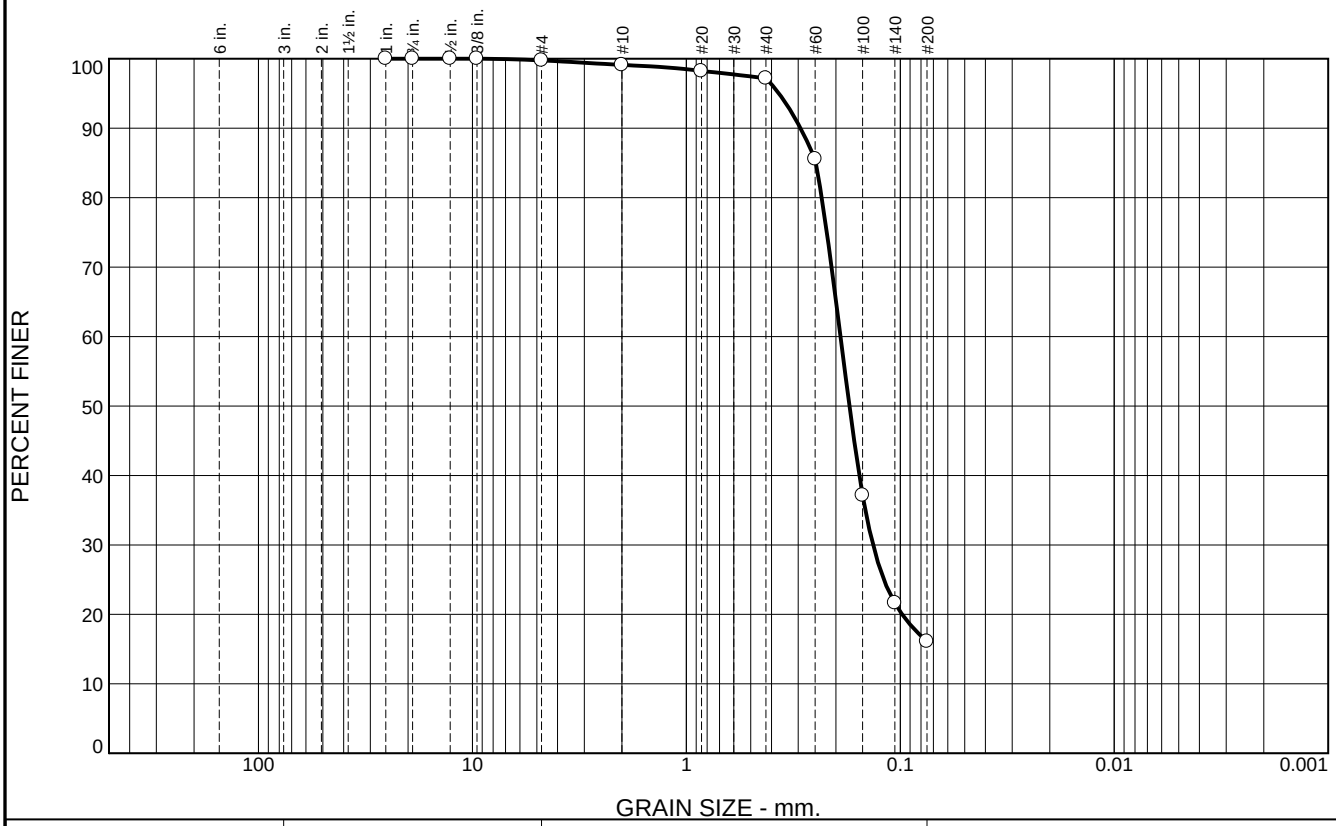
**Location:** BI-PBC-11-12 A
**Sample Number:** 6494 (7) **Depth:** 2.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.7 | 1.9 | 81.1 | 16.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.1 | | |
| #20 | 98.2 | | |
| #40 | 97.2 | | |
| #60 | 85.5 | | |
| #100 | 37.1 | | |
| #140 | 21.6 | | |
| #200 | 16.1 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2930 $D_{85}$= 0.2481 $D_{60}$= 0.1904
$D_{50}$= 0.1730 $D_{30}$= 0.1342 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

**Location:** BI-PBC-11-12 B
**Sample Number:** 6494 (8) **Depth:** 4.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

Boring Designation BI-PBC-12-12

| DRILLING LOG | DIVISION South Atlantic | INSTALLATION Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT MsCIP Barrier Island Restoration Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT N/A |
| | 10. COORDINATE SYSTEM/DATUM State Plane, MSE (U.S. Ft.) \| HORIZONTAL NAD83 \| VERTICAL NAVD88 |
| 2. BORING DESIGNATION BI-PBC-12-12 \| LOCATION COORDINATES E = 1,077,178 N = 247,064 | 11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY Corps of Engineers - CESAM \| CONTRACTOR FILE NO. | 12. TOTAL SAMPLES \| DISTURBED \| UNDISTURBED (UD) 0 |
| 4. NAME OF DRILLER American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED \| DEG. FROM VERTICAL \| BEARING | 14. WATER DEPTH 43.9 Ft. |
| | 15. DATE BORING \| STARTED 12-15-12 \| COMPLETED 12-15-12 |
| 6. THICKNESS OF OVERBURDEN N/A | 16. ELEVATION TOP OF BORING -43.3 Ft. |
| 7. DEPTH DRILLED INTO ROCK N/A | 17. TOTAL RECOVERY FOR BORING 100% |
| 8. TOTAL DEPTH OF BORING 16.2 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -43.3 | 0.0 | | | | |
| -46.3 | 3.0 | | CLAY, organic-H, mostly organic matter, highly plastic clay/silt, dark gray to black (OH) | NS | |
| -47.3 | 4.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, some shell fragments, trace silt, gray (SP) | A | Classification: SP-SM Color: 5Y 5/2-olive gray D50: 0.2037 mm % Fines: 10.6 |
| -51.3 | 8.0 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, trace clayey lenses, greenish gray (SM) | B | Classification: SM Color: 5Y 5/2-olive gray D50: 0.1606 mm % Fines: 18.6 |
| -55.3 | 12.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SC) | NS | |
| -59.5 | 16.2 | | CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, gray and grayish brown (CH) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.17905° Long = -88.53923°

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-PBC-12-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 10.743

**Longitude** 088 32.354

**Date** 12/15/2012

**Start Time** 13:52:52

**End Time** 13:53:15

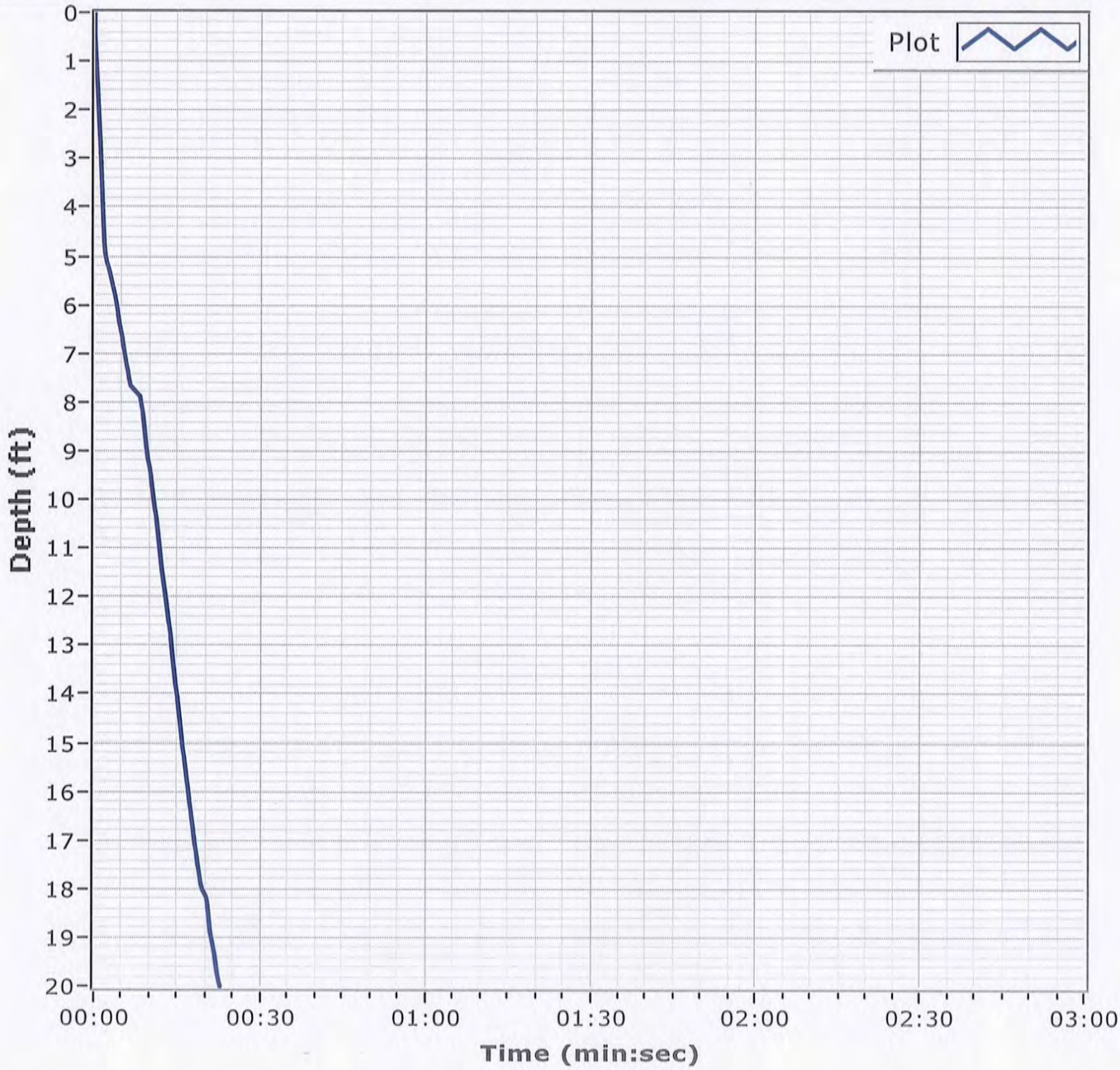
**Total Time** 00:00:22

**Water Depth** 43.9'

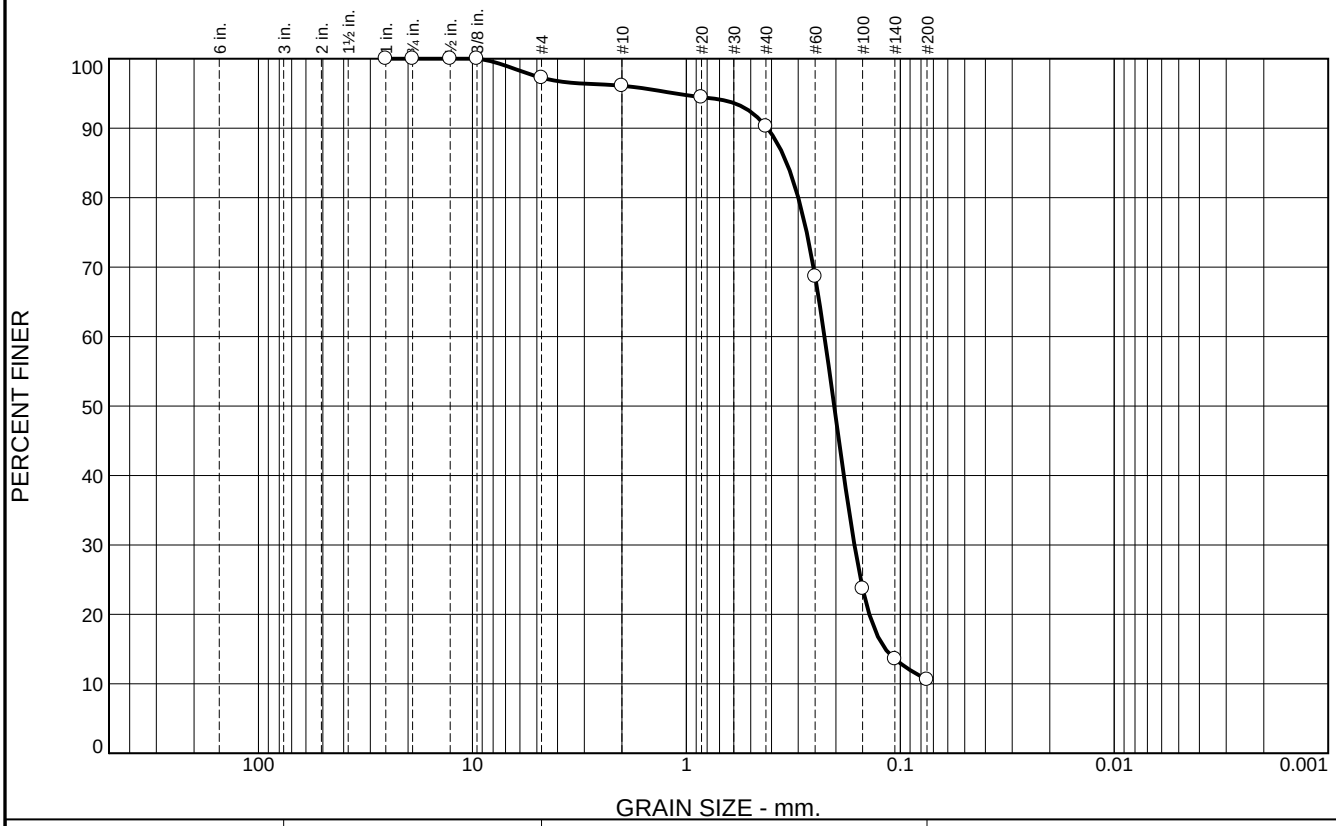
**Penetration** 20.0'

**Recovery** 16.2'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.7 | 1.2 | 5.8 | 79.7 | 10.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 97.3 | | |
| #10 | 96.1 | | |
| #20 | 94.5 | | |
| #40 | 90.3 | | |
| #60 | 68.6 | | |
| #100 | 23.7 | | |
| #140 | 13.6 | | |
| #200 | 10.6 | | |

* (no specification provided)

**Material Description**

Fine grained, SLIGHTLY SILTY SAND, with trace SHELL

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.4179 $D_{85}$= 0.3396 $D_{60}$= 0.2261
$D_{50}$= 0.2037 $D_{30}$= 0.1640 $D_{15}$= 0.1174
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

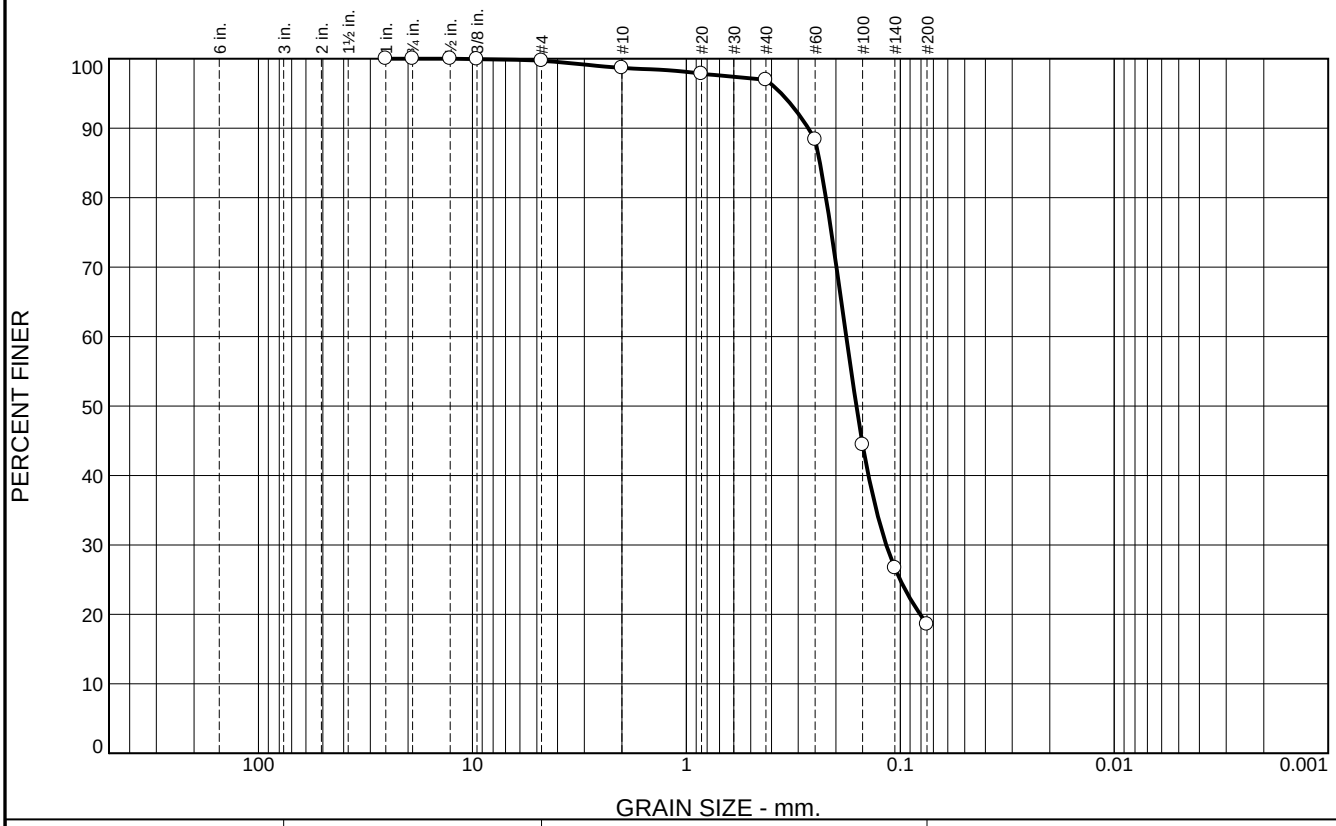
**Location:** BI-PBC-12-12 A
**Sample Number:** 6494 (9) **Depth:** 3.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 1.0 | 1.8 | 78.3 | 18.6 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 99.9 | | |
| #4 | 99.7 | | |
| #10 | 98.7 | | |
| #20 | 97.8 | | |
| #40 | 96.9 | | |
| #60 | 88.4 | | |
| #100 | 44.4 | | |
| #140 | 26.7 | | |
| #200 | 18.6 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2696 $D_{85}$= 0.2374 $D_{60}$= 0.1790
$D_{50}$= 0.1606 $D_{30}$= 0.1163 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

**Location:** BI-PBC-12-12 B
**Sample Number:** 6494 (10) **Depth:** 4.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-13-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-13-12 — LOCATION COORDINATES: E = 1,075,777 N = 246,290 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO.: | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES: |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 42.3 Ft. |
| | 15. DATE BORING — STARTED: 12-15-12 — COMPLETED: 12-15-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -41.8 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -41.8 | 0.0 | | | | |
| -42.6 | 0.8 | | CLAY, fat, mostly clay, very soft, gray (CH) | NS | |
| | | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, trace clay lenses, gray (SM) | A | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1674 mm % Fines: 17.4 |
| | | | | B | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1486 mm % Fines: 19.2 |
| -50.8 | 9.0 | | | | |
| -52.8 | 11.0 | | SILT, inorganic-L, mostly silt, some fine-grained sand-sized quartz, trace shell fragments, gray (ML) | | |
| -55.3 | 13.5 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC) | NS | |
| -57.5 | 15.7 | | CLAY, fat, mostly clay, soft, gray and brown (CH) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17693° Long = -88.54367°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-PBC-13-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 10.616

**Longitude** 088 32.620

**Date** 12/15/2012

**Start Time** 13:05:20

**End Time** 13:05:45

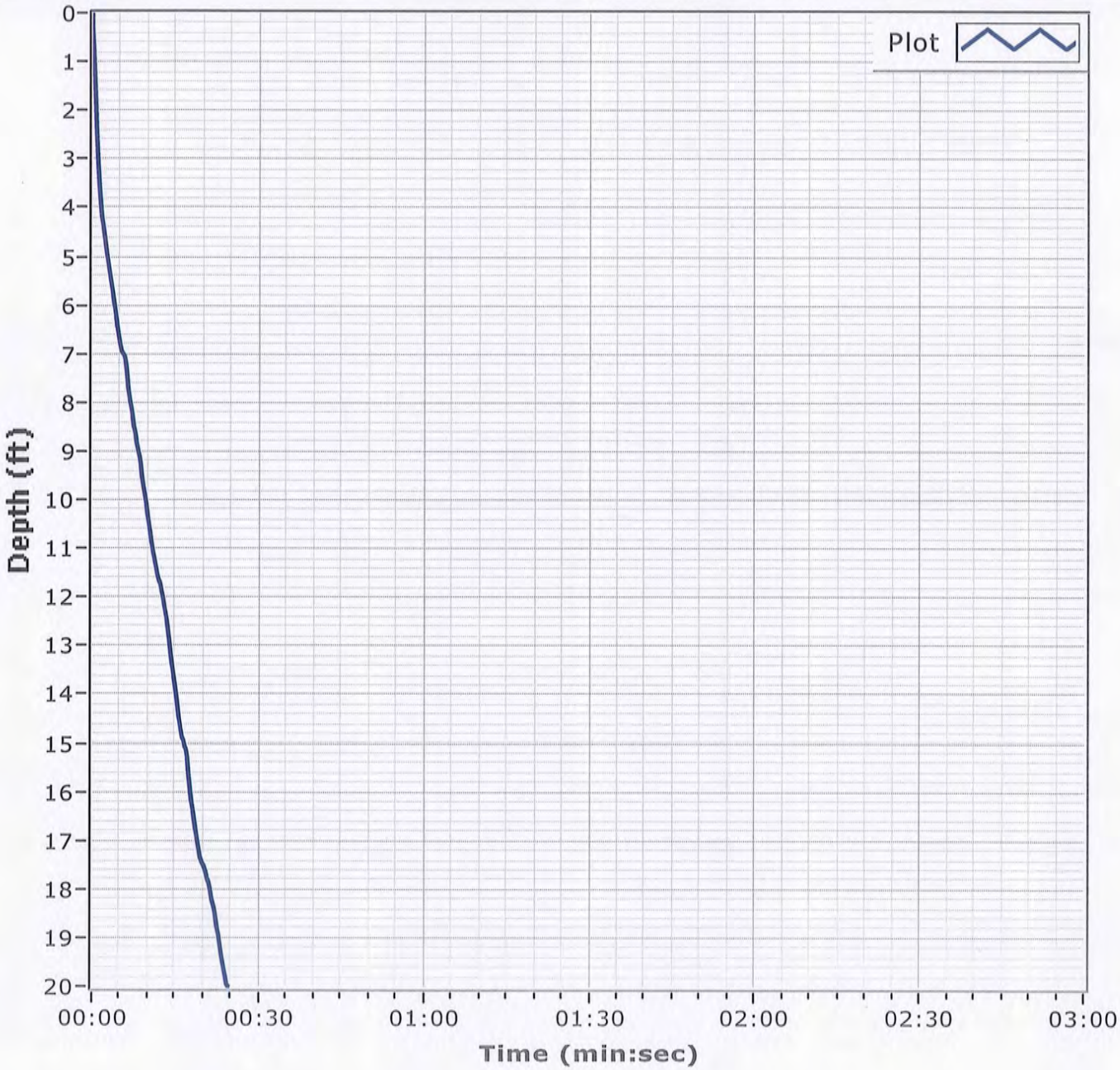
**Total Time** 00:00:24

**Water Depth** 42.3'

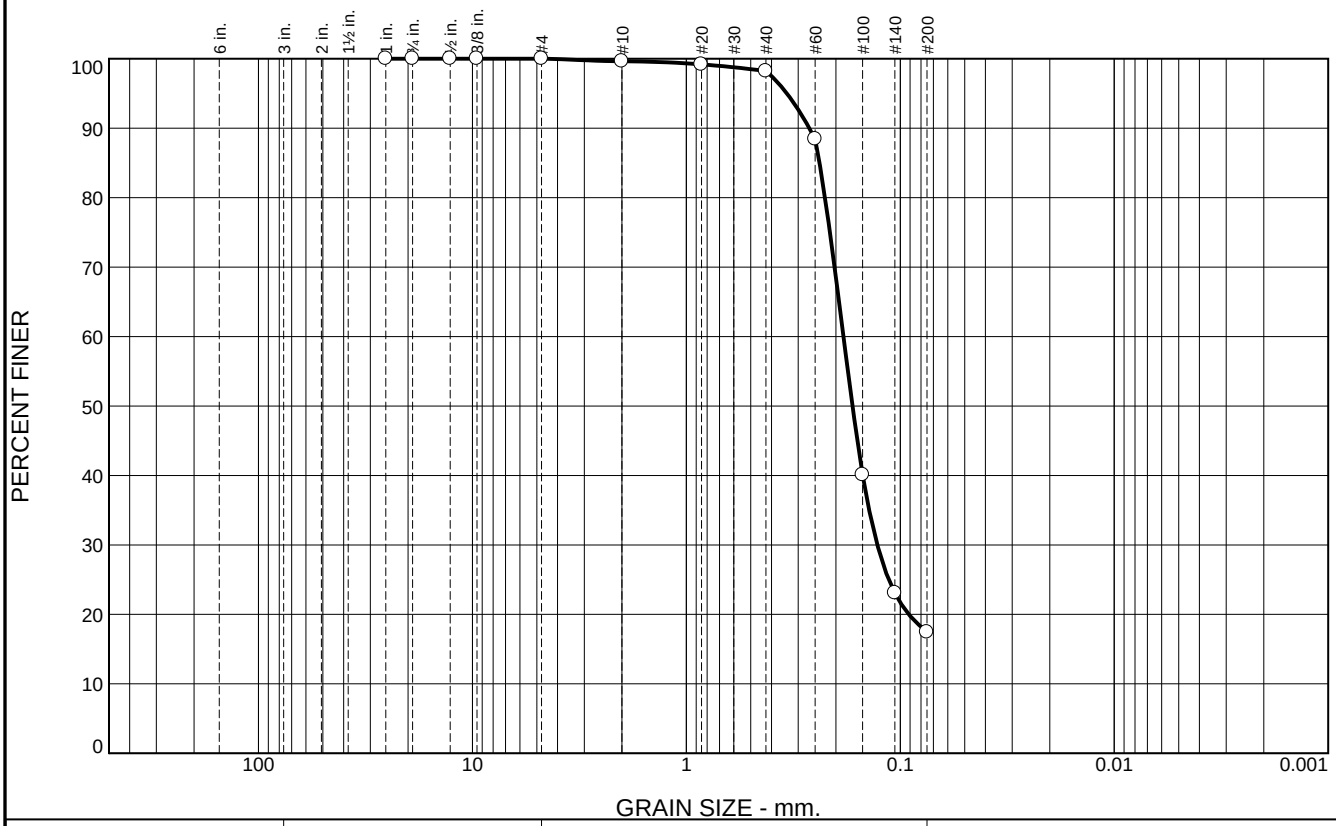
**Penetration** 20.0'

**Recovery** 15.6'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 1.4 | 80.8 | 17.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 99.2 | | |
| #40 | 98.2 | | |
| #60 | 88.4 | | |
| #100 | 40.1 | | |
| #140 | 23.1 | | |
| #200 | 17.4 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2663 $D_{85}$= 0.2385 $D_{60}$= 0.1845
$D_{50}$= 0.1674 $D_{30}$= 0.1281 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

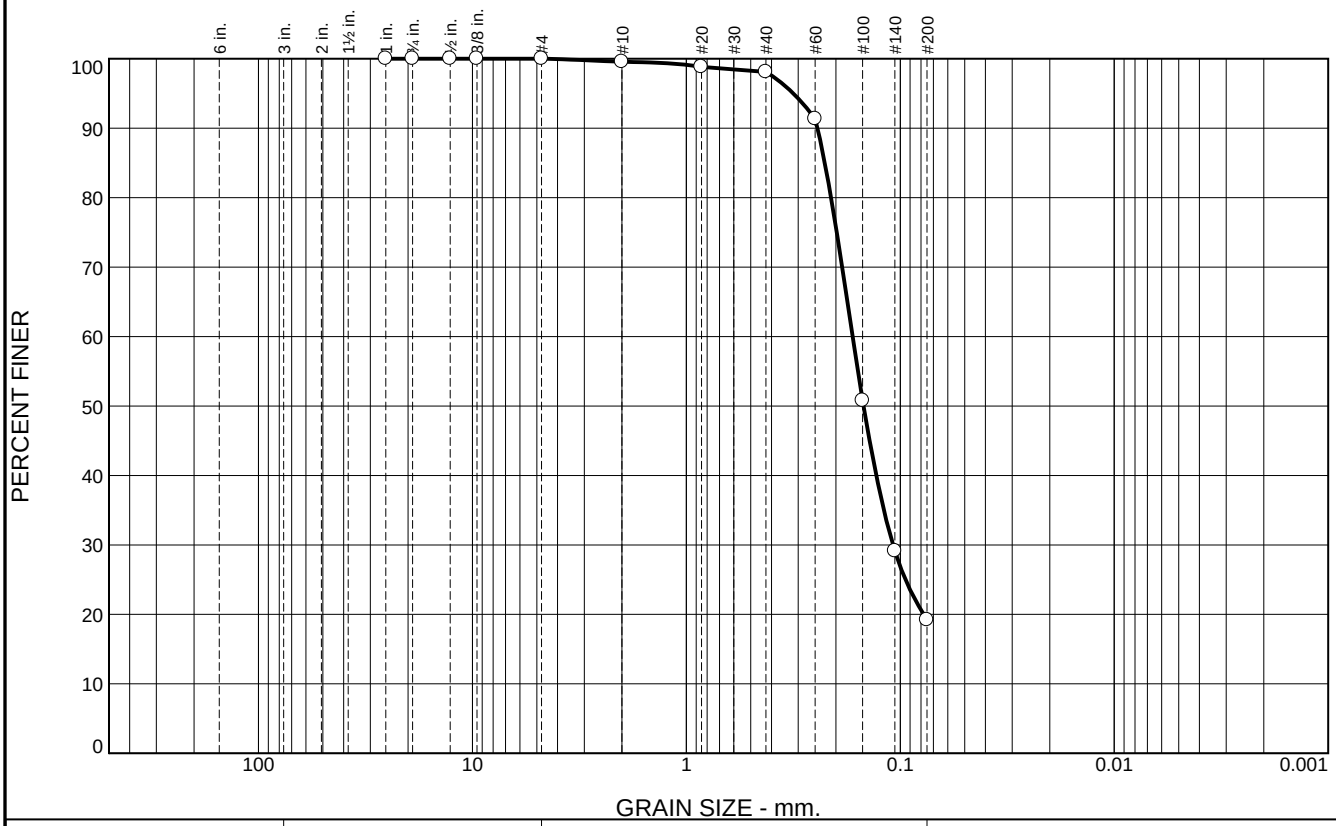
**Location:** BI-PBC-13-12 A
**Sample Number:** 6494 (11) **Depth:** 0.8' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 1.5 | 78.9 | 19.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.6 | | |
| #20 | 98.8 | | |
| #40 | 98.1 | | |
| #60 | 91.3 | | |
| #100 | 50.8 | | |
| #140 | 29.1 | | |
| #200 | 19.2 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2438 $D_{85}$= 0.2252 $D_{60}$= 0.1671
$D_{50}$= 0.1486 $D_{30}$= 0.1081 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

**Location:** BI-PBC-13-12 B
**Sample Number:** 6494 (12) **Depth:** 5.8' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-14-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-14-12 — LOCATION COORDINATES: E = 1,075,212 N = 244,797 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO.: | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES: |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 42.6 Ft. |
| | 15. DATE BORING — STARTED: 12-15-12 — COMPLETED: 12-15-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -42.5 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 16.3 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -42.5 | 0.0 | | | | |
| -42.8 | 0.3 | | CLAY, fat, mostly clay, soft, gray (CH) | NS | |
| | | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, little shell fragments, clay lenses, gray (SM) | A | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1681 mm % Fines: 15.4 |
| | | | | B | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.152 mm % Fines: 19.9 |
| -53.5 | 11.0 | | | | |
| -55.5 | 13.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace fine-grained sand-sized quartz, trace shell fragments, gray (SC) | NS | |
| -58.8 | 16.3 | | CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace shell fragments, gray (CH) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17283° Long = -88.54547°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-PBC-14-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 10.370

**Longitude** 088 32.728

**Date** 12/15/2012

**Start Time** 11:01:28

**End Time** 11:01:54

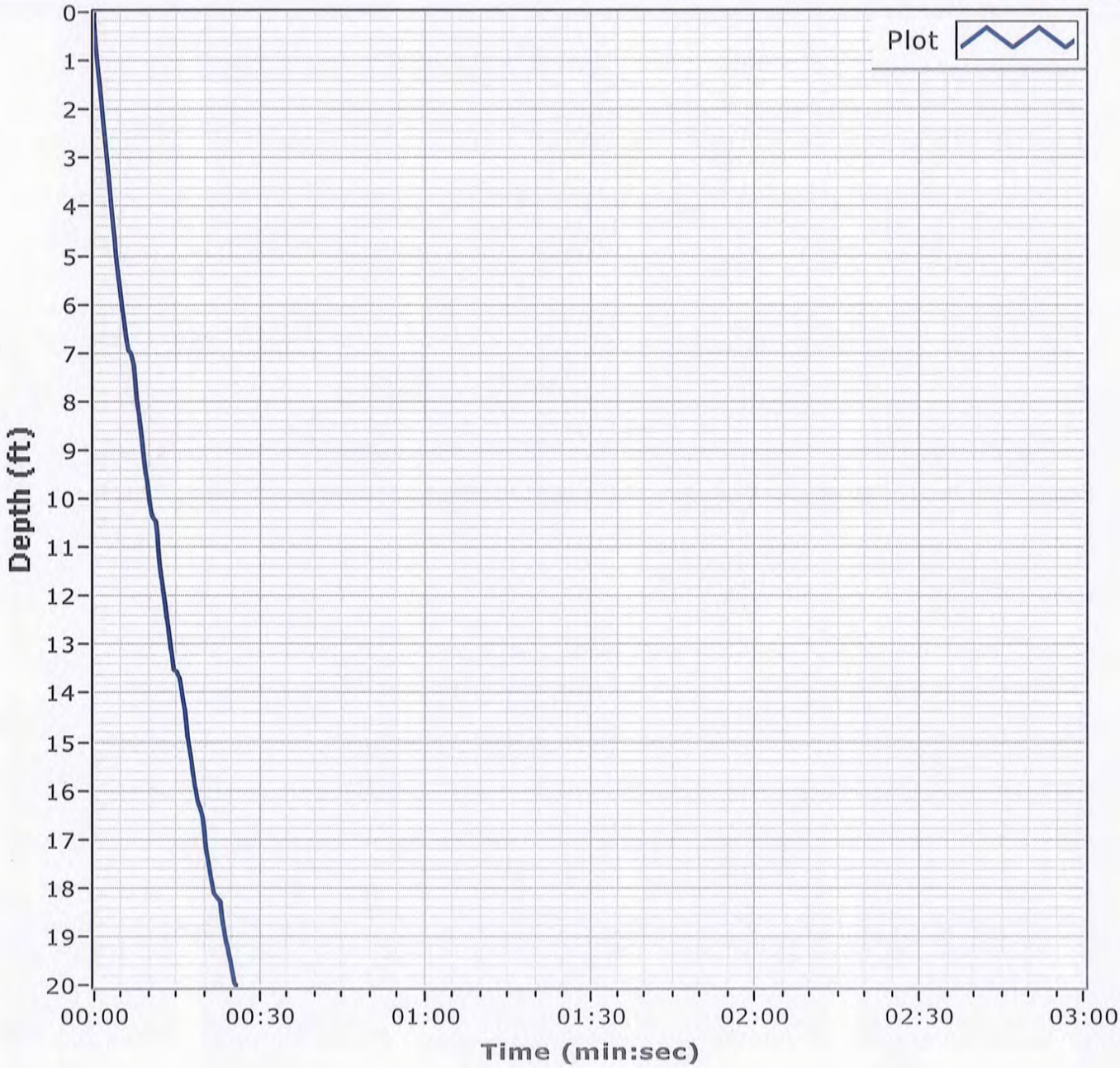
**Total Time** 00:00:26

**Water Depth** 42.6'

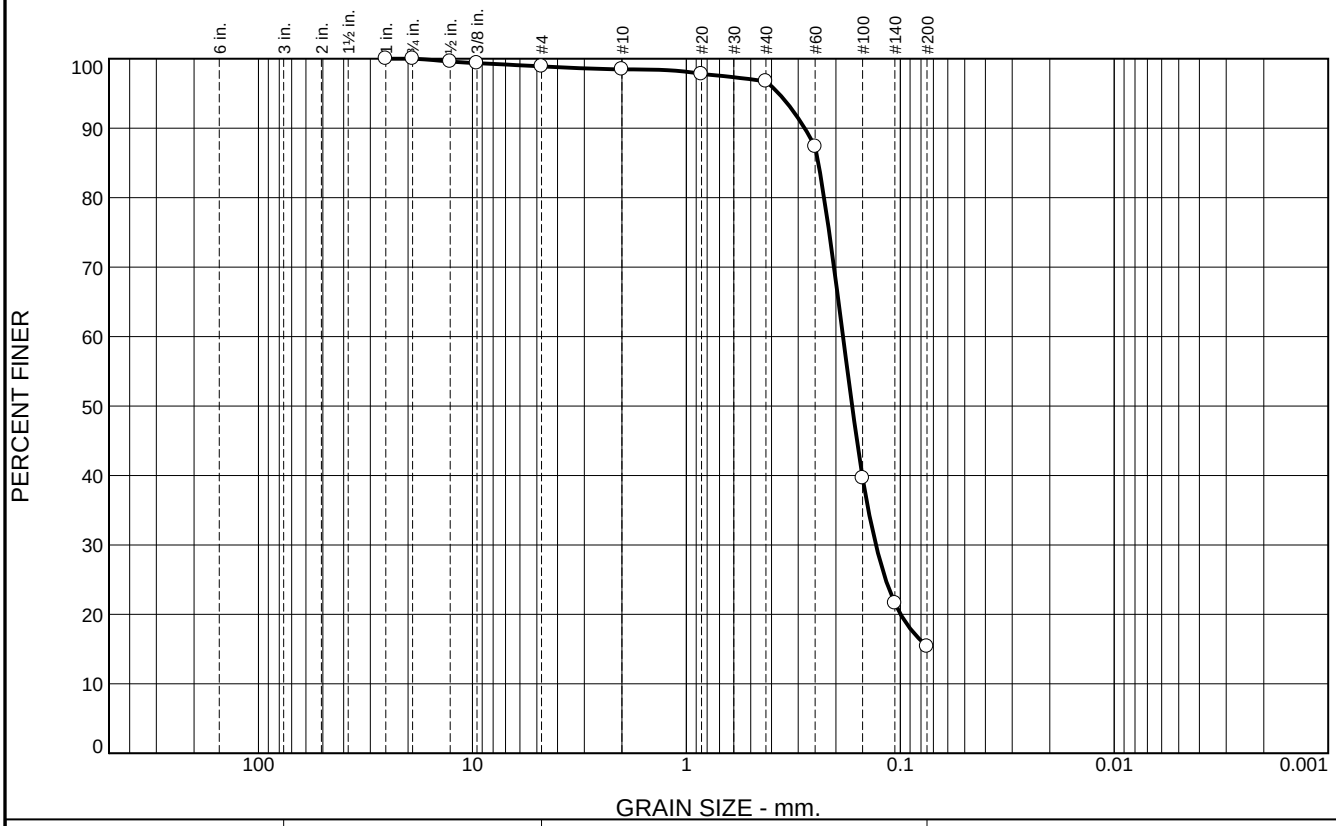
**Penetration** 20.0'

**Recovery** 16.2'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.1 | 0.4 | 1.8 | 81.3 | 15.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 99.6 | | |
| .375 | 99.4 | | |
| #4 | 98.9 | | |
| #10 | 98.5 | | |
| #20 | 97.8 | | |
| #40 | 96.7 | | |
| #60 | 87.4 | | |
| #100 | 39.6 | | |
| #140 | 21.6 | | |
| #200 | 15.4 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND, with trace SHELL

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2802 $D_{85}$= 0.2416 $D_{60}$= 0.1853
$D_{50}$= 0.1681 $D_{30}$= 0.1301 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

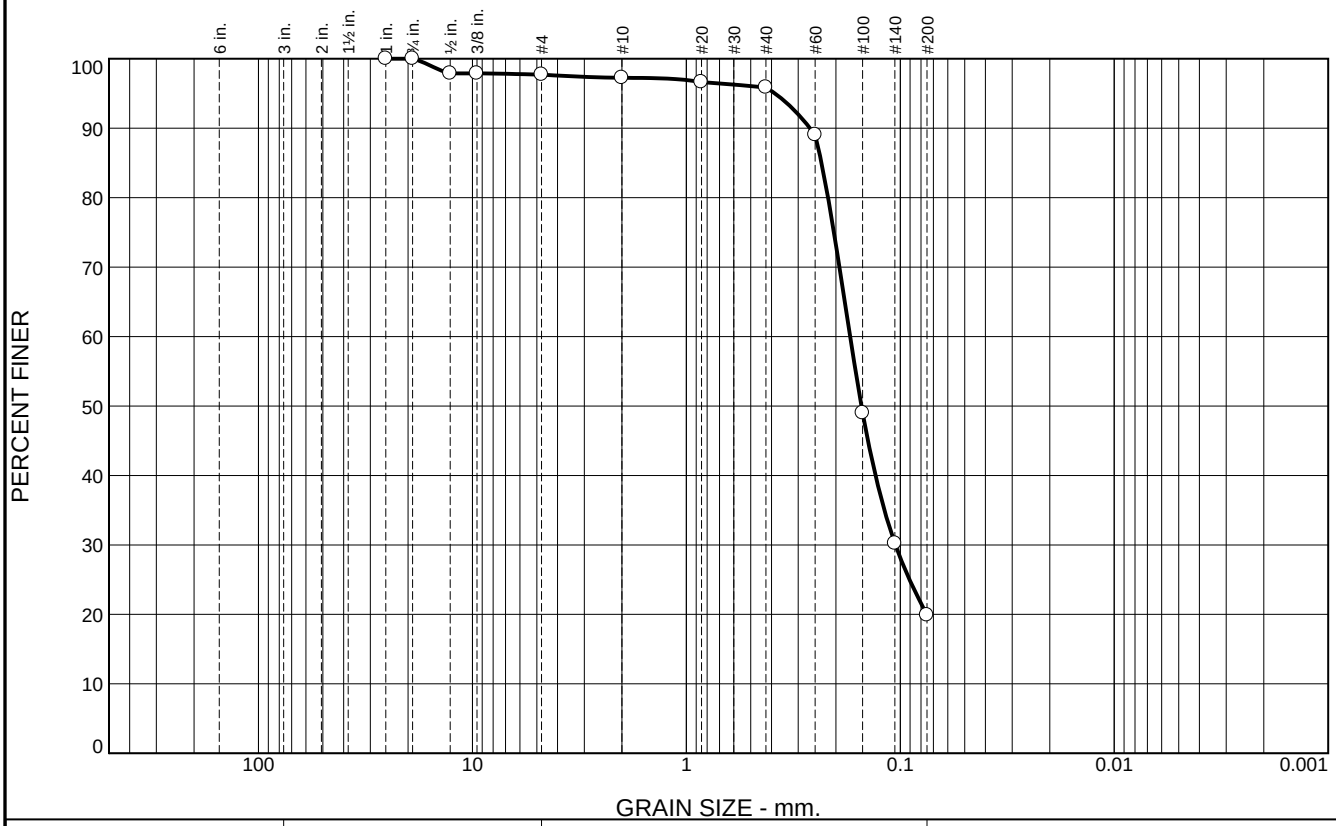
**Location:** BI-PBC-14-12 A
**Sample Number:** 6494 (13) **Depth:** 0.25' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.3 | 0.5 | 1.3 | 76.0 | 19.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 97.9 | | |
| .375 | 97.9 | | |
| #4 | 97.7 | | |
| #10 | 97.2 | | |
| #20 | 96.6 | | |
| #40 | 95.9 | | |
| #60 | 89.0 | | |
| #100 | 49.0 | | |
| #140 | 30.2 | | |
| #200 | 19.9 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND, with trace SHELL

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2644 $D_{85}$= 0.2334 $D_{60}$= 0.1717
$D_{50}$= 0.1520 $D_{30}$= 0.1054 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

**Location:** BI-PBC-14-12 B
**Sample Number:** 6494 (14) **Depth:** 5.25' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-15-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-15-12 — LOCATION COORDINATES: E = 1,073,808 N = 244,019 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 41.4 Ft. |
| | 15. DATE BORING — STARTED: 12-15-12 — COMPLETED: 12-15-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -41.4 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.4 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -41.4 | 0.0 | | | | |
| -41.9 | 0.5 | | CLAY, fat, mostly clay, soft, grayish brown (CH) | NS | |
| | | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, little shell fragments, trace clay, silt predominant 10-12 ft., gray (SM) | A | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1566 mm % Fines: 16.5 |
| | | | | B | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1526 mm % Fines: 17.8 |
| -53.4 | 12.0 | | | | |
| -55.4 | 14.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |
| -56.8 | 15.4 | | CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace shell fragments, soft, gray (CH) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17070° Long = -88.54992°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

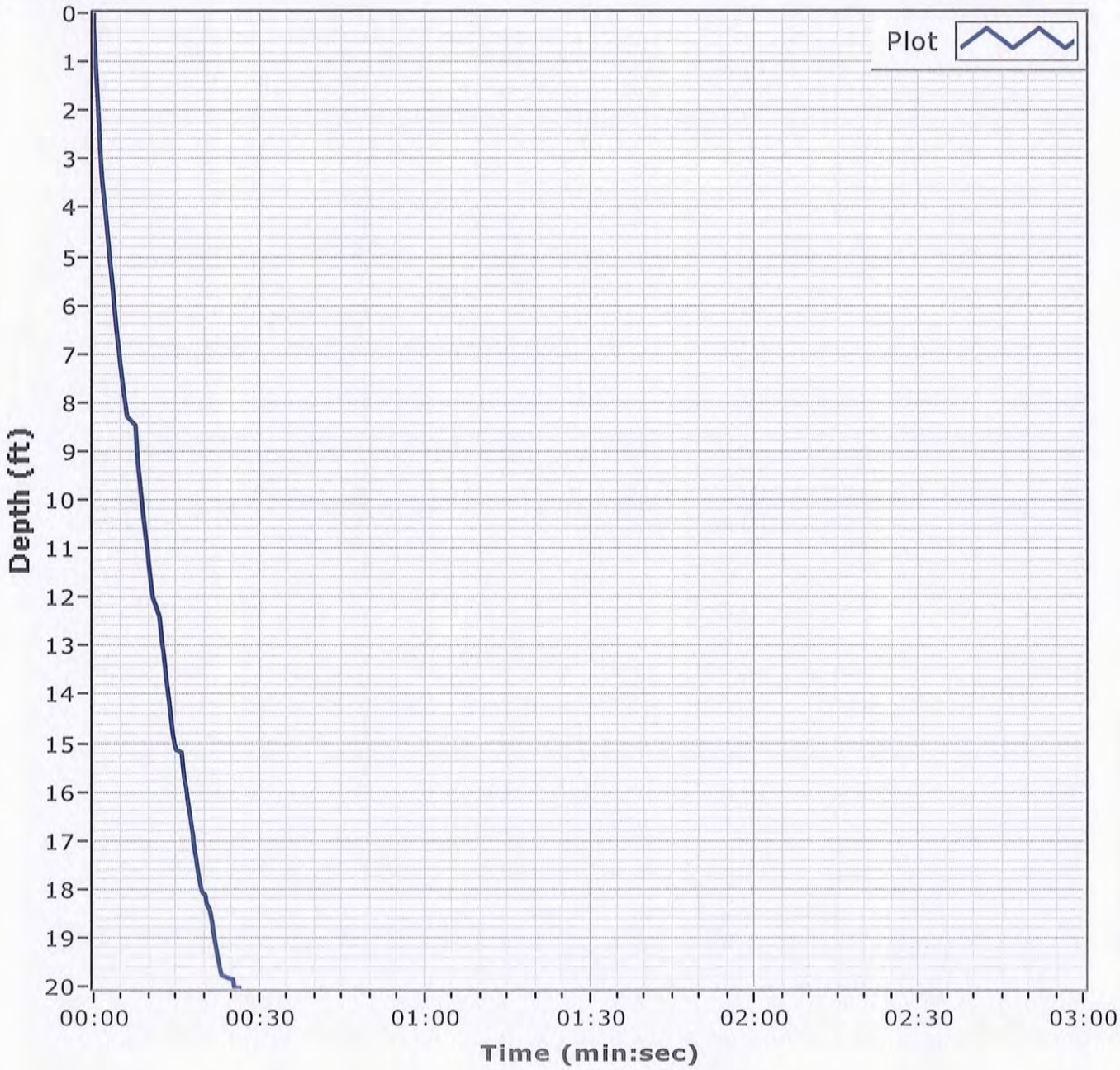
**Core Identifier** BI-PBC-15-12
**Coordinate System**
Latitude / Longitude

**Latitude** 30 10.242
**Longitude** 088 32.995

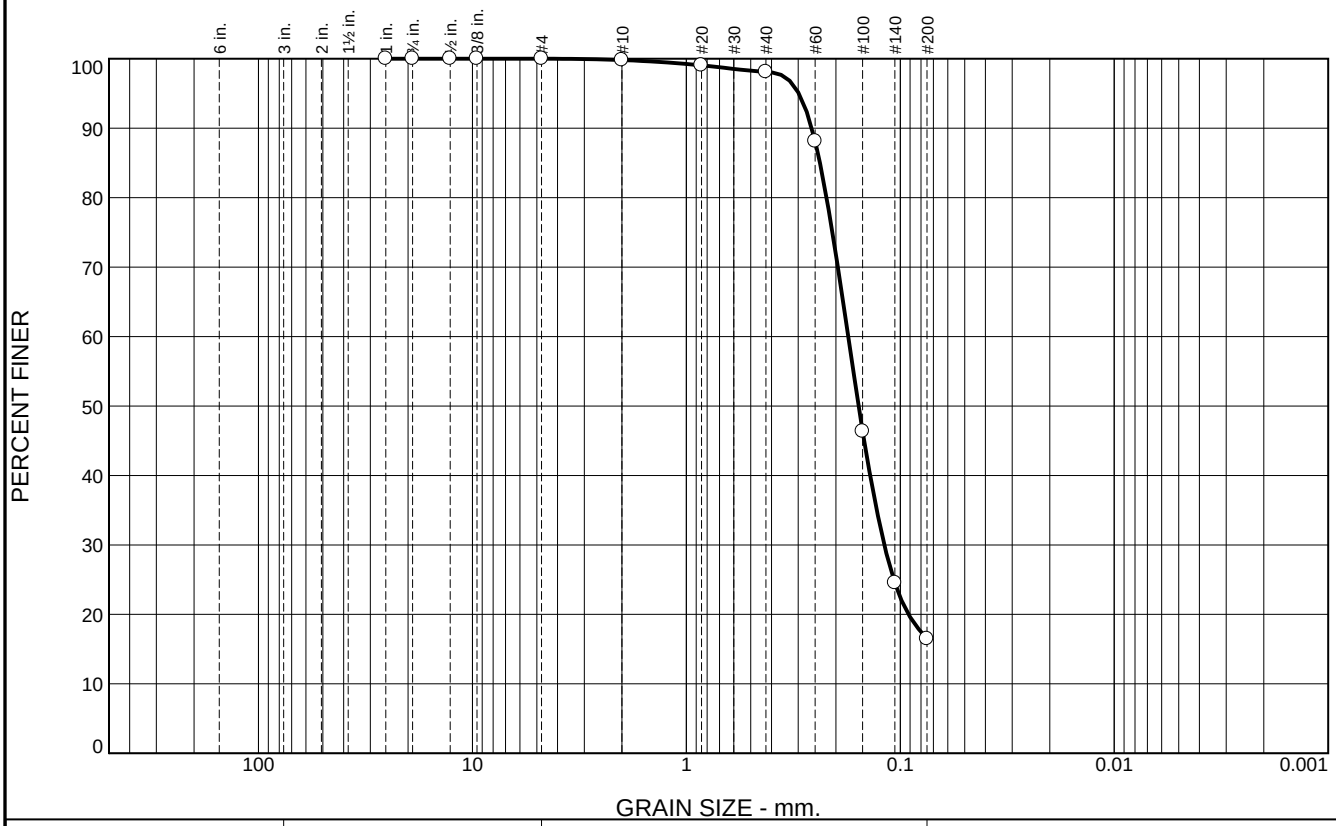
**Date** 12/15/2012
**Start Time** 10:03:12
**End Time** 10:03:39
**Total Time** 00:00:26

**Water Depth** 41.4'
**Penetration** 20.0'
**Recovery** 15.4'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.2 | 1.7 | 81.6 | 16.5 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.8 | | |
| #20 | 99.0 | | |
| #40 | 98.1 | | |
| #60 | 88.1 | | |
| #100 | 46.3 | | |
| #140 | 24.5 | | |
| #200 | 16.5 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2593 $D_{85}$= 0.2373 $D_{60}$= 0.1752
$D_{50}$= 0.1566 $D_{30}$= 0.1188 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

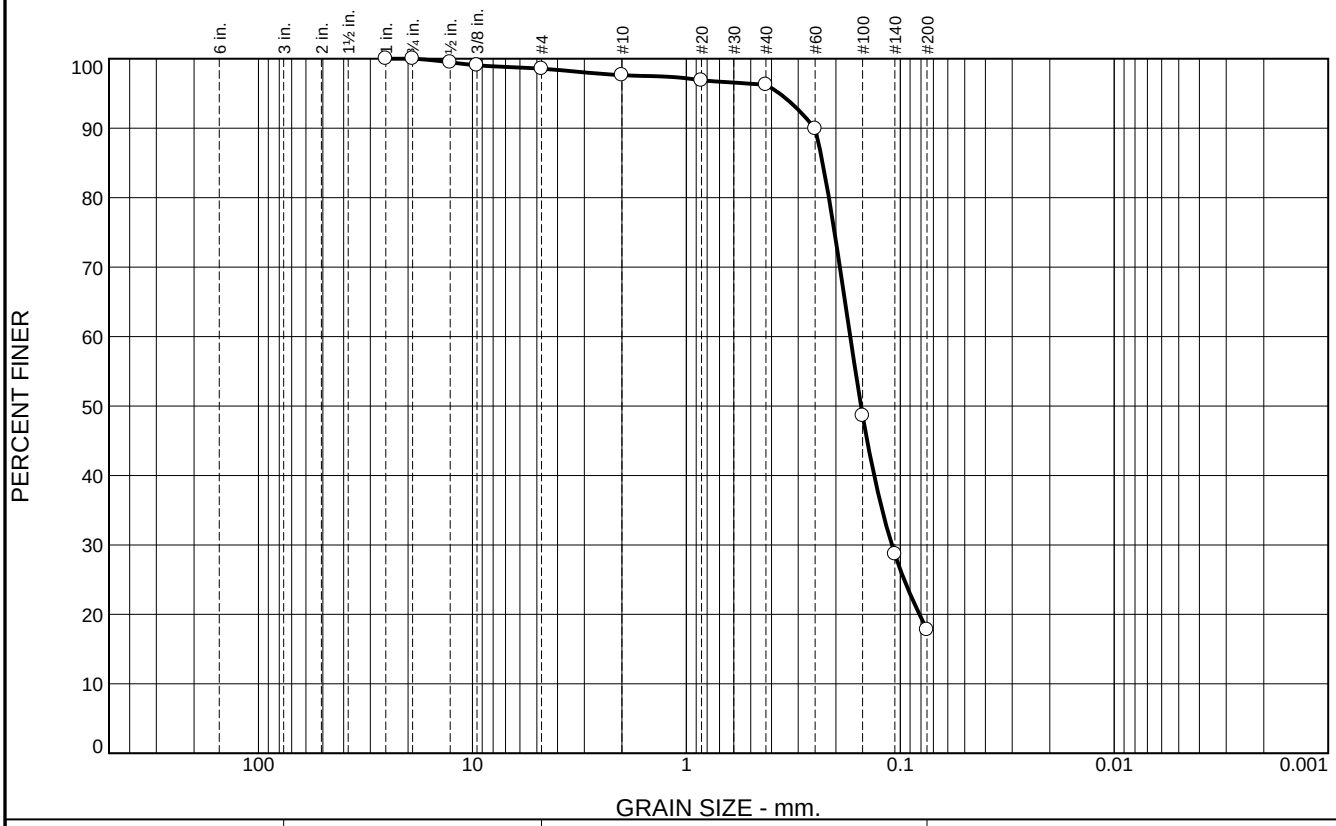
**Location:** BI-PBC-15-12 A
**Sample Number:** 6494 (15) **Depth:** 0.5' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.4 | 1.0 | 1.4 | 78.4 | 17.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 99.5 | | |
| .375 | 99.1 | | |
| #4 | 98.6 | | |
| #10 | 97.6 | | |
| #20 | 96.9 | | |
| #40 | 96.2 | | |
| #60 | 89.9 | | |
| #100 | 48.6 | | |
| #140 | 28.7 | | |
| #200 | 17.8 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND, with trace SHELL

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2514 $D_{85}$= 0.2306 $D_{60}$= 0.1715
$D_{50}$= 0.1526 $D_{30}$= 0.1094 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

**Location:** BI-PBC-15-12 B
**Sample Number:** 6494 (16) **Depth:** 5.5' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-16-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-16-12 — LOCATION COORDINATES: E = 1,073,243 N = 242,519 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 42.7 Ft. |
| | 15. DATE BORING — STARTED: 12-15-12 — COMPLETED: 12-15-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -42.7 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -42.7 | 0.0 | | | | |
| -44.7 | 2.0 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, greenish gray (SM) | A | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1672 mm % Fines: 14.4 |
| -45.2 | 2.5 | | CLAY, fat, mostly clay, trace shell fragments, clay lenses, greenish gray (CH) | NS | |
| -47.7 | 5.0 | | SAND, silty, clayey, mostly fine-grained sand-sized quartz, some clay, some silt, greenish gray (SC-SM) | | |
| -52.7 | 10.0 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, some shell fragments, some clayey lenses, greenish gray (SM) | B | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1549 mm % Fines: 16 |
| -58.4 | 15.7 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace silt, trace shell fragments, greenish gray (SC) | NS | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.16658° Long = -88.55172°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-PBC-16-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 09.995

**Longitude** 088 33.103

**Date** 12/15/2012

**Start Time** 09:00:32

**End Time** 09:01:04

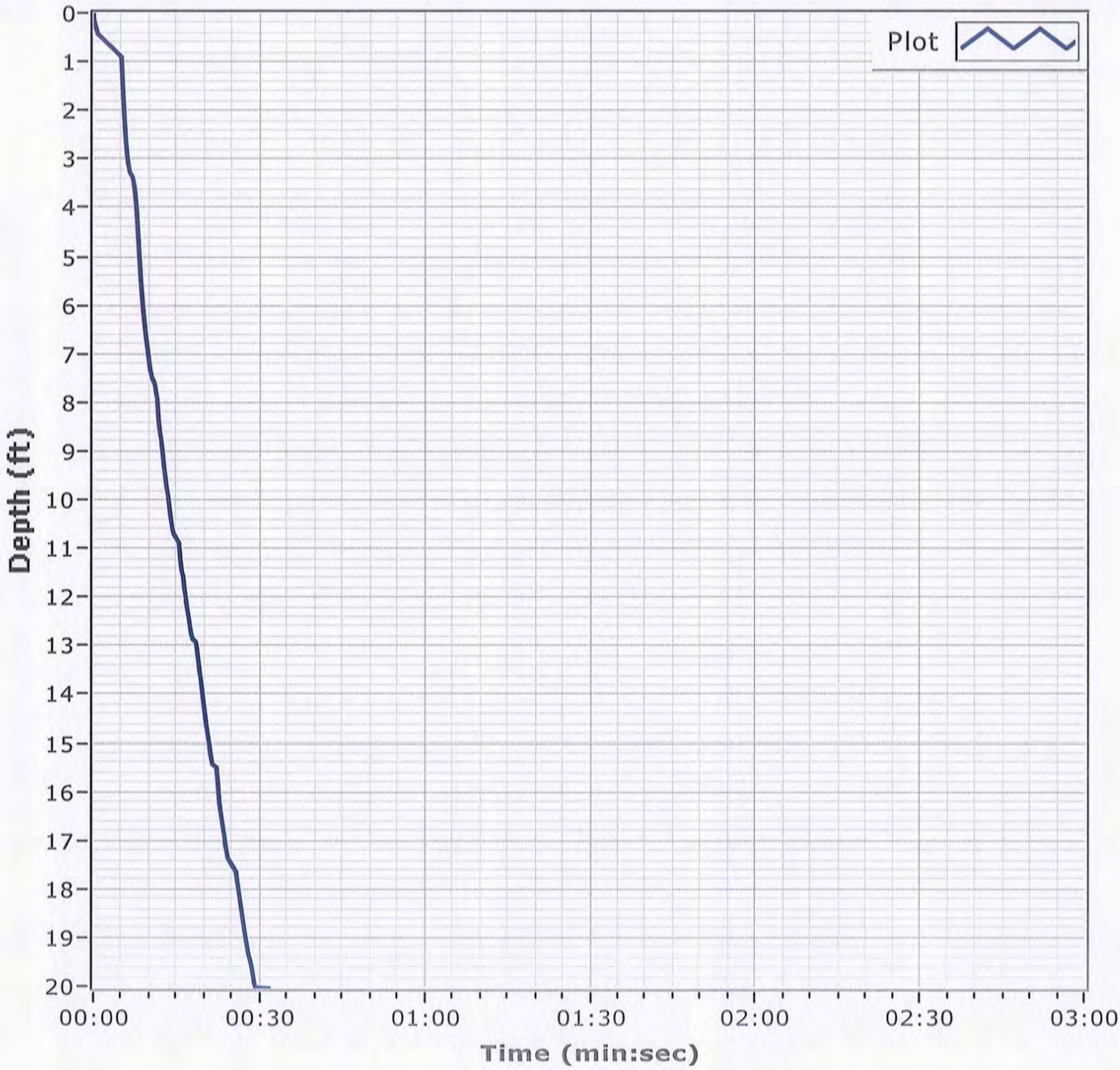
**Total Time** 00:00:32

**Water Depth** 42.7'

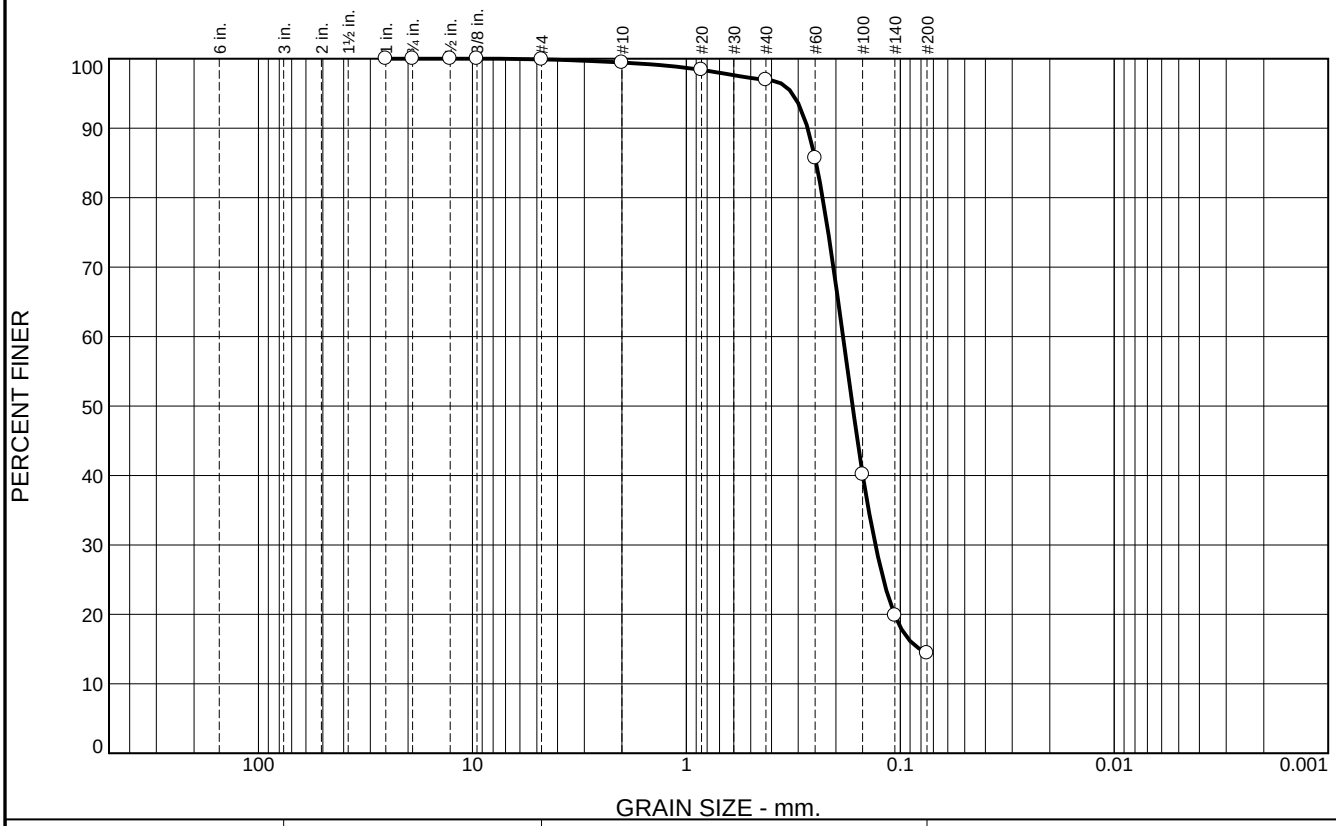
**Penetration** 20.0'

**Recovery** 15.6'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.5 | 2.4 | 82.6 | 14.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.4 | | |
| #20 | 98.4 | | |
| #40 | 97.0 | | |
| #60 | 85.7 | | |
| #100 | 40.1 | | |
| #140 | 19.8 | | |
| #200 | 14.4 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2712 $D_{85}$= 0.2473 $D_{60}$= 0.1853
$D_{50}$= 0.1672 $D_{30}$= 0.1308 $D_{15}$= 0.0810
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

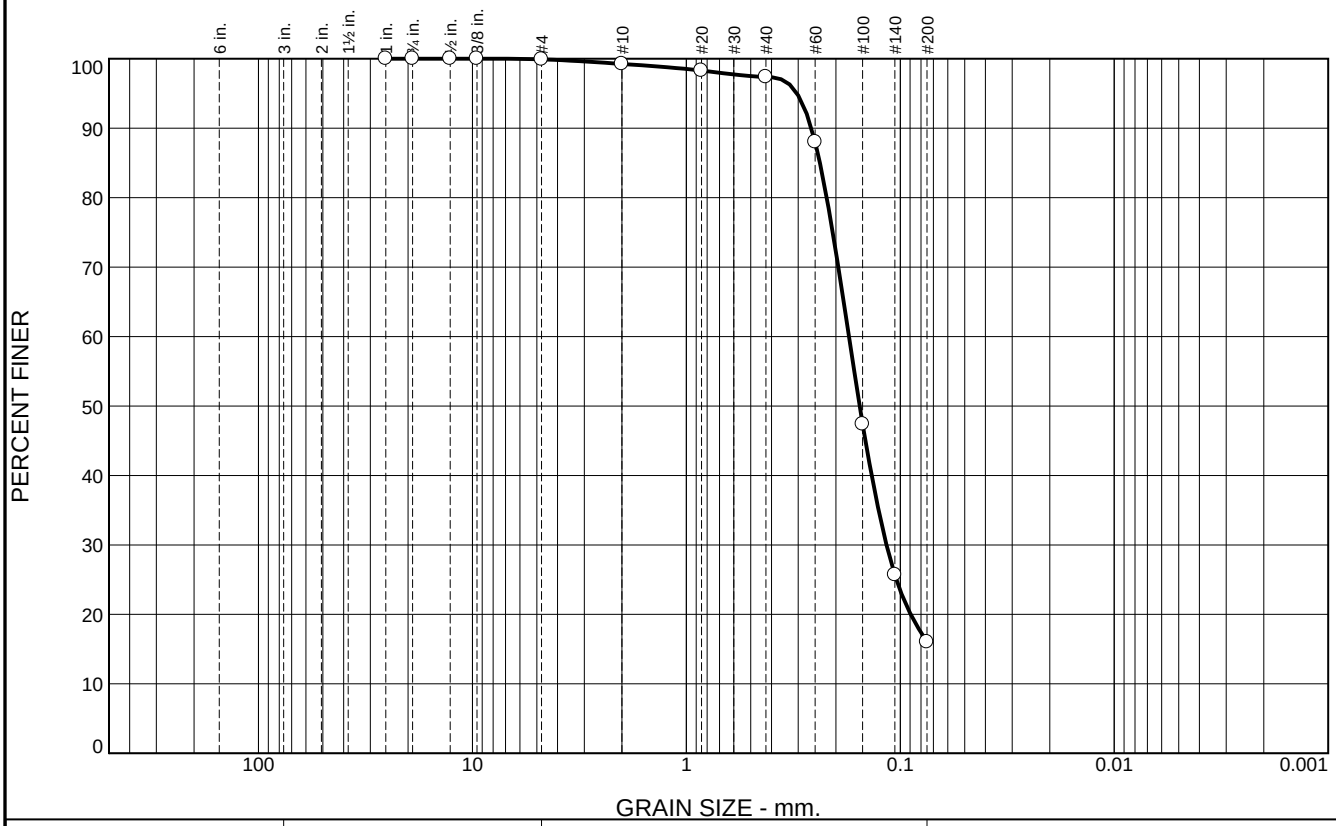
**Location:** BI-PBC-16-12 A
**Sample Number:** 6494 (17) **Depth:** 0.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.7 | 1.8 | 81.4 | 16.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.2 | | |
| #20 | 98.3 | | |
| #40 | 97.4 | | |
| #60 | 88.0 | | |
| #100 | 47.4 | | |
| #140 | 25.7 | | |
| #200 | 16.0 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2604 $D_{85}$= 0.2374 $D_{60}$= 0.1738
$D_{50}$= 0.1549 $D_{30}$= 0.1160 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

**Location:** BI-PBC-16-12 B
**Sample Number:** 6494 (18) **Depth:** 5.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-18-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-18-12 — LOCATION COORDINATES: E = 1,078,796 N = 250,643 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 37.8 Ft. |
| | 15. DATE BORING — STARTED: 12-16-12 — COMPLETED: 12-16-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -37.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.8 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -37.2 | 0.0 | | | | |
| -39.2 | 2.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC) | NS | |
| -41.2 | 4.0 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, trace clay lenses, gray (SM) | A | Classification: SM Color: 5Y 5/2-olive gray D50: 0.1852 mm % Fines: 16.3 |
| -42.2 | 5.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little silt, little shell fragments, gray (SP) | B | Classification: SM Color: 5Y 5/2-olive gray D50: 0.2122 mm % Fines: 12.4 |
| -44.2 | 7.0 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, trace clay lenses, gray (SM) | C | Classification: SM Color: 5Y 5/2-olive gray D50: 0.178 mm % Fines: 15.9 |
| -47.2 | 10.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) | NS | |
| -49.2 | 12.0 | | CLAY, fat, mostly clay, gray (CH) | | |
| -53.0 | 15.8 | | CLAY, lean, mostly clay, trace fine-grained sand-sized quartz, stiff, gray and yellow-orange mottle (CL) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18888° Long = -88.53408°**

**Project** Missiissippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-PBC-18-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.333

**Longitude** 088 32.045

**Date** 12/16/2012

**Start Time** 11:35:59

**End Time** 11:36:53

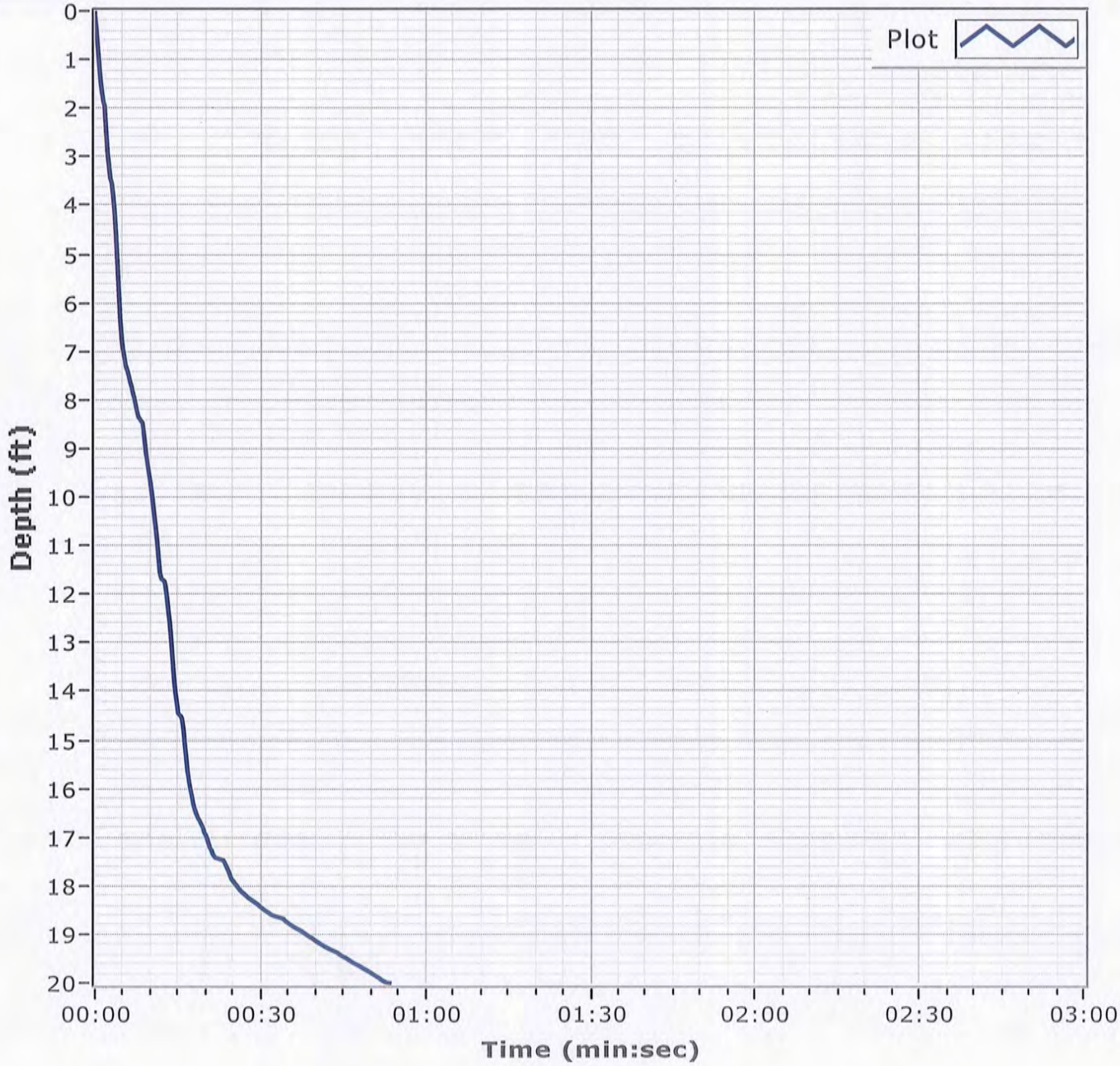
**Total Time** 00:00:53

**Water Depth** 37.8'

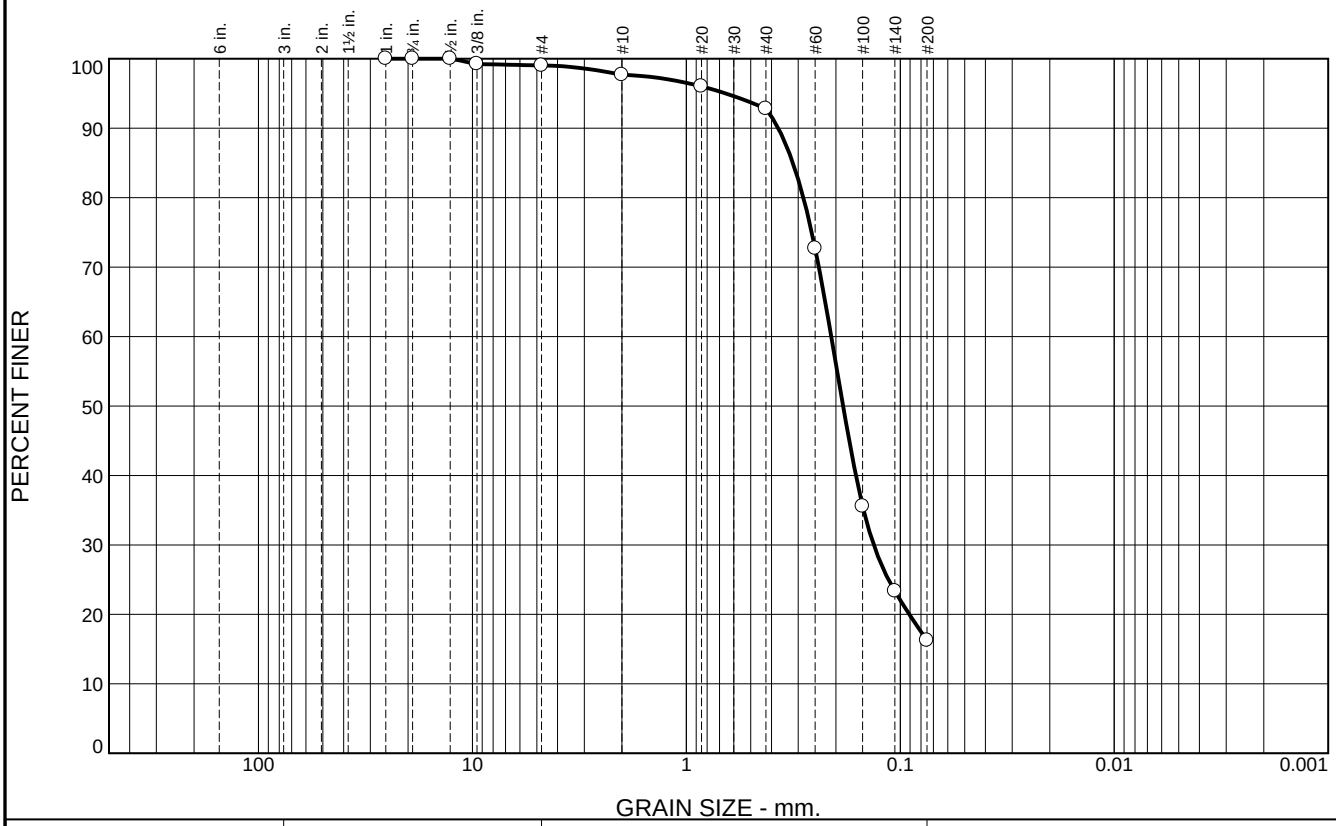
**Penetration** 20.0'

**Recovery** 15.8'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.0 | 1.3 | 4.9 | 76.5 | 16.3 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 99.2 | | |
| #4 | 99.0 | | |
| #10 | 97.7 | | |
| #20 | 96.0 | | |
| #40 | 92.8 | | |
| #60 | 72.7 | | |
| #100 | 35.6 | | |
| #140 | 23.3 | | |
| #200 | 16.3 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND, with trace SHELL

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3719 $D_{85}$= 0.3178 $D_{60}$= 0.2102
$D_{50}$= 0.1852 $D_{30}$= 0.1332 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

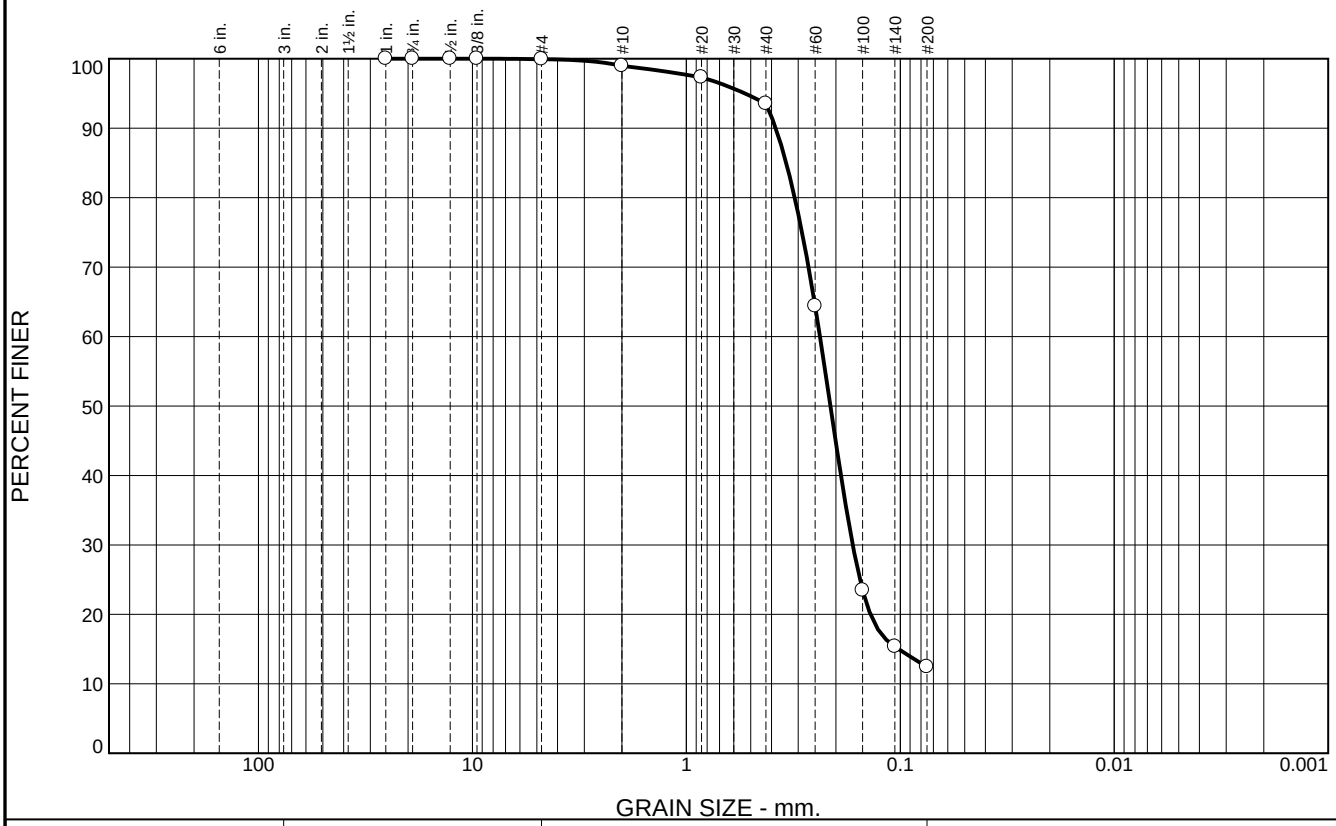
**Location:** BI-PBC-18-12 A
**Sample Number:** 6494 (19) **Depth:** 2.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.9 | 5.5 | 81.1 | 12.4 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.0 | | |
| #20 | 97.3 | | |
| #40 | 93.5 | | |
| #60 | 64.4 | | |
| #100 | 23.5 | | |
| #140 | 15.4 | | |
| #200 | 12.4 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3821 $D_{85}$= 0.3414 $D_{60}$= 0.2374
$D_{50}$= 0.2122 $D_{30}$= 0.1670 $D_{15}$= 0.1017
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

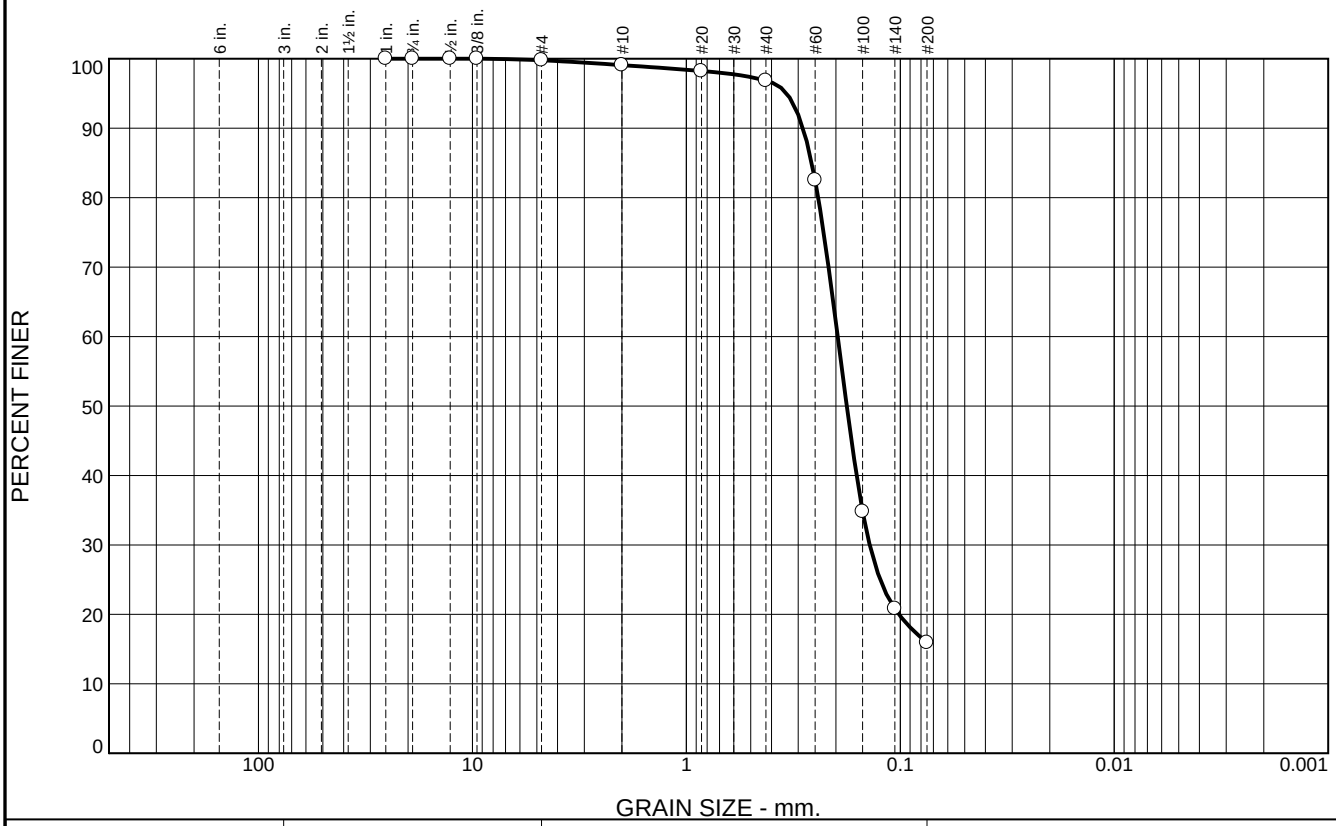
**Location:** BI-PBC-18-12 B
**Sample Number:** 6494 (20) **Depth:** 4.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.2 | 0.7 | 2.3 | 80.9 | 15.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.8 | | |
| #10 | 99.1 | | |
| #20 | 98.2 | | |
| #40 | 96.8 | | |
| #60 | 82.5 | | |
| #100 | 34.8 | | |
| #140 | 20.8 | | |
| #200 | 15.9 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2853 $D_{85}$= 0.2594 $D_{60}$= 0.1962
$D_{50}$= 0.1780 $D_{30}$= 0.1390 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

**Location:** BI-PBC-18-12 C
**Sample Number:** 6494 (21) **Depth:** 5.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-19-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-19-12 — LOCATION COORDINATES: E = 1,077,851 N = 249,466 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 39.4 Ft. |
| | 15. DATE BORING — STARTED: 12-15-12 — COMPLETED: 12-15-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -38.4 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.5 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -38.4 | 0.0 | | | | |
| -42.6 | 4.2 | | SAND, silty, mostly fine-grained sand-sized quartz, mostly clay, mostly silt, few shell fragments, silty, clayey, gray (SM) | A | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1915 mm % Fines: 16.8 |
| -44.4 | 6.0 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, gray (SP) | B | Classification: SP-SM Color: 5Y 6/2-light olive gray<br>D50: 0.2168 mm % Fines: 5.1 |
| -47.4 | 9.0 | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, trace clayey lenses, gray (SM) | C | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1742 mm % Fines: 16.2 |
| -50.4 | 12.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, some larger shells, gray (SC) | NS | |
| -53.9 | 15.5 | | CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace shell fragments, soft, gray (CH) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18565° Long = -88.53708°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-PBC-19-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 11.139

**Longitude** 088 32.225

**Date** 12/15/2012

**Start Time** 15:16:53

**End Time** 15:17:22

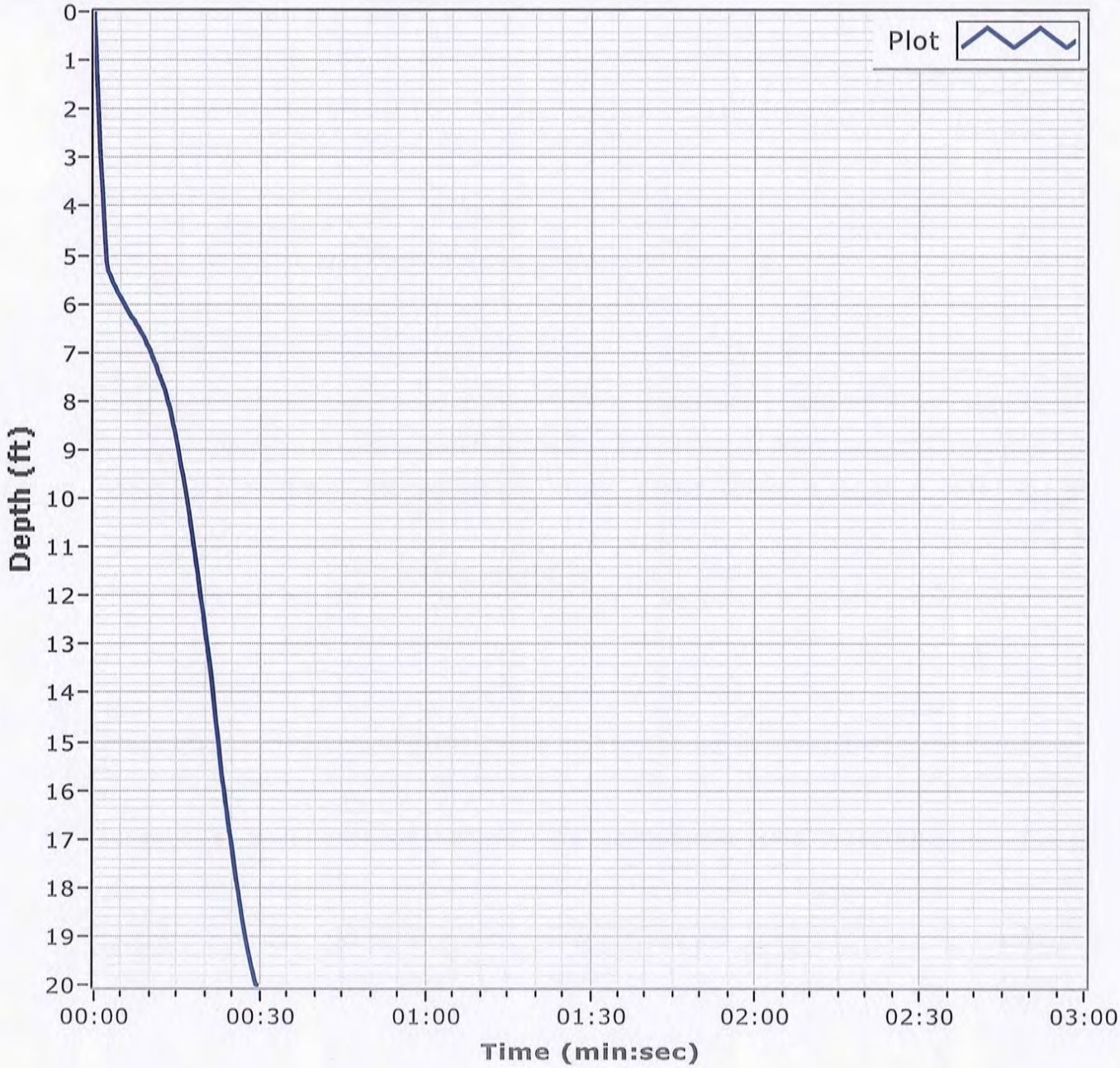
**Total Time** 00:00:29

**Water Depth** 39.4'

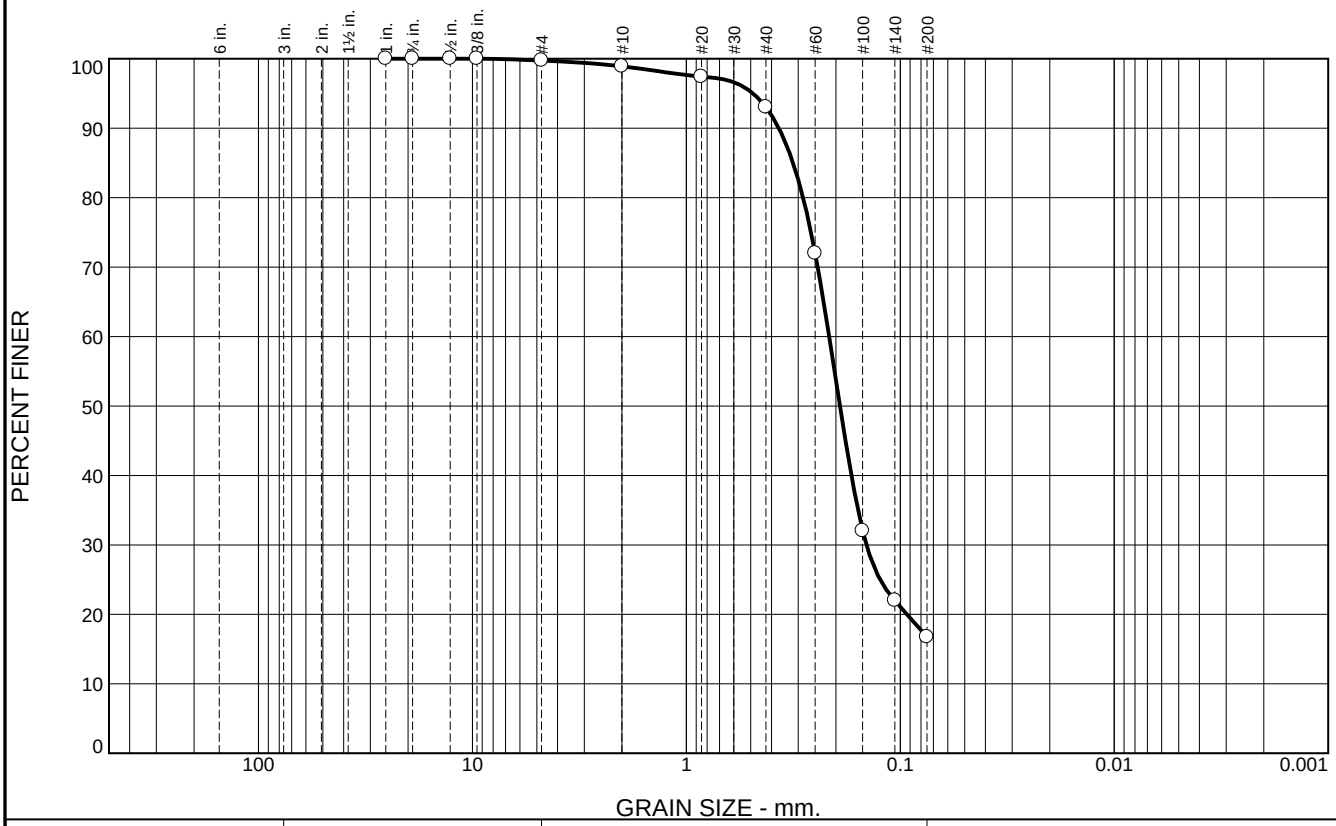
**Penetration** 20.0'

**Recovery** 15.5'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.8 | 5.9 | 76.2 | 16.8 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 98.9 | | |
| #20 | 97.4 | | |
| #40 | 93.0 | | |
| #60 | 72.0 | | |
| #100 | 32.0 | | |
| #140 | 22.0 | | |
| #200 | 16.8 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3694 $D_{85}$= 0.3172 $D_{60}$= 0.2150
$D_{50}$= 0.1915 $D_{30}$= 0.1440 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

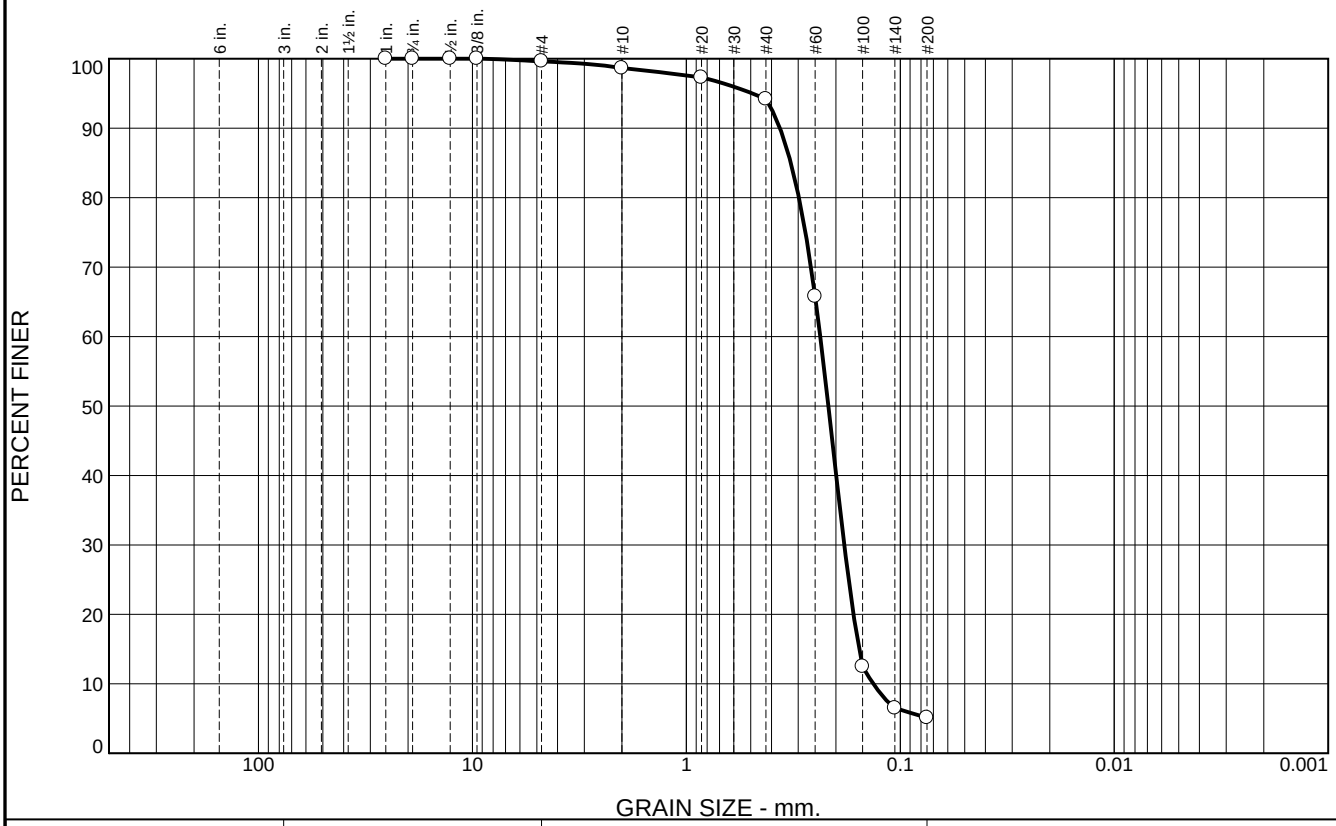
**Location:** BI-PBC-19-12 A
**Sample Number:** 6494 (22) **Depth:** 0.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 1.0 | 4.4 | 89.1 | 5.1 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 98.6 | | |
| #20 | 97.3 | | |
| #40 | 94.2 | | |
| #60 | 65.8 | | |
| #100 | 12.5 | | |
| #140 | 6.5 | | |
| #200 | 5.1 | | |

* (no specification provided)

**Material Description**

Fine grained, SLIGHTLY SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.3650 $D_{85}$= 0.3248 $D_{60}$= 0.2366
$D_{50}$= 0.2168 $D_{30}$= 0.1828 $D_{15}$= 0.1558
$D_{10}$= 0.1337 $C_u$= 1.77 $C_c$= 1.06

**Classification**

USCS= SP-SM AASHTO=

**Remarks**

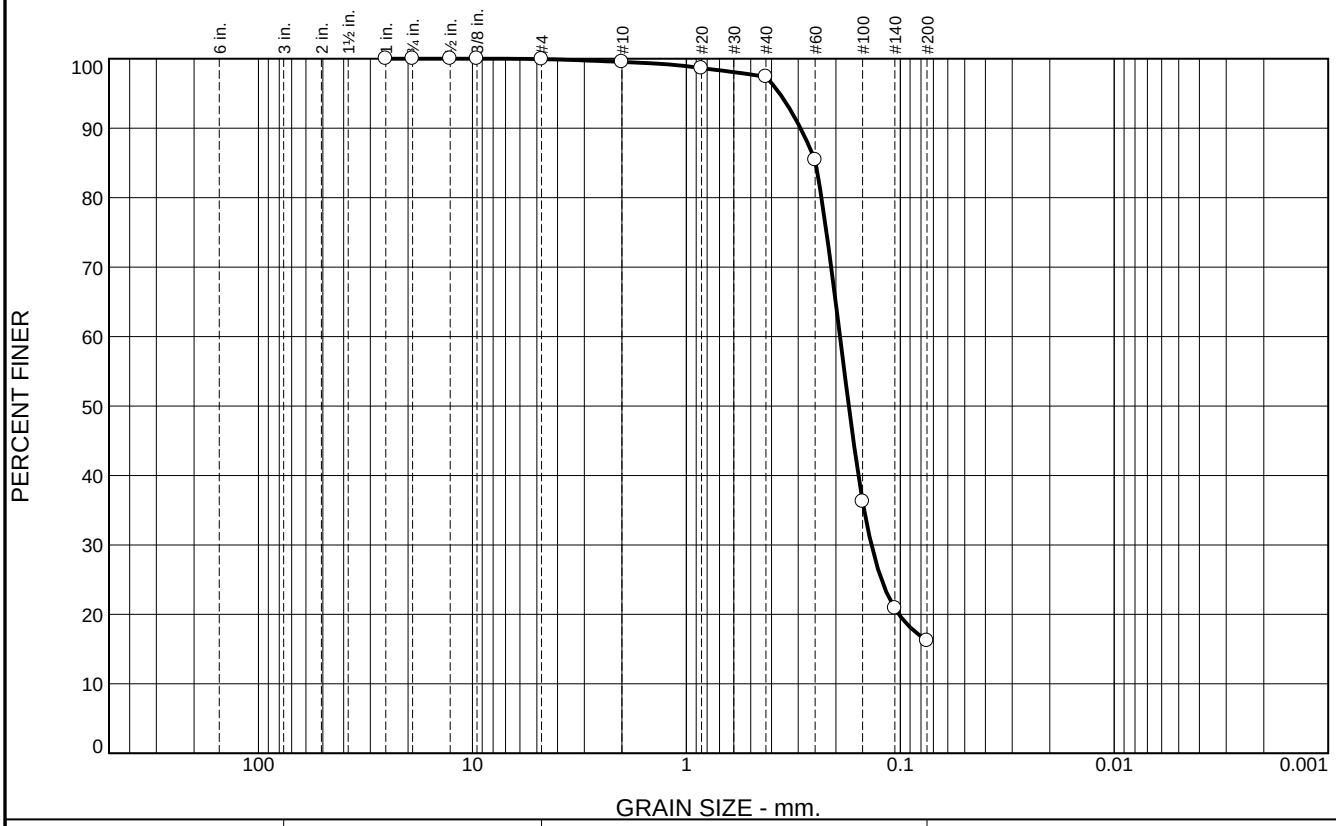
**Location:** BI-PBC-19-12 B
**Sample Number:** 6494 (23) **Depth:** 4.2' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.1 | 0.4 | 2.1 | 81.2 | 16.2 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 99.9 | | |
| #10 | 99.5 | | |
| #20 | 98.6 | | |
| #40 | 97.4 | | |
| #60 | 85.4 | | |
| #100 | 36.2 | | |
| #140 | 20.9 | | |
| #200 | 16.2 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2931 $D_{85}$= 0.2486 $D_{60}$= 0.1914
$D_{50}$= 0.1742 $D_{30}$= 0.1365 $D_{15}$=
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

**Location:** BI-PBC-19-12 C
**Sample Number:** 6494 (24) **Depth:** 6.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-20-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-20-12 — LOCATION COORDINATES: E = 1,076,522 N = 247,979 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO. | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 40.8 Ft. |
| | 15. DATE BORING — STARTED: 12-15-12 — COMPLETED: 12-15-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -40.2 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 14.7 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -40.2 | 0.0 | | | | |
| -40.6 | 0.4 | | SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, gray (SP) | A | Classification: SP Color: 5Y 5/2-olive gray<br>D50: 0.278 mm % Fines: 3 |
| -46.2 | 6.0 | | SAND, silty, mostly fine-grained sand-sized quartz, little shell fragments, trace clayey lenses, gray (SM) | B | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1746 mm % Fines: 14.9 |
| -52.2 | 12.0 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC) | NS | |
| -54.9 | 14.7 | | CLAY, fat, mostly clay, trace shell fragments, slight organic odor, gray and brown (CH) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.18157° Long = -88.54130°**

**Project** Mississippi Barrier Island Restoration Project

**AVS**
**AMERICAN VIBRACORE SERVICES**

**Core Identifier** BI-PBC-20-12

**Coordinate System**
Latitude / Longitude

**Latitude** 30 10.894

**Longitude** 088 32.478

**Date** 12/15/2012

**Start Time** 13:30:43

**End Time** 13:31:09

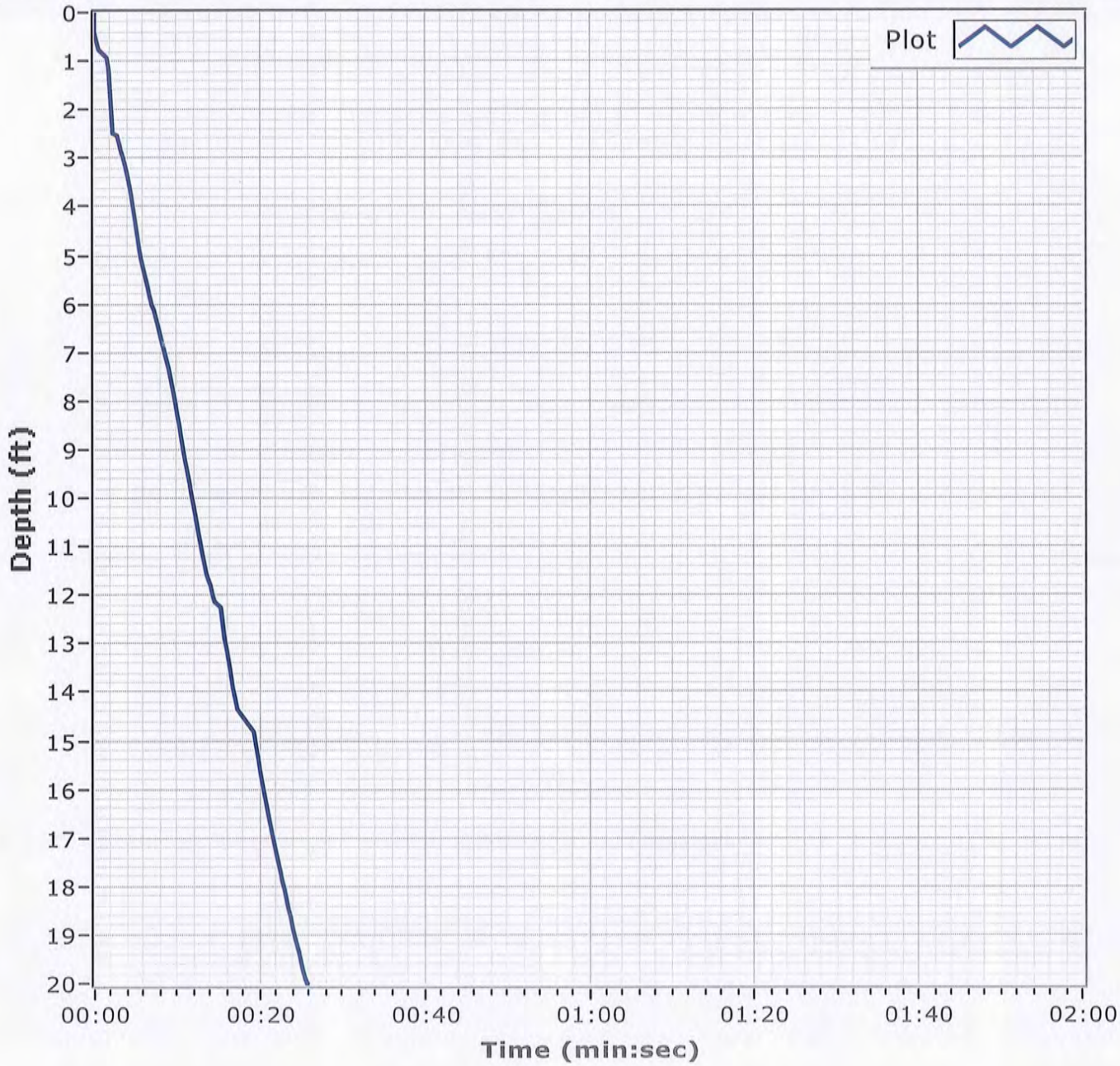
**Total Time** 00:00:26

**Water Depth** 40.8'

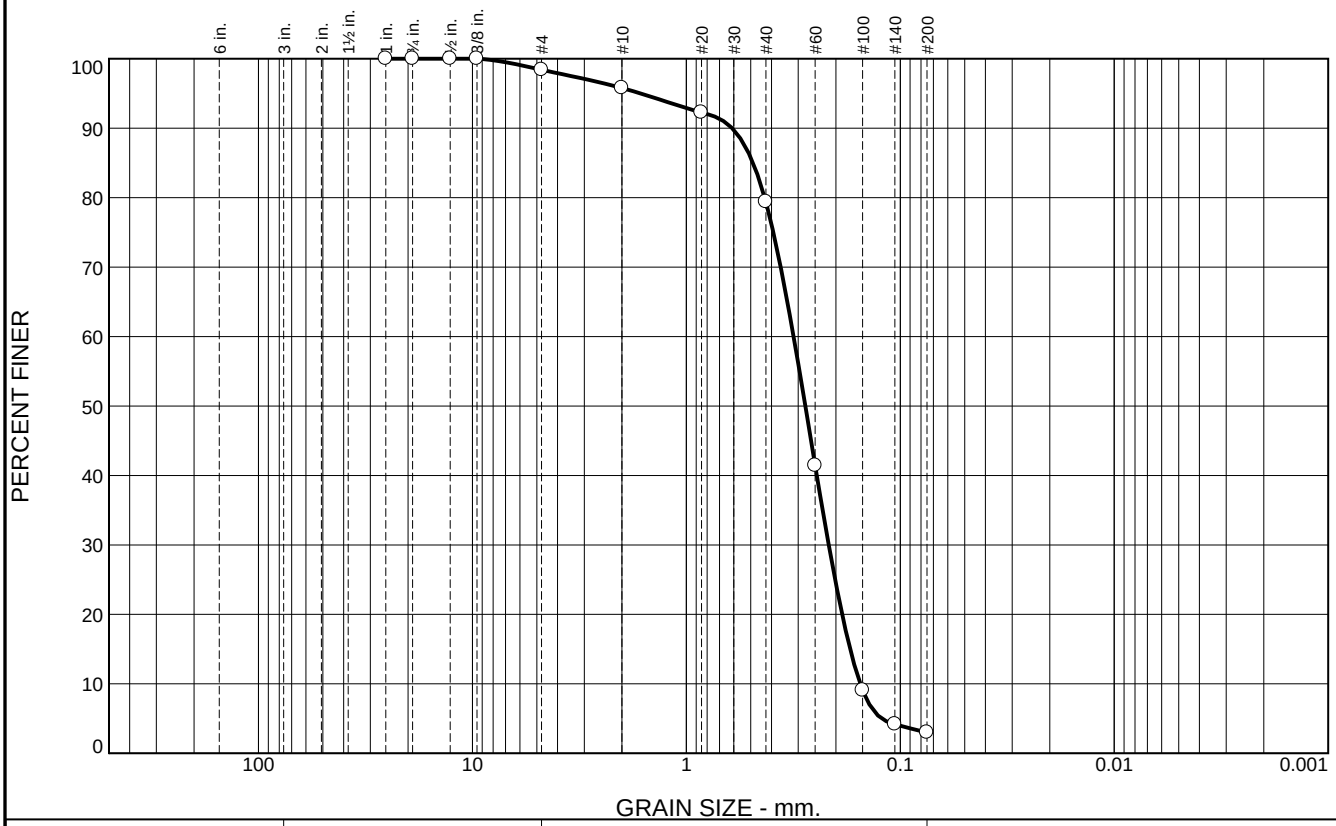
**Penetration** 20.0'

**Recovery** 14.6'

**Comments**



# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.6 | 2.6 | 16.4 | 76.4 | 3.0 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 98.4 | | |
| #10 | 95.8 | | |
| #20 | 92.3 | | |
| #40 | 79.4 | | |
| #60 | 41.4 | | |
| #100 | 9.1 | | |
| #140 | 4.2 | | |
| #200 | 3.0 | | |

* (no specification provided)

**Material Description**

Fine to medium grained, SAND, with trace SHELL

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.6110 $D_{85}$= 0.4880 $D_{60}$= 0.3155
$D_{50}$= 0.2780 $D_{30}$= 0.2160 $D_{15}$= 0.1717
$D_{10}$= 0.1540 $C_u$= 2.05 $C_c$= 0.96

**Classification**

USCS= SP AASHTO=

**Remarks**

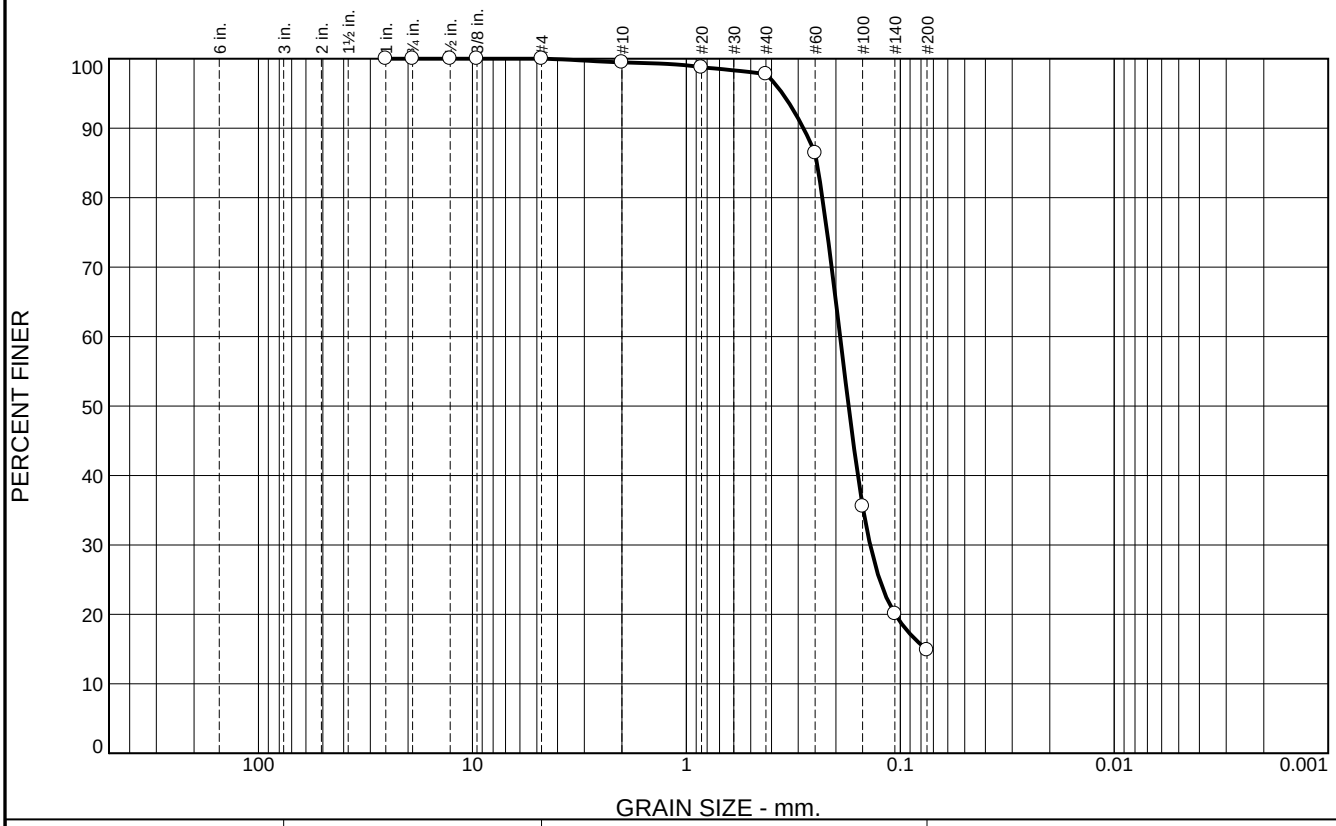
**Location:** BI-PBC-20-12 A
**Sample Number:** 6494 (25) **Depth:** 0.0' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

# Particle Size Distribution Report




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.5 | 1.7 | 82.9 | 14.9 | |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| 1 | 100.0 | | |
| .75 | 100.0 | | |
| .5 | 100.0 | | |
| .375 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 99.5 | | |
| #20 | 98.8 | | |
| #40 | 97.8 | | |
| #60 | 86.4 | | |
| #100 | 35.5 | | |
| #140 | 20.1 | | |
| #200 | 14.9 | | |

* (no specification provided)

**Material Description**

Fine grained, SILTY SAND

**Atterberg Limits**

PL= LL= PI=

**Coefficients**

$D_{90}$= 0.2839 $D_{85}$= 0.2453 $D_{60}$= 0.1912
$D_{50}$= 0.1746 $D_{30}$= 0.1384 $D_{15}$= 0.0758
$D_{10}$= $C_u$= $C_c$=

**Classification**

USCS= SM AASHTO=

**Remarks**

**Location:** BI-PBC-20-12 B
**Sample Number:** 6494 (26) **Depth:** 0.4' **Date:** 12/26/12

**Thompson Engineering**

**Mobile, Alabama**

**Client:** CDM/Thompson Engineering JV
**Project:** MsCIP Barrier Island Restoration GT
**Project No:** 1221110095 **Figure**

**Boring Designation BI-PBC-21-12**

| DRILLING LOG | DIVISION: South Atlantic | INSTALLATION: Mobile District | SHEET 1 OF 1 SHEETS |
|---|---|---|---|

| | |
|---|---|
| 1. PROJECT: MsCIP Barrier Island Restoration, Pascagoula Bar Channel | 9. SIZE AND TYPE OF BIT: N/A |
| | 10. COORDINATE SYSTEM/DATUM: State Plane, MSE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88 |
| 2. BORING DESIGNATION: BI-PBC-21-12 — LOCATION COORDINATES: E = 1,074,385 N = 245,522 | 11. MANUFACTURER'S DESIGNATION OF DRILL: Vibracore — ☐ AUTO HAMMER ☐ MANUAL HAMMER |
| 3. DRILLING AGENCY: Corps of Engineers - CESAM — CONTRACTOR FILE NO.: | 12. TOTAL SAMPLES — DISTURBED: — UNDISTURBED (UD): 0 |
| 4. NAME OF DRILLER: American Vibracore Systems, Inc. | 13. TOTAL NUMBER CORE BOXES: |
| 5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: | 14. WATER DEPTH: 40.6 Ft. |
| | 15. DATE BORING — STARTED: 12-15-12 — COMPLETED: 12-15-12 |
| 6. THICKNESS OF OVERBURDEN: N/A | 16. ELEVATION TOP OF BORING: -40.4 Ft. |
| 7. DEPTH DRILLED INTO ROCK: N/A | 17. TOTAL RECOVERY FOR BORING: 100% |
| 8. TOTAL DEPTH OF BORING: 15.0 Ft. | 18. SIGNATURE AND TITLE OF INSPECTOR: Mark Green, Geotechnical Engineer |

| ELEV. | DEPTH | LEGEND | CLASSIFICATION OF MATERIALS | SAMPLE | LABORATORY RESULTS |
|---|---|---|---|---|---|
| -40.4 | 0.0 | | | | |
| | | | SAND, silty, mostly fine-grained sand-sized quartz, some silt, some shell fragments, trace clay lenses, gray (SM) | A | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.1844 mm % Fines: 14.9 |
| | | | | B | Classification: SM Color: 5Y 5/2-olive gray<br>D50: 0.162 mm % Fines: 15.5 |
| -52.4 | 12.0 | | | NS | |
| -53.9 | 13.5 | | SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC) | | |
| -55.4 | 15.0 | | CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace shell fragments, gray (CH) | | |

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. NS = Sample not submitted for laboratory analysis from this interval.

3. Seafloor elevation calculated using sampling vessel's fathometer water depth reading and applying NOAA tidal gauge data conversion factor.

0 5 10 15 20 25

**SAM FORM 1836 - MsCIP**
MAY 2010

**Lat = 30.17483° Long = -88.54808°**