U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT

2012 Offshore Sand Borrow Investigation

Geotechnical Engineering Report

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1.0 INTRODUCTION

As part of the Mississippi Coastal Improvements Program (MsCIP), the Mobile District Army Corps of Engineers conducted an extensive geophysical and geotechnical investigation beginning in 2006 and concluding in 2011. This investigation identified suitable sand in several areas near the barrier islands of Mississippi and Alabama. Unfortunately, following the conclusion of the investigation, several issues came to light that required Mobile District to renew its efforts to identify additional quantities of sand by expanding previously identified sources and identifying new ones. For an in-depth discussion of the initial investigations, please see the report, "Offshore Sand Borrow Investigation, Phase 1 & 2" (USACE, 2012).

This report is an addendum to the previously mentioned report. It focuses on the 2012 vibracore sampling event to identify these new sand sources. The report includes sample location maps and the lab results for the grain size, shape, and color analysis for each sediment sample. It also includes initial borrow area designs. These designs are subject to change and are not considered finalized at the time of this report.

For questions concerning this report, please contact Michael FitzHarris, Mobile District Geotechnical and Dam Safety Section, (251) 690-3488.

1.1 PROJECT DESCRIPTION

Following Hurricane Katrina in 2005, the MsCIP was established to conduct comprehensive planning to address the following issues:

- Hurricane and storm damage reduction
- Salt water intrusion
- Shoreline erosion
- Fish and wildlife preservation
- Other water-related resource projects

One of the primary components of the Program is the Comprehensive Barrier Island Restoration Plan. Major tasks of the Plan are the following:

- Renourish the northern shoreline of West Ship Island
- Renourish the eastern shoreline of Cat Island
- Revise the dredge material disposal plan for the Pascagoula navigation channel
- Restore the sediment budget of the Mississippi barrier island chain

The project to renourish the northern shoreline of West Ship Island was completed in the spring of 2013. A borrow area was identified for the Cat Island renourishment project as part of the 2010 and 2011 vibracore sampling events. However, the project is currently on hold due to real estate issues. The revision of the dredge material disposal plan for the Pascagoula navigation channel is currently being finalized. A plan has been developed to restore the sediment budget within the barrier islands system. The two major components of this plan include projects to place approximately 13.4 million cubic yards (mcy) of sand within Camille Cut to reconnect East and West Ship Islands, and direct placement of approximately 5.4 mcy of sand on the southern shoreline of East Ship Island.

1.2 SUITABLE MATERIAL FOR BORROW

Beginning in 2006, grab-sampling events were conducted by USACE personnel along the Mississippi Barrier Islands prior to the Phase I and II vibracore sampling events. The intent of the sampling was to identify typical sediment characteristics within the barrier island system. The following sediment characteristics and in situ condition benchmarks were established for potential sand sources for the Camille Cut and East Ship Island projects.

Table 1.2.1 Benchmarks for suitable sediment characteristics and borrow areas

Characteristic	Benchmark
Sand layer thickness	Greater than or equal to 4 ft.
D50 Grain Size range	0.26 to 0.32 mm
Percent Fines	Less than 15%
Color	Munsell Color Value greater than or equal to 6
Overburden / unsuitable sediments	≤ 2 feet on top of the sand, or throughout the entire useable thickness of sand.
Location	Outside active littoral zone; Outside National Park Service Boundaries

Although borrow area location was initially restricted to areas outside of National Park Service (NPS) boundaries during the 2010 geotechnical investigation, the findings of the Engineer Research and Development Center / Coastal and Hydraulics Laboratory Technical Report-12-9 “Littoral Sediment Budget for the Mississippi Sound Barrier Islands” (Byrnes et al., 2012) identified DA-10 (Sand Island) as a potential sand source because of its position within the barrier island littoral system, despite its location within NPS boundaries. This report provided a basis for sampling the area adjacent to DA-10 during the 2011 geotechnical investigation. For

the purposes of the 2012 sampling event, no areas were sampled within the NPS boundaries or within the littoral zone.

1.3 STUDY DESCRIPTION

The volume of sand needed for restoring sediment to the barrier islands necessitated large quantities of sand in addition to the sand sites already found during the 2010 and 2011 sampling events. This study consisted of an initial desktop investigation, followed by vibracore sampling and lab testing of sediment samples. Additional spatial analysis was conducted using ArcGIS to identify the potential borrow areas based on the field data collected. No additional geophysical surveys were conducted for this investigation. However, the United States Geological Survey (USGS) provided previous geophysical surveys during the initial planning stages for this study.

1.4 OBJECTIVES

The objectives of this report are:

- To outline the procedures of the geotechnical investigation
- To describe the sampling areas' grain size, fines content, color, and angularity
- To identify potential borrow areas and provide estimates on borrow area sand quantities, average D50 grain size, percent fine material, typical Munsell Color classification, and general grain angularity.

1.5 SCOPE OF WORK

The scope of work for this geotechnical engineering study was derived from the project requirements and includes the following technical approaches:

- Identify areas of potential sand resources based on past studies and utilizing subject matter experts from the USGS and the Bureau of Ocean Energy Management (BOEM).
- Conduct vibracore sampling of the sites and sample potentially useable sediments for further lab testing.
- Conduct testing of samples for grain size, angularity, percent fine material, calcium carbonate content, and color.
- Use the spatial and laboratory data to identify areas with suitable borrow material.

Initial work to identify boring locations began in June of 2012. Boring locations were refined up until sampling began in November 2012. Ultimately, two hundred and thirty (230) vibracore borings were drilled during sampling that began in November 2012 and finished in January

2013. The drilling inspector visually classified each boring in its entirety and bag-sampled sand intervals with visually-classified suitable characteristics for use in the project placement areas. Section 2.1 describes the characteristics necessary for a sand interval to be bag-sampled. Four hundred, eighty-eight (488) bag samples were collected from these vibracores. All other unsuitable sediments (clays and silts) were discarded. Geotechnical testing of the bag samples included mechanical sieve analysis for grain size distribution, percentage of fine material, qualitative Munsell Color classification of samples, and qualitative sediment grain shape classification. A simplified acid test was used to determine basic calcium carbonate content. These test results helped determine if a particular boring, and by extension the sampling area, met the fill characteristics criteria established during the beach and island sediment sampling events during the Phase I and II geotechnical investigations.

1.6 RESULTS

From the 2012 sampling event, three new potential borrow areas were identified and two existing borrow areas were expanded. The three new borrow areas are Horn Island Pass, Petit Bois South OCS, and Petit Bois Pass-Mississippi. The existing potential borrow areas, Petit Bois West and Petit Bois East, were both expanded based on the data gathered from the sampling. The following table is a consolidated list of the characteristics for each of the new potential borrow areas.

Table 1.6.1 Potential Borrow Area Characteristics

Borrow Area	***Template Volume (mcy)[2]***	***Area (Acres)***	***D50 (mm)***	***Percent Fines***	***Dry Munsell Value***
Petit Bois East[1]	13.1	885	0.33	4	6
Petit Bois West[1]	2.9	380	0.28	4	6
Petit Bois Pass-MS	2.0	175	0.31	3	6.7
Petit Bois South-OCS	4.9	809	0.30	3.0	6.8
Horn Island Pass[1]	3.8	587	0.29	4.1	7
Total	26.7				

[1]Statistics for Horn Island Pass, Petit Bois West, and Petit Bois East include borings taken during the 2010, 2011, and 2012 sampling events. Therefore, these statistics may vary from the sample statistics for the 2012 sampling event itself.

[2]Borrow area template volume does not include estimated losses caused by dredging inefficiencies.

These values represent initial estimated quantities and values. Final borrow area designs will determine the characteristics of the sediments within their boundaries. The final designs will not be included in this report.

2.0 GEOTECHNICAL INVESTIGATION

The intent of the 2012 sampling event was to further delineate and expand the existing borrow areas identified in the 2010-2011 geotechnical investigation and to identify new potential borrow areas with suitable sand. Initial sampling locations were identified using geophysical data and bathymetric charts. These sampling areas are outlined in Figure 2.0.1. In preparation for sampling, the vibracore contractor also performed a magnetometer survey of the sampling areas to ensure that no utilities or potential archeological sites would be damaged during sampling. The survey is included in Appendix A.

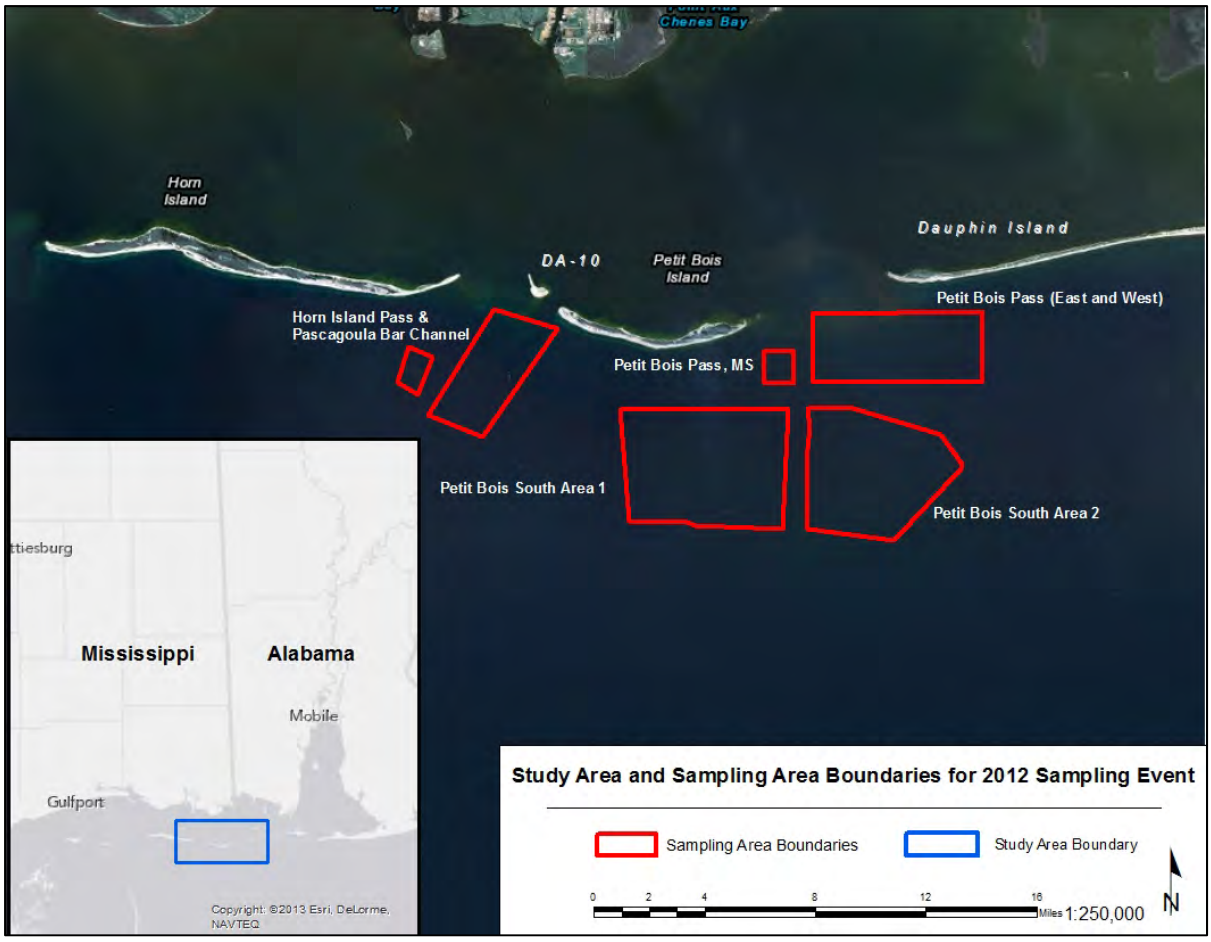


Figure 2.0.1 Overview map of the study area and the sampling subareas.

2.1 VIBRACORE SAMPLING AND GEOTECHNICAL TESTING

Geotechnical sampling began on 16 November 2012 and concluded on 12 January 2013. American Vibracore Services, Inc., was the contractor selected to provide the boat and

vibracore equipment. Their vessel, *M/V Thunderforce*, utilized a stern-mounted, A-frame winch system to raise and lower the vibracore machine into the water (Figures 2.1.1). Boring locations were determined using a Trimble DGPS with antenna mounted at the apex of the A-frame. Horizontal datum for the borings is North American Datum 1983 (NAD83). Seafloor depths were determined using a fathometer mounted on the hull of the boat. These depths were converted to elevations in NAVD88 using verified NOAA tidal gage data obtained from the NOAA Tides and Currents website (http://tidesandcurrents.noaa.gov). The tidal gages used for the conversion are Dauphin Island, AL (Station ID 8735180, Epoch 1983-2001) and Pascagoula NOAA Lab, MS (Station ID 8741533, Epoch 1983-2001). The vibracore machine consisted of an aluminum I-beam with four stabilizer legs that acted as a guide rail for a high frequency, low oscillation vibrator attached to a 25-foot core barrel (Figure 2.1.2). The vibrator vibrates the core barrel downward through the sediments and the core is retained in a three-inch diameter, twenty-foot long plastic inner sleeve (Figure 2.1.3). During the sampling process, the contractor uses proprietary software to monitor the vibracore tube as it progresses into the seafloor. This software plots depth (Y-axis) versus time (X-axis) and gives an indication to the resistance the vibracore encounters while penetrating the sediments. Steep slopes indicate that the vibracore advanced quickly through the sediment. Plateaus indicate layers of sediment with increased resistance to penetration. These graphs are included with the boring logs in Appendices B through E.



Figure 2.1.1 M/V Thunderforce

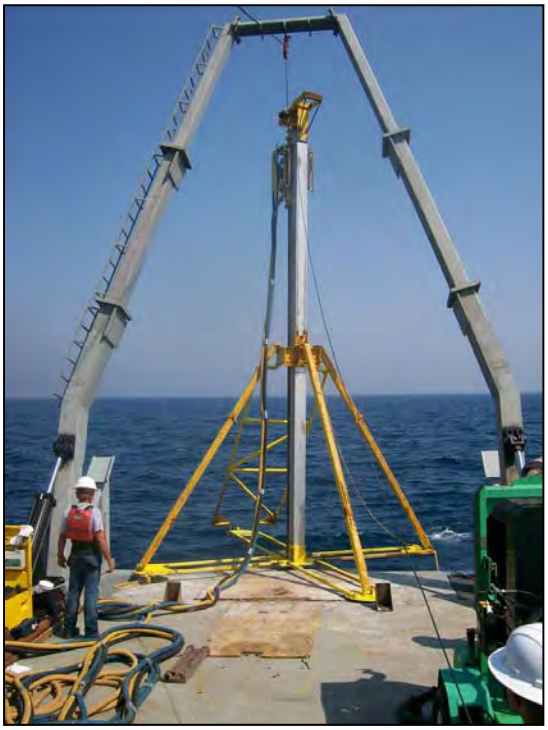




Figure 2.1.3 Plastic sleeve of sand being extracted from vibracore tube

Figure 2.1.2 The vibracore machine elevated by the A-Frame winch system.

Two hundred and thirty borings were completed as part of the sampling event. The various sampling areas are designated as follows: Petit Bois East and West – PB; Petit Bois Pass-Mississippi – PBP; Petit Bois South-OCS – PBS; Pascagoula Bar Channel – PBC; and Horn Island Pass – HP. These abbreviations apply to the vibracore boring designations and their respective samples. Sampling began in the Petit Bois South area and progressed to the other areas as the weather permitted.

A protocol was established to streamline the sampling effort as much as practicable. Each boring was visually classified by the drilling inspector in its entirety and bag-samples for laboratory testing were extracted from the vibracores at selected intervals depending on visually estimated characteristics. Sands, ranging from silty sands (SM) to poorly graded sands (SP), were bag-sampled, while clays (CL and CH) and silts (ML and MH) were discarded. The USACE inspector had the discretion to not sample sandy material that did not appear to be suitable either because of its dark color or because of its fines content. This eliminated some SM material and most clayey sands (SC). If a two-foot or greater thickness of clay or silt was in the boring, deeper material below it was generally not sampled. These thick clay or silt layers were used as a basement cutoff because of the difficulty in dredging this material. The drilling inspector completed a SAM FORM 1836-MsCIP (Drilling Log) for each boring using Bentley's gINT V8i software. The final logs include both the field

classification and the laboratory classification for the samples, lab data (D50 and percent fines), and the Munsell Color Classification.

Samples were tested by a USACE-certified commercial laboratory, Thompson Engineering, Inc., of Mobile, AL. Couriers from the lab picked up samples approximately once per week. The lab conducted grain size analyses (ASTM D 422-63) on the sediment samples using the following sieve sizes: 1-inch, 0.75-inch, 0.5 inch, 0.375-inch, Standard U.S. #4, #10, #20, #40, #60, #100, #140, and #200. A grain size distribution curve was drawn for each sample. The Coefficient of Uniformity (C_u) and the coefficient of curvature (C_c) were calculated, as well as the D_{10}, D_{15}, D_{30}, D_{50}, D_{60}, D_{85}, and D_{90} grain sizes. The percentages of coarse, medium, and fine sand were calculated, in addition to the percentage of fine material (clays and silts). The samples were classified according to the Unified Soil Classification System (USCS) (ASTM D 2488). Hydrometer analysis was not conducted on fine sediments to determine percentages of silts versus clays in the samples because it was not of significance to the project. Lab samples were returned to the District after testing. Mobile District personnel conducted qualitative wet and dry Munsell Color classification (ASTM D 1535-12a) and grain angularity classifications on the samples returned from the lab. Appendices B through E contain the boring logs for each vibracore boring, followed by the penetrometer log, and laboratory sample *Particle Size Distribution Reports*, as applicable. These appendices also contain tables listing each field sample with its color, select grain size information, percent fines, and grain angularity.

Using the benchmark sand characteristics, each boring was assigned a “Suitable”, “Borderline”, or “Unsuitable” classification. The boring classifications were designated by a color and shape, and then plotted in ArcMap for a quick visual analysis.

Table 2.1.2 Simplified Boring Suitability Classification Criteria

Symbol	Classification	Remarks
Bright Green Circle	Suitable	Boring meets all of the above characteristics.
Yellow Pentagon	Borderline (color)	Boring almost meets color requirements; meets other characteristics
Yellow Triangle	Borderline (grain size)	Boring almost meets grain size requirement; meets other characteristics
Yellow Square	Borderline (thickness)	Boring almost meets sand thickness requirement; meets other characteristics.
Brown Circle	Unsuitable (overburden > 2 ft)	Boring contains more than 2 ft. of overburden thickness above any potentially useable sand

Symbol	Classification	Remarks
Red Circle	Unsuitable (clay)	Boring is almost entirely clay or unusable clayey sand
Red Triangle	Unsuitable (grain size)	Weighted average D50 for boring is significantly less than benchmark
Red Square	Unsuitable (thickness)	Thickness of sand is significantly less than benchmark

This visual mapping analysis was used to identify areas with suitable sand and discount areas that did not need further exploration. Throughout the sampling event, additional planned borings were added based on the initial boring results. In particular, planned borings were added in the Horn Island and Petit Bois South sampling areas based on the results of the initial borings. Planned borings were also relocated or deleted based on initial sampling results. In particular, several planned borings in Petit Bois West, Petit Bois Pass Mississippi, and Pascagoula Bar Channel were eliminated because of results from borings in the surrounding area.

The following sections discuss each sampling area and the characteristics of the sand located in them. Estimated grain size, percent fines, and typical dry Munsell Value and Color were calculated for areas identified according to the screening process stated above. Borings outside these areas were not included in the calculations. This method was used to prevent skewing results of the potential borrow areas with borings that would not meet the characteristic criteria previously established for suitable sand. This methodology was especially important to calculating the values for the Petit Bois South area because of the discontinuous nature of the different clusters of borings along the shoals. For example, borings along the shoals generally had larger grain sizes and less fine sediments than borings off the shoals. Therefore, incorporating the borings from off the shoals would lower the average D50 grain size and increase the percentage of fine sediments for the borrow area as a whole. Initial statistical calculations were made using the volume of borrow represented by sample to create weighting factors. Later during borrow area design, ArcMap was used to generate Thiessen polygons and Triangulated Irregular Network (TIN) surfaces from the boring information and survey data. These surfaces and polygons were used in conjunction with bathymetric contour lines to draw approximate borrow area boundaries and calculate initial template volumes of suitable sand available.

2.2 PETIT BOIS EAST AND WEST

Petit Bois East and West borrow areas were identified during the 2010 and 2011 geotechnical investigations. Petit Bois West is located approximately 3 miles east-southeast from the eastern tip of Petit Bois Island, MS, and 2.8 miles southwest from the western tip of Dauphin

Island, AL. Petit Bois East is located approximately 2 miles south of the western tip of Dauphin Island. Figure 2.2.1 shows the original design for the borrow areas, prior to the 2012 sampling event.

The sand quality is very good in these areas (D50: ~0.32 mm, % Fines: <5%, Munsell Color Value: 6) with minimal to no overburden. However, a north/south-running natural gas pipeline bisects the Petit Bois West borrow area (Figure 2.2.1). The pipeline owners are concerned about the possibility of damage to their pipeline in the future caused by the removal of borrow material on either side of it. Modeling is being conducted by an independent third-party contractor, in conjunction with the pipeline company, to determine the long term effects of the borrow area excavations on the pipeline. The results of this modeling will not be included in this report. The borrow quantity for Petit Bois West was recomputed, with a one thousand-foot buffer added around the pipeline, to determine the loss of sand in the footprint of the pipeline. The pipeline and buffer footprint effectively prevents the removal of over one million cubic yards of material from the Petit Bois West borrow area. This sampling event was triggered in large part because of this deficit.

To make up for the loss of this material, the first series of the 2012 vibracores were positioned around the existing borrow area boundaries. The intent of their positioning was to determine if it was possible to expand the current borrow area perimeters outside the 1,000 foot pipeline buffer and maximize each area's potential yields (Figure 2.2.1). Figure 2.2.1 shows the current borrow area configurations for Petit Bois East and West with the seventy-eight (78) borings from the 2012 sampling event surrounding it. Figure 2.2.2 overlays the 2012 borings with the 2010 and 2011 vibracores. This figure illustrates the density of the borings along the outer edges of the borrow areas. During sampling, five (5) proposed borings were eliminated from the northern edge of the Petit Bois West borings because the surrounding material was suitable (borderline for the color) and was expected to be suitable in this more northern area.

For Petit Bois West, the sand deposit is exposed within the perimeter of the existing borrow area. The 2012 borings along the northern boundary contained suitable sand, but with some sand having a darker Munsell Value than desired. However, the ambient water depth ranges from 18 to 28 feet in this area which might be considered too close to the active littoral zone for significant expansion into this area (Figures 2.2.3 and 2.2.4). The sand body begins to be overlapped by clays and silts just south of the southern boundary and thick clay beds cover the majority of the area. Borings with suitable sand south of this borrow area appear to be in

shoals only. Expansion to the west is limited by the pipeline and buried cable. Expansion to the east of the pipeline is limited by thick clay beds just to the west of Petit Bois East.

Samples from suitable borings had a D50 range of 0.18 to 0.39 mm, with a weighted mean D50 of 0.30 mm. Percent fines ranged from 0.8% to 7.7%, with an average of 2.7%. Dry Munsell Color Value ranged from 4 to 8, with an average of 6. Typical dry Munsell Colors were White 2.5Y 8/1 (21%), Light Brownish Gray 2.5Y 6/2 (20%), and Light Gray 2.5Y 7/2 (17%). Overall, white and light gray were the two predominant colors at 25% and 29%, respectively.

For Petit Bois East, the sand deposit is exposed within the perimeter of the existing borrow area, similar to Petit Bois West. The borings indicate that the sand body becomes overlapped by clays in the northeast, indicating the sand body is either buried deeper than is feasible for use or it terminates beneath the clay. In either case, further expansion of the borrow area in this direction is limited. Along the northwestern portion of the northern boundary, borings contained suitable sand. However, shallower water depths may prevent expansion in this direction. The eastern borings indicate that limited expansion is possible in this direction, because the sand begins to be overlapped by silts and clays further east. The borings in the southwest indicate the sand body beginning to be overlapped by clays and silts before being completely covered or terminating. The south central borings indicate that the sand body begins to become covered by overburden on the southwest and southeast sides of a shoal extending south. The surficial sand begins thinning out as well on the southeastern side of this shoal. Borings from the southeastern corner of the borrow area indicate that the borrow area can be expanded along the shoal which extends from this corner. Borings did not delineate the farthest extent of the sand in this direction. There are several shoals running northwest/southeast through the southern half of the sampling area that do contain sand. But they appear to have thinner veneers of sand than desired. Also, the troughs between the shoals appear to have significant clay layers, making this material unsuitable (Figures 2.2.5 and 2.2.6).

Samples from suitable borings had a D50 range of 0.21 to 0.45 mm, with a weighted mean D50 of 0.32 mm. Percent fines ranged from 0.5% to 17.8%, with an average of 4.1%. Dry Munsell Color Value ranged from 5 to 8.5, with an average of 6.8. Typical dry Munsell Colors were White 5Y 8/1 (16%), Light Gray 2.5Y 7/2 (13.2%), and Light Brownish Gray 2.5Y 6/2 (10%). Overall, light gray and white were the two predominant colors at 33% and 24%, respectively. The borings in the east that are “Borderline” for color have adequate grain size and are slightly silty. It is expected that if the sand in this area is used, many of the

fines would wash out during dredging and placement, thereby lightening the overall color of the sand.

The Petit Bois East and West borrow areas were reconfigured to incorporate the new data from the 2012 vibracore borings and accommodate the pipeline buffer. Figure 2.2.7 shows the new borrow area configurations with the originally proposed borrow areas overlaid to illustrate the changes. The borrow area statistics have changed due to this new configuration.

Appendix B contains a consolidated list (Table B-1) of the borings and their respective samples. It includes the laboratory gradation data, USCS classification, and the Munsell color classifications. Boring logs and lab data are included after Table B-1.

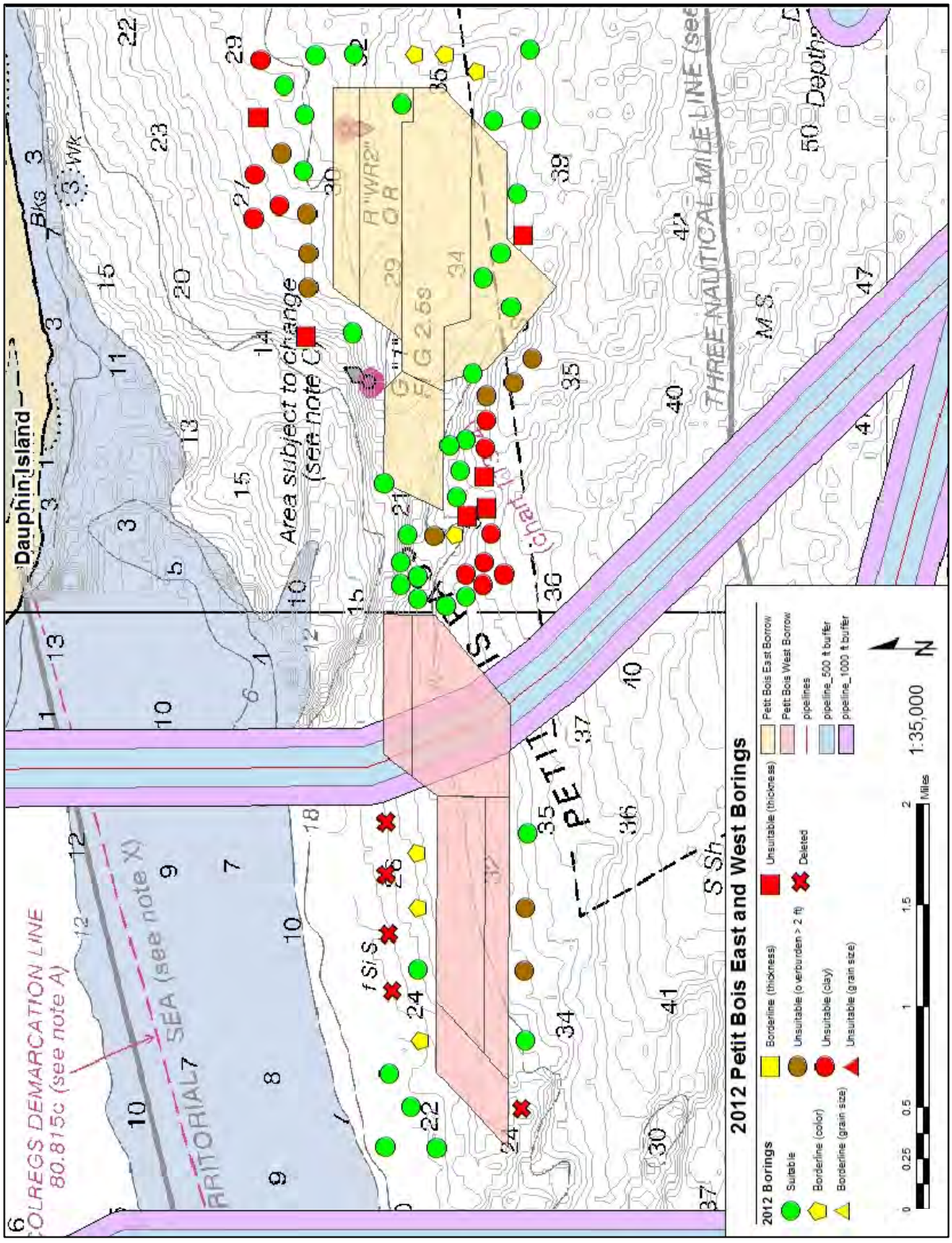


Figure 2.2.1 2012 sampling locations for Petit Bois East and West areas with symbols showing different sample characteristics at that site. The original proposed borrow area outlines are shown.

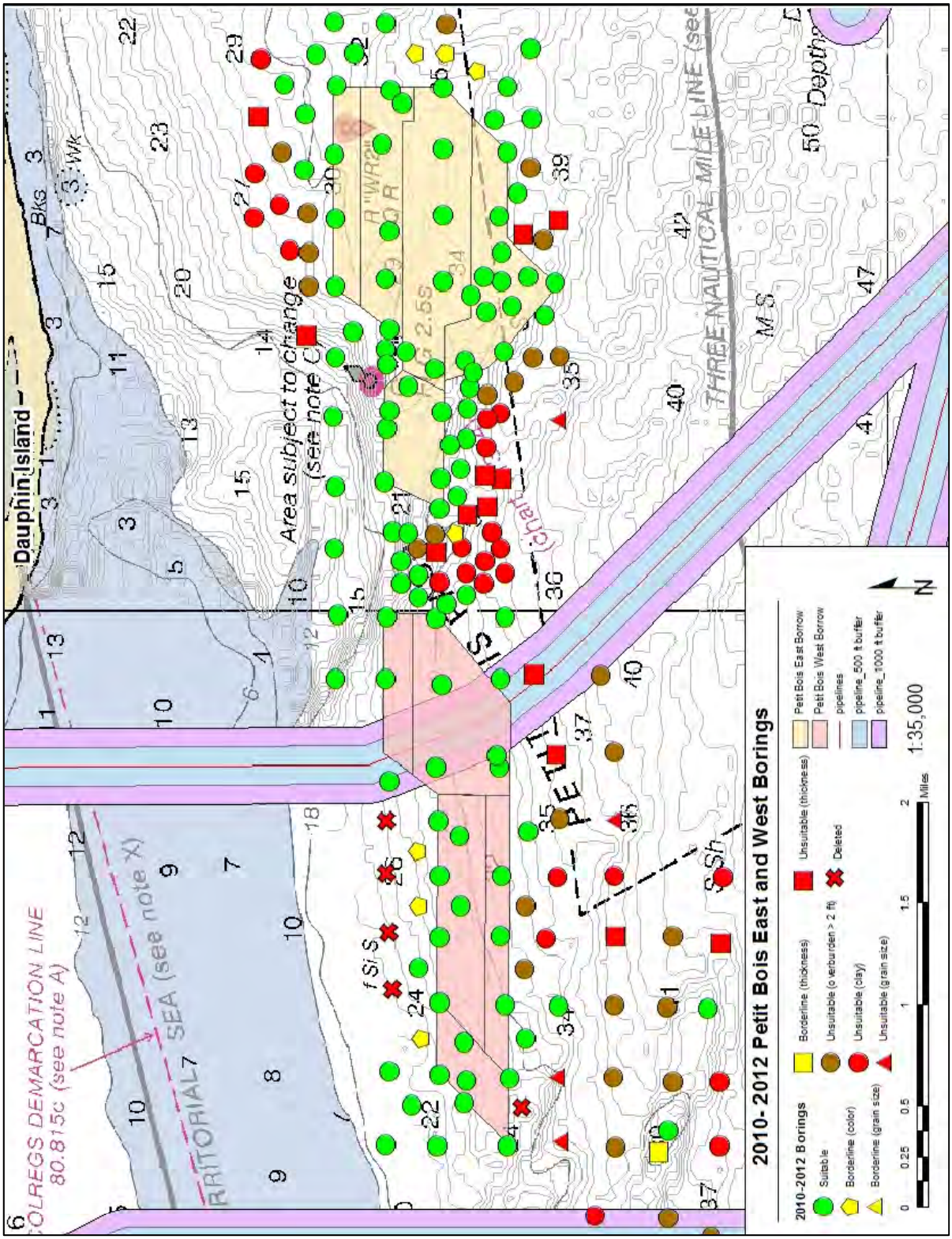


Figure 2.2.2 2010-2012 sample locations with symbols showing different sample characteristics found at each site.

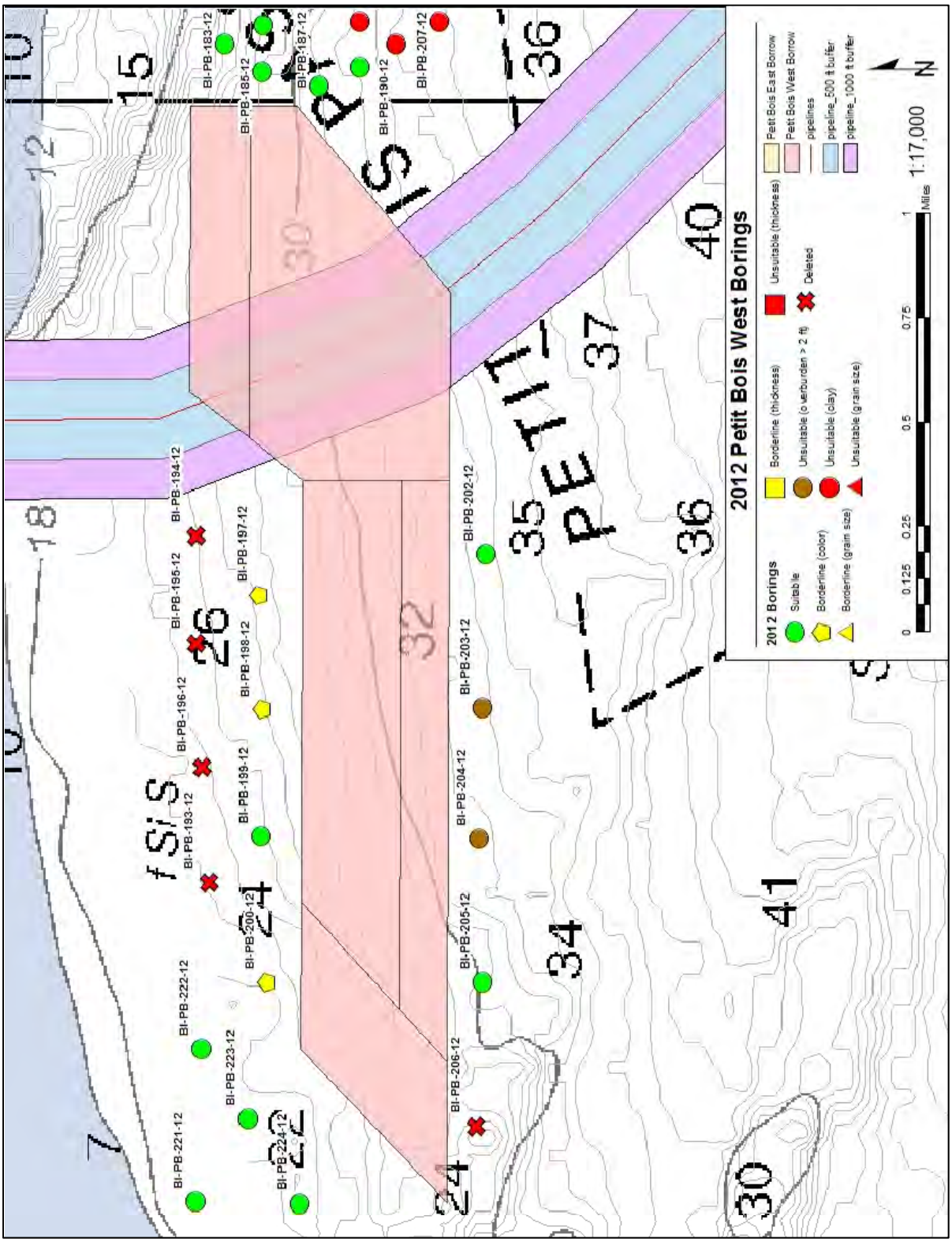


Figure 2.2.3 2012 sample locations with symbols showing different sample characteristics found at that site. The original proposed Petit Bois West borrow area is superimposed.

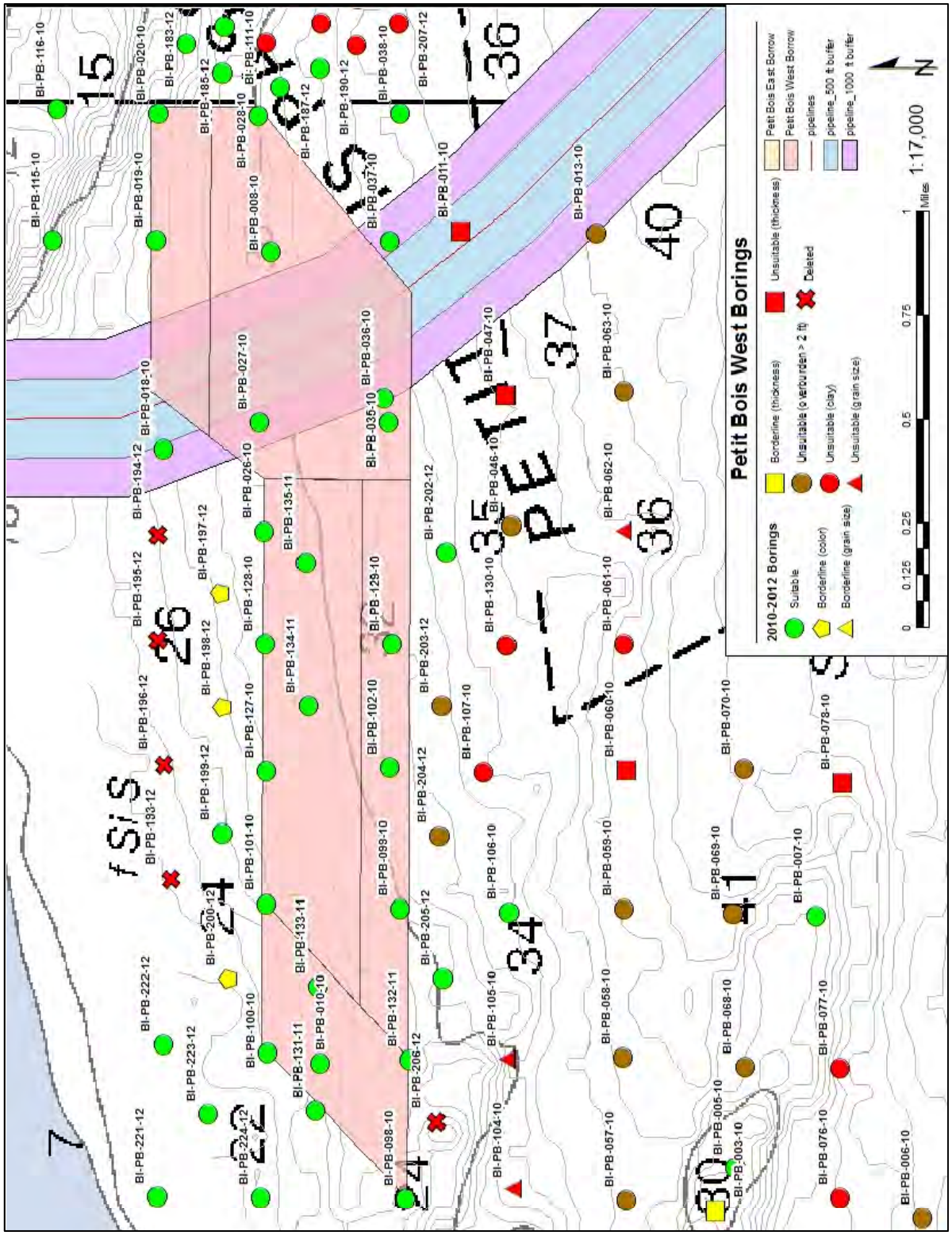


Figure 2.2.4 2010-2012 sample locations with symbols showing different sample characteristics found at that site. The original proposed Petit Bois West borrow area is superimposed.

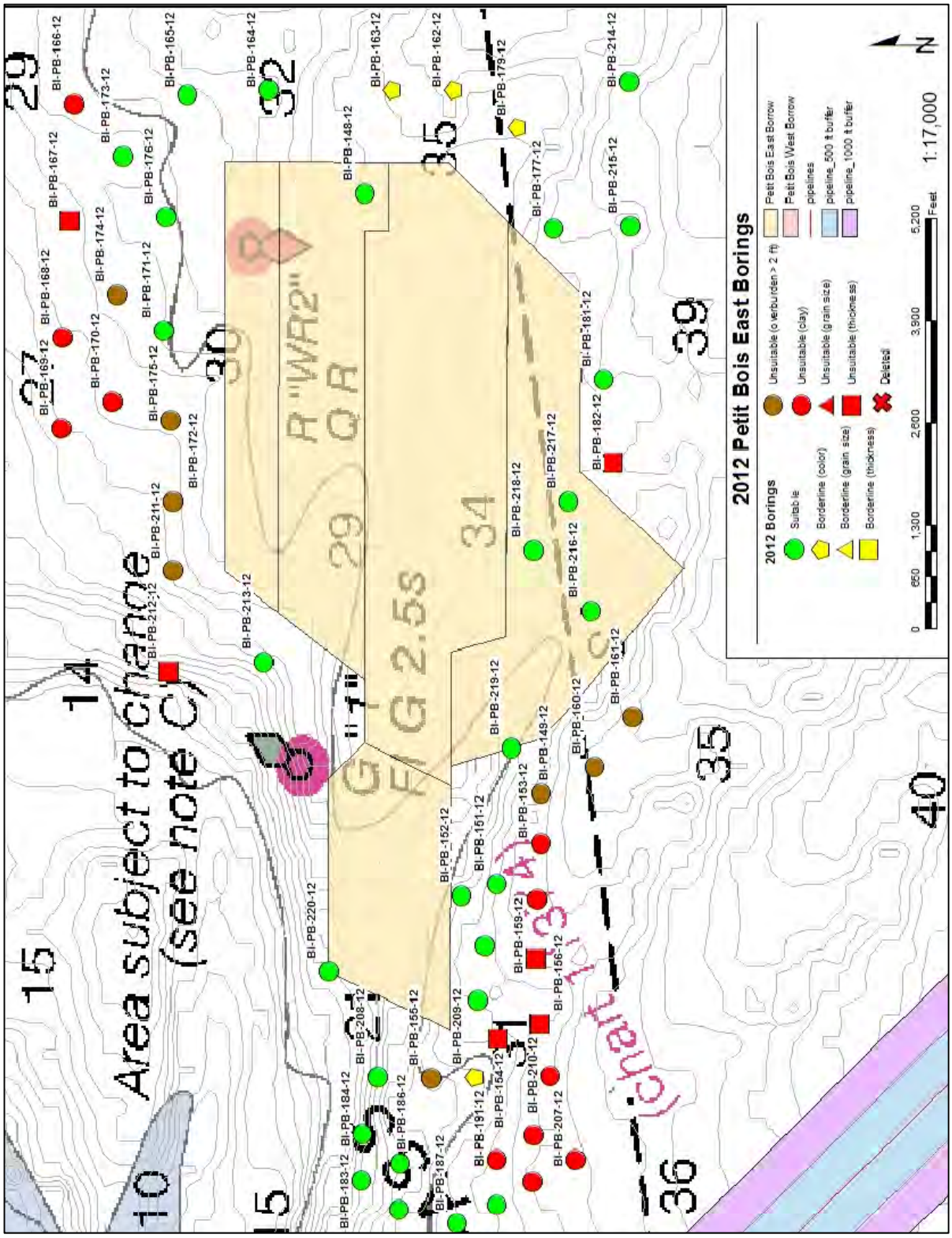


Figure 2.2.5 2012 sample locations with symbols showing different sample characteristics found at that site. The original proposed Petit Bois East borrow area is superimposed.

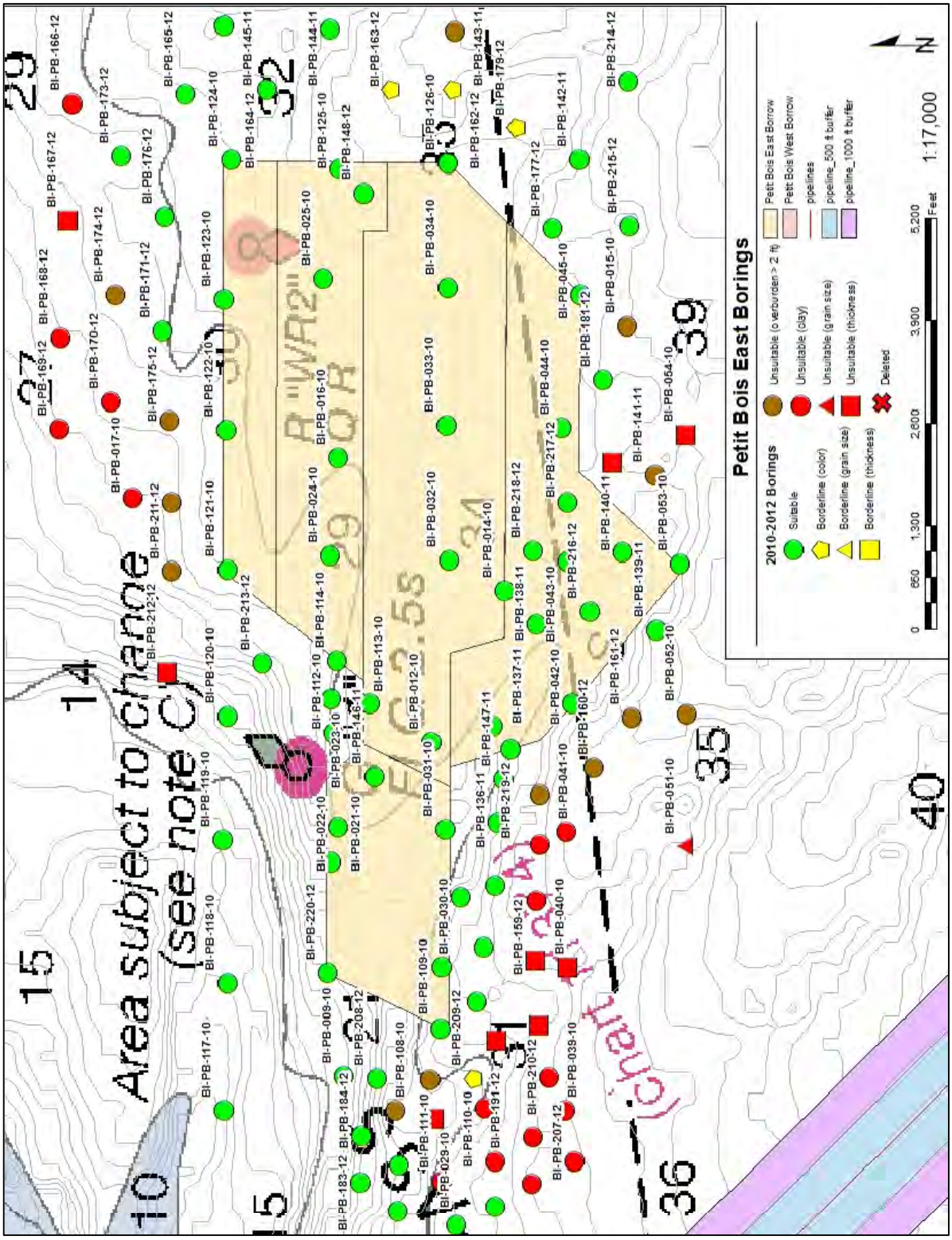


Figure 2.2.6 2010-2012 sample locations with symbols showing different sample characteristics found at that site. The original proposed Petit Bois East borrow area is superimposed.

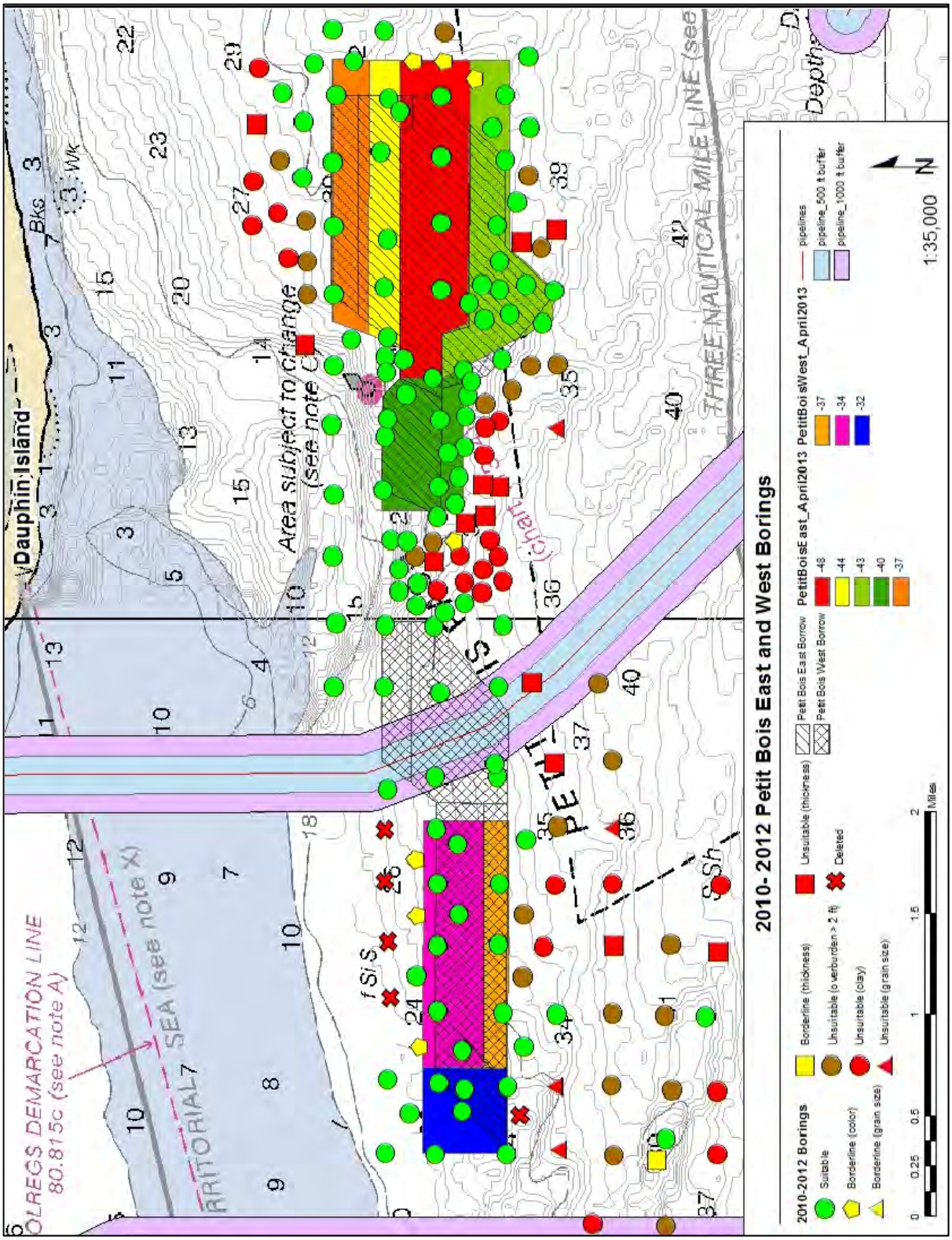


Figure 2.2.7 Original proposed Petit Bois West and Petit Bois East borrow areas overlaid on the new proposed Petit Bois West and Petit Bois East borrow areas.

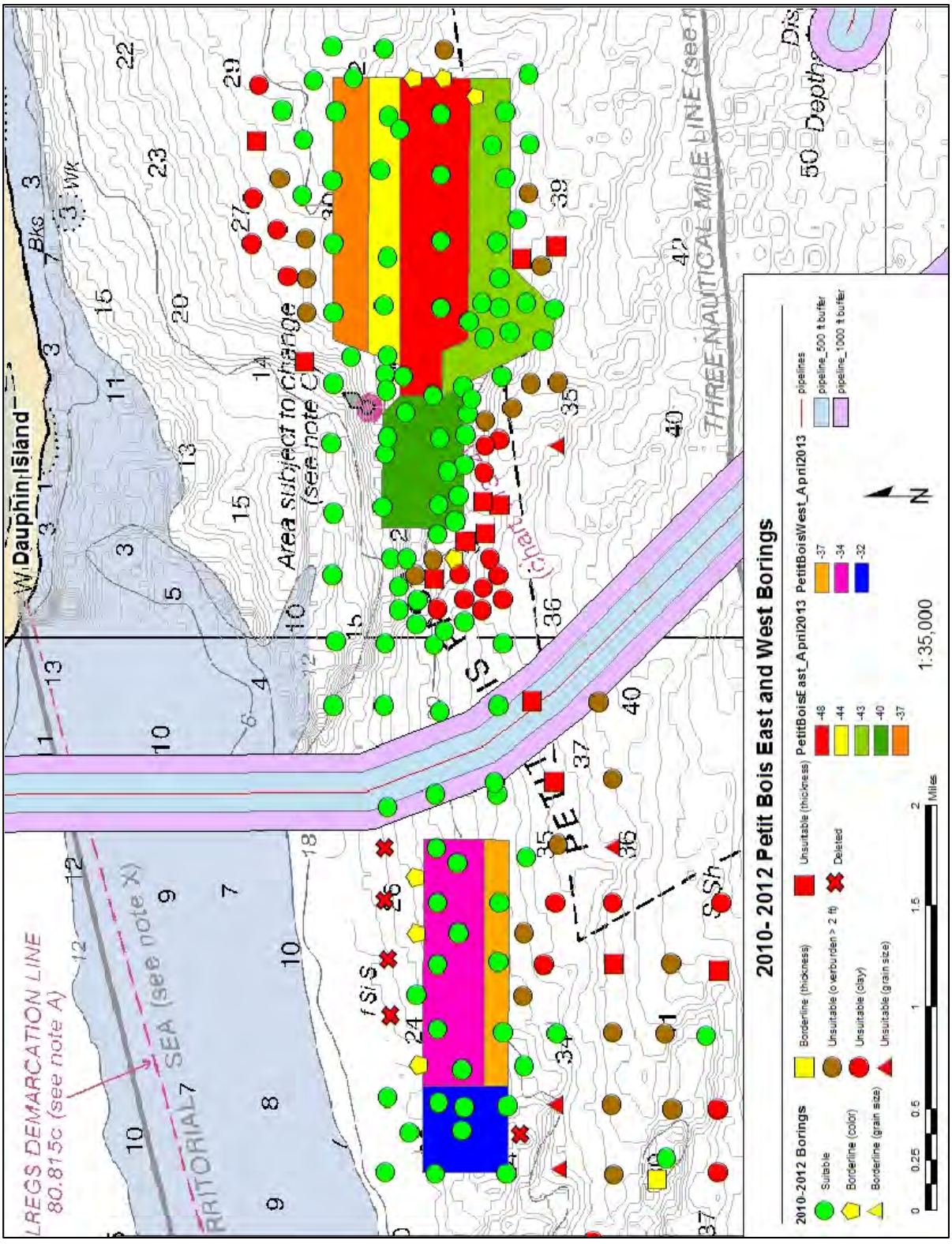


Figure 2.2.8 Reconfigured Petit Bois West and Petit Bois East borrow areas after 2012 sampling event.

2.3 PETIT BOIS PASS -MISSISSIPPI

Petit Bois Pass-Mississippi is a sampling area located approximately 1.3 miles southeast of Petit Bois Island, in Mississippi state waters. A major shoal feature was identified in this area using bathymetry. It runs northwest to southeast near the intersection of the National Park Service's (NPS) Gulf Islands National Seashore boundary and a buried cable (shown on the map as a pipeline) running through Petit Bois Pass (Figure 2.3.1). The shoal footprint is approximately 160 acres in area with ambient water depths ranging from 25 ft to 37 ft. Due to its proximity to the Pass, it was speculated that this shoal might have similar sediment characteristics to the sand found in the Petit Bois East and West borrow areas. The USGS used its geophysical data to assist in locating borings along the crest of the shoal and delineate the shoal's lateral extents. Other borings were situated along the shoal margins to gain a better understanding of the shoal's structure and the surrounding sediments. Figure 2.3.1 shows the location of the sampling area and the borings taken there.

Sampling results indicate that the shoal crest has thick deposits of suitable sand in the northwest portion of the shoal, closer to Petit Bois Island. In general, borings that intersected the top of the shoal recovered poorly-graded, medium- to fine-grained, sand-sized quartz (SP) with very little fines (< 5%) and trace shell fragments throughout. Below the poorly graded sand (SP) layers, the sediments quickly grade to silty and clayey sands (SM and SC), usually underlain by intermittent layers of clay (CL/CH) and/or silt (ML/MH). Munsell Color Value typically decreases with increasing depth. D50 grain size also typically decreases with depth. Off the shoal, sand is typically only surficial, one to two feet thick, and is underlain by clays and silts. Overburden was virtually non-existent on the top of the shoal. Figure 2.3.2 is a Triangulated Irregular Network (TIN) map created in ArcMap using the sand thicknesses observed in the borings to create the isolines. It clearly shows that the sand thins out abruptly further away from the crest of the shoal. Borrow area design needs to focus on maximizing the cut into the shoal in the northwest portion. The sand layer is thickest and cleanest in this area, allowing for deeper dredge cuts.

The samples had a typical dry Munsell Color Value of 7 (58% of sample volume). Of the samples with suitable sand, the majority of sample volume (49% of sample volume) had a Munsell Color of 5Y 7/2 (LT Gray). 5Y 6/2 (LT Olive Gray) was the second most abundant color by volume. However, the percentage of light gray to white color was 71% for the entire sample volume. D50 grain size for samples in the shoal ranged from 0.13 mm to 0.48

mm, with a weighted mean D50 of 0.31 mm. Sand thicknesses within borings on the shoal ranged from four feet to 16 ft, with an average thickness of 6.1 ft. In several borings (BI-PBP-2-12, BI-PBP-6-12, BI-PBP-20-12, BI-PBP-21-12) the vibracore sampler could not penetrate the dense sand, making it difficult to assess the true thickness of the sand body from the borings. The penetrometer graphs in Appendix B attest to the difficulty the vibracore had in penetrating these areas. There is also a slightly thicker mound on the southeast tip of the shoal with suitable sand, but then the sand thins out rather quickly moving away from the crest of the shoal to the northeast, east, south, and west. (Figure 2.3.2)

The more continuous nature of the shoal makes borrow area design and dredging less difficult than Horn Island Pass or Petit Bois South-OCS. Borrow areas should be constrained to the shoal to optimize sand recovery, while any dredging off the shoal will result in recovery of mostly poor material (SM, SC, CL, ML). Figure 2.3.3 shows the proposed location of the potential borrow area and its various cut elevations. Based on this borrow area design, approximately 2.0 mcy of suitable sand are available. Table C-1 of Appendix C contains a consolidated list of the borings and their respective samples. It includes the laboratory gradation data, USCS classification, and the Munsell color classifications. Boring logs and lab data are included after Table C-1.

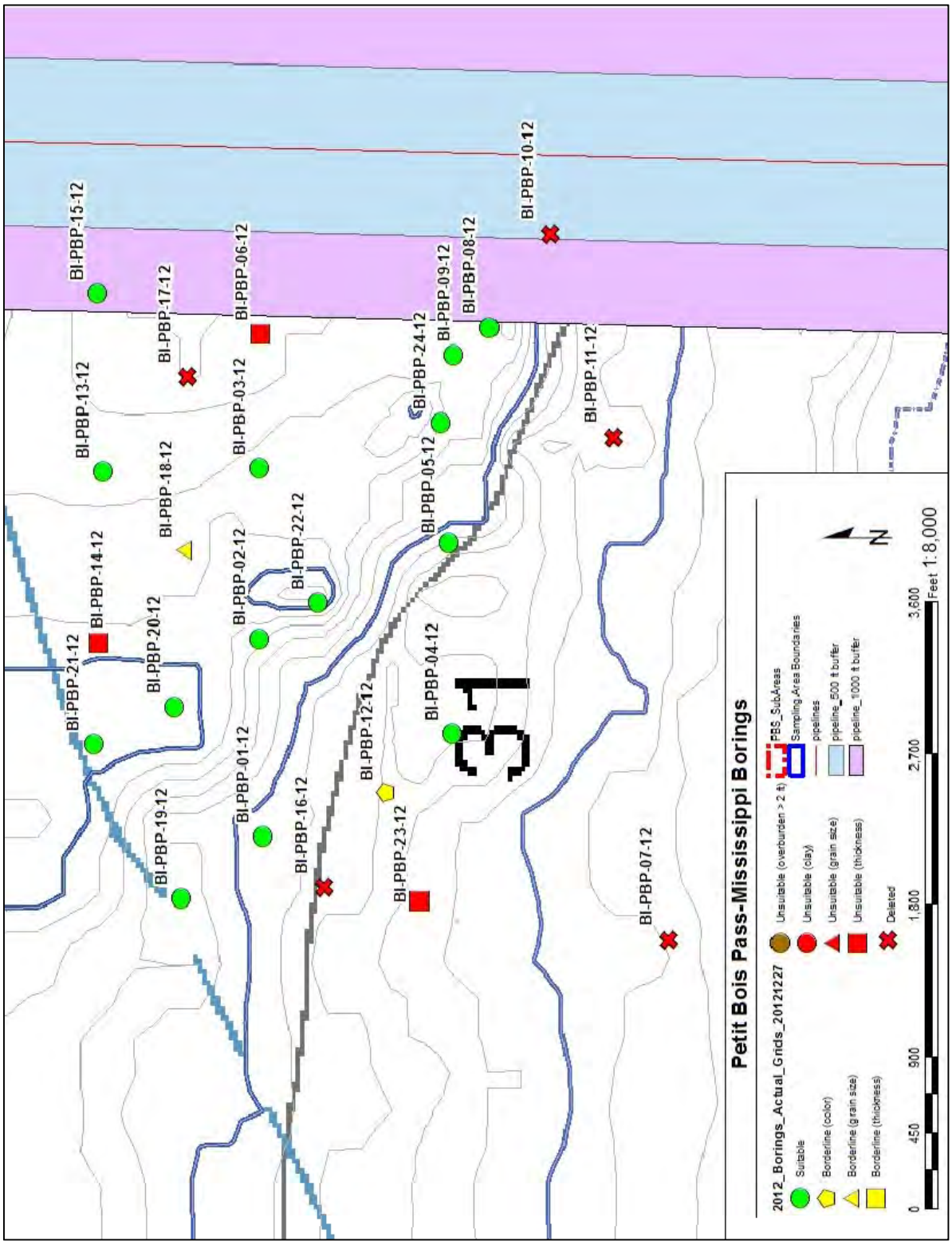


Figure 2.3.1 Proposed borings for Petit Bois Pass Mississippi sampling area with bathymetric contours illustrating the main shoal in the area. The blue contours are at 5-ft intervals.

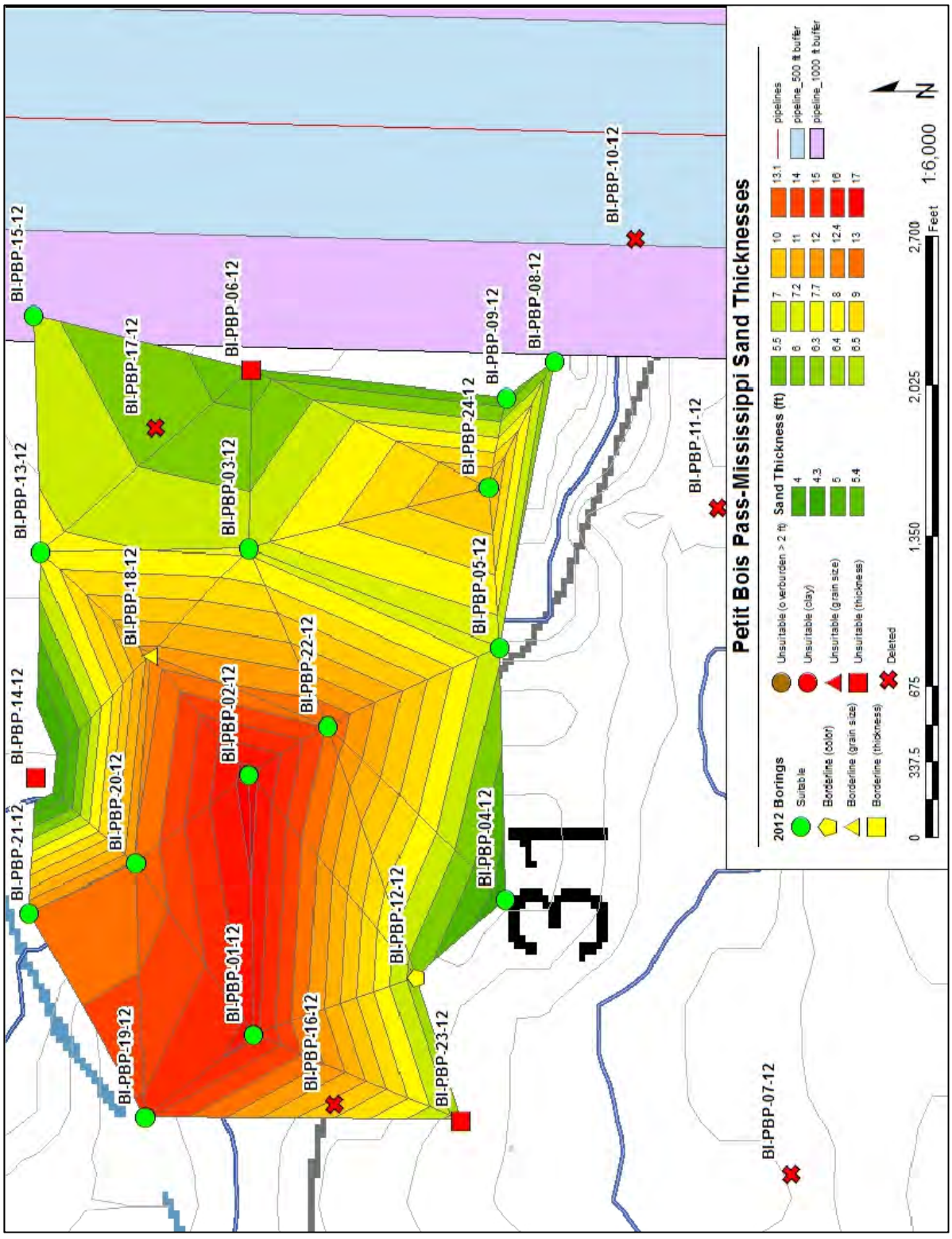


Figure 2.3.2 Map of sand thicknesses in the Petit Bois Pass Mississippi sampling area.

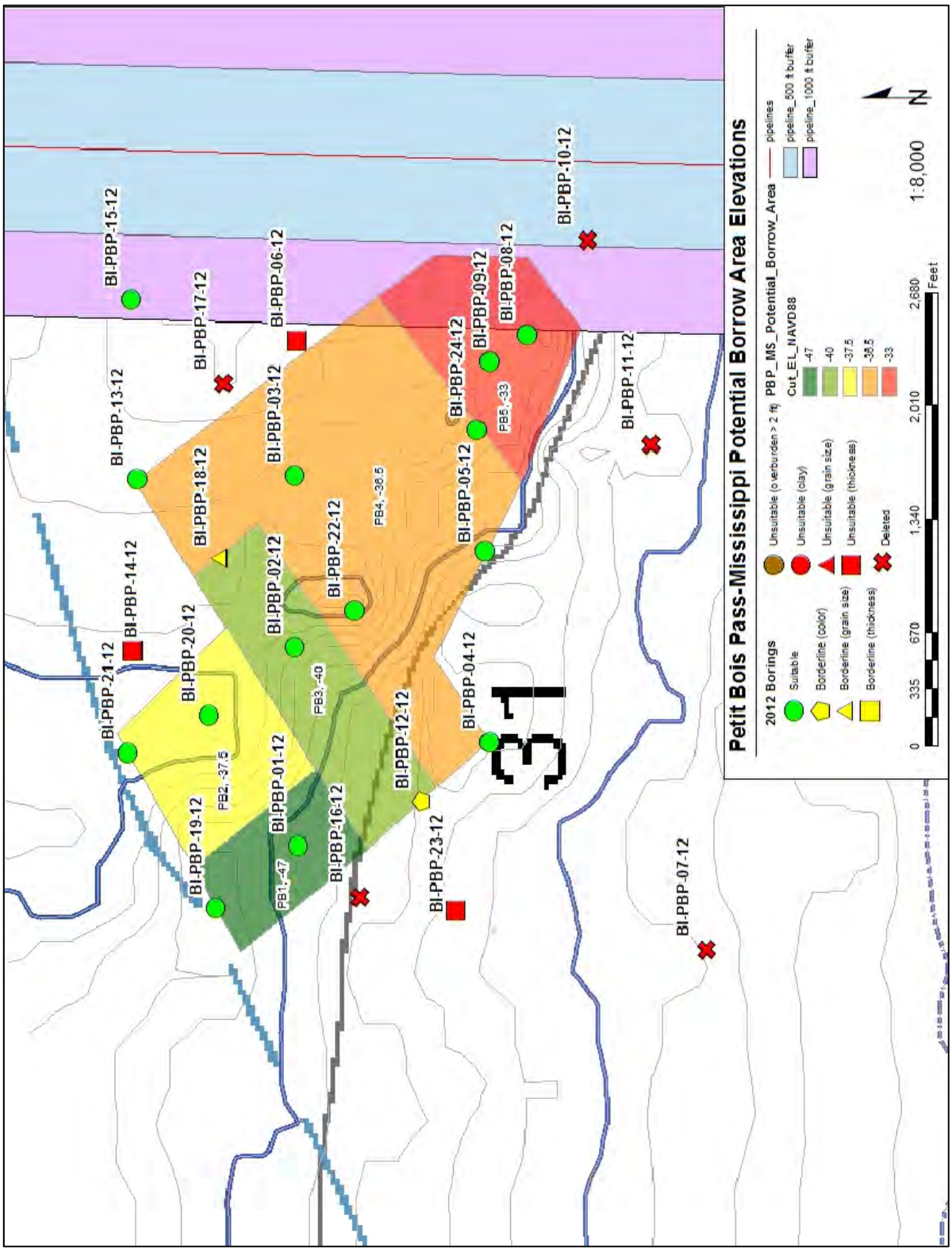


Figure 2.3.3 Petit Bois Pass Mississippi potential borrow areas with cut elevations.

2.4 PETIT BOIS SOUTH

The Petit Bois South sampling area is comprised of two major sub-areas, Area 1 and Area 2, which are located approximately 3 miles south and 6 miles southeast, respectively, of Petit Bois Island. They are divided by a pipeline and buried cable running north-south between them and are bounded in the south by pipelines running east-west. Area 1 overlaps Mississippi and Federal waters, while Area 2 is almost entirely in Federal waters. Ambient water depths in these areas range from 44 to 64 feet. These two study areas were identified using National Oceanic and Atmospheric Administration (NOAA) bathymetry which indicates several shoal complexes within their perimeters (Figure 2.4.1).

The USGS has performed limited geophysical surveys in Areas 1 and 2 in the past as part of their Northern Gulf of Mexico (NGOM) surveys (Twichell et al., 2011). However, little specific grain size information was available about the shoals in Area 1 and the western shoals in Area 2. The USGS's geophysical data for Area 1 was limited because the survey grids were not dense enough to provide an accurate picture of the subsurface geology. The lack of geophysical and boring data prompted USACE to decide not to do any intensive vibracore sampling without the aid of a more comprehensive geophysical investigation being conducted first. To date, this investigation has not been conducted, and only a limited number of borings were taken in Area 1 as a result.

During their 2010 geophysical survey, the USGS identified the shoals in Area 2 as having potentially useable sand for nourishment projects, but did not have any significant boring data to supplement the survey and verify the quality of the sand. Previous sediment sampling in the area has consisted of mostly grab samples and some shallow borings (<5 m). The USGS maintains an online database of seafloor grab samples and borings that have been taken in the Gulf of Mexico. This database is available on the USGS's usSEABED website (http://walrus.wr.usgs.gov/usseabed). It is not an exhaustive list of all sampling ever completed in the area, but it does provide information regarding seafloor surface sediments. The descriptions for the sediment samples typically do not include quantitative grain size, percent fines, or Munsell Color classifications, which reduces their utility for this project. Descriptions tend to be more qualitative. In addition, the majority of the data points come from grab samples that do not necessarily reflect the sediments below the veneer. The Mississippi-Alabama-Florida (MAFLA) Sand Sheet runs through this area. It consists of poorly-graded, fine- to medium-grained, sand-sized quartz with some shell hash and fine sediments. It can vary in thickness, but based on the boring data it is generally one to two feet thick throughout the sample area. This thickness corresponds to the depths that grab

samplers can sample. As a result, grab samples may indicate sand at a particular location, but this sand may be part of the MAFLA veneer and be thinly bedded with poor sediments below it.

The shoals are very discontinuous throughout Area 2 and the USGS used its geophysical and bathymetric data to help target the shoal crests, greatly enhancing the probability of intercepting them. NOAA bathymetry was also useful in identifying boring locations. A Geological Survey of Alabama (GSA) report did identify one major sand body beneath the overburden in the western portion of Area 2 (Parker, 1993). However, it had limited boring information and was targeted to determine the quality and thickness of the sand body. Results are discussed in the following sections. Although the surrounding shoals were believed to contain potentially suitable sand, the same could not be said for the other off-shoal locations throughout the sampling area.

One hundred-four (104) vibracores were drilled in this area as part of this investigation. Generally, borings with thicknesses of suitable material are located along the crests of the shoals. Some borings targeted areas between shoals to verify sand thicknesses on the shoals. Borings that are off the shoal crests typically do not meet the established standards from Section 1.2 for sand quality or bedding thickness. For the purposes of this report, Areas 1 and 2 have been divided into smaller sub-areas. The statistics presented are based on boring samples and are weighted by volume of borrow represented by samples.

Figure 2.4 shows the locations of Areas 1 and 2 (solid blue outline) and the proposed borings. The sampling subareas described in the following sections are outlined in red dashed lines.

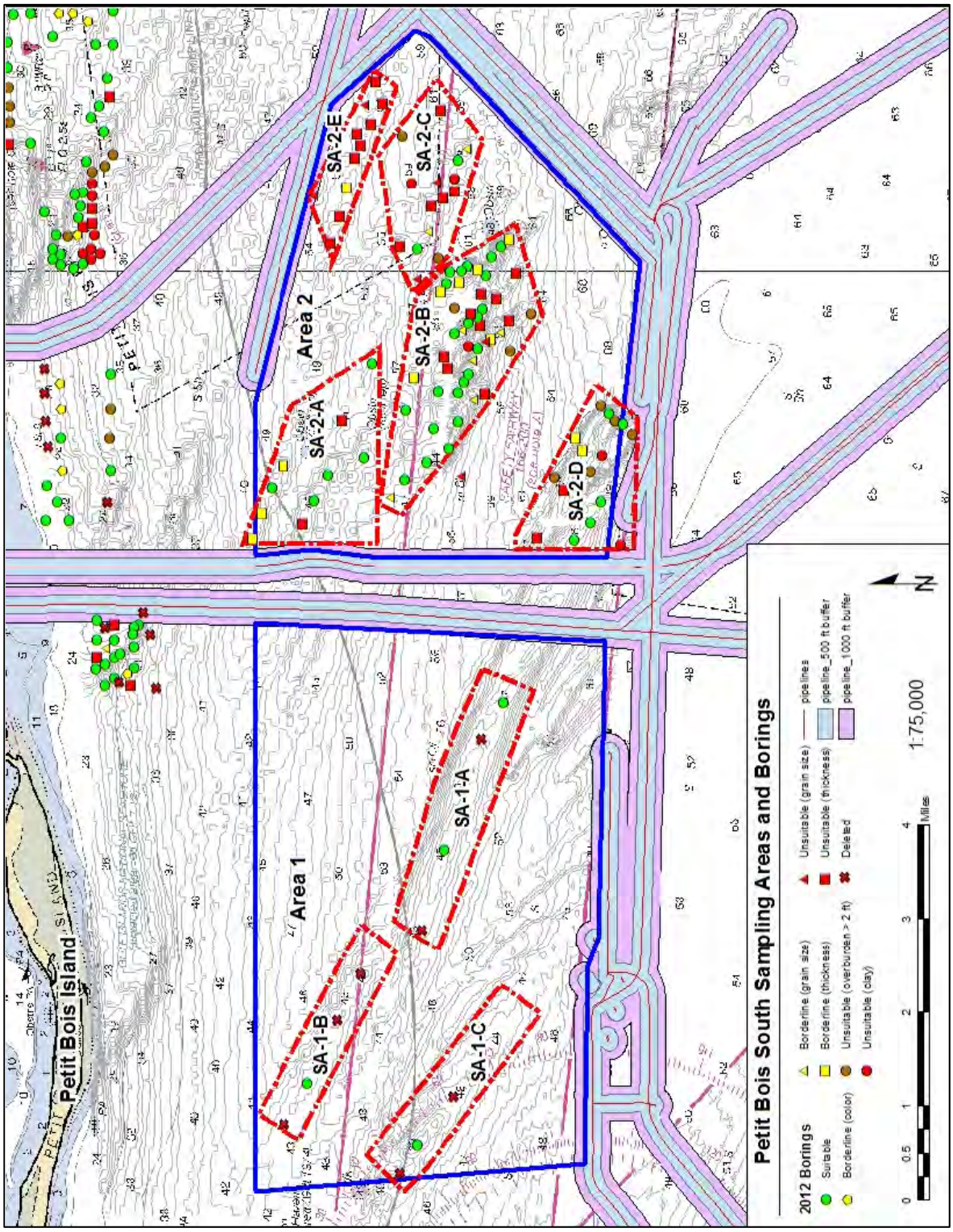


Figure 2.4 Completed borings for the Petit Bois South sampling areas with bathymetric contours illustrating the main shoals in the two areas.

2.4.1 Area SA-1-A

Sampling area SA-1-A is located in Area 1 of the Petit Bois South study area, approximately 4 miles south of Petit Bois Island. This sampling area is bounded by the north/south-running buried cable and pipline to the east and the east/west-running pipelines to the south. This area is dominated by one large shoal. Ambient water depths range from 57 ft off the northern edge of the shoal, up to 45 ft on the crest of the shoal. Two borings targeted the thickest part of the shoal (Figure 2.4.1). Two planned borings were not taken due to project constraints. Both borings indicated that the shoal has a veneer of poorly-graded sand (SP) with trace shell hash underlain by silty sand that grades to clayey sand, and eventually to clay further to the east. The SP veneer ranges from 6.8 to 8.7 ft, with average thickness of 7.8 ft. D50 grain size ranges from 0.26 to 0.32 mm, with a weighted mean D50 of 0.30 mm. Percent fines range from 1.8 to 12.5 %, with an average of 3.6%. Its average dry Munsell Color Value is 6, with a typical dry Munsell Color of Light Olive Gray. This sand is considered suitable for borrow material, however, more investigation is needed to delineate a suitable borrow area.

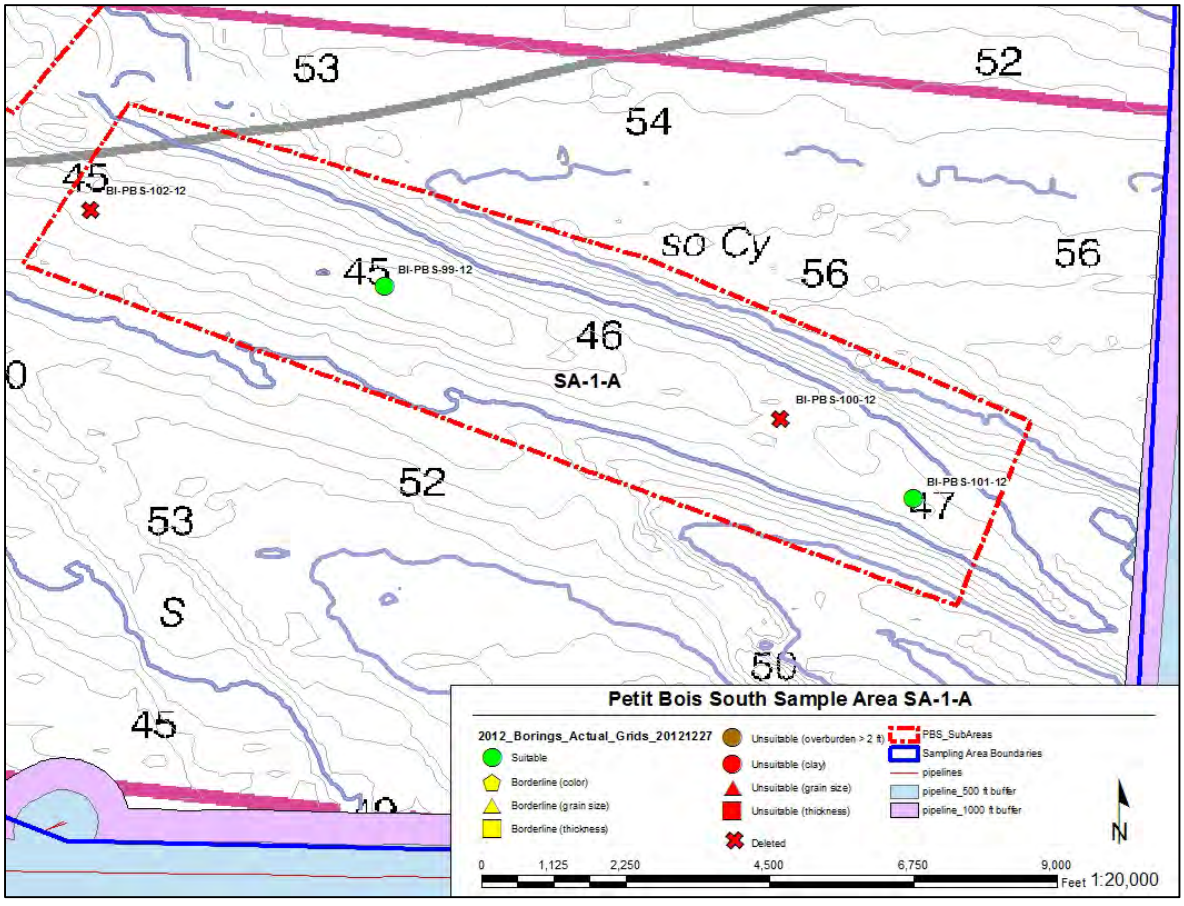


Figure 2.4.1 Petit Bois South SA-1-A sampling sub-area with bathymetric contours. Blue contours represent 5-ft contour intervals.

2.4.2 Area SA-1-B

Sampling area SA-1-B is located in Area 1 of the Petit Bois South study area, approximately 2.5 miles south of Petit Bois Island. Ambient water depth is approximately 43 ft. to 48 ft. It contains a single shoal approximately 10,700 ft long by 2,500 ft wide. One boring (BI-PBS-95-12) was taken in this shoal, targeting the highest point of the shoal crest. The boring indicates that the structure of the shoal is similar to the shoal in SA-1-A. A 2.2 ft veneer of poorly-graded sand with trace shell hash, with a D50 of 0.32 mm, percent fines of 1.2%, and a dry Munsell Value of 6, is underlain by a siltier sand with smaller grain size and higher silt content, followed by layers of silt (ML) and clay (CH/CL). Based on this data, the shoal is not suitable for use as a borrow area due to the thickness of the sand layers. However, the shoal becomes thicker vertically towards the southeastern end, which may indicate a thicker veneer of sand. Additional sampling needs to be conducted to determine the complete structure of the shoal.

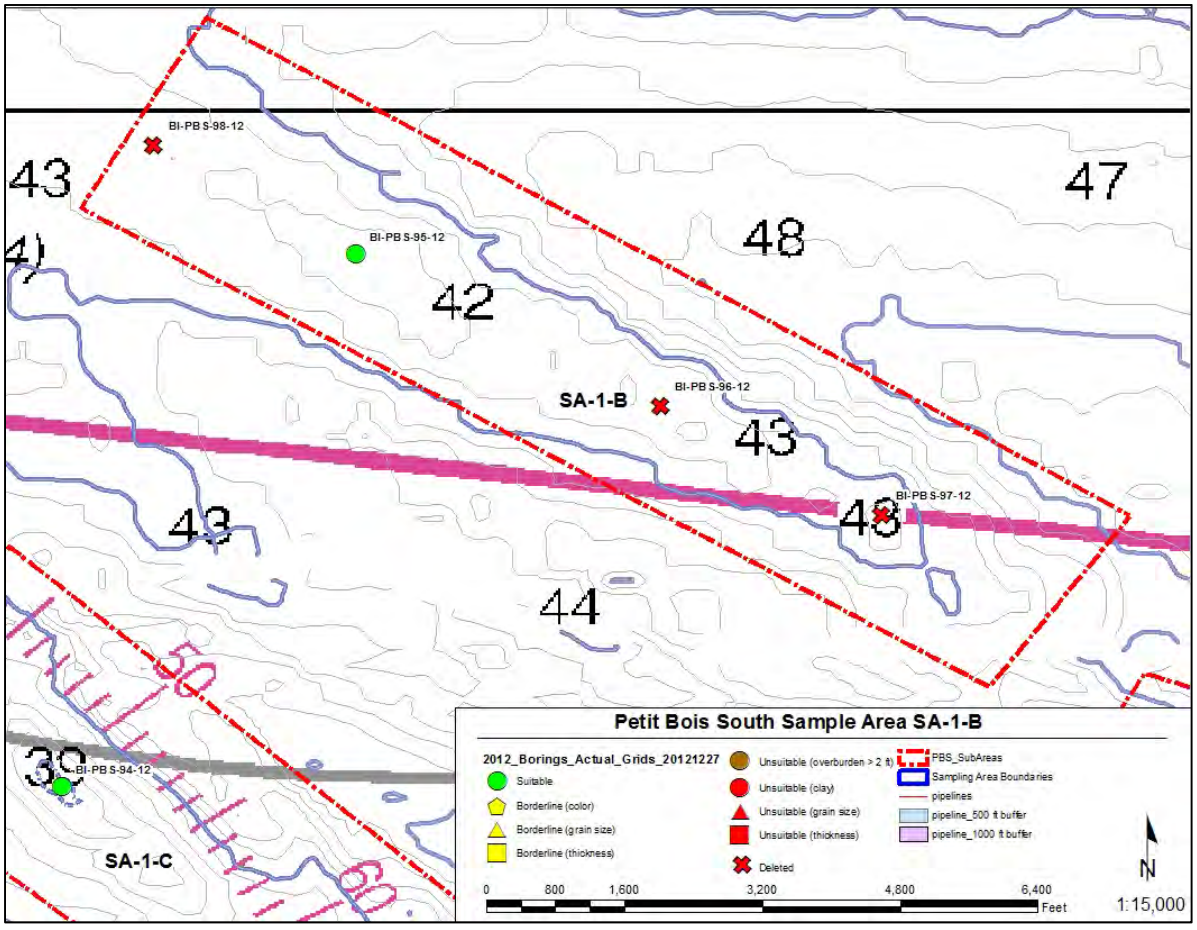


Figure 2.4.2 Completed borings for the Petit Bois South SA-1-B sampling sub area with bathymetric contours illustrating the main shoals in the area. Blue contours represent 5-ft contour intervals.

2.4.3 Area SA-1-C

Sampling area SA-1-C is located in Area 1 of the Petit Bois South study area, approximately 3.6 miles south of Petit Bois Island. Ambient water depth is approximately 40 ft. to 47 ft. It contains a single shoal approximately 3,000 ft long by 1,200 ft wide. One boring (BI-PBS-94-12) was taken in this shoal, targeting the highest point of the shoal crest. The boring indicates that the structure of the shoal is similar to the shoals in Area SA-1-A and SA-1-B. A 7.0 ft veneer of poorly-graded, slightly silty sand, with a D50 of 0.27 mm, percent fines of 3.9%, and a Munsell Value of 6.5, is underlain by a siltier, finer-grained sand, followed by layers of silt (ML) and clay (CH/CL). Based on this data, the shoal might be suitable for use as a borrow area if more borings are taken to delineate its extent and verify the thickness and quality of the sand veneer. However, the shoal becomes thinner vertically towards the southeastern end, which may indicate a thinner veneer of sand. Additional sampling needs to be conducted to determine the true structure of the shoal.

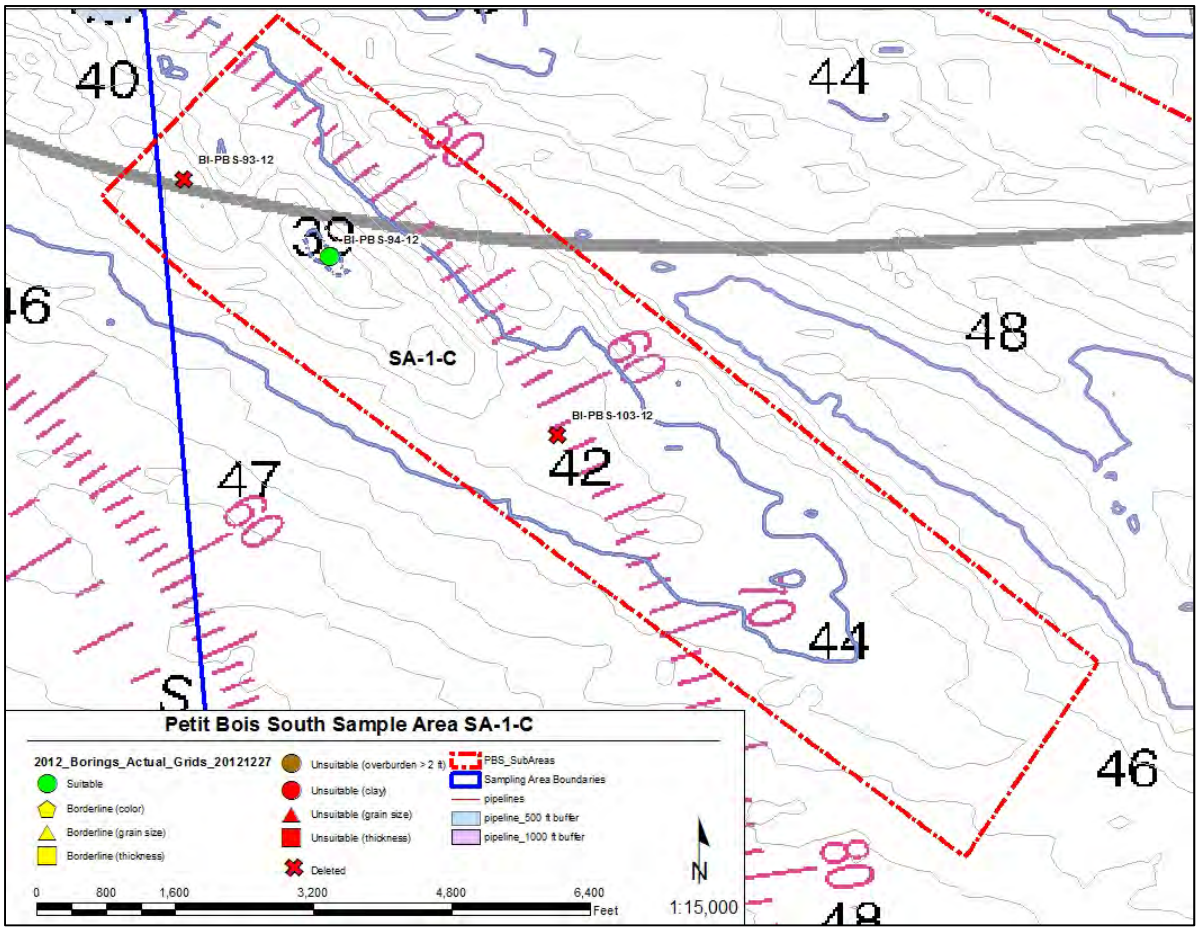


Figure 2.4.3 Completed borings for the Petit Bois South SA-1-C sampling sub area with bathymetric contours illustrating the main shoals in the area. Blue contours represent 5-ft contour intervals.

2.4.4 Area SA-2-A

Sampling area, SA-2-A, is located in the northwest corner of Petit Bois South Area 2, approximately 4 miles southeast of the eastern tip of Petit Bois Island (Figure 2.4). It contains approximately three shoals, none of which displays significant vertical elevation. Ambient water depths range from 45 to 55 ft. Ten (10) borings were taken in this sampling area. The four borings along the northern-most shoal contain a surficial layer of poorly-graded sand (SP), underlain by clayey sand and then clay. Thickness of the SP layer ranges from 2.6 to 3.8 ft. D50 grain size ranges from 0.33-0.34 mm. Percent fines ranges from 1.4%-2.3%. Dry Munsell Color Value is 7 for all samples. Generally, grain size decreases with depth, while percent fines increases with depth. Color also typically becomes darker with depth. This area was not considered for further evaluation because the shoals are too thin and not long, or wide, enough to significantly increase the volume of sand available.

Two borings were taken southeast of this shoal. Each one has a veneer of poorly-graded sand (SP). The western one (BI-PBS-110-12) has a 2.3 ft. thickness, while the eastern one (BI-PBS-111-12) has a 4 ft thickness. Although BI-PBS-111-12 has suitable sand, the sand below the veneer in the surrounding area is too silty and fine-grained for use. Because of this lack of suitable sand thickness, this area has been eliminated from further investigation.

A larger shoal runs through the middle of the sampling area from the west. Four borings were taken on it. Three of the four borings contained suitable thicknesses of poorly-graded sand ranging from 5.5 to 9.5 ft., and composite D50s of 0.33mm, percent fines of less than 4% and typical dry Munsell Color of Light Gray with dry Munsell Value of 7. A Triangulated Irregular Network (TIN) map of the shoal was created using the sand thicknesses from the borings to create the isolines (Figure 2.4.4.2). This map shows how suitable sand thickness runs along the shoal crests and quickly thins out off-shoal. Based on the boring information, this area could potentially be used for borrow.

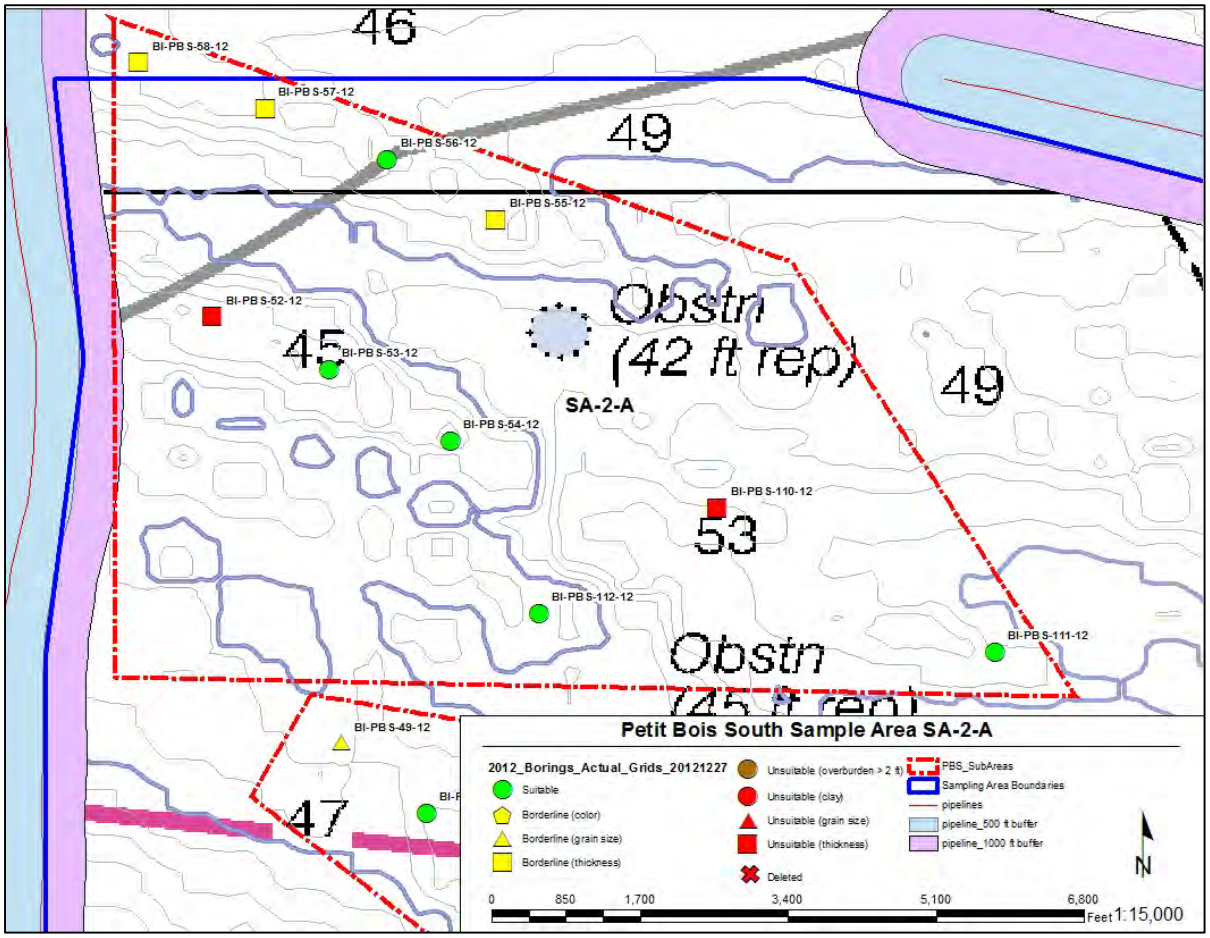


Figure 2.4.4.1 Completed borings for the Petit Bois South SA-2-A sampling sub area with bathymetric contours illustrating the main shoals in the area. Blue contours represent 5-ft contour intervals.

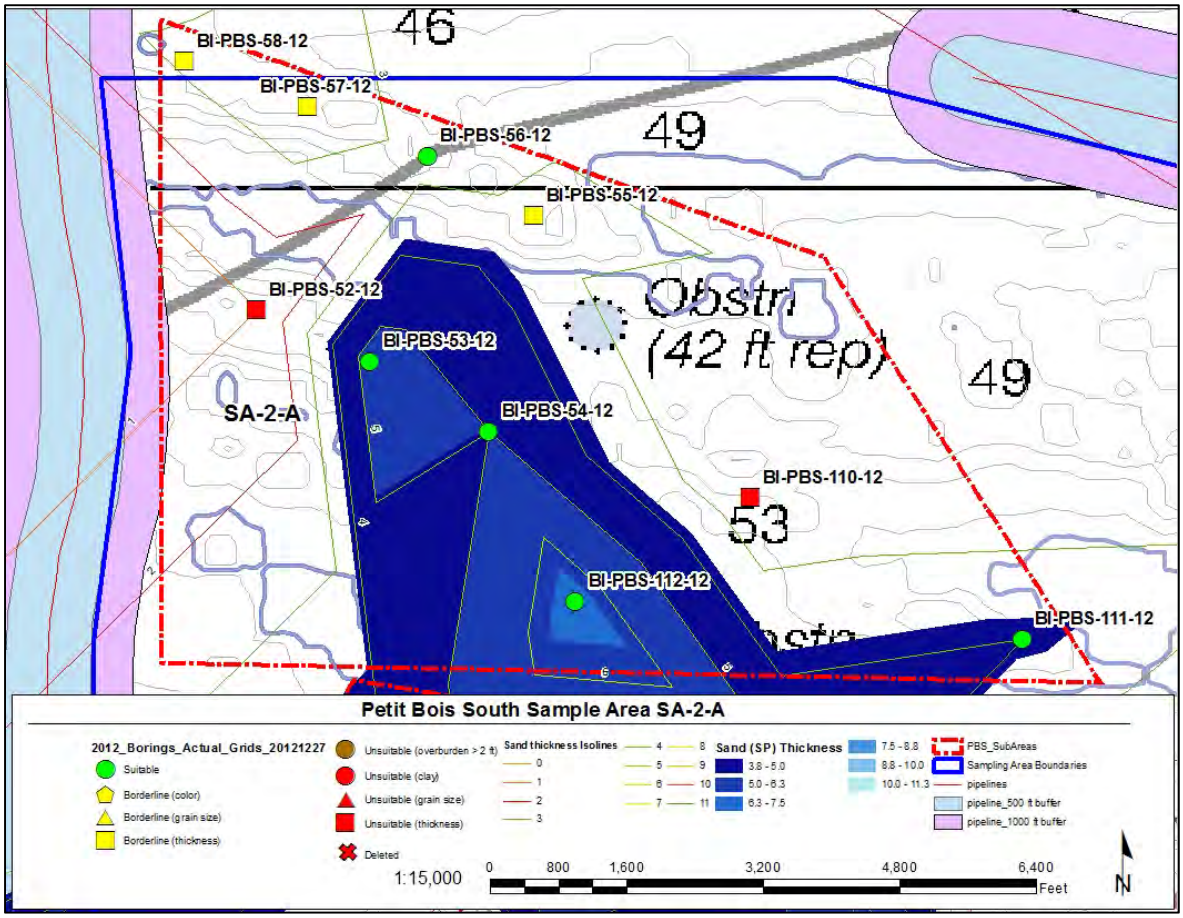


Figure 2.4.4.2 Sand thickness map created from the borings for the Petit Bois South SA-2-A sampling sub area. Blue-shaded thicknesses start at 3.8 ft and progress to 11.3 ft.

2.4.5 Area SA-2-B

Area SA-2B surrounds the largest shoal complex in Area 2, and is located approximately 5.7 miles southeast of the eastern tip of Petit Bois Island. Ambient water depths range from 44 to 63 ft. There are three major northwest/southeast-running shoals with significant bathymetric change in this area. The off-shoal area consists of gently undulating seafloor dipping generally towards the south. Borings in this area primarily targeted the three shoals. Within the borings, grain size typically decreases with depth, while percent fines increases with depth. Also, color typically becomes darker with depth, usually as a consequence of increasing fines. Sand bed thickness decreases considerably off the shoals. Figure 2.4.5.1 shows the borings taken in the area. The shoal contours are also outlined in darker blue at the five-foot contour intervals.

Starting with the western shoal, the borings contained a surficial layer of poorly-graded sand (SP), with thicknesses ranging from 0.4 to 10.4 ft. with an average thickness of 5.1 ft. and composite D50 grain size ranges from 0.20 to 0.37, with an average D50 of 0.26 mm. Percent fines range from 1.2% to 14.5%, with an average of 4.7%. Dry Munsell Color Value ranges from 5 to 7.5, with a typical light gray color.

The middle shoal's borings contained SP thicknesses ranging from 1.0 to 8.6 ft with an average thickness of 4.7 ft. Composite D50 grain size ranges from 0.21 to 0.5 mm, with an average D50 of 0.30 mm. Percent fines range from 1.7 to 3.8% with an average of 2.5%. Dry Munsell Color Value ranges from 6 to 7, with a typical light gray color.

The eastern shoal's borings contained SP thicknesses ranging from 2.3 to 7.7 ft., with an average thickness of 4.9 ft. Composite D50 grain size ranges from 0.17 to 0.66 mm, with a weighted average D50 of 0.30 mm. Percent fines range from 2.2 to 14.9%, with an average of 5.4%. Dry Munsell Color Value ranges from 5 to 7, with a typical light gray to light olive gray color.

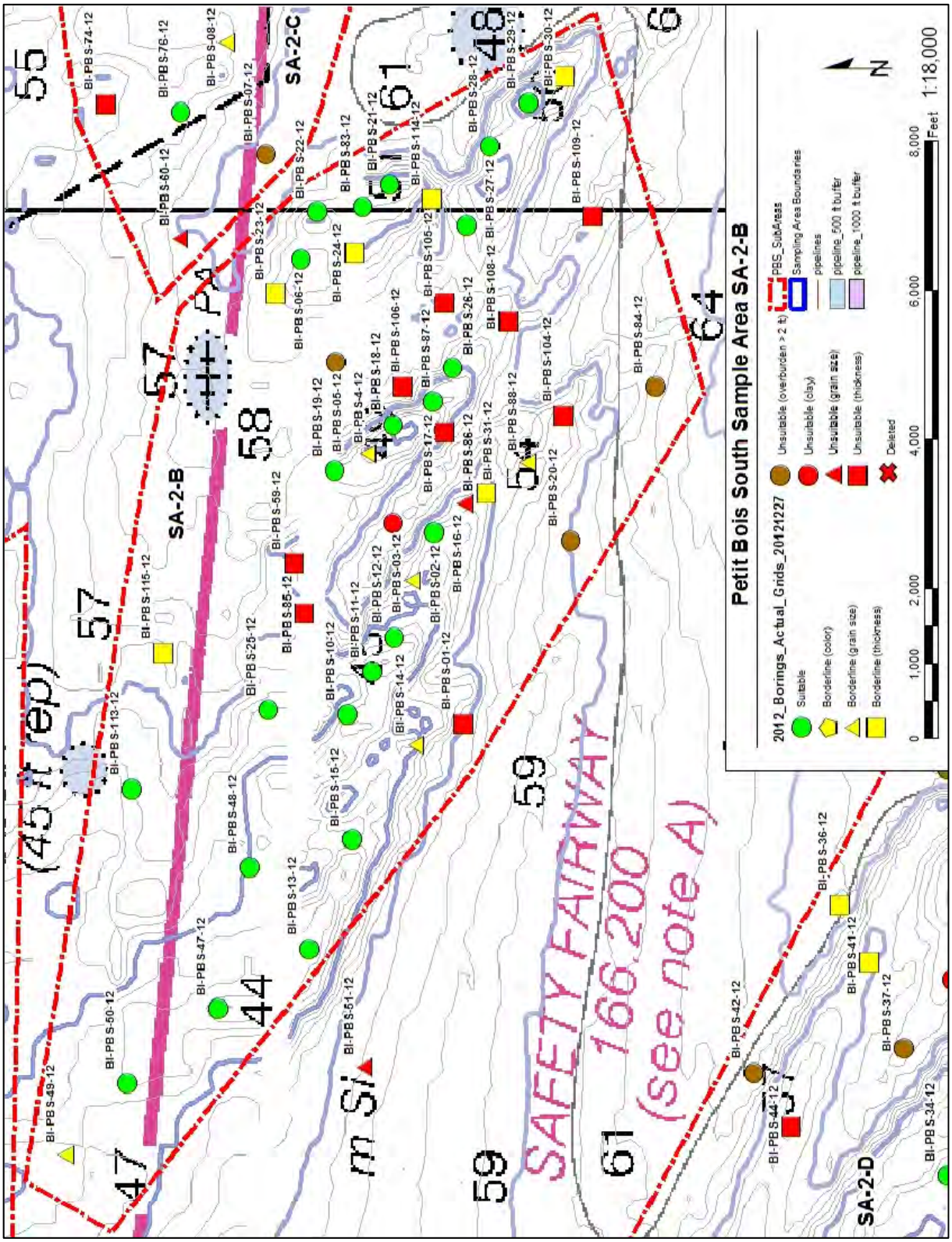


Figure 2.4.5.1 Completed borings for the Petit Bois South SA-2-B sampling sub area with bathymetric contours illustrating the main shoals in the area. Blue contours represent 5-ft contour intervals.

The map in Figure 2.4.5.2 shows a TIN surface created from the thicknesses of SP material in the borings. The thickest portions of sand correspond with the shoal crests. Off the shoals, the borings indicate a drastic reduction in the thickness of the SP. D50 grain size also begins to grade smaller in the more southern shoals.

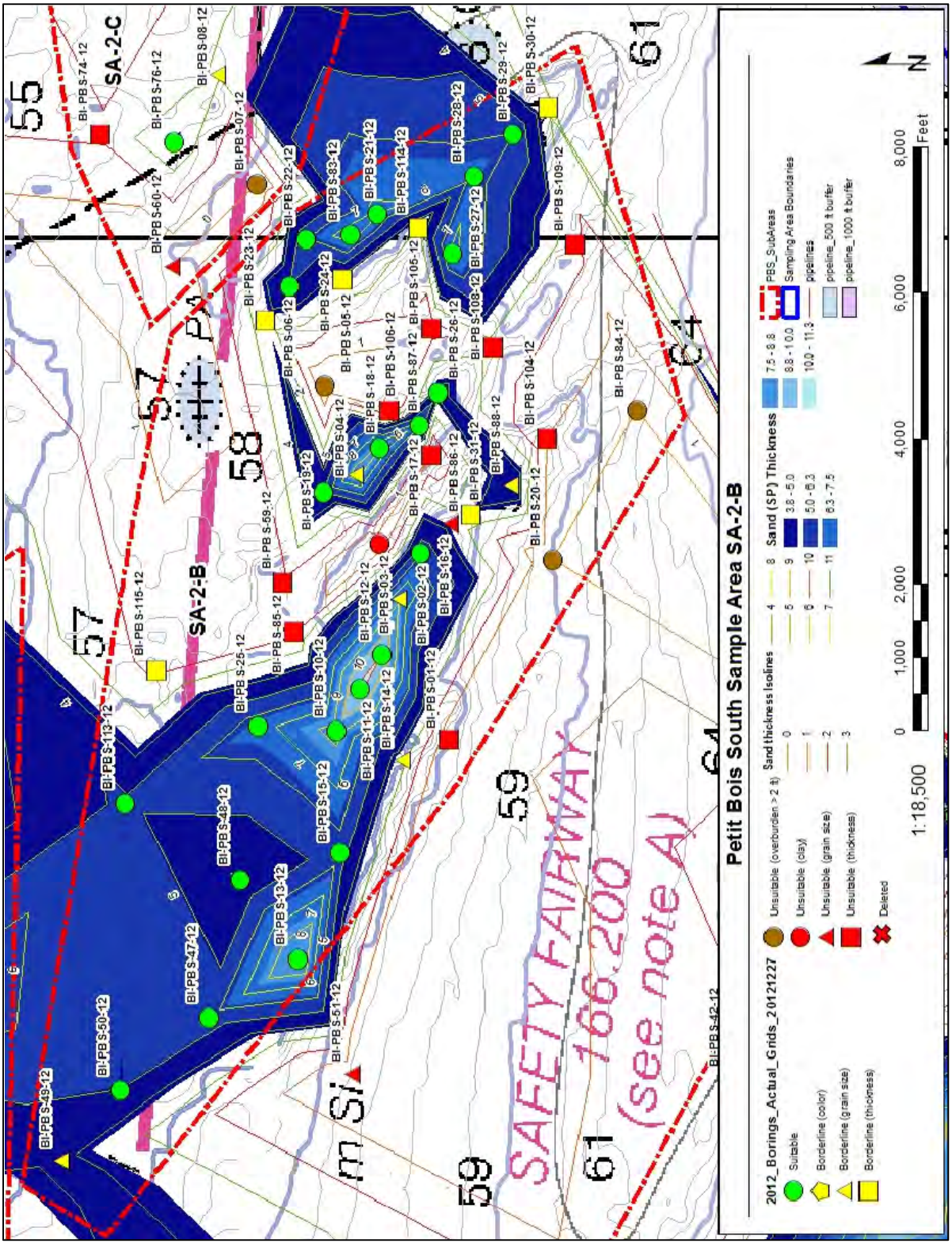


Figure 2.4.5.2 Sand thickness map created from the borings for the Petit Bois South SA-2-B sampling sub area. Blue-shaded thicknesses start at 3.8 ft and progress to 11.3 ft. for this area.

2.4.6 Area SA-2-C

Sampling area SA-2-C is located approximately 5.9 miles south of the western tip of Dauphin Island. It has one insignificant shoal within its perimeter. The majority of the area consists of gently sloping seafloor. Of the 10 borings on and around the shoal, only two have a sand (SP) thickness greater than 4 ft (BI-PBS-76-12 and BI-PBS-68-12). Thicknesses range from 2.2 to 4.2 ft, with an average of 3.3 ft. D50 grain size ranges from 0.19 mm to 0.34 mm, with an average of 0.24 mm. Percent fines range from 2.7 to 13.3%, with an average of 8.2%. Dry Munsell color value ranges from 5 to 7 with a typical color of light gray to light olive gray.

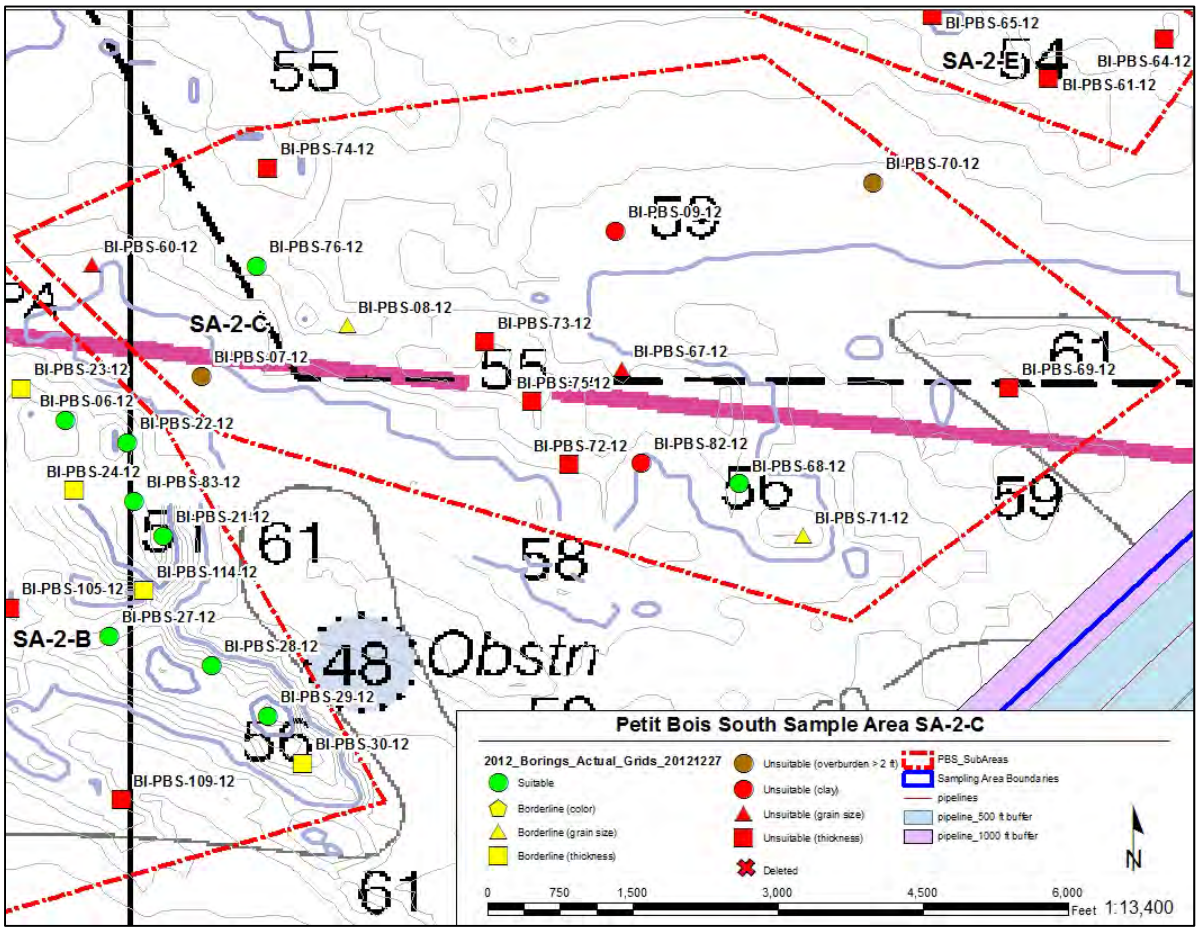


Figure 2.4.6.1 Completed borings for the Petit Bois South SA-2-C sampling sub area with bathymetric contours illustrating the main shoals in the area. Blue contours represent 5-ft contour intervals.

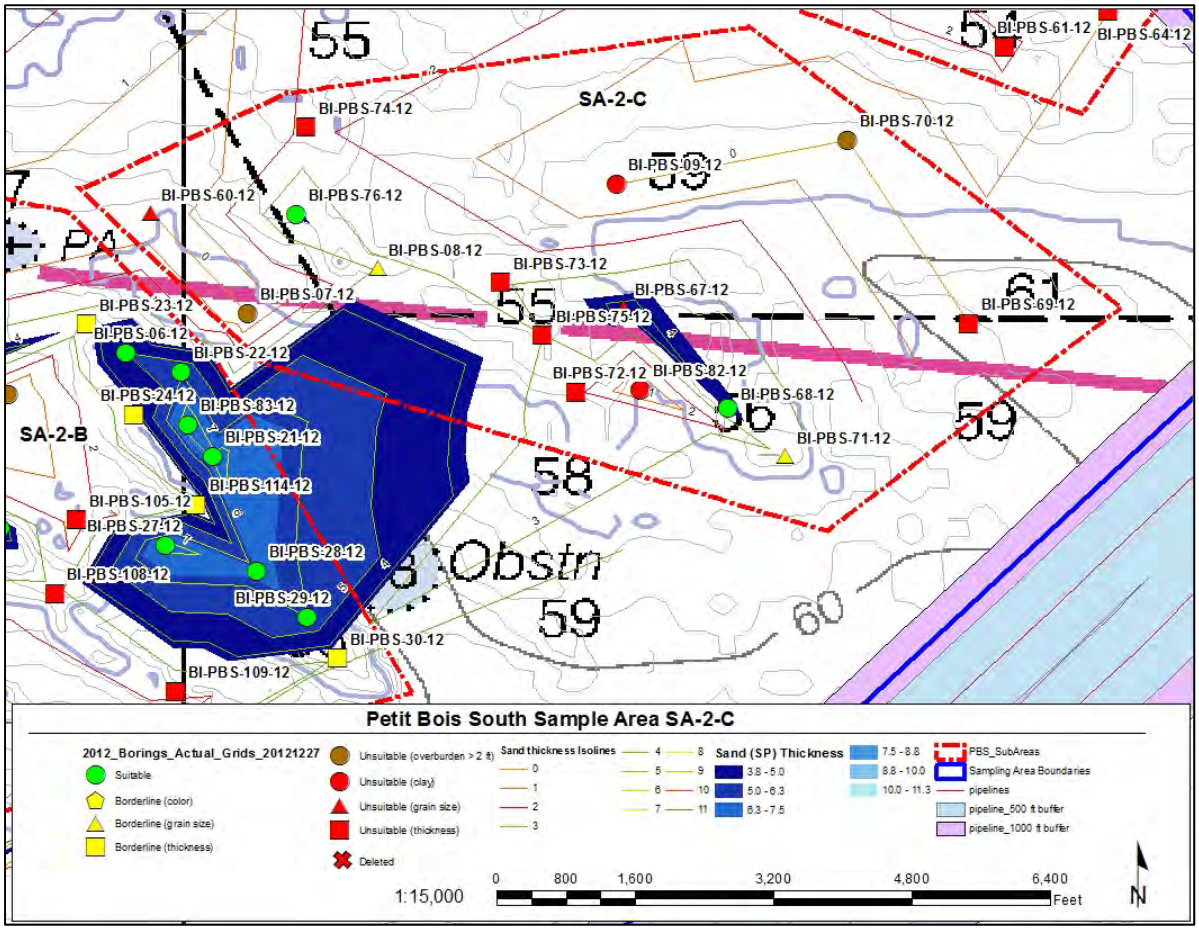


Figure 2.4.6.2 Sand thickness map created from the borings for the Petit Bois South SA-2-C sampling sub area. Blue-shaded thicknesses start at 3.8 ft and progress to 8.8 ft. for this area.

2.4.7 Area SA-2-D

Sampling area SA-2-D is located approximately 6.1 miles southeast of the eastern tip of Petit Bois Island. It is bounded by pipelines to the west and south. It contains a significant shoal feature running northwest/southeast through it. Ambient water depths range from 48 to 68 ft. Based on the borings, sand (SP) thicknesses on the shoals ranged from 1.2 to 11.3 ft, with an average thickness of 4.9 ft. The thickest shoal is the southwestern-most shoal. It has three borings with sand thicknesses ranging from 8.1 to 11.3, and a weighted average D50 of 0.27 mm. Its percent fines range from 1.3 to 3.0%. Its average dry Munsell Color Value is 6, with a typical dry Munsell color of light olive gray. It is slightly darker than preferred, but still acceptable sand.

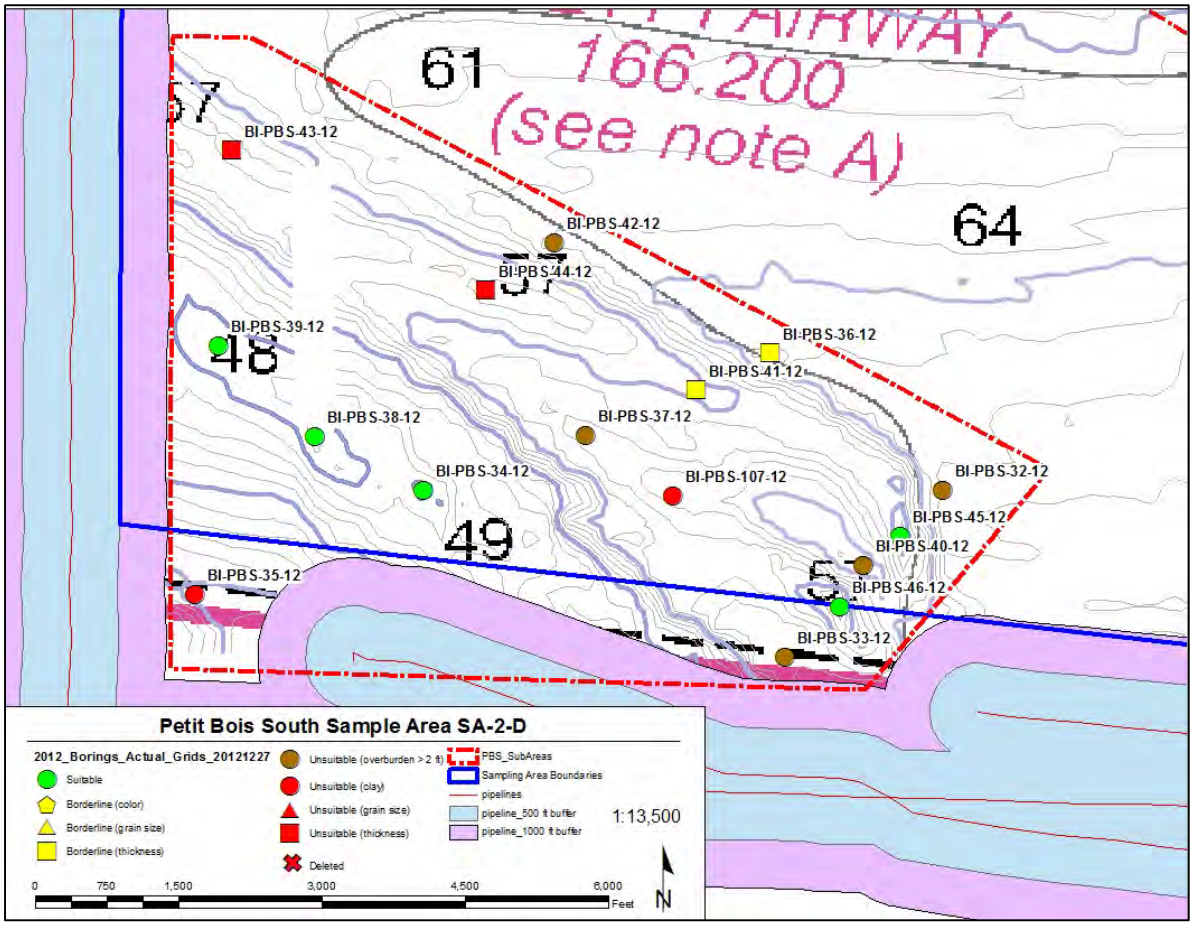


Figure 2.4.7.1 Completed borings for the Petit Bois South SA-2-D sampling sub area with bathymetric contours illustrating the main shoals in the area. Blue contours represent 5-ft contour intervals.

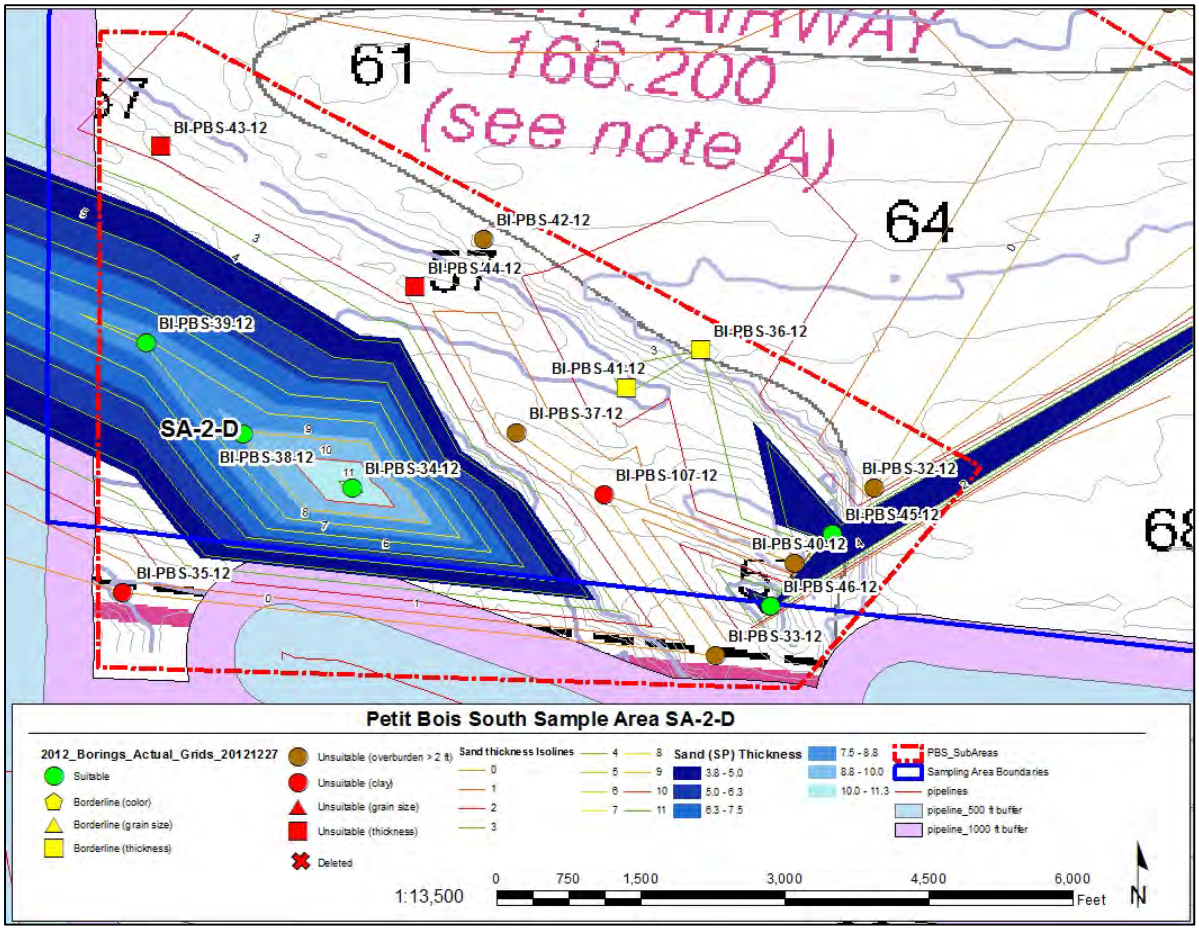


Figure 2.4.7.2 Sand thickness map created from the borings for the Petit Bois South SA-2-D sampling sub area. Blue-shaded thicknesses start at 3.8 ft and progress to 11.3 ft. for this area.

2.4.8 Area SA-2-E

Sampling area SA-2-E is located in the northeast section of Sampling Area 2, approximately 4.8 miles south of the western end of Dauphin Island. There are no significant shoal features in this area. Ambient water depth ranges from 52 to 57 ft. Each of the borings in this area had a surficial layer of sand (SP), ranging in thickness from 0.8 to 3.2 ft. Within this veneer, D50 ranges from 0.18 mm to 0.32 mm, with an average D50 of 0.26 mm. Percent fines ranges from 1.6% to 11.6%, with an average of 5.1%. Its average dry Munsell Color Value is 6, with a typical color of light olive gray to light gray. Two borings, BI-PBS-62-12 and BI-PBS-63-12, had beach quality sand beneath silty and clayey sand layers. Unfortunately, these SM and SC layers are too thick (2.3 and 5.8 ft, respectively) for these to be considered feasible for borrow. In addition, the borings in the western half of this area were underlain by clay and silt, not sand. This area is not suitable for borrow material.

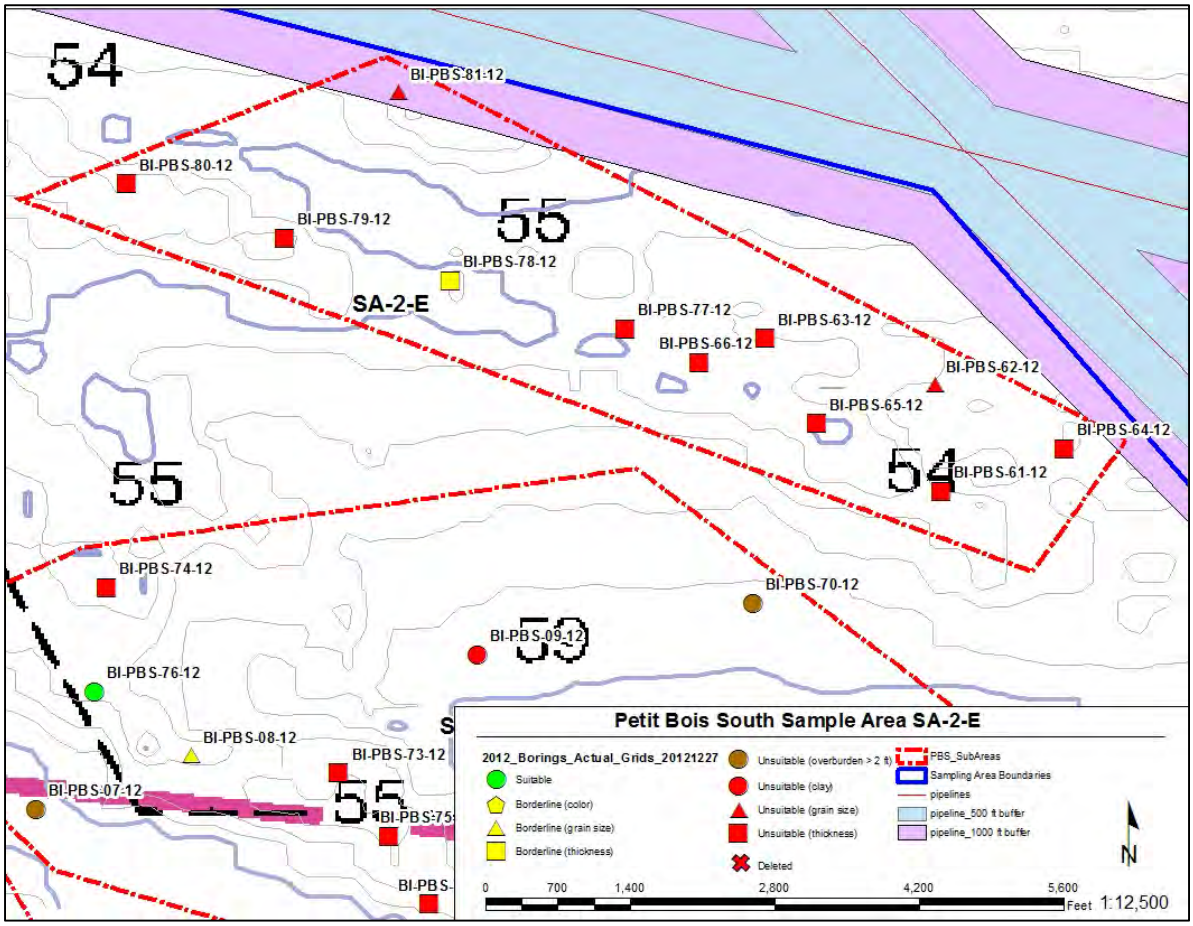


Figure 2.4.8.1 Completed borings for the Petit Bois South SA-2-E sampling sub area with bathymetric contours illustrating the main shoals in the area. Blue contours represent 5-ft contour intervals.

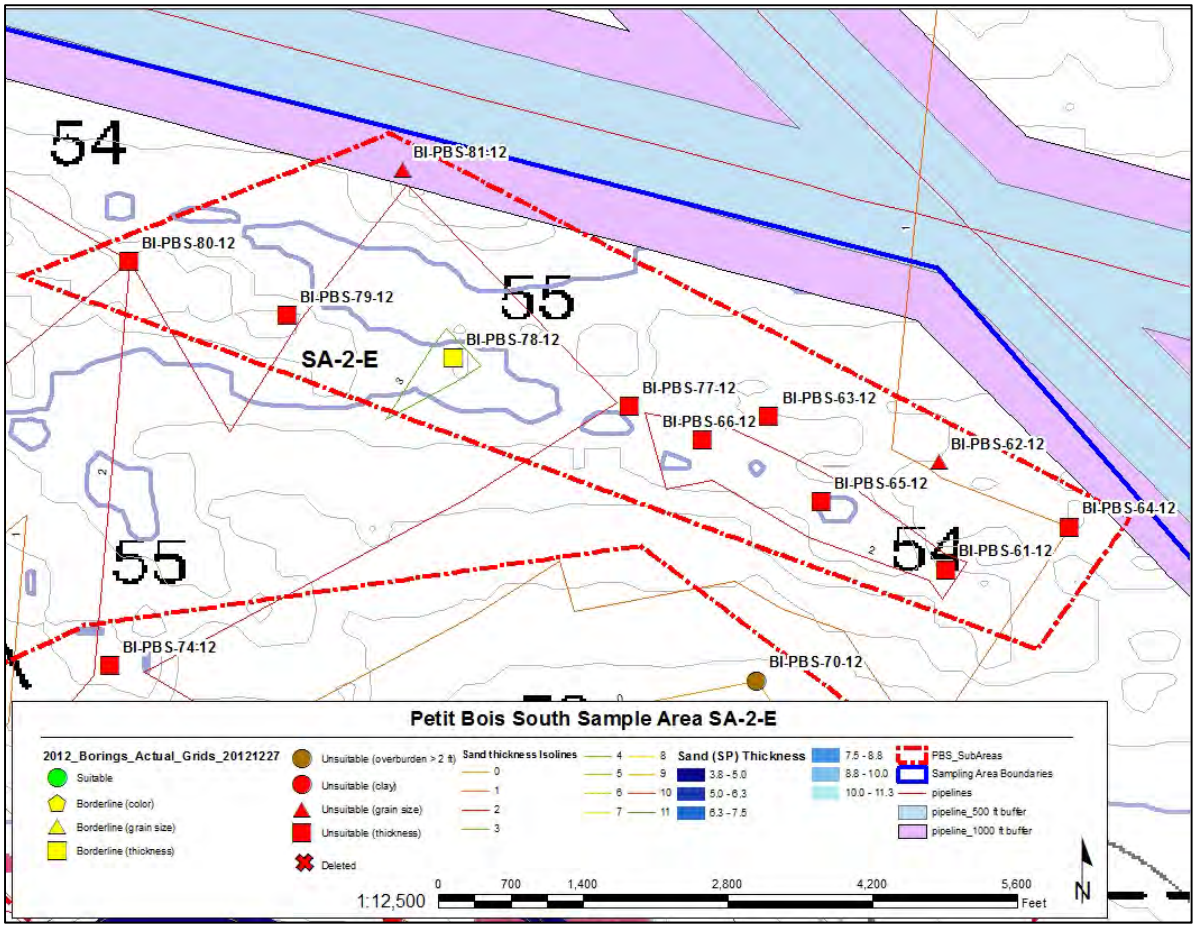


Figure 2.4.8.2 Sand thickness map created from the borings for the Petit Bois South SA-2-E sampling sub area.

2.4.9 Petit Bois South Summary

Due to the lack of available data for it, Petit Bois South Area 1 was not considered a feasible borrow area. Area 2 was analyzed further as a potential borrow area. Using boring and bathymetry data, a sand thickness layer was created in ArcMap to map the suitable sand available (Figure 2.4.9.1). Using this map and the available bathymetry for the area, Figure 2.4.9.2 was created to highlight potential borrow areas within Area 2. The various colors represent different dredge cut elevations for each borrow site. Based on this borrow area design, approximately 4.9 mcy of sand are available. Average D50 is approximately 0.30 mm, with 3.0% fines, and a dry Munsell Color Value of 6.8 and typical dry Munsell Color of Light Gray 5Y 7/2. Table D-1 of Appendix D contains a consolidated list of the borings and their respective samples. It includes the laboratory gradation data, USCS classification, and the Munsell color classifications. Boring logs and lab data are included after Table D-1.

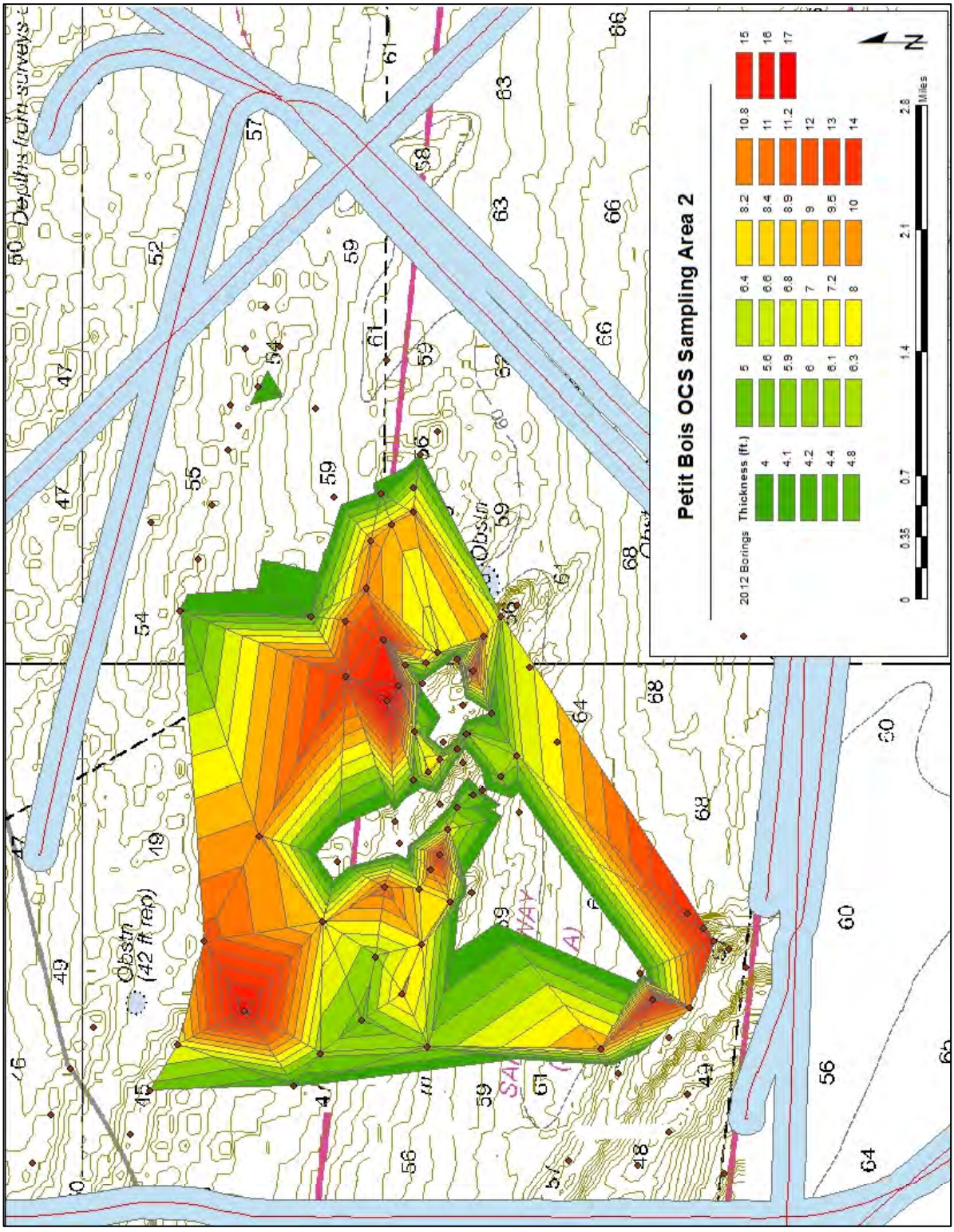


Figure 2.4.9.1 Borings completed in the Petit Bois South sampling area with a sand thickness layer overlaid to illustrate the significance role the shoals play in this area's sand resources.

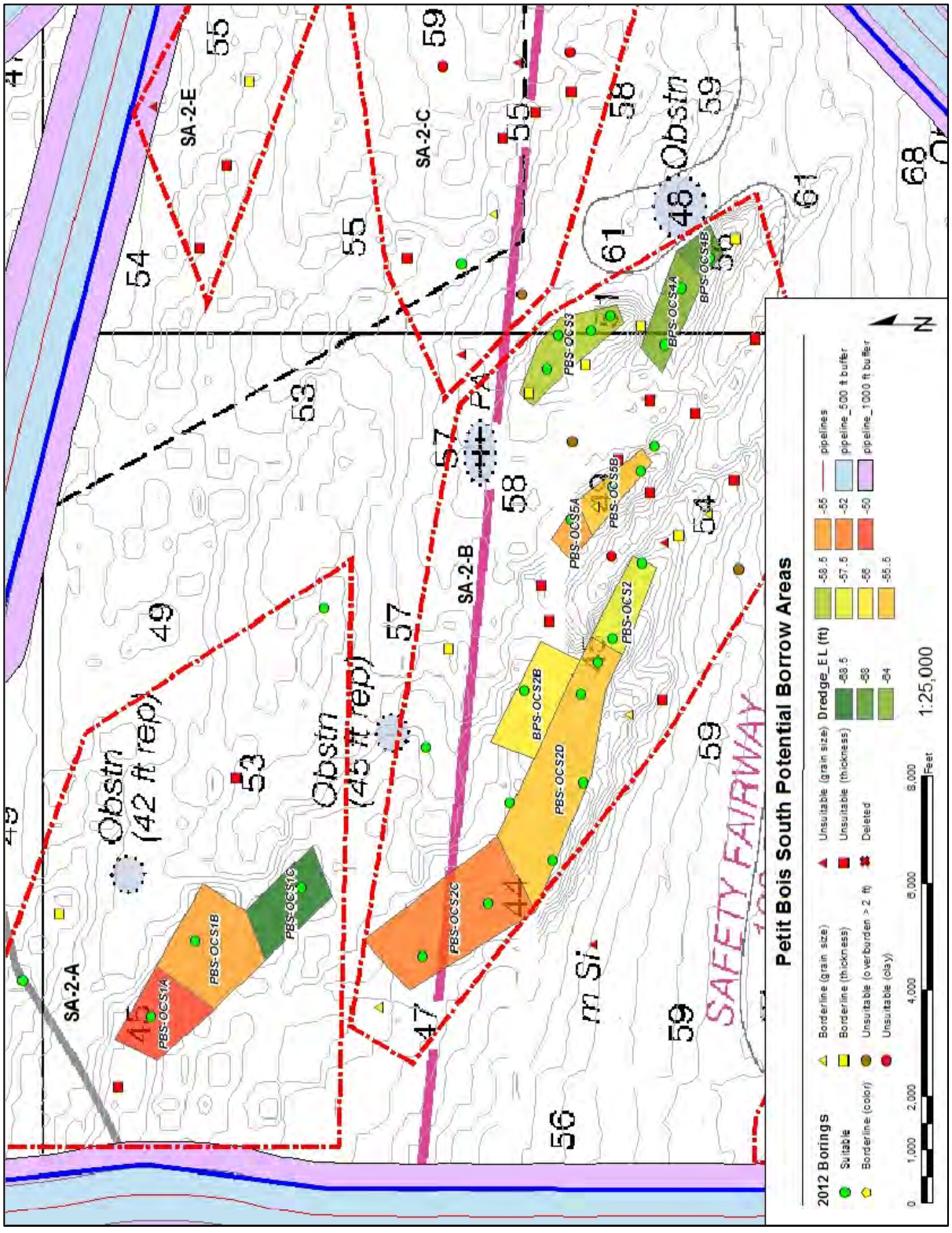


Figure 2.4.9.2 Borings for the Petit Bois South sampling areas with proposed borrow areas outlined. The colors represent dredge cut elevations.

2.5 HORN ISLAND PASS AND PASCAGOULA BAR CHANNEL

Horn Island Pass is located between Petit Bois Island to the east and Horn Island to the west. Disposal Area 10, also known as Sand Island, is a man-made island located in the pass between the two islands. The pass also has a shipping channel (Pascagoula Bar Channel) to the east and two pipelines that run north-south through the western half of the area. DA-10 was created by decades of disposing dredged sand from the bar channel in a location that was not significantly influenced by natural transport processes. This allowed it to build up to the island it is today. The mounds just to the south of the channel were created in the same manner. These mounds are readily identified on bathymetry of the region (Figure 2.5.1). The sampling area is located south of DA-10 and the NPS boundary, bounded by the pipelines to the west and the shipping channel to the east. The 2010 sampling event focused on the main disposal mounds to the east. The recovered cores illustrated that these mounds contained suitable sand for use in the MsCIP Barrier Island project. The discontinuous nature of the mounds makes it difficult to design a borrow area that efficiently dredges the sand without dredging up the poor sediments just off the margins of the mounds. Therefore, this area was not considered for a potential borrow area. However, with the need for additional sand, it was decided to investigate the area further. Additional borings were needed to determine the sand content and structure of the mounds to the west, adjacent to the pipelines, and further to the north of the 2010 borings. If the sand in these mounds also proved to be suitable, the extra volume would make the difficult dredging conditions more acceptable.

The Horn Island Pass borings targeted the three major dredged sediment mounds in the area and the tip of the ebb-tidal shoal. The sides of the Pascagoula Bar Channel were also sampled as part of a channel-widening project. Ambient water depths in this area range from 19 to 40 feet. Sampling was conducted in the Horn Island Pass area in 2010, so only fifteen (15) vibracores were drilled as part of this investigation to augment the information from the previous investigation. Figure 2.5.1 shows the layout of the 2012 planned borings (green diamonds) and the 2010-2011 borings (gold diamonds), as well as the bathymetry of the area. Planned borings along the Pascagoula Bar Channel are also included in the map.

In general, borings that intersected the tops of the mounds recovered poorly-graded, medium- to fine-grained, sand-sized quartz (SP) with very little fines and trace shell fragments throughout. Sand thicknesses on the mounds ranged from one foot to 11.8 ft, with an average thickness of 6.1 ft. D50 grain size for samples in the mounds ranged from 0.15 mm to 0.34 mm, with an average D50 of 0.28 mm. Percent fines ranged from 1.6% to 14.3%,

with an average of 4.9%. Typical dry Munsell Color Value was 7 (82% of samples), with a Munsell Color of Light Gray (79% of samples). Overburden was virtually non-existent on the tops of the mounds. Below the initial top sand layer, the sediments quickly grade to silty and clayey sands (SM and SC), usually underlain by mixed layers of clay (CL and CH) and silt (ML and MH). Dry Munsell Color Value typically decreases with increasing depth. D50 grain size also typically decreases with depth. Figure 4.1.2 is a Triangulated Irregular Network (TIN) map created in ArcMap using the sand thicknesses observed in the borings to create the isolines. It clearly illustrates that the sand thins out abruptly further away from the crests of the mounds. It does show that there is some sand between the disposal mounds, almost like saddles, but in general the mounds are the primary source of suitable sand in the area. Off the mounds, sand is typically only surficial, one to two feet thick, and is underlain by clays and silts.

Borings paralleling the Pascagoula Bar Channel contained unsuitable sand for this project. The borings generally contained significant volumes of silt and clay in the northern half of the group, but did have a veneer of silty sand in the southern half of the group. For the borings in the south, the grain size of the sand is too small for use in this project. D50 ranges from 0.15 to 0.20 mm, with an average D50 of 0.17 mm. Percent fines ranges from 0.4% to 19.8%, with an average of 15.1%. Munsell Color Value ranges from 5 to 6, with an average of 5.05. Typical Munsell Color is Olive Gray. Based on this information, the areas paralleling the channel are not considered suitable for this project.

The discontinuous nature of the mounds makes borrow area design and dredging difficult. Borrow areas should be constrained to the mounds to optimize sand recovery, while any accidental dredging off the mounds will result in recovery of mostly poor material (SM, SC, CL, ML). Three mounded areas are considered suitable for borrow area use. Figure 2.5.3 shows the locations of the potential borrow areas. Based on that borrow area design, approximately 3.2 mcy of suitable sand are available. Table E-1 of Appendix E contains a consolidated list of the borings and their respective samples. It includes the laboratory gradation data, USCS classification, and the Munsell color classifications.

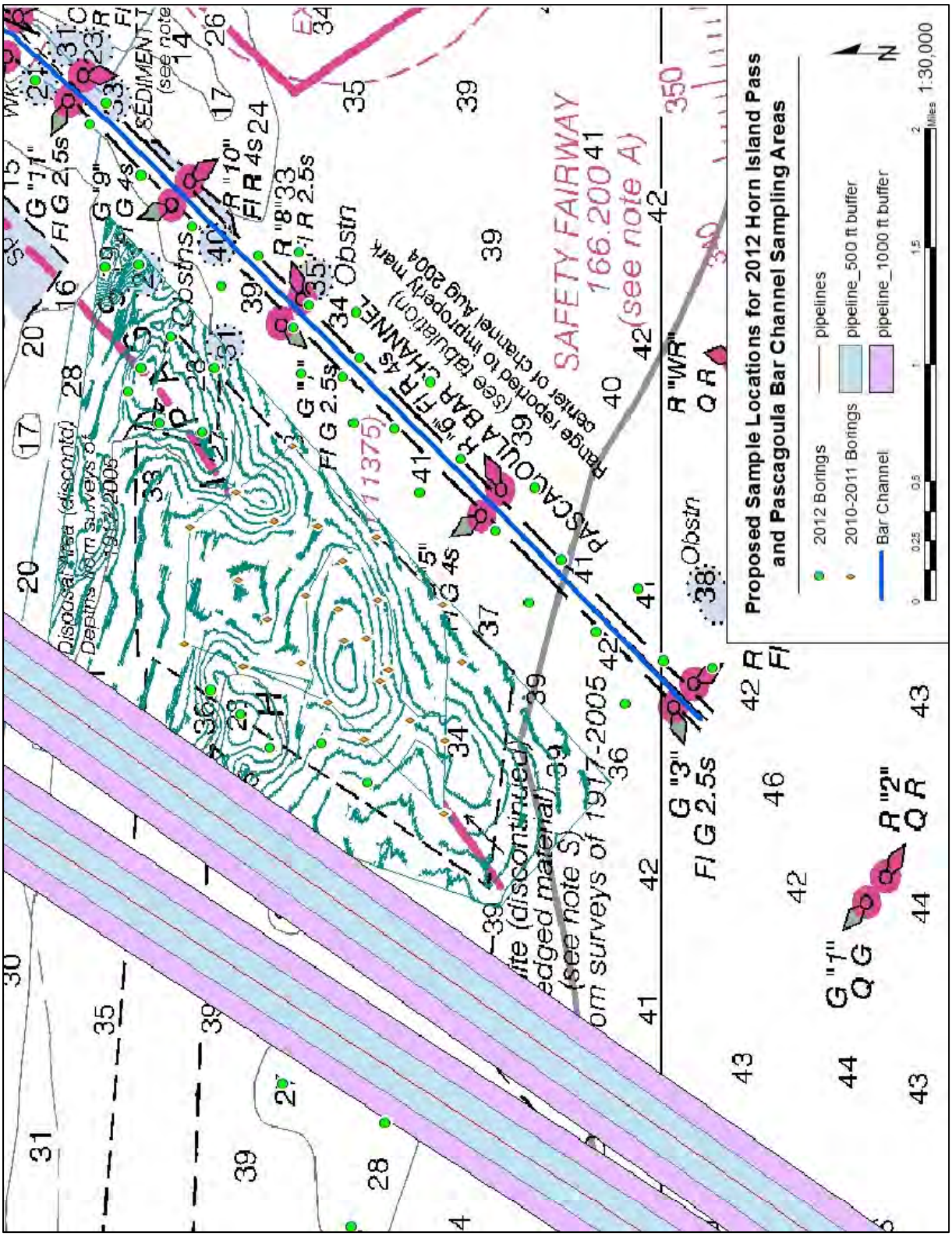


Figure 2.5.1. Borings taken for the 2012 Horn Island Pass and Pascagoula Bar Channel sampling. The dredge disposal mounds are evident in the bathymetry of the study area.

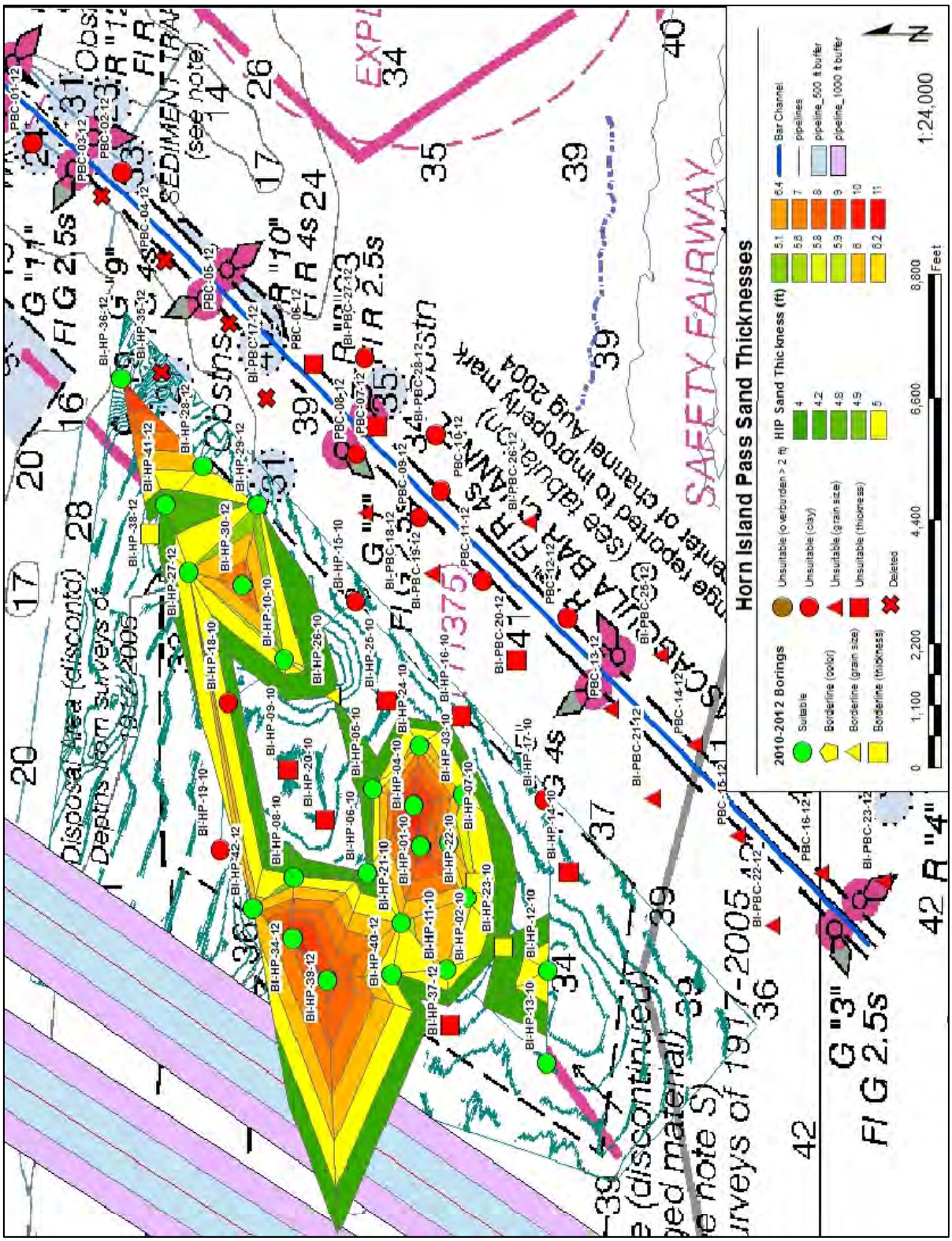


Figure 2.5.2 Horn Island Pass sand thicknesses based on boring data.

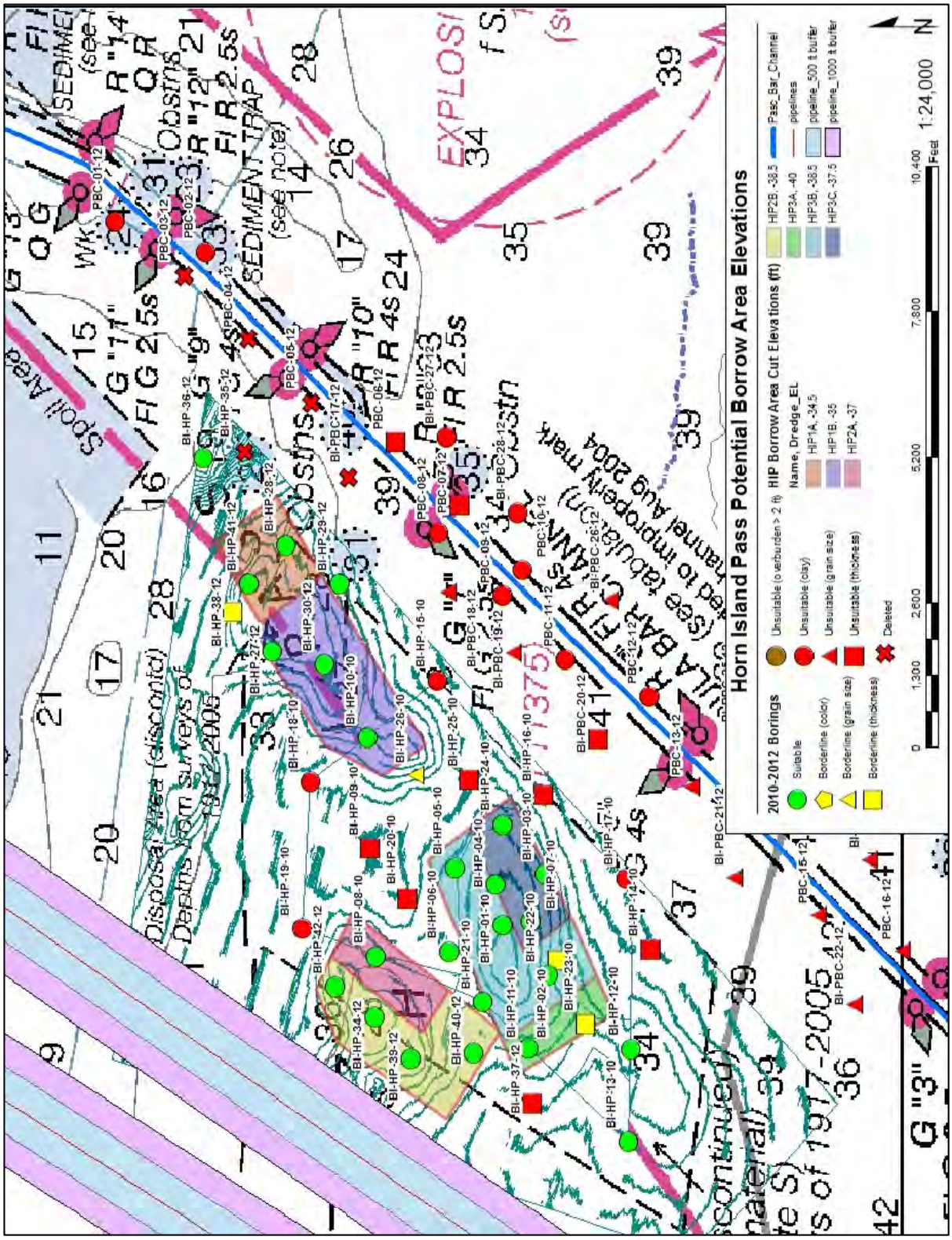


Figure 2.5.3 Horn Island Pass potential borrow areas with cut elevations.

3.0 CONCLUSION

The 2012 geotechnical sampling event began in November 2012 and was completed in January 2013. Based on the results of the sampling, USACE Mobile identified several areas that offer suitable sand in economically feasible quantities. These areas for potential borrow are the Horn Island Pass, Petit Bois South-OCS, and Petit Bois Pass-Mississippi. The investigation also led to the potential expansion of the Petit Bois West and East borrow areas previously identified during the 2010-2011 geotechnical investigation conducted by Mobile District. Table 3.1 contains the statistics for the proposed borrow areas as of this report date, but do not necessarily reflect the final borrow area design.

Table 3.1 Potential Borrow Area statistics[2]

Borrow Area	Dredge Volume ()[3]	Area (Acres)	D50 (mm)	Area-weighted Percent Fines	Dry Munsell Value
Petit Bois East[1]	11.1	885	0.33	4	6
Petit Bois West[1]	2.5	380	0.28	4	6
Petit Bois Pass-MS	1.8	175	0.31	3	6.7
Petit Bois South-OCS	4.1	809	0.30	3.0	6.8
Horn Island Pass[1]	3.2	587	0.29	4.1	7
Total	22.7				

[1]Statistics for Horn Island Pass, Petit Bois West, and Petit Bois East include borings taken during the 2010, 2011, and 2012 sampling events. Therefore, these statistics may vary from the sample statistics for the 2012 sampling event.

[2]Borrow area statistics are volumetrically-weighted statistics. Changes in borrow area design will alter these statistics.

[3]Dredge volume is the borrow area template volume minus estimated losses due to dredging inefficiencies.

Based on the estimated placement site volumes of 13.4 mcy and 5.4 mcy for Camille Cut and East Ship Island, respectively, the combined estimated volume (22.7 mcy) of the borrow areas identified during the two previous sampling events (2010 and 2011) and this one (2012) are sufficient to meet the quantities needed for both projects (18.8 mcy).

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Appendix A: Magnetometer Survey

AMERICAN VIBRACORE
SERVICES

February 25, 2013



U.S. Army Corps of Engineers
Mobile District
109 Saint Joseph Street
Mobile Alabama 36602

Re: Mississippi Barrier Island Restoration Project

American Vibracore Services, Inc. is pleased to submit this report regarding the completion of the vibracore field work phase of this project.

Overview
American Vibracore Services, Inc. (AVS) under contract from the US Army Corps of Engineers Mobile District, conducted vibracore sampling operations offshore Mississippi from November 16th, 2012 through January 12th, 2013. A total of 230 vibracores were collected.

Magnetometer Survey
A magnetometer survey of all core locations was conducted prior to vibracore operations in order to identify any potential pipelines or hazards at these locations.

Vibracore Equipment
AVS's 85 foot steel hulled research vessel "Thunderforce" was used as a work platform for vibracore operations. AVS's large pneumatic coring machine was used to take all the vibracore samples. A penetrometer was used to measure and record all coring advance rates and penetration depths.

Core Processing and Laboratory Testing
All cores collected from the project were split and turned over to the USACE for onboard logging, photo-documentation, and sampling.

Reporting
The Magnetometer survey and Penetrometer logs are all contained in this report.

Closing
We appreciate the opportunity to be of service to the US Army Corps of Engineers Mobile District on this project and look forward to a continued relationship.

Respectfully Submitted,

3/4/2013

Frederick G Kaub P.G.
American Vibracore Services

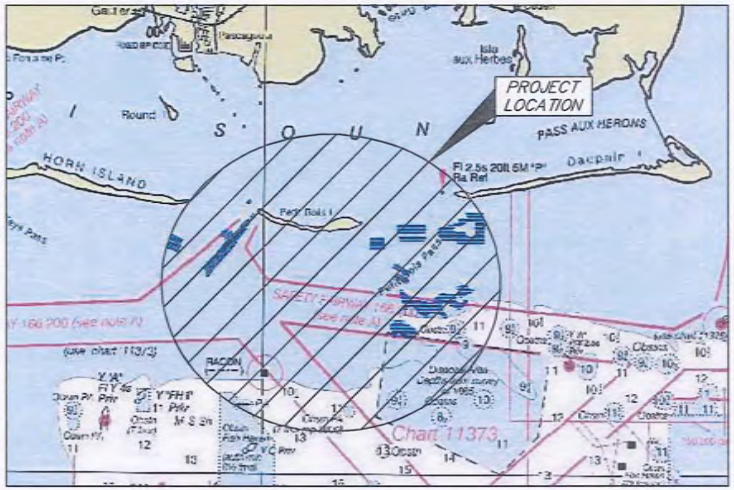
AMERICAN VIBRACORE SERVICES, INC.

HORN ISLAND/PETIT BOIS AREA

MAGNETOMETER SITE SURVEY

SOLICITATION NO.: W91278-12-T-0037

JACKSON CO., MISSISSIPPI AND MOBILE CO., ALABAMA



VICINITY MAP (N.T.S.)

INDEX TO SHEETS

SHEET NO.	DESCRIPTION
1	TITLE VIEW
2-8	PLAN VIEW
9	MAGNETIC ANOMALY TABLE

REVISED BY:	DATE:

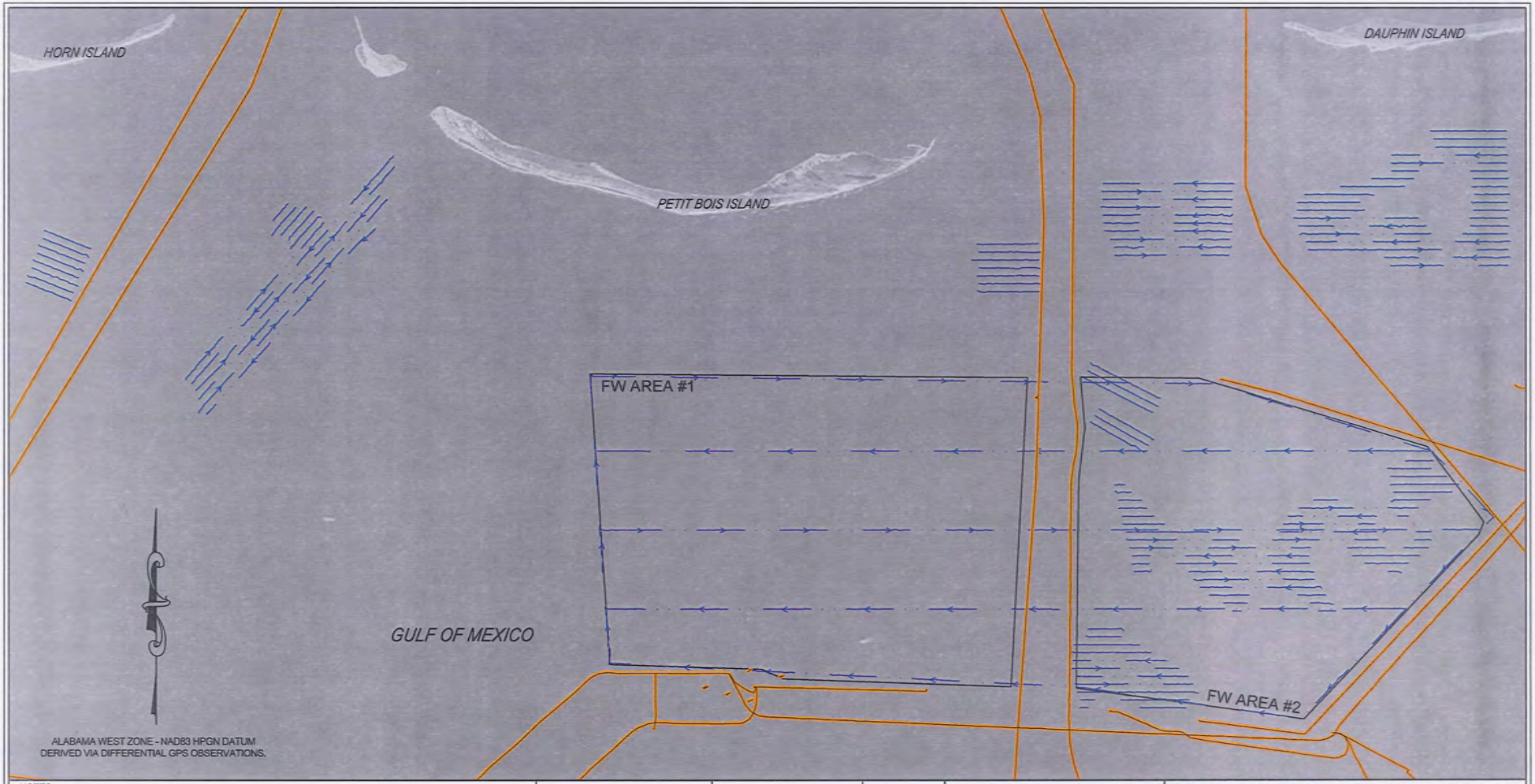
PLAN SCALE
SCALE: NTS

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HYDROTERRA TECHNOLOGIES, LLC
AMERICAN VIBRACORE SERVICE

AMERICAN VIBRACORE SERVICES, INC.
HORN ISLAND/PETIT BOIS AREA
MAGNETOMETER
SITE SURVEY
TITLE PAGE
JACKSON CO., MISSISSIPPI AND MOBILE CO., ALABAMA

DATE: 11/12/12 | JOB# 2121063 | FILE: 2121063-Olin Hydrographic Solutions- Pascagoula Mag Survey Submittal.dwg | SHEET: 1 OF 9



NOTES:

1. ALL HORIZONTAL COORDINATES ARE BASED ON ALABAMA WEST ZONE - NAD83 HPGN DATUM, US SURVEY FOOT AS DERIVED FROM DIFFERENTIAL GPS OBSERVATIONS.
2. MAGNETOMETER DATA WAS OBTAINED WITH A GEOMETRICS 882 CESIUM MAGNETOMETER.
3. GEOGRAPHIC INFORMATION DATA WAS OBTAINED FROM NOAA ENC DIRECT AND THE MMS G. O. M. DATABASE.
4. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.
5. SURVEY DATA ACQUISITION WAS PERFORMED NOVEMBER 1-8, 2012.
6. THE INTENTION OF THIS DRAWING IS TO SHOW THE LOCATIONS OF MAGNETIC ANOMALIES WITHIN THE PROJECT AREA TO AID IN THE DETERMINATION OF THE LOCATION OF POSSIBLE PIPELINE HAZARDS. NO EFFORT WAS MADE TO VERIFY THE SIZE OR DEPTH OF COVER OF ANY PIPELINES SHOWN HEREIN. ALSO, NO EFFORT WAS MADE TO VERIFY ANY CULTURAL RESOURCES WITHIN THE PROJECT AREA.

LEGEND

- APPROX. PIPELINE LOCATION (see Note 3)
- MAGNETOMETER SURVEY ROUTE

REVISED BY:	DATE:

HORIZONTAL SCALE

6000' 0' 3000' 6000'

DATE: 11/12/12 | JOB# 2121063

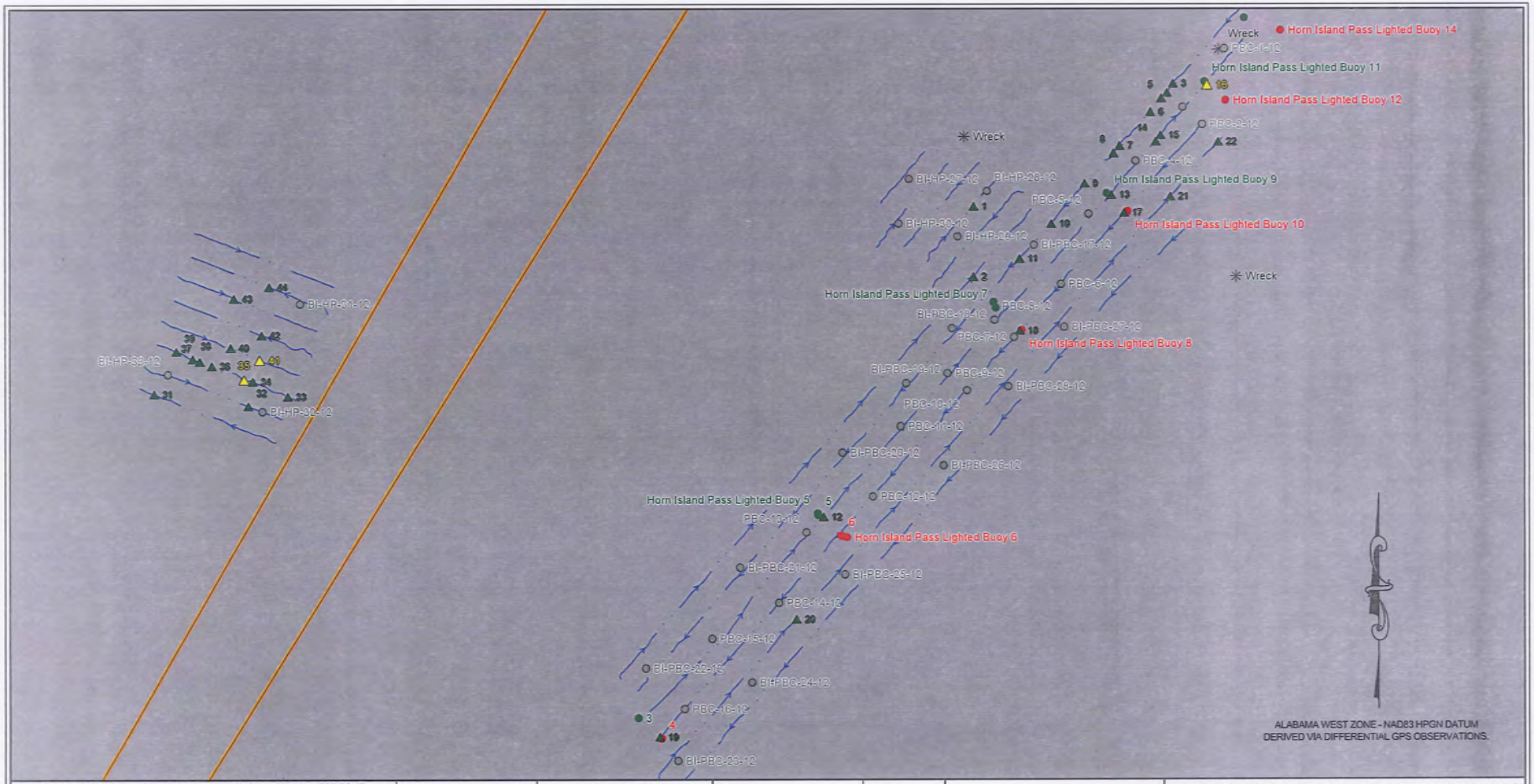
HYDROTERRA TECHNOLOGIES, LLC
LAND SURVEY AND HYDROGRAPHIC SOLUTIONS

AMERICAN VIBRACORE SERVICE

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HORN ISLAND/PETIT BOIS AREA
MAGNETOMETER SITE SURVEY
PLAN VIEW
JACKSON CO., MISSISSIPPI AND MOBILE CO., ALABAMA

FILE: 2121063-Olin Hydrographic Solutions- Pascagoula Mag Survey SubmittalLdwg

SHEET: 2 OF 9



1. ALL HORIZONTAL COORDINATES ARE BASED ON ALABAMA WEST ZONE NAD83 HPGN DATUM, US SURVEY FOOT AS DERIVED FROM DIFFERENTIAL GPS OBSERVATIONS.
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GAMMA AMPLITUDE

- 1-50 GAMMAS
- 51-100 GAMMAS
- 101-500 GAMMAS
- 501-1000 GAMMAS
- > 1001 GAMMAS

LEGEND

- APPROX. PIPELINE LOCATION (see Note 3)
- MAGNETOMETER SURVEY ROUTE
- PROPOSED BORING LOCATION
- NAVIGATION BUOY
- NAVIGATION BUOY
- REPORTED WRECK LOCATION (see Note 3)

REVISED BY:	DATE:

HORIZONTAL SCALE

2000' 0' 1000' 2000'

DATE: 11/12/12 JOB# 2121063

HYDROTERRA TECHNOLOGIES, LLC LAND SURVEY AND HYDROGRAPHIC SOLUTIONS

AMERICAN VIBRACORE SERVICE

AMERICAN VIBRACORE SERVICES, INC.

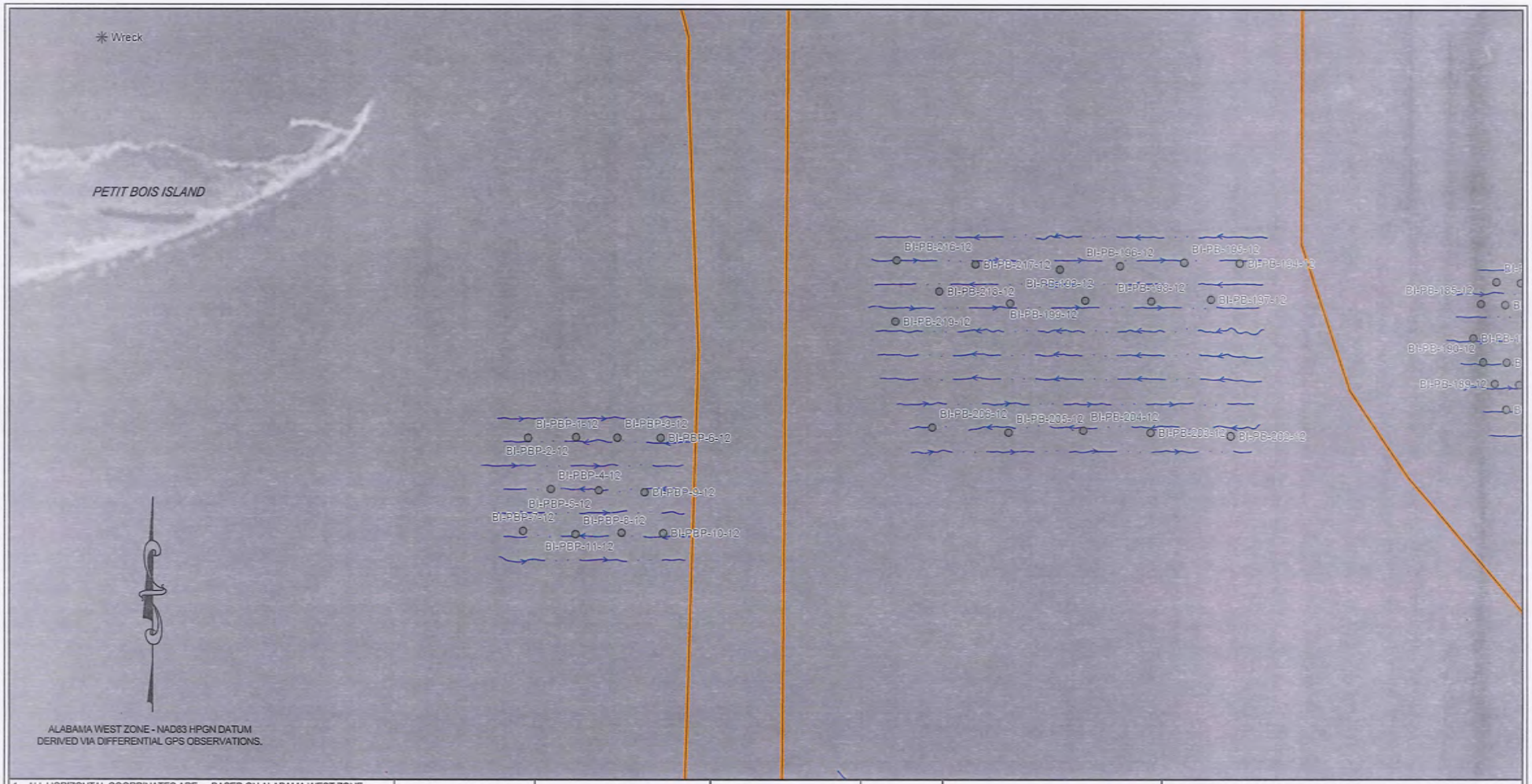
HORN ISLAND/PETIT BOIS AREA

MAGNETOMETER SITE SURVEY

PLAN VIEW

JACKSON CO., MISSISSIPPI AND MOBILE CO., ALABAMA

FILE: 2121063-Olin Hydrographic Solutions- Pascagoula Mag Survey Submittal.dwg



ALABAMA WEST ZONE - NAD83 HPGN DATUM
DERIVED VIA DIFFERENTIAL GPS OBSERVATIONS.

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GAMMA AMPLITUDE
1-50 GAMMAS
51-100 GAMMAS
101-500 GAMMAS
501-1000 GAMMAS
> 1001 GAMMAS

LEGEND
APPROX. PIPELINE LOCATION (see Note 3)
MAGNETOMETER SURVEY ROUTE
PROPOSED BORING LOCATION
NAVIGATION BUOY
NAVIGATION BUOY
REPORTED WRECK LOCATION (see Note 3)

REVISED BY:	DATE:

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DATE: 11/12/12 JOB# 2121063

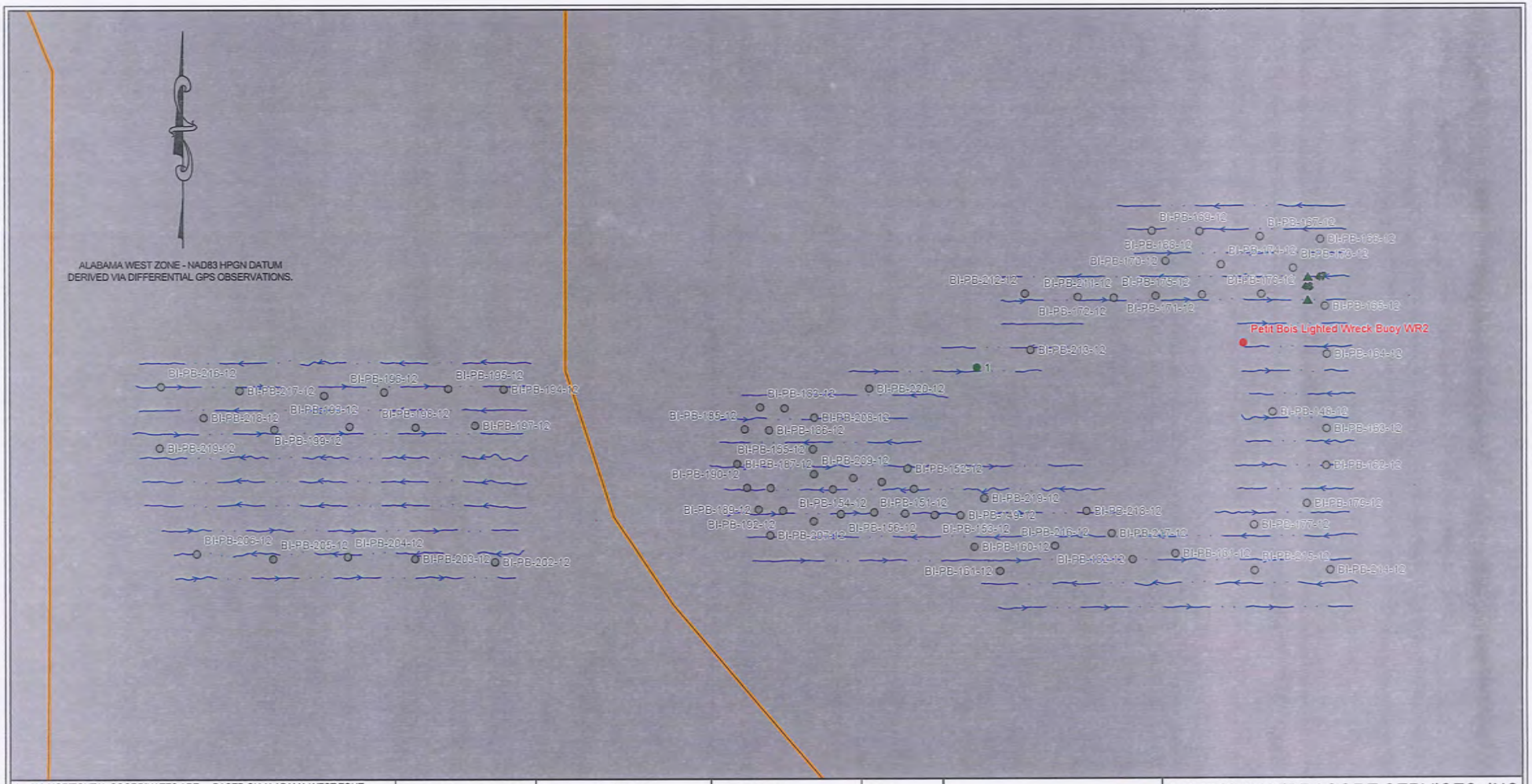
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LAND SURVEY AND HYDROGRAPHIC SOLUTIONS

AMERICAN VIBRACORE SERVICE

AMERICAN VIBRACORE SERVICES, INC.
HORN ISLAND/PETIT BOIS AREA
MAGNETOMETER SITE SURVEY
PLAN VIEW
JACKSON CO., MISSISSIPPI AND MOBILE CO., ALABAMA

FILE: 2121063-Olin Hydrographic Solutions- Pascagoula Mag Survey Submittal.dwg

SHEET: 4 OF 9



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GAMMA AMPLITUDE

- 1-50 GAMMAS
- 51-100 GAMMAS
- 101-500 GAMMAS
- 501-1000 GAMMAS
- > 1001 GAMMAS

LEGEND

- APPROX. PIPELINE LOCATION (see Note 3)
- MAGNETOMETER SURVEY ROUTE
- PROPOSED BORING LOCATION
- NAVIGATION BUOY
- NAVIGATION BUOY
- REPORTED WRECK LOCATION (see Note 3)

REVISED BY:	DATE:

HORIZONTAL SCALE

2000' 0' 1000' 2000'

DATE: 11/12/12 JOB# 2121063

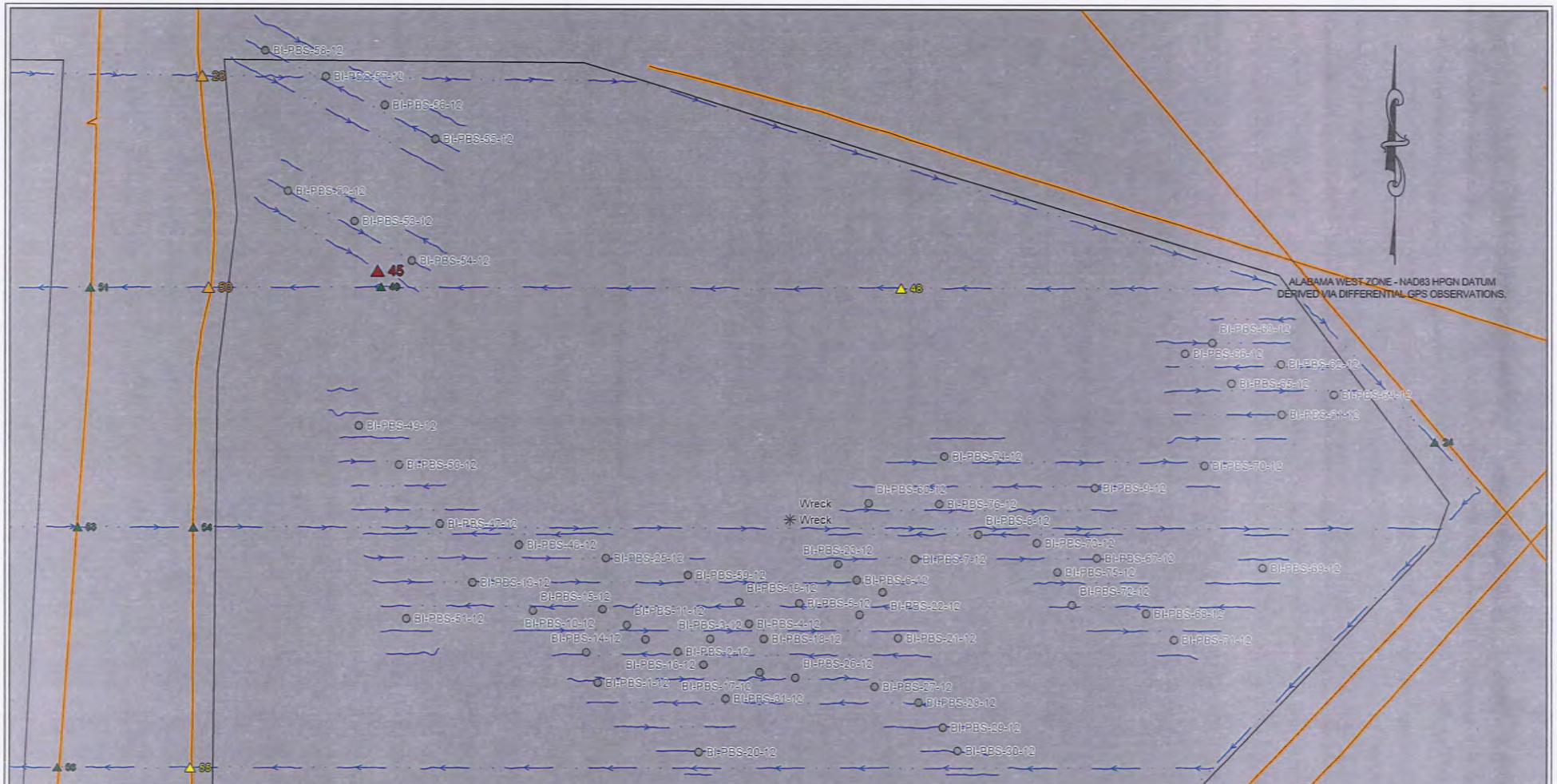
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2000' 0' 1000' 2000'

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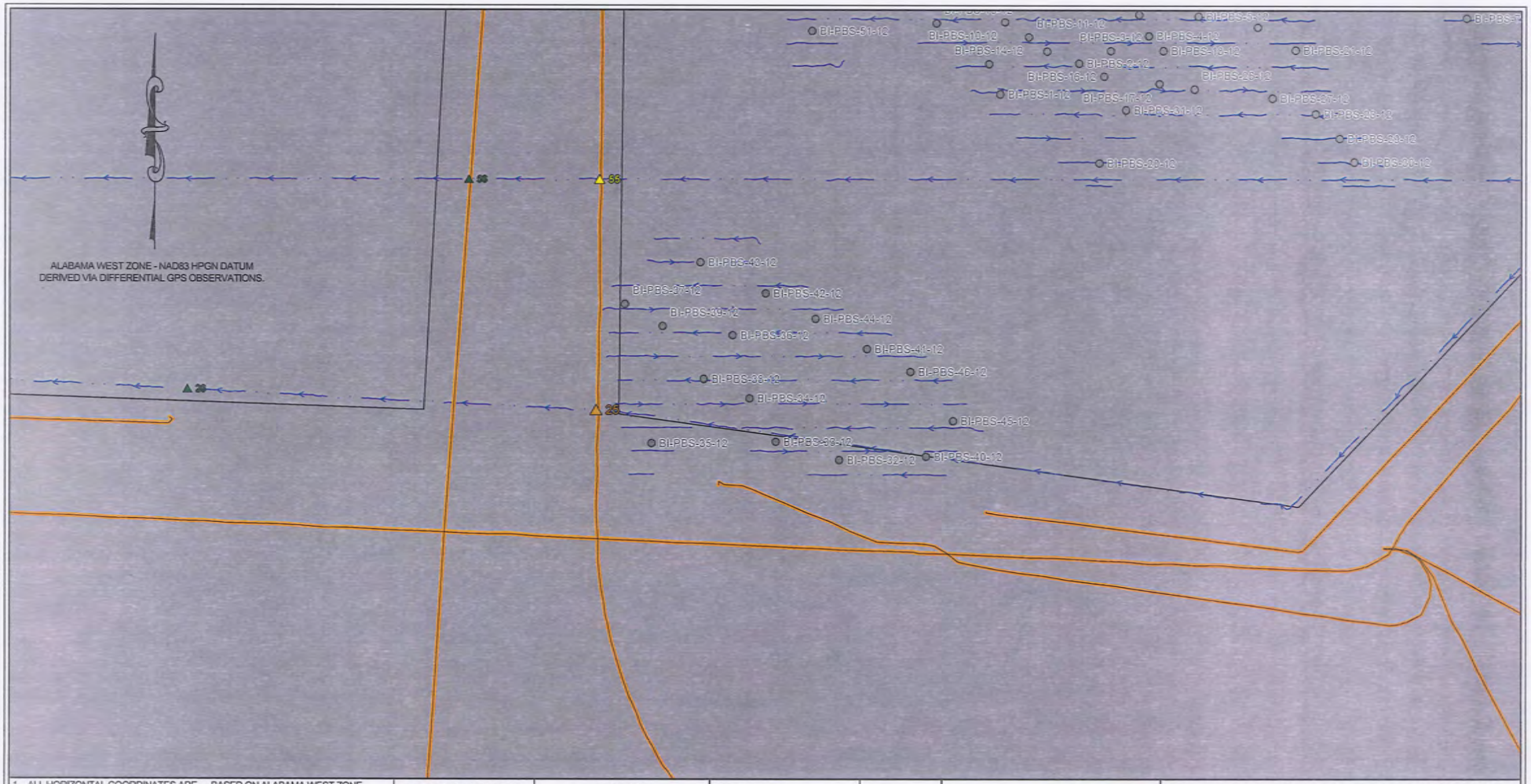
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4000' 0' 2000' 4000'

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HYDROTERRA TECHNOLOGIES, LLC LAND SURVEY AND HYDROGRAPHIC SOLUTIONS

AMERICAN VIBRACORE SERVICE

AMERICAN VIBRACORE SERVICES, INC.
HORN ISLAND/PETIT BOIS AREA
MAGNETOMETER SITE SURVEY
PLAN VIEW

JACKSON CO., MISSISSIPPI AND MOBILE CO., ALABAMA

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SHEET: 8 OF 9

Ref	Line	Easting	Northing	Signature Amplitude	Signature Width	Signature Type	Description
1	10	1642265	72747	14	91	Monopole	
2	13	1642260	71251	42	242	Dipole	
3	12	1646485	75322	16	153	Dipole	
4	12	1646357	75131	28	1342	Monopole	
5	12	1646236	75015	50	126	Monopole	
6	12	1646007	74728	14	184	Dipole	
7	12	1645352	74017	18	212	Complex	
8	12	1645223	73868	19	119	Dipole	
9	12	1644614	73233	31	307	Dipole	
10	12	1643908	72378	11	401	Monopole	
11	12	1643238	71637	24	531	Dipole	
12	11	1639087	66180	24	741	Dipole	NavBuoy
13	11	1645174	72991	48	523	Monopole	NavBuoy
14	11	1646117	74107	16	258	Dipole	
15	11	1646219	74237	10	245	Dipole	
16	11	1647199	75294	88	288	Monopole	NavBuoy
17	19	1645446	72612	22	394	Dipole	NavBuoy
18	19	1643240	70113	21	362	Dipole	NavBuoy
19	19	1635626	61529	50	214	Monopole	NavBuoy
20	10	1638516	64018	12	258	Dipole	
21	10	1646423	72956	18	210	Dipole	
22	10	1647436	74098	36	308	Dipole	
23	1	1690923	62603	143	332	Monopole	Pipeline
24	1	1716578	55027	23	697	Monopole	
25	1	1690623	43335	322	1405	Monopole	Pipeline
26	1	1681975	43771	23	3167	Monopole	Pipeline
27	1	1674376	44153	13	2255	Monopole	
28	1	1672483	44252	201	1777	Monopole	Pipeline
29	1	1670462	44329	265	1436	Dipole	Pipeline
30	1	1669082	44430	481	1773	Monopole	Pipeline
31	1	1624952	68786	12	139	Dipole	
32	8	1626938	68530	48	222	Complex	
33	7	1627772	68733	11	129	Monopole	
34	7	1627032	69052	30	184	Monopole	
35	7	1626850	69089	88	278	Complex	
36	7	1626167	69383	26	115	Dipole	
37	7	1625916	69470	24	177	Monopole	
38	7	1625765	69525	14	133	Dipole	
39	7	1625418	69684	15	173	Dipole	
40	7	1626565	69762	20	183	Monopole	
41	7	1627179	69505	60	291	Complex	
42	5	1627221	70026	14	118	Dipole	

Ref	Line	Easting	Northing	Signature Amplitude	Signature Width	Signature Type	Description
43	4	1626638	70803	22	171	Dipole	
44	3	1627381	71048	22	136	Monopole	
45	78	1694579	58581	830	1100	Dipole	
46	102	1717522	76473	14	279	Monopole	
47	101	1717525	76961	23	196	Dipole	
48	3	1705475	58224	61	1670	Monopole	
49	3	1694651	58241	13	2059	Monopole	
50	3	1691061	58226	320	1431	Monopole	Pipeline
51	3	1688596	58221	7	886	Dipole	Pipeline
52	3	1663371	58235	10	604	Monopole	
53	2	1688341	53227	5	536	Dipole	Pipeline
54	2	1690753	53223	49	745	Complex	Pipeline
55	1	1690690	48226	63	912	Monopole	Pipeline
56	1	1687922	48225	7	822	Dipole	Pipeline
57	1	1671197	48218	18	675	Dipole	

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HORIZONTAL SCALE

4000' 0' 2000' 4000'

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DATE: 11/12/12 | JOB# 2121063 | FILE: 2121063-Olin Hydrographic Solutions- Pascagoula Mag Survey Submittal.dwg | SHEET: 9 OF 9

Appendix B: Petit Bois East and West Boring Logs, Penetrometer Logs, and Lab Results

Table B-1 Petit Bois East and West Vibracore Samples

BORING	SAMPLE DEPTH (ft)	LOCATION	LATITUDE	LONGITUDE	USCS_Log	USCS_Lab	ANGULARITY	WET COLOR CODE	WET MUNSELL VALUE	WET COLOR	DRY COLOR CODE	DRY MUNSELL VALUE	DRY COLOR	D_{50}	% FINES	Composite D50	Composite Fines
BI-PB-148-12																0.31	6.50
BI-PB-148-12a	2.5-7	Petit Bois Pass	30.2013	-88.2969	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.2938	7.2		
BI-PB-148-12b	7-12	Petit Bois Pass	30.2013	-88.2969	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	2.5Y 6/2	6	LT BROWNISH GRAY	0.3179	6.2		
BI-PB-148-12c	12-16	Petit Bois Pass	30.2013	-88.2969	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/1	6	GRAY	0.3206	6.1		
BI-PB-149-12		Petit Bois Pass	30.1952	-88.3177	SC	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-150-12		Petit Bois Pass	30.1953	-88.3214	CH	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-151-12		Petit Bois Pass	30.1967	-88.3209												0.37	2.95
BI-PB-151-12a	1.5-5	Petit Bois Pass	30.1967	-88.3209	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3501	4.3		
BI-PB-151-12b	5-10	Petit Bois Pass	30.1967	-88.3209	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 7/1	7	LT GRAY	5Y 8/1	8	WHITE	0.3798	2		
BI-PB-152-12		Petit Bois Pass	30.1979	-88.3213												0.33	3.94
BI-PB-152-12a	0-1.2	Petit Bois Pass	30.1979	-88.3213	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.2879	2		
BI-PB-152-12b	2.8-5.9	Petit Bois Pass	30.1979	-88.3213	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3404	3.1		
BI-PB-152-12c	5.9-10.9	Petit Bois Pass	30.1979	-88.3213	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/1	6	GRAY	5Y 7/1	7	LT GRAY	0.3417	2.5		
BI-PB-152-12d	12.0-13.8	Petit Bois Pass	30.1979	-88.3213	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 5/1	6	GRAY	5Y 7/1	7	LT GRAY	0.2892	10.7		
BI-PB-153-12		Petit Bois Pass	30.1952	-88.3195	CH	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-154-12		Petit Bois Pass	30.1967	-88.3263												0.30	2.90
BI-PB-154-12a	0-2.3	Petit Bois Pass	30.1967	-88.3263	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 7/2	7	LT GRAY	0.296	2.9		
BI-PB-155-12		Petit Bois Pass	30.1990	-88.3277												0.29	3.30
BI-PB-155-12a	8.4-13.4	Petit Bois Pass	30.1990	-88.3277	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 4/4	4	OLIVE	5Y 6/4	6	PALE OLIVE	0.2932	3.3		
BI-PB-156-12		Petit Bois Pass	30.1953	-88.3257												0.29	1.50
BI-PB-156-12a	0.0-1.6	Petit Bois Pass	30.1953	-88.3257	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 7/2	7	LT GRAY	0.2901	1.5		
BI-PB-157-12		Petit Bois Pass	30.1974	-88.3249												0.34	2.22
BI-PB-157-12a	0-5	Petit Bois Pass	30.1974	-88.3249	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3406	2.4		
BI-PB-157-12b	5-7.8	Petit Bois Pass	30.1974	-88.3249	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3525	1.9		
BI-PB-158-12		Petit Bois Pass	30.1971	-88.3230												0.34	4.96
BI-PB-158-12a	0-1.4	Petit Bois Pass	30.1971	-88.3230	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.4123	2.1		
BI-PB-158-12b	1.4-4.7	Petit Bois Pass	30.1971	-88.3230	SP	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3581	5.8		
BI-PB-158-12c	4.7-7.3	Petit Bois Pass	30.1971	-88.3230	SP-SM	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3364	1.8		
BI-PB-158-12d	7.3-9.7	Petit Bois Pass	30.1971	-88.3230	SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 5/2	5	OLIVE GRAY	0.259	8.9		
BI-PB-159-12		Petit Bois Pass	30.1954	-88.3235	CH	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-160-12		Petit Bois Pass	30.1933	-88.3168	CH	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-161-12		Petit Bois Pass	30.1920	-88.3151	CH	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-162-12		Petit Bois Pass	30.1983	-88.2933												0.32	5.77
BI-PB-162-12a	0-5	Petit Bois Pass	30.1983	-88.2933	SP-SM	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.33	4.8		
BI-PB-162-12b	5-10	Petit Bois Pass	30.1983	-88.2933	SP-SM	SP	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.316	4.7		
BI-PB-162-12c	10-15	Petit Bois Pass	30.1983	-88.2933	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/1.5	5	GRAYSIH BROWN	2.5Y 6/1	6	GRAY	0.3059	7.8		
BI-PB-163-12		Petit Bois Pass	30.2004	-88.2933												0.31	6.56
BI-PB-163-12a	0-5	Petit Bois Pass	30.2004	-88.2933	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.304	7.2		
BI-PB-163-12b	5-10	Petit Bois Pass	30.2004	-88.2933	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.3062	5.7		
BI-PB-163-12c	10-13.2	Petit Bois Pass	30.2004	-88.2933	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/1	5	GRAY	2.5Y 6/1	6	GRAY	0.3121	6.9		
BI-PB-164-12		Petit Bois Pass	30.2047	-88.2933												0.33	3.07
BI-PB-164-12a	0-2.6	Petit Bois Pass	30.2047	-88.2933	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.3369	2		
BI-PB-164-12b	2.6-5	Petit Bois Pass	30.2047	-88.2933	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3388	4.2		
BI-PB-164-12c	5-8.7	Petit Bois Pass	30.2047	-88.2933	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT BROWNISH GRAY	5Y 7/2	7	LT GRAY	0.3269	3		
BI-PB-164-12d	8.7-10	Petit Bois Pass	30.2047	-88.2933	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.3079	5.6		
BI-PB-165-12		Petit Bois Pass	30.2075	-88.2934												0.33	3.16
BI-PB-165-12a	1.3-1.9	Petit Bois Pass	30.2075	-88.2934	SP	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYSIH BROWN	2.5Y 7/2	7	LT GRAY	0.3143	7.9		
BI-PB-165-12b	1.9-2.8	Petit Bois Pass	30.2075	-88.2934	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 8/1	8	WHITE	5Y 8/1	8	WHITE	0.3783	2.1		
BI-PB-165-12c	2.8-3.5	Petit Bois Pass	30.2075	-88.2934	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 8/1	8	WHITE	2.5Y 8.5/1	8.5	WHITE	0.3381	1.3		
BI-PB-165-12d	3.5-10	Petit Bois Pass	30.2075	-88.2934	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/1	6	GRAY	2.5Y 7/1	7	LT GRAY	0.3332	2.4		
BI-PB-165-12e	10-15	Petit Bois Pass	30.2075	-88.2934	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 8/1	8	WHITE	2.5Y 8/1	8	WHITE	0.3237	1.9		

BORING	SAMPLE DEPTH (ft)	LOCATION	LATITUDE	LONGITUDE	USCS_Log	USCS_Lab	ANGULARITY	WET COLOR CODE	WET MUNSELL VALUE	WET COLOR	DRY COLOR CODE	DRY MUNSELL VALUE	DRY COLOR	D_{50}	% FINES	Composite D50	Composite Fines
BI-PB-166-12		Petit Bois Pass	30.2114	-88.2938	CH	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-167-12		Petit Bois Pass	30.2116	-88.2978	CH	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-168-12		Petit Bois Pass	30.2118	-88.3019												0.35	4.10
BI-PB-168-12a	13.5-16	Petit Bois Pass	30.2118	-88.3019	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT GRAYISH BROWN	0.3461	4.1		
BI-PB-169-12		Petit Bois Pass	30.2119	-88.3050												0.19	17.30
BI-PB-169-12a	0.2-2.4	Petit Bois Pass	30.2119	-88.3050	SM	SM	SUBANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 5/2	5	OLIVE GRAY	0.1874	17.3		
BI-PB-170-12		Petit Bois Pass	30.2101	-88.3041	CH	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-171-12		Petit Bois Pass	30.2083	-88.3016												0.33	9.91
BI-PB-171-12a	1.7-2.7	Petit Bois Pass	30.2083	-88.3016	SP-SC	SM	SUBANGULAR TO SUBROUNDED	2.5Y 4.5/2	4.5	GRAYISH BROWN	2.5Y 5.5/2	5.5	LT BROWNISH GRAY	0.3161	14.8		
BI-PB-171-12b	2.7-5	Petit Bois Pass	30.2083	-88.3016	SP	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/1	5	GRAY	2.5Y 6/1	6	GRAY	0.3062	9.2		
BI-PB-171-12c	5-10	Petit Bois Pass	30.2083	-88.3016	SP	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.3267	8.2		
BI-PB-171-12d	14.2-16.3	Petit Bois Pass	30.2083	-88.3016	SP	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7.5/2	7.5	PALE BROWN	0.3833	10.8		
BI-PB-172-12		Petit Bois Pass	30.2080	-88.3076												0.29	6.65
BI-PB-172-12a	0-.5	Petit Bois Pass	30.2080	-88.3076	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6.5/2	6.5	LT GRAY	2.5Y 7/2	7	LT GRAY	0.351	0.3		
BI-PB-172-12b	3.1-3.6	Petit Bois Pass	30.2080	-88.3076	SP-SC	SC	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5.5/2	5.5	LT BROWNISH GRAY	0.2973	19.9		
BI-PB-172-12c	3.6-5.2	Petit Bois Pass	30.2080	-88.3076	SP-SM	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5.5/2	5.5	LT BROWNISH GRAY	2.5Y 6/2	6	LT BROWNISH GRAY	0.2958	2.9		
BI-PB-172-12d	5.2-10.9	Petit Bois Pass	30.2080	-88.3076	SP	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 7/1	7	LT GRAY	0.2886	7.1		
BI-PB-173-12		Petit Bois Pass	30.2097	-88.2956												0.34	3.42
BI-PB-173-12a	0.0-0.8	Petit Bois Pass	30.2097	-88.2956	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/2	7	LT GRAY	2.5Y 7/2	7	LT GRAY	0.3643	1.4		
BI-PB-173-12b	1.9-3.1	Petit Bois Pass	30.2097	-88.2956	SM	SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/1	5	GRAY	2.5Y 6/2	6	LT BROWNISH GRAY	0.3054	17.8		
BI-PB-173-12c	3.1-8.6	Petit Bois Pass	30.2097	-88.2956	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/2	7	LT GRAY	2.5Y 8/2	8	PALE BROWN	0.3463	2		
BI-PB-173-12d	8.6-13.6	Petit Bois Pass	30.2097	-88.2956	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 8/1	8	WHITE	5Y 8/1	8	WHITE	0.3297	1.7		
BI-PB-174-12		Petit Bois Pass	30.2099	-88.3004	CH	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-175-12		Petit Bois Pass	30.2081	-88.3047												0.31	5.07
BI-PB-175-12a	4.2-5.8	Petit Bois Pass	30.2081	-88.3047	SP	SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.3147	12.1		
BI-PB-175-12b	5.8-8.3	Petit Bois Pass	30.2081	-88.3047	SP-SM	SP-SM								0.3027	5.7		
BI-PB-175-12c	8.3-11.3	Petit Bois Pass	30.2081	-88.3047	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3228	2.7		
BI-PB-175-12d	11.3-15.8	Petit Bois Pass	30.2081	-88.3047	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 8/1	8	WHITE	2.5Y 8/1	8	WHITE	0.3078	3.8		
BI-PB-176-12		Petit Bois Pass	30.2082	-88.2977												0.33	2.09
BI-PB-176-12a	0-1	Petit Bois Pass	30.2082	-88.2977	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 5.5/2	5.5	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3059	10.9		
BI-PB-176-12b	2.6-3.7	Petit Bois Pass	30.2082	-88.2977	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/1.5	5	GRAYISH BROWN	2.5Y 6/1	6	GRAY	0.3161	10.5		
BI-PB-176-12c	3.7-4.8	Petit Bois Pass	30.2082	-88.2977	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 6/1.5	6	LT BROWNISH GRAY	2.5Y 7/1	8	LT GRAY	0.3331	6.3		
BI-PB-176-12d	4.8-9.3	Petit Bois Pass	30.2082	-88.2977	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7.5/2	7.5	PALE BROWN	2.5Y 8/1	8	WHITE	0.3417	0.5		
BI-PB-176-12e	9.3-14.3	Petit Bois Pass	30.2082	-88.2977	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 8/1	8	WHITE	2.5Y 8/1	8	WHITE	0.3202	1.8		
BI-PB-177-12		Petit Bois Pass	30.1948	-88.2981												0.36	2.40
BI-PB-177-12a	0.0-4.3	Petit Bois Pass	30.1948	-88.2981	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.3539	5.9		
BI-PB-177-12b	4.3-9.3	Petit Bois Pass	30.1948	-88.2981	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/1	6	GRAY	2.5Y 7/1	7	LT GRAY	0.3615	1.9		
BI-PB-177-12c	9.3-14.3	Petit Bois Pass	30.1948	-88.2981	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/1	6	GRAY	5Y 7/1	7	LT GRAY	0.3621	0.7		
BI-PB-177-12d	14.3-19.3	Petit Bois Pass	30.1948	-88.2981	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/1	6	GRAY	5Y 7/1	7	LT GRAY	0.3802	1.6		
BI-PB-179-12		Petit Bois Pass	30.1960	-88.2946												0.32	5.90
BI-PB-179-12a	0.0-2.2	Petit Bois Pass	30.1960	-88.2946	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3679	0.9		
BI-PB-179-12b	2.2-7.2	Petit Bois Pass	30.1960	-88.2946	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.3187	8.2		
BI-PB-179-12c	7.2-12.2	Petit Bois Pass	30.1960	-88.2946	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 5/1	5	GRAY	2.5Y 6/1	6	GRAY	0.306	5.8		
BI-PB-179-12d	12.2-17.2	Petit Bois Pass	30.1960	-88.2946	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 4/1	4	DK GRAY	5Y 5/1	5	GRAY	0.305	5.9		
BI-PB-181-12		Petit Bois Pass	30.1930	-88.3033												0.33	2.38
BI-PB-181-12a	0.0-3.5	Petit Bois Pass	30.1930	-88.3033	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 5/2	5	OLIVE GRAY	0.3268	7.8		
BI-PB-181-12b	3.5-5.4	Petit Bois Pass	30.1930	-88.3033	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/1	6	GRAY	2.5Y 7/1	7	LT GRAY	0.3526	1.2		
BI-PB-181-12c	5.4-10.4	Petit Bois Pass	30.1930	-88.3033	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 7/1	7	LT GRAY	5Y 8/1	8	WHITE	0.3366	0.6		
BI-PB-181-12d	10.4-15.4	Petit Bois Pass	30.1930	-88.3033	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 8/1	8	WHITE	2.5Y 8.5/1	8.5	WHITE	0.3225	0.8		
BI-PB-182-12		Petit Bois Pass	30.1927	-88.3062												0.28	2.95
BI-PB-182-12a	0-2	Petit Bois Pass	30.1927	-88.3062	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/3	5	OLIVE	5Y 6/3	6	PALE OLIVE	0.3259	1.2		
BI-PB-182-12b	3.8-5	Petit Bois Pass	30.1927	-88.3062	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 5/1	5	GRAY	5Y 6/1	6	GRAY	0.2826	6.9		
BI-PB-182-12c	7-12	Petit Bois Pass	30.1927	-88.3062	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/1	6	GRAY	5Y 7/1	7	LT GRAY	0.2569	2.7		
BI-PB-183-12		Petit Bois Pass	30.2014	-88.3312												0.30	1.55
BI-PB-183-12a	0-2.2	Petit Bois Pass	30.2014	-88.3312	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3904	1.3		
BI-PB-183-12b	2.2-7.2	Petit Bois Pass	30.2014	-88.3312	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 7/2	7	LT GRAY	0.2611	2		

BORING	SAMPLE DEPTH (ft)	LOCATION	LATITUDE	LONGITUDE	USCS_Log	USCS_Lab	ANGULARITY	WET COLOR CODE	WET MUNSELL VALUE	WET COLOR	DRY COLOR CODE	DRY MUNSELL VALUE	DRY COLOR	D_{50}	% FINES	Composite D50	Composite Fines
BI-PB-183-12c	7.2-12.2	Petit Bois Pass	30.2014	-88.3312	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3022	1.2		
BI-PB-184-12		Petit Bois Pass	30.2014	-88.3296												0.29	2.37
BI-PB-184-12a	0-2.8	Petit Bois Pass	30.2014	-88.3296	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3403	1.6		
BI-PB-184-12b	2.8-6.1	Petit Bois Pass	30.2014	-88.3296	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/3	5	OLIVE	5Y 6/3	6	PALE OLIVE	0.2845	4		
BI-PB-184-12c	6.1-8.5	Petit Bois Pass	30.2014	-88.3296	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 7/1	7	LT GRAY	5Y 8/1	8	WHITE	0.2723	1.6		
BI-PB-184-12d	8.5-12.4	Petit Bois Pass	30.2014	-88.3296	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.2834	1.9		
BI-PB-185-12		Petit Bois Pass	30.2002	-88.3322												0.29	1.59
BI-PB-185-12a	0-2.1	Petit Bois Pass	30.2002	-88.3322	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2625	2		
BI-PB-185-12b	2.1-5.1	Petit Bois Pass	30.2002	-88.3322	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3152	1.3		
BI-PB-186-12		Petit Bois Pass	30.2001	-88.3306												0.28	2.91
BI-PB-186-12a	0-3.9	Petit Bois Pass	30.2001	-88.3306	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/3	6	PALE OLIVE	5Y 7/3	7	PALE YELLOW	0.3092	1.5		
BI-PB-186-12b	3.9-6.9	Petit Bois Pass	30.2001	-88.3306	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.2199	4.5		
BI-PB-186-12c	6.9-8.7	Petit Bois Pass	30.2001	-88.3306	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.3275	3.3		
BI-PB-187-12		Petit Bois Pass	30.1981	-88.3327												0.34	2.23
BI-PB-187-12a	1.1-2.2	Petit Bois Pass	30.1981	-88.3327	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 5/3	5	OLIVE	5Y 6/3	6	PALE OLIVE	0.2865	5.3		
BI-PB-187-12b	2.2-7.2	Petit Bois Pass	30.1981	-88.3327	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3462	1.2		
BI-PB-187-12c	7.2-12.2	Petit Bois Pass	30.1981	-88.3327	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3258	3		
BI-PB-187-12d	12.2-15.5	Petit Bois Pass	30.1981	-88.3327	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3816	1.6		
BI-PB-189-12		Petit Bois Pass	30.1955	-88.3312	ML	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-190-12		Petit Bois Pass	30.1968	-88.3320												0.30	3.50
BI-PB-190-12a	1.4-3.2	Petit Bois Pass	30.1968	-88.3320	SP-SM	SP-SM	ANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2746	7.7		
BI-PB-190-12b	3.2-8	Petit Bois Pass	30.1968	-88.3320	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 7/1	7	LT GRAY	5Y 8/1	8	WHITE	0.3087	2.3		
BI-PB-190-12c	8-10.3	Petit Bois Pass	30.1968	-88.3320	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.2838	2.7		
BI-PB-191-12		Petit Bois Pass	30.1967	-88.3305	ML	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-192-12		Petit Bois Pass	30.1954	-88.3296	CL-ML	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											
BI-PB-197-12		Petit Bois Pass	30.2003	-88.3503												0.28	5.58
BI-PB-197-12a	0.0-3.9.	Petit Bois Pass	30.2003	-88.3503	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.2933	5.5		
BI-PB-197-12b	3.9-5.2	Petit Bois Pass	30.2003	-88.3503	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.3028	2.4		
BI-PB-197-12c	5.2-7.6	Petit Bois Pass	30.2003	-88.3503	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 3/2	3	VERY DK GRAYISH BROV	2.5Y 4/2	4	DK GRAYISH BROWN	0.2985	5.9		
BI-PB-197-12d	7.6-9.4	Petit Bois Pass	30.2003	-88.3503	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 3/2	3	DK OLIVE GRAY	5Y 5/2	5	OLIVE GRAY	0.2174	7.6		
BI-PB-198-12		Petit Bois Pass	30.2002	-88.3543												0.28	3.64
BI-PB-198-12a	0.0-1.5	Petit Bois Pass	30.2002	-88.3543	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2842	1.5		
BI-PB-198-12b	1.5-6.0	Petit Bois Pass	30.2002	-88.3543	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.2867	2.5		
BI-PB-198-12c	6.0-11.0	Petit Bois Pass	30.2002	-88.3543	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 3/2	3	VERY DK GRAYISH BROV	2.5Y 5/2	5	GRAYISH BROWN	0.2777	5.3		
BI-PB-199-12		Petit Bois Pass	30.2002	-88.3587												0.30	2.55
BI-PB-199-12a	0-5	Petit Bois Pass	30.2002	-88.3587	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.3122	2.3		
BI-PB-199-12b	5-10.2	Petit Bois Pass	30.2002	-88.3587	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.2926	2.8		
BI-PB-200-12		Petit Bois Pass	30.2000	-88.3637												0.29	2.77
BI-PB-200-12a	0-2	Petit Bois Pass	30.2000	-88.3637	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.3185	3		
BI-PB-200-12b	2-5	Petit Bois Pass	30.2000	-88.3637	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 3/3	3	DK OLIVE BROWN	2.5Y 4/3	4	OLIVE BROWN	0.2803	2.2		
BI-PB-200-12c	5-7	Petit Bois Pass	30.2000	-88.3637	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.2484	2.9		
BI-PB-200-12d	7-10	Petit Bois Pass	30.2000	-88.3637	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.2966	3.1		
BI-PB-202-12		Petit Bois Pass	30.1924	-88.3489												0.33	1.79
BI-PB-202-12a	1.1-2.5	Petit Bois Pass	30.1924	-88.3489	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3014	2.1		
BI-PB-202-12b	2.-7.5	Petit Bois Pass	30.1924	-88.3489	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.34	1.7		
BI-PB-203-12		Petit Bois Pass	30.1925	-88.3542												0.31	4.50
BI-PB-203-12a	3.0-5.9	Petit Bois Pass	30.1925	-88.3542	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2		GRAYISH BROWN	2.5Y 6/2		LT BROWNISH GRAY	0.3135	4.5		
BI-PB-204-12		Petit Bois Pass	30.1926	-88.3588												0.30	4.03
BI-PB-204-12a	3.0-4.6	Petit Bois Pass	30.1926	-88.3588	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.2616	9.5		
BI-PB-204-12b	4.6-9.6	Petit Bois Pass	30.1926	-88.3588	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.3191	3.8		
BI-PB-204-12c	11.9-15.3	Petit Bois Pass	30.1926	-88.3588	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/1	6	GRAY	2,5Y 7/1	7	LT GRAY	0.2925	1.8		
BI-PB-205-12		Petit Bois Pass	30.1925	-88.3637												0.28	4.23
BI-PB-205-12a	0.0-2.6	Petit Bois Pass	30.1925	-88.3637	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.2473	3.9		
BI-PB-205-12b	3.3-7.2	Petit Bois Pass	30.1925	-88.3637	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.257	6.2		
BI-PB-205-12c	7.2-14.6	Petit Bois Pass	30.1925	-88.3637	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3122	3.3		
BI-PB-207-12		Petit Bois Pass	30.1940	-88.3305	SC	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.											

BORING	SAMPLE DEPTH (ft)	LOCATION	LATITUDE	LONGITUDE	USCS_Log	USCS_Lab	ANGULARITY	WET COLOR CODE	WET MUNSELL VALUE	WET COLOR	DRY COLOR CODE	DRY MUNSELL VALUE	DRY COLOR	D_{50}	% FINES	Composite D50	Composite Fines
BI-PB-208-12		Petit Bois Pass	30.2009	-88.3276												0.39	1.99
BI-PB-208-12a	0-2.6	Petit Bois Pass	30.2009	-88.3276	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6.5/2	6.5	LT GRAY	2.5Y 7/2	7	LT GRAY	0.3431	3.6		
BI-PB-208-12b	2.6-4.3	Petit Bois Pass	30.2009	-88.3276	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 8/2	8	PALE BROWN	2.5Y 8/1.5	8	PALE BROWN	0.448	0.8		
BI-PB-208-12c	4.3-7	Petit Bois Pass	30.2009	-88.3276	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.4003	1.2		
BI-PB-209-12		Petit Bois Pass	30.1975	-88.3276												0.27	6.31
BI-PB-209-12a	0-1.8	Petit Bois Pass	30.1975	-88.3276	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3221	1.3		
BI-PB-209-12b	2.3-3.5	Petit Bois Pass	30.1975	-88.3276	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 4/3	4	OLIVE BROWN	2.5Y 5/3	5	LT OLIVE BROWN	0.2077	9.1		
BI-PB-209-12c	4.8-5.4	Petit Bois Pass	30.1975	-88.3276	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 4/3	4	OLIVE	5Y 5/3	5	OLIVE	0.3033	11.2		
BI-PB-209-12d	5.4-7.2	Petit Bois Pass	30.1975	-88.3276	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.3191	3.4		
BI-PB-209-12e	7.2-12.2	Petit Bois Pass	30.1975	-88.3276	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 4/3	4	OLIVE	5Y 5/3	5	OLIVE	0.2832	4.4		
BI-PB-209-12f	12.2-17.2	Petit Bois Pass	30.1975	-88.3276	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 4/3	4	OLIVE	5Y 5/3	5	OLIVE	0.217	9.8		
BI-PB-210-12		Petit Bois Pass	30.1949	-88.3276	ML	UNSUITABLE MATERIAL. FIELD CLASSIFICATION ONLY. NO SAMPLE RETAINED FOR LAB CLASSIFICATION.										<Null>	<Null>
BI-PB-211-12		Petit Bois Pass	30.2080	-88.3100												0.34	2.69
BI-PB-211-12a	0-1.1	Petit Bois Pass	30.2080	-88.3100	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3143	3.2		
BI-PB-211-12b	5.1-7.2	Petit Bois Pass	30.2080	-88.3100	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/6	5	LT OLIVE BROWN	2.5Y 6/6	6	OLIVE YELLOW	0.3494	0.3		
BI-PB-211-12c	7.2-12.1	Petit Bois Pass	30.2080	-88.3100	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 7.5/2	7.5	PALE BROWN	0.3471	3.6		
BI-PB-212-12		Petit Bois Pass	30.2081	-88.3135												0.30	2.00
BI-PB-212-12a	0-2.7	Petit Bois Pass	30.2081	-88.3135	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 7/2	7	LT GRAY	0.3025	2		
BI-PB-213-12		Petit Bois Pass	30.2048	-88.3132												0.31	2.29
BI-PB-213-12a	0-4.3	Petit Bois Pass	30.2048	-88.3132	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3127	2.2		
BI-PB-213-12b	4.3-7.7	Petit Bois Pass	30.2048	-88.3132	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3014	2.4		
BI-PB-214-12		Petit Bois Pass	30.1921	-88.2930												0.36	2.25
BI-PB-214-12a	0.0-2.6	Petit Bois Pass	30.1921	-88.2930	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3065	1.3		
BI-PB-214-12b	3.3-5.4	Petit Bois Pass	30.1921	-88.2930	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.3526	6.3		
BI-PB-214-12c	5.4-10.5	Petit Bois Pass	30.1921	-88.2930	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3785	1.2		
BI-PB-214-12d	10.4-13.8	Petit Bois Pass	30.1921	-88.2930	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3913	2		
BI-PB-215-12		Petit Bois Pass	30.1921	-88.2980												0.35	4.03
BI-PB-215-12a	0.0-1.8	Petit Bois Pass	30.1921	-88.2980	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.301	3.2		
BI-PB-215-12b	2.7-4.1	Petit Bois Pass	30.1921	-88.2980	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.3459	3.8		
BI-PB-215-12c	4.1-6.2	Petit Bois Pass	30.1921	-88.2980	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.391	4.9		
BI-PB-216-12		Petit Bois Pass	30.1935	-88.3114												0.30	2.38
BI-PB-216-12a	0-4.4	Petit Bois Pass	30.1935	-88.3114	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2697	2.9		
BI-PB-216-12b	4.4-9.4	Petit Bois Pass	30.1935	-88.3114	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3399	2.7		
BI-PB-216-12c	9.4-14.4	Petit Bois Pass	30.1935	-88.3114	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.2911	1.6		
BI-PB-217-12		Petit Bois Pass	30.1942	-88.3076												0.34	4.94
BI-PB-217-12a	0-0.5	Petit Bois Pass	30.1942	-88.3076	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3234	1.3		
BI-PB-217-12b	1.2-5.7	Petit Bois Pass	30.1942	-88.3076	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 6/3	6	PALE OLIVE	5Y 7/3	7	PALE YELLOW	0.3352	5.9		
BI-PB-217-12c	5.7-8.7	Petit Bois Pass	30.1942	-88.3076	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.35	4.1		
BI-PB-218-12		Petit Bois Pass	30.1955	-88.3093												0.32	5.57
BI-PB-218-12a	0-5	Petit Bois Pass	30.1955	-88.3093	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.316	9.7		
BI-PB-218-12b	5-8.8	Petit Bois Pass	30.1955	-88.3093	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3386	4.4		
BI-PB-218-12c	8.8-13.8	Petit Bois Pass	30.1955	-88.3093	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/2	7	LT GRAY	2.5Y 8/2	8	PALE YELLOW	0.3172	2.1		
BI-PB-218-12d	13.8-15.7	Petit Bois Pass	30.1955	-88.3093	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 7/2	7	LT GRAY	2.5Y 8/2	8	PALE YELLOW	0.2612	6.2		
BI-PB-219-12		Petit Bois Pass	30.1962	-88.3162												0.28	3.74
BI-PB-219-12a	0-5.9	Petit Bois Pass	30.1962	-88.3162	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 7/2	7	LT GRAY	0.2729	2.1		
BI-PB-219-12b	5.9-10.9	Petit Bois Pass	30.1962	-88.3162	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2503	7.3		
BI-PB-219-12c	10.9-15.9	Petit Bois Pass	30.1962	-88.3162	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.31	2.1		
BI-PB-220-12		Petit Bois Pass	30.2026	-88.3239												0.26	1.70
BI-PB-220-12a	0-4.2	Petit Bois Pass	30.2026	-88.3239	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3202	1.1		
BI-PB-220-12b	4.2-6.8	Petit Bois Pass	30.2026	-88.3239	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/1	5	GRAY	5Y 7/1	7	LT GRAY	0.2423	2.3		
BI-PB-220-12C	6.8-11.8	Petit Bois Pass	30.2026	-88.3239	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6.5/1	6.5	LT GRAY	5Y 7/1	7	LT GRAY	0.2219	1.9		
BI-PB-221-12		Petit Bois Pass	30.2024	-88.3714												0.30	1.76
BI-PB-221-12a	0-5	Petit Bois Pass	30.2024	-88.3714	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3248	1.7		
BI-PB-221-12b	5-10	Petit Bois Pass	30.2024	-88.3714	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.2875	1.9		
BI-PB-221-12c	10-16.3	Petit Bois Pass	30.2024	-88.3714	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/1	6	GRAY	5Y 7/1	7	LT GRAY	0.2894	1.7		
BI-PB-222-12		Petit Bois Pass	30.2022	-88.3661												0.32	3.04

BORING	SAMPLE DEPTH (ft)	LOCATION	LATITUDE	LONGITUDE	USCS_Log	USCS_Lab	ANGULARITY	WET COLOR CODE	WET MUNSELL VALUE	WET COLOR	DRY COLOR CODE	DRY MUNSELL VALUE	DRY COLOR	D_{50}	% FINES	Composite D50	Composite Fines
BI-PB-222-12a	0-5	Petit Bois Pass	30.2022	-88.3661	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3667	1.5		
BI-PB-222-12b	5-10	Petit Bois Pass	30.2022	-88.3661	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.3124	2.5		
BI-PB-222-12c	10-12.7	Petit Bois Pass	30.2022	-88.3661	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.3064	3		
BI-PB-222-12d	12.7-16.0	Petit Bois Pass	30.2022	-88.3661	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.2903	6.2		
BI-PB-223-12		Petit Bois Pass	30.2006	-88.3685												0.23	2.16
BI-PB-223-12a	0-5	Petit Bois Pass	30.2006	-88.3685	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.2824	1.2		
BI-PB-223-12b	5-10	Petit Bois Pass	30.2006	-88.3685	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.1767	2.5		
BI-PB-223-12c	10-11.4	Petit Bois Pass	30.2006	-88.3685	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.2397	4.4		
BI-PB-224-12		Petit Bois Pass	30.1988	-88.3714												0.34	1.67
BI-PB-224-12a	0-5	Petit Bois Pass	30.1988	-88.3714	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3506	1		
BI-PB-224-12b	5-10	Petit Bois Pass	30.1988	-88.3714	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.3548	0.8		
BI-PB-224-12c	10-14	Petit Bois Pass	30.1988	-88.3714	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.2994	3.6		

Boring Designation BI-PB-148-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-148-12	LOCATION COORDINATES: E = 1,153,719 N = 255,435	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: 38.4 Ft.	
		15. DATE BORING	STARTED: 12-06-12 / COMPLETED: 12-06-12
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: 17.1 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-37.9	0.0				
-40.0	2.1		SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, some clay, trace clay, gray (SM)	NS	
			SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, silty banding throughout, gray (SP-SM)	A	Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.2938 mm % Fines: 7.2
			At El. -45.0 Ft., mostly fine to medium-grained sand-sized quartz, few silt, trace clay stringers, gray	B	Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.3179 mm % Fines: 6.2
			At El. -50.0 Ft., mostly fine to medium-grained sand-sized quartz, few silt, trace clay stringers, gray	C	Classification: SP-SM Color: 2.5Y 6/1-gray D50: 0.3206 mm % Fines: 6.1
-54.4	16.5				
-55.0	17.1		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, low to medium plasticity, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20130° Long = -88.29687°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

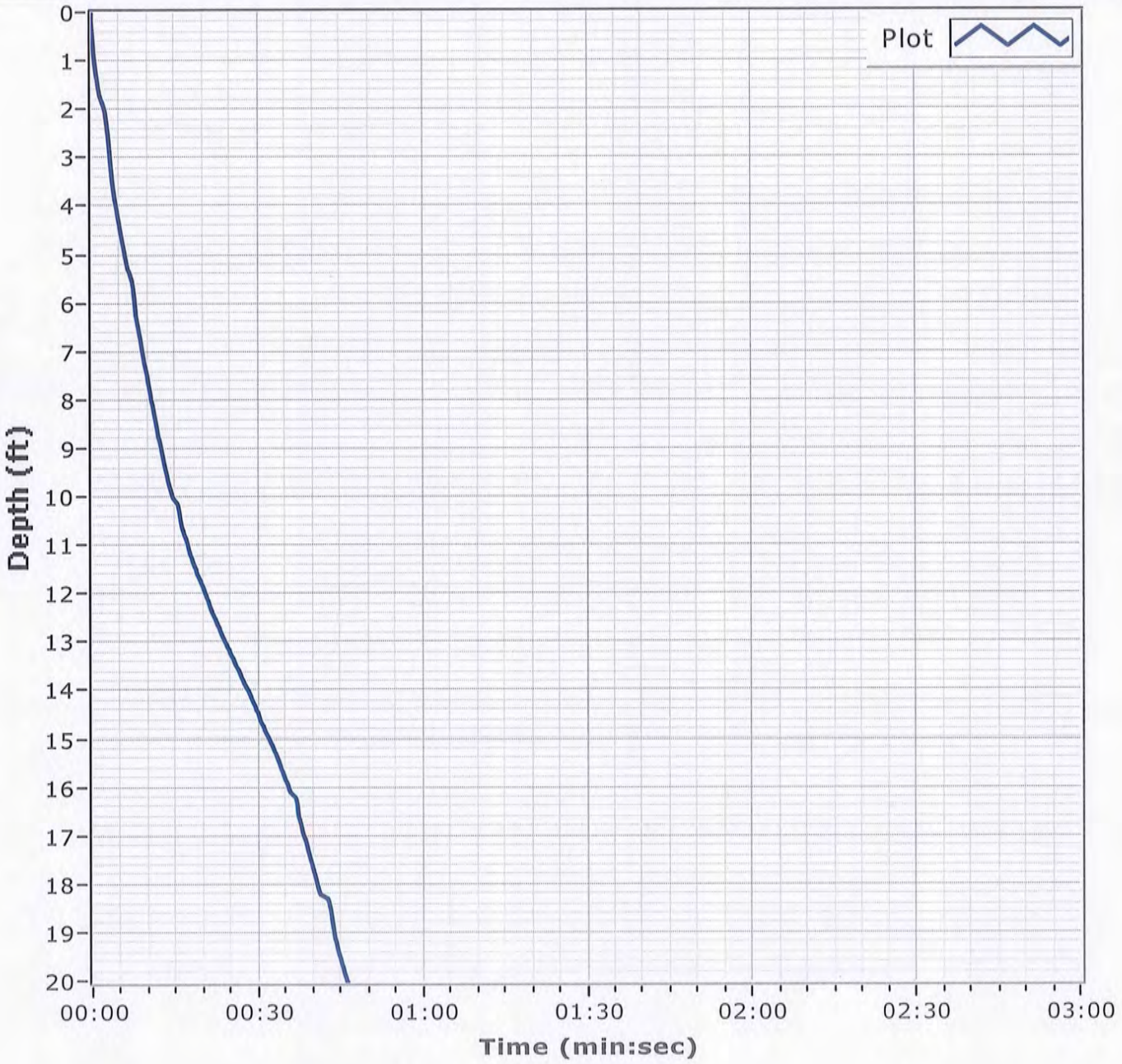
Core Identifier BI-PB-148-12
Coordinate System
Latitude / Longitude

Latitude 30 12.078
Longitude 088 17.812

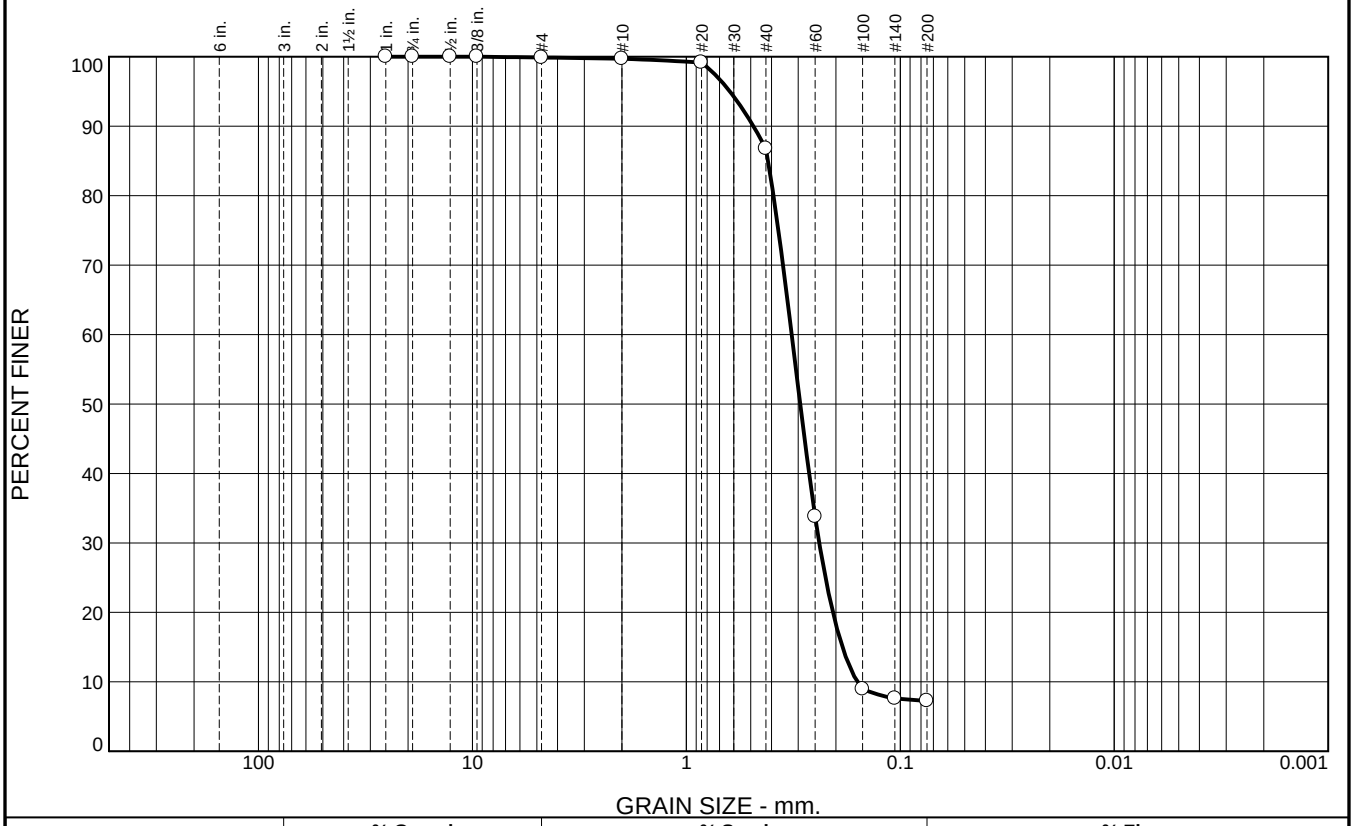
Date 12/06/2012
Start Time 11:27:47
End Time 11:28:34
Total Time 00:00:46

Water Depth 38.4'
Penetration 20.0'
Recovery 17.1'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.2	12.9	79.6	7.2	

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	99.7		
#20	99.2		
#40	86.8		
#60	33.8		
#100	9.0		
#140	7.6		
#200	7.2		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4863 D_{85}= 0.4152 D_{60}= 0.3219
D_{50}= 0.2938 D_{30}= 0.2391 D_{15}= 0.1866
D_{10}= 0.1589 C_u= 2.03 C_c= 1.12

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-148-12 A
Sample Number: 6480 (12) **Depth:** 2.1' **Date:** 12/07/12

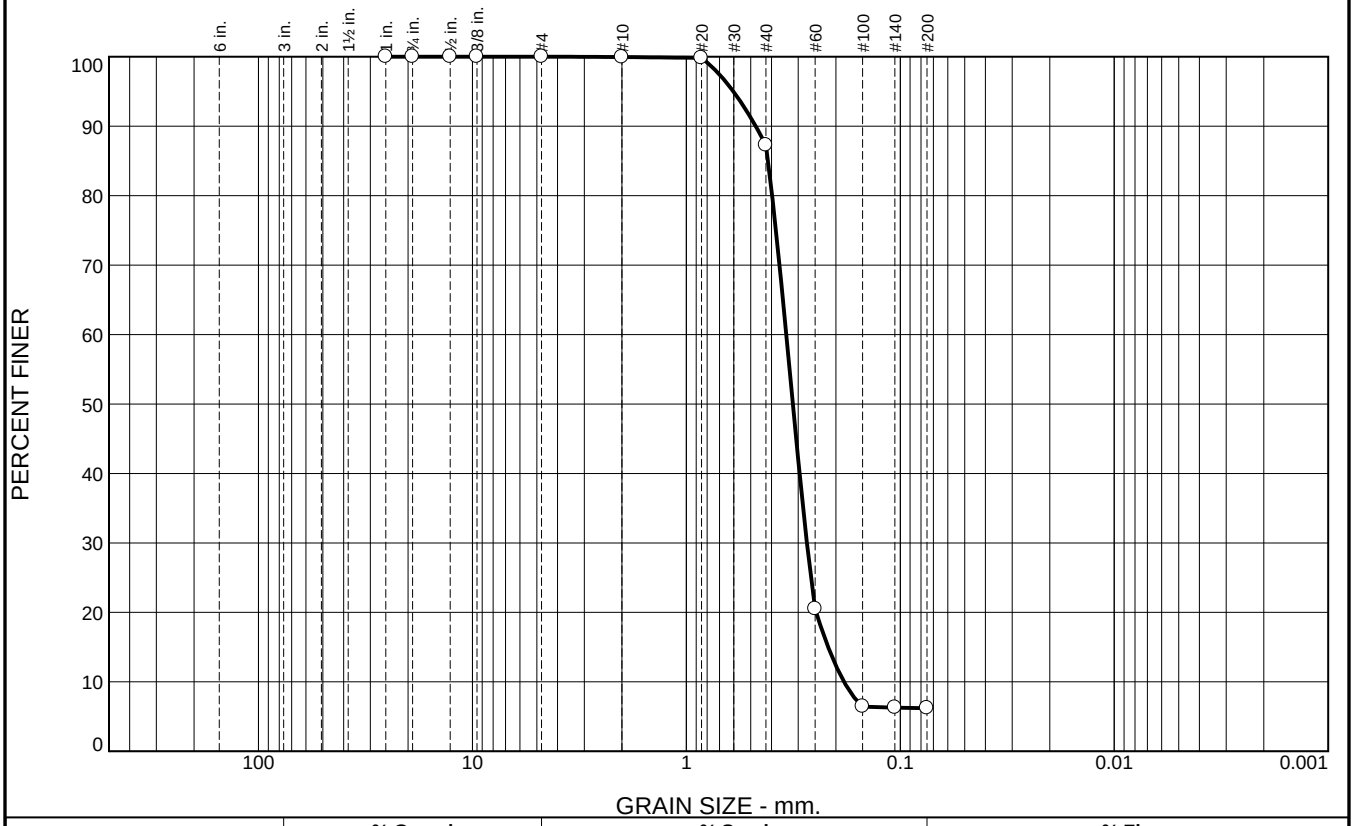
Thompson Engineering

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	0.1	12.6	81.1	6.2	

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	99.9		
#20	99.8		
#40	87.3		
#60	20.5		
#100	6.4		
#140	6.3		
#200	6.2		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4743 D_{85}= 0.4154 D_{60}= 0.3411
D_{50}= 0.3179 D_{30}= 0.2735 D_{15}= 0.2173
D_{10}= 0.1833 C_u= 1.86 C_c= 1.20

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-148-12 B
Sample Number: 6480 (13) **Depth:** 7.1' **Date:** 12/07/12

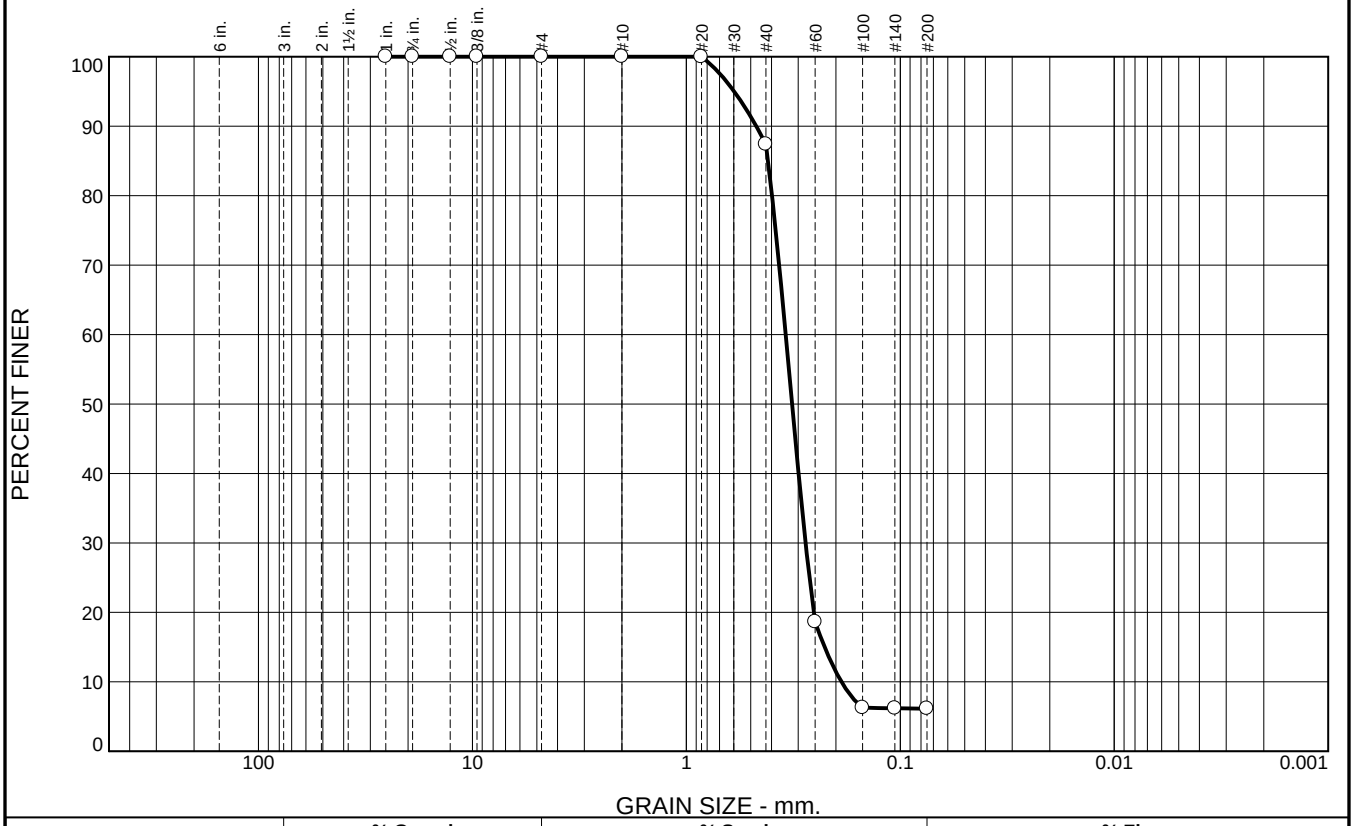
Thompson Engineering

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	12.6	81.3	6.1	

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	100.0		
#40	87.4		
#60	18.6		
#100	6.3		
#140	6.2		
#200	6.1		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4716 D_{85}= 0.4153 D_{60}= 0.3432
D_{50}= 0.3206 D_{30}= 0.2775 D_{15}= 0.2258
D_{10}= 0.1885 C_u= 1.82 C_c= 1.19

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-148-12 C
Sample Number: 6480 (14) **Depth:** 12.1' **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-PB-149-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-149-12	LOCATION COORDINATES: E = 1,147,140 N = 253,186	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: 37.6 Ft.	
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
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: 14.7 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-38.1	0.0				
-39.1	1.0		SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, some silt, gray (SP-SM)		
			SAND, clayey, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SC)		
-44.1	6.0		CLAY, fat, mostly clay, medium to high plasticity, stiff, dark gray (CH)	NS	
-47.0	8.9		SAND, poorly-graded, mostly medium-grained sand-sized quartz, trace silt, lt. gray to white (SP)		
-51.3	13.2		CLAY, fat, mostly clay, some fine-grained sand-sized quartz, medium to high plasticity, dark gray (CH)		
-52.8	14.7				

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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19520° Long = -88.31773°

Project Mississippi Barrier Island Restoration Project

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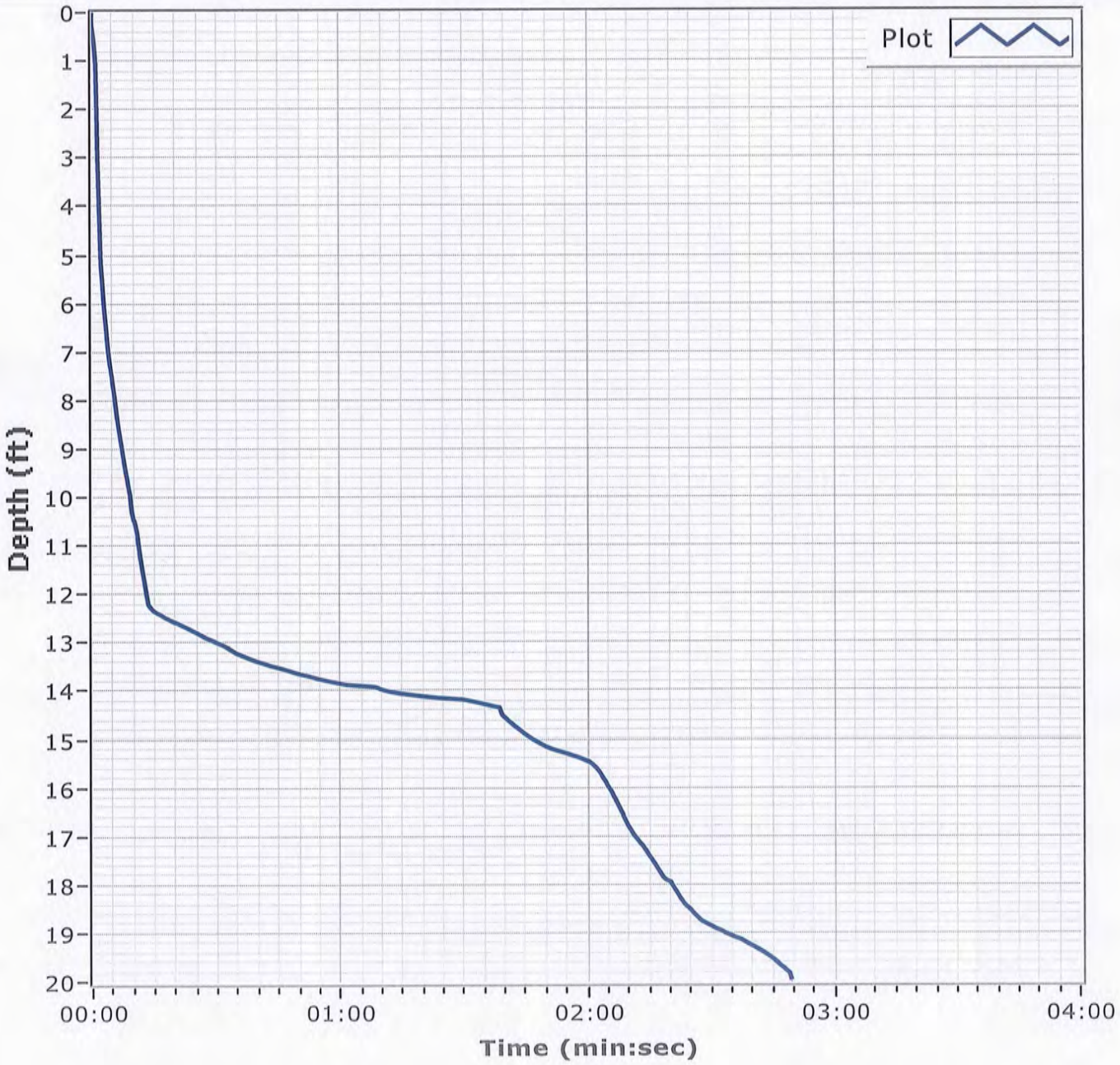
Core Identifier BI-PB-149-12
Coordinate System
Latitude / Longitude

Latitude 30 11.712
Longitude 088 19.064

Date 12/12/2012
Start Time 11:26:11
End Time 11:29:01
Total Time 00:02:49

Water Depth 37.6
Penetration 20.0'
Recovery 14.7'

Comments



Boring Designation BI-PB-150-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-150-12	LOCATION COORDINATES: E = 1,145,974 N = 253,217	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: 39.2 Ft.	
		15. DATE BORING	STARTED: 12-19-12 / COMPLETED: 12-19-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -39.0 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
-39.0	0.0				
			CLAY, fat, mostly clay, trace shell fragments, medium to high plasticity, trace shell fragments, stiff, greenish gray (CH)	NS	
-53.9	14.9				
-56.4	17.4		CLAY, fat, mostly clay, some silt, trace shell fragments, trace wood debris, medium to high plasticity, stiff, with poorly-graded, fine-grained sand lenses, greenish 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19530° Long = -88.32142°

Project Mississippi Barrier Island Restoration Project

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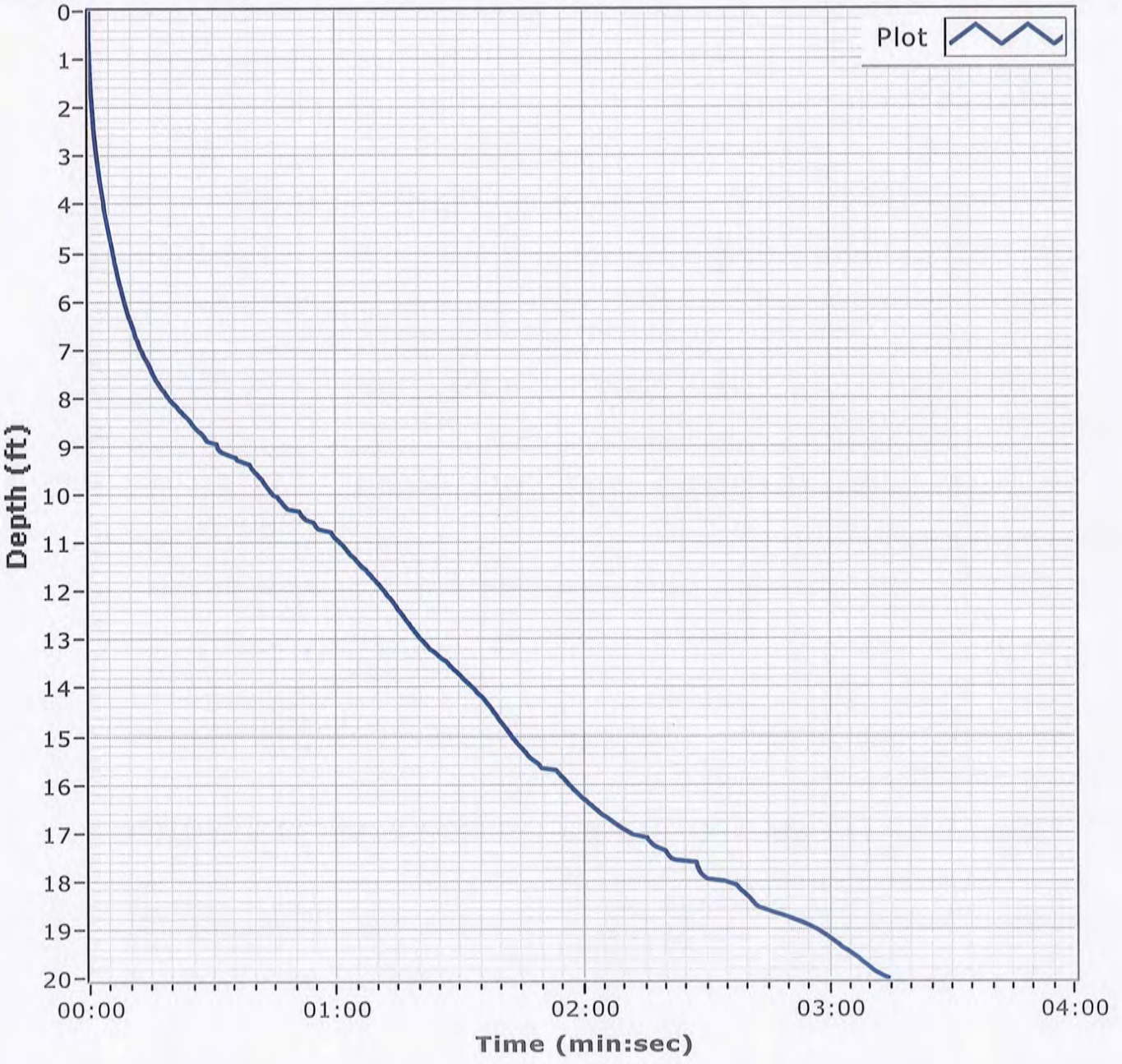
Core Identifier BI-PB-150-12
Coordinate System
Latitude / Longitude

Latitude 30 11.718
Longitude 88 19.285

Date 12/19/2012
Start Time 12:32:23
End Time 12:35:38
Total Time 00:03:14

Water Depth 39.2'
Penetration 20.0'
Recovery 17.4'

Comments



Boring Designation BI-PB-151-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-151-12	LOCATION COORDINATES: E = 1,146,145 N = 253,738	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: 35.9 Ft.	
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -36.4 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
-36.4	0.0				
-37.9	1.5		CLAY, fat, mostly clay, some silt, soft, medium to high plasticity, gray (CH)	NS	
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, few clay stringers, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3501 mm % Fines: 4.3
			At El. -41.4 Ft., mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, trace clay stringers, lt. gray	B	Classification: SP Color: 5Y 8/1-white D50: 0.3798 mm % Fines: 2
-46.2	9.8				
			CLAY, fat, mostly clay, few fine-grained sand-sized quartz, stiff, trace sandy lenses, greenish gray (CH)	NS	
-56.4	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19673° Long = -88.32087°

Project Mississippi Barrier Island Restoration Project

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S E R V I C E S

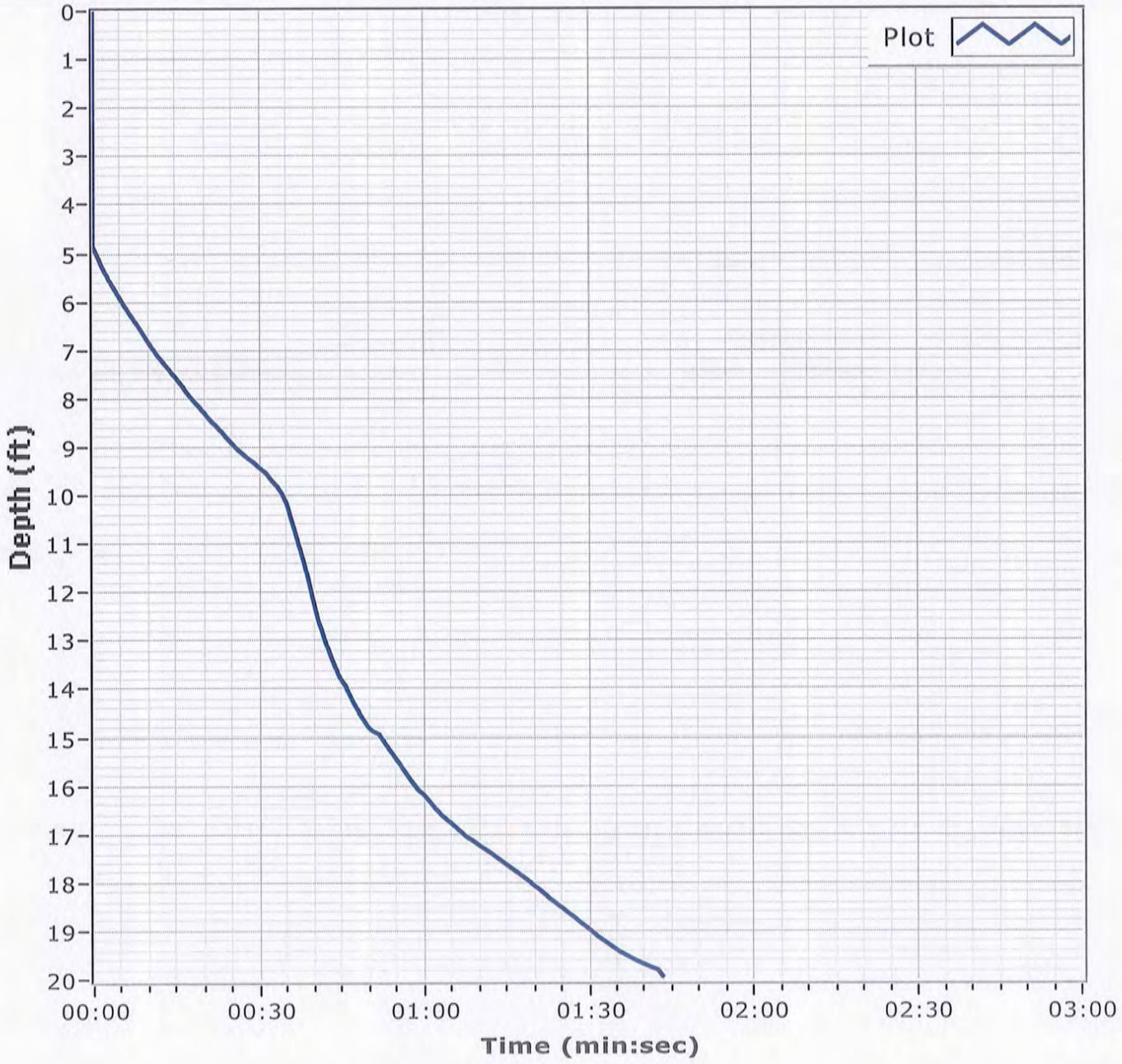
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Coordinate System
Latitude / Longitude

Latitude 30 11.804
Longitude 088 19.252

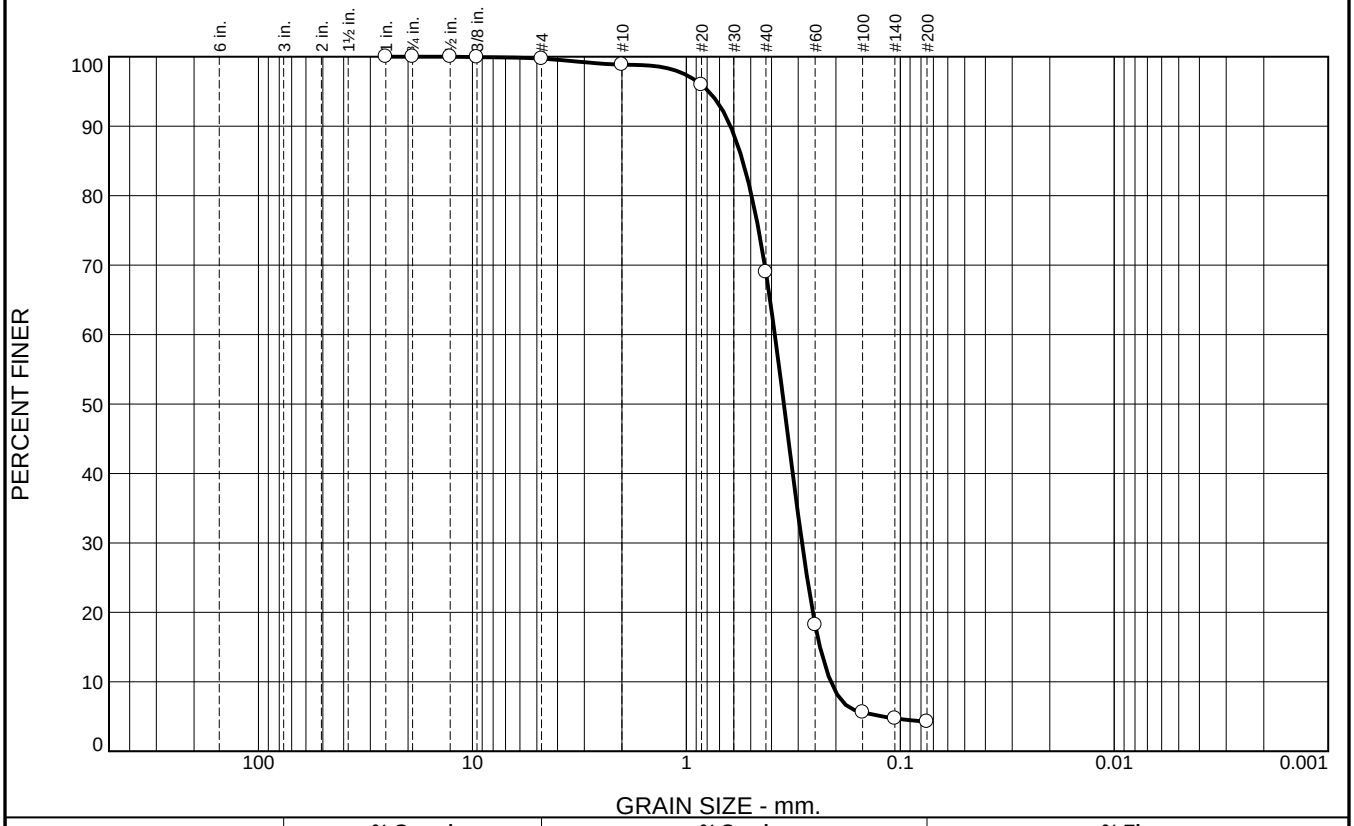
Date 12/12/2012
Start Time 10:31:10
End Time 10:32:53
Total Time 00:01:43

Water Depth 35.9
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	0.9	29.8	64.7	4.3	

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	98.8		
#20	95.9		
#40	69.0		
#60	18.2		
#100	5.6		
#140	4.7		
#200	4.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6218 D_{85}= 0.5451 D_{60}= 0.3857
D_{50}= 0.3501 D_{30}= 0.2883 D_{15}= 0.2372
D_{10}= 0.2112 C_u= 1.83 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-151-12 A
Sample Number: 6485 (1) **Depth:** 1.5' **Date:** 12/07/12

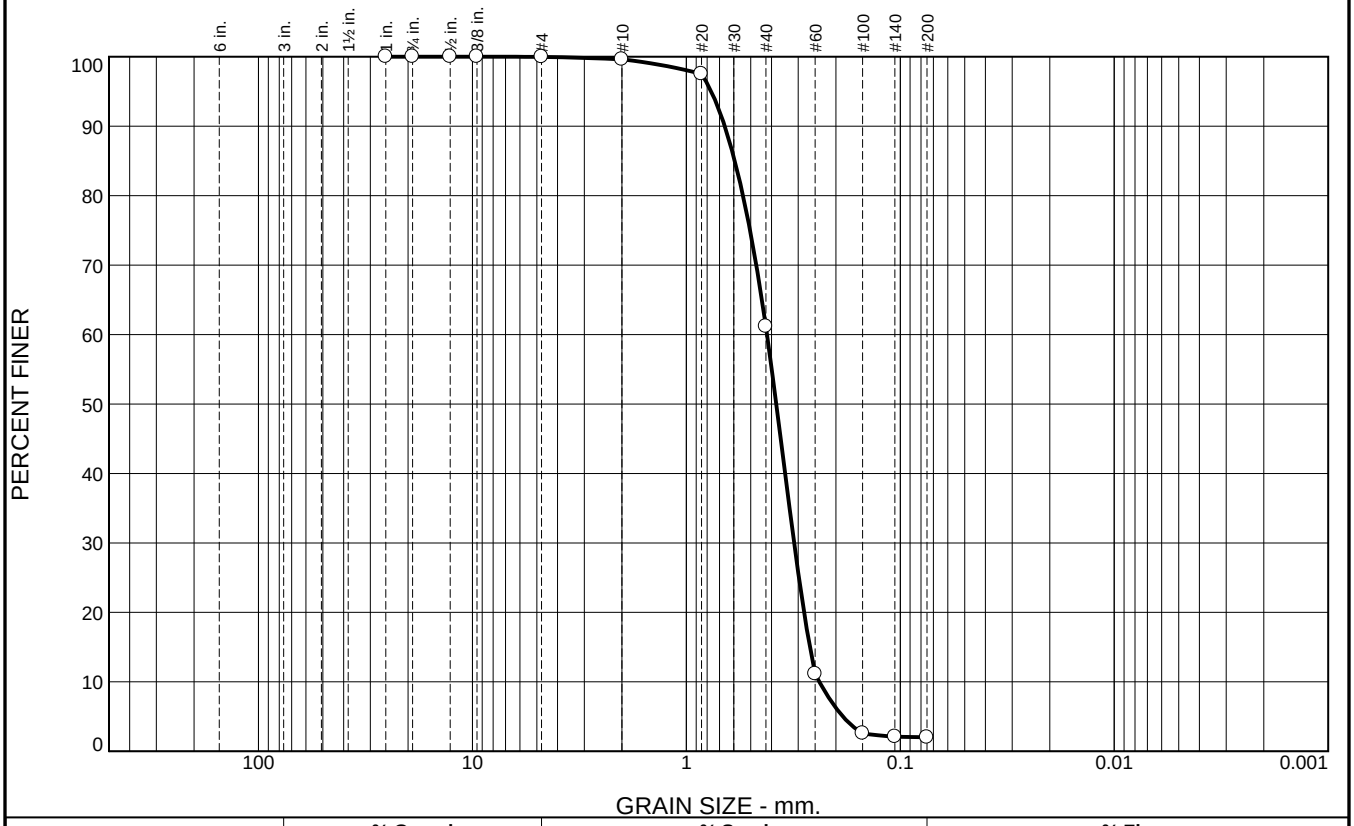
Thompson Engineering

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	0.4	38.5	59.1	2.0	

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	99.6		
#20	97.5		
#40	61.1		
#60	11.1		
#100	2.6		
#140	2.1		
#200	2.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6615 D_{85}= 0.5936 D_{60}= 0.4198
D_{50}= 0.3798 D_{30}= 0.3136 D_{15}= 0.2649
D_{10}= 0.2389 C_u= 1.76 C_c= 0.98

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-151-12 B
Sample Number: 6485 (2) **Depth:** 5.0' **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-PB-152-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-152-12	LOCATION COORDINATES: E = 1,146,007 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: / 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: 33.6 Ft.	
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -34.2 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
-34.2	0.0				
-35.4	1.2		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, trace fines, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2879 mm % Fines: 2
-37.0	2.8		SILT, inorganic-L, mostly silt, some clay, some fine-grained sand-sized quartz, trace shell fragments, brownish gray (ML)	NS	
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace coarse-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray (SP) At El. -40.1 Ft., mostly fine-grained sand-sized quartz, trace fines, trace shells, dense, lt. gray	B	Classification: SP Color: 5Y 7/2-light gray D50: 0.3404 mm % Fines: 3.1
				C	Classification: SP Color: 5Y 7/1-light gray D50: 0.3417 mm % Fines: 2.5
-45.1	10.9				
-46.2	12.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace organic matter, trace wood debris, brown to dk. brown (SM)	NS	
-48.0	13.8		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, some silt, gray (SP-SM)	D	Classification: SP-SM Color: 5Y 7/1-light gray D50: 0.2892 mm % Fines: 10.7
-48.8	14.6		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)	NS	
-53.0	18.8		CLAY, fat, mostly clay, medium to high plasticity, stiff, trace fine grain sand lenses throughout, greenish 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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19793° Long = -88.32130°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

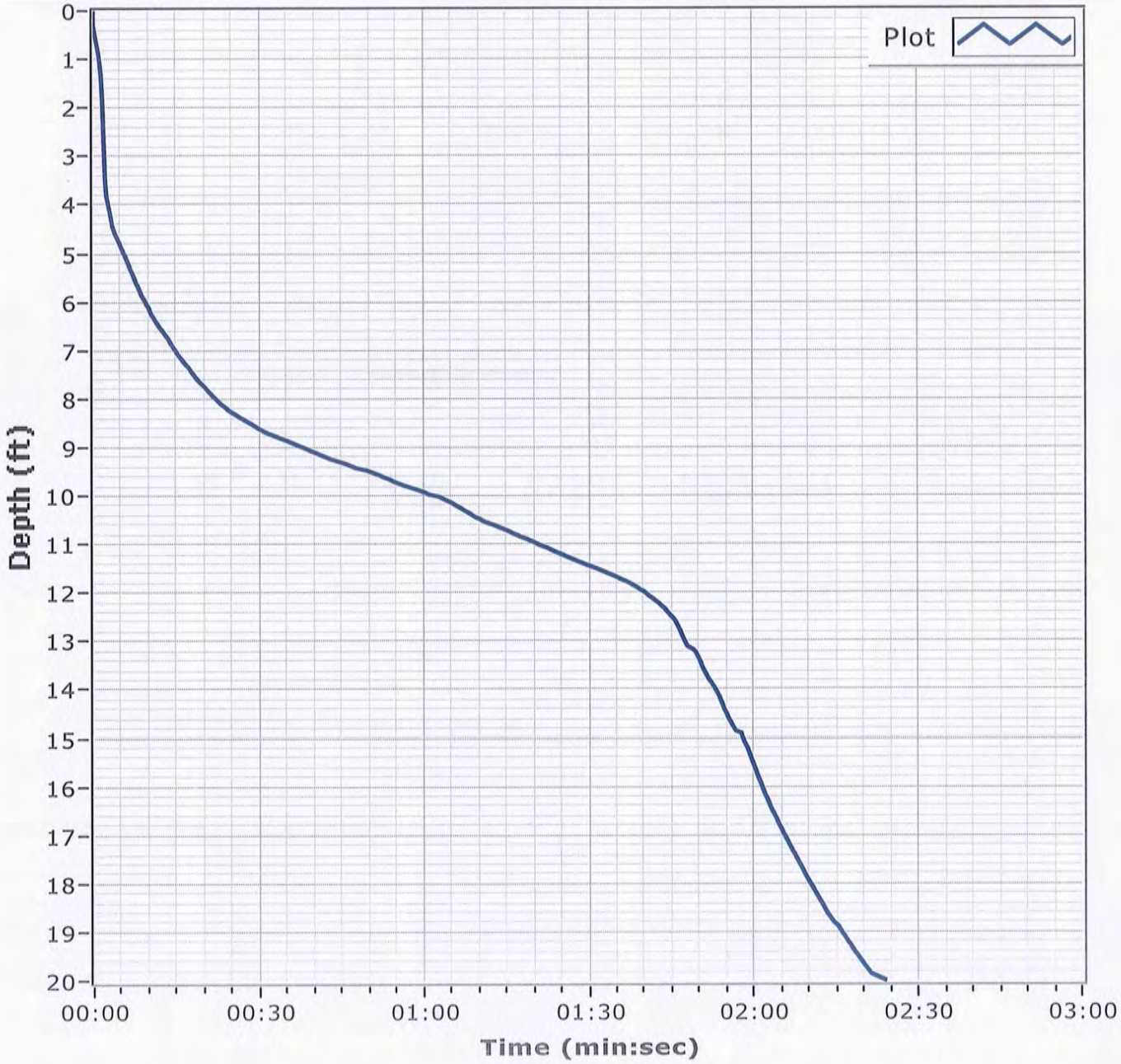
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Coordinate System
Latitude / Longitude

Latitude 30 11.876
Longitude 088 19.278

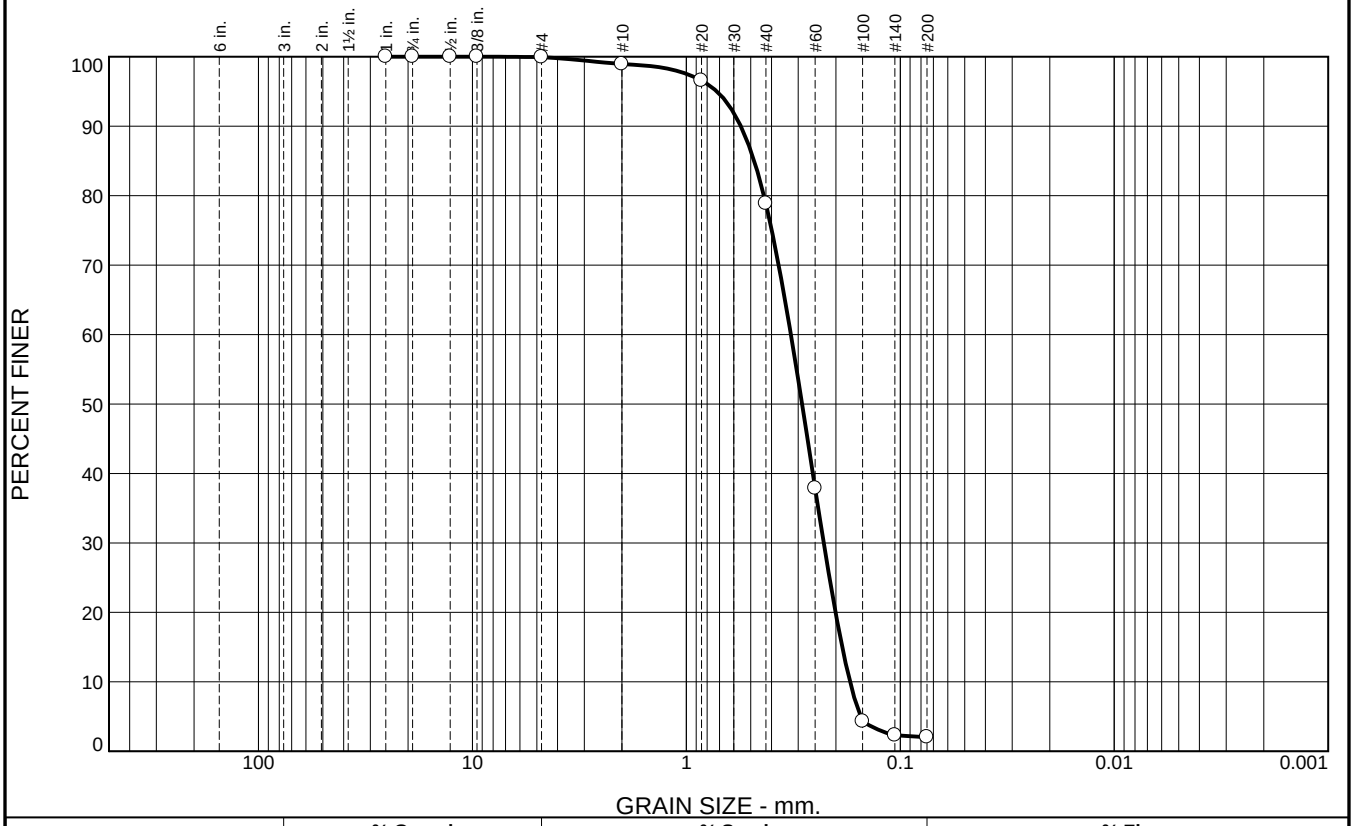
Date 12/12/2012
Start Time 09:52:51
End Time 09:55:15
Total Time 00:02:24

Water Depth 33.6'
Penetration 20.0'
Recovery 18.7'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.9	20.2	76.8	2.0	

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	99.0		
#20	96.6		
#40	78.8		
#60	37.8		
#100	4.3		
#140	2.3		
#200	2.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5565 D_{85}= 0.4820 D_{60}= 0.3247
D_{50}= 0.2879 D_{30}= 0.2279 D_{15}= 0.1869
D_{10}= 0.1720 C_u= 1.89 C_c= 0.93

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-152-12 A
Sample Number: 6485 (3) **Depth:** 0.0' **Date:** 12/07/12

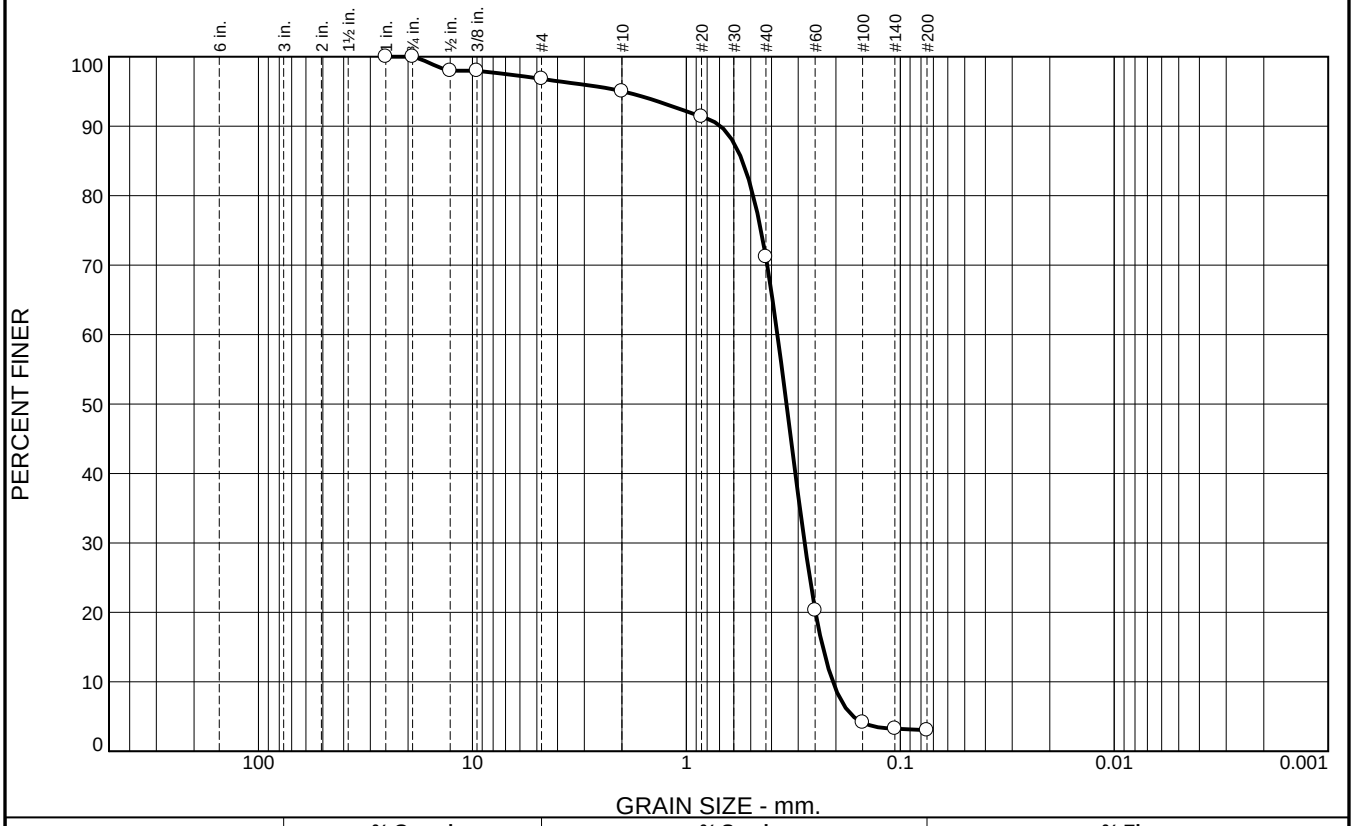
Thompson Engineering

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	3.2	1.8	23.8	68.1	3.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	98.0		
.375	98.0		
#4	96.8		
#10	95.0		
#20	91.4		
#40	71.2		
#60	20.3		
#100	4.1		
#140	3.3		
#200	3.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6928 D_{85}= 0.5471 D_{60}= 0.3752
D_{50}= 0.3404 D_{30}= 0.2802 D_{15}= 0.2304
D_{10}= 0.2067 C_u= 1.81 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-152-12 B
Sample Number: 6485 (4) **Depth:** 2.8' **Date:** 12/07/12

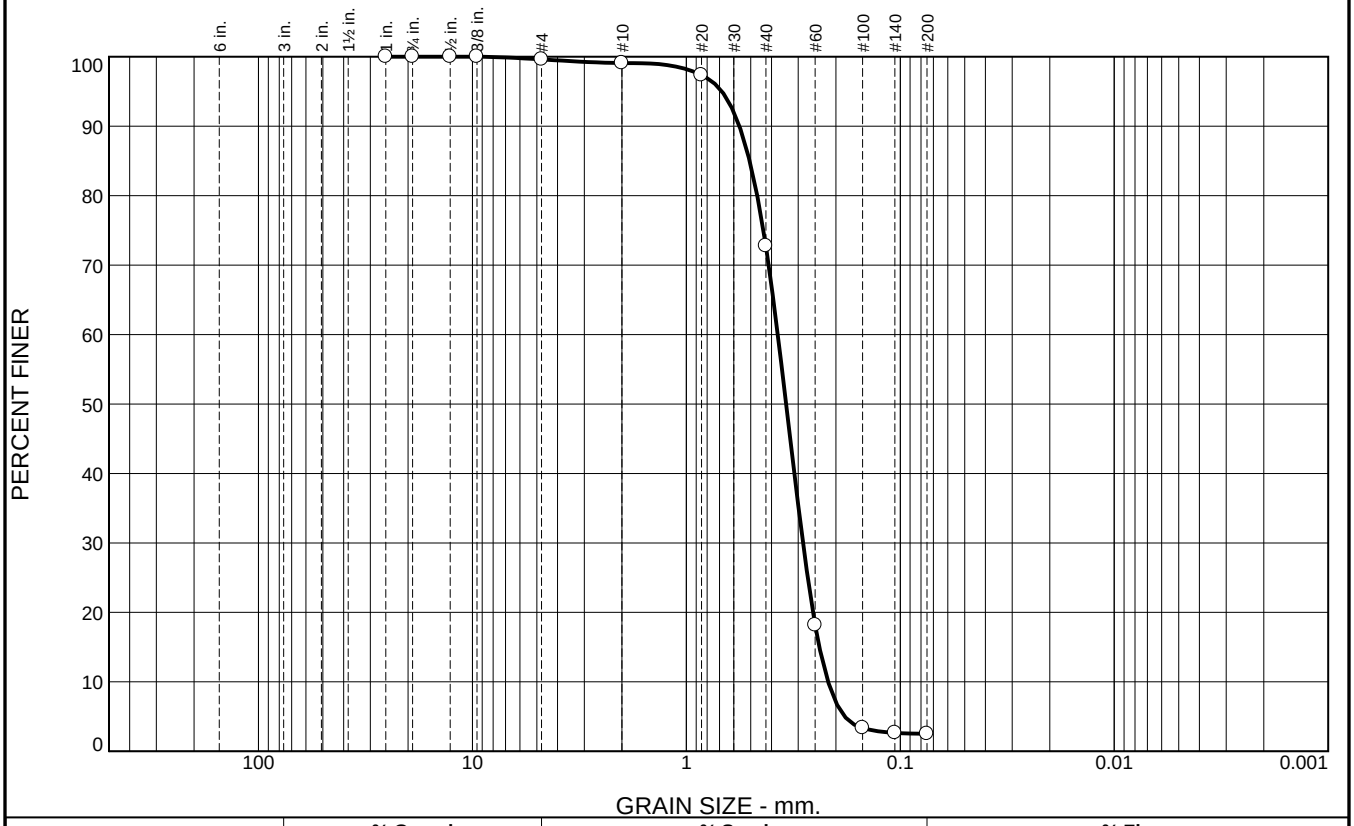
Thompson Engineering

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	0.4	0.5	26.4	70.2	2.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.6		
#10	99.1		
#20	97.3		
#40	72.7		
#60	18.2		
#100	3.4		
#140	2.7		
#200	2.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5649 D_{85}= 0.5061 D_{60}= 0.3738
D_{50}= 0.3417 D_{30}= 0.2851 D_{15}= 0.2388
D_{10}= 0.2173 C_u= 1.72 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-152-12 C
Sample Number: 6485 (5) **Depth:** 5.9' **Date:** 12/07/12

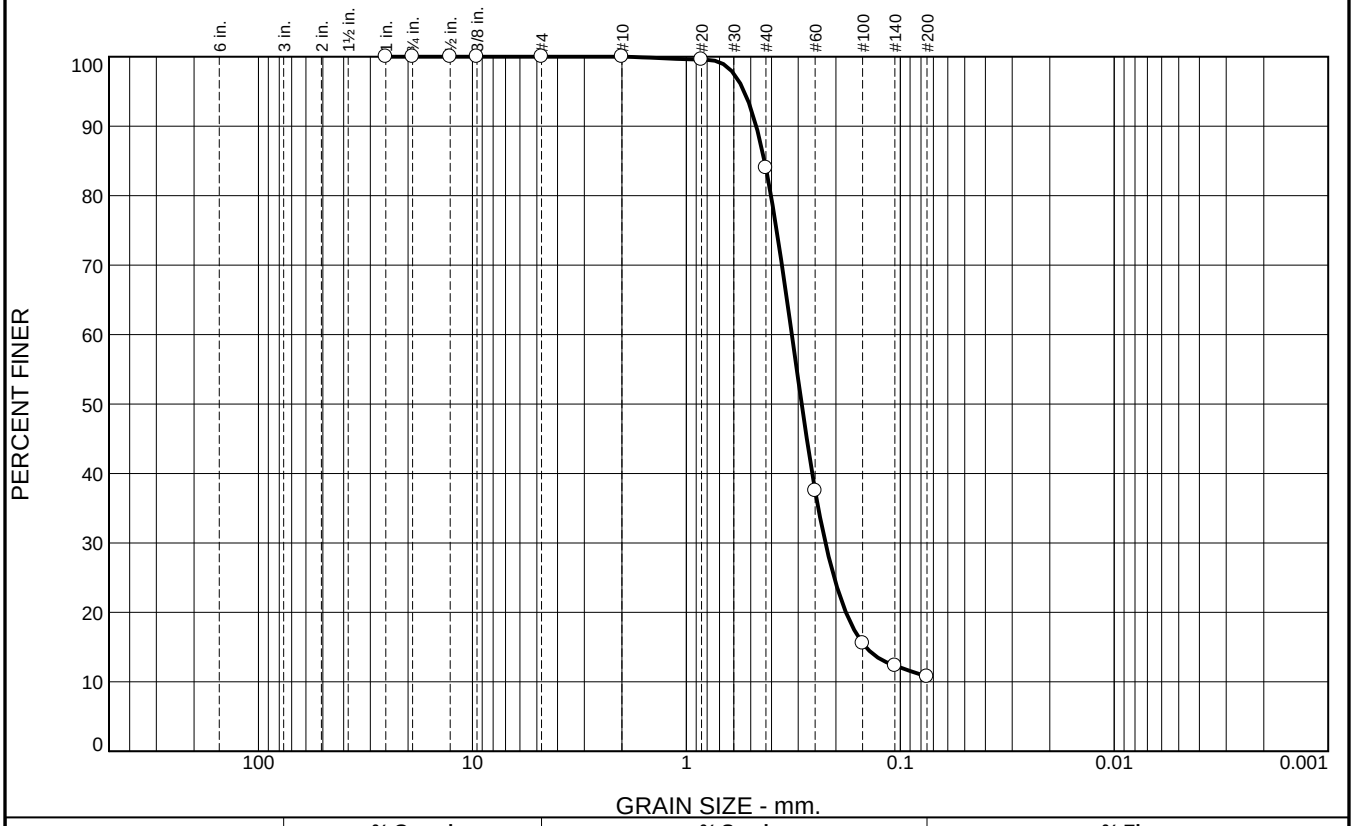
Thompson Engineering

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	0.0	0.0	16.0	73.3	10.7	

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	99.6		
#40	84.0		
#60	37.5		
#100	15.6		
#140	12.3		
#200	10.7		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4714 D_{85}= 0.4314 D_{60}= 0.3214
D_{50}= 0.2892 D_{30}= 0.2238 D_{15}= 0.1449
D_{10}= C_u= C_c=

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-152-12 D
Sample Number: 6485 (6) **Depth:** 12.0' **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-PB-153-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-153-12	LOCATION COORDINATES: E = 1,146,590 N = 253,184	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: 38.7 Ft.	
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -39.2 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-39.2	0.0				
			CLAY, fat, mostly clay, trace shell fragments, sandy clay between 5-10 ft., medium to high plasticity, some sandy pockets, fine grained-sand lenses between 12-20 ft., greenish gray (CH)	NS	
-59.2	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19520° Long = -88.31947°

Project Mississippi Barrier Island Restoration Project

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AMERICAN VIBRACORE
S E R V I C E S

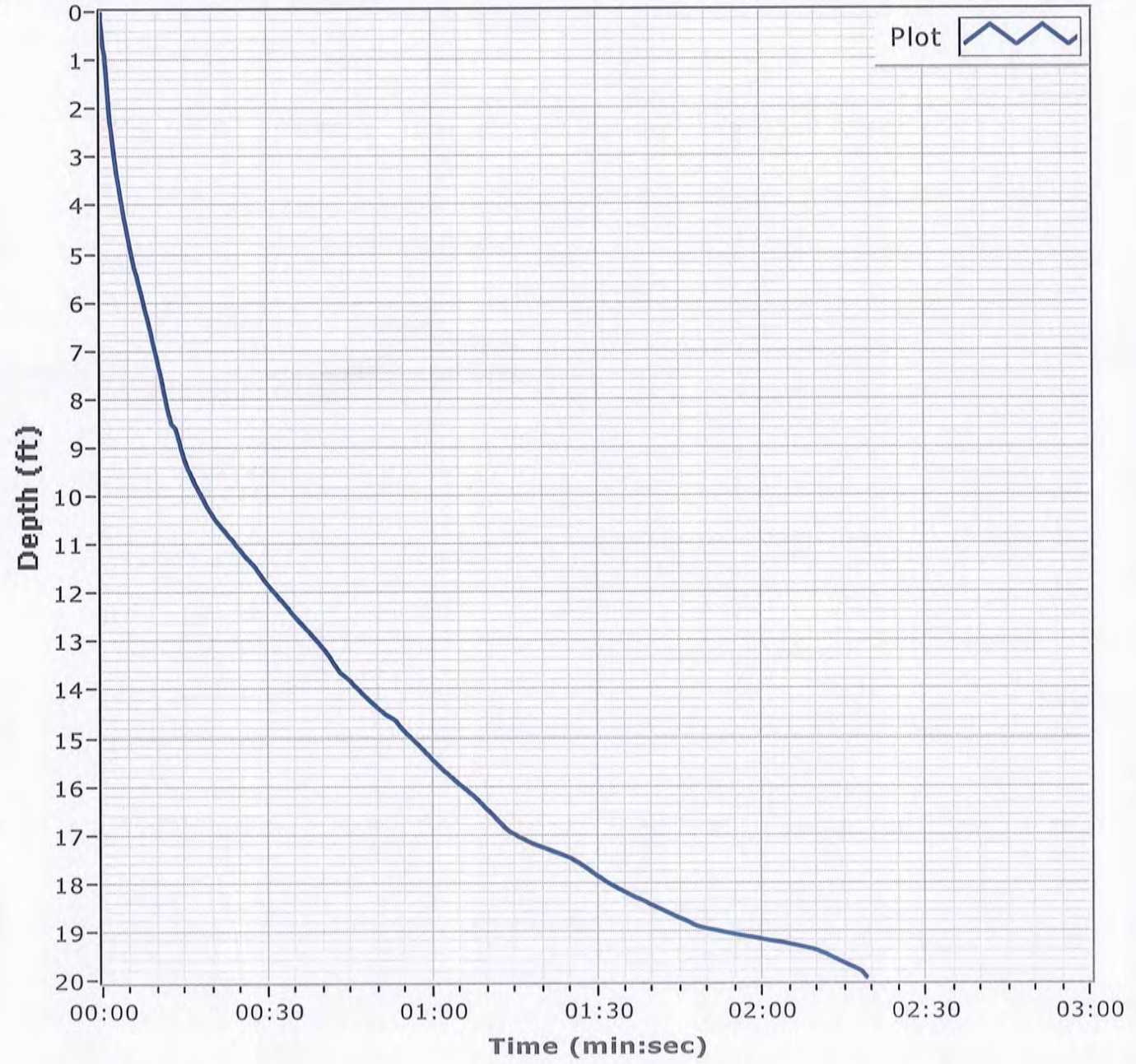
Core Identifier BI-PB-153-12
Coordinate System
Latitude / Longitude

Date 12/12/2012
Start Time 10:58:53
End Time 11:01:13
Total Time 00:02:19

Water Depth 38.7'
Penetration 20.0'
Recovery 20.0'

Latitude 30 11.712
Longitude 088 19.168

Comments



Boring Designation BI-PB-154-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-154-12	LOCATION COORDINATES: E = 1,144,439 N = 253,712	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: / 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: 33.4 Ft.	
		15. DATE BORING	STARTED: 12-11-12 / COMPLETED: 12-11-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -32.9 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-32.9	0.0				
-35.2	2.3		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace clay, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.296 mm % Fines: 2.9
-46.8	13.9		CLAY, fat, mostly clay, trace shell fragments, medium to high plasticity, stiff, greenish gray (CH)	NS	
-47.9	15.0		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, greenish 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19668° Long = -88.32627°

Project Mississippi Barrier Island Restoration Project

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S E R V I C E S

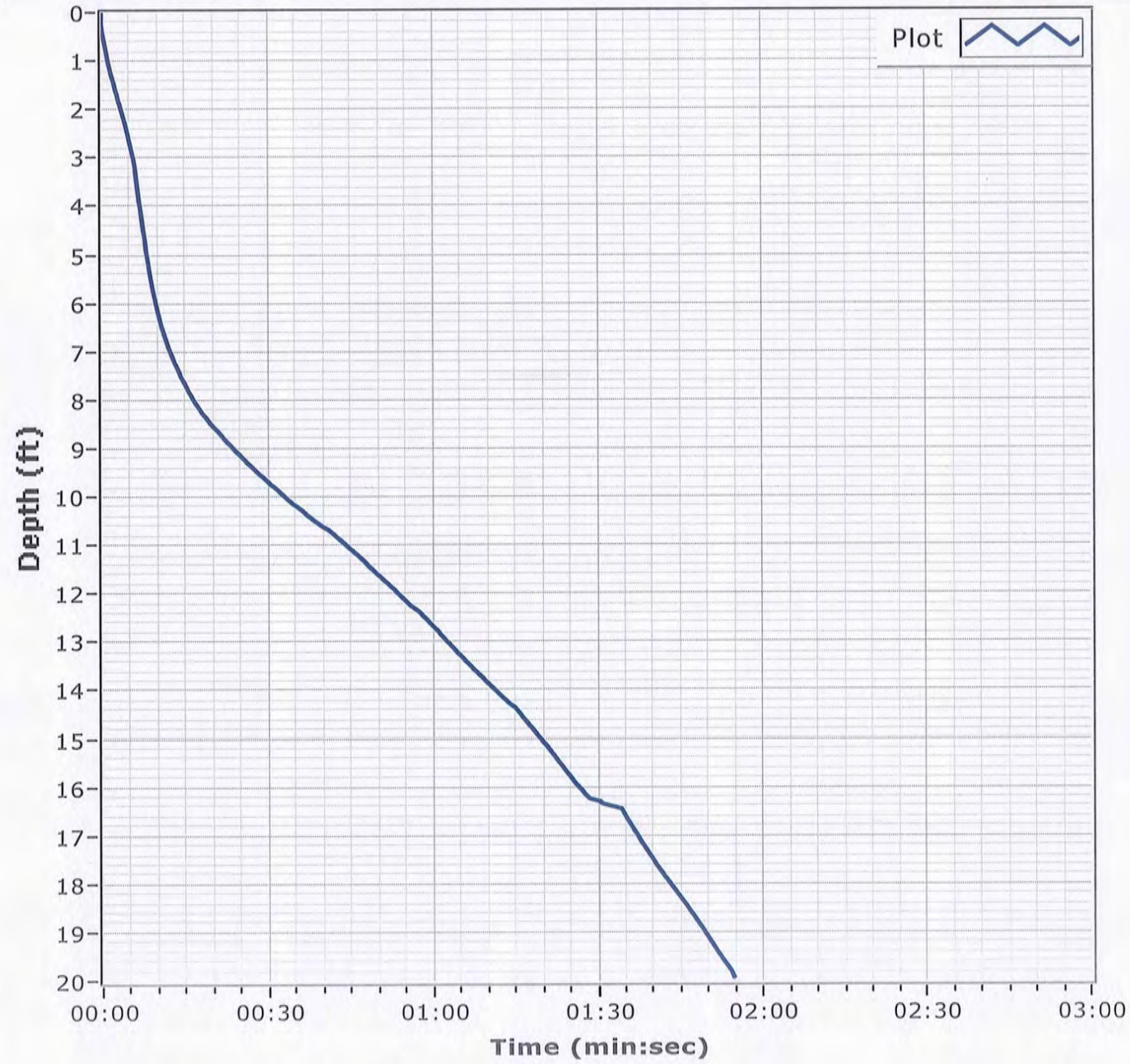
Core Identifier BI-PB-154-12
Coordinate System
Latitude / Longitude

Date 12/11/2012
Start Time 14:05:25
End Time 14:07:19
Total Time 00:01:54

Water Depth 33.4
Penetration 20.0'
Recovery 15.0'

Latitude 33 11.801
Longitude 088 19.576

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	1.4	21.0	74.2	2.9	

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	98.1		
#20	94.3		
#40	77.1		
#60	35.8		
#100	5.5		
#140	3.3		
#200	2.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5988 D_{85}= 0.5033 D_{60}= 0.3339
D_{50}= 0.2960 D_{30}= 0.2326 D_{15}= 0.1873
D_{10}= 0.1702 C_u= 1.96 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-154-12 A
Sample Number: 6485 (7) **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-PB-155-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-155-12	LOCATION COORDINATES: E = 1,144,000 N = 254,547	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: 35.1 Ft.	
		15. DATE BORING	STARTED: 12-07-12 / COMPLETED: 12-07-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -34.2 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 100%	
8. TOTAL DEPTH OF BORING: 13.4 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-34.2	0.0				
-34.4	0.2		SILT, inorganic-L, mostly silt, trace fine-grained sand-sized quartz, trace shell fragments, gray (ML)		
			CLAY, fat, mostly clay, very stiff, medium to high plasticity, few sandy lenses, greenish gray (CH)	NS	
-40.8	6.6				
-42.6	8.4		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, greenish gray (SC)		
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, lt. gray (SP)	A	Classification: SP Color: 5Y 6/4-pale olive D50: 0.2932 mm % Fines: 3.3
-47.6	13.4				

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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19898° Long = -88.32765°

Project Mississippi Barrier Island Restoration Project

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SERVICES

Core Identifier BI-PB-155-12

Coordinate System
Latitude / Longitude

Latitude 30 11.939

Longitude 088 19.659

Date 12/07/2012

Start Time 14:40:19

End Time 14:48:24

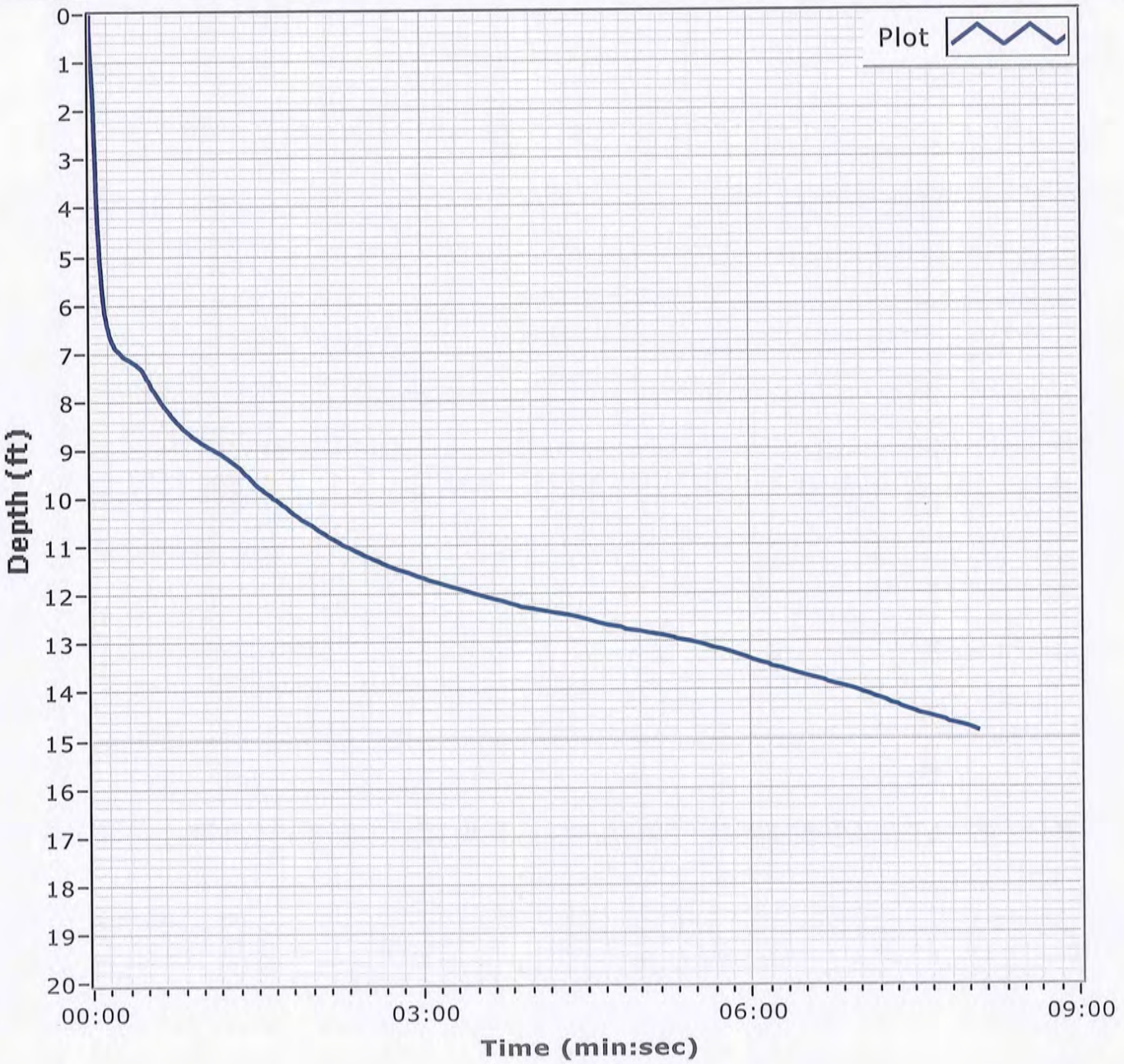
Total Time 00:08:05

Water Depth 35.1'

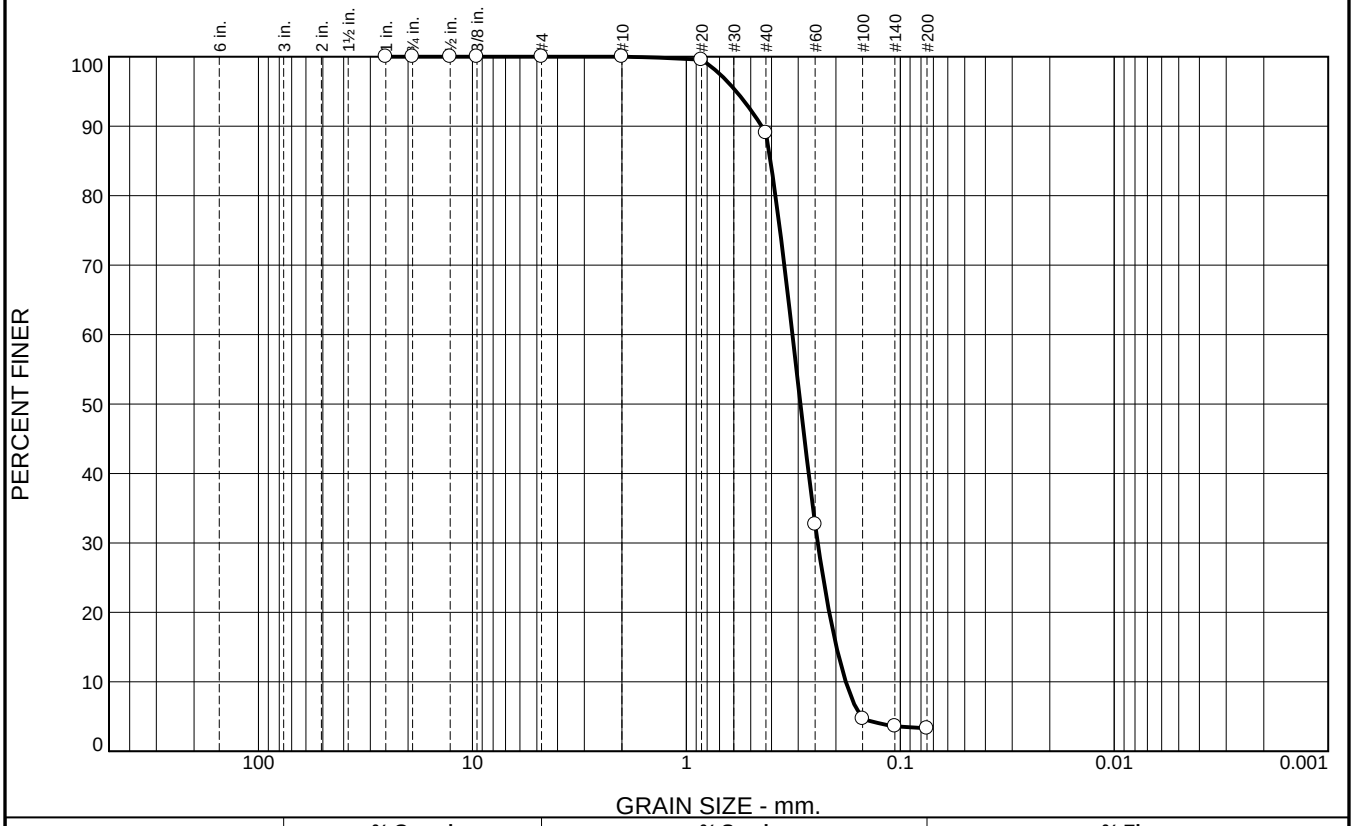
Penetration 14.9'

Recovery 13.4'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	11.0	85.7	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	100.0		
#20	99.6		
#40	89.0		
#60	32.7		
#100	4.7		
#140	3.6		
#200	3.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4446 D_{85}= 0.4043 D_{60}= 0.3193
D_{50}= 0.2932 D_{30}= 0.2430 D_{15}= 0.1988
D_{10}= 0.1799 C_u= 1.78 C_c= 1.03

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-155-12 A
Sample Number: 6482 (1) **Depth:** 8.4' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PB-156-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-156-12	LOCATION COORDINATES: E = 1,144,612 N = 253,193	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: 35.4 Ft.
		15. DATE BORING	STARTED: 12-19-12 / COMPLETED: 12-19-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -35.1 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-35.1	0.0				
-36.7	1.6		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2901 mm % Fines: 1.5
-37.1	2.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, trace shell fragments, brownish gray (SM)		
			CLAY, fat, mostly clay, trace shell fragments, medium to high plasticity, stiff, trace pockets of fine-grained sand, greenish gray (CH)	NS	
-50.7	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19525° Long = -88.32573°

Project Mississippi Barrier Island Restoration Project

AVS
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S E R V I C E S

Core Identifier BI-PB-156-12

Coordinate System
Latitude / Longitude

Latitude 30 11.722

Longitude 88 19.544

Date 12/19/2012

Start Time 13:31:36

End Time 13:33:50

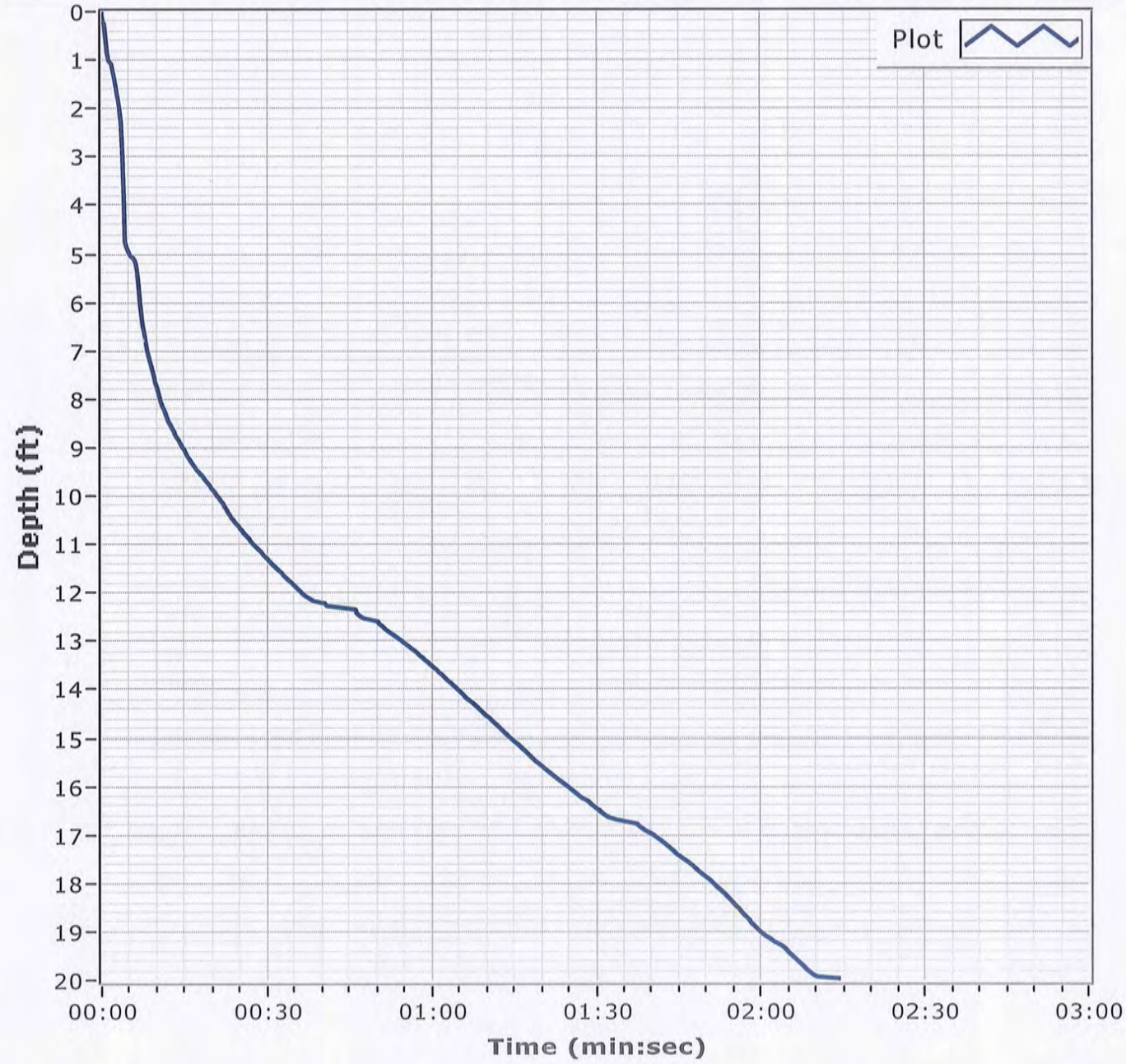
Total Time 00:02:14

Water Depth 33.7'

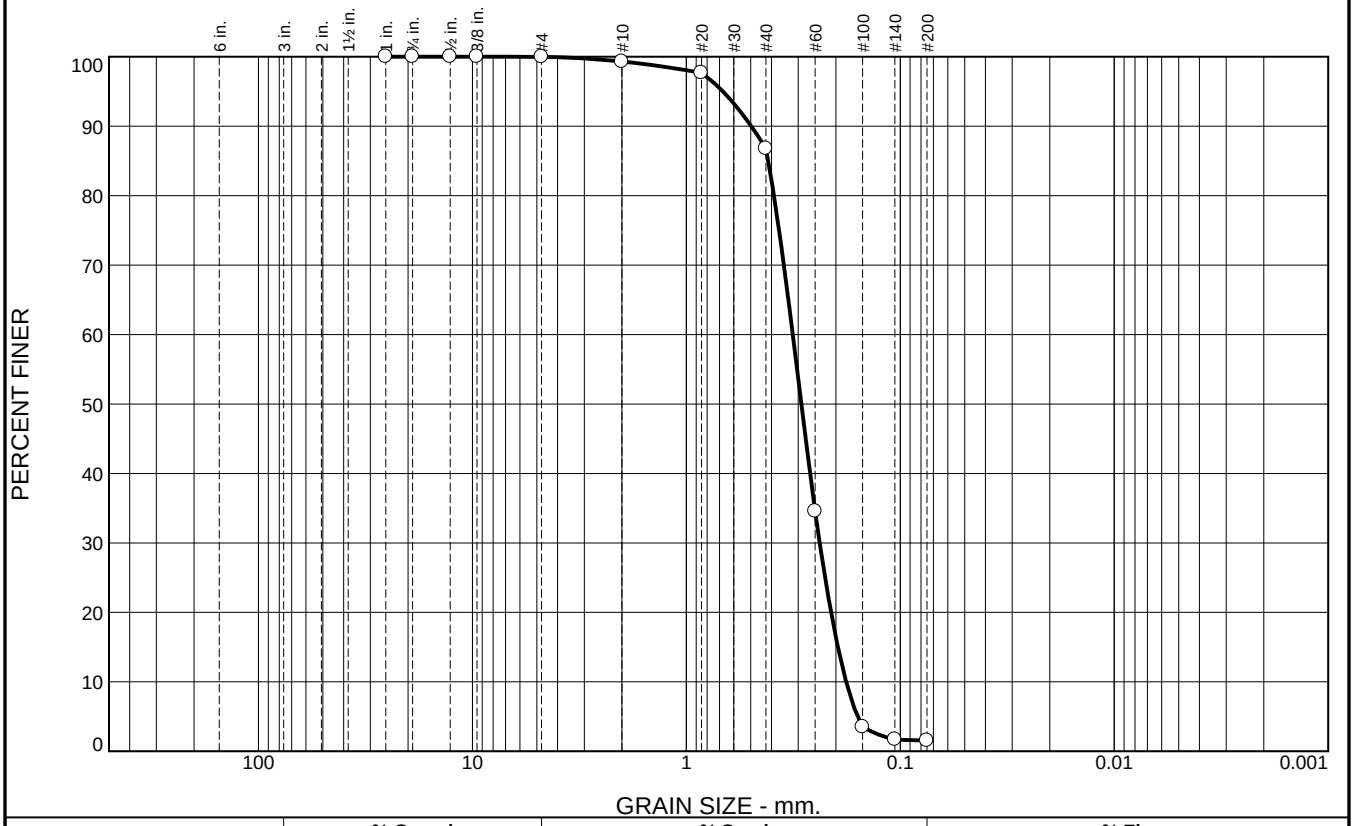
Penetration 20.0'

Recovery 15.6'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.7	12.5	85.3	1.5	

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	99.3		
#20	97.7		
#40	86.8		
#60	34.6		
#100	3.5		
#140	1.7		
#200	1.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4975 D_{85}= 0.4145 D_{60}= 0.3182
D_{50}= 0.2901 D_{30}= 0.2381 D_{15}= 0.1958
D_{10}= 0.1792 C_u= 1.78 C_c= 0.99

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-156-12 A
Sample Number: 6494 (63) **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-PB-157-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-157-12	LOCATION COORDINATES: E = 1,144,871 N = 253,965	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: 36.7 Ft.	
		15. DATE BORING	STARTED: 12-11-12 / COMPLETED: 12-11-12
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: 19.8 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-36.1	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace clayey nodules, gray to light gray (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3406 mm % Fines: 2.4
				B	Classification: SP Color: 2.5Y 8/1-white D50: 0.3525 mm % Fines: 1.9
-43.7	7.6				
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, trace shell fragments, greenish gray (SM)	NS	
-50.4	14.3				
			CLAY, fat, mostly clay, medium to high plasticity, trace sandy pockets, greenish gray (CH)		
-55.9	19.8				
			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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19737° Long = -88.32490°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

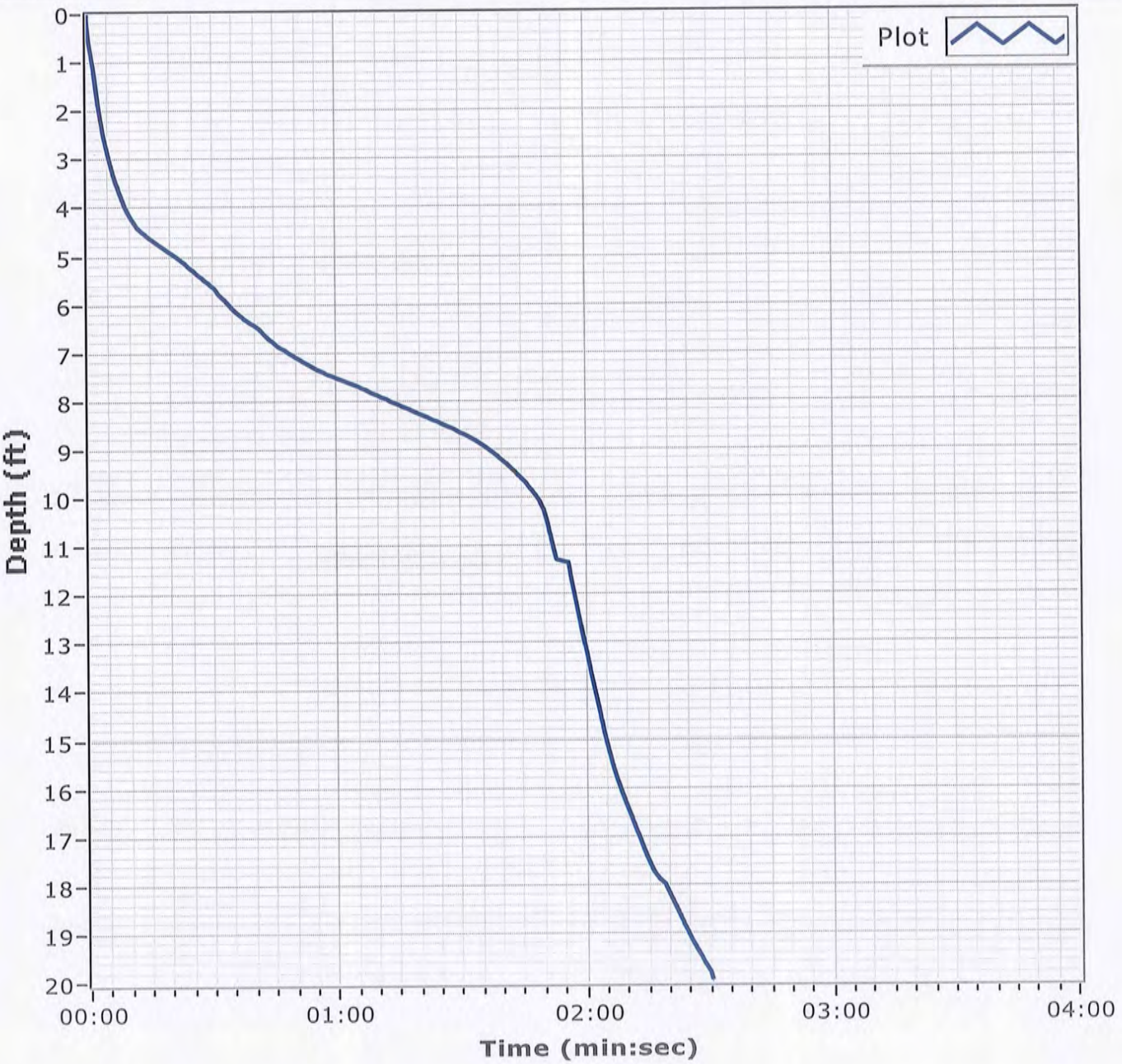
Core Identifier BI-PB-157-12
Coordinate System Latitude / Longitude

Latitude 33 11.842
Longitude 088 19.494

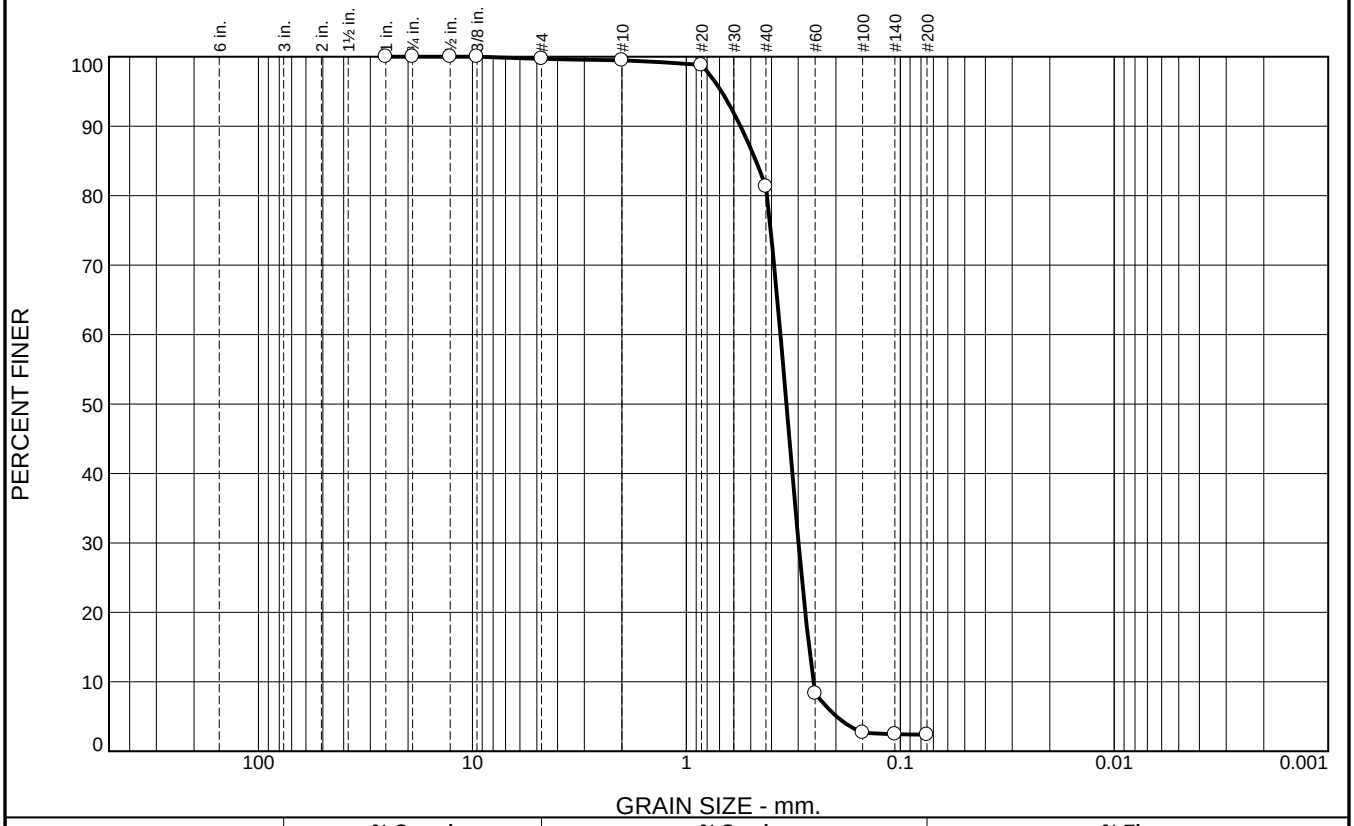
Date 12/11/2012
Start Time 14:33:57
End Time 14:36:28
Total Time 00:02:30

Water Depth 36.7'
Penetration 20.0'
Recovery 19.8'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.2	18.2	78.9	2.4	

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	99.5		
#20	98.8		
#40	81.3		
#60	8.3		
#100	2.7		
#140	2.5		
#200	2.4		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5583 D_{85}= 0.4730 D_{60}= 0.3631
D_{50}= 0.3406 D_{30}= 0.2992 D_{15}= 0.2671
D_{10}= 0.2547 C_u= 1.43 C_c= 0.97

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-157-12 A
Sample Number: 6485 (8) **Depth:** 0.0' **Date:** 12/07/12

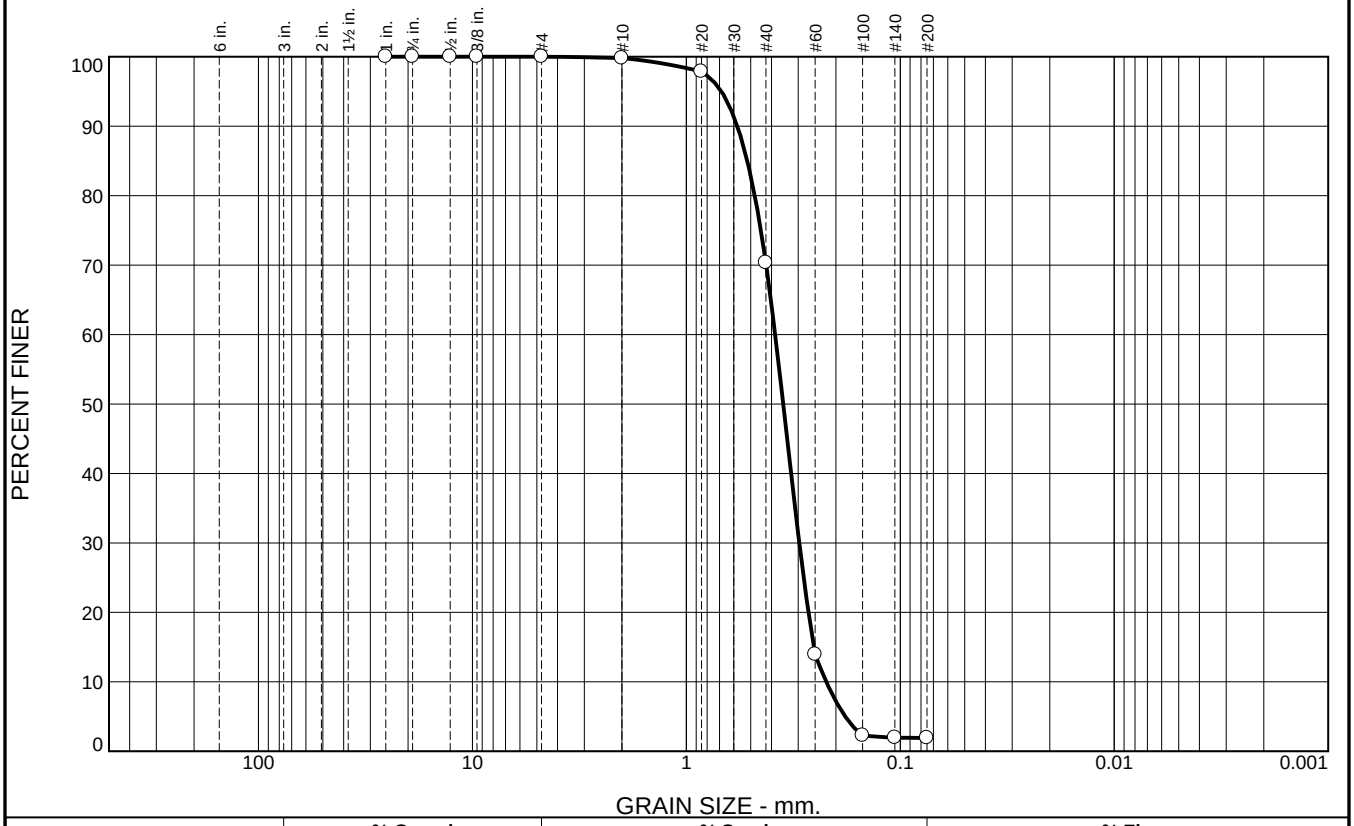
Thompson Engineering

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	0.0	0.2	29.5	68.4	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	99.8		
#20	97.9		
#40	70.3		
#60	13.9		
#100	2.3		
#140	2.0		
#200	1.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5774 D_{85}= 0.5190 D_{60}= 0.3845
D_{50}= 0.3525 D_{30}= 0.2968 D_{15}= 0.2536
D_{10}= 0.2217 C_u= 1.73 C_c= 1.03

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-157-12 B
Sample Number: 6485 (9) **Depth:** 5.0' **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-PB-158-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-158-12	LOCATION COORDINATES: E = 1,145,462 N = 253,877	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: 36.4 Ft.	
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -37.1 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-37.1	0.0				
-38.5	1.4		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.4123 mm % Fines: 2.1
-41.8	4.7		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, clayey band @ 1.7 ft., lt. gray to white (SP)	B	Classification: SP-SM Color: 2.5Y 8/1-white D50: 0.3581 mm % Fines: 5.8
-44.4	7.3		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, gray (SP-SM)	C	Classification: SP Color: 2.5Y 8/1-white D50: 0.3364 mm % Fines: 1.8
-53.6	16.5		SAND, silty, mostly fine-grained sand-sized quartz, some silt, with clay stringers, gray (SM)	D	Classification: SP-SM Color: 5Y 5/2-olive gray D50: 0.259 mm % Fines: 8.9
-54.4	17.3		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, stiff, greenish gray (SC)	NS	
-56.8	19.7		CLAY, fat, mostly clay, medium to high plasticity, stiff, dark green (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.

0 5 10 15 20 25

Lat = 30.19712° Long = -88.32303°

Project Mississippi Barrier Island Restoration Project

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S E R V I C E S

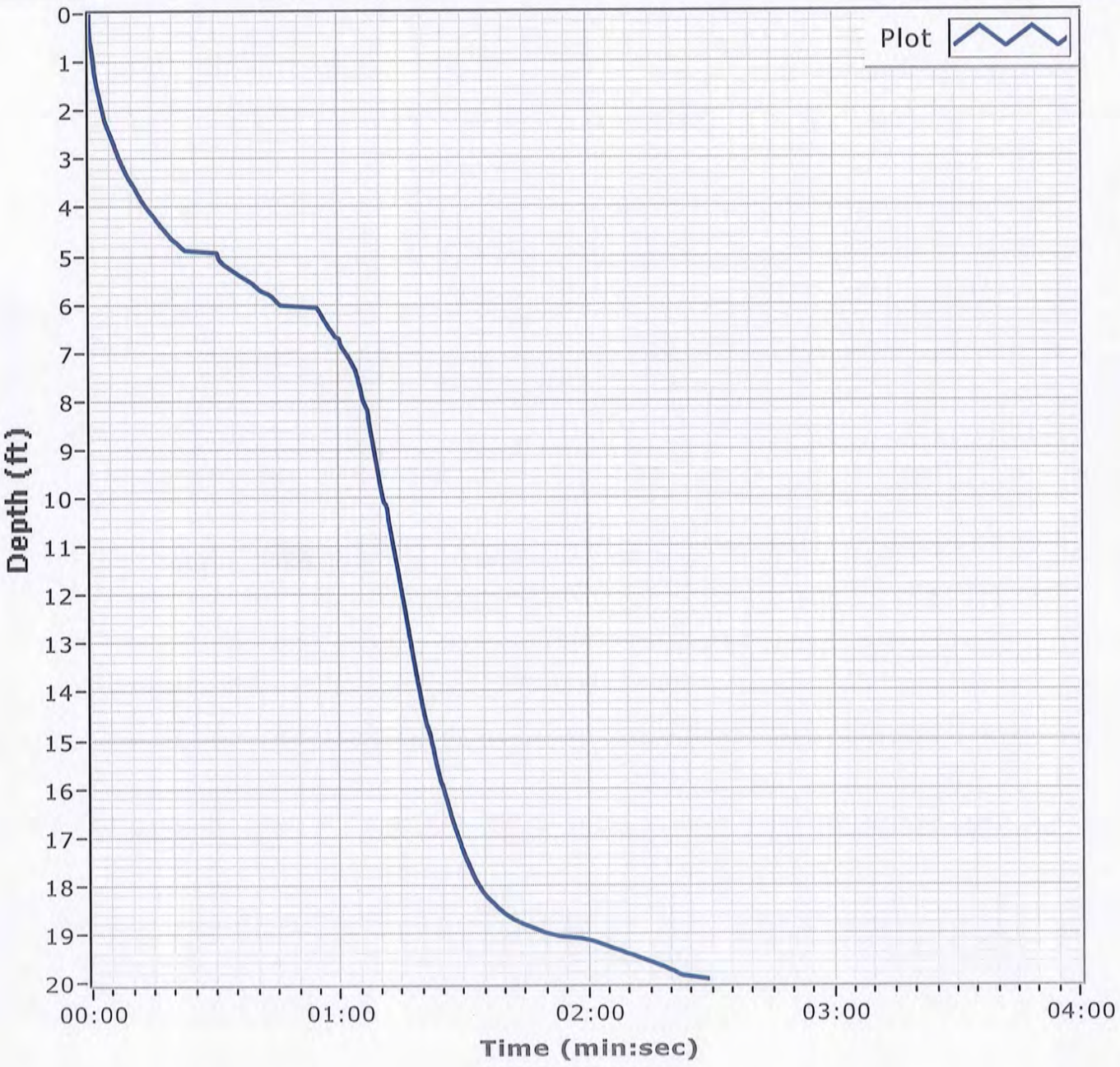
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Coordinate System
Latitude / Longitude

Date 12/12/2012
Start Time 09:16:27
End Time 09:18:56
Total Time 00:02:29

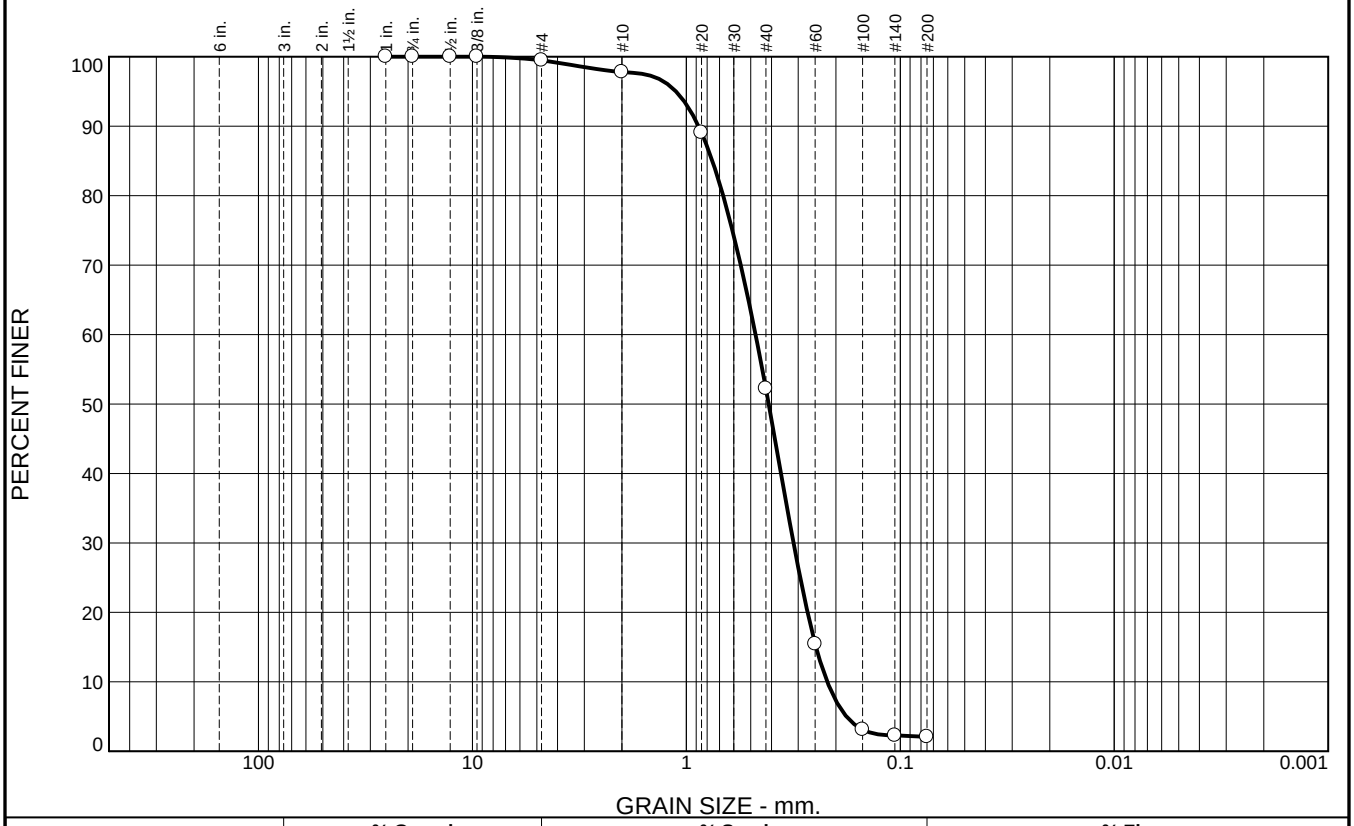
Water Depth 36.4'
Penetration 20.0'
Recovery 19.7'

Latitude 30 11.827
Longitude 088 19.382

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	1.7	45.6	50.1	2.1	

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	97.8		
#20	89.1		
#40	52.2		
#60	15.5		
#100	3.1		
#140	2.3		
#200	2.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.8772 D_{85}= 0.7562 D_{60}= 0.4750
D_{50}= 0.4123 D_{30}= 0.3157 D_{15}= 0.2477
D_{10}= 0.2194 C_u= 2.16 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-158-12 A
Sample Number: 6485 (10) **Depth:** 0.0' **Date:** 12/07/12

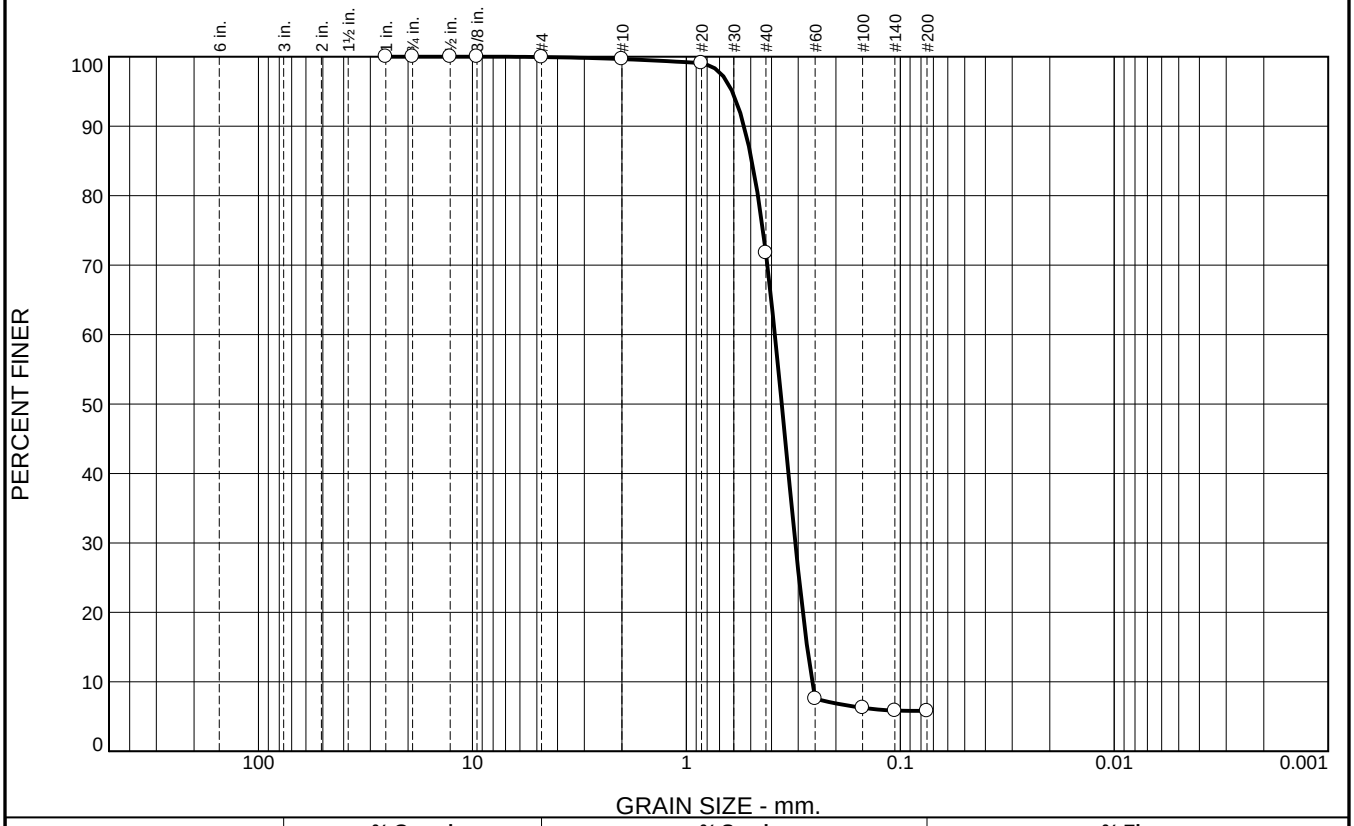
Thompson Engineering

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	0.3	28.0	65.9	5.8	

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	99.1		
#40	71.7		
#60	7.6		
#100	6.3		
#140	5.8		
#200	5.8		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5373 D_{85}= 0.4941 D_{60}= 0.3856
D_{50}= 0.3581 D_{30}= 0.3096 D_{15}= 0.2728
D_{10}= 0.2583 C_u= 1.49 C_c= 0.96

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-158-12 B
Sample Number: 6485 (11) **Depth:** 1.4' **Date:** 12/07/12

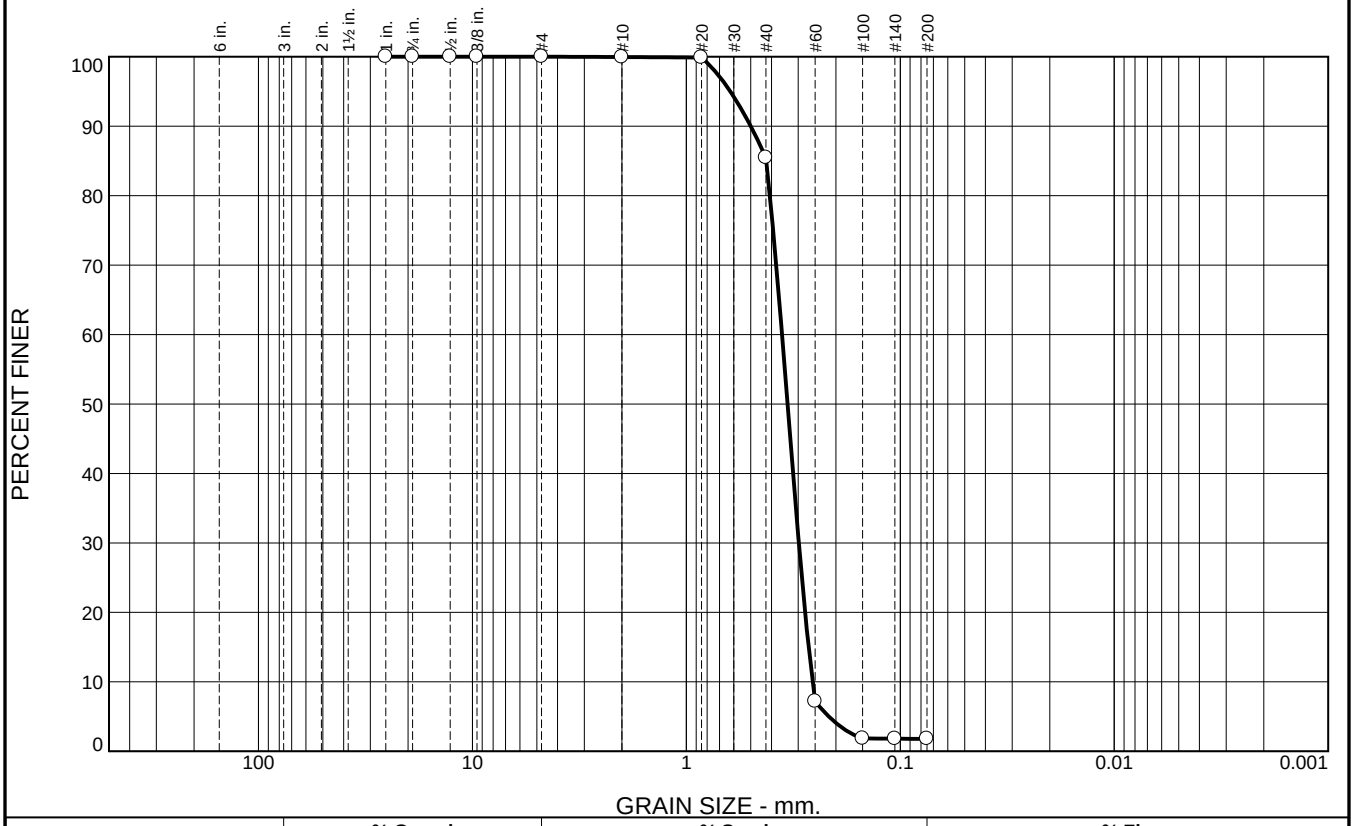
Thompson Engineering

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	0.1	14.5	83.6	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	99.9		
#20	99.9		
#40	85.4		
#60	7.2		
#100	1.9		
#140	1.8		
#200	1.8		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5003 D_{85}= 0.4234 D_{60}= 0.3570
D_{50}= 0.3364 D_{30}= 0.2982 D_{15}= 0.2686
D_{10}= 0.2572 C_u= 1.39 C_c= 0.97

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-158-12 C
Sample Number: 6485 (12) **Depth:** 4.7' **Date:** 12/07/12

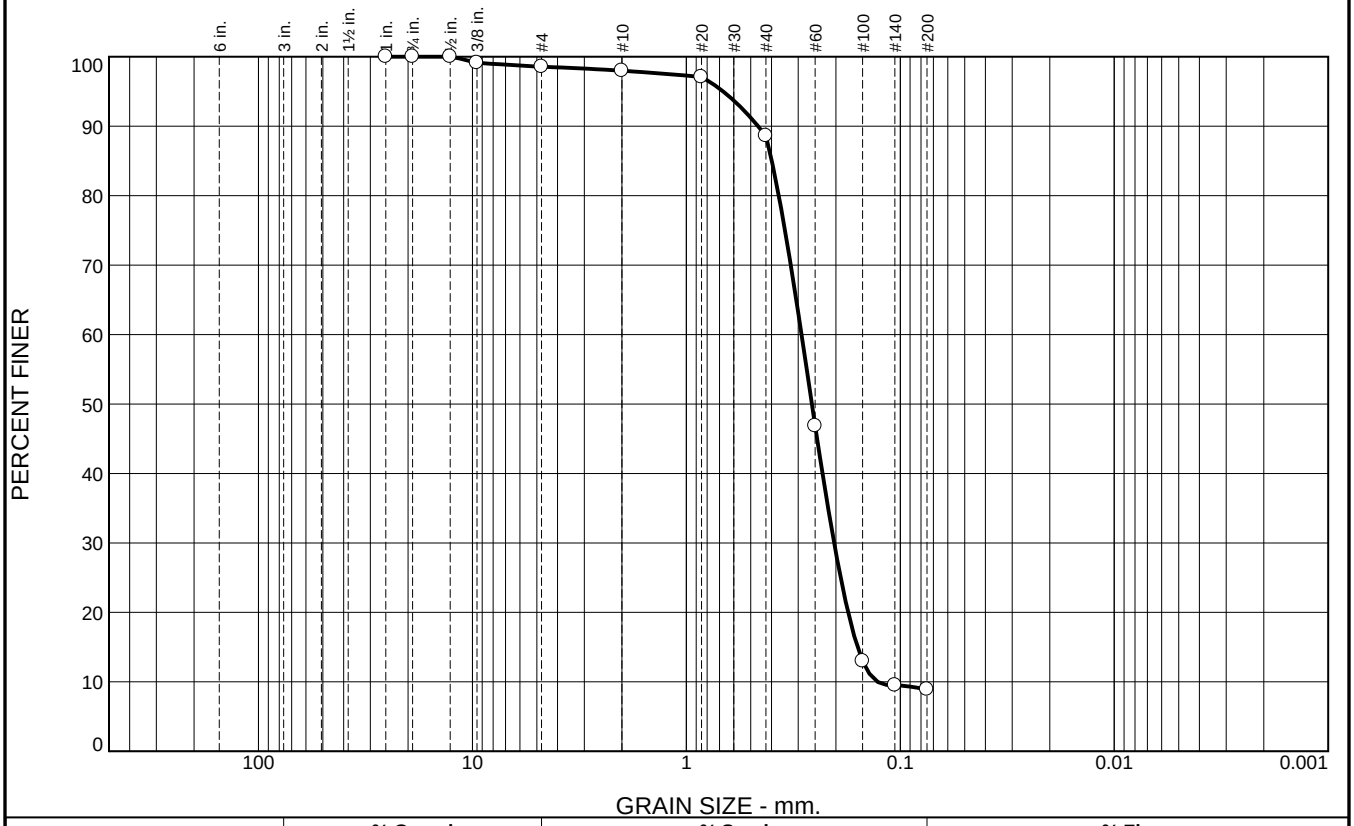
Thompson Engineering

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	1.4	0.6	9.4	79.7	8.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.1		
#4	98.6		
#10	98.0		
#20	97.1		
#40	88.6		
#60	46.9		
#100	13.0		
#140	9.5		
#200	8.9		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4624 D_{85}= 0.3985 D_{60}= 0.2896
D_{50}= 0.2590 D_{30}= 0.2039 D_{15}= 0.1586
D_{10}= 0.1277 C_u= 2.27 C_c= 1.12

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-158-12 D
Sample Number: 6485 (13) **Depth:** 7.3' **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-PB-159-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-159-12	LOCATION COORDINATES: E = 1,145,323 N = 253,240	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: 36.2 Ft.
		15. DATE BORING	STARTED: 12-19-12 / COMPLETED: 12-19-12
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: 17.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-36.0	0.0				
-36.5	0.5		SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, trace shell fragments, stiff, gray (SP-SM)		
			CLAY, fat, mostly clay, trace shell fragments, sandy lenses between 13.8 and 17.0 ft., stiff, greenish gray (CH)	NS	
-53.0	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19537° Long = -88.32348°

Project Mississippi Barrier Island Restoration Project

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S E R V I C E S

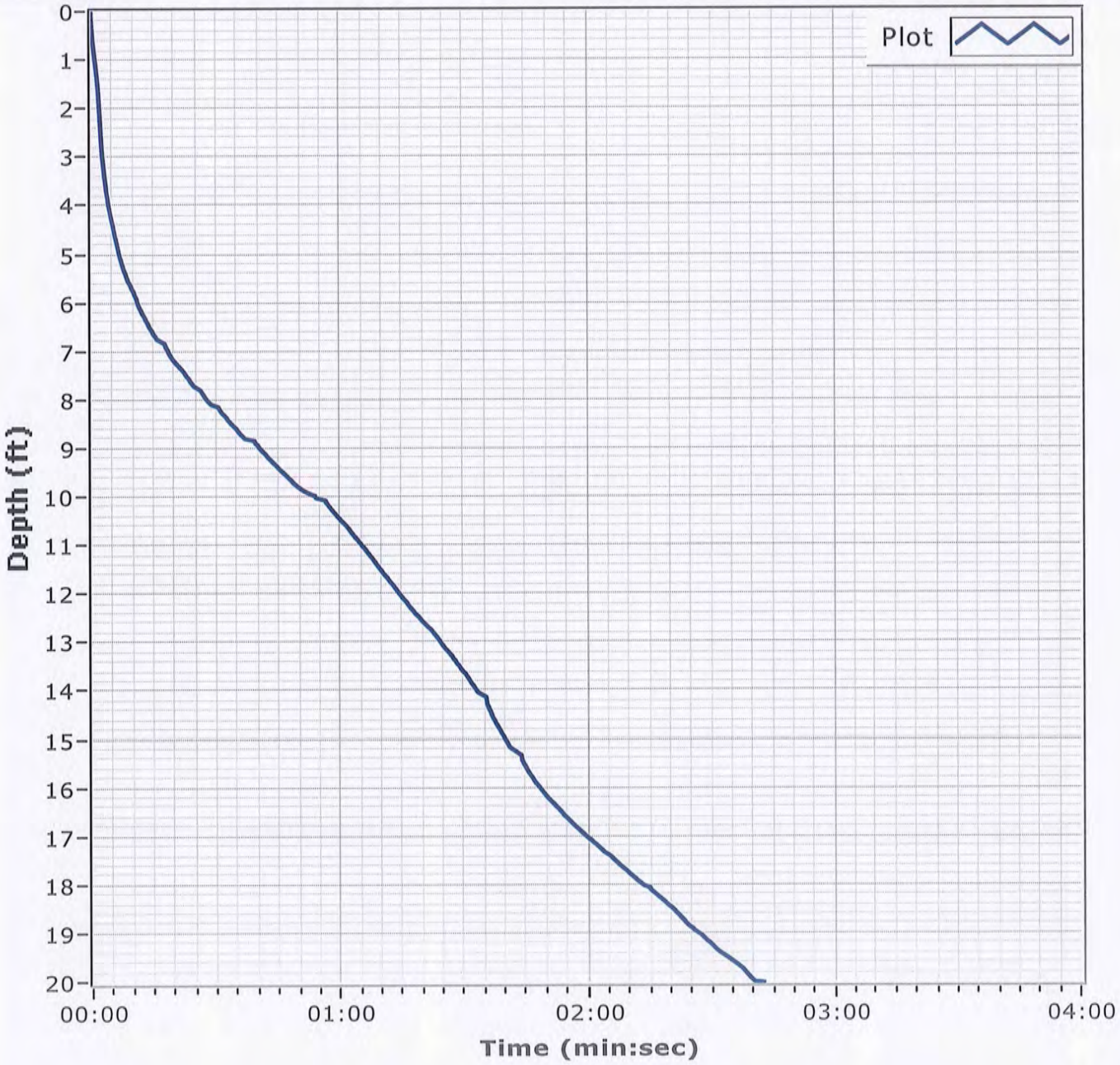
Core Identifier BI-PB-159-12
Coordinate System
Latitude / Longitude

Latitude 30 11.722
Longitude 88 19.409

Date 12/19/2012
Start Time 13:00:41
End Time 13:03:24
Total Time 00:02:43

Water Depth 36.2'
Penetration 20.0'
Recovery 17.0'

Comments



Boring Designation BI-PB-160-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-160-12	LOCATION COORDINATES: E = 1,147,443 N = 252,508	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: 39.8 Ft.	
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
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: 19.2 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-39.9	0.0				
-40.3	0.4		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, grayish brown (SM)		
			CLAY, fat, mostly clay, medium to high plasticity, clayey sand pockets throughout interval, dark gray (CH)		
-44.8	4.9		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)		
-47.5	7.6		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, occasional clay lenses, lt. gray (SP)	NS	
-59.1	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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19333° Long = -88.31678°

Project Mississippi Barrier Island Restoration Project

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SERVICES

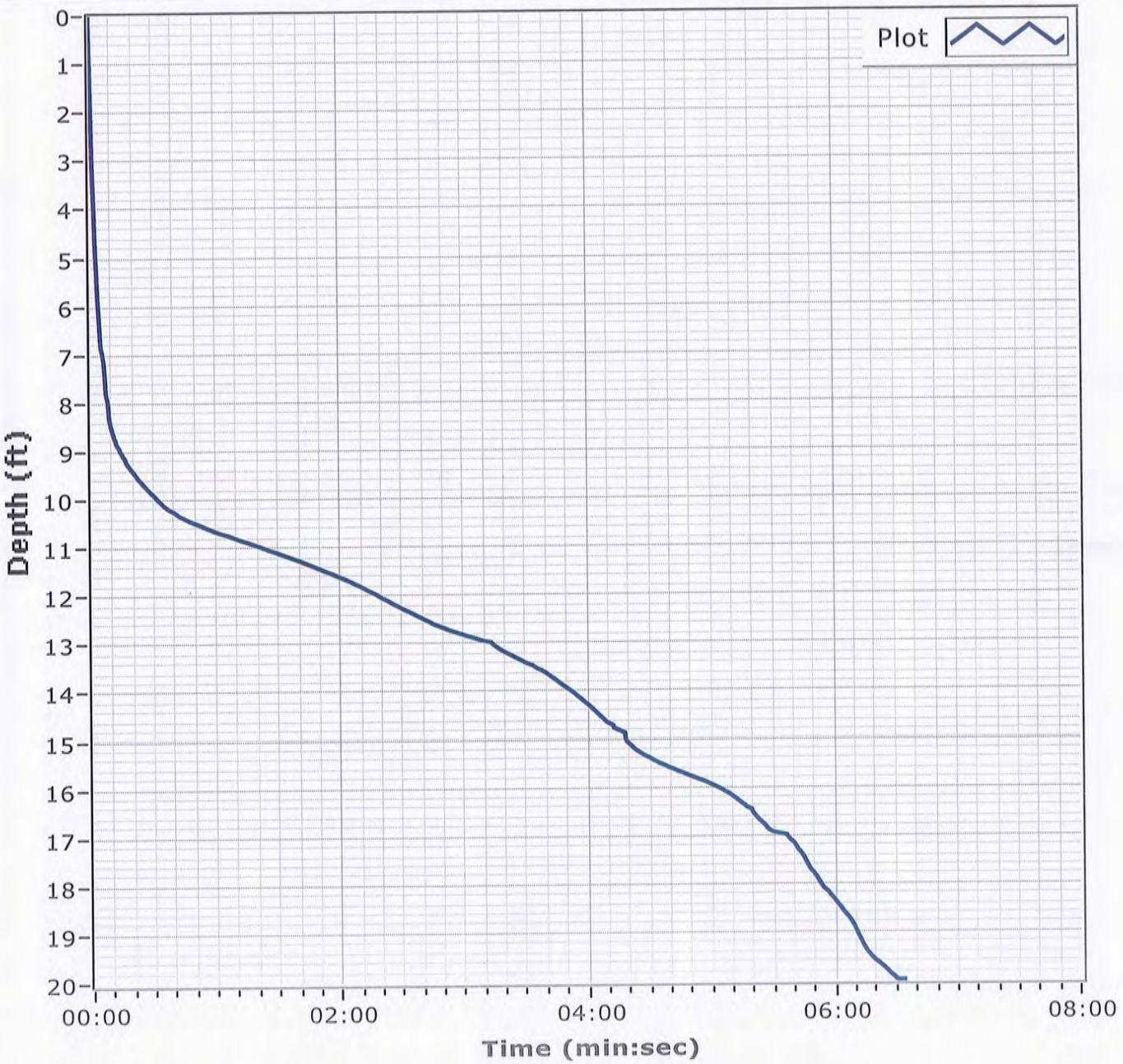
Core Identifier BI-PB-160-12
Coordinate System
Latitude / Longitude

Date 12/12/2012
Start Time 14:15:27
End Time 14:22:02
Total Time 00:06:34

Water Depth 39.8'
Penetration 20.0'
Recovery 19.3'

Latitude 30 11.600
Longitude 088 19.007

Comments



Boring Designation BI-PB-161-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-161-12	LOCATION COORDINATES: E = 1,147,992 N = 252,019	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: 41.7 Ft.	
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -41.7 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 100%	
8. TOTAL DEPTH OF BORING: 11.6 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-41.7	0.0				
-42.5	0.8		CLAY, lean, mostly clay, some silt, little shell fragments, trace fine-grained sand-sized quartz, soft, grayish brown (CL)		
-45.9	4.2		CLAY, fat, mostly clay, some fine-grained sand-sized quartz, trace shell fragments, stiff, medium to high plasticity, gray (CH)		
-46.9	5.2		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, few shell fragments, gray (SC)	NS	
-53.3	11.6		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace clay lenses throughout interval, lt. gray to 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19198° Long = -88.31505°

Project Mississippi Barrier Island Restoration Project

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AMERICAN VIBRACORE
S E R V I C E S

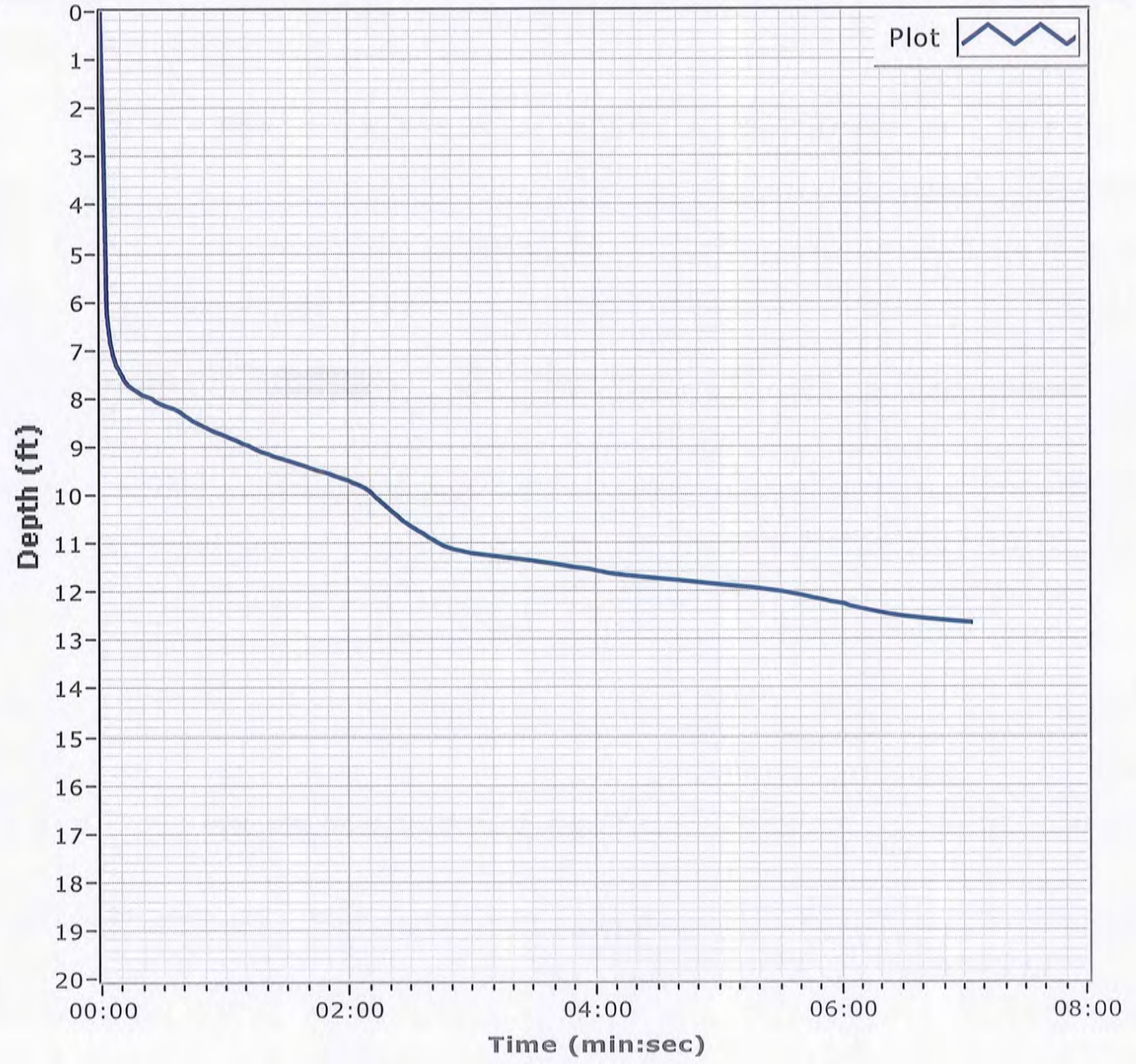
Core Identifier BI-PB-161-12
Coordinate System
Latitude / Longitude

Date 12/12/2012
Start Time 14:48:57
End Time 14:56:02
Total Time 00:07:04

Water Depth 41.7'
Penetration 12.7'
Recovery 11.6'

Latitude 30 11.895
Longitude 088 18.903

Comments



Boring Designation BI-PB-162-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-162-12	LOCATION COORDINATES: E = 1,154,862 N = 254,331	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: 12-06-12 / COMPLETED: 12-06-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -40.1 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
-40.1	0.0				
-41.4	1.3		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few shell fragments, trace silt, trace clay, gray (SP)		
			SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, trace clayey stringers, gray (SP-SM)	A	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.33 mm % Fines: 4.8
				B	Classification: SP Color: 2.5Y 5/2-grayish brown D50: 0.316 mm % Fines: 4.7
				C	Classification: SP-SM Color: 2.5Y 6/1-gray D50: 0.3059 mm % Fines: 7.8
-55.1	15.0				
-56.8	16.7		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)	NS	
-60.1	20.0		CLAY, fat, mostly clay, medium to high plasticity, sandy at 16.8 and 18.7 ft., stiff, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19825° Long = -88.29327°

Project Mississippi Barrier Island Restoration Project

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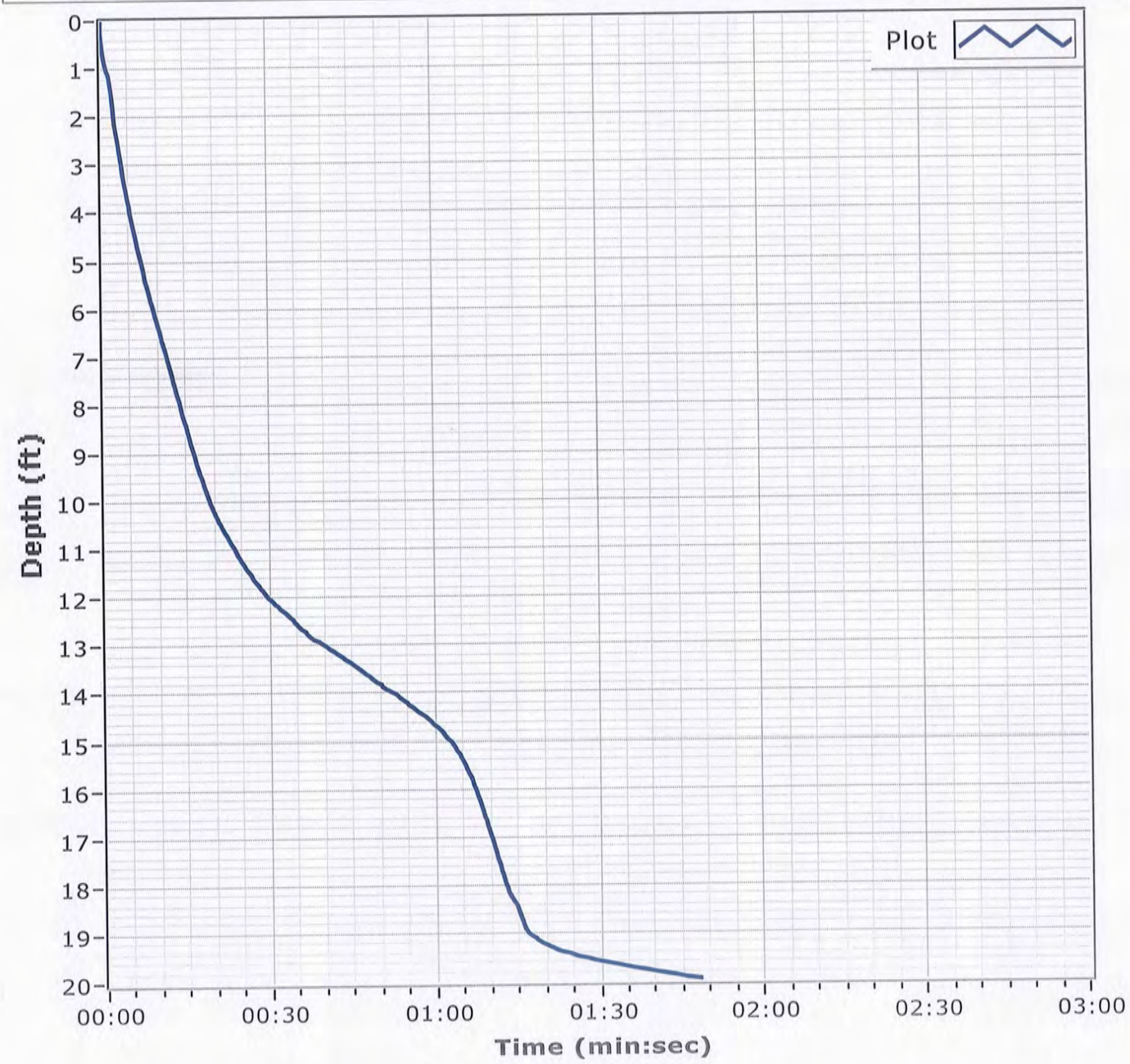
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Coordinate System
Latitude / Longitude

Date 12/06/2012
Start Time 13:24:22
End Time 13:26:11
Total Time 00:01:48

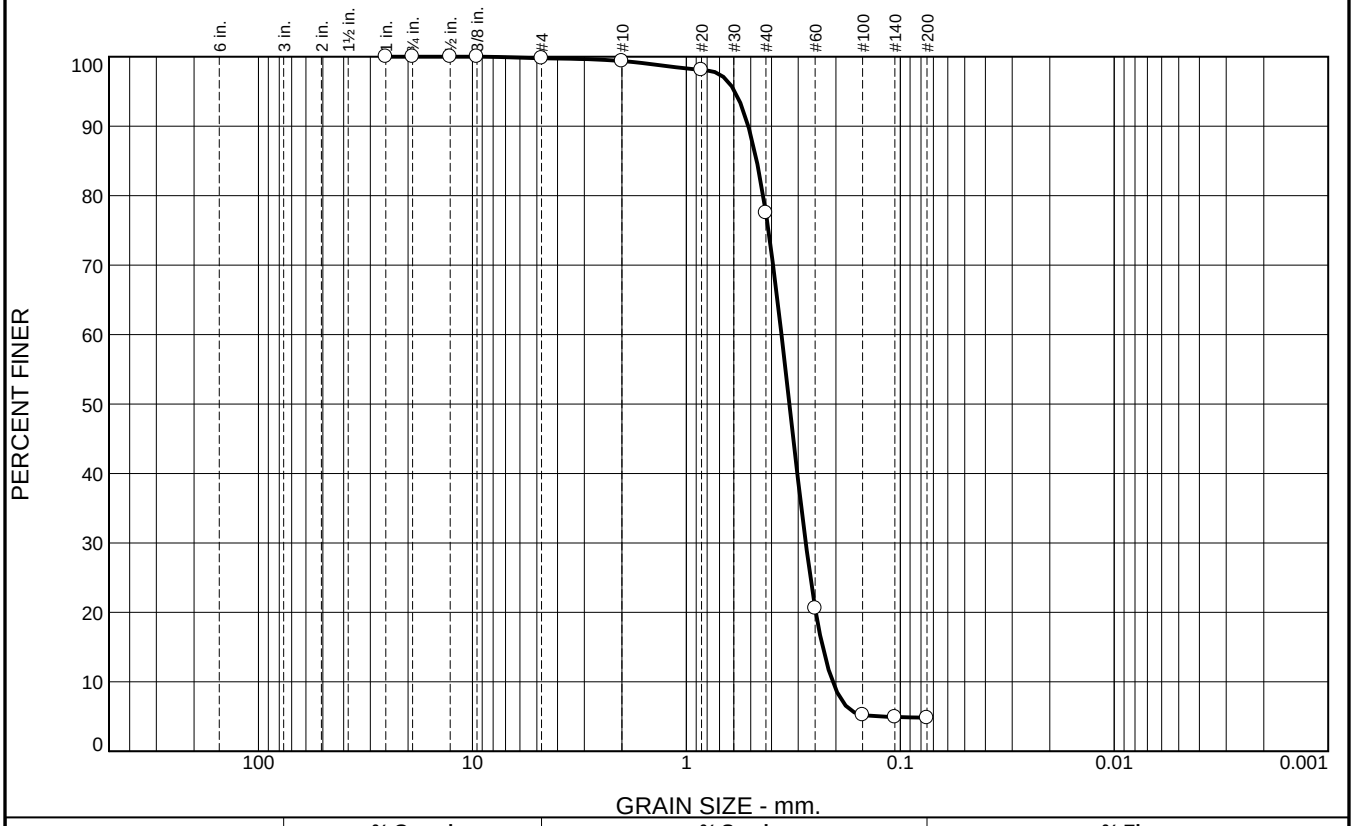
Water Depth 40.6'
Penetration 20.0'
Recovery 20.0'

Latitude 30 11.895
Longitude 088 17.596

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.4	21.9	72.7	4.8	

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	98.1		
#40	77.5		
#60	20.6		
#100	5.2		
#140	4.9		
#200	4.8		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5134 D_{85}= 0.4690 D_{60}= 0.3592
D_{50}= 0.3300 D_{30}= 0.2768 D_{15}= 0.2305
D_{10}= 0.2071 C_u= 1.73 C_c= 1.03

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-162-12 A
Sample Number: 6480 (15) **Depth:** 0.0' **Date:** 12/07/12

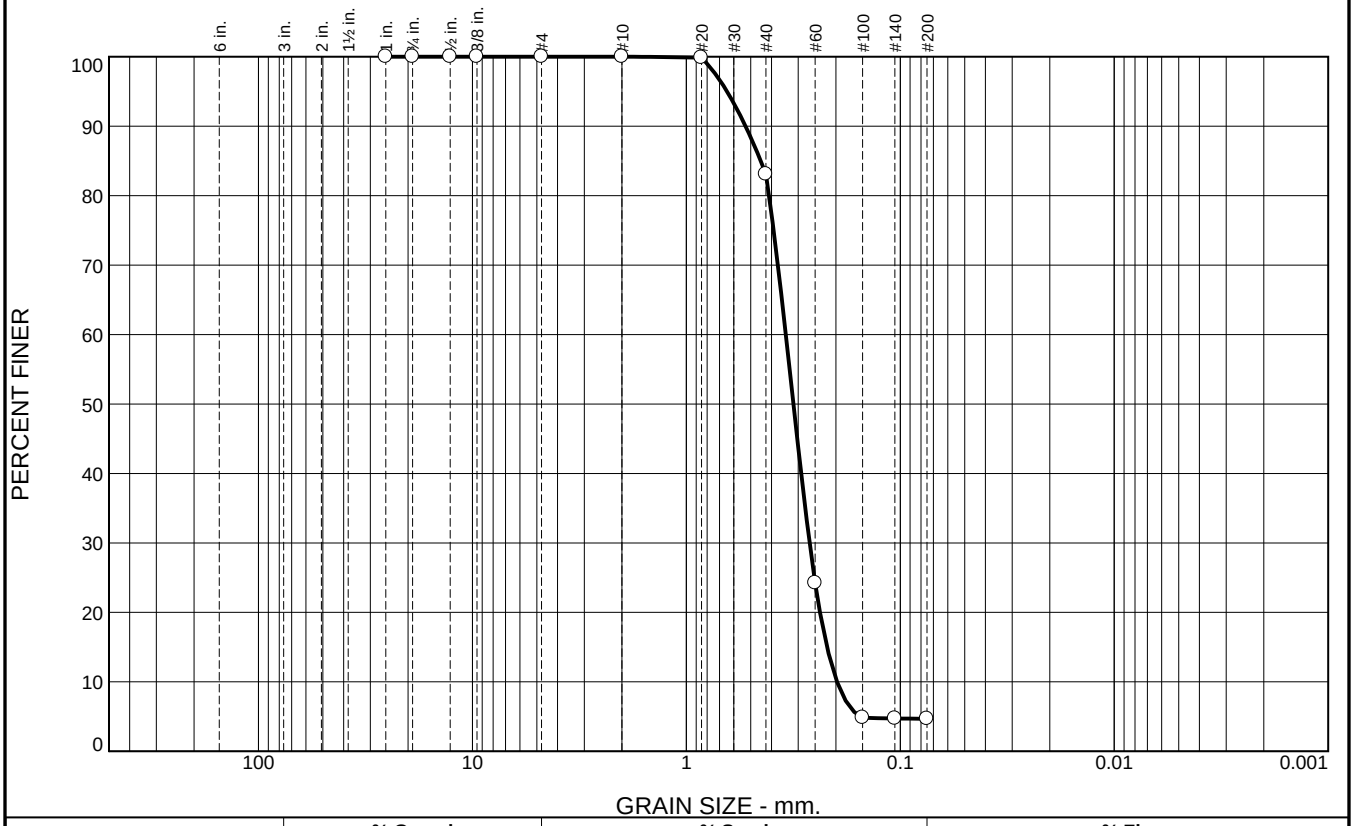
Thompson Engineering

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	16.9	78.4	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	99.9		
#40	83.1		
#60	24.2		
#100	4.8		
#140	4.7		
#200	4.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5289 D_{85}= 0.4494 D_{60}= 0.3429
D_{50}= 0.3160 D_{30}= 0.2656 D_{15}= 0.2199
D_{10}= 0.1976 C_u= 1.74 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-162-12 B
Sample Number: 6480 (16) **Depth:** 5.0' **Date:** 12/07/12

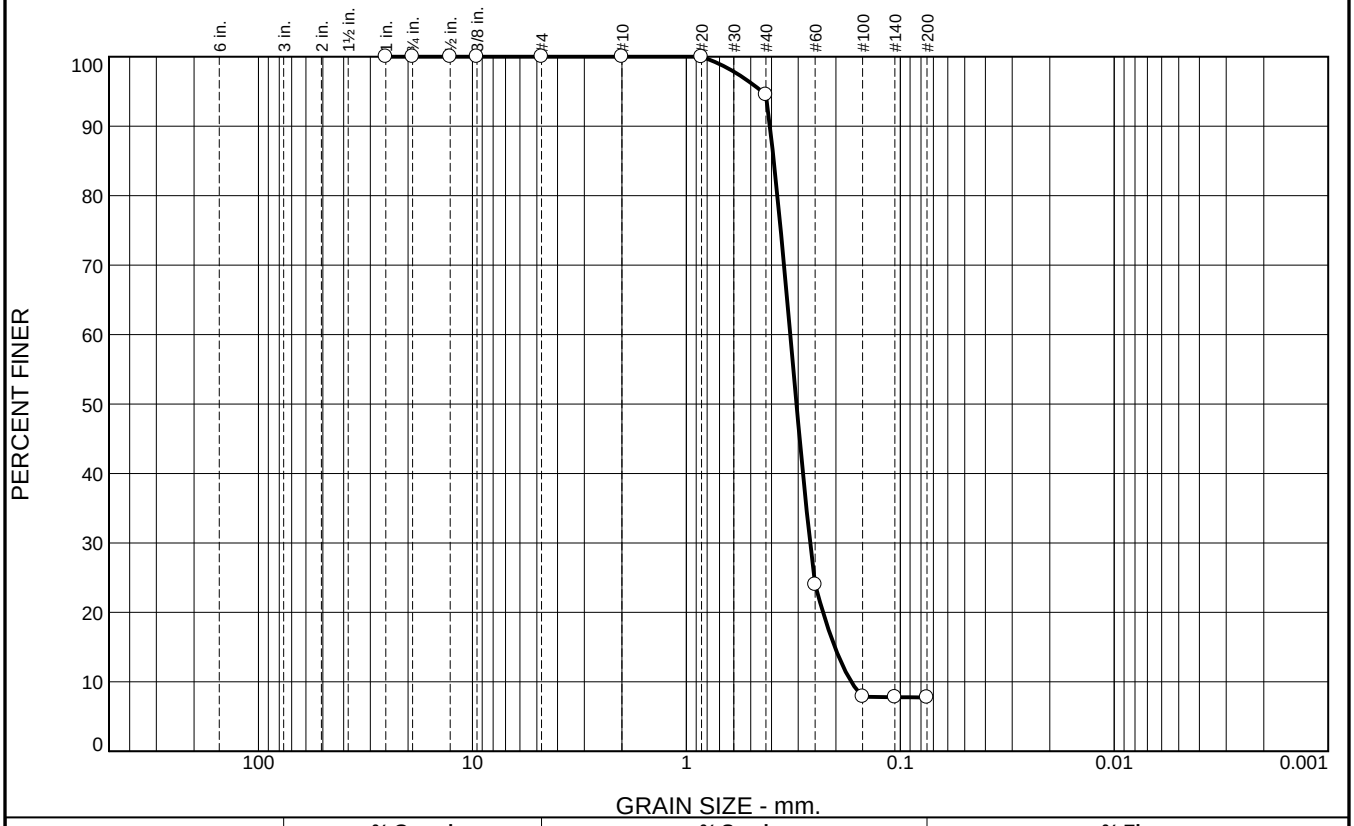
Thompson Engineering

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	5.5	86.7	7.8	

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	100.0		
#20	100.0		
#40	94.5		
#60	24.0		
#100	7.9		
#140	7.8		
#200	7.8		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4068 D_{85}= 0.3900 D_{60}= 0.3269
D_{50}= 0.3059 D_{30}= 0.2641 D_{15}= 0.2023
D_{10}= 0.1696 C_u= 1.93 C_c= 1.26

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-162-12 C
Sample Number: 6480 (17) **Depth:** 10.0' **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-PB-163-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-163-12	LOCATION COORDINATES: E = 1,154,858 N = 255,102	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.	
		15. DATE BORING	STARTED: 12-06-12 / COMPLETED: 12-06-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -37.6 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
-37.6	0.0				
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace clay streaks, gray (SP-SM)	A	Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.304 mm % Fines: 7.2
				B	Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.3062 mm % Fines: 5.7
				C	Classification: SP-SM Color: 2.5Y 6/1-gray D50: 0.3121 mm % Fines: 6.9
-50.8	13.2				
			CLAY, fat, mostly clay, few sandy pockets throughout, medium to high plasticity, stiff, gray (CH)	NS	
-57.6	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20037° Long = -88.29327°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
SERVICES

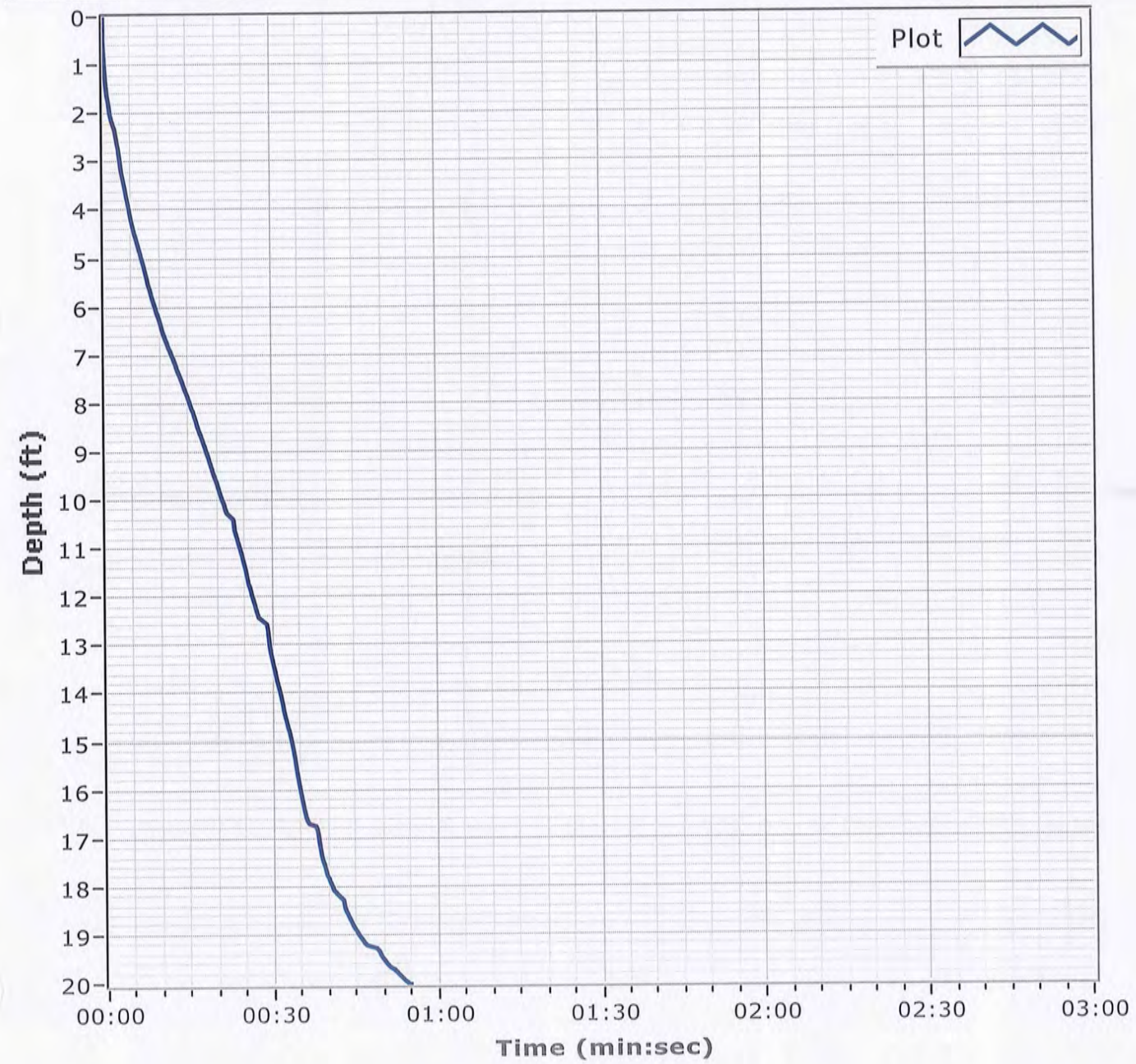
Core Identifier BI-PB-163-12
Coordinate System
Latitude / Longitude

Date 12/06/2012
Start Time 12:16:39
End Time 12:17:34
Total Time 00:00:55

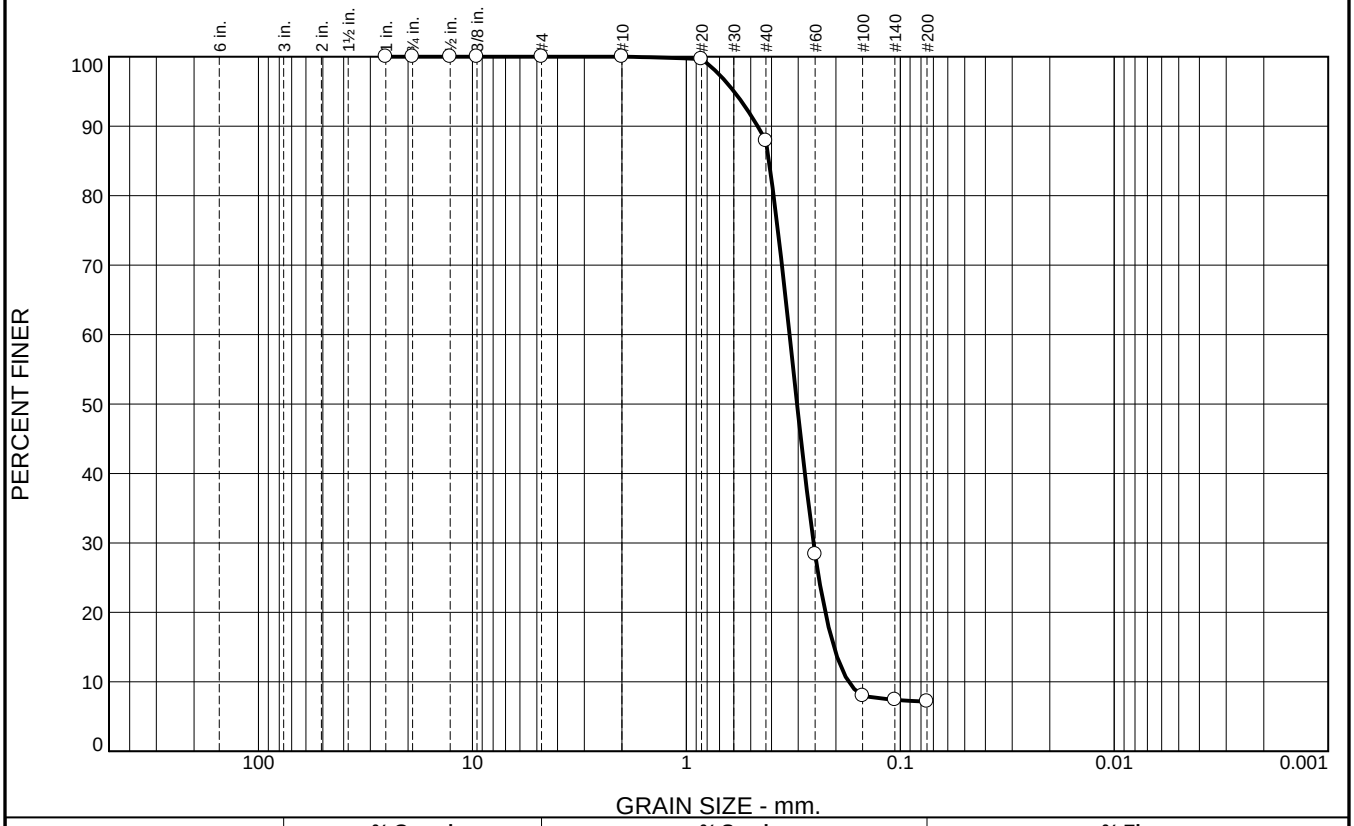
Water Depth 38.2'
Penetration 20.0'
Recovery 20.0'

Latitude 30 12.022
Longitude 088 17.596

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	12.1	80.7	7.2	

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	100.0		
#20	99.7		
#40	87.9		
#60	28.4		
#100	8.0		
#140	7.4		
#200	7.2		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4649 D_{85}= 0.4111 D_{60}= 0.3294
D_{50}= 0.3040 D_{30}= 0.2544 D_{15}= 0.2043
D_{10}= 0.1745 C_u= 1.89 C_c= 1.13

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-163-12 A
Sample Number: 6480 (18) **Depth:** 0.0' **Date:** 12/07/12

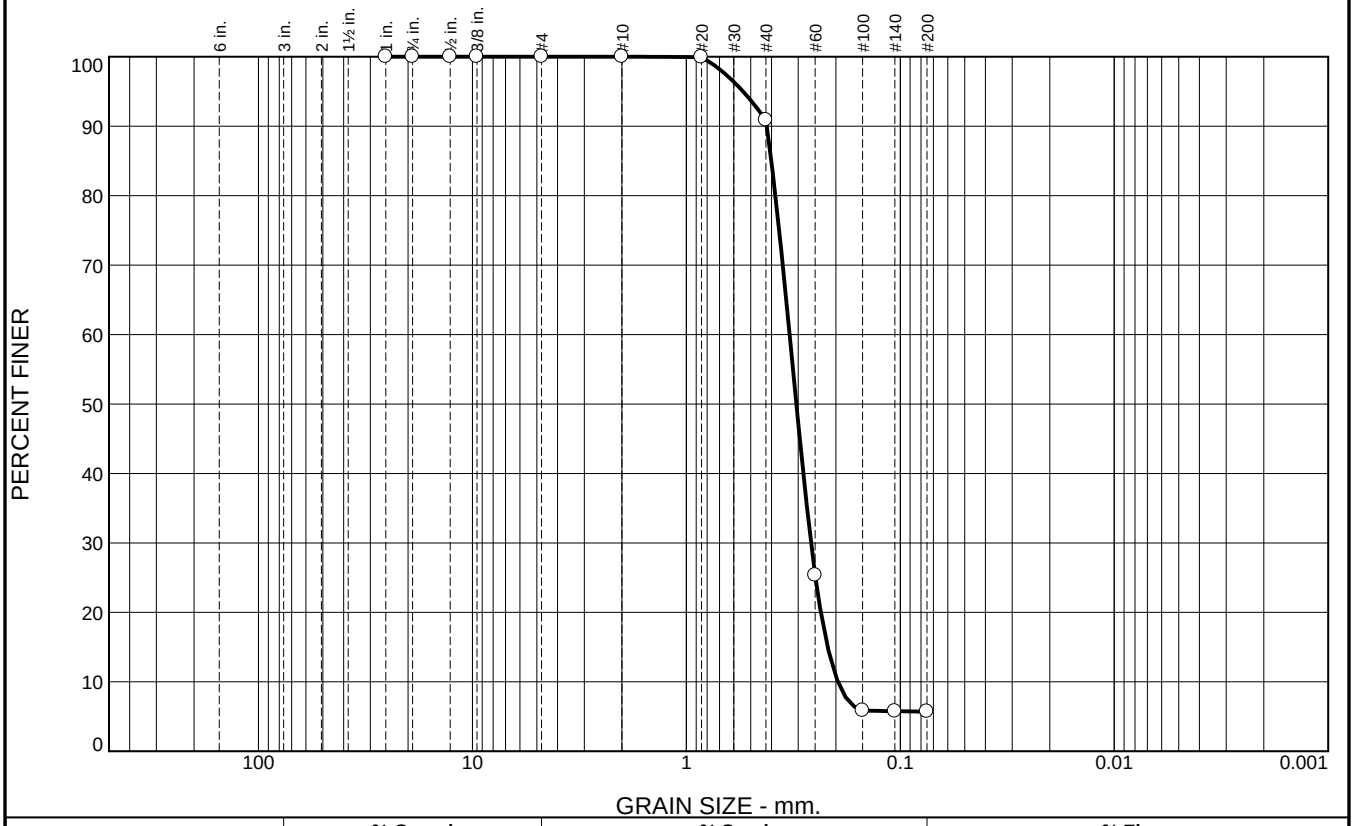
Thompson Engineering

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	9.1	85.2	5.7	

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	90.9		
#60	25.3		
#100	5.9		
#140	5.8		
#200	5.7		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4209 D_{85}= 0.4005 D_{60}= 0.3292
D_{50}= 0.3062 D_{30}= 0.2614 D_{15}= 0.2185
D_{10}= 0.1957 C_u= 1.68 C_c= 1.06

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-163-12 B
Sample Number: 6480 (19) **Depth:** 5.0' **Date:** 12/07/12

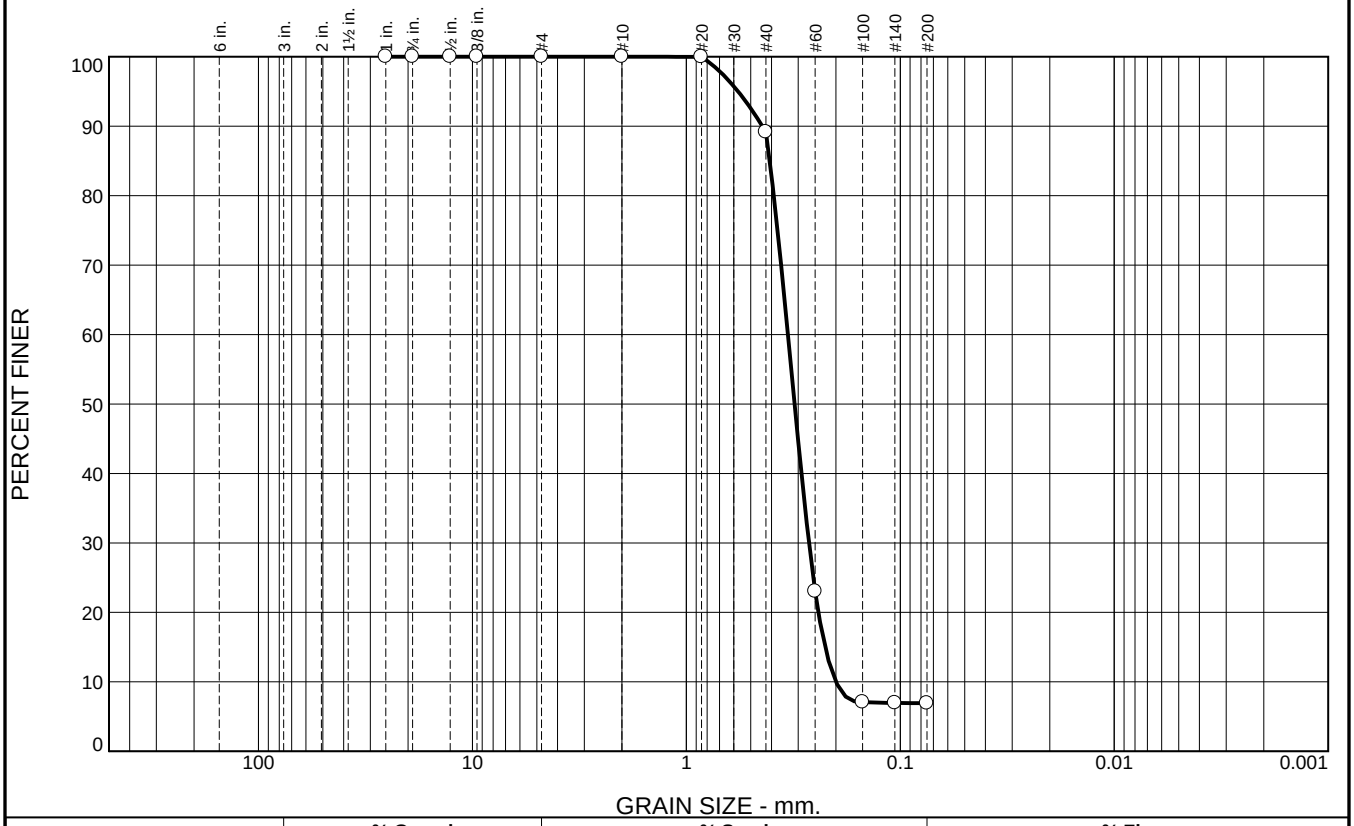
Thompson Engineering

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	10.8	82.3	6.9	

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	100.0		
#20	100.0		
#40	89.2		
#60	23.0		
#100	7.1		
#140	7.0		
#200	6.9		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4416 D_{85}= 0.4077 D_{60}= 0.3352
D_{50}= 0.3121 D_{30}= 0.2674 D_{15}= 0.2245
D_{10}= 0.1999 C_u= 1.68 C_c= 1.07

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-163-12 C
Sample Number: 6480 (20) **Depth:** 10.0' **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-PB-164-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-164-12	LOCATION COORDINATES: E = 1,154,851 N = 256,670	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 Ft.	
		15. DATE BORING	STARTED: 12-06-12 / COMPLETED: 12-06-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -33.5 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	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-33.5	0.0			
		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, pale lt. brown to gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.3369 mm % Fines: 2
-36.1	2.6			
		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP)	B	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3388 mm % Fines: 4.2
-38.5	5.0			
		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace clay stringers, lt. gray to white (SP)	C	Classification: SP Color: 5Y 7/2-light gray D50: 0.3269 mm % Fines: 3
-42.2	8.7			
-43.5	10.0	SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, few clay, clay content increases with depth, lt. gray to gray (SP-SC)	D	Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.3079 mm % Fines: 5.6
		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, some silt, few shell fragments, gray (SC)	NS	
-49.6	16.1			
-50.5	17.0	CLAY, lean, mostly clay, some fine-grained sand-sized quartz, trace shell fragments, sandy clay, gray (CL)		
-51.8	18.3			
		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, clayey sand, gray (SC)		
-53.5	20.0			
		CLAY, lean, mostly clay, some fine-grained sand-sized, trace shell fragments, sandy clay, gray (CL)		

NOTES:

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

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20468° Long = -88.29327°

Boring Designation BI-PB-164-12

DRILLING LOG (Cont. Sheet)	INSTALLATION	SHEET 2 OF 2 SHEETS
	Mobile District	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Barrier Island Restoration	State Plane, MSE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 1,154,851 Y = 256,670	-33.5 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			2. NS = Sample not submitted for laboratory analysis from this interval.		

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20468° Long = -88.29327°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PB-164-12

Coordinate System
Latitude / Longitude

Latitude 30 12.281

Longitude 088 17.596

Date 12/06/2012

Start Time 10:37:41

End Time 10:38:28

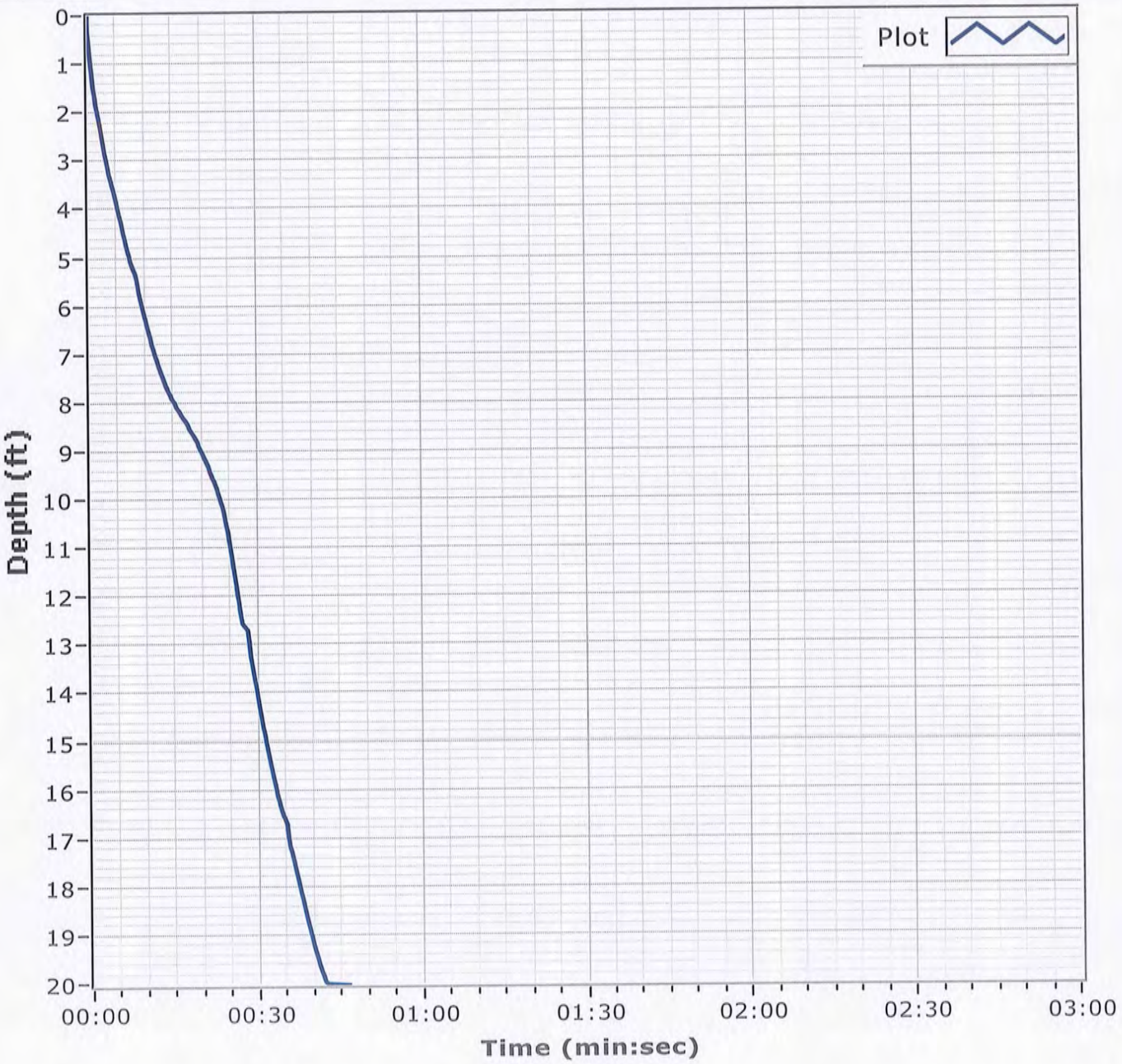
Total Time 00:00:46

Water Depth 34.0'

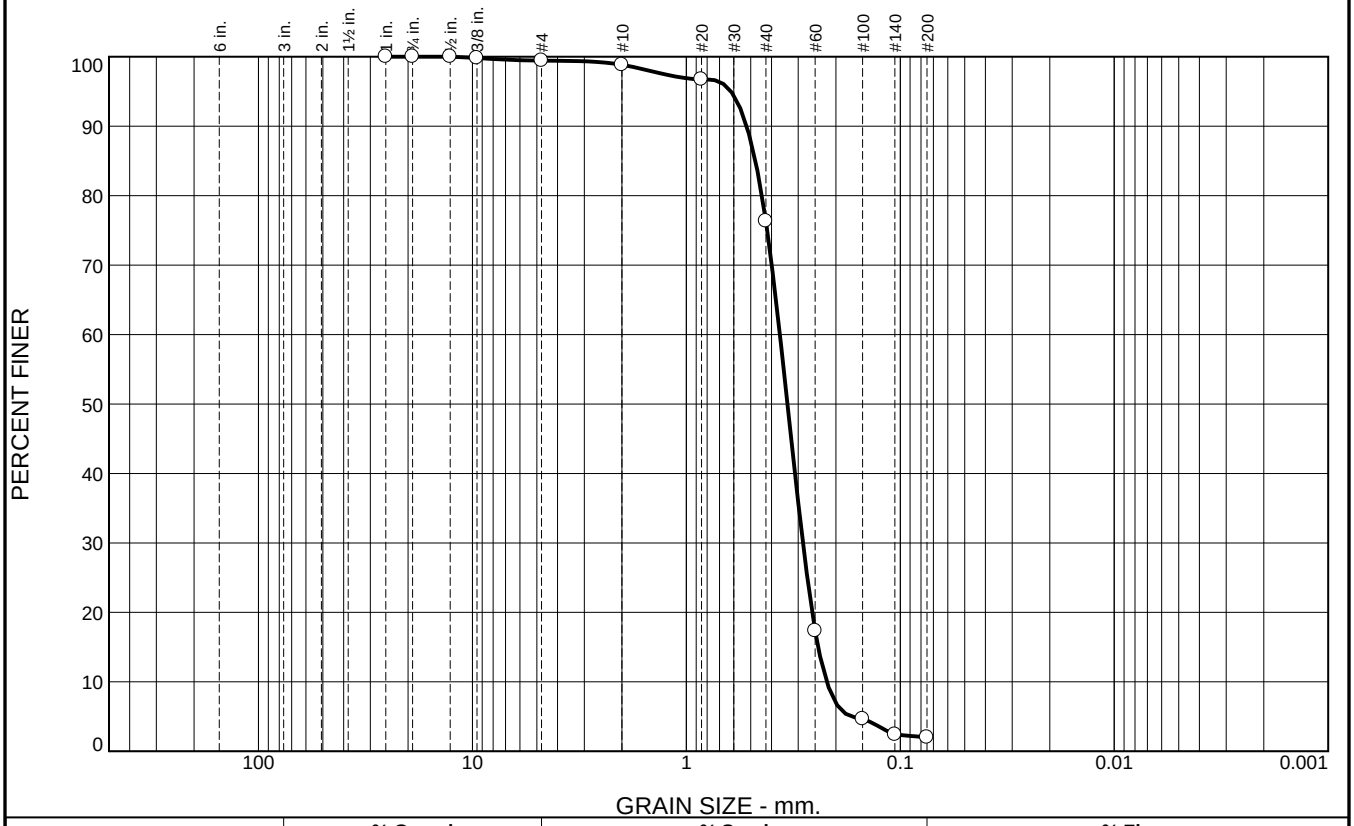
Penetration 20.0'

Recovery 20.0'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	0.6	22.5	74.3	2.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.8		
#4	99.4		
#10	98.8		
#20	96.7		
#40	76.3		
#60	17.3		
#100	4.7		
#140	2.4		
#200	2.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5225 D_{85}= 0.4756 D_{60}= 0.3654
D_{50}= 0.3369 D_{30}= 0.2853 D_{15}= 0.2420
D_{10}= 0.2206 C_u= 1.66 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-164-12 A
Sample Number: 6480 (21) **Depth:** 0.0' **Date:** 12/07/12

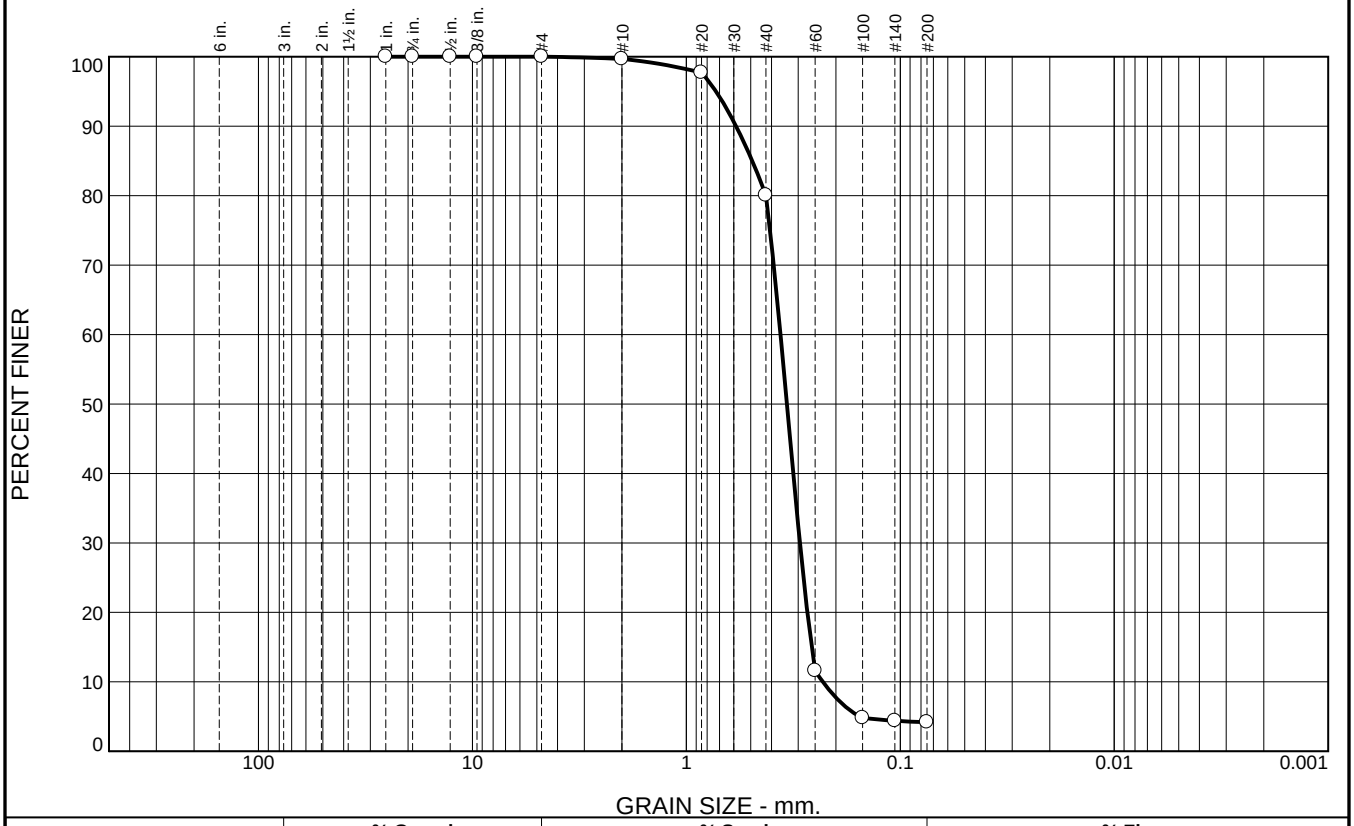
Thompson Engineering

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	0.3	19.6	75.9	4.2	

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	99.7		
#20	97.7		
#40	80.1		
#60	11.6		
#100	4.8		
#140	4.4		
#200	4.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5855 D_{85}= 0.4923 D_{60}= 0.3629
D_{50}= 0.3388 D_{30}= 0.2948 D_{15}= 0.2597
D_{10}= 0.2302 C_u= 1.58 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-164-12 B
Sample Number: 6480 (22) **Depth:** 2.6' **Date:** 12/07/12

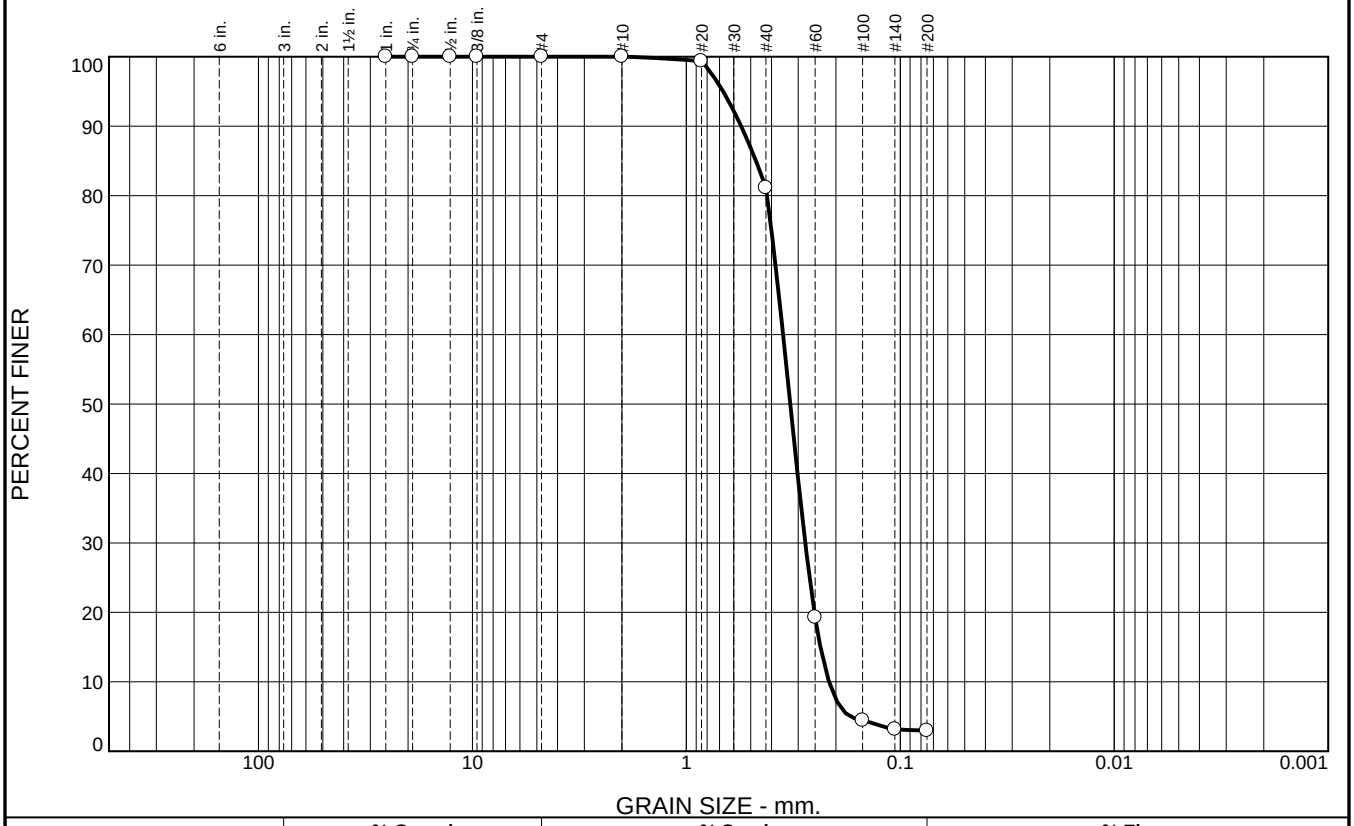
Thompson Engineering

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	18.9	78.1	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	100.0		
#20	99.4		
#40	81.1		
#60	19.3		
#100	4.4		
#140	3.1		
#200	3.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5543 D_{85}= 0.4731 D_{60}= 0.3530
D_{50}= 0.3269 D_{30}= 0.2783 D_{15}= 0.2362
D_{10}= 0.2153 C_u= 1.64 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-164-12 C
Sample Number: 6480 (23) **Depth:** 5.0' **Date:** 12/07/12

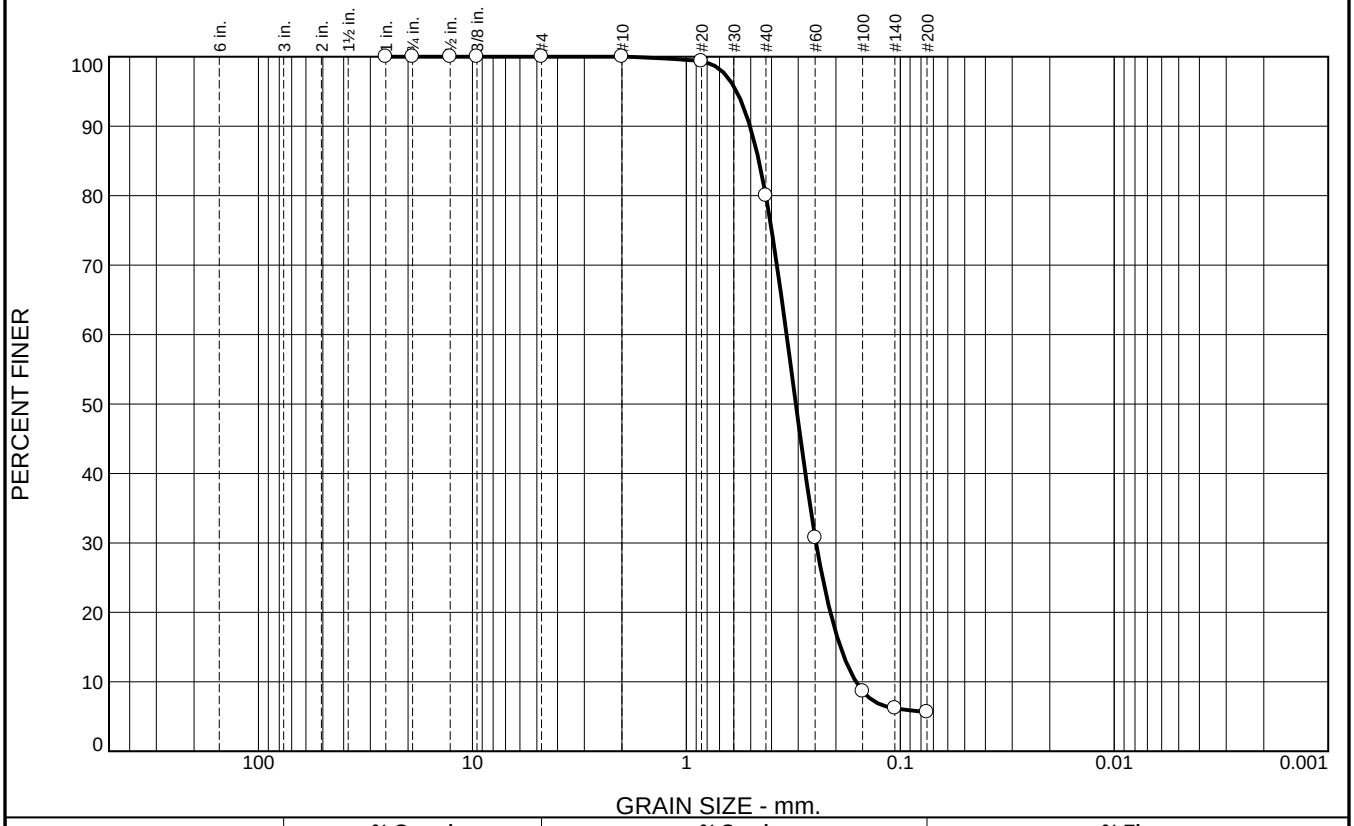
Thompson Engineering

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	20.0	74.4	5.6	

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	99.4		
#40	80.0		
#60	30.8		
#100	8.7		
#140	6.2		
#200	5.6		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5041 D_{85}= 0.4580 D_{60}= 0.3401
D_{50}= 0.3079 D_{30}= 0.2476 D_{15}= 0.1905
D_{10}= 0.1612 C_u= 2.11 C_c= 1.12

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-164-12 D
Sample Number: 6480 (24) **Depth:** 8.7' **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-PB-165-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-165-12	LOCATION COORDINATES: E = 1,154,799 N = 257,695	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: 33.1 Ft.	
		15. DATE BORING	STARTED: 12-06-12 / COMPLETED: 12-06-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -32.5 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-32.5	0.0				
-33.1	0.6		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)	NS	
-33.8	1.3		SILT, inorganic-L, mostly silt, trace fine-grained sand-sized quartz, medium to high plasticity, brownish gray (ML)	A	Classification: SP-SM Color: 2.5Y 7/2-light gray D50: 0.3143 mm % Fines: 7.9
				B	Classification: SP Color: 5Y 8/1-white D50: 0.3783 mm % Fines: 2.1
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, clay band at 1.7 ft., gray (SP) At El. -34.4 Ft., mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, gray At El. -35.3 Ft., mostly fine to medium-grained sand-sized quartz, trace silt, dense, lt. gray to white	C	Classification: SP Color: 2.5Y 8.5/1- D50: 0.3381 mm % Fines: 1.3
				D	Classification: SP Color: 2.5Y 7/1-light gray D50: 0.3332 mm % Fines: 2.4
				E	Classification: SP Color: 2.5Y 8/1-white D50: 0.3237 mm % Fines: 1.9
-47.5	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.	NS	

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20750° Long = -88.29342°

Project Mississippi Barrier Island Restoration Project

AVS
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SERVICES

Core Identifier BI-PB-165-12

Coordinate System
Latitude / Longitude

Latitude 30 12.450

Longitude 088 17.605

Date 12/06/2012

Start Time 09:37:27

End Time 09:42:57

Total Time 00:05:30

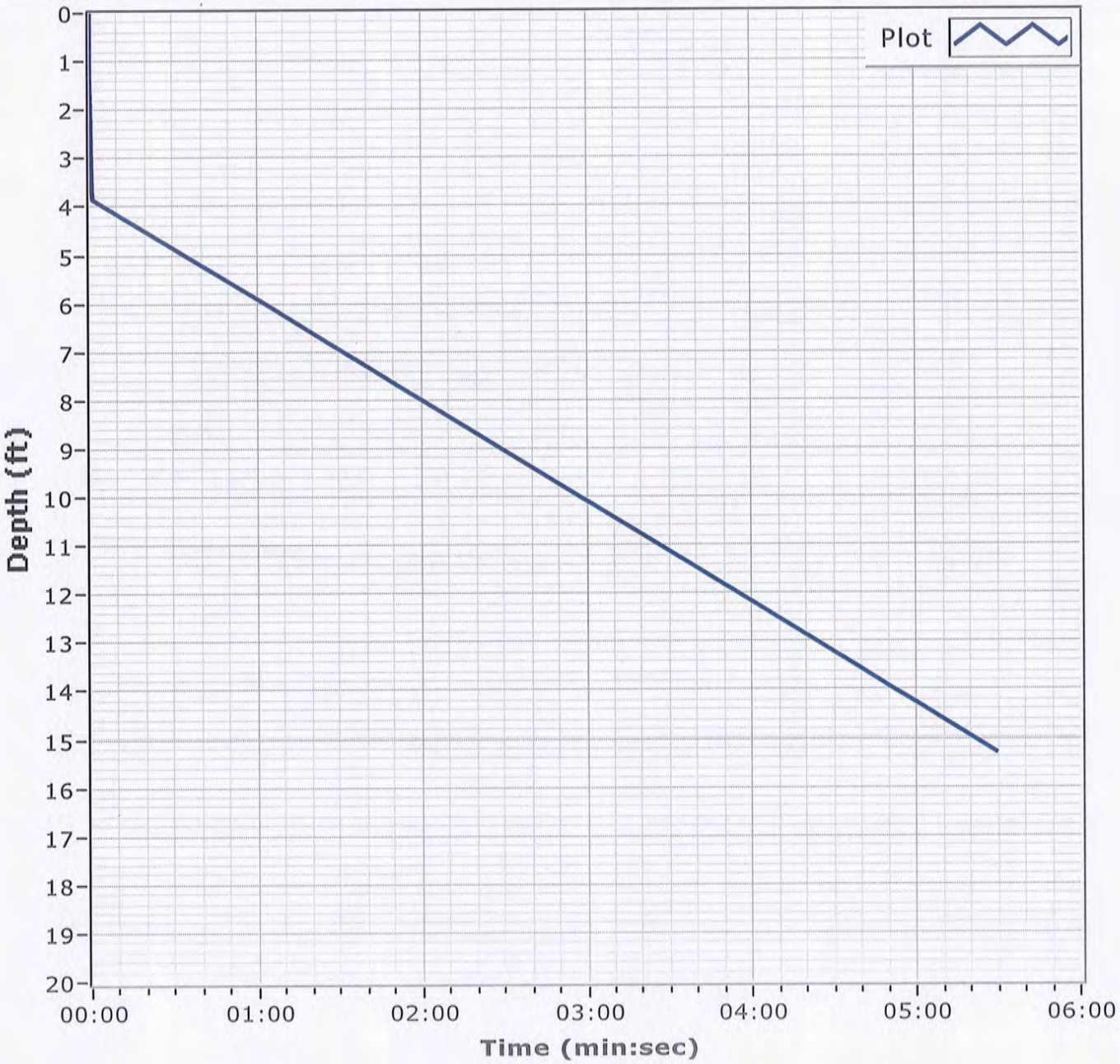
Water Depth 33.1'

Penetration 15.3'

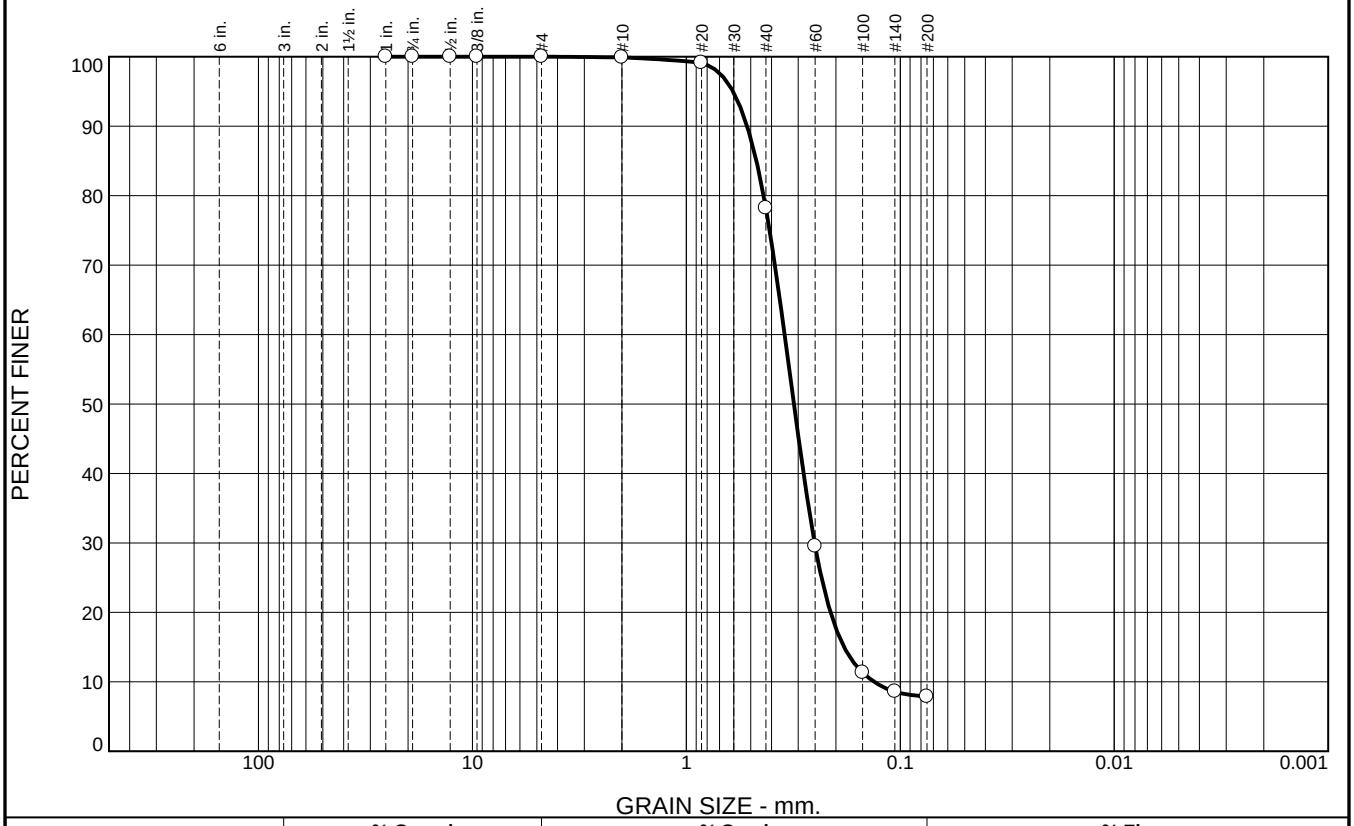
Recovery 15.0'

Comments

Note Penetromerer connector was loose, intermittant connection.



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	21.7	70.3	7.9	

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	99.1		
#40	78.2		
#60	29.5		
#100	11.3		
#140	8.6		
#200	7.9		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5199 D_{85}= 0.4705 D_{60}= 0.3473
D_{50}= 0.3143 D_{30}= 0.2516 D_{15}= 0.1833
D_{10}= 0.1325 C_u= 2.62 C_c= 1.38

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-165-12 A
Sample Number: 6480 (25) **Depth:** 1.3' **Date:** 12/07/12

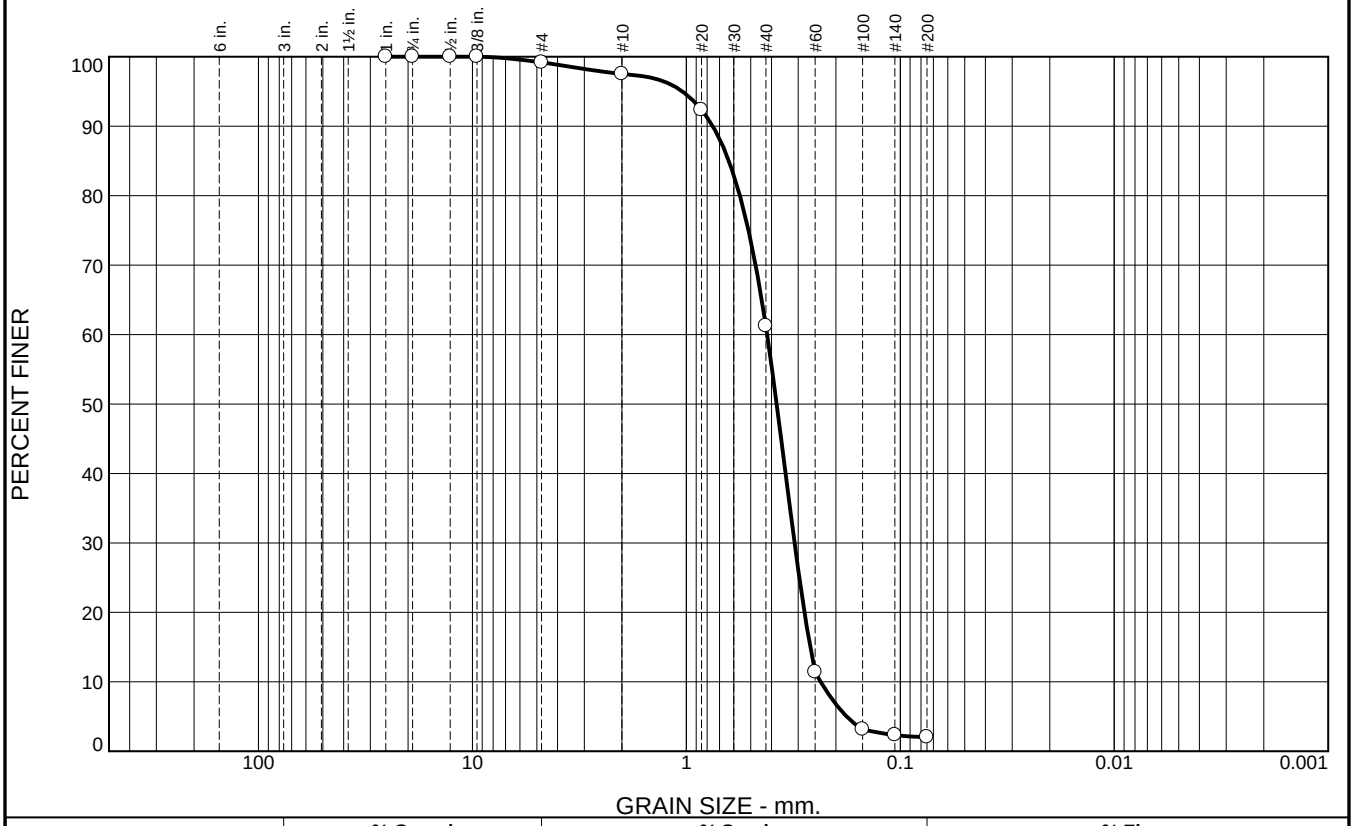
Thompson Engineering

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	0.8	1.7	36.3	59.1	2.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.2		
#10	97.5		
#20	92.3		
#40	61.2		
#60	11.4		
#100	3.2		
#140	2.3		
#200	2.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.7529 D_{85}= 0.6329 D_{60}= 0.4192
D_{50}= 0.3783 D_{30}= 0.3122 D_{15}= 0.2638
D_{10}= 0.2355 C_u= 1.78 C_c= 0.99

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-165-12 B
Sample Number: 6480 (26) **Depth:** 1.9' **Date:** 12/07/12

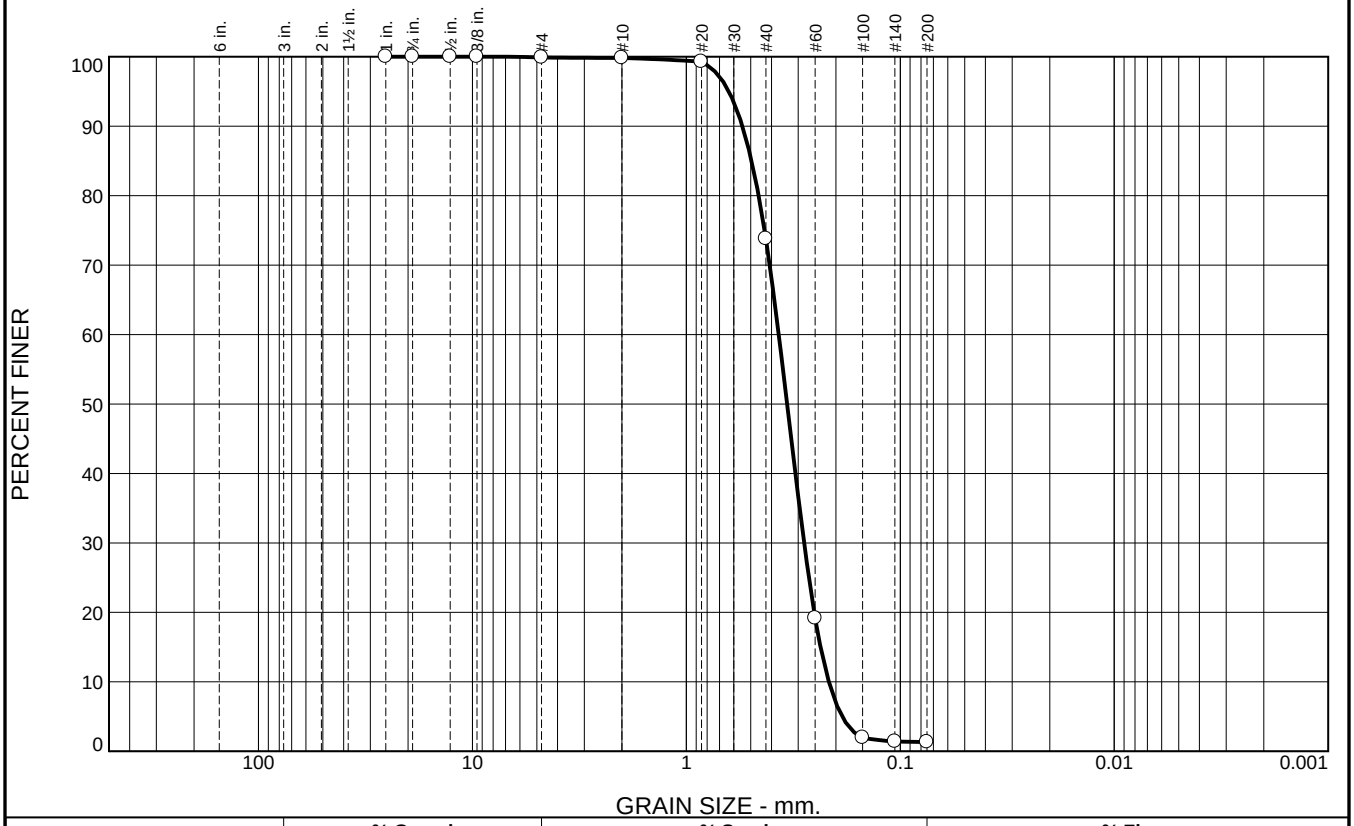
Thompson Engineering

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	0.1	0.1	26.0	72.5	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	99.8		
#20	99.3		
#40	73.8		
#60	19.2		
#100	2.0		
#140	1.4		
#200	1.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5469 D_{85}= 0.4958 D_{60}= 0.3699
D_{50}= 0.3381 D_{30}= 0.2817 D_{15}= 0.2359
D_{10}= 0.2157 C_u= 1.72 C_c= 0.99

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-165-12 C
Sample Number: 6480 (27) **Depth:** 2.8' **Date:** 12/07/12

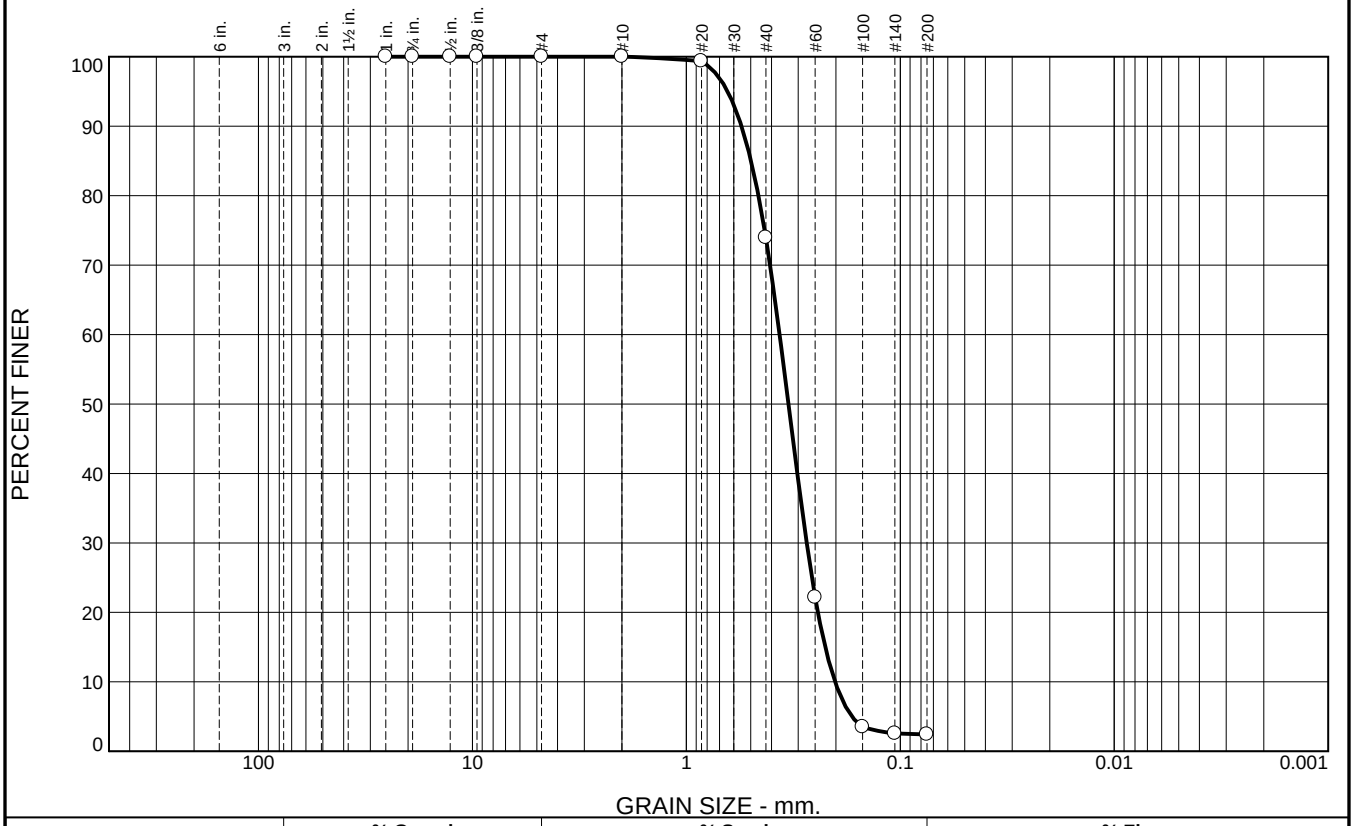
Thompson Engineering

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	26.1	71.5	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	100.0		
#20	99.4		
#40	73.9		
#60	22.2		
#100	3.5		
#140	2.6		
#200	2.4		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5521 D_{85}= 0.4986 D_{60}= 0.3665
D_{50}= 0.3332 D_{30}= 0.2739 D_{15}= 0.2244
D_{10}= 0.2019 C_u= 1.82 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-165-12 D
Sample Number: 6480 (28) **Depth:** 5.0' **Date:** 12/07/12

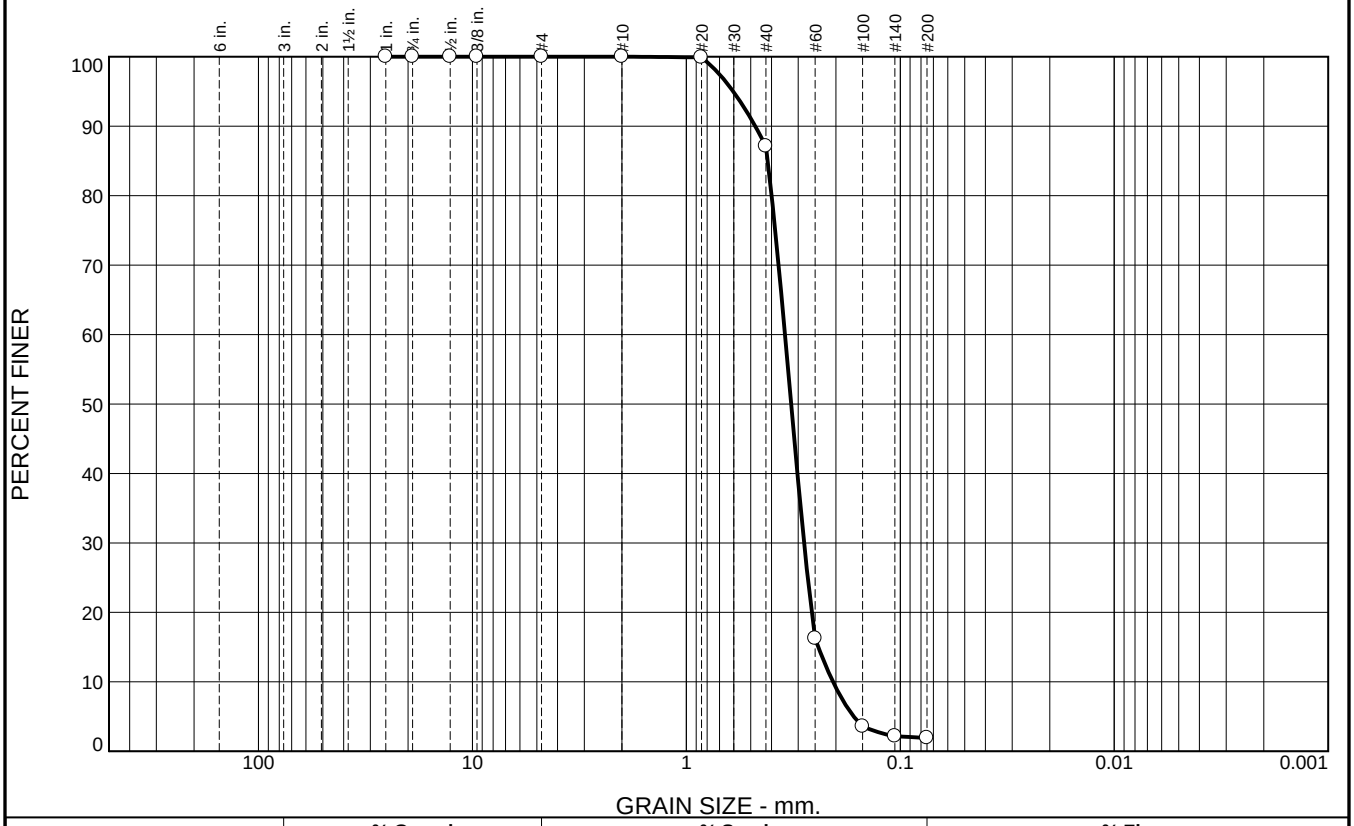
Thompson Engineering

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	12.9	85.2	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	100.0		
#20	99.9		
#40	87.1		
#60	16.3		
#100	3.6		
#140	2.2		
#200	1.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4765 D_{85}= 0.4166 D_{60}= 0.3459
D_{50}= 0.3237 D_{30}= 0.2819 D_{15}= 0.2415
D_{10}= 0.2063 C_u= 1.68 C_c= 1.11

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-165-12 E
Sample Number: 6480 (29) **Depth:** 10.0' **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-PB-166-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-166-12	LOCATION COORDINATES: E = 1,154,688 N = 259,113	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: 11-29-12 / COMPLETED: 11-29-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -32.1 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 100%	
8. TOTAL DEPTH OF BORING: 10.2 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-32.1	0.0				
-32.3	0.2		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, lt. brown (SP)		
			CLAY, fat, mostly clay, trace silt, medium plasticity, gray (CH)		
			At El. -33.8 Ft., mostly clay, trace wood debris, high plasticity, gray mottled with brown	NS	
-38.6	6.5				
-39.5	7.4		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace clay, lt. gray (SP)		
			CLAY, fat, mostly clay, trace silt, trace wood debris, medium to high plasticity, gray (CH)		
-42.3	10.2				

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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.21140° Long = -88.29375°

Project Mississippi Barrier Island Restoration Project

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AMERICAN VIBRACORE SERVICES

Core Identifier BI-PB-166-12

Coordinate System
Latitude / Longitude

Latitude 30 12.684

Longitude 088 17.625

Date 11/29/2012

Start Time 14:34:13

End Time 14:37:39

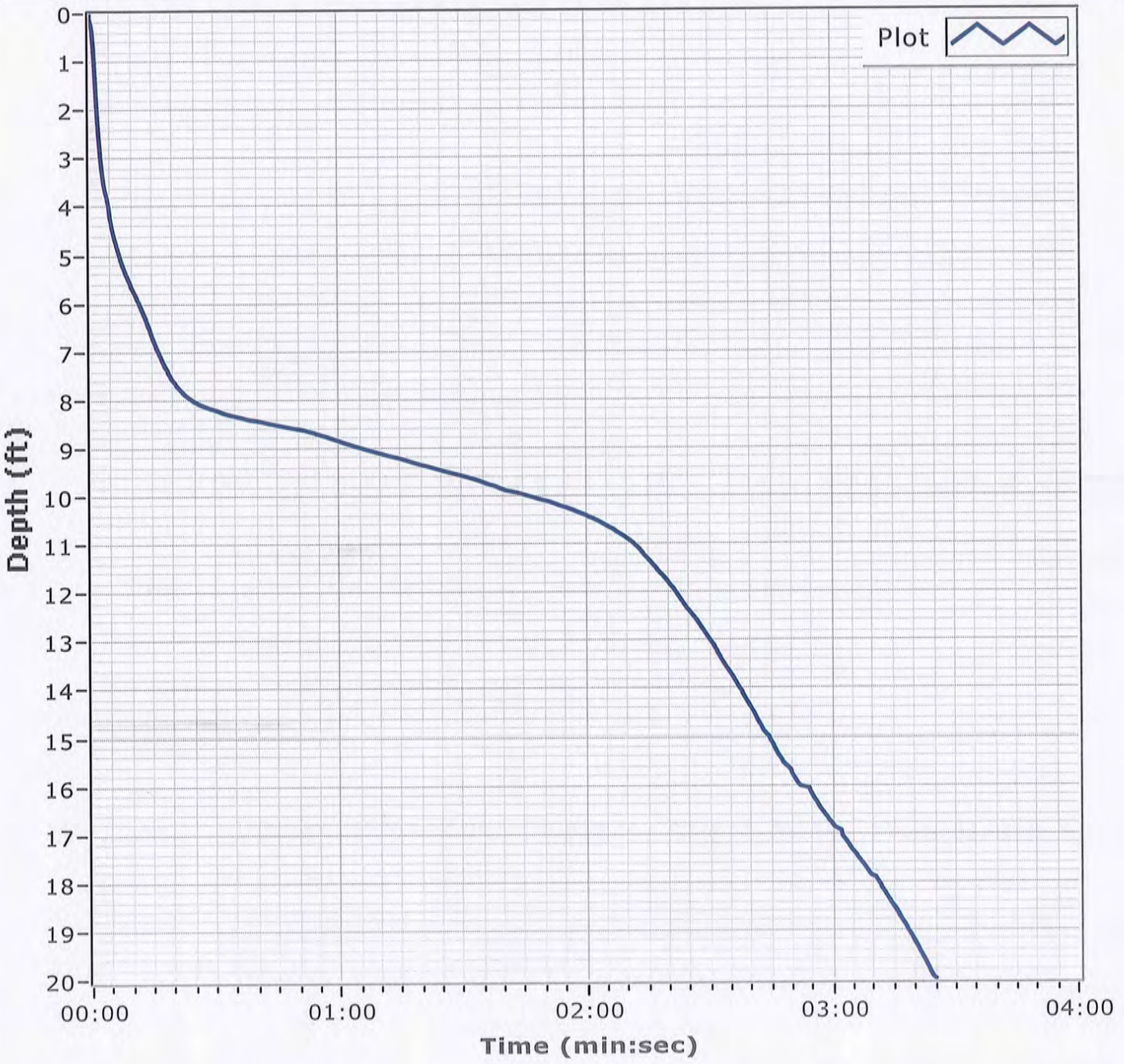
Total Time 00:03:25

Water Depth 32.3'

Penetration 20.0'

Recovery 10.3'

Comments



Boring Designation BI-PB-167-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-167-12	LOCATION COORDINATES: E = 1,153,417 N = 259,169	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: / 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: 29.7 Ft.	
		15. DATE BORING	STARTED: 11-29-12 / COMPLETED: 11-29-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -29.6 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-29.6	0.0				
-30.3	0.7		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, lt. brown to lt. gray (SP)	NS	
-31.0	1.4		SAND, clayey, mostly fine-grained sand-sized quartz, trace silt, gray (SC)		
			CLAY, fat, mostly clay, trace silt, medium to high plasticity, gray to brownish gray (CH)		
-40.0	10.4				
-40.5	10.9		SAND, clayey, mostly fine-grained sand-sized quartz, trace silt, brownish gray (SC)		
-43.5	13.9		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, little silt, little wood debris, trace organic matter, brownish gray mottled with brown (SP-SM)		
-44.7	15.1		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, lt. gray (SP)		
-45.1	15.5		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.21157° Long = -88.29777°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

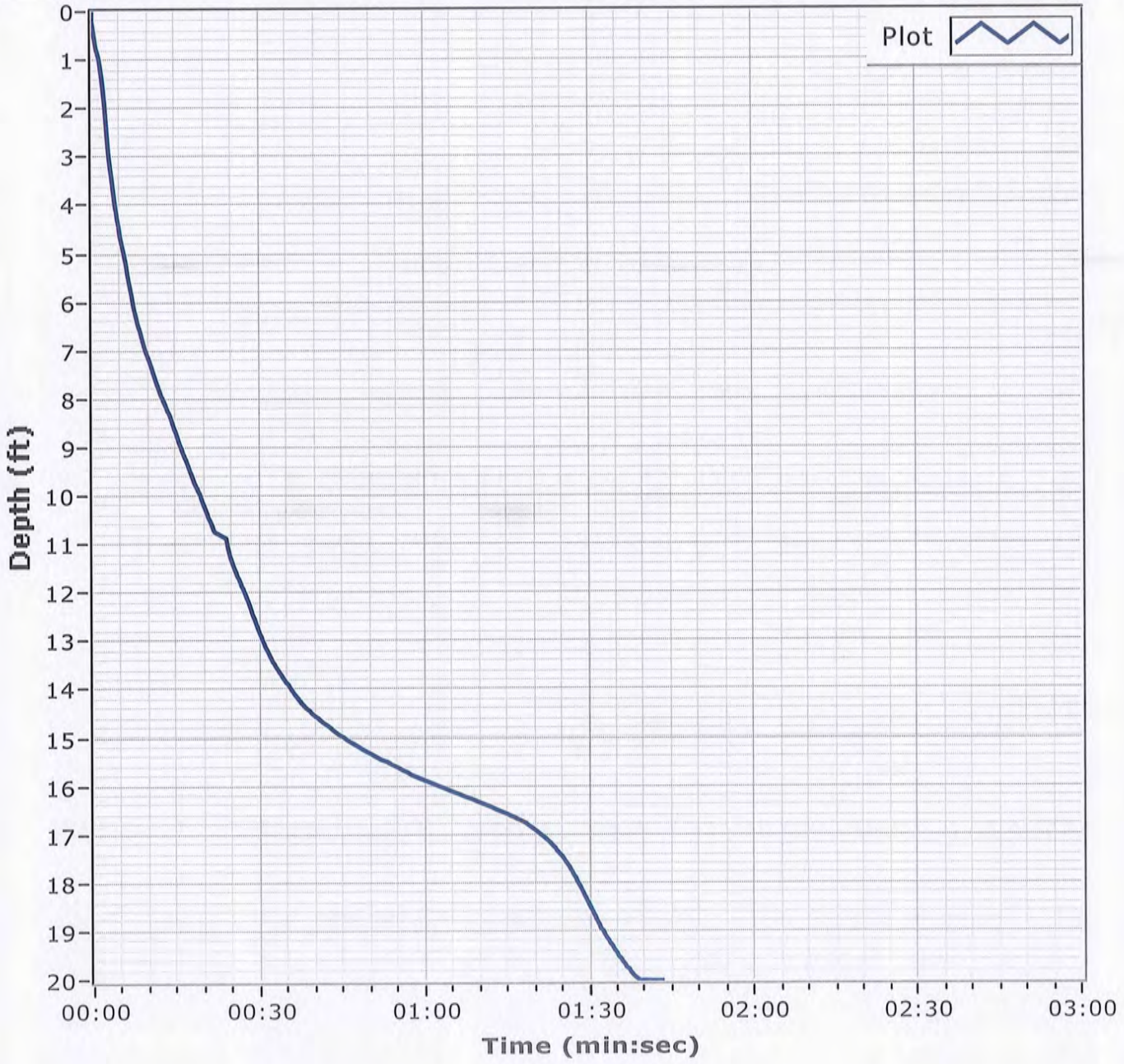
Core Identifier BI-PB-167-12
Coordinate System
Latitude / Longitude

Date 11/29/2012
Start Time 13:51:18
End Time 13:53:01
Total Time 00:01:43

Water Depth 29.7'
Penetration 20.0'
Recovery 15.5'

Latitude 30 12.694
Longitude 088 17.866

Comments



Boring Designation BI-PB-168-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-168-12	LOCATION COORDINATES: E = 1,152,128 N = 259,258	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: 11-29-12 / COMPLETED: 11-29-12
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: 16.6 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-29.2	0.0				
-29.4	0.2		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, brownish gray (SP)		
-31.0	1.8		SAND, clayey, mostly fine-grained sand-sized quartz, trace silt, gray (SC)		
			CLAY, fat, mostly clay, medium to high plasticity, gray to brownish gray (CH)	NS	
-39.4	10.2		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace wood debris, clayey stringers, brownish gray (SM)		
-41.3	12.1		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, little silt, trace wood debris, lt brown mottled with brown (SP-SM)		
-42.7	13.5		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace wood debris, lt. brown to gray (SP)	A	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3461 mm % Fines: 4.1
-45.8	16.6			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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.21183° Long = -88.30185°

Project Mississippi Barrier Island Restoration Project

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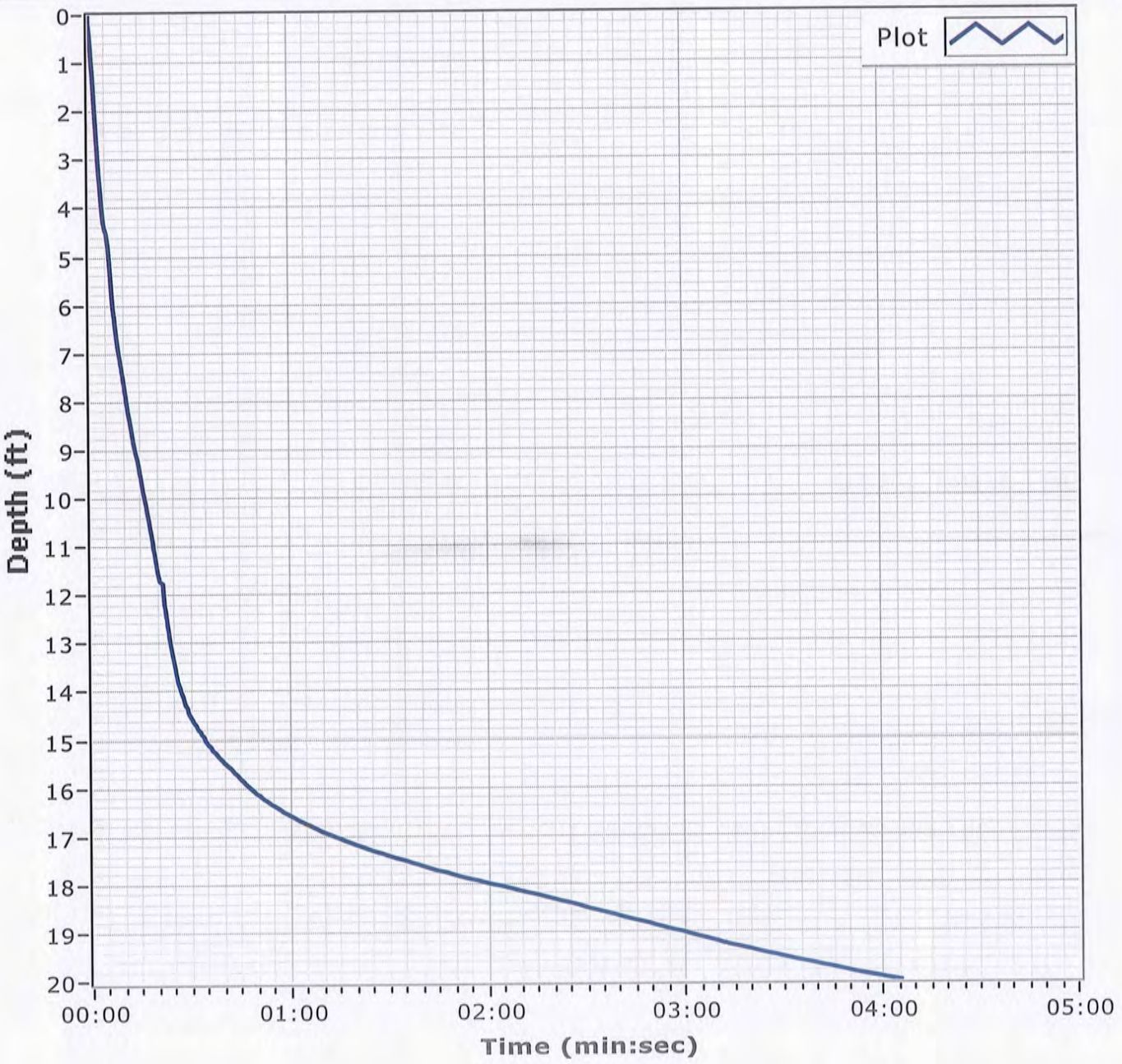
Core Identifier BI-PB-168-12
Coordinate System Latitude / Longitude

Latitude 30 12.710
Longitude 088 18.111

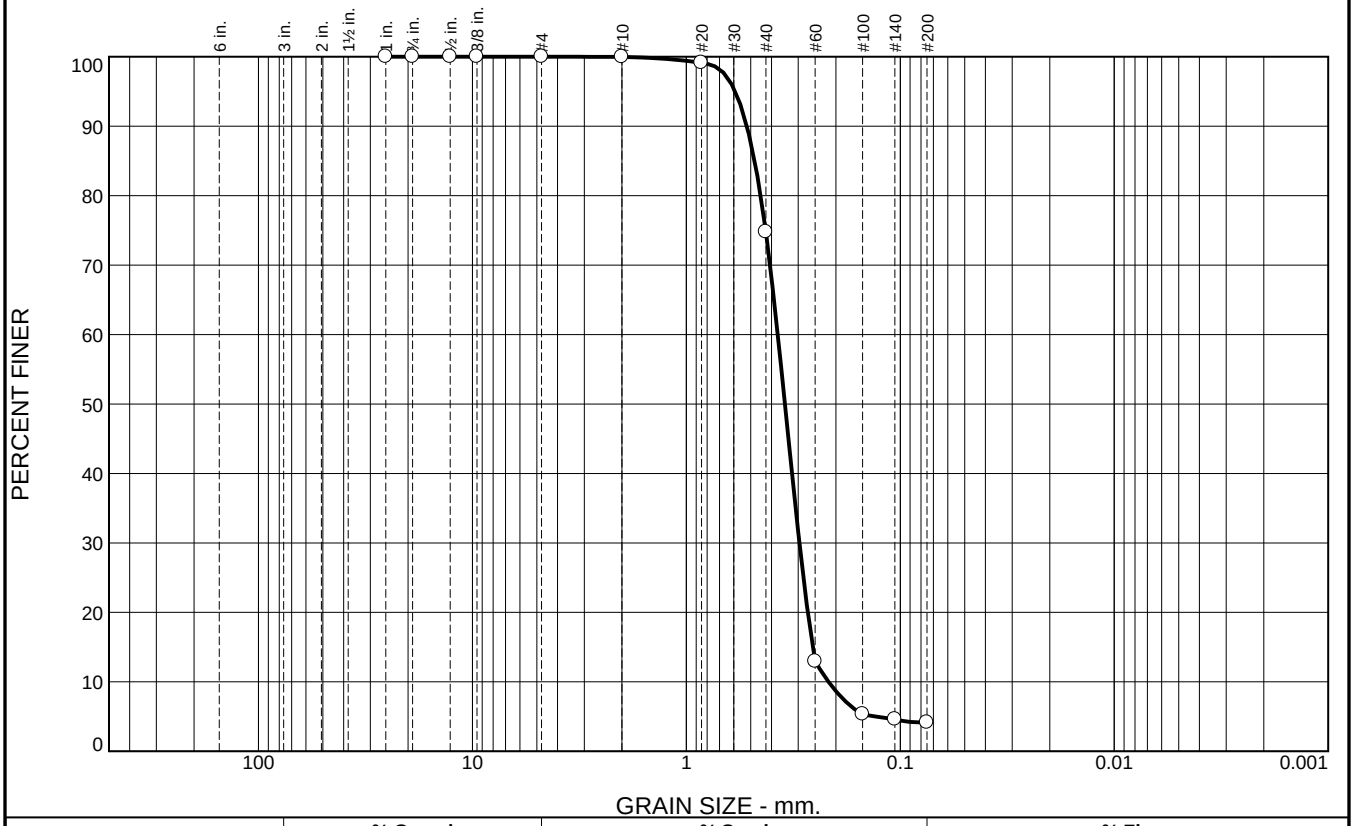
Date 11/29/2012
Start Time 12:57:52
End Time 13:01:58
Total Time 00:04:06

Water Depth 29.2'
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	0.0	25.2	70.7	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	100.0		
#20	99.1		
#40	74.8		
#60	12.9		
#100	5.3		
#140	4.6		
#200	4.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5213 D_{85}= 0.4797 D_{60}= 0.3738
D_{50}= 0.3461 D_{30}= 0.2963 D_{15}= 0.2566
D_{10}= 0.2164 C_u= 1.73 C_c= 1.09

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-168-12 A
Sample Number: 6471 (39) **Depth:** 13.5' **Date:** 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PB-169-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-169-12	LOCATION COORDINATES: E = 1,151,127 N = 259,267	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: 28.7 Ft.	
		15. DATE BORING	STARTED: 11-29-12 / COMPLETED: 11-29-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -28.8 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-28.8	0.0				
-29.0	0.2		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, gray (SP)	NS	
				A	Classification: SM Color: 5Y 5/2-olive gray D50: 0.1874 mm % Fines: 17.3
-31.2	2.4		SAND, silty, mostly fine-grained sand-sized quartz, trace clay, trace wood debris, gray (SM)		
			CLAY, fat, mostly clay, medium to high plasticity, gray (CH)		
			At El. -33.7 Ft., mostly clay, medium to high plasticity, brownish gray		
				NS	
			At El. -38.7 Ft., mostly clay, trace silt, trace wood debris, medium to high plasticity, greenish gray mottled with brownish gray		
-42.3	13.5				
-43.7	14.9		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace wood debris, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.21187° Long = -88.30502°

Project Mississippi Barrier Island Restoration Project

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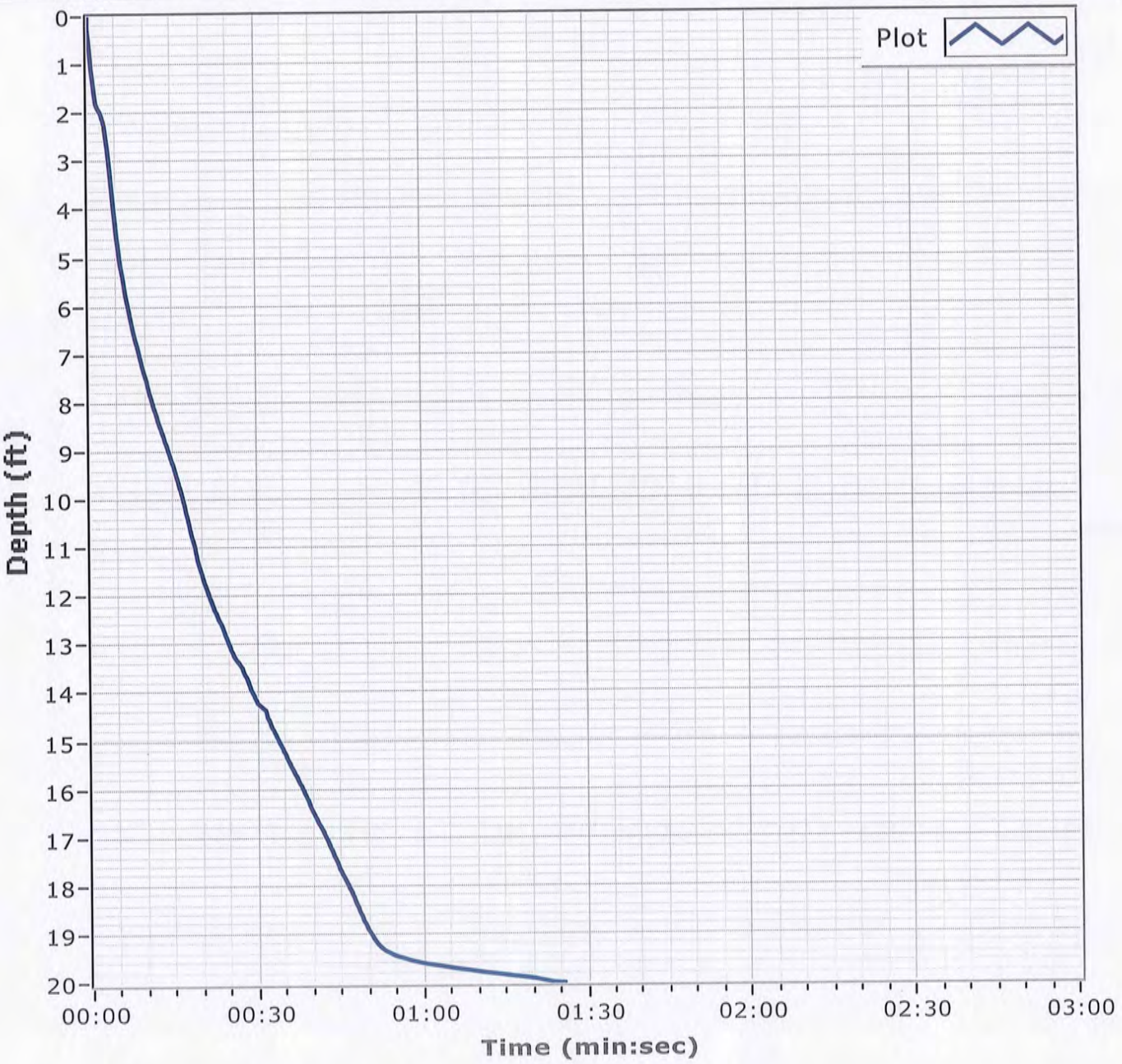
Core Identifier BI-PB-169-12
Coordinate System
Latitude / Longitude

Date 11/29/2012
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End Time 12:20:21
Total Time 00:01:25

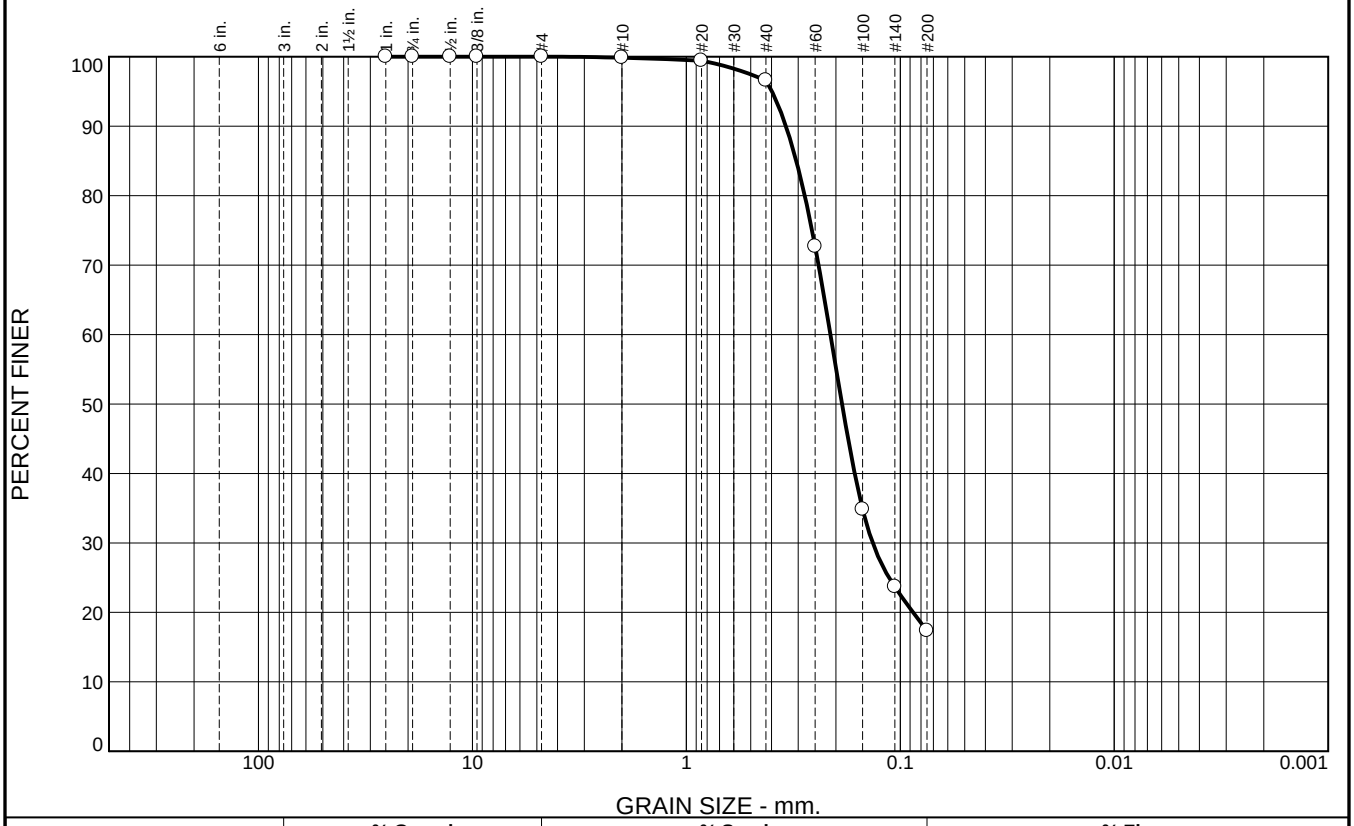
Water Depth 28.7'
Penetration 20.0'
Recovery 15.0'

Latitude 30 12.712
Longitude 088 18.301

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	3.3	79.3	17.3	

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	99.9		
#20	99.4		
#40	96.6		
#60	72.7		
#100	34.8		
#140	23.7		
#200	17.3		

* (no specification provided)

Material Description

Fine grained, SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3424 D_{85}= 0.3064 D_{60}= 0.2121
D_{50}= 0.1874 D_{30}= 0.1347 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PB-169-12 A
Sample Number: 6471 (40) **Depth:** 0.2' **Date:** 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PB-170-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-170-12	LOCATION COORDINATES: E = 1,151,421 N = 258,614	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: 31.7 Ft.	
		15. DATE BORING	STARTED: 12-05-12 / COMPLETED: 12-05-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -31.4 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 100%	
8. TOTAL DEPTH OF BORING: 11.5 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-31.4	0.0				
-31.6	0.2		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, lt. gray (SP)		
			CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, medium to high plascticity, medium stiff, greenish gray to gray (CH)		
			At El. -36.3 Ft., mostly clay, little silt, high plasticity, stiff, few green silty bands, lt. gray mottled with brown and green	NS	
-40.1	8.7				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, gray w/lt. brown streaking (SP)		
-42.6	11.2				
-42.9	11.5				
			CLAY, lean, mostly clay, some fine-grained sand-sized quartz, sandy, low to medium plasticity, greenish 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.21007° Long = -88.30410°

Project Mississippi Barrier Island Restoration Project

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S E R V I C E S

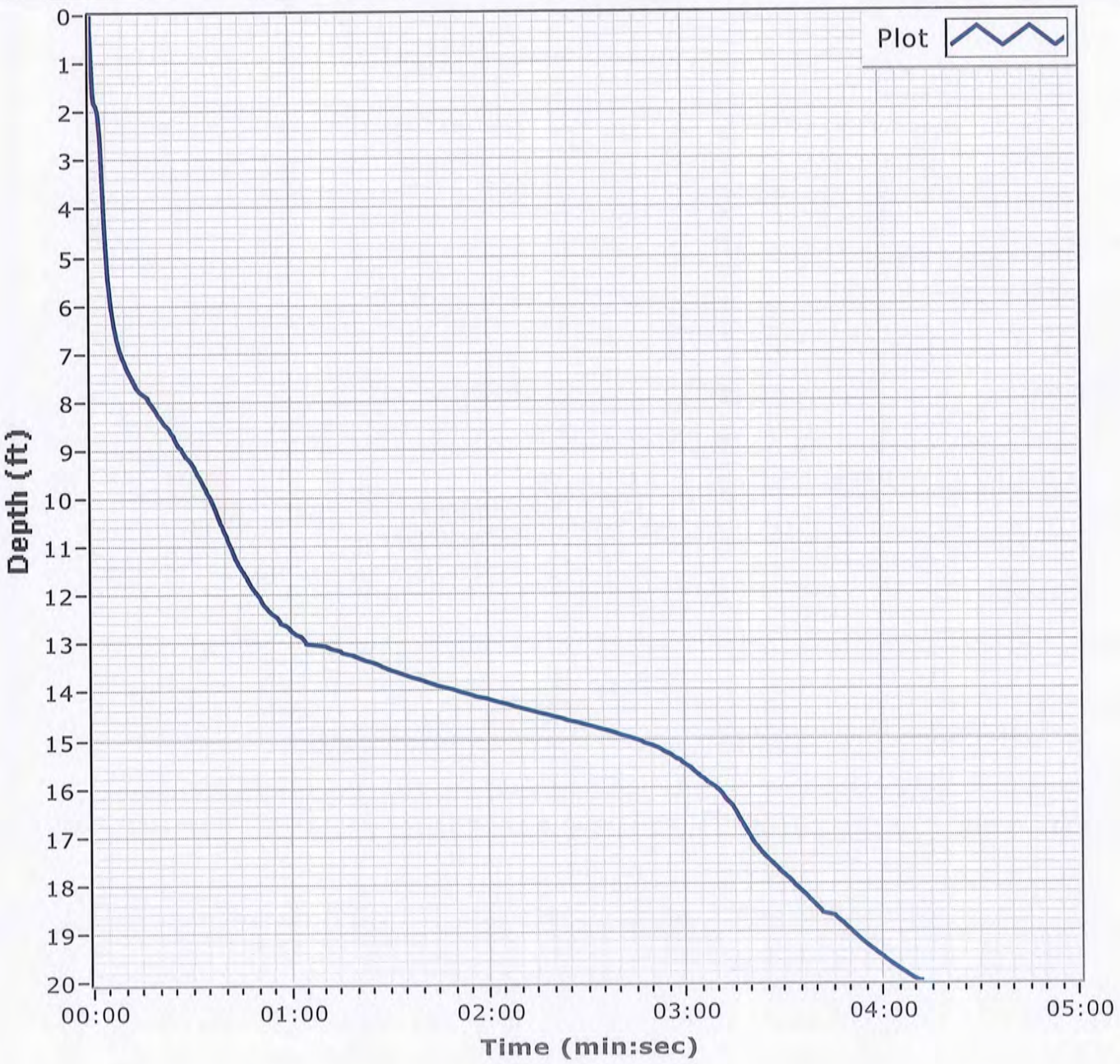
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Coordinate System
Latitude / Longitude

Latitude 30 12.604
Longitude 088 18.246

Date 12/05/2012
Start Time 10:05:13
End Time 10:09:25
Total Time 00:04:12

Water Depth 31.7'
Penetration 20.0'
Recovery 11.5'

Comments



Boring Designation BI-PB-171-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-171-12	LOCATION COORDINATES: E = 1,152,204 N = 257,974	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 / 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: 31.6 Ft.	
		15. DATE BORING	STARTED: 12-05-12 / COMPLETED: 12-05-12
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: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-31.1	0.0				
-32.8	1.7		CLAY, lean, mostly clay, trace fine-grained sand-sized quartz, trace silt, moderately stiff, low to medium plasticity, greenish gray (CL)	NS	
-33.8	2.7		SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, some clay, few silt, gray (SP-SC)	A	Classification: SM Color: 2.5Y 5.5/2-brownish gray D50: 0.3161 mm % Fines: 14.8
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace clay, clayey lense at 4.7 ft., gray (SP) At El. -36.1 Ft., mostly fine to medium-grained sand-sized quartz, trace silt, gray	B	Classification: SP-SM Color: 2.5Y 6/1-gray D50: 0.3062 mm % Fines: 9.2
-41.1	10.0			C	Classification: SP-SM Color: 2.5Y 6/2-light brownish gray D50: 0.3267 mm % Fines: 8.2
-45.3	14.2		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, low to medium plasticity, gray (CL)	NS	
-47.4	16.3		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, clayey pocket at 15.6 ft., lt. gray (SP)	D	Classification: SP-SM Color: 2.5Y 7.5/2- D50: 0.3833 mm % Fines: 10.8
-48.1	17.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, gray (SP-SM)	NS	
-50.6	19.5		SAND, silty, mostly fine-grained sand-sized quartz, some silt, some wood debris, little organic matter, brownish gray (SM)		
-51.1	20.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, 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

Lat = 30.20830° Long = -88.30163°

Boring Designation BI-PB-171-12

DRILLING LOG (Cont. Sheet)	INSTALLATION	SHEET 2 OF 2 SHEETS
	Mobile District	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Barrier Island Restoration	State Plane, MSE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 1,152,204 Y = 257,974	-31.1 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			analysis from this interval.		

30
35
40
45
50
55
60

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20830° Long = -88.30163°

Project Mississippi Barrier Island Restoration Project

AVS
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S E R V I C E S

Core Identifier BI-PB-171-12

Coordinate System
Latitude / Longitude

Latitude 30 12.489

Longitude 088 18.098

Date 12/05/2012

Start Time 15:04:46

End Time 15:07:45

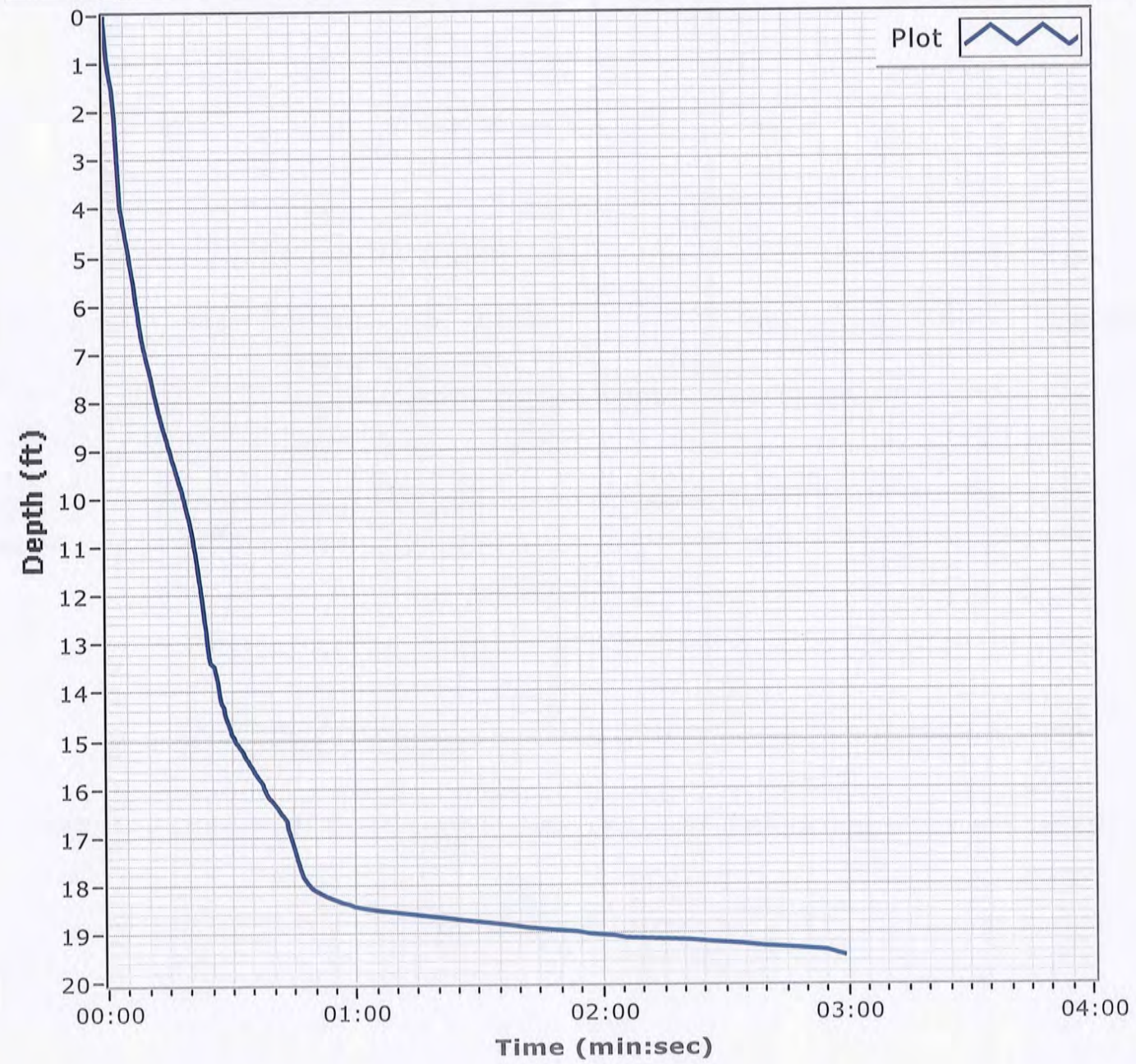
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Water Depth 31.6'

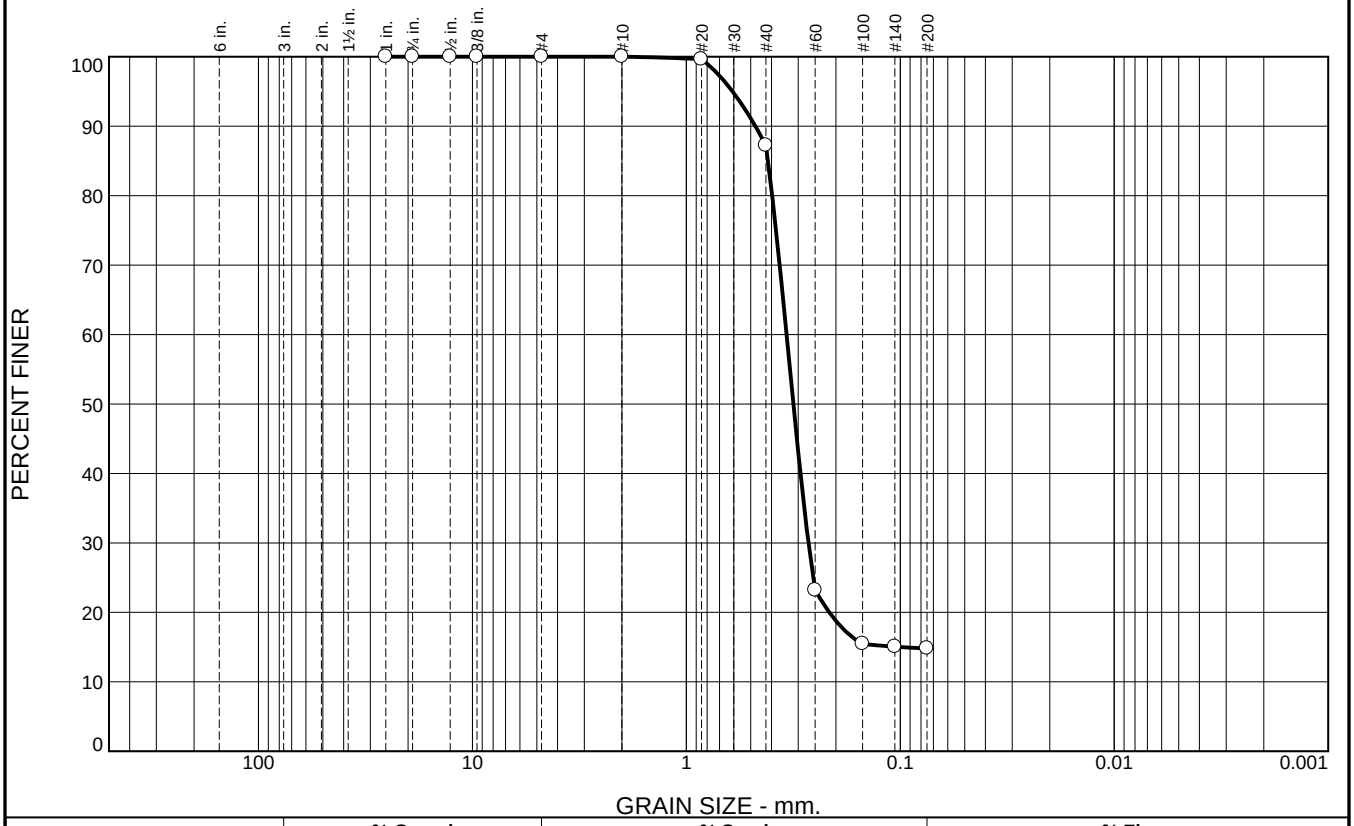
Penetration 19.5'

Recovery 19.5'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	12.8	72.4	14.8	

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	100.0		
#20	99.6		
#40	87.2		
#60	23.2		
#100	15.5		
#140	15.1		
#200	14.8		

* (no specification provided)

Material Description

Fine to medium grained, SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4759 D_{85}= 0.4155 D_{60}= 0.3400
D_{50}= 0.3161 D_{30}= 0.2690 D_{15}= 0.0998
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PB-171-12 A
Sample Number: 6480 (30) **Depth:** 1.7' **Date:** 12/07/12

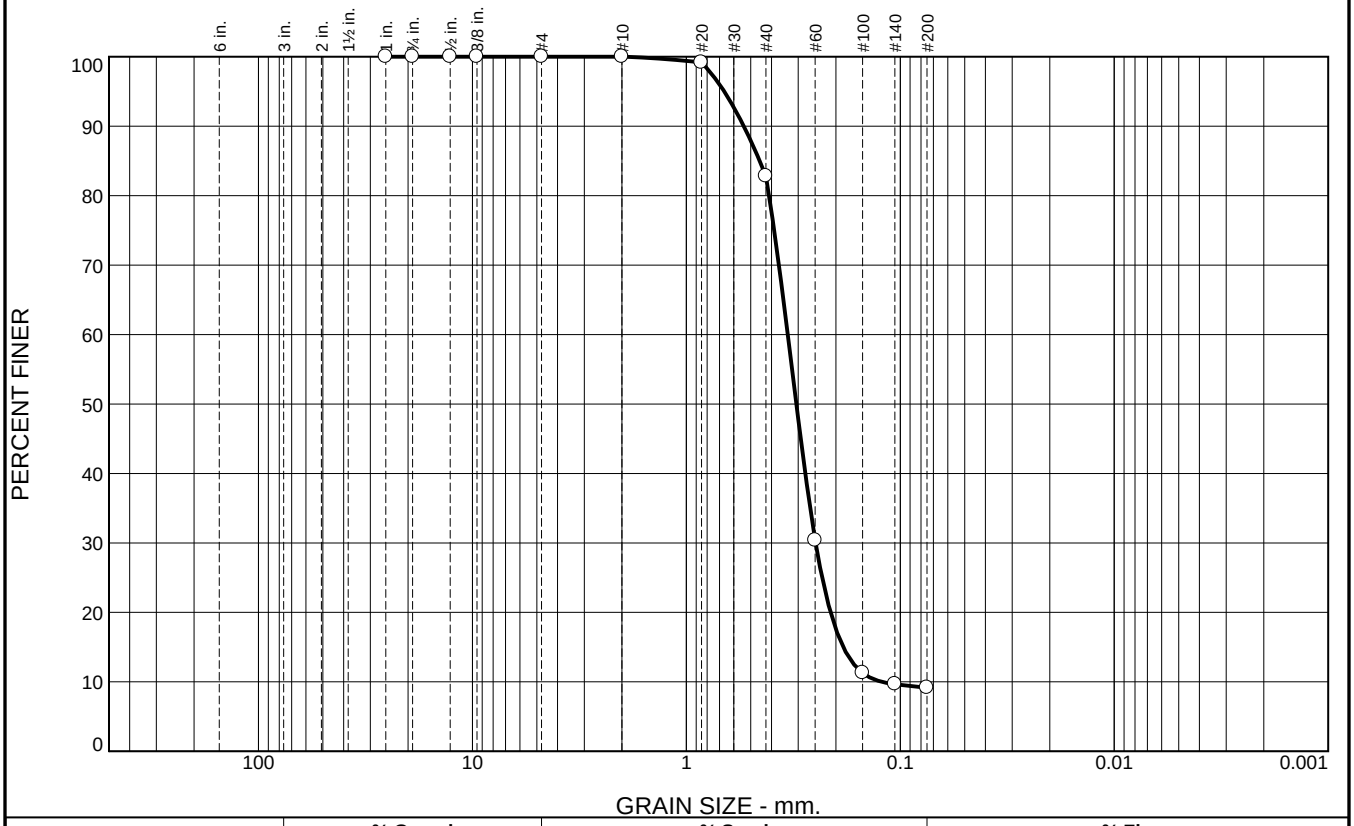
Thompson Engineering

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	17.2	73.6	9.2	

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	100.0		
#20	99.2		
#40	82.8		
#60	30.4		
#100	11.3		
#140	9.7		
#200	9.2		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5391 D_{85}= 0.4545 D_{60}= 0.3358
D_{50}= 0.3062 D_{30}= 0.2488 D_{15}= 0.1850
D_{10}= 0.1222 C_u= 2.75 C_c= 1.51

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-171-12 B
Sample Number: 6480 (31) **Depth:** 2.7' **Date:** 12/07/12

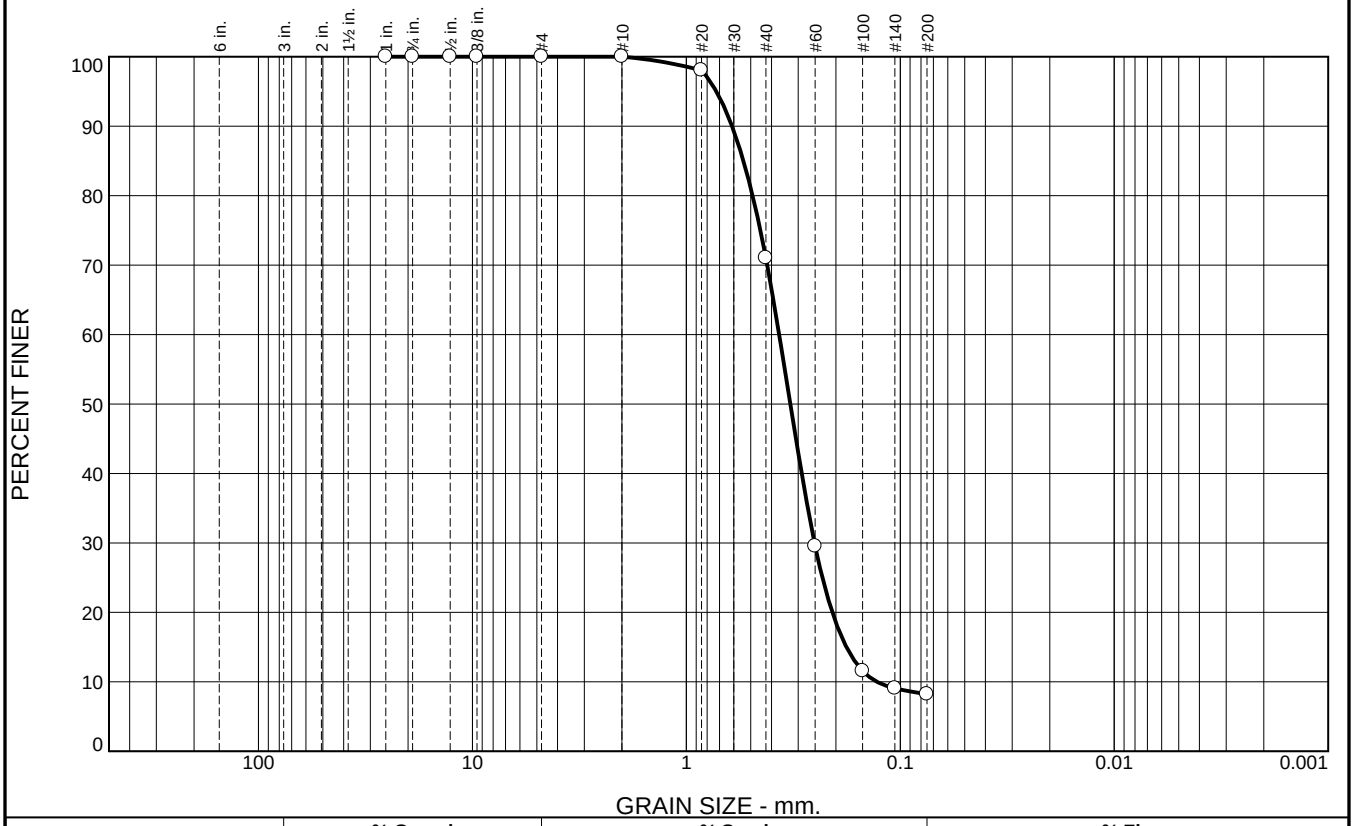
Thompson Engineering

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	29.0	62.8	8.2	

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	100.0		
#20	98.0		
#40	71.0		
#60	29.5		
#100	11.6		
#140	9.1		
#200	8.2		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6114 D_{85}= 0.5409 D_{60}= 0.3683
D_{50}= 0.3267 D_{30}= 0.2518 D_{15}= 0.1787
D_{10}= 0.1287 C_u= 2.86 C_c= 1.34

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-171-12 C
Sample Number: 6480 (32) **Depth:** 5.0' **Date:** 12/07/12

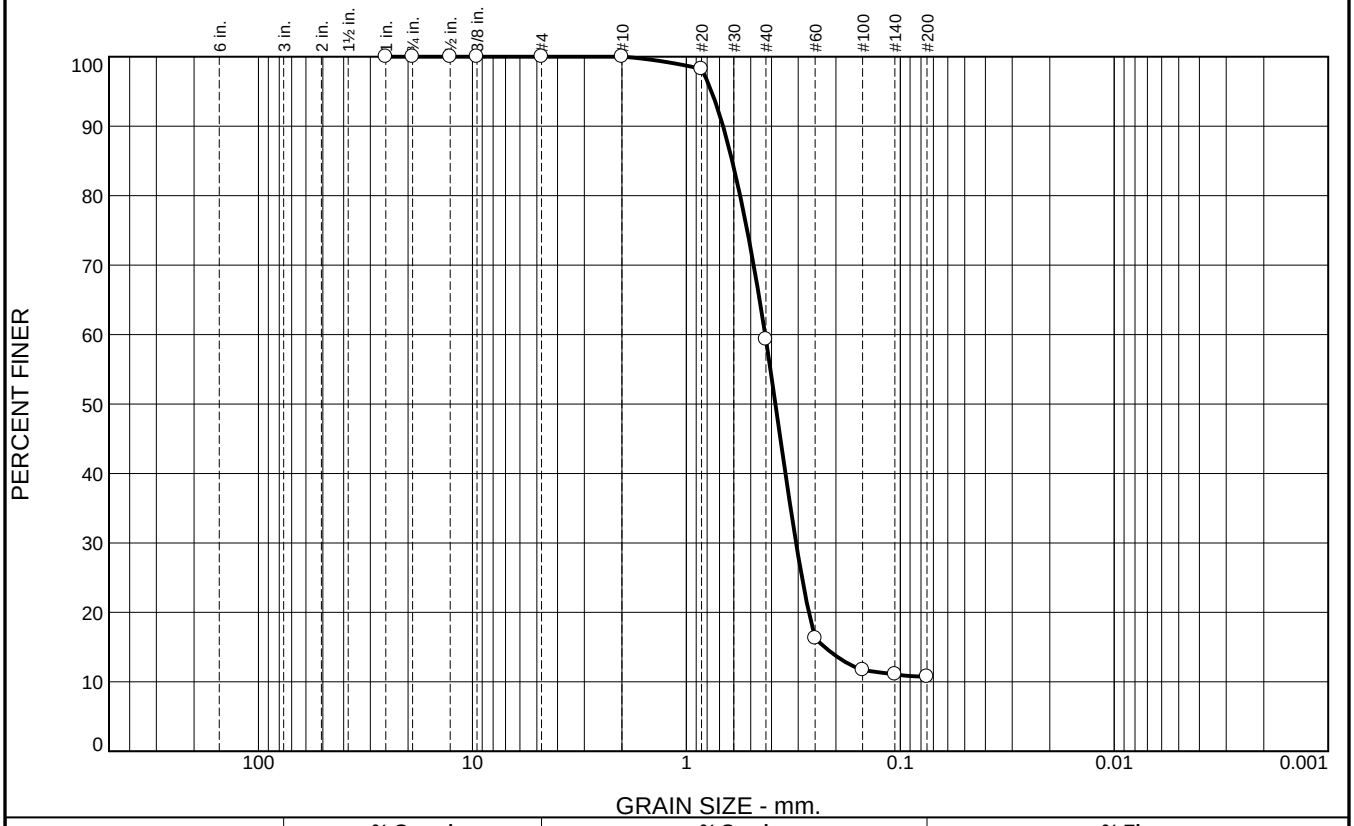
Thompson Engineering

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	40.7	48.5	10.8	

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	100.0		
#20	98.2		
#40	59.3		
#60	16.3		
#100	11.7		
#140	11.1		
#200	10.8		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6739 D_{85}= 0.6102 D_{60}= 0.4283
D_{50}= 0.3833 D_{30}= 0.3072 D_{15}= 0.2255
D_{10}= C_u= C_c=

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-171-12 D
Sample Number: 6480 (33) **Depth:** 14.2' **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-PB-172-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-172-12	LOCATION COORDINATES: E = 1,150,328 N = 257,845	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: 12-05-12 / COMPLETED: 12-05-12
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: 10.9 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-29.8	0.0				
-30.3	0.5		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, pale brown (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.351 mm % Fines: 0.3
				NS	
-32.9	3.1		CLAY, lean, mostly clay, few fine-grained sand-sized quartz, medium plasticity, SP layer at 1.2 ft., gets sandier near 3.1 ft., gray mottled with brownish gray (CL)		
-33.4	3.6			B	~~Classification: SC Color: 2.5Y 5.5/2-brownish gray~~ D50: 0.2973 mm % Fines: 19.9
				C	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.2958 mm % Fines: 2.9
-35.0	5.2		SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, few clay, trace wood debris, clay band at 3.3 ft., gray (SP-SC)		
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace wood debris, gray (SP-SM)	D	Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.2886 mm % Fines: 7.1
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, very dense, lt. gray (SP)		
-40.7	10.9			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. Sand was very dense. Stopped vibracore machine after 5 minutes due to lack of penetration.

0 5 10 15 20 25

Lat = 30.20797° Long = -88.30757°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

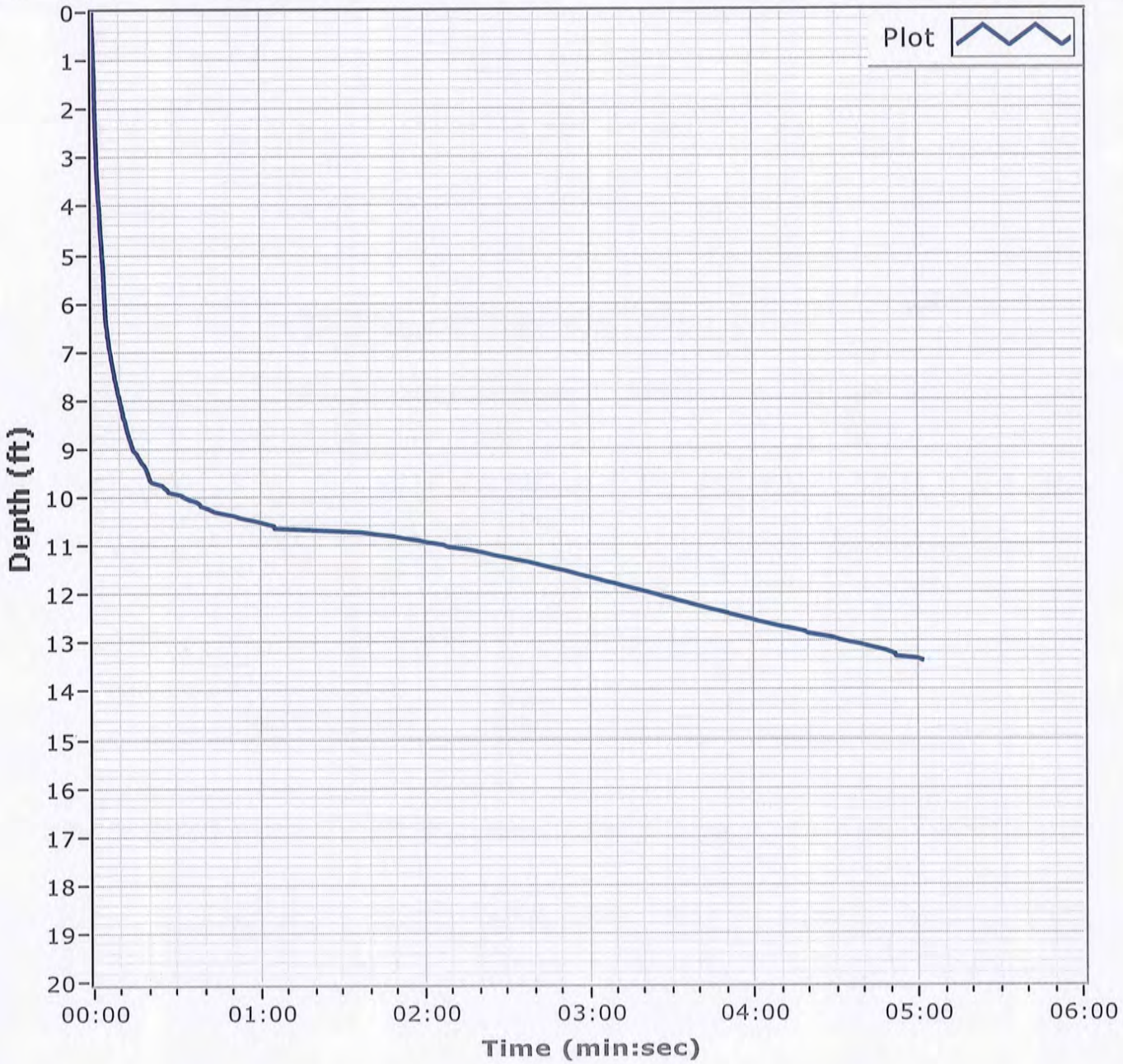
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Coordinate System
Latitude / Longitude

Latitude 30 12.478
Longitude 088 18.454

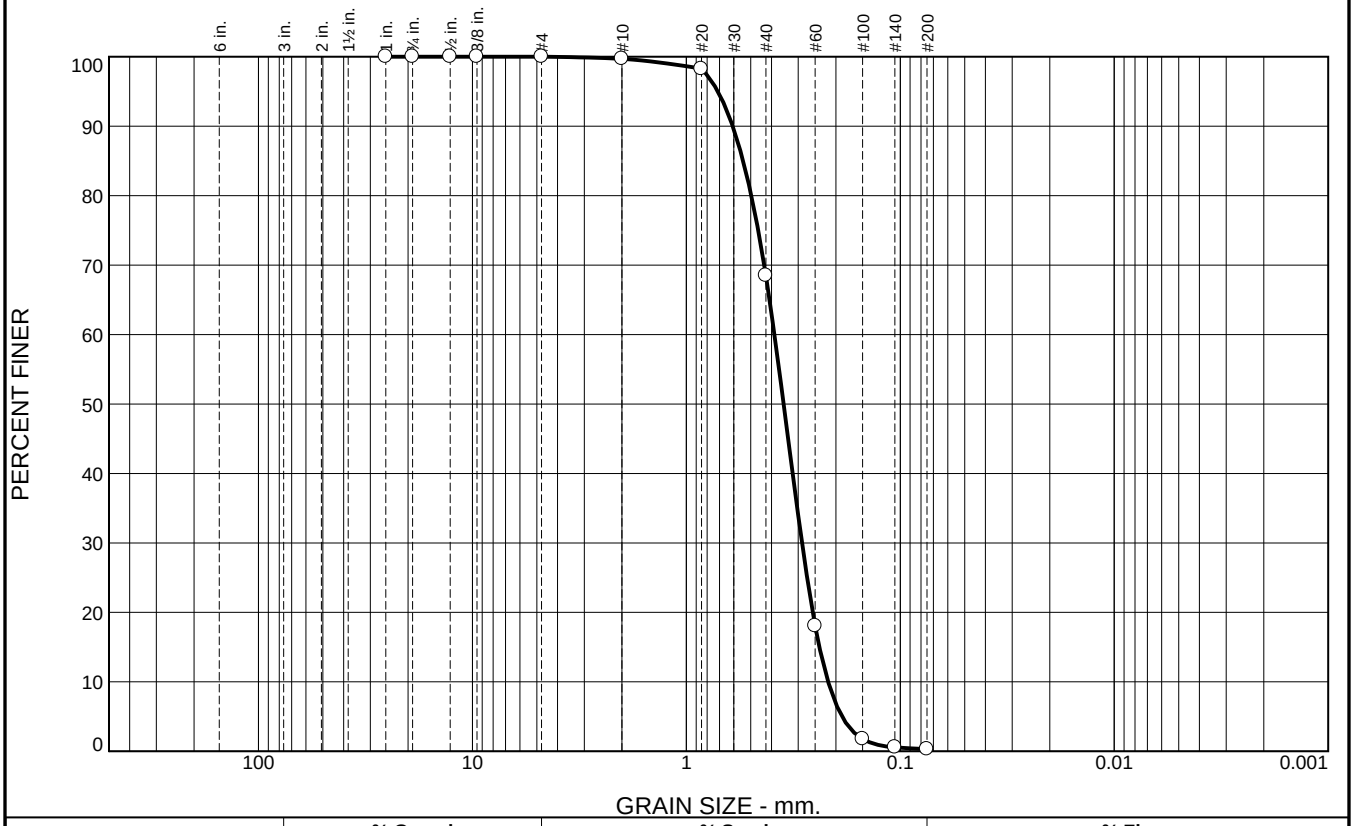
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End Time 13:15:34
Total Time 00:05:02

Water Depth 30.1'
Penetration 13.4'
Recovery 10.9'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.3	31.2	68.2	0.3	

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	98.3		
#40	68.5		
#60	18.1		
#100	1.8		
#140	0.6		
#200	0.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6071 D_{85}= 0.5428 D_{60}= 0.3875
D_{50}= 0.3510 D_{30}= 0.2881 D_{15}= 0.2388
D_{10}= 0.2173 C_u= 1.78 C_c= 0.99

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-172-12 A
Sample Number: 6480 (34) **Depth:** 0.0' **Date:** 12/07/12

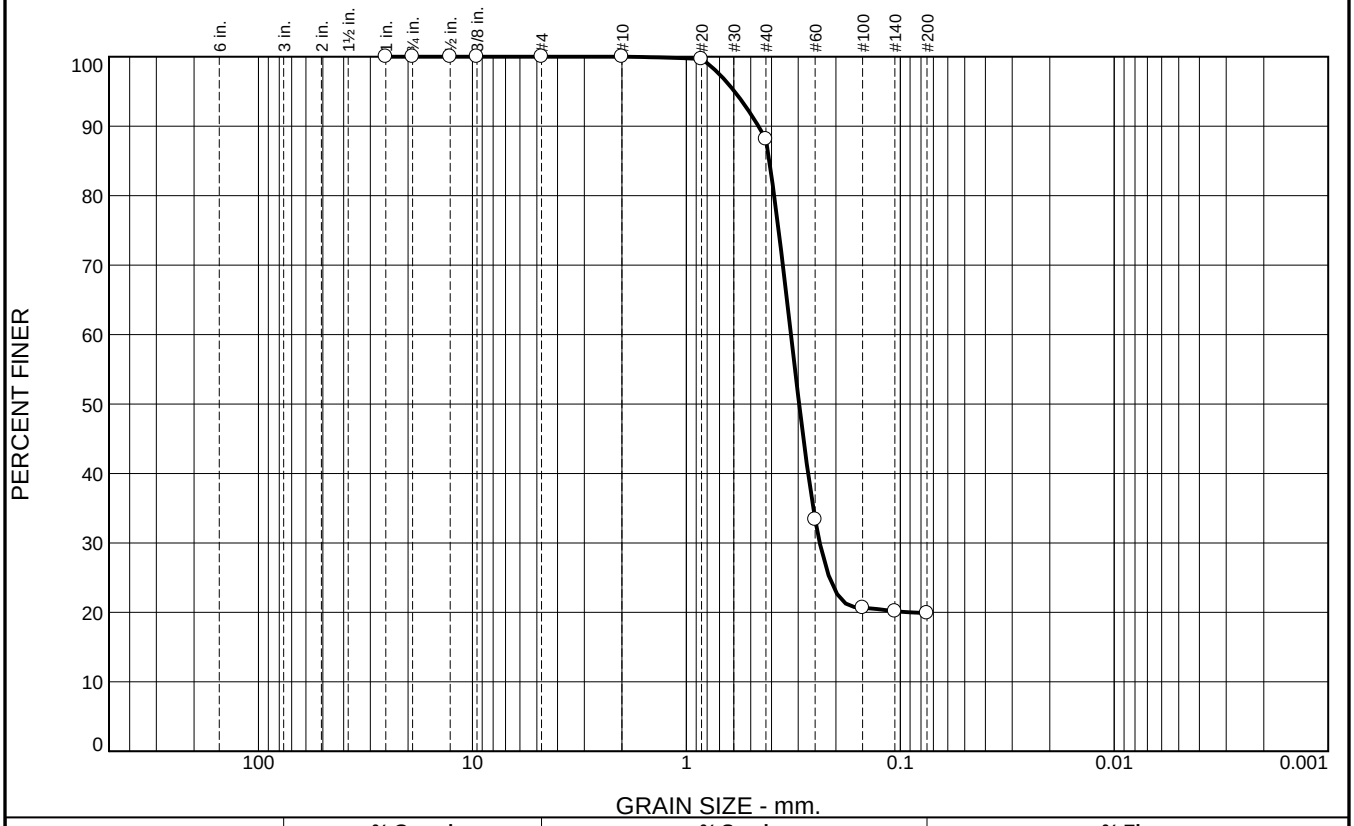
Thompson Engineering

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	11.9	68.2	19.9	

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	100.0		
#20	99.7		
#40	88.1		
#60	33.4		
#100	20.7		
#140	20.2		
#200	19.9		

* (no specification provided)

Material Description

Fine to medium grained, CLAYEY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4608 D_{85}= 0.4095 D_{60}= 0.3245
D_{50}= 0.2973 D_{30}= 0.2379 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO=

Remarks

Location: BI-PB-172-12 B
Sample Number: 6480 (35) **Depth:** 3.1' **Date:** 12/07/12

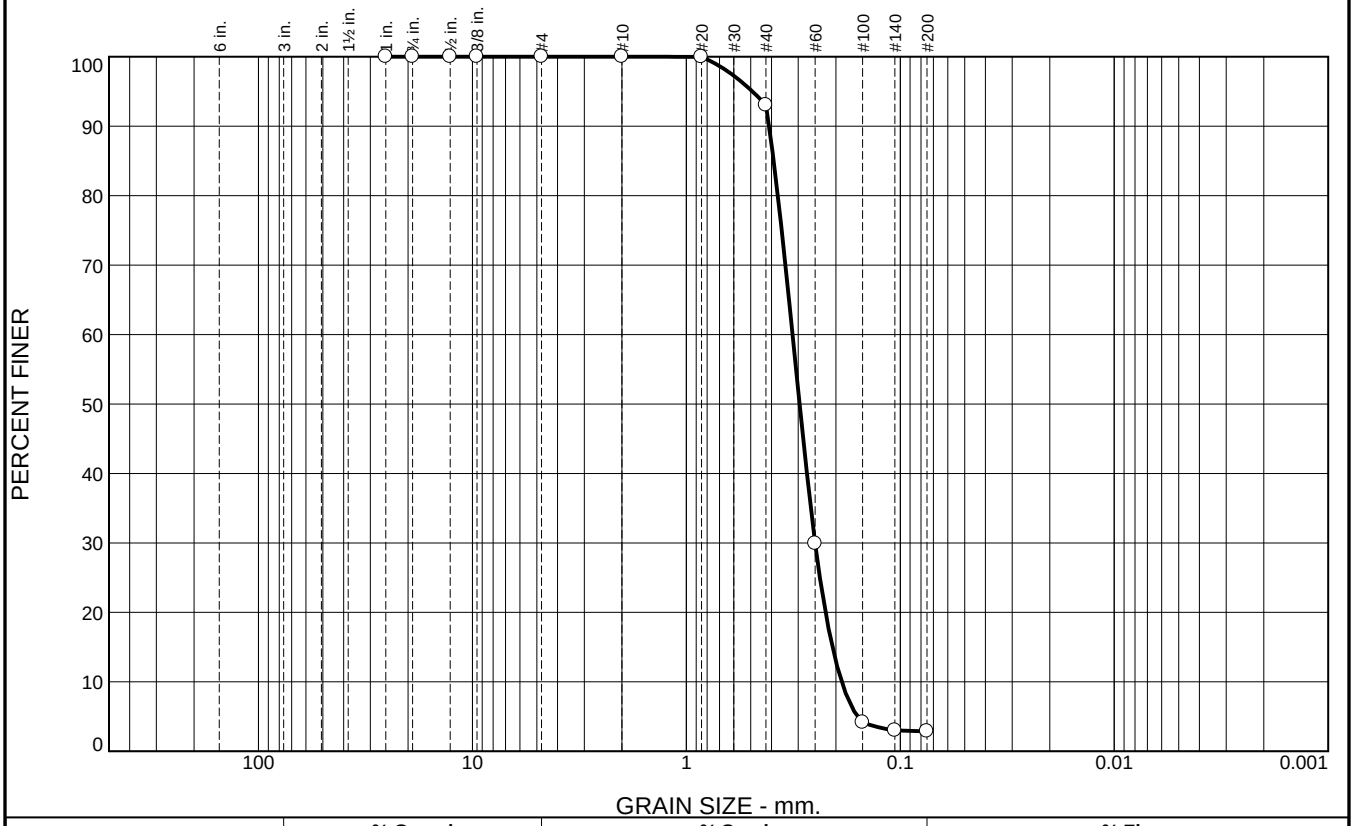
Thompson Engineering

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	7.0	90.1	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	100.0		
#20	100.0		
#40	93.0		
#60	29.9		
#100	4.1		
#140	3.0		
#200	2.9		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4105 D_{85}= 0.3905 D_{60}= 0.3190
D_{50}= 0.2958 D_{30}= 0.2502 D_{15}= 0.2076
D_{10}= 0.1880 C_u= 1.70 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-172-12 C
Sample Number: 6480 (36) **Depth:** 3.6' **Date:** 12/07/12

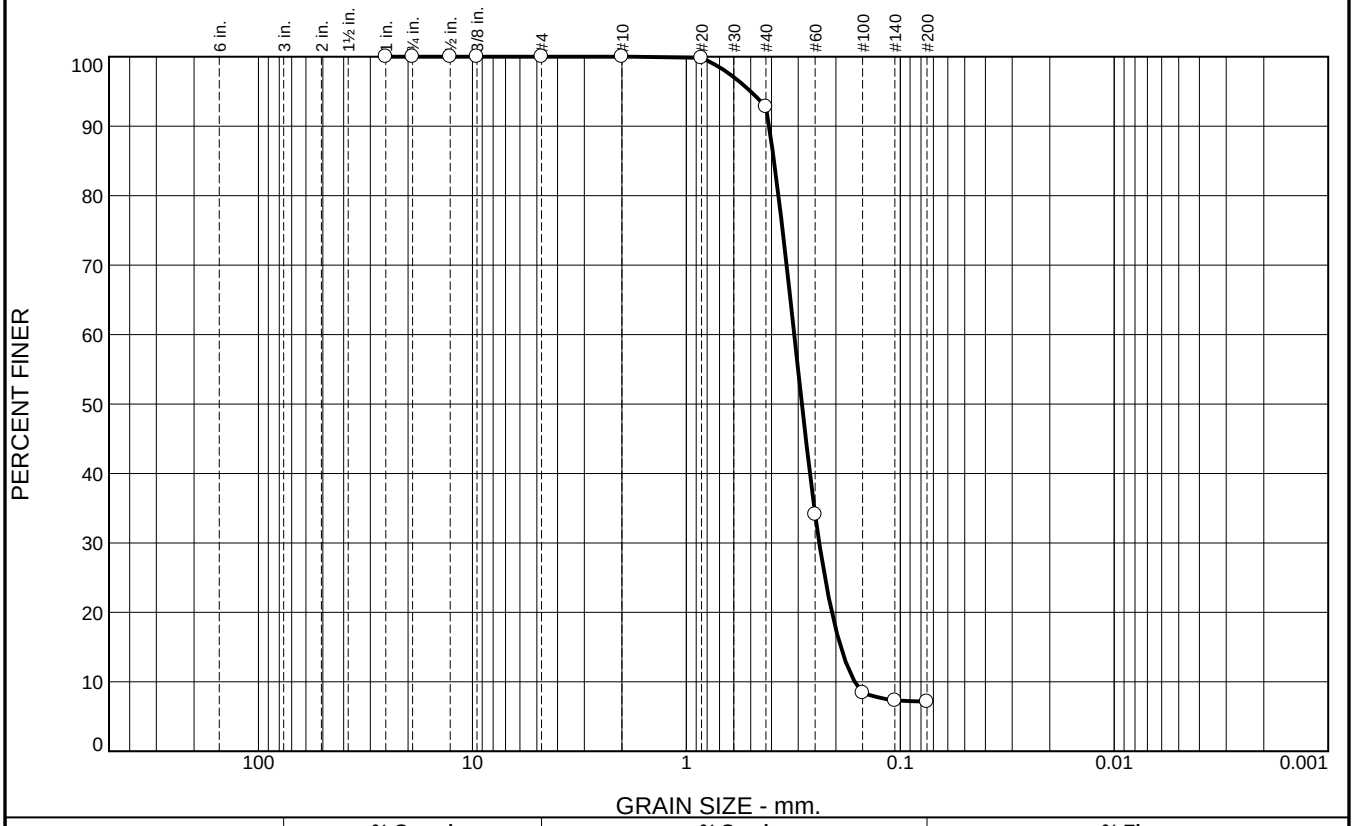
Thompson Engineering

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	7.2	85.7	7.1	

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	99.8		
#40	92.8		
#60	34.1		
#100	8.4		
#140	7.3		
#200	7.1		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4107 D_{85}= 0.3891 D_{60}= 0.3132
D_{50}= 0.2886 D_{30}= 0.2392 D_{15}= 0.1898
D_{10}= 0.1635 C_u= 1.92 C_c= 1.12

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-172-12 D
Sample Number: 6480 (37) **Depth:** 5.2' **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-PB-173-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-173-12	LOCATION COORDINATES: E = 1,154,122 N = 258,503	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: 31.1 Ft.	
		15. DATE BORING	STARTED: 11-29-12 / COMPLETED: 11-29-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -30.9 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 100%	
8. TOTAL DEPTH OF BORING: 13.6 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-30.9	0.0				
-31.7	0.8		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, lt. brown to gray (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3643 mm % Fines: 1.4
-32.8	1.9			NS	
-34.0	3.1		SAND, clayey, mostly fine-grained sand-sized quartz, trace silt, gray (SC)	B	Classification: SM Color: 2.5Y 6/2-light brownish gray D50: 0.3054 mm % Fines: 17.8
			SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, little clay, trace silt, gray (SP-SC)	NS	
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, orange staining from 3.6 to 4.9 ft., lt. gray to white (SP)	C	Classification: SP Color: 2.5Y 8/2-pale yellow D50: 0.3463 mm % Fines: 2
				D	Classification: SP Color: 5Y 8/1-white D50: 0.3297 mm % Fines: 1.7
-44.5	13.6				
			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.	NS	

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20973° Long = -88.29555°

Project Mississippi Barrier Island Restoration Project

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SERVICES

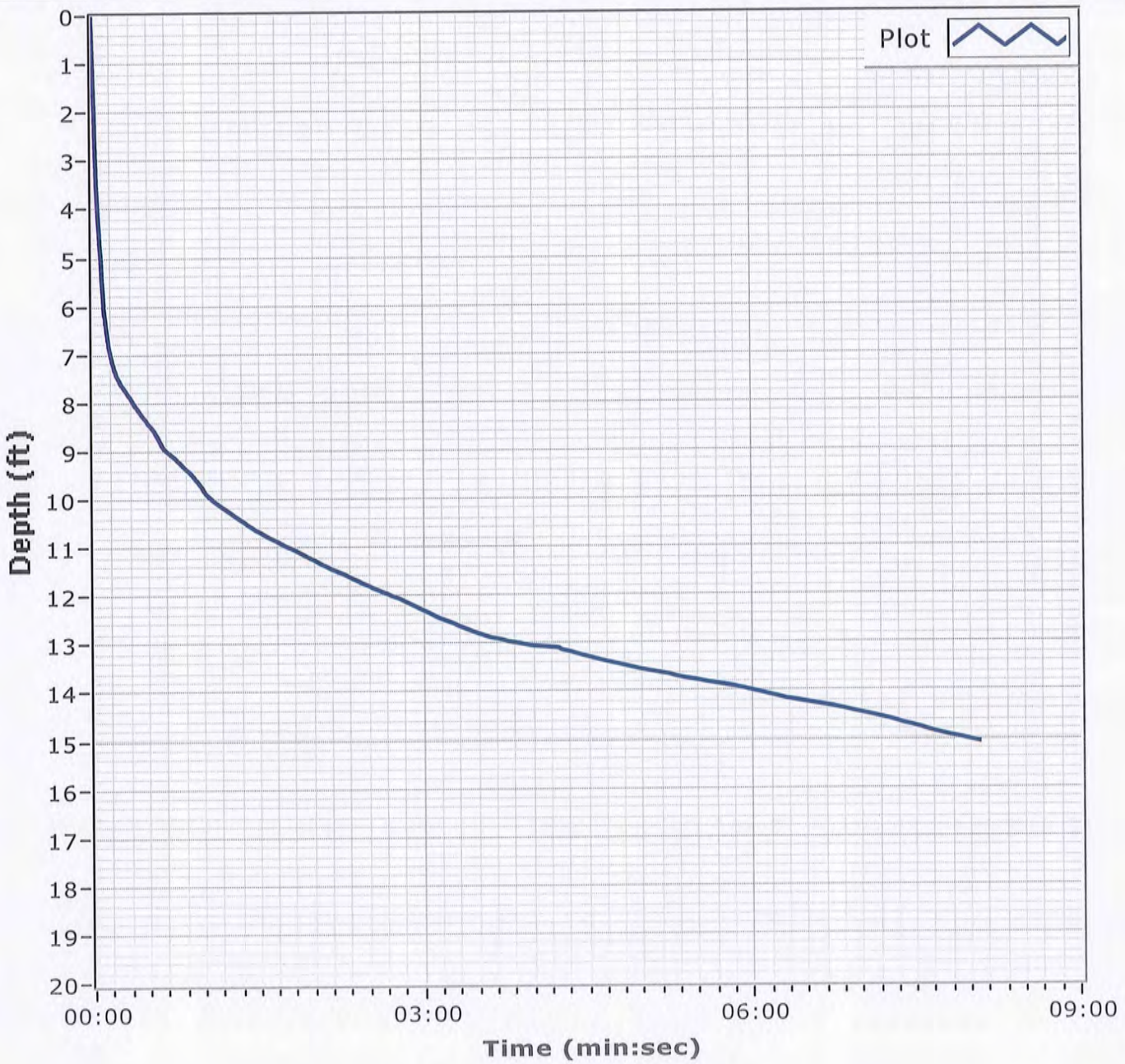
Core Identifier BI-PB-173-12
Coordinate System
Latitude / Longitude

Latitude 30 12.584
Longitude 088 17.733

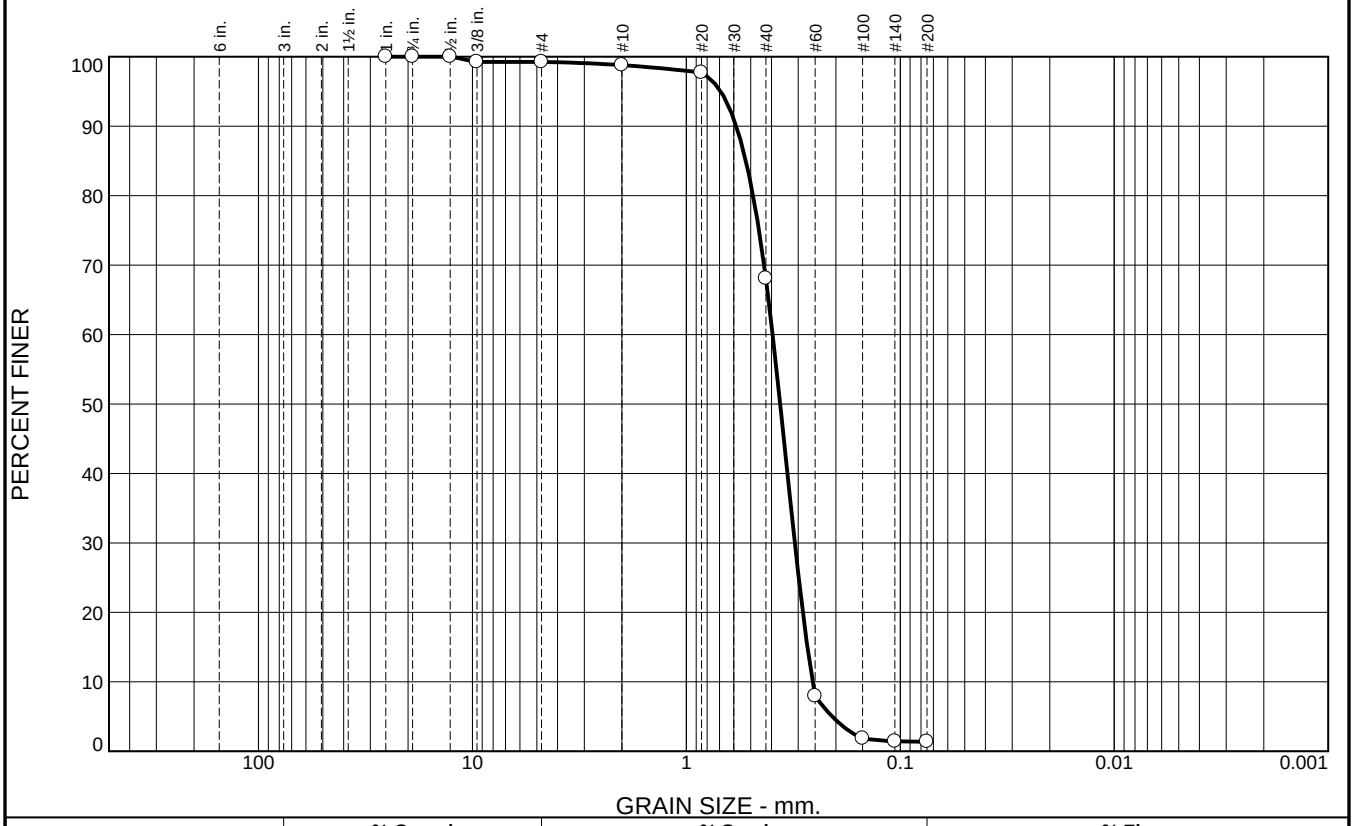
Date 11/29/2012
Start Time 15:10:11
End Time 15:18:16
Total Time 00:08:05

Water Depth 31.1'
Penetration 15.1'
Recovery 13.6'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.8	0.4	30.7	66.7	1.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.2		
#4	99.2		
#10	98.8		
#20	97.7		
#40	68.1		
#60	7.9		
#100	1.9		
#140	1.4		
#200	1.4		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5839 D_{85}= 0.5268 D_{60}= 0.3951
D_{50}= 0.3643 D_{30}= 0.3113 D_{15}= 0.2721
D_{10}= 0.2570 C_u= 1.54 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-173-12 A
Sample Number: 6471 (41) **Depth:** 0.0' **Date:** 12/03/12

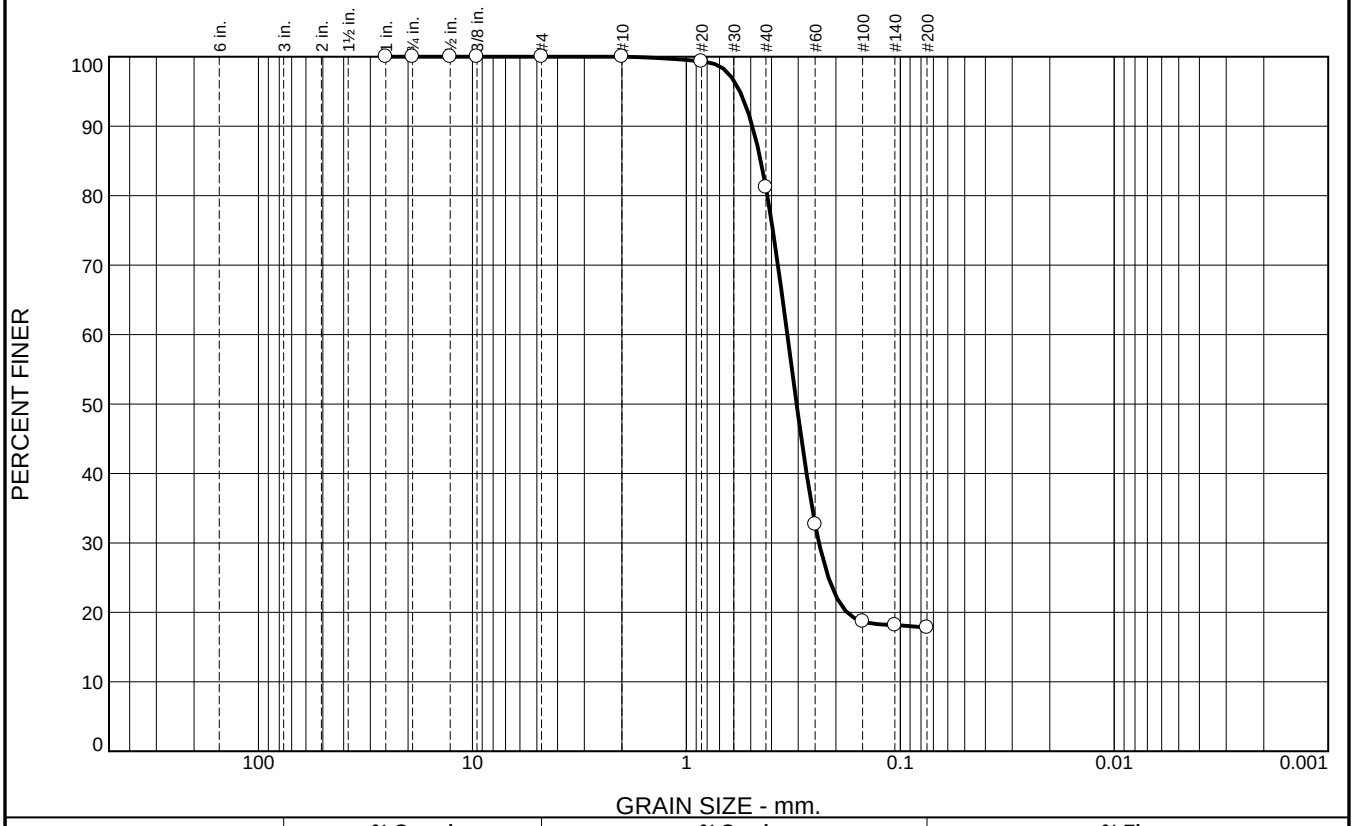
Thompson Engineering

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	18.8	63.4	17.8	

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	100.0		
#20	99.3		
#40	81.2		
#60	32.7		
#100	18.7		
#140	18.2		
#200	17.8		

* (no specification provided)

Material Description

Fine to medium grained, SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4912 D_{85}= 0.4489 D_{60}= 0.3373
D_{50}= 0.3054 D_{30}= 0.2398 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PB-173-12 B
Sample Number: 6471 (42) **Depth:** 1.9' **Date:** 12/03/12

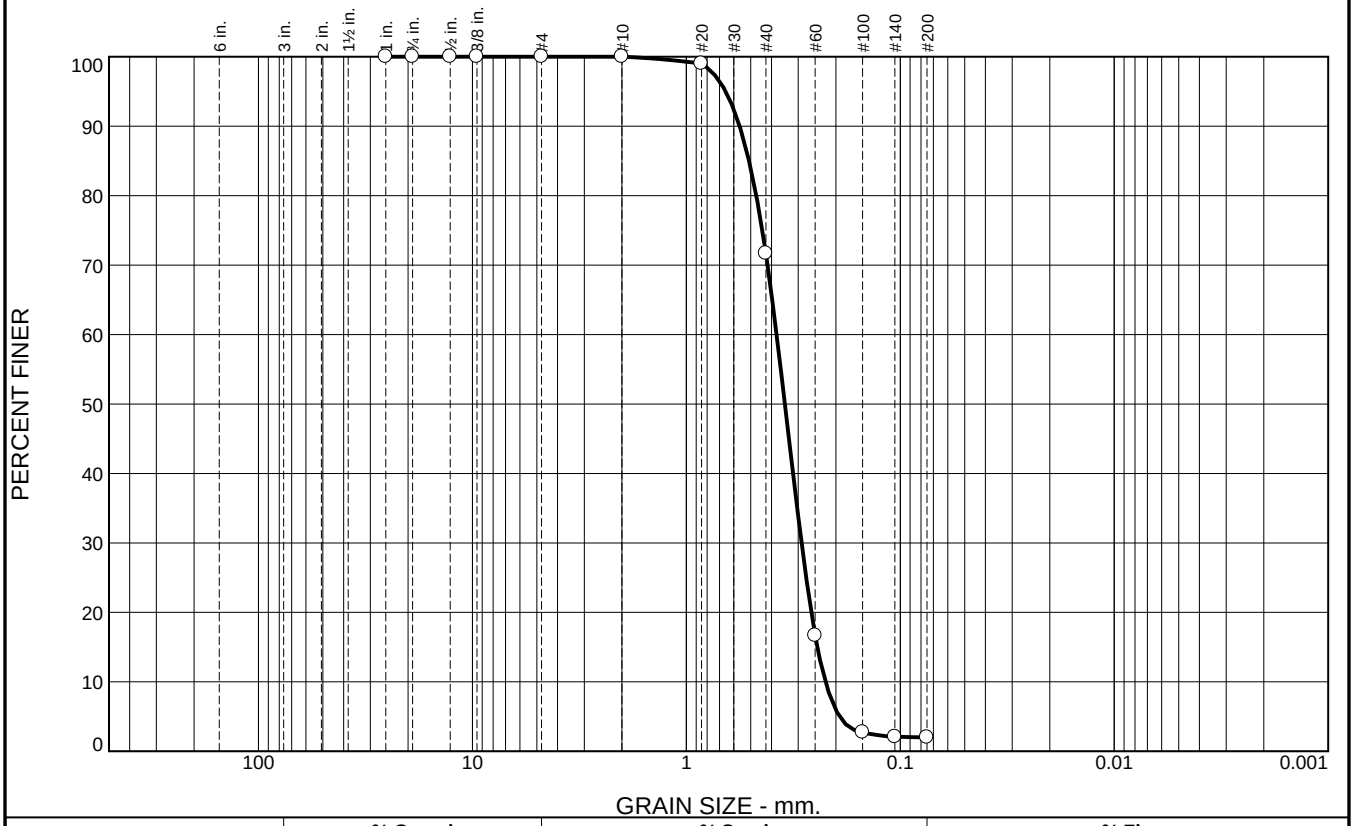
Thompson Engineering

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	28.3	69.7	2.0	

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	100.0		
#20	99.0		
#40	71.7		
#60	16.7		
#100	2.7		
#140	2.1		
#200	2.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5635 D_{85}= 0.5096 D_{60}= 0.3785
D_{50}= 0.3463 D_{30}= 0.2896 D_{15}= 0.2442
D_{10}= 0.2238 C_u= 1.69 C_c= 0.99

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-173-12 C
Sample Number: 6471 (43) **Depth:** 3.6' **Date:** 12/03/12

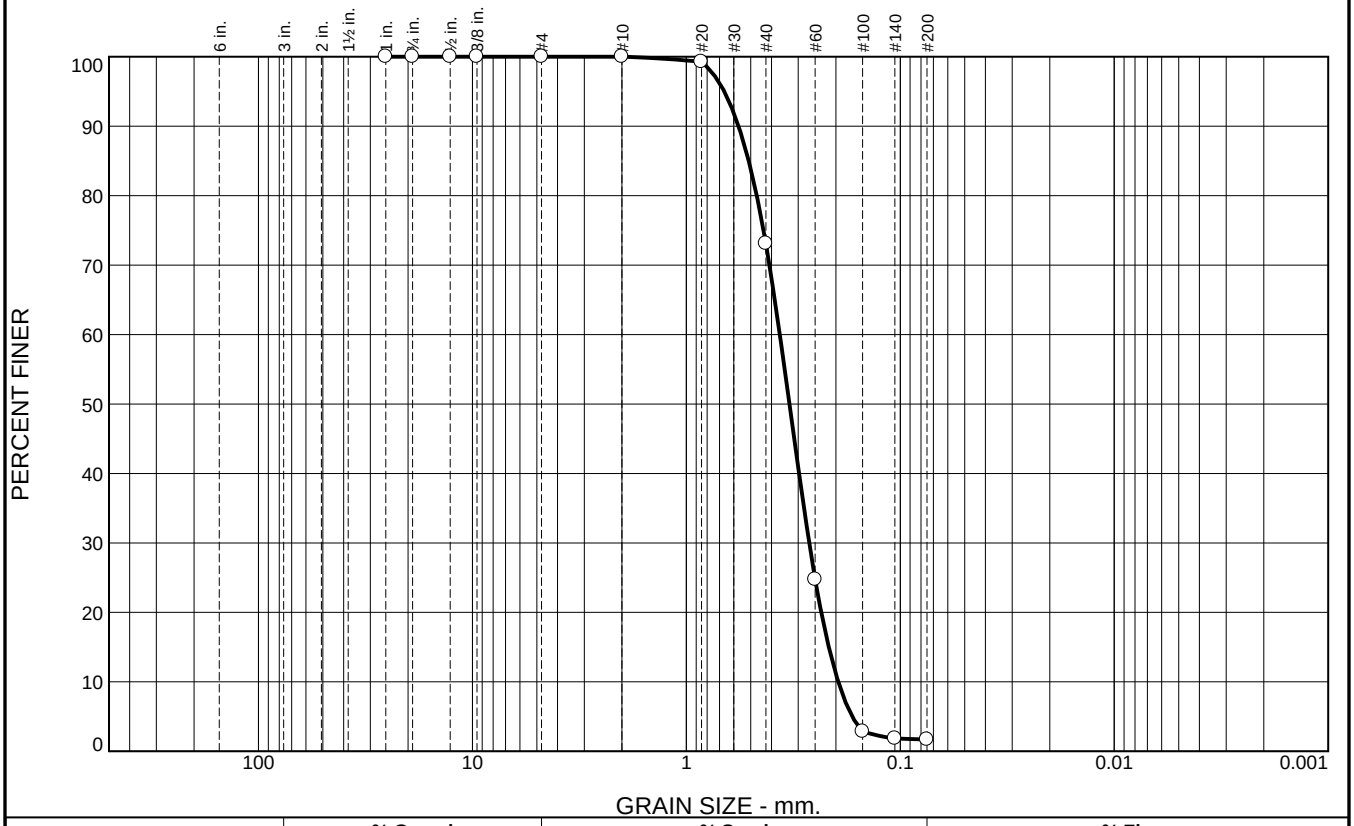
Thompson Engineering

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	26.9	71.4	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	99.3		
#40	73.1		
#60	24.7		
#100	2.9		
#140	1.8		
#200	1.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5699 D_{85}= 0.5111 D_{60}= 0.3656
D_{50}= 0.3297 D_{30}= 0.2666 D_{15}= 0.2159
D_{10}= 0.1950 C_u= 1.88 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-173-12 D
Sample Number: 6471 (44) **Depth:** 8.6' **Date:** 12/03/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PB-174-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-174-12	LOCATION COORDINATES: E = 1,152,596 N = 258,565	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: / 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: 30.9 Ft.	
		15. DATE BORING	STARTED: 11-29-12 / COMPLETED: 11-29-12
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: 7.3 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-30.5	0.0				
-31.0	0.5		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, lt. brown (SP)		
-35.1	4.6		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace silt, trace wood debris, medium to high plasticity, gray mottled with orange and greenish gray (CH)	NS	
-37.8	7.3		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace clay, trace wood debris, lt. gray with orange stains (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. Sand was extremely dense and vibracore could not advance past 7.3 ft.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20992° Long = -88.30038°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

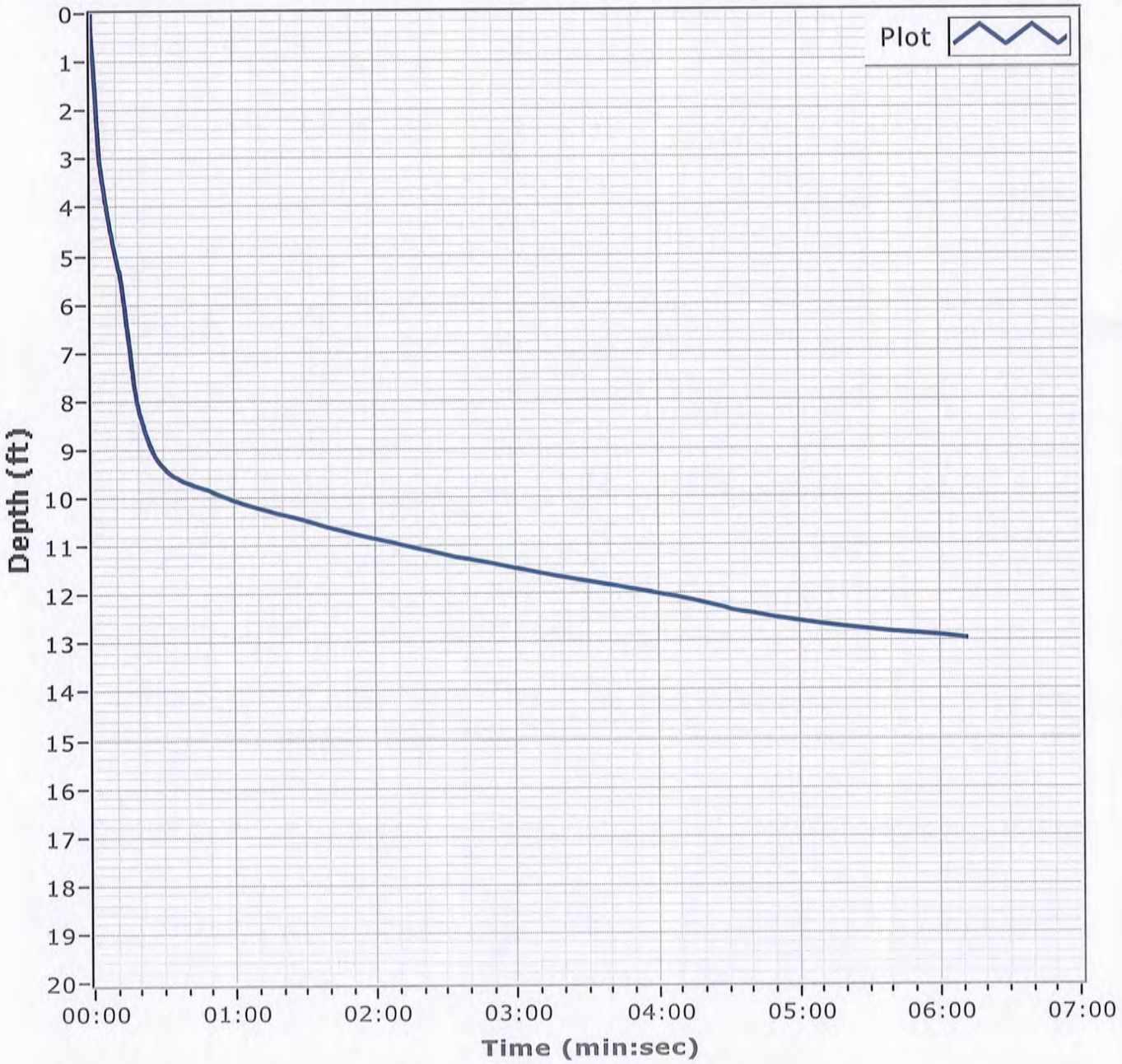
Core Identifier BI-PB-174-12
Coordinate System
Latitude / Longitude

Latitude 30 12.595
Longitude 088 18.023

Date 11/29/2012
Start Time 15:52:22
End Time 15:58:34
Total Time 00:06:12

Water Depth 30.9'
Penetration 13.0'
Recovery 7.3'

Comments



Boring Designation BI-PB-175-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-175-12	LOCATION COORDINATES: E = 1,151,225 N = 257,886	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: 12-05-12 / COMPLETED: 12-05-12
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: 15.8 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-29.7	0.0				
-30.0	0.3				
-30.7	1.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, pale brown (SP)	NS	
-33.9	4.2		SAND, silty, mostly fine-grained sand-sized quartz, some silt, gray (SM)		
-35.5	5.8		CLAY, fat, mostly clay, trace wood debris, medium to high plasticity, trace fine grain sandy pockets, gray (CH)	A	Classification: SM Color: 2.5Y 6/2-light brownish gray D50: 0.3147 mm % Fines: 12.1
			SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, trace clay, gray (SP-SM)	B	Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.3027 mm % Fines: 5.7
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace clay, trace clay lenses, lt. gray (SP) At El. -38.0 Ft., mostly fine to medium-grained sand-sized quartz, trace silt, dense, lt. gray to white	C	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3228 mm % Fines: 2.7
			At El. -41.0 Ft., mostly fine to medium-grained sand-sized quartz, trace silt, trace clay, dense, clay band at 15.7 ft., lt. gray	D	Classification: SP Color: 2.5Y 8/1-white D50: 0.3078 mm % Fines: 3.8
-45.5	15.8				
				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. Buoy approximately 150 m SE of boring location.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20807° Long = -88.30473°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

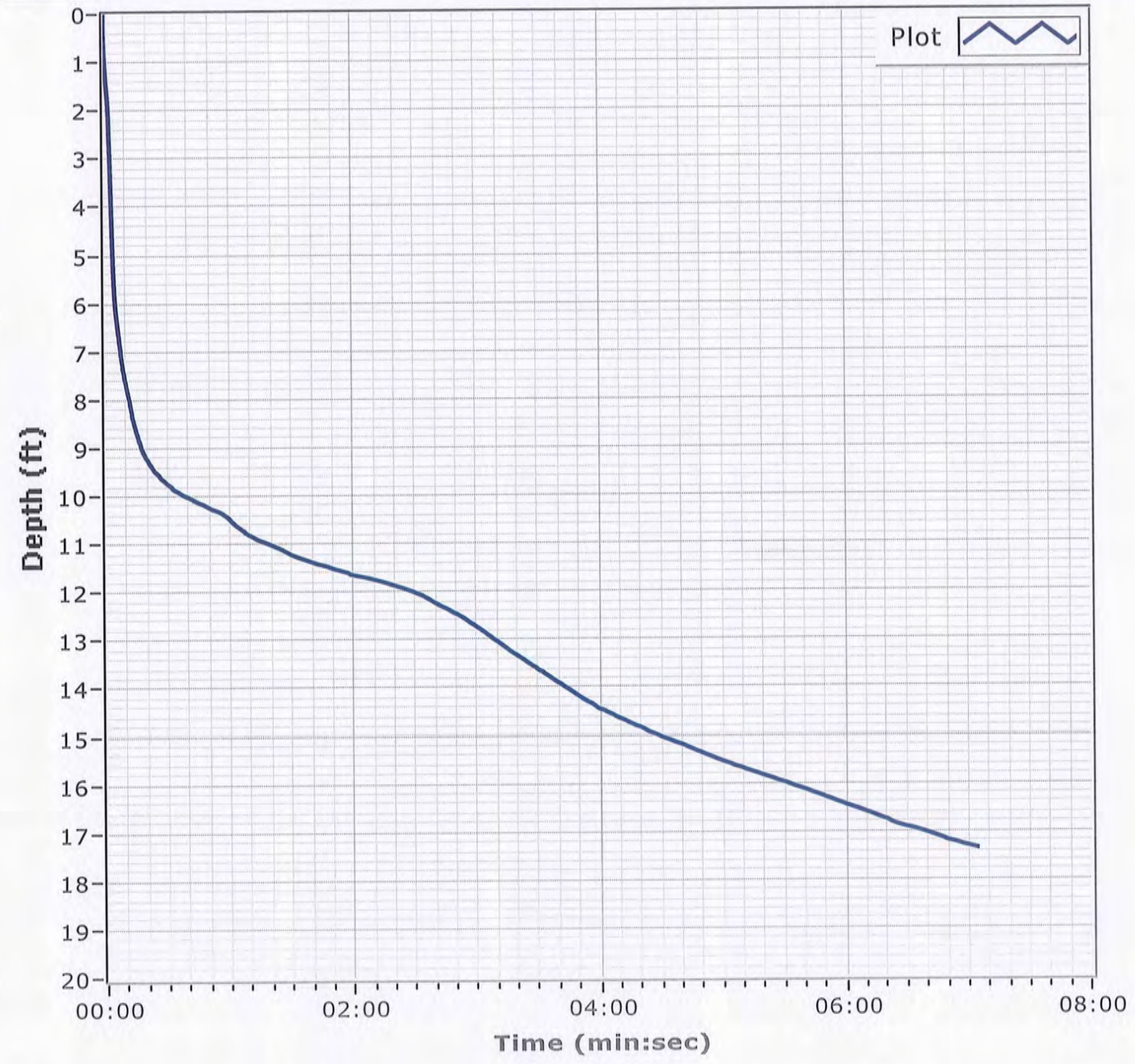
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Coordinate System Latitude / Longitude

Date 12/05/2012
Start Time 14:03:56
End Time 14:11:01
Total Time 00:07:05

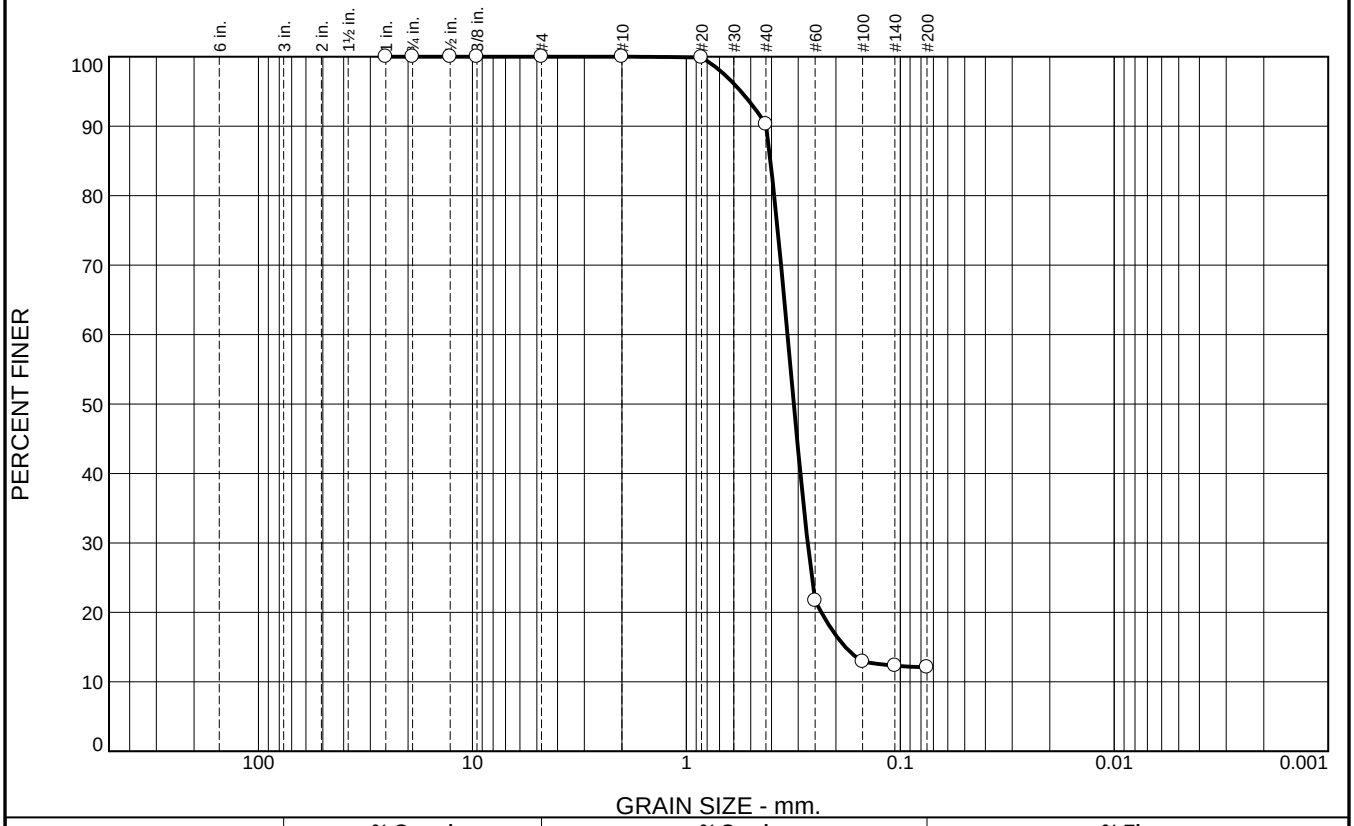
Water Depth 30.1'
Penetration 17.4'
Recovery 15.8'

Latitude 30 12.484
Longitude 088 18.284

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	9.7	78.2	12.1	

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	99.9		
#40	90.3		
#60	21.7		
#100	12.9		
#140	12.3		
#200	12.1		

* (no specification provided)

Material Description

Fine grained, SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4238 D_{85}= 0.4046 D_{60}= 0.3368
D_{50}= 0.3147 D_{30}= 0.2712 D_{15}= 0.1806
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PB-175-12 A
Sample Number: 6480 (38) **Depth:** 4.2' **Date:** 12/07/12

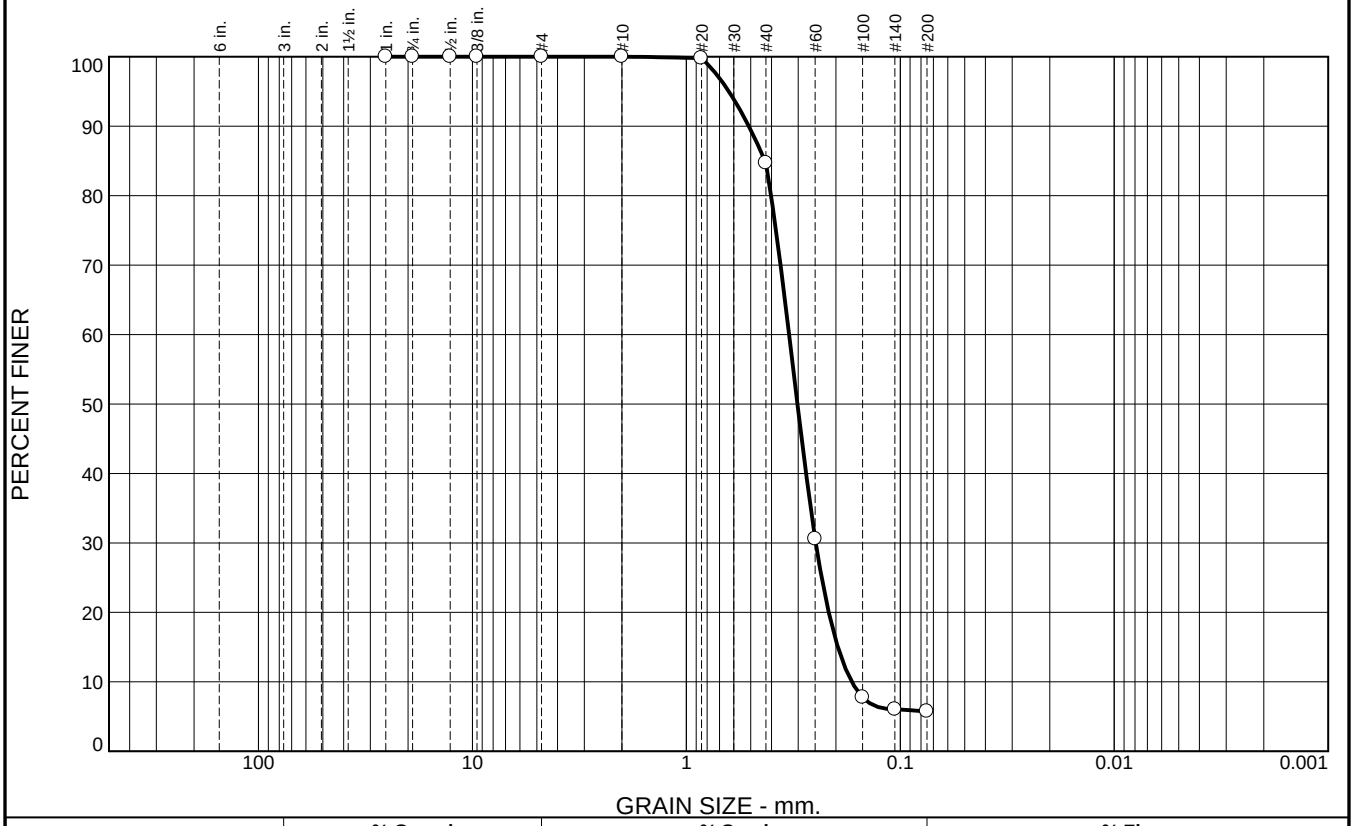
Thompson Engineering

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	15.3	79.0	5.7	

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	99.8		
#40	84.7		
#60	30.6		
#100	7.8		
#140	6.0		
#200	5.7		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5108 D_{85}= 0.4291 D_{60}= 0.3310
D_{50}= 0.3027 D_{30}= 0.2483 D_{15}= 0.1959
D_{10}= 0.1688 C_u= 1.96 C_c= 1.10

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-175-12 B
Sample Number: 6480 (39) **Depth:** 5.8' **Date:** 12/07/12

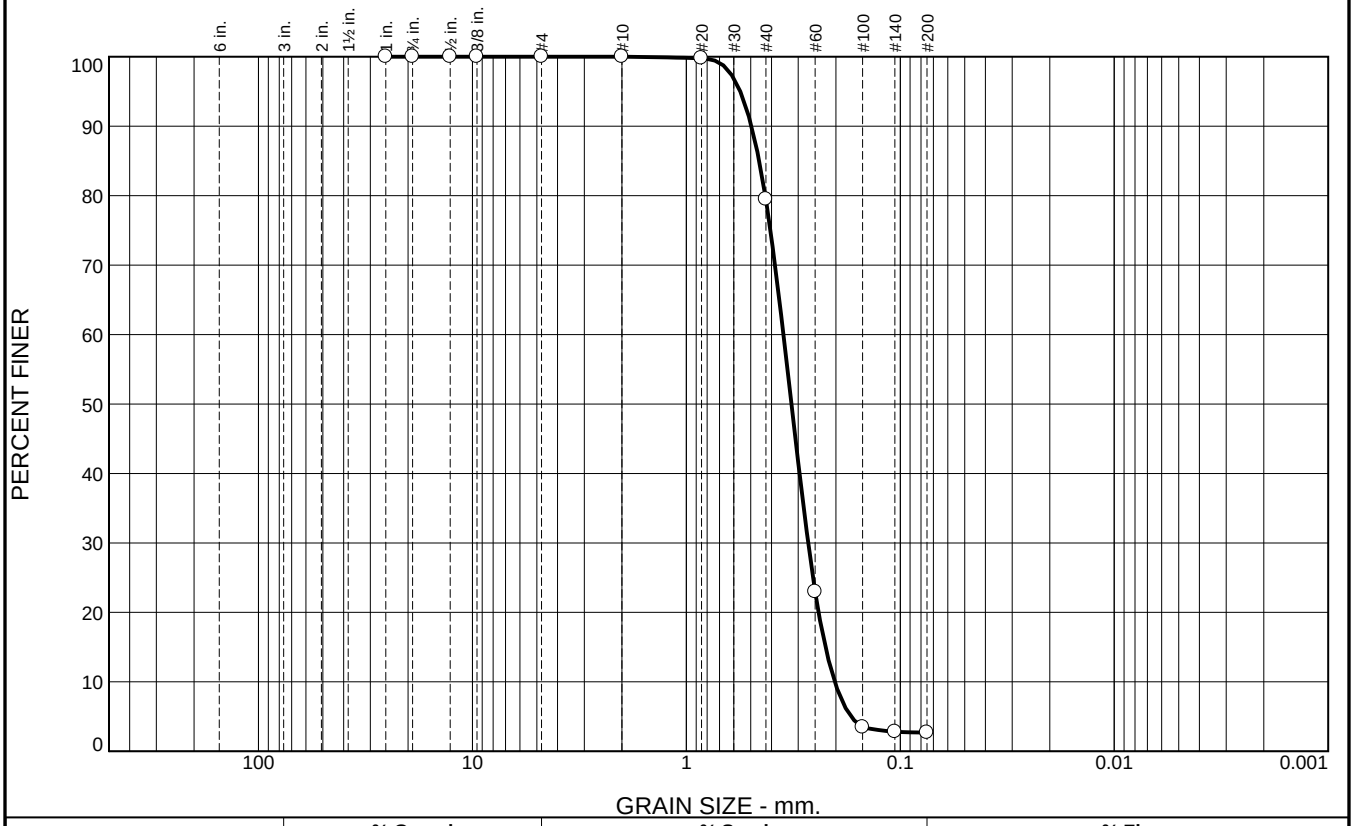
Thompson Engineering

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	20.5	76.8	2.7	

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	99.8		
#40	79.5		
#60	23.0		
#100	3.5		
#140	2.8		
#200	2.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4962 D_{85}= 0.4567 D_{60}= 0.3517
D_{50}= 0.3228 D_{30}= 0.2697 D_{15}= 0.2237
D_{10}= 0.2025 C_u= 1.74 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-175-12 C
Sample Number: 6480 (40) **Depth:** 8.3' **Date:** 12/07/12

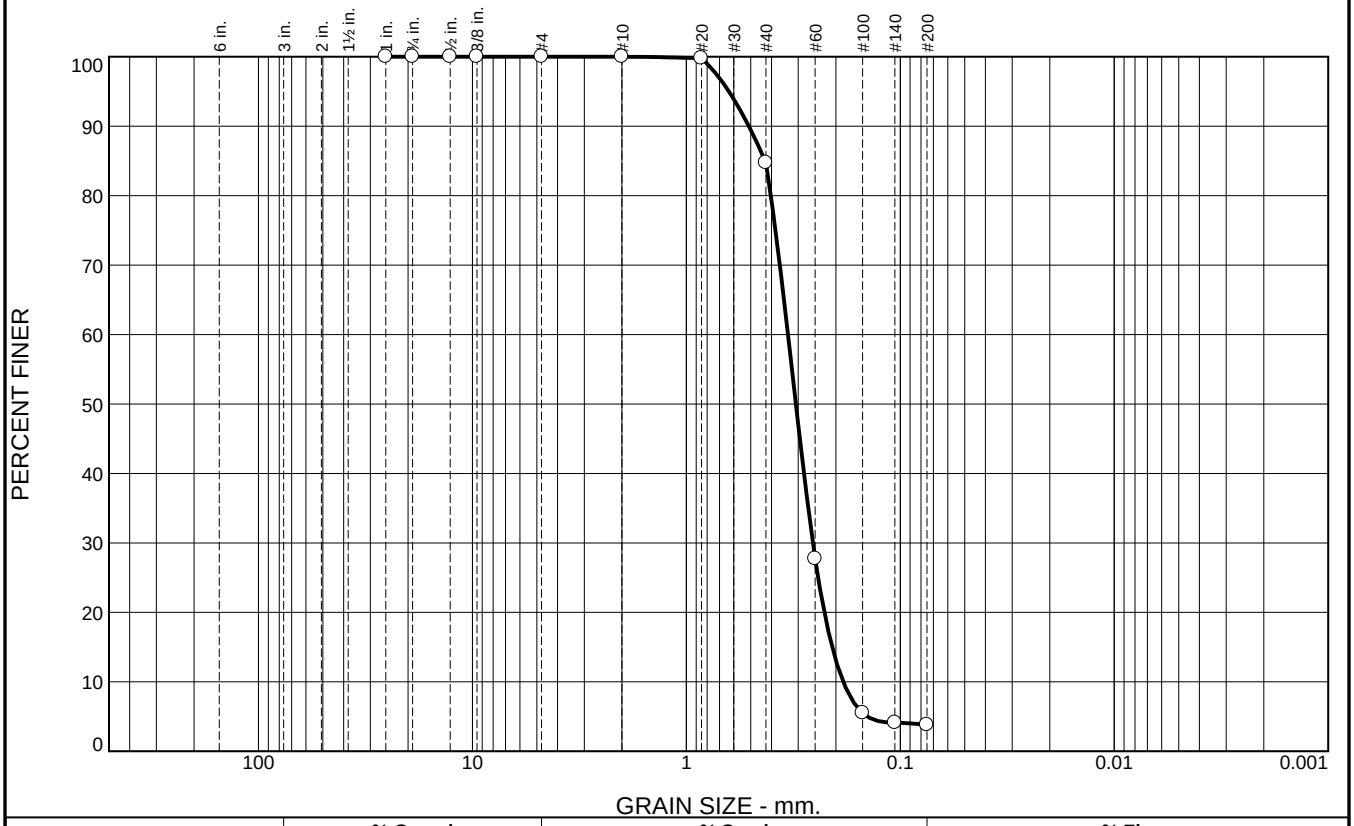
Thompson Engineering

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	15.3	80.9	3.8	

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	100.0		
#20	99.8		
#40	84.7		
#60	27.7		
#100	5.5		
#140	4.1		
#200	3.8		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5104 D_{85}= 0.4288 D_{60}= 0.3349
D_{50}= 0.3078 D_{30}= 0.2562 D_{15}= 0.2083
D_{10}= 0.1850 C_u= 1.81 C_c= 1.06

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-175-12 D
Sample Number: 6480 (41) **Depth:** 11.3' **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-PB-176-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-176-12	LOCATION COORDINATES: E = 1,153,461 N = 257,951	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: 33.7 Ft.	
		15. DATE BORING	STARTED: 12-05-12 / COMPLETED: 12-05-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -33.2 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-33.2	0.0				
-34.2	1.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, clay bandt at 0.2 ft., pale brown to gray (SP)	A	Classification: SP-SM Color: 2.5Y 7/2-light gray D50: 0.3059 mm % Fines: 10.9
-35.8	2.6		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, low to medium plasticity, gray (CL)	NS	
-36.9	3.7		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, gray (SM)	B	Classification: SP-SM Color: 2.5Y 6/1-gray D50: 0.3161 mm % Fines: 10.5
-38.0	4.8		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace clay, gray (SP-SM)	C	Classification: SP-SM Color: 2.5Y 7/1-light gray D50: 0.3331 mm % Fines: 6.3
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, lt. gray to white (SP)	D	Classification: SP Color: 2.5Y 8/1-white D50: 0.3417 mm % Fines: 0.5
				E	Classification: SP Color: 2.5Y 8/1-white D50: 0.3202 mm % Fines: 1.8
-47.5	14.3				
			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.	NS	

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20822° Long = -88.29765°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

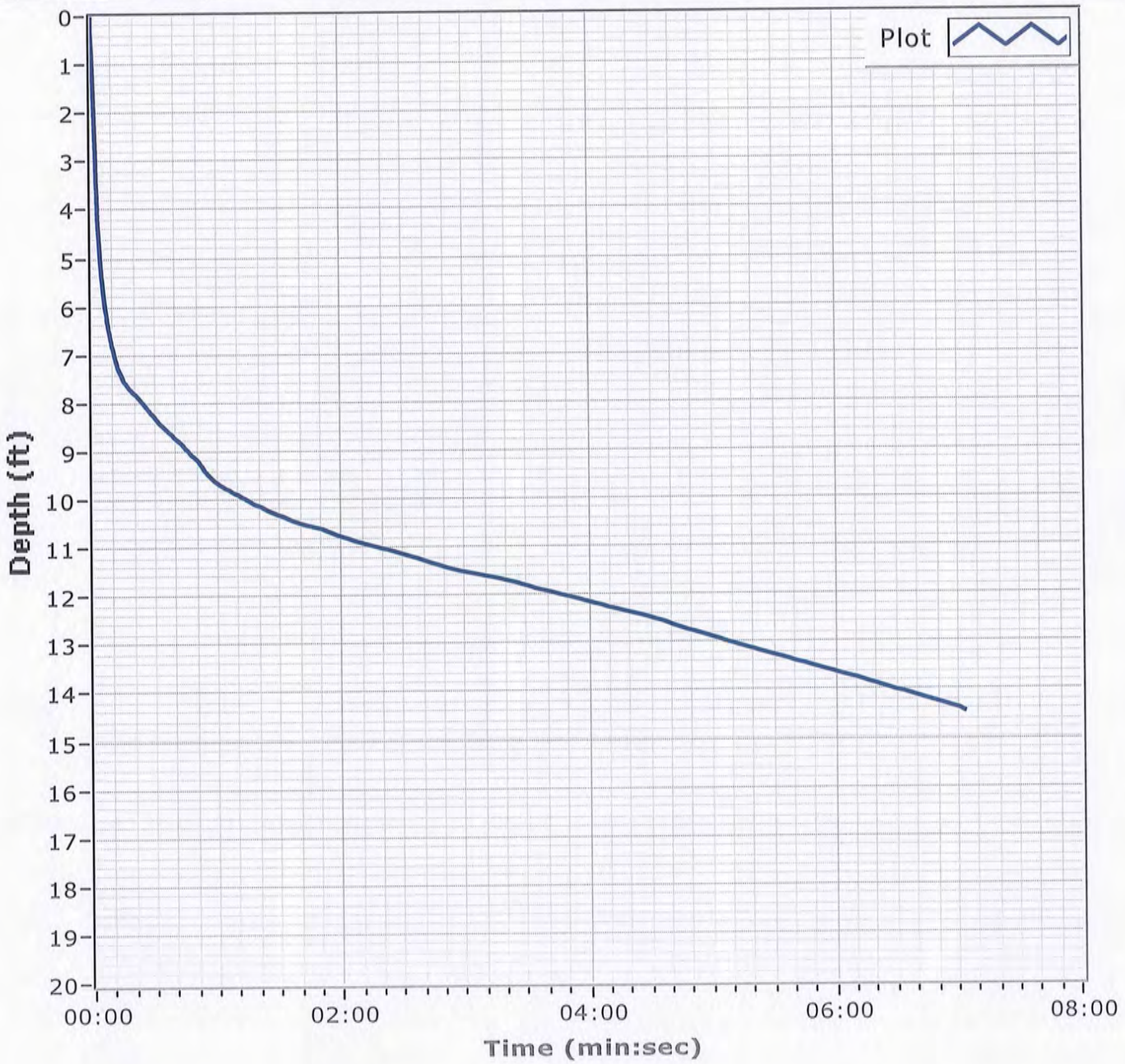
Core Identifier BI-PB-176-12
Coordinate System Latitude / Longitude

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End Time 16:12:16
Total Time 00:07:04

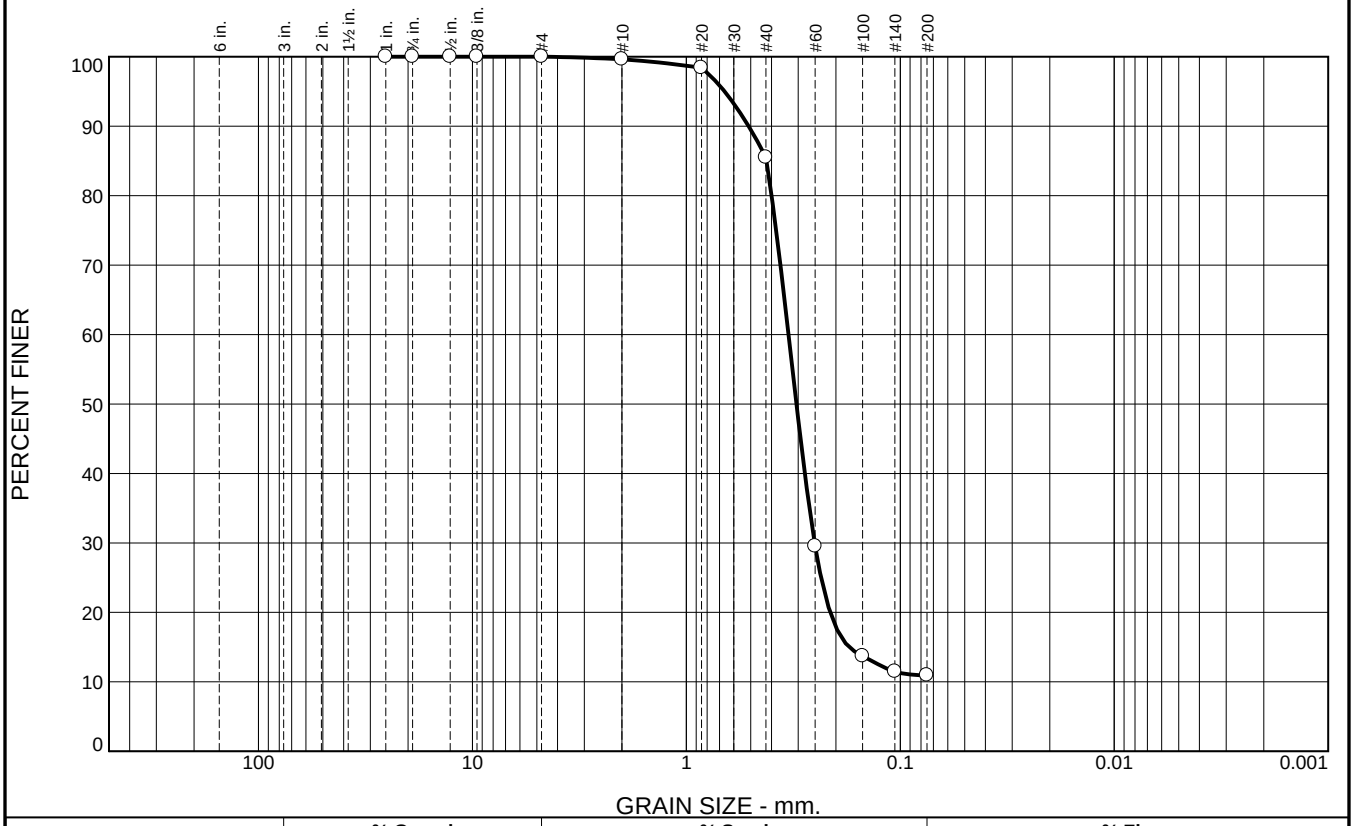
Water Depth 33.7
Penetration 14.5'
Recovery 14.3'

Latitude 30 12.493
Longitude 088 17.859

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.4	14.1	74.6	10.9	

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	99.6		
#20	98.4		
#40	85.5		
#60	29.5		
#100	13.7		
#140	11.5		
#200	10.9		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5117 D_{85}= 0.4224 D_{60}= 0.3331
D_{50}= 0.3059 D_{30}= 0.2515 D_{15}= 0.1735
D_{10}= C_u= C_c=

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-176-12 A
Sample Number: 6480 (42) **Depth:** 0.0' **Date:** 12/07/12

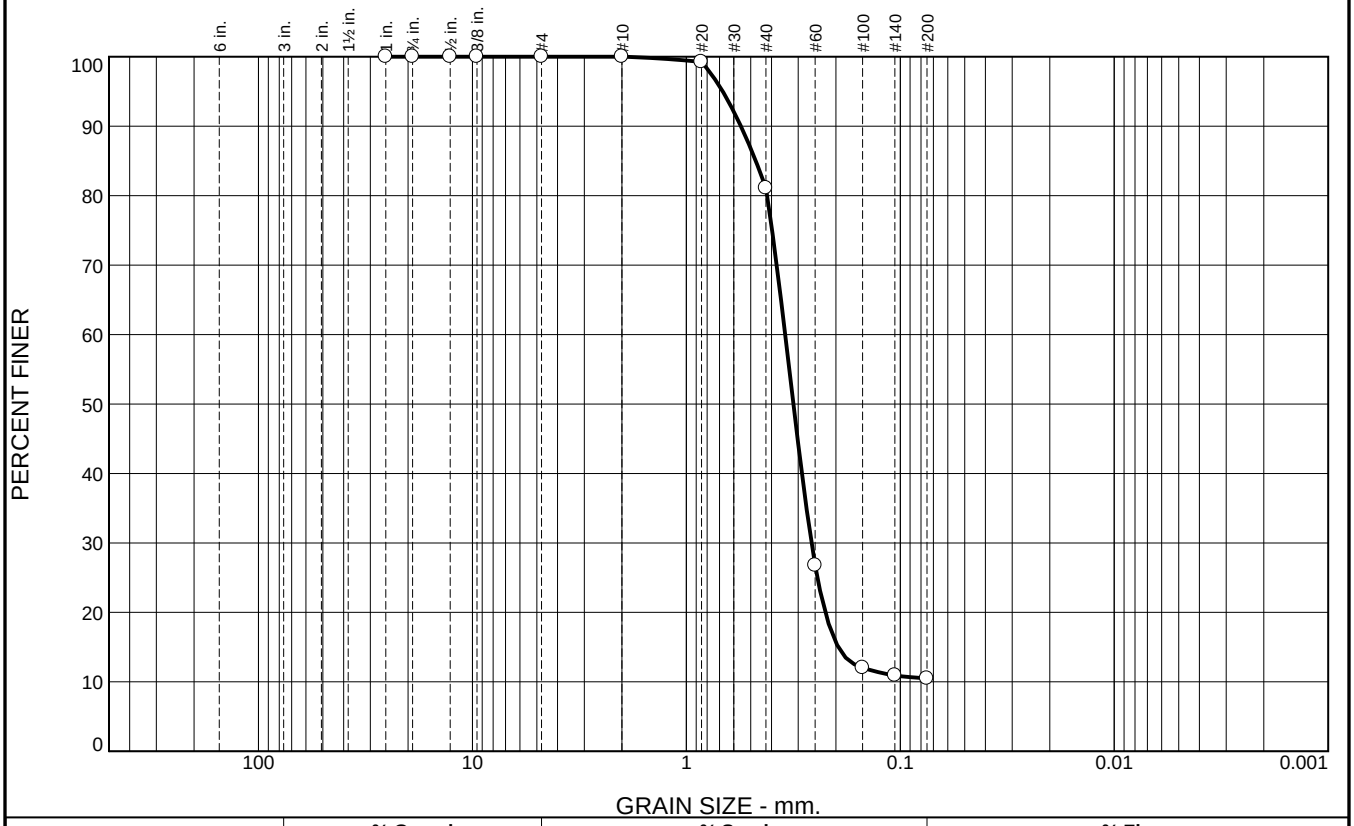
Thompson Engineering

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	18.9	70.6	10.5	

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	100.0		
#20	99.2		
#40	81.1		
#60	26.8		
#100	12.0		
#140	10.9		
#200	10.5		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5561 D_{85}= 0.4740 D_{60}= 0.3451
D_{50}= 0.3161 D_{30}= 0.2601 D_{15}= 0.1950
D_{10}= C_u= C_c=

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-176-12 B
Sample Number: 6480 (43) **Depth:** 2.6' **Date:** 12/07/12

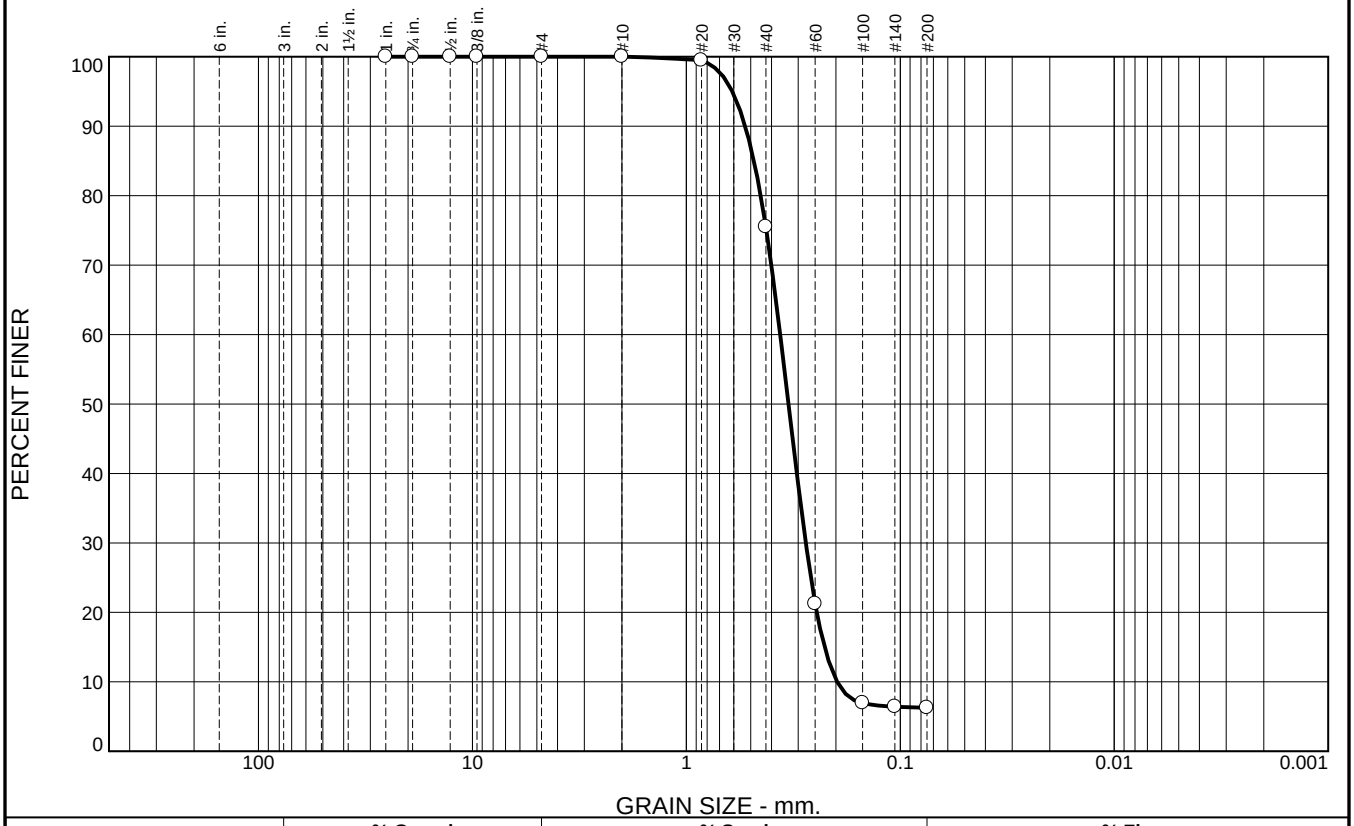
Thompson Engineering

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	24.5	69.2	6.3	

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	100.0		
#20	99.5		
#40	75.5		
#60	21.3		
#100	7.0		
#140	6.4		
#200	6.3		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5307 D_{85}= 0.4833 D_{60}= 0.3642
D_{50}= 0.3331 D_{30}= 0.2766 D_{15}= 0.2259
D_{10}= 0.1973 C_u= 1.85 C_c= 1.07

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-176-12 C
Sample Number: 6480 (44) **Depth:** 3.7' **Date:** 12/07/12

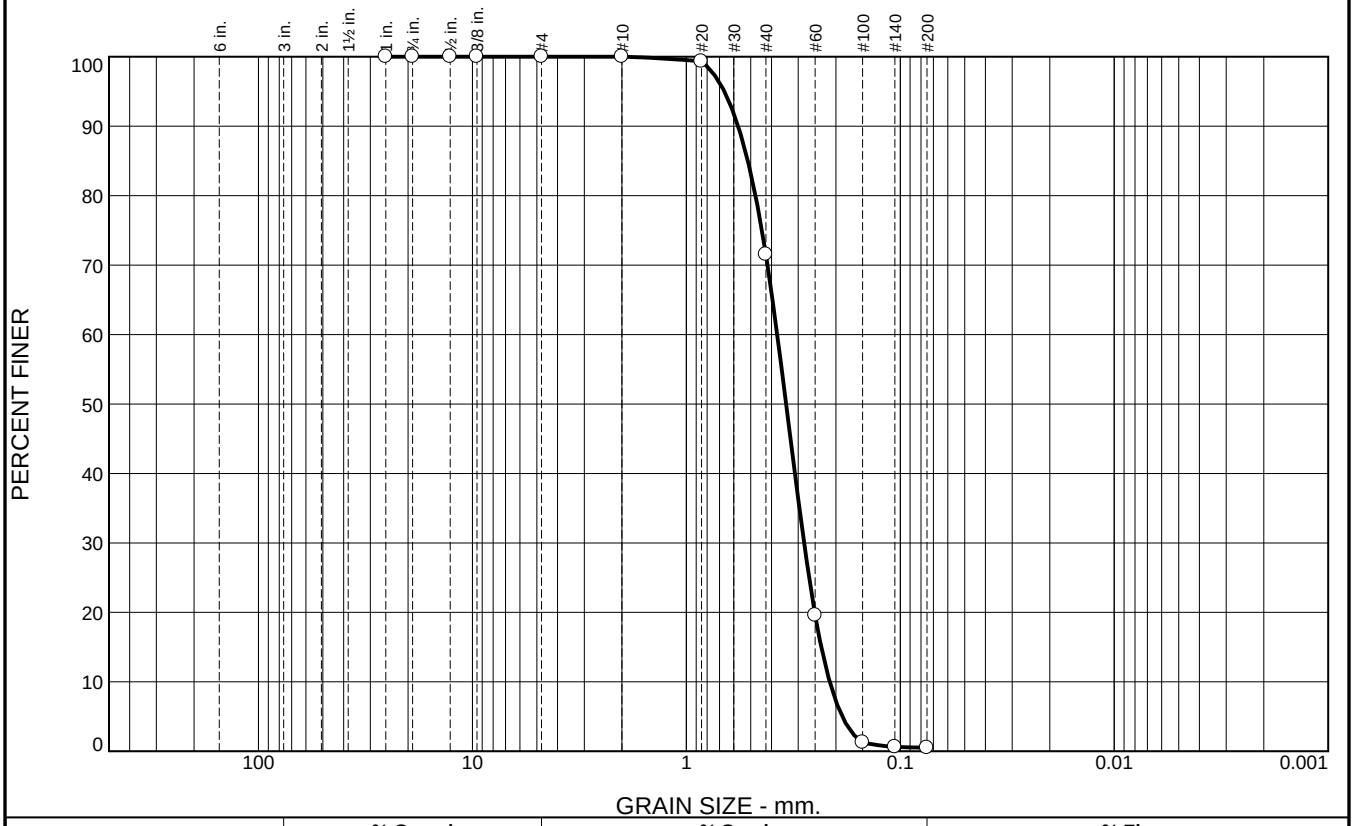
Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	28.5	71.0	0.5	

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	100.0		
#20	99.3		
#40	71.5		
#60	19.6		
#100	1.3		
#140	0.6		
#200	0.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5725 D_{85}= 0.5159 D_{60}= 0.3761
D_{50}= 0.3417 D_{30}= 0.2817 D_{15}= 0.2341
D_{10}= 0.2138 C_u= 1.76 C_c= 0.99

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-176-12 D
Sample Number: 6480 (45) **Depth:** 4.8' **Date:** 12/07/12

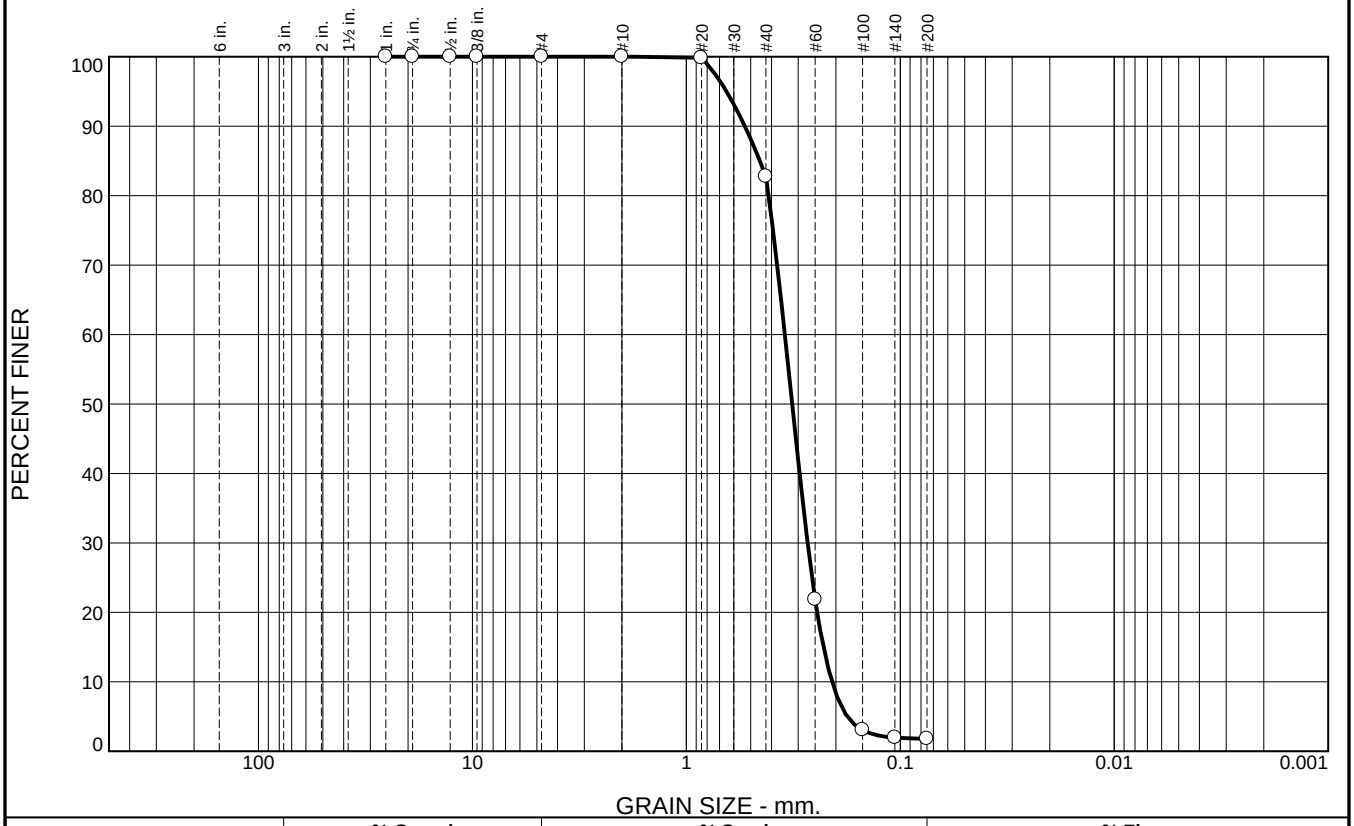
Thompson Engineering

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	17.2	81.0	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	100.0		
#20	99.8		
#40	82.8		
#60	21.8		
#100	3.1		
#140	2.0		
#200	1.8		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5330 D_{85}= 0.4535 D_{60}= 0.3464
D_{50}= 0.3202 D_{30}= 0.2714 D_{15}= 0.2286
D_{10}= 0.2085 C_u= 1.66 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-176-12 E
Sample Number: 6480 (46) **Depth:** 9.3' **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-PB-177-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-177-12	LOCATION COORDINATES: E = 1,153,351 N = 253,051	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: 40.7 Ft.	
		15. DATE BORING	STARTED: 12-19-12 / COMPLETED: 12-19-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -40.6 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-40.6	0.0				
-41.0	0.4				
-41.2	0.6		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, gray (SP)	A	Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.3539 mm % Fines: 5.9
			CLAY, lean, mostly clay, some fine-grained sand-sized quartz, soft, dark gray (CL)		
-44.9	4.3		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace clay, gray (SP-SM)	B	Classification: SP Color: 2.5Y 7/1-light gray D50: 0.3615 mm % Fines: 1.9
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, gray to light gray (SP)		
			At El. -49.9 Ft., mostly fine to medium-grained sand-sized quartz, trace fines, lt. gray	C	Classification: SP Color: 5Y 7/1-light gray D50: 0.3621 mm % Fines: 0.7
				D	Classification: SP Color: 5Y 7/1-light gray D50: 0.3802 mm % Fines: 1.6
-59.9	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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19475° Long = -88.29807°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

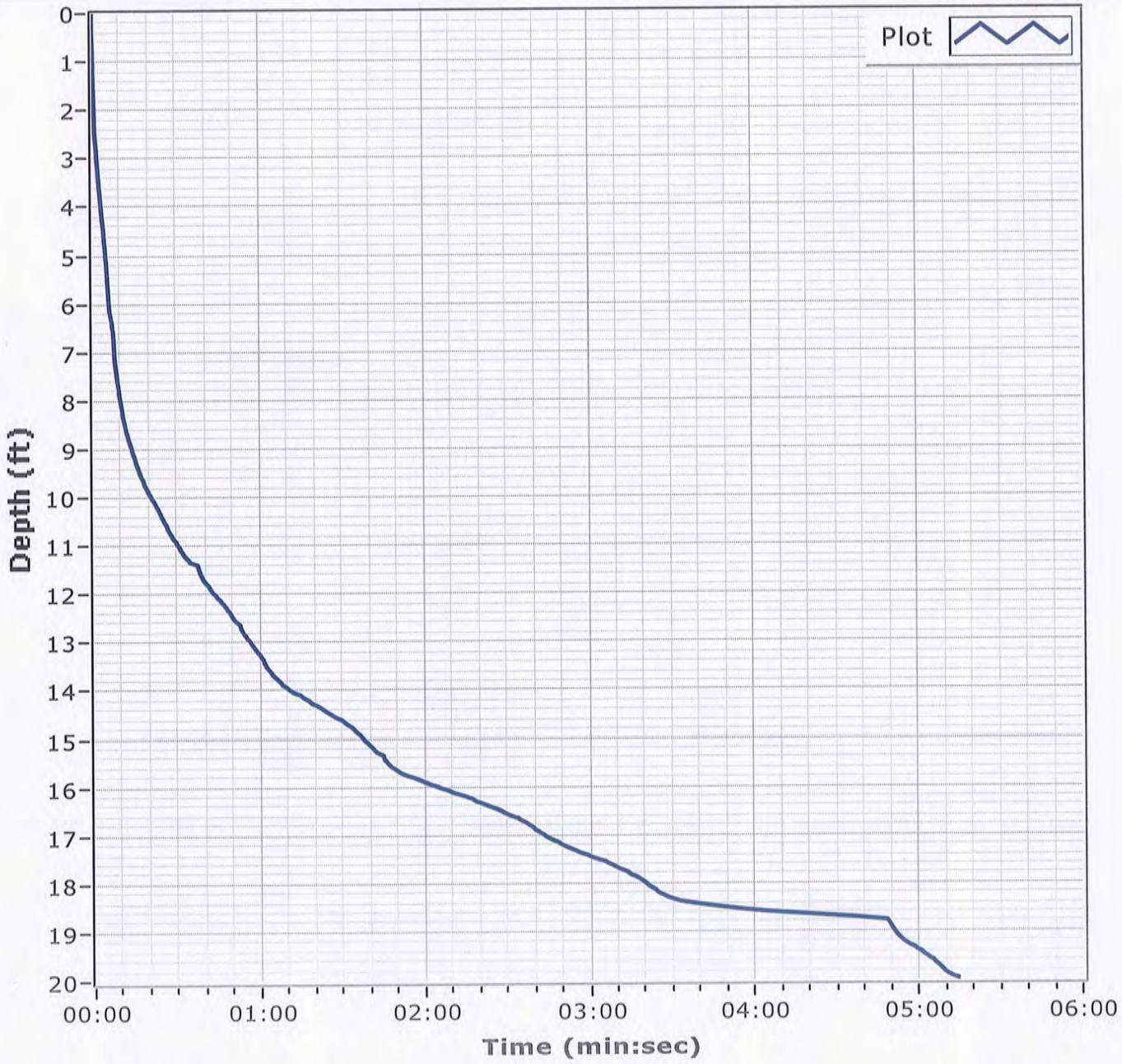
Core Identifier BI-PB-177-12
Coordinate System Latitude / Longitude

Latitude 30 11.685
Longitude 88 17.884

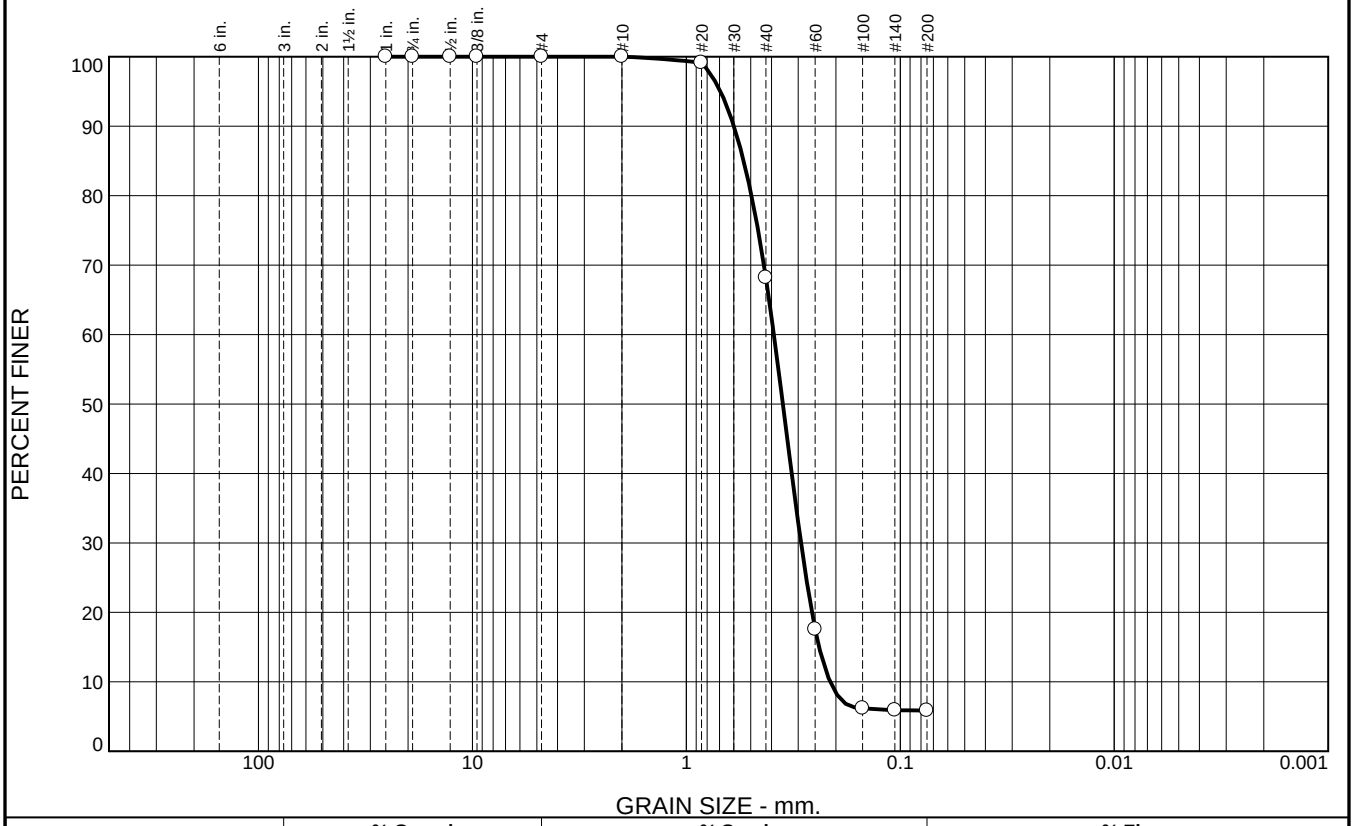
Date 12/19/2012
Start Time 09:51:25
End Time 09:56:40
Total Time 00:05:15

Water Depth 40.7'
Penetration 20.0'
Recovery 19.3'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	31.8	62.3	5.9	

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	100.0		
#20	99.1		
#40	68.2		
#60	17.6		
#100	6.2		
#140	5.9		
#200	5.9		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5992 D_{85}= 0.5395 D_{60}= 0.3899
D_{50}= 0.3539 D_{30}= 0.2912 D_{15}= 0.2396
D_{10}= 0.2129 C_u= 1.83 C_c= 1.02

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-177-12 A
Sample Number: 6494 (64) **Depth:** 0.0' **Date:** 12/26/12

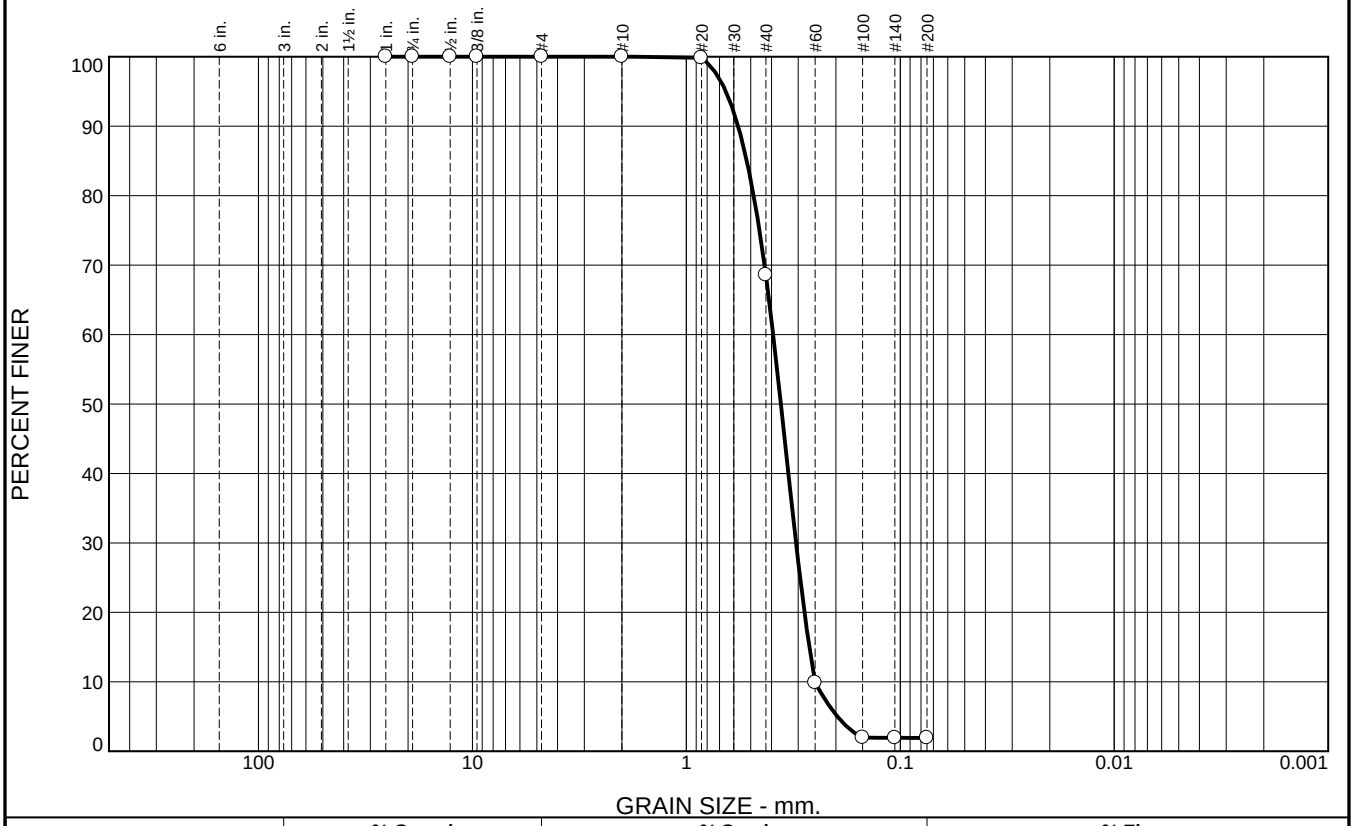
Thompson Engineering

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	0.0	31.4	66.7	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	100.0		
#20	99.8		
#40	68.6		
#60	9.9		
#100	2.0		
#140	1.9		
#200	1.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5724 D_{85}= 0.5215 D_{60}= 0.3929
D_{50}= 0.3615 D_{30}= 0.3073 D_{15}= 0.2665
D_{10}= 0.2504 C_u= 1.57 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-177-12 B
Sample Number: 6494 (65) **Depth:** 4.3' **Date:** 12/26/12

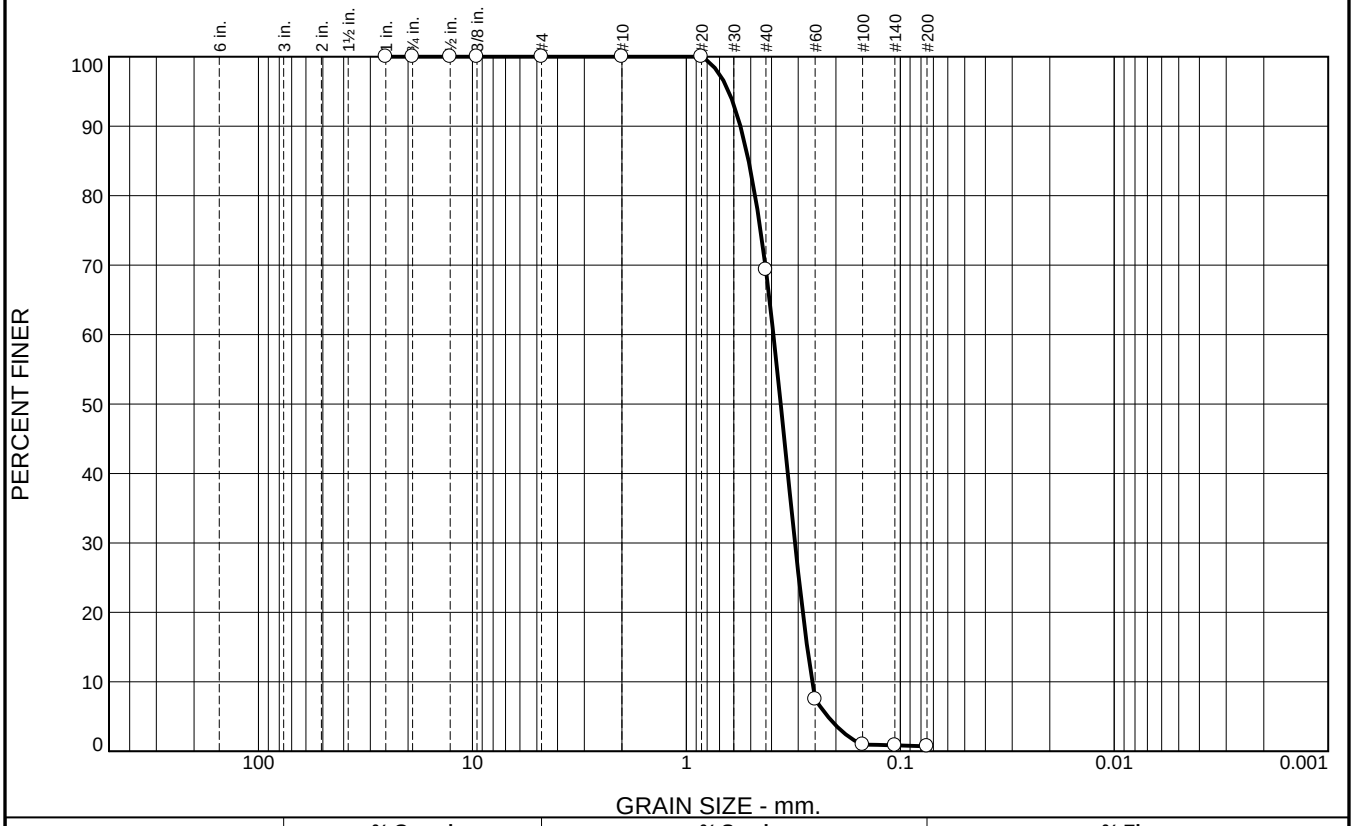
Thompson Engineering

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	0.0	30.6	68.7	0.7	

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	100.0		
#40	69.4		
#60	7.5		
#100	1.0		
#140	0.9		
#200	0.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5587 D_{85}= 0.5116 D_{60}= 0.3917
D_{50}= 0.3621 D_{30}= 0.3108 D_{15}= 0.2727
D_{10}= 0.2582 C_u= 1.52 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-177-12 C
Sample Number: 6494 (66) **Depth:** 9.3' **Date:** 12/26/12

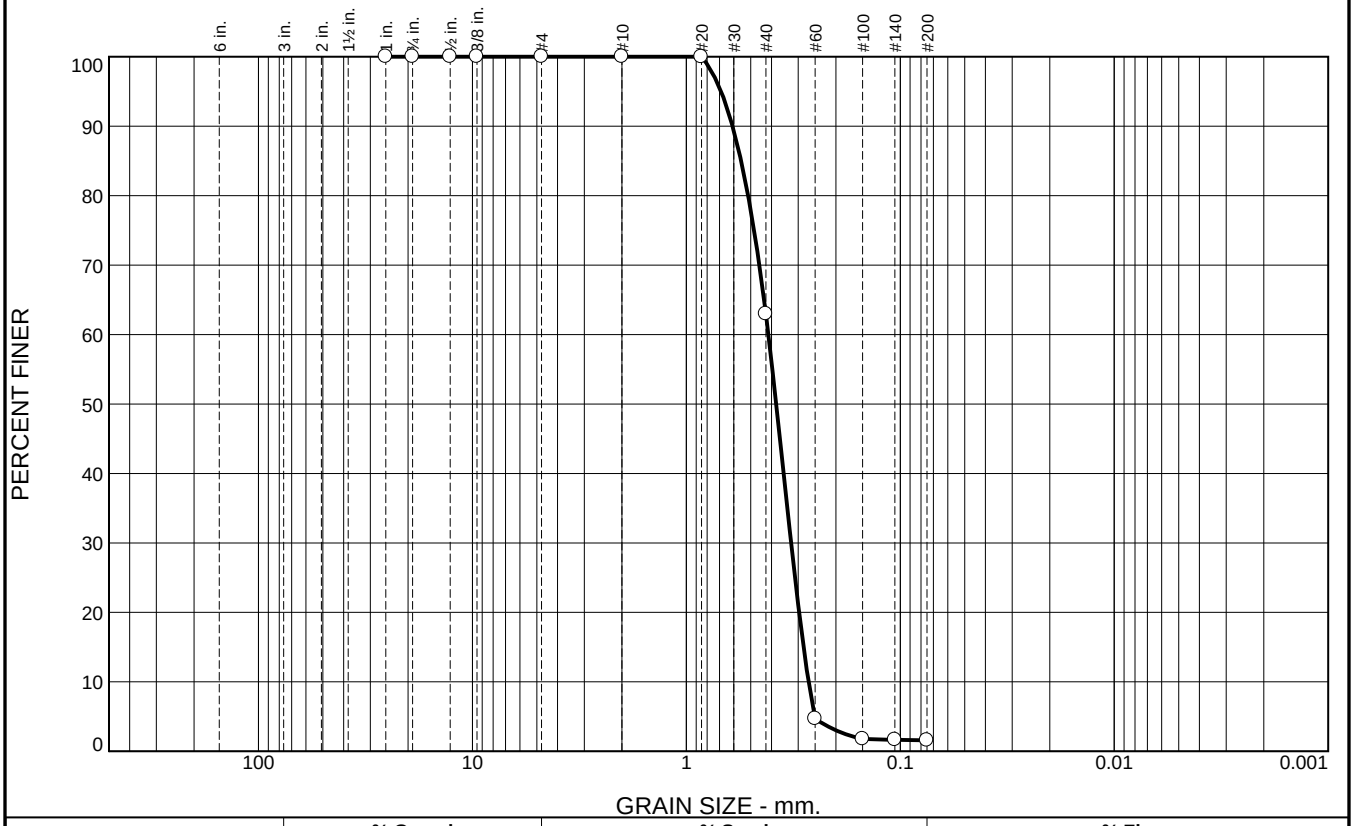
Thompson Engineering

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	0.0	37.0	61.4	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	100.0		
#40	63.0		
#60	4.7		
#100	1.8		
#140	1.7		
#200	1.6		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6081 D_{85}= 0.5545 D_{60}= 0.4137
D_{50}= 0.3802 D_{30}= 0.3239 D_{15}= 0.2835
D_{10}= 0.2687 C_u= 1.54 C_c= 0.94

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-177-12 D
Sample Number: 6494 (67) **Depth:** 14.3' **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-PB-179-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-179-12	LOCATION COORDINATES: E = 1,154,461 N = 253,511	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: 37.1 Ft.	
		15. DATE BORING	STARTED: 12-19-12 / COMPLETED: 12-19-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -37.0 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-37.0	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: 2.5Y 7/2-light gray D50: 0.3679 mm % Fines: 0.9
-39.2	2.2				
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, trace clay stringers, lt brownish gray (SP-SM)	B	Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.3187 mm % Fines: 8.2
				C	Classification: SP-SM Color: 2.5Y 6/1-gray D50: 0.306 mm % Fines: 5.8
				D	Classification: SP-SM Color: 5Y 5/1-gray D50: 0.305 mm % Fines: 5.9
			At El. -54.2 Ft., mostly fine-grained sand-sized quartz, trace thin clay bands, lt. gray	NS	
-56.1	19.1				
			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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19600° Long = -88.29455°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

Core Identifier BI-PB-179-12

Coordinate System
Latitude / Longitude

Latitude 30 11.760

Longitude 88 17.673

Date 12/19/2012

Start Time 09:22:20

End Time 09:23:36

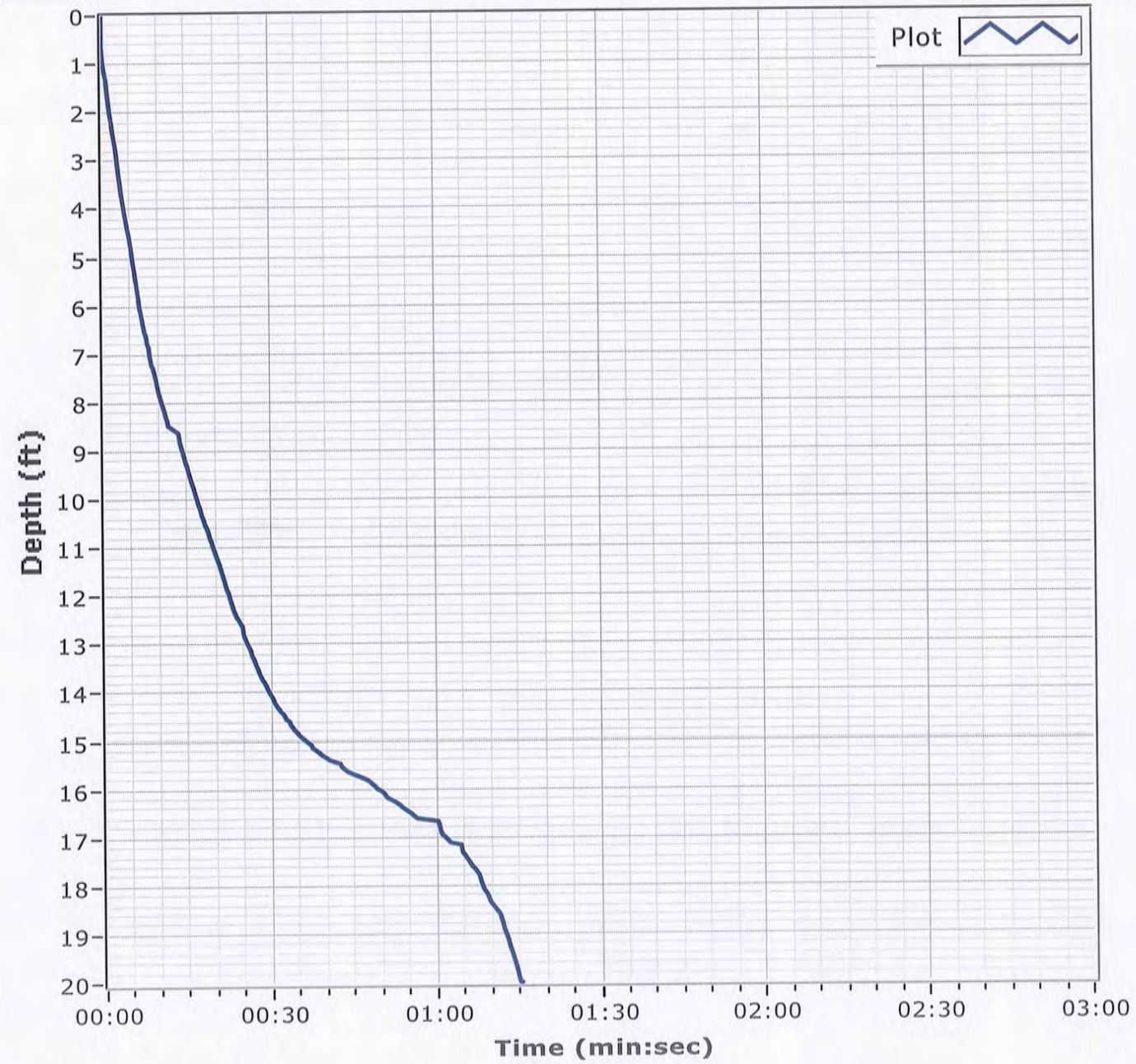
Total Time 00:01:15

Water Depth 37.1'

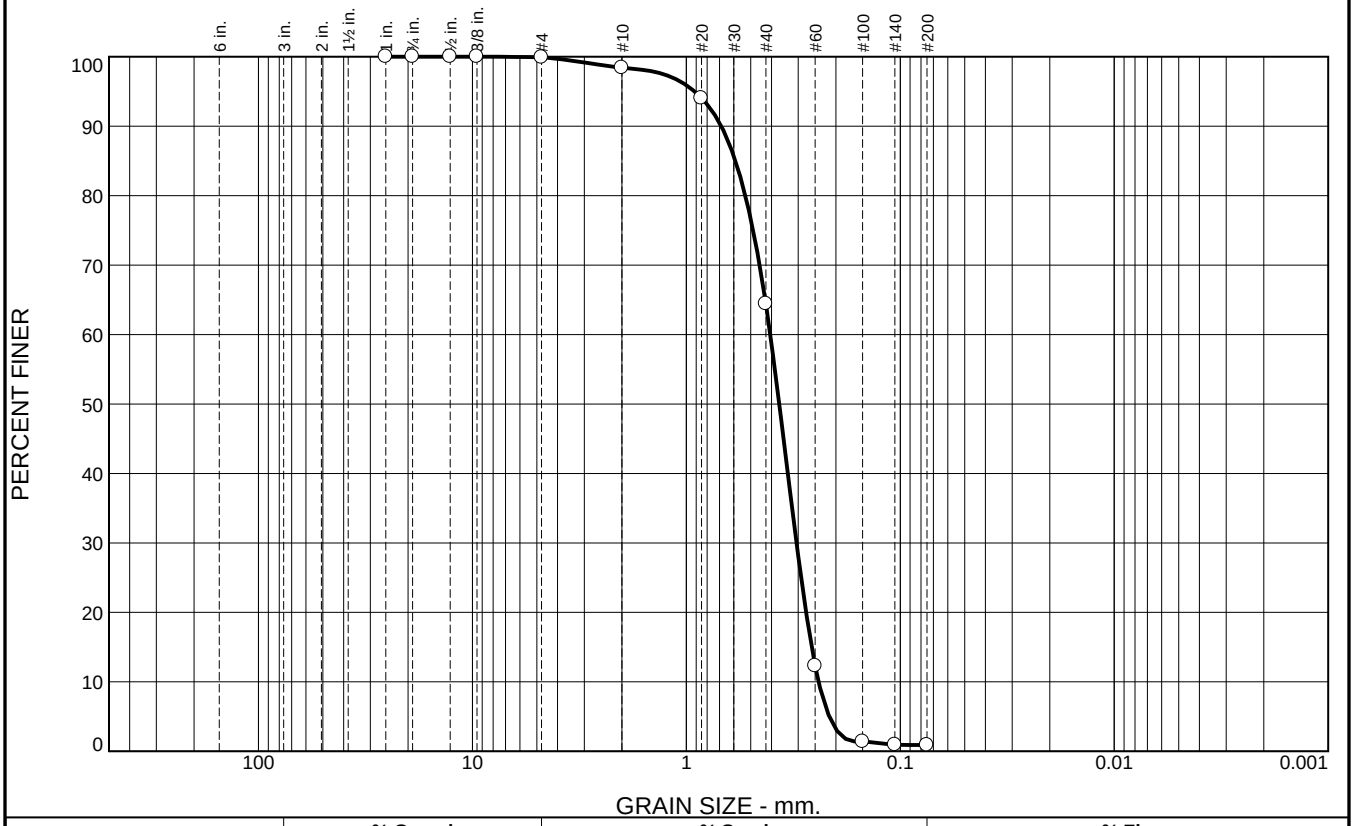
Penetration 20.0'

Recovery 19.1'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	1.5	34.0	63.5	0.9	

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	98.4		
#20	94.0		
#40	64.4		
#60	12.3		
#100	1.4		
#140	0.9		
#200	0.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6868 D_{85}= 0.5894 D_{60}= 0.4054
D_{50}= 0.3679 D_{30}= 0.3057 D_{15}= 0.2596
D_{10}= 0.2409 C_u= 1.68 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-179-12 A
Sample Number: 6494 (68) **Depth:** 0.0' **Date:** 12/26/12

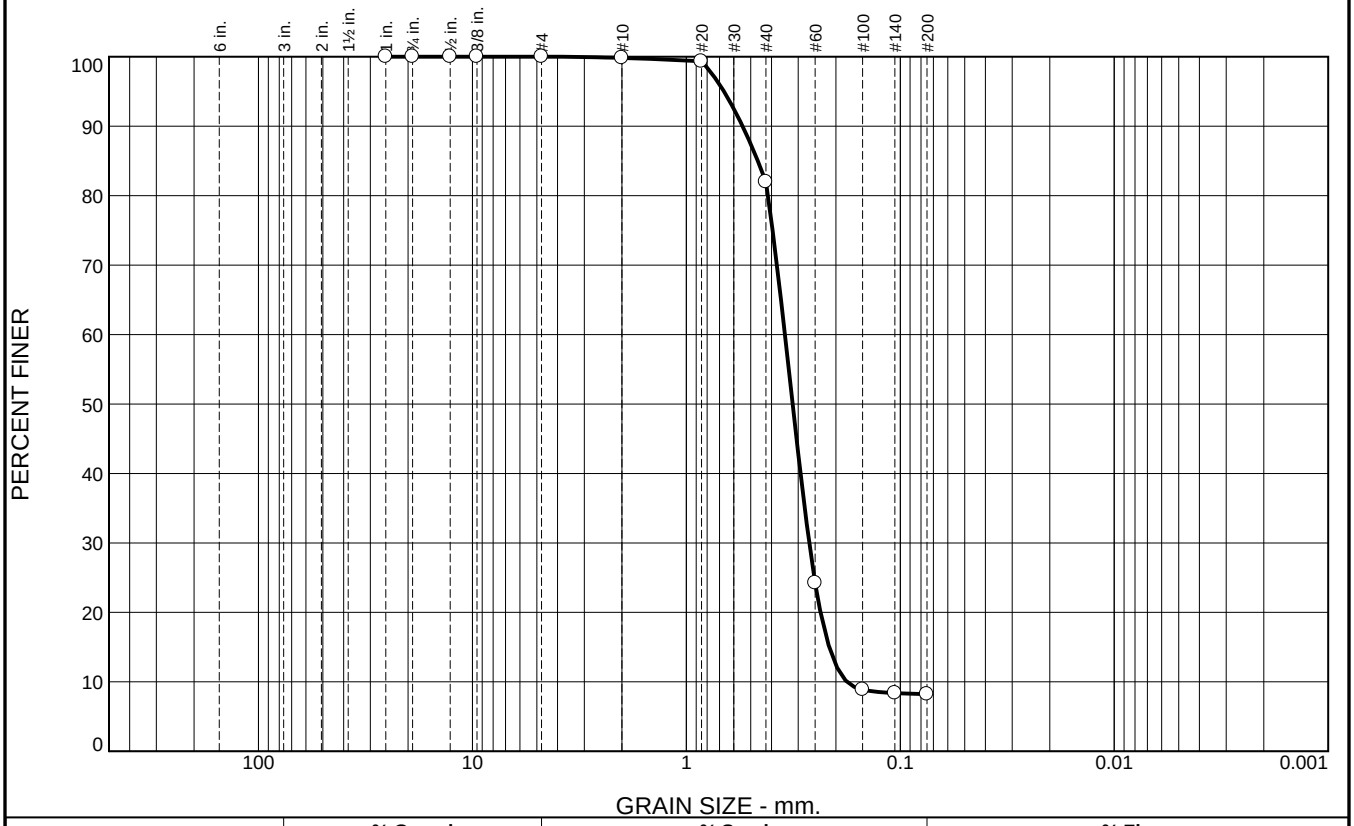
Thompson Engineering

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	0.2	17.8	73.8	8.2	

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	99.8		
#20	99.3		
#40	82.0		
#60	24.2		
#100	8.9		
#140	8.4		
#200	8.2		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5461 D_{85}= 0.4639 D_{60}= 0.3461
D_{50}= 0.3187 D_{30}= 0.2666 D_{15}= 0.2149
D_{10}= 0.1777 C_u= 1.95 C_c= 1.16

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-179-12 B
Sample Number: 6494 (69) **Depth:** 2.2' **Date:** 12/26/12

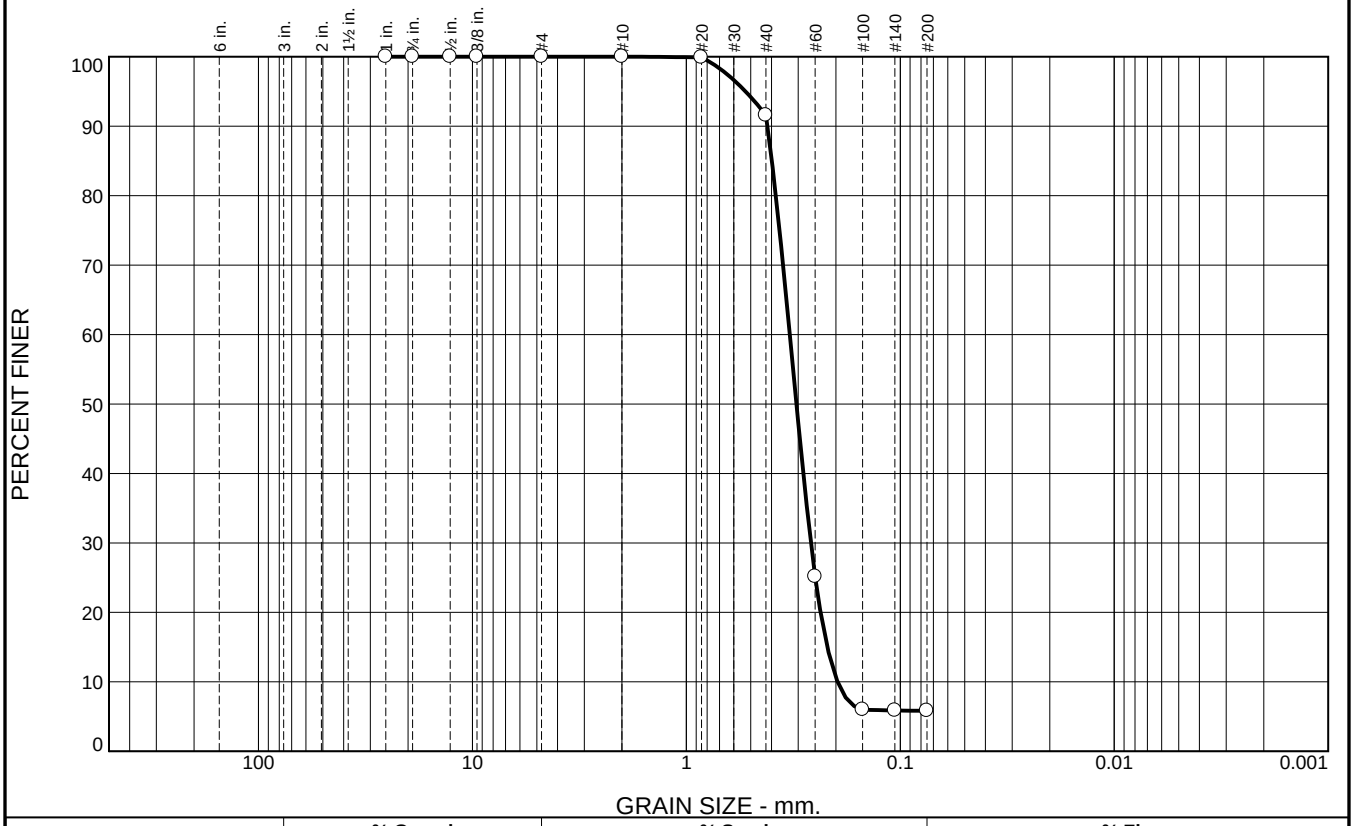
Thompson Engineering

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	0.0	0.0	8.4	85.8	5.8	

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	100.0		
#20	99.9		
#40	91.6		
#60	25.1		
#100	6.0		
#140	5.9		
#200	5.8		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4179 D_{85}= 0.3982 D_{60}= 0.3285
D_{50}= 0.3060 D_{30}= 0.2618 D_{15}= 0.2193
D_{10}= 0.1964 C_u= 1.67 C_c= 1.06

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-179-12 C
Sample Number: 6494 (70) **Depth:** 7.2' **Date:** 12/26/12

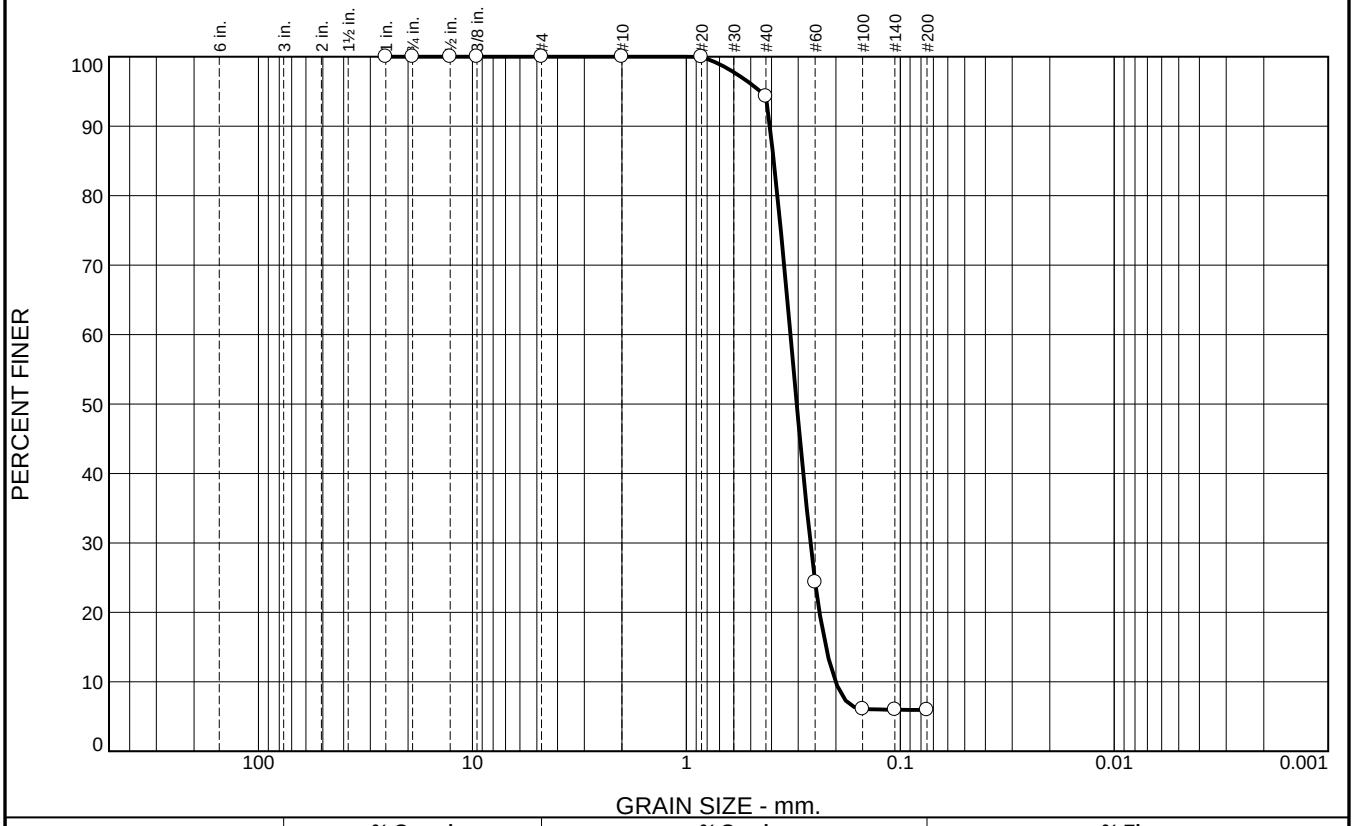
Thompson Engineering

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	0.0	0.0	5.7	88.4	5.9	

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	100.0		
#20	100.0		
#40	94.3		
#60	24.4		
#100	6.1		
#140	6.0		
#200	5.9		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4073 D_{85}= 0.3901 D_{60}= 0.3263
D_{50}= 0.3050 D_{30}= 0.2631 D_{15}= 0.2227
D_{10}= 0.2007 C_u= 1.63 C_c= 1.06

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-179-12 D
Sample Number: 6494 (71) **Depth:** 12.2' **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-PB-181-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-181-12	LOCATION COORDINATES: E = 1,151,693 N = 252,414	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: / 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: 40.7 Ft.	
		15. DATE BORING	STARTED: 12-19-12 / COMPLETED: 12-19-12
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: 15.4 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-40.5	0.0				
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few alternating bands of soft clay, gray (SP-SM)	A	Classification: SP-SM Color: 5Y 5/2-olive gray D50: 0.3268 mm % Fines: 7.8
-44.0	3.5				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, dense, lt. gray to white (SP)	B	Classification: SP Color: 2.5Y 7/1-light gray D50: 0.3526 mm % Fines: 1.2
				C	Classification: SP Color: 5Y 8/1-white D50: 0.3366 mm % Fines: 0.6
				D	Classification: SP Color: 2.5Y 8.5/1- D50: 0.3225 mm % Fines: 0.8
-55.9	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.		

0 5 10 15 20 25

Lat = 30.19302° Long = -88.30333°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

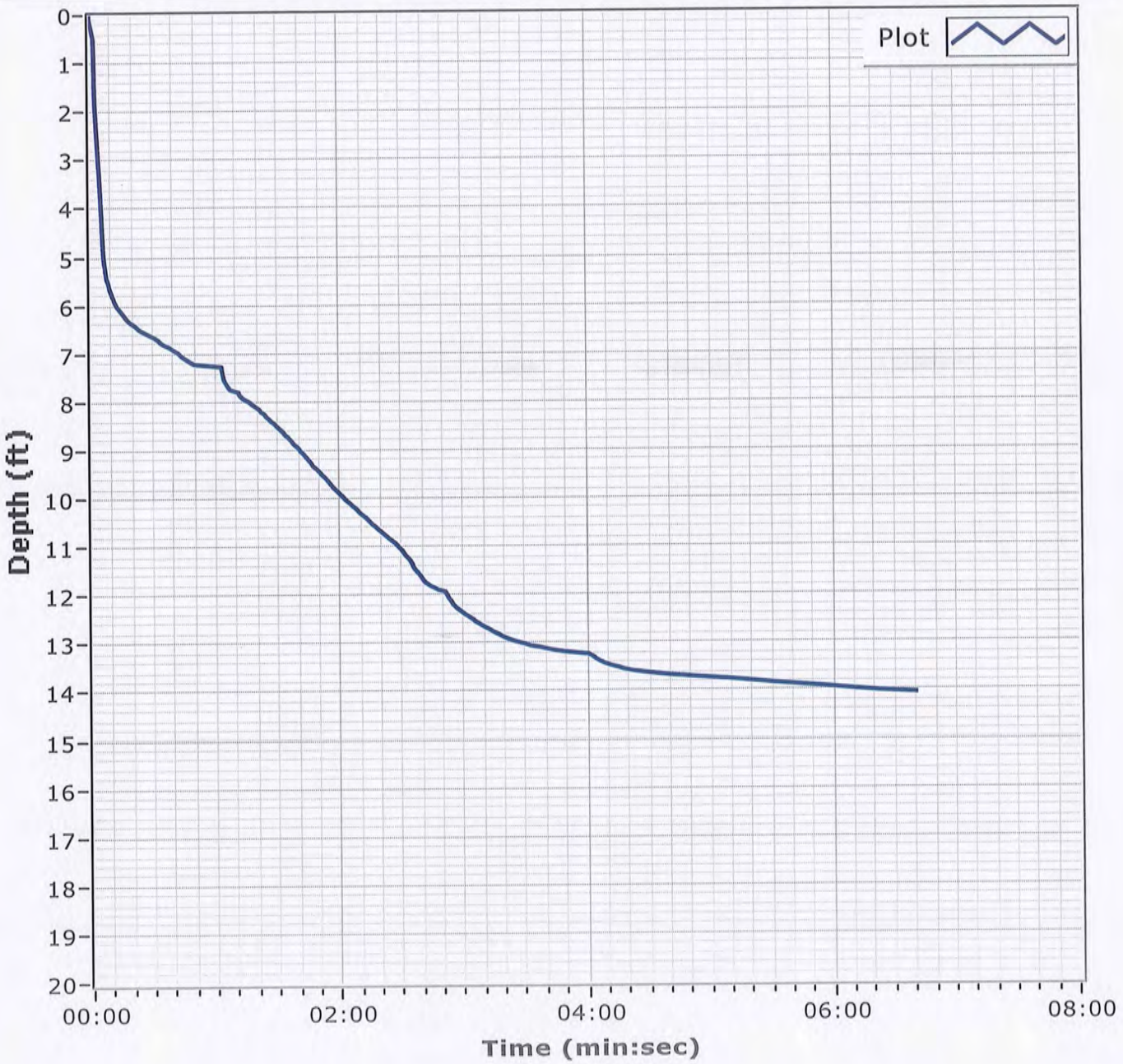
Core Identifier BI-PB-181-12
Coordinate System
Latitude / Longitude

Latitude 30 11.581
Longitude 88 18.200

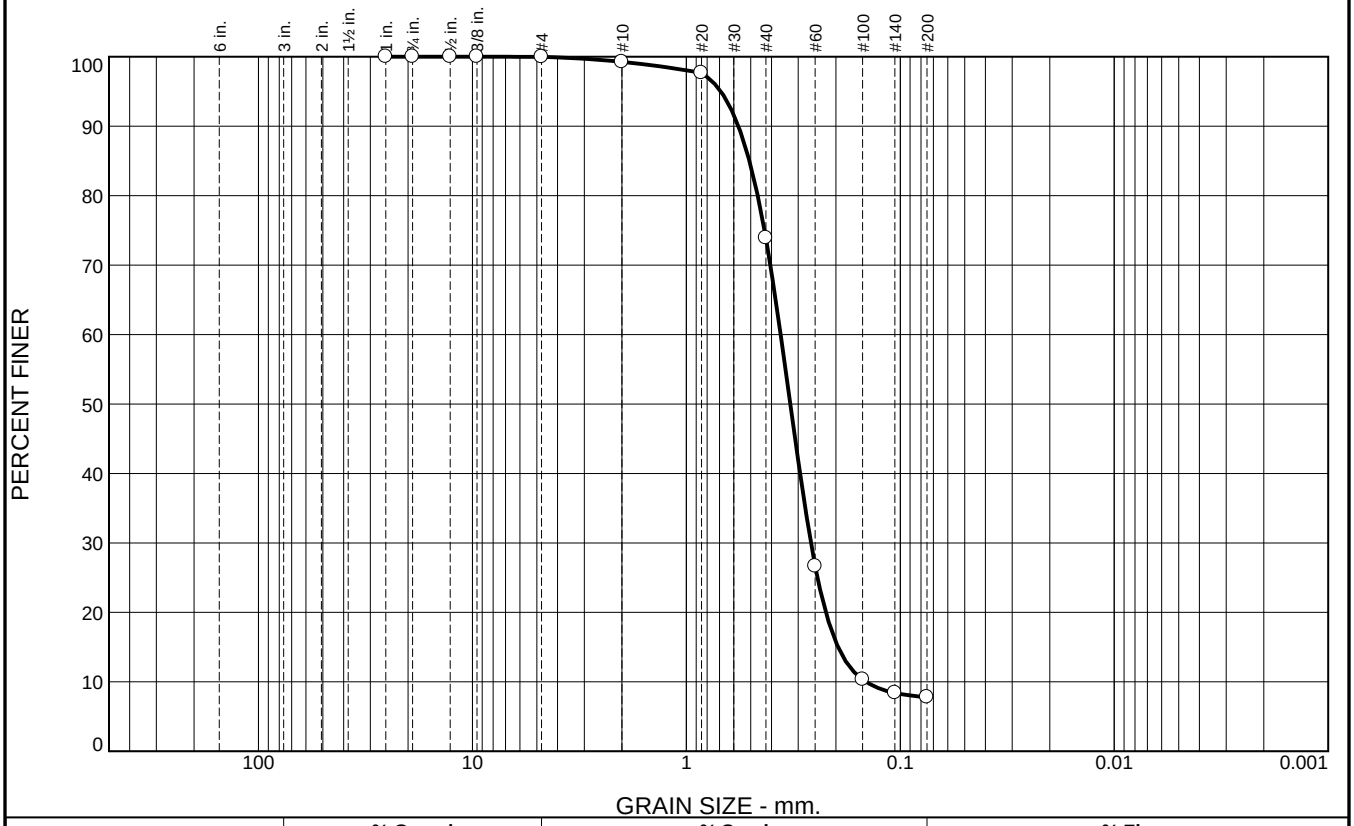
Date 12/19/2012
Start Time 10:22:41
End Time 10:29:22
Total Time 00:06:41

Water Depth 40.7'
Penetration 14.1'
Recovery 15.3'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.7	25.4	66.1	7.8	

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	99.3		
#20	97.7		
#40	73.9		
#60	26.7		
#100	10.3		
#140	8.4		
#200	7.8		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5710 D_{85}= 0.5074 D_{60}= 0.3624
D_{50}= 0.3268 D_{30}= 0.2617 D_{15}= 0.1954
D_{10}= 0.1444 C_u= 2.51 C_c= 1.31

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-181-12 A
Sample Number: 6494 (72) **Depth:** 0.0' **Date:** 12/26/12

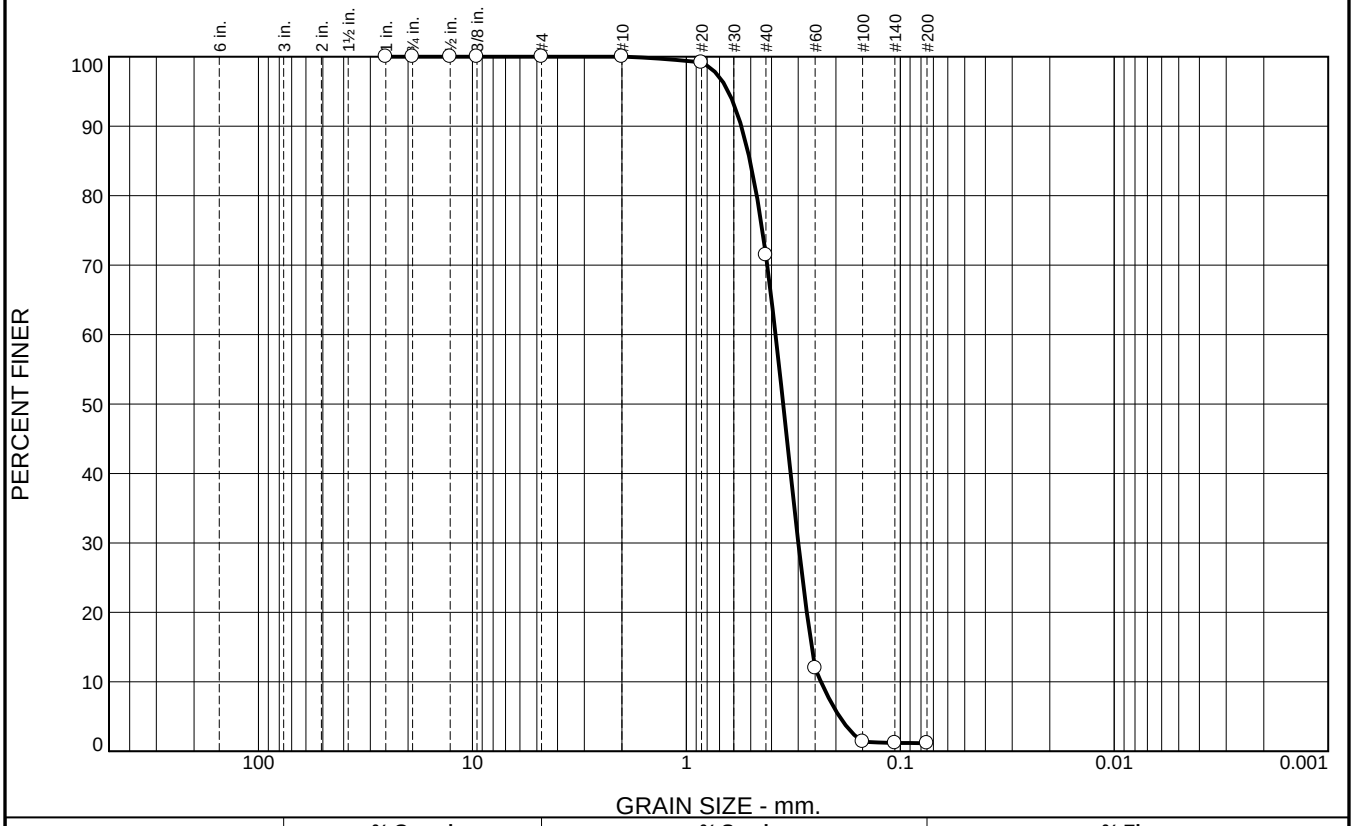
Thompson Engineering

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	0.0	28.5	70.3	1.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	99.2		
#40	71.5		
#60	12.0		
#100	1.4		
#140	1.2		
#200	1.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5533 D_{85}= 0.5040 D_{60}= 0.3827
D_{50}= 0.3526 D_{30}= 0.2999 D_{15}= 0.2596
D_{10}= 0.2347 C_u= 1.63 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-181-12 B
Sample Number: 6494 (73) **Depth:** 3.5' **Date:** 12/26/12

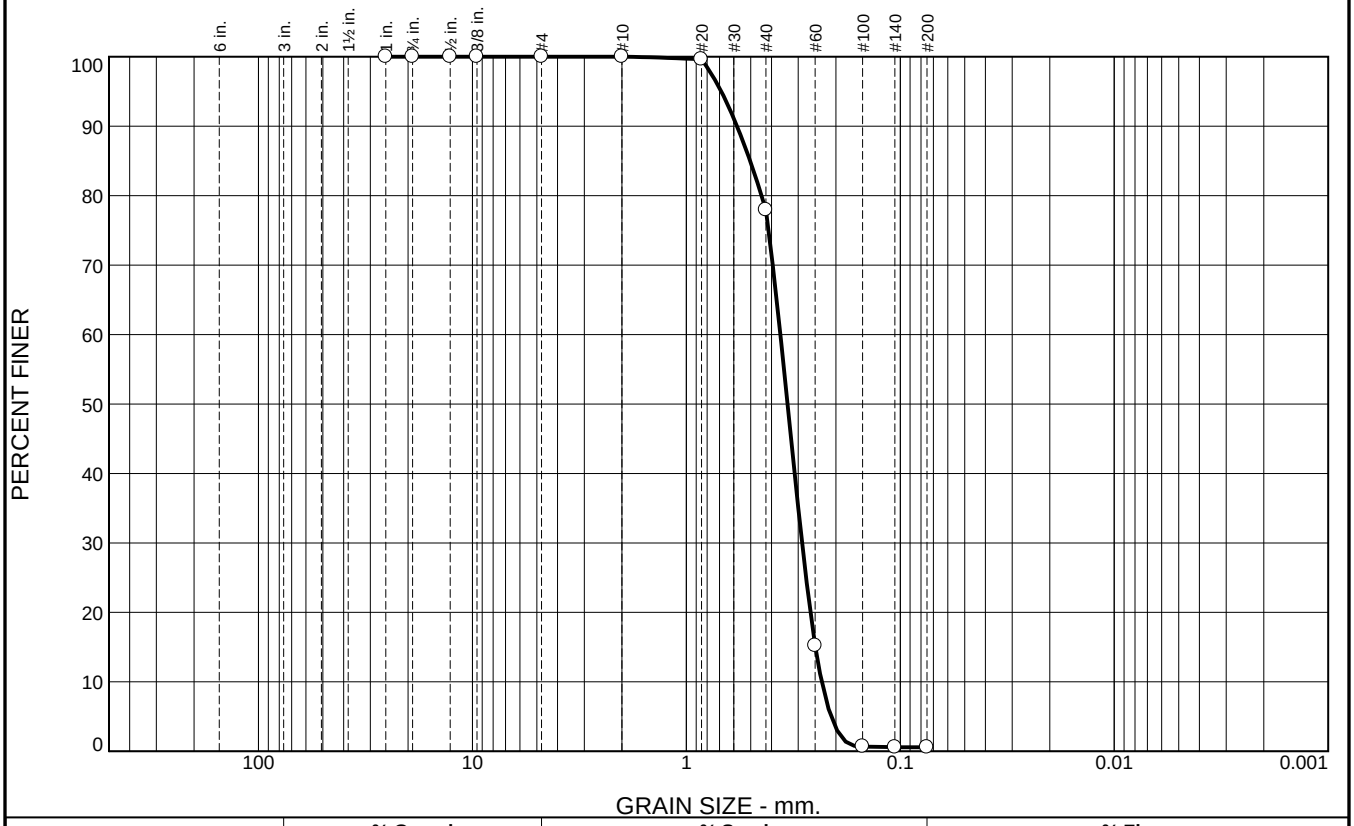
Thompson Engineering

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	0.0	0.0	22.1	77.3	0.6	

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	99.6		
#40	77.9		
#60	15.2		
#100	0.7		
#140	0.6		
#200	0.6		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5795 D_{85}= 0.5035 D_{60}= 0.3634
D_{50}= 0.3366 D_{30}= 0.2880 D_{15}= 0.2494
D_{10}= 0.2329 C_u= 1.56 C_c= 0.98

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-181-12 C
Sample Number: 6494 (74) **Depth:** 5.4' **Date:** 12/26/12

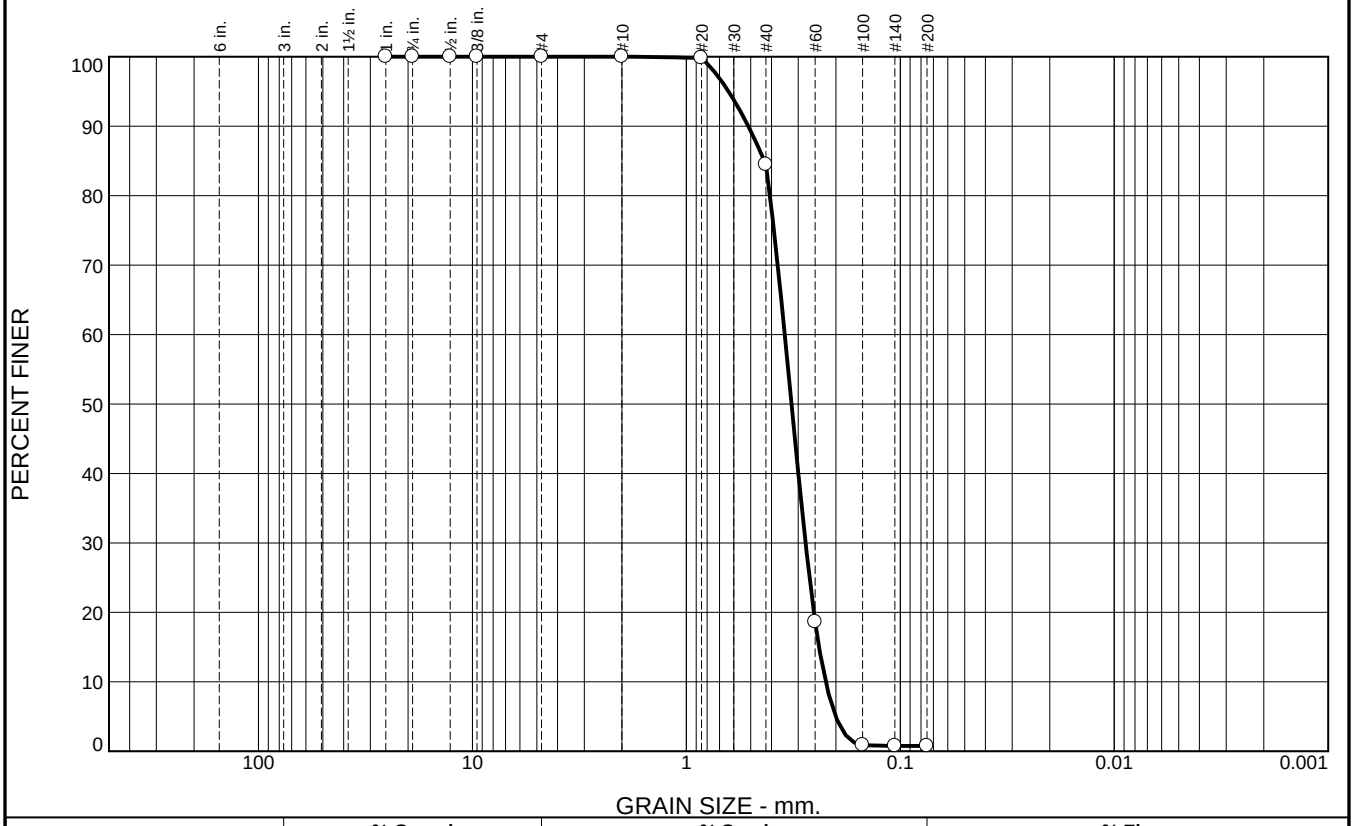
Thompson Engineering

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	0.0	15.5	83.7	0.8	

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	100.0		
#20	99.8		
#40	84.5		
#60	18.6		
#100	0.9		
#140	0.8		
#200	0.8		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5135 D_{85}= 0.4323 D_{60}= 0.3467
D_{50}= 0.3225 D_{30}= 0.2774 D_{15}= 0.2398
D_{10}= 0.2232 C_u= 1.55 C_c= 0.99

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-181-12 D
Sample Number: 6494 (75) **Depth:** 10.4' **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-PB-182-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-182-12	LOCATION COORDINATES: E = 1,150,793 N = 252,287	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: 38.4 Ft.	
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
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: 12.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-38.5	0.0				
-40.5	2.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, gray (SP)	A	Classification: SP Color: 5Y 6/3-pale olive D50: 0.3259 mm % Fines: 1.2
-42.3	3.8		CLAY, lean, mostly clay, some silt, low to medium plasticity, some fine grain layers between 3.1 to 3.6 ft., dark gray (CL)	NS	
-43.5	5.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, dense, clay lens at 4.5 ft., lt. gray (SP)	B	Classification: SP-SM Color: 5Y 6/1-gray D50: 0.2826 mm % Fines: 6.9
-45.5	7.0		CLAY, lean, mostly clay, some fine-grained, sand-sized quartz layers, lt. brown (CL)	NS	
-50.5	12.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, thin clay bands between 8.7 to 10.3 ft., clay band at 11.6 ft., lt. gray to white (SP)	C	Classification: SP Color: 5Y 7/1-light gray D50: 0.2569 mm % Fines: 2.7

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.

0 5 10 15 20 25

Lat = 30.19268° Long = -88.30618°

Project Mississippi Barrier Island Restoration Project

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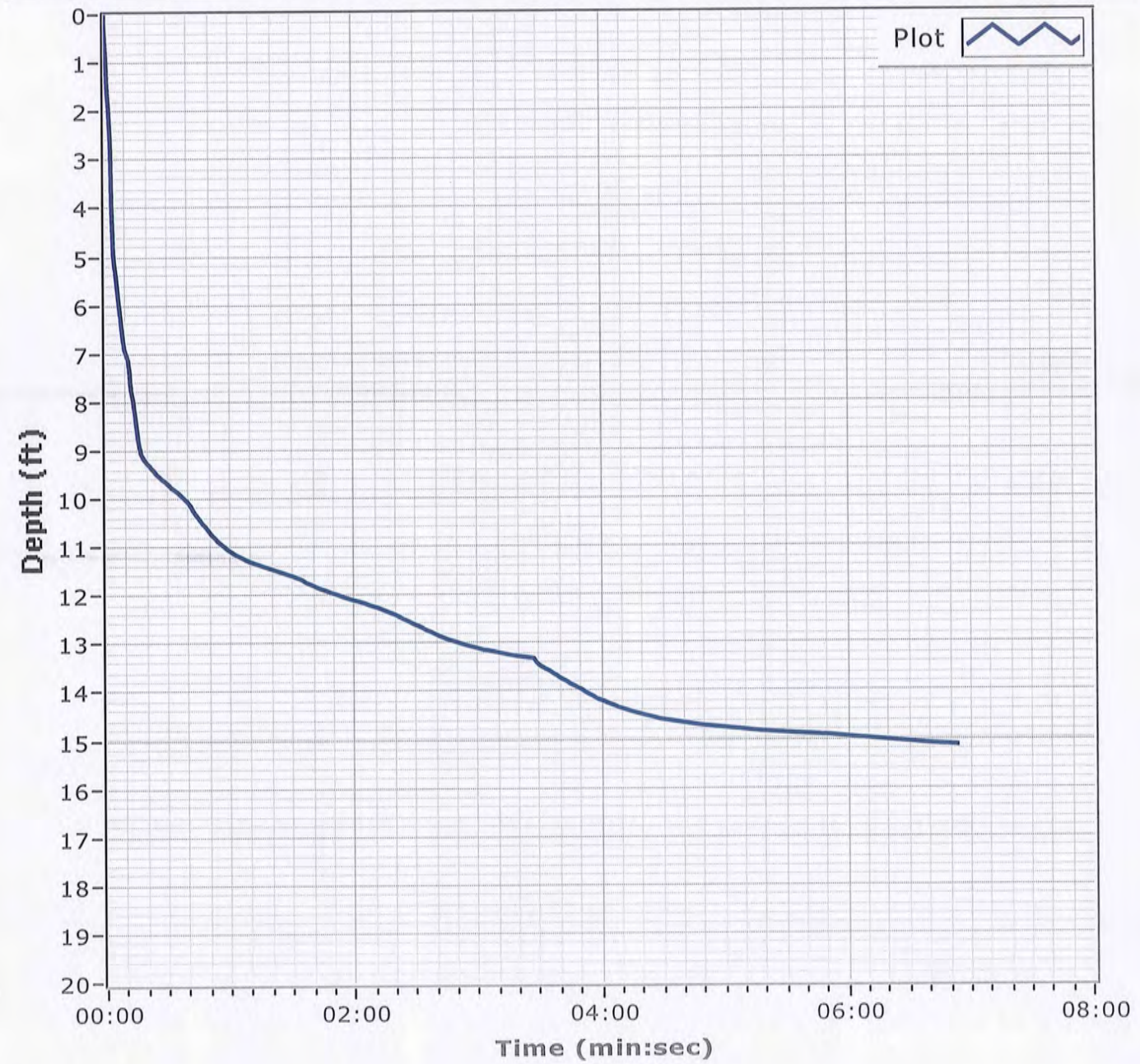
Core Identifier BI-PB-182-12
Coordinate System
Latitude / Longitude

Latitude 30 11.561
Longitude 088 18.371

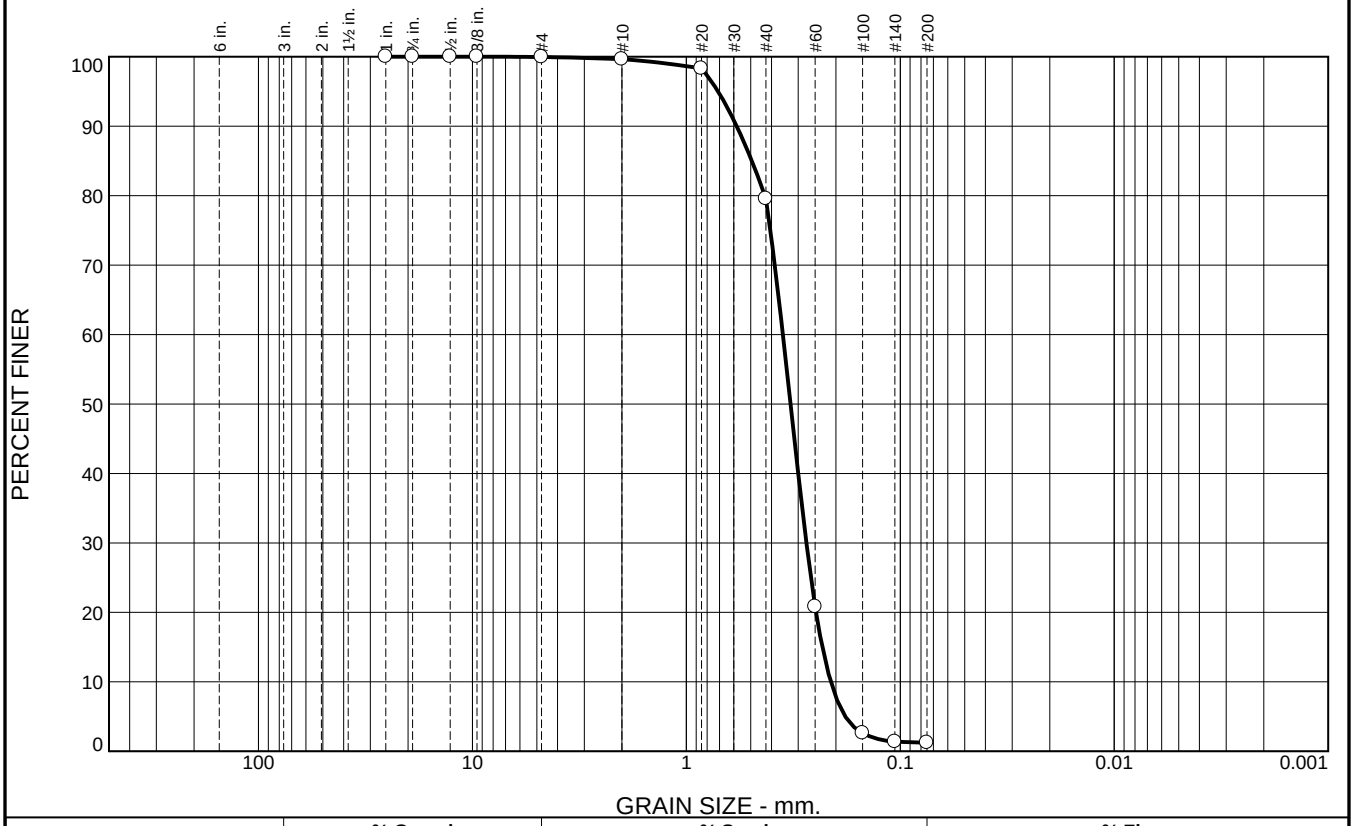
Date 12/12/2012
Start Time 15:48:36
End Time 15:55:30
Total Time 00:06:54

Water Depth 38.4'
Penetration 15.1'
Recovery 12.1'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.4	20.0	78.4	1.2	

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	98.3		
#40	79.6		
#60	20.8		
#100	2.6		
#140	1.4		
#200	1.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5816 D_{85}= 0.4944 D_{60}= 0.3538
D_{50}= 0.3259 D_{30}= 0.2749 D_{15}= 0.2314
D_{10}= 0.2113 C_u= 1.67 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-182-12 A
Sample Number: 6485 (14) **Depth:** 0.0' **Date:** 12/07/12

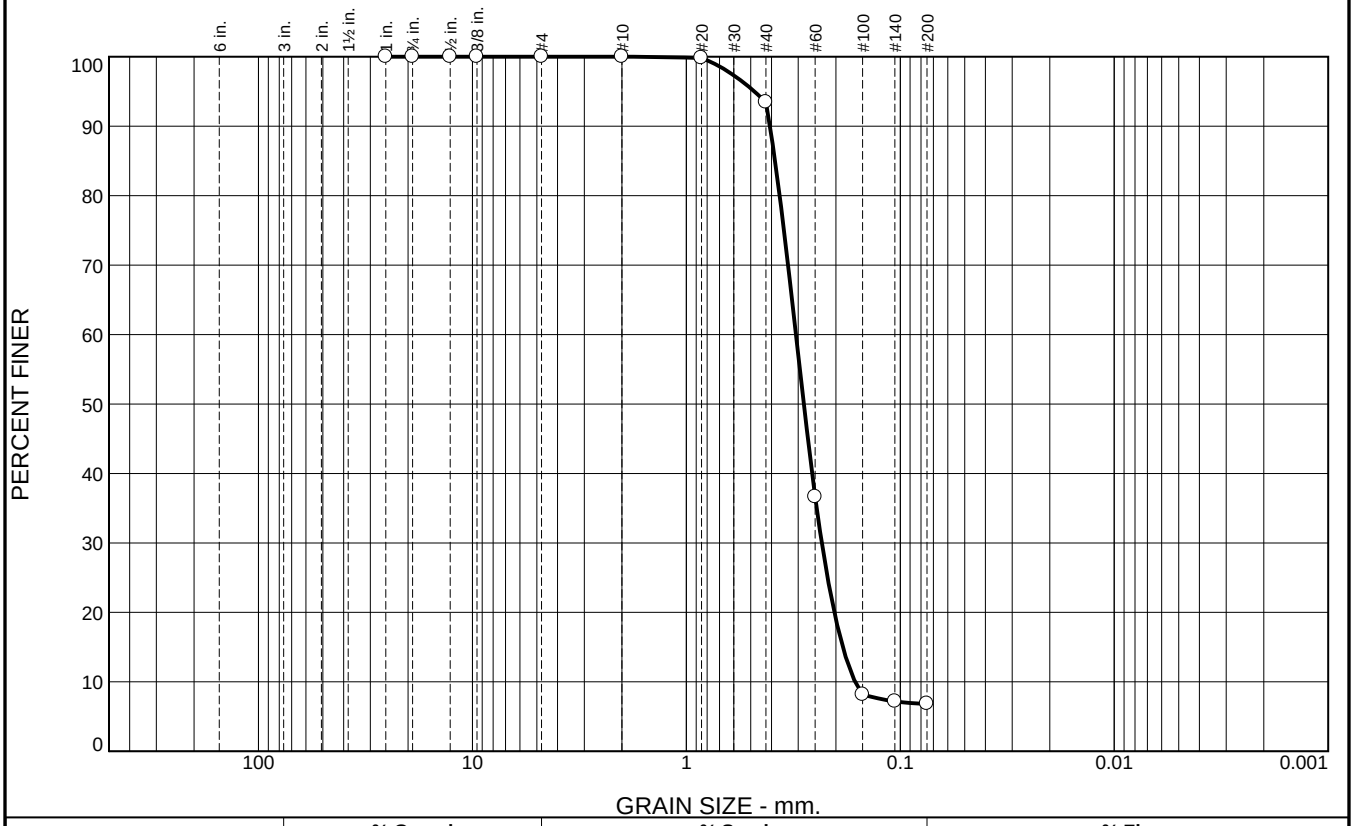
Thompson Engineering

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	6.6	86.5	6.9	

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	100.0		
#20	99.8		
#40	93.4		
#60	36.6		
#100	8.2		
#140	7.2		
#200	6.9		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4066 D_{85}= 0.3847 D_{60}= 0.3076
D_{50}= 0.2826 D_{30}= 0.2327 D_{15}= 0.1858
D_{10}= 0.1628 C_u= 1.89 C_c= 1.08

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-182-12 B
Sample Number: 6485 (15) **Depth:** 3.8' **Date:** 12/07/12

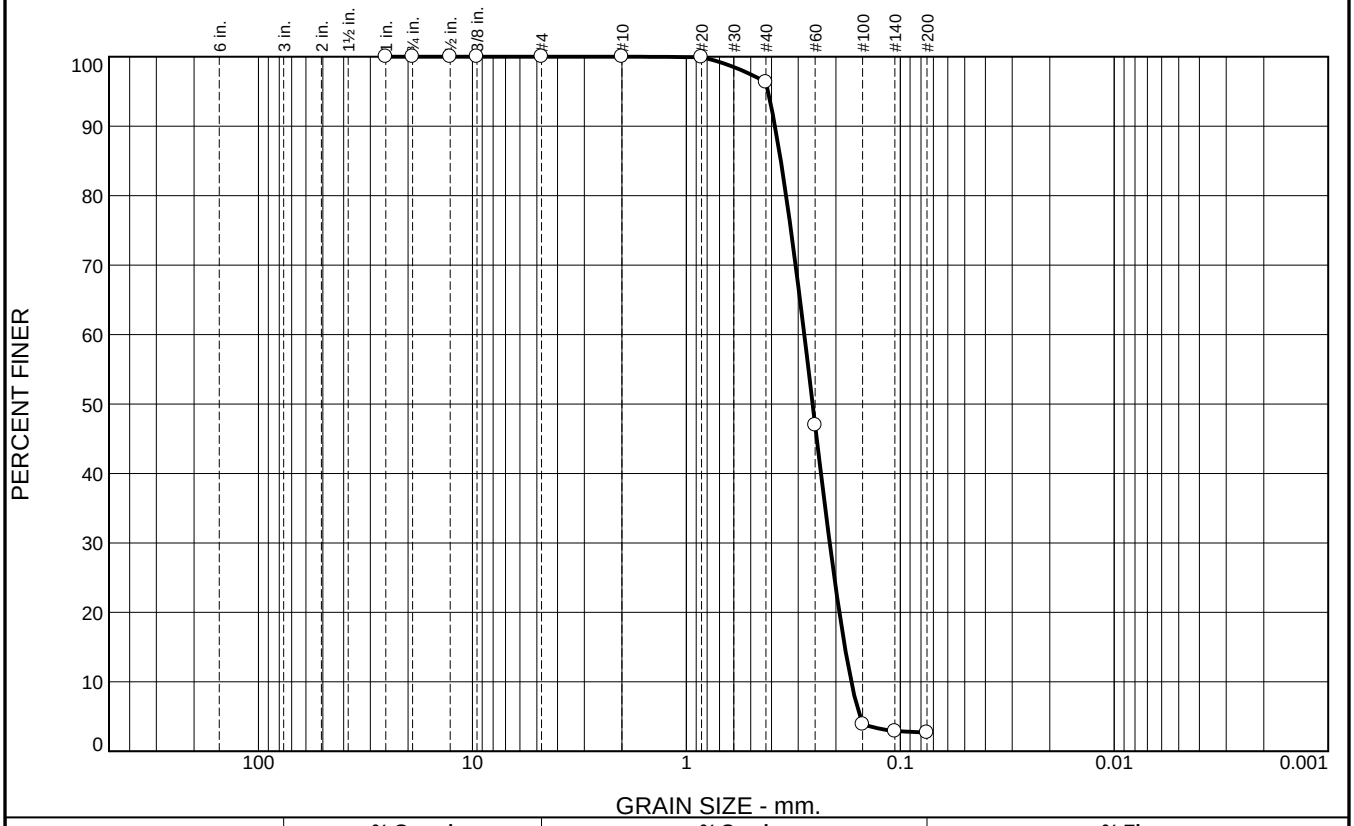
Thompson Engineering

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	3.7	93.6	2.7	

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	96.3		
#60	46.9		
#100	3.9		
#140	2.9		
#200	2.7		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3850 D_{85}= 0.3615 D_{60}= 0.2812
D_{50}= 0.2569 D_{30}= 0.2138 D_{15}= 0.1817
D_{10}= 0.1696 C_u= 1.66 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-182-12 C
Sample Number: 6485 (16) **Depth:** 7.0' **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-PB-183-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-183-12	LOCATION COORDINATES: E = 1,142,874 N = 255,433	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: 27 Ft.	
		15. DATE BORING	STARTED: 12-07-12 / COMPLETED: 12-07-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -26.4 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-26.4	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 7/2-light gray D50: 0.3904 mm % Fines: 1.3
-28.6	2.2				
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, trace clay streaks at 1.4 ft., lt. gray (SP)	B	Classification: SP Color: 5Y 7/2-light gray D50: 0.2611 mm % Fines: 2
-33.6	7.2				
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, lt. gray (SP)	C	Classification: SP Color: 2.5Y 8/1-white D50: 0.3022 mm % Fines: 1.2
-38.6	12.2				
-39.0	12.6			NS	
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, trace clayey nodules, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20143° Long = -88.33120°

Project Mississippi Barrier Island Restoration Project

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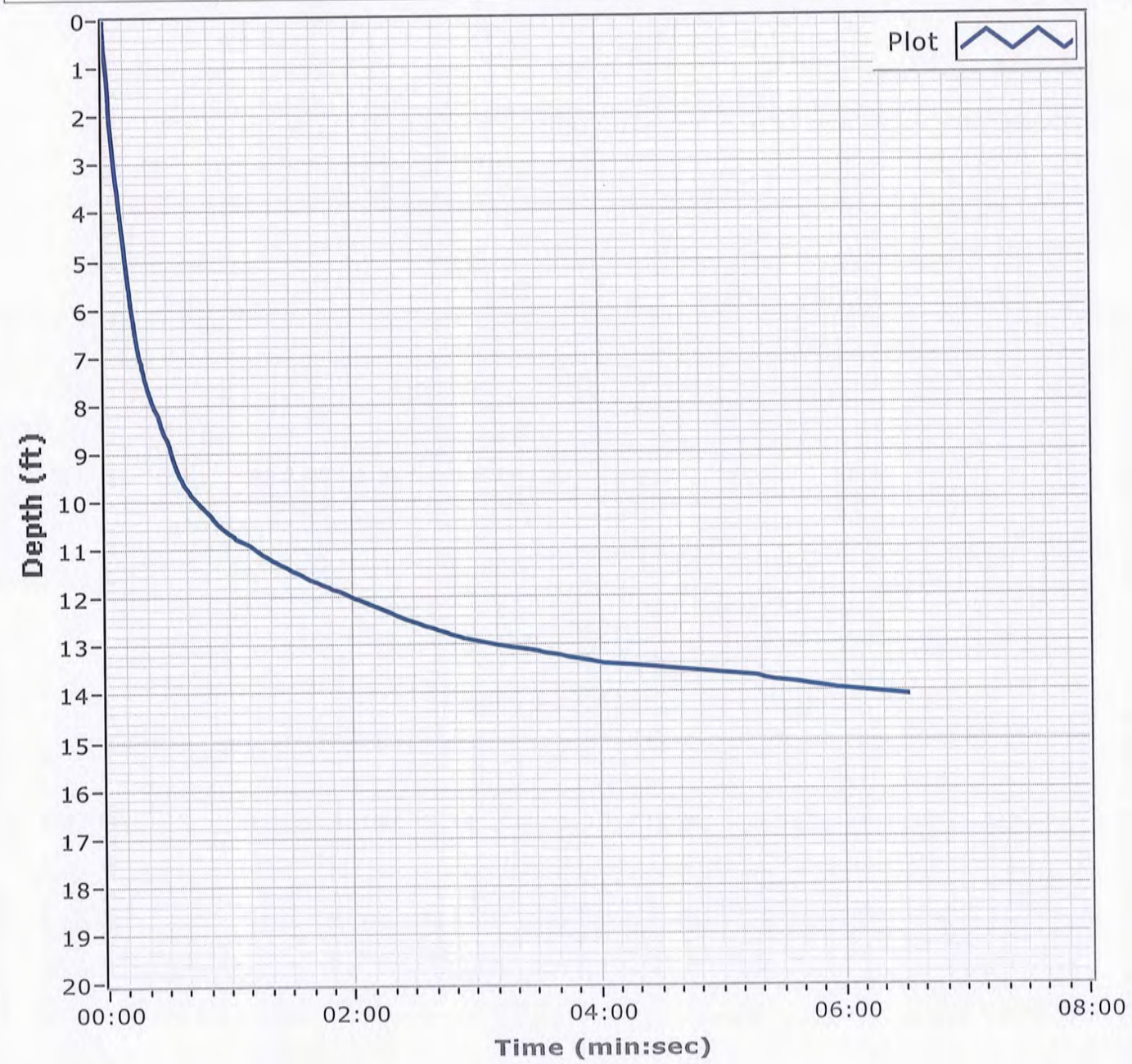
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Coordinate System
Latitude / Longitude

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Longitude 088 19.872

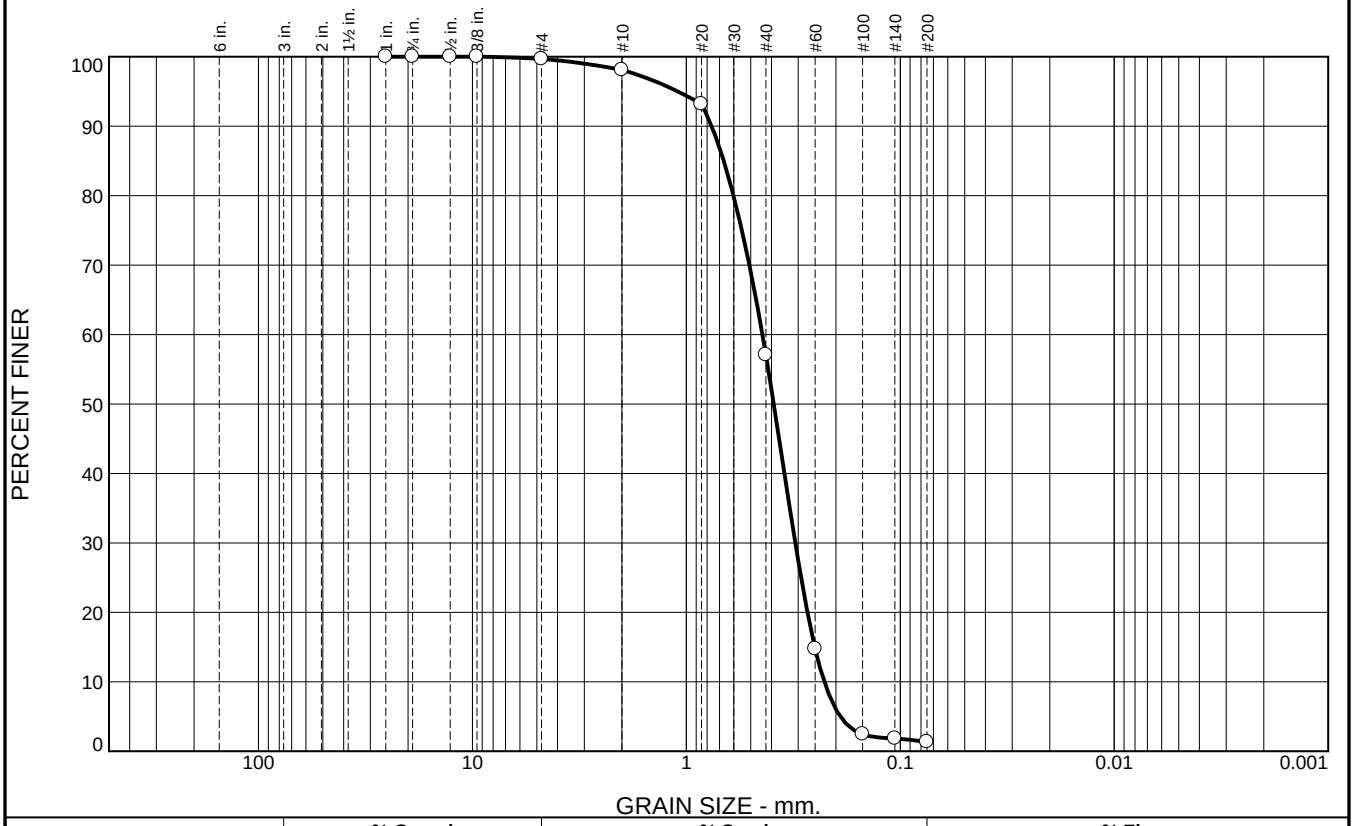
Date 12/07/2012
Start Time 11:43:49
End Time 11:50:21
Total Time 00:06:32

Water Depth 27.0'
Penetration 14.1'
Recovery 12.6

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	1.6	41.0	55.8	1.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.7		
#10	98.1		
#20	93.2		
#40	57.1		
#60	14.7		
#100	2.5		
#140	1.9		
#200	1.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.7622 D_{85}= 0.6689 D_{60}= 0.4411
D_{50}= 0.3904 D_{30}= 0.3097 D_{15}= 0.2512
D_{10}= 0.2265 C_u= 1.95 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-183-12 A
Sample Number: 6482 (2) **Depth:** 0.0' **Date:** 12/12/12

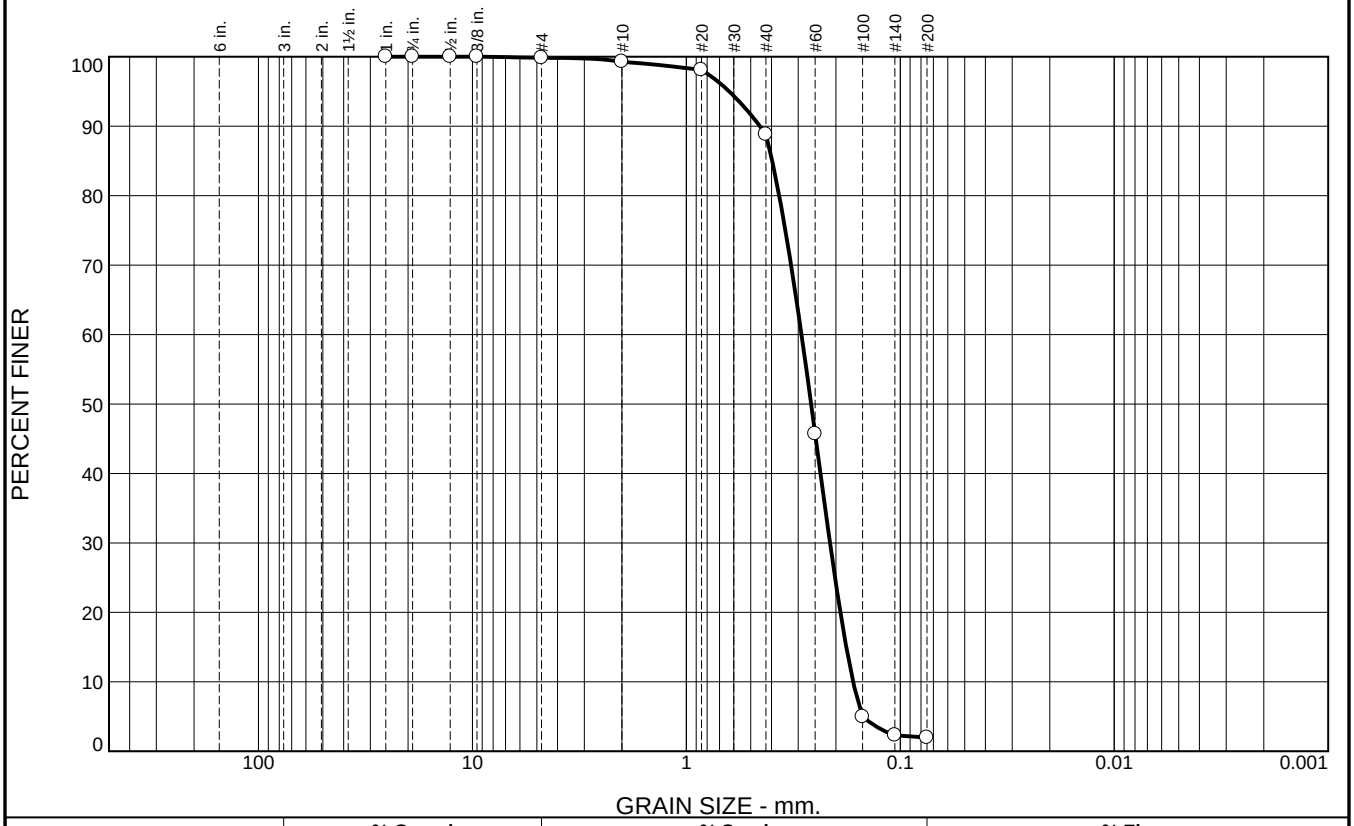
Thompson Engineering

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	0.5	10.5	86.8	2.0	

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	98.1		
#40	88.8		
#60	45.7		
#100	5.0		
#140	2.3		
#200	2.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4535 D_{85}= 0.3968 D_{60}= 0.2898
D_{50}= 0.2611 D_{30}= 0.2131 D_{15}= 0.1790
D_{10}= 0.1663 C_u= 1.74 C_c= 0.94

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-183-12 B
Sample Number: 6482 (3) **Depth:** 2.2' **Date:** 12/12/12

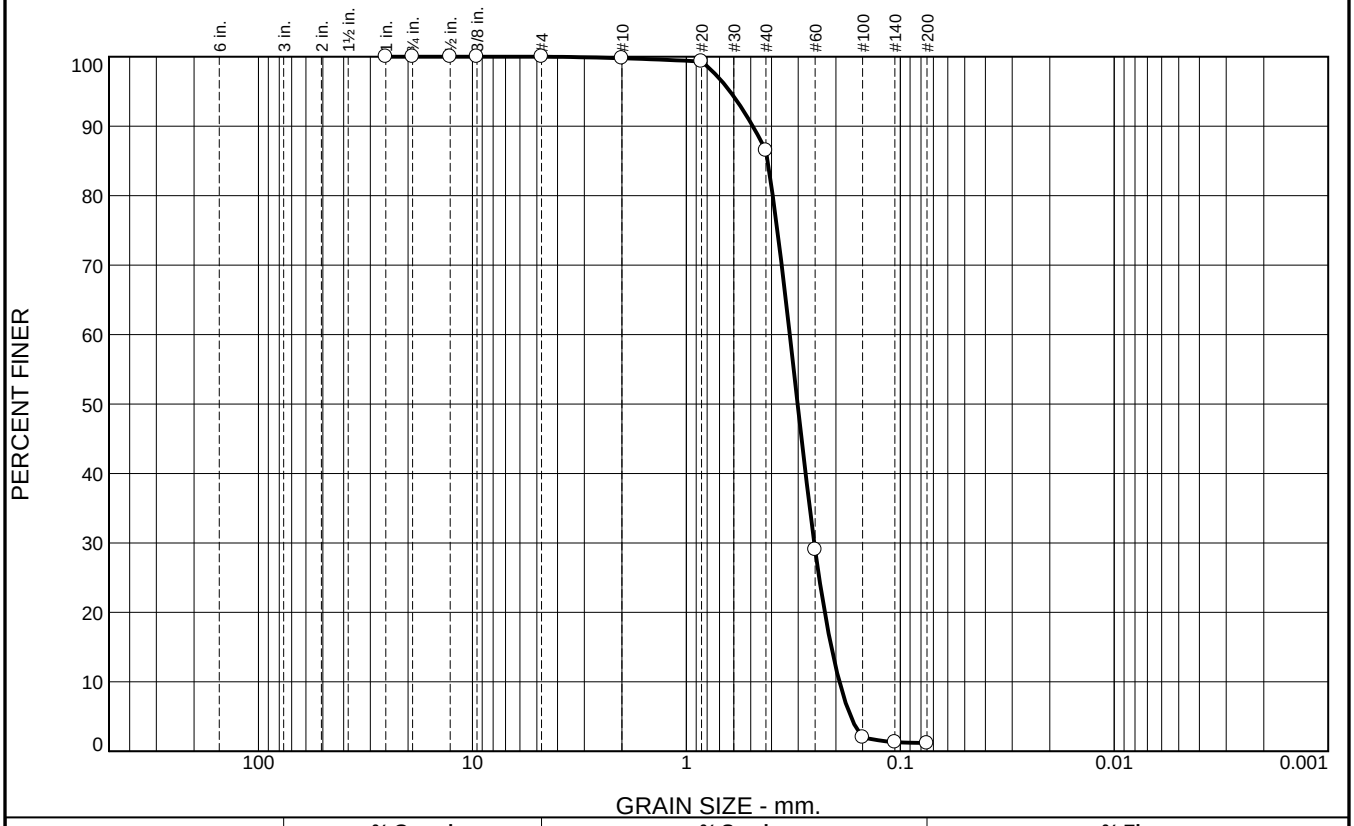
Thompson Engineering

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	13.3	85.3	1.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	99.8		
#20	99.3		
#40	86.5		
#60	29.0		
#100	2.0		
#140	1.3		
#200	1.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4893 D_{85}= 0.4172 D_{60}= 0.3286
D_{50}= 0.3022 D_{30}= 0.2525 D_{15}= 0.2101
D_{10}= 0.1927 C_u= 1.71 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-183-12 C
Sample Number: 6482 (4) **Depth:** 7.2' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PB-184-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-184-12	LOCATION COORDINATES: E = 1,143,386 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: / 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: 28.2 Ft.	
		15. DATE BORING	STARTED: 12-07-12 / COMPLETED: 12-07-12
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: 18.5 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-27.6	0.0				
-30.4	2.8		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3403 mm % Fines: 1.6
-33.7	6.1		SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, few clay, trace silt, trace shell fragments, few clay stringers, gray to lt. gray (SP-SC)	B	Classification: SP Color: 5Y 6/3-pale olive D50: 0.2845 mm % Fines: 4
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, lt. gray (SP)	C	Classification: SP Color: 5Y 8/1-white D50: 0.2723 mm % Fines: 1.6
-40.0	12.4		At El. -36.1 Ft., mostly fine-grained sand-sized quartz, trace silt, lt. gray to white	D	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.2834 mm % Fines: 1.9
-42.7	15.1		CLAY, fat, mostly clay, medium to high plasticity, gray (CH)	NS	
-43.7	16.1		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)		
-46.1	18.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace clay, 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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20137° Long = -88.32958°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

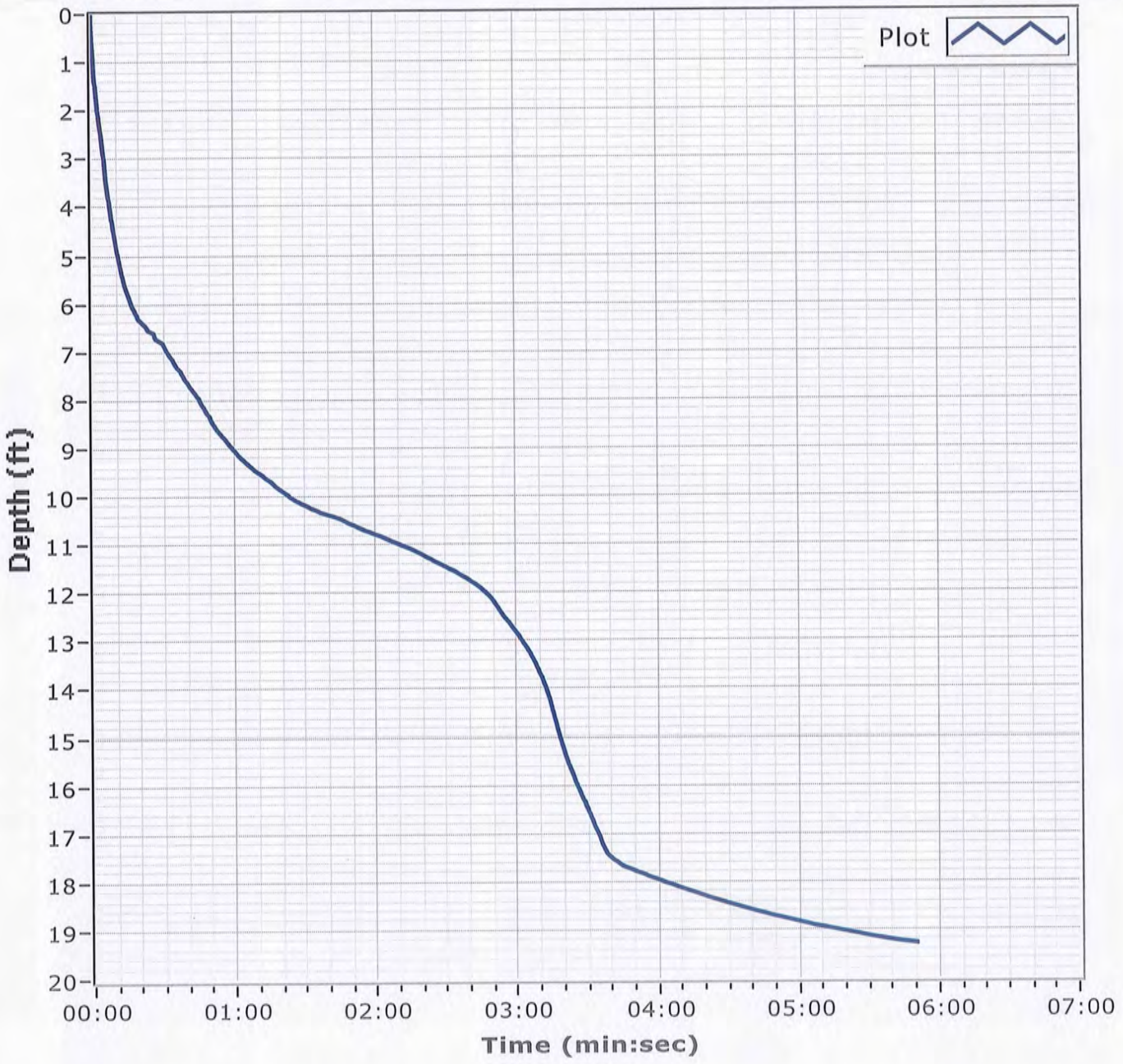
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Coordinate System
Latitude / Longitude

Latitude 30 12.082
Longitude 088 19.775

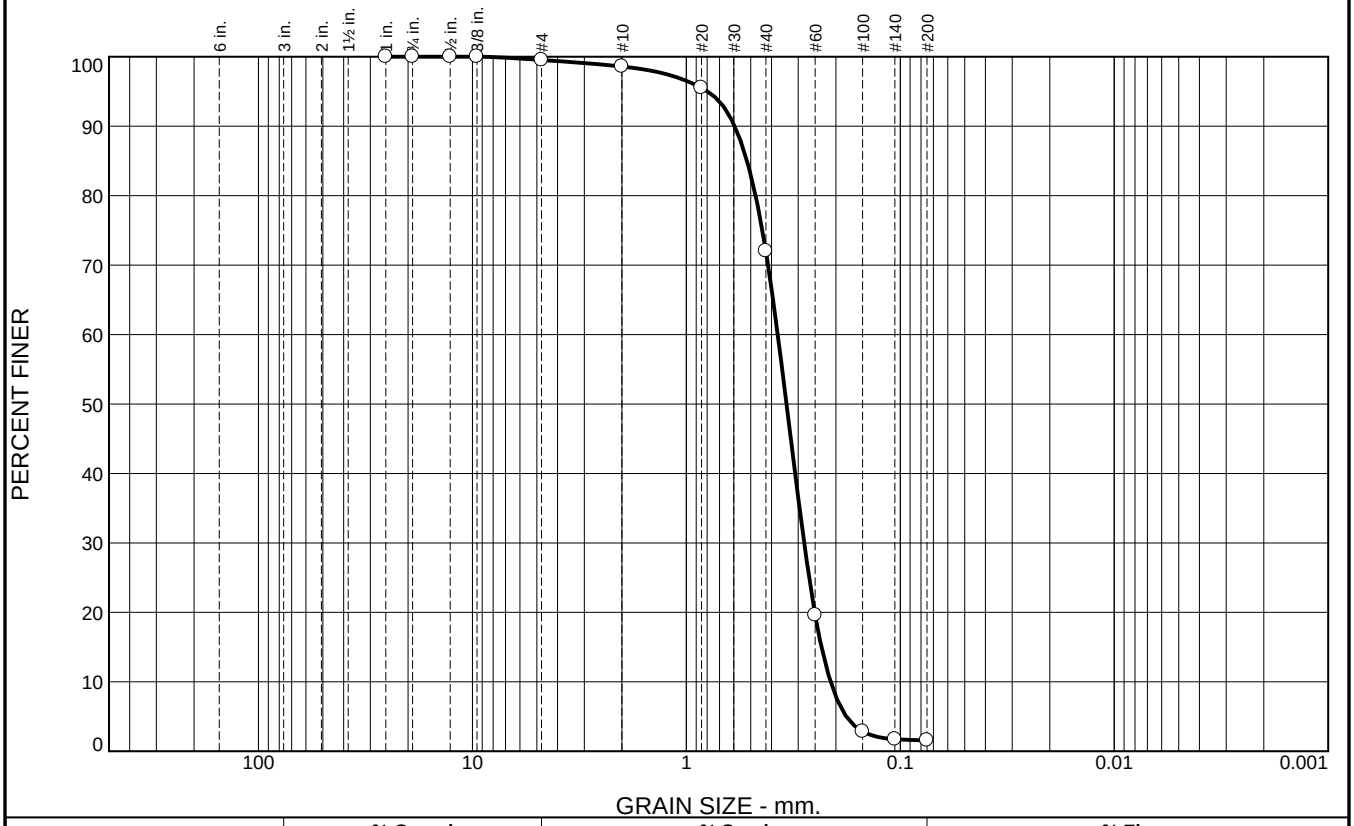
Date 12/07/2012
Start Time 10:53:48
End Time 10:59:39
Total Time 00:05:50

Water Depth 28.2'
Penetration 19.3'
Recovery 18.5'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	0.9	26.6	70.4	1.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.5		
#10	98.6		
#20	95.5		
#40	72.0		
#60	19.6		
#100	2.9		
#140	1.8		
#200	1.6		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5941 D_{85}= 0.5205 D_{60}= 0.3739
D_{50}= 0.3403 D_{30}= 0.2815 D_{15}= 0.2336
D_{10}= 0.2118 C_u= 1.77 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-184-12 A
Sample Number: 6482 (5) **Depth:** 0.0' **Date:** 12/12/12

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	9.0	86.5	4.0	

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	99.5		
#20	98.1		
#40	90.5		
#60	36.2		
#100	5.6		
#140	4.2		
#200	4.0		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4219 D_{85}= 0.3957 D_{60}= 0.3107
D_{50}= 0.2845 D_{30}= 0.2341 D_{15}= 0.1909
D_{10}= 0.1728 C_u= 1.80 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-184-12 B
Sample Number: 6482 (6) **Depth:** 2.8' **Date:** 12/12/12

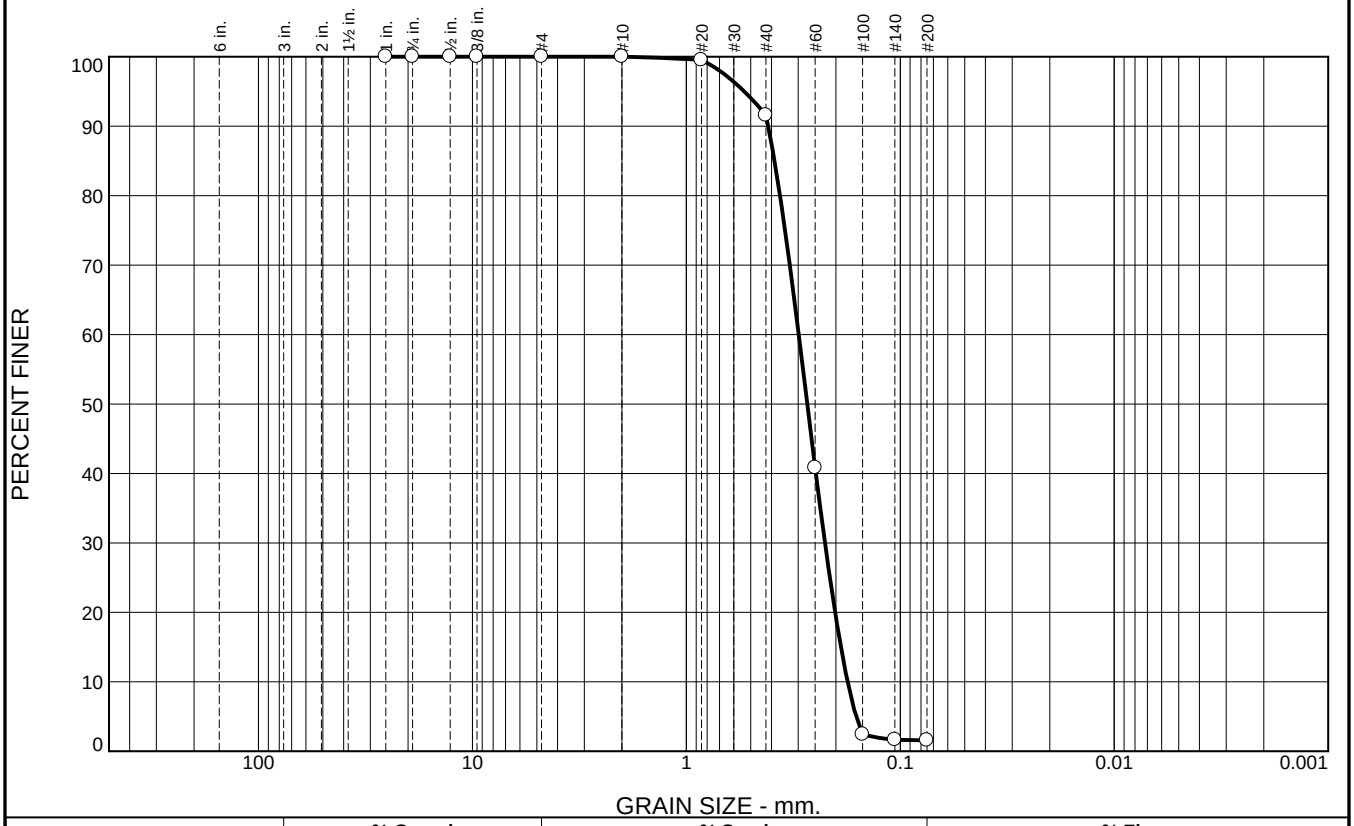
Thompson Engineering

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	8.4	90.0	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	99.5		
#40	91.6		
#60	40.8		
#100	2.4		
#140	1.7		
#200	1.6		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4145 D_{85}= 0.3870 D_{60}= 0.2986
D_{50}= 0.2723 D_{30}= 0.2249 D_{15}= 0.1896
D_{10}= 0.1765 C_u= 1.69 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-184-12 C
Sample Number: 6482 (7) **Depth:** 6.1' **Date:** 12/12/12

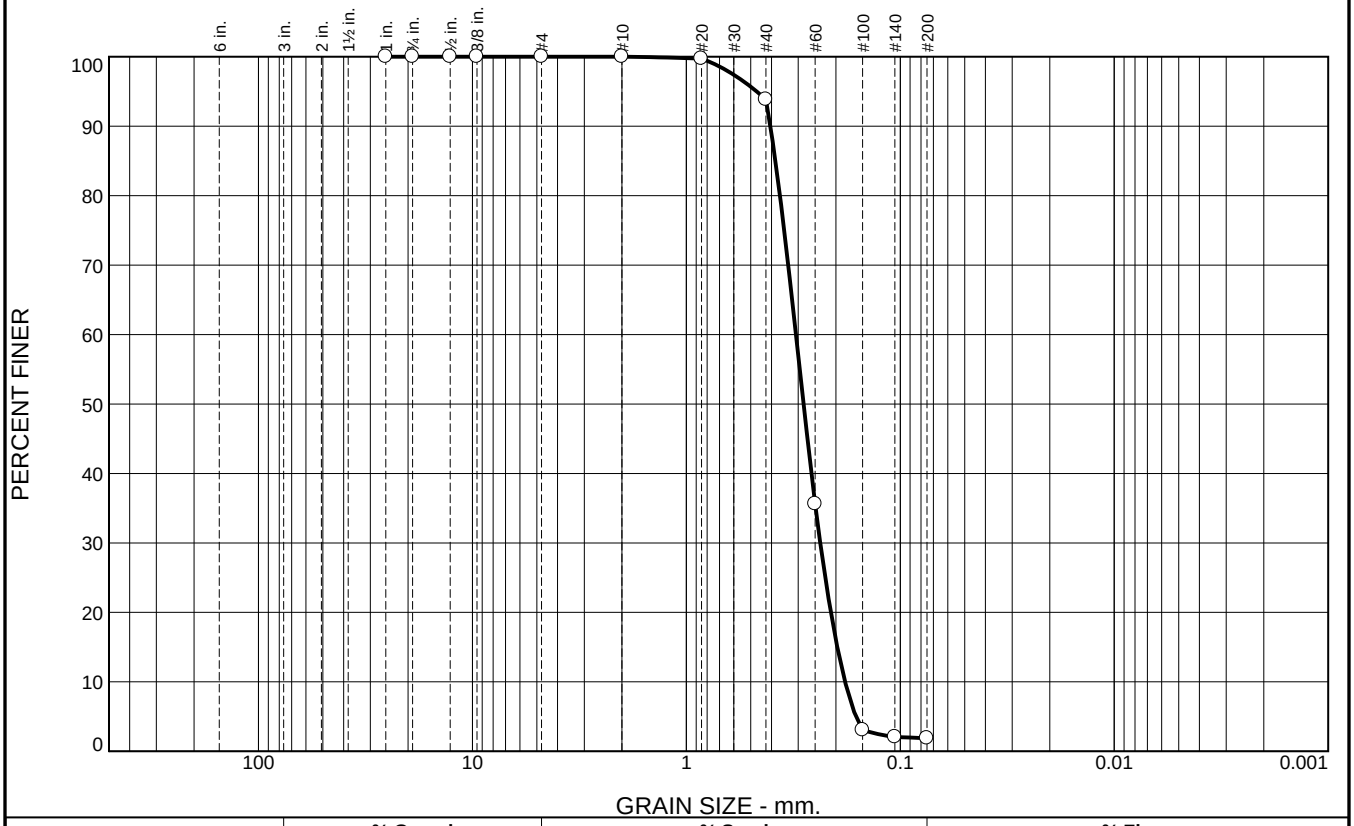
Thompson Engineering

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	6.2	91.9	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	100.0		
#20	99.7		
#40	93.8		
#60	35.6		
#100	3.1		
#140	2.1		
#200	1.9		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4047 D_{85}= 0.3832 D_{60}= 0.3076
D_{50}= 0.2834 D_{30}= 0.2366 D_{15}= 0.1971
D_{10}= 0.1813 C_u= 1.70 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-184-12 D
Sample Number: 6482 (8) **Depth:** 8.5' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PB-185-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-185-12	LOCATION COORDINATES: E = 1,142,560 N = 254,966	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: 31 Ft.	
		15. DATE BORING	STARTED: 12-07-12 / COMPLETED: 12-07-12
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: 5.1 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 silt, trace shells at 2.1 ft., lt. gray to gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2625 mm % Fines: 2
-32.4	2.1		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace shell fragments, very dense sand, lt. gray (SP)	B	Classification: SP Color: 2.5Y 8/1-white D50: 0.3152 mm % Fines: 1.3
-35.4	5.1				

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. Very dense sand prevented vibracore from progressing deeper than 5.1 ft.

0
5
10
15
20
25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20015° Long = -88.33220°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

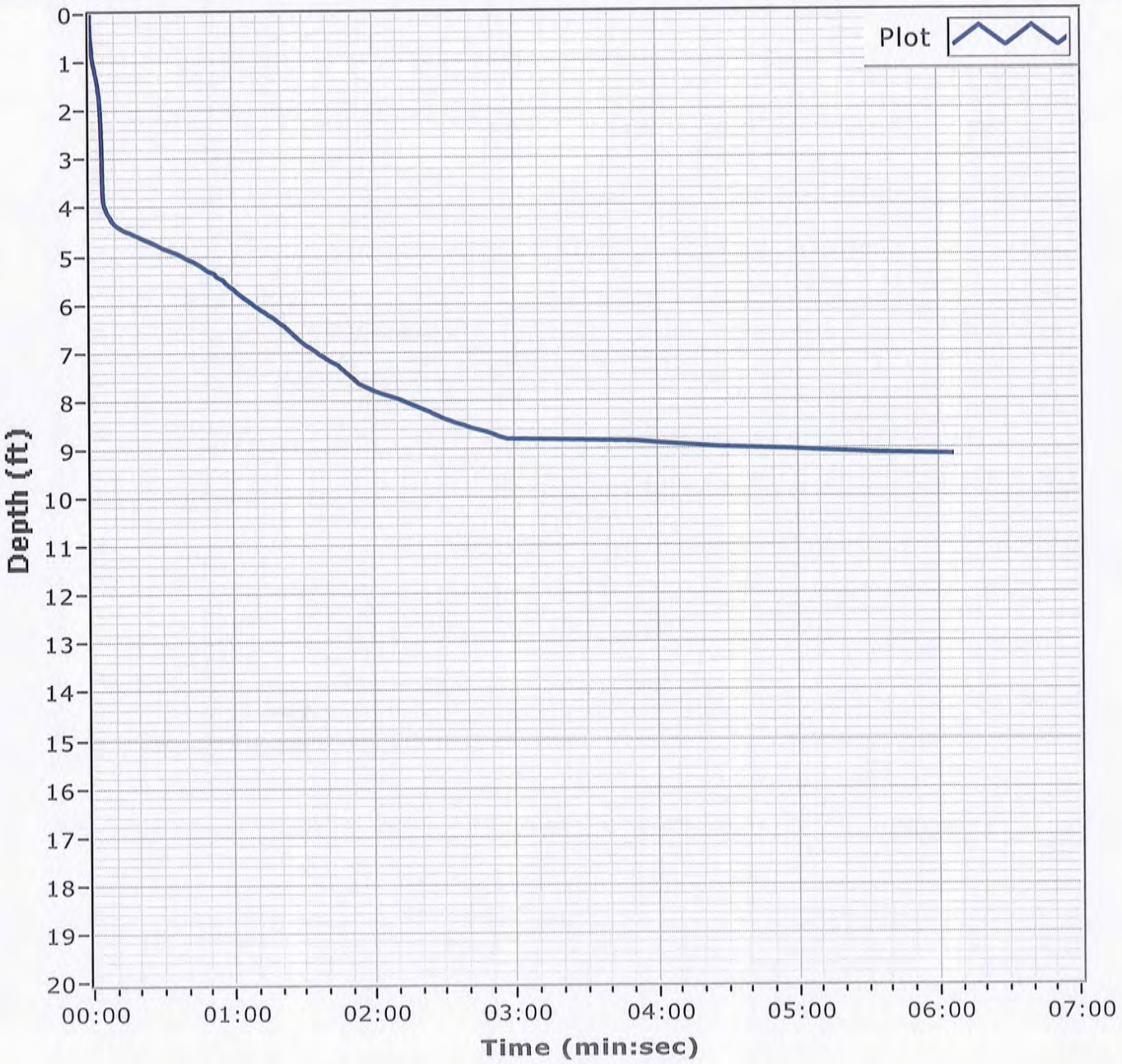
Core Identifier BI-PB-185-12
Coordinate System
Latitude / Longitude

Latitude 30 12.009
Longitude 088 19.932

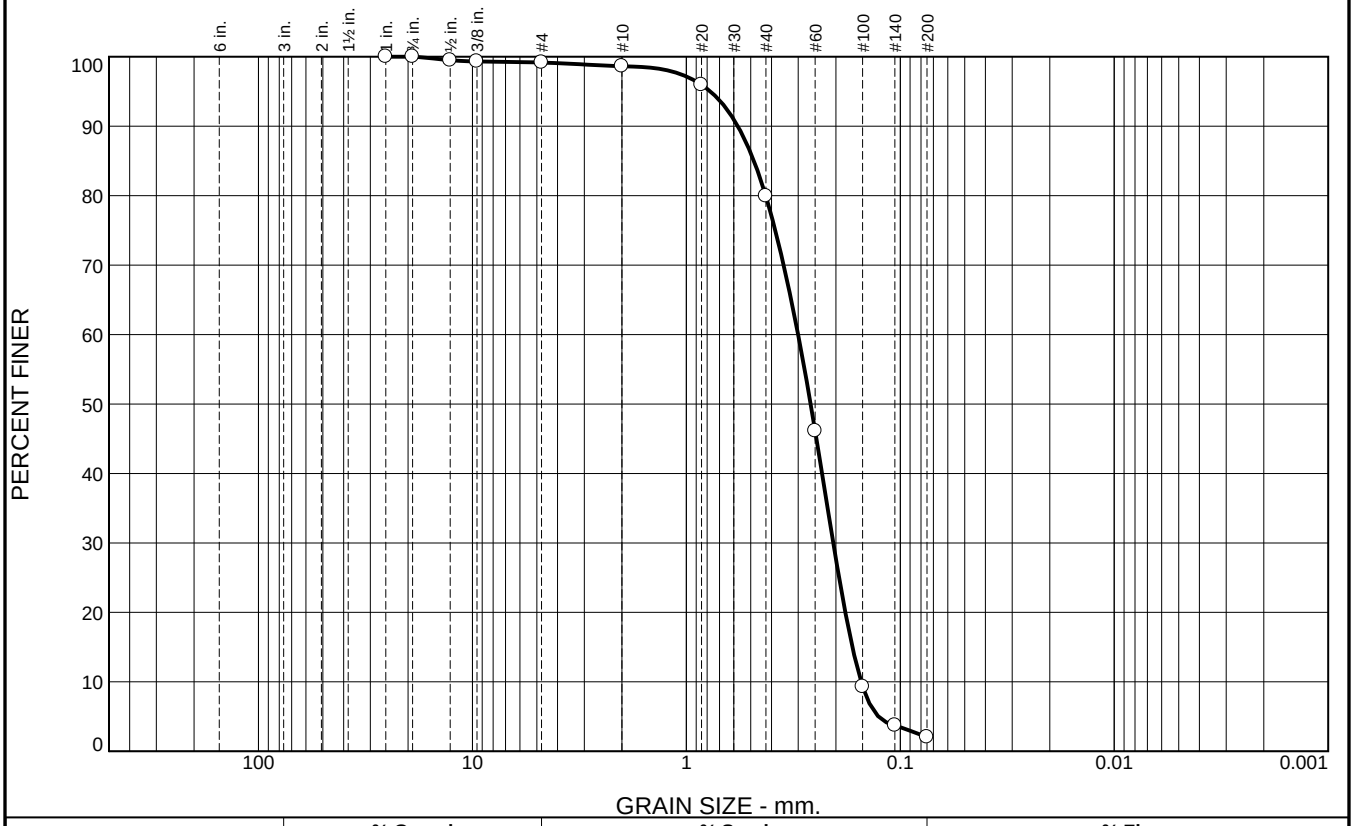
Date 12/07/2012
Start Time 13:10:07
End Time 13:16:14
Total Time 00:06:06

Water Depth 31.9'
Penetration 9.1'
Recovery 5.1'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.8	0.6	18.7	77.9	2.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	99.5		
.375	99.3		
#4	99.2		
#10	98.6		
#20	96.0		
#40	79.9		
#60	46.1		
#100	9.3		
#140	3.7		
#200	2.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5747 D_{85}= 0.4836 D_{60}= 0.3005
D_{50}= 0.2625 D_{30}= 0.2058 D_{15}= 0.1676
D_{10}= 0.1525 C_u= 1.97 C_c= 0.92

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-185-12 A
Sample Number: 6482 (9) **Depth:** 0.0' **Date:** 12/12/12

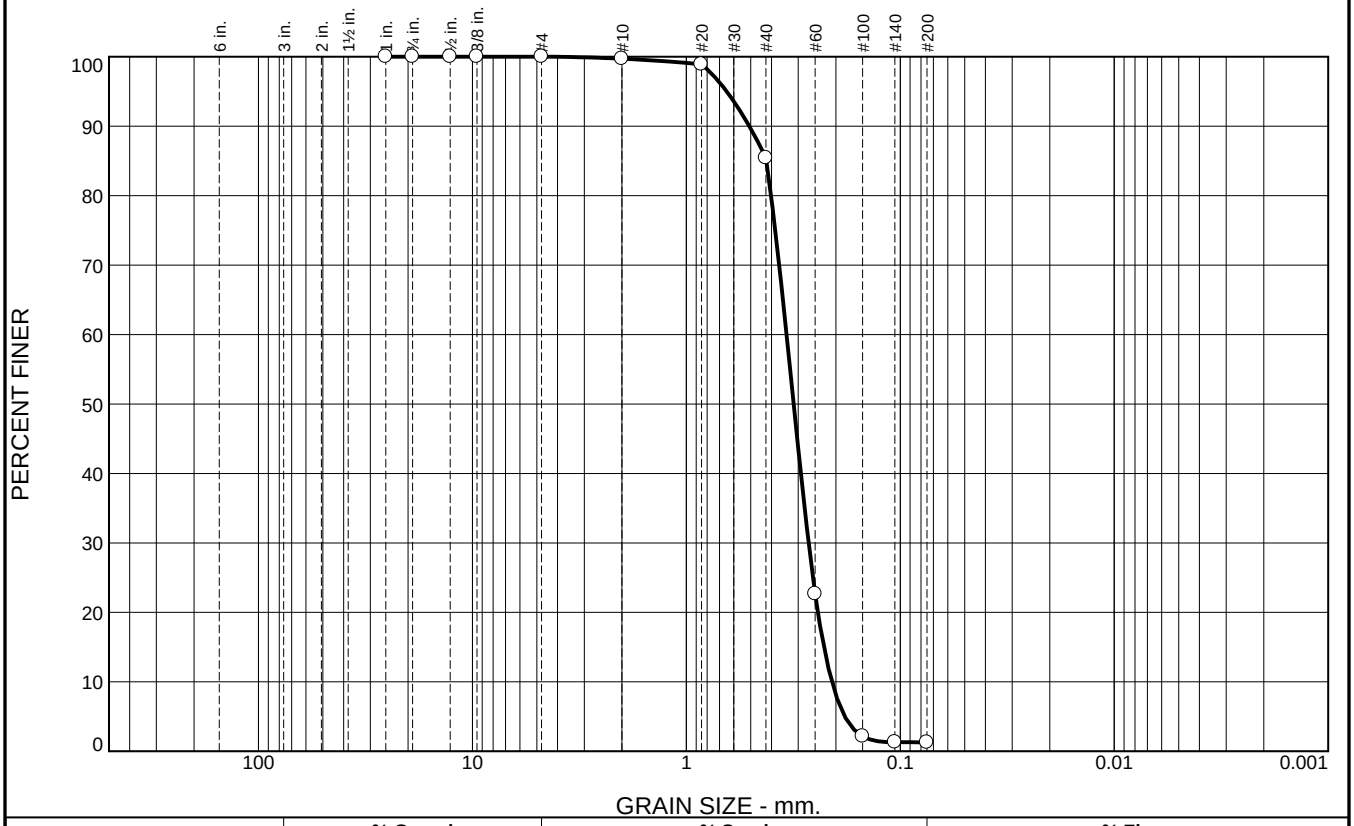
Thompson Engineering

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	14.3	84.1	1.3	

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	98.9		
#40	85.4		
#60	22.6		
#100	2.2		
#140	1.3		
#200	1.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5079 D_{85}= 0.4229 D_{60}= 0.3401
D_{50}= 0.3152 D_{30}= 0.2684 D_{15}= 0.2275
D_{10}= 0.2088 C_u= 1.63 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-185-12 B
Sample Number: 6482 (10) **Depth:** 2.1' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PB-186-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-186-12	LOCATION COORDINATES: E = 1,143,075 N = 254,950	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: 28.8 Ft.	
		15. DATE BORING	STARTED: 12-07-12 / COMPLETED: 12-07-12
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: 18.9 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-27.9	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: 5Y 7/3-pale yellow D50: 0.3092 mm % Fines: 1.5
-31.8	3.9		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace clay, trace shell fragments, clayey band at 6.7 ft., gray (SP)	B	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.2199 mm % Fines: 4.5
-34.8	6.9		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few silt, trace clay, trace shell fragments, gray to lt. gray (SP)	C	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.3275 mm % Fines: 3.3
-36.6	8.7		CLAY, fat, mostly clay, trace shell fragments, medium to high plasticity, very stiff, sandy at 18.4 ft., greenish gray (CH)	NS	
-46.5	18.6				
-46.8	18.9		SAND, clayey, mostly clay, few fine-grained sand-sized quartz, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20010° Long = -88.33057°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

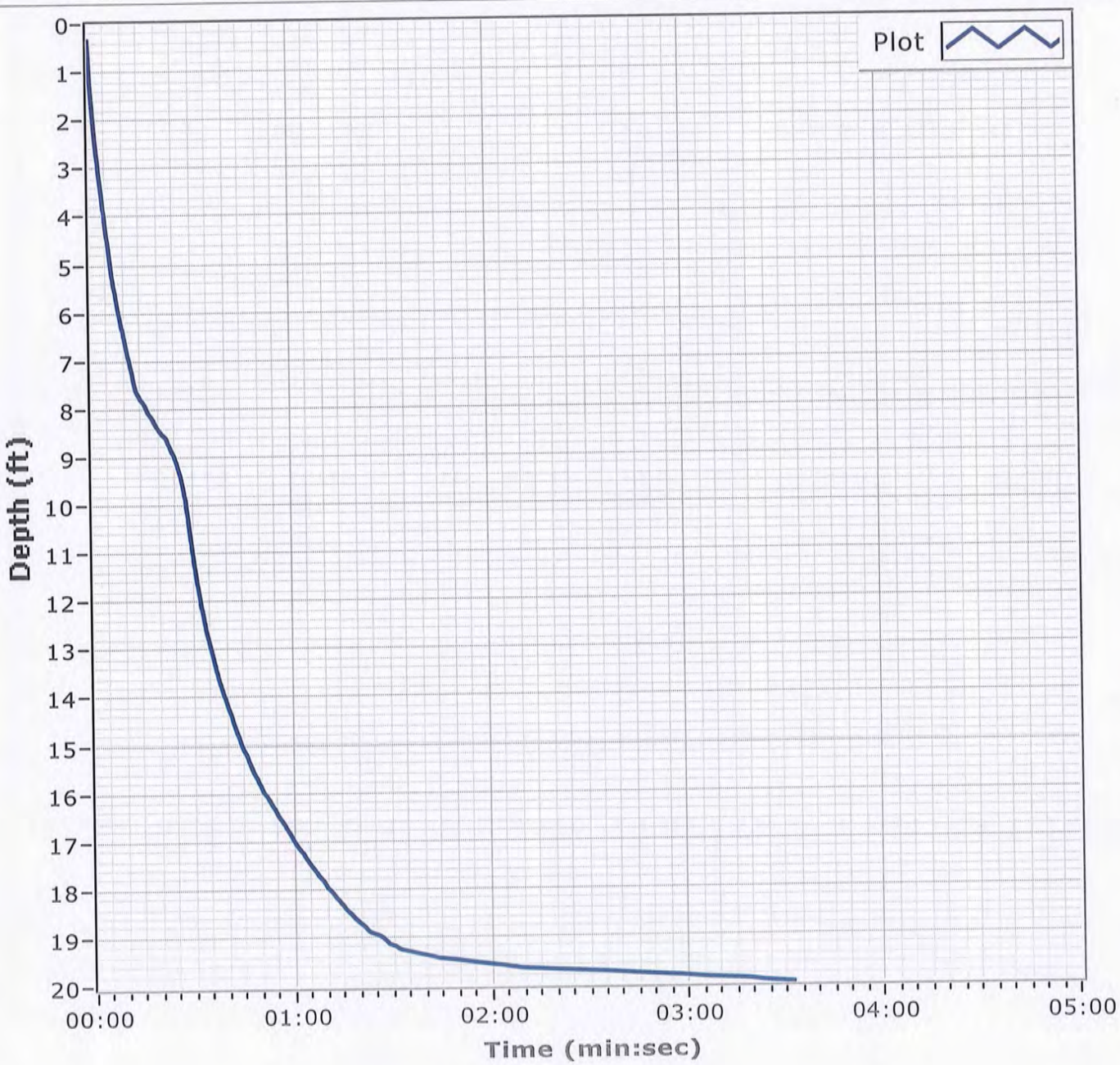
Core Identifier BI-PB-186-12
Coordinate System
Latitude / Longitude

Latitude 30 12.006
Longitude 088 19.834

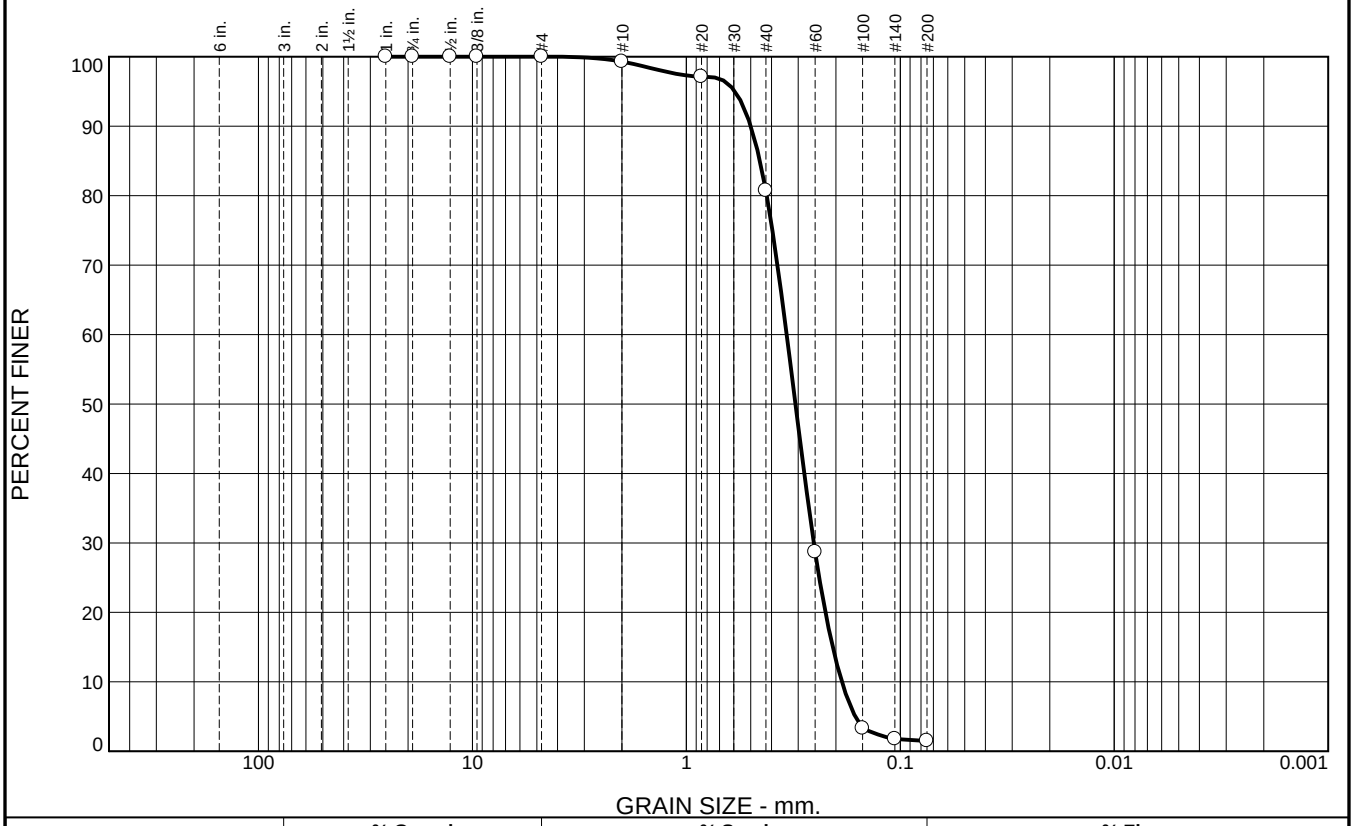
Date 12/07/2012
Start Time 13:50:08
End Time 13:53:41
Total Time 00:03:32

Water Depth 28.8'
Penetration 20.0'
Recovery 18.9'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.7	18.6	79.2	1.5	

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	99.3		
#20	97.1		
#40	80.7		
#60	28.7		
#100	3.3		
#140	1.8		
#200	1.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4998 D_{85}= 0.4531 D_{60}= 0.3397
D_{50}= 0.3092 D_{30}= 0.2537 D_{15}= 0.2070
D_{10}= 0.1877 C_u= 1.81 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-186-12 A
Sample Number: 6482 (11) **Depth:** 0.0' **Date:** 12/12/12

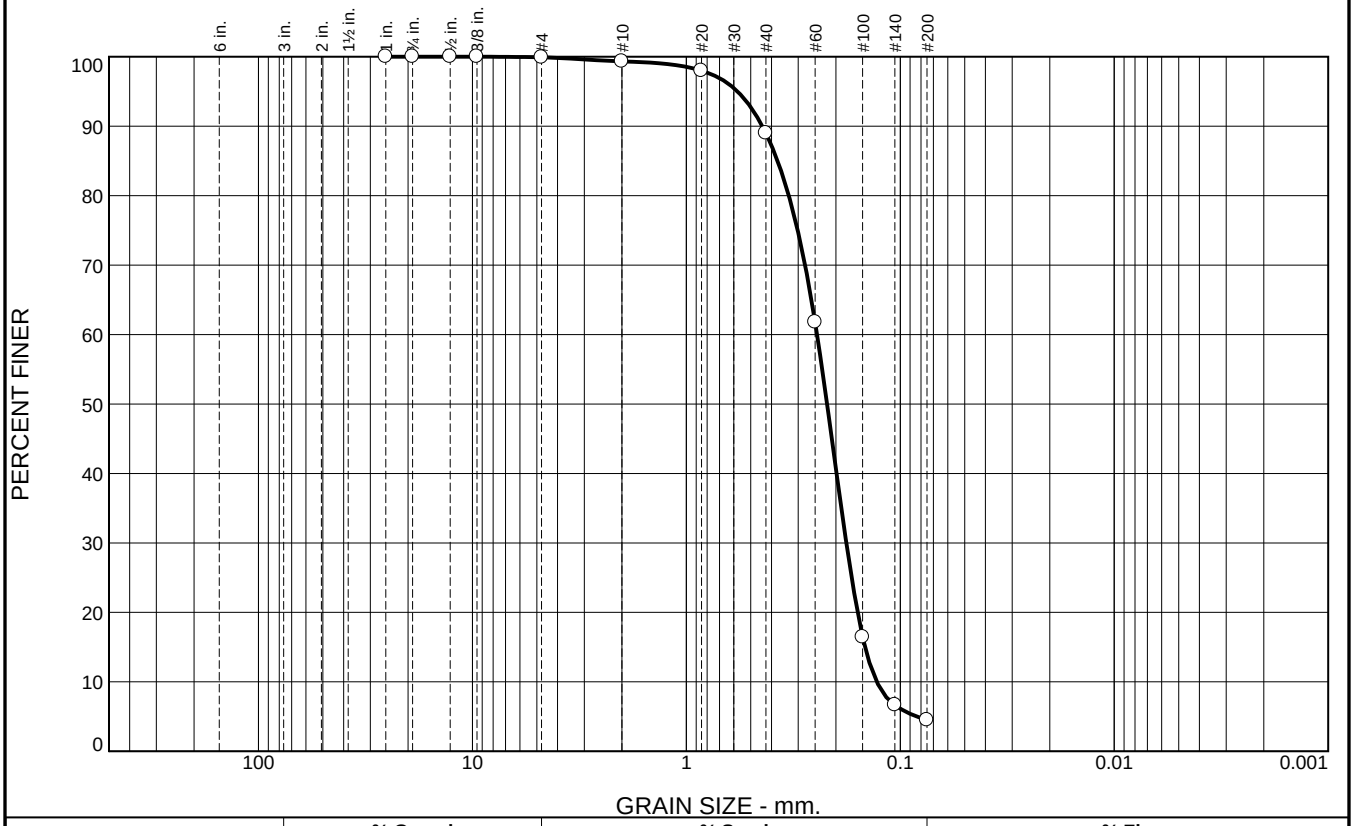
Thompson Engineering

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	0.6	10.3	84.5	4.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.9		
#10	99.3		
#20	98.0		
#40	89.0		
#60	61.8		
#100	16.4		
#140	6.7		
#200	4.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4416 D_{85}= 0.3745 D_{60}= 0.2449
D_{50}= 0.2199 D_{30}= 0.1789 D_{15}= 0.1462
D_{10}= 0.1289 C_u= 1.90 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-186-12 B
Sample Number: 6482 (12) **Depth:** 3.9' **Date:** 12/12/12

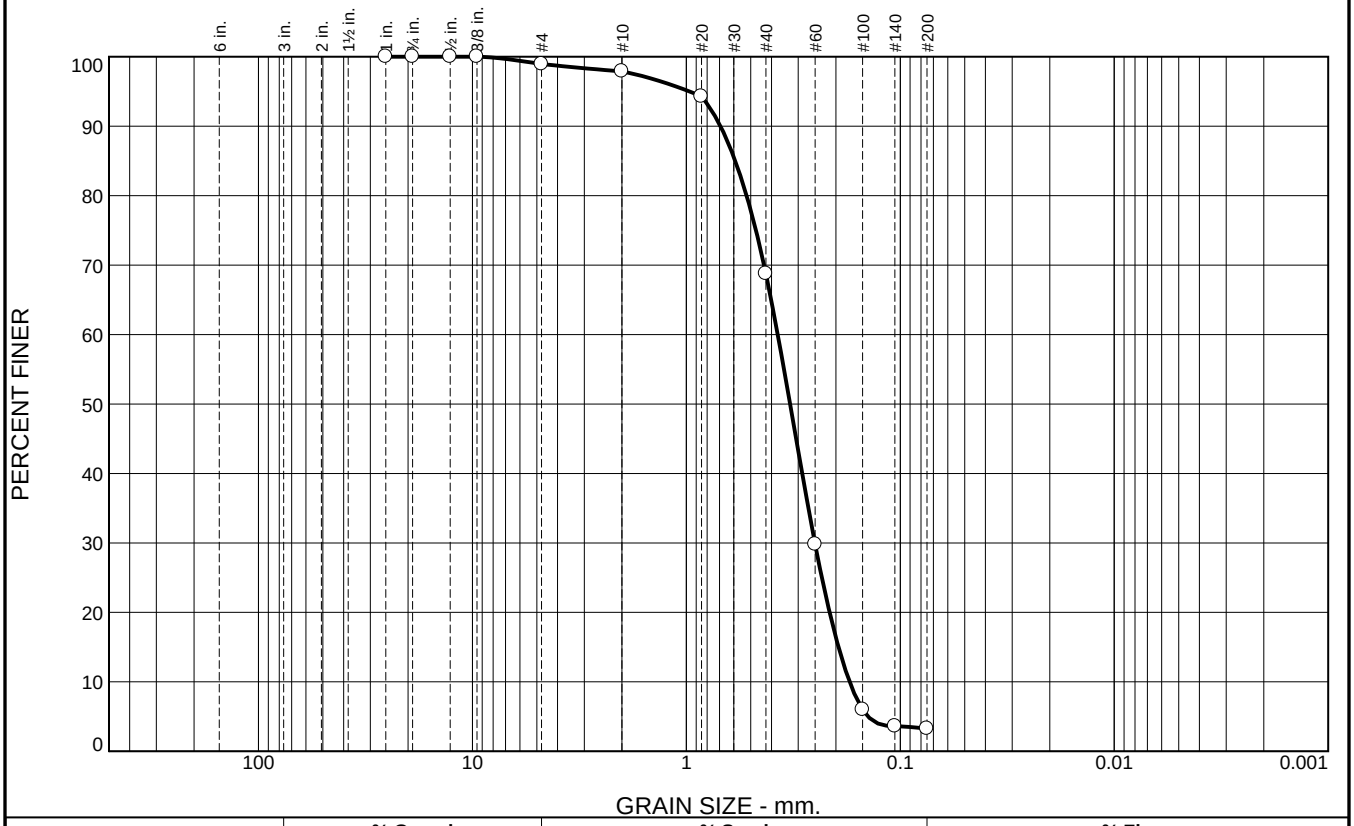
Thompson Engineering

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	1.1	1.0	29.1	65.5	3.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	98.9		
#10	97.9		
#20	94.3		
#40	68.8		
#60	29.8		
#100	6.0		
#140	3.6		
#200	3.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6929 D_{85}= 0.5907 D_{60}= 0.3740
D_{50}= 0.3275 D_{30}= 0.2508 D_{15}= 0.1945
D_{10}= 0.1728 C_u= 2.16 C_c= 0.97

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-186-12 C
Sample Number: 6482 (13) **Depth:** 6.9' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PB-187-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-187-12	LOCATION COORDINATES: E = 1,142,412 N = 254,231	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: 33.7 Ft.	
		15. DATE BORING	STARTED: 12-11-12 / COMPLETED: 12-11-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -34.0 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-34.0	0.0				
-35.1	1.1		SILT, inorganic-L, mostly silt, some shell fragments, trace fine-grained sand-sized quartz, dark gray (ML)	NS	
-36.2	2.2		SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, gray (SP-SM)	A	Classification: SP-SM Color: 5Y 6/3-pale olive D50: 0.2865 mm % Fines: 5.3
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, dense, lt. gray (SP)	B	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3462 mm % Fines: 1.2
				C	Classification: SP Color: 2.5Y 8/1-white D50: 0.3258 mm % Fines: 3
				D	Classification: SP Color: 2.5Y 8/1-white D50: 0.3816 mm % Fines: 1.6
-49.5	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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19813° Long = -88.33268°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
SERVICES

Core Identifier BI-PB-187-12

Coordinate System
Latitude / Longitude

Latitude 33 11.888

Longitude 088 19.961

Date 12/11/2012

Start Time 09:17:37

End Time 09:25:59

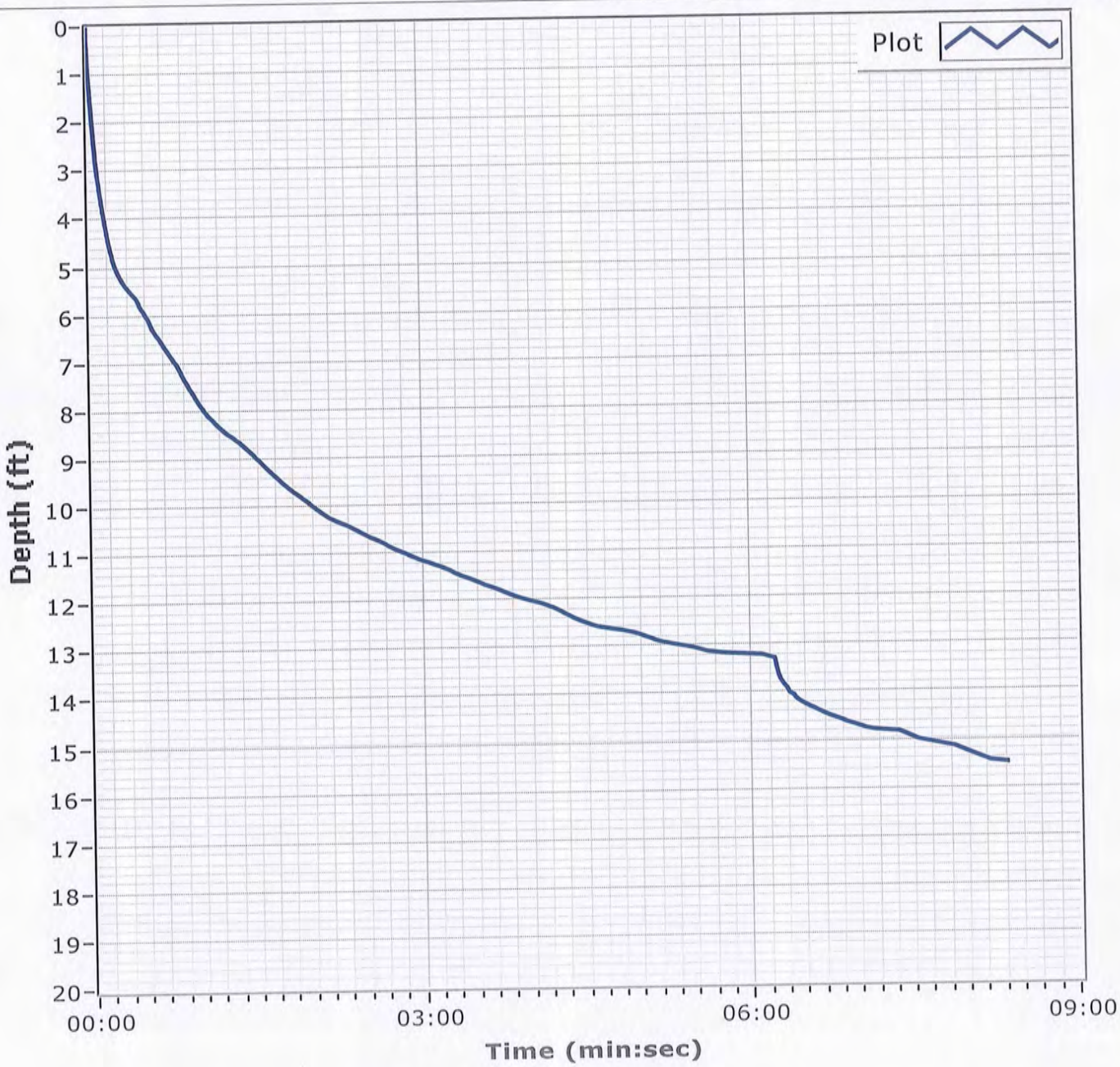
Total Time 00:08:22

Water Depth 33.7'

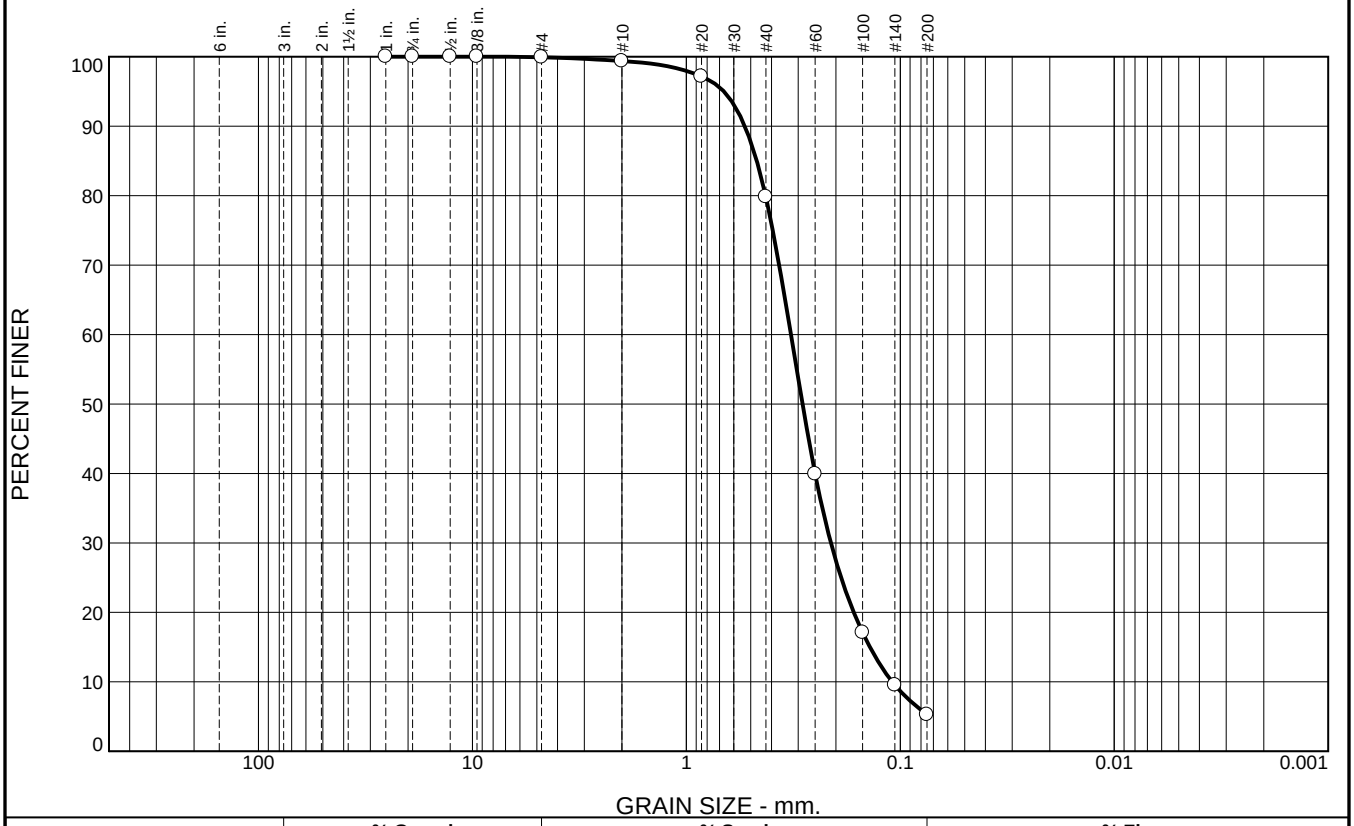
Penetration 15.5'

Recovery 15.5'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.5	19.6	74.5	5.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.9		
#10	99.4		
#20	97.2		
#40	79.8		
#60	39.9		
#100	17.1		
#140	9.5		
#200	5.3		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5330 D_{85}= 0.4687 D_{60}= 0.3244
D_{50}= 0.2865 D_{30}= 0.2111 D_{15}= 0.1387
D_{10}= 0.1091 C_u= 2.97 C_c= 1.26

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-187-12 A
Sample Number: 6485 (17) **Depth:** 1.1' **Date:** 12/07/12

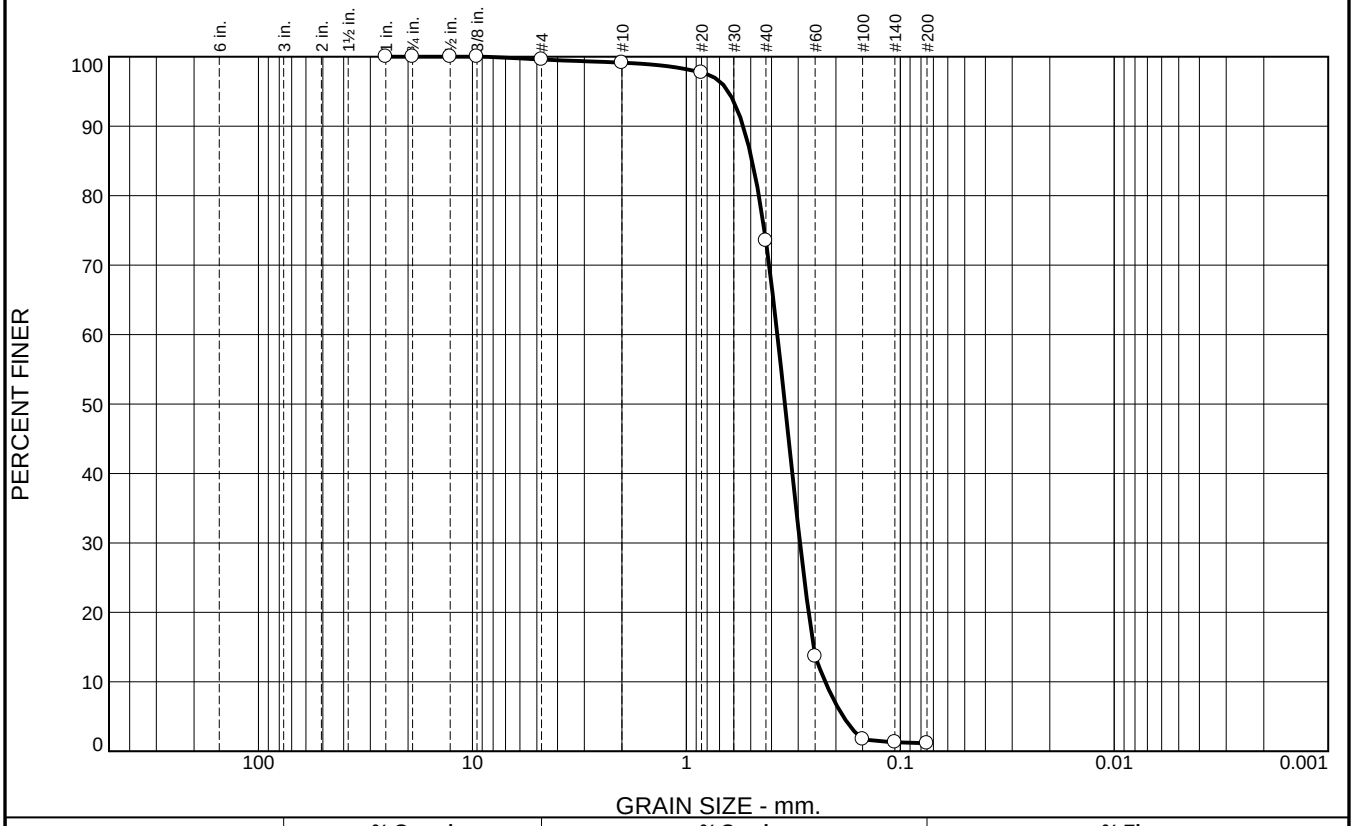
Thompson Engineering

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	0.4	0.5	25.6	72.3	1.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.6		
#10	99.1		
#20	97.7		
#40	73.5		
#60	13.7		
#100	1.7		
#140	1.3		
#200	1.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5422 D_{85}= 0.4925 D_{60}= 0.3755
D_{50}= 0.3462 D_{30}= 0.2945 D_{15}= 0.2541
D_{10}= 0.2241 C_u= 1.68 C_c= 1.03

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-187-12 B
Sample Number: 6485 (18) **Depth:** 2.2' **Date:** 12/07/12

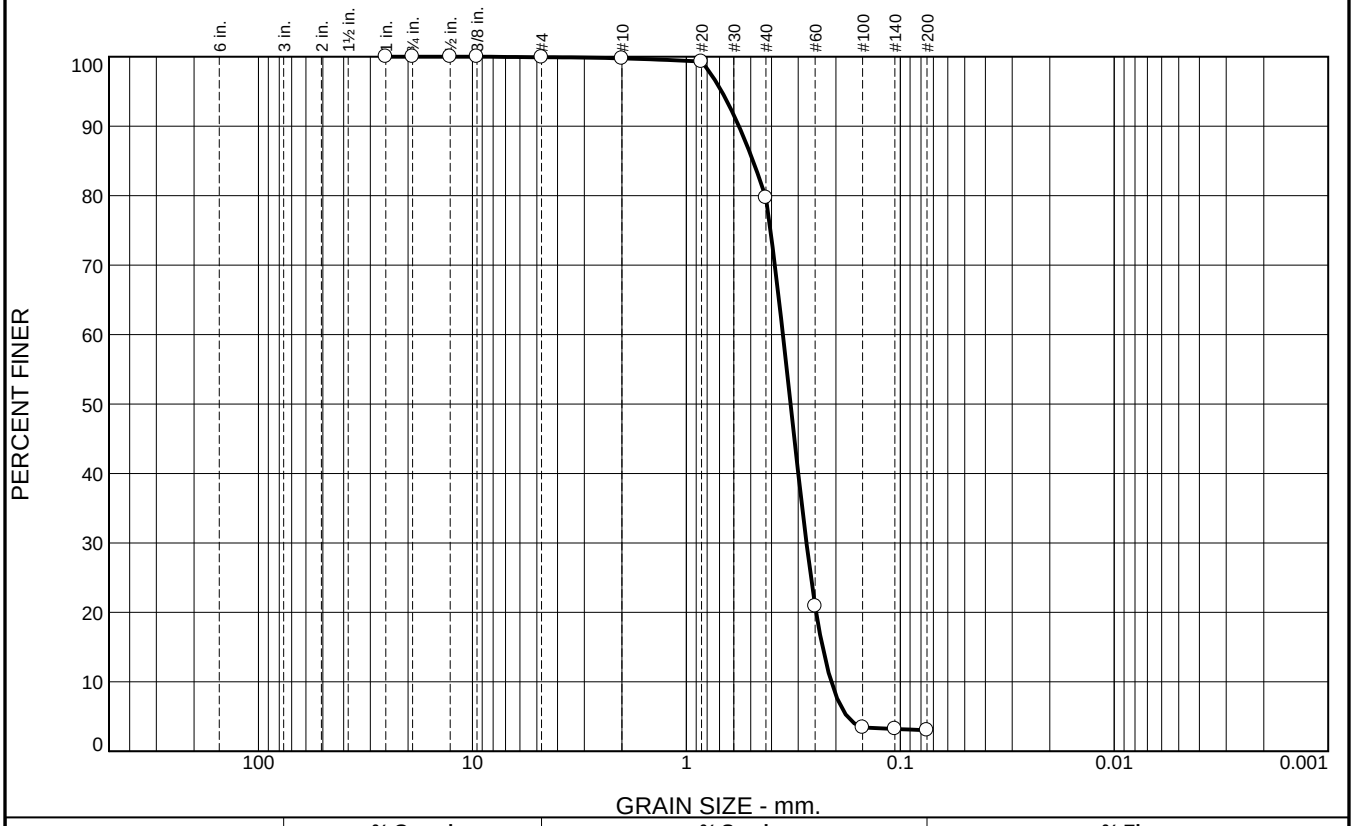
Thompson Engineering

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	0.1	20.1	76.7	3.0	

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	99.8		
#20	99.3		
#40	79.7		
#60	20.9		
#100	3.4		
#140	3.2		
#200	3.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5681 D_{85}= 0.4882 D_{60}= 0.3537
D_{50}= 0.3258 D_{30}= 0.2747 D_{15}= 0.2309
D_{10}= 0.2103 C_u= 1.68 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-187-12 C
Sample Number: 6485 (19) **Depth:** 7.2' **Date:** 12/07/12

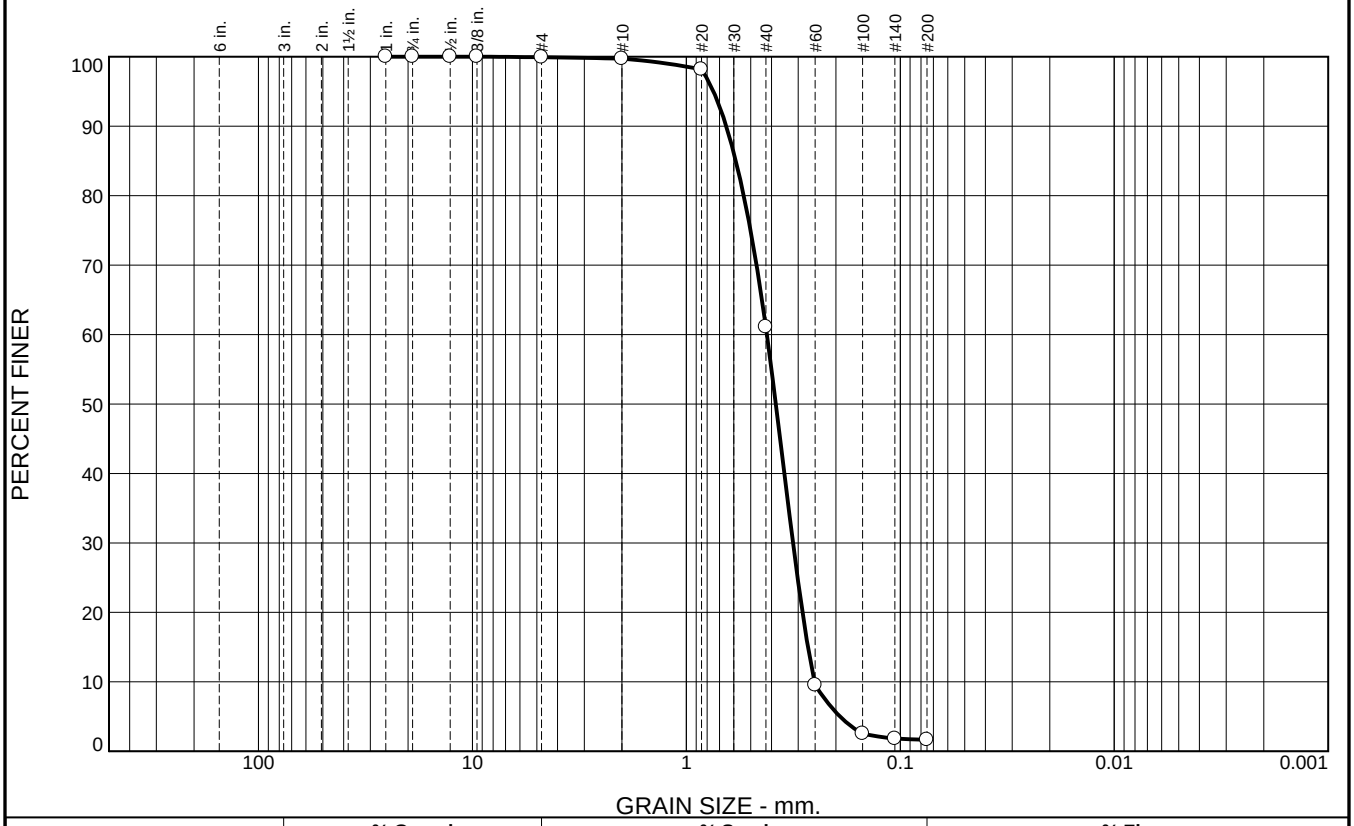
Thompson Engineering

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	0.2	38.6	59.5	1.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.9		
#10	99.7		
#20	98.2		
#40	61.1		
#60	9.5		
#100	2.5		
#140	1.8		
#200	1.6		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6509 D_{85}= 0.5868 D_{60}= 0.4203
D_{50}= 0.3816 D_{30}= 0.3174 D_{15}= 0.2705
D_{10}= 0.2519 C_u= 1.67 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-187-12 D
Sample Number: 6485 (20) **Depth:** 12.2' **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-PB-189-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-189-12	LOCATION COORDINATES: E = 1,142,877 N = 253,269	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: 36.4 Ft.	
		15. DATE BORING	STARTED: 12-11-12 / COMPLETED: 12-11-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -36.4 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-36.4	0.0				
-37.9	1.5		SILT, inorganic-L, mostly silt, some clay, trace fine-grained sand-sized quartz, trace shell fragments, brownish gray (ML)		
			CLAY, fat, mostly clay, medium to high plasticity, stiff, sandy lenses between 1.5 and 3.5 ft., greenish gray (CH)	NS	
-52.0	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19548° Long = -88.33122°

Project Mississippi Barrier Island Restoration Project

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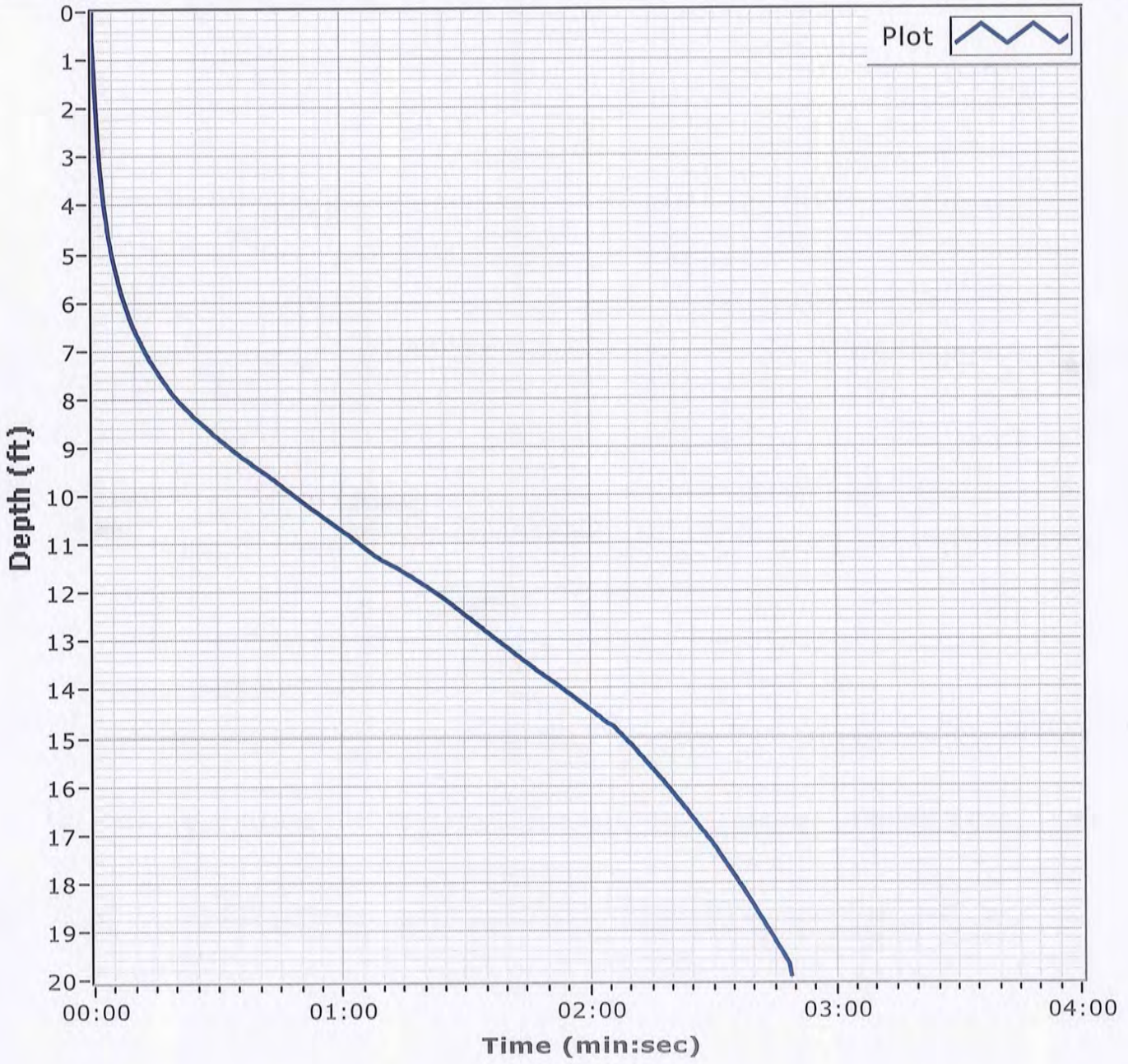
Core Identifier BI-PB-189-12
Coordinate System
Latitude / Longitude

Latitude 33 11.729
Longitude 088 19.873

Date 12/11/2012
Start Time 11:22:13
End Time 11:25:02
Total Time 00:02:49

Water Depth 36.4'
Penetration 20.0'
Recovery 15.5'

Comments



Boring Designation BI-PB-190-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-190-12	LOCATION COORDINATES: E = 1,142,619 N = 253,730	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: 34.5 Ft.	
		15. DATE BORING	STARTED: 12-11-12 / COMPLETED: 12-11-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -34.7 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-34.7	0.0				
-36.1	1.4		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, gray (CL)	NS	
-37.9	3.2		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, trace clay stringers, gray (SM)	A	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.2746 mm % Fines: 7.7
-45.0	10.3		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace clay, trace clay stringers, dense, lt. gray (SP)	B	Classification: SP Color: 5Y 8/1-white D50: 0.3087 mm % Fines: 2.3
				C	Classification: SP Color: 2.5Y 8/1-white D50: 0.2838 mm % Fines: 2.7
-52.4	17.7		CLAY, fat, mostly clay, trace fine-grained sand-sized sand, trace shell fragments, medium to high plasticity, greenish gray (CH)	NS	
-52.9	18.2		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, greenish 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.

0 5 10 15 20 25

Lat = 30.19675° Long = -88.33203°

Project Mississippi Barrier Island Restoration Project

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S E R V I C E S

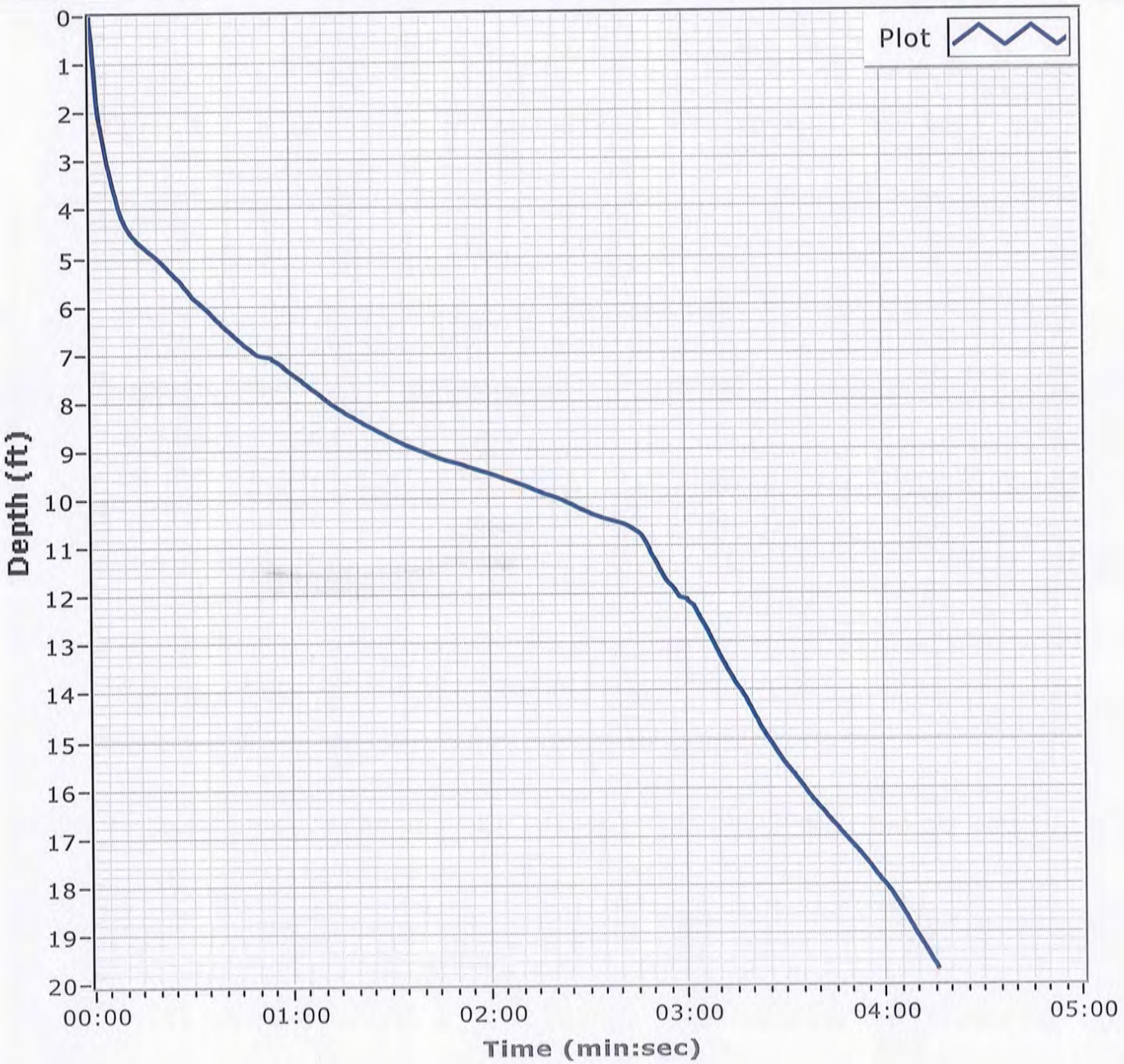
Core Identifier BI-PB-190-12
Coordinate System
Latitude / Longitude

Date 12/11/2012
Start Time 10:08:03
End Time 10:12:19
Total Time 00:04:16

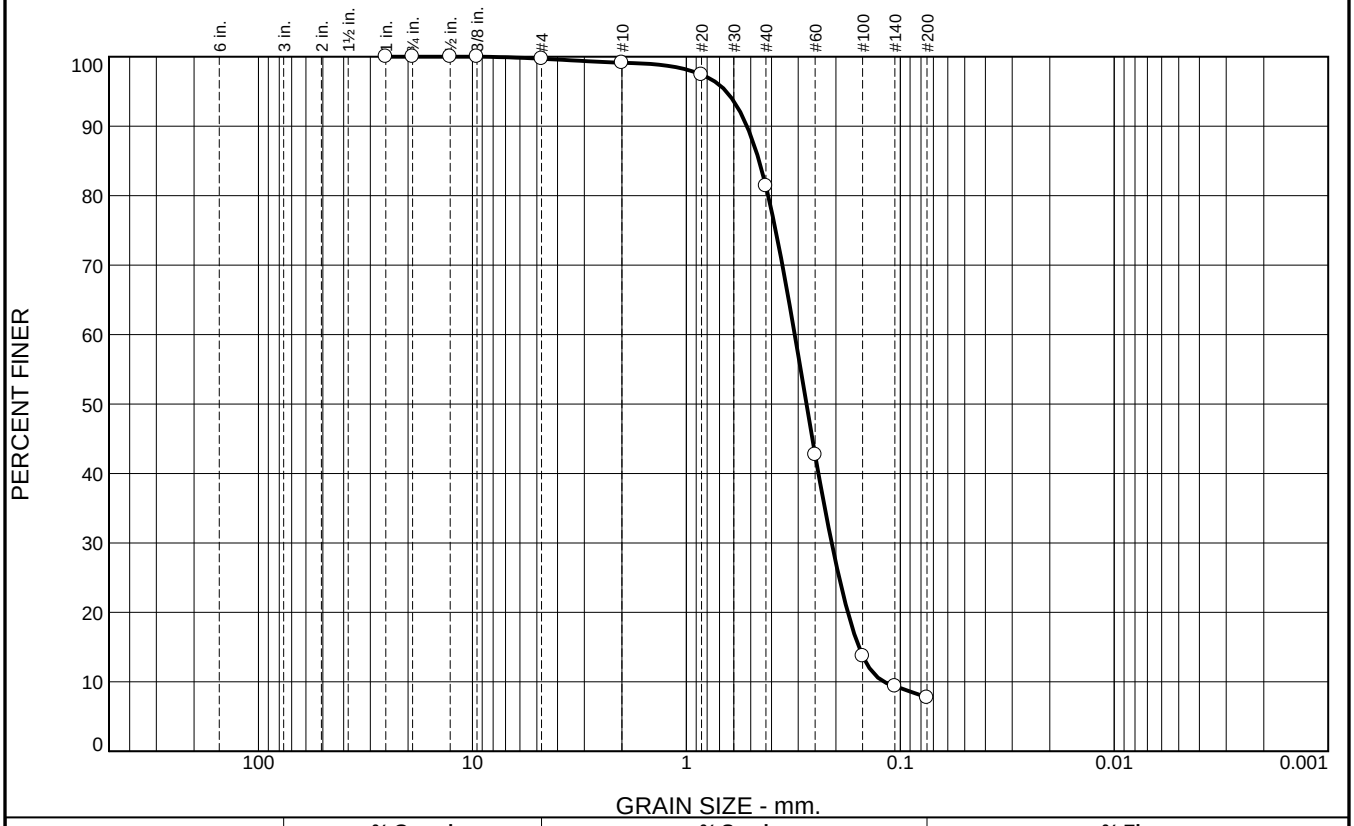
Water Depth 34.5'
Penetration 19.8'
Recovery 18.2'

Latitude 33 11.805
Longitude 088 19.922

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.6	17.7	73.7	7.7	

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	99.1		
#20	97.4		
#40	81.4		
#60	42.7		
#100	13.7		
#140	9.4		
#200	7.7		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5208 D_{85}= 0.4570 D_{60}= 0.3116
D_{50}= 0.2746 D_{30}= 0.2093 D_{15}= 0.1562
D_{10}= 0.1191 C_u= 2.62 C_c= 1.18

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-190-12 A
Sample Number: 6485 (21) **Depth:** 1.4' **Date:** 12/07/12

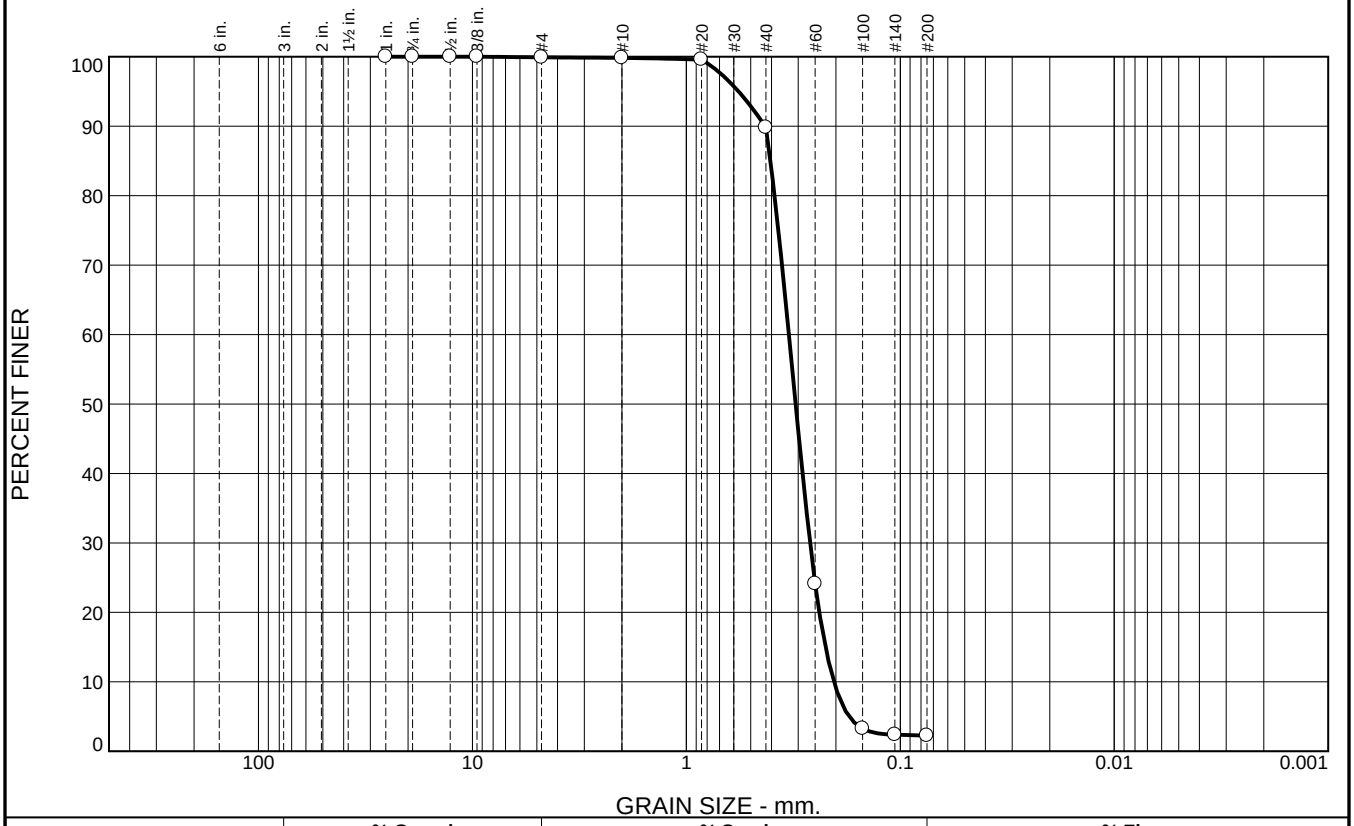
Thompson Engineering

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	0.1	0.1	10.0	87.5	2.3	

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	99.8		
#20	99.6		
#40	89.8		
#60	24.1		
#100	3.3		
#140	2.4		
#200	2.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4290 D_{85}= 0.4046 D_{60}= 0.3318
D_{50}= 0.3087 D_{30}= 0.2642 D_{15}= 0.2237
D_{10}= 0.2044 C_u= 1.62 C_c= 1.03

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-190-12 B
Sample Number: 6485 (22) **Depth:** 3.2' **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	0.1	8.4	88.8	2.7	

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	99.9		
#20	99.8		
#40	91.5		
#60	36.1		
#100	4.0		
#140	2.8		
#200	2.7		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4165 D_{85}= 0.3919 D_{60}= 0.3094
D_{50}= 0.2838 D_{30}= 0.2348 D_{15}= 0.1940
D_{10}= 0.1777 C_u= 1.74 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-190-12 C
Sample Number: 6485 (23) **Depth:** 8.2' **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-PB-191-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-191-12	LOCATION COORDINATES: E = 1,143,112 N = 253,725	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: 34.8 Ft.	
		15. DATE BORING	STARTED: 12-11-12 / COMPLETED: 12-11-12
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: 15.8 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-34.9	0.0				
-36.2	1.3		SILT, inorganic-L, mostly silt, little fine-grained sand-sized quartz, trace clay, brownish gray (ML)		
			CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace shell fragments, medium to high plasticity, stiff, greenish gray (CH)	NS	
-50.3	15.4				
-50.7	15.8		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, greenish 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19673° Long = -88.33047°

Project Mississippi Barrier Island Restoration Project

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SERVICES

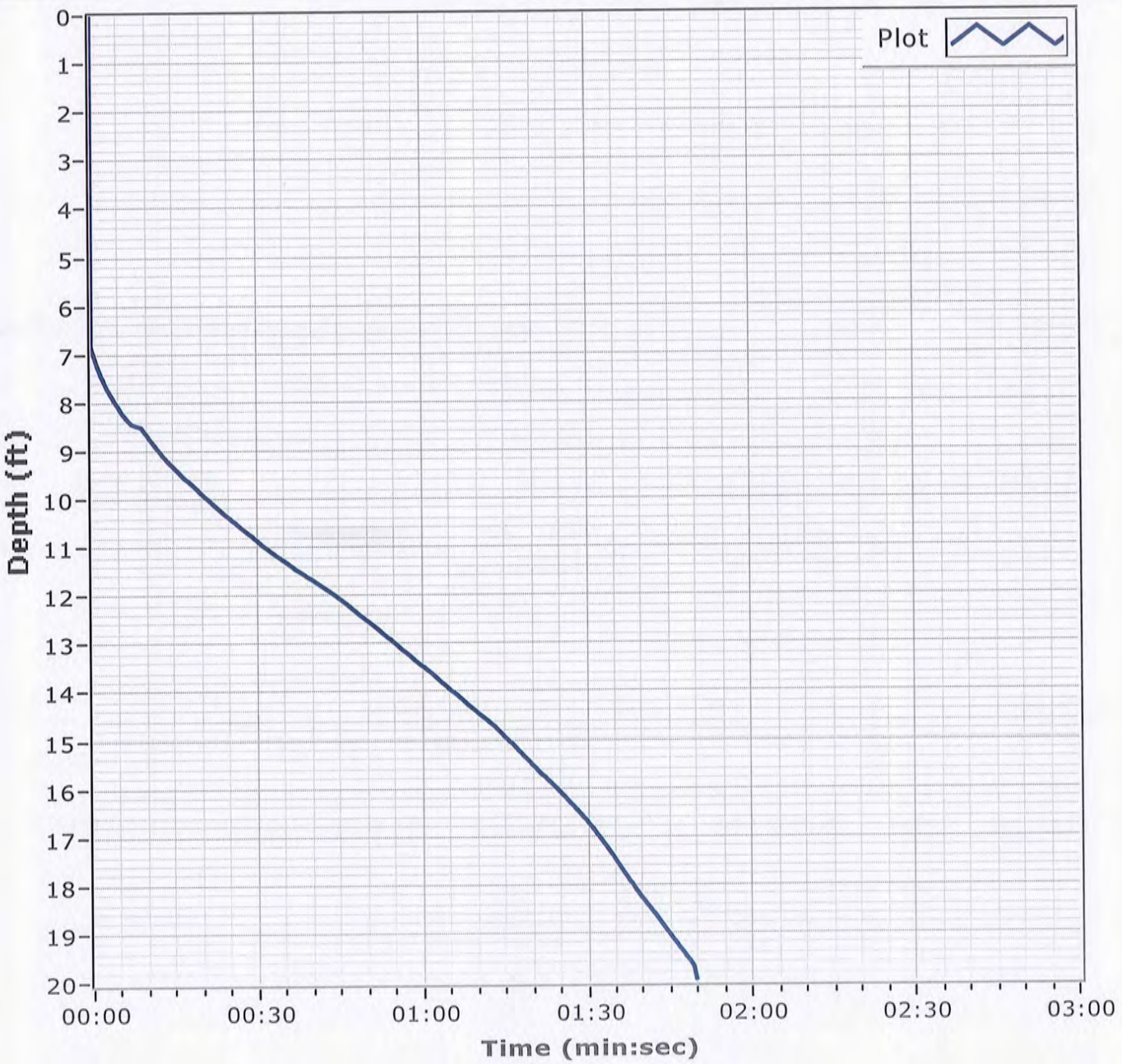
Core Identifier BI-PB-191-12
Coordinate System
Latitude / Longitude

Date 12/11/2012
Start Time 10:48:05
End Time 10:49:55
Total Time 00:01:49

Water Depth 34.8'
Penetration 20.0'
Recovery 15.8'

Latitude 33 11.804
Longitude 088 19.828

Comments



Boring Designation BI-PB-192-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-192-12	LOCATION COORDINATES: E = 1,143,389 N = 253,253	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: 36.4 Ft.	
		15. DATE BORING	STARTED: 12-11-12 / COMPLETED: 12-11-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -36.4 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-36.4	0.0				
-37.9	1.5		CLAY, silty, mostly clay, some silt, trace fine-grained sand-sized quartz, soft, brownish gray (CL-ML)	NS	
-50.9	14.5		CLAY, fat, mostly clay, trace shell fragments, medium to high plasticity, stiff, greenish gray (CH)		
-51.7	15.3		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, little silt, trace shell fragments, greenish 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19543° Long = -88.32960°

Project Mississippi Barrier Island Restoration Project

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S E R V I C E S

Core Identifier BI-PB-192-12

Coordinate System
Latitude / Longitude

Latitude 33 11.726

Longitude 088 19.776

Date 12/11/2012

Start Time 12:00:26

End Time 12:04:48

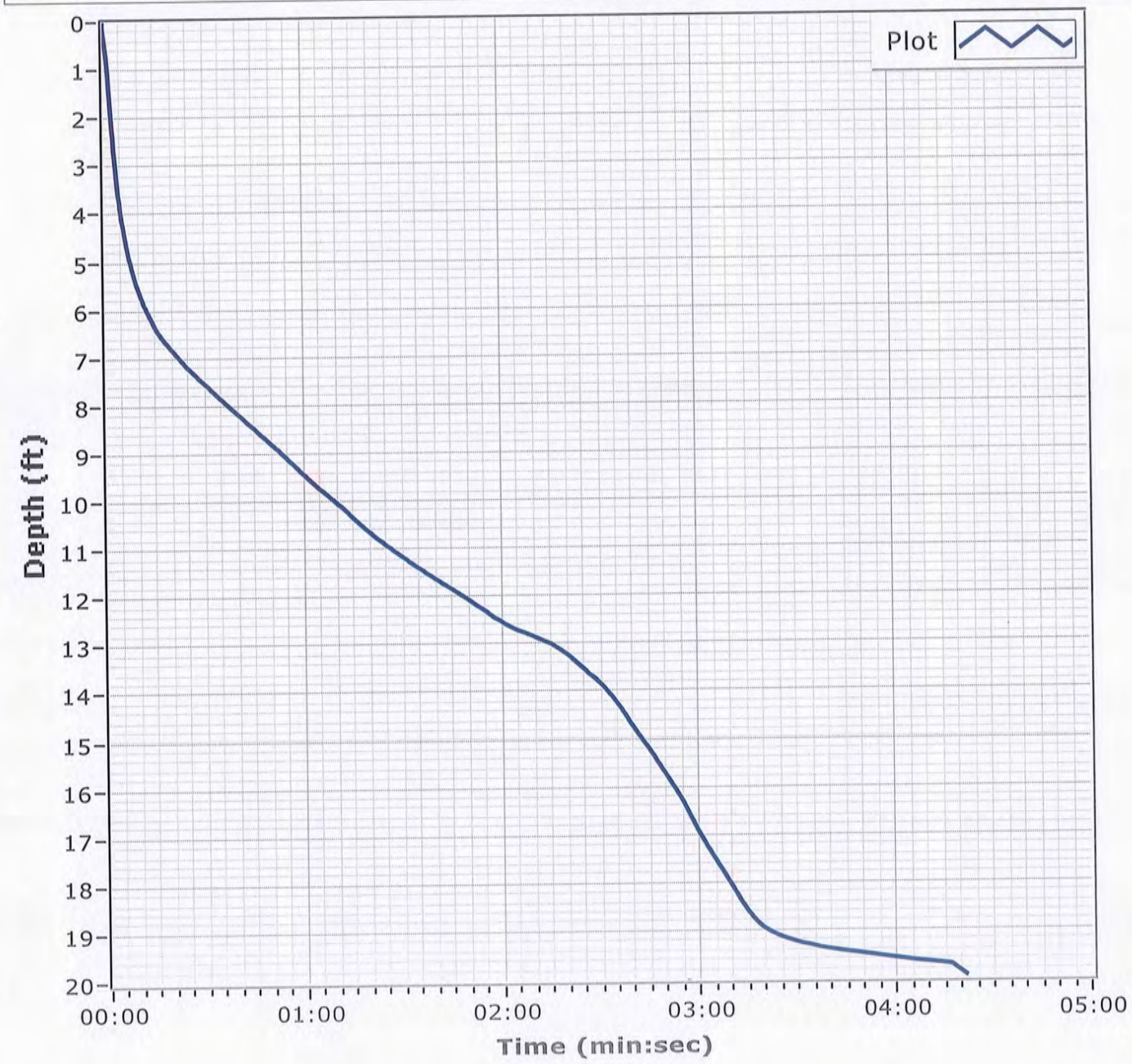
Total Time 00:04:21

Water Depth 36.4'

Penetration 20.0'

Recovery 15.3'

Comments



Boring Designation BI-PB-197-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-197-12	LOCATION COORDINATES: E = 1,136,842 N = 254,978	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: 28.2 Ft.	
		15. DATE BORING	STARTED: 12-22-12 / COMPLETED: 12-22-12
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: 17.7 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-29.0	0.0				
			SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, trace shell fragments, gray to lt. brown (SP-SM)	A	Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.2933 mm % Fines: 5.5
-32.9	3.9				
-34.2	5.2		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, pale lt. brown (SP)	B	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3028 mm % Fines: 2.4
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, brown (SM)	C	Classification: SP-SM Color: 2.5Y 4/2-dark grayish brown D50: 0.2985 mm % Fines: 5.9
-38.4	9.4		At El. -36.6 Ft., mostly fine-grained sand-sized quartz, some silt, gray	D	Classification: SP-SM Color: 5Y 5/2-olive gray D50: 0.2174 mm % Fines: 7.6
			CLAY, fat, mostly clay, medium to high plasticity, silty between 9.4 to 10.4 ft., stiff, greenish gray (CH)	NS	
-46.7	17.7				
			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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20025° Long = -88.35030°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

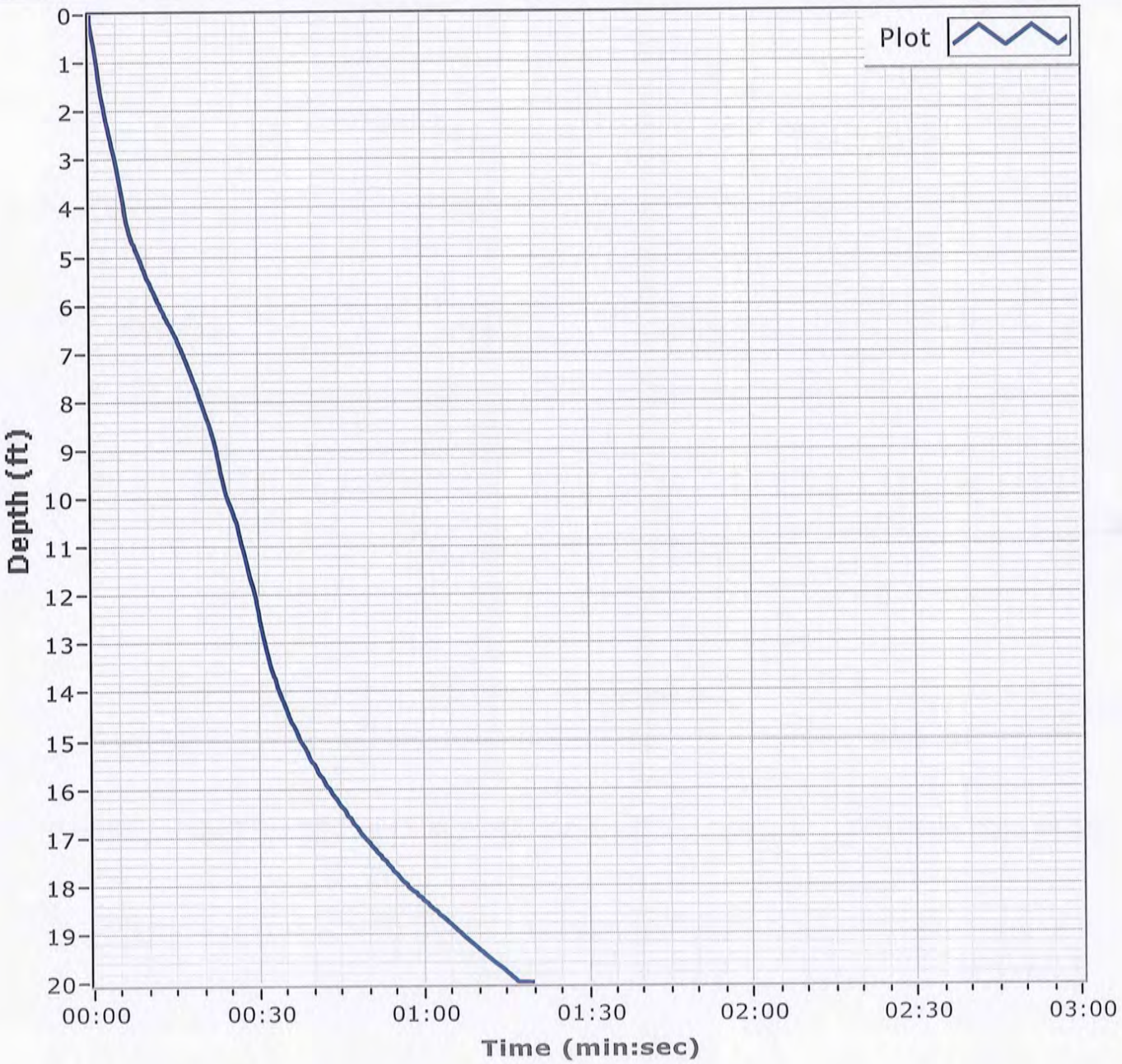
Core Identifier BI-PB-197-12
Coordinate System
Latitude / Longitude

Latitude 30 12.015
Longitude 088 21.018

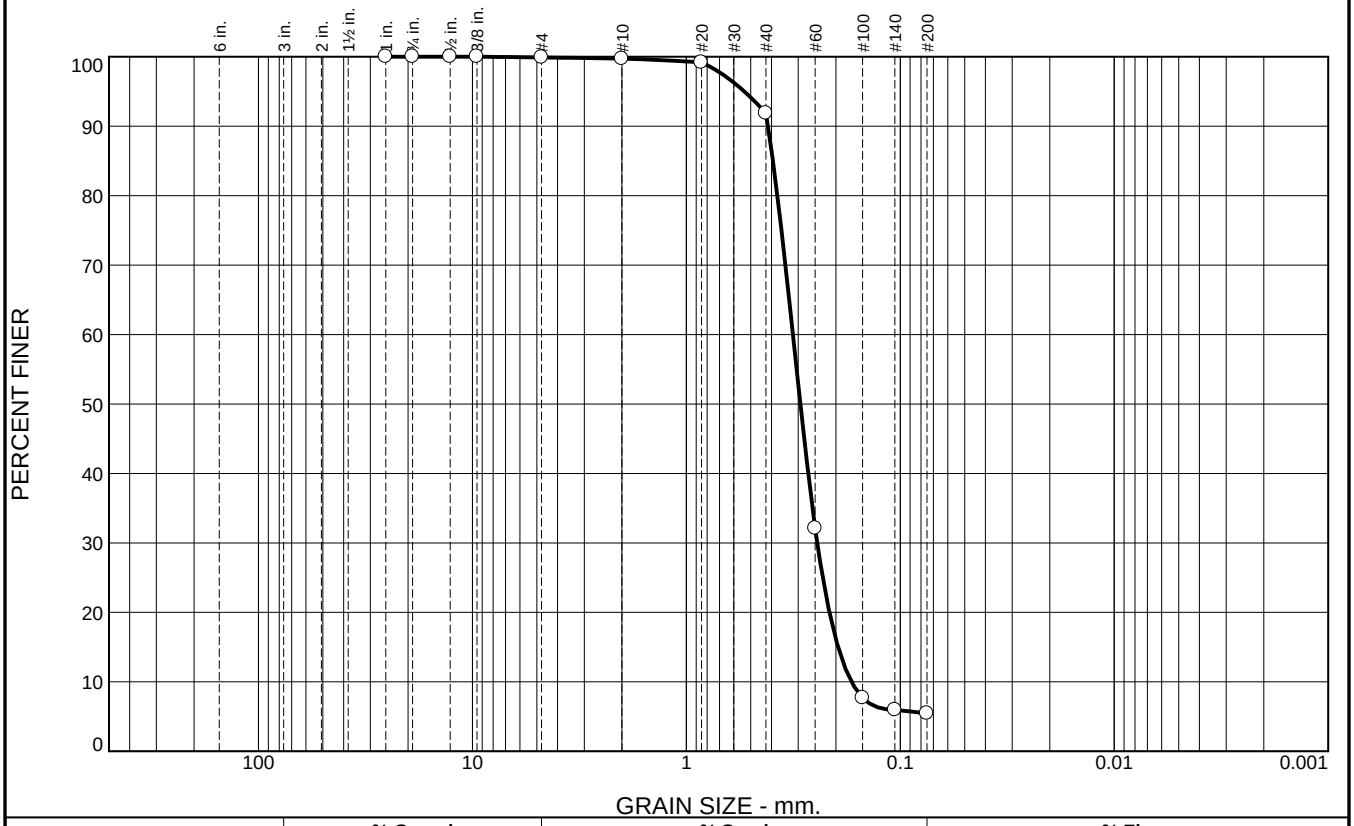
Date 12/22/2012
Start Time 09:09:04
End Time 09:10:24
Total Time 00:01:20

Water Depth 28.2'
Penetration 20.0'
Recovery 17.7'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.2	7.8	86.4	5.5	

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	99.7		
#20	99.2		
#40	91.9		
#60	32.1		
#100	7.7		
#140	5.9		
#200	5.5		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4154 D_{85}= 0.3936 D_{60}= 0.3177
D_{50}= 0.2933 D_{30}= 0.2445 D_{15}= 0.1954
D_{10}= 0.1693 C_u= 1.88 C_c= 1.11

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-197-12 A
Sample Number: 6495 (13) **Depth:** 0.0' **Date:** 12/31/12

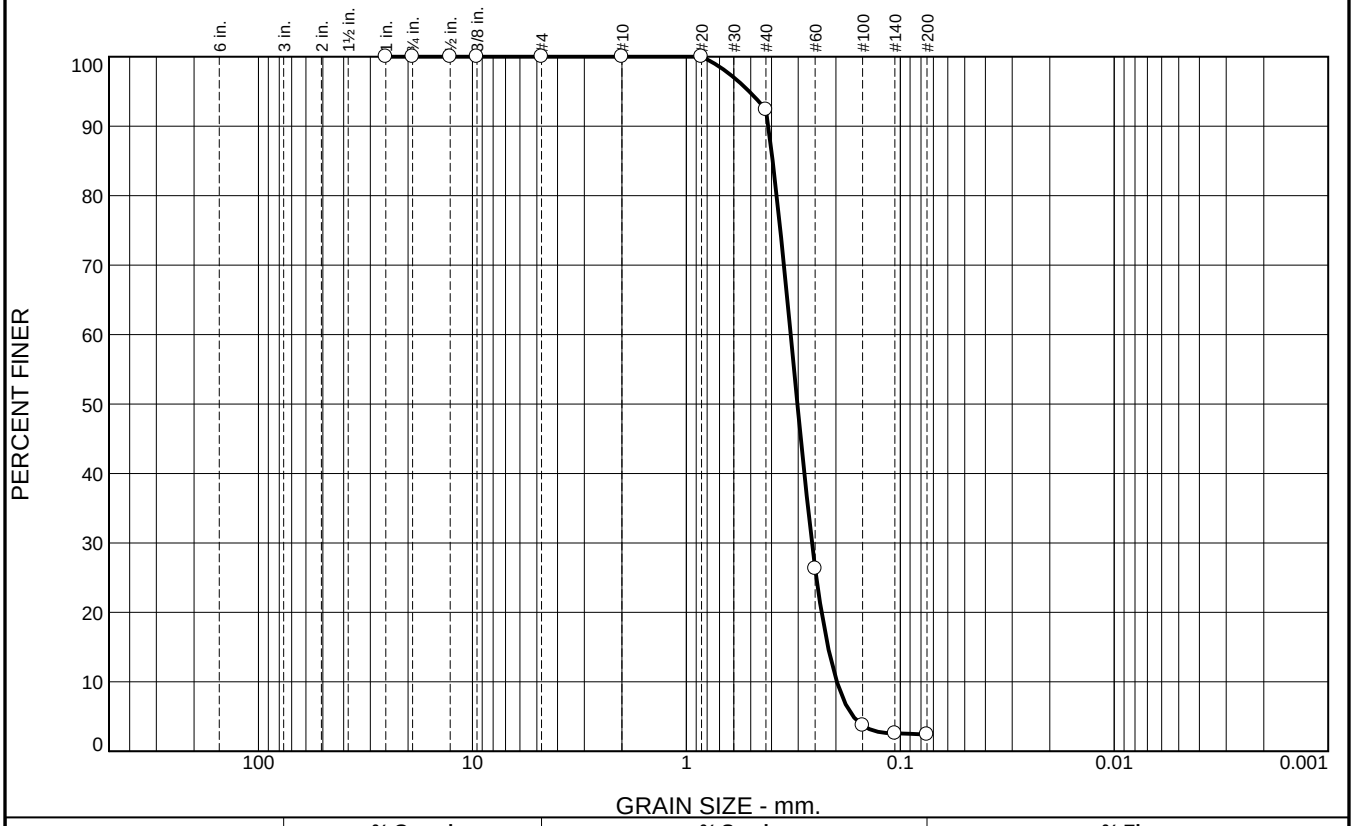
Thompson Engineering

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	7.6	90.0	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	100.0		
#20	100.0		
#40	92.4		
#60	26.3		
#100	3.7		
#140	2.6		
#200	2.4		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4142 D_{85}= 0.3948 D_{60}= 0.3254
D_{50}= 0.3028 D_{30}= 0.2588 D_{15}= 0.2176
D_{10}= 0.1979 C_u= 1.64 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-197-12 B
Sample Number: 6495 (14) **Depth:** 3.9' **Date:** 12/31/12

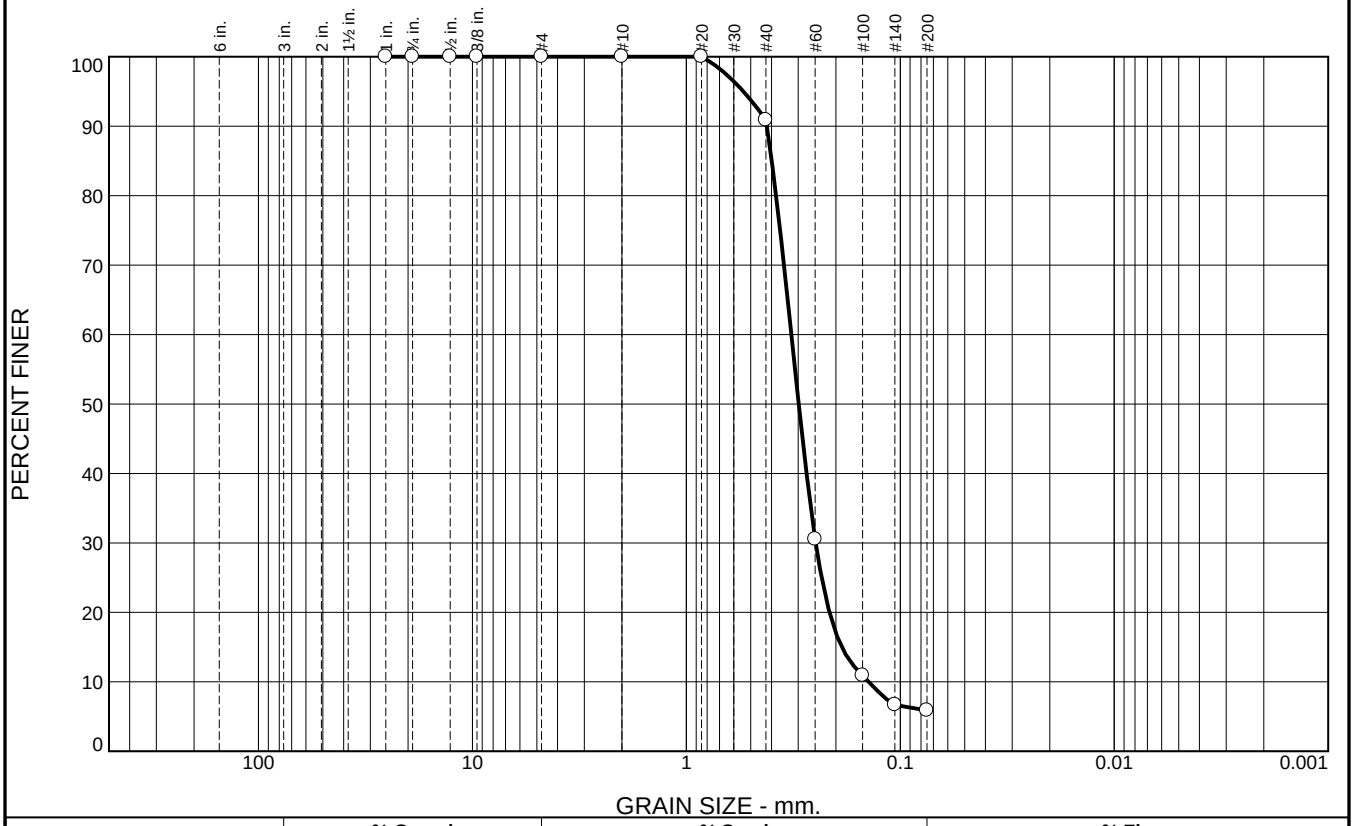
Thompson Engineering

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	9.1	85.0	5.9	

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	100.0		
#20	100.0		
#40	90.9		
#60	30.5		
#100	10.9		
#140	6.7		
#200	5.9		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4206 D_{85}= 0.3987 D_{60}= 0.3231
D_{50}= 0.2985 D_{30}= 0.2485 D_{15}= 0.1879
D_{10}= 0.1406 C_u= 2.30 C_c= 1.36

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-197-12 C
Sample Number: 6495 (15) **Depth:** 5.2' **Date:** 12/31/12

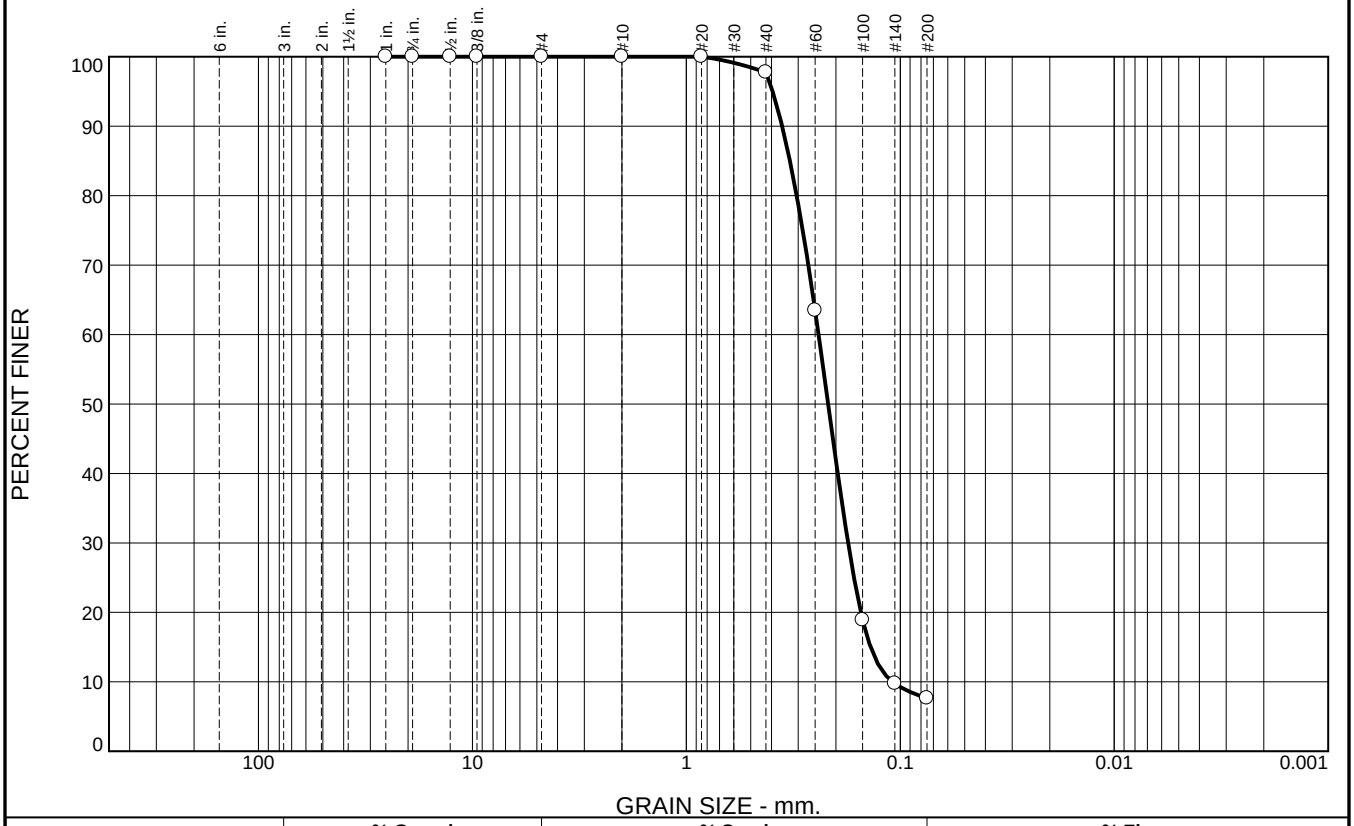
Thompson Engineering

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	2.3	90.1	7.6	

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	100.0		
#40	97.7		
#60	63.5		
#100	18.9		
#140	9.8		
#200	7.6		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3566 D_{85}= 0.3281 D_{60}= 0.2410
D_{50}= 0.2174 D_{30}= 0.1755 D_{15}= 0.1377
D_{10}= 0.1086 C_u= 2.22 C_c= 1.18

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-197-12 D
Sample Number: 6495 (16) **Depth:** 7.6' **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-PB-198-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-198-12	LOCATION COORDINATES: E = 1,135,585 N = 254,936	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: 27.6 Ft.	
		15. DATE BORING	STARTED: 12-22-12 / COMPLETED: 12-22-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -28.4 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
-28.4	0.0				
-29.9	1.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2842 mm % Fines: 1.5
-34.4	6.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, trace clayey nodules, pale lt. brown (SP-SM)	B	Classification: SP Color: 2.5Y 5/2-grayish brown D50: 0.2867 mm % Fines: 2.5
-40.5	12.1		SAND, silty, mostly fine-grained sand-sized quartz, some silt, pale lt. brown (SM)	C	Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.2777 mm % Fines: 5.3
-47.2	18.8		At El. -39.5 Ft., mostly fine-grained sand-sized quartz, some silt, little clay, gray CLAY, fat, mostly clay, trace shell fragments, medium to high plasticity, greenish 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20015° Long = -88.35428°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

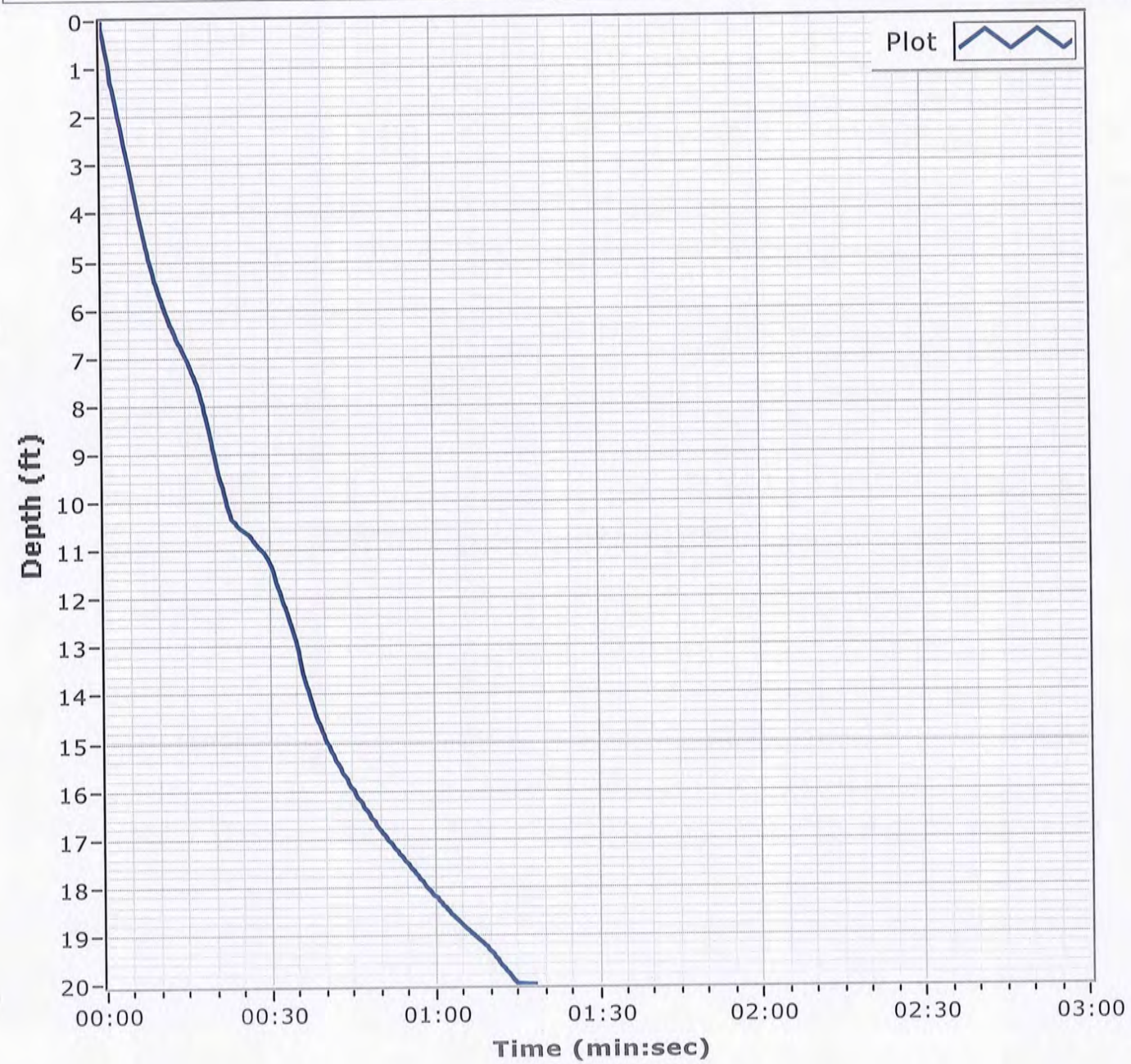
Core Identifier BI-PB-198-12
Coordinate System
Latitude / Longitude

Latitude 30 12.009
Longitude 088 21.257

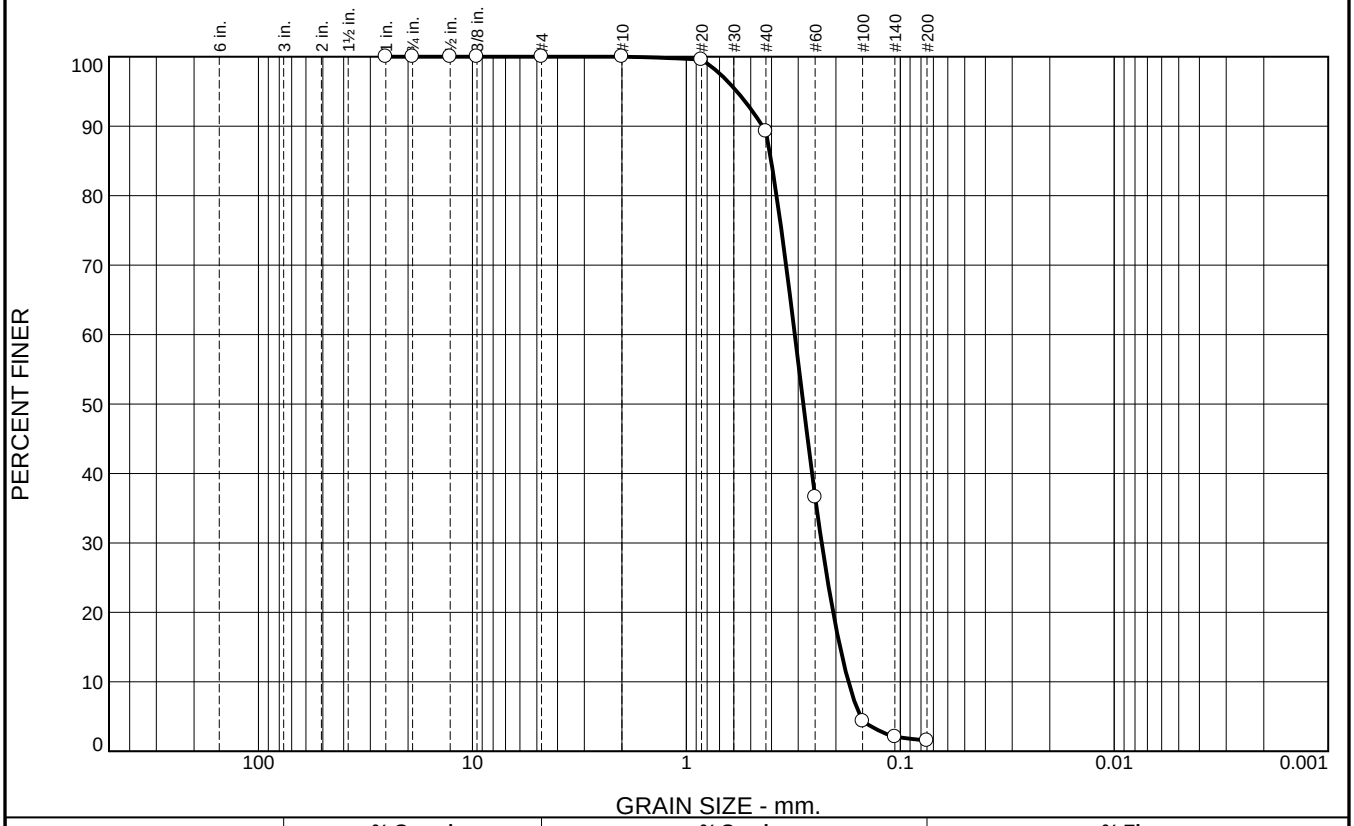
Date 12/22/2012
Start Time 09:42:01
End Time 09:43:20
Total Time 00:01:18

Water Depth 27.6'
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	10.7	87.8	1.5	

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	100.0		
#20	99.6		
#40	89.3		
#60	36.6		
#100	4.4		
#140	2.1		
#200	1.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4404 D_{85}= 0.4013 D_{60}= 0.3113
D_{50}= 0.2842 D_{30}= 0.2330 D_{15}= 0.1913
D_{10}= 0.1749 C_u= 1.78 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-198-12 A
Sample Number: 6495 (17) **Depth:** 0.0' **Date:** 12/31/12

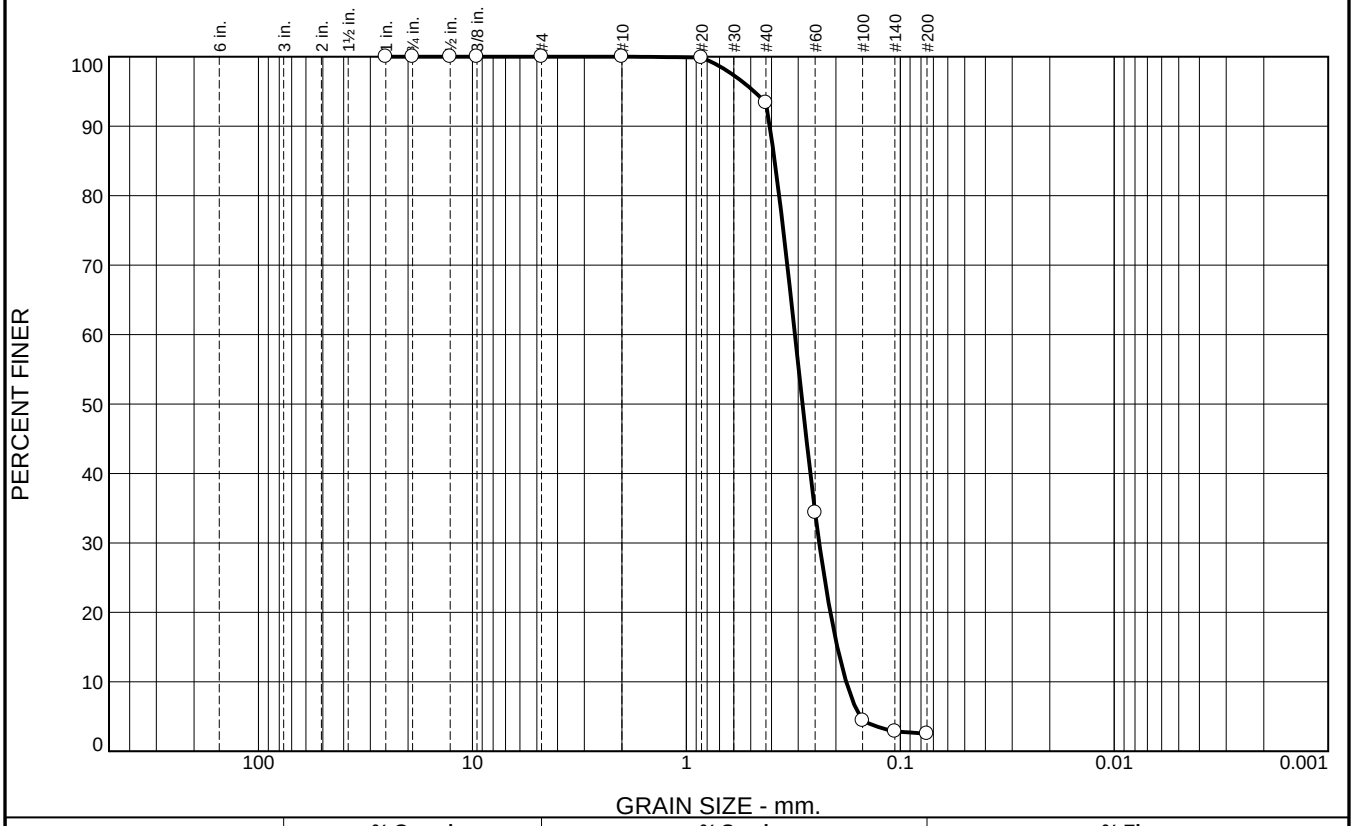
Thompson Engineering

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	6.6	90.9	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	100.0		
#20	99.9		
#40	93.4		
#60	34.4		
#100	4.4		
#140	2.9		
#200	2.5		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4075 D_{85}= 0.3862 D_{60}= 0.3109
D_{50}= 0.2867 D_{30}= 0.2392 D_{15}= 0.1970
D_{10}= 0.1791 C_u= 1.74 C_c= 1.03

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-198-12 B
Sample Number: 6495 (18) **Depth:** 1.5' **Date:** 12/31/12

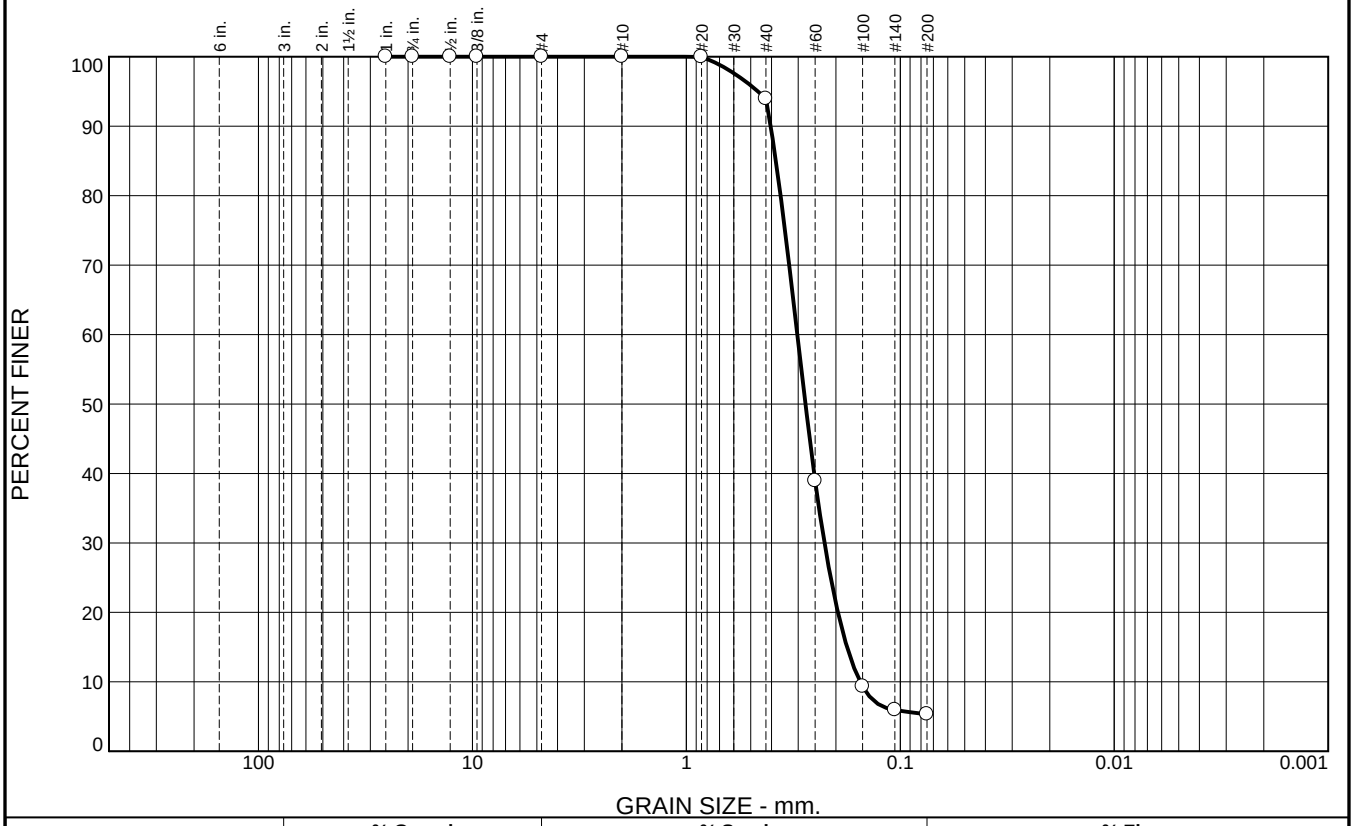
Thompson Engineering

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	0.0	6.0	88.7	5.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	100.0		
#40	94.0		
#60	38.9		
#100	9.3		
#140	6.0		
#200	5.3		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4034 D_{85}= 0.3813 D_{60}= 0.3031
D_{50}= 0.2777 D_{30}= 0.2262 D_{15}= 0.1776
D_{10}= 0.1541 C_u= 1.97 C_c= 1.10

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-198-12 C
Sample Number: 6495 (19) **Depth:** 6.0' **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-PB-199-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-199-12	LOCATION COORDINATES: E = 1,134,195 N = 254,938	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: 27 Ft.	
		15. DATE BORING	STARTED: 12-13-12 / COMPLETED: 12-13-12
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: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-27.8	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, siltier between 3.4 to 5 ft. and 8.5 to 10.0 ft deep., pale lt. brown to lt. gray (SP)	A	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3122 mm % Fines: 2.3
				B	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.2926 mm % Fines: 2.8
-38.0	10.2				
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, little silt, gray (SC)	NS	
-41.5	13.7				
			CLAY, fat, mostly clay, medium to high plasticity, stiff, dark green (CH)		
-47.8	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20017° Long = -88.35868°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

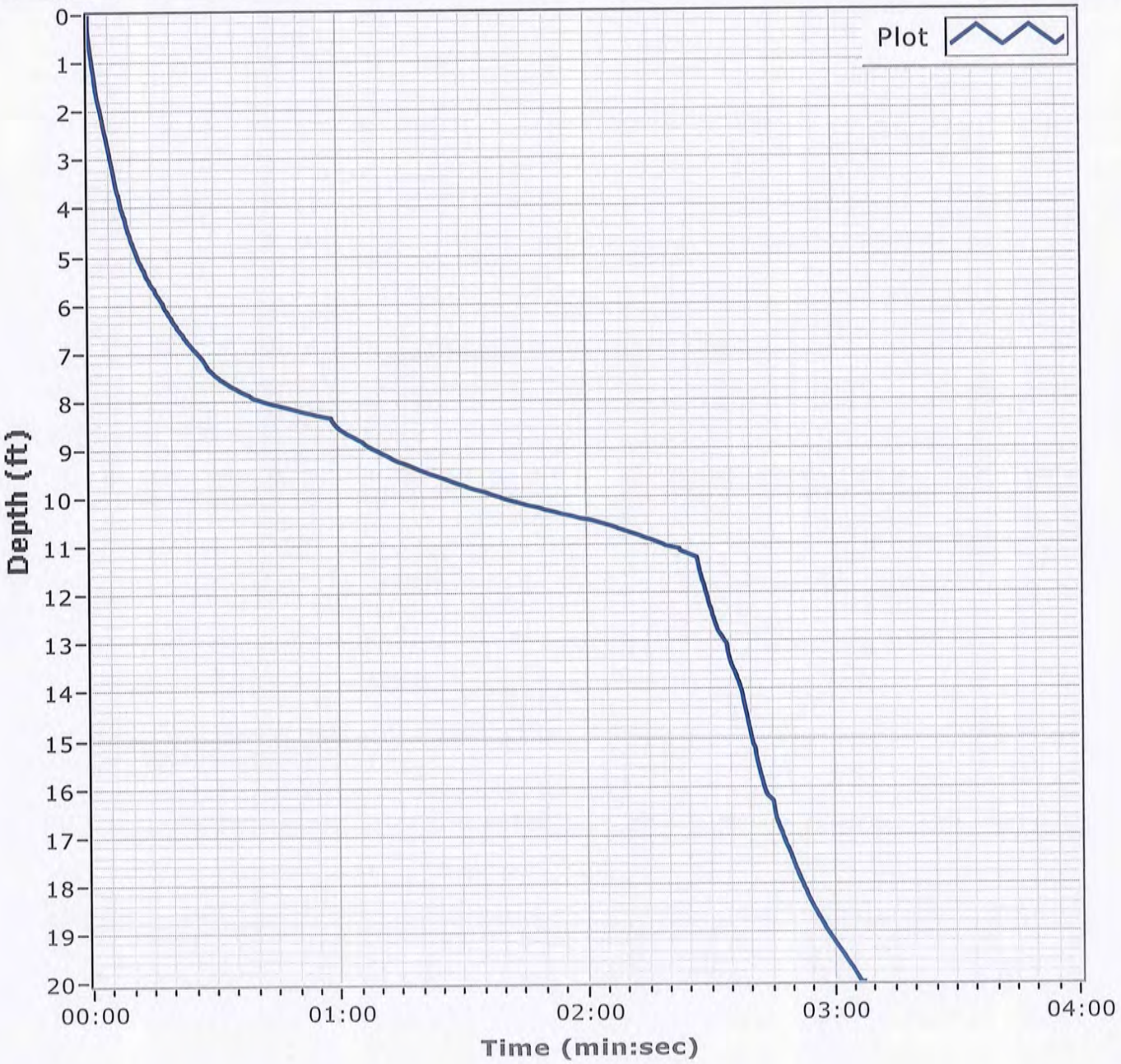
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Coordinate System
Latitude / Longitude

Date 12/13/2012
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End Time 11:40:00
Total Time 00:03:07

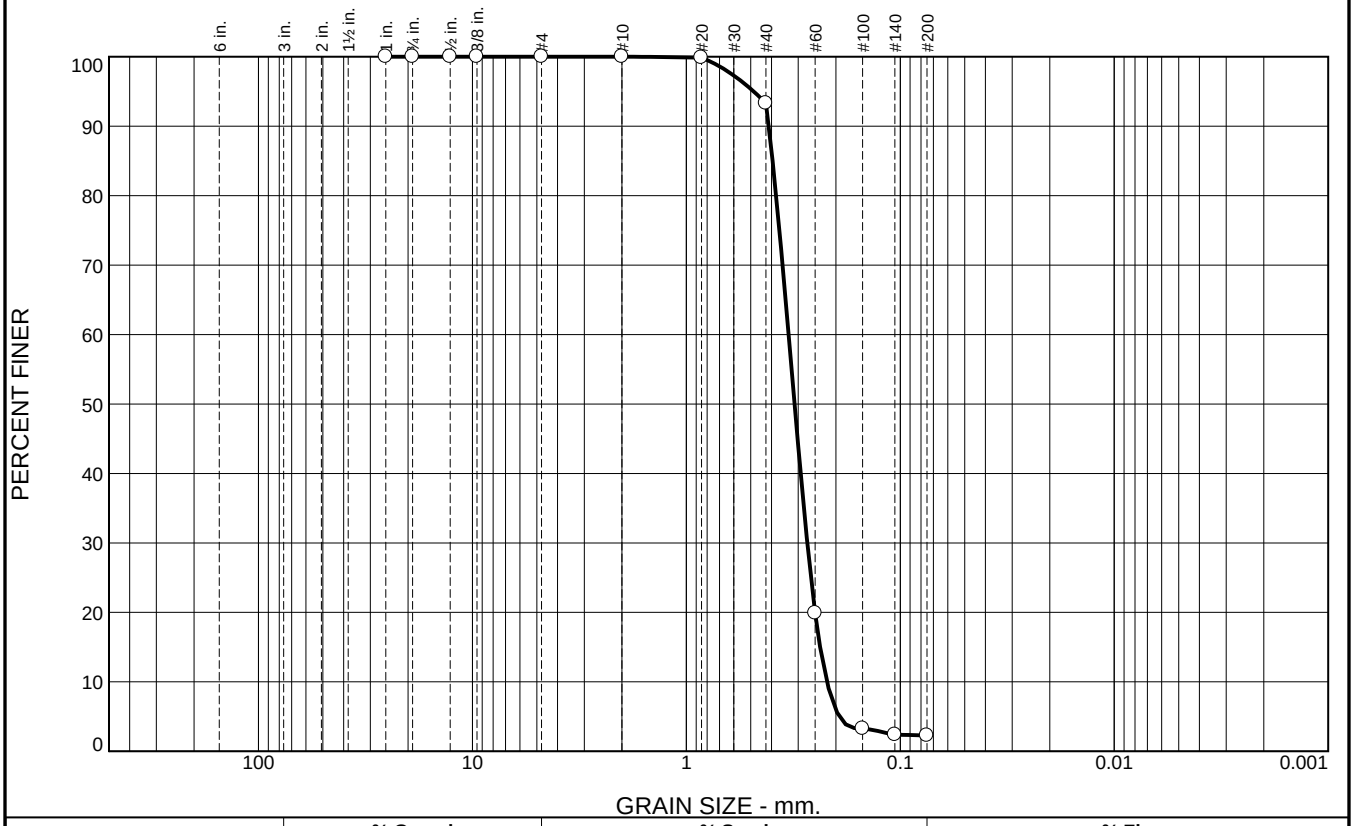
Water Depth 27.0'
Penetration 20.0'
Recovery 20.0'

Latitude 30 12.010
Longitude 088 21.521

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	6.7	91.0	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	100.0		
#20	99.9		
#40	93.3		
#60	19.9		
#100	3.3		
#140	2.4		
#200	2.3		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4119 D_{85}= 0.3950 D_{60}= 0.3327
D_{50}= 0.3122 D_{30}= 0.2723 D_{15}= 0.2370
D_{10}= 0.2202 C_u= 1.51 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-199-12 A
Sample Number: 6485 (24) **Depth:** 0.0' **Date:** 12/07/12

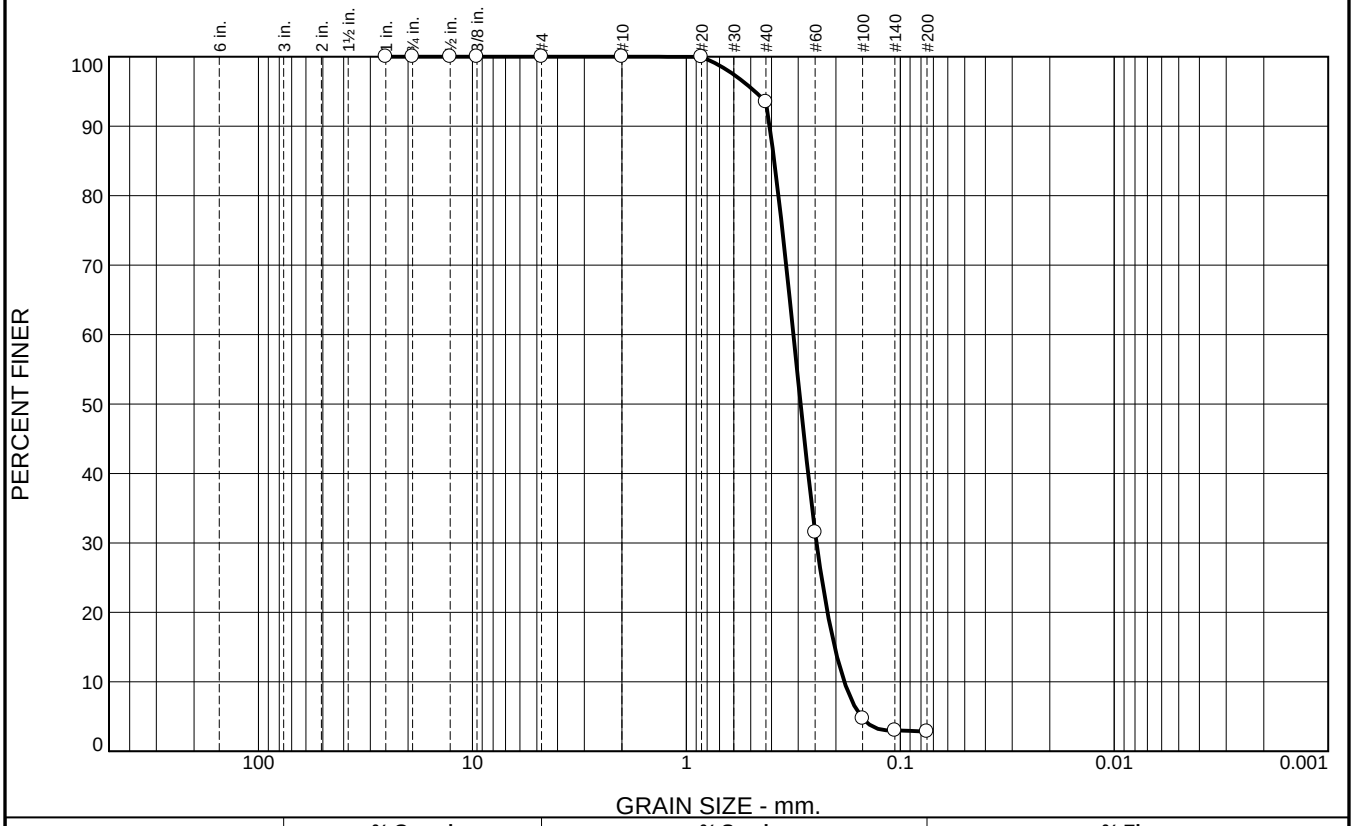
Thompson Engineering

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	6.5	90.7	2.8	

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	100.0		
#20	100.0		
#40	93.5		
#60	31.5		
#100	4.7		
#140	3.0		
#200	2.8		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4081 D_{85}= 0.3881 D_{60}= 0.3161
D_{50}= 0.2926 D_{30}= 0.2463 D_{15}= 0.2027
D_{10}= 0.1827 C_u= 1.73 C_c= 1.05

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-199-12 B
Sample Number: 6485 (25) **Depth:** 5.0' **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-PB-200-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-200-12	LOCATION COORDINATES: E = 1,132,603 N = 254,862	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: 25.9 Ft.	
		15. DATE BORING	STARTED: 12-13-12 / COMPLETED: 12-13-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -26.7 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
-26.7	0.0				
-28.7	2.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, trace clayey nodules, lt. gray (SP)	A	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3185 mm % Fines: 3
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, brown (SP-SM)	B	Classification: SP Color: 2.5Y 4/3-olive brown D50: 0.2803 mm % Fines: 2.2
			At El. -31.7 Ft., mostly fine-grained sand-sized quartz, few silt, interval siltier with depth, lt. gray to lt. brown	C	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.2484 mm % Fines: 2.9
-36.7	10.0		At El. -33.7 Ft., mostly fine-grained sand-sized quartz, few silt, siltier between 7 to 8 ft., lt. brown to lt. gray	D	Classification: SP Color: 2.5Y 5/2-grayish brown D50: 0.2966 mm % Fines: 3.1
-40.2	13.5		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)	NS	
-46.7	20.0		CLAY, fat, mostly clay, medium to high plasticity, greenish 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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19998° Long = -88.36372°

Project Mississippi Barrier Island Restoration Project

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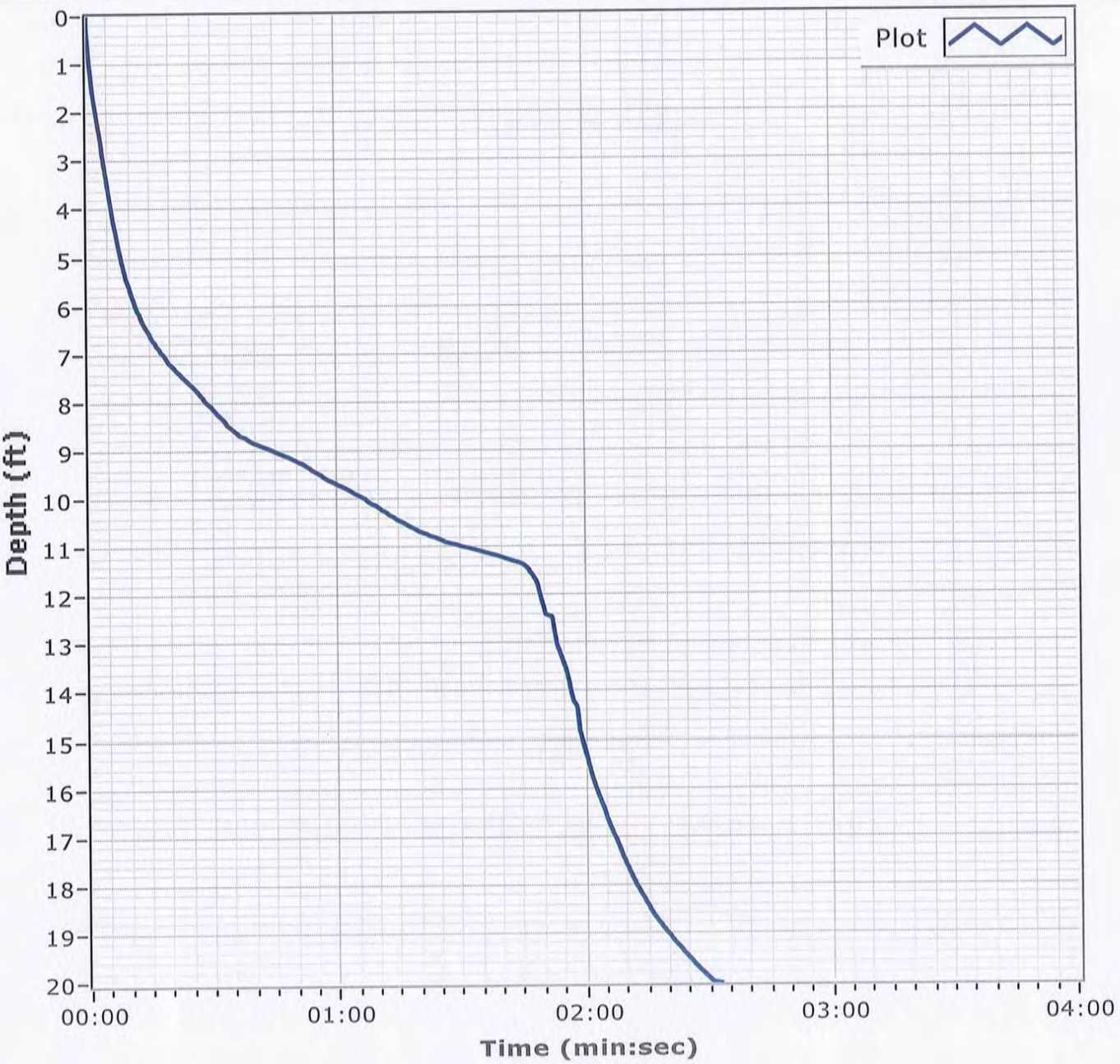
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Coordinate System Latitude / Longitude

Latitude 30 11.999
Longitude 088 21.823

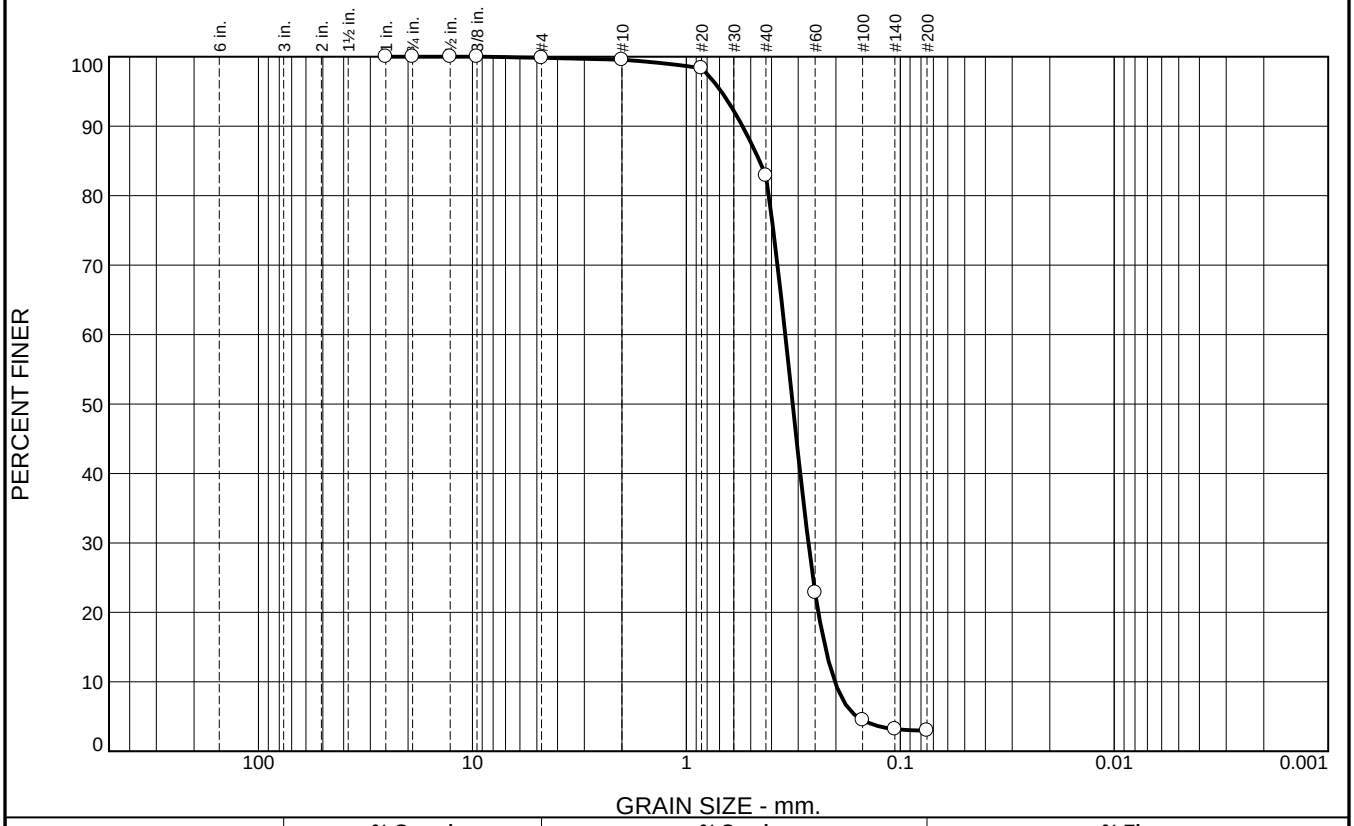
Date 12/13/2012
Start Time 11:01:34
End Time 11:04:07
Total Time 00:02:33

Water Depth 25.9'
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	0.2	0.2	16.7	79.9	3.0	

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	99.6		
#20	98.4		
#40	82.9		
#60	22.9		
#100	4.5		
#140	3.2		
#200	3.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5466 D_{85}= 0.4552 D_{60}= 0.3449
D_{50}= 0.3185 D_{30}= 0.2690 D_{15}= 0.2245
D_{10}= 0.2022 C_u= 1.71 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-200-12 A
Sample Number: 6485 (26) **Depth:** 0.0' **Date:** 12/07/12

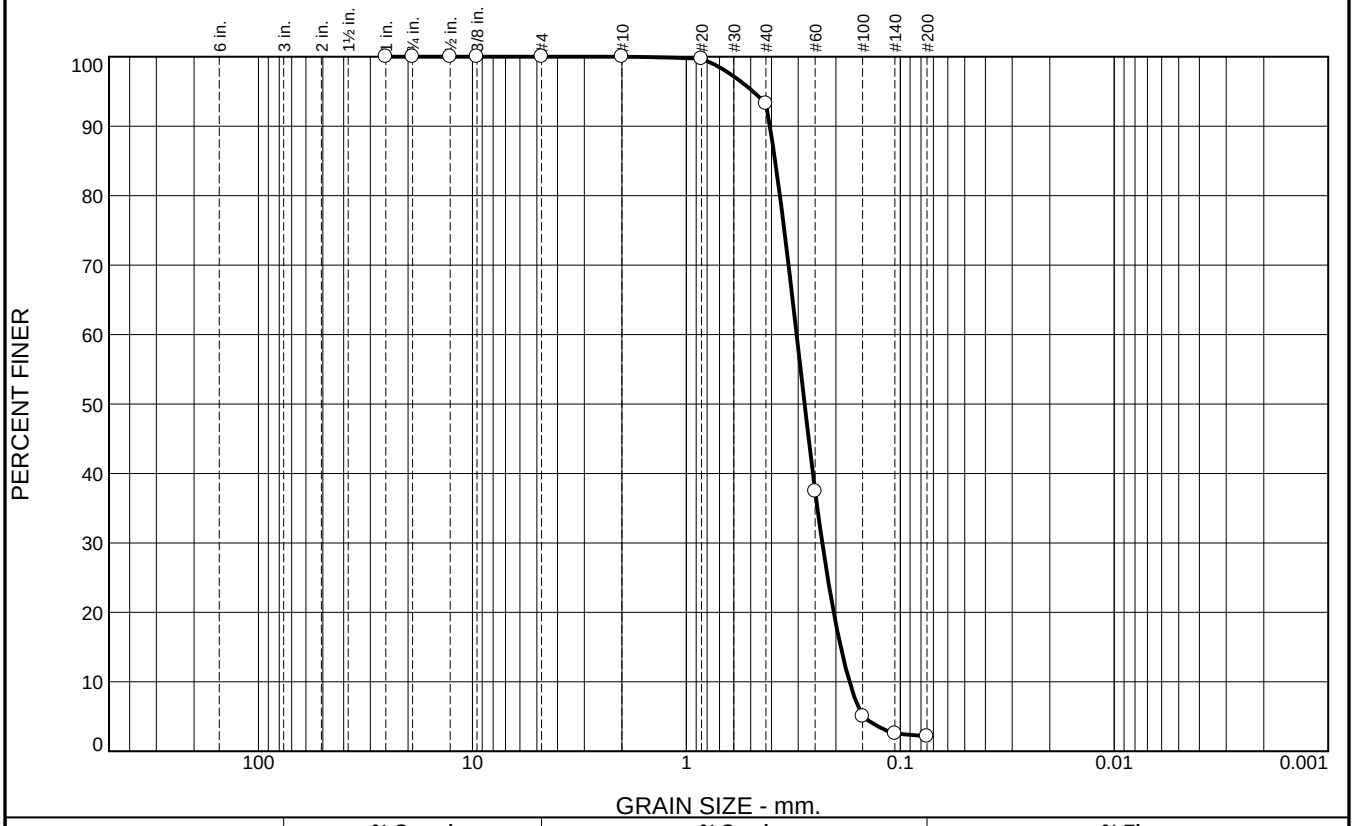
Thompson Engineering

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	6.8	91.0	2.2	

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	100.0		
#20	99.7		
#40	93.2		
#60	37.4		
#100	5.0		
#140	2.6		
#200	2.2		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4069 D_{85}= 0.3842 D_{60}= 0.3054
D_{50}= 0.2803 D_{30}= 0.2316 D_{15}= 0.1899
D_{10}= 0.1729 C_u= 1.77 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-200-12 B
Sample Number: 6485 (27) **Depth:** 2.0' **Date:** 12/07/12

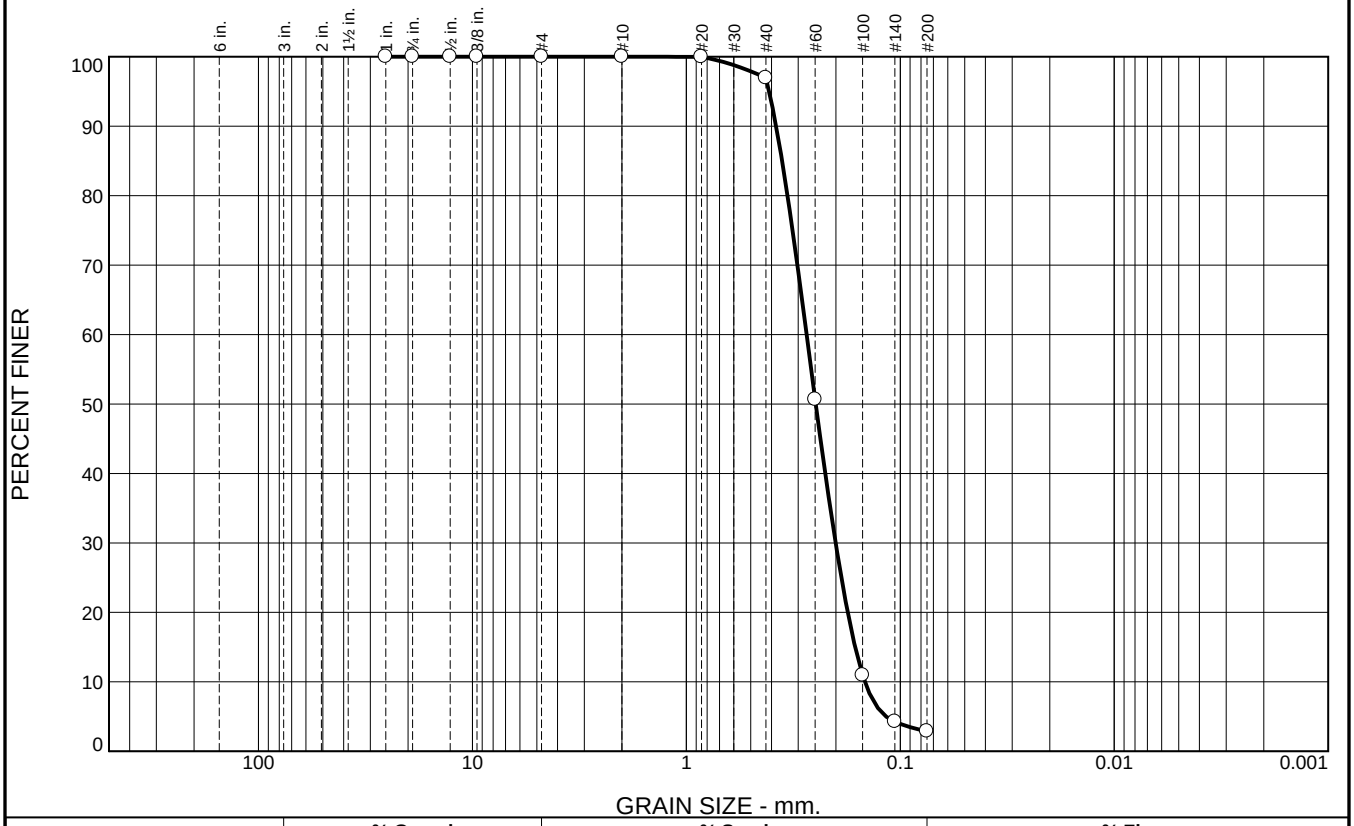
Thompson Engineering

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	3.1	94.0	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	100.0		
#20	100.0		
#40	96.9		
#60	50.6		
#100	11.0		
#140	4.3		
#200	2.9		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3803 D_{85}= 0.3567 D_{60}= 0.2742
D_{50}= 0.2484 D_{30}= 0.2006 D_{15}= 0.1627
D_{10}= 0.1464 C_u= 1.87 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-200-12 C
Sample Number: 6485 (28) **Depth:** 5.0' **Date:** 12/07/12

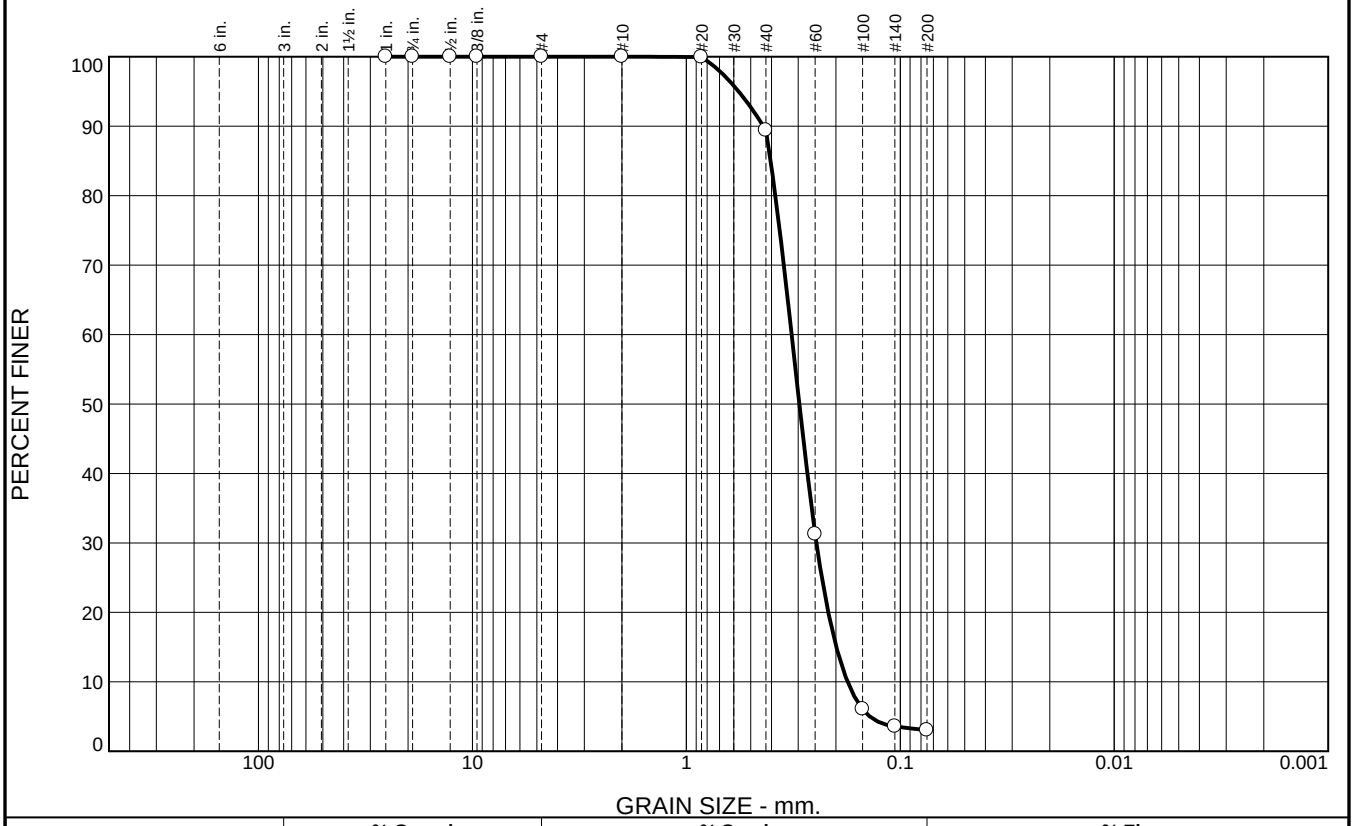
Thompson Engineering

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	10.6	86.3	3.1	

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	99.9		
#40	89.4		
#60	31.3		
#100	6.1		
#140	3.6		
#200	3.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4370 D_{85}= 0.4036 D_{60}= 0.3221
D_{50}= 0.2966 D_{30}= 0.2466 D_{15}= 0.1991
D_{10}= 0.1765 C_u= 1.82 C_c= 1.07

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-200-12 D
Sample Number: 6485 (29) **Depth:** 7.0' **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-PB-202-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-202-12	LOCATION COORDINATES: E = 1,137,303 N = 252,107	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: 36.3 Ft.	
		15. DATE BORING	STARTED: 12-19-12 / COMPLETED: 12-19-12
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: 19.8 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-35.9	0.0				
-37.0	1.1		CLAY, fat, mostly clay, few silt, trace fine-grained sand-sized quartz, very soft, medium to high plasticity, brownish gray (CH)	NS	
				A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3014 mm % Fines: 2.1
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP) At El. -38.4 Ft., mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, trace clayey nodules, lt. gray to white	B	Classification: SP Color: 5Y 7/2-light gray D50: 0.34 mm % Fines: 1.7
-43.4	7.5				
-43.8	7.9		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, brownish gray (SC)		
			CLAY, fat, mostly clay, medium to high plasticity, stiff, zones of trace fine-grained sand at 8.5 ft., greenish gray (CH)	NS	
-55.7	19.8				
			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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19235° Long = -88.34888°

Project Mississippi Barrier Island Restoration Project

AVS
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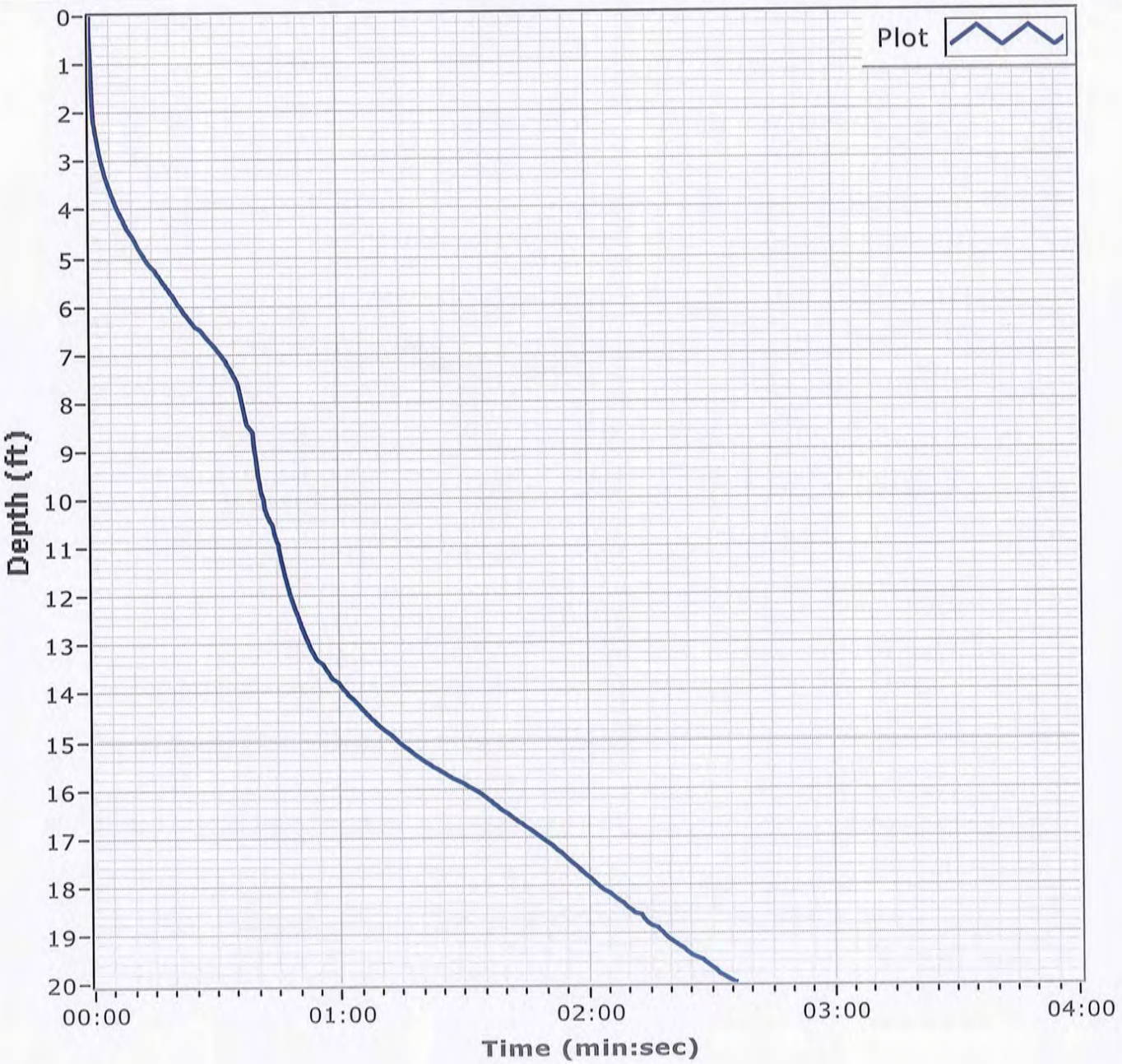
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Coordinate System
Latitude / Longitude

Latitude 30 11.541
Longitude 88 20.933

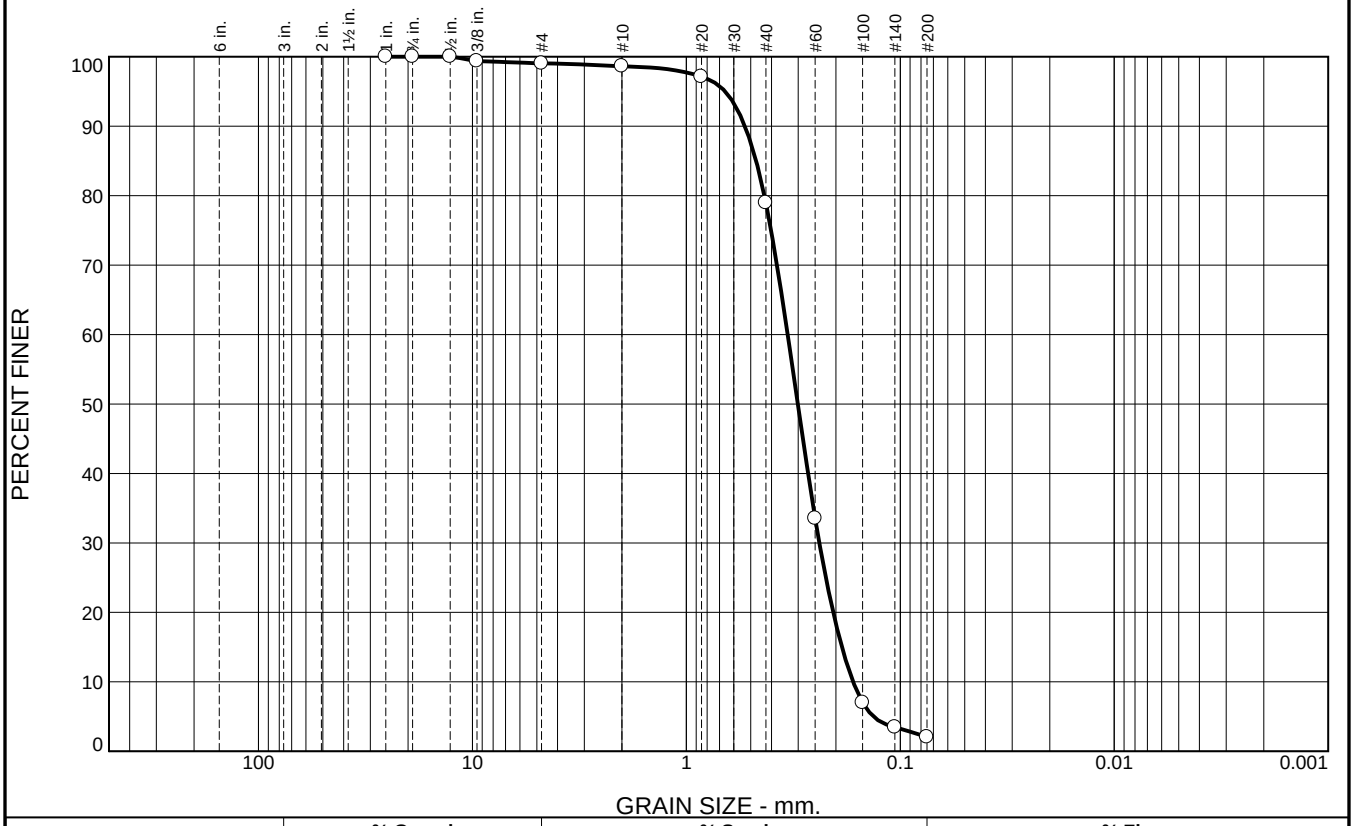
Date 12/19/2012
Start Time 14:00:54
End Time 14:03:30
Total Time 00:02:36

Water Depth 36.3'
Penetration 20.0'
Recovery 19.8'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.0	0.4	19.6	76.9	2.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.4		
#4	99.0		
#10	98.6		
#20	97.1		
#40	79.0		
#60	33.5		
#100	7.0		
#140	3.5		
#200	2.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5322 D_{85}= 0.4720 D_{60}= 0.3361
D_{50}= 0.3014 D_{30}= 0.2389 D_{15}= 0.1876
D_{10}= 0.1663 C_u= 2.02 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-202-12 A
Sample Number: 6494 (76) **Depth:** 1.1' **Date:** 12/26/12

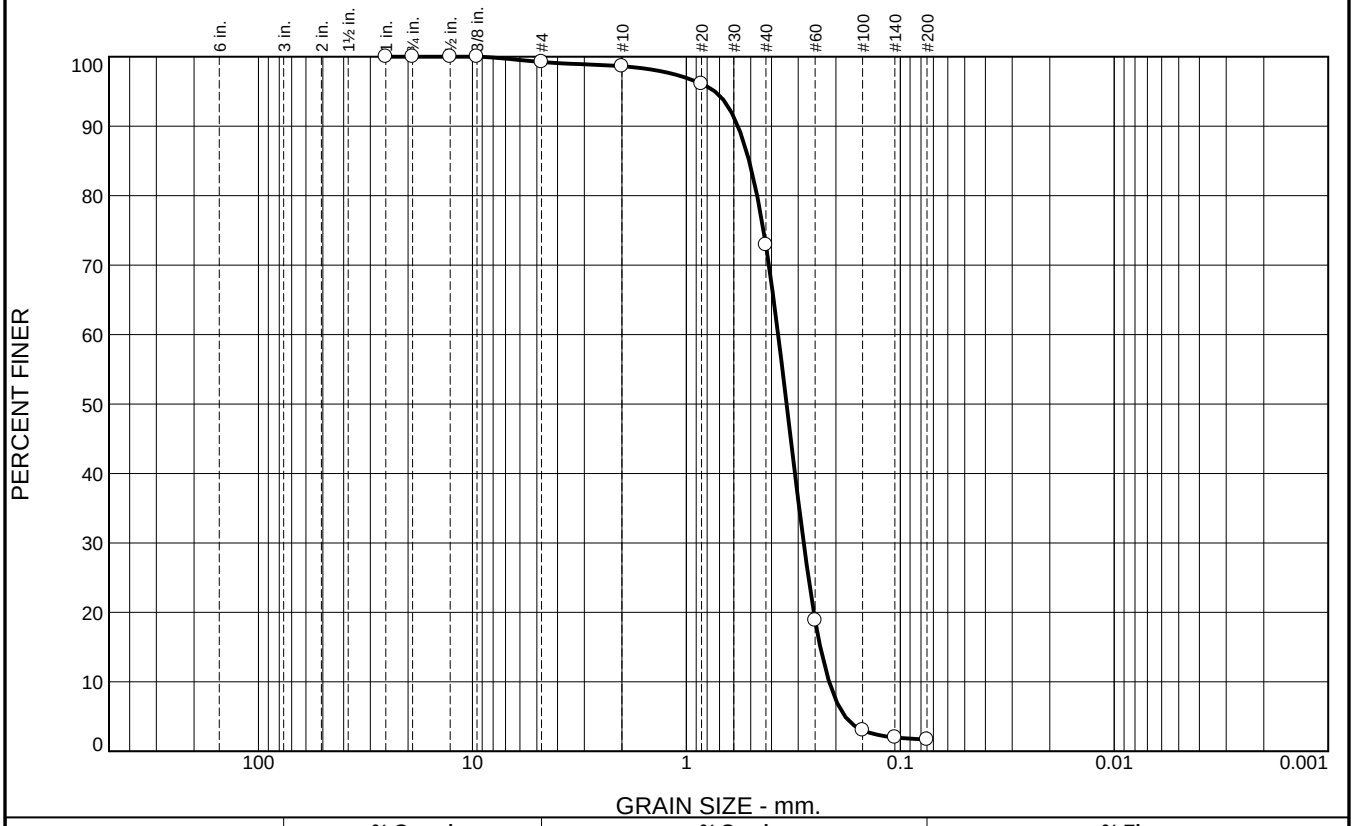
Thompson Engineering

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	0.8	0.6	25.7	71.2	1.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.2		
#10	98.6		
#20	96.1		
#40	72.9		
#60	18.8		
#100	3.0		
#140	2.0		
#200	1.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5738 D_{85}= 0.5087 D_{60}= 0.3723
D_{50}= 0.3400 D_{30}= 0.2831 D_{15}= 0.2365
D_{10}= 0.2150 C_u= 1.73 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-202-12 B
Sample Number: 6494 (77) **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-PB-203-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-203-12	LOCATION COORDINATES: E = 1,135,612 N = 252,154	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: 35.1 Ft.	
		15. DATE BORING	STARTED: 12-19-12 / COMPLETED: 12-19-12
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: 19.6 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-34.9	0.0				
-37.9	3.0		CLAY, fat, mostly clay, very soft, slightly sandy, brownish gray (CH)	NS	
-40.8	5.9		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little coarse-grained sand-sized quartz, little shell fragments, trace fines, gray to lt. pale brown (SP)	A	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3135 mm % Fines: 4.5
-42.5	7.6		SILT, inorganic-L, mostly silt, some fine-grained sand-sized quartz, gray (ML)		
-43.2	8.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, lt. gray to white (SP)		
-54.5	19.6		CLAY, fat, mostly clay, trace shell fragments, medium to high plasticity, stiff, greenish 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.

0 5 10 15 20 25

Lat = 30.19250° Long = -88.35423°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
SERVICES

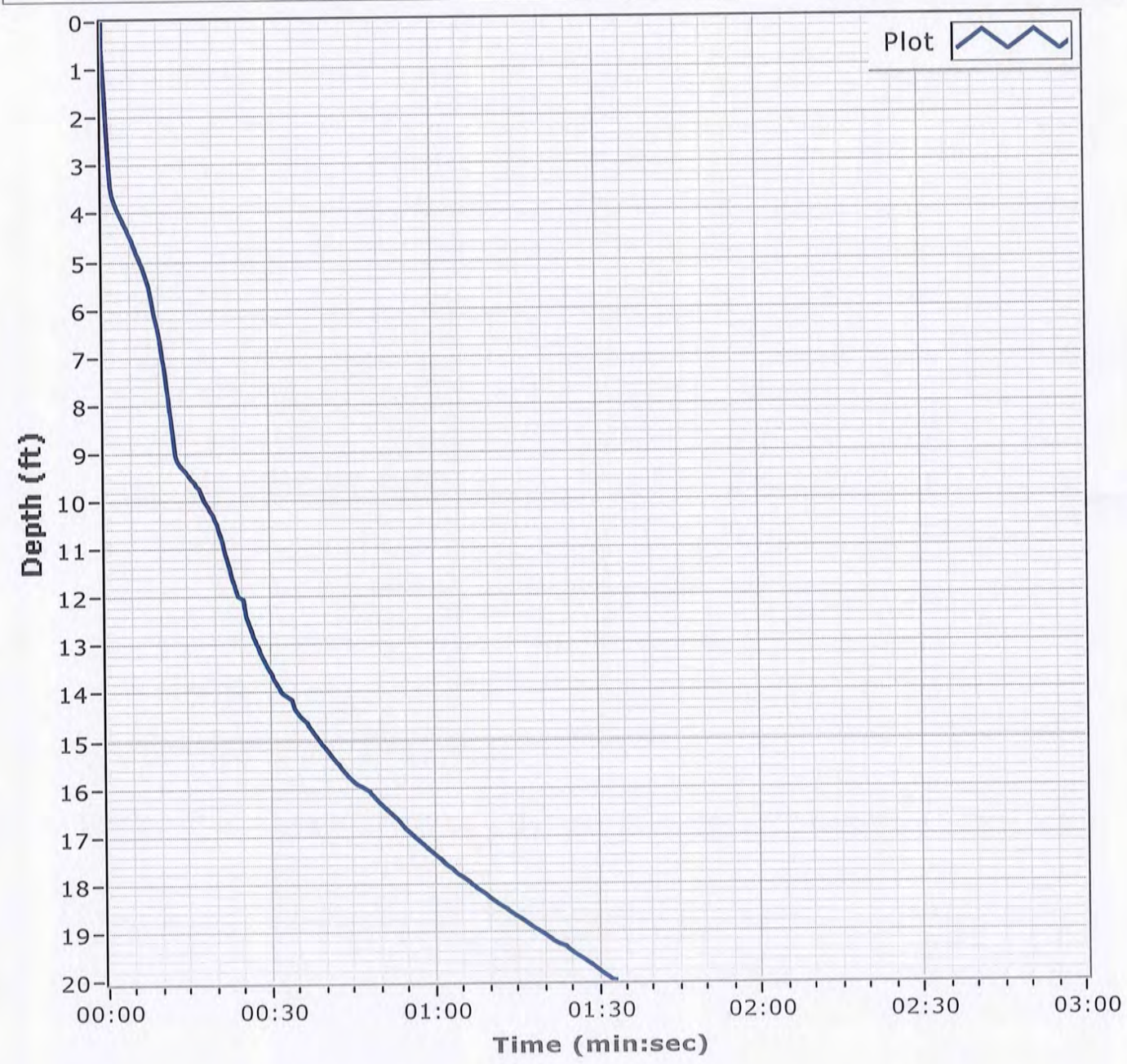
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Latitude / Longitude

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Total Time 00:01:33

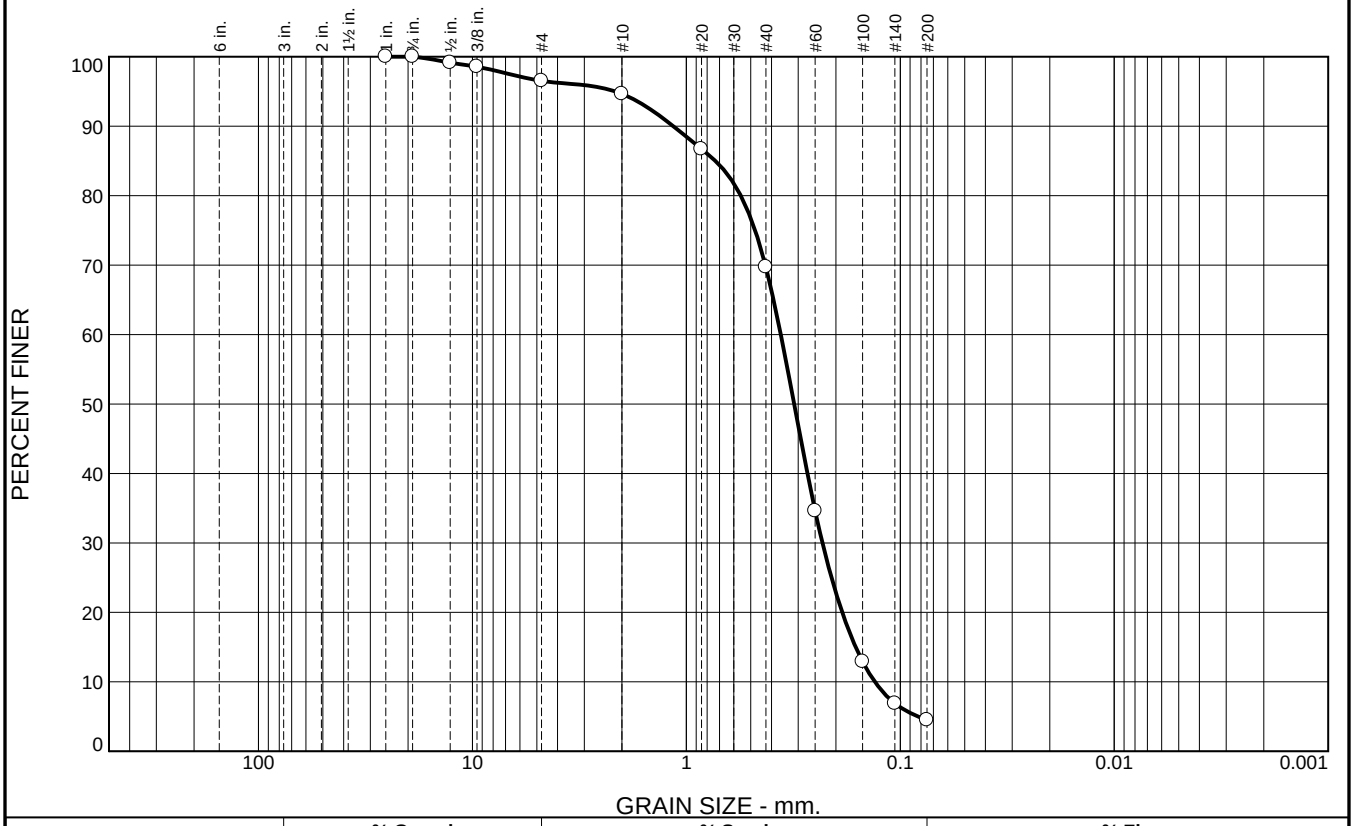
Water Depth 35.1'
Penetration 20.0'
Recovery 19.6'

Latitude 30 11.550
Longitude 88 21.254

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.5	1.9	24.9	65.2	4.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	99.1		
.375	98.5		
#4	96.5		
#10	94.6		
#20	86.7		
#40	69.7		
#60	34.6		
#100	12.9		
#140	6.9		
#200	4.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.1518 D_{85}= 0.7323 D_{60}= 0.3619
D_{50}= 0.3135 D_{30}= 0.2312 D_{15}= 0.1618
D_{10}= 0.1315 C_u= 2.75 C_c= 1.12

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-203-12 A
Sample Number: 6494 (78) **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**

Boring Designation BI-PB-204-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-204-12	LOCATION COORDINATES: E = 1,134,184 N = 252,184	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: 34.7 Ft.	
		15. DATE BORING	STARTED: 12-19-12 / COMPLETED: 12-19-12
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: 19.3 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-34.5	0.0				
-37.5	3.0		SILT, inorganic-L, mostly silt, some clay, some fine-grained sand-sized quartz, grayish brown (ML)	NS	
-39.1	4.6		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay nodules, gray (SM)	A	Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.2616 mm % Fines: 9.5
-44.1	9.6		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, clayey streaks throughout zone, dense, lt. gray to white (SP)	B	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3191 mm % Fines: 3.8
-46.4	11.9		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, brownish gray (SC)	NS	
-49.8	15.3		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, clayey streaks throughout zone, dense, lt. gray to white (SP)	C	Classification: SP Color: 2.5Y 7/1-light gray D50: 0.2925 mm % Fines: 1.8
-53.8	19.3		CLAY, fat, mostly clay, medium to high plasticity, greenish 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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19260° Long = -88.35875°

Project Mississippi Barrier Island Restoration Project

AVS
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S E R V I C E S

Core Identifier BI-PB-204-12

Coordinate System
Latitude / Longitude

Latitude 30 11.556

Longitude 88 21.525

Date 12/19/2012

Start Time 15:03:16

End Time 15:07:16

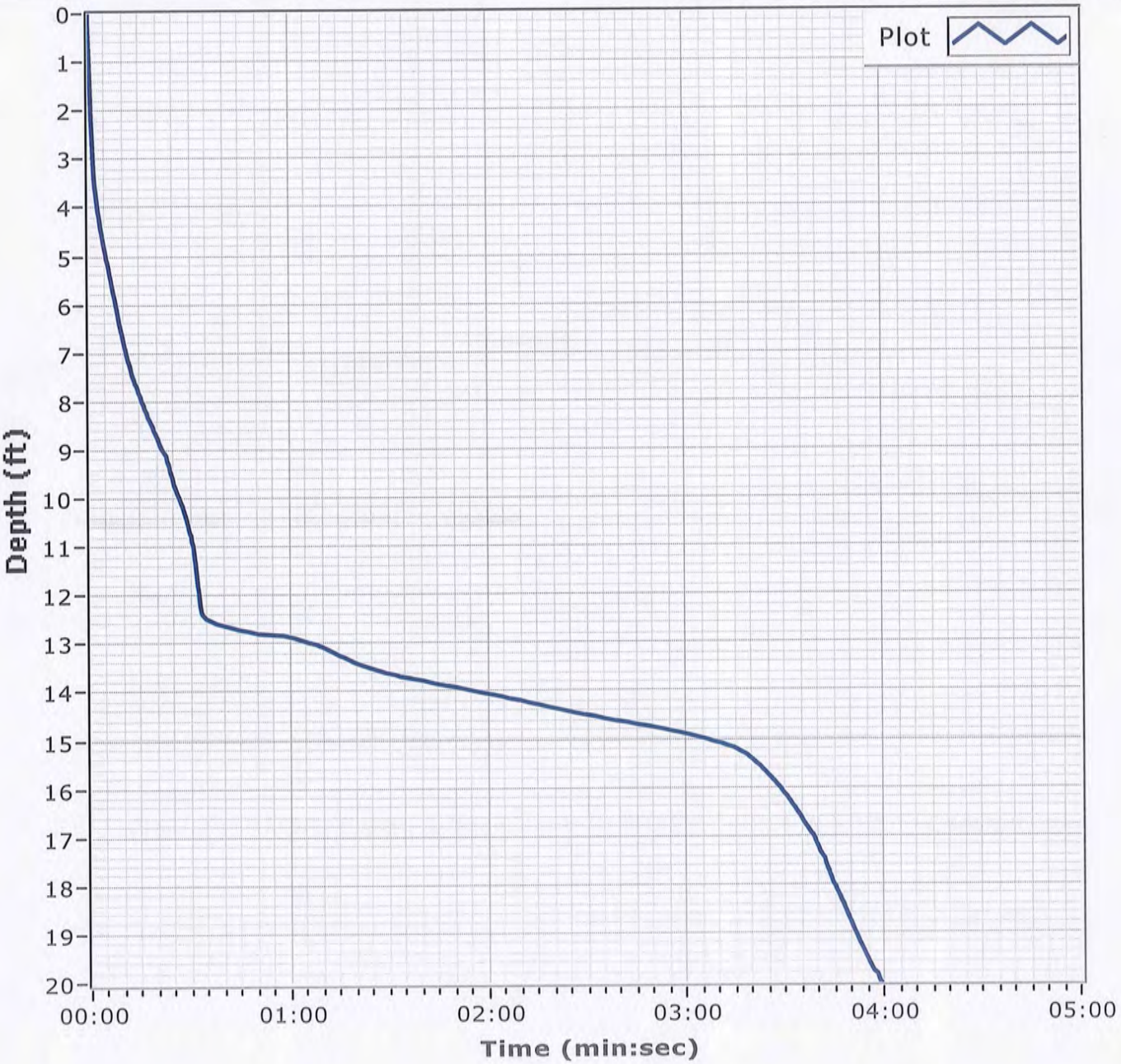
Total Time 00:03:59

Water Depth 34.7'

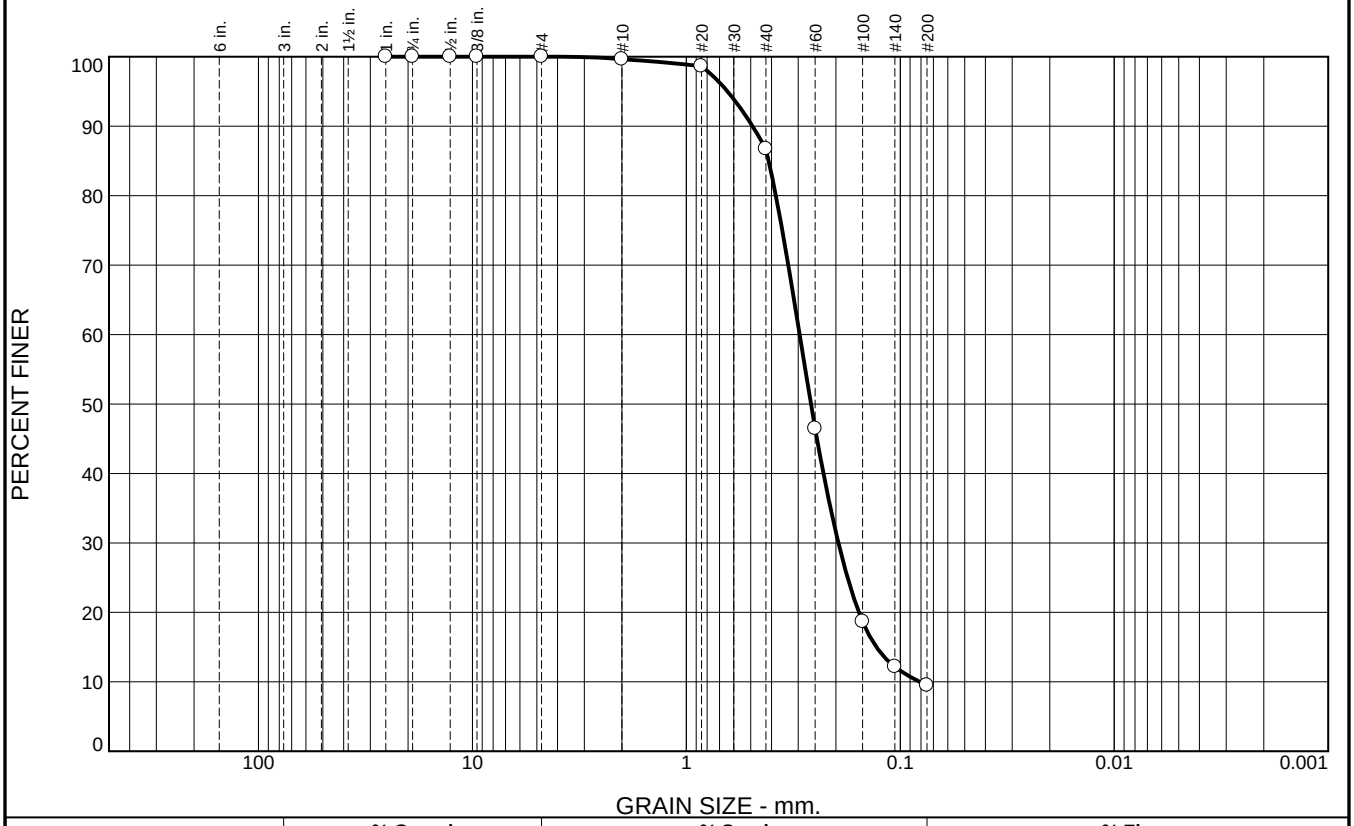
Penetration 20.0'

Recovery 19.3'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.4	12.9	77.2	9.5	

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	99.6		
#20	98.6		
#40	86.7		
#60	46.5		
#100	18.7		
#140	12.2		
#200	9.5		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4907 D_{85}= 0.4123 D_{60}= 0.2956
D_{50}= 0.2616 D_{30}= 0.1947 D_{15}= 0.1295
D_{10}= 0.0811 C_u= 3.65 C_c= 1.58

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-204-12 A
Sample Number: 6494 (79) **Depth:** 3.0' **Date:** 12/26/12

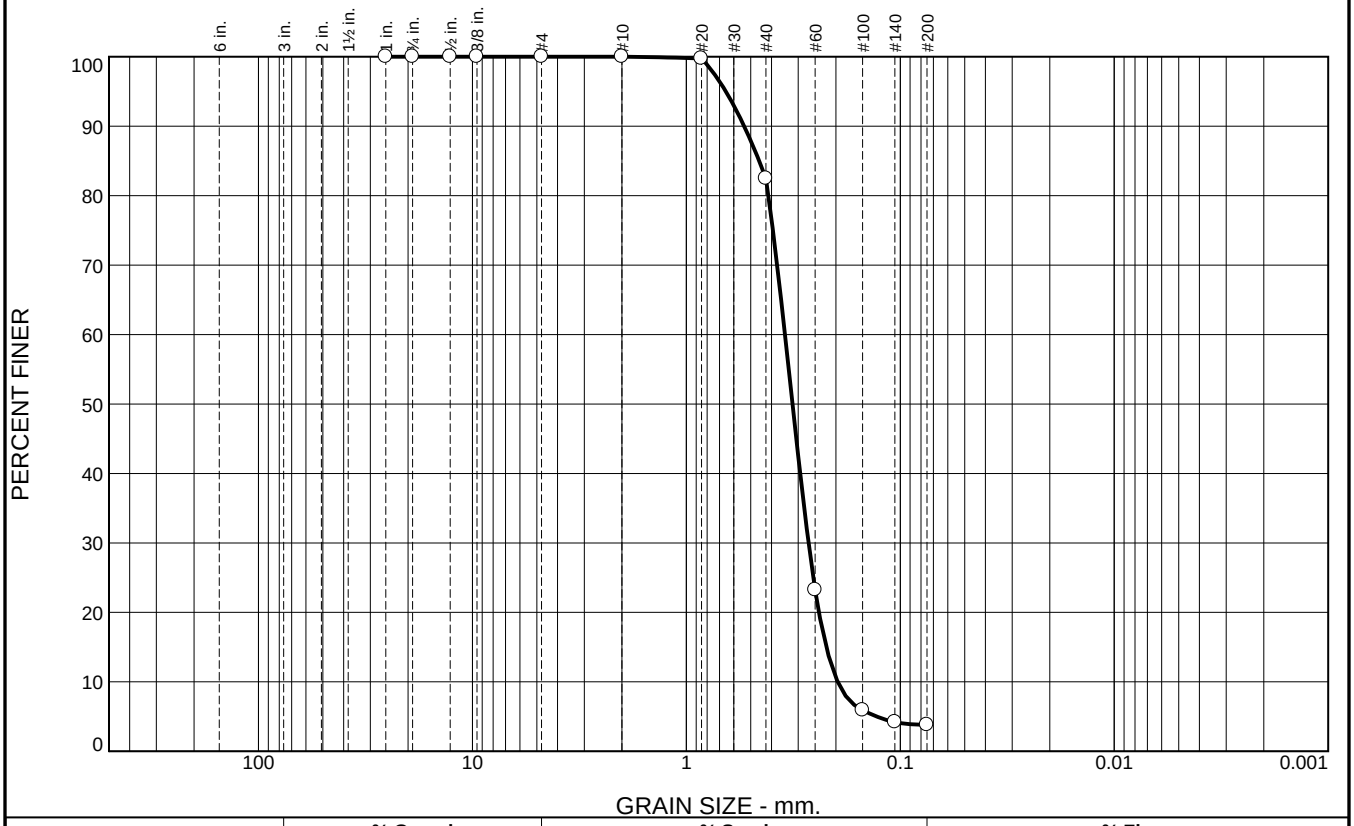
Thompson Engineering

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	0.0	0.0	17.5	78.7	3.8	

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	100.0		
#20	99.7		
#40	82.5		
#60	23.2		
#100	5.9		
#140	4.2		
#200	3.8		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5368 D_{85}= 0.4570 D_{60}= 0.3459
D_{50}= 0.3191 D_{30}= 0.2686 D_{15}= 0.2217
D_{10}= 0.1962 C_u= 1.76 C_c= 1.06

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-204-12 B
Sample Number: 6494 (80) **Depth:** 4.6' **Date:** 12/26/12

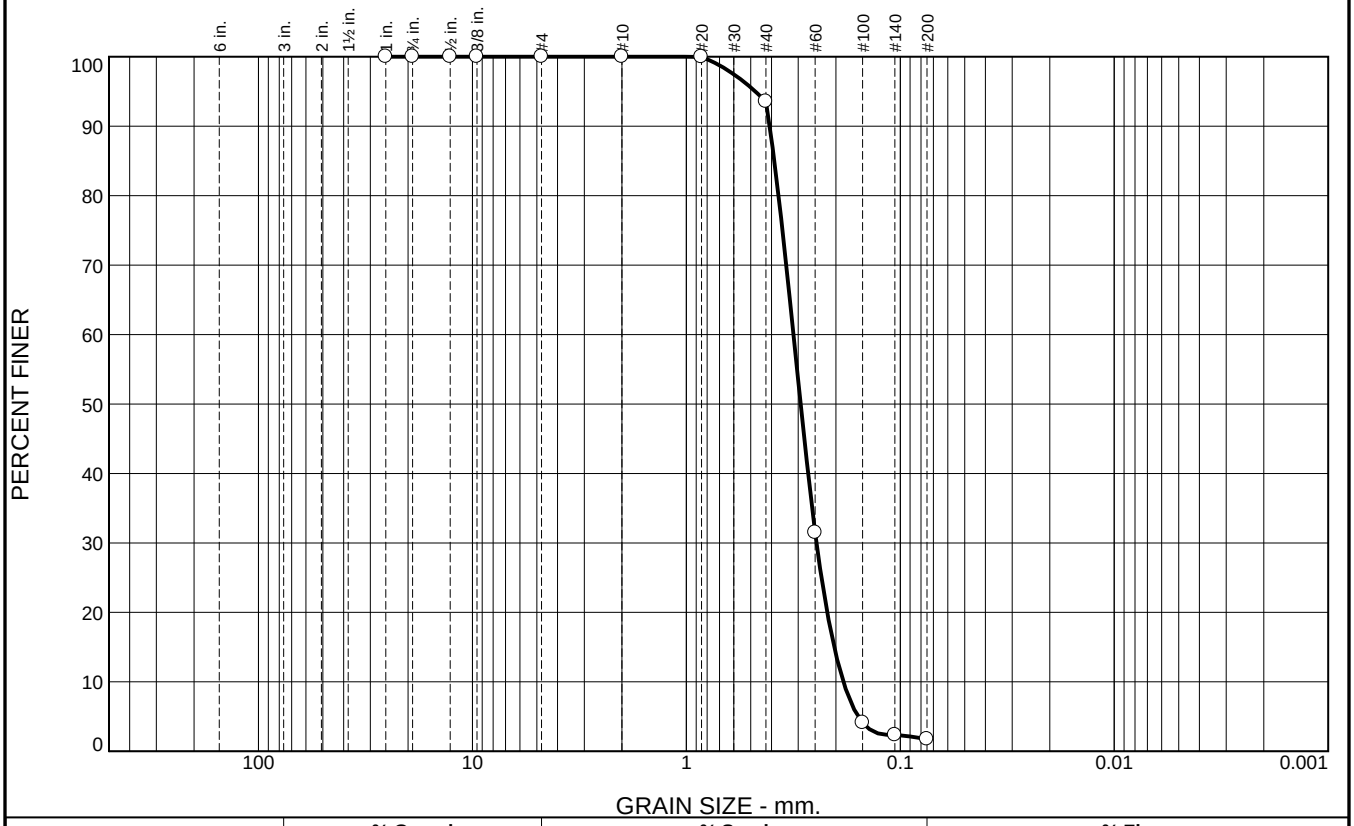
Thompson Engineering

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	0.0	6.5	91.7	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	100.0		
#20	100.0		
#40	93.5		
#60	31.5		
#100	4.1		
#140	2.3		
#200	1.8		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4078 D_{85}= 0.3878 D_{60}= 0.3158
D_{50}= 0.2925 D_{30}= 0.2464 D_{15}= 0.2037
D_{10}= 0.1847 C_u= 1.71 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-204-12 C
Sample Number: 6494 (81) **Depth:** 11.9' **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-PB-205-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-205-12	LOCATION COORDINATES: E = 1,132,611 N = 252,131	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: 12-19-12 / COMPLETED: 12-19-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -32.5 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-32.5	0.0				
-35.1	2.6		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, gray (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.2473 mm % Fines: 3.9
-35.8	3.3		SILT, inorganic-L, mostly silt, some clay, some fine-grained sand-sized quartz, brownish gray (ML)	NS	
-39.7	7.2		SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, trace shell fragments, trace organic matter, organic staining, lt. brown (SM)	B	Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.257 mm % Fines: 6.2
-47.1	14.6		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, clayey streaks throughout interval, lt. brown to lt. gray (SP)	C	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3122 mm % Fines: 3.3
-51.6	19.1		CLAY, fat, mostly clay, medium to high plasticity, few sandy lenses throughout interval, greenish 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.		

0 5 10 15 20 25

Lat = 30.19247° Long = -88.36373°

Project Mississippi Barrier Island Restoration Project

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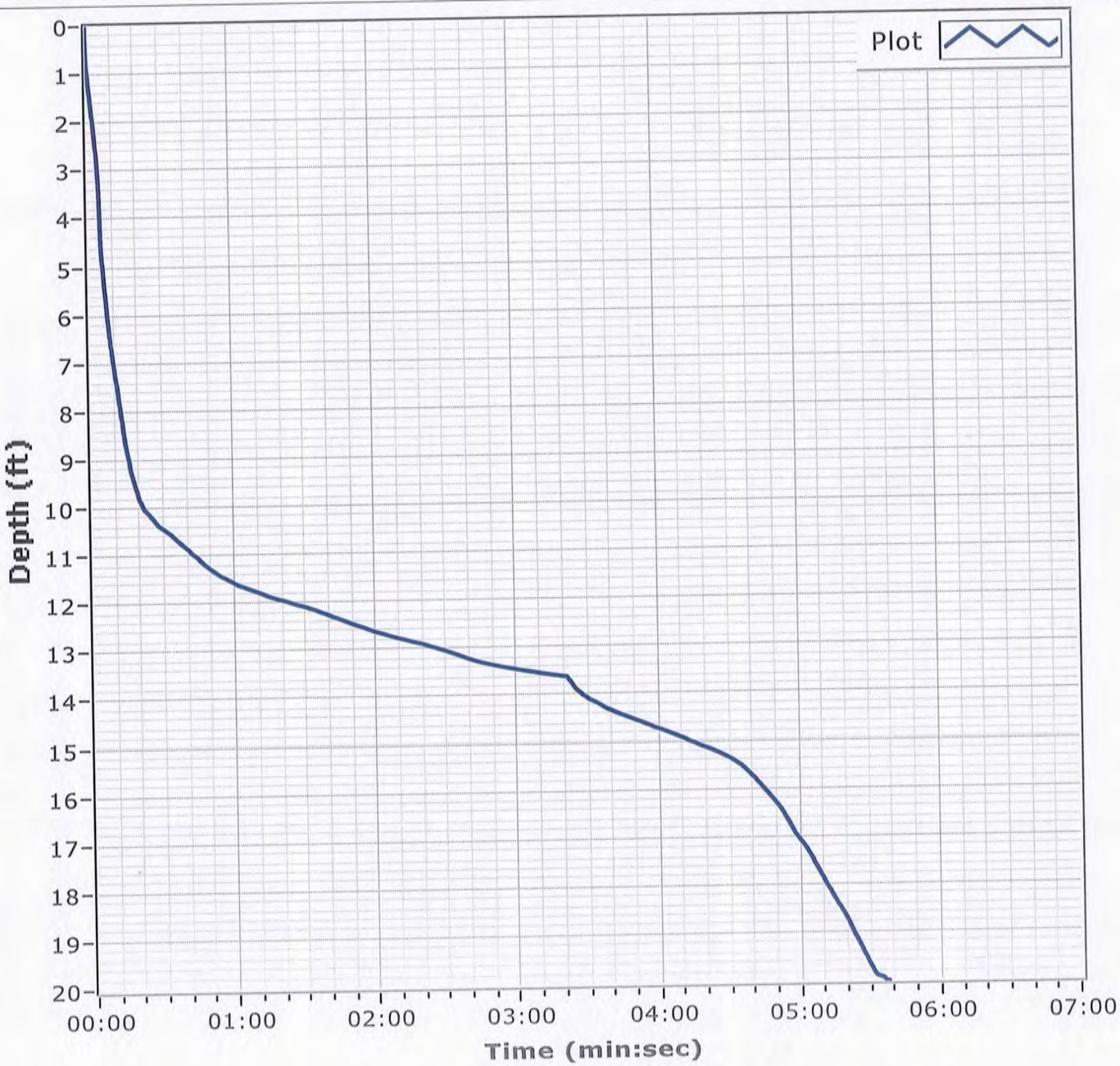
Core Identifier BI-PB-205-12
Coordinate System
Latitude / Longitude

Latitude 30 11.548 N
Longitude 88 21.824 W

Date 12/19/2012
Start Time 15:32:50
End Time 15:38:28
Total Time 00:05:38

Water Depth 32.7
Penetration 20.0'
Recovery 19.2

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.3	1.3	13.4	80.1	3.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	98.7		
#10	97.4		
#20	94.2		
#40	84.0		
#60	51.0		
#100	7.5		
#140	4.4		
#200	3.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5346 D_{85}= 0.4381 D_{60}= 0.2779
D_{50}= 0.2473 D_{30}= 0.2016 D_{15}= 0.1701
D_{10}= 0.1577 C_u= 1.76 C_c= 0.93

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-205-12 A
Sample Number: 6494 (82) **Depth:** 0.0' **Date:** 12/26/12

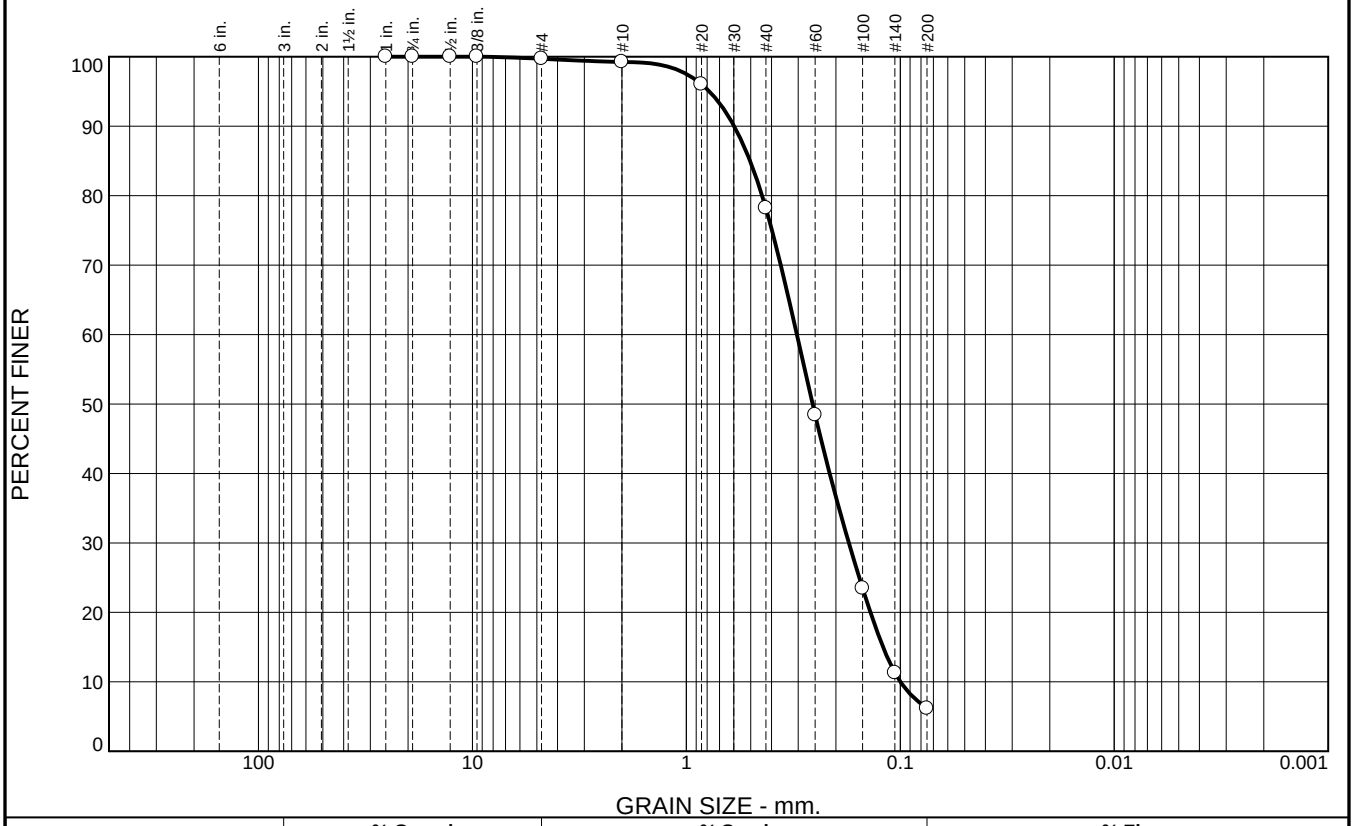
Thompson Engineering

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	0.3	0.5	21.0	72.0	6.2	

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	99.2		
#20	96.0		
#40	78.2		
#60	48.4		
#100	23.5		
#140	11.3		
#200	6.2		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5976 D_{85}= 0.5038 D_{60}= 0.3045
D_{50}= 0.2570 D_{30}= 0.1741 D_{15}= 0.1204
D_{10}= 0.0999 C_u= 3.05 C_c= 1.00

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-205-12 B
Sample Number: 6494 (83) **Depth:** 3.3' **Date:** 12/26/12

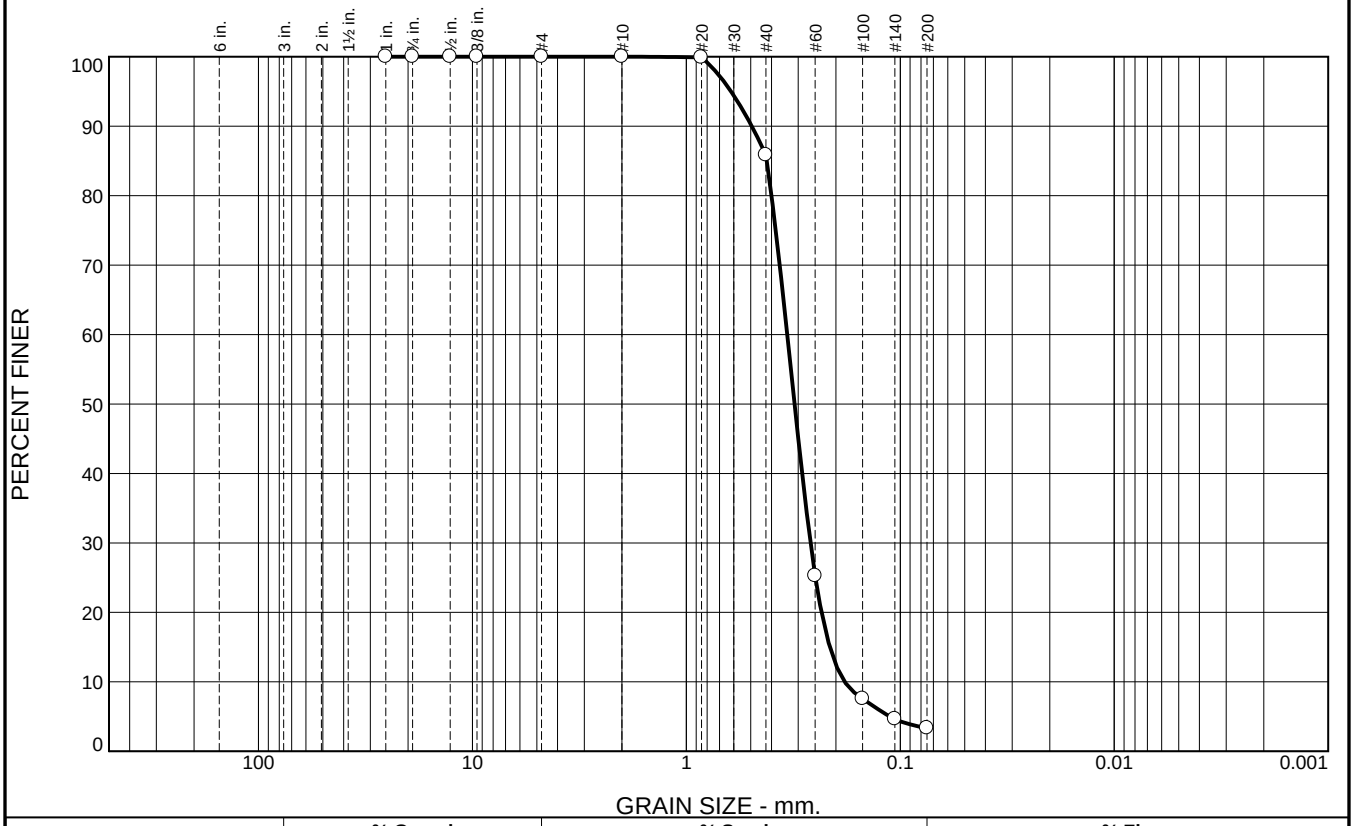
Thompson Engineering

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	0.0	14.1	82.6	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	100.0		
#20	99.9		
#40	85.9		
#60	25.3		
#100	7.6		
#140	4.7		
#200	3.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4947 D_{85}= 0.4209 D_{60}= 0.3376
D_{50}= 0.3122 D_{30}= 0.2629 D_{15}= 0.2135
D_{10}= 0.1821 C_u= 1.85 C_c= 1.12

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-205-12 C
Sample Number: 6494 (84) **Depth:** 7.2' **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-PB-207-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-207-12	LOCATION COORDINATES: E = 1,143,123 N = 252,732	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: 37.5 Ft.	
		15. DATE BORING	STARTED: 12-11-12 / COMPLETED: 12-11-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -37.3 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
-37.3	0.0				
-38.6	1.3		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, some silt, trace shell fragments, brownish gray (SC)		
			CLAY, fat, mostly clay, trace fine-grained, sand-sized quartz lenses, medium to high plasticity, greenish gray (CH)	NS	
-53.9	16.6				
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, greenish 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.

0 5 10 15 20 25

Lat = 30.19400° Long = -88.33045°

Project Mississippi Barrier Island Restoration Project

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AMERICAN VIBRACORE SERVICES

Core Identifier BI-PB-207-12

Coordinate System
Latitude / Longitude

Latitude 33 11.640

Longitude 088 19.827

Date 12/11/2012

Start Time 13:01:58

End Time 13:08:35

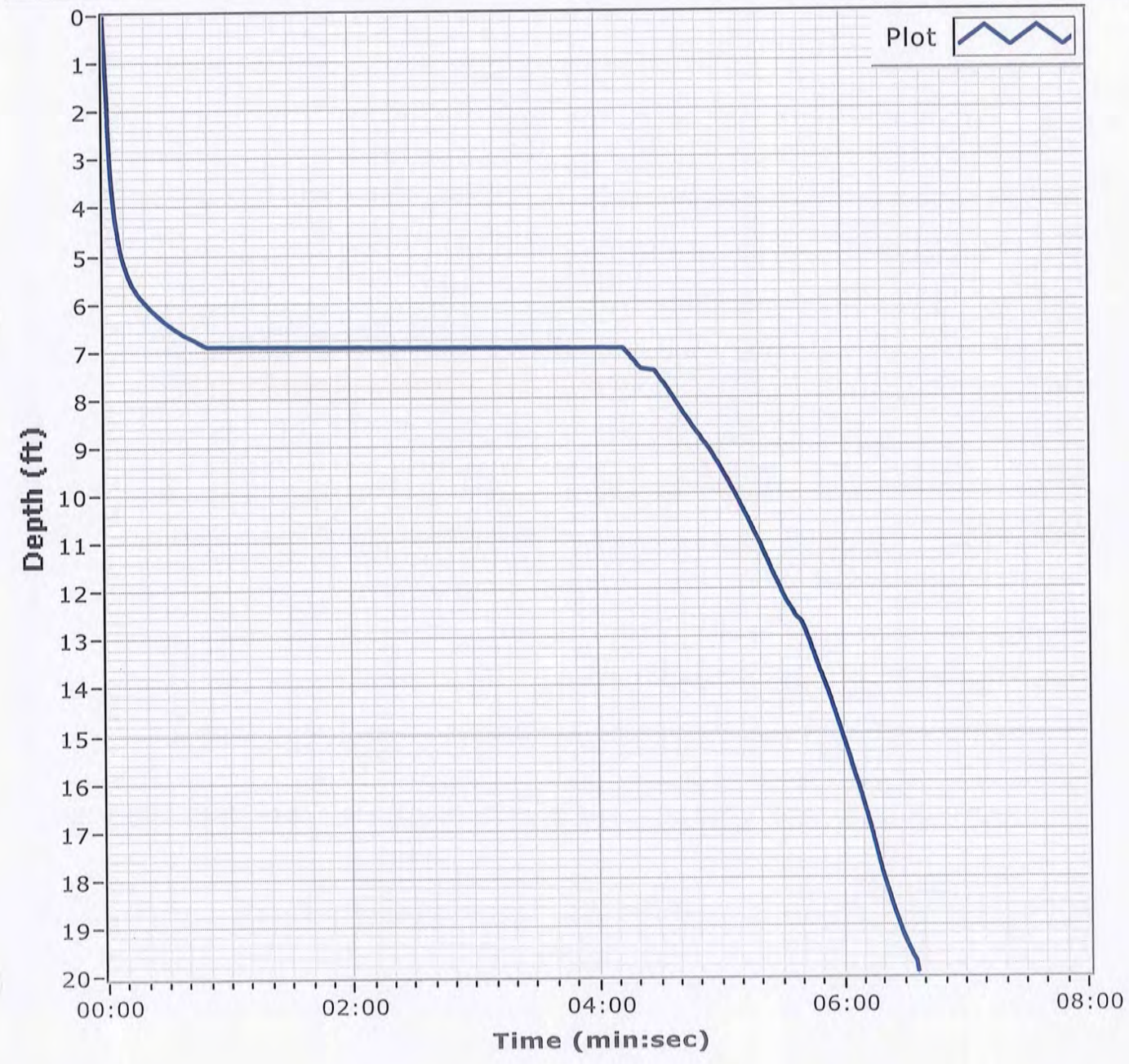
Total Time 00:06:36

Water Depth 37.5'

Penetration 20.0'

Recovery 16.6'

Comments



Boring Designation BI-PB-208-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-208-12	LOCATION COORDINATES: E = 1,144,019 N = 255,227	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: 32.8 Ft.	
		15. DATE BORING	STARTED: 12-06-12 / COMPLETED: 12-06-12
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: 11.9 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-32.0	0.0				
-34.6	2.6		SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, trace shell fragments, some clay nodules from 1.3 to 2.5 ft., pale brown (SP-SM)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3431 mm % Fines: 3.6
-43.9	11.9		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace clayey nodules throughout, lt. gray to white (SP)	B	Classification: SP Color: 2.5Y 8/1.5- D50: 0.448 mm % Fines: 0.8
				C	Classification: SP Color: 2.5Y 8/1-white D50: 0.4003 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.	NS	

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20085° Long = -88.32758°

Project Mississippi Barrier Island Restoration Project

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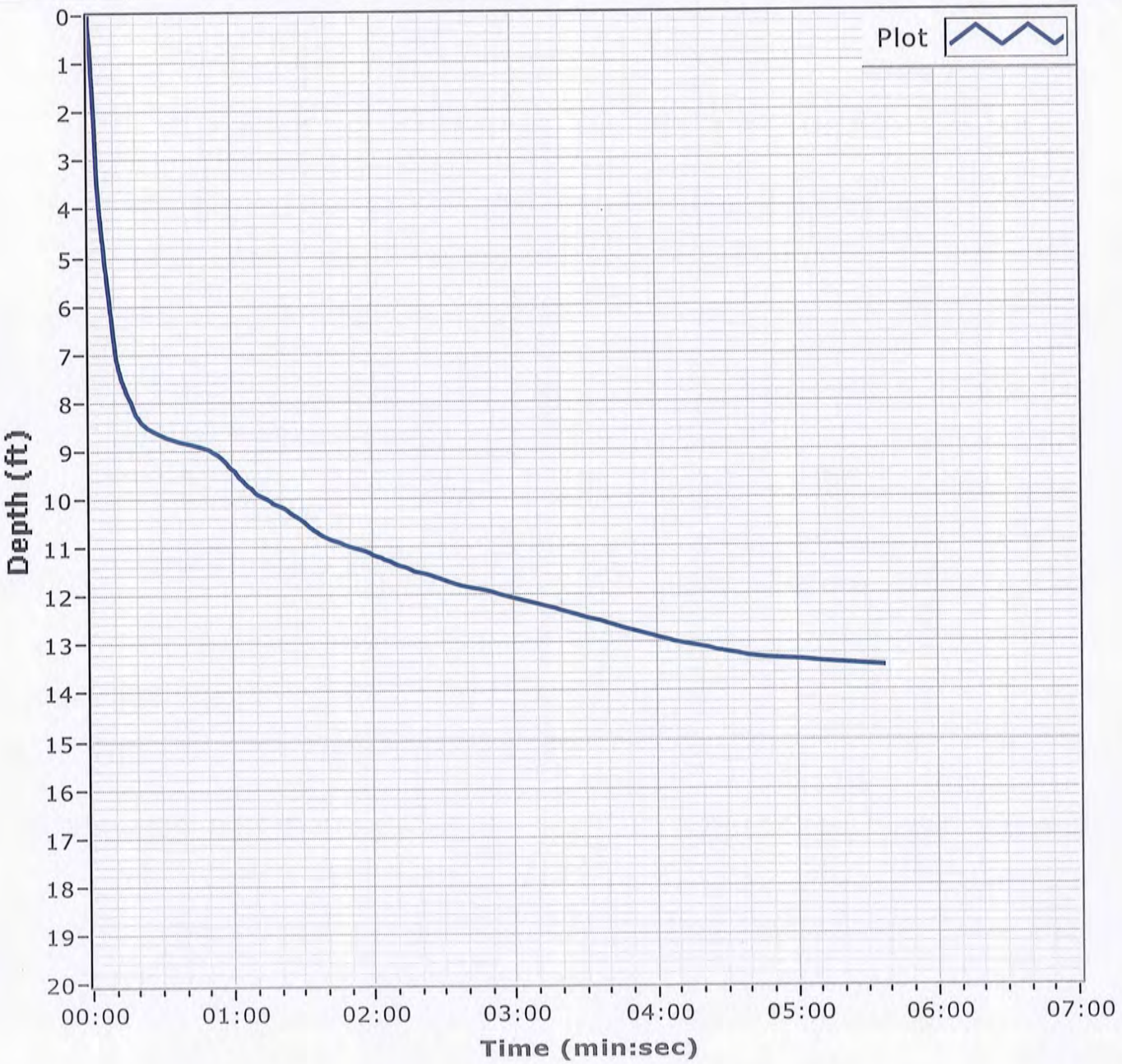
Core Identifier BI-PB-208-12
Coordinate System
Latitude / Longitude

Latitude 30 12.051
Longitude 088 19.655

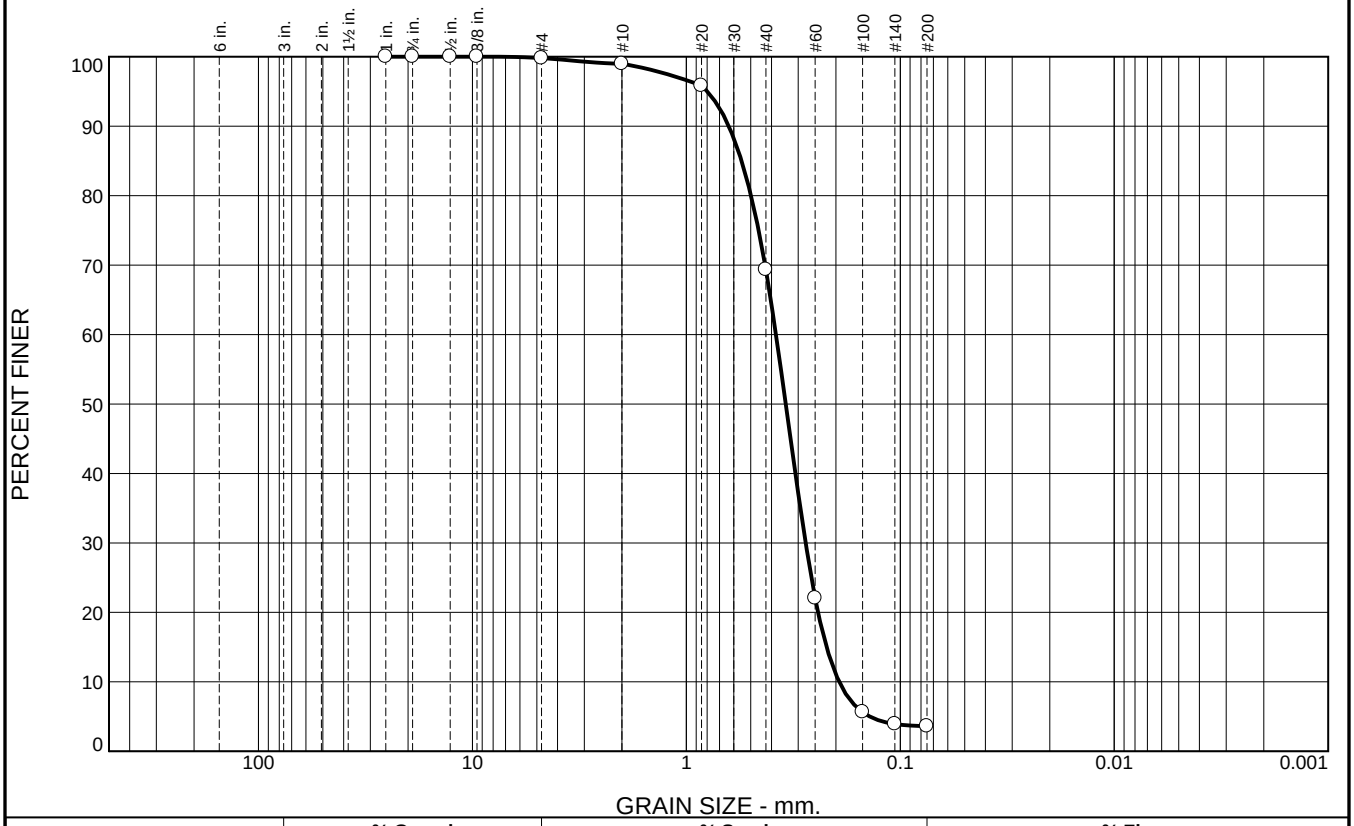
Date 12/06/2012
Start Time 15:55:51
End Time 16:01:29
Total Time 00:05:37

Water Depth 32.8'
Penetration 13.5'
Recovery 11.9'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.8	29.6	65.8	3.6	

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	95.8		
#40	69.4		
#60	22.0		
#100	5.6		
#140	3.9		
#200	3.6		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6332 D_{85}= 0.5518 D_{60}= 0.3811
D_{50}= 0.3431 D_{30}= 0.2771 D_{15}= 0.2210
D_{10}= 0.1931 C_u= 1.97 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-208-12 A
Sample Number: 6480 (47) **Depth:** 0.0' **Date:** 12/07/12

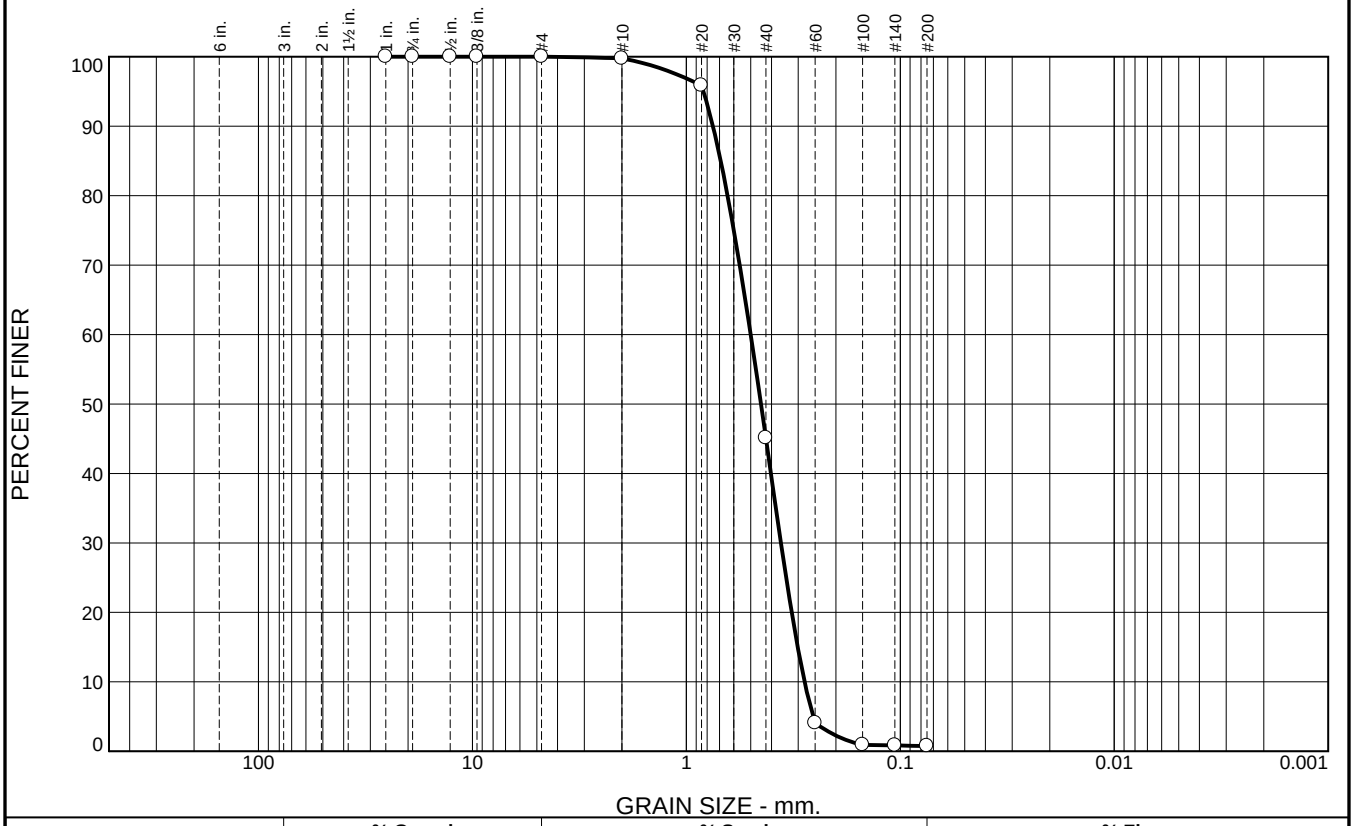
Thompson Engineering

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	0.2	54.7	44.3	0.8	

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	99.8		
#20	95.9		
#40	45.1		
#60	4.1		
#100	0.9		
#140	0.8		
#200	0.8		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.7512 D_{85}= 0.6908 D_{60}= 0.5005
D_{50}= 0.4480 D_{30}= 0.3613 D_{15}= 0.3018
D_{10}= 0.2804 C_u= 1.78 C_c= 0.93

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-208-12 B
Sample Number: 6480 (48) **Depth:** 2.6' **Date:** 12/07/12

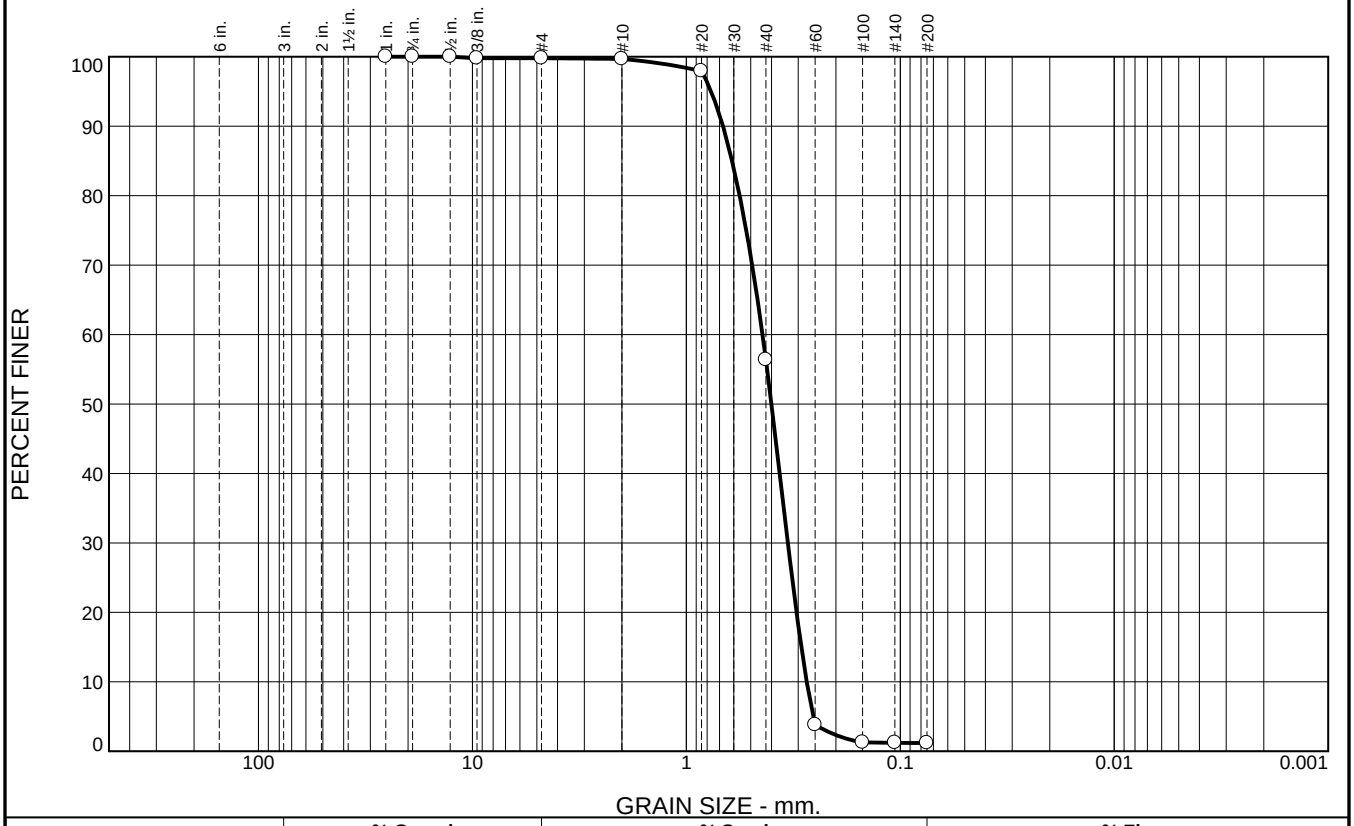
Thompson Engineering

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	0.2	0.1	43.3	55.2	1.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.8		
#4	99.8		
#10	99.7		
#20	97.9		
#40	56.4		
#60	3.8		
#100	1.3		
#140	1.2		
#200	1.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6744 D_{85}= 0.6114 D_{60}= 0.4406
D_{50}= 0.4003 D_{30}= 0.3355 D_{15}= 0.2903
D_{10}= 0.2741 C_u= 1.61 C_c= 0.93

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-208-12 C
Sample Number: 6480 (49) **Depth:** 6.9' **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-PB-209-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-209-12	LOCATION COORDINATES: E = 1,144,027 N = 254,016	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: 32.6 Ft.	
		15. DATE BORING	STARTED: 12-07-12 / COMPLETED: 12-07-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -31.6 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 100%	
8. TOTAL DEPTH OF BORING: 17.2 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-31.6	0.0				
-33.4	1.8		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray to pale lt. brown (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3221 mm % Fines: 1.3
-33.9	2.3			NS	
-35.1	3.5		CLAY, lean, mostly clay, some fine-grained sand-sized sand, low to medium plasticity, grayish brown (CL)	B	Classification: SP-SM Color: 2.5Y 5/3-light olive brown D50: 0.2077 mm % Fines: 9.1
-35.7	4.1			NS	
-37.0	5.4		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)	C	Classification: SP-SM Color: 5Y 5/3-olive D50: 0.3033 mm % Fines: 11.2
			CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, gray (CH)	D	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3191 mm % Fines: 3.4
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC) At El. -36.4 Ft., mostly fine-grained sand-sized quartz, little clay, gray	E	Classification: SP Color: 5Y 5/3-olive D50: 0.2832 mm % Fines: 4.4
-43.8	12.2		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, gray (SP) At El. -38.8 Ft., mostly fine-grained sand-sized quartz, trace silt, gray		
-48.8	17.2		SAND, silty, mostly fine-grained sand-sized quartz, trace shell fragments, gray (SM)	F	Classification: SP-SM Color: 5Y 5/3-olive D50: 0.217 mm % Fines: 9.8
				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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19752° Long = -88.32757°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

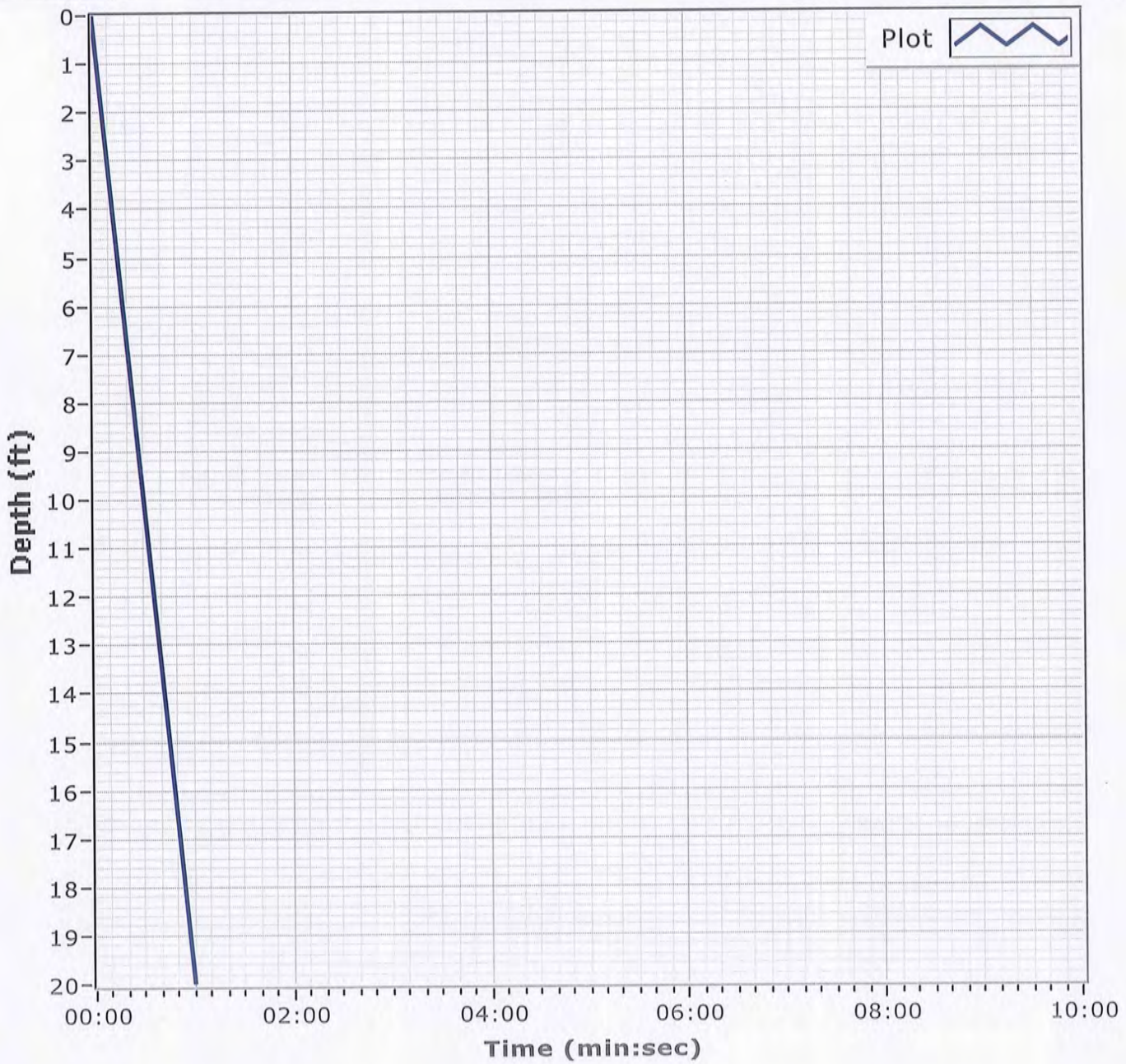
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Coordinate System
Latitude / Longitude

Latitude 30 11.851
Longitude 088 19.654

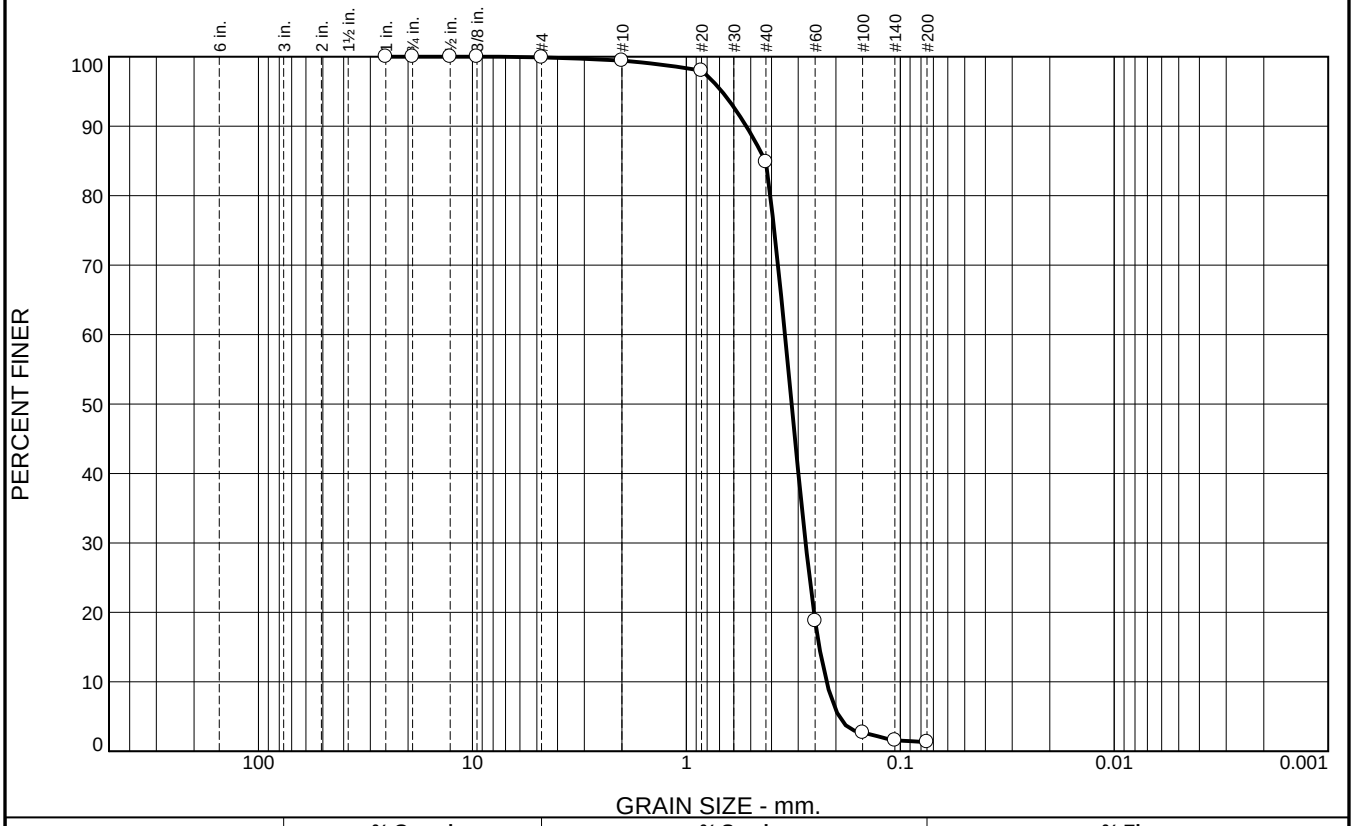
Date 12/07/2012
Start Time 15:25:04
End Time 15:26:04
Total Time 00:01:00

Water Depth 32.6'
Penetration 20.0'
Recovery 17.2'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.5	14.5	83.6	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	98.0		
#40	84.9		
#60	18.8		
#100	2.7		
#140	1.6		
#200	1.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5250 D_{85}= 0.4273 D_{60}= 0.3460
D_{50}= 0.3221 D_{30}= 0.2773 D_{15}= 0.2390
D_{10}= 0.2211 C_u= 1.56 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-209-12 A
Sample Number: 6482 (14) **Depth:** 0.0' **Date:** 12/12/12

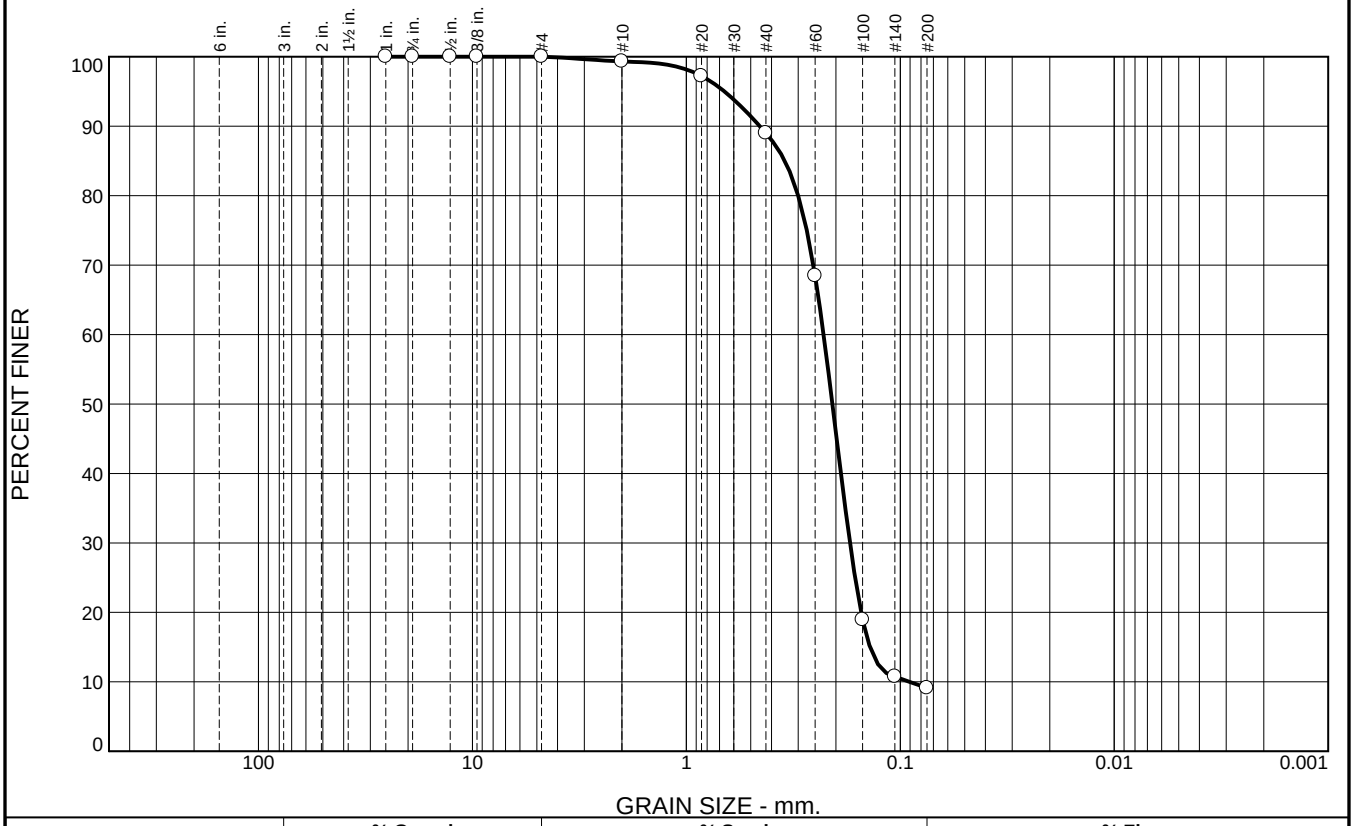
Thompson Engineering

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	0.7	10.3	79.9	9.1	

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	99.3		
#20	97.2		
#40	89.0		
#60	68.4		
#100	18.9		
#140	10.7		
#200	9.1		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4542 D_{85}= 0.3464 D_{60}= 0.2282
D_{50}= 0.2077 D_{30}= 0.1720 D_{15}= 0.1386
D_{10}= 0.0905 C_u= 2.52 C_c= 1.43

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-209-12 B
Sample Number: 6482 (15) **Depth:** 2.3' **Date:** 12/12/12

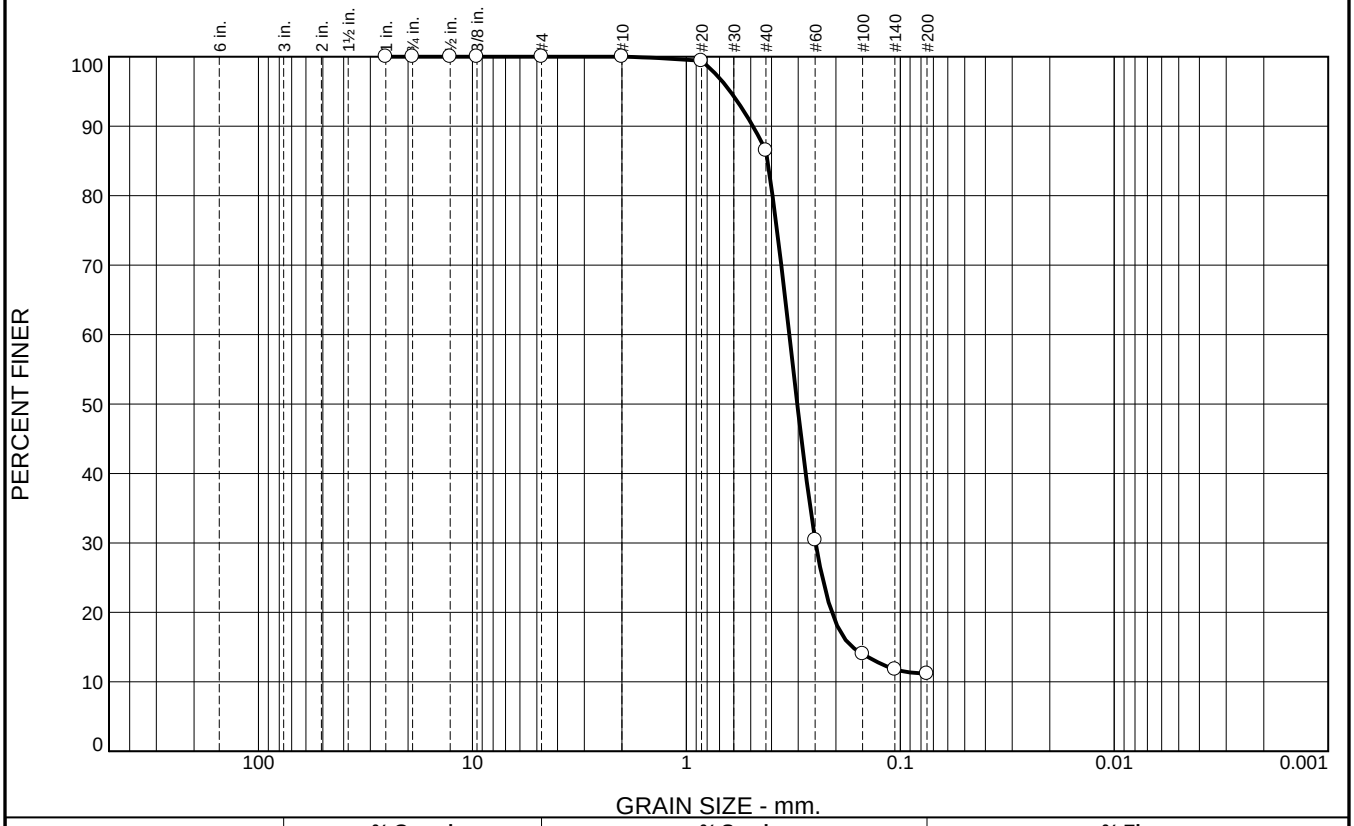
Thompson Engineering

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	13.5	75.3	11.2	

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	100.0		
#20	99.4		
#40	86.5		
#60	30.4		
#100	14.0		
#140	11.8		
#200	11.2		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4889 D_{85}= 0.4174 D_{60}= 0.3302
D_{50}= 0.3033 D_{30}= 0.2487 D_{15}= 0.1675
D_{10}= C_u= C_c=

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-209-12 C
Sample Number: 6482 (16) **Depth:** 4.8' **Date:** 12/12/12

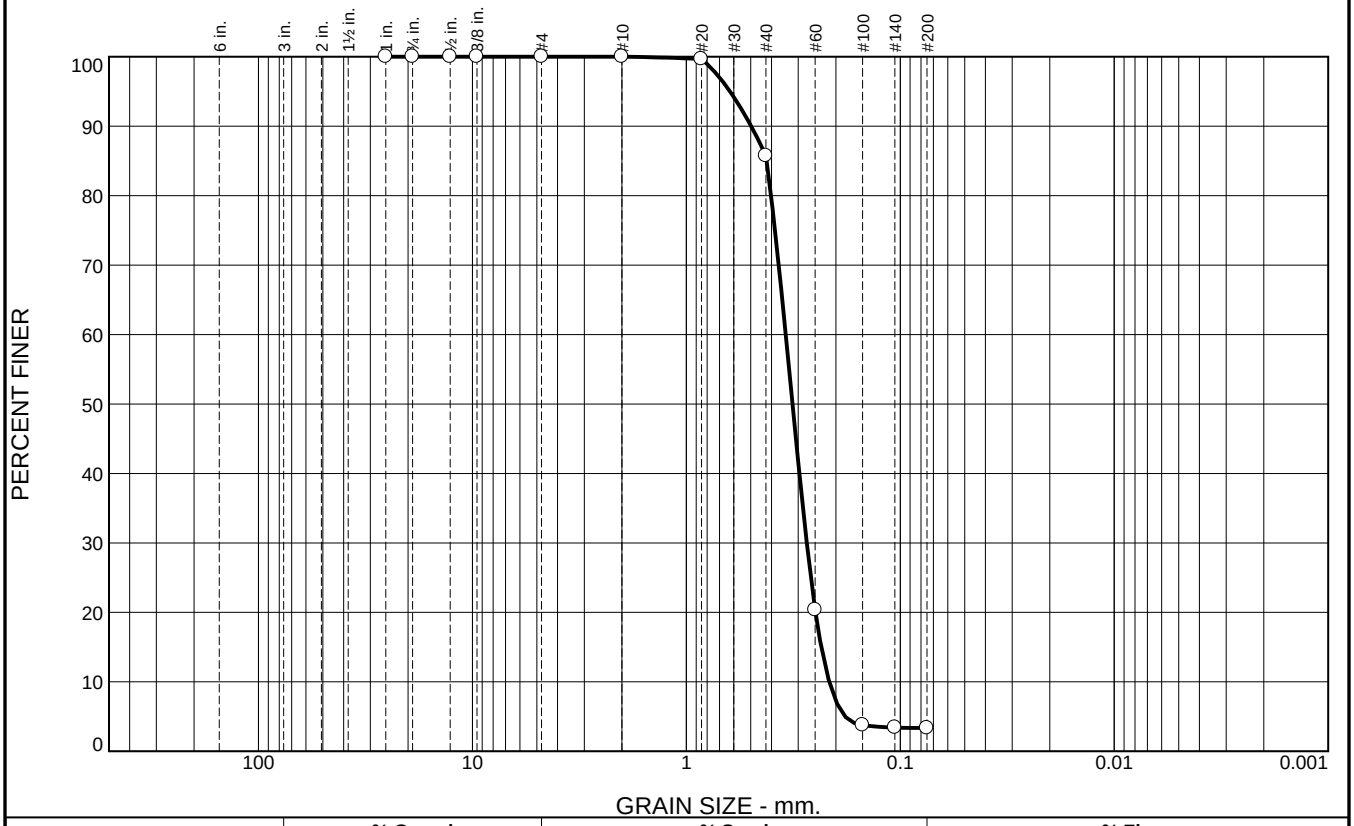
Thompson Engineering

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	14.3	82.3	3.4	

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	100.0		
#20	99.7		
#40	85.7		
#60	20.4		
#100	3.8		
#140	3.4		
#200	3.4		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4978 D_{85}= 0.4217 D_{60}= 0.3431
D_{50}= 0.3191 D_{30}= 0.2738 D_{15}= 0.2340
D_{10}= 0.2148 C_u= 1.60 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-209-12 D
Sample Number: 6482 (17) **Depth:** 5.4' **Date:** 12/12/12

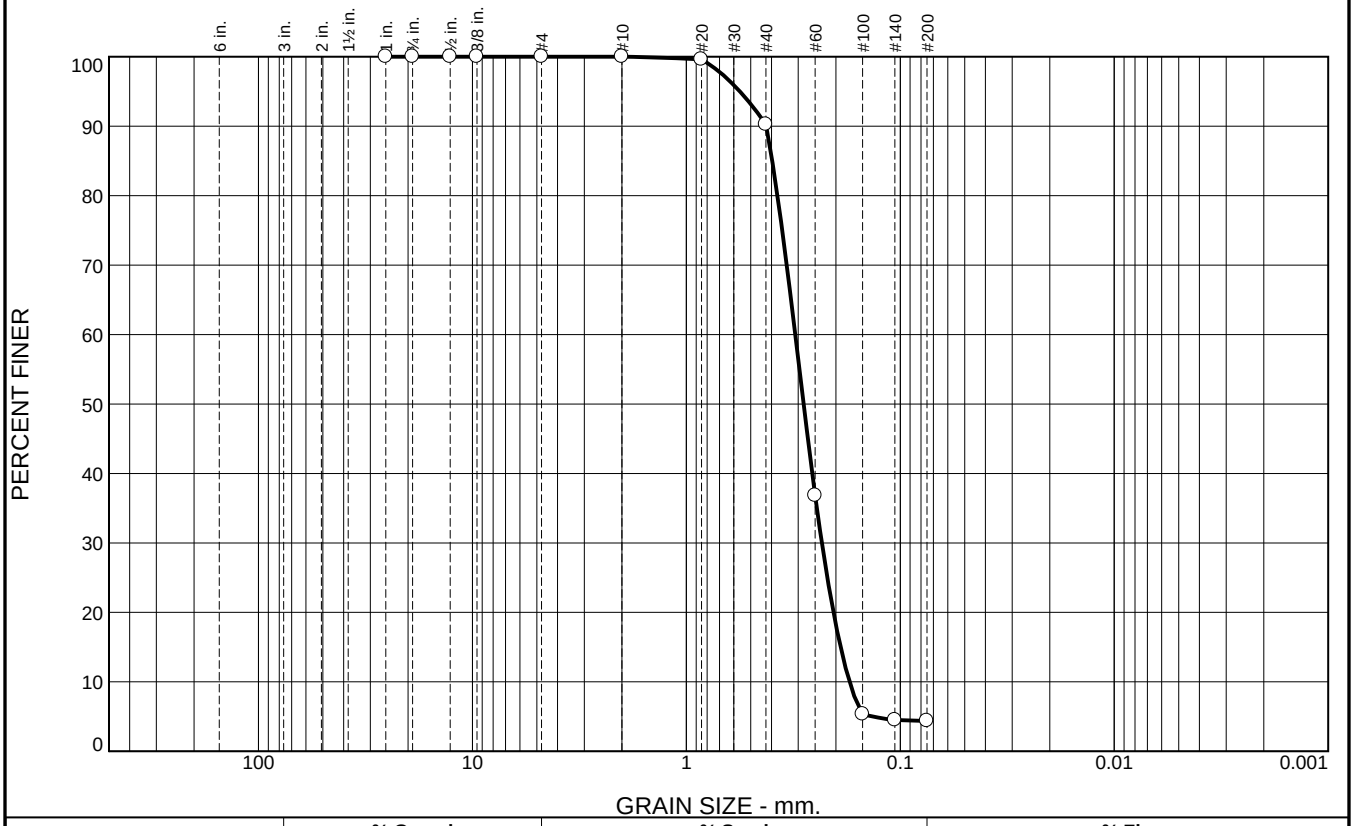
Thompson Engineering

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	9.8	85.8	4.4	

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	100.0		
#20	99.6		
#40	90.2		
#60	36.8		
#100	5.4		
#140	4.5		
#200	4.4		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4235 D_{85}= 0.3967 D_{60}= 0.3098
D_{50}= 0.2832 D_{30}= 0.2326 D_{15}= 0.1903
D_{10}= 0.1729 C_u= 1.79 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-209-12 E
Sample Number: 6482 (18) **Depth:** 7.2' **Date:** 12/12/12

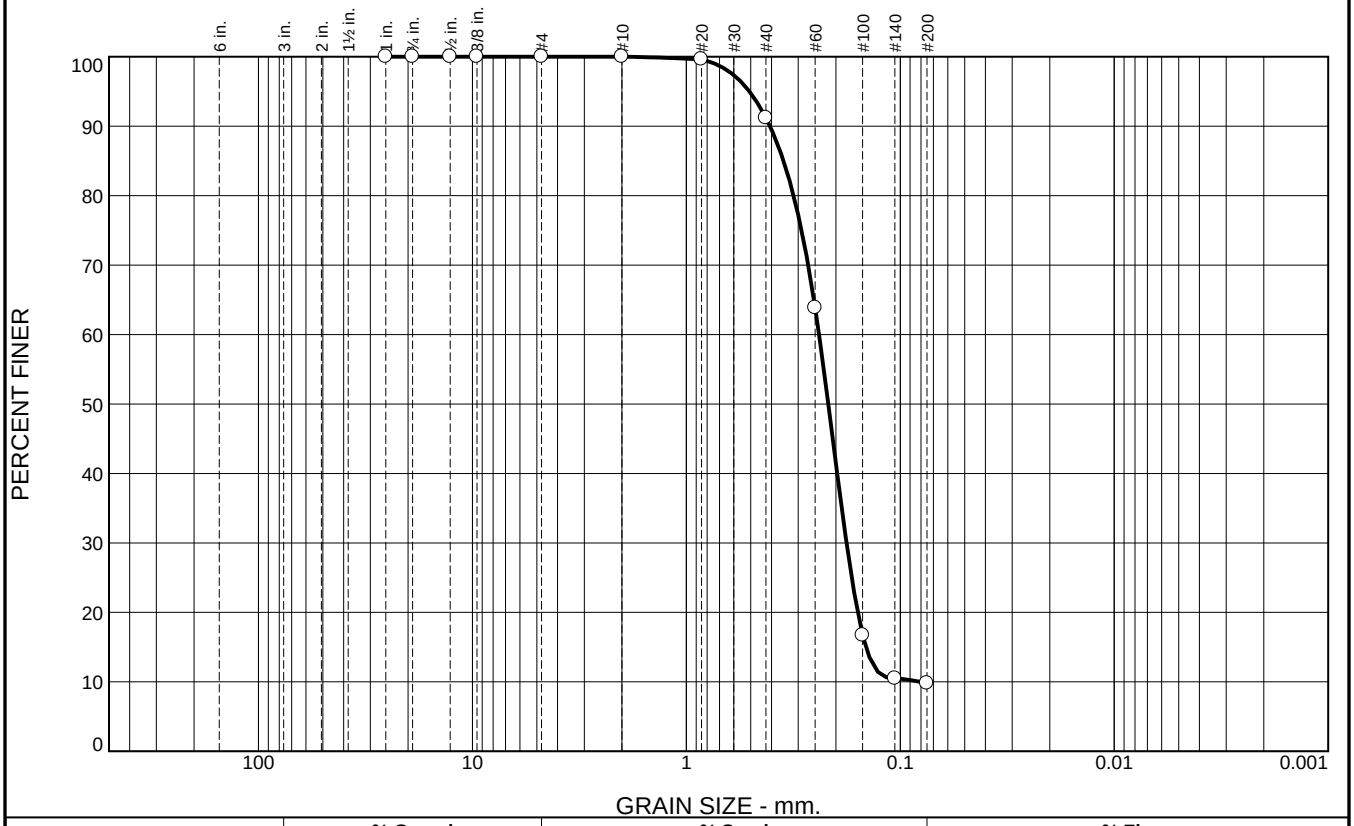
Thompson Engineering

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	8.8	81.4	9.8	

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	100.0		
#20	99.6		
#40	91.2		
#60	63.9		
#100	16.7		
#140	10.5		
#200	9.8		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4067 D_{85}= 0.3513 D_{60}= 0.2397
D_{50}= 0.2170 D_{30}= 0.1785 D_{15}= 0.1448
D_{10}= 0.0807 C_u= 2.97 C_c= 1.65

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-209-12 F
Sample Number: 6482 (19) **Depth:** 12.2' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PB-210-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-210-12	LOCATION COORDINATES: E = 1,144,038 N = 253,052	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: 37.6 Ft.	
		15. DATE BORING	STARTED: 12-11-12 / COMPLETED: 12-11-12
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: 15.3 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-37.2	0.0				
-38.6	1.4		SILT, inorganic-L, mostly silt, some clay, trace shell fragments, brownish gray (ML)		
			CLAY, fat, mostly clay, trace shell fragments, medium to high plasticity, stiff, greenish gray (CH)	NS	
-52.5	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19487° Long = -88.32755°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PB-210-12

Coordinate System
Latitude / Longitude

Latitude 33 11.692

Longitude 088 19.653

Date 12/11/2012

Start Time 13:36:36

End Time 13:39:06

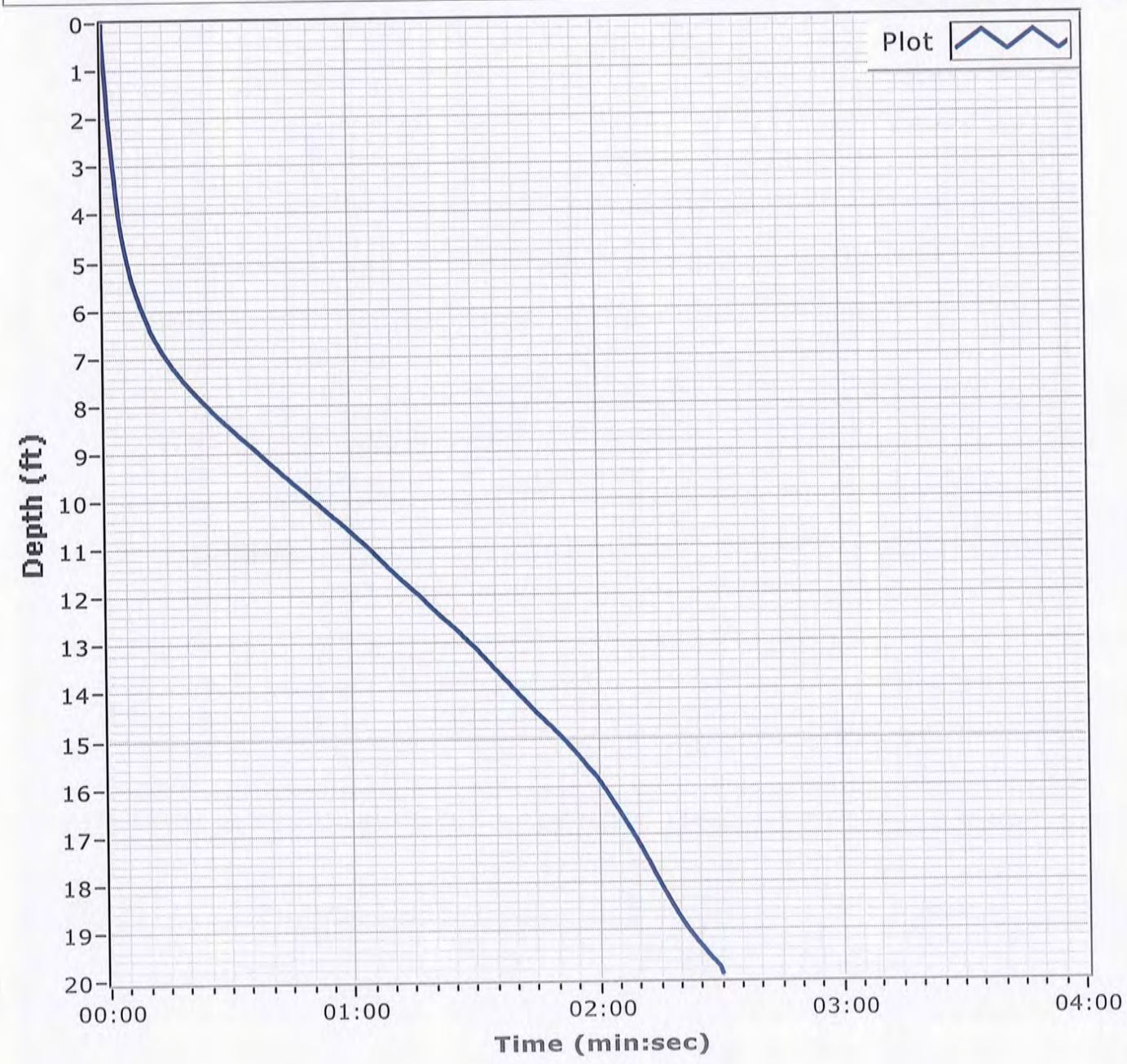
Total Time 00:02:30

Water Depth 37.6'

Penetration 20.0'

Recovery 15.3'

Comments



Boring Designation BI-PB-211-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-211-12	LOCATION COORDINATES: E = 1,149,570 N = 257,845	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: 31.1 Ft.	
		15. DATE BORING	STARTED: 12-05-12 / COMPLETED: 12-05-12
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: 15.7 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-30.8	0.0				
-31.9	1.1		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, gray (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3143 mm % Fines: 3.2
-35.9	5.1		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, high plasticity, stiff, gray mottled with brownish orange, and greenish gray (CH)	NS	
-38.0	7.2		SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, few clay, trace silt, gray mottled with brownish orange, and greenish gray (SP-SC)	B	Classification: SP Color: 2.5Y 6/6-olive yellow D50: 0.3494 mm % Fines: 0.3
-42.9	12.1		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, trace clay stringers, dense, lt. gray grading to gray (SP)	C	Classification: SP Color: 2.5Y 7.5/2- D50: 0.3471 mm % Fines: 3.6
-44.3	13.5		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)	NS	
-46.5	15.7		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace clay, very dense, 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. Sand was very dense. Stopped vibracore machine after 5 minutes due to lack of penetration.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20798° Long = -88.30997°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

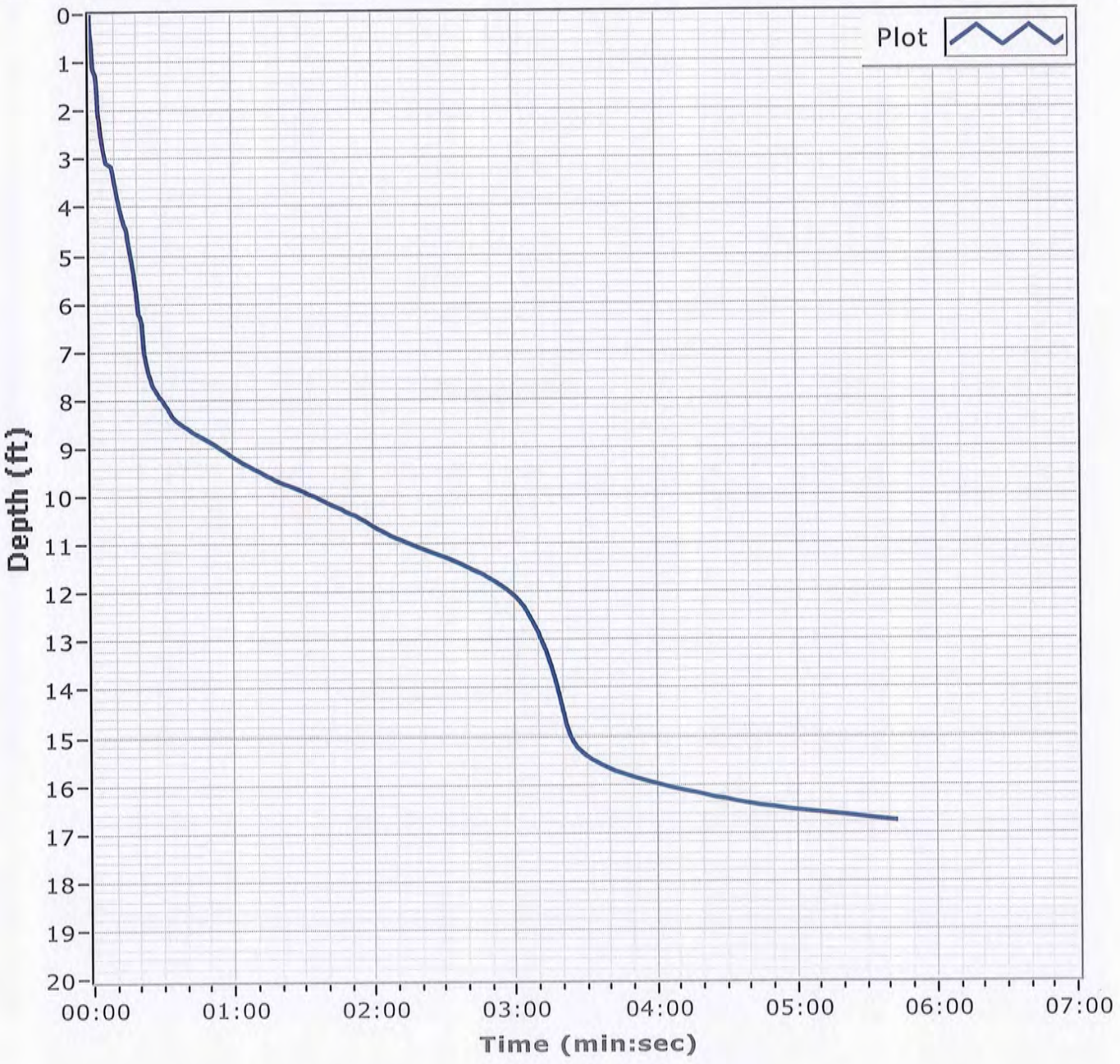
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Coordinate System Latitude / Longitude

Date 12/05/2012
Start Time 11:40:23
End Time 11:46:06
Total Time 00:05:43

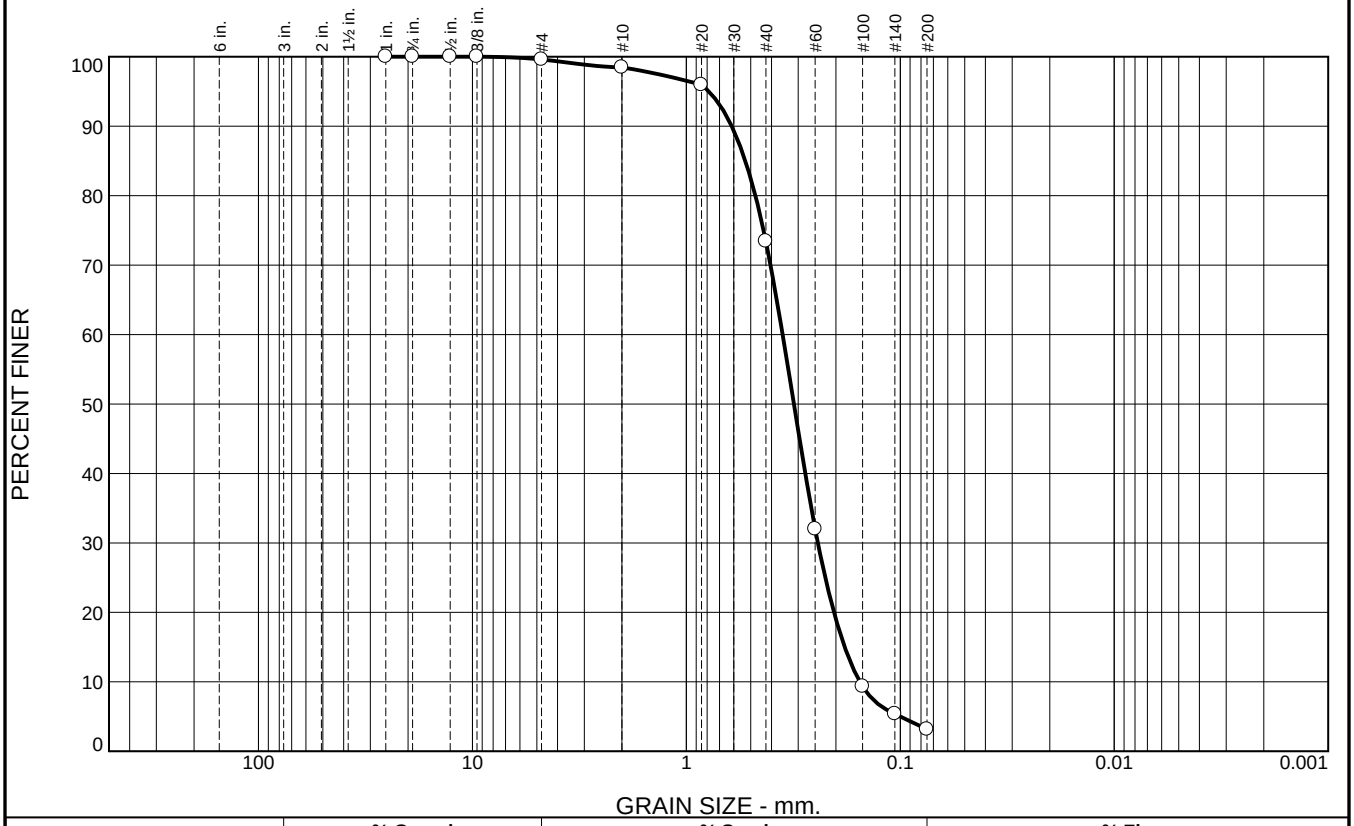
Water Depth 31.1'
Penetration 16.8'
Recovery 15.7'

Latitude 30 12.479
Longitude 088 18.598

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	1.1	25.1	70.2	3.2	

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	98.5		
#20	96.0		
#40	73.4		
#60	32.0		
#100	9.3		
#140	5.4		
#200	3.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6135 D_{85}= 0.5300 D_{60}= 0.3548
D_{50}= 0.3143 D_{30}= 0.2428 D_{15}= 0.1820
D_{10}= 0.1546 C_u= 2.29 C_c= 1.07

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-211-12 A
Sample Number: 6480 (50) **Depth:** 0.0' **Date:** 12/07/12

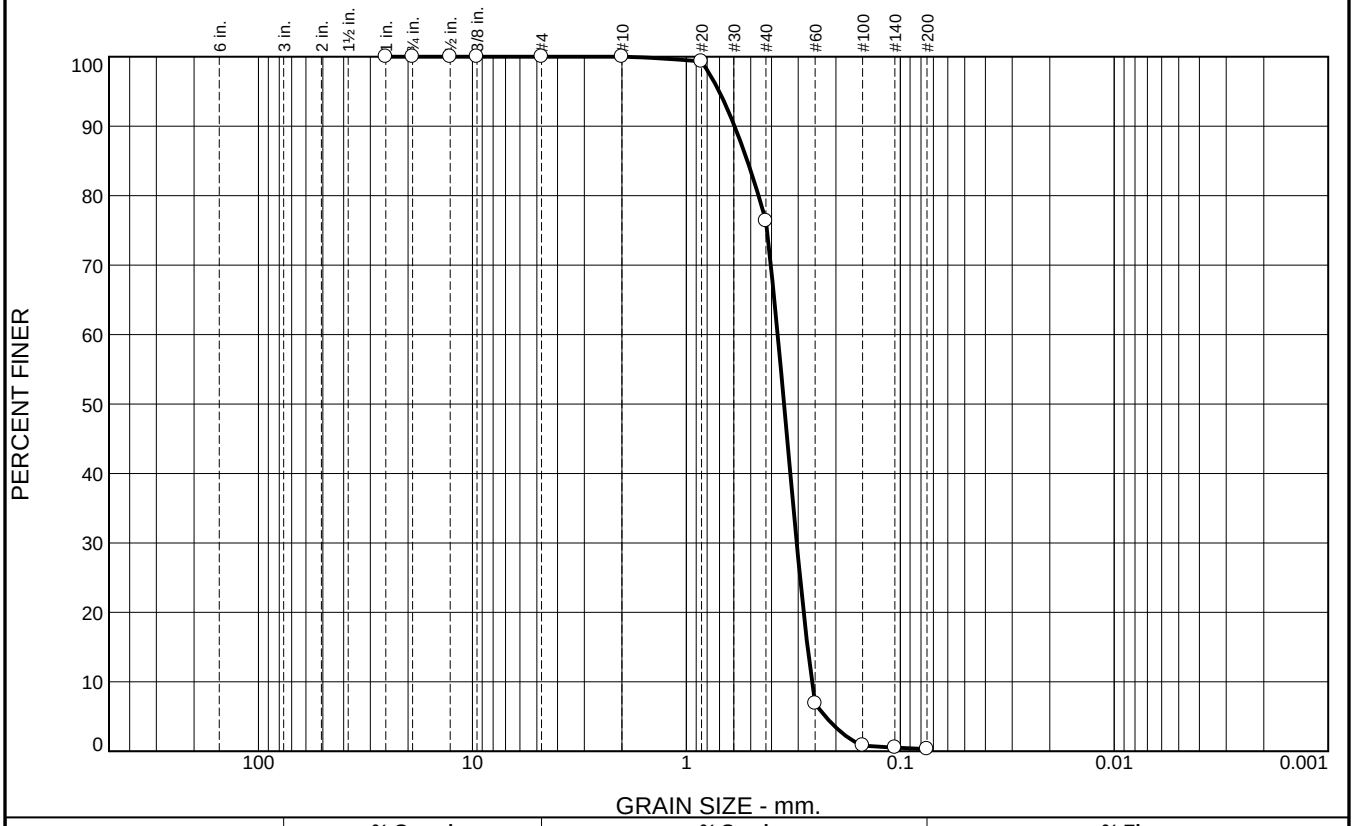
Thompson Engineering

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	23.6	76.1	0.3	

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	100.0		
#20	99.3		
#40	76.4		
#60	6.9		
#100	0.8		
#140	0.5		
#200	0.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5949 D_{85}= 0.5186 D_{60}= 0.3741
D_{50}= 0.3494 D_{30}= 0.3051 D_{15}= 0.2716
D_{10}= 0.2589 C_u= 1.44 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-211-12 B
Sample Number: 6480 (51) **Depth:** 5.1' **Date:** 12/07/12

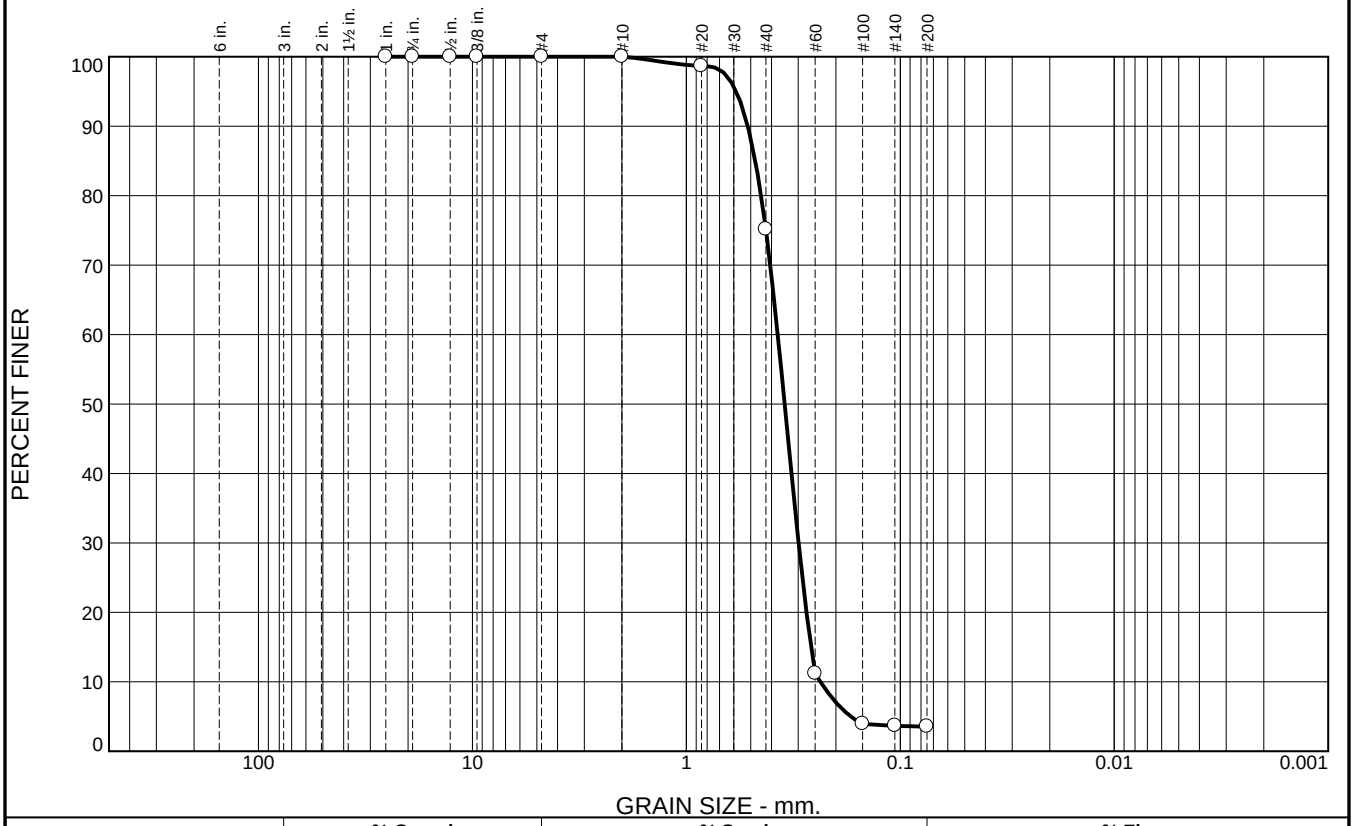
Thompson Engineering

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	24.8	71.6	3.6	

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	98.7		
#40	75.2		
#60	11.2		
#100	4.0		
#140	3.7		
#200	3.6		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5163 D_{85}= 0.4761 D_{60}= 0.3739
D_{50}= 0.3471 D_{30}= 0.2990 D_{15}= 0.2614
D_{10}= 0.2361 C_u= 1.58 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-211-12 C
Sample Number: 6480 (52) **Depth:** 7.2' **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-PB-212-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-212-12	LOCATION COORDINATES: E = 1,148,461 N = 257,895	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: / 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: 26.4 Ft.	
		15. DATE BORING	STARTED: 12-05-12 / COMPLETED: 12-05-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -26.1 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-26.1	0.0				
-28.8	2.7		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 7/2-light gray D50: 0.3025 mm % Fines: 2
-30.9	4.8		CLAY, lean, mostly clay, some silt, some fine-grained sand-sized quartz, gray (CL)		
-32.6	6.5		SILT, inorganic-L, mostly silt, trace clay, brownish gray (ML)		
-34.1	8.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, brown (SM)		
-39.7	13.6		CLAY, fat, mostly clay, trace wood debris, some silt at 9.8-10.6 ft., medium to high plasticity, brown mottled with orange and gray (CH)	NS	
-40.9	14.8		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20813° Long = -88.31348°

Project Mississippi Barrier Island Restoration Project

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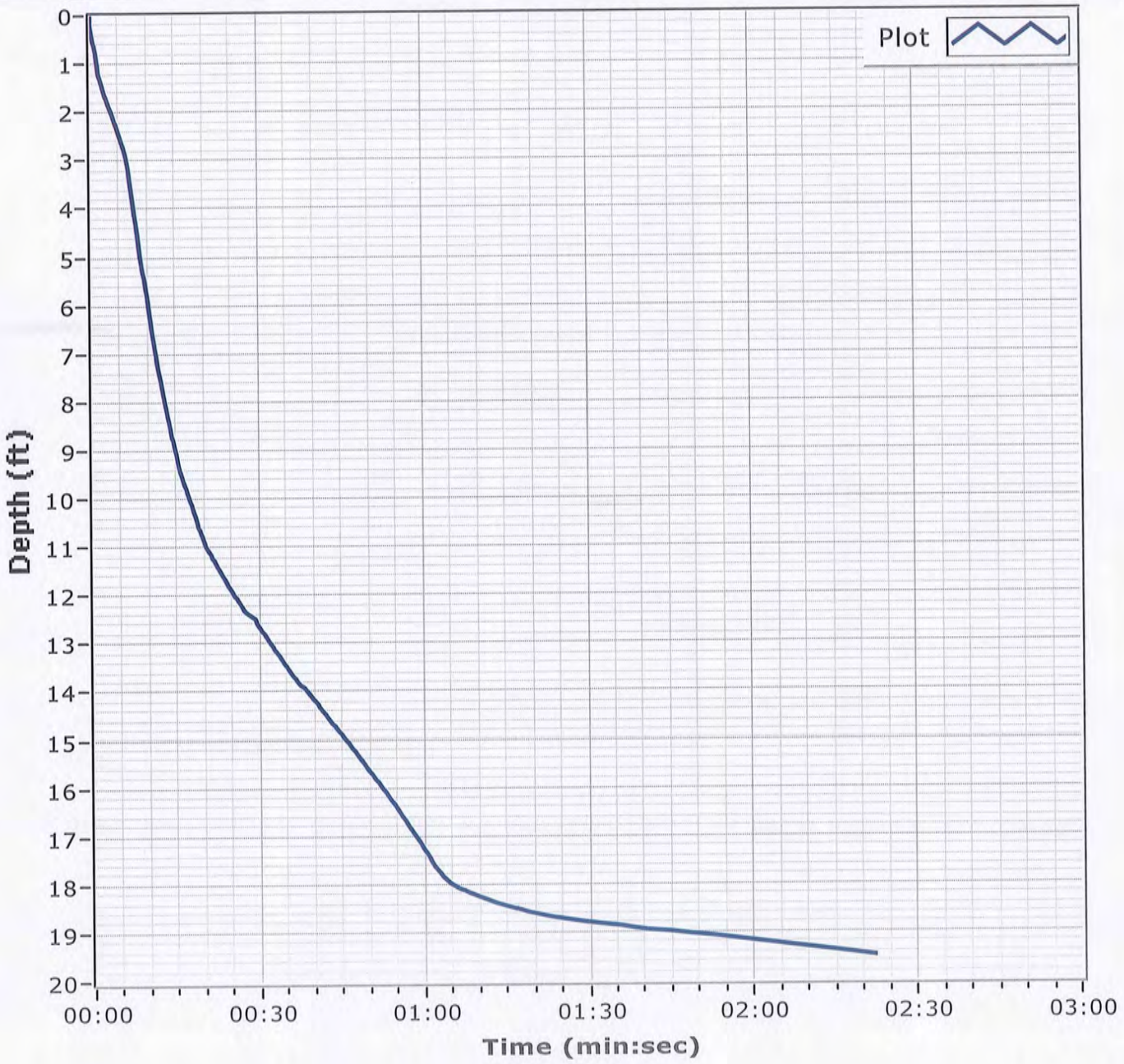
Core Identifier BI-PB-212-12
Coordinate System Latitude / Longitude

Latitude 30 12.488
Longitude 088 18.809

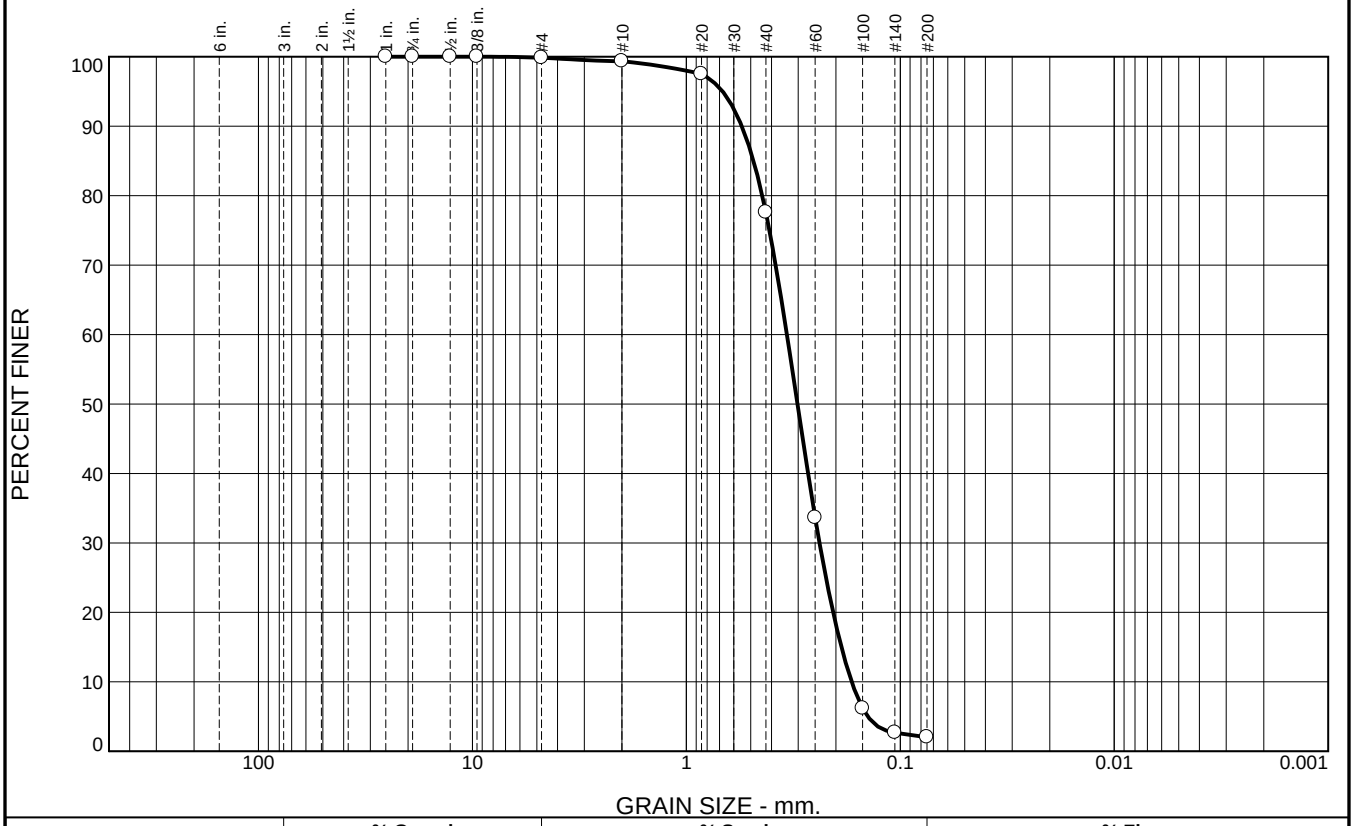
Date 12/05/2012
Start Time 10:54:32
End Time 10:56:54
Total Time 00:02:22

Water Depth 26.4'
Penetration 19.5'
Recovery 14.8'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.4	21.8	75.6	2.0	

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	97.5		
#40	77.6		
#60	33.7		
#100	6.2		
#140	2.7		
#200	2.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5505 D_{85}= 0.4855 D_{60}= 0.3388
D_{50}= 0.3025 D_{30}= 0.2385 D_{15}= 0.1886
D_{10}= 0.1689 C_u= 2.01 C_c= 0.99

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-212-12 A
Sample Number: 6480 (53) **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-PB-213-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-213-12	LOCATION COORDINATES: E = 1,148,564 N = 256,692	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: 29.4 Ft.
		15. DATE BORING	STARTED: 12-06-12 / COMPLETED: 12-06-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -28.8 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-28.8	0.0				
-33.1	4.3		SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, trace shell fragments, lt. pale brown (SP-SM)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3127 mm % Fines: 2.2
-36.5	7.7		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, very dense, lt. gray to white (SP)	B	Classification: SP Color: 2.5Y 8/1-white D50: 0.3014 mm % Fines: 2.4
			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. Very dense sand prevented the vibracore from penetrating deeper than 7.7 ft.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20482° Long = -88.31317°

Project Mississippi Barrier Island Restoration Project

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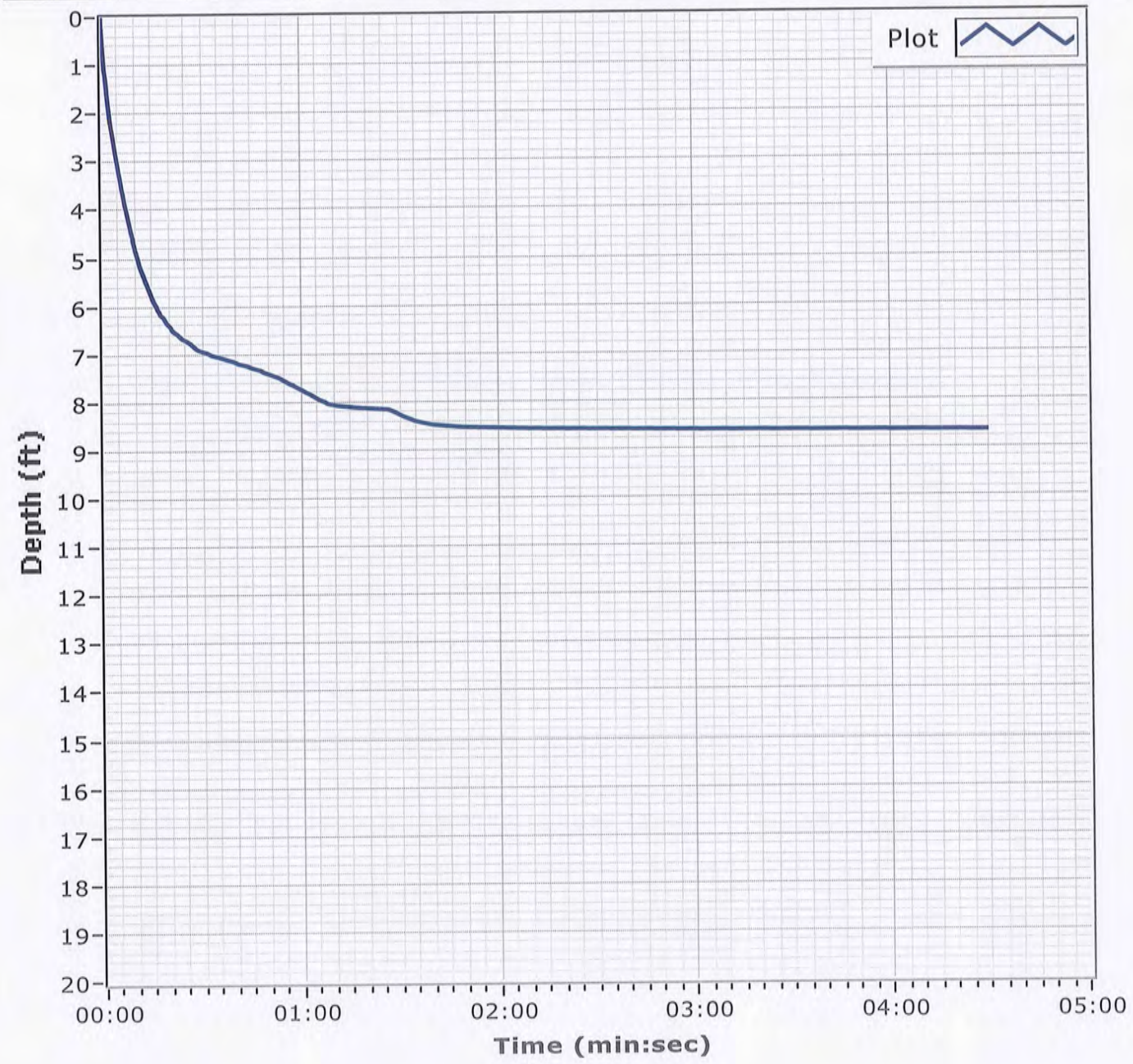
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Coordinate System
Latitude / Longitude

Date 12/06/2012
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End Time 14:23:16
Total Time 00:04:30

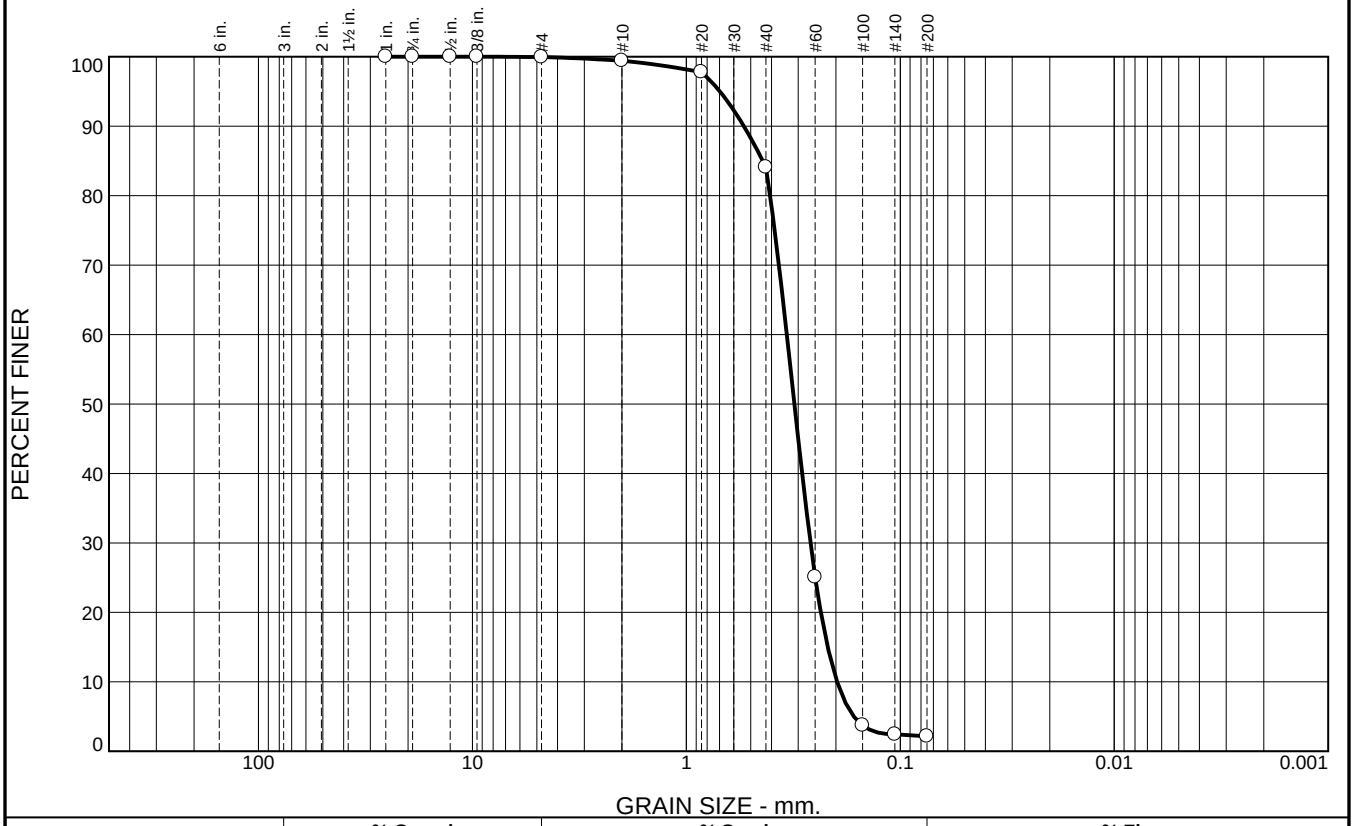
Water Depth 29.4'
Penetration 8.7'
Recovery 7.7'

Latitude 30 12.289
Longitude 088 18.790

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.5	15.3	81.9	2.2	

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	99.4		
#20	97.8		
#40	84.1		
#60	25.1		
#100	3.7		
#140	2.4		
#200	2.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5385 D_{85}= 0.4395 D_{60}= 0.3392
D_{50}= 0.3127 D_{30}= 0.2630 D_{15}= 0.2183
D_{10}= 0.1974 C_u= 1.72 C_c= 1.03

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-213-12 A
Sample Number: 6480 (54) **Depth:** 0.0' **Date:** 12/07/12

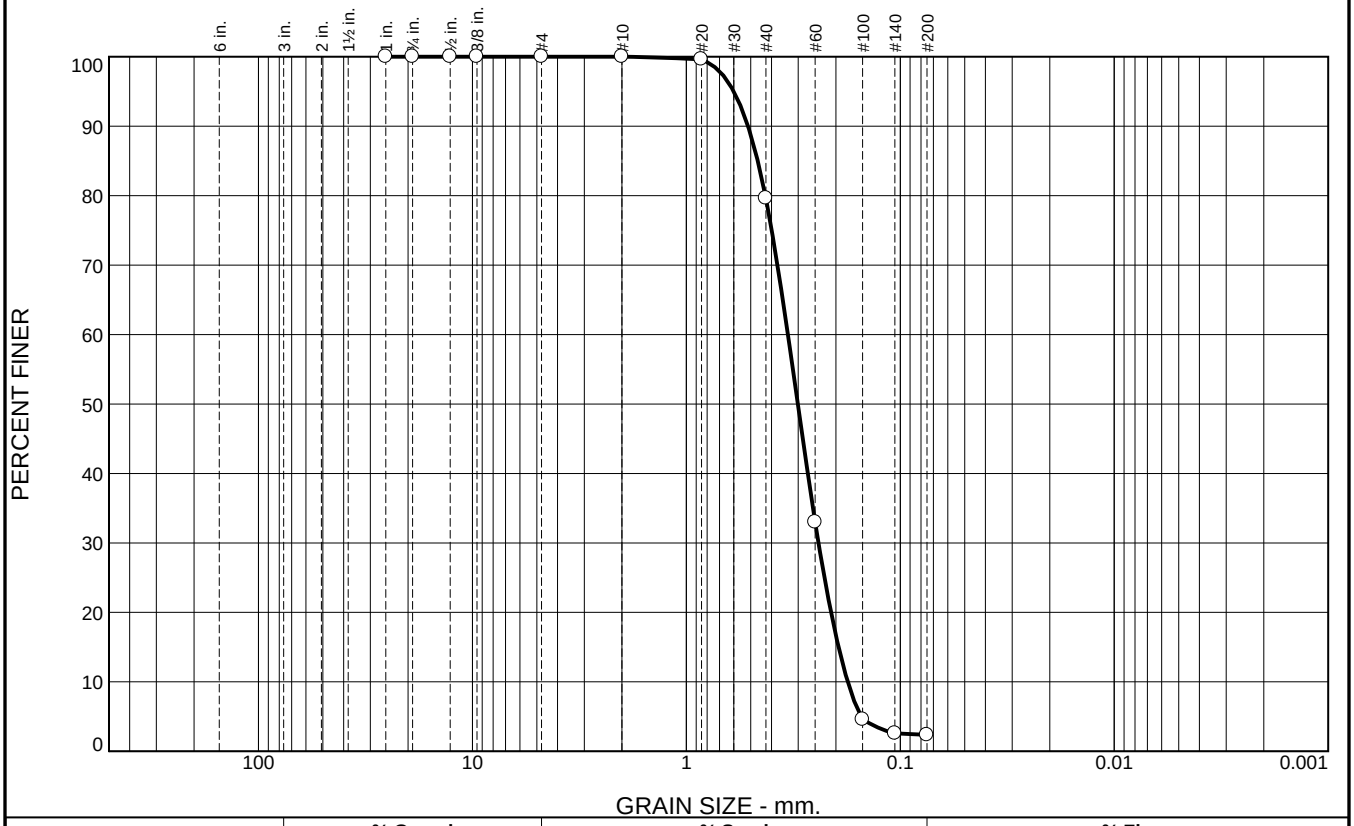
Thompson Engineering

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	20.4	77.2	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	100.0		
#20	99.6		
#40	79.6		
#60	33.0		
#100	4.6		
#140	2.6		
#200	2.4		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5150 D_{85}= 0.4639 D_{60}= 0.3352
D_{50}= 0.3014 D_{30}= 0.2412 D_{15}= 0.1944
D_{10}= 0.1762 C_u= 1.90 C_c= 0.98

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-213-12 B
Sample Number: 6480 (55) **Depth:** 4.3' **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-PB-214-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-214-12	LOCATION COORDINATES: E = 1,154,974 N = 252,102	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: 38.4 Ft.	
		15. DATE BORING	STARTED: 12-19-12 / COMPLETED: 12-19-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -38.2 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-38.2	0.0				
-40.8	2.6		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3065 mm % Fines: 1.3
-41.5	3.3			NS	
-43.6	5.4		CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, trace silt, soft, dark brownish gray (CH)	B	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.3526 mm % Fines: 6.3
			SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, trace clay, gray (SP-SM)		
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, lt. gray to white (SP)	C	Classification: SP Color: 2.5Y 8/1-white D50: 0.3785 mm % Fines: 1.2
			At El. -48.6 Ft., mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, trace clayey stringers, gray to light gray	D	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3913 mm % Fines: 2
-54.0	15.8			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.

0 5 10 15 20 25

Lat = 30.19212° Long = -88.29295°

Project Mississippi Barrier Island Restoration Project

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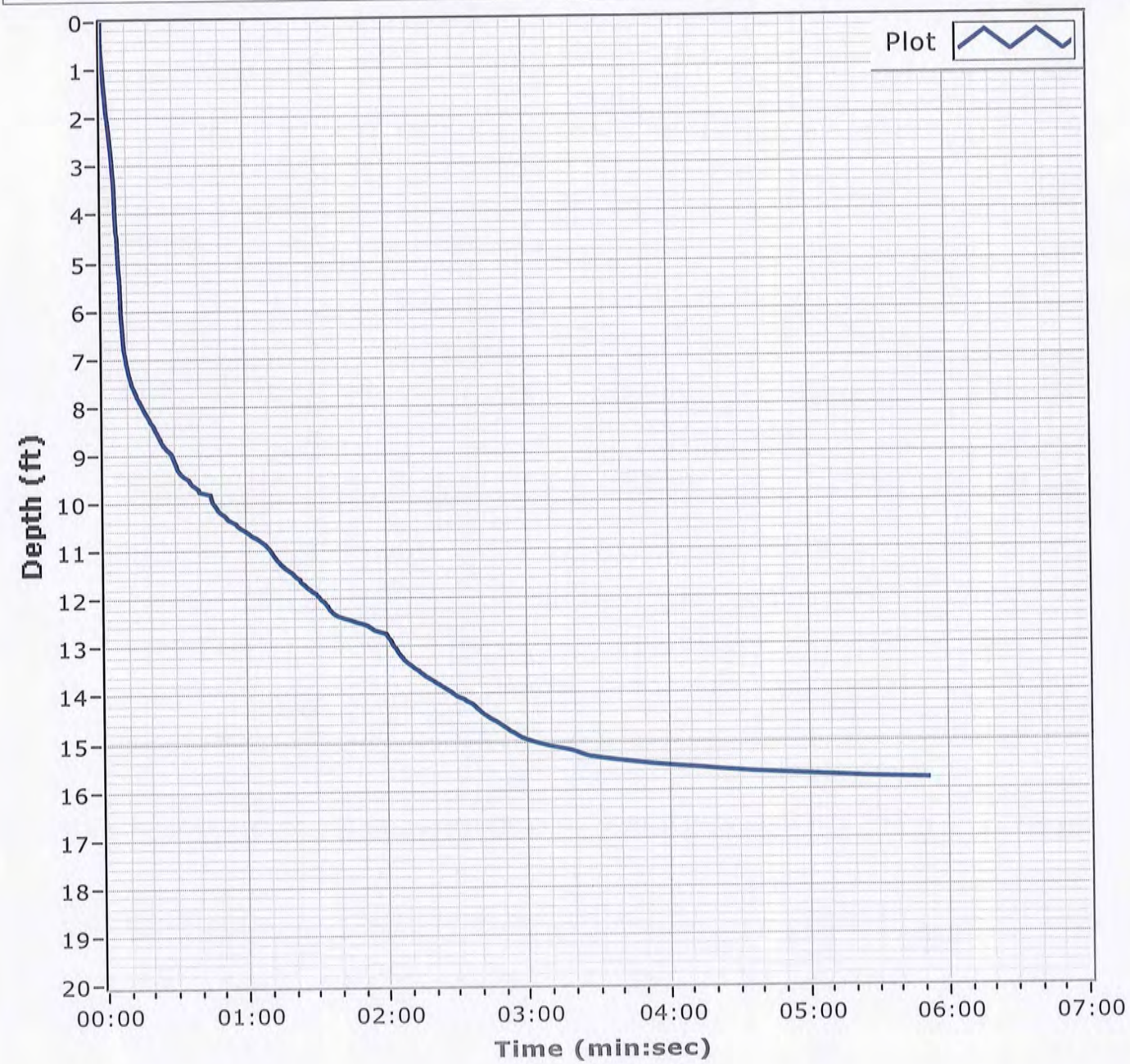
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Coordinate System Latitude / Longitude

Date 12/19/2012
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End Time 11:39:24
Total Time 00:05:52

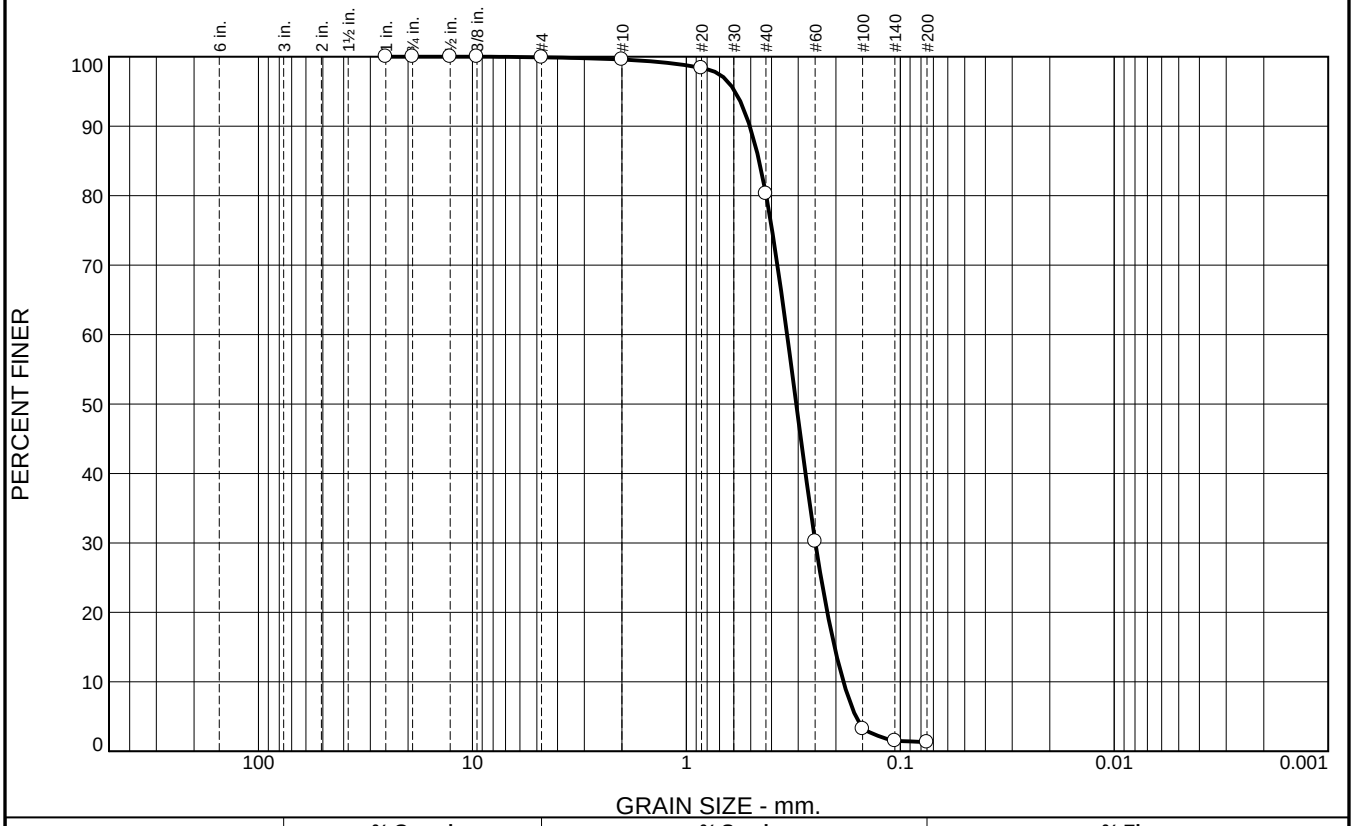
Water Depth 38.4'
Penetration 15.8'
Recovery 13.8'

Latitude 30 11.527
Longitude 88 17.577

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.3	19.3	79.0	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	99.6		
#20	98.4		
#40	80.3		
#60	30.2		
#100	3.2		
#140	1.5		
#200	1.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5051 D_{85}= 0.4570 D_{60}= 0.3382
D_{50}= 0.3065 D_{30}= 0.2493 D_{15}= 0.2029
D_{10}= 0.1845 C_u= 1.83 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-214-12 A
Sample Number: 6494 (85) **Depth:** 0.0' **Date:** 12/26/12

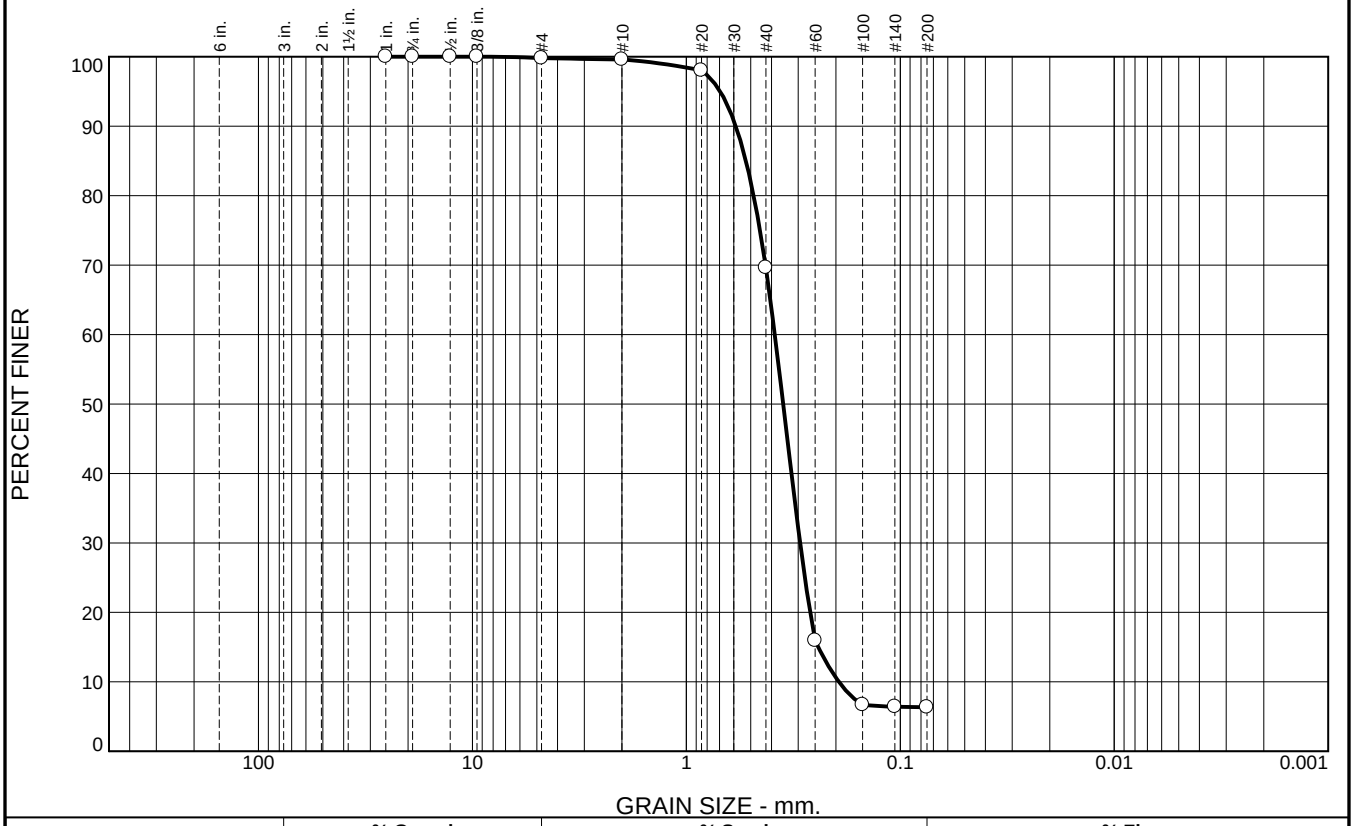
Thompson Engineering

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	0.2	0.2	30.0	63.3	6.3	

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	99.6		
#20	98.0		
#40	69.6		
#60	15.9		
#100	6.7		
#140	6.4		
#200	6.3		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5869 D_{85}= 0.5266 D_{60}= 0.3860
D_{50}= 0.3526 D_{30}= 0.2942 D_{15}= 0.2417
D_{10}= 0.1937 C_u= 1.99 C_c= 1.16

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-214-12 B
Sample Number: 6494 (86) **Depth:** 3.3' **Date:** 12/26/12

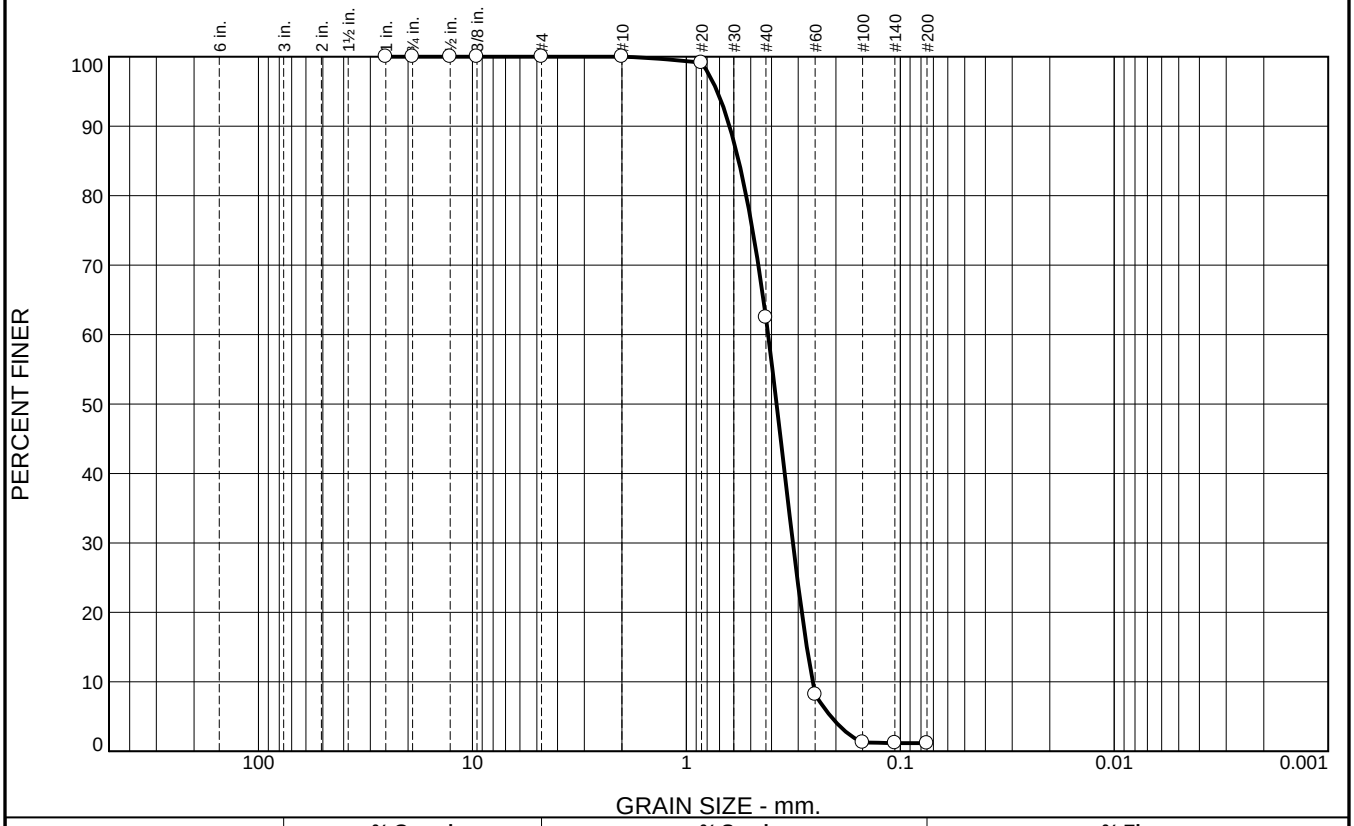
Thompson Engineering

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	0.0	37.5	61.3	1.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	99.1		
#40	62.5		
#60	8.2		
#100	1.3		
#140	1.2		
#200	1.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6282 D_{85}= 0.5691 D_{60}= 0.4148
D_{50}= 0.3785 D_{30}= 0.3178 D_{15}= 0.2737
D_{10}= 0.2569 C_u= 1.61 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-214-12 C
Sample Number: 6494 (87) **Depth:** 5.4' **Date:** 12/26/12

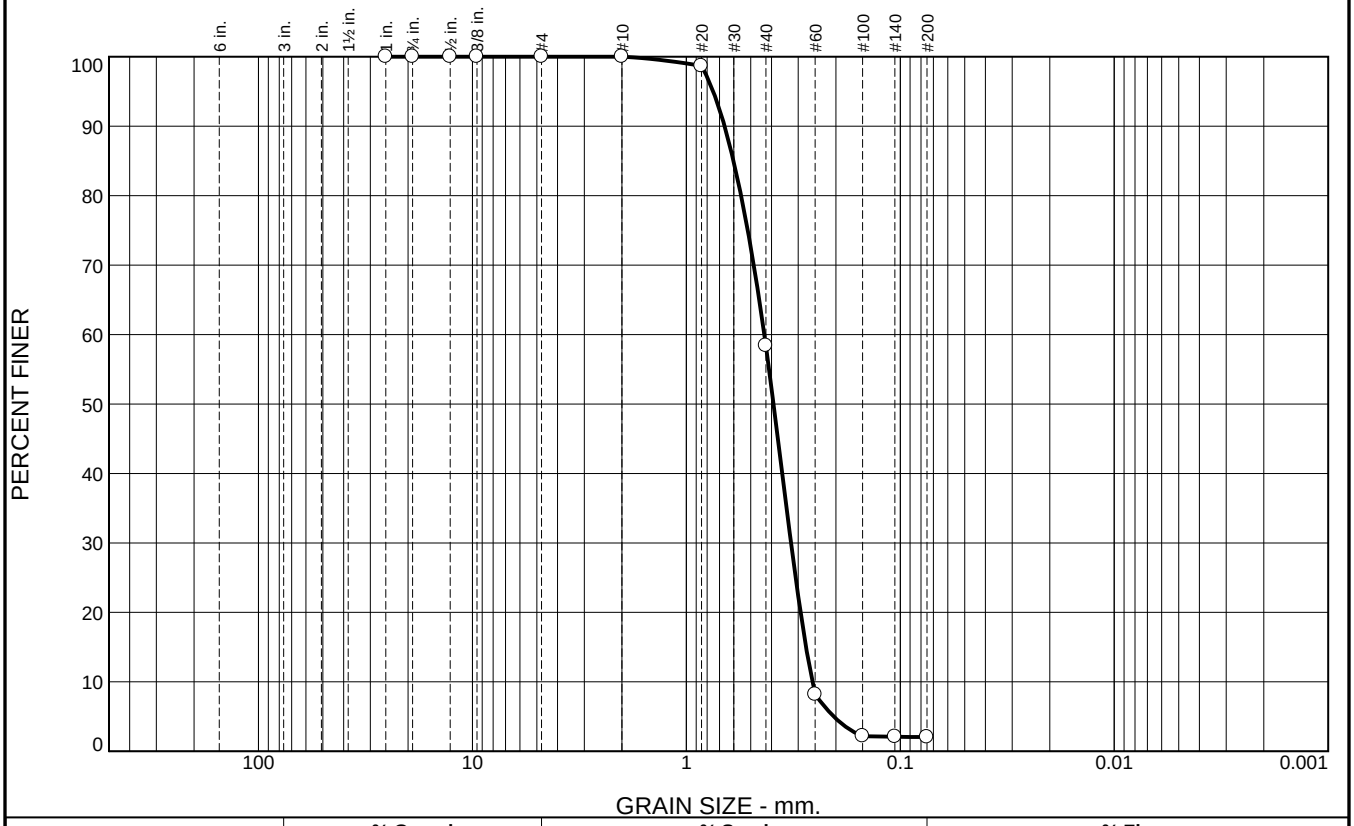
Thompson Engineering

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	0.0	41.6	56.4	2.0	

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	100.0		
#20	98.7		
#40	58.4		
#60	8.2		
#100	2.2		
#140	2.1		
#200	2.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6627 D_{85}= 0.6018 D_{60}= 0.4322
D_{50}= 0.3913 D_{30}= 0.3243 D_{15}= 0.2761
D_{10}= 0.2576 C_u= 1.68 C_c= 0.94

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-214-12 D
Sample Number: 6494 (88) **Depth:** 10.4' **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-PB-215-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-215-12	LOCATION COORDINATES: E = 1,153,378 N = 252,080	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: 40.1 Ft.	
		15. DATE BORING	STARTED: 12-19-12 / COMPLETED: 12-19-12
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: 19.1 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-39.9	0.0				
-41.7	1.8		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.301 mm % Fines: 3.2
-42.6	2.7		CLAY, lean, mostly clay, some silt, silty, soft, with a sandy layer at 2.2 ft., gray (CL)	NS	
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP)	B	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.3459 mm % Fines: 3.8
			At El. -44.0 Ft., mostly fine to medium-grained sand-sized quartz, trace fines, clayey band at 5.9 ft., lt. gray to white	C	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.391 mm % Fines: 4.9
-48.8	8.9		At El. -46.1 Ft., mostly fine-grained sand-sized quartz, alternating bands of sand and clay, greenish gray and white		
-59.0	19.1		CLAY, lean, mostly clay, some silt, lenses of poorly graded sand at 14.8 and 15.8 ft., stiff, greenish 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19208° Long = -88.29800°

Project Mississippi Barrier Island Restoration Project

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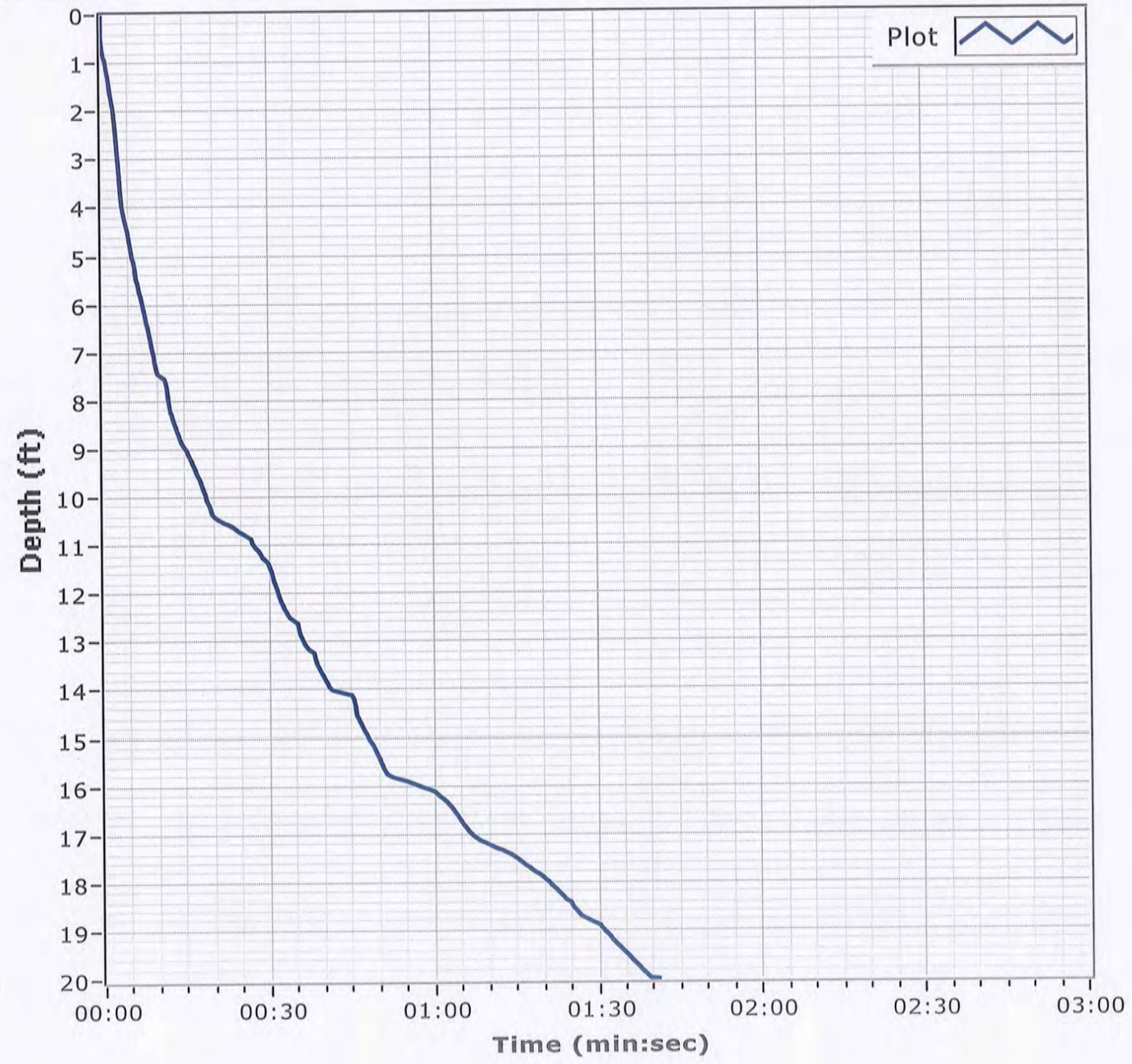
Core Identifier BI-PB-215-12
Coordinate System Latitude / Longitude

Latitude 30 11.525
Longitude 88 17.880

Date 12/19/2012
Start Time 10:55:51
End Time 10:57:32
Total Time 00:01:41

Water Depth 40.1'
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	0.1	0.6	17.7	78.4	3.2	

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	99.3		
#20	97.6		
#40	81.6		
#60	32.1		
#100	4.9		
#140	3.4		
#200	3.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4953 D_{85}= 0.4482 D_{60}= 0.3323
D_{50}= 0.3010 D_{30}= 0.2439 D_{15}= 0.1968
D_{10}= 0.1775 C_u= 1.87 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-215-12 A
Sample Number: 6494 (89) **Depth:** 0.0' **Date:** 12/26/12

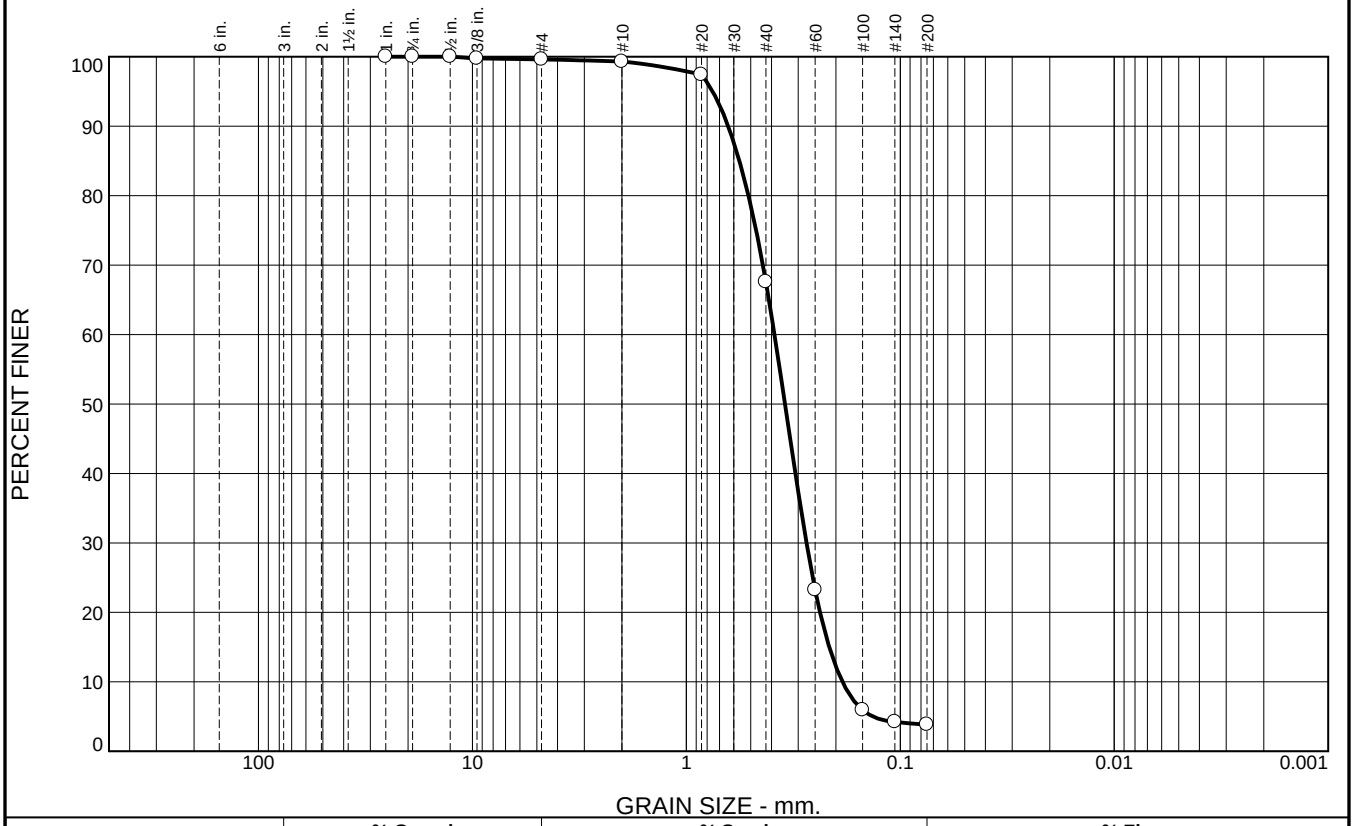
Thompson Engineering

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	0.3	31.7	63.8	3.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.7		
#4	99.6		
#10	99.3		
#20	97.4		
#40	67.6		
#60	23.2		
#100	5.9		
#140	4.2		
#200	3.8		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6374 D_{85}= 0.5649 D_{60}= 0.3873
D_{50}= 0.3459 D_{30}= 0.2745 D_{15}= 0.2149
D_{10}= 0.1866 C_u= 2.08 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-215-12 B
Sample Number: 6494 (90) **Depth:** 2.7' **Date:** 12/26/12

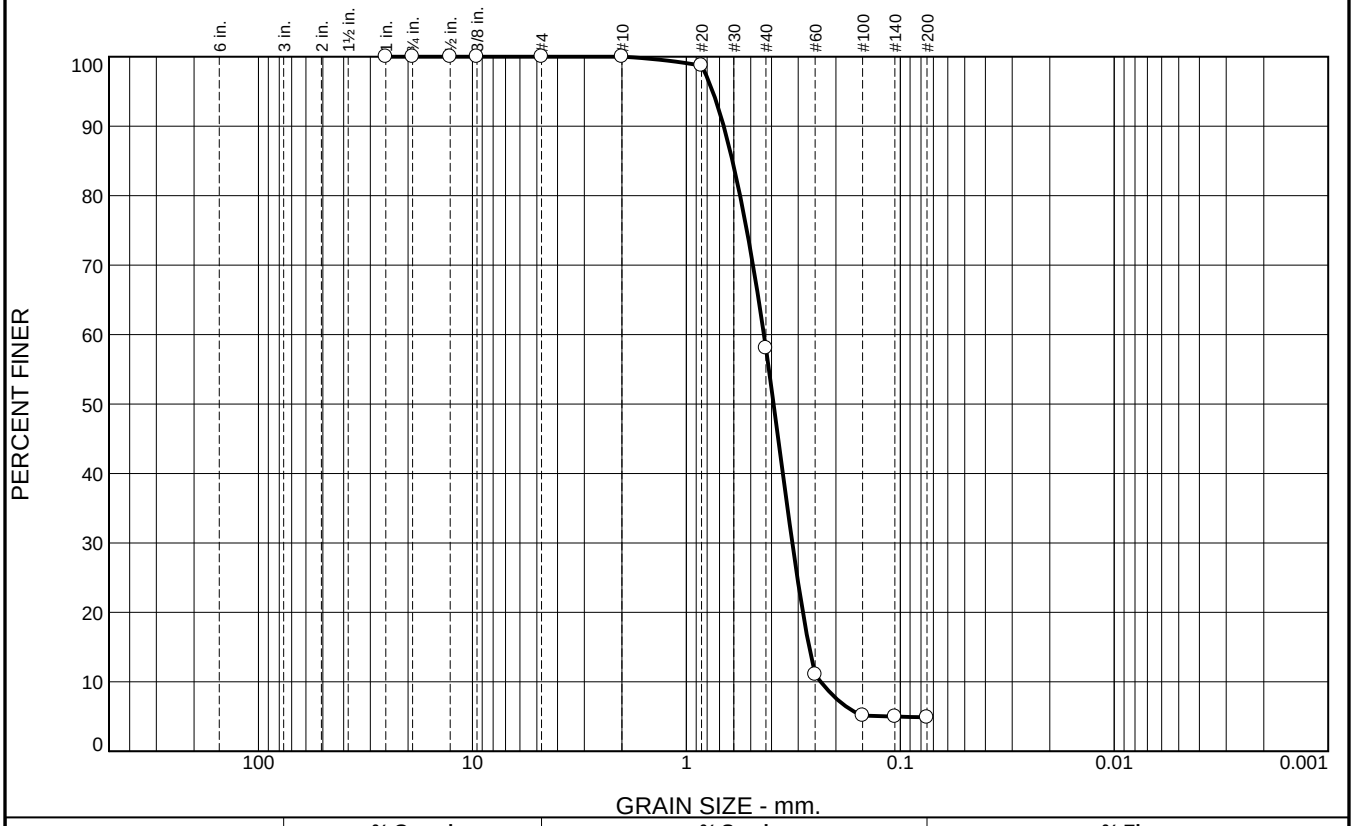
Thompson Engineering

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	0.0	41.9	53.2	4.9	

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	100.0		
#20	98.7		
#40	58.1		
#60	11.1		
#100	5.1		
#140	5.0		
#200	4.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6690 D_{85}= 0.6083 D_{60}= 0.4340
D_{50}= 0.3910 D_{30}= 0.3198 D_{15}= 0.2670
D_{10}= 0.2352 C_u= 1.84 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-215-12 C
Sample Number: 6494 (91) **Depth:** 4.1' **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-PB-216-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-216-12	LOCATION COORDINATES: E = 1,149,149 N = 252,566	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: 35.8 Ft.	
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
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: 14.4 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-36.0	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2697 mm % Fines: 2.9
-40.4	4.4				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, trace 0.5-inch thick clay lenses, lt. gray to white (SP)	B	Classification: SP Color: 2.5Y 8/1-white D50: 0.3399 mm % Fines: 2.7
				C	Classification: SP Color: 2.5Y 8/1-white D50: 0.2911 mm % Fines: 1.6
-50.4	14.4				
			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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19347° Long = -88.31138°

Project Mississippi Barrier Island Restoration Project

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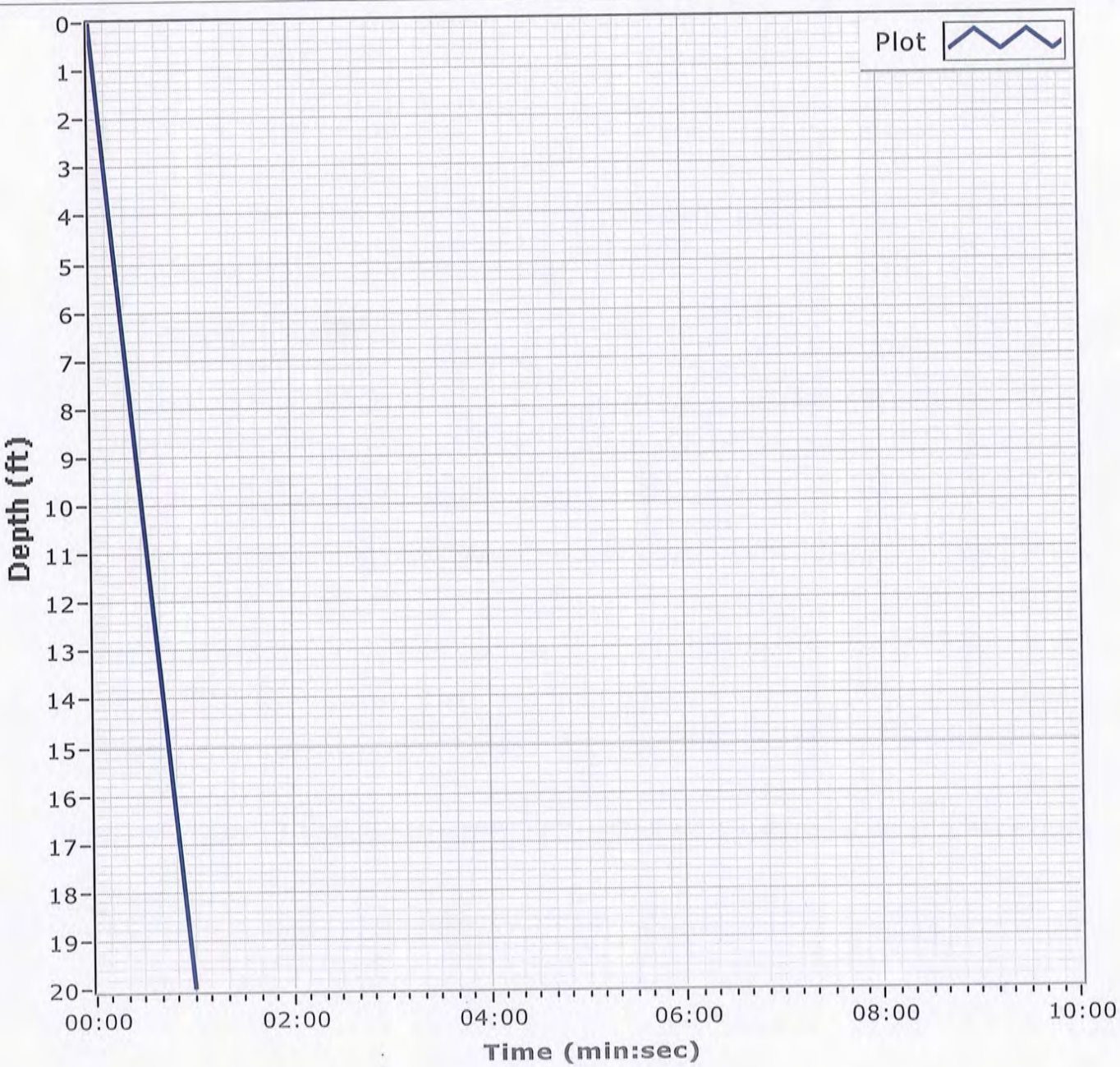
Core Identifier BI-PB-216-12
Coordinate System
Latitude / Longitude

Latitude 30 11.608
Longitude 088 18.683

Date 12/12/2012
Start Time 13:45:03
End Time 13:46:03
Total Time 00:01:00

Water Depth 35.8'
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	0.7	18.3	77.9	2.9	

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	96.7		
#40	80.8		
#60	43.6		
#100	6.3		
#140	3.4		
#200	2.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5455 D_{85}= 0.4682 D_{60}= 0.3059
D_{50}= 0.2697 D_{30}= 0.2141 D_{15}= 0.1769
D_{10}= 0.1630 C_u= 1.88 C_c= 0.92

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-216-12 A
Sample Number: 6485 (30) **Depth:** 0.0' **Date:** 12/07/12

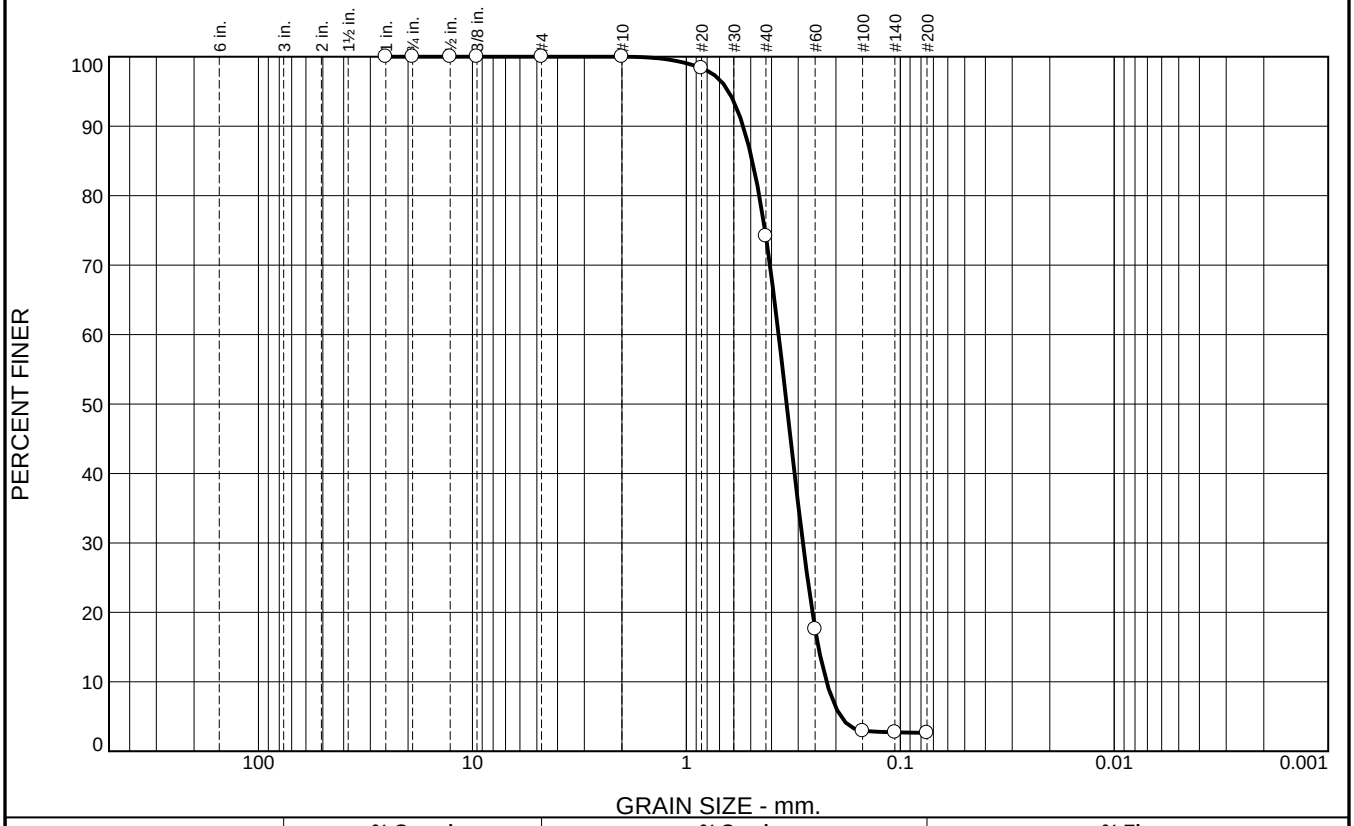
Thompson Engineering

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	25.8	71.5	2.7	

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	98.3		
#40	74.2		
#60	17.6		
#100	2.9		
#140	2.7		
#200	2.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5425 D_{85}= 0.4917 D_{60}= 0.3704
D_{50}= 0.3399 D_{30}= 0.2855 D_{15}= 0.2413
D_{10}= 0.2211 C_u= 1.68 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-216-12 B
Sample Number: 6485 (31) **Depth:** 4.4' **Date:** 12/07/12

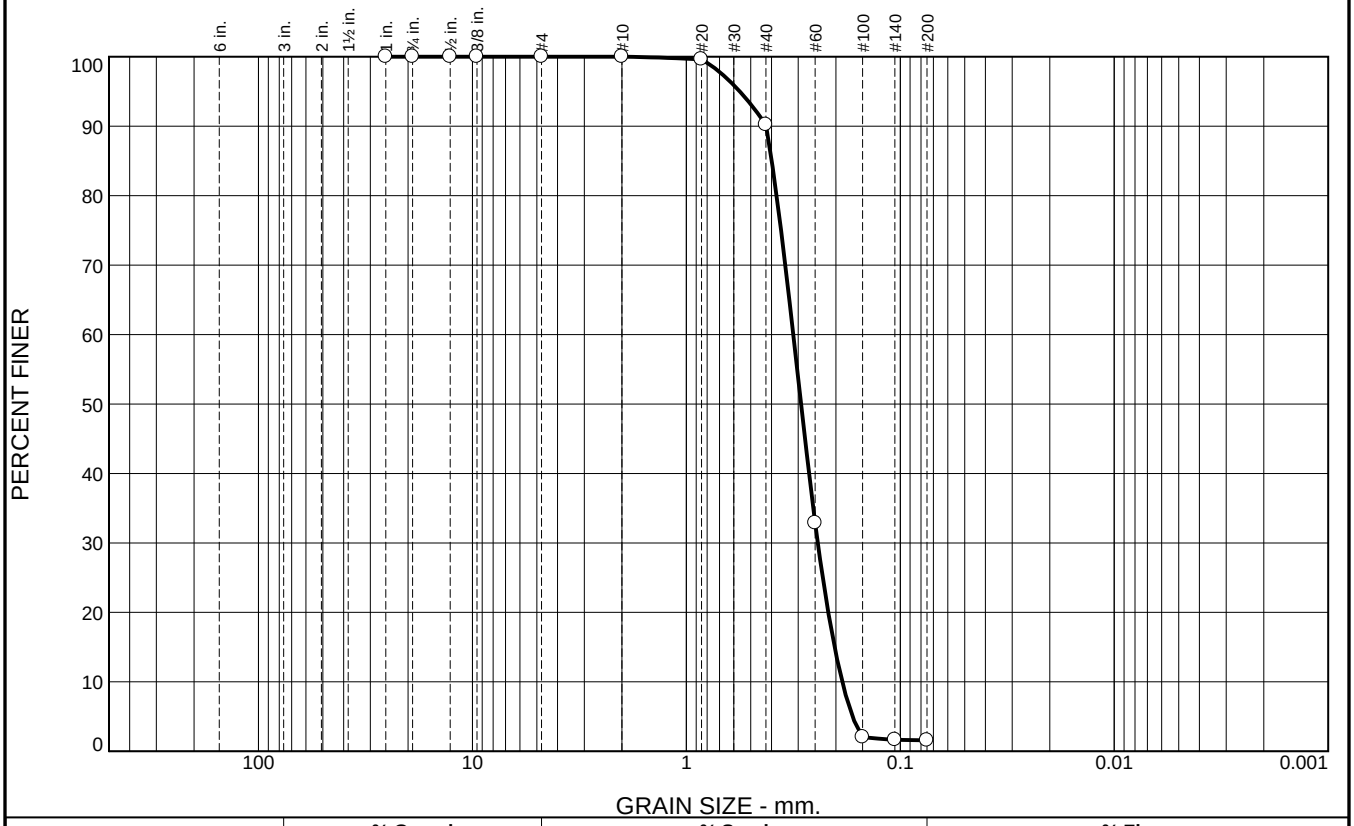
Thompson Engineering

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	0.0	9.8	88.6	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	99.6		
#40	90.2		
#60	32.9		
#100	2.0		
#140	1.7		
#200	1.6		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4238 D_{85}= 0.3988 D_{60}= 0.3165
D_{50}= 0.2911 D_{30}= 0.2430 D_{15}= 0.2028
D_{10}= 0.1869 C_u= 1.69 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-216-12 C
Sample Number: 6485 (32) **Depth:** 9.4' **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-PB-217-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-217-12	LOCATION COORDINATES: E = 1,150,351 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: 38.9 Ft.	
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -38.8 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-38.8	0.0				
-39.3	0.5		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3234 mm % Fines: 1.3
-40.0	1.2		CLAY, fat, mostly clay, medium to high plasticity, band of poorly graded fine grain sand at 0.8 ft., gray (CH)	NS	
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, lt gray (SP)	B	Classification: SP-SM Color: 5Y 7/3-pale yellow D50: 0.3352 mm % Fines: 5.9
			At El. -46.6 Ft., mostly fine to medium-grained sand-sized quartz, trace fines, white	C	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.35 mm % Fines: 4.1
			At El. -47.5 Ft., mostly fine-grained sand-sized quartz, some clay, alternating bands (0.2 to 1.0 ft. thick) of poorly-graded, fine-grained sand and medium to high plasticity clay, lt. gray to dark gray	NS	
-54.5	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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19423° Long = -88.30757°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

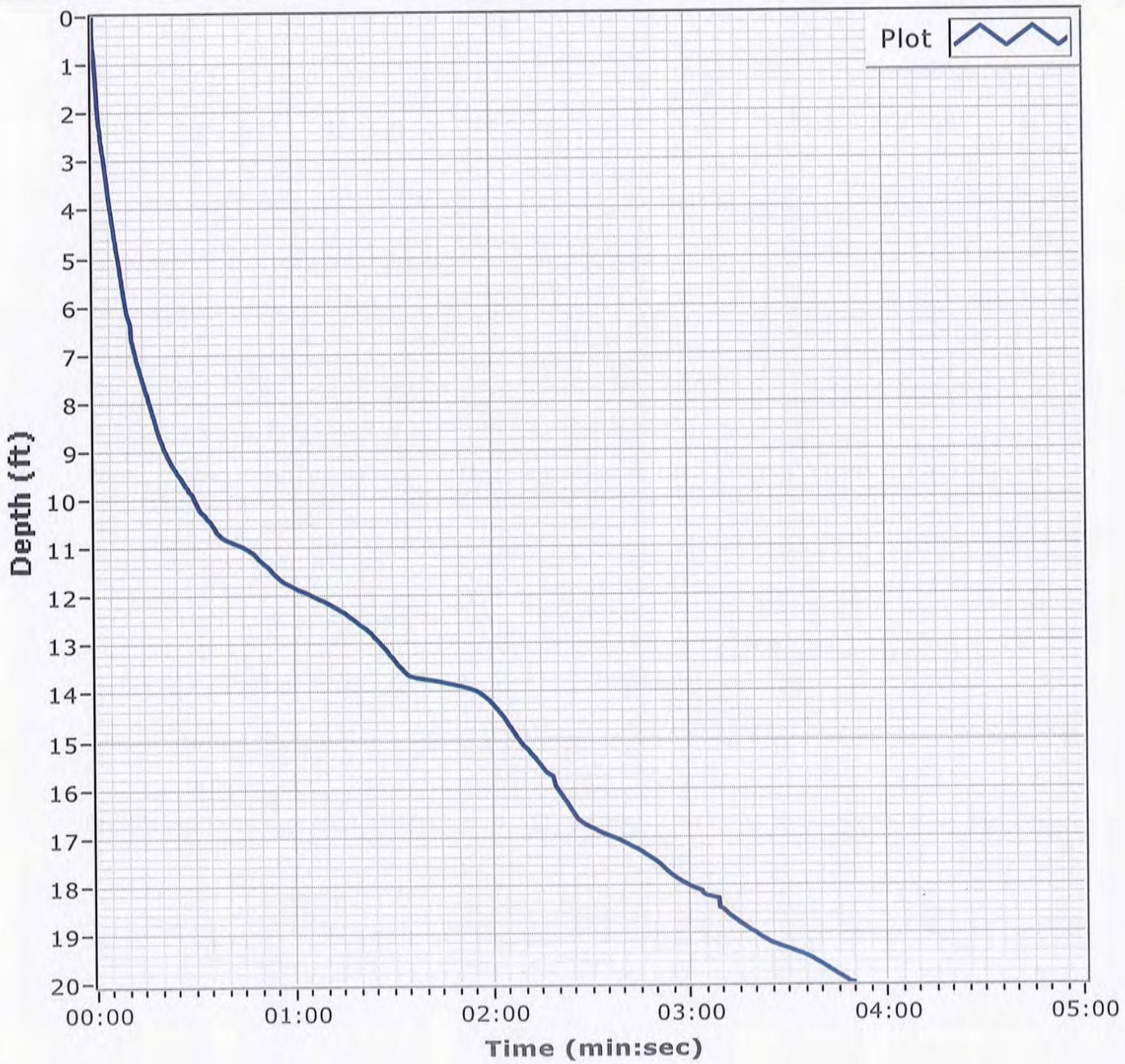
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Coordinate System
Latitude / Longitude

Date 12/12/2012
Start Time 15:19:03
End Time 15:22:53
Total Time 00:03:50

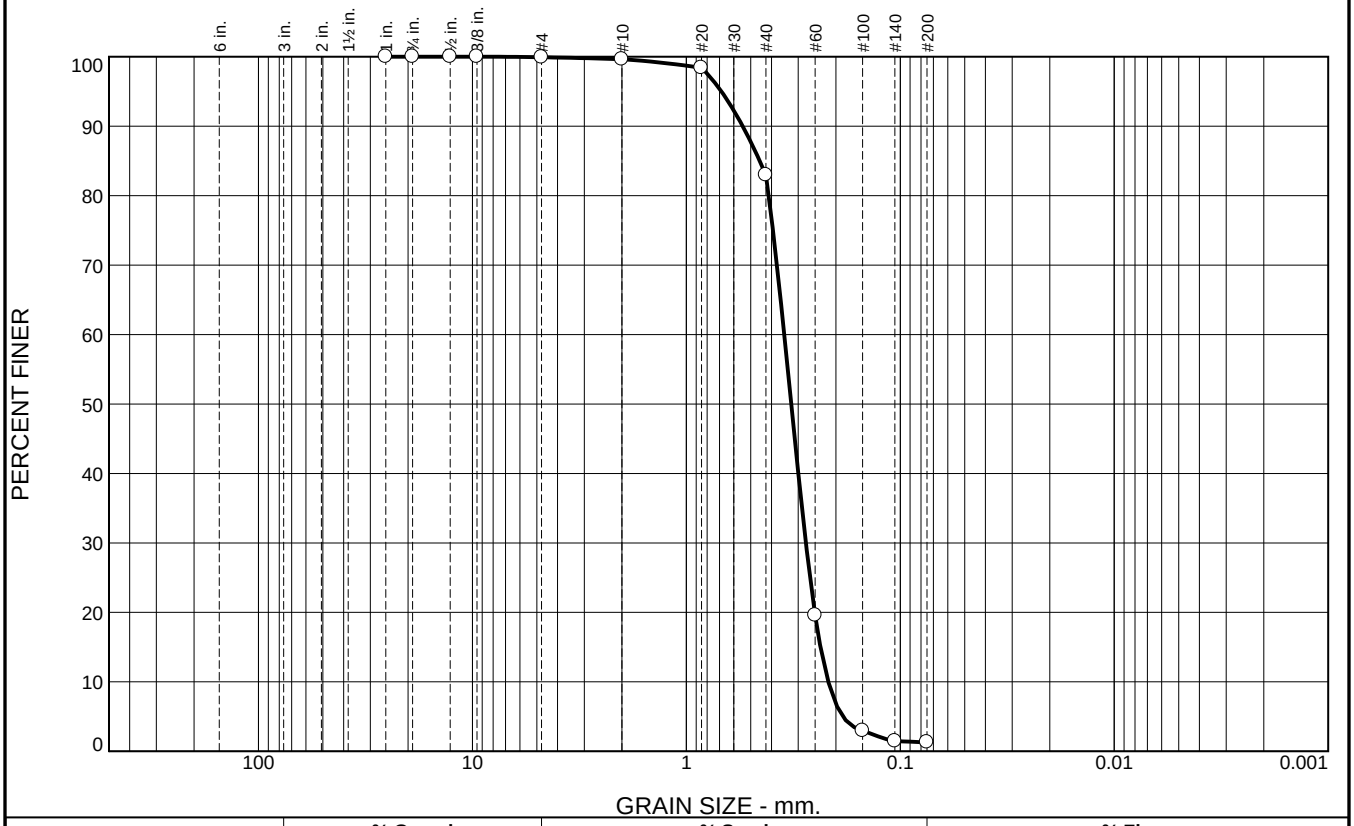
Water Depth 38.9'
Penetration 20.0'
Recovery 15.7'

Latitude 30 11.654
Longitude 088 18.454

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.3	16.6	81.7	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	99.6		
#20	98.4		
#40	83.0		
#60	19.6		
#100	3.0		
#140	1.5		
#200	1.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5454 D_{85}= 0.4543 D_{60}= 0.3486
D_{50}= 0.3234 D_{30}= 0.2765 D_{15}= 0.2360
D_{10}= 0.2169 C_u= 1.61 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-217-12 A
Sample Number: 6485 (33) **Depth:** 0.0' **Date:** 12/07/12

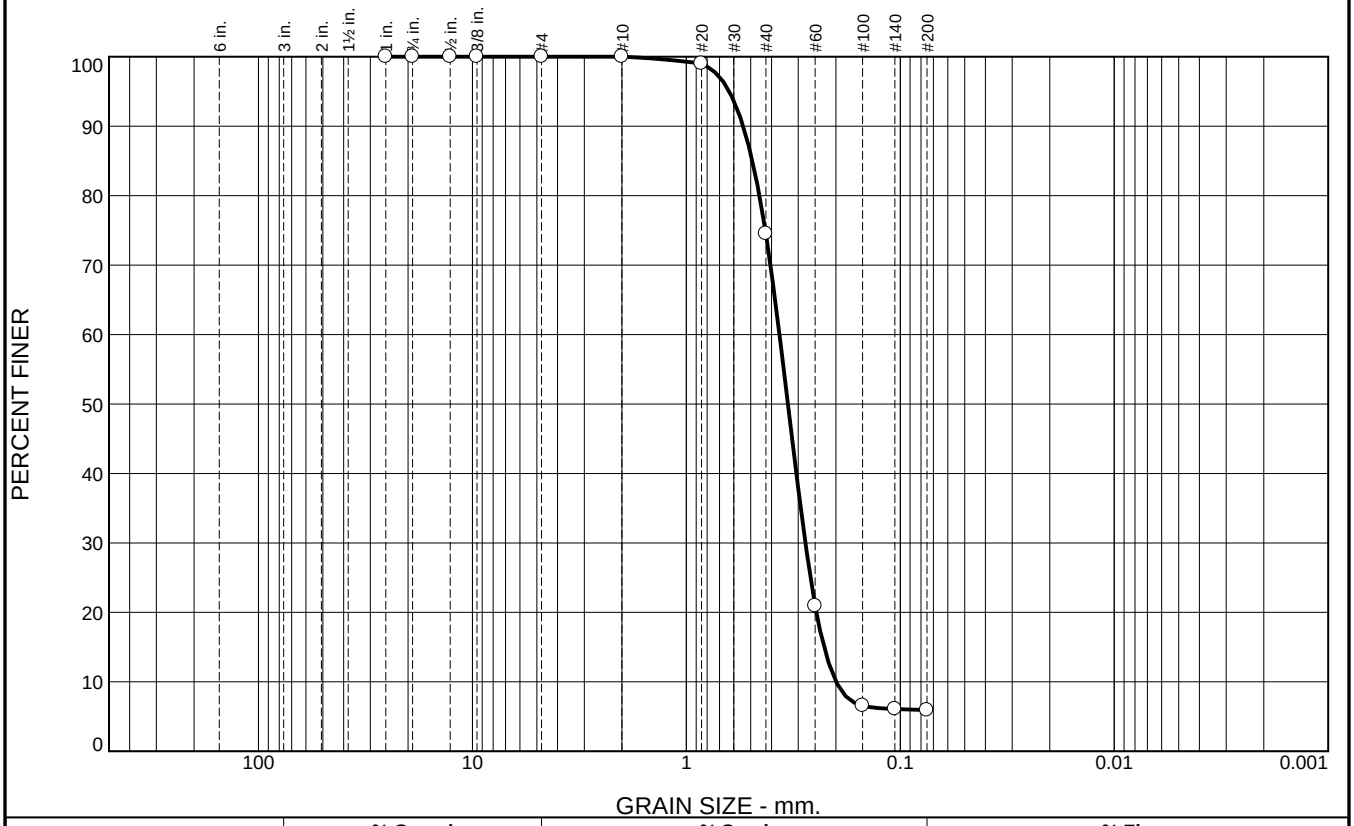
Thompson Engineering

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	25.5	68.6	5.9	

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	100.0		
#20	99.0		
#40	74.5		
#60	20.9		
#100	6.6		
#140	6.1		
#200	5.9		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5424 D_{85}= 0.4915 D_{60}= 0.3670
D_{50}= 0.3352 D_{30}= 0.2779 D_{15}= 0.2272
D_{10}= 0.1995 C_u= 1.84 C_c= 1.05

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-217-12 B
Sample Number: 6485 (34) **Depth:** 1.2' **Date:** 12/07/12

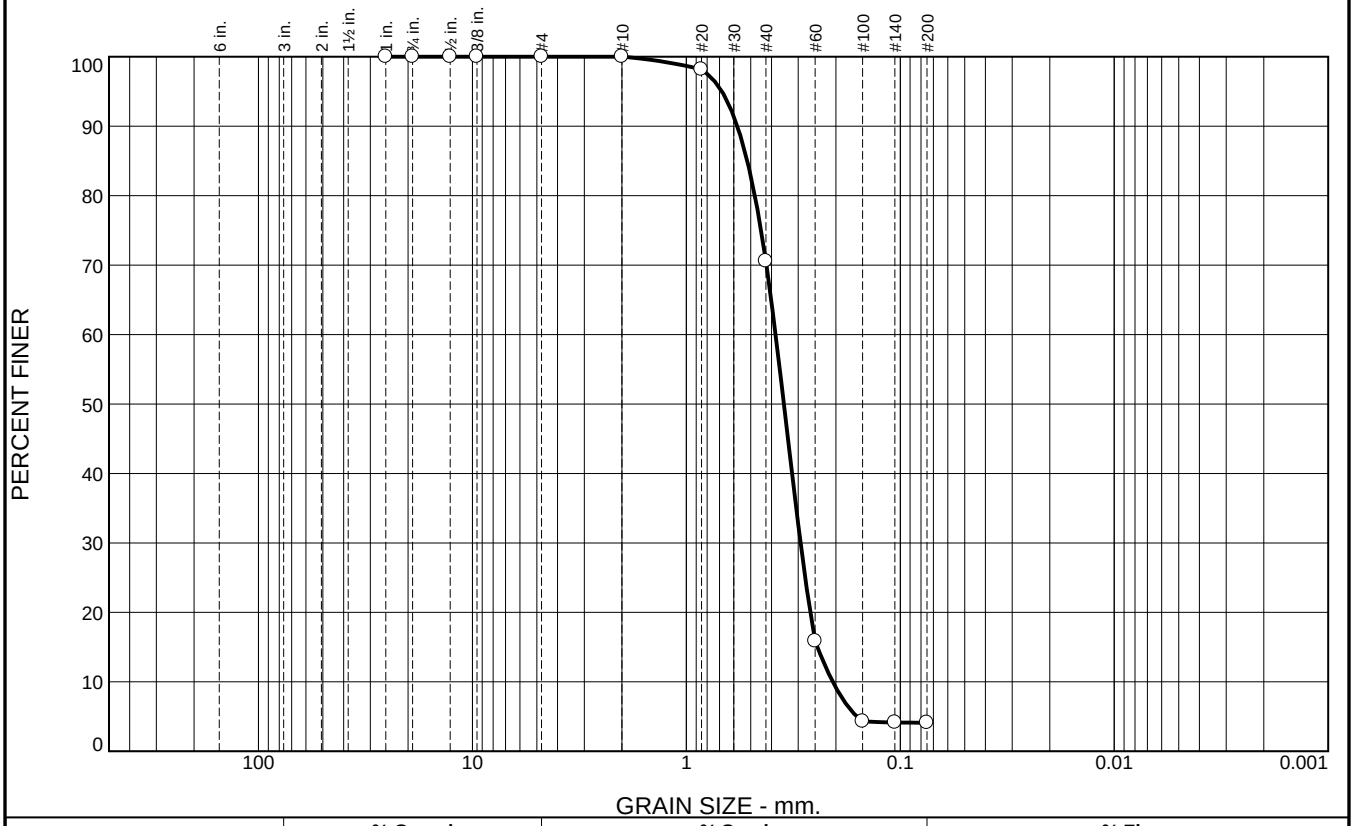
Thompson Engineering

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	29.4	66.5	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	100.0		
#20	98.2		
#40	70.6		
#60	15.9		
#100	4.3		
#140	4.1		
#200	4.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5775 D_{85}= 0.5190 D_{60}= 0.3826
D_{50}= 0.3500 D_{30}= 0.2927 D_{15}= 0.2439
D_{10}= 0.2068 C_u= 1.85 C_c= 1.08

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-217-12 C
Sample Number: 6485 (35) **Depth:** 5.7' **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-PB-218-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-218-12	LOCATION COORDINATES: E = 1,149,812 N = 253,289	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: 37.3 Ft.	
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
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: 17.3 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-37.7	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, lt. gray (SP)	A	Classification: SP-SM Color: 2.5Y 7/2-light gray D50: 0.316 mm % Fines: 9.7
				B	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3386 mm % Fines: 4.4
-46.5	8.8				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, some clay, trace fines, 0.5-inch clayey lenses between 14 to 15.7 ft., dense, lt. gray to white (SP)	C	Classification: SP Color: 2.5Y 8/2-pale yellow D50: 0.3172 mm % Fines: 2.1
				D	Classification: SP-SM Color: - D50: 0.2612 mm % Fines: 6.2
-53.4	15.7				
			CLAY, fat, mostly clay, trace fine-grained sand-sized quartz, firm, dark gray (CH)	NS	
-55.0	17.3				
			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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19545° Long = -88.30927°

Project Mississippi Barrier Island Restoration Project

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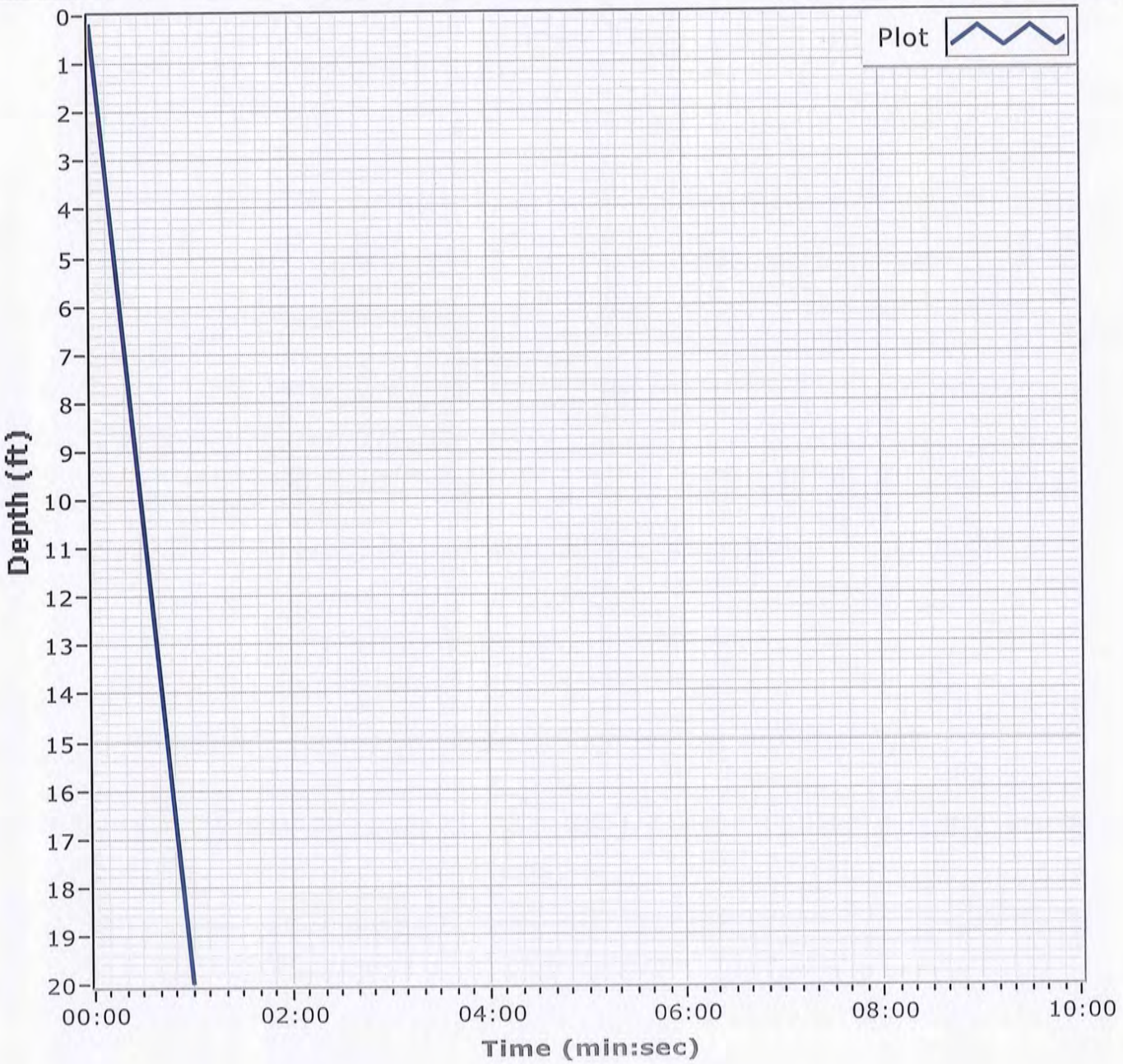
Core Identifier BI-PB-218-12
Coordinate System
Latitude / Longitude

Latitude 30 11.727
Longitude 088 18.556

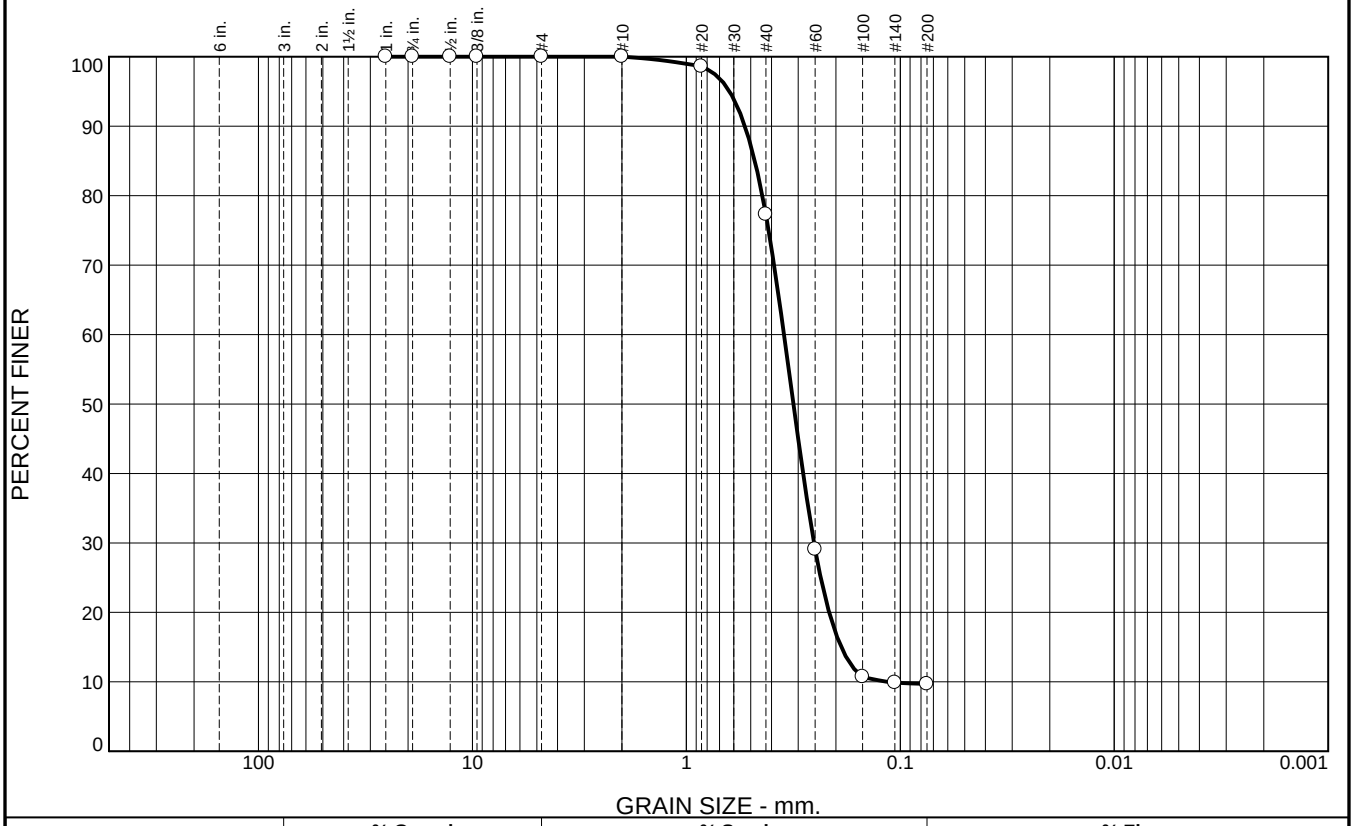
Date 12/12/2012
Start Time 13:02:03
End Time 13:03:03
Total Time 00:01:00

Water Depth 37.3'
Penetration 20.0'
Recovery 17.3'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	22.7	67.6	9.7	

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	98.6		
#40	77.3		
#60	29.1		
#100	10.7		
#140	9.9		
#200	9.7		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5322 D_{85}= 0.4787 D_{60}= 0.3496
D_{50}= 0.3160 D_{30}= 0.2532 D_{15}= 0.1889
D_{10}= 0.1143 C_u= 3.06 C_c= 1.60

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-218-12 A
Sample Number: 6485 (36) **Depth:** 0.0' **Date:** 12/07/12

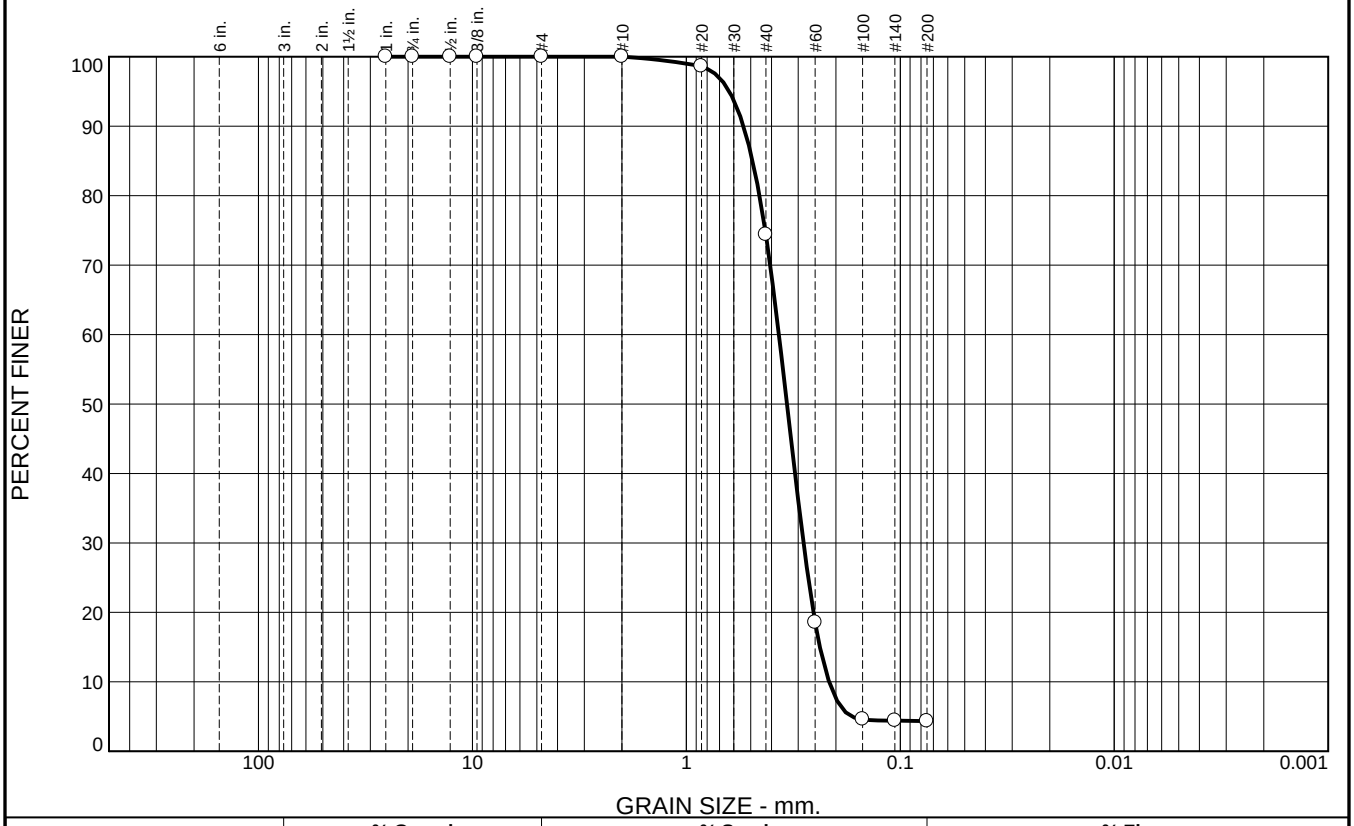
Thompson Engineering

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	25.6	70.0	4.4	

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	100.0		
#20	98.6		
#40	74.4		
#60	18.5		
#100	4.6		
#140	4.4		
#200	4.4		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5405 D_{85}= 0.4904 D_{60}= 0.3693
D_{50}= 0.3386 D_{30}= 0.2835 D_{15}= 0.2375
D_{10}= 0.2151 C_u= 1.72 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-218-12 B
Sample Number: 6485 (37) **Depth:** 5.0' **Date:** 12/07/12

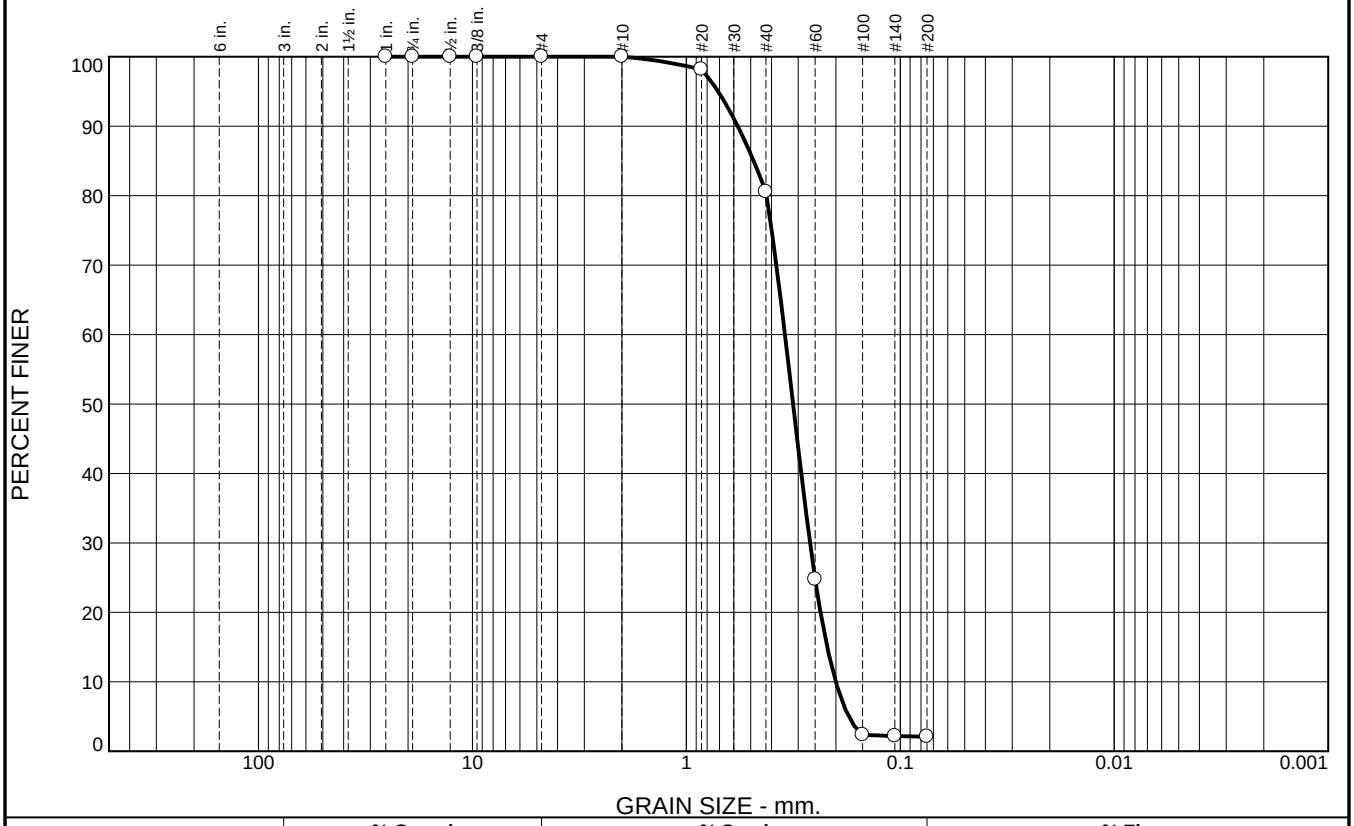
Thompson Engineering

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	19.5	78.4	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	98.2		
#40	80.5		
#60	24.7		
#100	2.4		
#140	2.2		
#200	2.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5751 D_{85}= 0.4849 D_{60}= 0.3461
D_{50}= 0.3172 D_{30}= 0.2643 D_{15}= 0.2196
D_{10}= 0.2003 C_u= 1.73 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-218-12 C
Sample Number: 6485 (38) **Depth:** 8.8' **Date:** 12/07/12

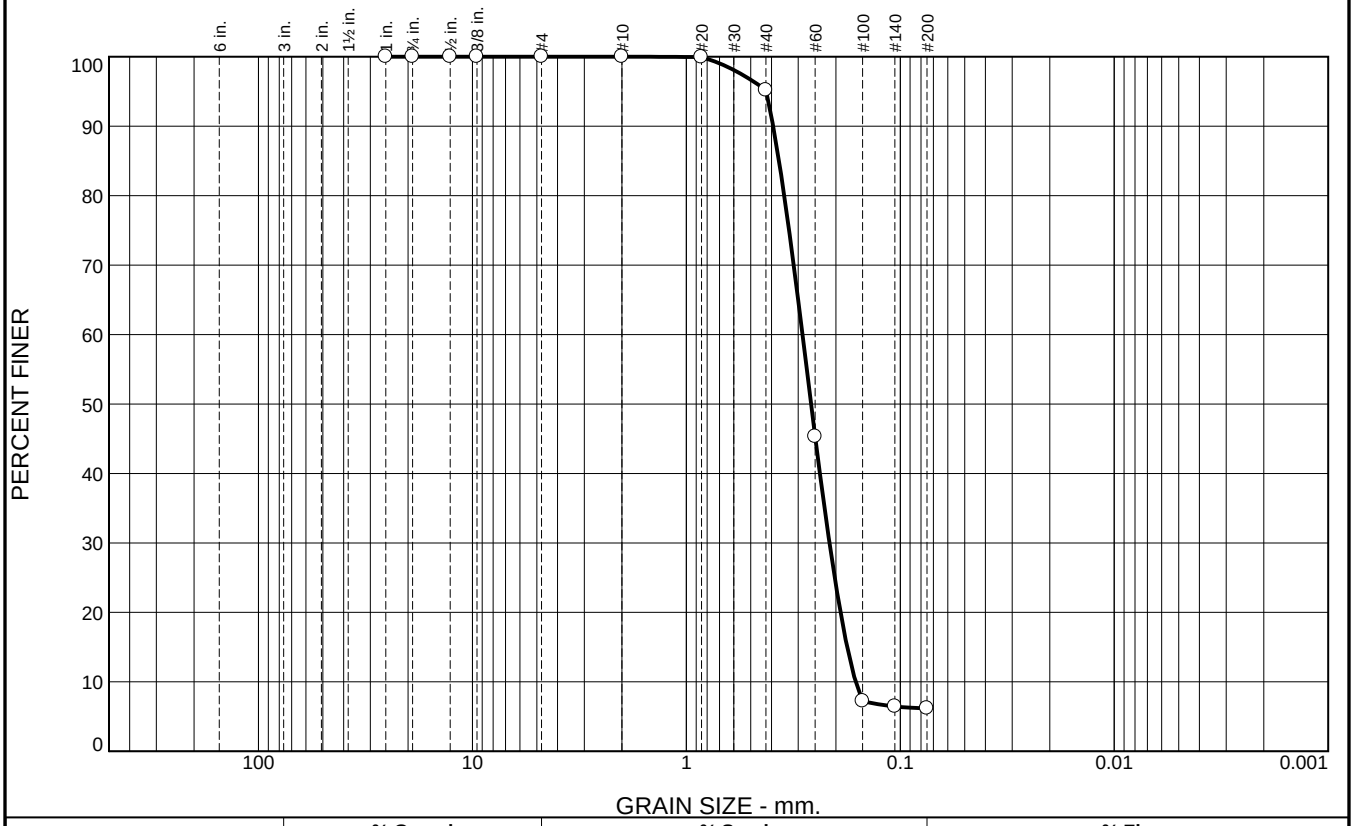
Thompson Engineering

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	4.8	89.0	6.2	

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	100.0		
#20	99.9		
#40	95.2		
#60	45.3		
#100	7.2		
#140	6.5		
#200	6.2		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3927 D_{85}= 0.3688 D_{60}= 0.2867
D_{50}= 0.2612 D_{30}= 0.2143 D_{15}= 0.1773
D_{10}= 0.1618 C_u= 1.77 C_c= 0.99

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-218-12 D
Sample Number: 6485 (39) **Depth:** 13.8' **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-PB-219-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-219-12	LOCATION COORDINATES: E = 1,147,637 N = 253,560	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: 31.4 Ft.
		15. DATE BORING	STARTED: 12-12-12 / COMPLETED: 12-12-12
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: 15.9 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 silt, trace shell fragments, dense, lt. gray to gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2729 mm % Fines: 2.1
-37.8	5.9				
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace clay, dense, gray (SP-SM)	B	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.2503 mm % Fines: 7.3
-42.8	10.9				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, dense, lt. gray to white (SP)	C	Classification: SP Color: 2.5Y 8/1-white D50: 0.31 mm % Fines: 2.1
-47.8	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19622° Long = -88.31615°

Project Mississippi Barrier Island Restoration Project

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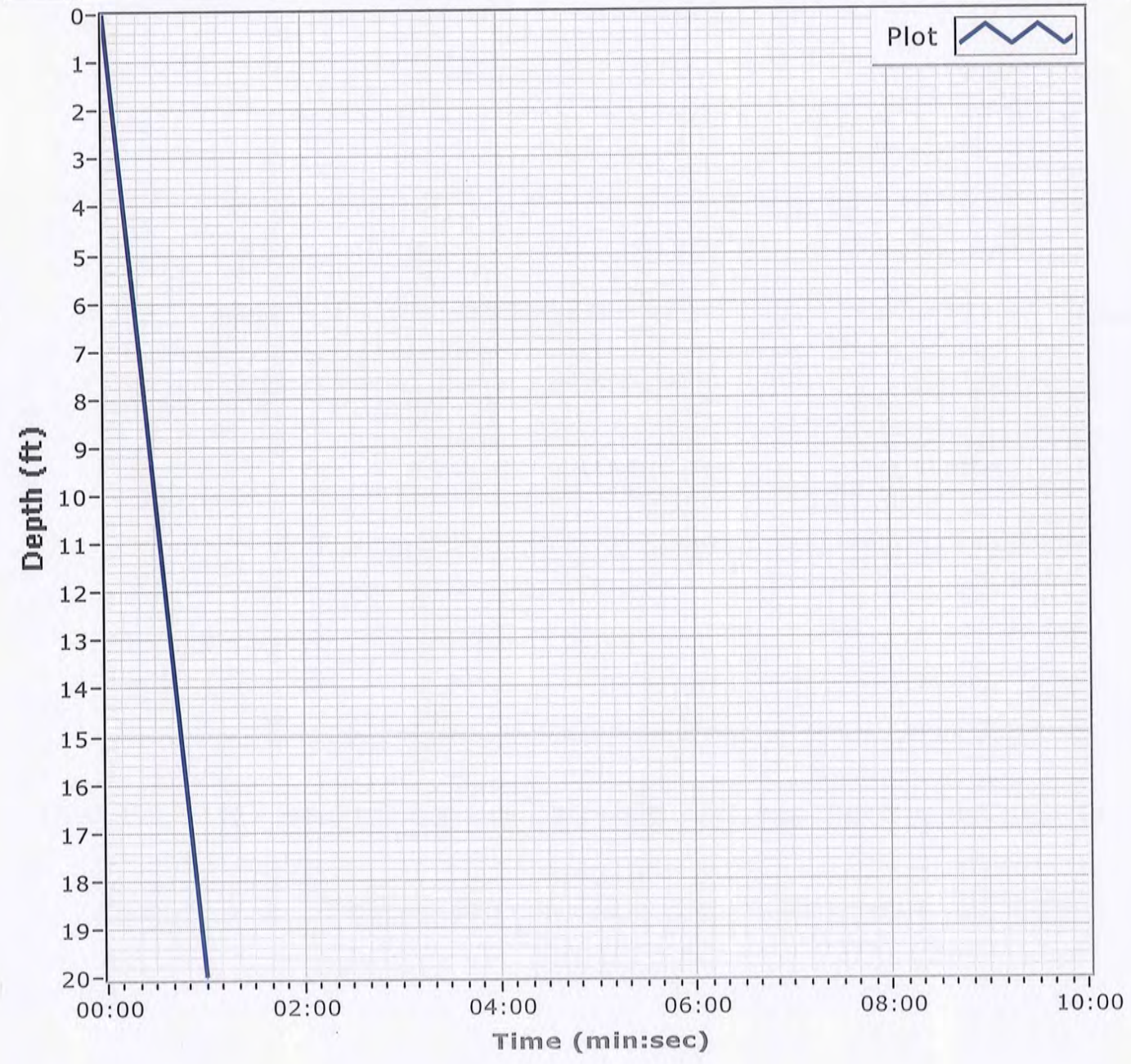
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Coordinate System
Latitude / Longitude

Latitude 30 11.930
Longitude 088 22.284

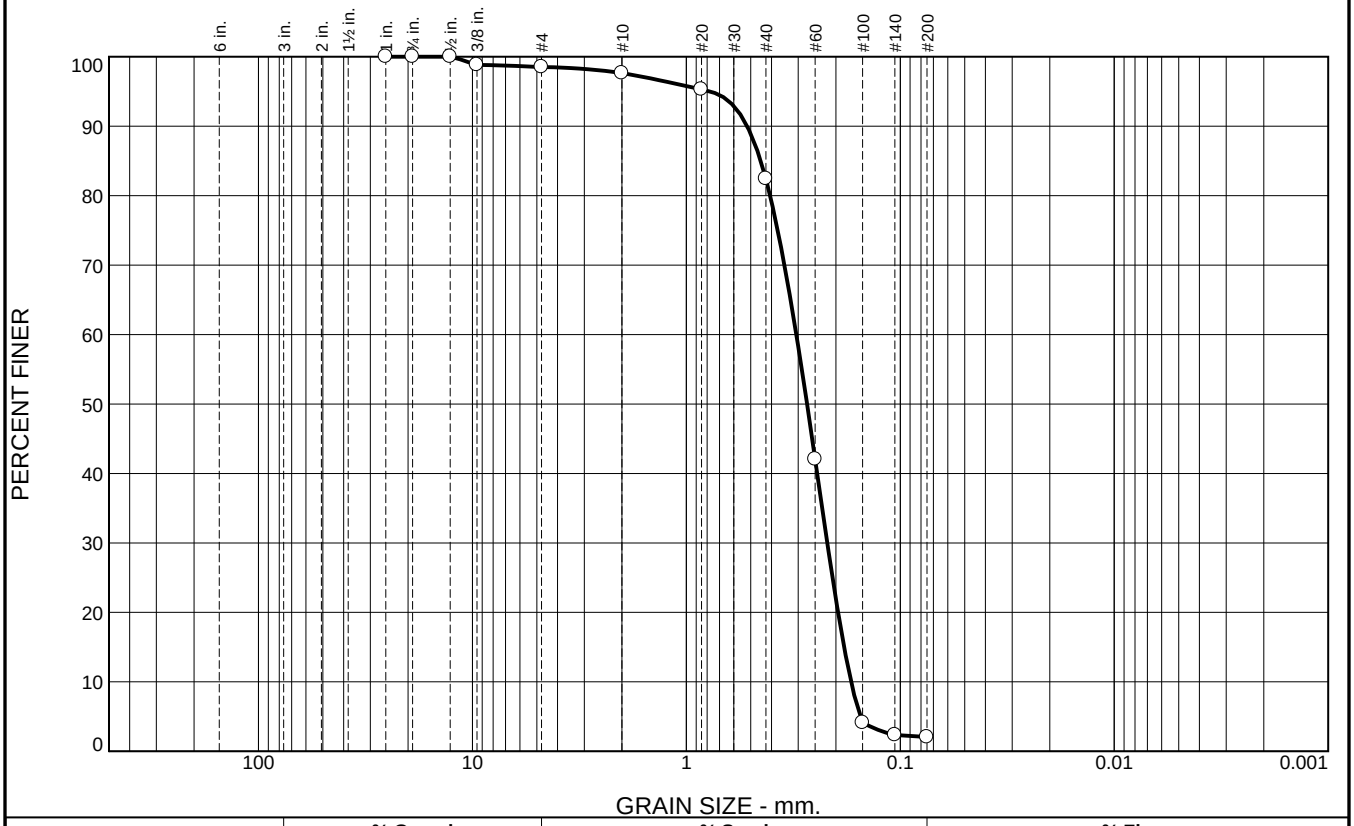
Date 12/13/2012
Start Time 08:34:03
End Time 08:35:03
Total Time 00:01:00

Water Depth 23.8'
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	1.5	0.9	15.2	80.3	2.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	98.8		
#4	98.5		
#10	97.6		
#20	95.3		
#40	82.4		
#60	42.0		
#100	4.1		
#140	2.3		
#200	2.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5199 D_{85}= 0.4493 D_{60}= 0.3063
D_{50}= 0.2729 D_{30}= 0.2194 D_{15}= 0.1832
D_{10}= 0.1700 C_u= 1.80 C_c= 0.92

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-219-12 A
Sample Number: 6485 (40) **Depth:** 0.0' **Date:** 12/07/12

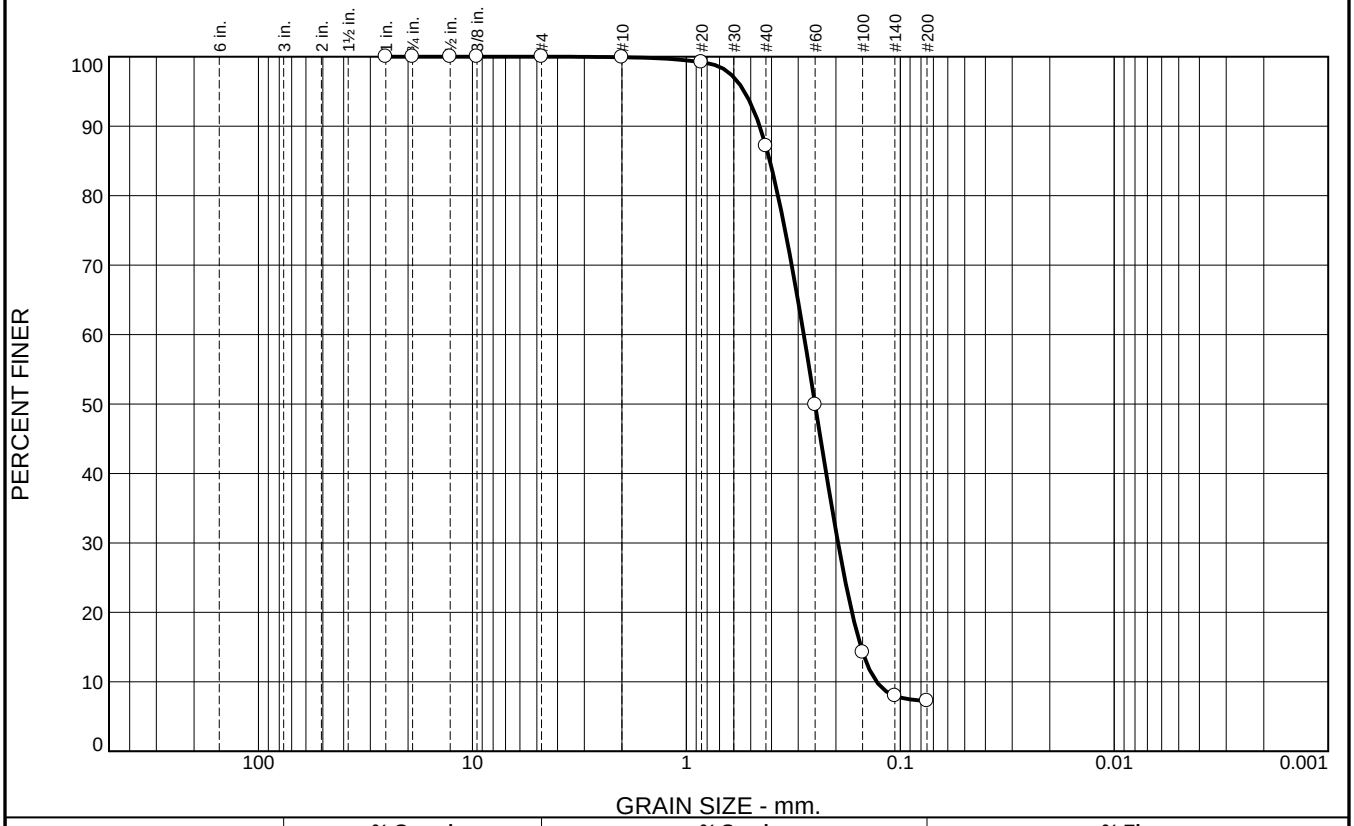
Thompson Engineering

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	0.1	12.7	79.9	7.3	

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	99.9		
#20	99.2		
#40	87.2		
#60	49.9		
#100	14.2		
#140	8.0		
#200	7.3		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4541 D_{85}= 0.4069 D_{60}= 0.2828
D_{50}= 0.2503 D_{30}= 0.1954 D_{15}= 0.1527
D_{10}= 0.1291 C_u= 2.19 C_c= 1.05

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-219-12 B
Sample Number: 6485 (41) **Depth:** 5.9' **Date:** 12/07/12

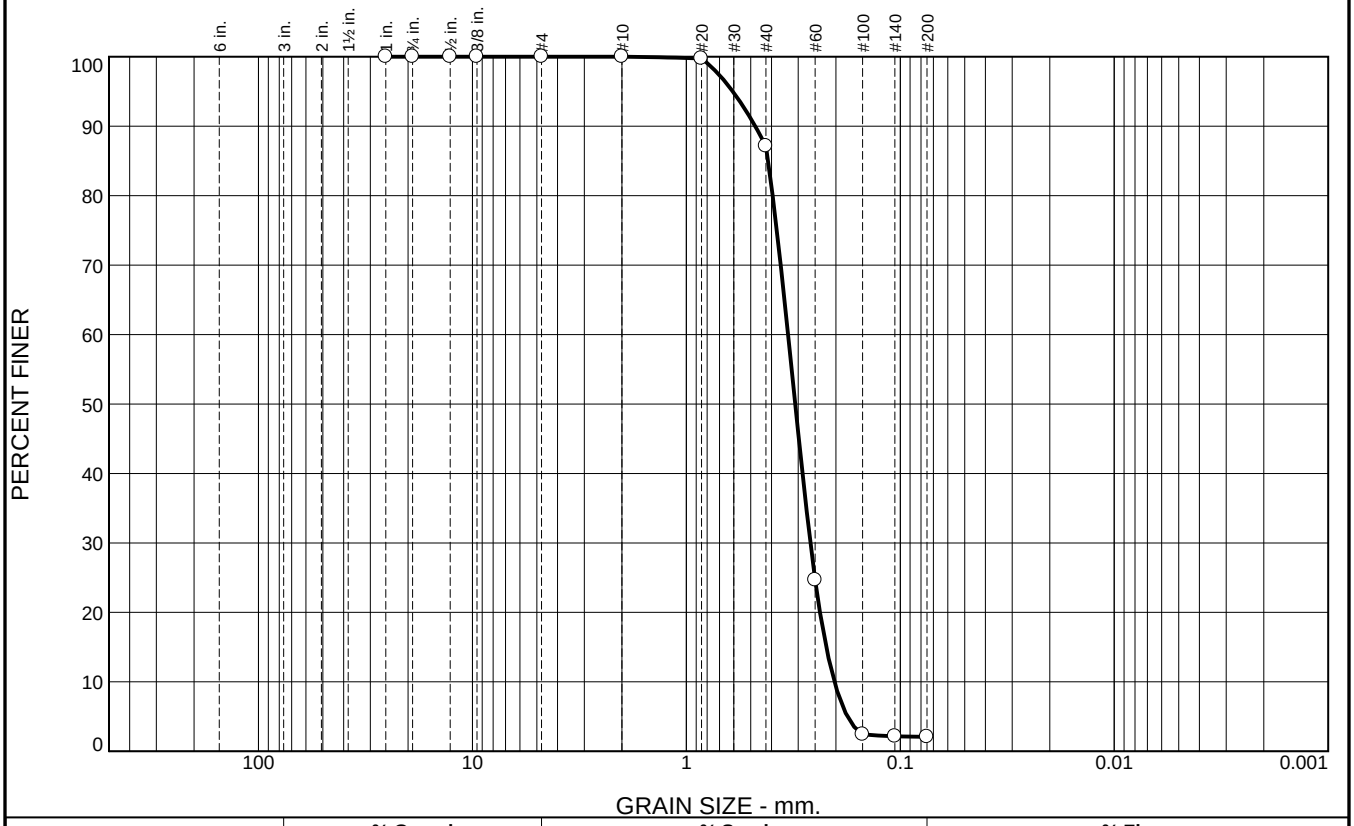
Thompson Engineering

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	0.0	0.0	12.9	85.0	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	99.7		
#40	87.1		
#60	24.7		
#100	2.4		
#140	2.2		
#200	2.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4769 D_{85}= 0.4151 D_{60}= 0.3346
D_{50}= 0.3100 D_{30}= 0.2633 D_{15}= 0.2219
D_{10}= 0.2032 C_u= 1.65 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-219-12 C
Sample Number: 6485 (42) **Depth:** 10.9' **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-PB-220-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-220-12	LOCATION COORDINATES: E = 1,145,178 N = 255,851	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: 26.1 Ft.	
		15. DATE BORING	STARTED: 12-06-12 / COMPLETED: 12-06-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -25.4 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 100%	
8. TOTAL DEPTH OF BORING: 11.8 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-25.4	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace silt, trace shell fragments, pale lt. brown (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3202 mm % Fines: 1.1
-29.6	4.2				
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace shell fragments, lt. gray (SP)	B	Classification: SP Color: 5Y 7/1-light gray D50: 0.2423 mm % Fines: 2.3
-32.2	6.8				
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace shell fragments, gray (SP)	C	Classification: SP Color: 5Y 7/1-light gray D50: 0.2219 mm % Fines: 1.9
-37.2	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20255° Long = -88.32390°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

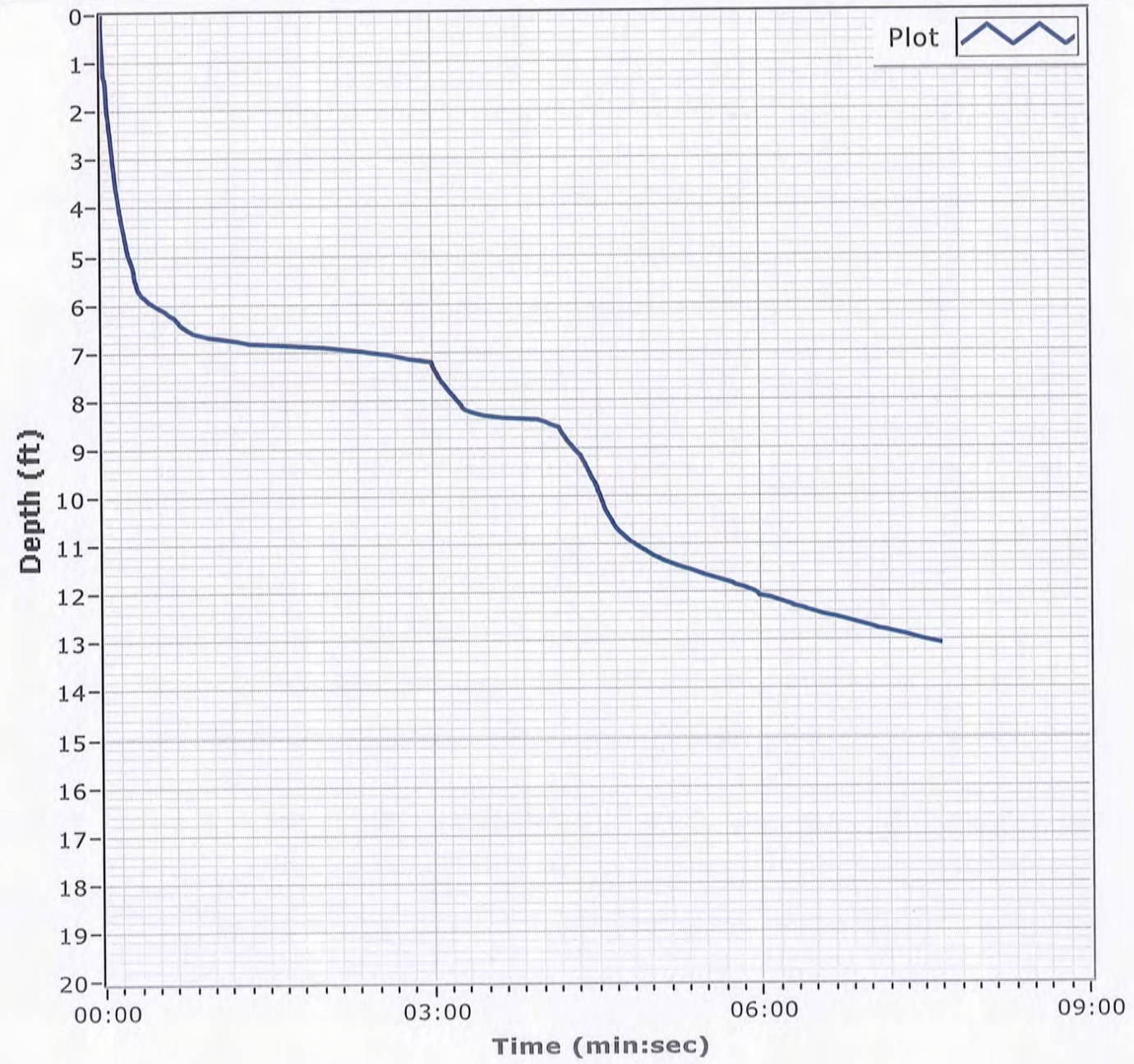
Core Identifier BI-PB-220-12
Coordinate System
Latitude / Longitude

Latitude 30 12.153
Longitude 088 19.434

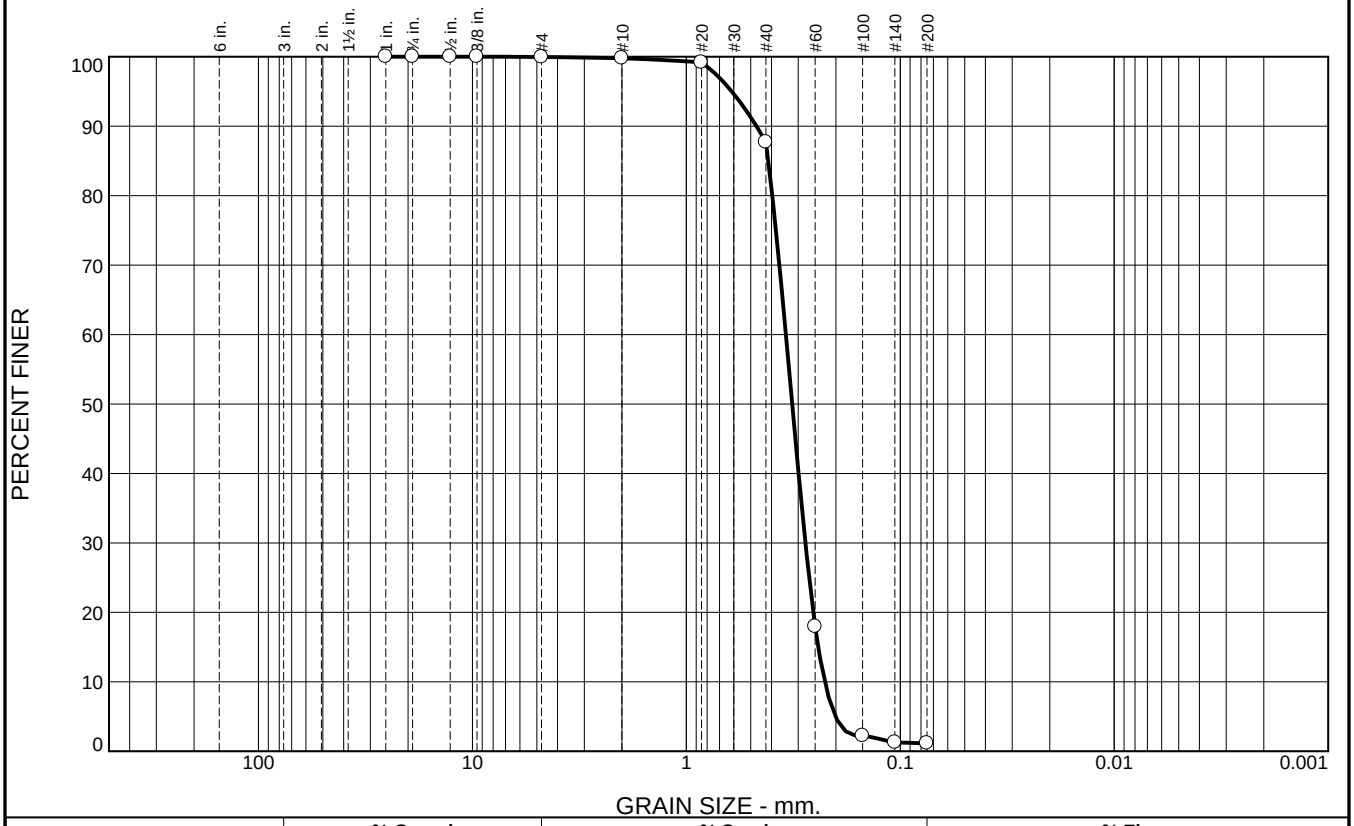
Date 12/06/2012
Start Time 15:04:32
End Time 15:12:12
Total Time 00:07:39

Water Depth 26.1'
Penetration 13.1'
Recovery 11.8'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.1	12.1	86.6	1.1	

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	99.8		
#20	99.2		
#40	87.7		
#60	18.0		
#100	2.2		
#140	1.3		
#200	1.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4706 D_{85}= 0.4141 D_{60}= 0.3425
D_{50}= 0.3202 D_{30}= 0.2779 D_{15}= 0.2419
D_{10}= 0.2255 C_u= 1.52 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-220-12 A
Sample Number: 6480 (56) **Depth:** 0.0' **Date:** 12/07/12

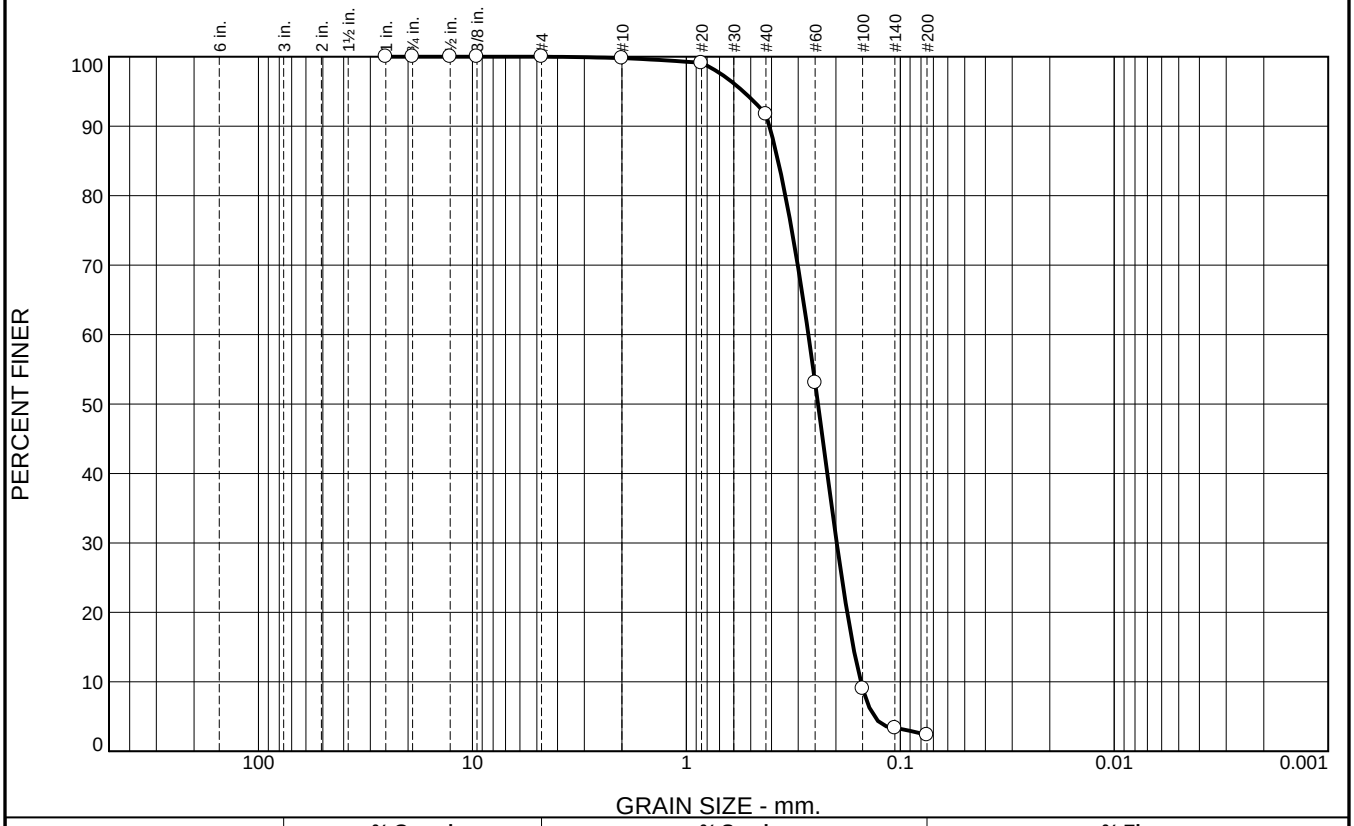
Thompson Engineering

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	0.2	8.1	89.4	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	91.7		
#60	53.1		
#100	9.0		
#140	3.3		
#200	2.3		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4089 D_{85}= 0.3723 D_{60}= 0.2690
D_{50}= 0.2423 D_{30}= 0.1982 D_{15}= 0.1660
D_{10}= 0.1530 C_u= 1.76 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-220-12 B
Sample Number: 6480 (57) **Depth:** 4.2' **Date:** 12/07/12

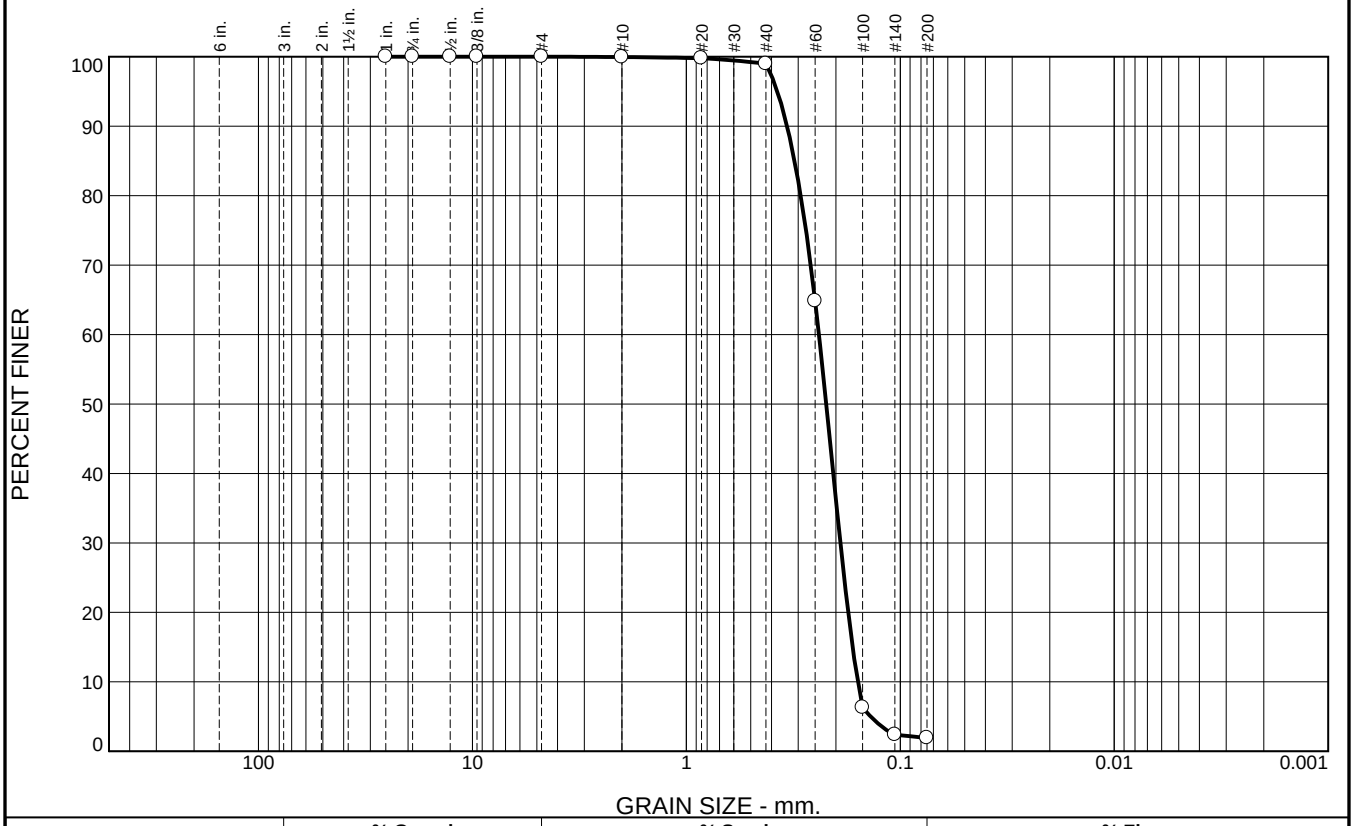
Thompson Engineering

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	0.1	0.9	97.1	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	99.8		
#40	99.0		
#60	64.8		
#100	6.3		
#140	2.4		
#200	1.9		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3381 D_{85}= 0.3121 D_{60}= 0.2400
D_{50}= 0.2219 D_{30}= 0.1906 D_{15}= 0.1673
D_{10}= 0.1582 C_u= 1.52 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-220-12 C
Sample Number: 6480 (58) **Depth:** 6.8' **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-PB-221-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-221-12	LOCATION COORDINATES: E = 1,130,189 N = 255,743	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: 22 Ft.	
		15. DATE BORING	STARTED: 12-13-12 / COMPLETED: 12-13-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -22.4 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-22.4	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, pale brown to lt. gray (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3248 mm % Fines: 1.7
				B	Classification: SP Color: 2.5Y 8/1-white D50: 0.2875 mm % Fines: 1.9
				C	Classification: SP Color: 5Y 7/1-light gray D50: 0.2894 mm % Fines: 1.7
-38.7	16.3				
			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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20243° Long = -88.37135°

Project Mississippi Barrier Island Restoration Project

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SERVICES

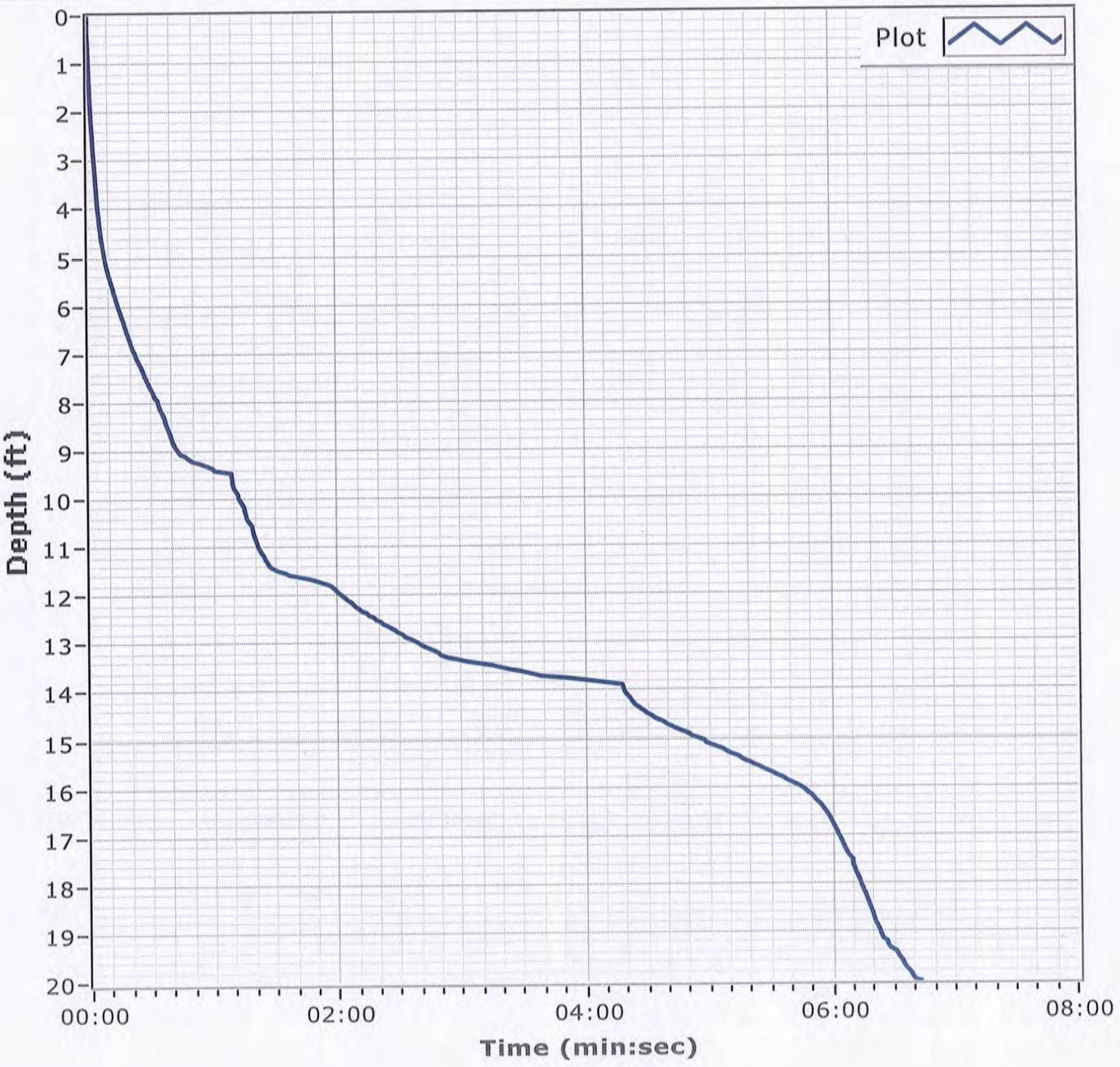
Core Identifier BI-PB-221-12
Coordinate System
Latitude / Longitude

Latitude 30 12.146
Longitude 088 22.281

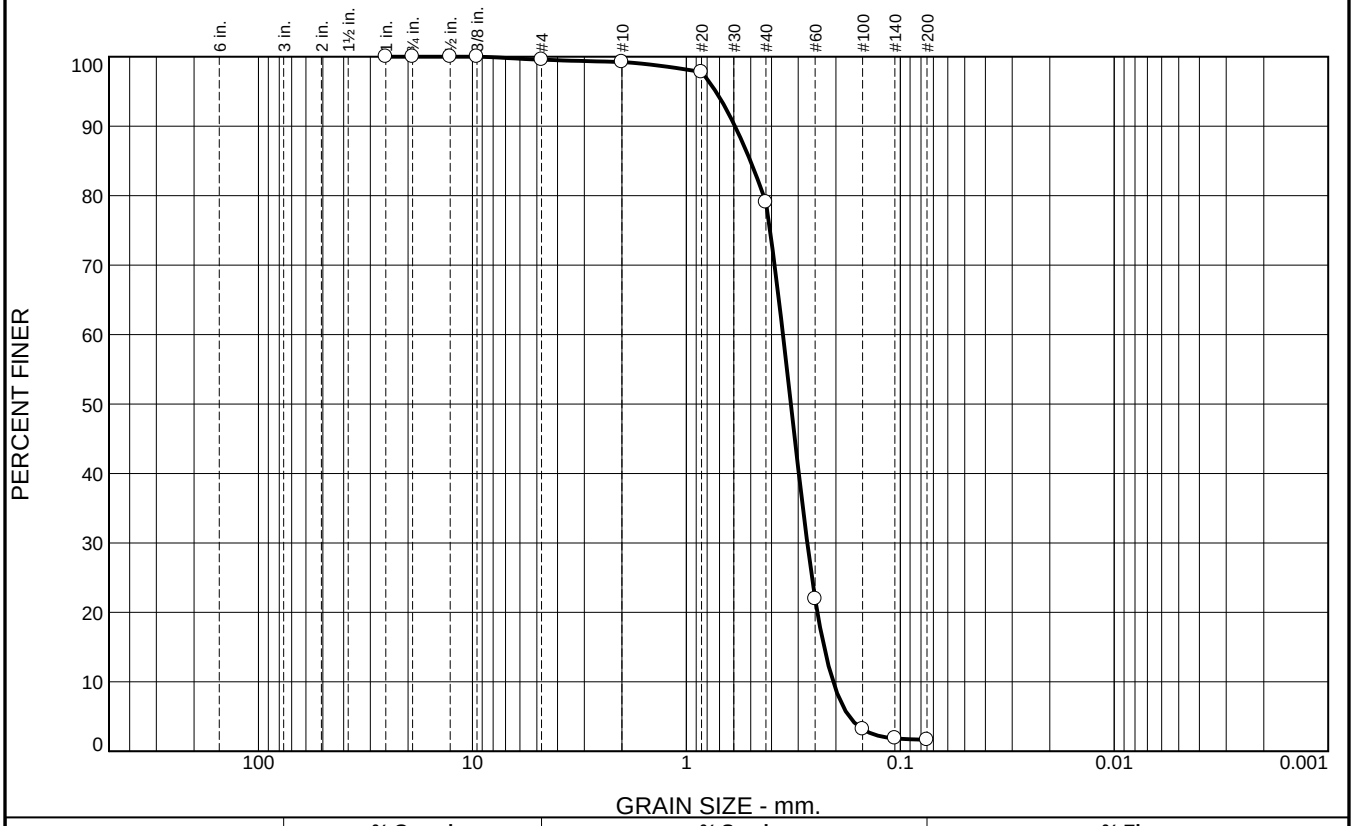
Date 12/13/2012
Start Time 09:51:37
End Time 09:58:21
Total Time 00:06:43

Water Depth 22.0'
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	0.4	0.4	20.1	77.4	1.7	

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	99.2		
#20	97.8		
#40	79.1		
#60	21.9		
#100	3.2		
#140	1.9		
#200	1.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5925 D_{85}= 0.5020 D_{60}= 0.3534
D_{50}= 0.3248 D_{30}= 0.2723 D_{15}= 0.2271
D_{10}= 0.2060 C_u= 1.72 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-221-12 A
Sample Number: 6485 (43) **Depth:** 0.0' **Date:** 12/07/12

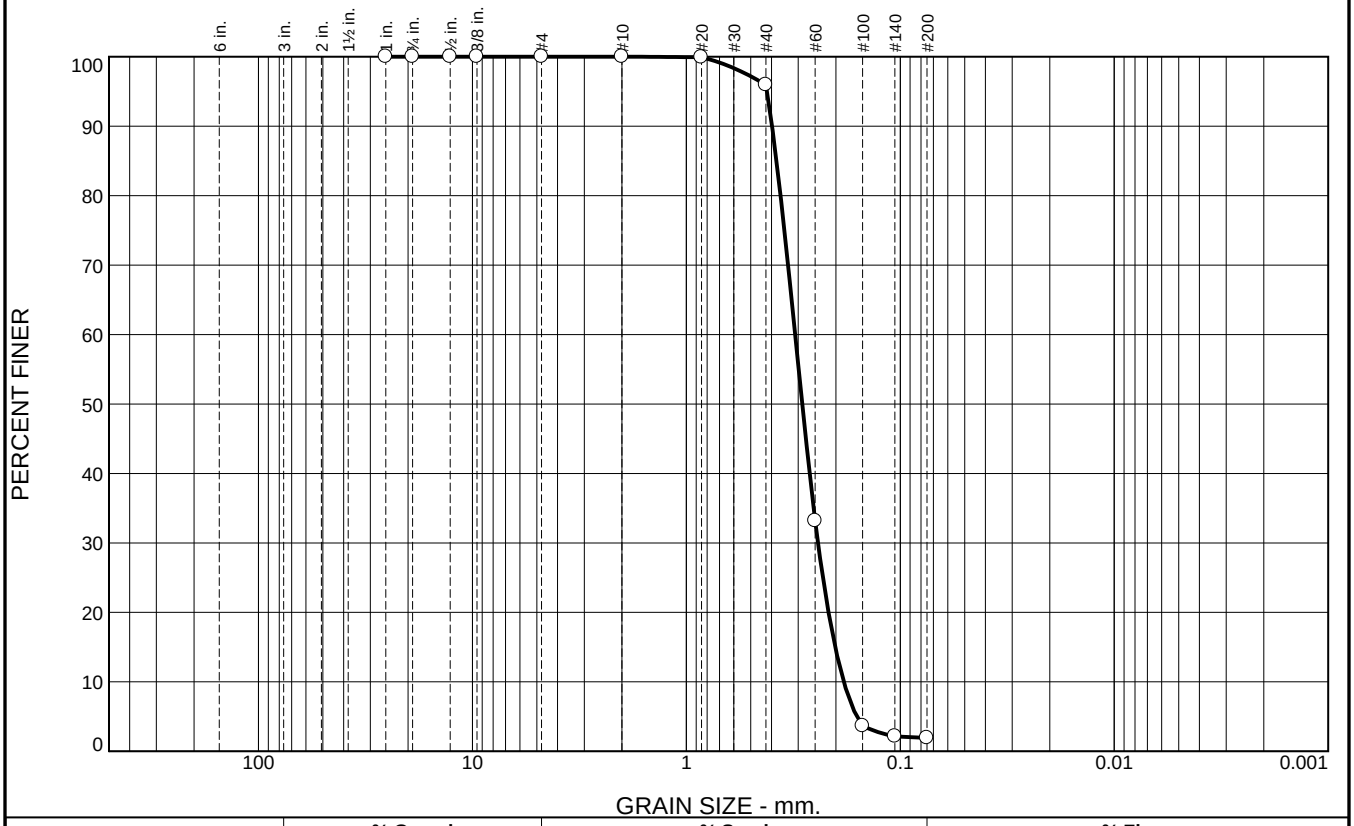
Thompson Engineering

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	4.1	94.0	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	100.0		
#20	99.9		
#40	95.9		
#60	33.2		
#100	3.6		
#140	2.1		
#200	1.9		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3974 D_{85}= 0.3788 D_{60}= 0.3101
D_{50}= 0.2875 D_{30}= 0.2425 D_{15}= 0.2015
D_{10}= 0.1838 C_u= 1.69 C_c= 1.03

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-221-12 B
Sample Number: 6485 (44) **Depth:** 5.0' **Date:** 12/07/12

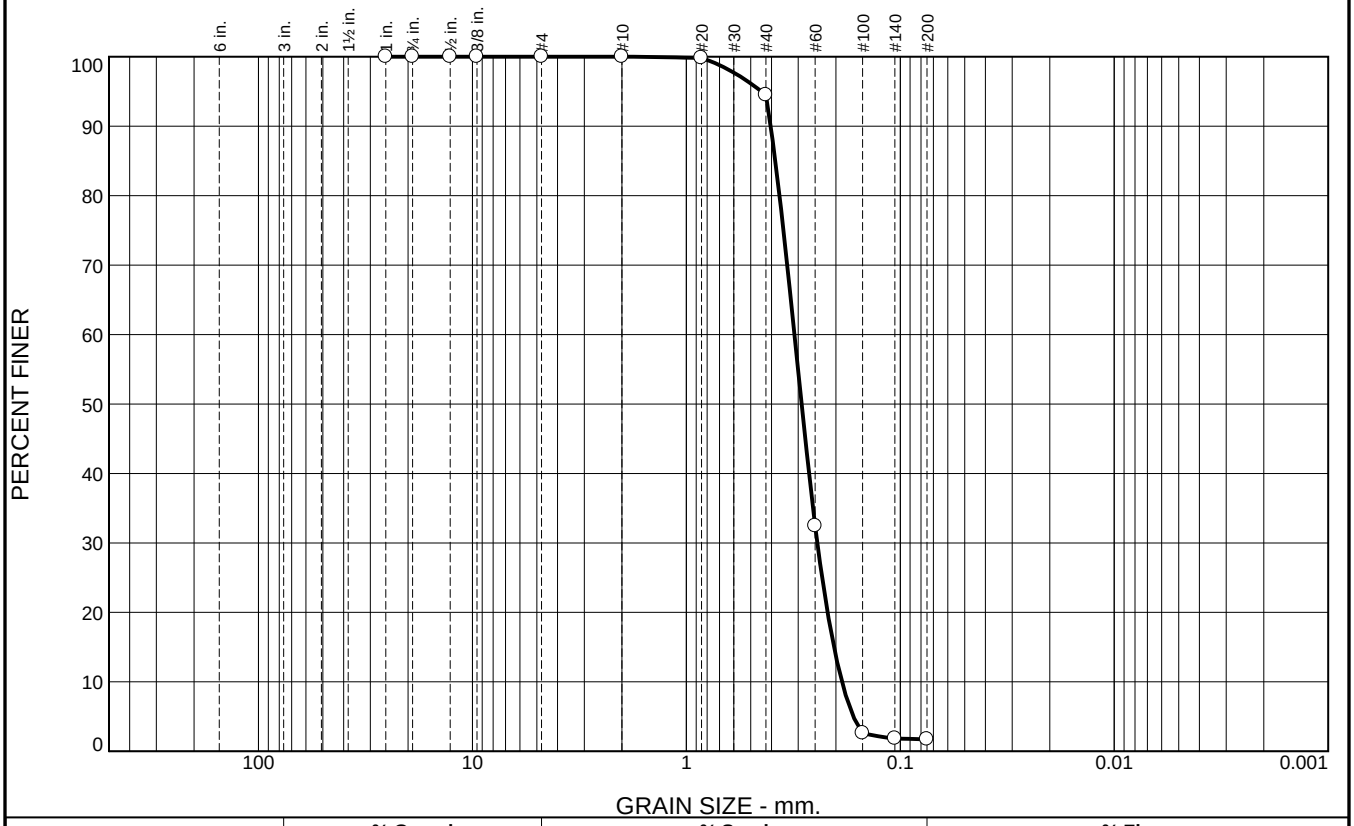
Thompson Engineering

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	5.5	92.8	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	99.8		
#40	94.5		
#60	32.5		
#100	2.6		
#140	1.8		
#200	1.7		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4033 D_{85}= 0.3836 D_{60}= 0.3125
D_{50}= 0.2894 D_{30}= 0.2442 D_{15}= 0.2042
D_{10}= 0.1875 C_u= 1.67 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-221-12 C
Sample Number: 6485 (45) **Depth:** 10.0' **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-PB-222-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-222-12	LOCATION COORDINATES: E = 1,131,864 N = 255,677	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: 22.8 Ft.	
		15. DATE BORING	STARTED: 12-13-12 / COMPLETED: 12-13-12
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: 16.6 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-23.6	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, becomes siltier with depth, pale brown to lt. gray (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3667 mm % Fines: 1.5
				B	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3124 mm % Fines: 2.5
				C	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3064 mm % Fines: 3
-36.3	12.7				
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, silty band at 14.9 ft., lt. brown (SP-SM)	D	Classification: SP-SM Color: 2.5Y 5/2-grayish brown D50: 0.2903 mm % Fines: 6.2
-39.6	16.0				
-40.2	16.6		CLAY, fat, mostly clay, little fine-grained sand-sized quartz, medium to high plasticity, stiff, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20223° Long = -88.36605°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

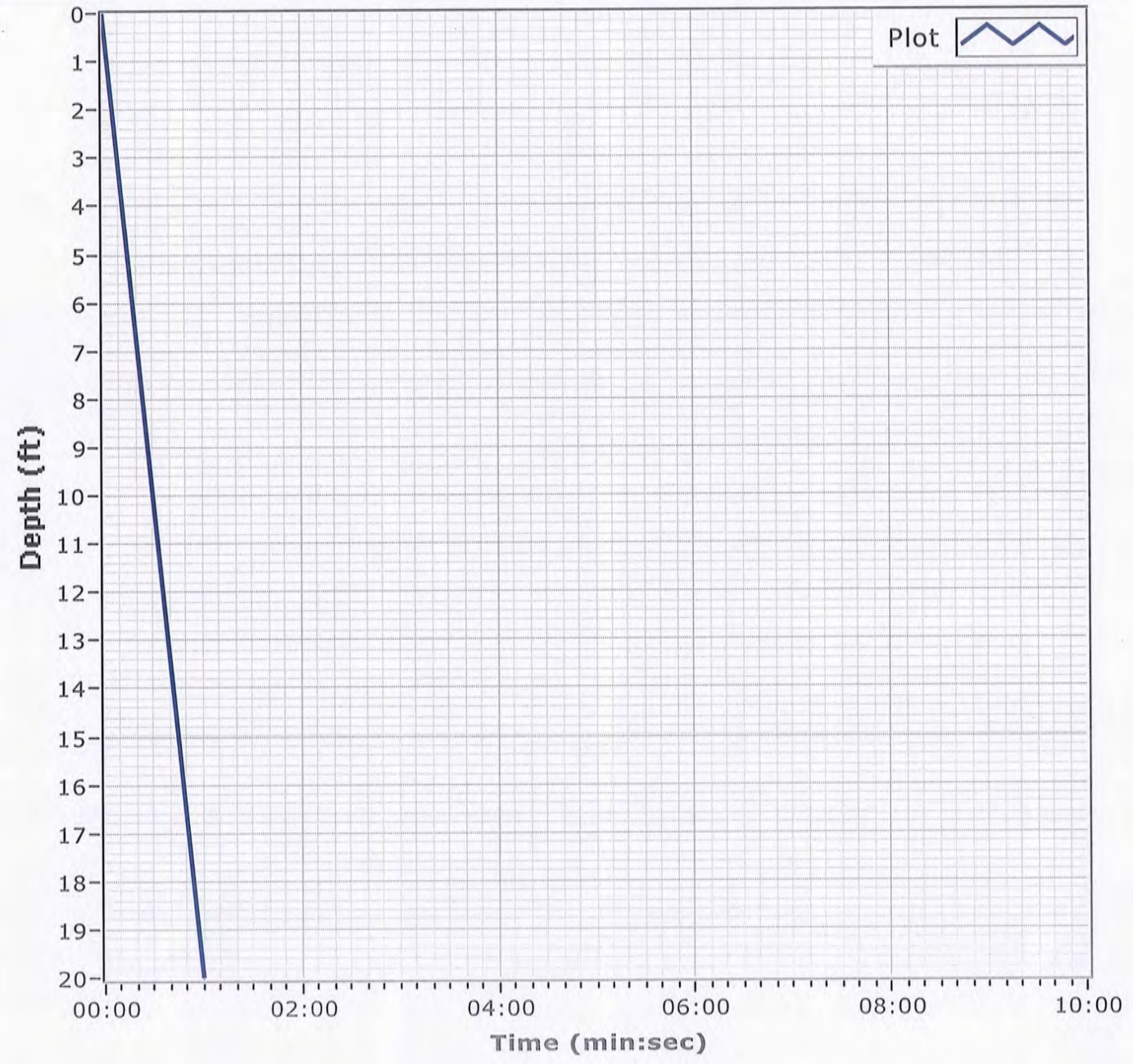
Core Identifier BI-PB-222-12
Coordinate System
Latitude / Longitude

Latitude 30 12.134
Longitude 088 21.963

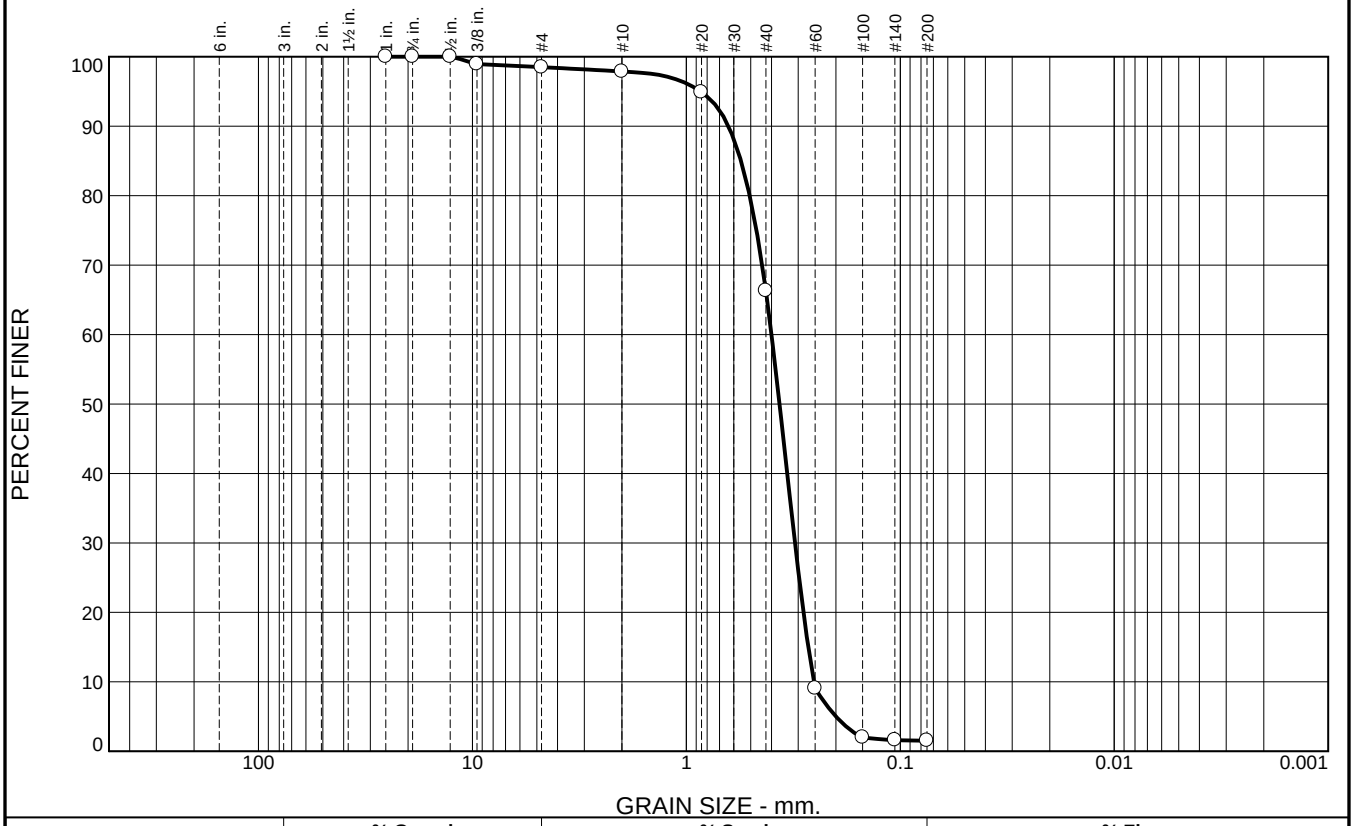
Date 12/13/2012
Start Time 10:25:03
End Time 10:26:03
Total Time 00:01:00

Water Depth 22.8'
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	1.5	0.6	31.6	64.8	1.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	98.9		
#4	98.5		
#10	97.9		
#20	94.9		
#40	66.3		
#60	9.1		
#100	2.0		
#140	1.6		
#200	1.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6358 D_{85}= 0.5552 D_{60}= 0.4000
D_{50}= 0.3667 D_{30}= 0.3107 D_{15}= 0.2695
D_{10}= 0.2534 C_u= 1.58 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-222-12 A
Sample Number: 6485 (46) **Depth:** 0.0' **Date:** 12/07/12

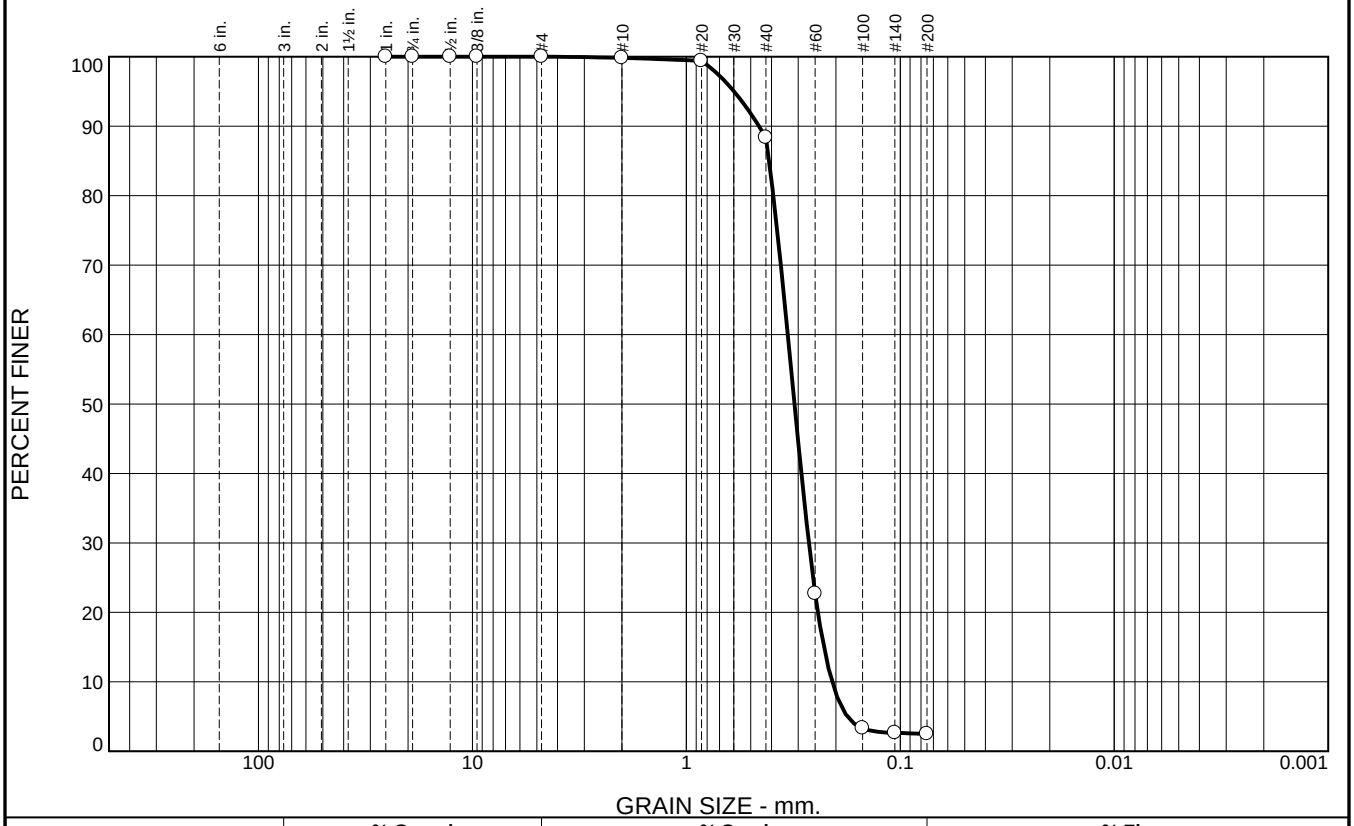
Thompson Engineering

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	0.2	11.4	85.9	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	88.4		
#60	22.7		
#100	3.3		
#140	2.7		
#200	2.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4578 D_{85}= 0.4105 D_{60}= 0.3358
D_{50}= 0.3124 D_{30}= 0.2677 D_{15}= 0.2276
D_{10}= 0.2083 C_u= 1.61 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-222-12 B
Sample Number: 6485 (47) **Depth:** 5.0' **Date:** 12/07/12

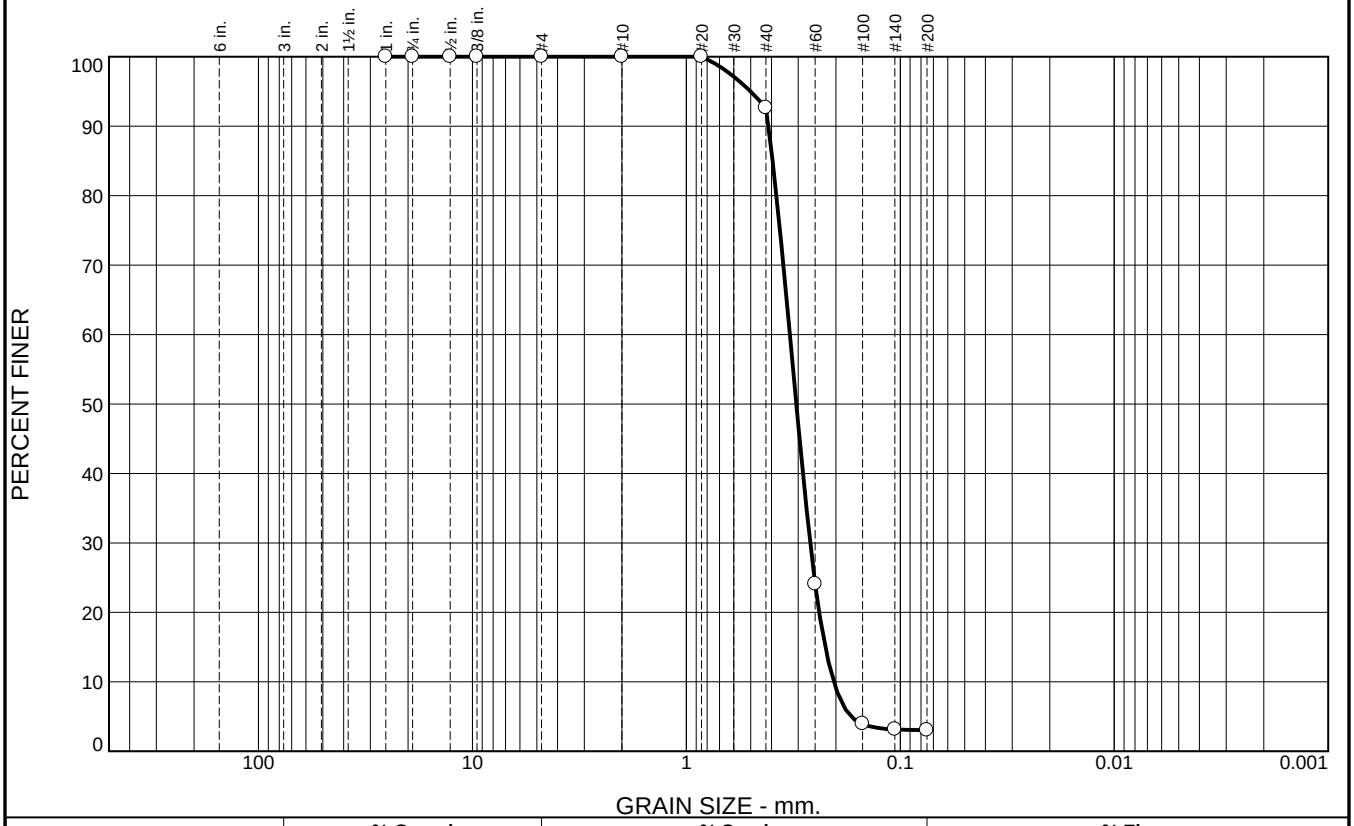
Thompson Engineering

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	7.4	89.6	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	100.0		
#20	100.0		
#40	92.6		
#60	24.1		
#100	3.9		
#140	3.1		
#200	3.0		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4136 D_{85}= 0.3951 D_{60}= 0.3282
D_{50}= 0.3064 D_{30}= 0.2638 D_{15}= 0.2242
D_{10}= 0.2047 C_u= 1.60 C_c= 1.04

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-222-12 C
Sample Number: 6485 (48) **Depth:** 10.0' **Date:** 12/07/12

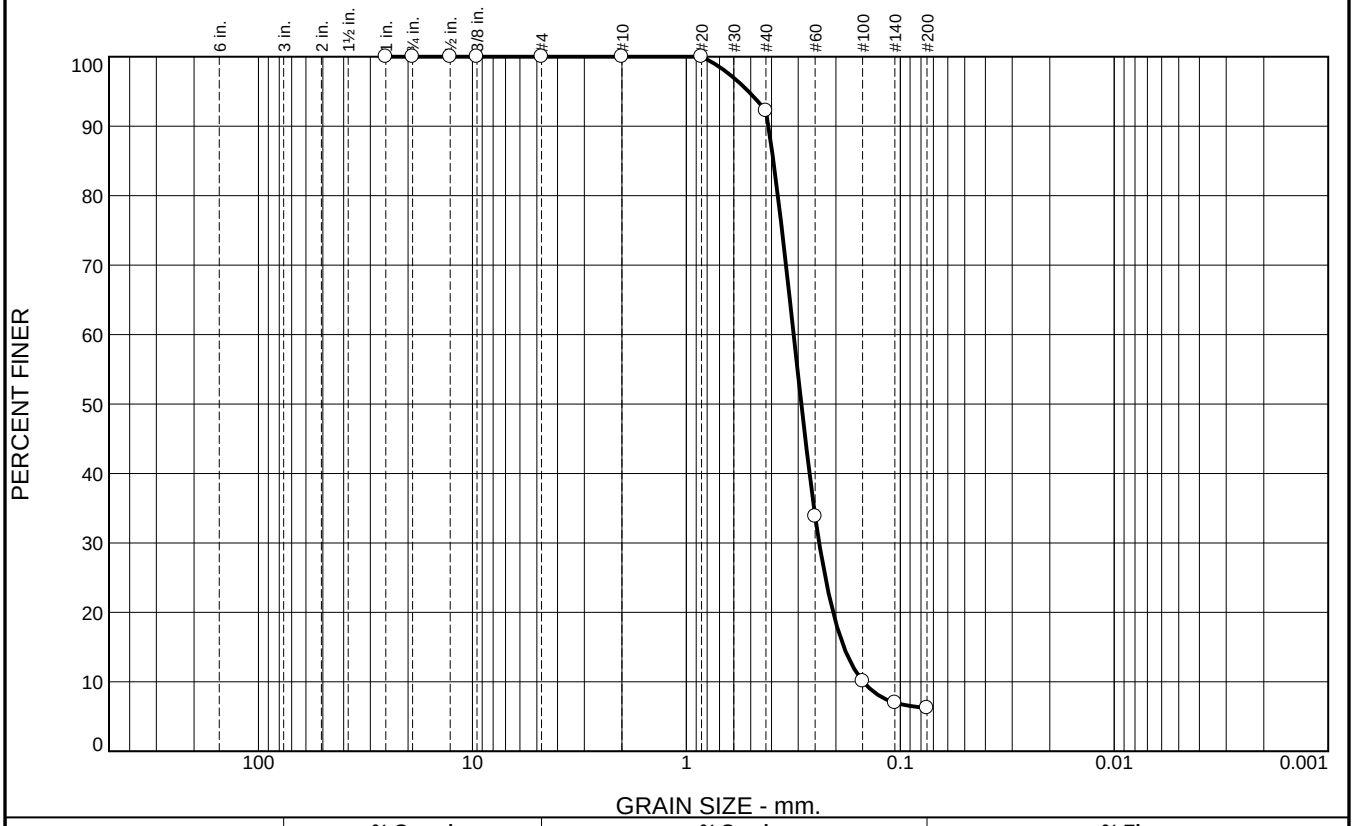
Thompson Engineering

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	7.8	86.0	6.2	

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	100.0		
#20	100.0		
#40	92.2		
#60	33.8		
#100	10.1		
#140	7.0		
#200	6.2		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4135 D_{85}= 0.3917 D_{60}= 0.3152
D_{50}= 0.2903 D_{30}= 0.2393 D_{15}= 0.1836
D_{10}= 0.1489 C_u= 2.12 C_c= 1.22

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PB-222-12 D
Sample Number: 6485 (49) **Depth:** 12.7' **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-PB-223-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-223-12	LOCATION COORDINATES: E = 1,131,098 N = 255,092	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: / 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: 25 Ft.	
		15. DATE BORING	STARTED: 12-13-12 / COMPLETED: 12-13-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -25.9 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
-25.9	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, silty bands from 6.0 to 6.5 ft. and at 9.0 ft., lt. gray (SP)	A	Classification: SP Color: 2.5Y 8/1-white D50: 0.2824 mm % Fines: 1.2
				B	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.1767 mm % Fines: 2.5
-35.9	10.0				
-37.3	11.4		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, lt. brown (SP-SM)	C	Classification: SP Color: 2.5Y 5/2-grayish brown D50: 0.2397 mm % Fines: 4.4
-38.4	12.5		SAND, silty, mostly fine-grained sand-sized quartz, some siltstone, trace clay, brown (SM)		
-40.9	15.0		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, some silt, gray (SC)		
			CLAY, fat, mostly clay, medium to high plasticity, stiff, grayish green (CH)	NS	
-45.9	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.20063° Long = -88.36848°

Project Mississippi Barrier Island Restoration Project

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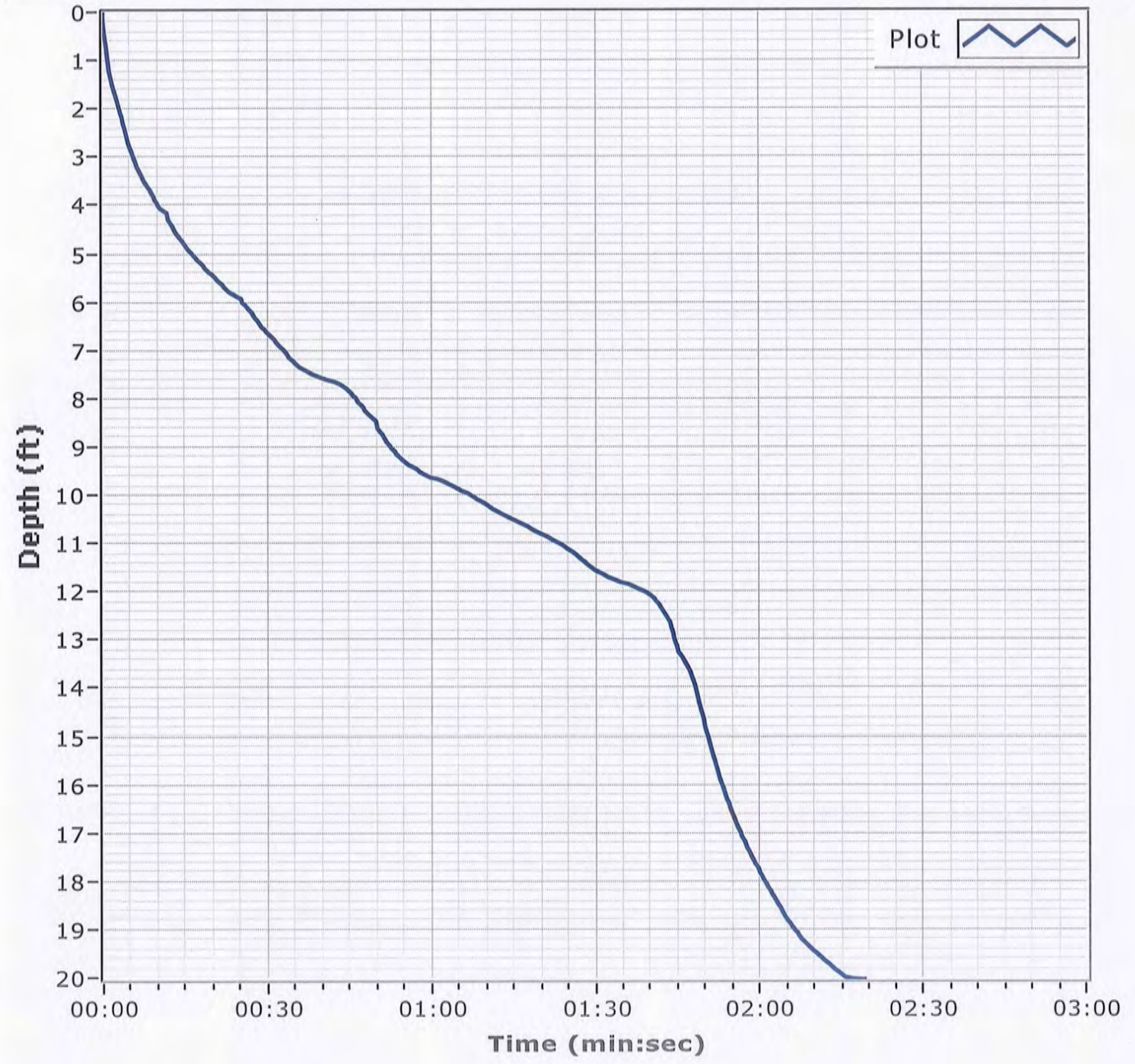
Core Identifier BI-PB-223-12
Coordinate System
Latitude / Longitude

Latitude 30 12.038
Longitude 088 22.109

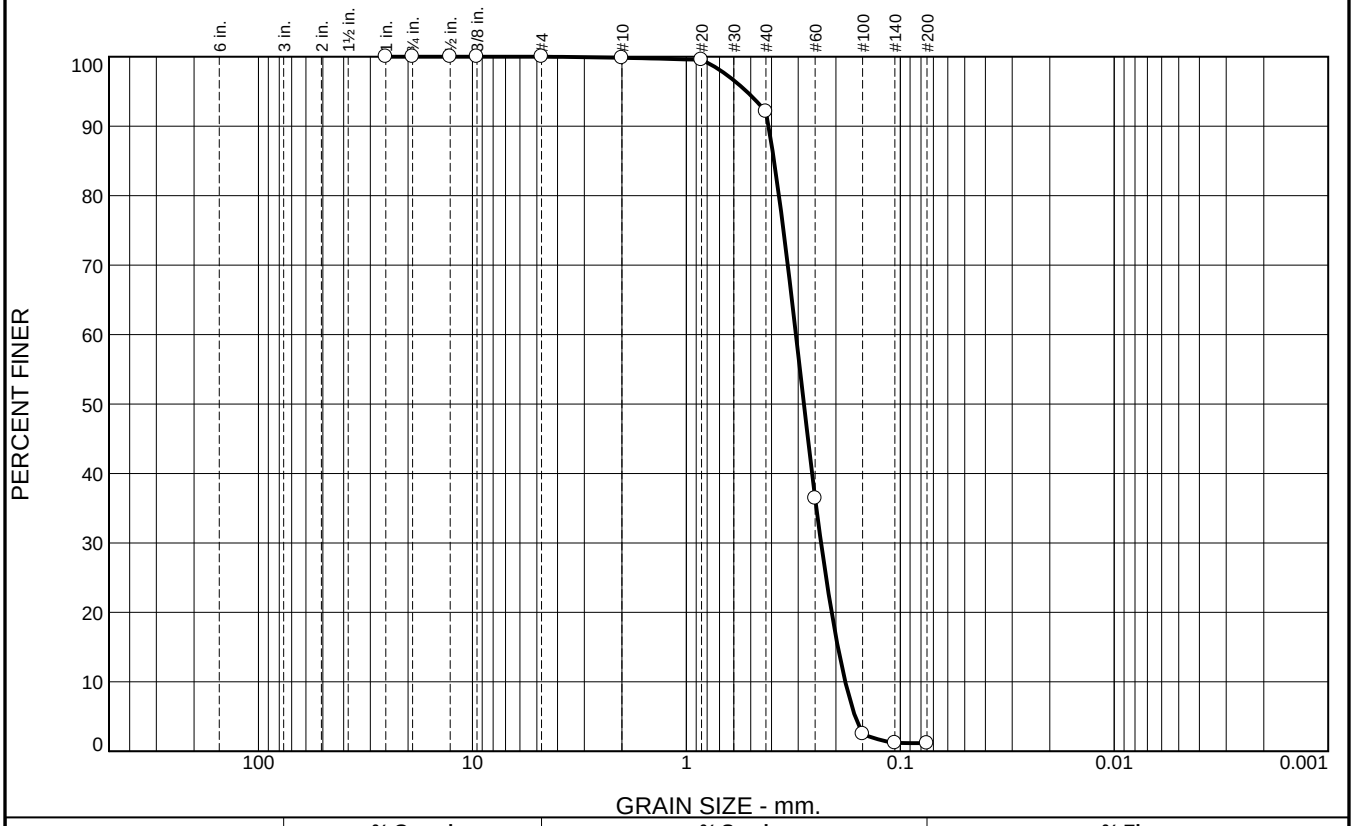
Date 12/13/2012
Start Time 09:20:05
End Time 09:22:25
Total Time 00:02:19

Water Depth 25.0'
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	0.0	0.2	7.7	90.9	1.2	

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	99.8		
#20	99.5		
#40	92.1		
#60	36.4		
#100	2.5		
#140	1.2		
#200	1.2		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4129 D_{85}= 0.3888 D_{60}= 0.3076
D_{50}= 0.2824 D_{30}= 0.2346 D_{15}= 0.1958
D_{10}= 0.1809 C_u= 1.70 C_c= 0.99

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-223-12 A
Sample Number: 6485 (50) **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	0.7	96.8	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	100.0		
#20	99.8		
#40	99.3		
#60	84.8		
#100	31.4		
#140	3.8		
#200	2.5		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2722 D_{85}= 0.2509 D_{60}= 0.1929
D_{50}= 0.1767 D_{30}= 0.1480 D_{15}= 0.1267
D_{10}= 0.1187 C_u= 1.63 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-223-12 B
Sample Number: 6485 (51) **Depth:** 5.0' **Date:** 12/07/12

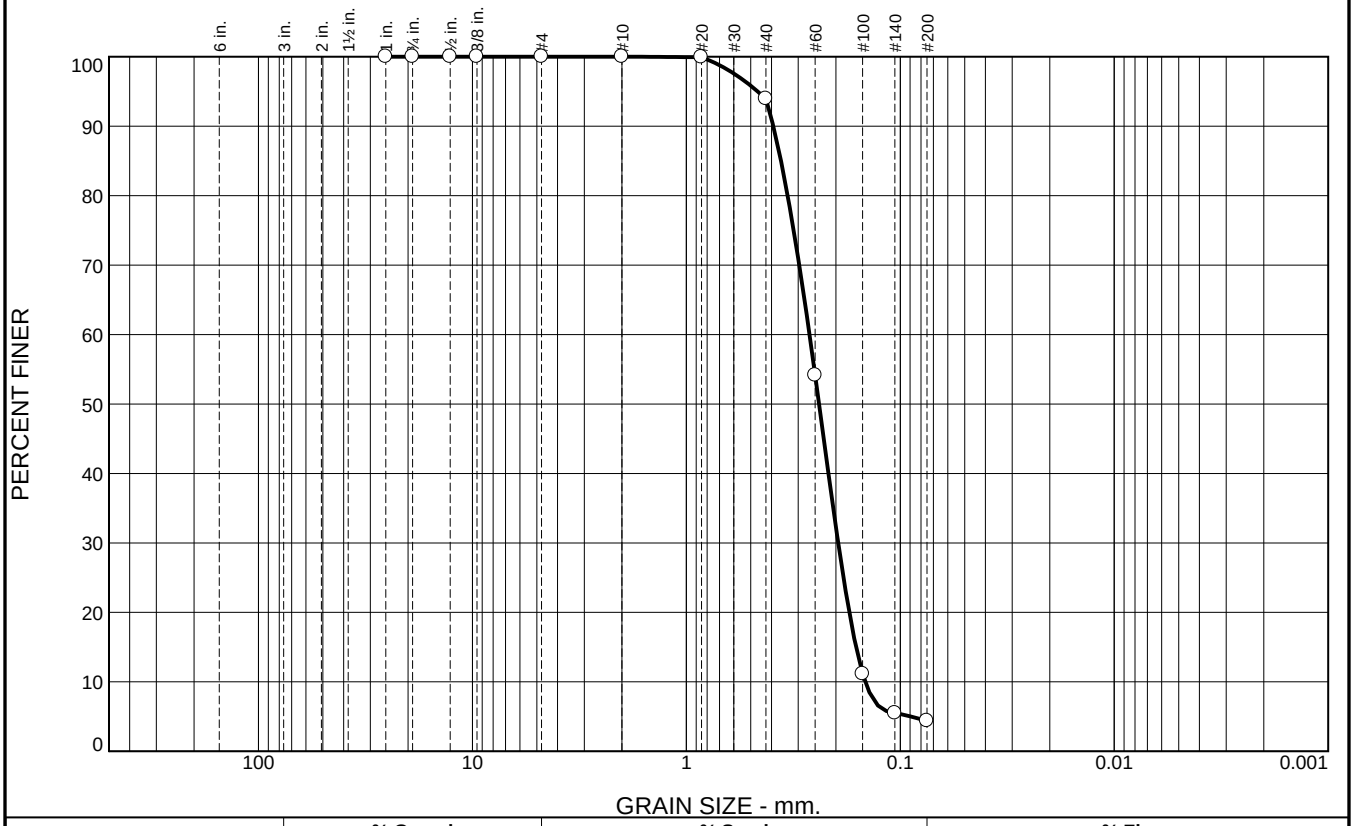
Thompson Engineering

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	89.5	4.4	

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	100.0		
#20	99.9		
#40	93.9		
#60	54.2		
#100	11.2		
#140	5.5		
#200	4.4		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3921 D_{85}= 0.3610 D_{60}= 0.2657
D_{50}= 0.2397 D_{30}= 0.1951 D_{15}= 0.1611
D_{10}= 0.1459 C_u= 1.82 C_c= 0.98

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-223-12 C
Sample Number: 6485 (52) **Depth:** 10.0' **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-PB-224-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PB-224-12	LOCATION COORDINATES: E = 1,130,179 N = 254,434	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: 23.8 Ft.	
		15. DATE BORING	STARTED: 12-13-12 / COMPLETED: 12-13-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -24.2 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-24.2	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: 2.5Y 8/1-white D50: 0.3506 mm % Fines: 1
				B	Classification: SP Color: 2.5Y 8/1-white D50: 0.3548 mm % Fines: 0.8
-35.2	11.0				
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace clay, lt. gray to gray (SP-SM)	C	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.2994 mm % Fines: 3.6
-39.2	15.0				
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace clay, gray (SM)	NS	
-42.9	18.7				
-44.2	20.0		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, sandy clay, low to medium plasticity, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19883° Long = -88.37140°

Project Mississippi Barrier Island Restoration Project

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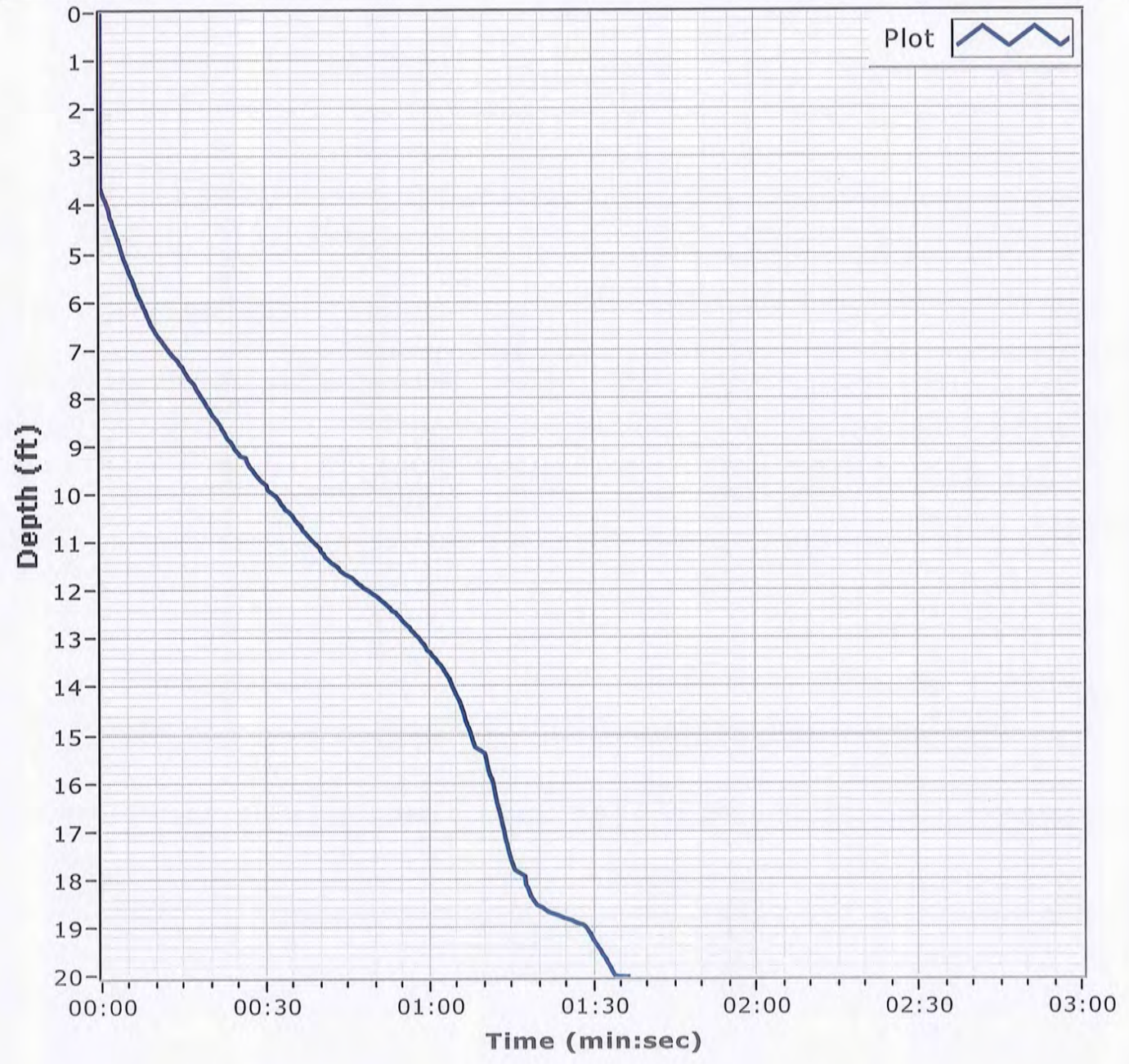
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Latitude / Longitude

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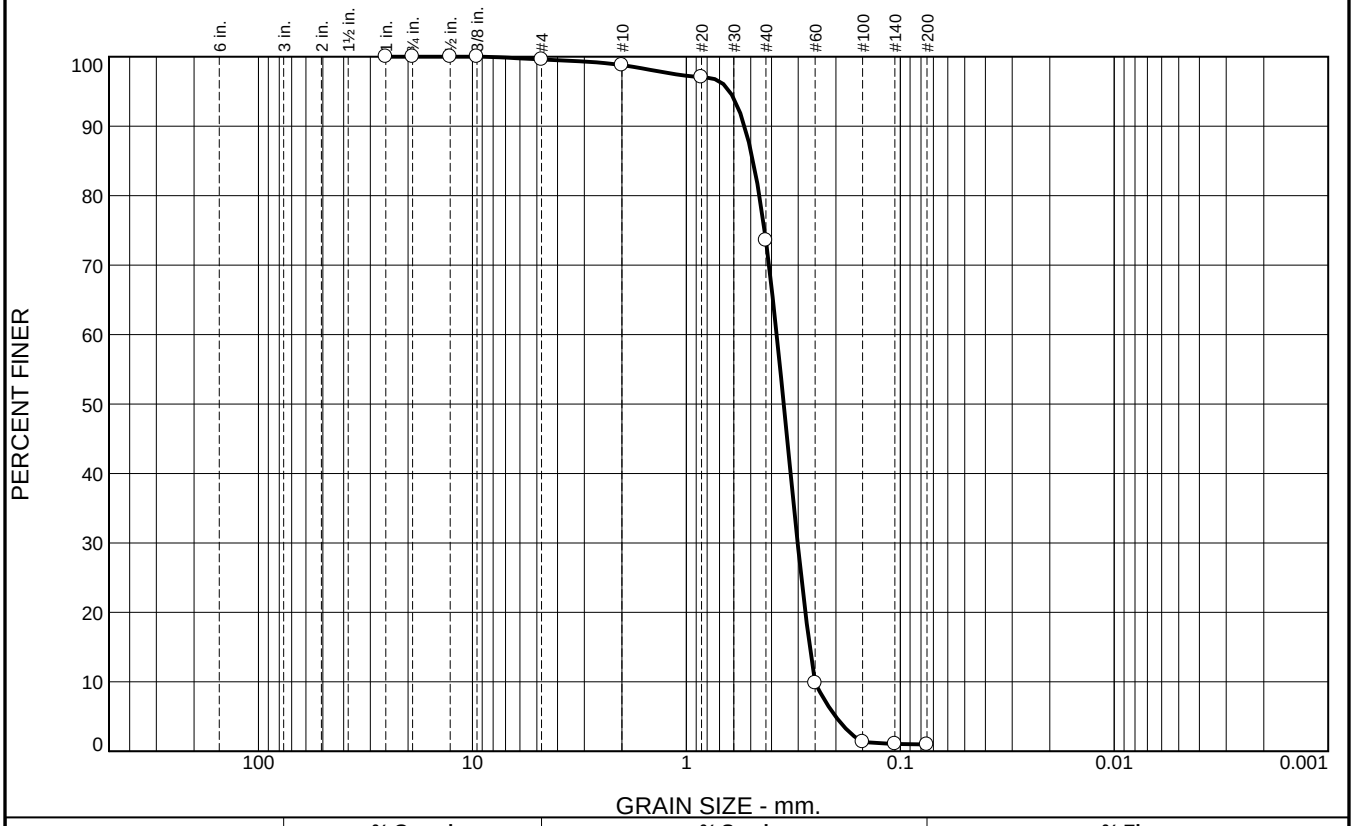
Water Depth 23.8'
Penetration 20.0'
Recovery 20.0'

Latitude 30 11.930
Longitude 088 22.284

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	0.8	25.2	72.6	1.0	

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	98.8		
#20	97.0		
#40	73.6		
#60	9.9		
#100	1.3		
#140	1.1		
#200	1.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5345 D_{85}= 0.4879 D_{60}= 0.3782
D_{50}= 0.3506 D_{30}= 0.3020 D_{15}= 0.2650
D_{10}= 0.2505 C_u= 1.51 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-224-12 A
Sample Number: 6485 (53) **Depth:** 0.0' **Date:** 12/07/12

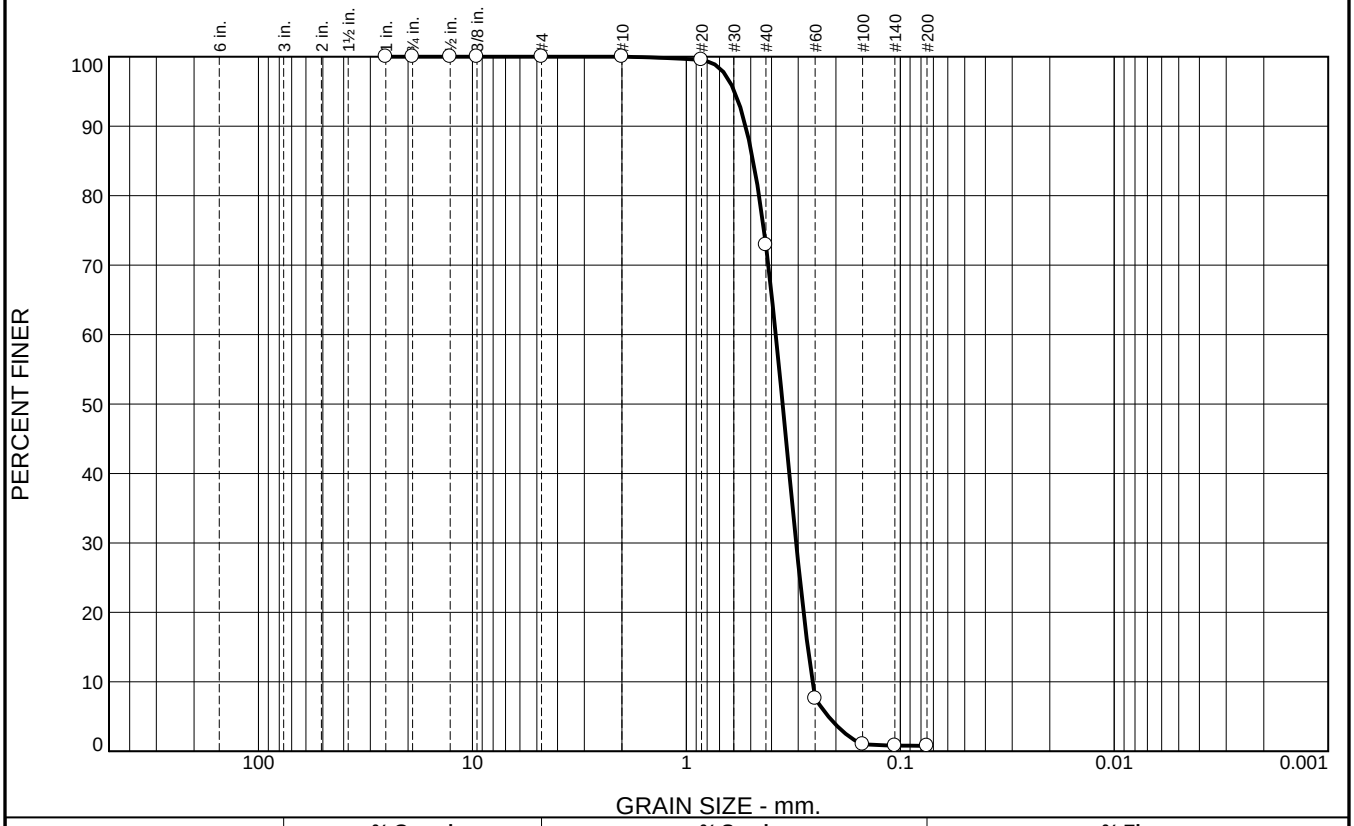
Thompson Engineering

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	27.1	72.1	0.8	

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	100.0		
#20	99.5		
#40	72.9		
#60	7.6		
#100	1.0		
#140	0.8		
#200	0.8		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5282 D_{85}= 0.4872 D_{60}= 0.3819
D_{50}= 0.3548 D_{30}= 0.3069 D_{15}= 0.2710
D_{10}= 0.2574 C_u= 1.48 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-224-12 B
Sample Number: 6485 (54) **Depth:** 5.0' **Date:** 12/07/12

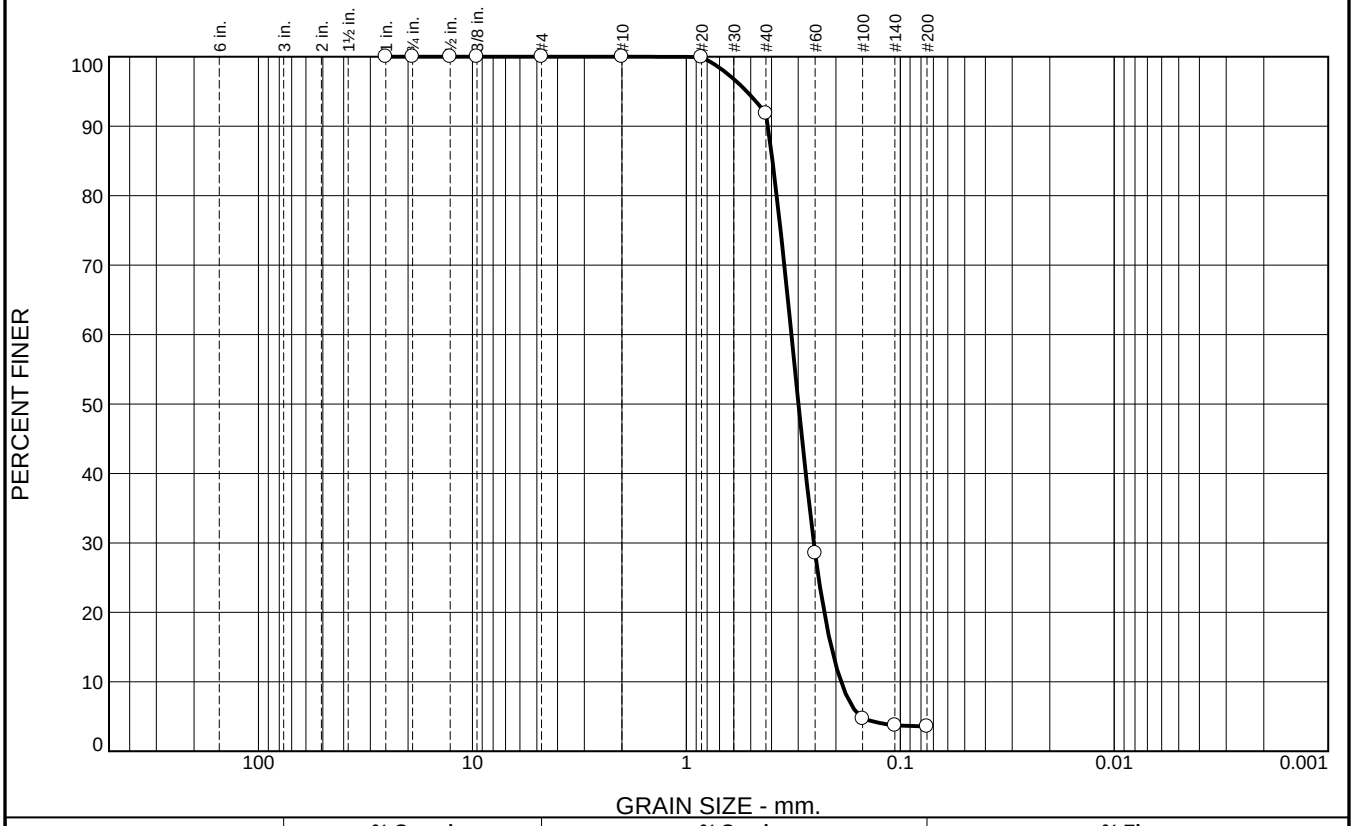
Thompson Engineering

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	8.2	88.2	3.6	

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	99.9		
#40	91.8		
#60	28.5		
#100	4.7		
#140	3.7		
#200	3.6		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4161 D_{85}= 0.3955 D_{60}= 0.3228
D_{50}= 0.2994 D_{30}= 0.2536 D_{15}= 0.2102
D_{10}= 0.1894 C_u= 1.70 C_c= 1.05

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PB-224-12 C
Sample Number: 6485 (55) **Depth:** 10.0' **Date:** 12/07/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Appendix C: Petit Bois Pass-Mississippi Boring Logs, Penetrometer Logs, and Lab Results

Table C-1 Petit Bois Pass Mississippi Vibracore Samples

BORING	SAMPLE DEPTH (ft)	LOCATION	LATITUDE	LONGITUDE	USCS	USCS_LAB	ANGULARITY	WET COLOR CODE	WET MUNSELL VALUE	WET COLOR	DRY COLOR CODE	DRY MUNSELL VALUE	DRY COLOR	D_{50}	% FINES	Comp_D50	Comp_Fines
BI-PBP-1-12		Petit Bois Pass	30.19192	-88.39588												0.38	2.92
BI-PBP-1-12a	*0-.6*	Petit Bois Pass	30.19192	-88.39588	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/3	5	OLIVE	5Y 6/3	6	PALE OLIVE	0.2506	2.1		
BI-PBP-1-12b	*1.3-2.5*	Petit Bois Pass	30.19192	-88.39588	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	5Y 8/1	8	WHITE	0.3651	1.6		
BI-PBP-1-12c	*2.5-6.1*	Petit Bois Pass	30.19192	-88.39588	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.4777	1.4		
BI-PBP-1-12d	*6.1-7.4*	Petit Bois Pass	30.19192	-88.39588	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 5/2	5	OLIVE GRAY	0.3369	8.2		
BI-PBP-1-12e	*7.4-9.2*	Petit Bois Pass	30.19192	-88.39588	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 8/1	8	WHITE	2.5Y 8.5/1	8.5	WHITE	0.3686	0.9		
BI-PBP-1-12f	*11.7-13*	Petit Bois Pass	30.19192	-88.39588	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.3004	3.2		
BI-PBP-1-12g	*13-16.3*	Petit Bois Pass	30.19192	-88.39588	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.3452	4.1		
BI-PBP-2-12		Petit Bois Pass	30.19198	-88.39268												0.31	2.27
BI-PBP-2-12a	*0-5*	Petit Bois Pass	30.19198	-88.39268	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3198	1.1		
BI-PBP-2-12b	*6-8.6*	Petit Bois Pass	30.19198	-88.39268	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2417	4.4		
BI-PBP-2-12c	*8.6-11*	Petit Bois Pass	30.19198	-88.39268	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3588	1.7		
BI-PBP-2-12d	*11-15*	Petit Bois Pass	30.19198	-88.39268	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3187	2.7		
BI-PBP-3-12		Petit Bois Pass	30.19198	-88.38990												0.34	1.67
BI-PBP-3-12a	*0-1.8*	Petit Bois Pass	30.19198	-88.38990	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/1	6	GRAY	5Y 7/1	7	LT GRAY	0.3418	1.6		
BI-PBP-3-12b	*3.1-4*	Petit Bois Pass	30.19198	-88.38990	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3817	1		
BI-PBP-3-12c	*4-5.1*	Petit Bois Pass	30.19198	-88.38990	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 7/1	7	LT GRAY	2.5Y 8/1	8	WHITE	0.2873	2.1		
BI-PBP-3-12d	*5.1-7.1*	Petit Bois Pass	30.19198	-88.38990	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3612	1.8		
BI-PBP-4-12		Petit Bois Pass	30.18883	-88.39422												0.25	5.60
BI-PBS-4-12a	*0-4.3*	Petit Bois Pass	30.18883	-88.39422	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2498	5.6		
BI-PBP-5-12		Petit Bois Pass	30.18890	-88.39112												0.27	2.45
BI-PBP-5-12a	*0-4.5*	Petit Bois Pass	30.18890	-88.39112	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.2748	1.8		
BI-PBP-5-12b	*6.2-7.2*	Petit Bois Pass	30.18890	-88.39112	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.2448	5.4		
BI-PBP-6-12		Petit Bois Pass	30.19195	-88.38770												0.30	2.33
BI-PBP-6-12a	*0-3.4*	Petit Bois Pass	30.19195	-88.38770	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3322	2.1		
BI-PBP-6-12b	*4.7-6.8*	Petit Bois Pass	30.19195	-88.38770	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.24	2.7		
BI-PBP-8-12		Petit Bois Pass	30.18822	-88.38760												0.34	1.14
BI-PBP-8-12a	*0-5*	Petit Bois Pass	30.18822	-88.38760	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3643	1		
BI-PBP-8-12b	*5-6.3*	Petit Bois Pass	30.18822	-88.38760	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 7/2	7	LT GRAY	0.2361	1.7		
BI-PBP-9-12		Petit Bois Pass	30.18882	-88.38805												0.29	1.41
BI-PBP-9-12a	*0-2.2*	Petit Bois Pass	30.18882	-88.38805	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.3314	1		
BI-PBP-9-12b	*2.4-5.6*	Petit Bois Pass	30.18882	-88.38805	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.2559	1.7		
BI-PBP-12-12		Petit Bois Pass	30.18992	-88.39517												0.27	4.45
BI-PBP-12-12a	*0-2.1*	Petit Bois Pass	30.18992	-88.39517	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2788	2		
BI-PBP-12-12b	*3.1-5.7*	Petit Bois Pass	30.18992	-88.39517	SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 5/2	5	OLIVE GRAY	0.2942	7.3		
BI-PBP-12-12c	*6.9-8.6*	Petit Bois Pass	30.18992	-88.39517	SP-SM	SP	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 6/2	6	LT BROWNISH GRAY	0.2302	3.1		
BI-PBP-13-12		Petit Bois Pass	30.19453	-88.38995												0.27	3.33
BI-PBP-13-12a	*0-4.8*	Petit Bois Pass	30.19453	-88.38995	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.2911	1.9		
BI-PBP-13-12b	*6-9.5*	Petit Bois Pass	30.19453	-88.38995	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 3/2	3	VERY DK GRAYISH BROWN	2.5Y 4/2	4	DK GRAYISH BROWN	0.2371	5.3		
BI-PBP-14-12		Petit Bois Pass	30.19460	-88.39272												0.26	2.50
BI-PBP-14-12a	*0-2*	Petit Bois Pass	30.19460	-88.39272	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2613	2.5		

BORING	SAMPLE DEPTH (ft)	LOCATION	LATITUDE	LONGITUDE	USCS	USCS_LAB	ANGULARITY	WET COLOR CODE	WET MUNSELL VALUE	WET COLOR	DRY COLOR CODE	DRY MUNSELL VALUE	DRY COLOR	D_{50}	% FINES	Comp_D50	Comp_Fines
BI-PBP-15-12		Petit Bois Pass	30.19462	-88.38703												0.31	2.94
BI-PBP-15-12a	*0-5*	Petit Bois Pass	30.19462	-88.38703	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3401	1.2		
BI-PBP-15-12b	5-7.2	Petit Bois Pass	30.19462	-88.38703	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 5/2	5	OLIVE GRAY	0.2343	6.9		
BI-PBP-18-12		Petit Bois Pass	30.19320	-88.39122												0.23	4.08
BI-PBP-18-12a	0-4	Petit Bois Pass	30.19320	-88.39122	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2036	3.4		
BI-PBP-18-12b	4-8	Petit Bois Pass	30.19320	-88.39122	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.2137	3.2		
BI-PBP-18-12c	8.7-13.1	Petit Bois Pass	30.19320	-88.39122	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	2.5Y 3/2	3	VERY DK GRAYISH BROWN	2.5Y 4/2	4	DK GRAYISH BROWN	0.2694	5.5		
BI-PBP-19-12		Petit Bois Pass	30.19325	-88.39690												0.36	2.48
BI-PBP-19-12a	0.4-3	Petit Bois Pass	30.19325	-88.39690	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.3295	1.7		
BI-PBP-19-12b	3-7.9	Petit Bois Pass	30.19325	-88.39690	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 6/2	6	LT BROWNISH GRAY	2.5Y 7/2	7	LT GRAY	0.346	1.5		
BI-PBP-19-12c	7.9-12	Petit Bois Pass	30.19325	-88.39690	SP-SM	SP	SUBANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.4269	3.7		
BI-PBP-19-12d	14.1-17.7	Petit Bois Pass	30.19325	-88.39690	SP	SP	SUBANGULAR TO SUBROUNDED	2.5Y 5/2	5	GRAYISH BROWN	2.5Y 6/2		LT BROWNISH GRAY	0.3387	3		
BI-PBP-20-12		Petit Bois Pass	30.19337	-88.39377												0.29	2.72
BI-PBP-20-12a	0-5	Petit Bois Pass	30.19337	-88.39377	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3285	0.9		
BI-PBP-20-12b	5-10	Petit Bois Pass	30.19337	-88.39377	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2316	4.3		
BI-PBP-20-12c	10-13.1	Petit Bois Pass	30.19337	-88.39377	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3013	3.1		
BI-PBP-21-12		Petit Bois Pass	30.19468	-88.39438												0.30	1.62
BI-PBP-21-12a	0.0-2.5	Petit Bois Pass	30.19468	-88.39438	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.314	1.4		
BI-PBP-21-12b	2.5-7.5	Petit Bois Pass	30.19468	-88.39438	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 7/1	7	LT GRAY	5Y 8/1	8	WHITE	0.3034	1.63		
BI-PBP-21-12c	7.5-13.0	Petit Bois Pass	30.19468	-88.39438	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 7/1	7	LT GRAY	5Y 8/1	8	WHITE	0.2974	1.7		
BI-PBP-22-12		Petit Bois Pass	30.19102	-88.39208												0.28	2.52
BI-PBP-22-12a	0.0-5.0	Petit Bois Pass	30.19102	-88.39208	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3069	1.3		
BI-PBP-22-12b	5.0-10.0	Petit Bois Pass	30.19102	-88.39208	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 7/2	7	LT GRAY	0.2872	2.2		
BI-PBP-22-12c	10.3-14.2	Petit Bois Pass	30.19102	-88.39208	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2354	4.5		
BI-PBP-23-12		Petit Bois Pass	30.18937	-88.39693												0.18	9.55
BI-PBP-23-12a	1.2-3.2	Petit Bois Pass	30.18937	-88.39693	SP	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 5/2	5	OLIVE GRAY	0.3227	6.9		
BI-PBP-23-12b	4.8-7.3	Petit Bois Pass	30.18937	-88.39693	SC	SM	SUBANGULAR TO SUBROUNDED	2.5Y 4/2	4	DK GRAYISH BROWN	2.5Y 5/2	5	GRAYISH BROWN	0.1263	13		
BI-PBP-23-12c	9.3-11.3	Petit Bois Pass	30.18937	-88.39693	SM	SM	SUBANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 5/2	5	OLIVE GRAY	0.1847	14.3		
BI-PBP-23-12d	11.3-14.4	Petit Bois Pass	30.18937	-88.39693	SP	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 4/2	4	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.1352	5.4		
BI-PBP-24-12		Petit Bois Pass	30.18903	-88.38915												0.25	7.01
BI-PBP-24-12a	0.0-5.0	Petit Bois Pass	30.18903	-88.38915	SP	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 6/2	6	LT OLIVE GRAY	5Y 7/2	7	LT GRAY	0.3327	5.1		
BI-PBP-24-12b	5.0-8.6	Petit Bois Pass	30.18903	-88.38915	SP	SP	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 7/2	7	LT GRAY	0.2546	2		
BI-PBP-24-12c	8.6-11.2	Petit Bois Pass	30.18903	-88.38915	SP-SM	SP-SM	SUBANGULAR TO SUBROUNDED	5Y 5/2	5	OLIVE GRAY	5Y 6/2	6	LT OLIVE GRAY	0.2973	6.2		
BI-PBP-24-12d	13.6-18.1	Petit Bois Pass	30.18903	-88.38915	SM	SM	SUBANGULAR TO SUBROUNDED	2.5Y 3/2	3	VERY DK GRAYISH BROWN	2.5Y 4/2	4	DK GRAYISH BROWN	0.1227	13.6		

Boring Designation BI-PBP-01-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-01-12	LOCATION COORDINATES: E = 1,122,455 N = 251,890	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 / 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: 31.7 Ft.	
		15. DATE BORING	STARTED: 12-08-12 / COMPLETED: 12-08-12
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: 16.3 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-30.3	0.0				
-30.9	0.6		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, brownish gray (SP)	A	Classification: SP Color: 5Y 6/3-pale olive D50: 0.2506 mm % Fines: 2.1
-31.3	1.0			NS	
			CLAY, fat, mostly clay, medium to high plasticity, dark gray (CH)	C	Classification: SP Color: 5Y 7/2-light gray D50: 0.4777 mm % Fines: 1.4
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little shell fragments, trace silt, gray (SP) At El. -31.6 Ft., mostly fine to medium-grained sand-sized quartz, some shell fragments, trace silt, gray	B	Classification: SP Color: 5Y 8/1-white D50: 0.3651 mm % Fines: 1.6
-37.7	7.4		At El. -32.8 Ft., mostly fine-grained sand-sized quartz, trace silt, trace shell fragments, trace clay stringers, lt. gray to white	E	Classification: SP Color: 2.5Y 8.5/1- D50: 0.3686 mm % Fines: 0.9
-39.5	9.2		At El. -36.6 Ft., mostly fine to medium-grained sand-sized quartz, trace silt, lt. gray to white	D	Classification: SP-SM Color: 5Y 5/2-olive gray D50: 0.3369 mm % Fines: 8.2
-41.3	11.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, dark gray (SP-SM)	NS	
-41.6	11.3				
-42.0	11.7		SAND, silty, mostly fine-grained sand-sized quartz, trace shell fragments, dark gray (SM)	G	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.3452 mm % Fines: 4.1
			CLAY, fat, mostly clay, medium to high plasticity, dark gray (CH)		
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, clay banding, dark gray (SP-SM)	F	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.3004 mm % Fines: 3.2
-46.6	16.3				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, some shell fragments, trace silt, clay nodules, gray (SP) At El. -43.4 Ft., mostly fine-grained sand-sized quartz, trace silt, trace clay, trace shell fragments, gray to light 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. Sample intervals do not match up with lithologic intervals because the contractor

0 5 10 15 20 25

Lat = 30.19192° Long = -88.39588°

DRILLING LOG (Cont. Sheet)	INSTALLATION	SHEET 2 OF 2 SHEETS
	Mobile District	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Barrier Island Restoration	State Plane, MSE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 1,122,455 Y = 251,890	-30.3 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			reversed the tubes on the table during sampling. This caused a disjointed sampling event because there were four five-foot tubes and the tops and bottoms did not match up correctly. The original log was redrawn to correct this situation, but the samples remained from the original, incorrect intervals. Their depths have been adjusted to account for the mix up. The lab sample intervals are incorrect; they match the original sample intervals.		

30
35
40
45
50
55
60

Lat = 30.19192° Long = -88.39588°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

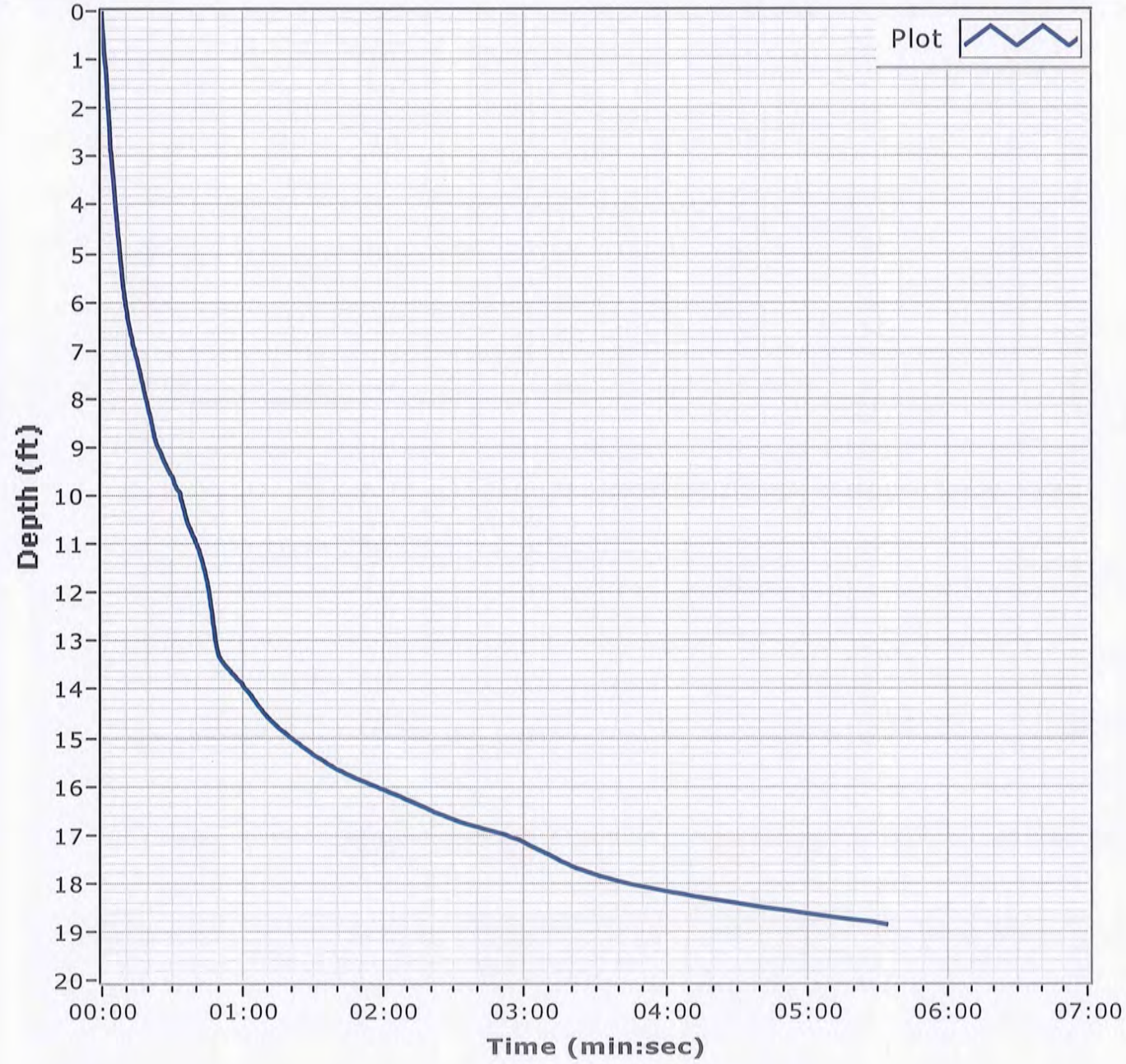
Core Identifier BI-PBP-1-12
Coordinate System
Latitude / Longitude

Date 12/08/2012
Start Time 11:08:23
End Time 11:13:58
Total Time 00:05:34

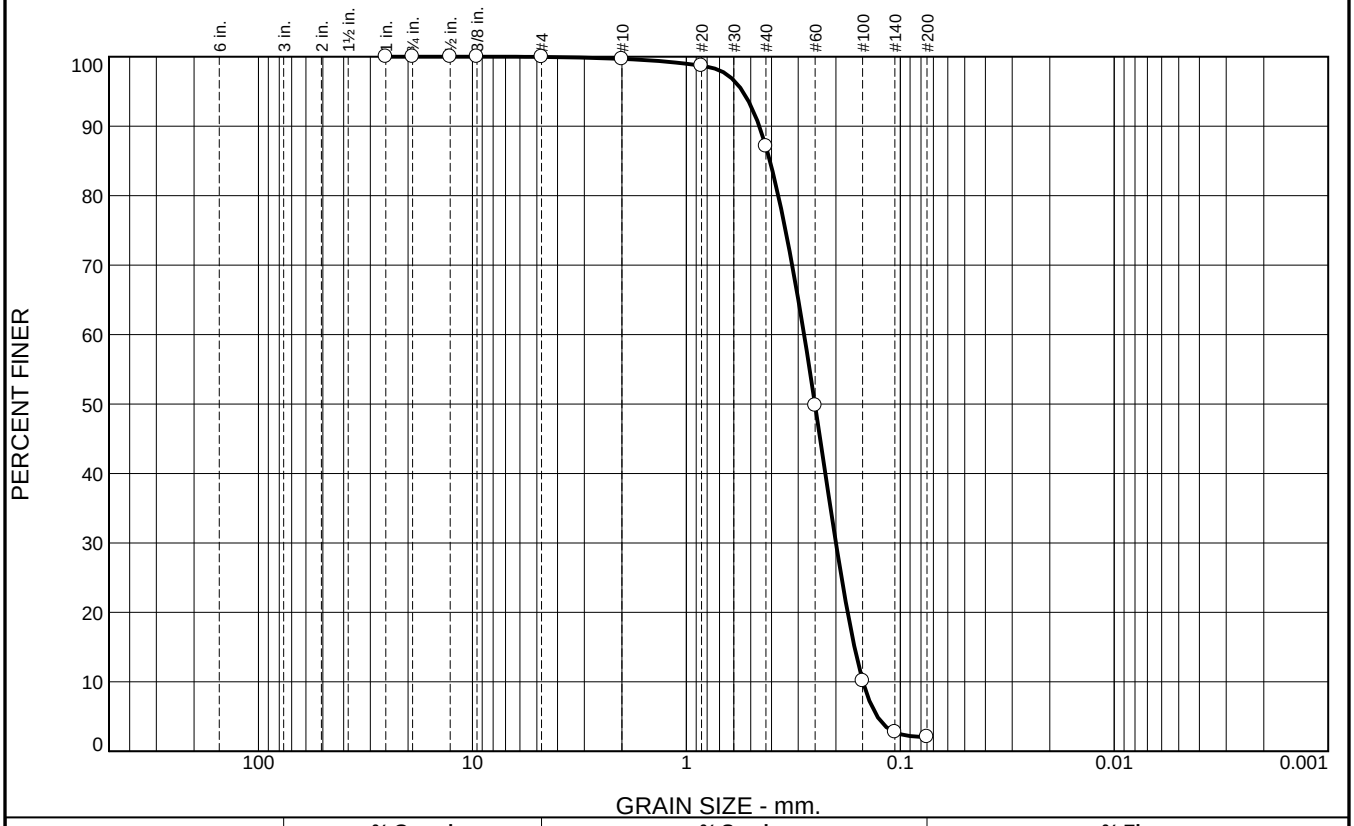
Water Depth 31.7'
Penetration 18.9'
Recovery 16.3'

Latitude 30 11.515
Longitude 088 23.753

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.3	12.6	85.0	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	99.7		
#20	98.7		
#40	87.1		
#60	49.8		
#100	10.1		
#140	2.8		
#200	2.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4561 D_{85}= 0.4068 D_{60}= 0.2818
D_{50}= 0.2506 D_{30}= 0.1999 D_{15}= 0.1639
D_{10}= 0.1495 C_u= 1.88 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-1-12 A
Sample Number: 6482 (20) **Depth:** 0.7' **Date:** 12/12/12

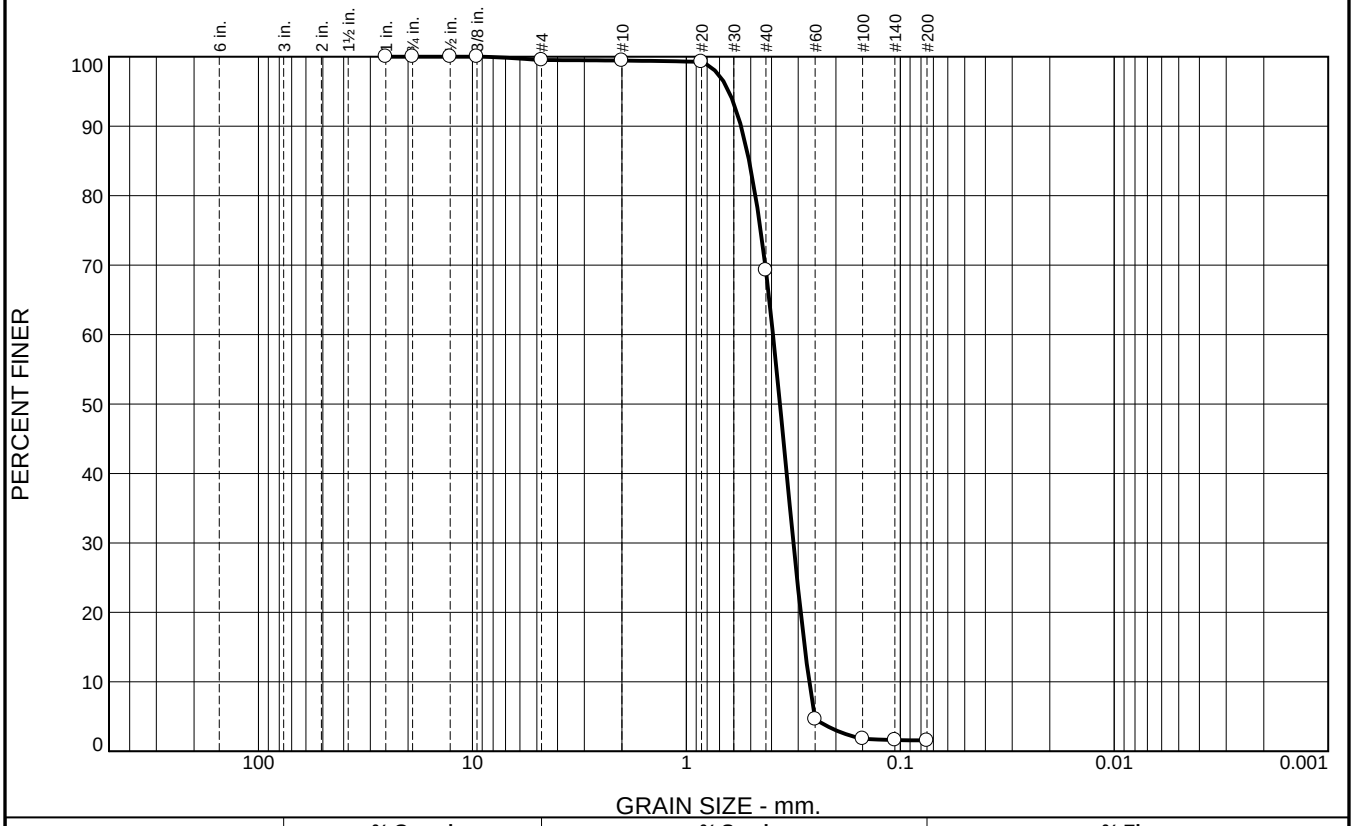
Thompson Engineering

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	0.5	0.1	30.1	67.7	1.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.5		
#10	99.4		
#20	99.3		
#40	69.3		
#60	4.6		
#100	1.8		
#140	1.6		
#200	1.6		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5551 D_{85}= 0.5088 D_{60}= 0.3935
D_{50}= 0.3651 D_{30}= 0.3160 D_{15}= 0.2801
D_{10}= 0.2668 C_u= 1.47 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-1-12 B
Sample Number: 6482 (21) **Depth:** 1.3' **Date:** 12/12/12

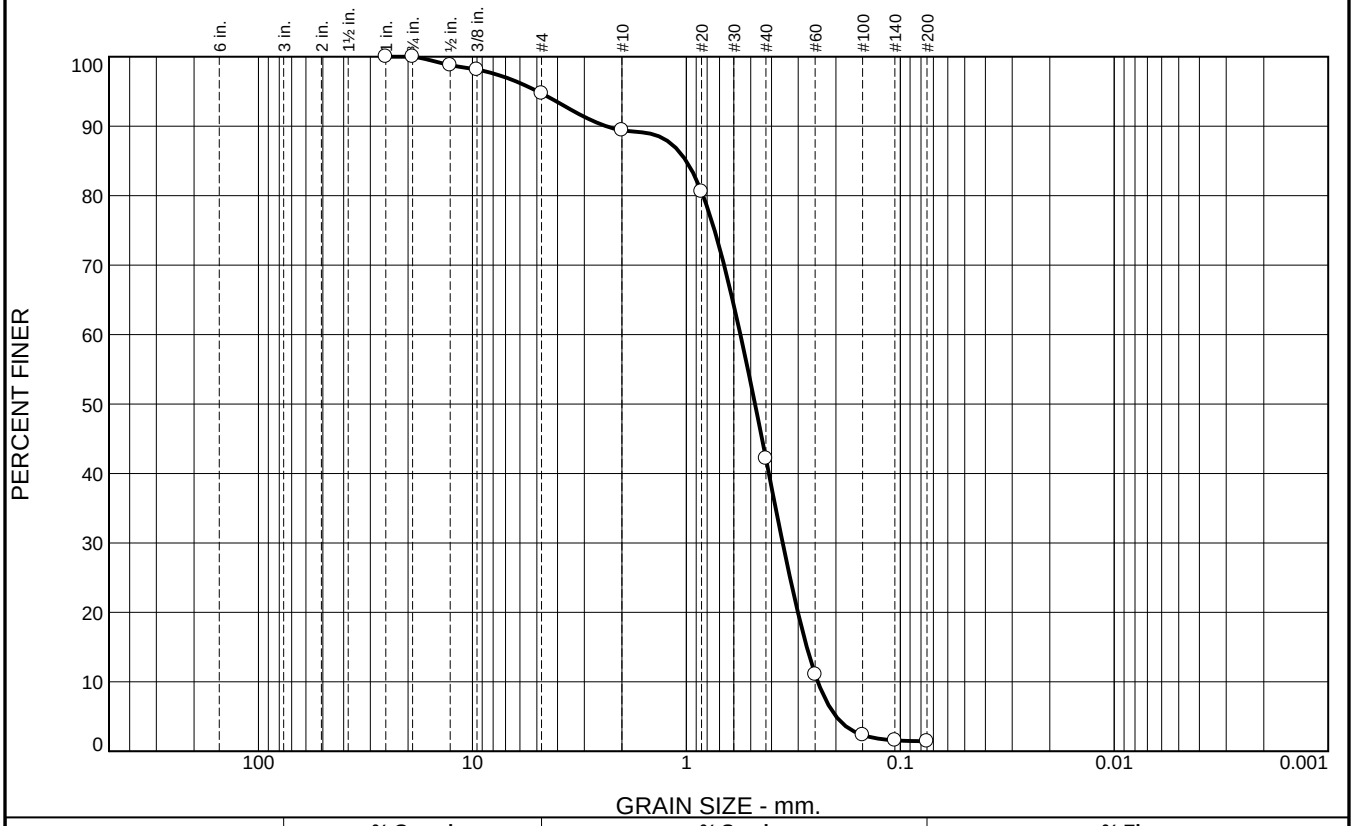
Thompson Engineering

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	5.3	5.3	47.2	40.8	1.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	98.8		
.375	98.1		
#4	94.7		
#10	89.4		
#20	80.6		
#40	42.2		
#60	11.1		
#100	2.4		
#140	1.6		
#200	1.4		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 2.3797 D_{85}= 1.0022 D_{60}= 0.5589
D_{50}= 0.4777 D_{30}= 0.3545 D_{15}= 0.2737
D_{10}= 0.2429 C_u= 2.30 C_c= 0.93

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-1-12 C
Sample Number: 6482 (22) **Depth:** 5.1' **Date:** 12/12/12

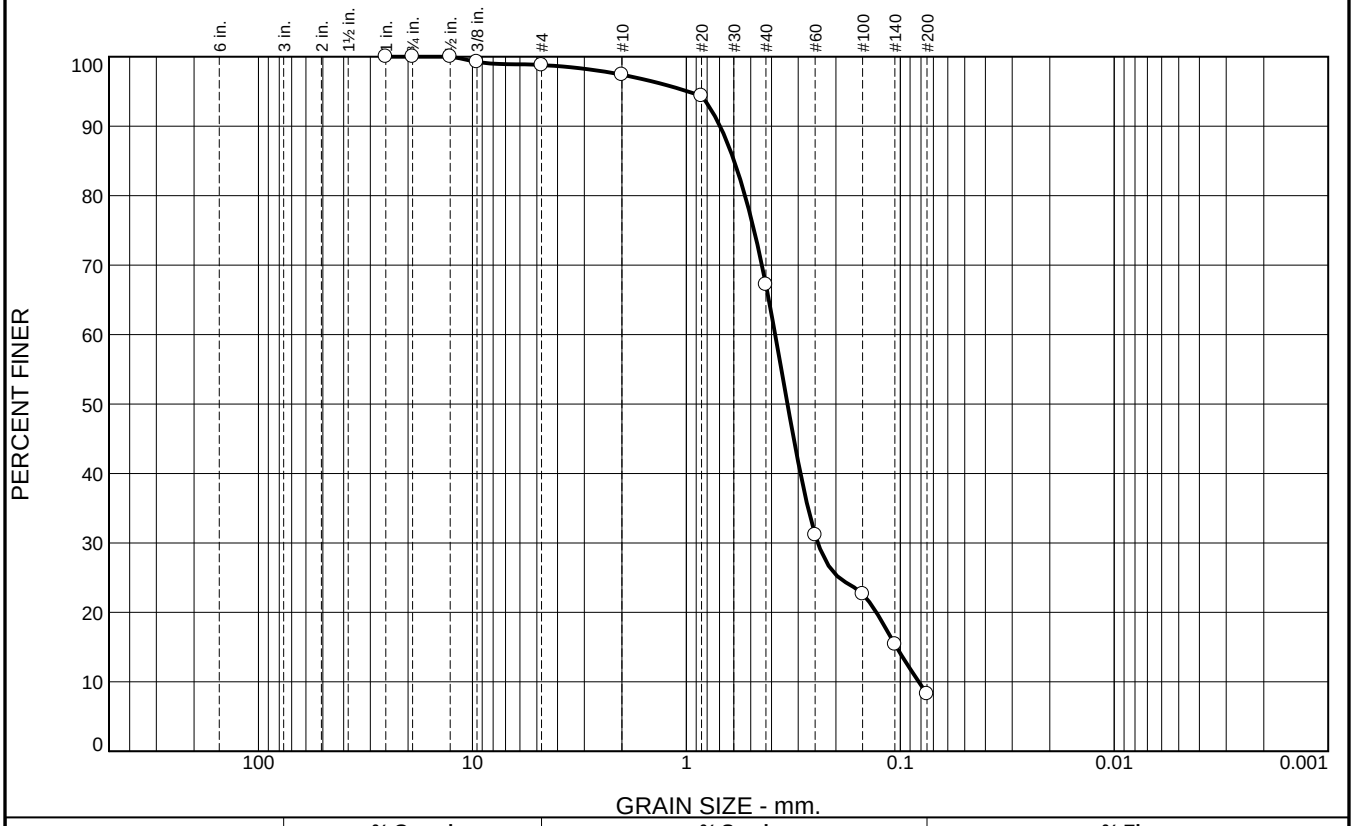
Thompson Engineering

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	1.4	30.2	59.0	8.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.3		
#4	98.8		
#10	97.4		
#20	94.4		
#40	67.2		
#60	31.2		
#100	22.6		
#140	15.4		
#200	8.2		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6960 D_{85}= 0.5977 D_{60}= 0.3843
D_{50}= 0.3369 D_{30}= 0.2429 D_{15}= 0.1042
D_{10}= 0.0820 C_u= 4.69 C_c= 1.87

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBP-1-12 D
Sample Number: 6482 (23) **Depth:** 8.4' **Date:** 12/12/12

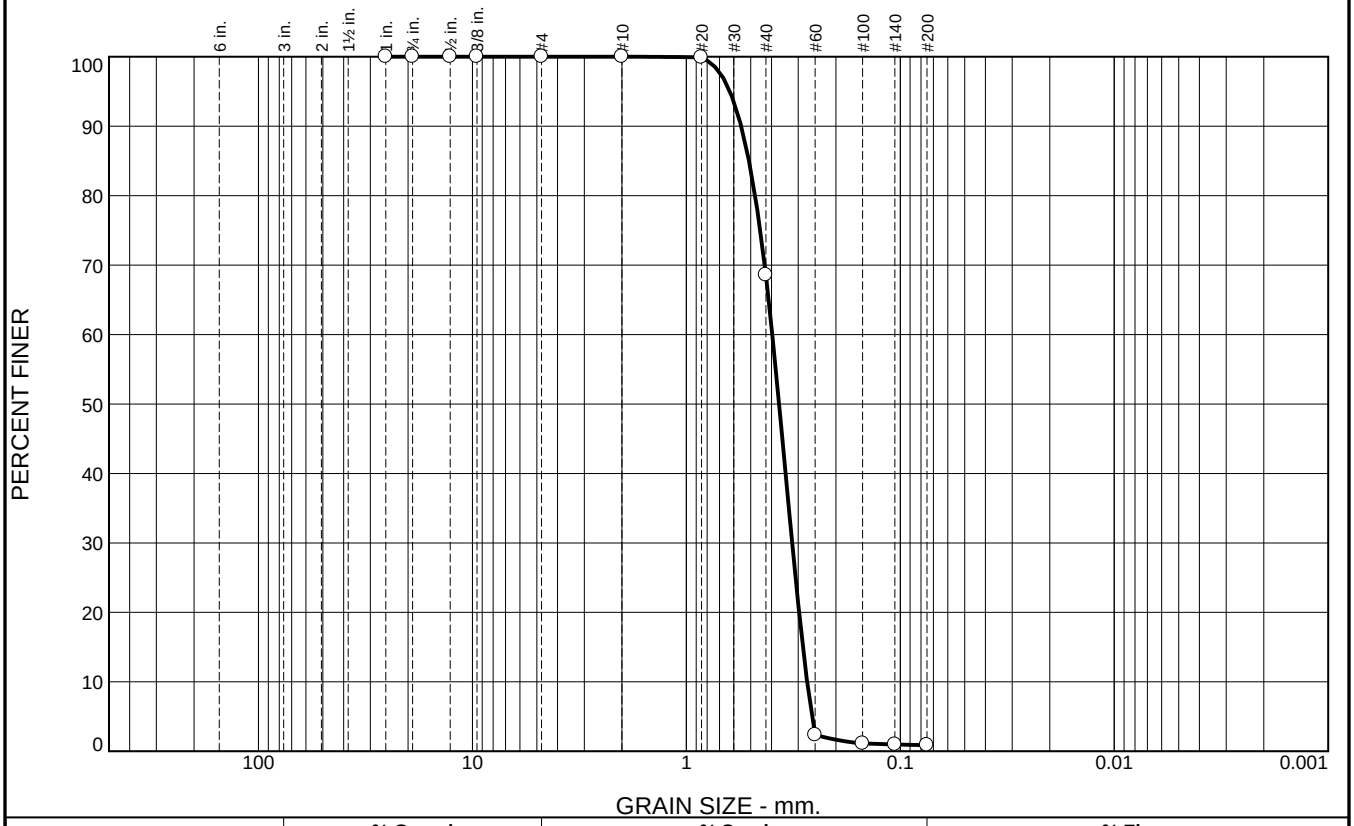
Thompson Engineering

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	31.4	67.7	0.9	

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	100.0		
#20	99.9		
#40	68.6		
#60	2.4		
#100	1.1		
#140	1.0		
#200	0.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5541 D_{85}= 0.5097 D_{60}= 0.3965
D_{50}= 0.3686 D_{30}= 0.3204 D_{15}= 0.2855
D_{10}= 0.2729 C_u= 1.45 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-1-12 E
Sample Number: 6482 (24) **Depth:** 10.2' **Date:** 12/12/12

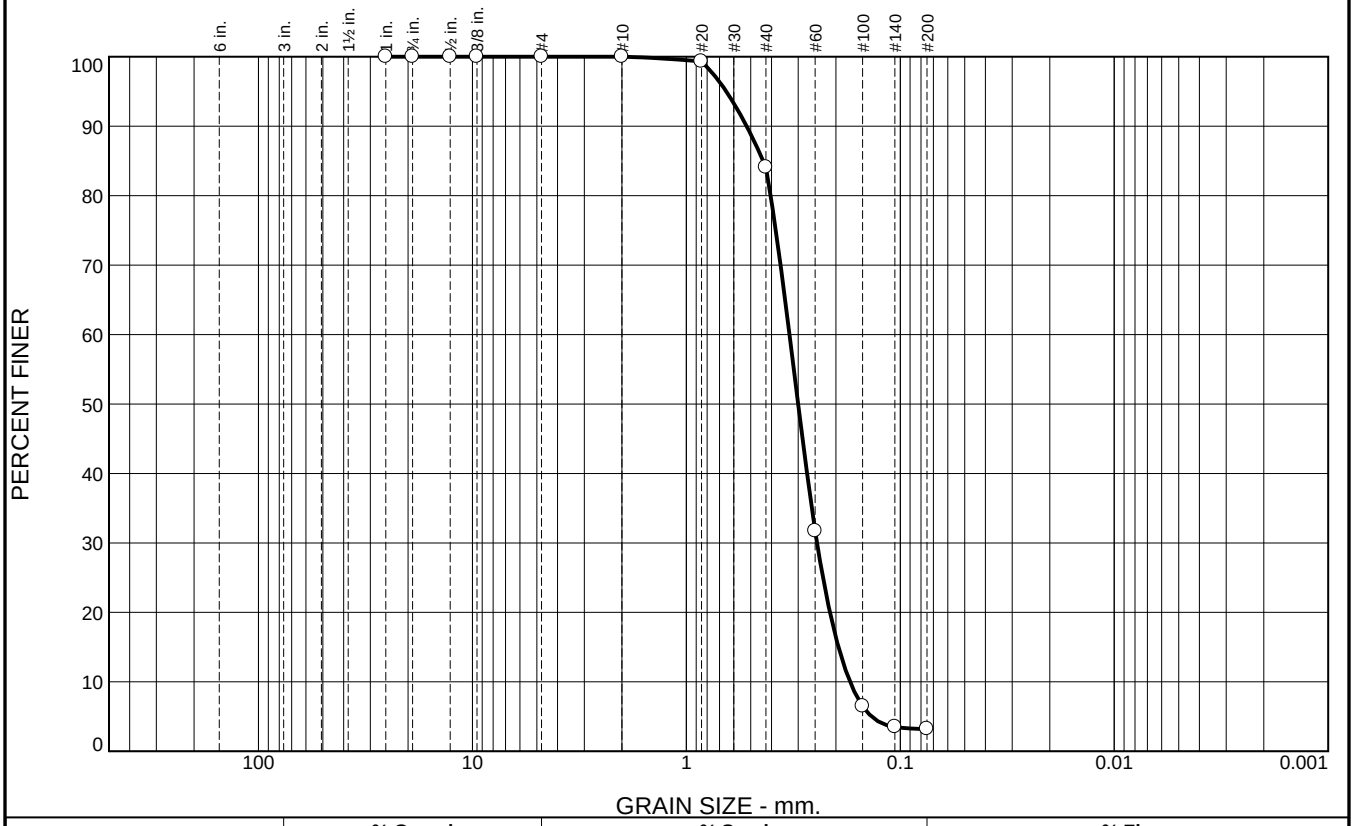
Thompson Engineering

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	15.9	80.9	3.2	

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	100.0		
#20	99.3		
#40	84.1		
#60	31.7		
#100	6.5		
#140	3.5		
#200	3.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5226 D_{85}= 0.4377 D_{60}= 0.3296
D_{50}= 0.3004 D_{30}= 0.2450 D_{15}= 0.1946
D_{10}= 0.1719 C_u= 1.92 C_c= 1.06

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-1-12 F
Sample Number: 6482 (25) **Depth:** 11.3' **Date:** 12/12/12

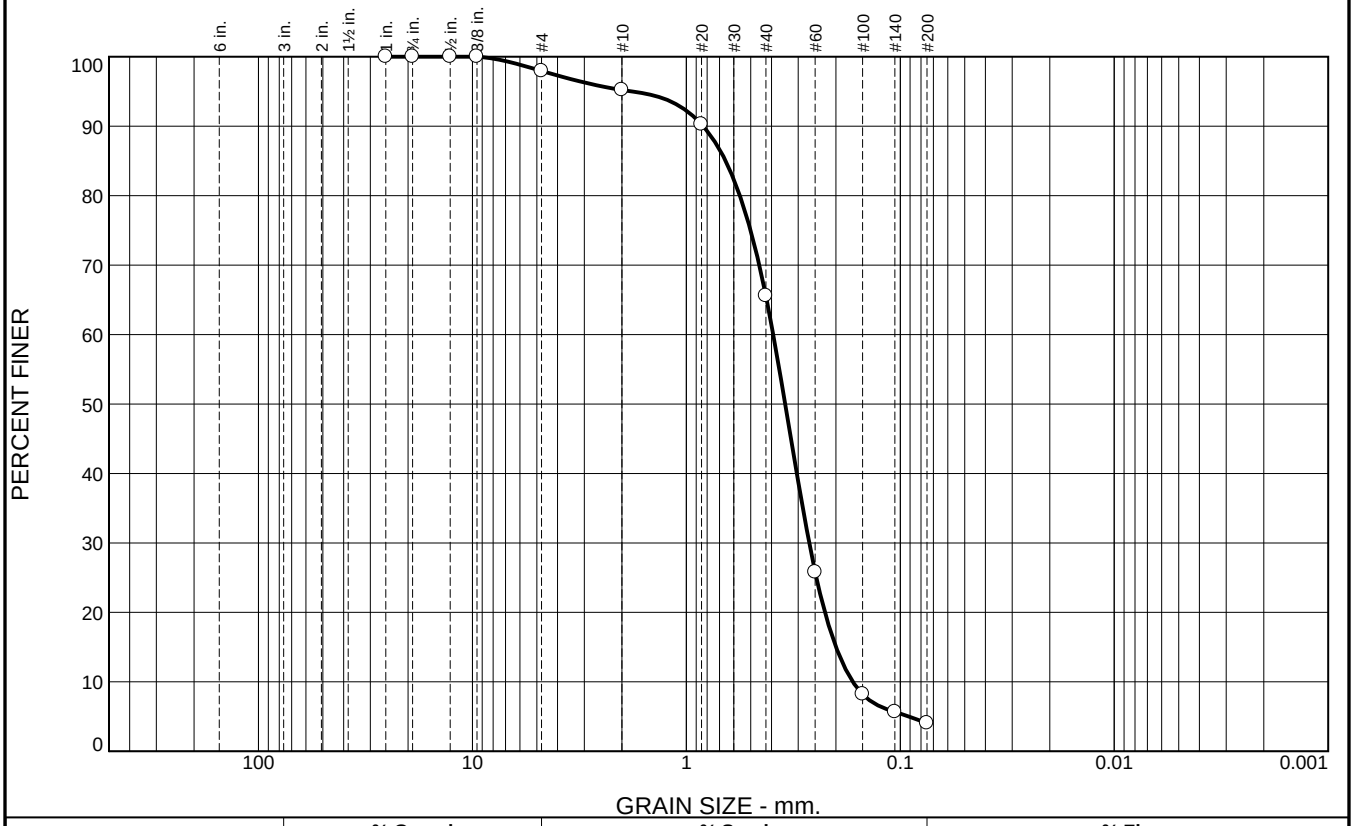
Thompson Engineering

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	2.1	2.7	29.6	61.5	4.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	97.9		
#10	95.2		
#20	90.3		
#40	65.6		
#60	25.8		
#100	8.2		
#140	5.7		
#200	4.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.8355 D_{85}= 0.6555 D_{60}= 0.3926
D_{50}= 0.3452 D_{30}= 0.2666 D_{15}= 0.1998
D_{10}= 0.1668 C_u= 2.35 C_c= 1.08

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-1-12 G
Sample Number: 6482 (26) **Depth:** 14.5' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PBP-02-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-02-12	LOCATION COORDINATES: E = 1,123,466 N = 251,916	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: 25.8 Ft.	
		15. DATE BORING	STARTED: 12-08-12 / COMPLETED: 12-08-12
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: 15.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-24.4	0.0				
-29.4	5.0		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 D50: 0.3198 mm % Fines: 1.1
-30.4	6.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, trace clay, lt. gray to gray (SP-SM)	NS	
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell fragments, silty bands at 7.2 ft. and 7.8 ft., lt. gray (SP)	B	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2417 mm % Fines: 4.4
			At El. -33.0 Ft., mostly fine to medium-grained sand-sized quartz, little shell fragments, siltier at 10.8 ft. with a clay band at 10.9 ft., lt. gray to gray	C	Classification: SP Color: 5Y 7/2-light gray D50: 0.3588 mm % Fines: 1.7
-39.4	15.0		At El. -35.4 Ft., mostly fine to medium-grained sand-sized quartz, trace shell fragments, silty band at 12.3 to 12.5 ft., sand grades finer with depth, dense, lt. gray	D	Classification: SP Color: 5Y 7/2-light gray D50: 0.3187 mm % Fines: 2.7
			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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19198° Long = -88.39268°

Project Mississippi Barrier Island Restoration Project

AVS
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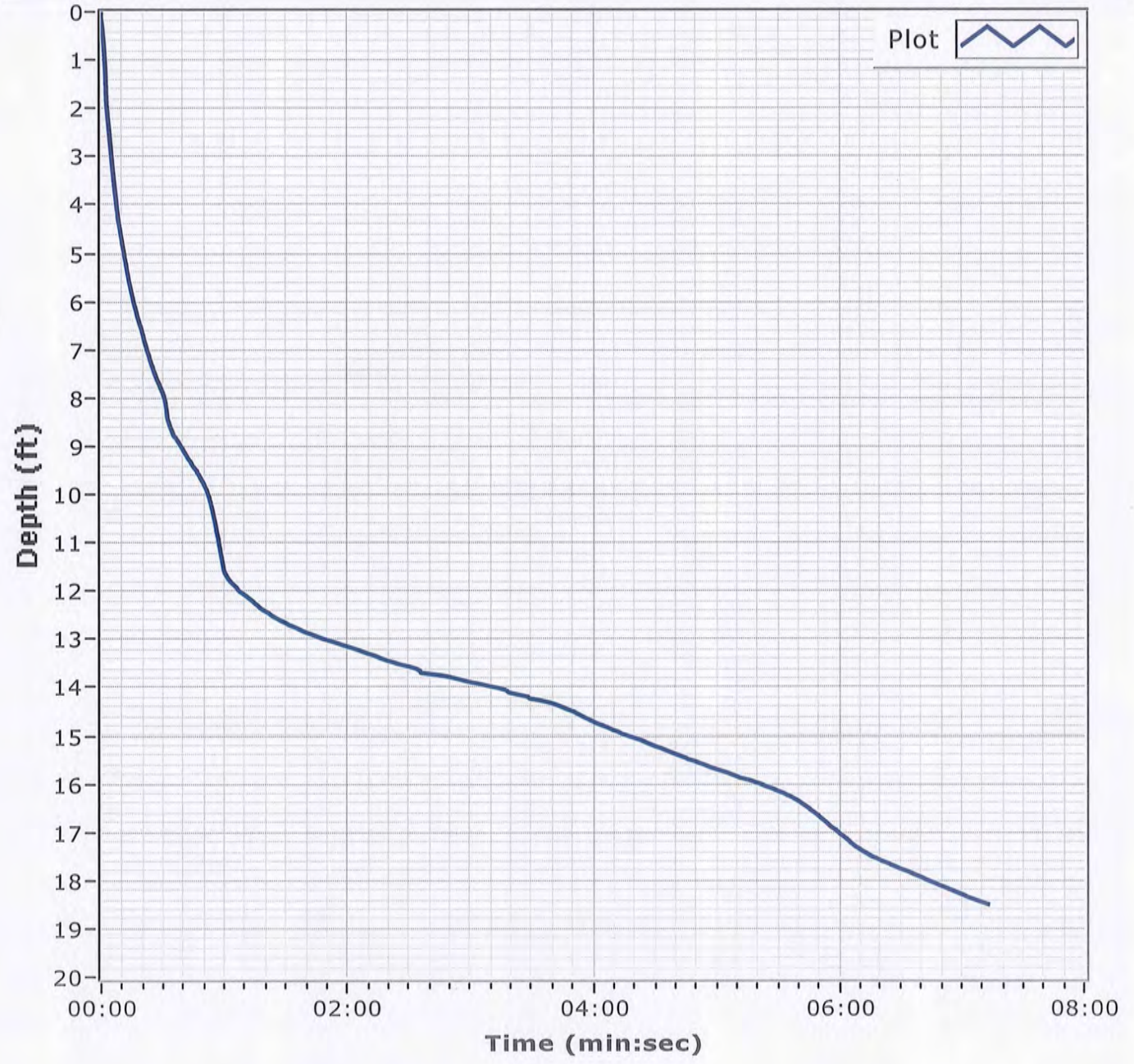
Core Identifier BI-PBP-2-12
Coordinate System
Latitude / Longitude

Date 12/08/2012
Start Time 11:59:54
End Time 12:07:08
Total Time 00:07:13

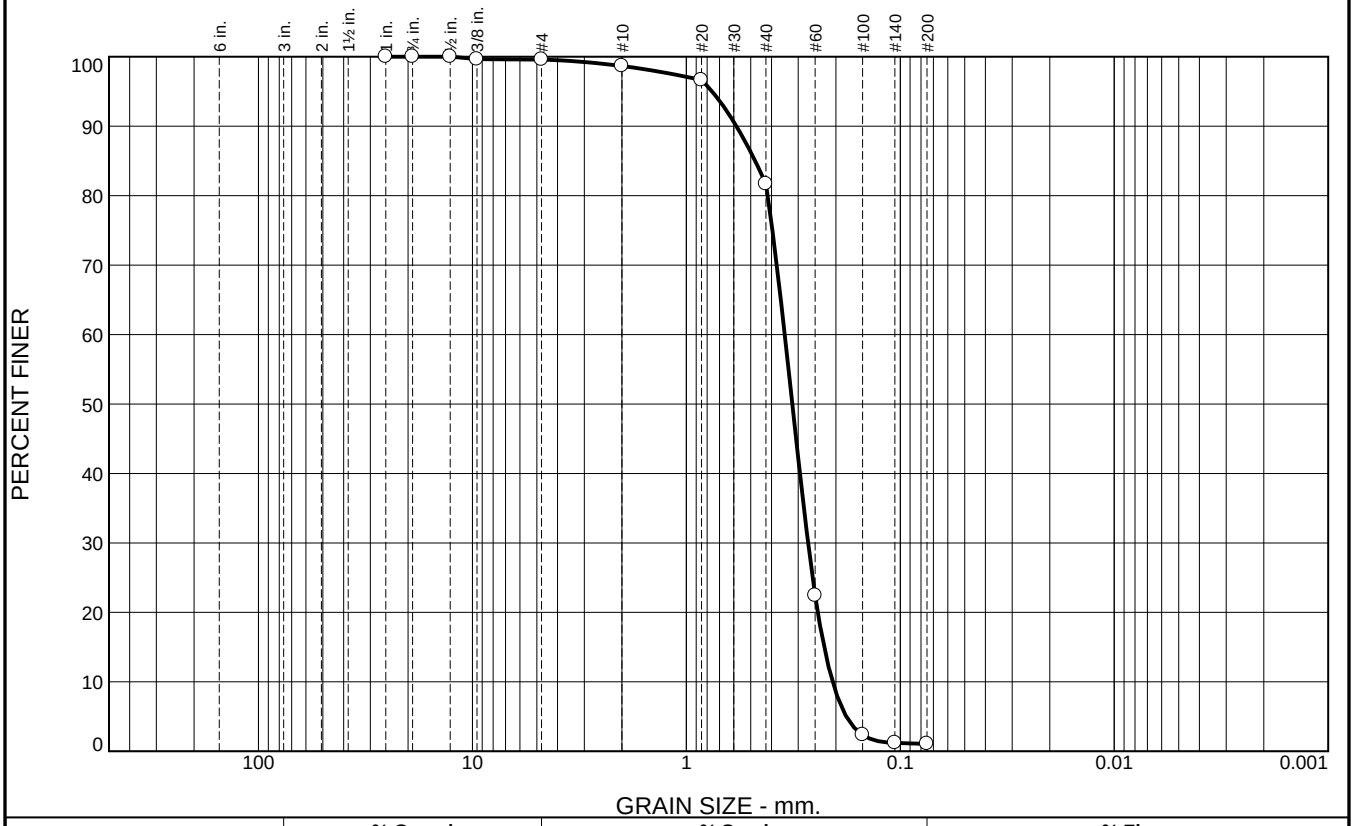
Water Depth 25.8'
Penetration 18.5'
Recovery 15.0'

Latitude 30 11.519
Longitude 088 23.561

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	0.9	17.0	80.6	1.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	99.6		
#4	99.6		
#10	98.7		
#20	96.6		
#40	81.7		
#60	22.4		
#100	2.4		
#140	1.2		
#200	1.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5836 D_{85}= 0.4771 D_{60}= 0.3468
D_{50}= 0.3198 D_{30}= 0.2699 D_{15}= 0.2269
D_{10}= 0.2073 C_u= 1.67 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-2-12 A
Sample Number: 6482 (27) **Depth:** 0.0' **Date:** 12/12/12

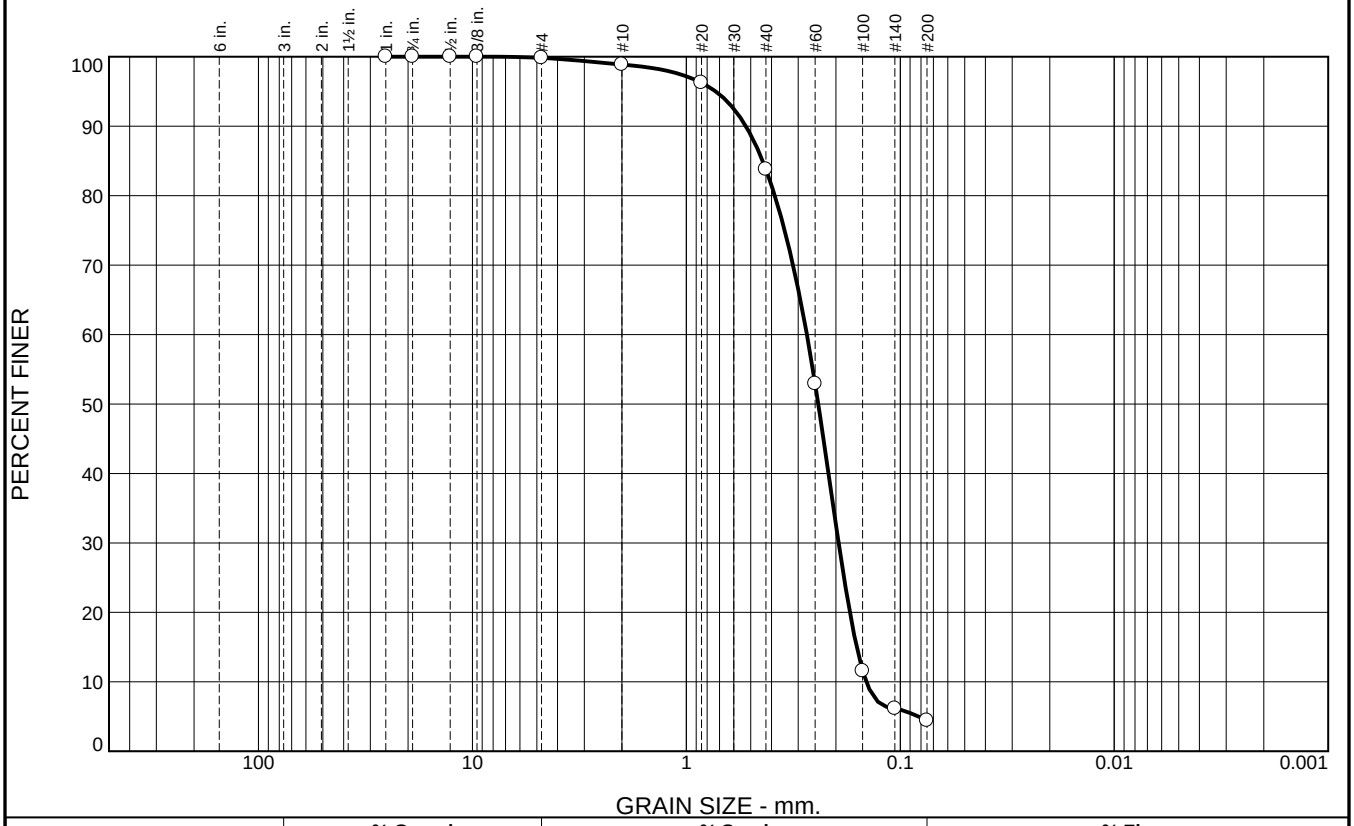
Thompson Engineering

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	0.9	15.1	79.4	4.4	

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	98.9		
#20	96.2		
#40	83.8		
#60	52.9		
#100	11.6		
#140	6.2		
#200	4.4		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5272 D_{85}= 0.4402 D_{60}= 0.2734
D_{50}= 0.2417 D_{30}= 0.1943 D_{15}= 0.1600
D_{10}= 0.1443 C_u= 1.89 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-2-12 B
Sample Number: 6482 (28) **Depth:** 6.0' **Date:** 12/12/12

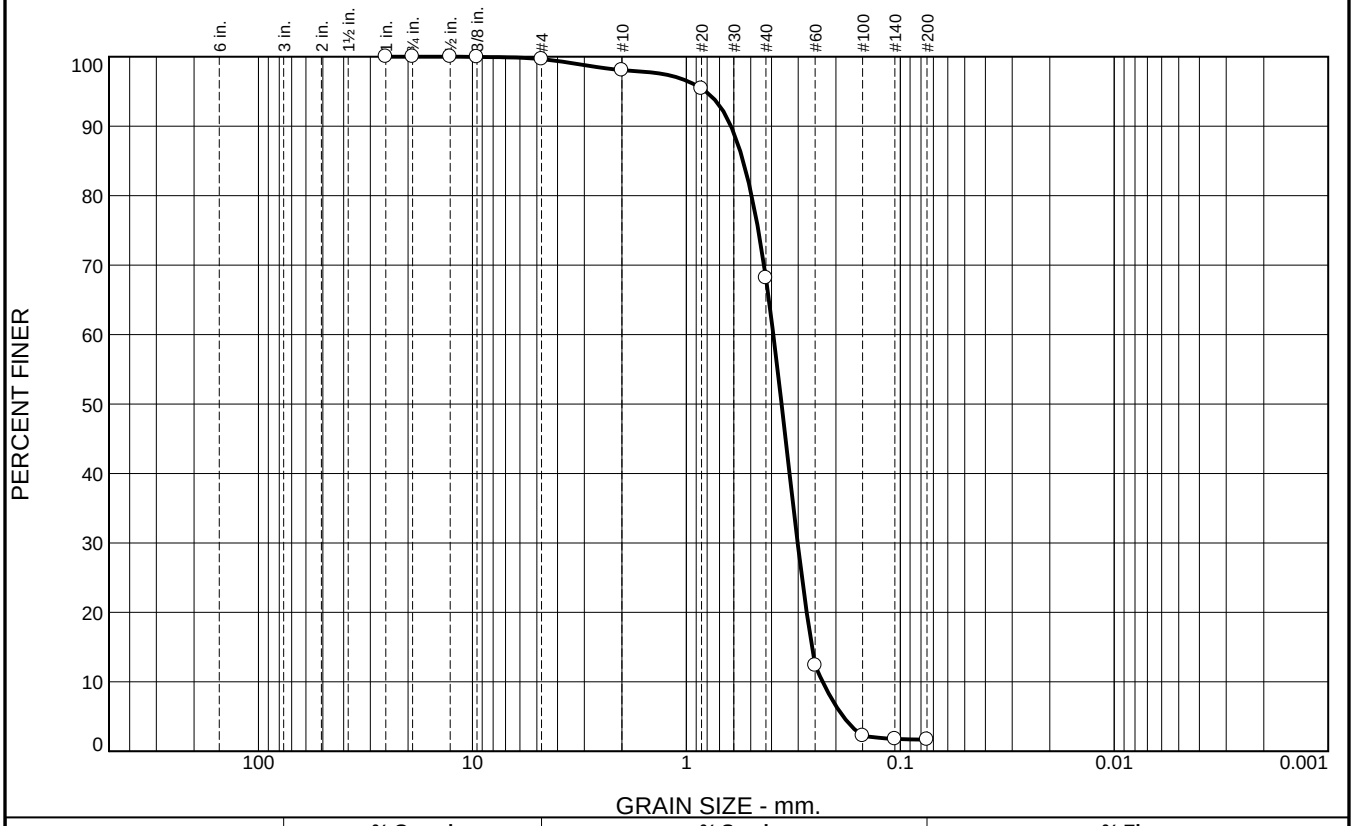
Thompson Engineering

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	1.5	29.9	66.5	1.7	

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	98.1		
#20	95.4		
#40	68.2		
#60	12.4		
#100	2.2		
#140	1.8		
#200	1.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6180 D_{85}= 0.5426 D_{60}= 0.3920
D_{50}= 0.3588 D_{30}= 0.3020 D_{15}= 0.2589
D_{10}= 0.2305 C_u= 1.70 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-2-12 C
Sample Number: 6482 (29) **Depth:** 8.6' **Date:** 12/12/12

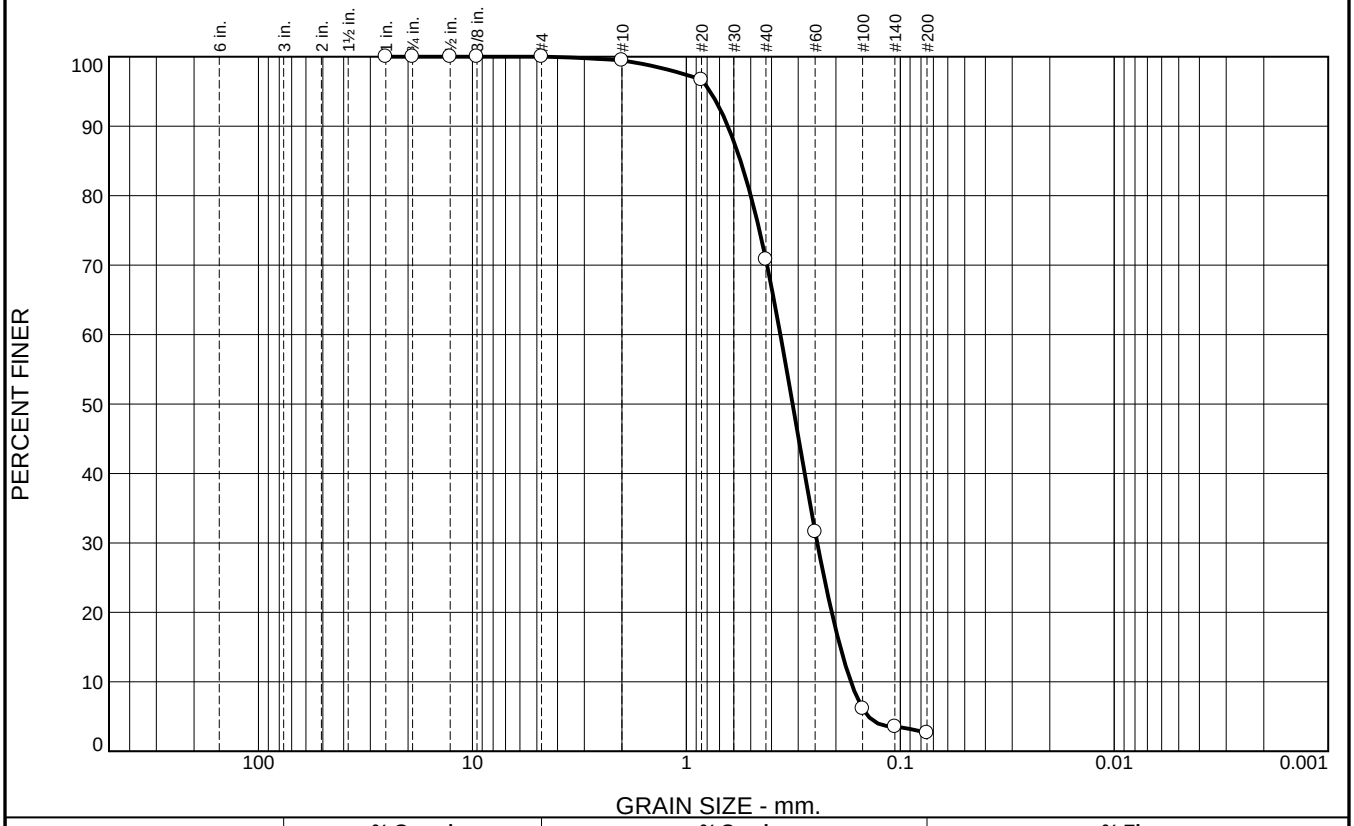
Thompson Engineering

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	28.7	68.1	2.7	

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	99.5		
#20	96.7		
#40	70.8		
#60	31.6		
#100	6.2		
#140	3.5		
#200	2.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6397 D_{85}= 0.5581 D_{60}= 0.3635
D_{50}= 0.3187 D_{30}= 0.2443 D_{15}= 0.1908
D_{10}= 0.1703 C_u= 2.13 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-2-12 D
Sample Number: 6482 (30) **Depth:** 11.0' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PBP-03-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-03-12	LOCATION COORDINATES: E = 1,124,344 N = 251,919	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 / 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: 12-08-12 / COMPLETED: 12-08-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -27.4 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
-27.4	0.0				
-29.2	1.8		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little shell fragments, trace fines, gray (SP)	B	Classification: SP Color: 5Y 7/2-light gray D50: 0.3817 mm % Fines: 1
-30.1	2.7		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, dark gray (SM)	NS	
-30.5	3.1			A	Classification: SP Color: 5Y 7/1-light gray D50: 0.3418 mm % Fines: 1.6
			CLAY, fat, mostly clay, medium to high plasticity, dark gray (CH)	D	Classification: SP Color: 5Y 7/2-light gray D50: 0.3612 mm % Fines: 1.8
-34.5	7.1		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few shell fragments, trace silt, lt. gray (SP)	C	Classification: SP Color: 2.5Y 8/1-white D50: 0.2873 mm % Fines: 2.1
-36.0	8.6		At El. -31.4 Ft., mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, lt. gray		
-36.4	9.0		At El. -32.5 Ft., mostly fine-grained sand-sized quartz, trace fines, lt. gray to white		
-38.9	11.5		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, trace clay stringers, brown (SM)		
-41.4	14.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little shell fragments, trace fines, lt. brown (SP)	NS	
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, brown (SM)		
			CLAY, lean, mostly clay, some fine-grained sand-sized quartz, trace shell fragments, dark brown to dark gray (CL)		
-46.4	19.0		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, with shelly bands throughout, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19198° Long = -88.38990°

Project Mississippi Barrier Island Restoration Project

AVS
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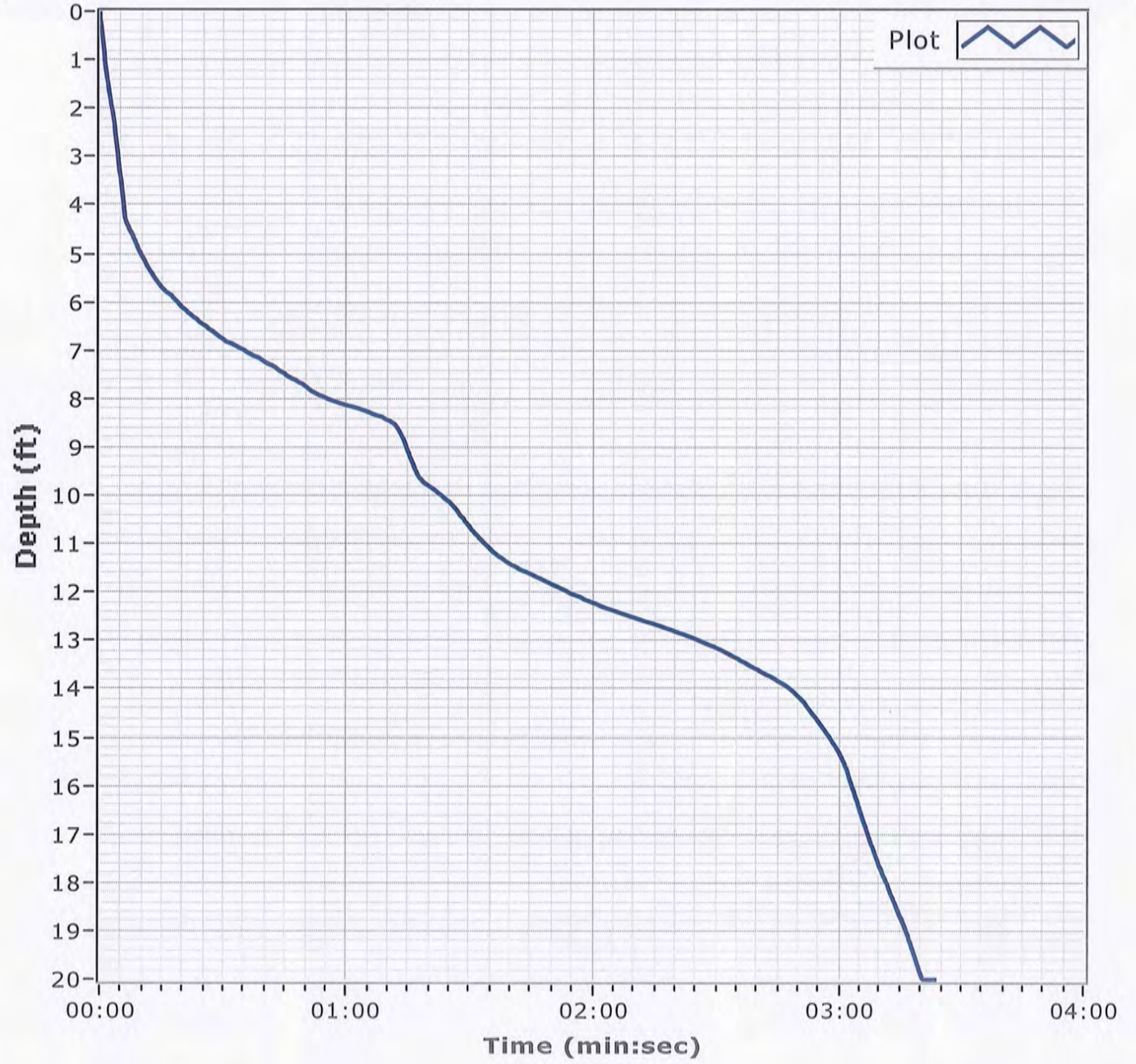
Core Identifier BI-PBP-3-12
Coordinate System
Latitude / Longitude

Latitude 30 11.519
Longitude 088 23.396

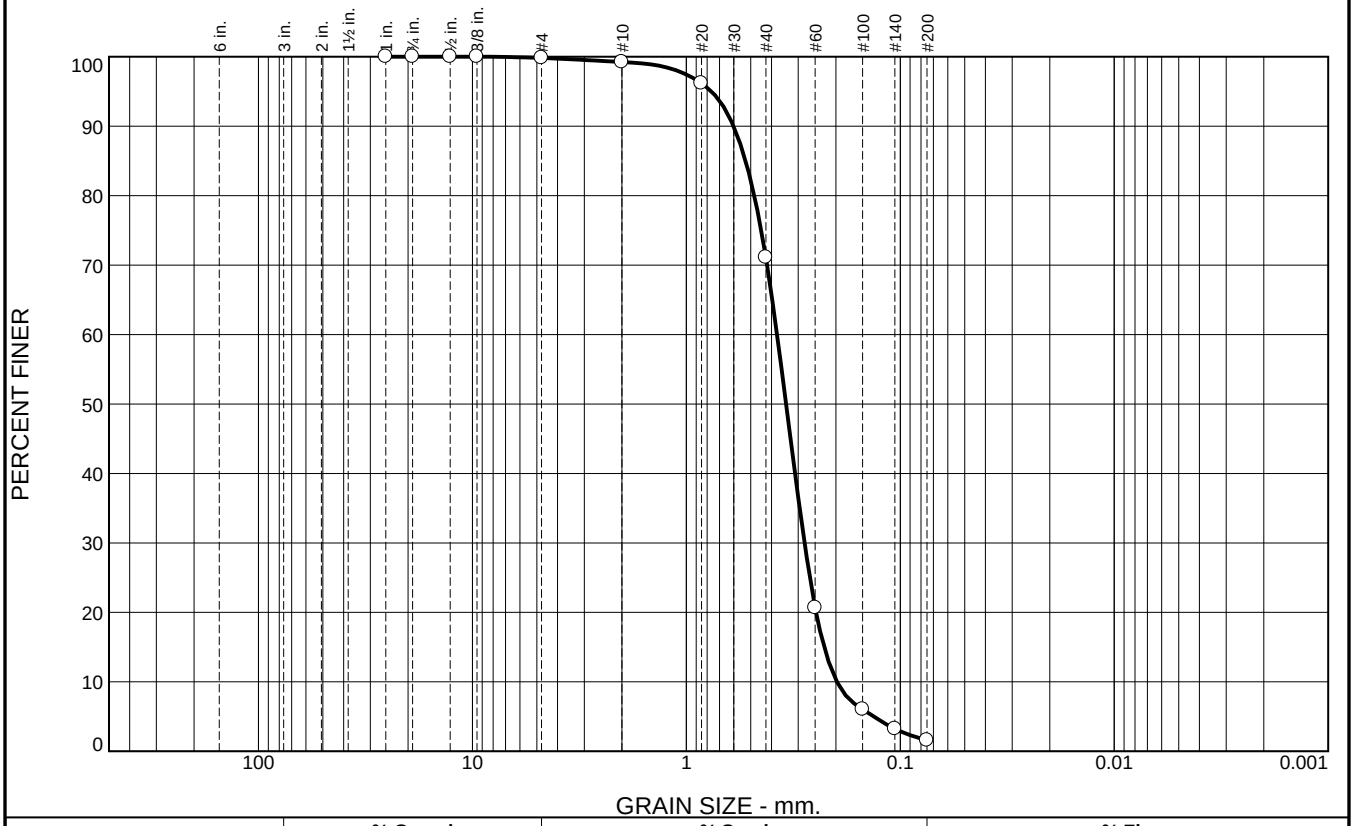
Date 12/08/2012
Start Time 13:05:48
End Time 13:09:12
Total Time 00:03:24

Water Depth 28.9'
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	0.2	0.6	28.1	69.5	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	99.2		
#20	96.2		
#40	71.1		
#60	20.7		
#100	6.0		
#140	3.2		
#200	1.6		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6013 D_{85}= 0.5284 D_{60}= 0.3767
D_{50}= 0.3418 D_{30}= 0.2804 D_{15}= 0.2269
D_{10}= 0.1978 C_u= 1.90 C_c= 1.05

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-3-12 A
Sample Number: 6482 (31) **Depth:** 0.0' **Date:** 12/12/12

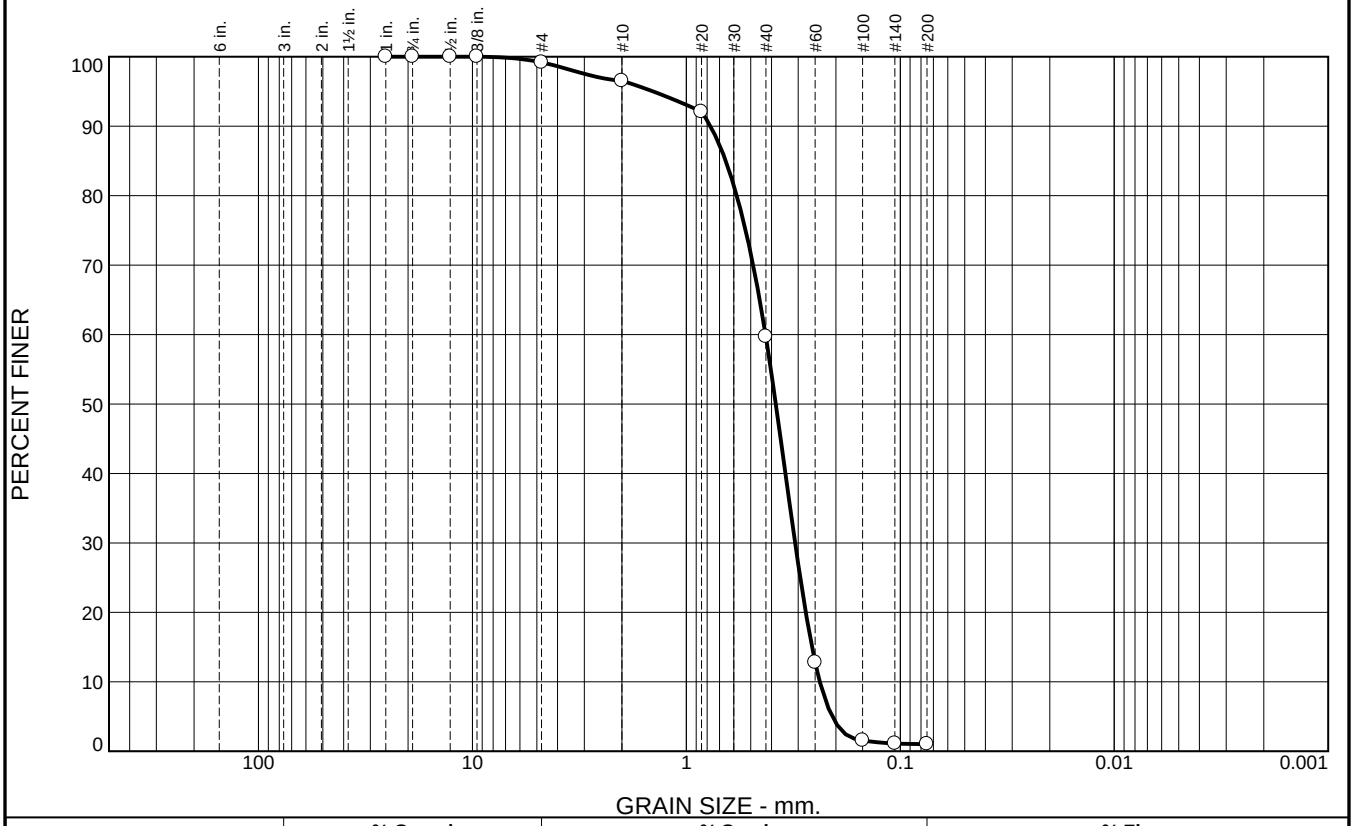
Thompson Engineering

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	0.8	2.7	36.8	58.7	1.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.2		
#10	96.5		
#20	92.1		
#40	59.7		
#60	12.8		
#100	1.6		
#140	1.1		
#200	1.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.7718 D_{85}= 0.6544 D_{60}= 0.4266
D_{50}= 0.3817 D_{30}= 0.3103 D_{15}= 0.2588
D_{10}= 0.2377 C_u= 1.79 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-3-12 B
Sample Number: 6482 (32) **Depth:** 2.2' **Date:** 12/12/12

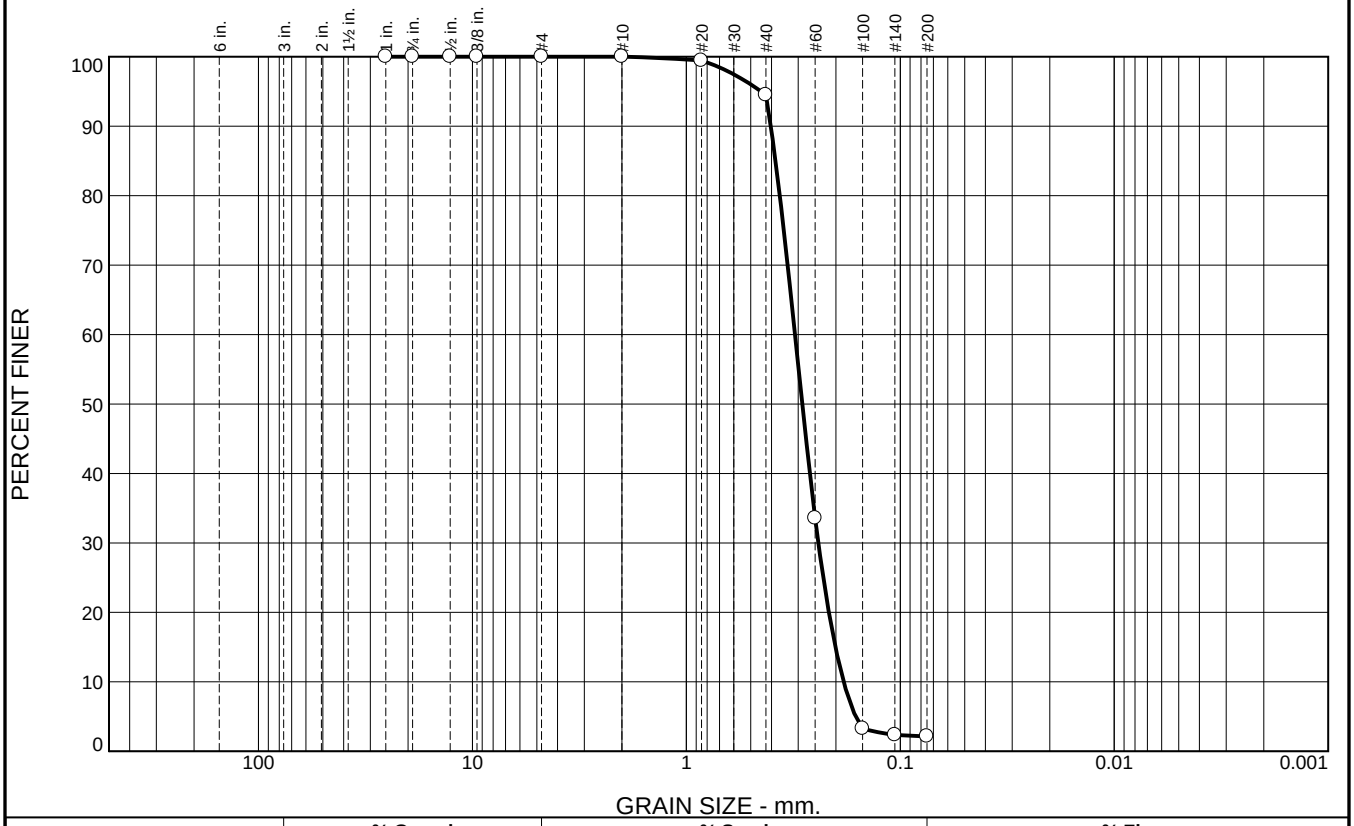
Thompson Engineering

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	5.5	92.4	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	99.4		
#40	94.5		
#60	33.6		
#100	3.3		
#140	2.4		
#200	2.1		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4028 D_{85}= 0.3828 D_{60}= 0.3107
D_{50}= 0.2873 D_{30}= 0.2415 D_{15}= 0.2011
D_{10}= 0.1841 C_u= 1.69 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-3-12 C
Sample Number: 6482 (33) **Depth:** 5.9' **Date:** 12/12/12

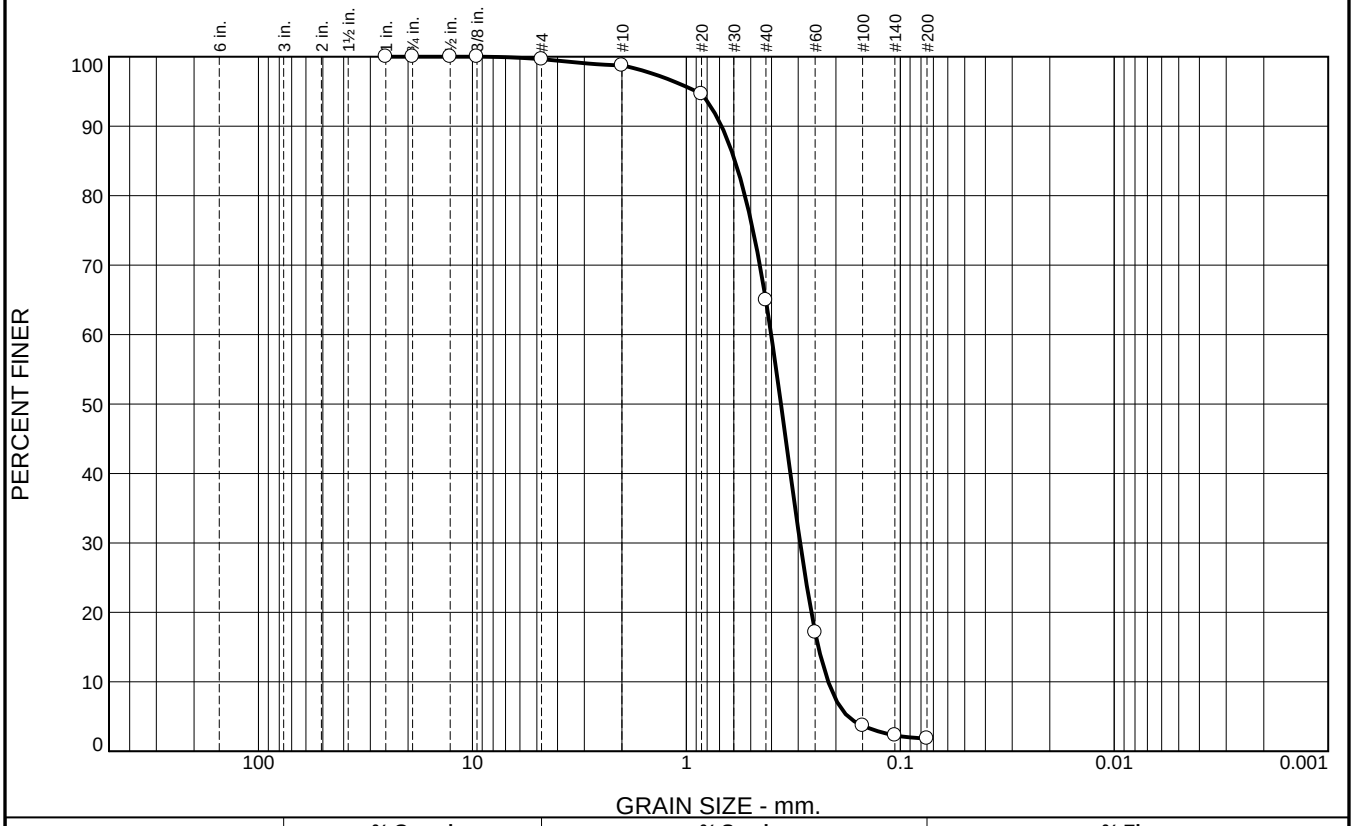
Thompson Engineering

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	0.8	33.8	63.2	1.8	

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	98.8		
#20	94.6		
#40	65.0		
#60	17.1		
#100	3.7		
#140	2.3		
#200	1.8		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6848 D_{85}= 0.5922 D_{60}= 0.4013
D_{50}= 0.3612 D_{30}= 0.2940 D_{15}= 0.2414
D_{10}= 0.2171 C_u= 1.85 C_c= 0.99

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-3-12 D
Sample Number: 6482 (34) **Depth:** 7.9' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PBP-04-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-04-12	LOCATION COORDINATES: E = 1,122,984 N = 250,768	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: 12-22-12 / COMPLETED: 12-22-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -31.4 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-31.4	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, slightly silty at 3.1 ft., gray (SP)	A	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.2498 mm % Fines: 5.6
-35.7	4.3				
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, clay band at 5.1 ft., gray (SC)	NS	
-38.7	7.3				
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, gray (SM)		
-41.4	10.0				
			SILT, inorganic-L, mostly silt, some fine-grained sand-sized quartz, little clay, brown grading to gray (ML)		
-43.2	11.8				
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, some silt, few clay stringers, gray (SP-SM)		
-46.4	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18883° Long = -88.39422°

Project Mississippi Barrier Island Restoration Project

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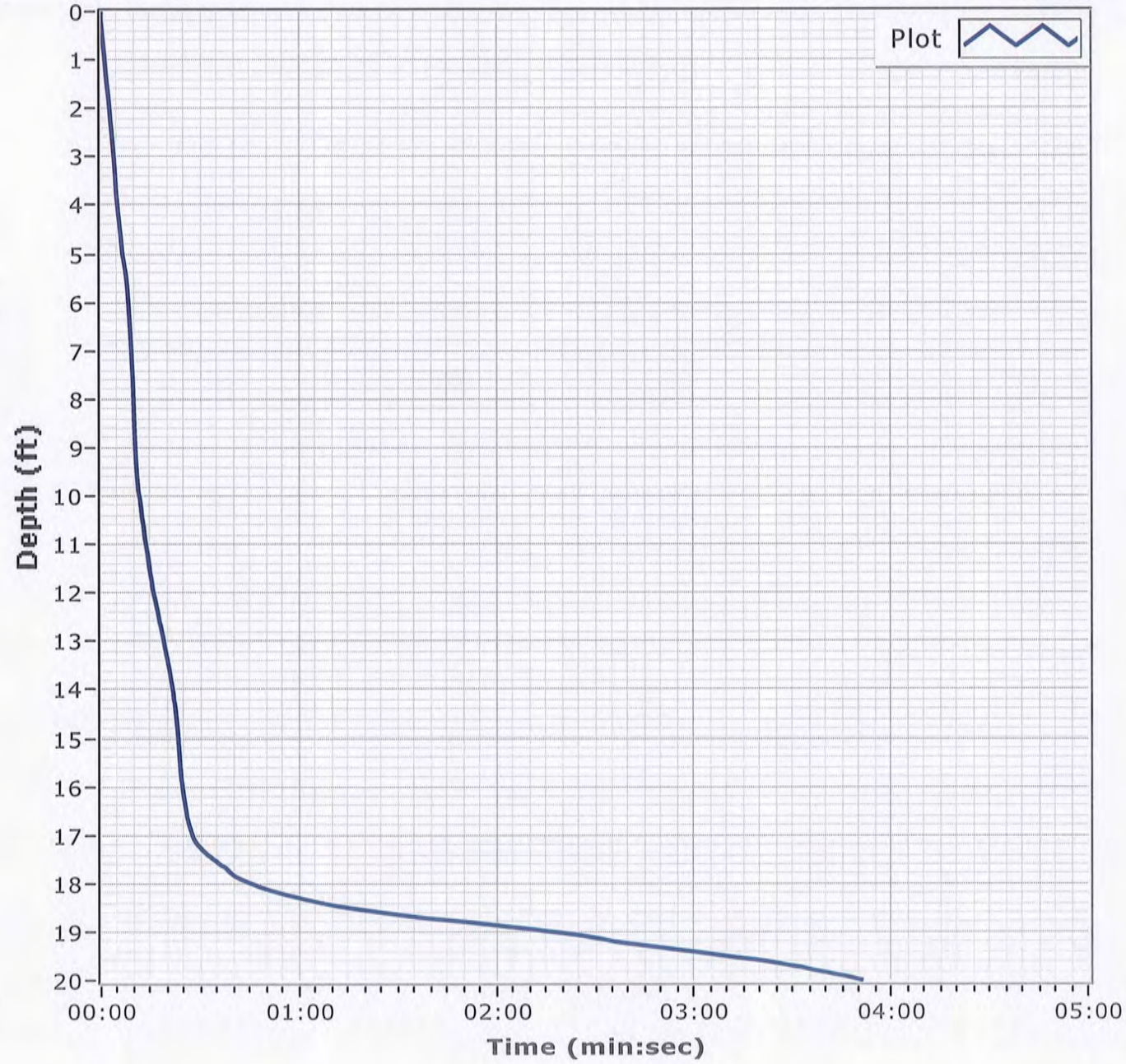
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Coordinate System
Latitude / Longitude

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Longitude 088 23.653

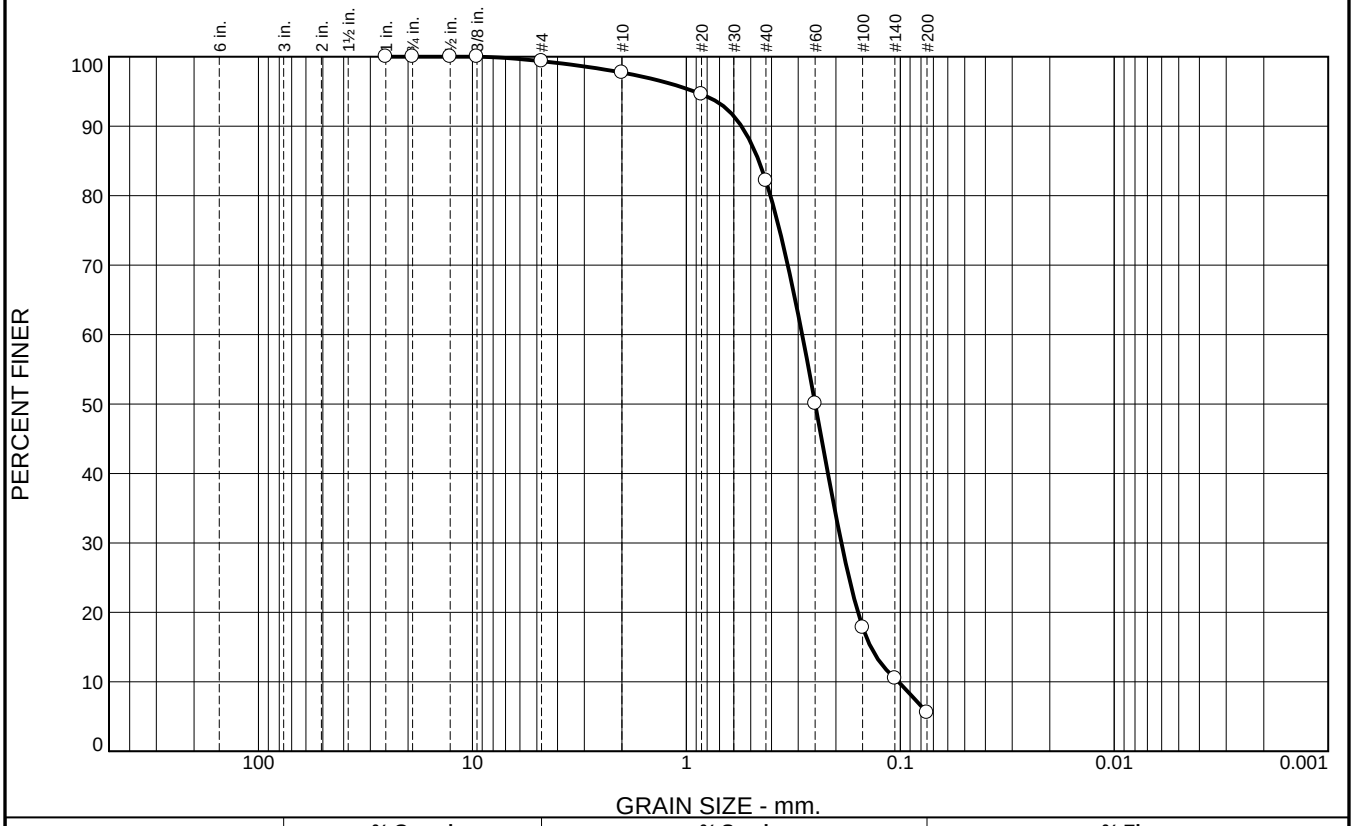
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Start Time 14:55:19
End Time 14:59:11
Total Time 00:03:51

Water Depth 32.3'
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	0.7	1.6	15.5	76.6	5.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.3		
#10	97.7		
#20	94.6		
#40	82.2		
#60	50.1		
#100	17.8		
#140	10.5		
#200	5.6		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5525 D_{85}= 0.4583 D_{60}= 0.2877
D_{50}= 0.2498 D_{30}= 0.1886 D_{15}= 0.1374
D_{10}= 0.1021 C_u= 2.82 C_c= 1.21

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBP-4-12 A
Sample Number: 6495 (20) **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-PBP-05-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-05-12	LOCATION COORDINATES: E = 1,123,963 N = 250,798	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: 31.2 Ft.	
		15. DATE BORING	STARTED: 12-08-12 / COMPLETED: 12-08-12
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: 16.8 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-29.4	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.2748 mm % Fines: 1.8
-33.9	4.5				
			SHELL, mostly shell fragments, clay band at 5.2 to 5.4 ft., gray	NS	
-35.6	6.2				
-36.6	7.2		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, lt. gray to gray (SP-SM)	B	Classification: SP-SM Color: 5Y 7/2-light gray D50: 0.2448 mm % Fines: 5.4
			CLAY, lean, mostly clay, some fine-grained sand-sized quartz, trace shell fragments, gray (CL)	NS	
-39.4	10.0				
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, lt. brown to gray (SM)		
-42.0	12.6				
-42.8	13.4		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, trace shell fragments, low to medium plasticity, dark gray (CL)		
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, dark gray (SM)		
-45.5	16.1				
-46.2	16.8				
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, 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.

0 5 10 15 20 25

Lat = 30.18890° Long = -88.39112°

Project Mississippi Barrier Island Restoration Project

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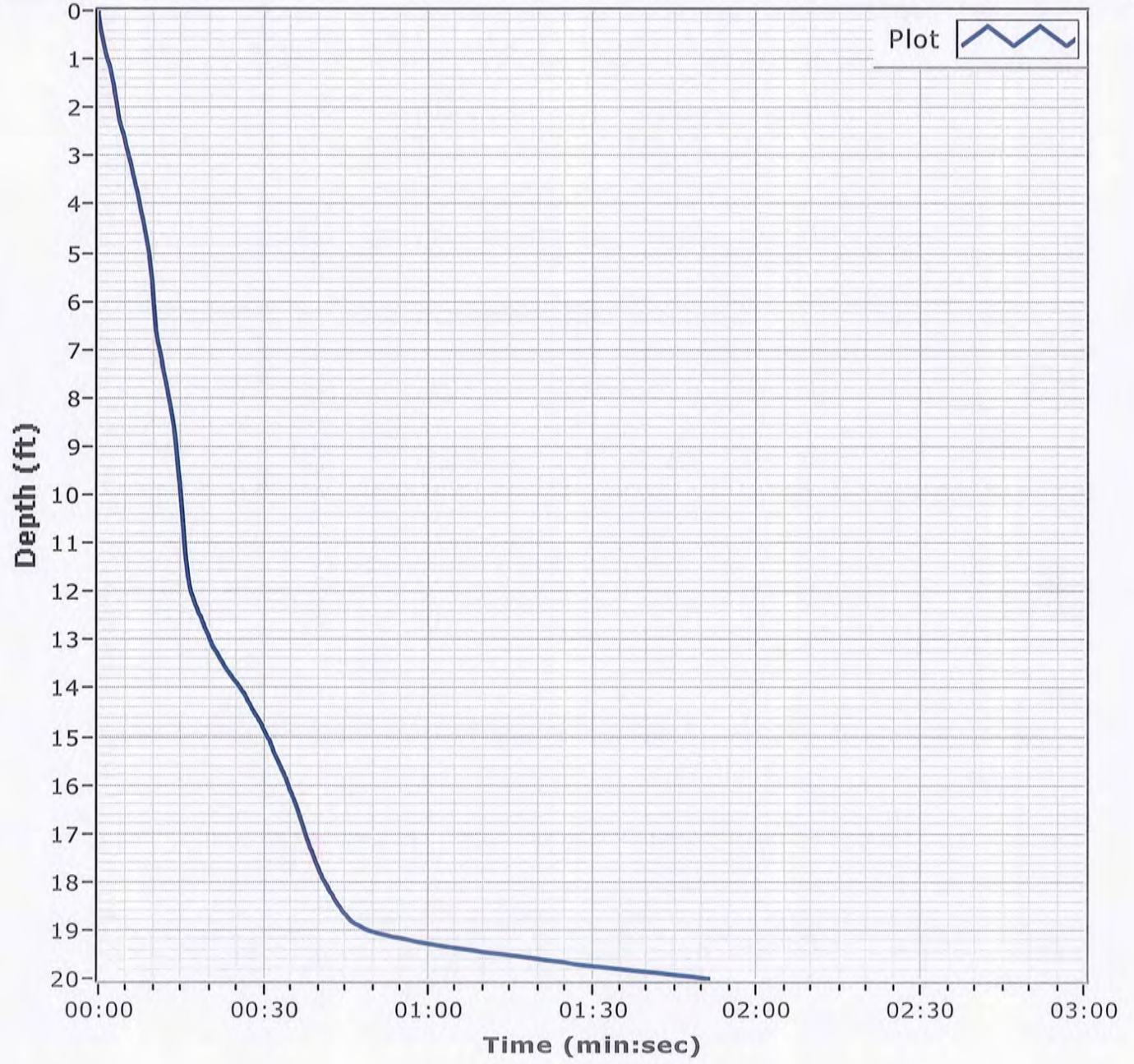
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Latitude / Longitude

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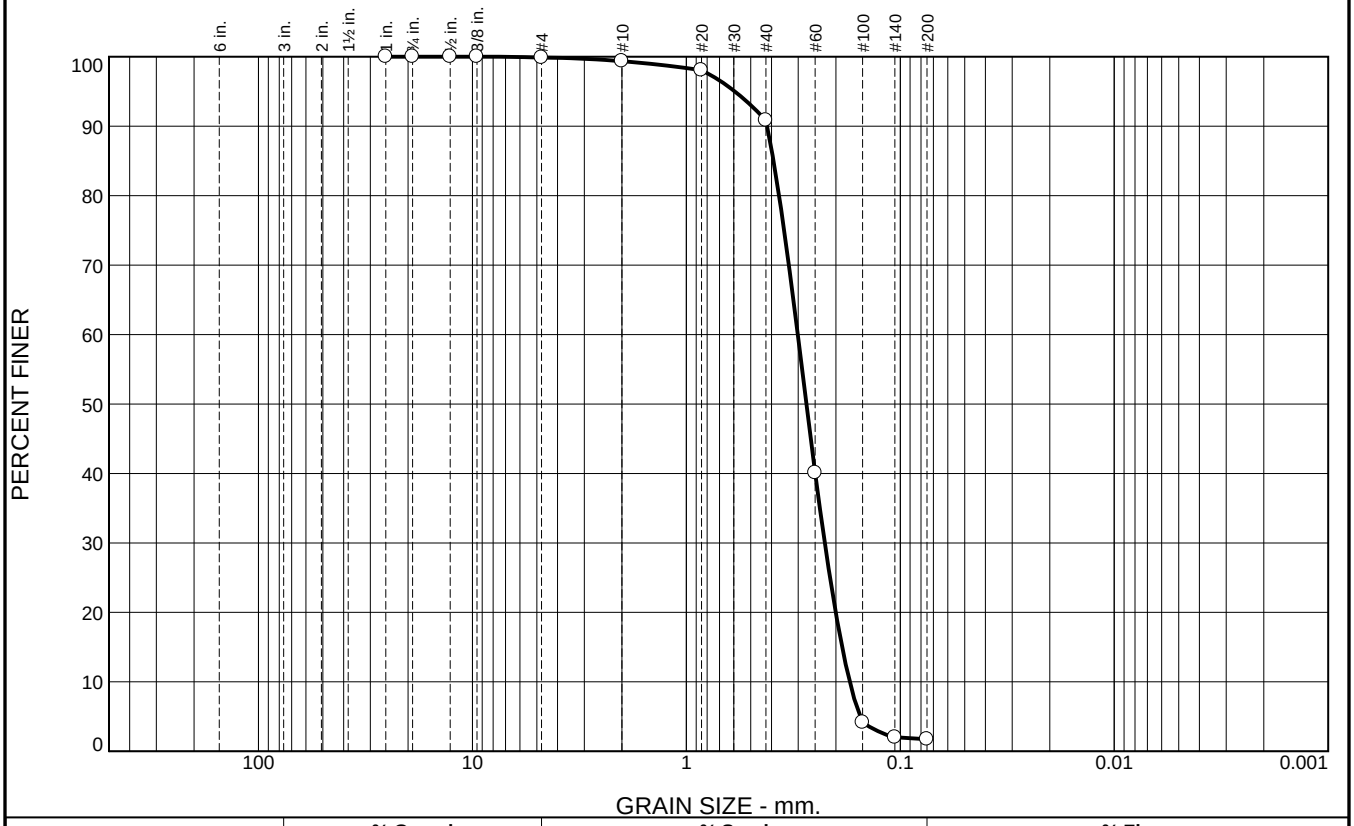
Water Depth 31.2'
Penetration 20.0'
Recovery 16.8'

Latitude 30 11.467
Longitude 088 23.334

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.5	8.6	89.0	1.8	

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	98.1		
#40	90.8		
#60	40.1		
#100	4.1		
#140	2.0		
#200	1.8		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4194 D_{85}= 0.3911 D_{60}= 0.3016
D_{50}= 0.2748 D_{30}= 0.2254 D_{15}= 0.1871
D_{10}= 0.1725 C_u= 1.75 C_c= 0.98

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-5-12 A
Sample Number: 6482 (35) **Depth:** 0.0' **Date:** 12/12/12

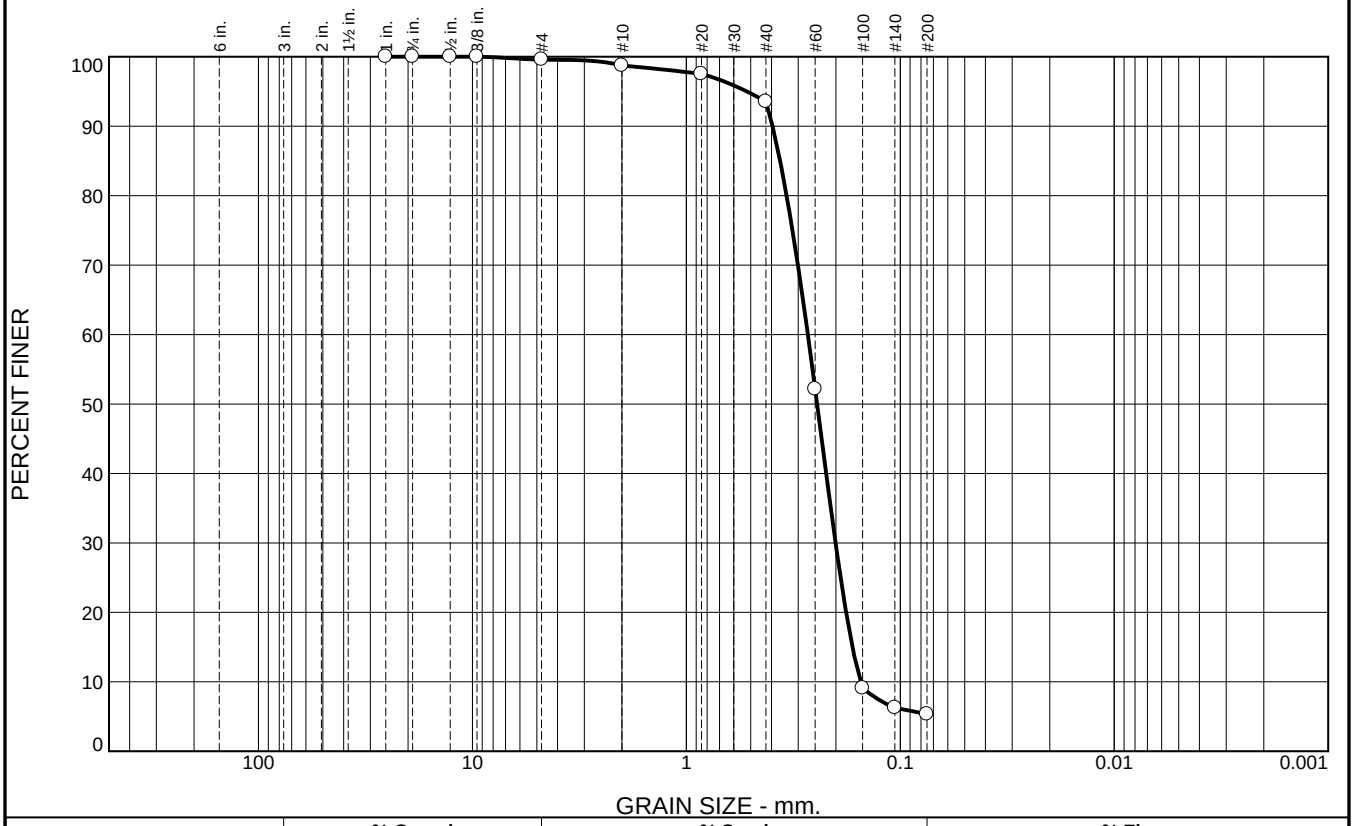
Thompson Engineering

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	0.9	5.2	88.1	5.4	

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	98.7		
#20	97.5		
#40	93.5		
#60	52.2		
#100	9.1		
#140	6.3		
#200	5.4		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3954 D_{85}= 0.3643 D_{60}= 0.2705
D_{50}= 0.2448 D_{30}= 0.2008 D_{15}= 0.1675
D_{10}= 0.1533 C_u= 1.76 C_c= 0.97

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBP-5-12 B
Sample Number: 6482 (36) **Depth:** 6.2' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PBP-06-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-06-12	LOCATION COORDINATES: E = 1,125,039 N = 251,911	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: 33 Ft.	
		15. DATE BORING	STARTED: 12-08-12 / COMPLETED: 12-08-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -31.4 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 100%	
8. TOTAL DEPTH OF BORING: 6.8 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-31.4	0.0				
-34.8	3.4		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, some shell fragments, trace silt, clay pocket at 0.2, gray to lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3322 mm % Fines: 2.1
-36.1	4.7		CLAY, fat, mostly clay, some sand, trace shell fragments, medium to high plasticity, greenish gray (CH)	NS	
-38.2	6.8		SAND, silty, mostly fine-grained sand-sized quartz, some silt, dark brown band at 5.3 ft., dense sand, pale brown (SM)	B	Classification: SP Color: 2.5Y 5/2-grayish brown D50: 0.24 mm % Fines: 2.7

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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19195° Long = -88.38770°

Project Mississippi Barrier Island Restoration Project

AVS
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S E R V I C E S

Core Identifier BI-PBP-6-12

Coordinate System
Latitude / Longitude

Latitude 30 11.517

Longitude 088 23.262

Date 12/08/2012

Start Time 13:45:51

End Time 13:48:32

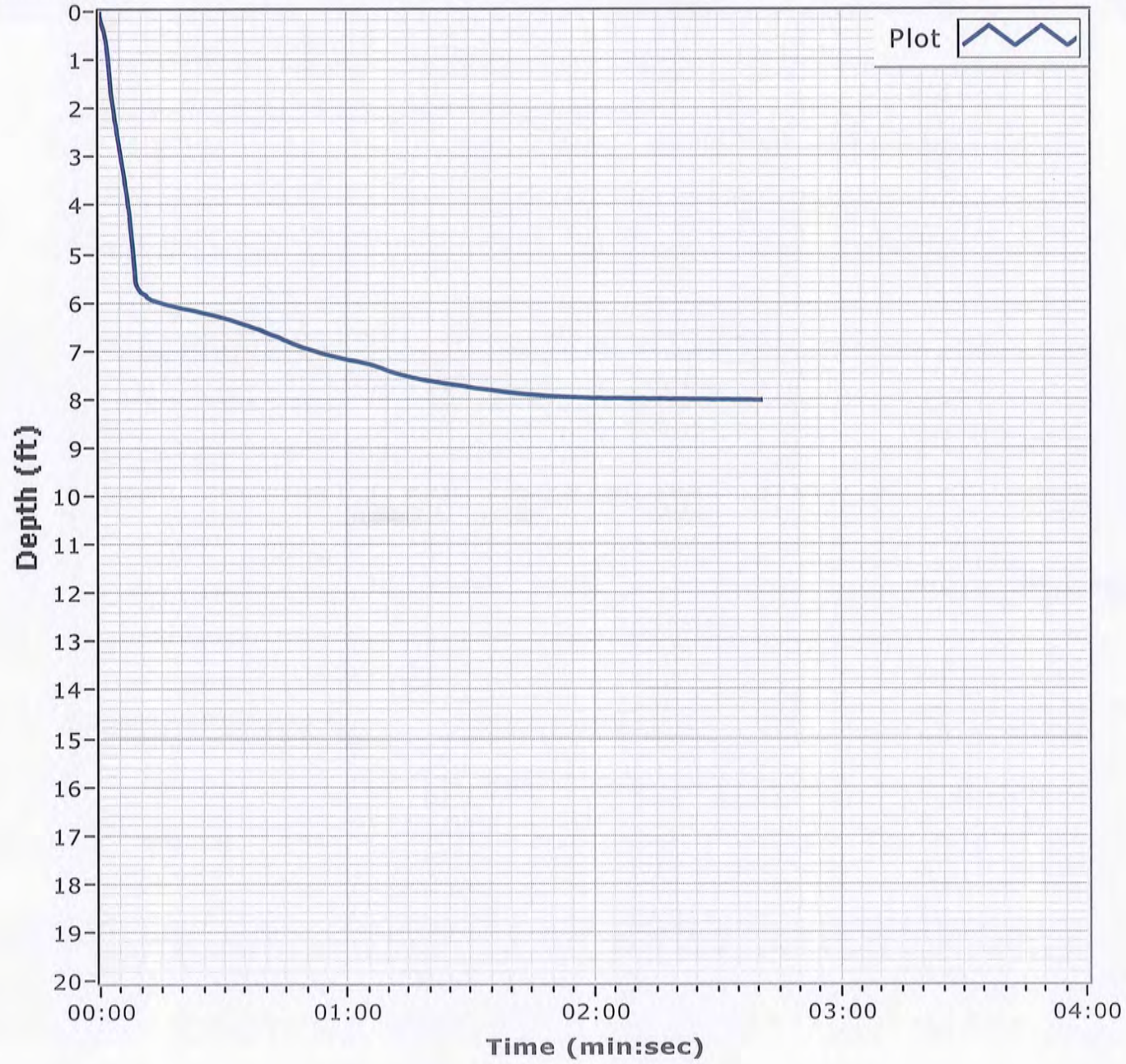
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Water Depth 33.0'

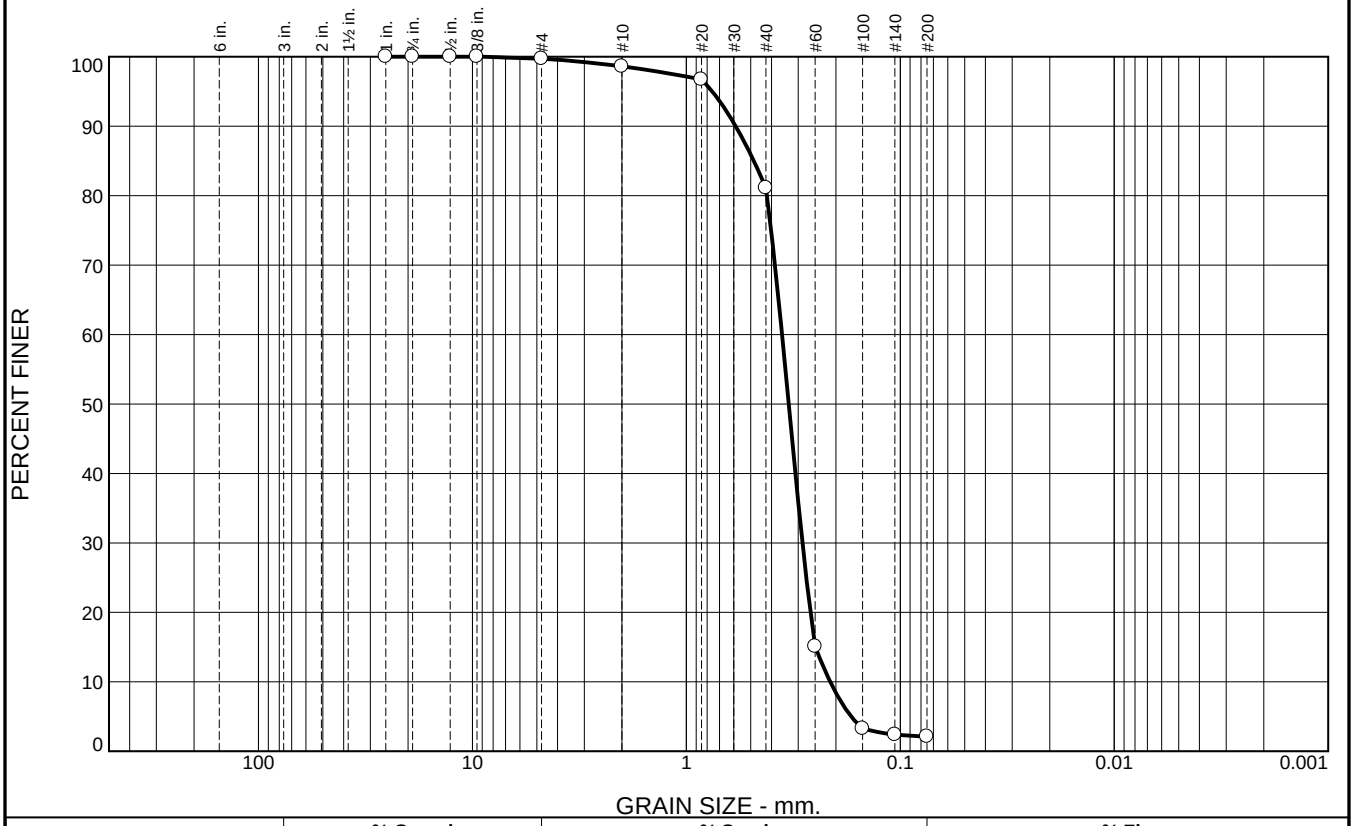
Penetration 8.0'

Recovery 6.8'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	1.1	17.5	79.0	2.1	

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	98.6		
#20	96.7		
#40	81.1		
#60	15.1		
#100	3.3		
#140	2.4		
#200	2.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5883 D_{85}= 0.4841 D_{60}= 0.3569
D_{50}= 0.3322 D_{30}= 0.2869 D_{15}= 0.2492
D_{10}= 0.2126 C_u= 1.68 C_c= 1.08

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-6-12 A
Sample Number: 6482 (37) **Depth:** 0.0' **Date:** 12/12/12

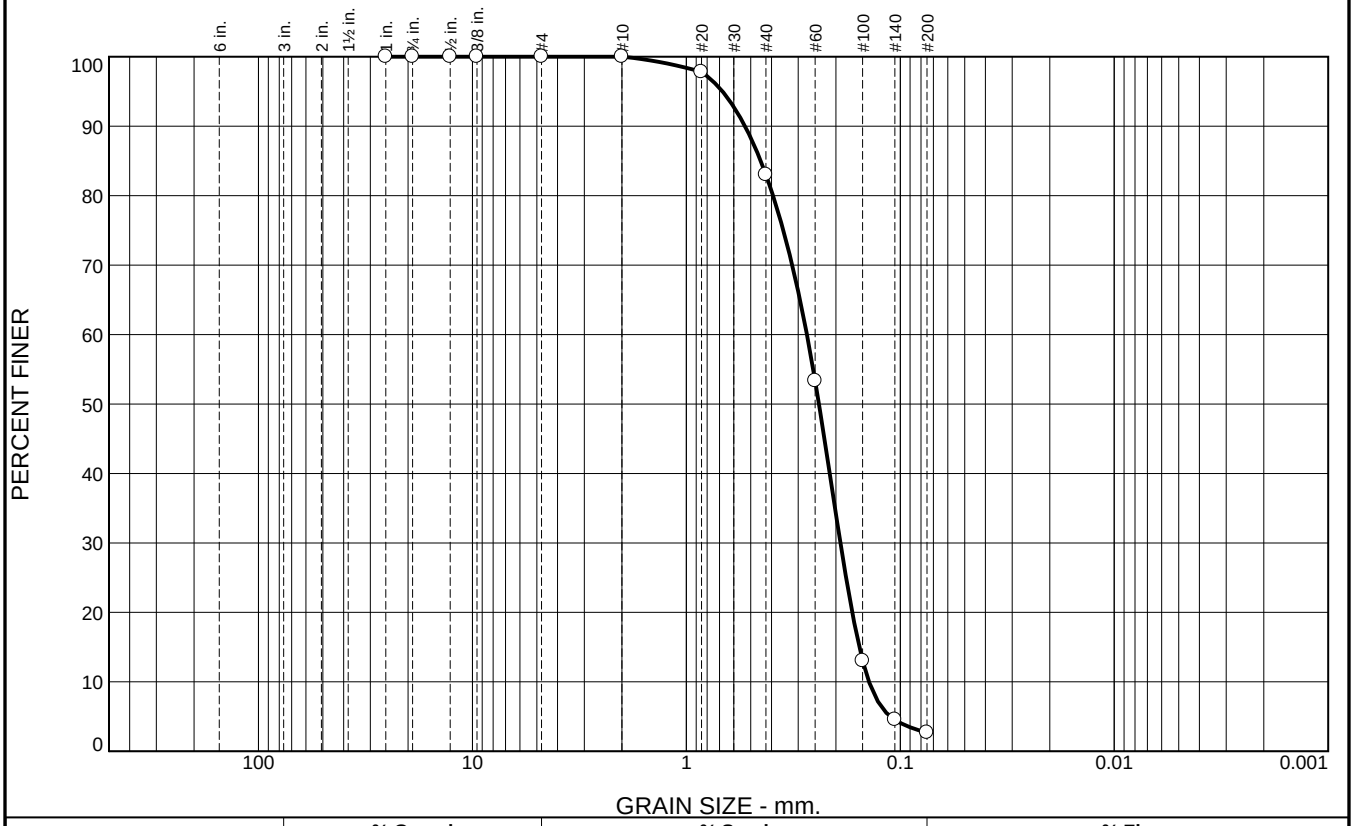
Thompson Engineering

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	17.0	80.3	2.7	

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	97.8		
#40	83.0		
#60	53.3		
#100	13.0		
#140	4.6		
#200	2.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5320 D_{85}= 0.4495 D_{60}= 0.2733
D_{50}= 0.2400 D_{30}= 0.1906 D_{15}= 0.1555
D_{10}= 0.1400 C_u= 1.95 C_c= 0.95

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-6-12 B
Sample Number: 6482 (38) **Depth:** 4.7' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PBP-08-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-08-12	LOCATION COORDINATES: E = 1,125,076 N = 250,555	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: 27.1 Ft.	
		15. DATE BORING	STARTED: 12-22-12 / COMPLETED: 12-22-12
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: 16.7 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-26.5	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few shell fragments, trace fines, lt. gray to gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3643 mm % Fines: 1
-32.8	6.3			B	Classification: SP Color: 5Y 7/2-light gray D50: 0.2361 mm % Fines: 1.7
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, little clay stringers, gray (SM)	NS	
-36.4	9.9				
			SILT, inorganic-L, mostly silt, some clay, little fine-grained sand-sized quartz, dark gray (ML)		
-38.8	12.3				
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, few clay stringers and a clay band at 14.8 ft., brown to gray (SM)		
-42.2	15.7				
-43.2	16.7		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, gray (SP-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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18822° Long = -88.38760°

Project Mississippi Barrier Island Restoration Project

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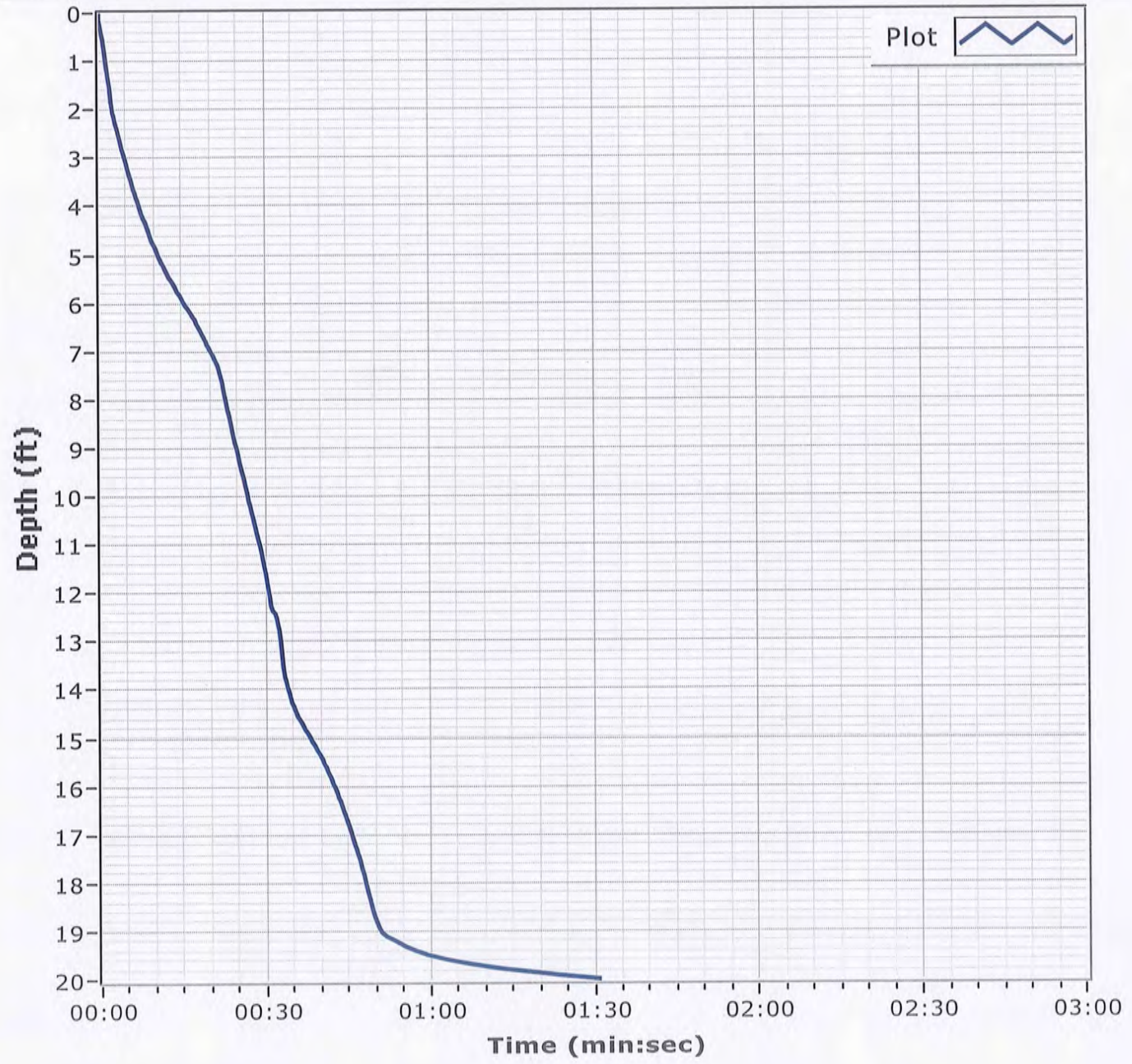
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Coordinate System
Latitude / Longitude

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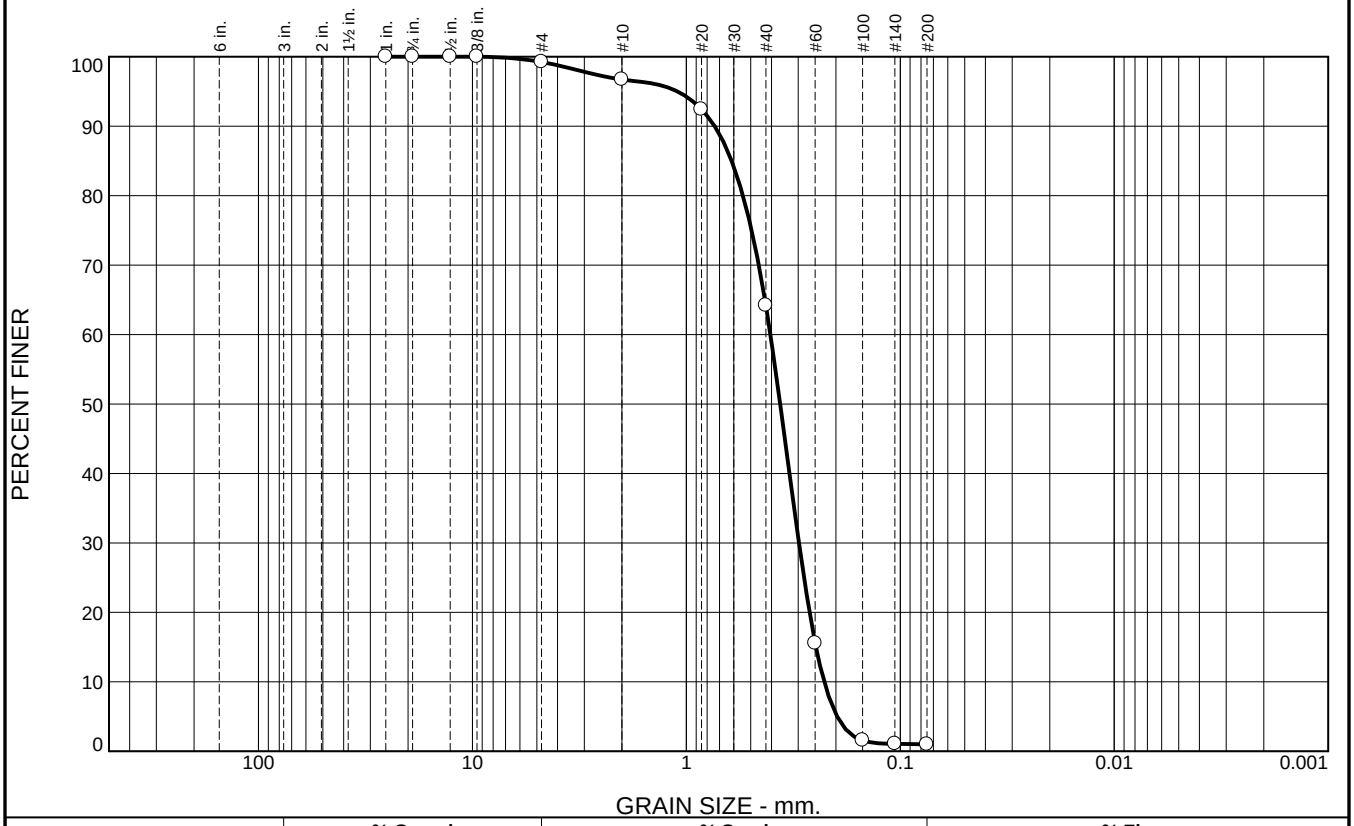
Water Depth 27.1'
Penetration 20.0'
Recovery 16.7'

Latitude 30 11.293
Longitude 088 23.256

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.8	2.5	32.5	63.2	1.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.2		
#10	96.7		
#20	92.4		
#40	64.2		
#60	15.5		
#100	1.6		
#140	1.1		
#200	1.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.7379 D_{85}= 0.6142 D_{60}= 0.4048
D_{50}= 0.3643 D_{30}= 0.2977 D_{15}= 0.2479
D_{10}= 0.2268 C_u= 1.78 C_c= 0.97

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-8-12 A
Sample Number: 6495 (21) **Depth:** 0.0' **Date:** 12/31/12

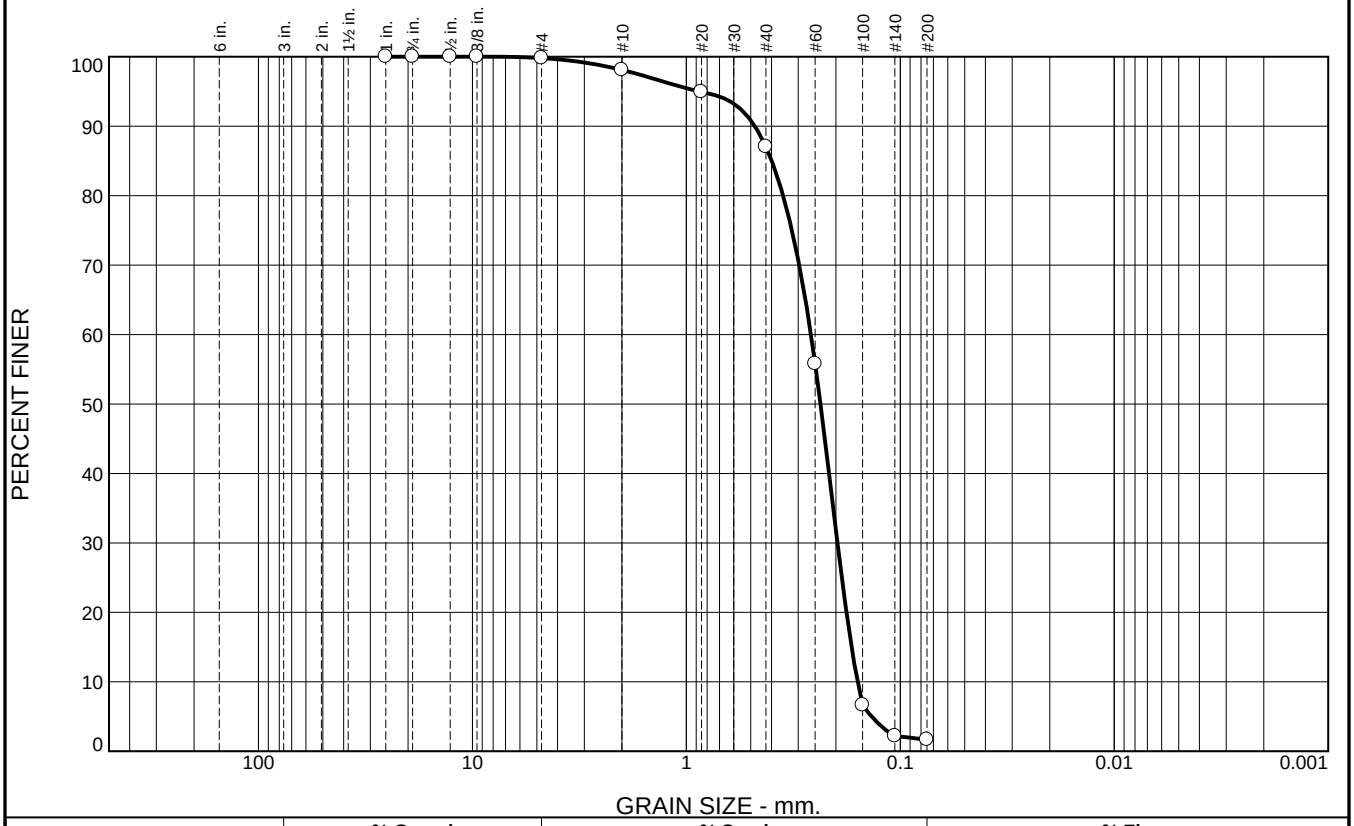
Thompson Engineering

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	0.2	1.7	11.1	85.3	1.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.8		
#10	98.1		
#20	94.9		
#40	87.0		
#60	55.8		
#100	6.6		
#140	2.2		
#200	1.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4787 D_{85}= 0.3988 D_{60}= 0.2616
D_{50}= 0.2361 D_{30}= 0.1967 D_{15}= 0.1691
D_{10}= 0.1586 C_u= 1.65 C_c= 0.93

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-8-12 B
Sample Number: 6495 (22) **Depth:** 5.0' **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-PBP-09-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-09-12	LOCATION COORDINATES: E = 1,124,933 N = 250,772	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: 12-08-12 / COMPLETED: 12-08-12
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: 18.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, 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 shell fragments, pale lt. brown (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.3314 mm % Fines: 1
-29.4	2.2				
-29.6	2.4			NS	
			SHELL, mostly shell fragments, trace fine-grained sand-sized quartz, gray		
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few shell fragments, trace fines, lt. gray (SP)	B	Classification: SP Color: 5Y 7/2-light gray D50: 0.2559 mm % Fines: 1.7
-32.8	5.6				
-33.7	6.5		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)		
-34.7	7.5		CLAY, fat, mostly clay, medium to high plasticity, dark gray (CH)		
-36.3	9.1		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP)		
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, pale brown (SM)	NS	
			At El. -41.0 Ft., mostly fine-grained sand-sized quartz, some silt, trace clay, brown		
-42.6	15.4				
-43.1	15.9		CLAY, lean, mostly clay, trace fine-grained sand-sized quartz, low to medium plasticity, dark gray (CL)		
-44.9	17.7				
-45.2	18.0		SAND, silty, mostly fine-grained sand-sized quartz, some silt, gray (SM)		
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18882° Long = -88.38805°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
SERVICES

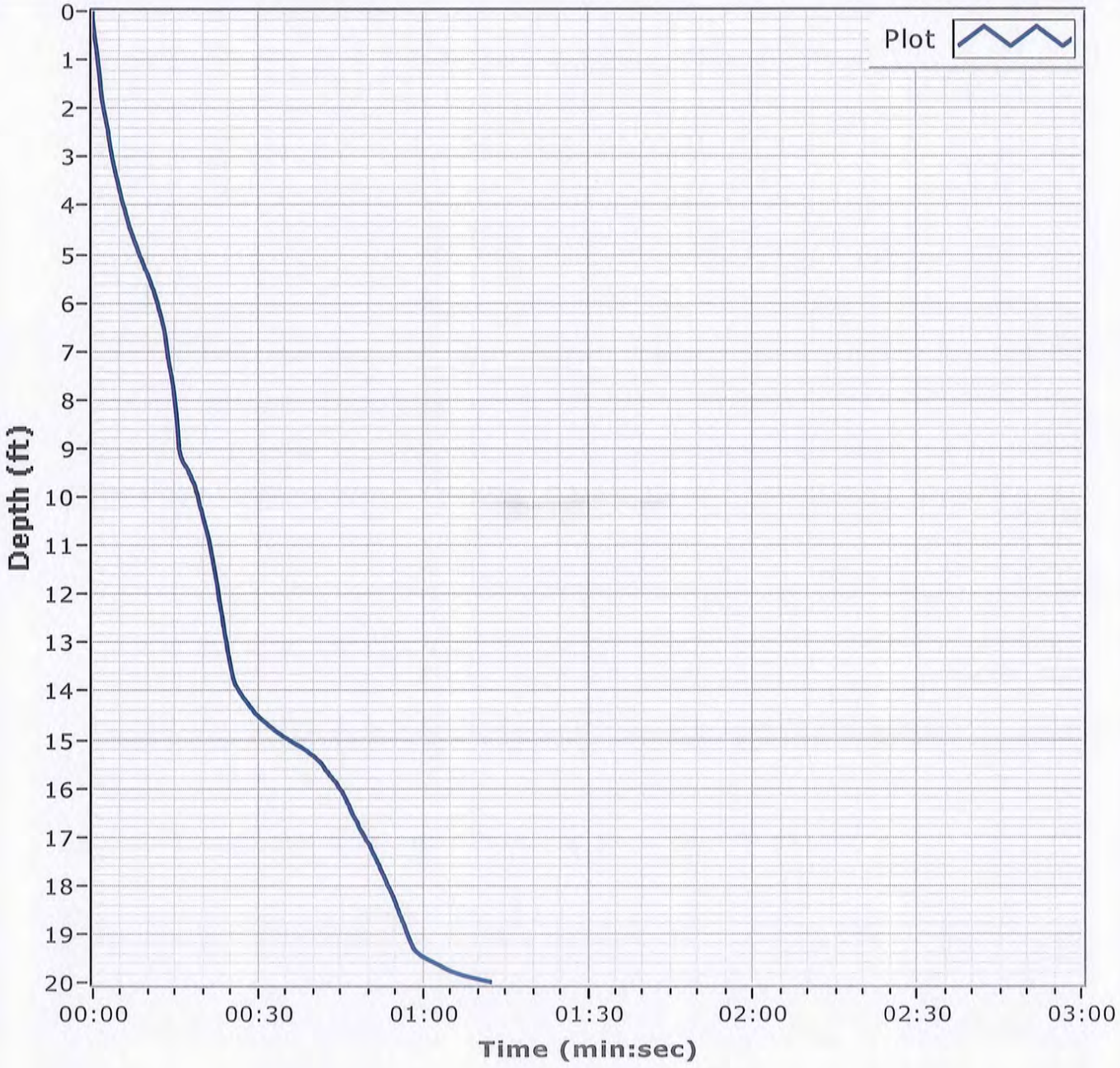
Core Identifier BI-PBP-9-12
Coordinate System
Latitude / Longitude

Latitude 30 11.329
Longitude 088 23.283

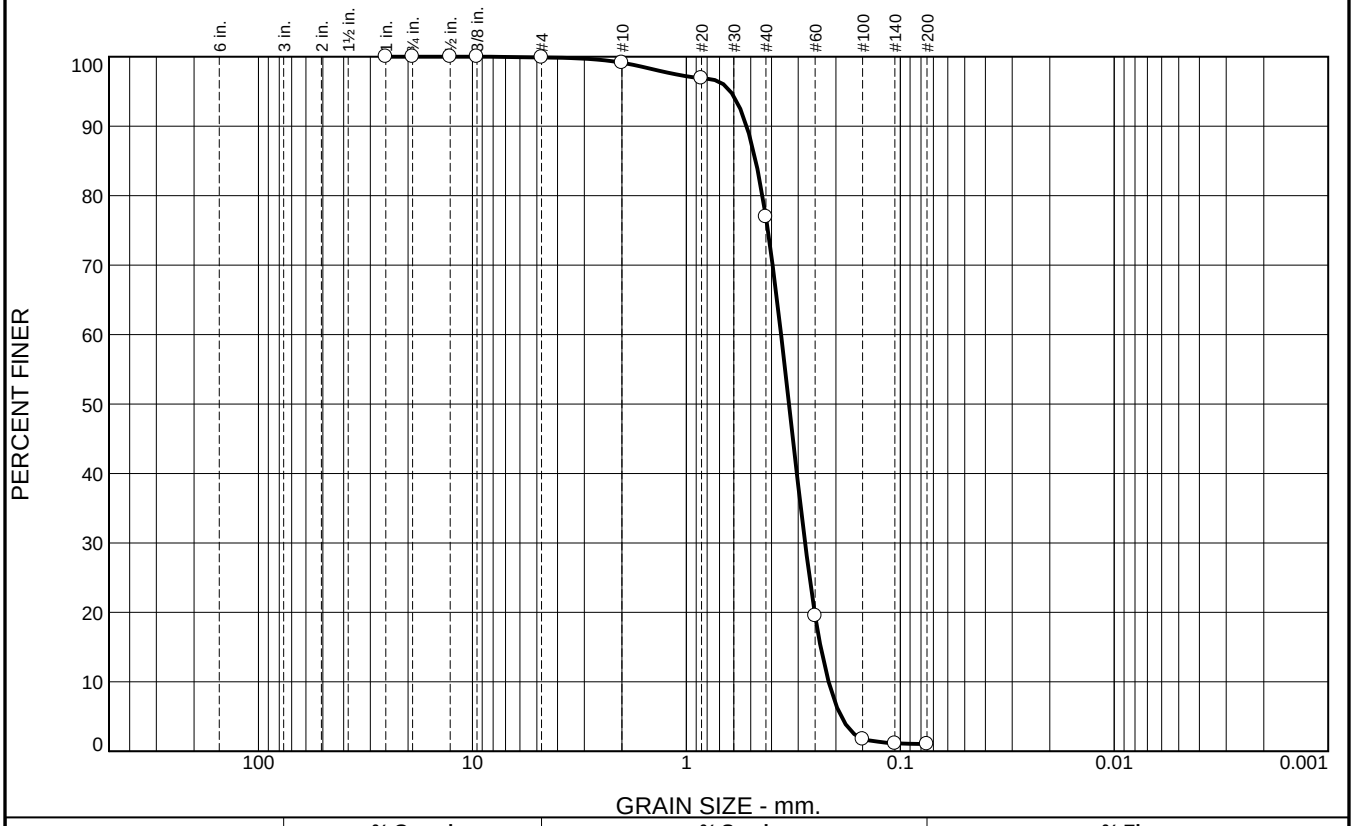
Date 12/08/2012
Start Time 14:17:46
End Time 14:18:59
Total Time 00:01:12

Water Depth 28.9'
Penetration 20.0'
Recovery 18.0'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.8	22.1	76.0	1.0	

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	99.1		
#20	96.9		
#40	77.0		
#60	19.5		
#100	1.7		
#140	1.1		
#200	1.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5225 D_{85}= 0.4741 D_{60}= 0.3607
D_{50}= 0.3314 D_{30}= 0.2788 D_{15}= 0.2355
D_{10}= 0.2163 C_u= 1.67 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-9-12 A
Sample Number: 6482 (39) **Depth:** 0.0' **Date:** 12/12/12

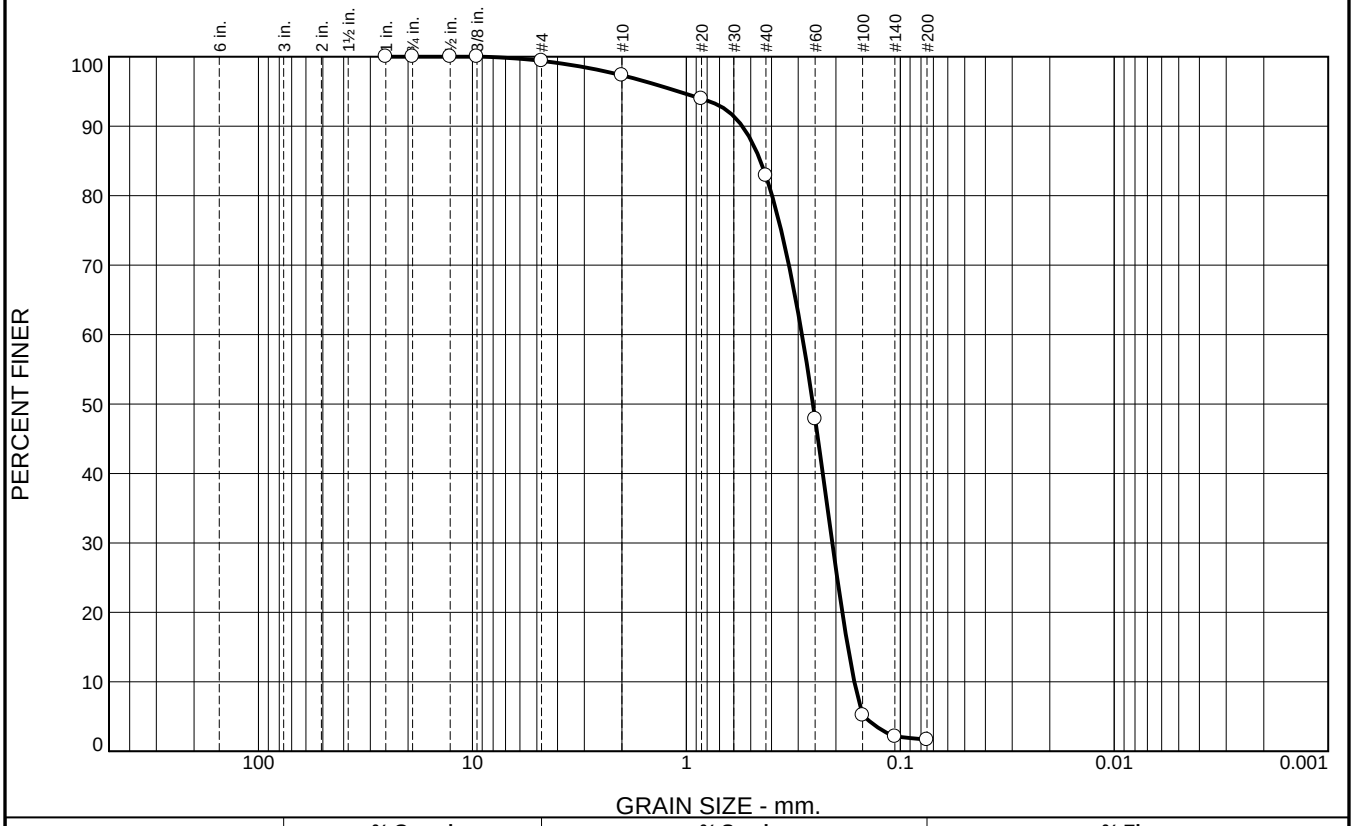
Thompson Engineering

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	0.6	2.1	14.4	81.2	1.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.4		
#10	97.3		
#20	93.9		
#40	82.9		
#60	47.9		
#100	5.2		
#140	2.1		
#200	1.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5473 D_{85}= 0.4503 D_{60}= 0.2882
D_{50}= 0.2559 D_{30}= 0.2079 D_{15}= 0.1759
D_{10}= 0.1641 C_u= 1.76 C_c= 0.91

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-9-12 B
Sample Number: 6482 (40) **Depth:** 2.4' **Date:** 12/12/12

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Boring Designation BI-PBP-12-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-12-12	LOCATION COORDINATES: E = 1,122,682 N = 251,164	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: 32.5 Ft.	
		15. DATE BORING	STARTED: 12-22-12 / COMPLETED: 12-22-12
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: 8.6 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-31.8	0.0				
-33.9	2.1		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2788 mm % Fines: 2
-34.9	3.1		SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, some shell fragments, few clay stringers, gray (SP-SM)	NS	
-37.5	5.7		SAND, silty, mostly fine-grained sand-sized quartz, some silt, little shell fragments, gray (SM)	B	Classification: SP-SM Color: 5Y 5/2-olive gray D50: 0.2942 mm % Fines: 7.3
-38.7	6.9		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, clay band at 6.6 ft., dark gray (SC)	NS	
-40.4	8.6		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, grades siltier with depth, gray grading to brown (SP-SM)	C	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.2302 mm % Fines: 3.1
				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. Drilled depth was 16.3 ft. and return was 8.6 ft. Unsure of cause of poor return. Did not appear to be a mechanical issue.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18992° Long = -88.39517°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

Core Identifier BI-PBP-12-12

Coordinate System
Latitude / Longitude

Latitude 30 11.395

Longitude 088 23.710

Date 12/22/2012

Start Time 14:20:05

End Time 14:22:54

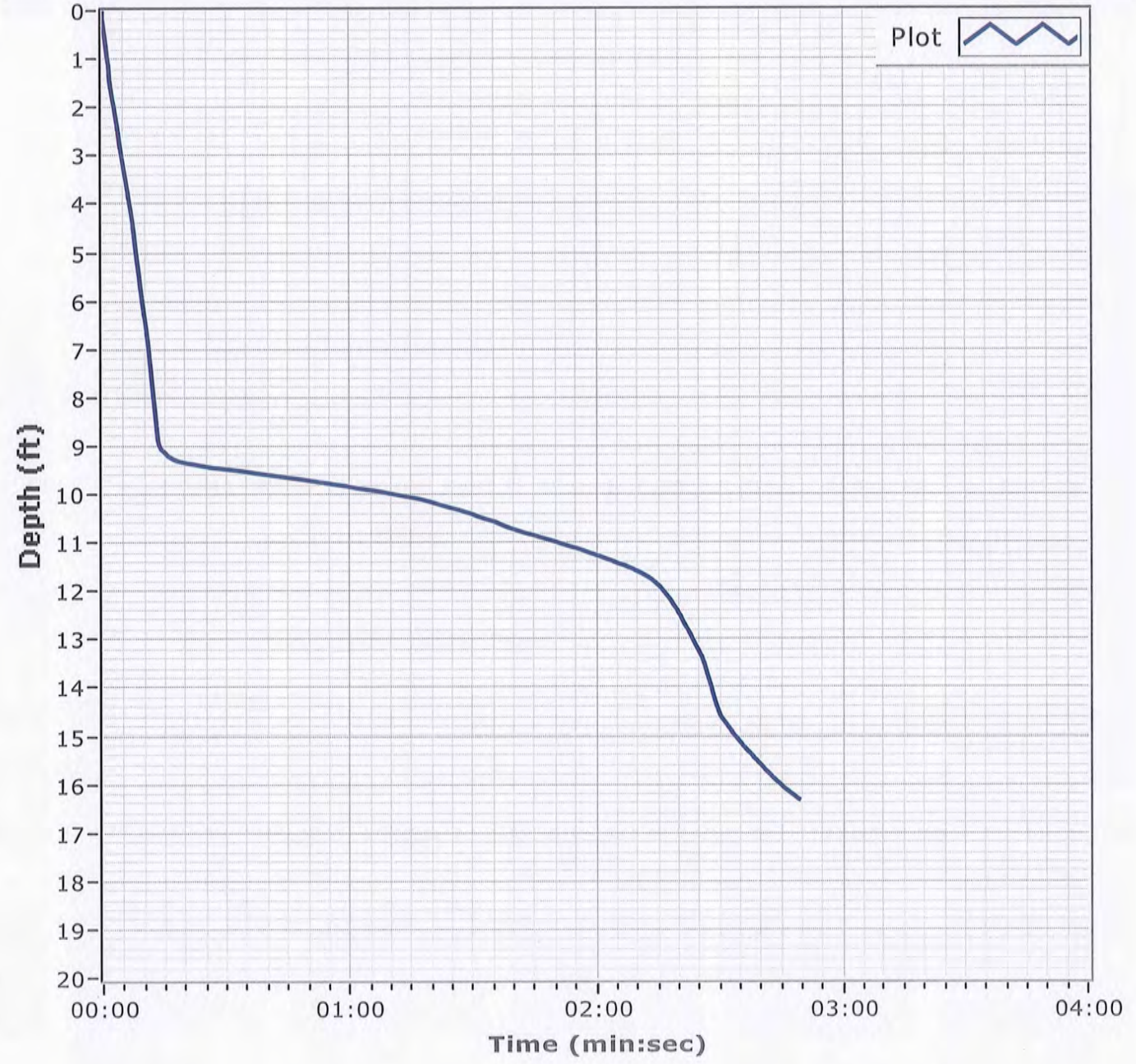
Total Time 00:02:49

Water Depth 32.5'

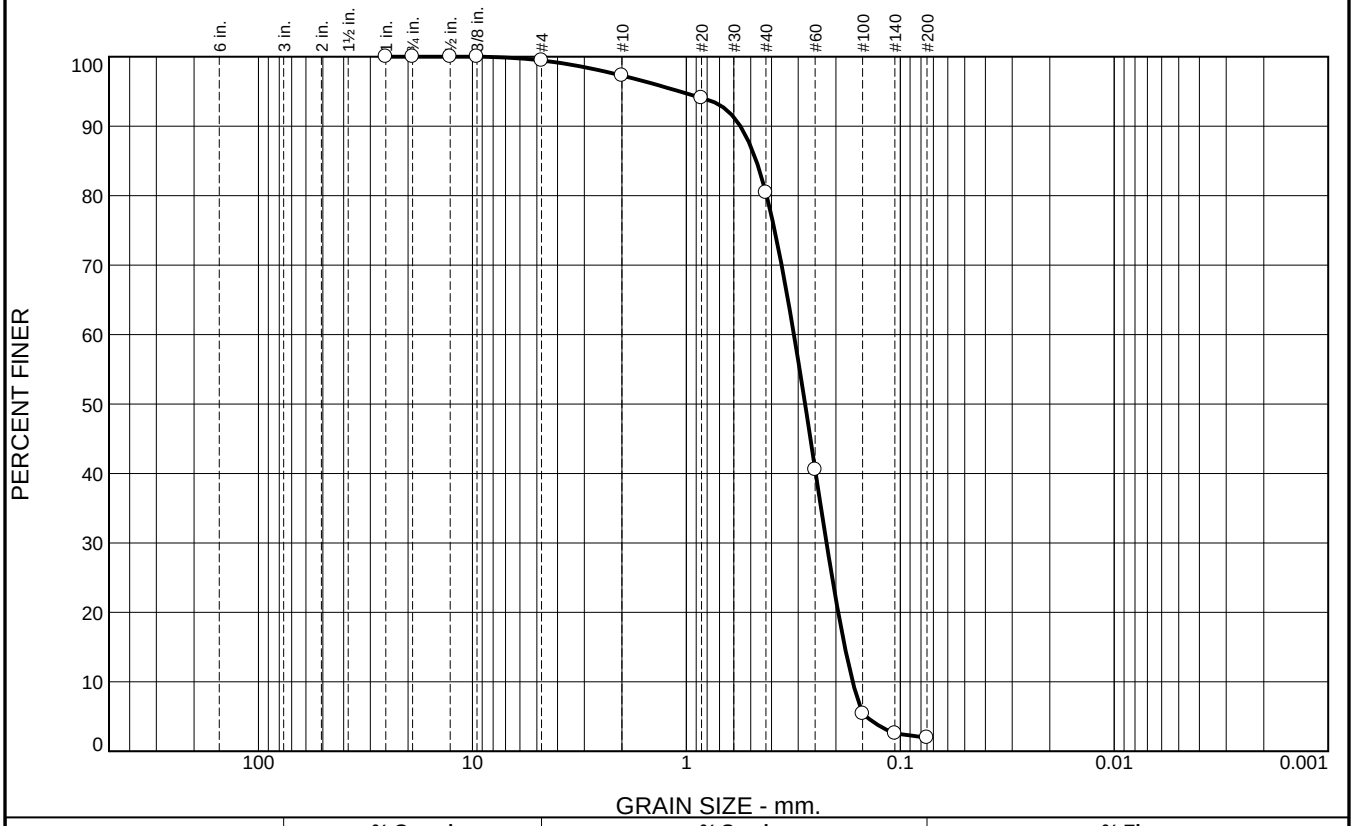
Penetration 16.3'

Recovery 8.6'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	2.2	16.9	78.4	2.0	

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	97.3		
#20	94.1		
#40	80.4		
#60	40.6		
#100	5.4		
#140	2.6		
#200	2.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5591 D_{85}= 0.4710 D_{60}= 0.3143
D_{50}= 0.2788 D_{30}= 0.2212 D_{15}= 0.1817
D_{10}= 0.1670 C_u= 1.88 C_c= 0.93

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-12-12 A
Sample Number: 6495 (23) **Depth:** 0.0' **Date:** 12/31/12

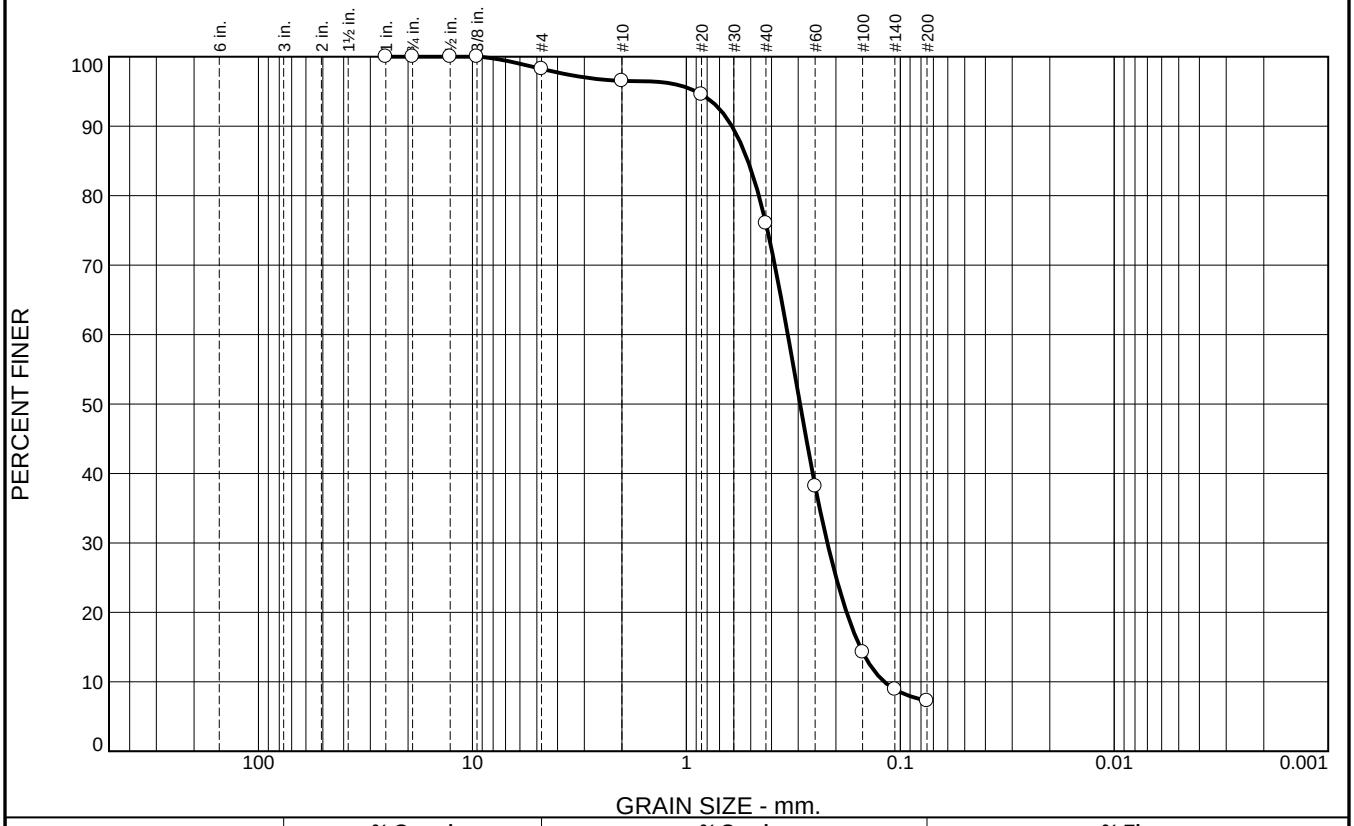
Thompson Engineering

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	1.8	1.7	20.5	68.7	7.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	98.2		
#10	96.5		
#20	94.6		
#40	76.0		
#60	38.2		
#100	14.3		
#140	8.9		
#200	7.3		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6120 D_{85}= 0.5157 D_{60}= 0.3356
D_{50}= 0.2942 D_{30}= 0.2192 D_{15}= 0.1541
D_{10}= 0.1187 C_u= 2.83 C_c= 1.21

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBP-12-12 B
Sample Number: 6495 (24) **Depth:** 3.1' **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	0.9	0.9	14.0	81.1	3.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.1		
#10	98.2		
#20	95.4		
#40	84.2		
#60	55.7		
#100	21.5		
#140	7.4		
#200	3.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5218 D_{85}= 0.4348 D_{60}= 0.2669
D_{50}= 0.2302 D_{30}= 0.1723 D_{15}= 0.1319
D_{10}= 0.1162 C_u= 2.30 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-12-12 C
Sample Number: 6495 (25) **Depth:** 6.9' **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-PBP-13-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-13-12	LOCATION COORDINATES: E = 1,124,325 N = 252,847	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 Ft.
		15. DATE BORING	STARTED: 12-22-12 / COMPLETED: 12-22-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -28.7 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-28.7	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, shelly at 1.2 ft., dense, lt. gray (SP)	A	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.2911 mm % Fines: 1.9
-33.5	4.8				
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, thick clay bands, gray (SM) At El. -34.7 Ft., mostly fine-grained sand-sized quartz, some silt, organic staining, trace clay bands, brown	NS	
				B	Classification: SP-SM Color: 2.5Y 4/2-dark grayish brown D50: 0.2371 mm % Fines: 5.3
-38.2	9.5				
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, little silt, trace shell fragments, gray (SC)		
-42.5	13.8				
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, trace clay bands, loose, gray (SM)	NS	
-48.0	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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19453° Long = -88.38995°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE SERVICES

Core Identifier BI-PBP-13-12

Coordinate System
Latitude / Longitude

Latitude 30 11.672 N

Longitude 088 23.397 W

Date 12/22/2012

Start Time 10:47:16

End Time 10:48:41

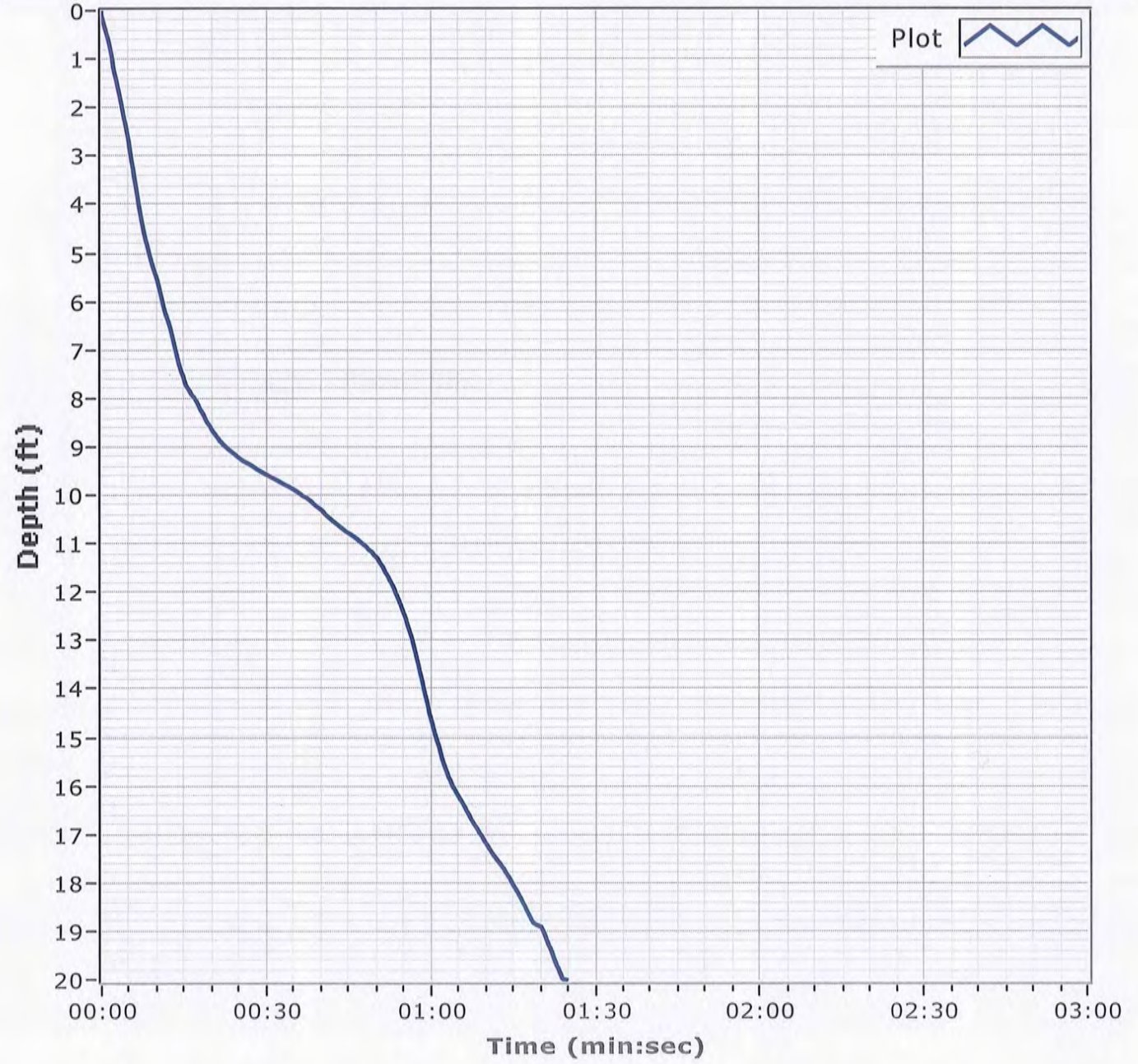
Total Time 00:01:25

Water Depth 29.0'

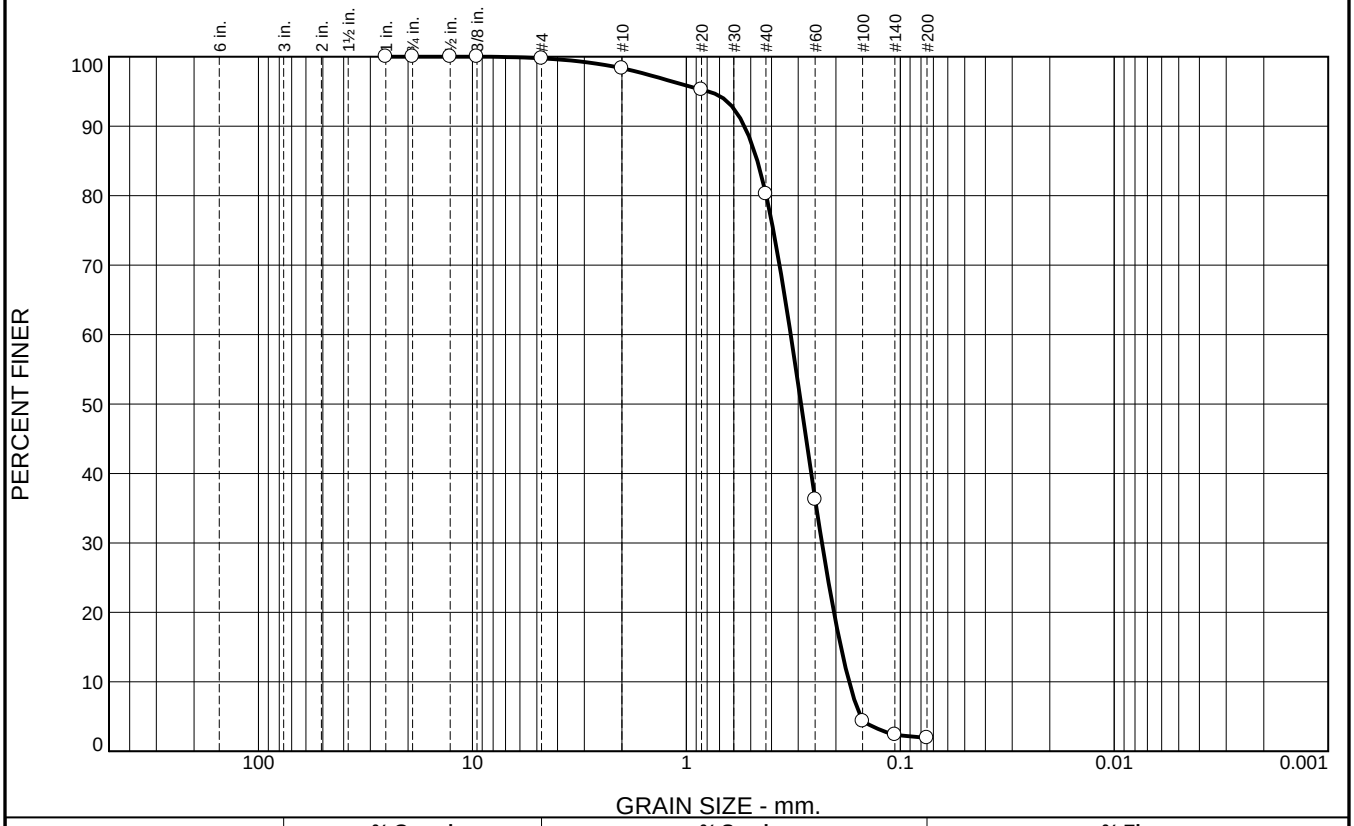
Penetration 20.0'

Recovery 19.3'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	1.5	18.0	78.4	1.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.8		
#10	98.3		
#20	95.3		
#40	80.3		
#60	36.3		
#100	4.3		
#140	2.4		
#200	1.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5350 D_{85}= 0.4657 D_{60}= 0.3253
D_{50}= 0.2911 D_{30}= 0.2323 D_{15}= 0.1896
D_{10}= 0.1736 C_u= 1.87 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-13-12 A
Sample Number: 6495 (26) **Depth:** 0.0' **Date:** 12/31/12

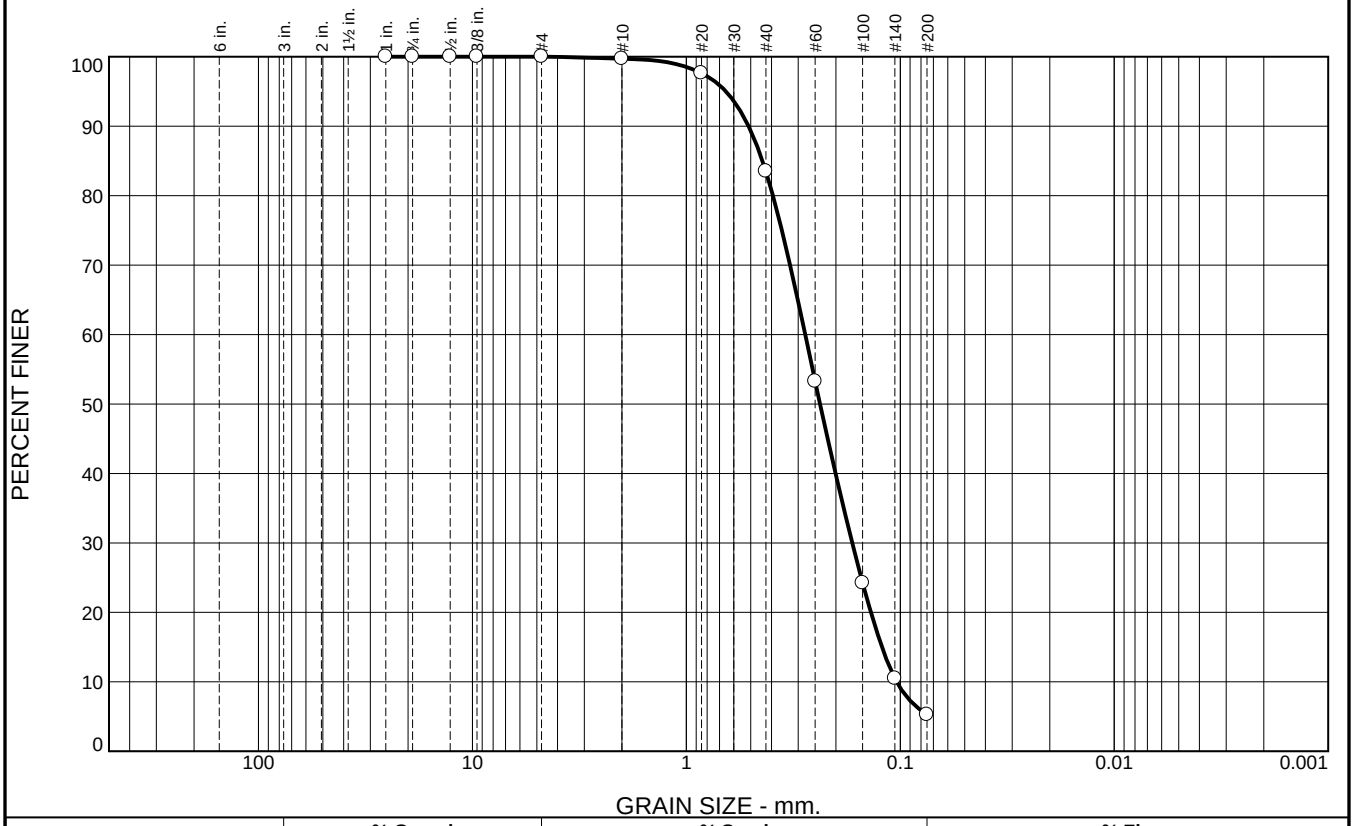
Thompson Engineering

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	0.3	16.2	78.2	5.3	

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	97.6		
#40	83.5		
#60	53.3		
#100	24.2		
#140	10.5		
#200	5.3		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5121 D_{85}= 0.4409 D_{60}= 0.2783
D_{50}= 0.2371 D_{30}= 0.1678 D_{15}= 0.1218
D_{10}= 0.1040 C_u= 2.68 C_c= 0.97

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBP-13-12 B
Sample Number: 6495 (27) **Depth:** 6.0' **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-PBP-14-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-14-12	LOCATION COORDINATES: E = 1,123,449 N = 252,869	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: 27.3 Ft.	
		15. DATE BORING	STARTED: 12-22-12 / COMPLETED: 12-22-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -27.0 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-27.0	0.0				
-29.0	2.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2613 mm % Fines: 2.5
-42.5	15.5		SAND, silty, mostly fine-grained sand-sized quartz, some silt, alternating bands of silty, fine-grained sand and stiff, low to medium plasticity, silty clay up to 1 ft. thick, 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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19460° Long = -88.39272°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBP-14-12

Coordinate System
Latitude / Longitude

Latitude 30 11.676 N

Longitude 088 23.563 W

Date 12/22/2012

Start Time 11:14:48

End Time 11:17:15

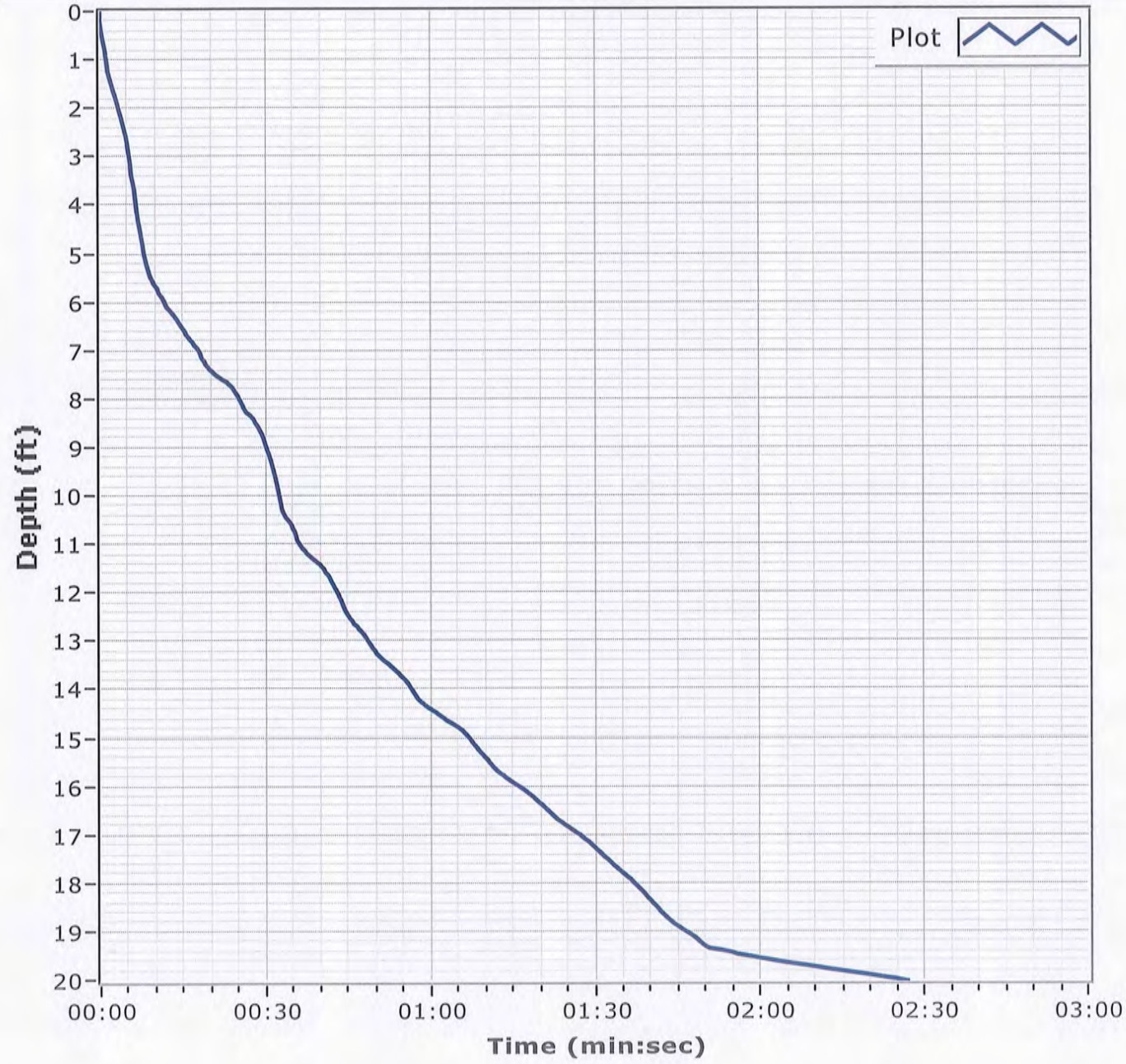
Total Time 00:02:27

Water Depth 27.3

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	0.6	1.4	17.7	77.8	2.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	99.8		
.375	99.8		
#4	99.4		
#10	98.0		
#20	94.9		
#40	80.3		
#60	46.8		
#100	15.0		
#140	5.1		
#200	2.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5732 D_{85}= 0.4779 D_{60}= 0.3012
D_{50}= 0.2613 D_{30}= 0.1962 D_{15}= 0.1501
D_{10}= 0.1315 C_u= 2.29 C_c= 0.97

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-14-12 A
Sample Number: 6495 (28) **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-PBP-15-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-15-12	LOCATION COORDINATES: E = 1,125,247 N = 252,883	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: 29.4 Ft.
		15. DATE BORING	STARTED: 12-22-12 / COMPLETED: 12-22-12
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: 19.6 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-29.2	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace coarse-grained sand-sized quartz, some shell fragments from 0.0 to 1.3 ft. and trace fines from 0.0 to 0.3 ft., gray to lt. gray to white (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3401 mm % Fines: 1.2
-34.2	5.0				
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few shell fragments, gray (SP-SM)	B	Classification: SP-SM Color: 5Y 5/2-olive gray D50: 0.2343 mm % Fines: 6.9
-36.4	7.2				
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, clay bands at 9.0 ft., gray (SM)	NS	
			At El. -40.1 Ft., mostly fine-grained sand-sized quartz, some silt, trace clay, trace shell fragments, two 1-in. diameter cobbles within interval, gray		
			At El. -43.8 Ft., mostly fine-grained sand-sized quartz, some silt, some clay, trace shell fragments, slightly plastic, greenish gray		
-48.8	19.6				
			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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19462° Long = -88.38703°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
SERVICES

Core Identifier BI-PBP-15-12

Coordinate System
Latitude / Longitude

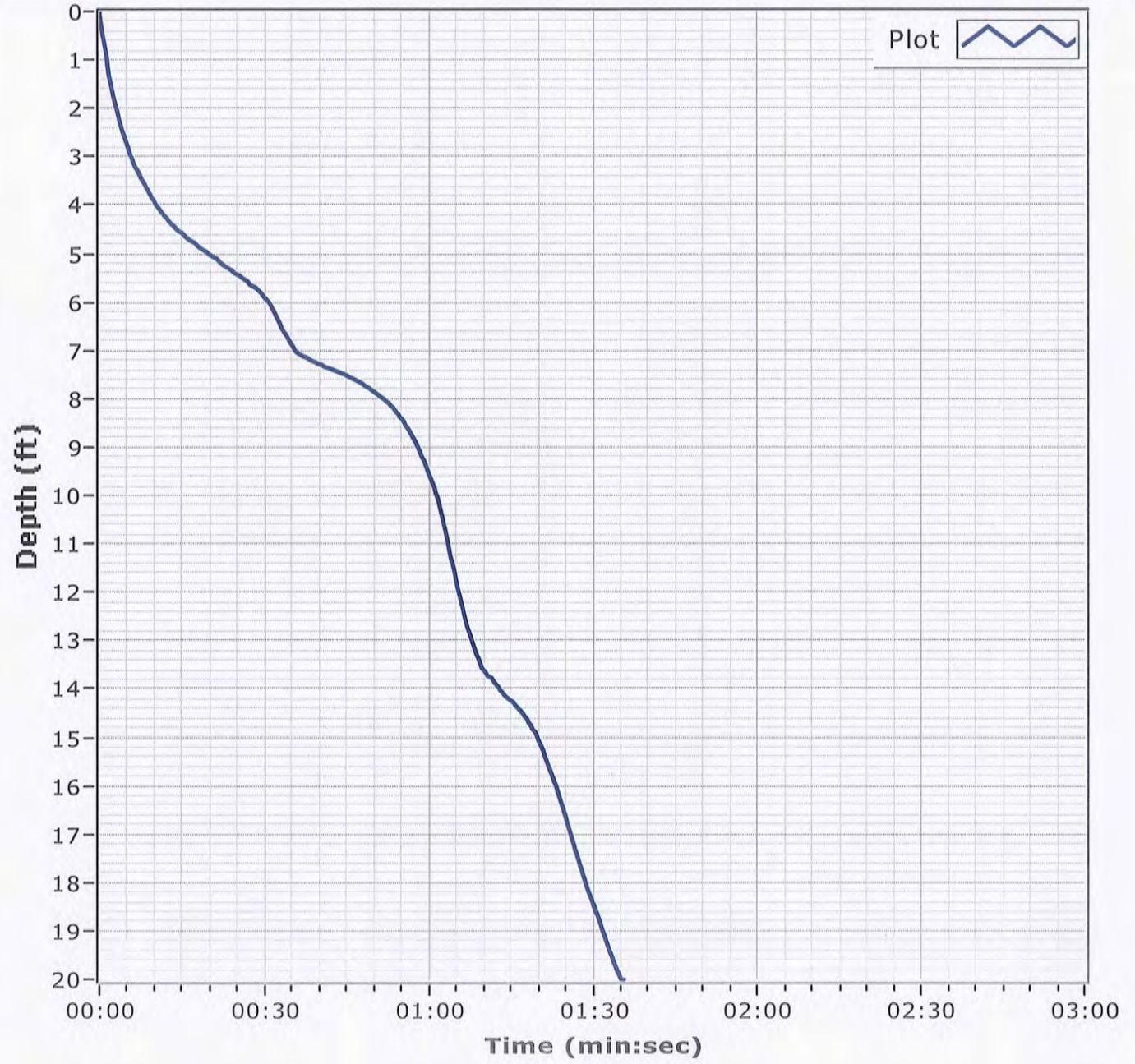
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Longitude 088 23.222 W

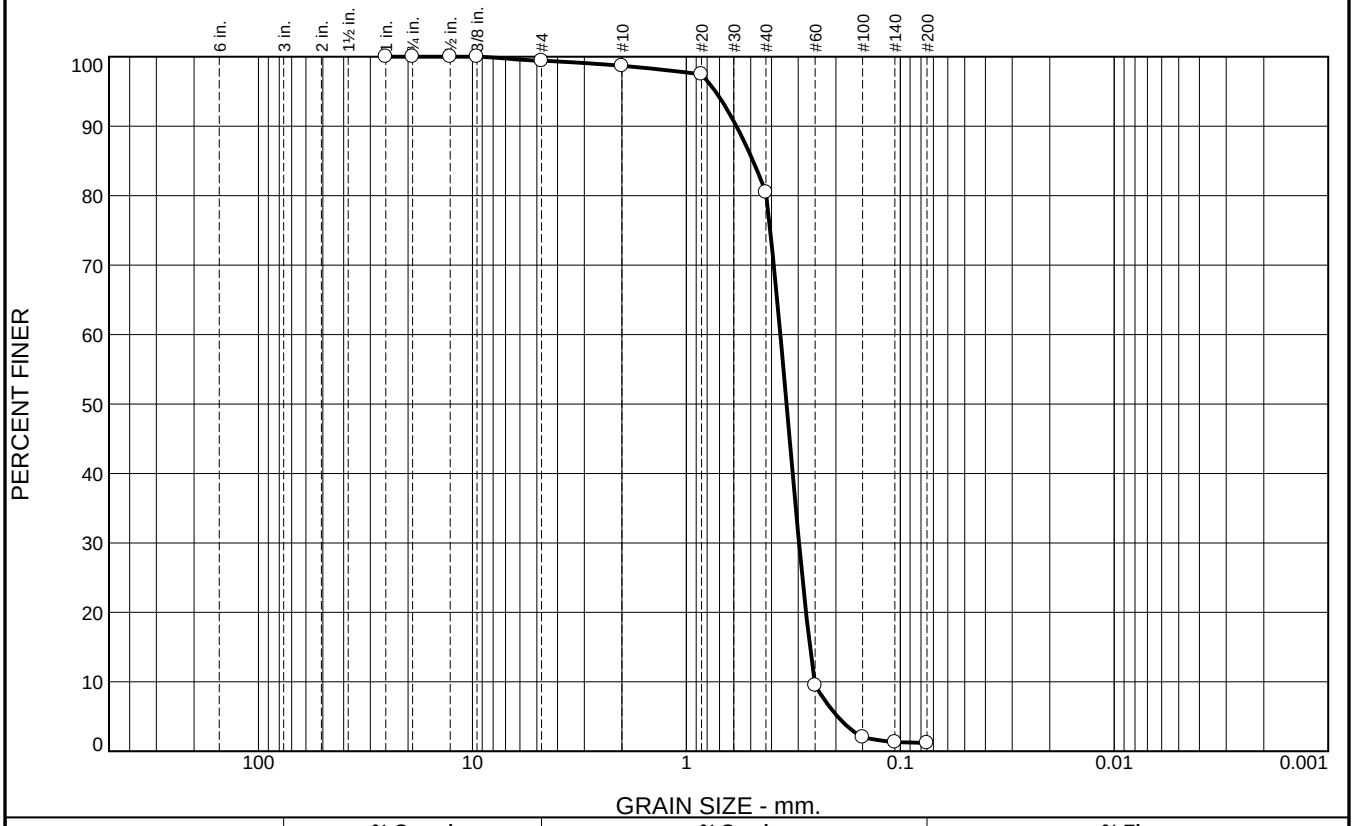
Date 12/22/2012
Start Time 10:16:56
End Time 10:18:32
Total Time 00:01:35

Water Depth 29.4'
Penetration 20.0'
Recovery 19.6'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	0.7	18.2	79.3	1.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.4		
#10	98.7		
#20	97.5		
#40	80.5		
#60	9.5		
#100	2.0		
#140	1.3		
#200	1.2		

* (no specification provided)

Material Description

Fine ro medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5831 D_{85}= 0.4880 D_{60}= 0.3634
D_{50}= 0.3401 D_{30}= 0.2976 D_{15}= 0.2646
D_{10}= 0.2515 C_u= 1.45 C_c= 0.97

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-15-12 A
Sample Number: 6495 (29) **Depth:** 0.0' **Date:** 12/31/12

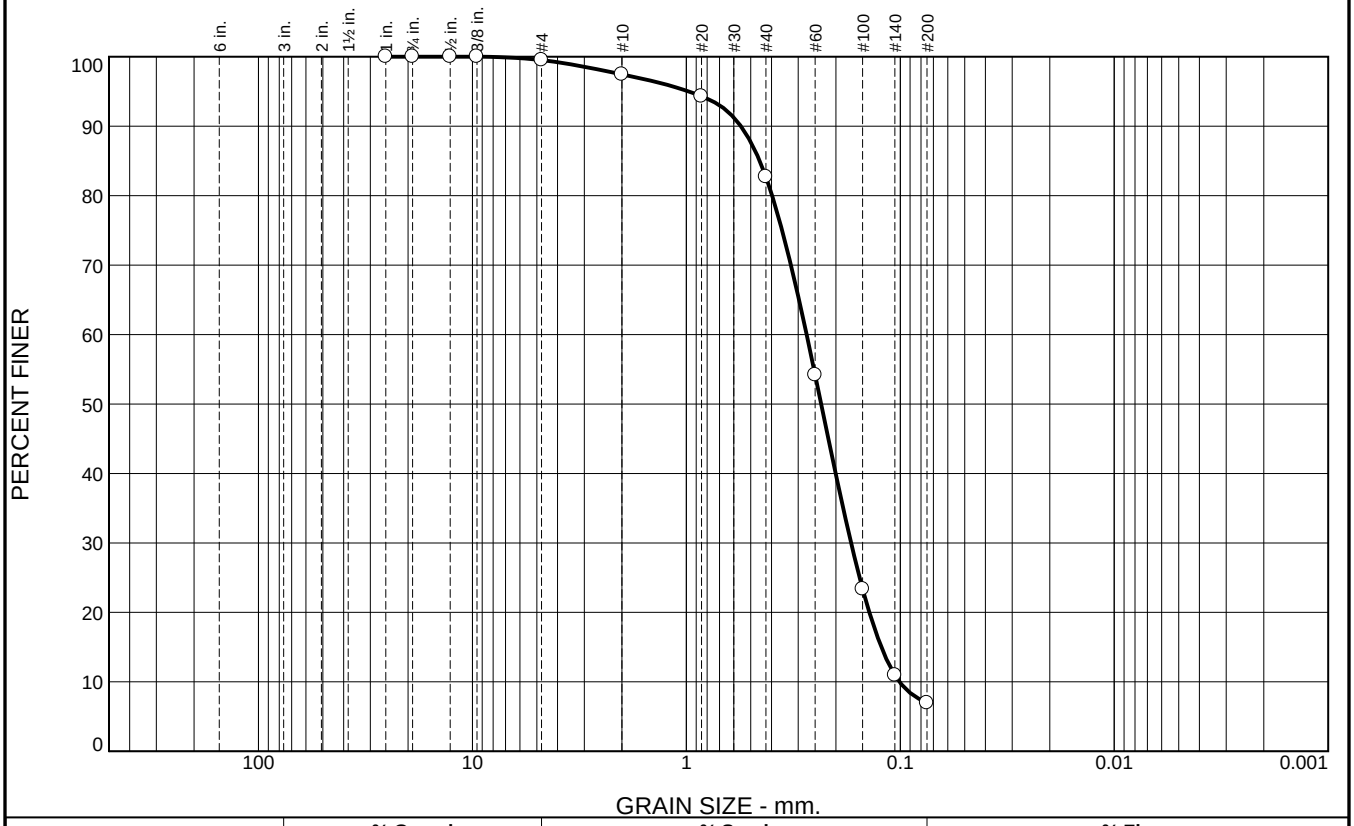
Thompson Engineering

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	0.5	2.1	14.7	75.8	6.9	

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	97.4		
#20	94.3		
#40	82.7		
#60	54.2		
#100	23.4		
#140	11.0		
#200	6.9		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5561 D_{85}= 0.4541 D_{60}= 0.2741
D_{50}= 0.2343 D_{30}= 0.1699 D_{15}= 0.1227
D_{10}= 0.1009 C_u= 2.72 C_c= 1.04

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBP-15-12 B
Sample Number: 6495 (30) **Depth:** 5.0' **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-PBP-18-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-18-12	LOCATION COORDINATES: E = 1,123,925 N = 252,361	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: 27 Ft.
		15. DATE BORING	STARTED: 12-22-12 / COMPLETED: 12-22-12
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: 19.1 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-26.5	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 6/2-light olive gray D50: 0.2036 mm % Fines: 3.4
				B	Classification: SP Color: 5Y 7/2-light gray D50: 0.2137 mm % Fines: 3.2
-34.5	8.0				
-35.2	8.7		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, little silt, low to medium plasticity, dark gray (CL)	NS	
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, few organic matter, trace clay, brown (SM)	C	Classification: SP-SM Color: 2.5Y 4/2-dark grayish brown D50: 0.2694 mm % Fines: 5.5
-39.6	13.1				
-40.6	14.1		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, medium plasticity, dark brown (CL)		
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace clay stringers, gray (SC)	NS	
-44.6	18.1				
-45.6	19.1		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, 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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19320° Long = -88.39122°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
SERVICES

Core Identifier BI-PBP-18-12

Coordinate System
Latitude / Longitude

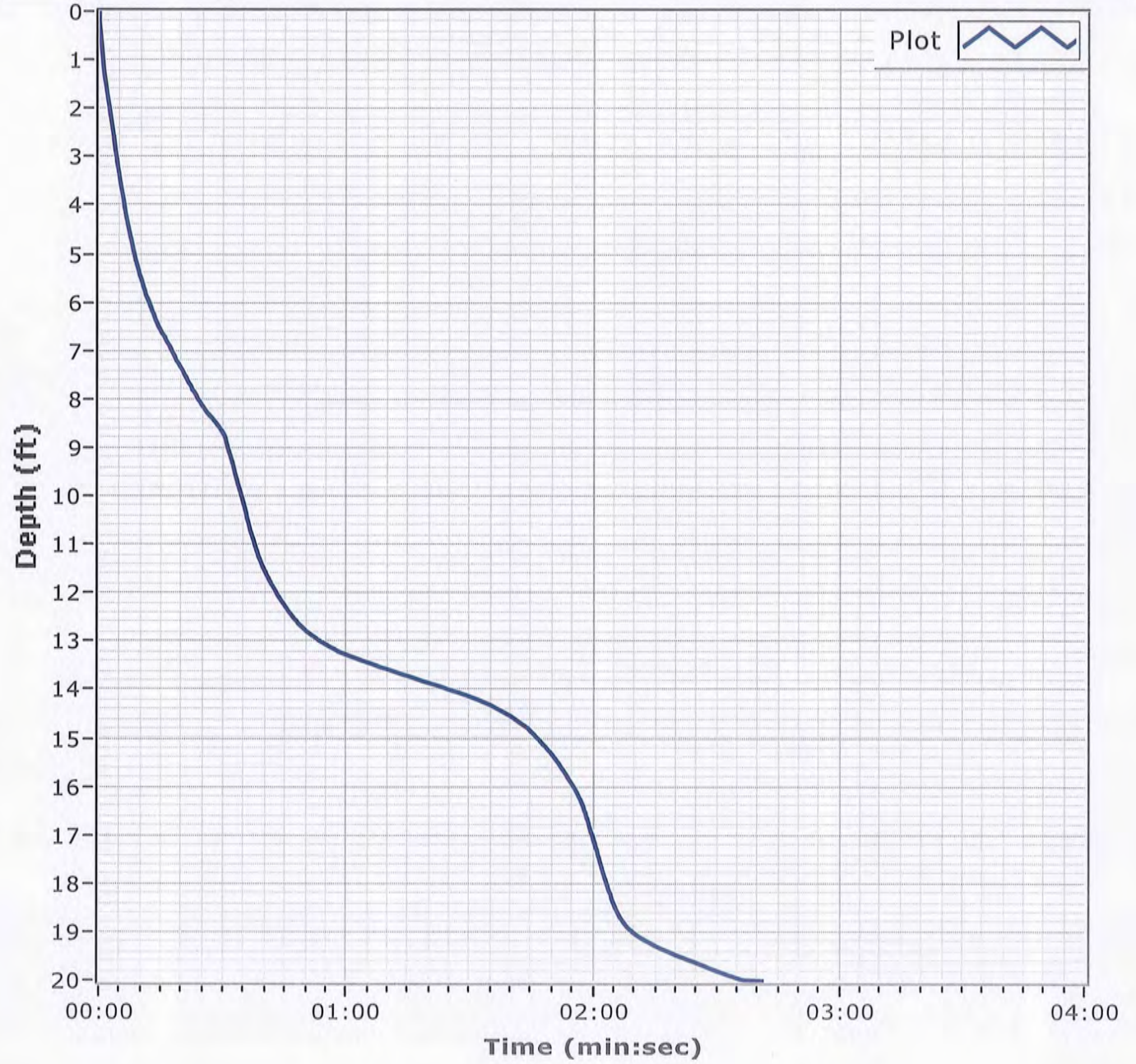
Latitude 30 11.592 N

Longitude 088 23.473 W

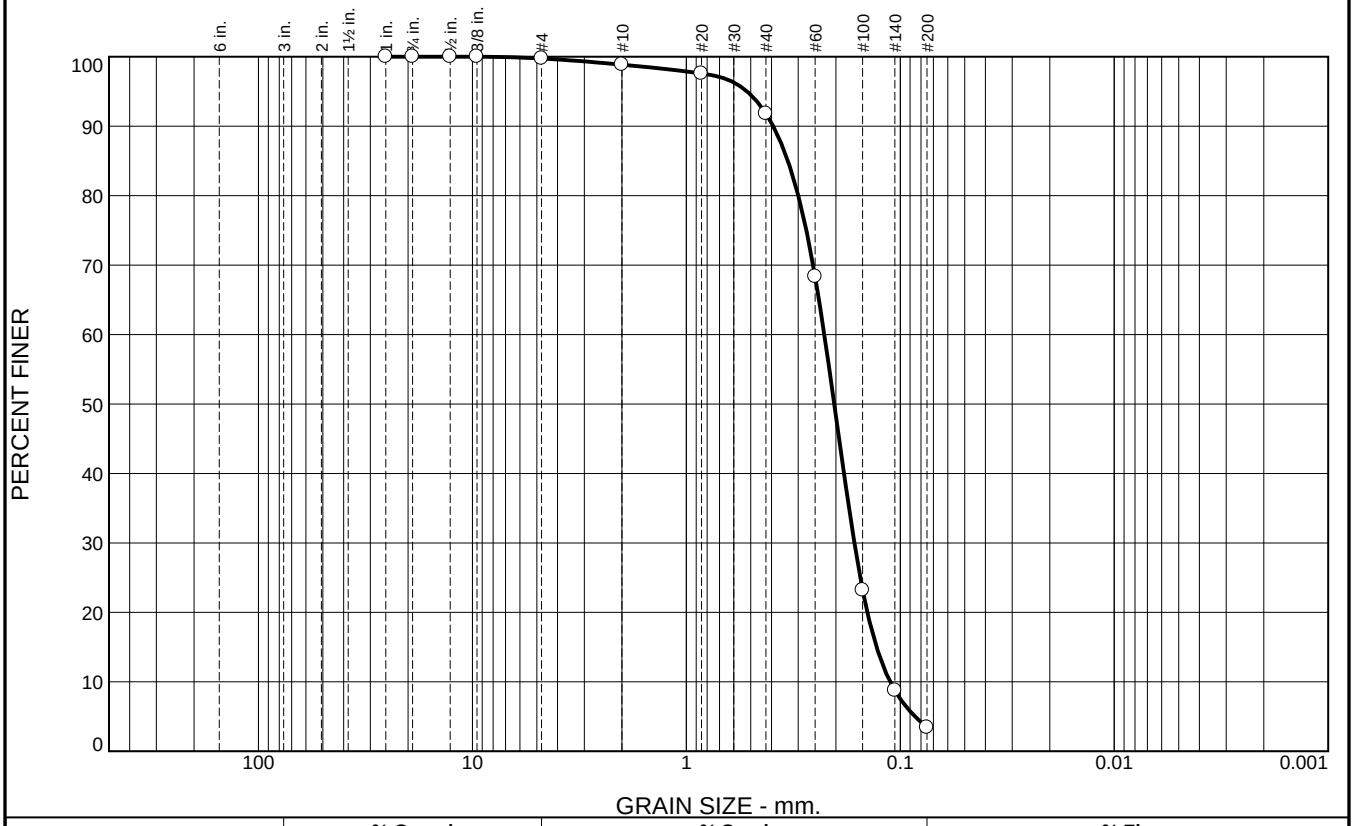
Date 12/22/2012
Start Time 13:16:44
End Time 13:19:25
Total Time 00:02:41

Water Depth 27.0'
Penetration 20.0'
Recovery 19.1'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.9	7.0	88.4	3.4	

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	98.8		
#20	97.6		
#40	91.8		
#60	68.3		
#100	23.2		
#140	8.8		
#200	3.4		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3927 D_{85}= 0.3353 D_{60}= 0.2265
D_{50}= 0.2036 D_{30}= 0.1640 D_{15}= 0.1292
D_{10}= 0.1115 C_u= 2.03 C_c= 1.06

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-18-12 A
Sample Number: 6495 (31) **Depth:** 0.0' **Date:** 12/31/12

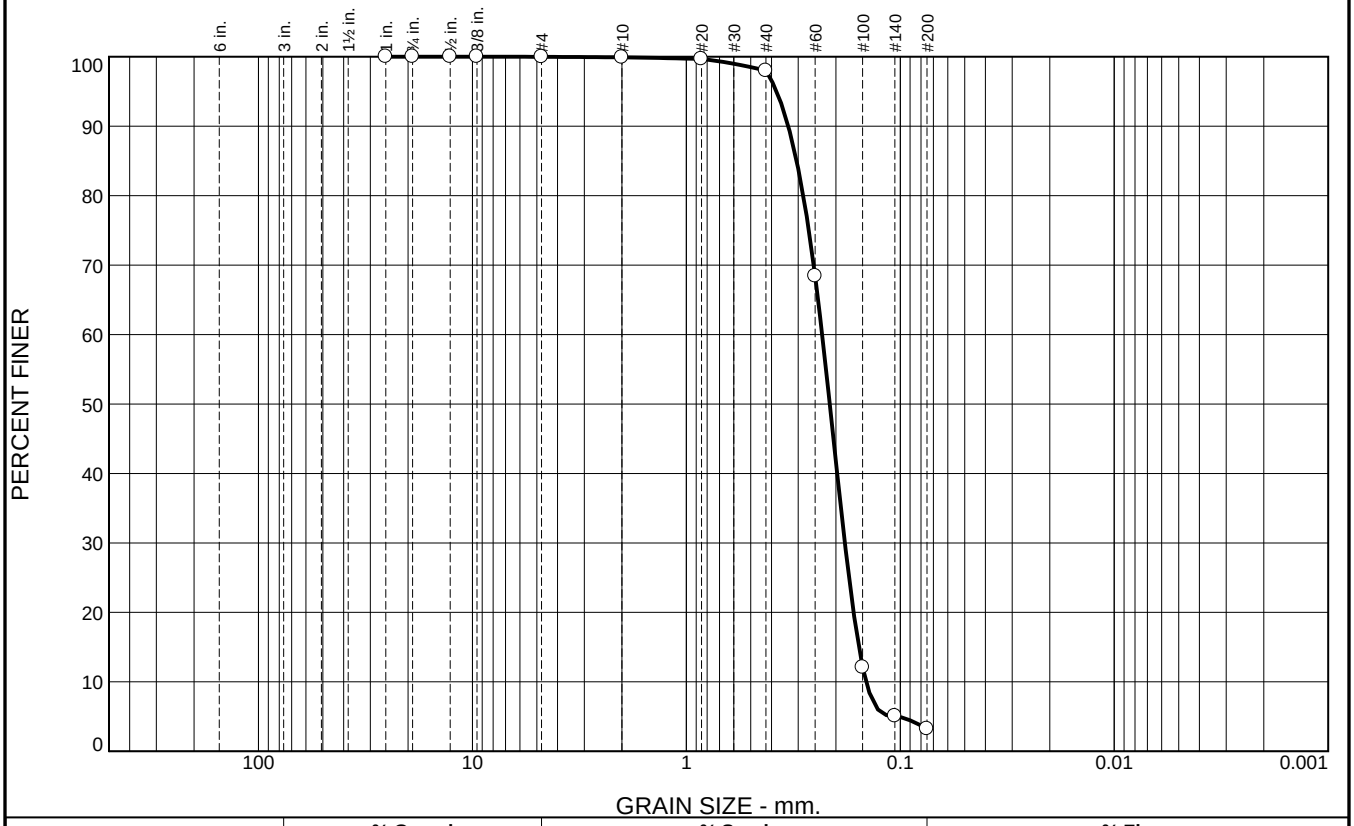
Thompson Engineering

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	1.9	94.8	3.2	

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	99.9		
#20	99.7		
#40	98.0		
#60	68.4		
#100	12.1		
#140	5.1		
#200	3.2		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3339 D_{85}= 0.3053 D_{60}= 0.2318
D_{50}= 0.2137 D_{30}= 0.1817 D_{15}= 0.1563
D_{10}= 0.1446 C_u= 1.60 C_c= 0.98

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-18-12 B
Sample Number: 6495 (32) **Depth:** 4.1' **Date:** 12/31/12

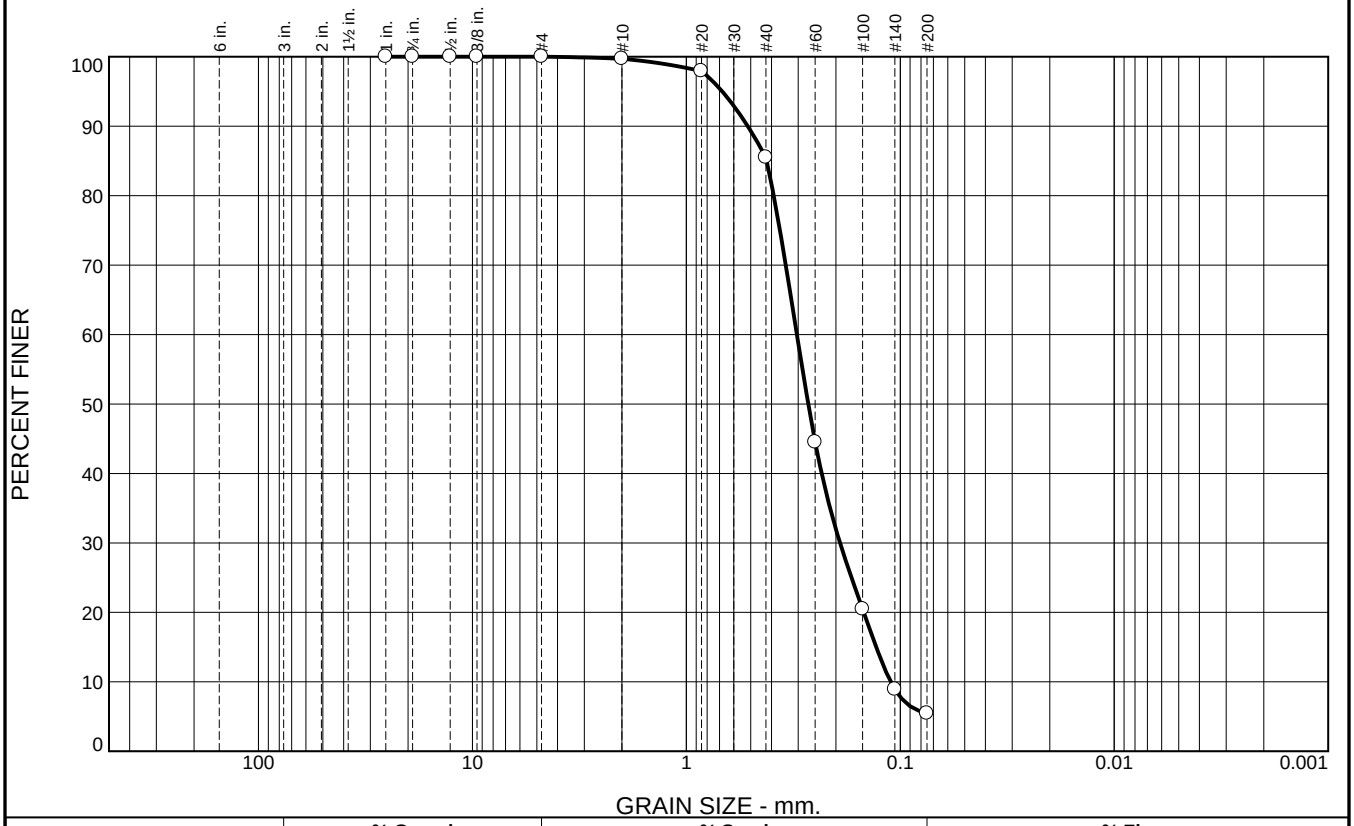
Thompson Engineering

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	0.3	14.2	80.0	5.5	

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	99.7		
#20	97.9		
#40	85.5		
#60	44.5		
#100	20.5		
#140	8.9		
#200	5.5		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5168 D_{85}= 0.4214 D_{60}= 0.3045
D_{50}= 0.2694 D_{30}= 0.1914 D_{15}= 0.1296
D_{10}= 0.1108 C_u= 2.75 C_c= 1.09

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBP-18-12 C
Sample Number: 6495 (33) **Depth:** 8.7' **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-PBP-19-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-19-12	LOCATION COORDINATES: E = 1,122,131 N = 252,373	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: 30.5 Ft.	
		15. DATE BORING	STARTED: 12-22-12 / COMPLETED: 12-22-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -30.2 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-30.2	0.0				
-30.6	0.4		SILT, inorganic-L, mostly silt, trace clay, very soft, dark gray (ML)	NS	
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, gray (SP)	A	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.3295 mm % Fines: 1.7
			At El. -33.2 Ft., mostly fine-grained sand-sized quartz, trace fines, 1-inch clayey band at 3.7 ft., lt. gray to white	B	Classification: SP Color: 2.5Y 7/2-light gray D50: 0.346 mm % Fines: 1.5
-38.1	7.9				
			SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, trace shell fragments, siltier at 8.6 and 11.1 ft., shell hash at 12 ft., gray (SP-SM)	C	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.4269 mm % Fines: 3.7
-42.2	12.0				
-42.9	12.7		SAND, silty, mostly fine-grained sand-sized quartz, some silt, dark brown (SM)	NS	
-43.7	13.5				
-44.3	14.1		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, dark brown (SC)		
			CLAY, fat, mostly clay, medium to high plasticity, stiff, dark gray (CH)	D	Classification: SP Color: 2.5Y 6/2-light brownish gray D50: 0.3387 mm % Fines: 3
-47.9	17.7		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, gets siltier with depth, 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.

0 5 10 15 20 25

Lat = 30.19325° Long = -88.39690°

Project Mississippi Barrier Island Restoration Project

AVS
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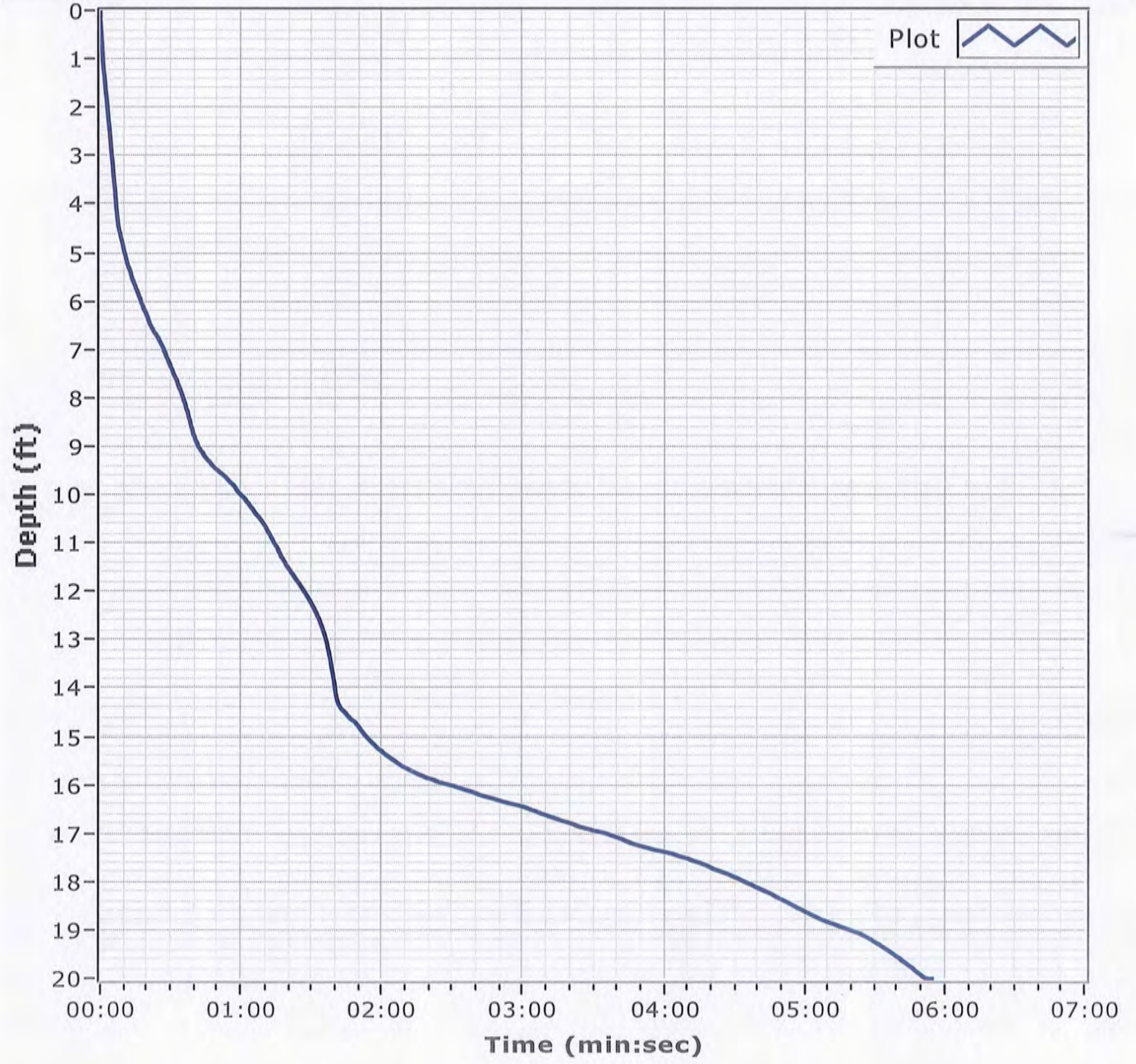
Core Identifier BI-PBP-19-12
Coordinate System
Latitude / Longitude

Date 12/22/2012
Start Time 11:42:59
End Time 11:48:55
Total Time 00:05:55

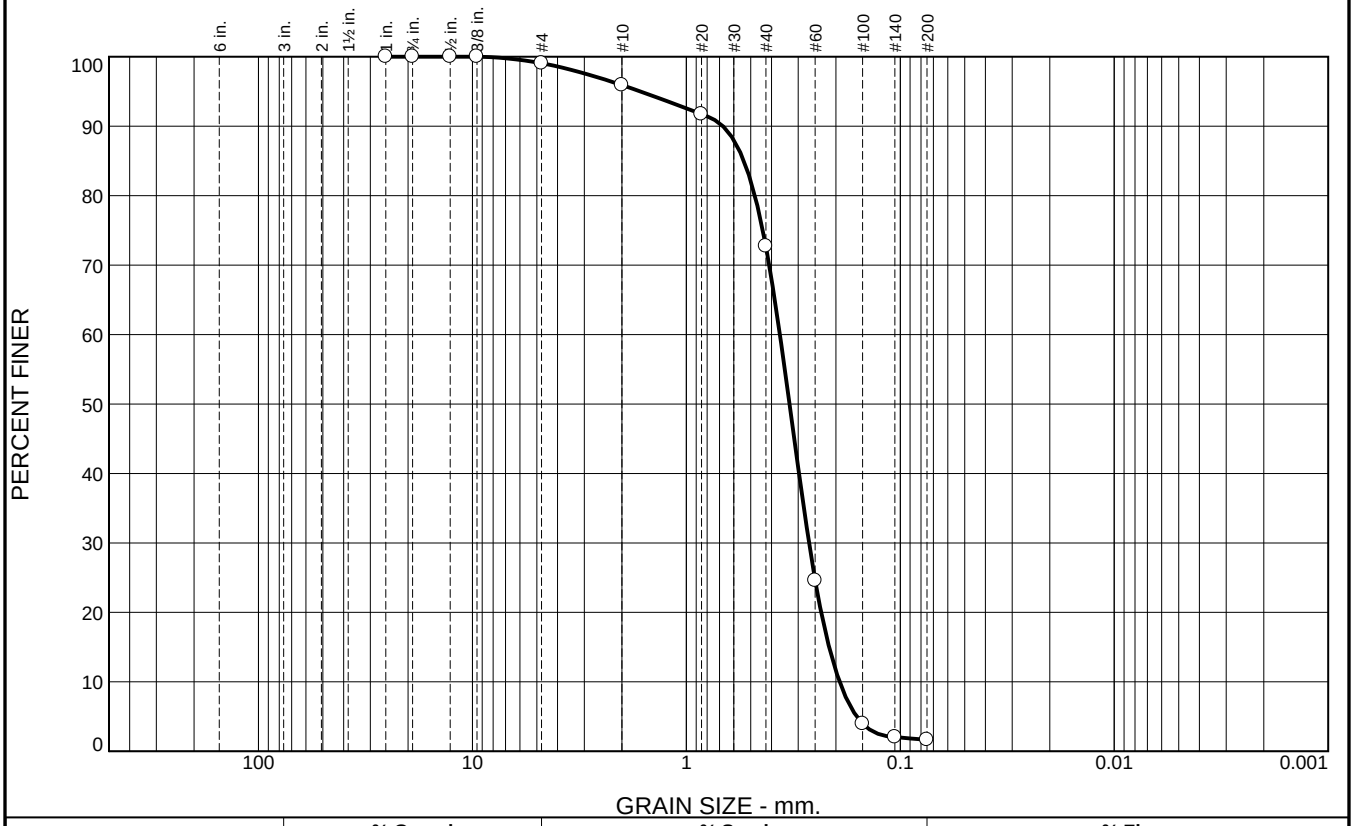
Water Depth 30.5'
Penetration 20.0'
Recovery 17.7'

Latitude 30 11.676 N
Longitude 088 23.814 W

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.9	3.2	23.2	71.0	1.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.1		
#10	95.9		
#20	91.7		
#40	72.7		
#60	24.6		
#100	4.0		
#140	2.0		
#200	1.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6750 D_{85}= 0.5385 D_{60}= 0.3654
D_{50}= 0.3295 D_{30}= 0.2671 D_{15}= 0.2152
D_{10}= 0.1923 C_u= 1.90 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-19-12 A
Sample Number: 6495 (34) **Depth:** 0.4' **Date:** 12/31/12

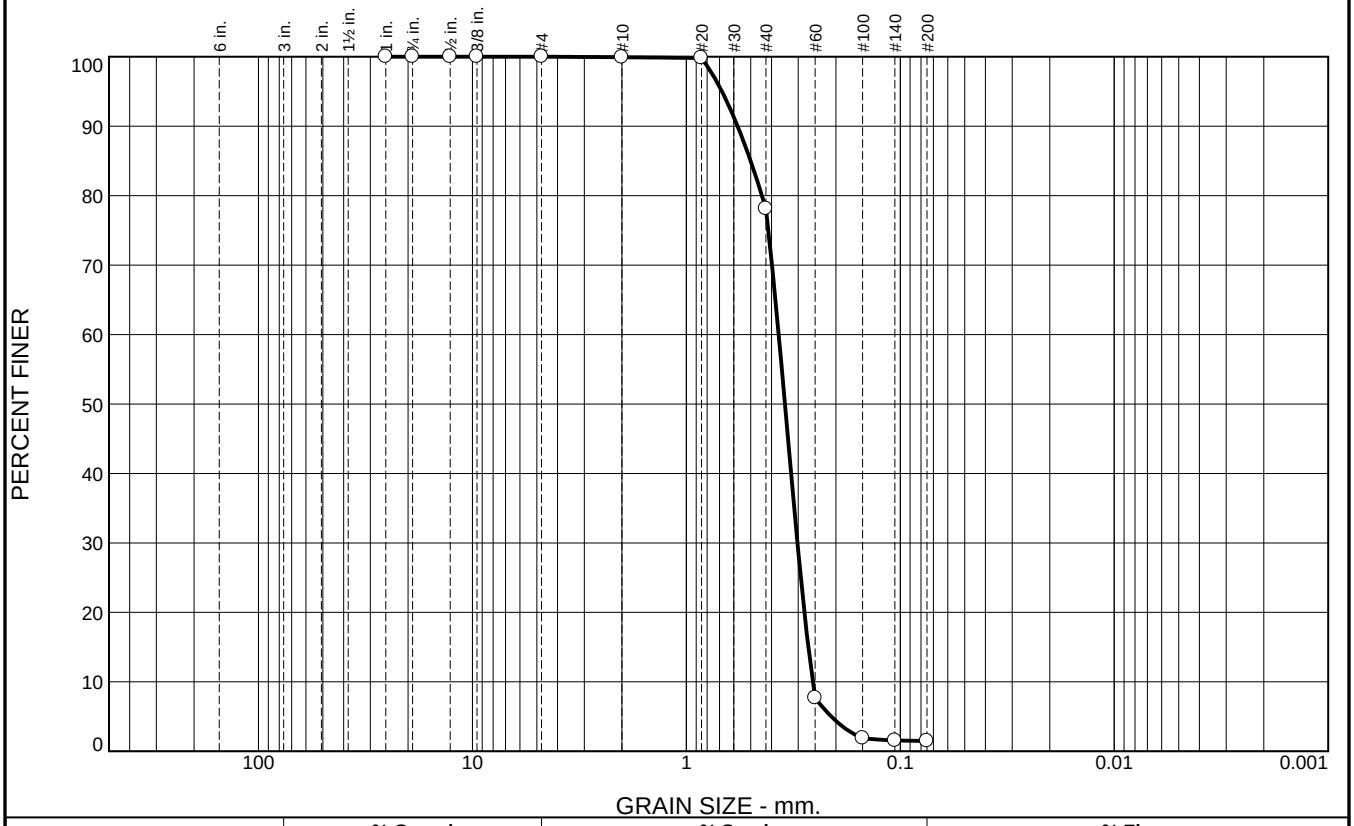
Thompson Engineering

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	21.8	76.6	1.5	

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	99.9		
#20	99.8		
#40	78.1		
#60	7.7		
#100	1.9		
#140	1.6		
#200	1.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5759 D_{85}= 0.5008 D_{60}= 0.3700
D_{50}= 0.3460 D_{30}= 0.3026 D_{15}= 0.2695
D_{10}= 0.2567 C_u= 1.44 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-19-12 B
Sample Number: 6495 (35) **Depth:** 3.0' **Date:** 12/31/12

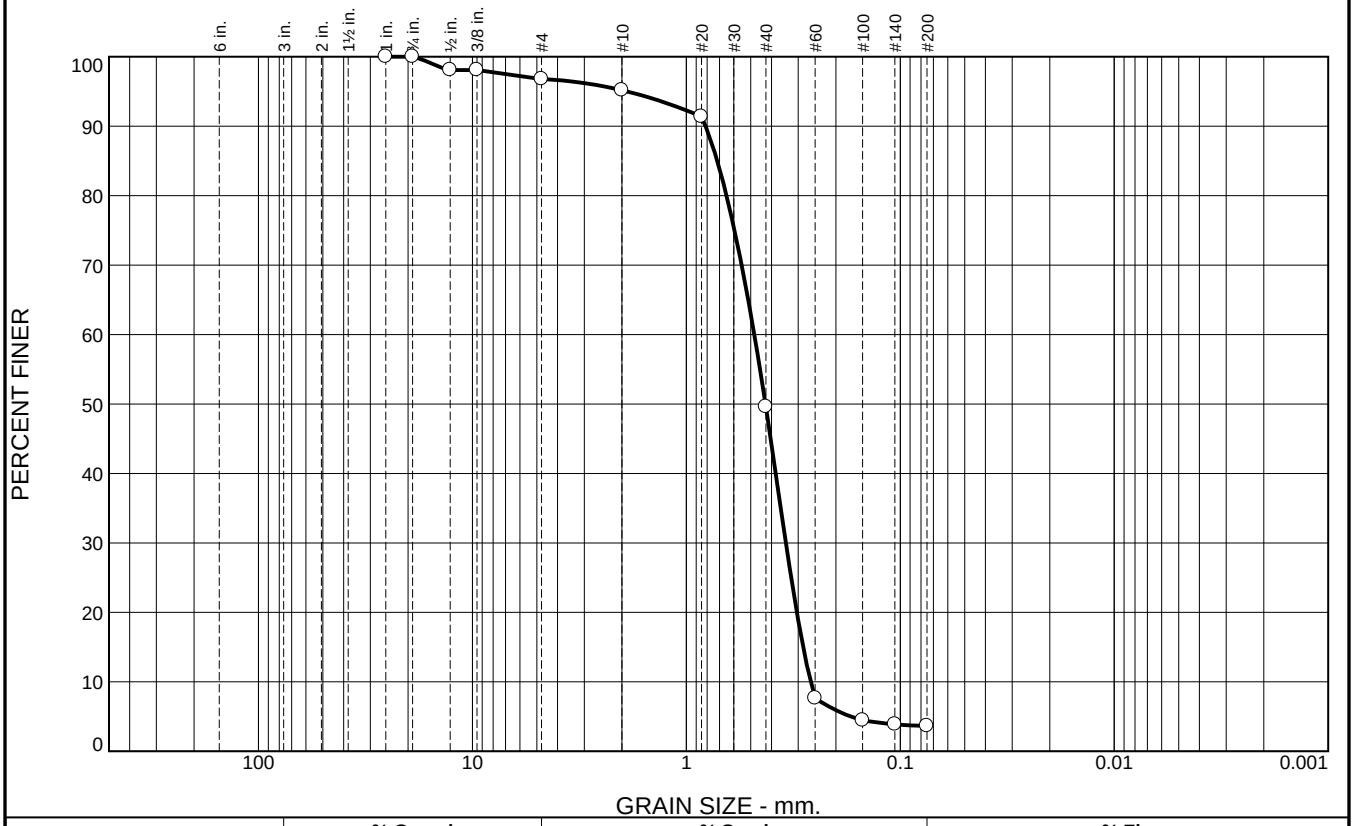
Thompson Engineering

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	3.2	1.6	45.6	45.9	3.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	98.1		
.375	98.1		
#4	96.8		
#10	95.2		
#20	91.4		
#40	49.6		
#60	7.6		
#100	4.5		
#140	3.9		
#200	3.7		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.8137 D_{85}= 0.7172 D_{60}= 0.4813
D_{50}= 0.4269 D_{30}= 0.3427 D_{15}= 0.2847
D_{10}= 0.2625 C_u= 1.83 C_c= 0.93

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-19-12 C
Sample Number: 6495 (36) **Depth:** 7.9' **Date:** 12/31/12

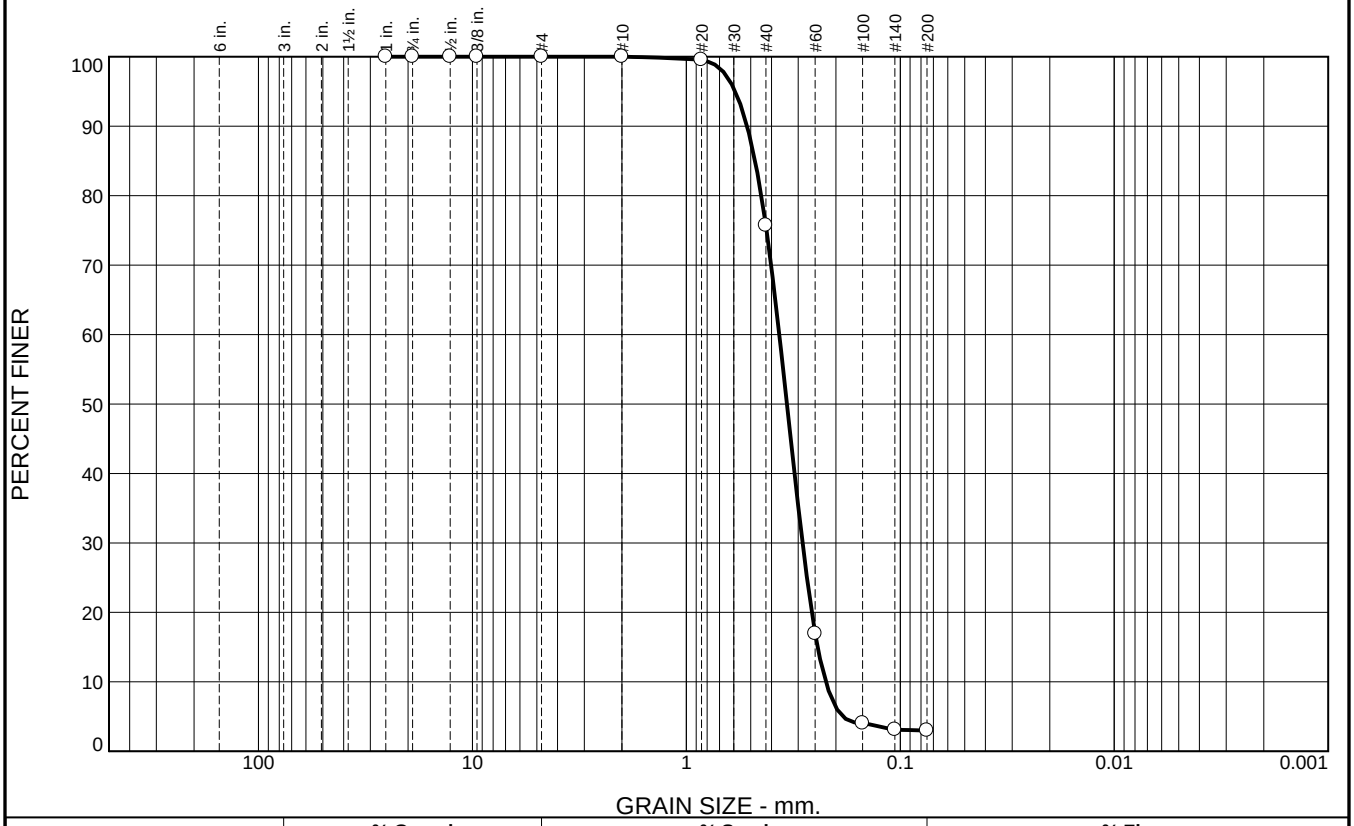
Thompson Engineering

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	24.3	72.7	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	100.0		
#20	99.6		
#40	75.7		
#60	16.9		
#100	4.0		
#140	3.1		
#200	3.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5200 D_{85}= 0.4773 D_{60}= 0.3677
D_{50}= 0.3387 D_{30}= 0.2866 D_{15}= 0.2434
D_{10}= 0.2230 C_u= 1.65 C_c= 1.00

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-19-12 D
Sample Number: 6495 (37) **Depth:** 14.1' **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-PBP-20-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-20-12	LOCATION COORDINATES: E = 1,123,119 N = 252,420	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: 24.2 Ft.	
		15. DATE BORING	STARTED: 12-22-12 / COMPLETED: 12-22-12
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -23.8 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-23.8	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few shell fragments, trace fines, pale lt. brown (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3285 mm % Fines: 0.9
-28.8	5.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace shell fragments, silty zone at 7.2 ft., dense, lt. gray (SP)	B	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2316 mm % Fines: 4.3
-33.8	10.0				
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, very dense, lt. gray (SP)	C	Classification: SP Color: 5Y 7/2-light gray D50: 0.3013 mm % Fines: 3.1
-36.9	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. Refusal reached at 16 ft.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19337° Long = -88.39377°

Project Mississippi Barrier Island Restoration Project

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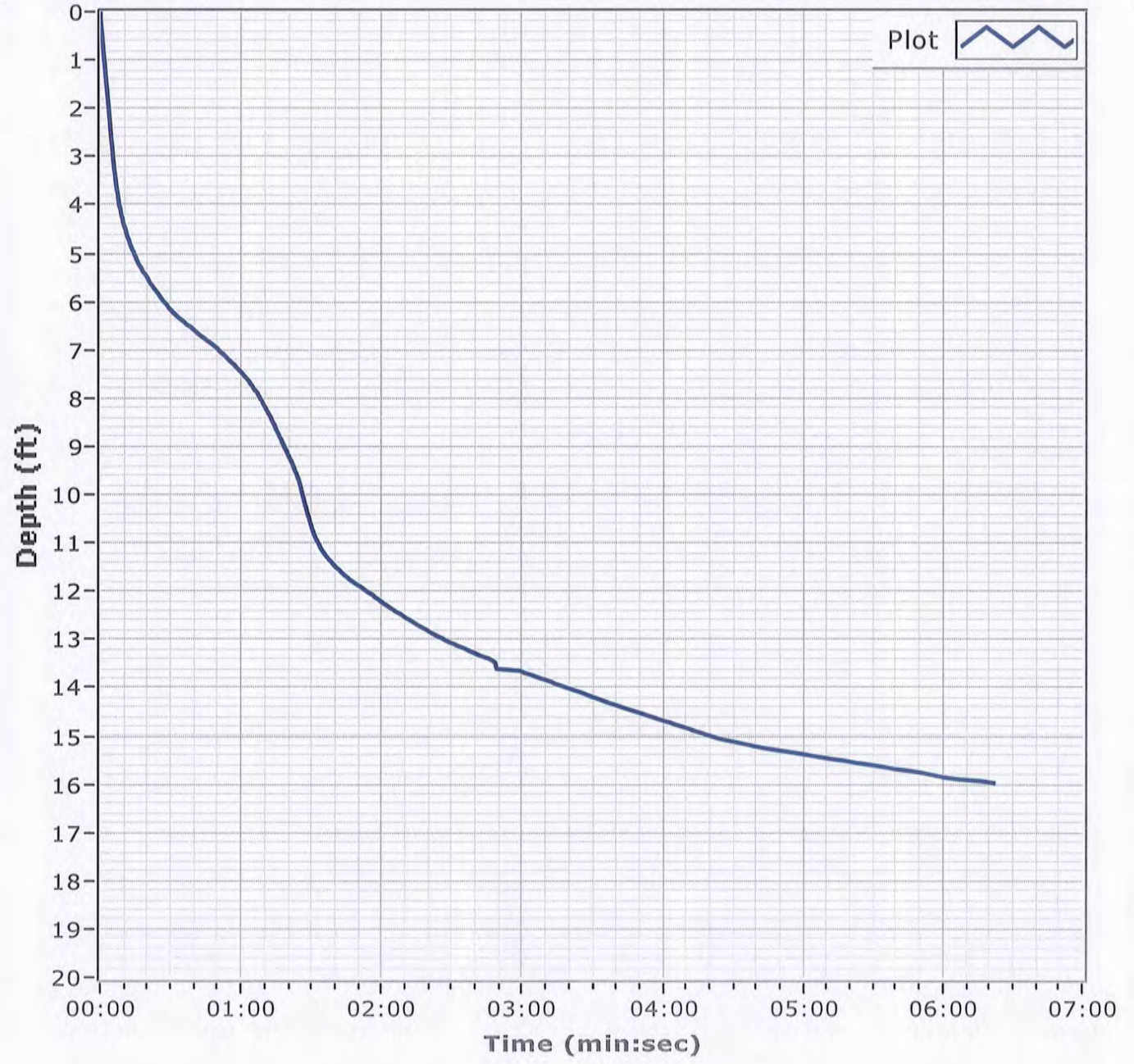
Core Identifier BI-PBP-20-12
Coordinate System
Latitude / Longitude

Date 12/22/2012
Start Time 12:47:35
End Time 12:53:58
Total Time 00:06:22

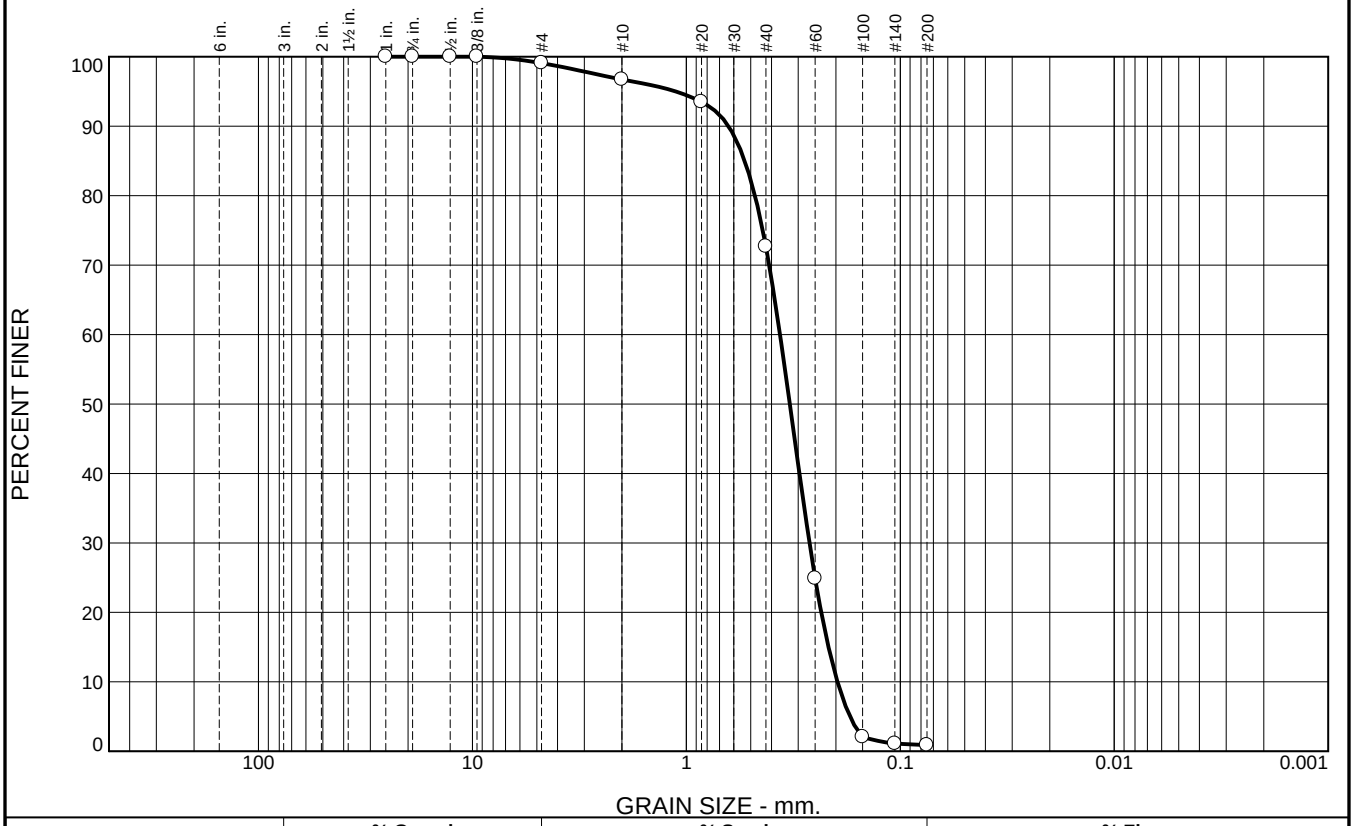
Water Depth 24.2'
Penetration 16.0'
Recovery 13.1'

Latitude 30 11.602 N
Longitude 088 23.626 W

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.9	2.4	24.0	71.8	0.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	99.1		
#10	96.7		
#20	93.5		
#40	72.7		
#60	24.9		
#100	2.1		
#140	1.1		
#200	0.9		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.6353 D_{85}= 0.5335 D_{60}= 0.3649
D_{50}= 0.3285 D_{30}= 0.2658 D_{15}= 0.2165
D_{10}= 0.1967 C_u= 1.86 C_c= 0.98

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-20-12 A
Sample Number: 6495 (38) **Depth:** 0.0' **Date:** 12/31/12

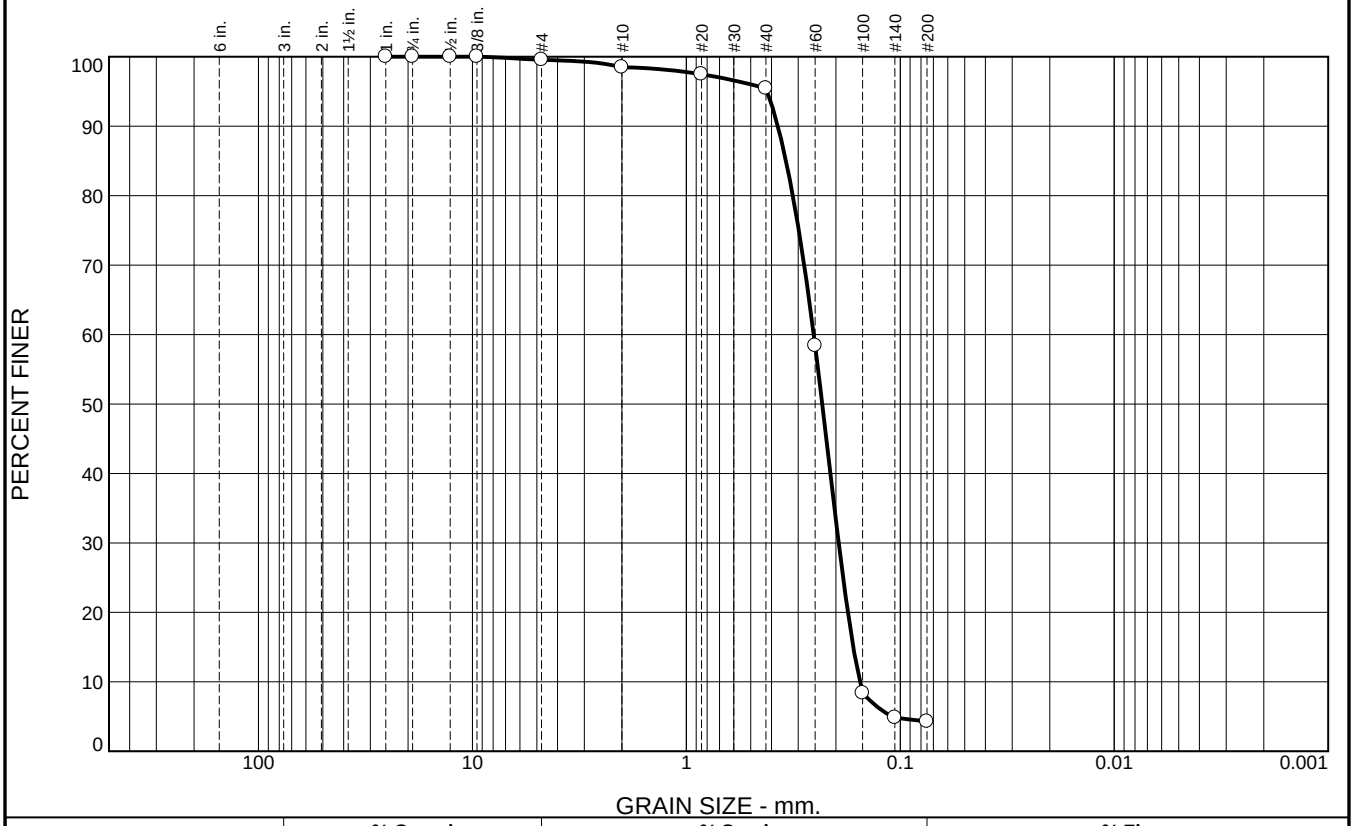
Thompson Engineering

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	0.4	1.1	3.1	91.1	4.3	

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	98.5		
#20	97.5		
#40	95.4		
#60	58.4		
#100	8.4		
#140	4.8		
#200	4.3		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3733 D_{85}= 0.3421 D_{60}= 0.2538
D_{50}= 0.2316 D_{30}= 0.1941 D_{15}= 0.1661
D_{10}= 0.1546 C_u= 1.64 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-20-12 B
Sample Number: 6495 (39) **Depth:** 5.0' **Date:** 12/31/12

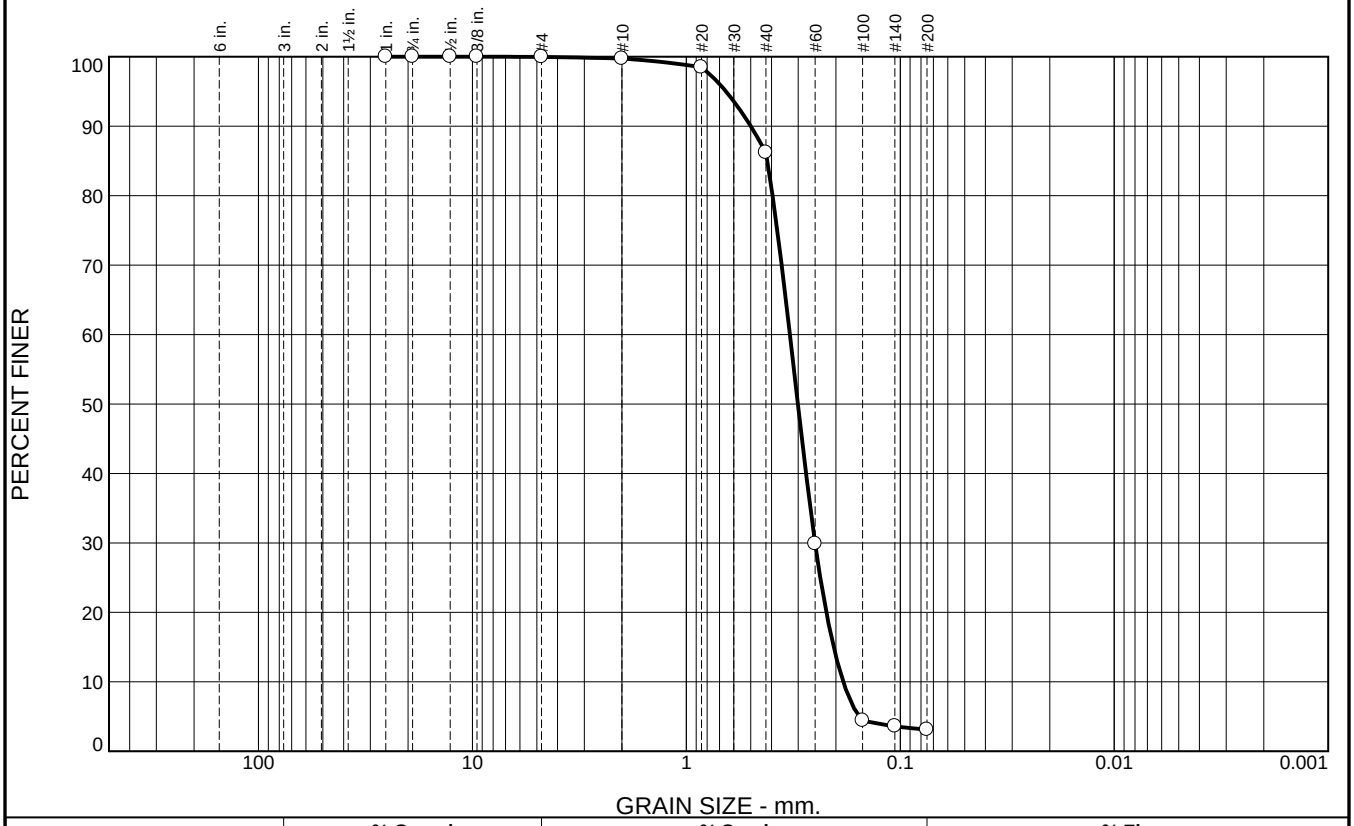
Thompson Engineering

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	0.3	13.5	83.1	3.1	

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	99.7		
#20	98.5		
#40	86.2		
#60	29.9		
#100	4.4		
#140	3.6		
#200	3.1		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5003 D_{85}= 0.4185 D_{60}= 0.3282
D_{50}= 0.3013 D_{30}= 0.2503 D_{15}= 0.2049
D_{10}= 0.1850 C_u= 1.77 C_c= 1.03

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-20-12 C
Sample Number: 6495 (40) **Depth:** 10.0' **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-PBP-21-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-21-12	LOCATION COORDINATES: E = 1,122,925 N = 252,896	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: 25.8 Ft.	
		15. DATE BORING	STARTED: 01-04-13 / COMPLETED: 01-04-13
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -25.0 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
-25.0	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, pale brownish gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.314 mm % Fines: 1.4
-27.5	2.5				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, 0.5-inch clayey band at 9.1 ft., very dense, lt. gray (SP)	B	Classification: SP Color: 5Y 8/1-white D50: 0.3034 mm % Fines: 1.5
				C	Classification: SP Color: 5Y 8/1-white D50: 0.2974 mm % Fines: 1.7
-38.0	13.0				
			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.		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.19468° Long = -88.39438°

Project Mississippi Barrier Island Restoration Project

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Core Identifier BI-PBP-21-12

Coordinate System
Latitude / Longitude

Latitude 30 11.681 N

Longitude 088 23.663 W

Date 01/04/2013

Start Time 11:28:15

End Time 11:34:12

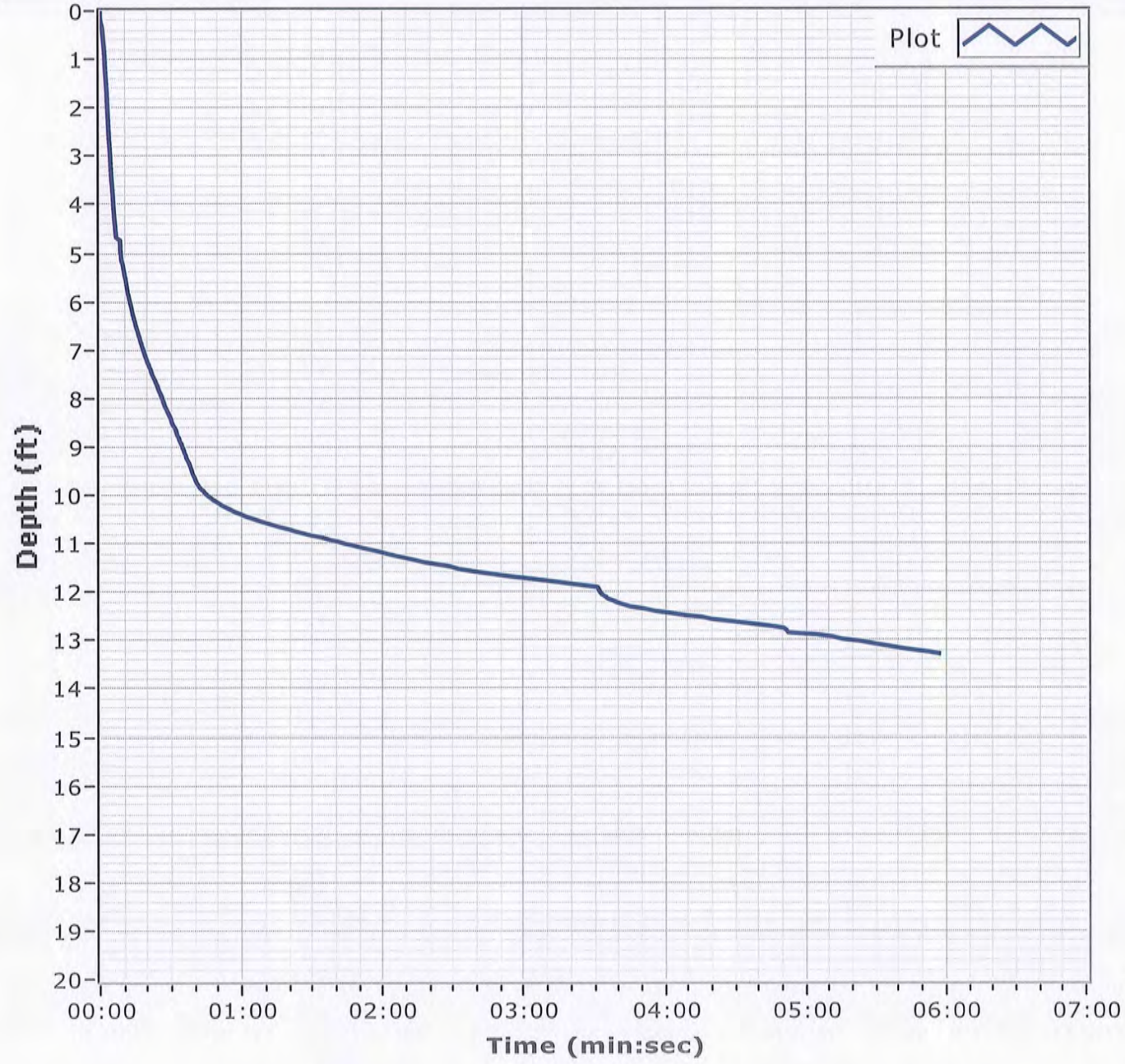
Total Time 00:05:57

Water Depth 25.8'

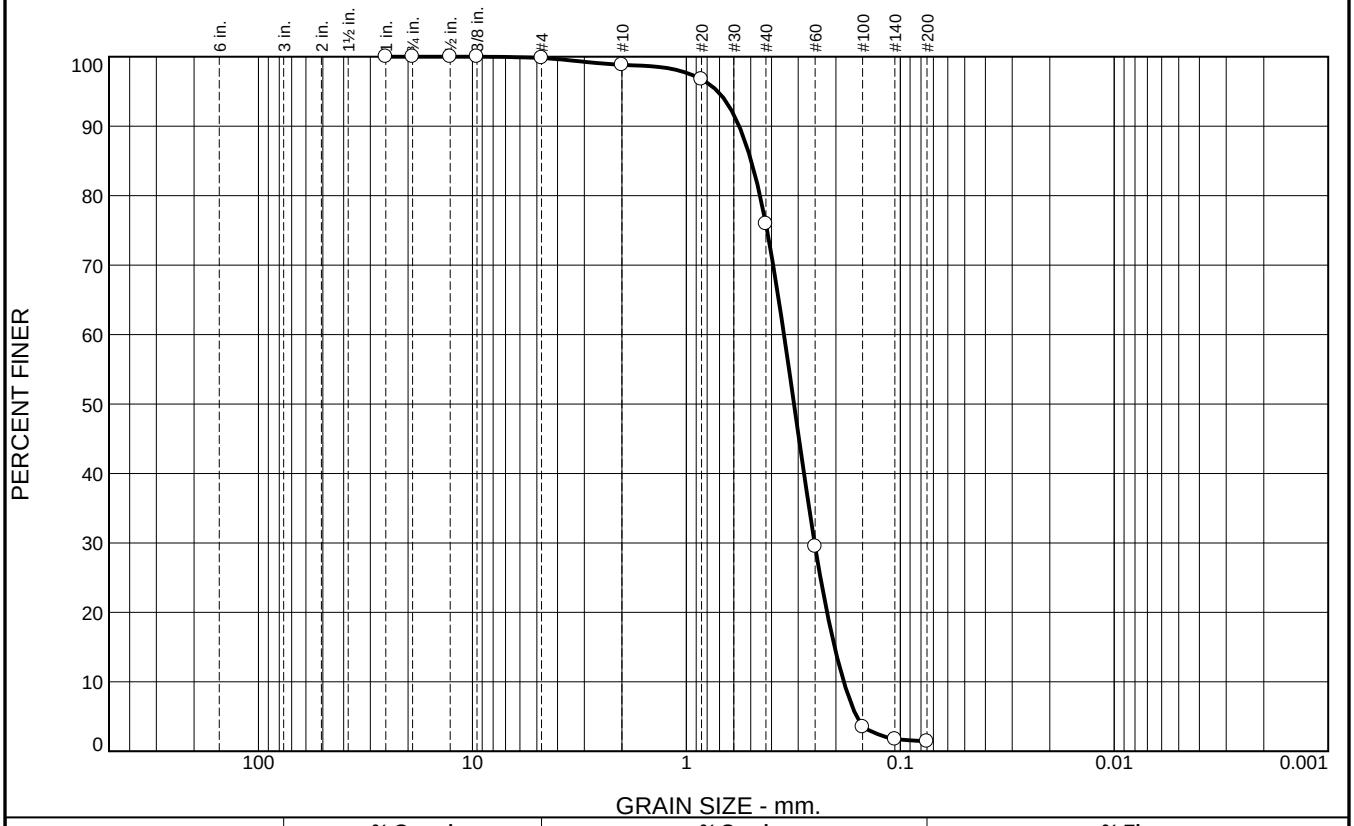
Penetration 13.3'

Recovery 13.0'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	1.0	22.9	74.5	1.4	

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	98.8		
#20	96.7		
#40	75.9		
#60	29.5		
#100	3.5		
#140	1.7		
#200	1.4		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5661 D_{85}= 0.4976 D_{60}= 0.3496
D_{50}= 0.3140 D_{30}= 0.2516 D_{15}= 0.2028
D_{10}= 0.1838 C_u= 1.90 C_c= 0.99

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-21-12 A
Sample Number: 6503 (1) **Depth:** 0.0' **Date:** 1/08/13

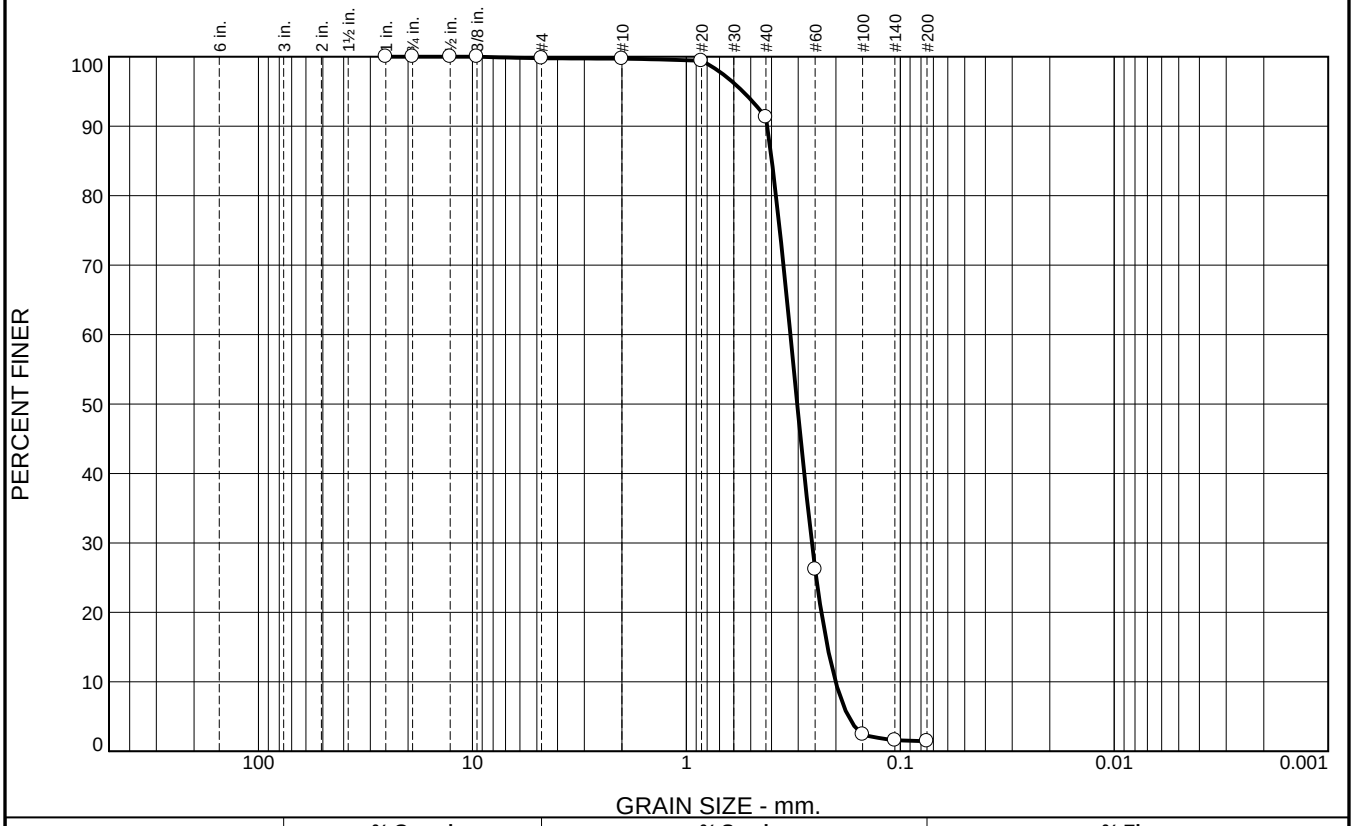
Thompson Engineering

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	0.2	0.1	8.4	89.8	1.5	

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	99.7		
#20	99.4		
#40	91.3		
#60	26.2		
#100	2.4		
#140	1.6		
#200	1.5		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4189 D_{85}= 0.3982 D_{60}= 0.3264
D_{50}= 0.3034 D_{30}= 0.2590 D_{15}= 0.2188
D_{10}= 0.2006 C_u= 1.63 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-21-12 B
Sample Number: 6503 (2) **Depth:** 2.5' **Date:** 1/08/13

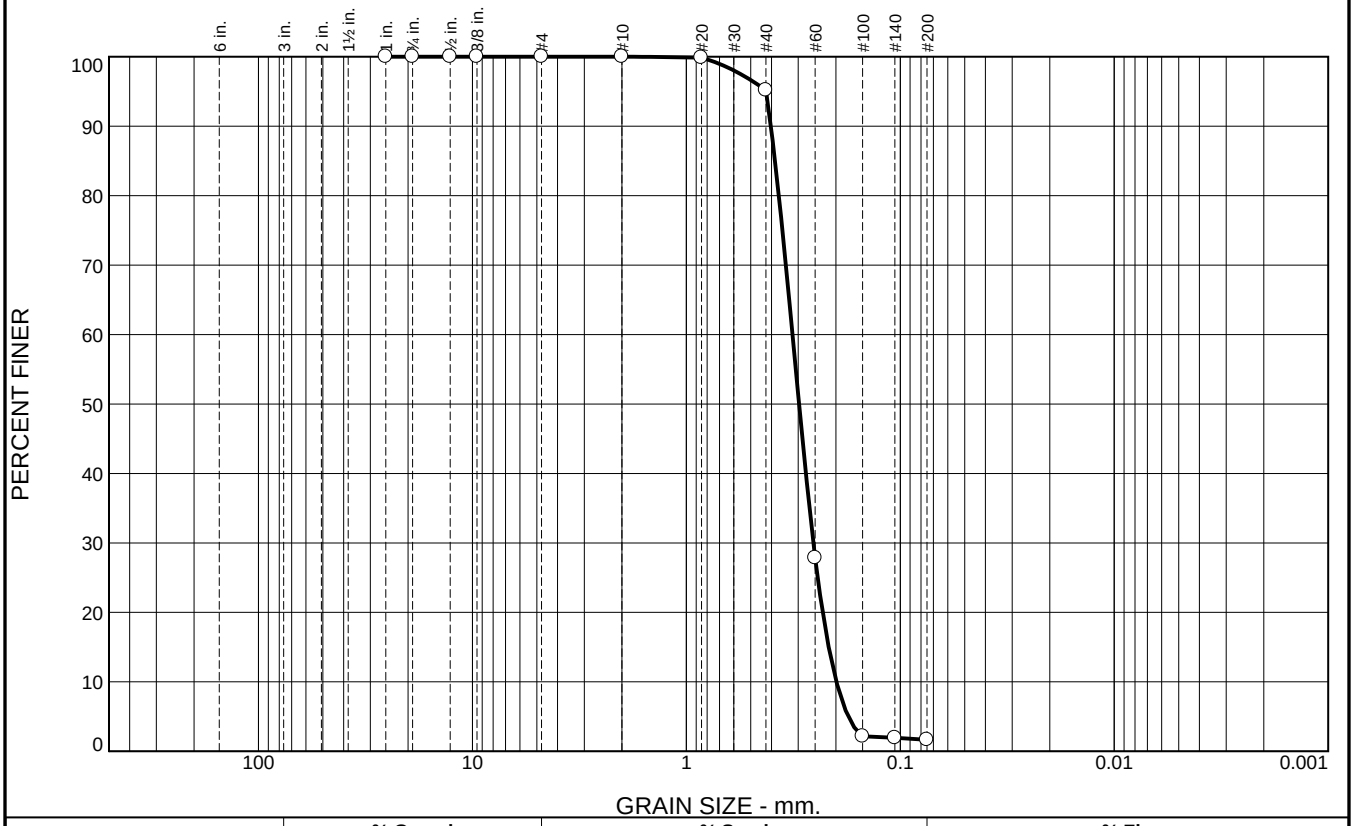
Thompson Engineering

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	0.0	4.8	93.5	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	95.2		
#60	27.8		
#100	2.1		
#140	1.9		
#200	1.7		

* (no specification provided)

Material Description

Fine grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4026 D_{85}= 0.3848 D_{60}= 0.3191
D_{50}= 0.2974 D_{30}= 0.2549 D_{15}= 0.2161
D_{10}= 0.1989 C_u= 1.60 C_c= 1.02

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-21-12 C
Sample Number: 6503 (3) **Depth:** 7.5' **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-PBP-22-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-22-12	LOCATION COORDINATES: E = 1,123,657 N = 251,567	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: 24.2 Ft.	
		15. DATE BORING	STARTED: 01-04-13 / COMPLETED: 01-04-13
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: 18.8 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, 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 fines, trace shell fragments, lt. gray (SP)	A	Classification: SP Color: 5Y 7/2-light gray D50: 0.3069 mm % Fines: 1.3
				B	Classification: SP Color: 5Y 7/2-light gray D50: 0.2872 mm % Fines: 2.2
-33.5	10.0				
-33.8	10.3		CLAY, fat, mostly clay, medium to high plasticity, gray (CH)	NS	
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace clay stringers, gray to lt. gray (SP)	C	Classification: SP Color: 5Y 6/2-light olive gray D50: 0.2354 mm % Fines: 4.5
-37.7	14.2				
			CLAY, lean, mostly clay, some silt, trace shell fragments, sandy zone between 14.2 to 14.7 ft., low to medium plasticity, gray (CL)	NS	
-40.2	16.7				
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, gray (SP-SM)		
-42.0	18.5				
-42.3	18.8		SAND, poorly-graded with clay, mostly fine-grained sand-sized quartz, few clay, clay band at 18.6 ft., gray (SP-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.

Lat = 30.19102° Long = -88.39208°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
SERVICES

Core Identifier BI-PBP-22-12

Coordinate System
Latitude / Longitude

Latitude 30 11.461 N

Longitude 088 23.525 W

Date 01/04/2013

Start Time 10:52:09

End Time 10:54:10

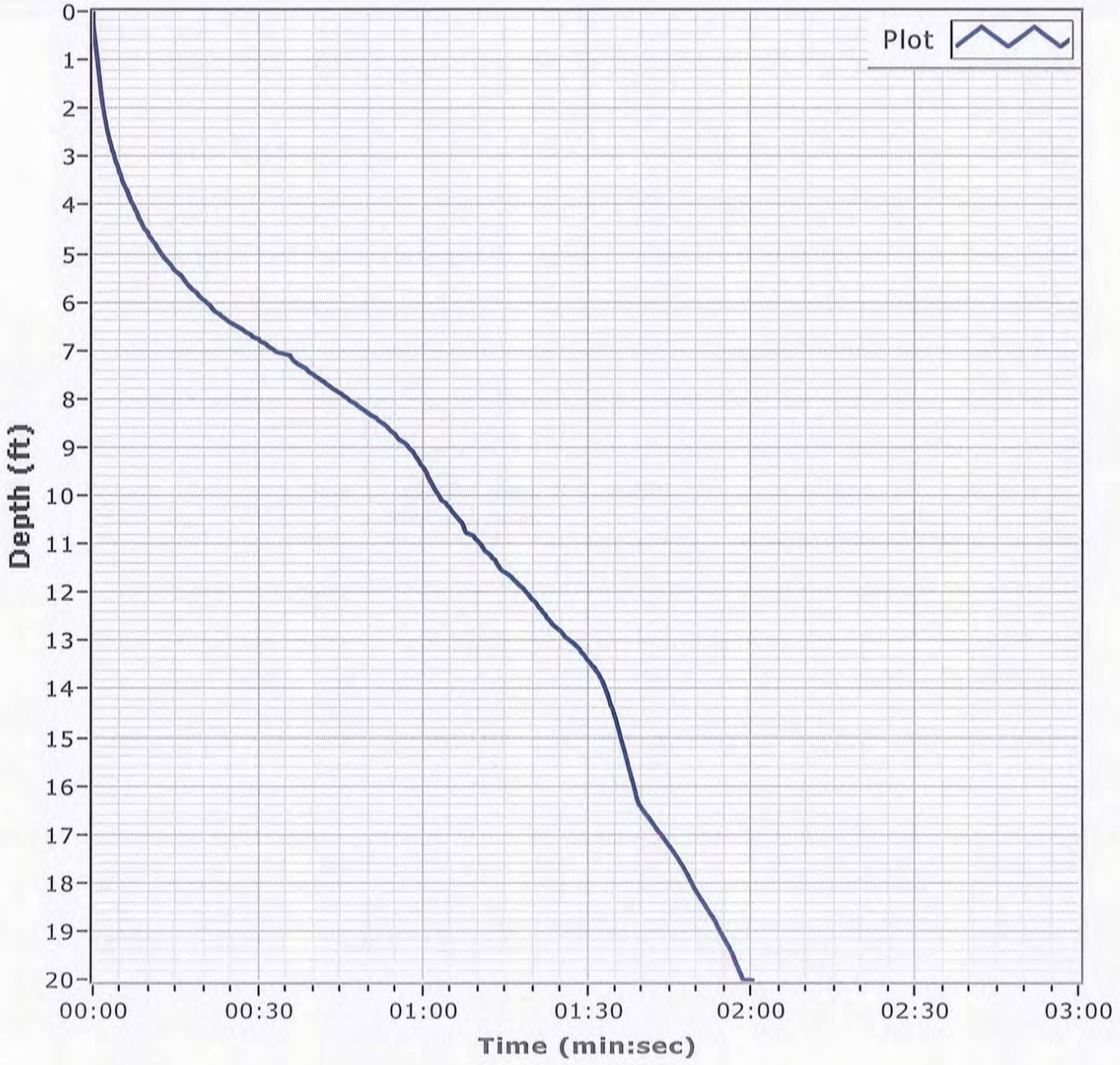
Total Time 00:02:00

Water Depth 24.2'

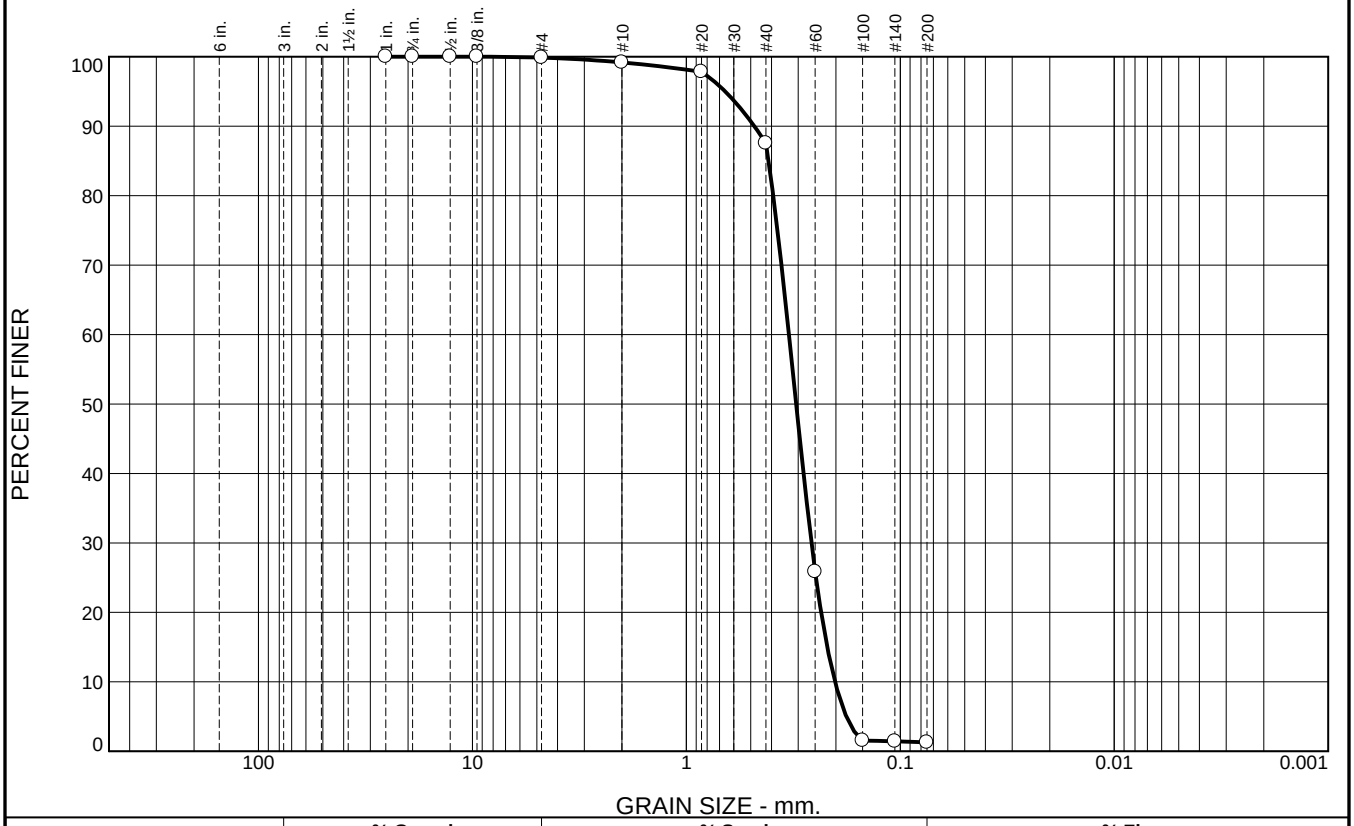
Penetration 20.0'

Recovery 18.8'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.7	11.7	86.2	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	99.2		
#20	97.8		
#40	87.5		
#60	25.9		
#100	1.5		
#140	1.4		
#200	1.3		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4815 D_{85}= 0.4128 D_{60}= 0.3316
D_{50}= 0.3069 D_{30}= 0.2602 D_{15}= 0.2195
D_{10}= 0.2019 C_u= 1.64 C_c= 1.01

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-22-12 A
Sample Number: 6503 (4) **Depth:** 0.0' **Date:** 1/08/13

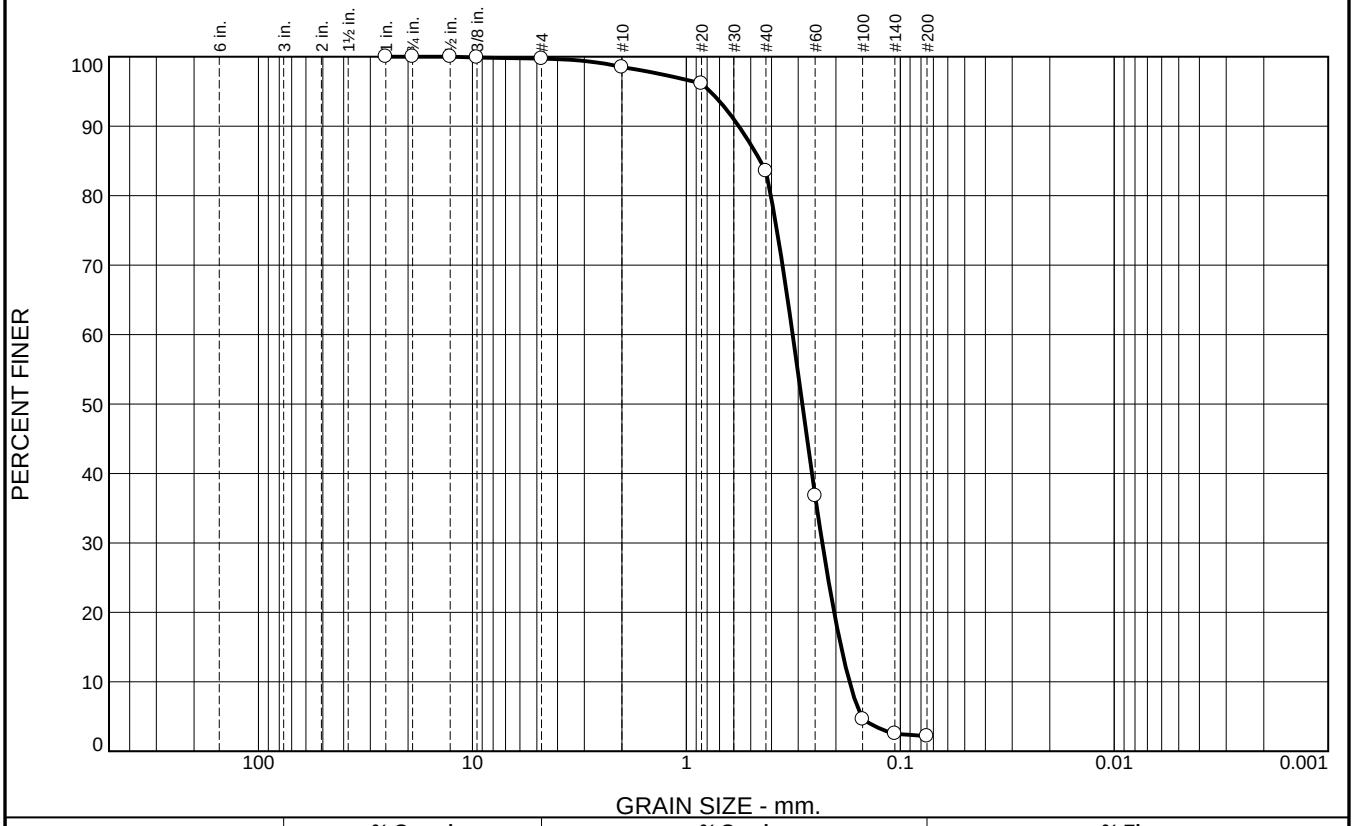
Thompson Engineering

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	1.2	15.0	81.3	2.2	

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	98.5		
#20	96.1		
#40	83.5		
#60	36.8		
#100	4.6		
#140	2.5		
#200	2.2		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5688 D_{85}= 0.4513 D_{60}= 0.3185
D_{50}= 0.2872 D_{30}= 0.2315 D_{15}= 0.1891
D_{10}= 0.1729 C_u= 1.84 C_c= 0.97

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-22-12 B
Sample Number: 6503 (5) **Depth:** 5.0' **Date:** 1/08/12

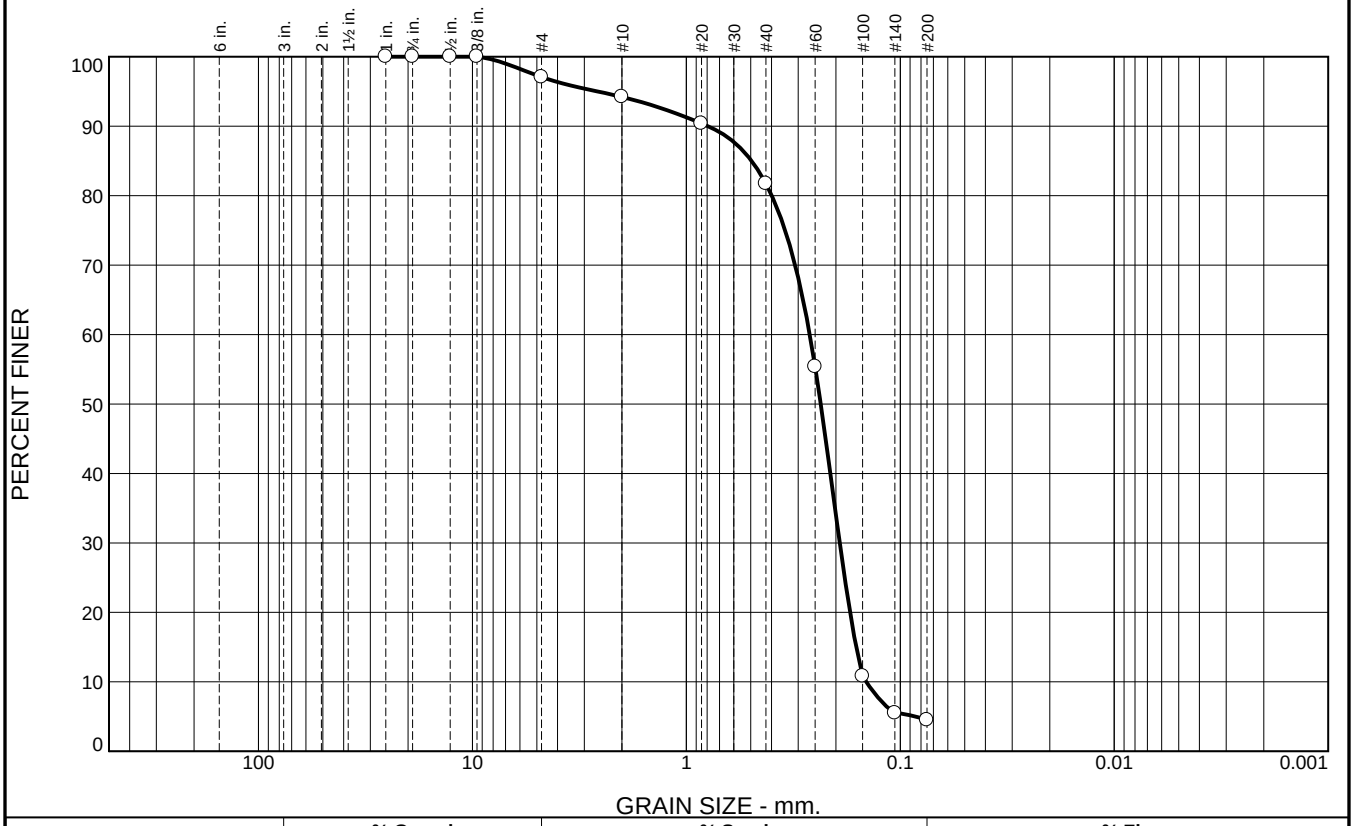
Thompson Engineering

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	2.9	2.9	12.5	77.2	4.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	100.0		
.5	100.0		
.375	100.0		
#4	97.1		
#10	94.2		
#20	90.4		
#40	81.7		
#60	55.4		
#100	10.8		
#140	5.5		
#200	4.5		

* (no specification provided)

Material Description

Fine to medium grained, SAND, with trace SHELL

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.7955 D_{85}= 0.4955 D_{60}= 0.2650
D_{50}= 0.2354 D_{30}= 0.1919 D_{15}= 0.1609
D_{10}= 0.1443 C_u= 1.84 C_c= 0.96

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-22-12 C
Sample Number: 6503 (6) **Depth:** 10.3' **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-PBP-23-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-23-12	LOCATION COORDINATES: E = 1,122,127 N = 250,961	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: 35.4 Ft.	
		15. DATE BORING	STARTED: 01-04-13 / COMPLETED: 01-04-13
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -34.7 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: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-34.7	0.0				
-35.9	1.2		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, some silt, trace shells, dark gray (SC)	NS	
-37.9	3.2		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace shell fragments, few silty bands, lt. gray (SP)	A	Classification: SP-SM Color: 5Y 5/2-olive gray D50: 0.3227 mm % Fines: 6.9
-39.5	4.8		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)	B	Classification: SM Color: 2.5Y 5/2-grayish brown D50: 0.1263 mm % Fines: 13
-42.0	7.3		SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, some medium grained sand between 4.8-5.3 ft., brown (SM)	NS	
-44.0	9.3		SILT, inorganic-L, mostly silt, some fine-grained sand-sized quartz, trace clay, trace shell fragments, gray (ML)	C	Classification: SM Color: 5Y 5/2-olive gray D50: 0.1847 mm % Fines: 14.3
-46.0	11.3		SAND, silty, mostly fine-grained sand-sized quartz, some silt, gray (SM)		
-49.1	14.4		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fines, trace silty bands, dense, lt. gray (SP)	D	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.1352 mm % Fines: 5.4
-49.6	14.9		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.

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18937° Long = -88.39693°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
S E R V I C E S

Core Identifier BI-PBP-23-12

Coordinate System
Latitude / Longitude

Latitude 30 11.362 N

Longitude 088 23.816 W

Date 01/04/2013

Start Time 10:09:47

End Time 10:12:55

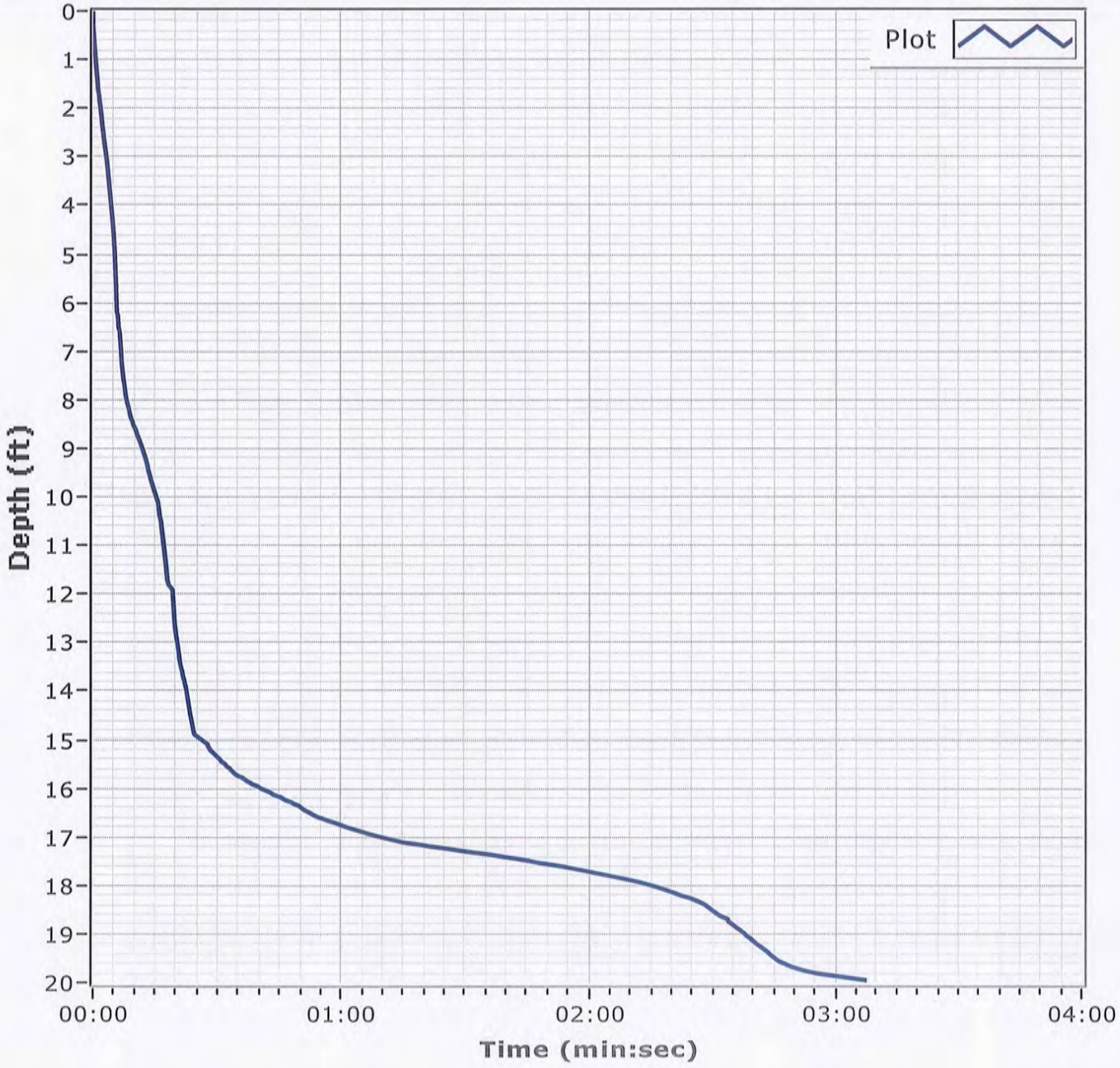
Total Time 00:03:07

Water Depth 35.4'

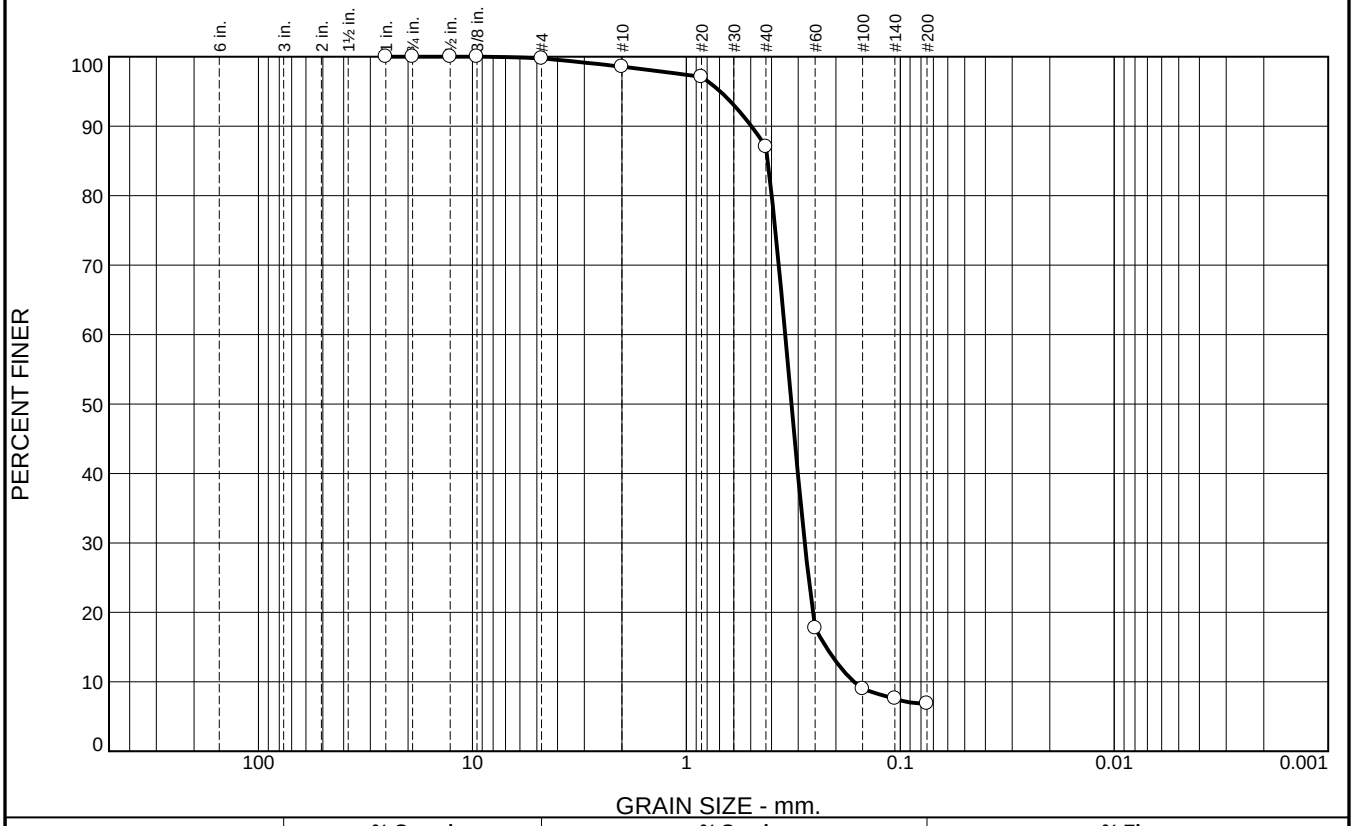
Penetration 20.0'

Recovery 14.9'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	1.2	11.5	80.2	6.9	

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	98.6		
#20	97.1		
#40	87.1		
#60	17.7		
#100	9.0		
#140	7.6		
#200	6.9		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4967 D_{85}= 0.4166 D_{60}= 0.3450
D_{50}= 0.3227 D_{30}= 0.2800 D_{15}= 0.2220
D_{10}= 0.1646 C_u= 2.10 C_c= 1.38

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBP-23-12 A
Sample Number: 6503 (7) **Depth:** 1.2' **Date:** 1/08/13

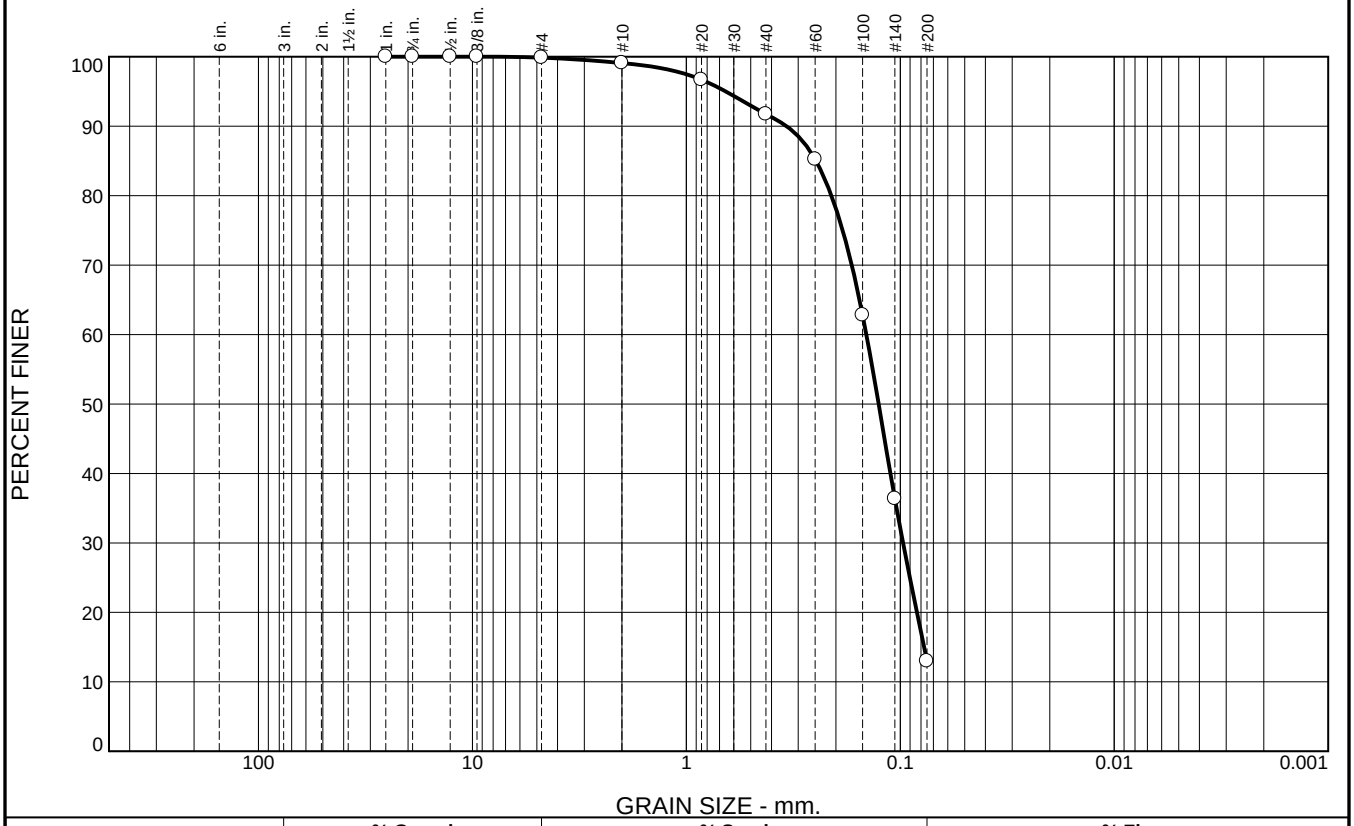
Thompson Engineering

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	0.1	0.8	7.4	78.7	13.0	

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	99.1		
#20	96.7		
#40	91.7		
#60	85.2		
#100	62.8		
#140	36.4		
#200	13.0		

* (no specification provided)

Material Description

Fine grained, SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3404 D_{85}= 0.2478 D_{60}= 0.1441
D_{50}= 0.1263 D_{30}= 0.0971 D_{15}= 0.0774
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PBP-23-12 B
Sample Number: 6503 (8) **Depth:** 4.8' **Date:** 1/08/13

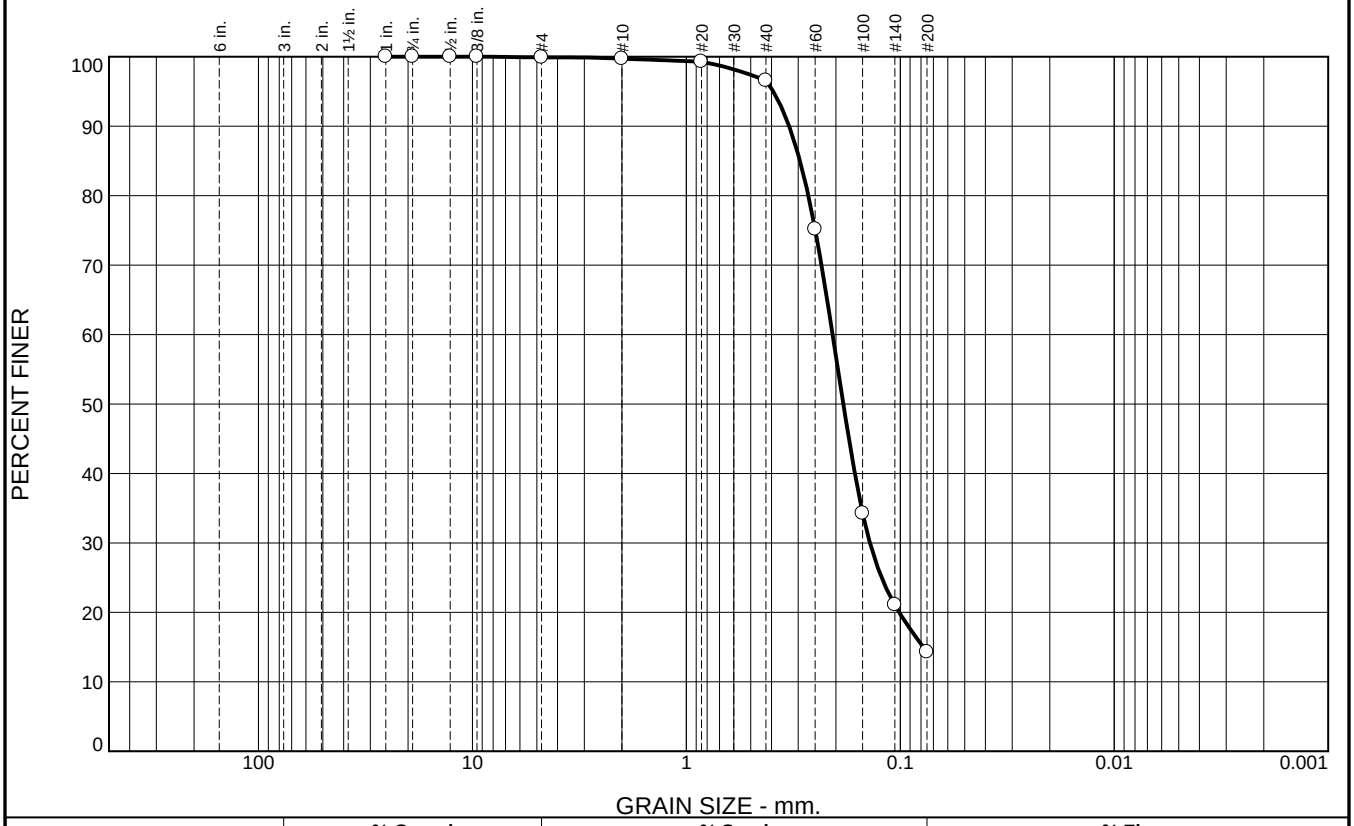
Thompson Engineering

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	0.1	0.2	3.1	82.3	14.3	

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	99.7		
#20	99.3		
#40	96.6		
#60	75.2		
#100	34.3		
#140	21.1		
#200	14.3		

* (no specification provided)

Material Description

Fine grained, SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3308 D_{85}= 0.2946 D_{60}= 0.2073
D_{50}= 0.1847 D_{30}= 0.1387 D_{15}= 0.0781
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PBP-23-12 C
Sample Number: 6503 (9) **Depth:** 9.3' **Date:** 1/08/13

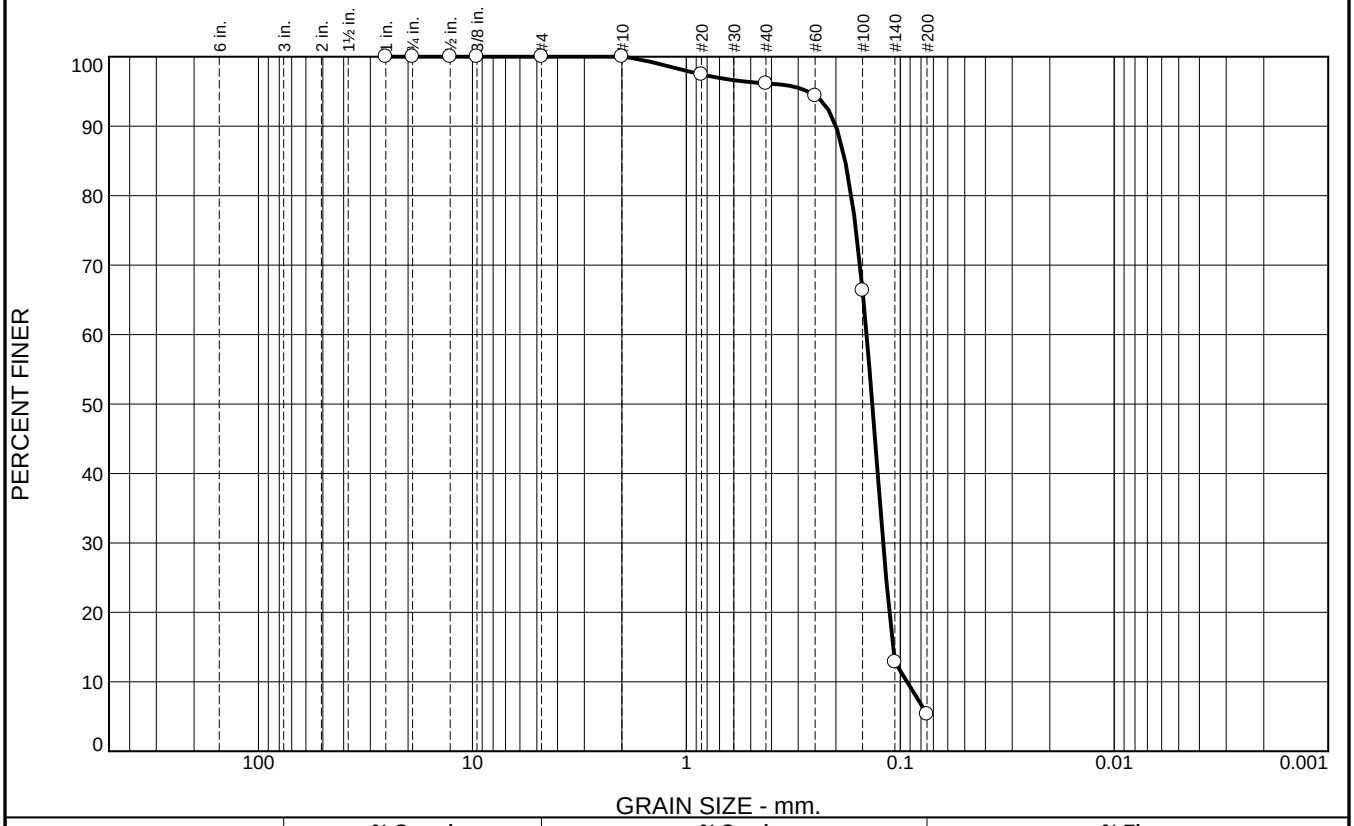
Thompson Engineering

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	0.0	3.8	90.8	5.4	

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	100.0		
#20	97.4		
#40	96.2		
#60	94.4		
#100	66.3		
#140	12.8		
#200	5.4		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2000 D_{85}= 0.1811 D_{60}= 0.1437
D_{50}= 0.1352 D_{30}= 0.1202 D_{15}= 0.1081
D_{10}= 0.0929 C_u= 1.55 C_c= 1.08

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBP-23-12 D
Sample Number: 6503 (10) **Depth:** 11.3' **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-PBP-24-12

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

1. PROJECT: Barrier Island Restoration, Petit Bois 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-PBP-24-12	LOCATION COORDINATES: E = 1,124,585 N = 250,847	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: 27.1 Ft.
		15. DATE BORING	STARTED: 01-04-13 / COMPLETED: 01-04-13
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: 19.9 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Mike FitzHarris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
-26.5	0.0				
			SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, trace fines, trace shell fragments, lt. pale brown to light gray (SP)	A	Classification: SP-SM Color: 5Y 7/2-light gray D50: 0.3327 mm % Fines: 5.1
				B	Classification: SP Color: 5Y 7/2-light gray D50: 0.2546 mm % Fines: 2
-35.1	8.6				
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell fragments, gray (SP-SM)	C	Classification: SP-SM Color: 5Y 6/2-light olive gray D50: 0.2973 mm % Fines: 6.2
-37.7	11.2				
			SAND, clayey, mostly fine-grained sand-sized quartz, some clay, little silt, trace shell fragments, gray (SC)	NS	
-40.1	13.6				
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, trace shell fragments, brown (SM)	D	Classification: SM Color: 2.5Y 4/2-dark grayish brown D50: 0.1227 mm % Fines: 13.6
-44.6	18.1				
-44.9	18.4		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, trace shell fragments, gray (SC)	NS	
-46.1	19.6		CLAY, lean, mostly clay, some fine-grained sand-sized quartz, gray (CL)		
-46.4	19.9		SAND, clayey, mostly fine-grained sand-sized quartz, some clay, gray (SC)		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification		

0 5 10 15 20 25

SAM FORM 1836 - MsCIP
MAY 2010

Lat = 30.18903° Long = -88.38915°

DRILLING LOG (Cont. Sheet)	INSTALLATION	SHEET 2 OF 2 SHEETS
	Mobile District	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Barrier Island Restoration	State Plane, MSE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 1,124,585 Y = 250,847	-26.5 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	SAMPLE	LABORATORY RESULTS
			System. 2. NS = Sample not submitted for laboratory analysis from this interval.		

30
35
40
45
50
55
60

Lat = 30.18903° Long = -88.38915°

Project Mississippi Barrier Island Restoration Project

AVS
AMERICAN VIBRACORE
SERVICES

Core Identifier BI-PBP-24-12

Coordinate System
Latitude / Longitude

Latitude 30 11.342 N

Longitude 088 23.349 W

Date 01/04/2013

Start Time 09:25:47

End Time 09:28:44

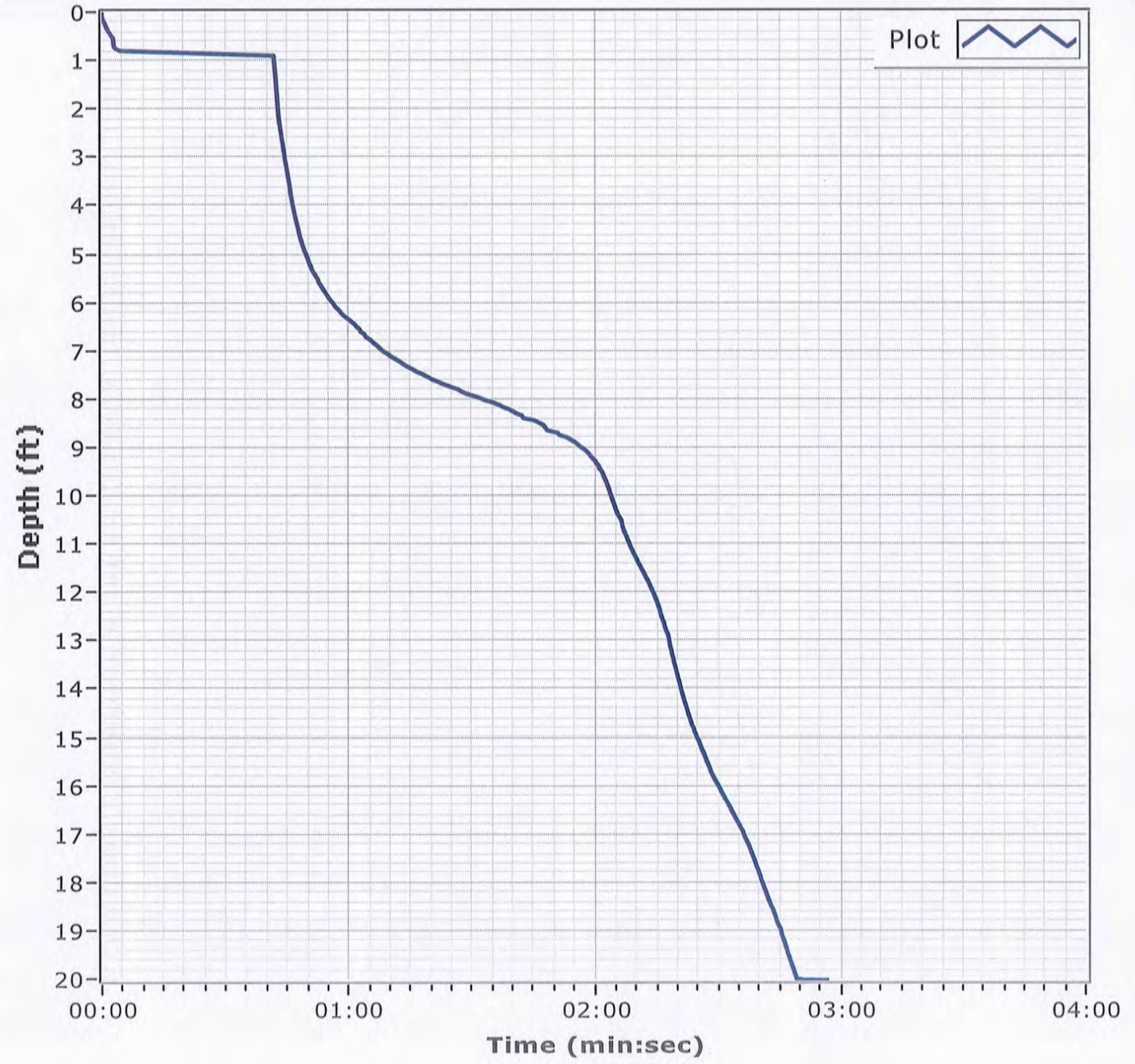
Total Time 00:02:57

Water Depth 27.1'

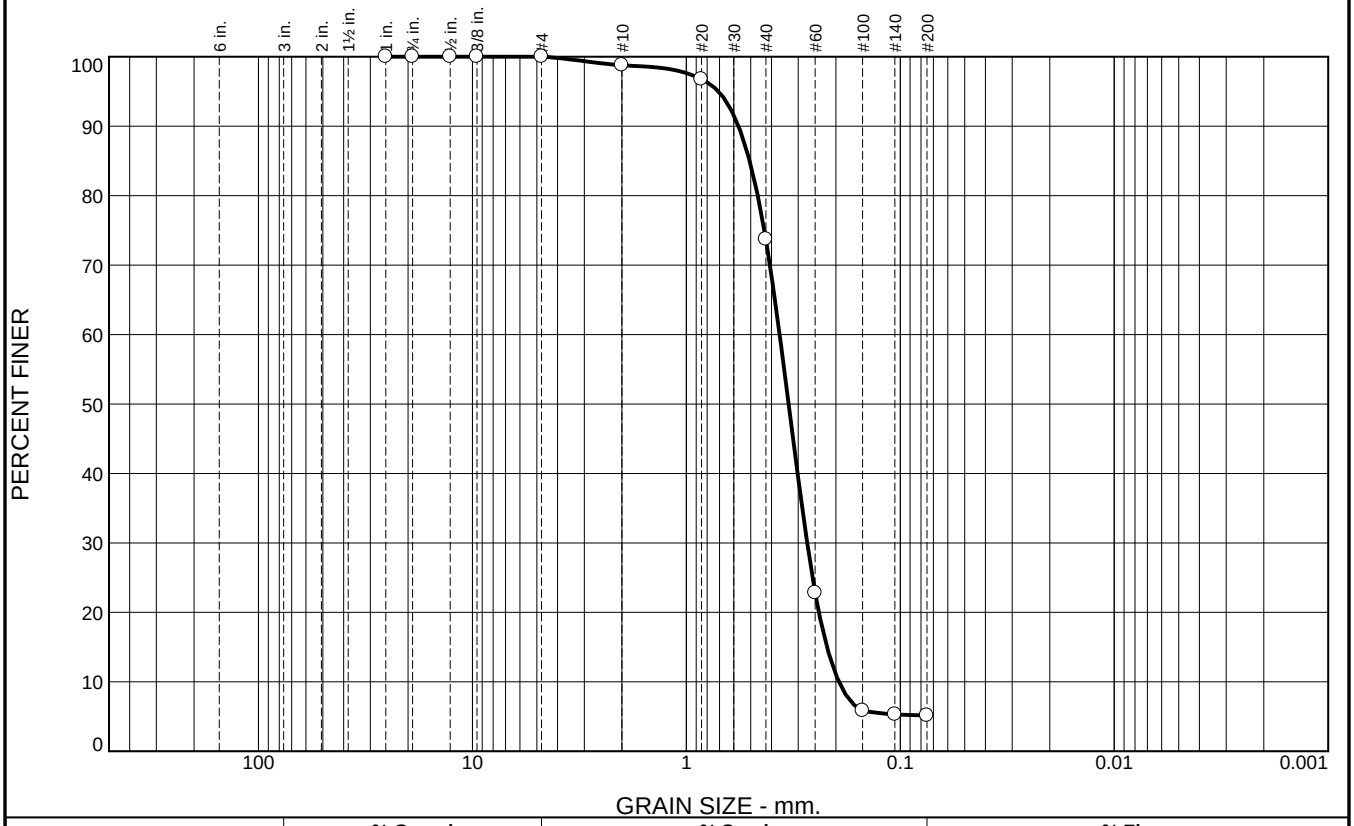
Penetration 20.0'

Recovery 19.9'

Comments



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.2	25.1	68.6	5.1	

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	98.8		
#20	96.8		
#40	73.7		
#60	22.8		
#100	5.8		
#140	5.3		
#200	5.1		

* (no specification provided)

Material Description

Fine to medium grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5703 D_{85}= 0.5061 D_{60}= 0.3663
D_{50}= 0.3327 D_{30}= 0.2726 D_{15}= 0.2202
D_{10}= 0.1937 C_u= 1.89 C_c= 1.05

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBP-24-12 A
Sample Number: 6503 (11) **Depth:** 0.0' **Date:** 1/08/13

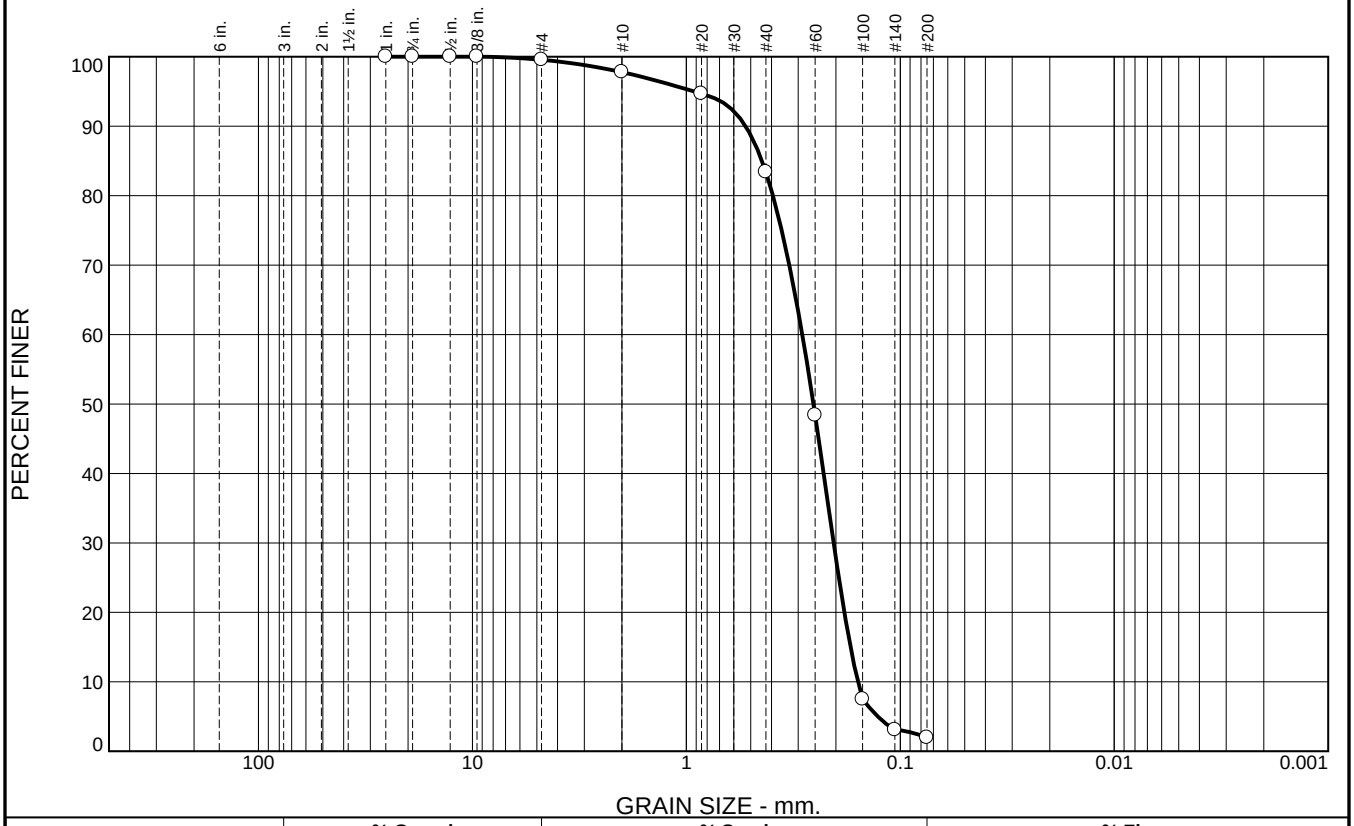
Thompson Engineering

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	0.4	1.8	14.4	81.4	2.0	

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	97.8		
#20	94.7		
#40	83.4		
#60	48.4		
#100	7.5		
#140	3.1		
#200	2.0		

* (no specification provided)

Material Description

Fine to medium grained, SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5288 D_{85}= 0.4432 D_{60}= 0.2873
D_{50}= 0.2546 D_{30}= 0.2049 D_{15}= 0.1710
D_{10}= 0.1580 C_u= 1.82 C_c= 0.93

Classification

USCS= SP AASHTO=

Remarks

Location: BI-PBP-24-12 B
Sample Number: 6503 (12) **Depth:** 5.0' **Date:** 1/08/13

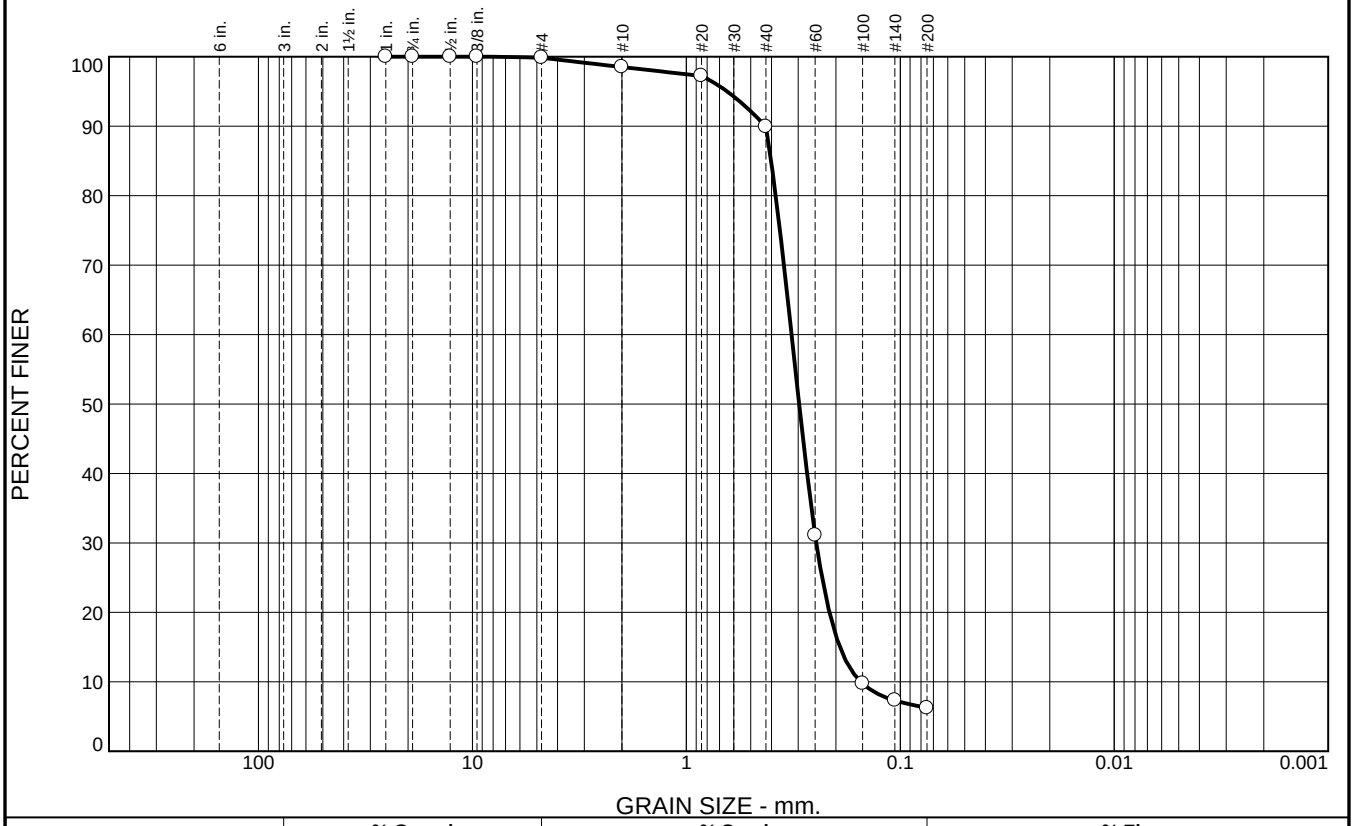
Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	1.3	8.6	83.7	6.2	

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	98.5		
#20	97.2		
#40	89.9		
#60	31.1		
#100	9.8		
#140	7.3		
#200	6.2		

* (no specification provided)

Material Description

Fine grained, SLIGHTLY SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4275 D_{85}= 0.4015 D_{60}= 0.3223
D_{50}= 0.2973 D_{30}= 0.2470 D_{15}= 0.1917
D_{10}= 0.1529 C_u= 2.11 C_c= 1.24

Classification

USCS= SP-SM AASHTO=

Remarks

Location: BI-PBP-24-12 C
Sample Number: 6503 (13) **Depth:** 8.6' **Date:** 1/08/13

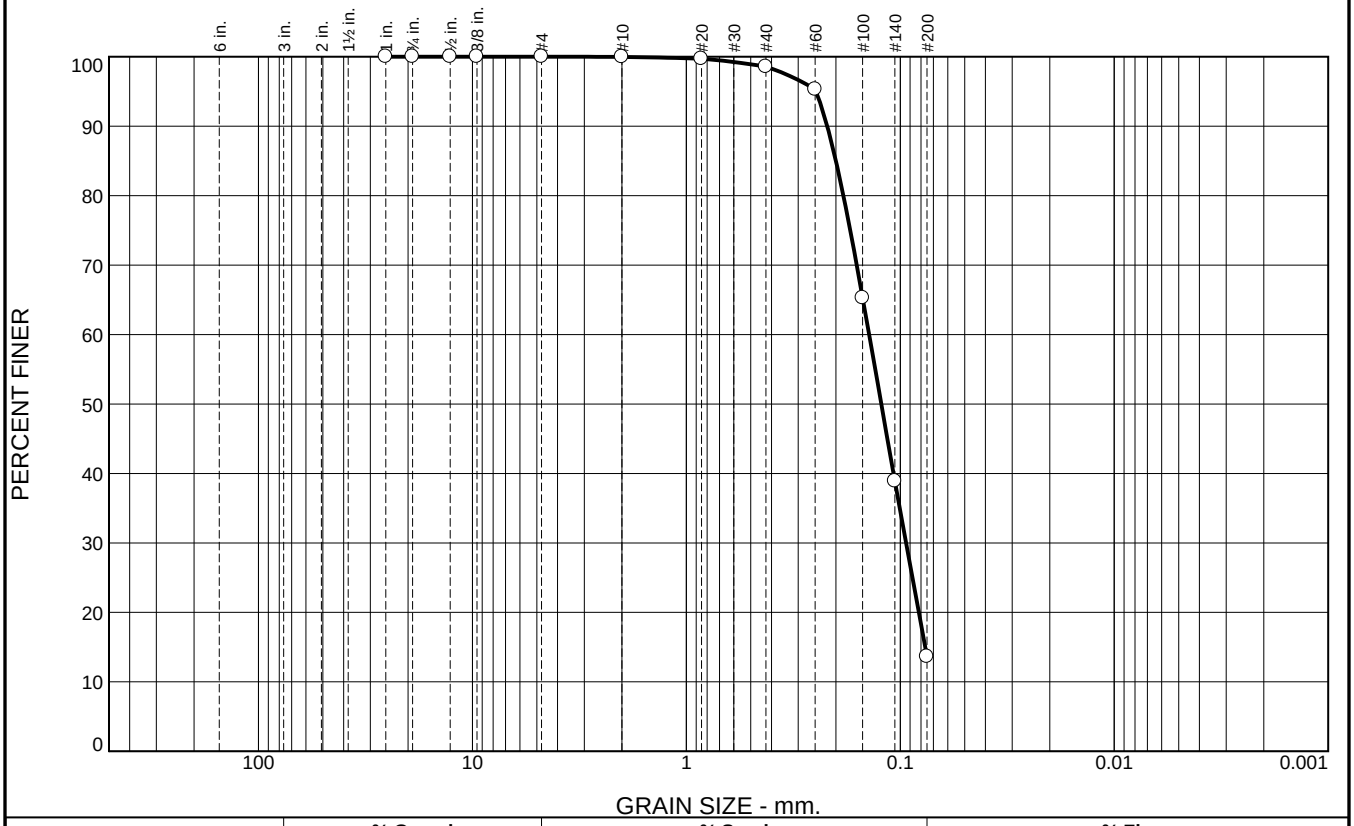
Thompson Engineering

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	0.0	1.4	85.0	13.6	

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	99.7		
#40	98.6		
#60	95.3		
#100	65.3		
#140	38.9		
#200	13.6		

* (no specification provided)

Material Description

Fine grained, SILTY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2194 D_{85}= 0.2000 D_{60}= 0.1399
D_{50}= 0.1227 D_{30}= 0.0940 D_{15}= 0.0764
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Location: BI-PBP-24-12 D
Sample Number: 6503 (14) **Depth:** 13.6' **Date:** 1/08/13

Thompson Engineering

Mobile, Alabama

Client: CDM/Thompson Engineering JV
Project: MsCIP Barrier Island Restoration GT

Project No: 1221110095 **Figure**