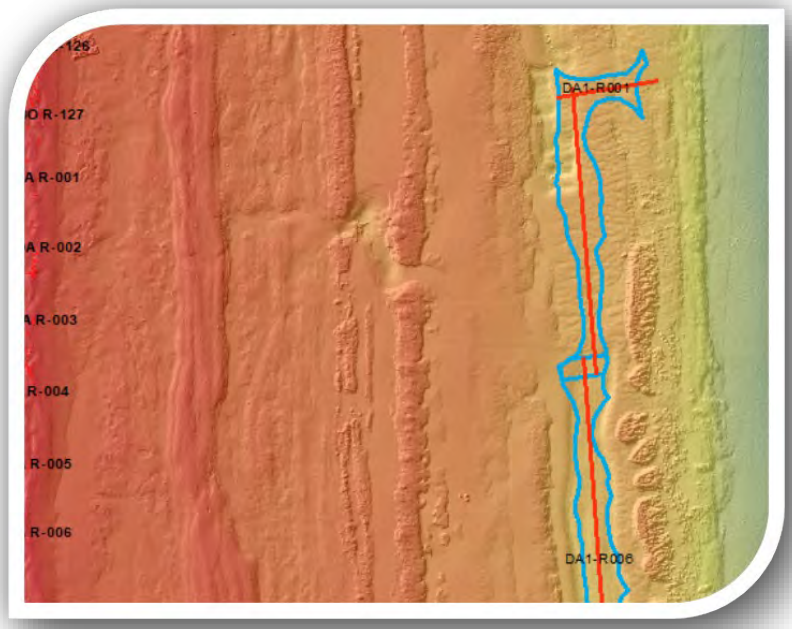
TAYLOR ENGINEERING, INC.

USACE Jacksonville District
Florida Peninsular Sand Source Investigation

Investigation Report
Offshore Miami-Dade County



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USACE Jacksonville District

Florida Peninsular Sand Source Investigation
Investigation Report

Offshore Miami-Dade County

Final Report

Prepared for

U.S. Army Corps of Engineers

W912BU-15-D-0006

by

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April 2021

Taylor Engineering Contract No. C2019-032-02

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1.0 INTRODUCTION

1.1 Scope

This document encompasses the Geophysical and Geotechnical Investigation Report for Miami-Dade County — for the U.S. Army Corps of Engineers (USACE) Jacksonville District.

The scope of this investigation is to provide reconnaissance level data in offshore areas with limited data on sediment quality. These offshore areas are in counties that yielded a sand deficit in the South Atlantic Division (SAD) Sand Availability and Needs Determination (SAND) Study (2020). This Investigation Report summarizes existing data reviewed during development of the investigation plan, summarizes the April 2020 reconnaissance level geophysical explorations (side scan sonar, magnetometer, and sub-bottom profiler), and identifies specific areas on the inner continental shelf offshore of Miami-Dade County with potential sand sources for further exploration. This investigation also included the collection and analysis of 59 vibracores from 26 investigation areas offshore of Miami-Dade County.

Appendix A summarizes the investigation areas and potential sand sources with volume estimates. **Appendix B** contains the geological profiles of each investigation area. **Appendix C** presents the sediment sample laboratory testing results. **Appendix D** includes granulometric tables and grain size distribution curves for each sample. **Appendix E** consists of geophysical survey data (seismic, multi-beam, magnetometer, and side scan) organized by individual investigation areas**. Appendix F** is the Miami-Dade County Investigation Plan, containing detailed information about the means and methods of the geophysical and geotechnical data collection**.**

1.2 Background

The U.S. Army Corps of Engineers completed a Sand Availability and Needs Determination (SAND) study for the entire South Atlantic Division (SAD) in September 2020. The SAD SAND study determined the sand availability and sand needs for the next 50-years for each county within the SAD. The study revealed that the sand sources for Miami-Dade County only fulfill 18 percent of the 50-year sand need. Miami-Dade has a 50-year sand need of 16.5 million cubic yards and a sand availability of 2.9 million cubic yards. This results in a sand deficit of 13.7 million cubic yards over the next 50 years (Taylor Engineering, 2020). Based on these results, the USACE initiated the comprehensive sand search presented in this investigation report.

The search for potential offshore sand sources in Miami-Dade County originates in the 1960s and continues to present day. Initially, the search for sand focused on the County's coastal and nearshore waters. Many past nourishment projects have also taken advantage of tidal inlet shoals (ebb and flood) or nearshore sands. However, the County is now running out of offshore sand sources and has turned to upland sources for their most recent beach nourishment efforts. In the past, offshore sand sources were generally close to the placement areas and permitting efforts did not require sophisticated sand search techniques or laboratory testing (Florida Department of Environmental Protection [FDEP], 2010). Additionally, historic sand searches and beach nourishment projects did not have as many environmental constraints related to buffers from hard bottoms and other natural resources. As such, the ability to locate viable sources of beach compatible sediments from offshore sources is severely constrained by environmental and economic factors (FDEP, 2020).

As both the demand for offshore sand sources increased and many of the once reliable nearshore sand sources became depleted, the search for sand moved further offshore. In the mid-1980s, the implementation of the *Beach Management Act* placed stricter regulations on potential borrow area sites and added additional environmental and water quality constraints. These regulations further constrained potential offshore sources (FDEP, 2010).

Presently, the search for offshore sand sources continues to move further offshore and thus further in distance from specific beach placement areas. Contemporary sand source field investigations are complex and data intensive, requiring bathymetric surveys, sub-bottom surveys, side-scan sonar surveys, magnetometer surveys, vibracore collection, sediment analysis, and logging of samples for permitting. Compatibility of sediment to proposed project locations includes the consideration of sediment grain size, sediment composition, and sediment color. These additional requirements placed on nourishment projects evolve from design constraints including environmental function, recreational use, and aesthetics.

2.0 GEOPHYSICAL INVESTIGATIONS

During April 2020 Taylor Engineering collected reconnaissance level geophysical data from nearly every potentially viable location outside of the required 400-foot environmental buffers. The geophysical overwater field surveys concurrently collected seismic reflection profile, multi-beam bathymetric, magnetometer, and side scan sonar data. Prior to execution, Taylor Engineering gave individual survey lines a reference number (1-93 in Miami-Dade). The surveyor completed a total 51.7 line-miles of geophysical surveys in Miami-Dade County. **Appendix E** presents the data collected during the geophysical investigation phase. The following sections of this report provide a description of the collection and analysis of vibracore samples as recommended by the 2020 Investigation Plan (**Appendix F**).

3.0 VIBRACORE COLLECTION

Together USACE and Taylor Engineering evaluated the geophysical data and selected vibracore locations for ground truthing based on the results of the geophysical investigation. **Table 3.1** contains the final vibracore locations and details about the evaluation and reasoning for each vibracore location. **Appendix A** provides maps of the final boring locations.

Between June 23, 2020 and July 1, 2020, Taylor Engineering and its vibracore subcontractor, Amdrill, Inc., completed 59 vibracore samples. The vibracore unit used was an Alpine style, pneumatic vertical hammer vibracore drill apparatus having a continuous 20-foot by 4-inch core barrel with a clear plastic core liner. During core collections, the liner was advanced until reaching a depth of 20 feet below the sediment surface or refusal. The scope of work for this effort defined refusal as no additional penetration of the vibracore within two minutes of additional effort applied to penetrate though the resistant layer at maximum vibration. The desired recovery of sediment is 80%. All vibracores achieved at least the minimum of 80% recovery.

The driller recorded the XYZ boring locations of the cores utilizing Real Time Kinematic Global Positional System (RTK GPS) in North American Datum 1983 (NAD83) and North American Vertical Datum 1988 (NAVD88).

Table 3.1 Locations and Descriptions of Vibracore Borings

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-01	DA03-R106	Apparent large sand flat between 1st and 2nd reef. No data.	3E	950298	490641	-22.5	3	9.9% fines content encountered below 3' sample depth
VB-DA20-02	DA04-R106	Between 2nd and 3rd reef. Partially mined, limited data available.	6N	954672	490960	-45.9	3	10.0% fines content encountered below 3' sample depth
VB-DA20-03	DA04-R106	Between 2nd and 3rd reef. Partially mined, limited data available.	8W	955932.3	491617.8	-47.4	6	0.25 mm mean grain size and 13.2% fines content encountered below 6' sample depth
VB-DA20-04	DA03-R106	Apparent large sand flat between 1st and 2nd reef. No data.	1N	949659	491907	-20.7	5	13.6% fines content encountered below 5' sample depth
VB-DA20-05	DA03-R106	Apparent large sand flat between 1st and 2nd reef. No data.	2S	951628	491938	-18.8	6	11.7% fines content encountered below 6' sample depth

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-06	DA04-R106	Between 2nd and 3rd reef. Partially mined, limited data available.	6N	954619	491974	-39.6	5	0.23 mm mean grain size and 15.3% fines content encountered below 5' sample depth
VB-DA20-07	DA03-R106	Apparent large sand flat between 1st and 2nd reef. No data.	1N	949715	493258	-22.3	2	11.1% fines content encountered below 2' sample depth
VB-DA20-08	DA04-R106	Between 2nd and 3rd reef. Partially mined, limited data available.	10W	955512	493879	-41.1	11	11.0% fines content encountered below 11' sample depth
VB-DA20-09	DA04-R106	Between 2nd and 3rd reef. Partially mined, limited data available.	10W	954521	493915	-36.6	5	9.0% fines content encountered below 5' sample depth
VB-DA20-10	DA03-R106	Apparent large sand flat between 1st and 2nd reef. No data.	5E	951207	494669	-23.3	3	8.0% fines content encountered below 3' sample depth

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-11	DA04-R101	Gap in 3rd reef. No data.	13W	954657	496672	-39.8	6	0.23 mm mean grain size and 14.7% fines content encountered below 6' sample depth
VB-DA20-12	DA04-R101	Gap in 3rd reef. No data.	12S	955646	497244	-42.6	6	7.5% fines content encountered below 6' sample depth
VB-DA20-13	DA04-R101	Gap in 3rd reef. No data.	14E	954846	497708	-38.5	5	10.2% fines content encountered below 5' sample depth
VB-DA20-14	DA03-R097A	Between 1st and 2nd Reef. Apparent sand flats, no data.	17E	949496	499623	-19.3	6	7.1% fines content encountered below 6' sample depth
VB-DA20-15	DA04-R101	Gap in 3rd reef. No data.	11N	954664	499858	-36.8	8	9.2% fines content encountered below 8' sample depth

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-16	DA03-R097A	Between 1st and 2nd Reef. Apparent sand flats, no data.	18W	950541	501640	-22.4	6	Compatible sediment encountered up to maximum sample depth of 6'
VB-DA20-17	DA03-R097B	Between 2nd and 3rd reefs. Limited data from 1990s. Previously mined.	15N	954226	503282	-46.3	4	13.2% fines content encountered below 4' sample depth
VB-DA20-18	DA03-R094	Gap in 3rd reef with no data or constraints.	21E	955077	503761	-43.1	4	11.4% fines content encountered below 4' sample depth
VB-DA20-19	DA03-R094	Gap in 3rd reef with no data or constraints.	155N	954543	504578	-47.0	4	9.1% fines content encountered below 4' sample depth
VB-DA20-20	DA03-R094	Gap in 3rd reef with no data or constraints.	23E	955471	505755	-48.0	4	8.1% fines content encountered below 4' sample depth

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-21	DA03-R094	Gap in 3rd reef with no data or constraints.	155N	954534	505808	-47.9	1	0.80 mm mean grain size and 11.7% fines content encountered below 1' sample depth
VB-DA20-22	DA03-R094	Gap in 3rd reef with no data or constraints.	155N	954553	506785	-48.5	2	8.7% fines content encountered below 2' sample depth
VB-DA20-23	DA03-R081	Gap in 3rd reef with no data or constraints.	155N	954541	508781	-51.2	1	0.25 mm mean grain size and 14.0% fines content encountered below 1' sample depth
VB-DA20-24	DA01-R090	Open area with no data.	28-27S	949799.7	509597.1	-28.1	0	22.3% fines content
VB-DA20-25	DA03-R081	Gap in 3rd reef with no data or constraints.	155N	954564	510792	-55.4	0	11.2% fines content

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-26	DA02-R082	Continued sand flat south of government cut with no constraints and no data.	30W	948738	512722	-30.5	1	10.6% fines content encountered below 1' sample depth
VB-DA20-27	DA02-R082	Continued sand flat south of government cut with no constraints and no data.	30W	950686	512727	-30.0	5	Compatible sediment encountered up to maximum sample depth of 5'
VB-DA20-28	DA04-R088	Long, Longitudinal area between 2nd & 3rd reefs with no data or constraint.	25W	954260	513700	-46.1	9	8.9% fines content encountered below 9' sample depth
VB-DA20-29	DA04-R088	Long, Longitudinal area between 2nd & 3rd reefs with no data or constraint.	26E	955225	514703	-47.7	8	9.5% fines content encountered below 8' sample depth
VB-DA20-30	DA02-R079	South of Government Cut, no constraints, no data, sand flat and mounds.	32N	949186	515356	-21.1	1	23.8% fines content encountered below 1' sample depth

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-31	DA02-R079	South of Government Cut, no constraints, no data, sand flat and mounds.	37E	945482.1	515710.7	-19.0	0	29.0% fines content
VB-DA20-32	DA03-R078	Offshore of Government Cut. No constraints, no data.	40E	953693	517934	-27.8	0	Limestone encountered near surface
VB-DA20-33	DA01-R073E	North of Government Cut ebb shoal and other non-constrained areas.	51N	950219	520080	-30.0	6	Compatible sediment encountered up to maximum sample depth of 6'
VB-DA20-34	DA01-R073E	North of Government Cut ebb shoal and other non-constrained areas.	50S	949165	521688	-26.0	0	35.8% gravel content, 1.92 mm mean grain size
VB-DA20-35	DA01-R073W	North of Government Cut ebb shoal and other non-constrained areas.	48N	946046	522300	-18.9	8	Compatible sediment encountered up to maximum sample depth of 8'

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-36	DA01-R073E	North of Government Cut ebb shoal and other non-constrained areas.	60W	950196	524956	-28.7	7	Compatible sediment encountered up to maximum sample depth of 7'
VB-DA20-37	DA01-R068	transverse area north of government cut with no data or buffers.	62S	946539.6	526521.2	-26.3	0	Limestone gravel encountered near surface
VB-DA20-38	DA01-R068	Between 2nd and 3rd reefs. No buffers, no data.	62S	949467	531077	-26.6	4	Compatible sediment encountered up to maximum sample depth of 4'
VB-DA20-39	DA02-R059	Open area with no data.	65E	954382.2	536518.3	-49.9	5	Compatible sediment encountered up to maximum sample depth of 5'
VB-DA20-40	DA02-R059	Area outside of buffers between 2nd and 3rd reef, no data.	64S	954772	537464	-50.4	2	Compatible sediment encountered up to maximum sample depth of 2'

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-41	DA01-R055	Open area with no data.	67W	954304.6	540981.8	-48.4	6	10.9% fines content encountered below 6' sample depth
VB-DA20-42	DA01-R051	Between 2nd and 3rd reefs. No buffers, no data.	68S	953875	543948	-44.7	10	Compatible sediment encountered up to maximum sample depth of 10'
VB-DA20-43	DA01-R051	Between 2nd and 3rd reefs. No buffers, no data.	69W	953678	545054	-47.2	8	Compatible sediment encountered up to maximum sample depth of 8'
VB-DA20-44	DA01-R051	Between 2nd and 3rd reefs. No buffers, no data.	68S	953368	546228	-51.6	0	8.7% fines content
VB-DA20-45	DA01-R043	Between 2nd and 3rd reefs, overlaps some previous investigation areas.	70S	955344.2	552394.3	-66.2	0	11.9% fines content
VB-DA20-46	DA01-R038	Between 2nd and 3rd reef, gap in buffers, no data.	71S	953523	557900	-51.4	0	12.3% fines content

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-47	DA01-R036	Between 2nd and 3rd reef, gap in buffers, no data.	72S	953580	561936	-51.9	0	10.6% fines content
VB-DA20-48	DA02-R032	Between 2nd and 3rd reef. No previous data.	74S	954594	564607	-63.3	0	11.7% fines content, 0.16 mm mean grain size
VB-DA20-49	DA02-R032	Between 2nd and 3rd reef. No previous data.	74S	954649	566754	-65.7	0	13.2% fines content, 0.16 mm mean grain size
VB-DA20-50	DA00-R026	Bakers Haulover ebb shoal area.	76N	947405	571188	-14.8	7	10.5% fines content encountered below 7' sample depth
VB-DA20-51	DA02-R018	Between 2nd and 3rd reefs. Partially previously used borrow area?	83N	955094	578224	-66.9	0	0.21 mm mean grain size
VB-DA20-52	DA01-R017	Large sand flat between 2nd and 3rd reefs.	82S	953252	578784	-47.6	3	12.5% fines content encountered below 3' sample depth
VB-DA20-53	DA02-R013	Between 2nd and 3rd reefs. ROSSI cores show good (previously used?) sand.	84N	954771	583356	-63.1	0	12.4% fines content, 0.21 mm mean grain size

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-54	DA01-R017	Large sand flat between 2nd and 3rd reefs.	82S	952912	585159	-44.9	3	7.6% fines content encountered below 3' sample depth
VB-DA20-55	DA02-R013	Between 2nd and 3rd reefs. ROSSI cores show good (previously used?) sand.	84N	954568	585883	-65.4	0	10.0% fines content
VB-DA20-56	DA01-R009	Sand flat area between 2nd and 3rd reefs. No buffers.	89W	952594	589046	-45.6	12	10.1% sample depth encountered below 12' sample depth
VB-DA20-57	DA01-R009	Sand flat area between 2nd and 3rd reefs. No buffers.	88-87S	952469	590279	-44.7	8	1.03 mm mean grain size and 15.9% gravel content encountered below 8' sample depth
VB-DA20-58	DA01-R002	Sand flat between 2nd and 3rd reef, gap in 3rd reef.	92-91S	954345	597542	-59.7	4	Compatible sediment encountered up to maximum sample depth of 4'

Boring Name	Investigation Area Name	Investigation Area Comments	Geophysical Track Line	Easting (feet)	Northing (feet)	Elevation NAVD88 (feet)	Depth of Beach Compatible Sediment (feet)	Compatibility Description
VB-DA20-59	DA01-R002	Gap in third reef.	93W	955078.1	599273.3	-65.1	2	0.21 mm mean grain size and 8.5% fines content encountered below 2' sample depth

4.0 VIBRACORE LOGGING AND SAMPLE ANALYSIS

Once retrieved onto the drilling vessel, the driller cut vibracores into sections of five feet or less, capped, taped, labeled, and prepared for delivery to Taylor Engineering's Coastal Geosciences Laboratory in Jacksonville, Florida. Upon arrival at the Jacksonville laboratory, Taylor Engineering cut vibracore sections into halves and prepped cores for logging, photography, sampling, testing, and archiving.

4.1 Boring Logs and Photographs

Taylor Engineering photographed and logged all vibracores concurrently. Taylor Engineering then provided draft logs to the government technical point of contact (TPOC) for review. Following initial review of draft boring logs, the government TPOC visited Taylor Engineering's laboratory to inspect the cores in person. **Appendix D** contains the final boring logs and vibracore photographs.

4.2 USACE Testing Assignments

After physical inspection and verification of draft boring logs, the government TPOC provided Taylor Engineering a testing assignment, defining which intervals to sample and which tests to complete per sample.

4.3 Sieve Analysis

Following the USACE testing assignment, lab representatives sampled cores at the requested intervals. Lab representatives evaluated samples by Sieve Analysis (using Sieve Sizes 3/4", 3/8", 3.5, 4, 5, 7, 10, 14, 18, 25, 35, 45, 60, 80, 120, 170, 200, 230) per American Society for Testing of Materials (ASTM) D 6913 with visual shell determination and moist Munsell color determination. **Appendix C** summarizes the individual samples tested, the results, and potential beach compatibility. **Appendix D** presents individual granulometric tables and grain size distribution curves for each sample.

4.4 Calcium Carbonate Analysis

Lab representatives completed carbonate content analysis on government TPOC specified samples using the non-ASTM, Twenhofel and Tyler method. The TPOC requested approximately 8% of the sieved samples for carbonate content analysis. Carbonate content ranged from 92.4% to 99.5% with an average value of 97.3%. **Appendix C** includes the individual carbonate contents of the tested samples.

4.5 Post-Carbonate Re-Sieves

Post-carbonate re-sieves were conducted on all 19 carbonate burn samples. The average mean grain size of post-carbonate re-sieve samples decreased by 54% from 0.52 mm to 0.24 mm. This large decrease in mean grain size is representative of the fraction of shell and shell hash present in the carbonate burn samples. **Appendix D** contains individual granulometric tables and grain size distribution curves for each post-carbonate re-sieve sample.

4.6 Data Archiving

Taylor Engineering logged all sediment data in gINT, utilizing a Jacksonville District-provided gINT template and database. Following completion of all laboratory investigations, lab representatives preserved the archive half of each vibracore in clear shrink wrap, placed them into wooden core boxes, and labeled the box with the project name, county, date, boring name, and depth intervals. Upon project

completion, Taylor Engineering delivered preserved vibracores in boxes to USACE South Atlantic – Jacksonville (SAJ) for storage and future reference.

5.0 INVESTIGATION RESULTS

5.1 Existing/Native Beach

Sediment used for beach nourishment must meet the design, siting, and other requirements of FDEP's Sand Rule (Florida Administrative Code 62B-41.007) which defines beach compatible fill as "material that maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system." The intent of this language is to define Native Beach Sediment as material existing within the coastal system at the fill placement site prior to the original beach restoration. The code also requires that beach fill material shall not contain:

- Greater than 5 percent, by weight, silt, clay or colloids passing the #230 sieve (4.0ϕ),
- Greater than 5 percent, by weight, fine gravel retained on the #4 sieve (-2.25ϕ),
- Coarse gravel, cobbles or material retained on the 3/4 inch sieve in a percentage or size greater than found on the native beach,
- Construction debris, toxic material or other foreign matter; and,
- Not result in cementation of the beach.

In addition to 62B-41.007 F.A.C. requirements above, Miami-Dade County has restricted previous beach nourishment projects to a median grain size of 0.3-0.55 mm and sediment with Munsell color values of 6 or higher.

5.2 Description of Encountered Sediments

Core borings consisted primarily of fine to medium-grained carbonate sand with varying amounts of shell, silt, and limestone gravel. Mean grain size ranged from 0.16 mm to 11.60 mm with an average mean grain size of 0.52 mm. Carbonate content ranged from 92.4% to 99.5% with an average value of 97.3%. Fines content (% passing #230 sieve) ranged from 1.2% to 34.7% with an average fines content of 9.2%. Gravel content (% retained #4 sieve) ranged from 0.0% to 84.3% with an average value of 3.2%. Visual shell content ranged from 0% to 10% with an average value of 1%. **Appendix B** contains the individual investigation area geological profiles. **Appendix C** summarizes all sediment sample laboratory testing results and the beach compatibility of each sample. A total of 34 of the 59 borings collected terminated in refusal in limestone. Depth of refusal ranged from 2.9 to 19.7 feet for all terminated borings.

5.3 Compatible Sediments Encountered

To determine the extent of compatible sediment, Taylor Engineering compared sediment testing results to the existing/native beach sediment requirements presented in **Table 5.1**. Taylor Engineering deemed sediment samples with results that met the existing/native beach requirements discussed in Section 5.1 as compatible, results that did not meet the existing/native beach requirements but were within an acceptable level of tolerance as potential, and samples that did not meet the requirements or fall within an acceptable level of tolerance as noncompatible. Due to the limited amount of sediment data, this reconnaissance level investigation identified sediment within a viable range of parameters that did not exactly meet beach compatibility requirements as potentially compatible (e.g., 5-7% silt). This investigation used samples designated as compatible and potential for potential sand sources

identification. Further investigations are necessary to elucidate the sediment compatibility within the potential sand sources designated by this reconnaissance level investigation report.

Table 5.1 Sediment Sample Beach Compatibility Parameters

Parameter	Compatible	Potential	Noncompatible
Moist Munsell Color	value ≥6	value ≥5 and <6	value <5
Gravel Content (% retained #4 sieve)	< 5%	5 - 10%	> 10%
Fines Content (% passing #230 sieve)	< 5%	5 - 7%	> 7%
Mean (mm)	0.3 - 0.55 mm	0.25 - 0.3 mm or 0.55 - 0.75 mm	< 0.25 mm or > 0.75 mm

5.4 Summary and Identification of Potential Sand Sources

Taylor Engineering identified potential sand sources based on the extent and depth of compatible and potential sediment in each core. The potential sand sources did not include investigation areas whose cores were not compatible and designated these areas as "Unusable." The potential sand sources designated investigation areas as "Potential" areas if their cores contained a minimum of five feet of compatible sediments. The depth of compatible sediment was determined using the maximum continuous extent of compatible sediment encountered in each investigation area. Taylor Engineering then subtracted a two-foot vertical buffer from the maximum depth of beach compatible sediment to estimate the volume within each potential sand source. Due to limited sediment data, Taylor Engineering calculated sand thicknesses and volumes using average depths over large potential sand sources with additional data, sediment thicknesses and volumes may increase or decrease.

This reconnaissance level investigation report identifies areas on the inner continental shelf offshore of Miami-Dade County for further exploration for potential beach compatible sediments. Many of the potential sand sources identified by this report contain only one boring with sediment data from this investigation. Due to the limited number and sparse spacing of borings within the investigation areas, further geotechnical investigations including additional borings are necessary to refine the potential sand source limits for final design. **Table 5.2** summarizes the depth of compatible sediment, estimated volume, the average depth of compatible sediment, and total estimated volume of potential beach quality material within the investigation areas and potential sand sources. Reported volumes only include areas with five feet or greater thickness of potential beach compatible material**. Figure 5.1** shows the regional location of investigation areas and potential sand sources. **Appendix A** contains maps of the investigation areas and the potential sand sources with volume estimates.

Table 5.2 Miami-Dade County Investigation Area Summary with Potential Sand Source Volumes

(Volumes are subject to change due to environmental restrictions, further geotechnical investigations, and other limiting factors.)

Investigation Area	Vibracores within Investigation Area (listed North to South)	Figure Location (Appendix A)	Average Sand Thickness (feet)		Potential Sand Source Volume (cubic yards) Buffer applied[2]
			Without Buffer	With 2-foot Buffer[1]	
DA01-R001	VB-DA20-59 VB-DA20-58	A-1	-	-	-
DA01-R009	VB-DA20-57 VB-DA20-56	A-3	12.9	10.9	490,390
DA01-R016	VB-DA20-54 VB-DA20-52	A-5	-	-	-
DA02-R019	VB-DA20-51	A-7	5.4	3.4	55,347
DA00-R025	VB-DA20-50	A-9	7.2	5.2	352,475
DA01-R051	VB-DA20-43 VB-DA20-42	A-16	8.1	6.1	443,490
DA01-R054	VB-DA20-41	A-17	5.7	3.7	103,263
DA01-R058	VB-DA20-40 VB-DA20-39	A-19	5.4	3.4	19,681
DA01-R066	VB-DA20-38	A-20	-	-	-
DA01-R072	VB-DA20-36 VB-DA20-34 VB-DA20-33	A-24	6.3	4.3	969,407
DA00-R073	VB-DA20-35	A-23	7.2	5.2	1,090,215
DA02-R081	VB-DA20-26 VB-DA20-27	A-27	6.3	4.3	152,282
DA03-R093	VB-DA20-22 VB-DA20-21 VB-DA20-20 VB-DA20-19 VB-DA20-18	A-31	-	-	-
DA04-R098	VB-DA20-15 VB-DA20-13 VB-DA20-12 VB-DA20-11	A-34	7.4	5.4	747,676
DA04-R109	VB-DA20-09 VB-DA20-08 VB-DA20-06 VB-DA20-03 VB-DA20-02	A-35	7.5	5.5	494,269

Investigation Area	Vibracores within Investigation Area (listed North to South)	Figure Location (Appendix A)	Average Sand Thickness (feet)		Potential Sand Source Volume (cubic yards) Buffer applied[2]
			Without Buffer	With 2-foot Buffer[1]	
DA02-R095	VB-DA20-16 VB-DA20-14	A-33	5.6	3.6	223,684
DA02-R109	VB-DA20-10 VB-DA20-07 VB-DA20-05 VB-DA20-04 VB-DA20-01	A-36	5.4	3.4	41,457
DA03-R094	VB-DA20-17 VB-DA20-15	A-32	7.2	5.2	332,504
DA01-R006	-	A-2	-	-	-
DA01-R013	VB-DA20-55 VB-DA20-53	A-4	-	-	-
DA01-R017	-	A-6	-	-	-
DA00-R023	-	A-8	-	-	-
DA01-R033	VB-DA20-49 VB-DA20-48	A-11	-	-	-
DA01-R036	VB-DA20-047	A-12	-	-	-
DA01-R039	VB-DA20-46	A-13	-	-	-
DA00-R027	VB-DA20-50	A-10	-	-	-
DA01-R043	VB-DA20-45	A-14	-	-	-
DA01-R050	VB-DA20-44	A-15	-	-	-
DA02-R054	-	A-18	-	-	-
DA00-R069	VB-DA20-37	A-21	-	-	-
DA00-R072	-	A-22	-	-	-
DA02-R076	VB-DA20-32	A-25	-	-	-
DA01-R077	VB-DA20-31 VB-DA20-30	A-26	-	-	-
DA03-R080	VB-DA20-29 VB-DA20-28	A-28	8.9	6.9	1,102,254
DA02-R082	VB-DA20-24	A-30	-	-	-
DA03-R081	VB-DA20-25 VB-DA20-23	A-29	-	-	-
Average/Total			7.1	5.1	6,618,402

[1]Due to limited sediment data, sand thicknesses and volumes were calculated using average depths over large "investigation Areas." With additional data, sediment thicknesses and volumes may increase or decrease.

[2]Volumes are only reported for potential sand sources which had an average of at least 5-feet of beach compatible sediment.

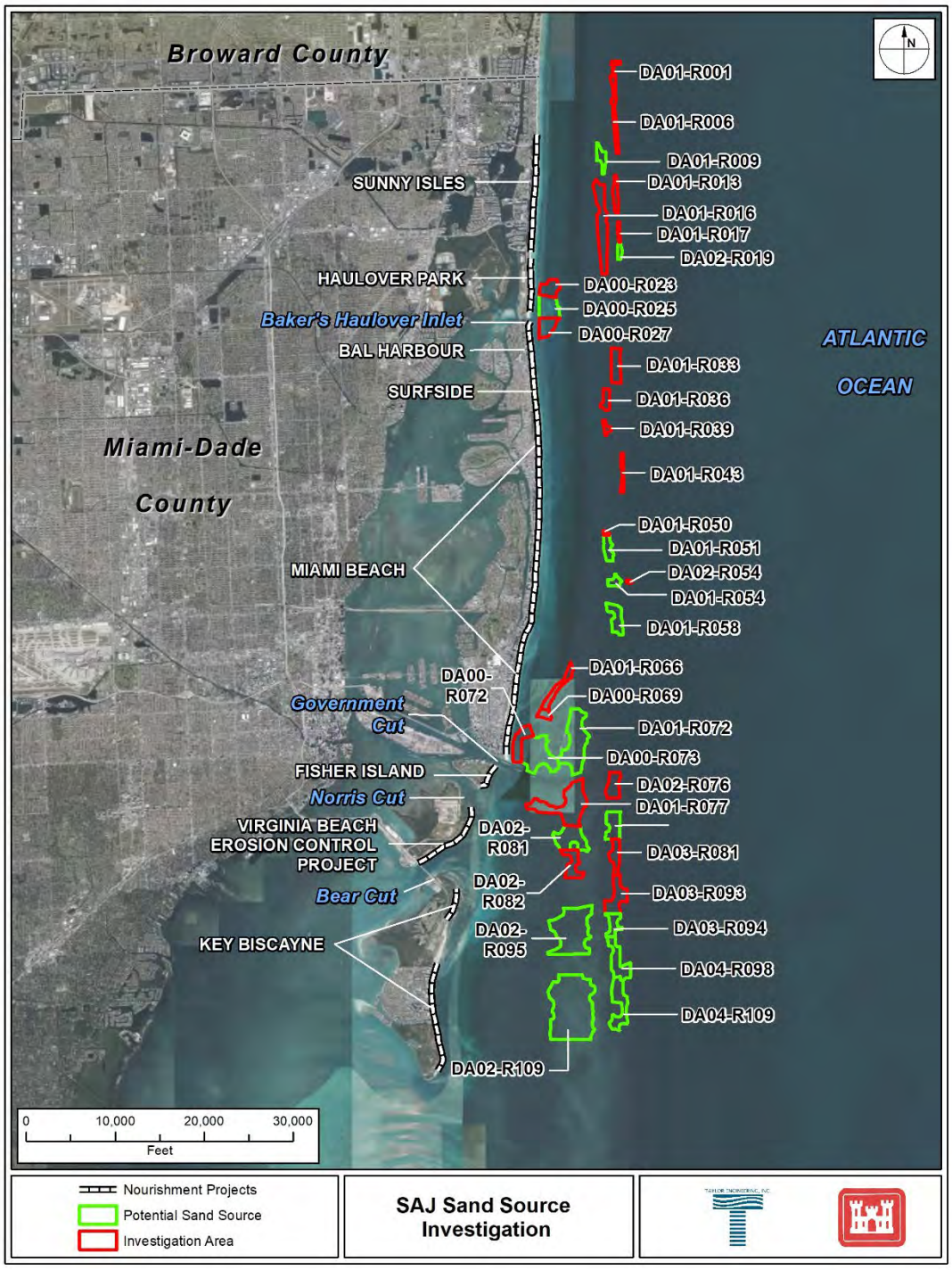


Figure 5.1 Locations of Investigation Areas and Potential Sand Sources

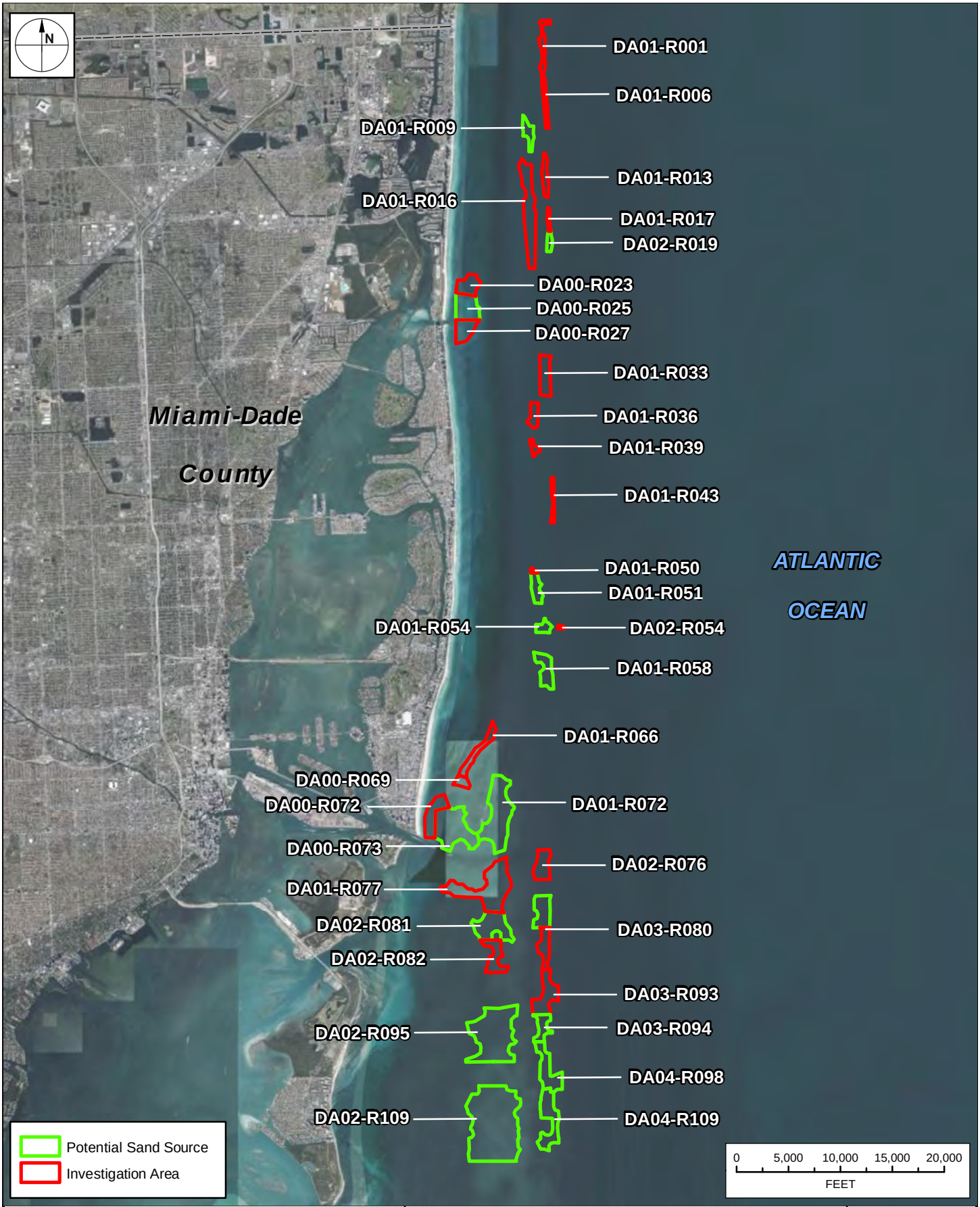
6.0 REFERENCES

Florida Department of Environmental Protection [FDEP]. 2010. *Offshore Sand Search Guidelines.* Bureau of Beaches and Coastal Systems.

Taylor Engineering. 2020. *South Atlantic Division (SAD) Sand Availability and Needs Determination (SAND) Study.* U.S. Army Corps of Engineers, Jacksonville District.

APPENDIX A

Investigation Area and Potential Sediment Source Maps with Volumes



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INVESTIGATION AREA AND POTENTIAL SEDIMENT
SOURCE MAPS WITH VOLUMES
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02
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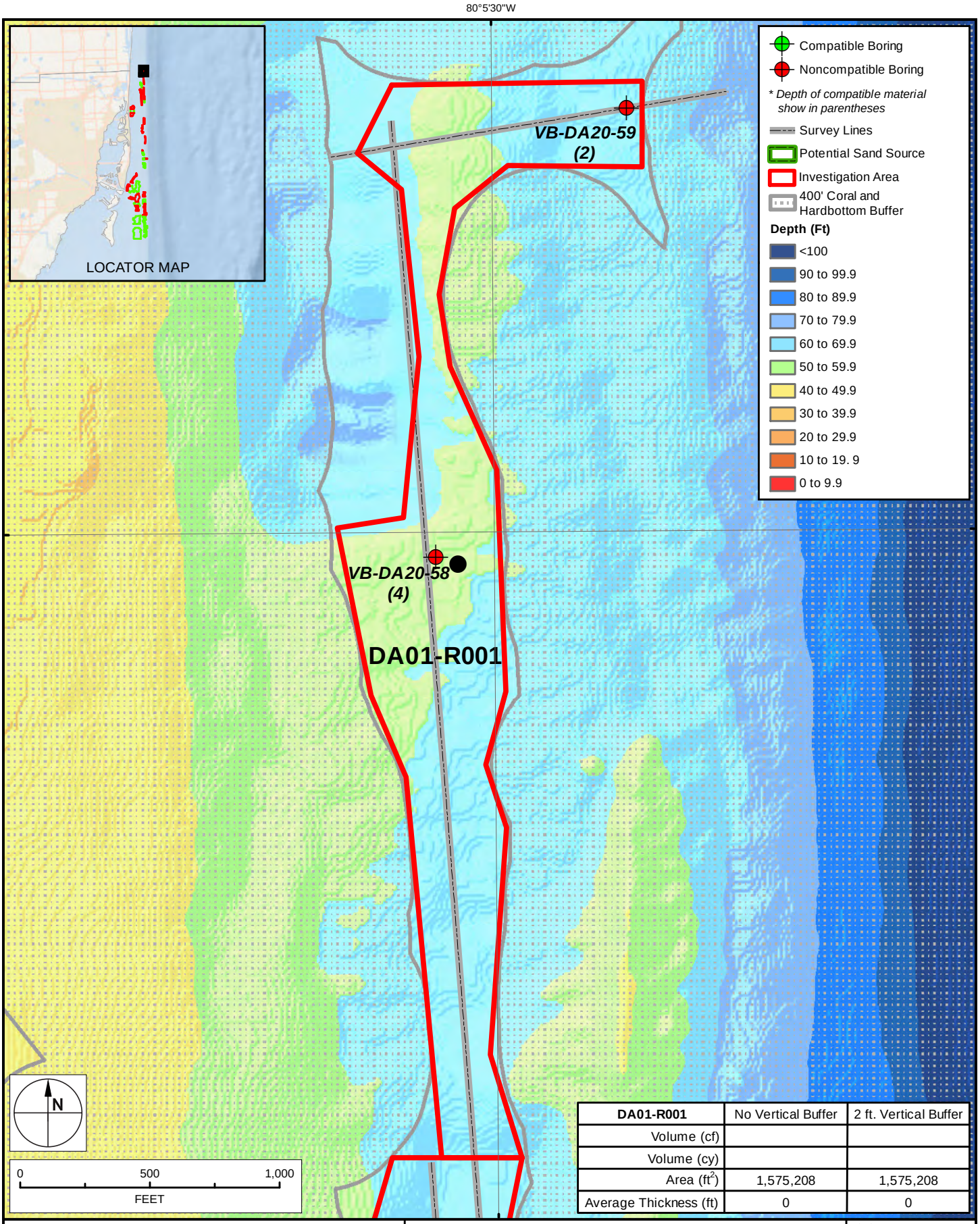

DA01-R001	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	1,575,208	1,575,208
Average Thickness (ft)	0	0

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FIGURE A-1
INVESTIGATION AREA DA01-R001
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

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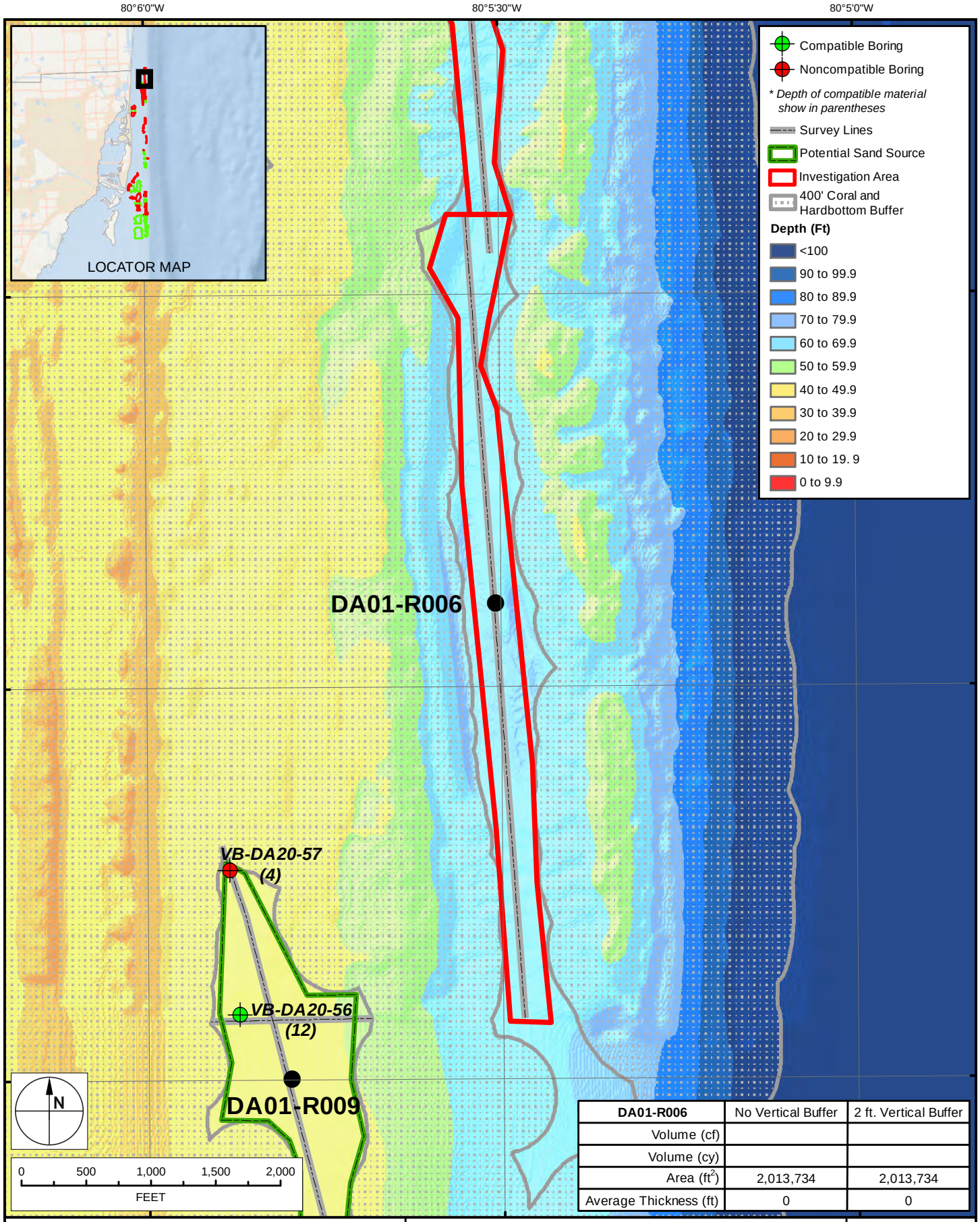

DA01-R006	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	2,013,734	2,013,734
Average Thickness (ft)	0	0

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FIGURE A-2
INVESTIGATION AREA DA01-R006
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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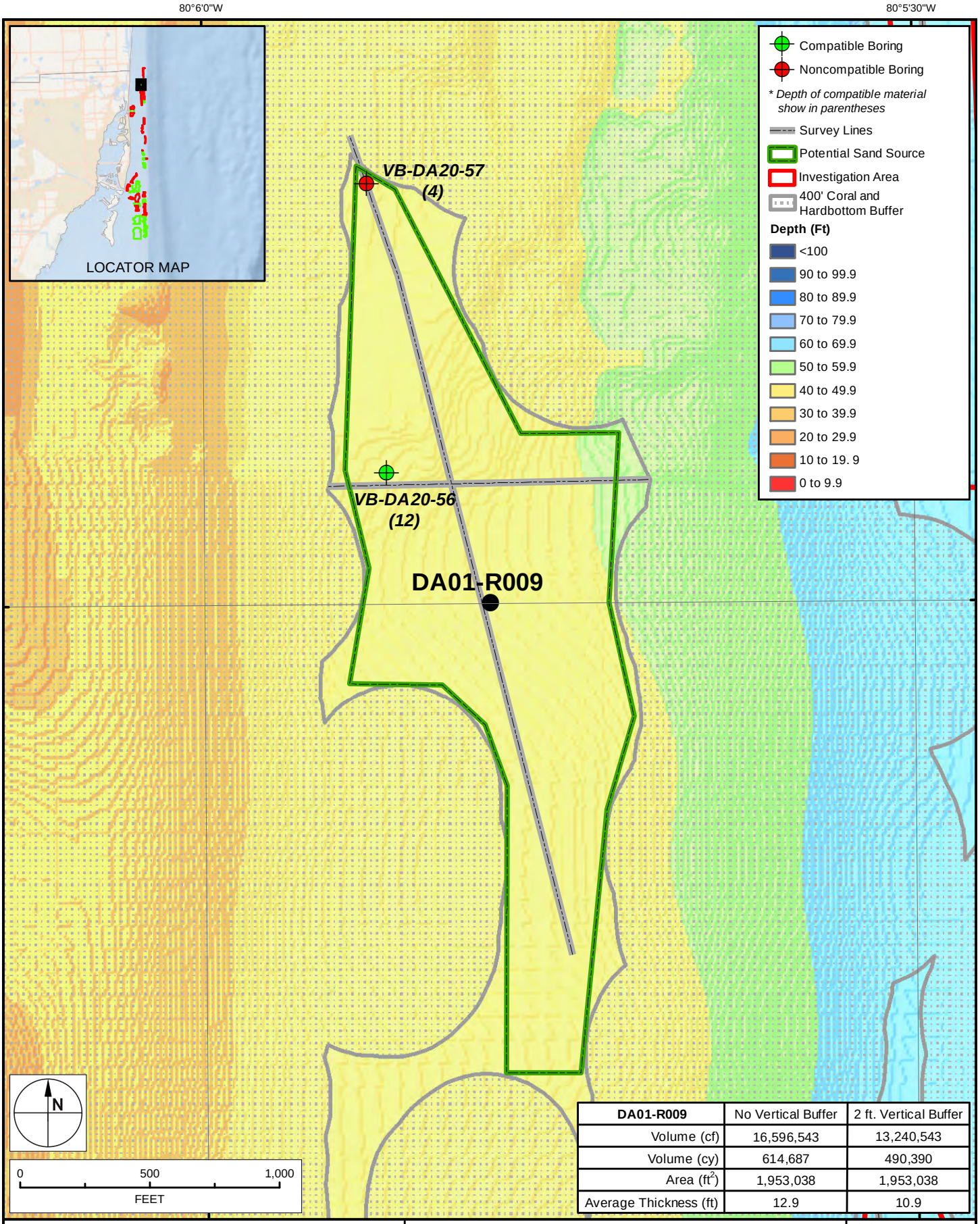

DA01-R009	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	16,596,543	13,240,543
Volume (cy)	614,687	490,390
Area (ft^2)	1,953,038	1,953,038
Average Thickness (ft)	12.9	10.9

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FIGURE A-3
POTENTIAL SAND SOURCE DA01-R009
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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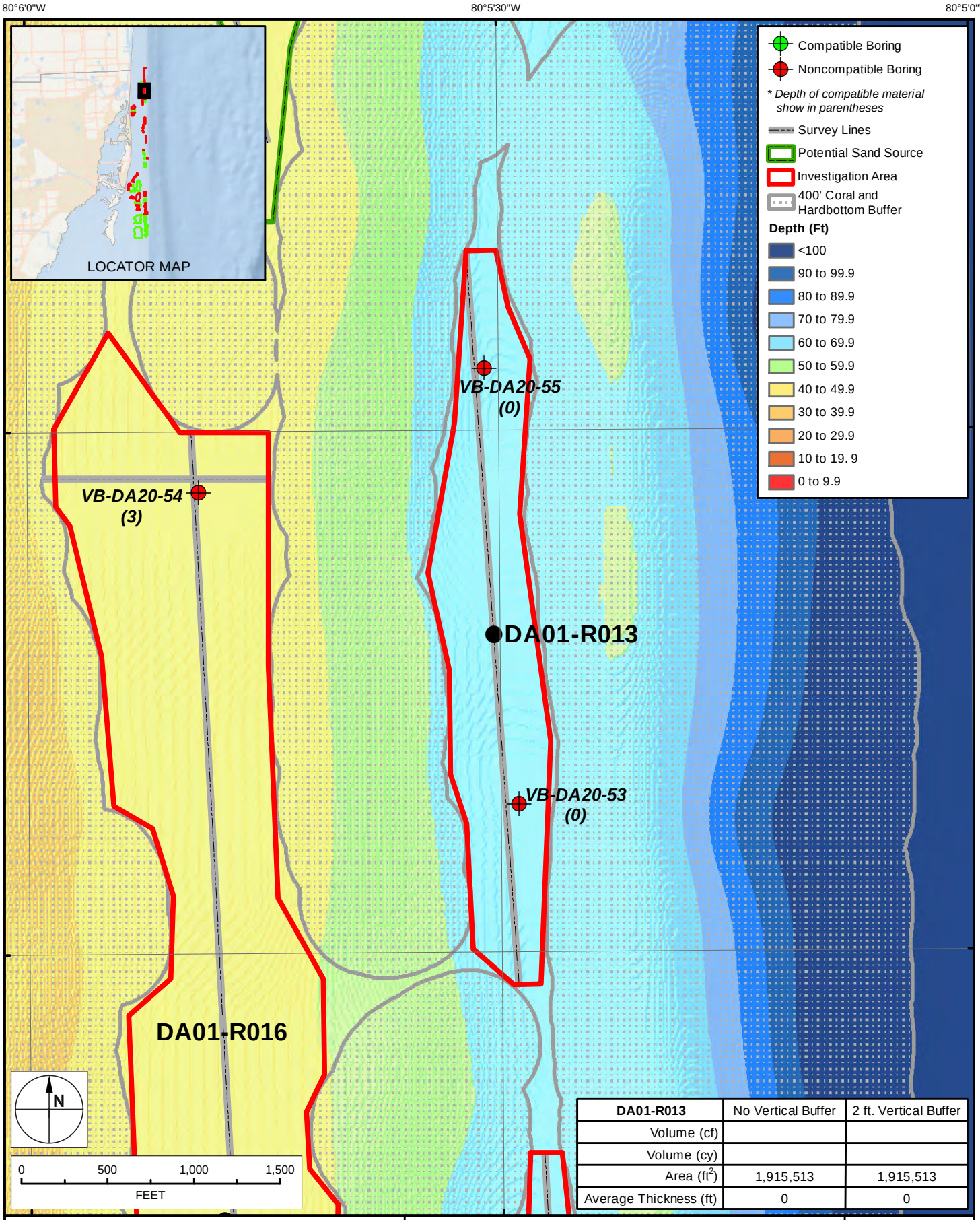

DA01-R013	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	1,915,513	1,915,513
Average Thickness (ft)	0	0

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FIGURE A-4
INVESTIGATION AREA DA01-R013
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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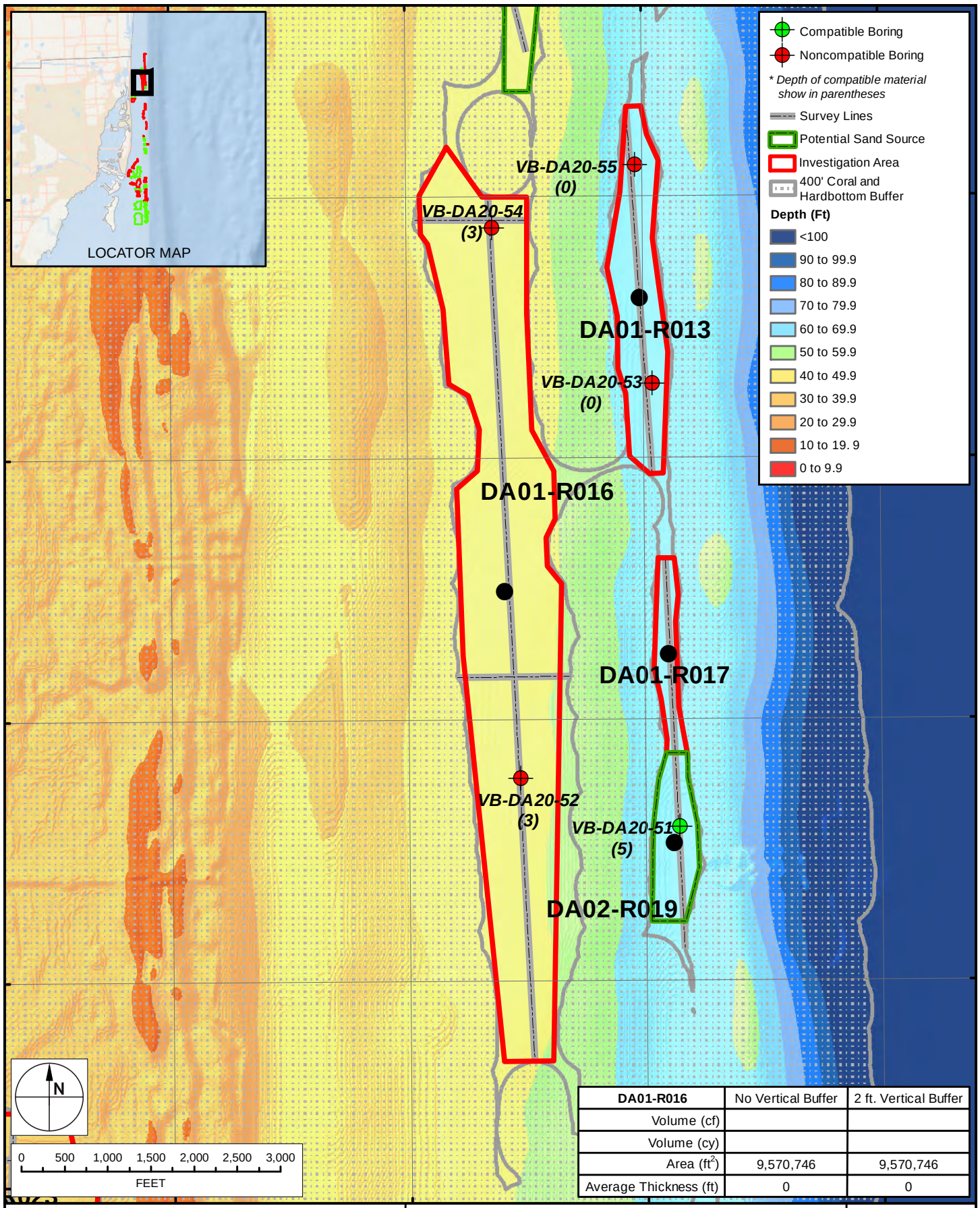

DA01-R016	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	9,570,746	9,570,746
Average Thickness (ft)	0	0

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FIGURE A-5
INVESTIGATION AREA DA01-R016
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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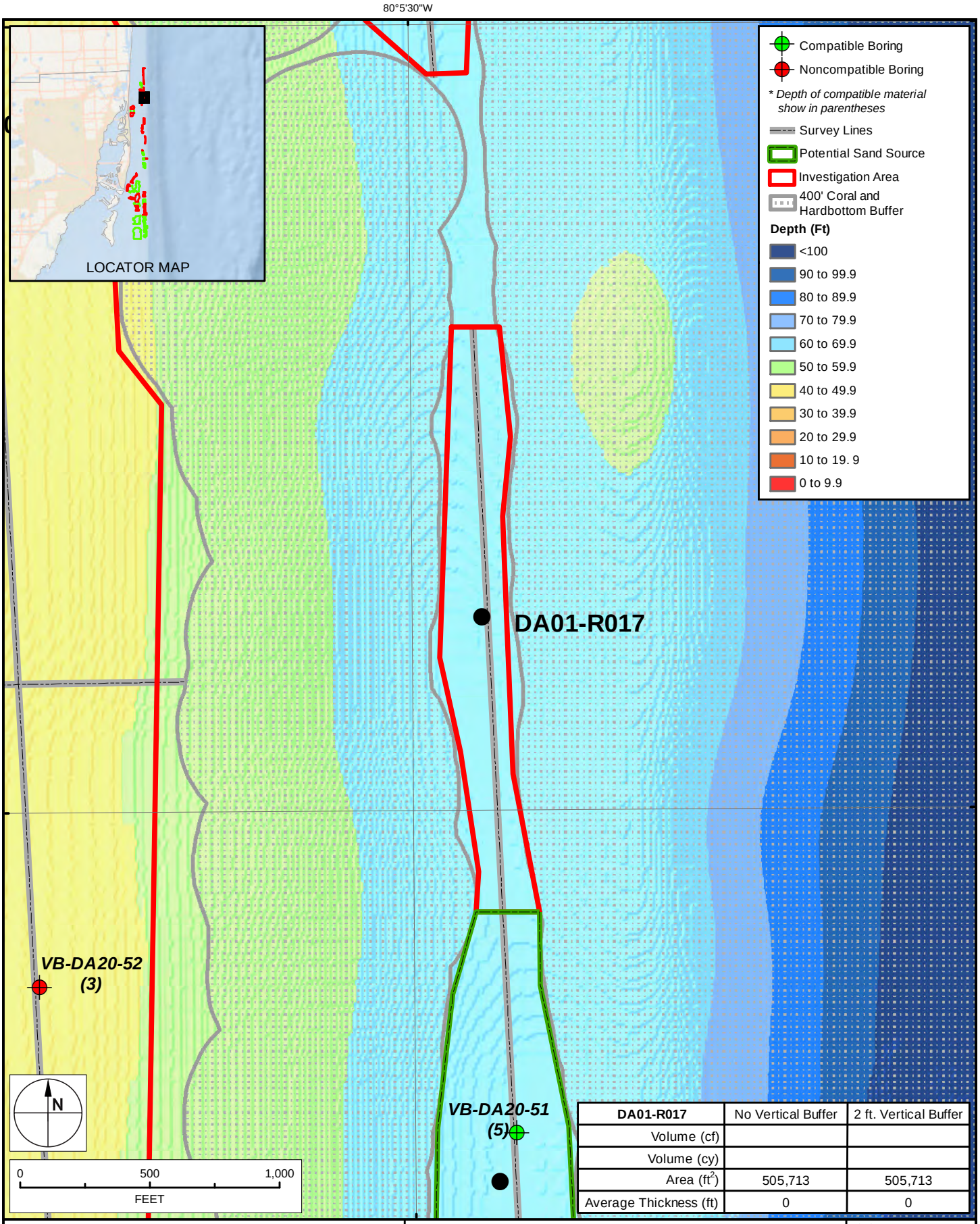

DA01-R017	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	505,713	505,713
Average Thickness (ft)	0	0

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FIGURE A-6
INVESTIGATION AREA DA01-R017
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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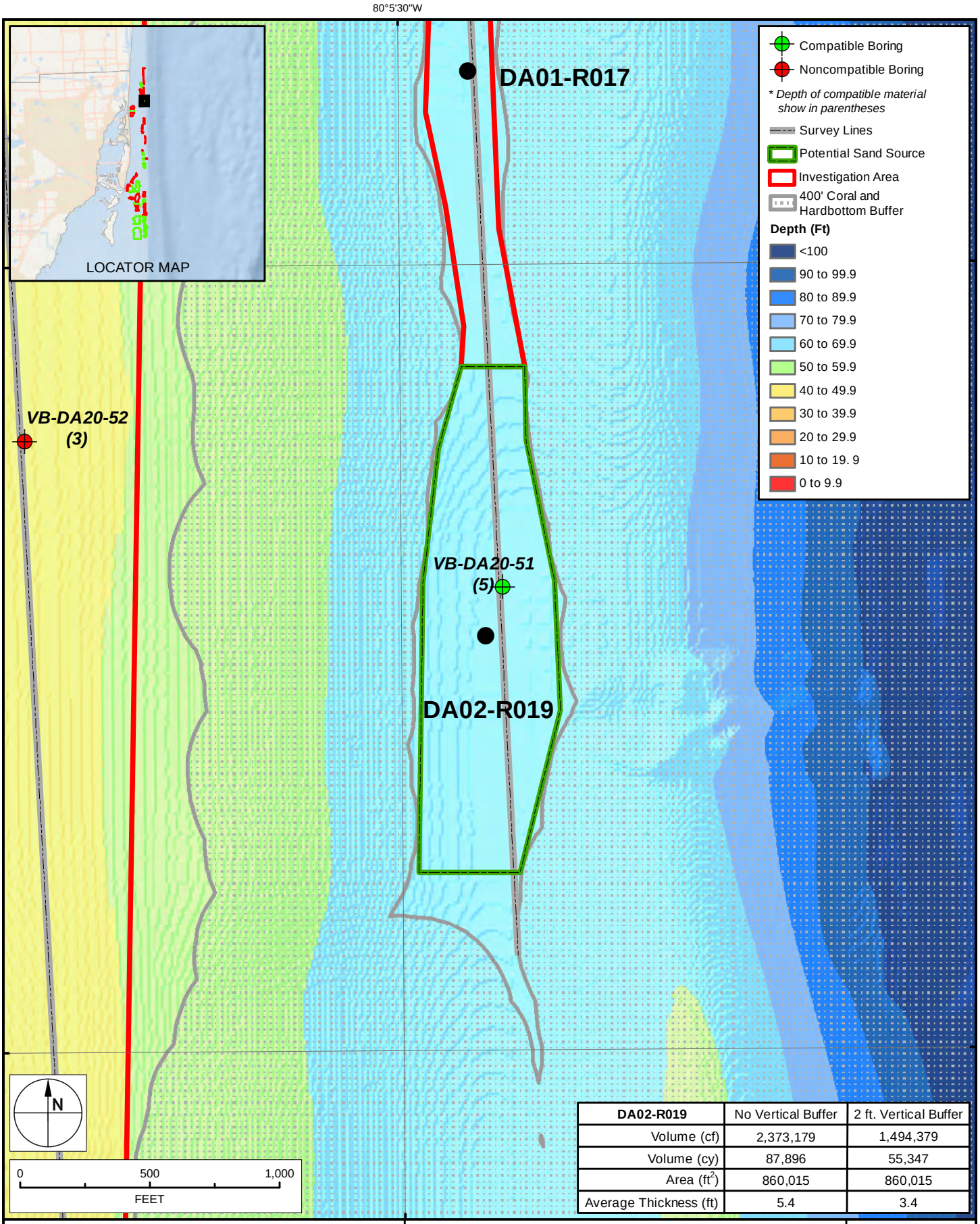

DA02-R019	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	2,373,179	1,494,379
Volume (cy)	87,896	55,347
Area (ft^2)	860,015	860,015
Average Thickness (ft)	5.4	3.4

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FIGURE A-7
POTENTIAL SAND SOURCE DA02-R019
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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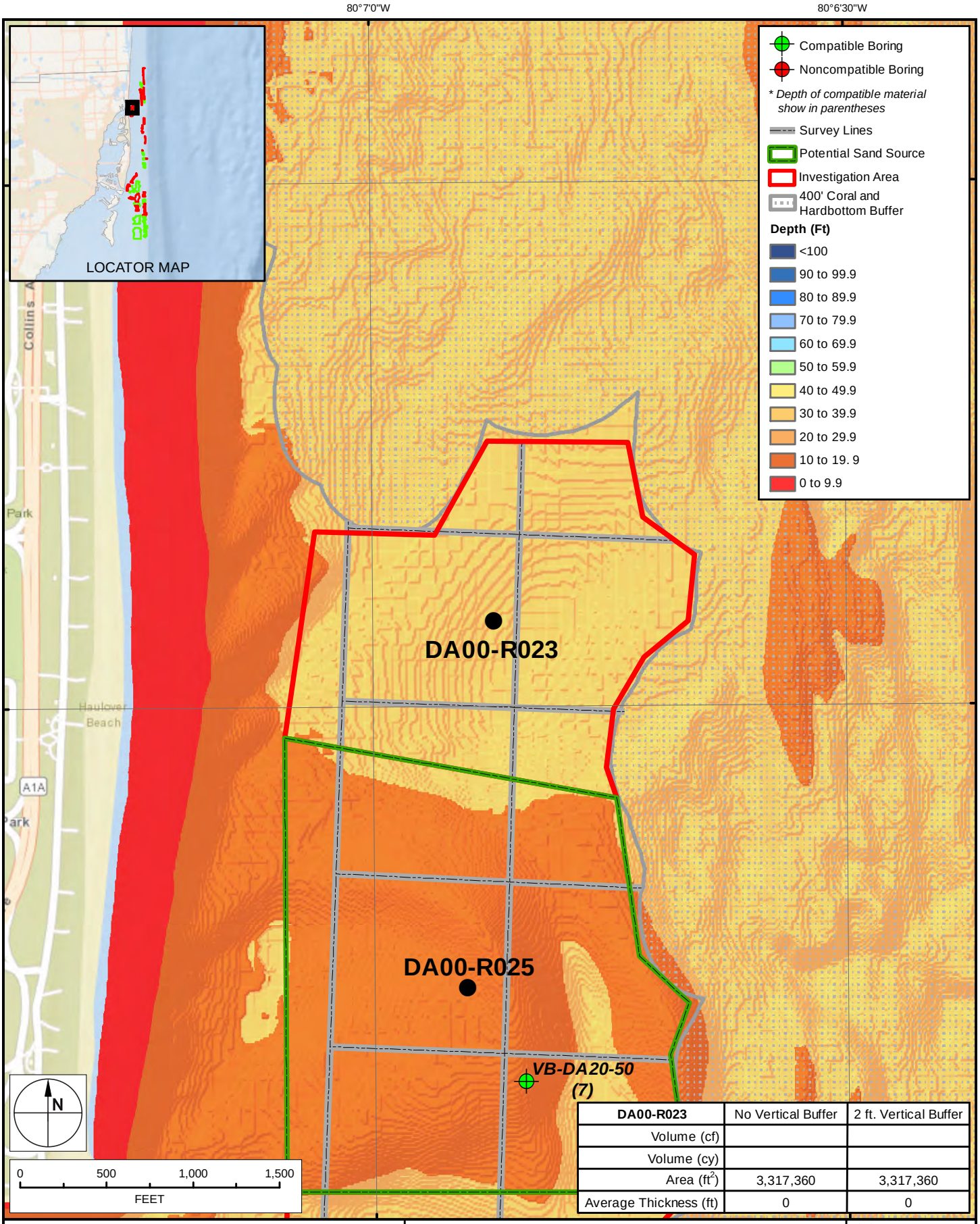

DA00-R023	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	3,317,360	3,317,360
Average Thickness (ft)	0	0

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FIGURE A-8
INVESTIGATION AREA DA00-R023
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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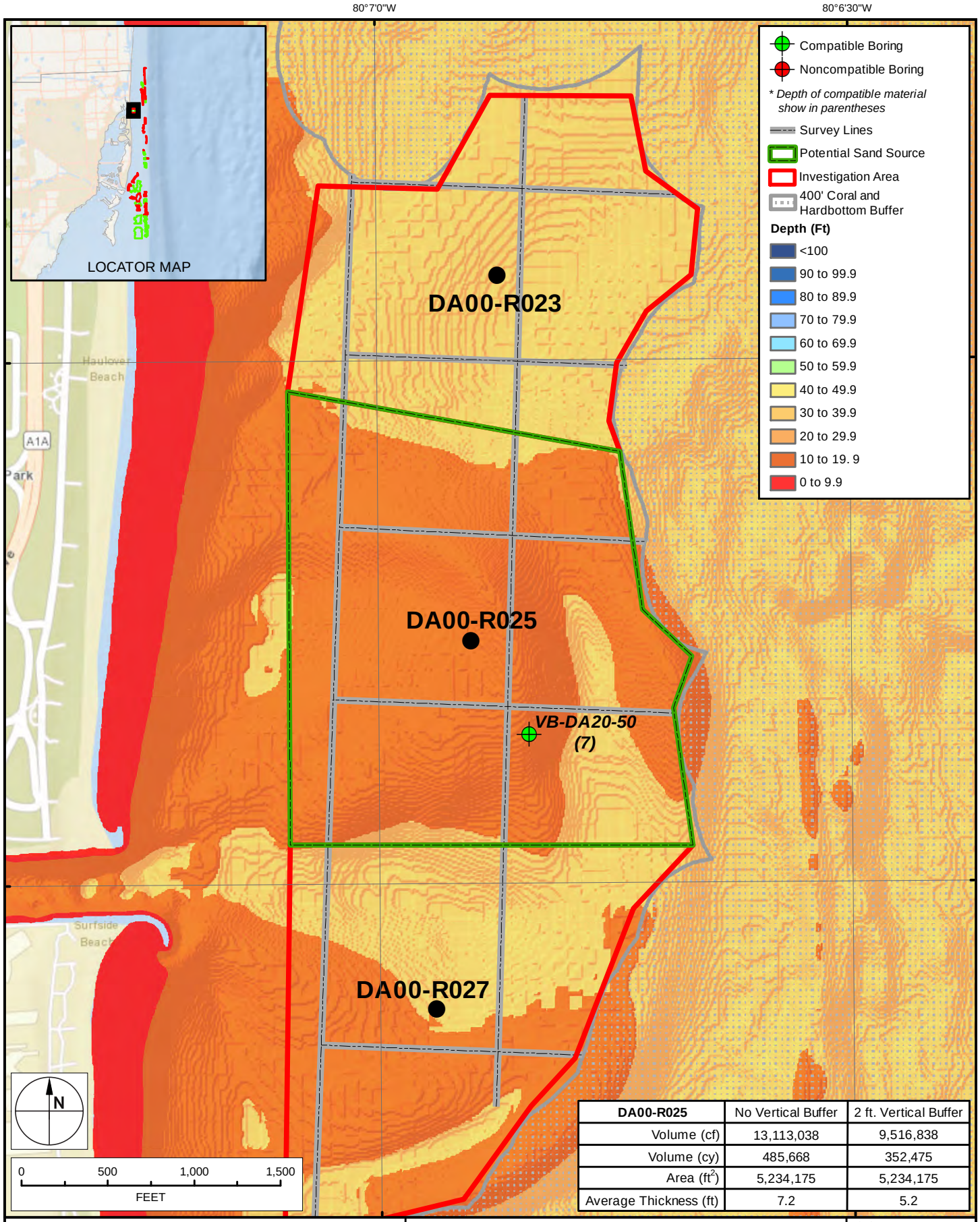

DA00-R025	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	13,113,038	9,516,838
Volume (cy)	485,668	352,475
Area (ft^2)	5,234,175	5,234,175
Average Thickness (ft)	7.2	5.2

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FIGURE A-9
POTENTIAL SAND SOURCE DA00-R025
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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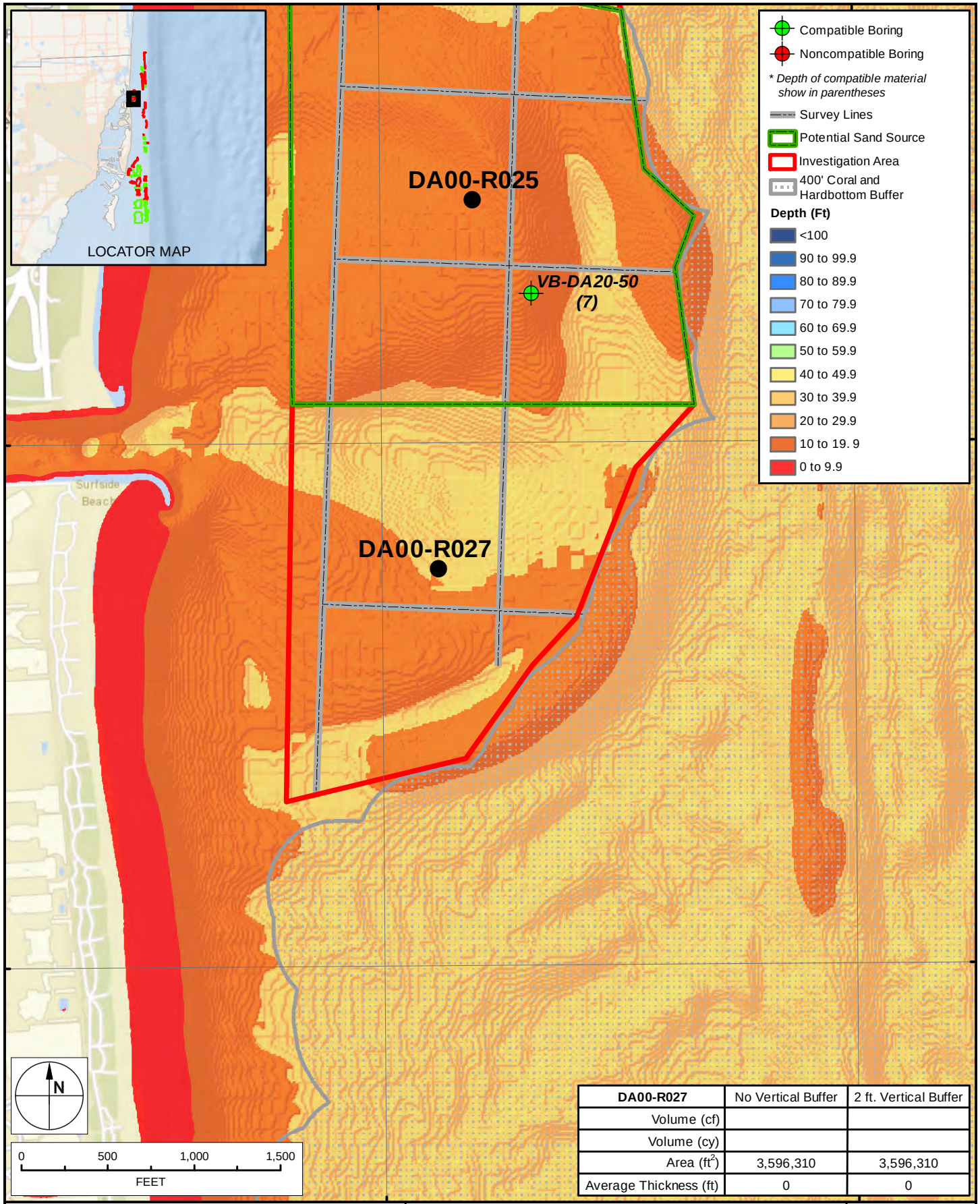

DA00-R027	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	3,596,310	3,596,310
Average Thickness (ft)	0	0

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FIGURE A-10
INVESTIGATION AREA DA00-R027
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
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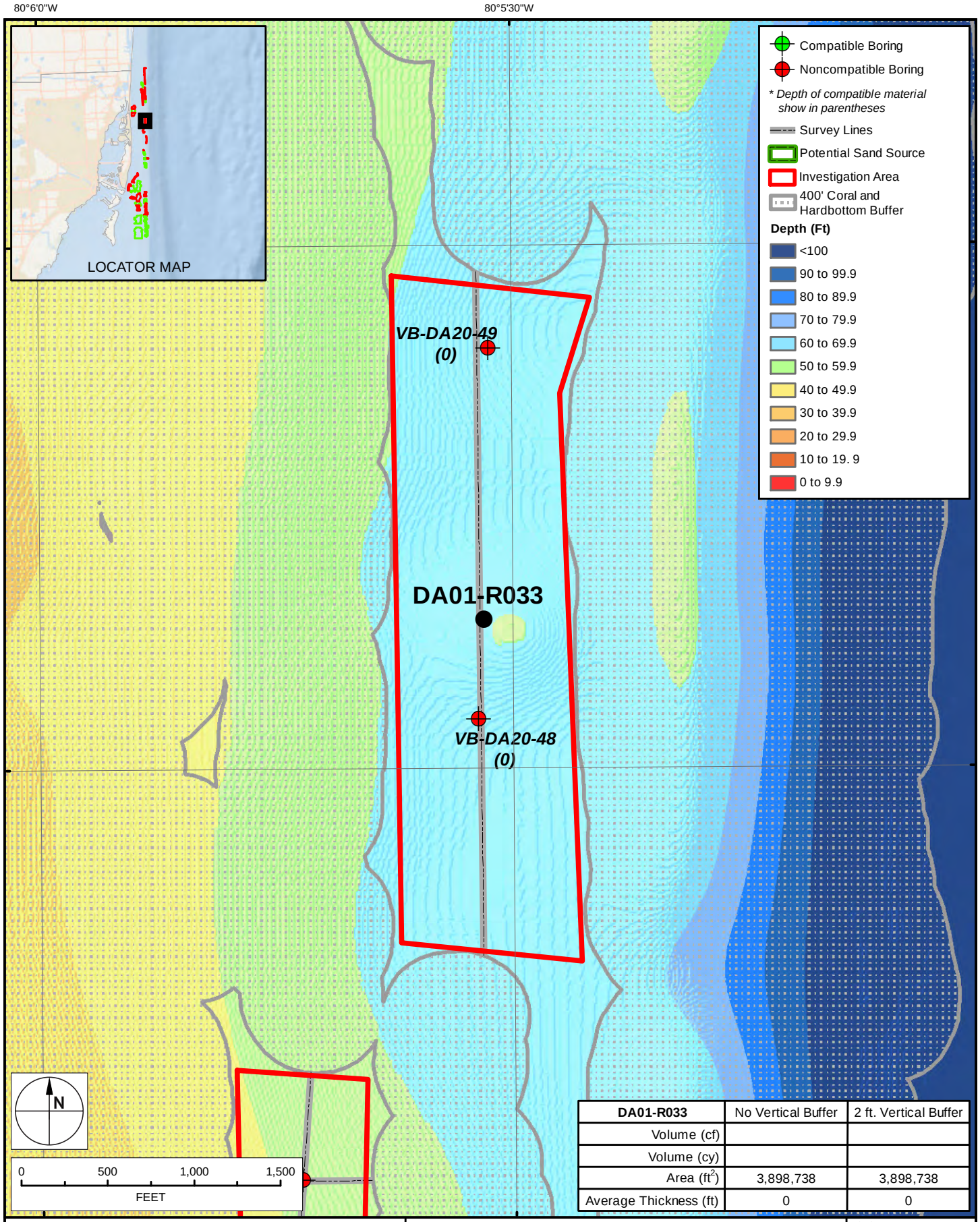

DA01-R033	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	3,898,738	3,898,738
Average Thickness (ft)	0	0

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FIGURE A-11
INVESTIGATION AREA DA01-R033
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
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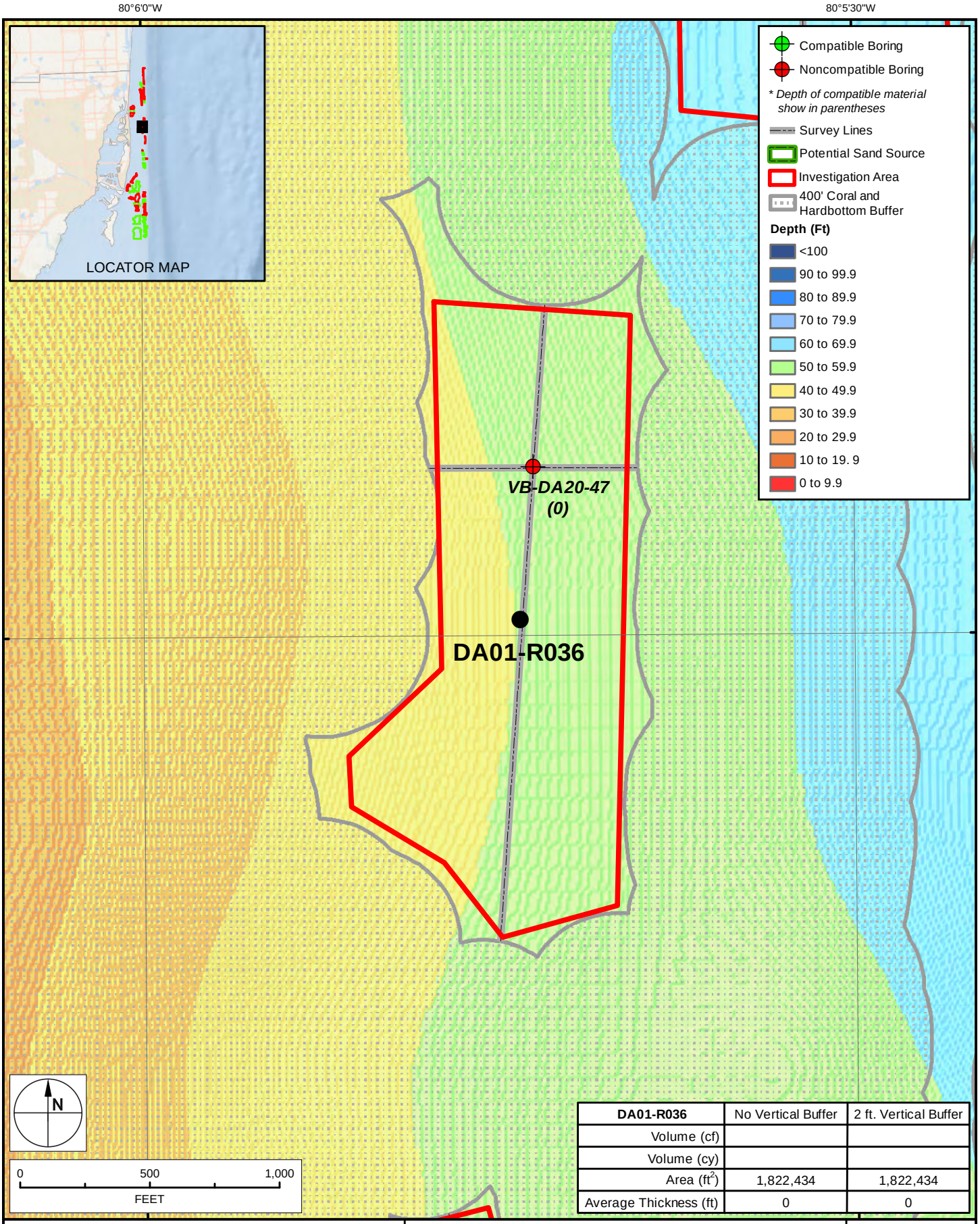

DA01-R036	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	1,822,434	1,822,434
Average Thickness (ft)	0	0

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FIGURE A-12
INVESTIGATION AREA DA01-R036
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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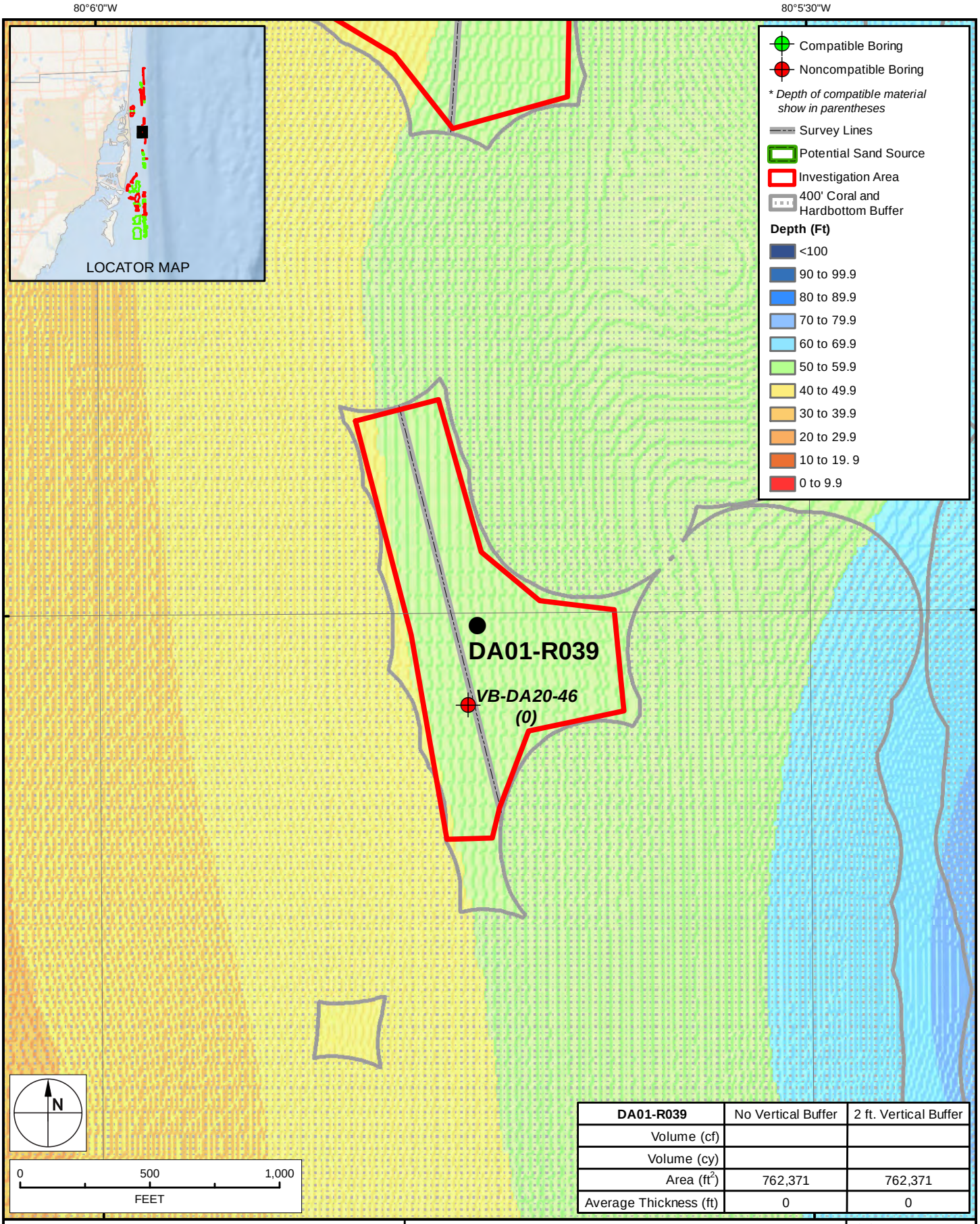

DA01-R039	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	762,371	762,371
Average Thickness (ft)	0	0

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FIGURE A-13
INVESTIGATION AREA DA01-R039
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

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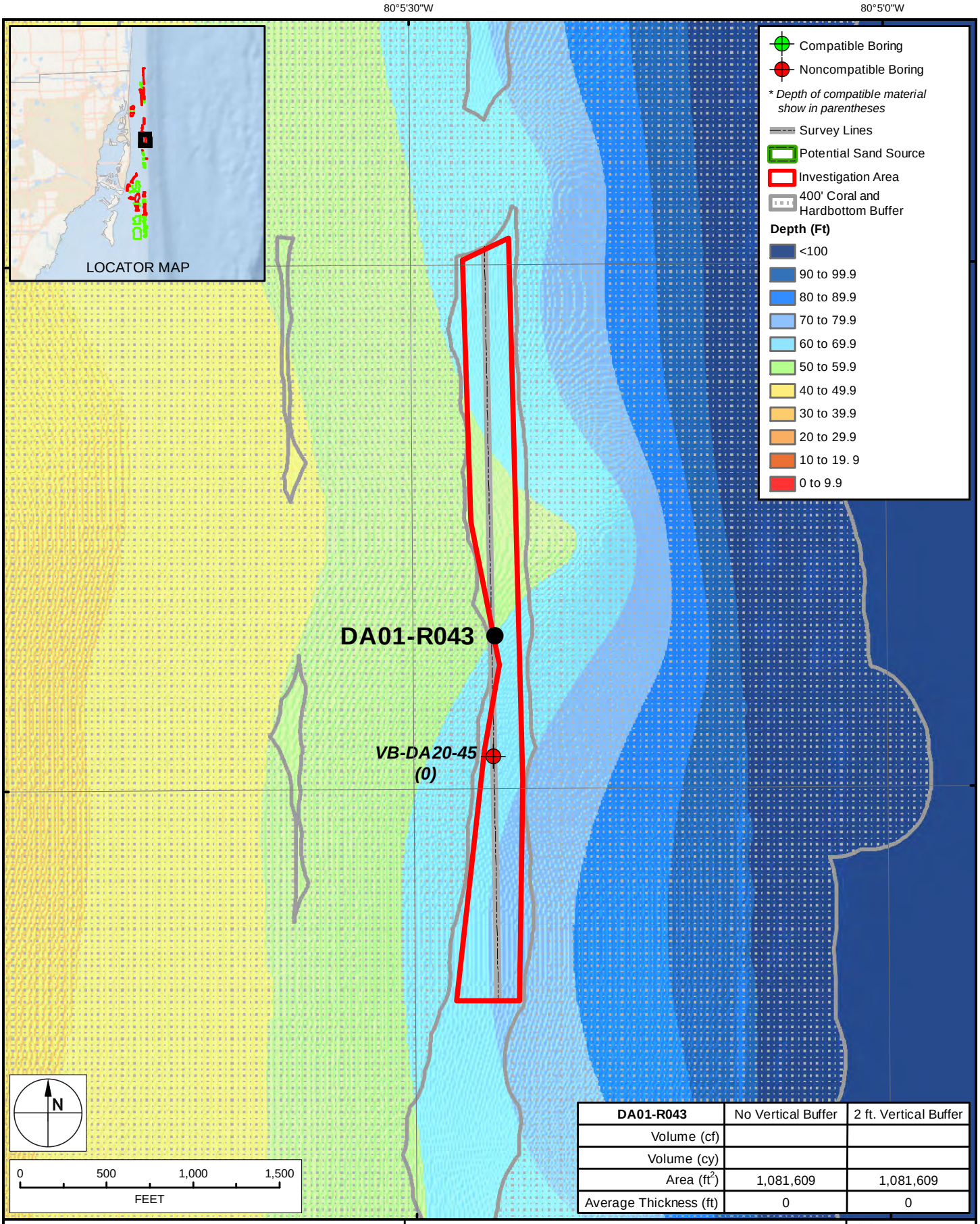

DA01-R043	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	1,081,609	1,081,609
Average Thickness (ft)	0	0

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FIGURE A-14
INVESTIGATION AREA DA01-R043
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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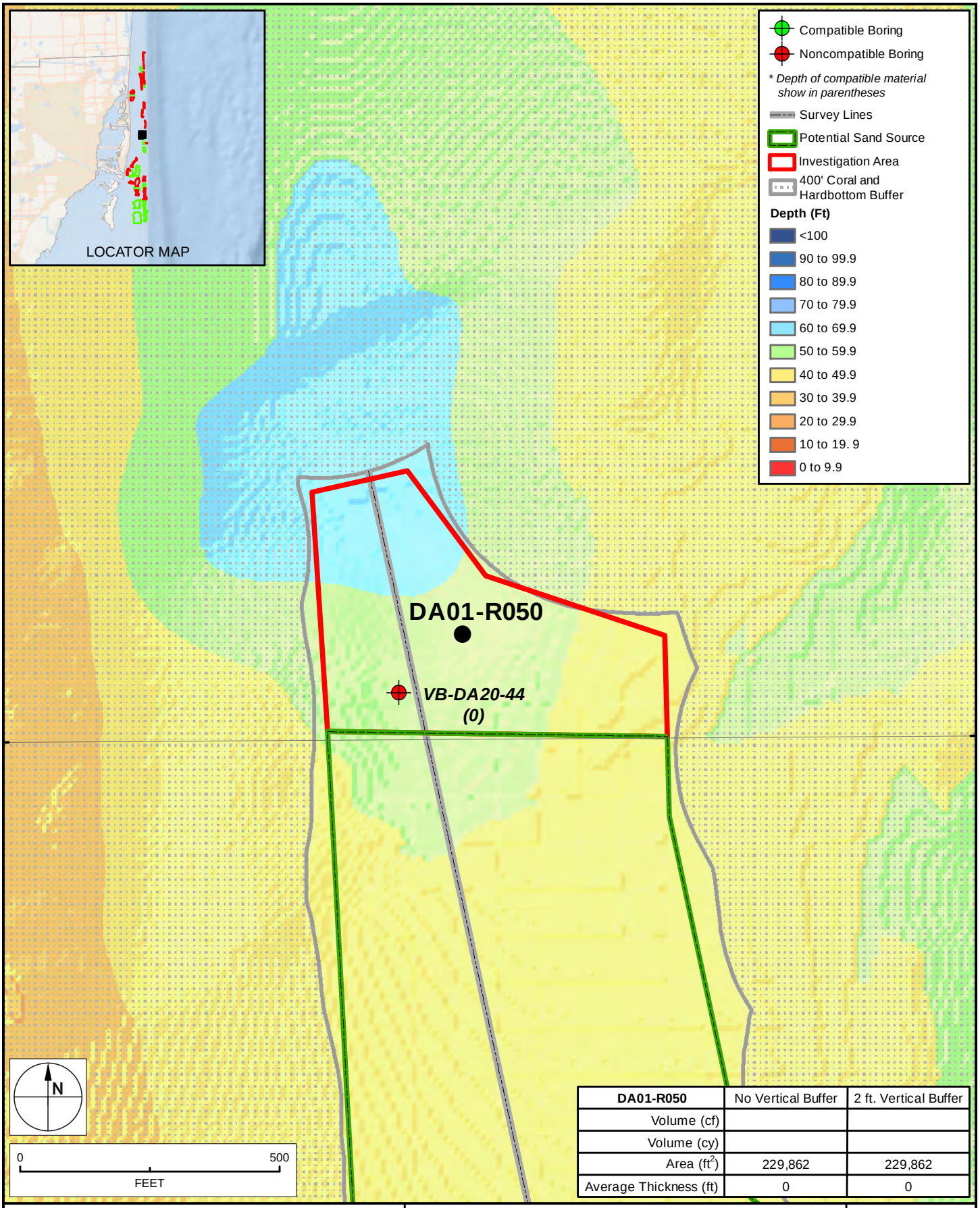

DA01-R050	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	229,862	229,862
Average Thickness (ft)	0	0

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FIGURE A-15
INVESTIGATION AREA DA01-R050
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

PROJECT	C2019-032-02
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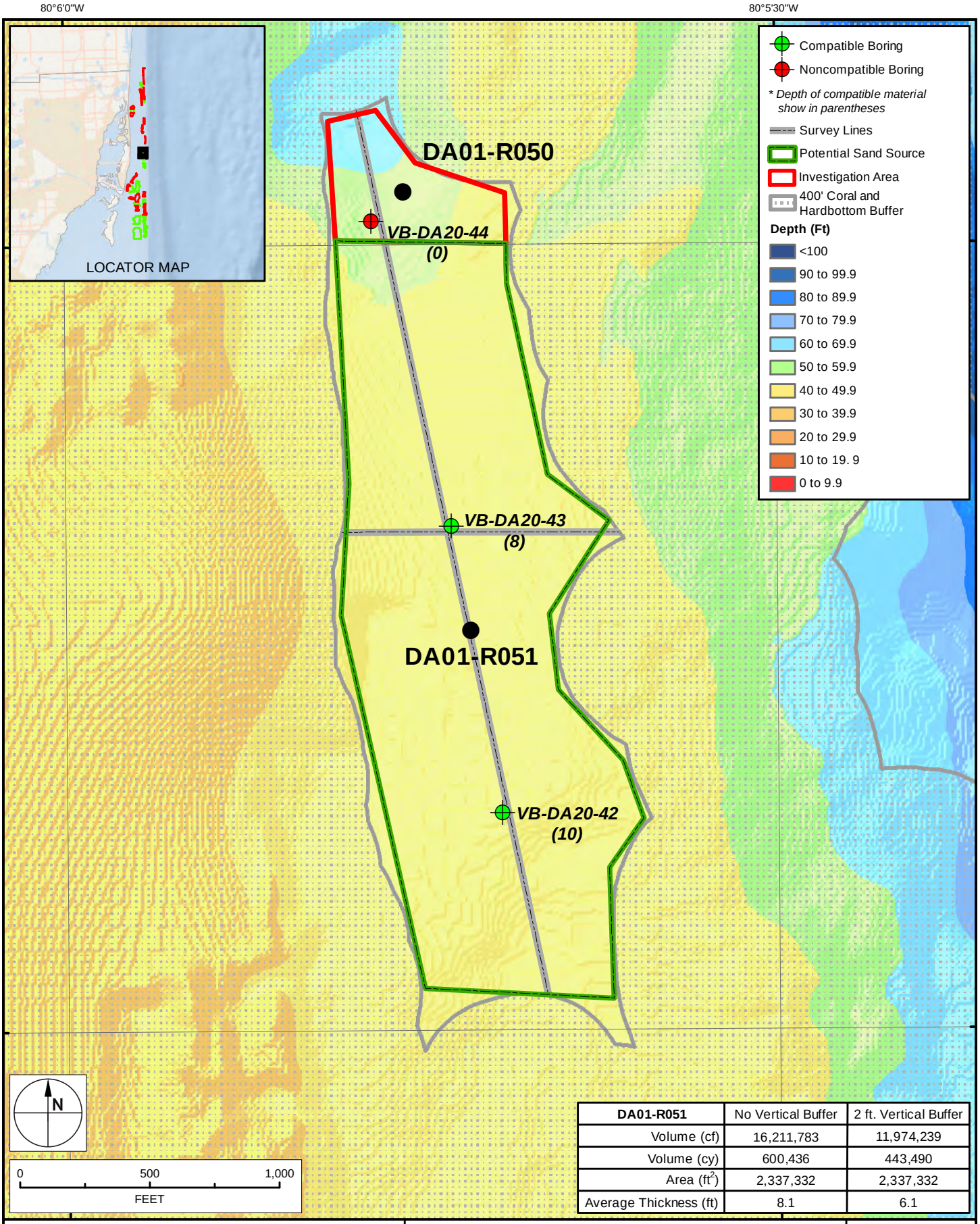

DA01-R051	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	16,211,783	11,974,239
Volume (cy)	600,436	443,490
Area (ft^2)	2,337,332	2,337,332
Average Thickness (ft)	8.1	6.1

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FIGURE A-16
POTENTIAL SAND SOURCE DA01-R051
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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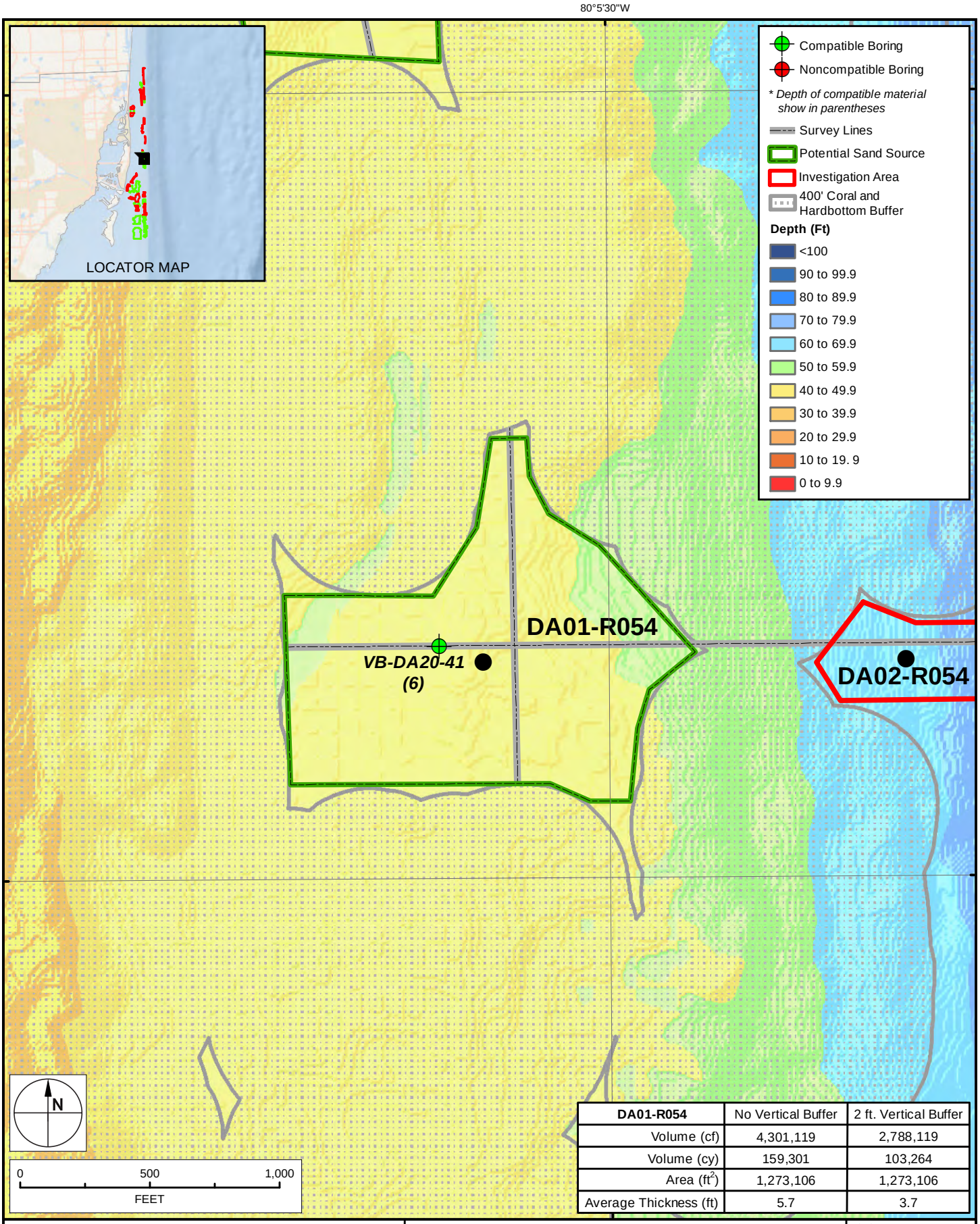

DA01-R054	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	4,301,119	2,788,119
Volume (cy)	159,301	103,264
Area (ft^2)	1,273,106	1,273,106
Average Thickness (ft)	5.7	3.7

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FIGURE A-17
POTENTIAL SAND SOURCE DA01-R054
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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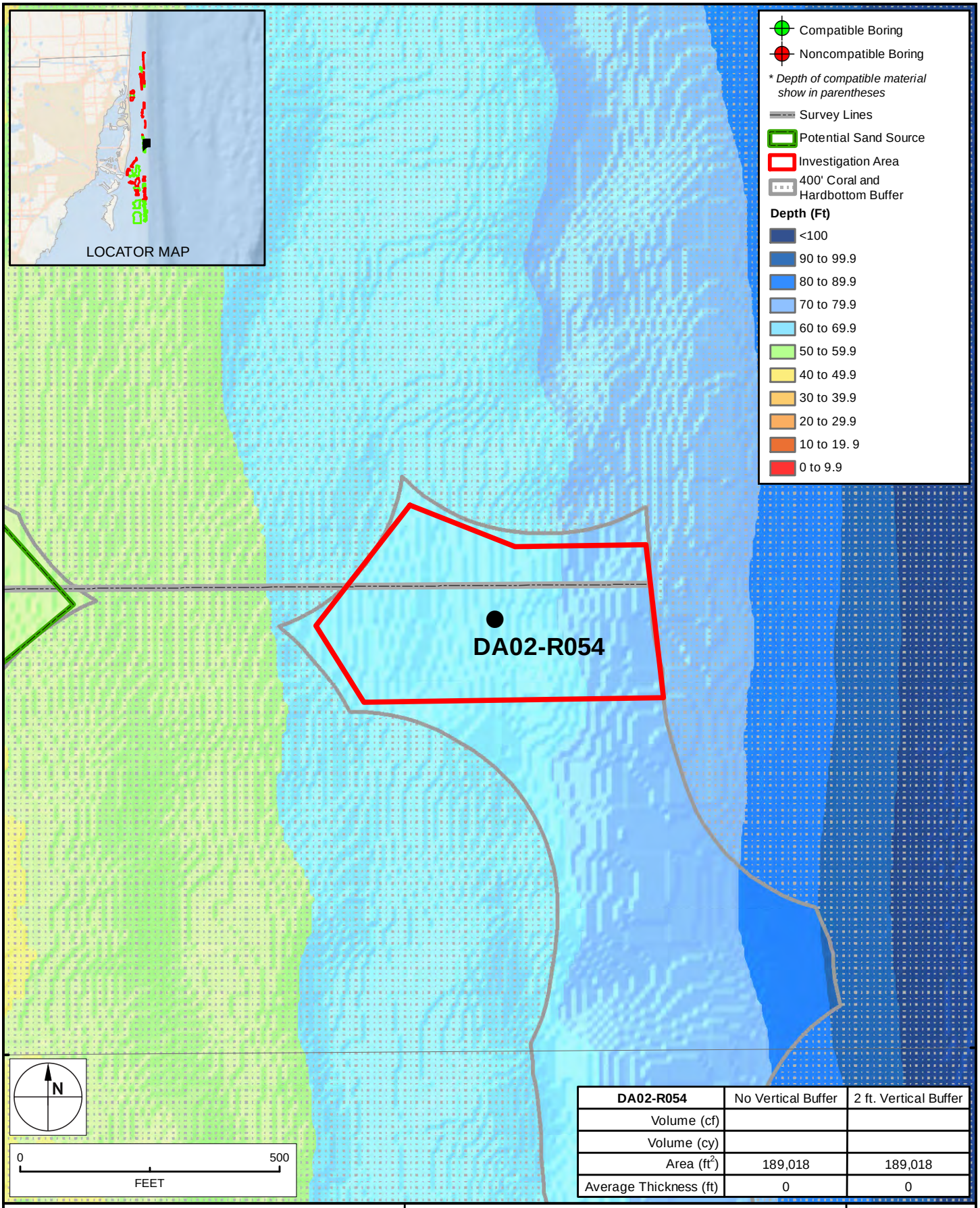

DA02-R054	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	189,018	189,018
Average Thickness (ft)	0	0

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FIGURE A-18
INVESTIGATION AREA DA02-R054
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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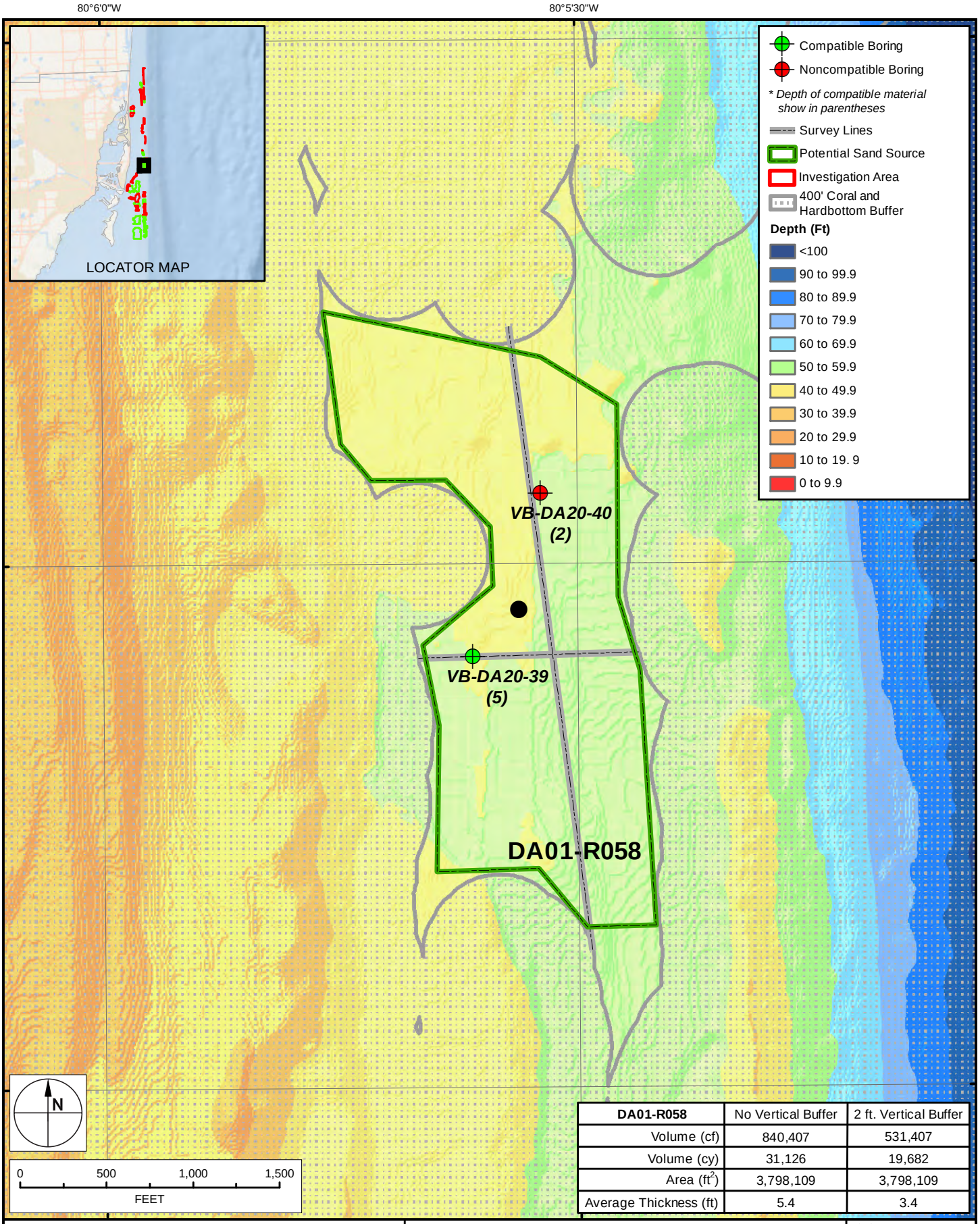

DA01-R058	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	840,407	531,407
Volume (cy)	31,126	19,682
Area (ft^2)	3,798,109	3,798,109
Average Thickness (ft)	5.4	3.4

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FIGURE A-19
POTENTIAL SAND SOURCE DA01-R058
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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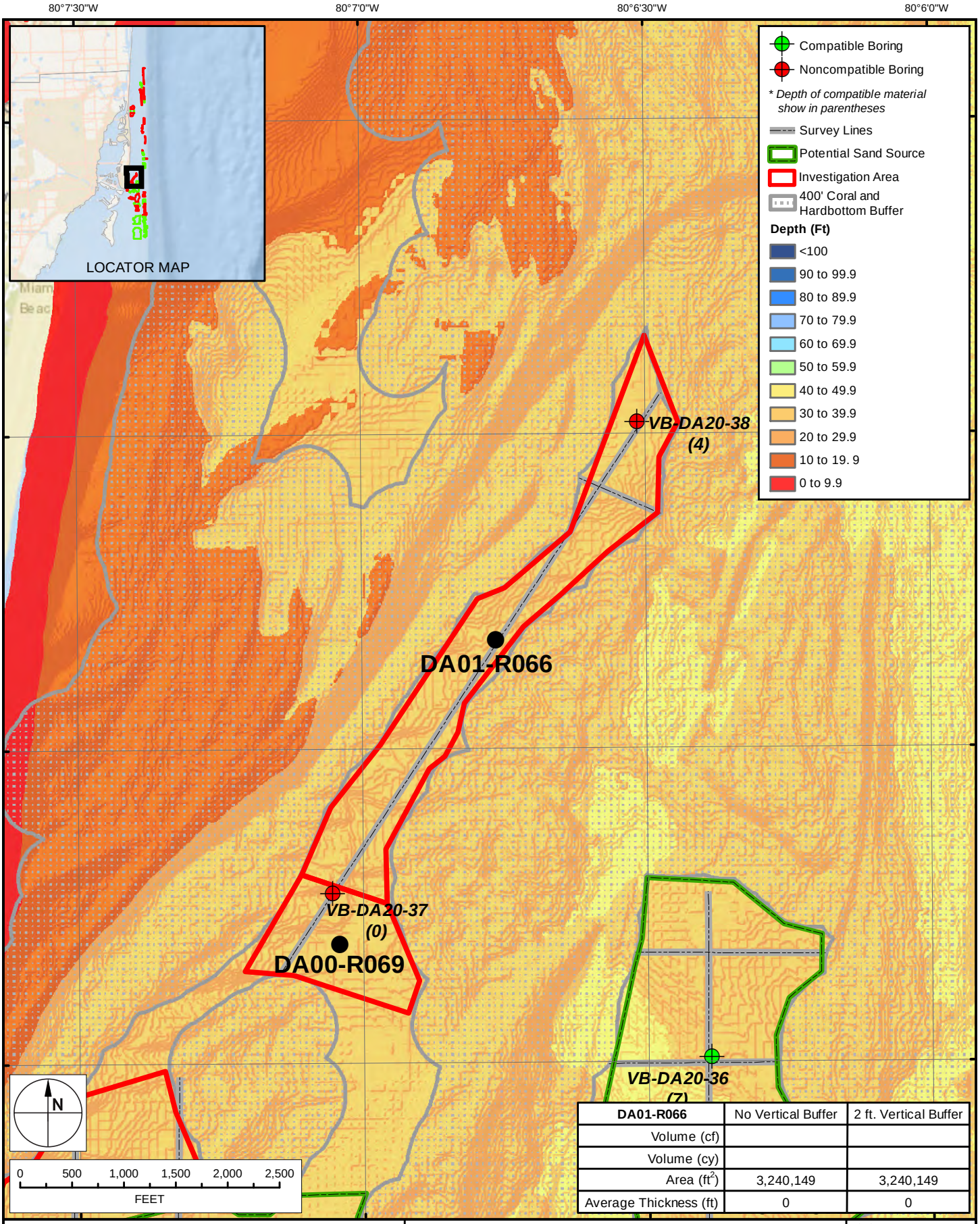

DA01-R066	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	3,240,149	3,240,149
Average Thickness (ft)	0	0

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FIGURE A-20
INVESTIGATION AREA DA01-R066
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
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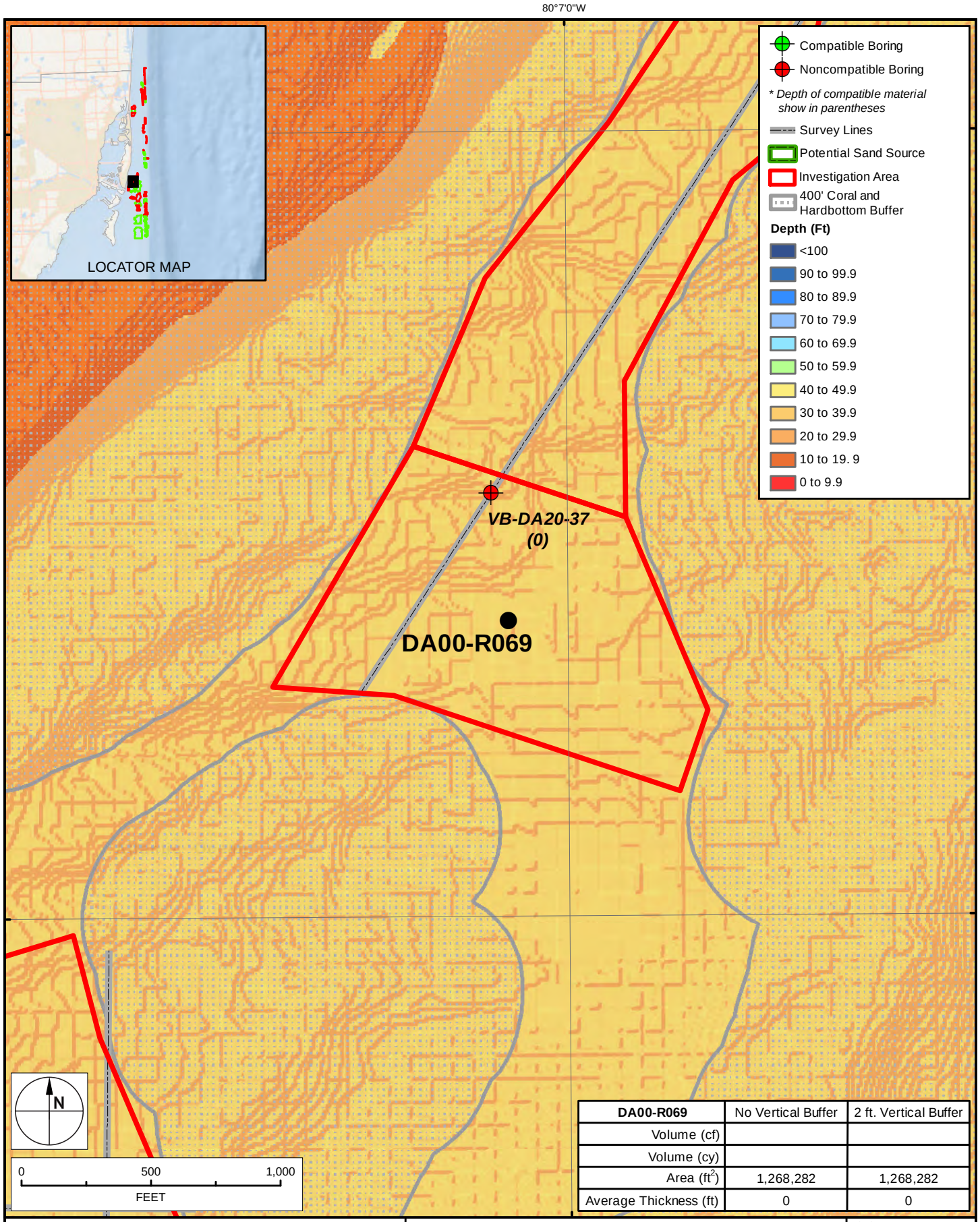

DA00-R069	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	1,268,282	1,268,282
Average Thickness (ft)	0	0

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FIGURE A-21
INVESTIGATION AREA DA00-R069
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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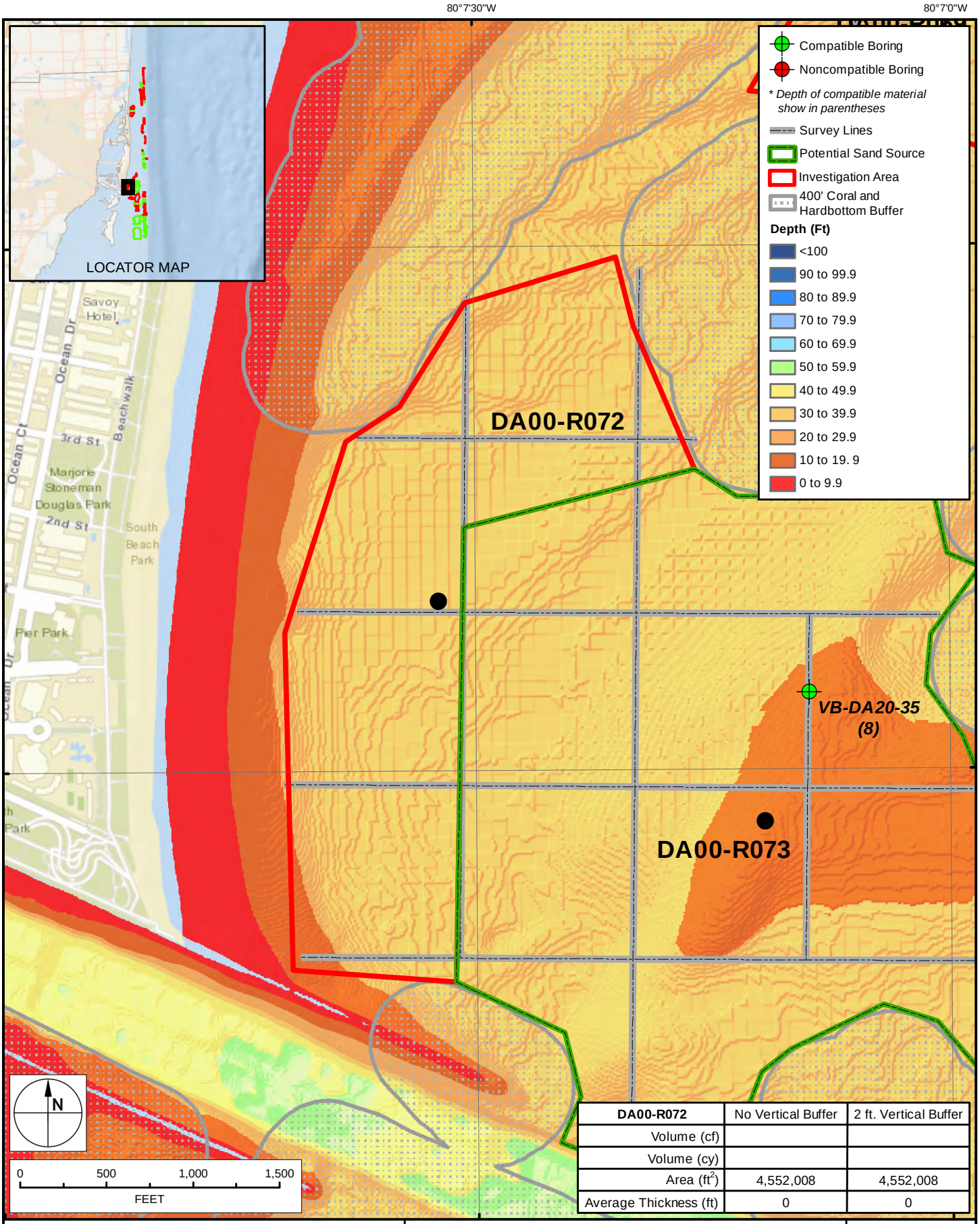

DA00-R072	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	4,552,008	4,552,008
Average Thickness (ft)	0	0

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FIGURE A-22
INVESTIGATION AREA DA00-R072
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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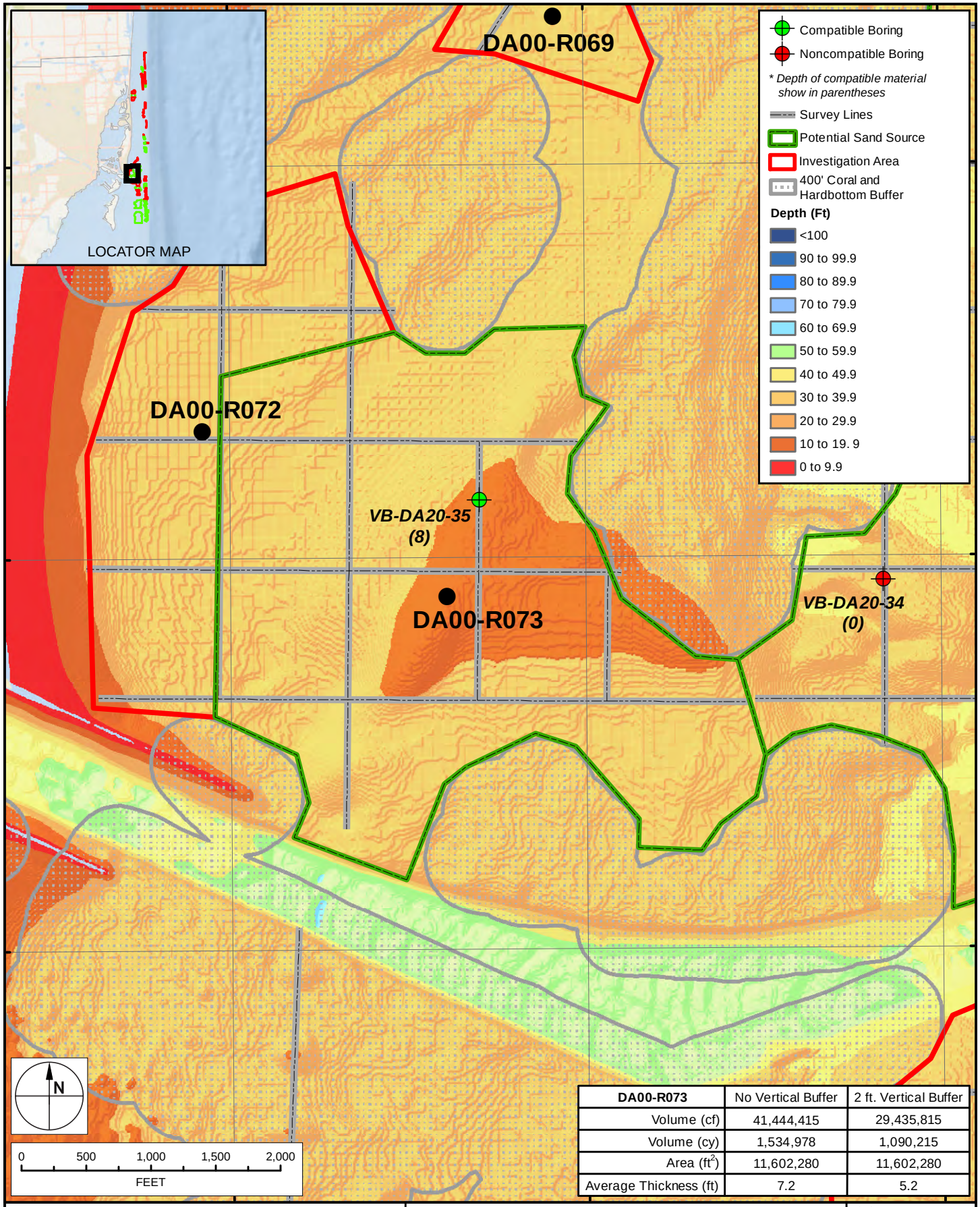

DA00-R073	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	41,444,415	29,435,815
Volume (cy)	1,534,978	1,090,215
Area (ft^2)	11,602,280	11,602,280
Average Thickness (ft)	7.2	5.2

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FIGURE A-23
POTENTIAL SAND SOURCE DA00-R073
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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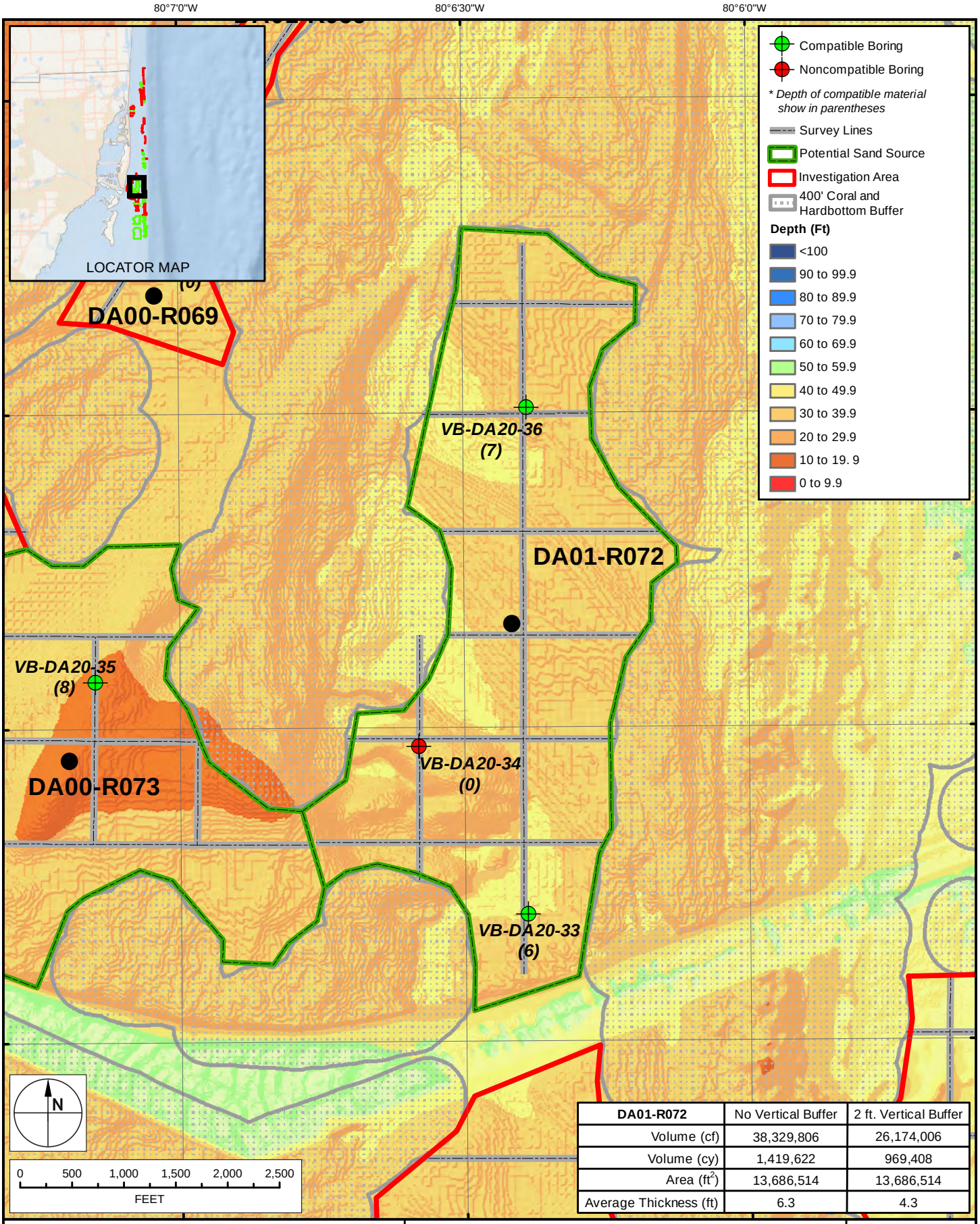

DA01-R072	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	38,329,806	26,174,006
Volume (cy)	1,419,622	969,408
Area (ft^2)	13,686,514	13,686,514
Average Thickness (ft)	6.3	4.3

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FIGURE A-24
POTENTIAL SAND SOURCE DA01-R072
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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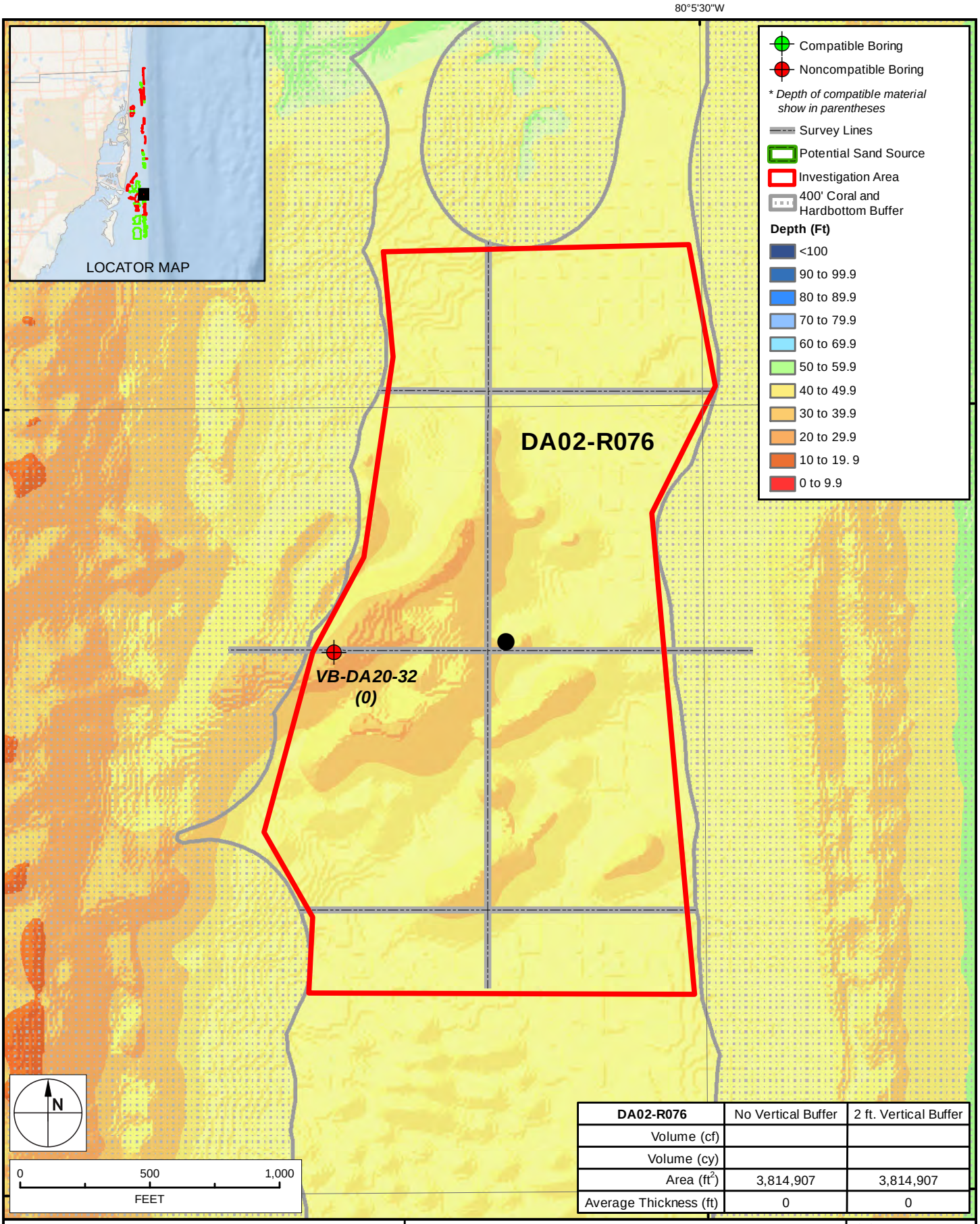

DA02-R076	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	3,814,907	3,814,907
Average Thickness (ft)	0	0

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FIGURE A-25
INVESTIGATION AREA DA02-R076
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
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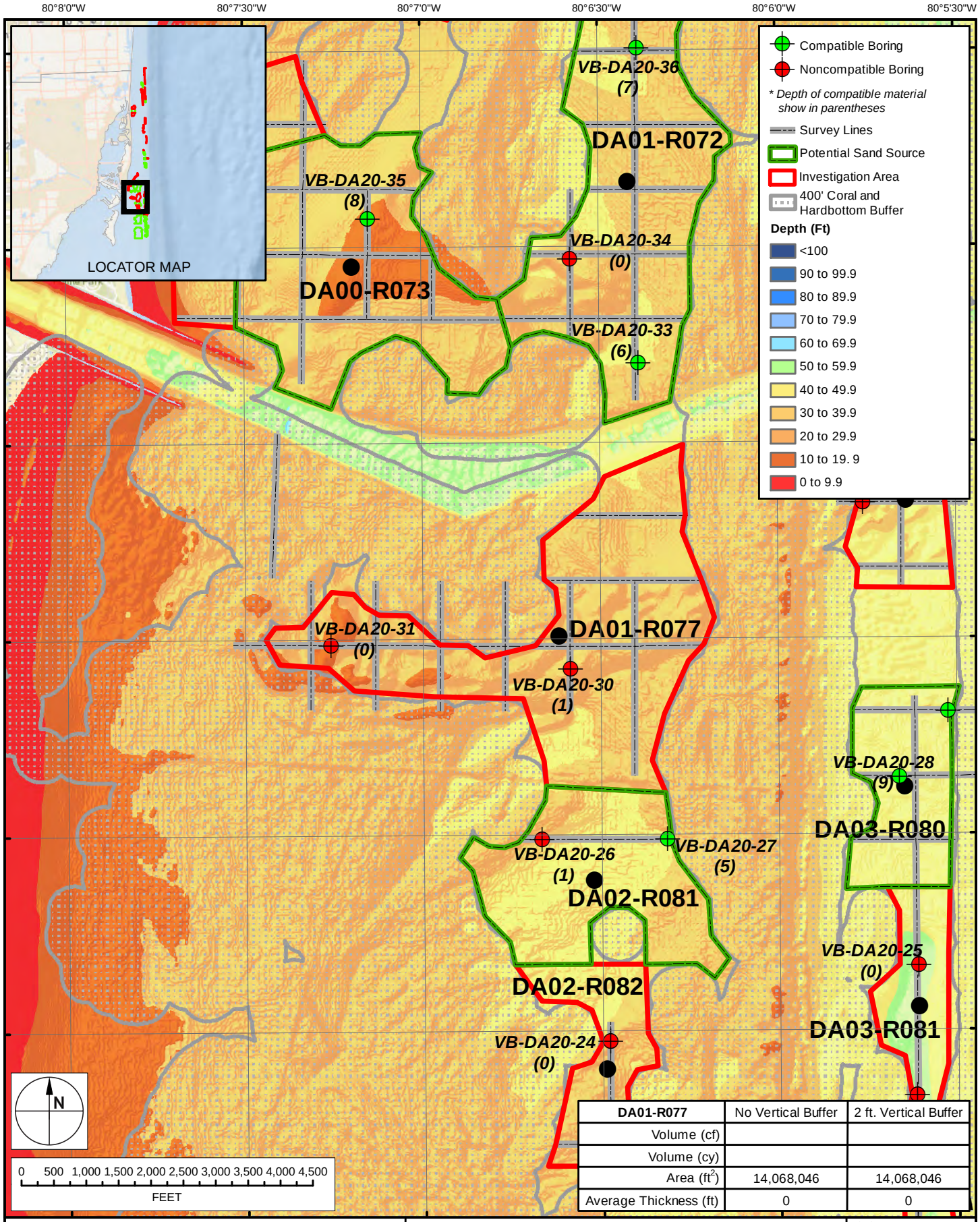

DA01-R077	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	14,068,046	14,068,046
Average Thickness (ft)	0	0

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FIGURE A-26
INVESTIGATION AREA DA01-R077
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
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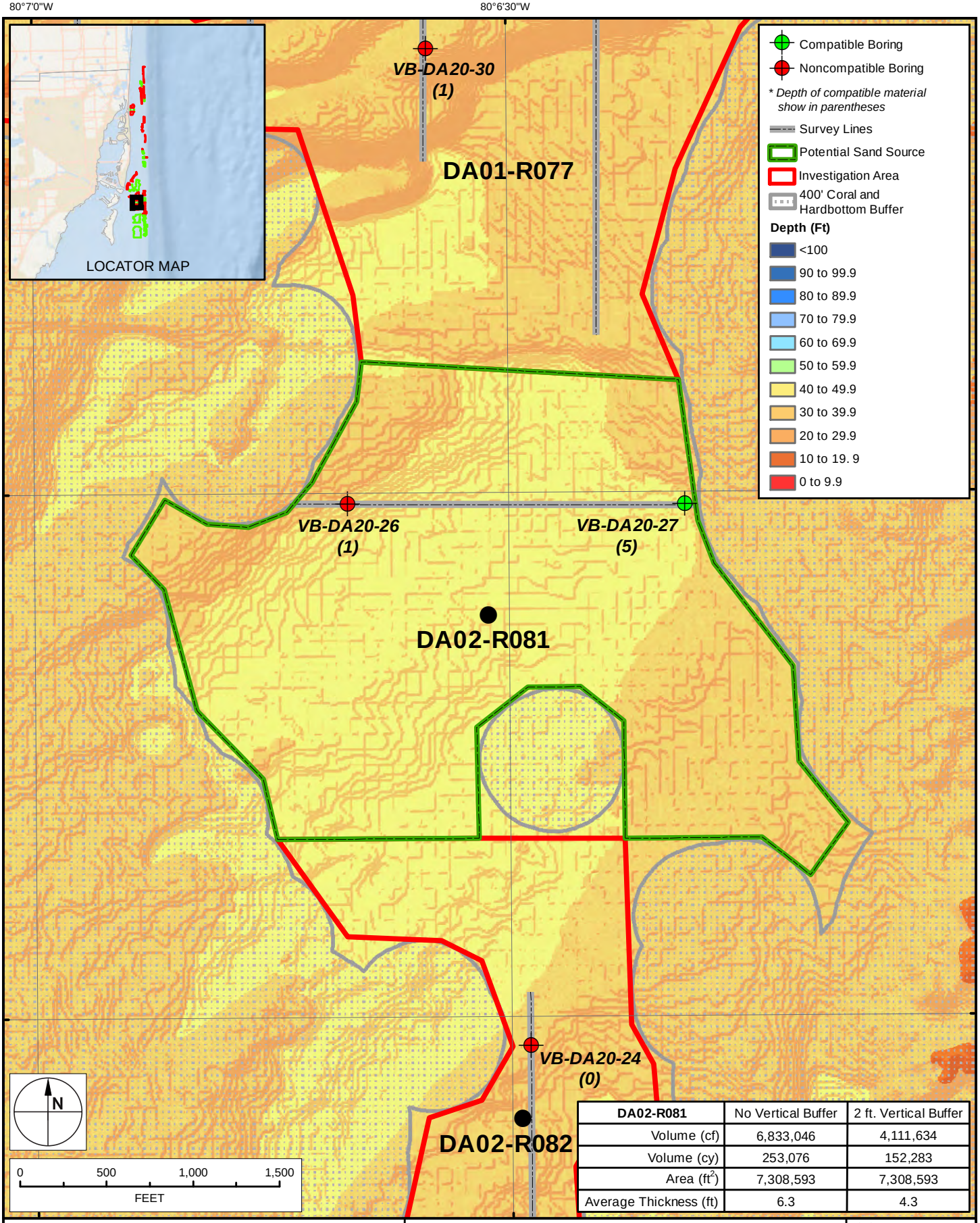

DA02-R081	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	6,833,046	4,111,634
Volume (cy)	253,076	152,283
Area (ft^2)	7,308,593	7,308,593
Average Thickness (ft)	6.3	4.3

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FIGURE A-27
POTENTIAL SAND SOURCE DA02-R081
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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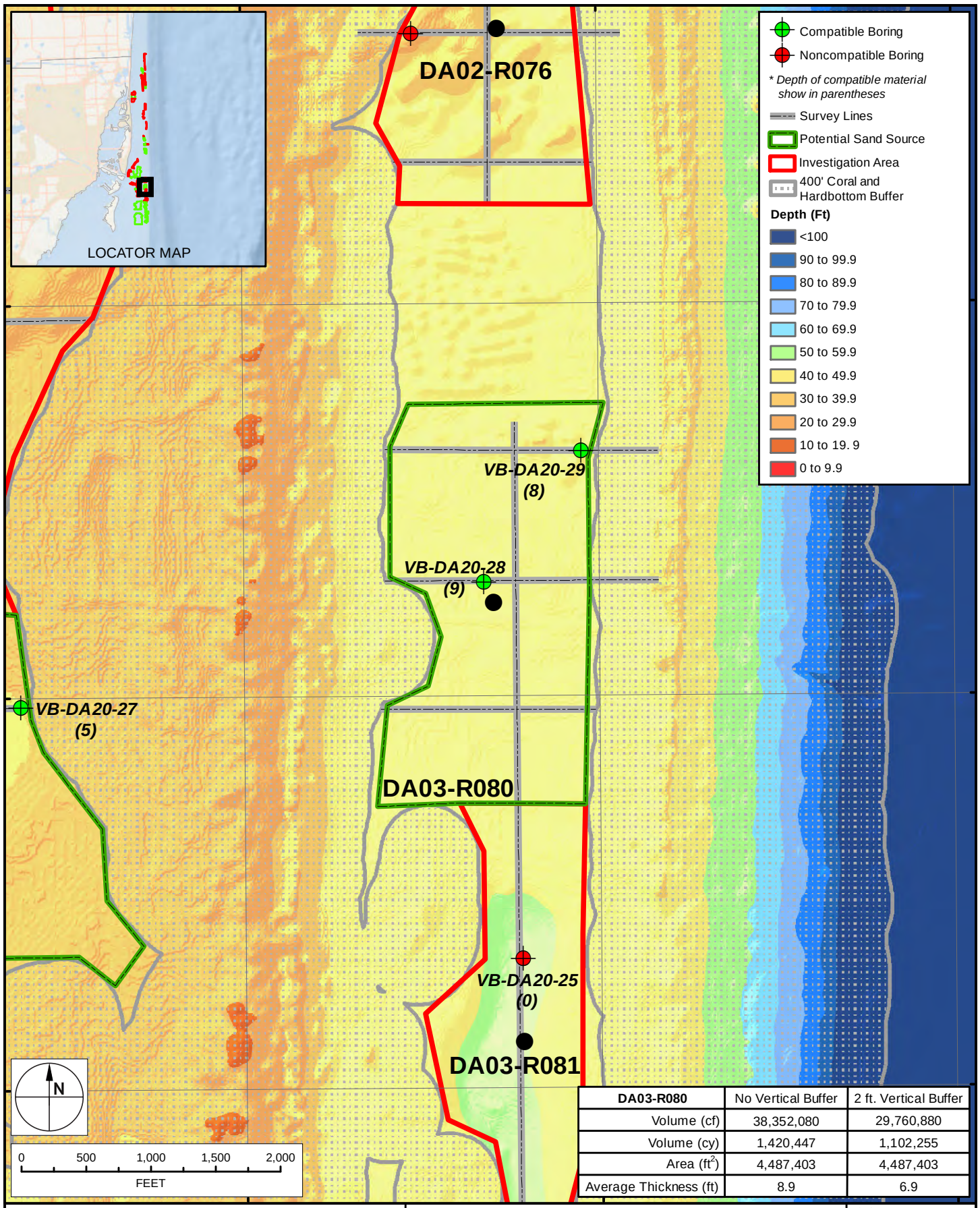

DA03-R080	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	38,352,080	29,760,880
Volume (cy)	1,420,447	1,102,255
Area (ft^2)	4,487,403	4,487,403
Average Thickness (ft)	8.9	6.9

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FIGURE A-28
POTENTIAL SAND SOURCE DA03-R080
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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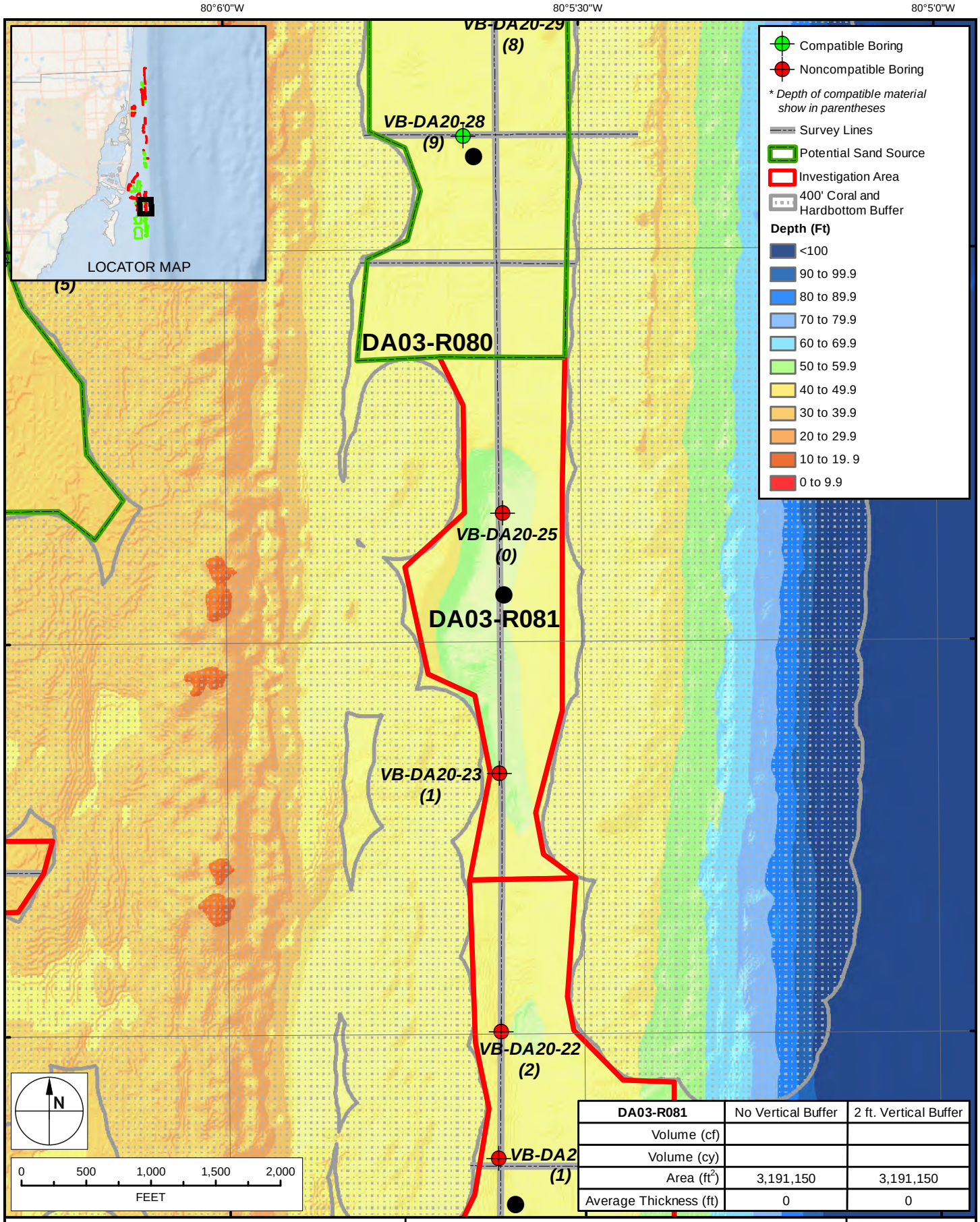

DA03-R081	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	3,191,150	3,191,150
Average Thickness (ft)	0	0

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FIGURE A-29
INVESTIGATION AREA DA03-R081
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
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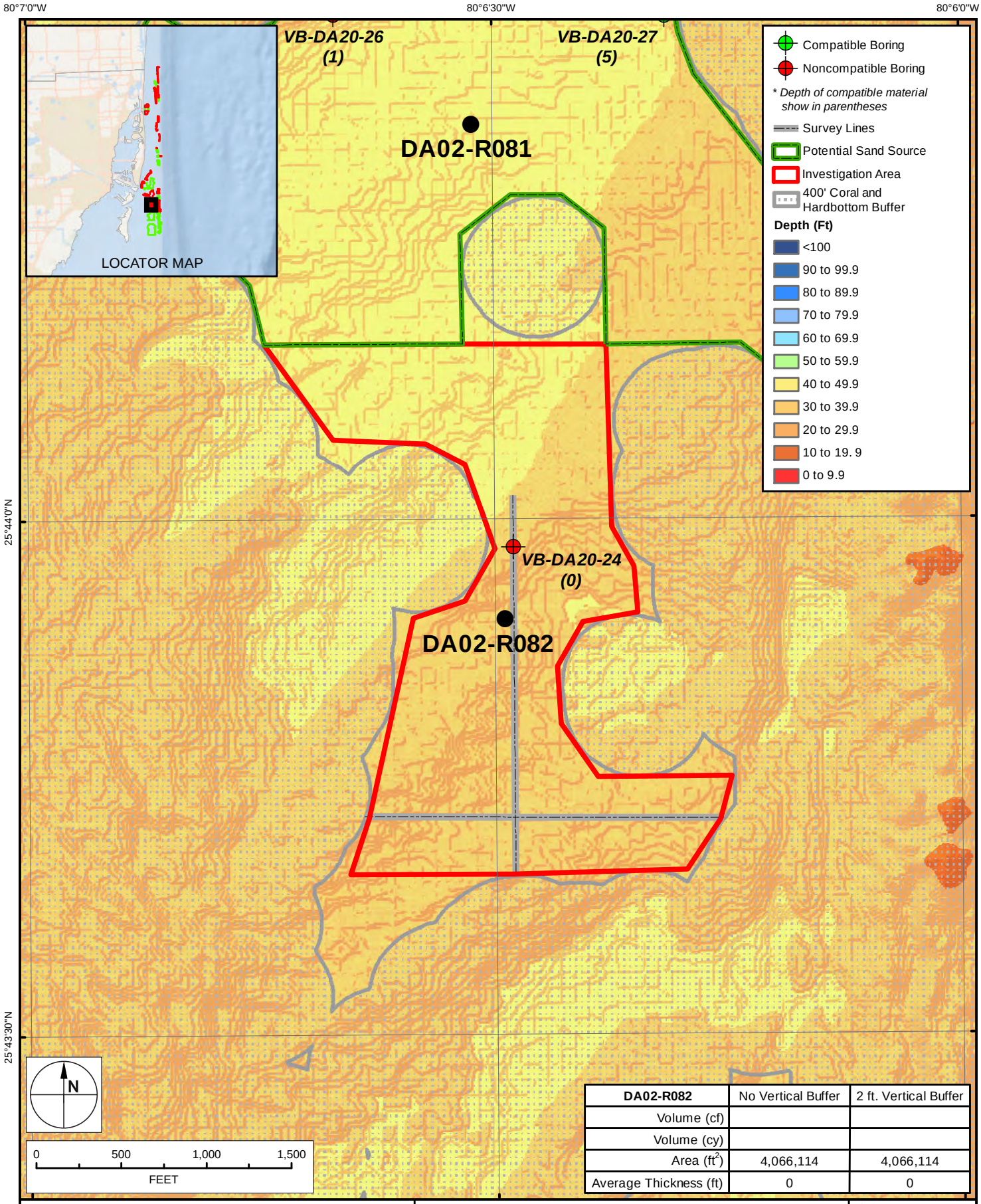

DA02-R082	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	4,066,114	4,066,114
Average Thickness (ft)	0	0

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FIGURE A-30
INVESTIGATION AREA DA02-R082
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
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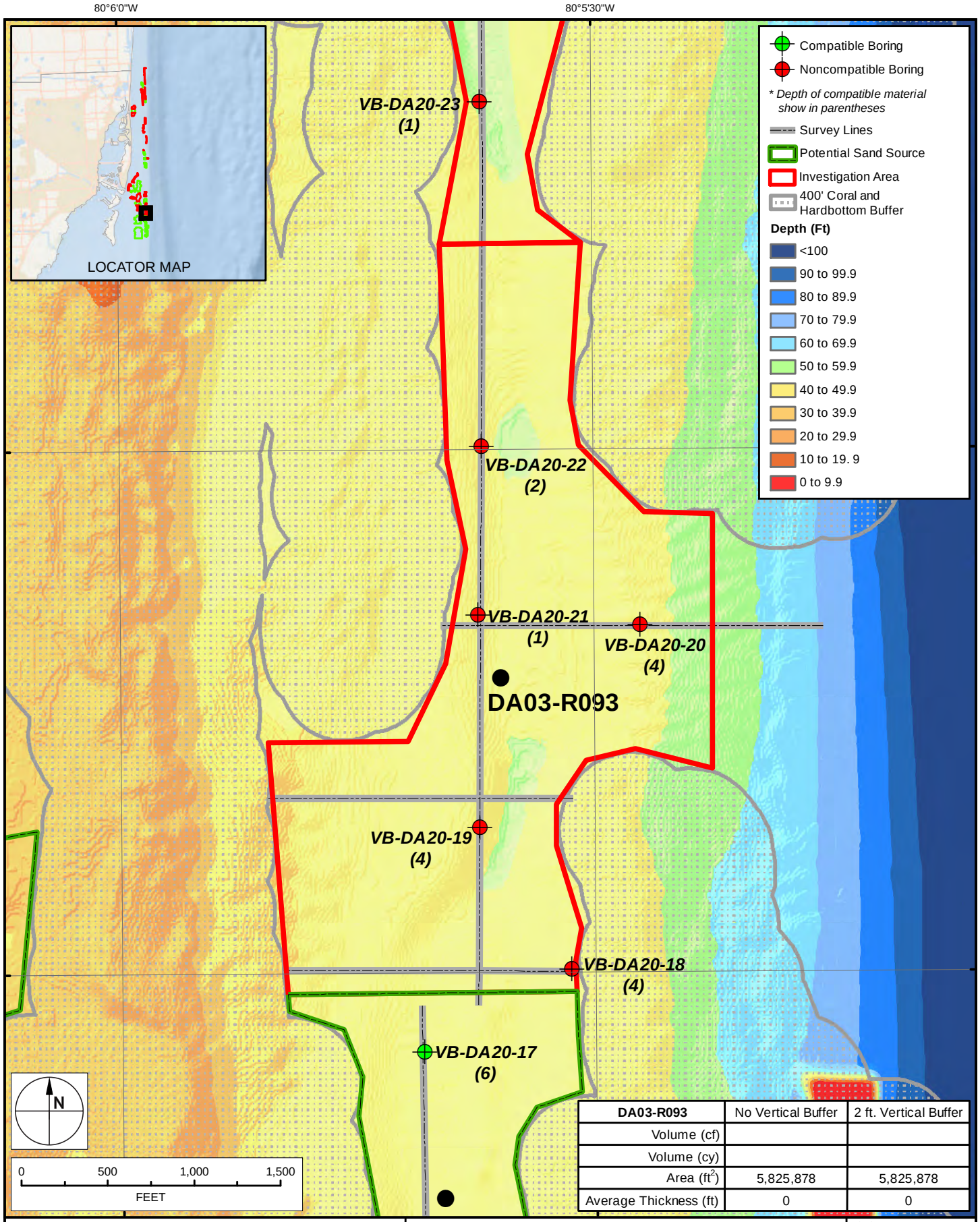

DA03-R093	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)		
Volume (cy)		
Area (ft^2)	5,825,878	5,825,878
Average Thickness (ft)	0	0

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FIGURE A-31
INVESTIGATION AREA DA03-R093
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
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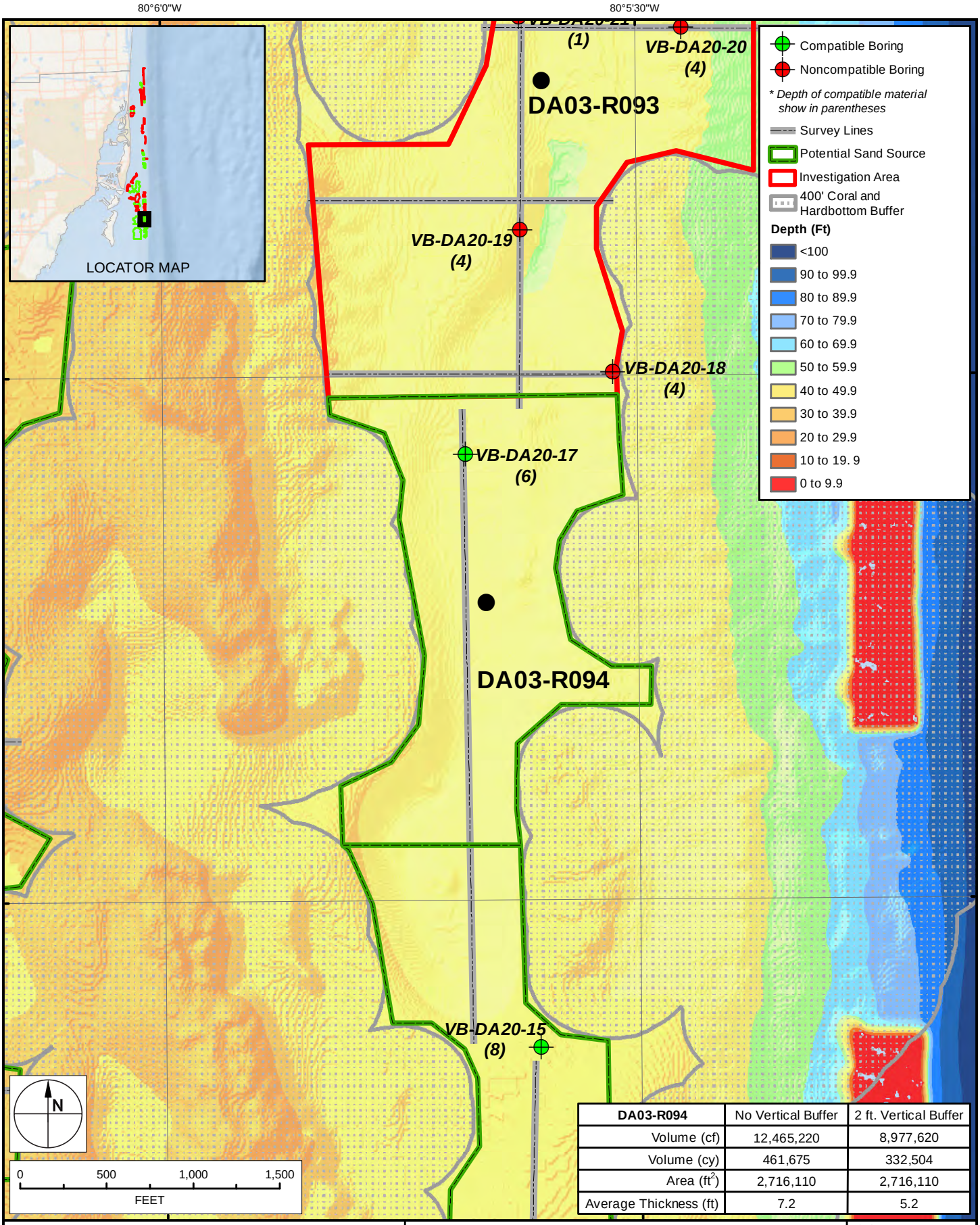

DA03-R094	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	12,465,220	8,977,620
Volume (cy)	461,675	332,504
Area (ft^2)	2,716,110	2,716,110
Average Thickness (ft)	7.2	5.2

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FIGURE A-32
POTENTIAL SAND SOURCE DA03-R094
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
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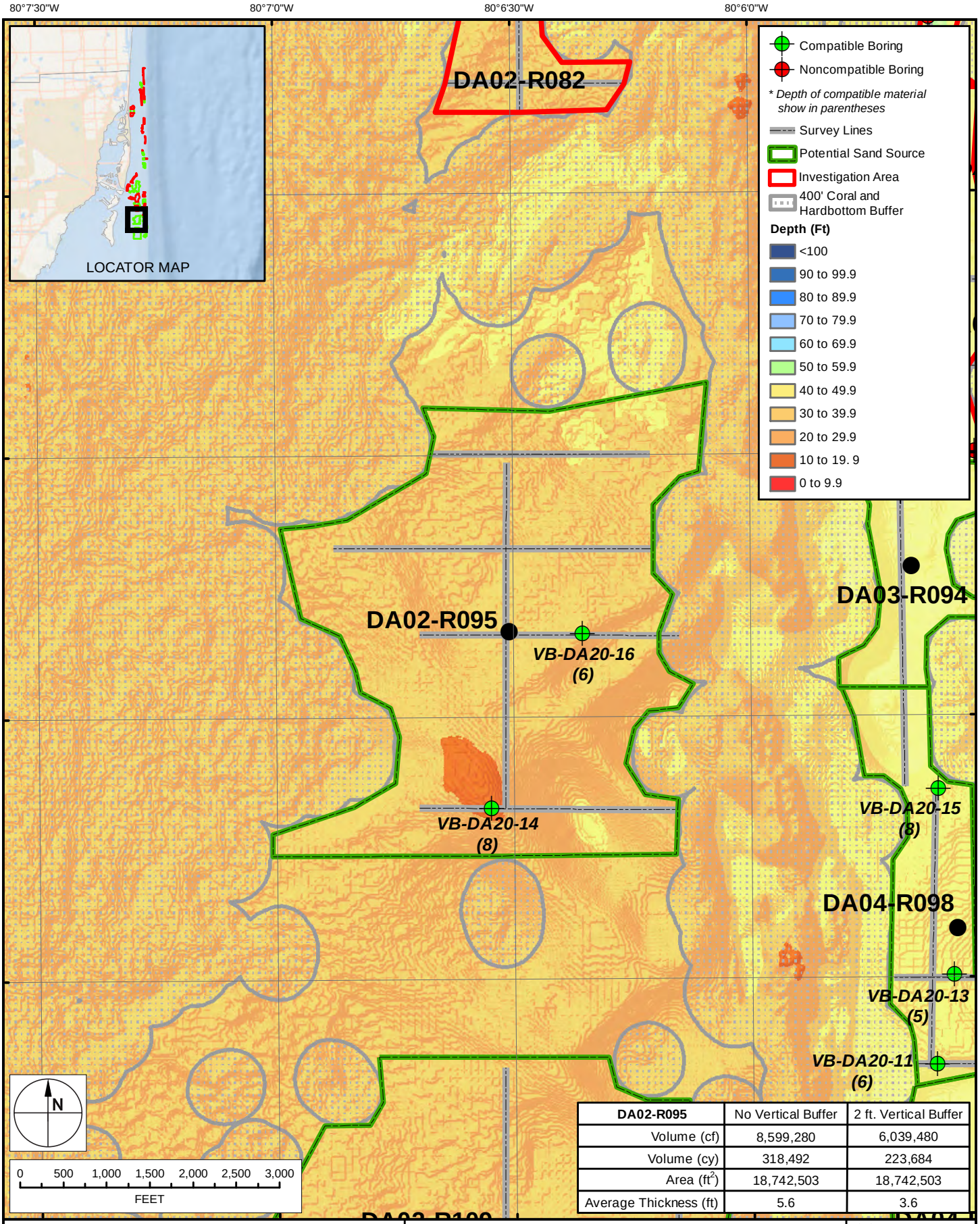

DA02-R095	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	8,599,280	6,039,480
Volume (cy)	318,492	223,684
Area (ft^2)	18,742,503	18,742,503
Average Thickness (ft)	5.6	3.6

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FIGURE A-33
POTENTIAL SAND SOURCE DA02-R095
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
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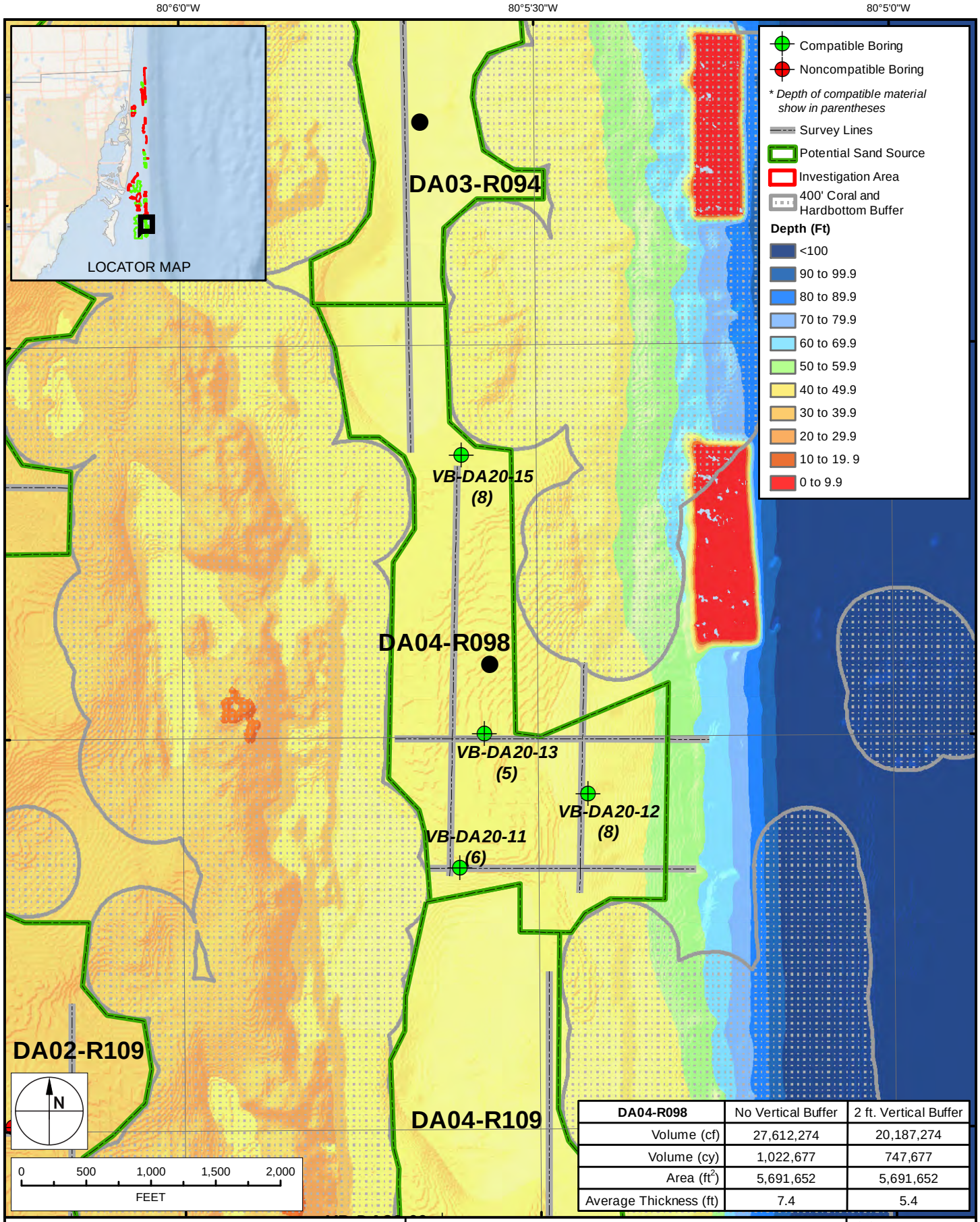

DA04-R098	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	27,612,274	20,187,274
Volume (cy)	1,022,677	747,677
Area (ft^2)	5,691,652	5,691,652
Average Thickness (ft)	7.4	5.4

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FIGURE A-34
POTENTIAL SAND SOURCE DA04-R098
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
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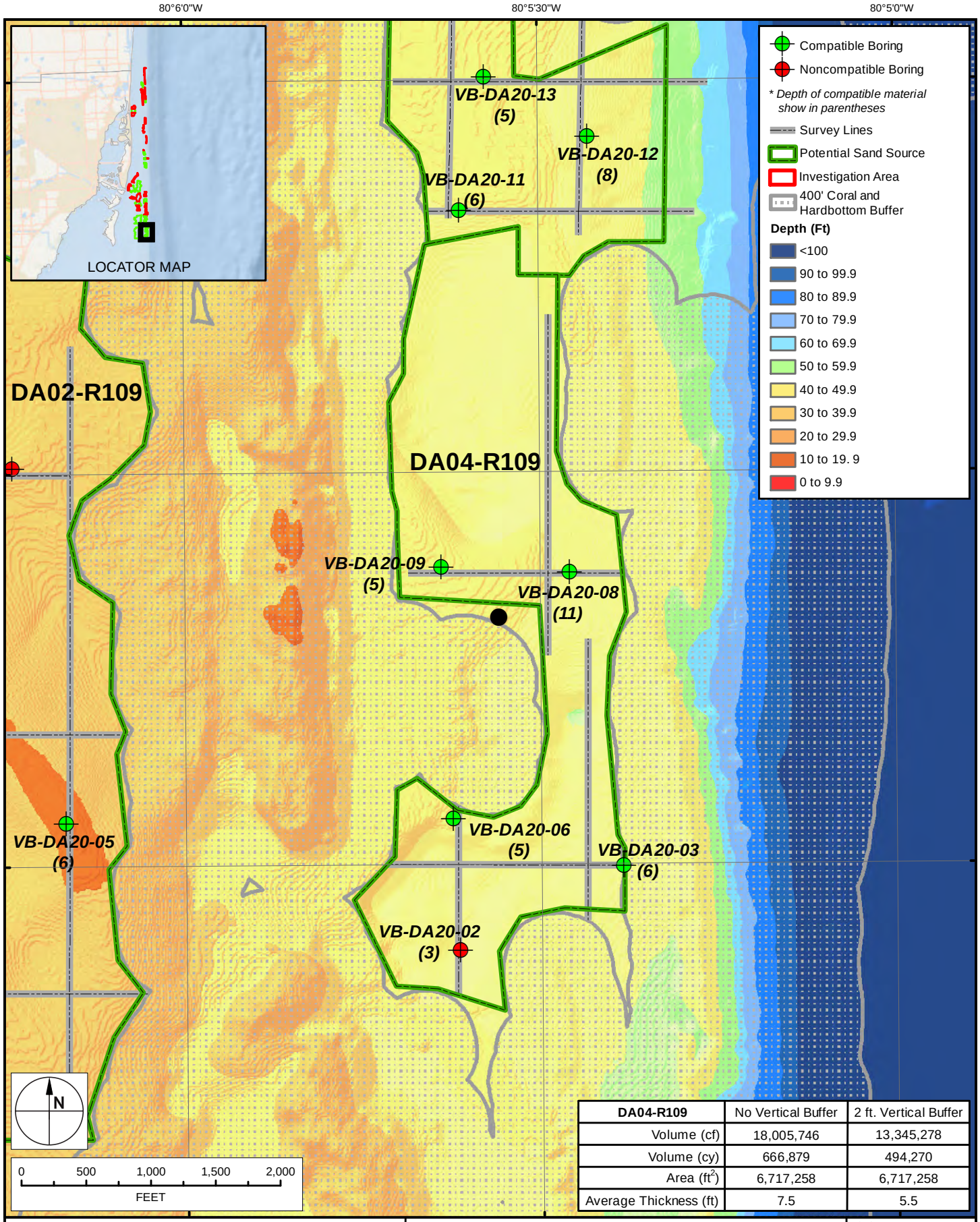

DA04-R109	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	18,005,746	13,345,278
Volume (cy)	666,879	494,270
Area (ft^2)	6,717,258	6,717,258
Average Thickness (ft)	7.5	5.5

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FIGURE A-35
POTENTIAL SAND SOURCE DA04-R109
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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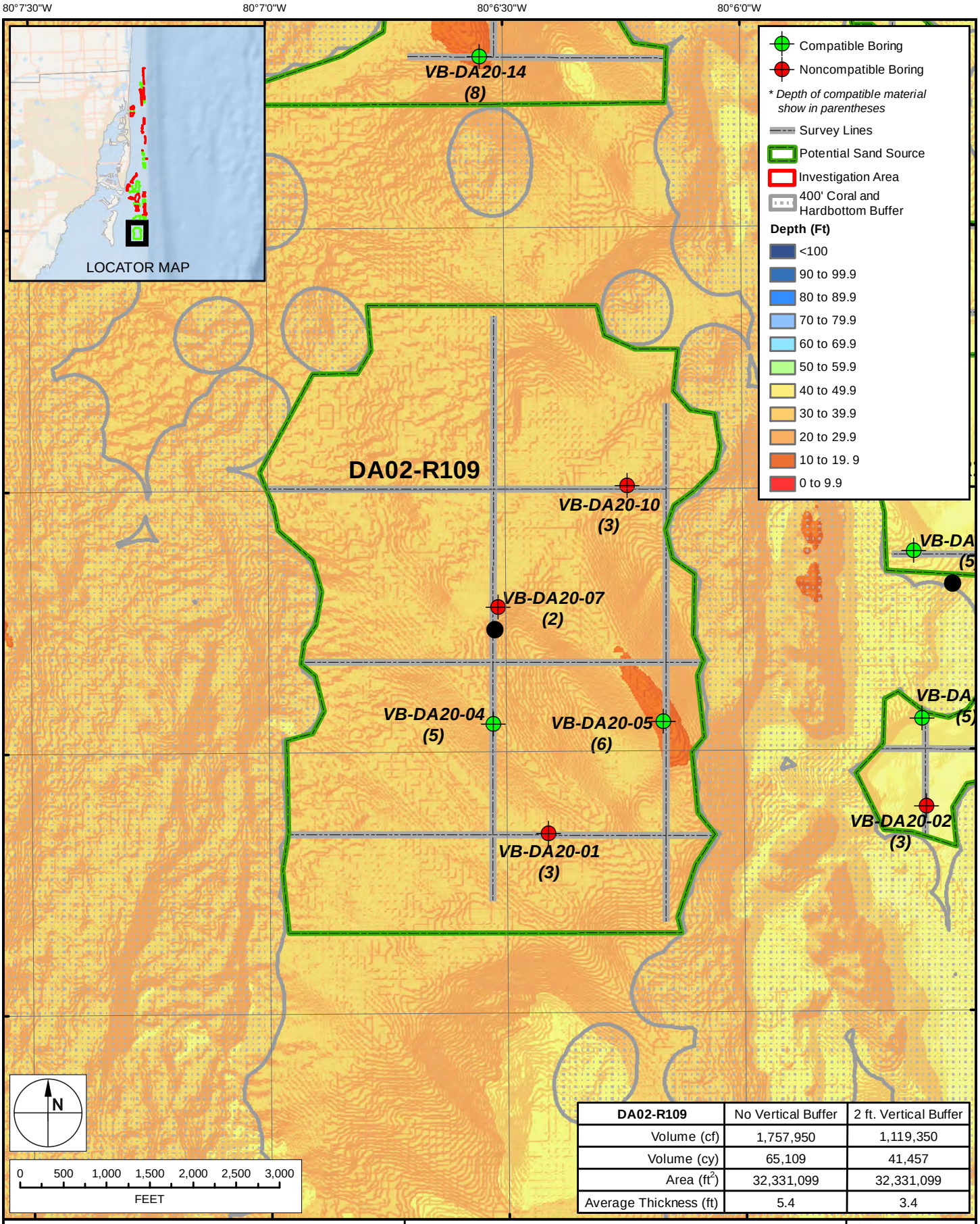

DA02-R109	No Vertical Buffer	2 ft. Vertical Buffer
Volume (cf)	1,757,950	1,119,350
Volume (cy)	65,109	41,457
Area (ft^2)	32,331,099	32,331,099
Average Thickness (ft)	5.4	3.4

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FIGURE A-36
POTENTIAL SAND SOURCE DA02-R109
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
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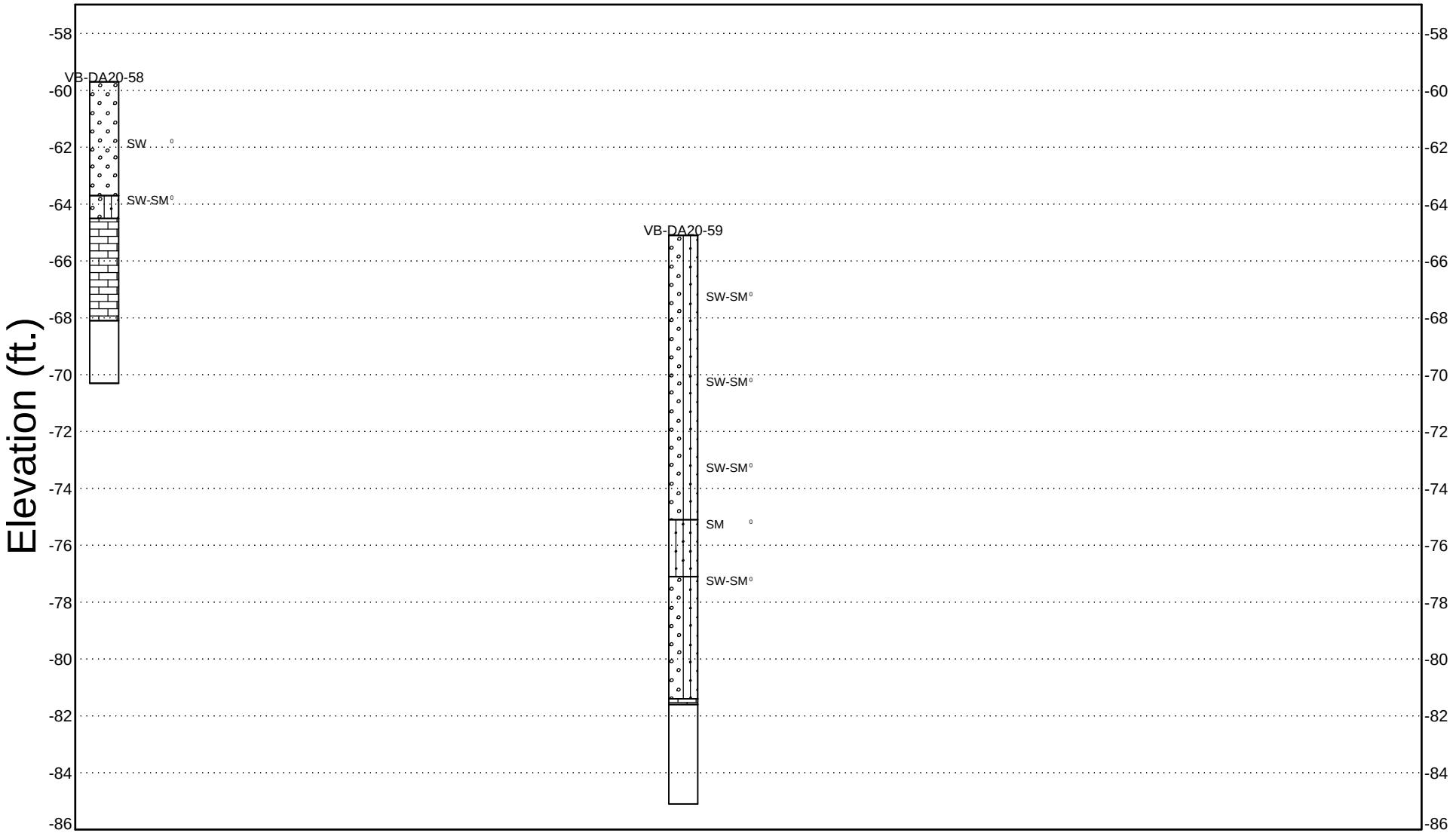
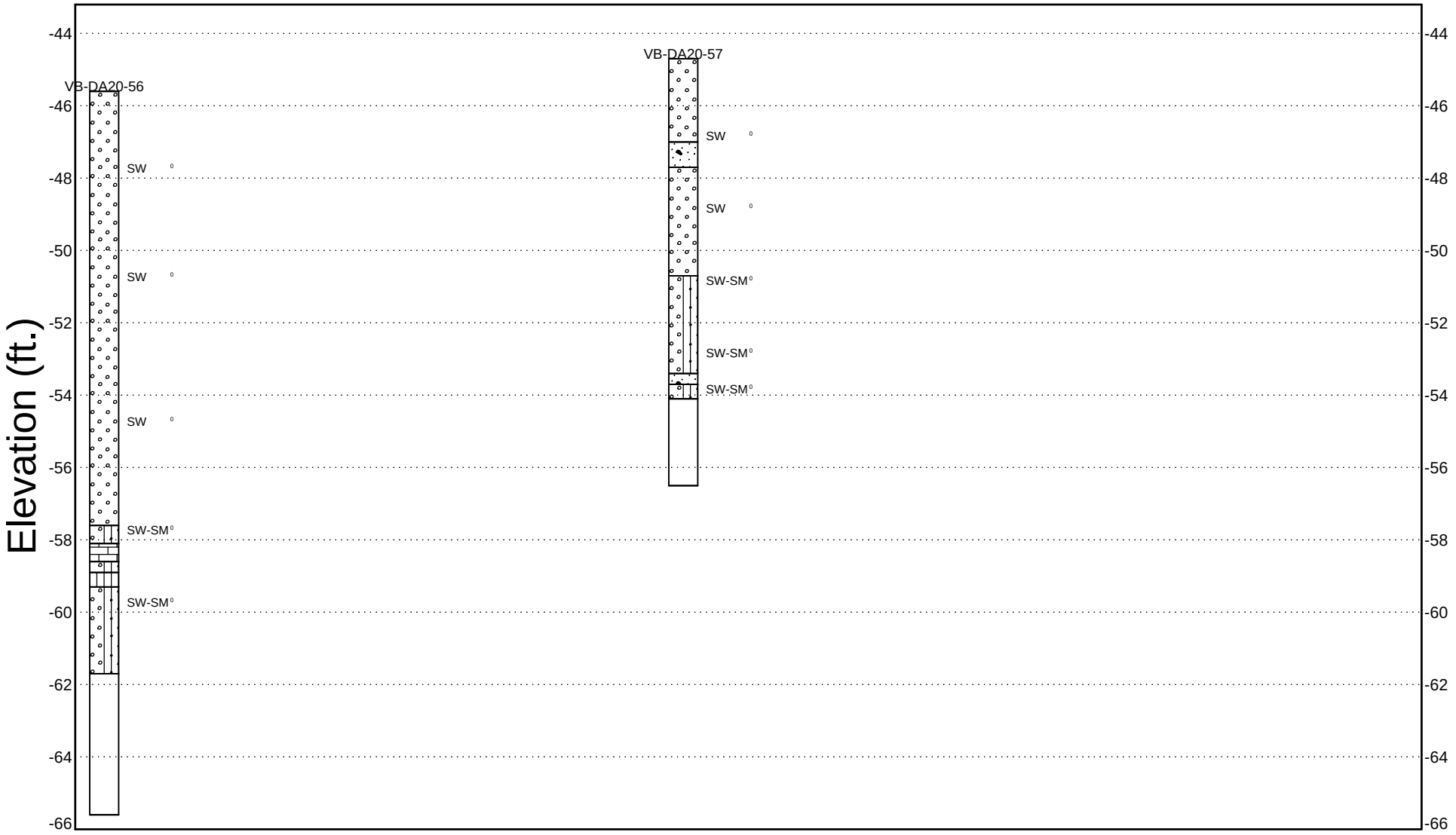
APPENDIX B

Investigation Area Geological Profiles


Elevation (ft.)
-58
-60
-62
-64
-66
-68
-70
-72
-74
-76
-78
-80
-82
-84
-86
VB-DA20-58
SW
SW-SM
VB-DA20-59
SW-SM
SW-SM
SW-SM
SM
SW-SM

DA01-R001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-54
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-58
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-64
-66
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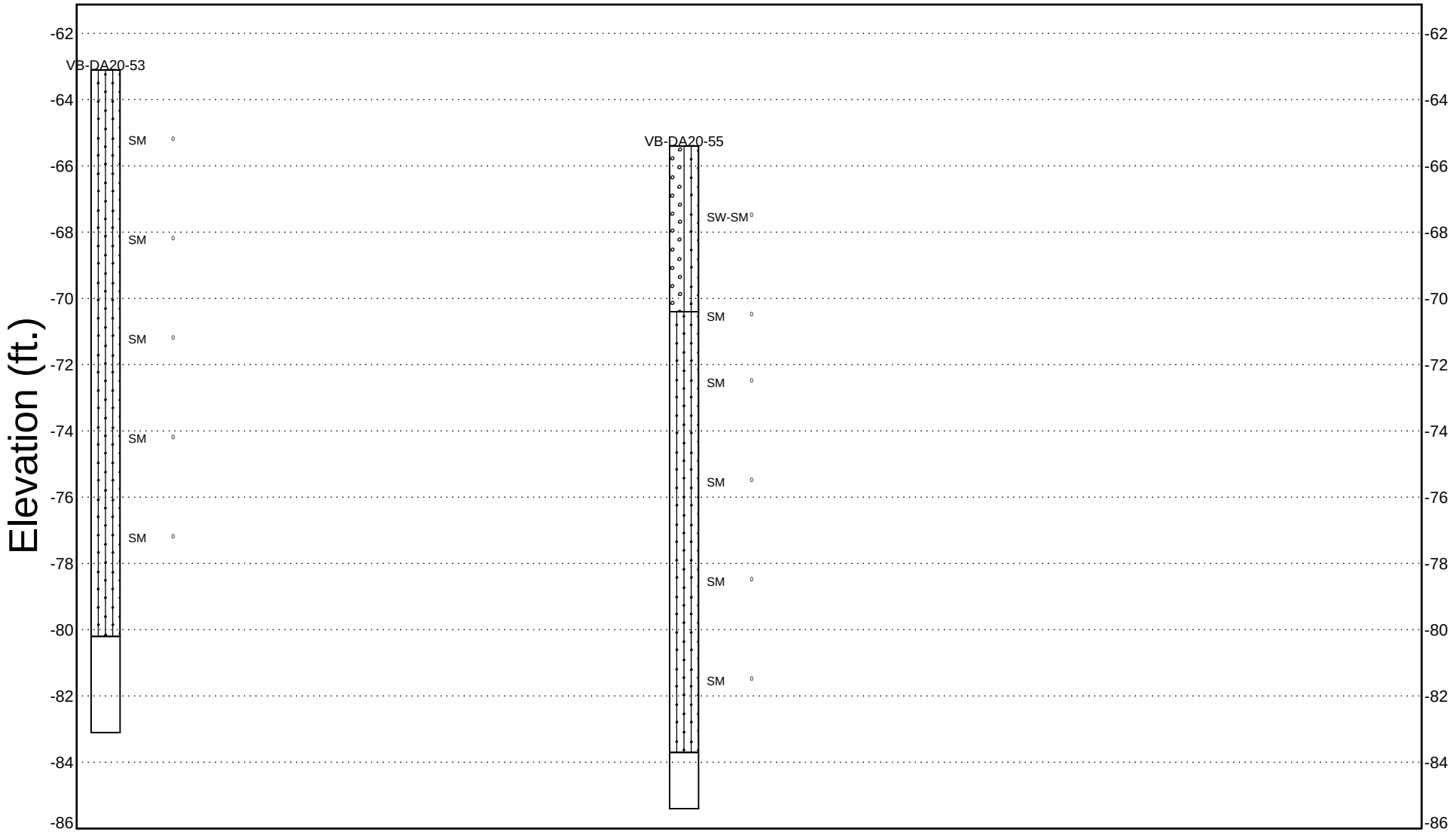
SW
SW
SW
SW-SM
SW-SM
VB-DA20-57
SW
SW
SW-SM
SW-SM
SW-SM

DA01-R009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-68
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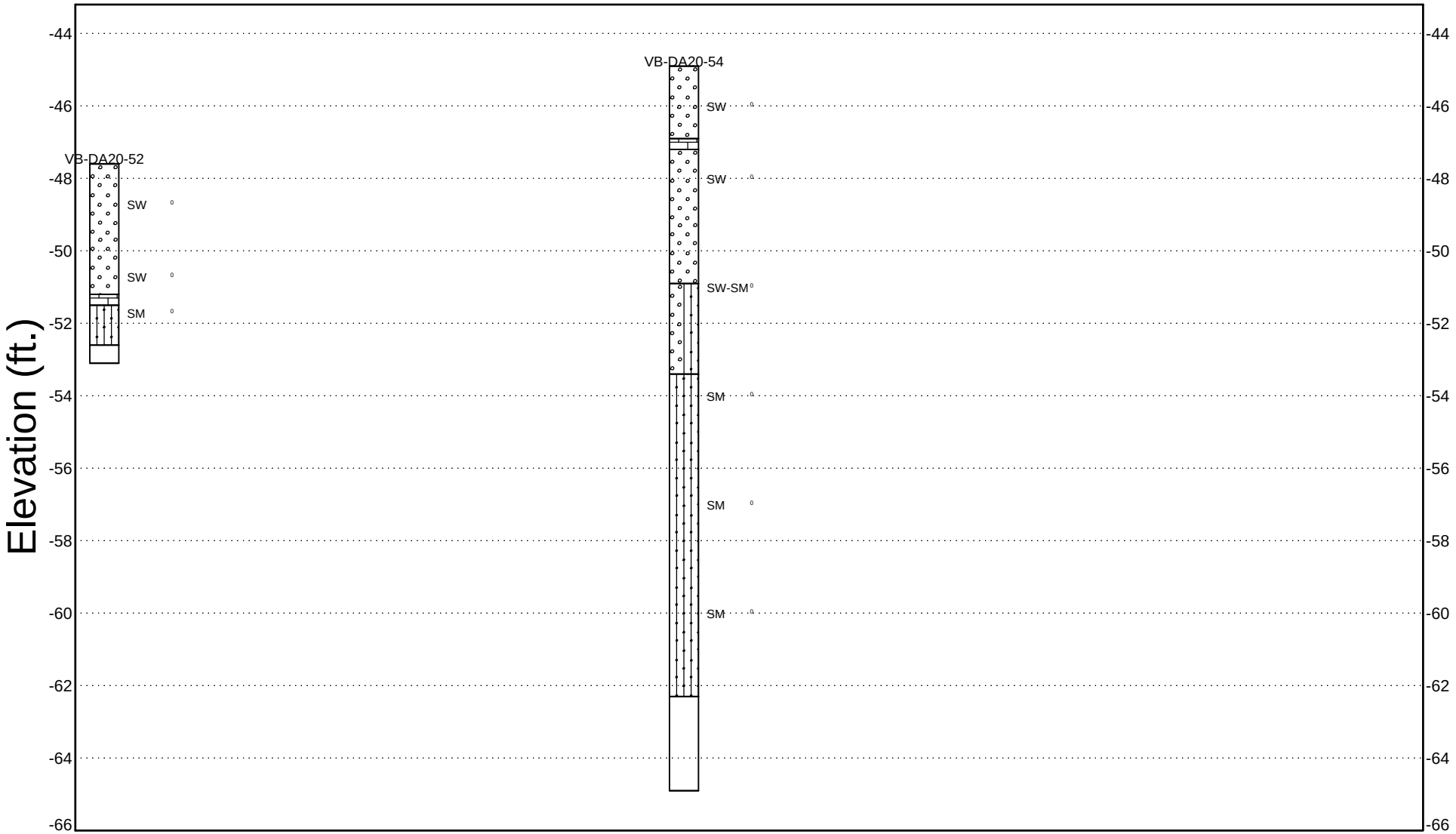
SM
SM
SM
SM
VB-DA20-55
SW-SM
SM
SM
SM
SM
SM

DA01-R013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-58
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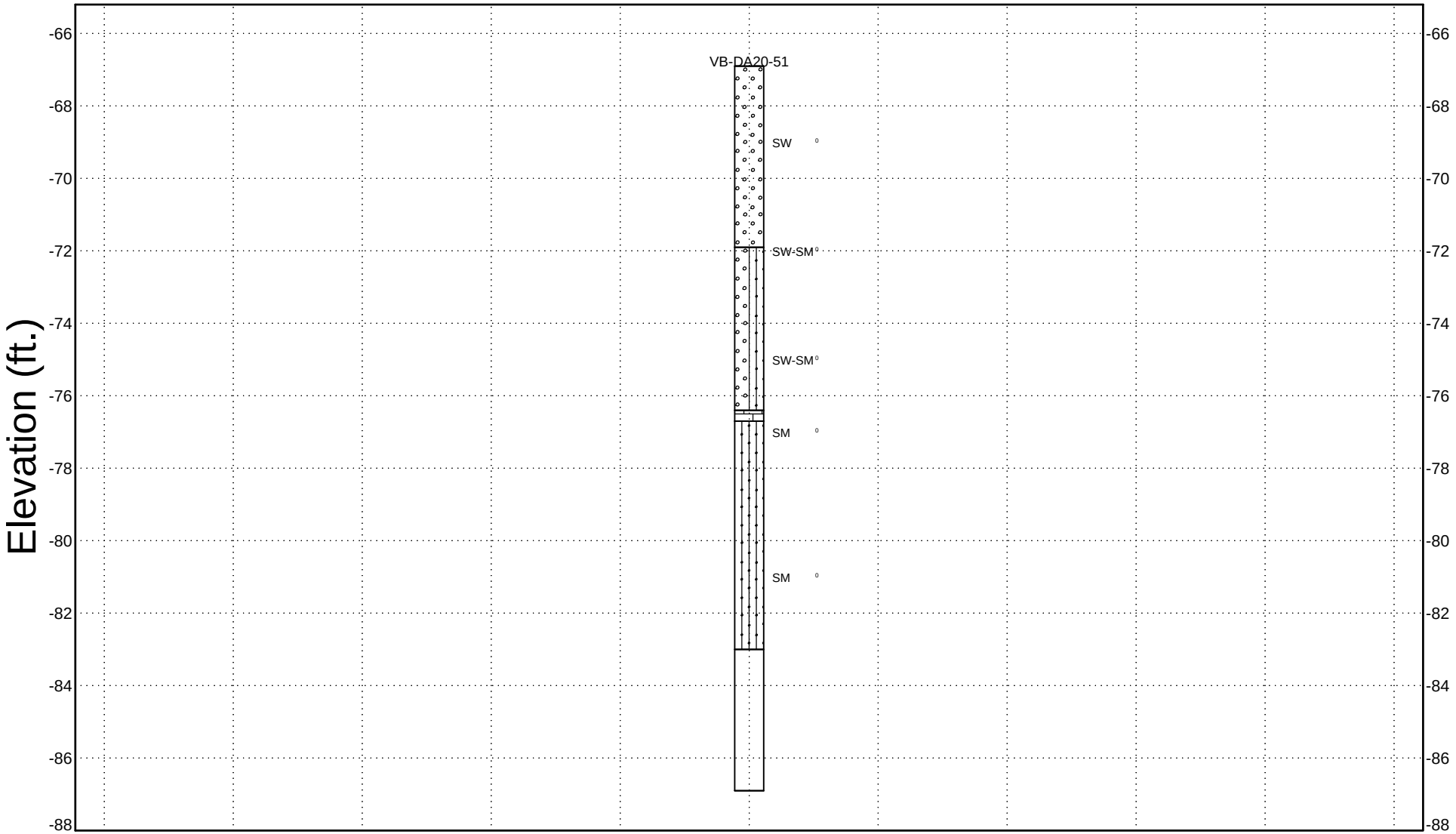
SW
SM
VB-DA20-54
SW
SW
SW-SM
SM
SM
SM

DA01-R016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-84
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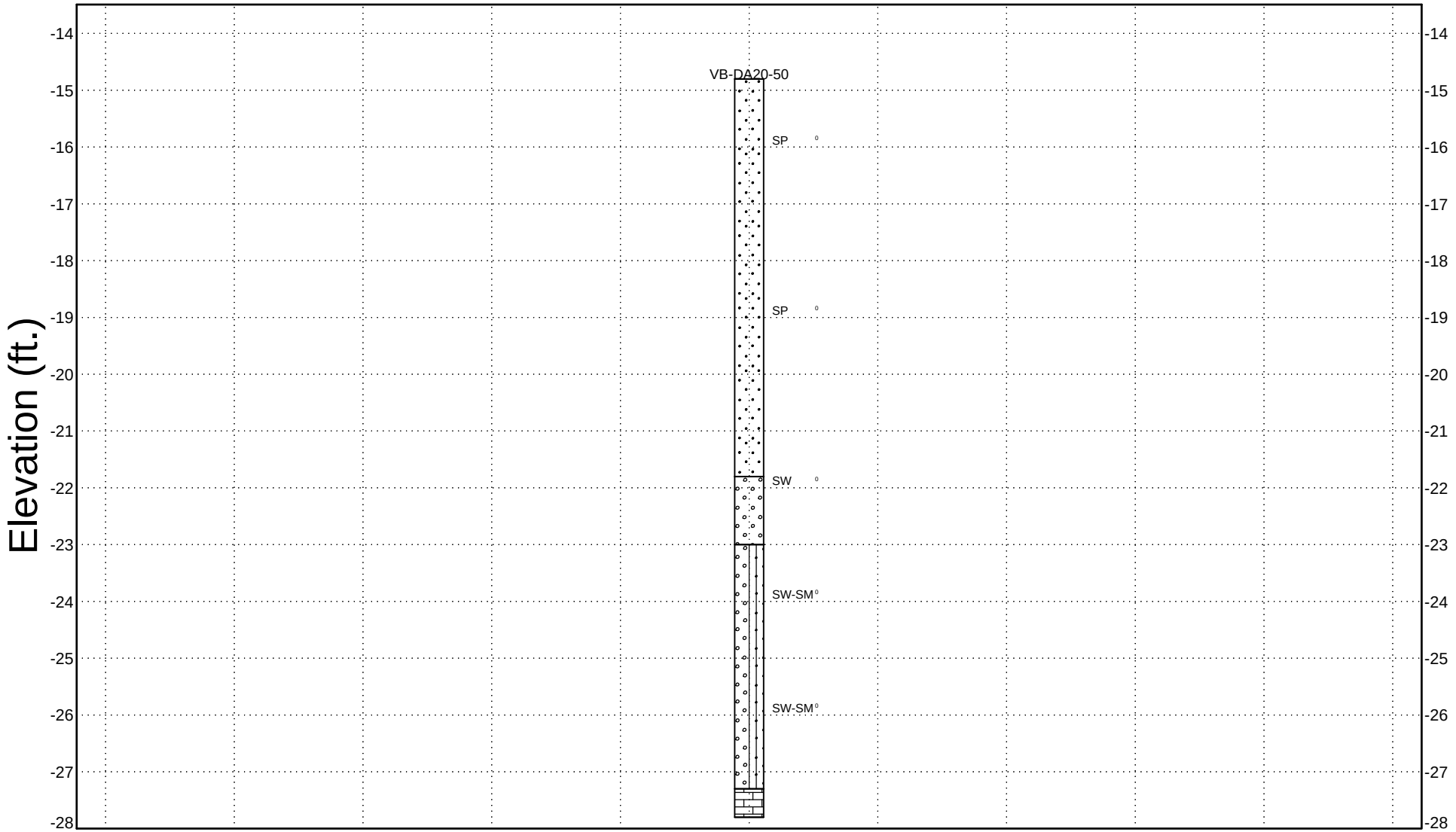
SW-SM
SW-SM
SM
SM

DA02-R019


Elevation (ft.)
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-17
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-20
-21
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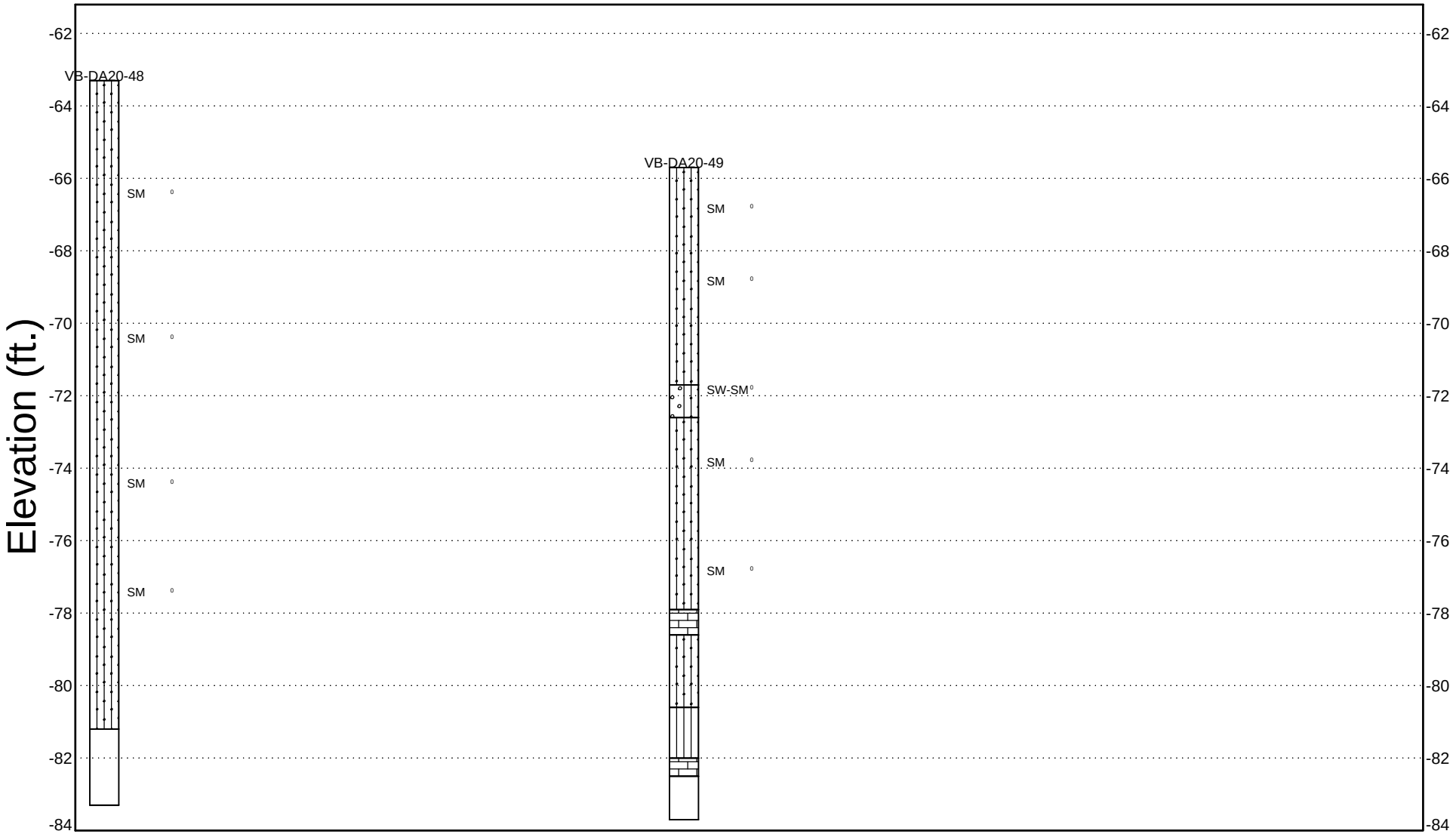
-26
-27
-28
VB-DA20-50
SP
SP
SW
SW-SM
SW-SM

DA00-R025


Elevation (ft.)
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-72
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-76
-78
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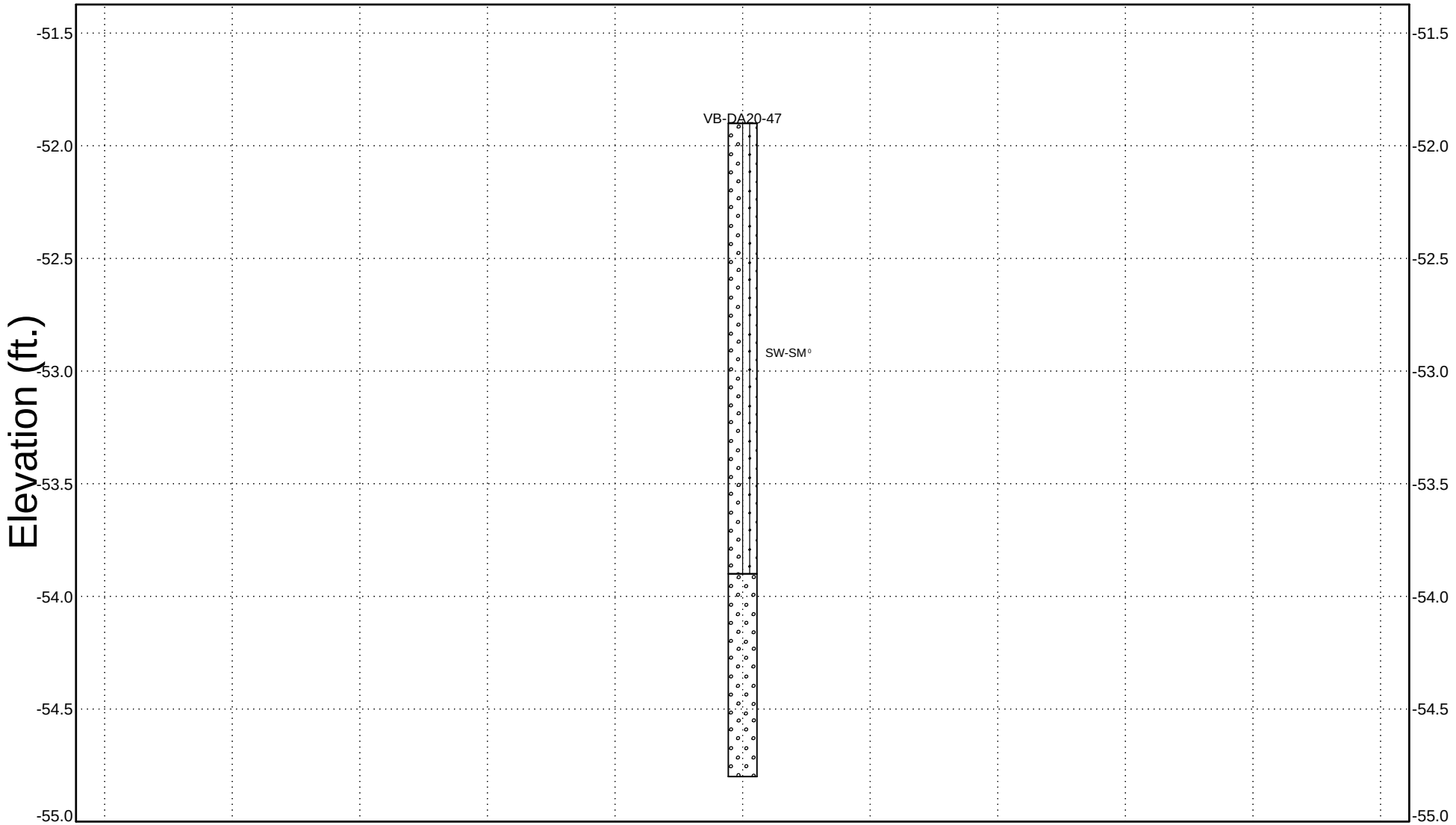
SM
SM
SM
VB-DA20-49
SM
SM
SW-SM
SM
SM

DA01-R033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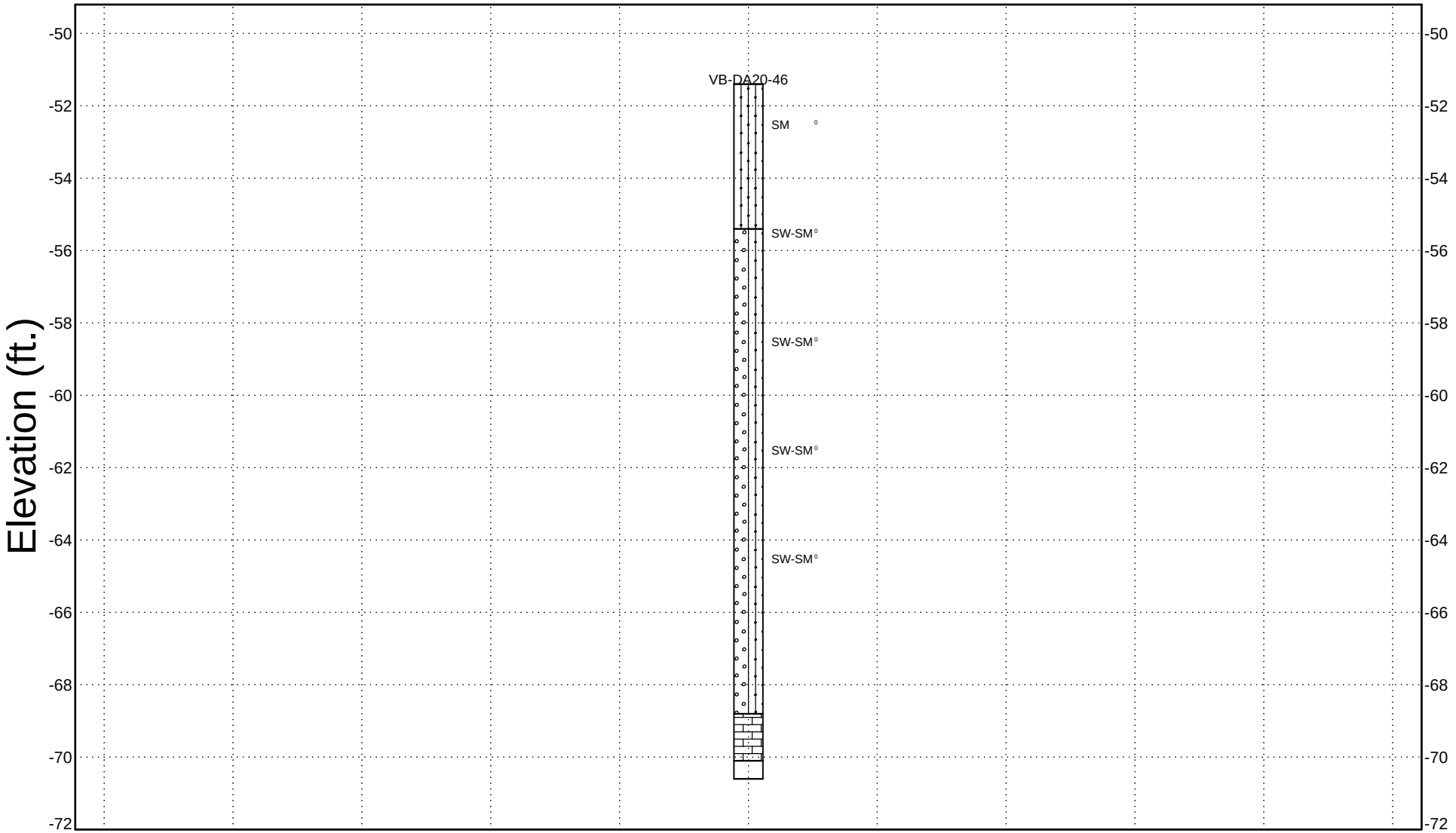
SW-SM
DA01-R036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-56
-58
-60
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-70
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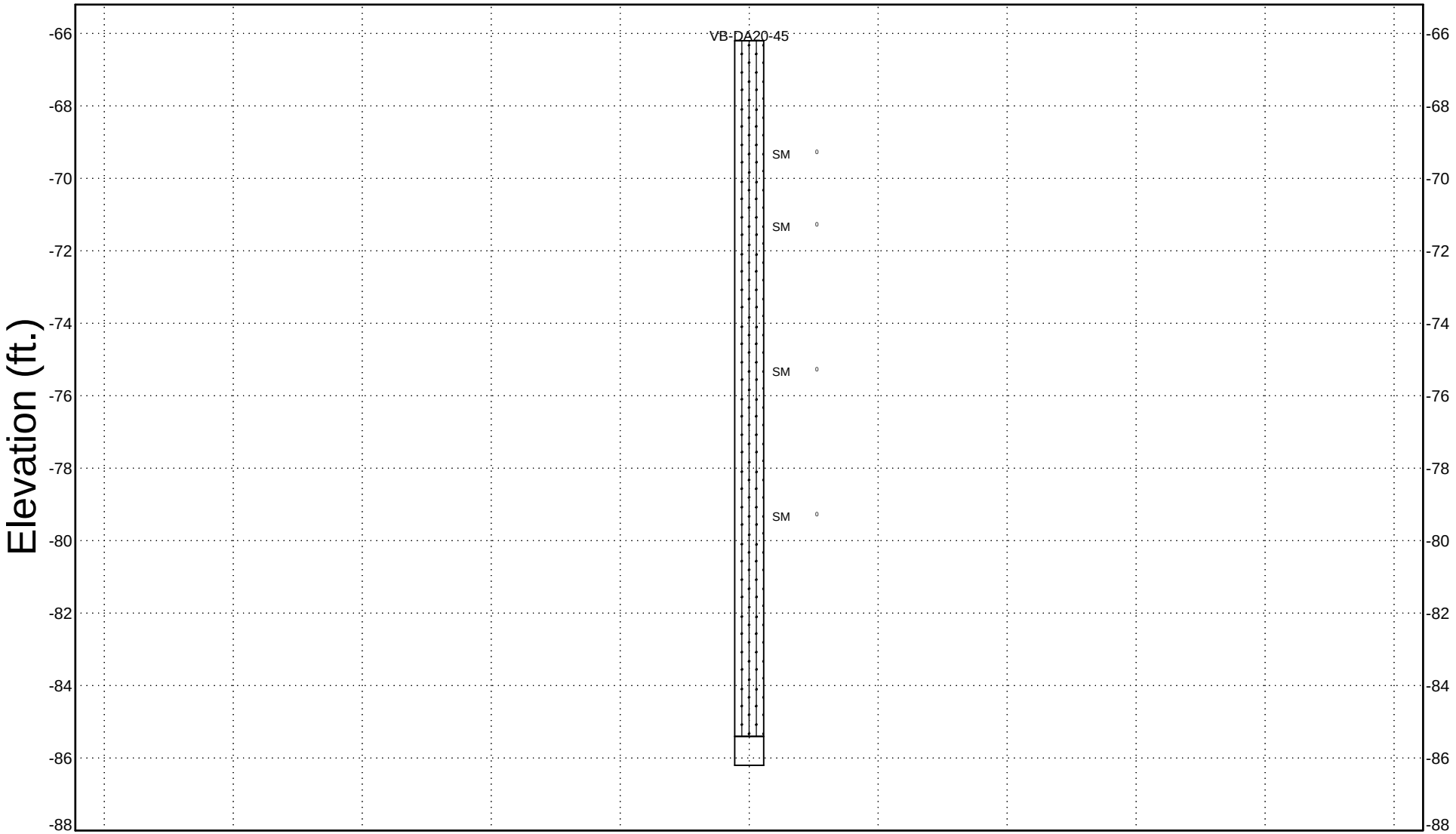
SW-SM
SW-SM
SW-SM
SW-SM

DA01-R039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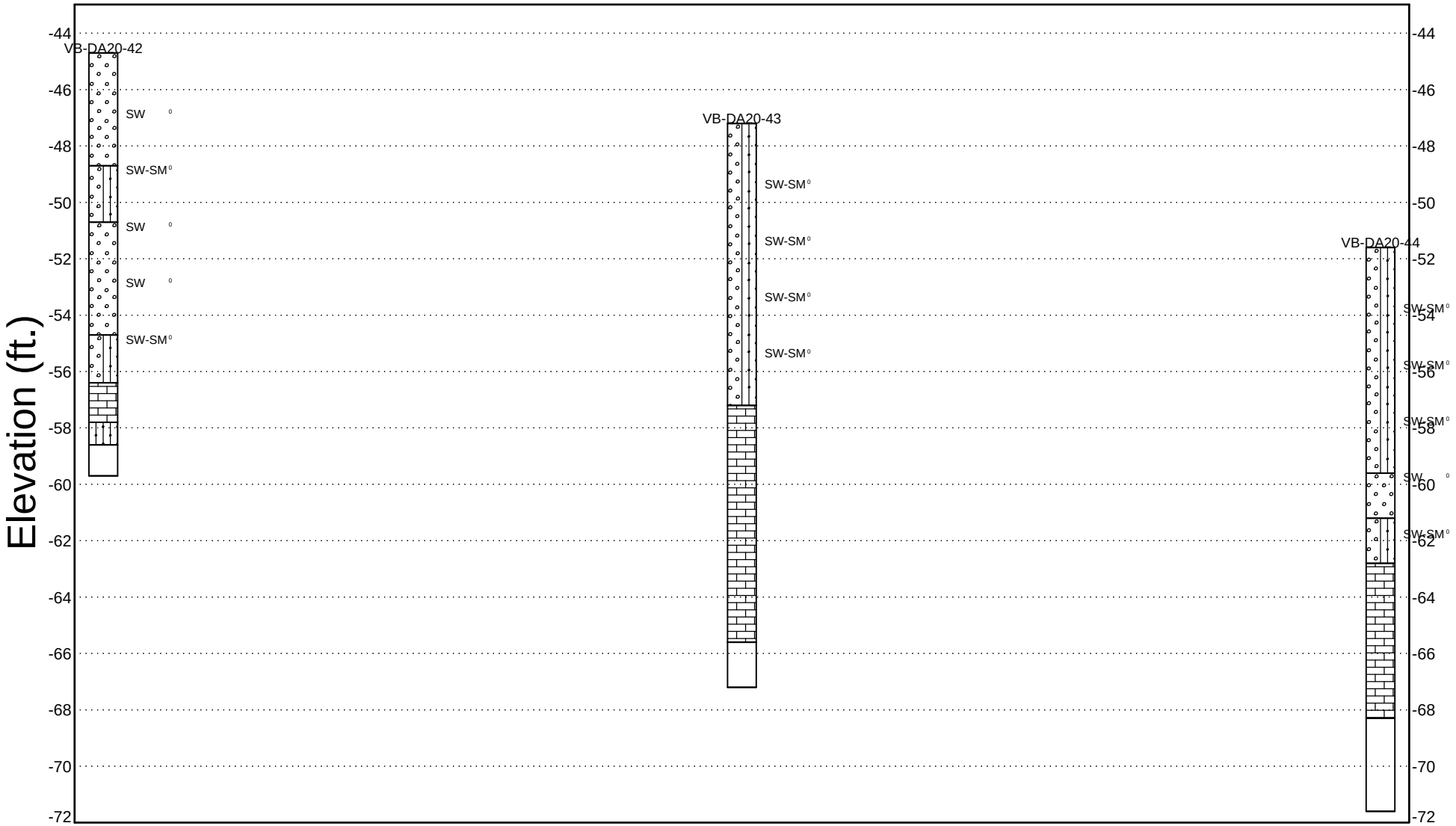
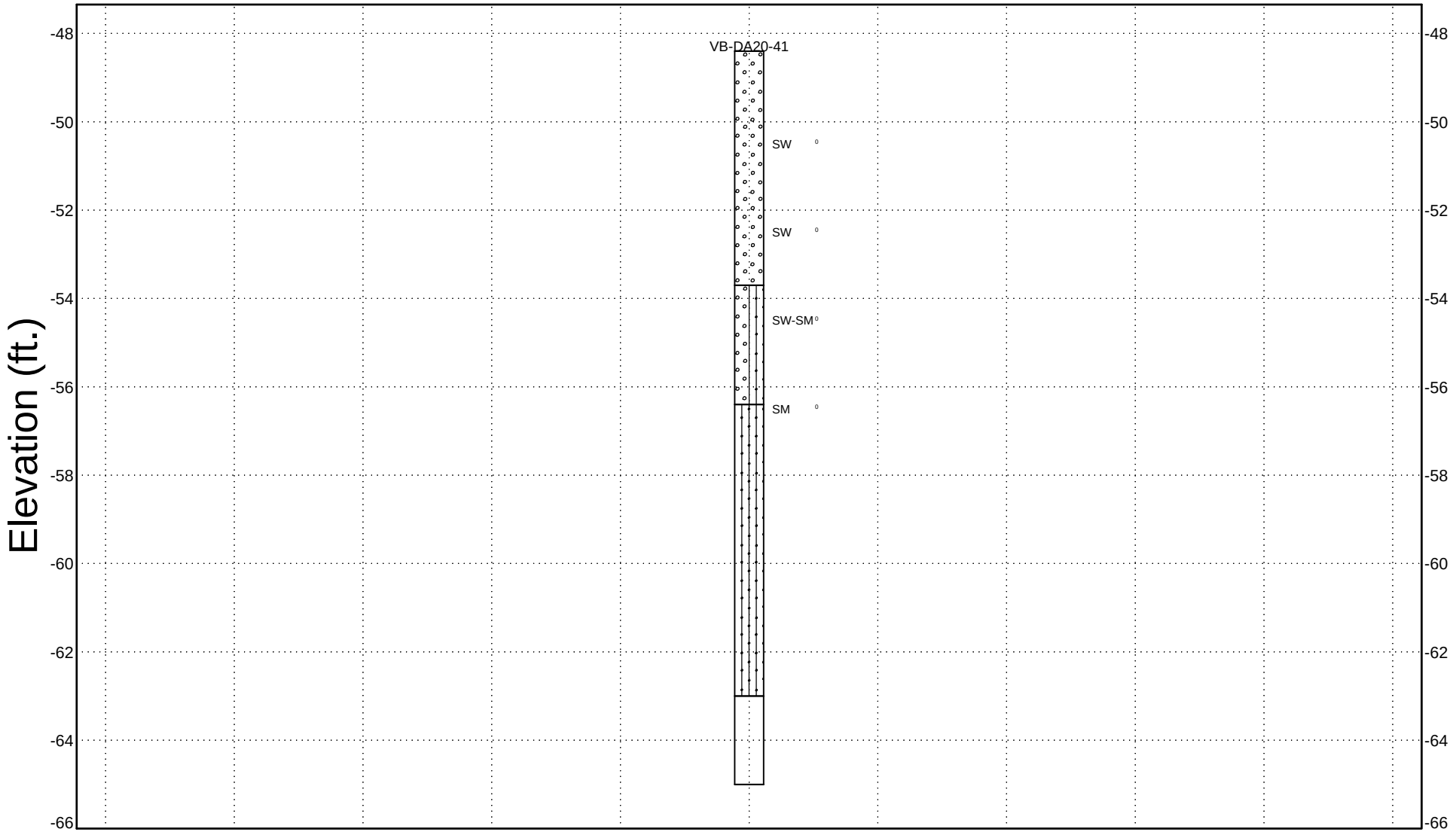
-86
-88

DA01-R043



DA01-R050 / DA01-R051



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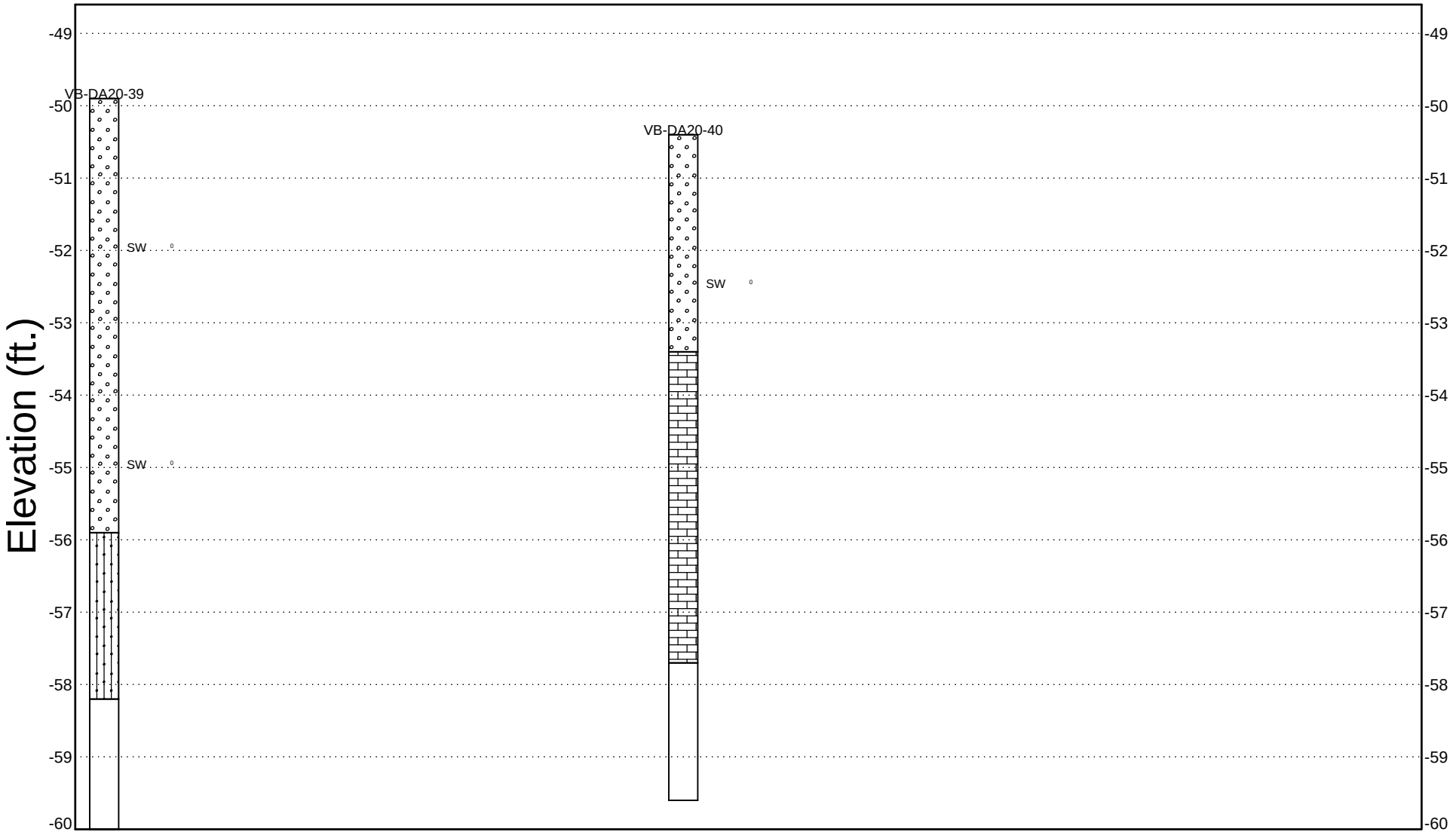
Elevation (ft.)
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-51
-52
-53
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-58
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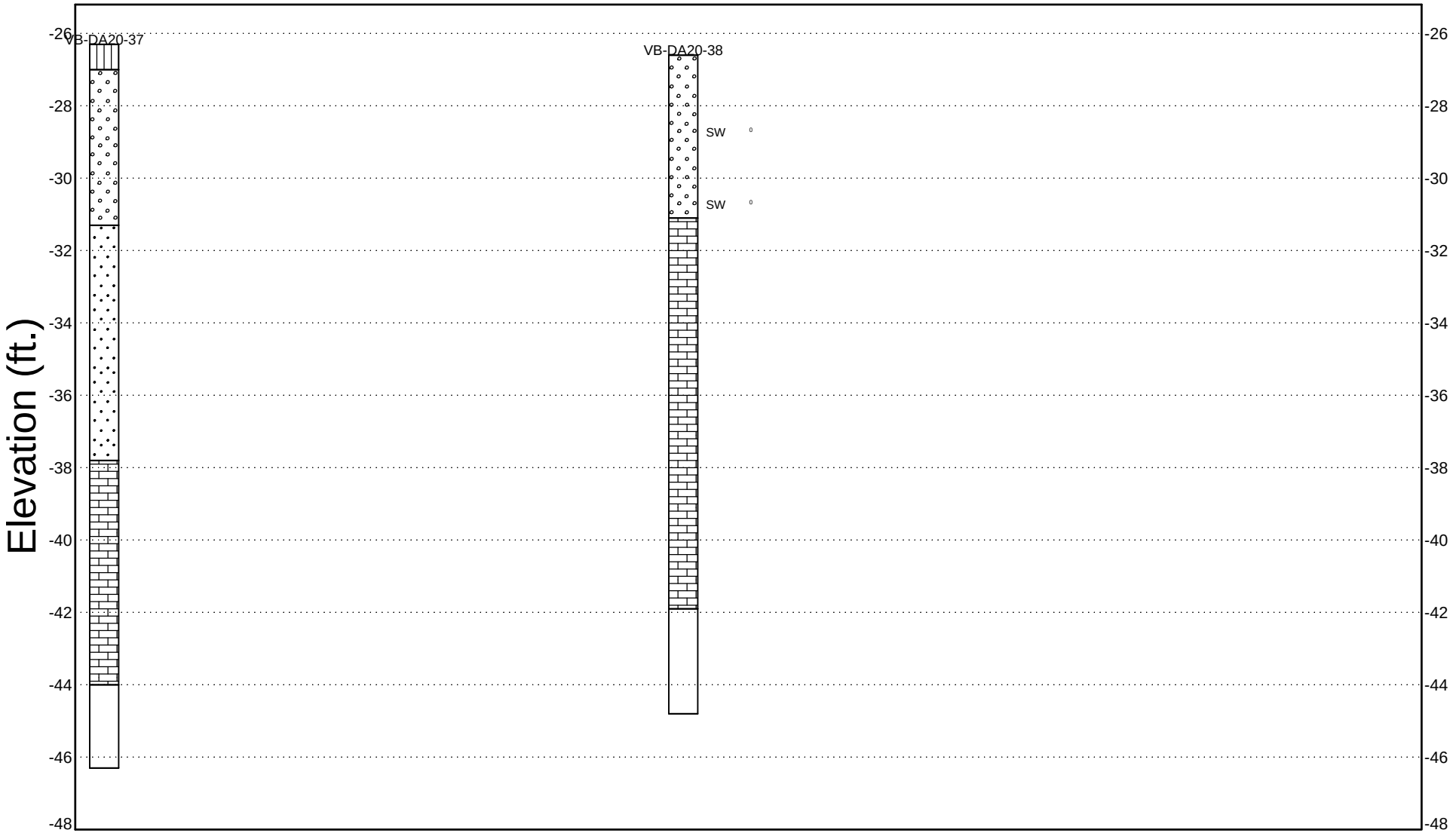
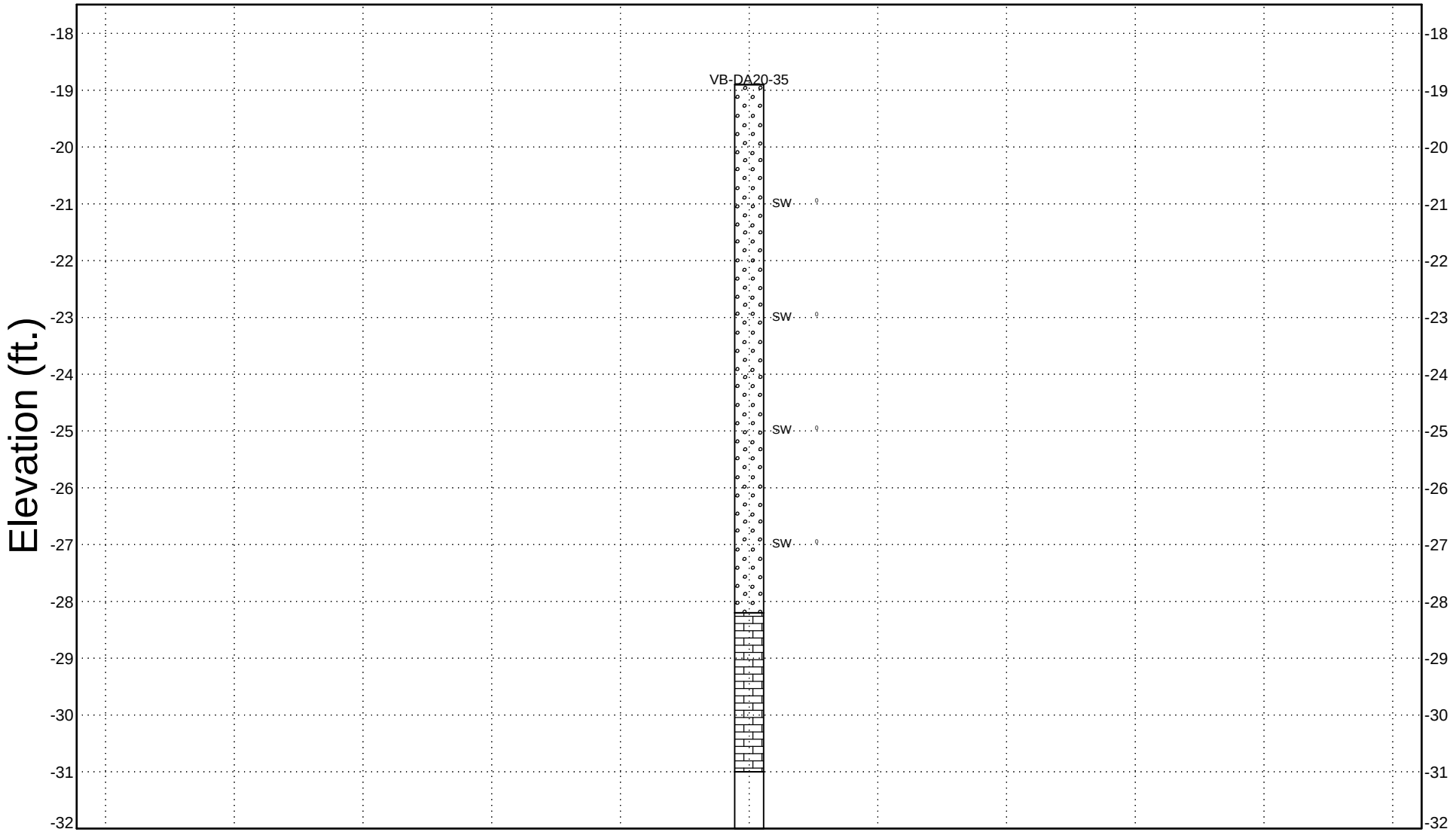
SW
VB-DA20-40
SW

DA01-R058



DA01-R066 / DA00-R069


VB-DA20-35
SW
SW
SW
SW
Elevation (ft.)
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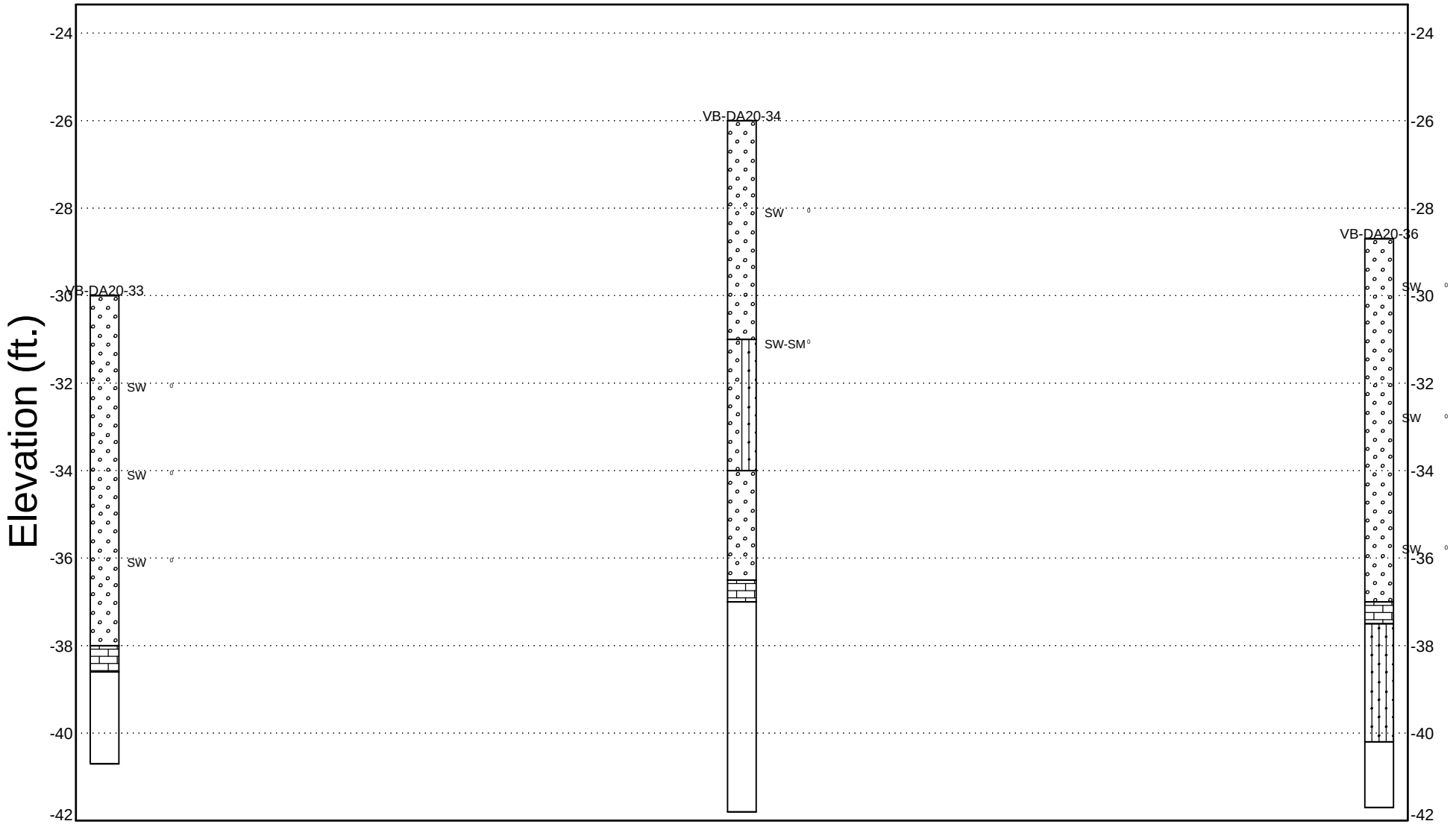
-31
-32

DA00-R073


Elevation (ft.)
-24
-26
-28
-30
-32
-34
-36
-38
-40
-42
VB-DA20-33
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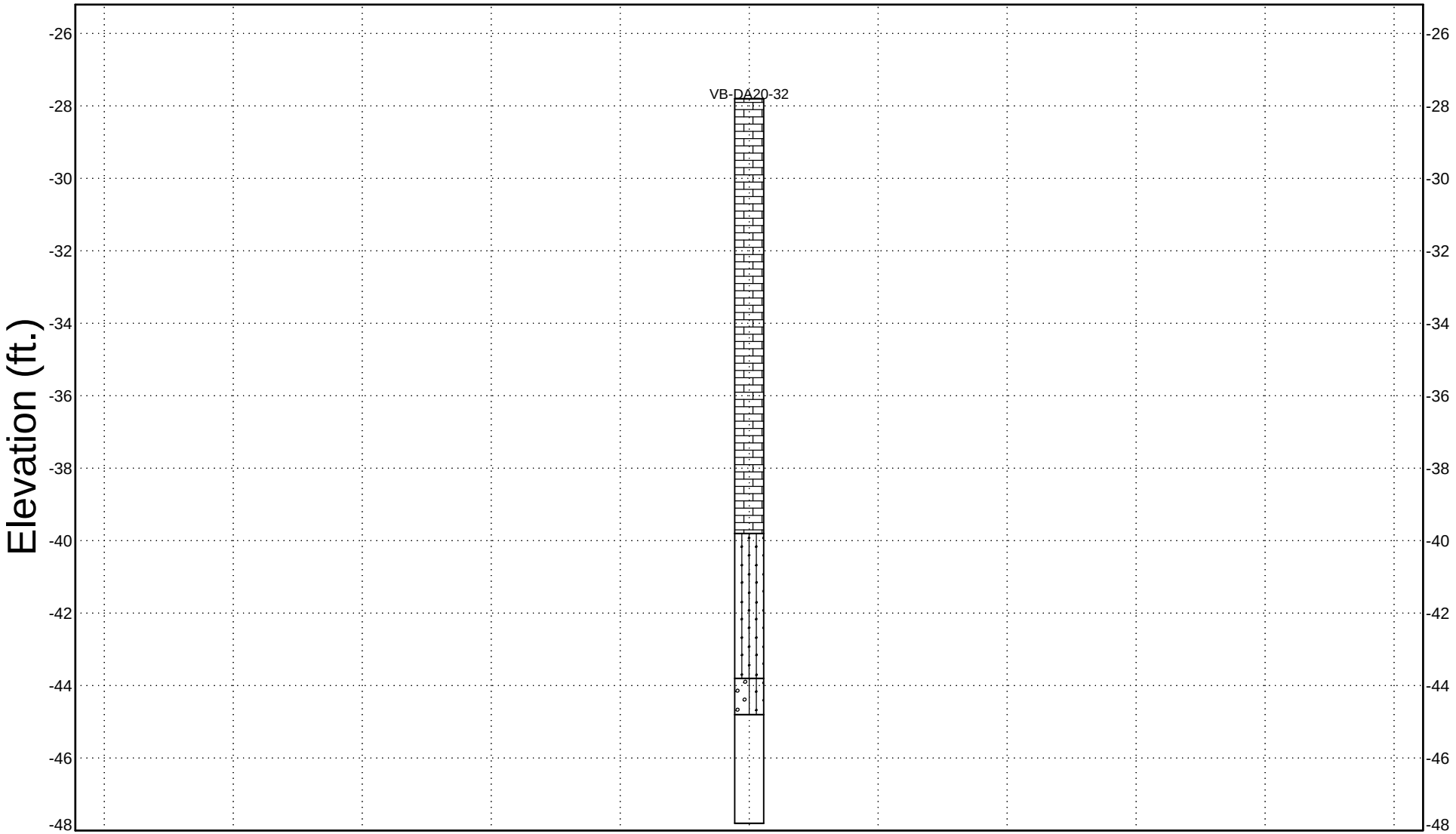
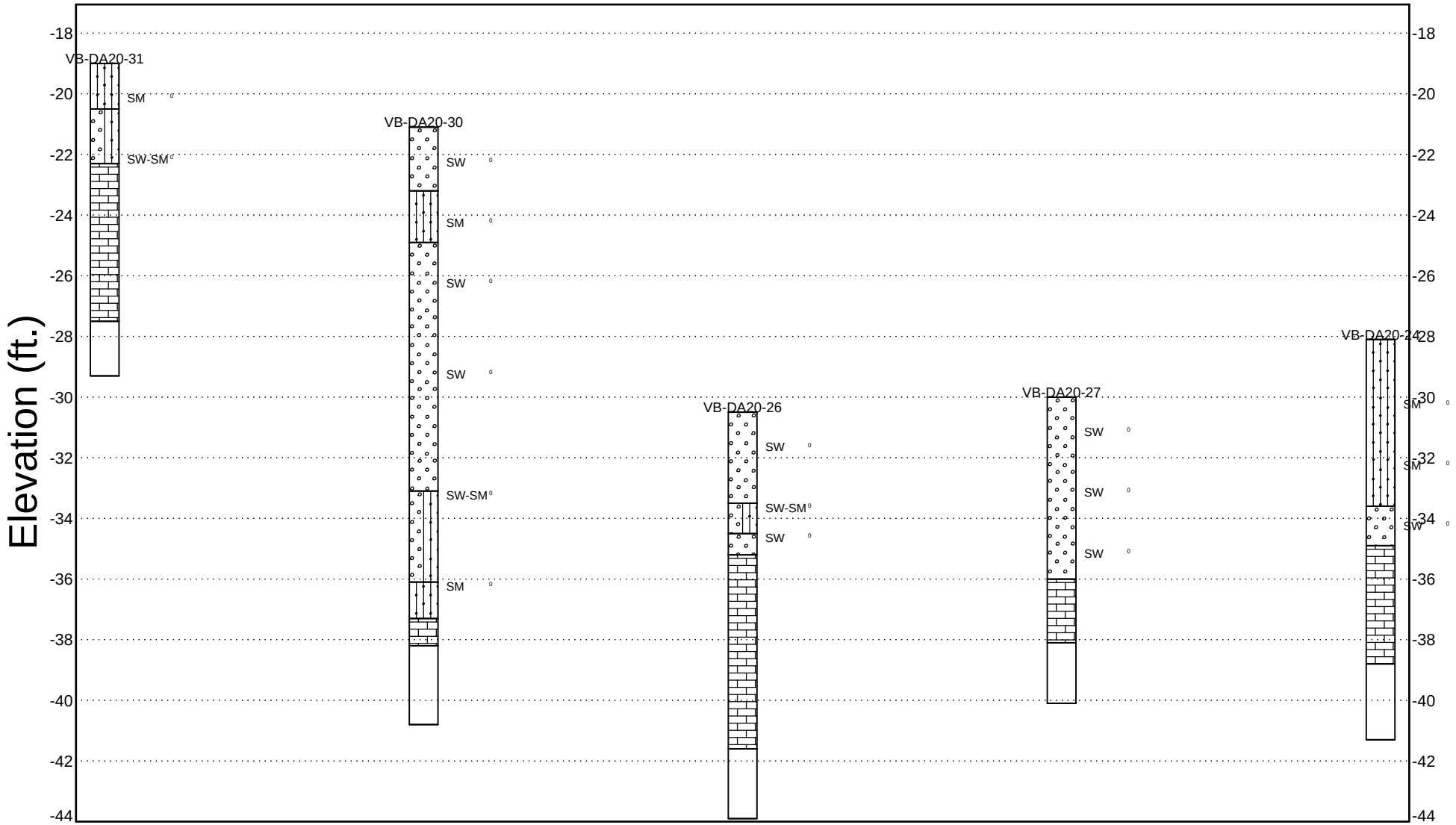
SW
SW
VB-DA20-34
SW
SW-SM
VB-DA20-36
SW
SW
SW

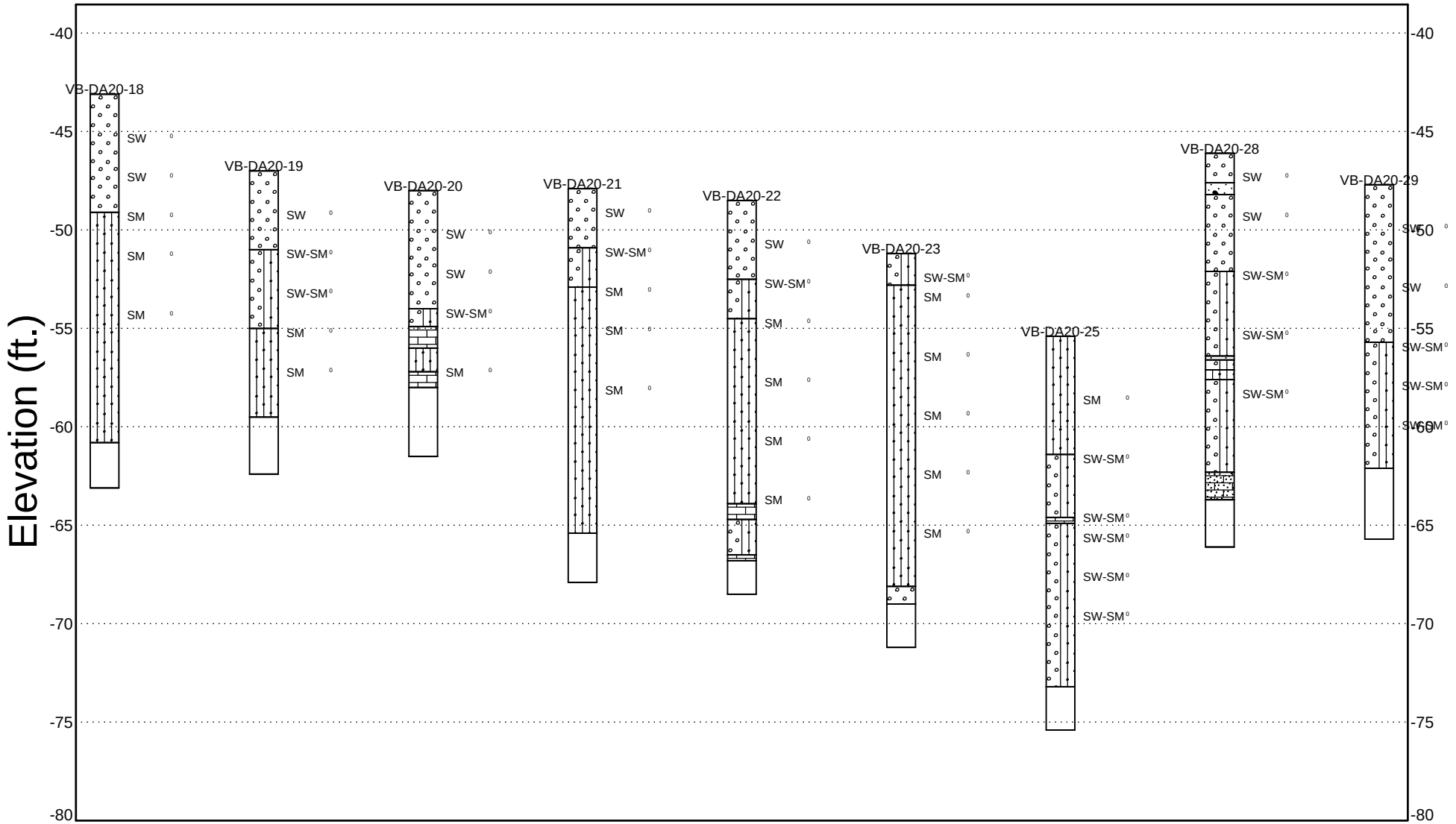
DA01-R072



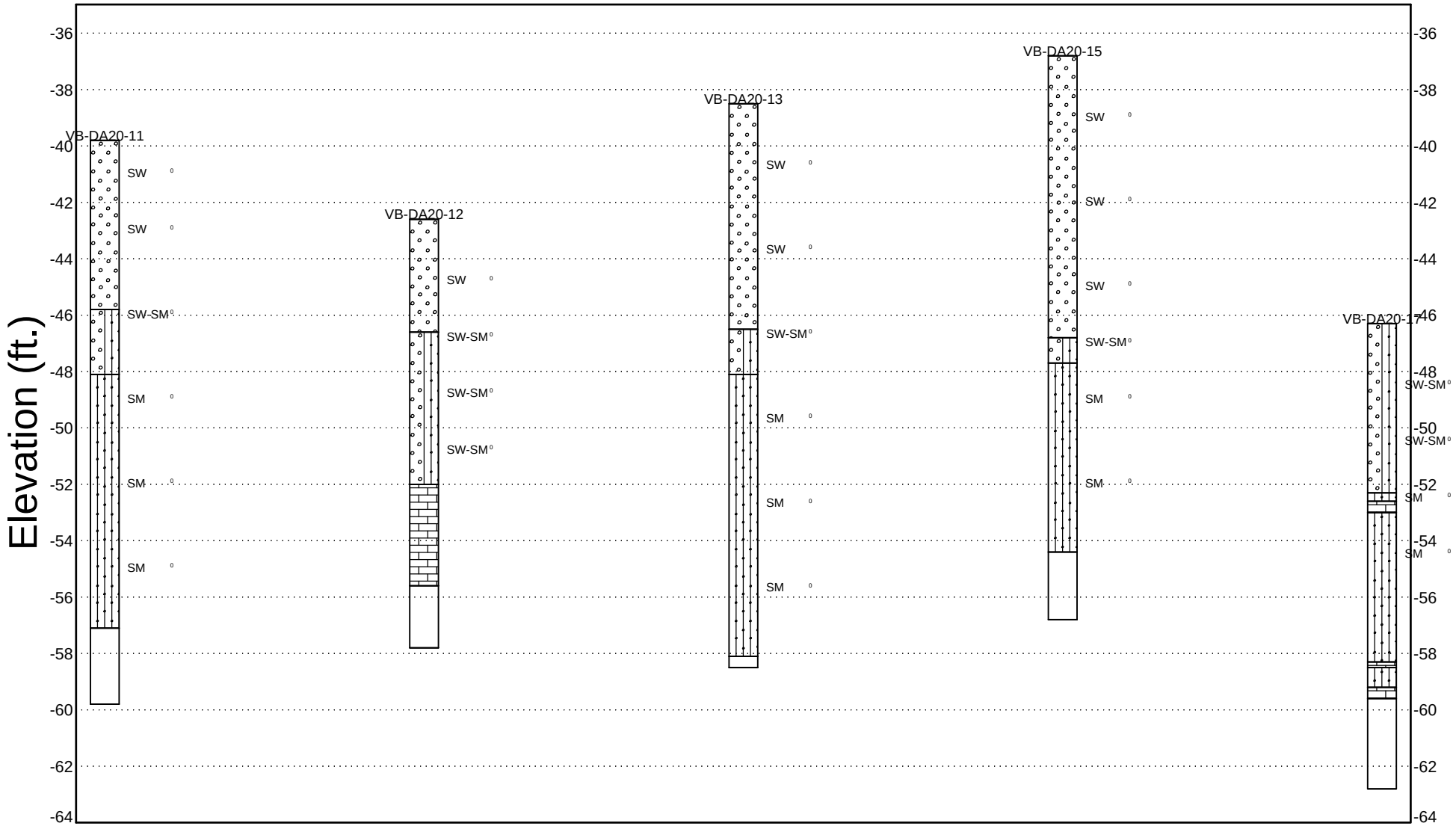
DA02-R076



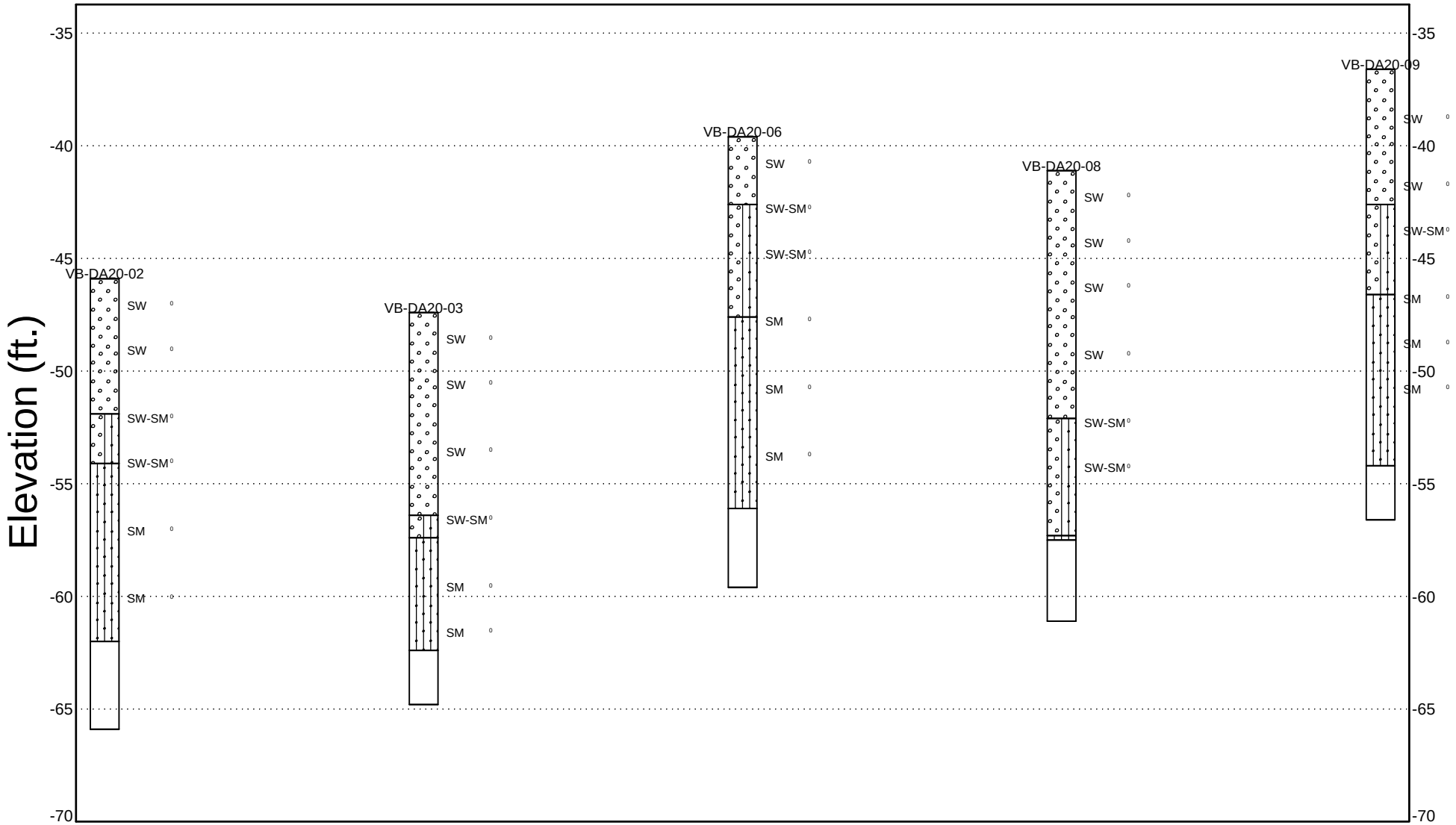
DA01-R077 / DA02-R081 / DA02-R082



DA03-R080 / DA03-R081 / DA03-R093



DA03-R094 / DA04-R098


Elevation (ft.)
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-45
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-55
-60
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-70
VB-DA20-02
SW
SW
SW-SM
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SM
SM
VB-DA20-03
SW
SW
SW
SW-SM
SM
SM
VB-DA20-06
SW
SW-SM
SW-SM
SM
SM
SM
VB-DA20-08
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SW
SW-SM
SW-SM
VB-DA20-09
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SW
SW-SM
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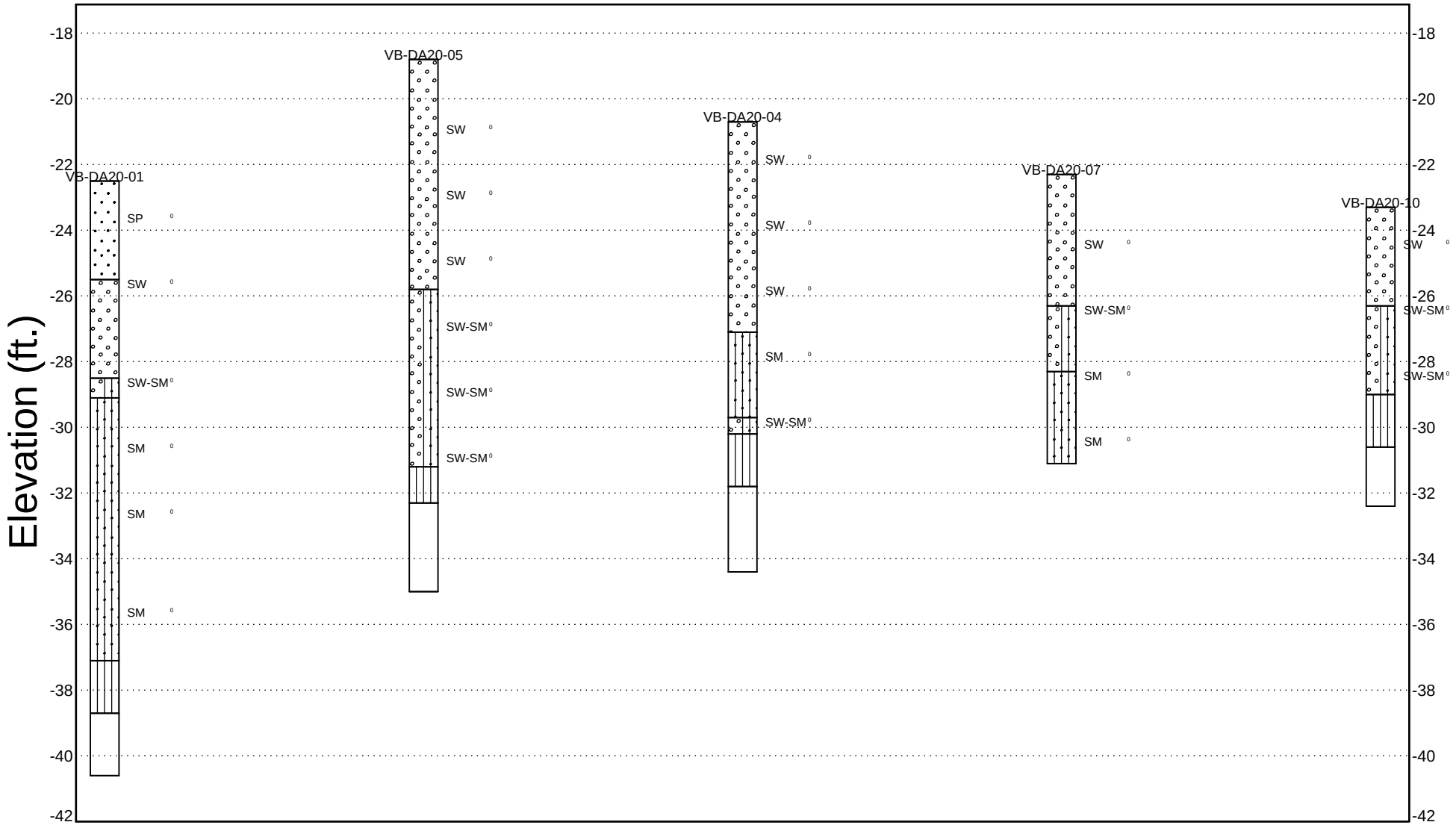
SM
SM

DA04-R109


Elevation (ft.)
-18
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-22
-24
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-30
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-38
-40
-42
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SW
SW-SM
SM
SM
SM
VB-DA20-05
SW
SW
SW
SW-SM
SW-SM
SW-SM
VB-DA20-04
SW
SW
SW
SM
SW-SM
VB-DA20-07
SW
SW-SM
SM
SM
VB-DA20-10
SW
SW-SM
SW-SM

DA02-R109

APPENDIX C

Sediment Sample Testing Summary Table

Borrow Area	Boring Name	Sample Depth (feet)	Sample Number	USCS Classification	Moist Munsell Color	Gravel Content (% retained #4 sieve)	Fines Content (% passing #230 sieve)	Mean (mm)	Visual Shell (%)	Carbonate Content (%)	Beach Compatibility
DA03-R106	VB-DA20-01	1.0	1	SP	5Y 8/2	0.0	3.0	0.33	1	95.6	Compatible
DA03-R106	VB-DA20-01	3.0	2	SW	5Y 8/2	1.6	2.5	0.42	2	NT	Compatible
DA03-R106	VB-DA20-01	6.0	3	SW-SM	5Y 8/2	3.9	9.9	0.55	3	NT	Noncompatible
DA03-R106	VB-DA20-01	8.0	4	SM	5Y 8/2	0.8	20.9	0.39	2	NT	Noncompatible
DA03-R106	VB-DA20-01	10.0	5	SM	5Y 8/2	2.0	27.1	0.45	2	NT	Noncompatible
DA03-R106	VB-DA20-01	13.0	6	SM	5Y 8/2	1.0	19.8	0.42	3	NT	Noncompatible
DA04-R106	VB-DA20-02	1.0	1	SW	5Y 8/2	1.6	4.1	0.48	1	NT	Compatible
DA04-R106	VB-DA20-02	3.0	2	SW	5Y 8/2	2.7	3.9	0.58	1	NT	Compatible
DA04-R106	VB-DA20-02	6.0	3	SW-SM	5Y 8/2	1.5	10.0	0.62	1	NT	Noncompatible
DA04-R106	VB-DA20-02	8.0	4	SW-SM	5Y 8/2	2.2	10.9	0.66	2	NT	Noncompatible
DA04-R106	VB-DA20-02	11.0	5	SM	5Y 8/2	0.5	28.5	0.24	1	NT	Noncompatible
DA04-R106	VB-DA20-02	14.0	6	SM	5Y 8/2	0.2	28.8	0.21	1	NT	Noncompatible
DA04-R106	VB-DA20-03	1.0	1	SW	5Y 8/2	28.8	2.4	1.44	1	NT	Potential
DA04-R106	VB-DA20-03	3.0	2	SW	5Y 8/2	1.0	3.3	0.42	0	99.2	Compatible
DA04-R106	VB-DA20-03	6.0	3	SW	5Y 8/2	0.2	3.5	0.49	1	NT	Compatible
DA04-R106	VB-DA20-03	9.0	4	SW-SM	5Y 8/2	0.0	6.5	0.25	0	NT	Noncompatible
DA04-R106	VB-DA20-03	12.0	5	SM	5Y 8/2	0.3	13.2	0.21	0	NT	Noncompatible
DA04-R106	VB-DA20-03	14.0	6	SM	5Y 8/2	1.7	17.6	0.26	1	NT	Noncompatible
DA03-R106	VB-DA20-04	1.0	1	SW	5Y 8/2	0.0	3.6	0.29	3	NT	Compatible
DA03-R106	VB-DA20-04	3.0	2	SW	5Y 8/2	1.1	2.7	0.38	1	NT	Compatible
DA03-R106	VB-DA20-04	5.0	3	SW	5Y 8/2	0.5	3.9	0.45	0	NT	Compatible
DA03-R106	VB-DA20-04	7.0	4	SM	5Y 8/2	4.4	13.6	0.61	0	NT	Noncompatible
DA03-R106	VB-DA20-04	9.0	5	SW-SM	5Y 8/2	1.0	11.6	0.42	1	NT	Noncompatible
DA03-R106	VB-DA20-05	2.0	1	SW	5Y 8/2	3.1	2.5	0.56	1	98.2	Compatible
DA03-R106	VB-DA20-05	4.0	2	SW	5Y 8/2	1.2	4.5	0.48	2	NT	Compatible
DA03-R106	VB-DA20-05	6.0	3	SW	5Y 8/2	2.4	4.3	0.64	2	NT	Compatible
DA03-R106	VB-DA20-05	8.0	4	SW-SM	5Y 8/2	0.4	11.7	0.35	7	NT	Noncompatible
DA03-R106	VB-DA20-05	10.0	5	SW-SM	5Y 8/2	0.3	11.4	0.36	5	NT	Noncompatible
DA03-R106	VB-DA20-05	12.0	6	SW-SM	5Y 8/2	0.3	11.2	0.36	2	NT	Noncompatible

Borrow Area	Boring Name	Sample Depth (feet)	Sample Number	USCS Classification	Moist Munsell Color	Gravel Content (% retained #4 sieve)	Fines Content (% passing #230 sieve)	Mean (mm)	Visual Shell (%)	Carbonate Content (%)	Beach Compatibility
DA04-R106	VB-DA20-06	1.0	1	SW	5Y 8/2	0.2	2.8	0.26	1	NT	Potential
DA04-R106	VB-DA20-06	3.0	2	SW-SM	5Y 8/2	0.8	5.1	0.32	1	NT	Compatible
DA04-R106	VB-DA20-06	5.0	3	SW-SM	5Y 8/2	0.1	6.9	0.32	1	NT	Compatible
DA04-R106	VB-DA20-06	8.0	4	SM	5Y 8/2	1.9	15.3	0.23	1	NT	Noncompatible
DA04-R106	VB-DA20-06	11.0	5	SM	5Y 8/2	0.2	13.0	0.24	0	NT	Noncompatible
DA04-R106	VB-DA20-06	14.0	6	SM	5Y 8/2	0.0	31.5	0.21	1	NT	Noncompatible
DA03-R106	VB-DA20-07	2.0	1	SW	5Y 8/2	6.1	3.1	0.53	0	NT	Compatible
DA03-R106	VB-DA20-07	4.0	2	SW-SM	5Y 8/2	0.9	11.1	0.46	1	NT	Noncompatible
DA03-R106	VB-DA20-07	6.0	3	SM	5Y 8/2	1.4	12.8	0.40	0	NT	Noncompatible
DA03-R106	VB-DA20-07	8.0	4	SM	5Y 8/2	4.5	14.4	0.44	2	NT	Noncompatible
DA04-R106	VB-DA20-08	1.0	1	SW	5Y 8/2	0.7	2.5	0.42	2	NT	Compatible
DA04-R106	VB-DA20-08	3.0	2	SW	5Y 8/2	1.1	3.0	0.36	1	NT	Compatible
DA04-R106	VB-DA20-08	5.0	3	SW	5Y 8/2	1.1	3.2	0.38	1	NT	Compatible
DA04-R106	VB-DA20-08	8.0	4	SW	5Y 8/2	3.4	3.7	0.61	1	NT	Compatible
DA04-R106	VB-DA20-08	11.0	5	SW-SM	5Y 8/2	0.4	6.9	0.45	2	NT	Compatible
DA04-R106	VB-DA20-08	13.0	6	SW-SM	5Y 8/1	0.4	11.0	0.46	1	NT	Noncompatible
DA04-R106	VB-DA20-09	2.0	1	SW	5Y 8/2	6.6	2.6	0.67	1	NT	Potential
DA04-R106	VB-DA20-09	5.0	2	SW	5Y 8/2	0.2	4.2	0.40	2	95	Compatible
DA04-R106	VB-DA20-09	7.0	3	SW-SM	5Y 8/1	0.4	9.0	0.40	3	NT	Noncompatible
DA04-R106	VB-DA20-09	10.0	4	SM	5Y 8/1	1.7	12.1	0.55	3	NT	Noncompatible
DA04-R106	VB-DA20-09	12.0	5	SM	5Y 8/1	1.4	15.5	0.63	3	NT	Noncompatible
DA04-R106	VB-DA20-09	14.0	6	SM	5Y 8/1	0.5	16.1	0.60	5	NT	Noncompatible
DA03-R106	VB-DA20-10	1.0	1	SW	5Y 8/2	1.5	2.1	0.36	0	NT	Compatible
DA03-R106	VB-DA20-10	3.0	2	SW-SM	5Y 8/2	4.8	5.5	0.46	2	97.4	Compatible
DA03-R106	VB-DA20-10	5.0	3	SW-SM	5Y 8/2	0.6	8.0	0.28	1	NT	Noncompatible
DA04-R101	VB-DA20-11	1.0	1	SW	5Y 8/2	0.2	2.8	0.56	0	NT	Compatible
DA04-R101	VB-DA20-11	3.0	2	SW	5Y 8/2	2.5	3.2	0.62	2	99.2	Compatible
DA04-R101	VB-DA20-11	6.0	3	SW-SM	5Y 8/2	0.0	6.3	0.41	3	NT	Compatible
DA04-R101	VB-DA20-11	9.0	4	SM	5Y 8/1	0.1	14.7	0.23	3	NT	Noncompatible
DA04-R101	VB-DA20-11	12.0	5	SM	5Y 8/1	0.7	21.3	0.23	3	NT	Noncompatible
DA04-R101	VB-DA20-11	15.0	6	SM	5Y 8/1	0.5	20.2	0.29	5	NT	Noncompatible

Borrow Area	Boring Name	Sample Depth (feet)	Sample Number	USCS Classification	Moist Munsell Color	Gravel Content (% retained #4 sieve)	Fines Content (% passing #230 sieve)	Mean (mm)	Visual Shell (%)	Carbonate Content (%)	Beach Compatibility
DA04-R101	VB-DA20-12	2.0	1	SW	5Y 8/2	1.3	2.7	0.37	1	NT	Compatible
DA04-R101	VB-DA20-12	4.0	2	SW-SM	5Y 8/2	2.7	5.3	0.46	2	NT	Compatible
DA04-R101	VB-DA20-12	6.0	3	SW-SM	5Y 8/2	0.8	6.6	0.41	1	NT	Compatible
DA04-R101	VB-DA20-12	8.0	4	SW-SM	5Y 8/2	0.0	7.5	0.26	1	NT	Potential
DA04-R101	VB-DA20-13	2.0	1	SW	5Y 8/2	0.6	3.4	0.57	1	98.8	Compatible
DA04-R101	VB-DA20-13	5.0	2	SW	5Y 8/2	0.1	3.5	0.40	1	NT	Compatible
DA04-R101	VB-DA20-13	8.0	3	SW-SM	5Y 8/1	0.1	10.2	0.33	1	NT	Noncompatible
DA04-R101	VB-DA20-13	11.0	4	SM	5Y 8/1	0.3	12.1	0.44	3	NT	Noncompatible
DA04-R101	VB-DA20-13	14.0	5	SM	5Y 8/1	0.1	19.1	0.60	5	NT	Noncompatible
DA04-R101	VB-DA20-13	17.0	6	SM	5Y 8/1	0.5	22.3	0.52	5	NT	Noncompatible
DA03-R097A	VB-DA20-14	2.0	1	SW	5Y 8/2	1.1	2.5	0.44	2	96.5	Compatible
DA03-R097A	VB-DA20-14	4.0	2	SW	5Y 8/2	0.3	2.4	0.34	1	NT	Compatible
DA03-R097A	VB-DA20-14	6.0	3	SW	5Y 8/2	0.6	2.9	0.43	2	NT	Compatible
DA03-R097A	VB-DA20-14	8.0	4	SW-SM	5Y 8/2	2.1	7.1	0.46	2	NT	Potential
DA04-R101	VB-DA20-15	2.0	1	SW	5Y 8/2	0.1	4.3	0.45	3	98.2	Compatible
DA04-R101	VB-DA20-15	5.0	2	SW	5Y 8/2	0.2	3.5	0.51	1	NT	Compatible
DA04-R101	VB-DA20-15	8.0	3	SW	5Y 8/2	0.9	4.7	0.63	2	NT	Compatible
DA04-R101	VB-DA20-15	10.0	4	SW-SM	5Y 8/2	1.2	9.2	0.46	3	NT	Noncompatible
DA04-R101	VB-DA20-15	12.0	5	SM	5Y 8/1	0.0	15.0	0.30	1	NT	Noncompatible
DA04-R101	VB-DA20-15	15.0	6	SM	5Y 8/1	0.0	34.7	0.17	1	NT	Noncompatible
DA03-R097A	VB-DA20-16	2.0	1	SW	5Y 8/2	2.1	1.6	0.60	2	98.2	Compatible
DA03-R097A	VB-DA20-16	4.0	2	SW	5Y 8/2	0.5	2.6	0.49	2	NT	Compatible
DA03-R097A	VB-DA20-16	6.0	3	SW	5Y 8/2	0.3	3.5	0.52	2	NT	Compatible
DA03-R097B	VB-DA20-17	2.0	1	SW-SM	5Y 8/2	0.8	5.2	0.50	3	99.1	Compatible
DA03-R097B	VB-DA20-17	4.0	2	SW-SM	5Y 8/2	0.1	6.8	0.48	3	NT	Compatible
DA03-R097B	VB-DA20-17	6.0	3	SM	5Y 8/2	2.9	13.2	0.49	2	NT	Noncompatible
DA03-R097B	VB-DA20-17	8.0	4	SM	5Y 8/1	1.9	23.8	0.53	2	NT	Noncompatible

Borrow Area	Boring Name	Sample Depth (feet)	Sample Number	USCS Classification	Moist Munsell Color	Gravel Content (% retained #4 sieve)	Fines Content (% passing #230 sieve)	Mean (mm)	Visual Shell (%)	Carbonate Content (%)	Beach Compatibility
DA03-R094	VB-DA20-18	2.0	1	SW	5Y 8/2	1.3	2.6	0.37	1	NT	Compatible
DA03-R094	VB-DA20-18	4.0	2	SW	5Y 8/2	2.8	4.3	0.62	1	NT	Compatible
DA03-R094	VB-DA20-18	6.0	3	SM	5Y 8/1	0.2	11.4	0.32	1	NT	Noncompatible
DA03-R094	VB-DA20-18	8.0	4	SM	5Y 8/1	0.2	15.4	0.19	1	NT	Noncompatible
DA03-R094	VB-DA20-18	11.0	5	SM	5Y 8/1	0.0	18.8	0.16	1	NT	Noncompatible
DA03-R094	VB-DA20-19	2.0	1	SW	5Y 8/2	0.9	4.9	0.60	2	99.5	Potential
DA03-R094	VB-DA20-19	4.0	2	SW-SM	5Y 8/2	0.5	5.6	0.71	3	NT	Potential
DA03-R094	VB-DA20-19	6.0	3	SW-SM	5Y 8/1	0.2	9.1	0.58	3	NT	Noncompatible
DA03-R094	VB-DA20-19	8.0	4	SM	5Y 8/1	0.9	13.0	0.50	2	NT	Noncompatible
DA03-R094	VB-DA20-19	10.0	5	SM	5Y 8/1	1.9	13.7	0.54	2	NT	Noncompatible
DA03-R094	VB-DA20-20	2.0	1	SW	5Y 8/1	1.4	3.7	0.31	2	NT	Compatible
DA03-R094	VB-DA20-20	4.0	2	SW	5Y 8/1	12.7	4.9	0.81	3	NT	Potential
DA03-R094	VB-DA20-20	6.0	3	SW-SM	5Y 8/1	1.0	8.1	0.56	5	NT	Noncompatible
DA03-R094	VB-DA20-20	9.0	4	SM	2.5Y 6/2	0.1	24.3	0.23	0	NT	Noncompatible
DA03-R094	VB-DA20-21	1.0	1	SW	2.5Y 8/2	0.1	3.1	0.54	0	NT	Compatible
DA03-R094	VB-DA20-21	3.0	2	SW-SM	2.5Y 8/1	6.5	6.2	0.80	2	NT	Noncompatible
DA03-R094	VB-DA20-21	5.0	3	SM	2.5Y 8/1	0.1	11.7	0.33	1	NT	Noncompatible
DA03-R094	VB-DA20-21	7.0	4	SM	2.5Y 8/1	0.3	17.3	0.25	1	NT	Noncompatible
DA03-R094	VB-DA20-21	10.0	5	SM	2.5Y 8/1	1.1	21.7	0.26	1	NT	Noncompatible
DA03-R094	VB-DA20-22	2.0	1	SW	2.5Y 8/2	6.8	4.0	0.60	0	99.3	Compatible
DA03-R094	VB-DA20-22	4.0	2	SW-SM	2.5Y 8/1	2.0	8.7	0.59	0	NT	Noncompatible
DA03-R094	VB-DA20-22	6.0	3	SM	2.5Y 8/1	1.4	13.3	0.56	1	NT	Noncompatible
DA03-R094	VB-DA20-22	9.0	4	SM	2.5Y 8/1	2.4	24.6	0.57	3	NT	Noncompatible
DA03-R094	VB-DA20-22	12.0	5	SM	2.5Y 8/1	2.2	24.9	0.59	1	NT	Noncompatible
DA03-R094	VB-DA20-22	15.0	6	SM	2.5Y 8/1	4.6	25.7	0.67	2	NT	Noncompatible
DA03-R081	VB-DA20-23	1.0	1	SW-SM	2.5Y 8/2	1.6	5.1	0.52	0	NT	Compatible
DA03-R081	VB-DA20-23	2.0	2	SM	2.5Y 8/1	0.2	14.0	0.25	0	NT	Noncompatible
DA03-R081	VB-DA20-23	5.0	3	SM	2.5Y 8/1	0.2	14.7	0.24	0	NT	Noncompatible
DA03-R081	VB-DA20-23	8.0	4	SM	2.5Y 8/1	0.8	18.0	0.23	0	NT	Noncompatible
DA03-R081	VB-DA20-23	11.0	5	SM	2.5Y 8/1	0.8	22.2	0.22	1	NT	Noncompatible
DA03-R081	VB-DA20-23	14.0	6	SM	2.5Y 8/1	3.9	19.2	0.40	3	NT	Noncompatible

Borrow Area	Boring Name	Sample Depth (feet)	Sample Number	USCS Classification	Moist Munsell Color	Gravel Content (% retained #4 sieve)	Fines Content (% passing #230 sieve)	Mean (mm)	Visual Shell (%)	Carbonate Content (%)	Beach Compatibility
DA01-R090	VB-DA20-24	2.0	1	SM	2.5Y 8/1	0.0	22.3	0.25	0	NT	Noncompatible
DA01-R090	VB-DA20-24	4.0	2	SM	2.5Y 8/1	0.3	19.7	0.30	0	NT	Noncompatible
DA01-R090	VB-DA20-24	6.0	3	SW	2.5Y 8/2	7.6	2.9	0.51	1	NT	Noncompatible
DA03-R081	VB-DA20-25	3.0	1	SM	2.5Y 8/1	0.3	11.2	0.29	1	98.5	Noncompatible
DA03-R081	VB-DA20-25	6.0	2	SW-SM	2.5Y 8/1	0.6	8.5	0.35	1	NT	Noncompatible
DA03-R081	VB-DA20-25	9.0	3	SW-SM	2.5Y 8/1	3.6	8.9	0.39	1	NT	Noncompatible
DA03-R081	VB-DA20-25	10.0	4	SW-SM	2.5Y 8/3	69.2	6.6	6.50	0	NT	Noncompatible
DA03-R081	VB-DA20-25	12.0	5	SW-SM	2.5Y 7/1	20.2	8.4	0.71	0	NT	Noncompatible
DA03-R081	VB-DA20-25	14.0	6	SW-SM	N 7/	16.9	9.7	0.61	0	NT	Noncompatible
DA02-R082	VB-DA20-26	1.0	1	SW	2.5Y 7/1	0.5	2.2	0.32	0	NT	Compatible
DA02-R082	VB-DA20-26	3.0	2	SW-SM	2.5Y 6/1	0.4	10.6	0.38	0	NT	Noncompatible
DA02-R082	VB-DA20-26	4.0	3	SW	2.5Y 6/1	84.3	2.6	11.60	10	NT	Noncompatible
DA02-R082	VB-DA20-27	1.0	1	SW	2.5Y 8/2	1.8	2.1	0.52	0	94.6	Compatible
DA02-R082	VB-DA20-27	3.0	2	SW	2.5Y 8/2	17.1	1.2	0.89	0	NT	Potential
DA02-R082	VB-DA20-27	5.0	3	SW	2.5Y 8/2	12.9	2.9	0.91	0	NT	Potential
DA04-R088	VB-DA20-28	1.0	1	SW	2.5Y 8/2	2.8	3.2	0.38	0	NT	Compatible
DA04-R088	VB-DA20-28	3.0	2	SW	2.5Y 8/2	2.2	4.2	0.49	7	NT	Compatible
DA04-R088	VB-DA20-28	6.0	3	SW-SM	2.5Y 6/1	0.8	5.8	0.25	0	NT	Potential
DA04-R088	VB-DA20-28	9.0	4	SW-SM	2.5Y 6/1	1.5	6.0	0.27	1	NT	Potential
DA04-R088	VB-DA20-28	12.0	5	SW-SM	2.5Y 8/2	7.5	8.9	0.40	0	NT	Noncompatible
DA04-R088	VB-DA20-29	2.0	1	SW	2.5Y 8/2	13.7	3.2	0.85	0	NT	Potential
DA04-R088	VB-DA20-29	5.0	2	SW	2.5Y 8/2	4.6	2.8	0.69	0	NT	Potential
DA04-R088	VB-DA20-29	8.0	3	SW-SM	2.5Y 8/2	2.1	5.2	0.58	0	NT	Compatible
DA04-R088	VB-DA20-29	10.0	4	SW-SM	2.5Y 8/2	0.3	9.5	0.49	1	NT	Noncompatible
DA04-R088	VB-DA20-29	12.0	5	SW-SM	2.5Y 8/2	1.6	9.9	0.50	0	NT	Noncompatible
DA02-R079	VB-DA20-30	1.0	1	SW	2.5Y 8/1	18.8	4.4	0.68	2	NT	Potential
DA02-R079	VB-DA20-30	3.0	2	SM	2.5Y 8/1	2.5	23.8	0.26	0	NT	Noncompatible
DA02-R079	VB-DA20-30	5.0	3	SW	2.5Y 7/1	58.3	1.8	4.35	1	NT	Noncompatible
DA02-R079	VB-DA20-30	8.0	4	SW	2.5Y 8/1	1.4	1.9	0.48	1	NT	Compatible
DA02-R079	VB-DA20-30	12.0	5	SW-SM	2.5Y 8/1	0.1	8.6	0.30	1	NT	Noncompatible
DA02-R079	VB-DA20-30	15.0	6	SM	2.5Y 8/1	0.1	12.2	0.26	0	NT	Noncompatible

Borrow Area	Boring Name	Sample Depth (feet)	Sample Number	USCS Classification	Moist Munsell Color	Gravel Content (% retained #4 sieve)	Fines Content (% passing #230 sieve)	Mean (mm)	Visual Shell (%)	Carbonate Content (%)	Beach Compatibility
DA02-R079	VB-DA20-31	1.0	1	SM	2.5Y 6/1	0.0	29.0	0.27	0	NT	Noncompatible
DA02-R079	VB-DA20-31	3.0	2	SW-SM	2.5Y 7/1	0.1	7.9	0.49	0	NT	Noncompatible
DA01-R073E	VB-DA20-33	2.0	1	SW	2.5Y 8/2	0.5	2.5	0.50	0	93.3	Compatible
DA01-R073E	VB-DA20-33	4.0	2	SW	2.5Y 8/2	0.4	2.3	0.42	0	NT	Compatible
DA01-R073E	VB-DA20-33	6.0	3	SW	2.5Y 8/2	3.1	3.2	0.42	0	NT	Compatible
DA01-R073E	VB-DA20-34	2.0	1	SW	2.5Y 7/1	35.8	4.3	1.92	0	NT	Noncompatible
DA01-R073E	VB-DA20-34	5.0	2	SW-SM	2.5Y 7/1	18.5	11.1	0.78	0	NT	Noncompatible
DA01-R073W	VB-DA20-35	2.0	1	SW	2.5Y 5/1	0.2	2.4	0.33	0	NT	Potential
DA01-R073W	VB-DA20-35	4.0	2	SW	2.5Y 6/1	0.2	3.4	0.44	2	NT	Compatible
DA01-R073W	VB-DA20-35	6.0	3	SW	2.5Y 6/1	5.1	2.8	0.60	3	NT	Potential
DA01-R073W	VB-DA20-35	8.0	4	SW	2.5Y 6/1	1.1	3.9	0.50	2	NT	Compatible
DA01-R073E	VB-DA20-36	1.0	1	SW	2.5Y 8/2	10.7	2.0	0.70	0	92.4	Potential
DA01-R073E	VB-DA20-36	4.0	2	SW	2.5Y 8/2	0.5	2.4	0.49	0	NT	Compatible
DA01-R073E	VB-DA20-36	7.0	3	SW	2.5Y 8/2	1.8	2.5	0.54	1	NT	Compatible
DA01-R068	VB-DA20-38	2.0	1	SW	2.5Y 7/1	0.9	2.3	0.53	0	NT	Compatible
DA01-R068	VB-DA20-38	4.0	2	SW	2.5Y 7/1	2.2	3.9	0.53	1	NT	Compatible
DA02-R059	VB-DA20-39	2.0	1	SW	5Y 6/2	9.1	2.9	0.71	0	NT	Potential
DA02-R059	VB-DA20-39	5.0	2	SW	5Y 6/2	0.1	4.2	0.42	1	NT	Compatible
DA02-R059	VB-DA20-40	2.0	1	SW	10YR 6/2	4.9	3.3	0.70	0	NT	Potential
DA01-R055	VB-DA20-41	2.0	1	SW	5Y 7/1	1.9	3.1	0.51	2	NT	Compatible
DA01-R055	VB-DA20-41	4.0	2	SW	5Y 7/1	0.8	3.1	0.49	3	NT	Compatible
DA01-R055	VB-DA20-41	6.0	3	SW-SM	5Y 6/1	0.6	7.9	0.29	1	NT	Potential
DA01-R055	VB-DA20-41	8.0	4	SM	5Y 6/1	0.1	10.9	0.27	1	NT	Noncompatible
DA01-R051	VB-DA20-42	2.0	1	SW	5Y 6/2	1.1	2.6	0.39	1	NT	Compatible
DA01-R051	VB-DA20-42	4.0	2	SW-SM	5Y 6/2	1.7	5.8	0.41	1	NT	Compatible
DA01-R051	VB-DA20-42	6.0	3	SW	5Y 6/2	2.3	4.1	0.43	2	NT	Compatible
DA01-R051	VB-DA20-42	8.0	4	SW	5Y 6/2	0.3	4.1	0.42	1	NT	Compatible
DA01-R051	VB-DA20-42	10.0	5	SW-SM	5Y 6/2	0.1	4.9	0.33	1	NT	Compatible

Borrow Area	Boring Name	Sample Depth (feet)	Sample Number	USCS Classification	Moist Munsell Color	Gravel Content (% retained #4 sieve)	Fines Content (% passing #230 sieve)	Mean (mm)	Visual Shell (%)	Carbonate Content (%)	Beach Compatibility
DA01-R051	VB-DA20-43	2.0	1	SW-SM	5Y 6/1	4.5	7.5	0.51	0	NT	Potential
DA01-R051	VB-DA20-43	4.0	2	SW-SM	5Y 6/1	0.5	6.9	0.46	0	NT	Compatible
DA01-R051	VB-DA20-43	6.0	3	SW-SM	5Y 6/1	1.7	5.1	0.51	2	NT	Compatible
DA01-R051	VB-DA20-43	8.0	4	SW-SM	5Y 6/1	4.0	5.4	0.58	2	NT	Compatible
DA01-R051	VB-DA20-44	2.0	1	SW-SM	5Y 6/1	4.7	8.7	0.51	1	NT	Noncompatible
DA01-R051	VB-DA20-44	4.0	2	SW-SM	5Y 6/1	0.1	7.9	0.32	1	NT	Noncompatible
DA01-R051	VB-DA20-44	6.0	3	SW-SM	5Y 6/1	0.6	5.6	0.31	1	NT	Compatible
DA01-R051	VB-DA20-44	8.0	4	SW	5Y 6/1	1.1	2.9	0.36	2	NT	Compatible
DA01-R051	VB-DA20-44	10.0	5	SW-SM	5Y 6/1	2.1	8.7	0.35	1	NT	Noncompatible
DA01-R043	VB-DA20-45	3.0	1	SM	5Y 6/2	2.0	11.9	0.41	0	NT	Noncompatible
DA01-R043	VB-DA20-45	5.0	2	SM	5Y 7/2	4.0	12.0	0.46	0	NT	Noncompatible
DA01-R043	VB-DA20-45	9.0	3	SM	5Y 7/2	0.2	21.2	0.30	0	NT	Noncompatible
DA01-R043	VB-DA20-45	13.0	4	SM	5Y 7/2	1.9	15.2	0.28	0	NT	Noncompatible
DA01-R038	VB-DA20-46	1.0	1	SM	2.5Y 7/3	3.1	12.3	0.38	1	NT	Noncompatible
DA01-R038	VB-DA20-46	4.0	2	SW-SM	2.5Y 7/3	1.0	7.9	0.37	2	NT	Noncompatible
DA01-R038	VB-DA20-46	7.0	3	SW-SM	2.5Y 7/3	1.2	6.5	0.40	1	NT	Compatible
DA01-R038	VB-DA20-46	10.0	4	SW-SM	2.5Y 7/3	1.2	9.9	0.33	0	NT	Noncompatible
DA01-R038	VB-DA20-46	13.0	5	SW-SM	2.5Y 6/2	6.0	9.9	0.56	0	NT	Noncompatible
DA01-R036	VB-DA20-47	1.0	1	SW-SM	5Y 6/1	0.1	10.6	0.44	0	NT	Noncompatible
DA02-R032	VB-DA20-48	3.0	1	SM	2.5Y 7/1	0.1	11.7	0.16	0	97.8	Noncompatible
DA02-R032	VB-DA20-48	7.0	2	SM	2.5Y 7/1	0.0	11.2	0.16	0	NT	Noncompatible
DA02-R032	VB-DA20-48	11.0	3	SM	5Y 6/1	0.5	18.2	0.17	0	NT	Noncompatible
DA02-R032	VB-DA20-48	14.0	4	SM	5Y 6/1	1.0	24.7	0.21	0	NT	Noncompatible
DA02-R032	VB-DA20-49	1.0	1	SM	5Y 6/2	0.0	13.2	0.16	0	NT	Noncompatible
DA02-R032	VB-DA20-49	3.0	2	SM	5Y 6/2	0.0	12.8	0.16	0	NT	Noncompatible
DA02-R032	VB-DA20-49	6.0	3	SW-SM	5Y 6/2	0.7	5.9	0.17	0	NT	Noncompatible
DA02-R032	VB-DA20-49	8.0	4	SM	5Y 7/1	2.0	18.1	0.26	0	NT	Noncompatible
DA02-R032	VB-DA20-49	11.0	5	SM	2.5Y 6/2	1.0	11.8	0.36	3	NT	Noncompatible

Borrow Area	Boring Name	Sample Depth (feet)	Sample Number	USCS Classification	Moist Munsell Color	Gravel Content (% retained #4 sieve)	Fines Content (% passing #230 sieve)	Mean (mm)	Visual Shell (%)	Carbonate Content (%)	Beach Compatibility
DA00-R026	VB-DA20-50	1.0	1	SP	2.5Y 5/1	0.8	1.3	0.39	0	NT	Potential
DA00-R026	VB-DA20-50	4.0	2	SP	2.5Y 5/1	0.0	1.4	0.40	0	NT	Potential
DA00-R026	VB-DA20-50	7.0	3	SW	2.5Y 5/1	0.1	4.2	0.43	0	NT	Potential
DA00-R026	VB-DA20-50	9.0	4	SW-SM	5Y 5/1	0.0	10.5	0.31	0	NT	Noncompatible
DA00-R026	VB-DA20-50	11.0	5	SW-SM	5Y 5/1	0.0	8.2	0.40	0	NT	Noncompatible
DA02-R018	VB-DA20-51	2.0	1	SW	5Y 6/1	0.6	3.8	0.21	0	NT	Noncompatible
DA02-R018	VB-DA20-51	5.0	2	SW-SM	5Y 6/1	0.3	4.9	0.19	0	NT	Noncompatible
DA02-R018	VB-DA20-51	8.0	3	SW-SM	5Y 6/1	2.0	8.3	0.21	0	NT	Noncompatible
DA02-R018	VB-DA20-51	10.0	4	SM	5Y 6/1	1.7	14.3	0.20	0	NT	Noncompatible
DA02-R018	VB-DA20-51	14.0	5	SM	5Y 6/1	0.2	19.4	0.18	0	NT	Noncompatible
DA01-R017	VB-DA20-52	1.0	1	SW	5Y 6/1	2.2	2.1	0.51	0	NT	Compatible
DA01-R017	VB-DA20-52	3.0	2	SW	5Y 6/1	7.6	1.9	0.80	3	NT	Potential
DA01-R017	VB-DA20-52	4.0	3	SM	5Y 5/1	5.5	12.5	0.64	0	NT	Noncompatible
DA02-R013	VB-DA20-53	2.0	1	SM	5Y 6/1	2.3	12.4	0.21	0	98.7	Noncompatible
DA02-R013	VB-DA20-53	5.0	2	SM	5Y 6/1	3.7	17.2	0.21	0	NT	Noncompatible
DA02-R013	VB-DA20-53	8.0	3	SM	5Y 6/1	0.3	23.7	0.17	0	NT	Noncompatible
DA02-R013	VB-DA20-53	11.0	4	SM	5Y 6/1	0.9	21.8	0.17	0	NT	Noncompatible
DA02-R013	VB-DA20-53	14.0	5	SM	5Y 6/1	1.6	20.8	0.26	1	NT	Noncompatible
DA01-R017	VB-DA20-54	1.0	1	SW	5Y 5/1	1.2	2.2	0.60	1	NT	Potential
DA01-R017	VB-DA20-54	3.0	2	SW	5Y 5/1	2.1	2.8	0.64	1	NT	Potential
DA01-R017	VB-DA20-54	6.0	3	SW-SM	5Y 5/1	0.2	7.6	0.53	1	NT	Noncompatible
DA01-R017	VB-DA20-54	9.0	4	SM	5Y 6/1	0.7	10.2	0.38	1	NT	Noncompatible
DA01-R017	VB-DA20-54	12.0	5	SM	5Y 6/1	1.0	14.2	0.47	1	NT	Noncompatible
DA01-R017	VB-DA20-54	15.0	6	SM	5Y 6/1	0.8	11.3	0.49	1	NT	Noncompatible
DA02-R013	VB-DA20-55	2.0	1	SW-SM	5Y 6/1	0.8	10.0	0.26	0	NT	Noncompatible
DA02-R013	VB-DA20-55	5.0	2	SM	5Y 6/1	0.5	14.1	0.23	0	NT	Noncompatible
DA02-R013	VB-DA20-55	7.0	3	SM	5Y 6/1	0.6	14.5	0.23	1	NT	Noncompatible
DA02-R013	VB-DA20-55	10.0	4	SM	5Y 6/1	2.8	12.7	0.34	1	NT	Noncompatible
DA02-R013	VB-DA20-55	13.0	5	SM	5Y 6/1	0.2	13.3	0.27	1	NT	Noncompatible
DA02-R013	VB-DA20-55	16.0	6	SM	5Y 6/1	2.5	10.8	0.48	0	NT	Noncompatible

Borrow Area	Boring Name	Sample Depth (feet)	Sample Number	USCS Classification	Moist Munsell Color	Gravel Content (% retained #4 sieve)	Fines Content (% passing #230 sieve)	Mean (mm)	Visual Shell (%)	Carbonate Content (%)	Beach Compatibility
DA01-R009	VB-DA20-56	2.0	1	SW	5Y 6/1	4.1	4.1	0.52	5	NT	Compatible
DA01-R009	VB-DA20-56	5.0	2	SW	5Y 6/1	4.5	2.7	0.57	3	NT	Compatible
DA01-R009	VB-DA20-56	9.0	3	SW	5Y 6/1	4.3	3.8	0.66	1	NT	Compatible
DA01-R009	VB-DA20-56	12.0	4	SW-SM	5Y 6/1	2.0	5.9	0.63	1	NT	Compatible
DA01-R009	VB-DA20-56	14.0	5	SW-SM	10YR 5/2	0.2	10.1	0.25	0	NT	Noncompatible
DA01-R009	VB-DA20-57	2.0	1	SW	2.5Y 5/1	5.0	2.5	0.59	1	NT	Potential
DA01-R009	VB-DA20-57	4.0	2	SW	5Y 5/1	9.1	4.2	0.79	1	NT	Potential
DA01-R009	VB-DA20-57	6.0	3	SW-SM	5Y 5/1	0.0	7.5	0.54	2	NT	Potential
DA01-R009	VB-DA20-57	8.0	4	SW-SM	5Y 5/1	0.4	6.1	0.62	1	NT	Potential
DA01-R009	VB-DA20-57	9.0	5	SW-SM	5Y 5/1	15.9	4.9	1.03	3	NT	Noncompatible
DA01-R002	VB-DA20-58	2.0	1	SW	5Y 6/1	6.6	4.4	0.51	2	NT	Compatible
DA01-R002	VB-DA20-58	4.0	2	SW-SM	5Y 6/1	3.2	5.1	0.36	1	NT	Compatible
DA01-R002	VB-DA20-59	2.0	1	SW-SM	5Y 6/1	1.7	4.9	0.30	3	NT	Compatible
DA01-R002	VB-DA20-59	5.0	2	SW-SM	5Y 6/1	1.5	8.5	0.21	1	NT	Noncompatible
DA01-R002	VB-DA20-59	8.0	3	SW-SM	5Y 6/1	0.1	8.5	0.23	1	NT	Noncompatible
DA01-R002	VB-DA20-59	10.0	4	SM	2.5Y 7/2	1.8	10.7	0.27	1	NT	Noncompatible
DA01-R002	VB-DA20-59	12.0	5	SW-SM	2.5Y 7/2	4.1	8.6	0.42	2	NT	Noncompatible

APPENDIX D

Vibracore Logs, Grain Size Distribution Curves, Granulometric Tables, and Photos

VB-DA20-01

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-01

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-01 — LOCATION COORDINATES: X = 950,298 Y = 490,641
3. DRILLING AGENCY: Amdrill — CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 18.1 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore — ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES — DISTURBED: 6 — UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING — STARTED: 06-23-20 — COMPLETED: 06-23-20
16. ELEVATION TOP OF BORING: -22.5 Ft.
17. TOTAL RECOVERY FOR BORING: 90 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-22.5	0.0								
			SAND, poorly-graded, mostly fine to medium-grained sand-sized carbonate, little shell, trace silt, trace fine gravel-sized coral, moist, 5Y 8/2 pale yellow (SP)		1		-23.5		
-25.5	3.0						-25.5		
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, little shell, trace silt, trace fine gravel-sized coral, moist, 5Y 8/2 pale yellow (SW)		2				
-28.5	6.0						-28.5		
-29.1	6.6		SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, little shell, few silt, trace fine gravel-sized coral, moist, 5Y 8/2 pale yellow (SW-SM)		3				
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, few shell, moist, 5Y 8/2 pale yellow (SM)				-30.5		
					4		-32.5		
					5				
							-35.5		
					6				
-37.1	14.6								
			SILT, inorganic-L, mostly silt, little						

0 5 10 15

(Continued)

Boring Designation VB-DA20-01

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT SAD-SAND	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 950,298 Y = 490,641	ELEVATION TOP OF BORING -22.5 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-38.7	16.2		fine-grained sand-sized carbonate, little gravel to cobble-sized limestone, few shell, moist, 5Y 3/2 dark olive gray (ML)						
-40.6	18.1		No Recovery				-40.6		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

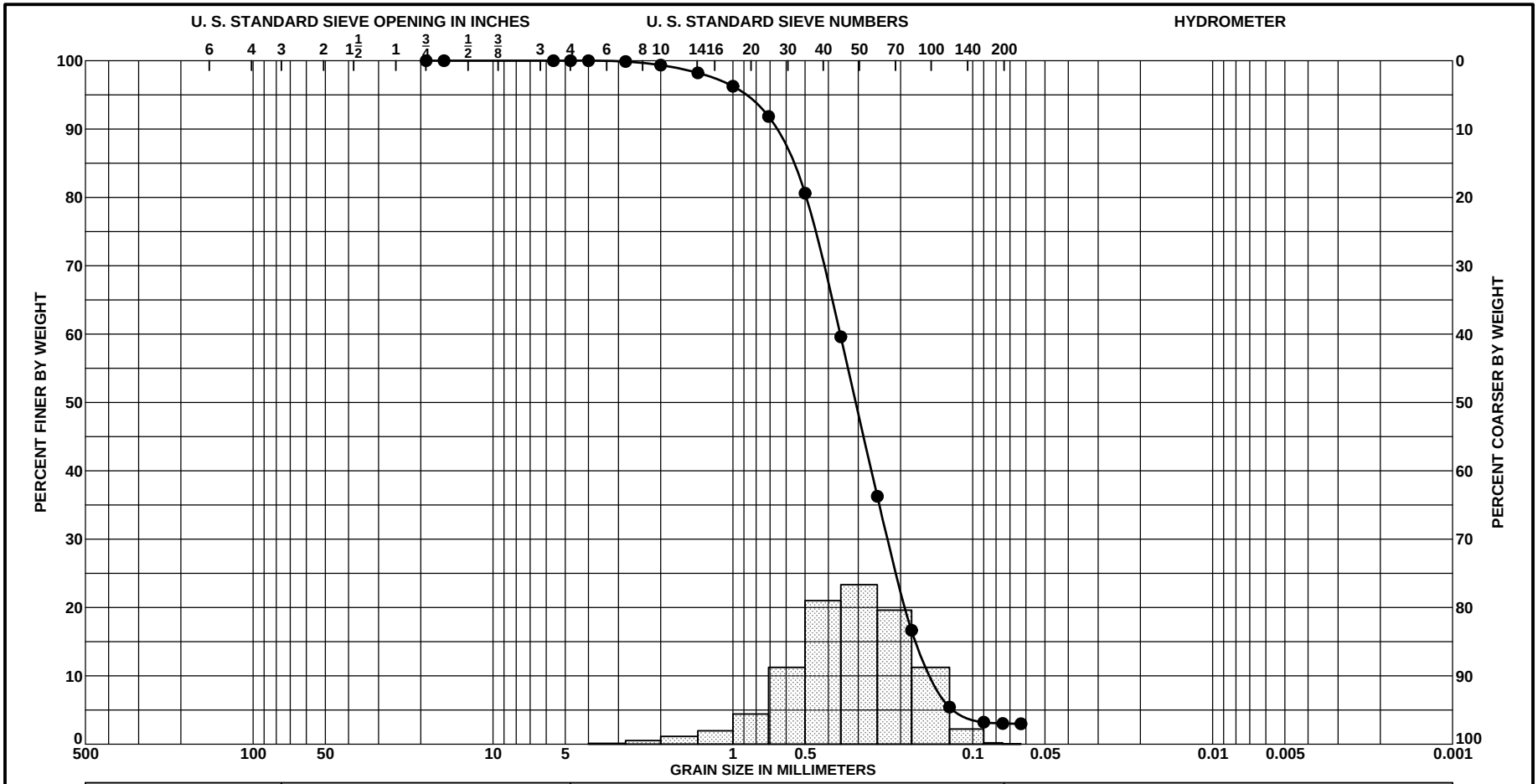
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SP*
2	3.0/3.2	SW*
3	6.0/6.2	SW-SM*
4	8.0/8.2	SM*
5	10.0/10.2	SM*
6	13.0/13.2	SM*

*Lab visual classification based on gradation curve

15 20 25 30 35

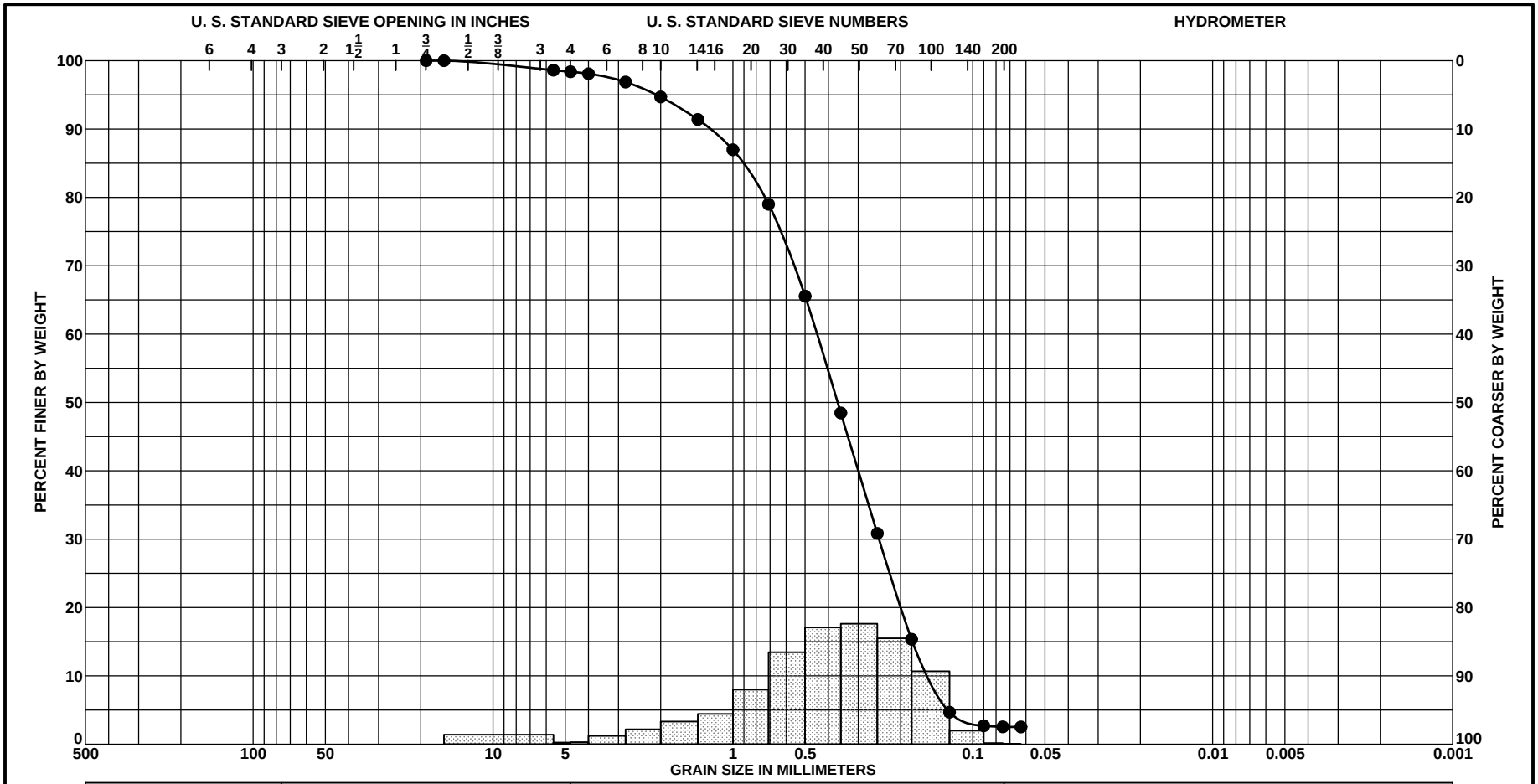


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, poorly-graded, mostly fine to	5Y 8/2	1	96						
		medium-grained sand-sized									
		carbonate, little									
		shell, trace silt, trace fine									
		gravel-sized coral, pale yellow (SP)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-01
BORING ELEV.	-22.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

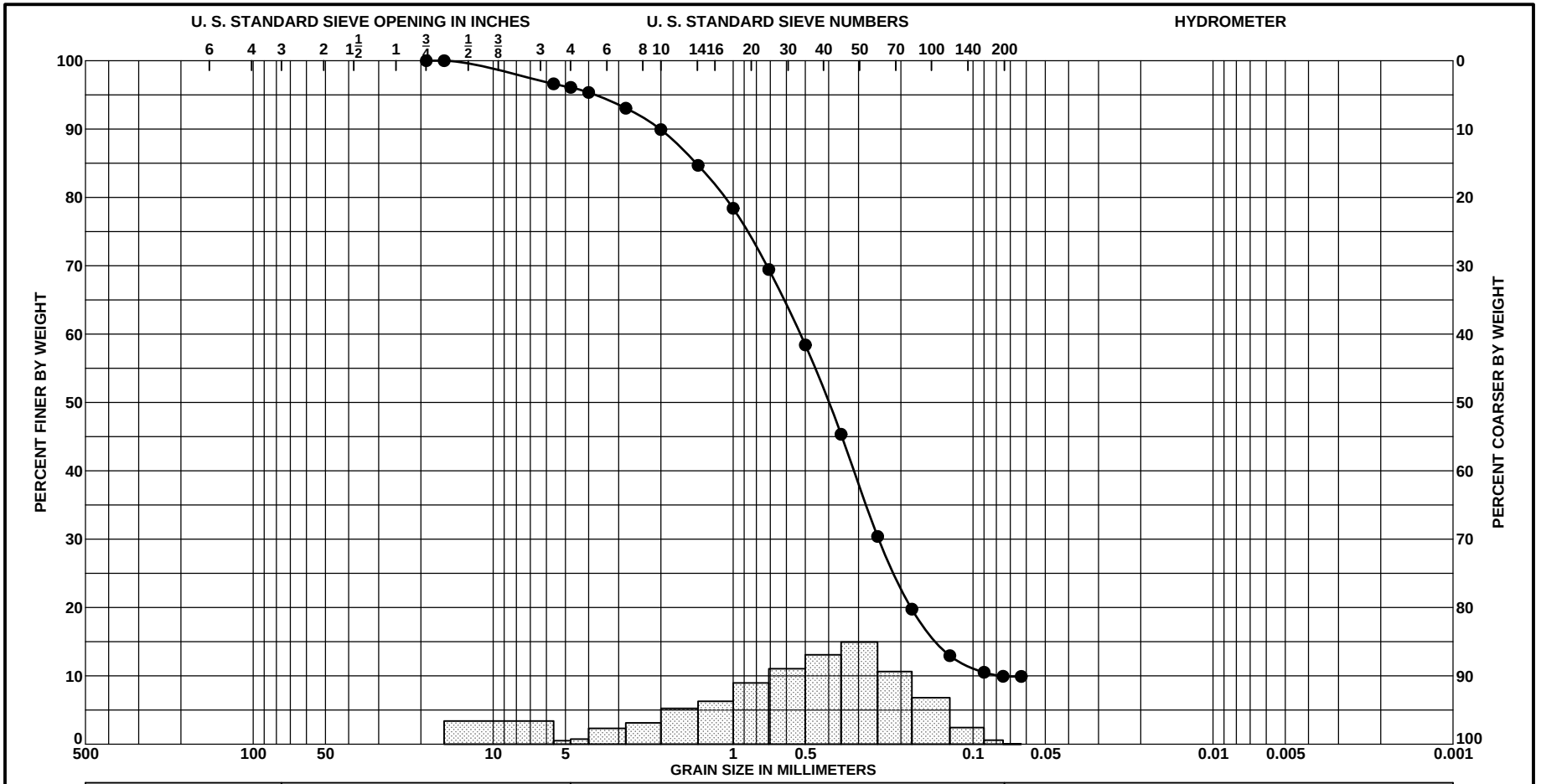


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2							
		medium-grained sand-sized									
		carbonate, little									
		shell, trace silt, trace fine									
		gravel-sized coral, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-01
BORING ELEV.	-22.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

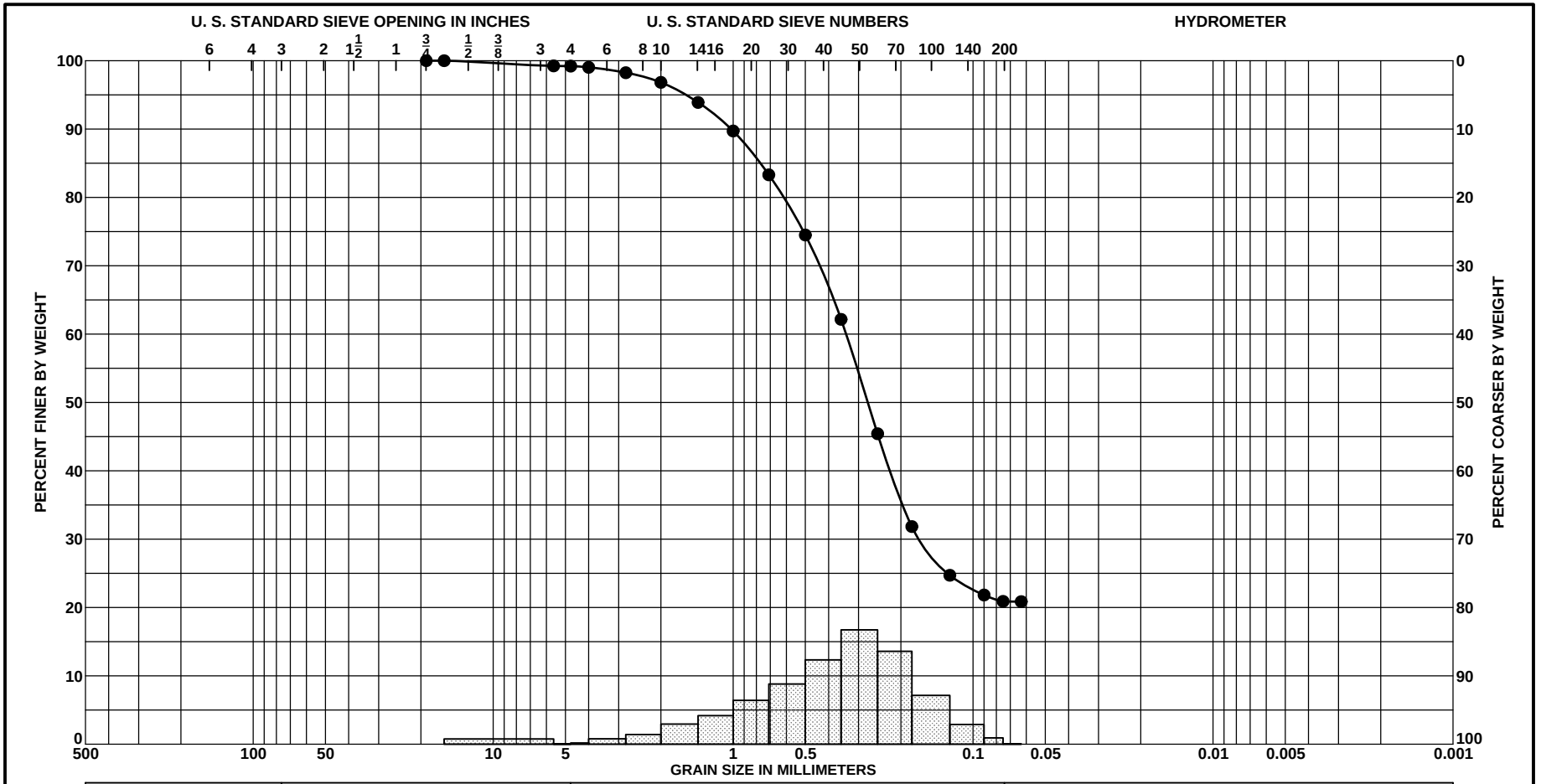


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	3							
		fine to medium-grained									
		sand-sized carbonate, little shell,									
		few silt, trace fine gravel-sized									
		coral, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-01
BORING ELEV.	-22.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

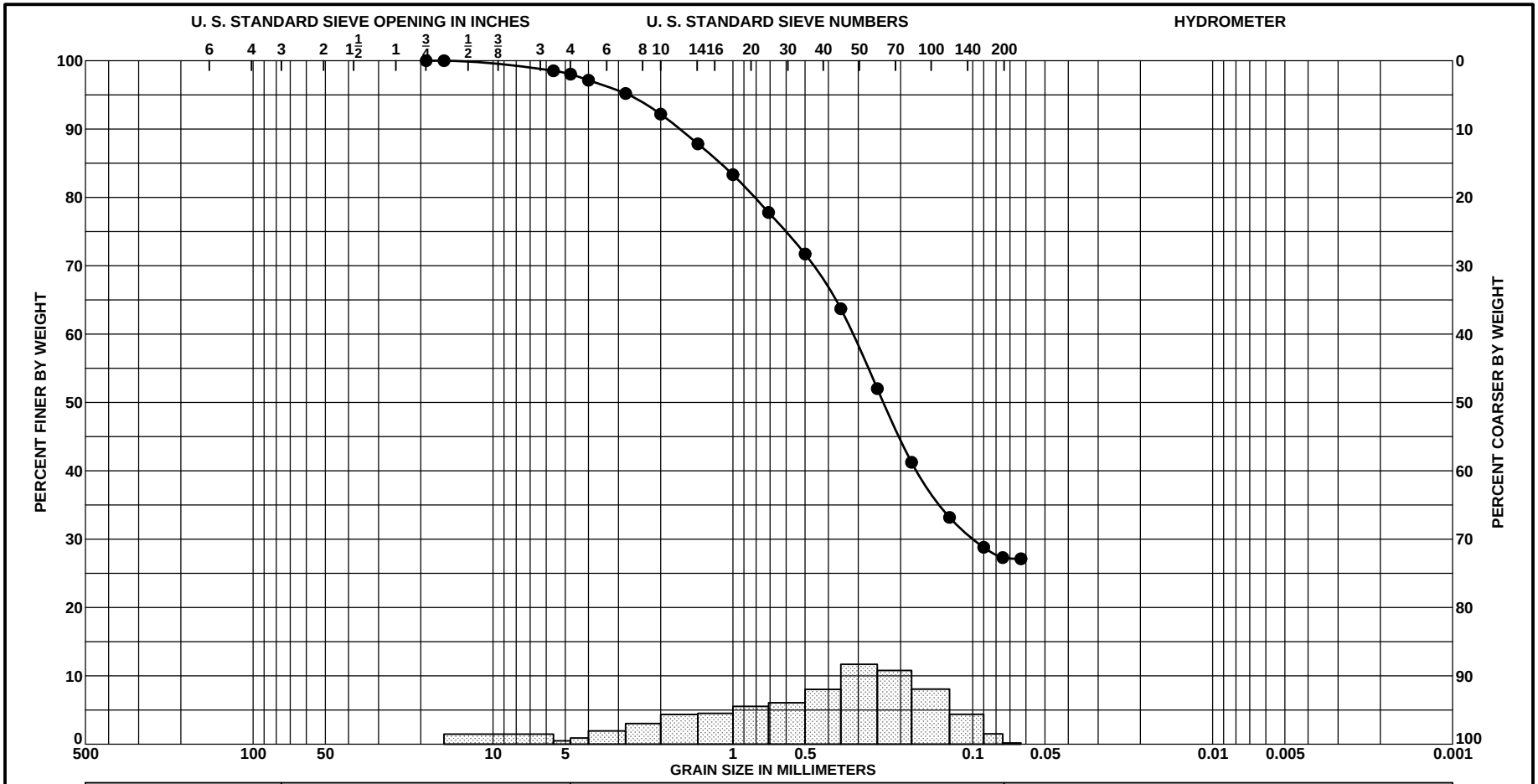


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	2							
		medium-grained									
		sand-sized carbonate, little silt, few									
		shell, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-01
BORING ELEV.	-22.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

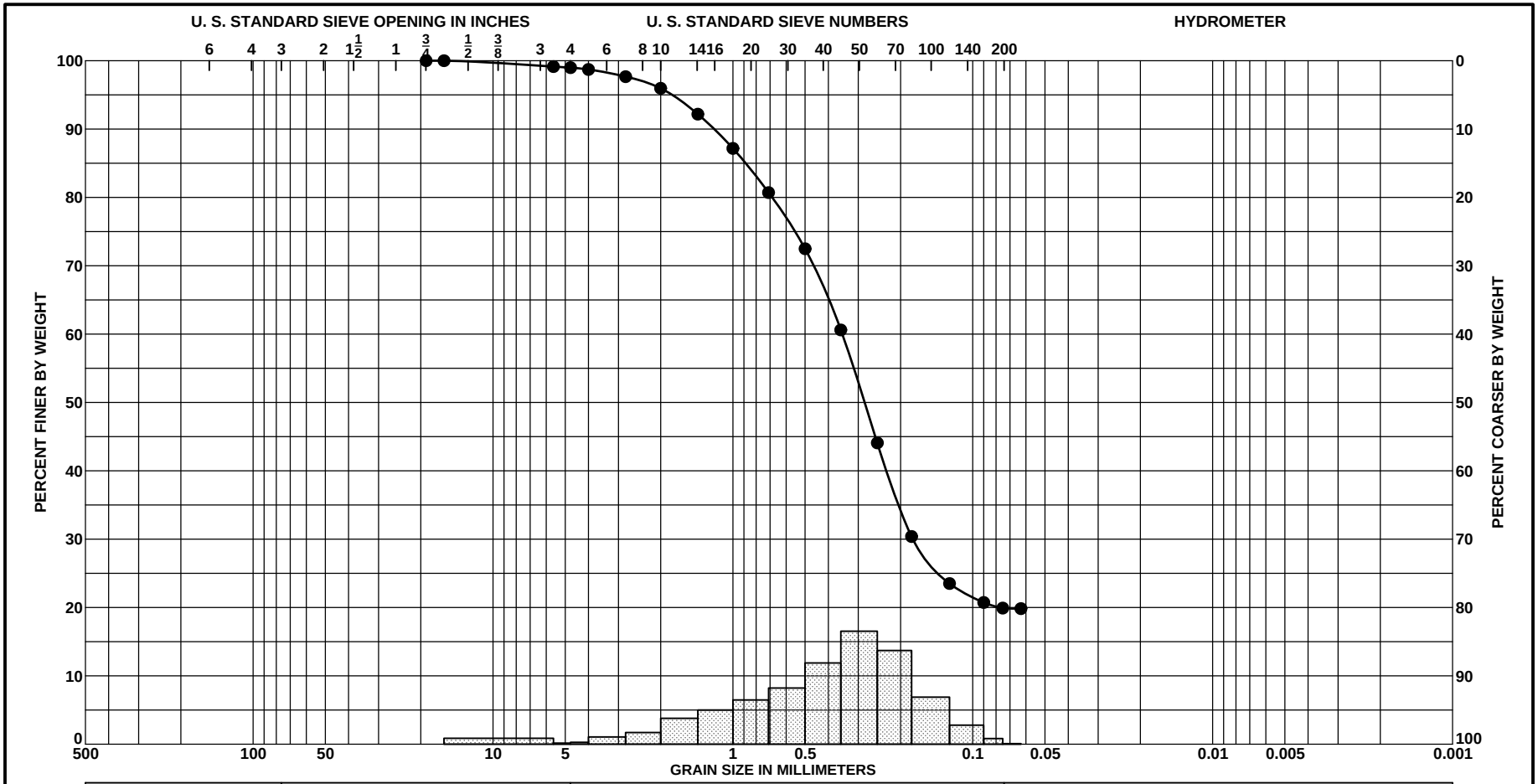


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	10.0 to 10.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	2							
		medium-grained									
		sand-sized carbonate, little silt, few									
		shell, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-01
BORING ELEV.	-22.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

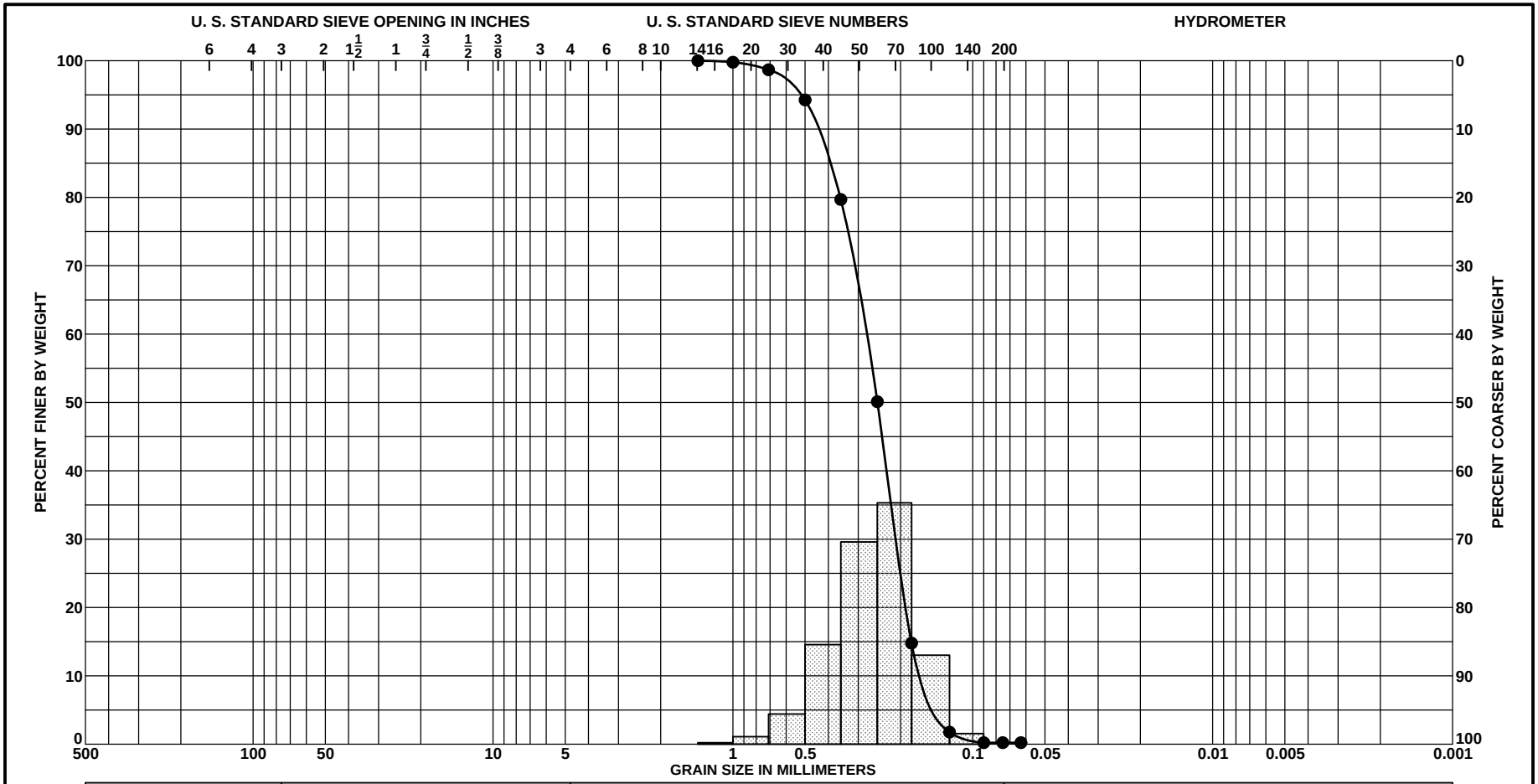


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	13.0 to 13.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	3							
		medium-grained									
		sand-sized carbonate, little silt, few									
		shell, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-01
BORING ELEV.	-22.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-01
BORING ELEV.	-22.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-01 @ 1 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,298	490,641	State Plane, FLE (U.S. Ft.)	-23.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP	5Y 8/2	#200 - 3.02 #230 - 2.99		95.60	1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.00	0.00
#5	-2.00	4.00	0.00	0.00
#7	-1.50	2.80	0.12	0.12
#10	-1.00	2.00	0.53	0.65
#14	-0.50	1.40	1.14	1.78
#18	0.00	1.00	1.96	3.74
#25	0.50	0.71	4.42	8.16
#35	1.00	0.50	11.23	19.39
#45	1.50	0.36	21.00	40.39
#60	2.00	0.25	23.34	63.73
#80	2.50	0.18	19.60	83.34
#120	3.00	0.13	11.24	94.57
#170	3.50	0.09	2.21	96.78
#200	3.75	0.08	0.19	96.98
#230	4.00	0.06	0.04	97.01

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.10	2.53	2.29	1.71	1.13	0.85	0.14

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.62	0.33	1.71	0.31	0.84	-0.57	3.67

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-01 @ 3 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,298	490,641	State Plane, FLE (U.S. Ft.)	-25.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.53 #230 - 2.52			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.39	1.39
#4	-2.25	4.75	0.23	1.61
#5	-2.00	4.00	0.29	1.91
#7	-1.50	2.80	1.22	3.12
#10	-1.00	2.00	2.17	5.30
#14	-0.50	1.40	3.30	8.60
#18	0.00	1.00	4.43	13.03
#25	0.50	0.71	7.97	21.00
#35	1.00	0.50	13.44	34.45
#45	1.50	0.36	17.09	51.53
#60	2.00	0.25	17.62	69.16
#80	2.50	0.18	15.50	84.65
#120	3.00	0.13	10.66	95.32
#170	3.50	0.09	1.99	97.31
#200	3.75	0.08	0.16	97.47
#230	4.00	0.06	0.01	97.48

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.99	2.48	2.19	1.46	0.65	0.19	-1.07

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.25	0.42	1.46	0.36	1.23	-1.07	4.64

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-01 @ 6 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,298	490,641	State Plane, FLE (U.S. Ft.)	-28.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 9.93 #230 - 9.92			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	3.39	3.39
#4	-2.25	4.75	0.52	3.90
#5	-2.00	4.00	0.74	4.65
#7	-1.50	2.80	2.31	6.96
#10	-1.00	2.00	3.12	10.08
#14	-0.50	1.40	5.23	15.31
#18	0.00	1.00	6.28	21.59
#25	0.50	0.71	8.96	30.55
#35	1.00	0.50	11.04	41.59
#45	1.50	0.36	13.07	54.66
#60	2.00	0.25	14.94	69.61
#80	2.50	0.18	10.63	80.24
#120	3.00	0.13	6.81	87.05
#170	3.50	0.09	2.42	89.47
#200	3.75	0.08	0.59	90.07
#230	4.00	0.06	0.02	90.08

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.78	2.25	1.32	0.19	-0.45	-1.92

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.87	0.55	1.32	0.40	1.49	-0.83	3.48

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-01 @ 8 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,298	490,641	State Plane, FLE (U.S. Ft.)	-30.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 20.90 #230 - 20.86			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.76	0.76
#4	-2.25	4.75	0.03	0.79
#5	-2.00	4.00	0.18	0.96
#7	-1.50	2.80	0.79	1.76
#10	-1.00	2.00	1.41	3.17
#14	-0.50	1.40	2.93	6.10
#18	0.00	1.00	4.18	10.28
#25	0.50	0.71	6.42	16.70
#35	1.00	0.50	8.81	25.51
#45	1.50	0.36	12.34	37.85
#60	2.00	0.25	16.73	54.58
#80	2.50	0.18	13.58	68.16
#120	3.00	0.13	7.13	75.29
#170	3.50	0.09	2.89	78.17
#200	3.75	0.08	0.93	79.10
#230	4.00	0.06	0.04	79.14

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		2.98	1.86	0.97	0.45	-0.69

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.35	0.39	1.86	0.28	1.2	-0.91	4.32

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-01 @ 10 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,298	490,641	State Plane, FLE (U.S. Ft.)	-32.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 27.30 #230 - 27.13			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.48	1.48
#4	-2.25	4.75	0.48	1.96
#5	-2.00	4.00	0.90	2.86
#7	-1.50	2.80	1.94	4.79
#10	-1.00	2.00	3.03	7.82
#14	-0.50	1.40	4.35	12.17
#18	0.00	1.00	4.51	16.68
#25	0.50	0.71	5.53	22.21
#35	1.00	0.50	6.07	28.28
#45	1.50	0.36	8.01	36.29
#60	2.00	0.25	11.69	47.98
#80	2.50	0.18	10.78	58.76
#120	3.00	0.13	8.06	66.82
#170	3.50	0.09	4.37	71.19
#200	3.75	0.08	1.51	72.70
#230	4.00	0.06	0.17	72.87

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
			2.09	0.73	-0.07	-1.47

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.15	0.45	2.09	0.23	1.55	-0.72	2.99

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-01 @ 13 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,298	490,641	State Plane, FLE (U.S. Ft.)	-35.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 19.91 #230 - 19.84			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.86	0.86
#4	-2.25	4.75	0.15	1.01
#5	-2.00	4.00	0.27	1.28
#7	-1.50	2.80	1.05	2.33
#10	-1.00	2.00	1.70	4.04
#14	-0.50	1.40	3.79	7.82
#18	0.00	1.00	5.01	12.83
#25	0.50	0.71	6.47	19.30
#35	1.00	0.50	8.22	27.51
#45	1.50	0.36	11.88	39.39
#60	2.00	0.25	16.52	55.91
#80	2.50	0.18	13.70	69.61
#120	3.00	0.13	6.88	76.49
#170	3.50	0.09	2.77	79.27
#200	3.75	0.08	0.82	80.09
#230	4.00	0.06	0.07	80.16

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		2.89	1.82	0.85	0.25	-0.87

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.27	0.41	1.82	0.28	1.26	-0.87	3.94

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-01 @ 3 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,298	490,641	State Plane, FLE (U.S. Ft.)	-25.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.22 #230 - 0.22			

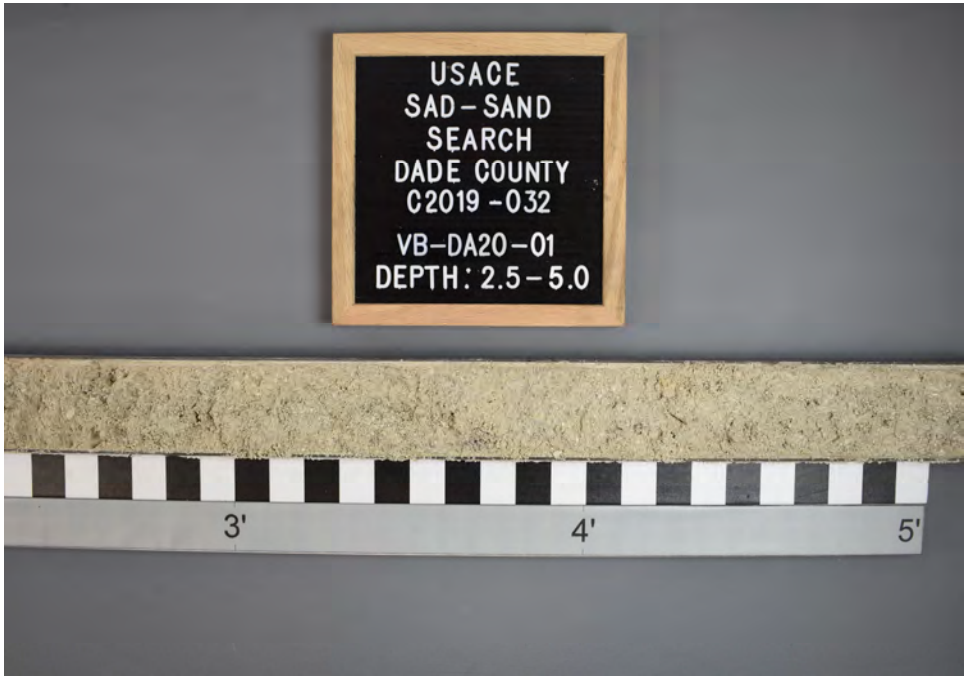
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#14	-0.50	1.40	0.00	0.00
#18	0.00	1.00	0.22	0.22
#25	0.50	0.71	1.10	1.32
#35	1.00	0.50	4.42	5.74
#45	1.50	0.36	14.57	20.31
#60	2.00	0.25	29.58	49.89
#80	2.50	0.18	35.32	85.21
#120	3.00	0.13	13.02	98.23
#170	3.50	0.09	1.55	99.78
#200	3.75	0.08	0.00	99.78
#230	4.00	0.06	0.00	99.78

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.88	2.48	2.36	2.00	1.58	1.35	0.92

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.94	0.26	2.00	0.25	0.58	-0.47	3.36

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

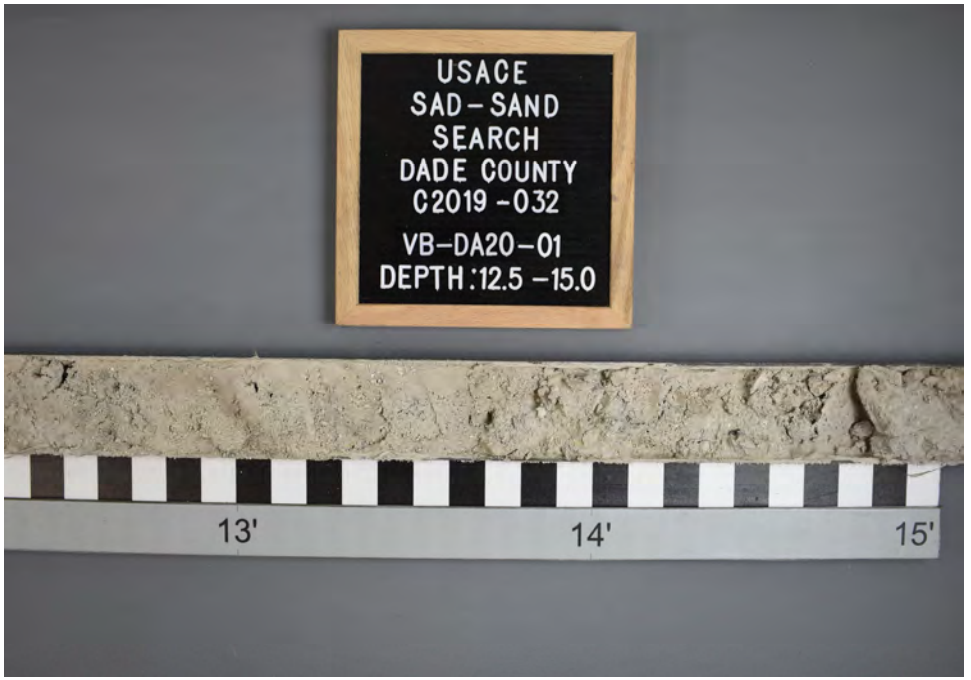
USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–01
DEPTH: 0.0– 2.5
0'
1'
2'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–01
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–01
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–01
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–01
DEPTH: 10.0 – 12.5
10'
11'
12'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–01
DEPTH: 12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–01
DEPTH: 15.0 – 16.2
15'
16'
17'

VB-DA20-02

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-02

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-02	LOCATION COORDINATES: X = 954,672 Y = 490,960	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 6 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-23-20 / COMPLETED: 06-23-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -45.9 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 81 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-45.9	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 5Y 8/2 pale yellow (SW)				-46.9		
					1				
							-48.9		
					2				
-51.9	6.0						-51.9		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, little shell, few silt, moist, 5Y 8/2 pale yellow (SW-SM)		3				
-54.1	8.2						-53.9		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 5Y 8/2 pale yellow (SM)		4				
							-56.9		
					5				
							-59.9		
					6				

0 5 10 15

(Continued)

Boring Designation VB-DA20-02

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 954,672 Y = 490,960	ELEVATION TOP OF BORING: -45.9 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-62.0	16.1		No Recovery						
-65.9	20.0						-65.9		

NOTES:

1. Taylor Engineering is the custodian for these original files.

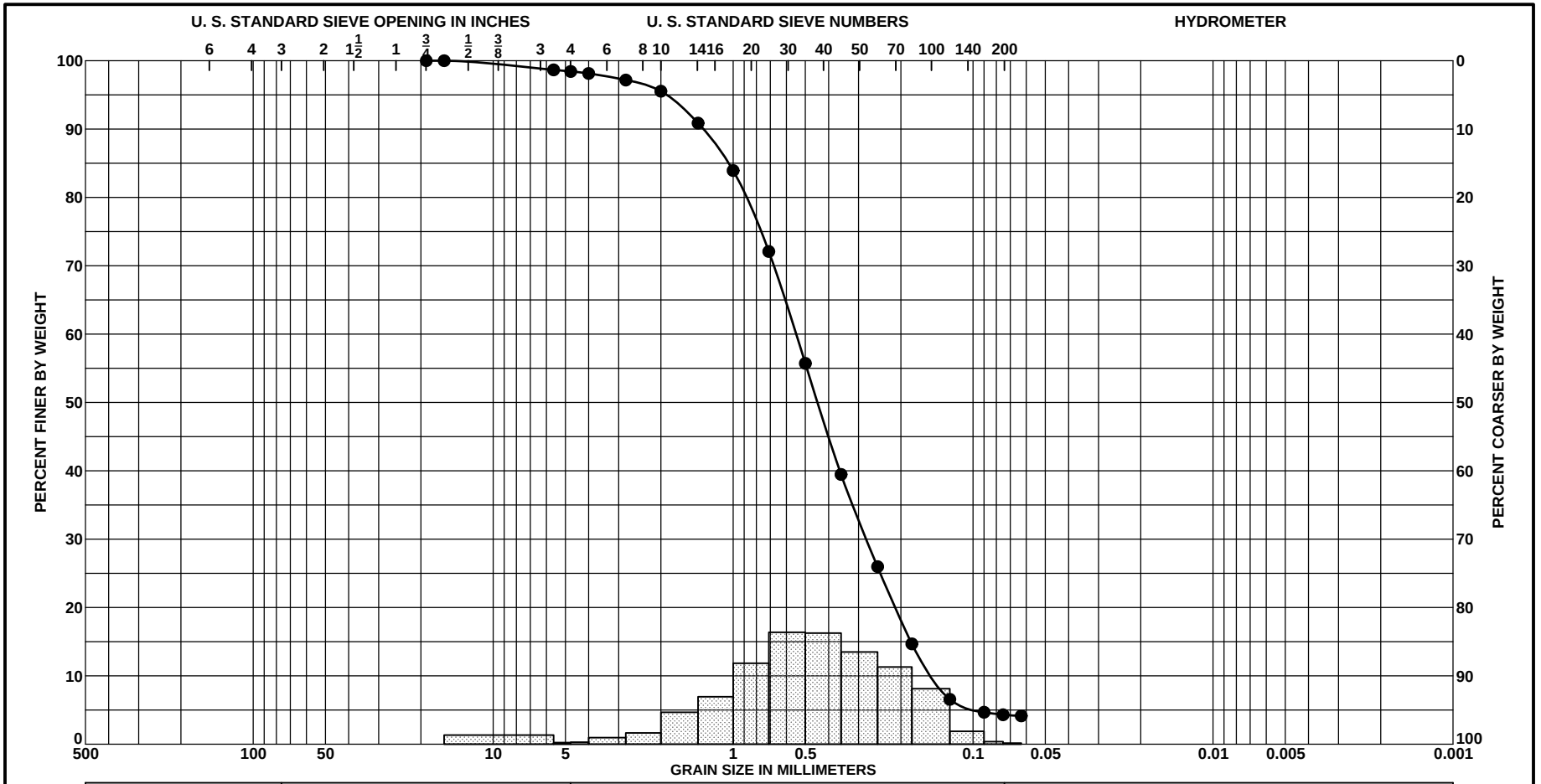
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW*
3	6.0/6.2	SW-SM*
4	8.0/8.2	SW-SM*
5	11.0/11.2	SM*
6	14.0/14.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

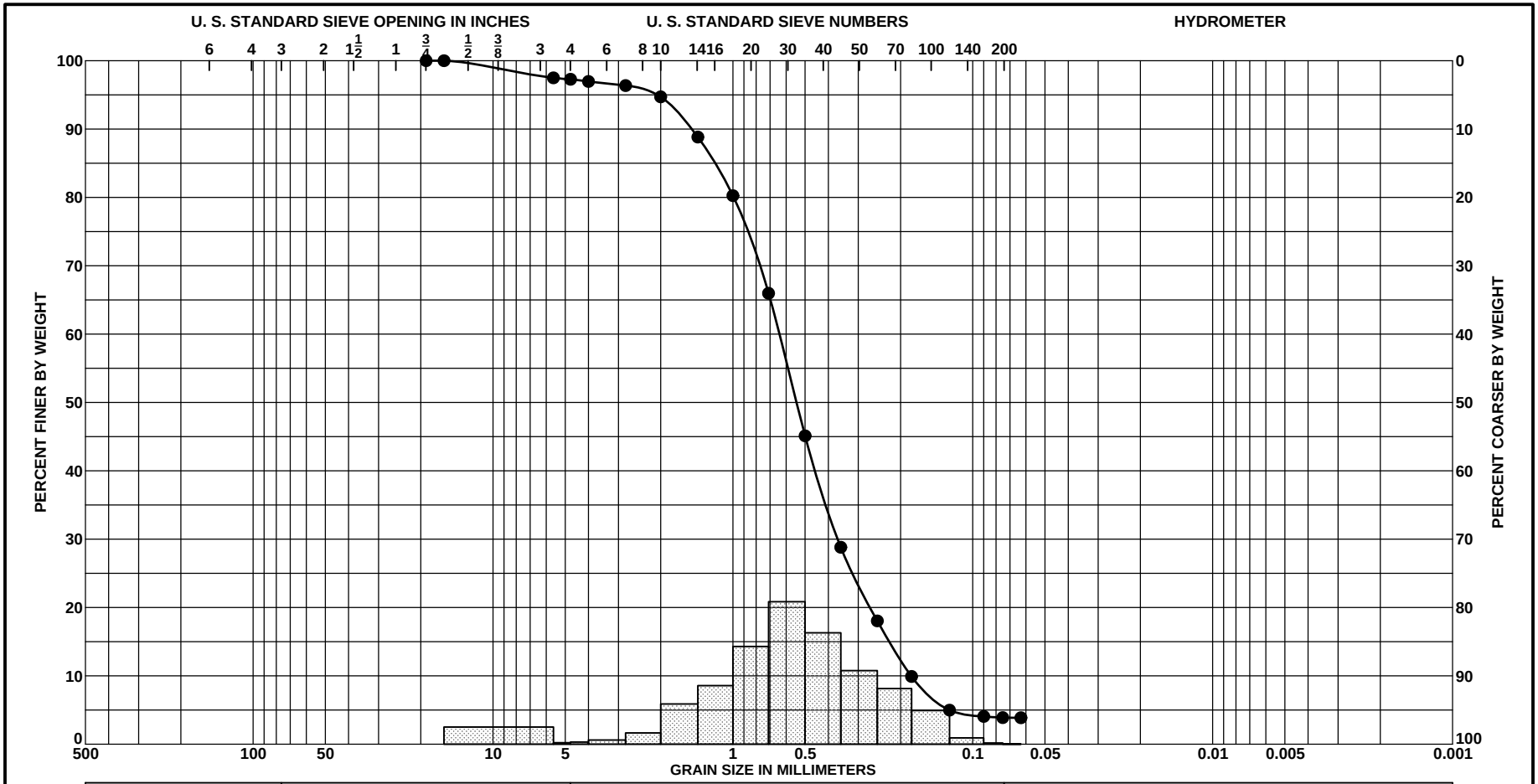


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, few									
		shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-02
BORING ELEV.	-45.9 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

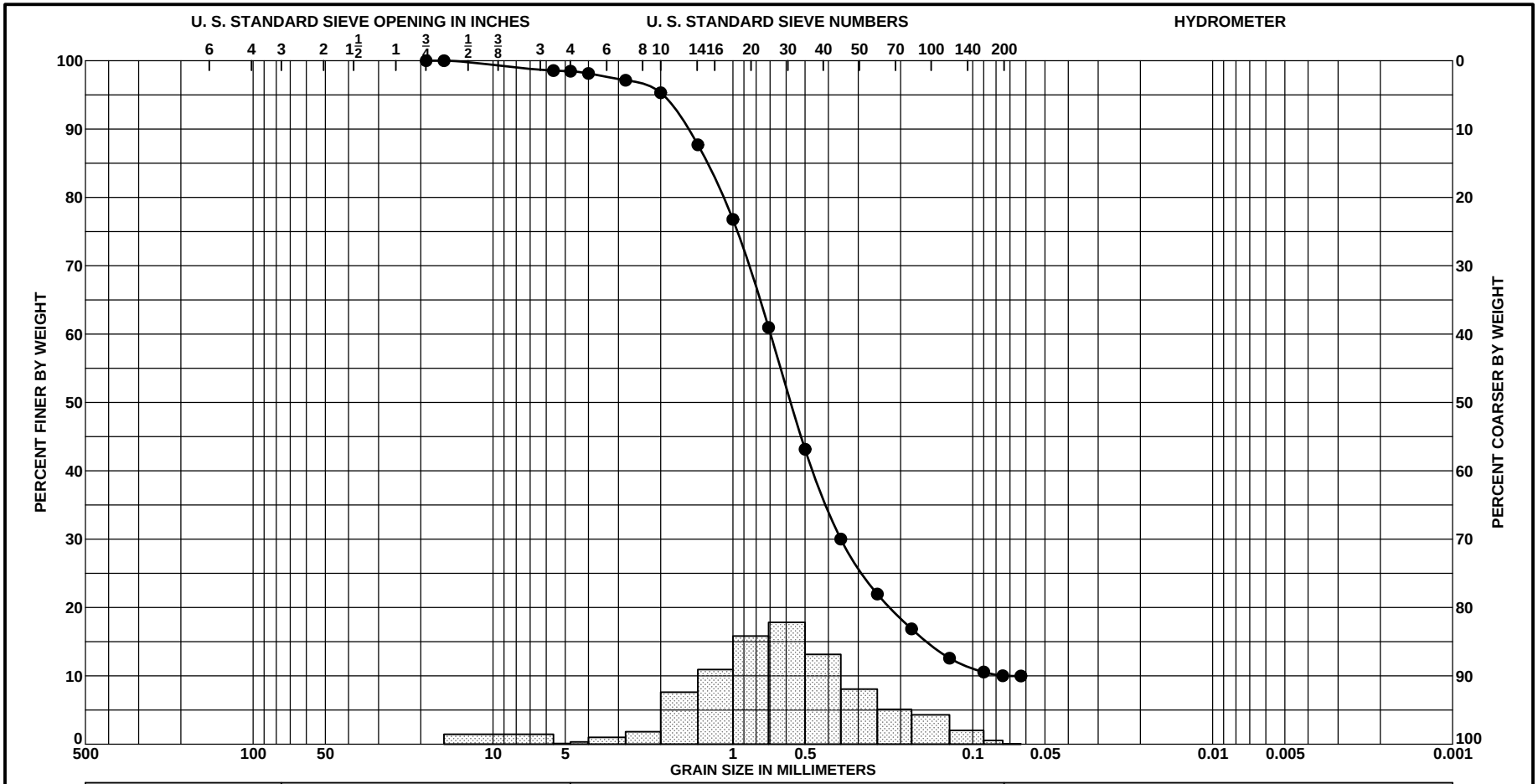


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, few									
		shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-02
BORING ELEV.	-45.9 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

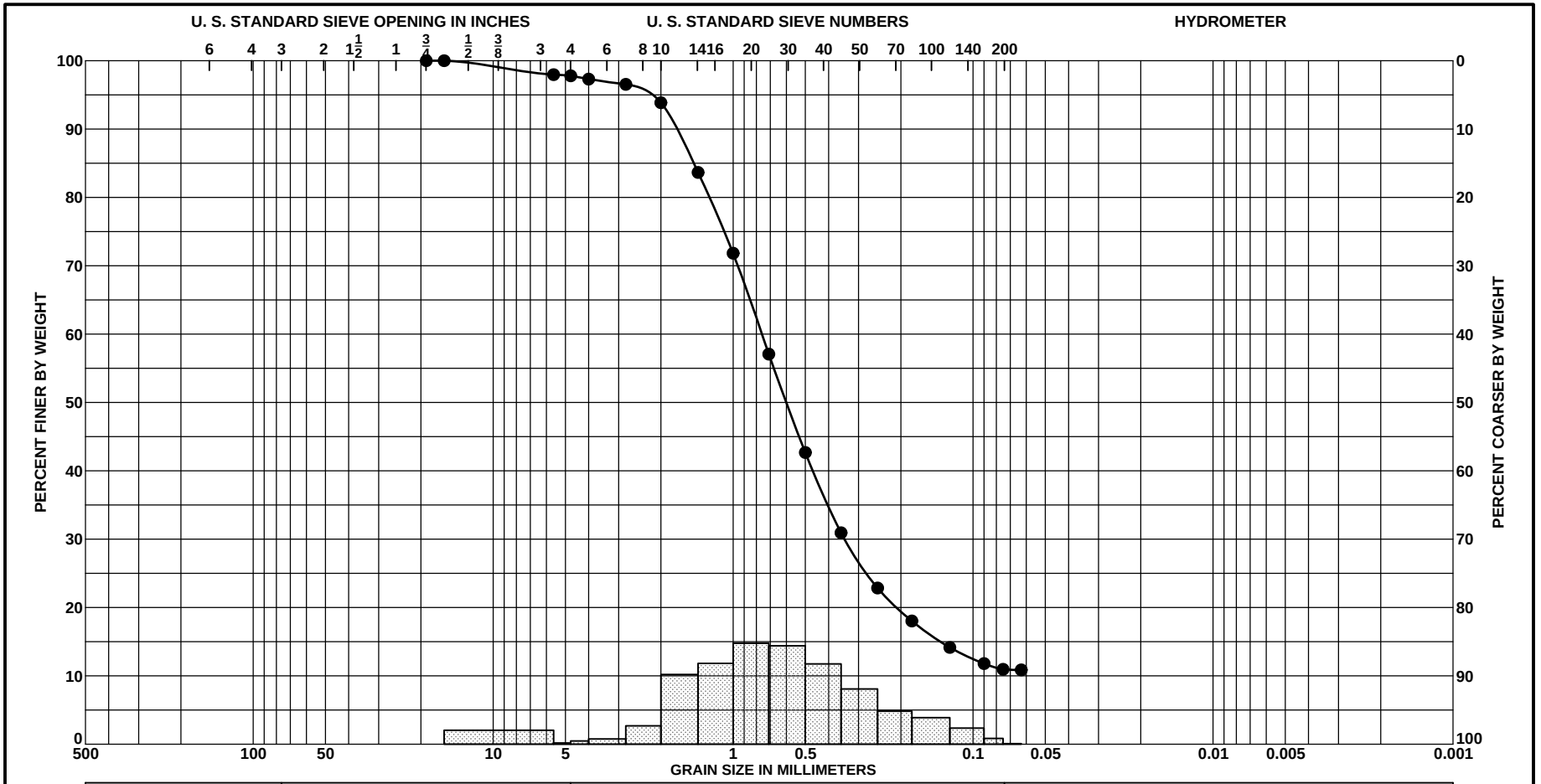


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	1							
		fine to									
		medium-grained sand-sized									
		carbonate, little									
		shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-02
BORING ELEV.	-45.9 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

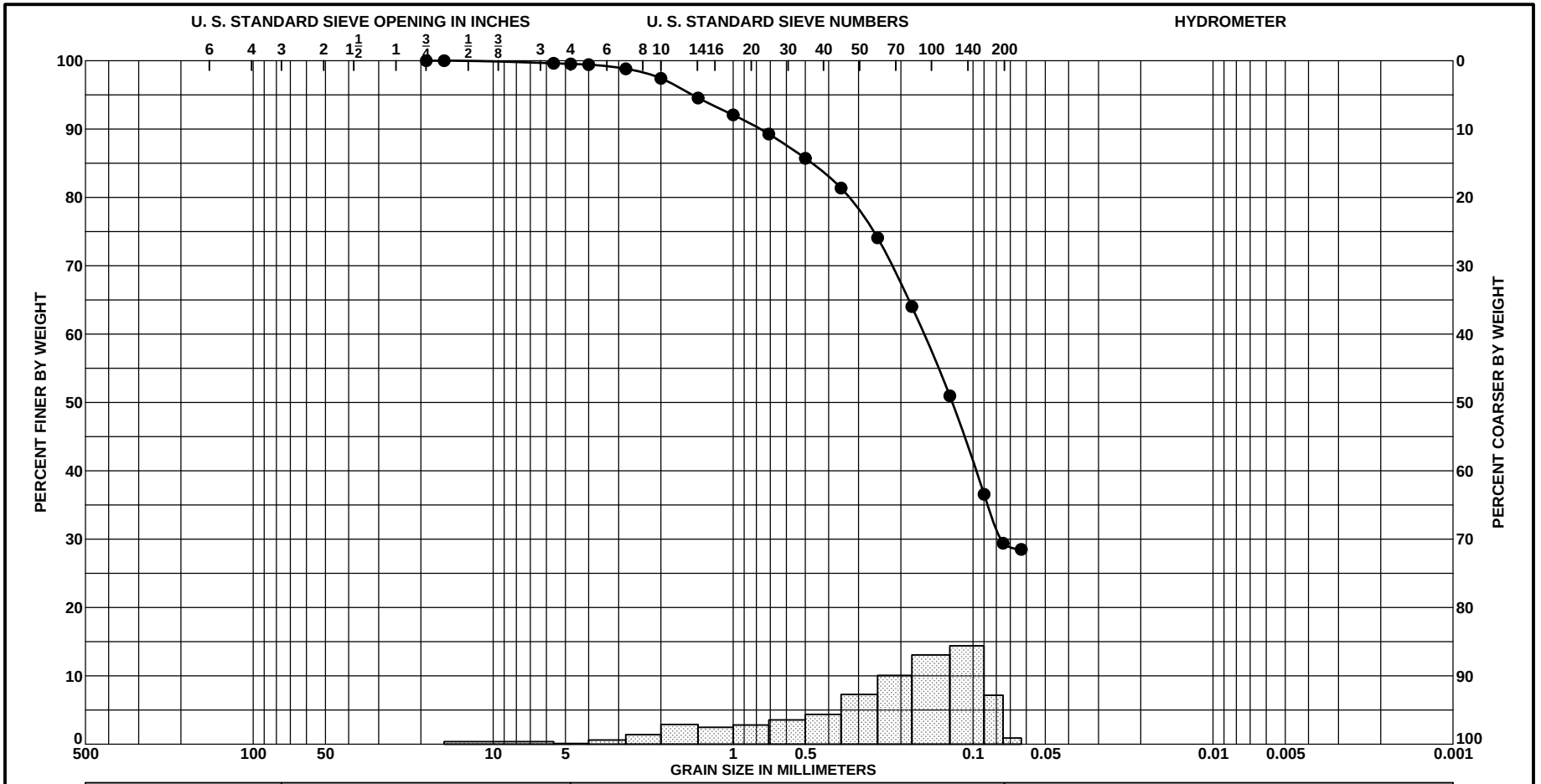


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	2							
		fine to									
		medium-grained sand-sized									
		carbonate, little									
		shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-02
BORING ELEV.	-45.9 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

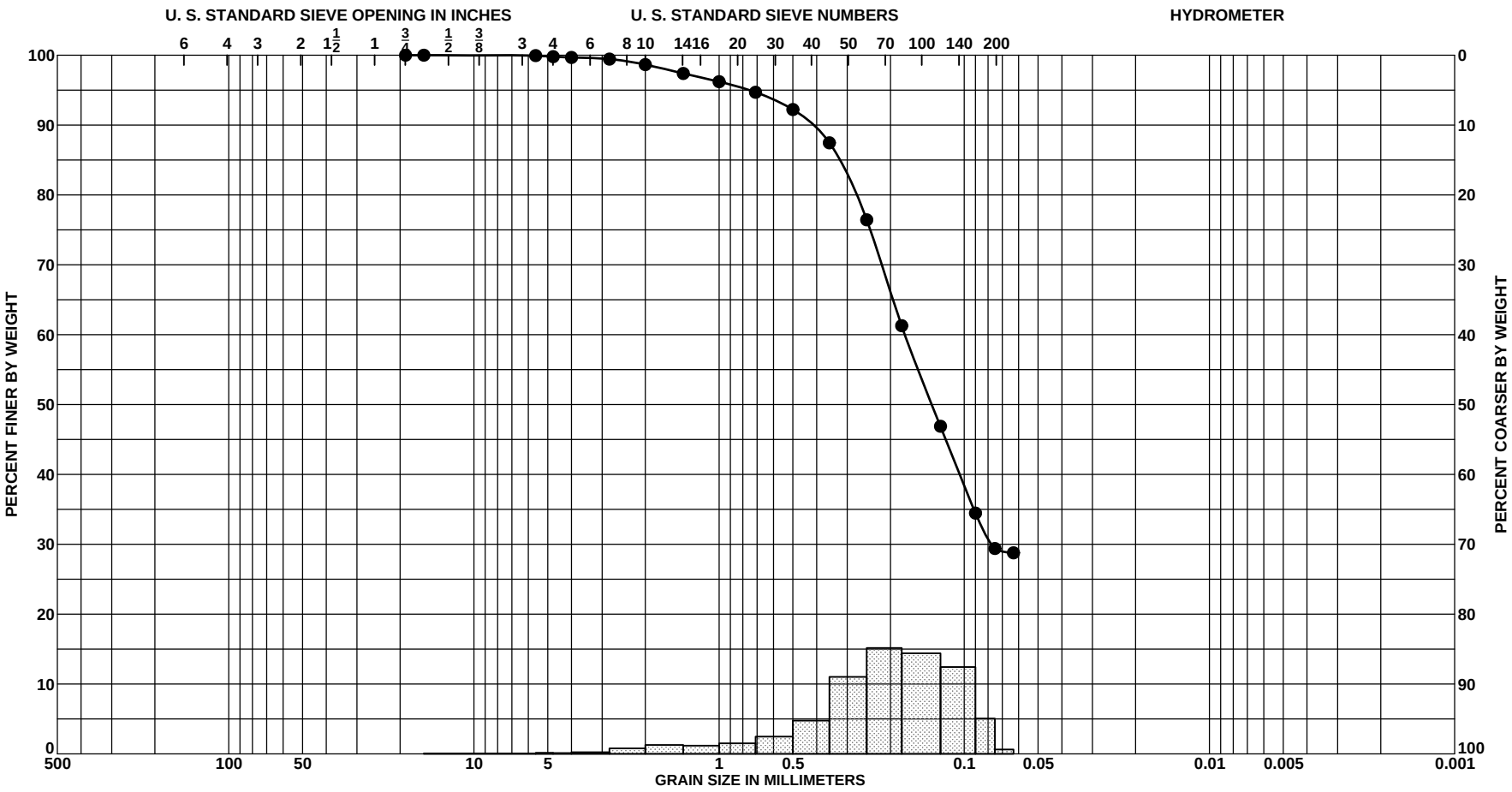


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	11.0 to 11.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-02
BORING ELEV.	-45.9 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	14.0 to 14.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-02
BORING ELEV.	-45.9 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-02 @ 1 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,672	490,960	State Plane, FLE (U.S. Ft.)	-46.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 4.30 #230 - 4.14			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.34	1.34
#4	-2.25	4.75	0.23	1.57
#5	-2.00	4.00	0.29	1.86
#7	-1.50	2.80	0.97	2.83
#10	-1.00	2.00	1.64	4.47
#14	-0.50	1.40	4.66	9.13
#18	0.00	1.00	6.94	16.07
#25	0.50	0.71	11.85	27.92
#35	1.00	0.50	16.37	44.28
#45	1.50	0.36	16.25	60.54
#60	2.00	0.25	13.49	74.02
#80	2.50	0.18	11.29	85.32
#120	3.00	0.13	8.12	93.44
#170	3.50	0.09	1.89	95.32
#200	3.75	0.08	0.37	95.70
#230	4.00	0.06	0.16	95.86

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.41	2.44	2.04	1.18	0.38	0.00	-0.94

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.05	0.48	1.18	0.44	1.22	-0.69	4.08

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-02 @ 3 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,672	490,960	State Plane, FLE (U.S. Ft.)	-48.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.89 #230 - 3.87			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.51	2.51
#4	-2.25	4.75	0.21	2.72
#5	-2.00	4.00	0.32	3.04
#7	-1.50	2.80	0.60	3.64
#10	-1.00	2.00	1.65	5.29
#14	-0.50	1.40	5.89	11.17
#18	0.00	1.00	8.57	19.75
#25	0.50	0.71	14.29	34.03
#35	1.00	0.50	20.85	54.88
#45	1.50	0.36	16.30	71.19
#60	2.00	0.25	10.77	81.96
#80	2.50	0.18	8.13	90.09
#120	3.00	0.13	4.93	95.02
#170	3.50	0.09	0.92	95.94
#200	3.75	0.08	0.17	96.11
#230	4.00	0.06	0.02	96.13

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.00	2.13	1.68	0.88	0.18	-0.22	-1.09

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.78	0.58	0.88	0.54	1.21	-0.83	4.71

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-02 @ 6 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,672	490,960	State Plane, FLE (U.S. Ft.)	-51.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 10.01 #230 - 9.98			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.45	1.45
#4	-2.25	4.75	0.09	1.54
#5	-2.00	4.00	0.33	1.86
#7	-1.50	2.80	1.00	2.86
#10	-1.00	2.00	1.83	4.69
#14	-0.50	1.40	7.61	12.30
#18	0.00	1.00	10.92	23.22
#25	0.50	0.71	15.82	39.03
#35	1.00	0.50	17.82	56.85
#45	1.50	0.36	13.14	69.99
#60	2.00	0.25	8.05	78.04
#80	2.50	0.18	5.09	83.13
#120	3.00	0.13	4.29	87.42
#170	3.50	0.09	2.02	89.44
#200	3.75	0.08	0.55	89.99
#230	4.00	0.06	0.03	90.02

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.60	1.81	0.81	0.06	-0.33	-0.98

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.69	0.62	0.81	0.57	1.2	-0.26	3.92

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-02 @ 8 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,672	490,960	State Plane, FLE (U.S. Ft.)	-53.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 10.95 #230 - 10.87			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.04	2.04
#4	-2.25	4.75	0.17	2.21
#5	-2.00	4.00	0.48	2.69
#7	-1.50	2.80	0.77	3.46
#10	-1.00	2.00	2.68	6.15
#14	-0.50	1.40	10.20	16.34
#18	0.00	1.00	11.82	28.17
#25	0.50	0.71	14.76	42.93
#35	1.00	0.50	14.40	57.33
#45	1.50	0.36	11.75	69.07
#60	2.00	0.25	8.08	77.15
#80	2.50	0.18	4.82	81.97
#120	3.00	0.13	3.87	85.84
#170	3.50	0.09	2.36	88.20
#200	3.75	0.08	0.84	89.05
#230	4.00	0.06	0.09	89.13

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.76	1.87	0.75	-0.13	-0.52	-1.21

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.59	0.66	0.75	0.59	1.3	-0.2	3.62

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-02 @ 11 ft

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,672	490,960	State Plane, FLE (U.S. Ft.)	-56.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 29.40 #230 - 28.50			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.38	0.38
#4	-2.25	4.75	0.09	0.47
#5	-2.00	4.00	0.10	0.57
#7	-1.50	2.80	0.61	1.19
#10	-1.00	2.00	1.39	2.58
#14	-0.50	1.40	2.87	5.45
#18	0.00	1.00	2.47	7.92
#25	0.50	0.71	2.81	10.73
#35	1.00	0.50	3.55	14.28
#45	1.50	0.36	4.36	18.64
#60	2.00	0.25	7.28	25.92
#80	2.50	0.18	10.06	35.97
#120	3.00	0.13	13.06	49.03
#170	3.50	0.09	14.40	63.43
#200	3.75	0.08	7.16	70.60
#230	4.00	0.06	0.90	71.50

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
			3.03	1.94	1.20	-0.58

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.09	0.23	3.03	0.12	1.4	-1.15	3.85

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-02 @ 14 ft

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,672	490,960	State Plane, FLE (U.S. Ft.)	-59.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 29.39 #230 - 28.78			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.06	0.06
#4	-2.25	4.75	0.15	0.21
#5	-2.00	4.00	0.11	0.32
#7	-1.50	2.80	0.23	0.56
#10	-1.00	2.00	0.79	1.34
#14	-0.50	1.40	1.27	2.61
#18	0.00	1.00	1.17	3.79
#25	0.50	0.71	1.52	5.31
#35	1.00	0.50	2.47	7.78
#45	1.50	0.36	4.76	12.54
#60	2.00	0.25	11.03	23.57
#80	2.50	0.18	15.15	38.72
#120	3.00	0.13	14.39	53.11
#170	3.50	0.09	12.43	65.54
#200	3.75	0.08	5.06	70.61
#230	4.00	0.06	0.62	71.22

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
			2.89	2.05	1.66	0.40

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.23	0.21	2.89	0.13	1.1	-1.35	5.42

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–02
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–02
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–02
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–02
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–02
DEPTH :10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–02
DEPTH :12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–02
DEPTH :15.0 – 16.1
15'
16'
17'

VB-DA20-03

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-03

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-03 — LOCATION COORDINATES: X = 955,932 Y = 491,618
3. DRILLING AGENCY: Amdrill — CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: —
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 17.4 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore — ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 6 — UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-23-20 — COMPLETED: 06-23-20
16. ELEVATION TOP OF BORING: -47.4 Ft.
17. TOTAL RECOVERY FOR BORING: 86 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-47.4	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, little gravel to cobble-sized limestone, few shell, trace silt, moist, 5Y 8/2 pale yellow (SW)				-48.4		
-49.3	1.9		SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, moist, 5Y 8/2 pale yellow (SW)		1		-50.4		
					2		-53.4		
					3				
-56.4	9.0						-56.4		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, moist, 5Y 8/2 pale yellow (SW-SM)		4				
-57.4	10.0		SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, few shell, moist, 5Y 8/2 pale yellow (SM)				-59.4		
					5		-61.4		
					6				
-62.4	15.0								

0 5 10 15

(Continued)

Boring Designation VB-DA20-03

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT SAD-SAND	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88	
LOCATION COORDINATES X = 955,932 Y = 491,618	ELEVATION TOP OF BORING -47.4 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			No Recovery						
-64.8	17.4						-64.8		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

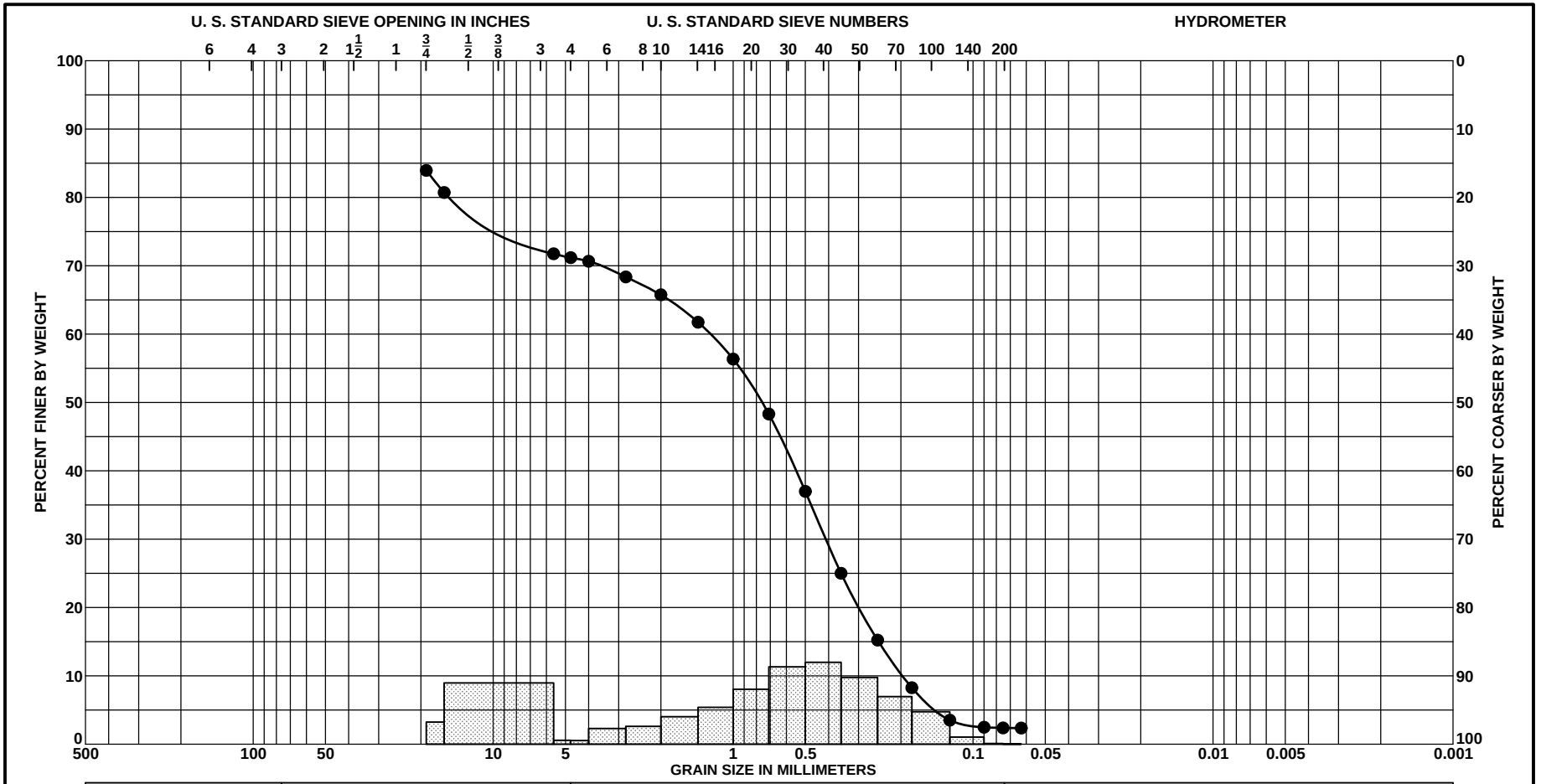
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW*
3	6.0/6.2	SW*
4	9.0/9.2	SW-SM*
5	12.0/12.2	SM*
6	14.0/14.2	SM*

*Lab visual classification based on gradation curve

15 20 25 30 35

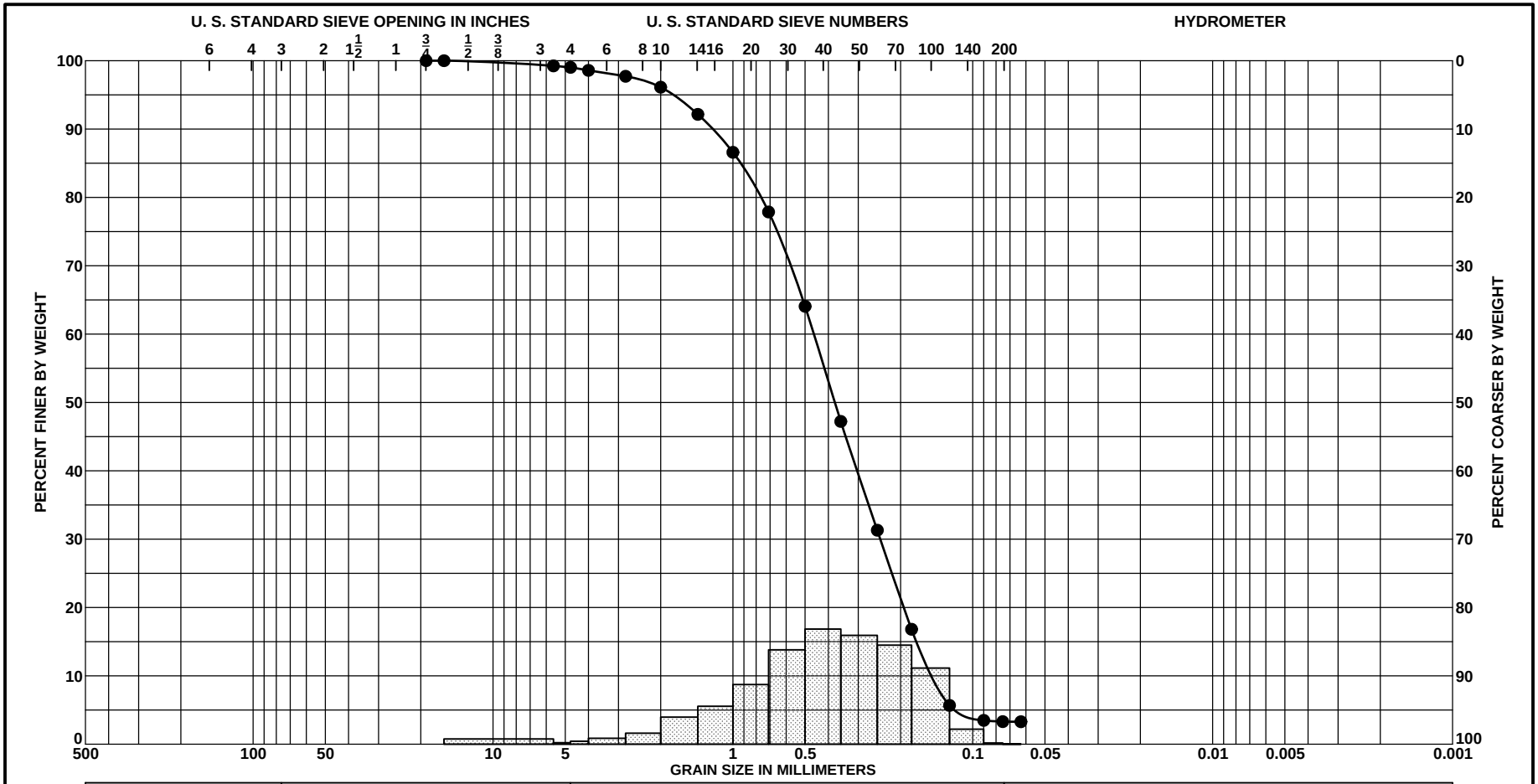


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, little									
		gravel to cobble-sized limestone,									
		few shell, trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-03
BORING ELEV.	-47.4 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

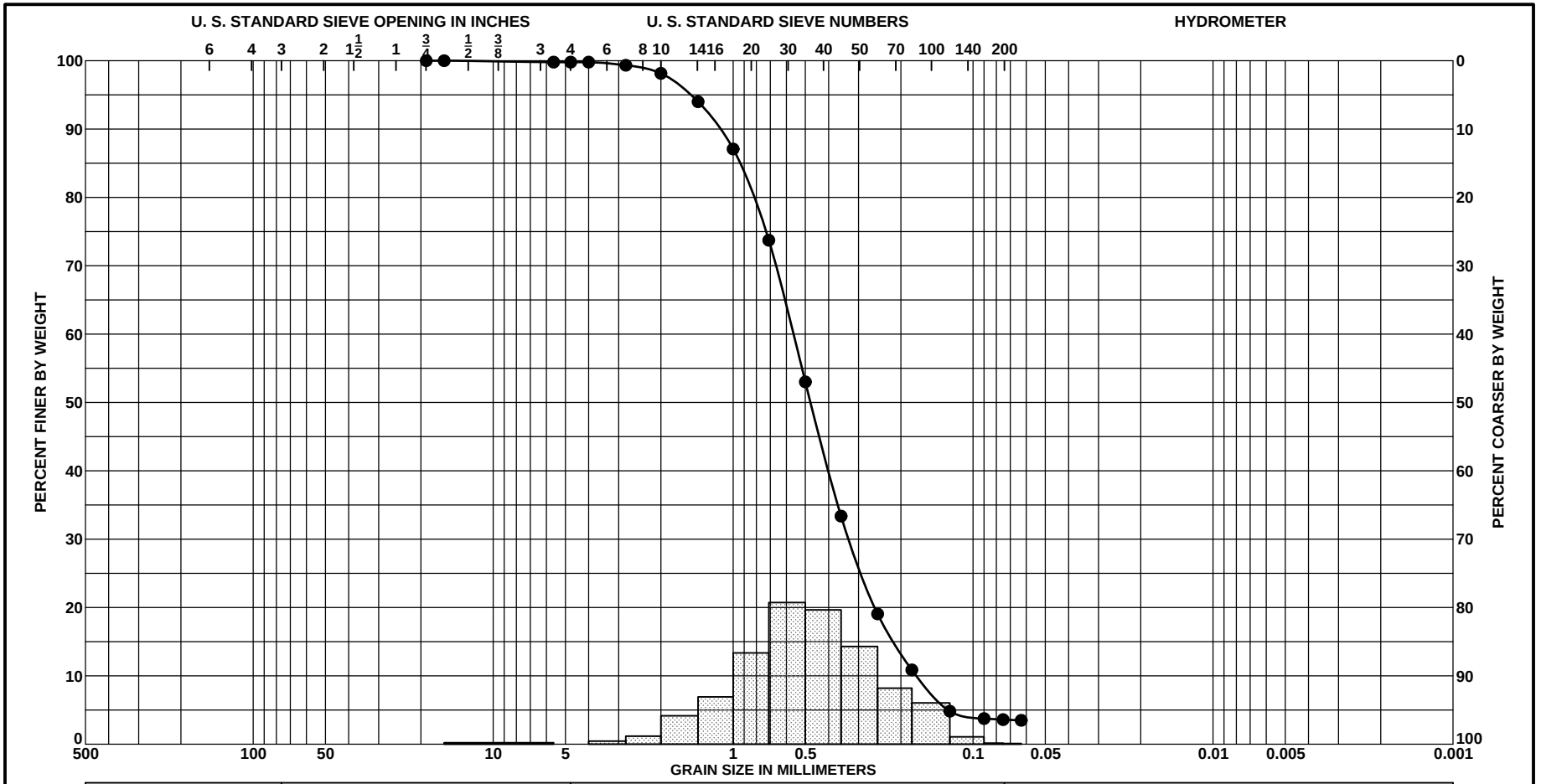


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	0	99						
		medium-grained sand-sized									
		carbonate, trace									
		silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-03
BORING ELEV.	-47.4 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

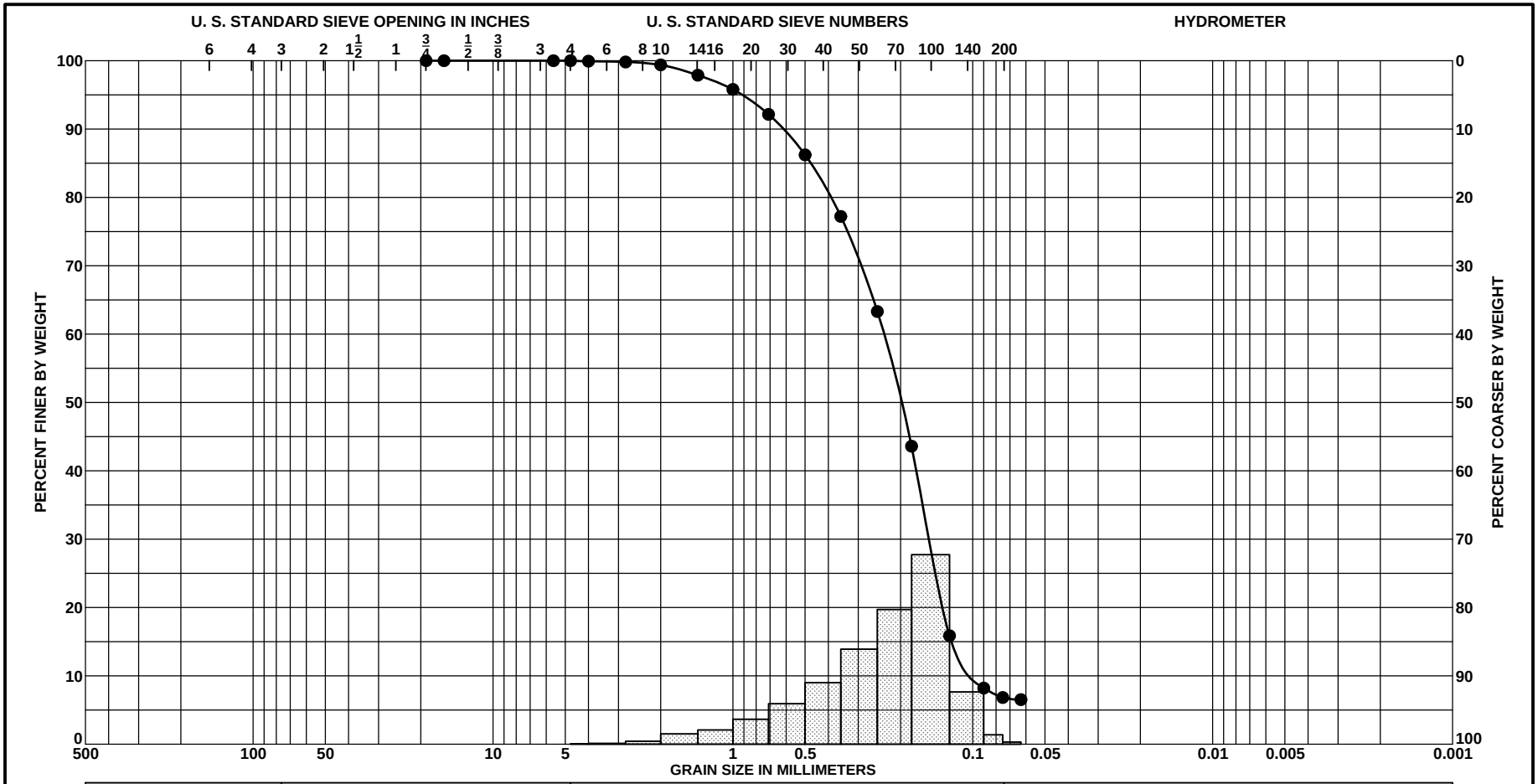


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-03
BORING ELEV.	-47.4 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

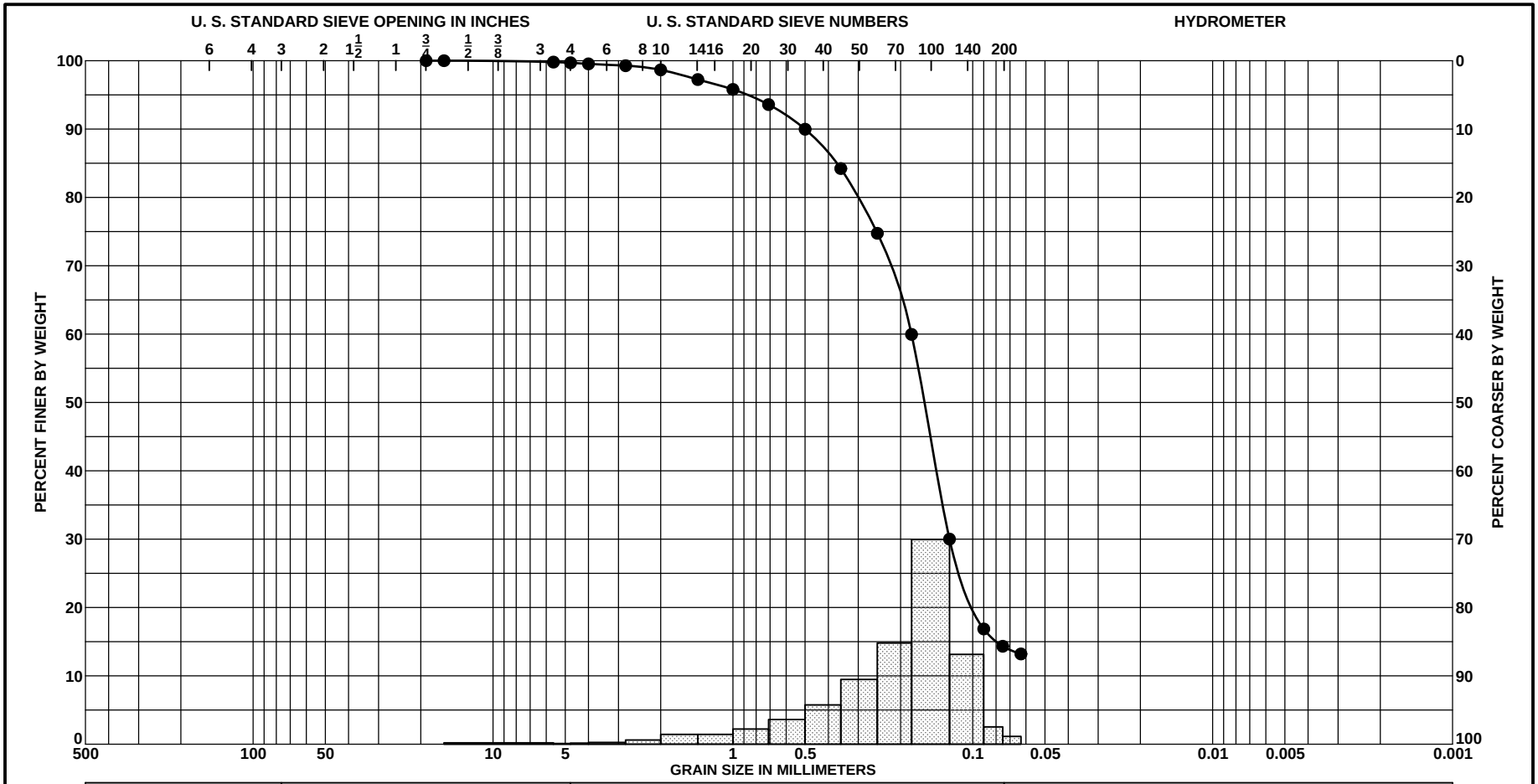


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	9.0 to 9.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-03
BORING ELEV.	-47.4 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

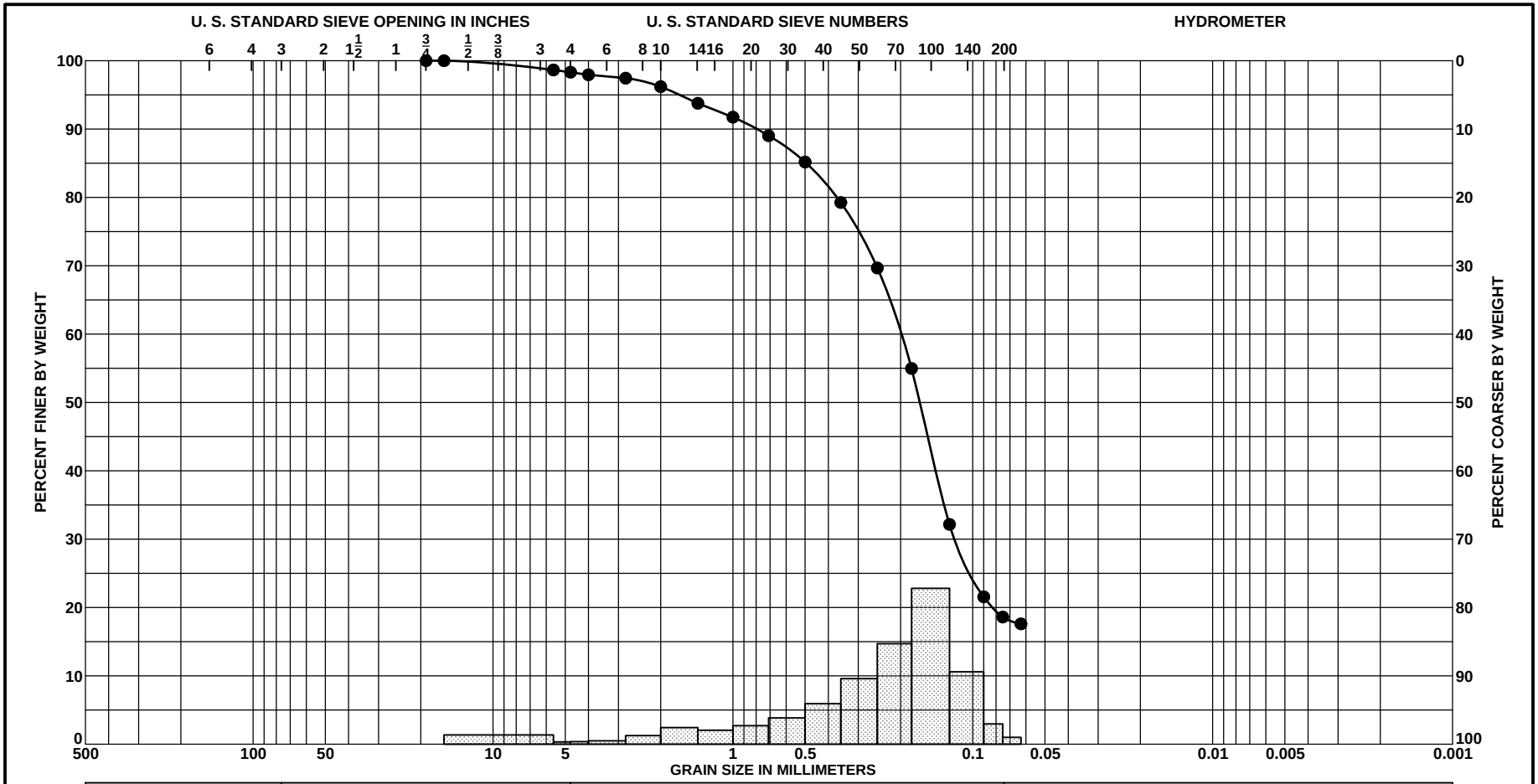


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	12.0 to 12.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	0							
		medium-grained									
		sand-sized carbonate, little silt, few									
		shell, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-03
BORING ELEV.	-47.4 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

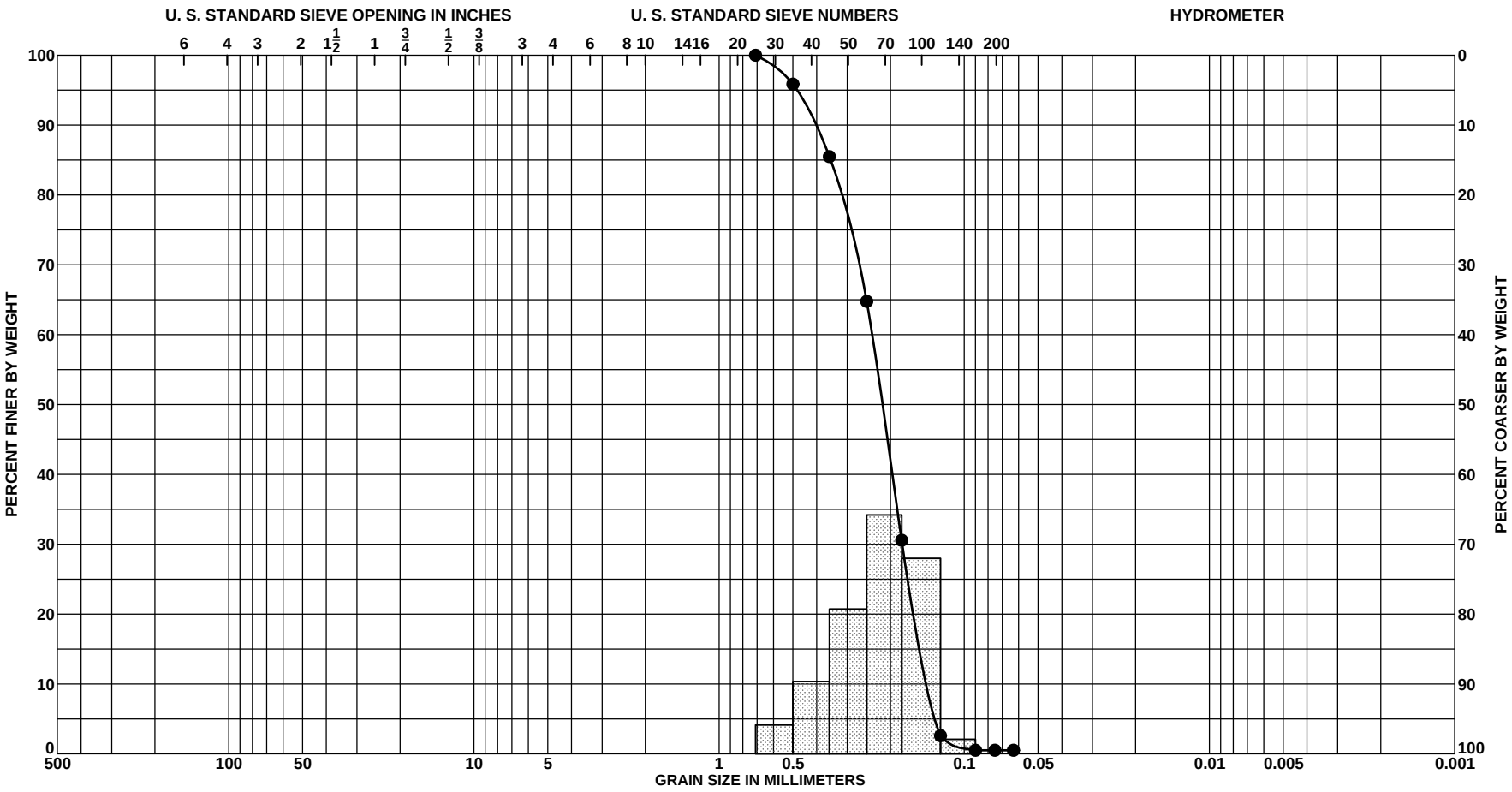


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	14.0 to 14.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	1							
		medium-grained									
		sand-sized carbonate, little silt, few									
		shell, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-03
BORING ELEV.	-47.4 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-03
BORING ELEV.	-47.4 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-03 @ 1 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,932	491,618	State Plane, FLE (U.S. Ft.)	-48.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.38 #230 - 2.36			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	16.05	16.05
5/8	-4.00	16.00	3.23	19.28
#3.5	-2.50	5.60	8.97	28.25
#4	-2.25	4.75	0.56	28.81
#5	-2.00	4.00	0.53	29.35
#7	-1.50	2.80	2.29	31.63
#10	-1.00	2.00	2.62	34.25
#14	-0.50	1.40	4.01	38.26
#18	0.00	1.00	5.39	43.65
#25	0.50	0.71	8.04	51.69
#35	1.00	0.50	11.32	63.01
#45	1.50	0.36	11.99	75.00
#60	2.00	0.25	9.77	84.77
#80	2.50	0.18	6.97	91.74
#120	3.00	0.13	4.75	96.49
#170	3.50	0.09	1.03	97.52
#200	3.75	0.08	0.10	97.62
#230	4.00	0.06	0.02	97.64

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.84	1.96	1.50	0.39	-3.04		

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	-0.53	1.44	0.39	0.76	1.9	0.38	2.13

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-03 @ 3 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,932	491,618	State Plane, FLE (U.S. Ft.)	-50.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.30 #230 - 3.29		99.20	0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.76	0.76
#4	-2.25	4.75	0.22	0.98
#5	-2.00	4.00	0.44	1.41
#7	-1.50	2.80	0.87	2.28
#10	-1.00	2.00	1.60	3.88
#14	-0.50	1.40	3.97	7.85
#18	0.00	1.00	5.56	13.40
#25	0.50	0.71	8.73	22.13
#35	1.00	0.50	13.80	35.93
#45	1.50	0.36	16.85	52.78
#60	2.00	0.25	15.91	68.69
#80	2.50	0.18	14.49	83.19
#120	3.00	0.13	11.14	94.33
#170	3.50	0.09	2.19	96.52
#200	3.75	0.08	0.18	96.70
#230	4.00	0.06	0.01	96.71

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.15	2.54	2.22	1.42	0.60	0.15	-0.86

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.25	0.42	1.42	0.37	1.18	-0.82	3.99

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-03 @ 6 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,932	491,618	State Plane, FLE (U.S. Ft.)	-53.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.59 #230 - 3.49			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.21	0.21
#4	-2.25	4.75	0.00	0.21
#5	-2.00	4.00	0.00	0.21
#7	-1.50	2.80	0.46	0.67
#10	-1.00	2.00	1.19	1.85
#14	-0.50	1.40	4.15	6.00
#18	0.00	1.00	6.92	12.92
#25	0.50	0.71	13.35	26.27
#35	1.00	0.50	20.73	46.99
#45	1.50	0.36	19.64	66.64
#60	2.00	0.25	14.30	80.94
#80	2.50	0.18	8.19	89.13
#120	3.00	0.13	6.04	95.17
#170	3.50	0.09	1.08	96.25
#200	3.75	0.08	0.15	96.41
#230	4.00	0.06	0.10	96.51

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.99	2.19	1.79	1.08	0.45	0.12	-0.62

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.04	0.49	1.08	0.47	0.98	-0.21	3.43

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-03 @ 9 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,932	491,618	State Plane, FLE (U.S. Ft.)	-56.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 6.83 #230 - 6.52			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.00	0.00
#5	-2.00	4.00	0.07	0.07
#7	-1.50	2.80	0.12	0.19
#10	-1.00	2.00	0.42	0.61
#14	-0.50	1.40	1.51	2.12
#18	0.00	1.00	2.09	4.21
#25	0.50	0.71	3.65	7.86
#35	1.00	0.50	5.93	13.78
#45	1.50	0.36	9.00	22.79
#60	2.00	0.25	13.91	36.69
#80	2.50	0.18	19.71	56.40
#120	3.00	0.13	27.73	84.13
#170	3.50	0.09	7.66	91.79
#200	3.75	0.08	1.38	93.17
#230	4.00	0.06	0.31	93.48

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.00	2.84	2.34	1.58	1.12	0.11

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.03	0.24	2.34	0.20	0.98	-1.03	3.94

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-03 @ 12 ft

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,932	491,618	State Plane, FLE (U.S. Ft.)	-59.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 14.33 #230 - 13.20			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.20	0.20
#4	-2.25	4.75	0.10	0.30
#5	-2.00	4.00	0.16	0.47
#7	-1.50	2.80	0.26	0.73
#10	-1.00	2.00	0.61	1.34
#14	-0.50	1.40	1.42	2.76
#18	0.00	1.00	1.44	4.20
#25	0.50	0.71	2.22	6.42
#35	1.00	0.50	3.61	10.02
#45	1.50	0.36	5.75	15.78
#60	2.00	0.25	9.47	25.25
#80	2.50	0.18	14.79	40.05
#120	3.00	0.13	29.95	70.00
#170	3.50	0.09	13.14	83.14
#200	3.75	0.08	2.53	85.67
#230	4.00	0.06	1.13	86.80

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.59	3.19	2.67	1.99	1.51	0.18

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.25	0.21	2.67	0.16	1.06	-1.61	6.38

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-03 @ 14 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,932	491,618	State Plane, FLE (U.S. Ft.)	-61.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 18.61 #230 - 17.61			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.35	1.35
#4	-2.25	4.75	0.33	1.68
#5	-2.00	4.00	0.38	2.06
#7	-1.50	2.80	0.49	2.56
#10	-1.00	2.00	1.25	3.80
#14	-0.50	1.40	2.43	6.23
#18	0.00	1.00	2.03	8.26
#25	0.50	0.71	2.71	10.98
#35	1.00	0.50	3.85	14.83
#45	1.50	0.36	5.92	20.74
#60	2.00	0.25	9.59	30.33
#80	2.50	0.18	14.71	45.04
#120	3.00	0.13	22.81	67.84
#170	3.50	0.09	10.60	78.44
#200	3.75	0.08	2.95	81.39
#230	4.00	0.06	1.00	82.39

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.34	2.61	1.72	1.10	-0.75

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.96	0.26	2.61	0.16	1.39	-1.59	5.69

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-03 @ 3 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,932	491,618	State Plane, FLE (U.S. Ft.)	-50.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.52 #230 - 0.52			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#25	0.50	0.71	0.00	0.00
#35	1.00	0.50	4.15	4.15
#45	1.50	0.36	10.36	14.51
#60	2.00	0.25	20.73	35.23
#80	2.50	0.18	34.20	69.43
#120	3.00	0.13	27.98	97.41
#170	3.50	0.09	2.07	99.48
#200	3.75	0.08	0.00	99.48
#230	4.00	0.06	0.00	99.48

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.96	2.76	2.60	2.22	1.75	1.54	1.04

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.14	0.23	2.22	0.21	0.57	-0.56	2.74

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–03
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–03
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–03
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–03
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–03
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–03
DEPTH :12.5 –15.0
13'
14'
15'

VB-DA20-04

Vibracore Log
Grain Size Distribution Curves
Granulometric Tables
Vibracore Photos

Boring Designation VB-DA20-04

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-04	LOCATION COORDINATES: X = 949,659 Y = 491,907	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 5 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-23-20 / COMPLETED: 06-23-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -20.7 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 81 %	
8. TOTAL DEPTH OF BORING: 13.7 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-20.7	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, trace fine gravel-sized limestone, moist, 5Y 8/2 pale yellow (SW)				-21.7		
					1				
							-23.7		
					2				
							-25.7		
					3				
-27.1	6.4								
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, trace fine gravel-sized limestone, moist, 5Y 8/2 pale yellow (SM)				-27.7		
					4				
-29.7	9.0						-29.7		
-30.2	9.5		SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, trace fine gravel-sized limestone, moist, 5Y 8/2 pale yellow (SW-SM)		5				
-31.8	11.1		SILT, inorganic-L, mostly silt, little fine-grained sand-sized carbonate, little gravel to cobble-sized limestone, moist, 5Y 8/1 white (ML)						
			No Recovery						
-34.4	13.7						-34.4		
			BORING TERMINATED IN REFUSAL				Abbreviations:		
			NOTES:						

0 5 10 15

(Continued)

Boring Designation VB-DA20-04

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 949,659 Y = 491,907	ELEVATION TOP OF BORING: -20.7 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE

1. Taylor Engineering is the custodian for these original files.

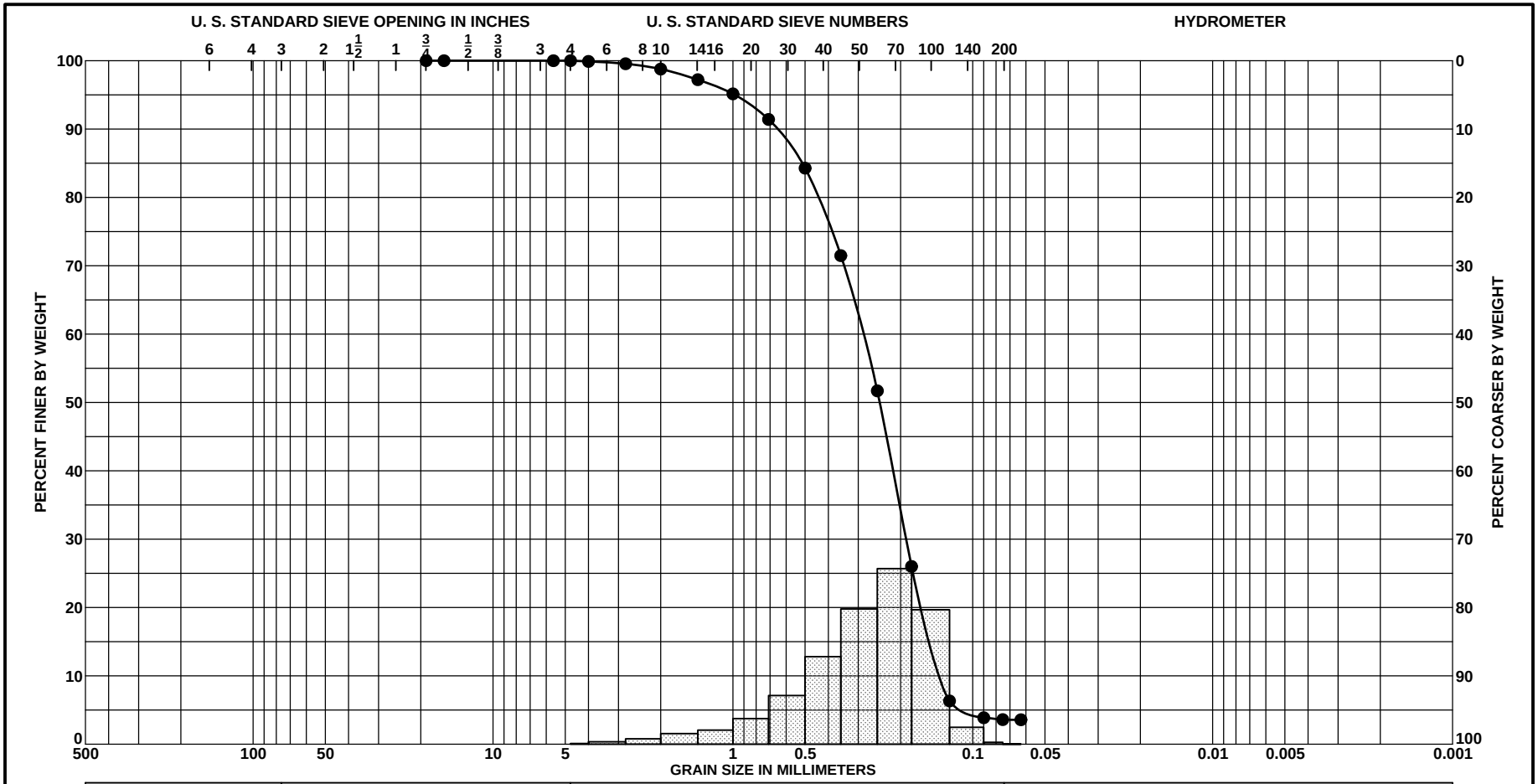
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW*
3	5.0/5.2	SW*
4	7.0/7.2	SM*
5	9.0/9.2	SW-SM*

*Lab visual classification based on gradation curve

15 20 25 30 35

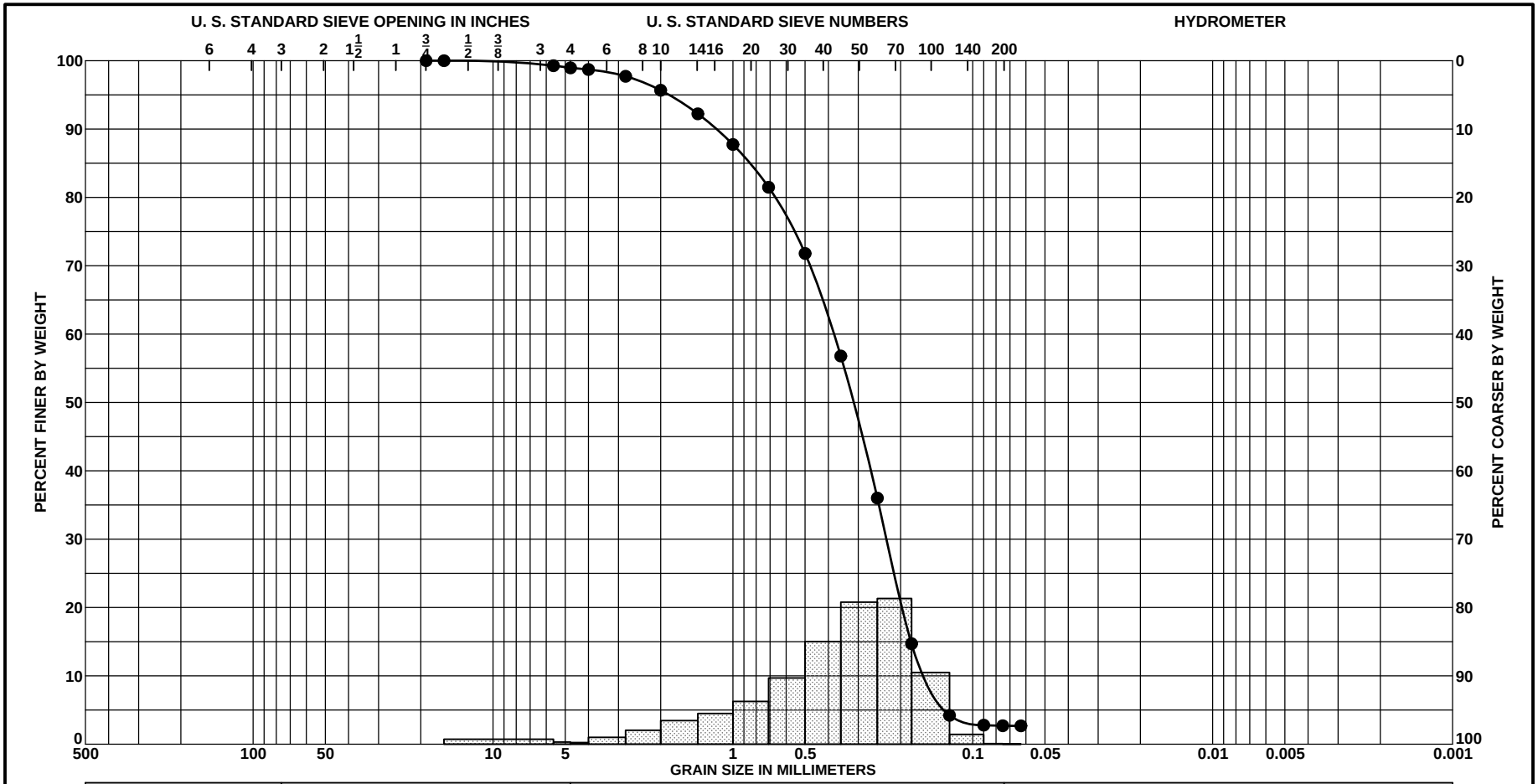


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	3							
		medium-grained sand-sized									
		carbonate, trace silt,									
		trace shell, trace fine gravel-sized									
		limestone, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-04
BORING ELEV.	-20.7 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

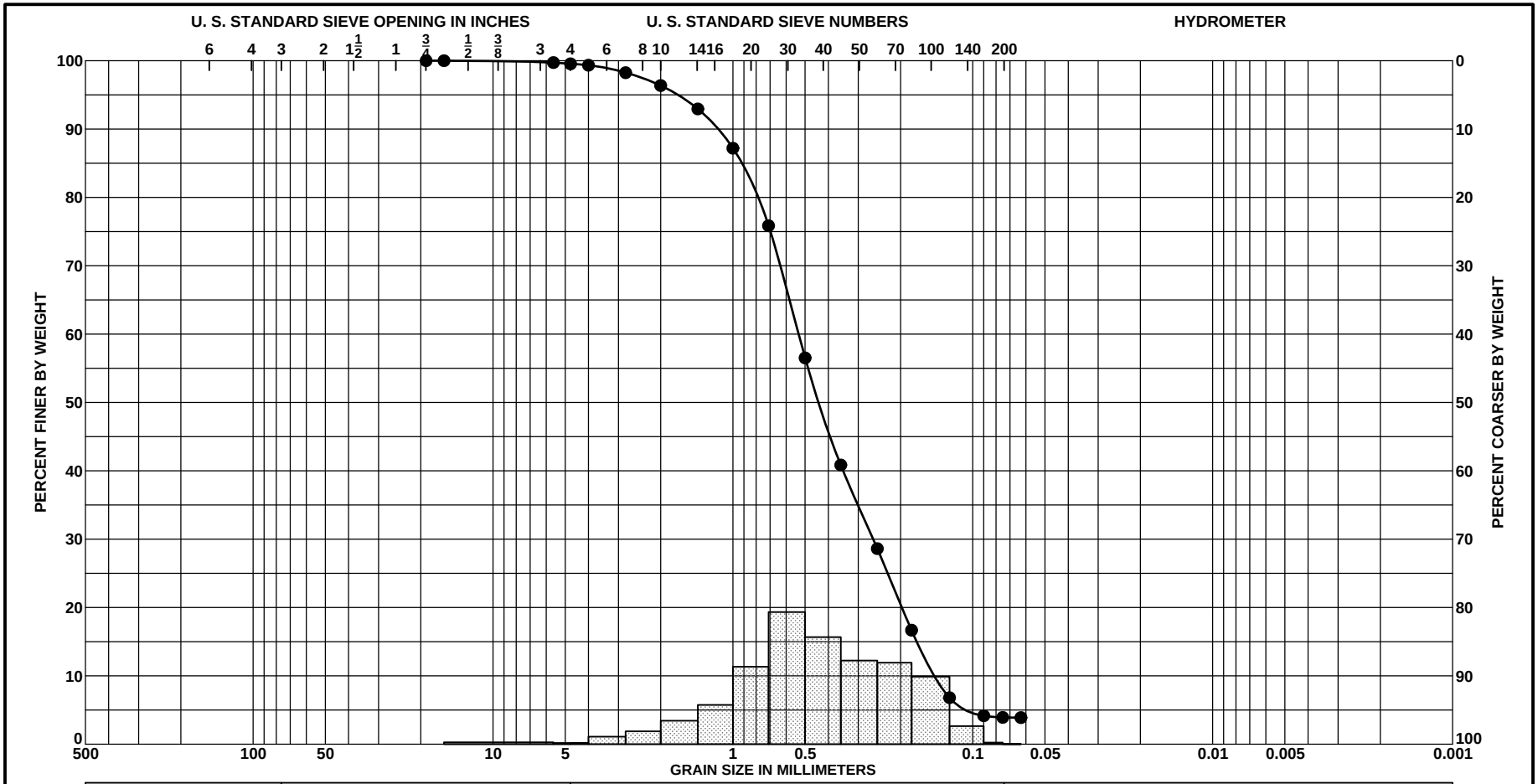


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace silt,									
		trace shell, trace fine gravel-sized									
		limestone, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-04
BORING ELEV.	-20.7 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

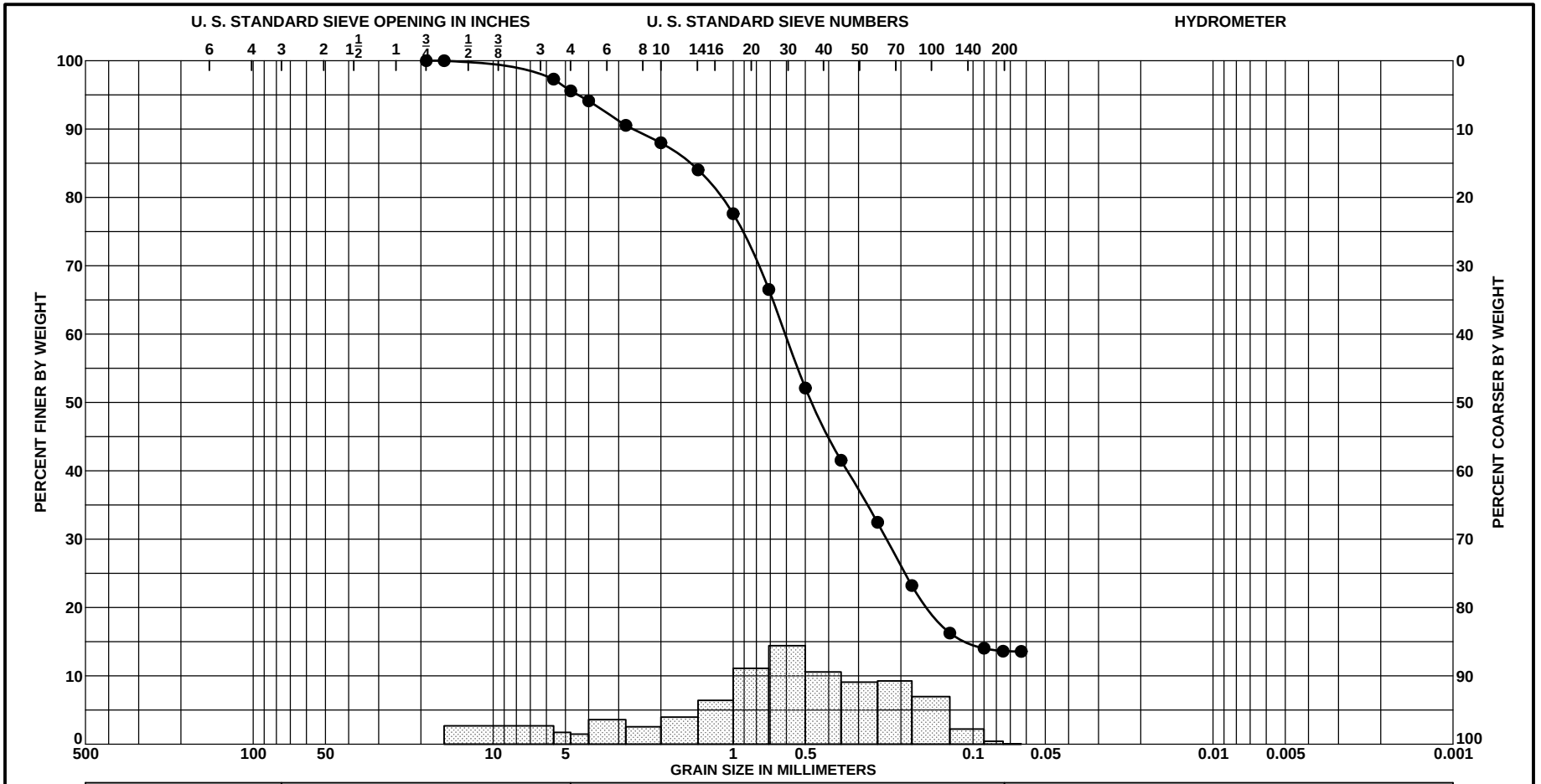


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	5.0 to 5.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, trace silt,									
		trace shell, trace fine gravel-sized									
		limestone, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-04
BORING ELEV.	-20.7 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

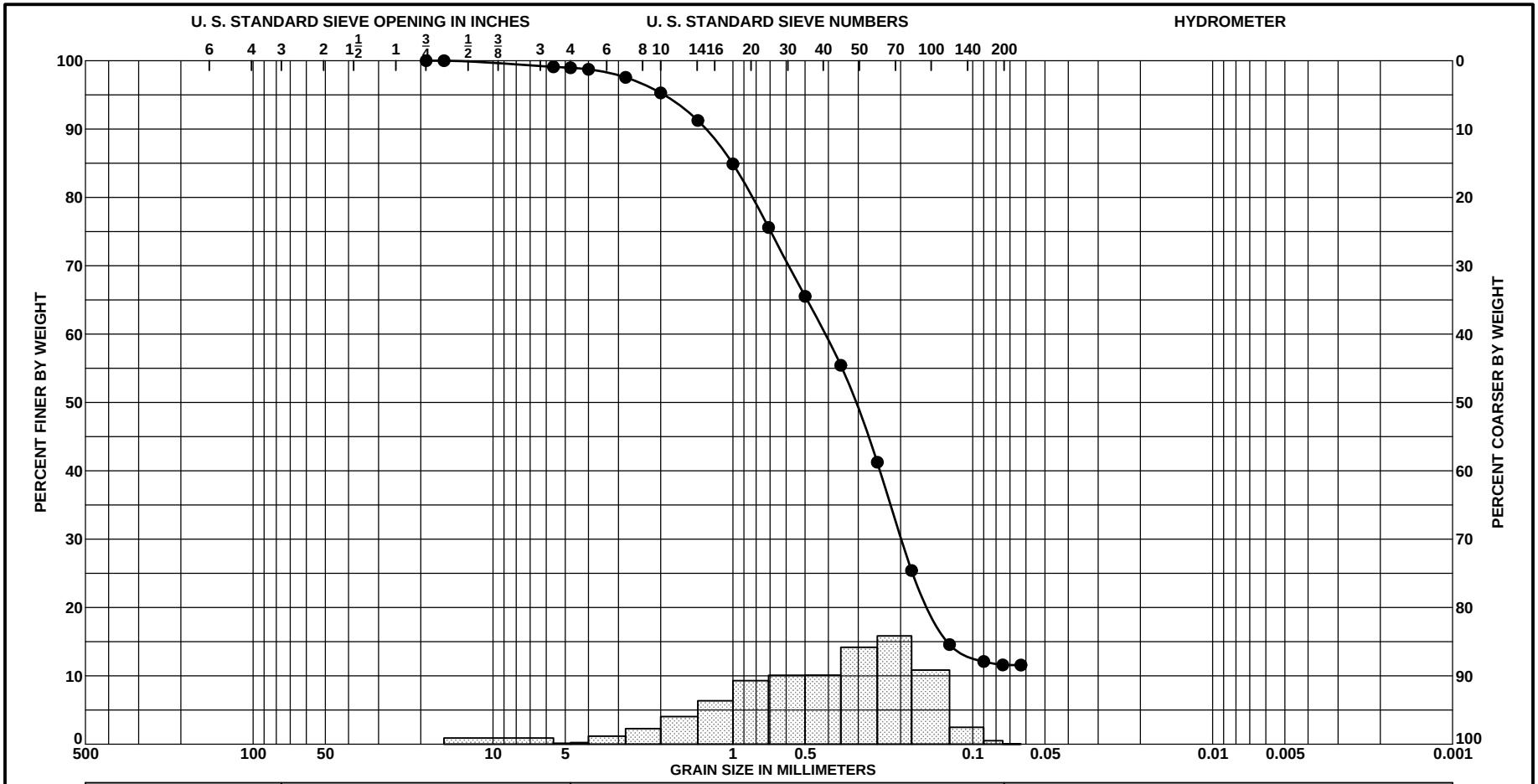


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	7.0 to 7.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, trace silt,									
		trace shell, trace fine gravel-sized									
		limestone, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-04
BORING ELEV.	-20.7 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	9.0 to 9.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	1							
		fine to medium-grained									
		sand-sized carbonate, few silt,									
		trace shell, trace fine gravel-sized									
		limestone, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-04
BORING ELEV.	-20.7 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-04 @ 1 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,659	491,907	State Plane, FLE (U.S. Ft.)	-21.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.60 #230 - 3.57			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.00	0.00
#5	-2.00	4.00	0.10	0.10
#7	-1.50	2.80	0.34	0.45
#10	-1.00	2.00	0.78	1.22
#14	-0.50	1.40	1.56	2.78
#18	0.00	1.00	2.07	4.85
#25	0.50	0.71	3.74	8.59
#35	1.00	0.50	7.13	15.72
#45	1.50	0.36	12.80	28.52
#60	2.00	0.25	19.78	48.30
#80	2.50	0.18	25.70	74.00
#120	3.00	0.13	19.67	93.67
#170	3.50	0.09	2.46	96.13
#200	3.75	0.08	0.27	96.40
#230	4.00	0.06	0.03	96.43

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.27	2.75	2.53	2.03	1.36	1.01	0.02

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.81	0.29	2.03	0.24	0.92	-1.13	4.52

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-04 @ 3 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,659	491,907	State Plane, FLE (U.S. Ft.)	-23.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.70 #230 - 2.68			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.73	0.73
#4	-2.25	4.75	0.32	1.05
#5	-2.00	4.00	0.24	1.29
#7	-1.50	2.80	1.00	2.28
#10	-1.00	2.00	2.04	4.32
#14	-0.50	1.40	3.44	7.77
#18	0.00	1.00	4.49	12.26
#25	0.50	0.71	6.26	18.52
#35	1.00	0.50	9.68	28.20
#45	1.50	0.36	15.01	43.21
#60	2.00	0.25	20.78	63.99
#80	2.50	0.18	21.31	85.30
#120	3.00	0.13	10.48	95.78
#170	3.50	0.09	1.43	97.21
#200	3.75	0.08	0.09	97.30
#230	4.00	0.06	0.02	97.32

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.96	2.47	2.26	1.66	0.83	0.30	-0.90

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.38	0.38	1.66	0.32	1.16	-1.17	4.61

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-04 @ 5 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,659	491,907	State Plane, FLE (U.S. Ft.)	-25.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.92 #230 - 3.89			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.27	0.27
#4	-2.25	4.75	0.19	0.46
#5	-2.00	4.00	0.20	0.66
#7	-1.50	2.80	1.09	1.75
#10	-1.00	2.00	1.88	3.63
#14	-0.50	1.40	3.43	7.06
#18	0.00	1.00	5.75	12.81
#25	0.50	0.71	11.34	24.14
#35	1.00	0.50	19.34	43.48
#45	1.50	0.36	15.67	59.15
#60	2.00	0.25	12.24	71.39
#80	2.50	0.18	11.93	83.32
#120	3.00	0.13	9.88	93.20
#170	3.50	0.09	2.64	95.84
#200	3.75	0.08	0.24	96.08
#230	4.00	0.06	0.03	96.11

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.34	2.53	2.15	1.21	0.52	0.14	-0.80

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.16	0.45	1.21	0.43	1.13	-0.41	3.27

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-04 @ 7 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,659	491,907	State Plane, FLE (U.S. Ft.)	-27.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 13.61 #230 - 13.57			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.69	2.69
#4	-2.25	4.75	1.72	4.41
#5	-2.00	4.00	1.46	5.88
#7	-1.50	2.80	3.58	9.46
#10	-1.00	2.00	2.55	12.01
#14	-0.50	1.40	3.97	15.97
#18	0.00	1.00	6.41	22.39
#25	0.50	0.71	11.09	33.48
#35	1.00	0.50	14.42	47.90
#45	1.50	0.36	10.57	58.46
#60	2.00	0.25	9.07	67.54
#80	2.50	0.18	9.25	76.79
#120	3.00	0.13	6.96	83.74
#170	3.50	0.09	2.22	85.96
#200	3.75	0.08	0.43	86.39
#230	4.00	0.06	0.03	86.43

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.06	2.40	1.10	0.12	-0.50	-2.15

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.71	0.61	1.10	0.47	1.52	-0.63	3.04

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-04 @ 9 ft

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,659	491,907	State Plane, FLE (U.S. Ft.)	-29.7 NAVD88

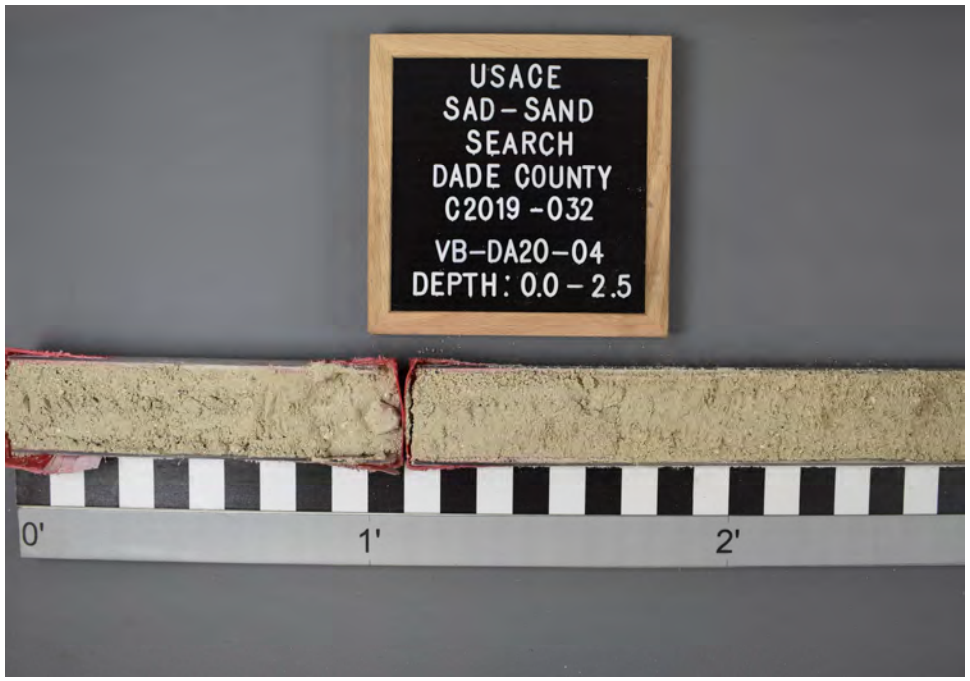
USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 11.60 #230 - 11.58			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.90	0.90
#4	-2.25	4.75	0.14	1.04
#5	-2.00	4.00	0.23	1.26
#7	-1.50	2.80	1.18	2.44
#10	-1.00	2.00	2.27	4.71
#14	-0.50	1.40	4.03	8.75
#18	0.00	1.00	6.36	15.10
#25	0.50	0.71	9.30	24.40
#35	1.00	0.50	10.08	34.48
#45	1.50	0.36	10.09	44.57
#60	2.00	0.25	14.18	58.75
#80	2.50	0.18	15.85	74.59
#120	3.00	0.13	10.83	85.42
#170	3.50	0.09	2.48	87.90
#200	3.75	0.08	0.50	88.40
#230	4.00	0.06	0.02	88.42

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.93	2.52	1.69	0.53	0.05	-0.96

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.24	0.42	1.69	0.31	1.29	-0.76	3.44

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–04
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–04
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–04
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–04
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–04
DEPTH : 10.0 – 11.1
10'
11'
12'

VB-DA20-05

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-05

DRILLING LOG	DIVISION	INSTALLATION	SHEET
	South Atlantic	Jacksonville, Fl	1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-05	LOCATION COORDINATES: X = 951,628 Y = 491,938	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 6 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-23-20 / COMPLETED: 06-23-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -18.8 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 83 %	
8. TOTAL DEPTH OF BORING: 16.2 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-18.8	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 5Y 8/2 pale yellow (SW)				-20.8		
					1				
							-22.8		
					2				
							-24.8		
					3				
-25.8	7.0								
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 8/2 pale yellow (SW-SM)				-26.8		
					4				
							-28.8		
					5				
							-30.8		
-31.2	12.4				6				
			SILT, inorganic-L, mostly silt, little fine-grained sand-sized carbonate, little gravel to cobble-sized limestone, moist, 5Y 7/1 light gray (ML)						
-32.3	13.5		No Recovery						

0 5 10 15

(Continued)

Boring Designation VB-DA20-05

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 951,628 Y = 491,938	ELEVATION TOP OF BORING: -18.8 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-35.0	16.2		BORING TERMINATED IN REFUSAL				-35.0		

NOTES:

1. Taylor Engineering is the custodian for these original files.

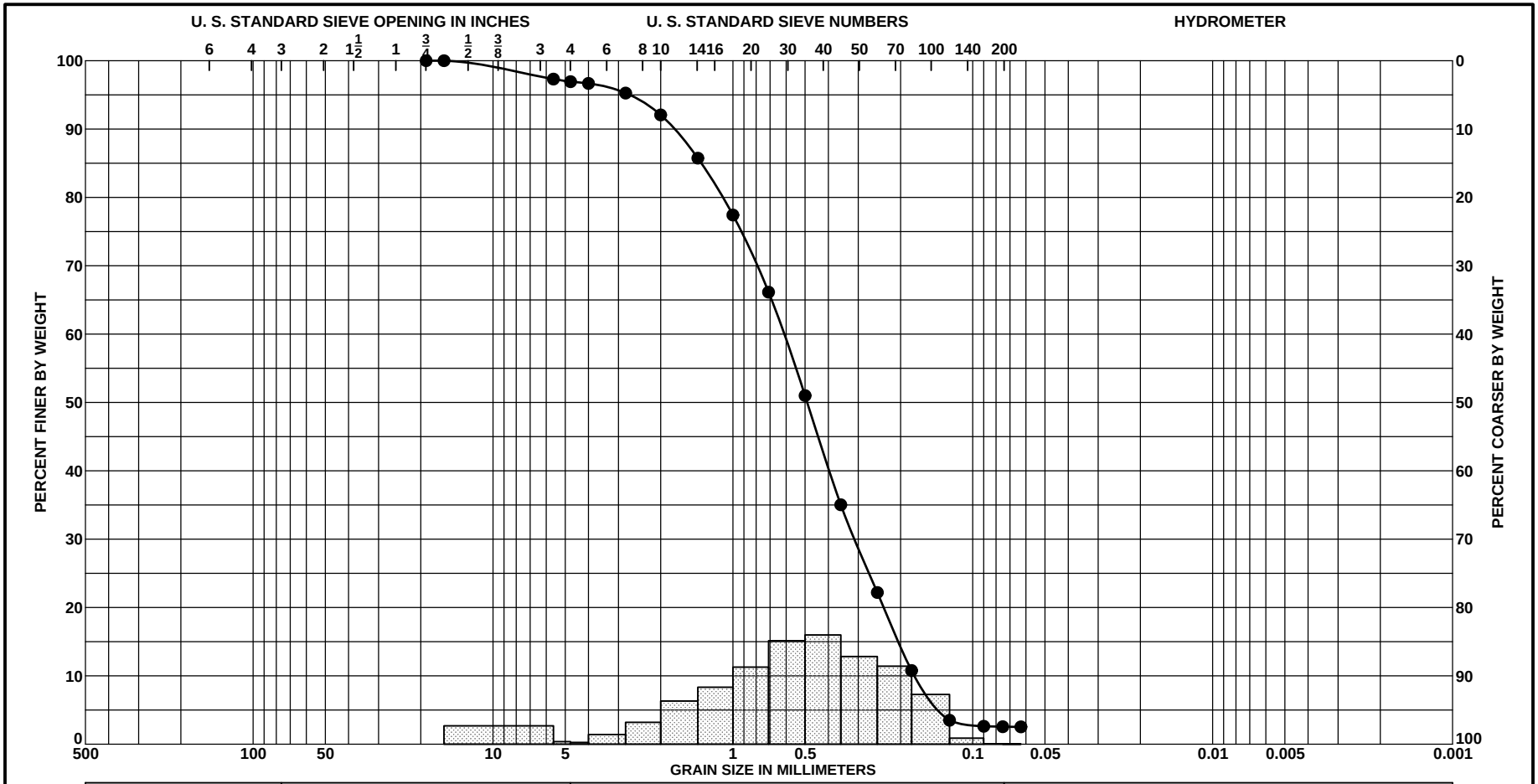
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW*
3	6.0/6.2	SW*
4	8.0/8.2	SW-SM*
5	10.0/10.2	SW-SM*
6	12.0/12.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:

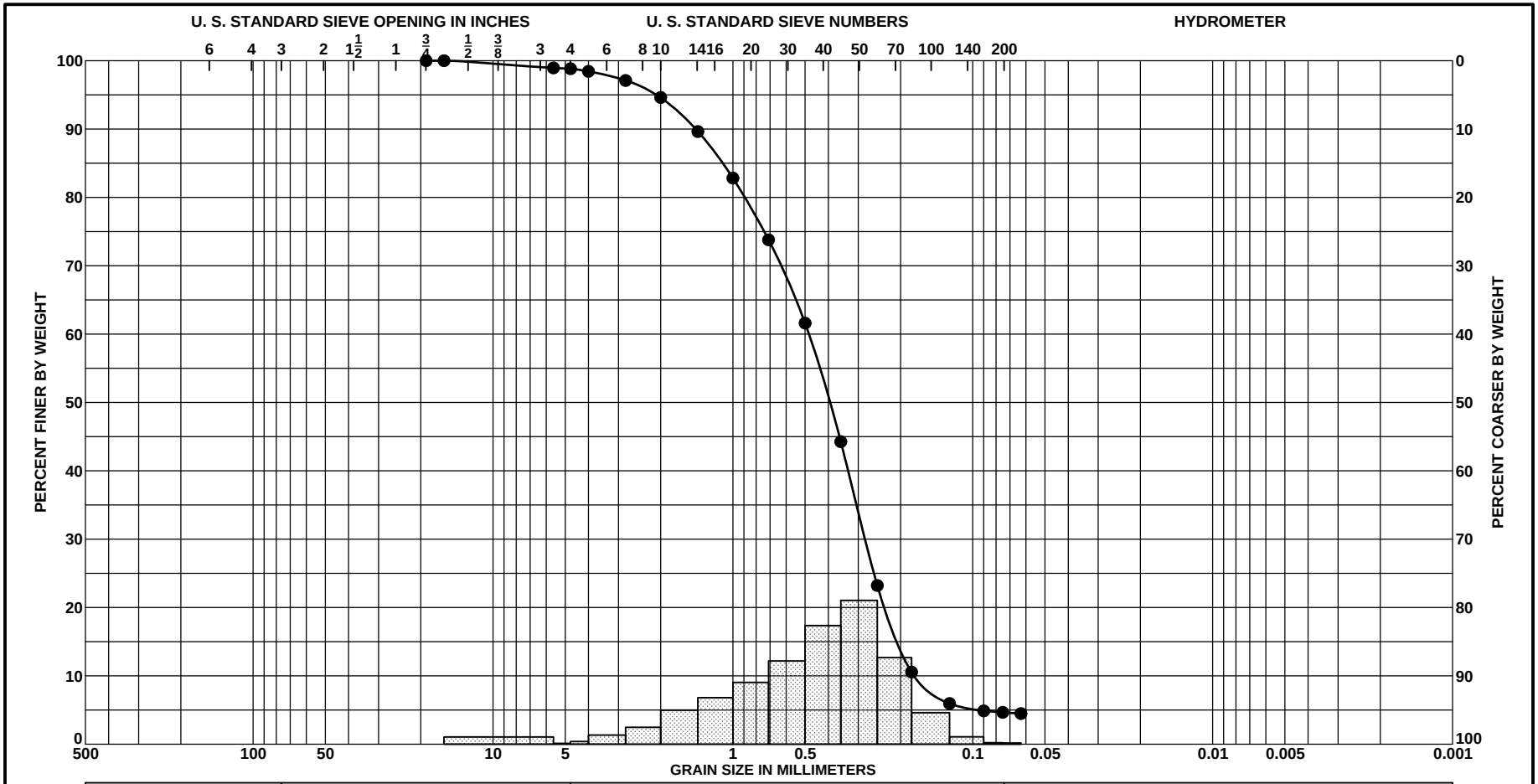


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1	98						
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-05
BORING ELEV.	-18.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

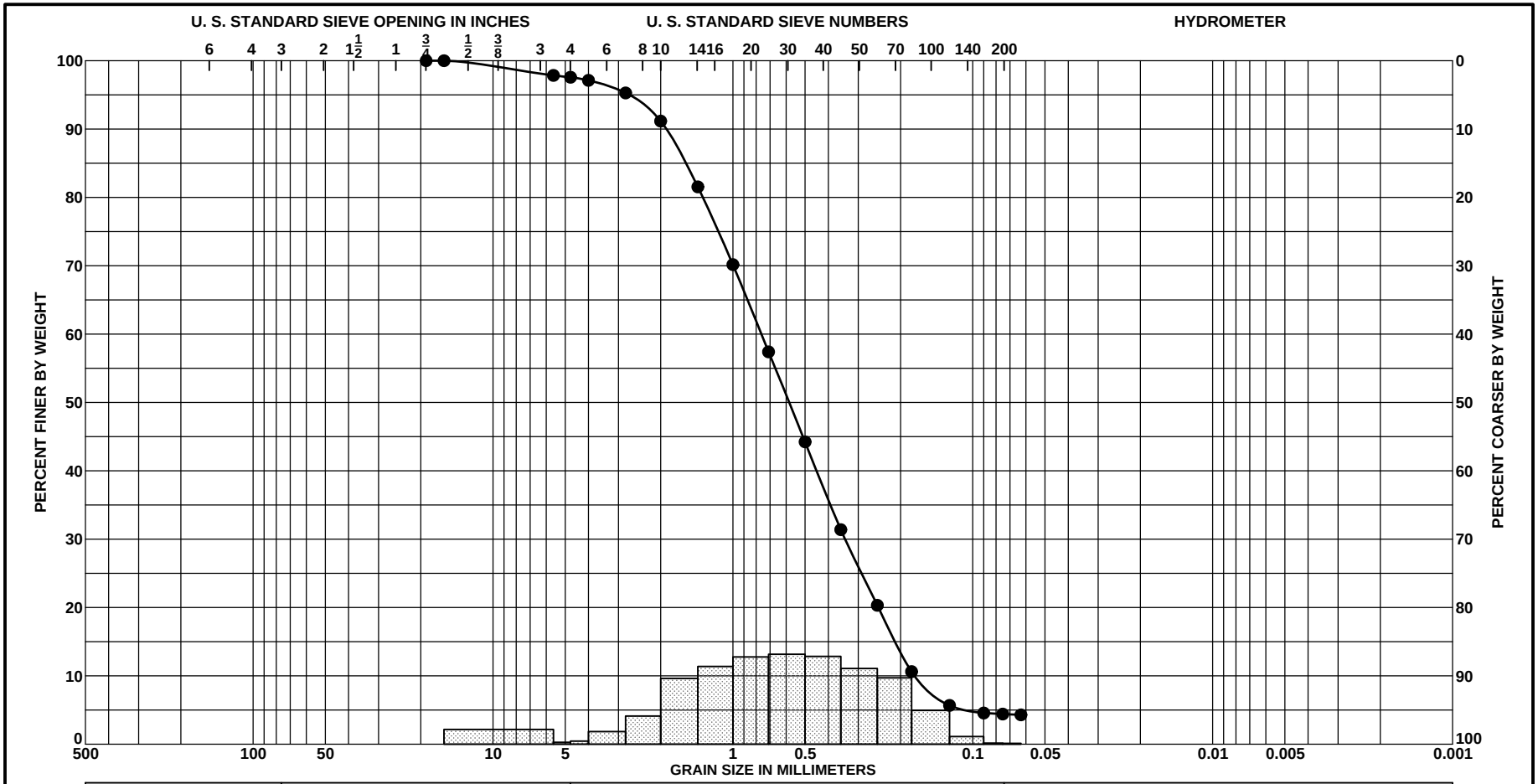


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-05
BORING ELEV.	-18.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

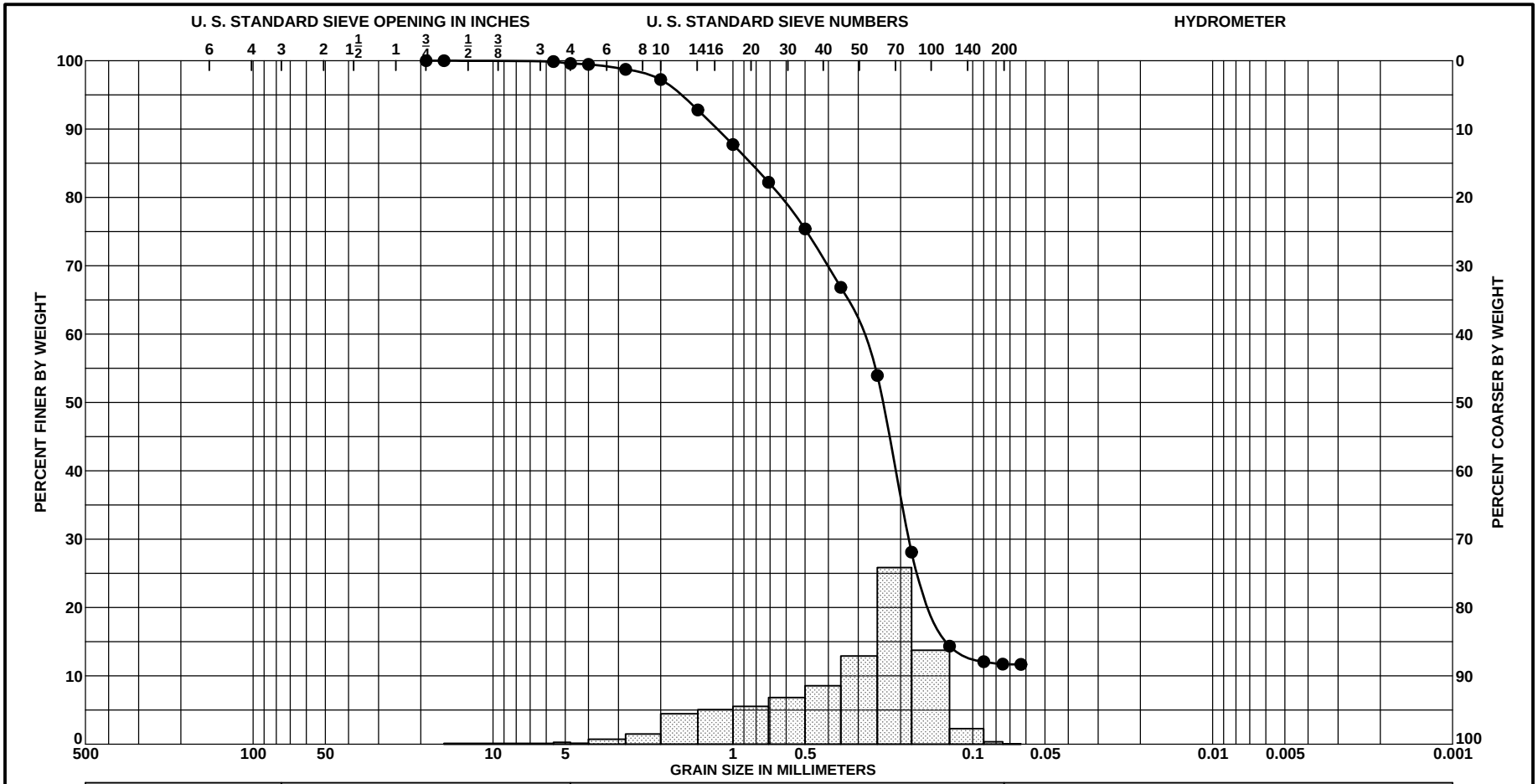


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-05
BORING ELEV.	-18.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

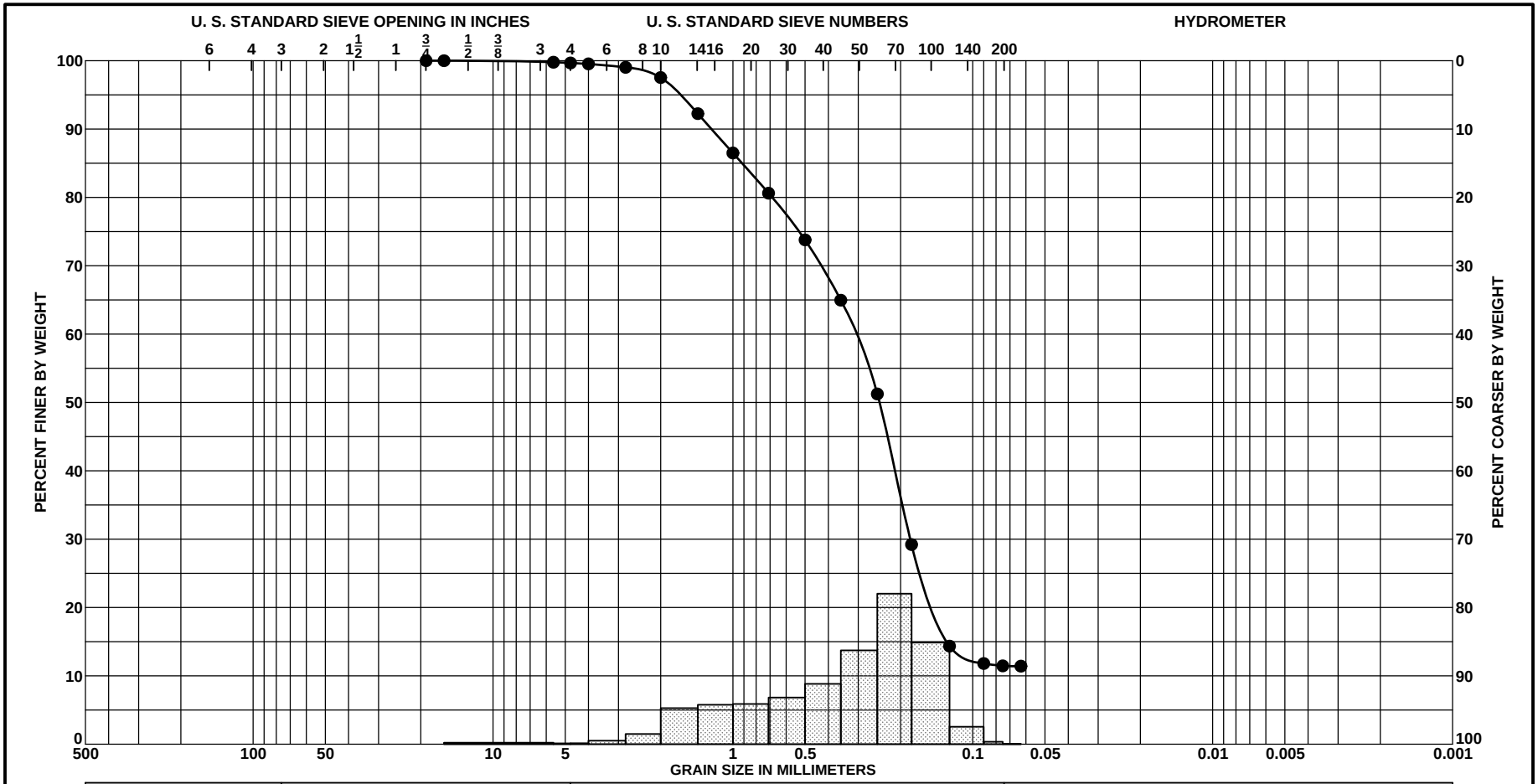


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	7							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-05
BORING ELEV.	-18.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

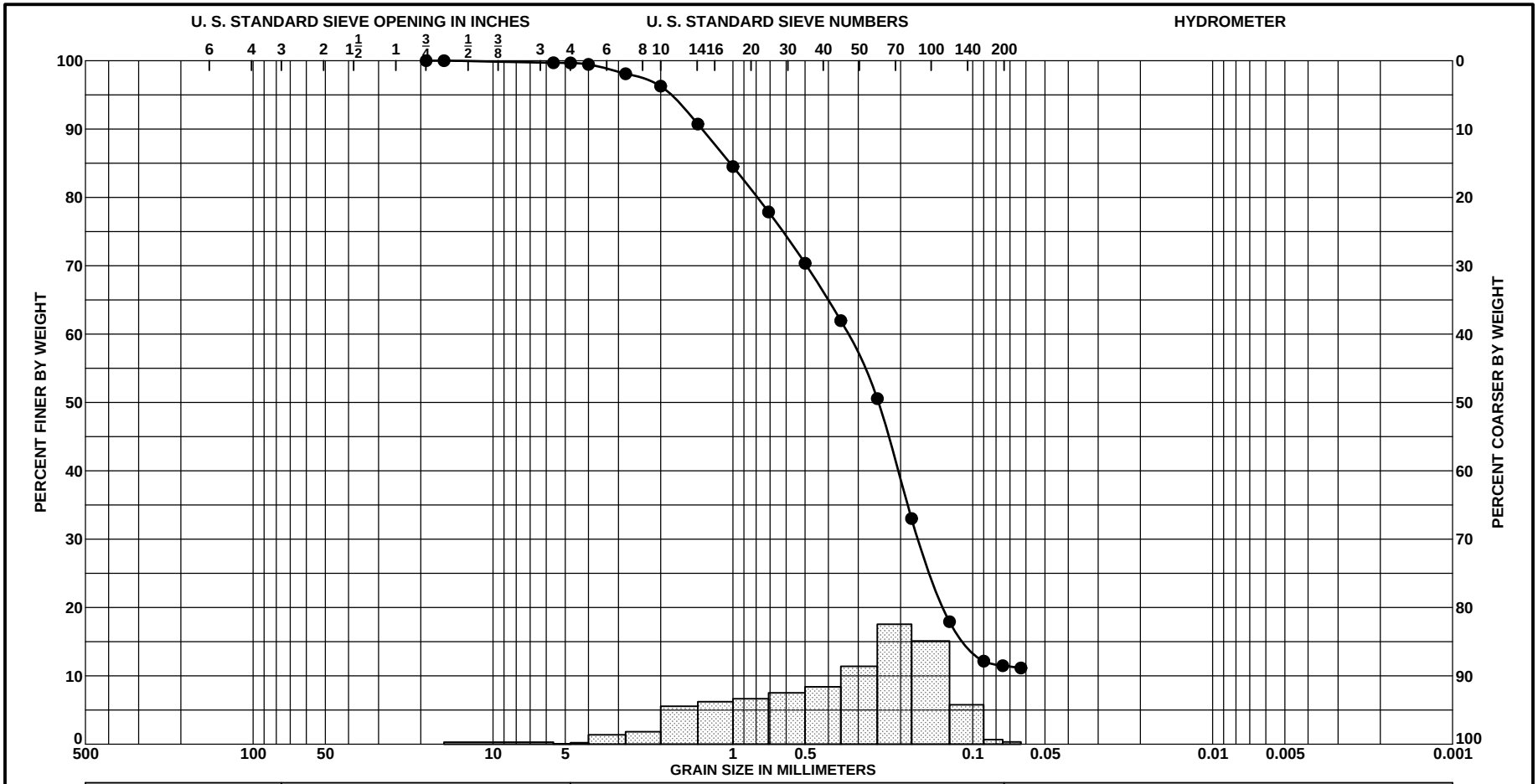


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	10.0 to 10.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	5							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-05
BORING ELEV.	-18.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

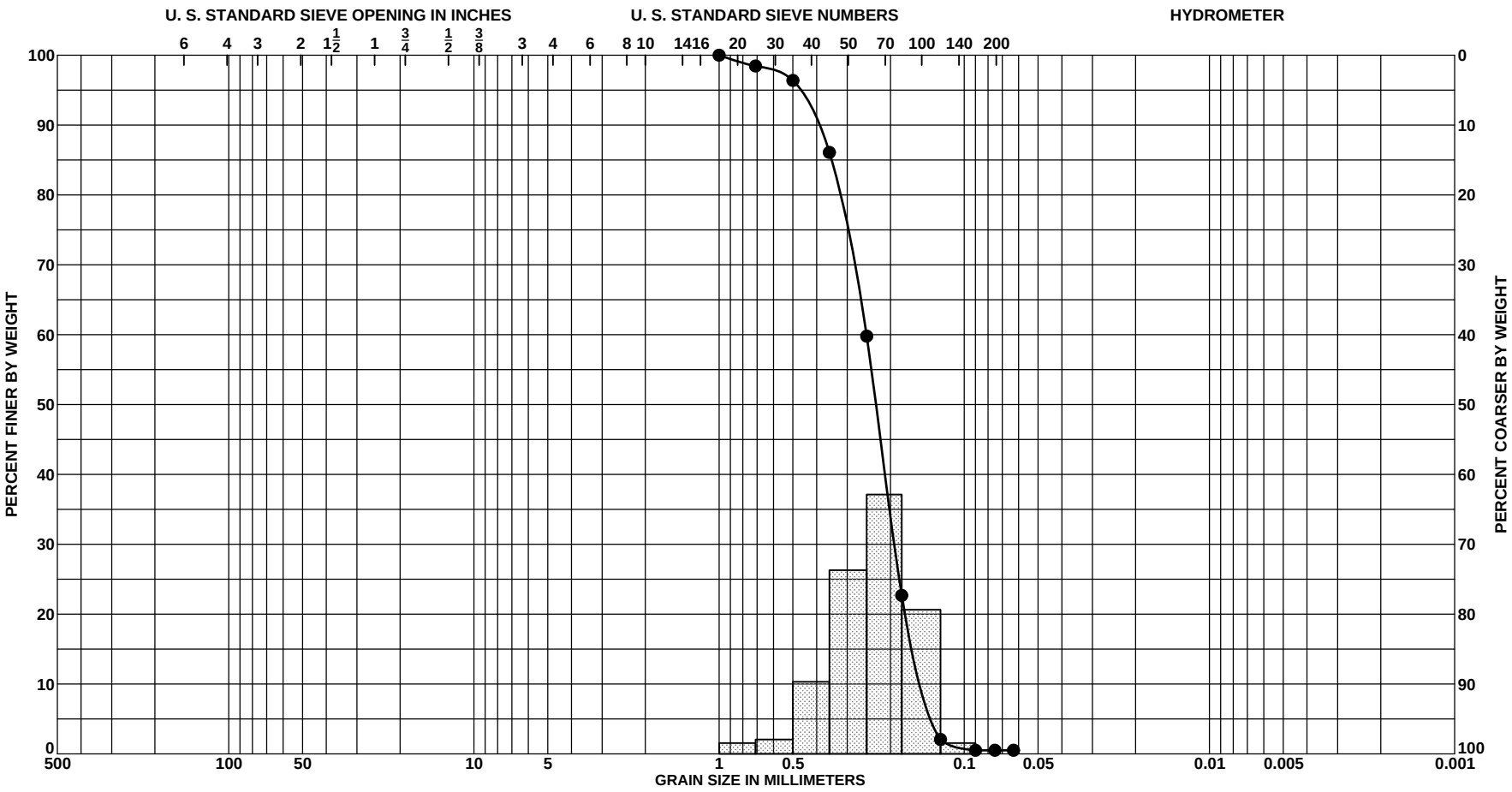


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	12.0 to 12.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	2							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-05
BORING ELEV.	-18.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-05
BORING ELEV.	-18.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-05 @ 2 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
951,628	491,938	State Plane, FLE (U.S. Ft.)	-20.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.56 #230 - 2.54		98.20	1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.69	2.69
#4	-2.25	4.75	0.38	3.07
#5	-2.00	4.00	0.25	3.32
#7	-1.50	2.80	1.42	4.74
#10	-1.00	2.00	3.19	7.93
#14	-0.50	1.40	6.32	14.26
#18	0.00	1.00	8.32	22.58
#25	0.50	0.71	11.28	33.86
#35	1.00	0.50	15.14	49.00
#45	1.50	0.36	15.97	64.97
#60	2.00	0.25	12.83	77.81
#80	2.50	0.18	11.42	89.22
#120	3.00	0.13	7.28	96.50
#170	3.50	0.09	0.88	97.38
#200	3.75	0.08	0.07	97.44
#230	4.00	0.06	0.02	97.46

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.90	2.27	1.89	1.03	0.11	-0.40	-1.46

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.84	0.56	1.03	0.49	1.33	-0.82	3.84

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-05 @ 4 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
951,628	491,938	State Plane, FLE (U.S. Ft.)	-22.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 4.66 #230 - 4.49			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.06	1.06
#4	-2.25	4.75	0.12	1.18
#5	-2.00	4.00	0.38	1.56
#7	-1.50	2.80	1.34	2.90
#10	-1.00	2.00	2.48	5.38
#14	-0.50	1.40	4.99	10.36
#18	0.00	1.00	6.81	17.17
#25	0.50	0.71	9.04	26.21
#35	1.00	0.50	12.19	38.39
#45	1.50	0.36	17.35	55.74
#60	2.00	0.25	21.04	76.78
#80	2.50	0.18	12.66	89.45
#120	3.00	0.13	4.60	94.05
#170	3.50	0.09	1.09	95.13
#200	3.75	0.08	0.21	95.34
#230	4.00	0.06	0.17	95.51

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.44	2.28	1.96	1.33	0.43	-0.09	-1.08

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.05	0.48	1.33	0.40	1.18	-0.89	4.08

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-05 @ 6 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
951,628	491,938	State Plane, FLE (U.S. Ft.)	-24.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 4.41 #230 - 4.29			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.15	2.15
#4	-2.25	4.75	0.27	2.42
#5	-2.00	4.00	0.46	2.88
#7	-1.50	2.80	1.84	4.72
#10	-1.00	2.00	4.12	8.84
#14	-0.50	1.40	9.62	18.46
#18	0.00	1.00	11.38	29.84
#25	0.50	0.71	12.76	42.60
#35	1.00	0.50	13.16	55.77
#45	1.50	0.36	12.85	68.61
#60	2.00	0.25	11.07	79.68
#80	2.50	0.18	9.70	89.38
#120	3.00	0.13	4.94	94.33
#170	3.50	0.09	1.11	95.44
#200	3.75	0.08	0.15	95.59
#230	4.00	0.06	0.12	95.71

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.30	2.22	1.79	0.78	-0.21	-0.63	-1.47

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.64	0.64	0.78	0.58	1.33	-0.44	3.2

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-05 @ 8 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
951,628	491,938	State Plane, FLE (U.S. Ft.)	-26.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 11.71 #230 - 11.68			7

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.12	0.12
#4	-2.25	4.75	0.28	0.41
#5	-2.00	4.00	0.13	0.54
#7	-1.50	2.80	0.73	1.27
#10	-1.00	2.00	1.49	2.76
#14	-0.50	1.40	4.45	7.21
#18	0.00	1.00	5.06	12.27
#25	0.50	0.71	5.52	17.79
#35	1.00	0.50	6.82	24.61
#45	1.50	0.36	8.55	33.16
#60	2.00	0.25	12.89	46.06
#80	2.50	0.18	25.84	71.90
#120	3.00	0.13	13.75	85.65
#170	3.50	0.09	2.27	87.93
#200	3.75	0.08	0.36	88.29
#230	4.00	0.06	0.04	88.32

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.94	2.61	2.08	1.02	0.34	-0.75

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.53	0.35	2.08	0.24	1.19	-0.96	3.33

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-05 @ 10 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
951,628	491,938	State Plane, FLE (U.S. Ft.)	-28.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 11.46 #230 - 11.42			5

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.22	0.22
#4	-2.25	4.75	0.11	0.33
#5	-2.00	4.00	0.13	0.47
#7	-1.50	2.80	0.50	0.97
#10	-1.00	2.00	1.50	2.47
#14	-0.50	1.40	5.28	7.74
#18	0.00	1.00	5.76	13.50
#25	0.50	0.71	5.88	19.39
#35	1.00	0.50	6.83	26.22
#45	1.50	0.36	8.82	35.04
#60	2.00	0.25	13.72	48.76
#80	2.50	0.18	22.03	70.79
#120	3.00	0.13	14.86	85.65
#170	3.50	0.09	2.55	88.20
#200	3.75	0.08	0.35	88.54
#230	4.00	0.06	0.04	88.58

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.94	2.64	2.03	0.91	0.21	-0.76

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.49	0.36	2.03	0.24	1.21	-0.85	3.09

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-05 @ 12 ft

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
951,628	491,938	State Plane, FLE (U.S. Ft.)	-30.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 11.48 #230 - 11.15			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.30	0.30
#4	-2.25	4.75	0.03	0.33
#5	-2.00	4.00	0.21	0.54
#7	-1.50	2.80	1.37	1.91
#10	-1.00	2.00	1.81	3.72
#14	-0.50	1.40	5.55	9.27
#18	0.00	1.00	6.22	15.49
#25	0.50	0.71	6.65	22.13
#35	1.00	0.50	7.51	29.64
#45	1.50	0.36	8.40	38.03
#60	2.00	0.25	11.40	49.43
#80	2.50	0.18	17.55	66.98
#120	3.00	0.13	15.09	82.08
#170	3.50	0.09	5.77	87.85
#200	3.75	0.08	0.67	88.52
#230	4.00	0.06	0.33	88.85

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.17	2.77	2.02	0.69	0.04	-0.88

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.46	0.36	2.02	0.25	1.33	-0.68	2.76

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-05 @ 2 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
951,628	491,938	State Plane, FLE (U.S. Ft.)	-20.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.52 #230 - 0.52			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#18	0.00	1.00	0.00	0.00
#25	0.50	0.71	1.55	1.55
#35	1.00	0.50	2.06	3.61
#45	1.50	0.36	10.31	13.92
#60	2.00	0.25	26.29	40.21
#80	2.50	0.18	37.11	77.32
#120	3.00	0.13	20.62	97.94
#170	3.50	0.09	1.55	99.48
#200	3.75	0.08	0.00	99.48
#230	4.00	0.06	0.00	99.48

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.93	2.66	2.47	2.13	1.71	1.54	1.07

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.07	0.24	2.13	0.23	0.56	-0.66	3.64

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–05
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–05
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–05
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–05
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–05
DEPTH: 10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–05
DEPTH: 12.5 – 13.5
13'
14'
15'

VB-DA20-06

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-06

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-06	LOCATION COORDINATES: X = 954,619 Y = 491,974	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 6 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-23-20 / COMPLETED: 06-23-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -39.6 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 83 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-39.6	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 5Y 8/2 pale yellow (SW)		1		-40.6		
-42.6	3.0						-42.6		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 8/2 pale yellow (SW-SM)		2				
					3		-44.6		
-47.6	8.0						-47.6		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 5Y 8/2 pale yellow (SM)		4				
					5		-50.6		
							-53.6		
					6				

0 5 10 15

(Continued)

Boring Designation VB-DA20-06

DRILLING LOG (Cont. Sheet)	INSTALLATION	SHEET 2 OF 2 SHEETS
	Jacksonville, FL	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
SAD-SAND	State Plane, FLE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 954,619 Y = 491,974	-39.6 Ft.

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-56.1	16.5		No Recovery						
-59.6	20.0						-59.6		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

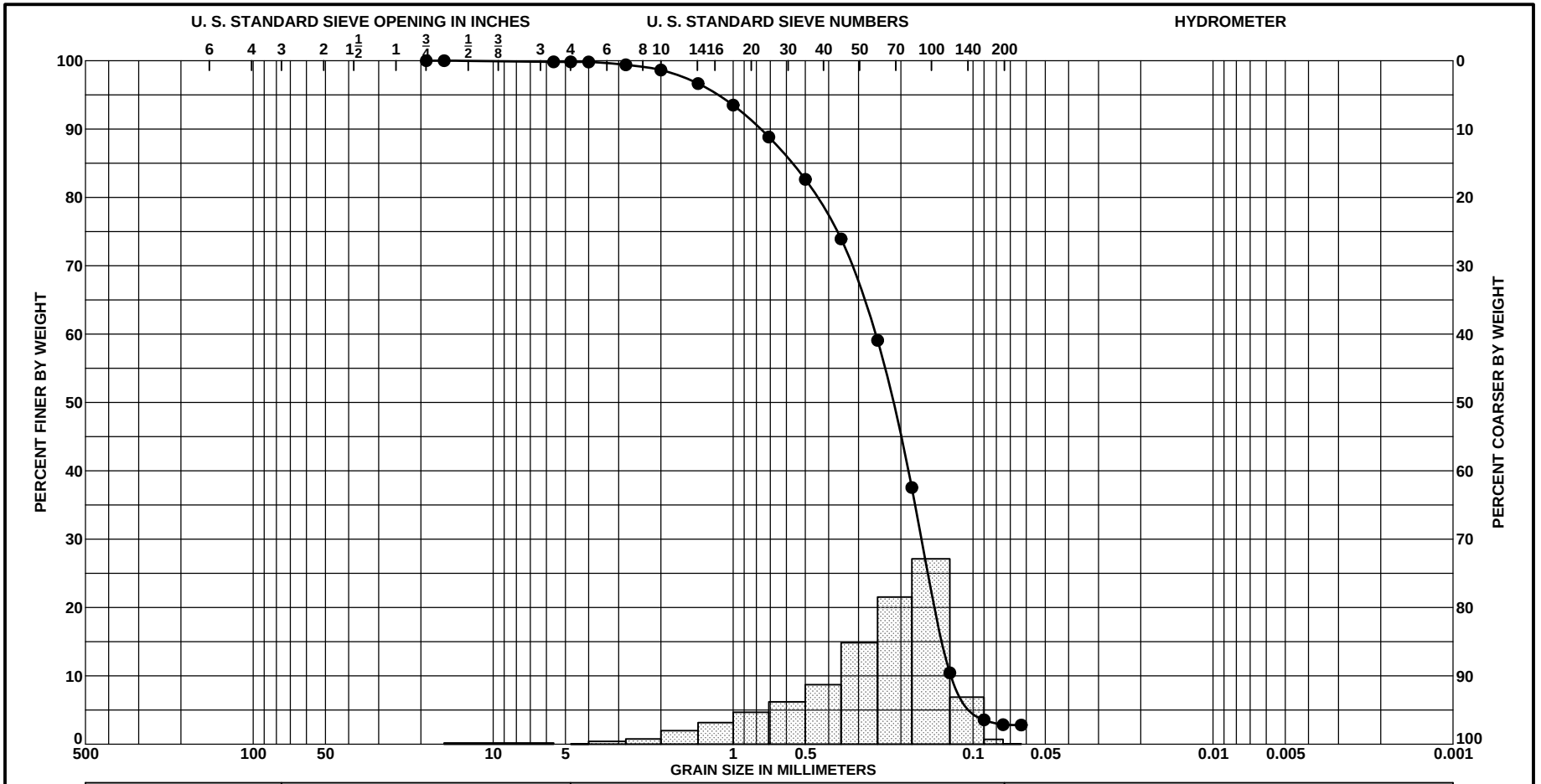
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW-SM*
3	5.0/5.2	SW-SM*
4	8.0/8.2	SM*
5	11.0/11.2	SM*
6	14.0/14.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

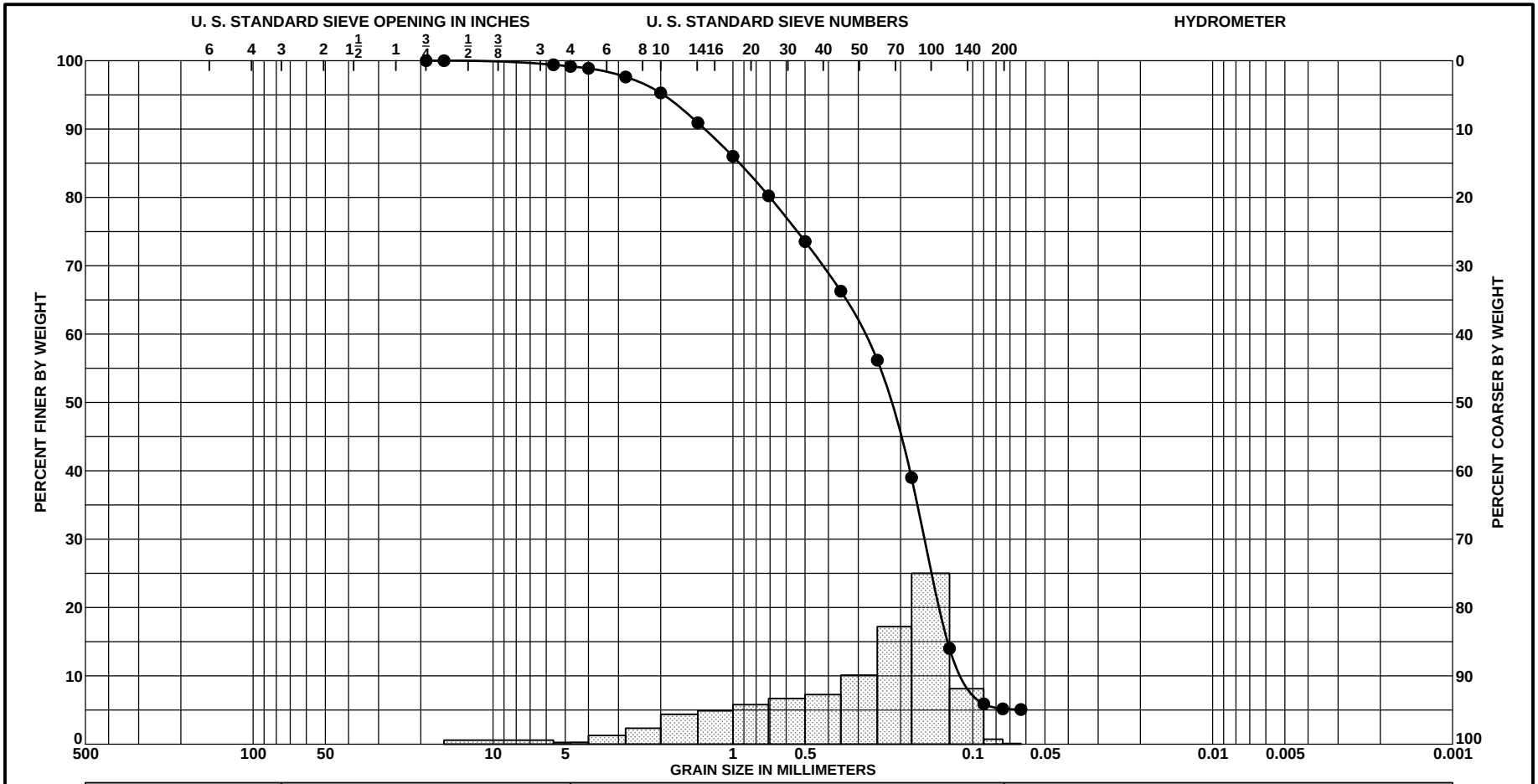


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-06
BORING ELEV.	-39.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

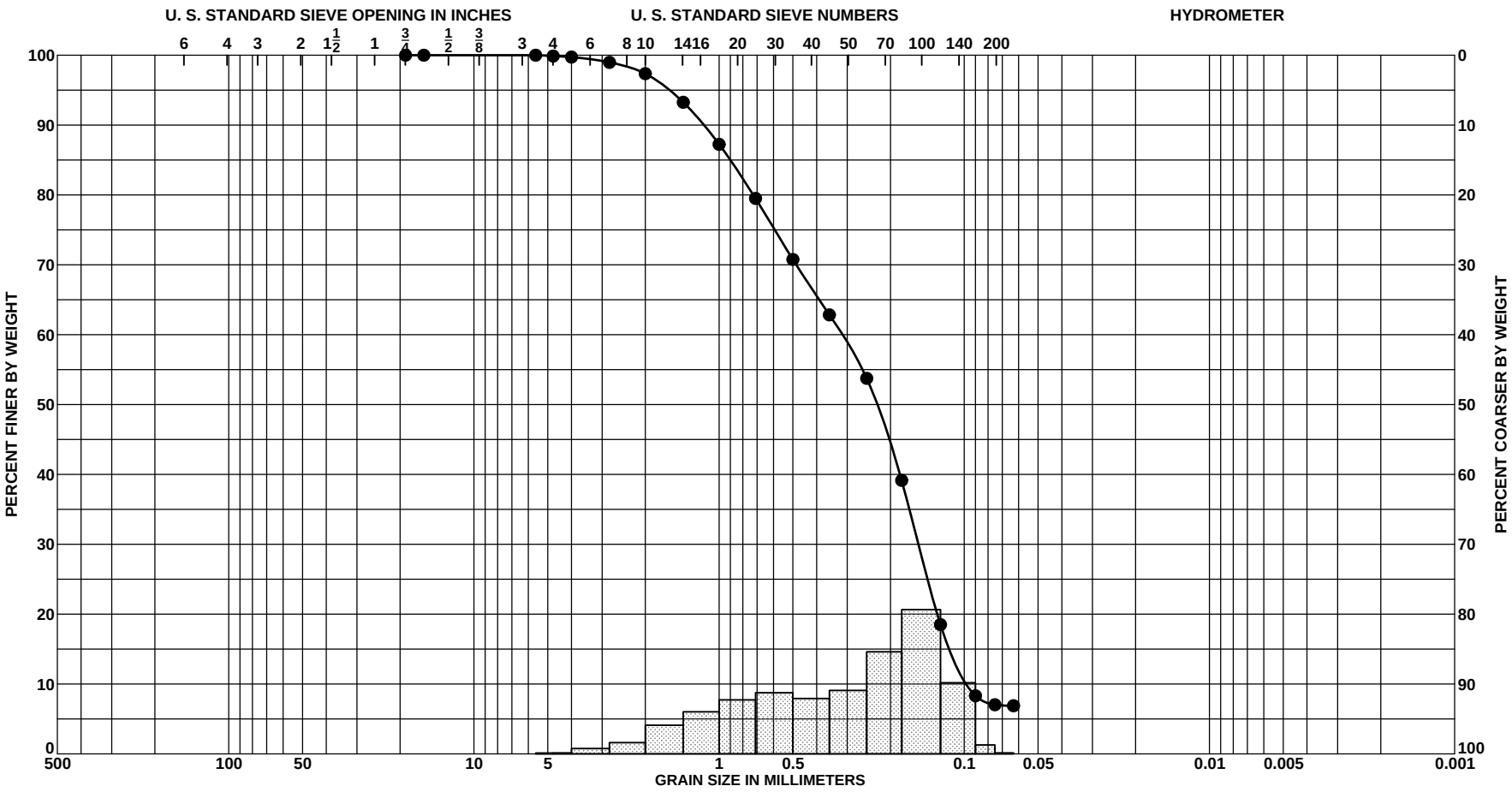


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-06
BORING ELEV.	-39.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

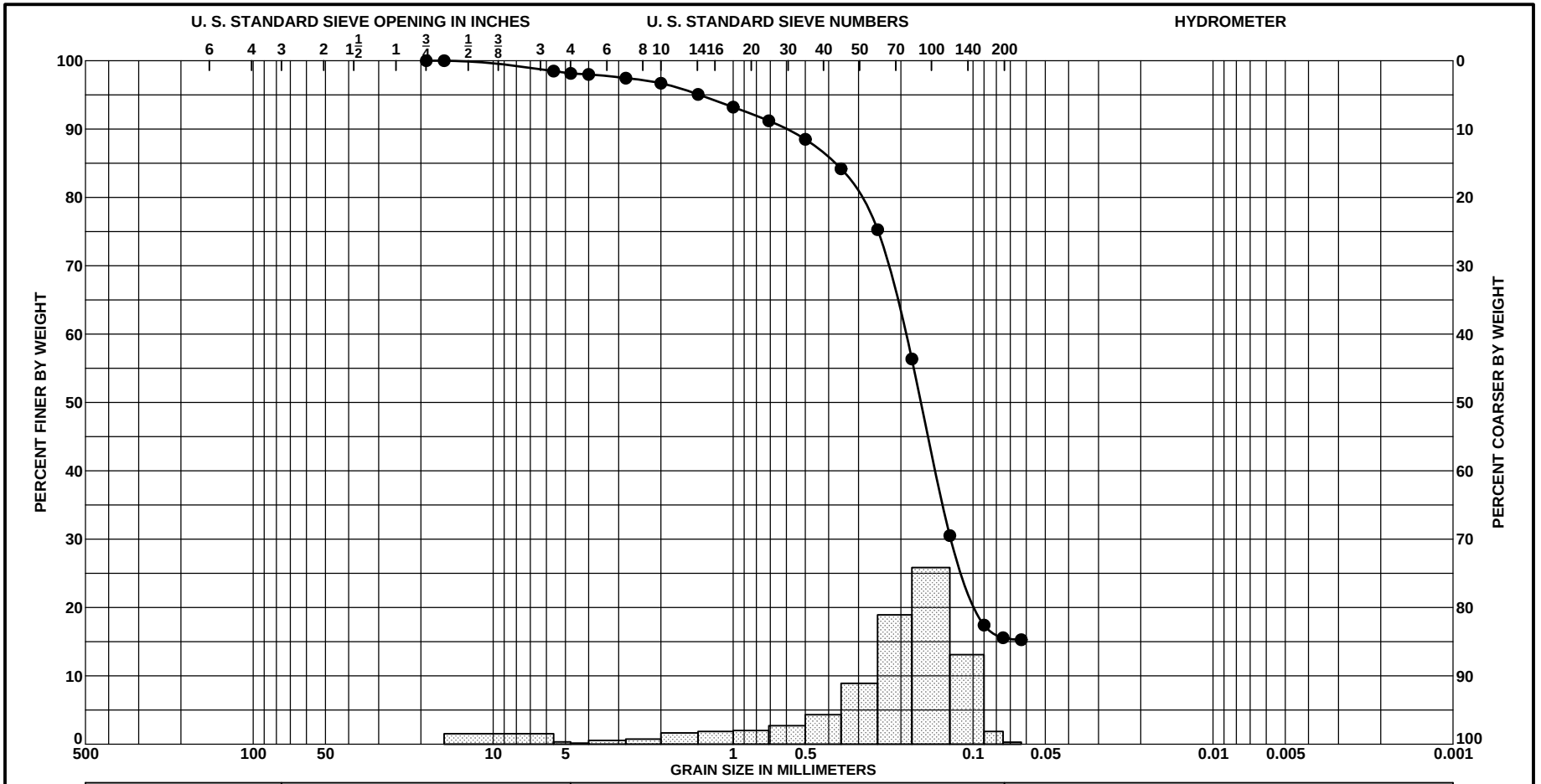


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	5.0 to 5.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-06
BORING ELEV.	-39.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

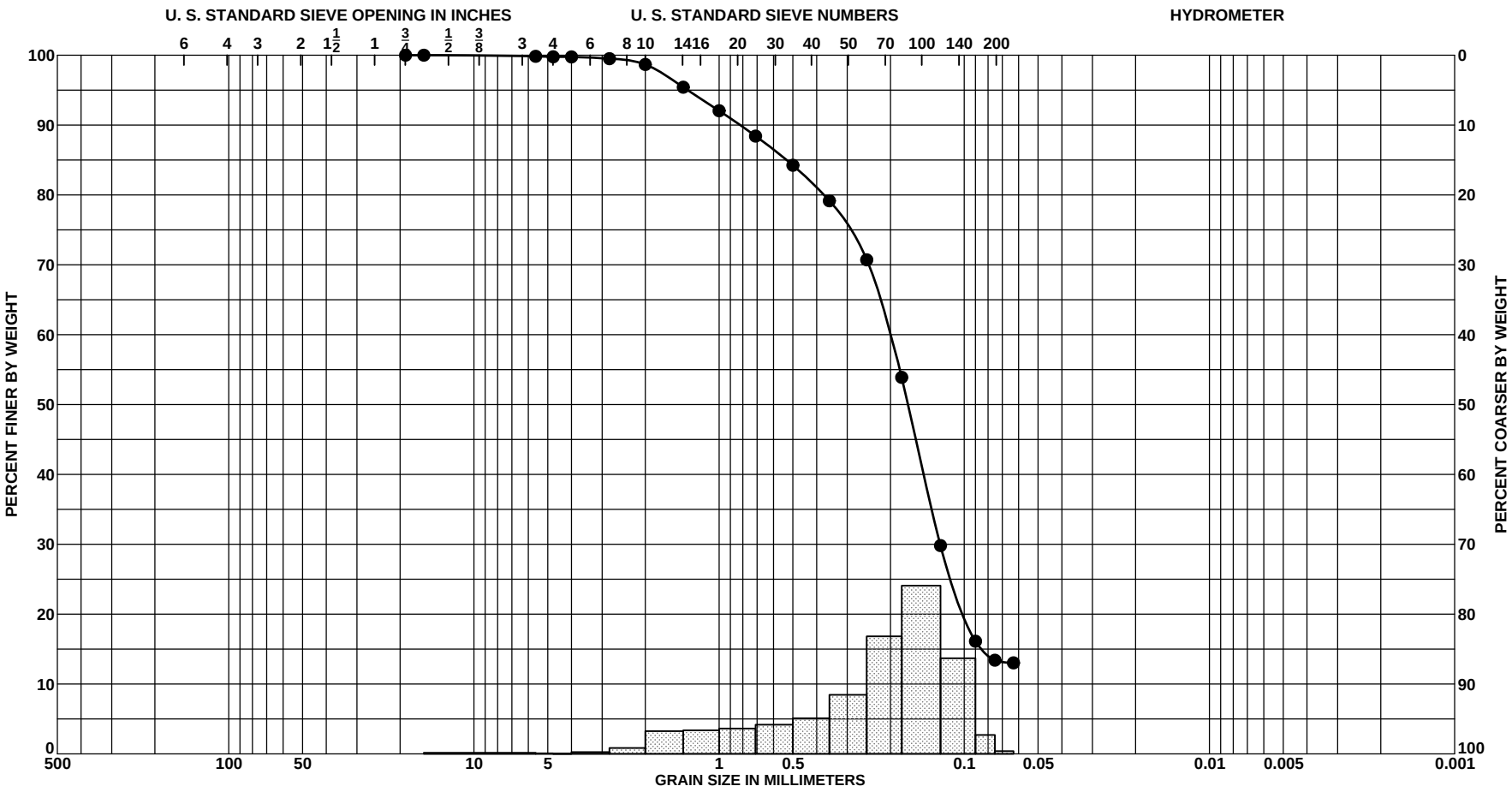


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-06
BORING ELEV.	-39.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

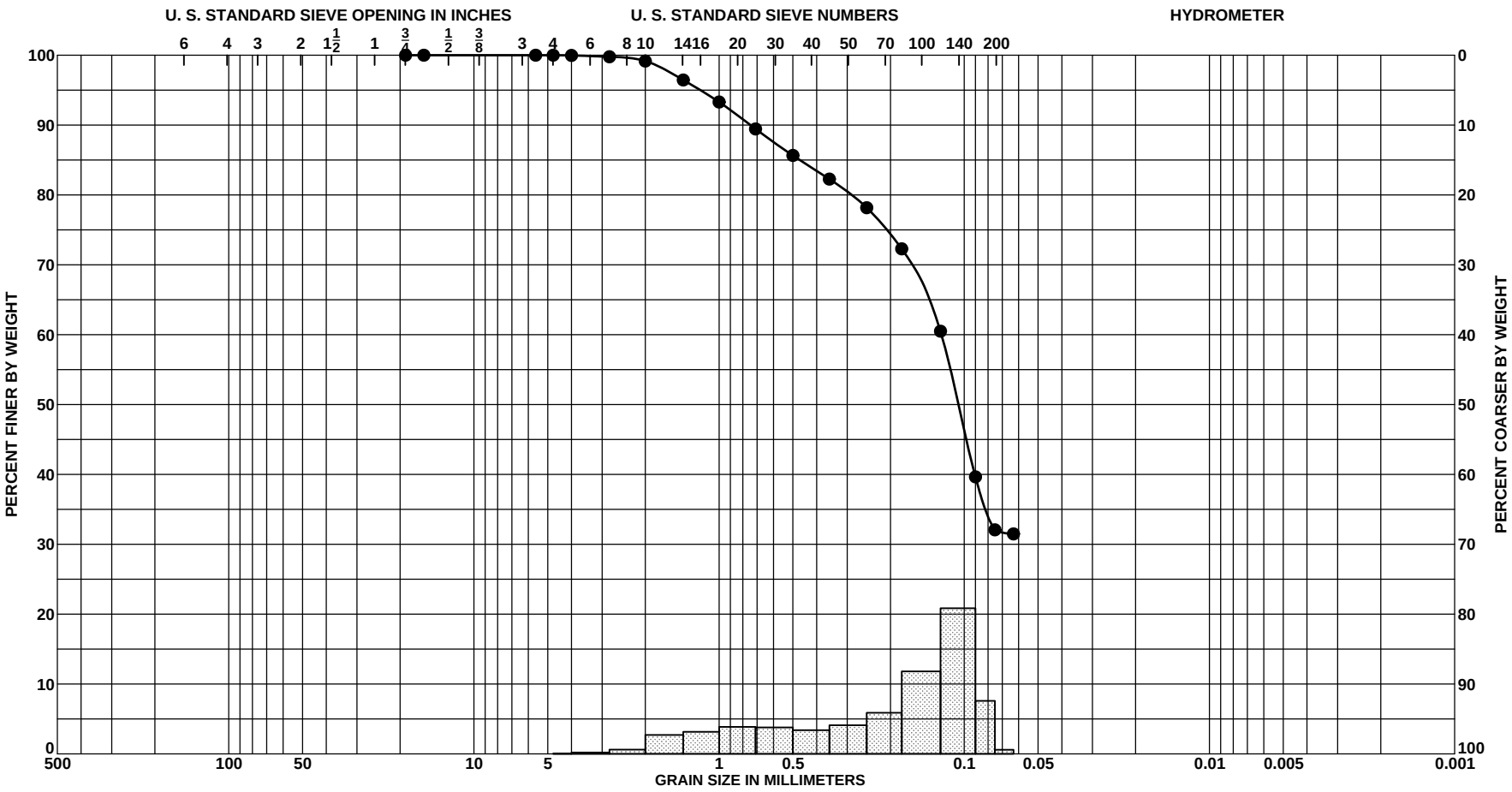


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	11.0 to 11.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-06
BORING ELEV.	-39.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	14.0 to 14.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-06
BORING ELEV.	-39.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-06 @ 1 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,619	491,974	State Plane, FLE (U.S. Ft.)	-40.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.85 #230 - 2.80			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.17	0.17
#4	-2.25	4.75	0.00	0.17
#5	-2.00	4.00	0.02	0.19
#7	-1.50	2.80	0.41	0.60
#10	-1.00	2.00	0.76	1.36
#14	-0.50	1.40	1.98	3.35
#18	0.00	1.00	3.15	6.50
#25	0.50	0.71	4.67	11.17
#35	1.00	0.50	6.20	17.36
#45	1.50	0.36	8.71	26.08
#60	2.00	0.25	14.84	40.91
#80	2.50	0.18	21.54	62.45
#120	3.00	0.13	27.11	89.56
#170	3.50	0.09	6.88	96.44
#200	3.75	0.08	0.71	97.15
#230	4.00	0.06	0.05	97.20

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.40	2.90	2.73	2.21	1.44	0.89	-0.24

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.92	0.26	2.21	0.22	1.06	-1.19	4.46

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-06 @ 3 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,619	491,974	State Plane, FLE (U.S. Ft.)	-42.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 5.17 #230 - 5.07			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.59	0.59
#4	-2.25	4.75	0.25	0.84
#5	-2.00	4.00	0.27	1.11
#7	-1.50	2.80	1.27	2.38
#10	-1.00	2.00	2.33	4.71
#14	-0.50	1.40	4.38	9.09
#18	0.00	1.00	4.89	13.98
#25	0.50	0.71	5.79	19.77
#35	1.00	0.50	6.69	26.46
#45	1.50	0.36	7.26	33.72
#60	2.00	0.25	10.09	43.81
#80	2.50	0.18	17.19	61.00
#120	3.00	0.13	24.99	85.99
#170	3.50	0.09	8.11	94.10
#200	3.75	0.08	0.73	94.83
#230	4.00	0.06	0.09	94.93

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.96	2.78	2.18	0.89	0.17	-0.97

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.66	0.32	2.18	0.22	1.37	-1.02	3.43

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-06 @ 5 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,619	491,974	State Plane, FLE (U.S. Ft.)	-44.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 7.03 #230 - 6.89			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.12	0.12
#5	-2.00	4.00	0.15	0.27
#7	-1.50	2.80	0.76	1.03
#10	-1.00	2.00	1.61	2.64
#14	-0.50	1.40	4.10	6.74
#18	0.00	1.00	6.02	12.76
#25	0.50	0.71	7.74	20.49
#35	1.00	0.50	8.74	29.24
#45	1.50	0.36	7.93	37.17
#60	2.00	0.25	9.09	46.25
#80	2.50	0.18	14.60	60.86
#120	3.00	0.13	20.65	81.50
#170	3.50	0.09	10.19	91.69
#200	3.75	0.08	1.28	92.97
#230	4.00	0.06	0.15	93.11

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.12	2.84	2.13	0.76	0.21	-0.71

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.65	0.32	2.13	0.23	1.3	-0.62	2.44

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-06 @ 8 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,619	491,974	State Plane, FLE (U.S. Ft.)	-47.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 15.57 #230 - 15.28			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.52	1.52
#4	-2.25	4.75	0.34	1.86
#5	-2.00	4.00	0.15	2.01
#7	-1.50	2.80	0.54	2.55
#10	-1.00	2.00	0.74	3.29
#14	-0.50	1.40	1.64	4.93
#18	0.00	1.00	1.85	6.79
#25	0.50	0.71	2.00	8.79
#35	1.00	0.50	2.71	11.50
#45	1.50	0.36	4.32	15.82
#60	2.00	0.25	8.91	24.72
#80	2.50	0.18	18.91	43.64
#120	3.00	0.13	25.85	69.49
#170	3.50	0.09	13.09	82.57
#200	3.75	0.08	1.85	84.43
#230	4.00	0.06	0.29	84.72

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.69	3.21	2.62	2.01	1.51	-0.48

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.10	0.23	2.62	0.16	1.3	-2.06	7.82

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-06 @ 11 ft

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,619	491,974	State Plane, FLE (U.S. Ft.)	-50.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 13.41 #230 - 13.03			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.16	0.16
#4	-2.25	4.75	0.07	0.23
#5	-2.00	4.00	0.01	0.24
#7	-1.50	2.80	0.25	0.49
#10	-1.00	2.00	0.84	1.33
#14	-0.50	1.40	3.25	4.58
#18	0.00	1.00	3.36	7.95
#25	0.50	0.71	3.63	11.58
#35	1.00	0.50	4.17	15.75
#45	1.50	0.36	5.09	20.84
#60	2.00	0.25	8.45	29.29
#80	2.50	0.18	16.82	46.11
#120	3.00	0.13	24.08	70.19
#170	3.50	0.09	13.69	83.88
#200	3.75	0.08	2.71	86.59
#230	4.00	0.06	0.38	86.97

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.51	3.18	2.58	1.75	1.02	-0.44

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.06	0.24	2.58	0.17	1.2	-1.2	4

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-06 @ 14 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,619	491,974	State Plane, FLE (U.S. Ft.)	-53.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 32.07 #230 - 31.49			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.00	0.00
#5	-2.00	4.00	0.03	0.03
#7	-1.50	2.80	0.19	0.22
#10	-1.00	2.00	0.61	0.84
#14	-0.50	1.40	2.71	3.55
#18	0.00	1.00	3.15	6.70
#25	0.50	0.71	3.85	10.55
#35	1.00	0.50	3.79	14.35
#45	1.50	0.36	3.39	17.73
#60	2.00	0.25	4.09	21.83
#80	2.50	0.18	5.88	27.71
#120	3.00	0.13	11.79	39.51
#170	3.50	0.09	20.85	60.35
#200	3.75	0.08	7.58	67.93
#230	4.00	0.06	0.58	68.51

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
			3.25	2.27	1.24	-0.27

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.25	0.21	3.25	0.11	1.34	-1.01	2.86

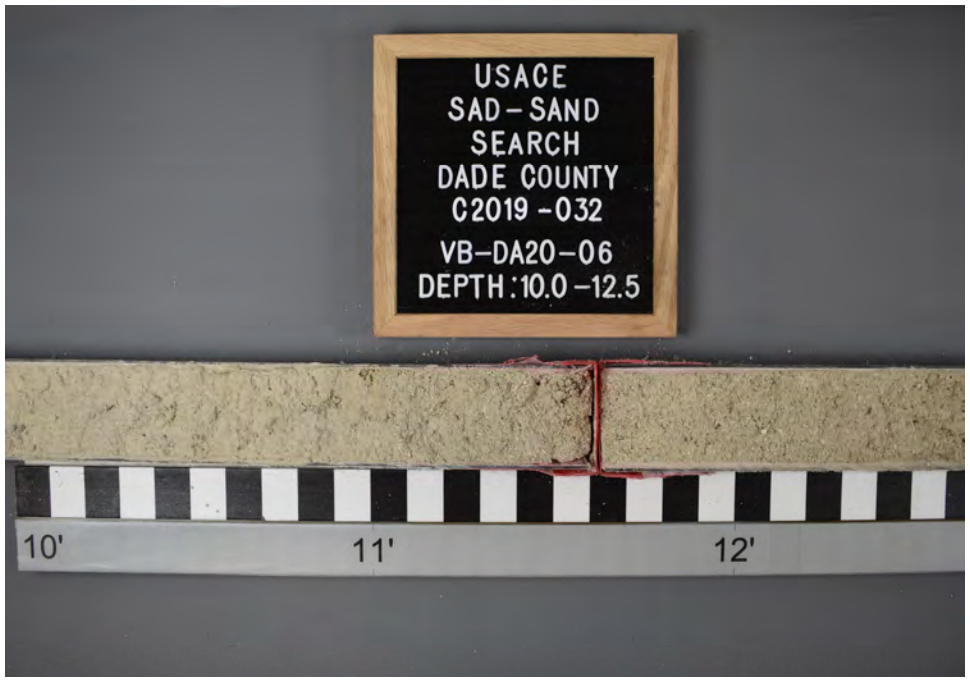
GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–06
DEPTH: 0.0 – 2.5
0'
1'
2'

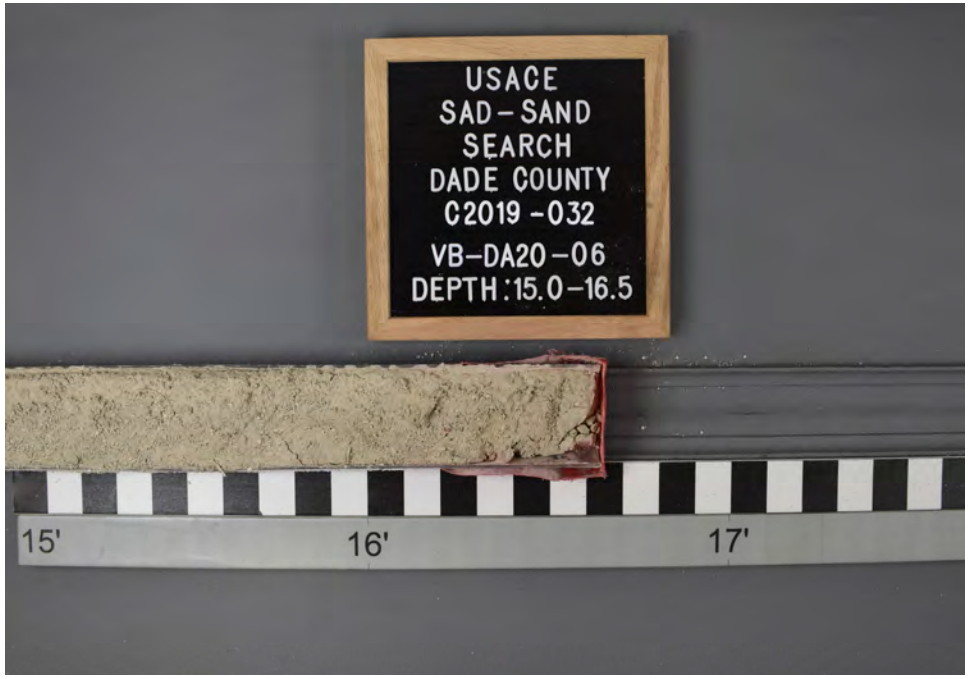
USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–06
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–06
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–06
DEPTH: 7.5 –10.0
8'
9'
10'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–06
DEPTH : 10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–06
DEPTH : 12.5 – 15.0
13'
14'
15'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–06
DEPTH : 15.0 – 16.5
15'
16'
17'

VB-DA20-07

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-07

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-07 — LOCATION COORDINATES: X = 949,715 Y = 493,258
3. DRILLING AGENCY: Amdrill — CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: —
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 8.8 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore — ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 4 — UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-23-20 — COMPLETED: 06-23-20
16. ELEVATION TOP OF BORING: -22.3 Ft.
17. TOTAL RECOVERY FOR BORING: 99 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-22.3	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, trace fine gravel-sized limestone, moist, 5Y 8/2 pale yellow (SW)				-24.3		
					1				
-26.3	4.0						-26.3		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, trace fine gravel-sized limestone, moist, 5Y 8/2 pale yellow (SW-SM)		2				
-28.3	6.0						-28.3		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, trace fine gravel-sized limestone, moist, 5Y 8/2 pale yellow (SM)		3		-30.3		
					4				
-31.1	8.8						-31.1		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW-SM*
3	6.0/6.2	SM*
4	8.0/8.2	SM*

(Continued)

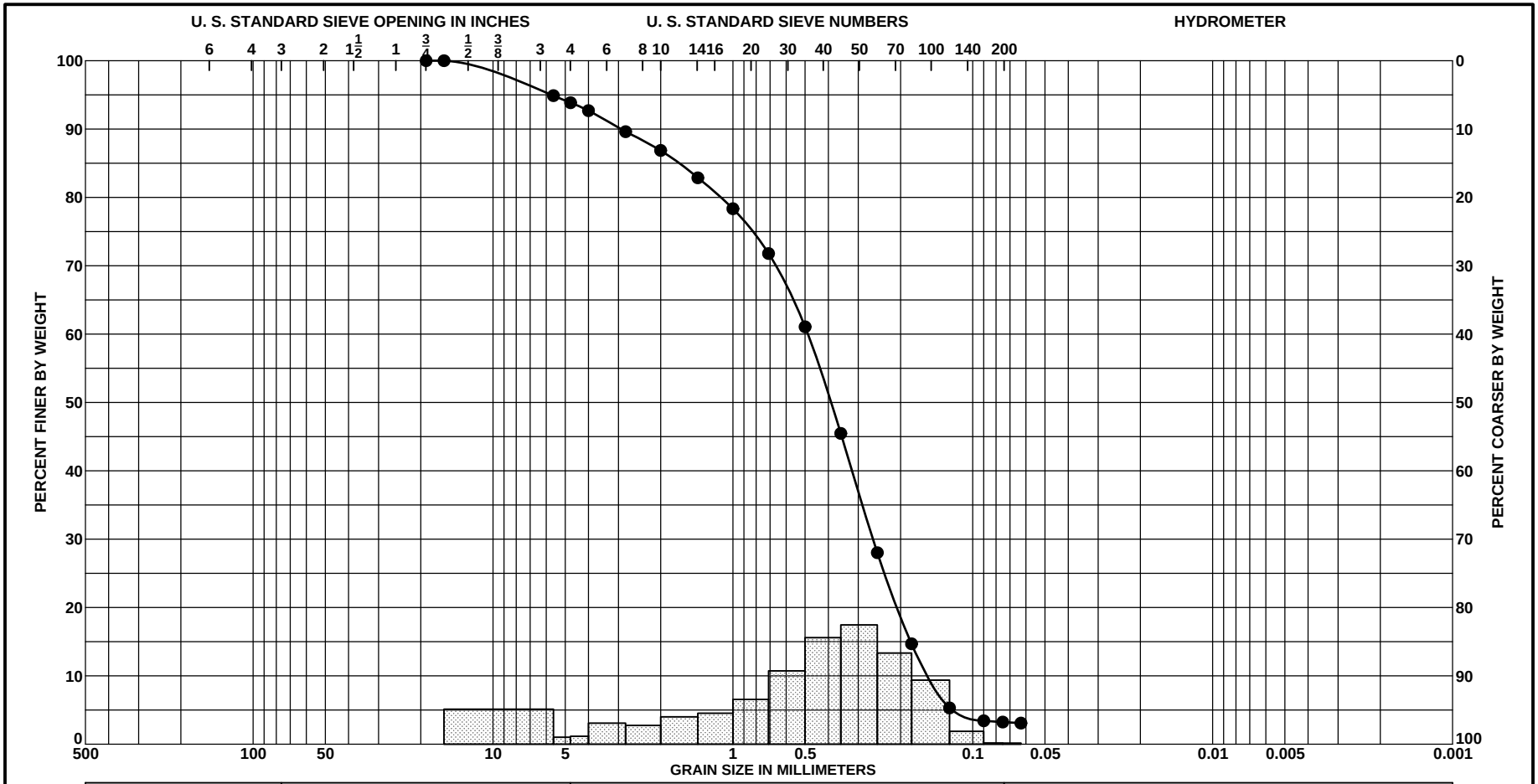
Boring Designation VB-DA20-07

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 949,715 Y = 493,258	ELEVATION TOP OF BORING: -22.3 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve						

15
20
25
30
35

SAJ FORM 1836-A
JUN 02

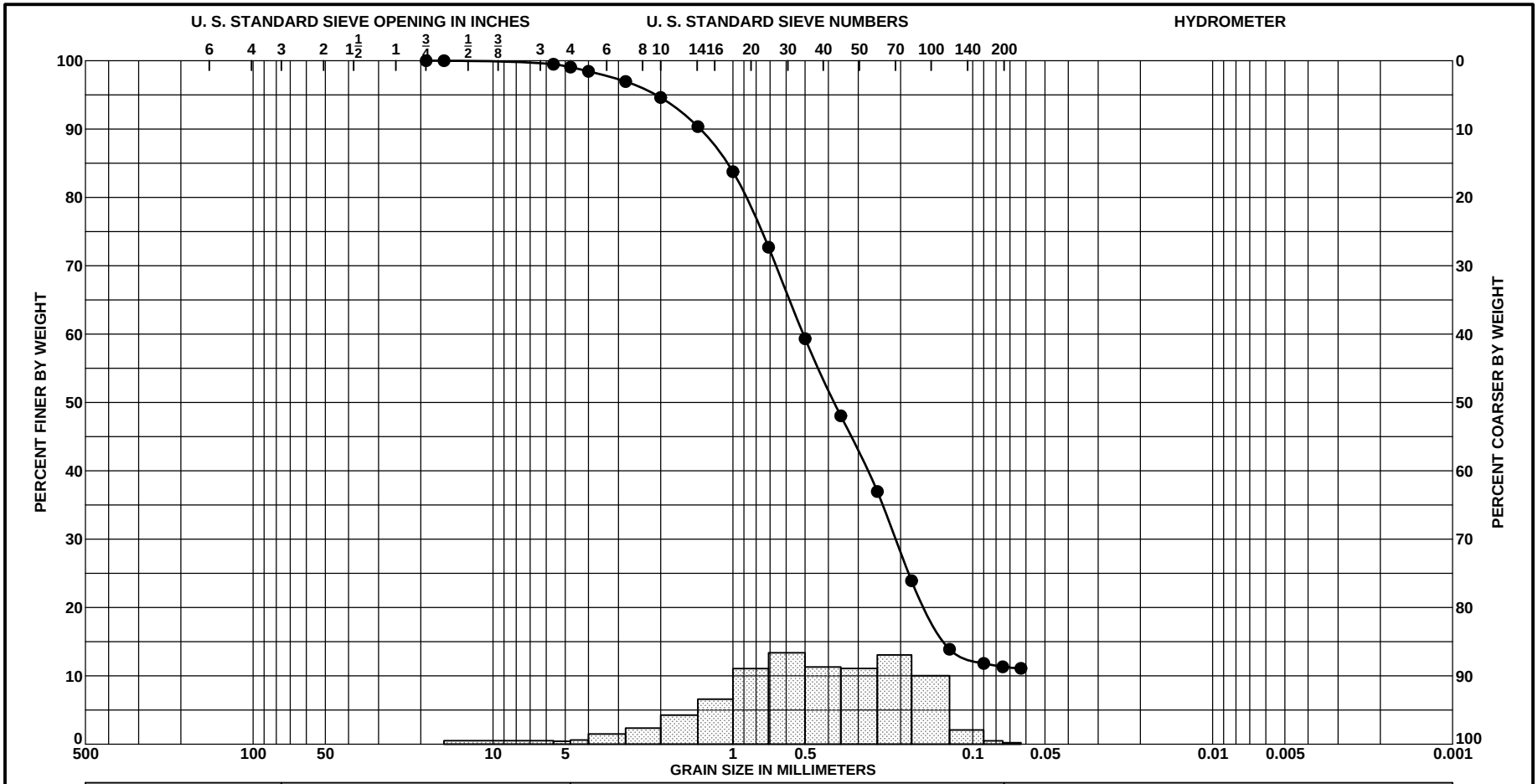


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, trace fine gravel-									
		sized limestone, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-07
BORING ELEV.	-22.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

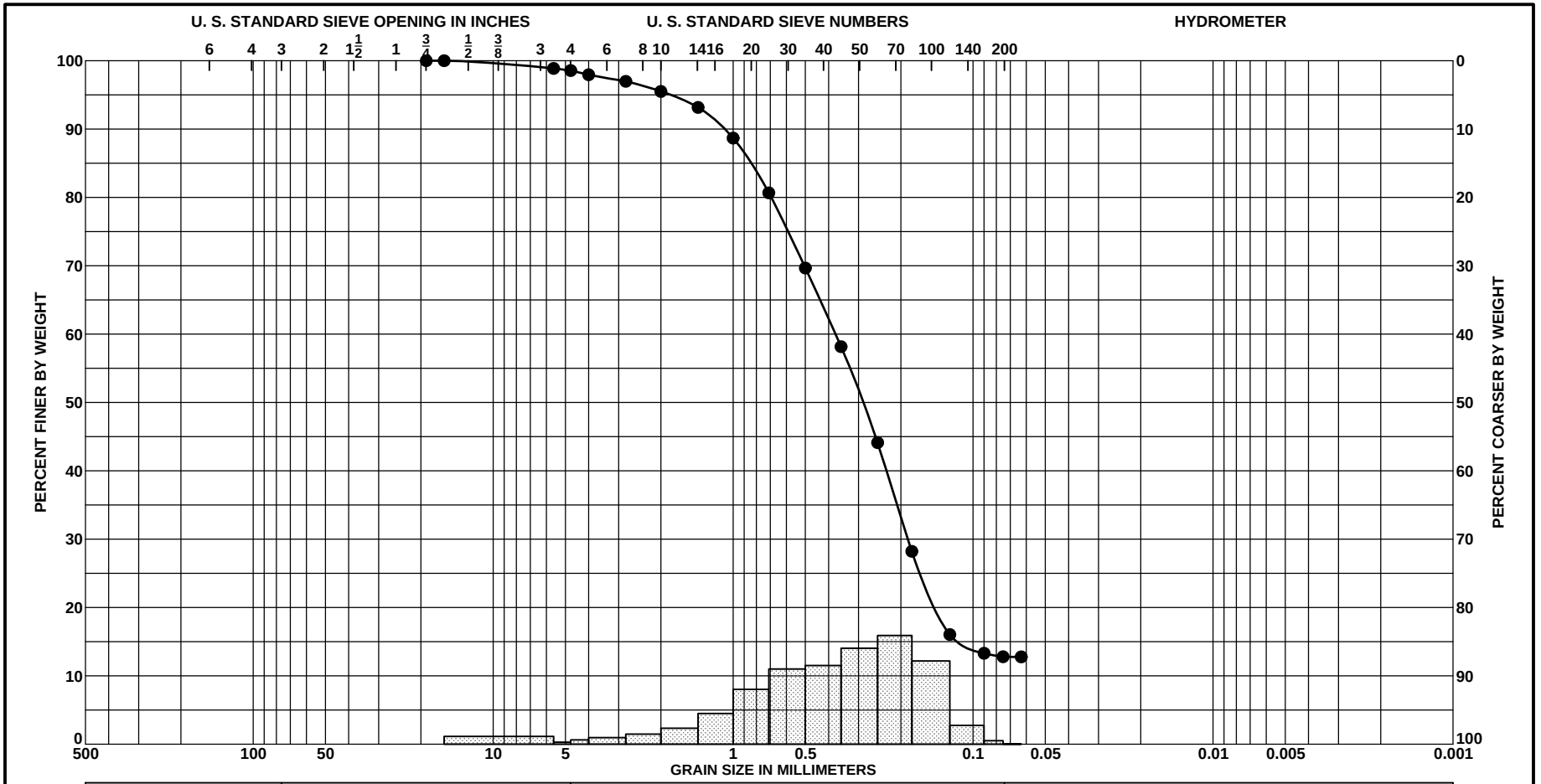


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	1							
		fine to medium-grained sand-									
		sized carbonate, few silt,									
		trace shell, trace fine gravel-sized									
		limestone, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-07
BORING ELEV.	-22.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

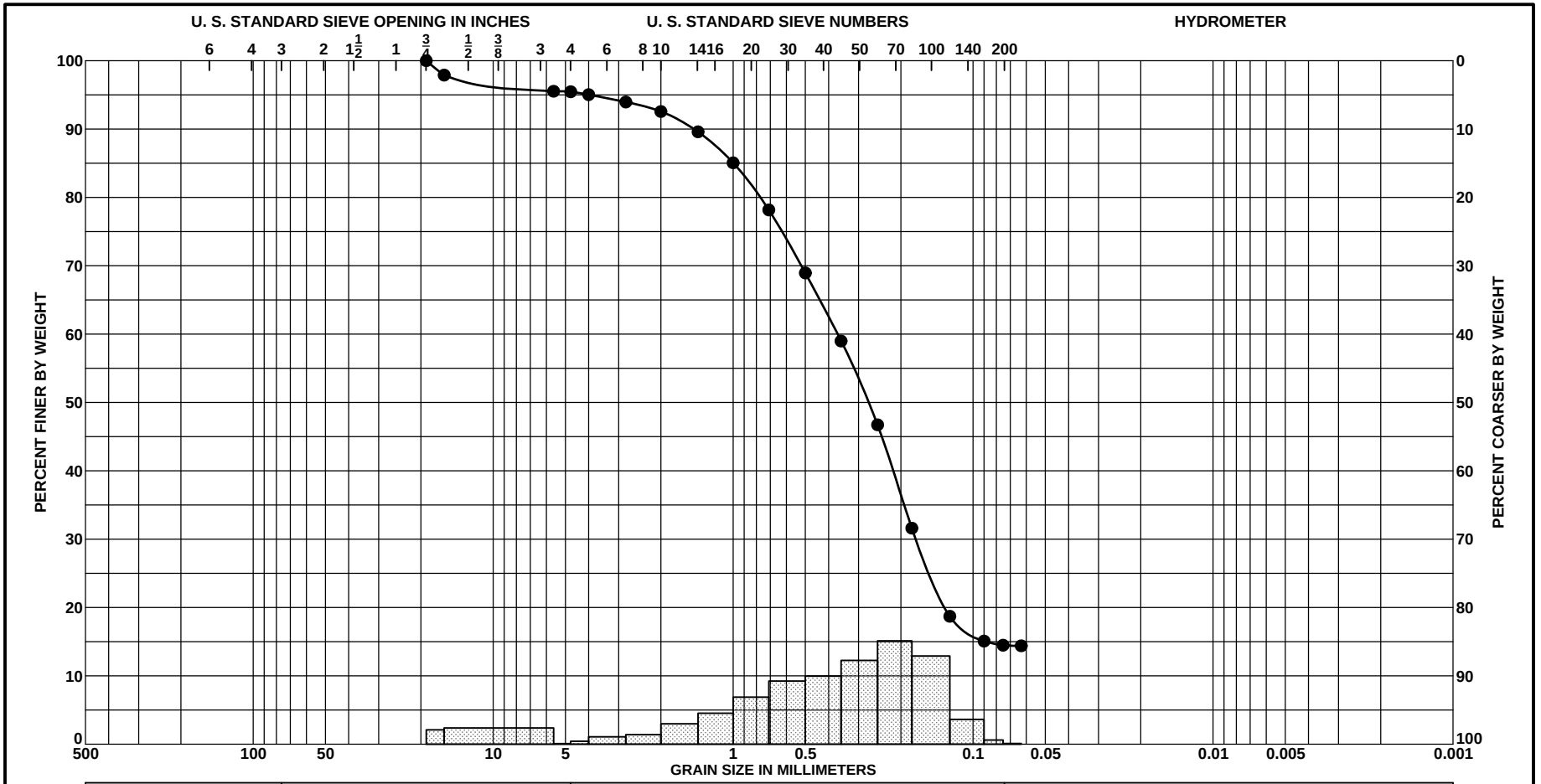


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, trace fine gravel-									
		sized limestone, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-07
BORING ELEV.	-22.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	2							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, trace fine gravel-									
		sized limestone, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-07
BORING ELEV.	-22.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-07 @ 2 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,715	493,258	State Plane, FLE (U.S. Ft.)	-24.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.24 #230 - 3.08			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	5.11	5.11
#4	-2.25	4.75	1.03	6.14
#5	-2.00	4.00	1.16	7.30
#7	-1.50	2.80	3.08	10.39
#10	-1.00	2.00	2.74	13.13
#14	-0.50	1.40	4.01	17.14
#18	0.00	1.00	4.52	21.66
#25	0.50	0.71	6.56	28.21
#35	1.00	0.50	10.72	38.94
#45	1.50	0.36	15.59	54.53
#60	2.00	0.25	17.45	71.98
#80	2.50	0.18	13.33	85.31
#120	3.00	0.13	9.38	94.69
#170	3.50	0.09	1.89	96.58
#200	3.75	0.08	0.19	96.76
#230	4.00	0.06	0.16	96.92

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.08	2.45	2.11	1.35	0.25	-0.64	-2.54

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.91	0.53	1.35	0.39	1.6	-1.05	3.54

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-07 @ 4 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,715	493,258	State Plane, FLE (U.S. Ft.)	-26.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 11.32 #230 - 11.10			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.51	0.51
#4	-2.25	4.75	0.43	0.94
#5	-2.00	4.00	0.61	1.55
#7	-1.50	2.80	1.49	3.04
#10	-1.00	2.00	2.35	5.39
#14	-0.50	1.40	4.26	9.65
#18	0.00	1.00	6.59	16.24
#25	0.50	0.71	11.05	27.29
#35	1.00	0.50	13.38	40.67
#45	1.50	0.36	11.29	51.96
#60	2.00	0.25	11.07	63.03
#80	2.50	0.18	13.06	76.09
#120	3.00	0.13	10.02	86.11
#170	3.50	0.09	2.07	88.18
#200	3.75	0.08	0.50	88.68
#230	4.00	0.06	0.22	88.90

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.89	2.46	1.41	0.40	-0.02	-1.08

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.11	0.46	1.41	0.38	1.28	-0.52	3.06

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-07 @ 6 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,715	493,258	State Plane, FLE (U.S. Ft.)	-28.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 12.80 #230 - 12.77			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.13	1.13
#4	-2.25	4.75	0.30	1.43
#5	-2.00	4.00	0.62	2.06
#7	-1.50	2.80	0.96	3.02
#10	-1.00	2.00	1.47	4.49
#14	-0.50	1.40	2.34	6.84
#18	0.00	1.00	4.49	11.32
#25	0.50	0.71	8.01	19.34
#35	1.00	0.50	11.00	30.33
#45	1.50	0.36	11.51	41.84
#60	2.00	0.25	14.04	55.88
#80	2.50	0.18	15.91	71.78
#120	3.00	0.13	12.18	83.96
#170	3.50	0.09	2.74	86.70
#200	3.75	0.08	0.50	87.20
#230	4.00	0.06	0.02	87.23

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.01	2.63	1.79	0.76	0.29	-0.89

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.34	0.40	1.79	0.29	1.28	-1.02	4.33

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-07 @ 8 ft

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,715	493,258	State Plane, FLE (U.S. Ft.)	-30.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 14.48 #230 - 14.39			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	2.10	2.10
#3.5	-2.50	5.60	2.37	4.47
#4	-2.25	4.75	0.07	4.54
#5	-2.00	4.00	0.42	4.97
#7	-1.50	2.80	1.08	6.04
#10	-1.00	2.00	1.39	7.43
#14	-0.50	1.40	2.97	10.41
#18	0.00	1.00	4.53	14.94
#25	0.50	0.71	6.89	21.83
#35	1.00	0.50	9.23	31.05
#45	1.50	0.36	9.96	41.02
#60	2.00	0.25	12.26	53.27
#80	2.50	0.18	15.12	68.39
#120	3.00	0.13	12.90	81.29
#170	3.50	0.09	3.63	84.92
#200	3.75	0.08	0.60	85.52
#230	4.00	0.06	0.09	85.61

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.37	2.76	1.87	0.67	0.08	-1.98

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.19	0.44	1.87	0.27	1.64	-1.38	4.95

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–07
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–07
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–07
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–07
DEPTH: 7.5 – 8.8
8'
9'
10'

VB-DA20-08

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-08

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-08 — LOCATION COORDINATES: X = 955,512 Y = 493,879
3. DRILLING AGENCY: Amdrill — CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: —
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 20.0 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore — ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 6 — UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-24-20 — COMPLETED: 06-24-20
16. ELEVATION TOP OF BORING: -41.1 Ft.
17. TOTAL RECOVERY FOR BORING: 82 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-41.1	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 5Y 8/2 pale yellow (SW)				-42.1		
					1		-44.1		
					2		-46.1		
					3		-49.1		
					4				
-52.1	11.0						-52.1		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, few shell, moist, 5Y 8/1 white (SW-SM)		5		-54.1		
					6				

0 5 10 15

(Continued)

Boring Designation VB-DA20-08

DRILLING LOG (Cont. Sheet)	INSTALLATION	SHEET 2 OF 2 SHEETS
	Jacksonville, FL	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
SAD-SAND	State Plane, FLE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 955,512 Y = 493,879	-41.1 Ft.

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-57.3	16.2								
-57.5	16.4		SILT, inorganic-L, mostly silt, little fine-grained sand-sized carbonate, few organic matter, moist, 5Y 8/1 white (ML)						
			No Recovery						
-61.1	20.0						-61.1		

NOTES:

1. Taylor Engineering is the custodian for these original files.

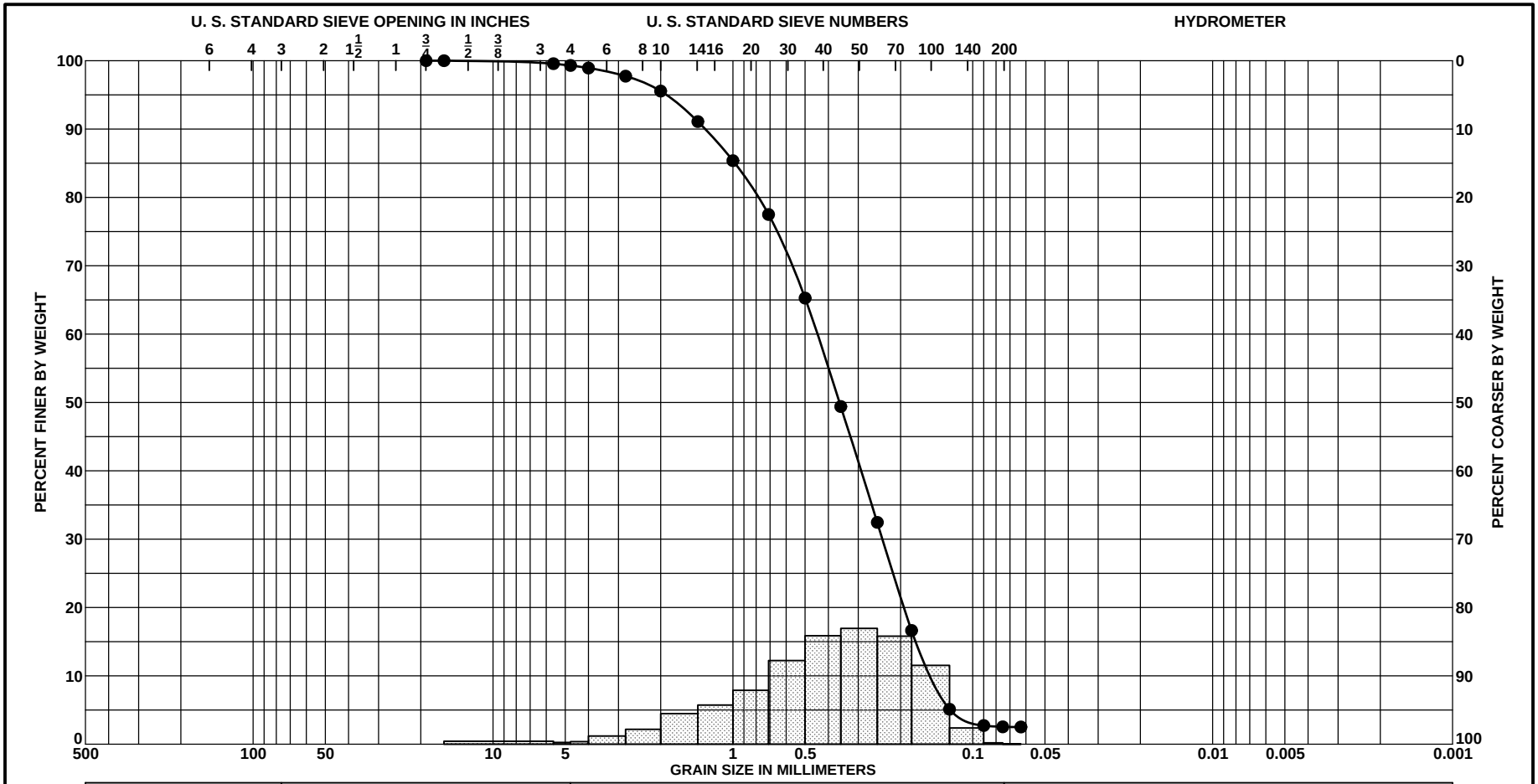
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW*
3	5.0/5.2	SW*
4	8.0/8.2	SW*
5	11.0/11.2	SW-SM*
6	13.0/13.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:

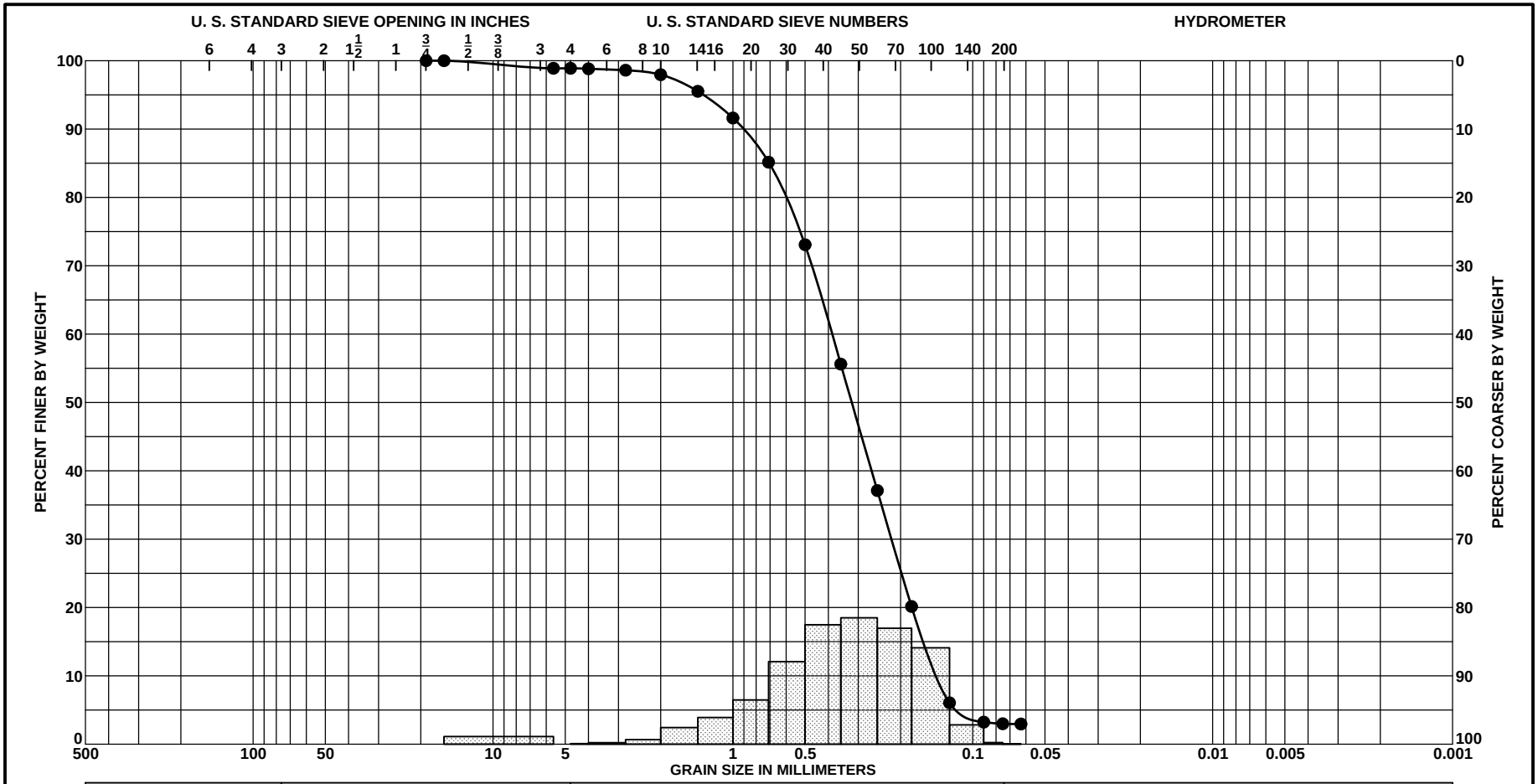


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-08
BORING ELEV.	-41.1 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

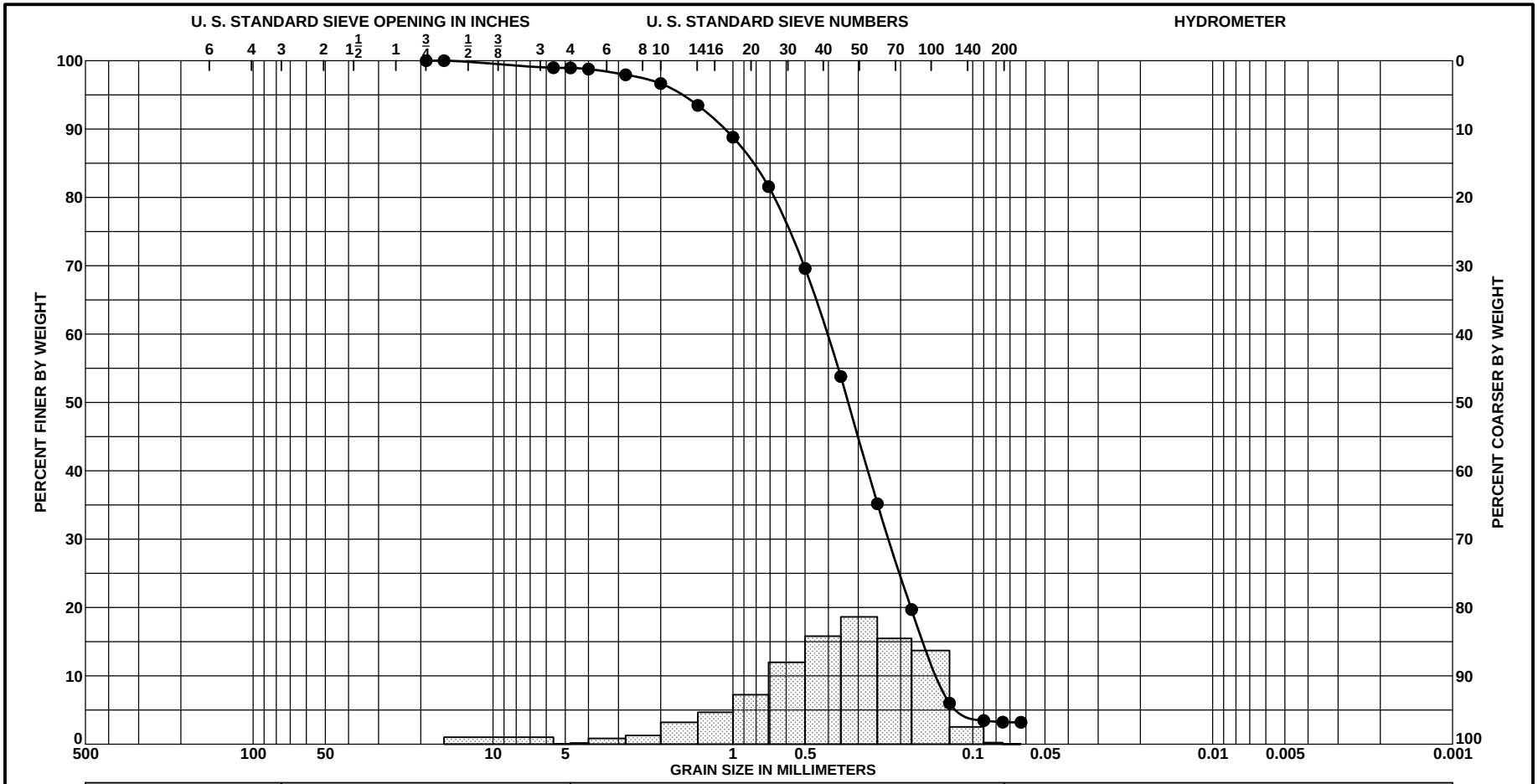


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-08
BORING ELEV.	-41.1 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

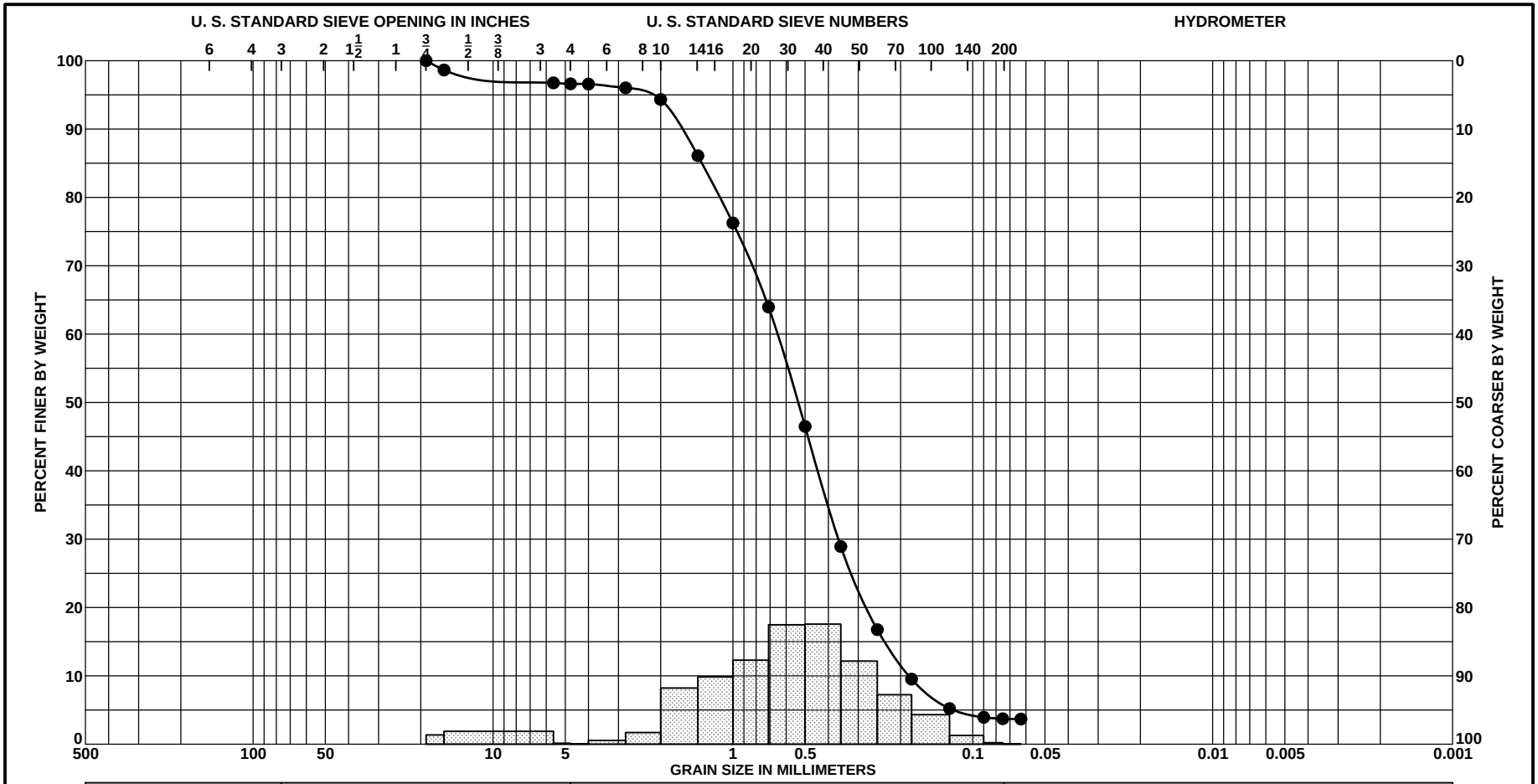


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	5.0 to 5.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-08
BORING ELEV.	-41.1 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

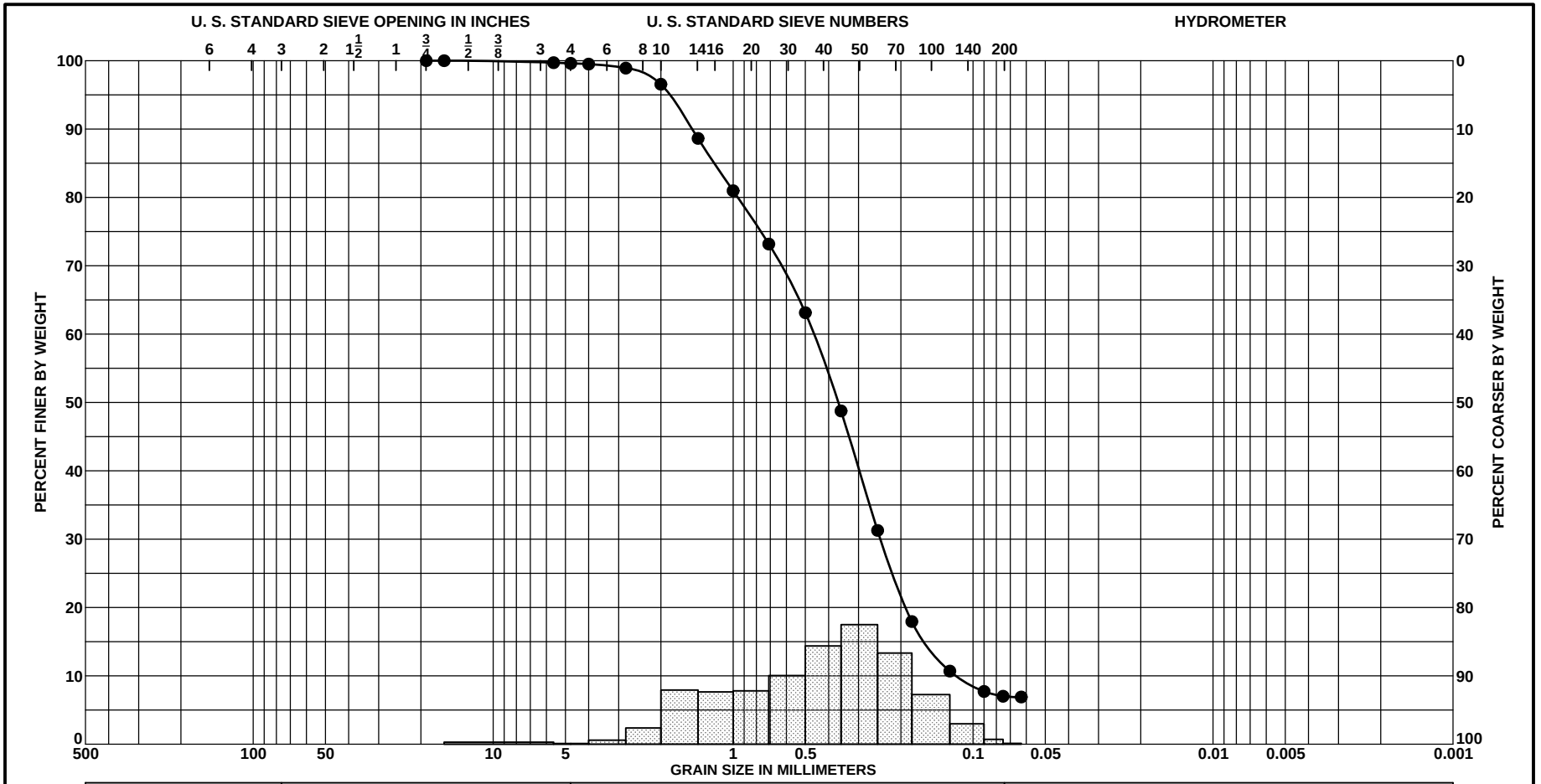


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-08
BORING ELEV.	-41.1 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

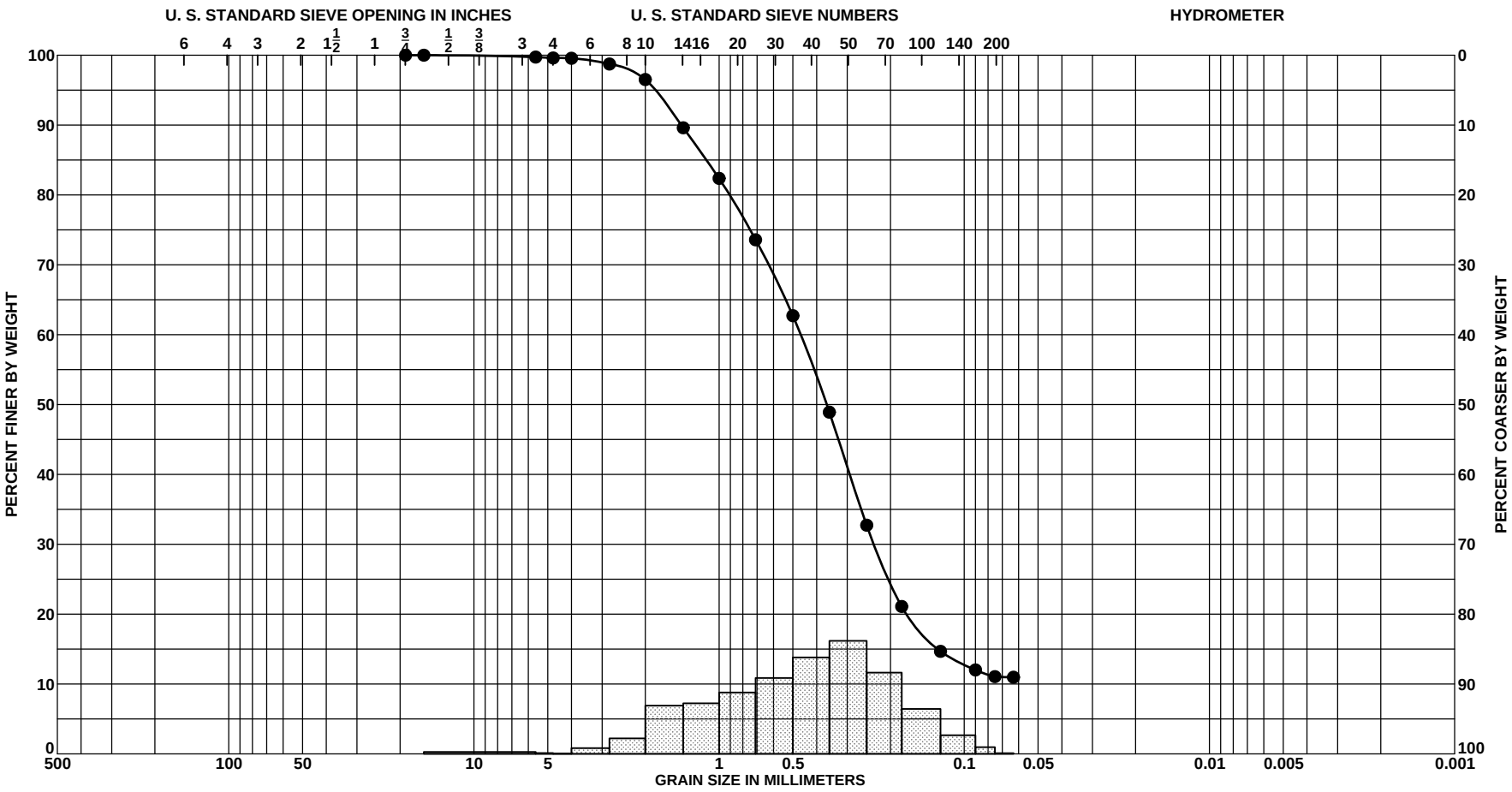


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	11.0 to 11.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	2							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, few shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-08
BORING ELEV.	-41.1 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	13.0 to 13.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, few shell, white (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-08
BORING ELEV.	-41.1 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-08 @ 1 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,512	493,879	State Plane, FLE (U.S. Ft.)	-42.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.54 #230 - 2.51			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.43	0.43
#4	-2.25	4.75	0.26	0.69
#5	-2.00	4.00	0.38	1.07
#7	-1.50	2.80	1.19	2.26
#10	-1.00	2.00	2.18	4.44
#14	-0.50	1.40	4.46	8.90
#18	0.00	1.00	5.72	14.63
#25	0.50	0.71	7.88	22.51
#35	1.00	0.50	12.23	34.74
#45	1.50	0.36	15.87	50.60
#60	2.00	0.25	16.95	67.55
#80	2.50	0.18	15.81	83.36
#120	3.00	0.13	11.53	94.89
#170	3.50	0.09	2.38	97.27
#200	3.75	0.08	0.19	97.46
#230	4.00	0.06	0.03	97.49

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.02	2.53	2.24	1.48	0.60	0.09	-0.94

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.27	0.41	1.48	0.36	1.19	-0.77	3.49

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-08 @ 3 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,512	493,879	State Plane, FLE (U.S. Ft.)	-44.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.99 #230 - 2.95			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.11	1.11
#4	-2.25	4.75	0.00	1.11
#5	-2.00	4.00	0.07	1.18
#7	-1.50	2.80	0.21	1.39
#10	-1.00	2.00	0.66	2.05
#14	-0.50	1.40	2.43	4.48
#18	0.00	1.00	3.90	8.38
#25	0.50	0.71	6.46	14.85
#35	1.00	0.50	12.08	26.92
#45	1.50	0.36	17.47	44.39
#60	2.00	0.25	18.50	62.89
#80	2.50	0.18	16.97	79.86
#120	3.00	0.13	14.09	93.95
#170	3.50	0.09	2.82	96.77
#200	3.75	0.08	0.24	97.01
#230	4.00	0.06	0.04	97.05

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.19	2.65	2.36	1.65	0.92	0.55	-0.43

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.49	0.36	1.65	0.32	1.1	-1.17	5.72

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-08 @ 5 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,512	493,879	State Plane, FLE (U.S. Ft.)	-46.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.22 #230 - 3.21			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.03	1.03
#4	-2.25	4.75	0.03	1.06
#5	-2.00	4.00	0.17	1.23
#7	-1.50	2.80	0.84	2.06
#10	-1.00	2.00	1.27	3.34
#14	-0.50	1.40	3.19	6.53
#18	0.00	1.00	4.67	11.20
#25	0.50	0.71	7.23	18.43
#35	1.00	0.50	11.98	30.41
#45	1.50	0.36	15.80	46.21
#60	2.00	0.25	18.62	64.83
#80	2.50	0.18	15.47	80.30
#120	3.00	0.13	13.70	94.00
#170	3.50	0.09	2.54	96.54
#200	3.75	0.08	0.24	96.78
#230	4.00	0.06	0.02	96.79

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.20	2.64	2.33	1.60	0.77	0.33	-0.74

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.39	0.38	1.60	0.33	1.17	-1.04	4.71

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-08 @ 8 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,512	493,879	State Plane, FLE (U.S. Ft.)	-49.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.73 #230 - 3.68			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	1.36	1.36
#3.5	-2.50	5.60	1.89	3.24
#4	-2.25	4.75	0.13	3.38
#5	-2.00	4.00	0.04	3.42
#7	-1.50	2.80	0.56	3.98
#10	-1.00	2.00	1.70	5.68
#14	-0.50	1.40	8.22	13.90
#18	0.00	1.00	9.84	23.74
#25	0.50	0.71	12.30	36.04
#35	1.00	0.50	17.46	53.51
#45	1.50	0.36	17.57	71.08
#60	2.00	0.25	12.16	83.24
#80	2.50	0.18	7.24	90.48
#120	3.00	0.13	4.30	94.78
#170	3.50	0.09	1.28	96.07
#200	3.75	0.08	0.21	96.27
#230	4.00	0.06	0.04	96.32

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.08	2.05	1.66	0.90	0.05	-0.39	-1.20

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.71	0.61	0.90	0.54	1.31	-1.04	5.32

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-08 @ 11 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,512	493,879	State Plane, FLE (U.S. Ft.)	-52.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 7.01 #230 - 6.90			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.29	0.29
#4	-2.25	4.75	0.10	0.39
#5	-2.00	4.00	0.10	0.49
#7	-1.50	2.80	0.59	1.08
#10	-1.00	2.00	2.37	3.45
#14	-0.50	1.40	7.92	11.37
#18	0.00	1.00	7.65	19.02
#25	0.50	0.71	7.80	26.82
#35	1.00	0.50	10.04	36.87
#45	1.50	0.36	14.38	51.24
#60	2.00	0.25	17.48	68.73
#80	2.50	0.18	13.33	82.06
#120	3.00	0.13	7.25	89.30
#170	3.50	0.09	2.98	92.29
#200	3.75	0.08	0.70	92.99
#230	4.00	0.06	0.11	93.10

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.63	2.24	1.46	0.38	-0.20	-0.90

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.15	0.45	1.46	0.36	1.22	-0.43	2.73

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-08 @ 13 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,512	493,879	State Plane, FLE (U.S. Ft.)	-54.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/1	#200 - 11.06 #230 - 10.96			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.27	0.27
#4	-2.25	4.75	0.12	0.39
#5	-2.00	4.00	0.05	0.44
#7	-1.50	2.80	0.82	1.26
#10	-1.00	2.00	2.22	3.48
#14	-0.50	1.40	6.91	10.39
#18	0.00	1.00	7.24	17.63
#25	0.50	0.71	8.79	26.42
#35	1.00	0.50	10.86	37.28
#45	1.50	0.36	13.81	51.10
#60	2.00	0.25	16.18	67.27
#80	2.50	0.18	11.63	78.90
#120	3.00	0.13	6.42	85.33
#170	3.50	0.09	2.66	87.98
#200	3.75	0.08	0.96	88.94
#230	4.00	0.06	0.09	89.04

	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		2.90	2.33	1.46	0.42	-0.11	-0.89

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.12	0.46	1.46	0.36	1.21	-0.37	2.8

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–08
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–08
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–08
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–08
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–08
DEPTH : 10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–08
DEPTH : 12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–08
DEPTH : 15.0 – 16.4
15'
16'
17'

VB-DA20-09

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-09

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-09	LOCATION COORDINATES: X = 954,521 Y = 493,915	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 6 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-23-20 / COMPLETED: 06-23-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -36.6 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 88 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-36.6	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 5Y 8/2 pale yellow (SW)				-38.6		
					1				
							-41.6		
					2				
-42.6	6.0								
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, moist, 5Y 8/1 white (SW-SM)				-43.6		
					3				
-46.6	10.0						-46.6		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, moist, 5Y 8/1 white (SM)		4				
							-48.6		
					5				
							-50.6		
					6				

0 5 10 15

(Continued)

Boring Designation VB-DA20-09

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 954,521 Y = 493,915	ELEVATION TOP OF BORING: -36.6 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-54.2	17.6		No Recovery				-56.6		
-56.6	20.0								

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

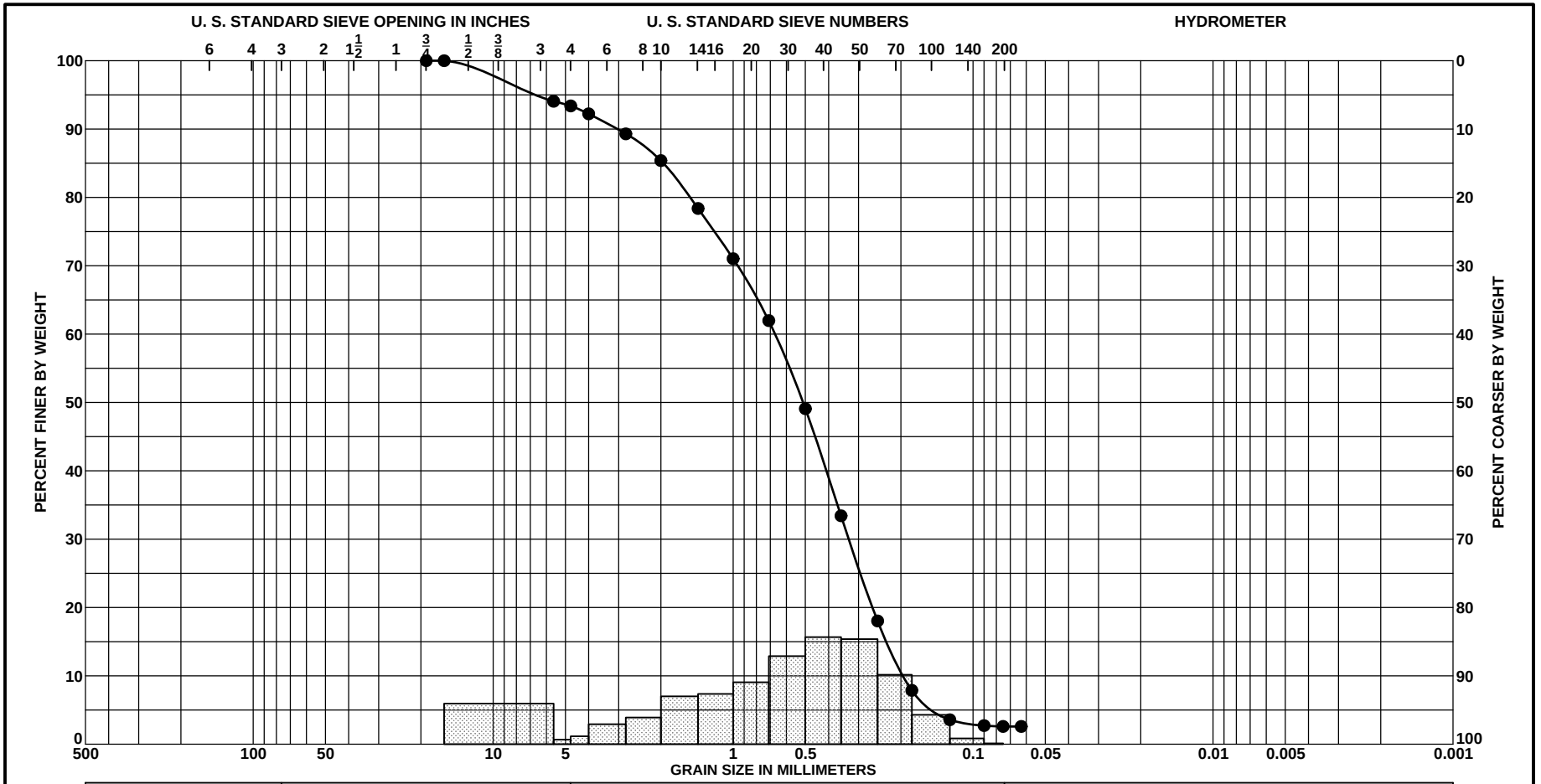
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	5.0/5.2	SW*
3	7.0/7.2	SW-SM*
4	10.0/10.2	SM*
5	12.0/12.2	SM*
6	14.0/14.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

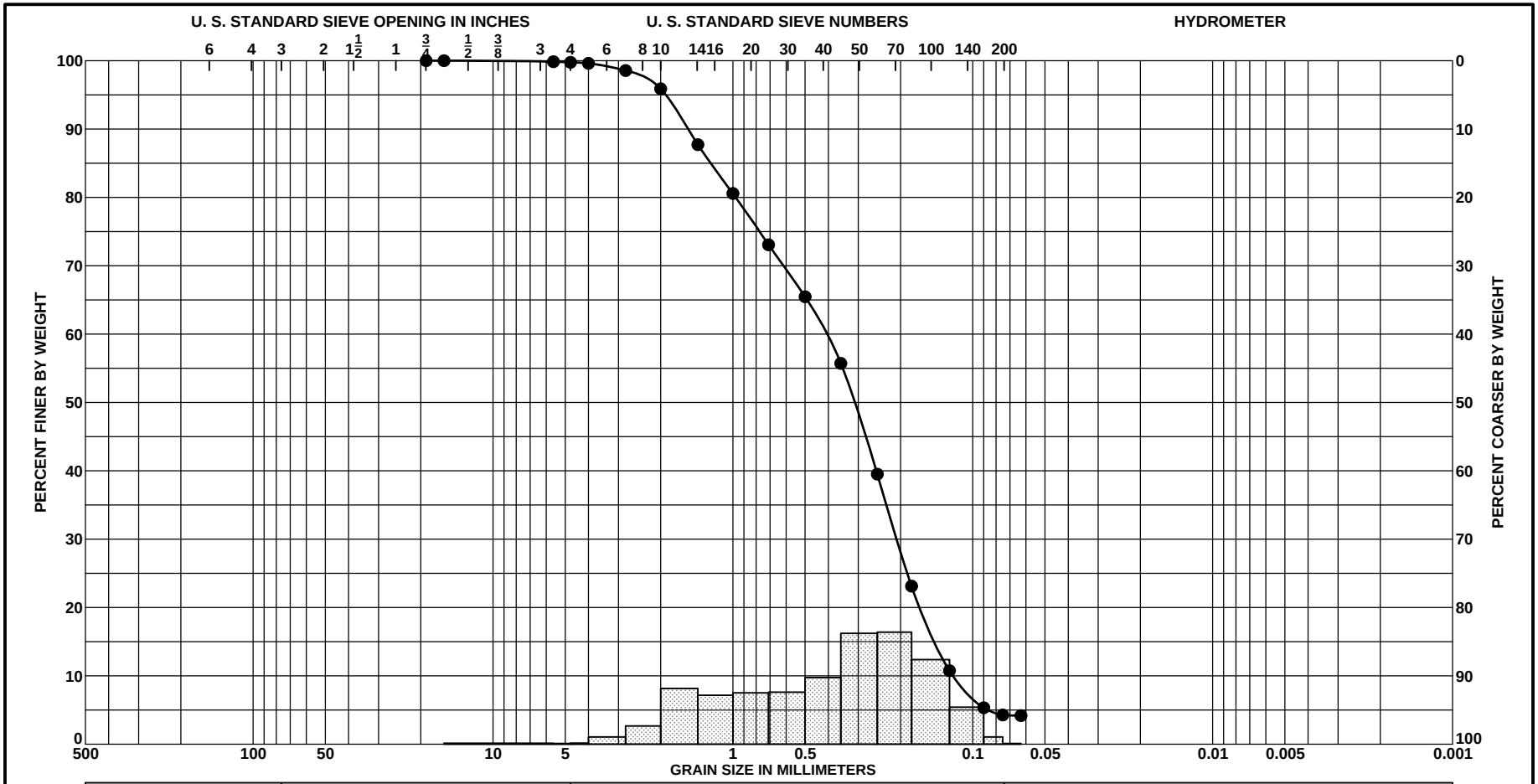


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-09
BORING ELEV.	-36.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

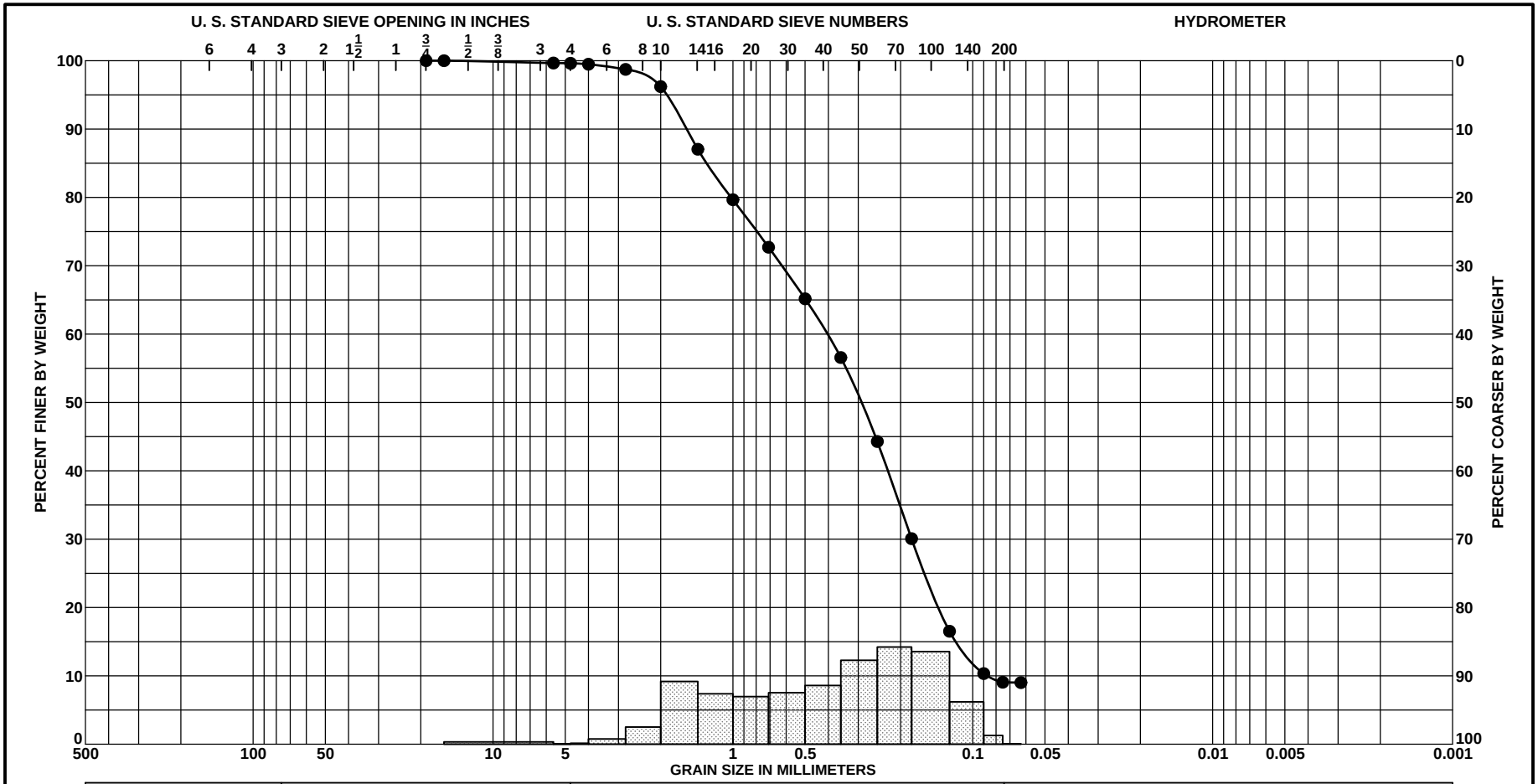


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2	95						
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-09
BORING ELEV.	-36.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

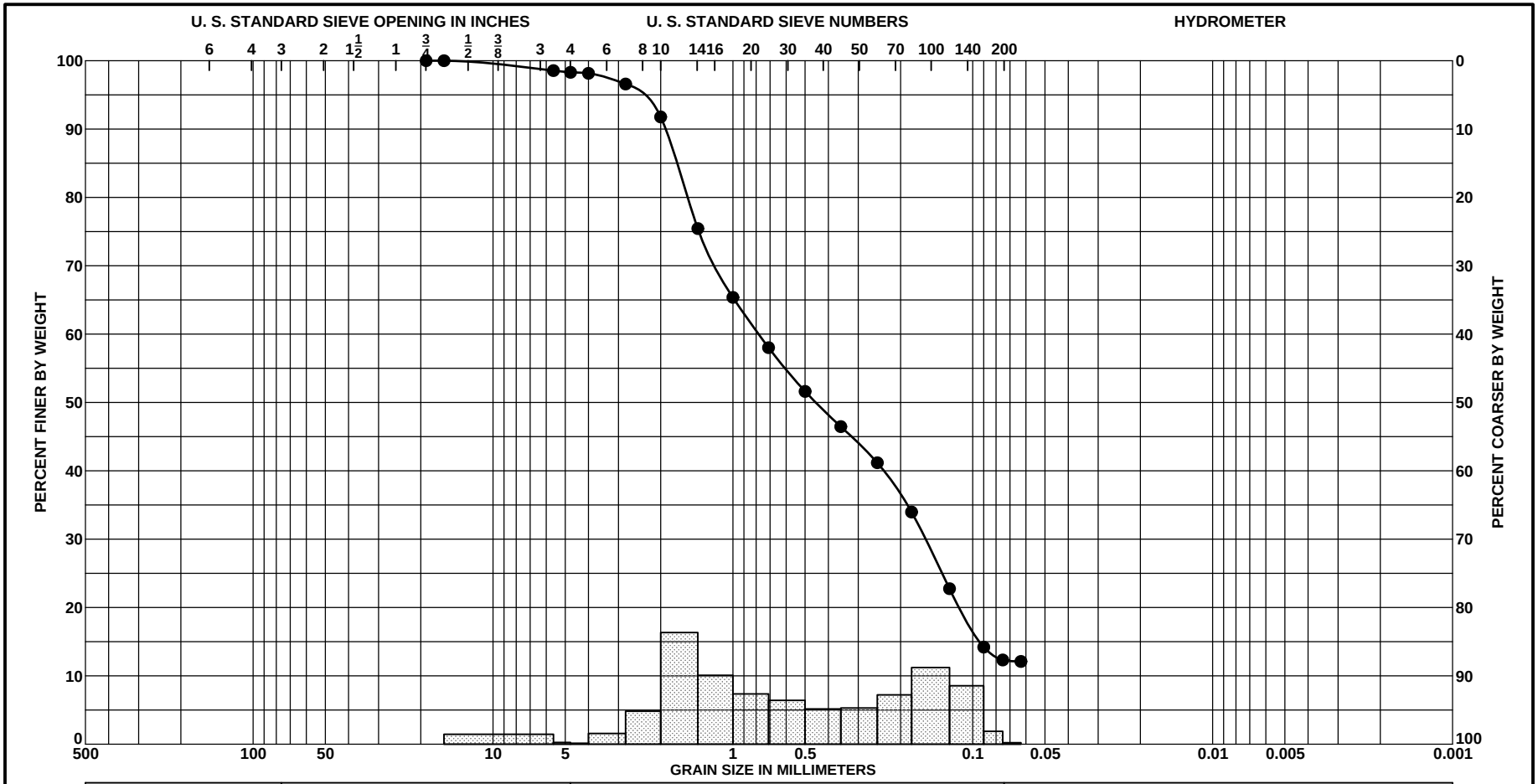


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	7.0 to 7.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/1	3							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, white (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-09
BORING ELEV.	-36.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

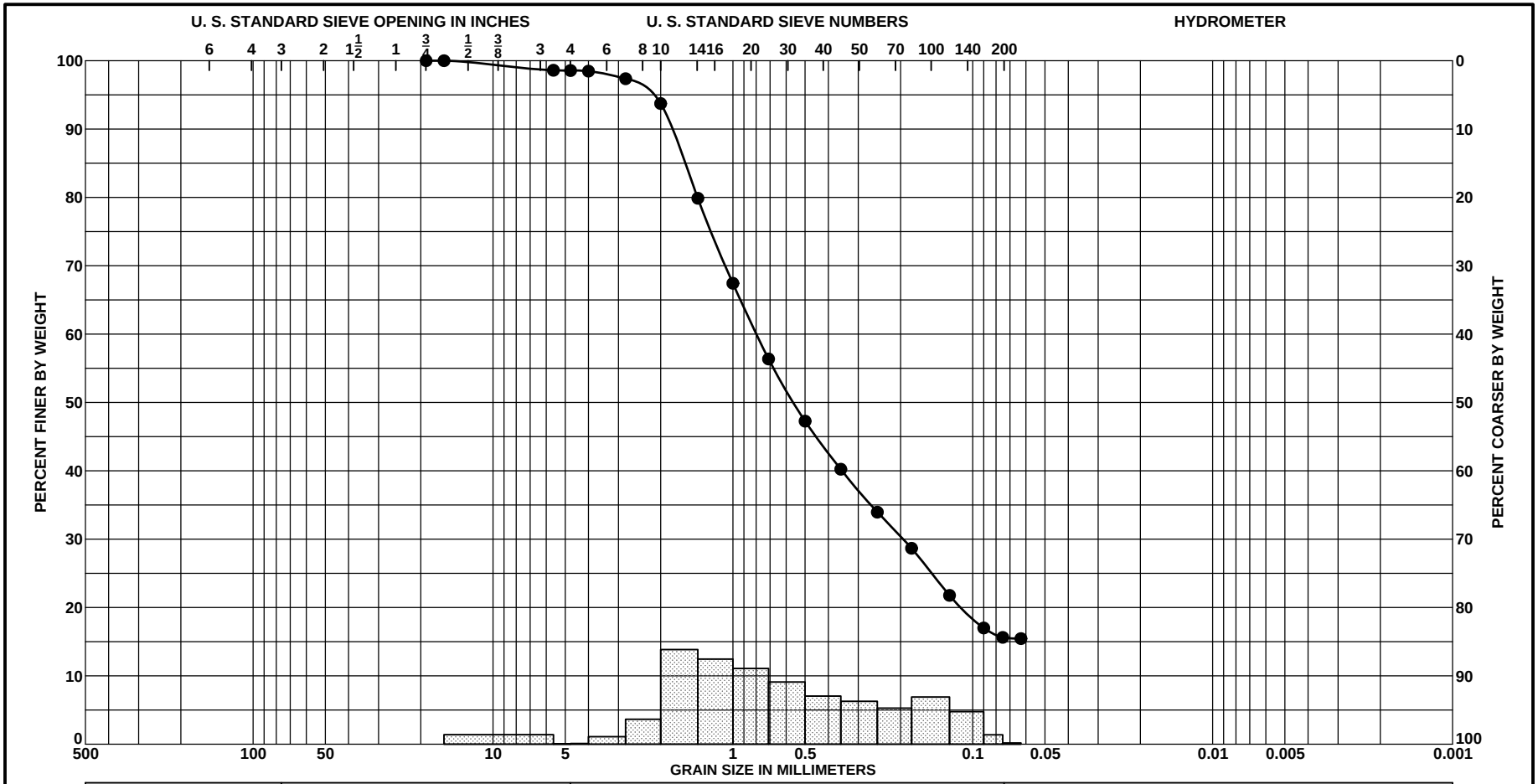


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	10.0 to 10.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	3							
		medium-grained									
		sand-sized carbonate, little silt,									
		white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-09
BORING ELEV.	-36.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

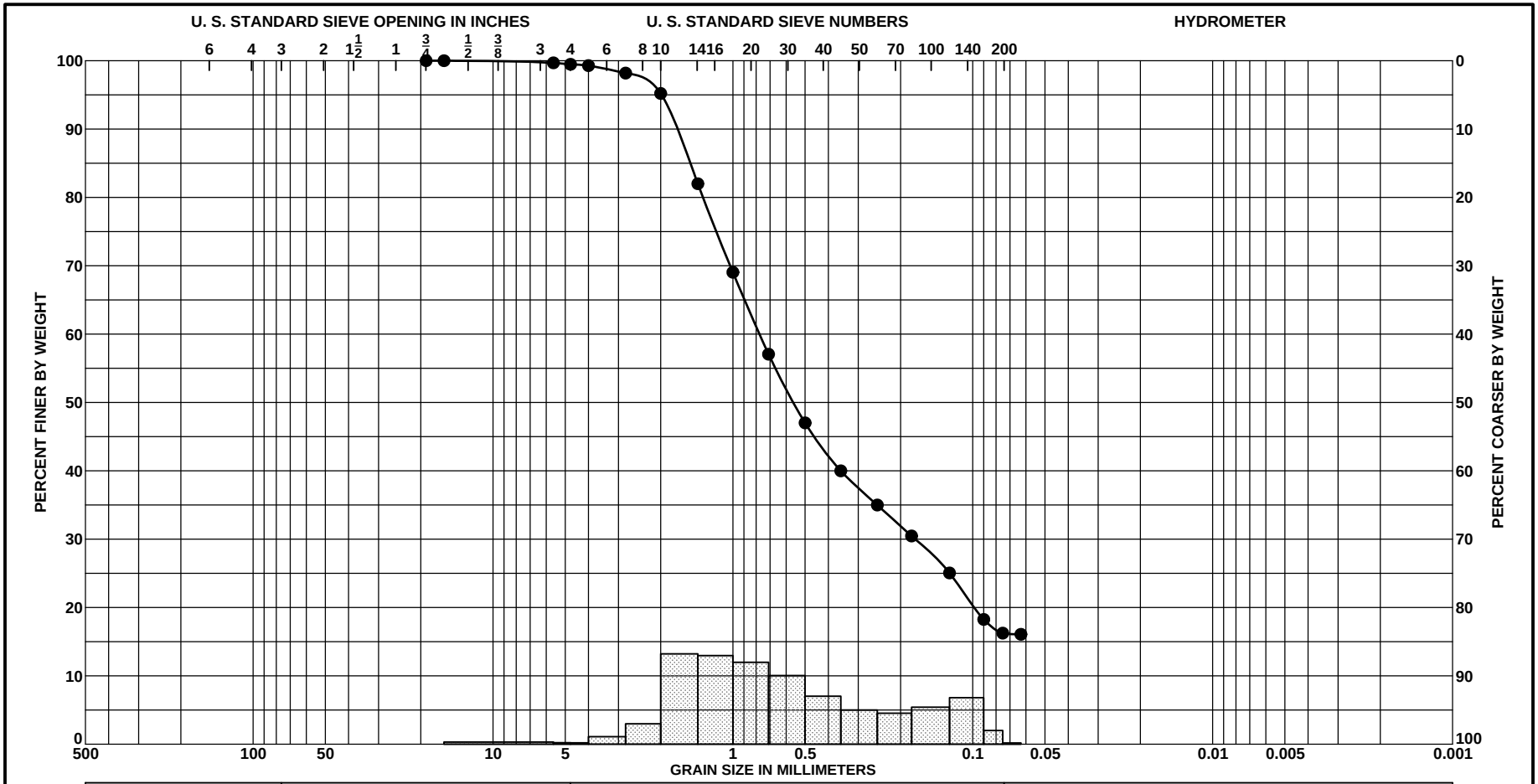


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	12.0 to 12.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	3							
		medium-grained									
		sand-sized carbonate, little silt,									
		white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-09
BORING ELEV.	-36.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

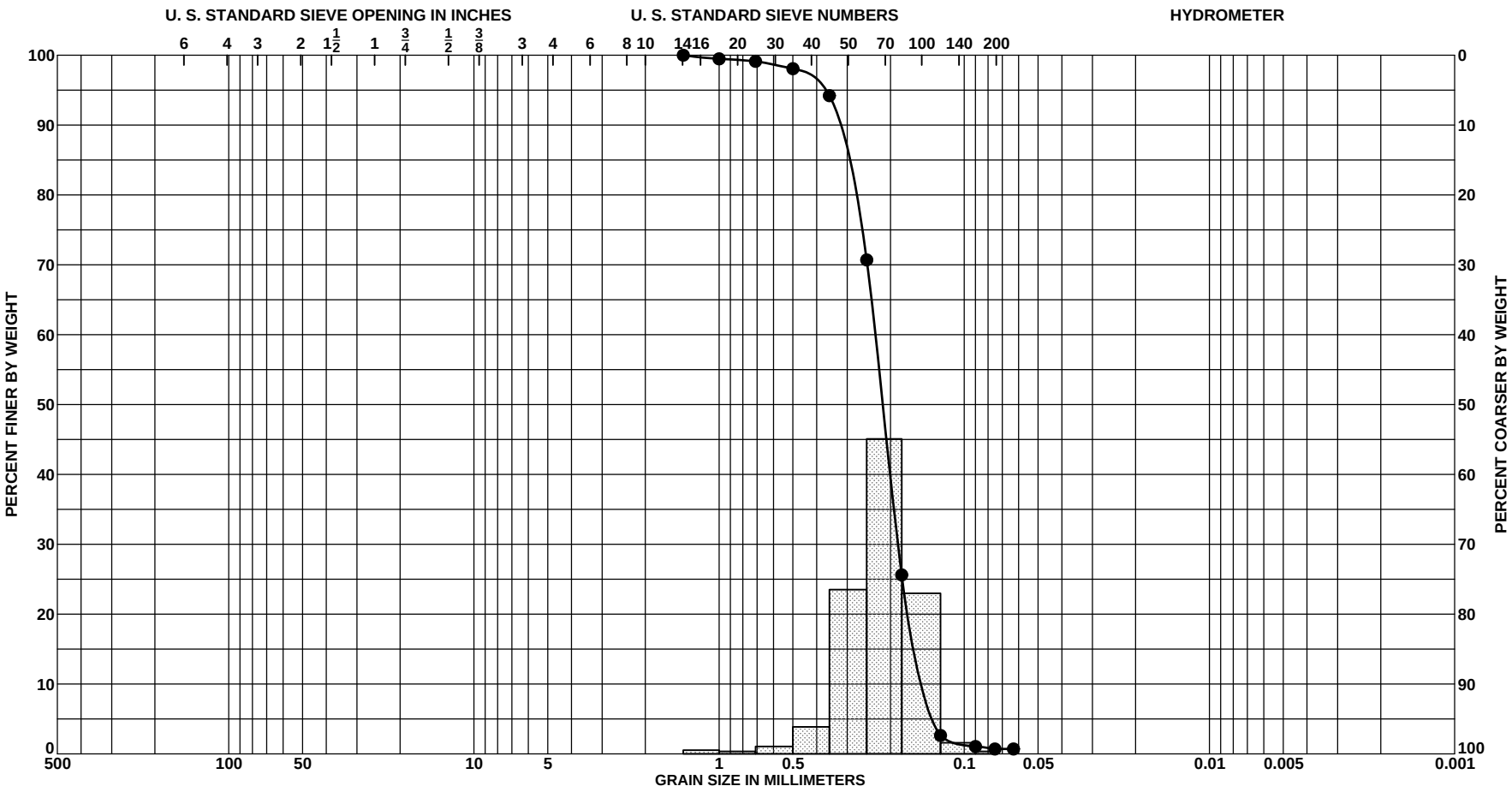


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	14.0 to 14.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	5							
		medium-grained									
		sand-sized carbonate, little silt,									
		white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-09
BORING ELEV.	-36.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-09
BORING ELEV.	-36.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-09 @ 2 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,521	493,915	State Plane, FLE (U.S. Ft.)	-38.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.60 #230 - 2.60			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	5.94	5.94
#4	-2.25	4.75	0.68	6.61
#5	-2.00	4.00	1.16	7.77
#7	-1.50	2.80	2.93	10.70
#10	-1.00	2.00	3.91	14.61
#14	-0.50	1.40	7.00	21.62
#18	0.00	1.00	7.35	28.97
#25	0.50	0.71	9.06	38.03
#35	1.00	0.50	12.88	50.91
#45	1.50	0.36	15.68	66.59
#60	2.00	0.25	15.38	81.97
#80	2.50	0.18	10.16	92.13
#120	3.00	0.13	4.30	96.43
#170	3.50	0.09	0.85	97.28
#200	3.75	0.08	0.13	97.40
#230	4.00	0.06	0.00	97.40

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.83	2.10	1.77	0.96	-0.27	-0.90	-2.78

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.57	0.67	0.96	0.51	1.55	-0.86	3.22

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-09 @ 5 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,521	493,915	State Plane, FLE (U.S. Ft.)	-41.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 4.28 #230 - 4.18		95.00	2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.14	0.14
#4	-2.25	4.75	0.10	0.24
#5	-2.00	4.00	0.15	0.39
#7	-1.50	2.80	1.05	1.44
#10	-1.00	2.00	2.67	4.11
#14	-0.50	1.40	8.17	12.28
#18	0.00	1.00	7.15	19.43
#25	0.50	0.71	7.51	26.93
#35	1.00	0.50	7.60	34.54
#45	1.50	0.36	9.75	44.28
#60	2.00	0.25	16.21	60.49
#80	2.50	0.18	16.38	76.88
#120	3.00	0.13	12.37	89.25
#170	3.50	0.09	5.42	94.67
#200	3.75	0.08	1.05	95.72
#230	4.00	0.06	0.10	95.82

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.58	2.79	2.44	1.68	0.37	-0.24	-0.95

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.32	0.40	1.68	0.31	1.32	-0.49	2.39

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-09 @ 7 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,521	493,915	State Plane, FLE (U.S. Ft.)	-43.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/1	#200 - 9.07 #230 - 9.02			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.34	0.34
#4	-2.25	4.75	0.04	0.38
#5	-2.00	4.00	0.13	0.51
#7	-1.50	2.80	0.76	1.27
#10	-1.00	2.00	2.52	3.79
#14	-0.50	1.40	9.17	12.96
#18	0.00	1.00	7.38	20.34
#25	0.50	0.71	6.96	27.30
#35	1.00	0.50	7.54	34.83
#45	1.50	0.36	8.60	43.43
#60	2.00	0.25	12.28	55.71
#80	2.50	0.18	14.21	69.93
#120	3.00	0.13	13.55	83.48
#170	3.50	0.09	6.19	89.67
#200	3.75	0.08	1.27	90.93
#230	4.00	0.06	0.05	90.98

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.04	2.69	1.77	0.34	-0.29	-0.93

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.31	0.40	1.77	0.29	1.38	-0.44	2.31

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-09 @ 10 ft

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,521	493,915	State Plane, FLE (U.S. Ft.)	-46.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 12.32 #230 - 12.11			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.45	1.45
#4	-2.25	4.75	0.25	1.70
#5	-2.00	4.00	0.14	1.84
#7	-1.50	2.80	1.57	3.41
#10	-1.00	2.00	4.82	8.23
#14	-0.50	1.40	16.33	24.56
#18	0.00	1.00	10.07	34.63
#25	0.50	0.71	7.35	41.98
#35	1.00	0.50	6.41	48.39
#45	1.50	0.36	5.15	53.54
#60	2.00	0.25	5.29	58.82
#80	2.50	0.18	7.21	66.03
#120	3.00	0.13	11.22	77.25
#170	3.50	0.09	8.54	85.80
#200	3.75	0.08	1.89	87.68
#230	4.00	0.06	0.21	87.89

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.39	2.90	1.16	-0.48	-0.76	-1.34

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.86	0.55	1.16	0.45	1.66	-0.02	1.99

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-09 @ 12 ft

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,521	493,915	State Plane, FLE (U.S. Ft.)	-48.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 15.63 #230 - 15.45			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.40	1.40
#4	-2.25	4.75	0.04	1.44
#5	-2.00	4.00	0.09	1.53
#7	-1.50	2.80	1.10	2.63
#10	-1.00	2.00	3.64	6.27
#14	-0.50	1.40	13.85	20.12
#18	0.00	1.00	12.45	32.57
#25	0.50	0.71	11.07	43.64
#35	1.00	0.50	9.10	52.73
#45	1.50	0.36	7.04	59.77
#60	2.00	0.25	6.28	66.05
#80	2.50	0.18	5.28	71.33
#120	3.00	0.13	6.89	78.23
#170	3.50	0.09	4.77	83.00
#200	3.75	0.08	1.37	84.37
#230	4.00	0.06	0.18	84.55

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.68	2.77	0.85	-0.30	-0.65	-1.17

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.67	0.63	0.85	0.55	1.46	0.14	2.57

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-09 @ 14 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,521	493,915	State Plane, FLE (U.S. Ft.)	-50.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 16.25 #230 - 16.08			5

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.31	0.31
#4	-2.25	4.75	0.22	0.53
#5	-2.00	4.00	0.19	0.72
#7	-1.50	2.80	1.09	1.81
#10	-1.00	2.00	2.98	4.79
#14	-0.50	1.40	13.21	18.00
#18	0.00	1.00	12.95	30.95
#25	0.50	0.71	11.99	42.94
#35	1.00	0.50	10.04	52.99
#45	1.50	0.36	7.02	60.01
#60	2.00	0.25	5.00	65.01
#80	2.50	0.18	4.53	69.54
#120	3.00	0.13	5.41	74.95
#170	3.50	0.09	6.80	81.75
#200	3.75	0.08	2.00	83.75
#230	4.00	0.06	0.17	83.92

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.00	0.85	-0.23	-0.58	-0.99

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.74	0.60	0.85	0.55	1.43	0.39	2.32

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-09 @ 5 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,521	493,915	State Plane, FLE (U.S. Ft.)	-41.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.70 #230 - 0.70			

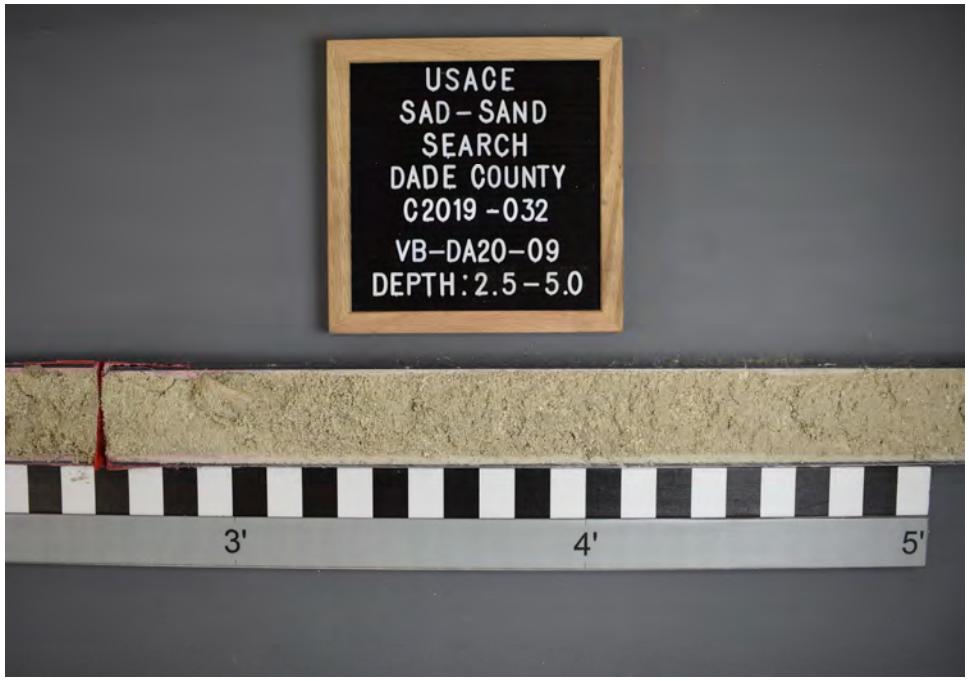
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#14	-0.50	1.40	0.00	0.00
#18	0.00	1.00	0.53	0.53
#25	0.50	0.71	0.35	0.88
#35	1.00	0.50	1.05	1.93
#45	1.50	0.36	3.86	5.79
#60	2.00	0.25	23.51	29.30
#80	2.50	0.18	45.09	74.39
#120	3.00	0.13	22.98	97.37
#170	3.50	0.09	1.58	98.95
#200	3.75	0.08	0.35	99.30
#230	4.00	0.06	0.00	99.30

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.95	2.71	2.51	2.23	1.91	1.72	1.40

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.19	0.22	2.23	0.21	0.5	-0.97	6.29

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–09
DEPTH: 0.0 – 2.5
0'
1'
2'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–09
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–09
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–09
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–09
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–09
DEPTH :12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–09
DEPTH :15.0 –17.6
15'
16'
17'

VB-DA20-10

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-10

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-10	LOCATION COORDINATES: X = 951,207 Y = 494,669	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 3 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-23-20 / COMPLETED: 06-23-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -23.3 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 80 %	
8. TOTAL DEPTH OF BORING: 9.1 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-23.3	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, trace fine gravel-sized limestone, moist, 5Y 8/2 pale yellow (SW)				-24.3		
					1				
-26.3	3.0						-26.3		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 8/2 pale yellow (SW-SM)		2		-28.3		
-29.0	5.7				3				
			SILT, inorganic-L, mostly silt, little gravel to cobble-sized limestone, moist, 5Y 8/1 white (ML)						
-30.6	7.3								
			No Recovery						
-32.4	9.1						-32.4		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW-SM*
3	5.0/5.2	SW-SM*

(Continued)

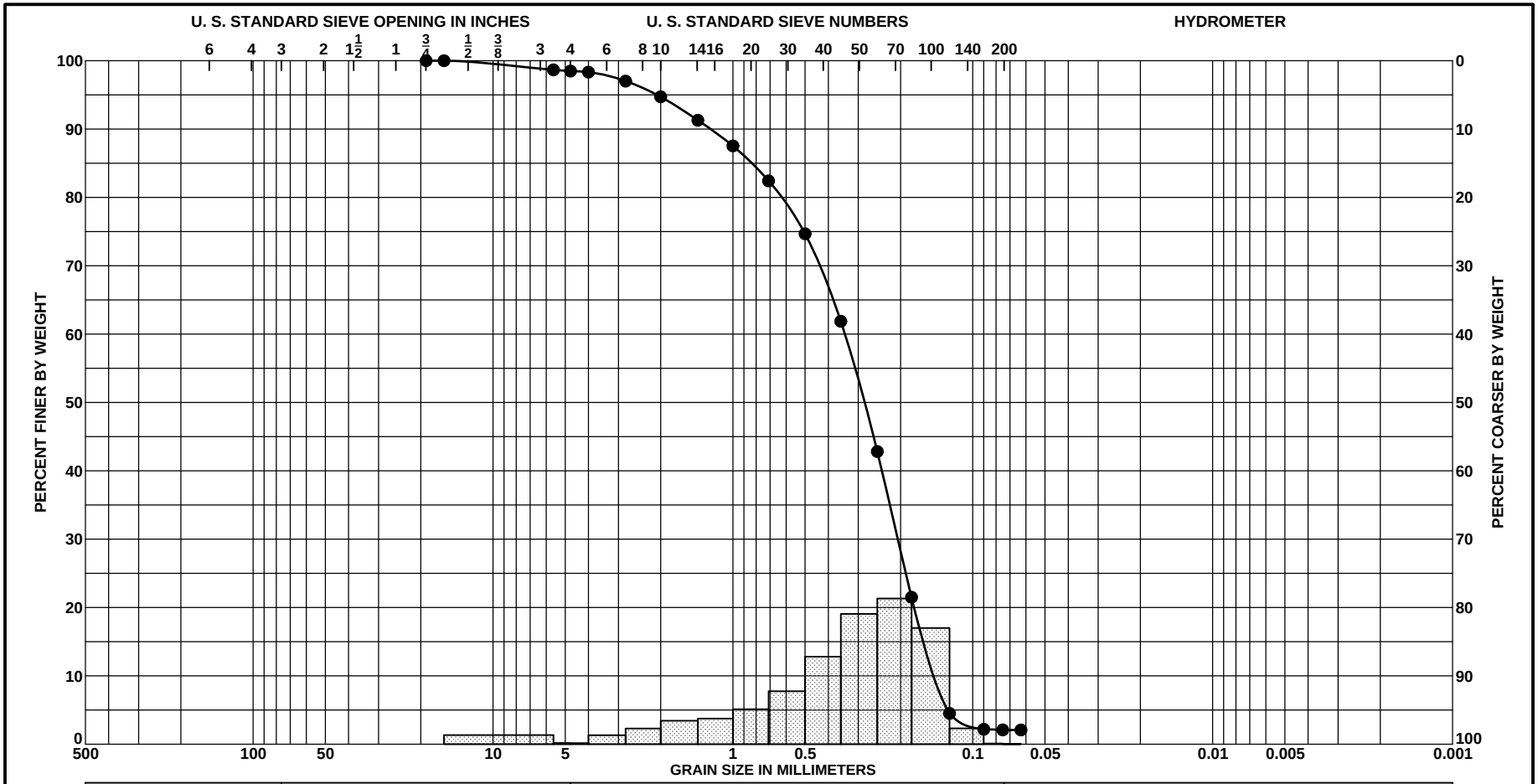
Boring Designation VB-DA20-10

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 951,207 Y = 494,669	ELEVATION TOP OF BORING: -23.3 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve						

15
20
25
30
35

SAJ FORM 1836-A
JUN 02

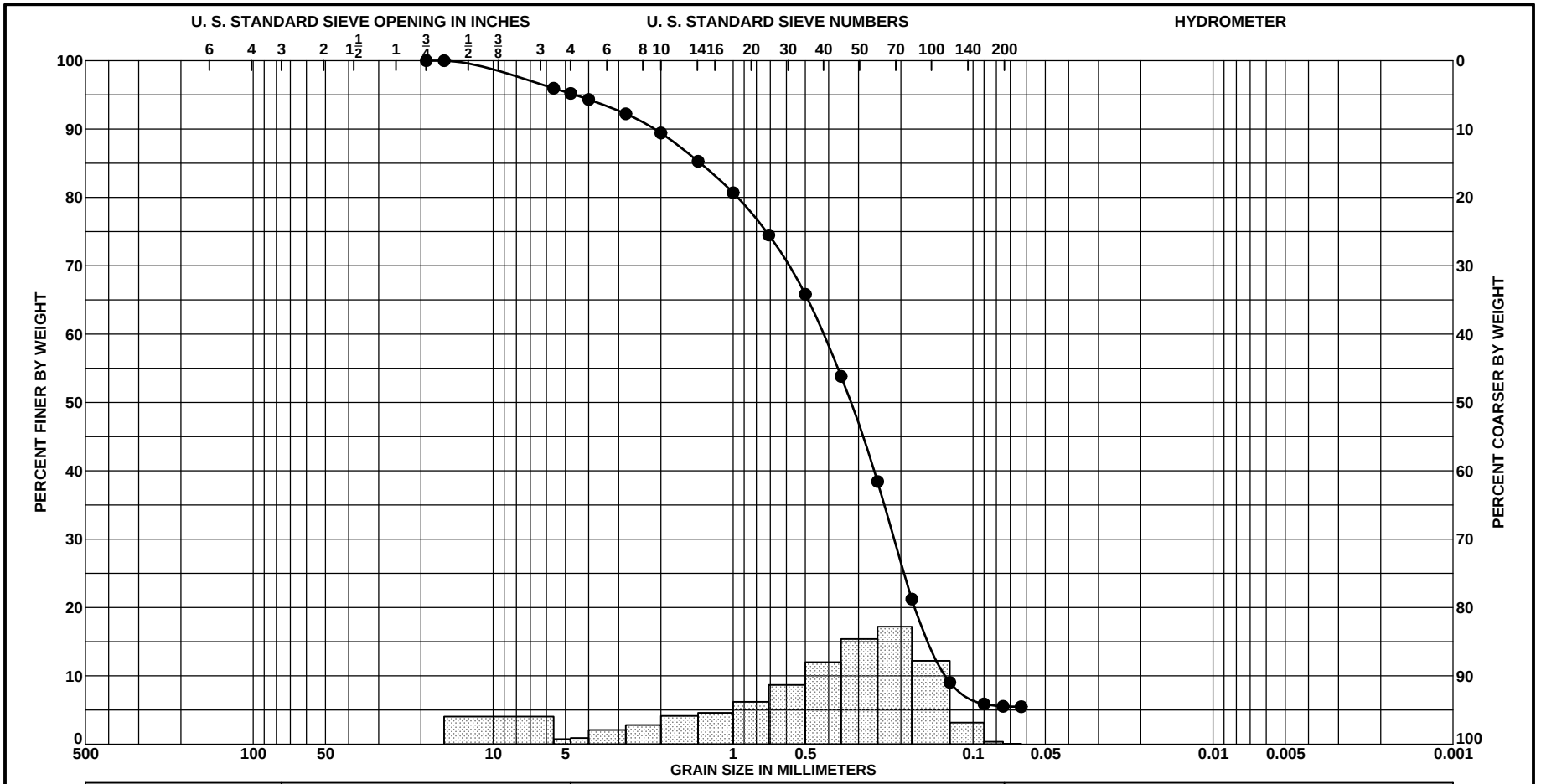


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, trace silt, trace shell,									
		trace fine gravel-sized									
		limestone, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-10
BORING ELEV.	-23.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

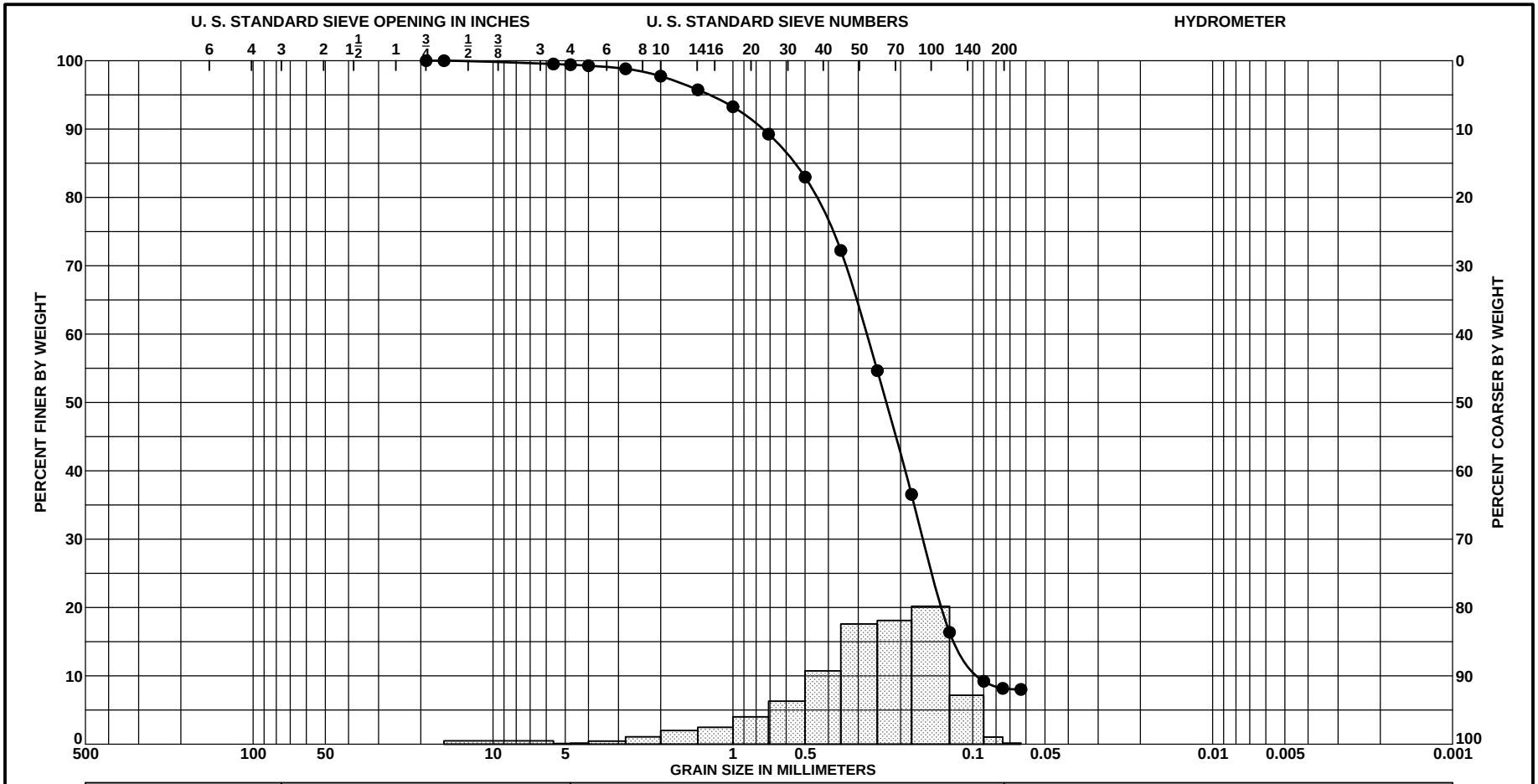


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	2	97						
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-10
BORING ELEV.	-23.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

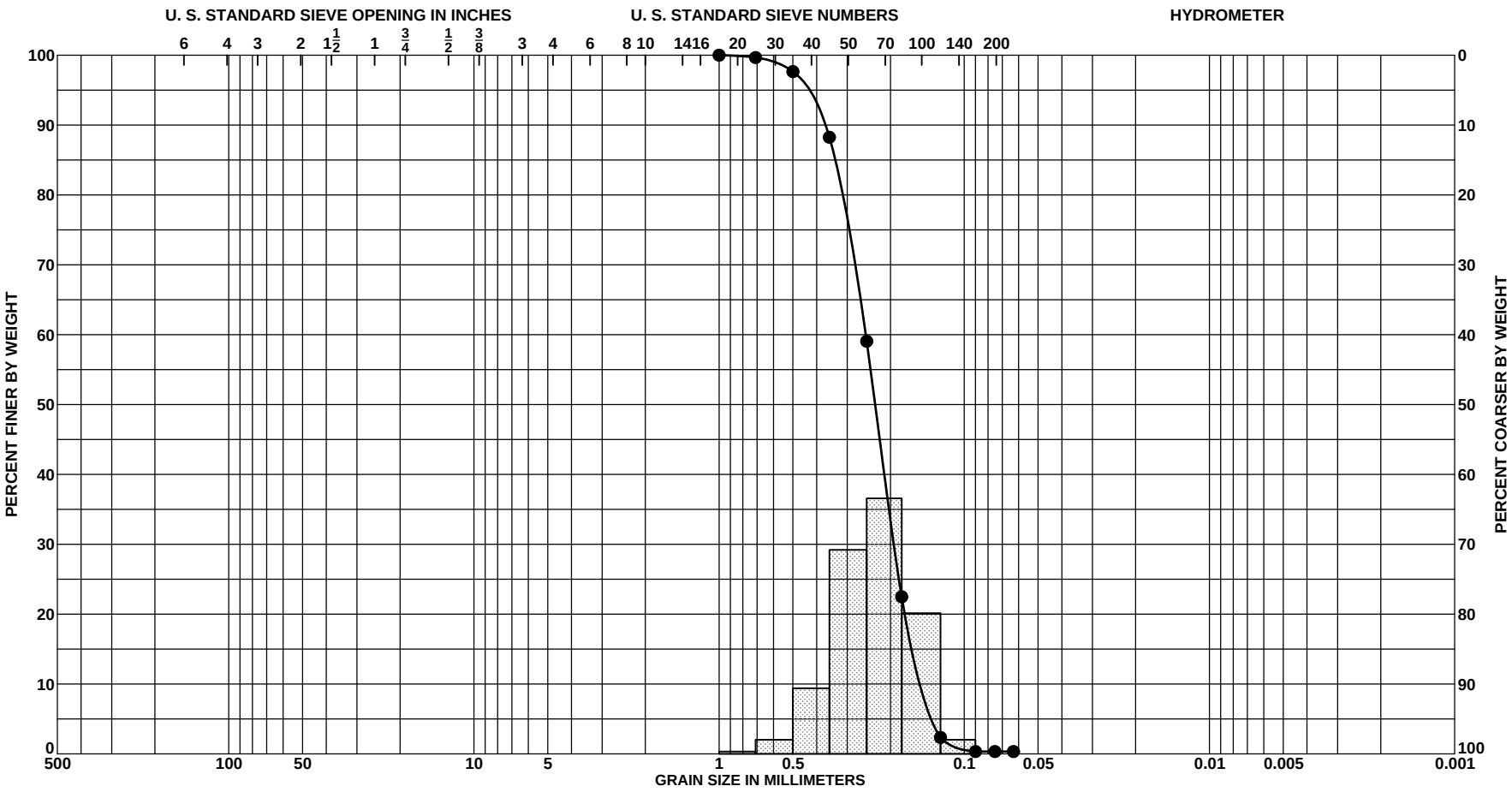


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	5.0 to 5.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-10
BORING ELEV.	-23.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-10
BORING ELEV.	-23.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-10 @ 1 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
951,207	494,669	State Plane, FLE (U.S. Ft.)	-24.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.09 #230 - 2.08			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.34	1.34
#4	-2.25	4.75	0.17	1.51
#5	-2.00	4.00	0.16	1.67
#7	-1.50	2.80	1.32	2.99
#10	-1.00	2.00	2.29	5.28
#14	-0.50	1.40	3.44	8.72
#18	0.00	1.00	3.75	12.47
#25	0.50	0.71	5.12	17.59
#35	1.00	0.50	7.75	25.33
#45	1.50	0.36	12.80	38.13
#60	2.00	0.25	19.05	57.18
#80	2.50	0.18	21.32	78.50
#120	3.00	0.13	16.99	95.50
#170	3.50	0.09	2.32	97.82
#200	3.75	0.08	0.09	97.91
#230	4.00	0.06	0.01	97.92

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.99	2.66	2.42	1.81	0.98	0.35	-1.06

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.48	0.36	1.81	0.29	1.26	-1.34	4.94

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-10 @ 3 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
951,207	494,669	State Plane, FLE (U.S. Ft.)	-26.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 5.54 #230 - 5.49		97.40	2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	4.04	4.04
#4	-2.25	4.75	0.75	4.79
#5	-2.00	4.00	0.90	5.68
#7	-1.50	2.80	2.09	7.77
#10	-1.00	2.00	2.81	10.58
#14	-0.50	1.40	4.14	14.72
#18	0.00	1.00	4.60	19.32
#25	0.50	0.71	6.19	25.51
#35	1.00	0.50	8.68	34.18
#45	1.50	0.36	12.00	46.18
#60	2.00	0.25	15.39	61.57
#80	2.50	0.18	17.20	78.77
#120	3.00	0.13	12.19	90.96
#170	3.50	0.09	3.15	94.11
#200	3.75	0.08	0.35	94.46
#230	4.00	0.06	0.05	94.51

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.71	2.39	1.62	0.46	-0.36	-2.19

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.12	0.46	1.62	0.33	1.58	-1.1	3.72

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-10 @ 5 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
951,207	494,669	State Plane, FLE (U.S. Ft.)	-28.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 8.17 #230 - 8.02			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.49	0.49
#4	-2.25	4.75	0.09	0.58
#5	-2.00	4.00	0.15	0.73
#7	-1.50	2.80	0.46	1.18
#10	-1.00	2.00	1.08	2.26
#14	-0.50	1.40	2.00	4.26
#18	0.00	1.00	2.48	6.74
#25	0.50	0.71	4.01	10.75
#35	1.00	0.50	6.28	17.03
#45	1.50	0.36	10.73	27.76
#60	2.00	0.25	17.59	45.35
#80	2.50	0.18	18.10	63.46
#120	3.00	0.13	20.17	83.63
#170	3.50	0.09	7.16	90.79
#200	3.75	0.08	1.04	91.83
#230	4.00	0.06	0.15	91.98

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.03	2.79	2.13	1.37	0.92	-0.35

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.82	0.28	2.13	0.23	1.12	-1.27	5.31

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-10 @ 3 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
951,207	494,669	State Plane, FLE (U.S. Ft.)	-26.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.34 #230 - 0.34			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#18	0.00	1.00	0.00	0.00
#25	0.50	0.71	0.34	0.34
#35	1.00	0.50	2.01	2.35
#45	1.50	0.36	9.40	11.74
#60	2.00	0.25	29.19	40.94
#80	2.50	0.18	36.58	77.52
#120	3.00	0.13	20.13	97.65
#170	3.50	0.09	2.01	99.66
#200	3.75	0.08	0.00	99.66
#230	4.00	0.06	0.00	99.66

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.93	2.66	2.47	2.12	1.73	1.57	1.14

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.09	0.23	2.12	0.23	0.52	-0.34	3.1

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–10
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–10
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–10
DEPTH: 5.0 – 7.3
5'
6'
7'

VB-DA20-11

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-11

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1 OF 2 SHEETS
	South Atlantic	Jacksonville, Fl	

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-11
LOCATION COORDINATES: X = 954,657 Y = 496,672
3. DRILLING AGENCY: Amdrill
CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL:
BEARING:
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 20.0 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) HORIZONTAL: NAD83 VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 6 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-24-20 COMPLETED: 06-24-20
16. ELEVATION TOP OF BORING: -39.8 Ft.
17. TOTAL RECOVERY FOR BORING: 87 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-39.8	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 5Y 8/2 pale yellow (SW)				-40.8		
					1		-42.8		
					2				
-45.8	6.0						-45.8		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 8/2 pale yellow (SW-SM)		3				
-48.1	8.3						-48.8		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 5Y 8/1 white (SM)		4				
					5		-51.8		
							-54.8		

0
5
10
15

(Continued)

Boring Designation VB-DA20-11

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 954,657 Y = 496,672	ELEVATION TOP OF BORING: -39.8 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
					6			
-57.1	17.3		No Recovery					
-59.8	20.0						-59.8	

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

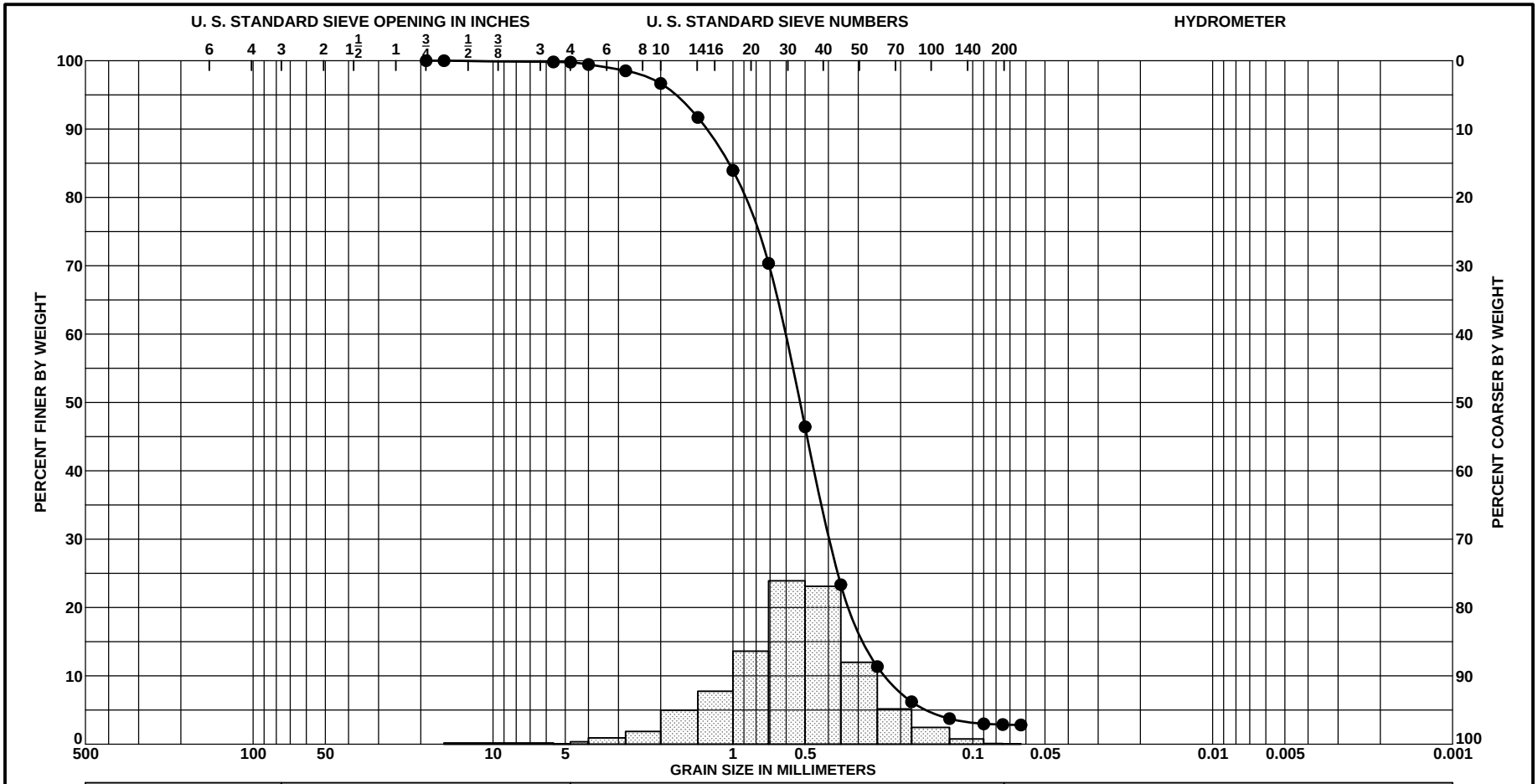
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW*
3	6.0/6.2	SW-SM*
4	9.0/9.2	SM*
5	12.0/12.2	SM*
6	15.0/15.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

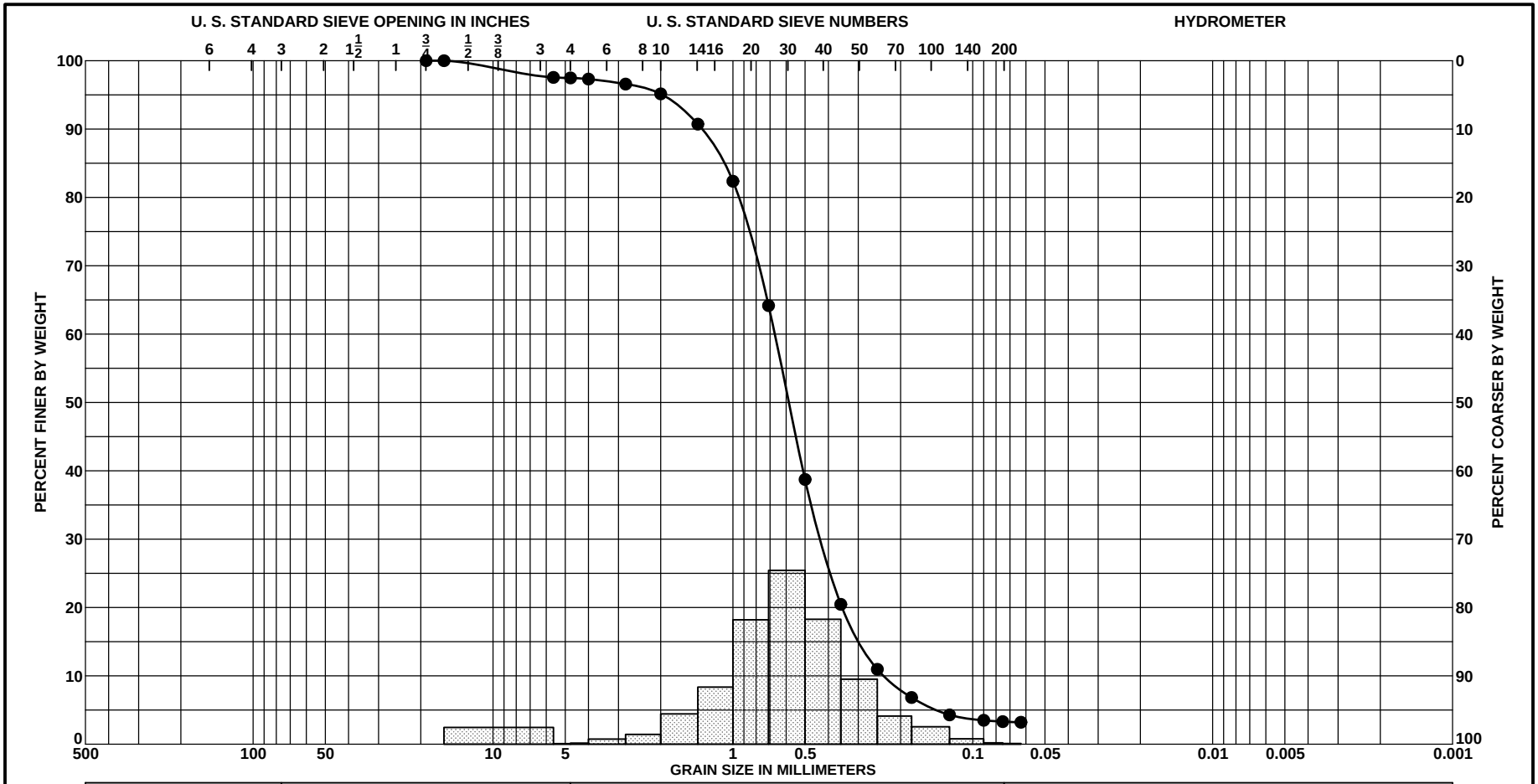


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, trace									
		silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-11
BORING ELEV.	-39.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

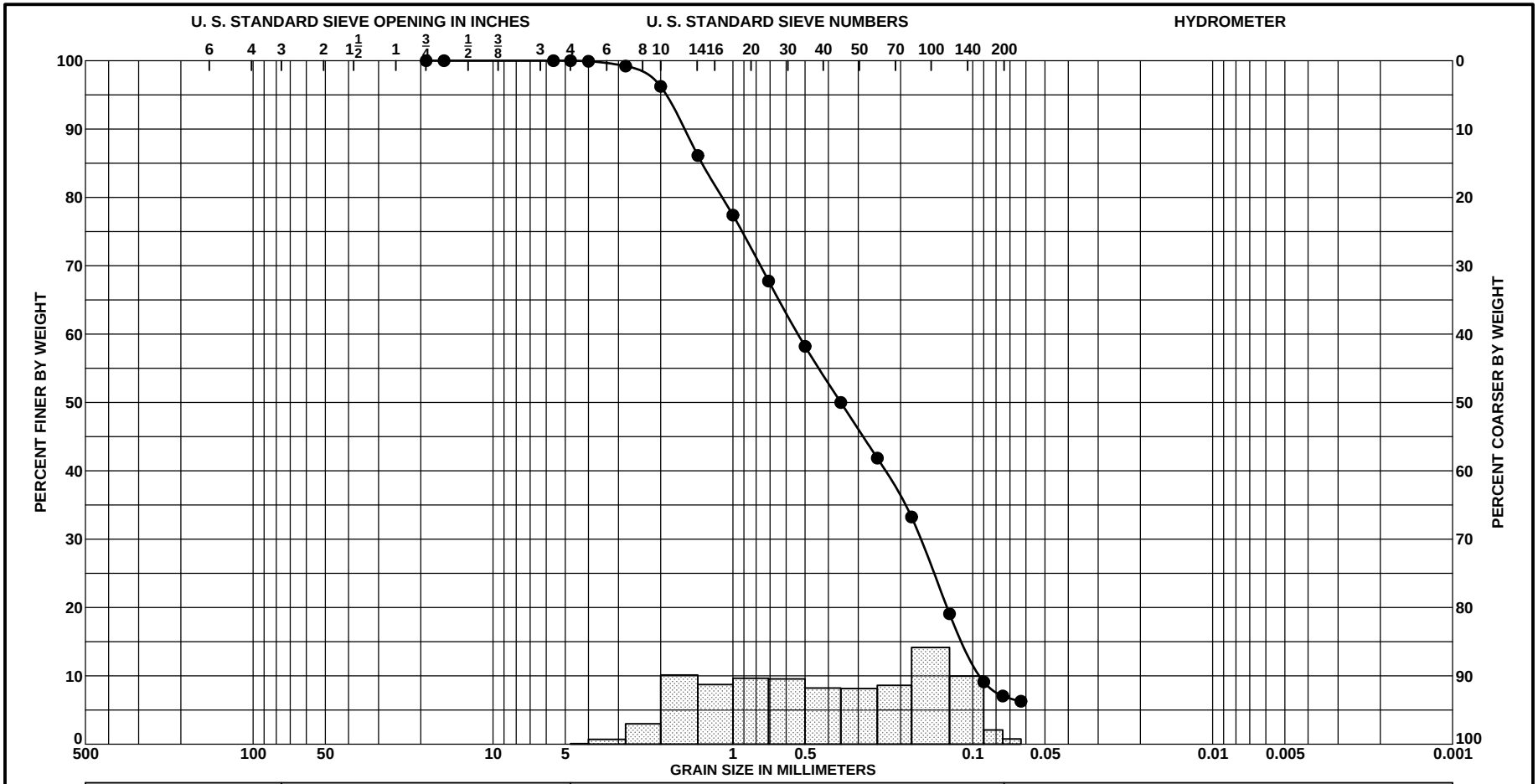


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2	99						
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-11
BORING ELEV.	-39.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

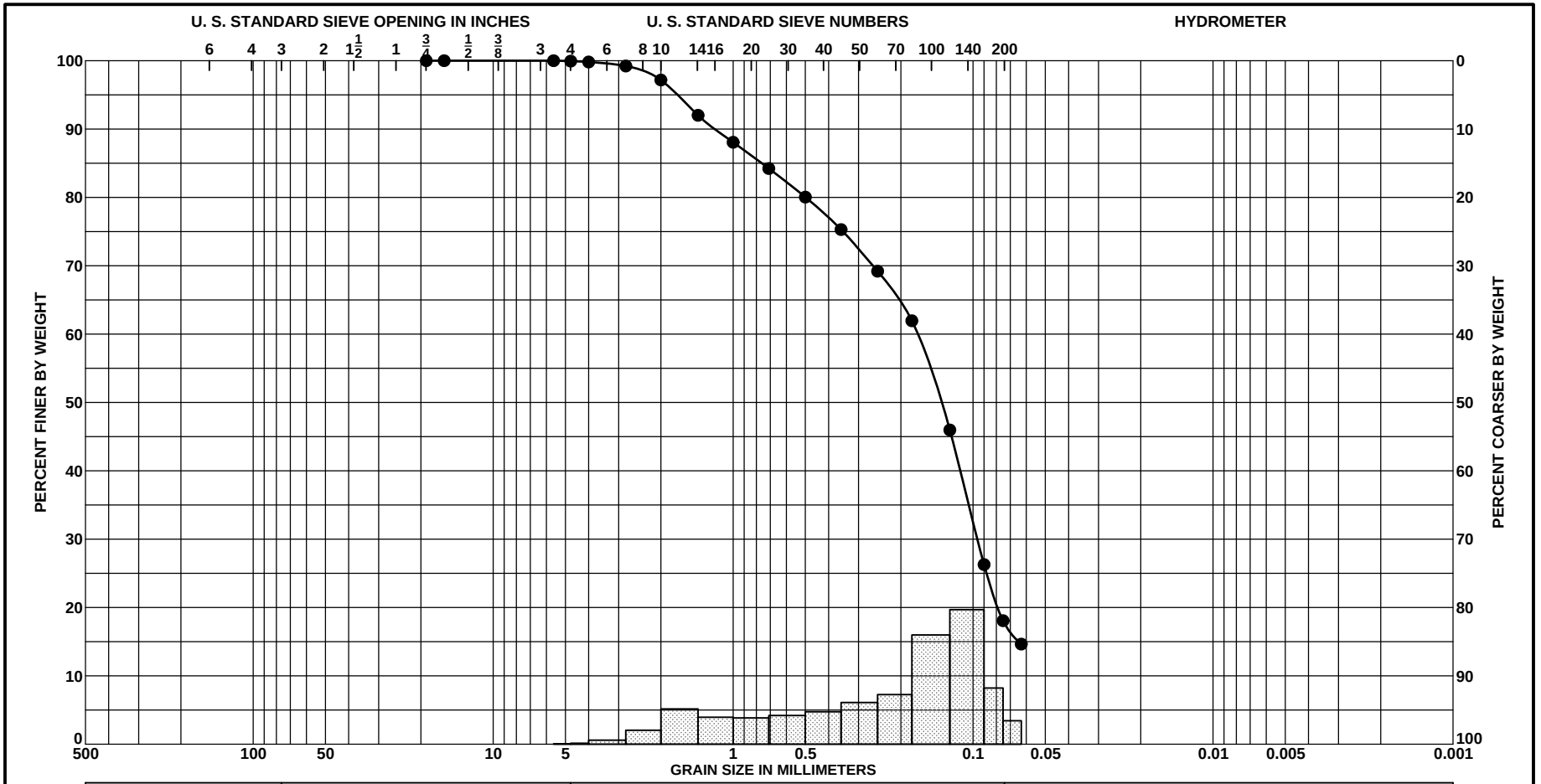


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	3							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-11
BORING ELEV.	-39.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

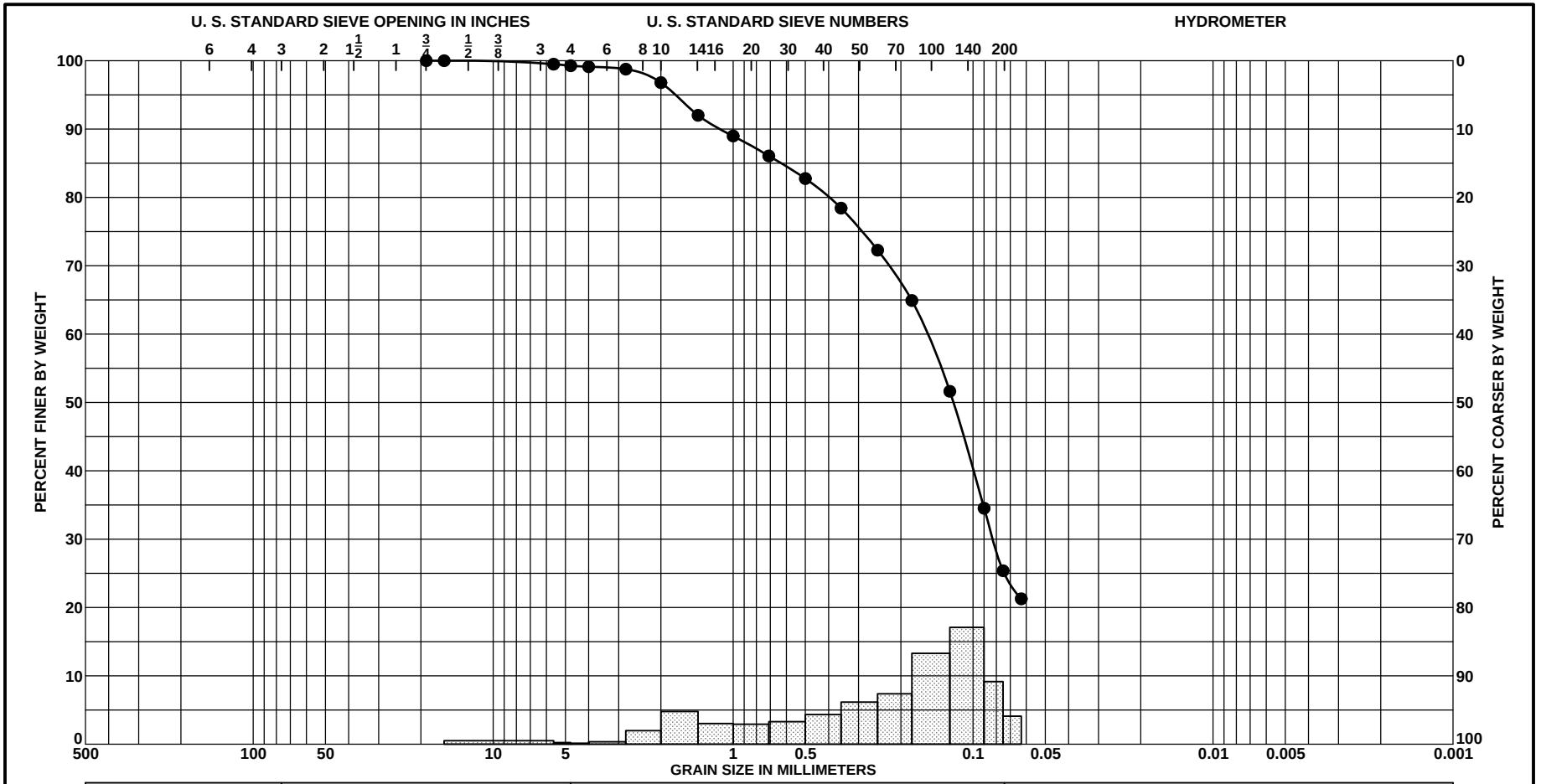


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	9.0 to 9.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/1	3							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-11
BORING ELEV.	-39.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

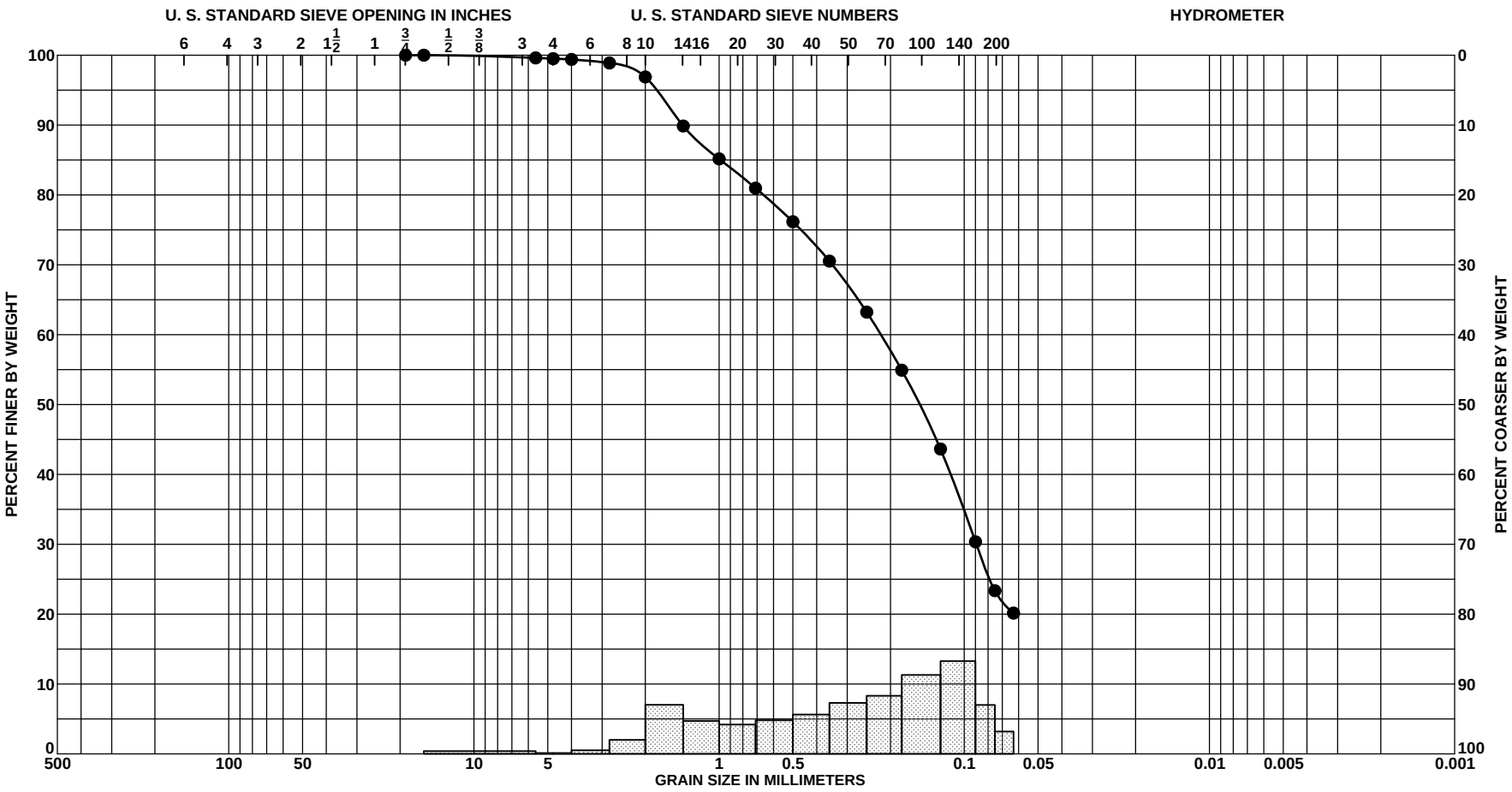


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	12.0 to 12.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	3							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-11
BORING ELEV.	-39.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

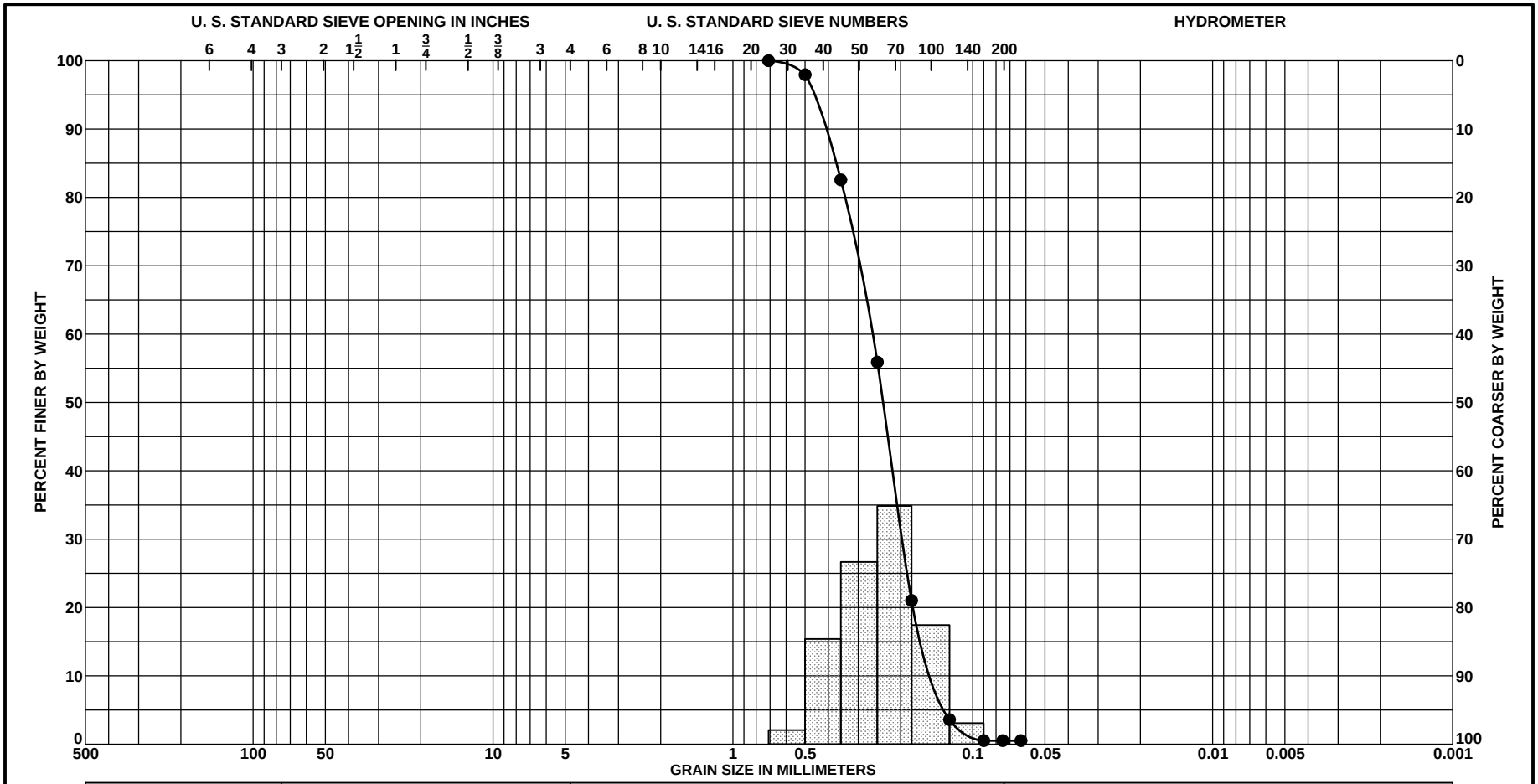


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	15.0 to 15.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	5							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-11
BORING ELEV.	-39.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-11
BORING ELEV.	-39.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-11 @ 1 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,657	496,672	State Plane, FLE (U.S. Ft.)	-40.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.87 #230 - 2.81			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.18	0.18
#4	-2.25	4.75	0.03	0.21
#5	-2.00	4.00	0.34	0.55
#7	-1.50	2.80	0.92	1.47
#10	-1.00	2.00	1.86	3.33
#14	-0.50	1.40	4.97	8.30
#18	0.00	1.00	7.75	16.06
#25	0.50	0.71	13.60	29.66
#35	1.00	0.50	23.91	53.57
#45	1.50	0.36	23.10	76.67
#60	2.00	0.25	11.98	88.65
#80	2.50	0.18	5.15	93.80
#120	3.00	0.13	2.46	96.26
#170	3.50	0.09	0.77	97.03
#200	3.75	0.08	0.10	97.13
#230	4.00	0.06	0.06	97.19

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.74	1.81	1.46	0.93	0.33	0.00	-0.83

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.84	0.56	0.93	0.52	0.94	-0.38	3.93

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-11 @ 3 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,657	496,672	State Plane, FLE (U.S. Ft.)	-42.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.30 #230 - 3.21		99.20	2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.44	2.44
#4	-2.25	4.75	0.08	2.52
#5	-2.00	4.00	0.17	2.69
#7	-1.50	2.80	0.74	3.42
#10	-1.00	2.00	1.43	4.85
#14	-0.50	1.40	4.43	9.28
#18	0.00	1.00	8.35	17.63
#25	0.50	0.71	18.20	35.83
#35	1.00	0.50	25.43	61.27
#45	1.50	0.36	18.27	79.54
#60	2.00	0.25	9.50	89.04
#80	2.50	0.18	4.13	93.17
#120	3.00	0.13	2.54	95.71
#170	3.50	0.09	0.79	96.50
#200	3.75	0.08	0.20	96.70
#230	4.00	0.06	0.09	96.79

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.86	1.73	1.38	0.78	0.20	-0.10	-0.98

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.68	0.62	0.78	0.58	1.09	-0.97	5.98

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-11 @ 6 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,657	496,672	State Plane, FLE (U.S. Ft.)	-45.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 7.05 #230 - 6.28			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.00	0.00
#5	-2.00	4.00	0.08	0.08
#7	-1.50	2.80	0.70	0.79
#10	-1.00	2.00	2.98	3.76
#14	-0.50	1.40	10.11	13.88
#18	0.00	1.00	8.72	22.59
#25	0.50	0.71	9.65	32.25
#35	1.00	0.50	9.55	41.79
#45	1.50	0.36	8.22	50.01
#60	2.00	0.25	8.13	58.14
#80	2.50	0.18	8.62	66.76
#120	3.00	0.13	14.16	80.92
#170	3.50	0.09	9.96	90.88
#200	3.75	0.08	2.07	92.95
#230	4.00	0.06	0.77	93.72

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.15	2.79	1.50	0.12	-0.38	-0.94

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.28	0.41	1.50	0.35	1.45	-0.11	1.8

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-11 @ 9 ft

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,657	496,672	State Plane, FLE (U.S. Ft.)	-48.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 18.07 #230 - 14.65			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.06	0.06
#5	-2.00	4.00	0.13	0.19
#7	-1.50	2.80	0.59	0.78
#10	-1.00	2.00	2.04	2.82
#14	-0.50	1.40	5.16	7.99
#18	0.00	1.00	3.95	11.94
#25	0.50	0.71	3.84	15.77
#35	1.00	0.50	4.19	19.96
#45	1.50	0.36	4.75	24.71
#60	2.00	0.25	6.09	30.80
#80	2.50	0.18	7.25	38.05
#120	3.00	0.13	15.98	54.03
#170	3.50	0.09	19.69	73.72
#200	3.75	0.08	8.21	81.93
#230	4.00	0.06	3.42	85.35

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.90	3.54	2.87	1.52	0.53	-0.79

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.10	0.23	2.87	0.14	1.48	-0.91	2.67

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-11 @ 12 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,657	496,672	State Plane, FLE (U.S. Ft.)	-51.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 25.37 #230 - 21.27			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.51	0.51
#4	-2.25	4.75	0.23	0.74
#5	-2.00	4.00	0.15	0.88
#7	-1.50	2.80	0.36	1.24
#10	-1.00	2.00	1.97	3.21
#14	-0.50	1.40	4.78	7.99
#18	0.00	1.00	3.03	11.02
#25	0.50	0.71	2.92	13.94
#35	1.00	0.50	3.30	17.24
#45	1.50	0.36	4.33	21.57
#60	2.00	0.25	6.16	27.72
#80	2.50	0.18	7.36	35.09
#120	3.00	0.13	13.28	48.37
#170	3.50	0.09	17.11	65.48
#200	3.75	0.08	9.15	74.63
#230	4.00	0.06	4.10	78.73

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.77	3.05	1.78	0.81	-0.81

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.12	0.23	3.05	0.12	1.54	-1.08	3.34

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-11 @ 15 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,657	496,672	State Plane, FLE (U.S. Ft.)	-54.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 23.35 #230 - 20.15			5

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.39	0.39
#4	-2.25	4.75	0.11	0.50
#5	-2.00	4.00	0.11	0.61
#7	-1.50	2.80	0.51	1.11
#10	-1.00	2.00	2.00	3.12
#14	-0.50	1.40	7.02	10.14
#18	0.00	1.00	4.70	14.84
#25	0.50	0.71	4.20	19.04
#35	1.00	0.50	4.80	23.83
#45	1.50	0.36	5.64	29.47
#60	2.00	0.25	7.30	36.77
#80	2.50	0.18	8.31	45.08
#120	3.00	0.13	11.29	56.37
#170	3.50	0.09	13.28	69.65
#200	3.75	0.08	7.00	76.65
#230	4.00	0.06	3.20	79.85

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.69	2.72	1.10	0.14	-0.87

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.80	0.29	2.72	0.15	1.57	-0.64	2.4

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-11 @ 3 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,657	496,672	State Plane, FLE (U.S. Ft.)	-42.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.51 #230 - 0.51			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#25	0.50	0.71	0.00	0.00
#35	1.00	0.50	2.05	2.05
#45	1.50	0.36	15.38	17.44
#60	2.00	0.25	26.67	44.10
#80	2.50	0.18	34.87	78.97
#120	3.00	0.13	17.44	96.41
#170	3.50	0.09	3.08	99.49
#200	3.75	0.08	0.00	99.49
#230	4.00	0.06	0.00	99.49

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.96	2.64	2.44	2.08	1.64	1.45	1.10

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.05	0.24	2.08	0.24	0.55	-0.09	2.53

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–11
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–11
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–11
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–11
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–11
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–11
DEPTH :12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–11
DEPTH :15.0 –17.3
15'
16'
17'

VB-DA20-12

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-12

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-12	LOCATION COORDINATES: X = 955,646 Y = 497,244	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 4 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-24-20 / COMPLETED: 06-24-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -42.6 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 86 %	
8. TOTAL DEPTH OF BORING: 15.2 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-42.6	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 5Y 8/2 pale yellow (SW)				-44.6		
					1				
-46.6	4.0						-46.6		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 8/2 pale yellow (SW-SM)		2		-48.6		
					3				
							-50.6		
					4				
-52.0	9.4		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone, little fine-grained sand-sized carbonate, few silt, moist, 5Y 8/1 white						
-55.6	13.0		No Recovery						

0 5 10 15

(Continued)

Boring Designation VB-DA20-12

DRILLING LOG (Cont. Sheet)	INSTALLATION	SHEET 2 OF 2 SHEETS
	Jacksonville, FL	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
SAD-SAND	State Plane, FLE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 955,646 Y = 497,244	-42.6 Ft.

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
~~-57.8~~	~~15.2~~		BORING TERMINATED IN REFUSAL				~~-57.8~~		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

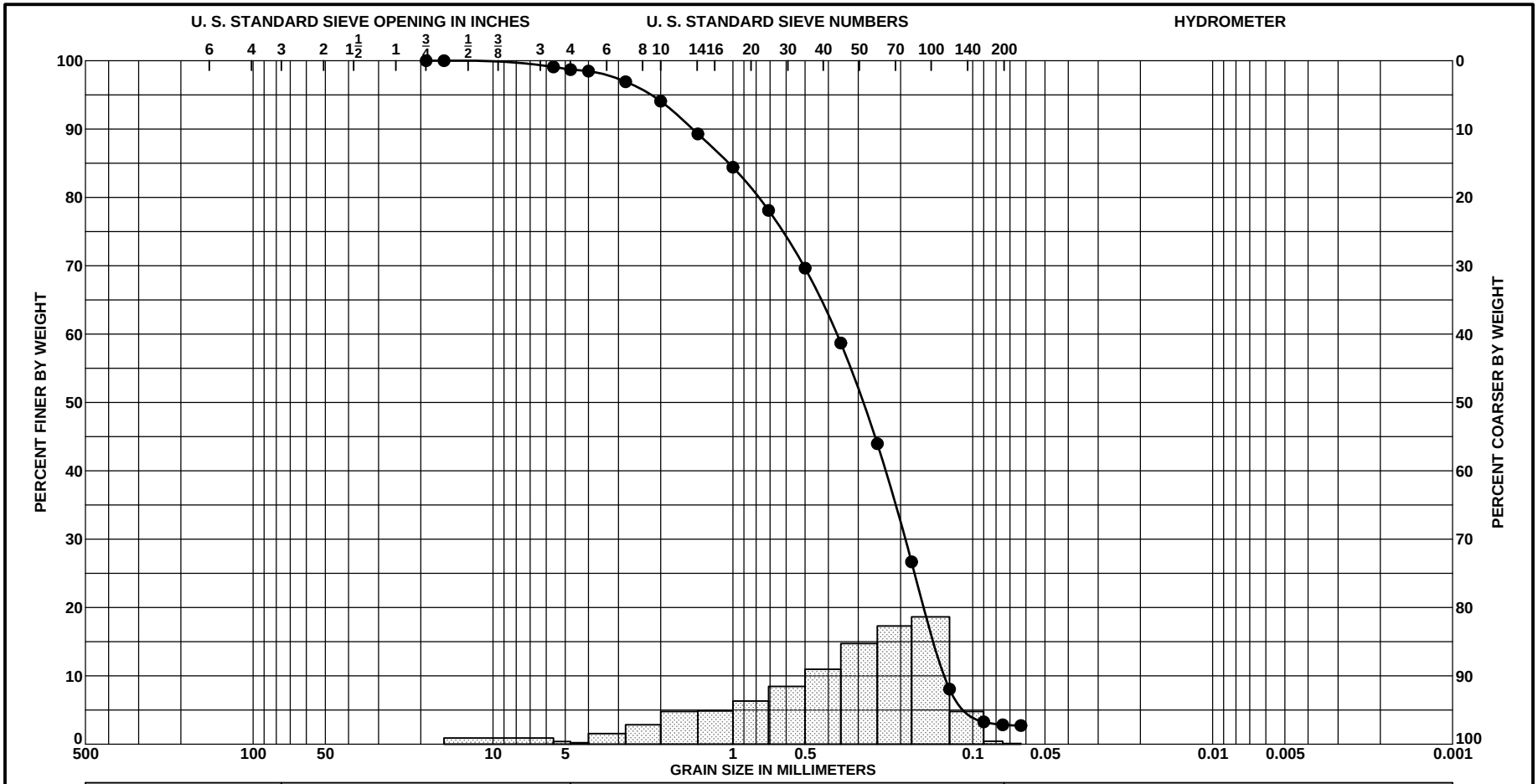
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW-SM*
3	6.0/6.2	SW-SM*
4	8.0/8.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

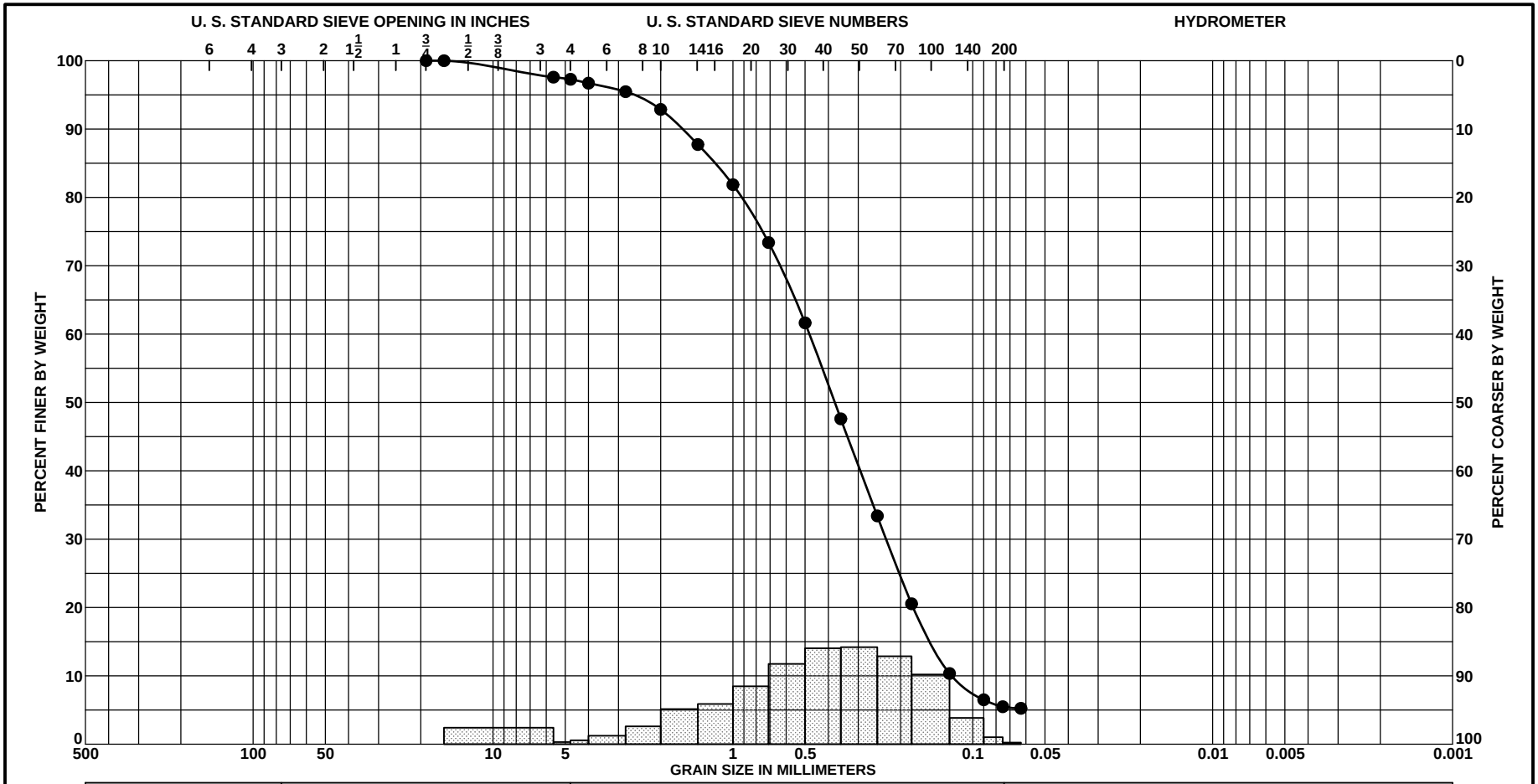


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-12
BORING ELEV.	-42.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

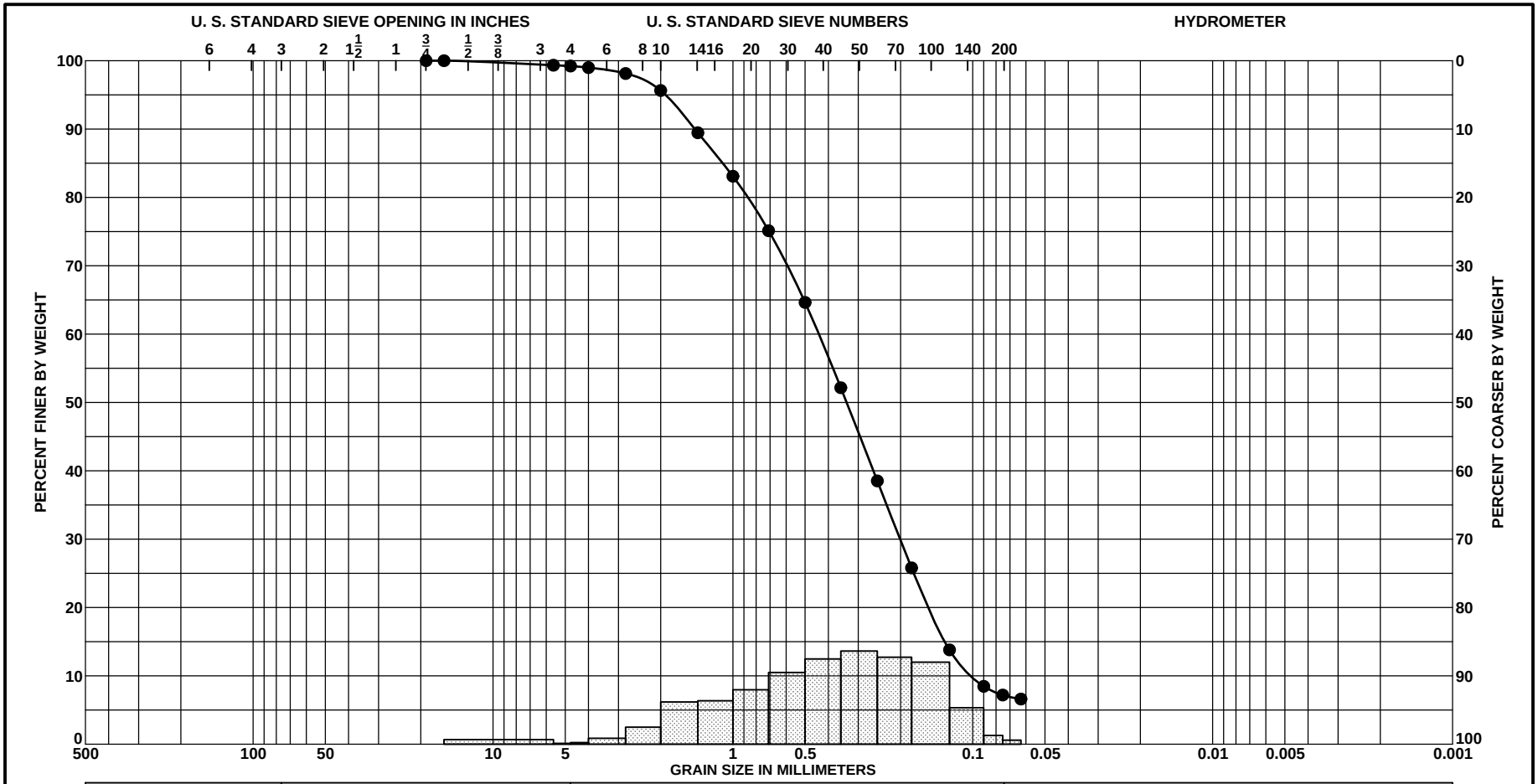


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	2							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-12
BORING ELEV.	-42.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

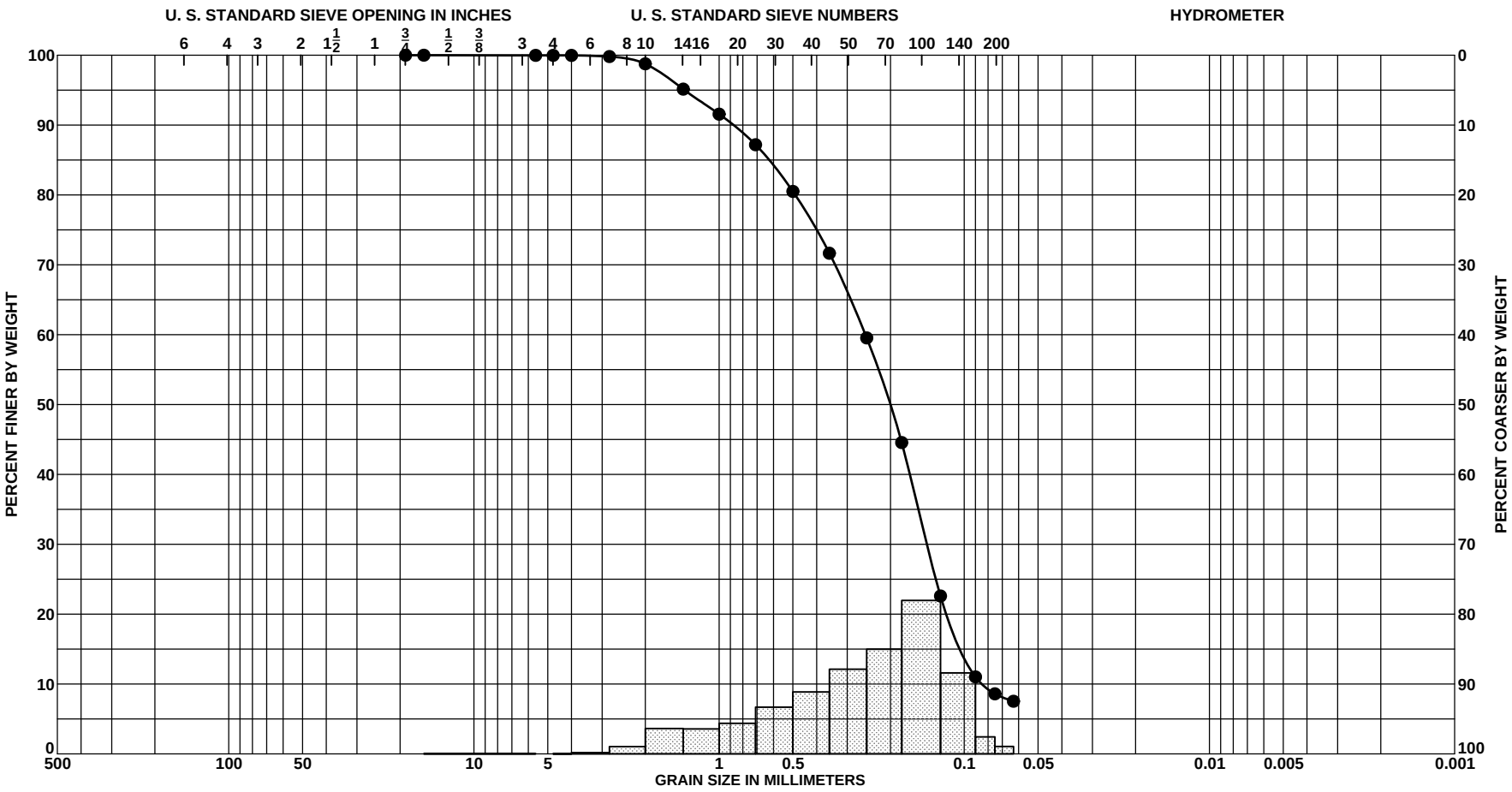


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-12
BORING ELEV.	-42.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-12
BORING ELEV.	-42.6 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-12 @ 2 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,646	497,244	State Plane, FLE (U.S. Ft.)	-44.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.83 #230 - 2.73			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.91	0.91
#4	-2.25	4.75	0.39	1.31
#5	-2.00	4.00	0.22	1.52
#7	-1.50	2.80	1.56	3.08
#10	-1.00	2.00	2.84	5.92
#14	-0.50	1.40	4.79	10.71
#18	0.00	1.00	4.87	15.59
#25	0.50	0.71	6.32	21.90
#35	1.00	0.50	8.45	30.35
#45	1.50	0.36	10.95	41.30
#60	2.00	0.25	14.73	56.03
#80	2.50	0.18	17.29	73.32
#120	3.00	0.13	18.62	91.95
#170	3.50	0.09	4.79	96.74
#200	3.75	0.08	0.43	97.17
#230	4.00	0.06	0.10	97.27

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.32	2.79	2.55	1.80	0.68	0.03	-1.16

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.43	0.37	1.80	0.29	1.35	-0.95	3.54

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-12 @ 4 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,646	497,244	State Plane, FLE (U.S. Ft.)	-46.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 5.48 #230 - 5.25			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.41	2.41
#4	-2.25	4.75	0.31	2.72
#5	-2.00	4.00	0.57	3.29
#7	-1.50	2.80	1.24	4.53
#10	-1.00	2.00	2.60	7.13
#14	-0.50	1.40	5.13	12.26
#18	0.00	1.00	5.87	18.14
#25	0.50	0.71	8.47	26.61
#35	1.00	0.50	11.75	38.36
#45	1.50	0.36	14.04	52.40
#60	2.00	0.25	14.20	66.60
#80	2.50	0.18	12.86	79.46
#120	3.00	0.13	10.20	89.66
#170	3.50	0.09	3.85	93.51
#200	3.75	0.08	1.01	94.52
#230	4.00	0.06	0.24	94.75

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.72	2.33	1.41	0.40	-0.18	-1.41

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.13	0.46	1.41	0.38	1.43	-0.85	3.78

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-12 @ 6 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,646	497,244	State Plane, FLE (U.S. Ft.)	-48.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 7.19 #230 - 6.61			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.66	0.66
#4	-2.25	4.75	0.12	0.78
#5	-2.00	4.00	0.23	1.01
#7	-1.50	2.80	0.86	1.87
#10	-1.00	2.00	2.49	4.36
#14	-0.50	1.40	6.18	10.54
#18	0.00	1.00	6.36	16.90
#25	0.50	0.71	7.97	24.87
#35	1.00	0.50	10.50	35.37
#45	1.50	0.36	12.48	47.84
#60	2.00	0.25	13.63	61.48
#80	2.50	0.18	12.73	74.20
#120	3.00	0.13	12.00	86.20
#170	3.50	0.09	5.34	91.53
#200	3.75	0.08	1.27	92.81
#230	4.00	0.06	0.59	93.39

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.91	2.53	1.58	0.51	-0.07	-0.95

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.30	0.41	1.58	0.33	1.33	-0.53	2.97

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-12 @ 8 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,646	497,244	State Plane, FLE (U.S. Ft.)	-50.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 8.59 #230 - 7.53			1

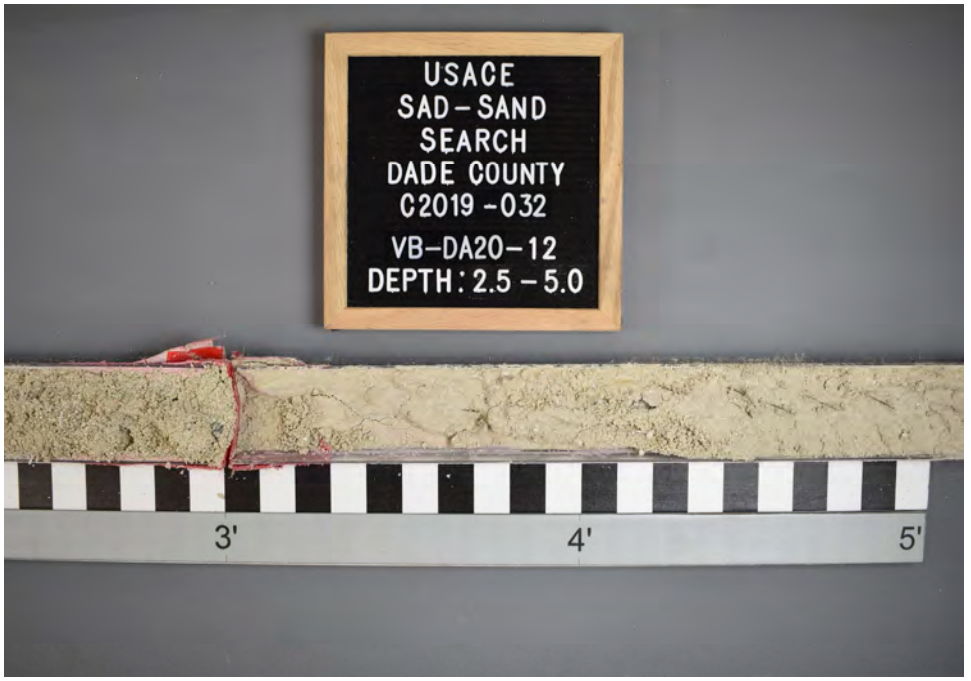
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.02	0.02
#4	-2.25	4.75	0.00	0.02
#5	-2.00	4.00	0.01	0.03
#7	-1.50	2.80	0.17	0.19
#10	-1.00	2.00	1.04	1.23
#14	-0.50	1.40	3.62	4.86
#18	0.00	1.00	3.58	8.44
#25	0.50	0.71	4.38	12.81
#35	1.00	0.50	6.68	19.49
#45	1.50	0.36	8.86	28.35
#60	2.00	0.25	12.12	40.47
#80	2.50	0.18	14.97	55.44
#120	3.00	0.13	21.96	77.40
#170	3.50	0.09	11.58	88.98
#200	3.75	0.08	2.42	91.41
#230	4.00	0.06	1.06	92.47

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.28	2.95	2.32	1.31	0.74	-0.48

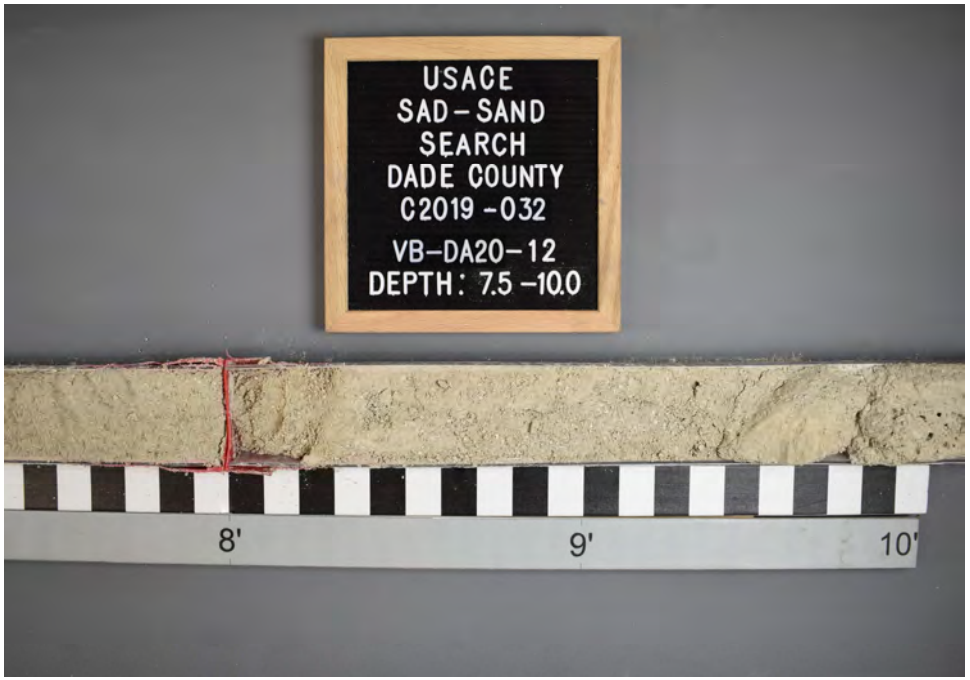
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.92	0.26	2.32	0.20	1.19	-0.81	2.99

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–12
DEPTH: 0.0 – 2.5
0'
1'
2'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–12
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–12
DEPTH: 5.0 – 7.5
5'
6'
7'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–12
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–12
DEPTH : 10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–12
DEPTH : 12.5 –13.0
13'
14'
15'

VB-DA20-13

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-13

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-13 — LOCATION COORDINATES: X = 954,846 Y = 497,708
3. DRILLING AGENCY: Amdrill — CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: —
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 20.0 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore — ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 6 — UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-24-20 — COMPLETED: 06-24-20
16. ELEVATION TOP OF BORING: -38.5 Ft.
17. TOTAL RECOVERY FOR BORING: 98 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-38.5	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, moist, 5Y 8/2 pale yellow (SW)				-40.5		
					1				
							-43.5		
					2				
-46.5	8.0						-46.5		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 8/1 white (SW-SM)		3				
-48.1	9.6								
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 5Y 8/1 white (SM)				-49.5		
					4				
							-52.5		
					5				

0 5 10 15

(Continued)

Boring Designation VB-DA20-13

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 954,846 Y = 497,708	ELEVATION TOP OF BORING: -38.5 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
							-55.5	
					6			
-58.1	19.6							
-58.5	20.0		No Recovery				-58.5	

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

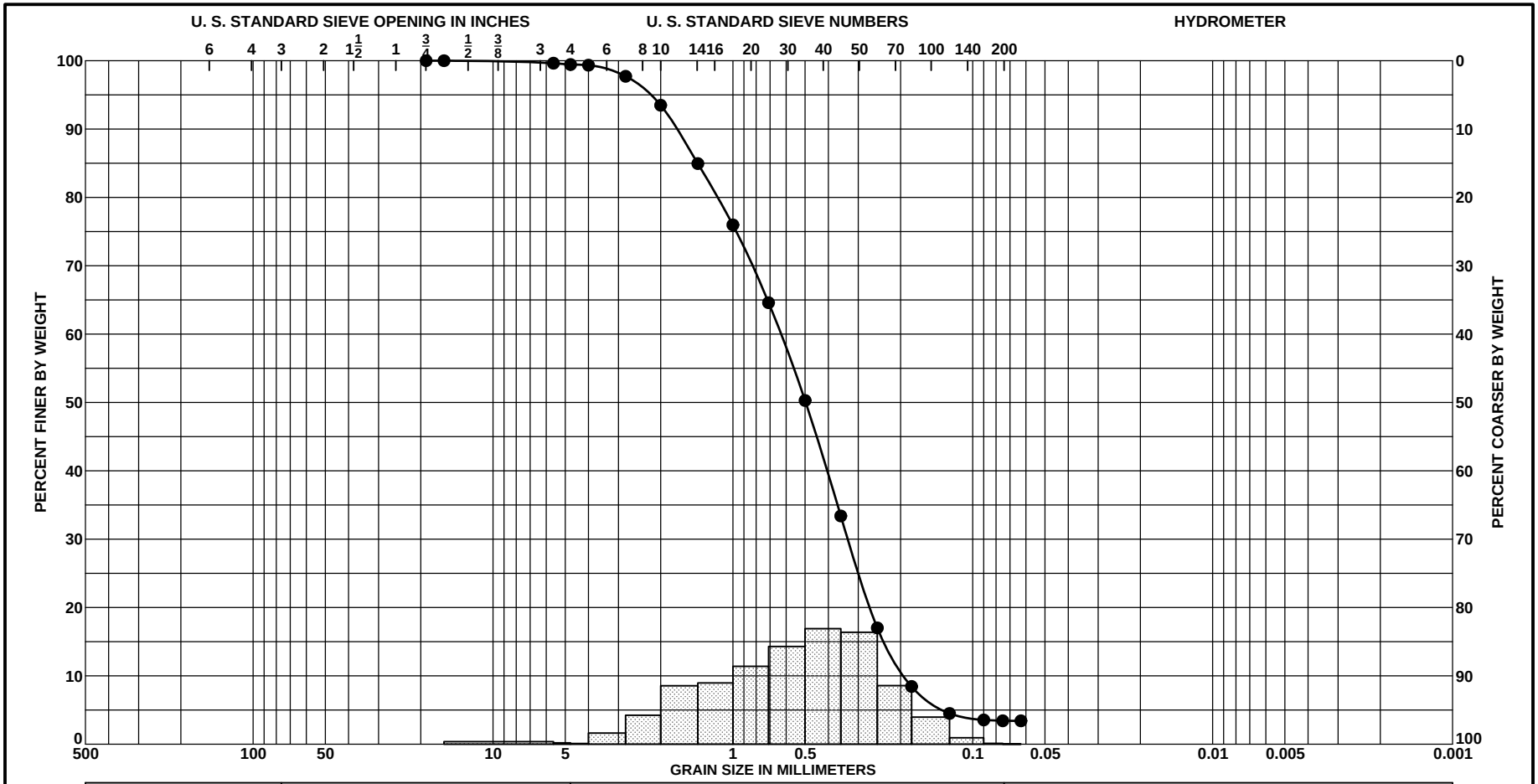
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	5.0/5.2	SW*
3	8.0/8.2	SW-SM*
4	11.0/11.2	SM*
5	14.0/14.2	SM*
6	17.0/17.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1	99						
		medium-grained sand-sized									
		carbonate, trace									
		silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-13
BORING ELEV.	-38.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
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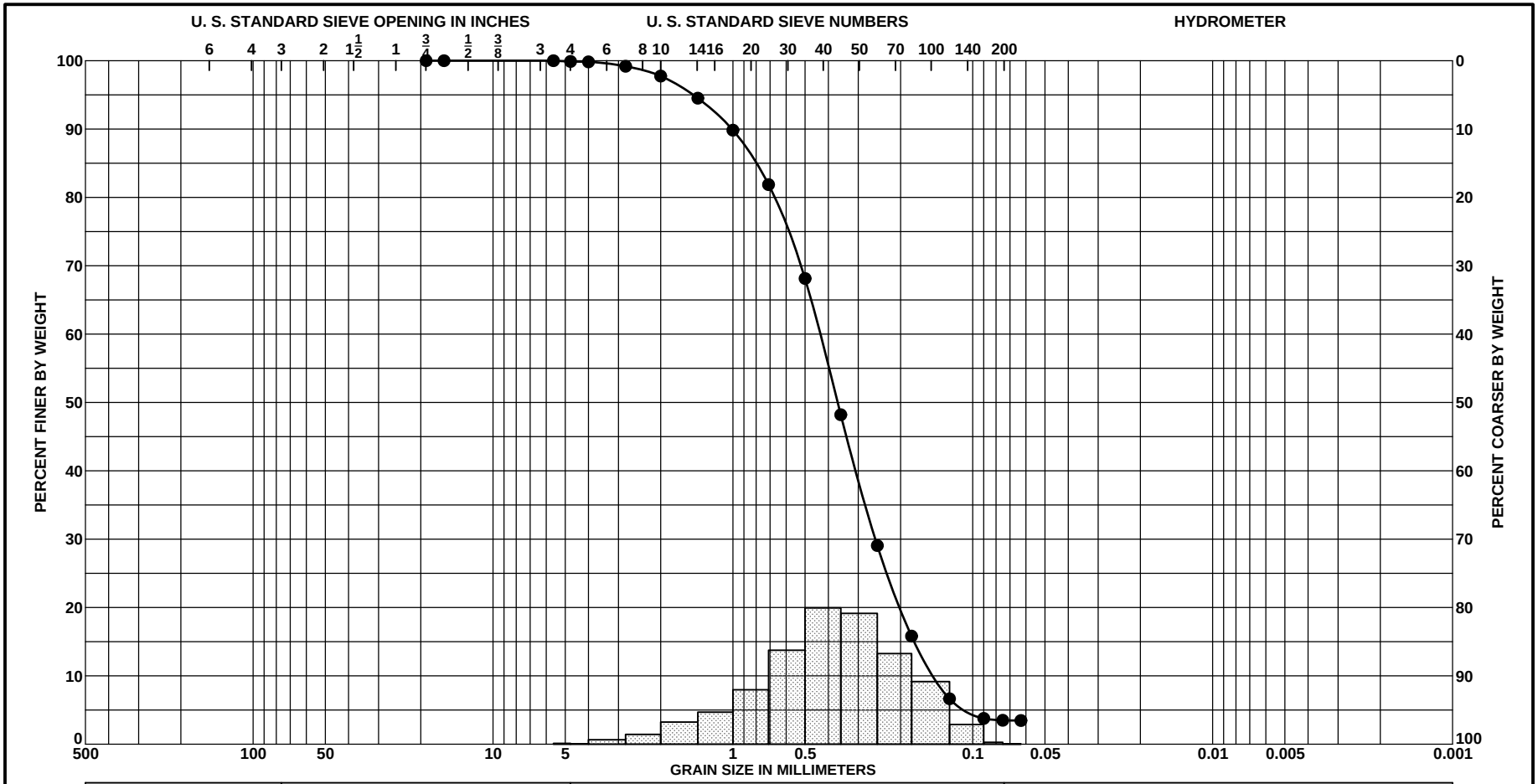
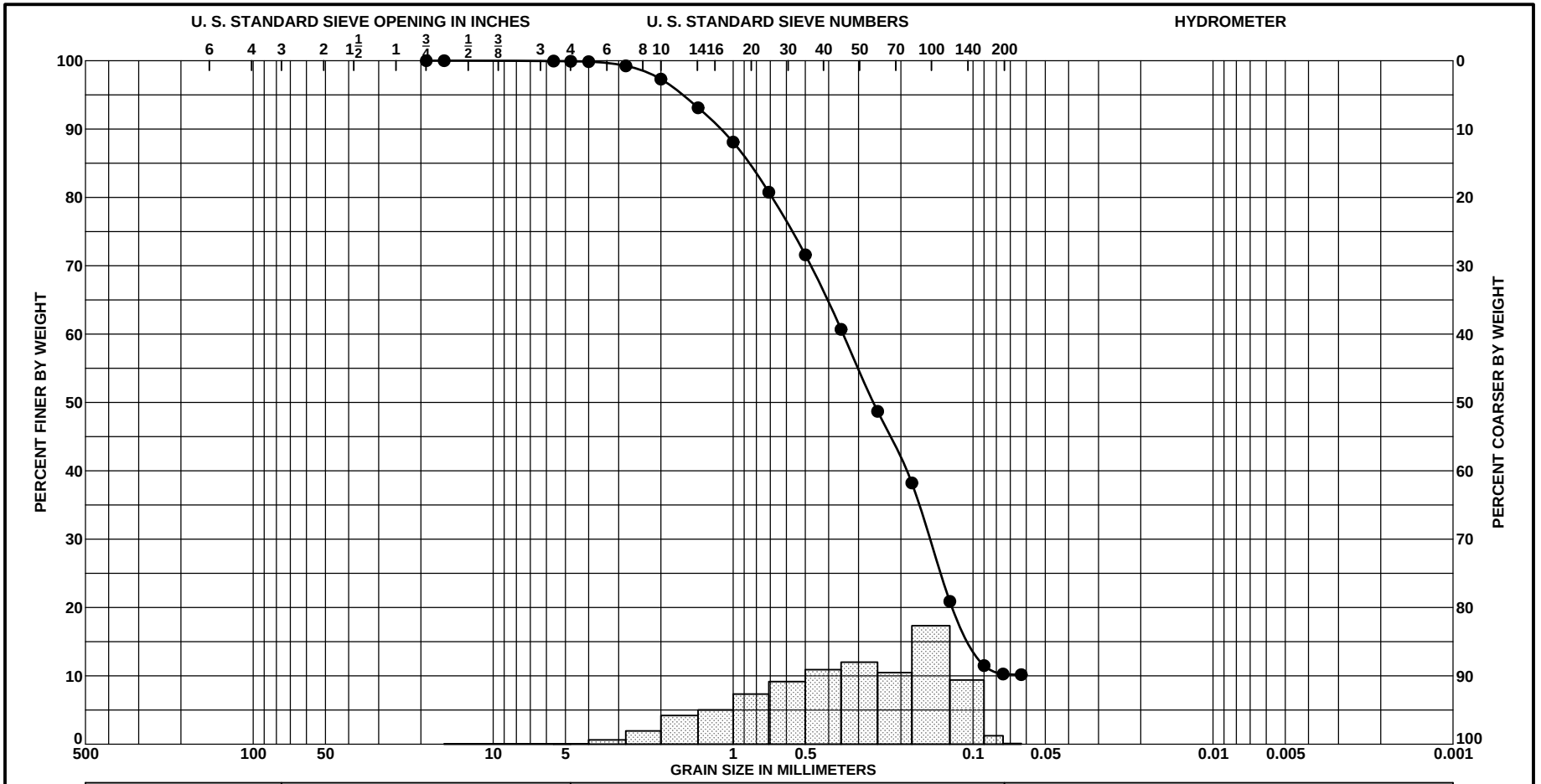


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-13
BORING ELEV.	-38.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

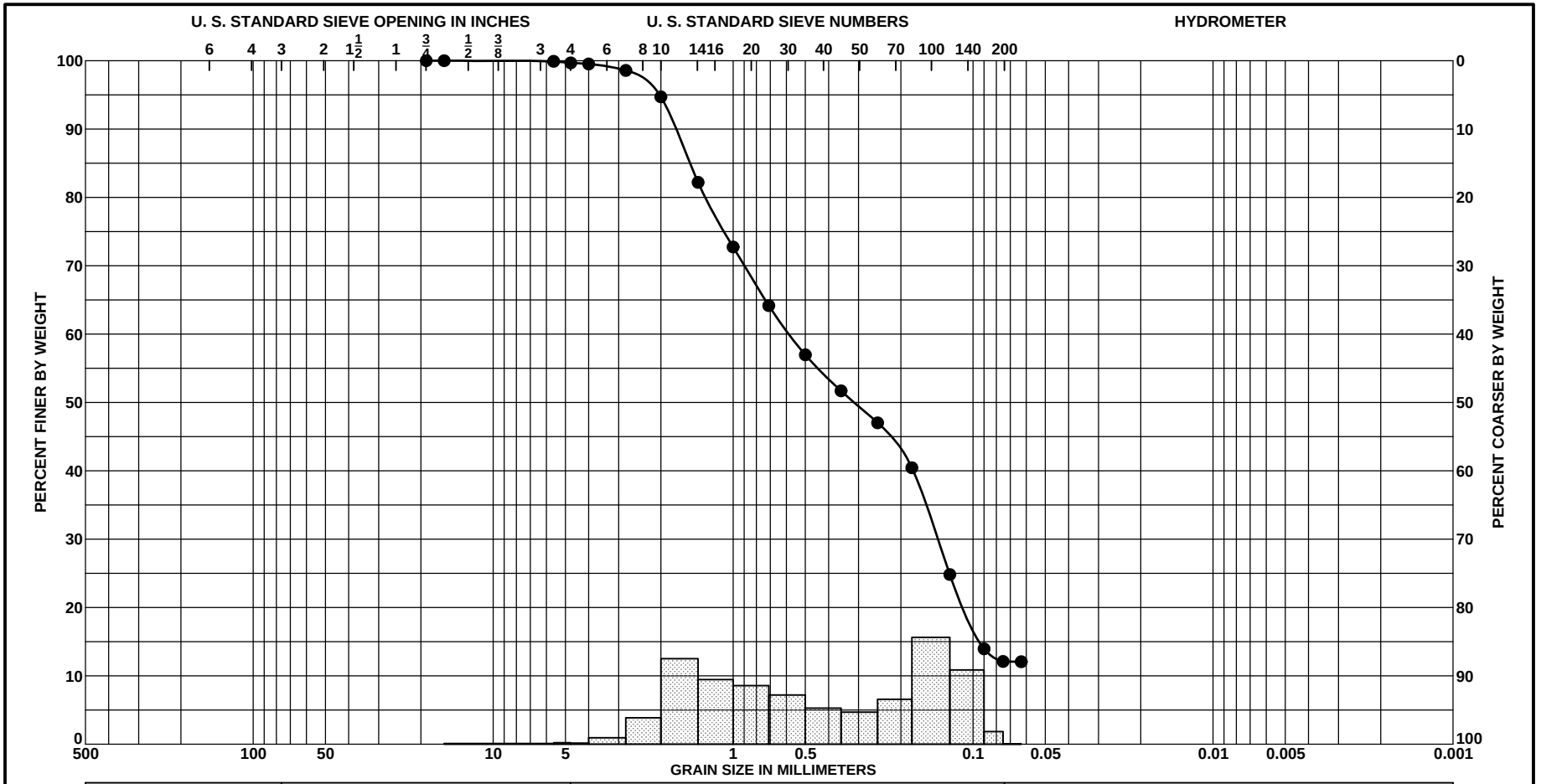


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	8.0 to 8.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, white (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-13
BORING ELEV.	-38.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

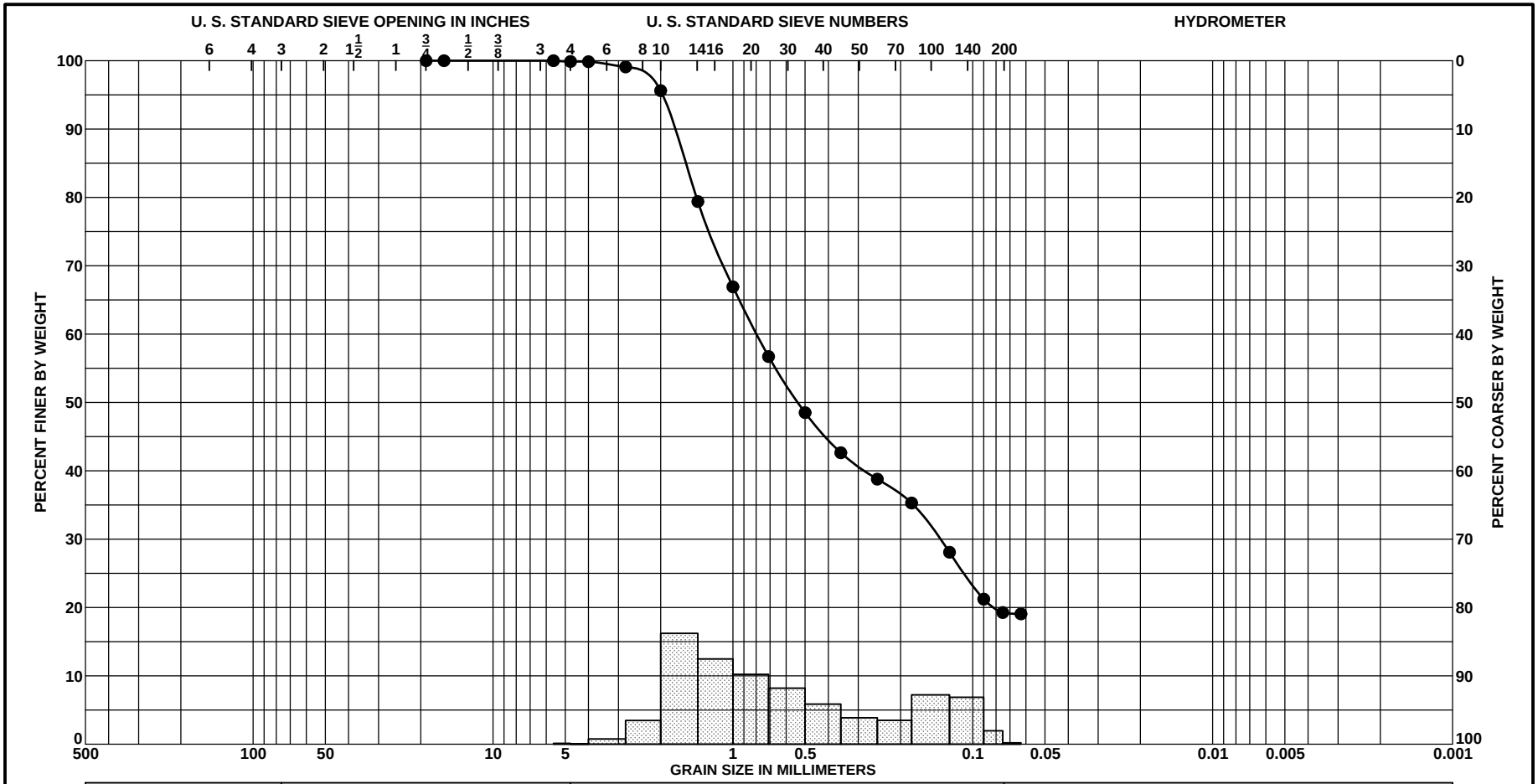


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	11.0 to 11.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	3							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-13
BORING ELEV.	-38.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	14.0 to 14.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	5							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-13
BORING ELEV.	-38.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
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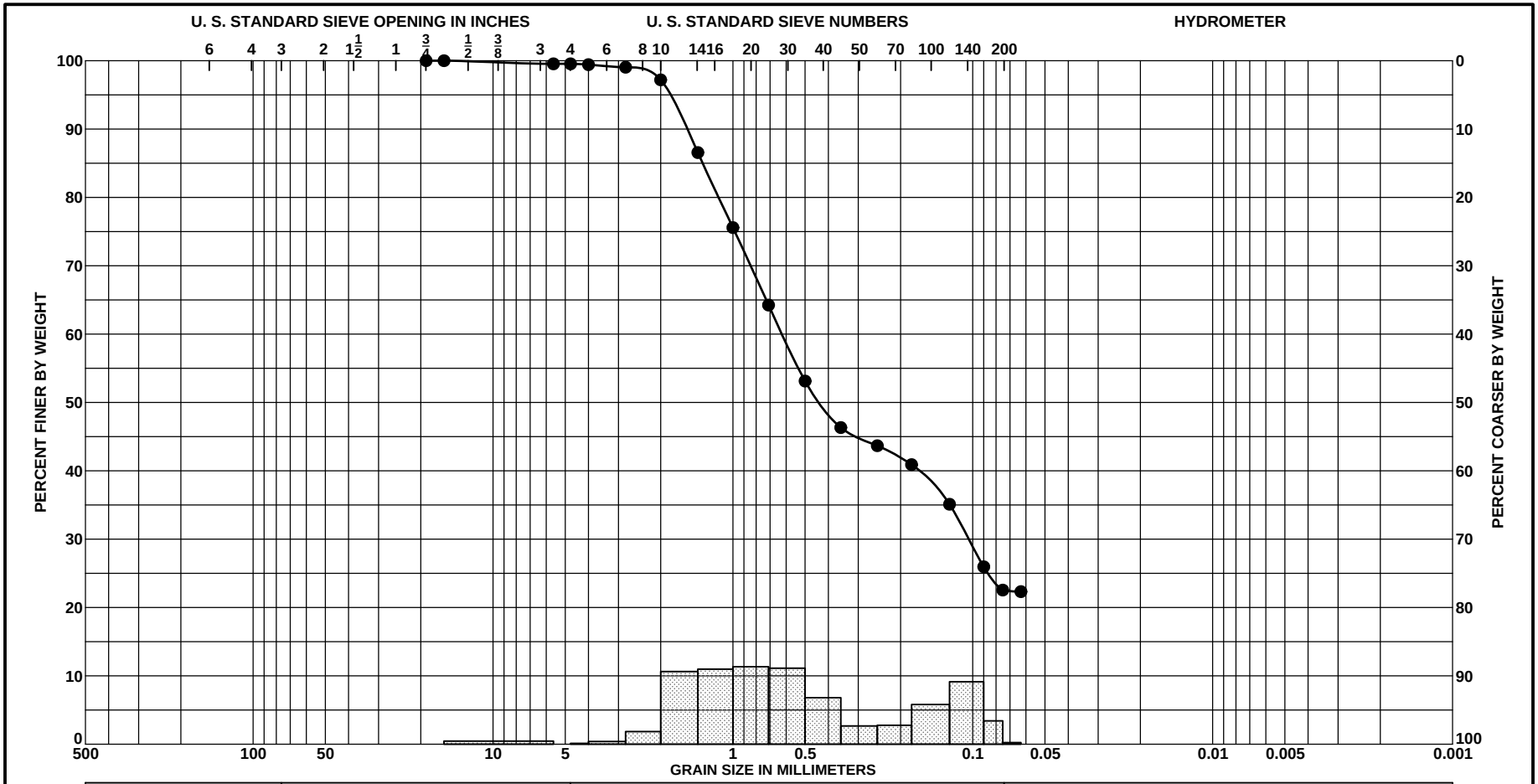
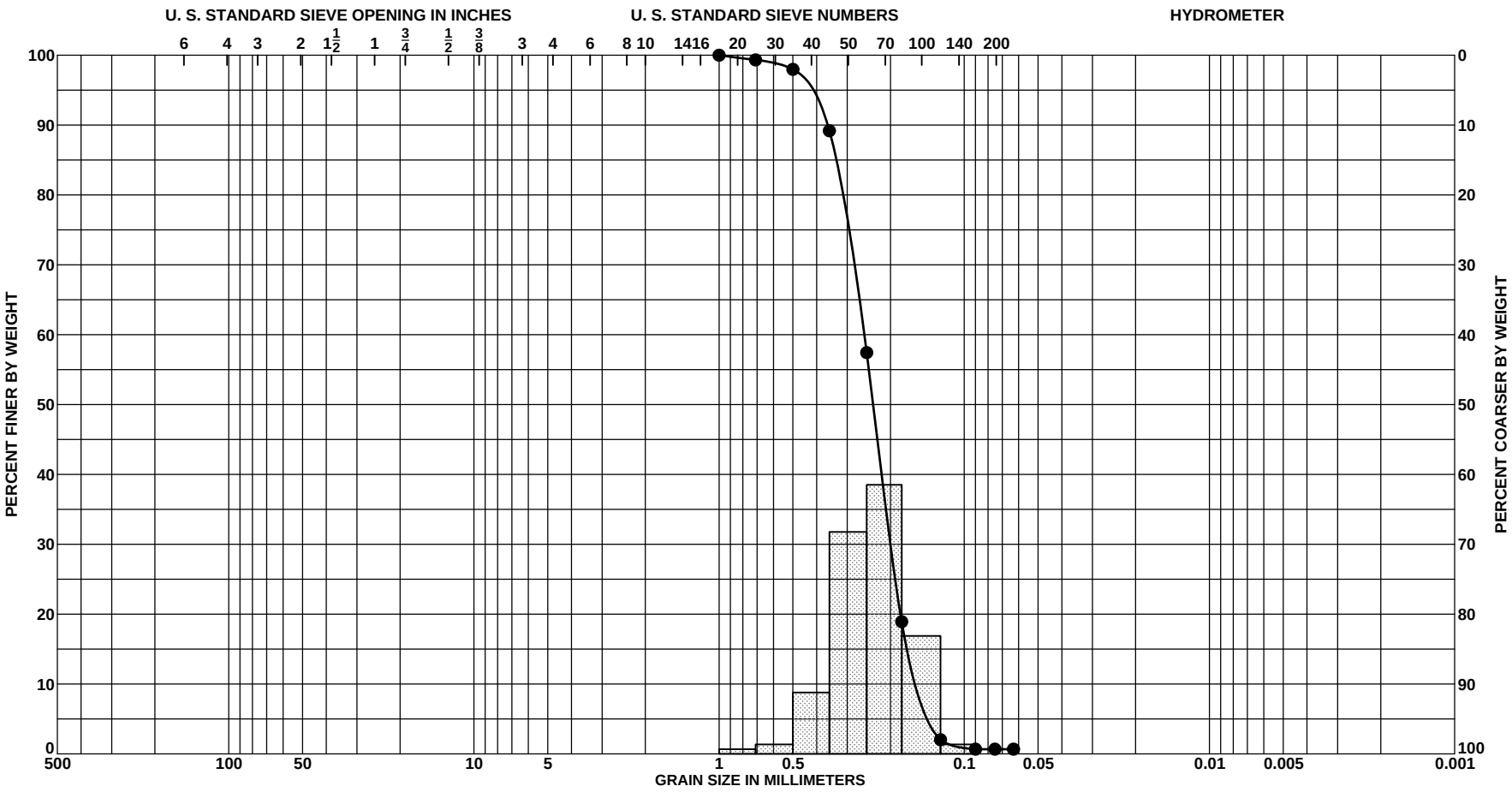


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	17.0 to 17.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	5							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-13
BORING ELEV.	-38.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-13
BORING ELEV.	-38.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-13 @ 2 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,846	497,708	State Plane, FLE (U.S. Ft.)	-40.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.43 #230 - 3.41		98.80	1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.37	0.37
#4	-2.25	4.75	0.20	0.56
#5	-2.00	4.00	0.09	0.66
#7	-1.50	2.80	1.62	2.28
#10	-1.00	2.00	4.24	6.51
#14	-0.50	1.40	8.54	15.05
#18	0.00	1.00	8.97	24.02
#25	0.50	0.71	11.39	35.41
#35	1.00	0.50	14.30	49.71
#45	1.50	0.36	16.90	66.61
#60	2.00	0.25	16.38	82.99
#80	2.50	0.18	8.57	91.55
#120	3.00	0.13	3.95	95.51
#170	3.50	0.09	0.95	96.45
#200	3.75	0.08	0.12	96.57
#230	4.00	0.06	0.01	96.59

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.94	2.06	1.76	1.01	0.04	-0.45	-1.18

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.81	0.57	1.01	0.50	1.16	-0.38	2.81

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-13 @ 5 ft

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,846	497,708	State Plane, FLE (U.S. Ft.)	-43.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.50 #230 - 3.46			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.11	0.11
#5	-2.00	4.00	0.06	0.17
#7	-1.50	2.80	0.64	0.81
#10	-1.00	2.00	1.43	2.25
#14	-0.50	1.40	3.24	5.49
#18	0.00	1.00	4.68	10.16
#25	0.50	0.71	7.96	18.13
#35	1.00	0.50	13.74	31.86
#45	1.50	0.36	19.94	51.80
#60	2.00	0.25	19.14	70.94
#80	2.50	0.18	13.25	84.19
#120	3.00	0.13	9.16	93.35
#170	3.50	0.09	2.87	96.23
#200	3.75	0.08	0.27	96.50
#230	4.00	0.06	0.03	96.54

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.29	2.49	2.15	1.45	0.75	0.37	-0.58

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.34	0.40	1.45	0.37	1.03	-0.49	3.19

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-13 @ 8 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,846	497,708	State Plane, FLE (U.S. Ft.)	-46.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/1	#200 - 10.27 #230 - 10.18			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.05	0.05
#4	-2.25	4.75	0.03	0.09
#5	-2.00	4.00	0.05	0.14
#7	-1.50	2.80	0.62	0.76
#10	-1.00	2.00	1.94	2.69
#14	-0.50	1.40	4.19	6.89
#18	0.00	1.00	5.03	11.91
#25	0.50	0.71	7.33	19.24
#35	1.00	0.50	9.16	28.41
#45	1.50	0.36	10.90	39.31
#60	2.00	0.25	11.99	51.30
#80	2.50	0.18	10.48	61.78
#120	3.00	0.13	17.33	79.11
#170	3.50	0.09	9.39	88.50
#200	3.75	0.08	1.24	89.73
#230	4.00	0.06	0.09	89.82

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.26	2.88	1.95	0.81	0.28	-0.72

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.58	0.33	1.95	0.26	1.27	-0.52	2.48

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-13 @ 11 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,846	497,708	State Plane, FLE (U.S. Ft.)	-49.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 12.11 #230 - 12.06			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.09	0.09
#4	-2.25	4.75	0.22	0.32
#5	-2.00	4.00	0.16	0.47
#7	-1.50	2.80	0.95	1.42
#10	-1.00	2.00	3.87	5.29
#14	-0.50	1.40	12.50	17.80
#18	0.00	1.00	9.46	27.26
#25	0.50	0.71	8.58	35.83
#35	1.00	0.50	7.20	43.04
#45	1.50	0.36	5.26	48.30
#60	2.00	0.25	4.68	52.98
#80	2.50	0.18	6.57	59.56
#120	3.00	0.13	15.62	75.18
#170	3.50	0.09	10.87	86.04
#200	3.75	0.08	1.85	87.89
#230	4.00	0.06	0.04	87.94

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.41	2.99	1.68	-0.12	-0.57	-1.04

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.17	0.44	1.68	0.31	1.57	-0.08	1.65

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-13 @ 14 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,846	497,708	State Plane, FLE (U.S. Ft.)	-52.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 19.26 #230 - 19.07			5

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.12	0.12
#5	-2.00	4.00	0.02	0.14
#7	-1.50	2.80	0.76	0.91
#10	-1.00	2.00	3.48	4.38
#14	-0.50	1.40	16.22	20.61
#18	0.00	1.00	12.48	33.08
#25	0.50	0.71	10.21	43.29
#35	1.00	0.50	8.20	51.49
#45	1.50	0.36	5.87	57.36
#60	2.00	0.25	3.86	61.22
#80	2.50	0.18	3.49	64.72
#120	3.00	0.13	7.21	71.92
#170	3.50	0.09	6.85	78.78
#200	3.75	0.08	1.96	80.74
#230	4.00	0.06	0.19	80.93

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.22	0.91	-0.32	-0.64	-0.98

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.73	0.60	0.91	0.53	1.47	0.51	2.02

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-13 @ 17 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,846	497,708	State Plane, FLE (U.S. Ft.)	-55.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 22.55 #230 - 22.32			5

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.46	0.46
#4	-2.25	4.75	0.00	0.46
#5	-2.00	4.00	0.11	0.57
#7	-1.50	2.80	0.38	0.96
#10	-1.00	2.00	1.84	2.80
#14	-0.50	1.40	10.63	13.43
#18	0.00	1.00	10.99	24.42
#25	0.50	0.71	11.33	35.75
#35	1.00	0.50	11.11	46.87
#45	1.50	0.36	6.80	53.67
#60	2.00	0.25	2.66	56.33
#80	2.50	0.18	2.76	59.10
#120	3.00	0.13	5.80	64.90
#170	3.50	0.09	9.14	74.04
#200	3.75	0.08	3.41	77.45
#230	4.00	0.06	0.23	77.68

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.57	1.23	0.03	-0.38	-0.90

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.95	0.52	1.23	0.43	1.5	0.32	2.17

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-13 @ 2 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,846	497,708	State Plane, FLE (U.S. Ft.)	-40.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.68 #230 - 0.68			

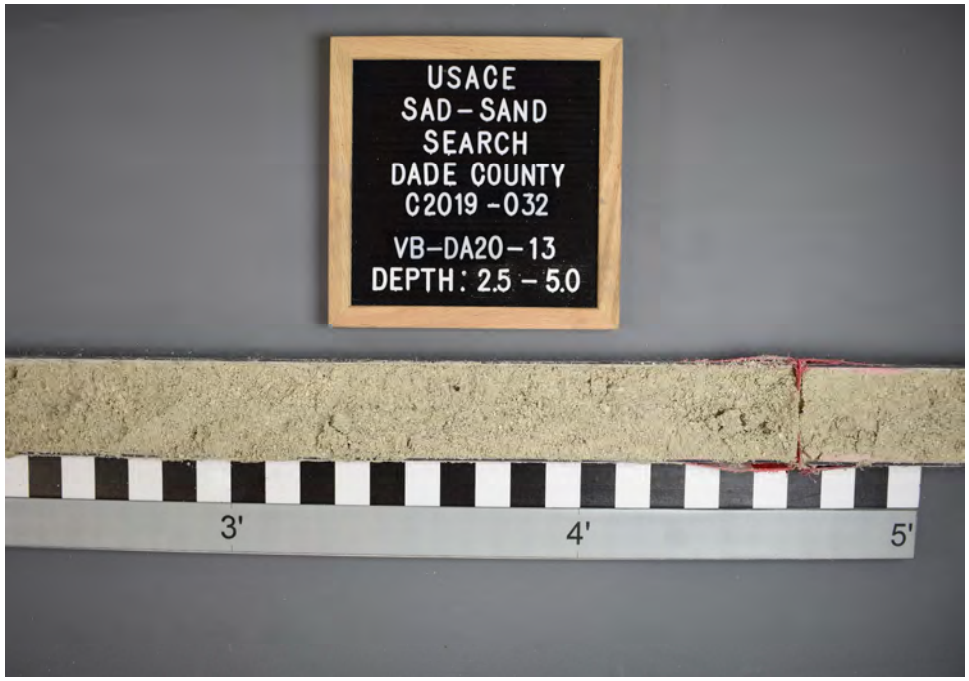
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#18	0.00	1.00	0.00	0.00
#25	0.50	0.71	0.68	0.68
#35	1.00	0.50	1.35	2.03
#45	1.50	0.36	8.78	10.81
#60	2.00	0.25	31.76	42.57
#80	2.50	0.18	38.51	81.08
#120	3.00	0.13	16.89	97.97
#170	3.50	0.09	1.35	99.32
#200	3.75	0.08	0.00	99.32
#230	4.00	0.06	0.00	99.32

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.91	2.59	2.42	2.10	1.72	1.58	1.17

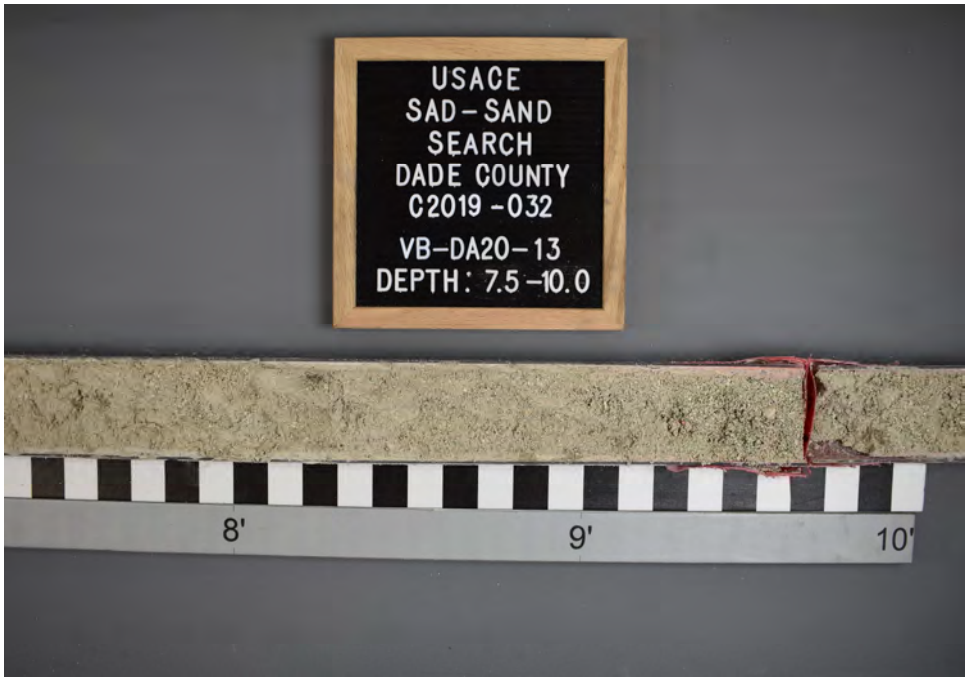
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.07	0.24	2.10	0.23	0.5	-0.41	3.59

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

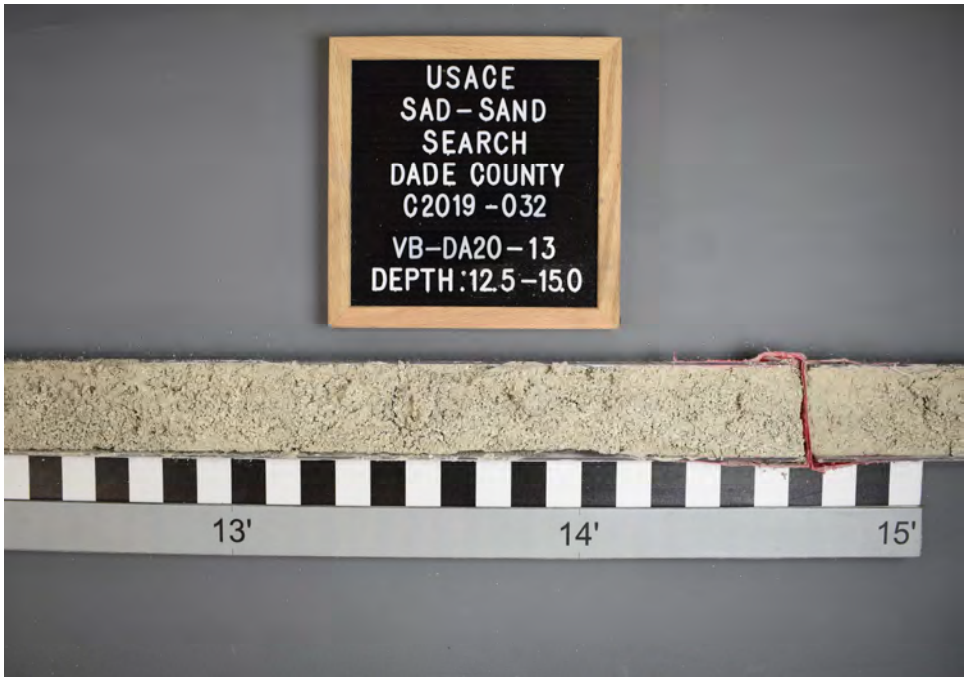
USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–13
DEPTH: 0.0 – 2.5
0'
1'
2'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–13
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–13
DEPTH: 5.0 – 7.5
5'
6'
7'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–13
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 13
DEPTH : 10.0 – 12.5
10'
11'
12'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 13
DEPTH : 12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 13
DEPTH : 15.0 – 17.5
15'
16'
17'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 13
DEPTH : 17.5 – 19.6
18'
19'
20'

VB-DA20-14

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-14

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-14	LOCATION COORDINATES: X = 949,496 Y = 499,623	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 4 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-24-20 / COMPLETED: 06-24-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -19.3 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 81 %	
8. TOTAL DEPTH OF BORING: 10.8 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-19.3	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 5Y 8/2 pale yellow (SW)				-21.3		
					1		-23.3		
					2		-25.3		
					3		-27.3		
-26.3	7.0								
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 8/2 pale yellow (SW-SM)						
-27.5	8.2				4				
-28.0	8.7		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone, little fine-grained sand-sized carbonate, little silt, moist, 5Y 8/1 white						
			No Recovery						
-30.1	10.8						-30.1		
			BORING TERMINATED IN REFUSAL				Abbreviations:		
			NOTES:						
			1. Taylor Engineering is the custodian for these original files.						
			2. Soils are field visually classified in accordance with the Unified Soils Classification System.						
			3. Laboratory Testing Results						
			SAMPLE SAMPLE LABORATORY						

0 5 10 15

(Continued)

Boring Designation VB-DA20-14

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 949,496 Y = 499,623	ELEVATION TOP OF BORING: -19.3 Ft.	

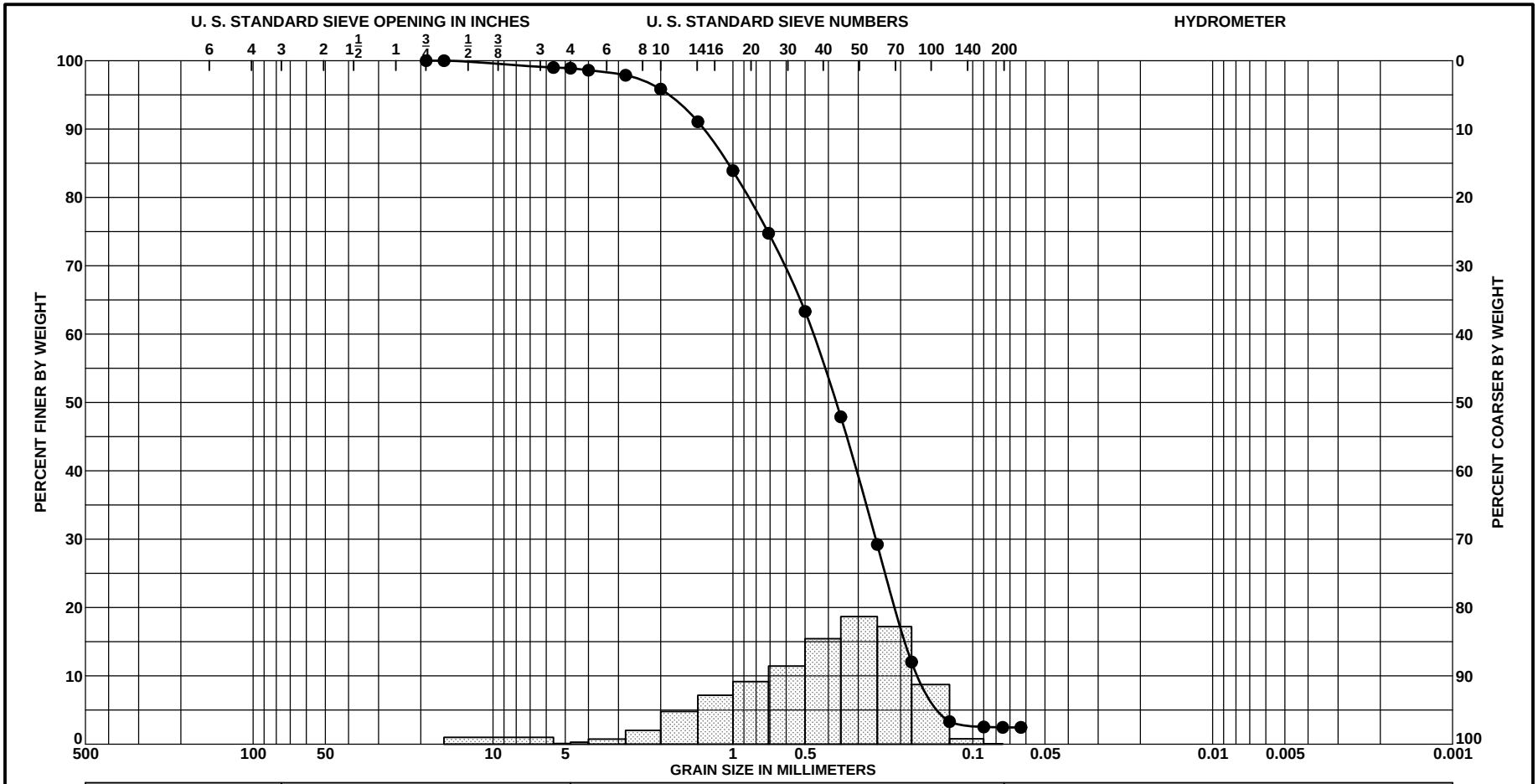
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE

ID	DEPTH	CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW*
3	6.0/6.2	SW*
4	8.0/8.2	SW-SM*

*Lab visual classification based on gradation curve

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

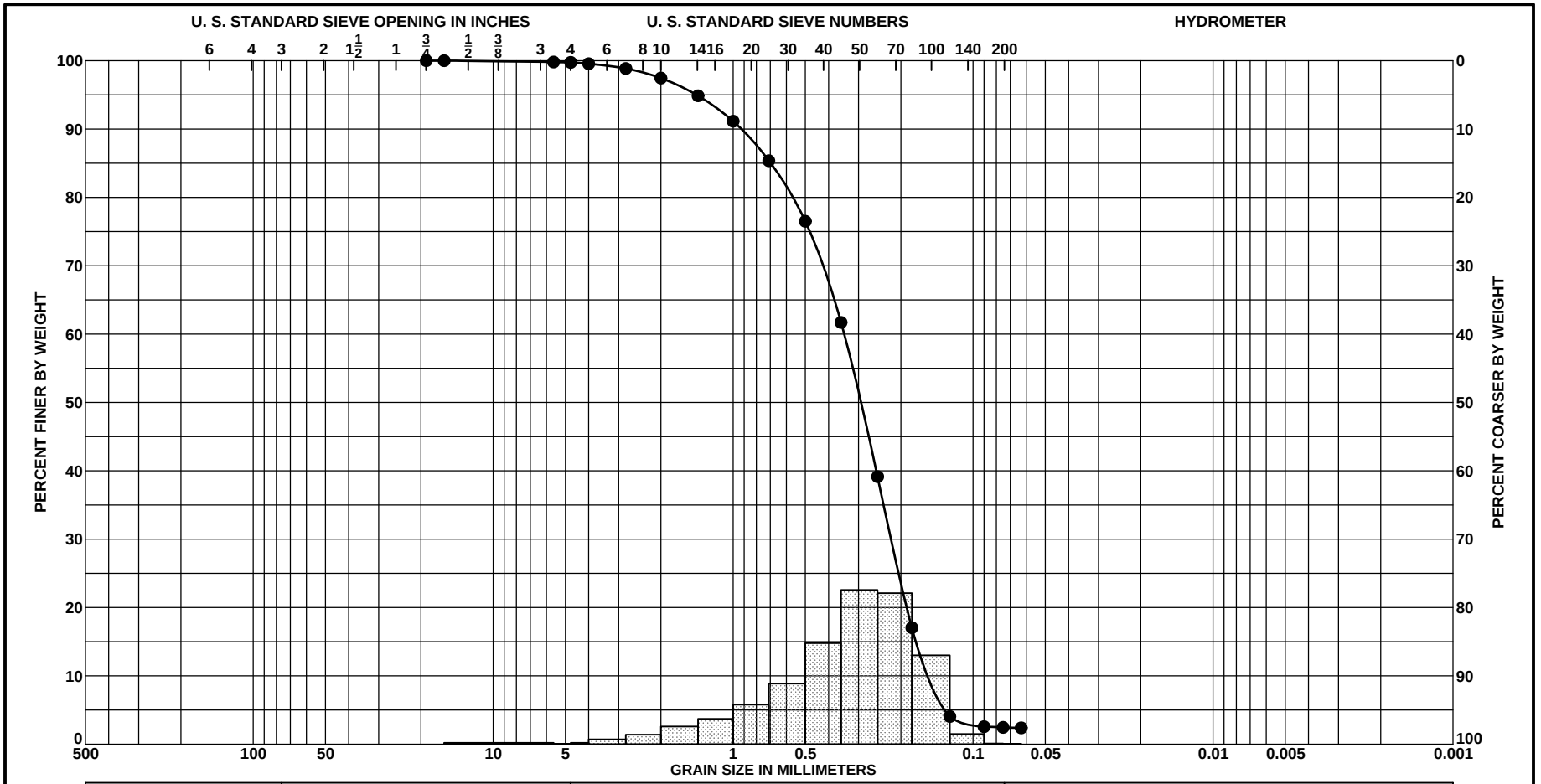


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2	97						
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-14
BORING ELEV.	-19.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

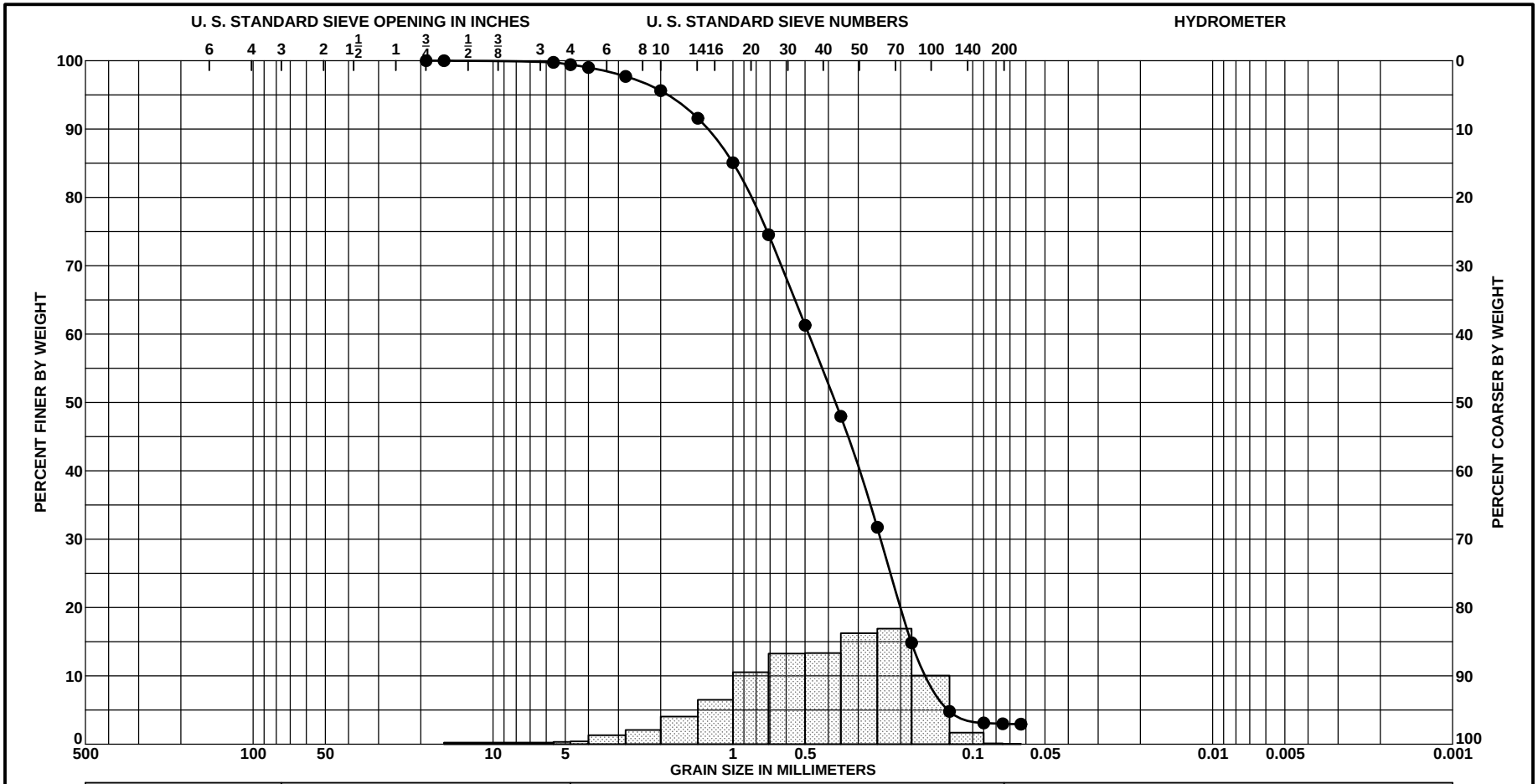


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-14
BORING ELEV.	-19.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

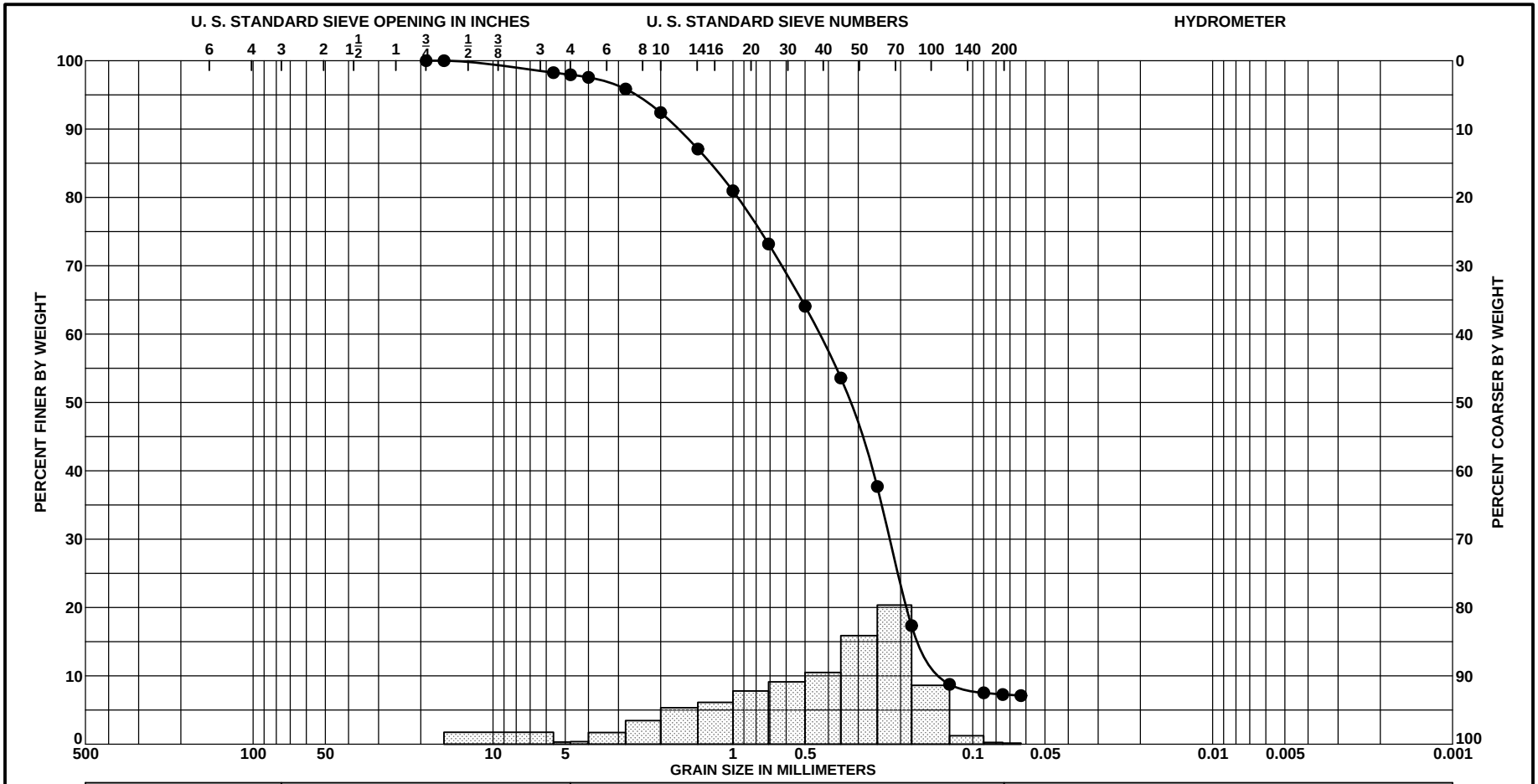


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-14
BORING ELEV.	-19.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

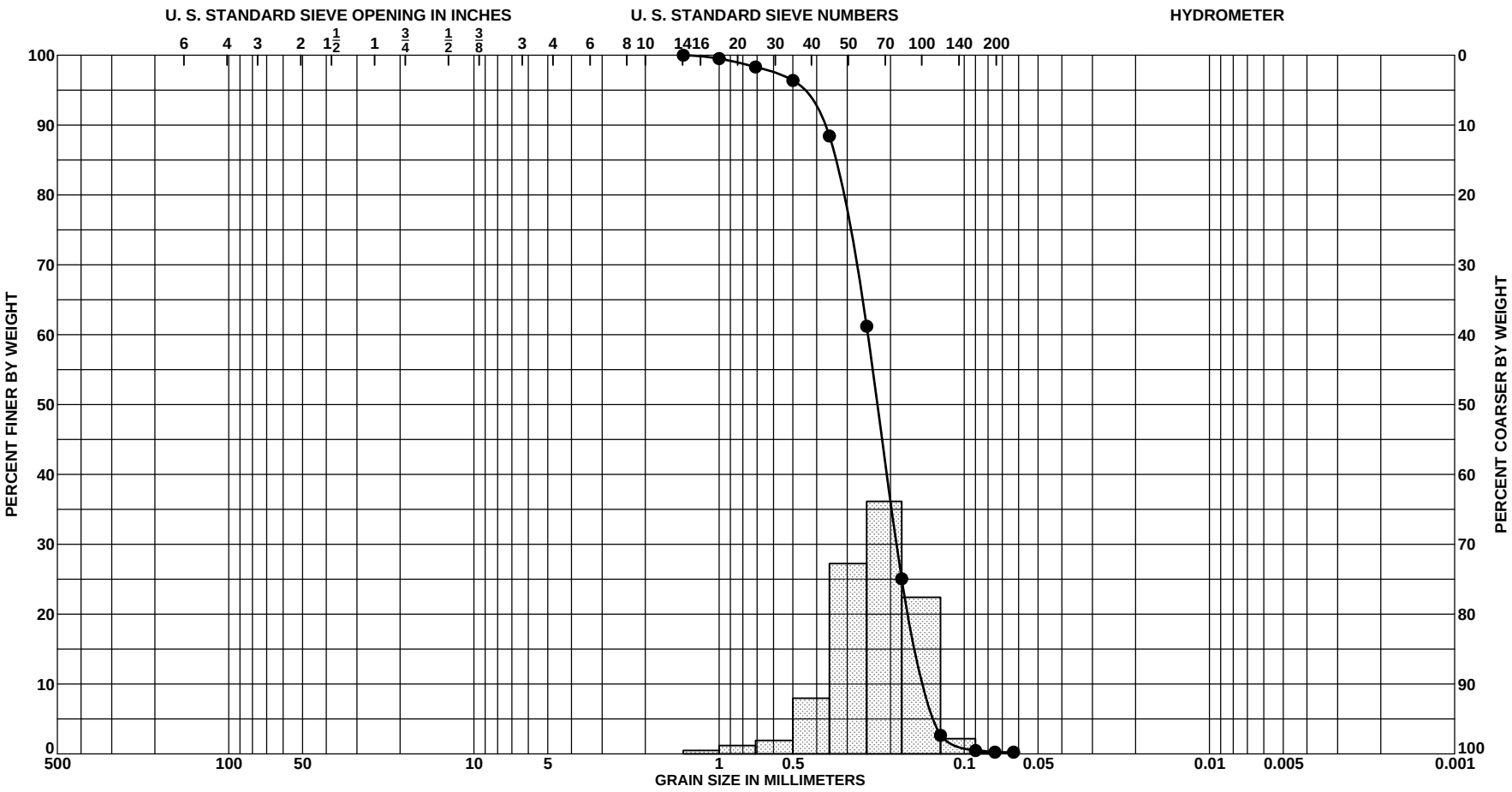


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	2							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-14
BORING ELEV.	-19.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-14
BORING ELEV.	-19.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-14 @ 2 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,496	499,623	State Plane, FLE (U.S. Ft.)	-21.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.46 #230 - 2.46		96.50	2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.00	1.00
#4	-2.25	4.75	0.10	1.10
#5	-2.00	4.00	0.29	1.39
#7	-1.50	2.80	0.74	2.13
#10	-1.00	2.00	2.02	4.15
#14	-0.50	1.40	4.78	8.93
#18	0.00	1.00	7.15	16.09
#25	0.50	0.71	9.16	25.25
#35	1.00	0.50	11.44	36.69
#45	1.50	0.36	15.42	52.11
#60	2.00	0.25	18.67	70.78
#80	2.50	0.18	17.19	87.97
#120	3.00	0.13	8.73	96.70
#170	3.50	0.09	0.79	97.49
#200	3.75	0.08	0.05	97.54
#230	4.00	0.06	0.00	97.54

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.90	2.38	2.12	1.43	0.49	-0.01	-0.91

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.18	0.44	1.43	0.37	1.18	-0.91	4

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-14 @ 4 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,496	499,623	State Plane, FLE (U.S. Ft.)	-23.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.45 #230 - 2.39			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.19	0.19
#4	-2.25	4.75	0.05	0.25
#5	-2.00	4.00	0.19	0.44
#7	-1.50	2.80	0.71	1.15
#10	-1.00	2.00	1.40	2.54
#14	-0.50	1.40	2.59	5.14
#18	0.00	1.00	3.71	8.85
#25	0.50	0.71	5.79	14.64
#35	1.00	0.50	8.87	23.51
#45	1.50	0.36	14.79	38.30
#60	2.00	0.25	22.56	60.85
#80	2.50	0.18	22.10	82.95
#120	3.00	0.13	13.00	95.95
#170	3.50	0.09	1.49	97.44
#200	3.75	0.08	0.10	97.55
#230	4.00	0.06	0.06	97.61

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.96	2.54	2.32	1.76	1.05	0.58	-0.53

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.54	0.34	1.76	0.30	1.04	-1.09	4.41

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-14 @ 6 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,496	499,623	State Plane, FLE (U.S. Ft.)	-25.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.98 #230 - 2.93			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.24	0.24
#4	-2.25	4.75	0.33	0.58
#5	-2.00	4.00	0.41	0.99
#7	-1.50	2.80	1.31	2.30
#10	-1.00	2.00	2.08	4.38
#14	-0.50	1.40	4.05	8.43
#18	0.00	1.00	6.50	14.92
#25	0.50	0.71	10.54	25.46
#35	1.00	0.50	13.25	38.71
#45	1.50	0.36	13.33	52.03
#60	2.00	0.25	16.23	68.26
#80	2.50	0.18	16.91	85.17
#120	3.00	0.13	10.03	95.21
#170	3.50	0.09	1.69	96.89
#200	3.75	0.08	0.12	97.02
#230	4.00	0.06	0.05	97.07

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.99	2.47	2.20	1.42	0.48	0.05	-0.92

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.21	0.43	1.42	0.37	1.18	-0.65	3.17

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-14 @ 8 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,496	499,623	State Plane, FLE (U.S. Ft.)	-27.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 7.26 #230 - 7.11			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.75	1.75
#4	-2.25	4.75	0.31	2.06
#5	-2.00	4.00	0.38	2.44
#7	-1.50	2.80	1.70	4.14
#10	-1.00	2.00	3.45	7.59
#14	-0.50	1.40	5.33	12.92
#18	0.00	1.00	6.11	19.03
#25	0.50	0.71	7.78	26.82
#35	1.00	0.50	9.11	35.93
#45	1.50	0.36	10.49	46.42
#60	2.00	0.25	15.88	62.30
#80	2.50	0.18	20.36	82.65
#120	3.00	0.13	8.60	91.25
#170	3.50	0.09	1.23	92.48
#200	3.75	0.08	0.25	92.74
#230	4.00	0.06	0.16	92.89

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.58	2.31	1.61	0.38	-0.25	-1.38

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.13	0.46	1.61	0.33	1.37	-0.94	3.58

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-14 @ 2 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,496	499,623	State Plane, FLE (U.S. Ft.)	-21.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.24 #230 - 0.24			

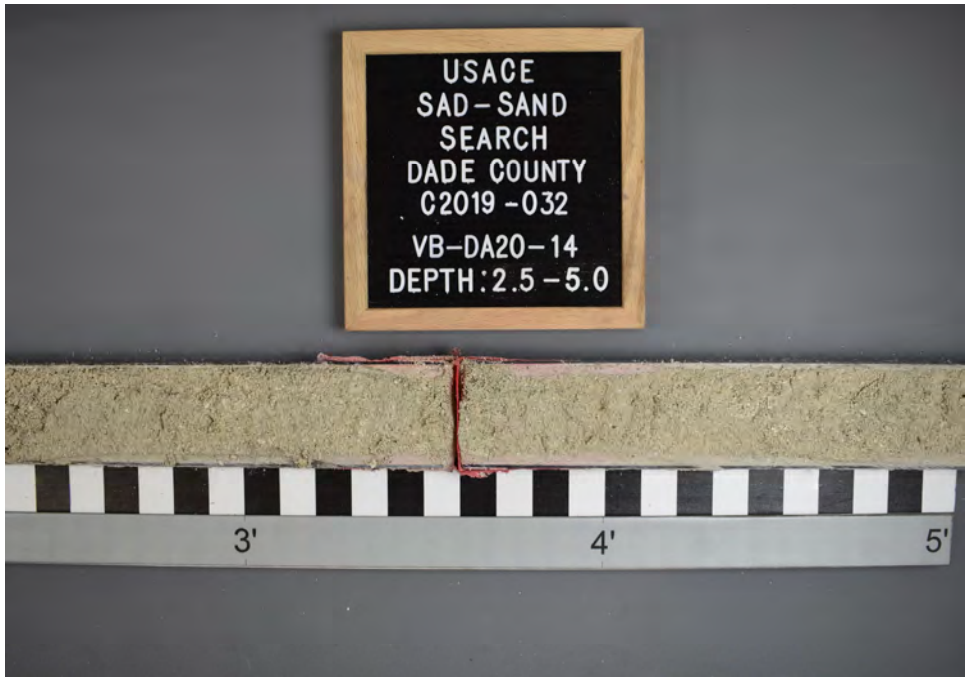
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#14	-0.50	1.40	0.00	0.00
#18	0.00	1.00	0.48	0.48
#25	0.50	0.71	1.20	1.69
#35	1.00	0.50	1.93	3.61
#45	1.50	0.36	7.95	11.57
#60	2.00	0.25	27.23	38.80
#80	2.50	0.18	36.14	74.94
#120	3.00	0.13	22.41	97.35
#170	3.50	0.09	2.17	99.52
#200	3.75	0.08	0.24	99.76
#230	4.00	0.06	0.00	99.76

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.95	2.70	2.50	2.15	1.75	1.58	1.09

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.11	0.23	2.16	0.22	0.58	-0.78	4.49

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD-SAND
SEARCH
DADE COUNTY
C2019-032
VB-DA20-14
DEPTH: 0.0 - 2.5
0'
1'
2'


USACE
SAD-SAND
SEARCH
DADE COUNTY
C2019-032
VB-DA20-14
DEPTH: 2.5 - 5.0
3'
4'
5'

USACE
SAD-SAND
SEARCH
DADE COUNTY
C2019-032
VB-DA20-14
DEPTH: 5.0 - 7.5
5'
6'
7'

USACE
SAD-SAND
SEARCH
DADE COUNTY
C2019-032
VB-DA20-14
DEPTH: 7.5 - 8.7
8'
9'
10'

VB-DA20-15

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-15

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-15
LOCATION COORDINATES: X = 954,664 Y = 499,858
3. DRILLING AGENCY: Amdrill
CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL:
BEARING:
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 20.0 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) HORIZONTAL: NAD83 VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 6 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-24-20 COMPLETED: 06-24-20
16. ELEVATION TOP OF BORING: -36.8 Ft.
17. TOTAL RECOVERY FOR BORING: 88 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-36.8	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, trace fine to coarse gravel-sized limestone, moist, 5Y 8/2 pale yellow (SW)				-38.8		
					1				
							-41.8		
					2				
							-44.8		
					3				
-46.8	10.0						-46.8		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, trace fine to coarse gravel-sized limestone, moist, 5Y 8/2 pale yellow (SW-SM)		4				
-47.7	10.9		SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, moist, 5Y 8/1 white (SM)				-48.8		
					5				
							-51.8		

0
5
10
15

(Continued)

Boring Designation VB-DA20-15

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT SAD-SAND	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88	
LOCATION COORDINATES X = 954,664 Y = 499,858	ELEVATION TOP OF BORING -36.8 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
					6				
-54.4	17.6		No Recovery						
-56.8	20.0						-56.8		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

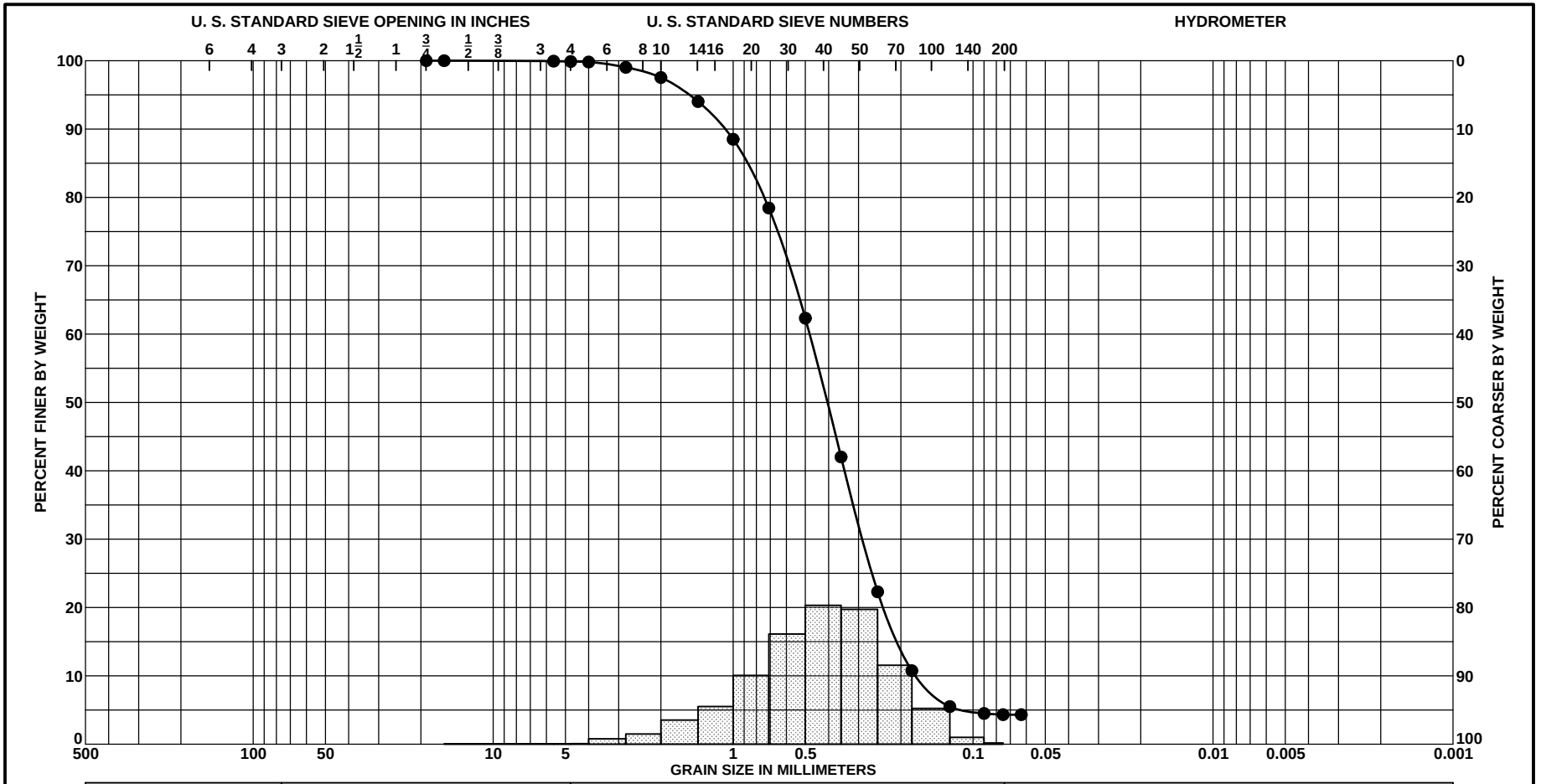
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	5.0/5.2	SW*
3	8.0/8.2	SW*
4	10.0/10.2	SW-SM*
5	12.0/12.2	SM*
6	15.0/15.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

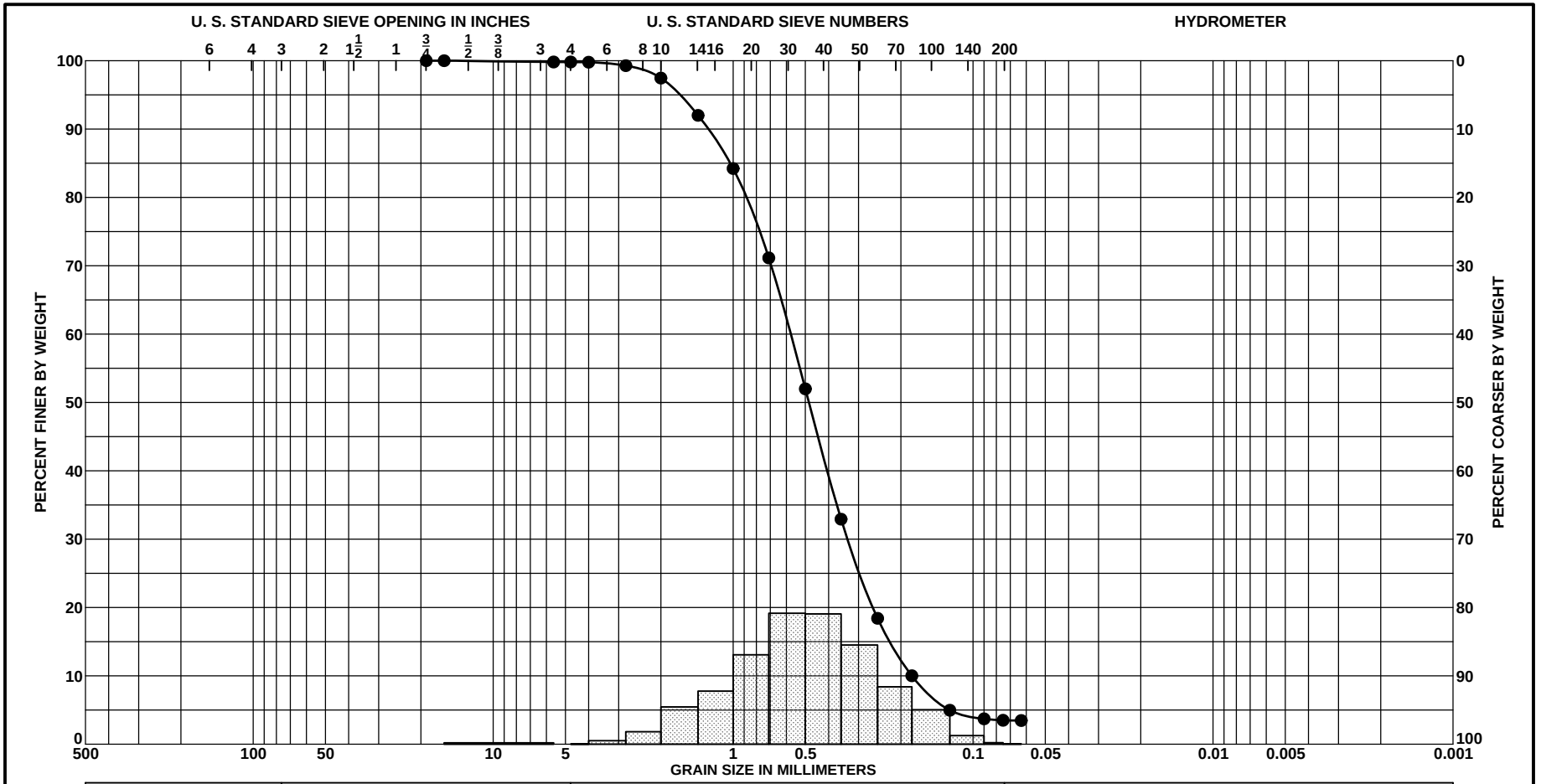


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	3	98						
		medium-grained sand-sized									
		carbonate, trace silt, trace shell,									
		trace fine to coarse gravel-sized									
		limestone, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-15
BORING ELEV.	-36.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

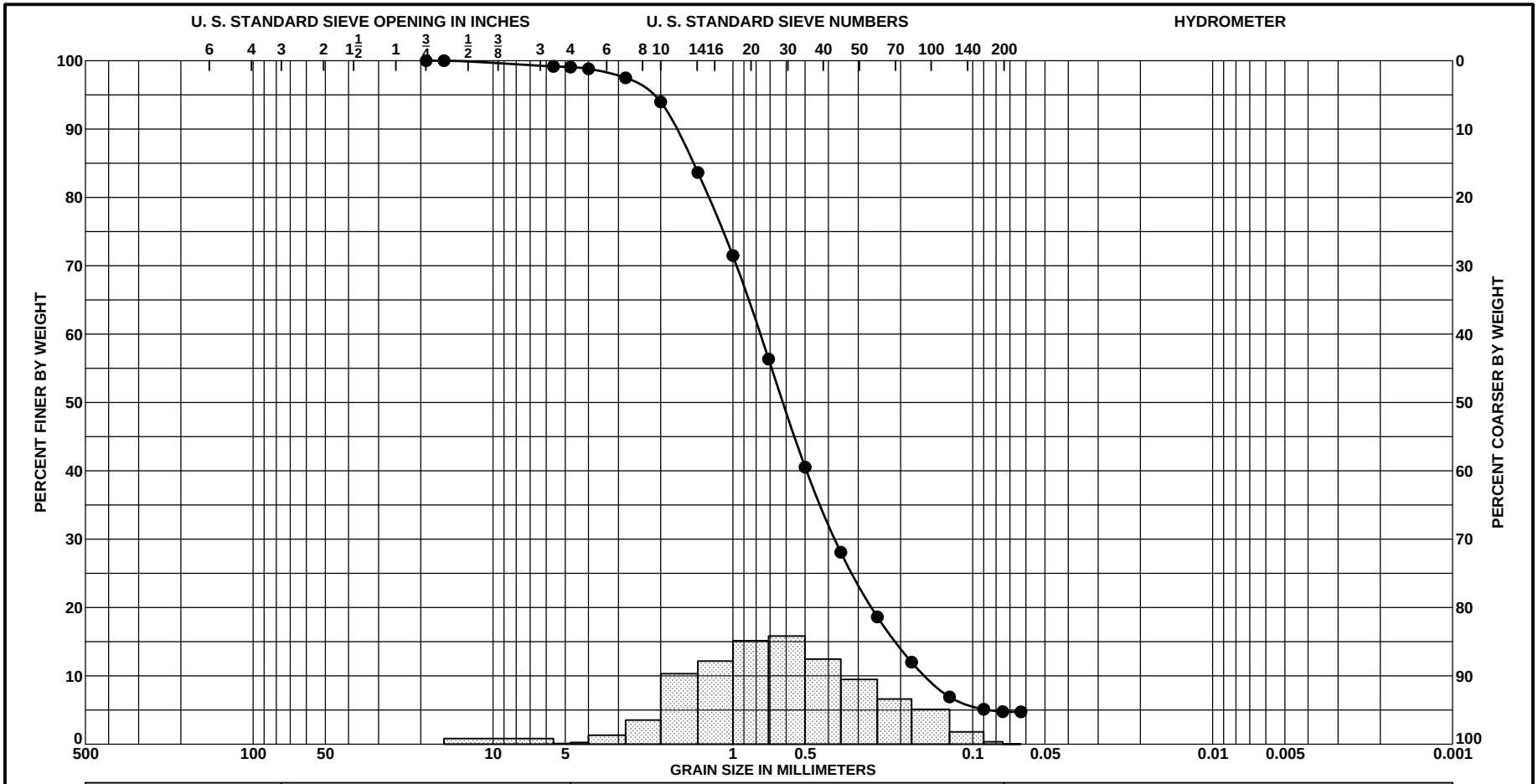


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace silt, trace shell,									
		trace fine to coarse gravel-sized									
		limestone, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-15
BORING ELEV.	-36.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

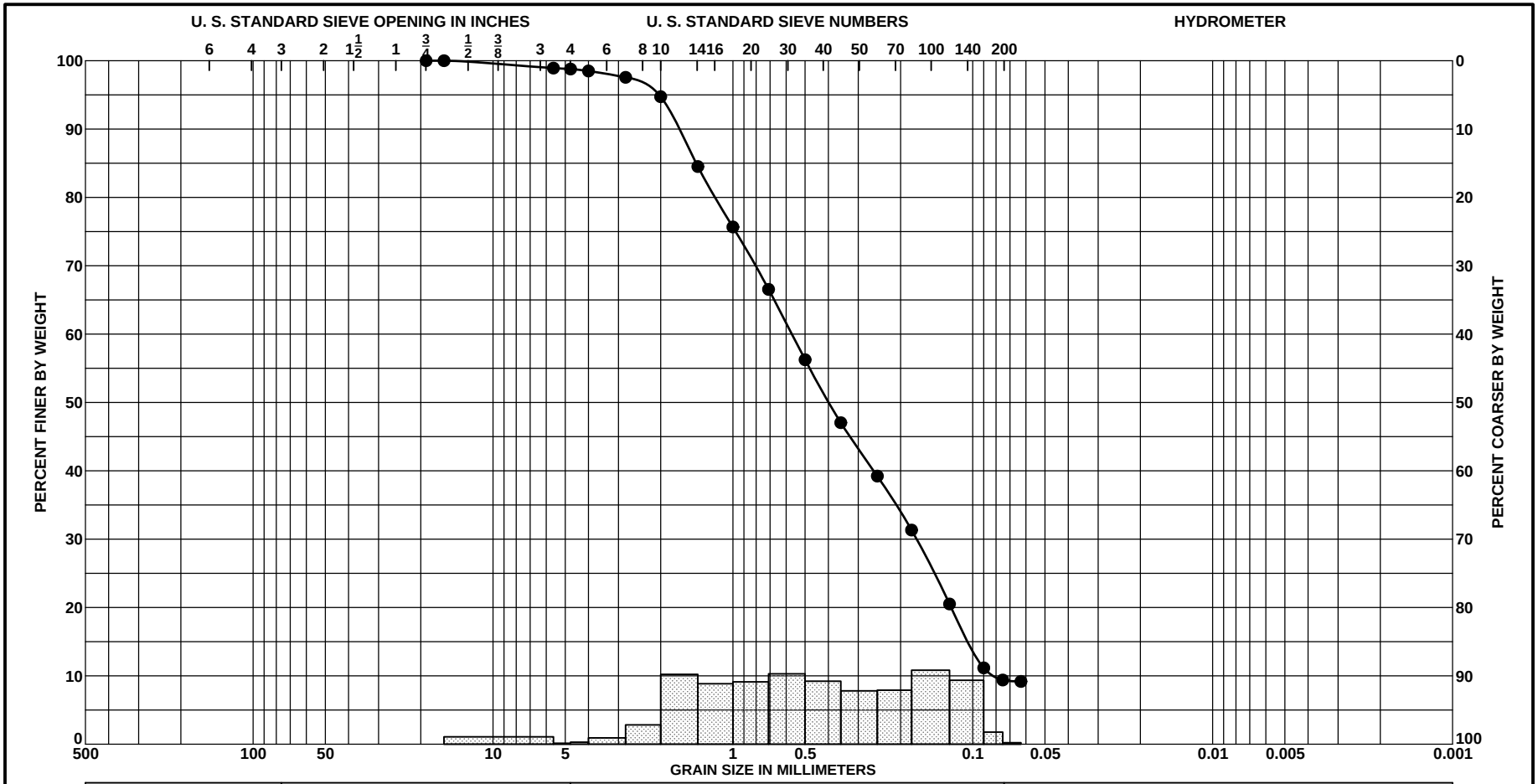


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	8.0 to 8.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2							
		medium-grained sand-sized									
		carbonate, trace silt, trace shell,									
		trace fine to coarse gravel-sized									
		limestone, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-15
BORING ELEV.	-36.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	10.0 to 10.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	3							
		fine to medium-grained sand-sized									
		carbonate, few silt, trace shell,									
		trace fine gravel-sized									
		limestone, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-15
BORING ELEV.	-36.8 Ft., NAVD88
DATE	8/3/2020

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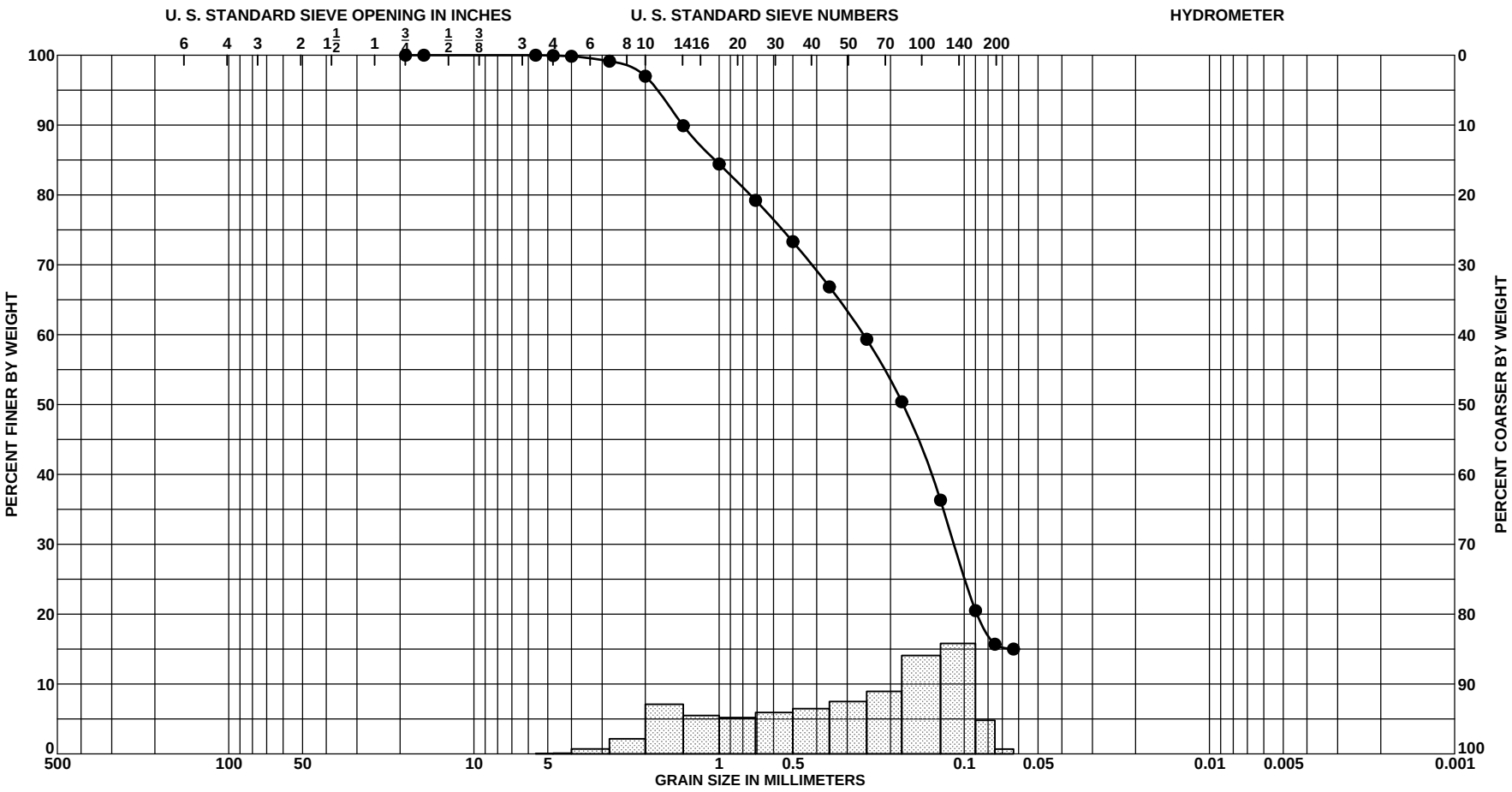

Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	12.0 to 12.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-15
BORING ELEV.	-36.8 Ft., NAVD88
DATE	8/3/2020

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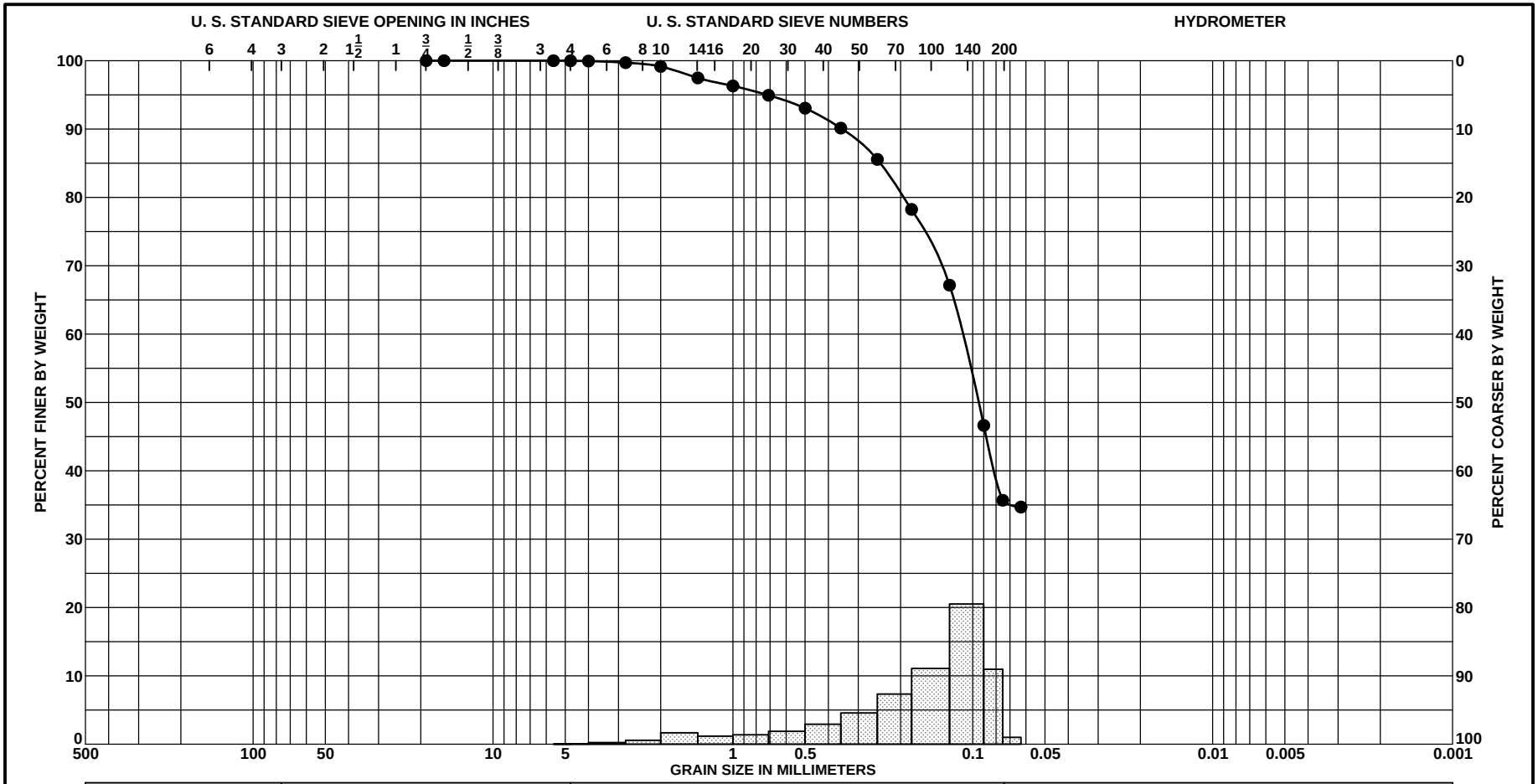
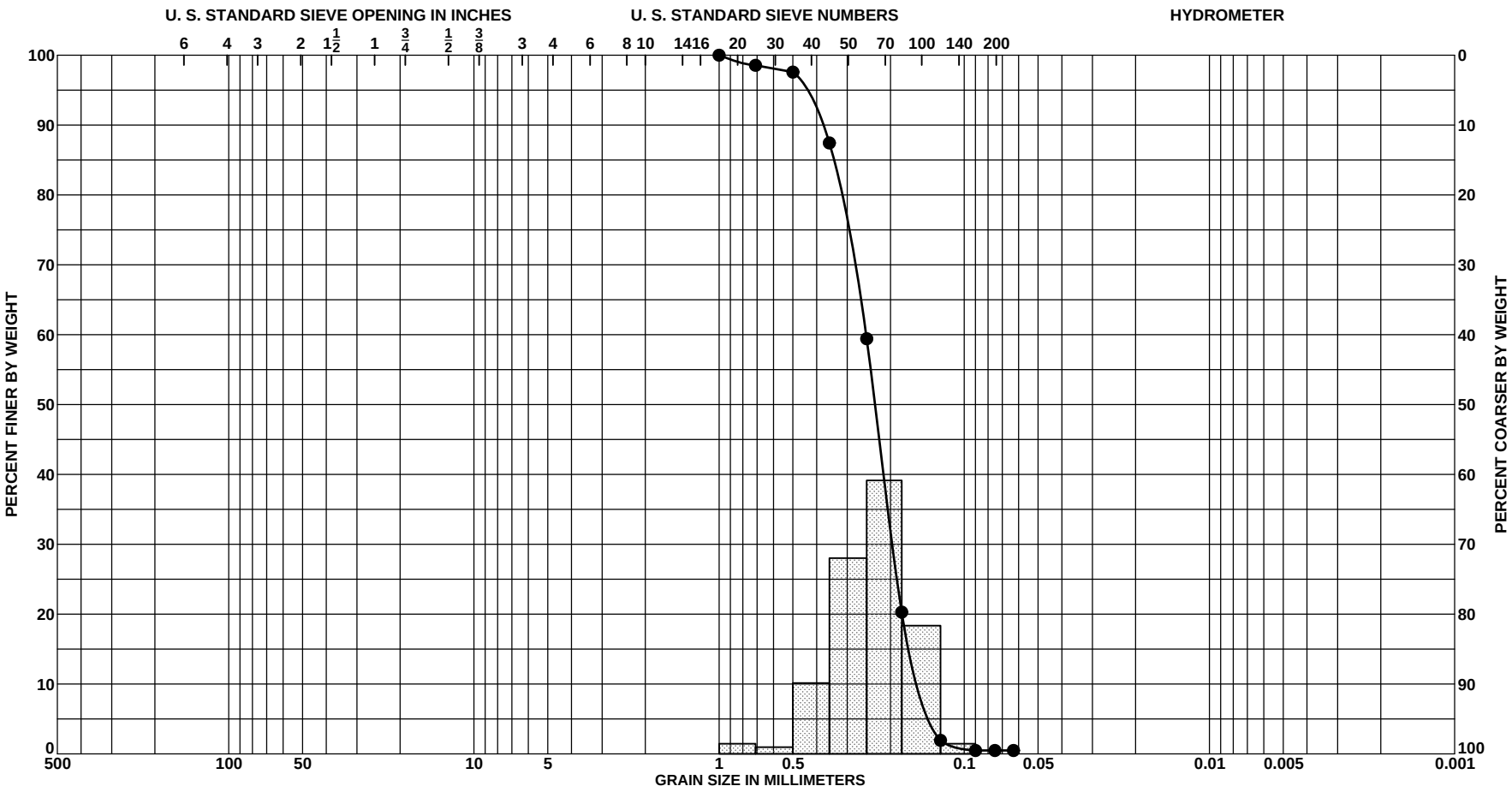


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	15.0 to 15.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-15
BORING ELEV.	-36.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-15
BORING ELEV.	-36.8 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-15 @ 2 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,664	499,858	State Plane, FLE (U.S. Ft.)	-38.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 4.32 #230 - 4.32		98.20	3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.07	0.07
#4	-2.25	4.75	0.05	0.12
#5	-2.00	4.00	0.07	0.19
#7	-1.50	2.80	0.78	0.97
#10	-1.00	2.00	1.48	2.46
#14	-0.50	1.40	3.52	5.98
#18	0.00	1.00	5.52	11.50
#25	0.50	0.71	10.05	21.55
#35	1.00	0.50	16.12	37.67
#45	1.50	0.36	20.31	57.98
#60	2.00	0.25	19.73	77.71
#80	2.50	0.18	11.54	89.25
#120	3.00	0.13	5.24	94.49
#170	3.50	0.09	1.01	95.50
#200	3.75	0.08	0.18	95.68
#230	4.00	0.06	0.00	95.68

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.25	2.27	1.93	1.30	0.61	0.22	-0.64

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.16	0.45	1.30	0.41	0.98	-0.53	3.4

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-15 @ 5 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,664	499,858	State Plane, FLE (U.S. Ft.)	-41.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.50 #230 - 3.47			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.19	0.19
#4	-2.25	4.75	0.00	0.19
#5	-2.00	4.00	0.03	0.22
#7	-1.50	2.80	0.51	0.73
#10	-1.00	2.00	1.81	2.54
#14	-0.50	1.40	5.46	8.00
#18	0.00	1.00	7.77	15.77
#25	0.50	0.71	13.08	28.85
#35	1.00	0.50	19.16	48.01
#45	1.50	0.36	19.07	67.08
#60	2.00	0.25	14.51	81.59
#80	2.50	0.18	8.40	89.99
#120	3.00	0.13	5.05	95.03
#170	3.50	0.09	1.26	96.29
#200	3.75	0.08	0.21	96.50
#230	4.00	0.06	0.03	96.53

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.00	2.14	1.77	1.05	0.35	0.01	-0.77

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.98	0.51	1.05	0.48	1.02	-0.22	3.17

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-15 @ 8 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,664	499,858	State Plane, FLE (U.S. Ft.)	-44.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 4.76 #230 - 4.73			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.83	0.83
#4	-2.25	4.75	0.10	0.93
#5	-2.00	4.00	0.25	1.19
#7	-1.50	2.80	1.32	2.51
#10	-1.00	2.00	3.53	6.03
#14	-0.50	1.40	10.32	16.35
#18	0.00	1.00	12.16	28.51
#25	0.50	0.71	15.14	43.65
#35	1.00	0.50	15.82	59.47
#45	1.50	0.36	12.45	71.92
#60	2.00	0.25	9.46	81.38
#80	2.50	0.18	6.62	88.00
#120	3.00	0.13	5.09	93.09
#170	3.50	0.09	1.80	94.89
#200	3.75	0.08	0.36	95.24
#230	4.00	0.06	0.03	95.27

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.58	2.20	1.66	0.70	-0.14	-0.52	-1.15

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.66	0.63	0.70	0.62	1.21	-0.07	3.06

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-15 @ 10 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,664	499,858	State Plane, FLE (U.S. Ft.)	-46.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 9.39 #230 - 9.18			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.08	1.08
#4	-2.25	4.75	0.14	1.22
#5	-2.00	4.00	0.29	1.50
#7	-1.50	2.80	0.93	2.43
#10	-1.00	2.00	2.83	5.27
#14	-0.50	1.40	10.22	15.48
#18	0.00	1.00	8.85	24.33
#25	0.50	0.71	9.12	33.45
#35	1.00	0.50	10.30	43.75
#45	1.50	0.36	9.21	52.96
#60	2.00	0.25	7.81	60.77
#80	2.50	0.18	7.90	68.67
#120	3.00	0.13	10.82	79.49
#170	3.50	0.09	9.35	88.84
#200	3.75	0.08	1.77	90.61
#230	4.00	0.06	0.21	90.82

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.24	2.79	1.34	0.04	-0.47	-1.05

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.11	0.46	1.34	0.40	1.51	-0.23	2.38

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-15 @ 12 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,664	499,858	State Plane, FLE (U.S. Ft.)	-48.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 15.70 #230 - 15.00			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.05	0.05
#5	-2.00	4.00	0.11	0.15
#7	-1.50	2.80	0.70	0.85
#10	-1.00	2.00	2.15	3.00
#14	-0.50	1.40	7.09	10.09
#18	0.00	1.00	5.49	15.58
#25	0.50	0.71	5.19	20.77
#35	1.00	0.50	5.91	26.69
#45	1.50	0.36	6.48	33.16
#60	2.00	0.25	7.50	40.66
#80	2.50	0.18	8.95	49.61
#120	3.00	0.13	14.07	63.68
#170	3.50	0.09	15.81	79.49
#200	3.75	0.08	4.81	84.30
#230	4.00	0.06	0.69	85.00

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.73	3.36	2.51	0.86	0.04	-0.86

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.72	0.30	2.51	0.18	1.49	-0.55	2.09

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-15 @ 15 ft

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,664	499,858	State Plane, FLE (U.S. Ft.)	-51.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 35.69 #230 - 34.69			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.01	0.01
#5	-2.00	4.00	0.04	0.05
#7	-1.50	2.80	0.23	0.28
#10	-1.00	2.00	0.56	0.84
#14	-0.50	1.40	1.67	2.51
#18	0.00	1.00	1.18	3.69
#25	0.50	0.71	1.36	5.06
#35	1.00	0.50	1.89	6.95
#45	1.50	0.36	2.92	9.86
#60	2.00	0.25	4.58	14.44
#80	2.50	0.18	7.32	21.76
#120	3.00	0.13	11.08	32.84
#170	3.50	0.09	20.52	53.36
#200	3.75	0.08	10.96	64.31
#230	4.00	0.06	0.99	65.31

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
			3.42	2.65	2.11	0.48

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.57	0.17	3.42	0.09	1.16	-1.57	5.06

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-15 @ 2 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,664	499,858	State Plane, FLE (U.S. Ft.)	-38.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.48 #230 - 0.48			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#18	0.00	1.00	0.00	0.00
#25	0.50	0.71	1.45	1.45
#35	1.00	0.50	0.97	2.42
#45	1.50	0.36	10.14	12.56
#60	2.00	0.25	28.02	40.58
#80	2.50	0.18	39.13	79.71
#120	3.00	0.13	18.36	98.07
#170	3.50	0.09	1.45	99.52
#200	3.75	0.08	0.00	99.52
#230	4.00	0.06	0.00	99.52

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.92	2.62	2.44	2.12	1.72	1.56	1.13

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.07	0.24	2.12	0.23	0.53	-0.62	3.89

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–15
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–15
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–15
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–15
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 15
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 15
DEPTH :12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 15
DEPTH :15.0 –17.6
15'
16'
17'

VB-DA20-16

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-16

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-16
LOCATION COORDINATES: X = 950,541 Y = 501,640
3. DRILLING AGENCY: Amdrill
CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL:
BEARING:
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 8.5 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) HORIZONTAL: NAD83 VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 3 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-24-20 COMPLETED: 06-24-20
16. ELEVATION TOP OF BORING: -22.4 Ft.
17. TOTAL RECOVERY FOR BORING: 89 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-22.4	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, moist, 5Y 8/2 pale yellow (SW)				-24.4		
					1		-26.4		
					2		-28.4		
					3				
-29.0	6.6		LIMESTONE, GRAVEL, poorly-graded, mostly gravel to cobble-sized limestone, few fine-grained sand-sized carbonate, few silt, moist, 5Y 8/1 white						
-30.0	7.6		No Recovery						
-30.9	8.5						-30.9		

BORING TERMINATED IN REFUSAL

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW*
3	6.0/6.2	SW*

*Lab visual classification based on gradation

Abbreviations:

0 5 10 15

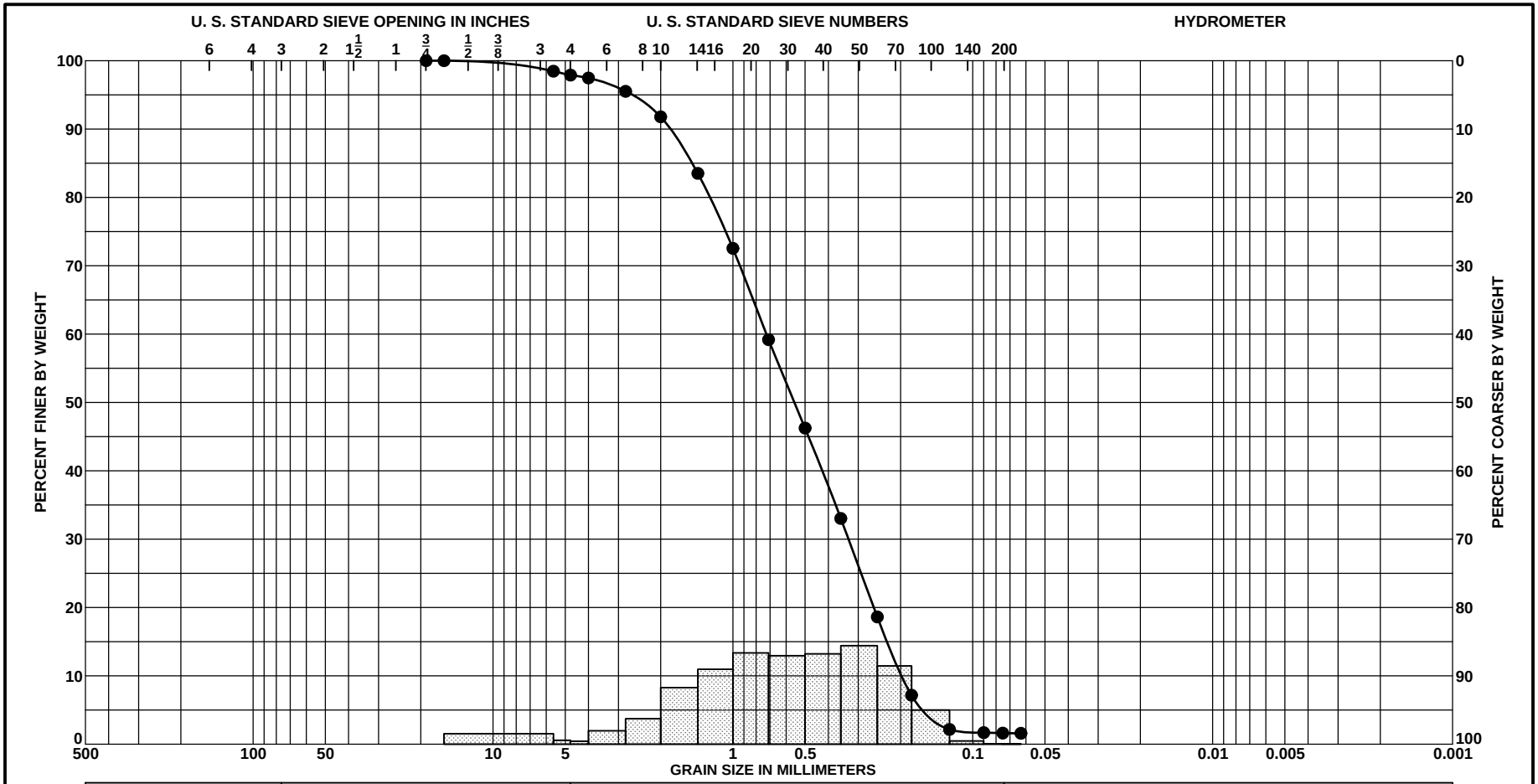
(Continued)

Boring Designation VB-DA20-16

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 950,541 Y = 501,640	ELEVATION TOP OF BORING: -22.4 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			curve						

15
20
25
30
35



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2	98						
		medium-grained sand-sized									
		carbonate, trace									
		silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-16
BORING ELEV.	-22.4 Ft., NAVD88
DATE	8/21/2020

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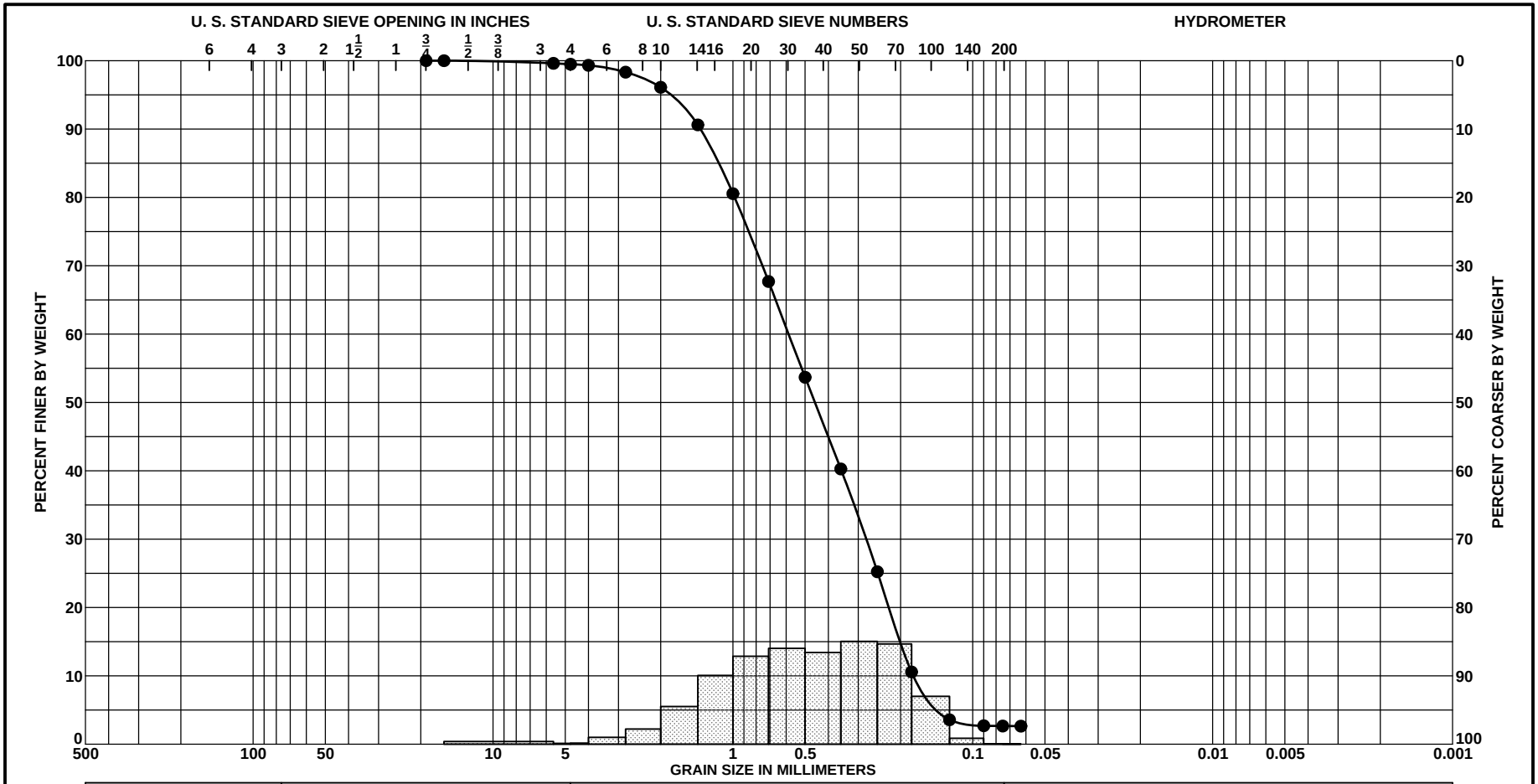
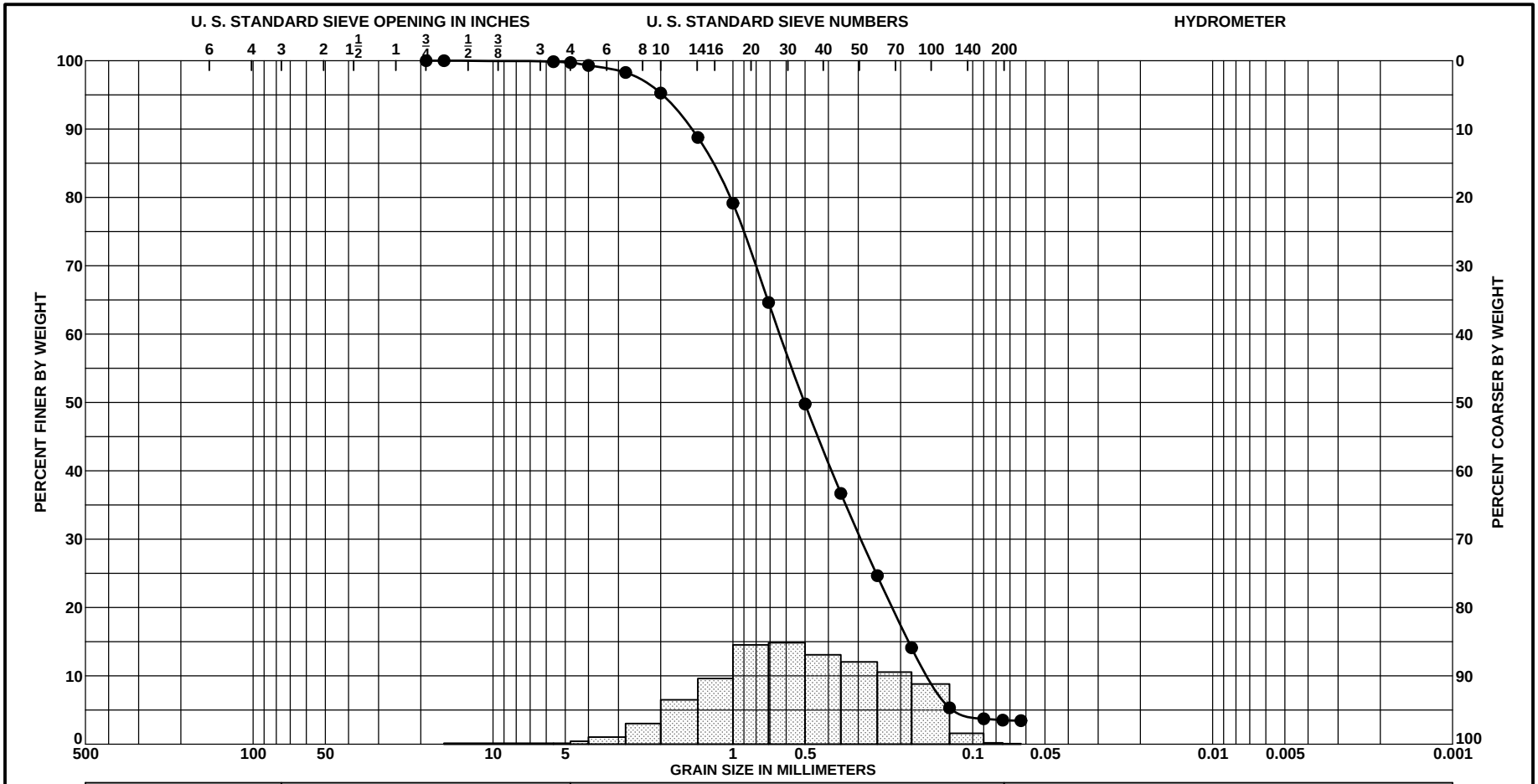


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2							
		medium-grained sand-sized									
		carbonate, trace									
		silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-16
BORING ELEV.	-22.4 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

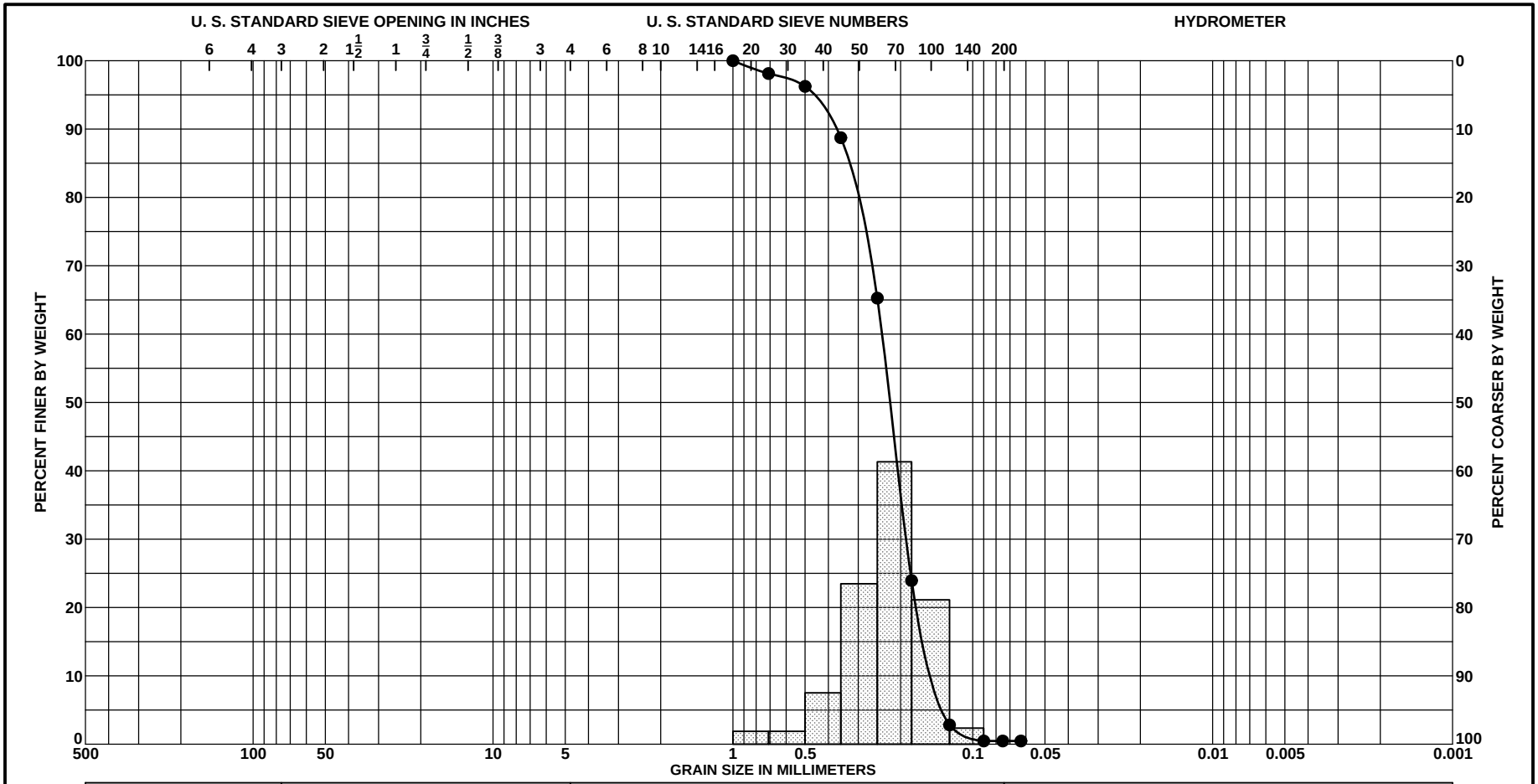


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2							
		medium-grained sand-sized									
		carbonate, trace									
		silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-16
BORING ELEV.	-22.4 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-16
BORING ELEV.	-22.4 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-16 @ 2 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,541	501,640	State Plane, FLE (U.S. Ft.)	-24.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 1.62 #230 - 1.59		98.20	2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.53	1.53
#4	-2.25	4.75	0.57	2.10
#5	-2.00	4.00	0.43	2.53
#7	-1.50	2.80	1.95	4.48
#10	-1.00	2.00	3.73	8.21
#14	-0.50	1.40	8.27	16.49
#18	0.00	1.00	10.97	27.45
#25	0.50	0.71	13.36	40.82
#35	1.00	0.50	12.94	53.75
#45	1.50	0.36	13.22	66.98
#60	2.00	0.25	14.40	81.38
#80	2.50	0.18	11.46	92.84
#120	3.00	0.13	5.00	97.84
#170	3.50	0.09	0.47	98.31
#200	3.75	0.08	0.07	98.38
#230	4.00	0.06	0.03	98.41

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.72	2.11	1.78	0.85	-0.11	-0.53	-1.43

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.73	0.60	0.85	0.55	1.28	-0.55	3.18

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-16 @ 4 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,541	501,640	State Plane, FLE (U.S. Ft.)	-26.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.65 #230 - 2.64			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.39	0.39
#4	-2.25	4.75	0.13	0.51
#5	-2.00	4.00	0.16	0.68
#7	-1.50	2.80	1.00	1.68
#10	-1.00	2.00	2.21	3.89
#14	-0.50	1.40	5.50	9.39
#18	0.00	1.00	10.06	19.45
#25	0.50	0.71	12.86	32.31
#35	1.00	0.50	14.01	46.32
#45	1.50	0.36	13.41	59.73
#60	2.00	0.25	15.04	74.77
#80	2.50	0.18	14.66	89.43
#120	3.00	0.13	7.00	96.43
#170	3.50	0.09	0.87	97.30
#200	3.75	0.08	0.05	97.35
#230	4.00	0.06	0.01	97.36

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.90	2.31	2.01	1.14	0.22	-0.17	-0.90

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.02	0.49	1.14	0.45	1.15	-0.43	2.91

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-16 @ 6 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,541	501,640	State Plane, FLE (U.S. Ft.)	-28.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 3.52 #230 - 3.45			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.14	0.14
#4	-2.25	4.75	0.13	0.27
#5	-2.00	4.00	0.42	0.69
#7	-1.50	2.80	1.03	1.72
#10	-1.00	2.00	3.02	4.74
#14	-0.50	1.40	6.49	11.23
#18	0.00	1.00	9.62	20.85
#25	0.50	0.71	14.53	35.37
#35	1.00	0.50	14.85	50.22
#45	1.50	0.36	13.09	63.31
#60	2.00	0.25	12.03	75.34
#80	2.50	0.18	10.54	85.89
#120	3.00	0.13	8.80	94.68
#170	3.50	0.09	1.60	96.28
#200	3.75	0.08	0.20	96.48
#230	4.00	0.06	0.07	96.55

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.10	2.41	1.99	0.99	0.14	-0.25	-0.98

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.95	0.52	0.99	0.50	1.19	-0.17	2.55

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-16 @ 2 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,541	501,640	State Plane, FLE (U.S. Ft.)	-24.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.47 #230 - 0.47			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#18	0.00	1.00	0.00	0.00
#25	0.50	0.71	1.88	1.88
#35	1.00	0.50	1.88	3.76
#45	1.50	0.36	7.51	11.27
#60	2.00	0.25	23.47	34.74
#80	2.50	0.18	41.31	76.06
#120	3.00	0.13	21.13	97.18
#170	3.50	0.09	2.35	99.53
#200	3.75	0.08	0.00	99.53
#230	4.00	0.06	0.00	99.53

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.95	2.69	2.49	2.18	1.79	1.60	1.08

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.12	0.23	2.18	0.22	0.56	-0.84	4.28

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–16
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–16
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–16
DEPTH: 5.0 – 7.6
6'
7'

VB-DA20-17

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-17

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1 OF 2 SHEETS
	South Atlantic	Jacksonville, Fl	

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-17	LOCATION COORDINATES: X = 954,226 Y = 503,282	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 4 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-24-20 / COMPLETED: 06-24-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -46.3 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 81 %	
8. TOTAL DEPTH OF BORING: 16.5 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-46.3	0.0								
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 8/2 pale yellow (SW-SM)				-48.3		
					1				
							-50.3		
					2				
-52.3	6.0						-52.3		
-52.6	6.3		SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 5Y 8/2 pale yellow (SM)		3				
-53.0	6.7		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone, few fine-grained sand-sized carbonate, few silt, moist, 5Y 8/1 white				-54.3		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, few fine gravel-sized limestone, trace shell, moist, 5Y 8/1 white (SM)		4				
-58.3	12.0								
-58.5	12.2		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone, few fine-grained sand-sized carbonate, few silt, moist, 5Y 8/1 white						
-59.2	12.9								
-59.6	13.3		SAND, silty, mostly fine to medium-grained sand-sized carbonate, some silt, trace shell, moist, 5Y 8/1 white (SM)						
			LIMESTONE No Recovery						

0 5 10 15

(Continued)

Boring Designation VB-DA20-17

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 954,226 Y = 503,282	ELEVATION TOP OF BORING: -46.3 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-62.8	16.5		BORING TERMINATED IN REFUSAL				-62.8		

NOTES:

1. Taylor Engineering is the custodian for these original files.

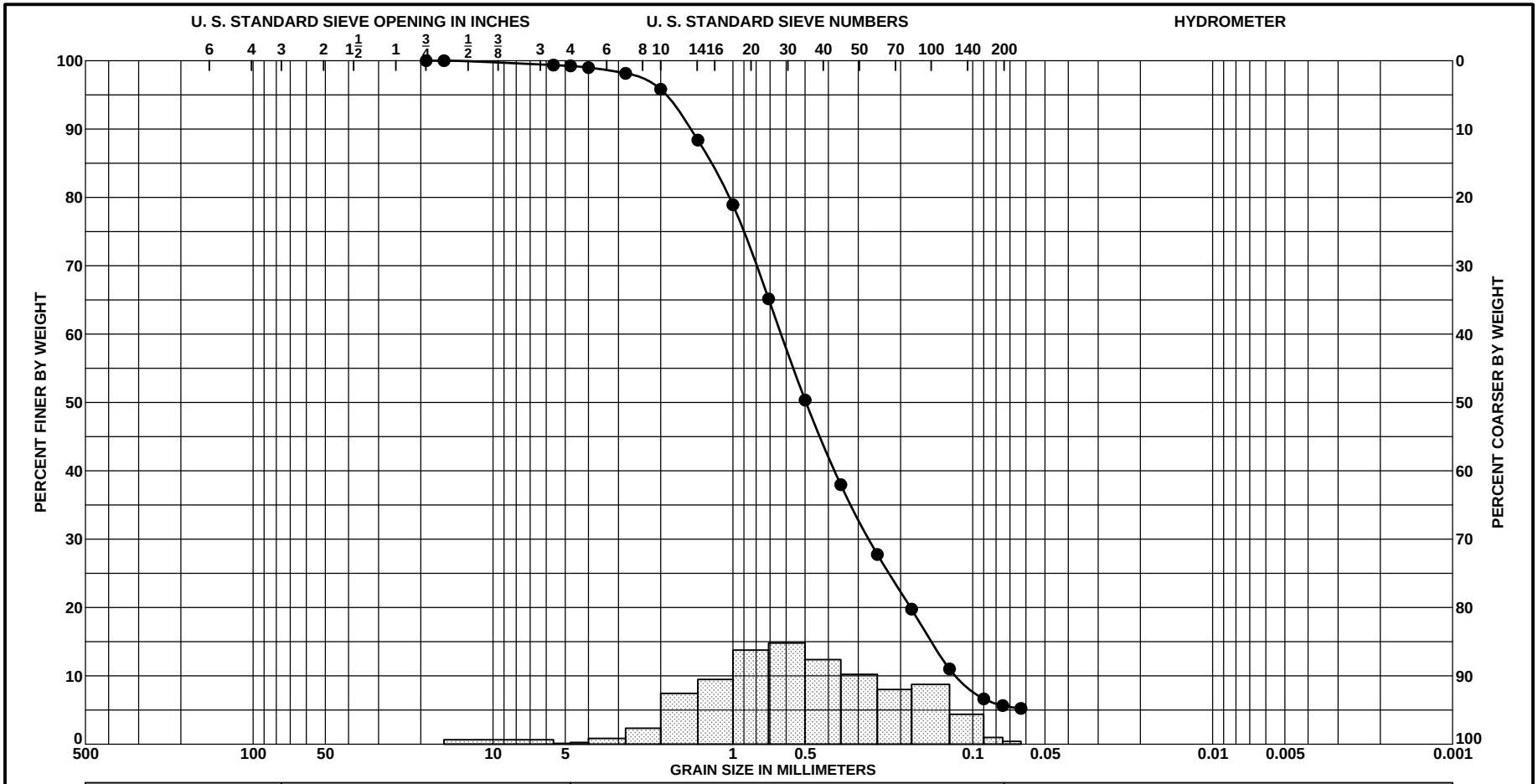
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW-SM*
2	4.0/4.2	SW-SM*
3	6.0/6.2	SM*
4	8.0/8.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	3	99						
		fine to									
		medium-grained sand-sized									
		carbonate, few silt,									
		trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-17
BORING ELEV.	-46.3 Ft., NAVD88
DATE	8/21/2020

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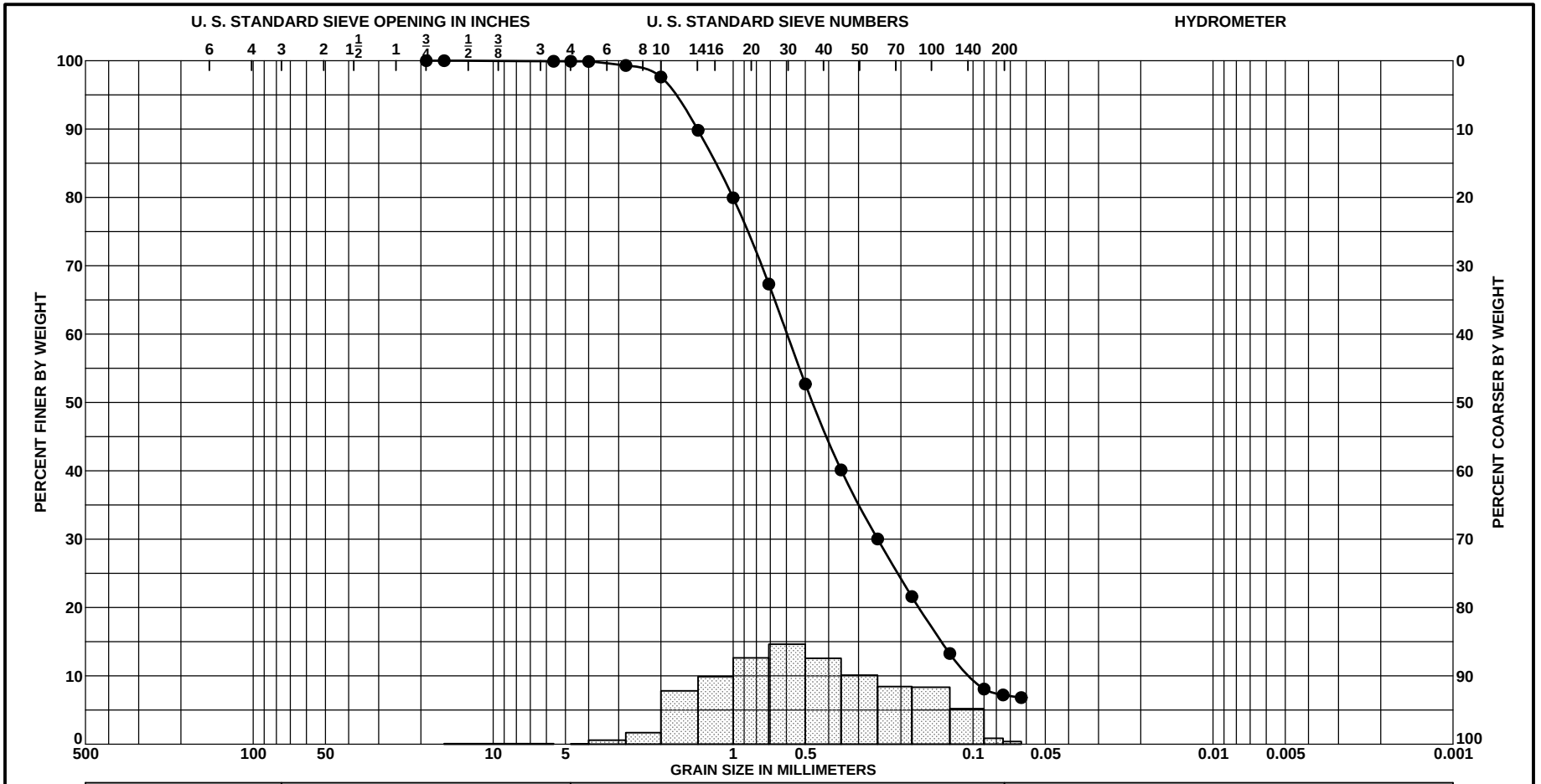
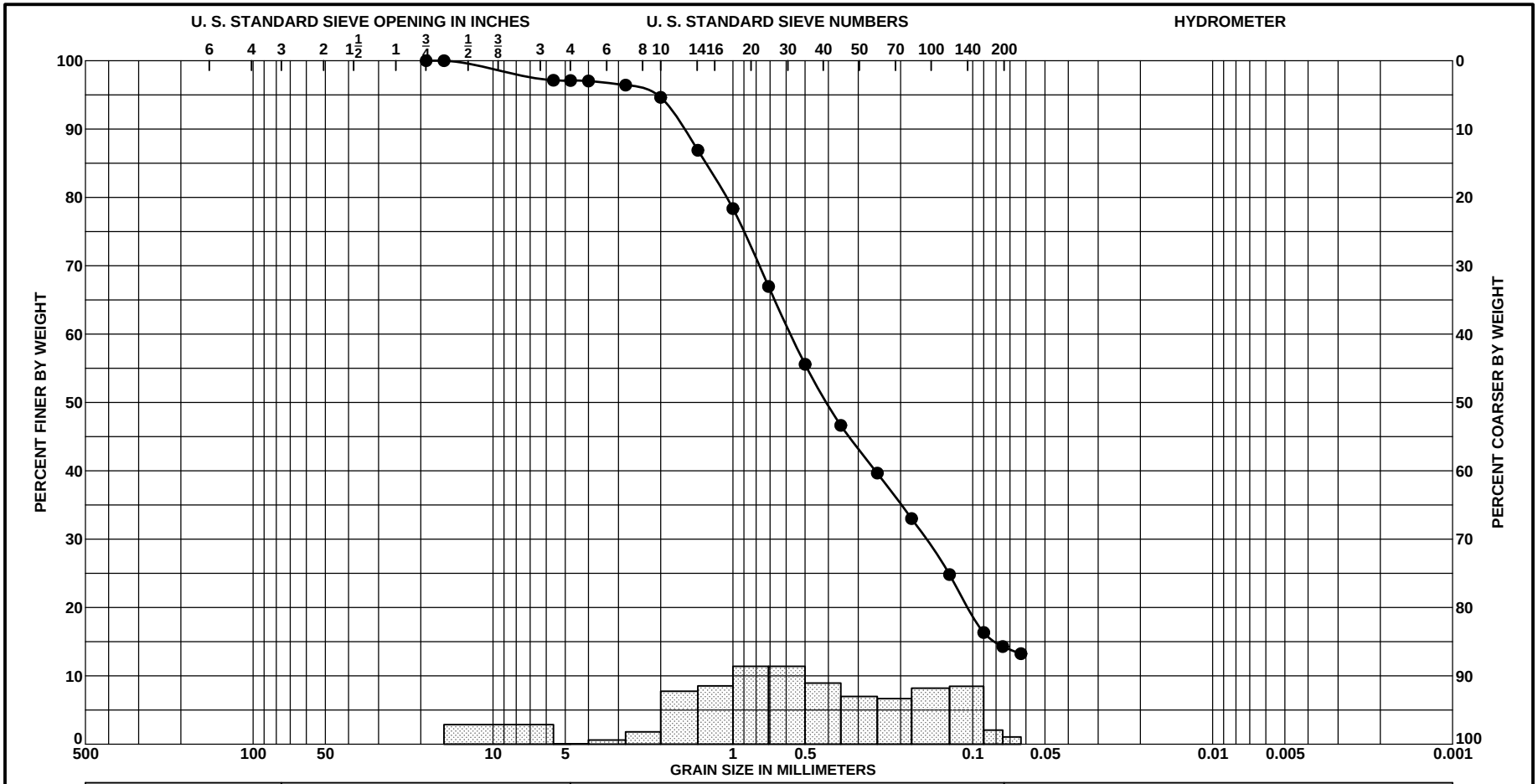


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	3							
		fine to									
		medium-grained sand-sized									
		carbonate, few silt,									
		trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-17
BORING ELEV.	-46.3 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

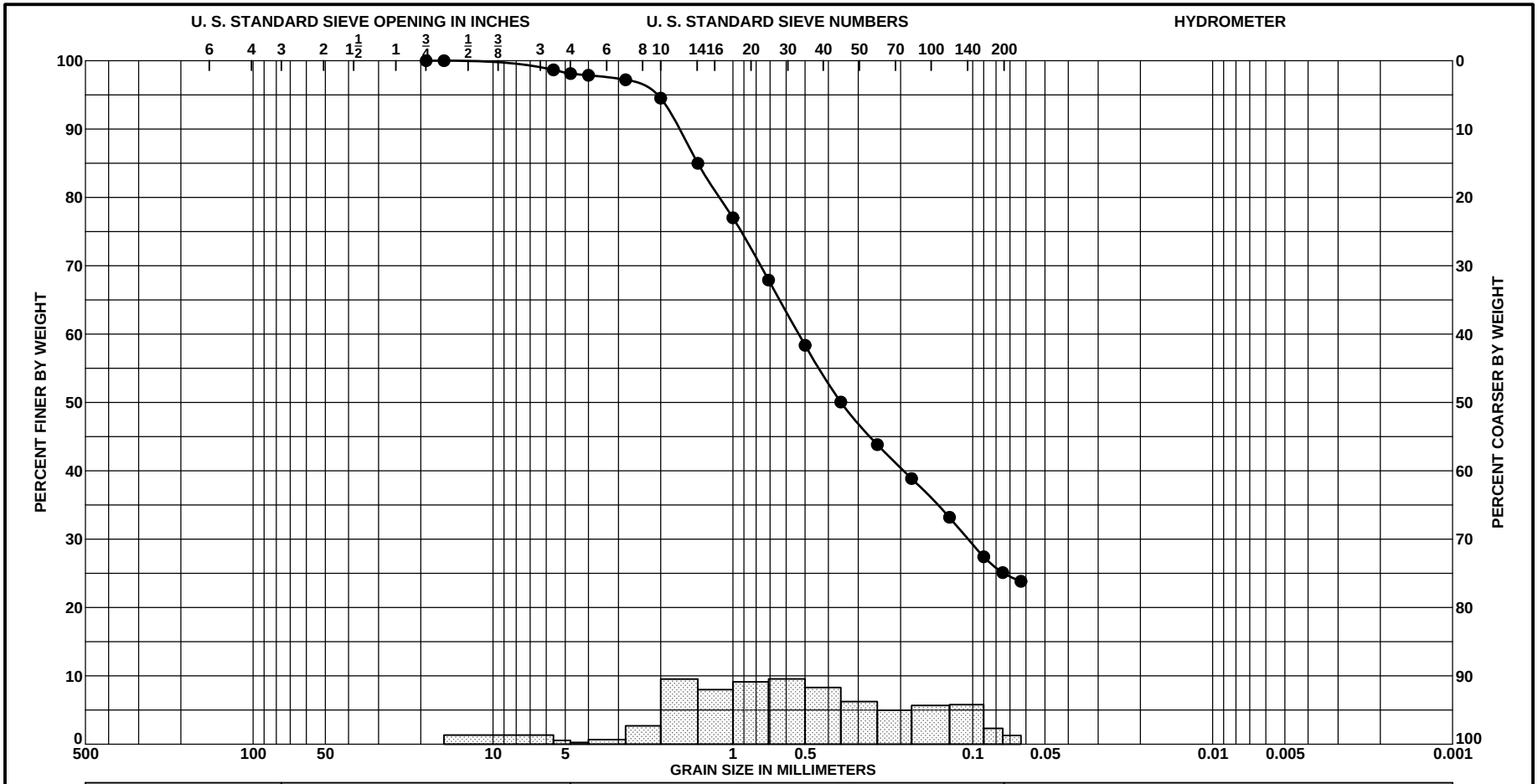


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, silty, mostly fine to	5Y 8/2	2							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-17
BORING ELEV.	-46.3 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

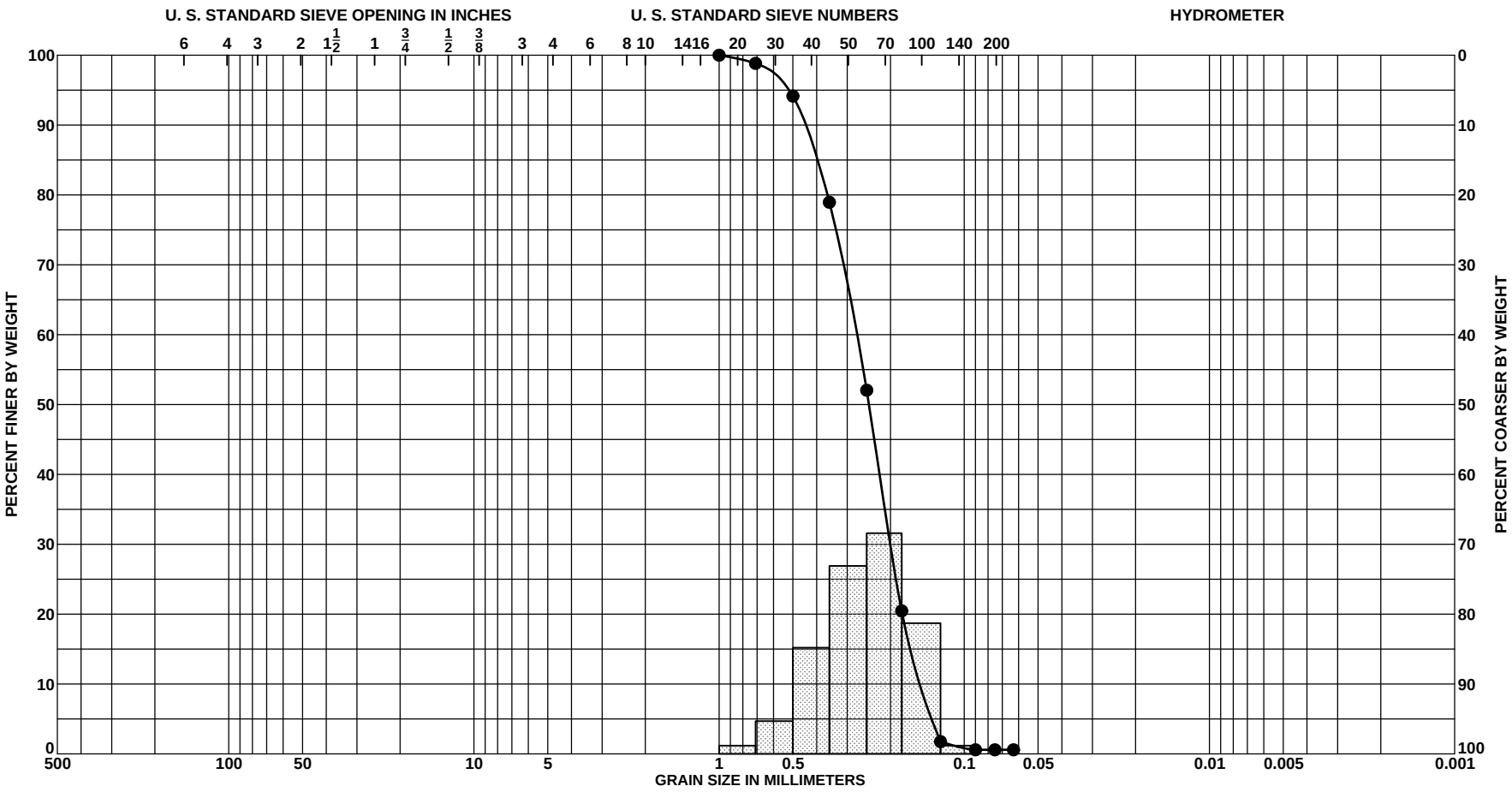


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	2							
		medium-grained									
		sand-sized carbonate, little silt, few									
		fine gravel-sized limestone,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-17
BORING ELEV.	-46.3 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-17
BORING ELEV.	-46.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-17 @ 2 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,226	503,282	State Plane, FLE (U.S. Ft.)	-48.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 5.65 #230 - 5.23		99.10	3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.64	0.64
#4	-2.25	4.75	0.11	0.76
#5	-2.00	4.00	0.25	1.01
#7	-1.50	2.80	0.85	1.85
#10	-1.00	2.00	2.33	4.18
#14	-0.50	1.40	7.43	11.61
#18	0.00	1.00	9.47	21.08
#25	0.50	0.71	13.76	34.84
#35	1.00	0.50	14.81	49.65
#45	1.50	0.36	12.38	62.03
#60	2.00	0.25	10.21	72.24
#80	2.50	0.18	8.00	80.24
#120	3.00	0.13	8.75	88.99
#170	3.50	0.09	4.38	93.37
#200	3.75	0.08	0.98	94.35
#230	4.00	0.06	0.42	94.77

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.71	2.17	1.01	0.14	-0.27	-0.94

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.99	0.50	1.01	0.50	1.29	-0.11	2.83

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-17 @ 4 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,226	503,282	State Plane, FLE (U.S. Ft.)	-50.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 7.20 #230 - 6.82			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.08	0.08
#4	-2.25	4.75	0.00	0.08
#5	-2.00	4.00	0.03	0.12
#7	-1.50	2.80	0.58	0.70
#10	-1.00	2.00	1.69	2.39
#14	-0.50	1.40	7.79	10.18
#18	0.00	1.00	9.88	20.06
#25	0.50	0.71	12.62	32.68
#35	1.00	0.50	14.63	47.31
#45	1.50	0.36	12.57	59.88
#60	2.00	0.25	10.10	69.98
#80	2.50	0.18	8.43	78.41
#120	3.00	0.13	8.33	86.73
#170	3.50	0.09	5.20	91.93
#200	3.75	0.08	0.86	92.80
#230	4.00	0.06	0.39	93.18

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.84	2.30	1.11	0.20	-0.21	-0.83

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.06	0.48	1.11	0.46	1.24	0.1	2.31

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-17 @ 6 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,226	503,282	State Plane, FLE (U.S. Ft.)	-52.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/2	#200 - 14.29 #230 - 13.24			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.86	2.86
#4	-2.25	4.75	0.04	2.90
#5	-2.00	4.00	0.07	2.97
#7	-1.50	2.80	0.60	3.57
#10	-1.00	2.00	1.80	5.36
#14	-0.50	1.40	7.74	13.10
#18	0.00	1.00	8.54	21.64
#25	0.50	0.71	11.39	33.03
#35	1.00	0.50	11.39	44.42
#45	1.50	0.36	8.93	53.35
#60	2.00	0.25	6.98	60.34
#80	2.50	0.18	6.66	66.99
#120	3.00	0.13	8.19	75.18
#170	3.50	0.09	8.48	83.66
#200	3.75	0.08	2.05	85.71
#230	4.00	0.06	1.05	86.76

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.54	2.99	1.31	0.15	-0.33	-1.10

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.04	0.49	1.31	0.40	1.58	-0.38	3.02

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-17 @ 8 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,226	503,282	State Plane, FLE (U.S. Ft.)	-54.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 25.10 #230 - 23.83			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.34	1.34
#4	-2.25	4.75	0.54	1.88
#5	-2.00	4.00	0.25	2.13
#7	-1.50	2.80	0.66	2.79
#10	-1.00	2.00	2.69	5.48
#14	-0.50	1.40	9.53	15.01
#18	0.00	1.00	7.97	22.99
#25	0.50	0.71	9.11	32.10
#35	1.00	0.50	9.54	41.64
#45	1.50	0.36	8.30	49.94
#60	2.00	0.25	6.23	56.17
#80	2.50	0.18	4.96	61.13
#120	3.00	0.13	5.67	66.80
#170	3.50	0.09	5.78	72.58
#200	3.75	0.08	2.32	74.90
#230	4.00	0.06	1.27	76.17

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.77	1.50	0.11	-0.44	-1.09

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.92	0.53	1.50	0.35	1.55	-0.07	2.61

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-17 @ 2 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,226	503,282	State Plane, FLE (U.S. Ft.)	-48.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.58 #230 - 0.58			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#18	0.00	1.00	0.00	0.00
#25	0.50	0.71	1.17	1.17
#35	1.00	0.50	4.68	5.85
#45	1.50	0.36	15.20	21.05
#60	2.00	0.25	26.90	47.95
#80	2.50	0.18	31.58	79.53
#120	3.00	0.13	18.71	98.25
#170	3.50	0.09	1.17	99.42
#200	3.75	0.08	0.00	99.42
#230	4.00	0.06	0.00	99.42

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.91	2.62	2.43	2.03	1.57	1.33	0.91

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.97	0.26	2.03	0.24	0.6	-0.41	2.79

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 17
DEPTH: 0.0 – 2.5
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 17
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 17
DEPTH: 5.0 – 7.5
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 17
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20– 17
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20– 17
DEPTH :12.5 –13.3
13'
14'
15'

VB-DA20-18

Vibracore Log
Grain Size Distribution Curves
Granulometric Tables
Vibracore Photos

Boring Designation VB-DA20-18

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-18	LOCATION COORDINATES: X = 955,077 Y = 503,761	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 5 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-24-20 / COMPLETED: 06-24-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -43.1 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 89 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-43.1	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 5Y 8/2 pale yellow (SW)				-45.1		
					1				
							-47.1		
					2				
-49.1	6.0						-49.1		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, moist, 5Y 8/1 white (SM)		3				
							-51.1		
					4				
							-54.1		
					5				

0 5 10 15

(Continued)

Boring Designation VB-DA20-18

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 955,077 Y = 503,761	ELEVATION TOP OF BORING: -43.1 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-60.8	17.7		No Recovery						
-63.1	20.0						-63.1		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

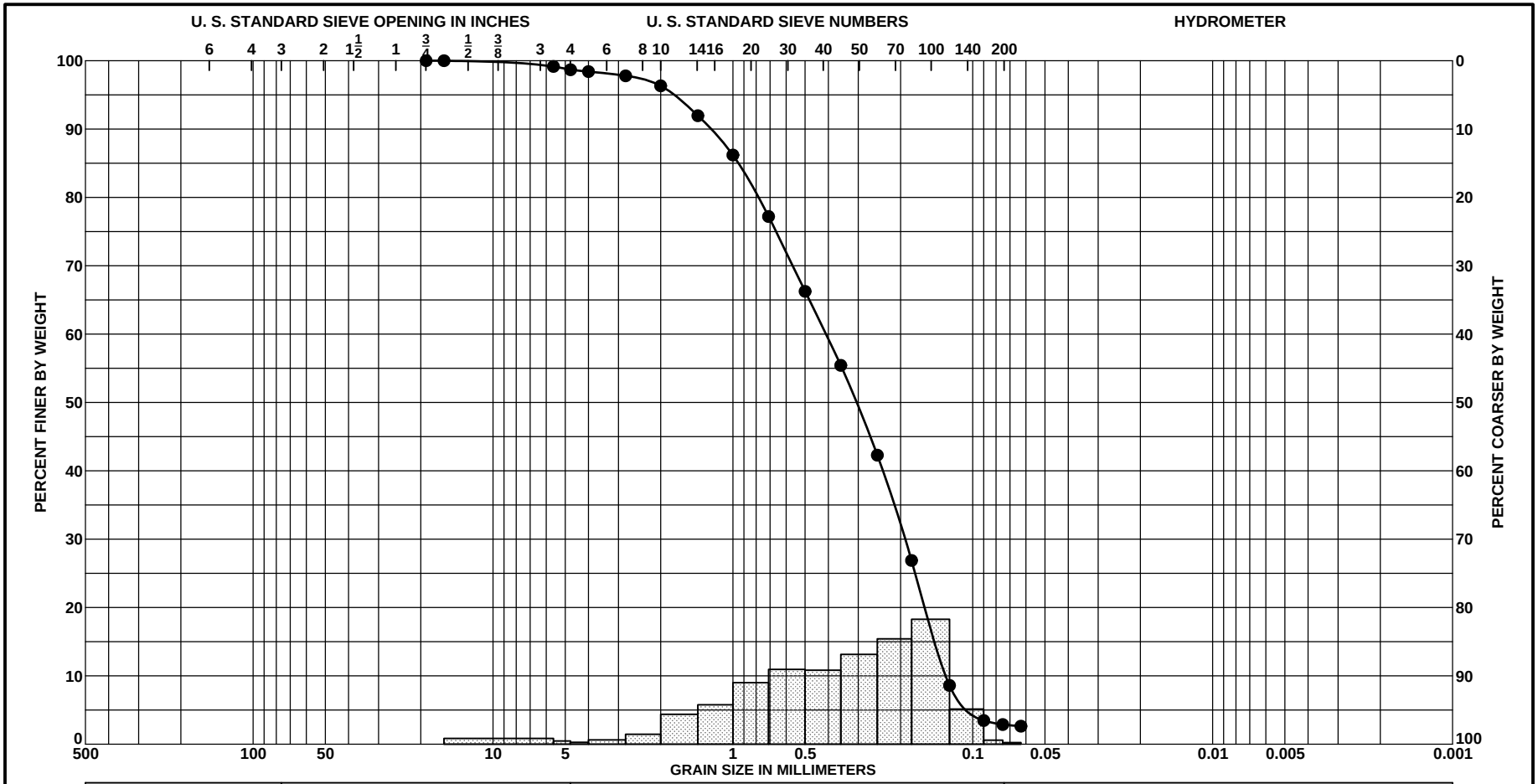
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW*
3	6.0/6.2	SM*
4	8.0/8.2	SM*
5	11.0/11.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

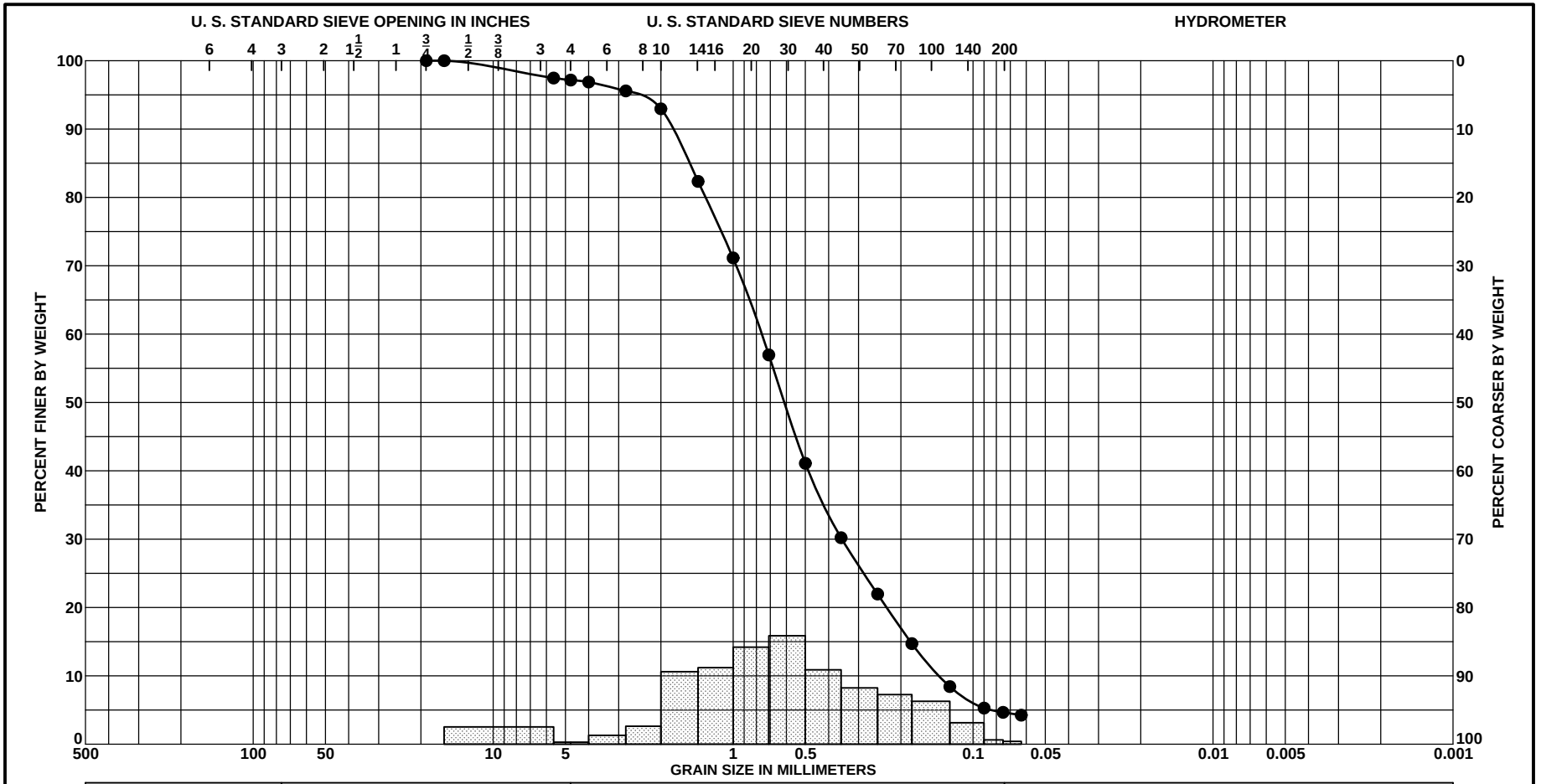


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-18
BORING ELEV.	-43.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

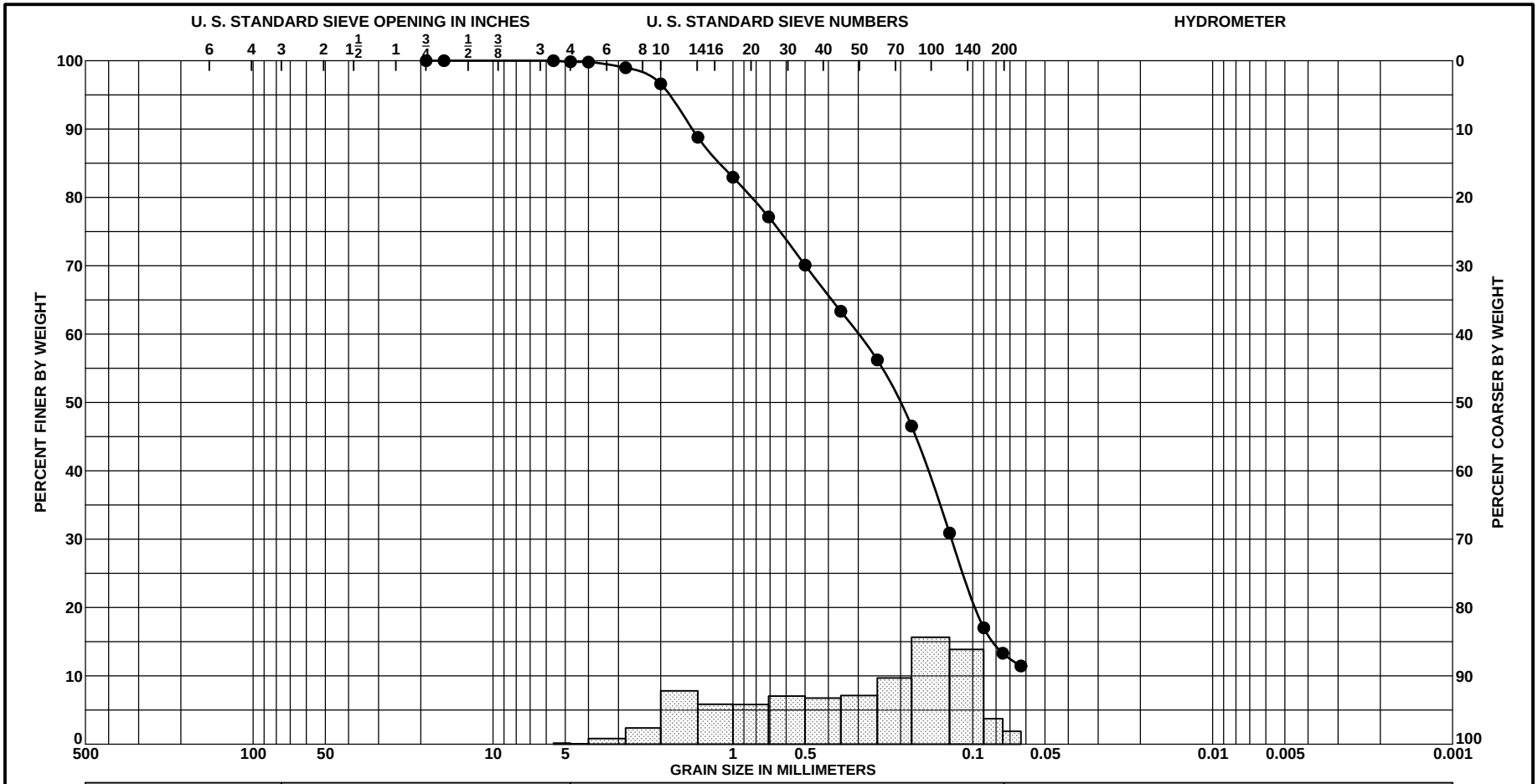


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-18
BORING ELEV.	-43.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

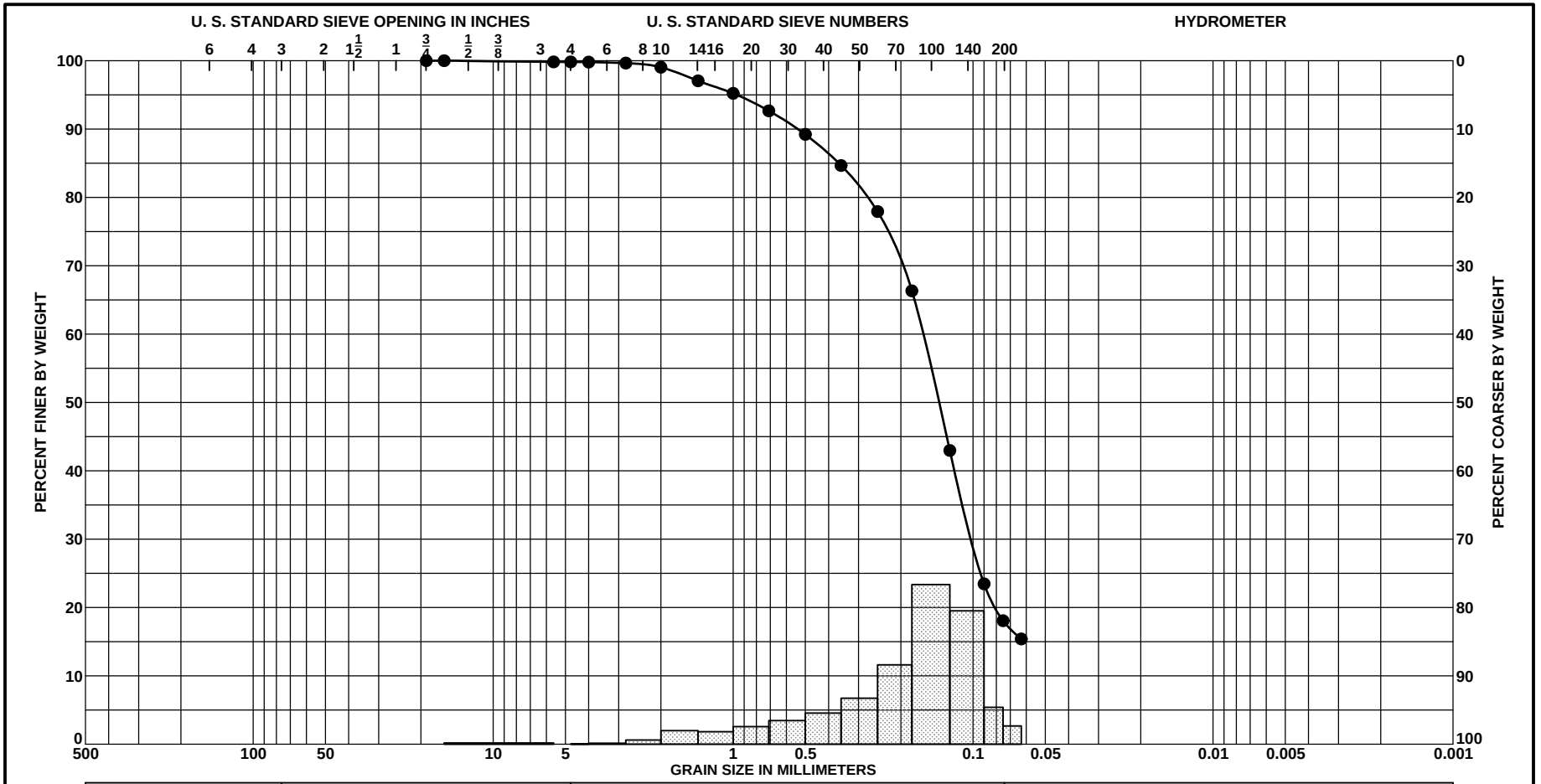


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-18
BORING ELEV.	-43.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

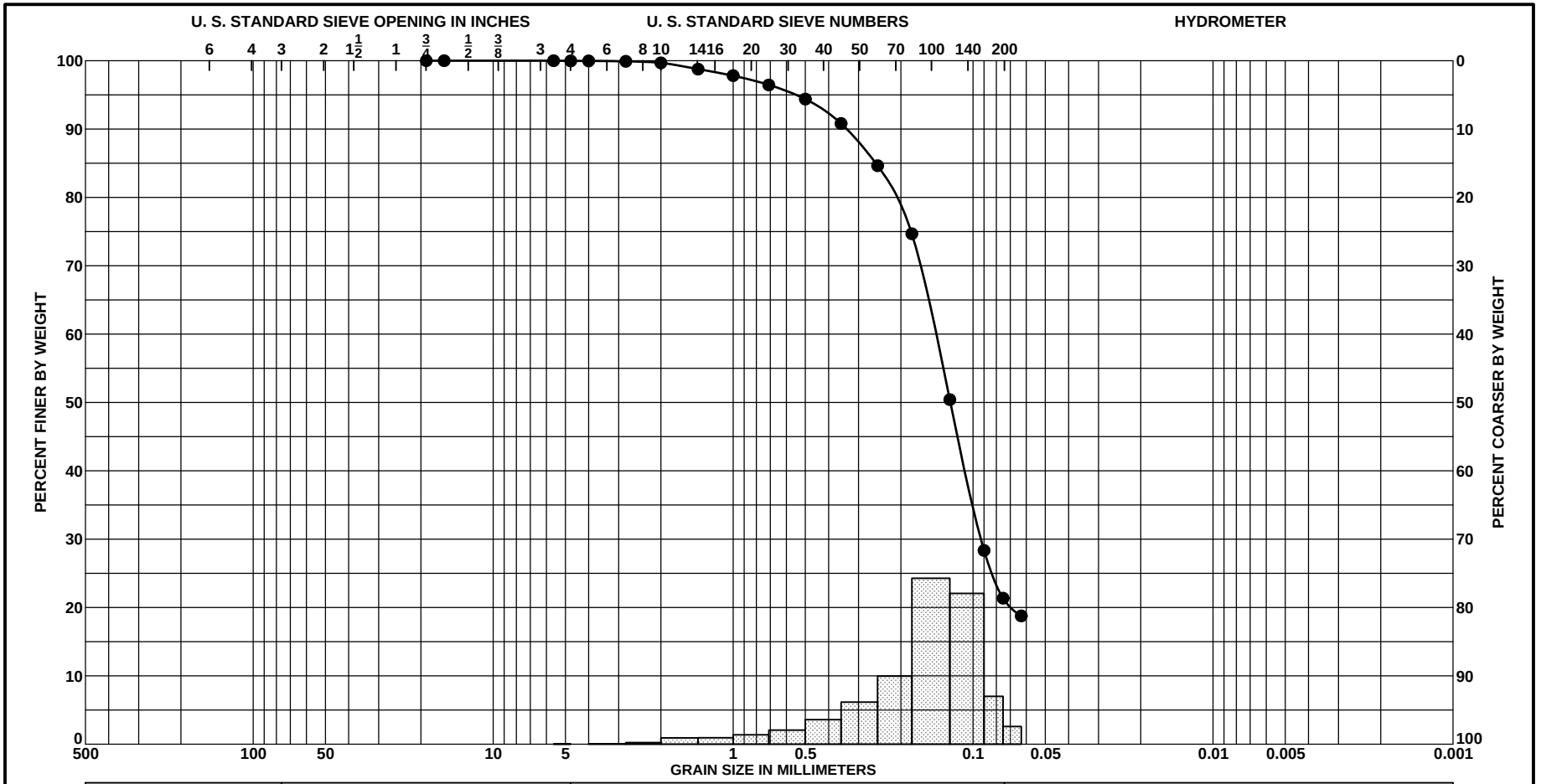


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-18
BORING ELEV.	-43.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	11.0 to 11.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-18
BORING ELEV.	-43.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-18 @ 2 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,077	503,761	State Plane, FLE (U.S. Ft.)	-45.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 2.88 #230 - 2.64			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.84	0.84
#4	-2.25	4.75	0.48	1.32
#5	-2.00	4.00	0.27	1.59
#7	-1.50	2.80	0.63	2.22
#10	-1.00	2.00	1.46	3.68
#14	-0.50	1.40	4.37	8.05
#18	0.00	1.00	5.76	13.80
#25	0.50	0.71	8.99	22.80
#35	1.00	0.50	10.95	33.75
#45	1.50	0.36	10.83	44.58
#60	2.00	0.25	13.13	57.71
#80	2.50	0.18	15.41	73.12
#120	3.00	0.13	18.28	91.40
#170	3.50	0.09	5.13	96.53
#200	3.75	0.08	0.59	97.12
#230	4.00	0.06	0.24	97.36

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.35	2.80	2.55	1.71	0.60	0.12	-0.85

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.43	0.37	1.71	0.31	1.3	-0.81	3.54

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-18 @ 4 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,077	503,761	State Plane, FLE (U.S. Ft.)	-47.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 4.66 #230 - 4.25			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.53	2.53
#4	-2.25	4.75	0.29	2.83
#5	-2.00	4.00	0.29	3.12
#7	-1.50	2.80	1.30	4.42
#10	-1.00	2.00	2.62	7.04
#14	-0.50	1.40	10.62	17.66
#18	0.00	1.00	11.20	28.86
#25	0.50	0.71	14.19	43.05
#35	1.00	0.50	15.86	58.91
#45	1.50	0.36	10.88	69.79
#60	2.00	0.25	8.24	78.03
#80	2.50	0.18	7.26	85.29
#120	3.00	0.13	6.28	91.57
#170	3.50	0.09	3.14	94.72
#200	3.75	0.08	0.62	95.34
#230	4.00	0.06	0.41	95.75

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.61	2.41	1.82	0.72	-0.17	-0.58	-1.39

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.68	0.62	0.72	0.61	1.39	-0.27	3.35

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-18 @ 6 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,077	503,761	State Plane, FLE (U.S. Ft.)	-49.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 13.31 #230 - 11.43			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.15	0.15
#5	-2.00	4.00	0.05	0.20
#7	-1.50	2.80	0.83	1.03
#10	-1.00	2.00	2.36	3.39
#14	-0.50	1.40	7.81	11.20
#18	0.00	1.00	5.85	17.05
#25	0.50	0.71	5.81	22.86
#35	1.00	0.50	7.05	29.91
#45	1.50	0.36	6.75	36.66
#60	2.00	0.25	7.12	43.78
#80	2.50	0.18	9.68	53.46
#120	3.00	0.13	15.64	69.10
#170	3.50	0.09	13.87	82.97
#200	3.75	0.08	3.72	86.69
#230	4.00	0.06	1.88	88.57

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.57	3.21	2.32	0.65	-0.09	-0.90

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.65	0.32	2.32	0.20	1.5	-0.48	2.04

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-18 @ 8 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,077	503,761	State Plane, FLE (U.S. Ft.)	-51.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 18.07 #230 - 15.40			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.17	0.17
#4	-2.25	4.75	0.00	0.17
#5	-2.00	4.00	0.03	0.20
#7	-1.50	2.80	0.15	0.35
#10	-1.00	2.00	0.61	0.96
#14	-0.50	1.40	1.99	2.94
#18	0.00	1.00	1.83	4.77
#25	0.50	0.71	2.57	7.34
#35	1.00	0.50	3.44	10.78
#45	1.50	0.36	4.55	15.33
#60	2.00	0.25	6.73	22.06
#80	2.50	0.18	11.61	33.67
#120	3.00	0.13	23.35	57.03
#170	3.50	0.09	19.52	76.54
#200	3.75	0.08	5.39	81.93
#230	4.00	0.06	2.67	84.60

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.94	3.46	2.85	2.13	1.55	0.04

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.37	0.19	2.85	0.14	1.14	-1.42	5.07

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-18 @ 11 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,077	503,761	State Plane, FLE (U.S. Ft.)	-54.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 21.36 #230 - 18.77			1

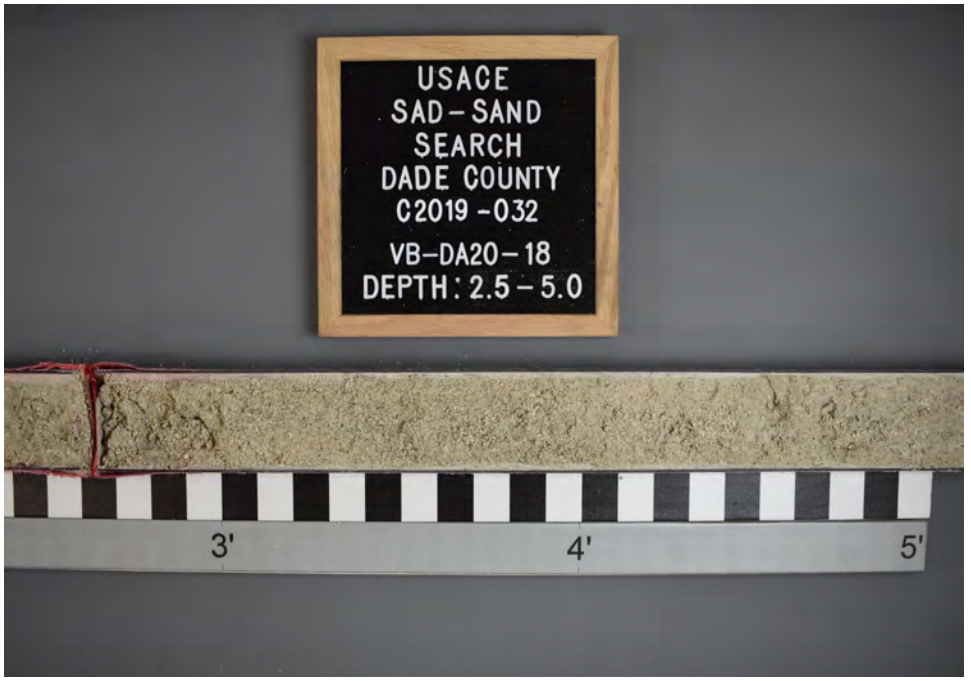
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.03	0.03
#5	-2.00	4.00	0.00	0.03
#7	-1.50	2.80	0.06	0.09
#10	-1.00	2.00	0.23	0.32
#14	-0.50	1.40	0.92	1.24
#18	0.00	1.00	0.95	2.18
#25	0.50	0.71	1.37	3.55
#35	1.00	0.50	2.06	5.61
#45	1.50	0.36	3.58	9.19
#60	2.00	0.25	6.16	15.36
#80	2.50	0.18	9.96	25.32
#120	3.00	0.13	24.27	49.59
#170	3.50	0.09	22.07	71.65
#200	3.75	0.08	6.99	78.64
#230	4.00	0.06	2.59	81.23

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.62	3.01	2.48	2.03	0.85

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.61	0.16	3.01	0.12	0.94	-1.57	5.92

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20– 18
DEPTH: 0.0 – 2.5
1'
2'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20– 18
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20– 18
DEPTH: 5.0 – 7.5
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20– 18
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 18
DEPTH : 10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 18
DEPTH : 12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 18
DEPTH : 15.0 –17.7
15'
16'
17'

VB-DA20-19

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-19

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-19
LOCATION COORDINATES: X = 954,543 Y = 504,578
3. DRILLING AGENCY: Amdrill
CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL:
BEARING:
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 15.4 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) HORIZONTAL: NAD83 VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 5 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-24-20 COMPLETED: 06-24-20
16. ELEVATION TOP OF BORING: -47.0 Ft.
17. TOTAL RECOVERY FOR BORING: 81 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-47.0	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace shell, trace silt, moist, 5Y 8/2 pale yellow (SW)				-49.0		
					1				
-51.0	4.0						-51.0		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 8/1 white (SW-SM)		2		-53.0		
					3				
-55.0	8.0						-55.0		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, few shell, moist, 5Y 8/1 white (SM)		4		-57.0		
					5				
-59.5	12.5								
			No Recovery						

0 5 10 15

(Continued)

Boring Designation VB-DA20-19

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 954,543 Y = 504,578	ELEVATION TOP OF BORING: -47.0 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-62.4	15.4						-62.4		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

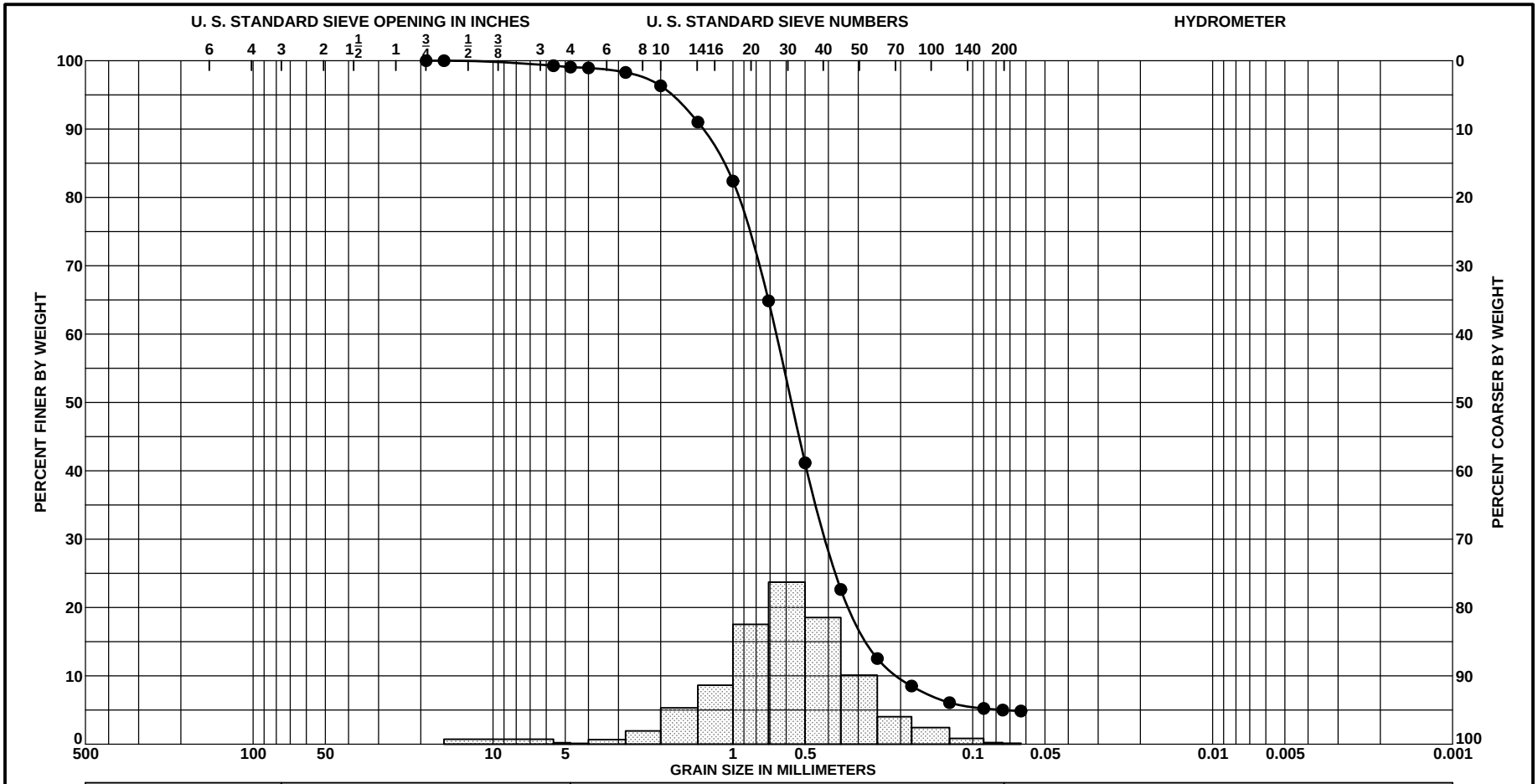
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW-SM*
3	6.0/6.2	SW-SM*
4	8.0/8.2	SM*
5	10.0/10.2	SM*

*Lab visual classification based on gradation curve

15 20 25 30 35

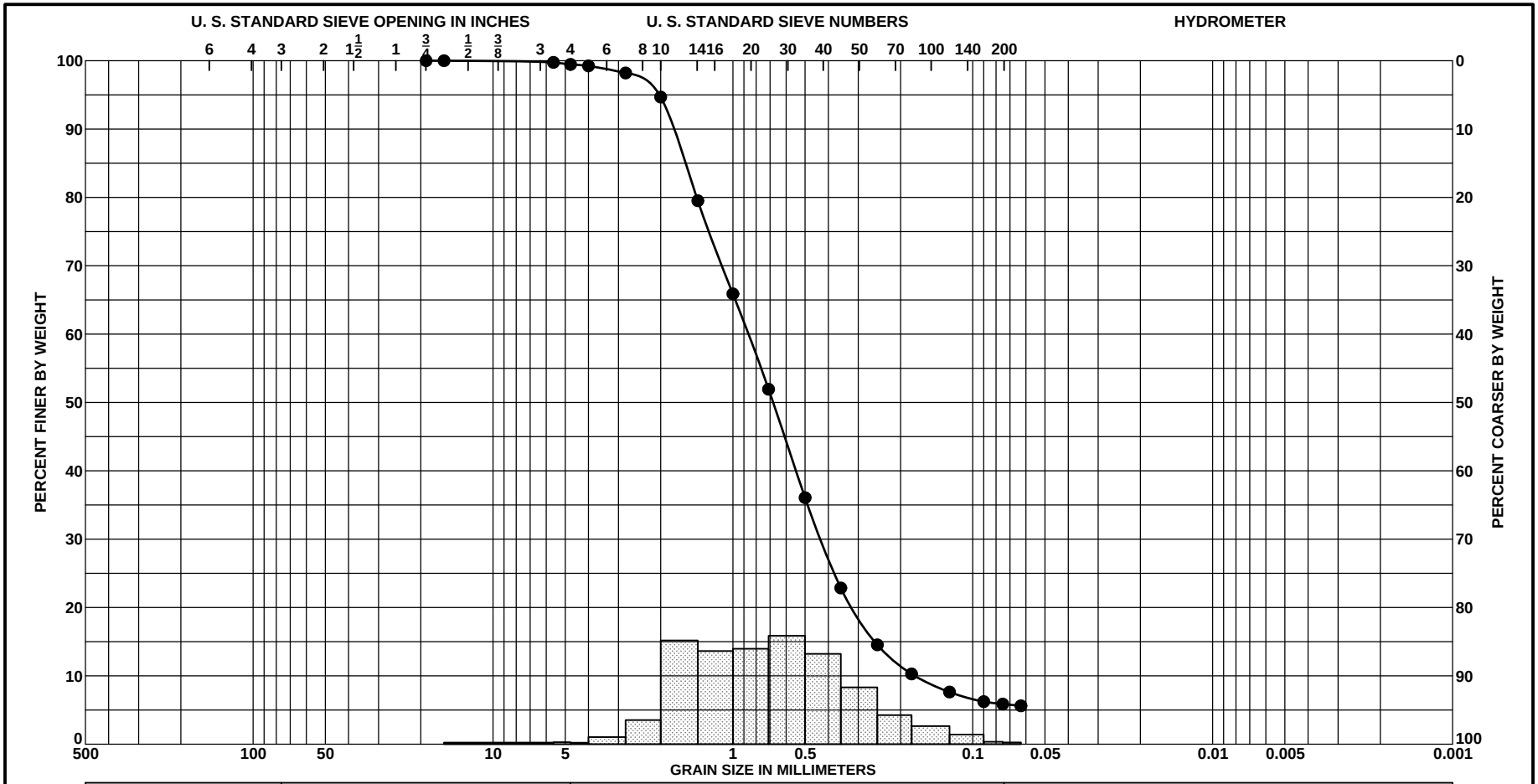


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/2	2	100						
		medium-grained sand-sized									
		carbonate, trace									
		shell, trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-19
BORING ELEV.	-47.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

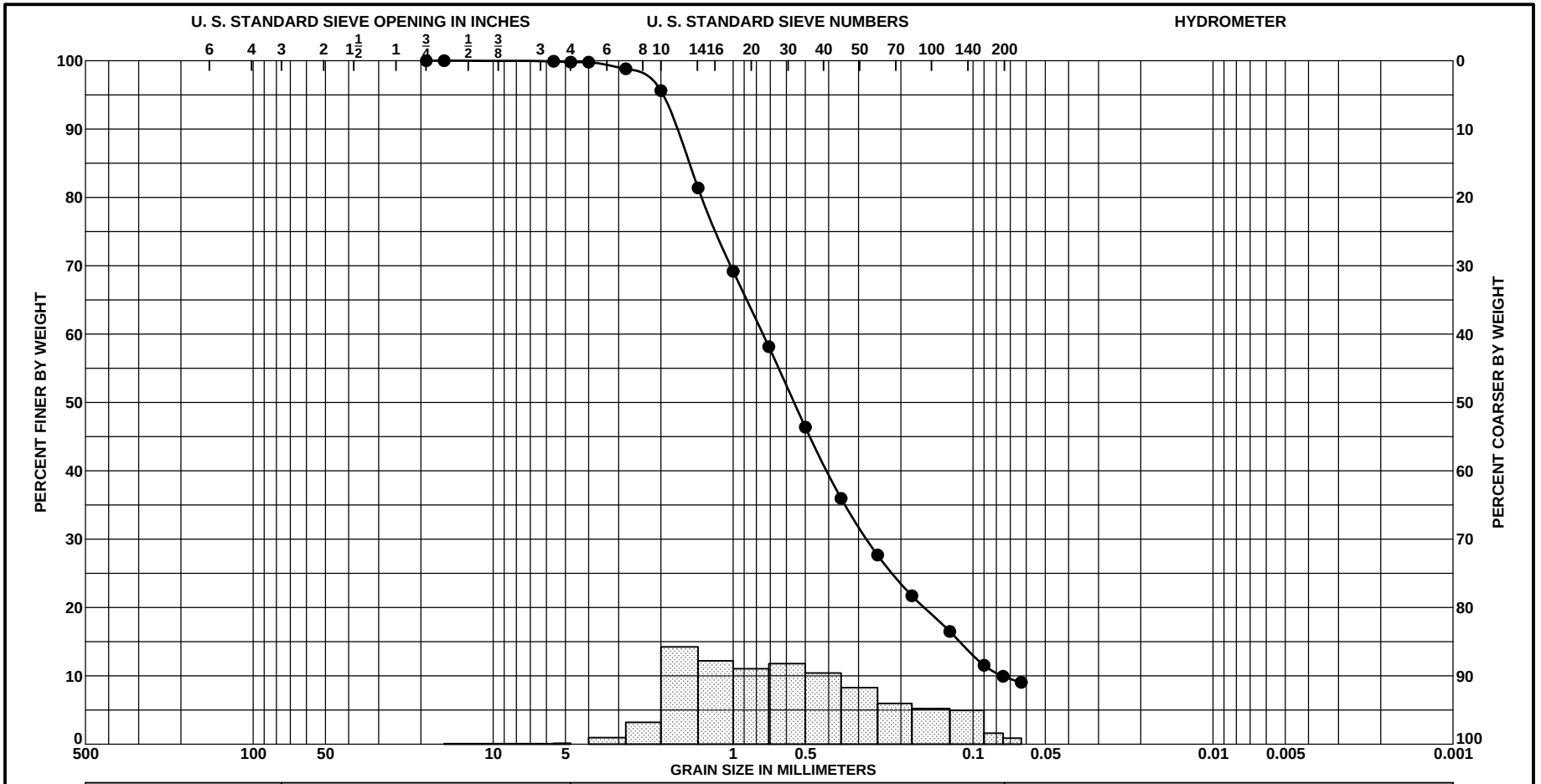


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/2	3							
		fine to									
		medium-grained sand-sized									
		carbonate, few silt,									
		trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-19
BORING ELEV.	-47.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

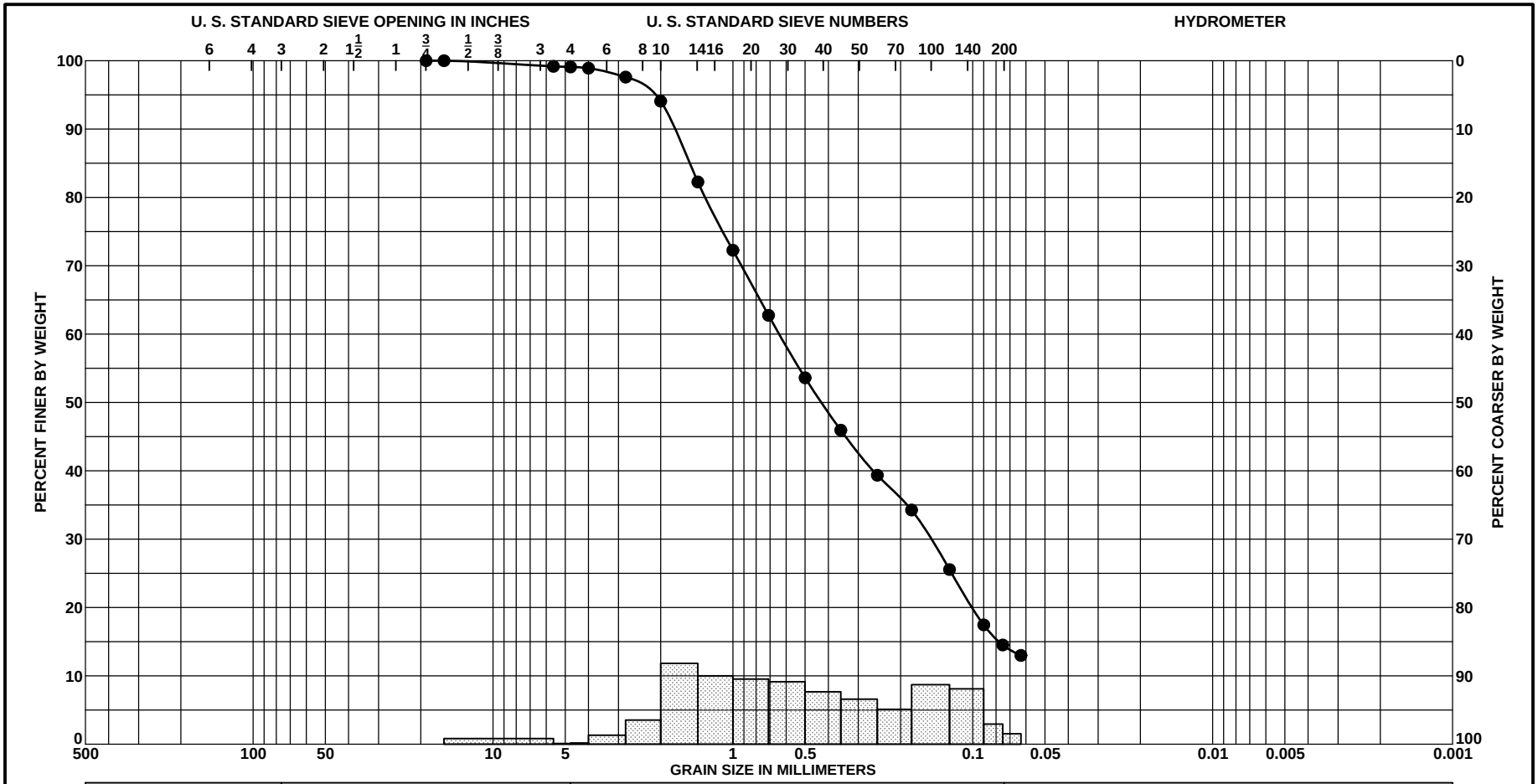


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/1	3							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, white (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-19
BORING ELEV.	-47.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

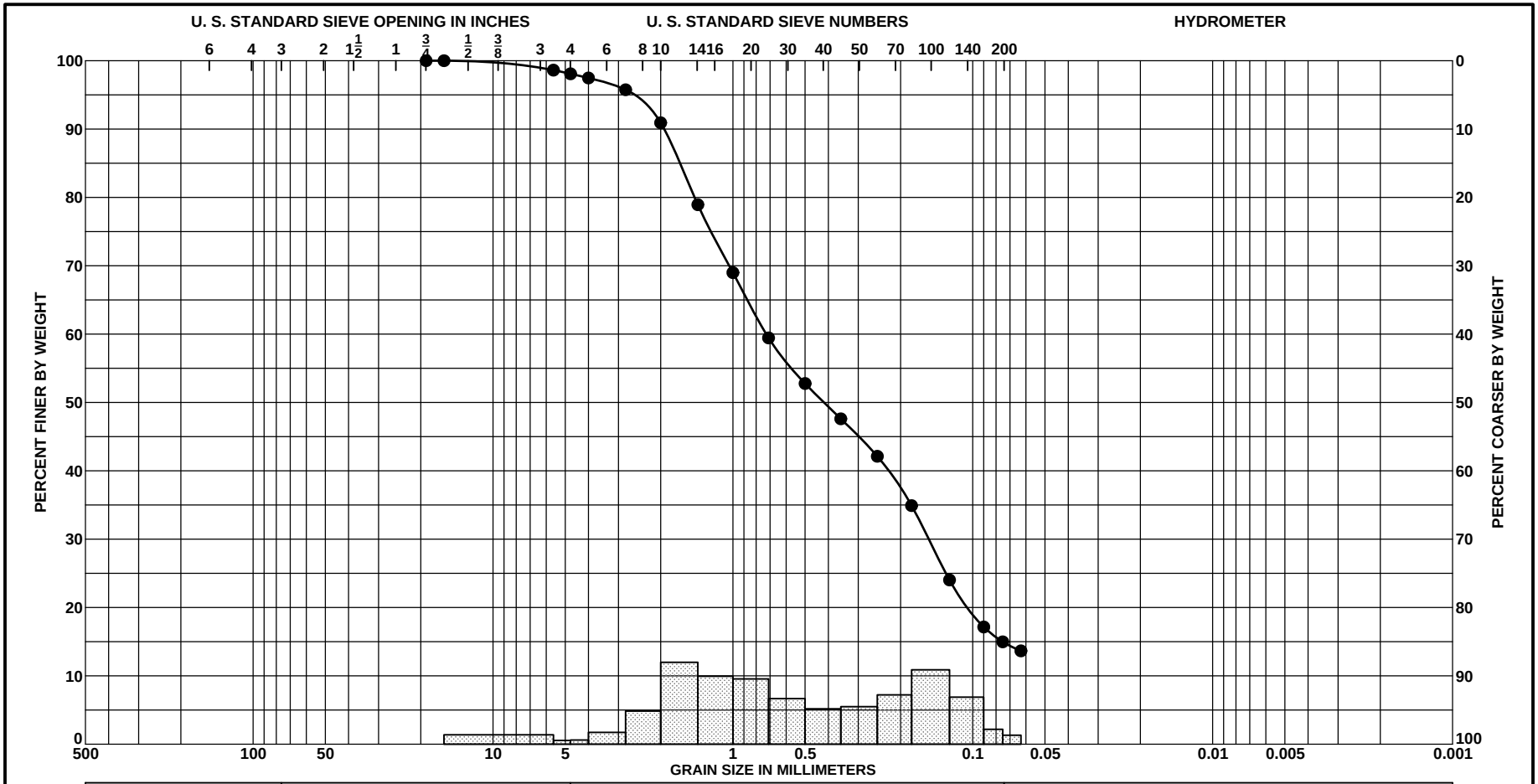


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	2							
		medium-grained									
		sand-sized carbonate, little silt, few									
		shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-19
BORING ELEV.	-47.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

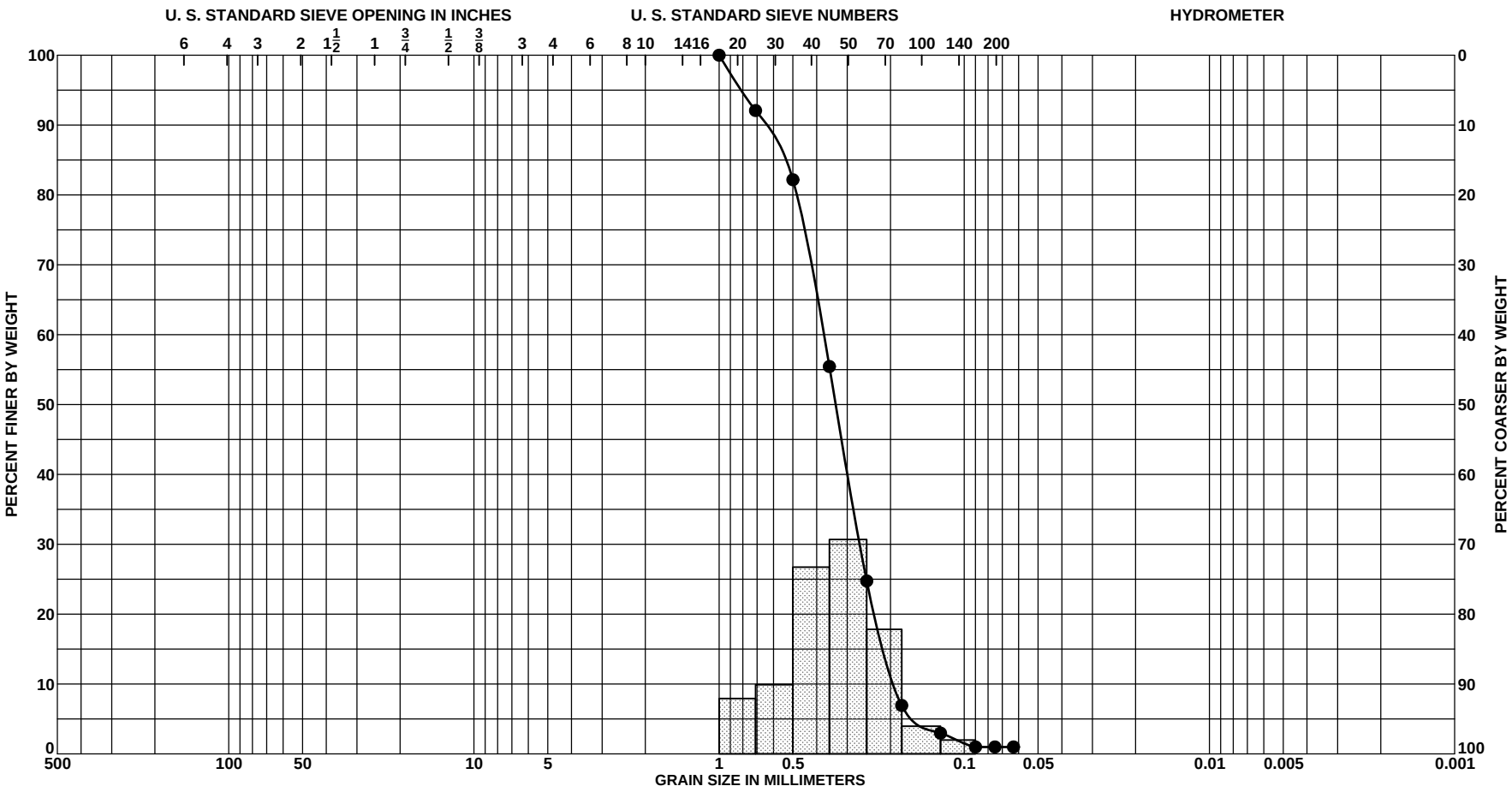


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	10.0 to 10.2 Ft.	SAND, silty, mostly fine to	5Y 8/1	2							
		medium-grained									
		sand-sized carbonate, little silt, few									
		shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-19
BORING ELEV.	-47.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-19
BORING ELEV.	-47.0 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-19 @ 2 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,543	504,578	State Plane, FLE (U.S. Ft.)	-49.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/2	#200 - 5.00 #230 - 4.85		99.50	2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.73	0.73
#4	-2.25	4.75	0.21	0.94
#5	-2.00	4.00	0.12	1.06
#7	-1.50	2.80	0.67	1.72
#10	-1.00	2.00	1.95	3.67
#14	-0.50	1.40	5.31	8.98
#18	0.00	1.00	8.63	17.61
#25	0.50	0.71	17.53	35.14
#35	1.00	0.50	23.70	58.84
#45	1.50	0.36	18.53	77.37
#60	2.00	0.25	10.10	87.47
#80	2.50	0.18	4.02	91.49
#120	3.00	0.13	2.44	93.93
#170	3.50	0.09	0.84	94.77
#200	3.75	0.08	0.23	95.00
#230	4.00	0.06	0.15	95.15

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.75	1.83	1.44	0.81	0.21	-0.09	-0.87

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.74	0.60	0.81	0.57	0.99	-0.41	4.77

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-19 @ 4 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,543	504,578	State Plane, FLE (U.S. Ft.)	-51.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/2	#200 - 5.87 #230 - 5.61			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.24	0.24
#4	-2.25	4.75	0.30	0.54
#5	-2.00	4.00	0.22	0.76
#7	-1.50	2.80	1.04	1.80
#10	-1.00	2.00	3.52	5.32
#14	-0.50	1.40	15.17	20.49
#18	0.00	1.00	13.63	34.11
#25	0.50	0.71	13.96	48.07
#35	1.00	0.50	15.86	63.93
#45	1.50	0.36	13.21	77.14
#60	2.00	0.25	8.32	85.46
#80	2.50	0.18	4.26	89.72
#120	3.00	0.13	2.65	92.37
#170	3.50	0.09	1.40	93.77
#200	3.75	0.08	0.36	94.13
#230	4.00	0.06	0.26	94.39

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	1.91	1.42	0.56	-0.33	-0.65	-1.04

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.50	0.71	0.56	0.68	1.13	0.26	2.98

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-19 @ 6 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,543	504,578	State Plane, FLE (U.S. Ft.)	-53.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/1	#200 - 9.93 #230 - 9.06			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.08	0.08
#4	-2.25	4.75	0.13	0.21
#5	-2.00	4.00	0.00	0.21
#7	-1.50	2.80	0.96	1.18
#10	-1.00	2.00	3.20	4.38
#14	-0.50	1.40	14.23	18.61
#18	0.00	1.00	12.20	30.81
#25	0.50	0.71	11.03	41.84
#35	1.00	0.50	11.77	53.62
#45	1.50	0.36	10.42	64.04
#60	2.00	0.25	8.28	72.32
#80	2.50	0.18	5.97	78.29
#120	3.00	0.13	5.22	83.51
#170	3.50	0.09	4.95	88.46
#200	3.75	0.08	1.61	90.07
#230	4.00	0.06	0.88	90.94

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.05	2.22	0.85	-0.24	-0.59	-0.98

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.79	0.58	0.85	0.55	1.35	0.36	2.31

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-19 @ 8 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,543	504,578	State Plane, FLE (U.S. Ft.)	-55.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 14.51 #230 - 12.98			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.82	0.82
#4	-2.25	4.75	0.09	0.92
#5	-2.00	4.00	0.17	1.09
#7	-1.50	2.80	1.31	2.40
#10	-1.00	2.00	3.52	5.92
#14	-0.50	1.40	11.82	17.74
#18	0.00	1.00	9.99	27.73
#25	0.50	0.71	9.52	37.26
#35	1.00	0.50	9.14	46.39
#45	1.50	0.36	7.66	54.06
#60	2.00	0.25	6.59	60.65
#80	2.50	0.18	5.09	65.74
#120	3.00	0.13	8.71	74.45
#170	3.50	0.09	8.09	82.54
#200	3.75	0.08	2.94	85.49
#230	4.00	0.06	1.53	87.02

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.62	3.03	1.24	-0.14	-0.57	-1.13

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.00	0.50	1.24	0.42	1.57	0.04	2.15

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-19 @ 10 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,543	504,578	State Plane, FLE (U.S. Ft.)	-57.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 8/1	#200 - 14.98 #230 - 13.65			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.38	1.38
#4	-2.25	4.75	0.54	1.92
#5	-2.00	4.00	0.61	2.53
#7	-1.50	2.80	1.72	4.25
#10	-1.00	2.00	4.83	9.09
#14	-0.50	1.40	11.98	21.06
#18	0.00	1.00	9.94	31.00
#25	0.50	0.71	9.55	40.56
#35	1.00	0.50	6.67	47.23
#45	1.50	0.36	5.17	52.39
#60	2.00	0.25	5.49	57.88
#80	2.50	0.18	7.22	65.10
#120	3.00	0.13	10.87	75.97
#170	3.50	0.09	6.88	82.85
#200	3.75	0.08	2.17	85.02
#230	4.00	0.06	1.32	86.35

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.63	2.96	1.27	-0.30	-0.71	-1.42

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.90	0.54	1.27	0.41	1.67	-0.06	2.1

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-19 @ 2 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,543	504,578	State Plane, FLE (U.S. Ft.)	-49.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.99 #230 - 0.99			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#18	0.00	1.00	0.00	0.00
#25	0.50	0.71	7.92	7.92
#35	1.00	0.50	9.90	17.82
#45	1.50	0.36	26.73	44.55
#60	2.00	0.25	30.69	75.25
#80	2.50	0.18	17.82	93.07
#120	3.00	0.13	3.96	97.03
#170	3.50	0.09	1.98	99.01
#200	3.75	0.08	0.00	99.01
#230	4.00	0.06	0.00	99.01

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.74	2.25	2.00	1.59	1.13	0.91	0.32

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.56	0.34	1.59	0.33	0.66	-0.03	2.93

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 19
DEPTH : 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 19
DEPTH : 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 19
DEPTH : 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 19
DEPTH : 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20– 19
DEPTH :10.0 –12.5
0'
11'
12'

VB-DA20-20

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-20

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-20	LOCATION COORDINATES: X = 955,471 Y = 505,755	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 4 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-24-20 / COMPLETED: 06-24-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -48.0 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 74 %	
8. TOTAL DEPTH OF BORING: 13.5 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-48.0	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 5Y 8/1 white (SW)				-50.0		
					1		-52.0		
					2				
-54.0	6.0						-54.0		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 8/1 white (SW-SM)		3				
-54.9	6.9								
			LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone, some fine-grained sand-sized carbonate, little silt, moist, 2.5Y 7/2 light gray						
-56.0	8.0								
			SAND, silty, mostly fine-grained sand-sized carbonate, little silt, moist, 2.5Y 6/2 light brownish gray (SM)				-57.0		
-57.2	9.2				4				
			LIMESTONE						
-58.0	10.0								
			No Recovery						
-61.5	13.5						-61.5		
			BORING TERMINATED IN REFUSAL				Abbreviations:		
			NOTES:						
			1. Taylor Engineering is the custodian for						

(Continued)

Boring Designation VB-DA20-20

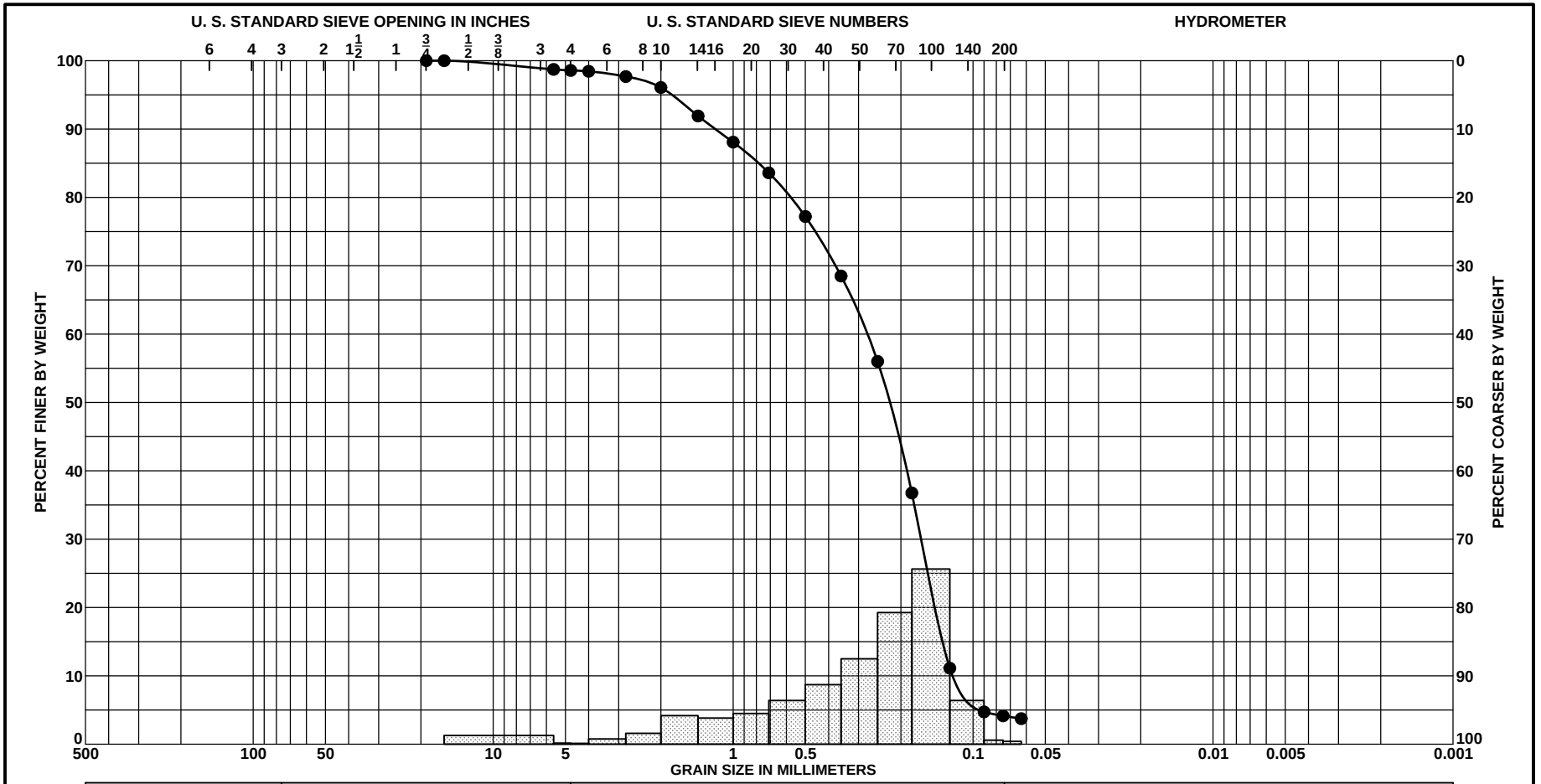
DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 955,471 Y = 505,755	ELEVATION TOP OF BORING: -48.0 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Laboratory Testing Results						

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW*
3	6.0/6.2	SW-SM*
4	9.0/9.2	SM*

*Lab visual classification based on gradation curve

15 20 25 30 35

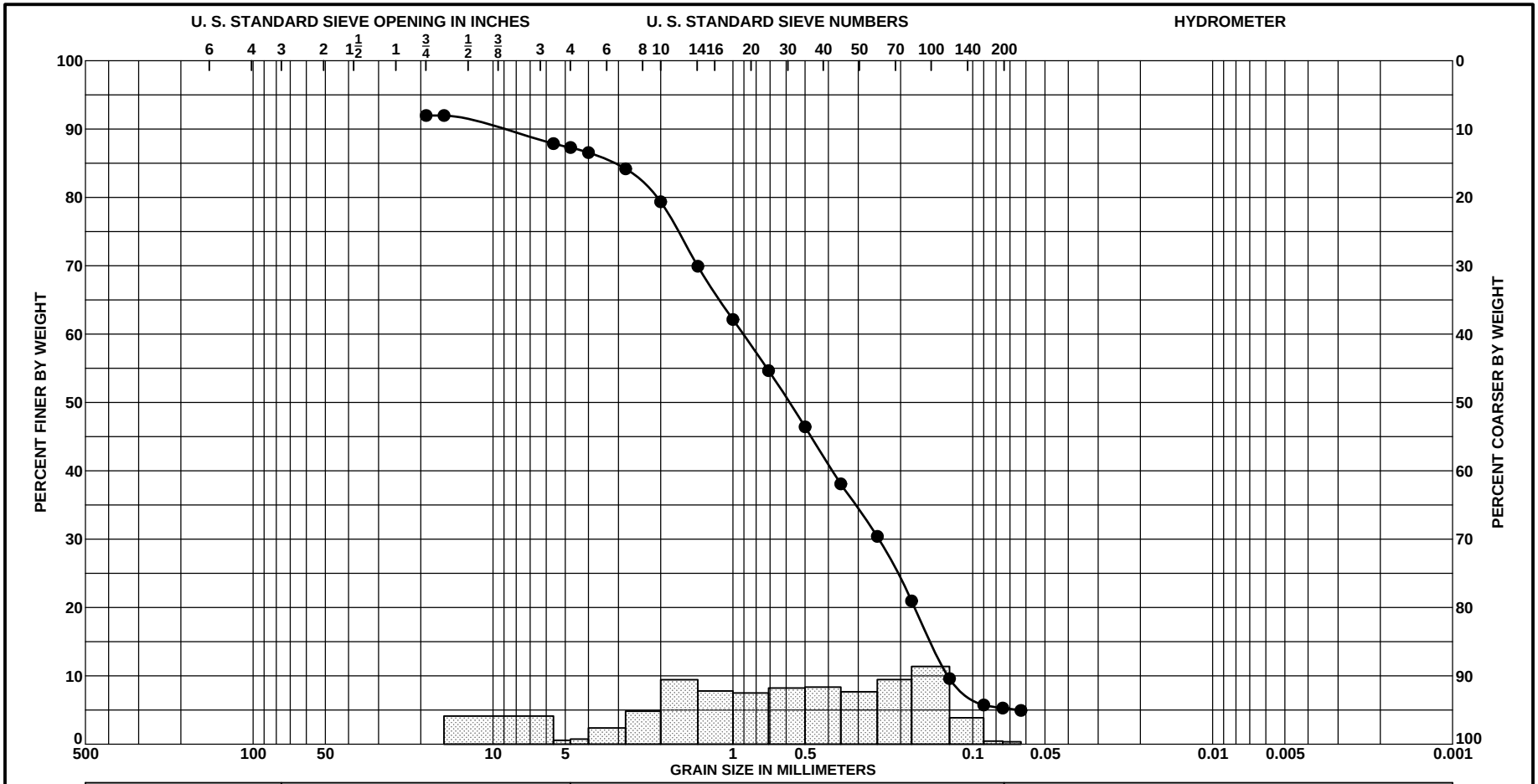


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/1	2							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, white (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-20
BORING ELEV.	-48.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

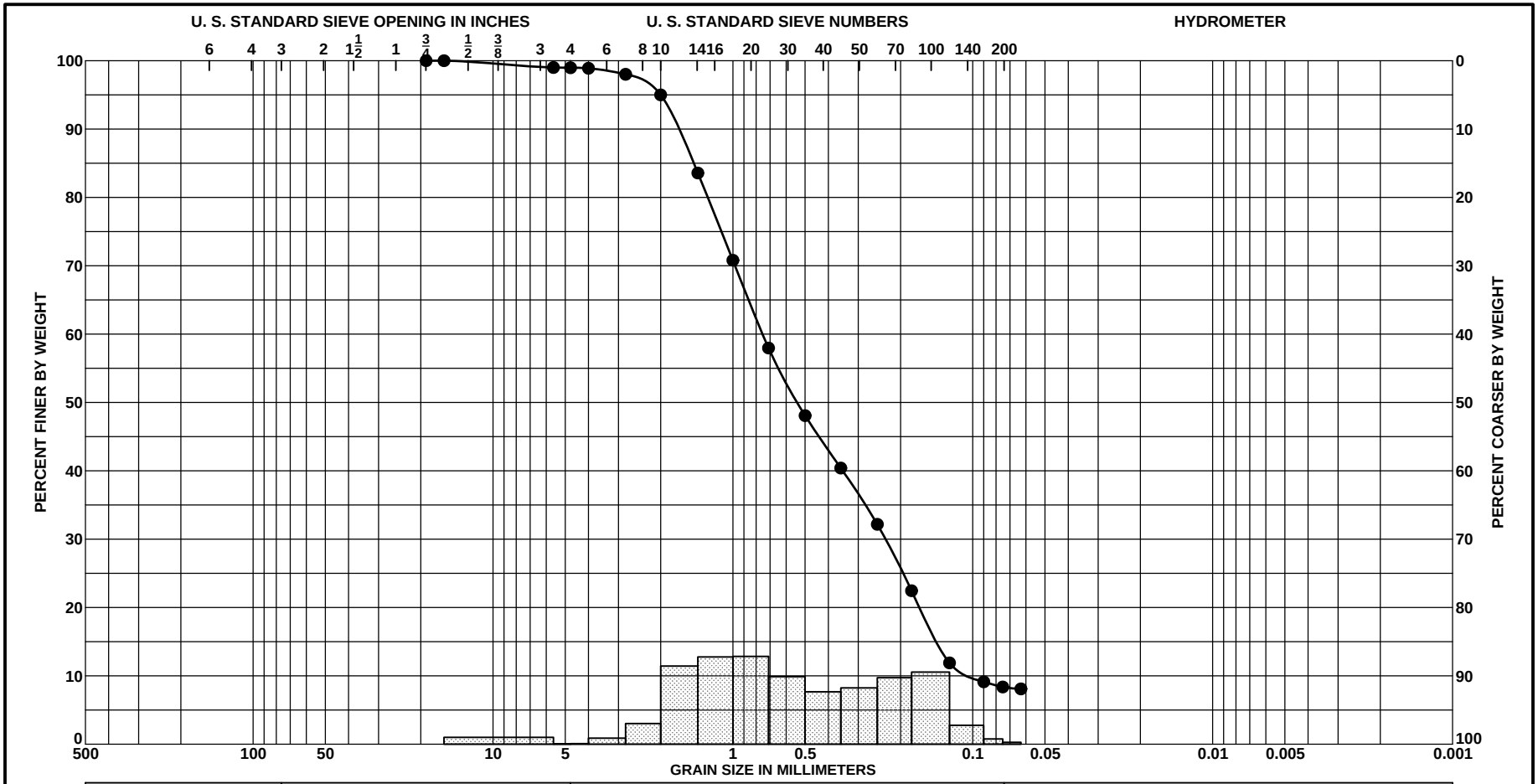


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	5Y 8/1	3							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, white (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-20
BORING ELEV.	-48.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

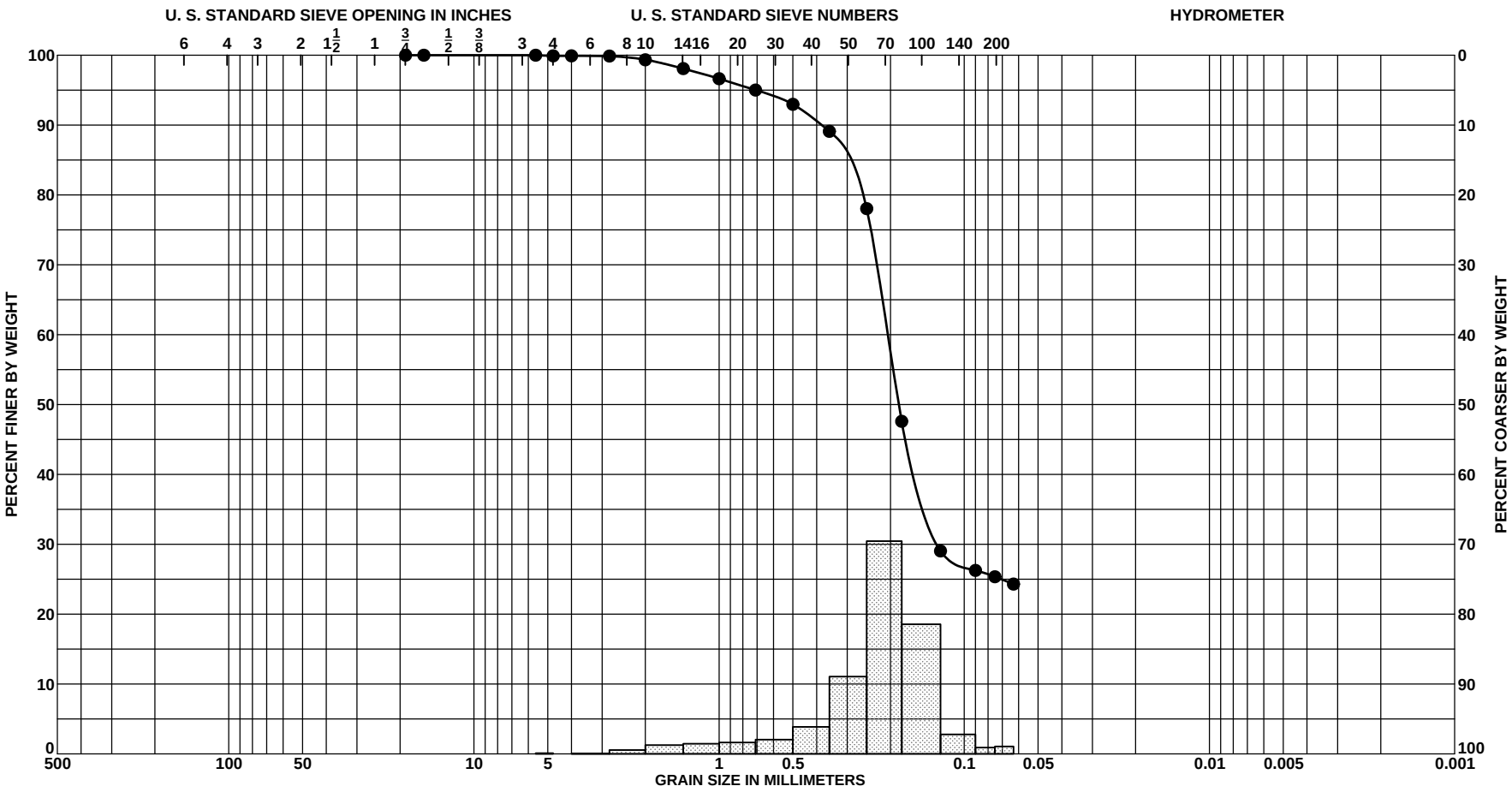


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 8/1	5							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, white (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-20
BORING ELEV.	-48.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	9.0 to 9.2 Ft.	SAND, silty, mostly fine-grained	2.5Y 6/2	0							
		sand-sized									
		carbonate, little silt, light brownish									
		gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-20
BORING ELEV.	-48.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-20 @ 2 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,471	505,755	State Plane, FLE (U.S. Ft.)	-50.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/1	#200 - 4.14 #230 - 3.74			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.27	1.27
#4	-2.25	4.75	0.15	1.43
#5	-2.00	4.00	0.12	1.55
#7	-1.50	2.80	0.77	2.32
#10	-1.00	2.00	1.60	3.92
#14	-0.50	1.40	4.17	8.09
#18	0.00	1.00	3.82	11.91
#25	0.50	0.71	4.50	16.41
#35	1.00	0.50	6.39	22.80
#45	1.50	0.36	8.71	31.51
#60	2.00	0.25	12.49	43.99
#80	2.50	0.18	19.26	63.25
#120	3.00	0.13	25.63	88.88
#170	3.50	0.09	6.39	95.27
#200	3.75	0.08	0.59	95.86
#230	4.00	0.06	0.40	96.26

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.48	2.90	2.73	2.16	1.13	0.45	-0.87

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.71	0.31	2.16	0.22	1.32	-1.32	4.71

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-20 @ 4 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,471	505,755	State Plane, FLE (U.S. Ft.)	-52.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/1	#200 - 5.29 #230 - 4.94			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	8.02	8.02
5/8	-4.00	16.00	0.00	8.02
#3.5	-2.50	5.60	4.11	12.13
#4	-2.25	4.75	0.57	12.70
#5	-2.00	4.00	0.75	13.45
#7	-1.50	2.80	2.37	15.82
#10	-1.00	2.00	4.83	20.64
#14	-0.50	1.40	9.43	30.07
#18	0.00	1.00	7.79	37.86
#25	0.50	0.71	7.49	45.35
#35	1.00	0.50	8.22	53.57
#45	1.50	0.36	8.35	61.92
#60	2.00	0.25	7.67	69.59
#80	2.50	0.18	9.45	79.04
#120	3.00	0.13	11.37	90.41
#170	3.50	0.09	3.86	94.26
#200	3.75	0.08	0.45	94.71
#230	4.00	0.06	0.35	95.06

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.96	2.72	2.29	0.78	-0.77	-1.48	

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.31	0.81	0.78	0.58	1.67	0.31	2.38

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-20 @ 6 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,471	505,755	State Plane, FLE (U.S. Ft.)	-54.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 8/1	#200 - 8.37 #230 - 8.10			5

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.99	0.99
#4	-2.25	4.75	0.03	1.03
#5	-2.00	4.00	0.08	1.11
#7	-1.50	2.80	0.88	1.99
#10	-1.00	2.00	3.01	5.00
#14	-0.50	1.40	11.43	16.43
#18	0.00	1.00	12.77	29.20
#25	0.50	0.71	12.84	42.04
#35	1.00	0.50	9.89	51.93
#45	1.50	0.36	7.67	59.60
#60	2.00	0.25	8.23	67.83
#80	2.50	0.18	9.72	77.55
#120	3.00	0.13	10.56	88.11
#170	3.50	0.09	2.77	90.87
#200	3.75	0.08	0.76	91.63
#230	4.00	0.06	0.28	91.90

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.81	2.37	0.90	-0.16	-0.52	-1.00

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.85	0.55	0.90	0.54	1.38	-0.05	2.45

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-20 @ 9 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,471	505,755	State Plane, FLE (U.S. Ft.)	-57.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 6/2	#200 - 25.35 #230 - 24.30			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.09	0.09
#5	-2.00	4.00	0.00	0.09
#7	-1.50	2.80	0.03	0.12
#10	-1.00	2.00	0.54	0.66
#14	-0.50	1.40	1.26	1.92
#18	0.00	1.00	1.44	3.36
#25	0.50	0.71	1.62	4.99
#35	1.00	0.50	2.04	7.03
#45	1.50	0.36	3.87	10.90
#60	2.00	0.25	11.06	21.96
#80	2.50	0.18	30.45	52.41
#120	3.00	0.13	18.55	70.96
#170	3.50	0.09	2.79	73.74
#200	3.75	0.08	0.90	74.65
#230	4.00	0.06	1.05	75.70

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.83	2.46	2.05	1.73	0.50

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.11	0.23	2.46	0.18	0.87	-1.58	6.69

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–20
DEPTH : 0.0 – 2.5
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–20
DEPTH : 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–20
DEPTH : 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2020 -032
VB–DA20–20
DEPTH : 7.5 – 10.0
8'
9'
10'

VB-DA20-21

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-21

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-21	LOCATION COORDINATES: X = 954,534 Y = 505,808	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 5 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-24-20 / COMPLETED: 06-24-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -47.9 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 88 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-47.9	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace shell, trace silt, moist, 2.5Y 8/2 pale yellow (SW)				-48.9		
					1				
-50.9	3.0						-50.9		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 2.5Y 8/1 white (SW-SM)		2				
-52.9	5.0						-52.9		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 2.5Y 8/1 white (SM)		3		-54.9		
					4				
							-57.9		
					5				

0 5 10 15

(Continued)

Boring Designation VB-DA20-21

DRILLING LOG (Cont. Sheet)	INSTALLATION	SHEET 2 OF 2 SHEETS
	Jacksonville, FL	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
SAD-SAND	State Plane, FLE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 954,534 Y = 505,808	-47.9 Ft.

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-65.4	17.5		No Recovery						
-67.9	20.0						-67.9		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

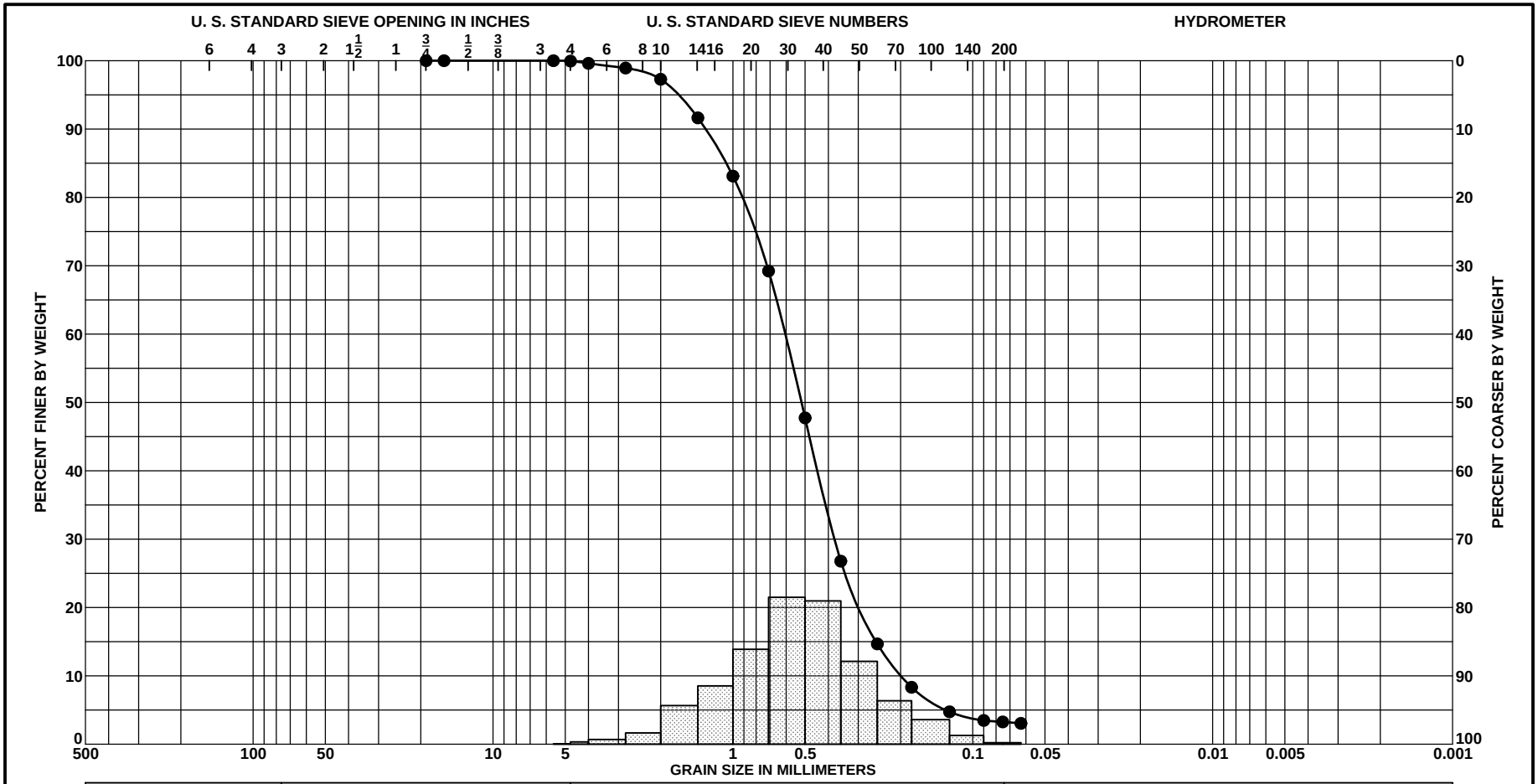
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW-SM*
3	5.0/5.2	SM*
4	7.0/7.2	SM*
5	10.0/10.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

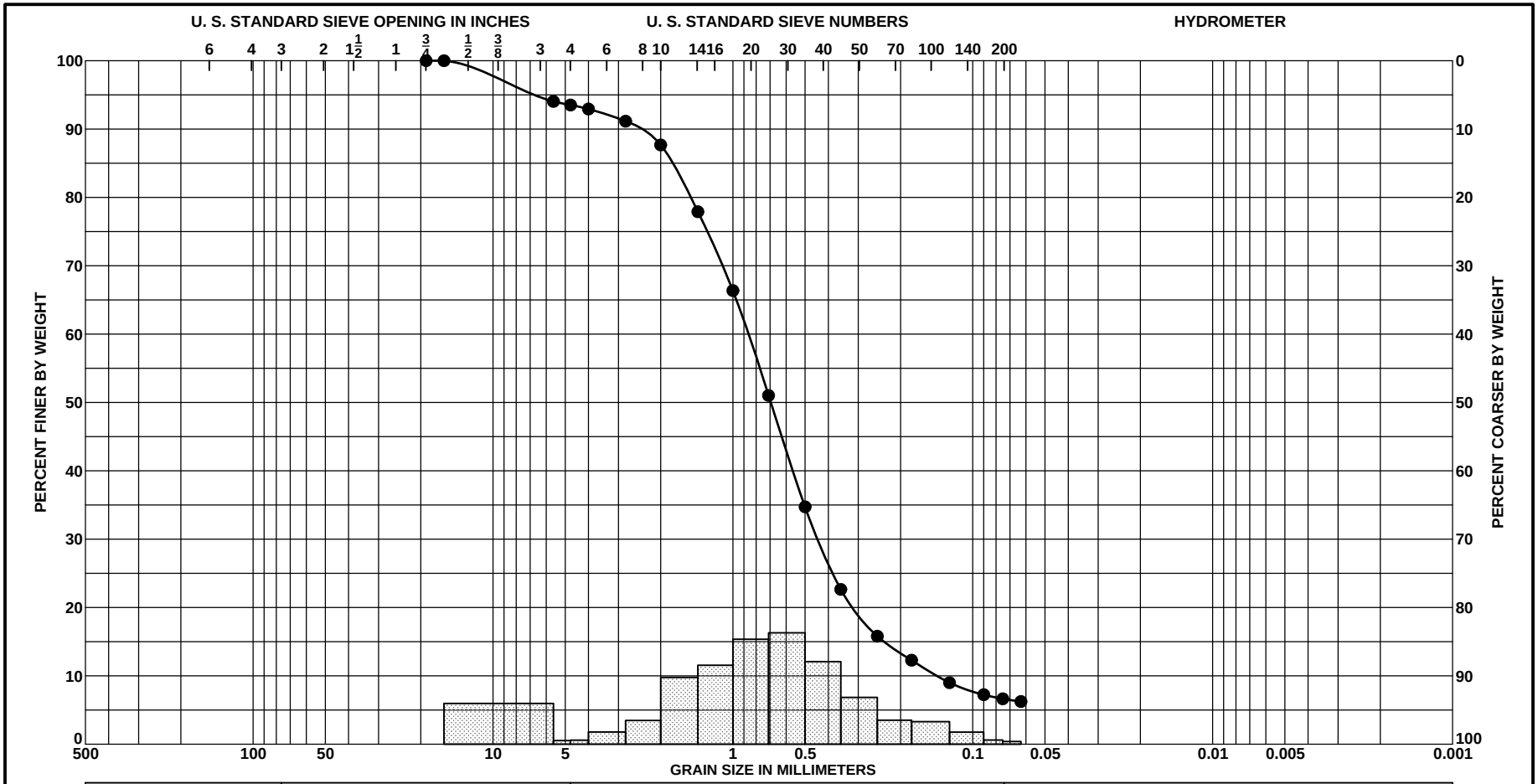


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, trace									
		shell, trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-21
BORING ELEV.	-47.9 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

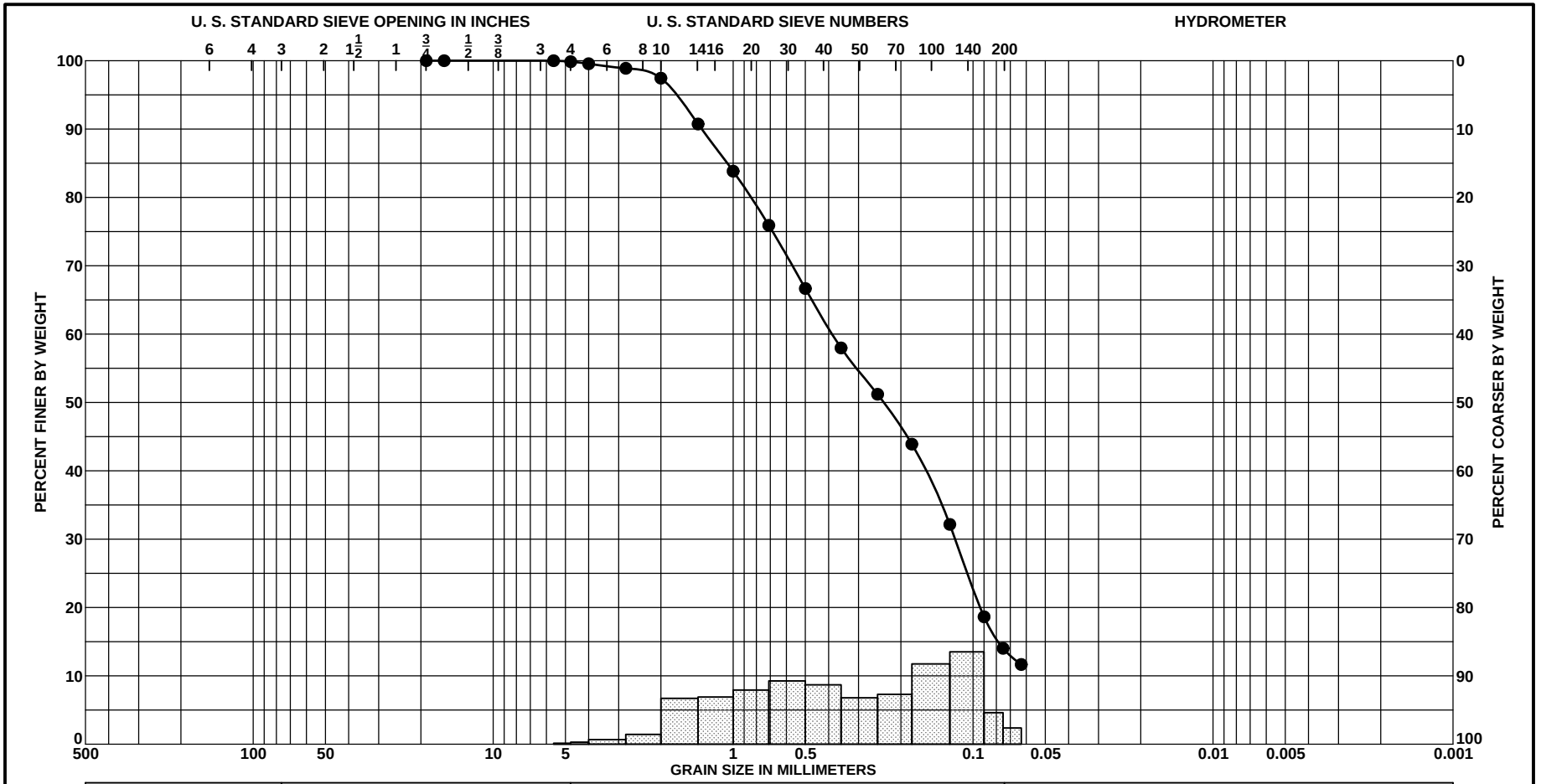


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 8/1	2							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, white (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-21
BORING ELEV.	-47.9 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

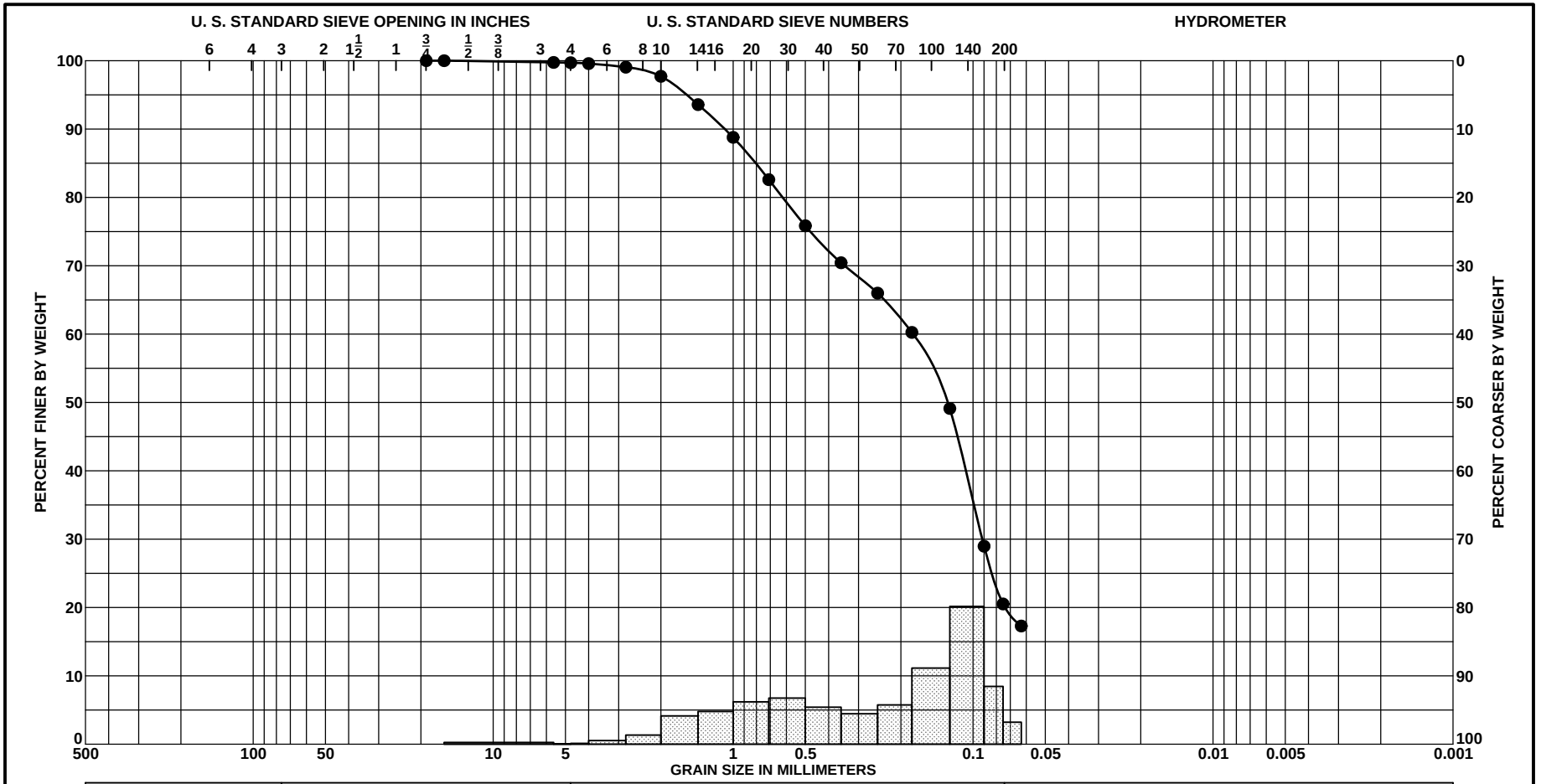


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	5.0 to 5.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-21
BORING ELEV.	-47.9 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

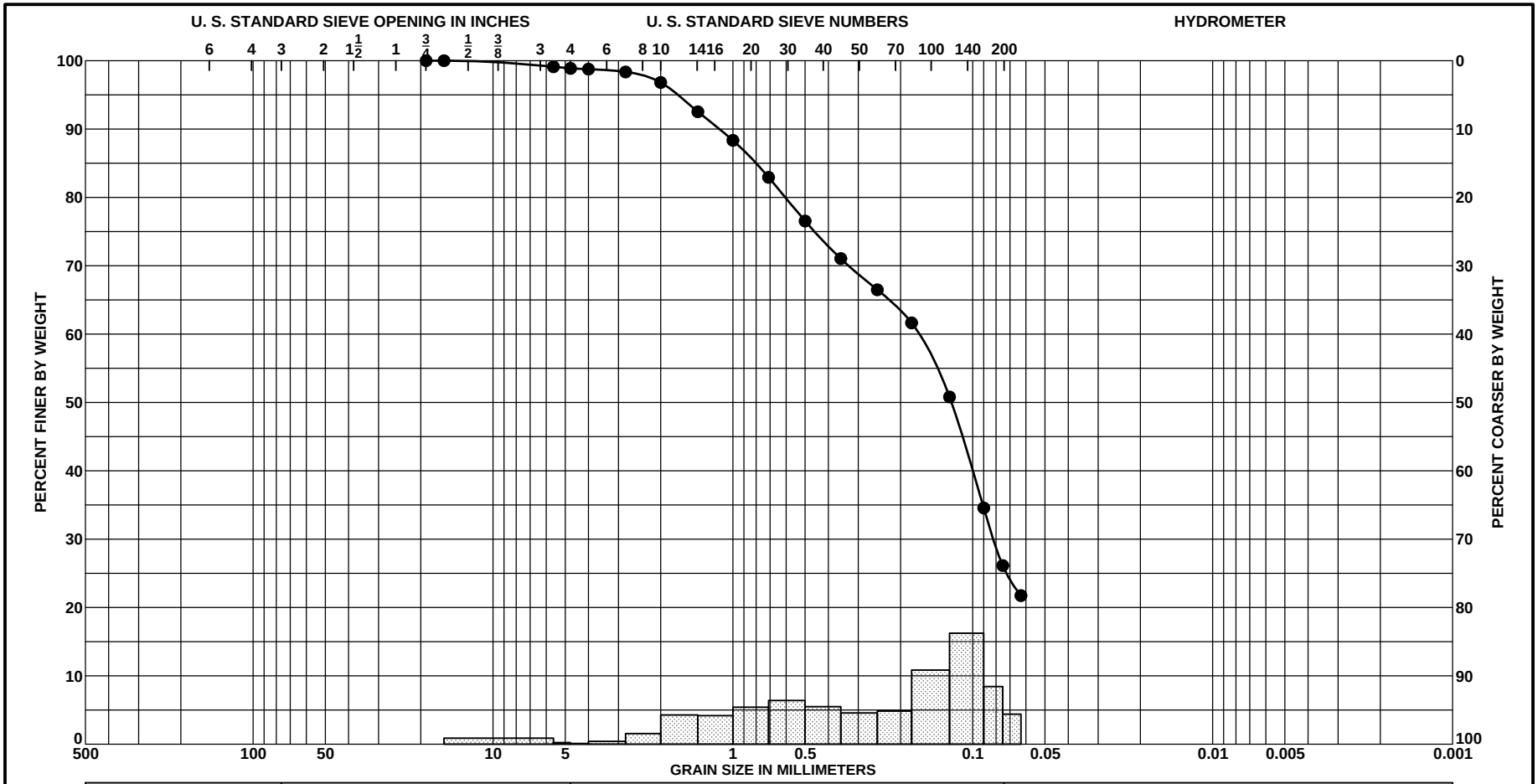


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	7.0 to 7.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-21
BORING ELEV.	-47.9 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	10.0 to 10.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-21
BORING ELEV.	-47.9 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-21 @ 1 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,534	505,808	State Plane, FLE (U.S. Ft.)	-48.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 3.26 #230 - 3.05			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.06	0.06
#5	-2.00	4.00	0.33	0.39
#7	-1.50	2.80	0.69	1.08
#10	-1.00	2.00	1.65	2.72
#14	-0.50	1.40	5.64	8.36
#18	0.00	1.00	8.52	16.88
#25	0.50	0.71	13.88	30.77
#35	1.00	0.50	21.49	52.26
#45	1.50	0.36	20.96	73.22
#60	2.00	0.25	12.11	85.33
#80	2.50	0.18	6.34	91.67
#120	3.00	0.13	3.59	95.26
#170	3.50	0.09	1.27	96.53
#200	3.75	0.08	0.22	96.74
#230	4.00	0.06	0.21	96.95

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.96	1.95	1.57	0.95	0.29	-0.05	-0.80

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.89	0.54	0.95	0.52	0.99	-0.07	3.24

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-21 @ 3 ft

Analysis Date: 8/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,534	505,808	State Plane, FLE (U.S. Ft.)	-50.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 8/1	#200 - 6.64 #230 - 6.24			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	5.96	5.96
#4	-2.25	4.75	0.52	6.48
#5	-2.00	4.00	0.59	7.07
#7	-1.50	2.80	1.78	8.85
#10	-1.00	2.00	3.48	12.33
#14	-0.50	1.40	9.76	22.09
#18	0.00	1.00	11.54	33.64
#25	0.50	0.71	15.34	48.98
#35	1.00	0.50	16.29	65.27
#45	1.50	0.36	12.08	77.35
#60	2.00	0.25	6.85	84.20
#80	2.50	0.18	3.51	87.71
#120	3.00	0.13	3.29	91.00
#170	3.50	0.09	1.76	92.76
#200	3.75	0.08	0.60	93.36
#230	4.00	0.06	0.40	93.76

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	1.99	1.40	0.53	-0.37	-0.81	-2.78

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.32	0.80	0.53	0.69	1.46	-0.5	3.59

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-21 @ 5 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,534	505,808	State Plane, FLE (U.S. Ft.)	-52.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 14.03 #230 - 11.66			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.14	0.14
#5	-2.00	4.00	0.30	0.44
#7	-1.50	2.80	0.67	1.11
#10	-1.00	2.00	1.44	2.55
#14	-0.50	1.40	6.71	9.26
#18	0.00	1.00	6.90	16.16
#25	0.50	0.71	7.92	24.09
#35	1.00	0.50	9.25	33.33
#45	1.50	0.36	8.70	42.03
#60	2.00	0.25	6.78	48.80
#80	2.50	0.18	7.30	56.10
#120	3.00	0.13	11.75	67.84
#170	3.50	0.09	13.51	81.36
#200	3.75	0.08	4.62	85.97
#230	4.00	0.06	2.36	88.34

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.64	3.26	2.08	0.55	-0.01	-0.82

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.58	0.33	2.08	0.24	1.49	-0.28	1.96

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-21 @ 7 ft

Analysis Date: 8/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,534	505,808	State Plane, FLE (U.S. Ft.)	-54.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 20.52 #230 - 17.29			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.25	0.25
#4	-2.25	4.75	0.04	0.29
#5	-2.00	4.00	0.13	0.42
#7	-1.50	2.80	0.53	0.95
#10	-1.00	2.00	1.34	2.29
#14	-0.50	1.40	4.14	6.42
#18	0.00	1.00	4.79	11.21
#25	0.50	0.71	6.19	17.41
#35	1.00	0.50	6.74	24.15
#45	1.50	0.36	5.41	29.56
#60	2.00	0.25	4.44	34.01
#80	2.50	0.18	5.74	39.75
#120	3.00	0.13	11.13	50.88
#170	3.50	0.09	20.15	71.03
#200	3.75	0.08	8.45	79.48
#230	4.00	0.06	3.22	82.71

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.62	2.96	1.08	0.39	-0.67

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.00	0.25	2.96	0.13	1.52	-0.72	2.44

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-21 @ 10 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,534	505,808	State Plane, FLE (U.S. Ft.)	-57.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 26.14 #230 - 21.74			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.88	0.88
#4	-2.25	4.75	0.24	1.13
#5	-2.00	4.00	0.11	1.23
#7	-1.50	2.80	0.41	1.65
#10	-1.00	2.00	1.54	3.19
#14	-0.50	1.40	4.28	7.47
#18	0.00	1.00	4.18	11.65
#25	0.50	0.71	5.42	17.07
#35	1.00	0.50	6.39	23.46
#45	1.50	0.36	5.49	28.95
#60	2.00	0.25	4.57	33.52
#80	2.50	0.18	4.84	38.36
#120	3.00	0.13	10.84	49.20
#170	3.50	0.09	16.24	65.44
#200	3.75	0.08	8.43	73.86
#230	4.00	0.06	4.40	78.26

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.81	3.02	1.14	0.40	-0.79

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.94	0.26	3.02	0.12	1.62	-0.81	2.87

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–21
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–21
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–21
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–21
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–21
DEPTH : 10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–21
DEPTH : 12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–21
DEPTH : 15.0 –17.5
15'
16'
17'

VB-DA20-22

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-22

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-22	LOCATION COORDINATES: X = 954,553 Y = 506,785	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 6 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-24-20 / COMPLETED: 06-24-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -48.5 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 92 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-48.5	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace shell, trace silt, moist, 2.5Y 8/2 pale yellow (SW)				-50.5		
					1				
-52.5	4.0						-52.5		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 2.5Y 8/1 white (SW-SM)		2				
-54.5	6.0						-54.5		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 2.5Y 8/1 white (SM)		3		-57.5		
					4				
							-60.5		
					5				
							-63.5		

0 5 10 15

(Continued)

Boring Designation VB-DA20-22

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 954,553 Y = 506,785	ELEVATION TOP OF BORING: -48.5 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-63.9	15.4				6				
			LIMESTONE, GRAVEL, poorly-graded, mostly gravel to cobble-sized limestone, few fine to coarse-grained sand-sized carbonate, few silt, moist, 2.5Y 7/1 light gray						
-64.7	16.2		SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 2.5Y 7/1 light gray (SW-SM)						
-66.5	18.0								
-66.8	18.3		LIMESTONE, GRAVEL, poorly-graded, mostly gravel to cobble-sized limestone, little fine to coarse-grained sand-sized carbonate, few silt, moist, 2.5Y 6/1 gray						
			No Recovery						
-68.5	20.0						-68.5		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

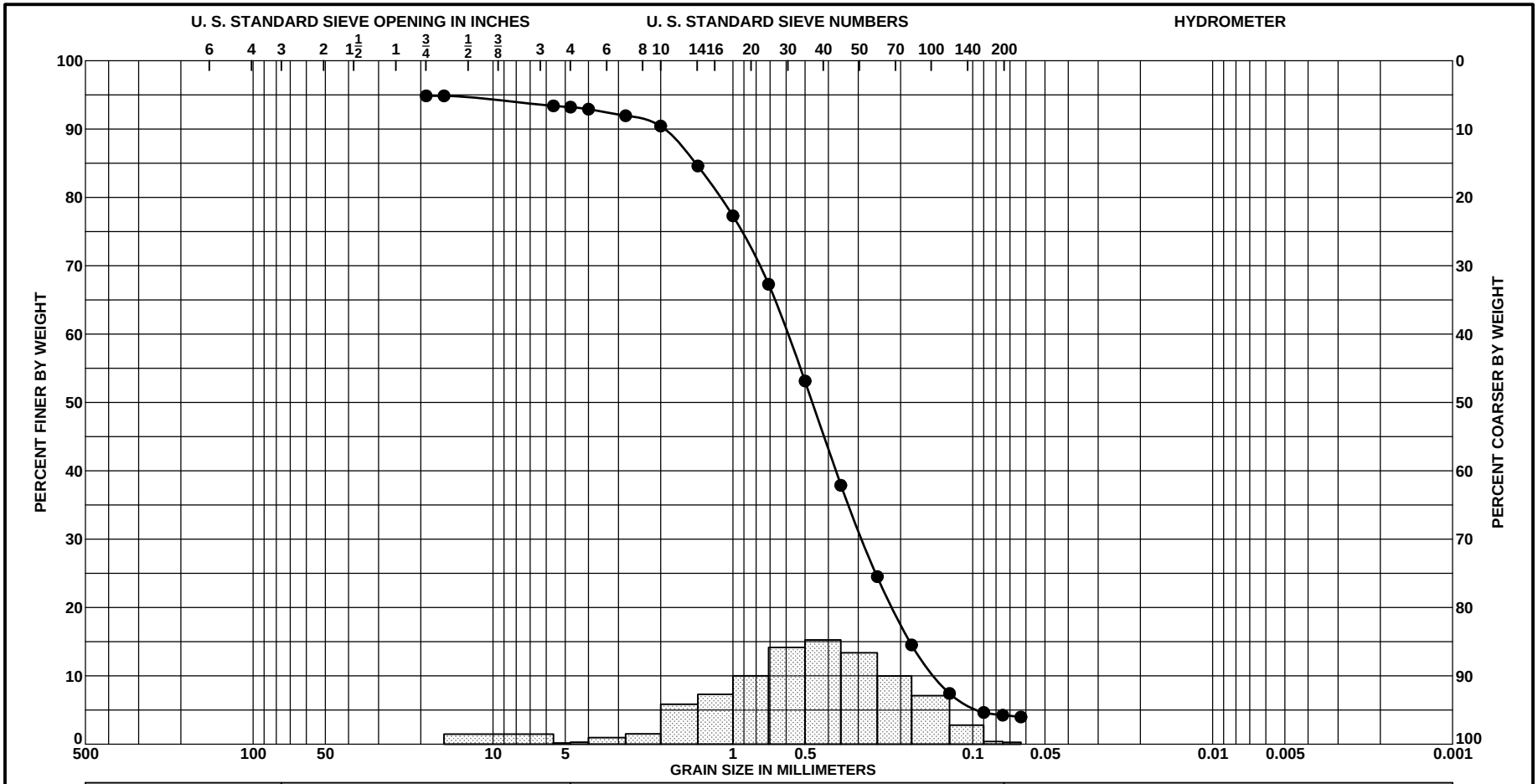
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW-SM*
3	6.0/6.2	SM*
4	9.0/9.2	SM*
5	12.0/12.2	SM*
6	15.0/15.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

SAJ FORM 1836-A
JUN 02

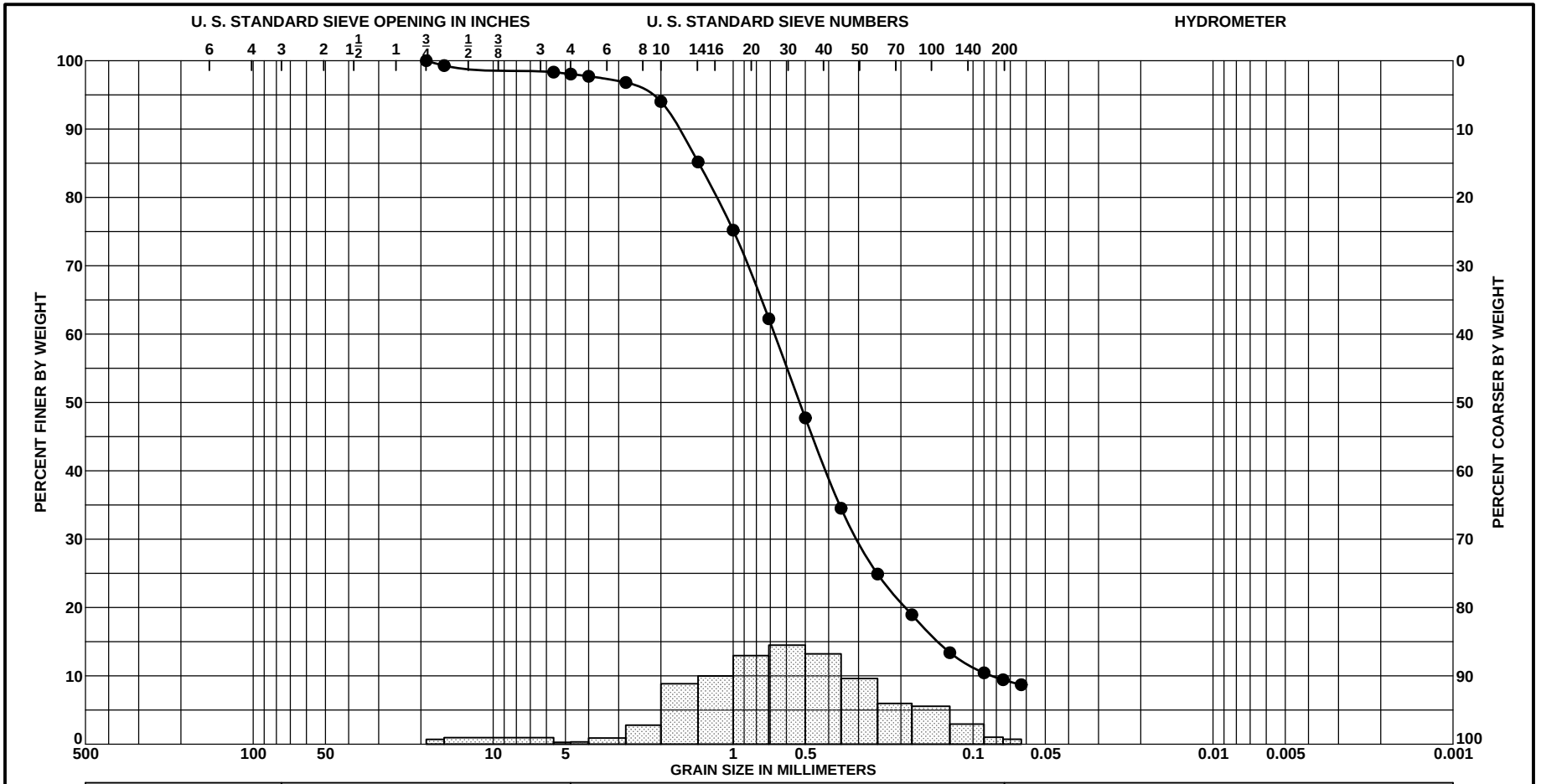


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0	99						
		medium-grained sand-sized									
		carbonate, trace									
		shell, trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-22
BORING ELEV.	-48.5 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

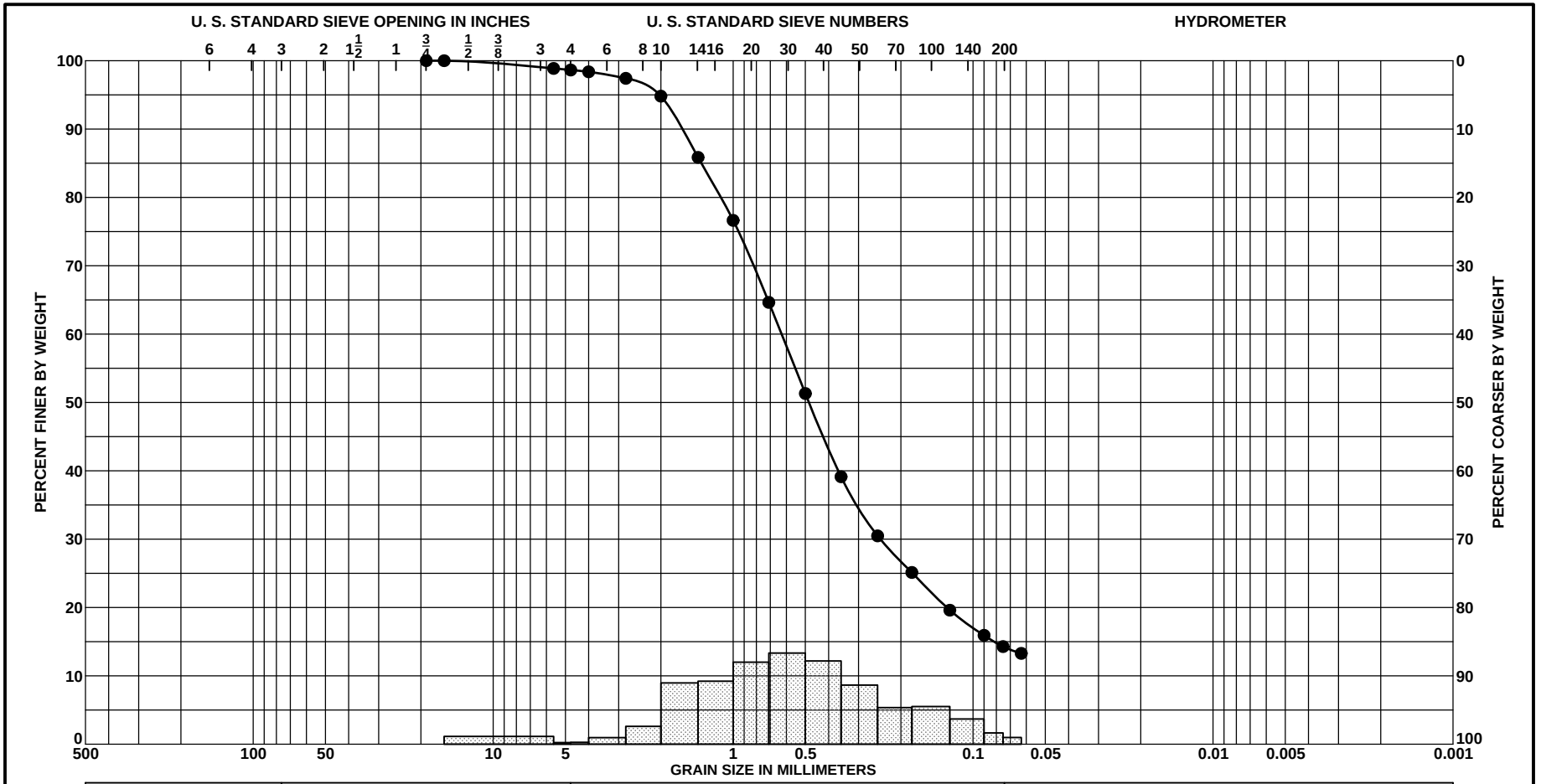


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 8/1	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, white (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-22
BORING ELEV.	-48.5 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

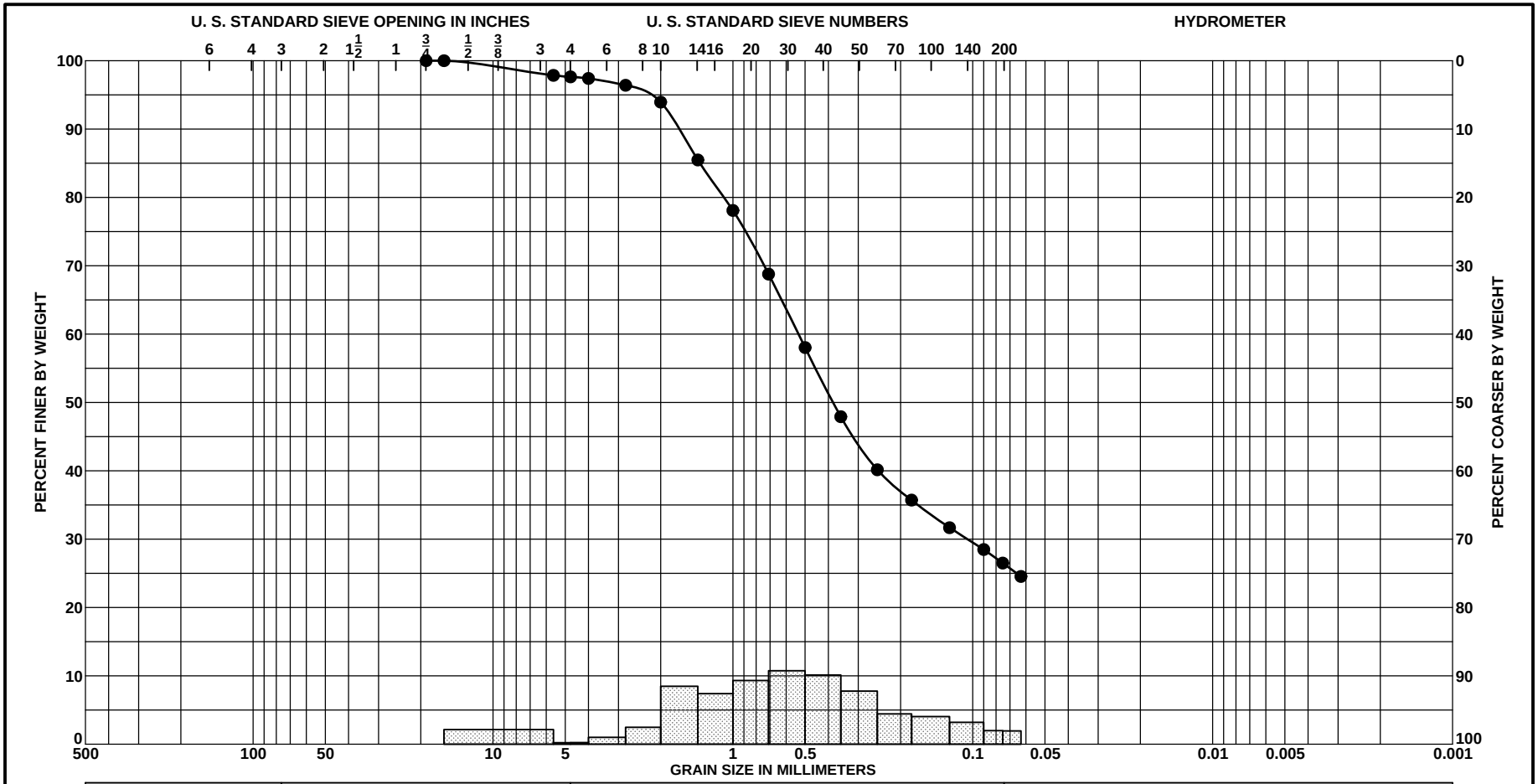


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-22
BORING ELEV.	-48.5 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

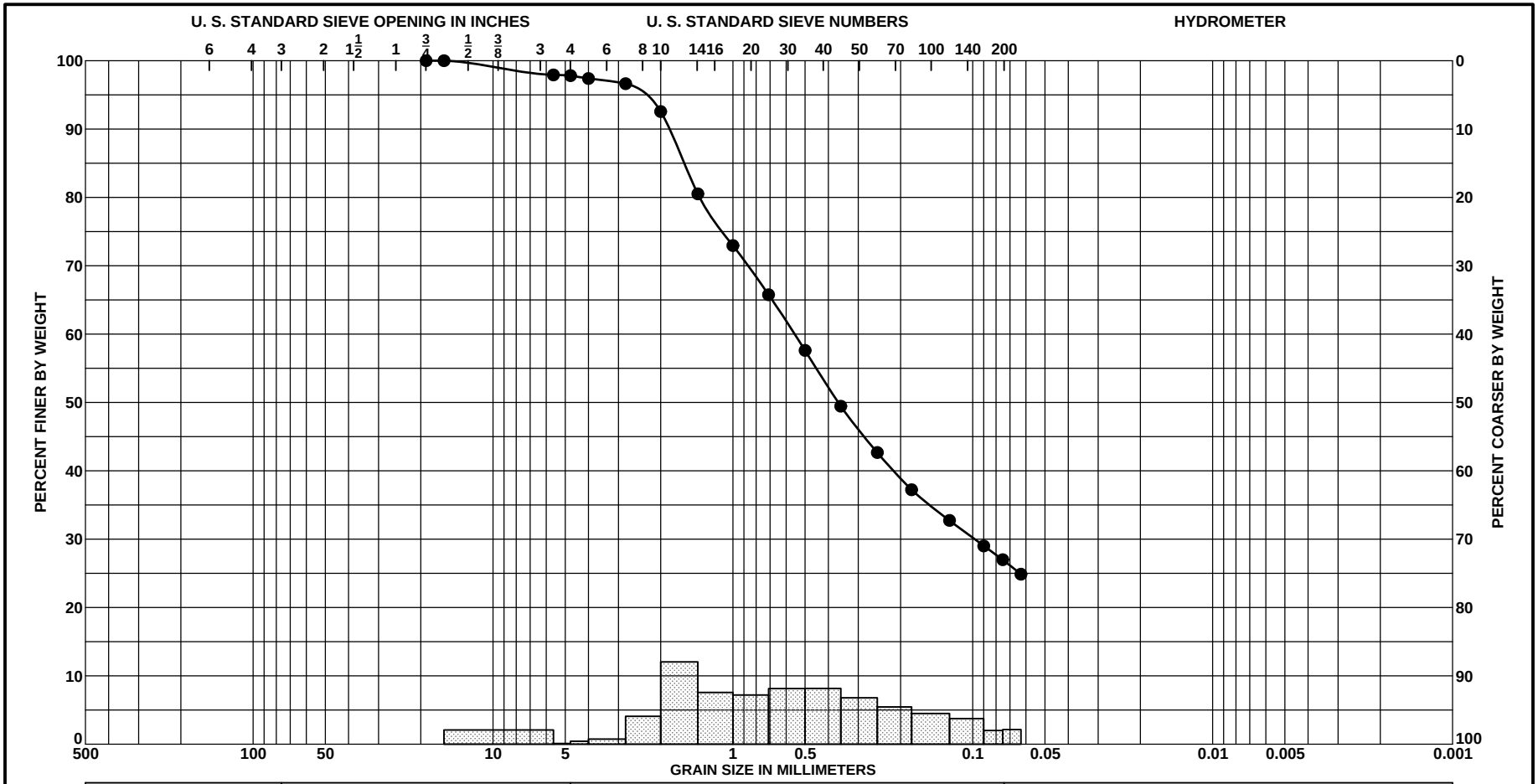


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	9.0 to 9.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	3							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-22
BORING ELEV.	-48.5 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

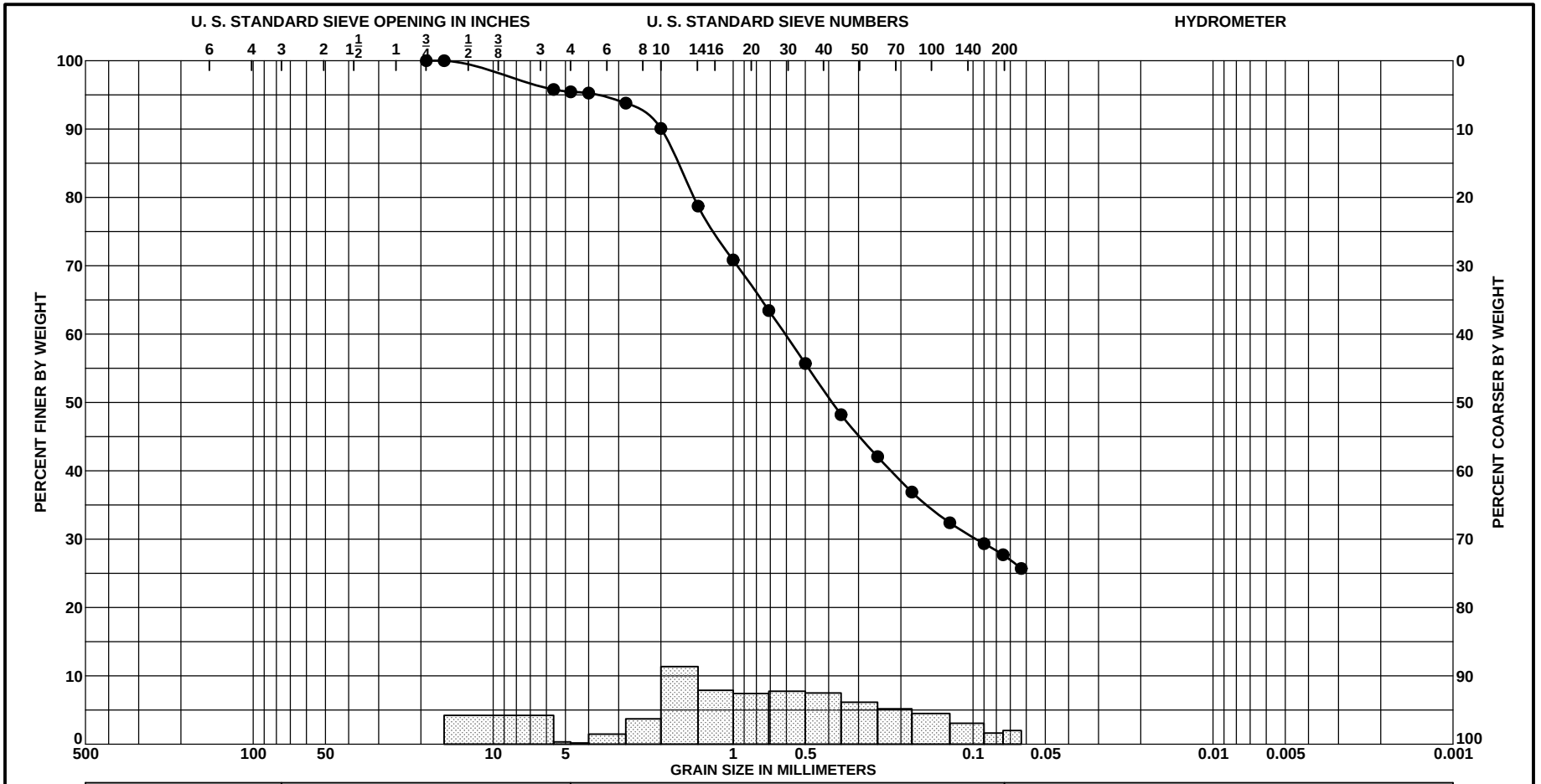


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	12.0 to 12.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-22
BORING ELEV.	-48.5 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

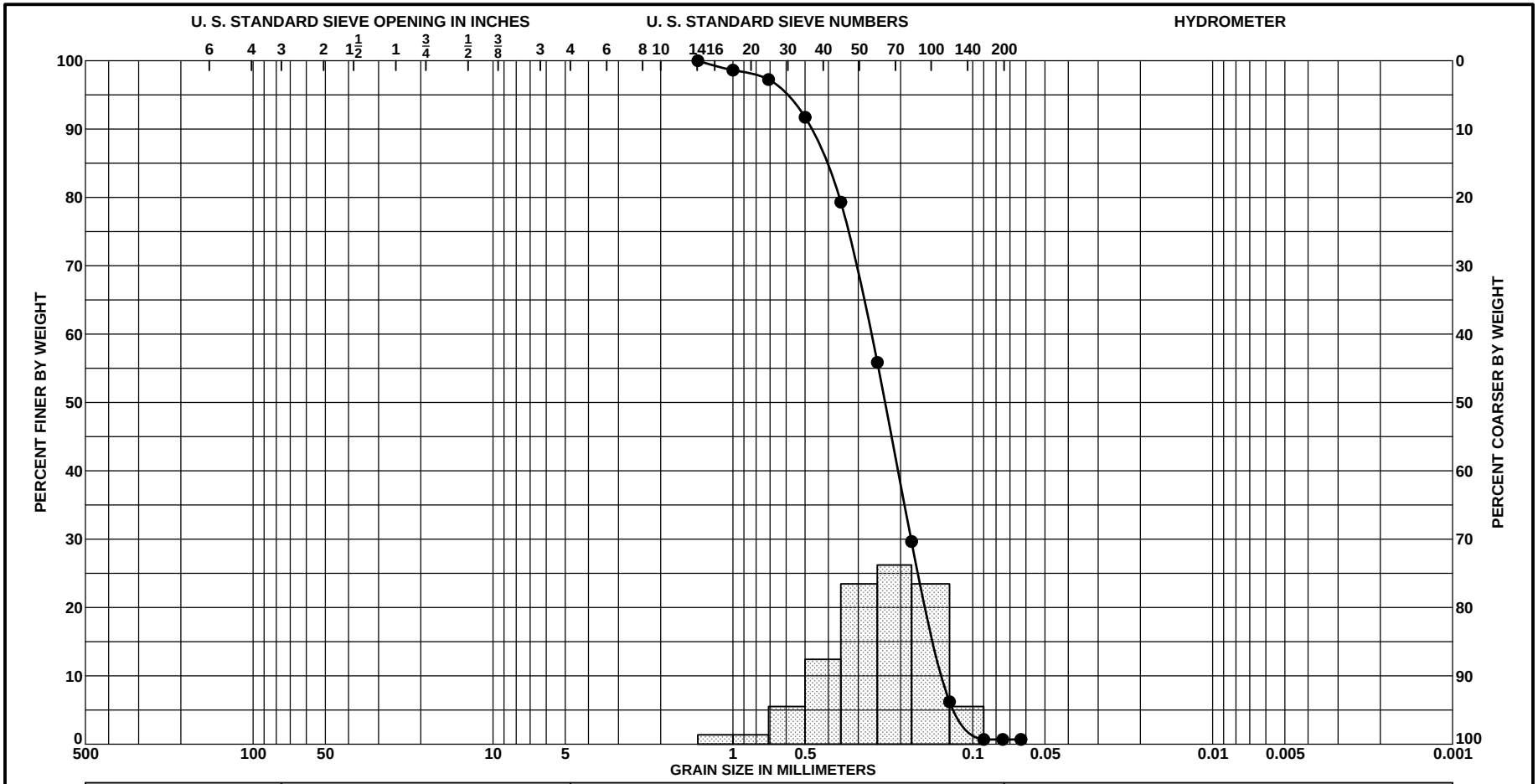


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	15.0 to 15.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	2							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-22
BORING ELEV.	-48.5 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-22
BORING ELEV.	-48.5 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-22 @ 2 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,553	506,785	State Plane, FLE (U.S. Ft.)	-50.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 4.25 #230 - 3.98		99.30	0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	5.14	5.14
5/8	-4.00	16.00	0.00	5.14
#3.5	-2.50	5.60	1.47	6.61
#4	-2.25	4.75	0.18	6.79
#5	-2.00	4.00	0.30	7.09
#7	-1.50	2.80	0.96	8.05
#10	-1.00	2.00	1.51	9.56
#14	-0.50	1.40	5.84	15.40
#18	0.00	1.00	7.30	22.70
#25	0.50	0.71	10.01	32.71
#35	1.00	0.50	14.15	46.86
#45	1.50	0.36	15.26	62.12
#60	2.00	0.25	13.36	75.49
#80	2.50	0.18	9.99	85.47
#120	3.00	0.13	7.10	92.57
#170	3.50	0.09	2.79	95.36
#200	3.75	0.08	0.39	95.75
#230	4.00	0.06	0.27	96.02

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.44	2.43	1.98	1.10	0.11	-0.46	

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.74	0.60	1.10	0.47	1.27	0.05	3.43

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-22 @ 4 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,553	506,785	State Plane, FLE (U.S. Ft.)	-52.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 8/1	#200 - 9.43 #230 - 8.70			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.71	0.71
#3.5	-2.50	5.60	0.96	1.67
#4	-2.25	4.75	0.28	1.95
#5	-2.00	4.00	0.33	2.28
#7	-1.50	2.80	0.90	3.19
#10	-1.00	2.00	2.79	5.98
#14	-0.50	1.40	8.84	14.82
#18	0.00	1.00	9.98	24.80
#25	0.50	0.71	12.97	37.76
#35	1.00	0.50	14.50	52.26
#45	1.50	0.36	13.22	65.49
#60	2.00	0.25	9.62	75.10
#80	2.50	0.18	5.95	81.06
#120	3.00	0.13	5.55	86.61
#170	3.50	0.09	2.95	89.56
#200	3.75	0.08	1.01	90.57
#230	4.00	0.06	0.73	91.30

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.76	1.99	0.92	0.01	-0.44	-1.18

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.77	0.59	0.92	0.53	1.36	-0.35	3.86

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-22 @ 6 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,553	506,785	State Plane, FLE (U.S. Ft.)	-54.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 14.28 #230 - 13.29			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.13	1.13
#4	-2.25	4.75	0.23	1.36
#5	-2.00	4.00	0.26	1.63
#7	-1.50	2.80	0.95	2.58
#10	-1.00	2.00	2.61	5.19
#14	-0.50	1.40	8.96	14.15
#18	0.00	1.00	9.21	23.36
#25	0.50	0.71	12.00	35.36
#35	1.00	0.50	13.33	48.69
#45	1.50	0.36	12.18	60.87
#60	2.00	0.25	8.65	69.52
#80	2.50	0.18	5.35	74.88
#120	3.00	0.13	5.52	80.39
#170	3.50	0.09	3.68	84.07
#200	3.75	0.08	1.65	85.72
#230	4.00	0.06	0.99	86.71

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.49	2.51	1.05	0.07	-0.40	-1.04

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.85	0.55	1.05	0.48	1.37	-0.05	3.07

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-22 @ 9 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,553	506,785	State Plane, FLE (U.S. Ft.)	-57.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 26.49 #230 - 24.55			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.14	2.14
#4	-2.25	4.75	0.22	2.36
#5	-2.00	4.00	0.23	2.59
#7	-1.50	2.80	1.00	3.59
#10	-1.00	2.00	2.47	6.06
#14	-0.50	1.40	8.46	14.52
#18	0.00	1.00	7.39	21.91
#25	0.50	0.71	9.31	31.22
#35	1.00	0.50	10.74	41.96
#45	1.50	0.36	10.12	52.09
#60	2.00	0.25	7.76	59.85
#80	2.50	0.18	4.44	64.29
#120	3.00	0.13	4.04	68.33
#170	3.50	0.09	3.19	71.52
#200	3.75	0.08	1.99	73.51
#230	4.00	0.06	1.95	75.45

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.94	1.40	0.17	-0.40	-1.21

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.82	0.57	1.40	0.38	1.52	-0.17	3.13

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-22 @ 12 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,553	506,785	State Plane, FLE (U.S. Ft.)	-60.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 27.00 #230 - 24.87			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.08	2.08
#4	-2.25	4.75	0.10	2.18
#5	-2.00	4.00	0.42	2.61
#7	-1.50	2.80	0.75	3.36
#10	-1.00	2.00	4.08	7.44
#14	-0.50	1.40	12.04	19.48
#18	0.00	1.00	7.57	27.05
#25	0.50	0.71	7.19	34.24
#35	1.00	0.50	8.15	42.39
#45	1.50	0.36	8.16	50.55
#60	2.00	0.25	6.77	57.32
#80	2.50	0.18	5.44	62.77
#120	3.00	0.13	4.49	67.26
#170	3.50	0.09	3.74	71.00
#200	3.75	0.08	2.01	73.00
#230	4.00	0.06	2.13	75.13

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.98	1.47	-0.14	-0.64	-1.30

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.76	0.59	1.47	0.36	1.61	-0.04	2.62

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-22 @ 15 ft

Analysis Date: 8/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,553	506,785	State Plane, FLE (U.S. Ft.)	-63.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 27.71 #230 - 25.71			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	4.21	4.21
#4	-2.25	4.75	0.34	4.56
#5	-2.00	4.00	0.18	4.73
#7	-1.50	2.80	1.47	6.21
#10	-1.00	2.00	3.71	9.92
#14	-0.50	1.40	11.36	21.27
#18	0.00	1.00	7.88	29.15
#25	0.50	0.71	7.40	36.56
#35	1.00	0.50	7.74	44.30
#45	1.50	0.36	7.50	51.79
#60	2.00	0.25	6.14	57.93
#80	2.50	0.18	5.18	63.11
#120	3.00	0.13	4.49	67.61
#170	3.50	0.09	3.05	70.66
#200	3.75	0.08	1.63	72.29
#230	4.00	0.06	2.00	74.29

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
			1.38	-0.26	-0.73	-1.91

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.58	0.67	1.38	0.38	1.72	-0.16	2.71

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-22 @ 2 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,553	506,785	State Plane, FLE (U.S. Ft.)	-50.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.69 #230 - 0.69			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#14	-0.50	1.40	0.00	0.00
#18	0.00	1.00	1.38	1.38
#25	0.50	0.71	1.38	2.76
#35	1.00	0.50	5.52	8.28
#45	1.50	0.36	12.41	20.69
#60	2.00	0.25	23.45	44.14
#80	2.50	0.18	26.21	70.34
#120	3.00	0.13	23.45	93.79
#170	3.50	0.09	5.52	99.31
#200	3.75	0.08	0.00	99.31
#230	4.00	0.06	0.00	99.31

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.22	2.79	2.60	2.11	1.59	1.31	0.70

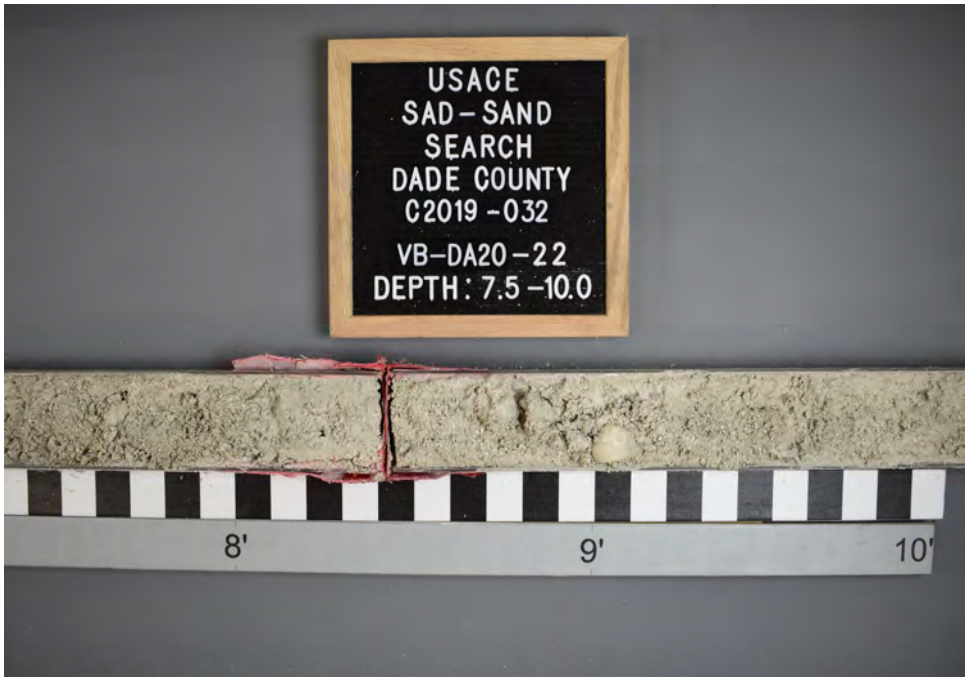
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.03	0.24	2.11	0.23	0.72	-0.64	3.35

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–22
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–22
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–22
DEPTH: 5.0 – 7.5
5'
6'
7'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–22
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–22
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–22
DEPTH :12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–22
DEPTH :15.0 –17.5
15'
16'
17'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–22
DEPTH :17.5 –18.3
18'
19'
20'

VB-DA20-23

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-23

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-23	LOCATION COORDINATES: X = 954,541 Y = 508,781	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 6 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-24-20 / COMPLETED: 06-24-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -51.2 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 89 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-51.2	0.0								
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 2.5Y 8/2 pale yellow (SW-SM)				-52.2		
-52.8	1.6				1				
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 2.5Y 8/1 white (SM)				-53.2		
					2				
							-56.2		
					3				
							-59.2		
					4				
							-62.2		
					5				
							-65.2		
					6				

0 5 10 15

(Continued)

Boring Designation VB-DA20-23

DRILLING LOG (Cont. Sheet)	INSTALLATION	SHEET 2 OF 2 SHEETS
	Jacksonville, FL	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
SAD-SAND	State Plane, FLE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 954,541 Y = 508,781	-51.2 Ft.

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-68.1	16.9								
-69.0	17.8		SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, some fine gravel-sized limestone, few silt, trace organic matter, moist, 2.5Y 6/1 gray (SW)						
-71.2	20.0		No Recovery				-71.2		

NOTES:

1. Taylor Engineering is the custodian for these original files.

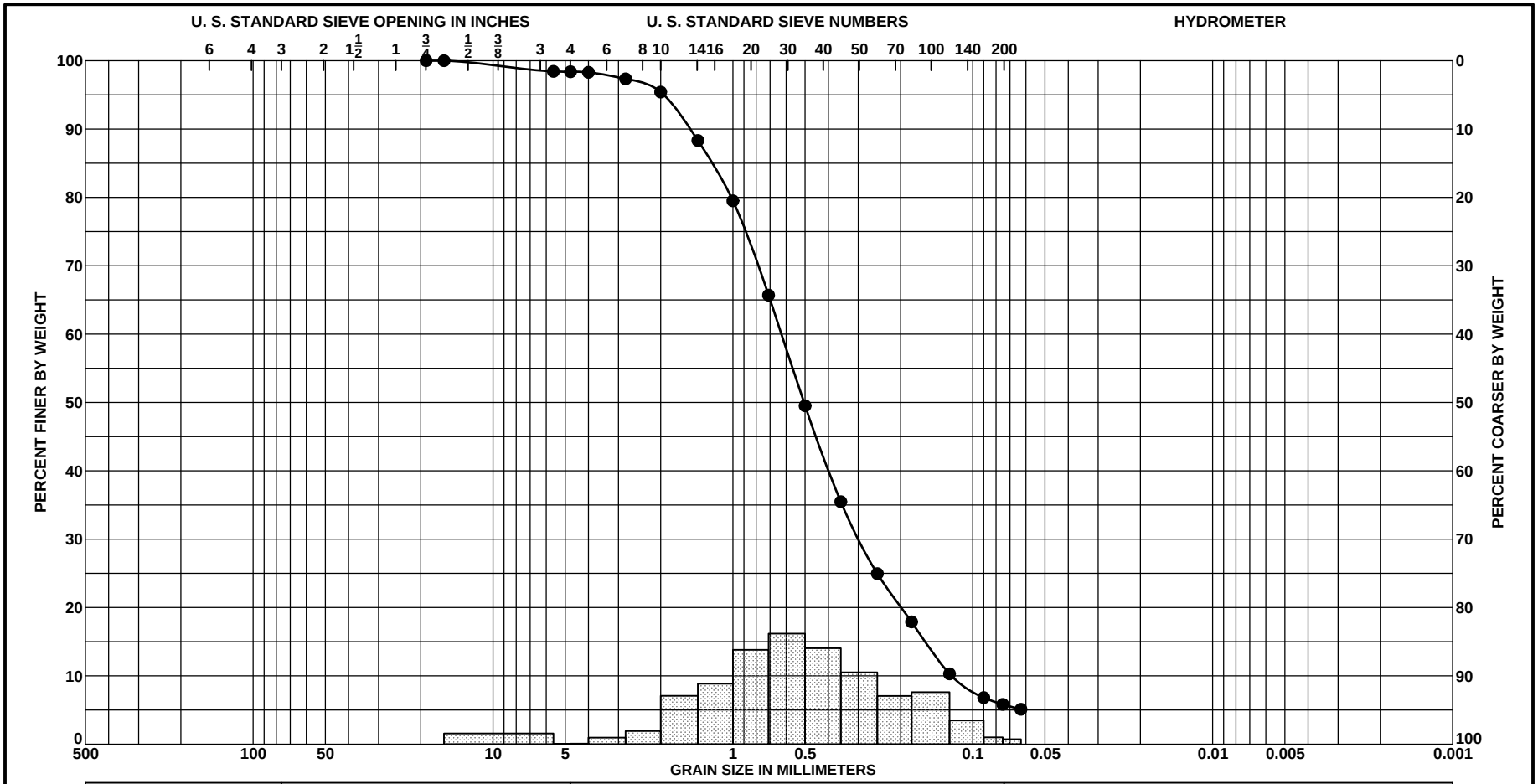
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW-SM*
2	2.0/2.2	SM*
3	5.0/5.2	SM*
4	8.0/8.2	SM*
5	11.0/11.2	SM*
6	14.0/14.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

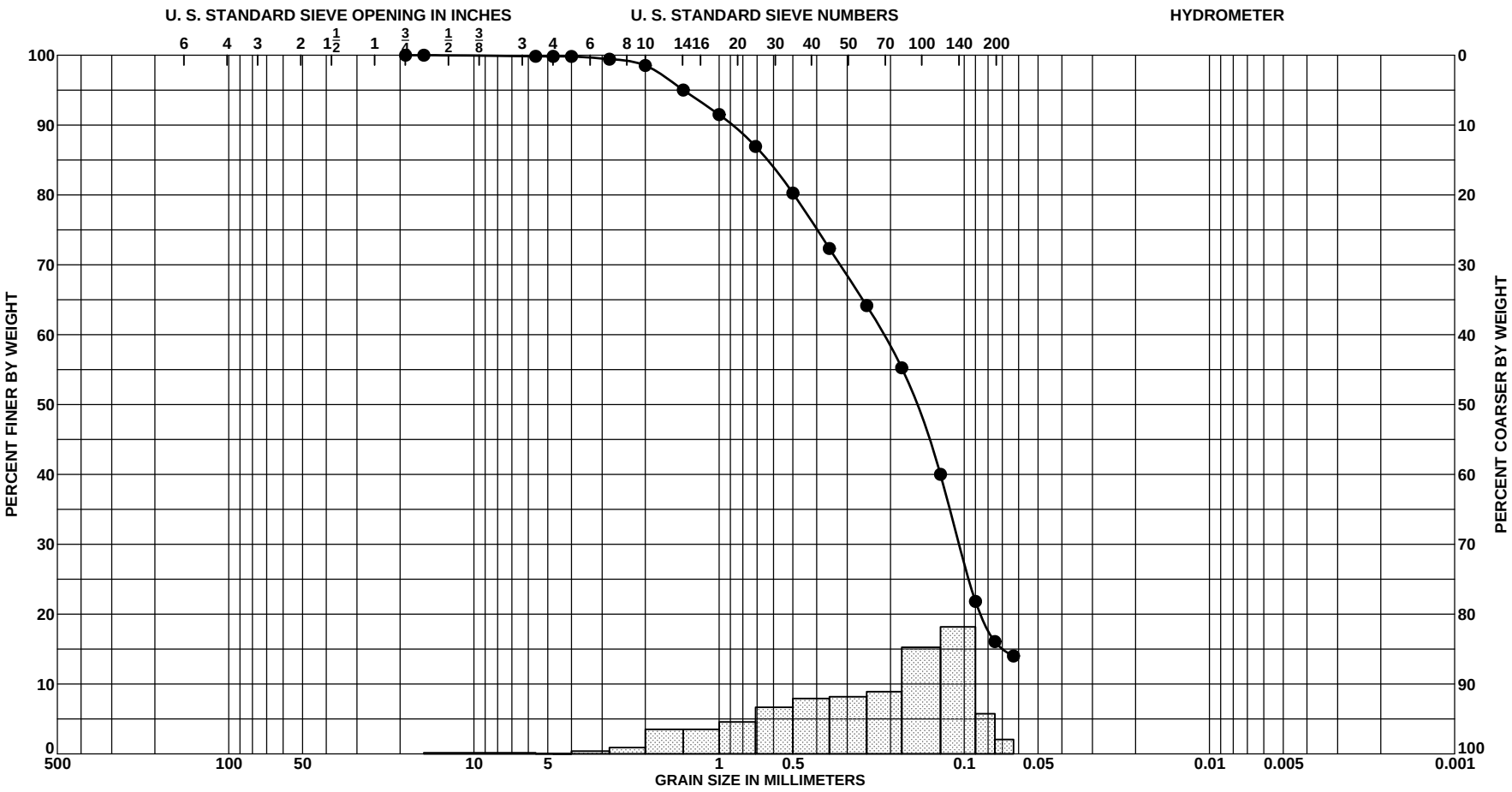


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 8/2	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few silt,									
		trace shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-23
BORING ELEV.	-51.2 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

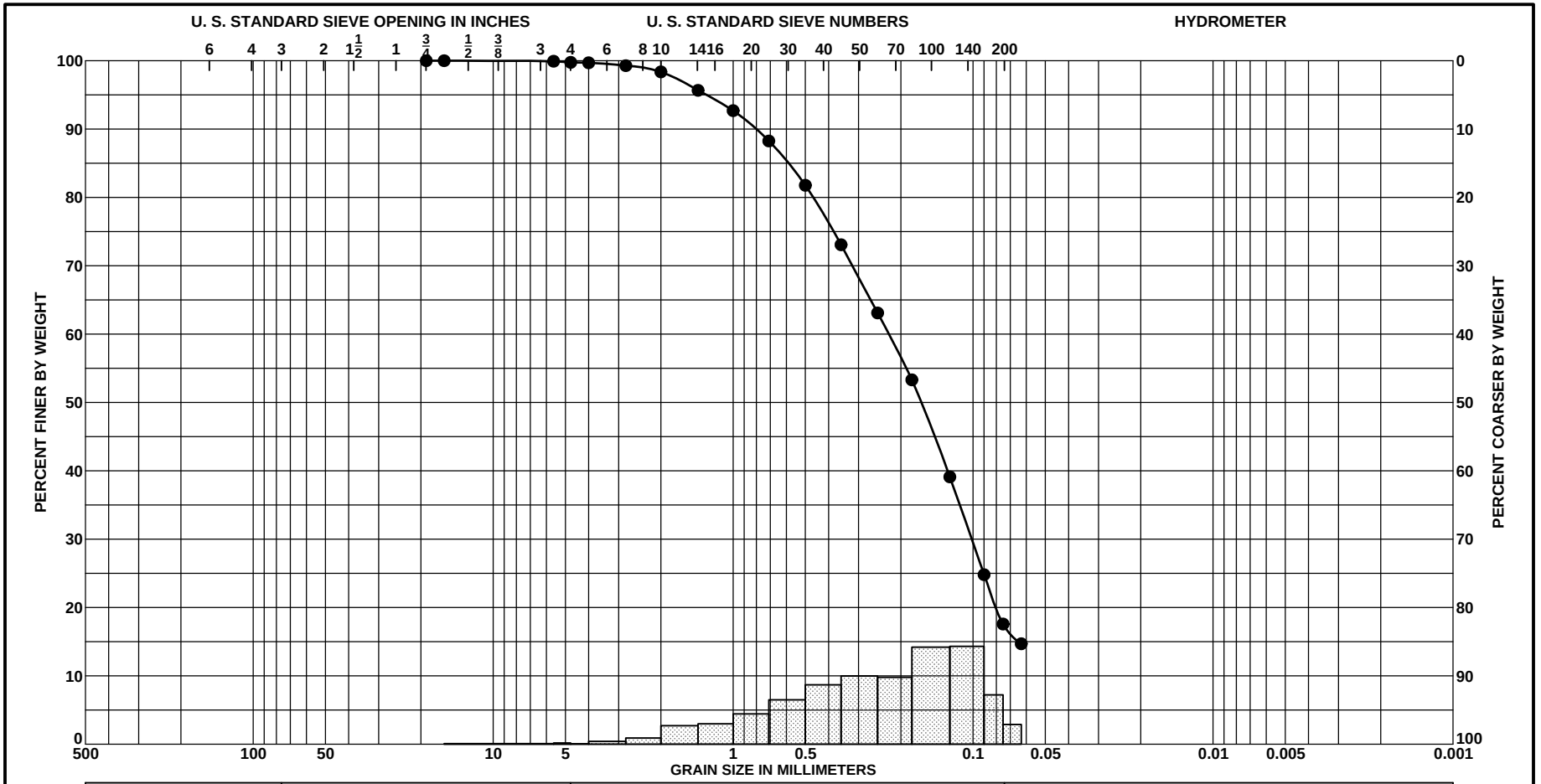


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	2.0 to 2.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-23
BORING ELEV.	-51.2 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

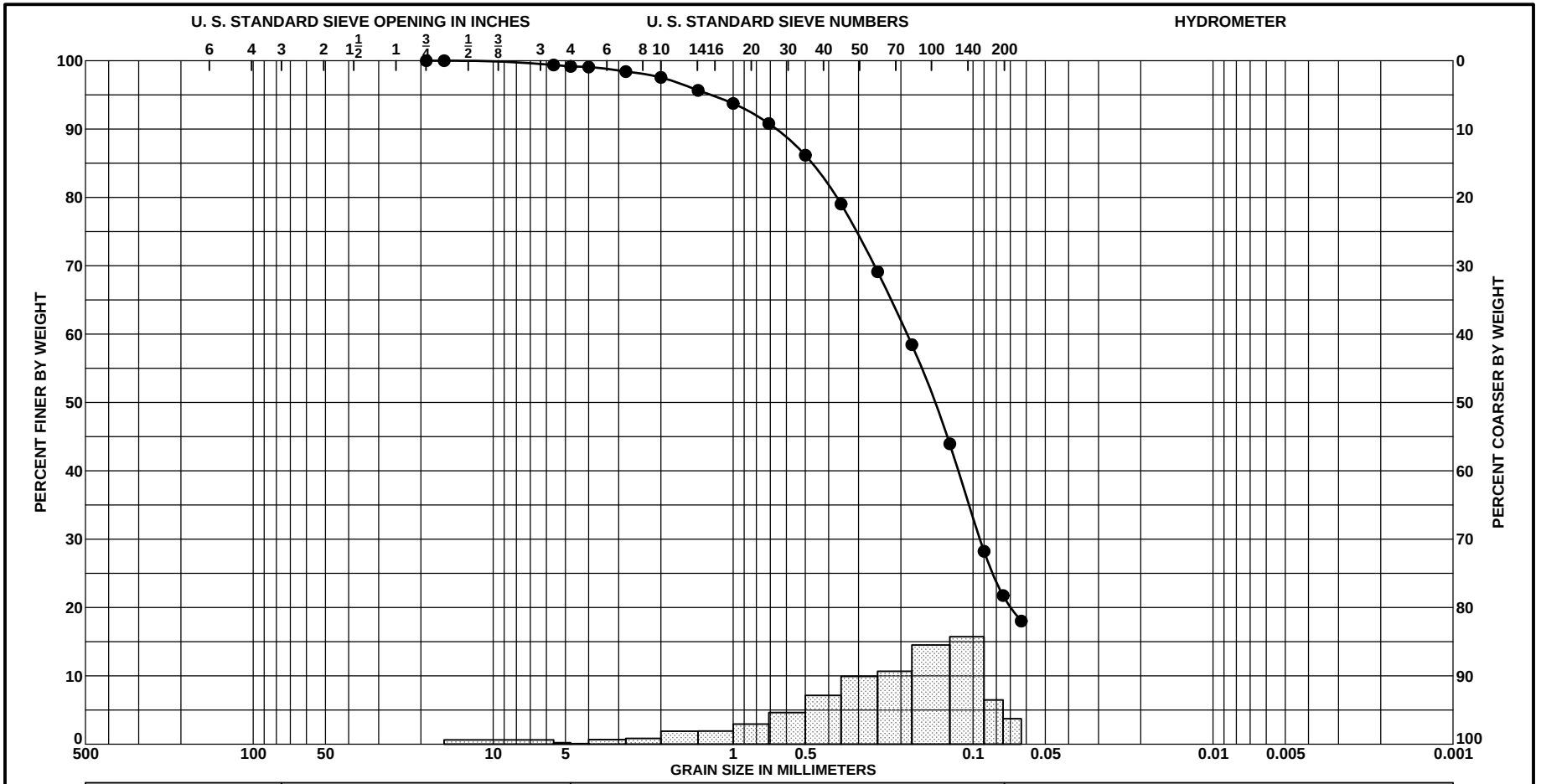


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	5.0 to 5.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-23
BORING ELEV.	-51.2 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

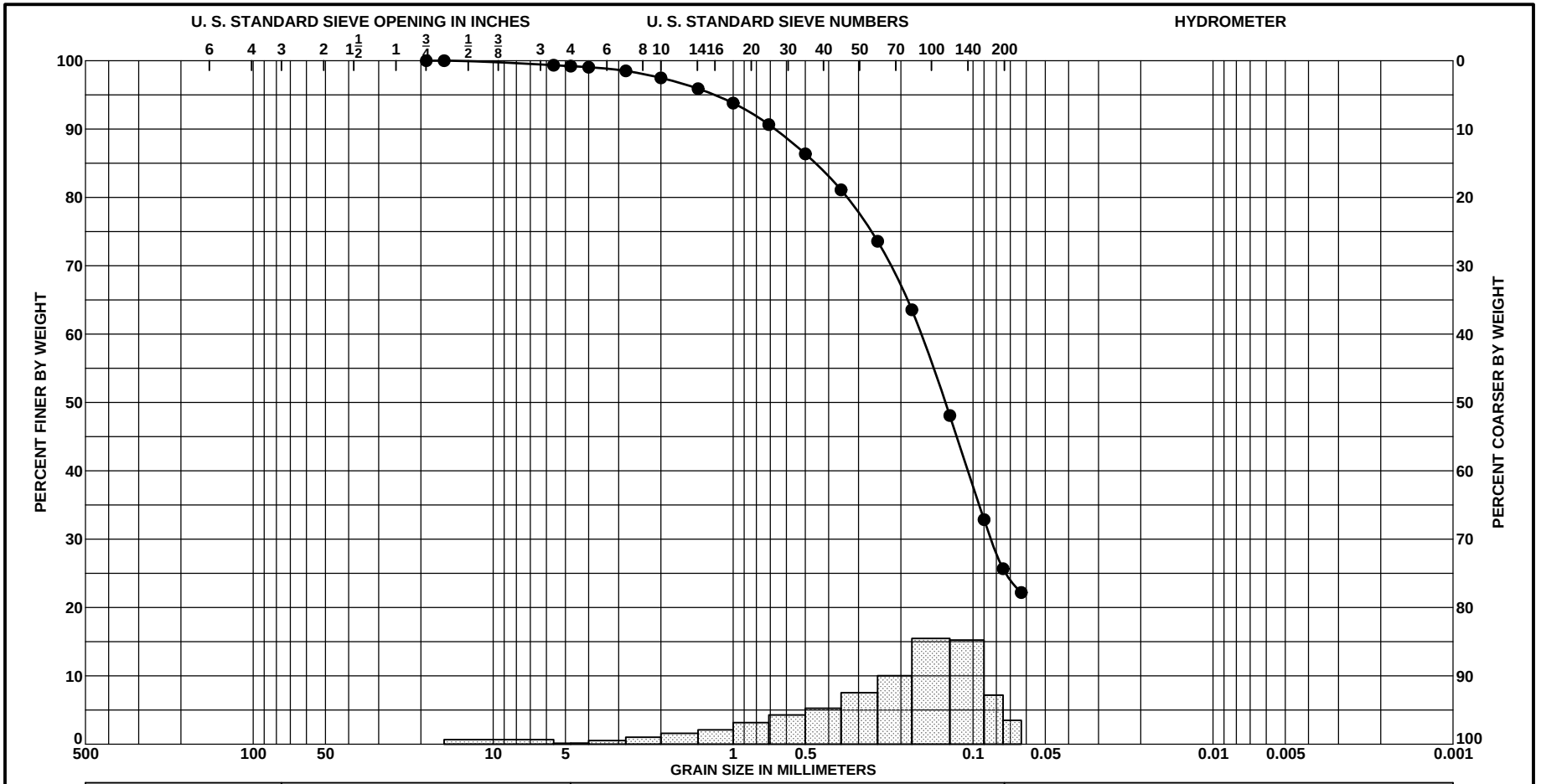


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-23
BORING ELEV.	-51.2 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

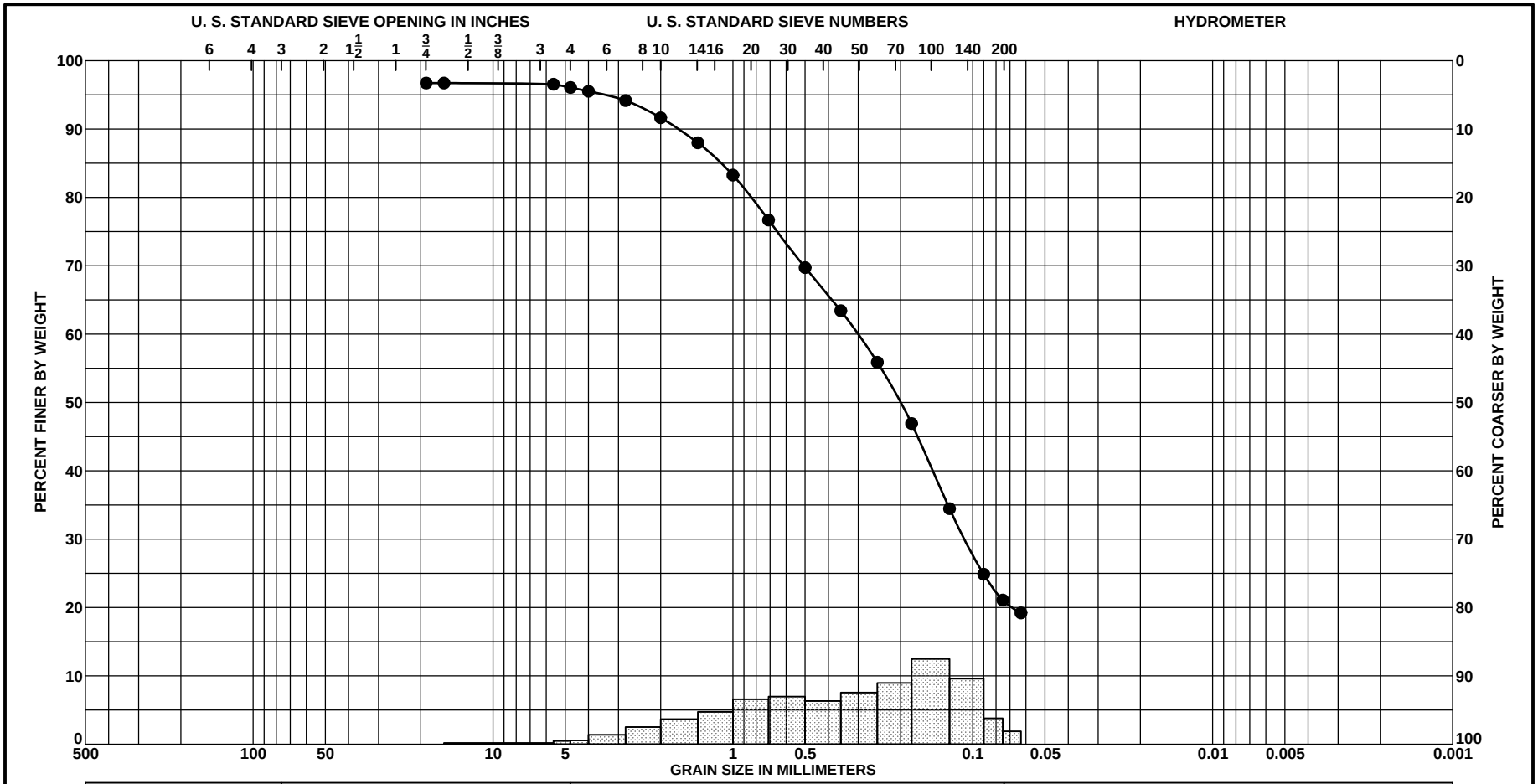


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	11.0 to 11.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-23
BORING ELEV.	-51.2 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	14.0 to 14.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	3							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-23
BORING ELEV.	-51.2 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-23 @ 1 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,541	508,781	State Plane, FLE (U.S. Ft.)	-52.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 8/2	#200 - 5.82 #230 - 5.10			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.56	1.56
#4	-2.25	4.75	0.05	1.61
#5	-2.00	4.00	0.09	1.70
#7	-1.50	2.80	0.96	2.66
#10	-1.00	2.00	1.93	4.59
#14	-0.50	1.40	7.08	11.67
#18	0.00	1.00	8.83	20.50
#25	0.50	0.71	13.81	34.31
#35	1.00	0.50	16.18	50.49
#45	1.50	0.36	14.04	64.52
#60	2.00	0.25	10.52	75.04
#80	2.50	0.18	7.06	82.10
#120	3.00	0.13	7.61	89.71
#170	3.50	0.09	3.48	93.19
#200	3.75	0.08	0.99	94.18
#230	4.00	0.06	0.72	94.90

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.62	2.00	0.98	0.16	-0.25	-0.97

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.94	0.52	0.98	0.51	1.31	-0.3	3.54

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-23 @ 2 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,541	508,781	State Plane, FLE (U.S. Ft.)	-53.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 16.07 #230 - 14.02			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.16	0.16
#4	-2.25	4.75	0.01	0.17
#5	-2.00	4.00	0.01	0.18
#7	-1.50	2.80	0.39	0.57
#10	-1.00	2.00	0.90	1.47
#14	-0.50	1.40	3.51	4.99
#18	0.00	1.00	3.51	8.49
#25	0.50	0.71	4.57	13.06
#35	1.00	0.50	6.67	19.74
#45	1.50	0.36	7.93	27.67
#60	2.00	0.25	8.17	35.84
#80	2.50	0.18	8.91	44.75
#120	3.00	0.13	15.25	59.99
#170	3.50	0.09	18.18	78.18
#200	3.75	0.08	5.75	83.93
#230	4.00	0.06	2.05	85.98

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.76	3.41	2.67	1.33	0.72	-0.50

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.03	0.24	2.67	0.16	1.34	-0.79	2.88

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-23 @ 5 ft

Analysis Date: 8/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,541	508,781	State Plane, FLE (U.S. Ft.)	-56.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 17.58 #230 - 14.69			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.08	0.08
#4	-2.25	4.75	0.17	0.24
#5	-2.00	4.00	0.06	0.31
#7	-1.50	2.80	0.42	0.73
#10	-1.00	2.00	0.91	1.63
#14	-0.50	1.40	2.70	4.33
#18	0.00	1.00	2.97	7.31
#25	0.50	0.71	4.44	11.75
#35	1.00	0.50	6.48	18.23
#45	1.50	0.36	8.70	26.92
#60	2.00	0.25	9.98	36.90
#80	2.50	0.18	9.79	46.70
#120	3.00	0.13	14.19	60.89
#170	3.50	0.09	14.31	75.20
#200	3.75	0.08	7.22	82.42
#230	4.00	0.06	2.89	85.31

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.89	3.49	2.62	1.39	0.83	-0.39

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.04	0.24	2.62	0.16	1.31	-0.76	3.01

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-23 @ 8 ft

Analysis Date: 8/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,541	508,781	State Plane, FLE (U.S. Ft.)	-59.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 21.75 #230 - 18.01			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.62	0.62
#4	-2.25	4.75	0.22	0.84
#5	-2.00	4.00	0.09	0.93
#7	-1.50	2.80	0.67	1.59
#10	-1.00	2.00	0.85	2.44
#14	-0.50	1.40	1.90	4.34
#18	0.00	1.00	1.91	6.26
#25	0.50	0.71	2.94	9.20
#35	1.00	0.50	4.63	13.83
#45	1.50	0.36	7.14	20.97
#60	2.00	0.25	9.92	30.88
#80	2.50	0.18	10.66	41.55
#120	3.00	0.13	14.50	56.05
#170	3.50	0.09	15.73	71.78
#200	3.75	0.08	6.47	78.25
#230	4.00	0.06	3.73	81.99

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.62	2.79	1.70	1.15	-0.33

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.15	0.23	2.79	0.14	1.34	-1.25	4.77

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-23 @ 11 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,541	508,781	State Plane, FLE (U.S. Ft.)	-62.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 25.67 #230 - 22.19			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.66	0.66
#4	-2.25	4.75	0.14	0.80
#5	-2.00	4.00	0.16	0.95
#7	-1.50	2.80	0.54	1.49
#10	-1.00	2.00	1.02	2.51
#14	-0.50	1.40	1.59	4.10
#18	0.00	1.00	2.10	6.20
#25	0.50	0.71	3.15	9.35
#35	1.00	0.50	4.28	13.64
#45	1.50	0.36	5.26	18.90
#60	2.00	0.25	7.52	26.42
#80	2.50	0.18	10.02	36.44
#120	3.00	0.13	15.47	51.92
#170	3.50	0.09	15.23	67.14
#200	3.75	0.08	7.18	74.33
#230	4.00	0.06	3.48	77.81

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.80	2.94	1.91	1.22	-0.29

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.20	0.22	2.94	0.13	1.37	-1.32	4.83

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-23 @ 14 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,541	508,781	State Plane, FLE (U.S. Ft.)	-65.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 21.09 #230 - 19.21			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	3.27	3.27
5/8	-4.00	16.00	0.00	3.27
#3.5	-2.50	5.60	0.17	3.45
#4	-2.25	4.75	0.47	3.92
#5	-2.00	4.00	0.55	4.47
#7	-1.50	2.80	1.36	5.84
#10	-1.00	2.00	2.52	8.35
#14	-0.50	1.40	3.66	12.02
#18	0.00	1.00	4.72	16.74
#25	0.50	0.71	6.57	23.31
#35	1.00	0.50	6.96	30.27
#45	1.50	0.36	6.30	36.58
#60	2.00	0.25	7.55	44.13
#80	2.50	0.18	8.95	53.08
#120	3.00	0.13	12.46	65.54
#170	3.50	0.09	9.59	75.13
#200	3.75	0.08	3.78	78.91
#230	4.00	0.06	1.88	80.79

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.49	2.33	0.62	-0.08	-1.81

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.34	0.40	2.33	0.20	1.51	-0.08	2.25

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–23
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–23
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–23
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–23
DEPTH: 7.5–10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–23
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–23
DEPTH :12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–23
DEPTH :15.0 –17.5
15'
16'
17'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–23
DEPTH :17.5 –17.8
18'
19'
20'

VB-DA20-24

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-24

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-24	LOCATION COORDINATES: X = 949,800 Y = 509,597	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 3 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-25-20 / COMPLETED: 06-25-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -28.1 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 81 %	
8. TOTAL DEPTH OF BORING: 13.2 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-28.1	0.0								
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, moist, 2.5Y 8/1 white (SM)				-30.1		
					1		-32.1		
					2		-34.1		
-33.6	5.5								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 2.5Y 8/2 pale yellow (SW)		3				
-34.9	6.8								
			LIMESTONE, GRAVEL, poorly-graded, mostly gravel to cobble-sized limestone, moist, 2.5Y 8/1 white						
-38.8	10.7								
			No Recovery						
-41.3	13.2						-41.3		
			BORING TERMINATED IN REFUSAL				Abbreviations:		
			NOTES:						
			1. Taylor Engineering is the custodian for these original files.						

0 5 10 15

(Continued)

Boring Designation VB-DA20-24

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 949,800 Y = 509,597	ELEVATION TOP OF BORING: -28.1 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE

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

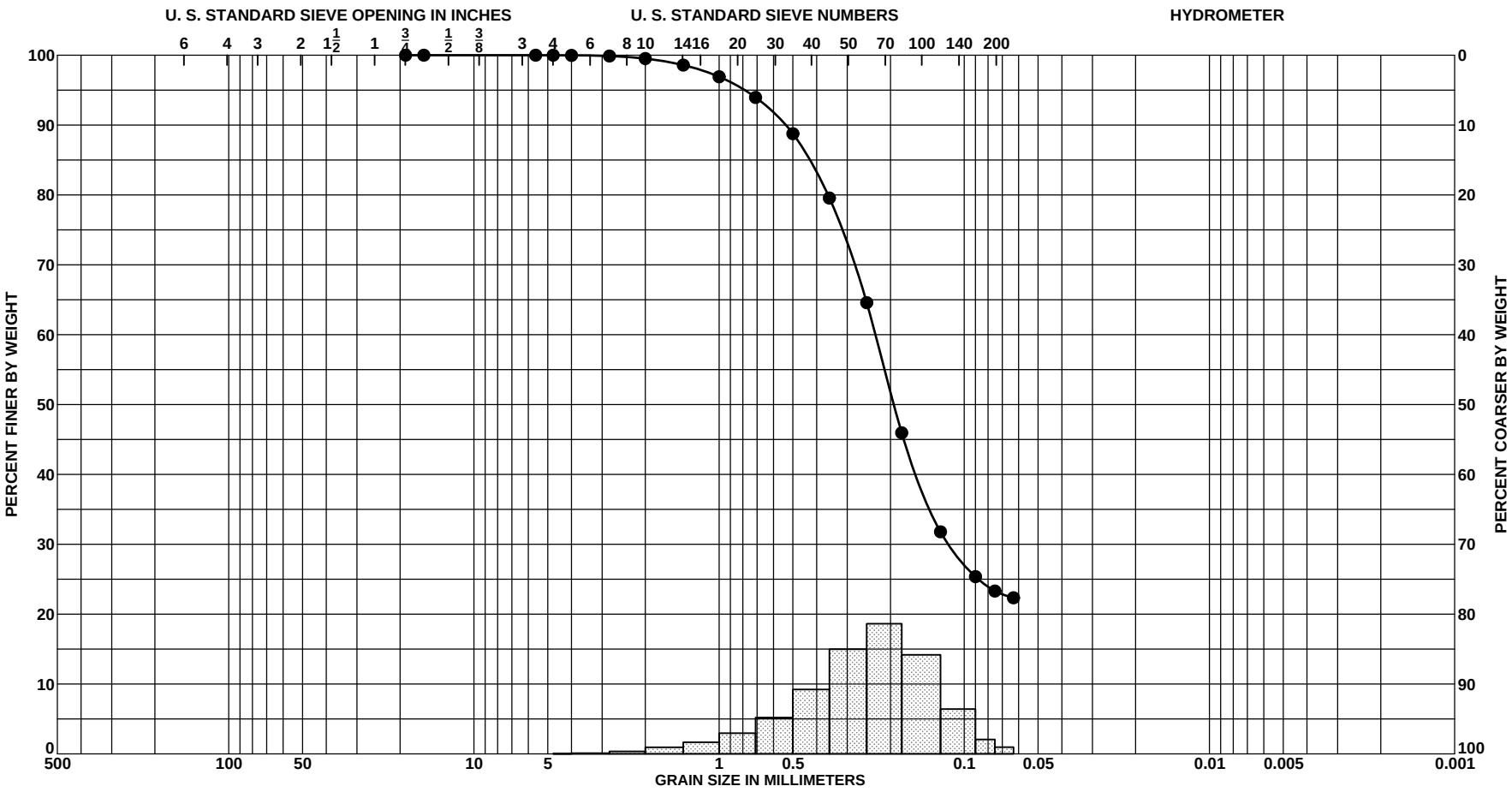
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SM*
2	4.0/4.2	SM*
3	6.0/6.2	SW*

*Lab visual classification based on gradation curve

15
20
25
30
35

SAJ FORM 1836-A
JUN 02

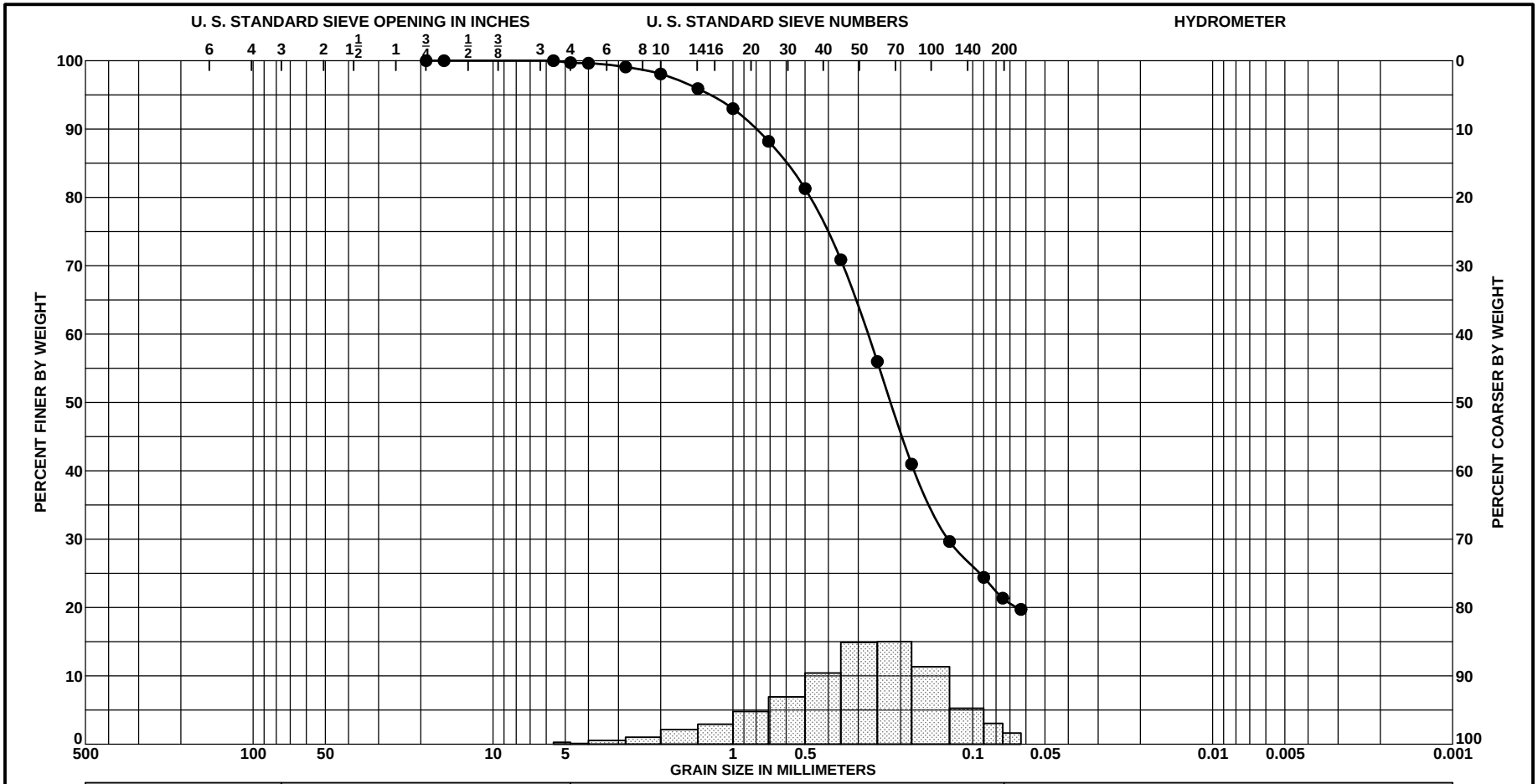


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	0							
		medium-grained									
		sand-sized carbonate, some silt,									
		white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-24
BORING ELEV.	-28.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

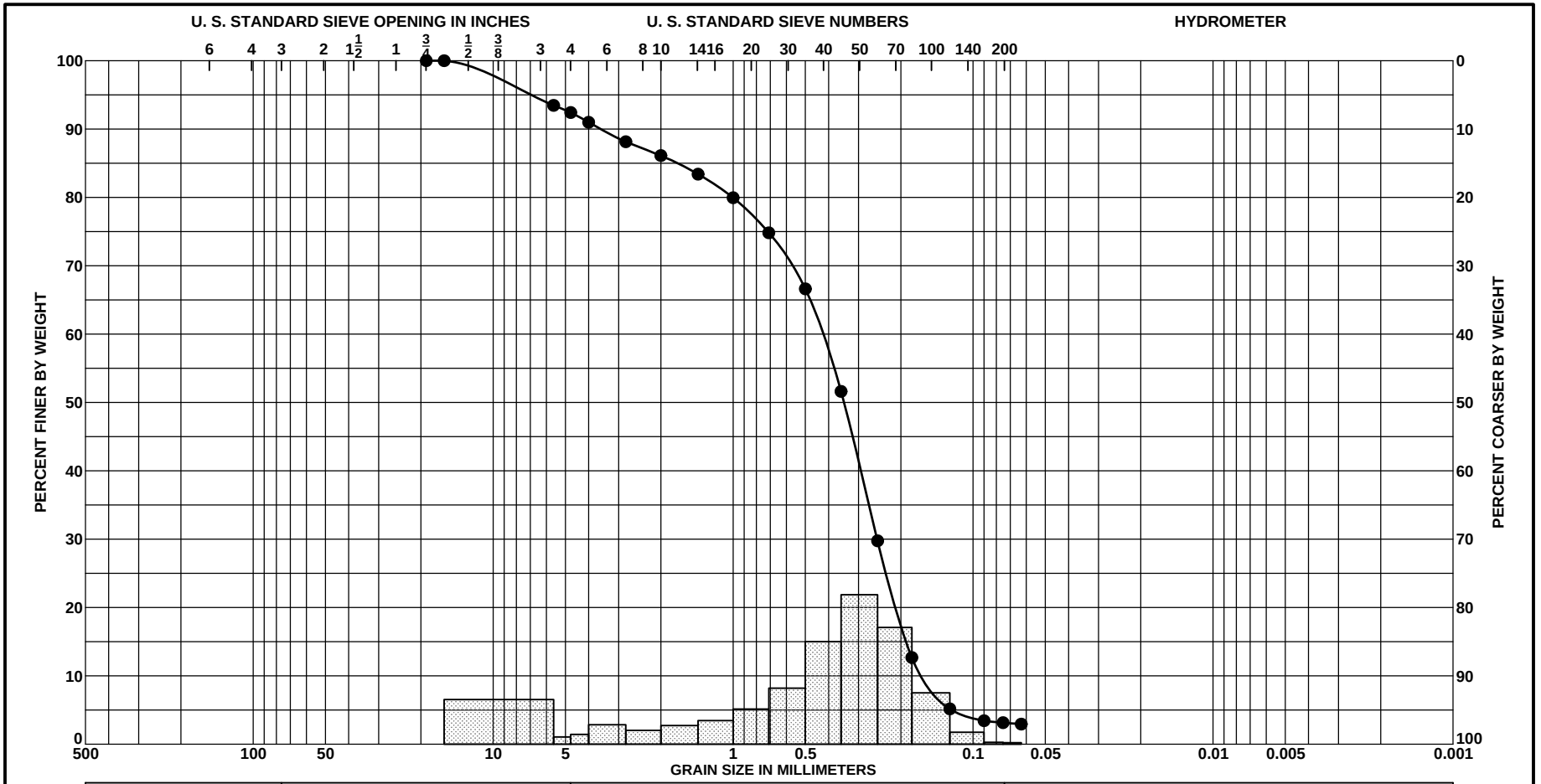


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	0							
		medium-grained									
		sand-sized carbonate, some silt,									
		white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-24
BORING ELEV.	-28.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-24
BORING ELEV.	-28.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-24 @ 2 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,800	509,597	State Plane, FLE (U.S. Ft.)	-30.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 23.30 #230 - 22.34			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.00	0.00
#5	-2.00	4.00	0.03	0.03
#7	-1.50	2.80	0.09	0.12
#10	-1.00	2.00	0.36	0.48
#14	-0.50	1.40	0.94	1.41
#18	0.00	1.00	1.67	3.08
#25	0.50	0.71	2.97	6.05
#35	1.00	0.50	5.19	11.24
#45	1.50	0.36	9.21	20.44
#60	2.00	0.25	14.98	35.42
#80	2.50	0.18	18.63	54.05
#120	3.00	0.13	14.17	68.22
#170	3.50	0.09	6.41	74.63
#200	3.75	0.08	2.06	76.70
#230	4.00	0.06	0.96	77.66

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.54	2.39	1.65	1.26	0.32

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.98	0.25	2.39	0.19	0.97	-0.7	3.67

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-24 @ 4 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,800	509,597	State Plane, FLE (U.S. Ft.)	-32.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 21.36 #230 - 19.72			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.28	0.28
#5	-2.00	4.00	0.09	0.37
#7	-1.50	2.80	0.55	0.92
#10	-1.00	2.00	1.02	1.94
#14	-0.50	1.40	2.14	4.08
#18	0.00	1.00	2.93	7.01
#25	0.50	0.71	4.79	11.80
#35	1.00	0.50	6.91	18.71
#45	1.50	0.36	10.41	29.12
#60	2.00	0.25	14.89	44.01
#80	2.50	0.18	15.01	59.02
#120	3.00	0.13	11.33	70.35
#170	3.50	0.09	5.25	75.60
#200	3.75	0.08	3.04	78.64
#230	4.00	0.06	1.63	80.28

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.44	2.20	1.30	0.80	-0.34

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.74	0.30	2.20	0.22	1.18	-0.65	3.39

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-24 @ 6 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,800	509,597	State Plane, FLE (U.S. Ft.)	-34.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 3.15 #230 - 2.94			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	6.53	6.53
#4	-2.25	4.75	1.05	7.58
#5	-2.00	4.00	1.43	9.01
#7	-1.50	2.80	2.85	11.86
#10	-1.00	2.00	2.02	13.88
#14	-0.50	1.40	2.73	16.60
#18	0.00	1.00	3.44	20.05
#25	0.50	0.71	5.13	25.18
#35	1.00	0.50	8.20	33.38
#45	1.50	0.36	15.01	48.38
#60	2.00	0.25	21.86	70.24
#80	2.50	0.18	17.07	87.32
#120	3.00	0.13	7.51	94.83
#170	3.50	0.09	1.74	96.57
#200	3.75	0.08	0.28	96.85
#230	4.00	0.06	0.21	97.06

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.05	2.40	2.14	1.54	0.48	-0.61	-2.91

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.97	0.51	1.54	0.34	1.66	-1.24	3.74

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–24
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–24
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–24
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–24
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD - SAND
SEARCH
DADE COUNTY
C2019 - 032
VB-DA20-24
DEPTH :10.0 -10.7
10'
11'
12'

VB-DA20-25

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-25

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-25	LOCATION COORDINATES: X = 954,564 Y = 510,792	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 6 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-24-20 / COMPLETED: 06-24-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -55.4 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 89 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-55.4	0.0								
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, few shell, moist, 2.5Y 8/1 white (SM)				-58.4		
					1				
-61.4	6.0						-61.4		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, few shell, moist, 2.5Y 8/1 white (SW-SM)		2		-64.4		
-64.6	9.2								
-64.9	9.5		LIMESTONE, GRAVEL, poorly-graded, mostly gravel to cobble-sized limestone, little fine to medium-grained sand-sized carbonate, few silt, moist, 2.5Y 7/1 light gray		3		-65.4		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, moist, 2.5Y 8/3 pale yellow (SW-SM)		4				
			At El. -66.2 Ft., mostly fine to coarse-grained sand-sized carbonate, few silt, moist, 2.5Y 7/1 light gray				-67.4		
					5				
			At El. -67.8 Ft., mostly fine to coarse-grained sand-sized carbonate, some fine gravel-sized limestone, few silt, moist, N 7/ light gray				-69.4		
					6				

0 5 10 15

(Continued)

Boring Designation VB-DA20-25

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT SAD-SAND	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 954,564 Y = 510,792	ELEVATION TOP OF BORING -55.4 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-73.2	17.8		No Recovery						
-75.4	20.0						-75.4		

NOTES:

1. Taylor Engineering is the custodian for these original files.

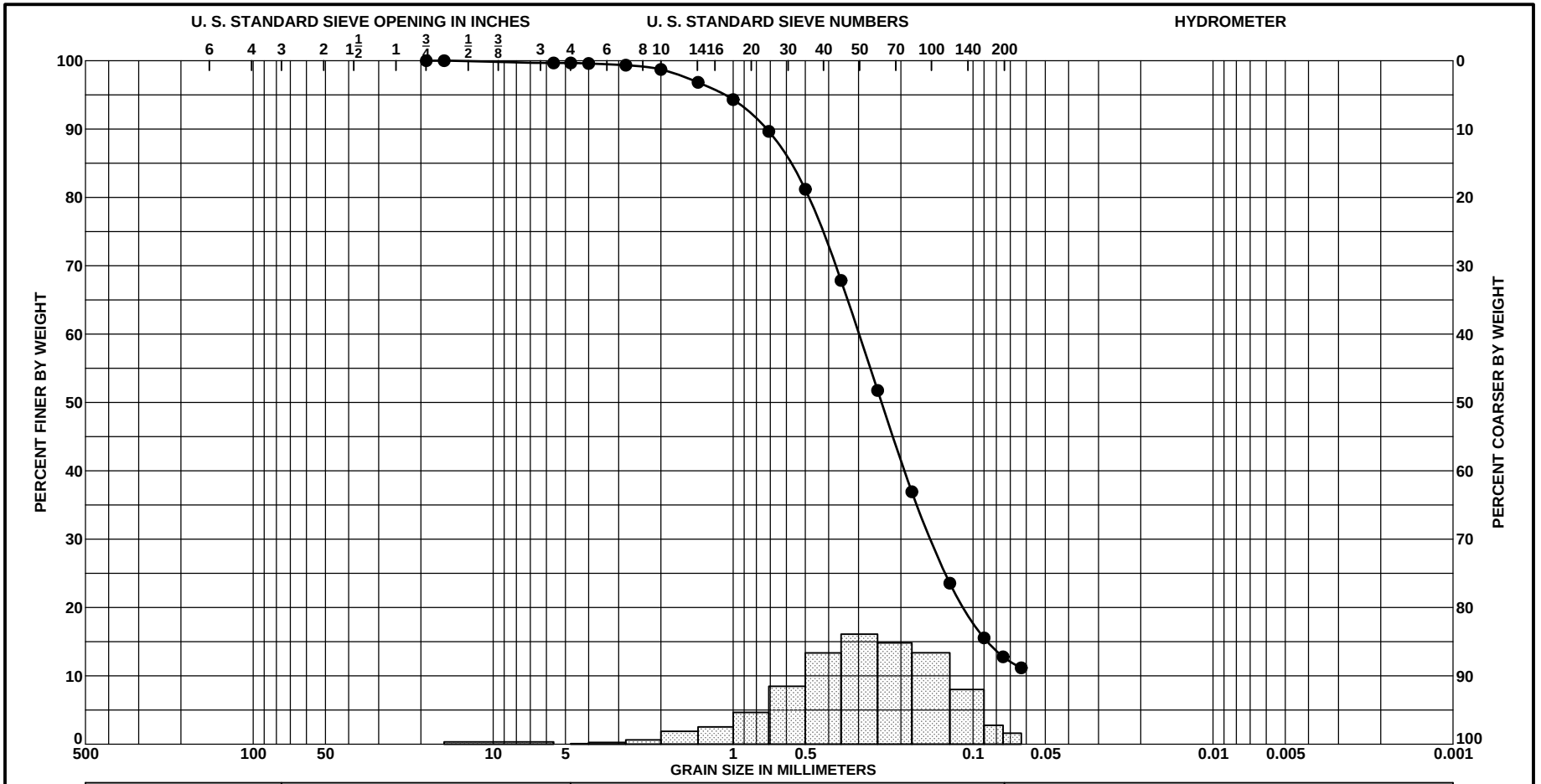
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	3.0/3.2	SM*
2	6.0/6.2	SW-SM*
3	9.0/9.2	SW-SM*
4	10.0/10.2	SW-SM*
5	12.0/12.2	SW-SM*
6	14.0/14.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	3.0 to 3.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	1	99						
		medium-grained									
		sand-sized carbonate, little silt, few									
		shell, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-25
BORING ELEV.	-55.4 Ft., NAVD88
DATE	8/21/2020

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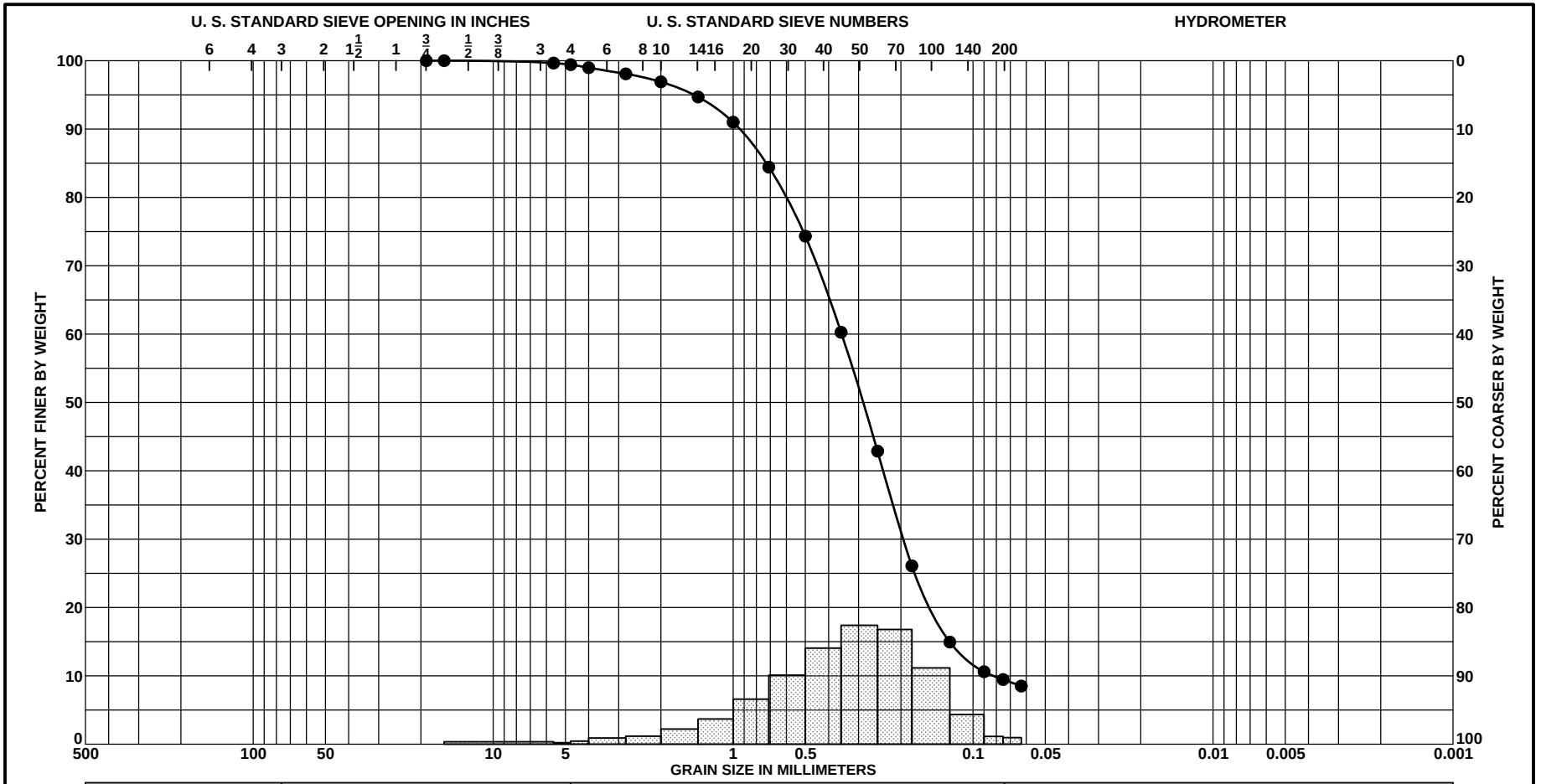
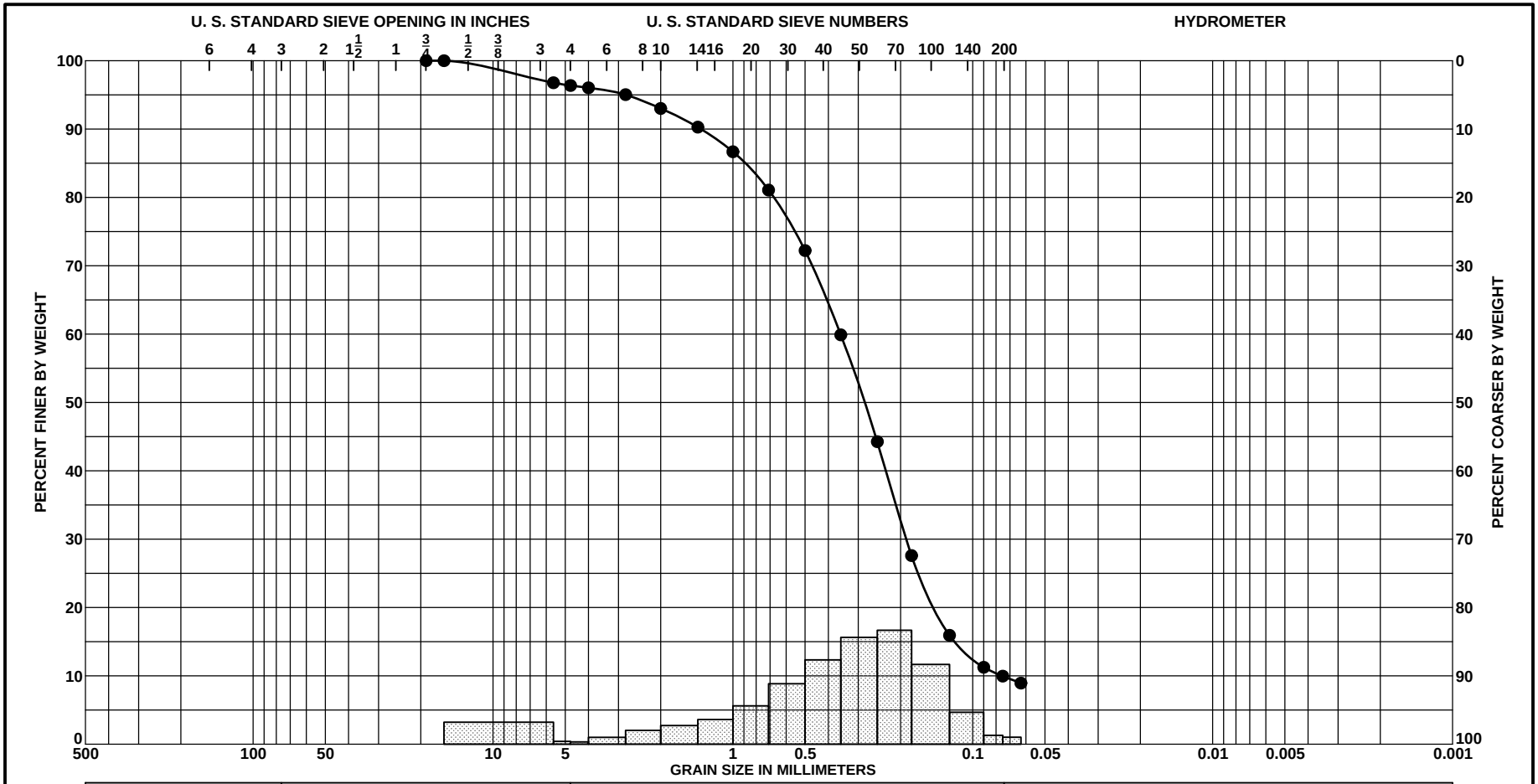


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 8/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, few shell, white (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-25
BORING ELEV.	-55.4 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

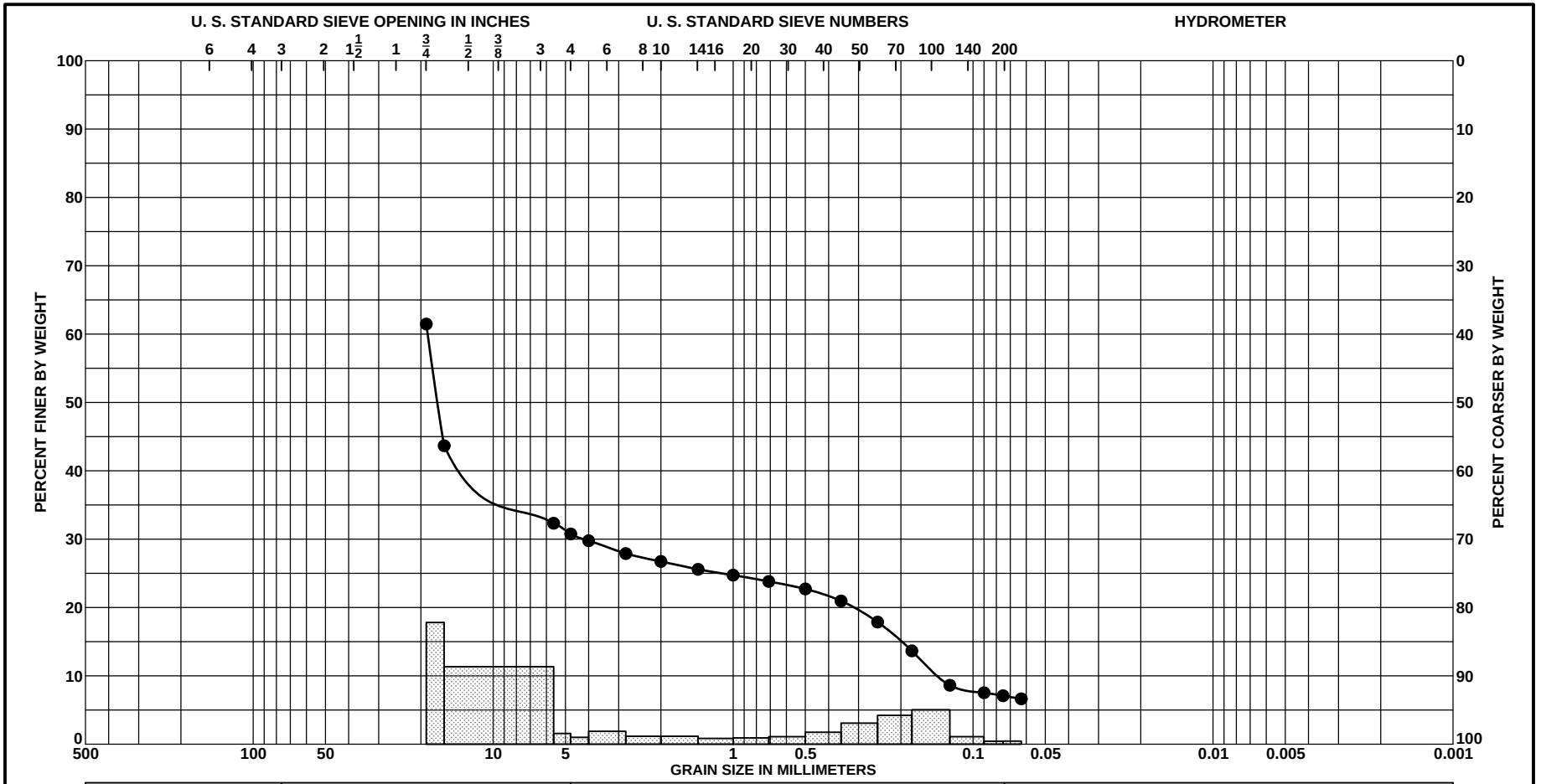


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	9.0 to 9.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 8/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, few shell, white (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-25
BORING ELEV.	-55.4 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

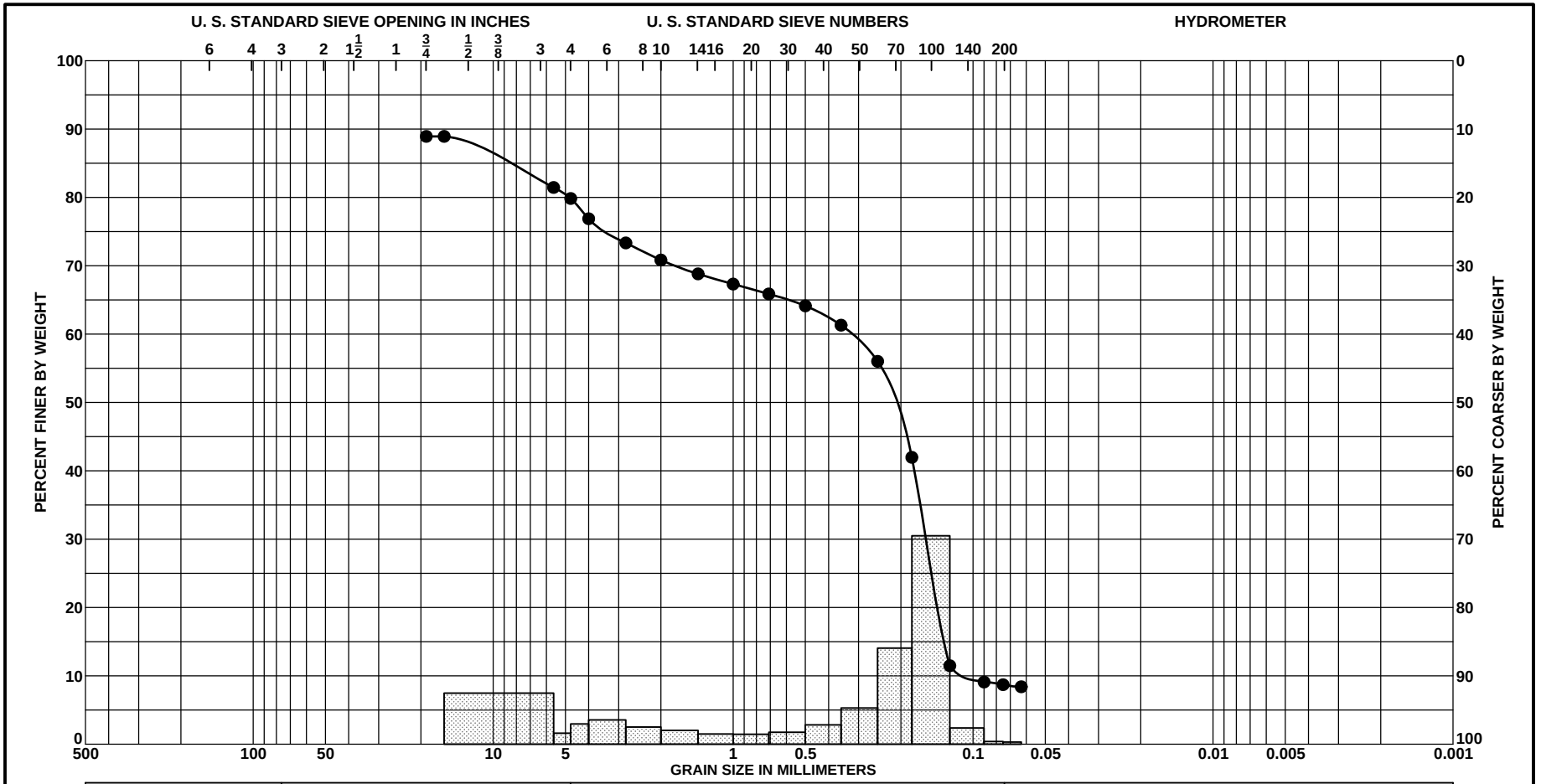


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	10.0 to 10.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 8/3	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-25
BORING ELEV.	-55.4 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

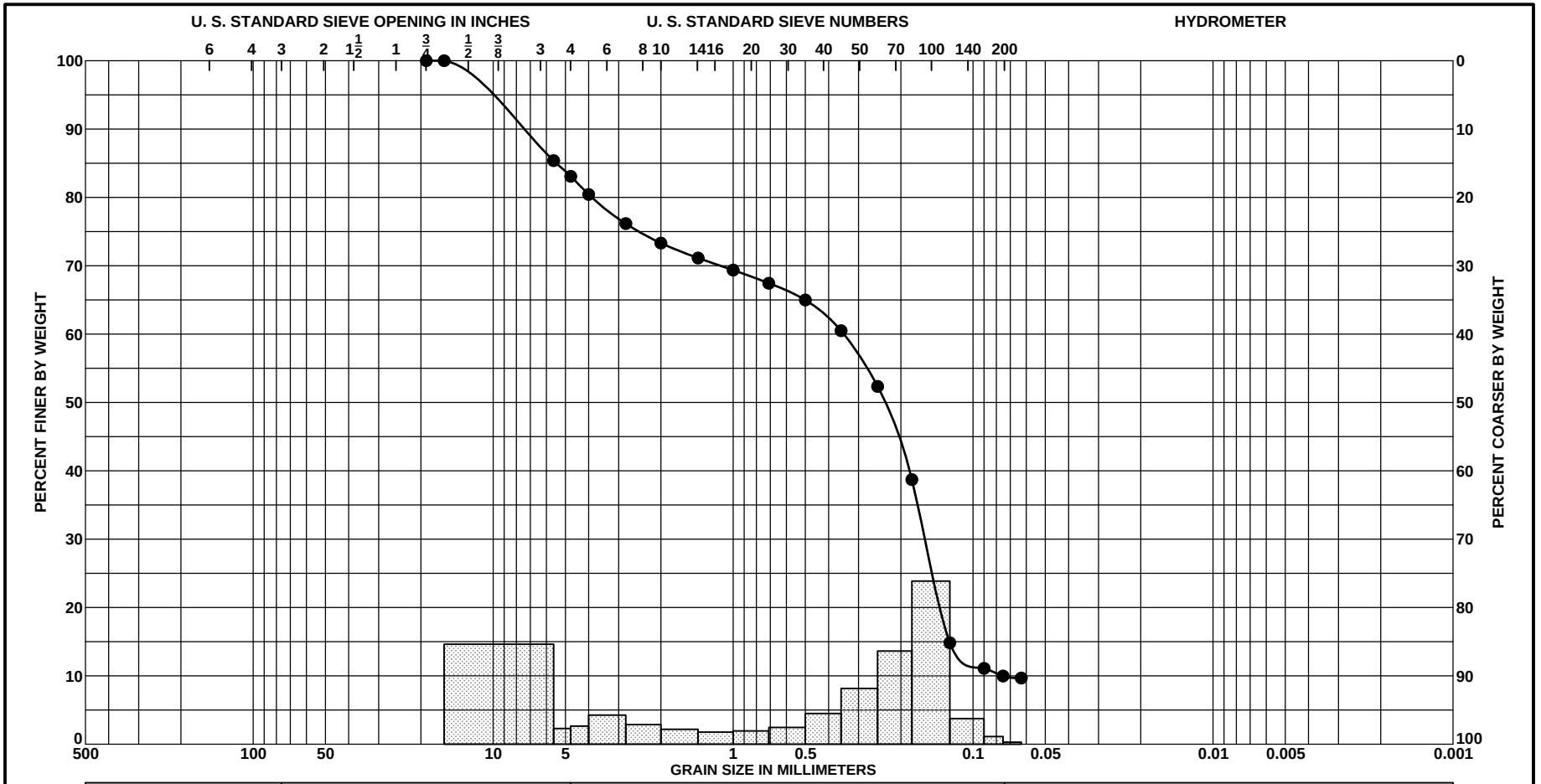


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	12.0 to 12.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 7/1	0							
		fine to coarse-grained									
		sand-sized carbonate, few silt, light									
		gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-25
BORING ELEV.	-55.4 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

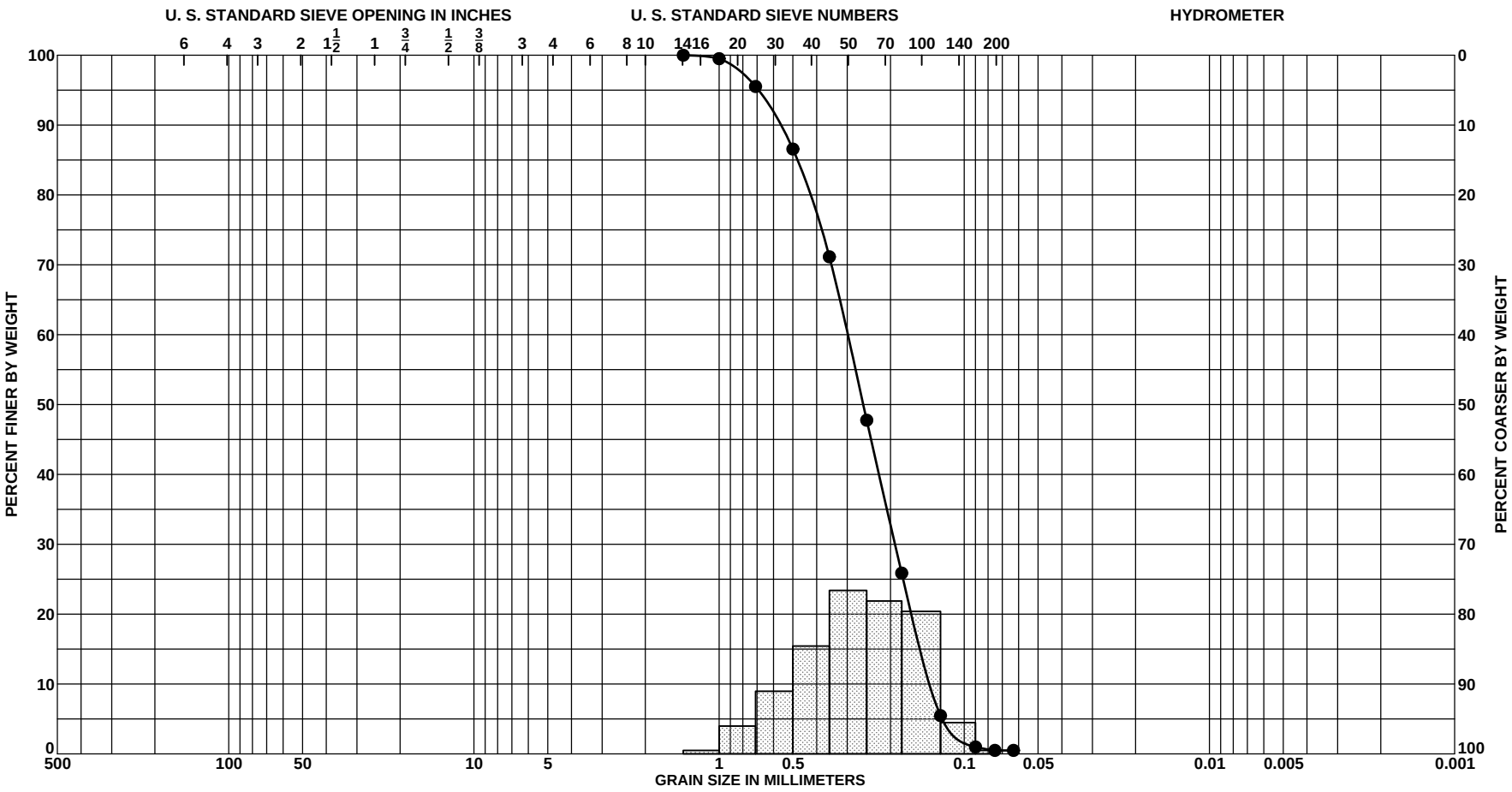


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	14.0 to 14.2 Ft.	SAND, well-graded with silt, mostly	N 7/	0							
		fine to coarse-grained									
		sand-sized carbonate, some fine									
		gravel-sized limestone, few silt, light									
		gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-25
BORING ELEV.	-55.4 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	3.0 to 3.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-25
BORING ELEV.	-55.4 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-25 @ 3 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,564	510,792	State Plane, FLE (U.S. Ft.)	-58.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 12.78 #230 - 11.17		98.50	1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.33	0.33
#4	-2.25	4.75	0.00	0.33
#5	-2.00	4.00	0.08	0.41
#7	-1.50	2.80	0.25	0.65
#10	-1.00	2.00	0.63	1.28
#14	-0.50	1.40	1.89	3.17
#18	0.00	1.00	2.53	5.69
#25	0.50	0.71	4.65	10.34
#35	1.00	0.50	8.47	18.81
#45	1.50	0.36	13.35	32.15
#60	2.00	0.25	16.09	48.24
#80	2.50	0.18	14.83	63.07
#120	3.00	0.13	13.37	76.45
#170	3.50	0.09	8.00	84.45
#200	3.75	0.08	2.77	87.22
#230	4.00	0.06	1.61	88.83

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.47	2.95	2.06	1.23	0.83	-0.14

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.80	0.29	2.06	0.24	1.13	-0.71	4.09

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-25 @ 6 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,564	510,792	State Plane, FLE (U.S. Ft.)	-61.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 8/1	#200 - 9.46 #230 - 8.50			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.35	0.35
#4	-2.25	4.75	0.22	0.57
#5	-2.00	4.00	0.46	1.03
#7	-1.50	2.80	0.89	1.92
#10	-1.00	2.00	1.17	3.09
#14	-0.50	1.40	2.22	5.31
#18	0.00	1.00	3.68	8.99
#25	0.50	0.71	6.58	15.57
#35	1.00	0.50	10.10	25.67
#45	1.50	0.36	14.07	39.74
#60	2.00	0.25	17.39	57.12
#80	2.50	0.18	16.78	73.90
#120	3.00	0.13	11.16	85.06
#170	3.50	0.09	4.34	89.40
#200	3.75	0.08	1.14	90.54
#230	4.00	0.06	0.95	91.50

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.95	2.55	1.80	0.97	0.52	-0.57

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.52	0.35	1.80	0.29	1.18	-0.82	4.12

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-25 @ 9 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,564	510,792	State Plane, FLE (U.S. Ft.)	-64.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 8/1	#200 - 9.96 #230 - 8.94			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	3.22	3.22
#4	-2.25	4.75	0.40	3.63
#5	-2.00	4.00	0.34	3.96
#7	-1.50	2.80	1.00	4.96
#10	-1.00	2.00	2.03	6.99
#14	-0.50	1.40	2.73	9.72
#18	0.00	1.00	3.60	13.32
#25	0.50	0.71	5.61	18.93
#35	1.00	0.50	8.85	27.78
#45	1.50	0.36	12.33	40.11
#60	2.00	0.25	15.63	55.74
#80	2.50	0.18	16.67	72.41
#120	3.00	0.13	11.66	84.07
#170	3.50	0.09	4.68	88.75
#200	3.75	0.08	1.29	90.04
#230	4.00	0.06	1.02	91.06

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.00	2.61	1.82	0.84	0.24	-1.49

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.37	0.39	1.82	0.28	1.49	-1.23	4.63

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-25 @ 10 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,564	510,792	State Plane, FLE (U.S. Ft.)	-65.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 8/3	#200 - 7.09 #230 - 6.63			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	38.53	38.53
5/8	-4.00	16.00	17.81	56.34
#3.5	-2.50	5.60	11.34	67.67
#4	-2.25	4.75	1.56	69.24
#5	-2.00	4.00	0.99	70.23
#7	-1.50	2.80	1.88	72.11
#10	-1.00	2.00	1.16	73.26
#14	-0.50	1.40	1.16	74.42
#18	0.00	1.00	0.85	75.27
#25	0.50	0.71	0.93	76.19
#35	1.00	0.50	1.10	77.29
#45	1.50	0.36	1.75	79.04
#60	2.00	0.25	3.09	82.13
#80	2.50	0.18	4.22	86.35
#120	3.00	0.13	5.03	91.38
#170	3.50	0.09	1.09	92.47
#200	3.75	0.08	0.44	92.91
#230	4.00	0.06	0.45	93.37

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.22	-0.16	-4.09			

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	-2.70	6.50			2.29	1.96	4.58

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-25 @ 12 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,564	510,792	State Plane, FLE (U.S. Ft.)	-67.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 7/1	#200 - 8.71 #230 - 8.40			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	11.07	11.07
5/8	-4.00	16.00	0.00	11.07
#3.5	-2.50	5.60	7.47	18.55
#4	-2.25	4.75	1.61	20.16
#5	-2.00	4.00	2.96	23.12
#7	-1.50	2.80	3.54	26.66
#10	-1.00	2.00	2.50	29.16
#14	-0.50	1.40	2.02	31.19
#18	0.00	1.00	1.49	32.68
#25	0.50	0.71	1.45	34.13
#35	1.00	0.50	1.74	35.87
#45	1.50	0.36	2.83	38.69
#60	2.00	0.25	5.29	43.98
#80	2.50	0.18	14.05	58.04
#120	3.00	0.13	30.48	88.52
#170	3.50	0.09	2.38	90.90
#200	3.75	0.08	0.39	91.29
#230	4.00	0.06	0.31	91.60

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.93	2.78	2.21	-1.73	-3.10	

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.50	0.71	2.21	0.22	2.09	-0.05	1.71

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-25 @ 14 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,564	510,792	State Plane, FLE (U.S. Ft.)	-69.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	N 7/	#200 - 9.97 #230 - 9.68			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	14.62	14.62
#4	-2.25	4.75	2.30	16.92
#5	-2.00	4.00	2.65	19.57
#7	-1.50	2.80	4.26	23.83
#10	-1.00	2.00	2.86	26.68
#14	-0.50	1.40	2.18	28.87
#18	0.00	1.00	1.77	30.63
#25	0.50	0.71	1.93	32.57
#35	1.00	0.50	2.45	35.01
#45	1.50	0.36	4.49	39.50
#60	2.00	0.25	8.15	47.66
#80	2.50	0.18	13.63	61.29
#120	3.00	0.13	23.87	85.16
#170	3.50	0.09	3.75	88.91
#200	3.75	0.08	1.12	90.03
#230	4.00	0.06	0.29	90.32

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.98	2.79	2.09	-1.29	-2.35	-3.65

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.71	0.61	2.09	0.23	2.34	-0.67	1.83

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-25 @ 3 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,564	510,792	State Plane, FLE (U.S. Ft.)	-58.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.50 #230 - 0.50			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#14	-0.50	1.40	0.00	0.00
#18	0.00	1.00	0.50	0.50
#25	0.50	0.71	3.98	4.48
#35	1.00	0.50	8.96	13.43
#45	1.50	0.36	15.42	28.86
#60	2.00	0.25	23.38	52.24
#80	2.50	0.18	21.89	74.13
#120	3.00	0.13	20.40	94.53
#170	3.50	0.09	4.48	99.00
#200	3.75	0.08	0.50	99.50
#230	4.00	0.06	0.00	99.50

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.05	2.74	2.52	1.95	1.38	1.08	0.53

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.90	0.27	1.95	0.26	0.77	-0.32	2.54

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–25
DEPTH : 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–25
DEPTH : 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–25
DEPTH : 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–25
DEPTH : 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–25
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–25
DEPTH :12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–25
DEPTH :15.0 –17.5
15'
16'
17'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–25
DEPTH :17.5 –17.8
18'
19'
20'

VB-DA20-26

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-26

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-26	LOCATION COORDINATES: X = 948,738 Y = 512,722	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 3 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-25-20 / COMPLETED: 06-25-20
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: 83 %	
8. TOTAL DEPTH OF BORING: 13.4 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-30.5	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace shell, trace silt, moist, 2.5Y 7/1 light gray (SW)		1		-31.5		
-33.5	3.0						-33.5		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, few shell, few fine to coarse gravel-sized limestone, moist, 2.5Y 6/1 gray (SW-SM)		2				
-34.5	4.0						-34.5		
-35.2	4.7		SAND, well-graded, mostly fine to coarse-grained sand-sized carbonate, trace shell, moist, 2.5Y 6/1 gray (SW)		3				
			LIMESTONE, GRAVEL, poorly-graded, mostly gravel to cobble-sized limestone, little fine-grained sand-sized carbonate, few silt, moist, 2.5Y 8/2 pale yellow						
-41.6	11.1								
			No Recovery						
-43.9	13.4						-43.9		
			BORING TERMINATED IN REFUSAL				Abbreviations:		
			NOTES:						
			1. Taylor Engineering is the custodian for						

0 5 10 15

(Continued)

Boring Designation VB-DA20-26

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 948,738 Y = 512,722	ELEVATION TOP OF BORING: -30.5 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE

these original files.

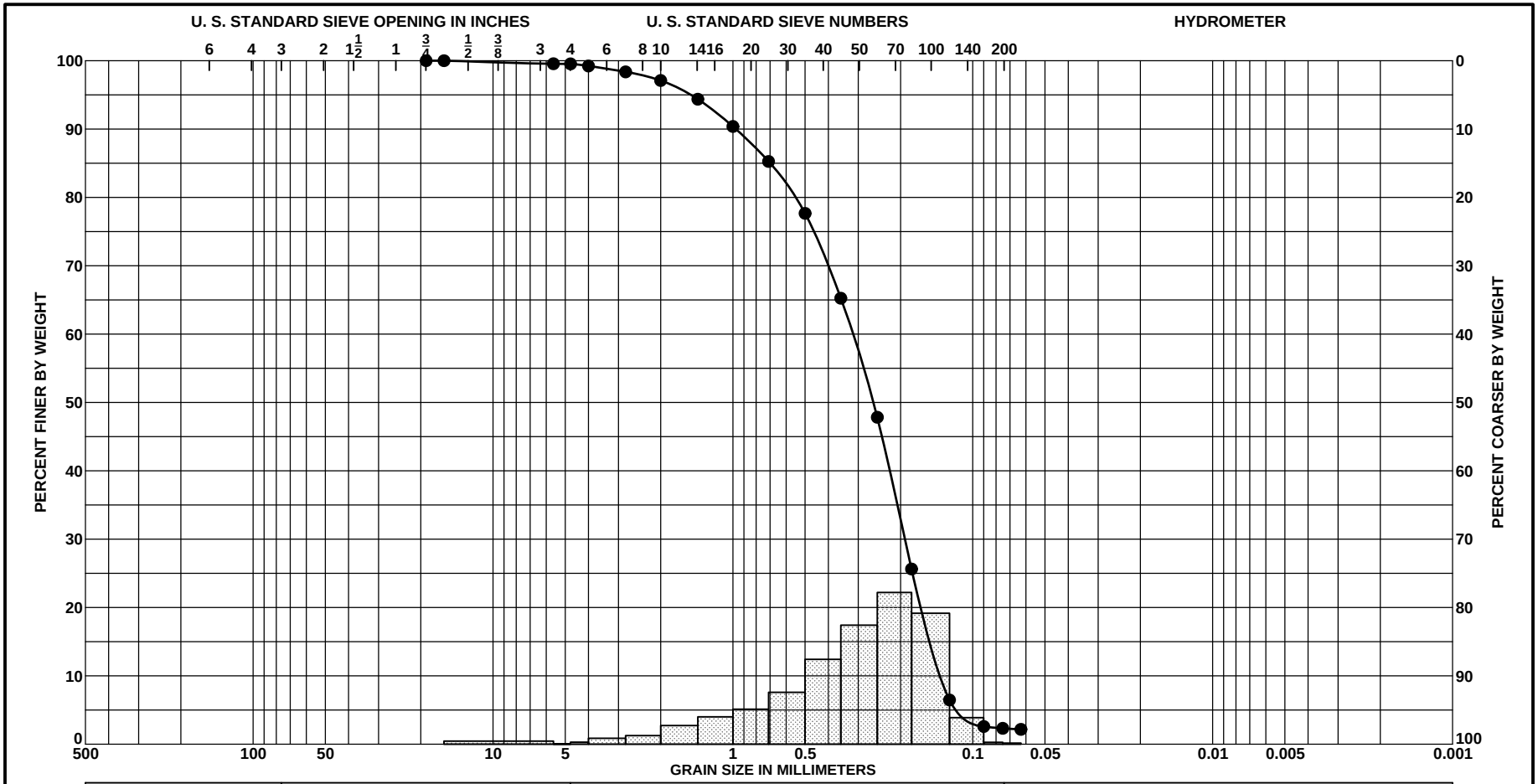
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW-SM*
3	4.0/4.2	SW*

*Lab visual classification based on gradation curve

15 20 25 30 35

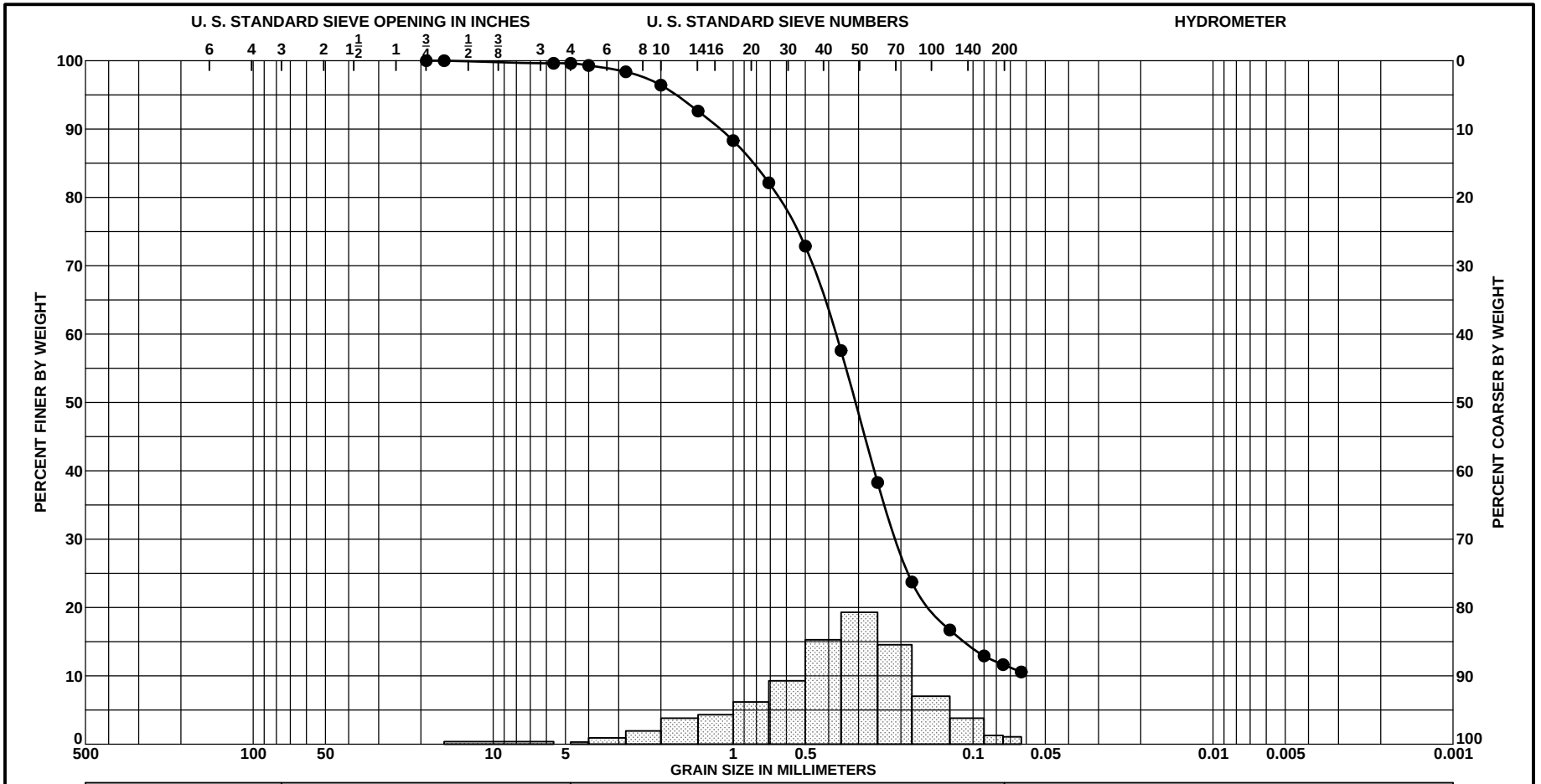


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 7/1	0							
		medium-grained sand-sized									
		carbonate, trace									
		shell, trace silt, light gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-26
BORING ELEV.	-30.5 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

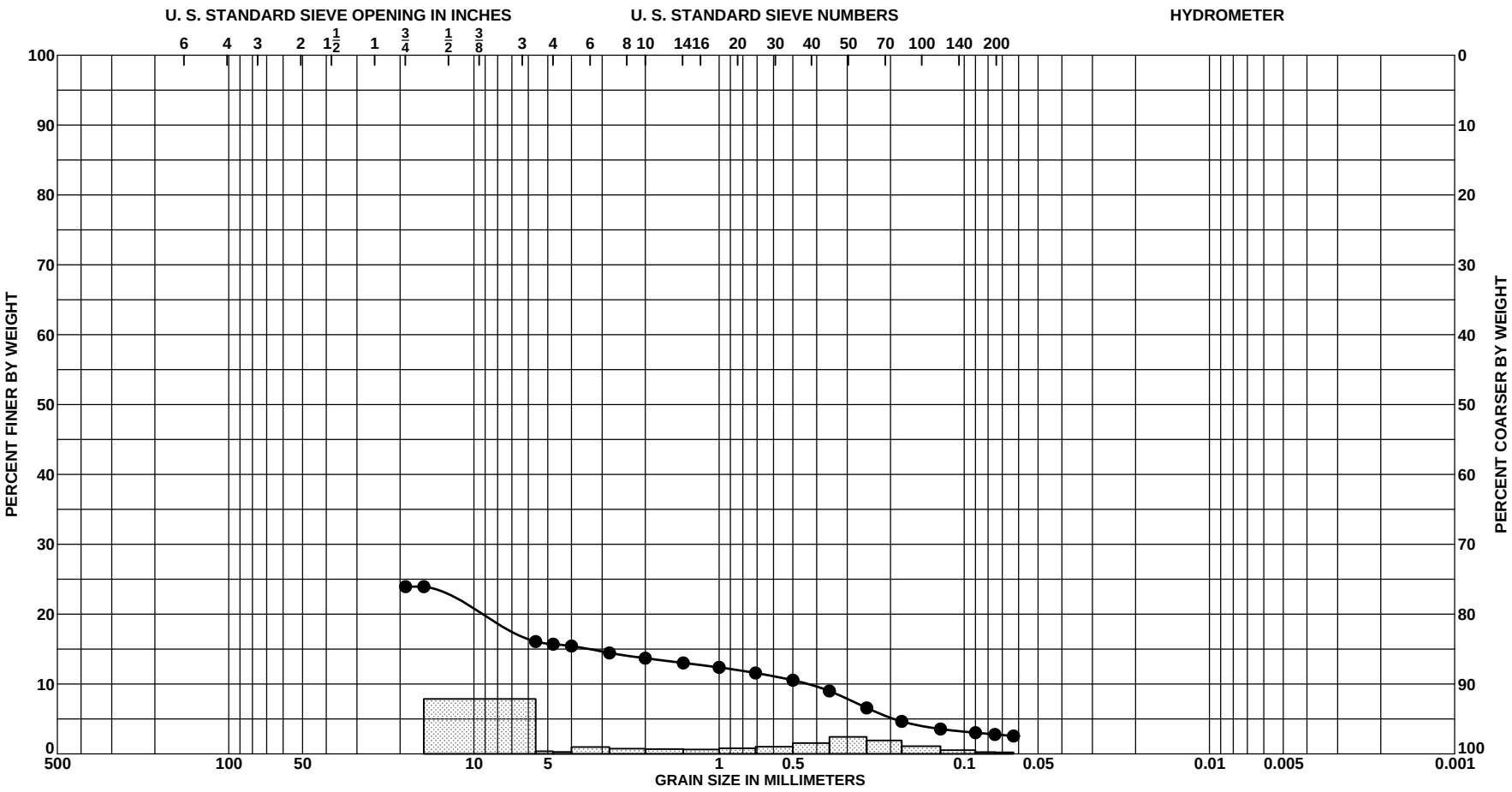


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 6/1	0							
		fine to medium-grained									
		sand-sized carbonate, few silt,									
		few shell, few fine gravel-sized									
		limestone, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-26
BORING ELEV.	-30.5 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 6/1	10							
		coarse-grained sand-sized									
		carbonate, trace									
		shell, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-26
BORING ELEV.	-30.5 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-26 @ 1 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
948,738	512,722	State Plane, FLE (U.S. Ft.)	-31.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 7/1	#200 - 2.32 #230 - 2.17			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.45	0.45
#4	-2.25	4.75	0.02	0.47
#5	-2.00	4.00	0.30	0.77
#7	-1.50	2.80	0.86	1.63
#10	-1.00	2.00	1.26	2.90
#14	-0.50	1.40	2.74	5.63
#18	0.00	1.00	3.99	9.62
#25	0.50	0.71	5.12	14.74
#35	1.00	0.50	7.59	22.33
#45	1.50	0.36	12.42	34.75
#60	2.00	0.25	17.42	52.17
#80	2.50	0.18	22.20	74.37
#120	3.00	0.13	19.16	93.53
#170	3.50	0.09	3.88	97.41
#200	3.75	0.08	0.27	97.68
#230	4.00	0.06	0.15	97.83

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.19	2.75	2.52	1.94	1.11	0.58	-0.62

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.65	0.32	1.94	0.26	1.14	-1.18	4.59

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-26 @ 3 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
948,738	512,722	State Plane, FLE (U.S. Ft.)	-33.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 6/1	#200 - 11.64 #230 - 10.57			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.38	0.38
#4	-2.25	4.75	0.00	0.38
#5	-2.00	4.00	0.32	0.70
#7	-1.50	2.80	0.93	1.63
#10	-1.00	2.00	1.95	3.58
#14	-0.50	1.40	3.80	7.37
#18	0.00	1.00	4.32	11.69
#25	0.50	0.71	6.18	17.86
#35	1.00	0.50	9.27	27.13
#45	1.50	0.36	15.28	42.41
#60	2.00	0.25	19.30	61.71
#80	2.50	0.18	14.56	76.27
#120	3.00	0.13	7.02	83.29
#170	3.50	0.09	3.80	87.09
#200	3.75	0.08	1.27	88.36
#230	4.00	0.06	1.07	89.43

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.09	2.46	1.70	0.88	0.35	-0.81

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.39	0.38	1.70	0.31	1.2	-0.67	3.72

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-26 @ 4 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
948,738	512,722	State Plane, FLE (U.S. Ft.)	-34.5 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 6/1	#200 - 2.78 #230 - 2.56			10

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	76.06	76.06
5/8	-4.00	16.00	0.00	76.06
#3.5	-2.50	5.60	7.86	83.92
#4	-2.25	4.75	0.38	84.30
#5	-2.00	4.00	0.27	84.57
#7	-1.50	2.80	0.99	85.55
#10	-1.00	2.00	0.75	86.31
#14	-0.50	1.40	0.68	86.99
#18	0.00	1.00	0.63	87.62
#25	0.50	0.71	0.81	88.43
#35	1.00	0.50	1.03	89.46
#45	1.50	0.36	1.54	91.00
#60	2.00	0.25	2.42	93.42
#80	2.50	0.18	1.93	95.35
#120	3.00	0.13	1.09	96.44
#170	3.50	0.09	0.52	96.97
#200	3.75	0.08	0.25	97.22
#230	4.00	0.06	0.23	97.44

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.41	-2.45					

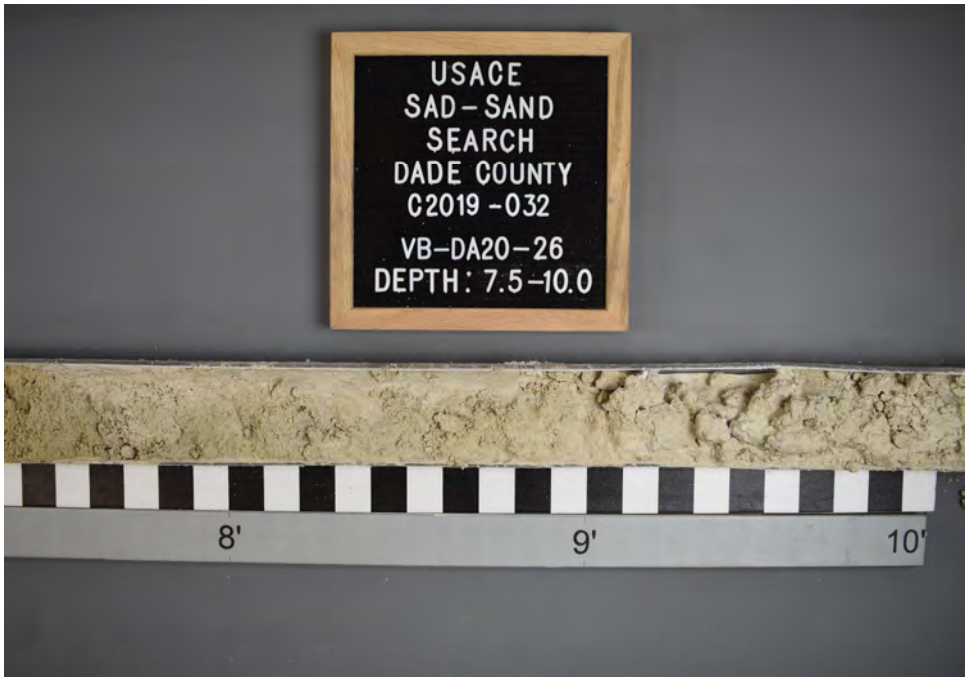
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	-3.54	11.63			1.79	3.05	9.71

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–26
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–26
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–26
DEPTH: 5.0 – 7.5
5'
6'
7'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–26
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 26
DEPTH :10.0 – 11.1
10'
11'
12'

VB-DA20-27

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-27

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-27	LOCATION COORDINATES: X = 950,686 Y = 512,727	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 3 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-25-20 / COMPLETED: 06-25-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -30.0 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 80 %	
8. TOTAL DEPTH OF BORING: 10.1 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-30.0	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace shell, trace fine gravel-sized limestone, trace silt, moist, 2.5Y 8/2 pale yellow (SW)				-31.0		
					1				
							-33.0		
					2				
							-35.0		
					3				
-36.0	6.0		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone, few fine to medium-grained sand-sized carbonate, moist, 2.5Y 6/1 gray						
-38.1	8.1		No Recovery						
-40.1	10.1						-40.1		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION

(Continued)

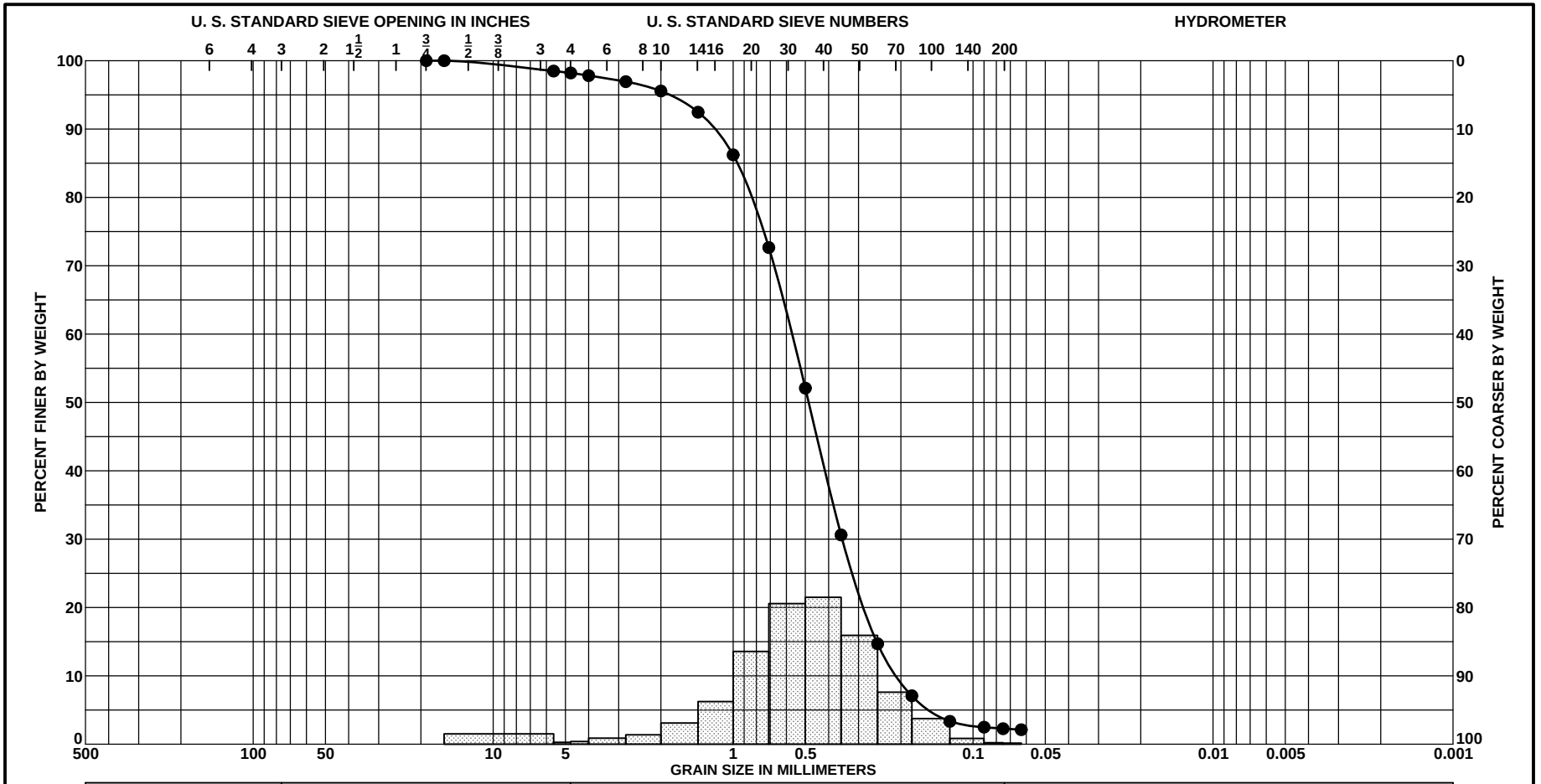
Boring Designation VB-DA20-27

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 950,686 Y = 512,727	ELEVATION TOP OF BORING: -30.0 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			1 1.0/1.2 SW* 2 3.0/3.2 SW* 3 5.0/5.2 SW* *Lab visual classification based on gradation curve						

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

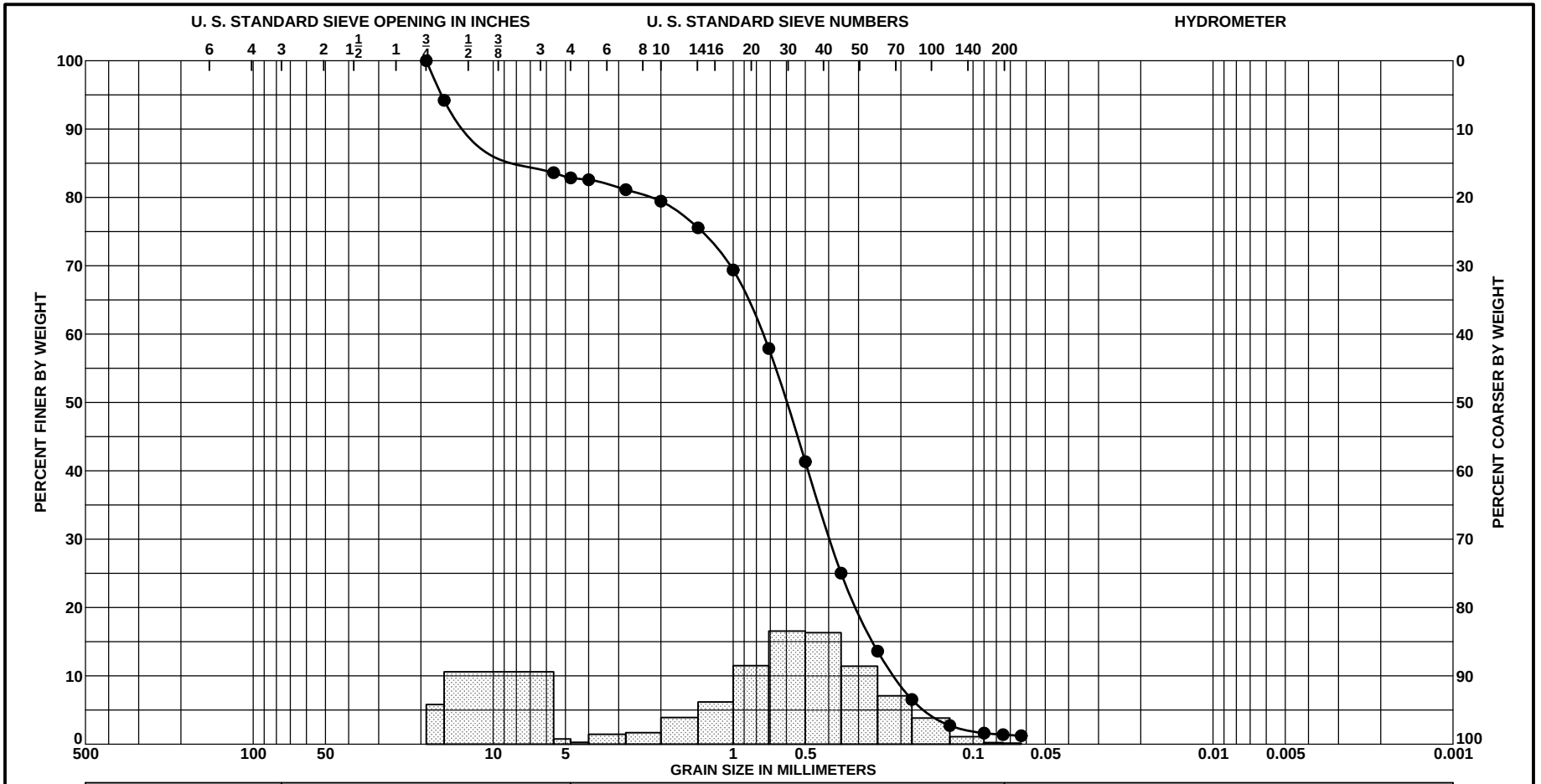


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0	95						
		medium-grained sand-sized									
		carbonate, trace shell,									
		trace fine gravel-sized limestone,									
		trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-27
BORING ELEV.	-30.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

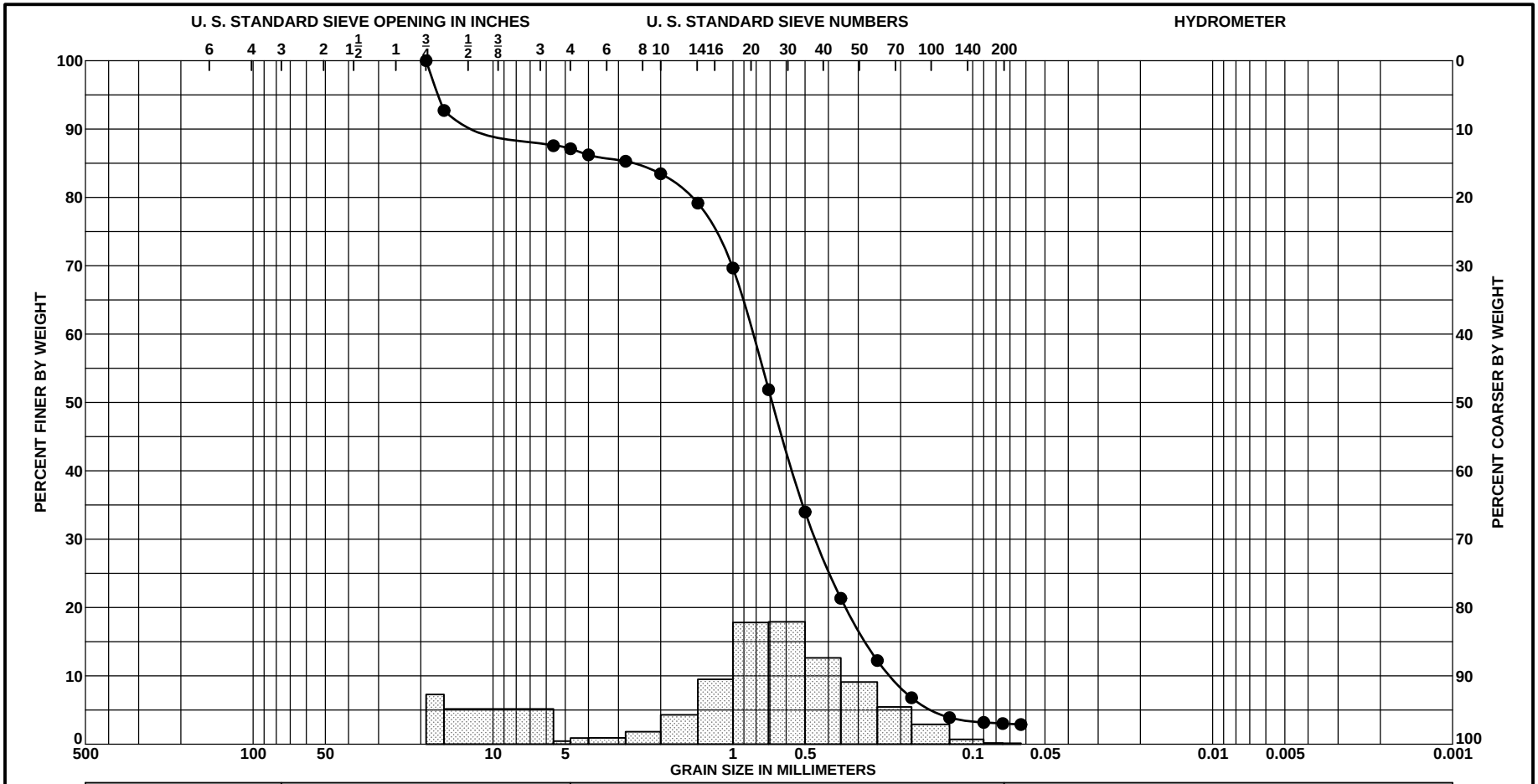


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, trace shell, trace fine									
		gravel-sized limestone,									
		trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-27
BORING ELEV.	-30.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

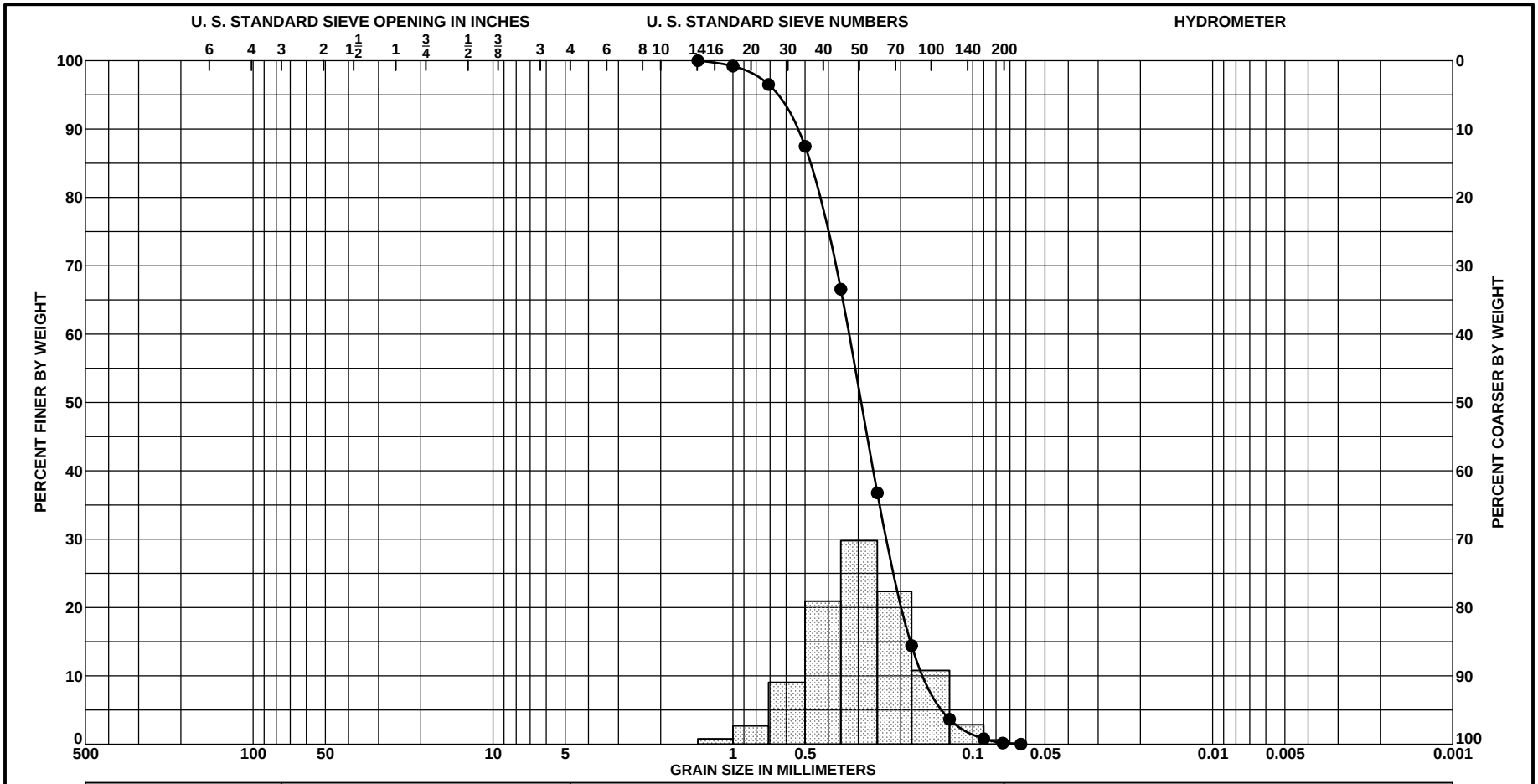


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	5.0 to 5.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, trace shell,									
		trace fine gravel-sized limestone,									
		trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-27
BORING ELEV.	-30.0 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-27
BORING ELEV.	-30.0 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-27 @ 1 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,686	512,727	State Plane, FLE (U.S. Ft.)	-31.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 2.27 #230 - 2.12		94.60	0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.52	1.52
#4	-2.25	4.75	0.28	1.79
#5	-2.00	4.00	0.39	2.19
#7	-1.50	2.80	0.88	3.07
#10	-1.00	2.00	1.37	4.43
#14	-0.50	1.40	3.11	7.54
#18	0.00	1.00	6.24	13.78
#25	0.50	0.71	13.56	27.34
#35	1.00	0.50	20.57	47.91
#45	1.50	0.36	21.48	69.39
#60	2.00	0.25	15.92	85.31
#80	2.50	0.18	7.61	92.92
#120	3.00	0.13	3.74	96.66
#170	3.50	0.09	0.85	97.51
#200	3.75	0.08	0.22	97.73
#230	4.00	0.06	0.15	97.88

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.78	1.96	1.68	1.05	0.41	0.08	-0.91

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.94	0.52	1.05	0.48	1.09	-0.99	5.54

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-27 @ 3 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,686	512,727	State Plane, FLE (U.S. Ft.)	-33.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 1.39 #230 - 1.24			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	5.80	5.80
#3.5	-2.50	5.60	10.58	16.38
#4	-2.25	4.75	0.76	17.14
#5	-2.00	4.00	0.28	17.42
#7	-1.50	2.80	1.45	18.87
#10	-1.00	2.00	1.69	20.55
#14	-0.50	1.40	3.90	24.45
#18	0.00	1.00	6.17	30.62
#25	0.50	0.71	11.49	42.11
#35	1.00	0.50	16.56	58.66
#45	1.50	0.36	16.31	74.97
#60	2.00	0.25	11.42	86.39
#80	2.50	0.18	7.07	93.46
#120	3.00	0.13	3.81	97.28
#170	3.50	0.09	1.10	98.38
#200	3.75	0.08	0.23	98.61
#230	4.00	0.06	0.16	98.76

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.70	1.90	1.50	0.74	-0.46	-2.55	-4.03

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.17	0.89	0.74	0.60	1.95	-0.92	2.86

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-27 @ 5 ft

Analysis Date: 8/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,686	512,727	State Plane, FLE (U.S. Ft.)	-35.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 3.02 #230 - 2.88			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	7.28	7.28
#3.5	-2.50	5.60	5.16	12.44
#4	-2.25	4.75	0.45	12.88
#5	-2.00	4.00	0.90	13.78
#7	-1.50	2.80	0.93	14.71
#10	-1.00	2.00	1.83	16.54
#14	-0.50	1.40	4.30	20.84
#18	0.00	1.00	9.49	30.33
#25	0.50	0.71	17.80	48.13
#35	1.00	0.50	17.89	66.03
#45	1.50	0.36	12.63	78.66
#60	2.00	0.25	9.11	87.76
#80	2.50	0.18	5.44	93.21
#120	3.00	0.13	2.91	96.11
#170	3.50	0.09	0.70	96.81
#200	3.75	0.08	0.17	96.98
#230	4.00	0.06	0.14	97.12

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.81	1.79	1.36	0.55	-0.28	-1.15	-4.08

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.14	0.91	0.55	0.68	1.79	-1.08	3.61

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-27 @ 1 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,686	512,727	State Plane, FLE (U.S. Ft.)	-31.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.16 #230 - 0.00			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#14	-0.50	1.40	0.00	0.00
#18	0.00	1.00	0.79	0.79
#25	0.50	0.71	2.69	3.49
#35	1.00	0.50	9.03	12.52
#45	1.50	0.36	20.92	33.44
#60	2.00	0.25	29.79	63.23
#80	2.50	0.18	22.35	85.58
#120	3.00	0.13	10.78	96.35
#170	3.50	0.09	2.85	99.21
#200	3.75	0.08	0.63	99.84
#230	4.00	0.06	0.16	100.00

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.94	2.46	2.26	1.78	1.30	1.08	0.58

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.78	0.29	1.78	0.29	0.7	-0.06	3.08

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–27
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–27
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–27
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–27
DEPTH: 7.5 – 8.1
8'
9'
10'

VB-DA20-28

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-28

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-28	LOCATION COORDINATES: X = 954,260 Y = 513,700	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 5 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-25-20 / COMPLETED: 06-25-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -46.1 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 88 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-46.1	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 2.5Y 8/2 pale yellow (SW)				-47.1		
-47.6	1.5				1				
-48.2	2.1		GRAVEL, poorly-graded, mostly fine to coarse gravel-sized limestone, few fine to medium-grained sand-sized carbonate, moist, 2.5Y 6/1 gray (GP)						
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 2.5Y 8/2 pale yellow (SW)				-49.1		
					2				
-52.1	6.0						-52.1		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, few shell, moist, 2.5Y 6/1 gray (SW-SM)		3		-55.1		
					4				
-56.4	10.3								
-56.6	10.5		GRAVEL, poorly-graded, mostly fine to coarse gravel-sized limestone, few fine to medium-grained sand-sized carbonate, moist, 2.5Y 6/1 gray (GP)						
-57.1	11.0								
-57.6	11.5		SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, few shell, moist, 2.5Y 6/1 gray (SW-SM)				-58.1		
					5				
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, little fine gravel-sized limestone, moist, 2.5Y 7/1 light gray (SM)						
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, moist, 2.5Y 8/2 pale yellow (SW-SM)						

0 5 10 15

(Continued)

Boring Designation VB-DA20-28

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT SAD-SAND	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 954,260 Y = 513,700	ELEVATION TOP OF BORING -46.1 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-62.3	16.2		SANDSTONE, N 7/ light gray						
-63.7	17.6								
-66.1	20.0						-66.1		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

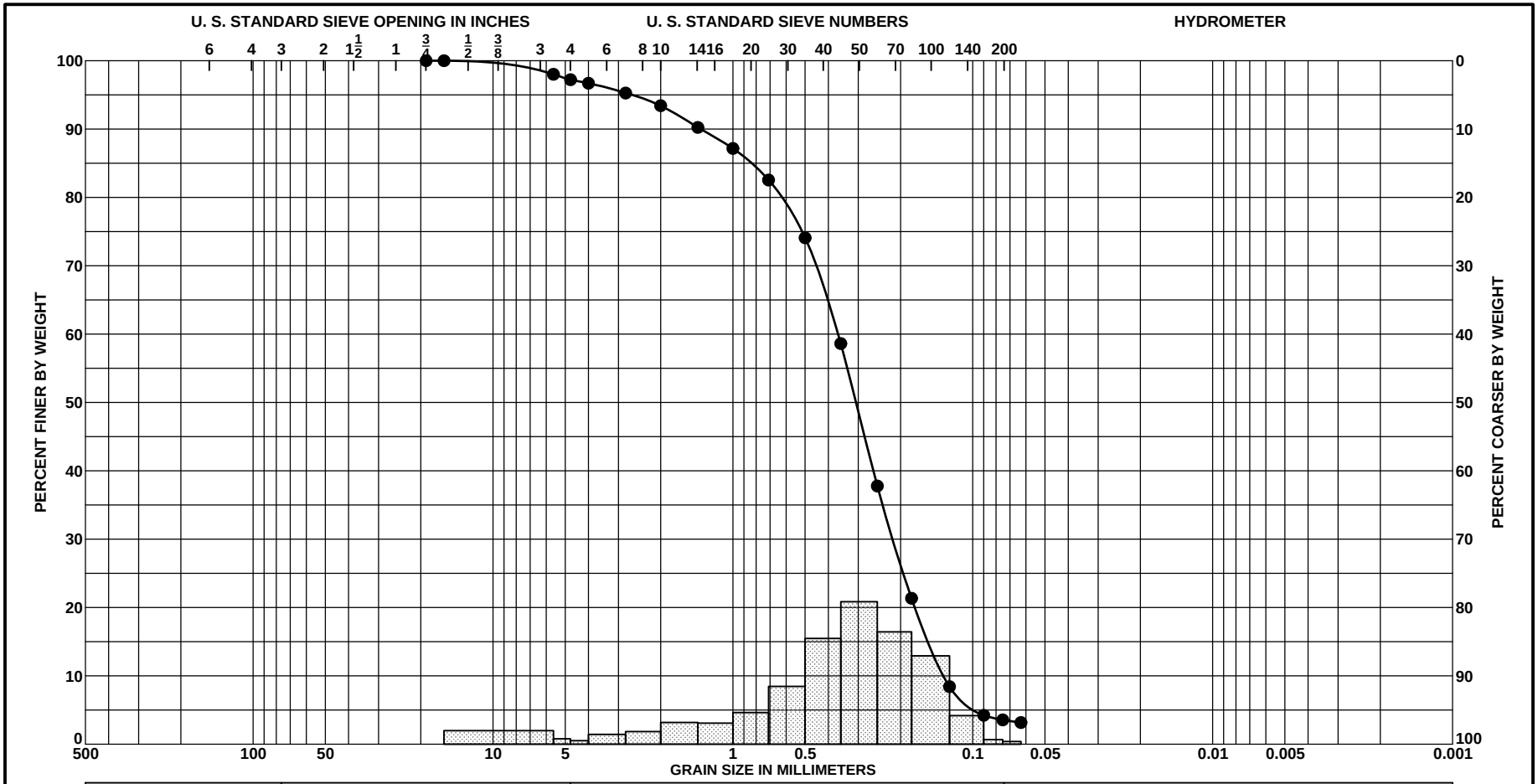
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW*
3	6.0/6.2	SW-SM*
4	9.0/9.2	SW-SM*
5	12.0/12.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, trace									
		silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-28
BORING ELEV.	-46.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
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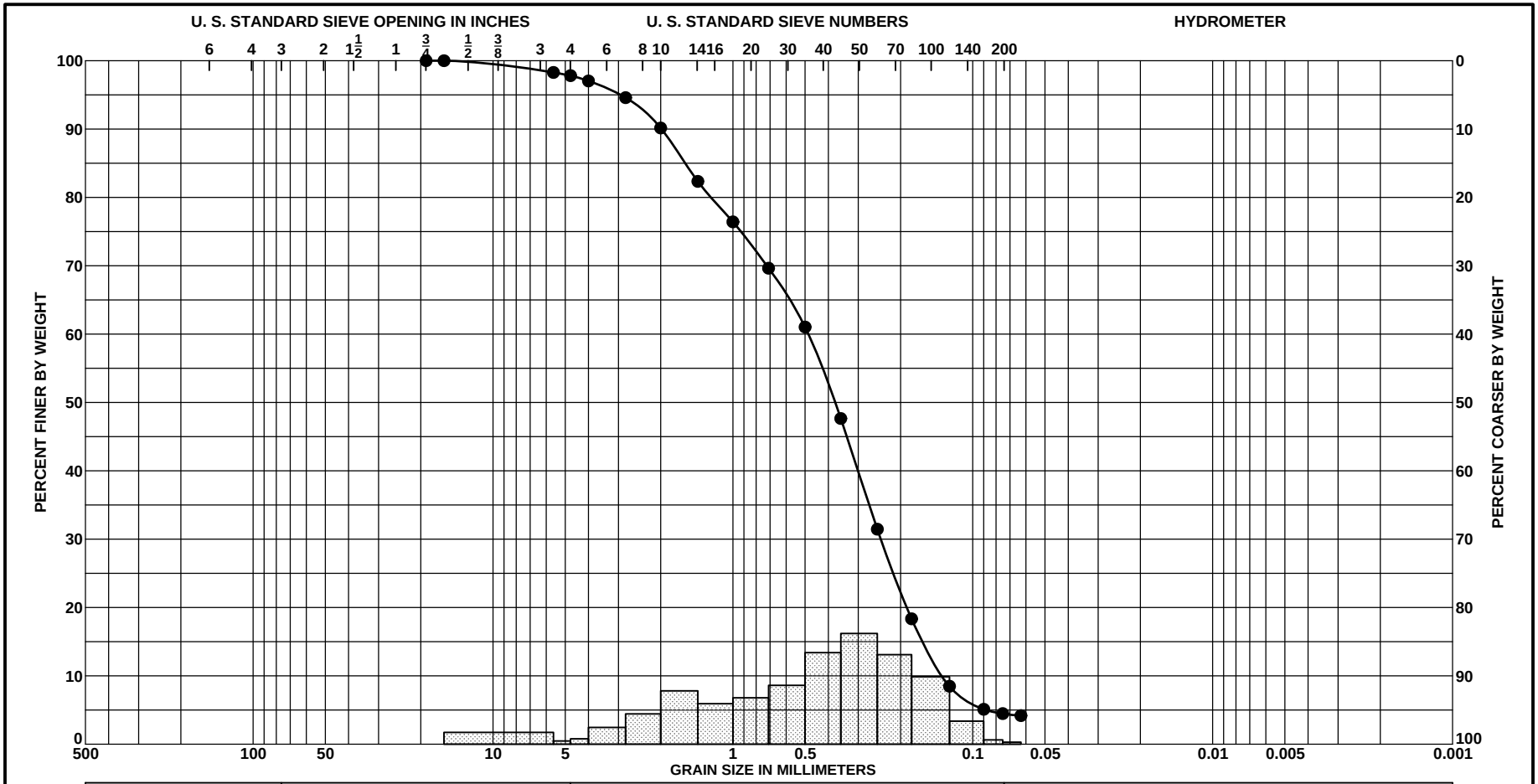
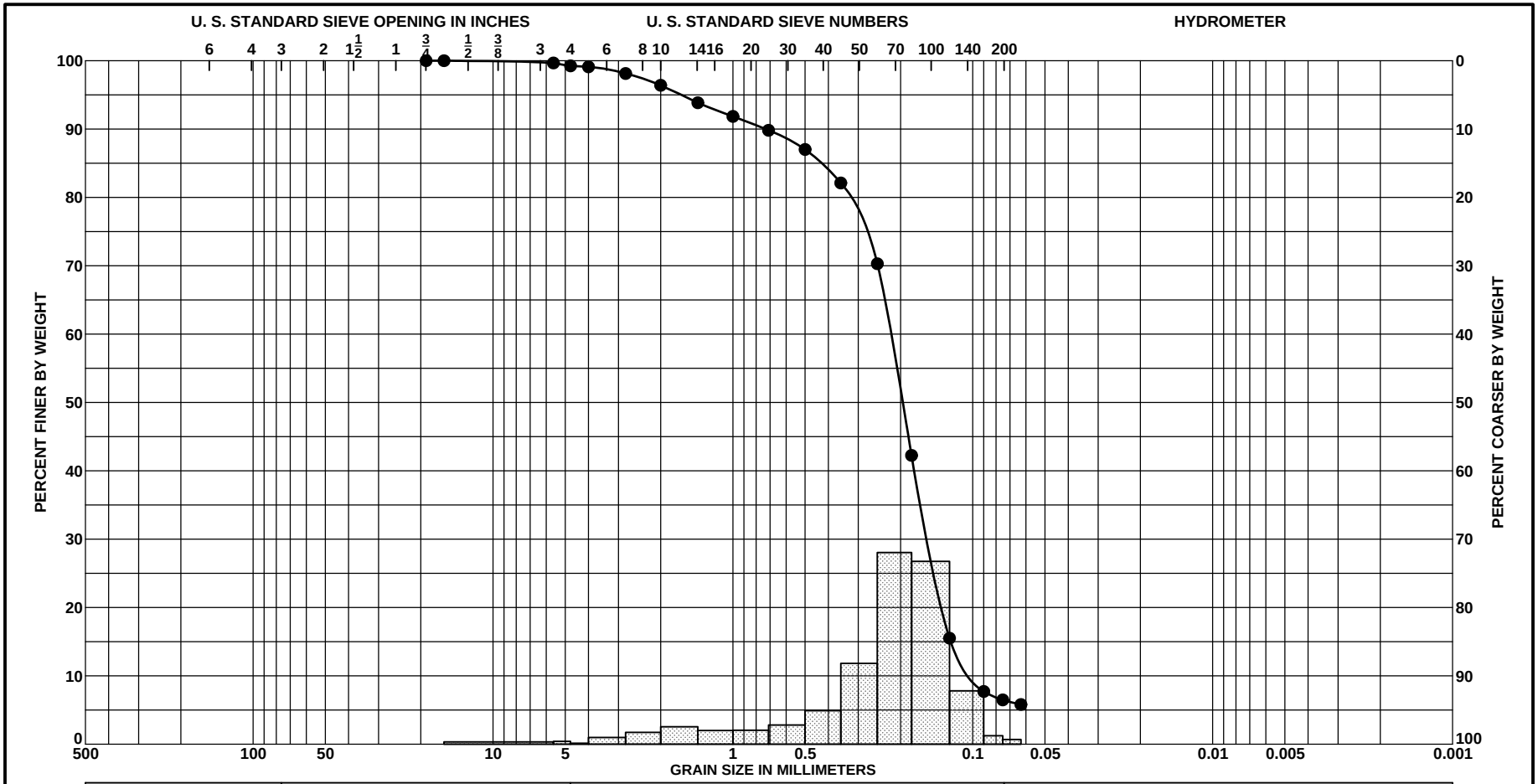


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	7							
		medium-grained sand-sized									
		carbonate, trace									
		silt, few shell, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-28
BORING ELEV.	-46.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 6/1	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-28
BORING ELEV.	-46.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
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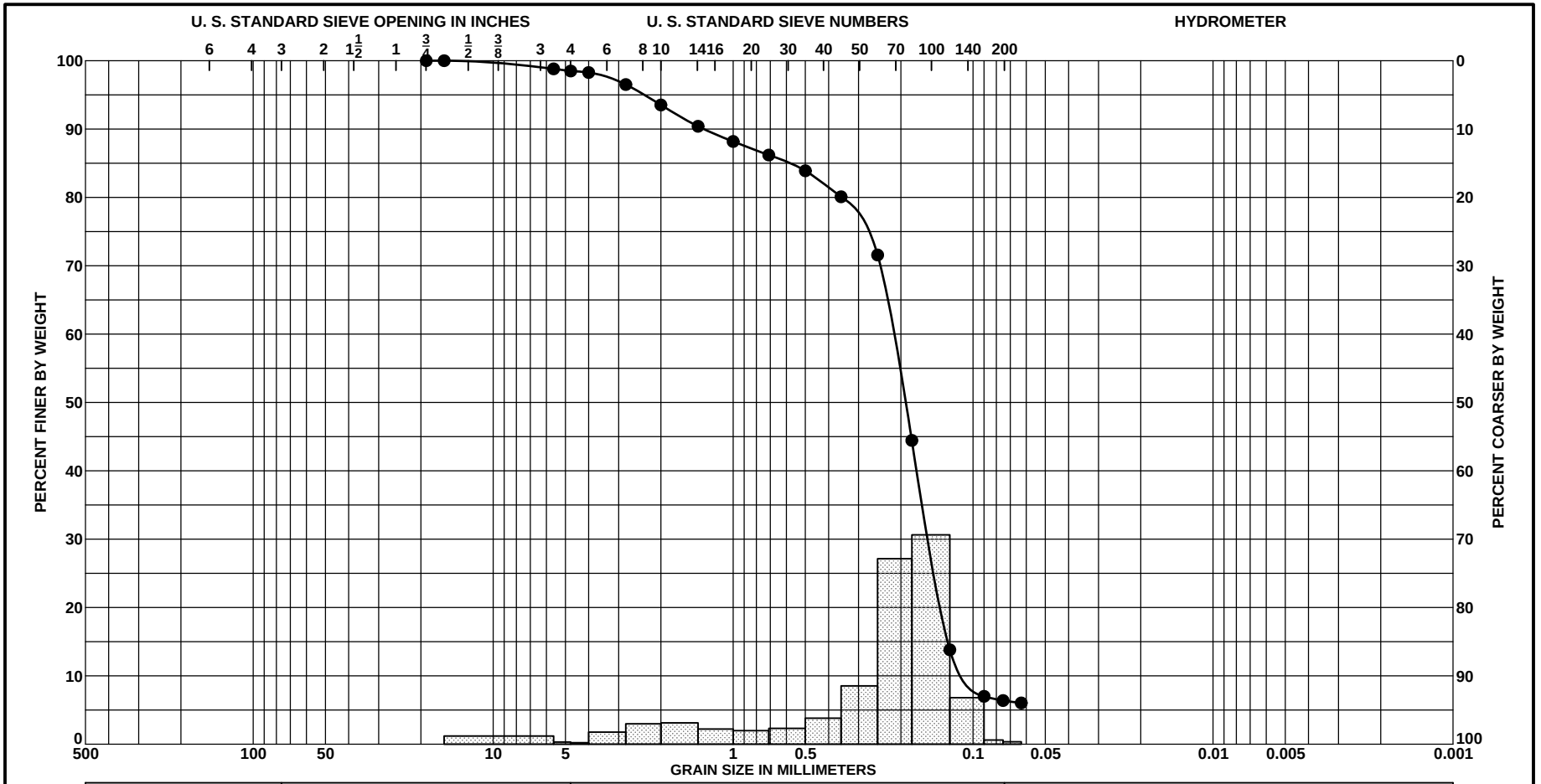
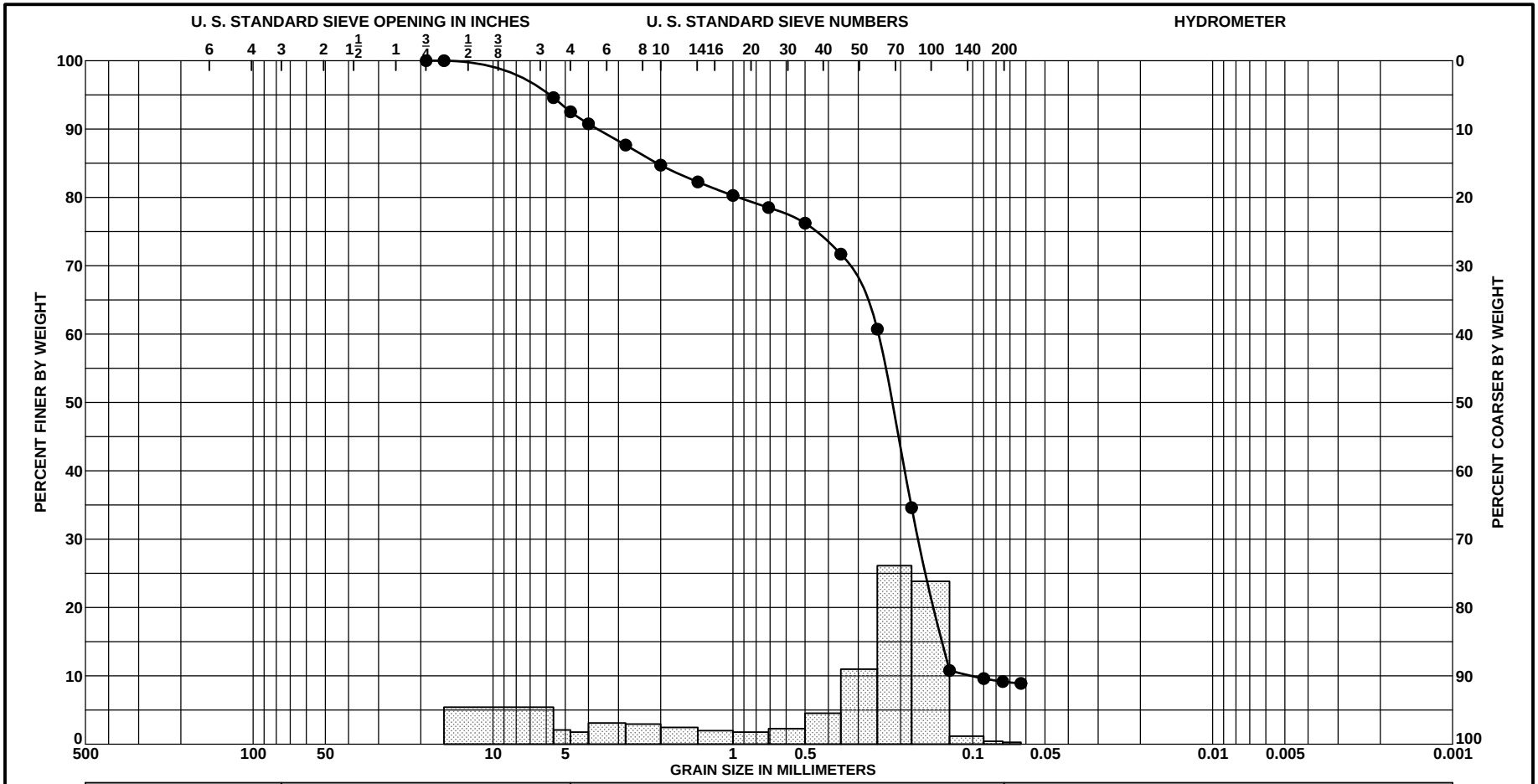


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	9.0 to 9.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 6/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-28
BORING ELEV.	-46.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	12.0 to 12.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 8/2	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-28
BORING ELEV.	-46.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-28 @ 1 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,260	513,700	State Plane, FLE (U.S. Ft.)	-47.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 3.56 #230 - 3.17			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.99	1.99
#4	-2.25	4.75	0.79	2.78
#5	-2.00	4.00	0.52	3.29
#7	-1.50	2.80	1.44	4.73
#10	-1.00	2.00	1.85	6.58
#14	-0.50	1.40	3.18	9.76
#18	0.00	1.00	3.07	12.84
#25	0.50	0.71	4.62	17.46
#35	1.00	0.50	8.45	25.91
#45	1.50	0.36	15.48	41.38
#60	2.00	0.25	20.84	62.22
#80	2.50	0.18	16.43	78.65
#120	3.00	0.13	12.93	91.58
#170	3.50	0.09	4.19	95.77
#200	3.75	0.08	0.68	96.44
#230	4.00	0.06	0.39	96.83

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.41	2.71	2.39	1.71	0.95	0.34	-1.43

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.40	0.38	1.71	0.31	1.36	-1.31	4.95

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-28 @ 3 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,260	513,700	State Plane, FLE (U.S. Ft.)	-49.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 4.47 #230 - 4.18			7

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.72	1.72
#4	-2.25	4.75	0.46	2.18
#5	-2.00	4.00	0.78	2.96
#7	-1.50	2.80	2.45	5.41
#10	-1.00	2.00	4.44	9.85
#14	-0.50	1.40	7.81	17.65
#18	0.00	1.00	5.93	23.58
#25	0.50	0.71	6.78	30.36
#35	1.00	0.50	8.61	38.97
#45	1.50	0.36	13.38	52.35
#60	2.00	0.25	16.19	68.55
#80	2.50	0.18	13.10	81.65
#120	3.00	0.13	9.87	91.52
#170	3.50	0.09	3.37	94.90
#200	3.75	0.08	0.63	95.53
#230	4.00	0.06	0.29	95.82

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.54	2.62	2.25	1.41	0.10	-0.61	-1.58

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.03	0.49	1.41	0.38	1.47	-0.68	2.98

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-28 @ 6 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,260	513,700	State Plane, FLE (U.S. Ft.)	-52.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 6/1	#200 - 6.48 #230 - 5.80			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.33	0.33
#4	-2.25	4.75	0.42	0.75
#5	-2.00	4.00	0.14	0.89
#7	-1.50	2.80	0.98	1.87
#10	-1.00	2.00	1.73	3.60
#14	-0.50	1.40	2.55	6.15
#18	0.00	1.00	2.00	8.15
#25	0.50	0.71	2.03	10.18
#35	1.00	0.50	2.80	12.99
#45	1.50	0.36	4.90	17.89
#60	2.00	0.25	11.82	29.70
#80	2.50	0.18	28.04	57.75
#120	3.00	0.13	26.75	84.49
#170	3.50	0.09	7.79	92.29
#200	3.75	0.08	1.23	93.52
#230	4.00	0.06	0.68	94.20

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.99	2.82	2.36	1.80	1.31	-0.72

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.02	0.25	2.36	0.19	1.17	-1.76	6.26

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-28 @ 9 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,260	513,700	State Plane, FLE (U.S. Ft.)	-55.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 6/1	#200 - 6.39 #230 - 6.03			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.20	1.20
#4	-2.25	4.75	0.31	1.51
#5	-2.00	4.00	0.22	1.73
#7	-1.50	2.80	1.76	3.49
#10	-1.00	2.00	2.99	6.47
#14	-0.50	1.40	3.12	9.60
#18	0.00	1.00	2.22	11.82
#25	0.50	0.71	1.98	13.80
#35	1.00	0.50	2.31	16.11
#45	1.50	0.36	3.80	19.91
#60	2.00	0.25	8.52	28.43
#80	2.50	0.18	27.13	55.56
#120	3.00	0.13	30.64	86.19
#170	3.50	0.09	6.81	93.00
#200	3.75	0.08	0.61	93.61
#230	4.00	0.06	0.35	93.97

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.96	2.82	2.40	1.80	0.98	-1.25

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.90	0.27	2.40	0.19	1.37	-1.76	5.58

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-28 @ 12 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,260	513,700	State Plane, FLE (U.S. Ft.)	-58.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 8/2	#200 - 9.16 #230 - 8.90			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	5.41	5.41
#4	-2.25	4.75	2.07	7.48
#5	-2.00	4.00	1.76	9.23
#7	-1.50	2.80	3.11	12.34
#10	-1.00	2.00	2.94	15.28
#14	-0.50	1.40	2.46	17.74
#18	0.00	1.00	1.98	19.72
#25	0.50	0.71	1.77	21.49
#35	1.00	0.50	2.28	23.77
#45	1.50	0.36	4.53	28.30
#60	2.00	0.25	10.98	39.28
#80	2.50	0.18	26.12	65.39
#120	3.00	0.13	23.82	89.22
#170	3.50	0.09	1.19	90.40
#200	3.75	0.08	0.44	90.84
#230	4.00	0.06	0.26	91.10

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.89	2.70	2.21	1.14	-0.85	-2.63

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.32	0.40	2.21	0.22	1.85	-1.31	3.41

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

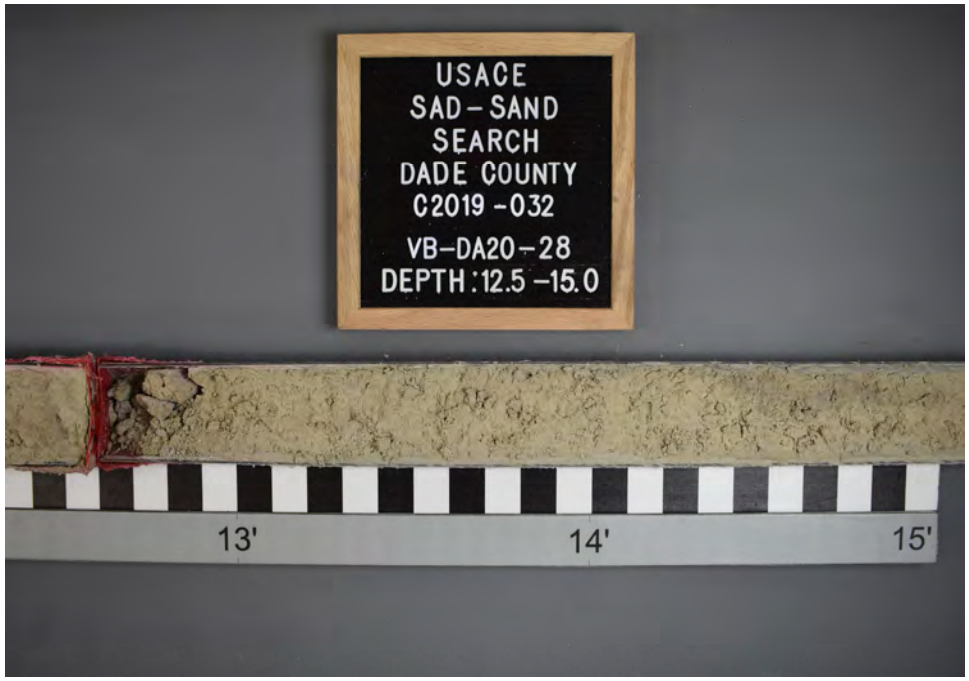
USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–28
DEPTH: 0.0 – 2.5
0'
1'
2'

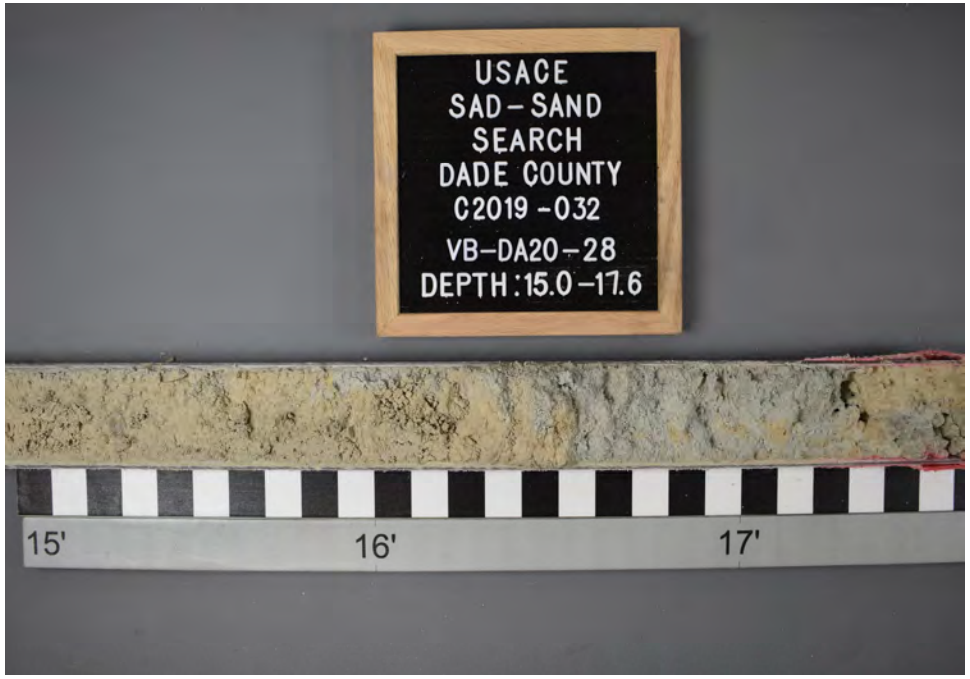
USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–28
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–28
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–28
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–28
DEPTH : 10.0 – 12.5
10'
11'
12'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–28
DEPTH : 12.5 – 15.0
13'
14'
15'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–28
DEPTH : 15.0 – 17.6
15'
16'
17'

VB-DA20-29

Vibracore Log
Grain Size Distribution Curves
Granulometric Tables
Vibracore Photos

Boring Designation VB-DA20-29

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT	SAD-SAND Miami-Dade County
2. BORING DESIGNATION	VB-DA20-29
LOCATION COORDINATES	X = 955,225 Y = 514,703
3. DRILLING AGENCY	Amdrill
CONTRACTOR FILE NO.	C2019-032
4. NAME OF DRILLER	Tim Clarkson
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	18.0 Ft.
9. SIZE AND TYPE OF BIT	4 Inch
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL	Alpine Pneumatic Vibracore ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES	DISTURBED 5 / UNDISTURBED (UD) 0
13. TOTAL NUMBER CORE BOXES	0
14. ELEVATION GROUND WATER	N/A
15. DATE BORING	STARTED 06-25-20 / COMPLETED 06-25-20
16. ELEVATION TOP OF BORING	-47.7 Ft.
17. TOTAL RECOVERY FOR BORING	80 %
18. SIGNATURE AND TITLE OF INSPECTOR	Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-47.7	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace shell, trace silt, moist, 2.5Y 8/1 white (SW)						
-48.9	1.2		SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, little gravel to cobble-sized limestone, few shell, few fine gravel-sized coral, trace silt, moist, 2.5Y 8/2 pale yellow (SW)				-49.7		
					1				
							-52.7		
					2				
-55.7	8.0						-55.7		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, trace shell, moist, 2.5Y 8/2 pale yellow (SW-SM)		3		-57.7		
					4				
							-59.7		
					5				
-62.1	14.4								
			No Recovery						

0 5 10 15

(Continued)

Boring Designation VB-DA20-29

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 955,225 Y = 514,703	ELEVATION TOP OF BORING: -47.7 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-65.7	18.0		BORING TERMINATED IN REFUSAL				-65.7		

NOTES:

1. Taylor Engineering is the custodian for these original files.

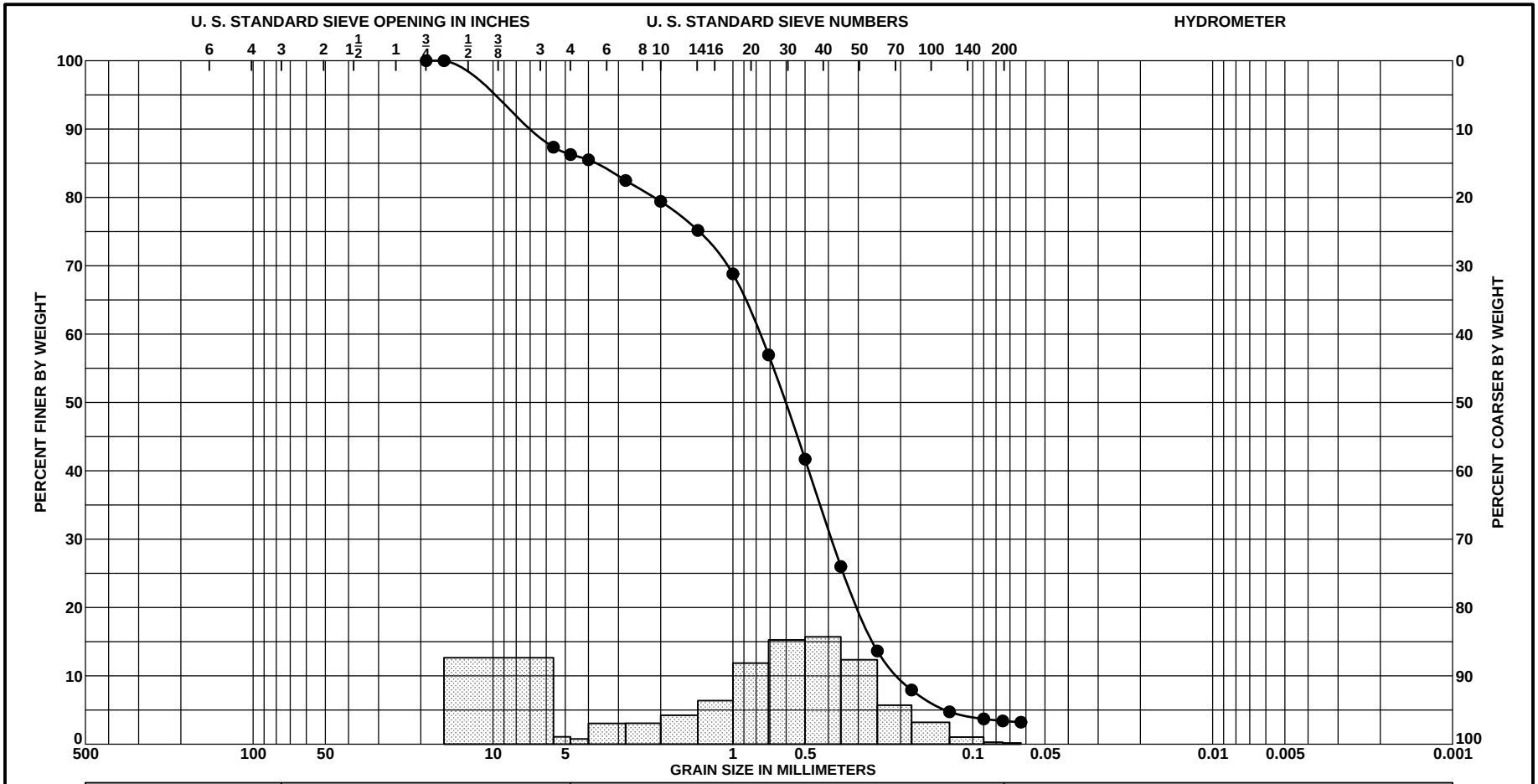
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	5.0/5.2	SW*
3	8.0/8.2	SW-SM*
4	10.0/10.2	SW-SM*
5	12.0/12.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, little gravel to									
		cobble-sized limestone, few shell,									
		trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-29
BORING ELEV.	-47.7 Ft., NAVD88
DATE	8/21/2020

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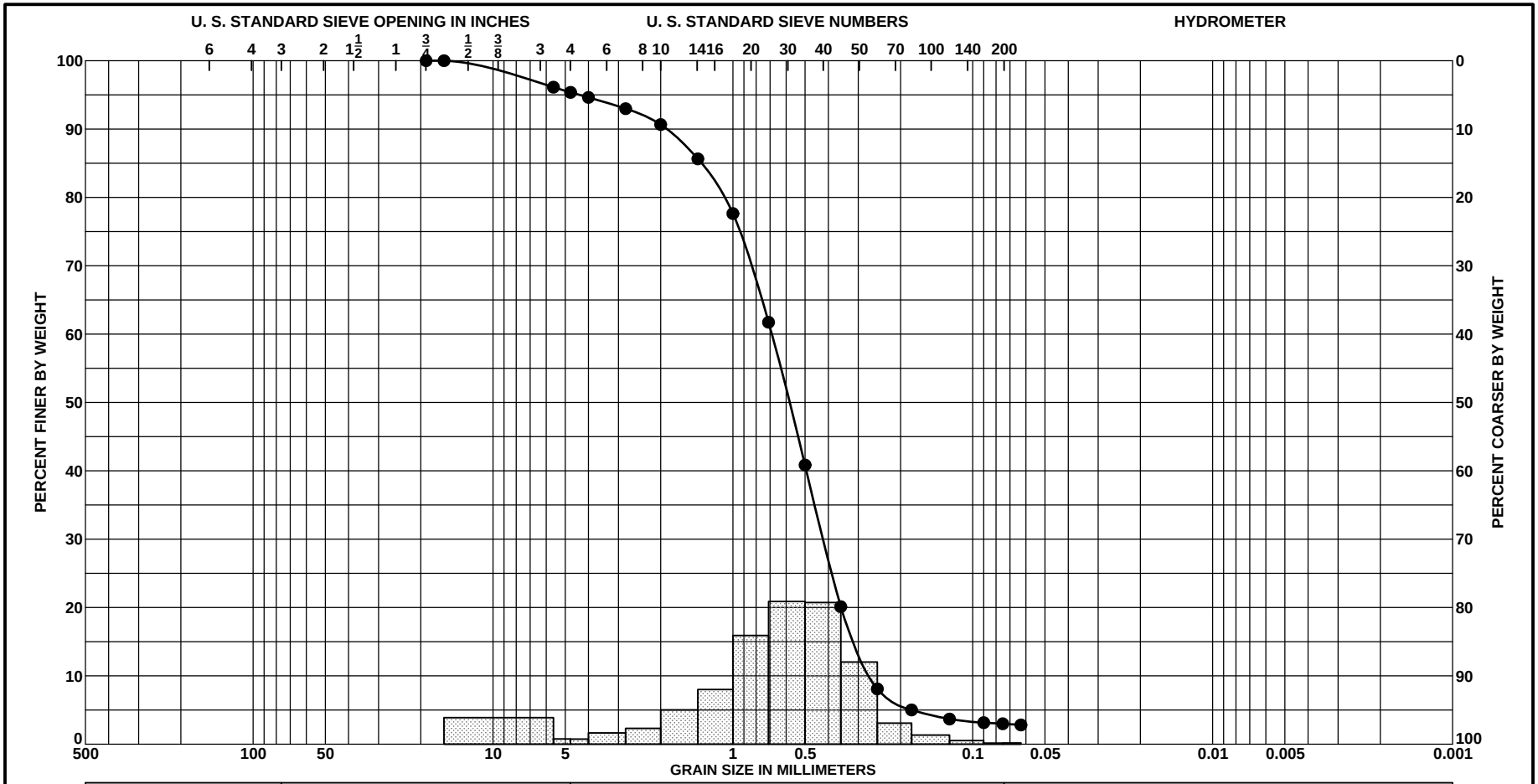
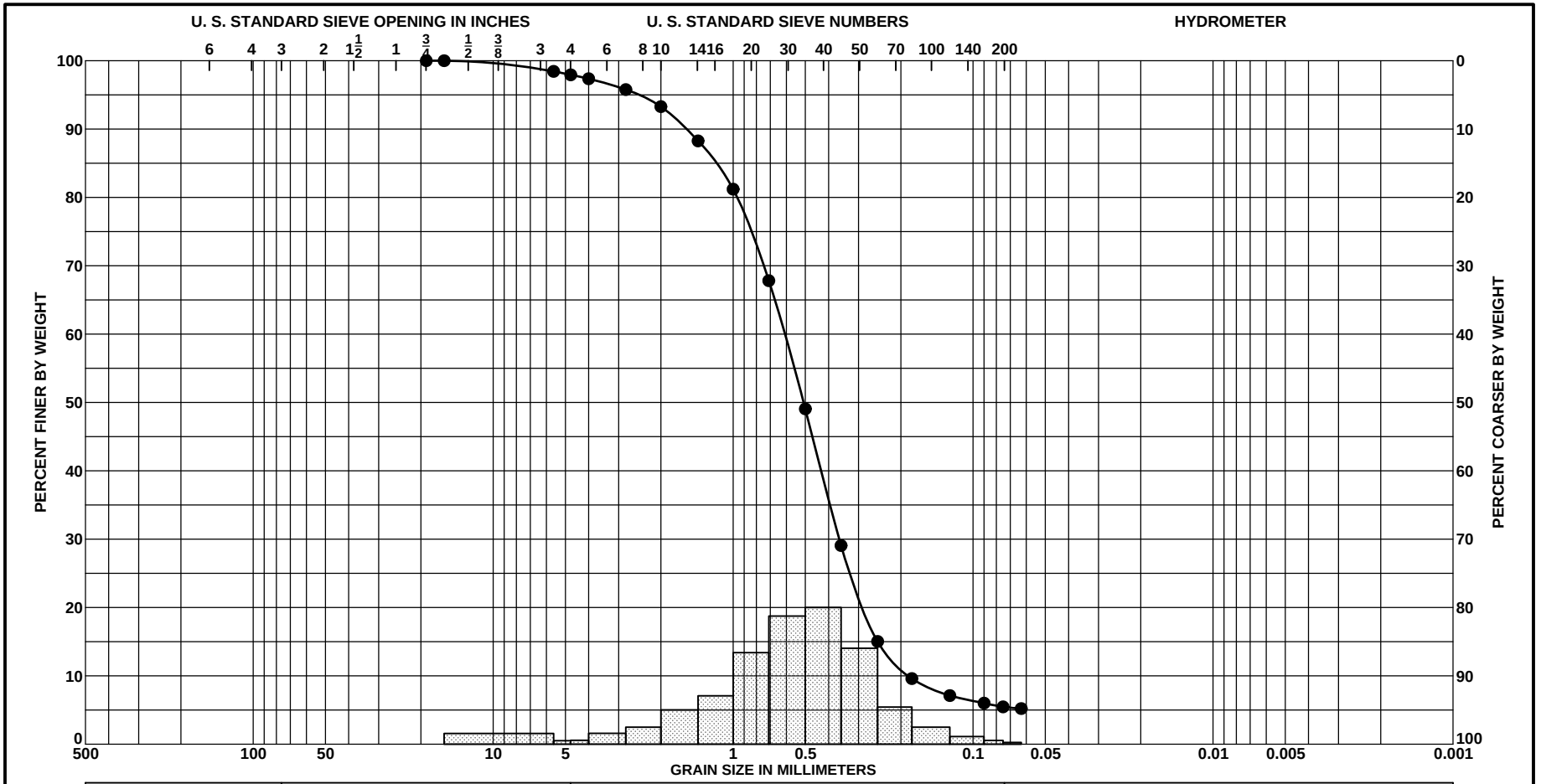


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, little gravel to cobble-									
		sized limestone, few shell,									
		trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-29
BORING ELEV.	-47.7 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

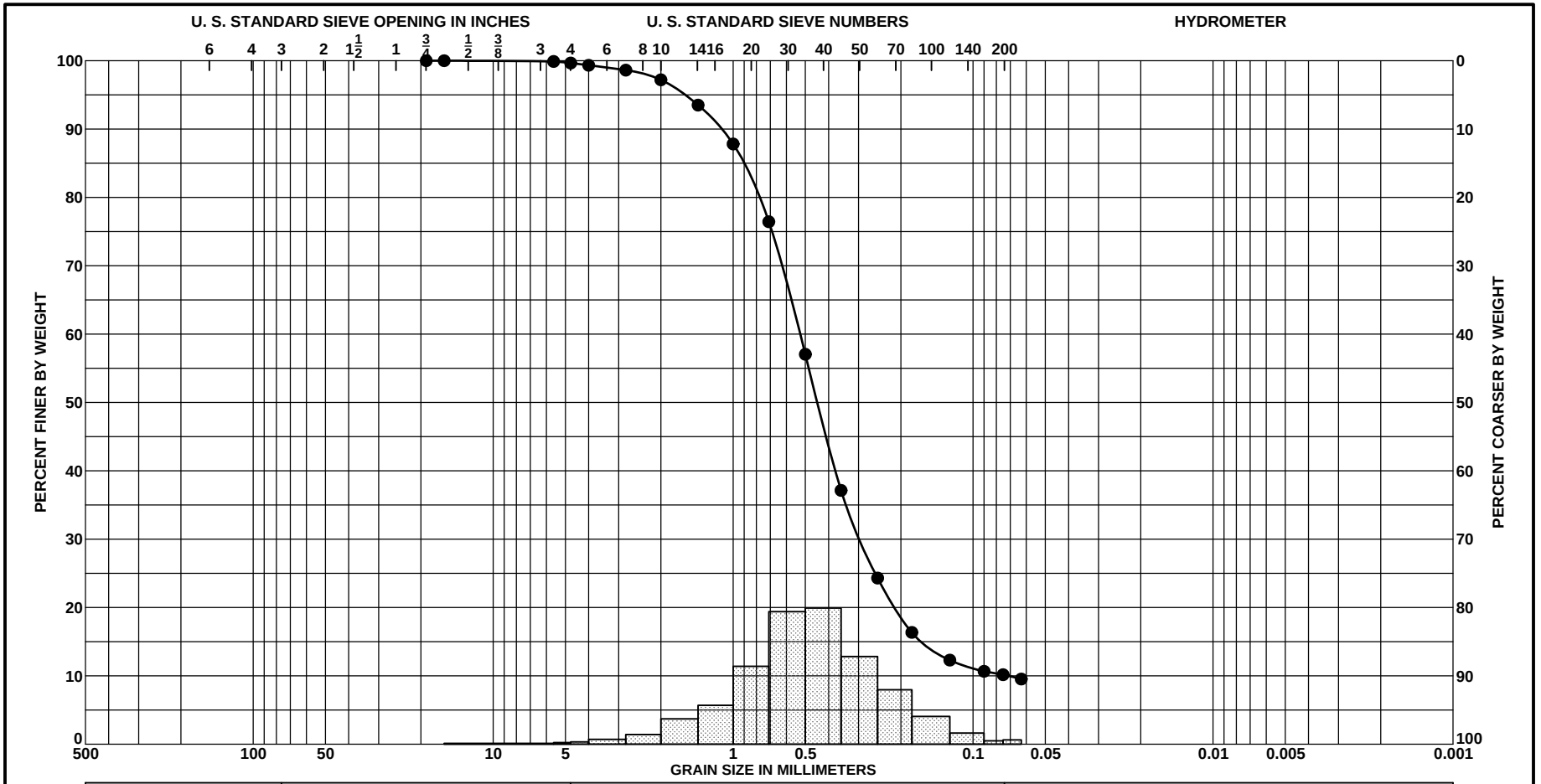


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	8.0 to 8.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 8/2	0							
		fine to									
		medium-grained sand-sized									
		carbonate, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-29
BORING ELEV.	-47.7 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	10.0 to 10.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 8/2	1							
		fine to									
		medium-grained sand-sized									
		carbonate, trace									
		shell, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-29
BORING ELEV.	-47.7 Ft., NAVD88
DATE	8/21/2020

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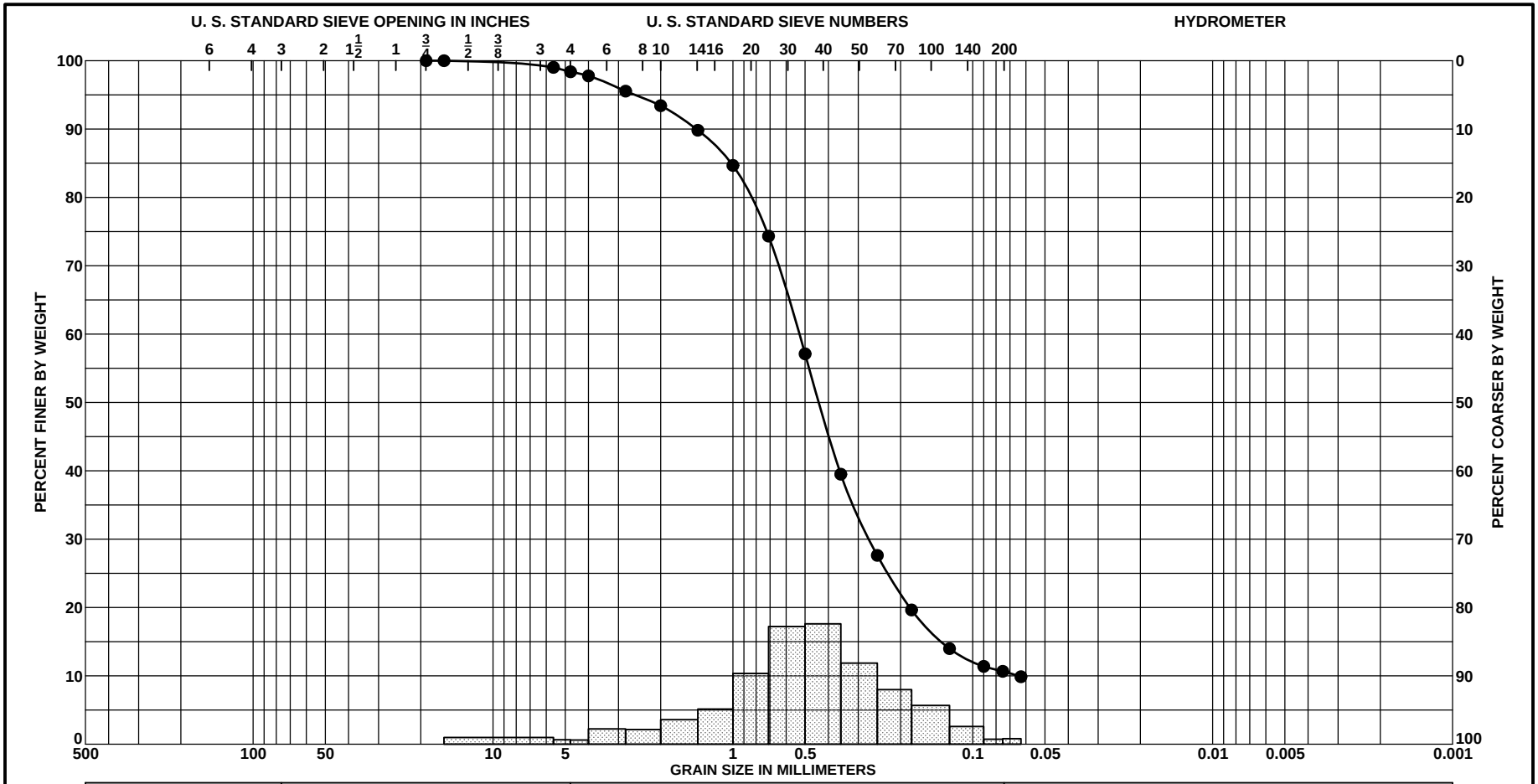
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	12.0 to 12.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 8/2	0							
		fine to									
		medium-grained sand-sized									
		carbonate, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-29
BORING ELEV.	-47.7 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-29 @ 2 ft

Analysis Date: 8/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,225	514,703	State Plane, FLE (U.S. Ft.)	-49.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 3.40 #230 - 3.22			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	12.65	12.65
#4	-2.25	4.75	1.08	13.73
#5	-2.00	4.00	0.76	14.50
#7	-1.50	2.80	3.03	17.53
#10	-1.00	2.00	3.06	20.59
#14	-0.50	1.40	4.24	24.83
#18	0.00	1.00	6.36	31.19
#25	0.50	0.71	11.85	43.05
#35	1.00	0.50	15.25	58.30
#45	1.50	0.36	15.71	74.01
#60	2.00	0.25	12.35	86.36
#80	2.50	0.18	5.71	92.07
#120	3.00	0.13	3.20	95.27
#170	3.50	0.09	1.03	96.30
#200	3.75	0.08	0.30	96.60
#230	4.00	0.06	0.18	96.78

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.96	1.90	1.54	0.73	-0.49	-1.75	-3.56

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.24	0.85	0.73	0.60	1.75	-0.77	2.72

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-29 @ 5 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,225	514,703	State Plane, FLE (U.S. Ft.)	-52.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 2.99 #230 - 2.82			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	3.87	3.87
#4	-2.25	4.75	0.76	4.63
#5	-2.00	4.00	0.74	5.37
#7	-1.50	2.80	1.65	7.02
#10	-1.00	2.00	2.32	9.34
#14	-0.50	1.40	5.02	14.36
#18	0.00	1.00	8.01	22.37
#25	0.50	0.71	15.90	38.27
#35	1.00	0.50	20.88	59.15
#45	1.50	0.36	20.73	79.88
#60	2.00	0.25	12.03	91.91
#80	2.50	0.18	3.08	94.99
#120	3.00	0.13	1.33	96.32
#170	3.50	0.09	0.53	96.85
#200	3.75	0.08	0.16	97.01
#230	4.00	0.06	0.17	97.18

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.50	1.67	1.38	0.78	0.08	-0.40	-2.13

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.54	0.69	0.78	0.58	1.24	-1.14	4.9

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-29 @ 8 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,225	514,703	State Plane, FLE (U.S. Ft.)	-55.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 8/2	#200 - 5.46 #230 - 5.21			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.56	1.56
#4	-2.25	4.75	0.50	2.06
#5	-2.00	4.00	0.57	2.64
#7	-1.50	2.80	1.59	4.23
#10	-1.00	2.00	2.48	6.72
#14	-0.50	1.40	5.01	11.73
#18	0.00	1.00	7.07	18.80
#25	0.50	0.71	13.39	32.19
#35	1.00	0.50	18.75	50.94
#45	1.50	0.36	19.99	70.93
#60	2.00	0.25	14.04	84.97
#80	2.50	0.18	5.43	90.40
#120	3.00	0.13	2.49	92.89
#170	3.50	0.09	1.11	93.99
#200	3.75	0.08	0.54	94.54
#230	4.00	0.06	0.25	94.79

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	1.97	1.64	0.97	0.23	-0.20	-1.35

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.78	0.58	0.97	0.51	1.18	-0.76	4.52

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-29 @ 10 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,225	514,703	State Plane, FLE (U.S. Ft.)	-57.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 8/2	#200 - 10.17 #230 - 9.53			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.11	0.11
#4	-2.25	4.75	0.23	0.34
#5	-2.00	4.00	0.33	0.67
#7	-1.50	2.80	0.71	1.38
#10	-1.00	2.00	1.42	2.80
#14	-0.50	1.40	3.70	6.49
#18	0.00	1.00	5.69	12.18
#25	0.50	0.71	11.38	23.56
#35	1.00	0.50	19.39	42.95
#45	1.50	0.36	19.91	62.87
#60	2.00	0.25	12.83	75.69
#80	2.50	0.18	7.95	83.65
#120	3.00	0.13	4.05	87.70
#170	3.50	0.09	1.64	89.33
#200	3.75	0.08	0.50	89.83
#230	4.00	0.06	0.64	90.47

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.54	1.97	1.18	0.54	0.17	-0.70

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.04	0.49	1.18	0.44	1.04	-0.21	3.75

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-29 @ 12 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,225	514,703	State Plane, FLE (U.S. Ft.)	-59.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 8/2	#200 - 10.66 #230 - 9.87			0

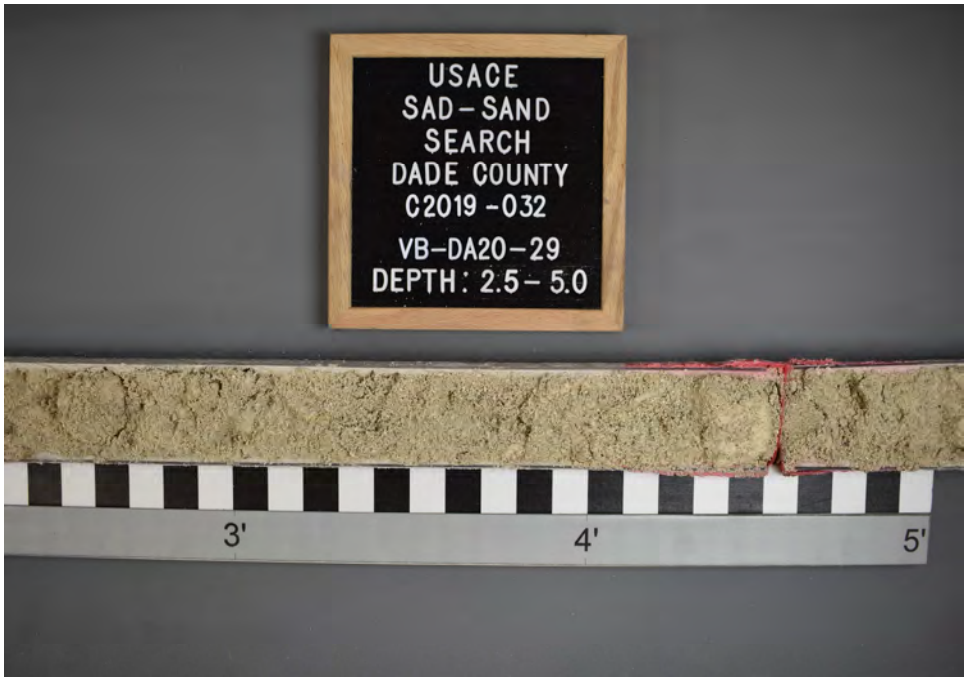
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.97	0.97
#4	-2.25	4.75	0.64	1.62
#5	-2.00	4.00	0.60	2.22
#7	-1.50	2.80	2.23	4.45
#10	-1.00	2.00	2.13	6.58
#14	-0.50	1.40	3.59	10.18
#18	0.00	1.00	5.14	15.32
#25	0.50	0.71	10.35	25.67
#35	1.00	0.50	17.22	42.89
#45	1.50	0.36	17.61	60.50
#60	2.00	0.25	11.87	72.37
#80	2.50	0.18	7.98	80.36
#120	3.00	0.13	5.66	86.02
#170	3.50	0.09	2.60	88.61
#200	3.75	0.08	0.72	89.34
#230	4.00	0.06	0.79	90.13

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.82	2.16	1.20	0.47	0.03	-1.37

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.99	0.50	1.20	0.44	1.28	-0.57	3.85

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–29
DEPTH: 0.0 – 2.5
0'
1'
2'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–29
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–29
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–29
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–29
DEPTH : 10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–29
DEPTH : 12.5 – 14.4
13'
14'
15'

VB-DA20-30

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-30

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-30	LOCATION COORDINATES: X = 949,186 Y = 515,356	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 6 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-25-20 / COMPLETED: 06-25-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -21.1 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 87 %	
8. TOTAL DEPTH OF BORING: 19.7 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-21.1	0.0								
-22.1	1.0		SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, moist, 2.5Y 8/1 white (SW)				-22.1		
-23.2	2.1		SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, little fine to coarse gravel-sized limestone, trace silt, moist, 2.5Y 7/1 light gray (SW)		1				
-24.9	3.8		SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, moist, 2.5Y 8/1 white (SM)				-24.1		
					2				
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, some gravel to cobble-sized limestone, moist, 2.5Y 7/1 light gray (SW)				-26.1		
					3				
			At El. -28.1 Ft., mostly fine to coarse-grained sand-sized carbonate, trace shell, trace fine gravel-sized limestone, moist, 2.5Y 8/1 white				-29.1		
					4				
-33.1	12.0						-33.1		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace fine gravel-sized limestone, trace shell, moist, 2.5Y 8/1 white (SW-SM)		5				
-36.1	15.0						-36.1		

0 5 10 15

(Continued)

Boring Designation VB-DA20-30

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 949,186 Y = 515,356	ELEVATION TOP OF BORING: -21.1 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace fine gravel-sized limestone, trace shell, moist, 2.5Y 8/1 white (SM)		6				
-37.3	16.2		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone, few fine to coarse-grained sand-sized carbonate, moist, 2.5Y 6/1 gray						
-38.2	17.1		No Recovery						
-40.8	19.7		BORING TERMINATED IN REFUSAL				-40.8		

Abbreviations:

NOTES:

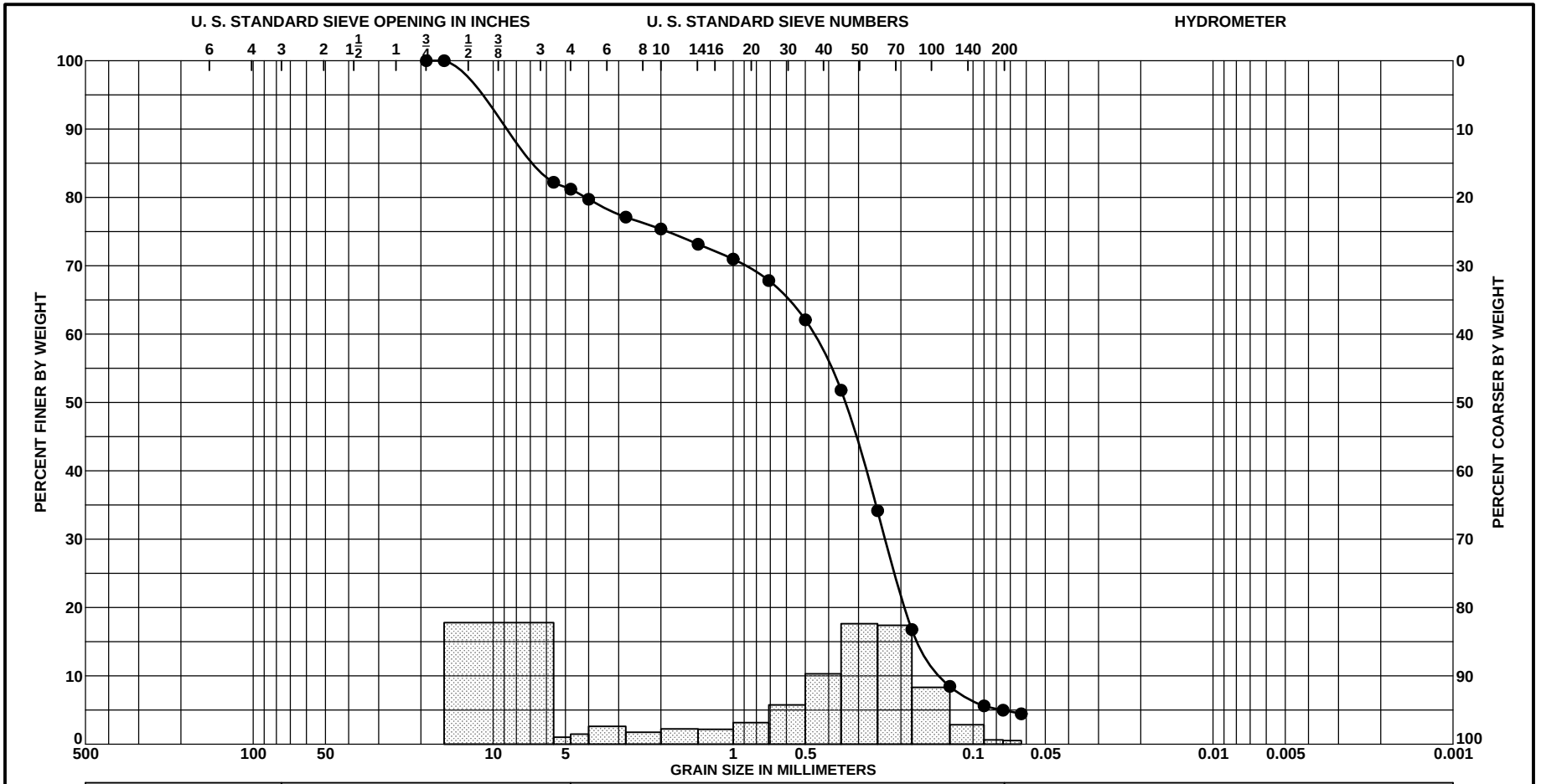
1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SM*
3	5.0/5.2	SW*
4	8.0/8.2	SW*
5	12.0/12.2	SW-SM*
6	15.0/15.2	SM*

*Lab visual classification based on gradation curve



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/1	2							
		medium-grained sand-sized									
		carbonate, little									
		fine to coarse gravel-sized									
		limestone, trace silt, white (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-30
BORING ELEV.	-21.1 Ft., NAVD88
DATE	8/21/2020

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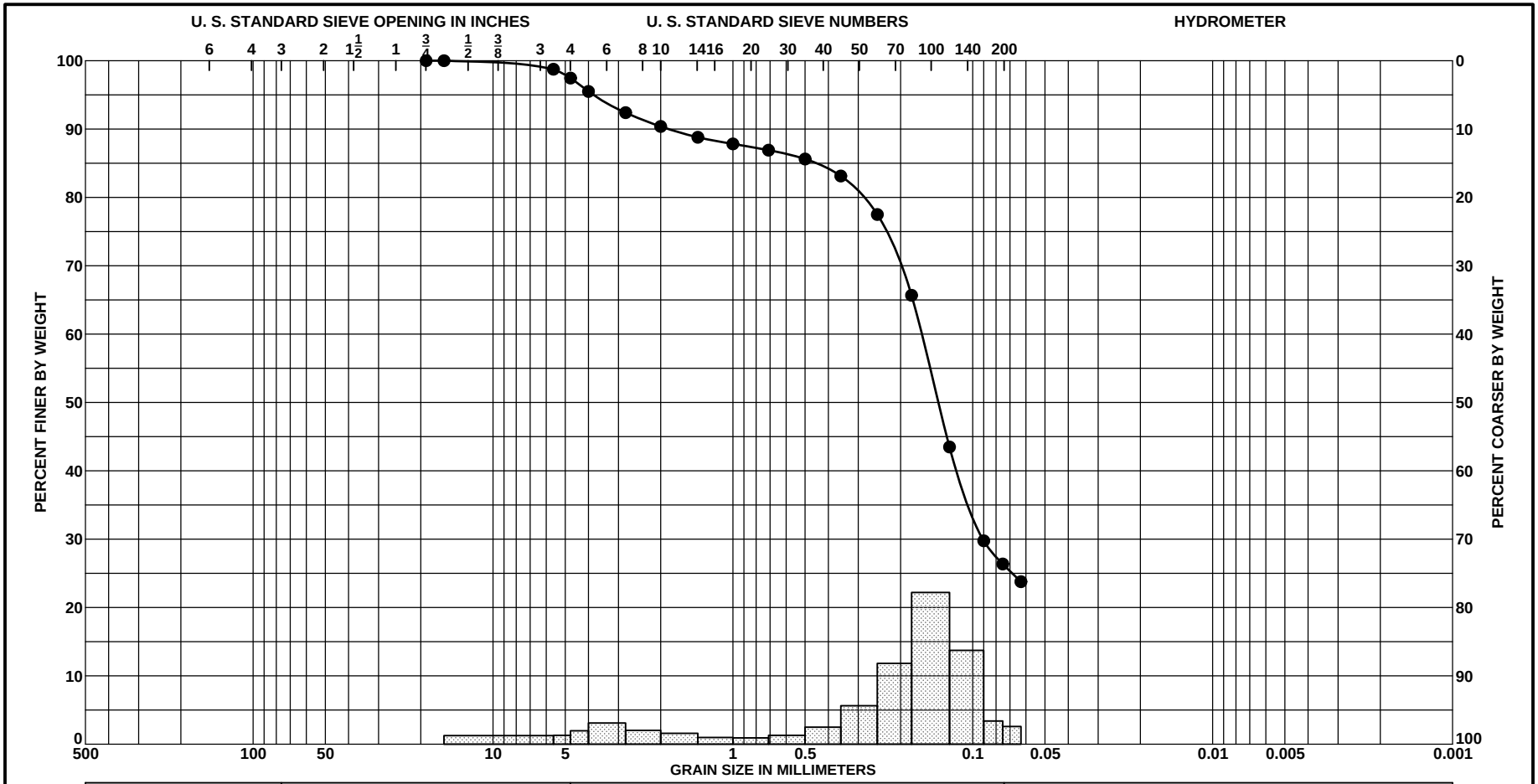

Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-30
BORING ELEV.	-21.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
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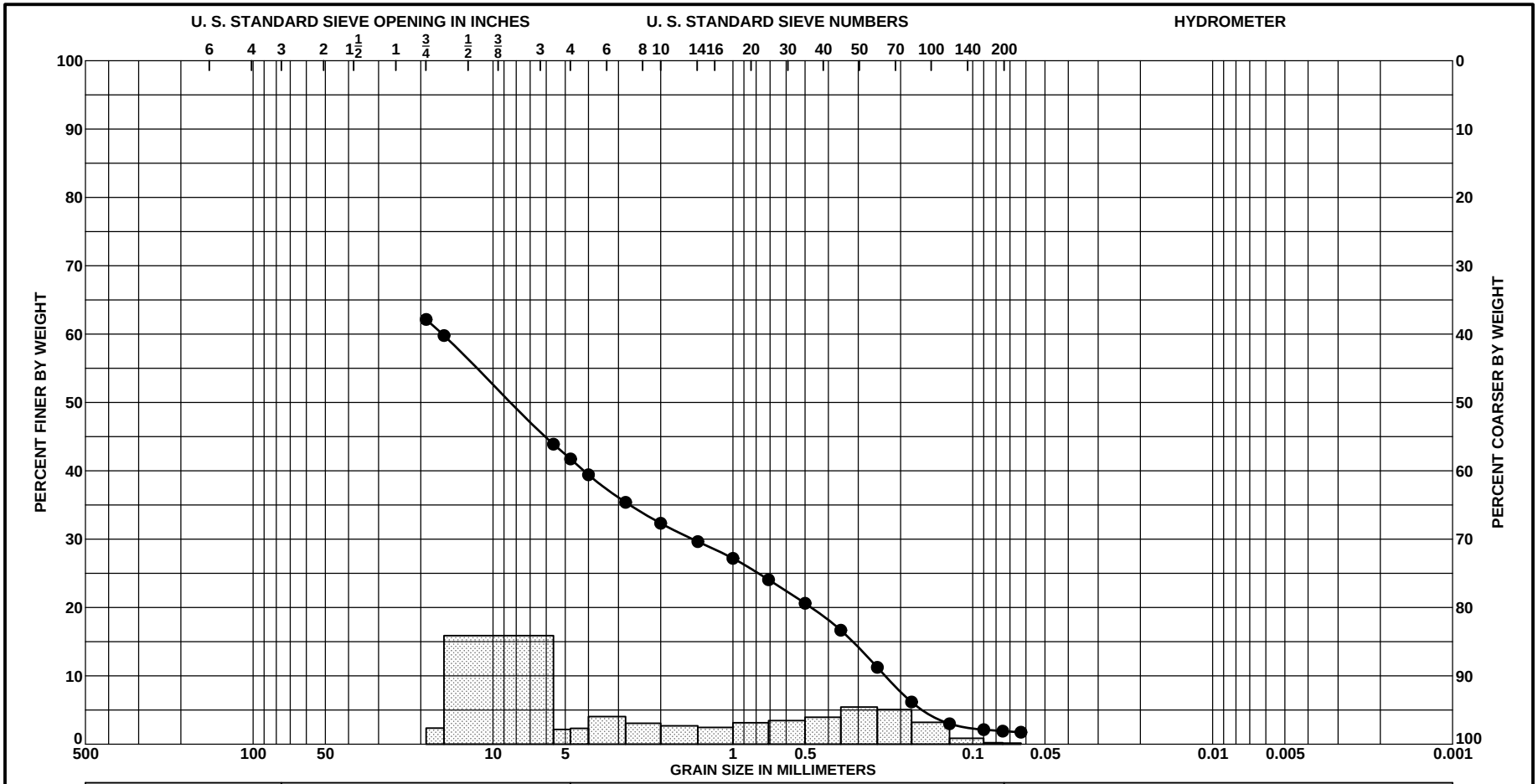
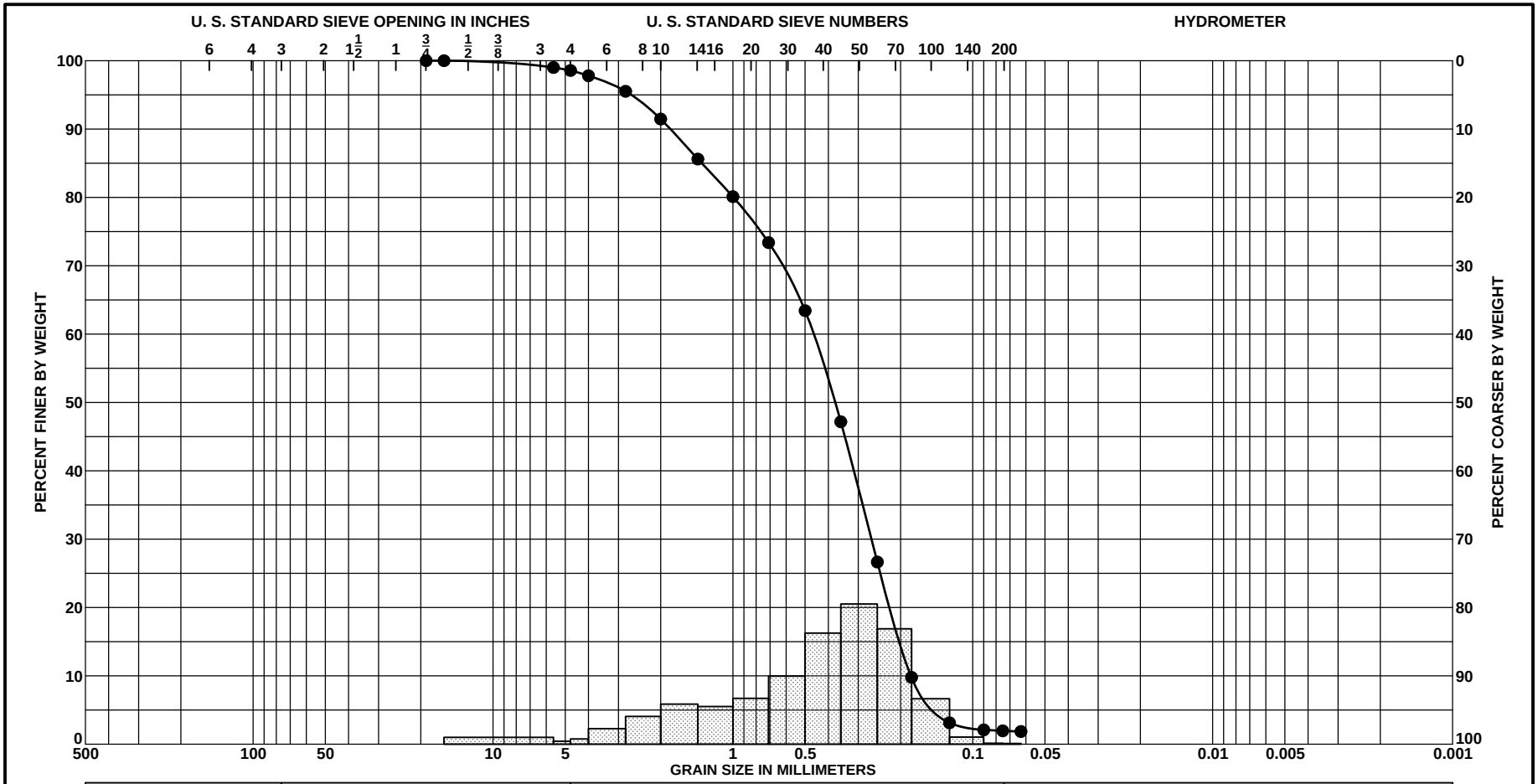


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	5.0 to 5.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 7/1	1							
		medium-grained sand-sized									
		carbonate,									
		some gravel to cobble-sized									
		limestone, light gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-30
BORING ELEV.	-21.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

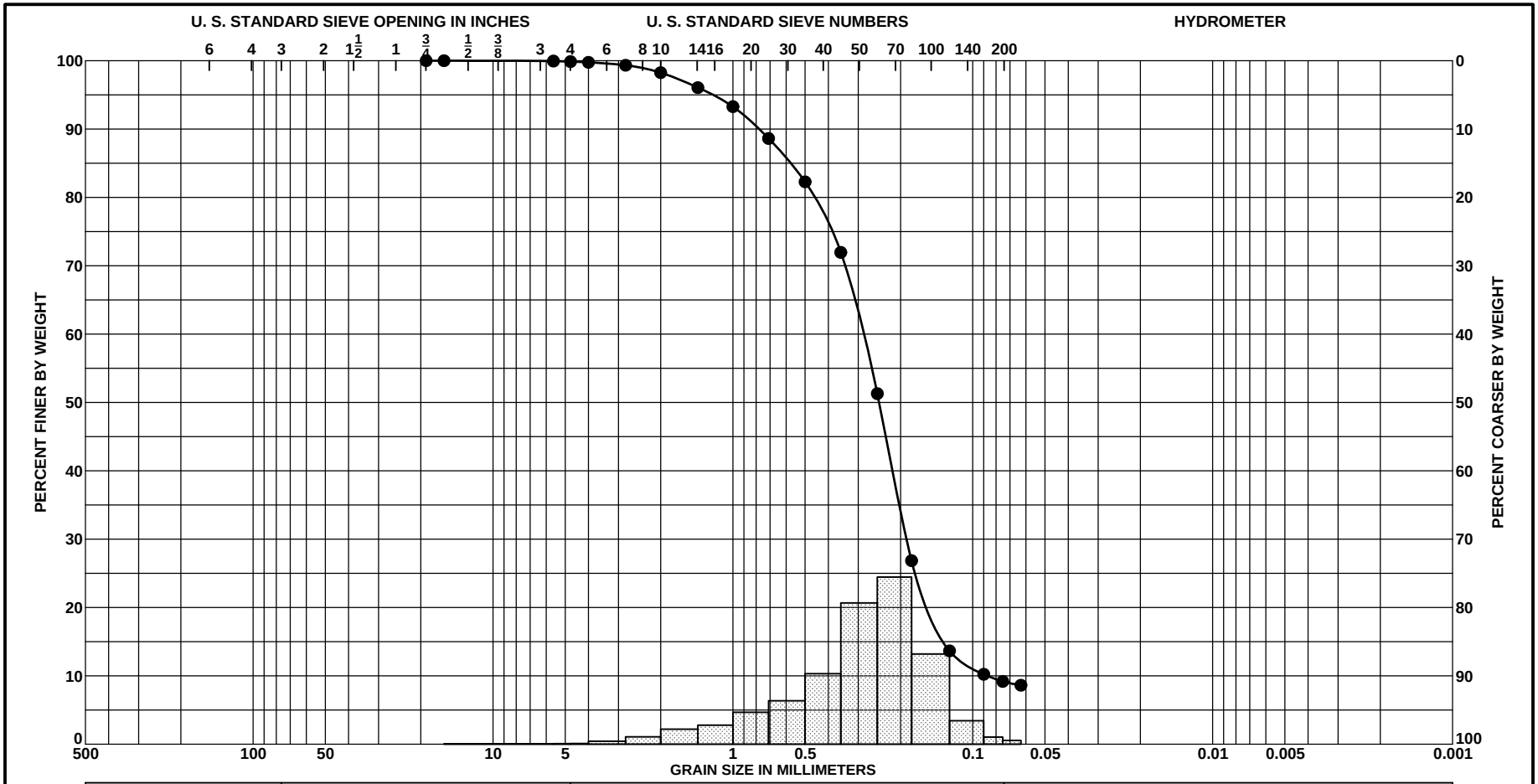


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/1	1							
		coarse-grained									
		sand-sized carbonate, trace shell,									
		trace fine									
		gravel-sized limestone, white (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-30
BORING ELEV.	-21.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

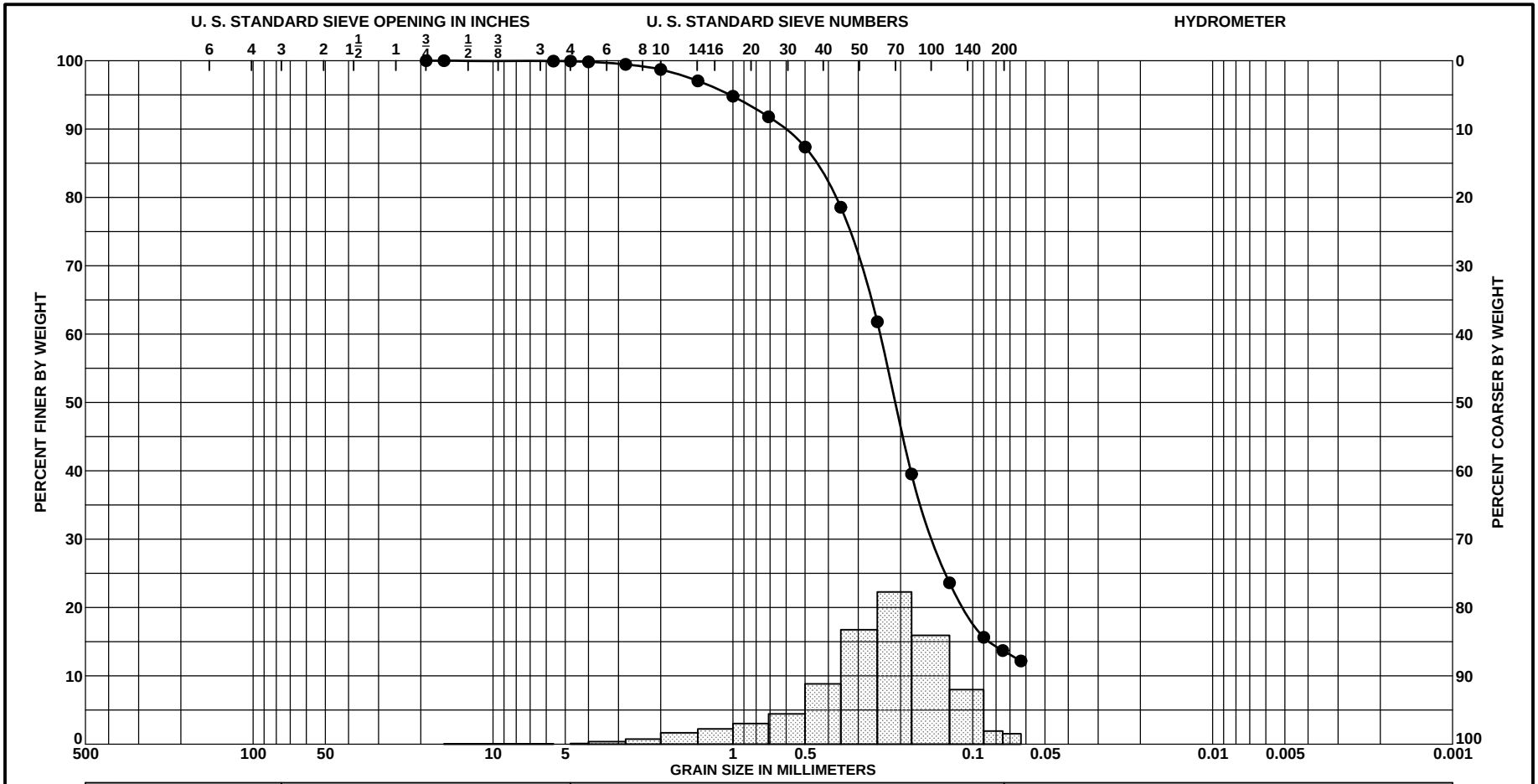


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	12.0 to 12.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 8/1	1							
		fine to medium-grained									
		sand-sized carbonate, few silt,									
		trace fine gravel-sized limestone,									
		trace shell, white (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-30
BORING ELEV.	-21.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	15.0 to 15.2 Ft.	SAND, silty, mostly fine to	2.5Y 8/1	0							
		medium-grained 6									
		sand-sized carbonate, little silt,									
		trace fine									
		gravel-sized limestone, white (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-30
BORING ELEV.	-21.1 Ft., NAVD88
DATE	8/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-30 @ 1 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,186	515,356	State Plane, FLE (U.S. Ft.)	-22.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/1	#200 - 4.98 #230 - 4.44			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	17.79	17.79
#4	-2.25	4.75	1.01	18.80
#5	-2.00	4.00	1.48	20.27
#7	-1.50	2.80	2.61	22.88
#10	-1.00	2.00	1.74	24.62
#14	-0.50	1.40	2.23	26.85
#18	0.00	1.00	2.17	29.02
#25	0.50	0.71	3.15	32.17
#35	1.00	0.50	5.74	37.92
#45	1.50	0.36	10.29	48.21
#60	2.00	0.25	17.63	65.83
#80	2.50	0.18	17.39	83.23
#120	3.00	0.13	8.31	91.54
#170	3.50	0.09	2.85	94.39
#200	3.75	0.08	0.63	95.02
#230	4.00	0.06	0.53	95.56

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.74	2.55	2.26	1.55	-0.92	-2.68	-3.76

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.55	0.68	1.55	0.34	2.18	-0.78	2.12

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-30 @ 3 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,186	515,356	State Plane, FLE (U.S. Ft.)	-24.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 26.36 #230 - 23.77			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.25	1.25
#4	-2.25	4.75	1.29	2.54
#5	-2.00	4.00	1.96	4.50
#7	-1.50	2.80	3.10	7.60
#10	-1.00	2.00	2.02	9.62
#14	-0.50	1.40	1.58	11.20
#18	0.00	1.00	0.97	12.18
#25	0.50	0.71	0.92	13.09
#35	1.00	0.50	1.29	14.38
#45	1.50	0.36	2.49	16.87
#60	2.00	0.25	5.64	22.50
#80	2.50	0.18	11.82	34.33
#120	3.00	0.13	22.19	56.52
#170	3.50	0.09	13.72	70.24
#200	3.75	0.08	3.39	73.64
#230	4.00	0.06	2.59	76.23

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.88	2.85	2.11	1.33	-1.92

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.94	0.26	2.85	0.14	1.75	-1.48	4.07

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-30 @ 5 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,186	515,356	State Plane, FLE (U.S. Ft.)	-26.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 7/1	#200 - 1.91 #230 - 1.75			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	37.85	37.85
5/8	-4.00	16.00	2.36	40.22
#3.5	-2.50	5.60	15.89	56.10
#4	-2.25	4.75	2.17	58.27
#5	-2.00	4.00	2.32	60.58
#7	-1.50	2.80	4.03	64.62
#10	-1.00	2.00	3.06	67.68
#14	-0.50	1.40	2.68	70.36
#18	0.00	1.00	2.45	72.81
#25	0.50	0.71	3.13	75.94
#35	1.00	0.50	3.44	79.39
#45	1.50	0.36	3.94	83.33
#60	2.00	0.25	5.43	88.76
#80	2.50	0.18	5.07	93.82
#120	3.00	0.13	3.19	97.01
#170	3.50	0.09	0.86	97.87
#200	3.75	0.08	0.22	98.09
#230	4.00	0.06	0.16	98.25

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.68	1.56	0.35	-3.08			

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	-2.12	4.35			2.09	1.76	3.73

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-30 @ 8 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,186	515,356	State Plane, FLE (U.S. Ft.)	-29.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/1	#200 - 1.96 #230 - 1.85			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.00	1.00
#4	-2.25	4.75	0.44	1.43
#5	-2.00	4.00	0.77	2.20
#7	-1.50	2.80	2.28	4.48
#10	-1.00	2.00	4.06	8.54
#14	-0.50	1.40	5.85	14.39
#18	0.00	1.00	5.51	19.90
#25	0.50	0.71	6.72	26.61
#35	1.00	0.50	9.96	36.57
#45	1.50	0.36	16.26	52.83
#60	2.00	0.25	20.52	73.35
#80	2.50	0.18	16.88	90.22
#120	3.00	0.13	6.65	96.87
#170	3.50	0.09	1.04	97.91
#200	3.75	0.08	0.13	98.04
#230	4.00	0.06	0.10	98.15

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.86	2.32	2.05	1.41	0.38	-0.35	-1.44

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.07	0.48	1.41	0.38	1.3	-0.92	3.46

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-30 @ 12 ft

Analysis Date: 8/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,186	515,356	State Plane, FLE (U.S. Ft.)	-33.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 8/1	#200 - 9.18 #230 - 8.63			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.05	0.05
#4	-2.25	4.75	0.08	0.13
#5	-2.00	4.00	0.10	0.24
#7	-1.50	2.80	0.43	0.67
#10	-1.00	2.00	1.08	1.75
#14	-0.50	1.40	2.19	3.94
#18	0.00	1.00	2.78	6.72
#25	0.50	0.71	4.66	11.38
#35	1.00	0.50	6.34	17.72
#45	1.50	0.36	10.32	28.05
#60	2.00	0.25	20.66	48.71
#80	2.50	0.18	24.44	73.15
#120	3.00	0.13	13.20	86.35
#170	3.50	0.09	3.43	89.77
#200	3.75	0.08	1.04	90.82
#230	4.00	0.06	0.56	91.37

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.91	2.57	2.03	1.35	0.86	-0.31

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.73	0.30	2.03	0.24	1.03	-1.01	4.32

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-30 @ 15 ft

Analysis Date: 8/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,186	515,356	State Plane, FLE (U.S. Ft.)	-36.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 8/1	#200 - 13.70 #230 - 12.17			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.06	0.06
#4	-2.25	4.75	0.00	0.06
#5	-2.00	4.00	0.11	0.16
#7	-1.50	2.80	0.37	0.53
#10	-1.00	2.00	0.75	1.28
#14	-0.50	1.40	1.67	2.95
#18	0.00	1.00	2.24	5.20
#25	0.50	0.71	3.01	8.21
#35	1.00	0.50	4.42	12.63
#45	1.50	0.36	8.82	21.45
#60	2.00	0.25	16.75	38.20
#80	2.50	0.18	22.27	60.47
#120	3.00	0.13	15.92	76.39
#170	3.50	0.09	7.98	84.37
#200	3.75	0.08	1.93	86.30
#230	4.00	0.06	1.53	87.83

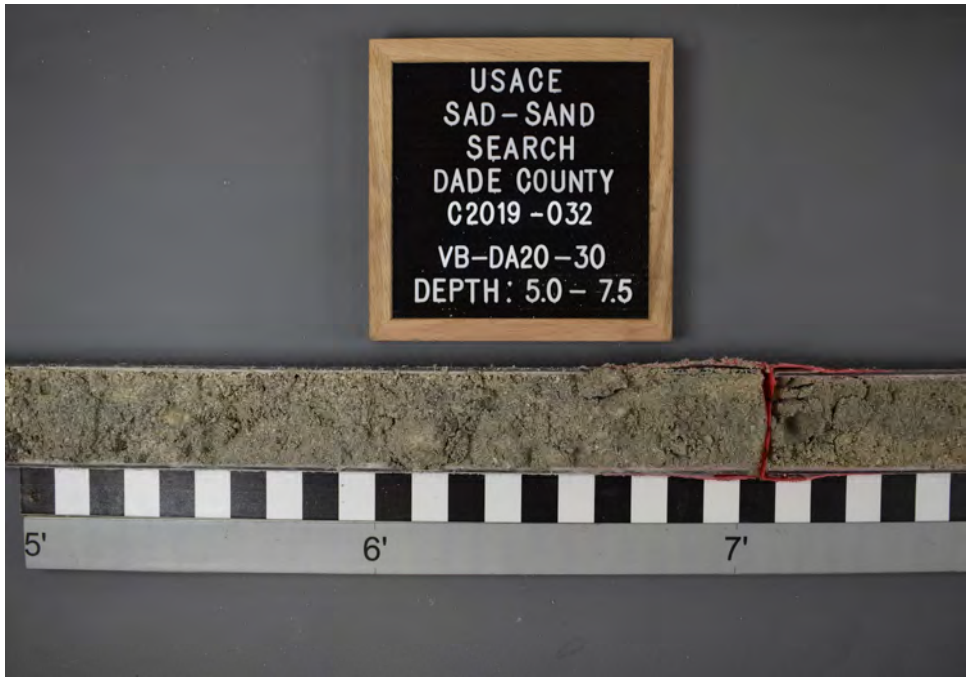
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.48	2.96	2.26	1.61	1.19	-0.04

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.97	0.26	2.26	0.21	1.04	-1.01	4.51

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–30
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–30
DEPTH: 2.5 – 5.0
3'
4'
5'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–30
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–30
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–30
DEPTH : 10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–30
DEPTH : 12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–30
DEPTH : 15.0 – 17.1
15'
16'
17'

VB-DA20-31

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-31

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-31
LOCATION COORDINATES: X = 945,482 Y = 515,711
3. DRILLING AGENCY: Amdrill
CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 10.3 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 2; UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-25-20; COMPLETED: 06-25-20
16. ELEVATION TOP OF BORING: -19.0 Ft.
17. TOTAL RECOVERY FOR BORING: 83 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-19.0	0.0								
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, moist, 2.5Y 6/1 gray (SM)				-20.0		
-20.5	1.5				1				
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, moist, 2.5Y 7/1 light gray (SW-SM)				-22.0		
-22.3	3.3				2				
			LIMESTONE, GRAVEL, poorly-graded, mostly fine gravel-sized limestone, some fine to medium-grained sand-sized carbonate, little silt, moist, 2.5Y 5/1 gray						
-27.5	8.5								
			No Recovery						
-29.3	10.3						-29.3		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION

(Continued)

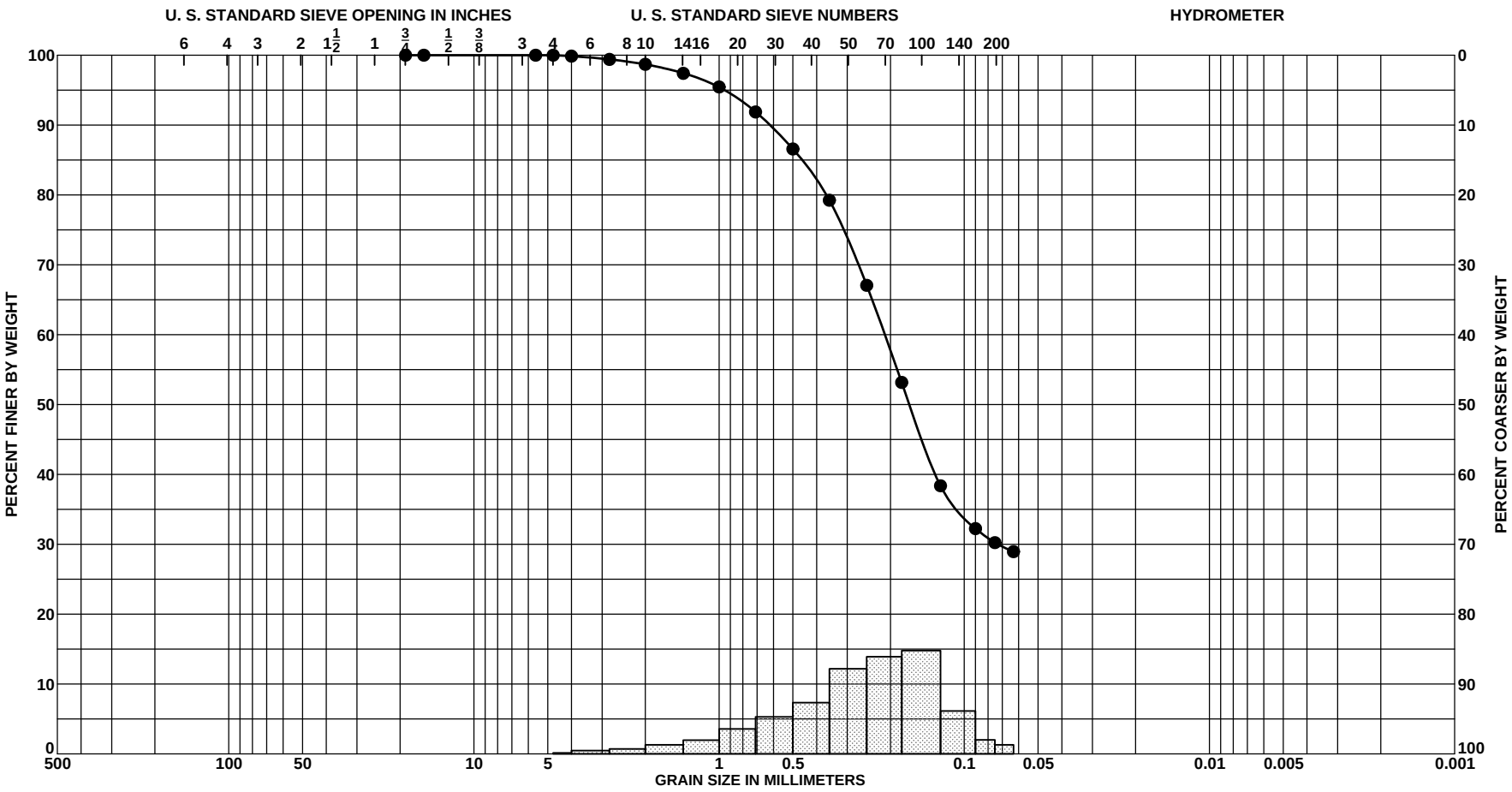
Boring Designation VB-DA20-31

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 945,482 Y = 515,711	ELEVATION TOP OF BORING: -19.0 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			1 1.0/1.2 SM* 2 3.0/3.2 SW-SM* *Lab visual classification based on gradation curve						

15
20
25
30
35

SAJ FORM 1836-A
JUN 02

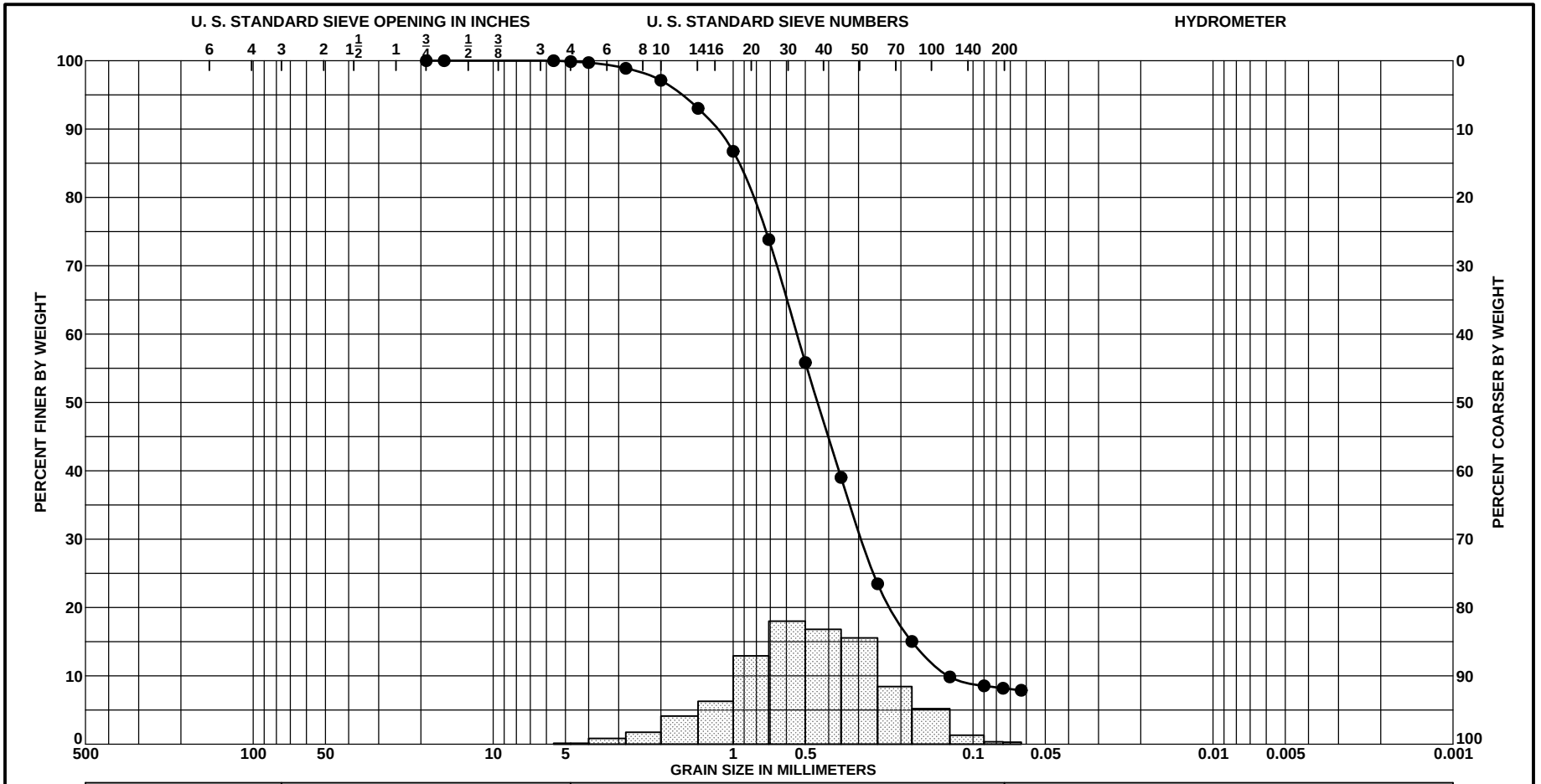


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, silty, mostly fine to	2.5Y 6/1	0							
		medium-grained									
		sand-sized carbonate, little silt, gray									
		(SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-31
BORING ELEV.	-19.0 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 7/1	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, light gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-31
BORING ELEV.	-19.0 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-31 @ 1 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
945,482	515,711	State Plane, FLE (U.S. Ft.)	-20.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 6/1	#200 - 30.24 #230 - 28.95			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.00	0.00
#5	-2.00	4.00	0.13	0.13
#7	-1.50	2.80	0.47	0.60
#10	-1.00	2.00	0.70	1.30
#14	-0.50	1.40	1.29	2.59
#18	0.00	1.00	1.95	4.55
#25	0.50	0.71	3.57	8.12
#35	1.00	0.50	5.30	13.42
#45	1.50	0.36	7.33	20.76
#60	2.00	0.25	12.18	32.94
#80	2.50	0.18	13.89	46.83
#120	3.00	0.13	14.79	61.63
#170	3.50	0.09	6.13	67.76
#200	3.75	0.08	2.00	69.76
#230	4.00	0.06	1.29	71.05

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
			2.61	1.67	1.18	0.06

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.91	0.27	2.61	0.16	1.11	-0.84	3.66

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-31 @ 3 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
945,482	515,711	State Plane, FLE (U.S. Ft.)	-22.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 7/1	#200 - 8.19 #230 - 7.89			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.13	0.13
#5	-2.00	4.00	0.15	0.27
#7	-1.50	2.80	0.84	1.12
#10	-1.00	2.00	1.75	2.87
#14	-0.50	1.40	4.11	6.98
#18	0.00	1.00	6.28	13.26
#25	0.50	0.71	12.91	26.17
#35	1.00	0.50	17.99	44.17
#45	1.50	0.36	16.81	60.97
#60	2.00	0.25	15.56	76.53
#80	2.50	0.18	8.43	84.97
#120	3.00	0.13	5.19	90.16
#170	3.50	0.09	1.30	91.46
#200	3.75	0.08	0.35	91.81
#230	4.00	0.06	0.30	92.11

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.44	1.95	1.17	0.45	0.11	-0.74

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.04	0.49	1.17	0.44	1.04	-0.19	3.08

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–31
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–31
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–31
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–31
DEPTH: 7.5 – 8.5
8'
9'
10'

VB-DA20-32

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-32

DRILLING LOG	DIVISION	INSTALLATION	SHEET
	South Atlantic	Jacksonville, Fl	1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-32	LOCATION COORDINATES: X = 953,693 Y = 517,934	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 0 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-25-20 / COMPLETED: 06-25-20
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: N/A	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-27.8	0.0								
			LIMESTONE, GRAVEL, poorly-graded, mostly gravel to cobble-sized limestone, little fine to medium-grained sand-sized carbonate, little silt, moist, 2.5Y 6/1 gray						
-39.8	12.0								
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, moist, 2.5Y 7/1 light gray (SM)						

0 5 10 15

(Continued)

Boring Designation VB-DA20-32

DRILLING LOG (Cont. Sheet)	INSTALLATION	SHEET 2 OF 2 SHEETS
	Jacksonville, FL	

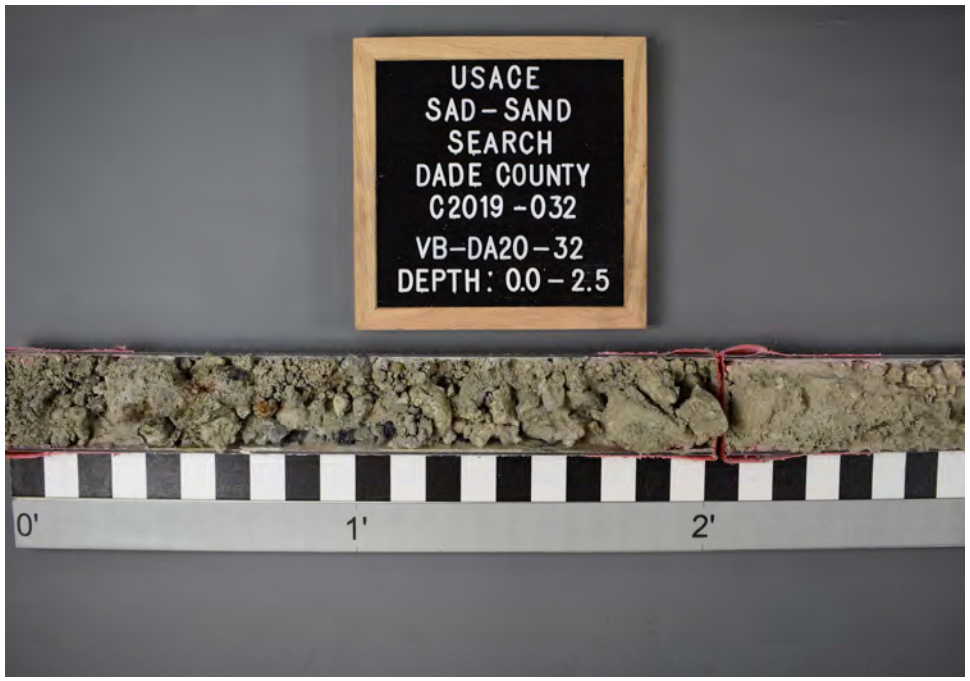
PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
SAD-SAND	State Plane, FLE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 953,693 Y = 517,934	-27.8 Ft.

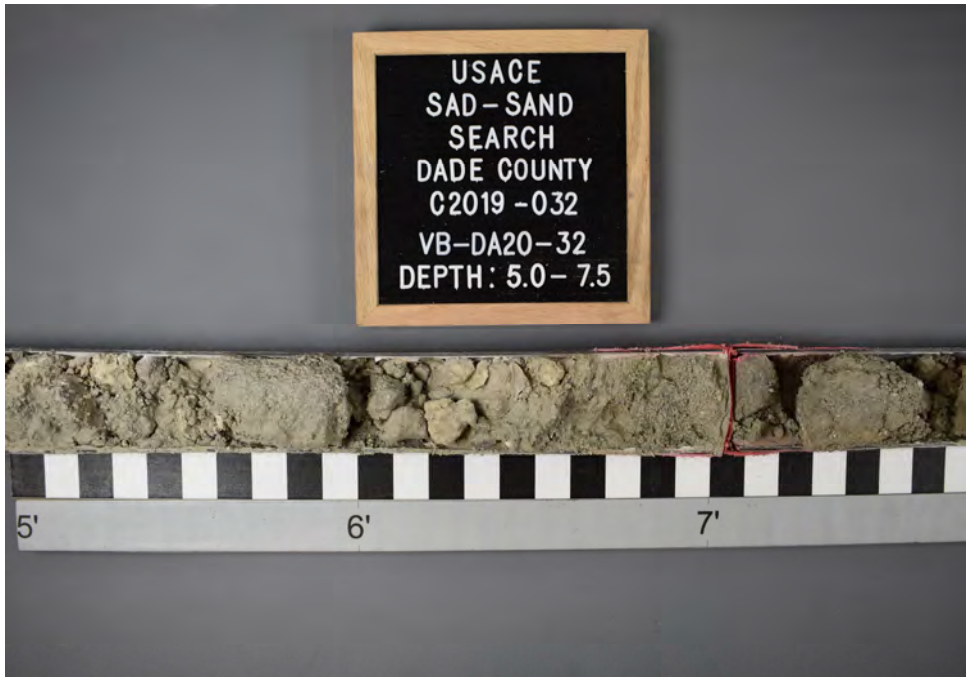
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-43.8	16.0								
-44.8	17.0		SAND, well-graded with silt, mostly fine to coarse-grained sand-sized carbonate, few silt, moist, 2.5Y 7/2 light gray (SW-SM)						
			No Recovery						
-47.8	20.0						-47.8		
			NOTES: 1. Taylor Engineering is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System.						

15 20 25 30 35

SAJ FORM 1836-A
JUN 02


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 32
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 32
DEPTH: 2.5 – 5.0
3'
4'
5'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 32
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 32
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 32
DEPTH : 10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 32
DEPTH : 12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 32
DEPTH : 15.0 – 17.0
15'
16'
17'

VB-DA20-33

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-33

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-33	LOCATION COORDINATES: X = 950,219 Y = 520,080	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 3 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-25-20 / COMPLETED: 06-25-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -30.0 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 80 %	
8. TOTAL DEPTH OF BORING: 10.7 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-30.0	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, moist, 2.5Y 8/2 pale yellow (SW)				-32.0		
					1		-34.0		
					2		-36.0		
-36.4	6.4				3				
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, some gravel to cobble-sized limestone, trace silt, moist, 2.5Y 8/2 pale yellow (SW)						
-38.0	8.0								
-38.6	8.6		LIMESTONE, GRAVEL, poorly-graded, mostly gravel to cobble-sized limestone, few fine to medium-grained sand-sized carbonate, few silt, moist, 2.5Y 6/1 gray						
			No Recovery						
-40.7	10.7						-40.7		
			BORING TERMINATED IN REFUSAL				Abbreviations:		
			NOTES:						
			1. Taylor Engineering is the custodian for these original files.						
			2. Soils are field visually classified in accordance with the Unified Soils Classification System.						
			3. Laboratory Testing Results						
			SAMPLE SAMPLE LABORATORY						

0 5 10 15

(Continued)

Boring Designation VB-DA20-33

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 950,219 Y = 520,080	ELEVATION TOP OF BORING: -30.0 Ft.	

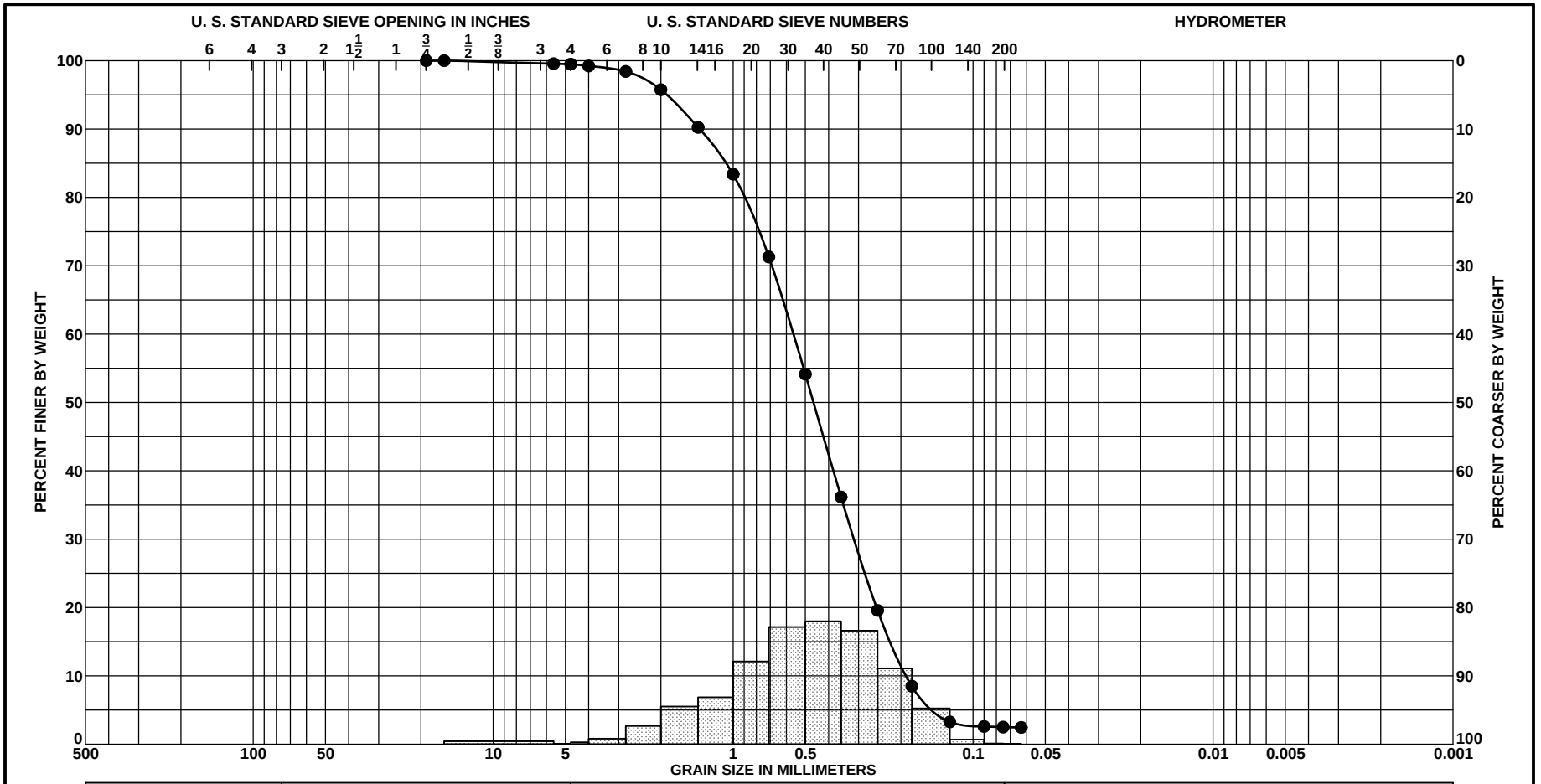
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE

ID	DEPTH	CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW*
3	6.0/6.2	SW*

*Lab visual classification based on gradation curve

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

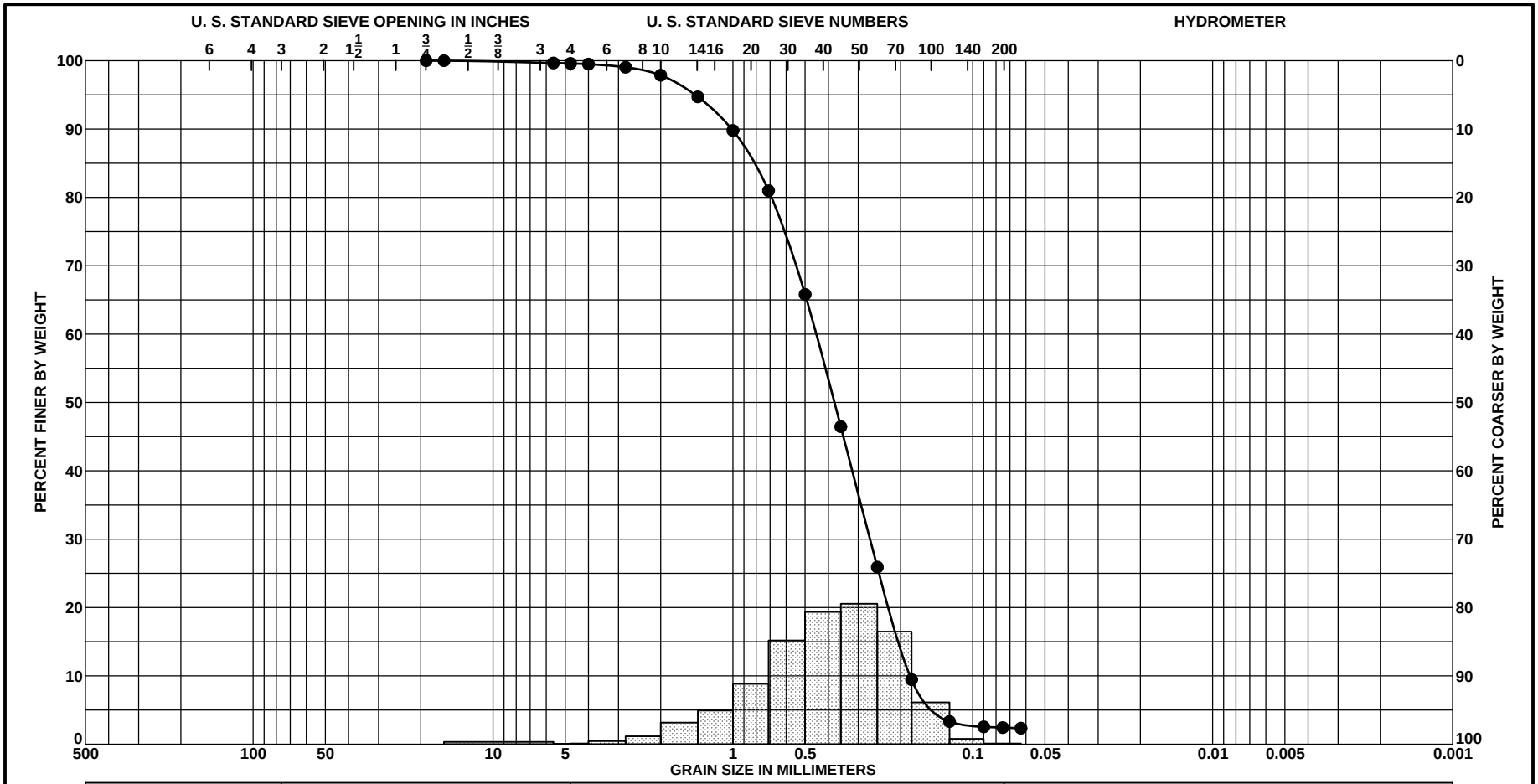


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0	93						
		medium-grained sand-sized									
		carbonate, trace									
		silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-33
BORING ELEV.	-30.0 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

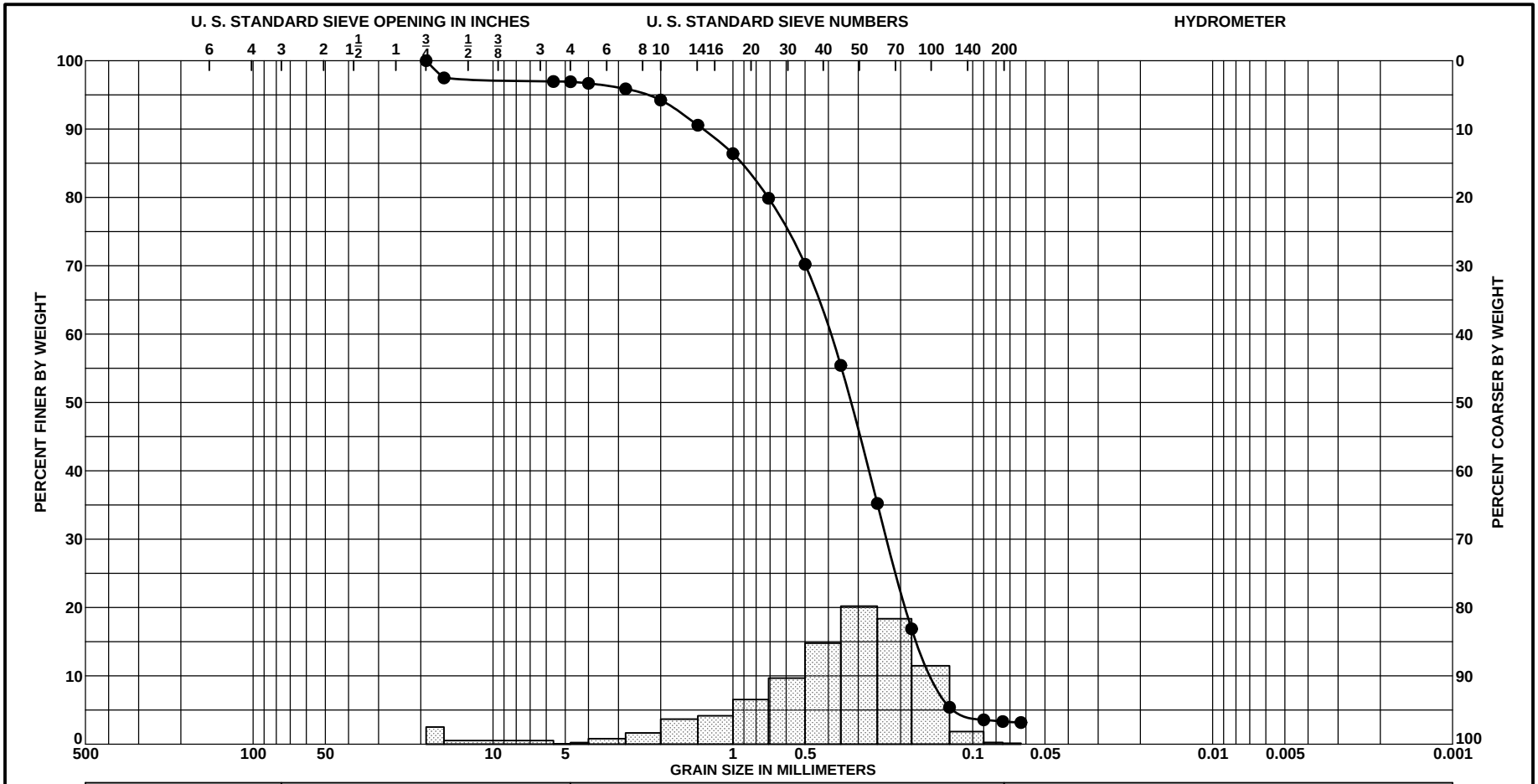


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, trace									
		silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-33
BORING ELEV.	-30.0 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

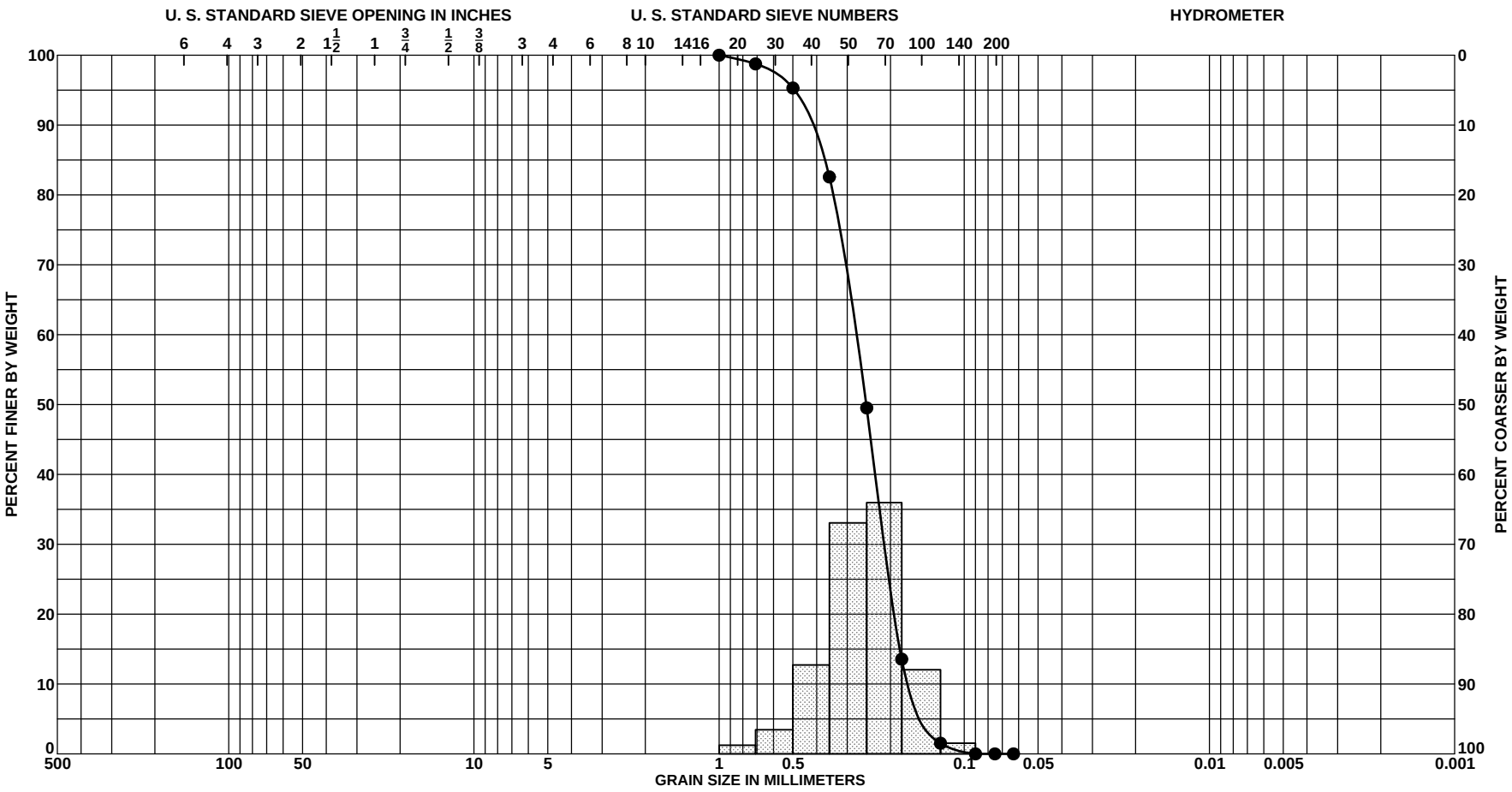


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, some gravel									
		to cobble-sized limestone,									
		trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-33
BORING ELEV.	-30.0 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-33
BORING ELEV.	-30.0 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-33 @ 2 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,219	520,080	State Plane, FLE (U.S. Ft.)	-32.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 2.50 #230 - 2.45		93.30	0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.44	0.44
#4	-2.25	4.75	0.06	0.50
#5	-2.00	4.00	0.27	0.77
#7	-1.50	2.80	0.80	1.57
#10	-1.00	2.00	2.67	4.25
#14	-0.50	1.40	5.51	9.76
#18	0.00	1.00	6.86	16.62
#25	0.50	0.71	12.10	28.72
#35	1.00	0.50	17.14	45.86
#45	1.50	0.36	17.97	63.83
#60	2.00	0.25	16.60	80.43
#80	2.50	0.18	11.09	91.52
#120	3.00	0.13	5.23	96.75
#170	3.50	0.09	0.67	97.41
#200	3.75	0.08	0.09	97.50
#230	4.00	0.06	0.05	97.55

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.83	2.16	1.84	1.12	0.35	-0.04	-0.93

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.99	0.50	1.12	0.46	1.08	-0.56	3.47

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-33 @ 4 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,219	520,080	State Plane, FLE (U.S. Ft.)	-34.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 2.43 #230 - 2.34			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.34	0.34
#4	-2.25	4.75	0.06	0.40
#5	-2.00	4.00	0.10	0.50
#7	-1.50	2.80	0.46	0.96
#10	-1.00	2.00	1.17	2.13
#14	-0.50	1.40	3.16	5.29
#18	0.00	1.00	4.92	10.21
#25	0.50	0.71	8.82	19.03
#35	1.00	0.50	15.17	34.20
#45	1.50	0.36	19.35	53.55
#60	2.00	0.25	20.54	74.09
#80	2.50	0.18	16.47	90.56
#120	3.00	0.13	6.12	96.68
#170	3.50	0.09	0.79	97.47
#200	3.75	0.08	0.10	97.57
#230	4.00	0.06	0.09	97.66

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.86	2.30	2.03	1.41	0.70	0.33	-0.55

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.27	0.41	1.41	0.38	0.99	-0.8	4.25

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-33 @ 6 ft

Analysis Date: 9/4/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,219	520,080	State Plane, FLE (U.S. Ft.)	-36.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 3.31 #230 - 3.17			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	2.52	2.52
#3.5	-2.50	5.60	0.53	3.05
#4	-2.25	4.75	0.03	3.08
#5	-2.00	4.00	0.24	3.31
#7	-1.50	2.80	0.80	4.12
#10	-1.00	2.00	1.65	5.76
#14	-0.50	1.40	3.68	9.44
#18	0.00	1.00	4.16	13.60
#25	0.50	0.71	6.53	20.13
#35	1.00	0.50	9.67	29.79
#45	1.50	0.36	14.79	44.58
#60	2.00	0.25	20.19	64.77
#80	2.50	0.18	18.35	83.12
#120	3.00	0.13	11.48	94.60
#170	3.50	0.09	1.83	96.43
#200	3.75	0.08	0.25	96.69
#230	4.00	0.06	0.14	96.83

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.11	2.54	2.28	1.63	0.75	0.18	-1.23

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.27	0.41	1.63	0.32	1.42	-1.72	6.89

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-33 @ 2 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,219	520,080	State Plane, FLE (U.S. Ft.)	-32.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.00 #230 - 0.00			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#18	0.00	1.00	0.00	0.00
#25	0.50	0.71	1.24	1.24
#35	1.00	0.50	3.46	4.70
#45	1.50	0.36	12.72	17.43
#60	2.00	0.25	33.06	50.48
#80	2.50	0.18	35.96	86.45
#120	3.00	0.13	12.03	98.48
#170	3.50	0.09	1.52	100.00
#200	3.75	0.08	0.00	100.00
#230	4.00	0.06	0.00	100.00

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.86	2.47	2.34	1.99	1.61	1.44	1.01

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.96	0.26	1.99	0.25	0.54	-0.42	3.46

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–33
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–33
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–33
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–33
DEPTH: 7.5 – 8.6
8'
9'
10'

VB-DA20-34

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-34

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-34
LOCATION COORDINATES: X = 949,165 Y = 521,688
3. DRILLING AGENCY: Amdrill
CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL:
BEARING:
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 15.8 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) HORIZONTAL: NAD83 VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 2 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-25-20 COMPLETED: 06-25-20
16. ELEVATION TOP OF BORING: -26.0 Ft.
17. TOTAL RECOVERY FOR BORING: 82 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-26.0	0.0								
			SAND, well-graded, mostly fine to coarse-grained sand-sized carbonate, few gravel to cobble-sized limestone, trace silt, moist, 2.5Y 7/1 light gray (SW)				-28.0		
					1				
-31.0	5.0						-31.0		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few gravel to cobble-sized limestone, few silt, moist, 2.5Y 7/1 light gray (SW-SM)		2				
-34.0	8.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, little gravel to cobble-sized limestone, few shell, moist, 2.5Y 7/1 light gray (SW)						
-36.5	10.5								
-37.0	11.0		LIMESTONE, 2.5Y 6/1 gray						
			No Recovery						

0 5 10 15

(Continued)

Boring Designation VB-DA20-34

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 949,165 Y = 521,688	ELEVATION TOP OF BORING: -26.0 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-41.8	15.8						-41.8		

BORING TERMINATED IN REFUSAL

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

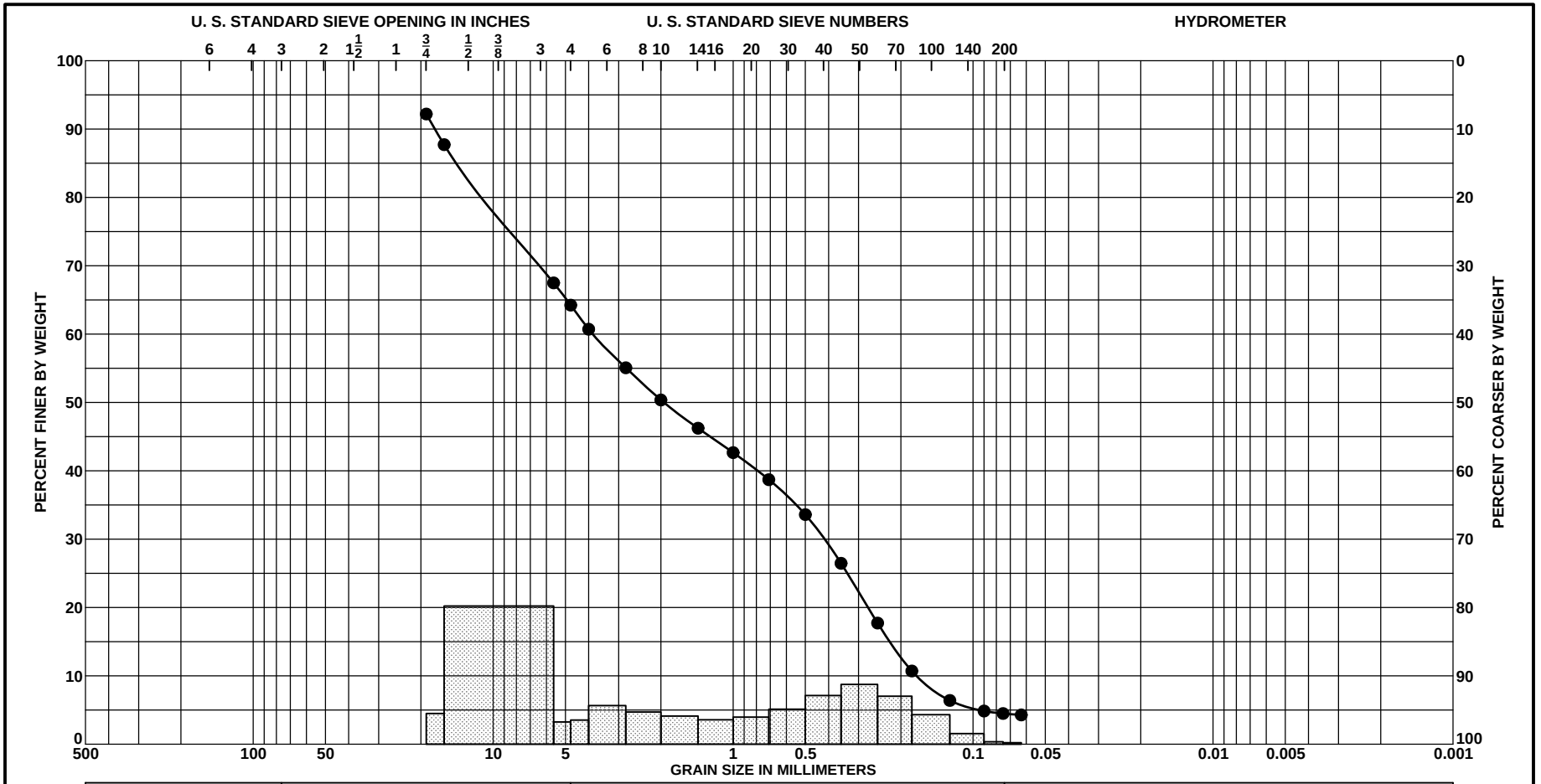
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	5.0/5.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 7/1	0							
		coarse-grained sand-sized									
		carbonate, few									
		gravel to cobble-sized limestone,									
		trace silt, light gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-34
BORING ELEV.	-26.0 Ft., NAVD88
DATE	9/4/2020

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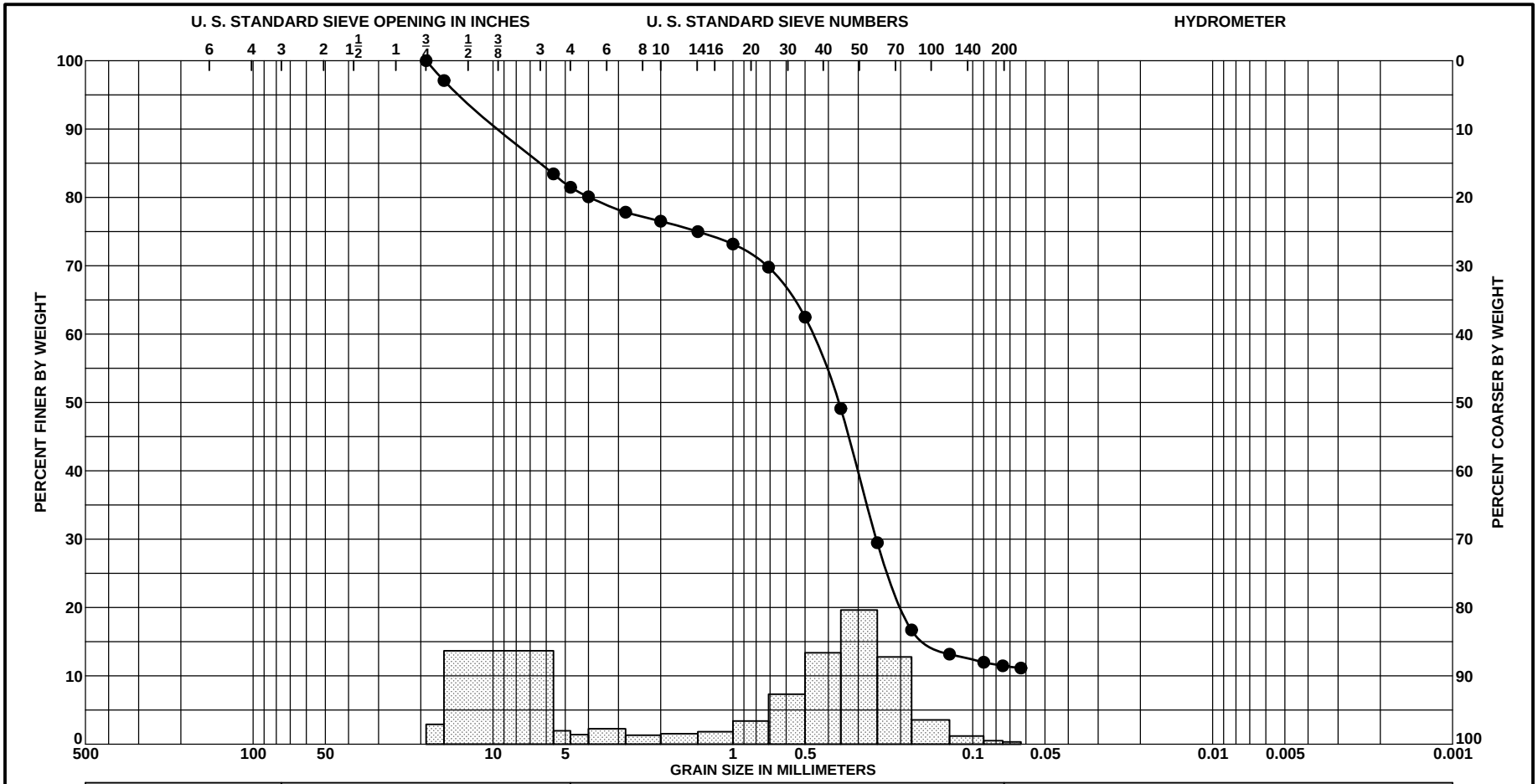


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 7/1	0							
		fine to medium-grained									
		sand-sized carbonate, few gravel									
		to cobble-sized limestone,									
		few silt, light gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-34
BORING ELEV.	-26.0 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-34 @ 2 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,165	521,688	State Plane, FLE (U.S. Ft.)	-28.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 7/1	#200 - 4.49 #230 - 4.28			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	7.80	7.80
5/8	-4.00	16.00	4.48	12.28
#3.5	-2.50	5.60	20.22	32.51
#4	-2.25	4.75	3.26	35.76
#5	-2.00	4.00	3.52	39.29
#7	-1.50	2.80	5.64	44.93
#10	-1.00	2.00	4.71	49.64
#14	-0.50	1.40	4.13	53.77
#18	0.00	1.00	3.57	57.34
#25	0.50	0.71	3.96	61.30
#35	1.00	0.50	5.11	66.41
#45	1.50	0.36	7.13	73.54
#60	2.00	0.25	8.74	82.28
#80	2.50	0.18	7.02	89.29
#120	3.00	0.13	4.31	93.60
#170	3.50	0.09	1.55	95.15
#200	3.75	0.08	0.36	95.51
#230	4.00	0.06	0.21	95.72

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.45	2.12	1.58	-0.96	-3.06	-3.72	

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	-0.94	1.92			2.19	0.47	1.82

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-34 @ 5 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,165	521,688	State Plane, FLE (U.S. Ft.)	-31.0 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 7/1	#200 - 11.47 #230 - 11.14			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	2.90	2.90
#3.5	-2.50	5.60	13.66	16.56
#4	-2.25	4.75	1.96	18.52
#5	-2.00	4.00	1.40	19.92
#7	-1.50	2.80	2.25	22.16
#10	-1.00	2.00	1.32	23.48
#14	-0.50	1.40	1.53	25.01
#18	0.00	1.00	1.82	26.82
#25	0.50	0.71	3.39	30.21
#35	1.00	0.50	7.31	37.52
#45	1.50	0.36	13.37	50.89
#60	2.00	0.25	19.63	70.53
#80	2.50	0.18	12.76	83.28
#120	3.00	0.13	3.54	86.82
#170	3.50	0.09	1.19	88.01
#200	3.75	0.08	0.52	88.53
#230	4.00	0.06	0.33	88.86

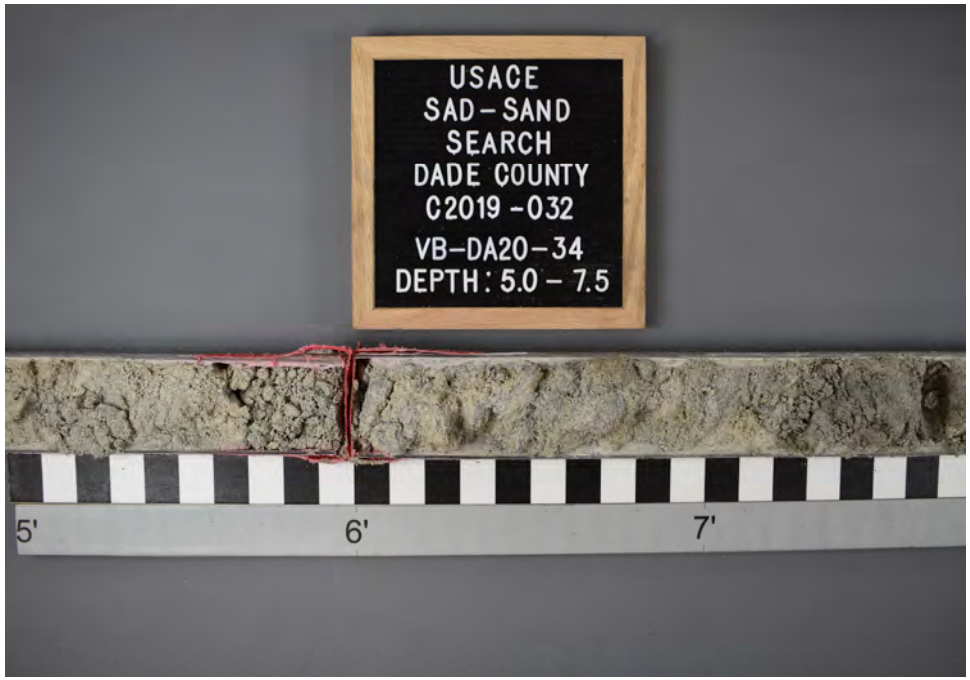
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.60	2.18	1.47	-0.50	-2.56	-3.77

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.36	0.78	1.47	0.36	2.15	-0.83	2.24

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–34
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–34
DEPTH: 2.5 – 5.0
3'
4'
5'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–34
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–34
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–34
DEPTH :10.0 –11.0
10'
11'
12'

VB-DA20-35

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-35

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-35 — LOCATION COORDINATES: X = 946,046 Y = 522,300
3. DRILLING AGENCY: Amdrill — CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 13.1 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore — ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES — DISTURBED: 4 — UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING — STARTED: 06-25-20 — COMPLETED: 06-25-20
16. ELEVATION TOP OF BORING: -18.9 Ft.
17. TOTAL RECOVERY FOR BORING: 53 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-18.9	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 2.5Y 5/1 gray (SW)				-20.9		
					1				
-22.4	3.5		SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 2.5Y 6/1 gray (SW)				-22.9		
					2				
							-24.9		
					3				
							-26.9		
					4				
-28.2	9.3		LIMESTONE, GRAVEL, poorly-graded, mostly gravel to cobble-sized limestone, few fine to coarse-grained sand-sized carbonate, few silt, moist, 2.5Y 8/1 white						
-31.0	12.1		No Recovery						
-32.0	13.1						-32.0		
			BORING TERMINATED IN REFUSAL				Abbreviations:		
			NOTES:						
			1. Taylor Engineering is the custodian for these original files.						

0 5 10 15

(Continued)

Boring Designation VB-DA20-35

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 946,046 Y = 522,300	ELEVATION TOP OF BORING: -18.9 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE

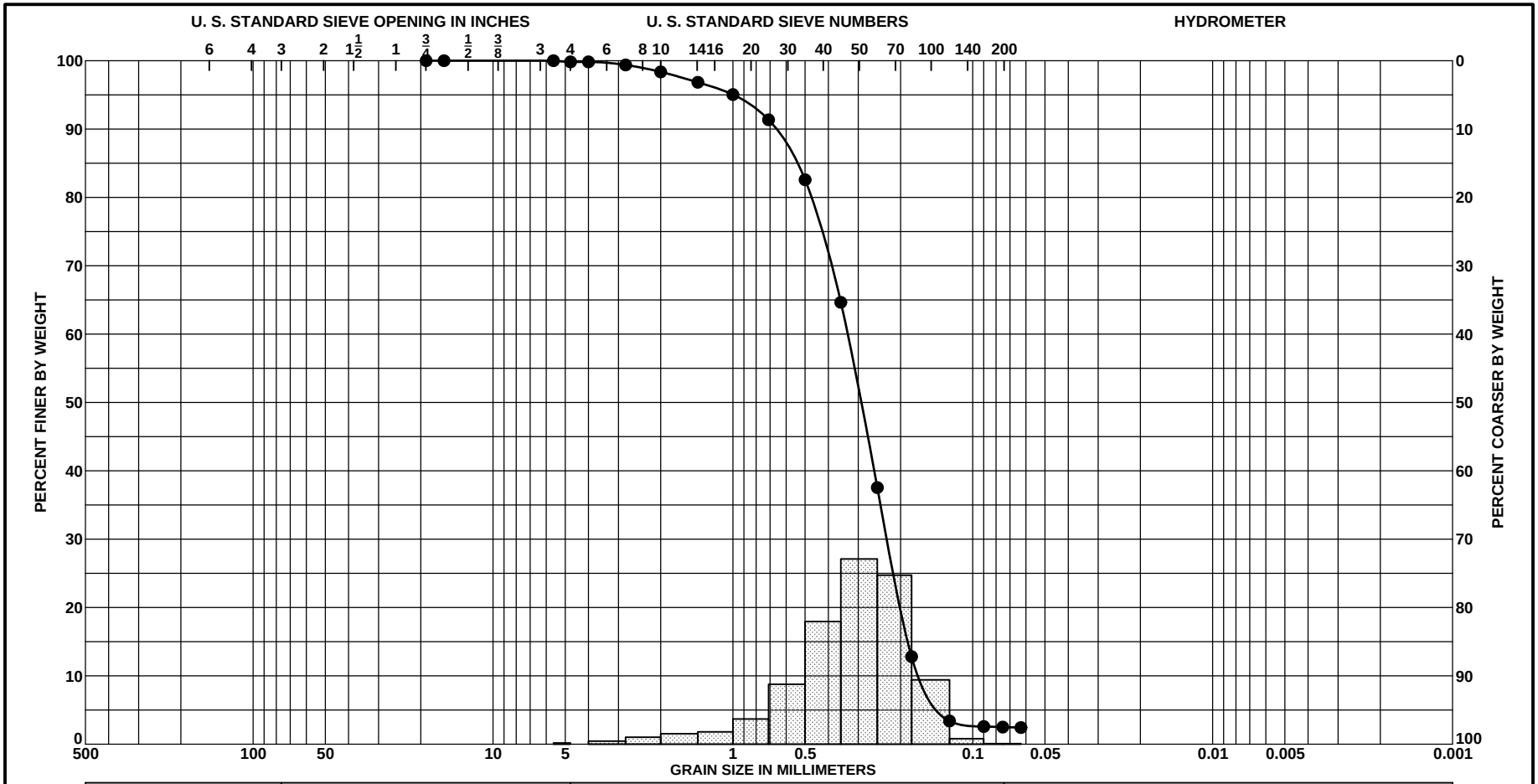
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW*
3	6.0/6.2	SW*
4	8.0/8.2	SW*

*Lab visual classification based on gradation curve

15 20 25 30 35



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 5/1	0							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-35
BORING ELEV.	-18.9 Ft., NAVD88
DATE	9/4/2020

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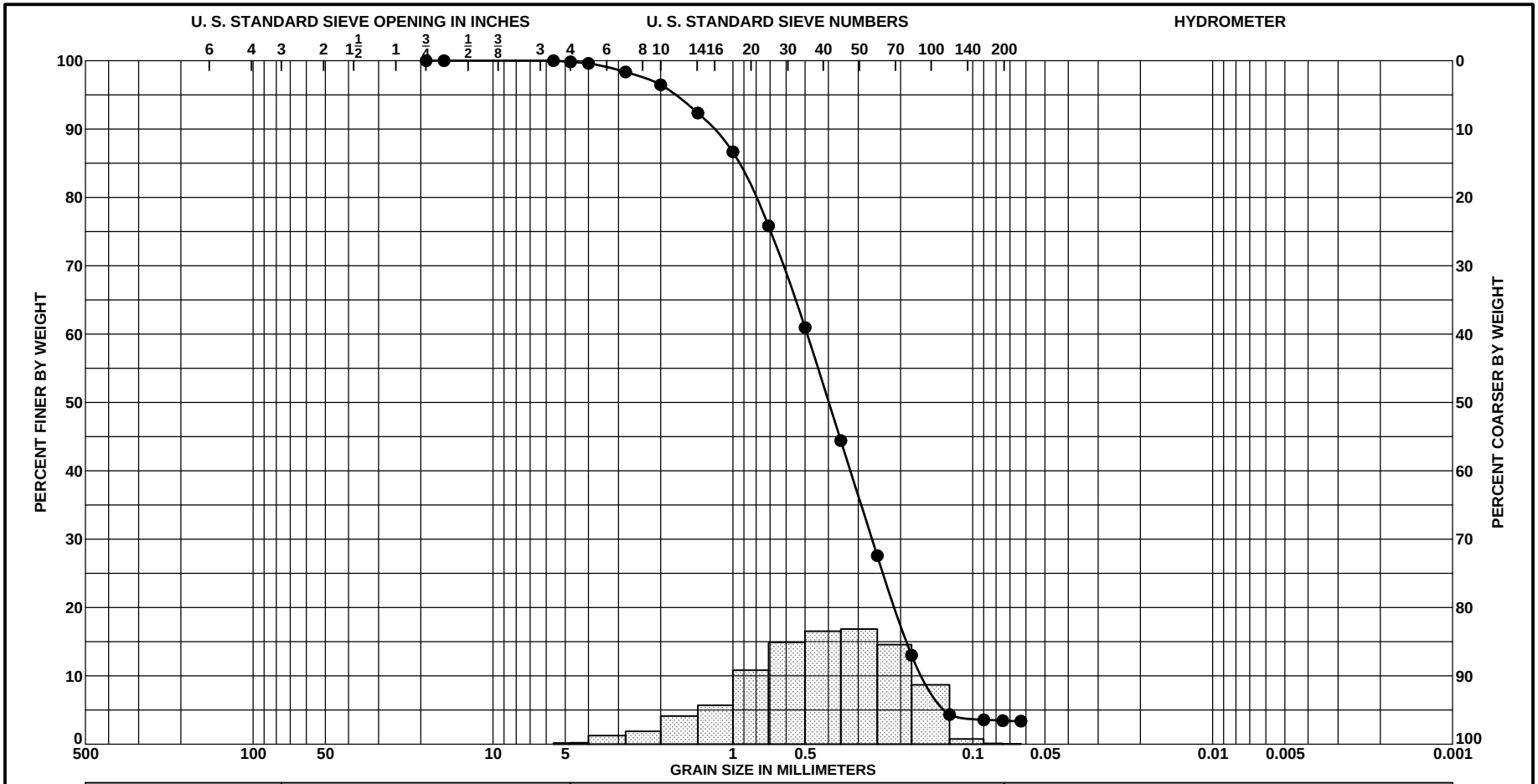
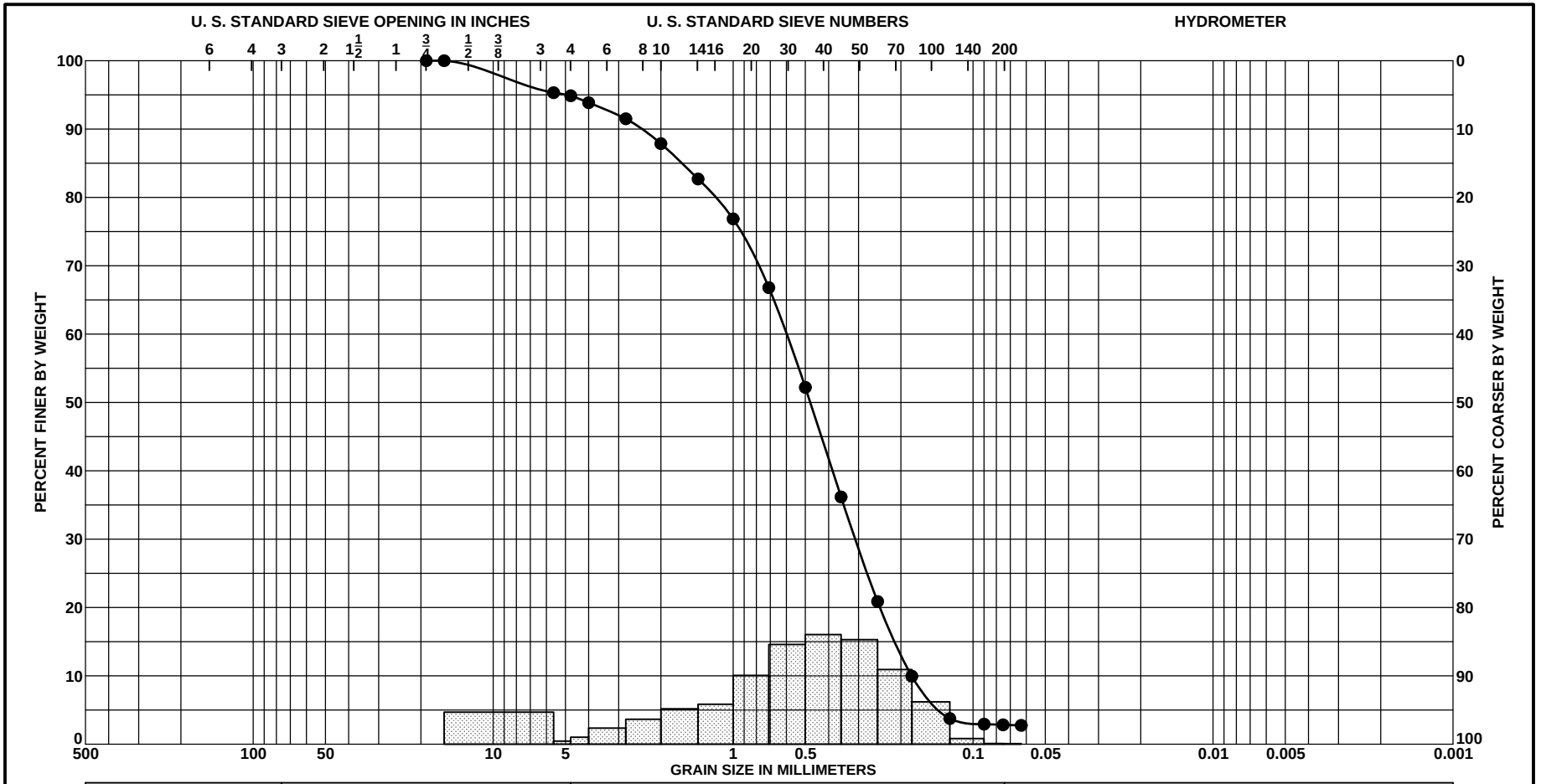


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 6/1	2							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-35
BORING ELEV.	-18.9 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

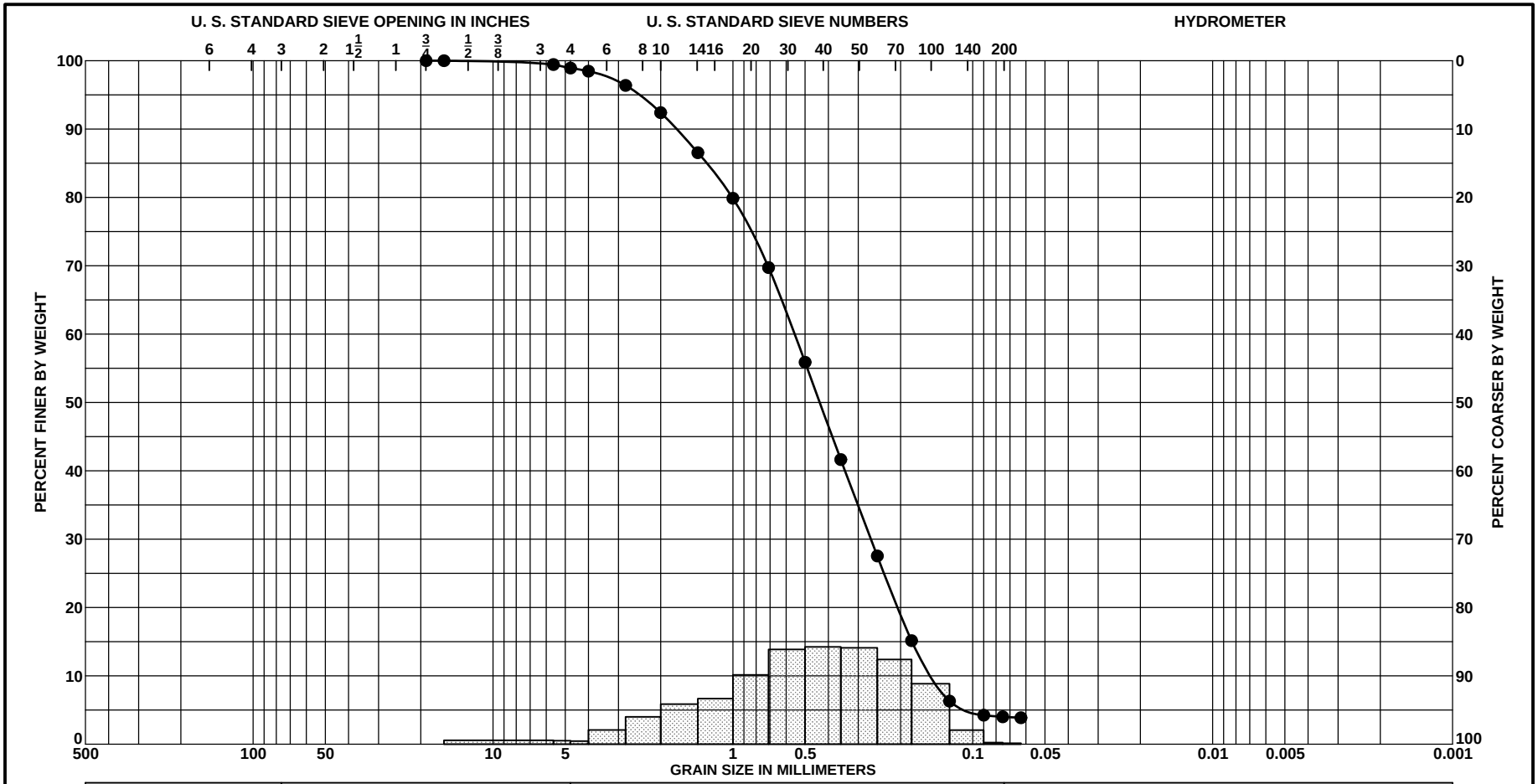


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 6/1	3							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-35
BORING ELEV.	-18.9 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 6/1	2							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-35
BORING ELEV.	-18.9 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-35 @ 2 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
946,046	522,300	State Plane, FLE (U.S. Ft.)	-20.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 5/1	#200 - 2.50 #230 - 2.43			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.17	0.17
#5	-2.00	4.00	0.00	0.17
#7	-1.50	2.80	0.45	0.62
#10	-1.00	2.00	1.02	1.64
#14	-0.50	1.40	1.52	3.16
#18	0.00	1.00	1.80	4.95
#25	0.50	0.71	3.69	8.65
#35	1.00	0.50	8.77	17.42
#45	1.50	0.36	17.94	35.35
#60	2.00	0.25	27.10	62.46
#80	2.50	0.18	24.73	87.19
#120	3.00	0.13	9.42	96.61
#170	3.50	0.09	0.81	97.42
#200	3.75	0.08	0.08	97.50
#230	4.00	0.06	0.07	97.57

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.91	2.44	2.25	1.77	1.21	0.92	0.01

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.62	0.33	1.77	0.29	0.86	-1.22	5.38

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-35 @ 4 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
946,046	522,300	State Plane, FLE (U.S. Ft.)	-22.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 6/1	#200 - 3.43 #230 - 3.37			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.17	0.17
#5	-2.00	4.00	0.22	0.39
#7	-1.50	2.80	1.26	1.65
#10	-1.00	2.00	1.88	3.53
#14	-0.50	1.40	4.12	7.65
#18	0.00	1.00	5.69	13.34
#25	0.50	0.71	10.82	24.16
#35	1.00	0.50	14.88	39.05
#45	1.50	0.36	16.54	55.58
#60	2.00	0.25	16.84	72.42
#80	2.50	0.18	14.57	86.99
#120	3.00	0.13	8.68	95.67
#170	3.50	0.09	0.77	96.44
#200	3.75	0.08	0.12	96.57
#230	4.00	0.06	0.06	96.63

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.96	2.40	2.09	1.33	0.53	0.12	-0.82

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.18	0.44	1.33	0.40	1.08	-0.53	2.97

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-35 @ 6 ft

Analysis Date: 9/4/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
946,046	522,300	State Plane, FLE (U.S. Ft.)	-24.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 6/1	#200 - 2.83 #230 - 2.75			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	4.68	4.68
#4	-2.25	4.75	0.45	5.13
#5	-2.00	4.00	1.01	6.14
#7	-1.50	2.80	2.35	8.50
#10	-1.00	2.00	3.64	12.14
#14	-0.50	1.40	5.17	17.31
#18	0.00	1.00	5.84	23.14
#25	0.50	0.71	10.06	33.20
#35	1.00	0.50	14.59	47.80
#45	1.50	0.36	16.03	63.83
#60	2.00	0.25	15.29	79.12
#80	2.50	0.18	10.93	90.05
#120	3.00	0.13	6.20	96.25
#170	3.50	0.09	0.82	97.06
#200	3.75	0.08	0.10	97.17
#230	4.00	0.06	0.08	97.25

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.90	2.22	1.87	1.07	0.09	-0.63	-2.32

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.75	0.59	1.07	0.48	1.48	-0.97	3.69

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-35 @ 8 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
946,046	522,300	State Plane, FLE (U.S. Ft.)	-26.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 6/1	#200 - 4.01 #230 - 3.87			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.56	0.56
#4	-2.25	4.75	0.52	1.08
#5	-2.00	4.00	0.45	1.53
#7	-1.50	2.80	2.08	3.61
#10	-1.00	2.00	3.99	7.60
#14	-0.50	1.40	5.85	13.46
#18	0.00	1.00	6.67	20.13
#25	0.50	0.71	10.14	30.27
#35	1.00	0.50	13.85	44.12
#45	1.50	0.36	14.24	58.36
#60	2.00	0.25	14.10	72.46
#80	2.50	0.18	12.40	84.85
#120	3.00	0.13	8.85	93.70
#170	3.50	0.09	2.06	95.75
#200	3.75	0.08	0.24	95.99
#230	4.00	0.06	0.14	96.13

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.32	2.47	2.10	1.21	0.24	-0.31	-1.33

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.01	0.50	1.21	0.43	1.29	-0.53	2.95

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–35
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–35
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–35
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–35
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD - SAND
SEARCH
DADE COUNTY
C2019 - 032
VB-DA20-35
DEPTH: 10.0 - 12.1
0'
11'
12'

VB-DA20-36

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-36

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-36	LOCATION COORDINATES: X = 950,196 Y = 524,956	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 3 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
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: 88 %	
8. TOTAL DEPTH OF BORING: 13.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-28.7	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 2.5Y 8/2 pale yellow (SW)				-29.7		
					1				
							-32.7		
					2				
							-35.7		
					3				
-37.0	8.3								
-37.5	8.8		LIMESTONE, 2.5Y 7/1 light gray						
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, few fine gravel-sized limestone, moist, 2.5Y 7/1 light gray (SM)						
-40.2	11.5								
			No Recovery						
-41.7	13.0						-41.7		
			BORING TERMINATED IN REFUSAL				Abbreviations:		
			NOTES:						
			1. Taylor Engineering is the custodian for these original files.						

0 5 10 15

(Continued)

Boring Designation VB-DA20-36

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 950,196 Y = 524,956	ELEVATION TOP OF BORING: -28.7 Ft.	

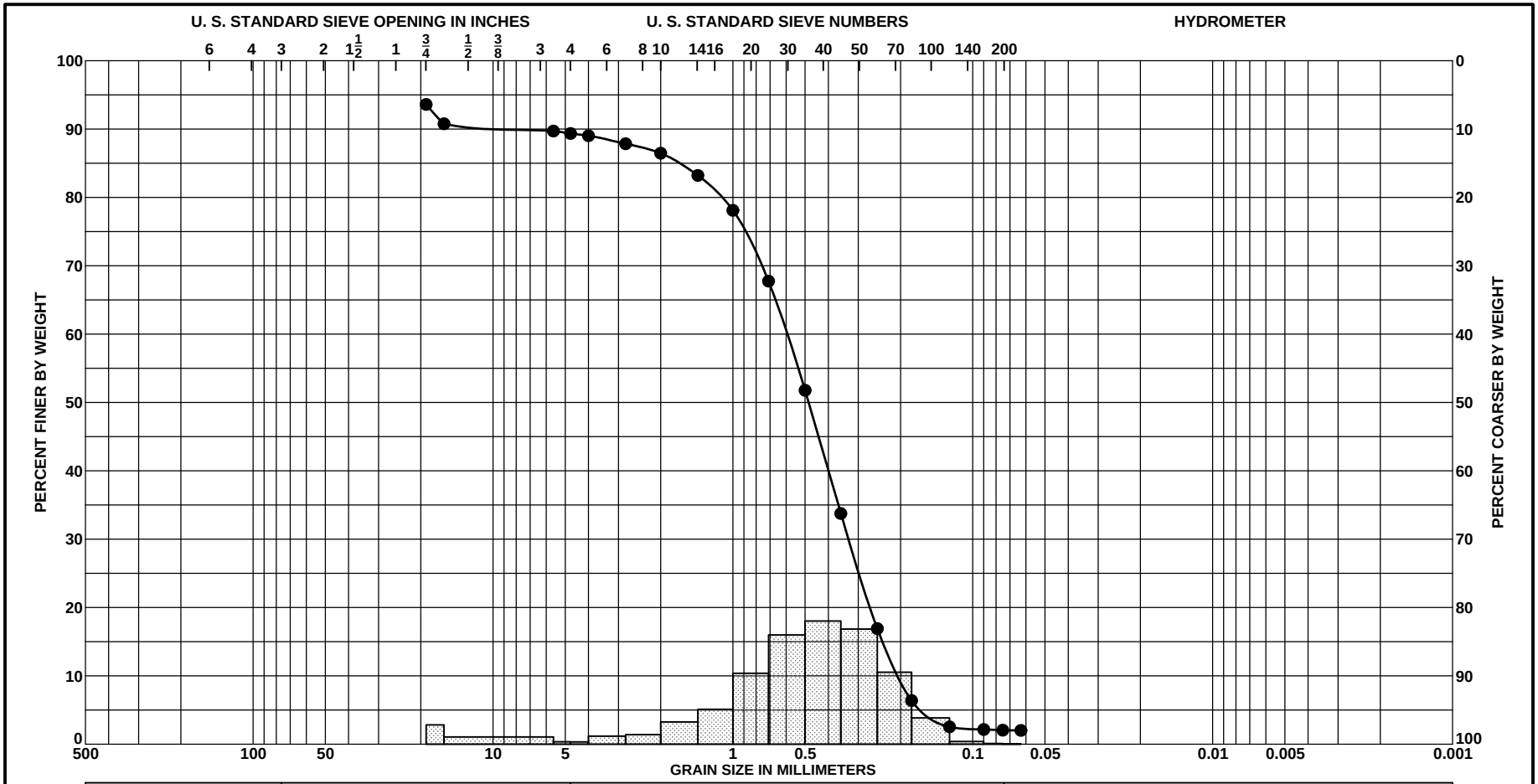
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Laboratory Testing Results						

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	4.0/4.2	SW*
3	7.0/7.2	SW*

*Lab visual classification based on gradation curve

15
20
25
30
35

SAJ FORM 1836-A
JUN 02

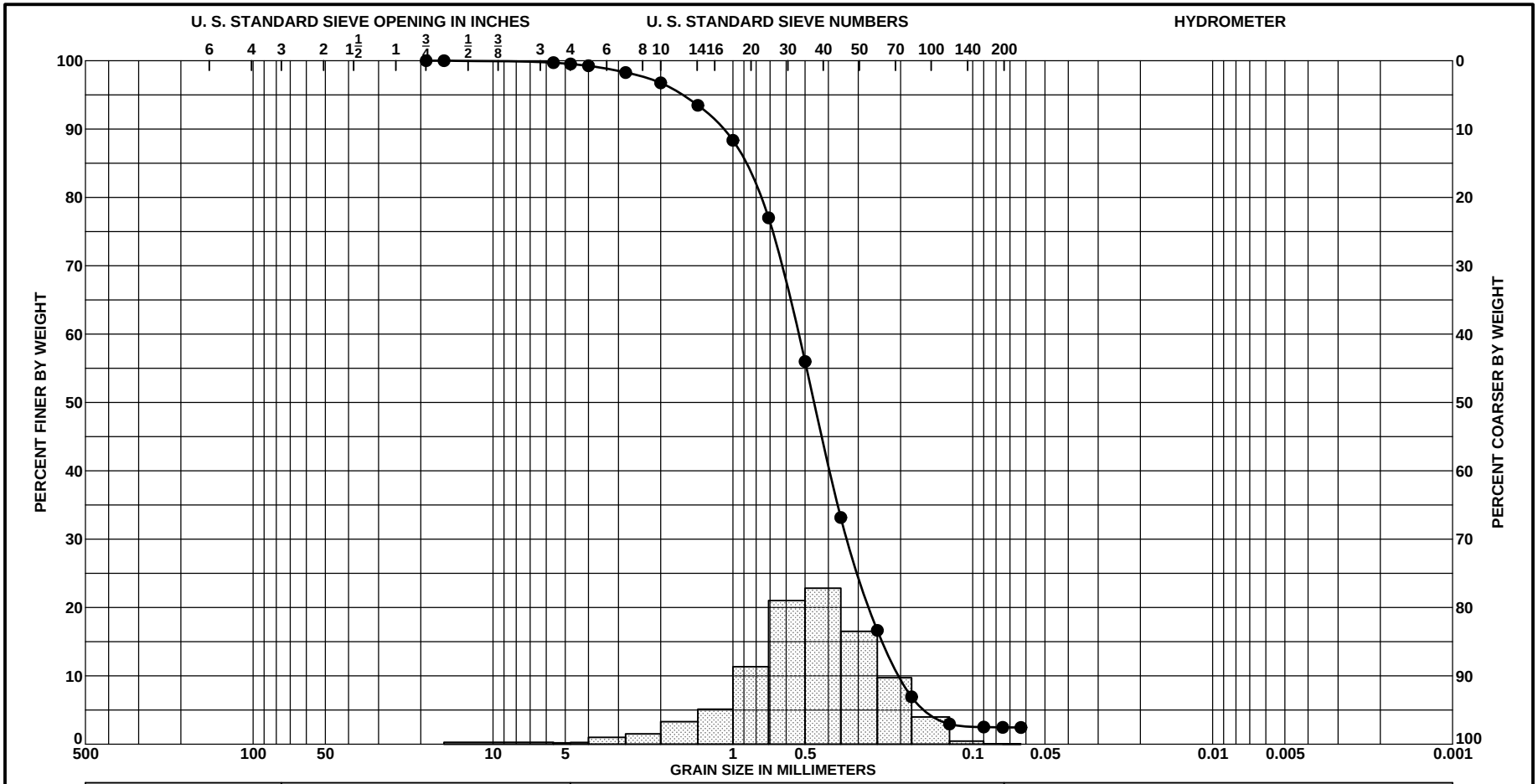


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0	92						
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-36
BORING ELEV.	-28.7 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

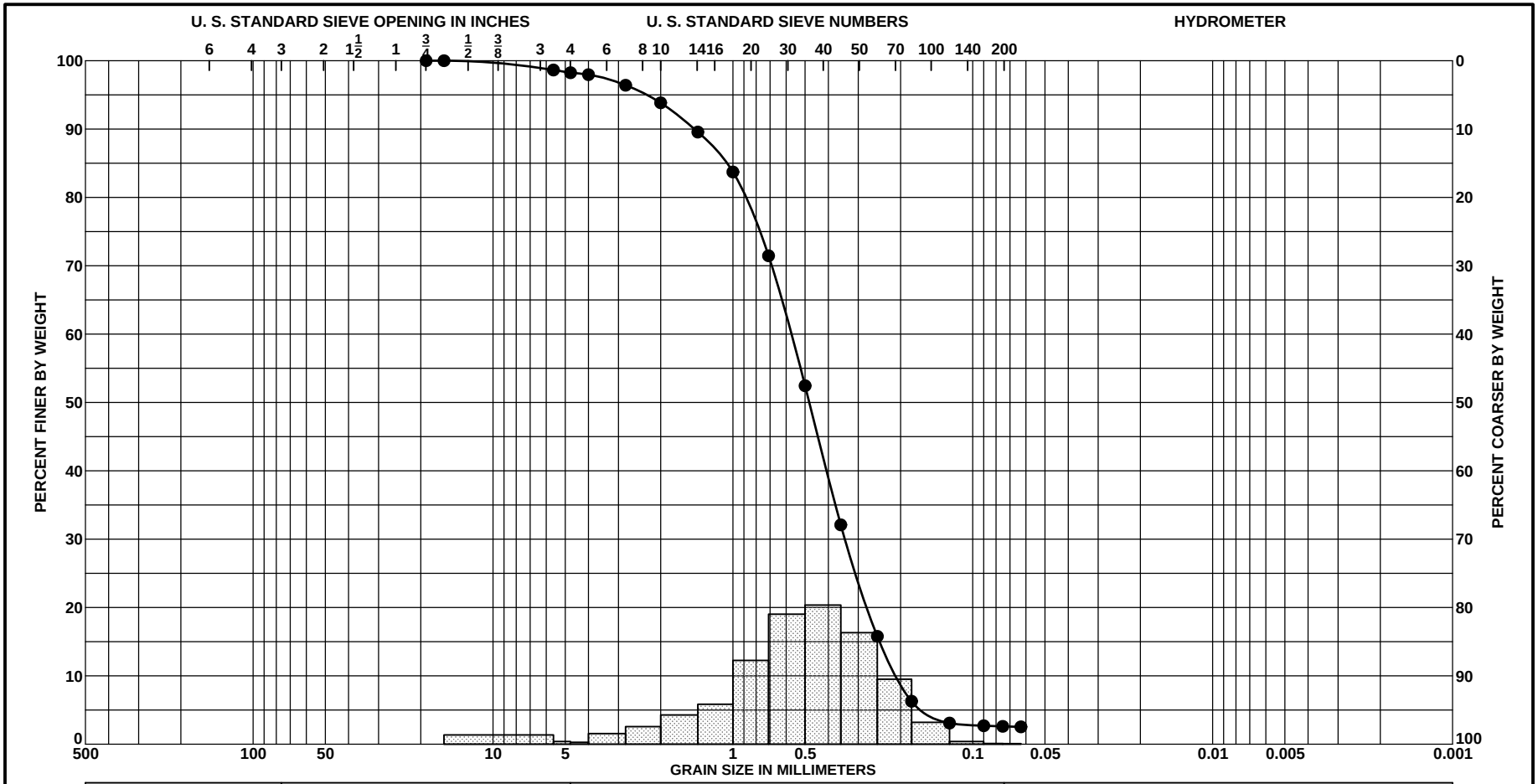


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	0							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-36
BORING ELEV.	-28.7 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

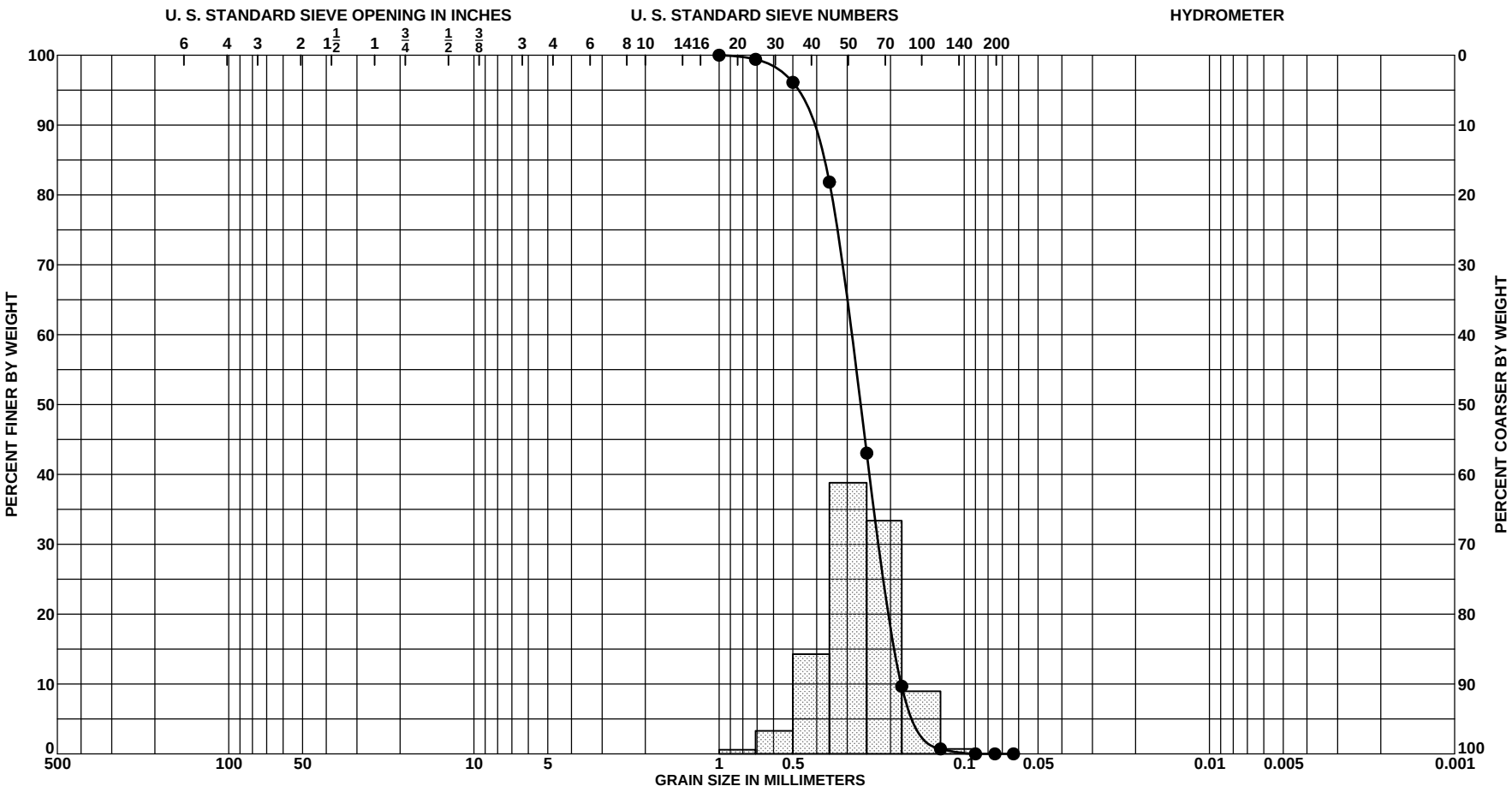


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	7.0 to 7.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 8/2	1							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, pale yellow (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-36
BORING ELEV.	-28.7 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-36
BORING ELEV.	-28.7 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-36 @ 1 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,196	524,956	State Plane, FLE (U.S. Ft.)	-29.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 2.05 #230 - 2.02		92.40	0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	6.40	6.40
5/8	-4.00	16.00	2.83	9.23
#3.5	-2.50	5.60	1.06	10.29
#4	-2.25	4.75	0.35	10.65
#5	-2.00	4.00	0.33	10.98
#7	-1.50	2.80	1.17	12.15
#10	-1.00	2.00	1.38	13.53
#14	-0.50	1.40	3.25	16.79
#18	0.00	1.00	5.10	21.89
#25	0.50	0.71	10.36	32.25
#35	1.00	0.50	15.97	48.22
#45	1.50	0.36	18.03	66.25
#60	2.00	0.25	16.84	83.09
#80	2.50	0.18	10.52	93.61
#120	3.00	0.13	3.85	97.47
#170	3.50	0.09	0.38	97.85
#200	3.75	0.08	0.10	97.95
#230	4.00	0.06	0.03	97.98

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.68	2.04	1.76	1.05	0.15	-0.62	

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.51	0.70	1.05	0.48	1.4	-0.87	5.03

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-36 @ 4 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,196	524,956	State Plane, FLE (U.S. Ft.)	-32.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 2.46 #230 - 2.44			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.28	0.28
#4	-2.25	4.75	0.19	0.48
#5	-2.00	4.00	0.26	0.74
#7	-1.50	2.80	0.99	1.73
#10	-1.00	2.00	1.51	3.24
#14	-0.50	1.40	3.29	6.53
#18	0.00	1.00	5.12	11.65
#25	0.50	0.71	11.34	22.98
#35	1.00	0.50	21.03	44.01
#45	1.50	0.36	22.83	66.84
#60	2.00	0.25	16.51	83.35
#80	2.50	0.18	9.72	93.07
#120	3.00	0.13	3.97	97.04
#170	3.50	0.09	0.45	97.49
#200	3.75	0.08	0.05	97.54
#230	4.00	0.06	0.02	97.56

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.74	2.03	1.75	1.13	0.55	0.19	-0.73

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.04	0.49	1.13	0.46	0.97	-0.72	4.38

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-36 @ 7 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,196	524,956	State Plane, FLE (U.S. Ft.)	-35.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 8/2	#200 - 2.61 #230 - 2.54			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.36	1.36
#4	-2.25	4.75	0.40	1.76
#5	-2.00	4.00	0.28	2.04
#7	-1.50	2.80	1.55	3.59
#10	-1.00	2.00	2.57	6.16
#14	-0.50	1.40	4.28	10.44
#18	0.00	1.00	5.84	16.28
#25	0.50	0.71	12.26	28.55
#35	1.00	0.50	19.01	47.56
#45	1.50	0.36	20.35	67.91
#60	2.00	0.25	16.30	84.22
#80	2.50	0.18	9.50	93.72
#120	3.00	0.13	3.19	96.91
#170	3.50	0.09	0.39	97.30
#200	3.75	0.08	0.09	97.39
#230	4.00	0.06	0.07	97.46

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.70	1.99	1.72	1.06	0.36	-0.02	-1.23

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.89	0.54	1.06	0.48	1.13	-0.99	4.71

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-36 @ 1 ft Post-Carbonate

Analysis Date: 8/3/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
950,196	524,956	State Plane, FLE (U.S. Ft.)	-29.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 0.00 #230 - 0.00			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#18	0.00	1.00	0.00	0.00
#25	0.50	0.71	0.59	0.59
#35	1.00	0.50	3.30	3.89
#45	1.50	0.36	14.27	18.16
#60	2.00	0.25	38.80	56.96
#80	2.50	0.18	33.37	90.33
#120	3.00	0.13	8.96	99.29
#170	3.50	0.09	0.71	100.00
#200	3.75	0.08	0.00	100.00
#230	4.00	0.06	0.00	100.00

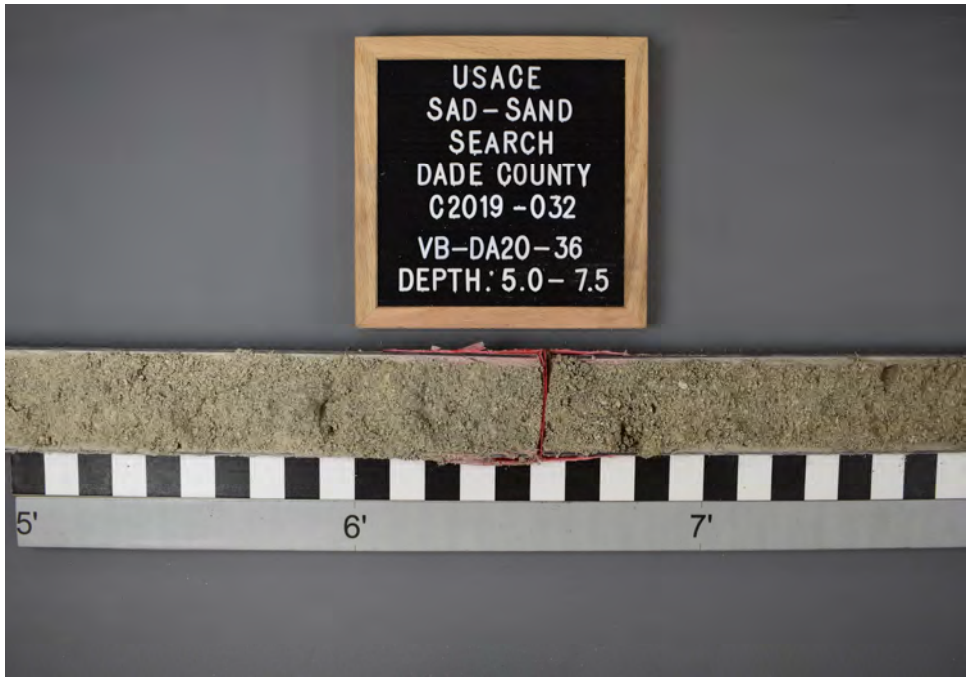
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.76	2.41	2.27	1.91	1.59	1.42	1.04

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.90	0.27	1.91	0.27	0.5	-0.27	3.32

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–36
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–36
DEPTH: 2.5 – 5.0
3'
4'
5'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–36
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–36
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD-SAND
SEARCH
DADE COUNTY
C2019-032
VB-DA20-36
DEPTH: 10.0 -11.5
10'
11'
12'

VB-DA20-37

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-37

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-37	LOCATION COORDINATES: X = 946,540 Y = 526,521	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 0 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -26.3 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: N/A	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-26.3	0.0								
-27.0	0.7		SILT, inorganic-L, mostly silt, few fine to medium-grained sand-sized carbonate, moist, 2.5Y 7/1 light gray (ML)						
			SAND, well-graded, mostly fine to coarse-grained sand-sized carbonate, few shell, trace silt, moist, 2.5Y 6/1 gray (SW)						
			At El. -29.0 Ft., mostly fine to coarse-grained sand-sized carbonate, few shell, few fine gravel-sized limestone, trace silt, moist, 2.5Y 7/2 light gray						
			At El. -30.2 Ft., mostly fine to coarse-grained sand-sized carbonate, few shell, few fine gravel-sized limestone, trace silt, moist, 2.5Y 5/1 gray						
-31.3	5.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized carbonate, few shell, few gravel to cobble-sized limestone, moist, 2.5Y 8/1 white (SP)						
-37.8	11.5		LIMESTONE, 2.5Y 8/1 white						

0 5 10 15

(Continued)

Boring Designation VB-DA20-37

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 946,540 Y = 526,521	ELEVATION TOP OF BORING: -26.3 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-44.0	17.7		No Recovery						
-46.3	20.0						-46.3		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–37
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–37
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–37
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–37
DEPTH: 7.5 –10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 37
DEPTH: 10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 37
DEPTH: 12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 37
DEPTH: 15.0 – 17.7
15'
16'
17'

VB-DA20-38

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-38

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-38	LOCATION COORDINATES: X = 949,467 Y = 531,077	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 2 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -26.6 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 84 %	
8. TOTAL DEPTH OF BORING: 18.2 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-26.6	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace fine gravel-sized limestone, trace silt, moist, 2.5Y 7/1 light gray (SW)				-28.6		
					1				
							-30.6		
-31.1	4.5				2				
			LIMESTONE						

0 5 10 15

(Continued)

Boring Designation VB-DA20-38

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 949,467 Y = 531,077	ELEVATION TOP OF BORING: -26.6 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-41.9	15.3		No Recovery						
-44.8	18.2		BORING TERMINATED IN REFUSAL				-44.8		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

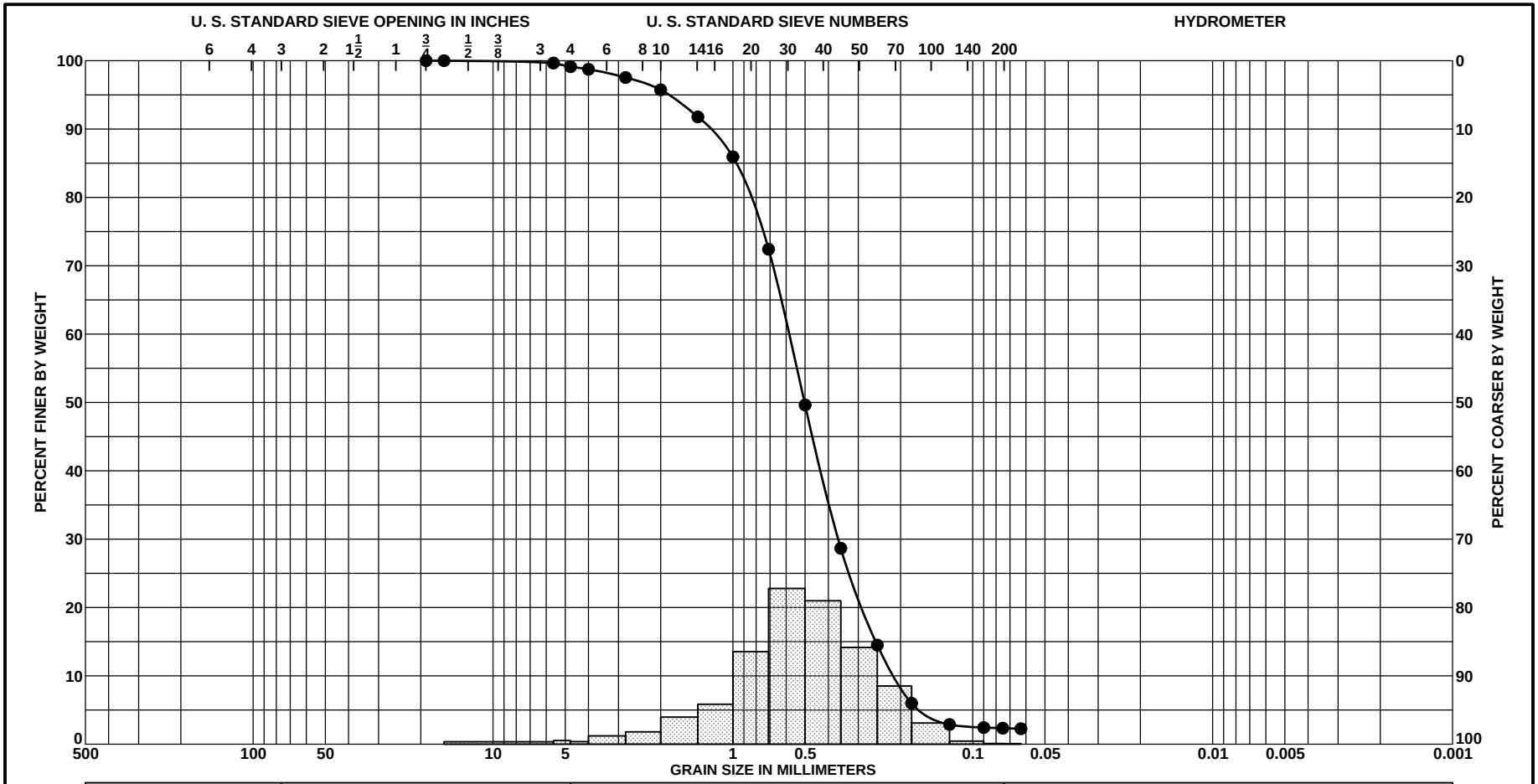
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

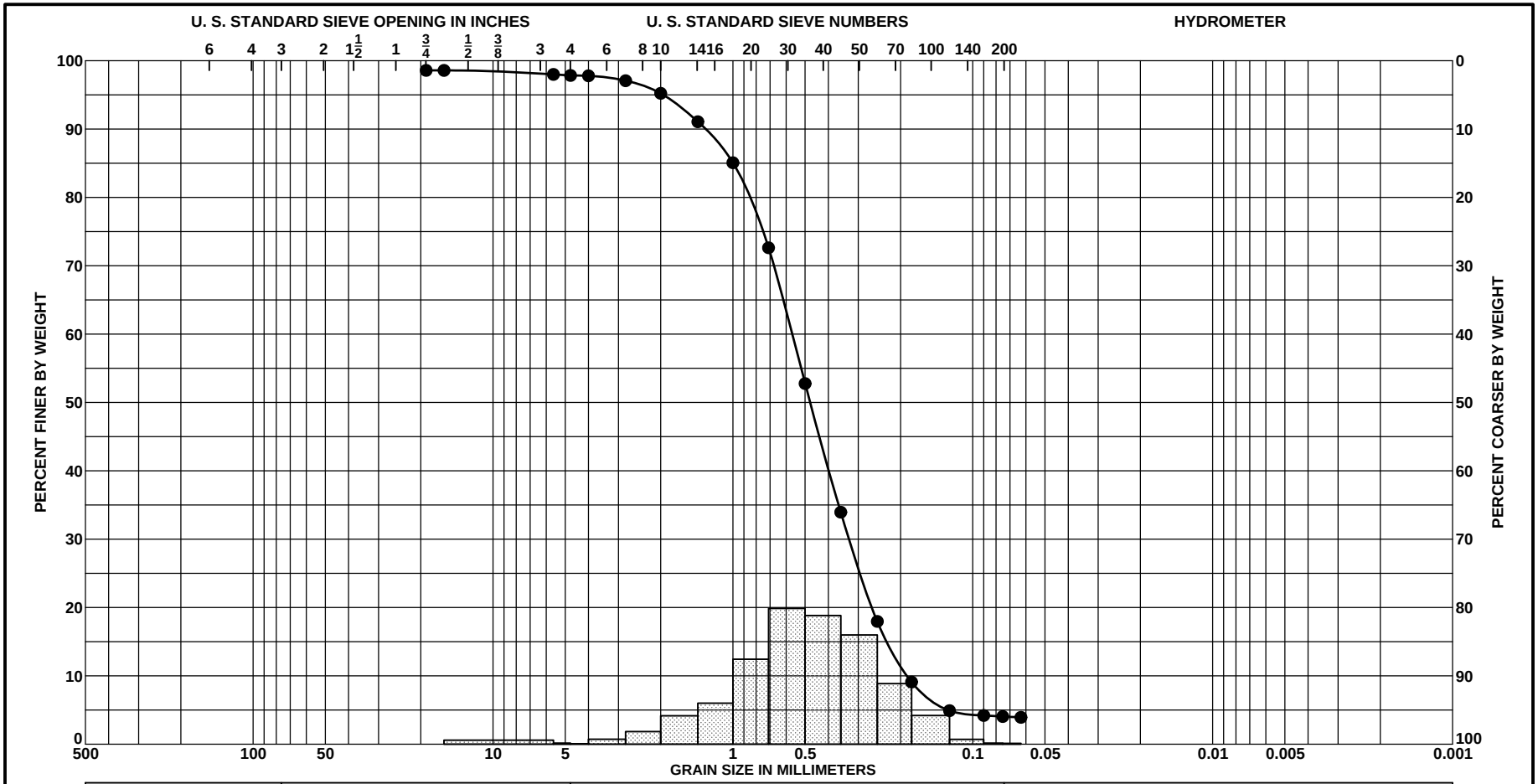


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 7/1	0							
		medium-grained sand-sized									
		carbonate, few shell, trace fine									
		gravel-sized limestone,									
		trace silt, light gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-38
BORING ELEV.	-26.6 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 7/1	1							
		medium-grained sand-sized									
		carbonate, few shell, trace fine									
		gravel-sized limestone,									
		trace silt, light gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-38
BORING ELEV.	-26.6 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-38 @ 2 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,467	531,077	State Plane, FLE (U.S. Ft.)	-28.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 7/1	#200 - 2.34 #230 - 2.26			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.34	0.34
#4	-2.25	4.75	0.53	0.88
#5	-2.00	4.00	0.38	1.25
#7	-1.50	2.80	1.21	2.47
#10	-1.00	2.00	1.79	4.26
#14	-0.50	1.40	3.96	8.22
#18	0.00	1.00	5.84	14.06
#25	0.50	0.71	13.52	27.59
#35	1.00	0.50	22.78	50.37
#45	1.50	0.36	20.97	71.34
#60	2.00	0.25	14.16	85.50
#80	2.50	0.18	8.51	94.01
#120	3.00	0.13	3.11	97.12
#170	3.50	0.09	0.45	97.57
#200	3.75	0.08	0.09	97.66
#230	4.00	0.06	0.08	97.74

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.66	1.95	1.63	0.99	0.40	0.07	-0.91

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.91	0.53	0.99	0.50	1.01	-0.69	4.31

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-38 @ 4 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
949,467	531,077	State Plane, FLE (U.S. Ft.)	-30.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 7/1	#200 - 4.05 #230 - 3.93			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	1.42	1.42
5/8	-4.00	16.00	0.00	1.42
#3.5	-2.50	5.60	0.59	2.00
#4	-2.25	4.75	0.15	2.16
#5	-2.00	4.00	0.05	2.21
#7	-1.50	2.80	0.72	2.93
#10	-1.00	2.00	1.85	4.77
#14	-0.50	1.40	4.15	8.93
#18	0.00	1.00	6.00	14.93
#25	0.50	0.71	12.44	27.37
#35	1.00	0.50	19.87	47.24
#45	1.50	0.36	18.82	66.06
#60	2.00	0.25	15.98	82.04
#80	2.50	0.18	8.87	90.90
#120	3.00	0.13	4.19	95.09
#170	3.50	0.09	0.70	95.80
#200	3.75	0.08	0.15	95.95
#230	4.00	0.06	0.12	96.07

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.99	2.11	1.78	1.07	0.40	0.04	-0.97

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.91	0.53	1.07	0.48	1.03	-0.39	4.17

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–38
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–38
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–38
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–38
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 38
DEPTH: 10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 38
DEPTH: 12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 38
DEPTH: 15.0 –15.3
15'
16'
17'

VB-DA20-39

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-39

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-39	LOCATION COORDINATES: X = 954,382 Y = 536,518	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 2 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -49.9 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 82 %	
8. TOTAL DEPTH OF BORING: 10.1 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-49.9	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace shell, trace silt, moist, 5Y 6/2 light olive gray (SW)				-51.9		
					1				
							-54.9		
					2				
-55.9	6.0								
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, few fine gravel-sized limestone, moist, 10YR 5/2 grayish brown (SM)						
-58.2	8.3								
			No Recovery						
-60.0	10.1						-60.0		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION

(Continued)

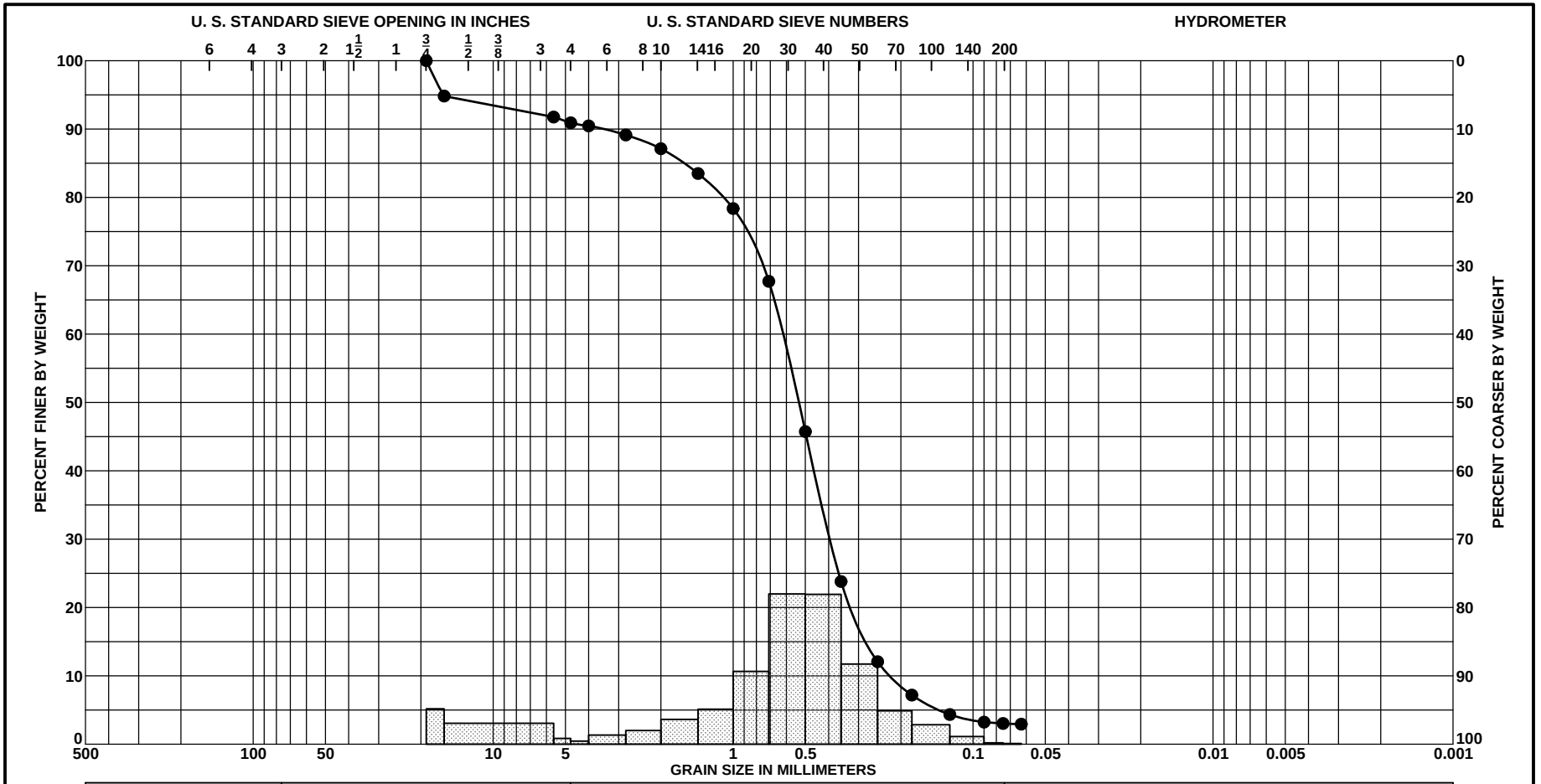
Boring Designation VB-DA20-39

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 954,382 Y = 536,518	ELEVATION TOP OF BORING: -49.9 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			1 2.0/2.2 SW* 2 5.0/5.2 SW* *Lab visual classification based on gradation curve						

15
20
25
30
35

SAJ FORM 1836-A
JUN 02

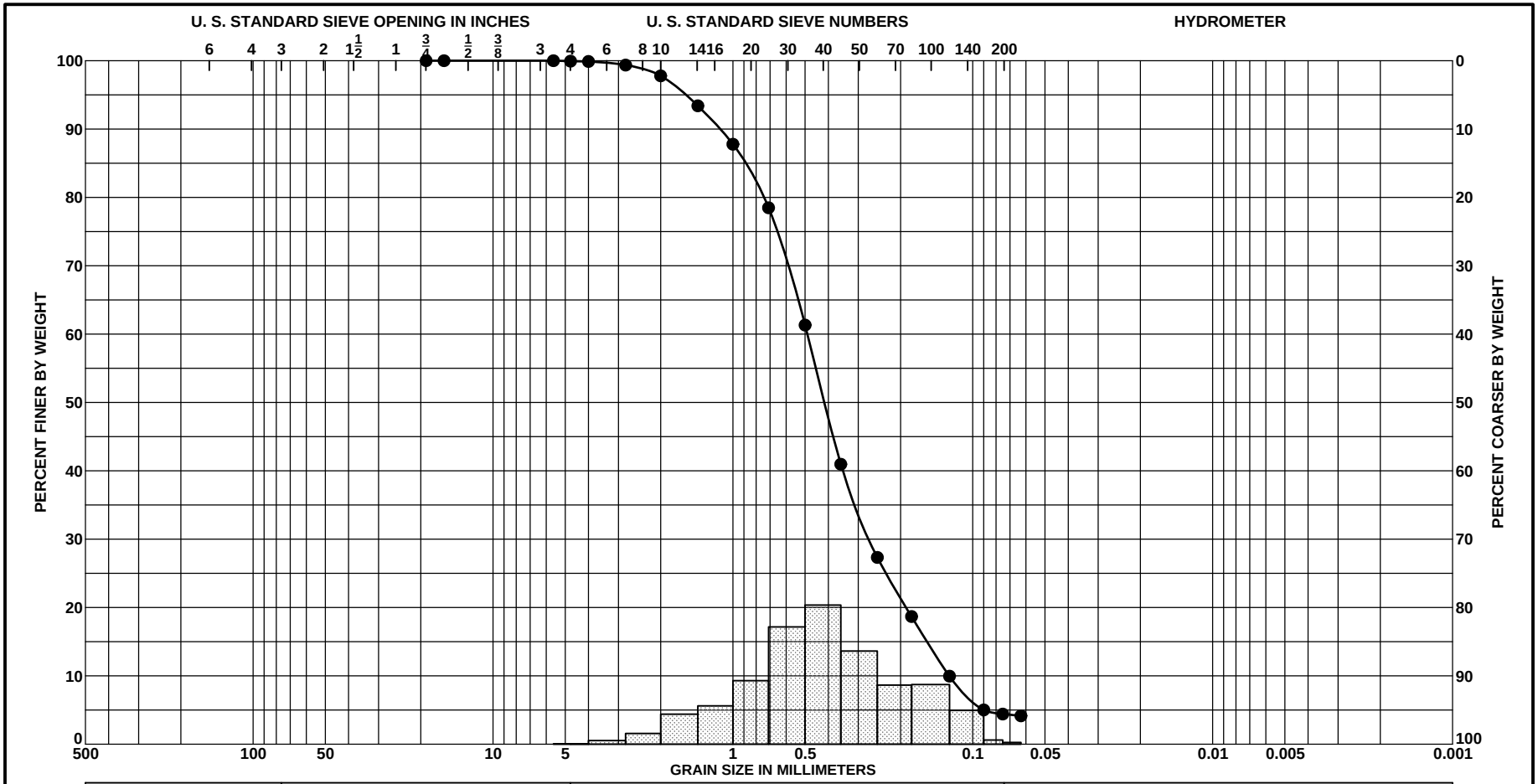


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/2	0							
		medium-grained sand-sized									
		carbonate, trace									
		shell, trace silt, light olive gray									
		(SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-39
BORING ELEV.	-49.9 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		shell, trace silt, light olive gray									
		(SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-39
BORING ELEV.	-49.9 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-39 @ 2 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,382	536,518	State Plane, FLE (U.S. Ft.)	-51.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/2	#200 - 3.04 #230 - 2.93			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	5.17	5.17
#3.5	-2.50	5.60	3.07	8.24
#4	-2.25	4.75	0.84	9.08
#5	-2.00	4.00	0.46	9.54
#7	-1.50	2.80	1.33	10.87
#10	-1.00	2.00	2.01	12.87
#14	-0.50	1.40	3.63	16.51
#18	0.00	1.00	5.12	21.63
#25	0.50	0.71	10.65	32.28
#35	1.00	0.50	21.99	54.27
#45	1.50	0.36	21.93	76.20
#60	2.00	0.25	11.73	87.93
#80	2.50	0.18	4.89	92.81
#120	3.00	0.13	2.84	95.66
#170	3.50	0.09	1.11	96.77
#200	3.75	0.08	0.19	96.96
#230	4.00	0.06	0.11	97.07

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.88	1.83	1.47	0.90	0.16	-0.57	-4.01

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.49	0.71	0.90	0.54	1.63	-1.43	4.84

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-39 @ 5 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,382	536,518	State Plane, FLE (U.S. Ft.)	-54.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/2	#200 - 4.41 #230 - 4.15			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.07	0.07
#5	-2.00	4.00	0.05	0.11
#7	-1.50	2.80	0.53	0.64
#10	-1.00	2.00	1.57	2.22
#14	-0.50	1.40	4.39	6.60
#18	0.00	1.00	5.62	12.22
#25	0.50	0.71	9.30	21.52
#35	1.00	0.50	17.16	38.68
#45	1.50	0.36	20.36	59.04
#60	2.00	0.25	13.63	72.67
#80	2.50	0.18	8.64	81.32
#120	3.00	0.13	8.73	90.05
#170	3.50	0.09	4.94	94.98
#200	3.75	0.08	0.61	95.59
#230	4.00	0.06	0.26	95.85

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.51	2.65	2.13	1.28	0.60	0.20	-0.68

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.25	0.42	1.28	0.41	1.1	-0.12	2.79

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–39
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–39
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–39
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–39
DEPTH: 7.5 – 8.3
8'
9'
10'

VB-DA20-40

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-40

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-40	LOCATION COORDINATES: X = 954,772 Y = 537,464	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 1 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -50.4 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 80 %	
8. TOTAL DEPTH OF BORING: 9.2 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-50.4	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, moist, 10YR 6/2 light brownish gray (SW)				-52.4		
					1				
-53.4	3.0		LIMESTONE, 10YR 5/2 grayish brown						
-57.7	7.3		No Recovery						
-59.6	9.2						-59.6		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*

*Lab visual classification based on gradation

0 5 10 15

(Continued)

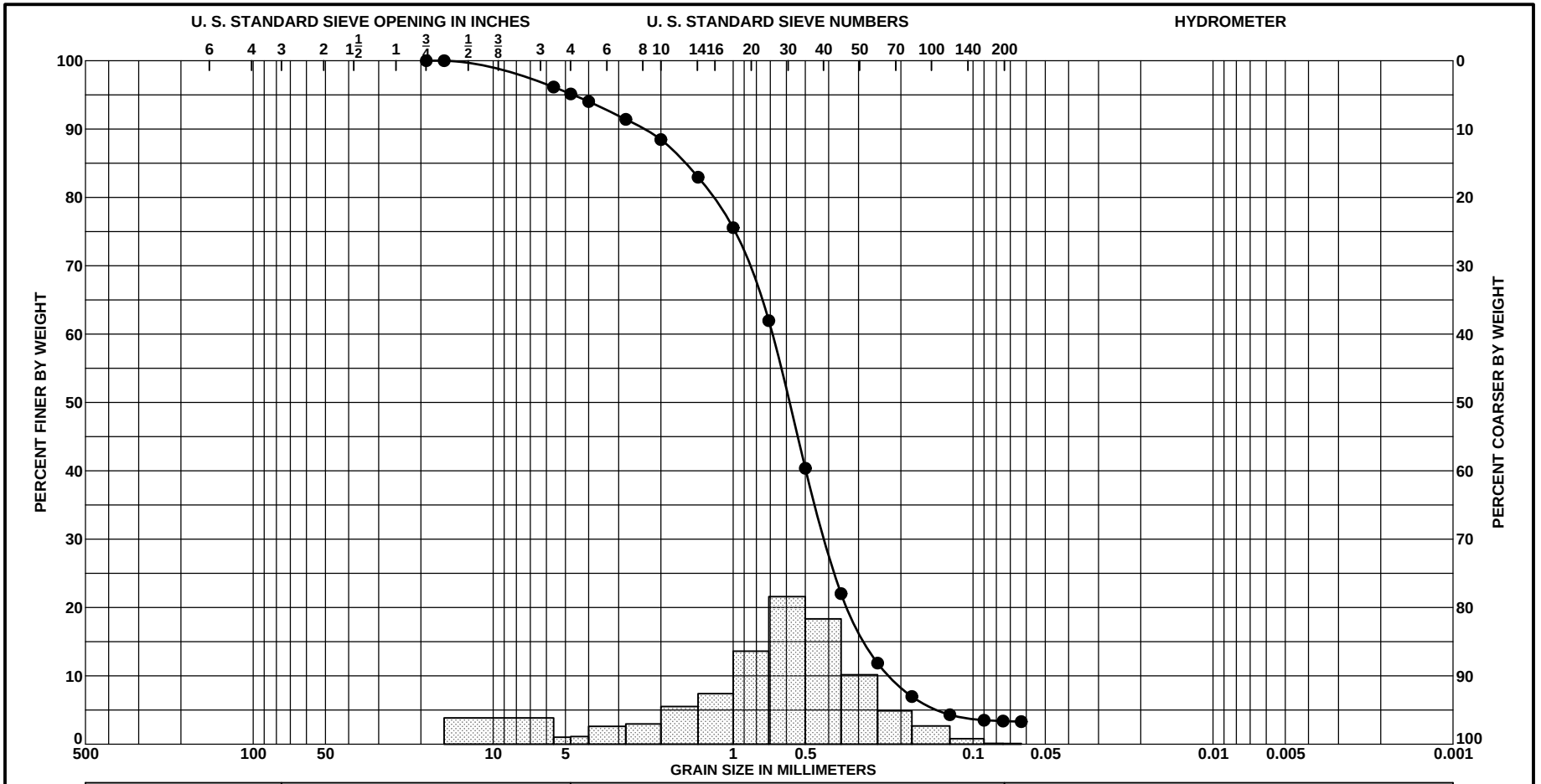
Boring Designation VB-DA20-40

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 954,772 Y = 537,464	ELEVATION TOP OF BORING: -50.4 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			curve						

15
20
25
30
35

SAJ FORM 1836-A
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	10YR 6/2	0							
		medium-grained sand-sized									
		carbonate, trace									
		silt, light brownish gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-40
BORING ELEV.	-50.4 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-40 @ 2 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,772	537,464	State Plane, FLE (U.S. Ft.)	-52.4 NAVD88

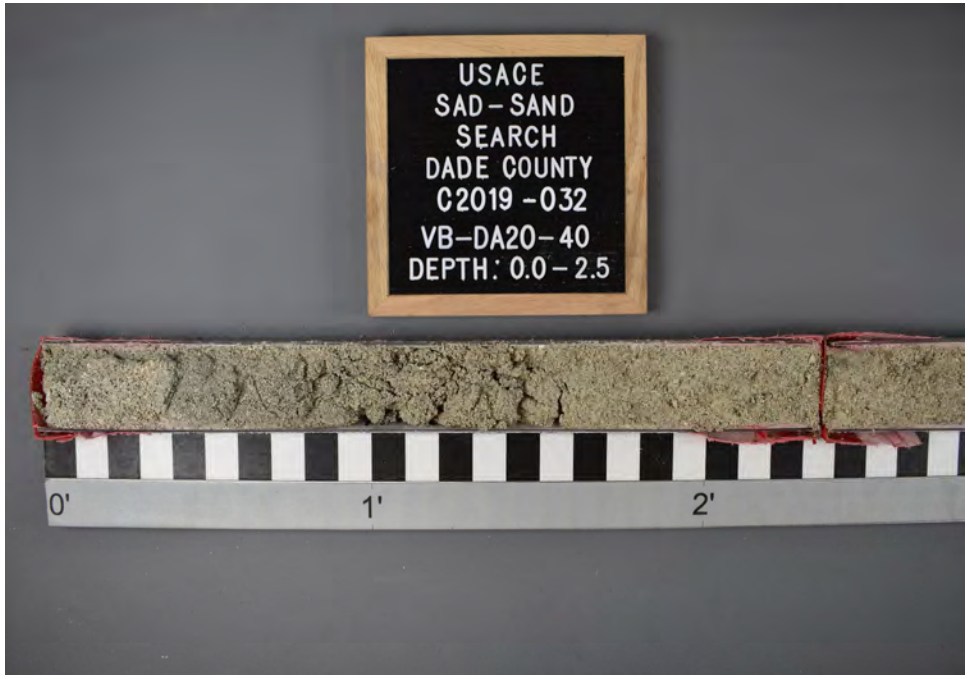
USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	10YR 6/2	#200 - 3.39 #230 - 3.30			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	3.85	3.85
#4	-2.25	4.75	1.01	4.86
#5	-2.00	4.00	1.11	5.97
#7	-1.50	2.80	2.61	8.58
#10	-1.00	2.00	2.96	11.55
#14	-0.50	1.40	5.50	17.05
#18	0.00	1.00	7.39	24.43
#25	0.50	0.71	13.61	38.04
#35	1.00	0.50	21.60	59.63
#45	1.50	0.36	18.34	77.97
#60	2.00	0.25	10.16	88.14
#80	2.50	0.18	4.89	93.02
#120	3.00	0.13	2.66	95.69
#170	3.50	0.09	0.81	96.50
#200	3.75	0.08	0.12	96.61
#230	4.00	0.06	0.09	96.70

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.87	1.80	1.42	0.78	0.02	-0.60	-2.22

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.52	0.70	0.78	0.58	1.33	-0.93	4.09

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–40
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–40
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20–40
DEPTH: 5.0 – 7.3
5'
6'
7'

VB-DA20-41

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-41

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-41	LOCATION COORDINATES: X = 954,305 Y = 540,982	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 4 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -48.4 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 87 %	
8. TOTAL DEPTH OF BORING: 16.6 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-48.4	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 5Y 7/1 light gray (SW)				-50.4		
					1				
							-52.4		
					2				
-53.7	5.3								
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, moist, 5Y 6/1 gray (SW-SM)				-54.4		
					3				
-56.4	8.0						-56.4		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, moist, 5Y 6/1 gray (SM)		4				
			At El. -59.1 Ft., mostly fine to medium-grained sand-sized carbonate, some gravel to cobble-sized limestone, little silt, moist, 5Y 6/1 gray						
-63.0	14.6								
			No Recovery						

0 5 10 15

(Continued)

Boring Designation VB-DA20-41

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT SAD-SAND	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88	
LOCATION COORDINATES X = 954,305 Y = 540,982	ELEVATION TOP OF BORING -48.4 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-65.0	16.6		BORING TERMINATED IN REFUSAL				-65.0		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

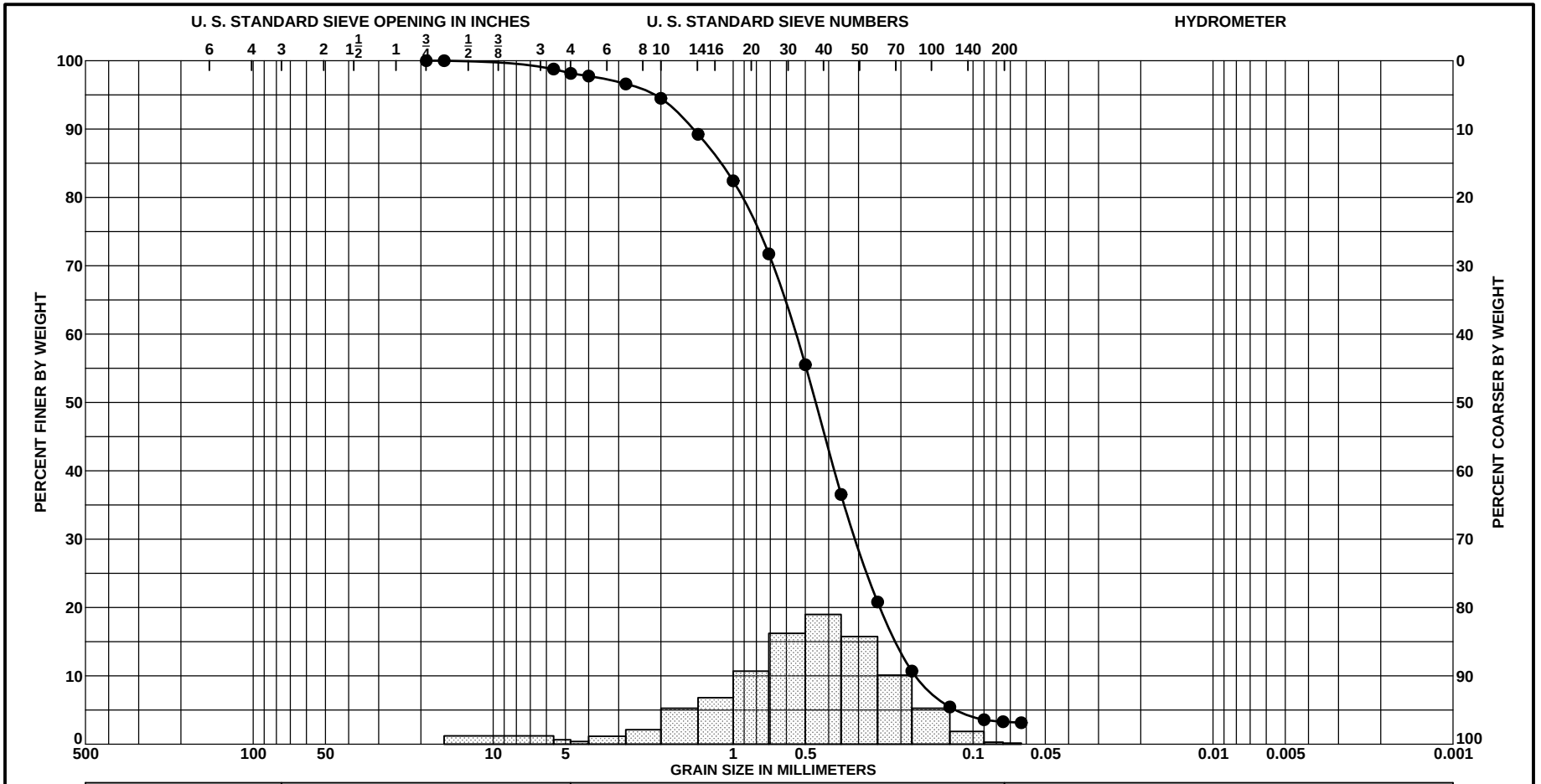
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW*
3	6.0/6.2	SW-SM*
4	8.0/8.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

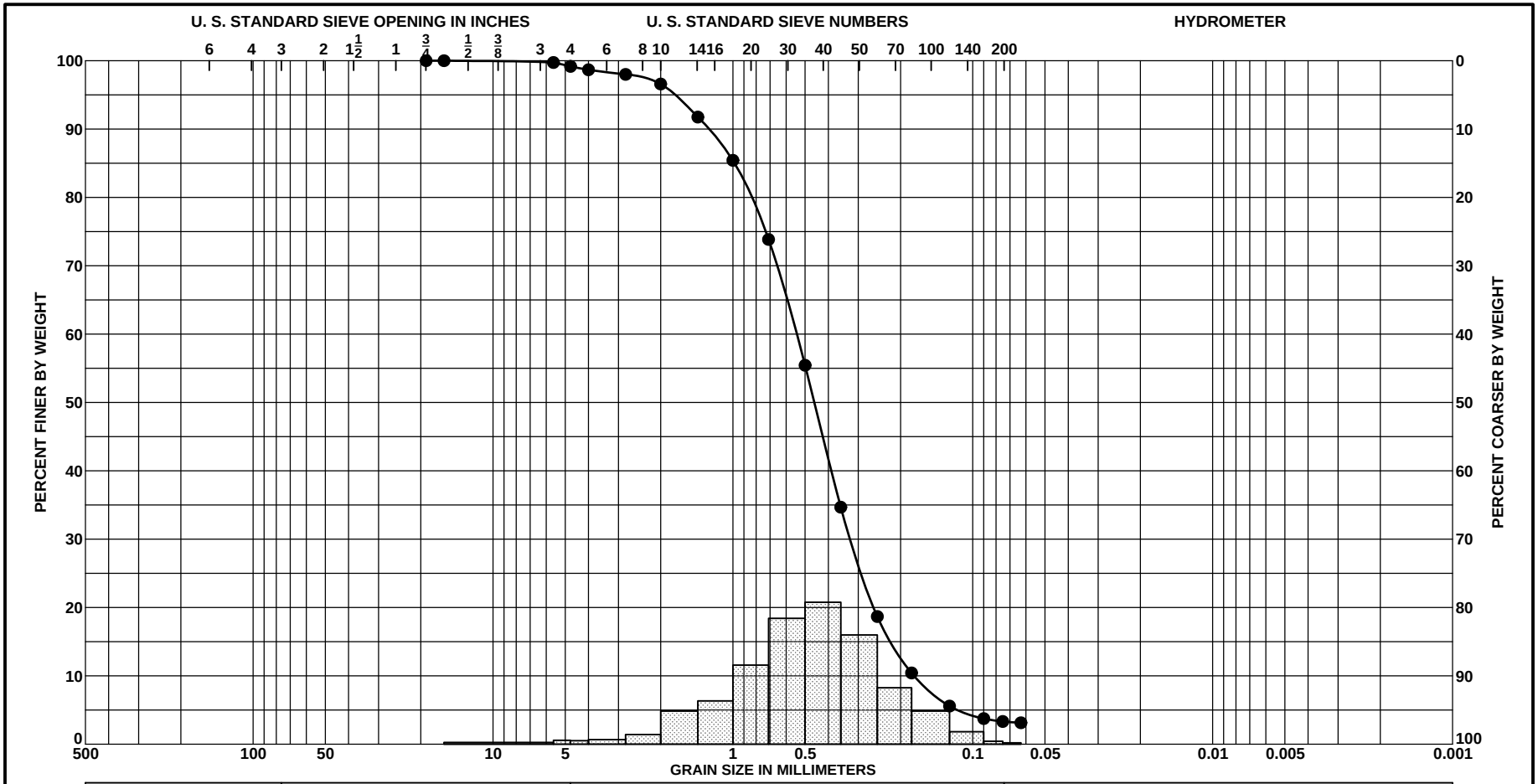


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 7/1	2							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, light gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-41
BORING ELEV.	-48.4 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

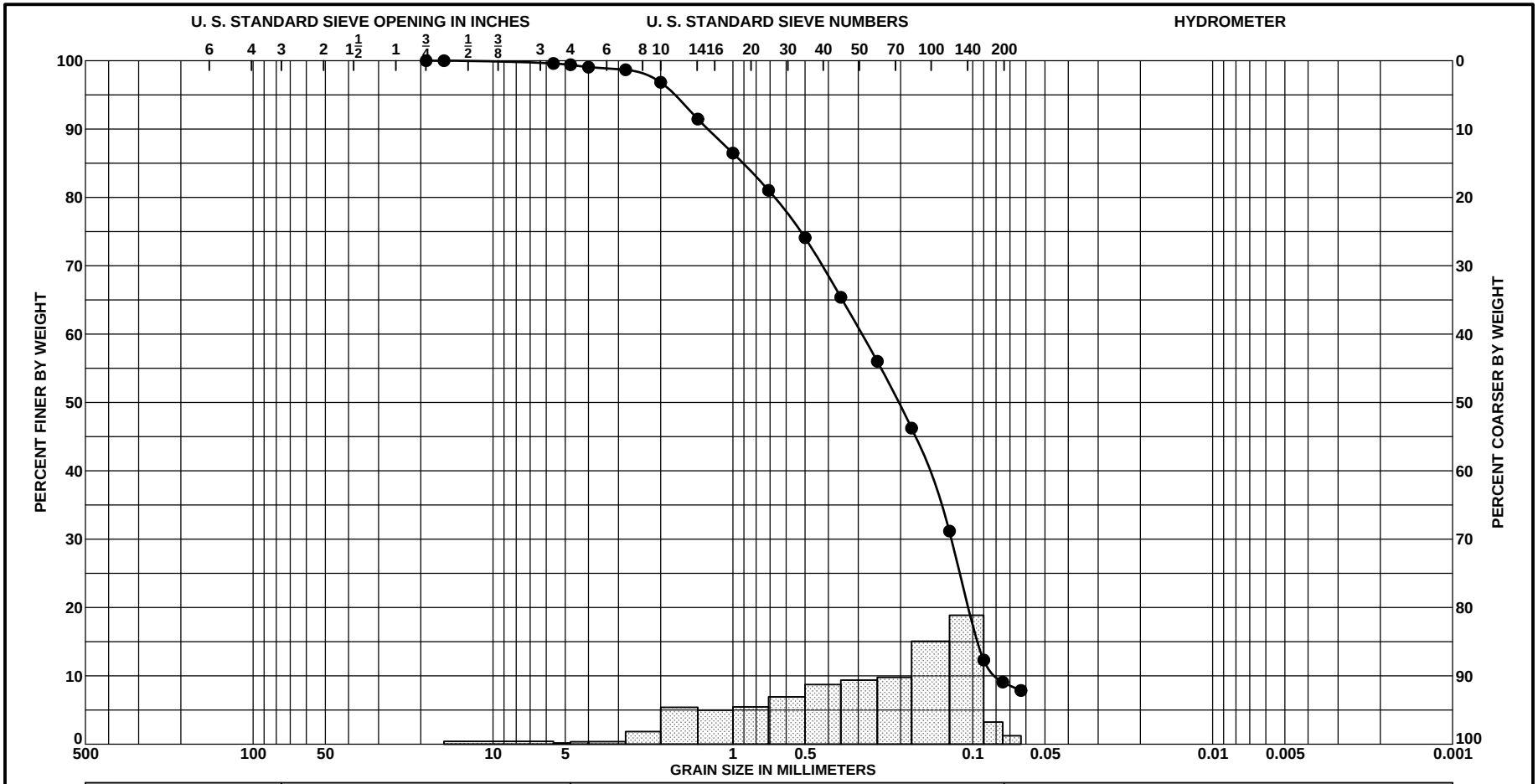


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	5Y 7/1	3							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, light gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-41
BORING ELEV.	-48.4 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

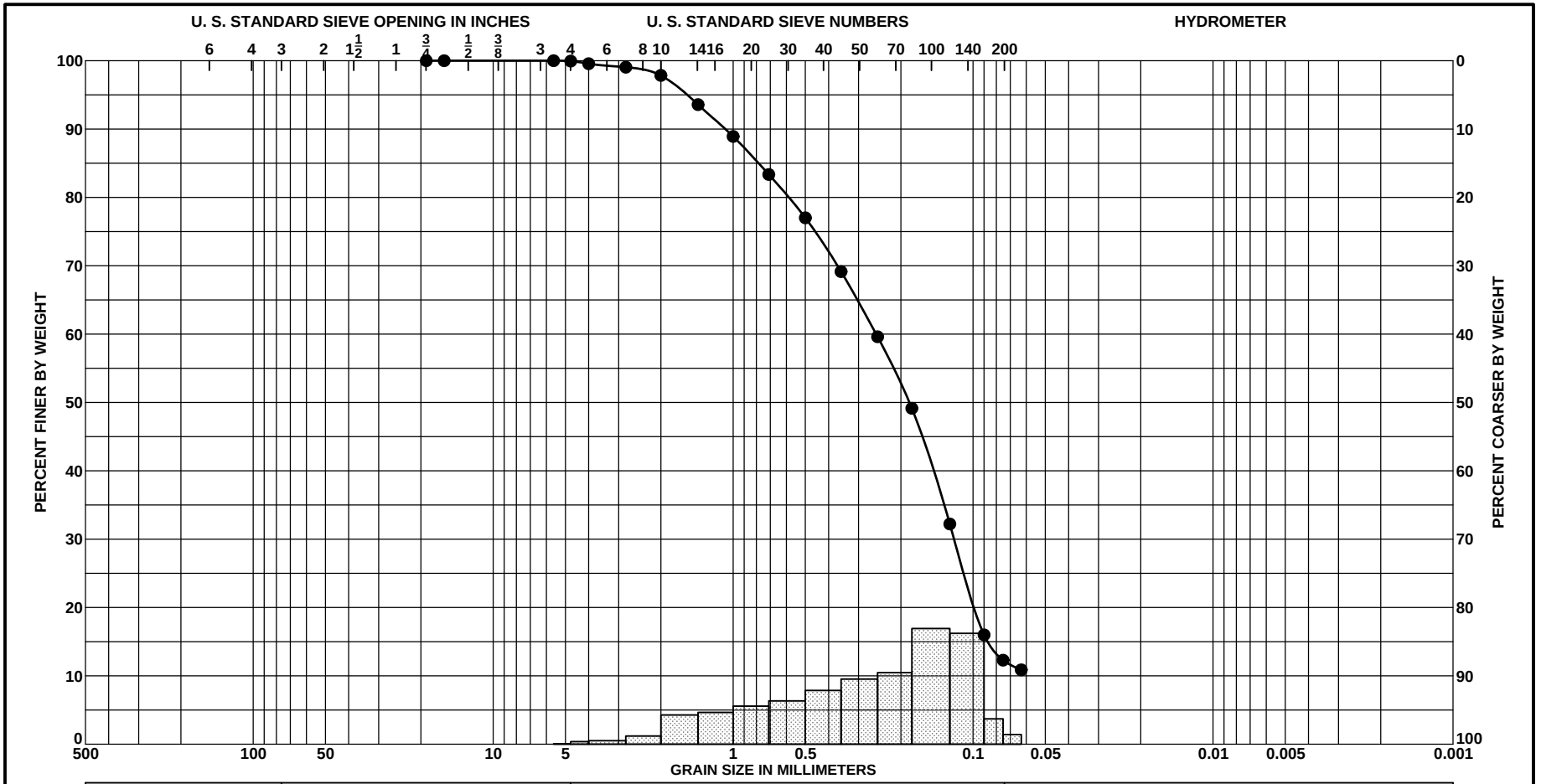


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-41
BORING ELEV.	-48.4 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	1							
		medium-grained									
		sand-sized carbonate, little silt, gray									
		(SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-41
BORING ELEV.	-48.4 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-41 @ 2 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,305	540,982	State Plane, FLE (U.S. Ft.)	-50.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 7/1	#200 - 3.29 #230 - 3.14			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.22	1.22
#4	-2.25	4.75	0.64	1.86
#5	-2.00	4.00	0.38	2.24
#7	-1.50	2.80	1.16	3.40
#10	-1.00	2.00	2.11	5.51
#14	-0.50	1.40	5.26	10.77
#18	0.00	1.00	6.81	17.58
#25	0.50	0.71	10.69	28.27
#35	1.00	0.50	16.22	44.49
#45	1.50	0.36	18.98	63.46
#60	2.00	0.25	15.74	79.20
#80	2.50	0.18	10.10	89.30
#120	3.00	0.13	5.25	94.56
#170	3.50	0.09	1.86	96.42
#200	3.75	0.08	0.29	96.71
#230	4.00	0.06	0.15	96.86

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.12	2.24	1.87	1.15	0.35	-0.12	-1.12

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.97	0.51	1.15	0.45	1.21	-0.76	4.12

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-41 @ 4 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,305	540,982	State Plane, FLE (U.S. Ft.)	-52.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 7/1	#200 - 3.32 #230 - 3.14			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.26	0.26
#4	-2.25	4.75	0.57	0.83
#5	-2.00	4.00	0.50	1.33
#7	-1.50	2.80	0.67	2.00
#10	-1.00	2.00	1.41	3.41
#14	-0.50	1.40	4.84	8.25
#18	0.00	1.00	6.33	14.58
#25	0.50	0.71	11.58	26.16
#35	1.00	0.50	18.41	44.56
#45	1.50	0.36	20.77	65.33
#60	2.00	0.25	15.99	81.32
#80	2.50	0.18	8.26	89.57
#120	3.00	0.13	4.85	94.42
#170	3.50	0.09	1.83	96.25
#200	3.75	0.08	0.43	96.68
#230	4.00	0.06	0.19	96.86

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.16	2.16	1.80	1.13	0.45	0.06	-0.84

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.03	0.49	1.13	0.46	1.08	-0.47	3.85

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-41 @ 6 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,305	540,982	State Plane, FLE (U.S. Ft.)	-54.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 9.08 #230 - 7.85			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.41	0.41
#4	-2.25	4.75	0.18	0.59
#5	-2.00	4.00	0.36	0.94
#7	-1.50	2.80	0.38	1.32
#10	-1.00	2.00	1.84	3.16
#14	-0.50	1.40	5.38	8.55
#18	0.00	1.00	4.98	13.52
#25	0.50	0.71	5.45	18.97
#35	1.00	0.50	6.92	25.90
#45	1.50	0.36	8.72	34.62
#60	2.00	0.25	9.36	43.98
#80	2.50	0.18	9.78	53.76
#120	3.00	0.13	15.06	68.82
#170	3.50	0.09	18.87	87.69
#200	3.75	0.08	3.23	90.92
#230	4.00	0.06	1.23	92.15

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.40	3.16	2.31	0.94	0.23	-0.83

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.78	0.29	2.31	0.20	1.44	-0.75	2.82

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-41 @ 8 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,305	540,982	State Plane, FLE (U.S. Ft.)	-56.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 12.29 #230 - 10.88			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.06	0.06
#5	-2.00	4.00	0.38	0.44
#7	-1.50	2.80	0.51	0.95
#10	-1.00	2.00	1.20	2.15
#14	-0.50	1.40	4.28	6.42
#18	0.00	1.00	4.65	11.08
#25	0.50	0.71	5.57	16.65
#35	1.00	0.50	6.34	22.99
#45	1.50	0.36	7.87	30.85
#60	2.00	0.25	9.54	40.39
#80	2.50	0.18	10.47	50.86
#120	3.00	0.13	16.93	67.78
#170	3.50	0.09	16.22	84.00
#200	3.75	0.08	3.71	87.71
#230	4.00	0.06	1.41	89.12

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.50	3.22	2.46	1.13	0.44	-0.67

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.87	0.27	2.46	0.18	1.36	-0.71	2.61

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 41
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 41
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 41
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 41
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–41
DEPTH: 10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–41
DEPTH: 12.5 –14.6
13'
14'
15'

VB-DA20-42

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-42

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-42
LOCATION COORDINATES: X = 953,875 Y = 543,948
3. DRILLING AGENCY: Amdrill
CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED; DEG. FROM VERTICAL; BEARING
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 15.0 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.); HORIZONTAL: NAD83; VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 5; UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-28-20; COMPLETED: 06-28-20
16. ELEVATION TOP OF BORING: -44.7 Ft.
17. TOTAL RECOVERY FOR BORING: 92 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-44.7	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace shell, trace silt, moist, 5Y 6/2 light olive gray (SW)				-46.7		
					1				
-48.7	4.0						-48.7		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 6/2 light olive gray (SW-SM)		2				
-50.7	6.0						-50.7		
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace shell, trace silt, moist, 5Y 6/2 light olive gray (SW)		3		-52.7		
					4				
-54.7	10.0						-54.7		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 6/2 light olive gray (SW-SM)		5				
-56.4	11.7								
			LIMESTONE, 2.5Y 5/1 gray						
-57.8	13.1								
			SAND, silty, mostly fine-grained sand-sized carbonate, little silt, moist, 2.5Y 6/1 gray (SM)						
-58.6	13.9		No Recovery						
-59.7	15.0						-59.7		

0 5 10 15

(Continued)

Boring Designation VB-DA20-42

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 953,875 Y = 543,948	ELEVATION TOP OF BORING: -44.7 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

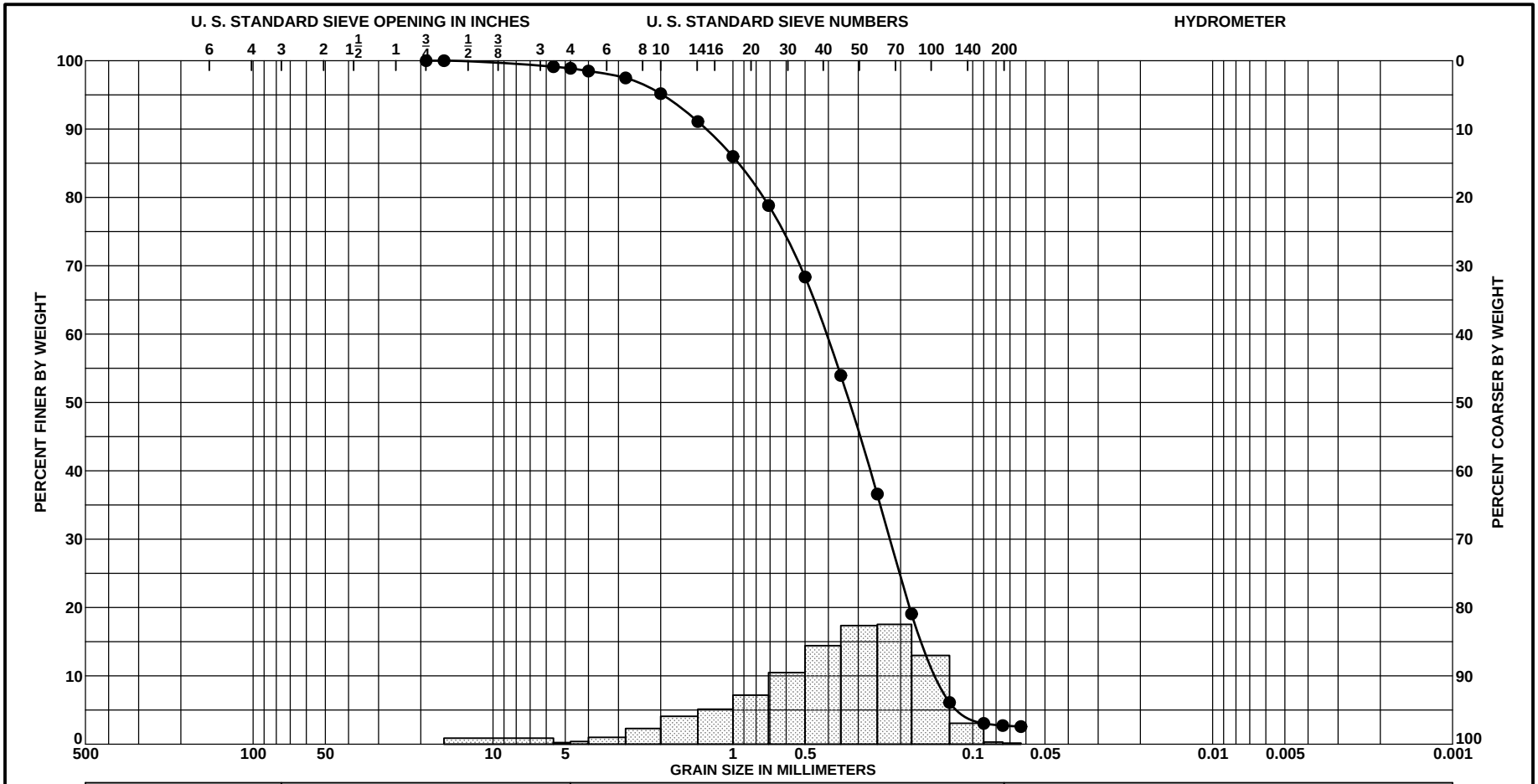
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW-SM*
3	6.0/6.2	SW*
4	8.0/8.2	SW*
5	10.0/10.2	SW-SM*

*Lab visual classification based on gradation curve

15 20 25 30 35



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		shell, trace silt, light olive gray									
		(SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-42
BORING ELEV.	-44.7 Ft., NAVD88
DATE	9/4/2020

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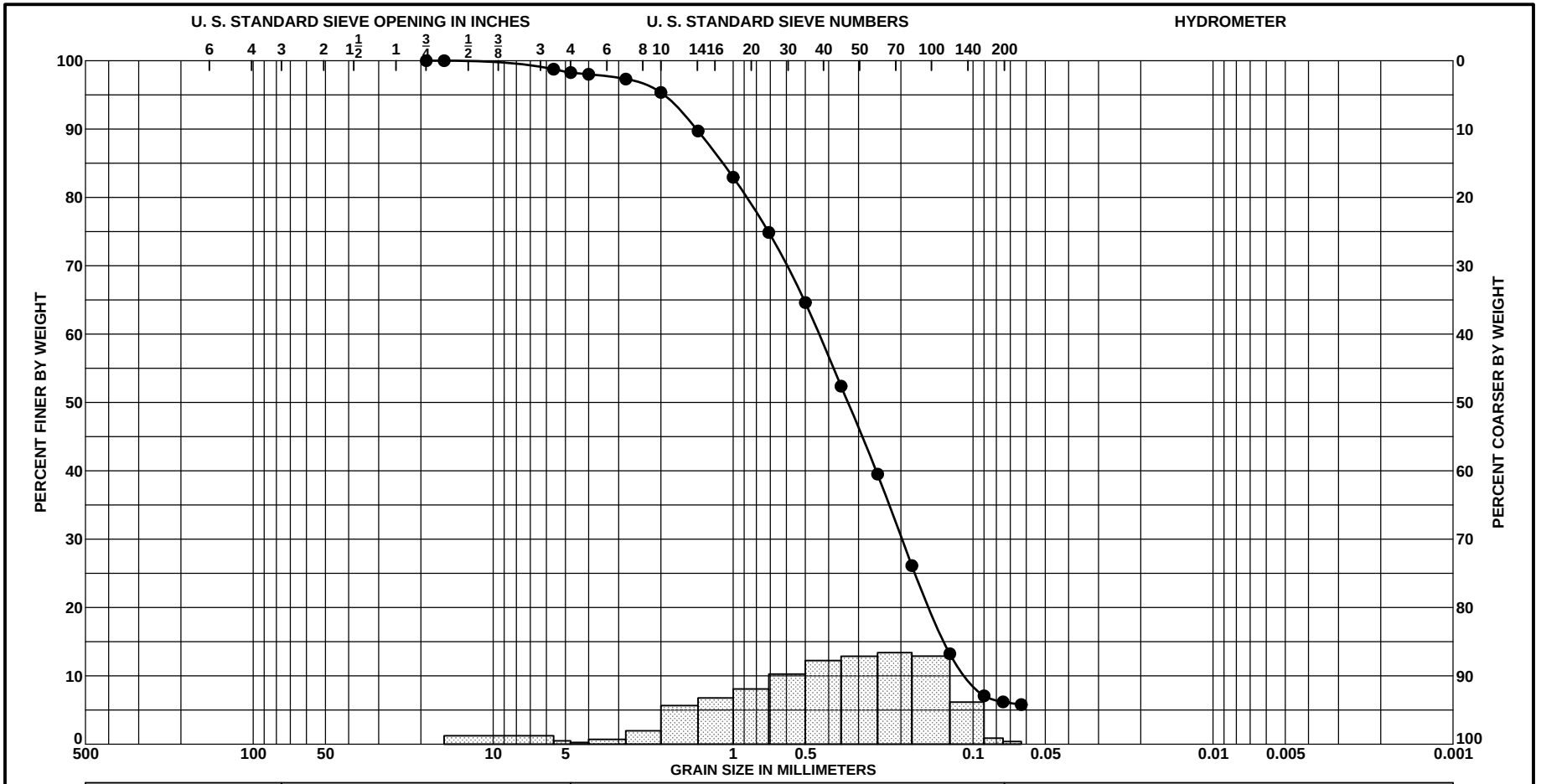

Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/2	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few silt, trace shell,									
		light olive gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-42
BORING ELEV.	-44.7 Ft., NAVD88
DATE	9/4/2020

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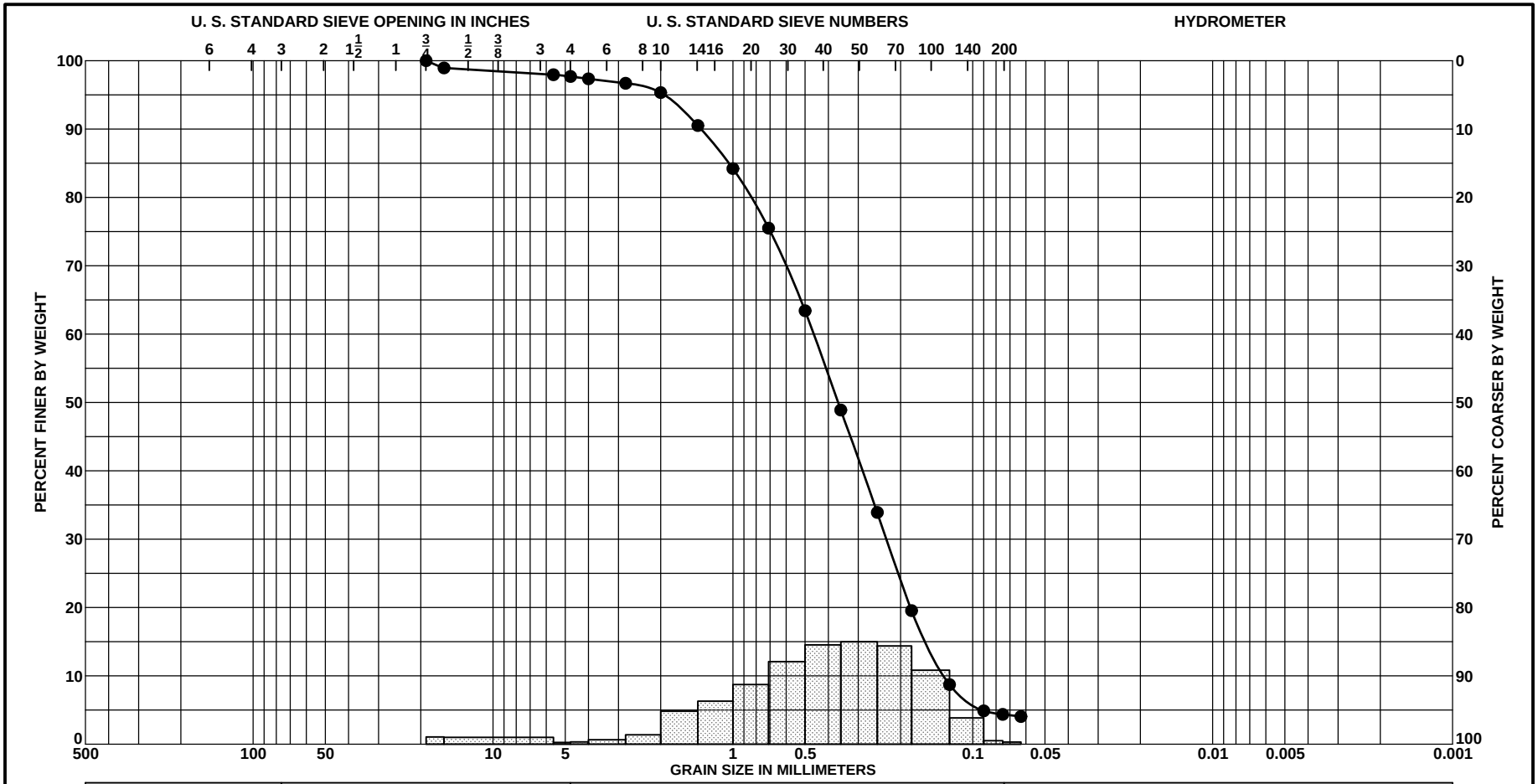

Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/2	2							
		medium-grained sand-sized									
		carbonate, trace									
		shell, trace silt, light olive gray									
		(SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-42
BORING ELEV.	-44.7 Ft., NAVD88
DATE	9/4/2020

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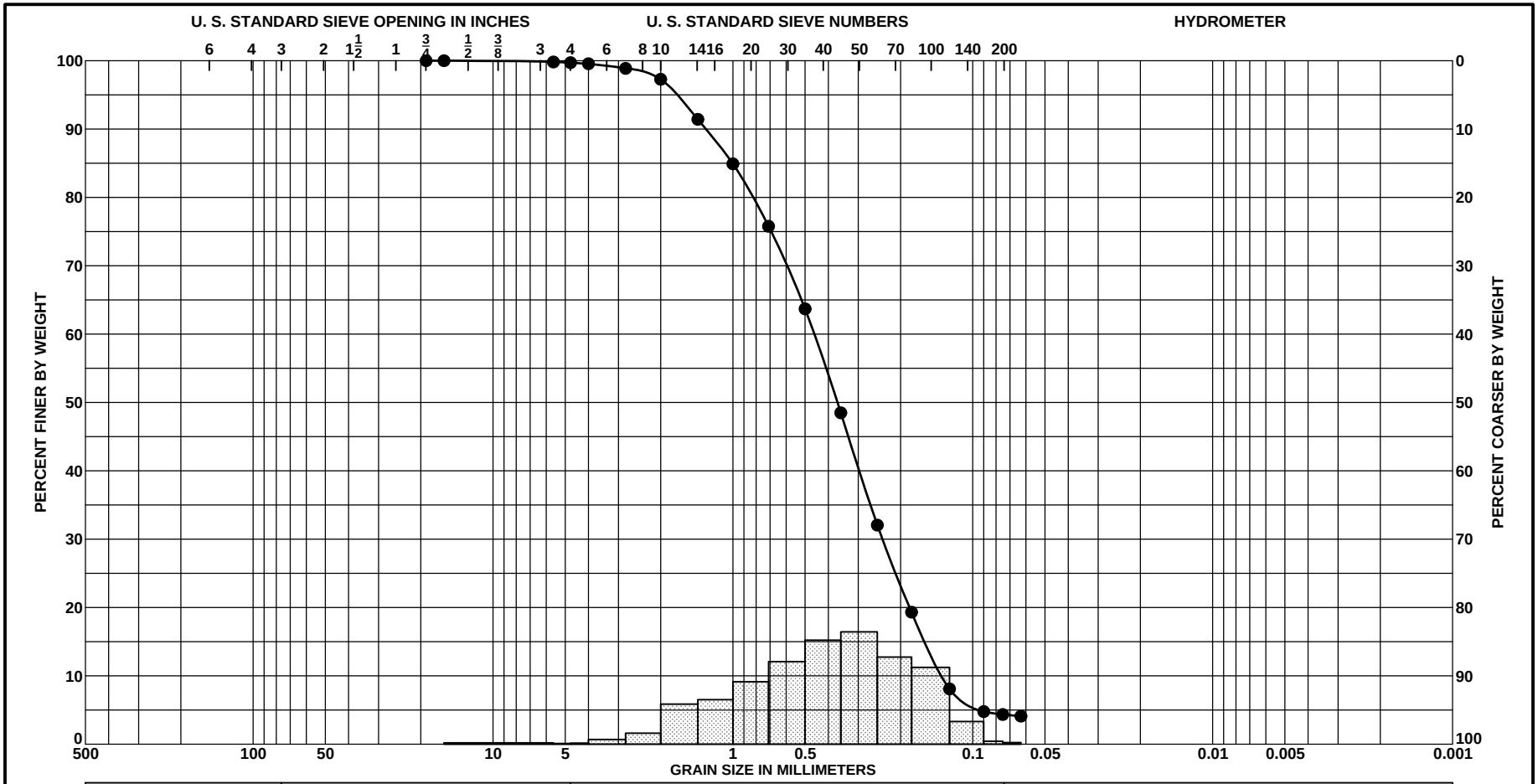
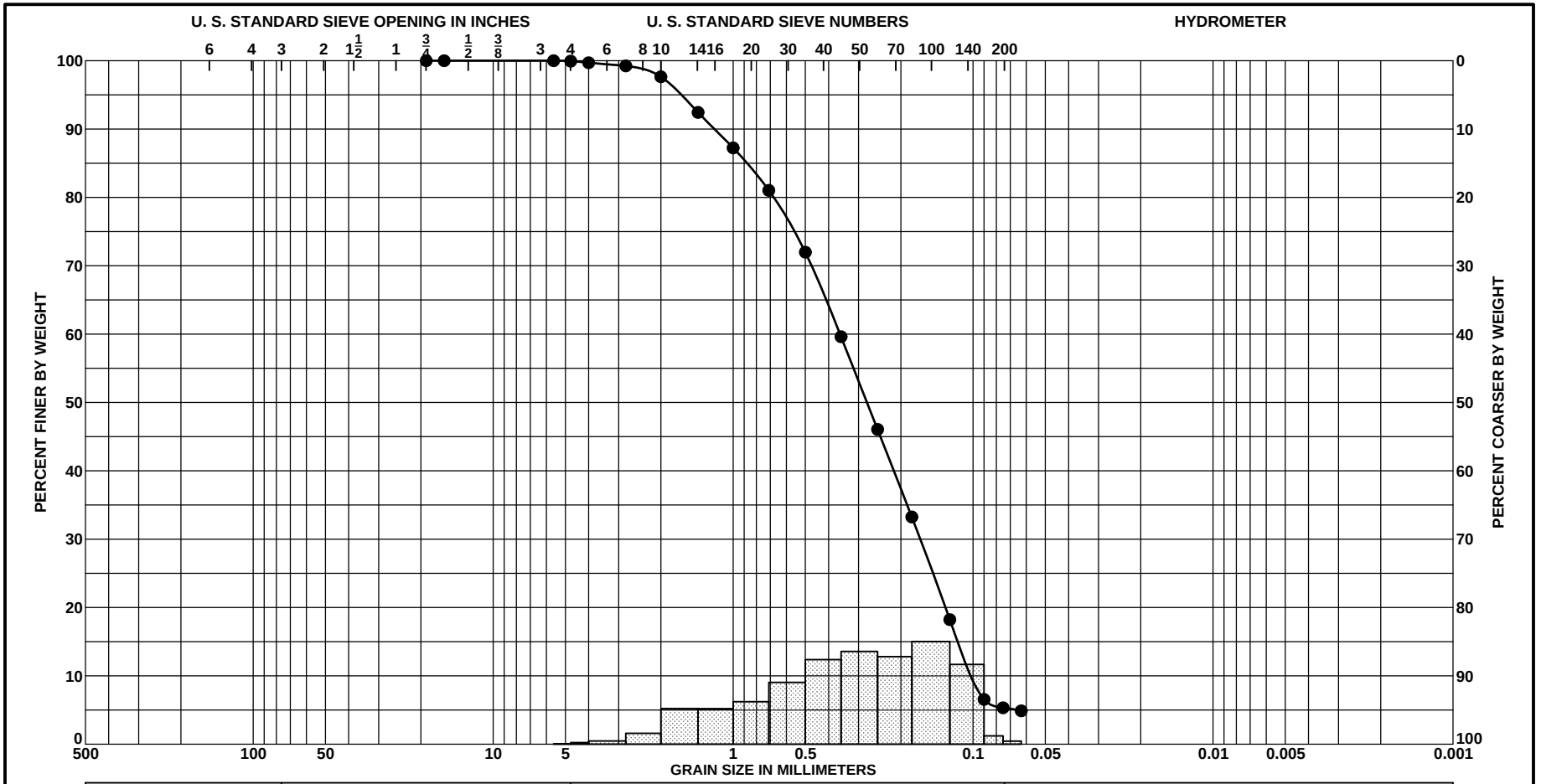


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/2	1							
		medium-grained sand-sized									
		carbonate, trace									
		shell, trace silt, light olive gray									
		(SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-42
BORING ELEV.	-44.7 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	10.0 to 10.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/2	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few silt,									
		trace shell, light olive gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-42
BORING ELEV.	-44.7 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-42 @ 2 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,875	543,948	State Plane, FLE (U.S. Ft.)	-46.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/2	#200 - 2.73 #230 - 2.57			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.88	0.88
#4	-2.25	4.75	0.24	1.11
#5	-2.00	4.00	0.40	1.51
#7	-1.50	2.80	1.01	2.52
#10	-1.00	2.00	2.30	4.82
#14	-0.50	1.40	4.08	8.90
#18	0.00	1.00	5.11	14.01
#25	0.50	0.71	7.17	21.18
#35	1.00	0.50	10.47	31.65
#45	1.50	0.36	14.41	46.05
#60	2.00	0.25	17.35	63.40
#80	2.50	0.18	17.53	80.93
#120	3.00	0.13	12.97	93.90
#170	3.50	0.09	3.06	96.96
#200	3.75	0.08	0.31	97.27
#230	4.00	0.06	0.15	97.43

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.18	2.62	2.33	1.61	0.68	0.14	-0.98

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.35	0.39	1.61	0.33	1.25	-0.95	3.97

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-42 @ 4 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,875	543,948	State Plane, FLE (U.S. Ft.)	-48.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/2	#200 - 6.19 #230 - 5.79			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.24	1.24
#4	-2.25	4.75	0.49	1.73
#5	-2.00	4.00	0.25	1.99
#7	-1.50	2.80	0.70	2.69
#10	-1.00	2.00	1.96	4.65
#14	-0.50	1.40	5.64	10.29
#18	0.00	1.00	6.76	17.05
#25	0.50	0.71	8.08	25.13
#35	1.00	0.50	10.25	35.39
#45	1.50	0.36	12.23	47.62
#60	2.00	0.25	12.87	60.49
#80	2.50	0.18	13.39	73.88
#120	3.00	0.13	12.89	86.77
#170	3.50	0.09	6.16	92.92
#200	3.75	0.08	0.89	93.81
#230	4.00	0.06	0.40	94.21

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.89	2.54	1.59	0.49	-0.08	-0.97

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.30	0.41	1.59	0.33	1.38	-0.7	3.38

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-42 @ 6 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,875	543,948	State Plane, FLE (U.S. Ft.)	-50.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/2	#200 - 4.36 #230 - 4.05			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	1.06	1.06
#3.5	-2.50	5.60	0.99	2.05
#4	-2.25	4.75	0.26	2.31
#5	-2.00	4.00	0.34	2.65
#7	-1.50	2.80	0.65	3.30
#10	-1.00	2.00	1.36	4.67
#14	-0.50	1.40	4.82	9.49
#18	0.00	1.00	6.30	15.78
#25	0.50	0.71	8.72	24.50
#35	1.00	0.50	12.08	36.58
#45	1.50	0.36	14.53	51.11
#60	2.00	0.25	14.98	66.09
#80	2.50	0.18	14.37	80.46
#120	3.00	0.13	10.82	91.28
#170	3.50	0.09	3.84	95.12
#200	3.75	0.08	0.52	95.64
#230	4.00	0.06	0.31	95.95

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.48	2.66	2.31	1.46	0.52	0.01	-0.97

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.21	0.43	1.46	0.36	1.37	-1.1	5.09

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-42 @ 8 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,875	543,948	State Plane, FLE (U.S. Ft.)	-52.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/2	#200 - 4.34 #230 - 4.10			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.19	0.19
#4	-2.25	4.75	0.10	0.29
#5	-2.00	4.00	0.15	0.44
#7	-1.50	2.80	0.68	1.12
#10	-1.00	2.00	1.60	2.72
#14	-0.50	1.40	5.86	8.58
#18	0.00	1.00	6.51	15.09
#25	0.50	0.71	9.14	24.23
#35	1.00	0.50	12.07	36.30
#45	1.50	0.36	15.21	51.51
#60	2.00	0.25	16.43	67.94
#80	2.50	0.18	12.74	80.68
#120	3.00	0.13	11.23	91.91
#170	3.50	0.09	3.31	95.23
#200	3.75	0.08	0.43	95.66
#230	4.00	0.06	0.24	95.90

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.47	2.65	2.28	1.45	0.53	0.05	-0.81

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.27	0.41	1.45	0.37	1.18	-0.44	2.84

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-42 @ 10 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,875	543,948	State Plane, FLE (U.S. Ft.)	-54.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/2	#200 - 5.33 #230 - 4.88			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.06	0.06
#5	-2.00	4.00	0.23	0.29
#7	-1.50	2.80	0.47	0.76
#10	-1.00	2.00	1.59	2.35
#14	-0.50	1.40	5.21	7.57
#18	0.00	1.00	5.19	12.76
#25	0.50	0.71	6.22	18.97
#35	1.00	0.50	9.05	28.02
#45	1.50	0.36	12.37	40.39
#60	2.00	0.25	13.56	53.95
#80	2.50	0.18	12.81	66.76
#120	3.00	0.13	15.02	81.78
#170	3.50	0.09	11.67	93.45
#200	3.75	0.08	1.22	94.67
#230	4.00	0.06	0.45	95.12

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.93	3.10	2.77	1.85	0.83	0.26	-0.75

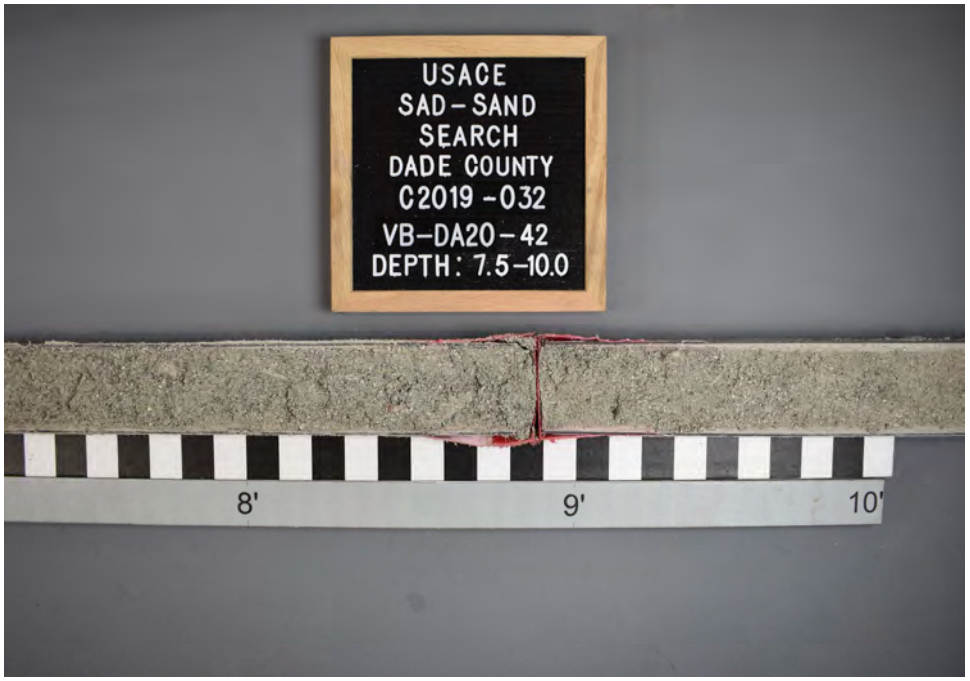
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.61	0.33	1.85	0.28	1.27	-0.53	2.52

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 42
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 42
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 42
DEPTH: 5.0 – 7.5
5'
6'
7'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 42
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 42
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 42
DEPTH :12.5 –13.9
13'
14'
15'

VB-DA20-43

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-43

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-43	LOCATION COORDINATES: X = 953,678 Y = 545,054	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 4 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -47.2 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 92 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-47.2	0.0								
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 6/1 gray (SW-SM)				-49.2		
					1		-51.2		
					2		-53.2		
					3		-55.2		
-55.2	8.0		SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, few fine gravel-sized limestone, trace shell, moist, 5Y 6/1 gray (SW-SM)		4				
-57.2	10.0		LIMESTONE, 5Y 6/2 light olive gray						

0 5 10 15

(Continued)

Boring Designation VB-DA20-43

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 953,678 Y = 545,054	ELEVATION TOP OF BORING: -47.2 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-65.6	18.4		No Recovery				-67.2		
-67.2	20.0								

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

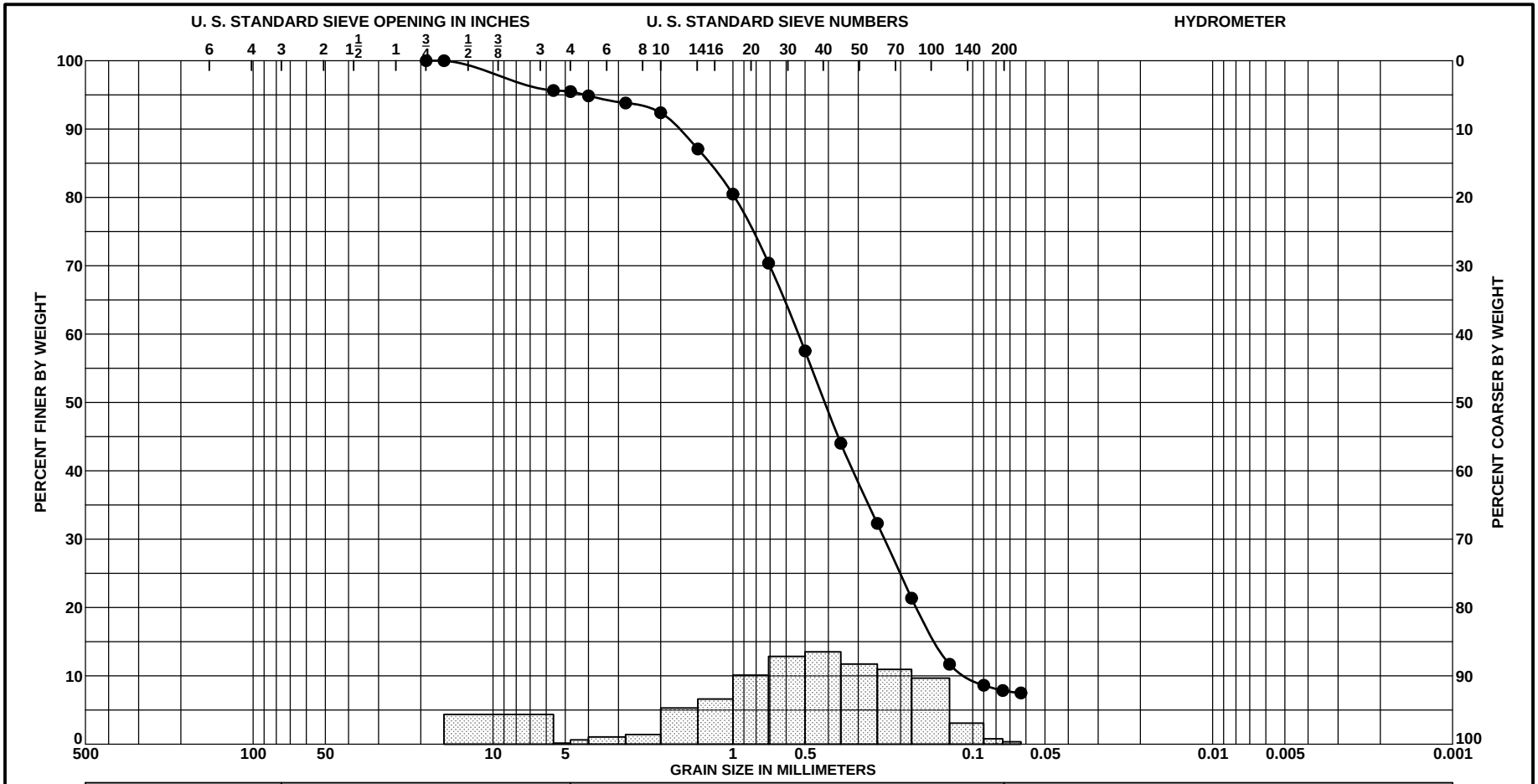
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW-SM*
2	4.0/4.2	SW-SM*
3	6.0/6.2	SW-SM*
4	8.0/8.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

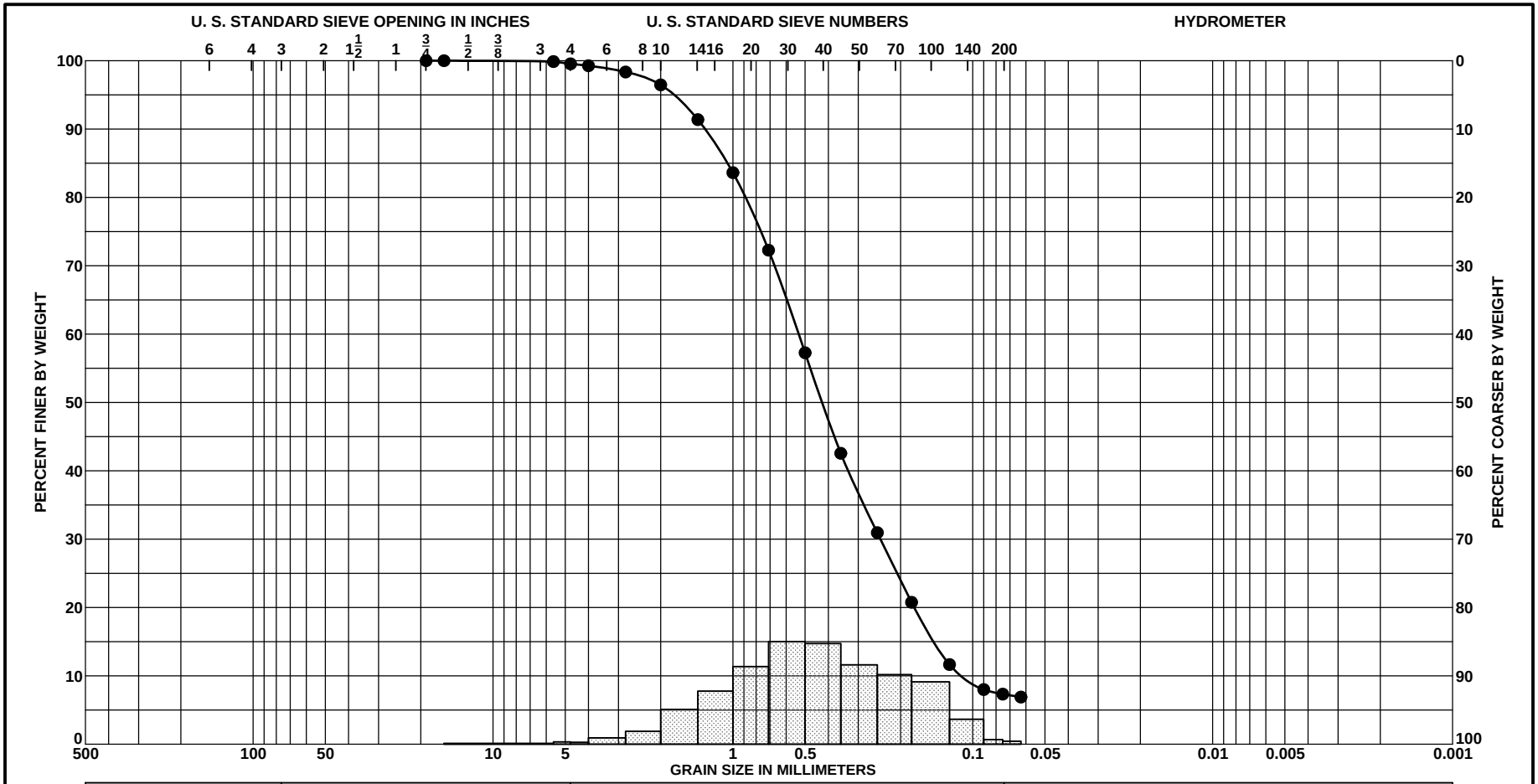


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-43
BORING ELEV.	-47.2 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

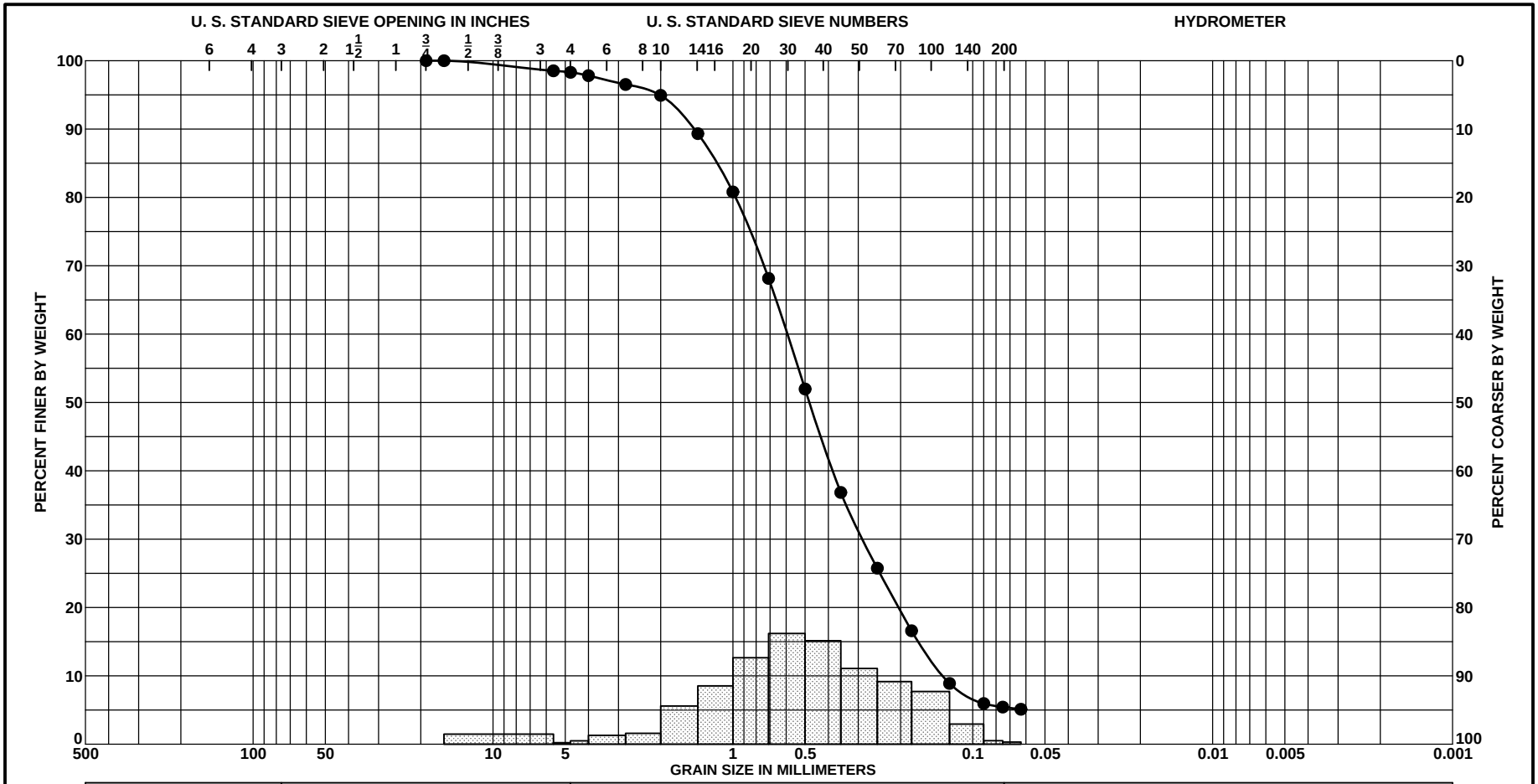


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-43
BORING ELEV.	-47.2 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

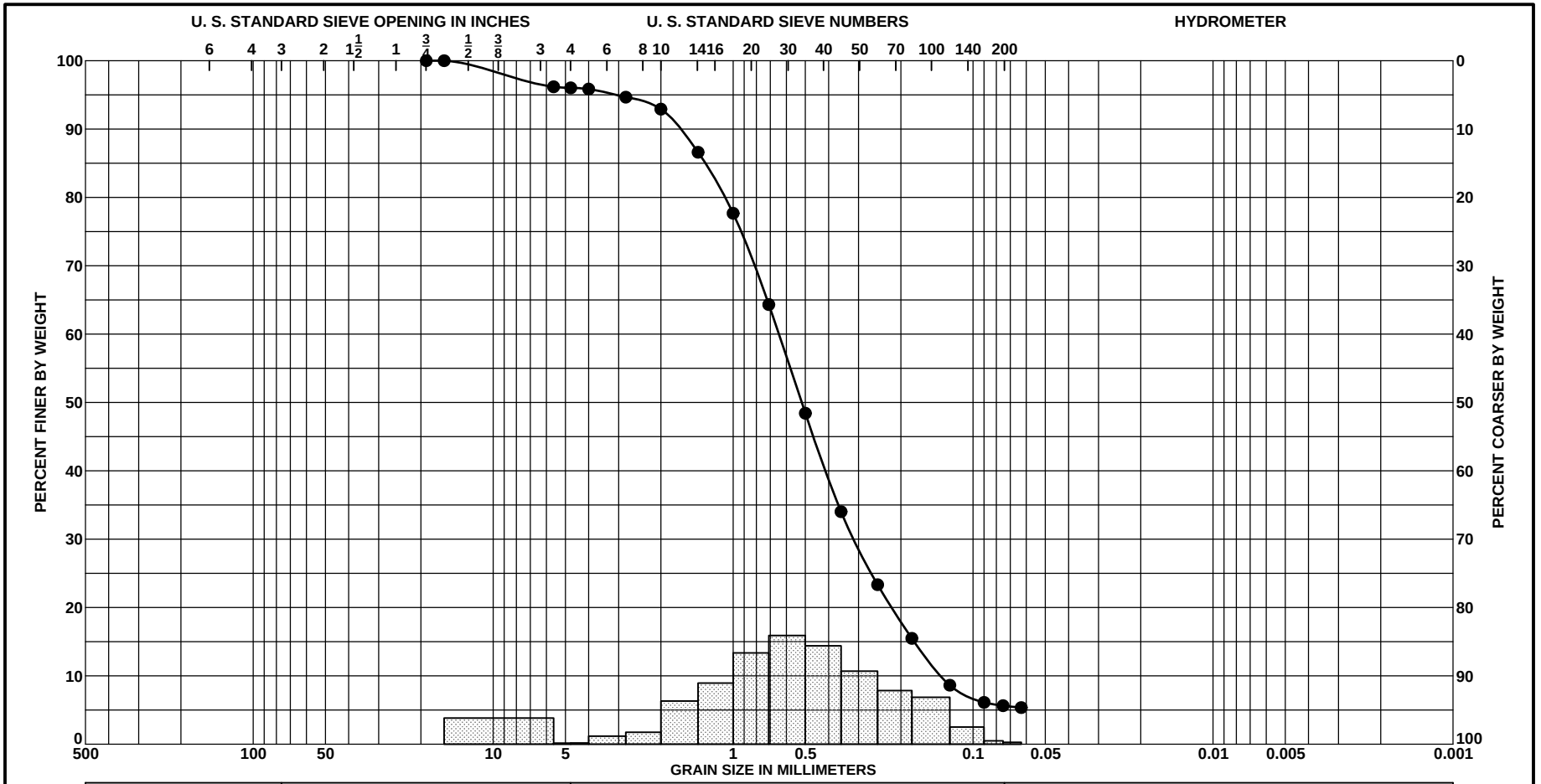


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	2							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-43
BORING ELEV.	-47.2 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	2							
		fine to medium-grained									
		sand-sized carbonate, few silt, few									
		fine gravel-sized limestone,									
		trace shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-43
BORING ELEV.	-47.2 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-43 @ 2 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,678	545,054	State Plane, FLE (U.S. Ft.)	-49.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 7.85 #230 - 7.50			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	4.36	4.36
#4	-2.25	4.75	0.15	4.51
#5	-2.00	4.00	0.63	5.14
#7	-1.50	2.80	1.05	6.19
#10	-1.00	2.00	1.42	7.61
#14	-0.50	1.40	5.30	12.92
#18	0.00	1.00	6.61	19.52
#25	0.50	0.71	10.10	29.62
#35	1.00	0.50	12.84	42.46
#45	1.50	0.36	13.51	55.98
#60	2.00	0.25	11.72	67.70
#80	2.50	0.18	10.94	78.64
#120	3.00	0.13	9.67	88.30
#170	3.50	0.09	3.07	91.38
#200	3.75	0.08	0.77	92.15
#230	4.00	0.06	0.35	92.50

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.78	2.33	1.28	0.27	-0.27	-2.06

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.97	0.51	1.28	0.41	1.52	-0.9	3.87

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-43 @ 4 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,678	545,054	State Plane, FLE (U.S. Ft.)	-51.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 7.33 #230 - 6.90			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.12	0.12
#4	-2.25	4.75	0.34	0.46
#5	-2.00	4.00	0.28	0.74
#7	-1.50	2.80	0.92	1.65
#10	-1.00	2.00	1.88	3.54
#14	-0.50	1.40	5.08	8.62
#18	0.00	1.00	7.76	16.38
#25	0.50	0.71	11.34	27.73
#35	1.00	0.50	15.00	42.73
#45	1.50	0.36	14.72	57.45
#60	2.00	0.25	11.61	69.06
#80	2.50	0.18	10.19	79.24
#120	3.00	0.13	9.11	88.35
#170	3.50	0.09	3.65	92.00
#200	3.75	0.08	0.67	92.67
#230	4.00	0.06	0.43	93.10

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.76	2.29	1.25	0.38	-0.02	-0.86

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.13	0.46	1.25	0.42	1.21	-0.21	2.77

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-43 @ 6 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,678	545,054	State Plane, FLE (U.S. Ft.)	-53.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 5.43 #230 - 5.11			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.48	1.48
#4	-2.25	4.75	0.22	1.70
#5	-2.00	4.00	0.49	2.19
#7	-1.50	2.80	1.29	3.48
#10	-1.00	2.00	1.59	5.07
#14	-0.50	1.40	5.60	10.67
#18	0.00	1.00	8.53	19.20
#25	0.50	0.71	12.65	31.85
#35	1.00	0.50	16.19	48.04
#45	1.50	0.36	15.14	63.17
#60	2.00	0.25	11.08	74.25
#80	2.50	0.18	9.15	83.41
#120	3.00	0.13	7.71	91.11
#170	3.50	0.09	2.94	94.05
#200	3.75	0.08	0.52	94.57
#230	4.00	0.06	0.32	94.89

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.54	2.04	1.06	0.23	-0.19	-1.02

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.96	0.51	1.06	0.48	1.28	-0.5	3.69

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-43 @ 8 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,678	545,054	State Plane, FLE (U.S. Ft.)	-55.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 5.63 #230 - 5.36			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	3.81	3.81
#4	-2.25	4.75	0.16	3.98
#5	-2.00	4.00	0.18	4.15
#7	-1.50	2.80	1.18	5.33
#10	-1.00	2.00	1.75	7.09
#14	-0.50	1.40	6.31	13.39
#18	0.00	1.00	8.93	22.33
#25	0.50	0.71	13.36	35.68
#35	1.00	0.50	15.90	51.58
#45	1.50	0.36	14.40	65.98
#60	2.00	0.25	10.68	76.67
#80	2.50	0.18	7.85	84.51
#120	3.00	0.13	6.86	91.37
#170	3.50	0.09	2.51	93.88
#200	3.75	0.08	0.48	94.37
#230	4.00	0.06	0.28	94.64

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.47	1.92	0.95	0.10	-0.35	-1.64

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.79	0.58	0.95	0.52	1.4	-0.72	4

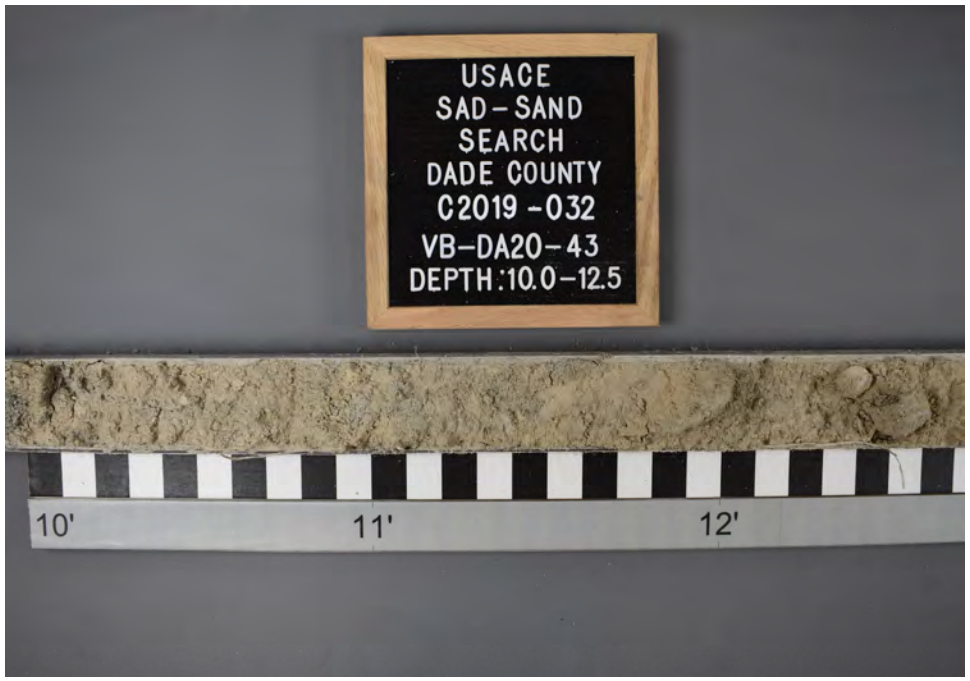
GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–43
DEPTH: 0.0 – 2.5
0'
1'
2'

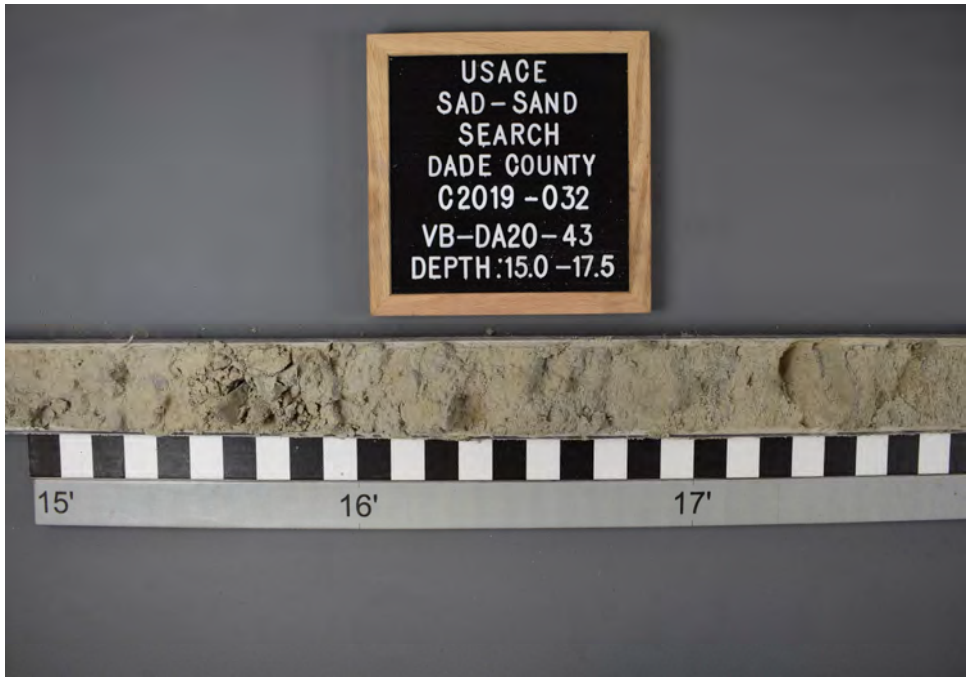
USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–43
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–43
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–43
DEPTH: 7.5 – 10.0
8'
9'
10'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 43
DEPTH: 10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 43
DEPTH: 12.5 – 15.0
13'
14'
15'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 43
DEPTH: 15.0 – 17.5
15'
16'
17'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 43
DEPTH: 17.5 – 18.4
18'
19'
20'

VB-DA20-44

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-44

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-44	LOCATION COORDINATES: X = 953,368 Y = 546,228	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 5 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -51.6 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 83 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-51.6	0.0								
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 6/1 gray (SW-SM)				-53.6		
					1				
							-55.6		
					2				
							-57.6		
					3				
-59.6	8.0						-59.6		
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 5Y 6/1 gray (SW)		4				
-61.2	9.6						-61.6		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, few fine gravel-sized limestone, trace shell, moist, 5Y 6/1 gray (SW-SM)		5				
-62.8	11.2								
			LIMESTONE, 10YR 5/2 grayish brown						

0 5 10 15

(Continued)

Boring Designation VB-DA20-44

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 953,368 Y = 546,228	ELEVATION TOP OF BORING: -51.6 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-68.3	16.7		No Recovery						
-71.6	20.0						-71.6		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

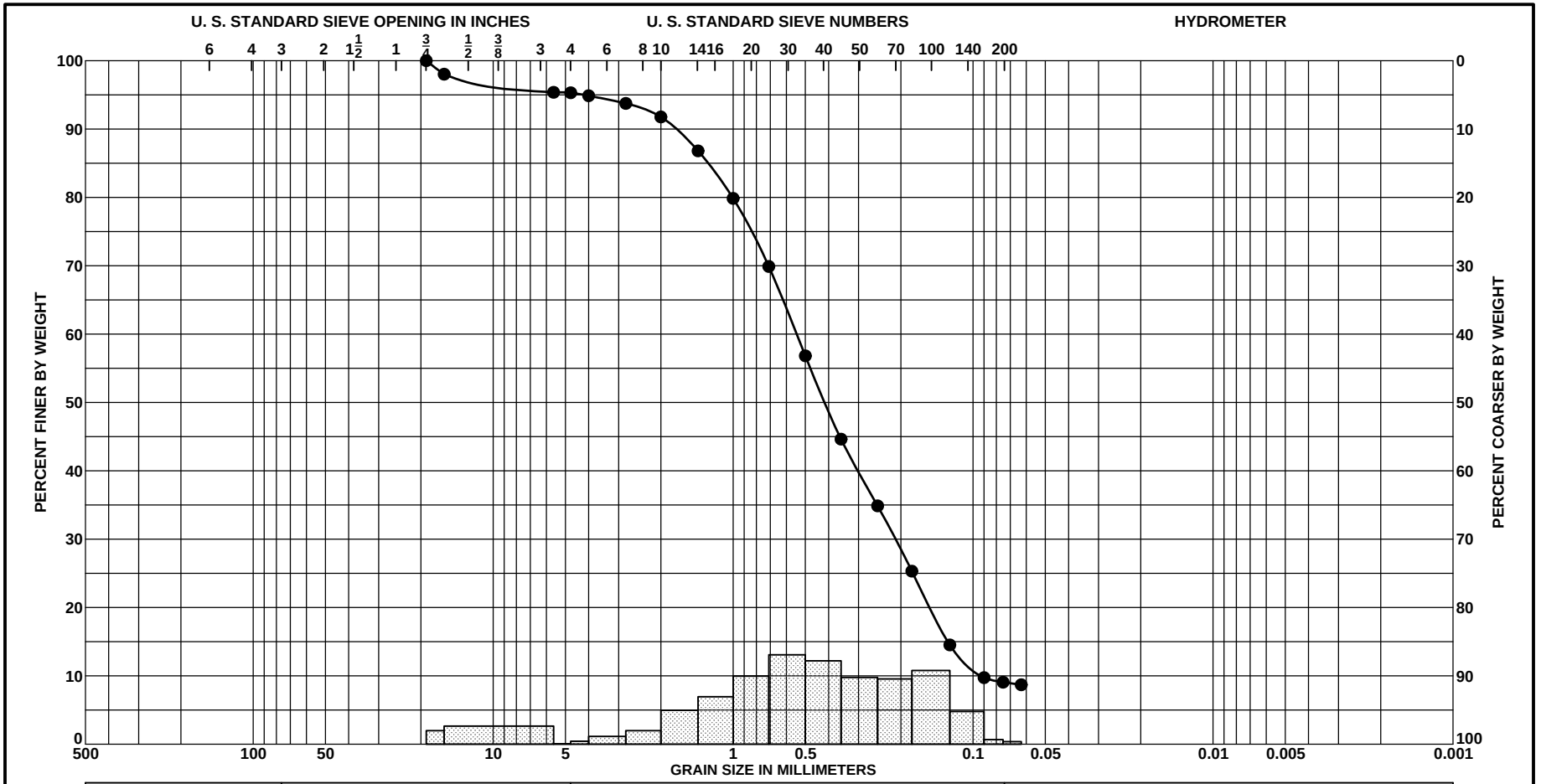
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW-SM*
2	4.0/4.2	SW-SM*
3	6.0/6.2	SW-SM*
4	8.0/8.2	SW*
5	10.0/10.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-44
BORING ELEV.	-51.6 Ft., NAVD88
DATE	9/4/2020

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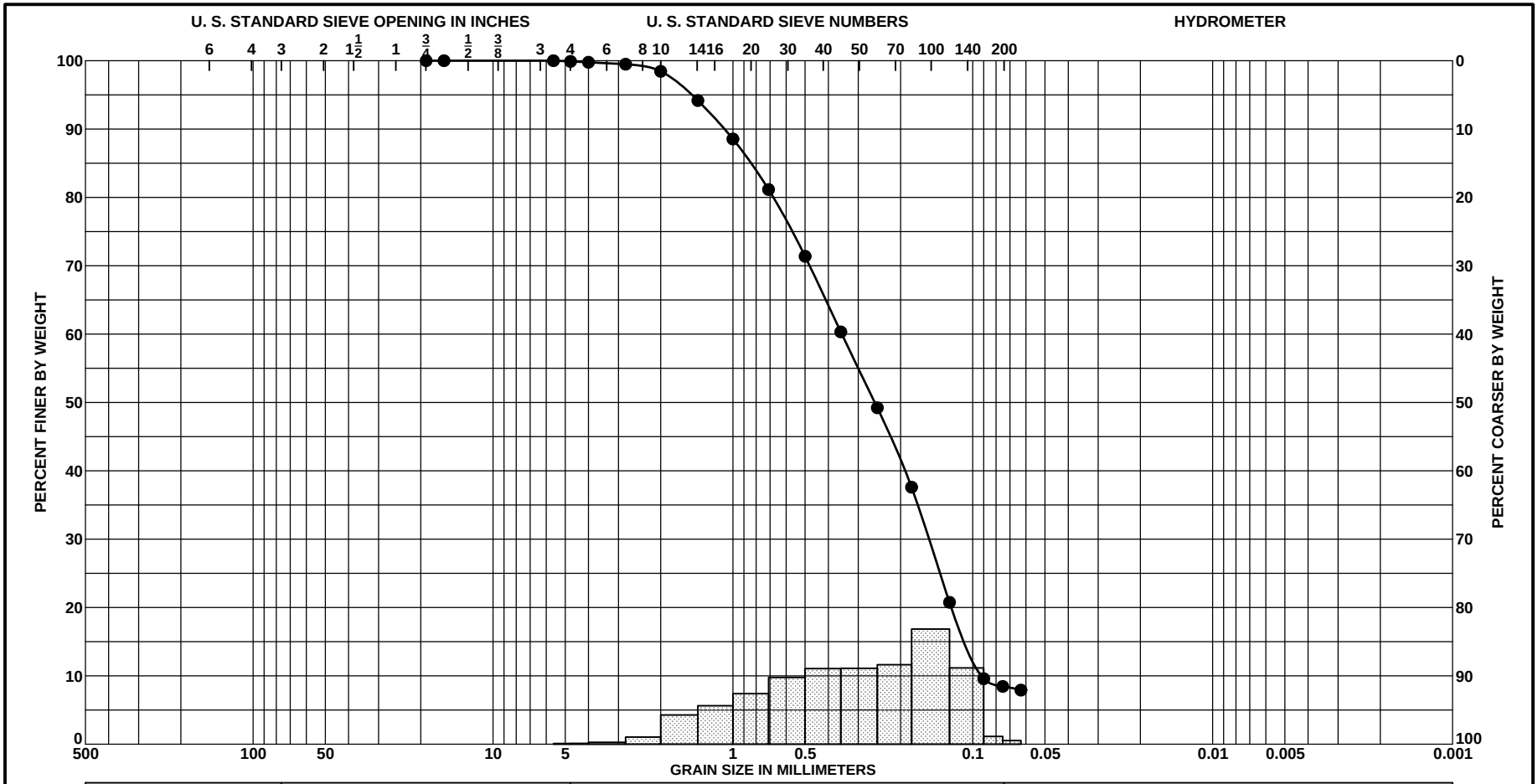
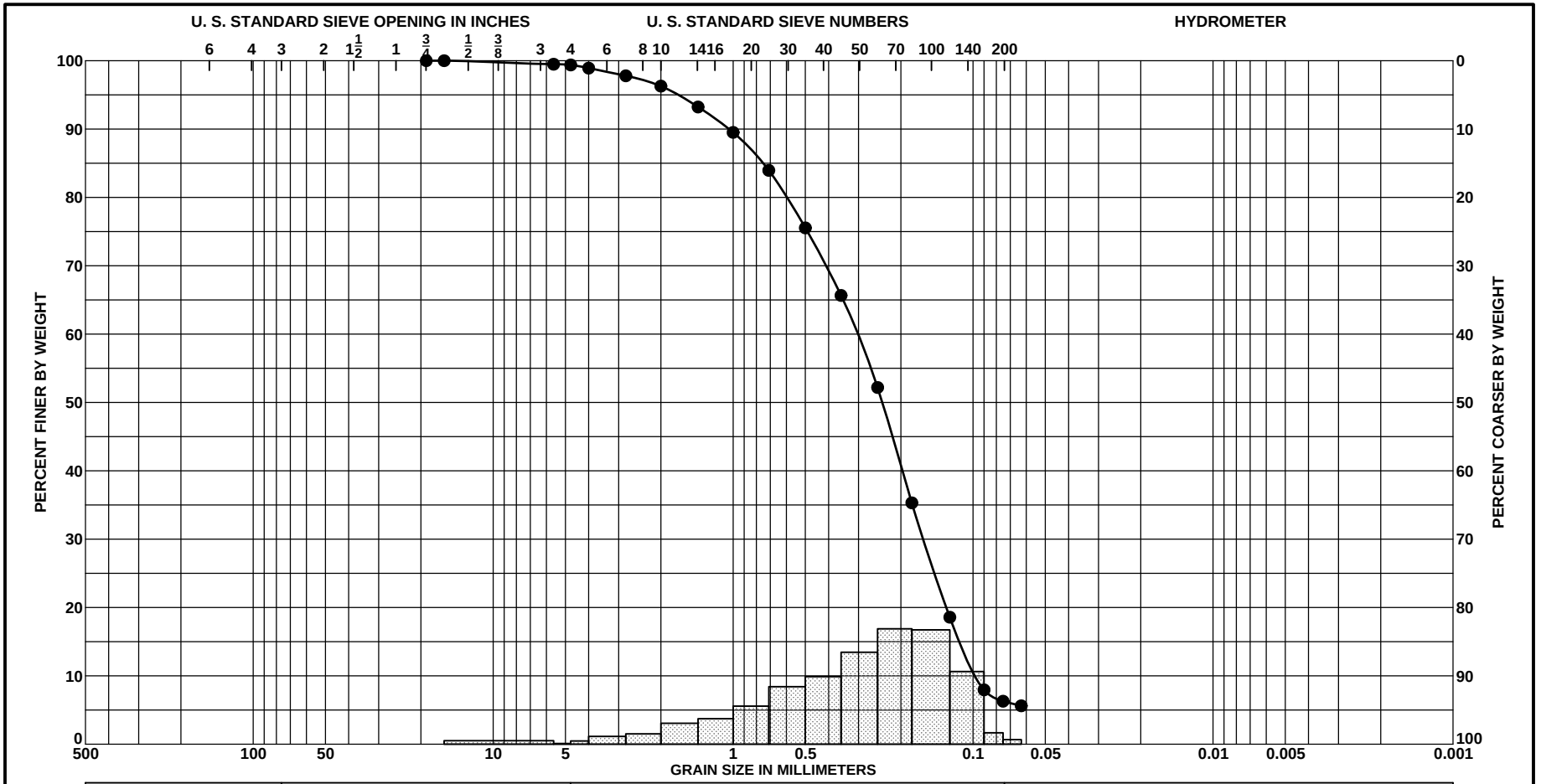


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-44
BORING ELEV.	-51.6 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

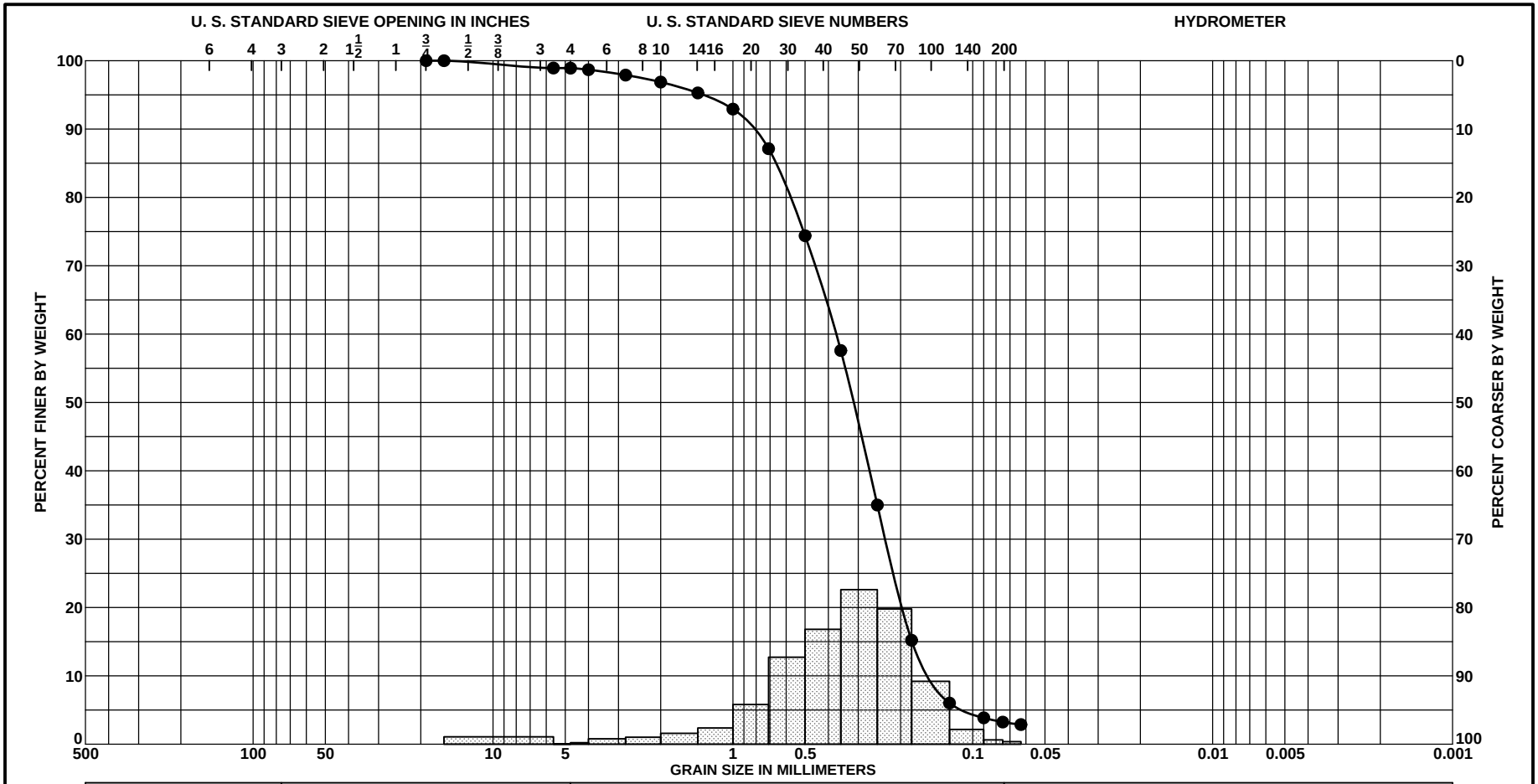


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-44
BORING ELEV.	-51.6 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

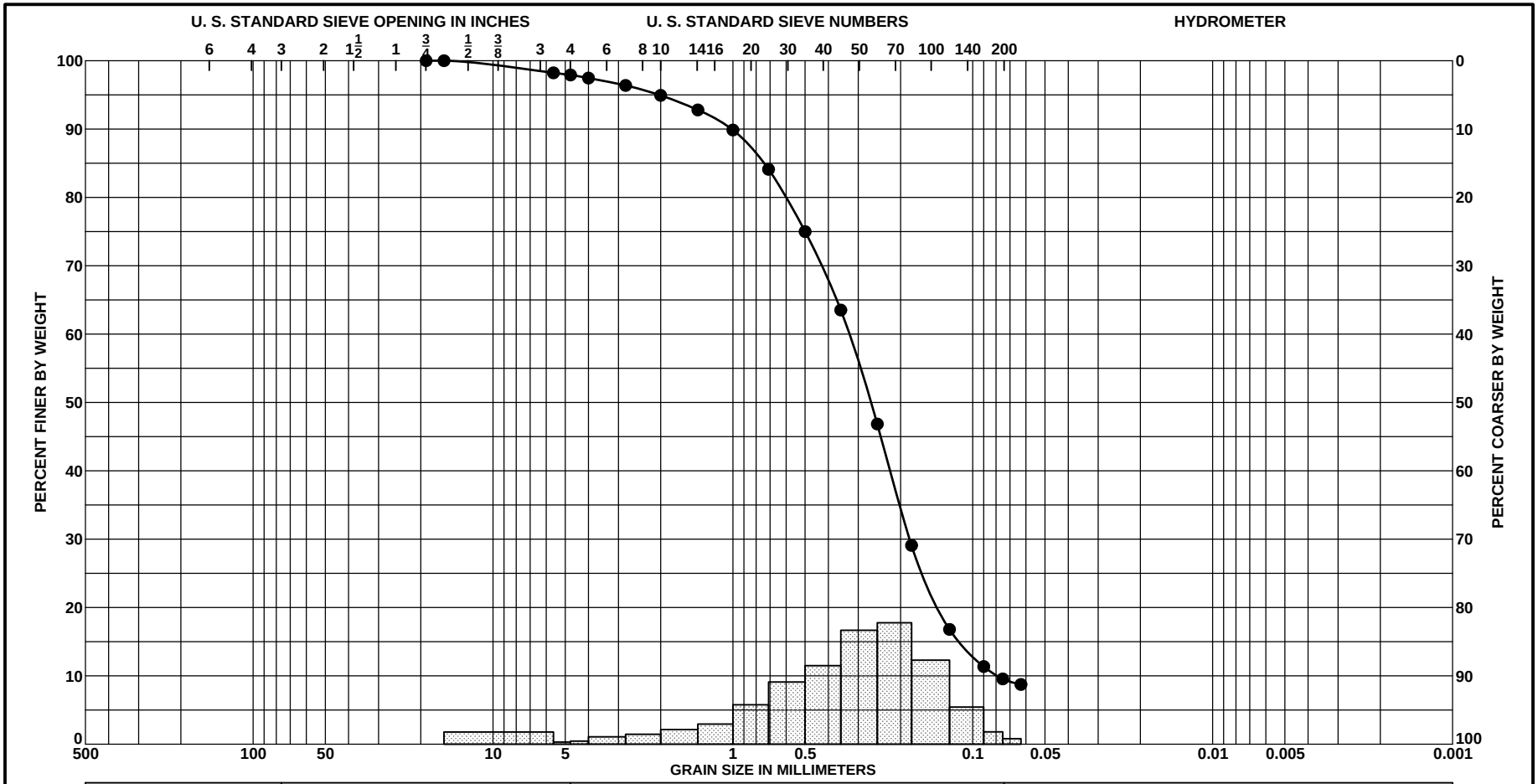


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/1	2							
		medium-grained sand-sized									
		carbonate, trace									
		silt, trace shell, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-44
BORING ELEV.	-51.6 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	10.0 to 10.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	1							
		fine to medium-grained									
		sand-sized carbonate, few silt,									
		few fine gravel-sized limestone,									
		trace shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-44
BORING ELEV.	-51.6 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-44 @ 2 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,368	546,228	State Plane, FLE (U.S. Ft.)	-53.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 9.07 #230 - 8.70			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	1.97	1.97
#3.5	-2.50	5.60	2.65	4.63
#4	-2.25	4.75	0.06	4.69
#5	-2.00	4.00	0.44	5.12
#7	-1.50	2.80	1.13	6.25
#10	-1.00	2.00	1.98	8.23
#14	-0.50	1.40	4.96	13.20
#18	0.00	1.00	6.95	20.15
#25	0.50	0.71	9.96	30.10
#35	1.00	0.50	13.07	43.18
#45	1.50	0.36	12.19	55.37
#60	2.00	0.25	9.76	65.13
#80	2.50	0.18	9.56	74.68
#120	3.00	0.13	10.79	85.48
#170	3.50	0.09	4.79	90.26
#200	3.75	0.08	0.66	90.93
#230	4.00	0.06	0.38	91.30

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.93	2.51	1.28	0.24	-0.30	-2.07

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.96	0.51	1.28	0.41	1.63	-0.99	4.22

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-44 @ 4 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,368	546,228	State Plane, FLE (U.S. Ft.)	-55.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 8.45 #230 - 7.91			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.10	0.10
#5	-2.00	4.00	0.13	0.23
#7	-1.50	2.80	0.28	0.51
#10	-1.00	2.00	1.04	1.55
#14	-0.50	1.40	4.28	5.83
#18	0.00	1.00	5.63	11.46
#25	0.50	0.71	7.39	18.85
#35	1.00	0.50	9.77	28.62
#45	1.50	0.36	11.07	39.68
#60	2.00	0.25	11.10	50.78
#80	2.50	0.18	11.62	62.40
#120	3.00	0.13	16.85	79.25
#170	3.50	0.09	11.17	90.42
#200	3.75	0.08	1.13	91.55
#230	4.00	0.06	0.54	92.09

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.21	2.87	1.96	0.81	0.31	-0.60

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.63	0.32	1.96	0.26	1.25	-0.46	2.36

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-44 @ 6 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,368	546,228	State Plane, FLE (U.S. Ft.)	-57.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 6.29 #230 - 5.62			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.51	0.51
#4	-2.25	4.75	0.11	0.62
#5	-2.00	4.00	0.46	1.08
#7	-1.50	2.80	1.13	2.21
#10	-1.00	2.00	1.51	3.72
#14	-0.50	1.40	3.05	6.77
#18	0.00	1.00	3.72	10.49
#25	0.50	0.71	5.56	16.05
#35	1.00	0.50	8.41	24.46
#45	1.50	0.36	9.88	34.35
#60	2.00	0.25	13.46	47.81
#80	2.50	0.18	16.88	64.69
#120	3.00	0.13	16.73	81.42
#170	3.50	0.09	10.63	92.05
#200	3.75	0.08	1.66	93.71
#230	4.00	0.06	0.67	94.38

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.12	2.81	2.06	1.03	0.50	-0.79

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.70	0.31	2.06	0.24	1.3	-0.96	3.8

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-44 @ 8 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,368	546,228	State Plane, FLE (U.S. Ft.)	-59.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/1	#200 - 3.24 #230 - 2.87			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.07	1.07
#4	-2.25	4.75	0.02	1.09
#5	-2.00	4.00	0.23	1.32
#7	-1.50	2.80	0.79	2.10
#10	-1.00	2.00	1.02	3.12
#14	-0.50	1.40	1.59	4.71
#18	0.00	1.00	2.36	7.08
#25	0.50	0.71	5.80	12.88
#35	1.00	0.50	12.73	25.61
#45	1.50	0.36	16.80	42.41
#60	2.00	0.25	22.60	65.01
#80	2.50	0.18	19.79	84.80
#120	3.00	0.13	9.19	93.99
#170	3.50	0.09	2.15	96.14
#200	3.75	0.08	0.62	96.76
#230	4.00	0.06	0.37	97.13

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.24	2.48	2.25	1.67	0.98	0.62	-0.44

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.48	0.36	1.67	0.31	1.09	-1.34	6.49

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-44 @ 10 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,368	546,228	State Plane, FLE (U.S. Ft.)	-61.6 NAVD88

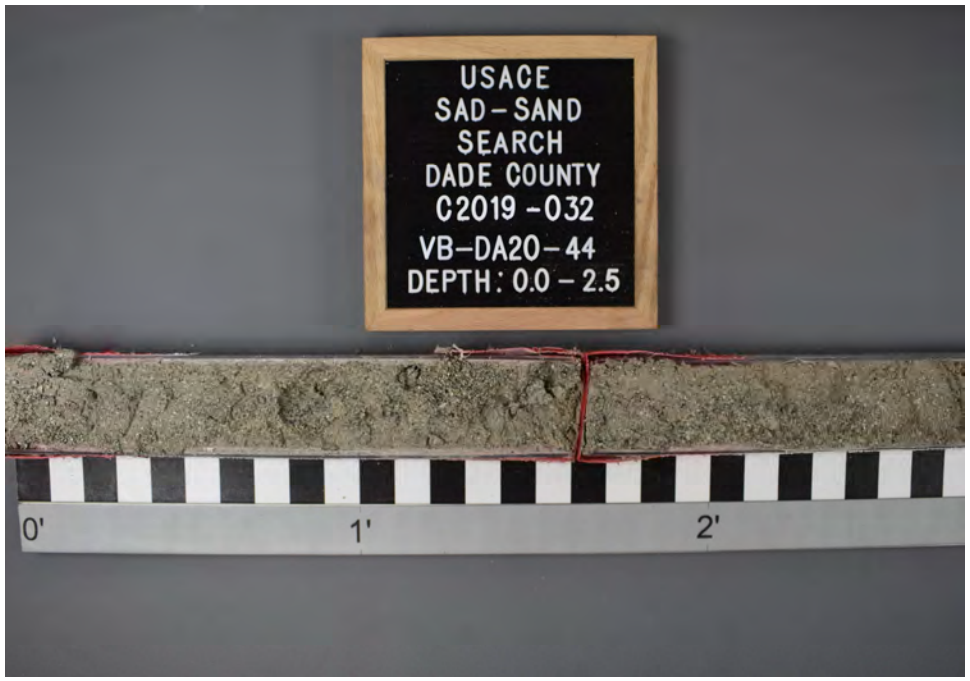
USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 9.55 #230 - 8.74			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.78	1.78
#4	-2.25	4.75	0.31	2.08
#5	-2.00	4.00	0.46	2.54
#7	-1.50	2.80	1.08	3.62
#10	-1.00	2.00	1.45	5.07
#14	-0.50	1.40	2.13	7.20
#18	0.00	1.00	2.94	10.14
#25	0.50	0.71	5.76	15.90
#35	1.00	0.50	9.11	25.00
#45	1.50	0.36	11.48	36.48
#60	2.00	0.25	16.67	53.15
#80	2.50	0.18	17.76	70.91
#120	3.00	0.13	12.30	83.21
#170	3.50	0.09	5.43	88.64
#200	3.75	0.08	1.81	90.45
#230	4.00	0.06	0.81	91.26

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.07	2.67	1.91	1.00	0.51	-1.02

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.53	0.35	1.91	0.27	1.35	-1.22	5.01

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 44
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 44
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 44
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 44
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 44
DEPTH :10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 44
DEPTH :12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 44
DEPTH :15.0 – 16.7
15'
16'
17'

VB-DA20-45

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-45

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-45	LOCATION COORDINATES: X = 955,344 Y = 552,394	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 4 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -66.2 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 10 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-66.2	0.0								
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, few shell, moist, 5Y 6/2 light olive gray (SM)				-69.2		
					1				
-70.2	4.0		SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 5Y 7/2 light gray (SM)				-71.2		
					2				
							-75.2		
					3				
							-79.2		
					4				

0 5 10 15

(Continued)

Boring Designation VB-DA20-45

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT SAD-SAND	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 955,344 Y = 552,394	ELEVATION TOP OF BORING -66.2 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-85.4	19.2								
-86.2	20.0		No Recovery				-86.2		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

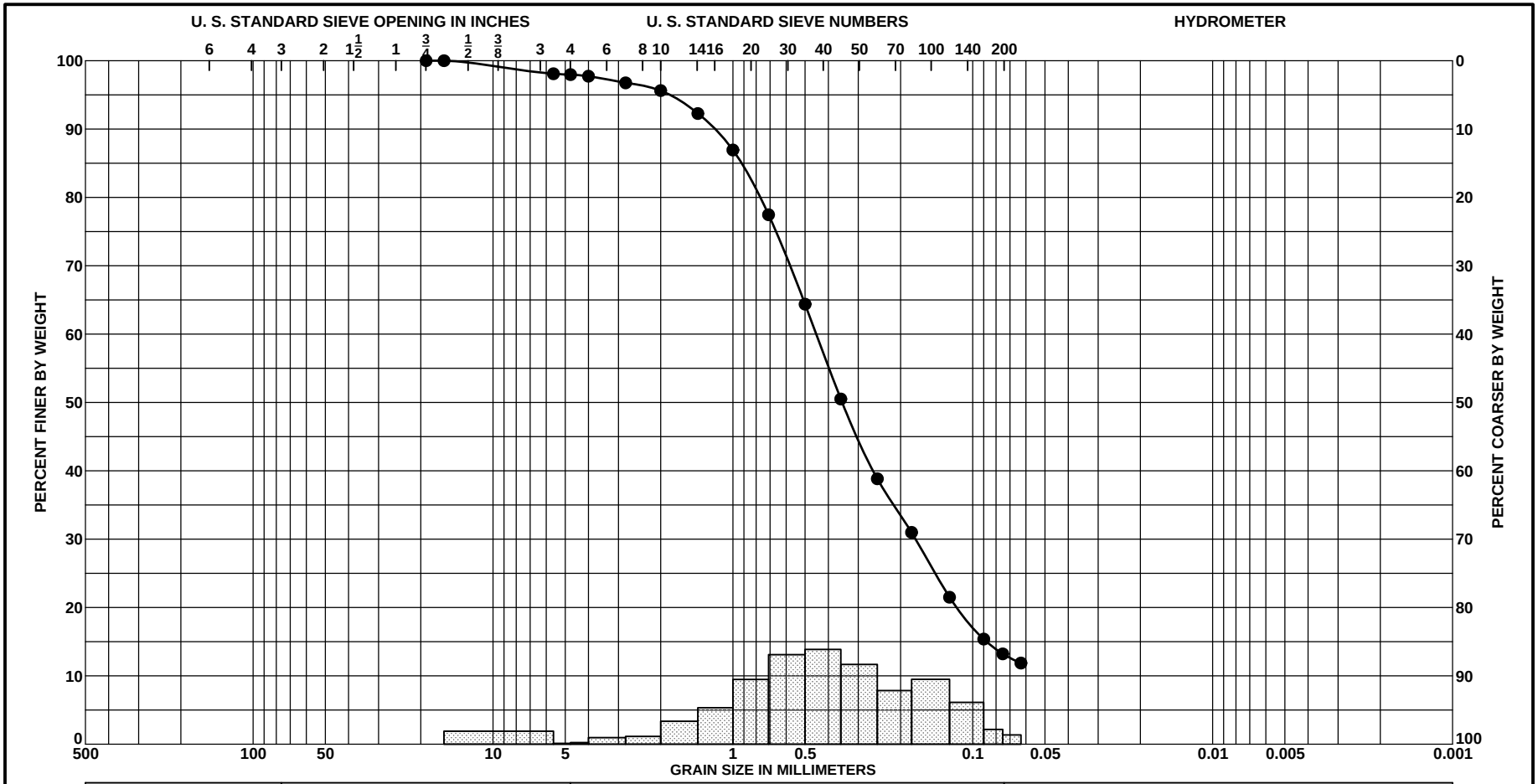
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	3.0/3.2	SM*
2	5.0/5.2	SM*
3	9.0/9.2	SM*
4	13.0/13.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

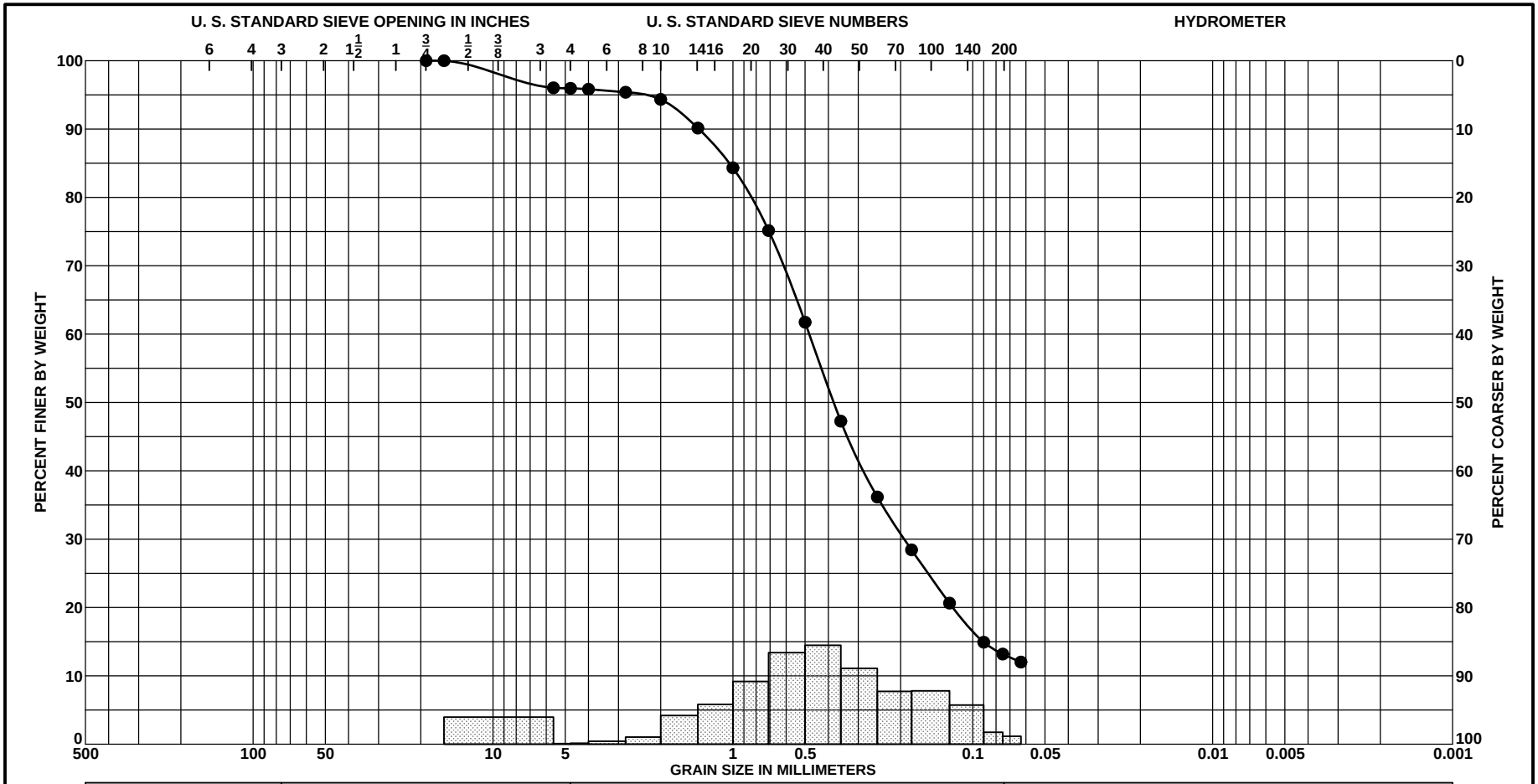


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	3.0 to 3.2 Ft.	SAND, silty, mostly fine to	5Y 6/2	0							
		medium-grained									
		sand-sized carbonate, little silt, few									
		shell, light olive gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-45
BORING ELEV.	-66.2 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

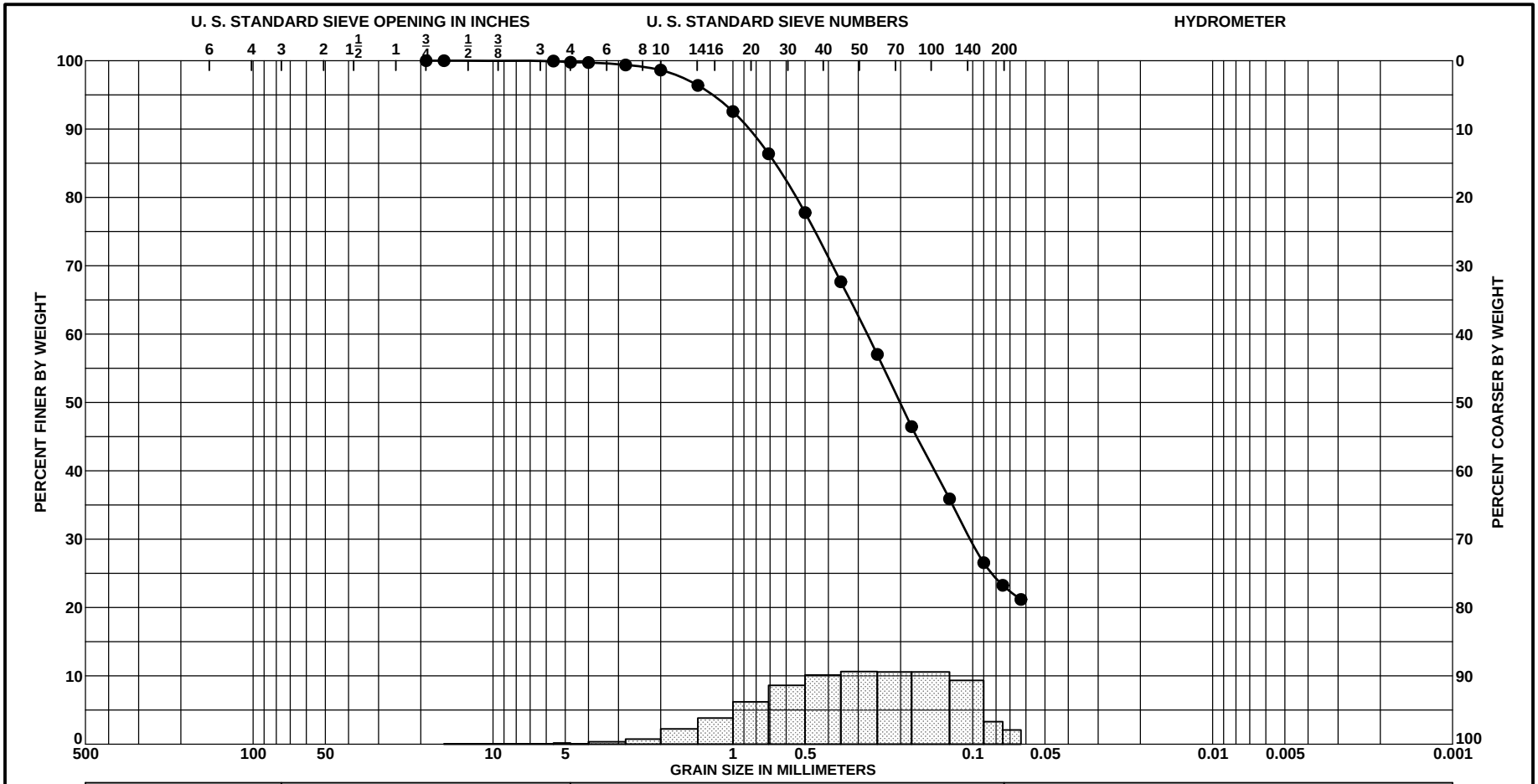


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, silty, mostly fine to	5Y 7/2	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, light gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-45
BORING ELEV.	-66.2 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

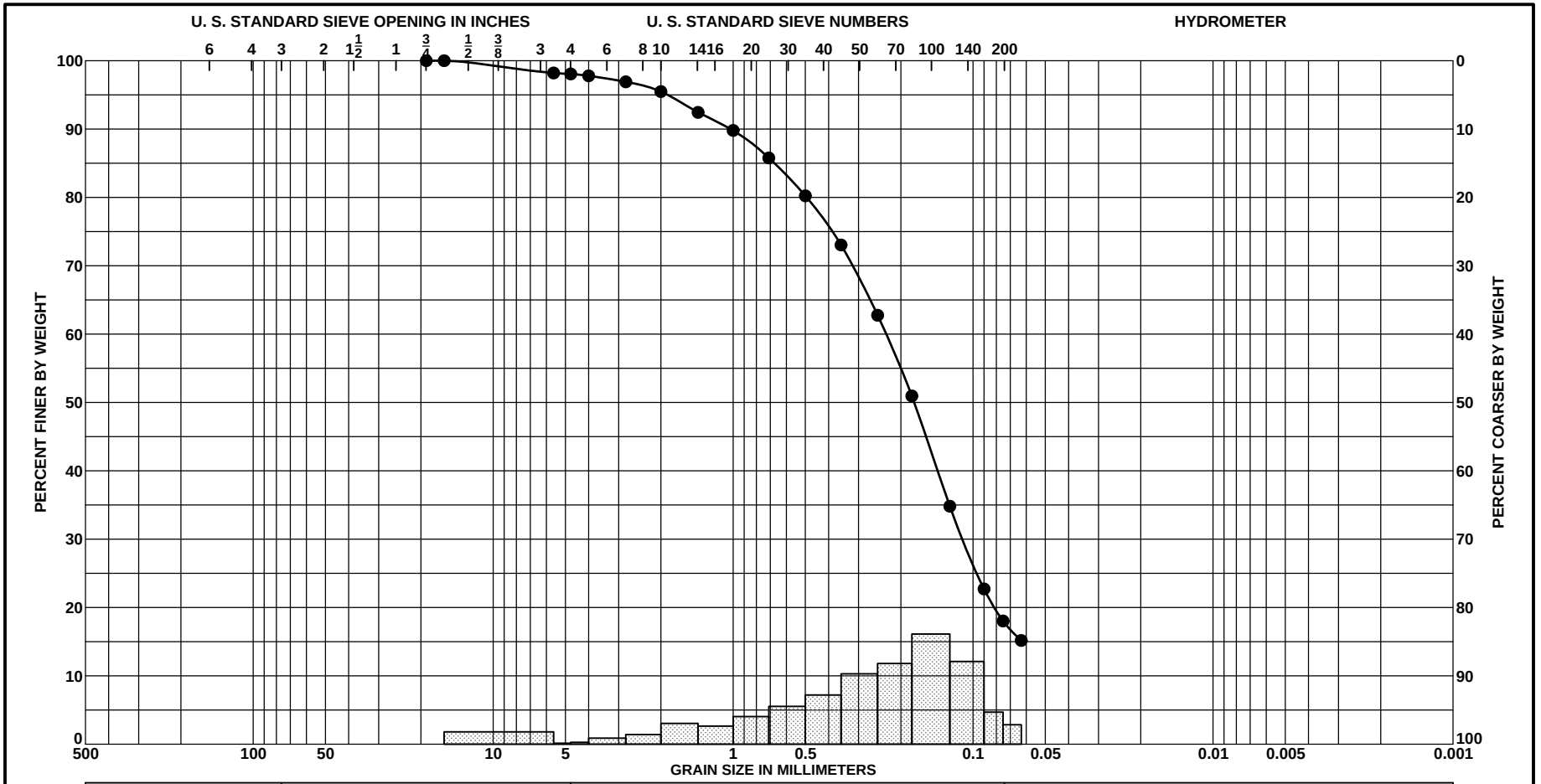


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	9.0 to 9.2 Ft.	SAND, silty, mostly fine to	5Y 7/2	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, light gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-45
BORING ELEV.	-66.2 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	13.0 to 13.2 Ft.	SAND, silty, mostly fine to	5Y 7/2	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, light gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-45
BORING ELEV.	-66.2 Ft., NAVD88
DATE	9/4/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-45 @ 3 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,344	552,394	State Plane, FLE (U.S. Ft.)	-69.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/2	#200 - 13.21 #230 - 11.87			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.91	1.91
#4	-2.25	4.75	0.13	2.04
#5	-2.00	4.00	0.24	2.27
#7	-1.50	2.80	0.97	3.24
#10	-1.00	2.00	1.13	4.37
#14	-0.50	1.40	3.36	7.73
#18	0.00	1.00	5.34	13.07
#25	0.50	0.71	9.47	22.54
#35	1.00	0.50	13.09	35.63
#45	1.50	0.36	13.87	49.49
#60	2.00	0.25	11.67	61.17
#80	2.50	0.18	7.85	69.01
#120	3.00	0.13	9.49	78.50
#170	3.50	0.09	6.12	84.62
#200	3.75	0.08	2.16	86.79
#230	4.00	0.06	1.34	88.13

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.45	2.82	1.52	0.59	0.15	-0.91

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.28	0.41	1.52	0.35	1.41	-0.65	3.9

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-45 @ 5 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,344	552,394	State Plane, FLE (U.S. Ft.)	-71.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 7/2	#200 - 13.18 #230 - 12.02			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	3.97	3.97
#4	-2.25	4.75	0.07	4.04
#5	-2.00	4.00	0.13	4.18
#7	-1.50	2.80	0.44	4.62
#10	-1.00	2.00	1.05	5.66
#14	-0.50	1.40	4.20	9.86
#18	0.00	1.00	5.82	15.67
#25	0.50	0.71	9.18	24.86
#35	1.00	0.50	13.40	38.26
#45	1.50	0.36	14.48	52.74
#60	2.00	0.25	11.10	63.84
#80	2.50	0.18	7.73	71.57
#120	3.00	0.13	7.80	79.36
#170	3.50	0.09	5.72	85.08
#200	3.75	0.08	1.74	86.82
#230	4.00	0.06	1.16	87.98

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.41	2.72	1.41	0.51	0.02	-1.32

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.11	0.46	1.41	0.38	1.52	-0.83	4.13

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-45 @ 9 ft

Analysis Date: 9/4/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,344	552,394	State Plane, FLE (U.S. Ft.)	-75.2 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 7/2	#200 - 23.25 #230 - 21.18			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.05	0.05
#4	-2.25	4.75	0.17	0.22
#5	-2.00	4.00	0.04	0.27
#7	-1.50	2.80	0.36	0.63
#10	-1.00	2.00	0.74	1.37
#14	-0.50	1.40	2.24	3.61
#18	0.00	1.00	3.82	7.43
#25	0.50	0.71	6.19	13.62
#35	1.00	0.50	8.61	22.23
#45	1.50	0.36	10.12	32.35
#60	2.00	0.25	10.63	42.97
#80	2.50	0.18	10.57	53.54
#120	3.00	0.13	10.57	64.11
#170	3.50	0.09	9.33	73.45
#200	3.75	0.08	3.30	76.75
#230	4.00	0.06	2.07	78.82

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.62	2.33	1.14	0.64	-0.32

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.75	0.30	2.33	0.20	1.26	-0.42	2.68

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-45 @ 13 ft

Analysis Date: 9/4/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,344	552,394	State Plane, FLE (U.S. Ft.)	-79.2 NAVD88

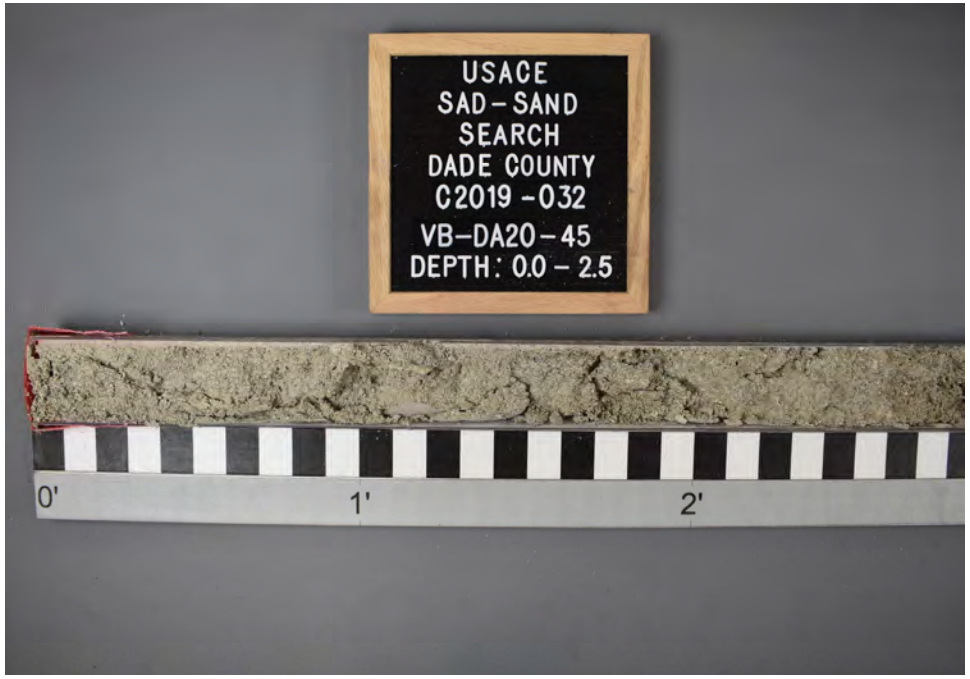
USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 7/2	#200 - 18.02 #230 - 15.18			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.80	1.80
#4	-2.25	4.75	0.14	1.94
#5	-2.00	4.00	0.28	2.21
#7	-1.50	2.80	0.88	3.09
#10	-1.00	2.00	1.42	4.51
#14	-0.50	1.40	3.05	7.56
#18	0.00	1.00	2.64	10.20
#25	0.50	0.71	4.03	14.23
#35	1.00	0.50	5.54	19.77
#45	1.50	0.36	7.19	26.96
#60	2.00	0.25	10.29	37.24
#80	2.50	0.18	11.81	49.06
#120	3.00	0.13	16.13	65.18
#170	3.50	0.09	12.10	77.29
#200	3.75	0.08	4.69	81.98
#230	4.00	0.06	2.85	84.82

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.93	3.41	2.53	1.36	0.66	-0.92

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.86	0.28	2.53	0.17	1.52	-1.21	4.42

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

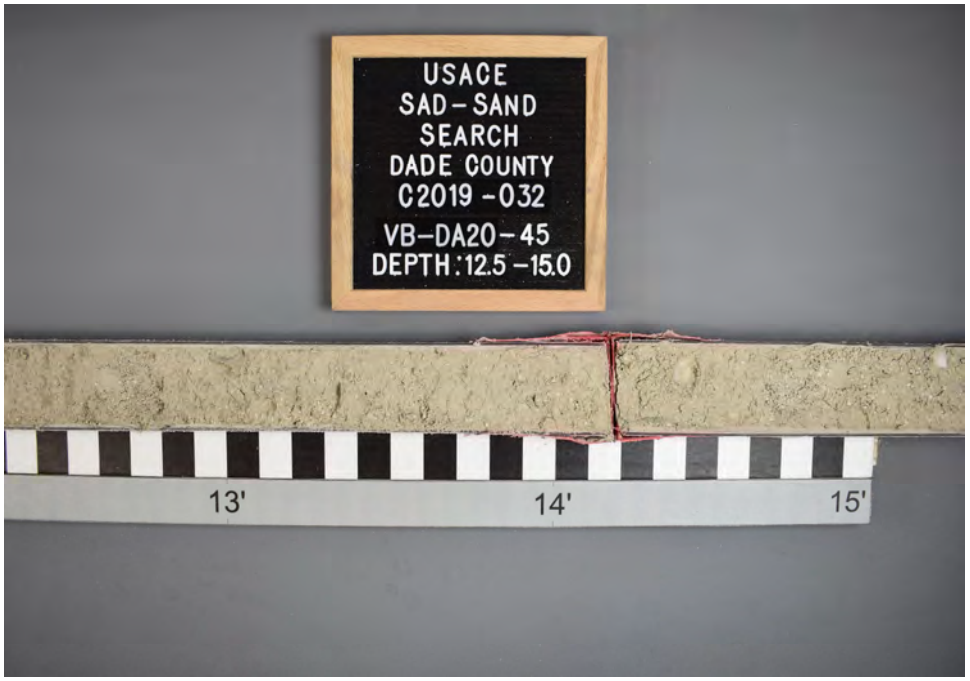

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 45
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 45
DEPTH: 2.5 – 5.0
3'
4'
5'

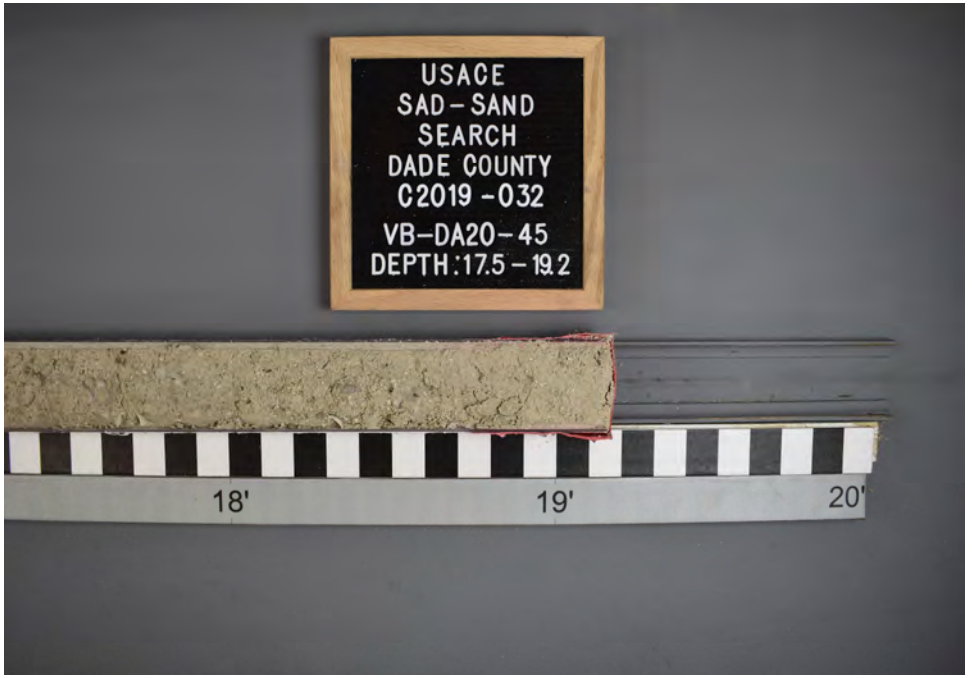
USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 45
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20 – 45
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–45
DEPTH : 10.0 – 12.5
10'
11'
12'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–45
DEPTH : 12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–45
DEPTH : 15.0 – 17.5
15'
16'
17'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 – 032
VB–DA20–45
DEPTH : 17.5 – 19.2
18'
19'
20'

VB-DA20-46

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-46

DRILLING LOG	DIVISION	INSTALLATION	SHEET
	South Atlantic	Jacksonville, Fl	1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-46	LOCATION COORDINATES: X = 953,523 Y = 557,900	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 5 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER: N/A	
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -51.4 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 96 %	
8. TOTAL DEPTH OF BORING: 19.2 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-51.4	0.0								
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, trace fine gravel-sized limestone, moist, 2.5Y 7/3 pale yellow (SM)		1		-52.4		
-55.4	4.0						-55.4		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, trace fine gravel-sized limestone, moist, 2.5Y 7/3 pale yellow (SW-SM)		2				
					3		-58.4		
					4		-61.4		
			At El. -62.9 Ft., mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, trace fine gravel-sized limestone, moist, 2.5Y 6/2 light brownish gray				-64.4		
			At El. -64.8 Ft., mostly fine to medium-grained sand-sized carbonate, little gravel to cobble-sized limestone, few shell, few silt, moist, 2.5Y 7/3 pale yellow		5				

0 5 10 15

(Continued)

Boring Designation VB-DA20-46

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT SAD-SAND	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 953,523 Y = 557,900	ELEVATION TOP OF BORING -51.4 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-68.8	17.4		LIMESTONE						
-70.1	18.7		No Recovery						
-70.6	19.2		BORING TERMINATED IN REFUSAL				-70.6		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

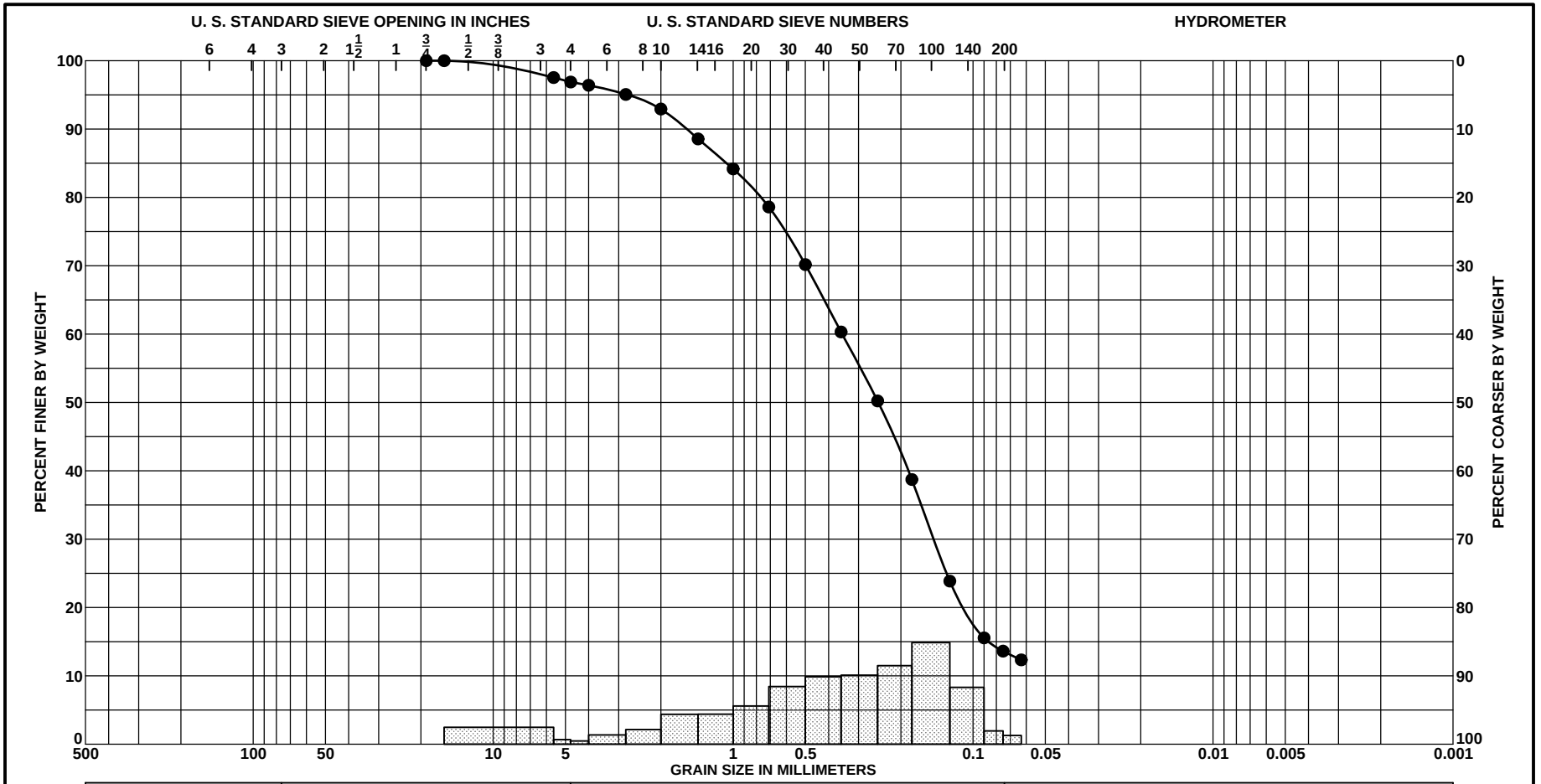
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SM*
2	4.0/4.2	SW-SM*
3	7.0/7.2	SW-SM*
4	10.0/10.2	SW-SM*
5	13.0/13.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

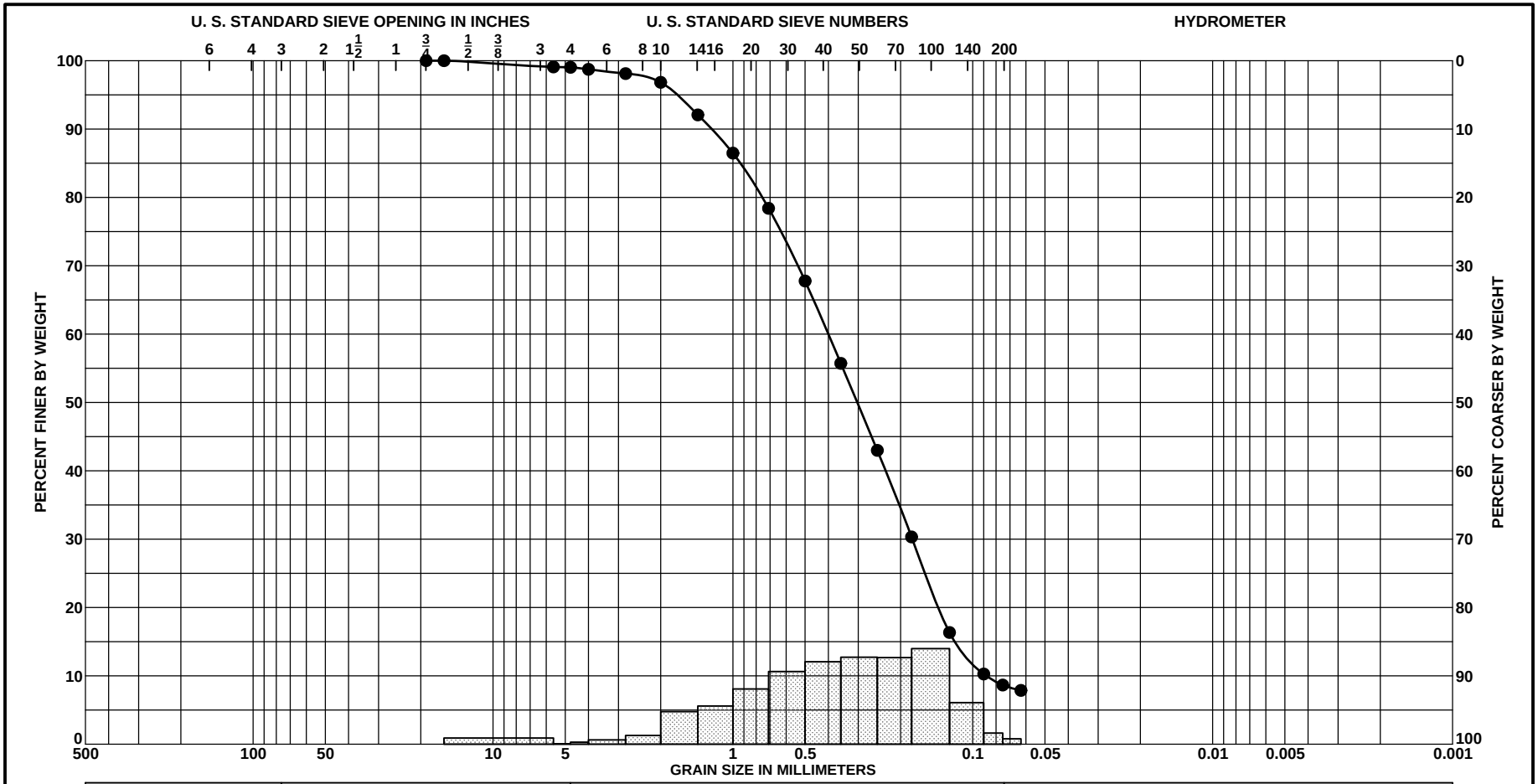


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, silty, mostly fine to	2.5Y 7/3	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, trace fine gravel-									
		sized limestone, pale yellow (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-46
BORING ELEV.	-51.4 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

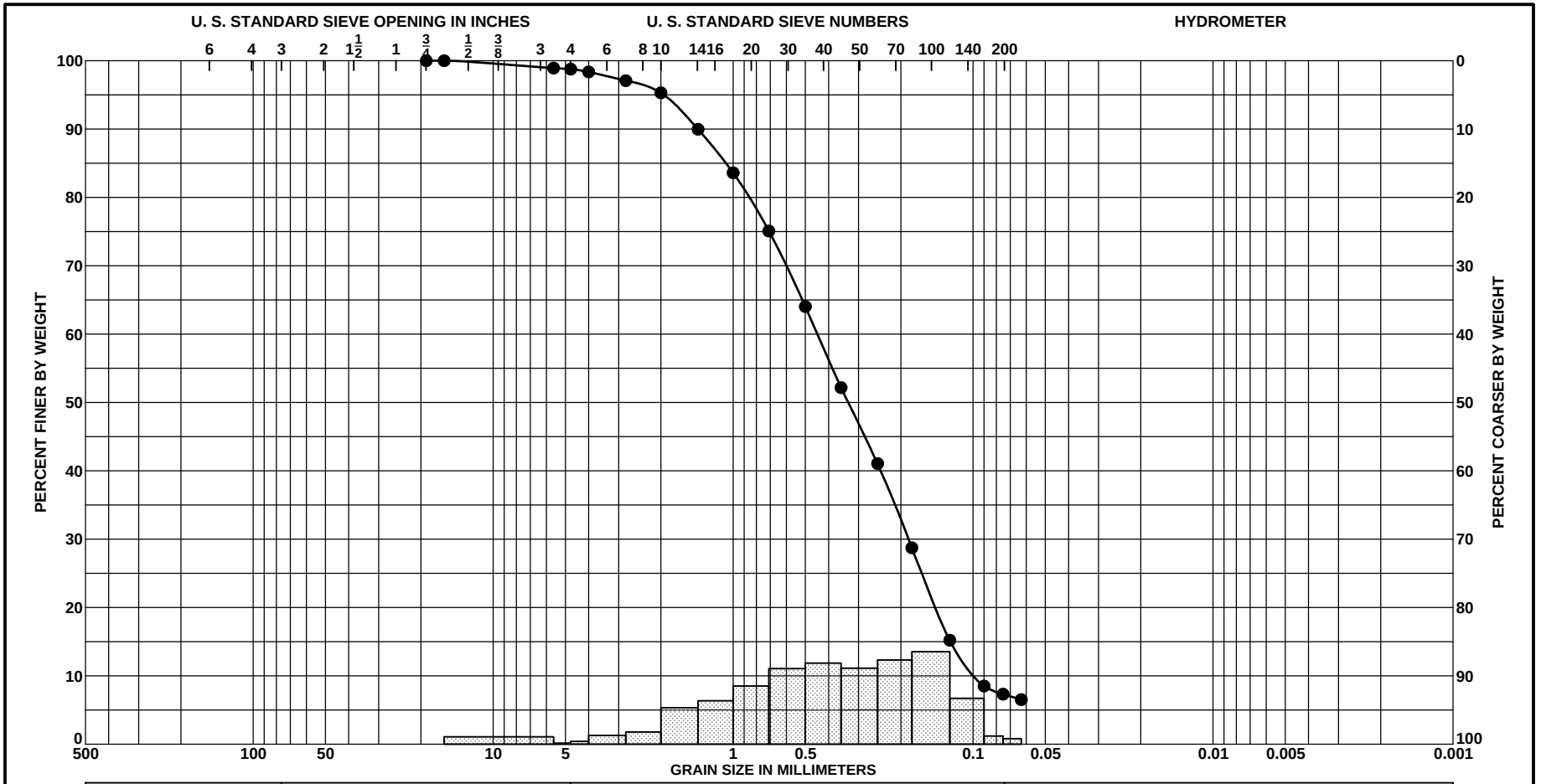


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 7/3	2							
		fine to medium-grained									
		sand-sized carbonate, few silt,									
		trace shell, trace fine gravel-sized									
		limestone, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-46
BORING ELEV.	-51.4 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

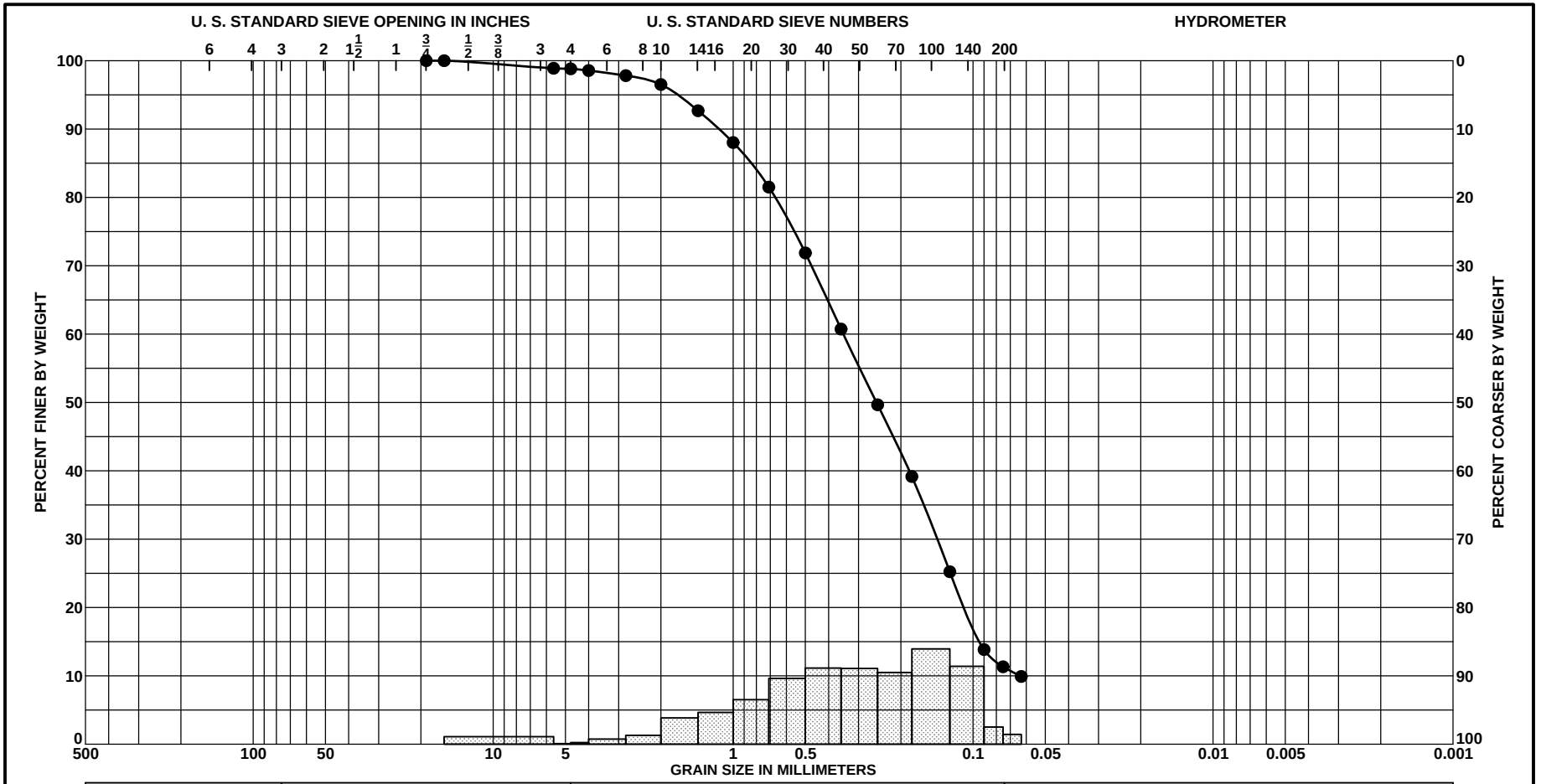


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	7.0 to 7.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 7/3	1							
		fine to medium-grained									
		sand-sized carbonate, few silt,									
		trace shell, trace fine gravel-sized									
		limestone, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-46
BORING ELEV.	-51.4 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

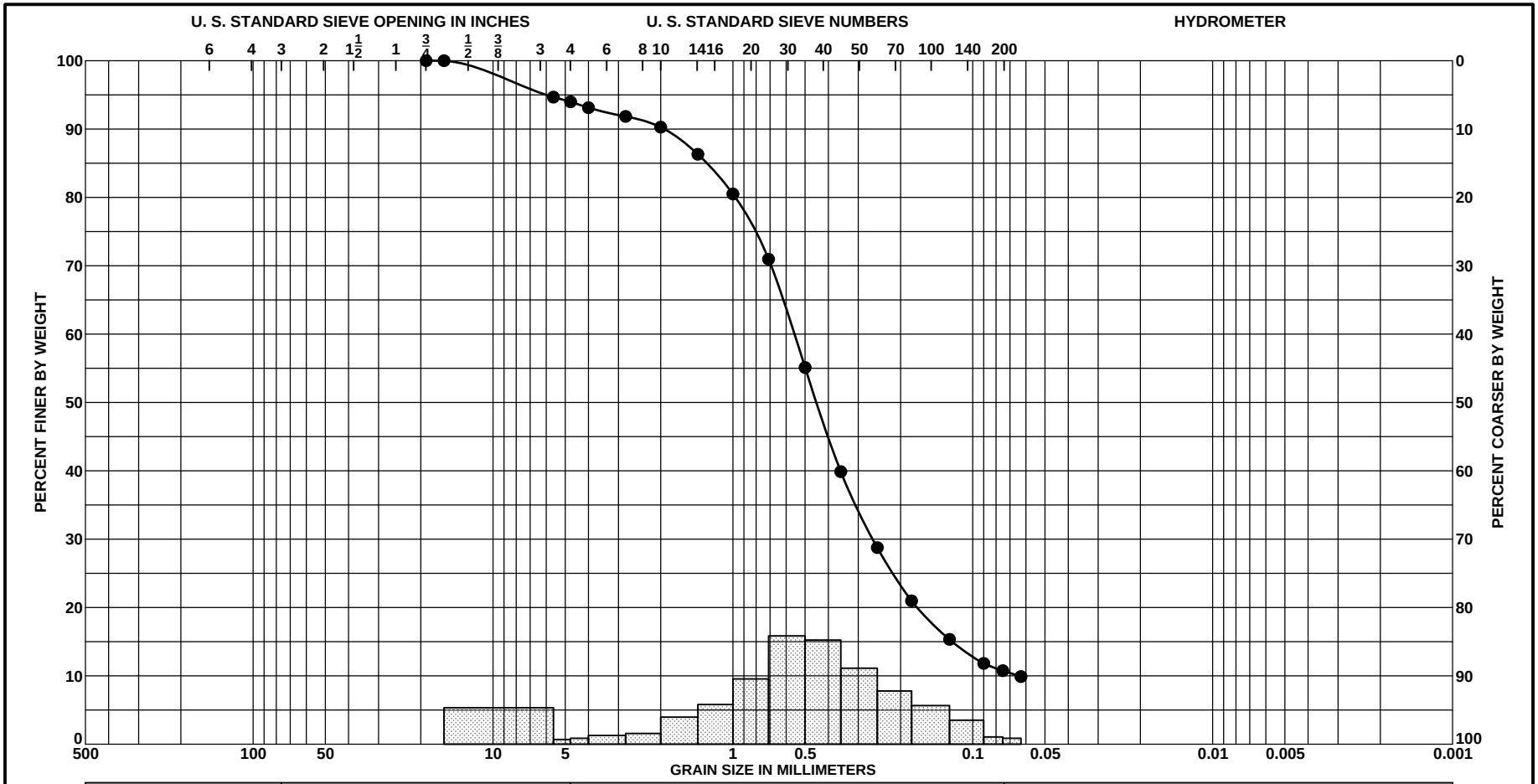


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	10.0 to 10.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 7/3	0							
		fine to medium-grained									
		sand-sized carbonate, few silt,									
		trace shell, trace fine gravel-sized									
		limestone, pale yellow (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-46
BORING ELEV.	-51.4 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	13.0 to 13.2 Ft.	SAD, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, trace fine gravel-sized limestone, light brownish gray (SW-SM)	2.5Y 6/2	0							

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-46
BORING ELEV.	-51.4 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-46 @ 1 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,523	557,900	State Plane, FLE (U.S. Ft.)	-52.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 7/3	#200 - 13.61 #230 - 12.34			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.46	2.46
#4	-2.25	4.75	0.66	3.12
#5	-2.00	4.00	0.47	3.59
#7	-1.50	2.80	1.35	4.94
#10	-1.00	2.00	2.13	7.07
#14	-0.50	1.40	4.37	11.44
#18	0.00	1.00	4.38	15.83
#25	0.50	0.71	5.58	21.41
#35	1.00	0.50	8.43	29.83
#45	1.50	0.36	9.86	39.69
#60	2.00	0.25	10.09	49.78
#80	2.50	0.18	11.50	61.28
#120	3.00	0.13	14.86	76.14
#170	3.50	0.09	8.31	84.45
#200	3.75	0.08	1.94	86.39
#230	4.00	0.06	1.28	87.66

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.47	2.96	2.01	0.71	0.02	-1.49

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.41	0.38	2.01	0.25	1.59	-0.92	3.52

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-46 @ 4 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,523	557,900	State Plane, FLE (U.S. Ft.)	-55.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 7/3	#200 - 8.65 #230 - 7.87			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.91	0.91
#4	-2.25	4.75	0.06	0.96
#5	-2.00	4.00	0.30	1.26
#7	-1.50	2.80	0.62	1.88
#10	-1.00	2.00	1.28	3.16
#14	-0.50	1.40	4.76	7.92
#18	0.00	1.00	5.60	13.52
#25	0.50	0.71	8.08	21.60
#35	1.00	0.50	10.63	32.23
#45	1.50	0.36	12.05	44.28
#60	2.00	0.25	12.73	57.01
#80	2.50	0.18	12.67	69.68
#120	3.00	0.13	13.98	83.66
#170	3.50	0.09	6.07	89.73
#200	3.75	0.08	1.62	91.35
#230	4.00	0.06	0.78	92.13

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.03	2.69	1.72	0.66	0.15	-0.81

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.43	0.37	1.72	0.30	1.32	-0.66	3.43

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-46 @ 7 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,523	557,900	State Plane, FLE (U.S. Ft.)	-58.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 7/3	#200 - 7.32 #230 - 6.52			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.08	1.08
#4	-2.25	4.75	0.15	1.23
#5	-2.00	4.00	0.41	1.64
#7	-1.50	2.80	1.28	2.92
#10	-1.00	2.00	1.78	4.70
#14	-0.50	1.40	5.34	10.04
#18	0.00	1.00	6.36	16.40
#25	0.50	0.71	8.51	24.91
#35	1.00	0.50	11.06	35.97
#45	1.50	0.36	11.86	47.83
#60	2.00	0.25	11.11	58.94
#80	2.50	0.18	12.32	71.27
#120	3.00	0.13	13.53	84.79
#170	3.50	0.09	6.70	91.49
#200	3.75	0.08	1.19	92.68
#230	4.00	0.06	0.79	93.48

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.97	2.64	1.60	0.50	-0.03	-0.97

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.33	0.40	1.60	0.33	1.4	-0.62	3.18

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-46 @ 10 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,523	557,900	State Plane, FLE (U.S. Ft.)	-61.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 7/3	#200 - 11.33 #230 - 9.91			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.11	1.11
#4	-2.25	4.75	0.09	1.19
#5	-2.00	4.00	0.24	1.43
#7	-1.50	2.80	0.75	2.19
#10	-1.00	2.00	1.30	3.48
#14	-0.50	1.40	3.84	7.32
#18	0.00	1.00	4.66	11.98
#25	0.50	0.71	6.52	18.50
#35	1.00	0.50	9.63	28.12
#45	1.50	0.36	11.14	39.27
#60	2.00	0.25	11.07	50.34
#80	2.50	0.18	10.50	60.84
#120	3.00	0.13	13.93	74.77
#170	3.50	0.09	11.39	86.16
#200	3.75	0.08	2.51	88.67
#230	4.00	0.06	1.42	90.09

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.41	3.01	1.98	0.84	0.31	-0.80

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.60	0.33	1.98	0.25	1.41	-0.77	3.53

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-46 @ 13 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,523	557,900	State Plane, FLE (U.S. Ft.)	-64.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 6/2	#200 - 10.76 #230 - 9.89			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	5.33	5.33
#4	-2.25	4.75	0.68	6.01
#5	-2.00	4.00	0.87	6.88
#7	-1.50	2.80	1.28	8.16
#10	-1.00	2.00	1.57	9.72
#14	-0.50	1.40	3.96	13.69
#18	0.00	1.00	5.81	19.50
#25	0.50	0.71	9.55	29.04
#35	1.00	0.50	15.85	44.89
#45	1.50	0.36	15.23	60.13
#60	2.00	0.25	11.11	71.24
#80	2.50	0.18	7.79	79.03
#120	3.00	0.13	5.64	84.66
#170	3.50	0.09	3.51	88.18
#200	3.75	0.08	1.07	89.24
#230	4.00	0.06	0.86	90.11

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.94	2.24	1.17	0.29	-0.30	-2.61

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.83	0.56	1.17	0.44	1.58	-0.85	3.79

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 46
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 46
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 46
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 46
DEPTH: 7.5–10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 46
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 46
DEPTH :12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 46
DEPTH :15.0 –17.5
15'
16'
17'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 46
DEPTH :17.5 –18.7
18'
19'
20'

VB-DA20-47

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-47

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 1 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-47	LOCATION COORDINATES: X = 953,580 Y = 561,936	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 1 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -51.9 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 100 %	
8. TOTAL DEPTH OF BORING: 2.9 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-51.9	0.0								
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 6/1 gray (SW-SM)		1		-52.9		
-53.9	2.0								
-54.8	2.9		SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, some fine gravel-sized limestone, few shell, trace silt, moist, 5Y 6/1 gray (SW)				-54.8		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

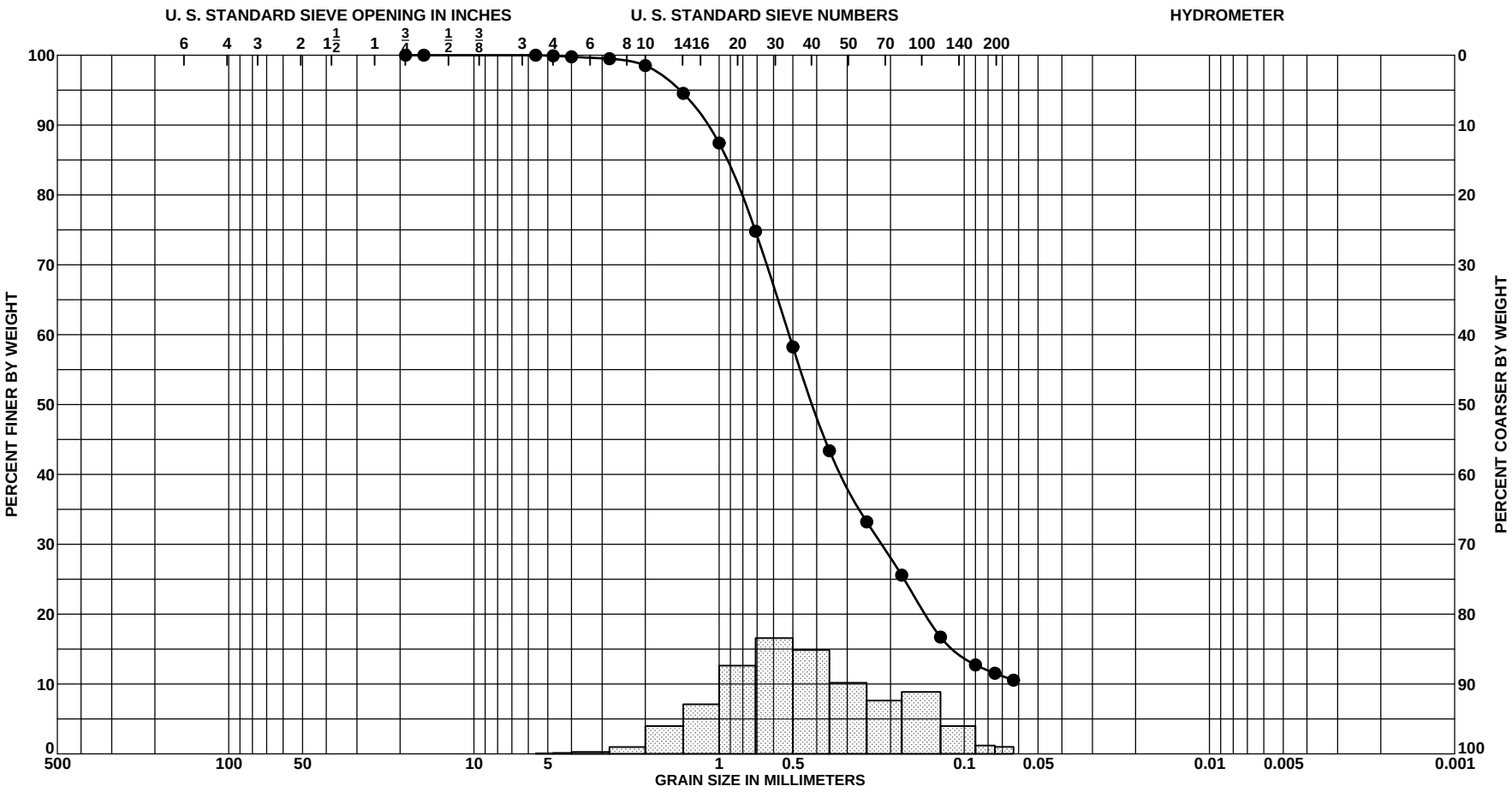
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW-SM*

*Lab visual classification based on gradation curve

0
5
10
15

SAJ FORM 1836
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-47
BORING ELEV.	-51.9 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-47 @ 1 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,580	561,936	State Plane, FLE (U.S. Ft.)	-52.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 11.54 #230 - 10.55			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.08	0.08
#5	-2.00	4.00	0.15	0.23
#7	-1.50	2.80	0.27	0.50
#10	-1.00	2.00	0.98	1.49
#14	-0.50	1.40	3.98	5.46
#18	0.00	1.00	7.11	12.57
#25	0.50	0.71	12.62	25.19
#35	1.00	0.50	16.56	41.76
#45	1.50	0.36	14.86	56.62
#60	2.00	0.25	10.17	66.79
#80	2.50	0.18	7.62	74.42
#120	3.00	0.13	8.87	83.28
#170	3.50	0.09	3.98	87.27
#200	3.75	0.08	1.19	88.46
#230	4.00	0.06	0.99	89.45

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.09	2.53	1.28	0.49	0.14	-0.56

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.20	0.44	1.28	0.41	1.16	0.13	2.58

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 47
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 47
DEPTH: 2.5 – 2.9
3'
4'
5'

VB-DA20-48

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-48

DRILLING LOG	DIVISION	INSTALLATION	SHEET
	South Atlantic	Jacksonville, Fl	1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-48	LOCATION COORDINATES: X = 954,594 Y = 564,607	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 4 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -63.3 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 90 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-63.3	0.0								
			SAND, silty, mostly fine-grained sand-sized carbonate, little silt, trace shell, moist, 2.5Y 7/1 light gray (SM)				-66.3		
					1				
							-70.3		
					2				
-73.5	10.2		SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 5Y 6/1 gray (SM)				-74.3		
					3				
							-77.3		
					4				

0 5 10 15

(Continued)

Boring Designation VB-DA20-48

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 954,594 Y = 564,607	ELEVATION TOP OF BORING: -63.3 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-81.2	17.9		No Recovery						
-83.3	20.0						-83.3		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

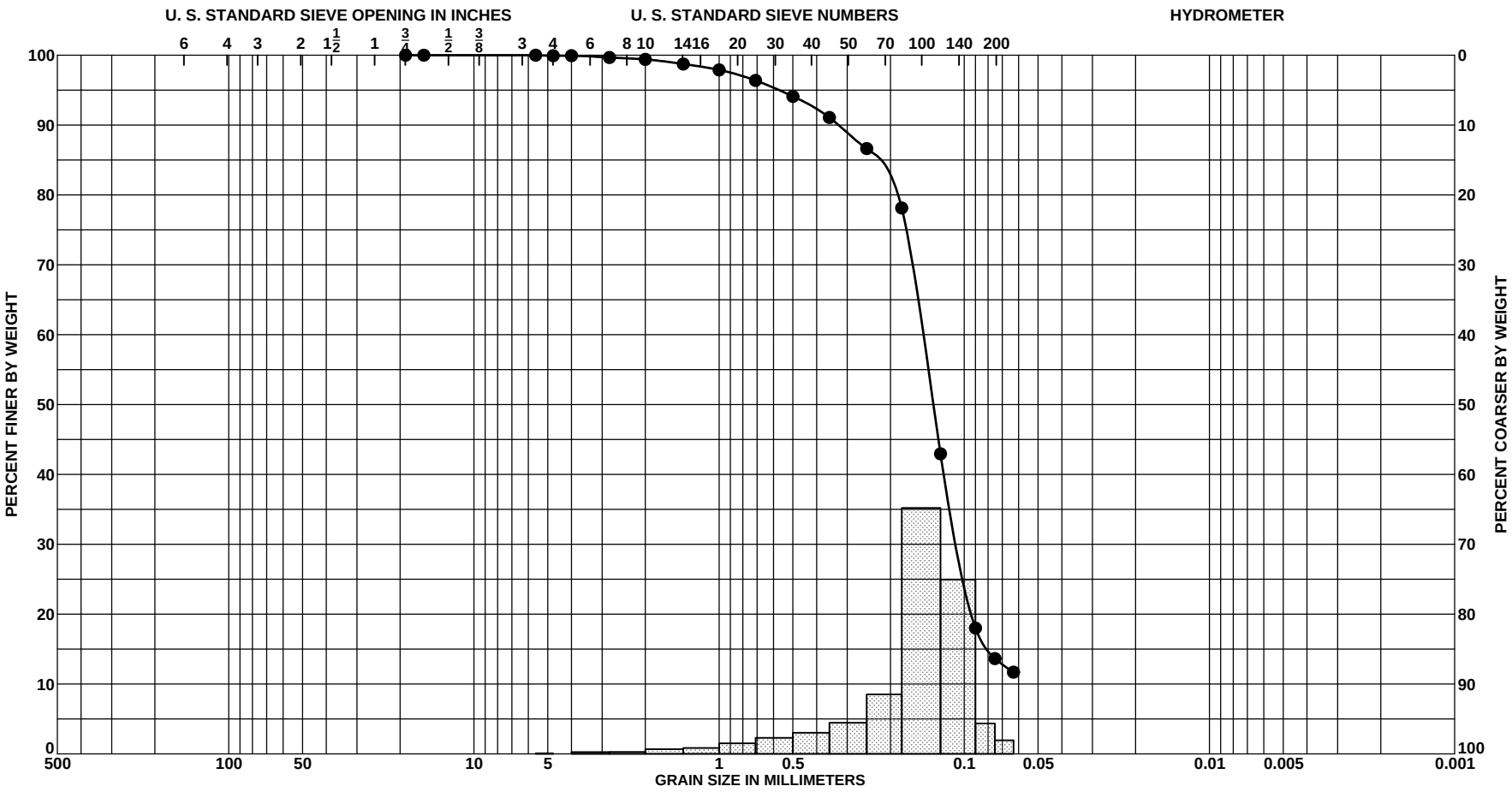
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	3.0/3.2	SM*
2	7.0/7.2	SM*
3	11.0/11.2	SM*
4	14.0/14.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

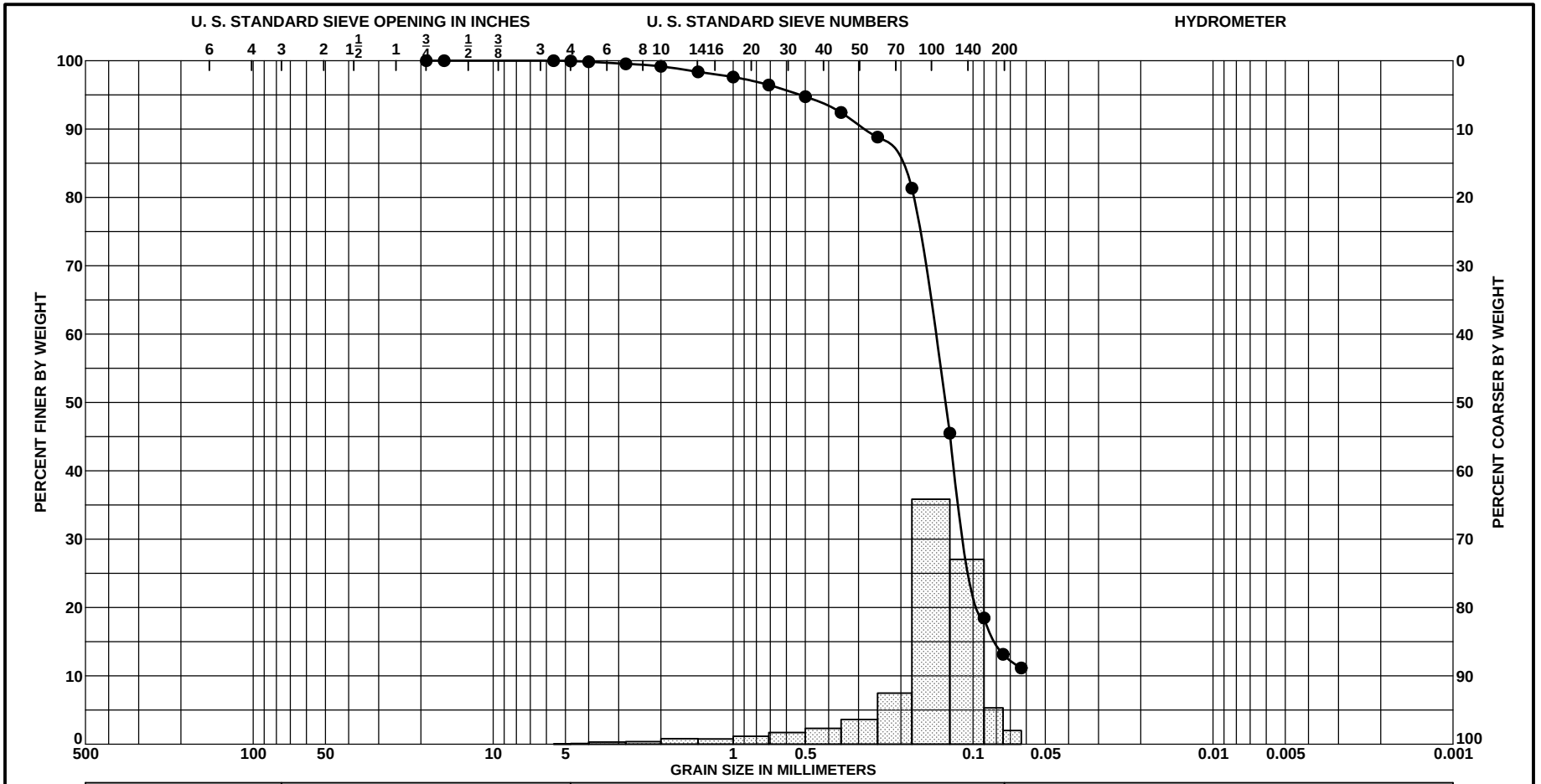


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	3.0 to 3.2 Ft.	SAND, silty, mostly fine-grained	2.5Y 7/1	0	98						
		sand-sized									
		carbonate, little silt, light gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-48
BORING ELEV.	-63.3 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

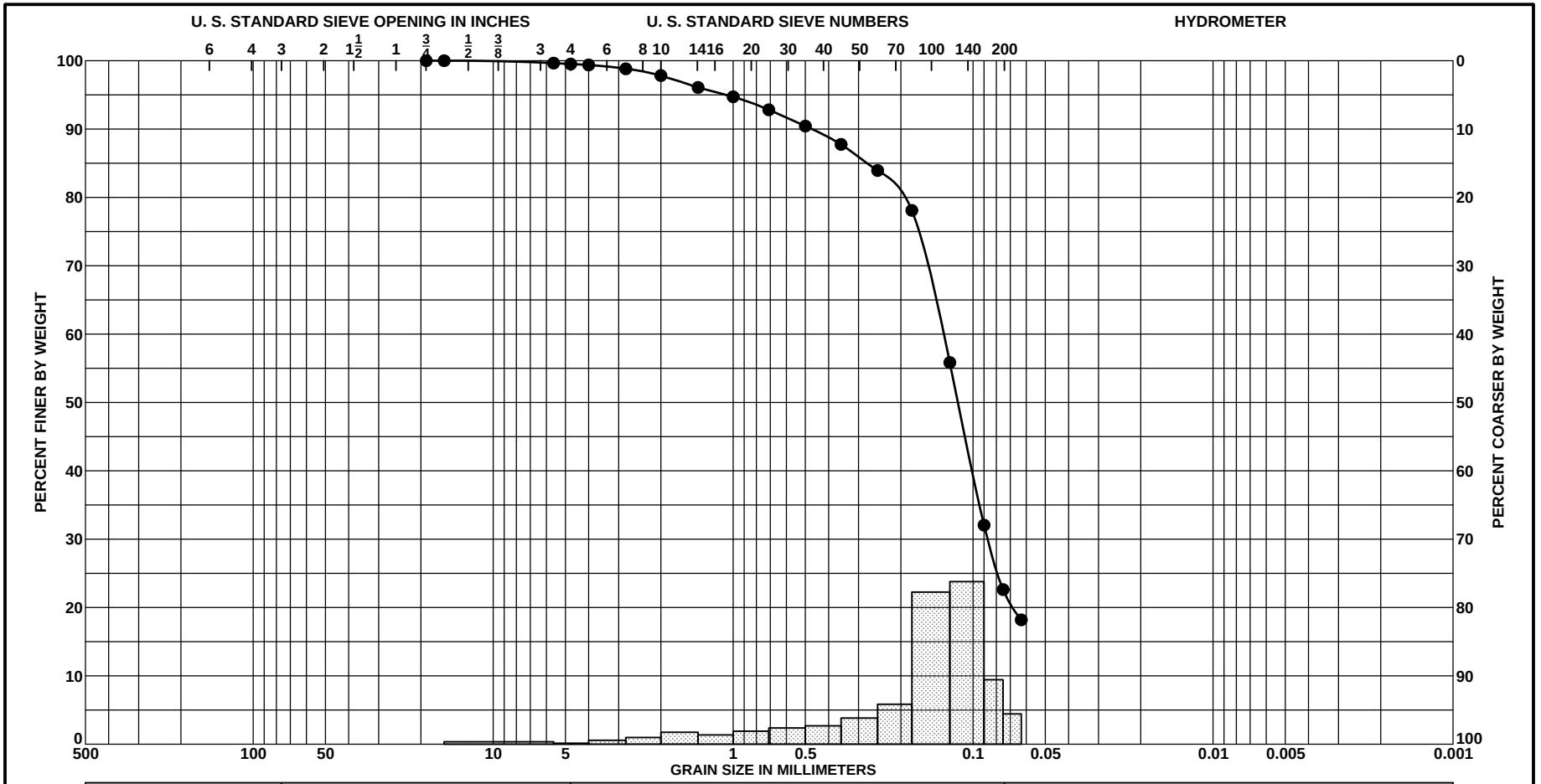


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	7.0 to 7.2 Ft.	SAND, silty, mostly fine-grained	2.5Y 7/1	0							
		sand-sized									
		carbonate, little silt, light gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-48
BORING ELEV.	-63.3 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

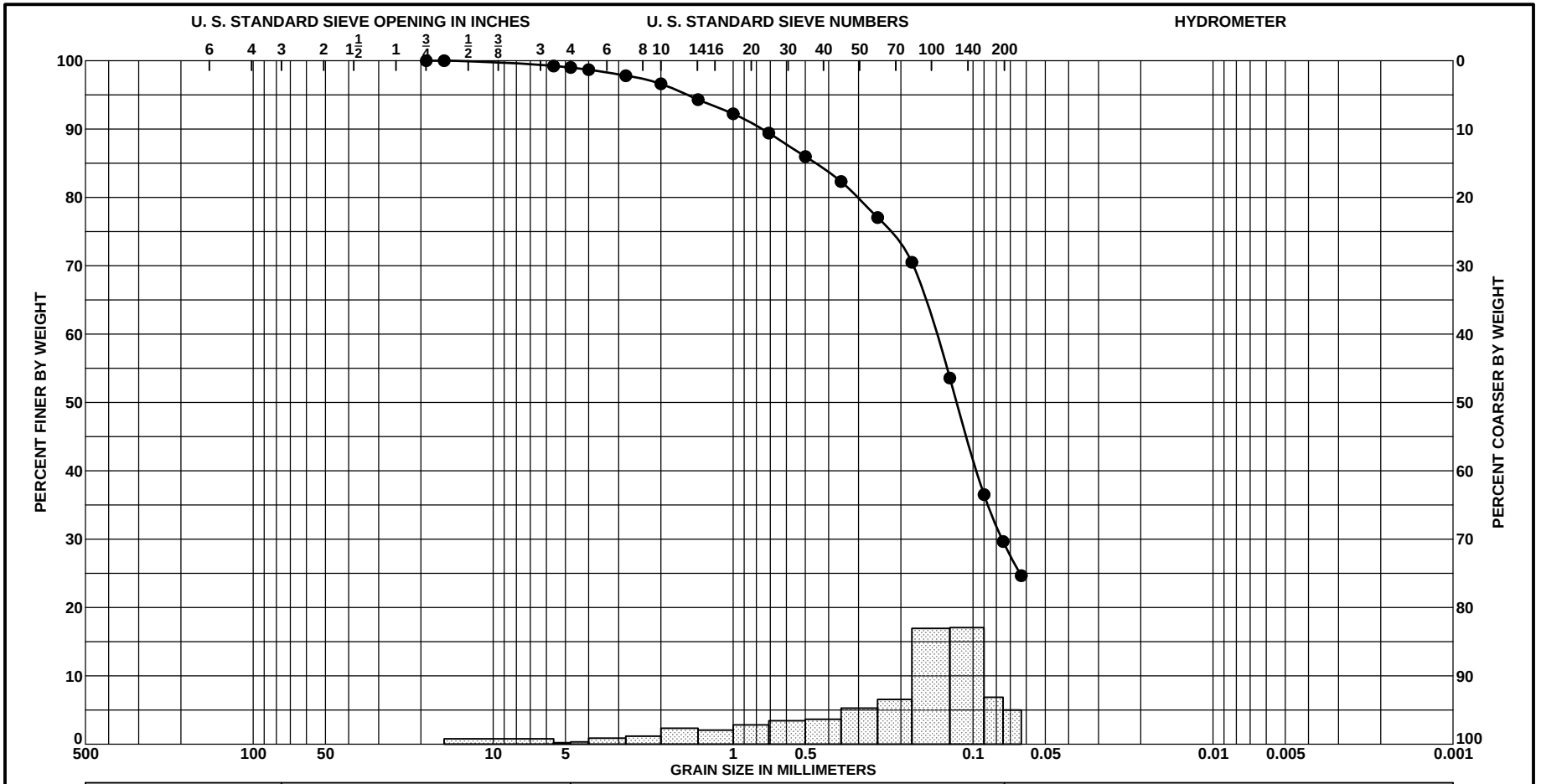


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	11.0 to 11.2 Ft.	SAND, silty, mostly fine-grained	5Y 6/1	0							
		sand-sized									
		carbonate, little silt, gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-48
BORING ELEV.	-63.3 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

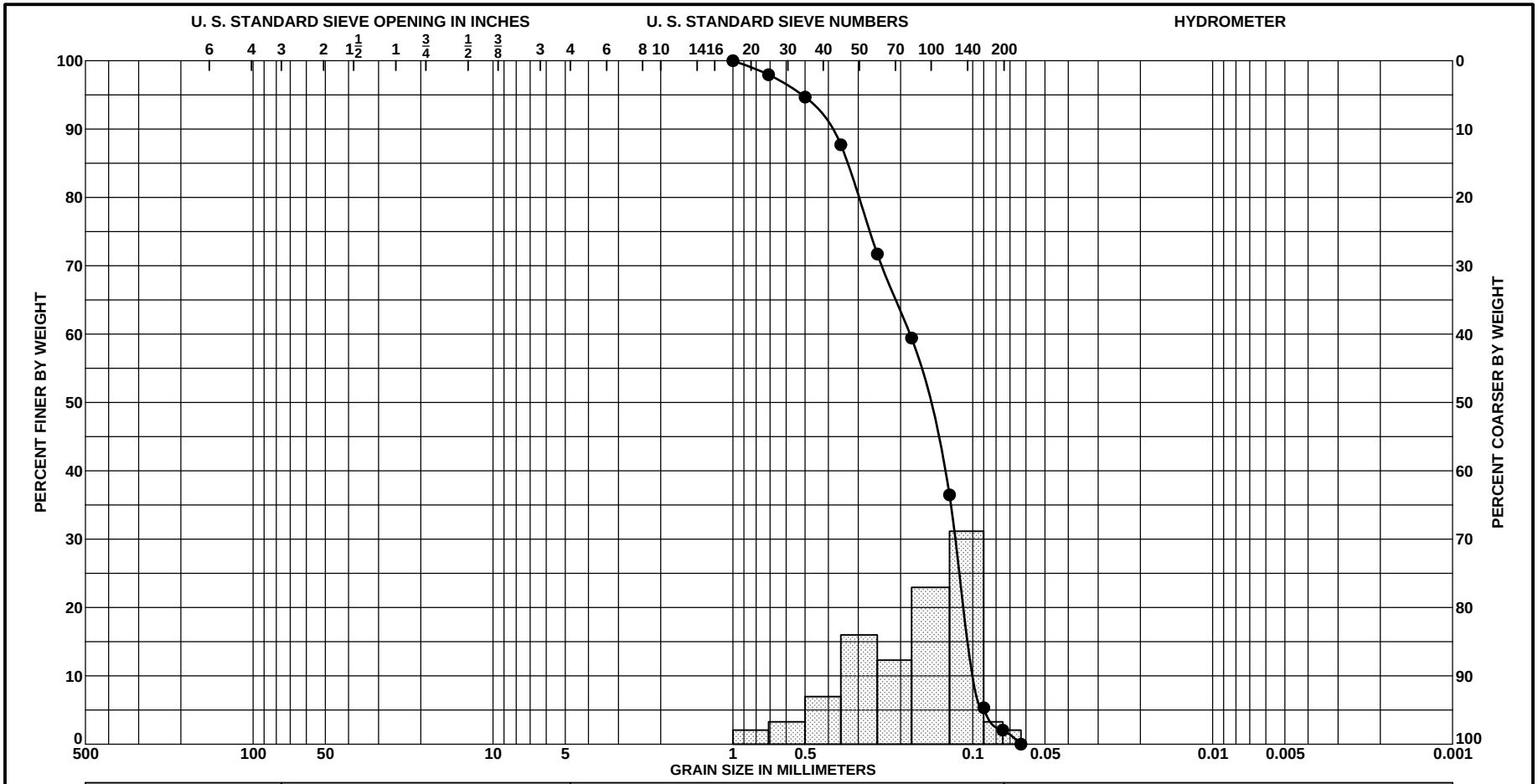


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	14.0 to 14.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	0							
		medium-grained									
		sand-sized carbonate, little silt, gray									
		(SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-48
BORING ELEV.	-63.3 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	3.0 to 3.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-48
BORING ELEV.	-63.3 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-48 @ 3 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,594	564,607	State Plane, FLE (U.S. Ft.)	-66.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 7/1	#200 - 13.64 #230 - 11.69		97.80	0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.07	0.07
#5	-2.00	4.00	0.00	0.07
#7	-1.50	2.80	0.26	0.33
#10	-1.00	2.00	0.27	0.60
#14	-0.50	1.40	0.66	1.26
#18	0.00	1.00	0.84	2.10
#25	0.50	0.71	1.51	3.61
#35	1.00	0.50	2.29	5.90
#45	1.50	0.36	3.02	8.92
#60	2.00	0.25	4.45	13.37
#80	2.50	0.18	8.50	21.87
#120	3.00	0.13	35.19	57.06
#170	3.50	0.09	24.94	82.00
#200	3.75	0.08	4.36	86.36
#230	4.00	0.06	1.95	88.31

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.61	3.36	2.90	2.54	2.15	0.80

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.63	0.16	2.90	0.13	0.89	-2.01	8.12

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-48 @ 7 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,594	564,607	State Plane, FLE (U.S. Ft.)	-70.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 7/1	#200 - 13.15 #230 - 11.15			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.05	0.05
#5	-2.00	4.00	0.11	0.15
#7	-1.50	2.80	0.31	0.46
#10	-1.00	2.00	0.37	0.83
#14	-0.50	1.40	0.81	1.63
#18	0.00	1.00	0.76	2.39
#25	0.50	0.71	1.16	3.55
#35	1.00	0.50	1.71	5.26
#45	1.50	0.36	2.31	7.58
#60	2.00	0.25	3.60	11.18
#80	2.50	0.18	7.48	18.66
#120	3.00	0.13	35.84	54.50
#170	3.50	0.09	27.04	81.54
#200	3.75	0.08	5.32	86.85
#230	4.00	0.06	1.99	88.85

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.62	3.38	2.94	2.59	2.32	0.92

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.69	0.15	2.94	0.13	0.89	-2.34	9.94

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-48 @ 11 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,594	564,607	State Plane, FLE (U.S. Ft.)	-74.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 22.62 #230 - 18.19			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.35	0.35
#4	-2.25	4.75	0.14	0.49
#5	-2.00	4.00	0.13	0.62
#7	-1.50	2.80	0.56	1.18
#10	-1.00	2.00	0.99	2.17
#14	-0.50	1.40	1.75	3.92
#18	0.00	1.00	1.36	5.28
#25	0.50	0.71	1.91	7.19
#35	1.00	0.50	2.38	9.57
#45	1.50	0.36	2.68	12.25
#60	2.00	0.25	3.81	16.06
#80	2.50	0.18	5.84	21.90
#120	3.00	0.13	22.26	44.16
#170	3.50	0.09	23.79	67.95
#200	3.75	0.08	9.43	77.38
#230	4.00	0.06	4.43	81.81

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.69	3.12	2.57	1.99	-0.10

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.56	0.17	3.12	0.12	1.26	-1.92	6.73

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-48 @ 14 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,594	564,607	State Plane, FLE (U.S. Ft.)	-77.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 29.65 #230 - 24.66			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.77	0.77
#4	-2.25	4.75	0.21	0.99
#5	-2.00	4.00	0.33	1.31
#7	-1.50	2.80	0.89	2.20
#10	-1.00	2.00	1.18	3.38
#14	-0.50	1.40	2.32	5.70
#18	0.00	1.00	2.06	7.77
#25	0.50	0.71	2.83	10.59
#35	1.00	0.50	3.43	14.03
#45	1.50	0.36	3.65	17.68
#60	2.00	0.25	5.27	22.95
#80	2.50	0.18	6.55	29.49
#120	3.00	0.13	16.94	46.43
#170	3.50	0.09	17.05	63.48
#200	3.75	0.08	6.87	70.35
#230	4.00	0.06	5.00	75.34

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.98	3.10	2.16	1.27	-0.65

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.24	0.21	3.10	0.12	1.49	-1.42	4.62

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-48 @ 3 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,594	564,607	State Plane, FLE (U.S. Ft.)	-66.3 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 2.05 #230 - 0.00			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#18	0.00	1.00	0.00	0.00
#25	0.50	0.71	2.05	2.05
#35	1.00	0.50	3.28	5.33
#45	1.50	0.36	6.97	12.30
#60	2.00	0.25	15.98	28.28
#80	2.50	0.18	12.30	40.57
#120	3.00	0.13	22.95	63.52
#170	3.50	0.09	31.15	94.67
#200	3.75	0.08	3.28	97.95
#230	4.00	0.06	2.05	100.00

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.53	3.33	3.18	2.71	1.90	1.62	0.95

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.51	0.18	2.71	0.15	0.82	-0.73	2.82

GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 48
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 48
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 48
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 48
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 48
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 48
DEPTH :12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 48
DEPTH :15.0 –17.5
15'
16'
17'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 48
DEPTH :17.5 –17.9
18'
19'
20'

VB-DA20-49

Vibracore Log
Grain Size Distribution Curves
Granulometric Tables
Vibracore Photos

Boring Designation VB-DA20-49

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1 OF 2 SHEETS
	South Atlantic	Jacksonville, Fl	

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-49
LOCATION COORDINATES: X = 954,649 Y = 566,754
3. DRILLING AGENCY: Amdrill
CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL:
BEARING:
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 18.0 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) HORIZONTAL: NAD83 VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 5 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-28-20 COMPLETED: 06-28-20
16. ELEVATION TOP OF BORING: -65.7 Ft.
17. TOTAL RECOVERY FOR BORING: 93 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-65.7	0.0								
			SAND, silty, mostly fine-grained sand-sized carbonate, little silt, trace shell, moist, 5Y 6/2 light olive gray (SM)				-66.7		
					1				
							-68.7		
					2				
-71.7	6.0						-71.7		
			SAND, well-graded with silt, mostly fine-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 6/2 light olive gray (SW-SM)		3				
-72.6	6.9		SAND, silty, mostly fine-grained sand-sized carbonate, few silt, few shell, moist, 5Y 7/1 light gray (SM)				-73.7		
					4				
			At El. -74.6 Ft., mostly fine to medium-grained sand-sized carbonate, little silt, few shell, moist, 2.5Y 6/2 light brownish gray						
							-76.7		
					5				
-77.9	12.2		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone, little fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 2.5Y 6/1 gray						
-78.6	12.9		SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 2.5Y 6/2 light brownish gray (SM)						
-80.6	14.9								

0 5 10 15

(Continued)

Boring Designation VB-DA20-49

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 954,649 Y = 566,754	ELEVATION TOP OF BORING: -65.7 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-82.0	16.3		SILT, inorganic-L, mostly silt, some gravel to cobble-sized limestone, few fine to medium-grained sand-sized carbonate, trace shell, moist, 5Y 7/1 light gray (ML)						
-82.5	16.8		LIMESTONE						
			No Recovery						
-83.7	18.0						-83.7		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

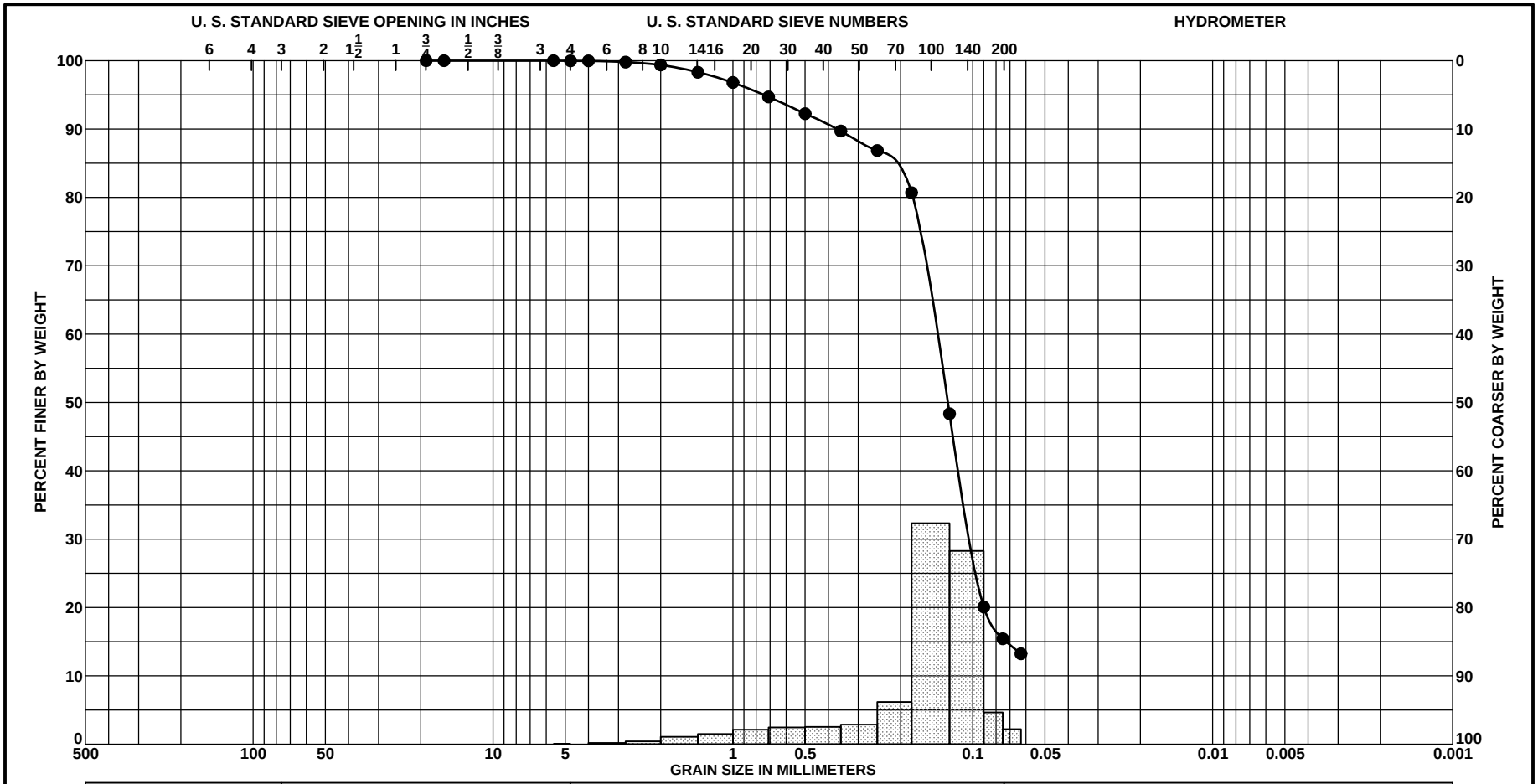
1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SM*
2	3.0/3.2	SM*
3	6.0/6.2	SW-SM*
4	8.0/8.2	SM*
5	11.0/11.2	SM*

*Lab visual classification based on gradation curve

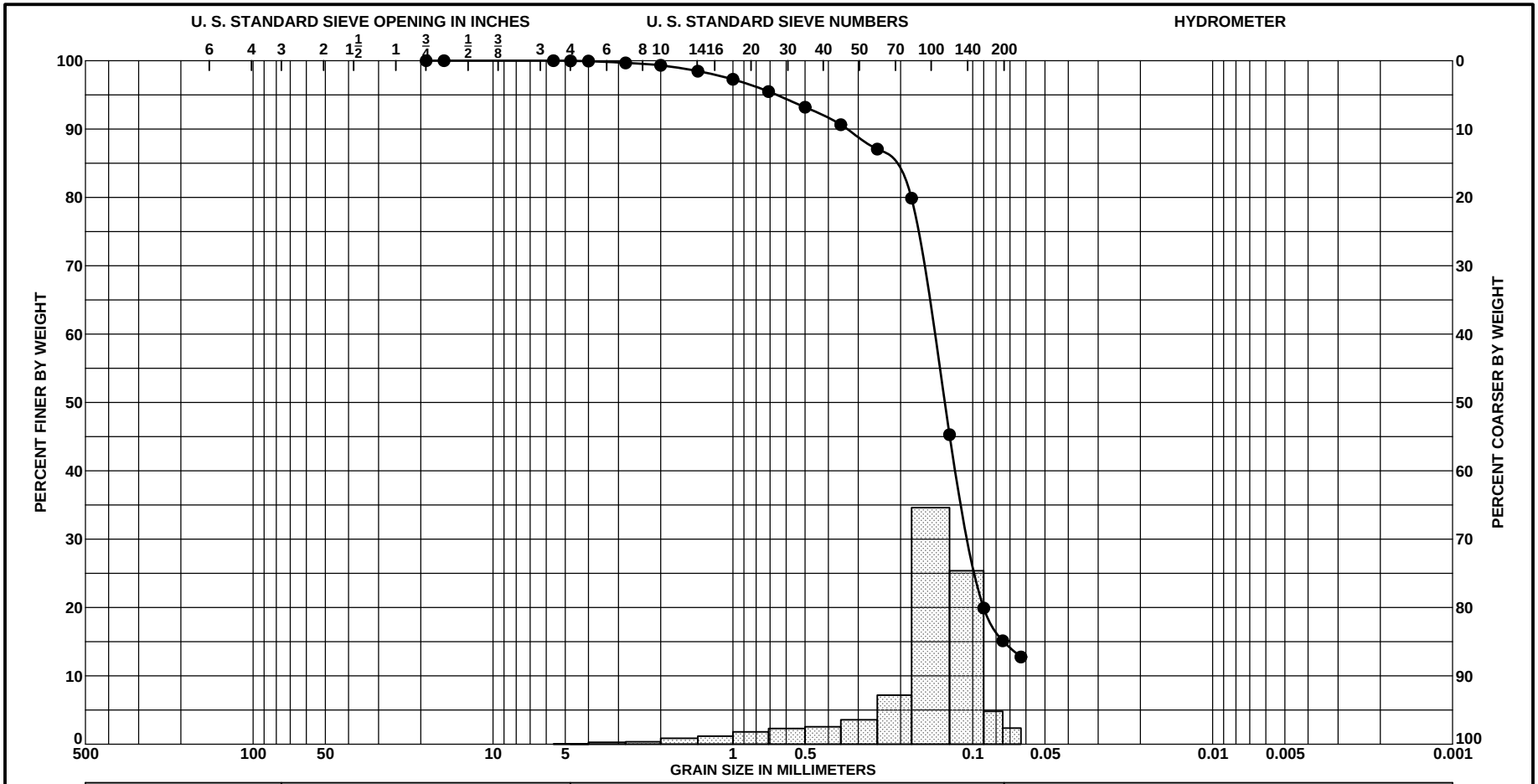


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, silty, mostly fine-grained	5Y 6/2	0							
		sand-sized									
		carbonate, little silt, light olive gray									
		(SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-49
BORING ELEV.	-65.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

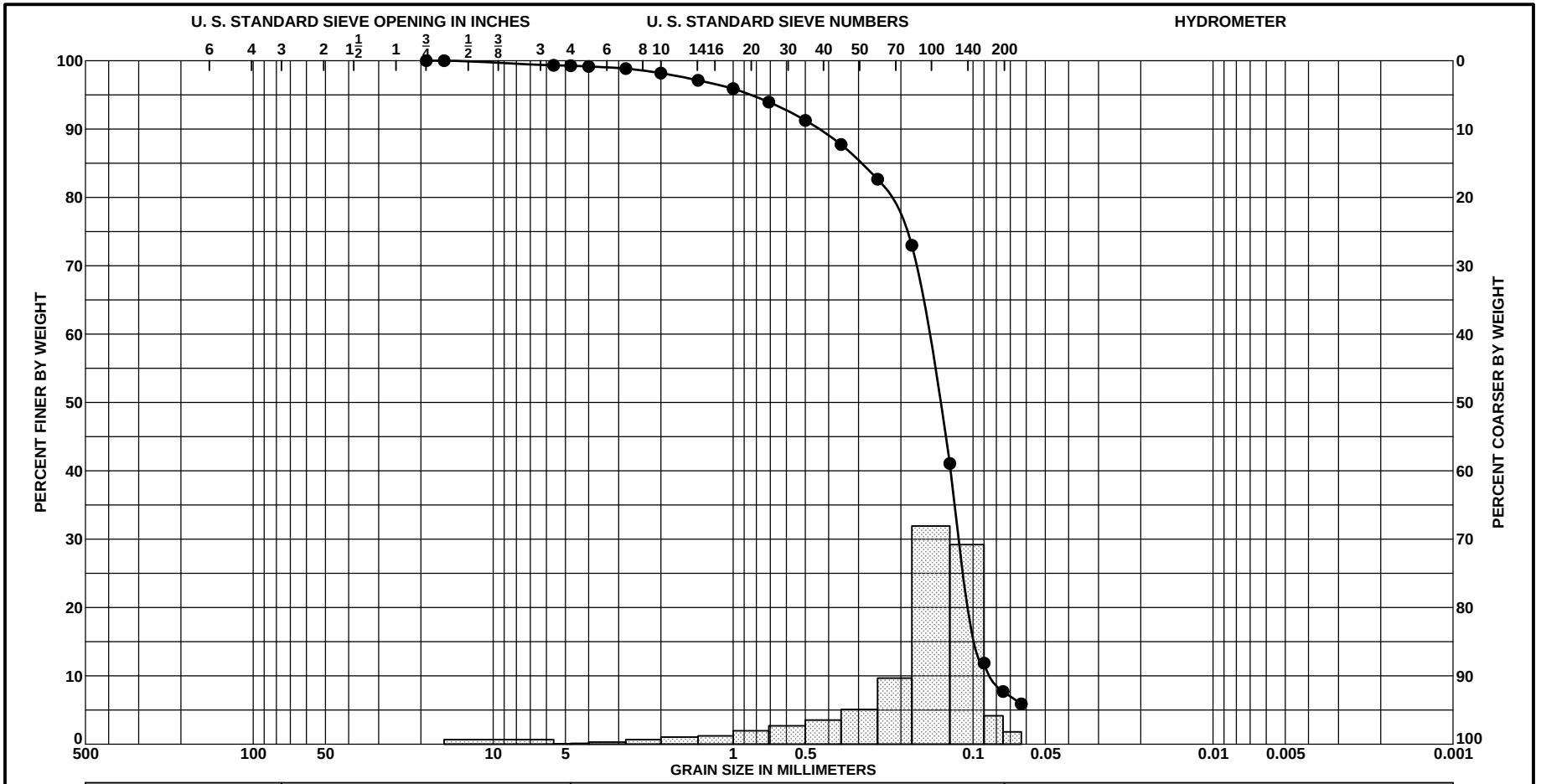


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, silty, mostly fine-grained	5Y 6/2	0							
		sand-sized									
		carbonate, little silt, light olive gray									
		(SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-49
BORING ELEV.	-65.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

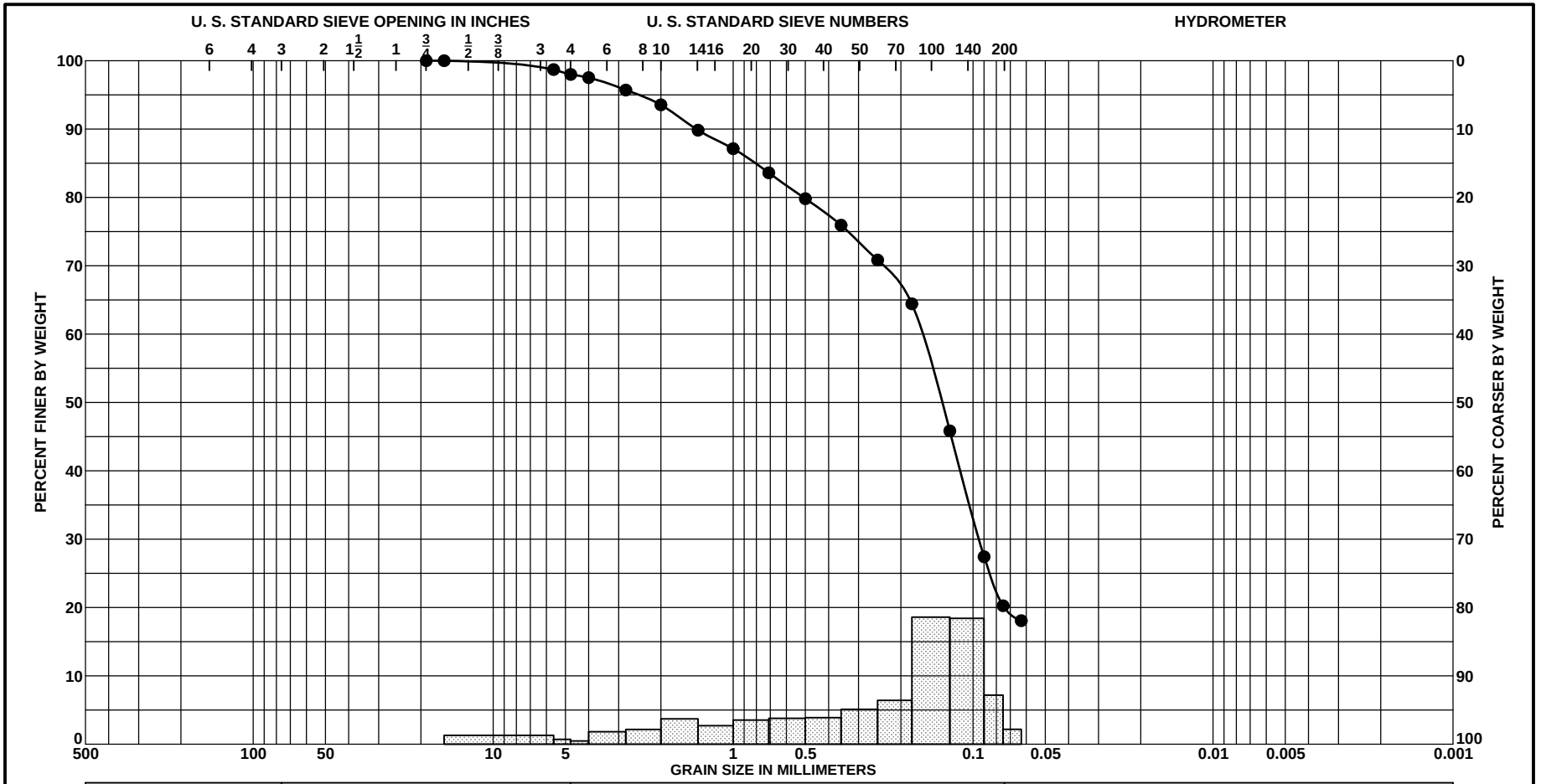


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/2	0							
		fine-grained sand-sized carbonate,									
		few silt, light olive gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-49
BORING ELEV.	-65.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

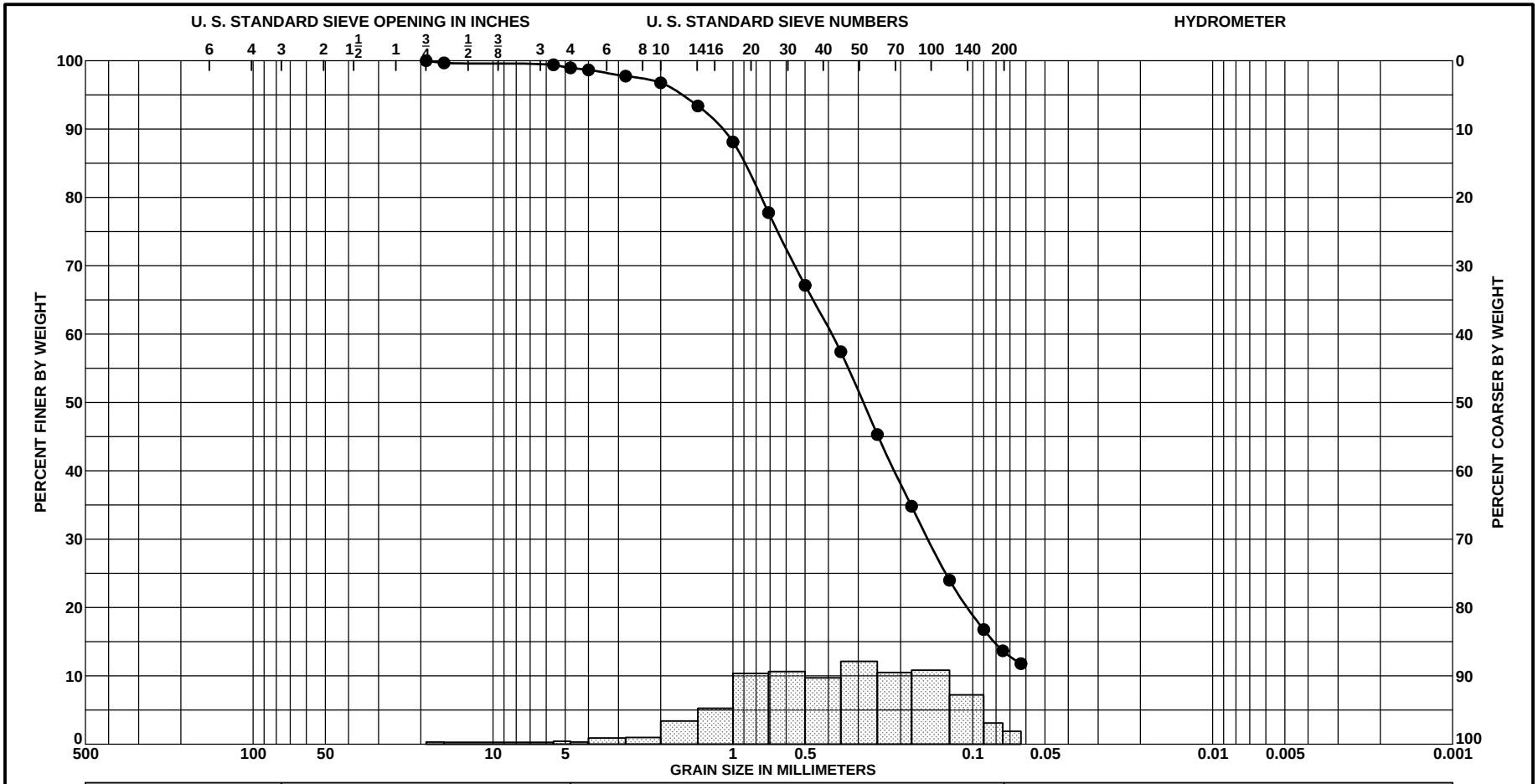


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, silty, mostly fine-grained	5Y 7/1	0							
		sand-sized									
		carbonate, few silt, light gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-49
BORING ELEV.	-65.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	11.0 to 11.2 Ft.	SAND, silty, mostly fine to	2.5Y 6/2	3							
		medium-grained sand-sized									
		carbonate, little									
		silt, few shell, light brownish gray									
		(SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-49
BORING ELEV.	-65.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-49 @ 1 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,649	566,754	State Plane, FLE (U.S. Ft.)	-66.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/2	#200 - 15.42 #230 - 13.23			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.02	0.02
#5	-2.00	4.00	0.00	0.02
#7	-1.50	2.80	0.18	0.21
#10	-1.00	2.00	0.41	0.62
#14	-0.50	1.40	1.07	1.69
#18	0.00	1.00	1.49	3.19
#25	0.50	0.71	2.11	5.30
#35	1.00	0.50	2.45	7.75
#45	1.50	0.36	2.54	10.29
#60	2.00	0.25	2.86	13.14
#80	2.50	0.18	6.17	19.32
#120	3.00	0.13	32.34	51.66
#170	3.50	0.09	28.27	79.93
#200	3.75	0.08	4.65	84.58
#230	4.00	0.06	2.19	86.77

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.72	3.41	2.97	2.59	2.23	0.43

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.63	0.16	2.97	0.13	0.98	-1.96	6.87

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-49 @ 3 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,649	566,754	State Plane, FLE (U.S. Ft.)	-68.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/2	#200 - 15.12 #230 - 12.76			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.03	0.03
#5	-2.00	4.00	0.02	0.06
#7	-1.50	2.80	0.27	0.33
#10	-1.00	2.00	0.35	0.68
#14	-0.50	1.40	0.86	1.53
#18	0.00	1.00	1.18	2.72
#25	0.50	0.71	1.80	4.52
#35	1.00	0.50	2.29	6.81
#45	1.50	0.36	2.56	9.36
#60	2.00	0.25	3.57	12.94
#80	2.50	0.18	7.18	20.12
#120	3.00	0.13	34.60	54.72
#170	3.50	0.09	25.37	80.08
#200	3.75	0.08	4.80	84.88
#230	4.00	0.06	2.36	87.24

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.70	3.40	2.93	2.57	2.21	0.61

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.64	0.16	2.93	0.13	0.94	-2.02	7.64

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-49 @ 6 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,649	566,754	State Plane, FLE (U.S. Ft.)	-71.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/2	#200 - 7.70 #230 - 5.89			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.67	0.67
#4	-2.25	4.75	0.06	0.73
#5	-2.00	4.00	0.12	0.84
#7	-1.50	2.80	0.31	1.16
#10	-1.00	2.00	0.66	1.82
#14	-0.50	1.40	1.05	2.87
#18	0.00	1.00	1.22	4.09
#25	0.50	0.71	1.96	6.05
#35	1.00	0.50	2.69	8.74
#45	1.50	0.36	3.52	12.26
#60	2.00	0.25	5.08	17.34
#80	2.50	0.18	9.67	27.01
#120	3.00	0.13	31.92	58.93
#170	3.50	0.09	29.21	88.14
#200	3.75	0.08	4.16	92.30
#230	4.00	0.06	1.81	94.11

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.43	3.28	2.86	2.40	1.87	0.23

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.52	0.17	2.86	0.14	1.11	-2.31	9.69

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-49 @ 8 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,649	566,754	State Plane, FLE (U.S. Ft.)	-73.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 7/1	#200 - 20.26 #230 - 18.07			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.29	1.29
#4	-2.25	4.75	0.71	2.01
#5	-2.00	4.00	0.47	2.48
#7	-1.50	2.80	1.82	4.30
#10	-1.00	2.00	2.16	6.46
#14	-0.50	1.40	3.71	10.17
#18	0.00	1.00	2.70	12.87
#25	0.50	0.71	3.53	16.40
#35	1.00	0.50	3.79	20.19
#45	1.50	0.36	3.88	24.07
#60	2.00	0.25	5.10	29.16
#80	2.50	0.18	6.41	35.57
#120	3.00	0.13	18.59	54.16
#170	3.50	0.09	18.41	72.57
#200	3.75	0.08	7.17	79.74
#230	4.00	0.06	2.18	81.93

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.58	2.89	1.59	0.44	-1.34

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.97	0.26	2.89	0.13	1.69	-1.21	3.58

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-49 @ 11 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,649	566,754	State Plane, FLE (U.S. Ft.)	-76.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 6/2	#200 - 13.67 #230 - 11.78			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.32	0.32
#3.5	-2.50	5.60	0.28	0.60
#4	-2.25	4.75	0.44	1.04
#5	-2.00	4.00	0.30	1.35
#7	-1.50	2.80	0.91	2.26
#10	-1.00	2.00	0.98	3.24
#14	-0.50	1.40	3.39	6.63
#18	0.00	1.00	5.26	11.89
#25	0.50	0.71	10.35	22.23
#35	1.00	0.50	10.63	32.87
#45	1.50	0.36	9.72	42.58
#60	2.00	0.25	12.12	54.70
#80	2.50	0.18	10.48	65.18
#120	3.00	0.13	10.83	76.02
#170	3.50	0.09	7.22	83.23
#200	3.75	0.08	3.10	86.33
#230	4.00	0.06	1.88	88.22

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.56	2.95	1.81	0.63	0.20	-0.74

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.46	0.36	1.81	0.29	1.39	-0.55	3.45

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 49
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 49
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 49
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 49
DEPTH: 7.5–10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 49
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 49
DEPTH :12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 49
DEPTH :15.0 –16.8
15'
16'
17'

VB-DA20-50

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-50

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-50 — LOCATION COORDINATES: X = 947,405 Y = 571,188
3. DRILLING AGENCY: Amdrill — CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL — BEARING
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 13.0 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore — ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES — DISTURBED: 5 — UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING — STARTED: 06-28-20 — COMPLETED: 06-28-20
16. ELEVATION TOP OF BORING: -14.8 Ft.
17. TOTAL RECOVERY FOR BORING: 100 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-14.8	0.0								
			SAND, poorly-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 2.5Y 5/1 gray (SP)				-15.8		
					1				
							-18.8		
					2				
-21.8	7.0						-21.8		
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 2.5Y 5/1 gray (SW)		3				
-23.0	8.2						-23.8		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 5/1 gray (SW-SM)		4				
							-25.8		
					5				
-27.3	12.5		At El. -26.8 Ft., mostly fine to medium-grained sand-sized carbonate, few silt, few shell, moist, 10YR 4/1 dark gray						
-27.8	13.0		LIMESTONE				-27.8		
			BORING TERMINATED IN REFUSAL				Abbreviations:		
			NOTES:						
			1. Taylor Engineering is the custodian for these original files.						

0 5 10 15

(Continued)

Boring Designation VB-DA20-50

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 947,405 Y = 571,188	ELEVATION TOP OF BORING: -14.8 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE

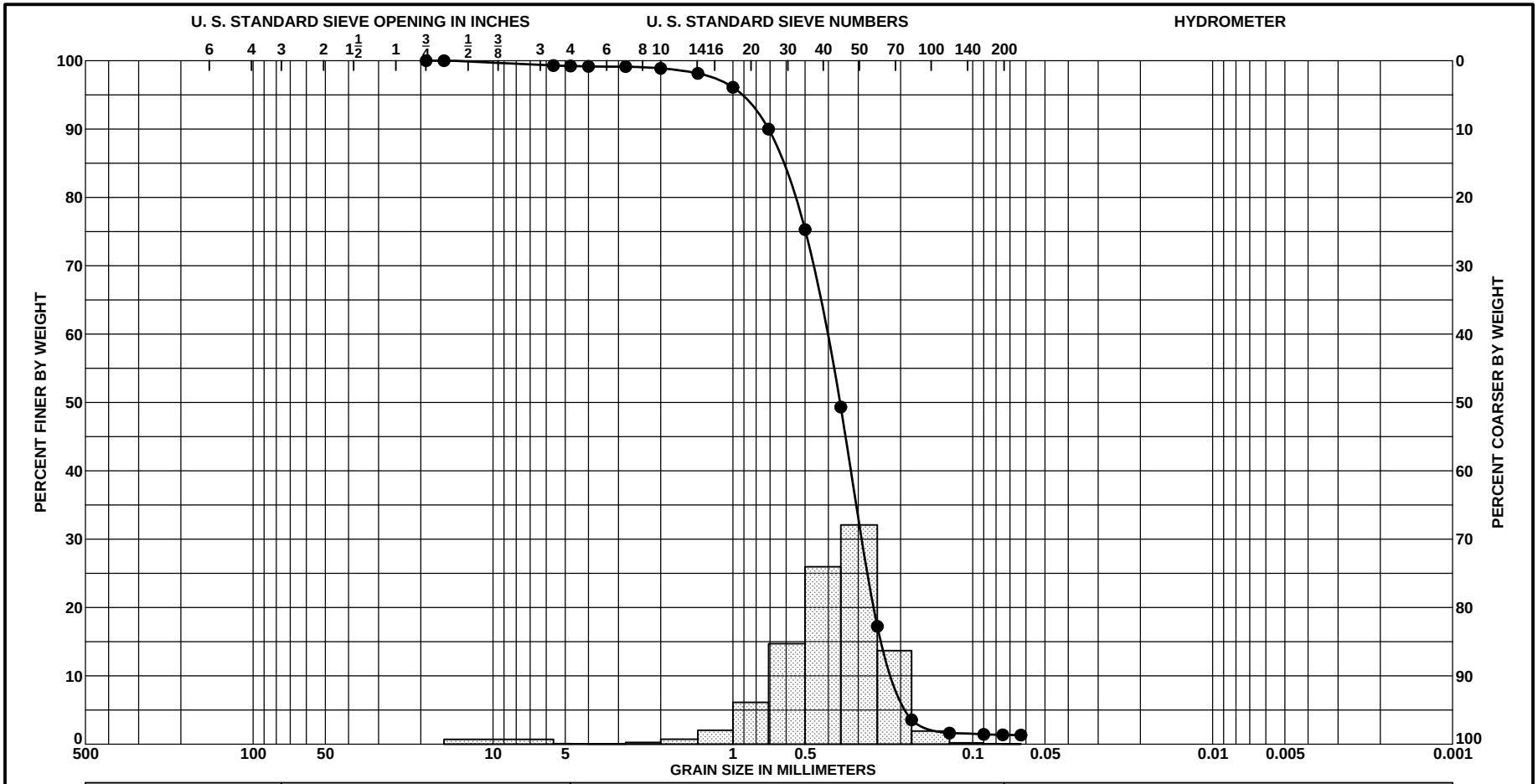
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SP*
2	4.0/4.2	SP*
3	7.0/7.2	SW*
4	9.0/9.2	SW-SM*
5	11.0/11.2	SW-SM*

*Lab visual classification based on gradation curve

15 20 25 30 35

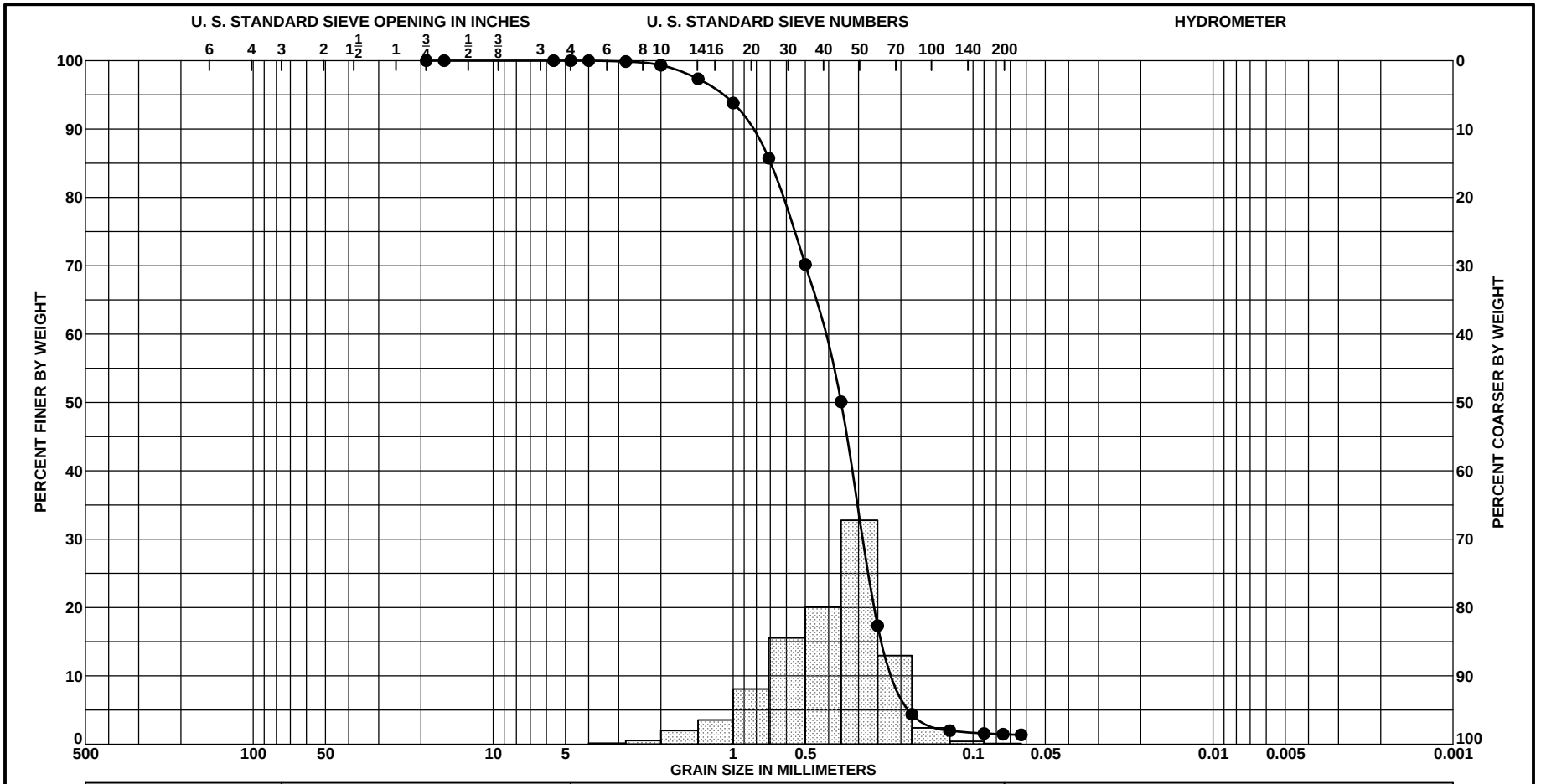


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, poorly-graded, mostly fine to	2.5Y 5/1	0							
		medium-grained sand-sized									
		carbonate, trace silt, gray (SP)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-50
BORING ELEV.	-14.8 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

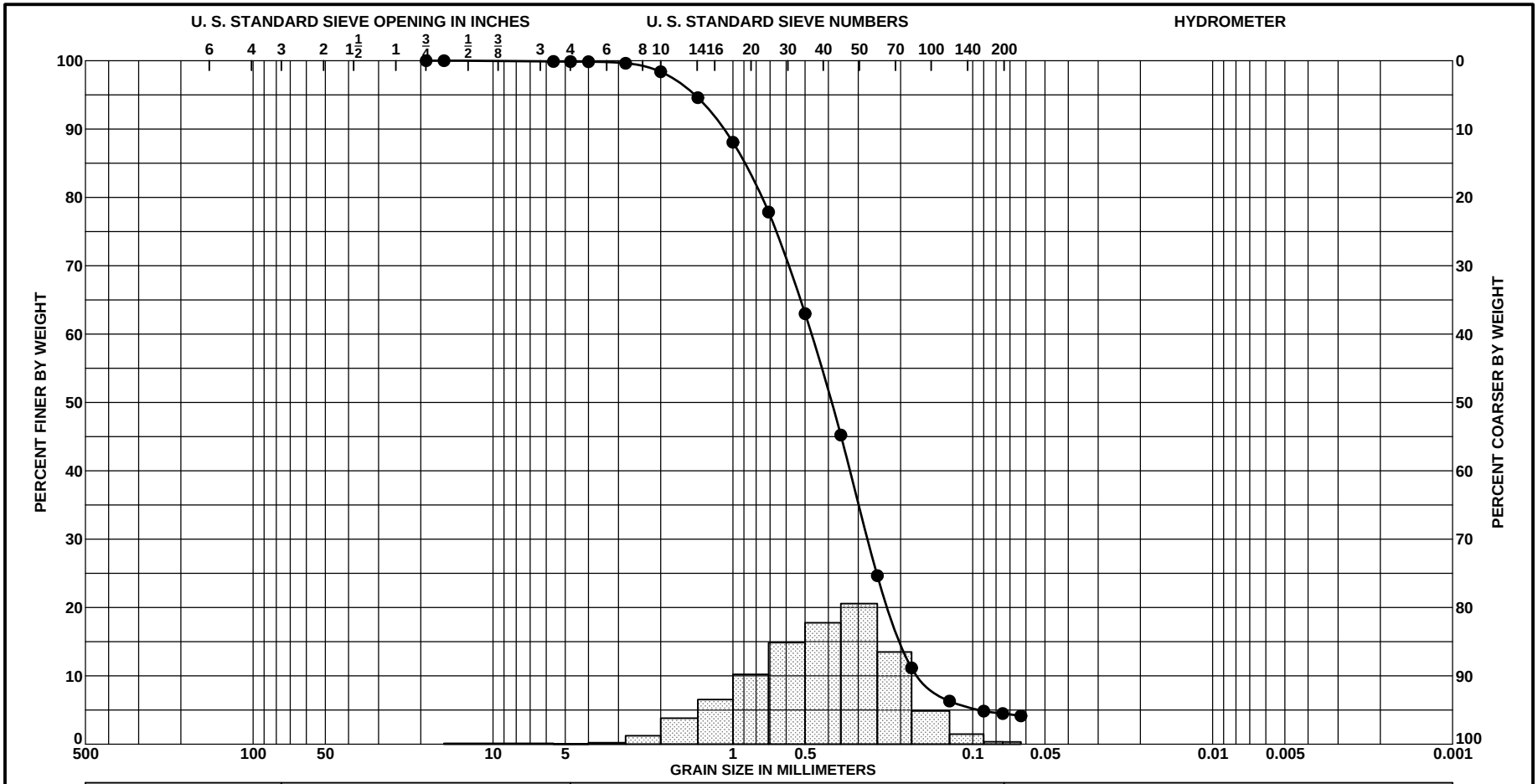


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, poorly-graded, mostly fine to	2.5Y 5/1	0							
		medium-grained sand-sized									
		carbonate, trace silt, gray (SP)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-50
BORING ELEV.	-14.8 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

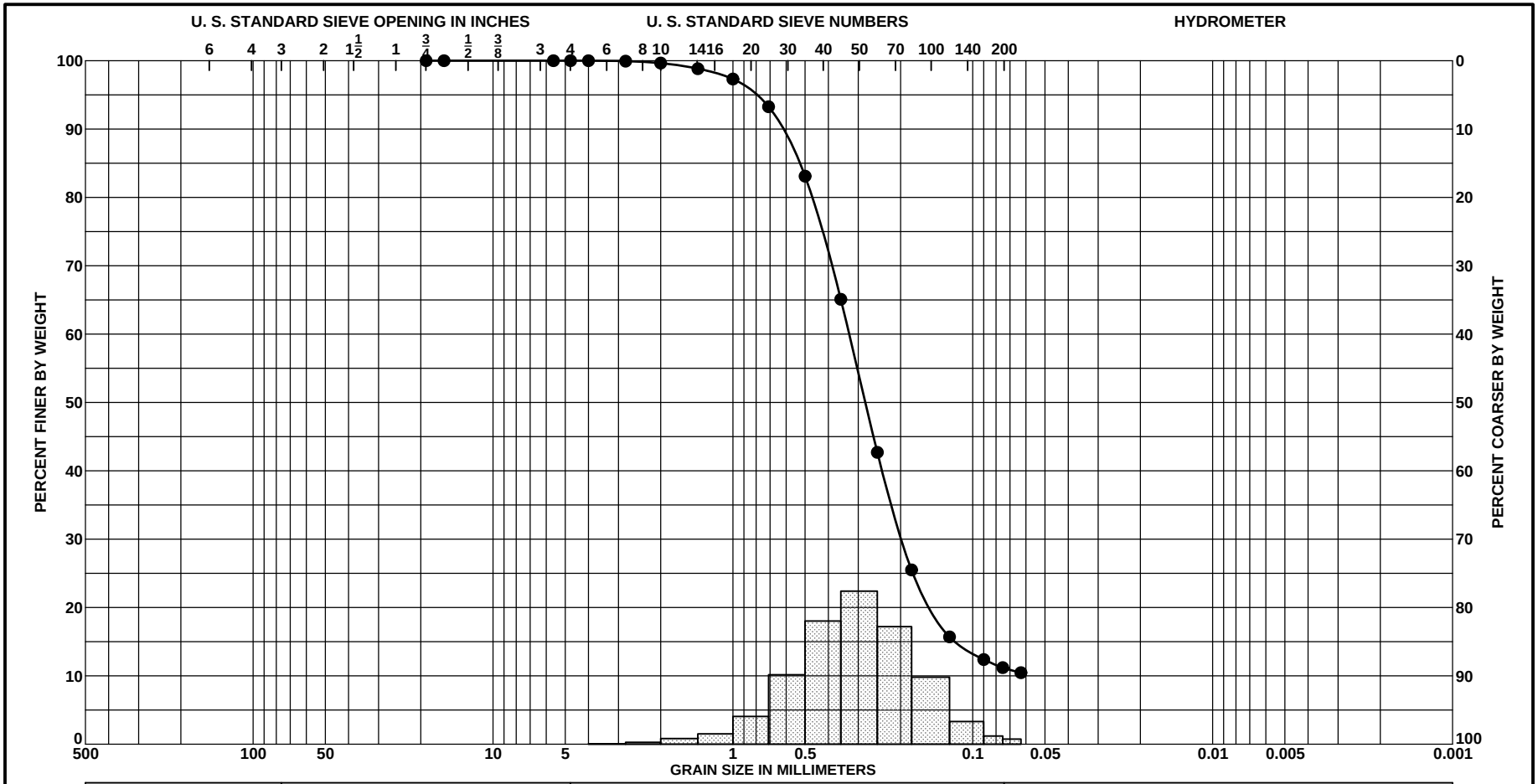


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	7.0 to 7.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 5/1	0							
		medium-grained sand-sized									
		carbonate, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-50
BORING ELEV.	-14.8 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

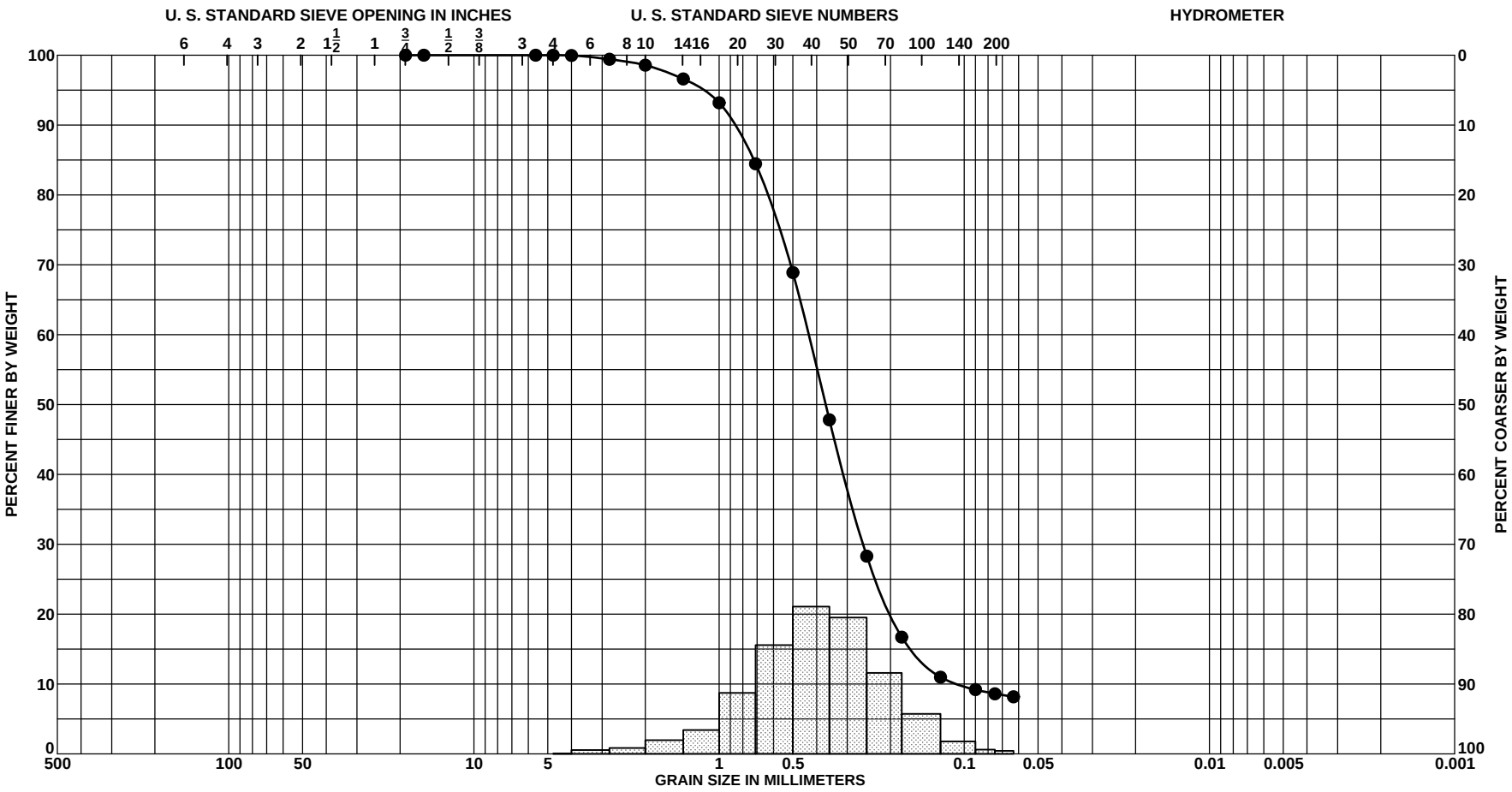


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	9.0 to 9.2 Ft.	SAND, well-graded with silt, mostly	5Y 5/1	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-50
BORING ELEV.	-14.8 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	11.0 to 11.2 Ft.	SAND, well-graded with silt, mostly	5Y 5/1	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-50
BORING ELEV.	-14.8 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-50 @ 1 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
947,405	571,188	State Plane, FLE (U.S. Ft.)	-15.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP	2.5Y 5/1	#200 - 1.37 #230 - 1.33			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.71	0.71
#4	-2.25	4.75	0.07	0.78
#5	-2.00	4.00	0.05	0.83
#7	-1.50	2.80	0.03	0.86
#10	-1.00	2.00	0.26	1.12
#14	-0.50	1.40	0.73	1.85
#18	0.00	1.00	2.04	3.90
#25	0.50	0.71	6.12	10.02
#35	1.00	0.50	14.70	24.71
#45	1.50	0.36	25.96	50.67
#60	2.00	0.25	32.08	82.76
#80	2.50	0.18	13.69	96.45
#120	3.00	0.13	1.93	98.38
#170	3.50	0.09	0.19	98.57
#200	3.75	0.08	0.06	98.63
#230	4.00	0.06	0.04	98.67

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.45	2.05	1.88	1.49	1.01	0.70	0.09

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.36	0.39	1.49	0.36	0.79	-1.84	10.98

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-50 @ 4 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
947,405	571,188	State Plane, FLE (U.S. Ft.)	-18.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP	2.5Y 5/1	#200 - 1.46 #230 - 1.37			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.00	0.00
#5	-2.00	4.00	0.00	0.00
#7	-1.50	2.80	0.13	0.13
#10	-1.00	2.00	0.53	0.66
#14	-0.50	1.40	1.99	2.65
#18	0.00	1.00	3.54	6.19
#25	0.50	0.71	8.08	14.27
#35	1.00	0.50	15.54	29.81
#45	1.50	0.36	20.09	49.91
#60	2.00	0.25	32.76	82.67
#80	2.50	0.18	12.96	95.63
#120	3.00	0.13	2.39	98.02
#170	3.50	0.09	0.42	98.44
#200	3.75	0.08	0.10	98.54
#230	4.00	0.06	0.10	98.63

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.48	2.05	1.88	1.50	0.85	0.56	-0.17

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.32	0.40	1.50	0.35	0.79	-0.66	3.66

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-50 @ 7 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
947,405	571,188	State Plane, FLE (U.S. Ft.)	-21.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 5/1	#200 - 4.48 #230 - 4.15			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.11	0.11
#4	-2.25	4.75	0.02	0.13
#5	-2.00	4.00	0.02	0.15
#7	-1.50	2.80	0.22	0.37
#10	-1.00	2.00	1.24	1.61
#14	-0.50	1.40	3.80	5.41
#18	0.00	1.00	6.53	11.94
#25	0.50	0.71	10.21	22.15
#35	1.00	0.50	14.87	37.01
#45	1.50	0.36	17.76	54.77
#60	2.00	0.25	20.57	75.34
#80	2.50	0.18	13.50	88.84
#120	3.00	0.13	4.86	93.69
#170	3.50	0.09	1.47	95.16
#200	3.75	0.08	0.36	95.52
#230	4.00	0.06	0.34	95.85

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.45	2.32	1.99	1.37	0.60	0.20	-0.55

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.21	0.43	1.37	0.39	1	-0.37	3.2

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-50 @ 9 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
947,405	571,188	State Plane, FLE (U.S. Ft.)	-23.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 5/1	#200 - 11.20 #230 - 10.46			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.00	0.00
#5	-2.00	4.00	0.00	0.00
#7	-1.50	2.80	0.06	0.06
#10	-1.00	2.00	0.28	0.34
#14	-0.50	1.40	0.83	1.17
#18	0.00	1.00	1.51	2.68
#25	0.50	0.71	4.05	6.73
#35	1.00	0.50	10.16	16.90
#45	1.50	0.36	18.01	34.91
#60	2.00	0.25	22.39	57.30
#80	2.50	0.18	17.20	74.50
#120	3.00	0.13	9.80	84.30
#170	3.50	0.09	3.31	87.61
#200	3.75	0.08	1.19	88.80
#230	4.00	0.06	0.74	89.54

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.98	2.53	1.84	1.22	0.96	0.29

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.70	0.31	1.84	0.28	0.87	-0.24	3.46

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-50 @ 11 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
947,405	571,188	State Plane, FLE (U.S. Ft.)	-25.8 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 5/1	#200 - 8.60 #230 - 8.17			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.00	0.00
#5	-2.00	4.00	0.04	0.04
#7	-1.50	2.80	0.54	0.58
#10	-1.00	2.00	0.85	1.43
#14	-0.50	1.40	1.97	3.40
#18	0.00	1.00	3.42	6.81
#25	0.50	0.71	8.73	15.54
#35	1.00	0.50	15.57	31.11
#45	1.50	0.36	21.08	52.19
#60	2.00	0.25	19.52	71.70
#80	2.50	0.18	11.59	83.29
#120	3.00	0.13	5.73	89.02
#170	3.50	0.09	1.78	90.80
#200	3.75	0.08	0.61	91.40
#230	4.00	0.06	0.43	91.83

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.56	2.14	1.45	0.80	0.51	-0.27

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.32	0.40	1.45	0.37	0.94	-0.28	3.54

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 50
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 50
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 50
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 50
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 50
DEPTH :10.0–12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 50
DEPTH :12.5–13.0
13'
14'
15'

VB-DA20-51

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-51

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-51	LOCATION COORDINATES: X = 955,094 Y = 578,224	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 5 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -66.9 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 80 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-66.9	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace silt, trace shell, moist, 5Y 6/1 gray (SW)				-68.9		
					1				
-71.9	5.0						-71.9		
			SAND, well-graded with silt, mostly fine-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 6/1 gray (SW-SM)		2				
							-74.9		
					3				
-76.4	9.5								
-76.7	9.8		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone				-76.9		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 5Y 6/1 gray (SM)		4				
							-80.9		
					5				

0 5 10 15

(Continued)

Boring Designation VB-DA20-51

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 955,094 Y = 578,224	ELEVATION TOP OF BORING: -66.9 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-83.0	16.1		No Recovery						
-86.9	20.0						-86.9		

NOTES:

1. Taylor Engineering is the custodian for these original files.

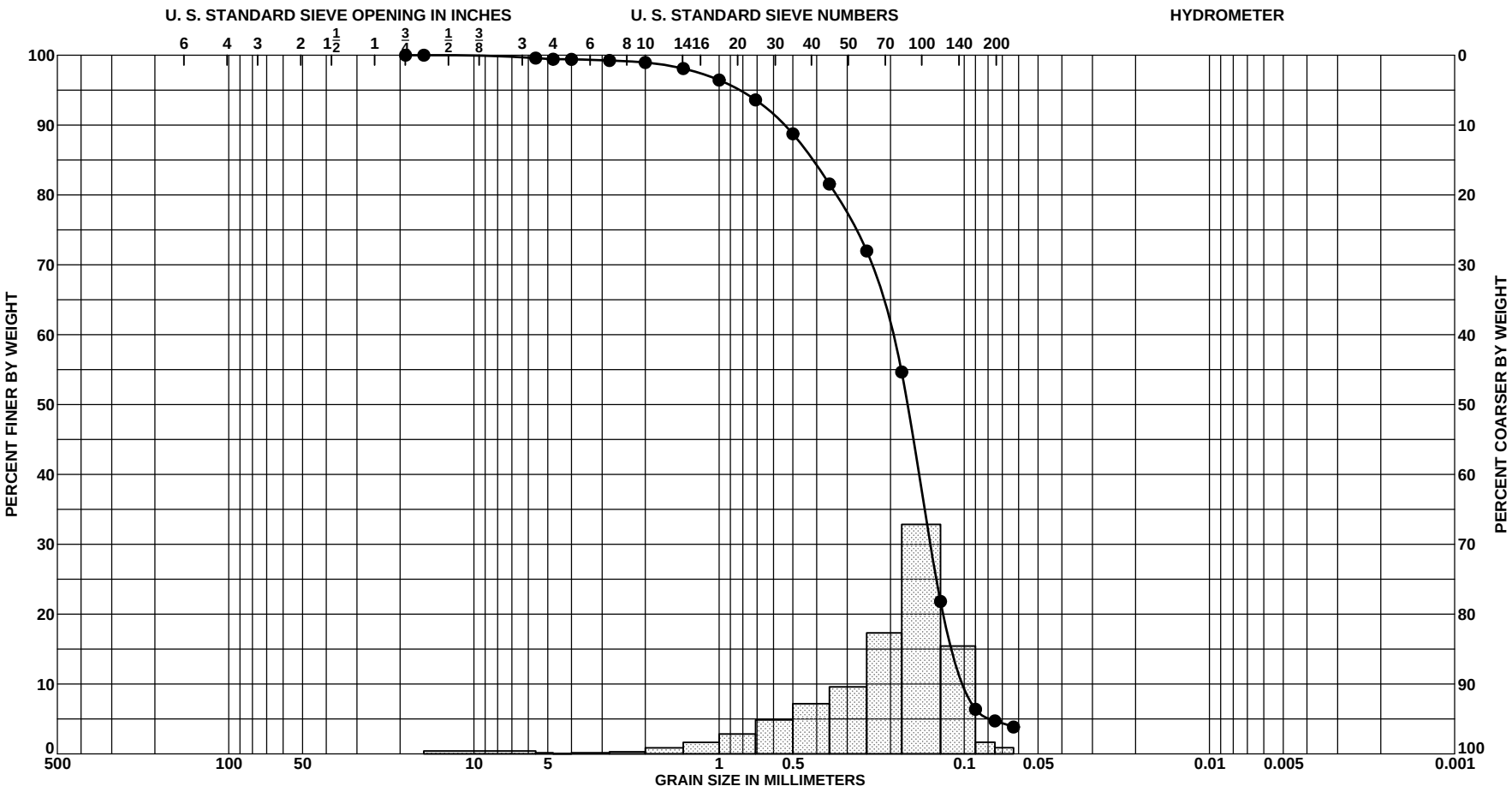
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	5.0/5.2	SW-SM*
3	8.0/8.2	SW-SM*
4	10.0/10.2	SM*
5	14.0/14.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/1	0							
		medium-grained sand-sized									
		carbonate, trace									
		silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-51
BORING ELEV.	-66.9 Ft., NAVD88
DATE	9/21/2020

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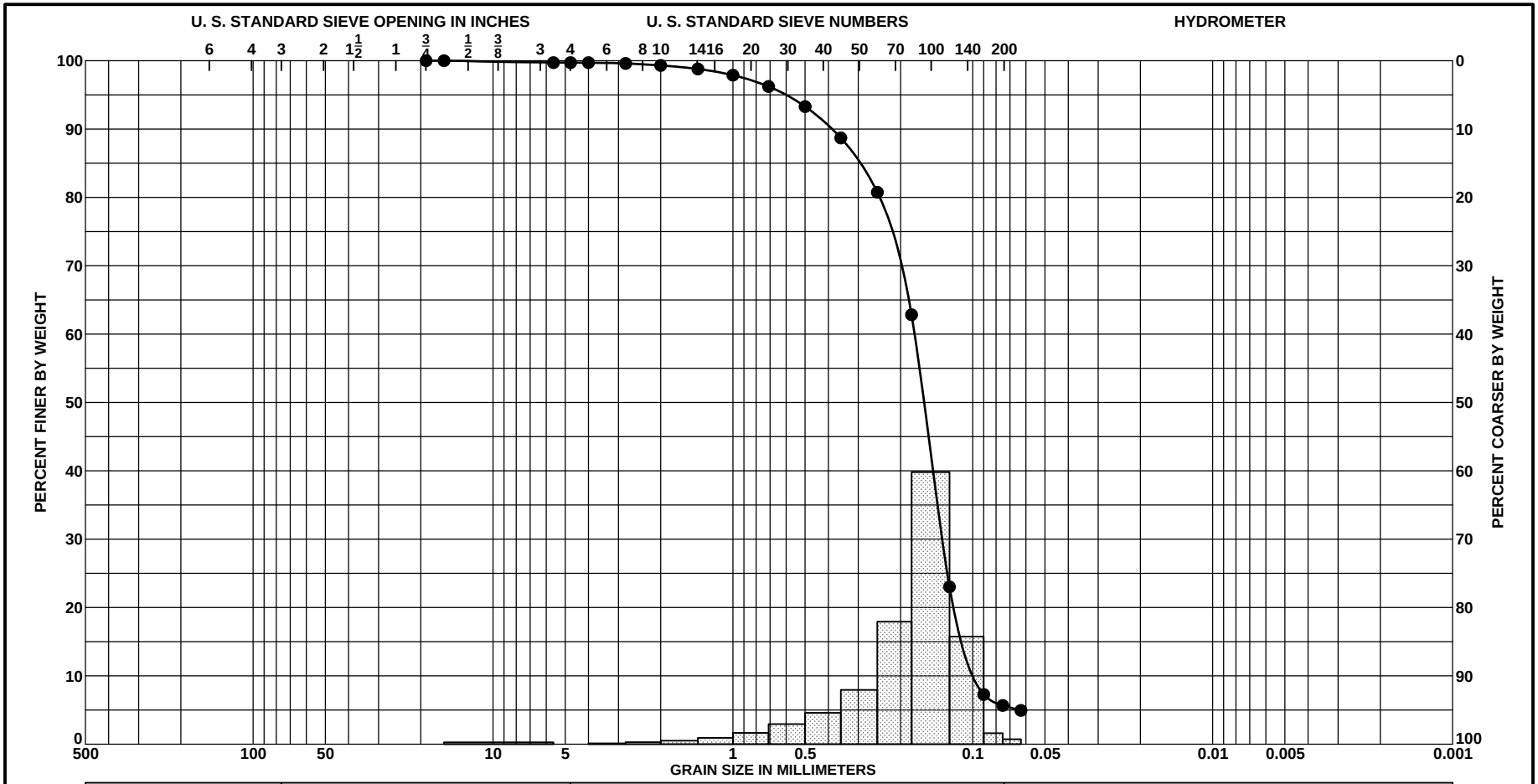

Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, well-graded with silt, mostly fine-grained sand-sized carbonate, few silt, gray (SW-SM)	5Y 6/1	0							

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-51
BORING ELEV.	-66.9 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
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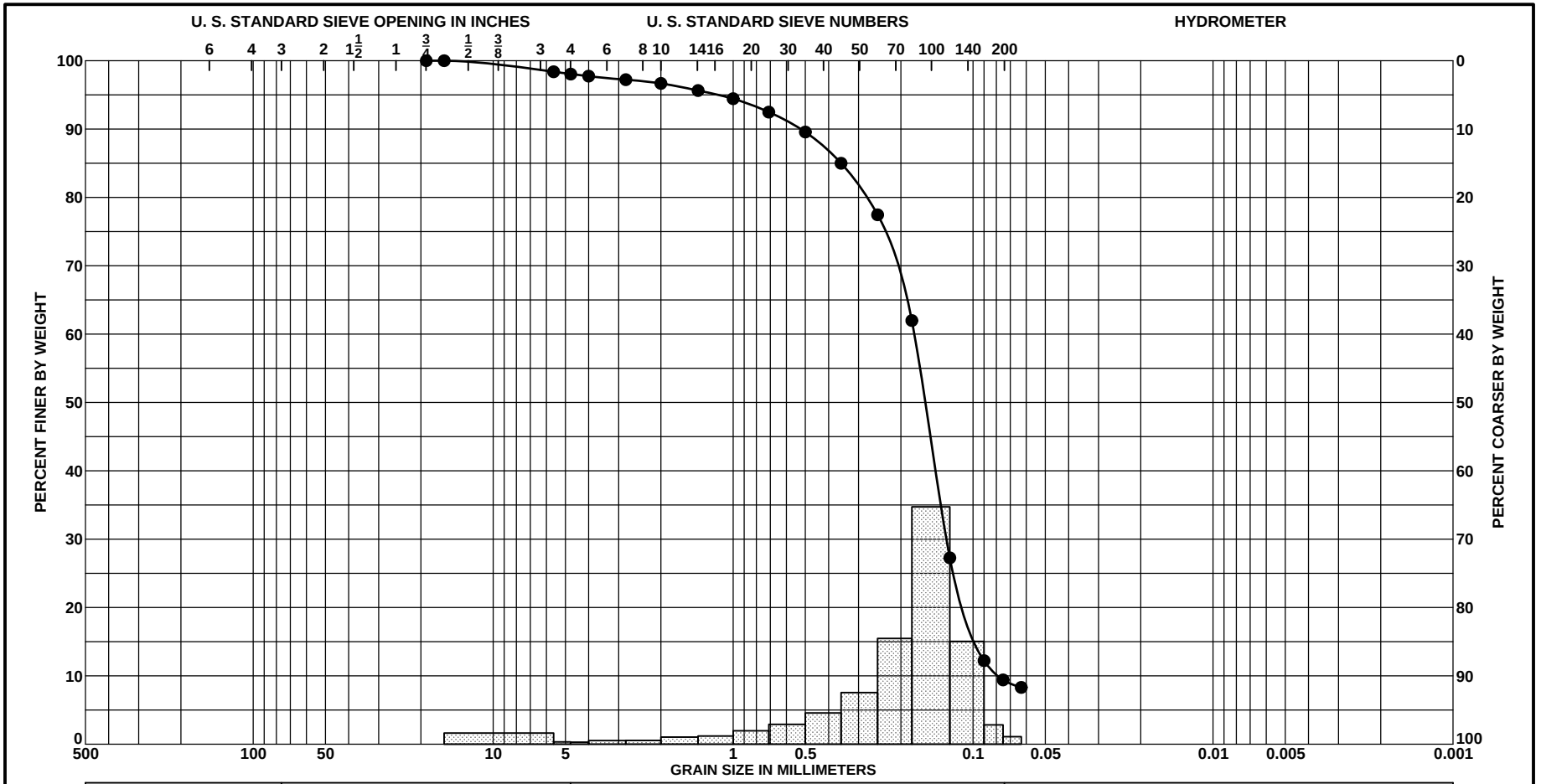
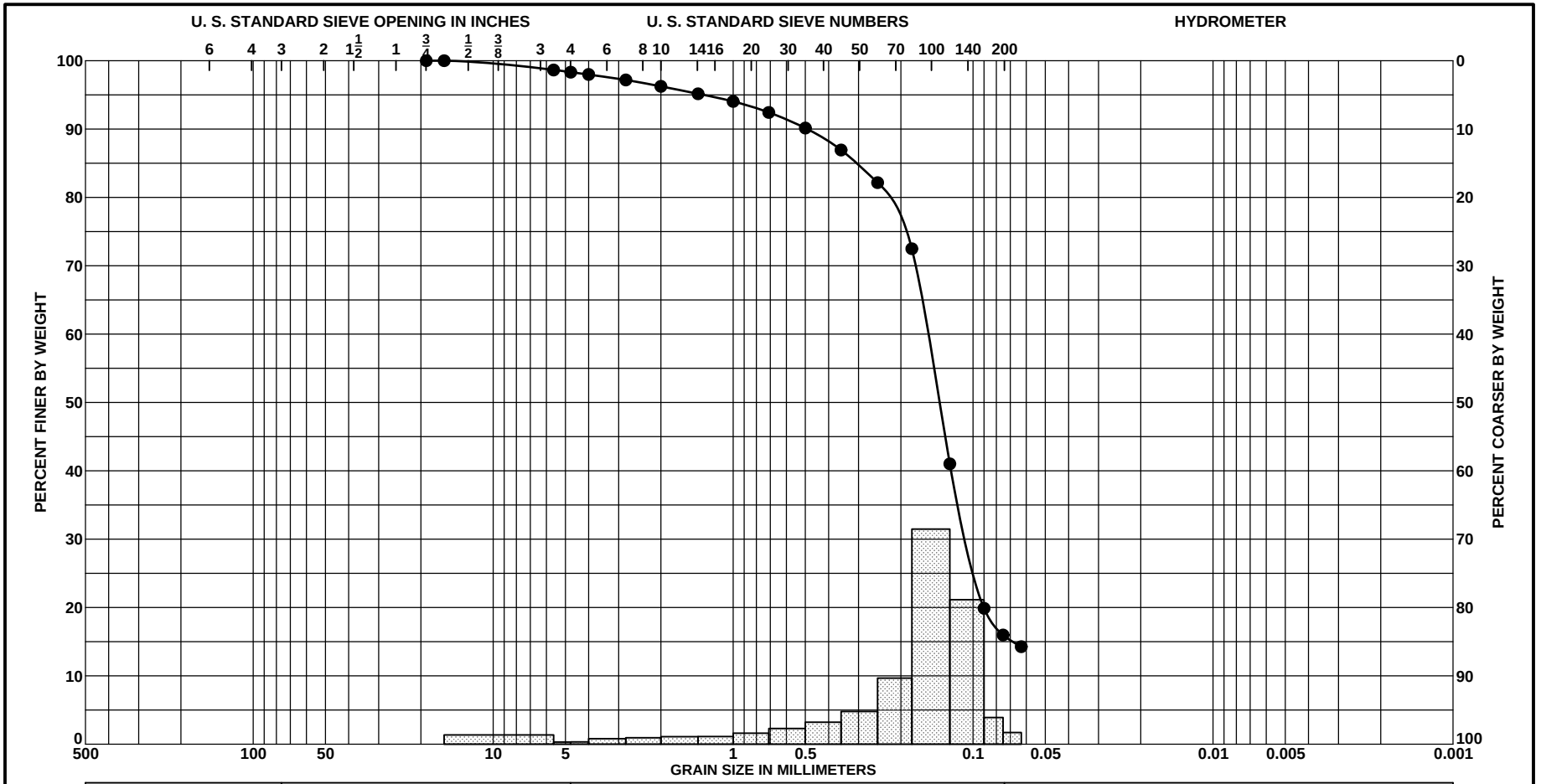


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	8.0 to 8.2 Ft.	SAND, well-graded with silt, mostly fine-grained sand-sized carbonate, few silt, gray (SW-SM)	5Y 6/1	0							

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-51
BORING ELEV.	-66.9 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

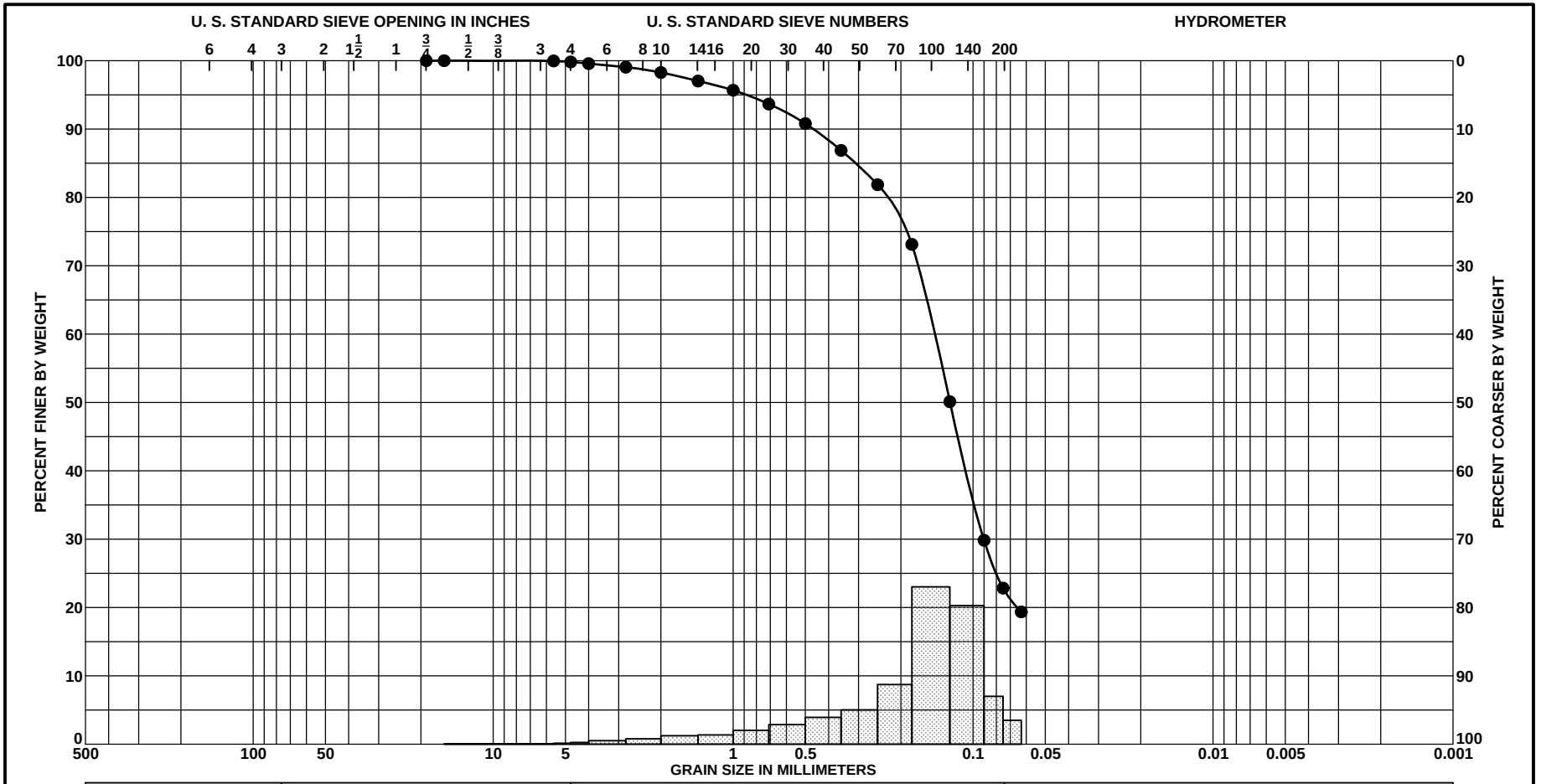


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	10.0 to 10.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	0							
		medium-grained									
		sand-sized carbonate, little silt, gray									
		(SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-51
BORING ELEV.	-66.9 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	14.0 to 14.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	0							
		medium-grained									
		sand-sized carbonate, little silt, gray									
		(SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-51
BORING ELEV.	-66.9 Ft., NAVD88
DATE	9/21/2020

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JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-51 @ 2 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,094	578,224	State Plane, FLE (U.S. Ft.)	-68.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/1	#200 - 4.72 #230 - 3.84			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.41	0.41
#4	-2.25	4.75	0.16	0.58
#5	-2.00	4.00	0.02	0.60
#7	-1.50	2.80	0.16	0.76
#10	-1.00	2.00	0.29	1.05
#14	-0.50	1.40	0.86	1.91
#18	0.00	1.00	1.65	3.56
#25	0.50	0.71	2.84	6.40
#35	1.00	0.50	4.85	11.25
#45	1.50	0.36	7.18	18.44
#60	2.00	0.25	9.58	28.02
#80	2.50	0.18	17.32	45.34
#120	3.00	0.13	32.84	78.18
#170	3.50	0.09	15.44	93.62
#200	3.75	0.08	1.66	95.28
#230	4.00	0.06	0.88	96.16

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.71	3.19	2.95	2.57	1.84	1.33	0.25

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.24	0.21	2.57	0.17	1.03	-1.68	7.28

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-51 @ 5 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,094	578,224	State Plane, FLE (U.S. Ft.)	-71.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 5.67 #230 - 4.94			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.28	0.28
#4	-2.25	4.75	0.00	0.28
#5	-2.00	4.00	0.00	0.28
#7	-1.50	2.80	0.12	0.40
#10	-1.00	2.00	0.29	0.69
#14	-0.50	1.40	0.51	1.20
#18	0.00	1.00	0.91	2.12
#25	0.50	0.71	1.65	3.77
#35	1.00	0.50	2.94	6.71
#45	1.50	0.36	4.59	11.30
#60	2.00	0.25	7.95	19.25
#80	2.50	0.18	17.92	37.17
#120	3.00	0.13	39.81	76.98
#170	3.50	0.09	15.75	92.73
#200	3.75	0.08	1.60	94.33
#230	4.00	0.06	0.73	95.06

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.98	3.22	2.98	2.66	2.16	1.80	0.71

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.42	0.19	2.66	0.16	0.87	-2.11	10.27

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-51 @ 8 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,094	578,224	State Plane, FLE (U.S. Ft.)	-74.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 9.41 #230 - 8.31			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.62	1.62
#4	-2.25	4.75	0.34	1.96
#5	-2.00	4.00	0.30	2.26
#7	-1.50	2.80	0.52	2.78
#10	-1.00	2.00	0.55	3.32
#14	-0.50	1.40	1.05	4.37
#18	0.00	1.00	1.19	5.56
#25	0.50	0.71	1.97	7.52
#35	1.00	0.50	2.91	10.43
#45	1.50	0.36	4.57	15.00
#60	2.00	0.25	7.54	22.55
#80	2.50	0.18	15.47	38.02
#120	3.00	0.13	34.72	72.74
#170	3.50	0.09	15.04	87.78
#200	3.75	0.08	2.82	90.59
#230	4.00	0.06	1.10	91.69

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.37	3.08	2.67	2.08	1.57	-0.23

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.24	0.21	2.67	0.16	1.26	-2.31	9.26

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-51 @ 10 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,094	578,224	State Plane, FLE (U.S. Ft.)	-76.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 15.98 #230 - 14.27			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.36	1.36
#4	-2.25	4.75	0.32	1.68
#5	-2.00	4.00	0.33	2.01
#7	-1.50	2.80	0.81	2.82
#10	-1.00	2.00	0.94	3.75
#14	-0.50	1.40	1.09	4.84
#18	0.00	1.00	1.12	5.96
#25	0.50	0.71	1.61	7.57
#35	1.00	0.50	2.29	9.86
#45	1.50	0.36	3.21	13.07
#60	2.00	0.25	4.78	17.84
#80	2.50	0.18	9.67	27.51
#120	3.00	0.13	31.47	58.98
#170	3.50	0.09	21.14	80.12
#200	3.75	0.08	3.91	84.02
#230	4.00	0.06	1.71	85.73

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.75	3.38	2.86	2.37	1.81	-0.43

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.36	0.19	2.86	0.14	1.33	-2.28	8.54

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-51 @ 14 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,094	578,224	State Plane, FLE (U.S. Ft.)	-80.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 22.84 #230 - 19.35			0

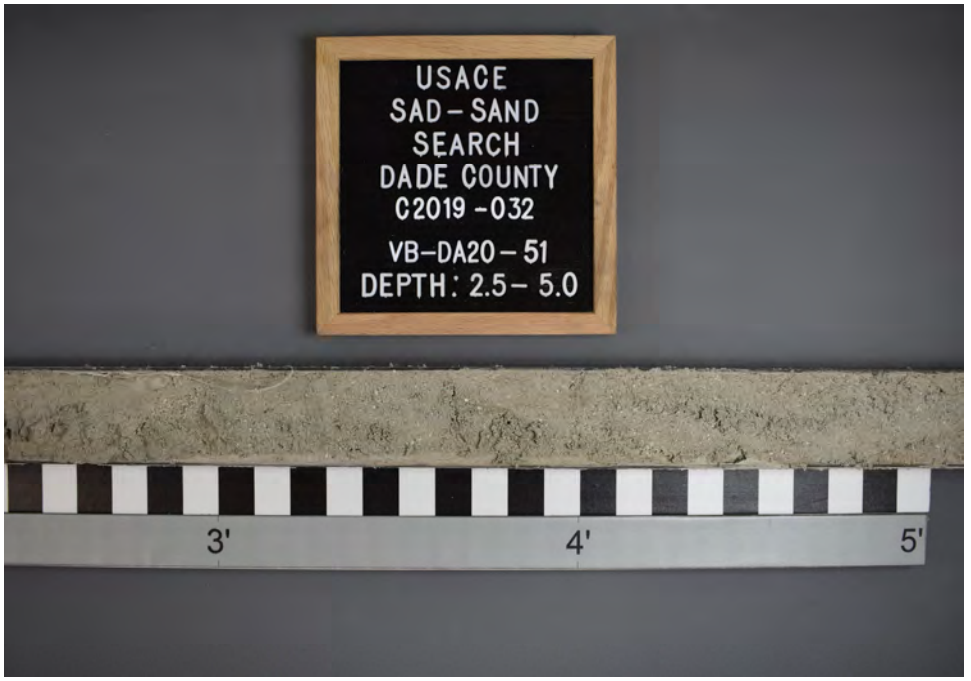
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.03	0.03
#4	-2.25	4.75	0.14	0.18
#5	-2.00	4.00	0.25	0.43
#7	-1.50	2.80	0.52	0.95
#10	-1.00	2.00	0.78	1.73
#14	-0.50	1.40	1.24	2.97
#18	0.00	1.00	1.35	4.32
#25	0.50	0.71	2.02	6.34
#35	1.00	0.50	2.86	9.20
#45	1.50	0.36	3.93	13.12
#60	2.00	0.25	5.02	18.14
#80	2.50	0.18	8.73	26.88
#120	3.00	0.13	23.01	49.89
#170	3.50	0.09	20.27	70.16
#200	3.75	0.08	7.00	77.16
#230	4.00	0.06	3.48	80.65

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.67	3.00	2.39	1.79	0.17

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.48	0.18	3.00	0.13	1.17	-1.65	5.79

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 51
DEPTH: 0.0 – 2.5
0'
1'
2'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 51
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 51
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 51
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 51
DEPTH :10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 51
DEPTH :12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 51
DEPTH :15.0 – 16.1
15'
16'
17'

VB-DA20-52

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-52

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
	South Atlantic	Jacksonville, Fl	

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-52
LOCATION COORDINATES: X = 953,252 Y = 578,784
3. DRILLING AGENCY: Amdrill
CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL:
BEARING:
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 5.5 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) HORIZONTAL: NAD83 VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 3 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-28-20 COMPLETED: 06-28-20
16. ELEVATION TOP OF BORING: -47.6 Ft.
17. TOTAL RECOVERY FOR BORING: 91 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-47.6	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 5Y 6/1 gray (SW)				-48.6		
					1				
							-50.6		
-51.2	3.6				2				
-51.5	3.9		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone				-51.6		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, some gravel to cobble-sized limestone, little silt, trace shell, moist, 5Y 5/1 gray (SM)		3				
-52.6	5.0								
-53.1	5.5		No Recovery				-53.1		
			BORING TERMINATED IN REFUSAL						

Abbreviations:

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

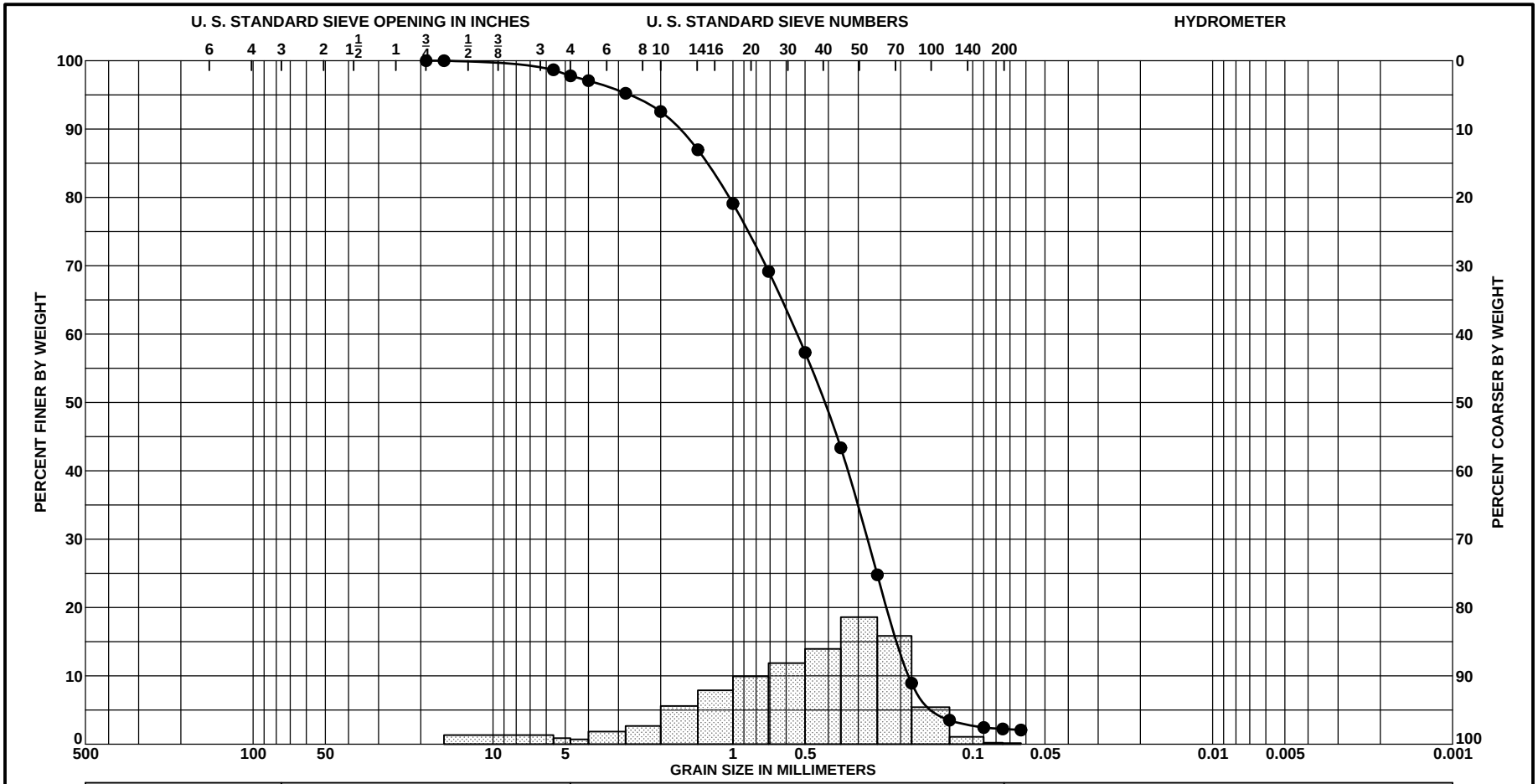
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW*
3	4.0/4.2	SM*

*Lab visual classification based on gradation curve

0
5
10
15

SAJ FORM 1836
JUN 02

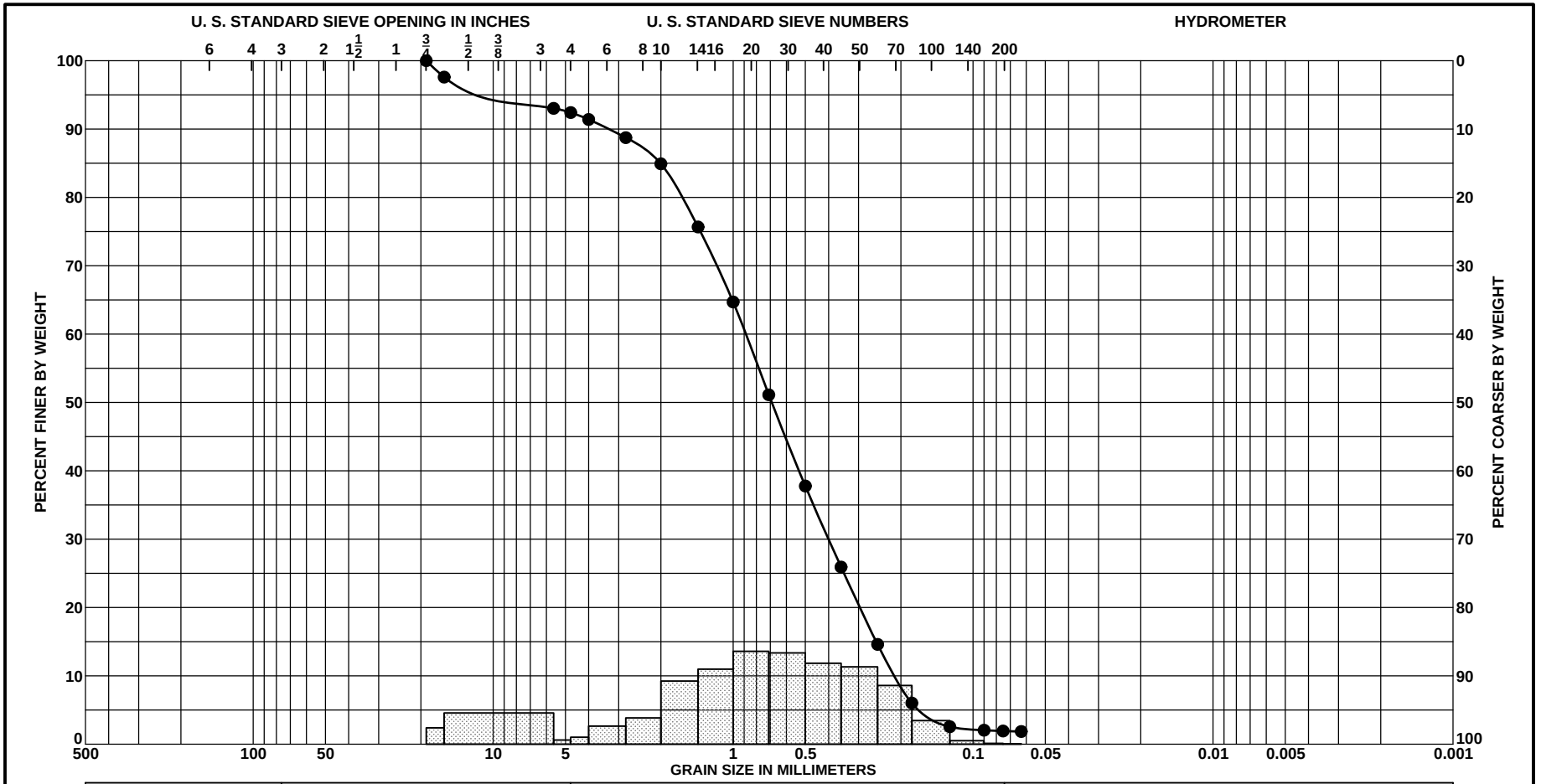


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/1	0							
		medium-grained sand-sized									
		carbonate, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-52
BORING ELEV.	-47.6 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

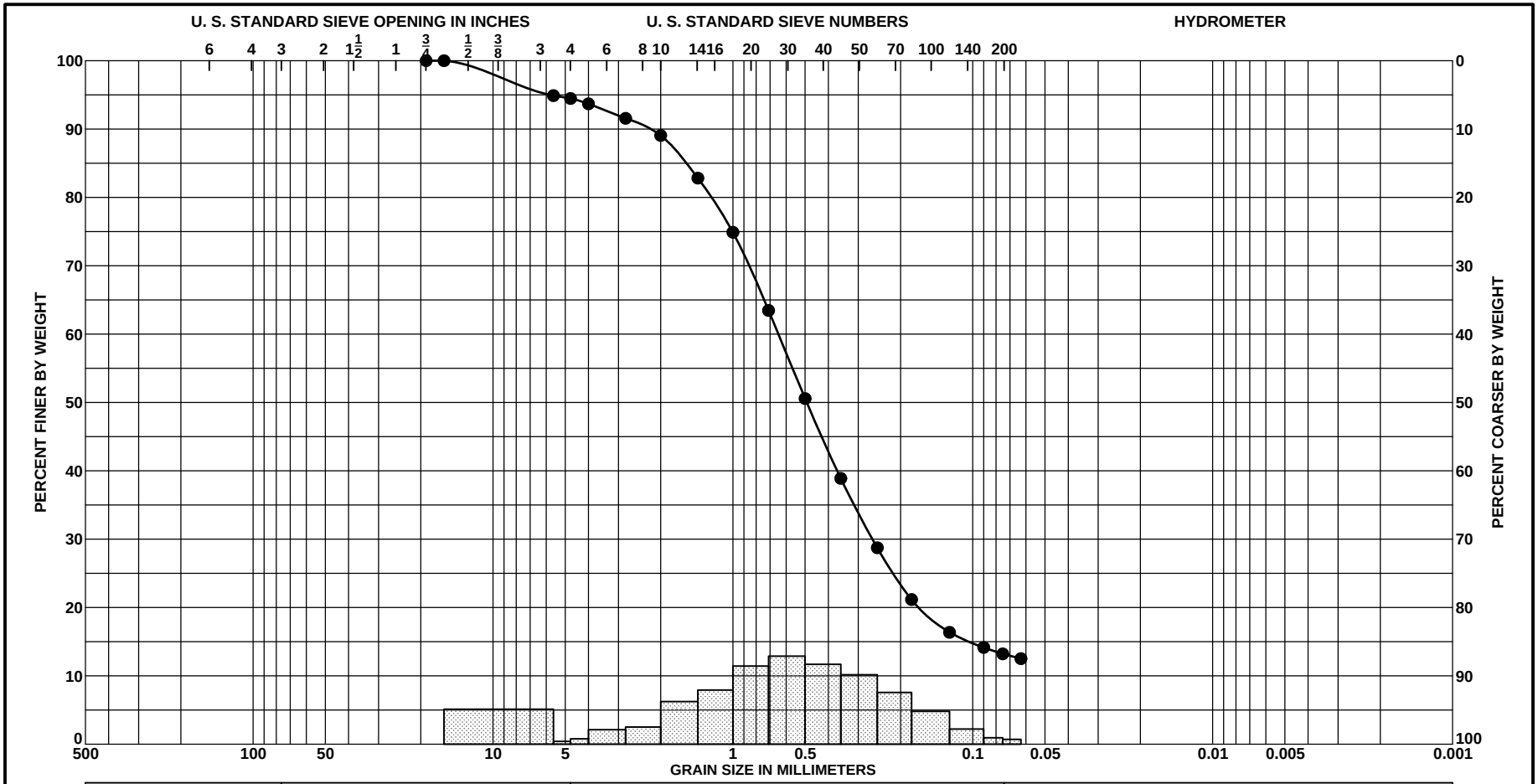


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/1	3							
		medium-grained sand-sized									
		carbonate, few									
		shell, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-52
BORING ELEV.	-47.6 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	4.0 to 4.2 Ft.	SAND, silty, mostly fine to	5Y 5/1	0							
		medium-grained									
		sand-sized carbonate, some gravel									
		to cobble-sized limestone,									
		little silt, trace shell, gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-52
BORING ELEV.	-47.6 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-52 @ 1 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,252	578,784	State Plane, FLE (U.S. Ft.)	-48.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/1	#200 - 2.23 #230 - 2.08			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.33	1.33
#4	-2.25	4.75	0.89	2.22
#5	-2.00	4.00	0.70	2.92
#7	-1.50	2.80	1.85	4.77
#10	-1.00	2.00	2.67	7.44
#14	-0.50	1.40	5.59	13.03
#18	0.00	1.00	7.88	20.91
#25	0.50	0.71	9.92	30.83
#35	1.00	0.50	11.86	42.69
#45	1.50	0.36	13.95	56.64
#60	2.00	0.25	18.58	75.22
#80	2.50	0.18	15.85	91.07
#120	3.00	0.13	5.42	96.49
#170	3.50	0.09	1.07	97.56
#200	3.75	0.08	0.21	97.77
#230	4.00	0.06	0.16	97.92

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.86	2.28	1.99	1.26	0.21	-0.31	-1.46

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.98	0.51	1.26	0.42	1.3	-0.84	3.58

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-52 @ 3 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,252	578,784	State Plane, FLE (U.S. Ft.)	-50.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/1	#200 - 1.93 #230 - 1.86			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	2.40	2.40
#3.5	-2.50	5.60	4.57	6.97
#4	-2.25	4.75	0.61	7.59
#5	-2.00	4.00	1.01	8.60
#7	-1.50	2.80	2.66	11.26
#10	-1.00	2.00	3.84	15.09
#14	-0.50	1.40	9.24	24.33
#18	0.00	1.00	10.97	35.30
#25	0.50	0.71	13.58	48.88
#35	1.00	0.50	13.35	62.23
#45	1.50	0.36	11.85	74.08
#60	2.00	0.25	11.32	85.40
#80	2.50	0.18	8.59	93.98
#120	3.00	0.13	3.46	97.44
#170	3.50	0.09	0.51	97.96
#200	3.75	0.08	0.12	98.07
#230	4.00	0.06	0.07	98.14

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.65	1.94	1.54	0.54	-0.47	-0.95	-3.15

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.32	0.80	0.54	0.69	1.58	-0.83	3.56

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-52 @ 4 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
953,252	578,784	State Plane, FLE (U.S. Ft.)	-51.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 5/1	#200 - 13.22 #230 - 12.52			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	5.11	5.11
#4	-2.25	4.75	0.41	5.53
#5	-2.00	4.00	0.78	6.31
#7	-1.50	2.80	2.12	8.43
#10	-1.00	2.00	2.51	10.94
#14	-0.50	1.40	6.24	17.18
#18	0.00	1.00	7.93	25.10
#25	0.50	0.71	11.44	36.54
#35	1.00	0.50	12.89	49.43
#45	1.50	0.36	11.69	61.11
#60	2.00	0.25	10.15	71.26
#80	2.50	0.18	7.57	78.84
#120	3.00	0.13	4.80	83.64
#170	3.50	0.09	2.21	85.84
#200	3.75	0.08	0.94	86.78
#230	4.00	0.06	0.70	87.48

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.08	2.25	1.02	-0.01	-0.59	-2.54

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.64	0.64	1.02	0.49	1.57	-0.63	3.33

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 52
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 52
DEPTH: 2.5 – 5.0
3'
4'
5'

VB-DA20-53

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-53

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-53	LOCATION COORDINATES: X = 954,771 Y = 583,356	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 5 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -63.1 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 85 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-63.1	0.0		SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, trace fine gravel-sized limestone, moist, 5Y 6/1 gray (SM)		1		-65.1		0
					2		-68.1		5
					3		-71.1		10
					4		-74.1		
					5		-77.1		15

(Continued)

Boring Designation VB-DA20-53

DRILLING LOG (Cont. Sheet)	INSTALLATION	SHEET 2 OF 2 SHEETS
	Jacksonville, FL	

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
SAD-SAND	State Plane, FLE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 954,771 Y = 583,356	-63.1 Ft.

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-78.2	15.1		SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, few fine gravel-sized limestone, few shell, moist, 5Y 6/2 light olive gray (SM)						
-80.2	17.1		No Recovery						
-83.1	20.0						-83.1		

NOTES:

1. Taylor Engineering is the custodian for these original files.

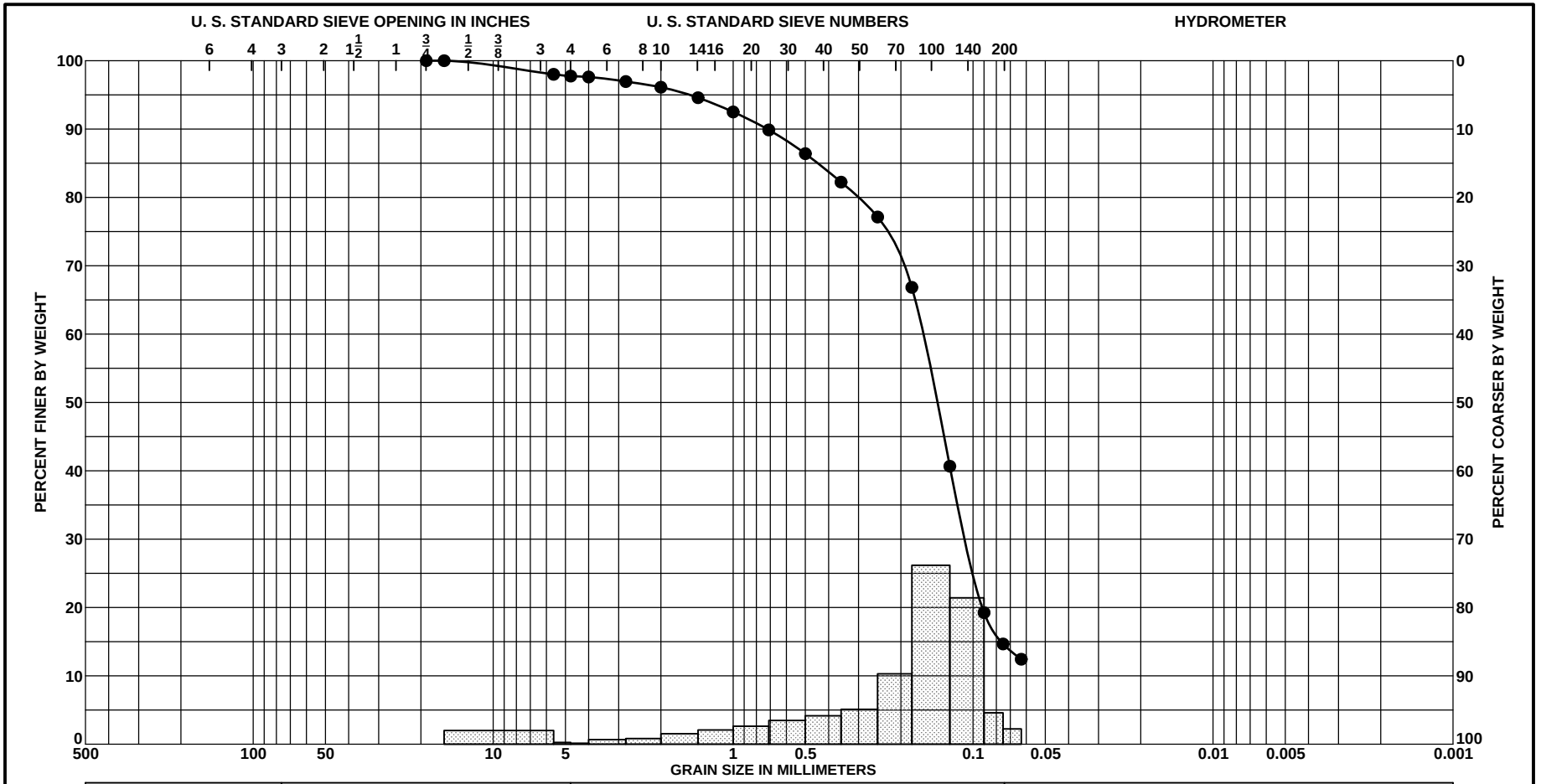
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SM*
2	5.0/5.2	SM*
3	8.0/8.2	SM*
4	11.0/11.2	SM*
5	14.0/14.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

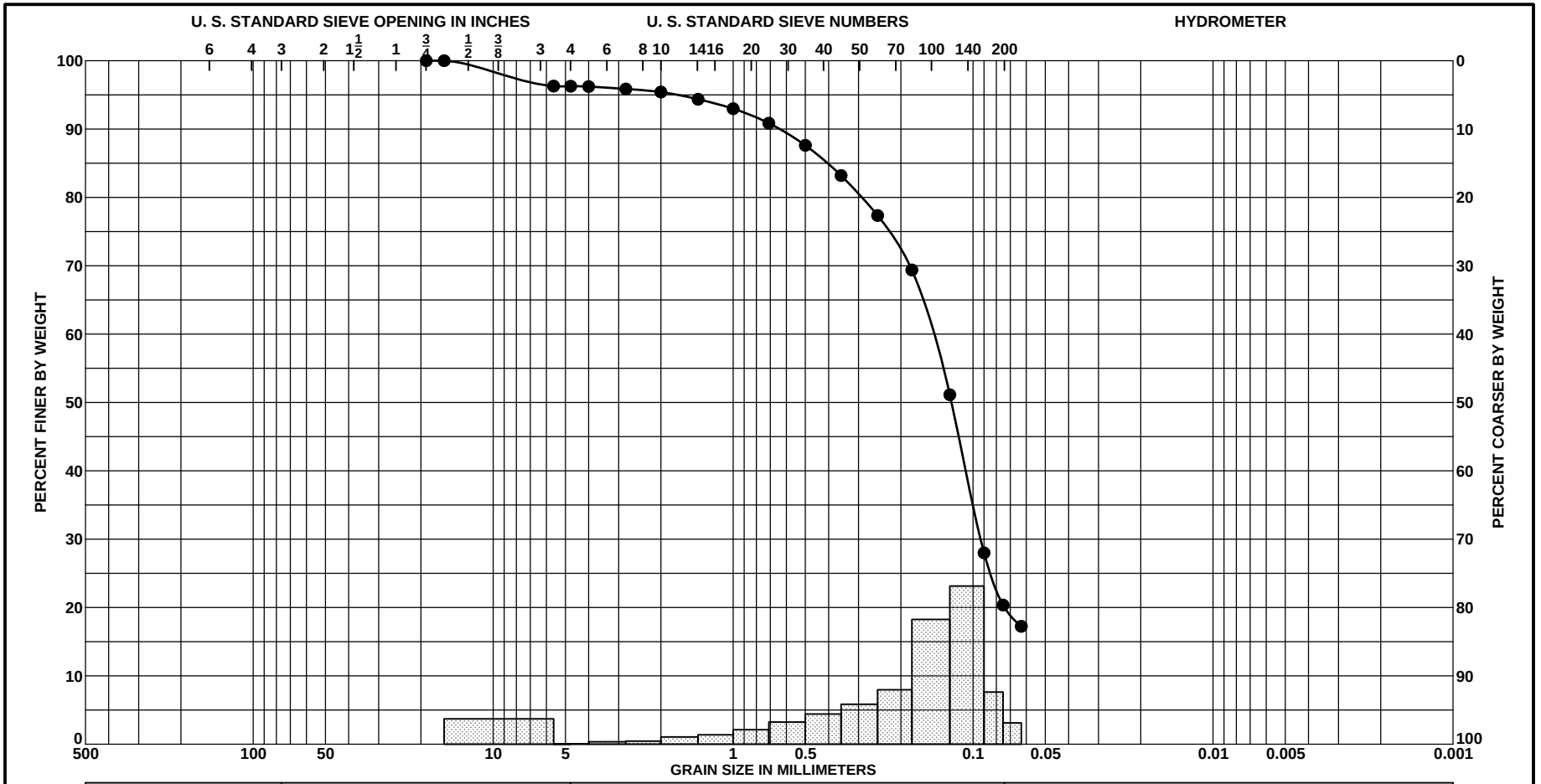


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	0	99						
		medium-grained									
		sand-sized carbonate, little silt,									
		trace fine gravel-sized limestone,									
		gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-53
BORING ELEV.	-63.1 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

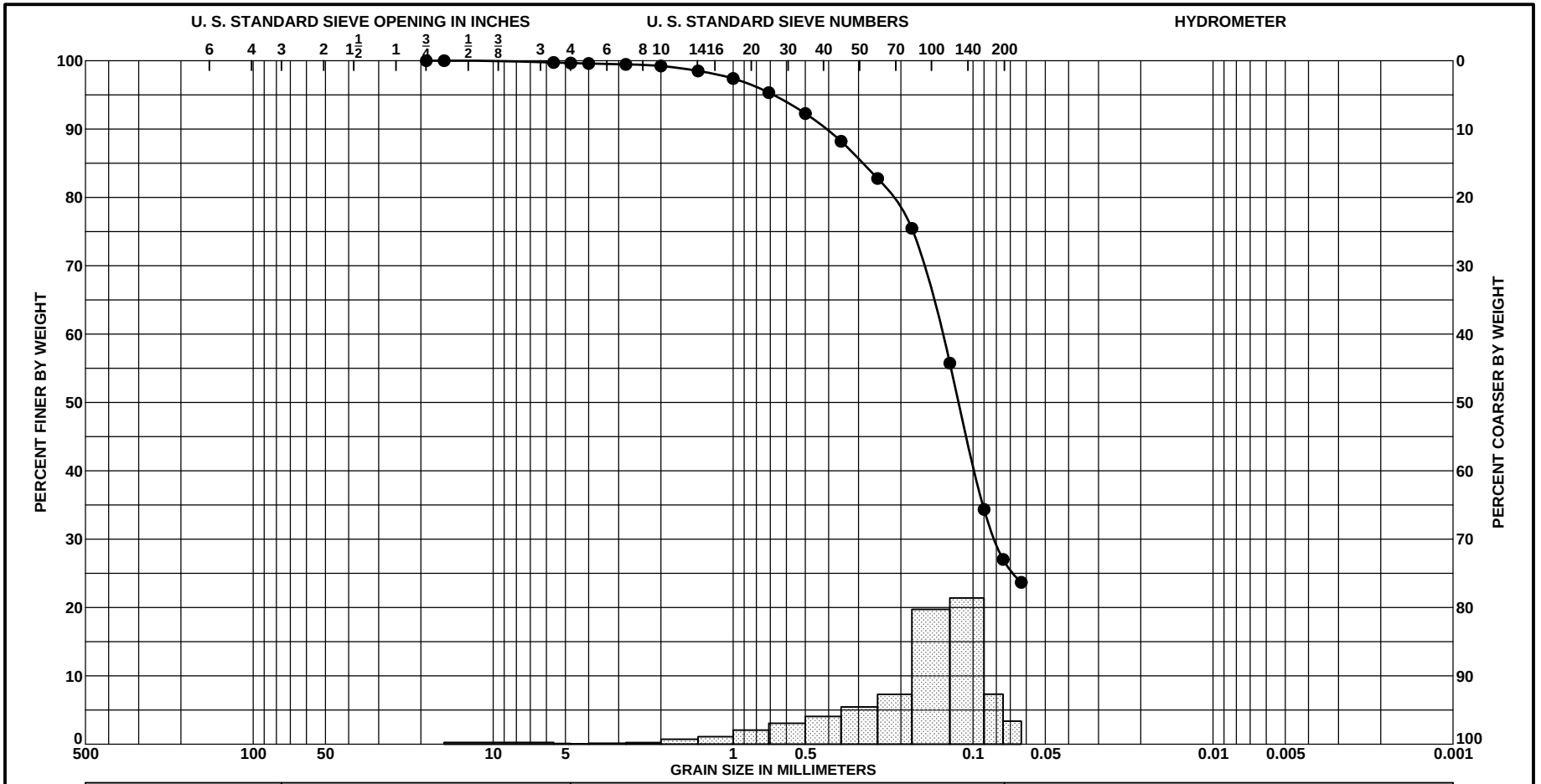


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace fine gravel-sized limestone,									
		gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-53
BORING ELEV.	-63.1 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

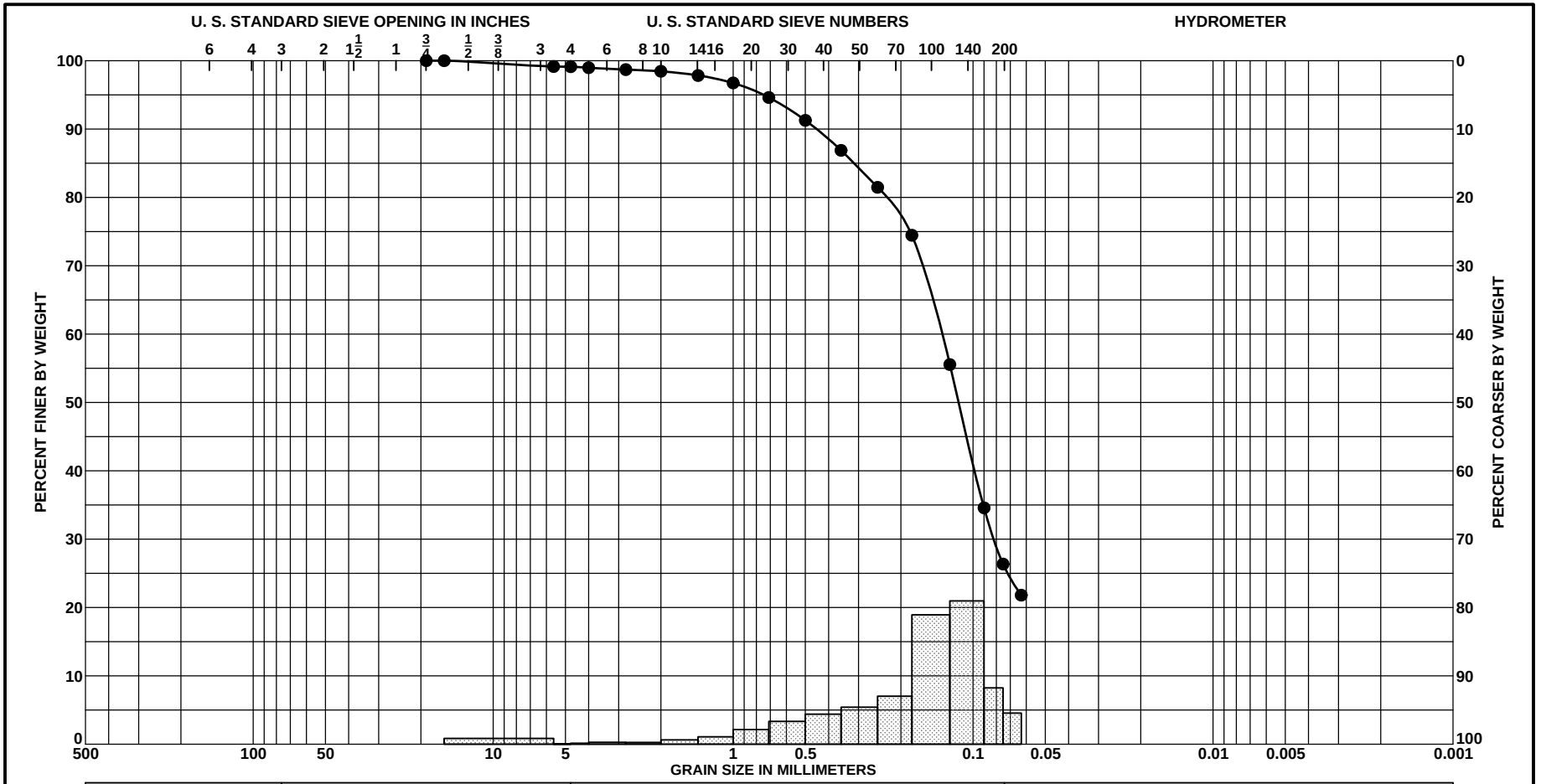


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	8.0 to 8.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace fine gravel-sized limestone,									
		gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-53
BORING ELEV.	-63.1 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

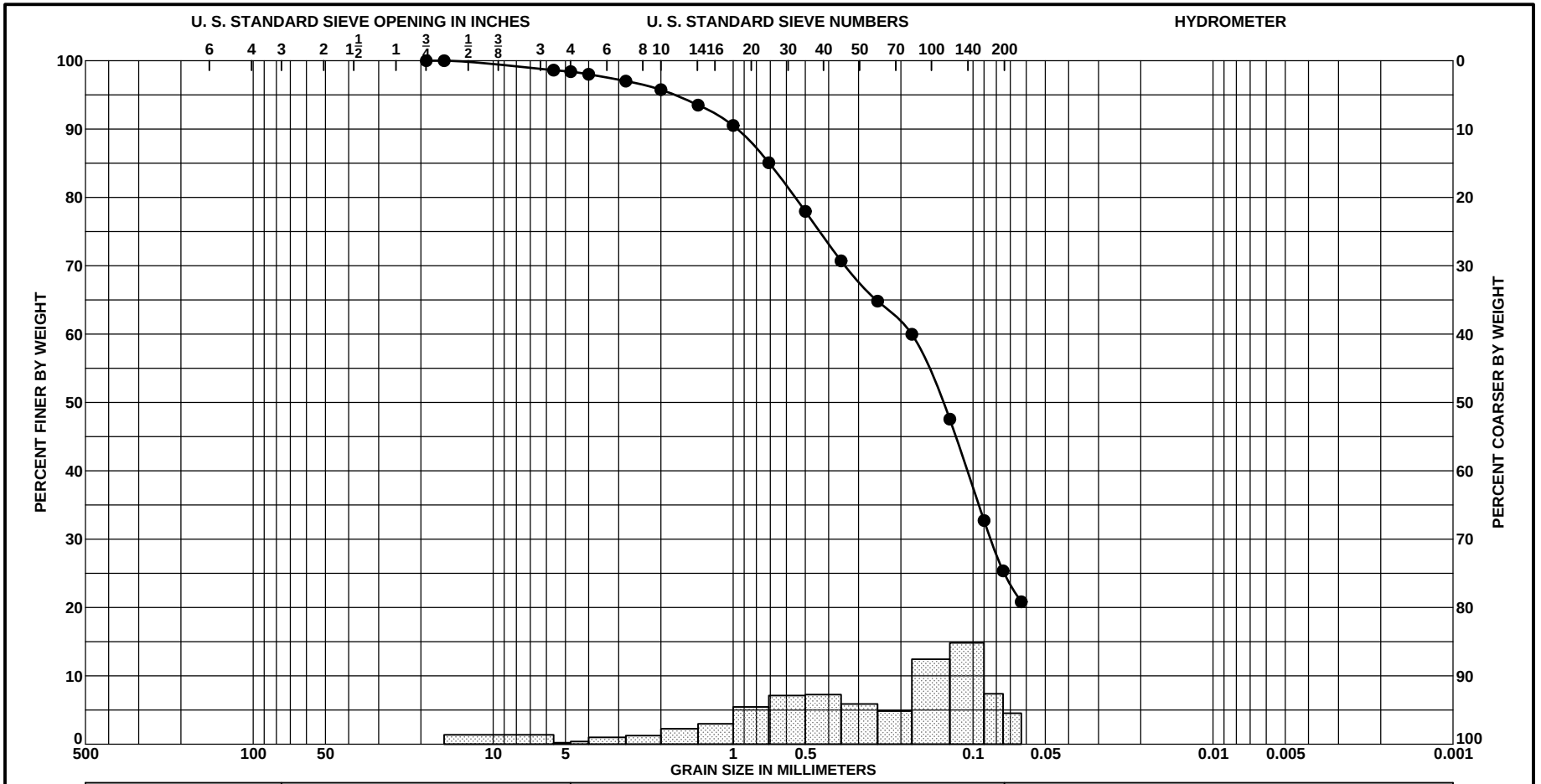


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	11.0 to 11.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	0							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace fine gravel-sized limestone,									
		gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-53
BORING ELEV.	-63.1 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

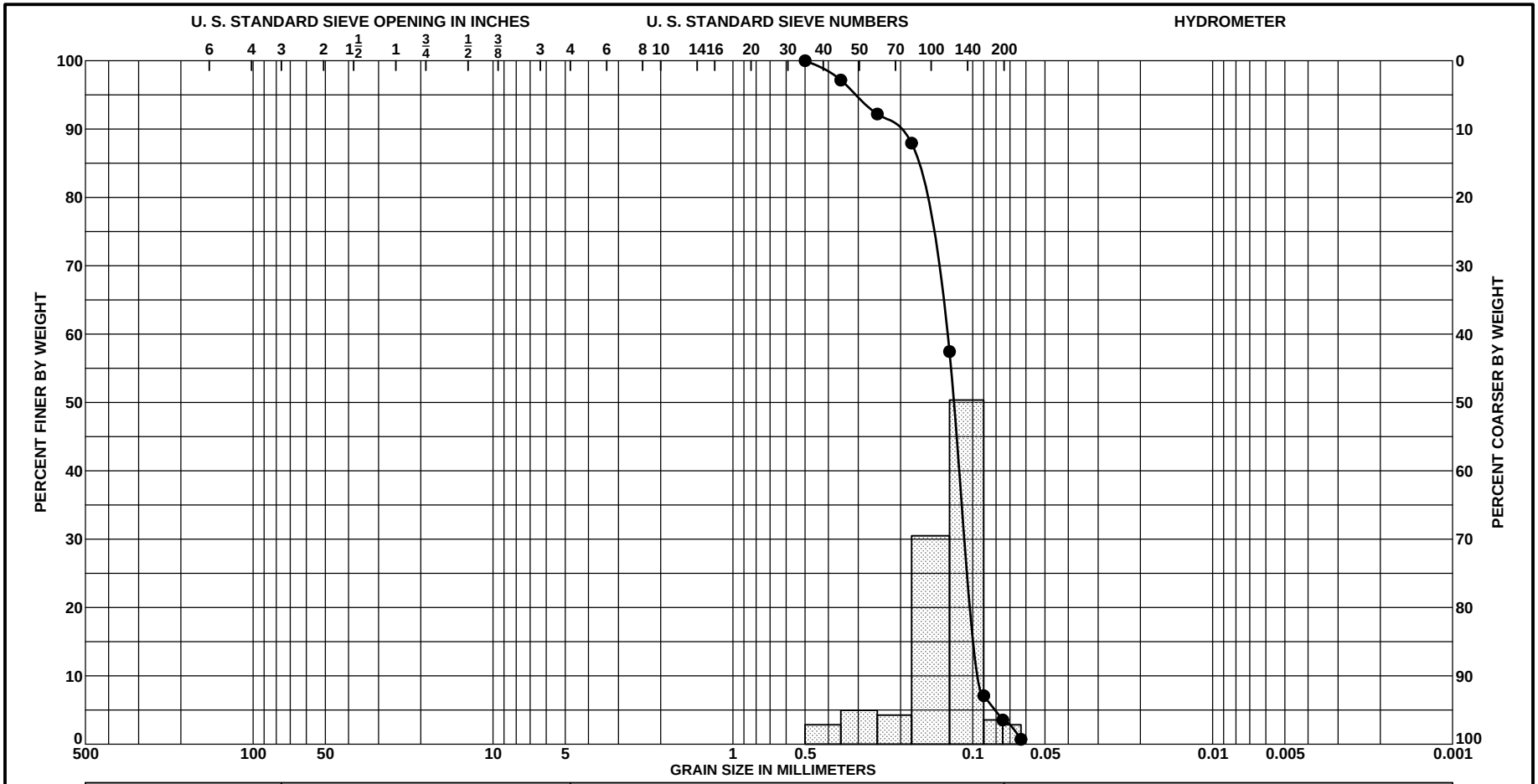


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	14.0 to 14.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace fine gravel-sized limestone,									
		gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-53
BORING ELEV.	-63.1 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, poorly-graded (SP)									
	Post-Carbonate										

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-53
BORING ELEV.	-63.1 Ft., NAVD88
DATE	8/3/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-53 @ 2 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,771	583,356	State Plane, FLE (U.S. Ft.)	-65.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 14.67 #230 - 12.43		98.70	0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.99	1.99
#4	-2.25	4.75	0.26	2.25
#5	-2.00	4.00	0.13	2.39
#7	-1.50	2.80	0.67	3.05
#10	-1.00	2.00	0.83	3.88
#14	-0.50	1.40	1.53	5.41
#18	0.00	1.00	2.08	7.50
#25	0.50	0.71	2.63	10.13
#35	1.00	0.50	3.47	13.60
#45	1.50	0.36	4.16	17.77
#60	2.00	0.25	5.10	22.87
#80	2.50	0.18	10.30	33.16
#120	3.00	0.13	26.17	59.33
#170	3.50	0.09	21.42	80.75
#200	3.75	0.08	4.58	85.33
#230	4.00	0.06	2.23	87.57

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.68	3.37	2.82	2.10	1.29	-0.63

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.24	0.21	2.82	0.14	1.44	-1.93	6.83

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-53 @ 5 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,771	583,356	State Plane, FLE (U.S. Ft.)	-68.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 20.36 #230 - 17.24			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	3.71	3.71
#4	-2.25	4.75	0.02	3.73
#5	-2.00	4.00	0.05	3.78
#7	-1.50	2.80	0.36	4.14
#10	-1.00	2.00	0.44	4.58
#14	-0.50	1.40	1.06	5.64
#18	0.00	1.00	1.38	7.02
#25	0.50	0.71	2.12	9.15
#35	1.00	0.50	3.24	12.39
#45	1.50	0.36	4.41	16.80
#60	2.00	0.25	5.85	22.65
#80	2.50	0.18	7.97	30.62
#120	3.00	0.13	18.26	48.88
#170	3.50	0.09	23.13	72.01
#200	3.75	0.08	7.63	79.64
#230	4.00	0.06	3.11	82.76

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.60	3.02	2.15	1.41	-0.80

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.26	0.21	3.02	0.12	1.61	-2.02	6.96

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-53 @ 8 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,771	583,356	State Plane, FLE (U.S. Ft.)	-71.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 27.04 #230 - 23.67			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.26	0.26
#4	-2.25	4.75	0.09	0.35
#5	-2.00	4.00	0.06	0.40
#7	-1.50	2.80	0.13	0.54
#10	-1.00	2.00	0.23	0.77
#14	-0.50	1.40	0.73	1.50
#18	0.00	1.00	1.10	2.60
#25	0.50	0.71	2.07	4.67
#35	1.00	0.50	3.06	7.73
#45	1.50	0.36	4.06	11.79
#60	2.00	0.25	5.44	17.24
#80	2.50	0.18	7.29	24.53
#120	3.00	0.13	19.72	44.25
#170	3.50	0.09	21.40	65.65
#200	3.75	0.08	7.31	72.96
#230	4.00	0.06	3.37	76.33

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.90	3.13	2.51	1.89	0.55

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.55	0.17	3.13	0.11	1.1	-1.69	6.76

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-53 @ 11 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,771	583,356	State Plane, FLE (U.S. Ft.)	-74.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 26.35 #230 - 21.80			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.85	0.85
#4	-2.25	4.75	0.03	0.88
#5	-2.00	4.00	0.15	1.02
#7	-1.50	2.80	0.28	1.30
#10	-1.00	2.00	0.25	1.55
#14	-0.50	1.40	0.62	2.17
#18	0.00	1.00	1.09	3.25
#25	0.50	0.71	2.13	5.39
#35	1.00	0.50	3.34	8.73
#45	1.50	0.36	4.39	13.12
#60	2.00	0.25	5.41	18.53
#80	2.50	0.18	7.01	25.54
#120	3.00	0.13	18.92	44.46
#170	3.50	0.09	20.96	65.42
#200	3.75	0.08	8.23	73.65
#230	4.00	0.06	4.55	78.20

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.82	3.13	2.46	1.77	0.41

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.52	0.17	3.13	0.11	1.23	-1.94	7.99

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-53 @ 14 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,771	583,356	State Plane, FLE (U.S. Ft.)	-77.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 25.36 #230 - 20.83			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.38	1.38
#4	-2.25	4.75	0.22	1.60
#5	-2.00	4.00	0.38	1.98
#7	-1.50	2.80	1.00	2.98
#10	-1.00	2.00	1.26	4.24
#14	-0.50	1.40	2.26	6.50
#18	0.00	1.00	2.97	9.47
#25	0.50	0.71	5.46	14.93
#35	1.00	0.50	7.11	22.04
#45	1.50	0.36	7.25	29.29
#60	2.00	0.25	5.89	35.18
#80	2.50	0.18	4.85	40.03
#120	3.00	0.13	12.42	52.45
#170	3.50	0.09	14.83	67.28
#200	3.75	0.08	7.37	74.64
#230	4.00	0.06	4.53	79.17

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.77	2.90	1.20	0.58	-0.83

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.92	0.26	2.90	0.13	1.61	-0.97	3.53

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-53 @ 2 ft Post-Carbonate

Analysis Date: 8/3/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,771	583,356	State Plane, FLE (U.S. Ft.)	-65.1 NAVD88

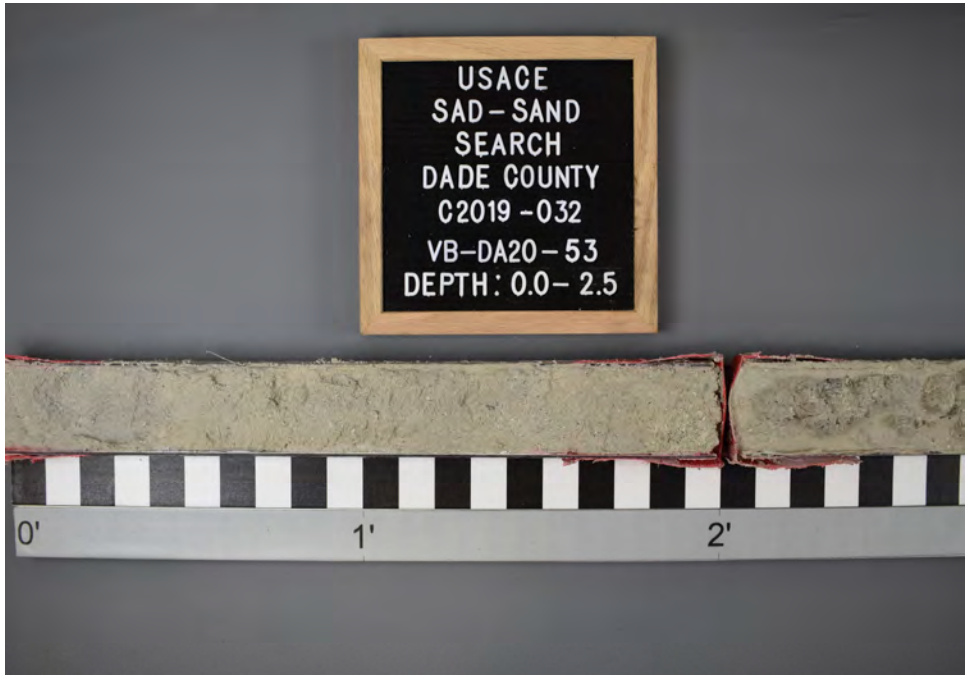
USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP		#200 - 3.55 #230 - 0.71			

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
#35	1.00	0.50	0.00	0.00
#45	1.50	0.36	2.84	2.84
#60	2.00	0.25	4.96	7.80
#80	2.50	0.18	4.26	12.06
#120	3.00	0.13	30.50	42.55
#170	3.50	0.09	50.35	92.91
#200	3.75	0.08	3.55	96.45
#230	4.00	0.06	2.84	99.29

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.65	3.41	3.32	3.07	2.71	2.56	1.72

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.95	0.13	3.07	0.12	0.52	-1.38	5.16

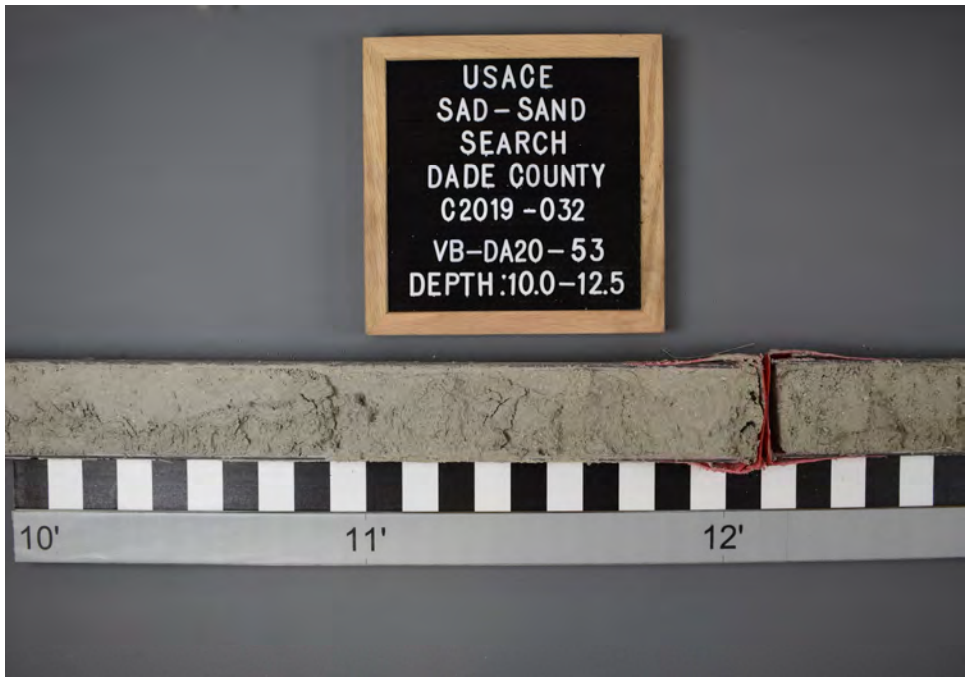
GRANULARMETRIC REPORT % DADA CACO3.GPJ CESAJ 20171021.GDT 3/3/21

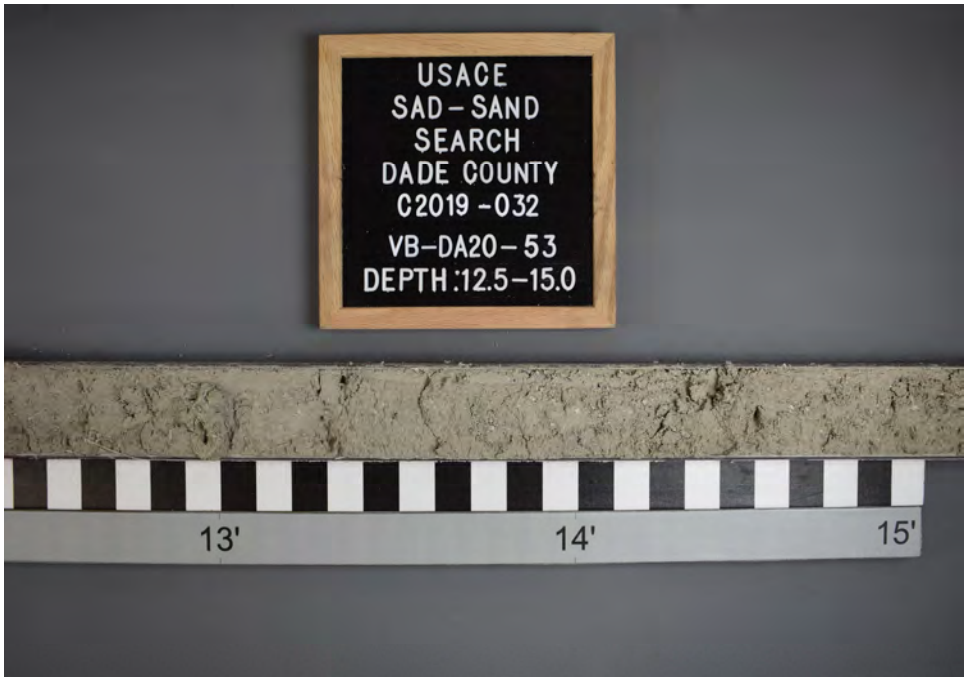

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 53
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 53
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 53
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 53
DEPTH: 7.5 – 10.0
8'
9'
10'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 53
DEPTH :10.0 – 12.5
10'
11'
12'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 53
DEPTH :12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 53
DEPTH :15.0 – 17.1
15'
16'
17'

VB-DA20-54

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-54

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-54	LOCATION COORDINATES: X = 952,912 Y = 585,159	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 6 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -44.9 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 87 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-44.9	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, little shell, trace silt, moist, 5Y 5/1 gray (SW)				-45.9		
					1				
-46.9	2.0								
-47.2	2.3		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone						
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, little shell, moist, 5Y 5/1 gray (SW)				-47.9		
					2				
-50.9	6.0						-50.9		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, little shell, few silt, moist, 5Y 5/1 gray (SW-SM)		3				
-53.4	8.5						-53.9		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, few shell, moist, 5Y 6/1 gray (SM)		4				
			At El. -55.3 Ft., mostly fine to medium-grained sand-sized carbonate, little silt, little shell, moist, 5Y 6/1 gray				-56.9		
					5				
							-59.9		

0 5 10 15

(Continued)

Boring Designation VB-DA20-54

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 952,912 Y = 585,159	ELEVATION TOP OF BORING: -44.9 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-62.3	17.4		No Recovery		6				
-64.9	20.0						-64.9		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

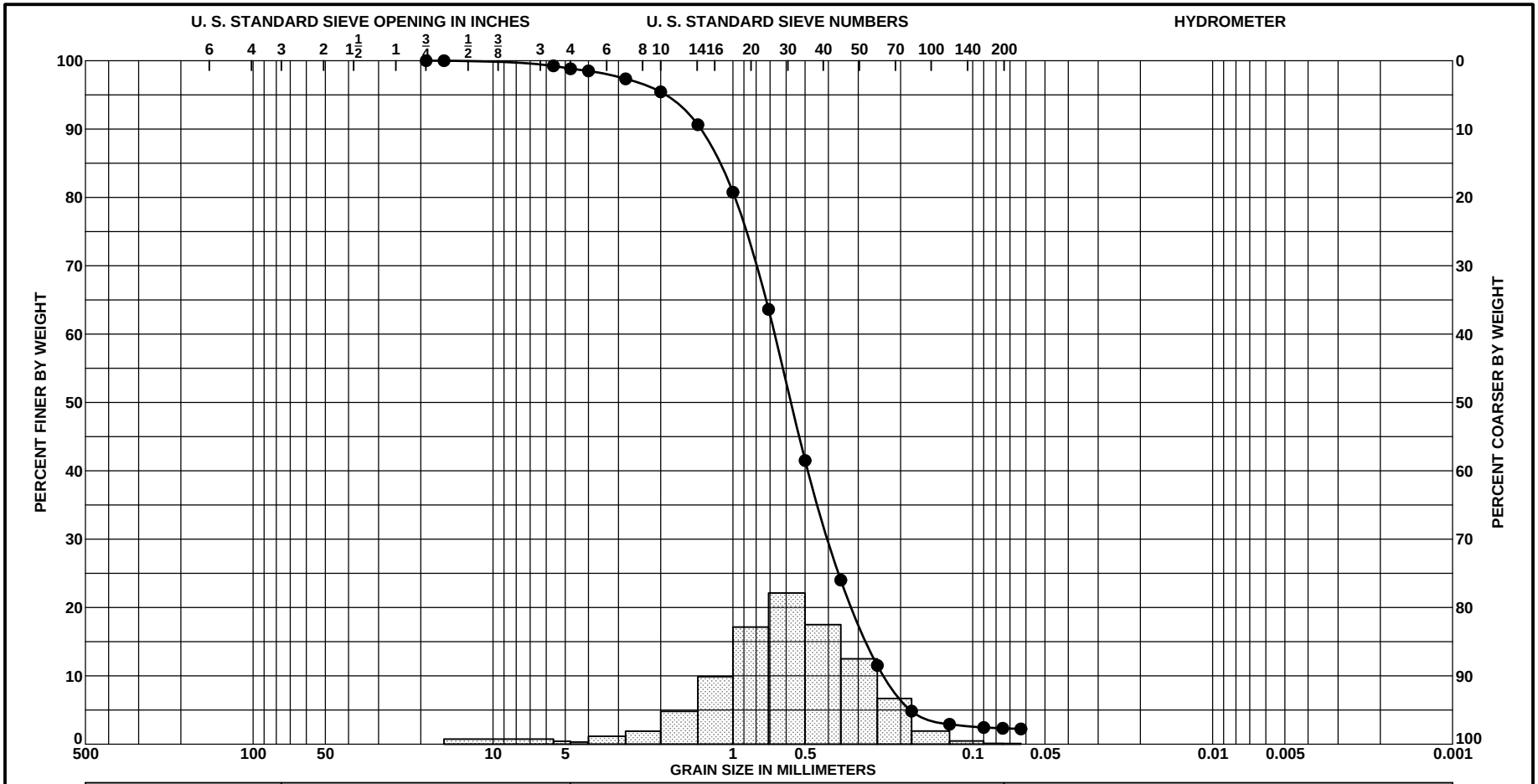
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	1.0/1.2	SW*
2	3.0/3.2	SW*
3	6.0/6.2	SW-SM*
4	9.0/9.2	SM*
5	12.0/12.2	SM*
6	15.0/15.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

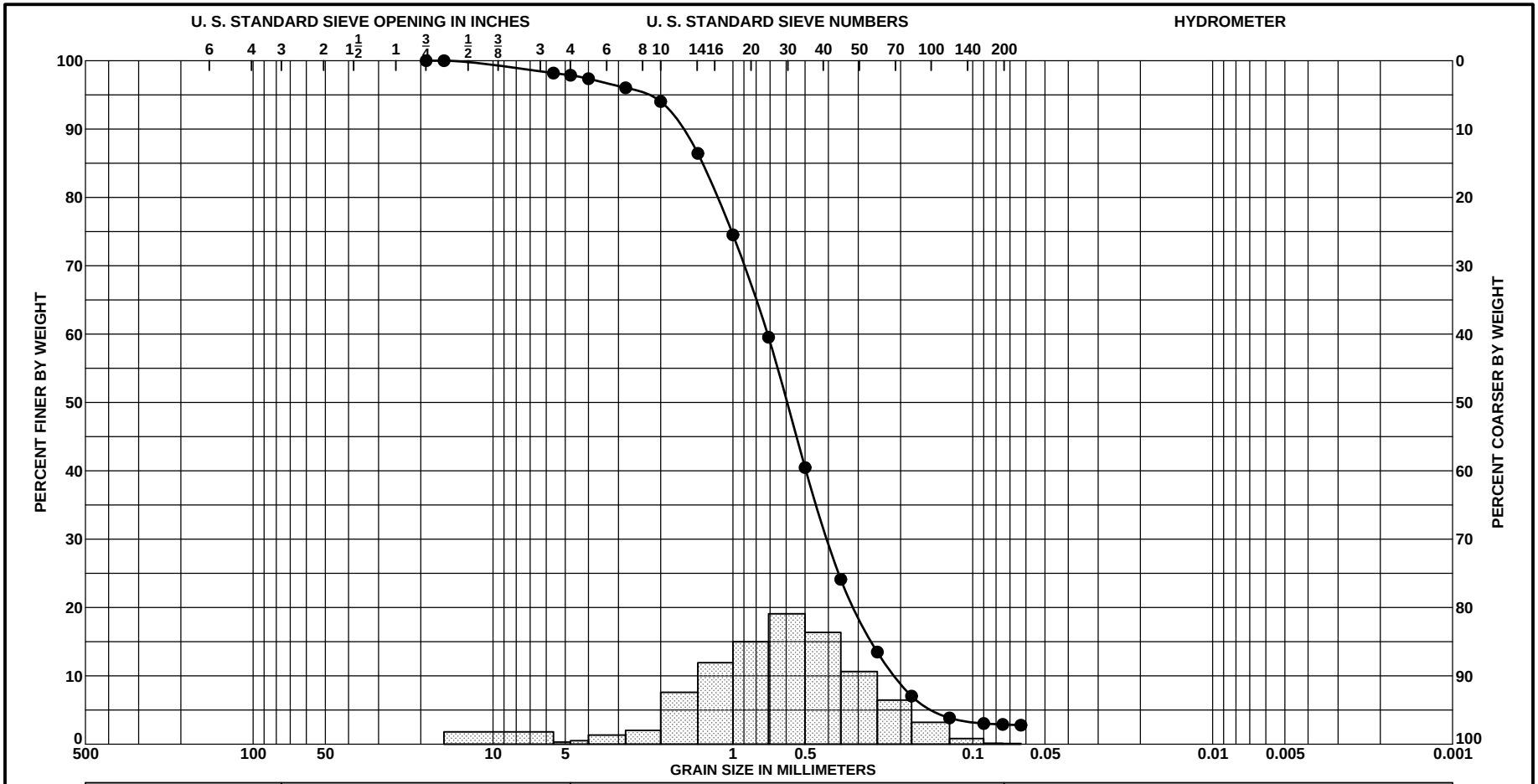


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	1.0 to 1.2 Ft.	SAND, well-graded, mostly fine to	5Y 5/1	1							
		medium-grained sand-sized									
		carbonate, trace									
		shell, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-54
BORING ELEV.	-44.9 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

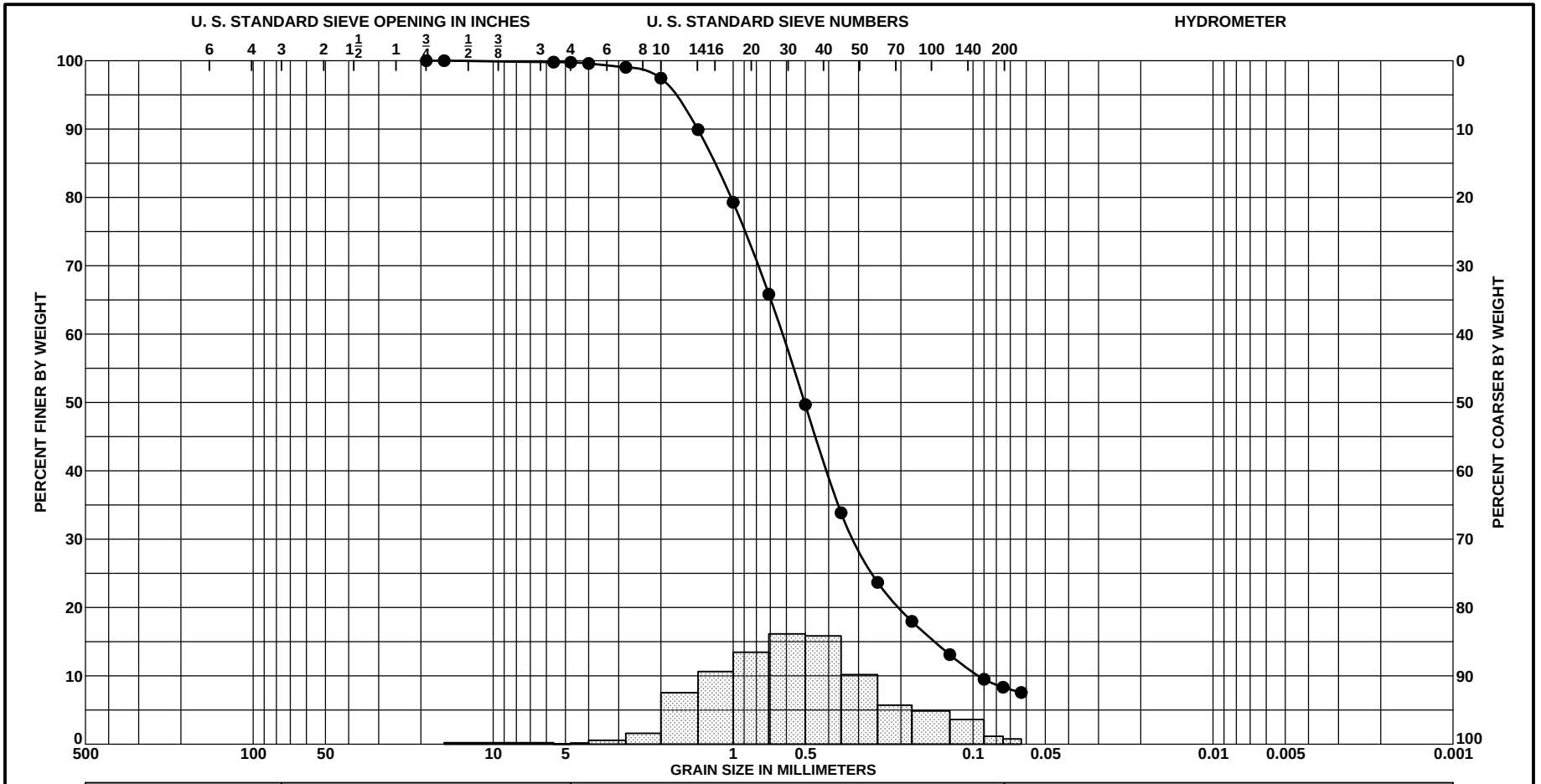


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	3.0 to 3.2 Ft.	SAND, well-graded, mostly fine to	5Y 5/1	1							
		medium-grained sand-sized									
		carbonate, trace									
		shell, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-54
BORING ELEV.	-44.9 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

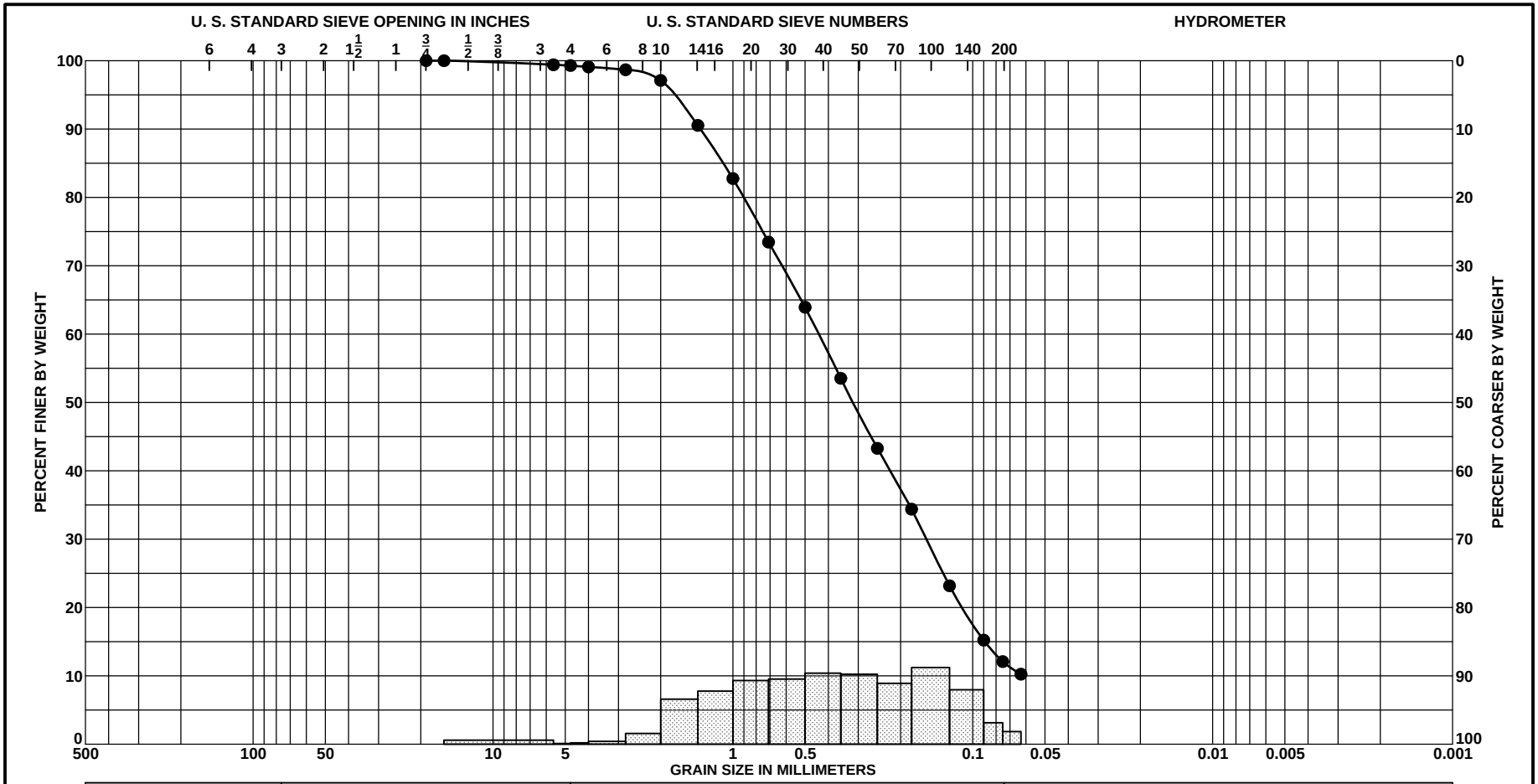


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 5/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, trace									
		shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-54
BORING ELEV.	-44.9 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

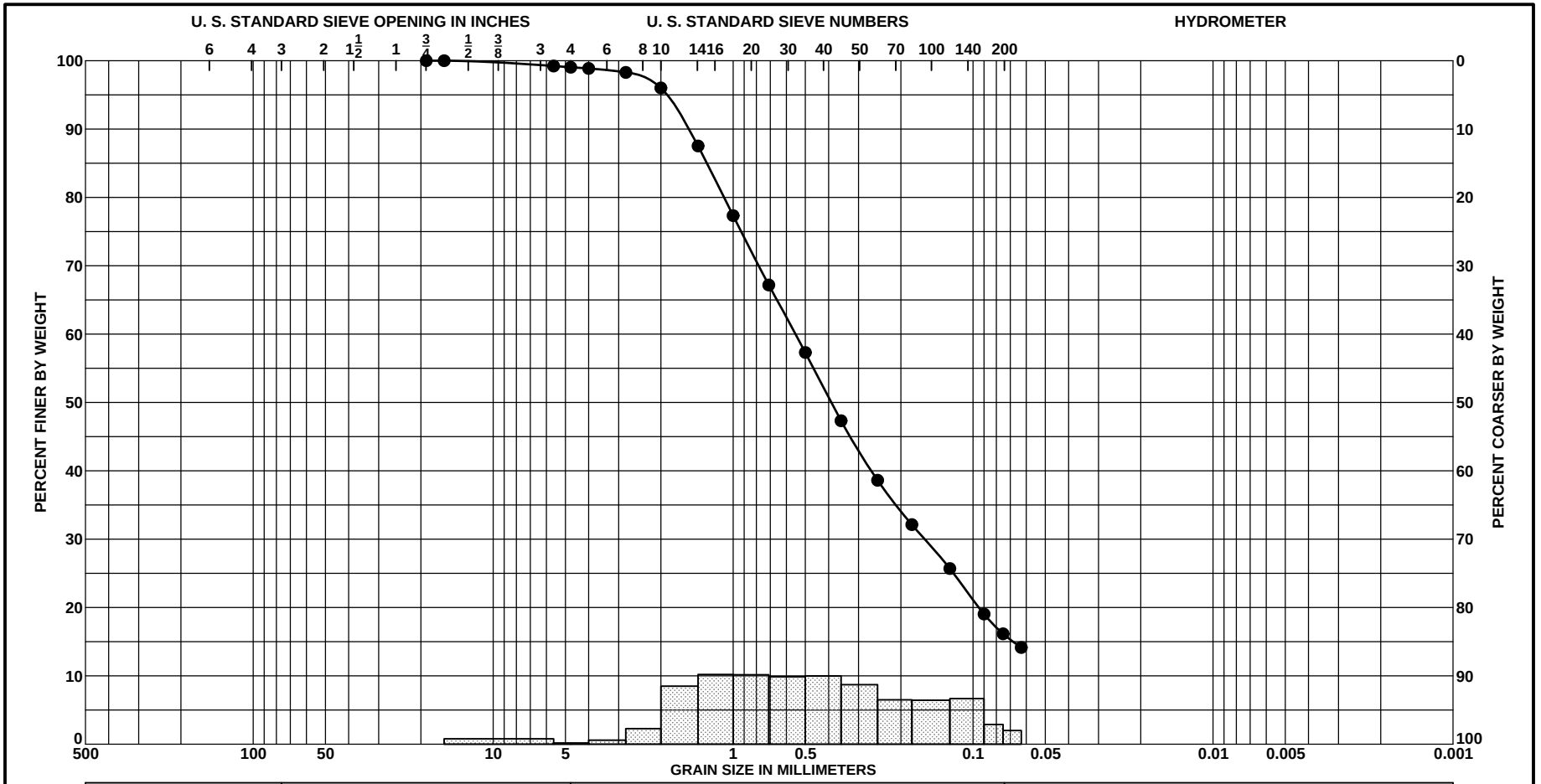


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	9.0 to 9.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-54
BORING ELEV.	-44.9 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

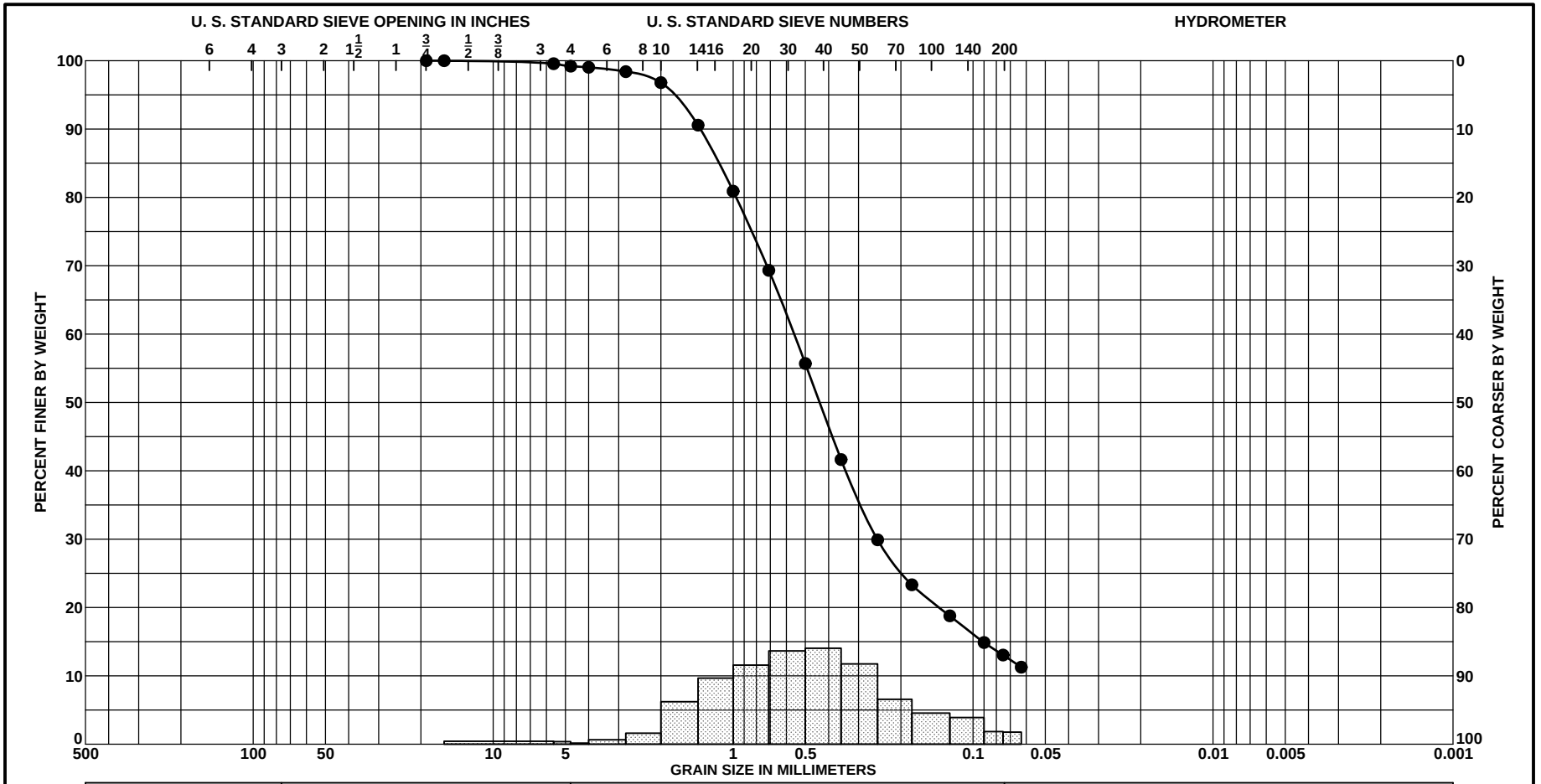


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	12.0 to 12.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	1							
		medium-grained sand-sized									
		carbonate, little									
		silt, little shell, gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-54
BORING ELEV.	-44.9 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	15.0 to 15.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	1							
		medium-grained sand-sized									
		carbonate, little									
		silt, little shell, gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-54
BORING ELEV.	-44.9 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-54 @ 1 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,912	585,159	State Plane, FLE (U.S. Ft.)	-45.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 5/1	#200 - 2.33 #230 - 2.23			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.75	0.75
#4	-2.25	4.75	0.43	1.18
#5	-2.00	4.00	0.31	1.50
#7	-1.50	2.80	1.16	2.66
#10	-1.00	2.00	1.90	4.56
#14	-0.50	1.40	4.81	9.37
#18	0.00	1.00	9.88	19.24
#25	0.50	0.71	17.14	36.38
#35	1.00	0.50	22.11	58.50
#45	1.50	0.36	17.50	75.99
#60	2.00	0.25	12.48	88.48
#80	2.50	0.18	6.69	95.16
#120	3.00	0.13	1.92	97.09
#170	3.50	0.09	0.47	97.56
#200	3.75	0.08	0.12	97.67
#230	4.00	0.06	0.10	97.77

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.49	1.82	1.47	0.81	0.17	-0.16	-0.95

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.74	0.60	0.81	0.57	1.03	-0.59	4.39

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-54 @ 3 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,912	585,159	State Plane, FLE (U.S. Ft.)	-47.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 5/1	#200 - 2.89 #230 - 2.78			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.81	1.81
#4	-2.25	4.75	0.31	2.12
#5	-2.00	4.00	0.51	2.63
#7	-1.50	2.80	1.33	3.96
#10	-1.00	2.00	2.01	5.98
#14	-0.50	1.40	7.58	13.56
#18	0.00	1.00	11.92	25.48
#25	0.50	0.71	14.98	40.46
#35	1.00	0.50	19.07	59.53
#45	1.50	0.36	16.35	75.88
#60	2.00	0.25	10.63	86.52
#80	2.50	0.18	6.45	92.96
#120	3.00	0.13	3.20	96.16
#170	3.50	0.09	0.82	96.98
#200	3.75	0.08	0.13	97.11
#230	4.00	0.06	0.11	97.22

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.82	1.88	1.47	0.75	-0.02	-0.40	-1.24

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.65	0.64	0.75	0.59	1.17	-0.59	4.16

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-54 @ 6 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,912	585,159	State Plane, FLE (U.S. Ft.)	-50.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 5/1	#200 - 8.33 #230 - 7.56			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.21	0.21
#4	-2.25	4.75	0.03	0.23
#5	-2.00	4.00	0.17	0.40
#7	-1.50	2.80	0.57	0.97
#10	-1.00	2.00	1.58	2.55
#14	-0.50	1.40	7.54	10.09
#18	0.00	1.00	10.63	20.72
#25	0.50	0.71	13.45	34.17
#35	1.00	0.50	16.14	50.32
#45	1.50	0.36	15.83	66.15
#60	2.00	0.25	10.18	76.33
#80	2.50	0.18	5.70	82.03
#120	3.00	0.13	4.87	86.89
#170	3.50	0.09	3.61	90.51
#200	3.75	0.08	1.16	91.67
#230	4.00	0.06	0.77	92.44

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.70	1.93	0.99	0.16	-0.22	-0.84

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.93	0.52	0.99	0.50	1.18	0.2	2.94

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-54 @ 9 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,912	585,159	State Plane, FLE (U.S. Ft.)	-53.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 12.08 #230 - 10.24			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.60	0.60
#4	-2.25	4.75	0.11	0.70
#5	-2.00	4.00	0.20	0.91
#7	-1.50	2.80	0.42	1.32
#10	-1.00	2.00	1.56	2.88
#14	-0.50	1.40	6.58	9.47
#18	0.00	1.00	7.77	17.24
#25	0.50	0.71	9.30	26.54
#35	1.00	0.50	9.53	36.07
#45	1.50	0.36	10.40	46.47
#60	2.00	0.25	10.24	56.71
#80	2.50	0.18	8.91	65.62
#120	3.00	0.13	11.21	76.83
#170	3.50	0.09	7.95	84.78
#200	3.75	0.08	3.14	87.92
#230	4.00	0.06	1.84	89.76

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.45	2.92	1.67	0.42	-0.08	-0.84

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.38	0.38	1.67	0.31	1.43	-0.28	2.54

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-54 @ 12 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,912	585,159	State Plane, FLE (U.S. Ft.)	-56.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 16.15 #230 - 14.15			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.78	0.78
#4	-2.25	4.75	0.19	0.96
#5	-2.00	4.00	0.17	1.13
#7	-1.50	2.80	0.58	1.71
#10	-1.00	2.00	2.27	3.99
#14	-0.50	1.40	8.48	12.47
#18	0.00	1.00	10.20	22.67
#25	0.50	0.71	10.15	32.82
#35	1.00	0.50	9.87	42.69
#45	1.50	0.36	9.99	52.68
#60	2.00	0.25	8.71	61.39
#80	2.50	0.18	6.49	67.87
#120	3.00	0.13	6.42	74.30
#170	3.50	0.09	6.66	80.96
#200	3.75	0.08	2.89	83.85
#230	4.00	0.06	2.00	85.85

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.77	3.05	1.37	0.11	-0.33	-0.94

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.09	0.47	1.37	0.39	1.47	-0.02	2.48

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-54 @ 15 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,912	585,159	State Plane, FLE (U.S. Ft.)	-59.9 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 13.04 #230 - 11.27			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.43	0.43
#4	-2.25	4.75	0.37	0.80
#5	-2.00	4.00	0.16	0.96
#7	-1.50	2.80	0.64	1.60
#10	-1.00	2.00	1.61	3.21
#14	-0.50	1.40	6.22	9.43
#18	0.00	1.00	9.67	19.10
#25	0.50	0.71	11.58	30.67
#35	1.00	0.50	13.64	44.31
#45	1.50	0.36	14.05	58.36
#60	2.00	0.25	11.74	70.10
#80	2.50	0.18	6.58	76.68
#120	3.00	0.13	4.54	81.22
#170	3.50	0.09	3.90	85.12
#200	3.75	0.08	1.84	86.96
#230	4.00	0.06	1.77	88.73

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.36	2.37	1.20	0.26	-0.16	-0.86

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.04	0.49	1.20	0.44	1.29	0.03	3.04

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 54
DEPTH: 0.0 – 2.5
0'
1'
2'

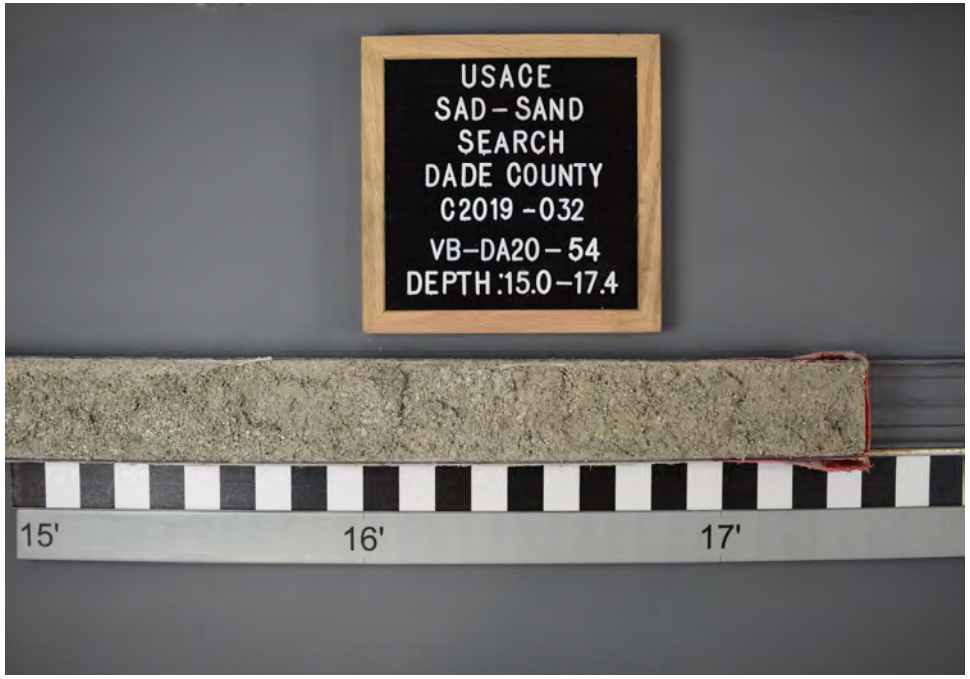
USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 54
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 54
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 54
DEPTH: 7.5–10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 54
DEPTH :10.0–12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 54
DEPTH :12.5–15.0
13'
14'
15'


USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 54
DEPTH :15.0–17.4
15'
16'
17'

VB-DA20-55

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-55

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-55	LOCATION COORDINATES: X = 954,568 Y = 585,883	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 6 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -65.4 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 91 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-65.4	0.0								
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 6/1 gray (SW-SM)				-67.4		
					1				
-70.4	5.0						-70.4		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, trace shell, moist, 5Y 6/1 gray (SM)		2		-72.4		
					3		-75.4		
					4		-78.4		
					5				
			At El. -79.4 Ft., mostly fine to medium-grained sand-sized carbonate, little silt, few shell, moist, 5Y 6/2 light olive gray						

0 5 10 15

(Continued)

Boring Designation VB-DA20-55

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 954,568 Y = 585,883	ELEVATION TOP OF BORING: -65.4 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
					6		-81.4		
-83.7	18.3		No Recovery						
-85.4	20.0						-85.4		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

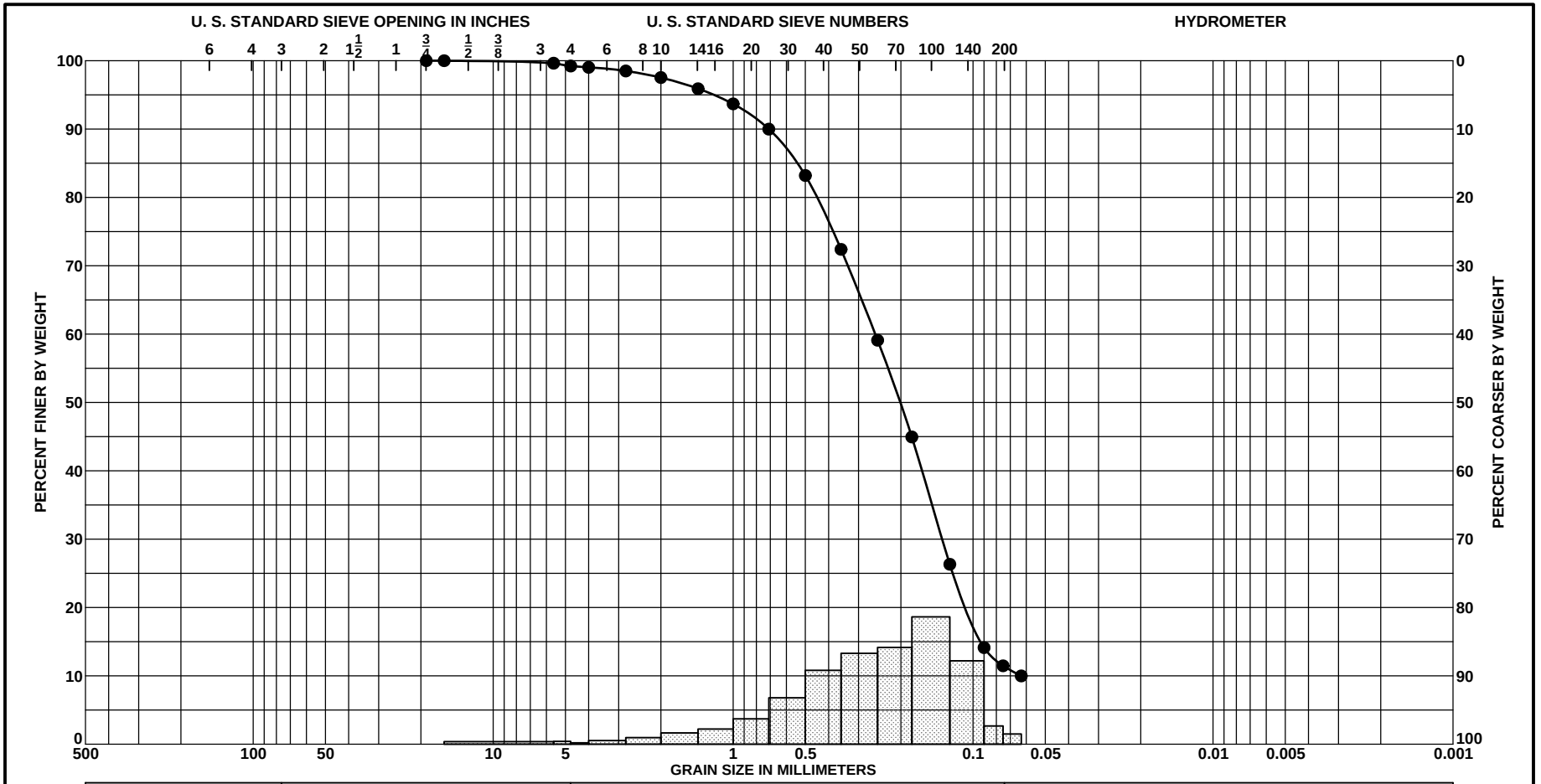
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW-SM*
2	5.0/5.2	SM*
3	7.0/7.2	SM*
4	10.0/10.2	SM*
5	13.0/13.2	SM*
6	16.0/16.2	SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

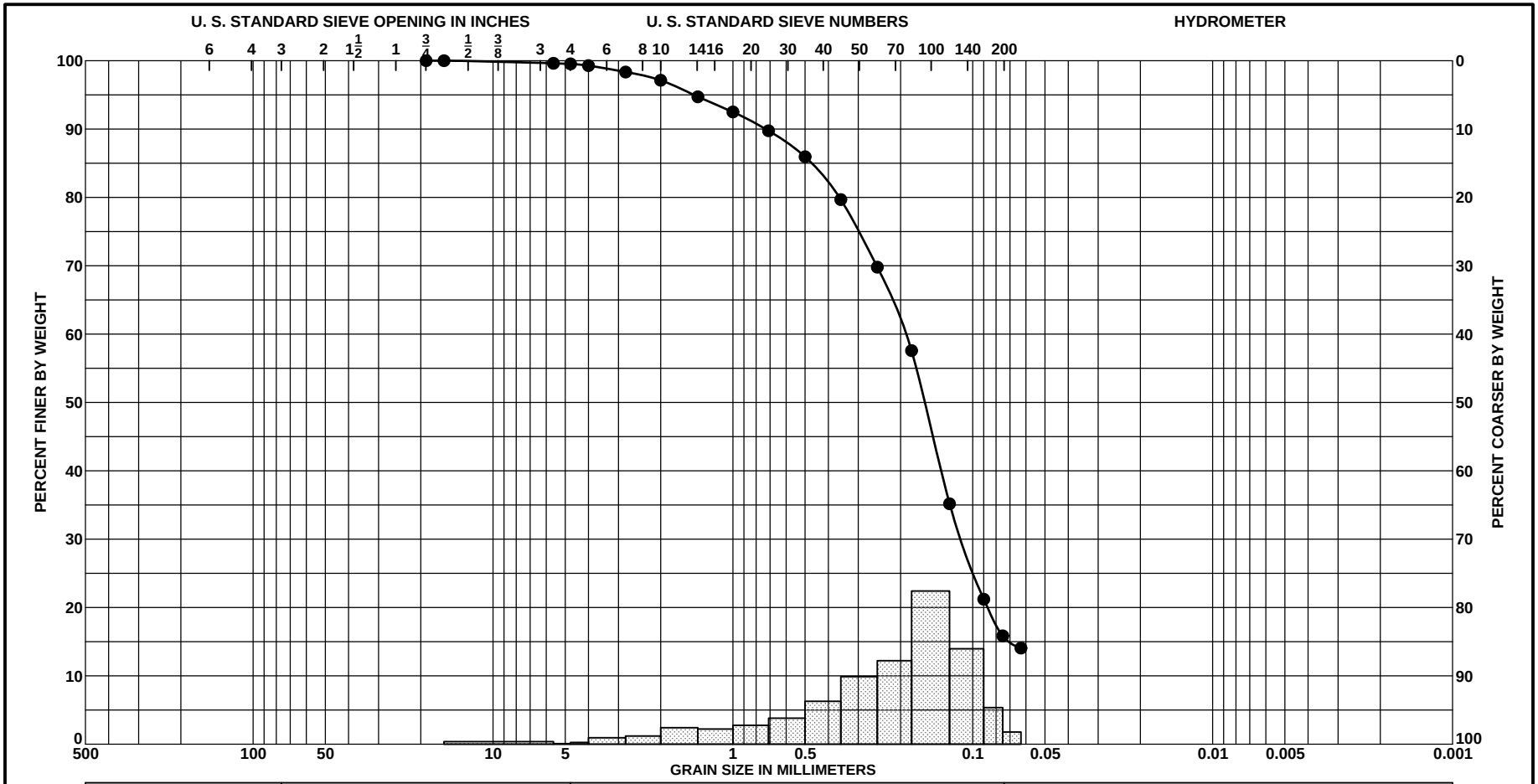


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-55
BORING ELEV.	-65.4 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

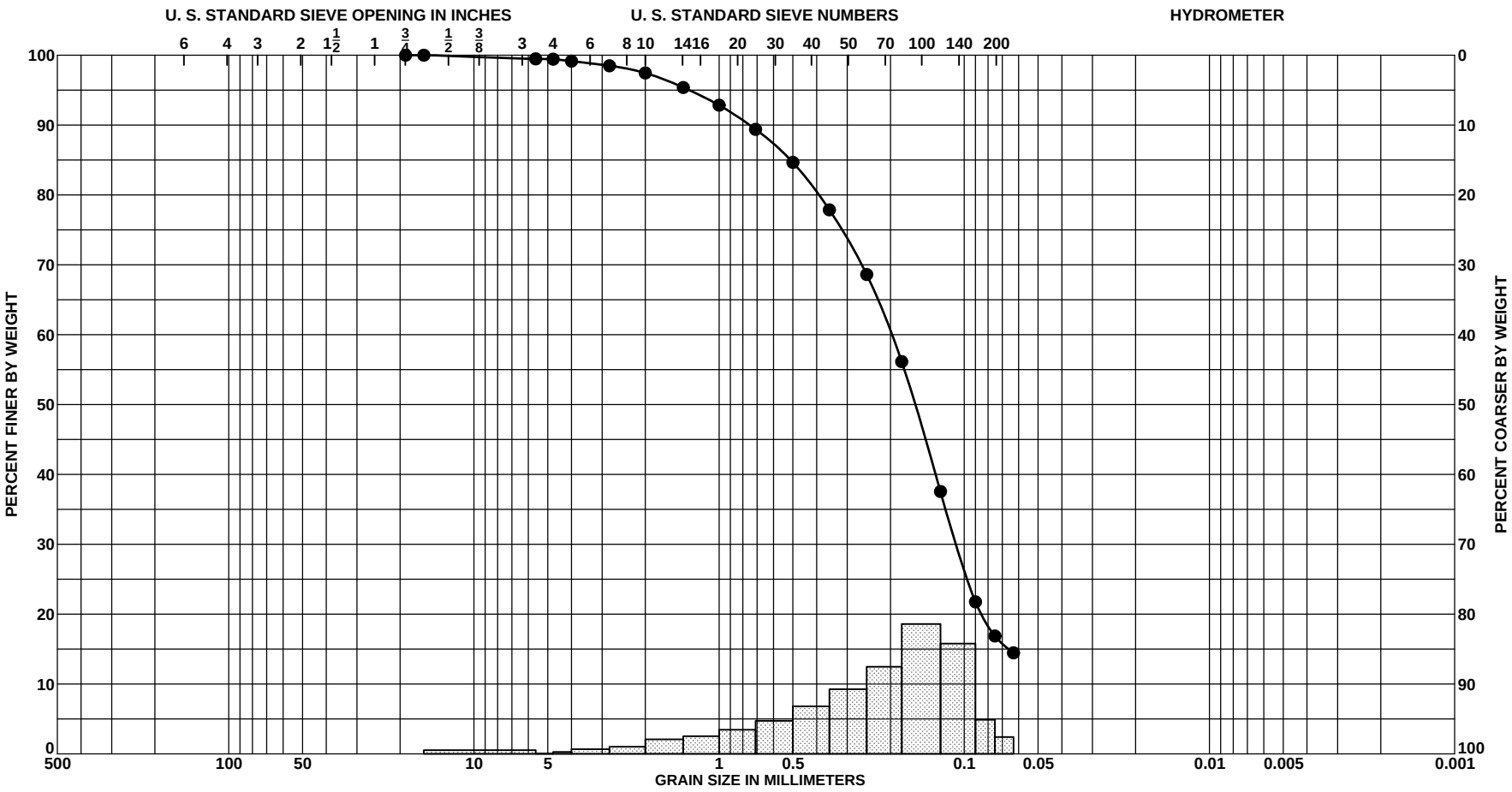


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	0							
		medium-grained									
		sand-sized carbonate, little silt, gray									
		(SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-55
BORING ELEV.	-65.4 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

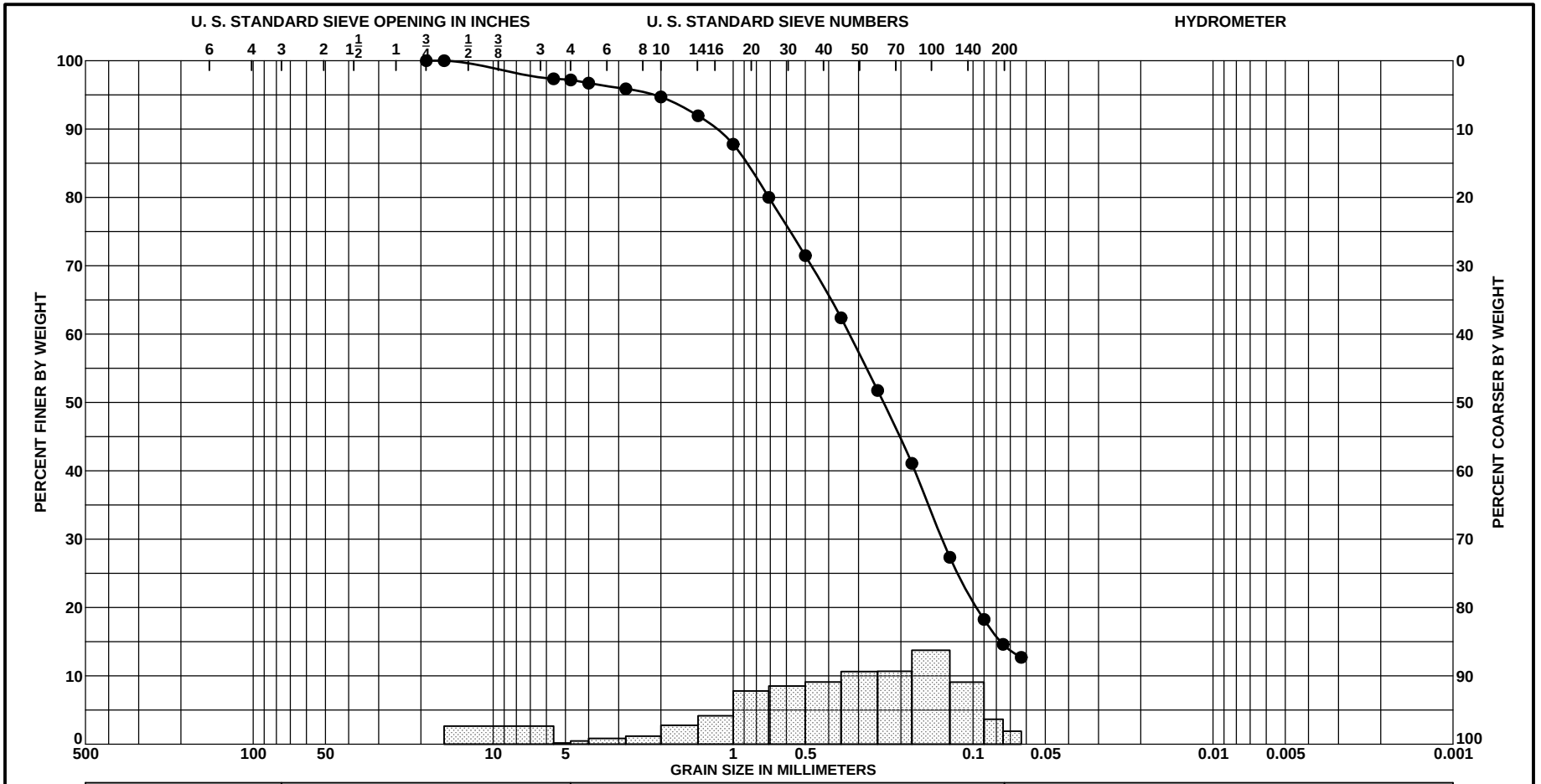


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	7.0 to 7.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-55
BORING ELEV.	-65.4 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

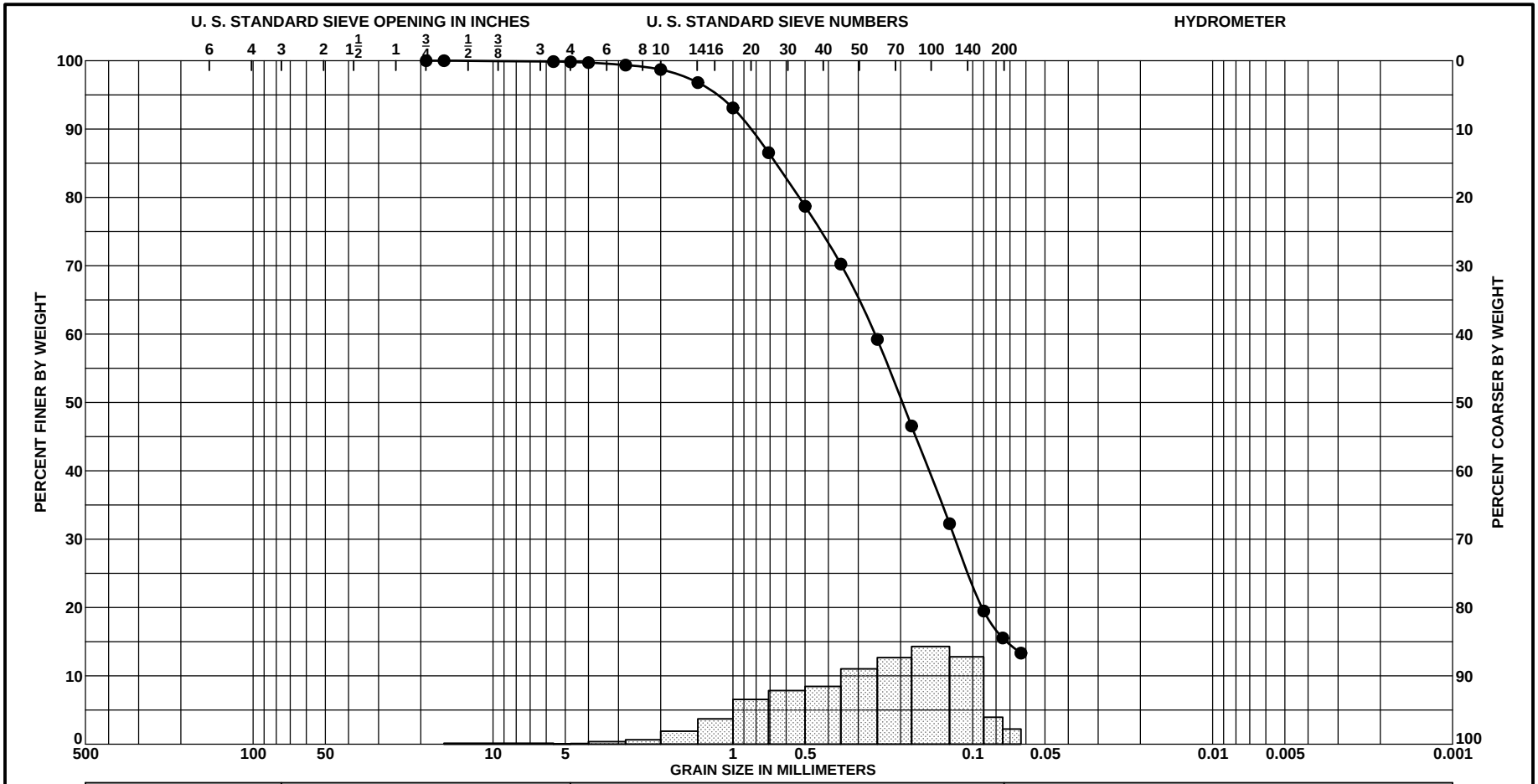


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	10.0 to 10.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-55
BORING ELEV.	-65.4 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

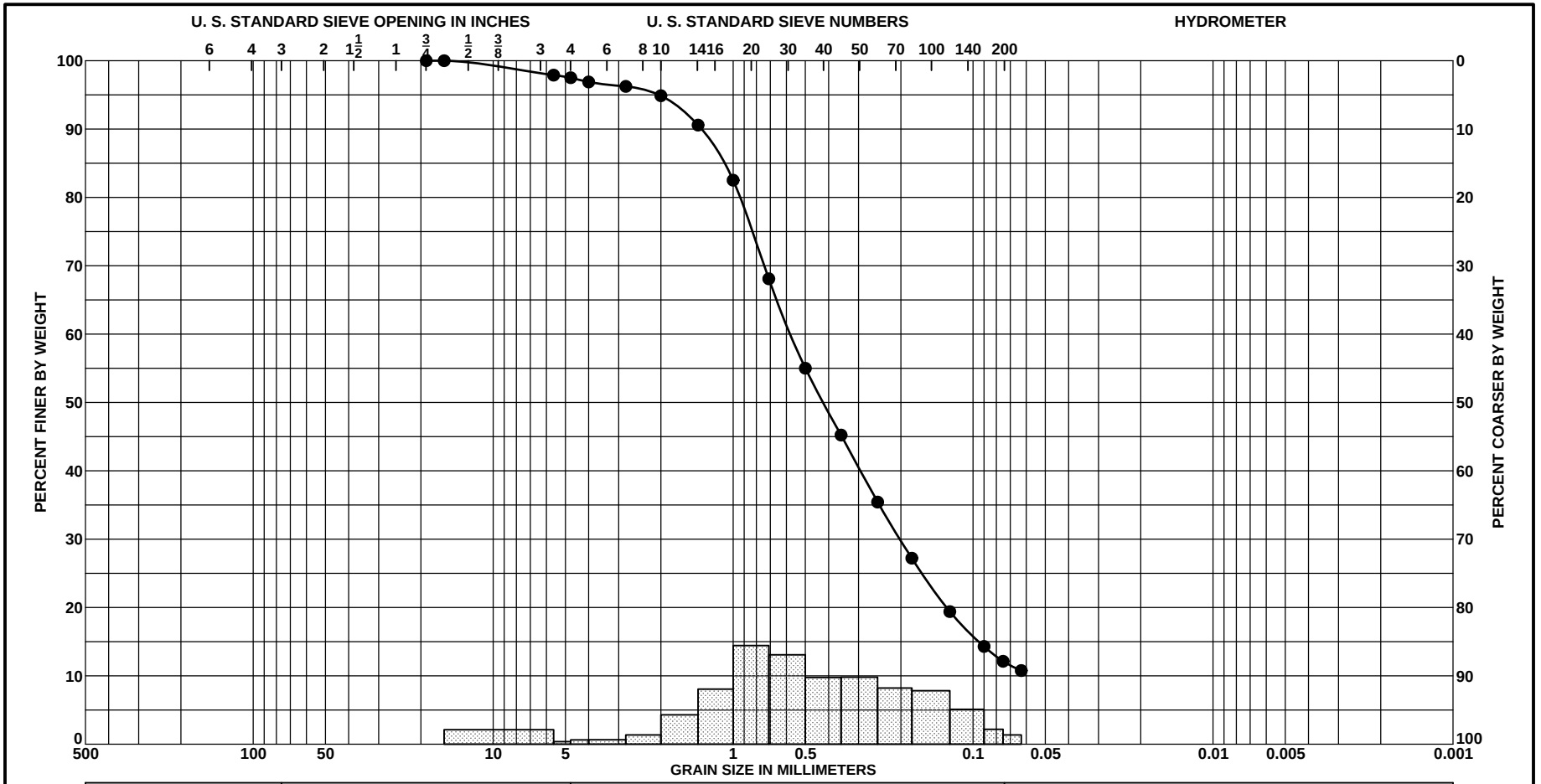


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	13.0 to 13.2 Ft.	SAND, silty, mostly fine to	5Y 6/1	1							
		medium-grained									
		sand-sized carbonate, little silt,									
		trace shell, gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-55
BORING ELEV.	-65.4 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 6	16.0 to 16.2 Ft.	mostly fine to	5Y 6/1	0							
		medium-grained sand-sized									
		carbonate, little									
		silt, gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-55
BORING ELEV.	-65.4 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-55 @ 2 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,568	585,883	State Plane, FLE (U.S. Ft.)	-67.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 11.47 #230 - 9.99			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.36	0.36
#4	-2.25	4.75	0.42	0.78
#5	-2.00	4.00	0.19	0.97
#7	-1.50	2.80	0.53	1.50
#10	-1.00	2.00	0.96	2.46
#14	-0.50	1.40	1.64	4.10
#18	0.00	1.00	2.21	6.32
#25	0.50	0.71	3.70	10.01
#35	1.00	0.50	6.78	16.80
#45	1.50	0.36	10.81	27.61
#60	2.00	0.25	13.29	40.90
#80	2.50	0.18	14.16	55.05
#120	3.00	0.13	18.63	73.68
#170	3.50	0.09	12.19	85.87
#200	3.75	0.08	2.66	88.53
#230	4.00	0.06	1.48	90.01

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.42	3.05	2.32	1.38	0.94	-0.30

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.94	0.26	2.32	0.20	1.22	-1.11	4.67

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-55 @ 5 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,568	585,883	State Plane, FLE (U.S. Ft.)	-70.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 15.85 #230 - 14.07			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.38	0.38
#4	-2.25	4.75	0.09	0.47
#5	-2.00	4.00	0.25	0.72
#7	-1.50	2.80	0.94	1.66
#10	-1.00	2.00	1.20	2.86
#14	-0.50	1.40	2.42	5.28
#18	0.00	1.00	2.22	7.50
#25	0.50	0.71	2.76	10.25
#35	1.00	0.50	3.80	14.05
#45	1.50	0.36	6.27	20.32
#60	2.00	0.25	9.88	30.21
#80	2.50	0.18	12.21	42.42
#120	3.00	0.13	22.41	64.82
#170	3.50	0.09	13.96	78.79
#200	3.75	0.08	5.36	84.15
#230	4.00	0.06	1.78	85.93

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.74	3.36	2.67	1.74	1.16	-0.56

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.12	0.23	2.67	0.16	1.3	-1.34	4.73

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-55 @ 7 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,568	585,883	State Plane, FLE (U.S. Ft.)	-72.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 16.87 #230 - 14.46			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.52	0.52
#4	-2.25	4.75	0.05	0.57
#5	-2.00	4.00	0.28	0.85
#7	-1.50	2.80	0.67	1.52
#10	-1.00	2.00	1.03	2.54
#14	-0.50	1.40	2.08	4.63
#18	0.00	1.00	2.53	7.16
#25	0.50	0.71	3.46	10.62
#35	1.00	0.50	4.72	15.34
#45	1.50	0.36	6.79	22.13
#60	2.00	0.25	9.25	31.39
#80	2.50	0.18	12.47	43.86
#120	3.00	0.13	18.59	62.44
#170	3.50	0.09	15.79	78.24
#200	3.75	0.08	4.89	83.13
#230	4.00	0.06	2.41	85.54

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.84	3.40	2.67	1.65	1.05	-0.43

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.10	0.23	2.67	0.16	1.31	-1.24	4.58

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-55 @ 10 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,568	585,883	State Plane, FLE (U.S. Ft.)	-75.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 14.61 #230 - 12.71			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.65	2.65
#4	-2.25	4.75	0.17	2.82
#5	-2.00	4.00	0.46	3.28
#7	-1.50	2.80	0.84	4.12
#10	-1.00	2.00	1.19	5.30
#14	-0.50	1.40	2.76	8.06
#18	0.00	1.00	4.16	12.22
#25	0.50	0.71	7.78	20.00
#35	1.00	0.50	8.52	28.52
#45	1.50	0.36	9.11	37.62
#60	2.00	0.25	10.62	48.25
#80	2.50	0.18	10.67	58.92
#120	3.00	0.13	13.75	72.66
#170	3.50	0.09	9.08	81.75
#200	3.75	0.08	3.65	85.39
#230	4.00	0.06	1.90	87.29

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.65	3.13	2.08	0.79	0.24	-1.13

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.54	0.34	2.08	0.24	1.56	-0.97	3.95

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-55 @ 13 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,568	585,883	State Plane, FLE (U.S. Ft.)	-78.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 15.54 #230 - 13.33			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.13	0.13
#4	-2.25	4.75	0.04	0.17
#5	-2.00	4.00	0.10	0.28
#7	-1.50	2.80	0.37	0.65
#10	-1.00	2.00	0.65	1.29
#14	-0.50	1.40	1.91	3.20
#18	0.00	1.00	3.71	6.91
#25	0.50	0.71	6.55	13.46
#35	1.00	0.50	7.84	21.30
#45	1.50	0.36	8.46	29.76
#60	2.00	0.25	11.01	40.77
#80	2.50	0.18	12.67	53.44
#120	3.00	0.13	14.29	67.74
#170	3.50	0.09	12.78	80.51
#200	3.75	0.08	3.95	84.46
#230	4.00	0.06	2.21	86.67

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.72	3.28	2.36	1.22	0.66	-0.26

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.90	0.27	2.36	0.19	1.25	-0.63	2.93

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-55 @ 16 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,568	585,883	State Plane, FLE (U.S. Ft.)	-81.4 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	5Y 6/1	#200 - 12.13 #230 - 10.77			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.11	2.11
#4	-2.25	4.75	0.38	2.49
#5	-2.00	4.00	0.62	3.11
#7	-1.50	2.80	0.65	3.76
#10	-1.00	2.00	1.36	5.12
#14	-0.50	1.40	4.30	9.42
#18	0.00	1.00	8.07	17.49
#25	0.50	0.71	14.43	31.91
#35	1.00	0.50	13.09	45.00
#45	1.50	0.36	9.77	54.77
#60	2.00	0.25	9.81	64.57
#80	2.50	0.18	8.21	72.79
#120	3.00	0.13	7.82	80.61
#170	3.50	0.09	5.09	85.70
#200	3.75	0.08	2.17	87.87
#230	4.00	0.06	1.36	89.23

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.33	2.64	1.26	0.26	-0.09	-1.04

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.07	0.48	1.26	0.42	1.46	-0.42	3.44

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 55
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 55
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 55
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 55
DEPTH: 7.5 – 10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 55
DEPTH : 10.0 – 12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 55
DEPTH : 12.5 – 15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 55
DEPTH : 15.0 – 17.5
15'
16'
17'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 55
DEPTH : 17.5 – 18.3
18'
19'
20'

VB-DA20-56

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-56

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-56	LOCATION COORDINATES: X = 952,594 Y = 589,046	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 5 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-28-20 / COMPLETED: 06-28-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -45.6 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 0 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-45.6	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, little shell, trace fine gravel-sized limestone, trace silt, moist, 5Y 6/1 gray (SW)				-47.6		
					1				
							-50.6		
					2				
							-54.6		
					3				
-57.6	12.0						-57.6		
-58.1	12.5		SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, little shell, few silt, trace fine gravel-sized limestone, moist, 5Y 6/1 gray (SW-SM)		4				
-58.6	13.0								
-58.9	13.3		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone, trace fine to medium-grained sand-sized carbonate, trace silt, moist, 2.5Y 6/1 gray						
-59.3	13.7						-59.6		
					5				
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few						

0 5 10 15

(Continued)

Boring Designation VB-DA20-56

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 952,594 Y = 589,046	ELEVATION TOP OF BORING: -45.6 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			silt, few shell, moist, 2.5Y 6/2 light brownish gray (SW-SM)						
-61.7	16.1		SILT, inorganic-L, mostly silt, little fine to medium-grained sand-sized carbonate, trace fine gravel-sized limestone, moist, 10YR 5/2 grayish brown (ML)						
			SAND, well-graded with silt, mostly fine-grained sand-sized carbonate, few silt, trace shell, moist, 10YR 5/2 grayish brown (SW-SM)						
			At El. -60.7 Ft., mostly fine-grained sand-sized carbonate, few fine gravel-sized limestone, few silt, moist, 5Y 6/1 gray						
			No Recovery						
-65.6	20.0						-65.6		

NOTES:

1. Taylor Engineering is the custodian for these original files.

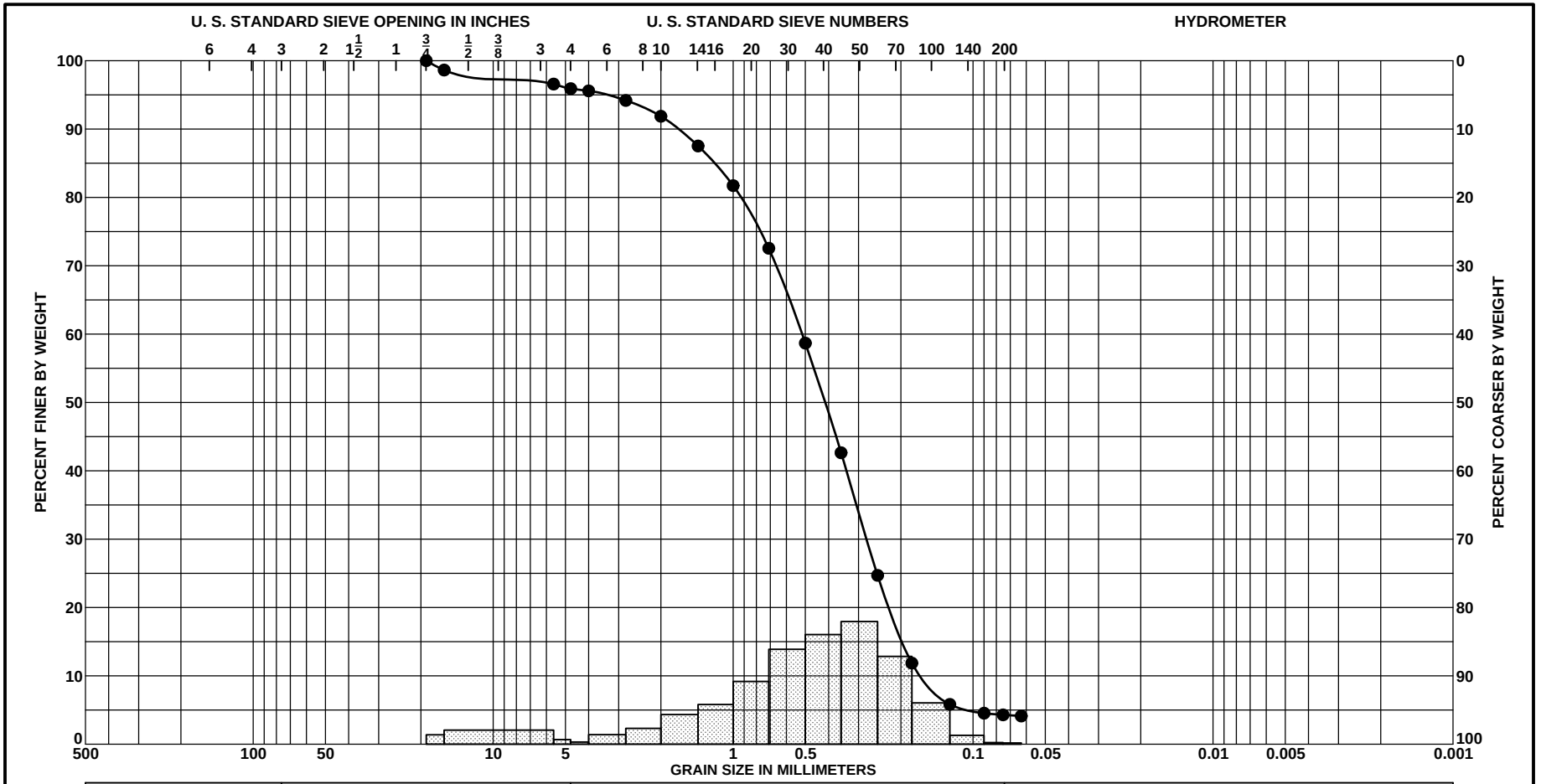
2. Soils are field visually classified in accordance with the Unified Soils Classification System.

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	5.0/5.2	SW*
3	9.0/9.2	SW*
4	12.0/12.2	SW-SM*
5	14.0/14.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:

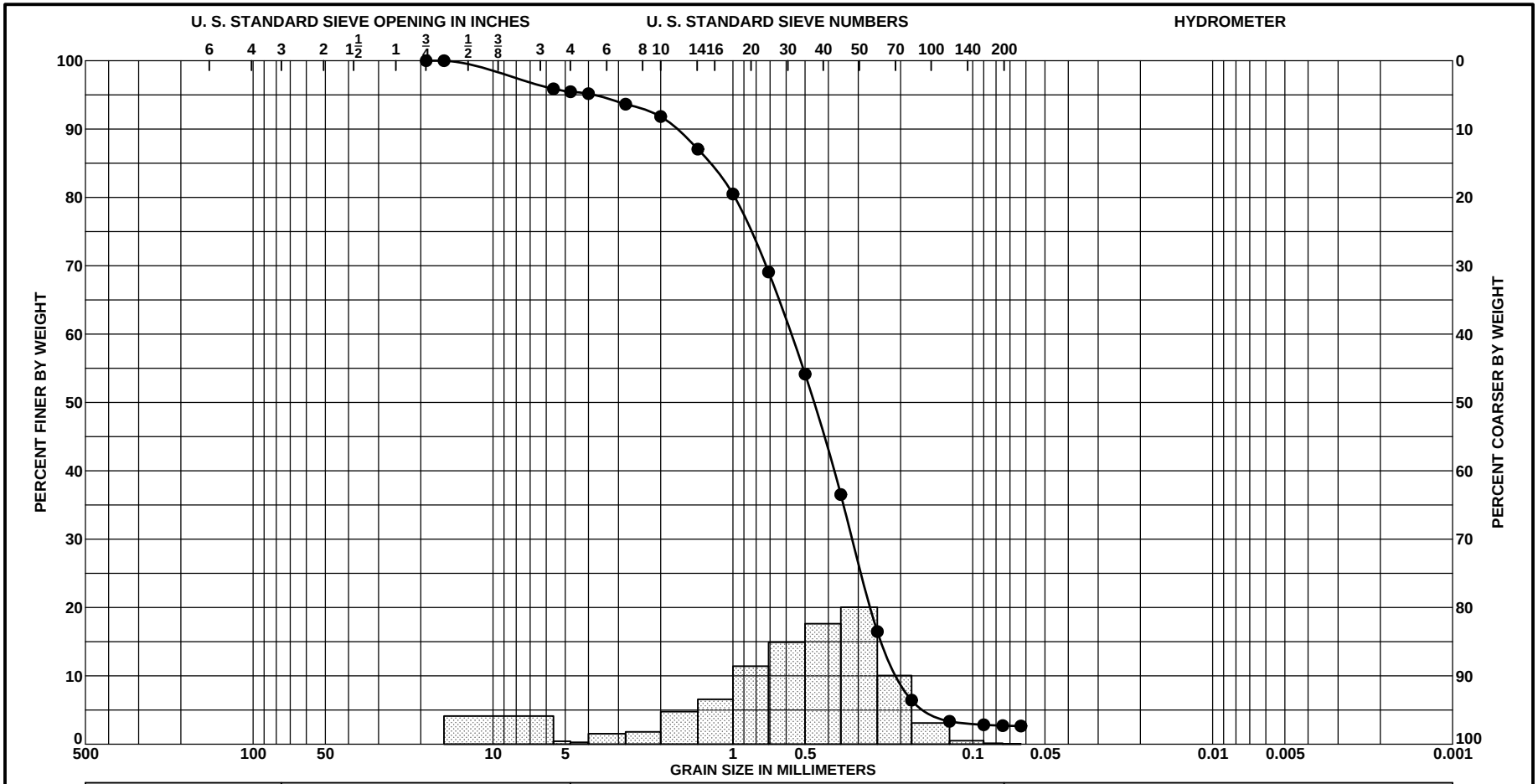


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/1	5							
		medium-grained sand-sized									
		carbonate, little									
		shell, trace fine gravel-sized									
		limestone, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-56
BORING ELEV.	-45.6 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

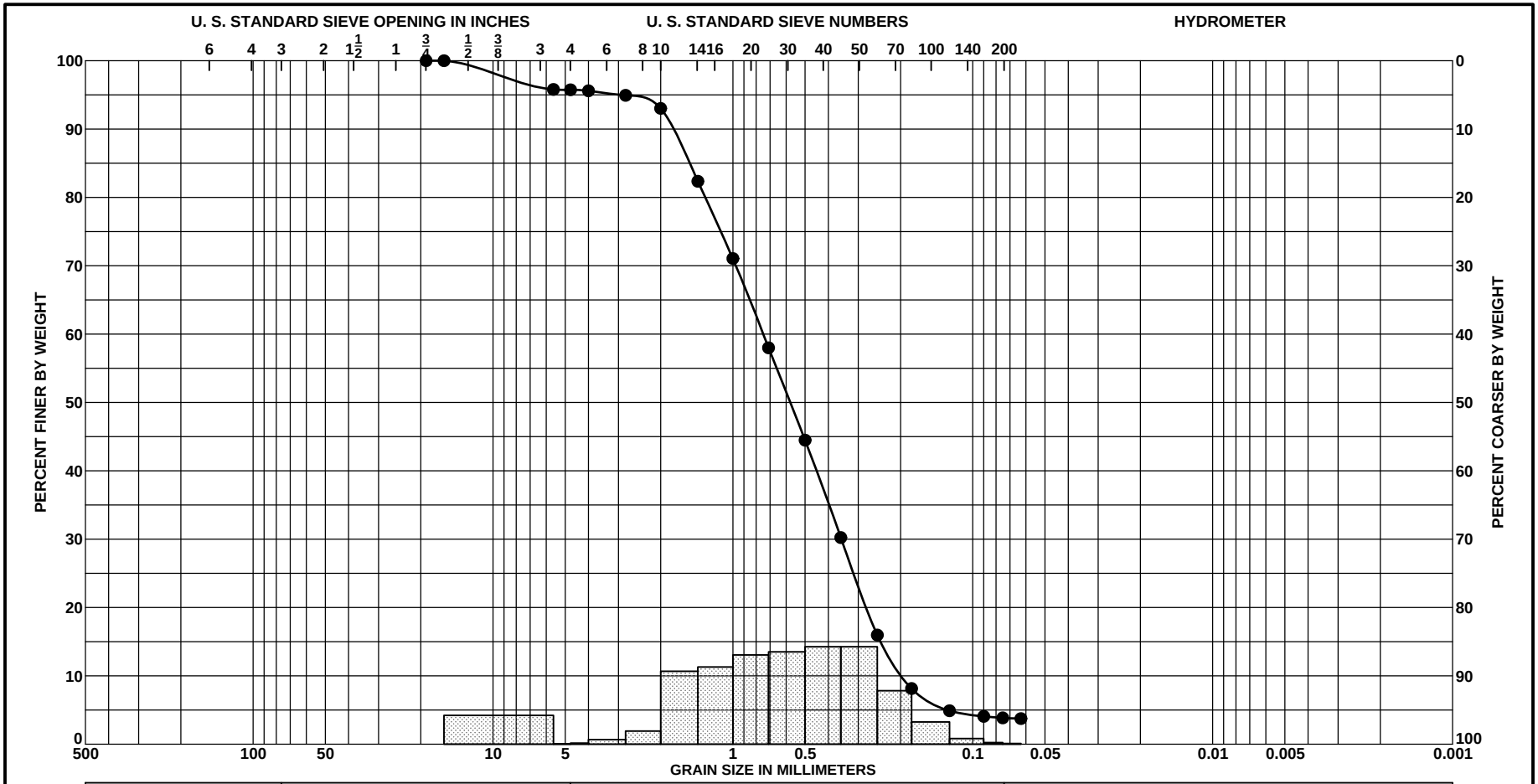


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/1	3							
		medium-grained sand-sized									
		carbonate, little									
		shell, trace fine gravel-sized									
		limestone, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-56
BORING ELEV.	-45.6 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

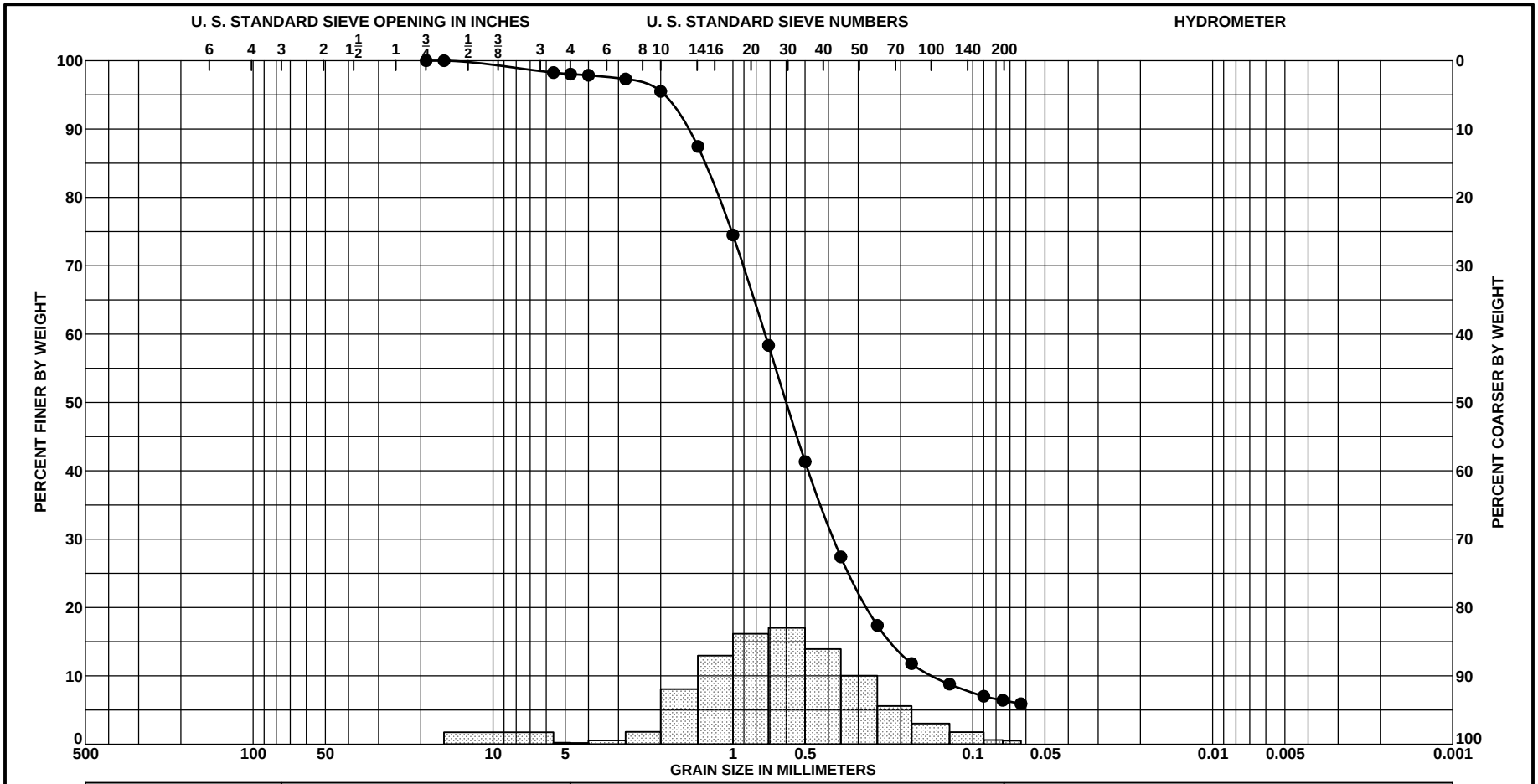


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	9.0 to 9.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/1	1							
		medium-grained sand-sized									
		carbonate, little									
		shell, trace fine gravel-sized									
		limestone, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-56
BORING ELEV.	-45.6 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

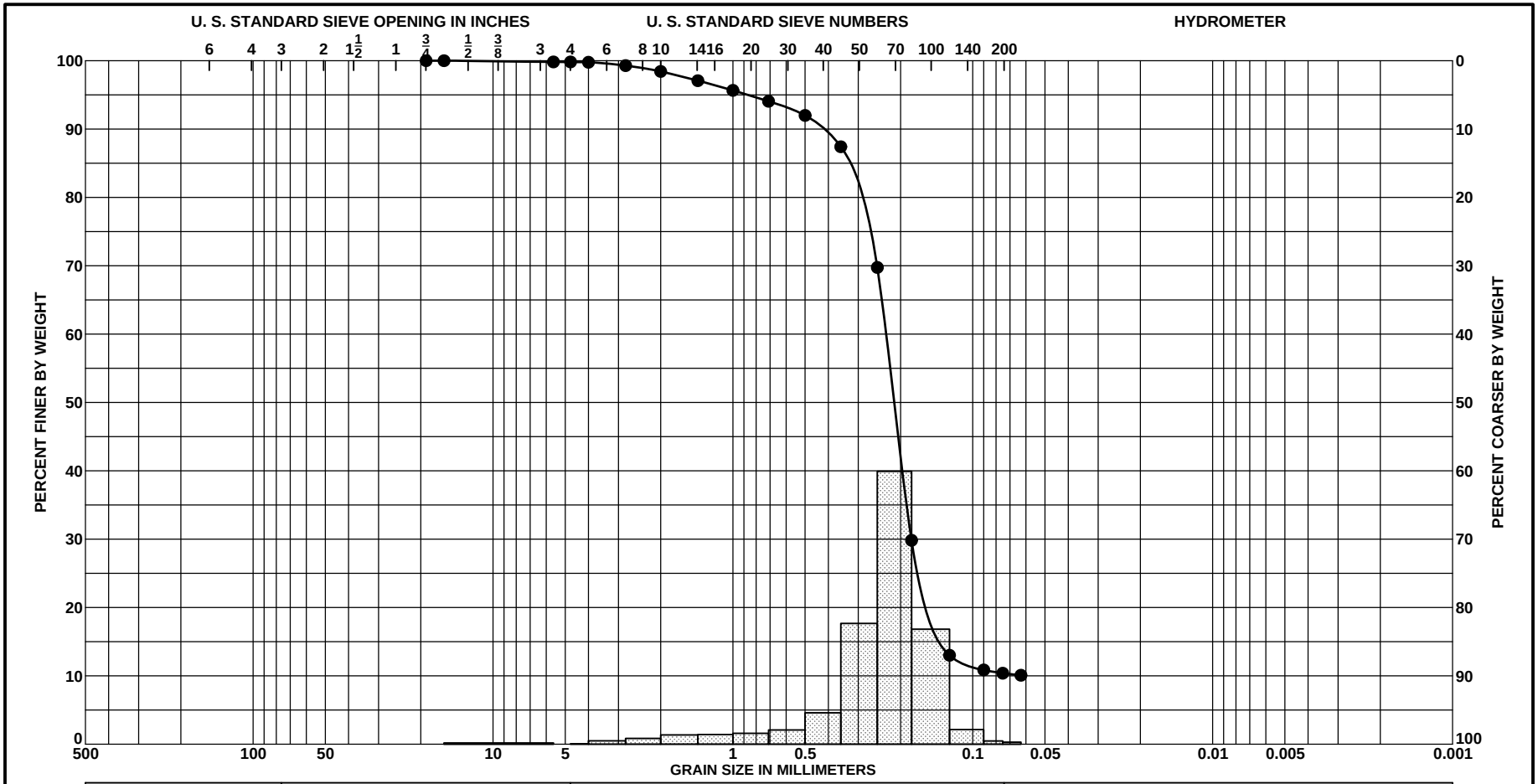


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	12.0 to 12.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	1							
		fine to medium-grained									
		sand-sized carbonate, little shell,									
		few silt, trace fine gravel-sized									
		limestone, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-56
BORING ELEV.	-45.6 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	14.0 to 14.2 Ft.	SAND, well-graded with silt, mostly	10YR 5/2	0							
		fine to									
		medium-grained sand-sized									
		carbonate, few silt, grayish brown									
		(SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-56
BORING ELEV.	-45.6 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-56 @ 2 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,594	589,046	State Plane, FLE (U.S. Ft.)	-47.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/1	#200 - 4.29 #230 - 4.12			5

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	1.37	1.37
#3.5	-2.50	5.60	2.05	3.42
#4	-2.25	4.75	0.67	4.09
#5	-2.00	4.00	0.32	4.41
#7	-1.50	2.80	1.40	5.81
#10	-1.00	2.00	2.32	8.13
#14	-0.50	1.40	4.34	12.48
#18	0.00	1.00	5.80	18.28
#25	0.50	0.71	9.17	27.44
#35	1.00	0.50	13.88	41.32
#45	1.50	0.36	16.04	57.36
#60	2.00	0.25	17.93	75.30
#80	2.50	0.18	12.84	88.14
#120	3.00	0.13	6.04	94.17
#170	3.50	0.09	1.29	95.47
#200	3.75	0.08	0.24	95.71
#230	4.00	0.06	0.17	95.88

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.32	2.34	1.99	1.27	0.37	-0.20	-1.79

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.95	0.52	1.27	0.41	1.42	-1.28	5.12

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-56 @ 5 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,594	589,046	State Plane, FLE (U.S. Ft.)	-50.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/1	#200 - 2.71 #230 - 2.66			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	4.12	4.12
#4	-2.25	4.75	0.42	4.54
#5	-2.00	4.00	0.28	4.82
#7	-1.50	2.80	1.54	6.36
#10	-1.00	2.00	1.81	8.17
#14	-0.50	1.40	4.77	12.94
#18	0.00	1.00	6.57	19.51
#25	0.50	0.71	11.41	30.92
#35	1.00	0.50	14.93	45.85
#45	1.50	0.36	17.63	63.48
#60	2.00	0.25	20.05	83.53
#80	2.50	0.18	10.03	93.56
#120	3.00	0.13	3.09	96.65
#170	3.50	0.09	0.51	97.16
#200	3.75	0.08	0.13	97.29
#230	4.00	0.06	0.05	97.34

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.73	2.02	1.79	1.12	0.24	-0.27	-1.94

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.82	0.57	1.12	0.46	1.33	-1.24	4.75

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-56 @ 9 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,594	589,046	State Plane, FLE (U.S. Ft.)	-54.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/1	#200 - 3.85 #230 - 3.75			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	4.21	4.21
#4	-2.25	4.75	0.05	4.26
#5	-2.00	4.00	0.15	4.40
#7	-1.50	2.80	0.66	5.07
#10	-1.00	2.00	1.91	6.98
#14	-0.50	1.40	10.66	17.64
#18	0.00	1.00	11.30	28.94
#25	0.50	0.71	13.06	42.00
#35	1.00	0.50	13.51	55.51
#45	1.50	0.36	14.26	69.77
#60	2.00	0.25	14.26	84.03
#80	2.50	0.18	7.83	91.86
#120	3.00	0.13	3.25	95.11
#170	3.50	0.09	0.82	95.93
#200	3.75	0.08	0.23	96.15
#230	4.00	0.06	0.10	96.25

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.98	2.00	1.68	0.80	-0.17	-0.58	-1.55

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.60	0.66	0.80	0.57	1.34	-0.78	3.98

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-56 @ 12 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,594	589,046	State Plane, FLE (U.S. Ft.)	-57.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 6.42 #230 - 5.91			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.74	1.74
#4	-2.25	4.75	0.22	1.96
#5	-2.00	4.00	0.17	2.13
#7	-1.50	2.80	0.55	2.68
#10	-1.00	2.00	1.80	4.48
#14	-0.50	1.40	8.06	12.54
#18	0.00	1.00	12.96	25.50
#25	0.50	0.71	16.15	41.65
#35	1.00	0.50	17.01	58.67
#45	1.50	0.36	13.93	72.59
#60	2.00	0.25	10.02	82.61
#80	2.50	0.18	5.59	88.20
#120	3.00	0.13	3.01	91.21
#170	3.50	0.09	1.77	92.98
#200	3.75	0.08	0.60	93.58
#230	4.00	0.06	0.50	94.09

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.12	1.62	0.75	-0.02	-0.37	-0.97

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.67	0.63	0.75	0.59	1.2	-0.27	4.14

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-56 @ 14 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,594	589,046	State Plane, FLE (U.S. Ft.)	-59.6 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	10YR 5/2	#200 - 10.39 #230 - 10.08			0

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.18	0.18
#4	-2.25	4.75	0.00	0.18
#5	-2.00	4.00	0.05	0.23
#7	-1.50	2.80	0.49	0.72
#10	-1.00	2.00	0.85	1.57
#14	-0.50	1.40	1.35	2.92
#18	0.00	1.00	1.42	4.34
#25	0.50	0.71	1.59	5.93
#35	1.00	0.50	2.08	8.01
#45	1.50	0.36	4.58	12.59
#60	2.00	0.25	17.66	30.25
#80	2.50	0.18	39.92	70.17
#120	3.00	0.13	16.82	86.99
#170	3.50	0.09	2.14	89.14
#200	3.75	0.08	0.48	89.61
#230	4.00	0.06	0.30	89.92

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.91	2.64	2.25	1.85	1.60	0.21

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.01	0.25	2.25	0.21	0.87	-2.16	9.56

GRANULARMETRIC REPORT % SADSAND DADE(V2.0.GPJ CESAJ 20171021.GDT 3/3/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20– 56
DEPTH: 0.0– 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20– 56
DEPTH: 2.5– 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20– 56
DEPTH: 5.0– 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20– 56
DEPTH: 7.5–10.0
8'
9'
10'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 56
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 56
DEPTH :12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 56
DEPTH :15.0 –16.1
15'
16'
17'

VB-DA20-57

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-57

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-57
LOCATION COORDINATES: X = 952,469 Y = 590,279
3. DRILLING AGENCY: Amdrill
CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL:
BEARING:
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 11.8 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) HORIZONTAL: NAD83 VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES: DISTURBED: 5 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING: STARTED: 06-29-20 COMPLETED: 06-29-20
16. ELEVATION TOP OF BORING: -44.7 Ft.
17. TOTAL RECOVERY FOR BORING: 81 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-44.7	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, little shell, trace silt, moist, 2.5Y 5/1 gray (SW)				-46.7		
-47.0	2.3				1				
-47.7	3.0		GRAVEL, poorly-graded, mostly fine gravel-sized coral, little fine to medium-grained sand-sized carbonate, few shell, 5Y 5/1 gray (GP)						
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, little shell, trace fine gravel-sized limestone, trace silt, moist, 5Y 5/1 gray (SW)				-48.7		
					2				
-50.7	6.0						-50.7		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, little shell, few silt, trace fine gravel-sized limestone, moist, 5Y 5/1 gray (SW-SM)		3		-52.7		
-53.4	8.7				4				
-53.7	9.0		GRAVEL, poorly-graded, mostly fine gravel-sized coral, little fine to coarse-grained sand-sized carbonate, little shell, 5Y 6/2 light olive gray (GP)				-53.7		
-54.1	9.4				5				
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, little shell, few silt, trace fine gravel-sized limestone, moist, 5Y 5/1 gray (SW-SM) No Recovery						
-56.5	11.8						-56.5		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

0 5 10 15

(Continued)

Boring Designation VB-DA20-57

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 952,469 Y = 590,279	ELEVATION TOP OF BORING: -44.7 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE

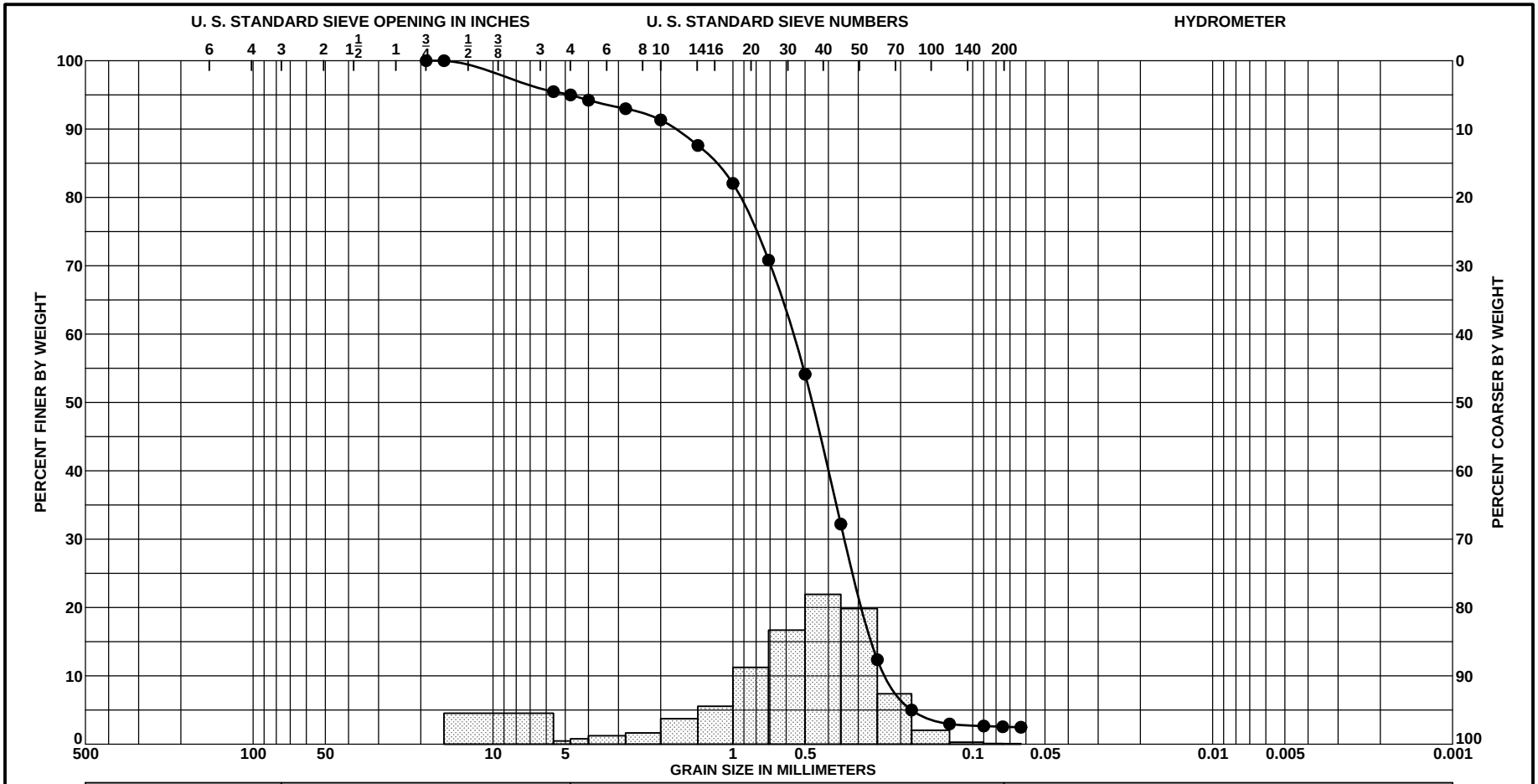
3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW*
2	4.0/4.2	SW*
3	6.0/6.2	SW-SM*
4	8.0/8.2	SW-SM*
5	9.0/9.2	SW-SM*

*Lab visual classification based on gradation curve

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

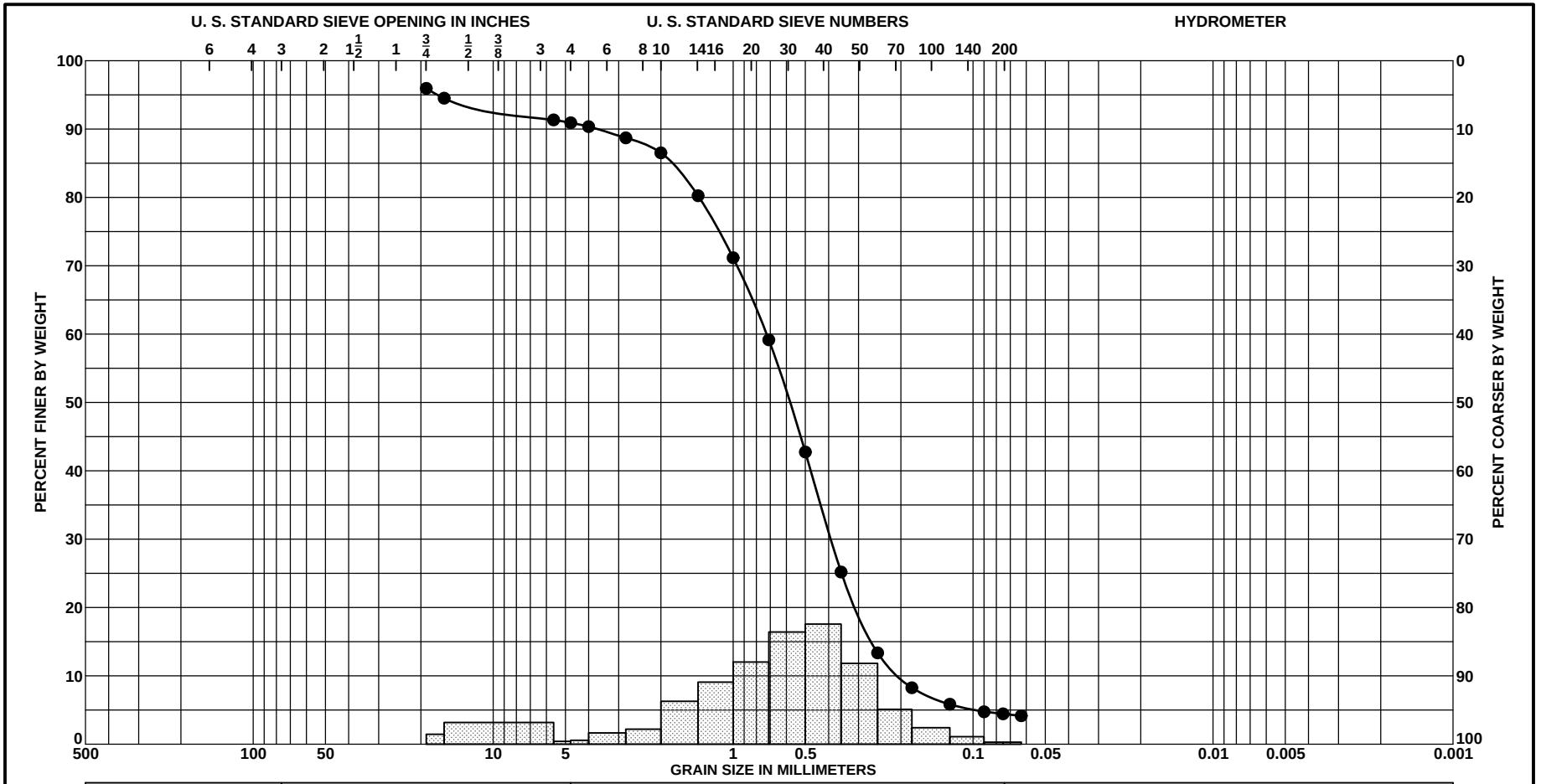


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	2.5Y 5/1	1							
		medium-grained sand-sized									
		carbonate, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-57
BORING ELEV.	-44.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

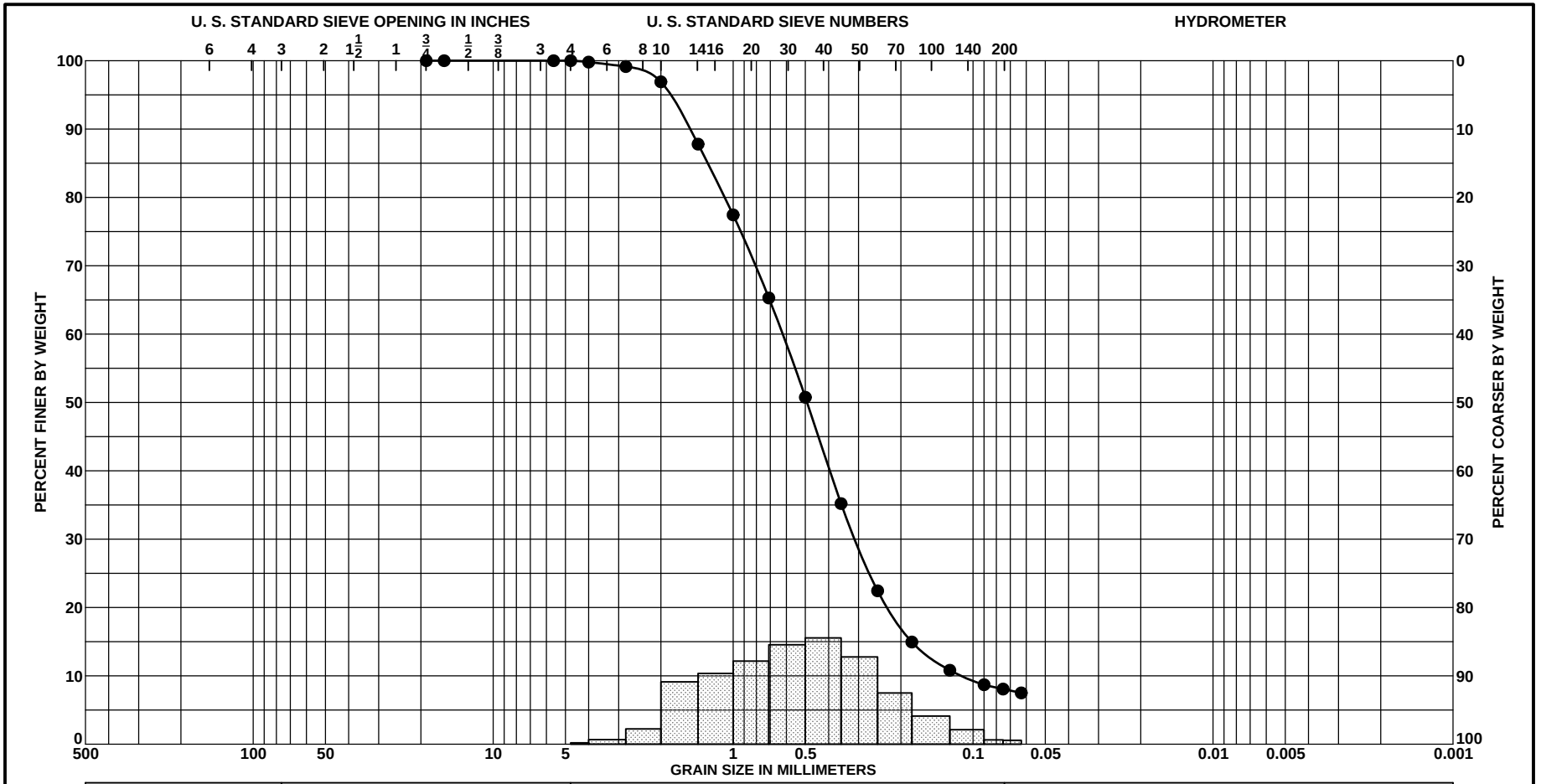


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded, mostly fine to	5Y 5/1	1							
		medium-grained sand-sized									
		carbonate, trace fine gravel-sized									
		limestone, trace silt, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-57
BORING ELEV.	-44.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

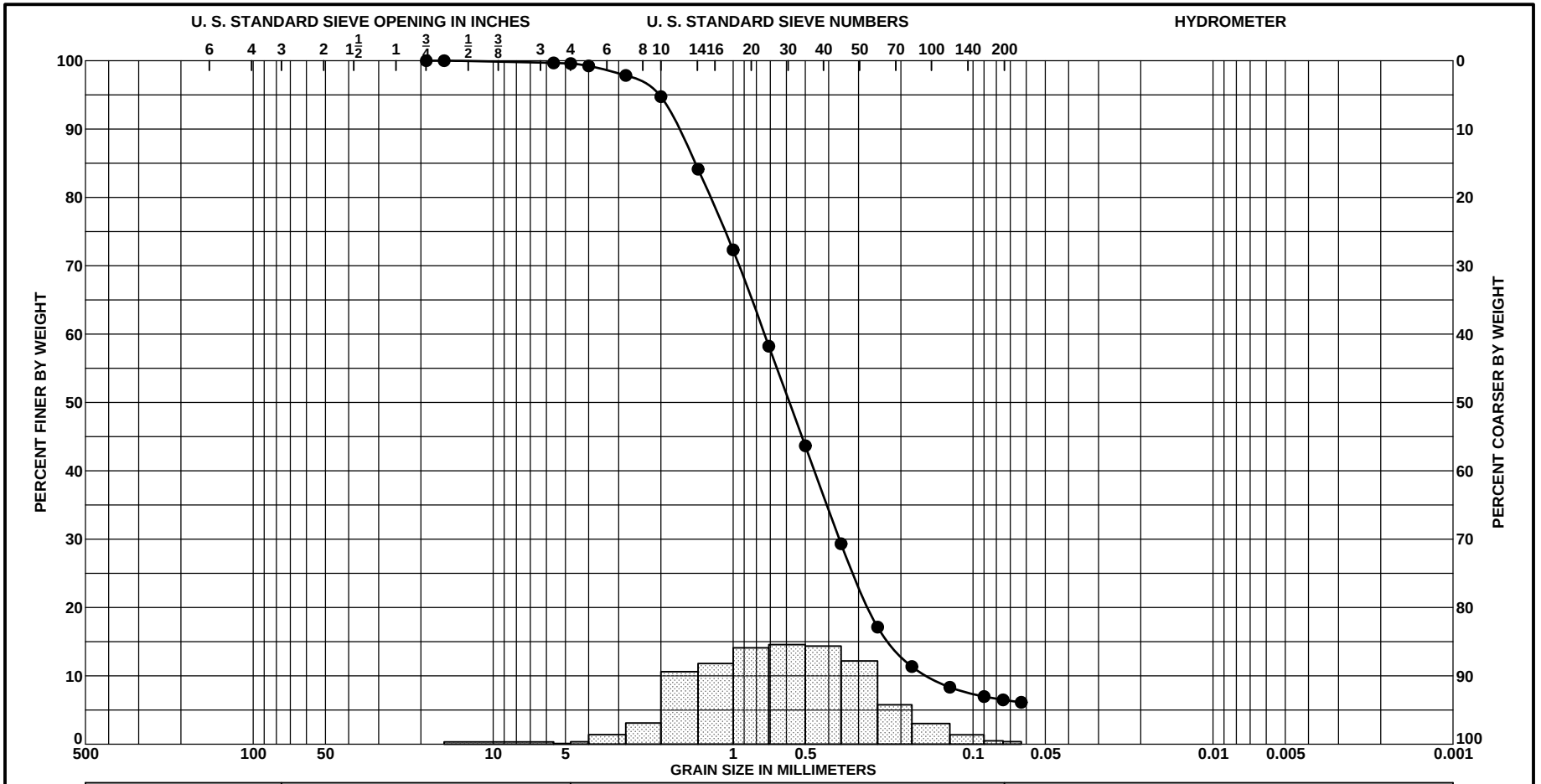


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	6.0 to 6.2 Ft.	SAND, well-graded with silt, mostly	5Y 5/1	2							
		fine to									
		medium-grained sand-sized									
		carbonate, few silt, trace fine gravel-									
		sized limestone, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-57
BORING ELEV.	-44.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

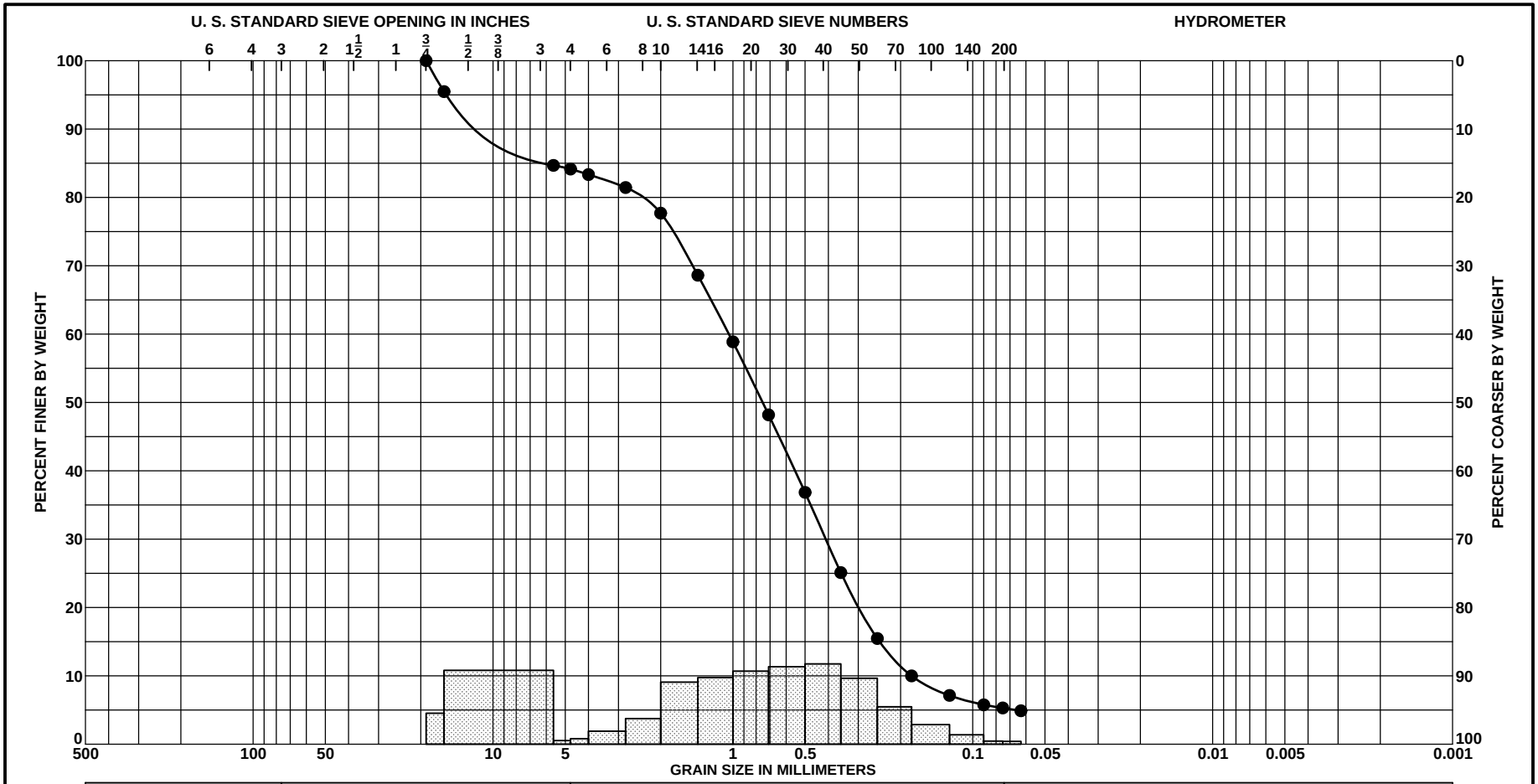


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	8.0 to 8.2 Ft.	SAND, well-graded with silt, mostly	5Y 5/1	1							
		fine to medium-grained									
		sand-sized carbonate, little shell,									
		few silt, trace fine gravel-sized									
		limestone, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-57
BORING ELEV.	-44.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	9.0 to 9.2 Ft.	SAND, well-graded with silt, mostly	5Y 5/1	3							
		fine to medium-grained									
		sand-sized carbonate, few silt,									
		trace fine gravel-sized									
		limestone, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-57
BORING ELEV.	-44.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-57 @ 2 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,469	590,279	State Plane, FLE (U.S. Ft.)	-46.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	2.5Y 5/1	#200 - 2.55 #230 - 2.48			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	4.53	4.53
#4	-2.25	4.75	0.48	5.01
#5	-2.00	4.00	0.78	5.78
#7	-1.50	2.80	1.24	7.02
#10	-1.00	2.00	1.65	8.67
#14	-0.50	1.40	3.73	12.40
#18	0.00	1.00	5.56	17.95
#25	0.50	0.71	11.23	29.18
#35	1.00	0.50	16.69	45.87
#45	1.50	0.36	21.93	67.80
#60	2.00	0.25	19.84	87.64
#80	2.50	0.18	7.36	95.01
#120	3.00	0.13	2.03	97.04
#170	3.50	0.09	0.30	97.34
#200	3.75	0.08	0.11	97.45
#230	4.00	0.06	0.07	97.52

SAND, well-graded, mostly fine to
medium-grained sand-sized carbonate, trace silt

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.50	1.91	1.68	1.09	0.31	-0.18	-2.25

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.77	0.59	1.09	0.47	1.31	-1.42	5.19

GRANULARMETRIC REPORT % SADSAND_MIAMIDADE.GPJ CESAJ 20171021.GDT 3/5/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-57 @ 4 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,469	590,279	State Plane, FLE (U.S. Ft.)	-48.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 5/1	#200 - 4.44 #230 - 4.16			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	4.04	4.04
5/8	-4.00	16.00	1.44	5.49
#3.5	-2.50	5.60	3.18	8.66
#4	-2.25	4.75	0.42	9.08
#5	-2.00	4.00	0.57	9.64
#7	-1.50	2.80	1.64	11.29
#10	-1.00	2.00	2.20	13.48
#14	-0.50	1.40	6.27	19.75
#18	0.00	1.00	9.08	28.83
#25	0.50	0.71	12.01	40.84
#35	1.00	0.50	16.41	57.25
#45	1.50	0.36	17.56	74.81
#60	2.00	0.25	11.83	86.64
#80	2.50	0.18	5.10	91.74
#120	3.00	0.13	2.41	94.15
#170	3.50	0.09	1.11	95.26
#200	3.75	0.08	0.30	95.56
#230	4.00	0.06	0.29	95.84

SAND, well-graded, mostly fine to
medium-grained sand-sized carbonate, trace fine gravel-sized limestone, trace silt

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.38	1.89	1.51	0.78	-0.21	-0.80	-4.08

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.35	0.78	0.78	0.58	1.4	-0.61	4.21

GRANULARMETRIC REPORT % SADSAND_MIAMIDADE.GPJ CESAJ 20171021.GDT 3/5/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-57 @ 6 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,469	590,279	State Plane, FLE (U.S. Ft.)	-50.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 5/1	#200 - 8.07 #230 - 7.50			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.00	0.00
#5	-2.00	4.00	0.20	0.20
#7	-1.50	2.80	0.66	0.86
#10	-1.00	2.00	2.23	3.09
#14	-0.50	1.40	9.11	12.21
#18	0.00	1.00	10.35	22.56
#25	0.50	0.71	12.15	34.71
#35	1.00	0.50	14.54	49.25
#45	1.50	0.36	15.55	64.80
#60	2.00	0.25	12.76	77.56
#80	2.50	0.18	7.50	85.05
#120	3.00	0.13	4.13	89.18
#170	3.50	0.09	2.12	91.30
#200	3.75	0.08	0.63	91.93
#230	4.00	0.06	0.57	92.50

SAND, well-graded with silt, mostly fine to
medium-grained sand-sized carbonate, few silt, trace fine gravel-sized limestone

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.43	1.90	1.02	0.10	-0.32	-0.90

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.88	0.54	1.02	0.49	1.14	0.11	2.59

GRANULARMETRIC REPORT % SADSAND_MIAMIDADE.GPJ CESAJ 20171021.GDT 3/5/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-57 @ 8 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,469	590,279	State Plane, FLE (U.S. Ft.)	-52.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 5/1	#200 - 6.49 #230 - 6.12			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.33	0.33
#4	-2.25	4.75	0.09	0.41
#5	-2.00	4.00	0.35	0.76
#7	-1.50	2.80	1.39	2.15
#10	-1.00	2.00	3.11	5.26
#14	-0.50	1.40	10.61	15.87
#18	0.00	1.00	11.81	27.68
#25	0.50	0.71	14.10	41.77
#35	1.00	0.50	14.57	56.34
#45	1.50	0.36	14.34	70.68
#60	2.00	0.25	12.18	82.87
#80	2.50	0.18	5.77	88.64
#120	3.00	0.13	3.03	91.67
#170	3.50	0.09	1.36	93.03
#200	3.75	0.08	0.48	93.51
#230	4.00	0.06	0.36	93.88

SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, little shell, few silt, trace fine gravel-sized limestone

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.10	1.68	0.78	-0.11	-0.49	-1.04

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.68	0.62	0.78	0.58	1.16	0.01	2.94

GRANULARMETRIC REPORT % SADSAND_MIAMIDADE.GPJ CESAJ 20171021.GDT 3/5/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-57 @ 9 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
952,469	590,279	State Plane, FLE (U.S. Ft.)	-53.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 5/1	#200 - 5.30 #230 - 4.89			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	4.52	4.52
#3.5	-2.50	5.60	10.80	15.32
#4	-2.25	4.75	0.53	15.85
#5	-2.00	4.00	0.81	16.66
#7	-1.50	2.80	1.89	18.55
#10	-1.00	2.00	3.75	22.31
#14	-0.50	1.40	9.08	31.38
#18	0.00	1.00	9.75	41.13
#25	0.50	0.71	10.69	51.82
#35	1.00	0.50	11.34	63.16
#45	1.50	0.36	11.74	74.90
#60	2.00	0.25	9.64	84.54
#80	2.50	0.18	5.47	90.01
#120	3.00	0.13	2.86	92.86
#170	3.50	0.09	1.38	94.24
#200	3.75	0.08	0.45	94.70
#230	4.00	0.06	0.42	95.11

SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace fine gravel-sized limestone

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.93	1.97	1.51	0.41	-0.85	-2.20	-3.93

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	-0.04	1.03	0.41	0.75	1.91	-0.6	2.6

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 57
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 57
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 57
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 57
DEPTH: 7.5 – 9.4
8'
9'
10'

VB-DA20-58

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-58

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville, Fl	SHEET 1 OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County
2. BORING DESIGNATION: VB-DA20-58 — LOCATION COORDINATES: X = 954,345 Y = 597,542
3. DRILLING AGENCY: Amdrill — CONTRACTOR FILE NO.: C2019-032
4. NAME OF DRILLER: Tim Clarkson
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED — DEG. FROM VERTICAL: — BEARING: —
6. THICKNESS OF OVERBURDEN: N/A
7. DEPTH DRILLED INTO ROCK: N/A
8. TOTAL DEPTH OF BORING: 10.6 Ft.
9. SIZE AND TYPE OF BIT: 4 Inch
10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) — HORIZONTAL: NAD83 — VERTICAL: NAVD88
11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore — ☒ AUTO HAMMER ☐ MANUAL HAMMER
12. TOTAL SAMPLES — DISTURBED: 2 — UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES: 0
14. ELEVATION GROUND WATER: N/A
15. DATE BORING — STARTED: 06-29-20 — COMPLETED: 06-29-20
16. ELEVATION TOP OF BORING: -59.7 Ft.
17. TOTAL RECOVERY FOR BORING: 80 %
18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-59.7	0.0								
			SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, few shell, trace silt, moist, 5Y 6/1 gray (SW)				-61.7		
					1				
-63.7	4.0						-63.7		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few shell, few silt, moist, 5Y 6/1 gray (SW-SM)		2				
-64.5	4.8		LIMESTONE, GRAVEL, poorly-graded, mostly cobble-sized limestone, little fine-grained sand-sized carbonate, trace silt, trace shell, 5Y 6/2 light olive gray						
-68.1	8.4		No Recovery						
-70.3	10.6						-70.3		
			BORING TERMINATED IN REFUSAL				Abbreviations:		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

SAMPLE SAMPLE LABORATORY

0 5 10 15

(Continued)

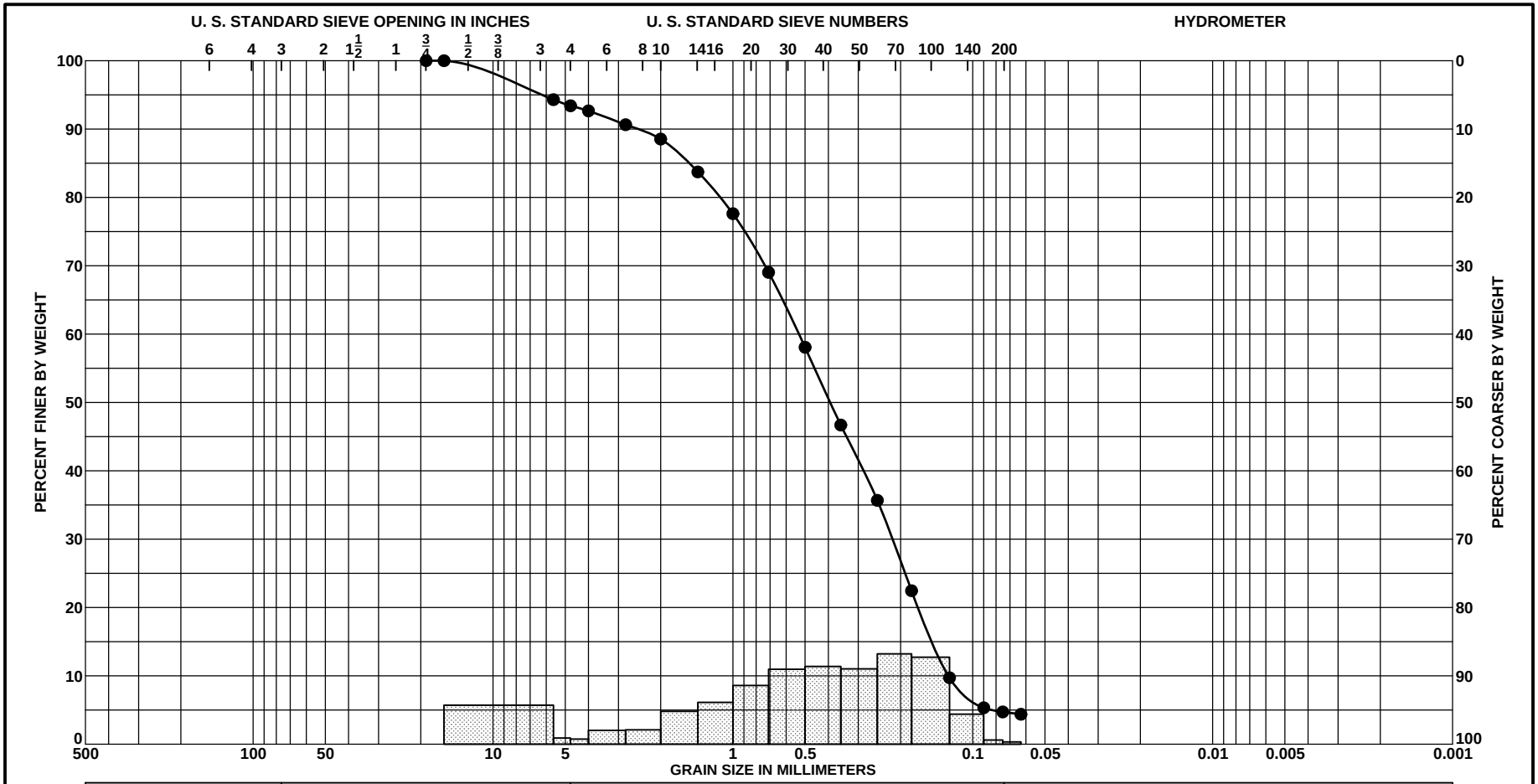
Boring Designation VB-DA20-58

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT: SAD-SAND	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88	
LOCATION COORDINATES: X = 954,345 Y = 597,542	ELEVATION TOP OF BORING: -59.7 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			ID DEPTH CLASSIFICATION 1 2.0/2.2 SW* 2 4.0/4.2 SW-SM* *Lab visual classification based on gradation curve						

15
20
25
30
35

SAJ FORM 1836-A
JUN 02

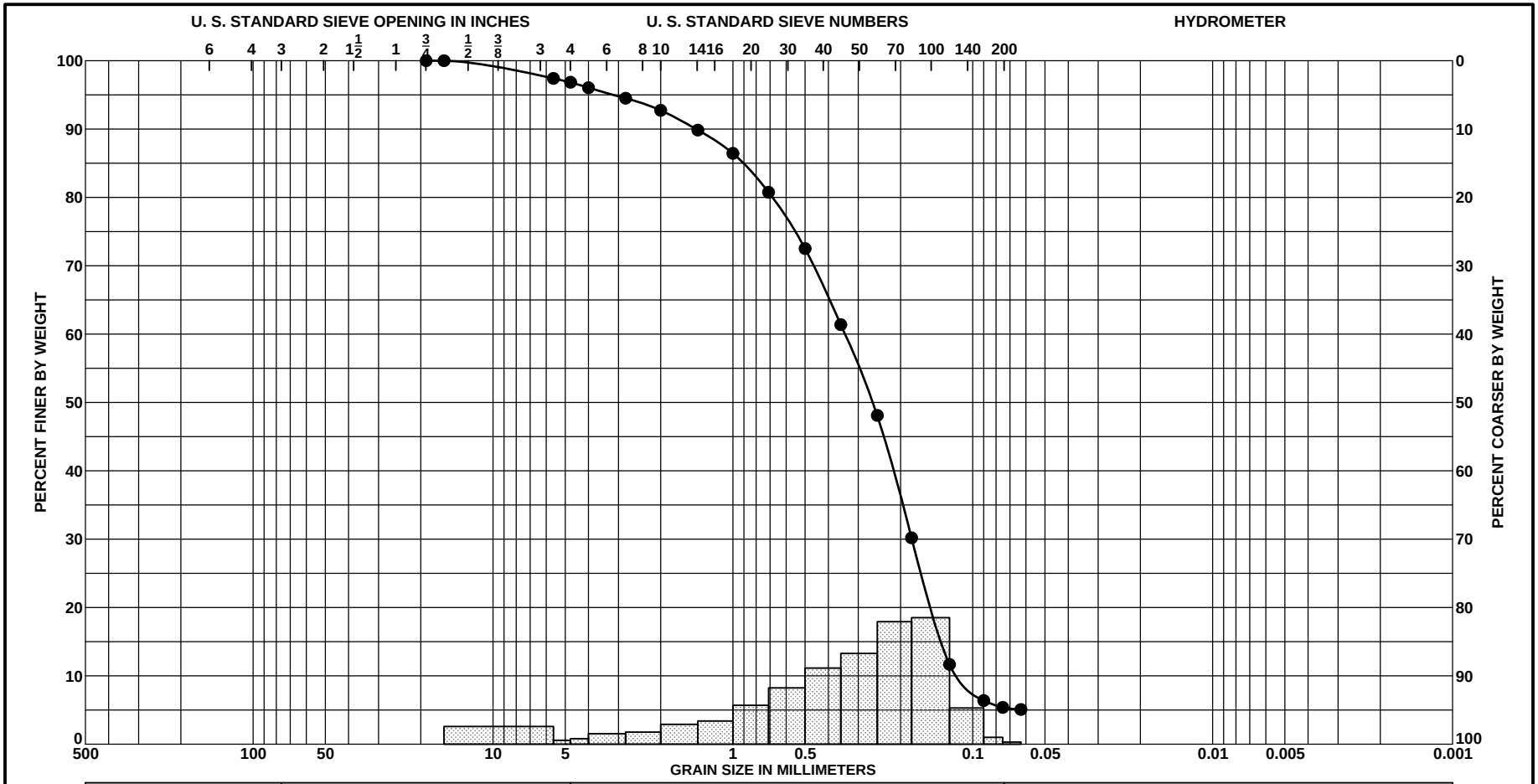


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded, mostly fine to	5Y 6/1	2							
		medium-grained sand-sized									
		carbonate, trace									
		shell, trace silt, moist, gray (SW)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-58
BORING ELEV.	-59.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	4.0 to 4.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, trace									
		shell, few silt, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-58
BORING ELEV.	-59.7 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-58 @ 2 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,345	597,542	State Plane, FLE (U.S. Ft.)	-61.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 6/1	#200 - 4.72 #230 - 4.38			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	5.70	5.70
#4	-2.25	4.75	0.90	6.59
#5	-2.00	4.00	0.75	7.34
#7	-1.50	2.80	2.03	9.37
#10	-1.00	2.00	2.10	11.47
#14	-0.50	1.40	4.81	16.27
#18	0.00	1.00	6.11	22.38
#25	0.50	0.71	8.58	30.97
#35	1.00	0.50	10.96	41.93
#45	1.50	0.36	11.38	53.31
#60	2.00	0.25	11.02	64.33
#80	2.50	0.18	13.22	77.55
#120	3.00	0.13	12.73	90.28
#170	3.50	0.09	4.39	94.67
#200	3.75	0.08	0.61	95.28
#230	4.00	0.06	0.34	95.62

SAND, well-graded, mostly fine to medium-grained sand-sized carbonate, trace shell, trace silt, moist

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.63	2.75	2.40	1.35	0.15	-0.53	-2.71

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.97	0.51	1.35	0.39	1.69	-0.9	3.3

GRANULARMETRIC REPORT % SADSAND_MIAMIDADE.GPJ CESAJ 20171021.GDT 3/5/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-58 @ 4 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
954,345	597,542	State Plane, FLE (U.S. Ft.)	-63.7 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 5.38 #230 - 5.08			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	2.59	2.59
#4	-2.25	4.75	0.56	3.15
#5	-2.00	4.00	0.81	3.96
#7	-1.50	2.80	1.53	5.49
#10	-1.00	2.00	1.77	7.26
#14	-0.50	1.40	2.89	10.16
#18	0.00	1.00	3.40	13.56
#25	0.50	0.71	5.69	19.25
#35	1.00	0.50	8.23	27.48
#45	1.50	0.36	11.13	38.62
#60	2.00	0.25	13.28	51.90
#80	2.50	0.18	17.92	69.81
#120	3.00	0.13	18.52	88.33
#170	3.50	0.09	5.29	93.62
#200	3.75	0.08	1.00	94.62
#230	4.00	0.06	0.30	94.92

SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, trace shell, few silt

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.88	2.64	1.93	0.85	0.21	-1.66

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.46	0.36	1.93	0.26	1.48	-1.27	4.47

GRANULARMETRIC REPORT % SADSAND_MIAMIDADE.GPJ CESAJ 20171021.GDT 3/5/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 58
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 58
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 58
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 58
DEPTH: 7.5 – 8.5
8'
9'
10'

VB-DA20-59

Vibracore Log

Grain Size Distribution Curves

Granulometric Tables

Vibracore Photos

Boring Designation VB-DA20-59

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1
	South Atlantic	Jacksonville, Fl	OF 2 SHEETS

1. PROJECT: SAD-SAND, Miami-Dade County		9. SIZE AND TYPE OF BIT: 4 Inch	
		10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: VB-DA20-59	LOCATION COORDINATES: X = 955,078 Y = 599,273	11. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Pneumatic Vibracore	☒ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Amdrill	CONTRACTOR FILE NO.: C2019-032	12. TOTAL SAMPLES	DISTURBED: 5 / UNDISTURBED (UD): 0
4. NAME OF DRILLER: Tim Clarkson		13. TOTAL NUMBER CORE BOXES: 0	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL:	BEARING:	14. ELEVATION GROUND WATER: N/A
		15. DATE BORING	STARTED: 06-29-20 / COMPLETED: 06-29-20
6. THICKNESS OF OVERBURDEN: N/A		16. ELEVATION TOP OF BORING: -65.1 Ft.	
7. DEPTH DRILLED INTO ROCK: N/A		17. TOTAL RECOVERY FOR BORING: 83 %	
8. TOTAL DEPTH OF BORING: 20.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: Will Warren, G.I.T., Geologist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-65.1	0.0								
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell, moist, 5Y 6/1 gray (SW-SM)				-67.1		
					1				
							-70.1		
					2				
							-73.1		
					3				
-75.1	10.0						-75.1		
			SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, little shell, moist, 2.5Y 7/2 light gray (SM)		4				
-77.1	12.0						-77.1		
			SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, little shell, few silt, moist, 2.5Y 7/2 light gray (SW-SM)		5				

0 5 10 15

(Continued)

Boring Designation VB-DA20-59

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville, FL	SHEET 2 OF 2 SHEETS
PROJECT SAD-SAND	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 955,078 Y = 599,273	ELEVATION TOP OF BORING -65.1 Ft.	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-81.4	16.3								
-81.6	16.5		LIMESTONE No Recovery						
-85.1	20.0						-85.1		

NOTES:

1. Taylor Engineering is the custodian for these original files.

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

3. Laboratory Testing Results

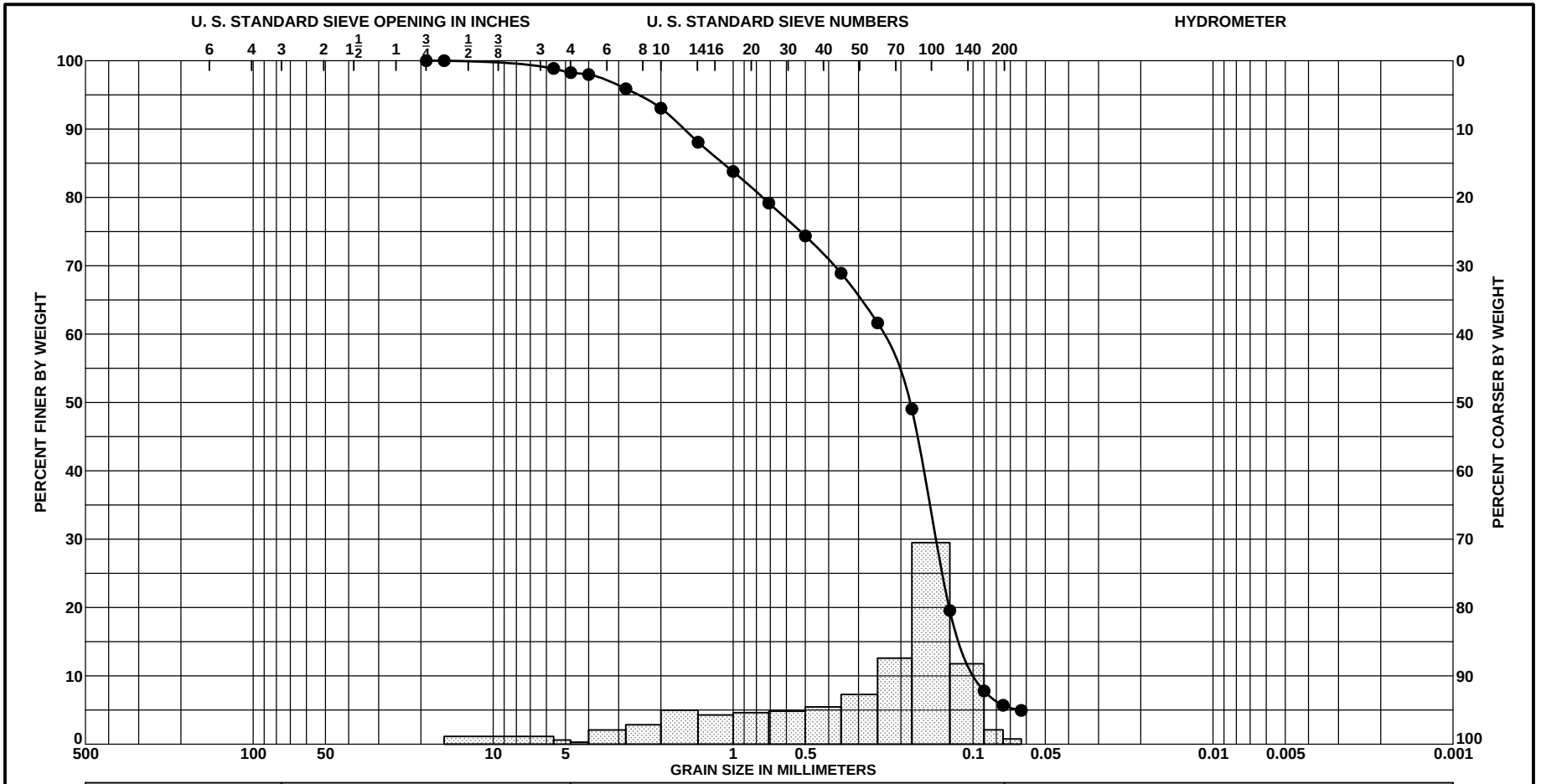
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	2.0/2.2	SW-SM*
2	5.0/5.2	SW-SM*
3	8.0/8.2	SW-SM*
4	10.0/10.2	SM*
5	12.0/12.2	SW-SM*

*Lab visual classification based on gradation curve

Abbreviations:

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

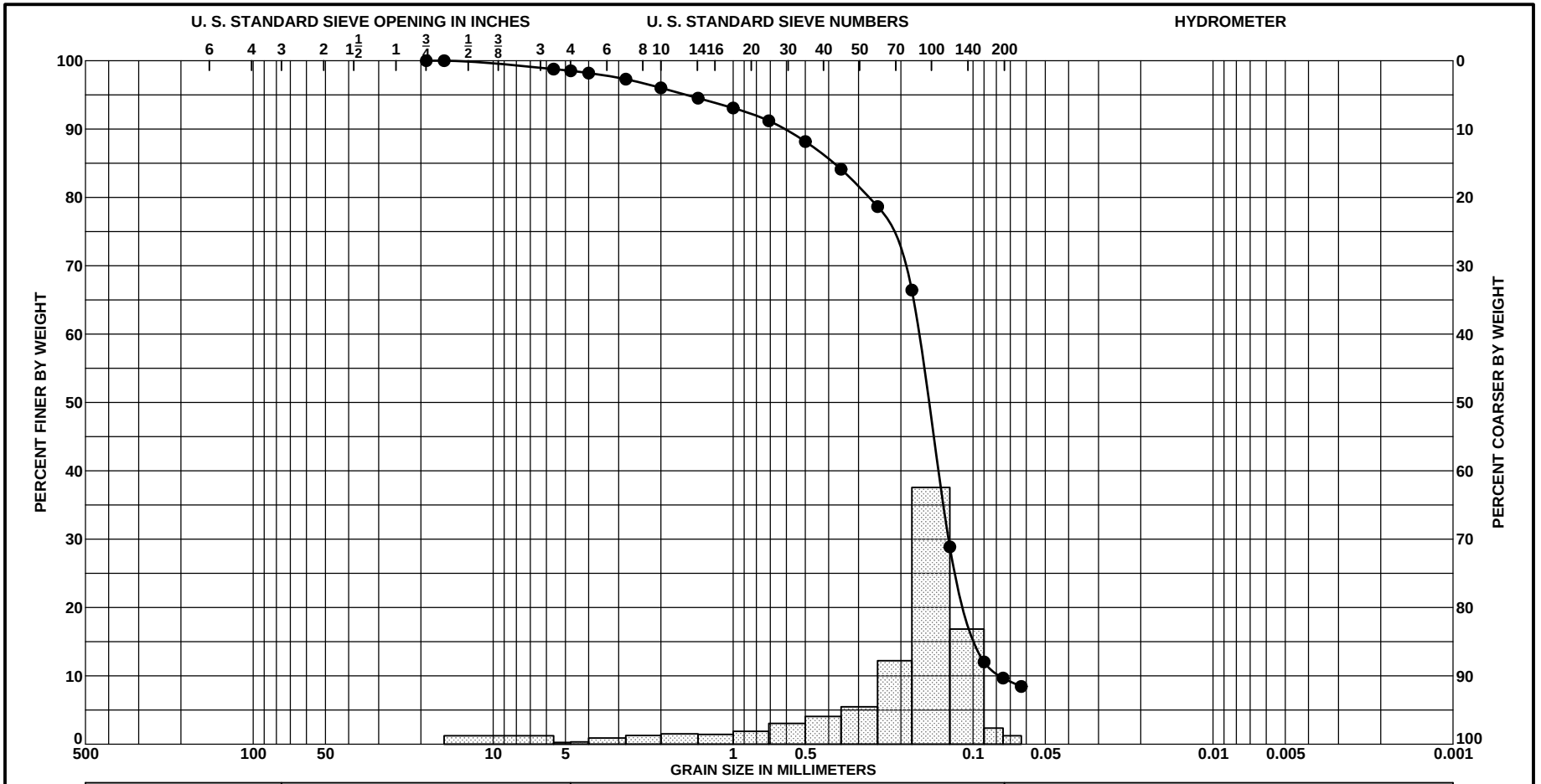


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 1	2.0 to 2.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	3							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-59
BORING ELEV.	-65.1 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

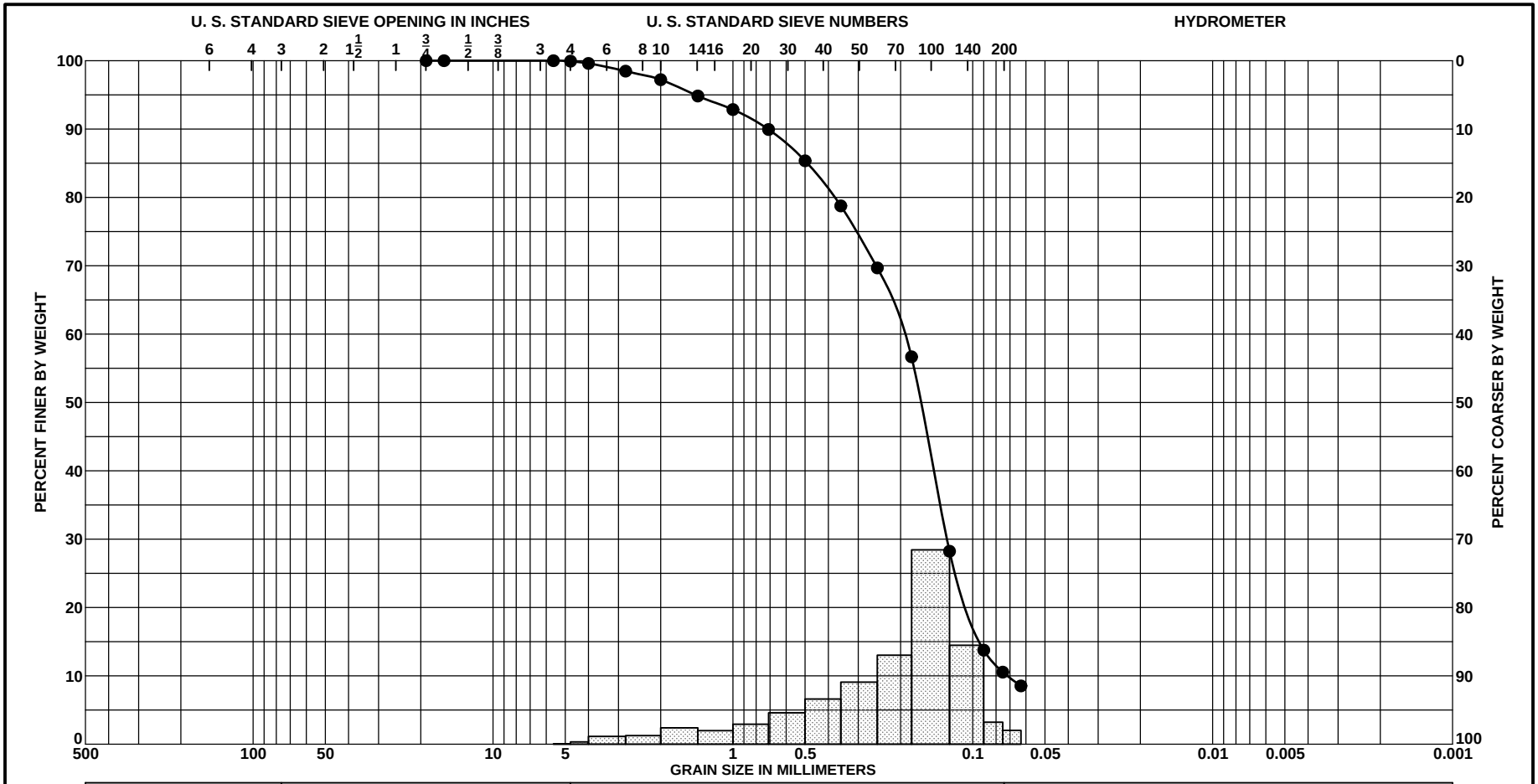


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 2	5.0 to 5.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-59
BORING ELEV.	-65.1 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

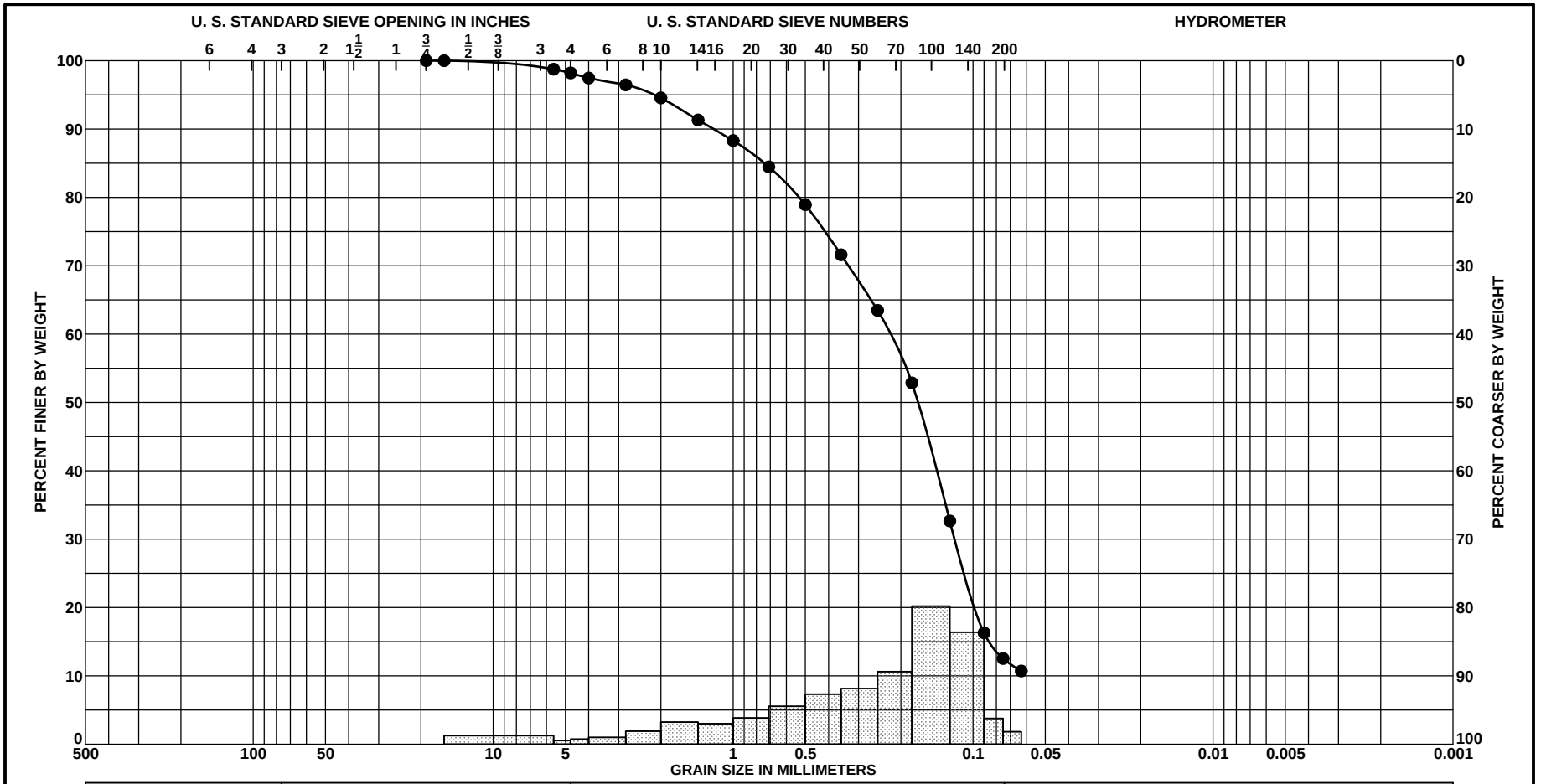


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 3	8.0 to 8.2 Ft.	SAND, well-graded with silt, mostly	5Y 6/1	1							
		fine to									
		medium-grained sand-sized									
		carbonate, few									
		silt, trace shell, gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-59
BORING ELEV.	-65.1 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

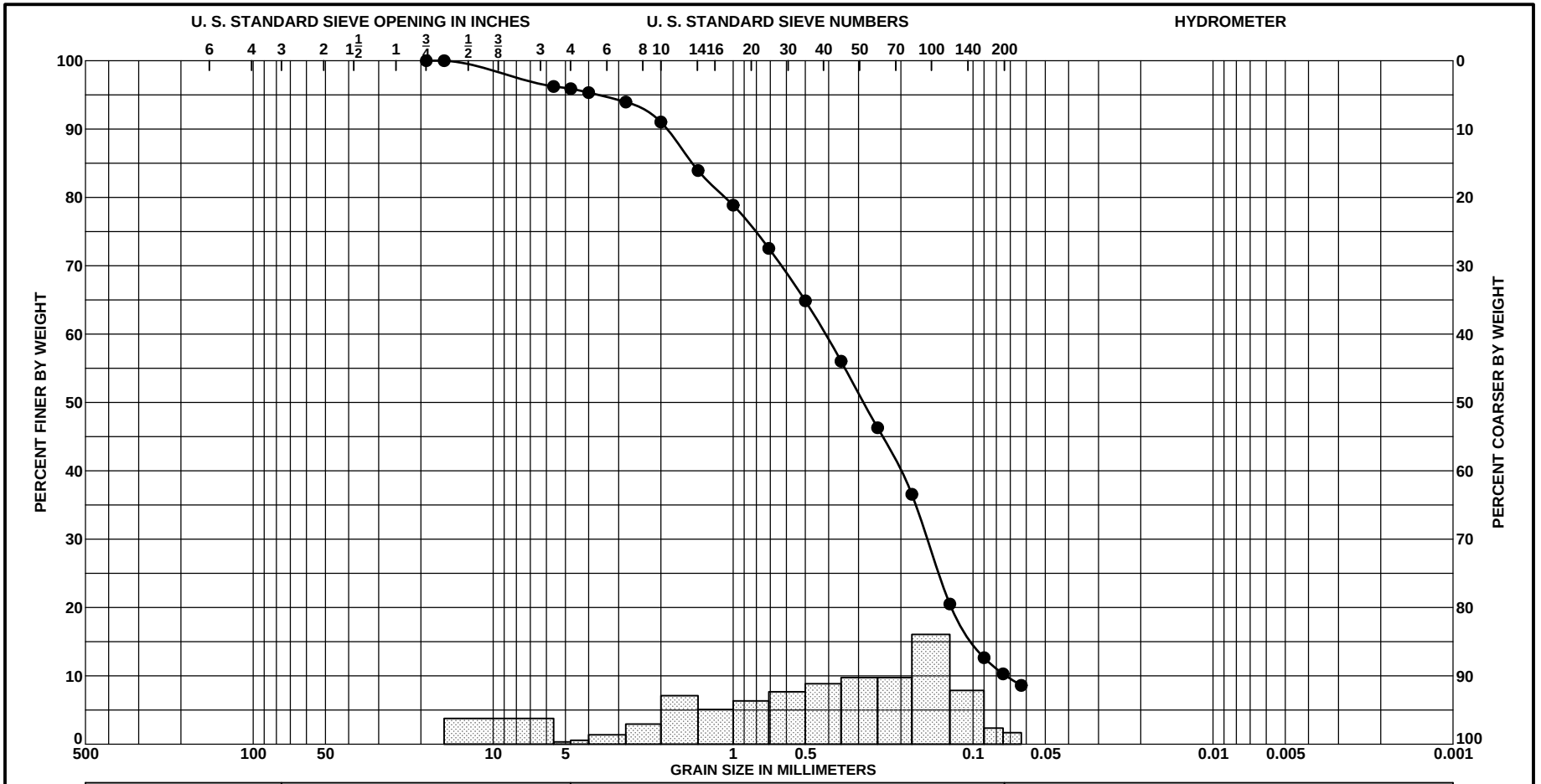


Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 4	10.0 to 10.2 Ft.	SAND, silty, mostly fine to	2.5Y 7/2	1							
		medium-grained									
		sand-sized carbonate, little silt, little									
		shell, light gray (SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-59
BORING ELEV.	-65.1 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO_3	G_S	Org %	w_n	LL	PL	PI
● 5	12.0 to 12.2 Ft.	SAND, well-graded with silt, mostly	2.5Y 7/2	2							
		fine to									
		medium-grained sand-sized									
		carbonate, little									
		shell, few silt, light gray (SW-SM)									

GRADATION CURVES

PROJECT	SAD-SAND
	Miami-Dade County
BORING NO.	VB-DA20-59
BORING ELEV.	-65.1 Ft., NAVD88
DATE	9/21/2020

SAJ FORM 2087
JUN 02

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-59 @ 2 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,078	599,273	State Plane, FLE (U.S. Ft.)	-67.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 5.69 #230 - 4.94			3

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.13	1.13
#4	-2.25	4.75	0.61	1.74
#5	-2.00	4.00	0.29	2.03
#7	-1.50	2.80	2.08	4.10
#10	-1.00	2.00	2.84	6.95
#14	-0.50	1.40	4.98	11.93
#18	0.00	1.00	4.28	16.21
#25	0.50	0.71	4.62	20.83
#35	1.00	0.50	4.82	25.64
#45	1.50	0.36	5.45	31.10
#60	2.00	0.25	7.28	38.37
#80	2.50	0.18	12.58	50.95
#120	3.00	0.13	29.50	80.45
#170	3.50	0.09	11.76	92.21
#200	3.75	0.08	2.09	94.31
#230	4.00	0.06	0.76	95.06

SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.98	3.15	2.91	2.46	0.93	-0.02	-1.34

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.73	0.30	2.46	0.18	1.55	-1.12	3.43

GRANULARMETRIC REPORT % SADSAND_MIAMIDADE.GPJ CESAJ 20171021.GDT 3/5/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-59 @ 5 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,078	599,273	State Plane, FLE (U.S. Ft.)	-70.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 9.67 #230 - 8.45			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.23	1.23
#4	-2.25	4.75	0.25	1.47
#5	-2.00	4.00	0.33	1.81
#7	-1.50	2.80	0.89	2.70
#10	-1.00	2.00	1.27	3.98
#14	-0.50	1.40	1.50	5.48
#18	0.00	1.00	1.44	6.92
#25	0.50	0.71	1.87	8.79
#35	1.00	0.50	3.04	11.83
#45	1.50	0.36	4.05	15.88
#60	2.00	0.25	5.46	21.35
#80	2.50	0.18	12.22	33.56
#120	3.00	0.13	37.56	71.13
#170	3.50	0.09	16.84	87.96
#200	3.75	0.08	2.36	90.33
#230	4.00	0.06	1.23	91.55

SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.38	3.11	2.72	2.15	1.51	-0.66

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.25	0.21	2.72	0.15	1.3	-2.13	7.81

GRANULARMETRIC REPORT % SADSAND_MIAMIDADE.GPJ CESAJ 20171021.GDT 3/5/21

Granularmetric Report

Project Name:
SAD-SAND

Sample Name: VB-DA20-59 @ 8 ft

Analysis Date: 9/21/2020

Taylor Engineering, Inc.

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,078	599,273	State Plane, FLE (U.S. Ft.)	-73.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	5Y 6/1	#200 - 10.54 #230 - 8.53			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	0.00	0.00
#4	-2.25	4.75	0.07	0.07
#5	-2.00	4.00	0.33	0.39
#7	-1.50	2.80	1.13	1.53
#10	-1.00	2.00	1.25	2.78
#14	-0.50	1.40	2.38	5.16
#18	0.00	1.00	1.99	7.15
#25	0.50	0.71	2.91	10.06
#35	1.00	0.50	4.58	14.64
#45	1.50	0.36	6.60	21.24
#60	2.00	0.25	9.07	30.31
#80	2.50	0.18	13.02	43.33
#120	3.00	0.13	28.44	71.77
#170	3.50	0.09	14.47	86.24
#200	3.75	0.08	3.22	89.46
#230	4.00	0.06	2.02	91.47

SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, few silt, trace shell

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.42	3.11	2.62	1.71	1.10	-0.53

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.14	0.23	2.62	0.16	1.23	-1.31	4.38

GRANULARMETRIC REPORT % SADSAND_MIAMIDADE.GPJ CESAJ 20171021.GDT 3/5/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-59 @ 10 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,078	599,273	State Plane, FLE (U.S. Ft.)	-75.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SM	2.5Y 7/2	#200 - 12.53 #230 - 10.71			1

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	1.25	1.25
#4	-2.25	4.75	0.54	1.79
#5	-2.00	4.00	0.75	2.54
#7	-1.50	2.80	1.00	3.54
#10	-1.00	2.00	1.91	5.45
#14	-0.50	1.40	3.24	8.68
#18	0.00	1.00	3.00	11.69
#25	0.50	0.71	3.85	15.53
#35	1.00	0.50	5.55	21.08
#45	1.50	0.36	7.32	28.40
#60	2.00	0.25	8.14	36.54
#80	2.50	0.18	10.60	47.14
#120	3.00	0.13	20.20	67.34
#170	3.50	0.09	16.37	83.71
#200	3.75	0.08	3.76	87.47
#230	4.00	0.06	1.83	89.29

SAND, silty, mostly fine to medium-grained sand-sized carbonate, little silt, little shell

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.52	3.23	2.57	1.27	0.54	-1.12

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.88	0.27	2.57	0.17	1.53	-1.21	4.03

GRANULARMETRIC REPORT % SADSAND_MIAMIDADE.GPJ CESAJ 20171021.GDT 3/5/21

Granularmetric Report

Taylor Engineering, Inc.

Project Name:
SAD-SAND

Sample Name: VB-DA20-59 @ 12 ft

Analysis Date: 9/21/2020

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):
955,078	599,273	State Plane, FLE (U.S. Ft.)	-77.1 NAVD88

USCS:	Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW-SM	2.5Y 7/2	#200 - 10.29 #230 - 8.60			2

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained	C. % Weight Retained
3/4	-4.25	19.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00
#3.5	-2.50	5.60	3.77	3.77
#4	-2.25	4.75	0.33	4.10
#5	-2.00	4.00	0.57	4.67
#7	-1.50	2.80	1.37	6.04
#10	-1.00	2.00	2.93	8.97
#14	-0.50	1.40	7.09	16.07
#18	0.00	1.00	5.07	21.14
#25	0.50	0.71	6.33	27.46
#35	1.00	0.50	7.66	35.13
#45	1.50	0.36	8.84	43.97
#60	2.00	0.25	9.74	53.70
#80	2.50	0.18	9.74	63.44
#120	3.00	0.13	16.05	79.49
#170	3.50	0.09	7.86	87.35
#200	3.75	0.08	2.36	89.71
#230	4.00	0.06	1.69	91.40

SAND, well-graded with silt, mostly fine to medium-grained sand-sized carbonate, little shell, few silt

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.29	2.86	1.81	0.31	-0.50	-1.88

Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.26	0.42	1.81	0.29	1.72	-0.78	3.04

GRANULARMETRIC REPORT % SADSAND_MIAMIDADE.GPJ CESAJ 20171021.GDT 3/5/21

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 59
DEPTH: 0.0 – 2.5
0'
1'
2'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 59
DEPTH: 2.5 – 5.0
3'
4'
5'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 59
DEPTH: 5.0 – 7.5
5'
6'
7'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 59
DEPTH: 7.5 – 10.0
8'
9'
10'

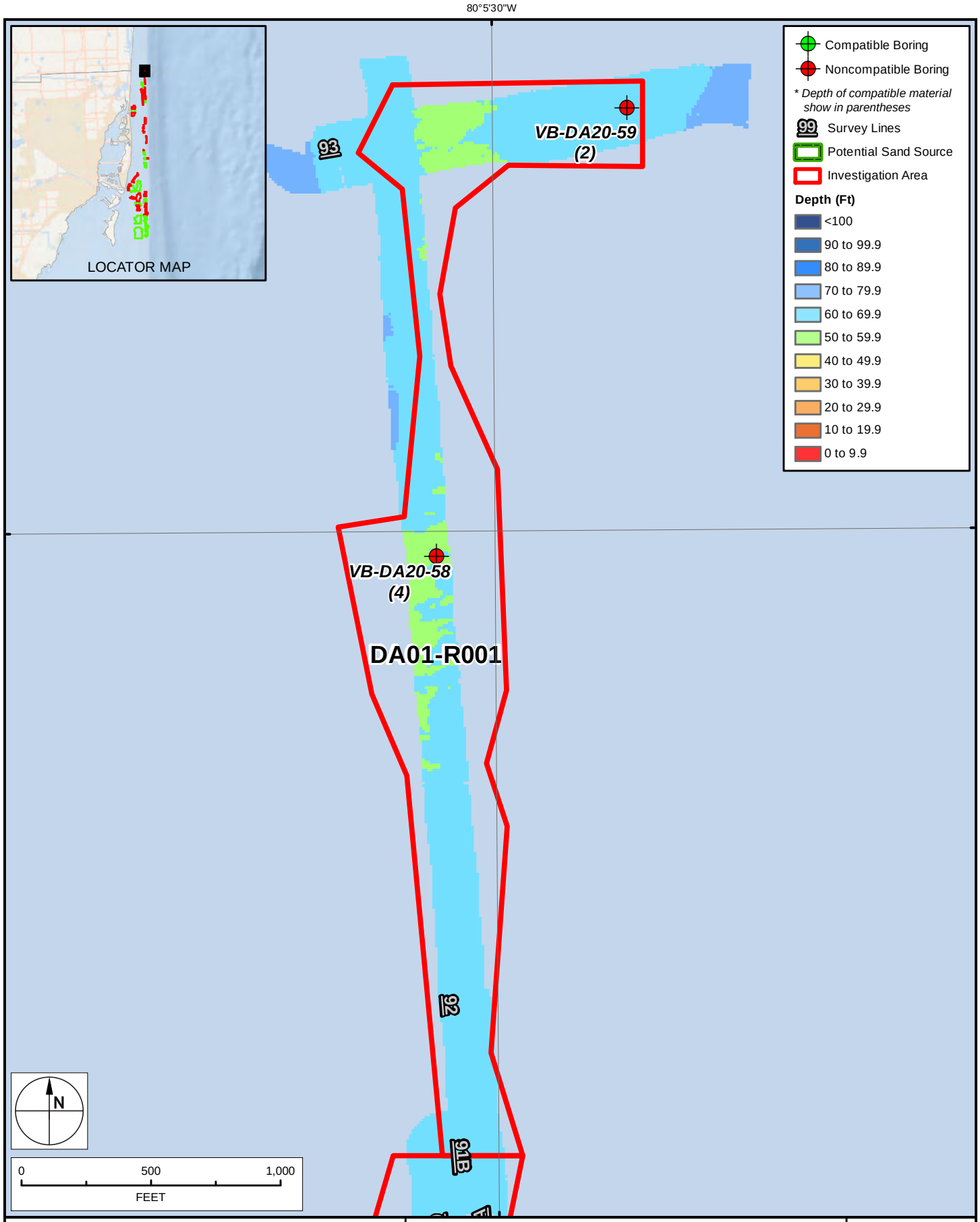
USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 59
DEPTH :10.0 –12.5
10'
11'
12'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 59
DEPTH :12.5 –15.0
13'
14'
15'

USACE
SAD – SAND
SEARCH
DADE COUNTY
C2019 -032
VB–DA20 – 59
DEPTH :15.0 –16.5
15'
16'
17'

APPENDIX E

Geophysical Survey Data



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

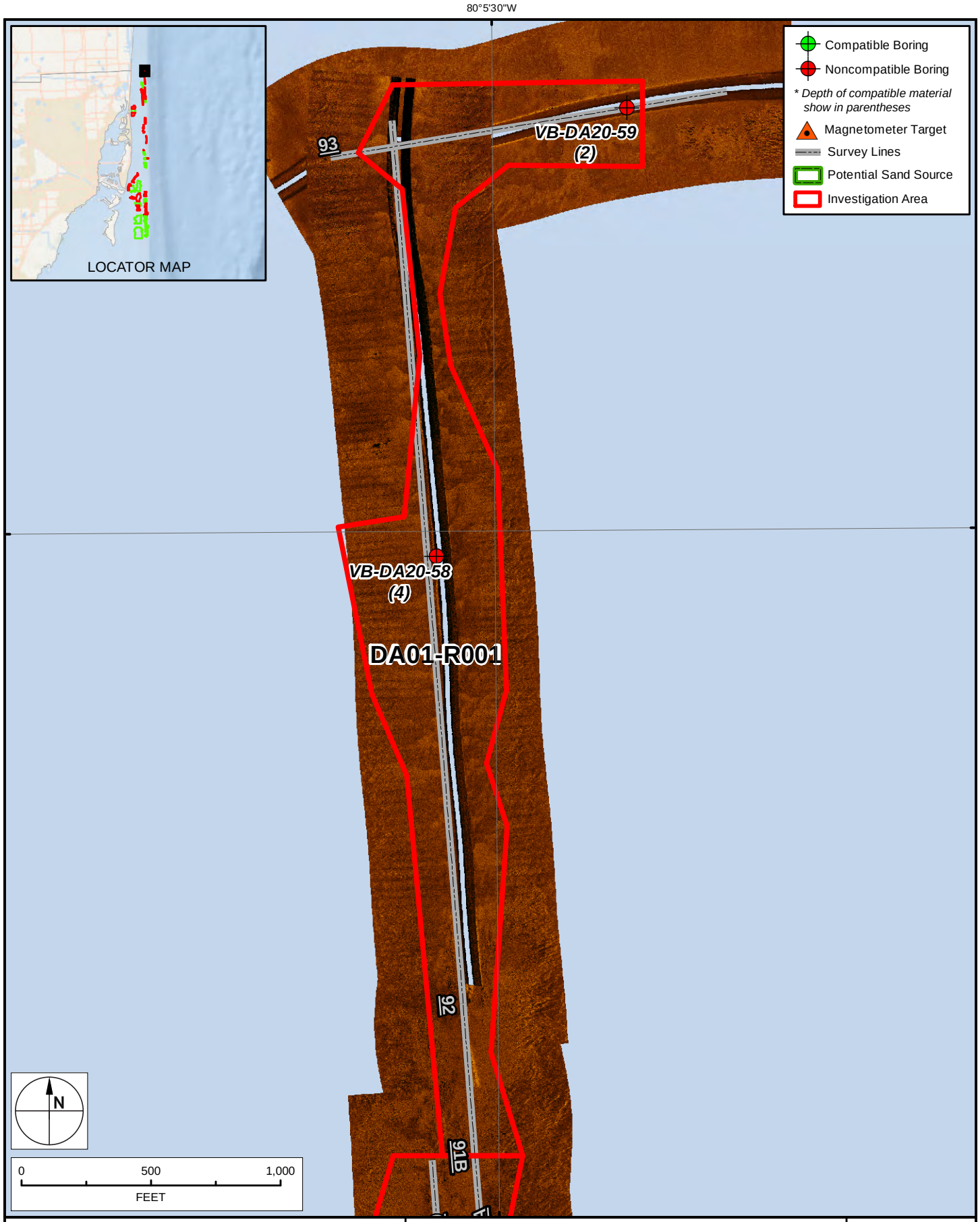
INVESTIGATION AREA DA01-R001
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY PL

SHEET

DATE APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R001
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

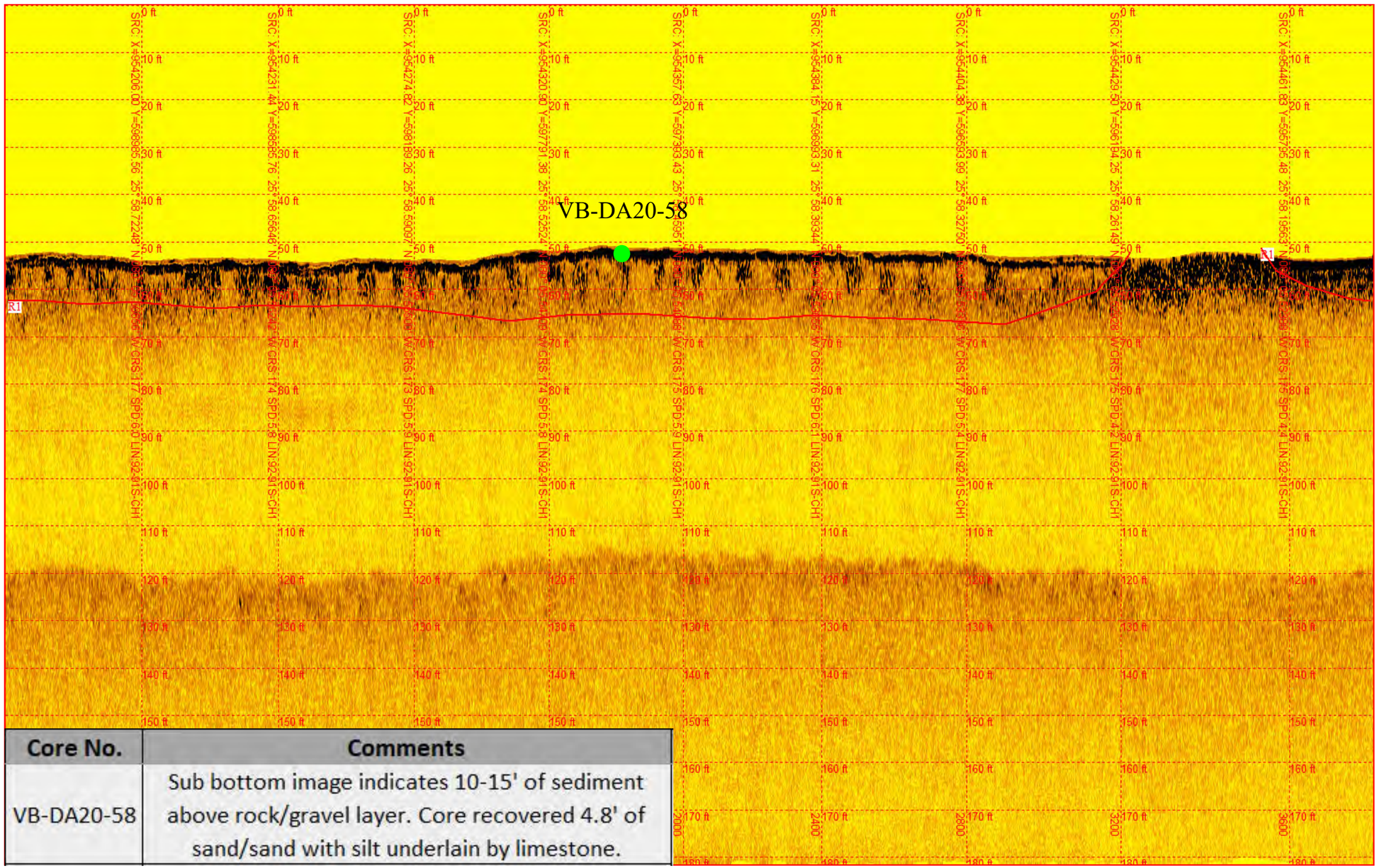
Company Logo

Sonographics, Inc.

SAD SAND South Broward County

Waterfall 92-91S-CH1

N S



Core No.	Comments
VB-DA20-58	Sub bottom image indicates 10-15' of sediment above rock/gravel layer. Core recovered 4.8' of sand/sand with silt underlain by limestone.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

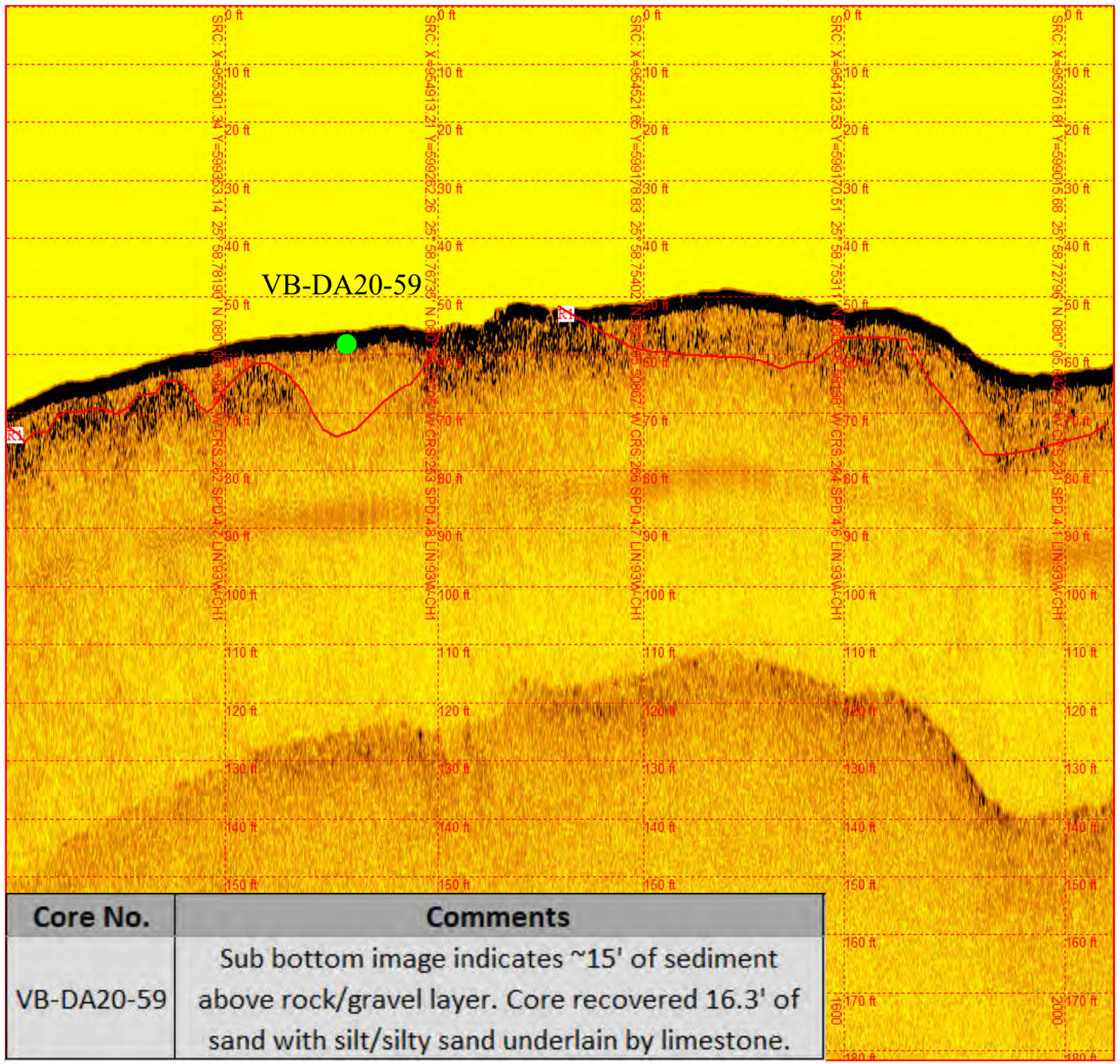
Company Logo

Sonographics, Inc.

SAD SAND South Broward County

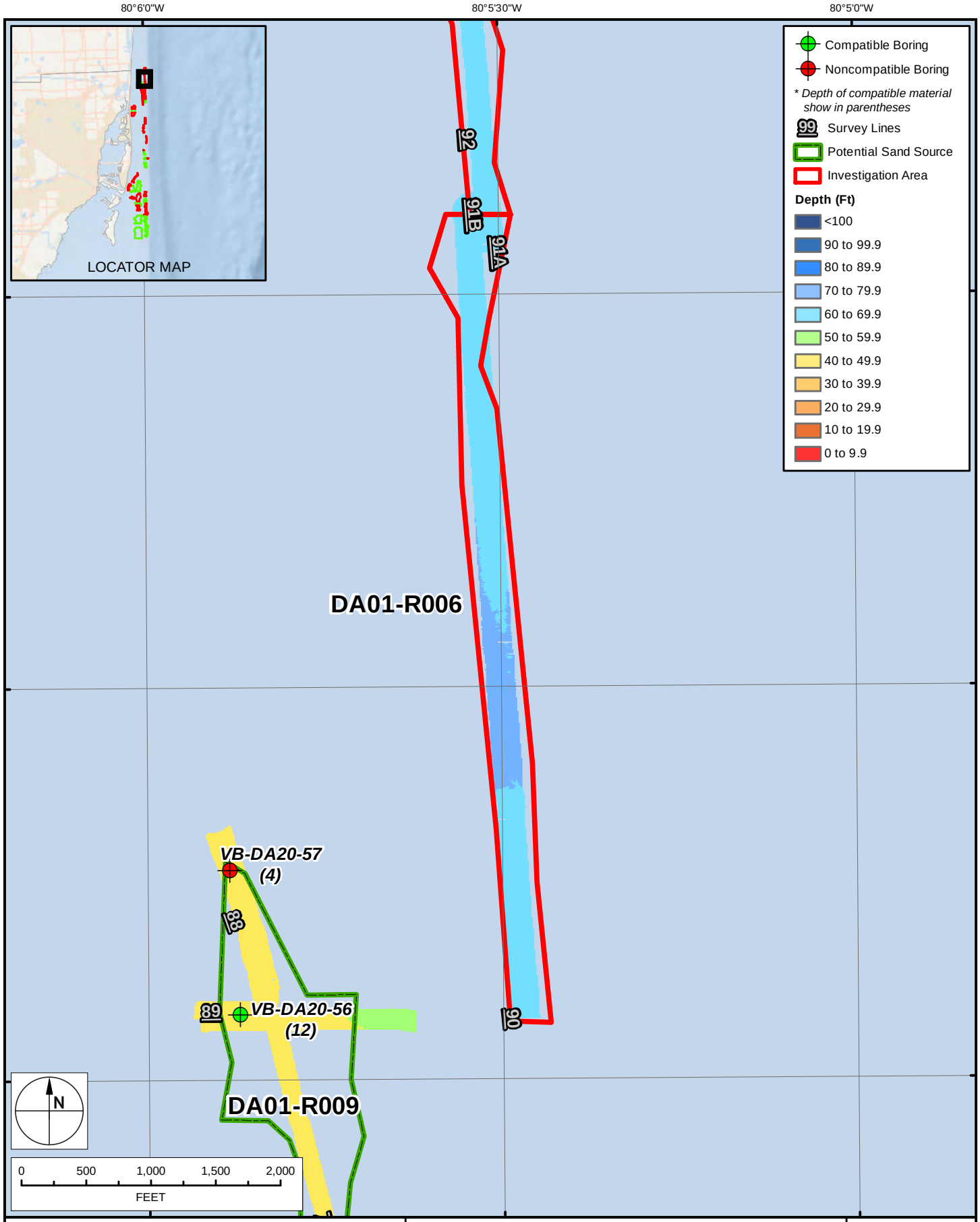
Waterfall 93W-CH1

E W



Core No.	Comments
VB-DA20-59	Sub bottom image indicates ~15' of sediment above rock/gravel layer. Core recovered 16.3' of sand with silt/silty sand underlain by limestone.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

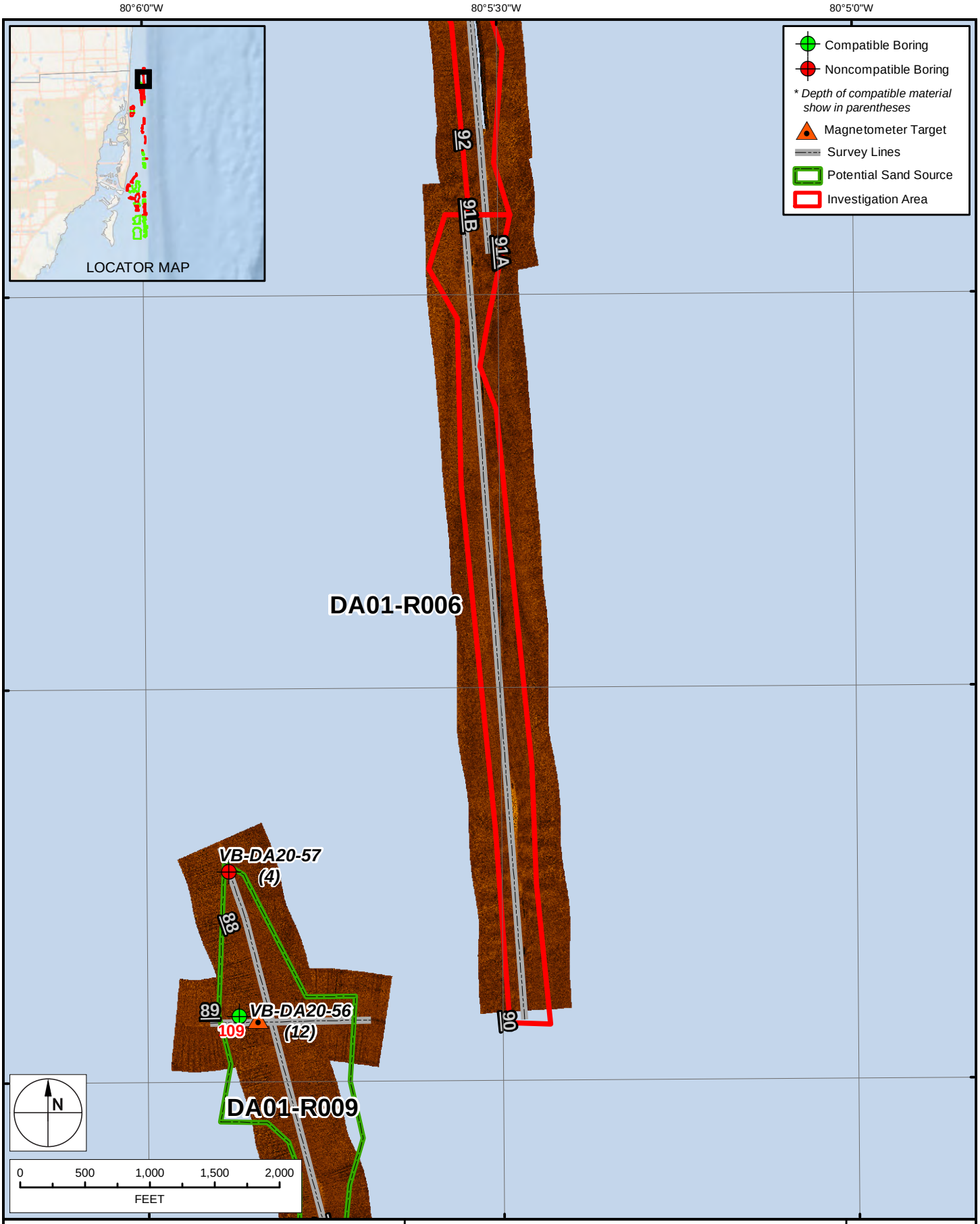
INVESTIGATION AREA DA01-R006
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R006
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

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DATE APRIL 2021

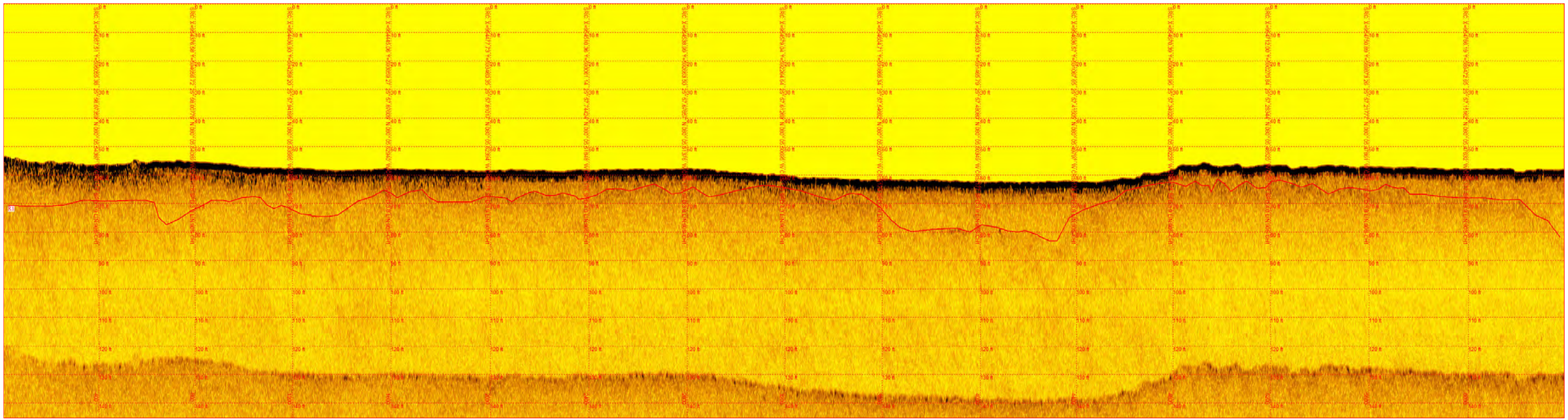
Company Logo

Sonographics, Inc.

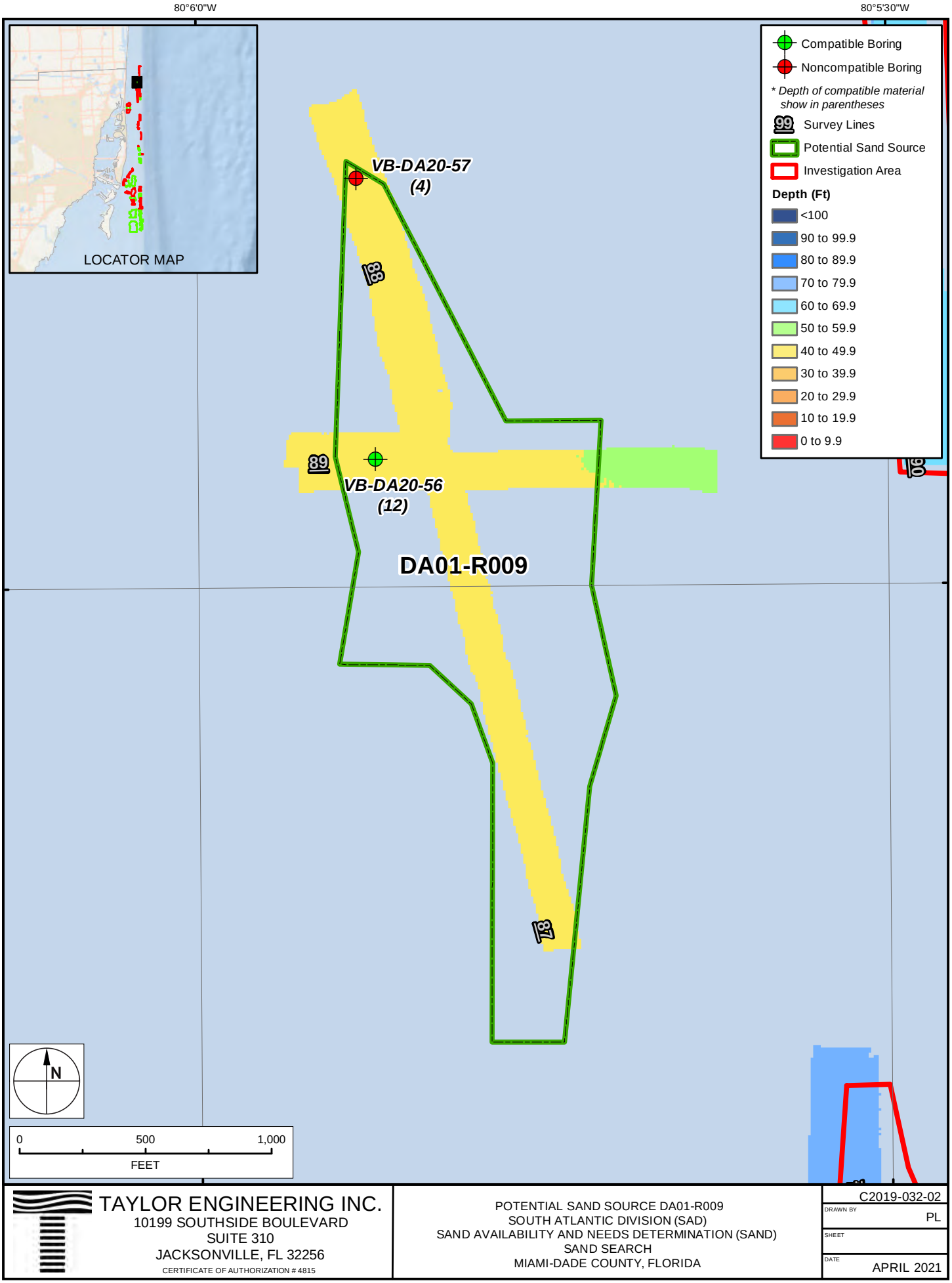
SAD SAND

Waterfall 90S-CH1

N S



Sonar Processing by 6.01.0025 and SWuWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

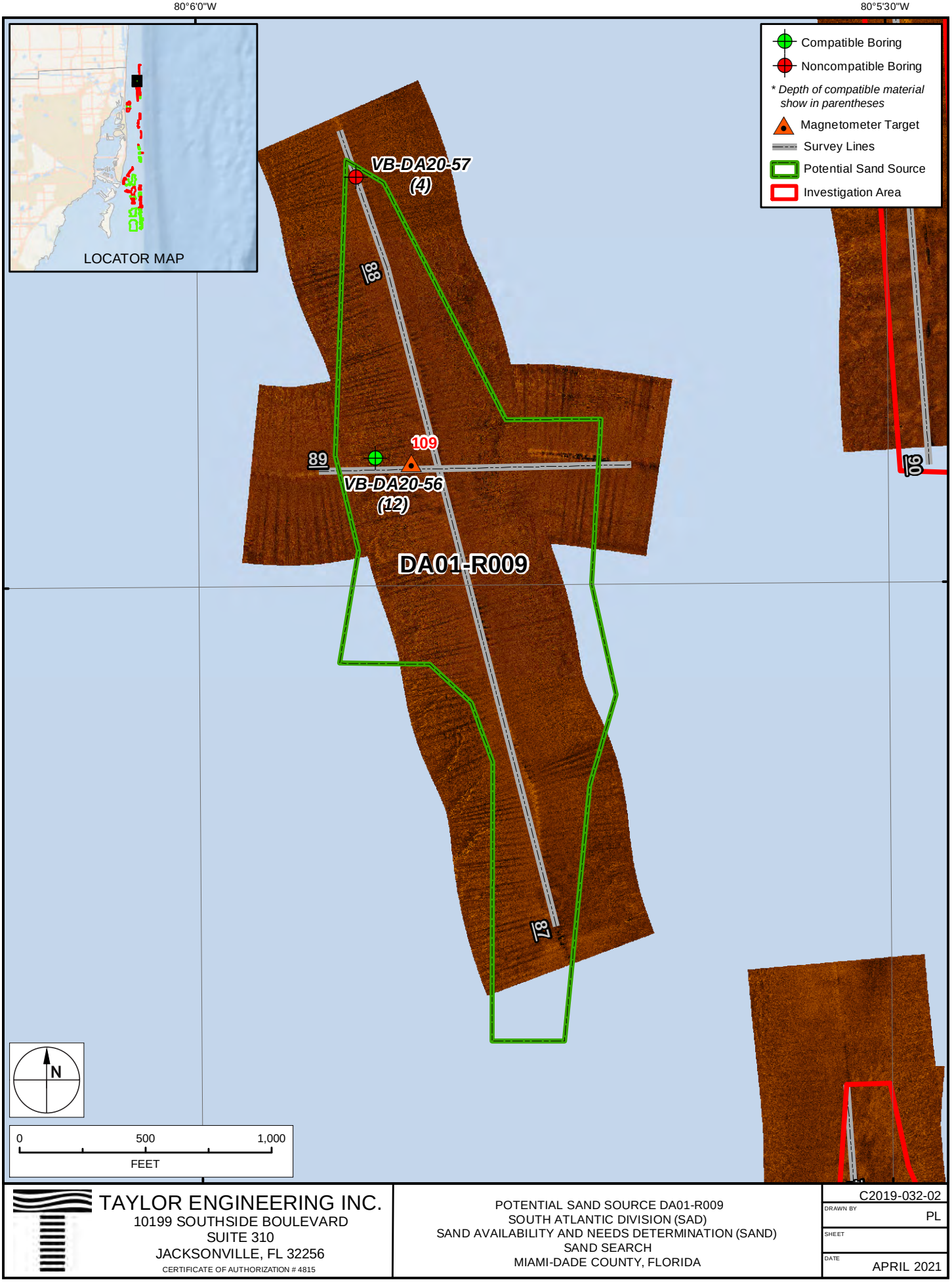
POTENTIAL SAND SOURCE DA01-R009
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA01-R009
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY PL

SHEET

DATE APRIL 2021

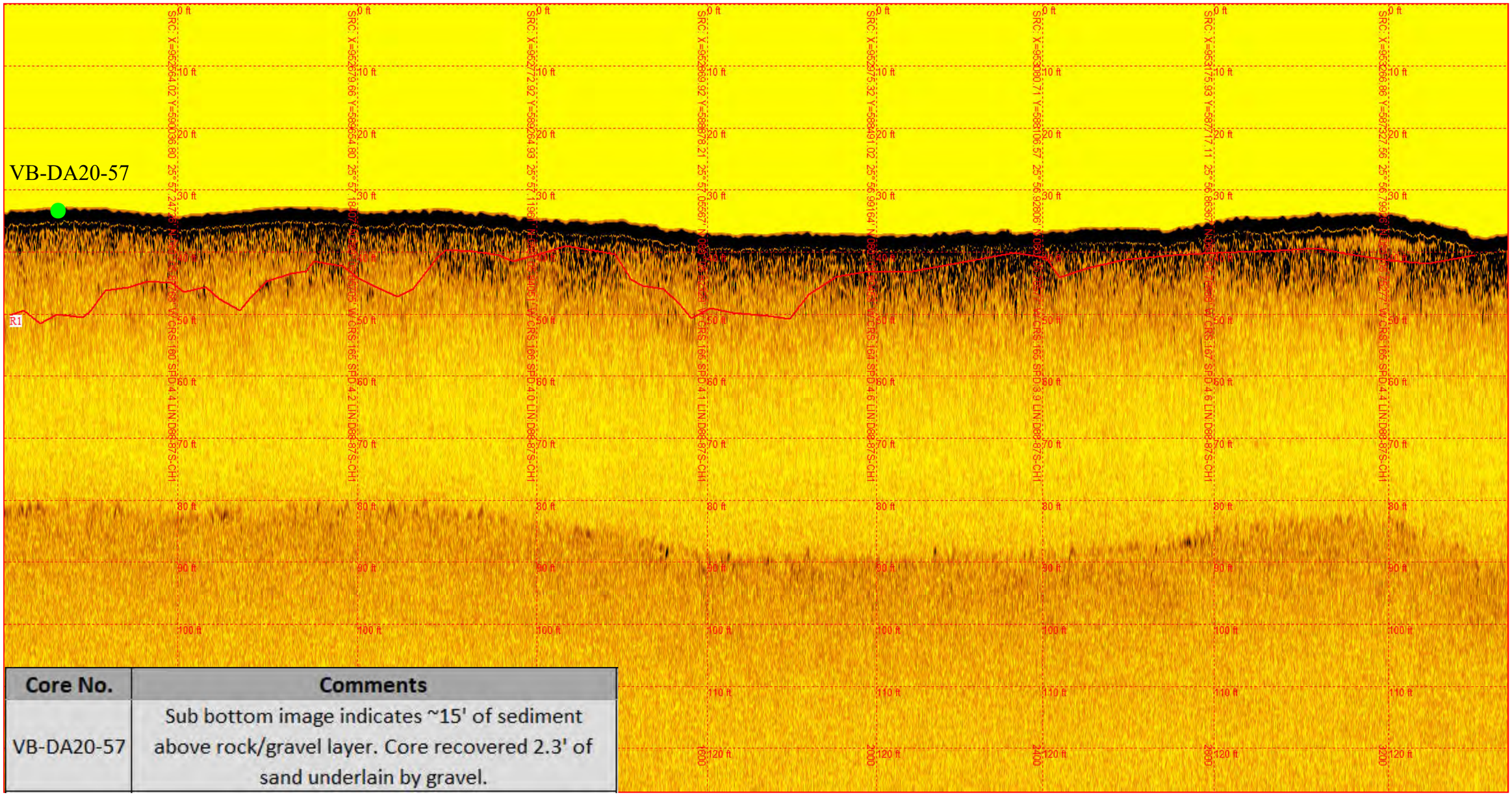
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D88-87S-CH1

N S



Core No.	Comments
VB-DA20-57	Sub bottom image indicates ~15' of sediment above rock/gravel layer. Core recovered 2.3' of sand underlain by gravel.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

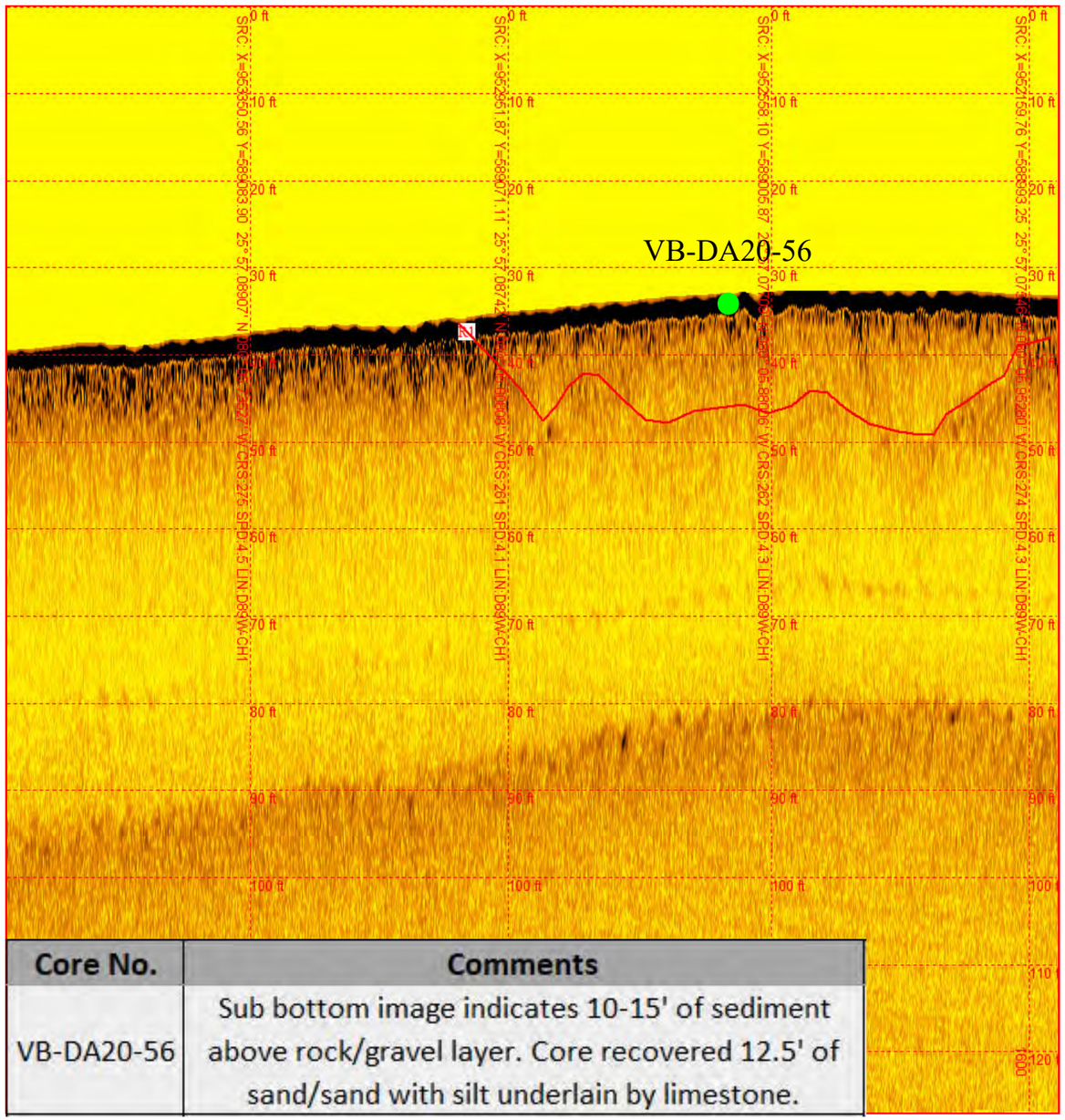
Company Logo

Sonographics, Inc.

SAD SAND

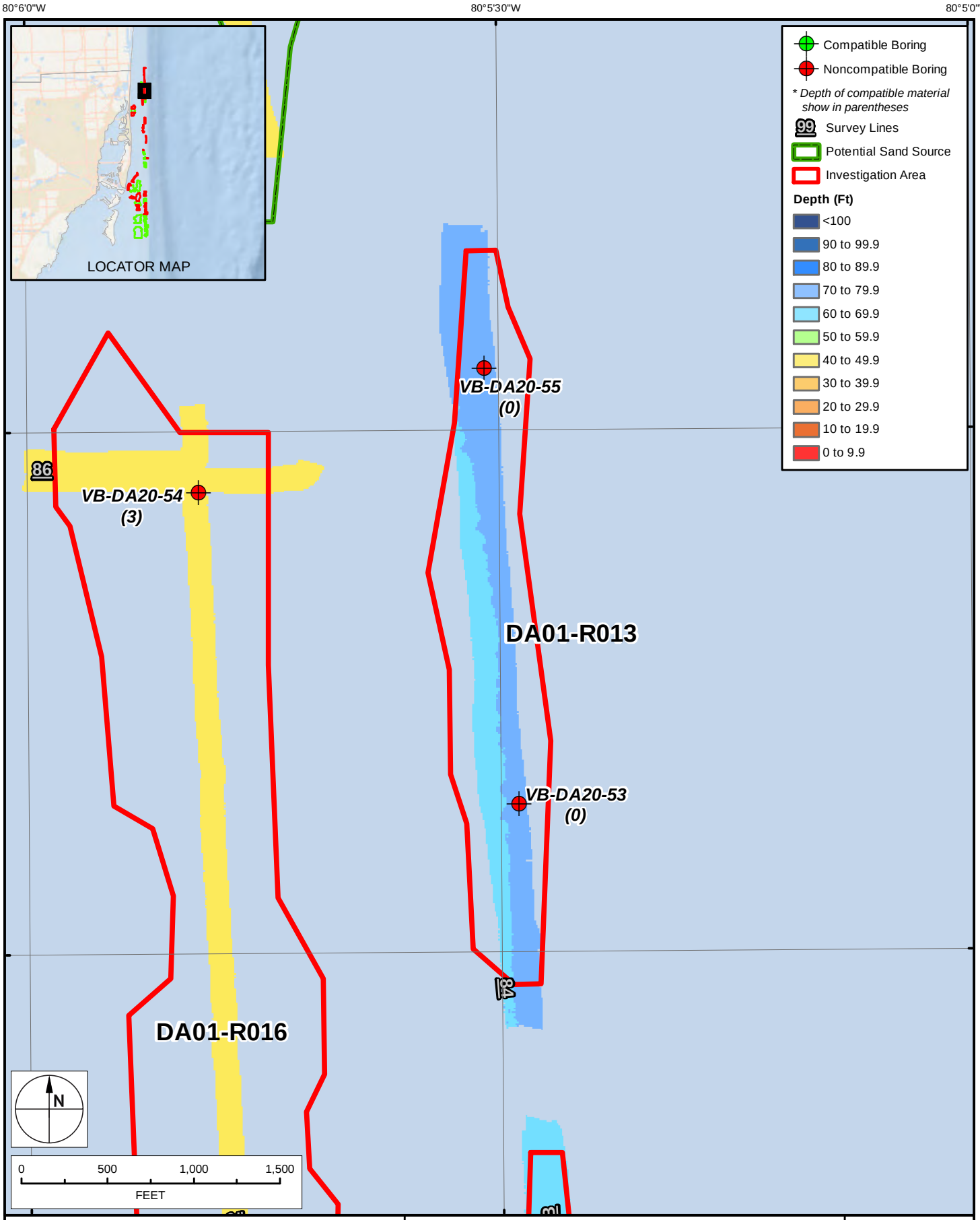
Waterfall D89W-CH1

E W



Core No.	Comments
VB-DA20-56	Sub bottom image indicates 10-15' of sediment above rock/gravel layer. Core recovered 12.5' of sand/sand with silt underlain by limestone.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

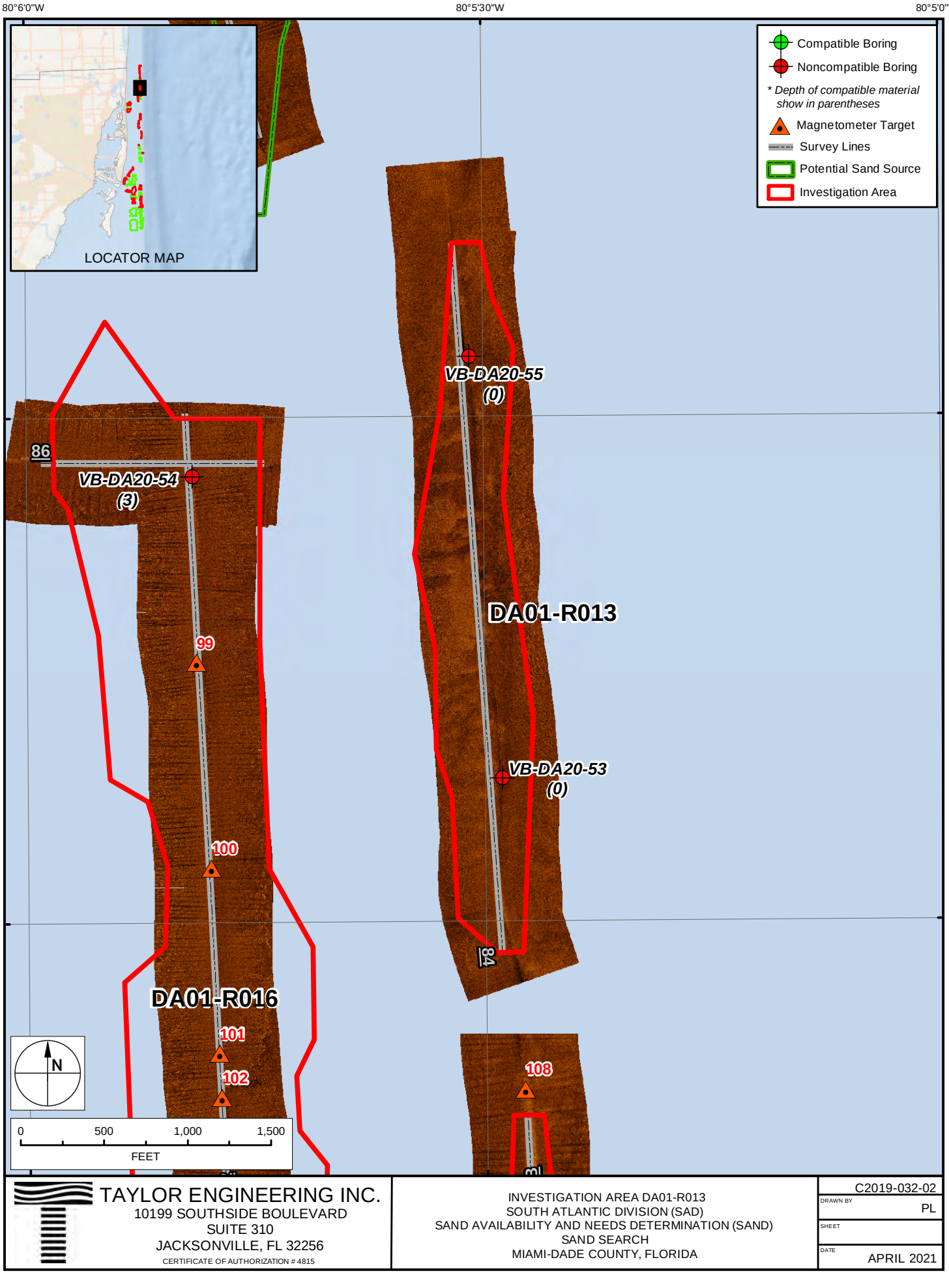
INVESTIGATION AREA DA01-R013
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R013
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

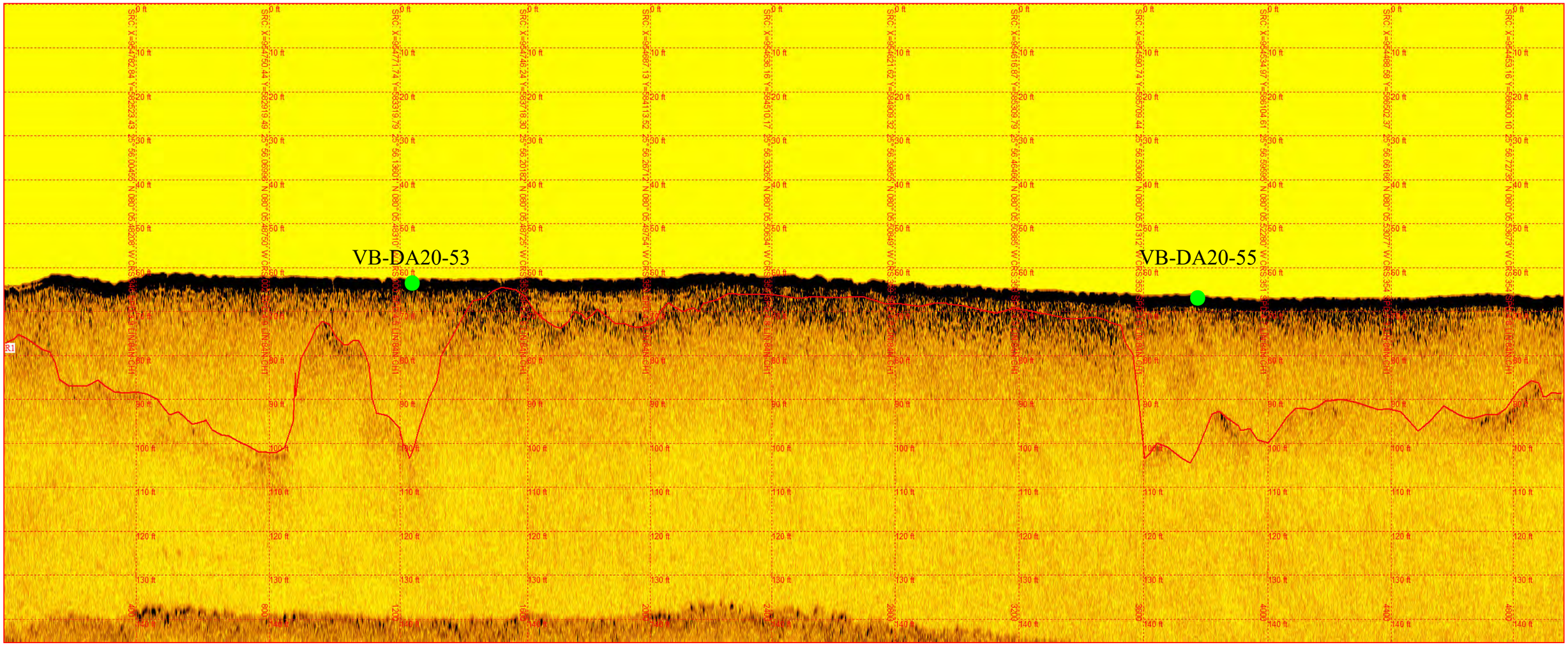
Company Logo

Sonographics, Inc.

SAD SAND

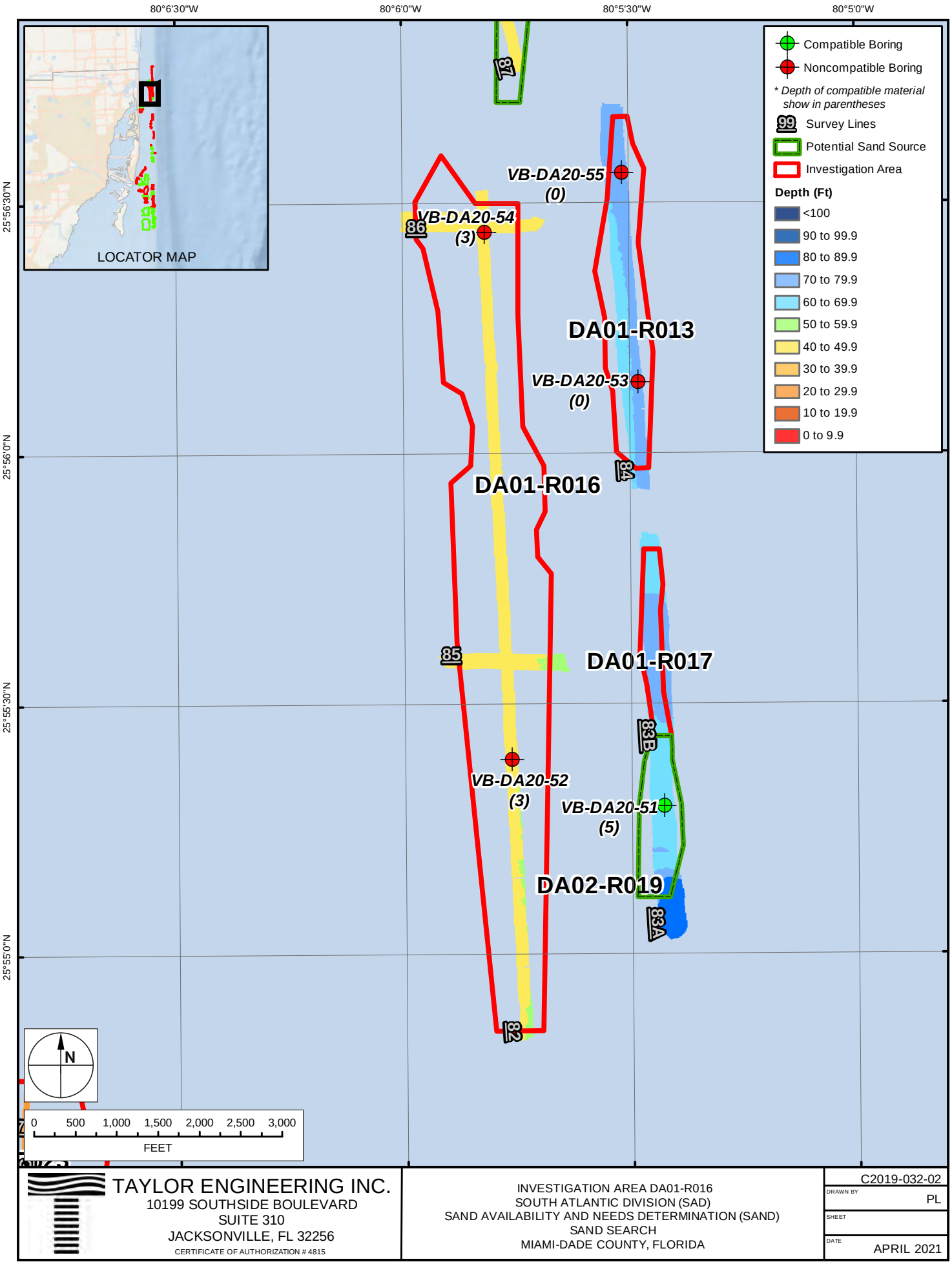
Waterfall 84N-CH1

S N



Core No.	Comments
VB-DA20-53	Sub bottom image indicates ~35' of sediment above rock/gravel layer. Core recovered 17.1' of silty sand before hitting refusal.
VB-DA20-55	Sub bottom image indicates 20-25' of sediment above rock/gravel layer. Core recovered 18.3' sand/silty sand before hitting refusal.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology, Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

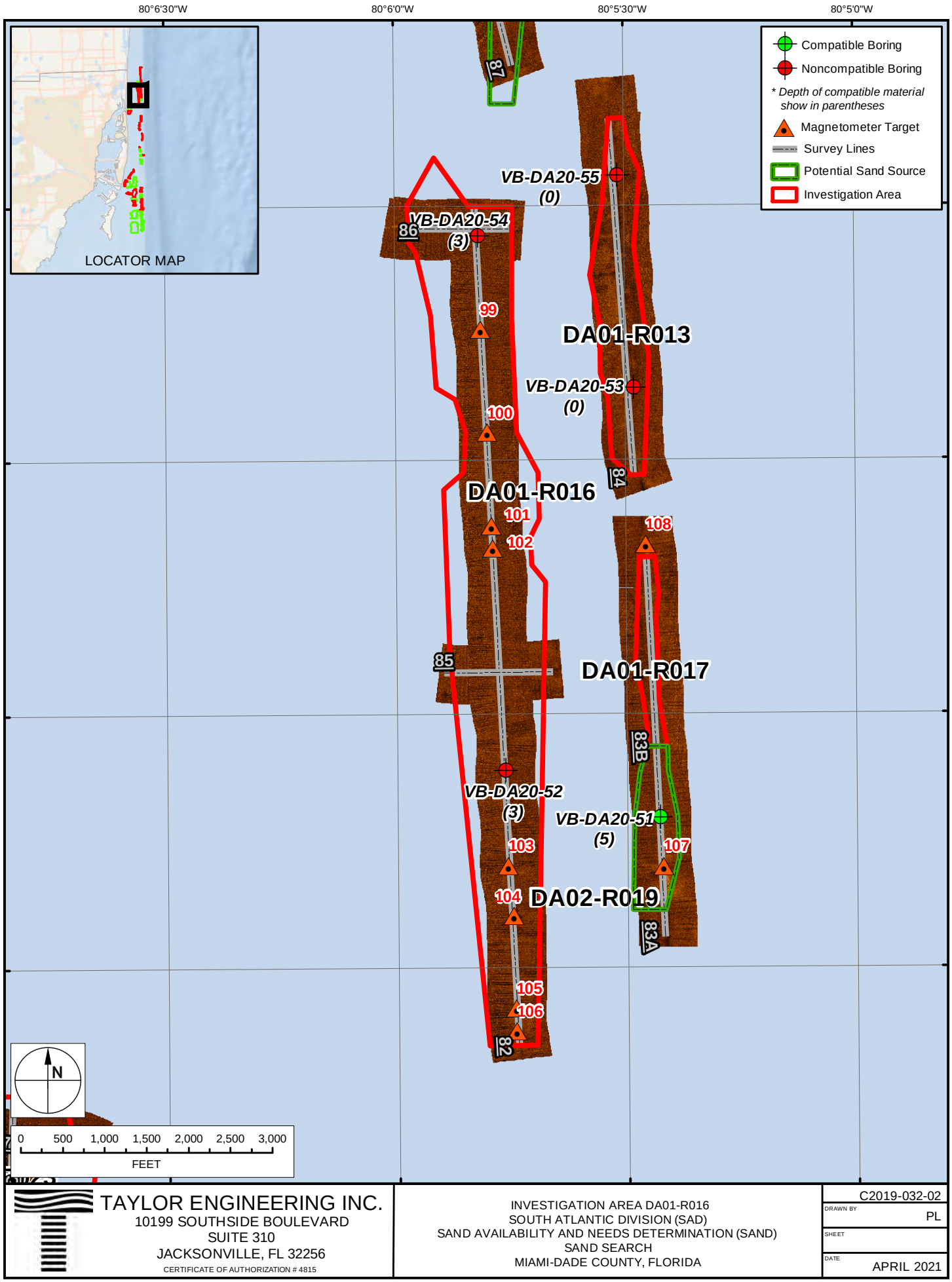
INVESTIGATION AREA DA01-R016
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R016
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

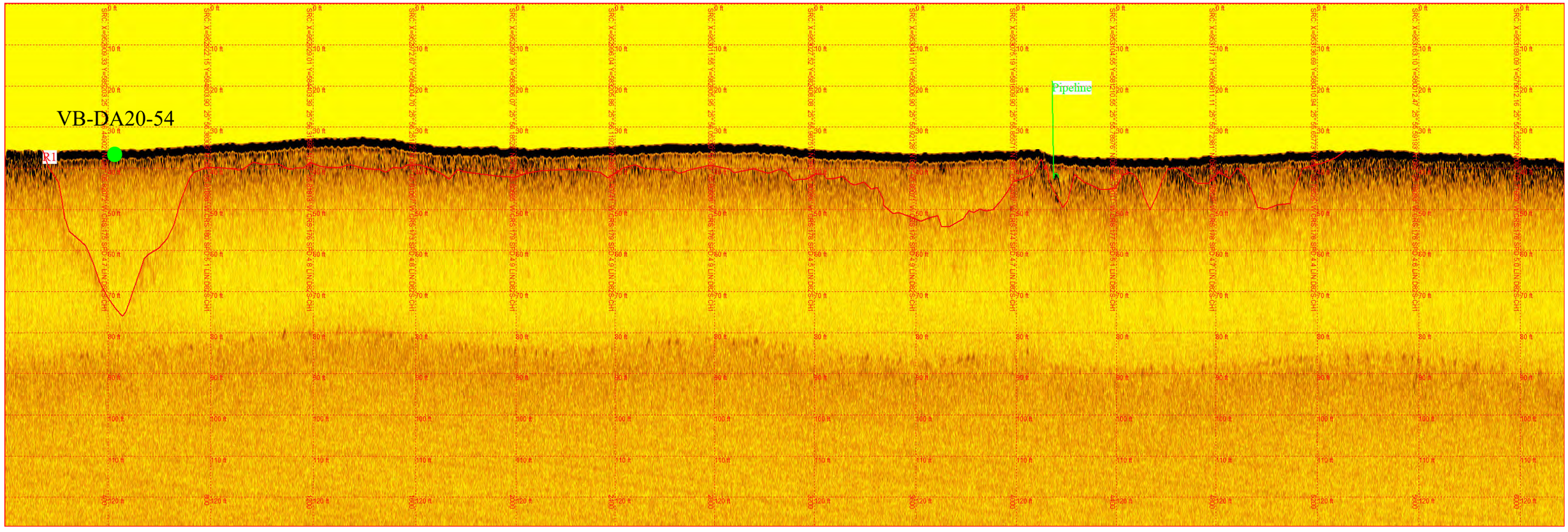
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D82S-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology, Inc.

Core No.	Comments
VB-DA20-54	Sub bottom image indicates ~30' of sediment above rock/gravel layer. Core recovered 2.0' of sediment underlain by limestone gravel and silty sand.

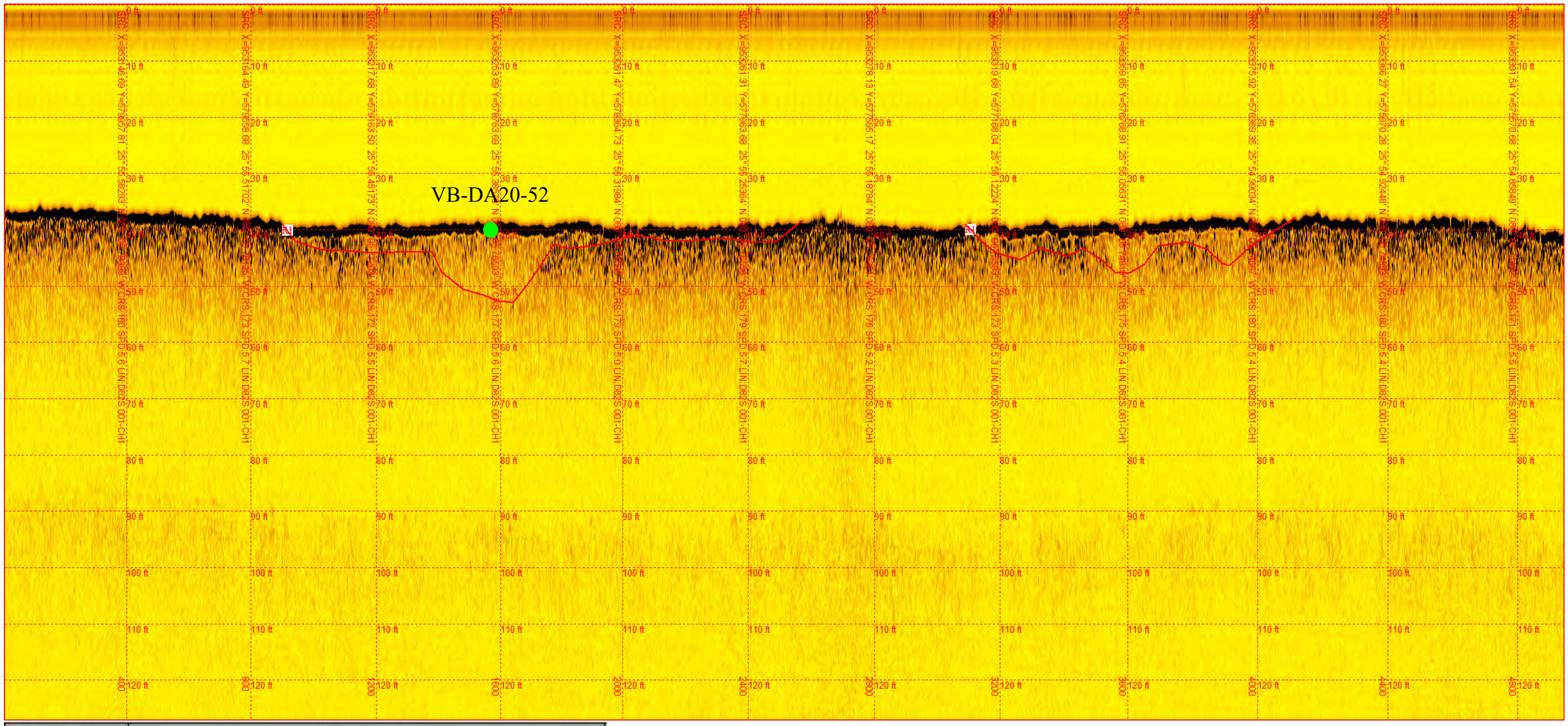
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D82S.001-CH1

N S



Core No.	Comments
VB-DA20-52	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 3.6' of sand underlain by limestone gravel and silty sand.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

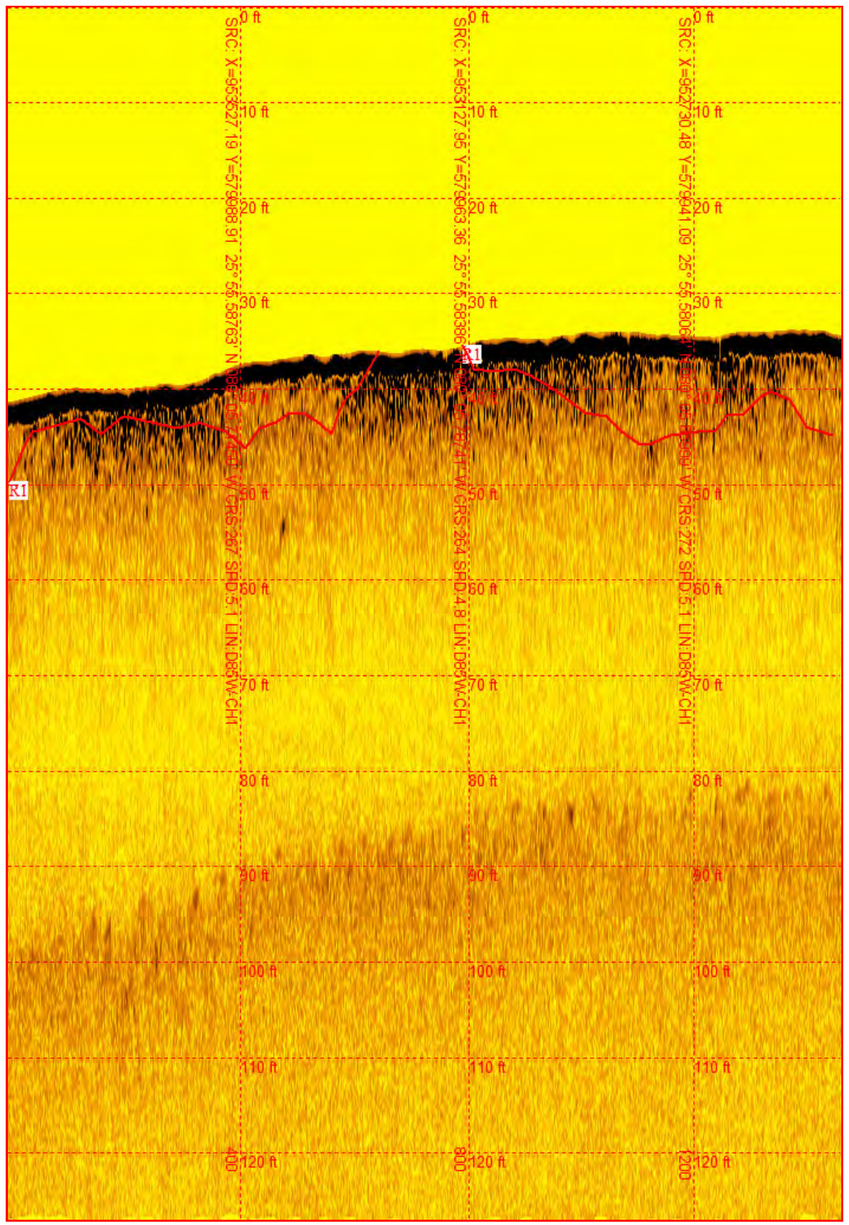
Company Logo

Sonographics, Inc.

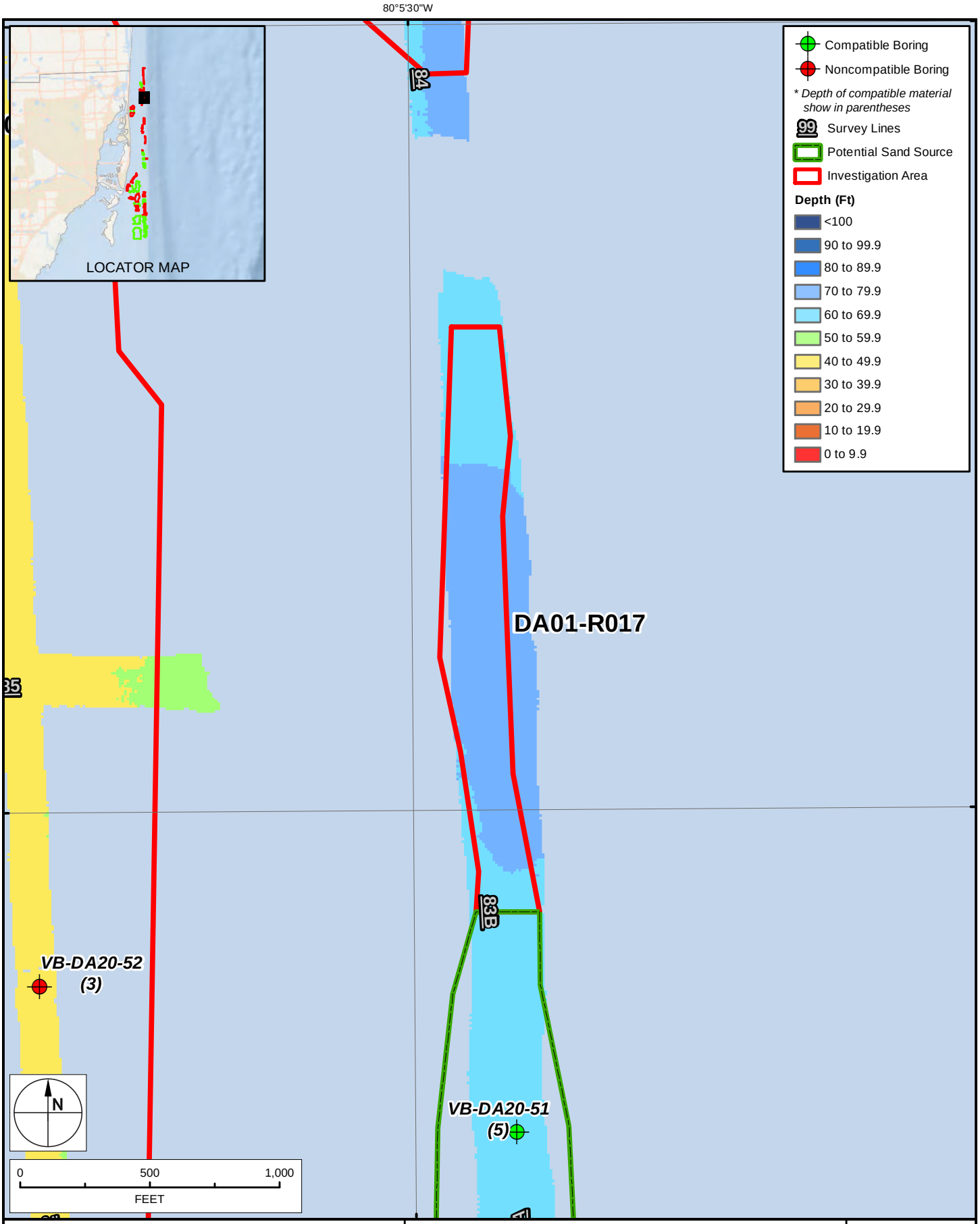
SAD SAND

Waterfall D85W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

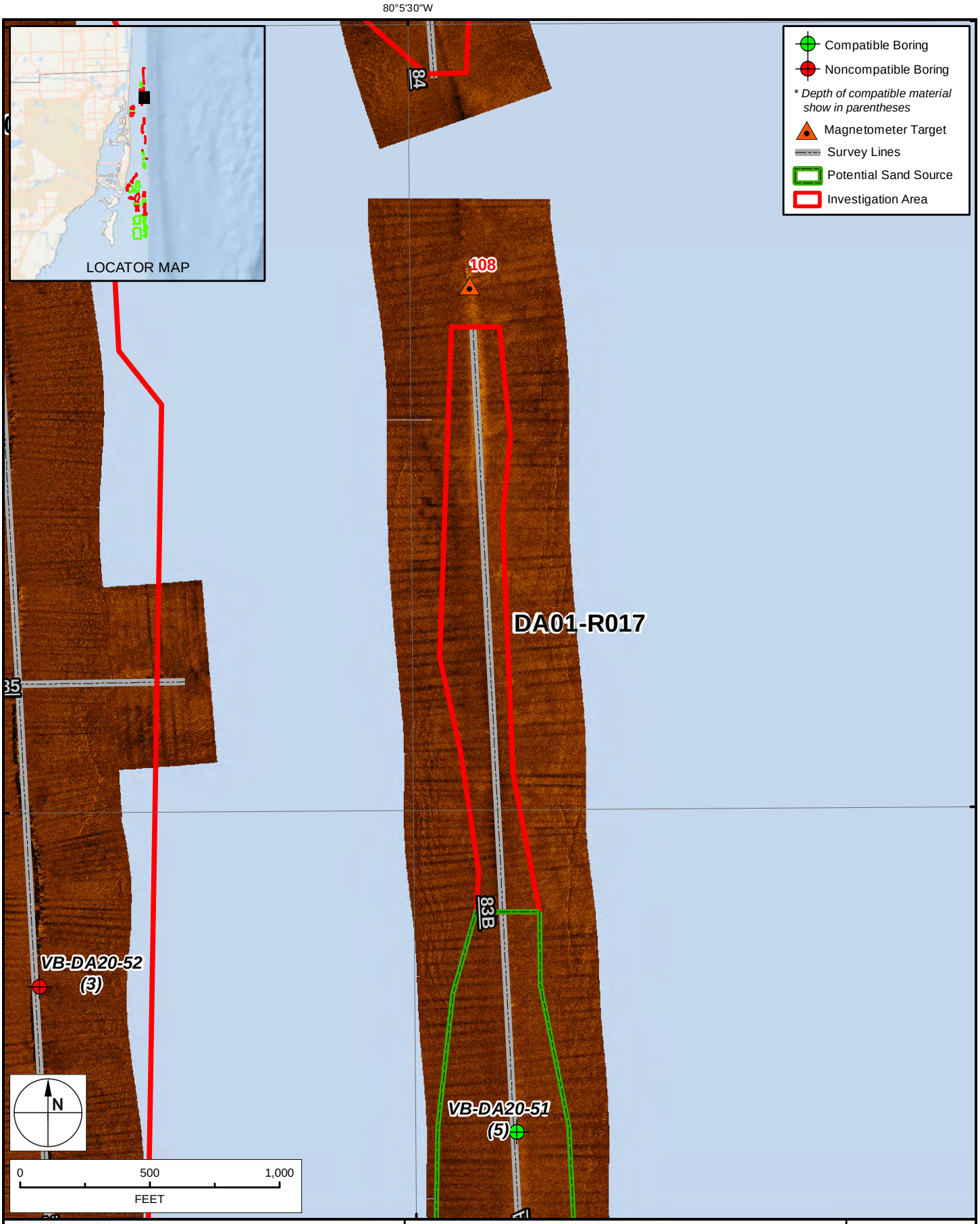
INVESTIGATION AREA DA01-R017
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

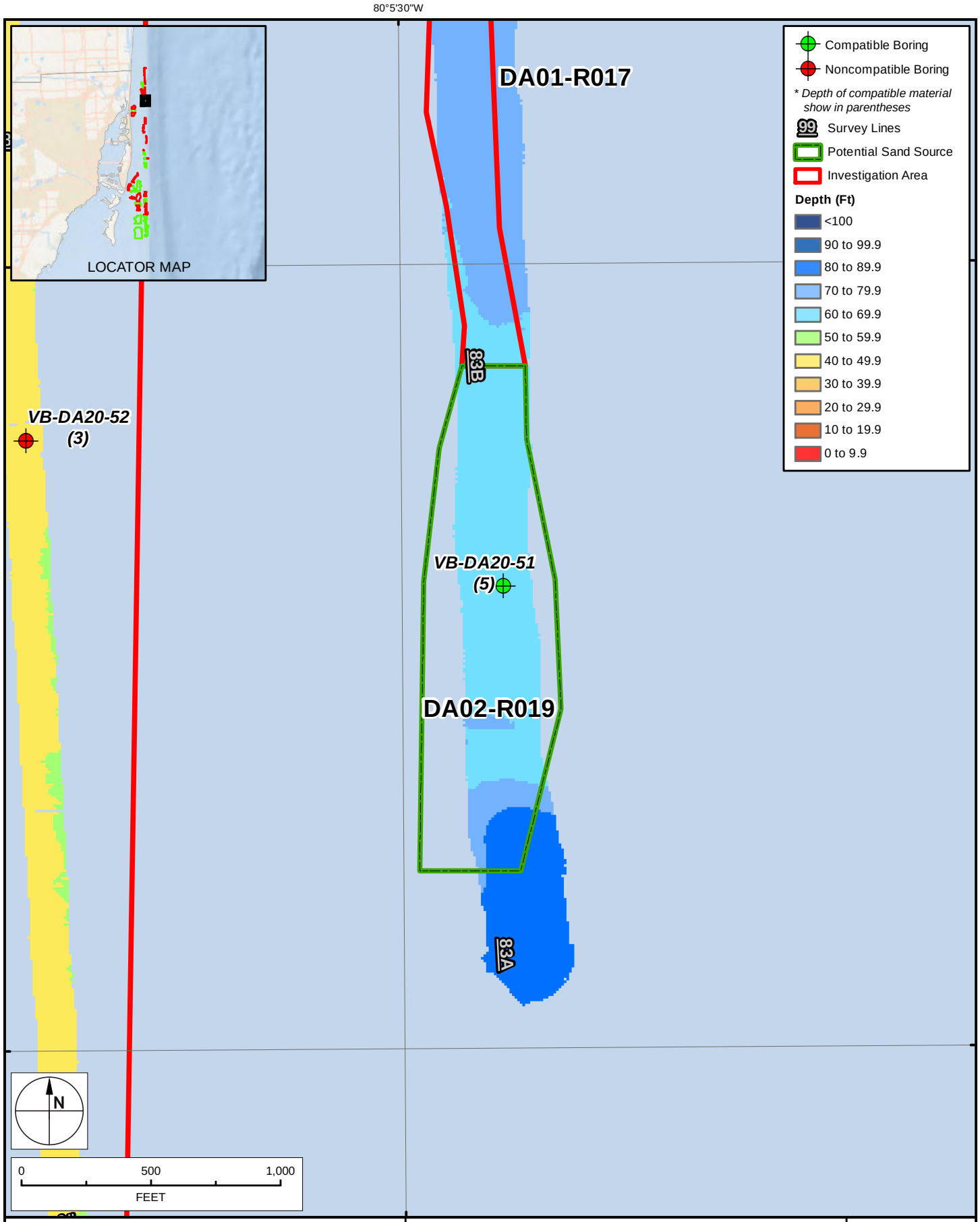
INVESTIGATION AREA DA01-R017
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

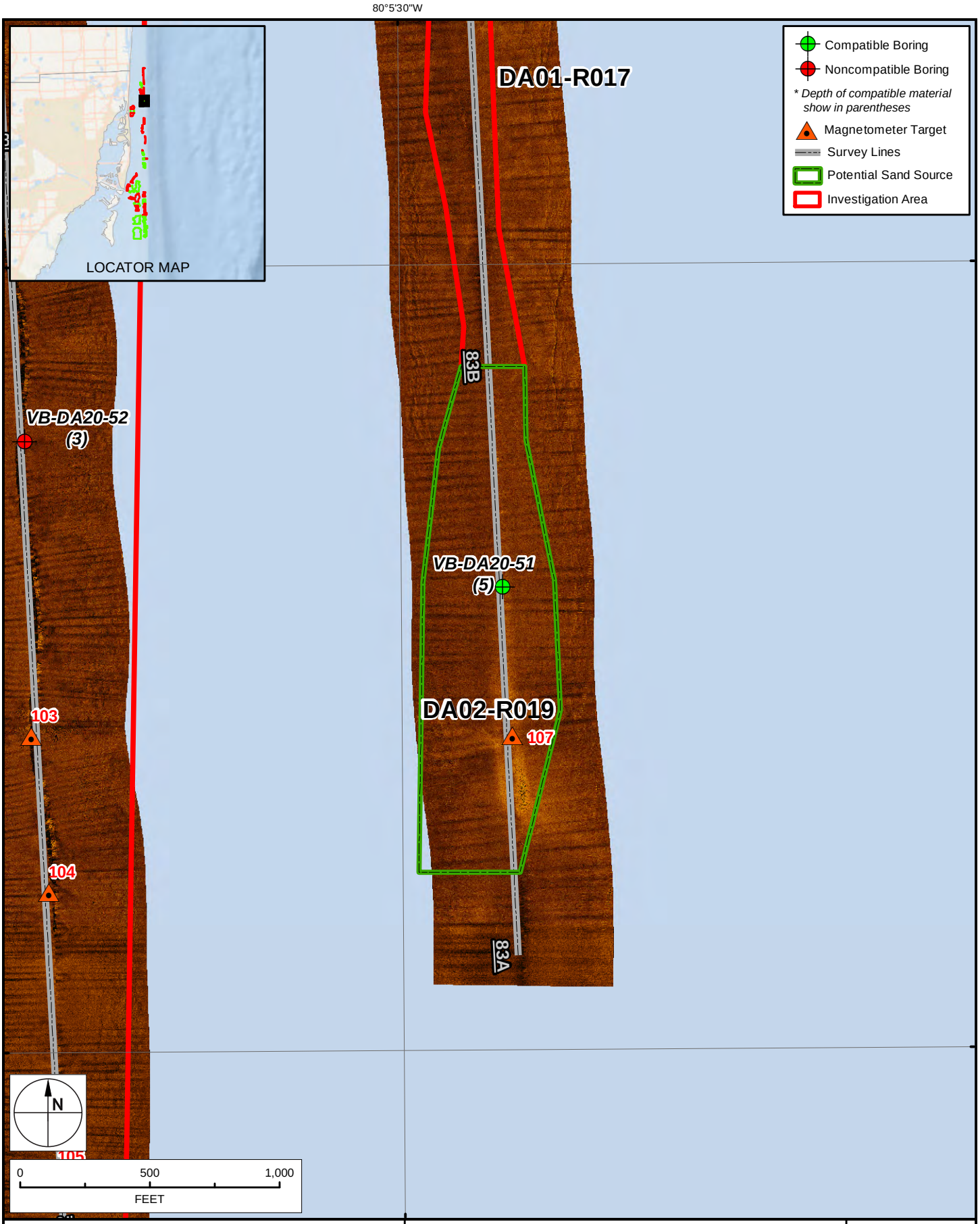
POTENTIAL SAND SOURCE DA02-R019
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA02-R019
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

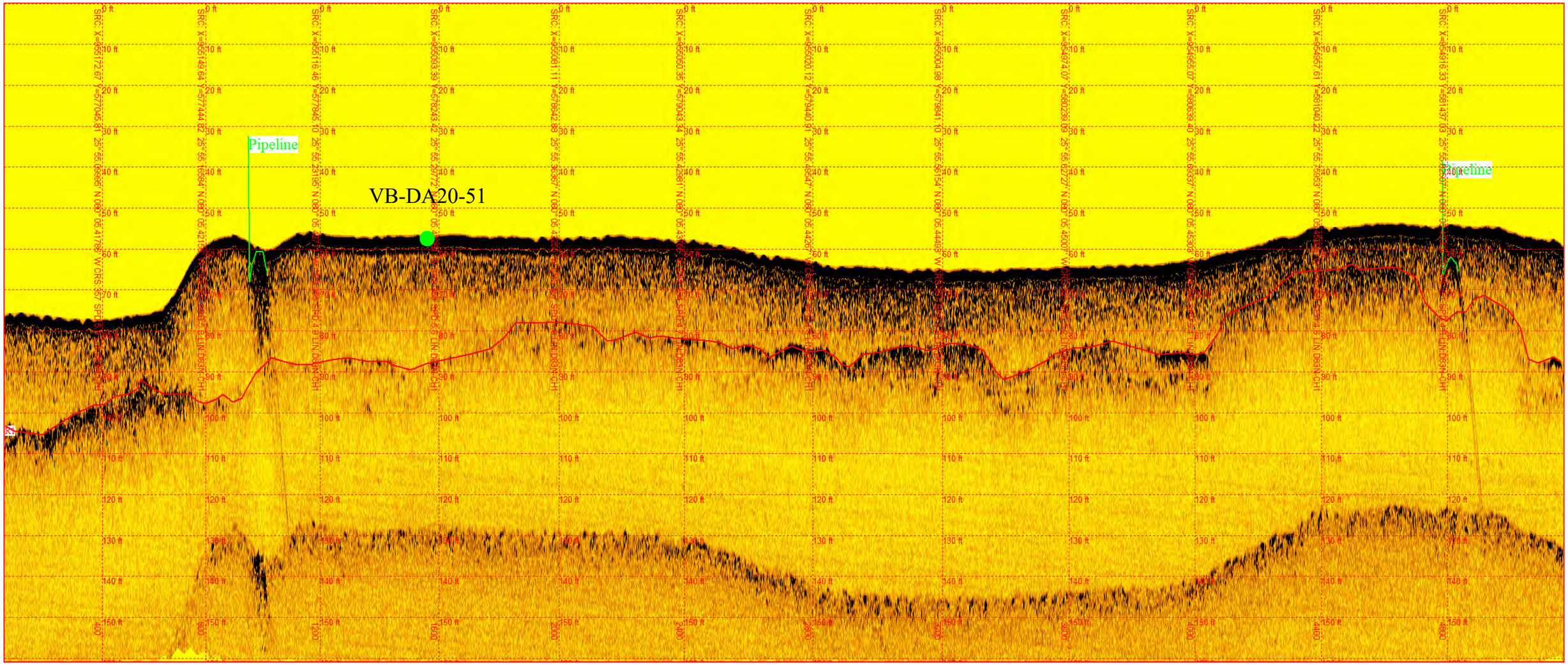
Company Logo

Sonographics, Inc.

SAD SAND

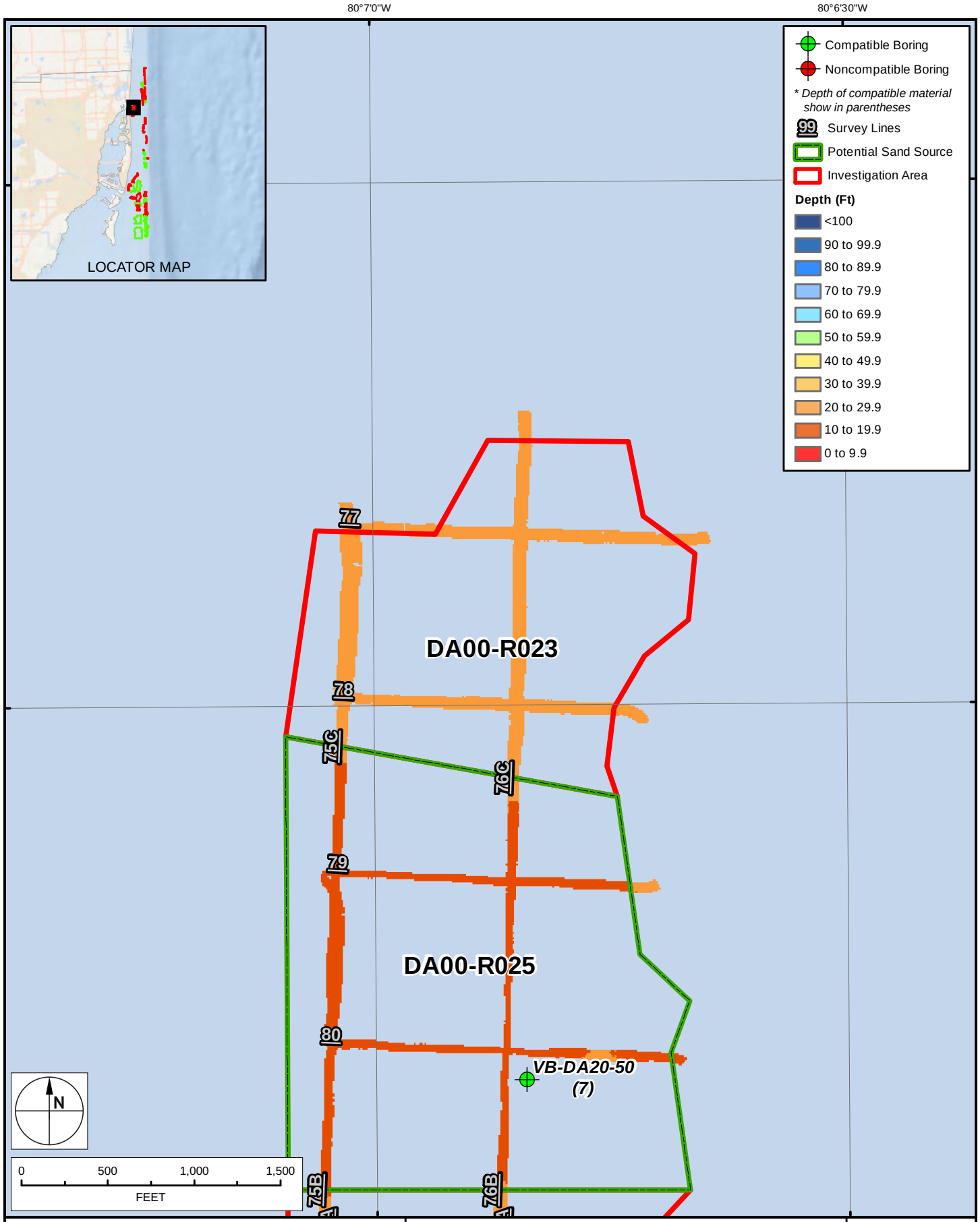
Waterfall D83N-CH1

S N



Core No.	Comments
VB-DA20-51	Sub bottom image indicates 20-25' of sediment above rock/gravel layer. Core recovered 9.5' of sand/sand with silt underlain by limestone gravel and silty sand.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA00-R023
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

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DATE: APRIL 2021

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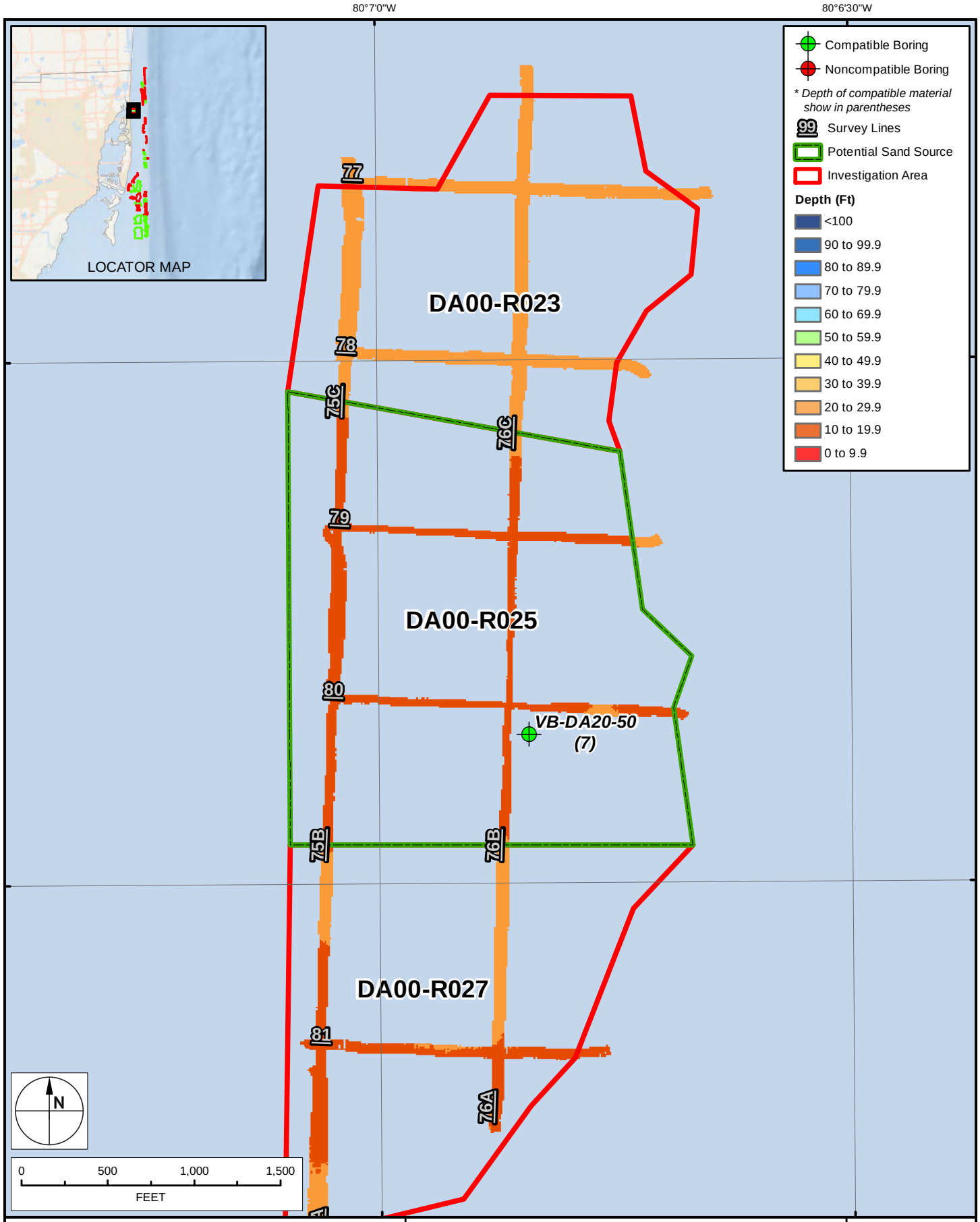
INVESTIGATION AREA DA00-R023
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA00-R025
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

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DATE: APRIL 2021

TAYLOR ENGINEERING INC.
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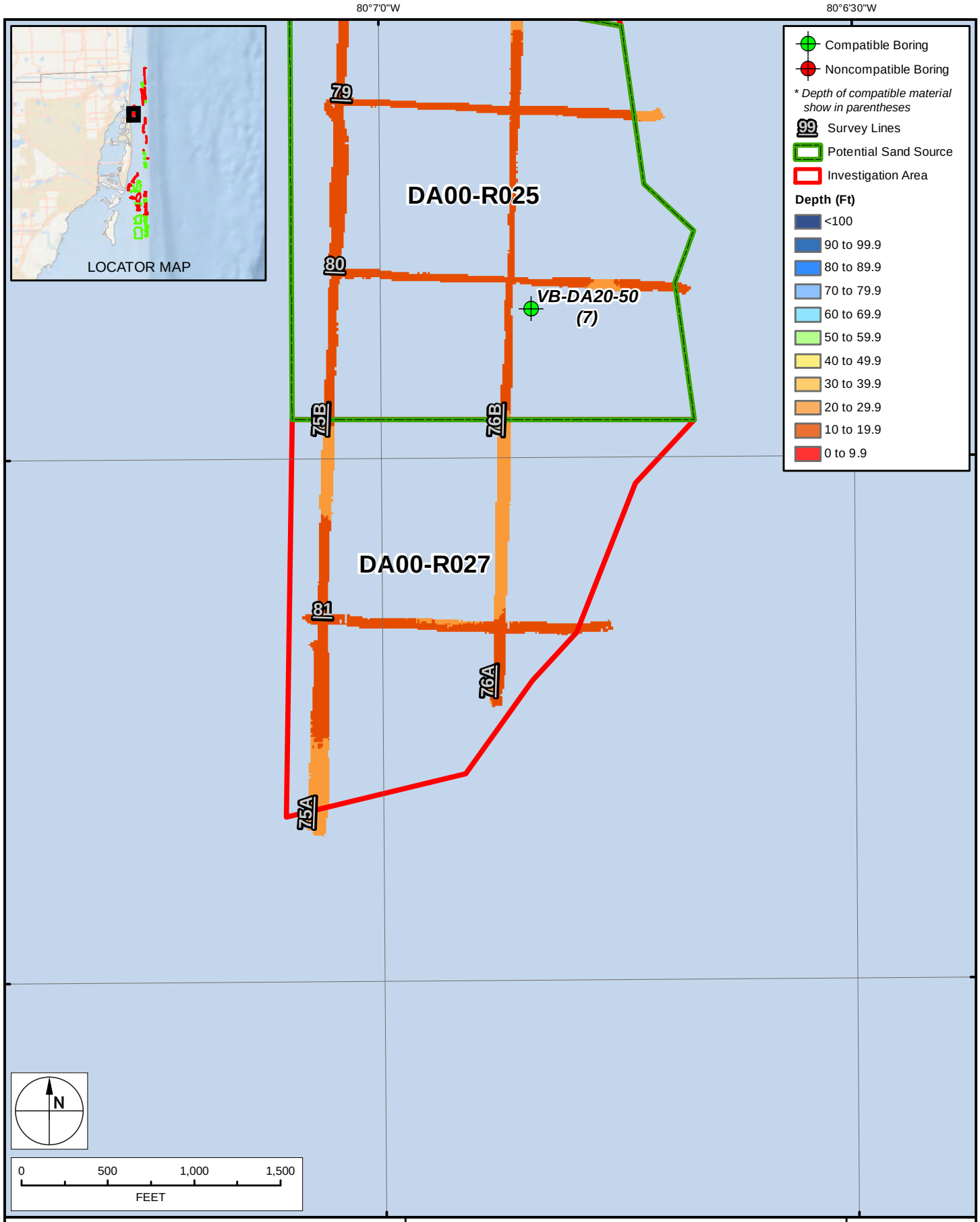
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA00-R025
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02
DRAWN BY: PL
SHEET:
DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
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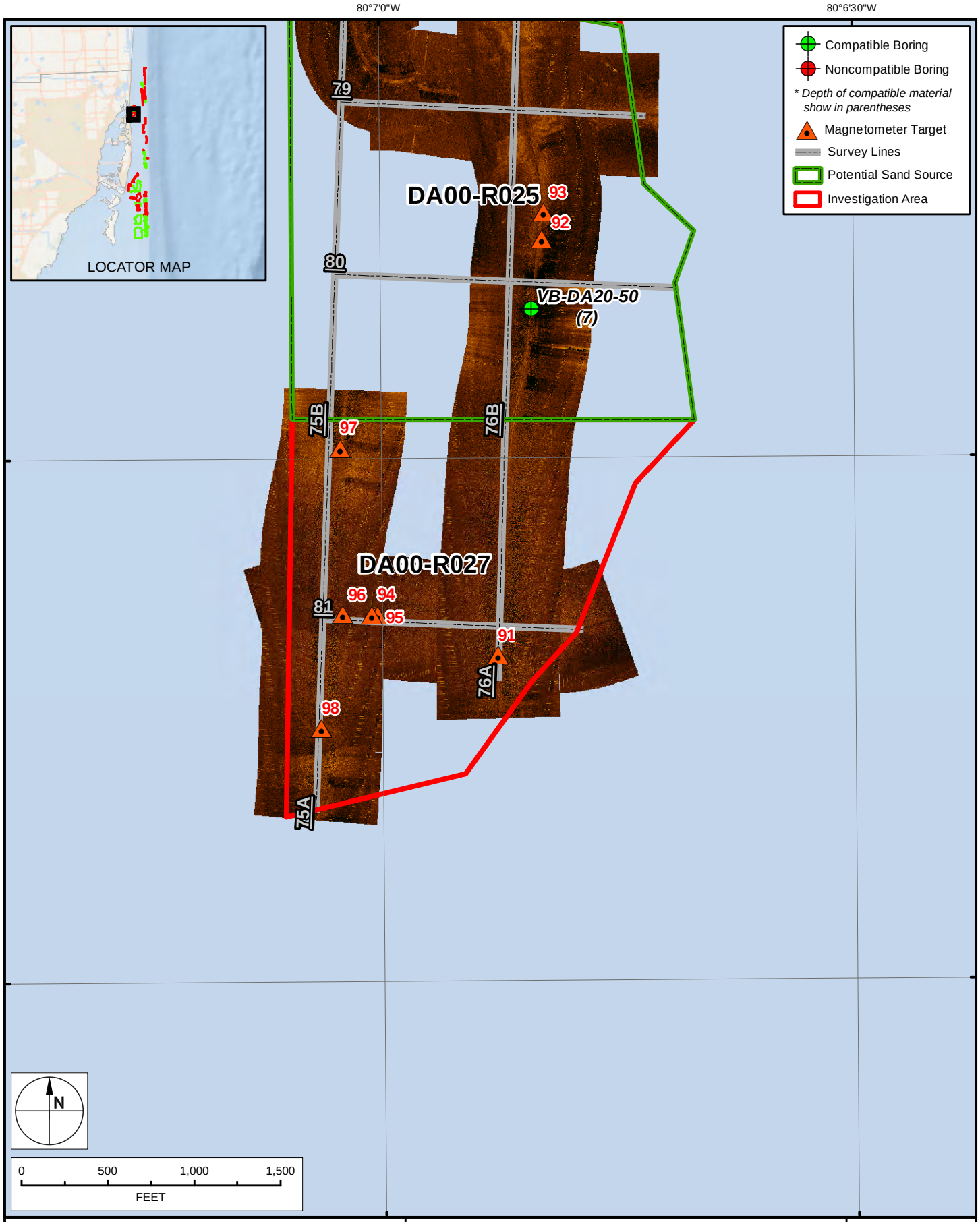
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA00-R027
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02
DRAWN BY PL
SHEET
DATE APRIL 2021



TAYLOR ENGINEERING INC.
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA00-R027
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

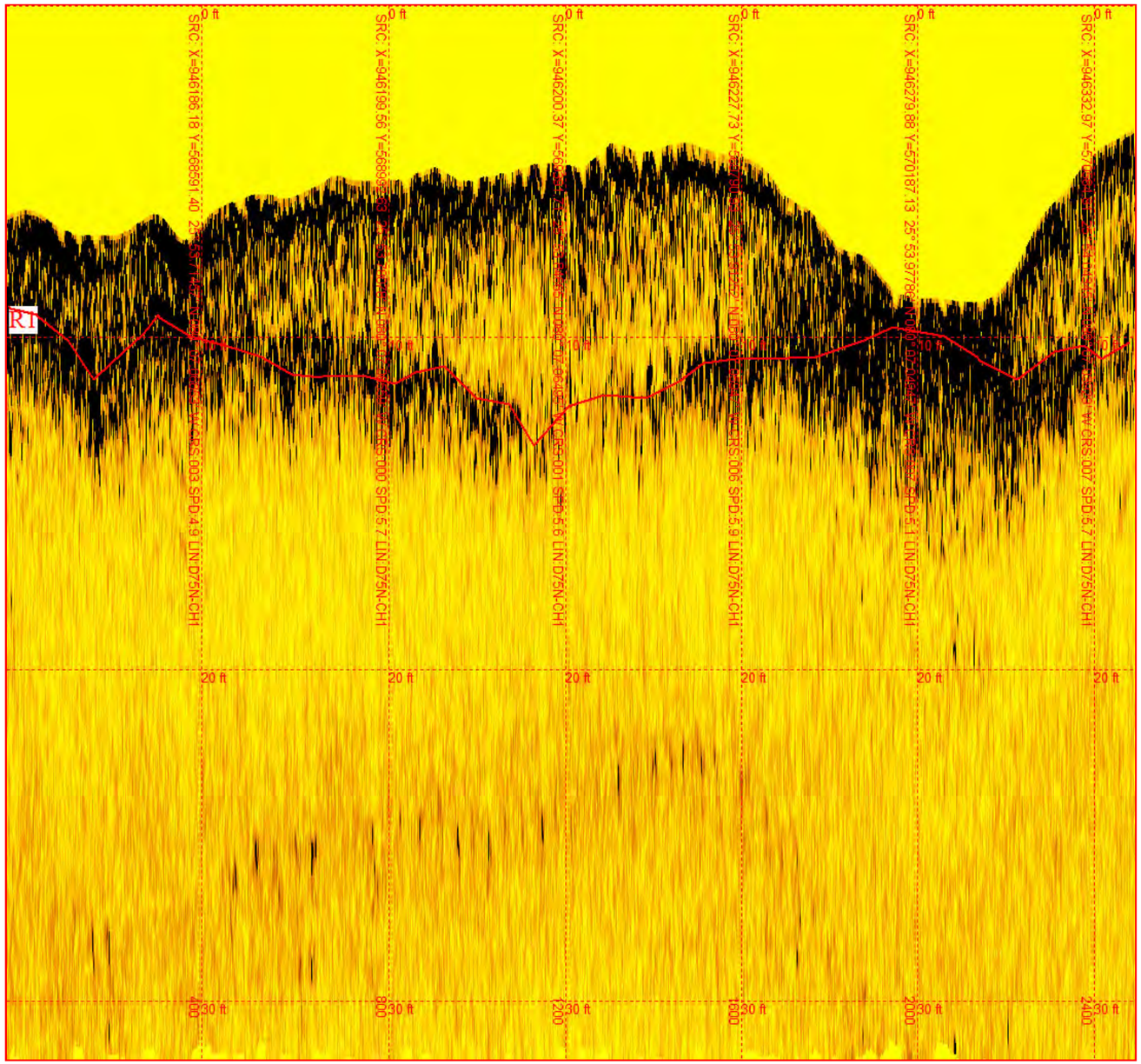
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D75N-CH1

S N



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

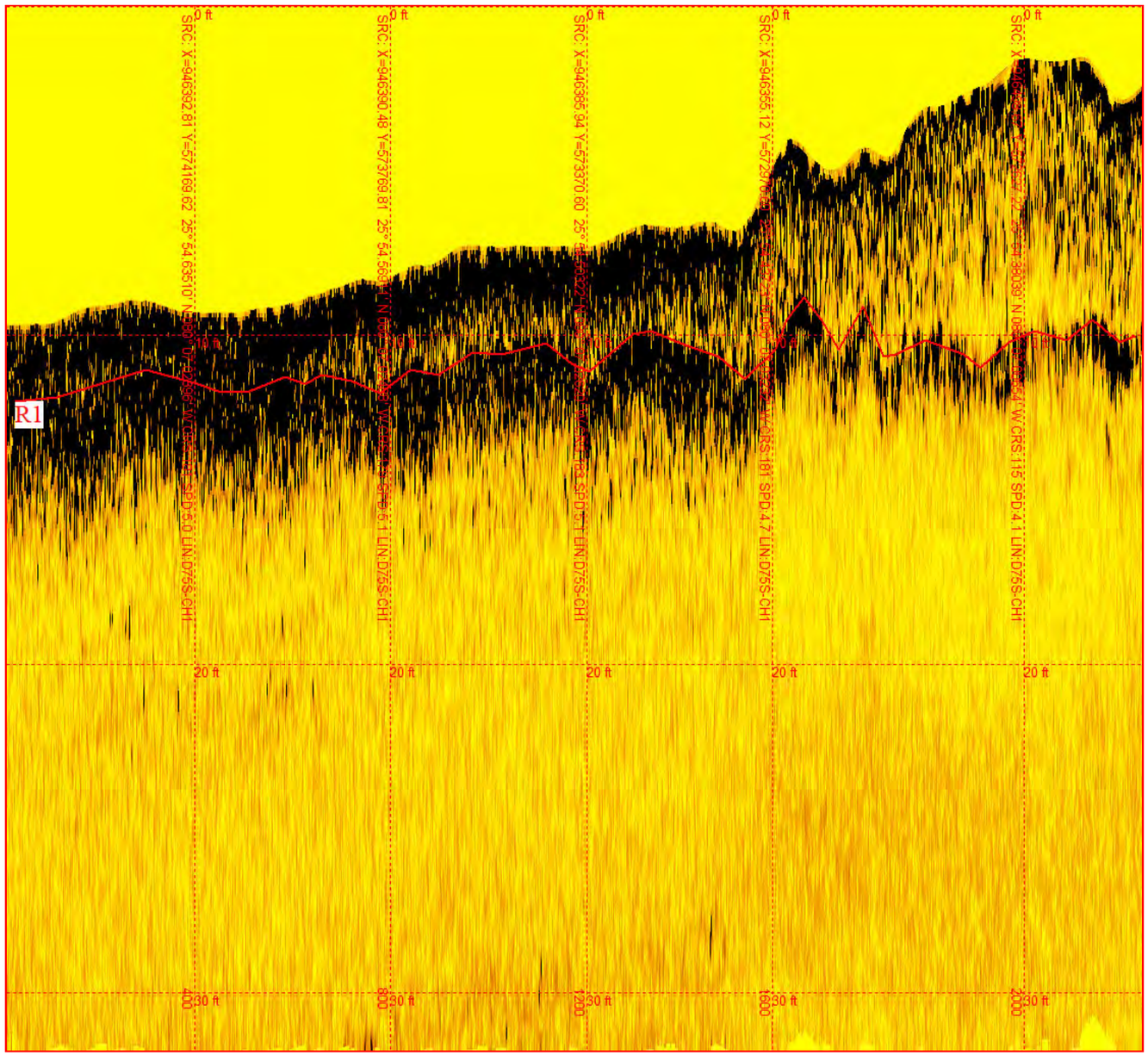
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D75S-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

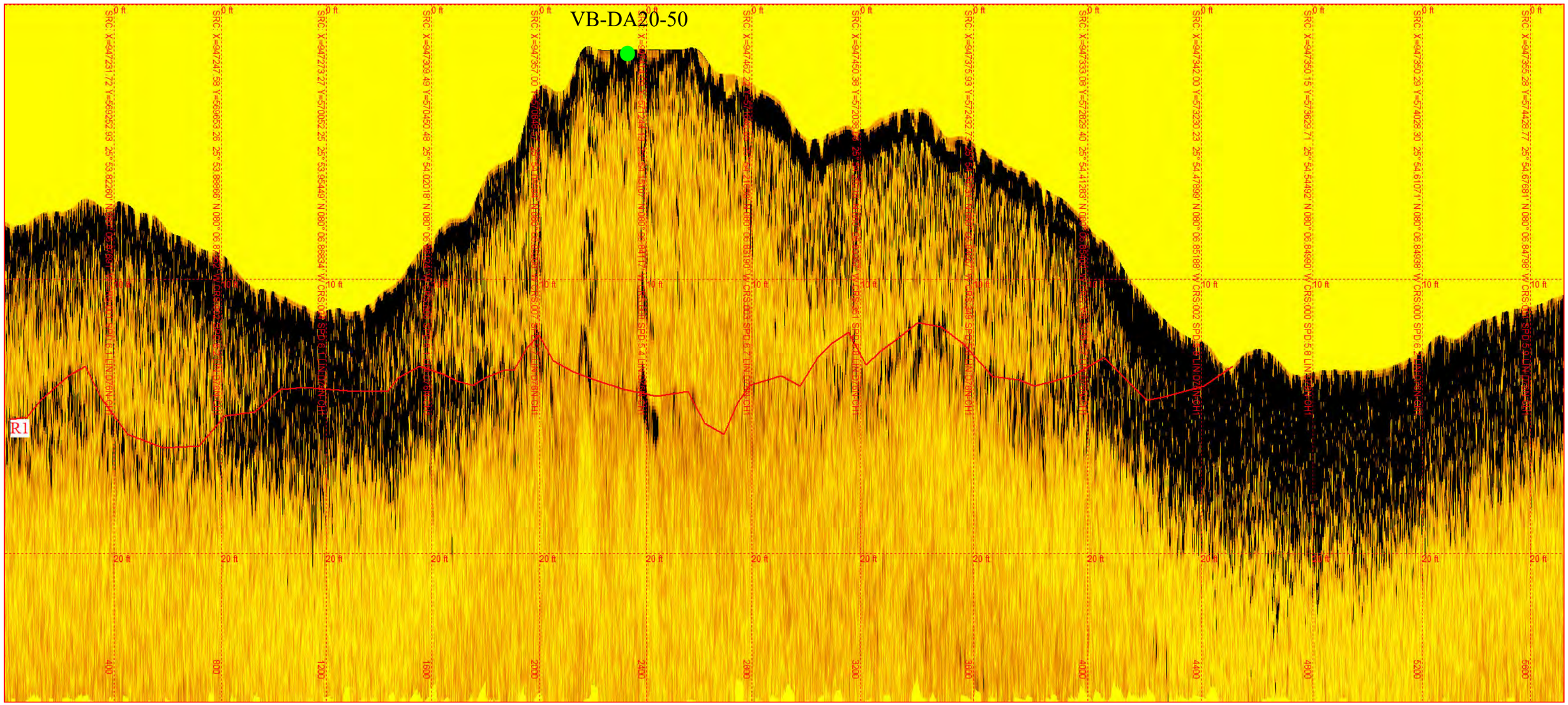
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D76N-CH1

S N



Core No.	Comments
VB-DA20-50	Sub bottom image indicates ~15' of sediment above rock/gravel layer. Core recovered 12.5' of sand/sand with silt underlain by limestone.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

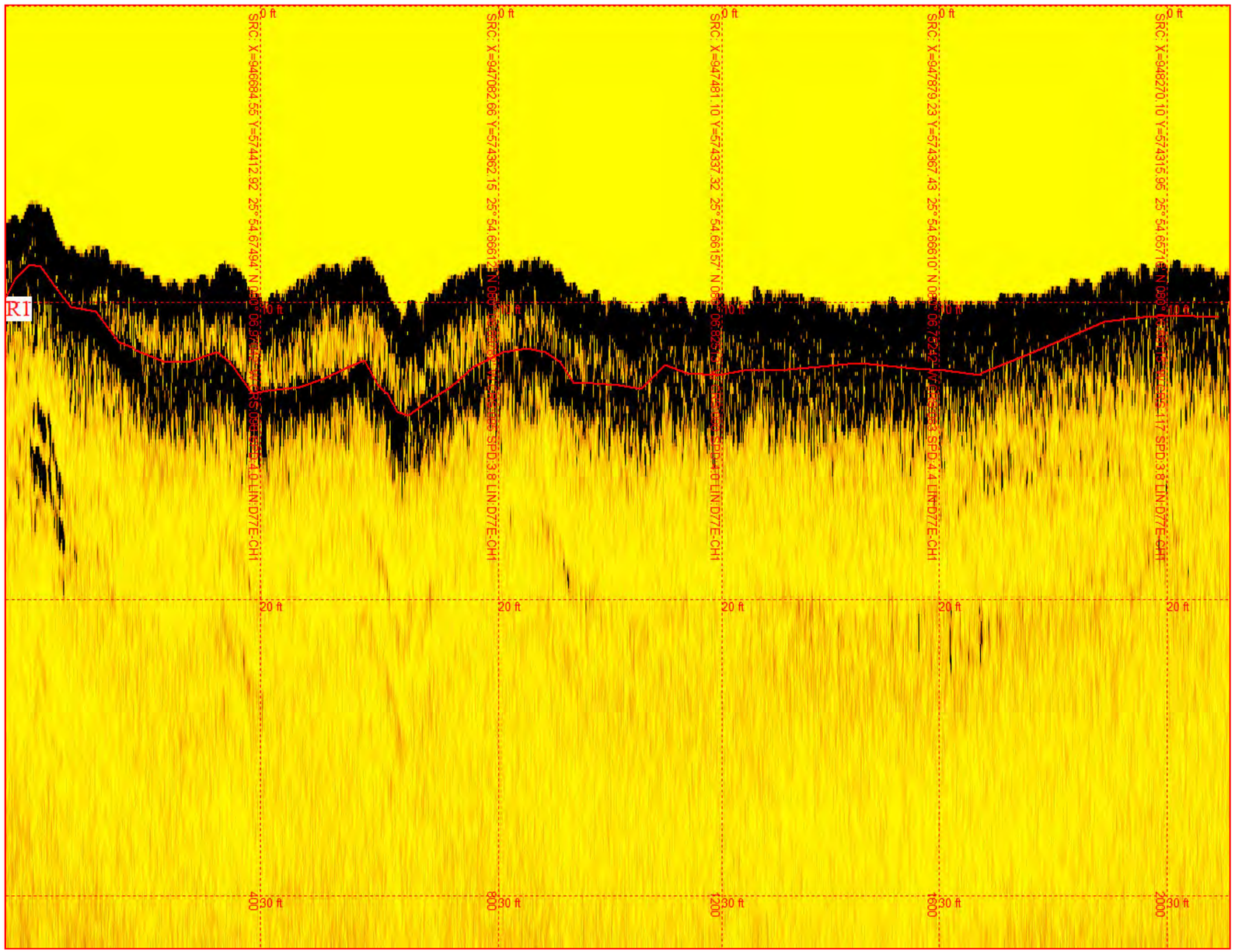
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D77E-CH1

W E



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

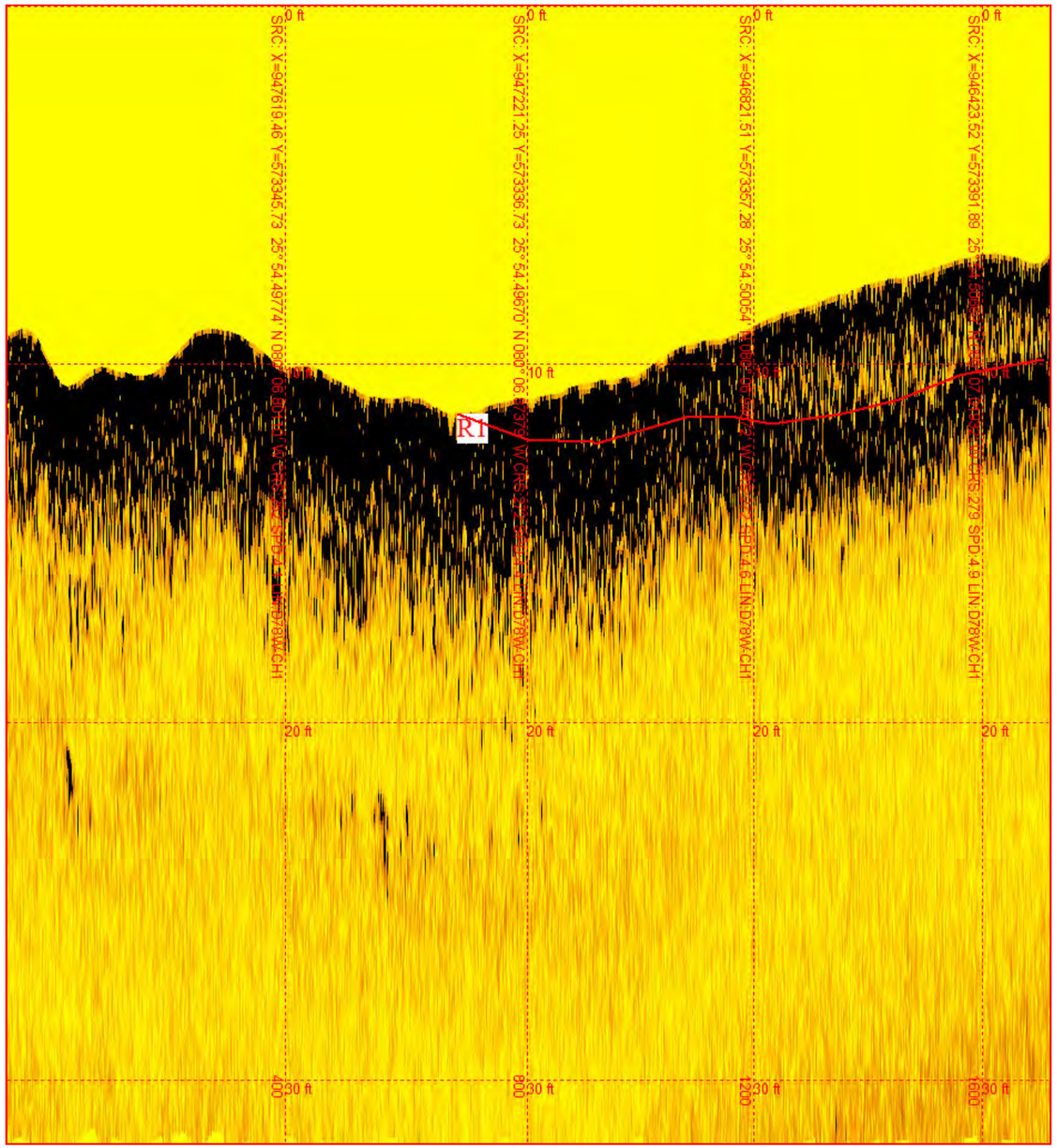
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D78W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

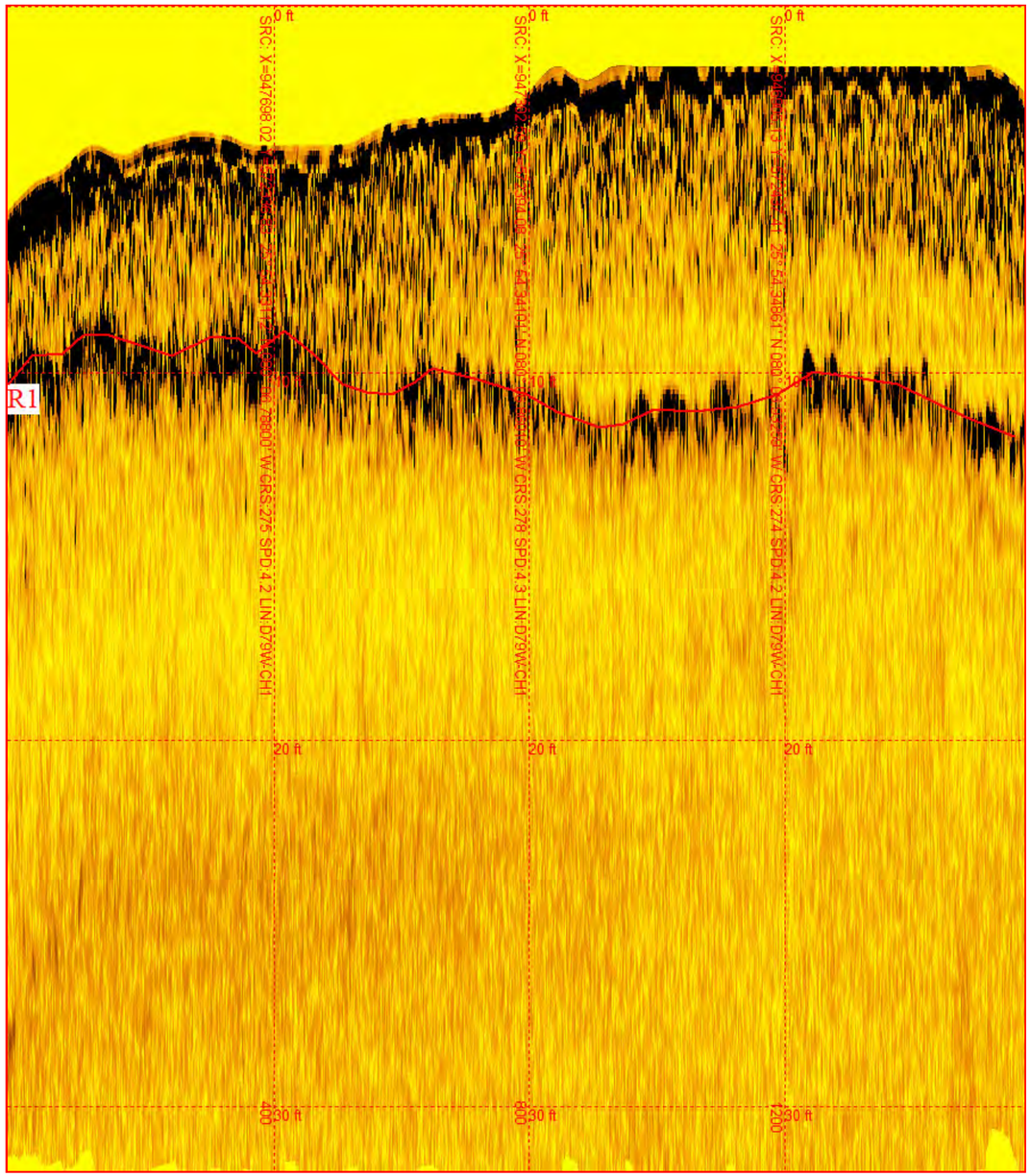
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D79W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

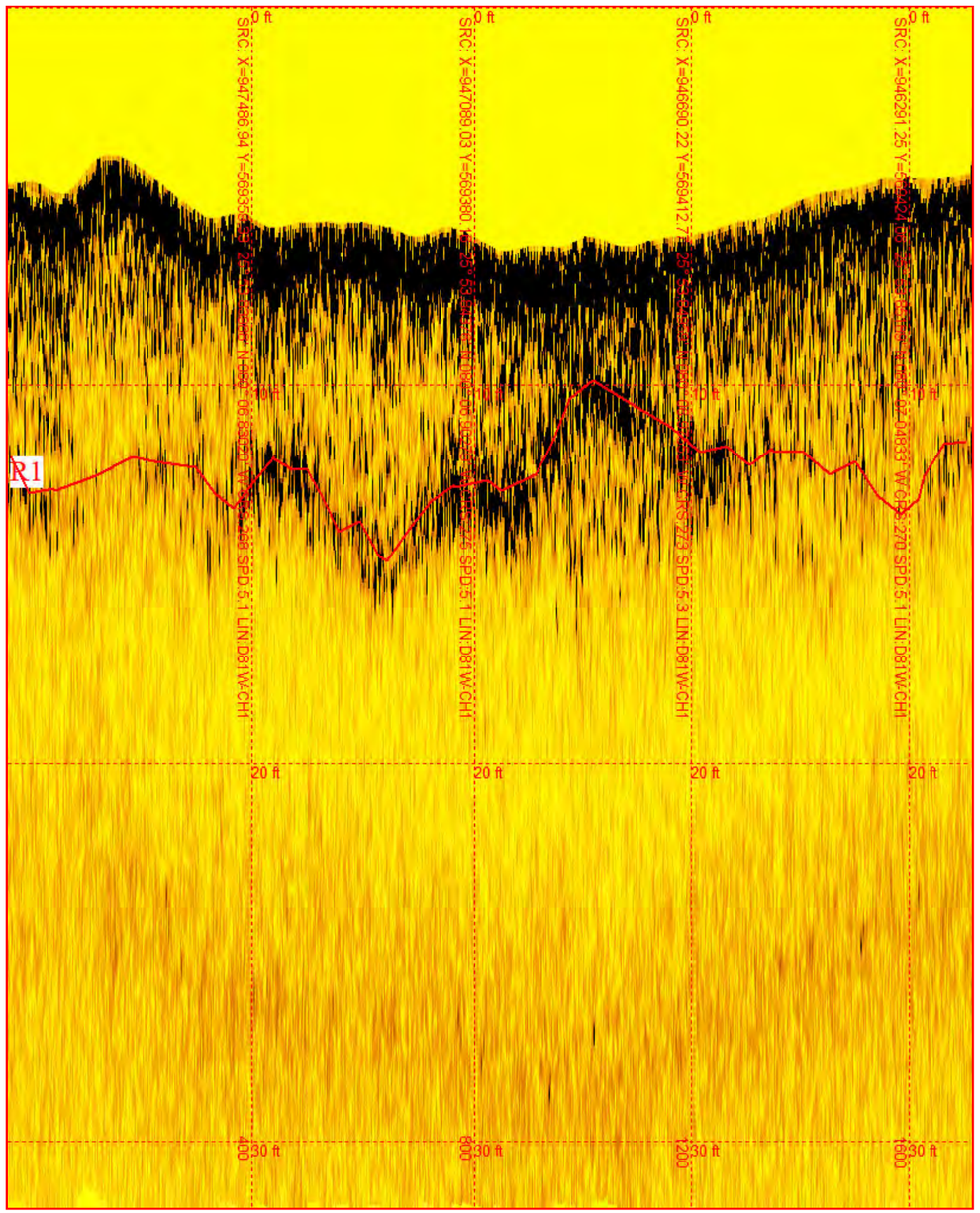
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D81W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

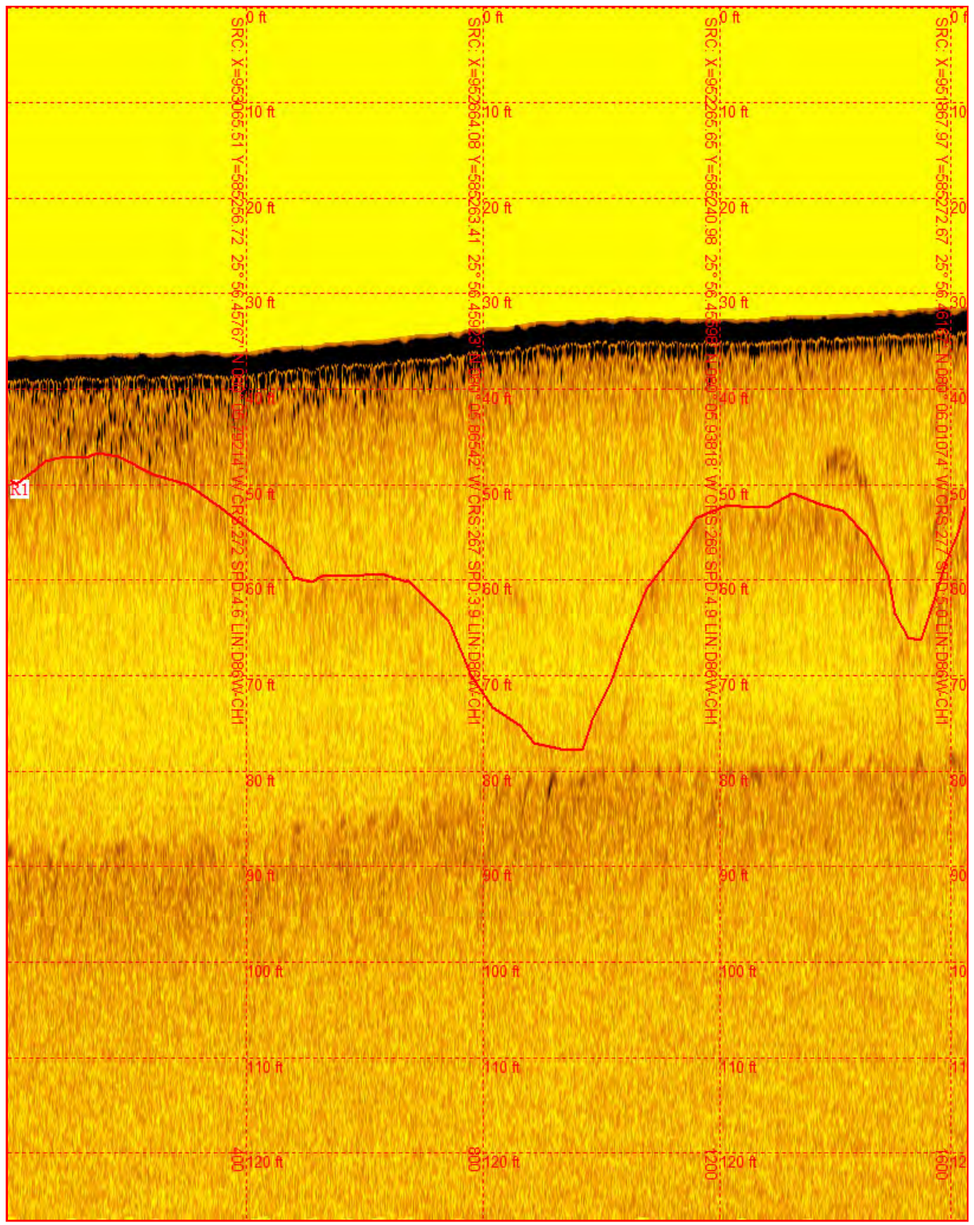
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D86W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

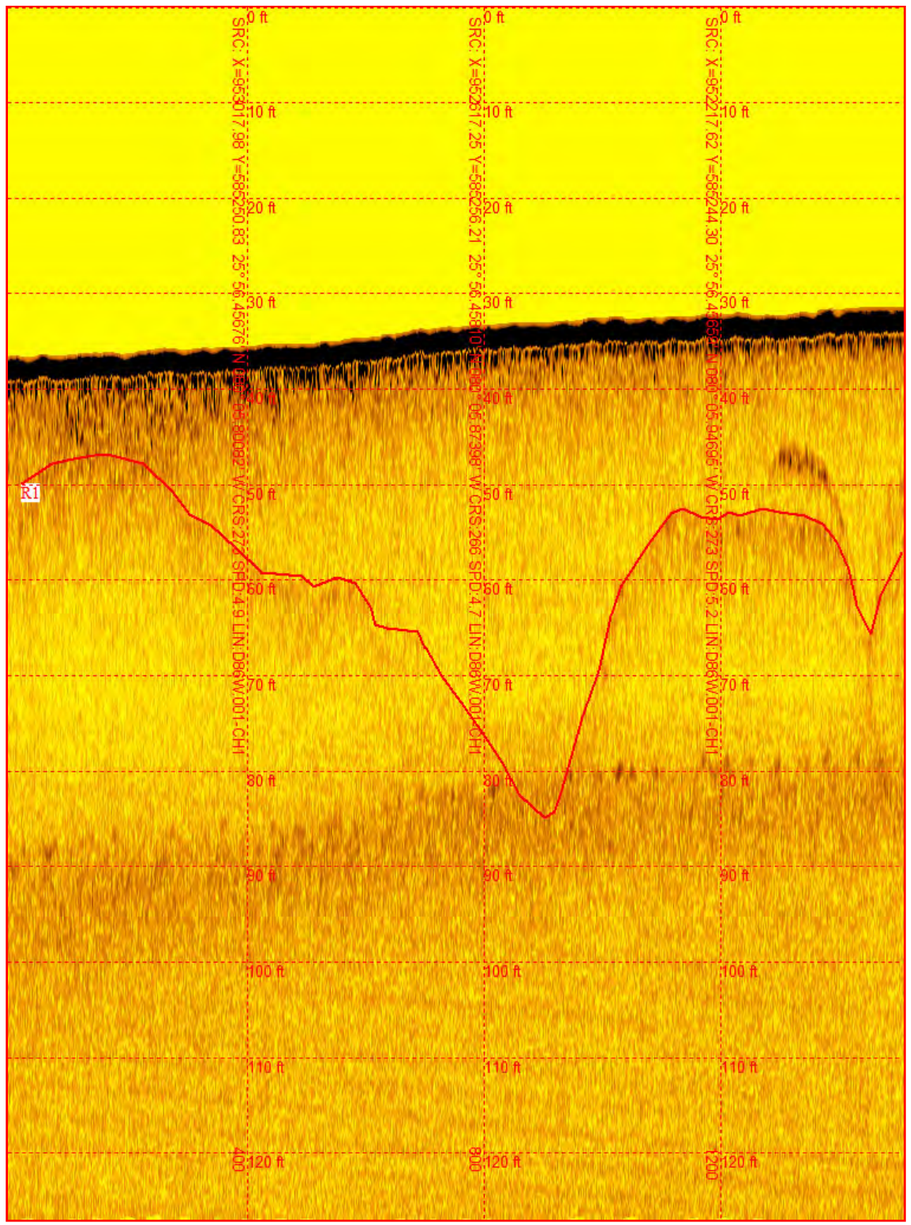
Company Logo

Sonographics, Inc.

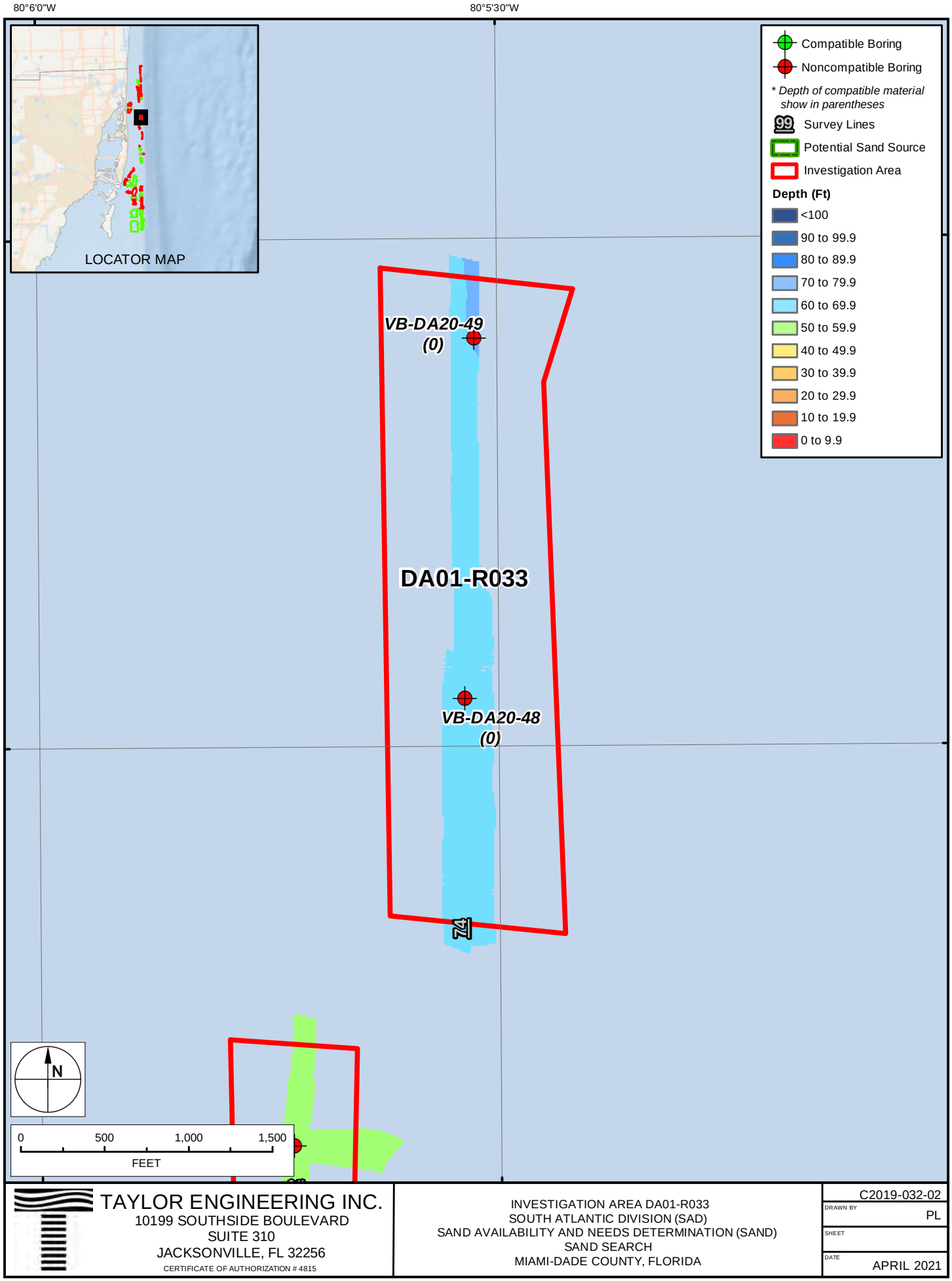
SAD SAND

Waterfall D86W.001-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

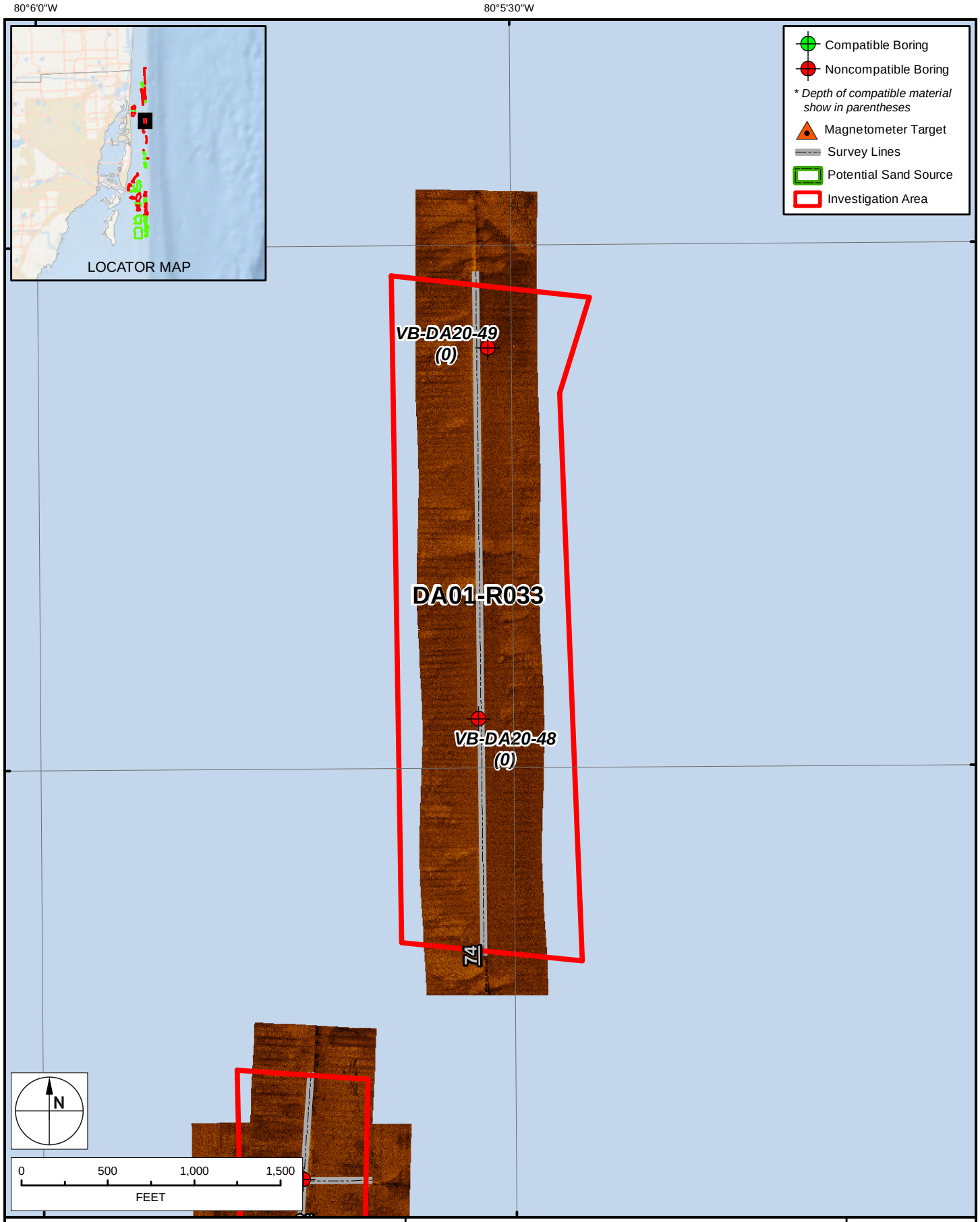
INVESTIGATION AREA DA01-R033
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R033
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

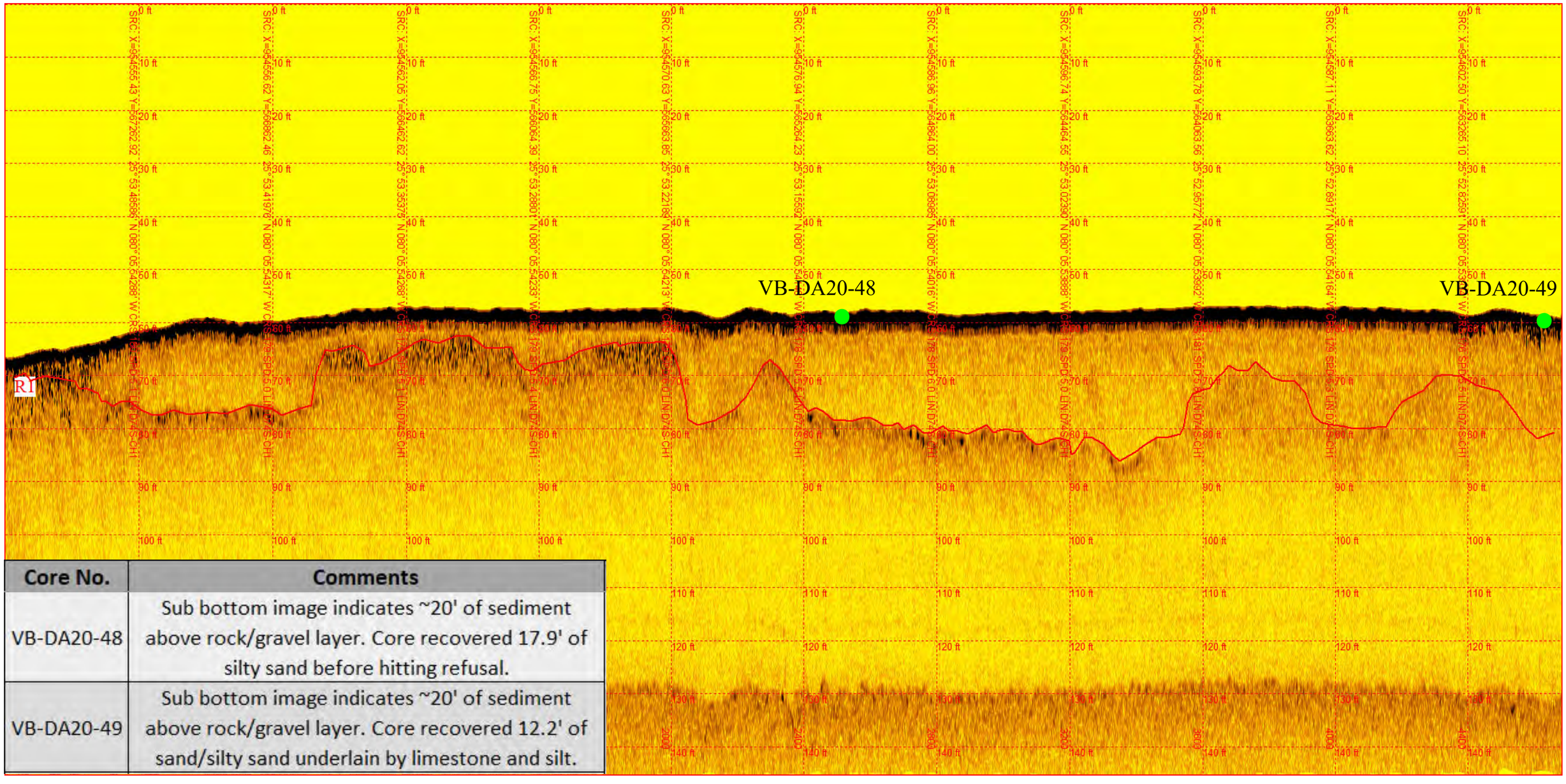
Company Logo

Sonographics, Inc.

SAD SAND

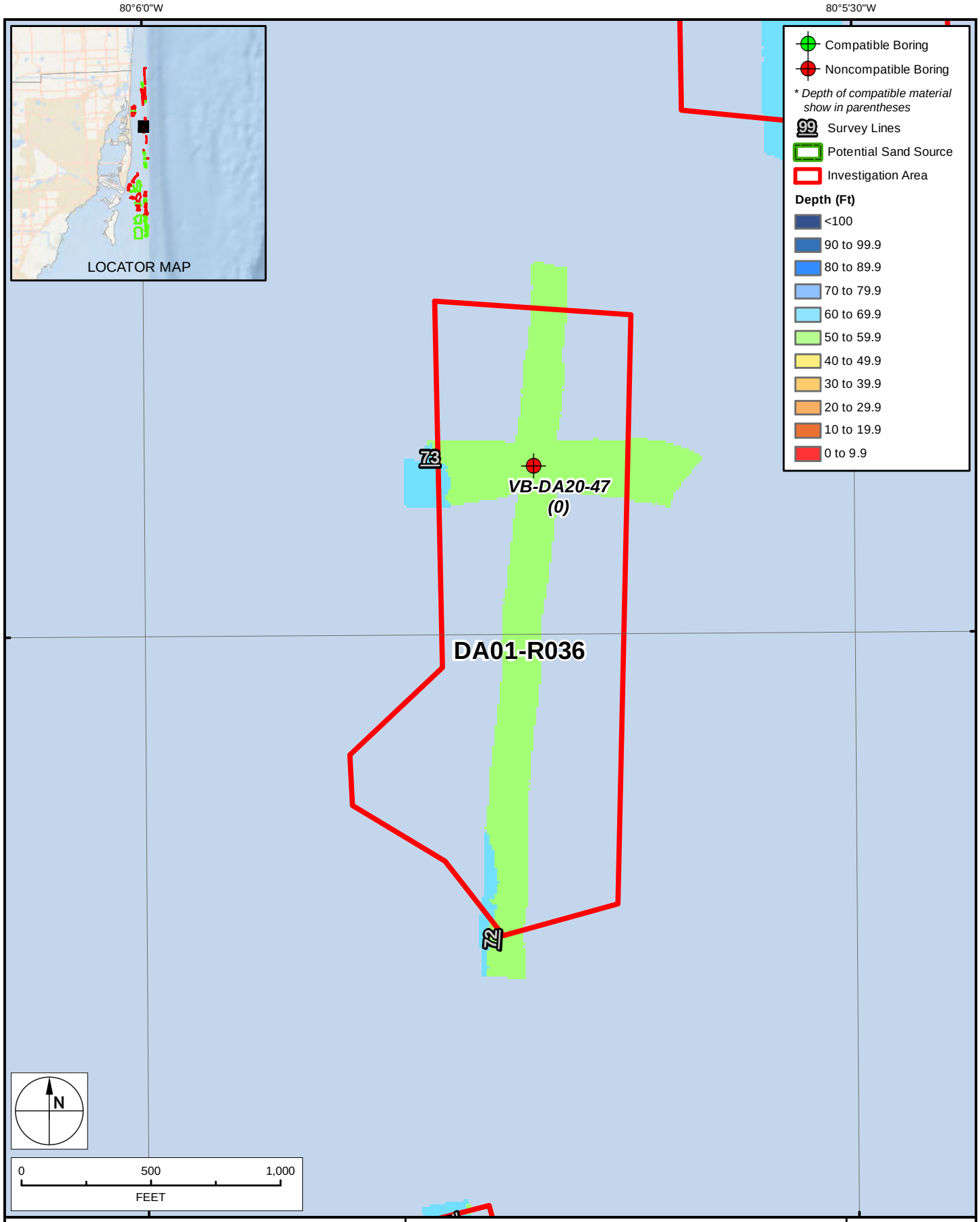
Waterfall D74S-CH1

N S



Core No.	Comments
VB-DA20-48	Sub bottom image indicates ~20' of sediment above rock/gravel layer. Core recovered 17.9' of silty sand before hitting refusal.
VB-DA20-49	Sub bottom image indicates ~20' of sediment above rock/gravel layer. Core recovered 12.2' of sand/silty sand underlain by limestone and silt.

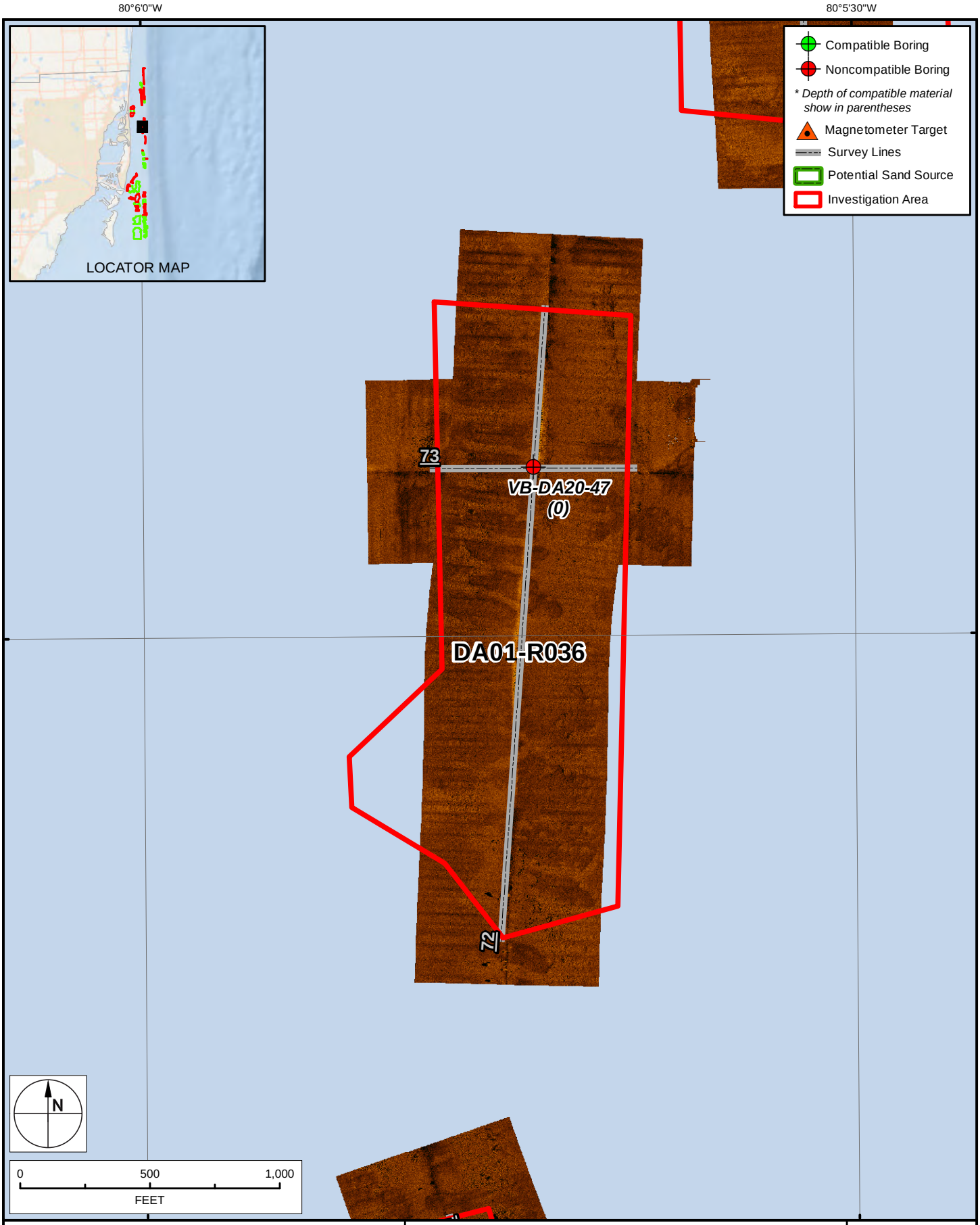
Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R036
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02
DRAWN BY PL
SHEET
DATE APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R036
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

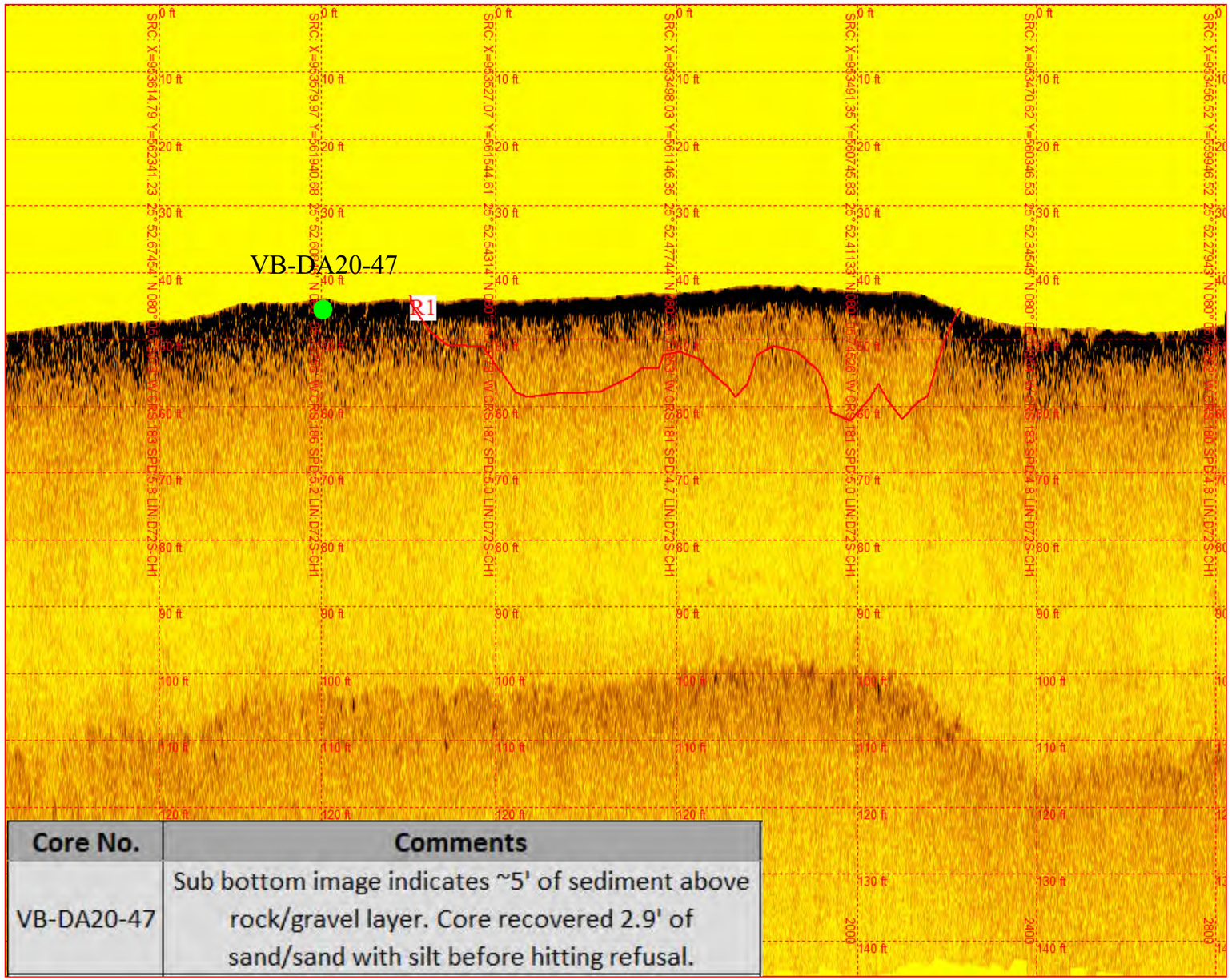
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D72S-CH1

N S



Core No.	Comments
VB-DA20-47	Sub bottom image indicates ~5' of sediment above rock/gravel layer. Core recovered 2.9' of sand/sand with silt before hitting refusal.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

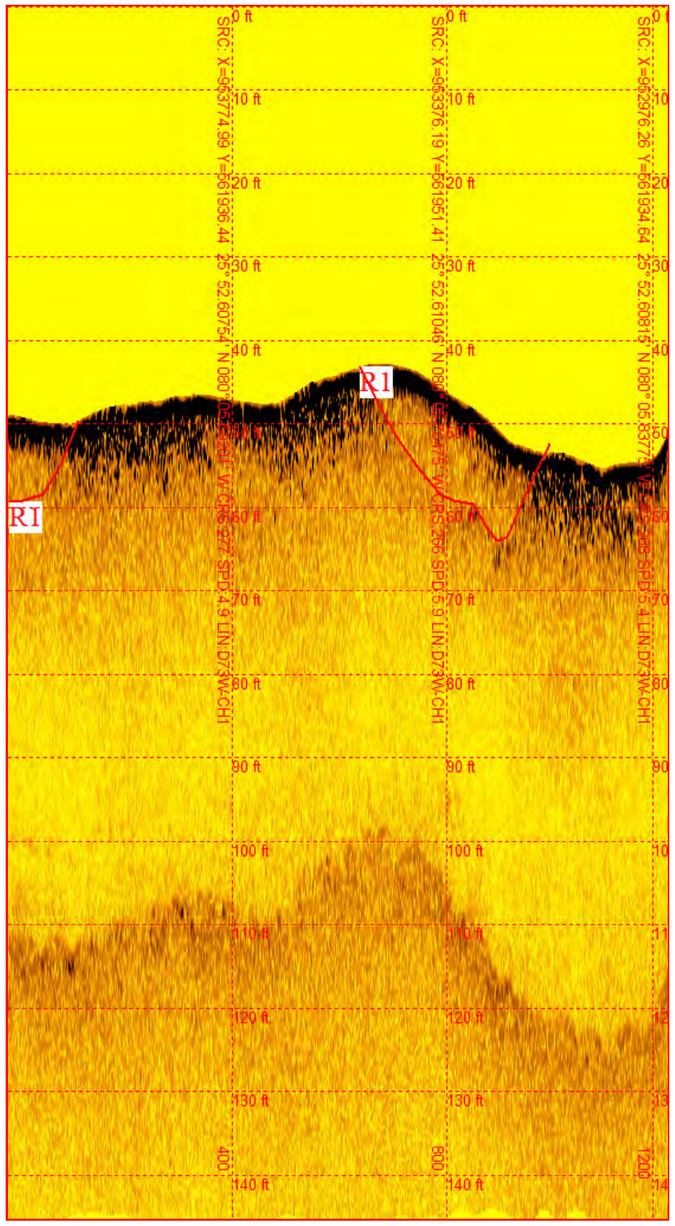
Company Logo

Sonographics, Inc.

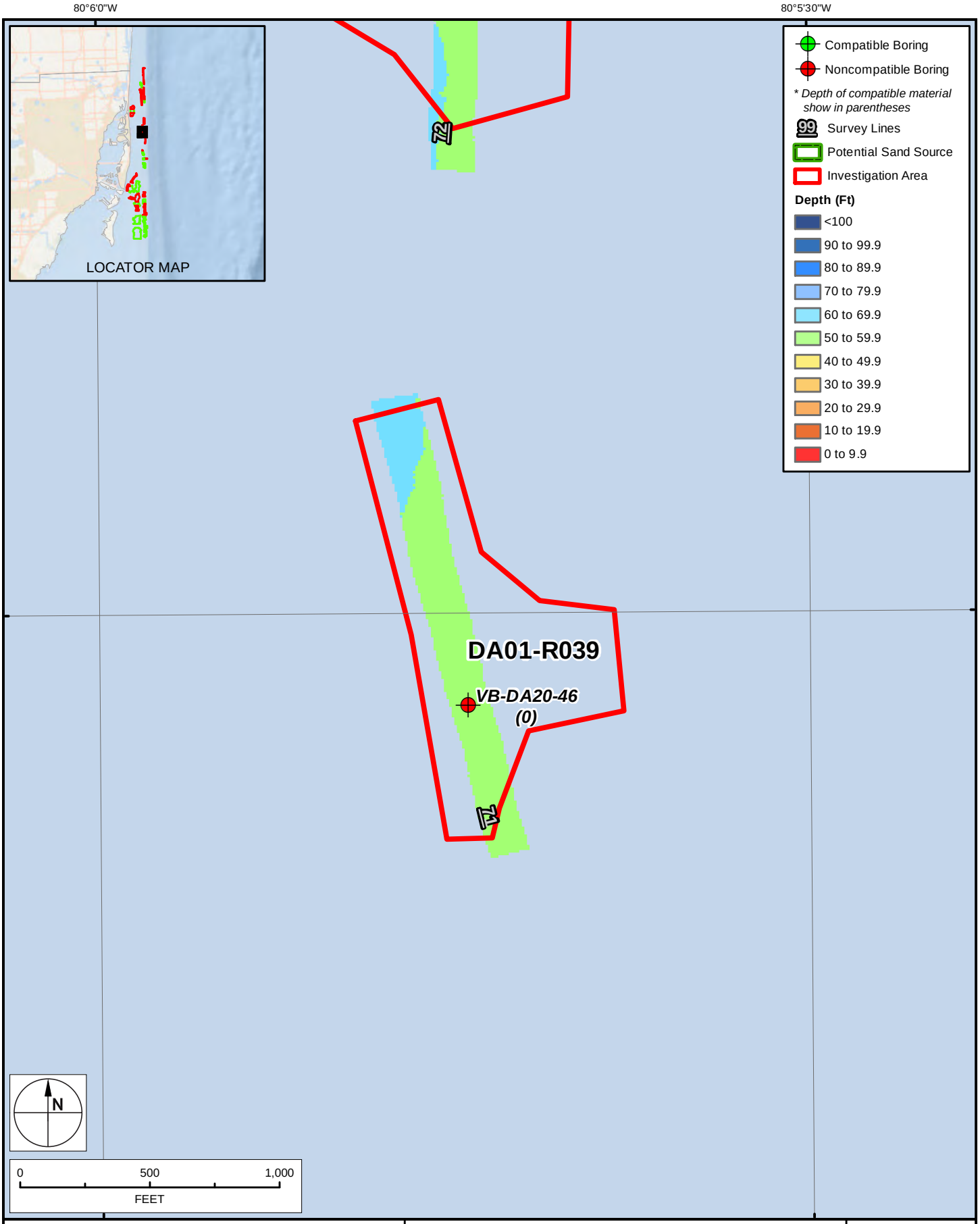
SAD SAND

Waterfall D73W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

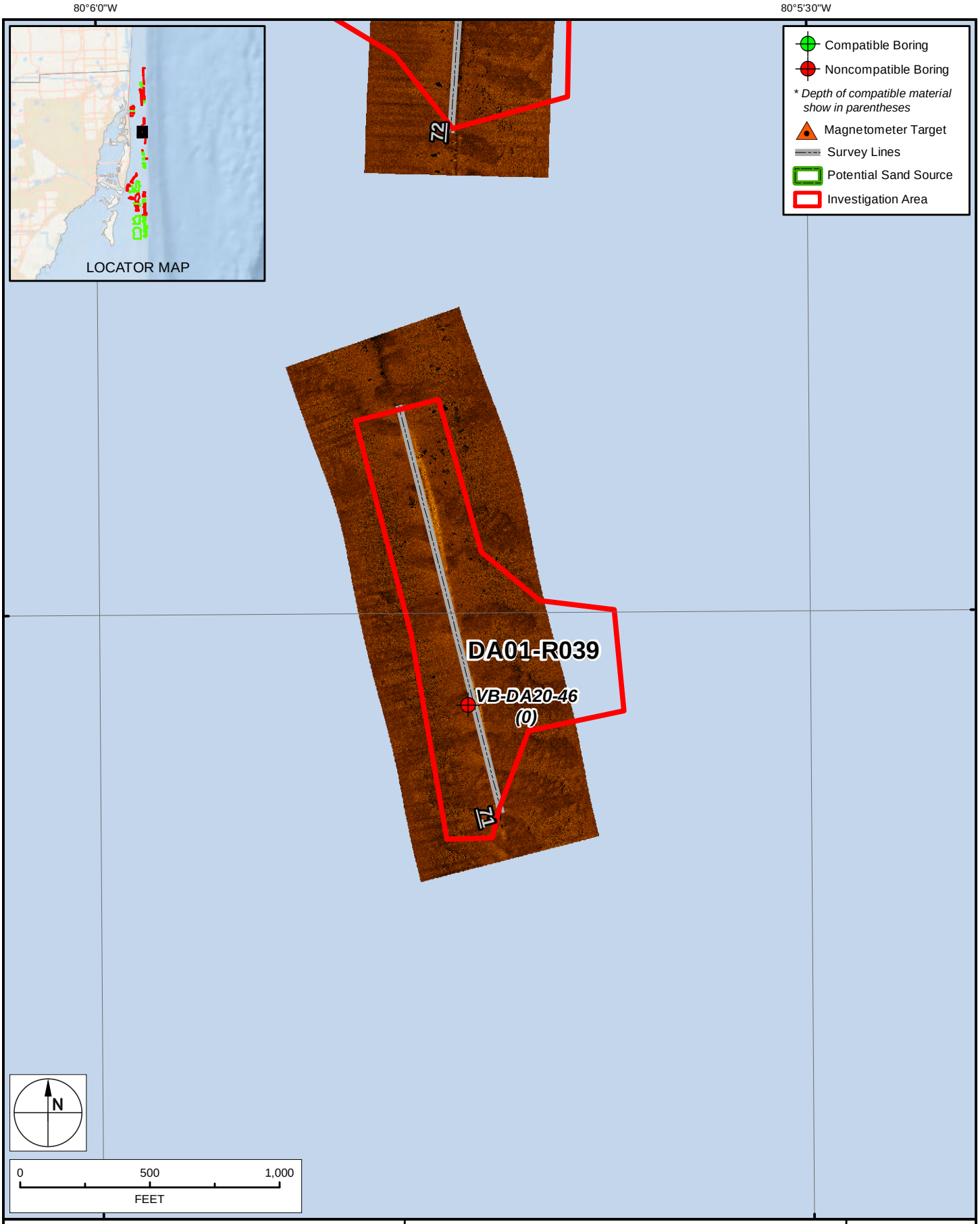
INVESTIGATION AREA DA01-R039
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R039
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

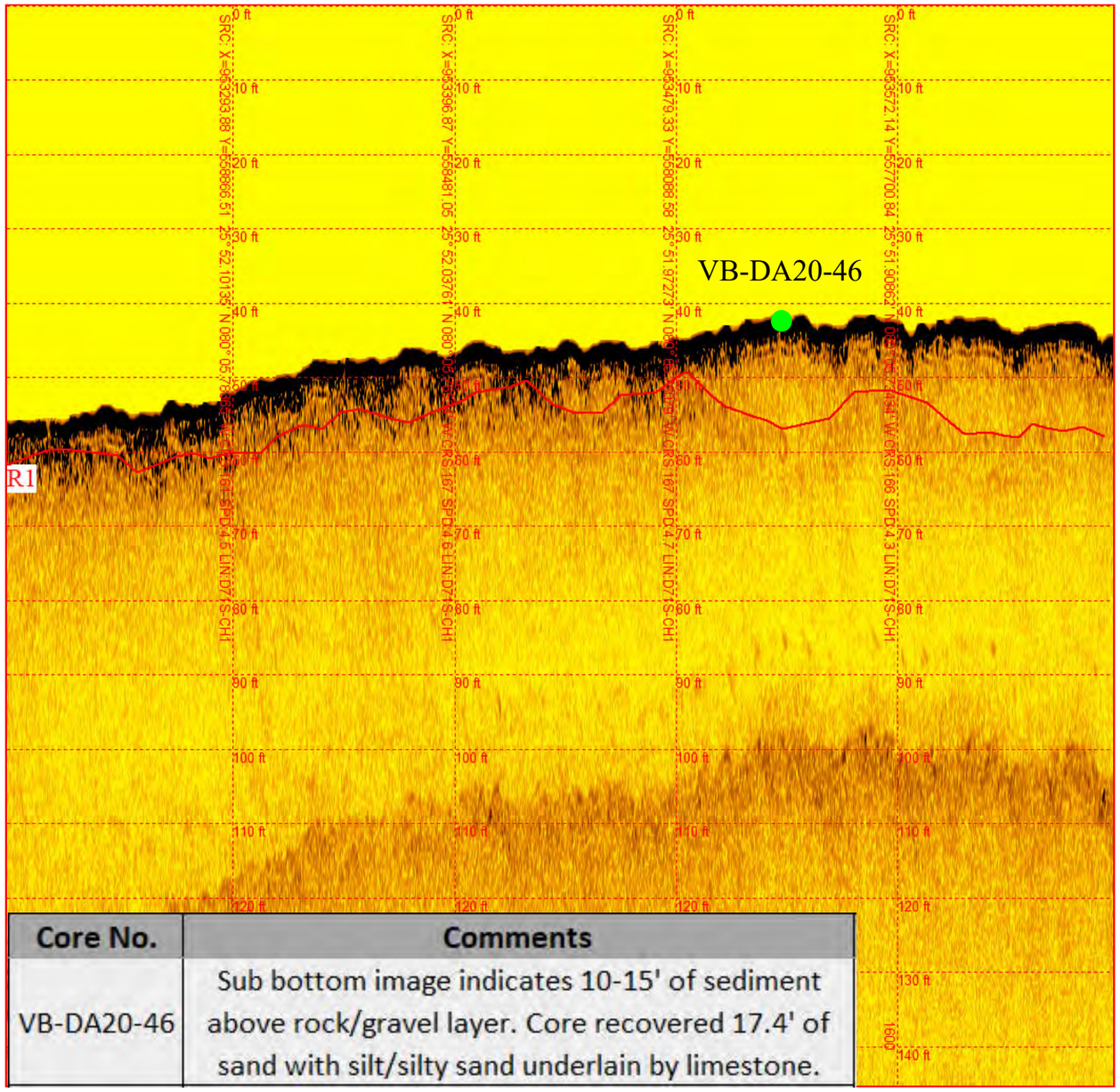
Company Logo

Sonographics, Inc.

SAD SAND

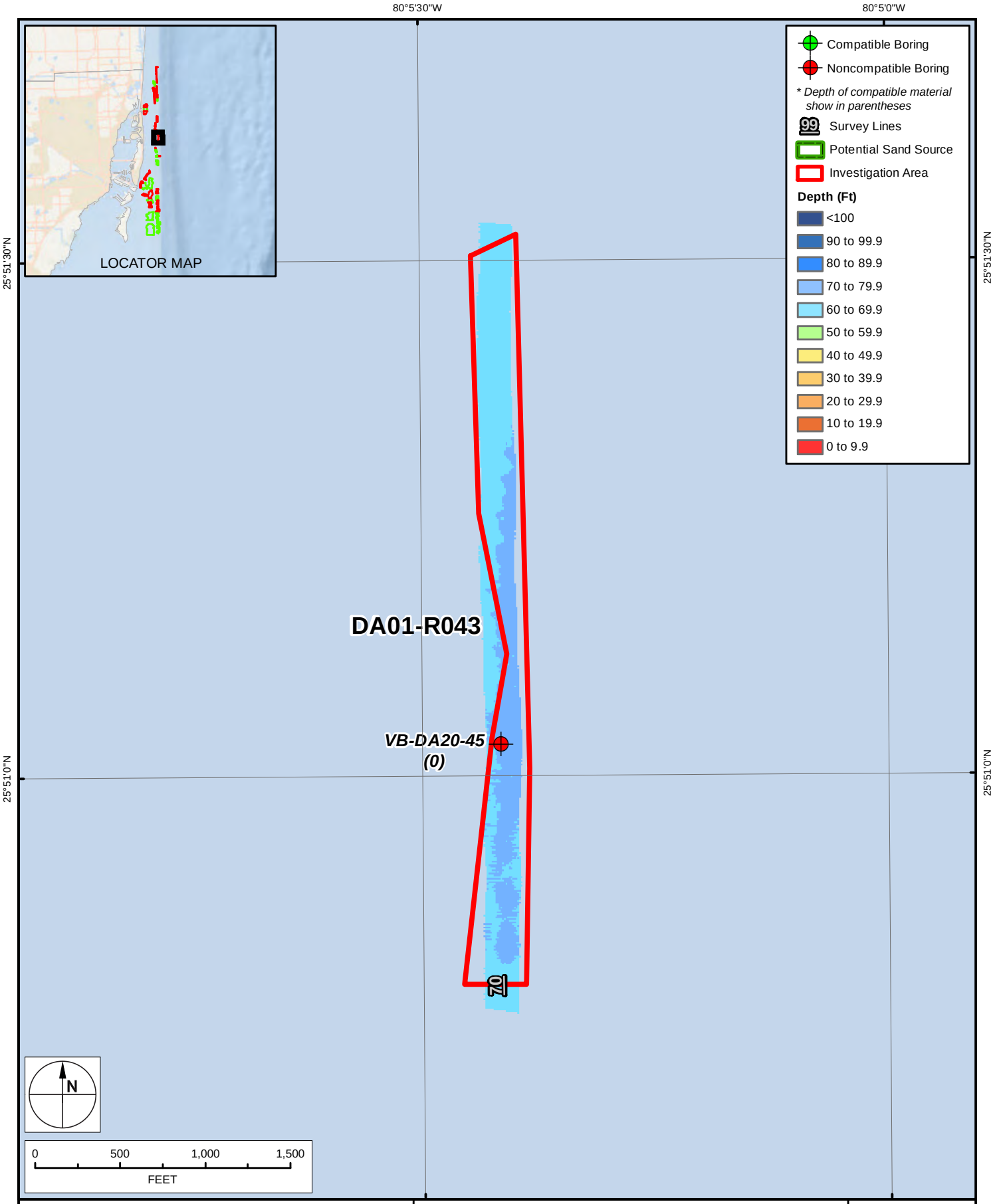
Waterfall D71S-CH1

N S



Core No.	Comments
VB-DA20-46	Sub bottom image indicates 10-15' of sediment above rock/gravel layer. Core recovered 17.4' of sand with silt/silty sand underlain by limestone.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R043
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R043
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

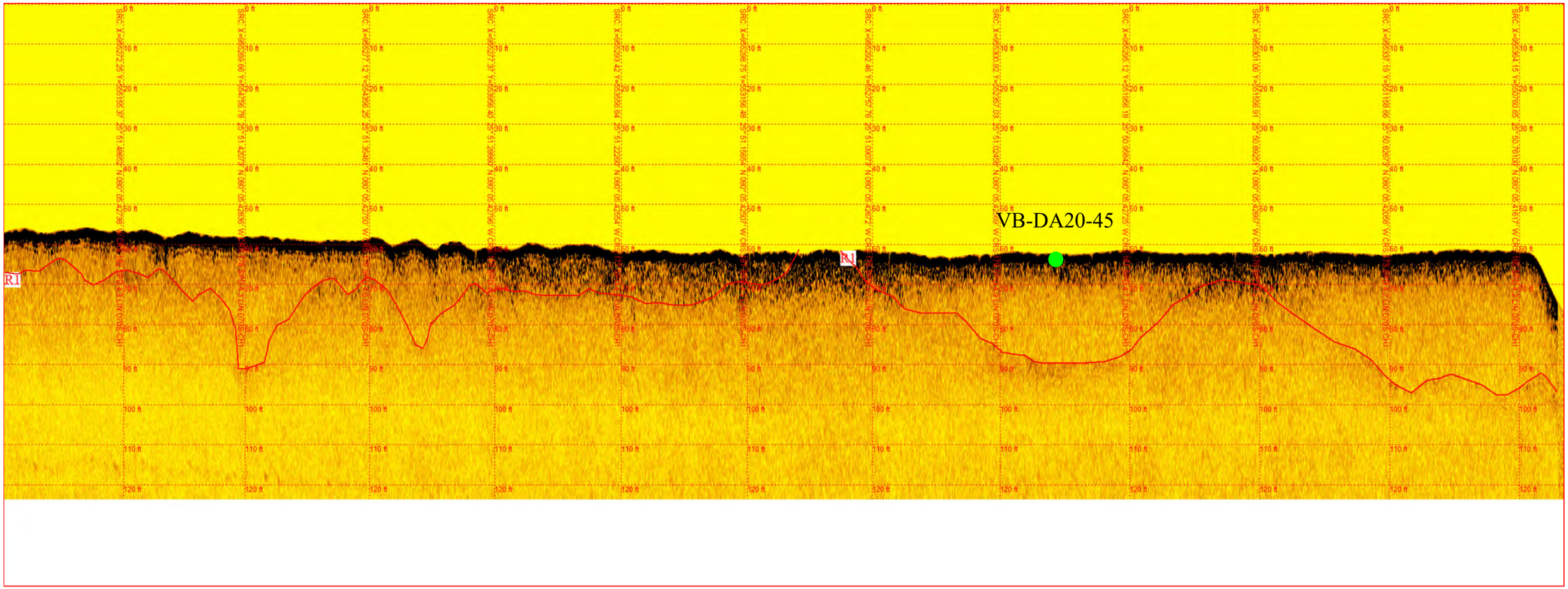
Company Logo

Sonographics, Inc.

SAD SAND

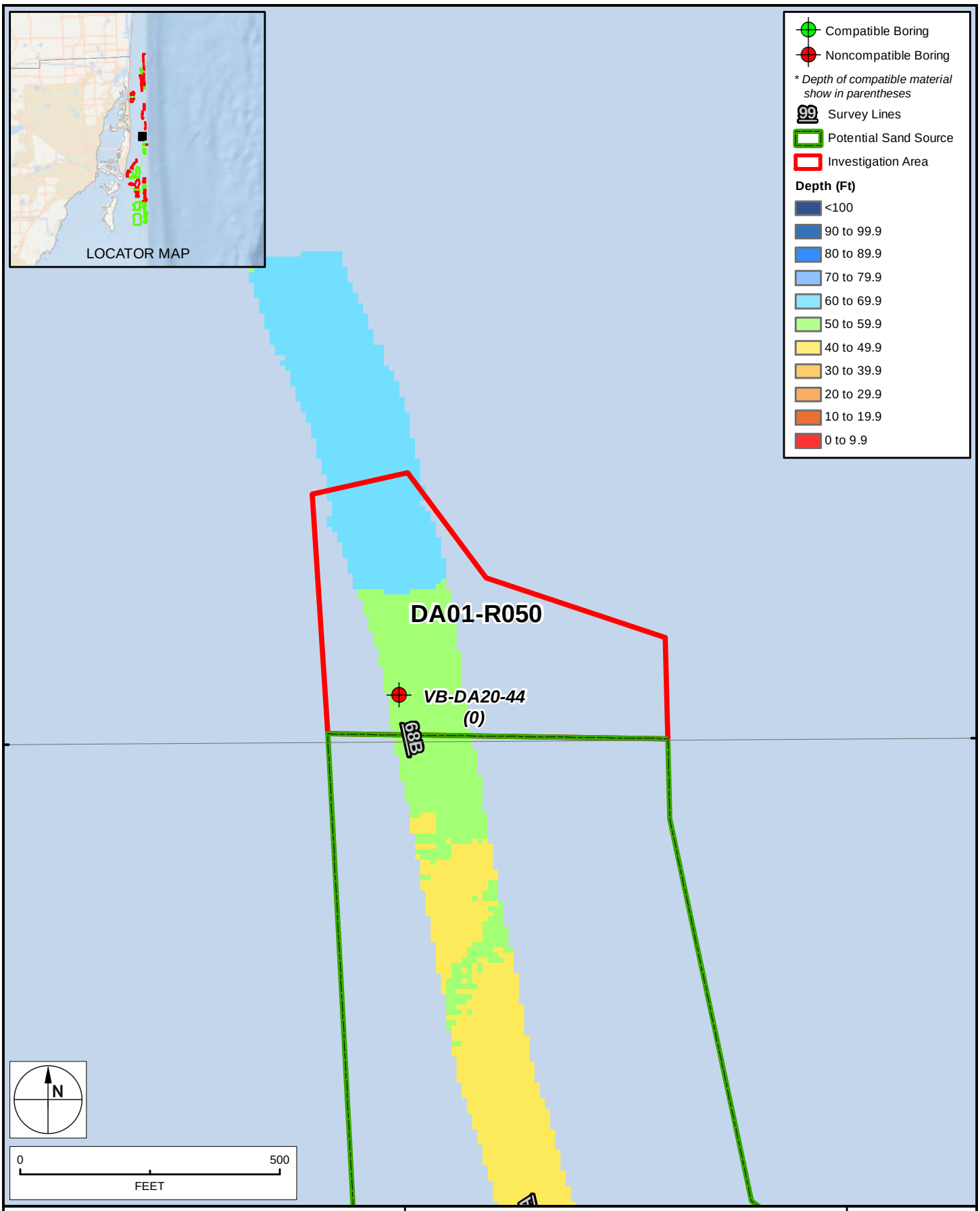
Waterfall D70S-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

Core No.	Comments
VB-DA20-45	Sub bottom image indicates ~25' of sediment above rock/gravel layer. Core recovered 19.2' of silty sand before hitting refusal.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R050
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

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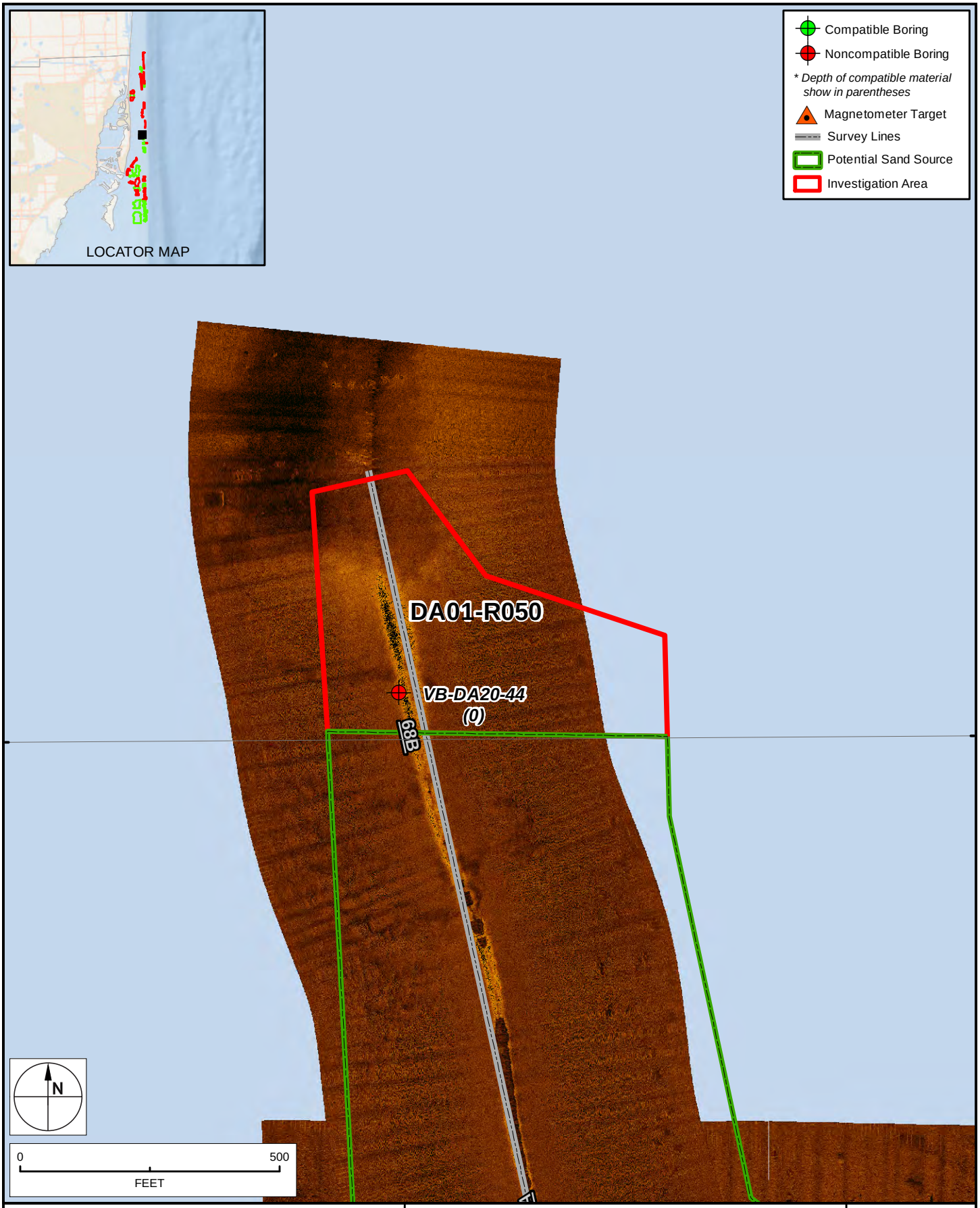
DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

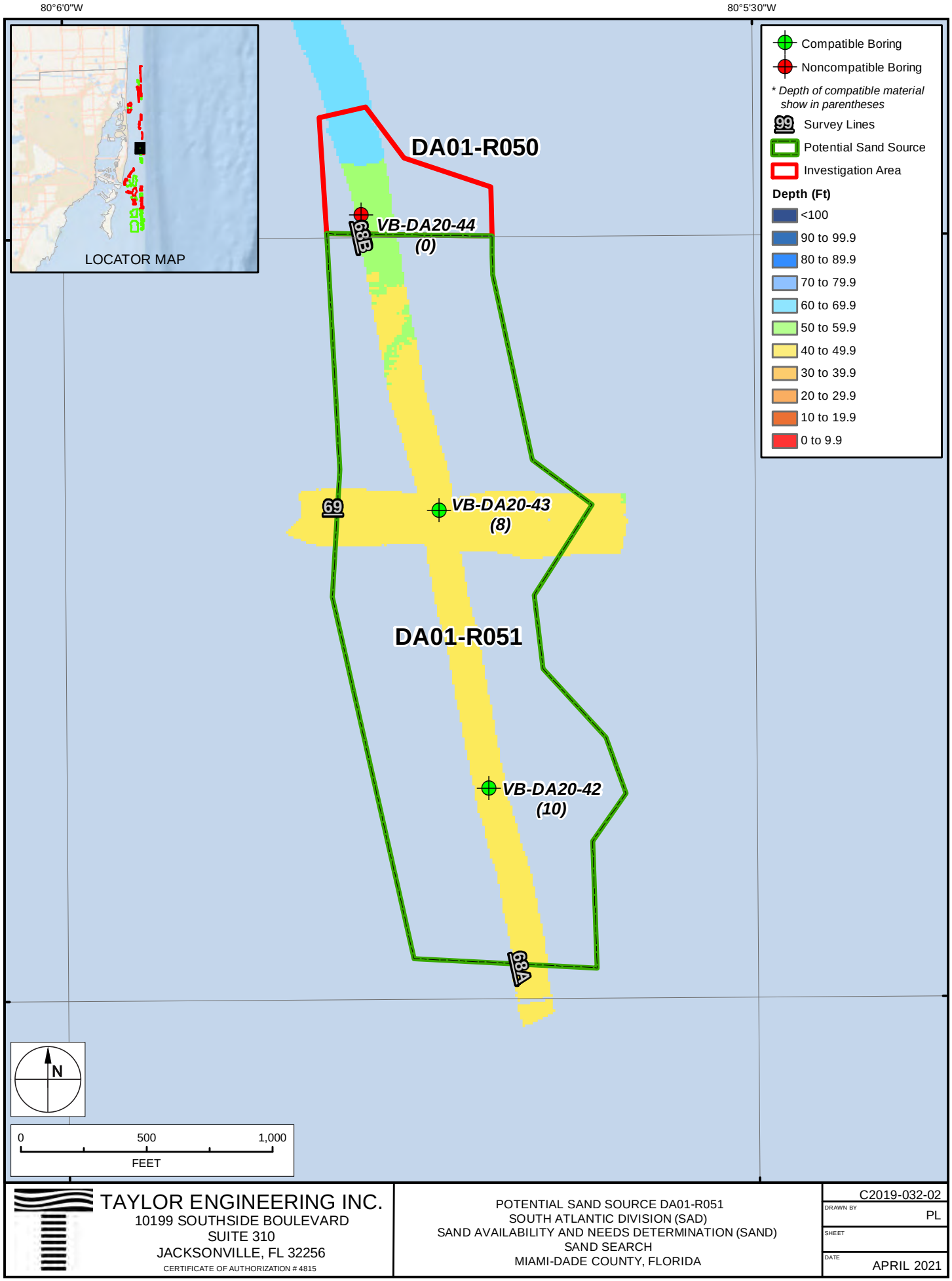
INVESTIGATION AREA DA01-R050
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA01-R051
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

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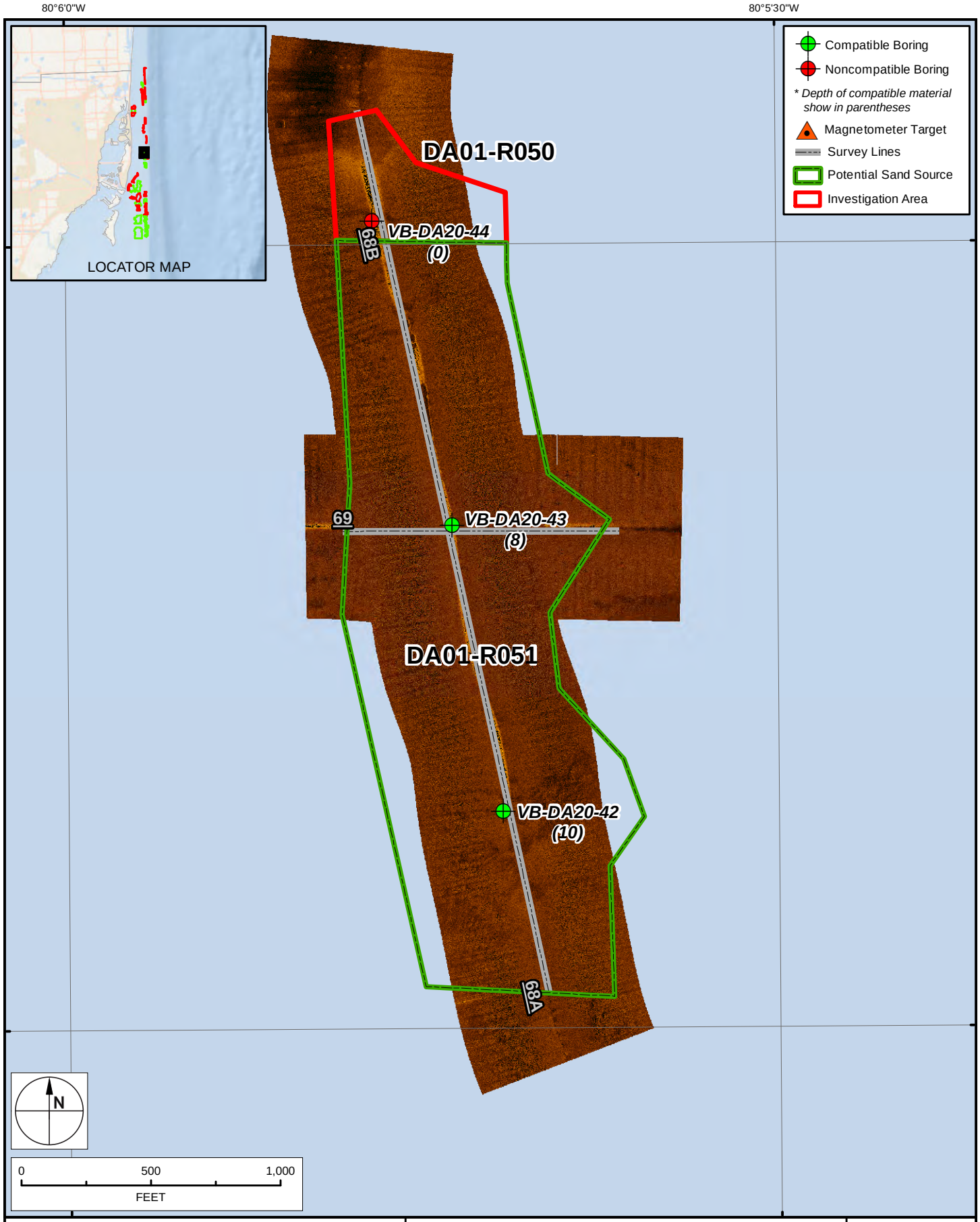
SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA01-R051
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

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DATE: APRIL 2021

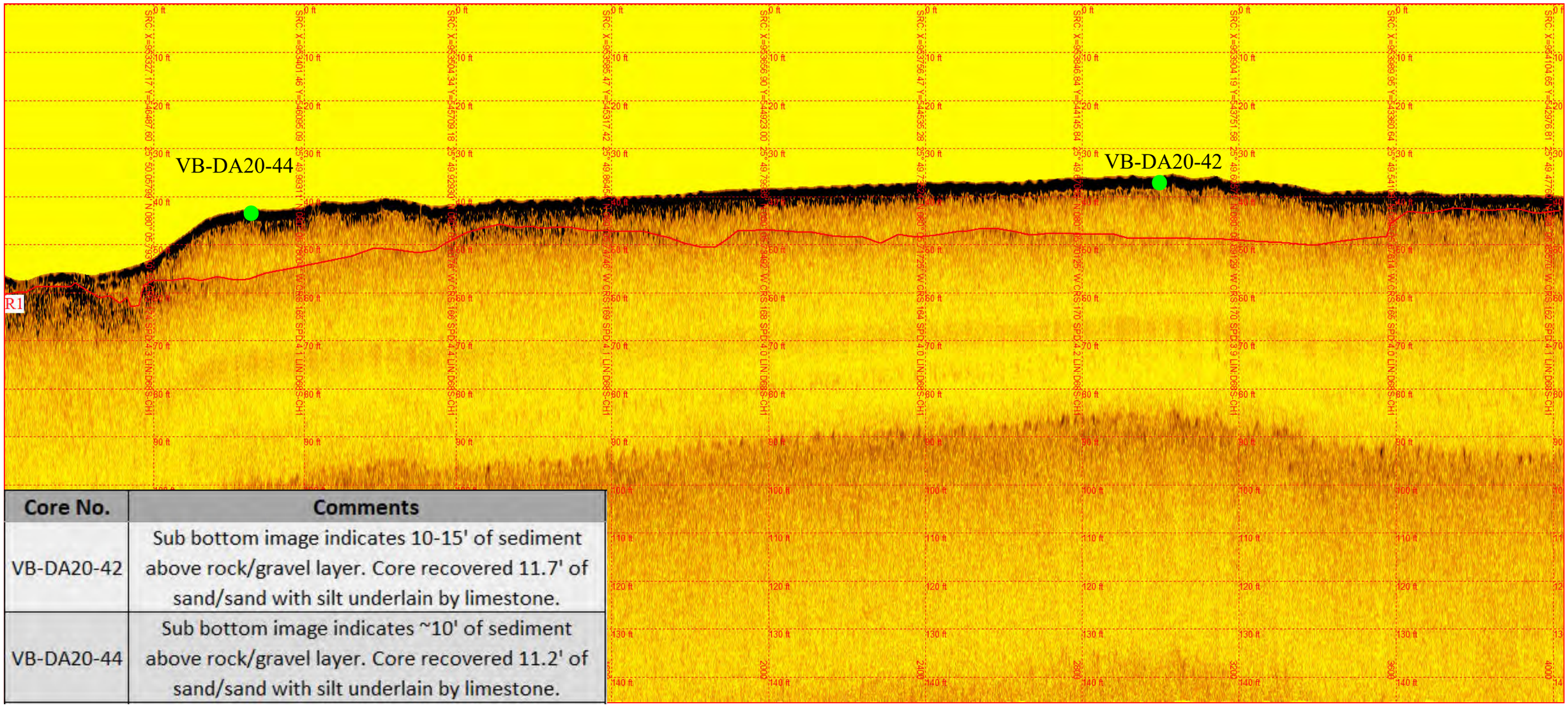
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D68S-CH1

N S



Core No.	Comments
VB-DA20-42	Sub bottom image indicates 10-15' of sediment above rock/gravel layer. Core recovered 11.7' of sand/sand with silt underlain by limestone.
VB-DA20-44	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 11.2' of sand/sand with silt underlain by limestone.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

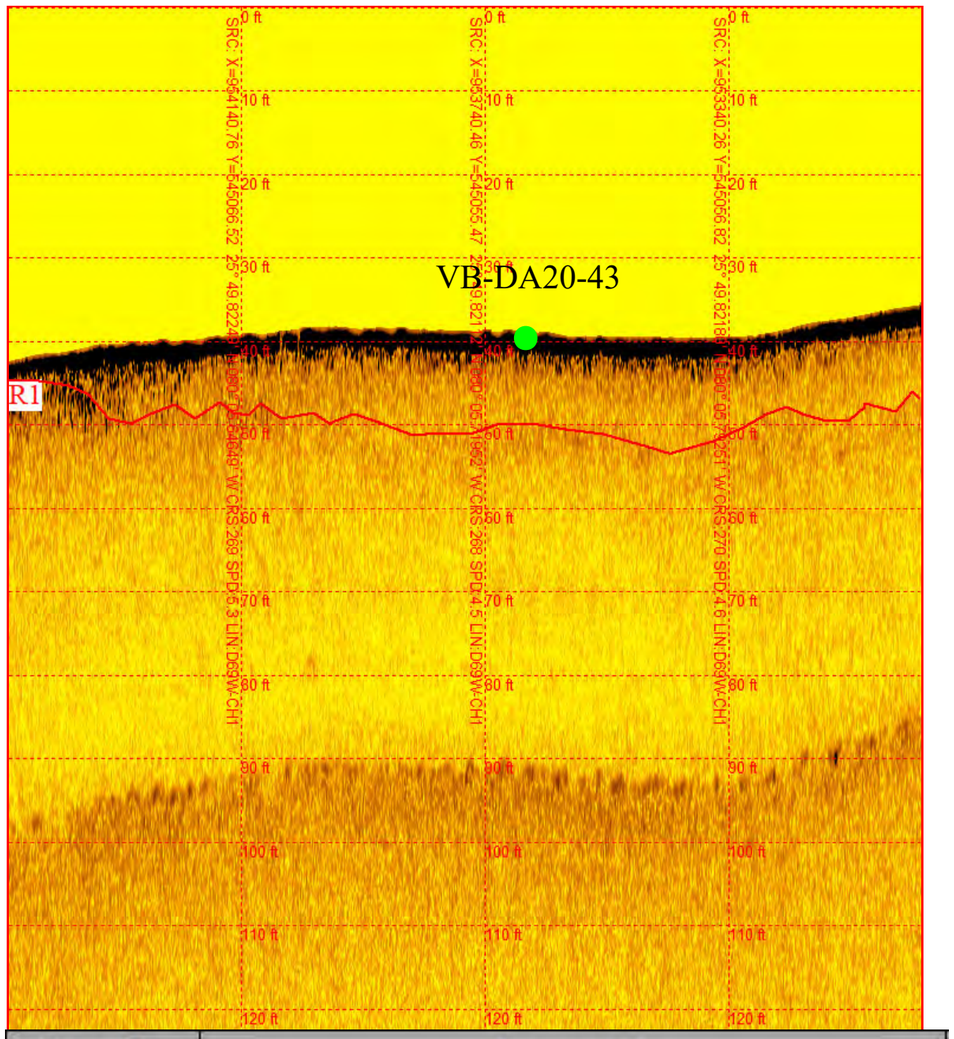
Company Logo

Sonographics, Inc.

SAD SAND

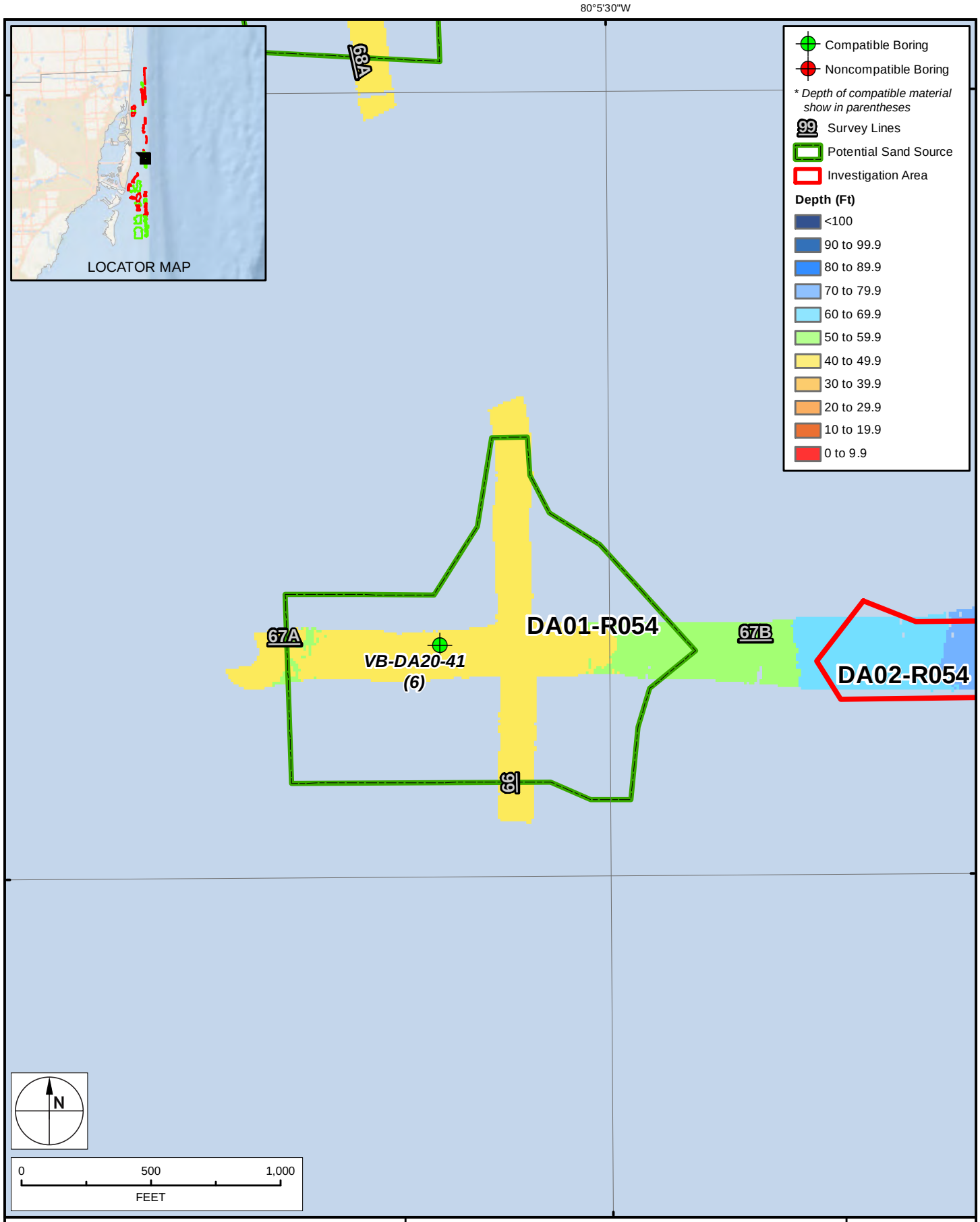
Waterfall D69W-CH1

E W



Core No.	Comments
VB-DA20-43	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 10.0' of sand with silt underlain by limestone.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

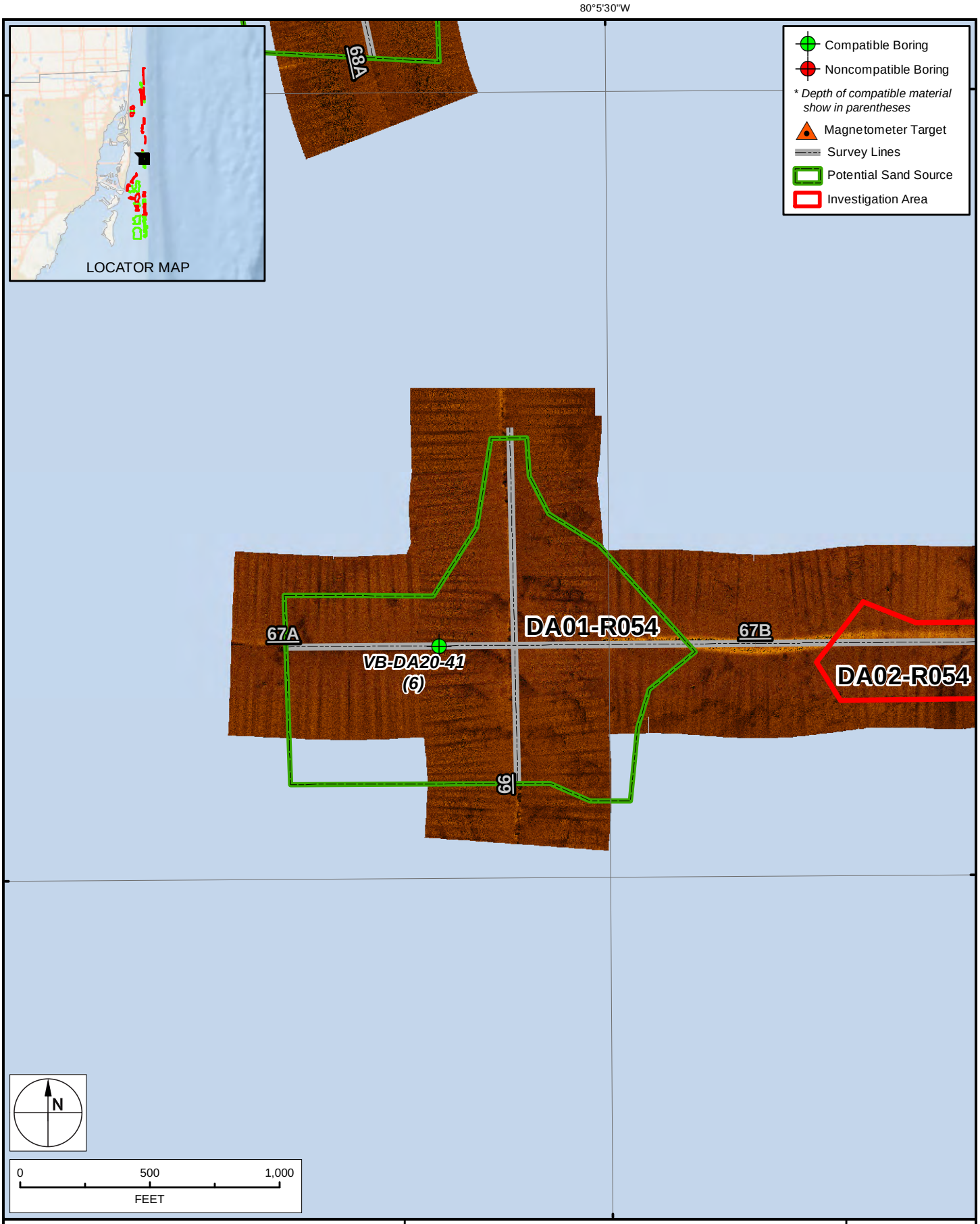
POTENTIAL SAND SOURCE DA01-R054
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA01-R054
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

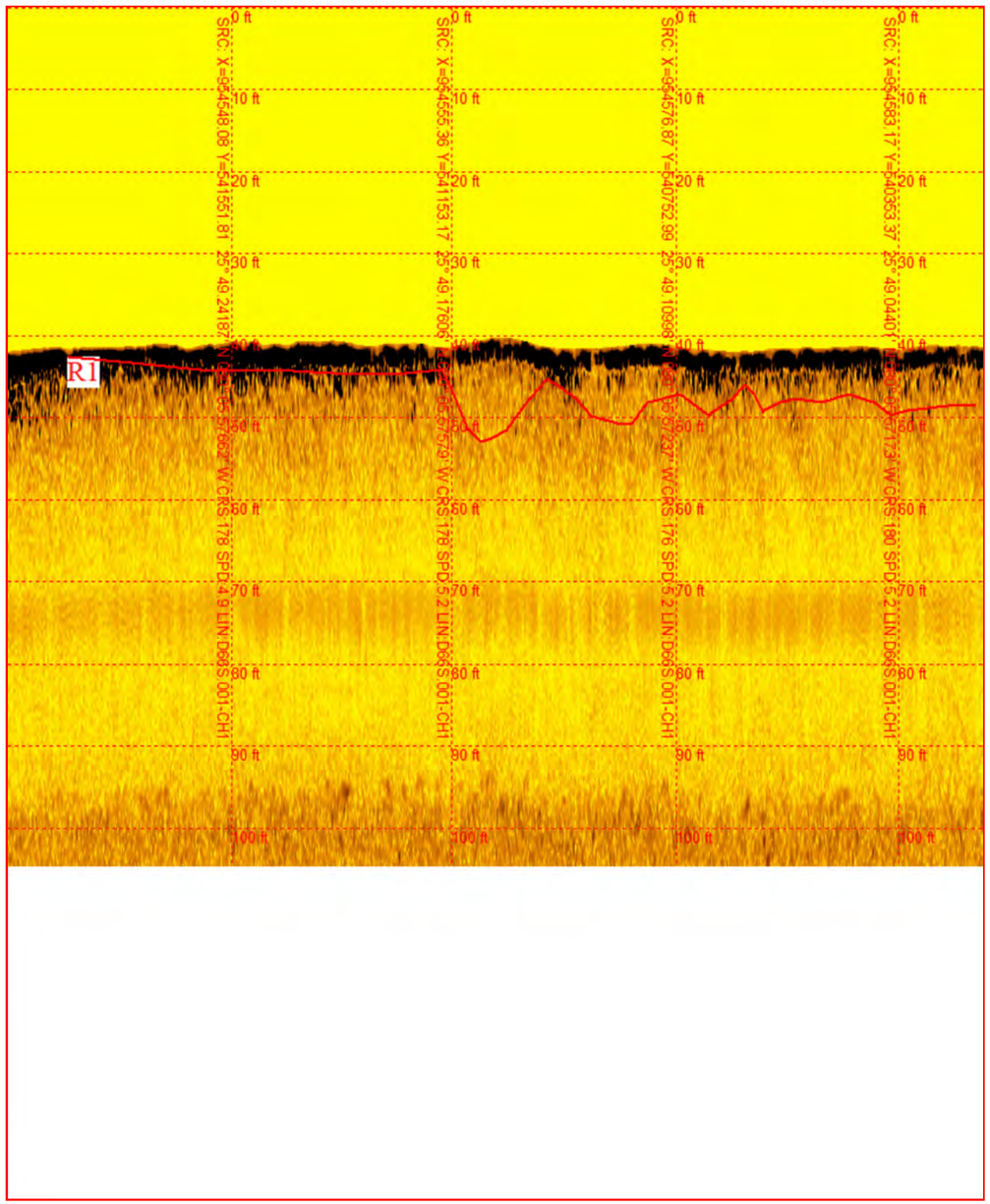
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D66S.001-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

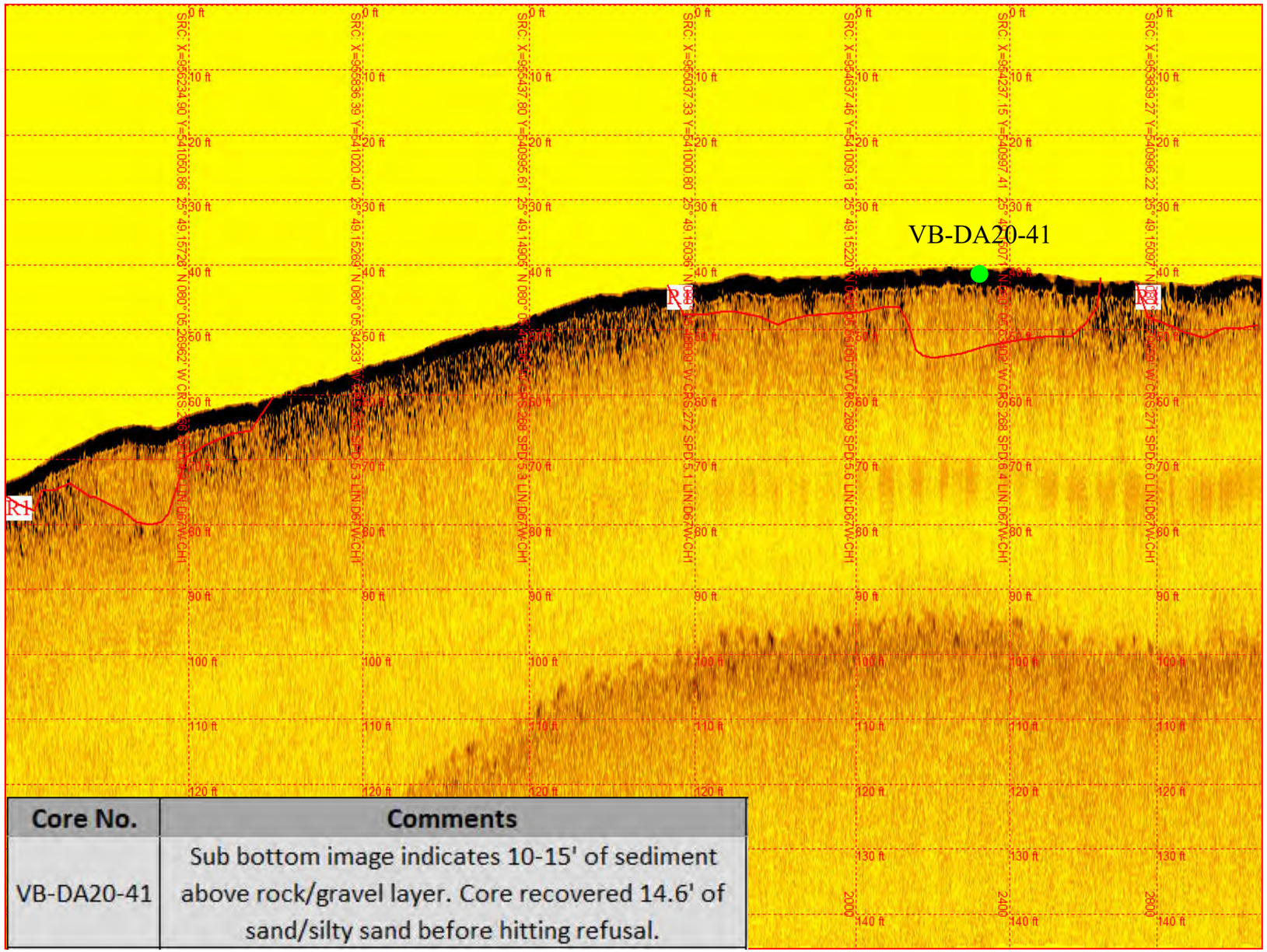
Company Logo

Sonographics, Inc.

SAD SAND

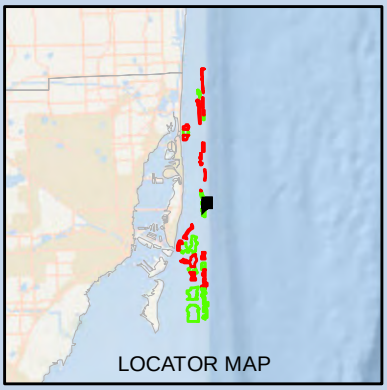
Waterfall D67W-CH1

E W



Core No.	Comments
VB-DA20-41	Sub bottom image indicates 10-15' of sediment above rock/gravel layer. Core recovered 14.6' of sand/silty sand before hitting refusal.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



Compatible Boring
Noncompatible Boring
* Depth of compatible material show in parentheses
99 Survey Lines
Potential Sand Source
Investigation Area

Depth (Ft)

- <100
- 90 to 99.9
- 80 to 89.9
- 70 to 79.9
- 60 to 69.9
- 50 to 59.9
- 40 to 49.9
- 30 to 39.9
- 20 to 29.9
- 10 to 19.9
- 0 to 9.9

67A
67B
DA02-R054

25°49'0"N
25°49'0"N

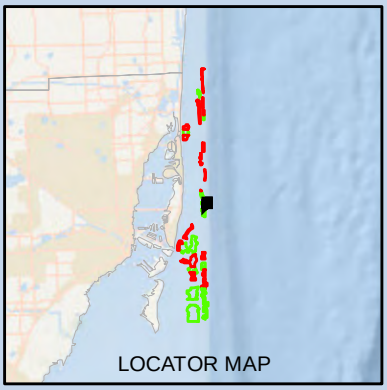
N

0 500
FEET

TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA02-R054
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02
DRAWN BY PL
SHEET
DATE APRIL 2021



Compatible Boring
Noncompatible Boring
* Depth of compatible material show in parentheses
Magnetometer Target
Survey Lines
Potential Sand Source
Investigation Area

67B
7A
DA02-R054

25°49'0"N
25°49'0"N

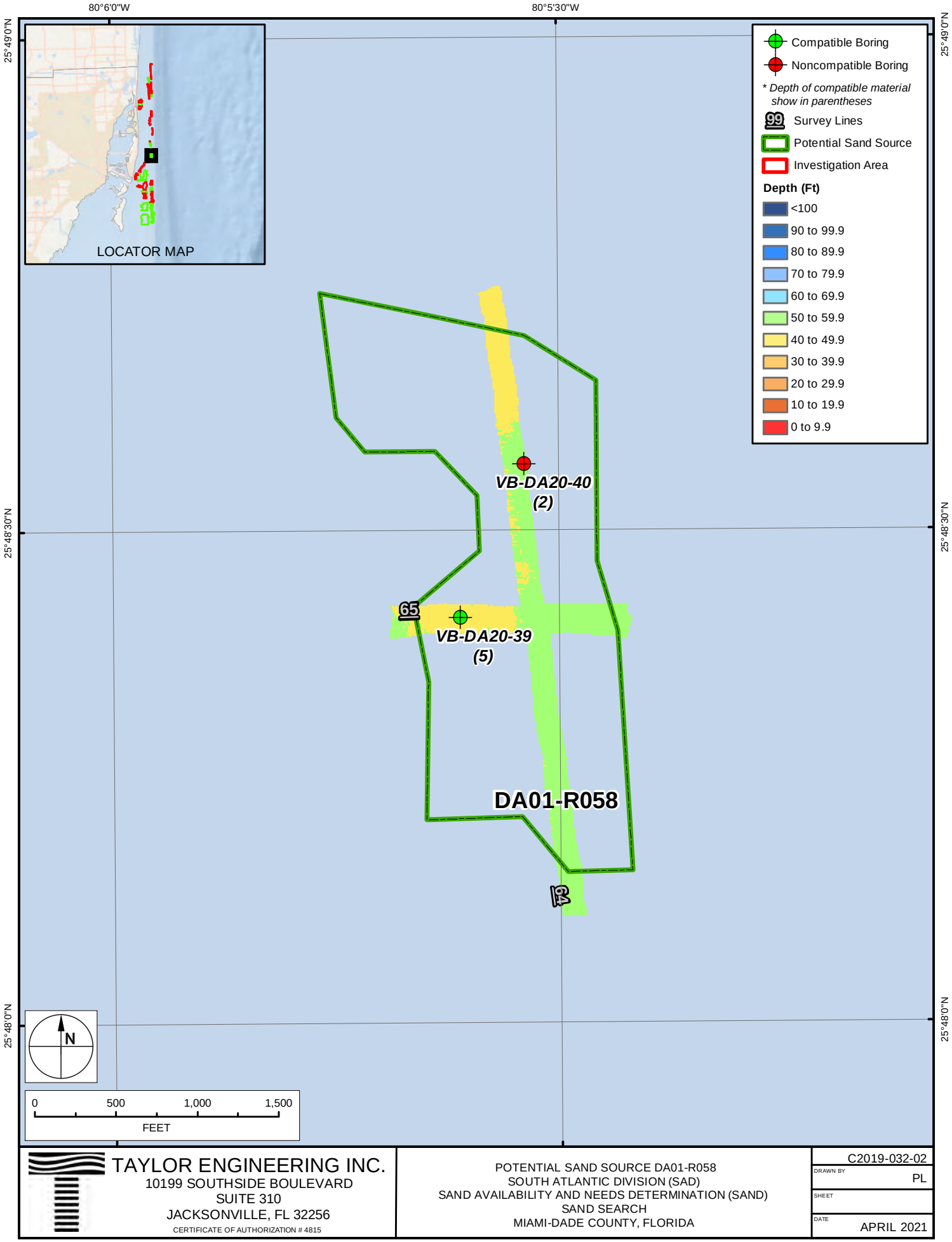
N

0 500
FEET

TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA02-R054
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

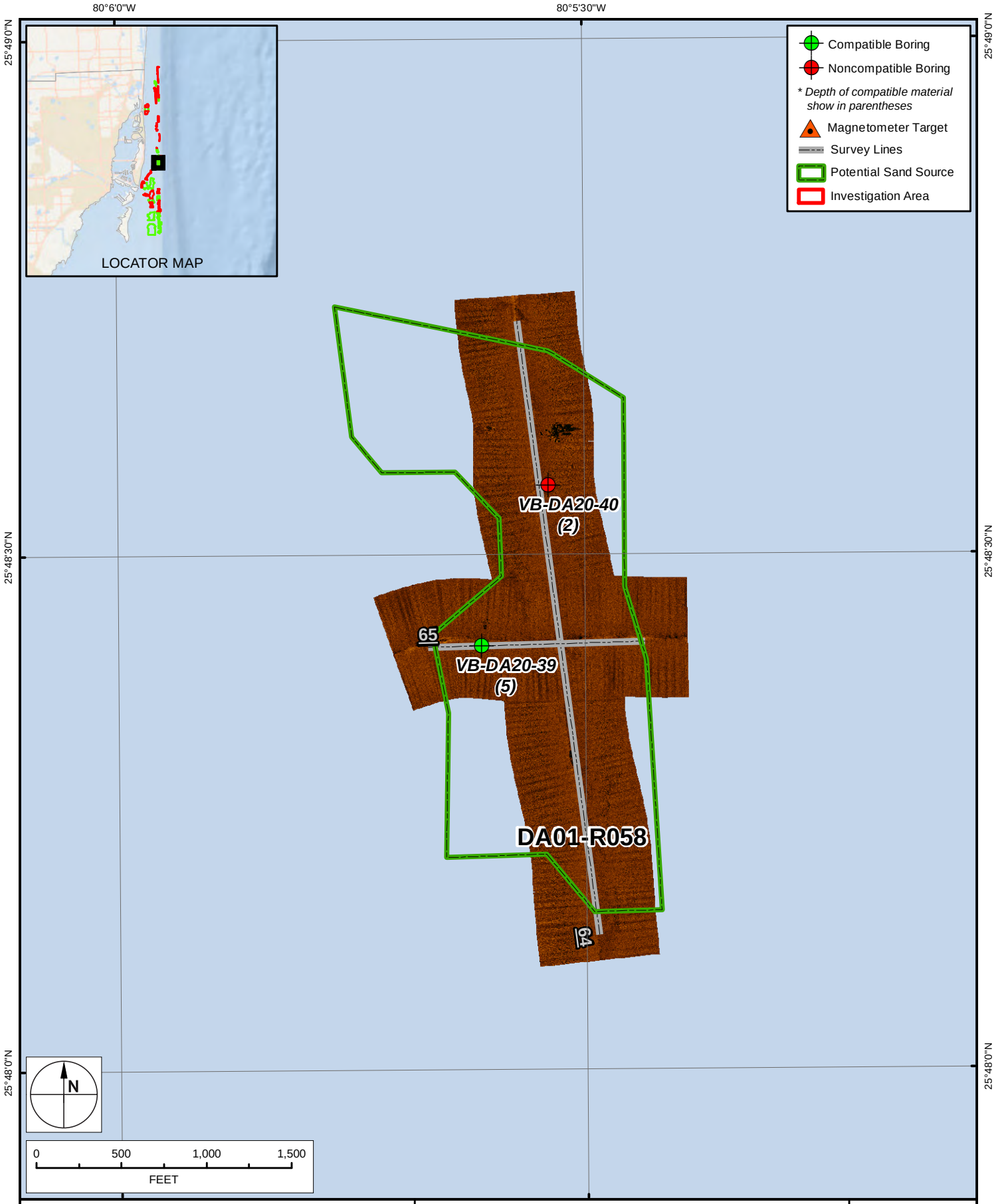
C2019-032-02
DRAWN BY PL
SHEET
DATE APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA01-R058
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02
DRAWN BY PL
SHEET
DATE APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA01-R058
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

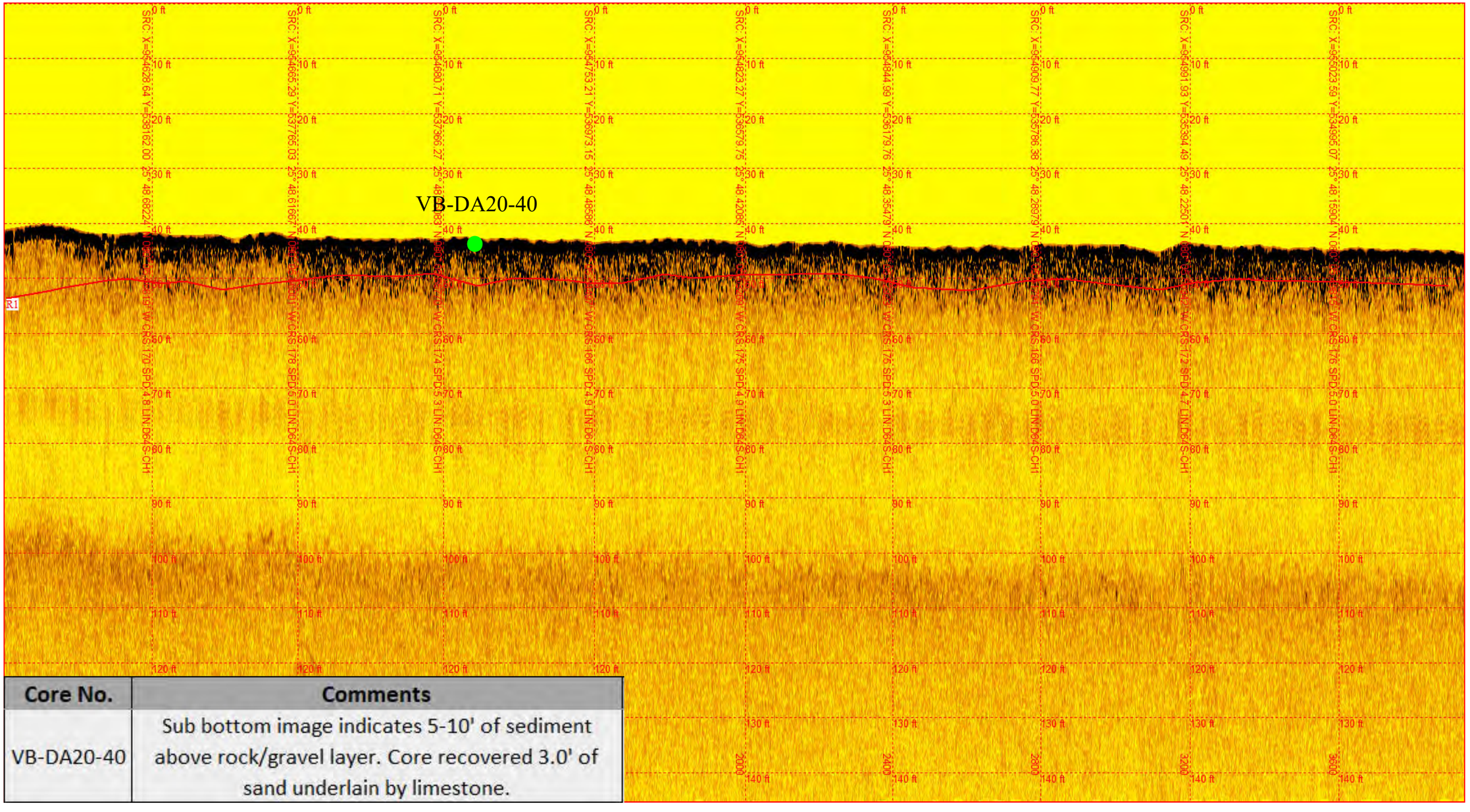
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D64S-CH1

N S



Core No.	Comments
VB-DA20-40	Sub bottom image indicates 5-10' of sediment above rock/gravel layer. Core recovered 3.0' of sand underlain by limestone.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

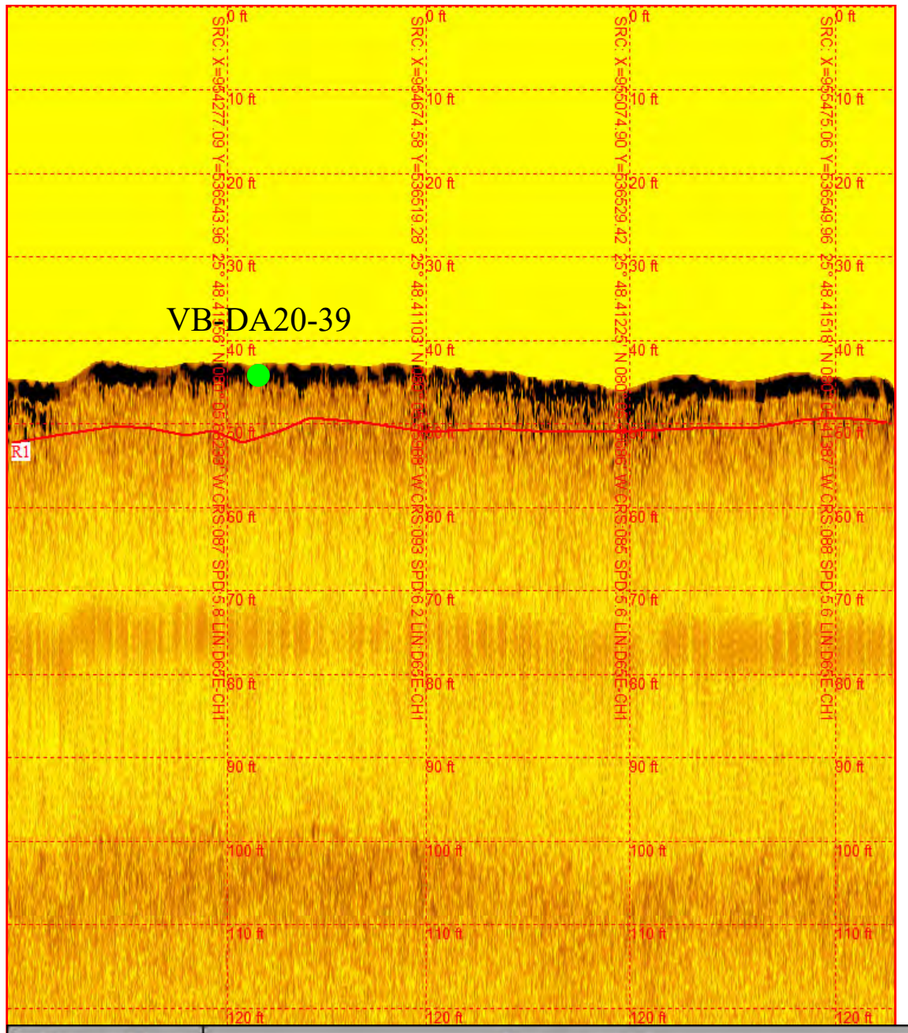
Company Logo

Sonographics, Inc.

SAD SAND

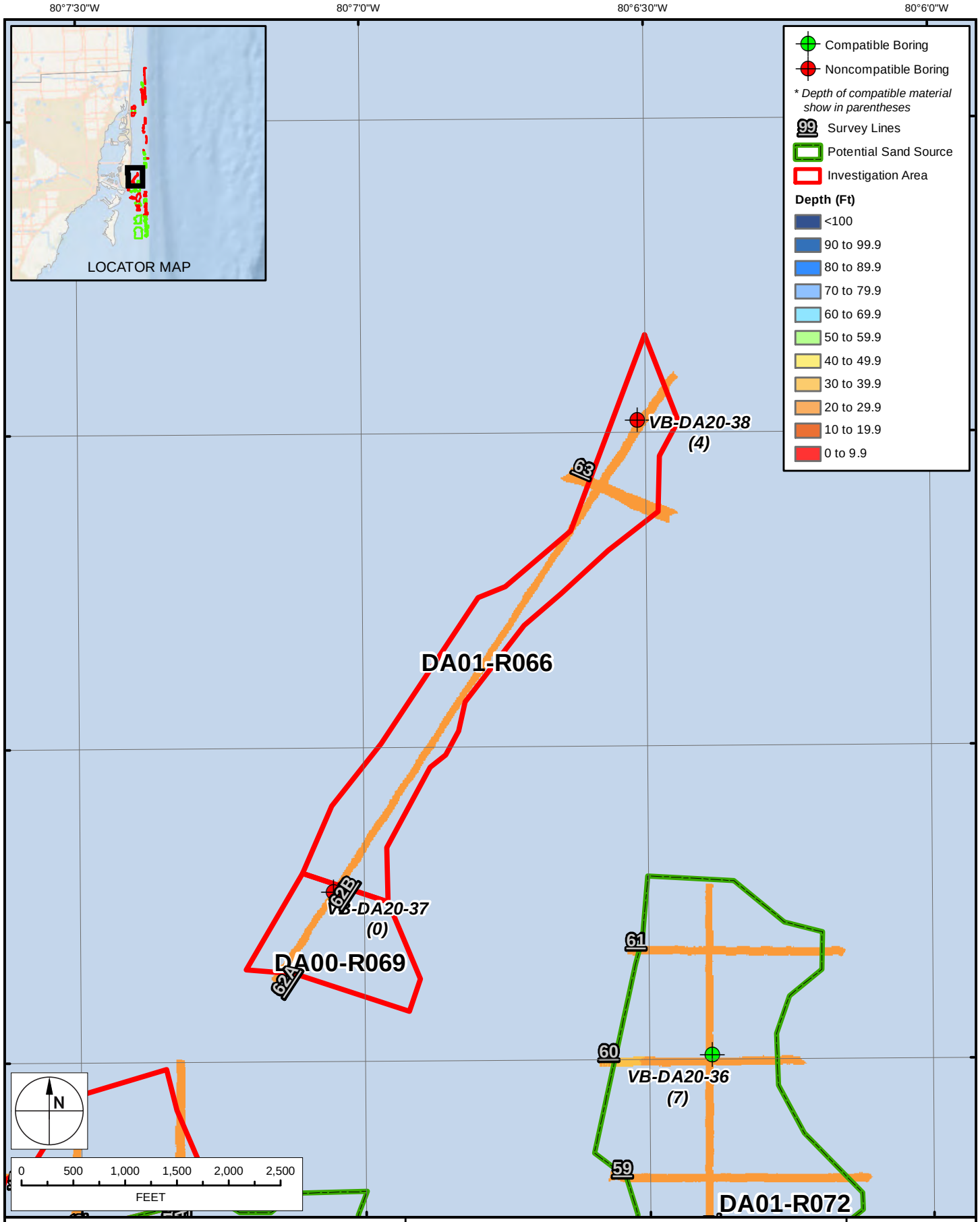
Waterfall D65E-CH1

W E



Core No.	Comments
VB-DA20-39	Sub bottom image indicates 5-10' of sediment above rock/gravel layer. Core recovered 8.3' of sand/silty sand before hitting refusal.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R066
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

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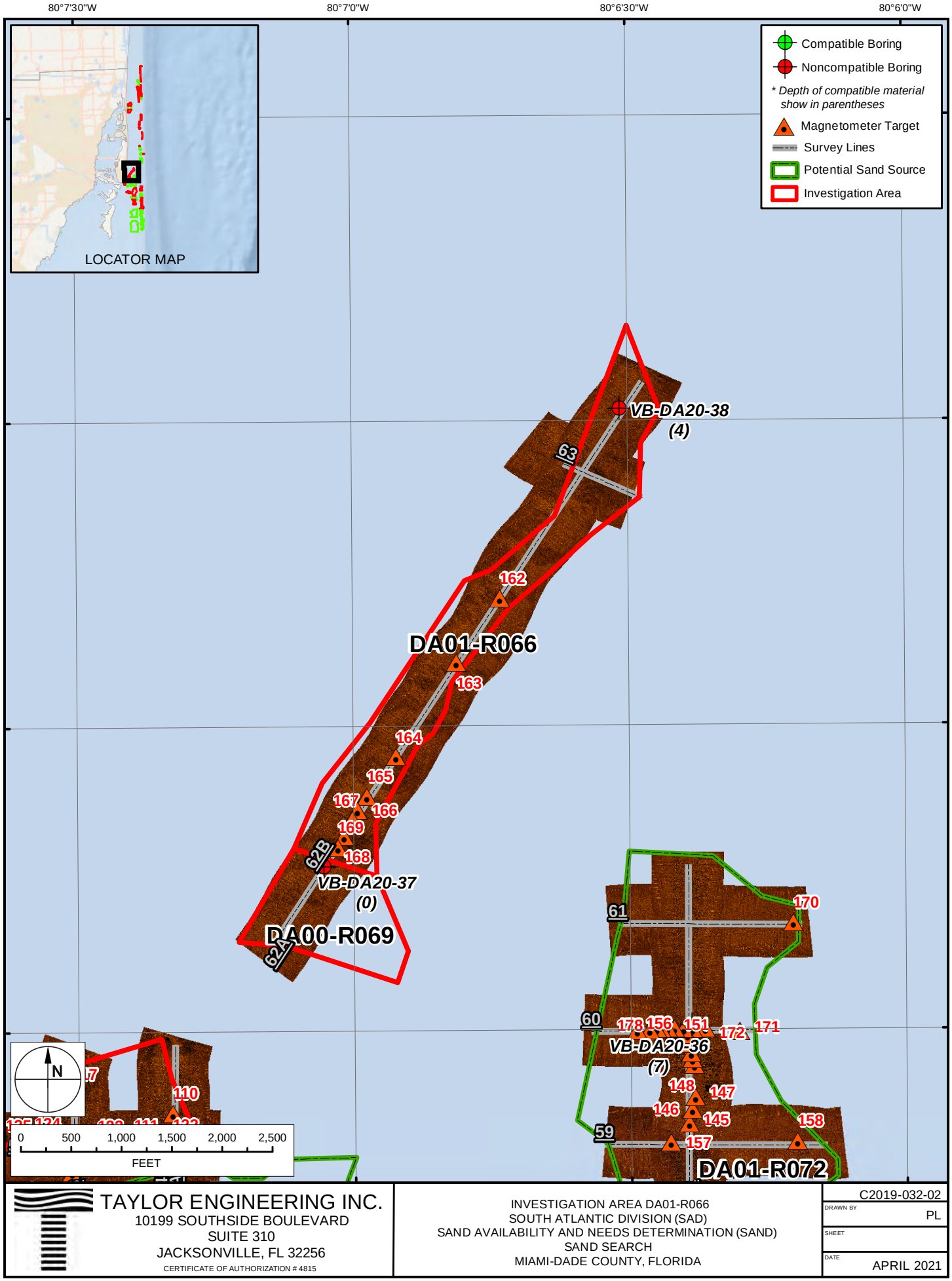
DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R066
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

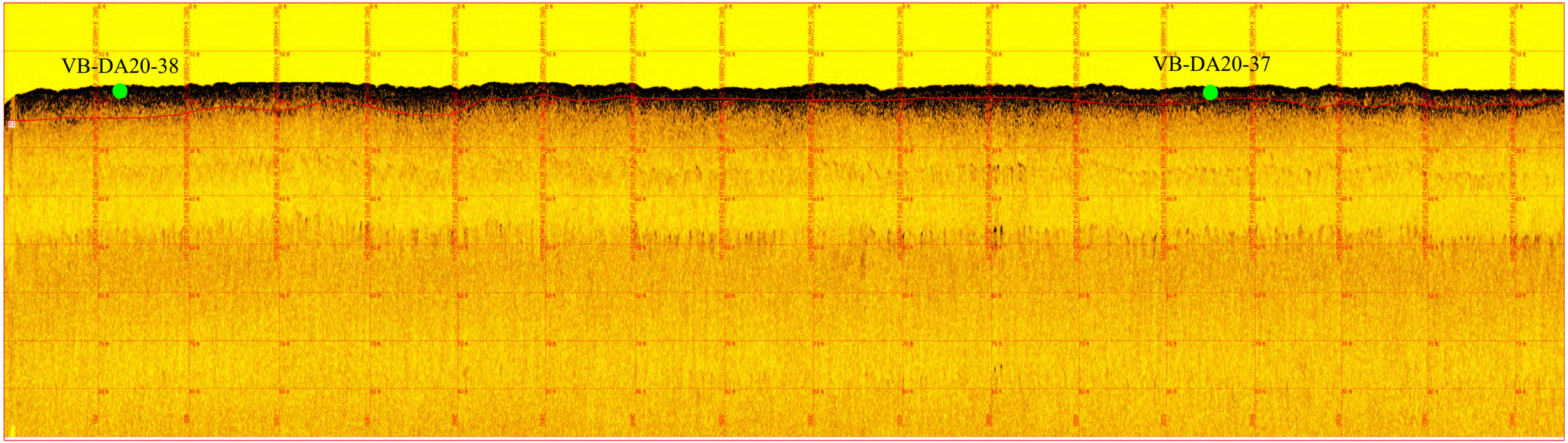
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D62S-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology, Inc.

Core No.	Comments
VB-DA20-37	Sub bottom image indicates 0-5' of sediment above rock/gravel layer. Core recovered 11.5' of sand/silt underlain by limestone.
VB-DA20-38	Sub bottom image indicates ~5' of sediment above rock/gravel layer. Core recovered 4.5' of sand underlain by limestone.

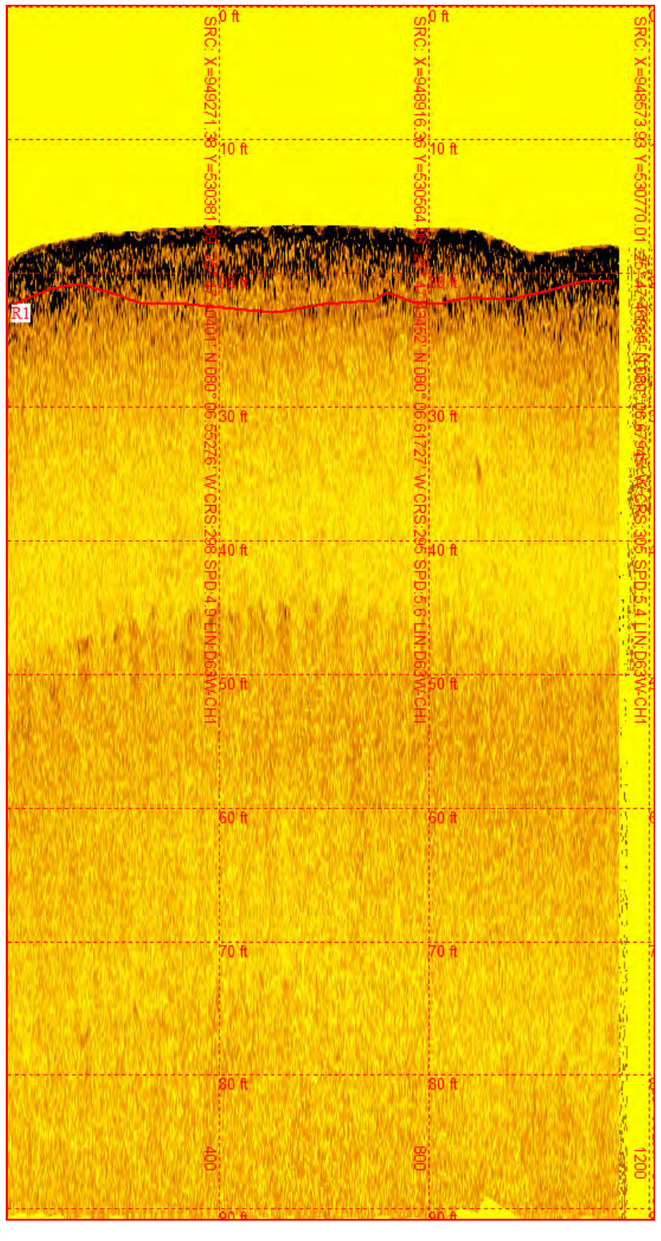
Company Logo

Sonographics, Inc.

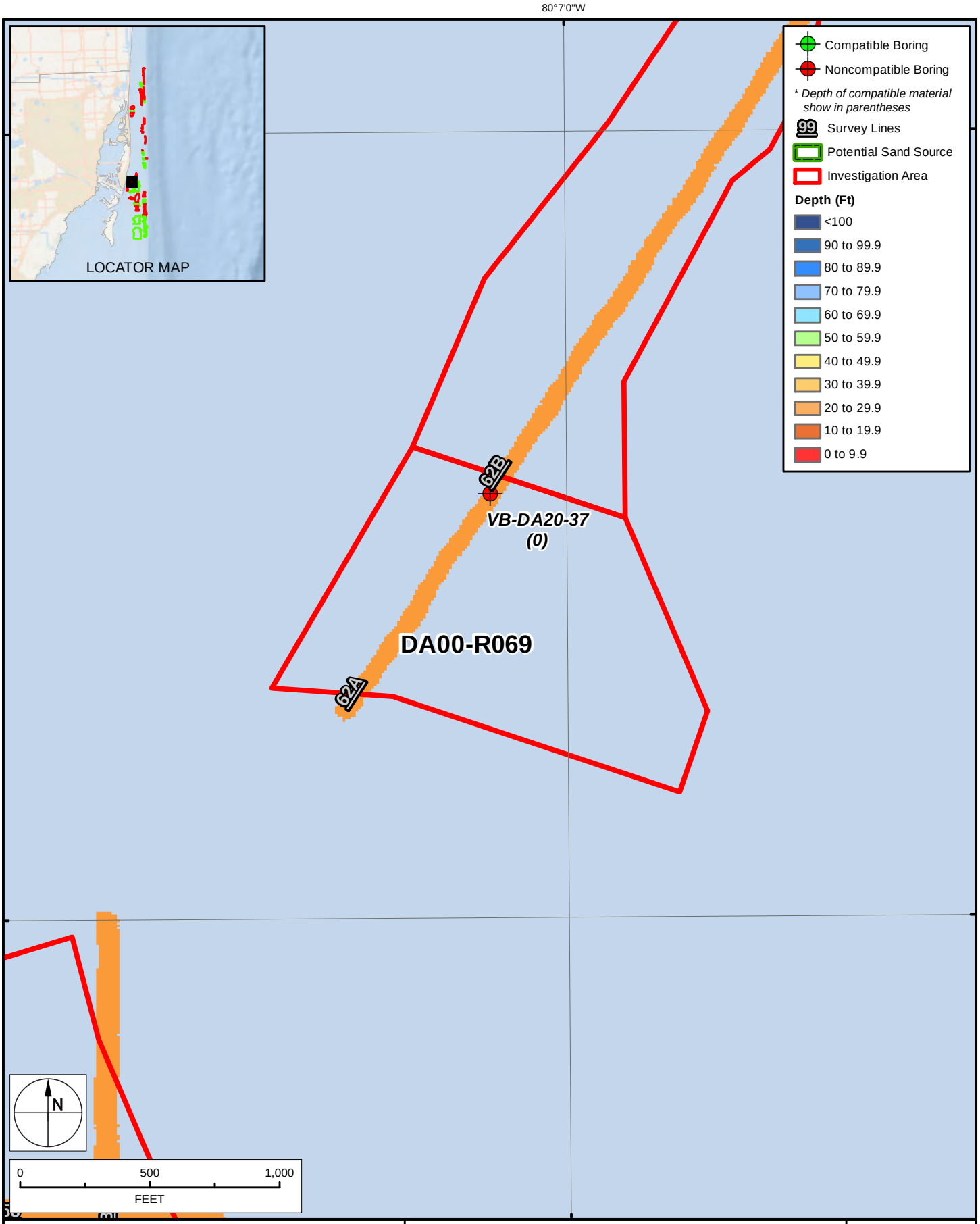
SAD SAND

Waterfall D63W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA00-R069
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02
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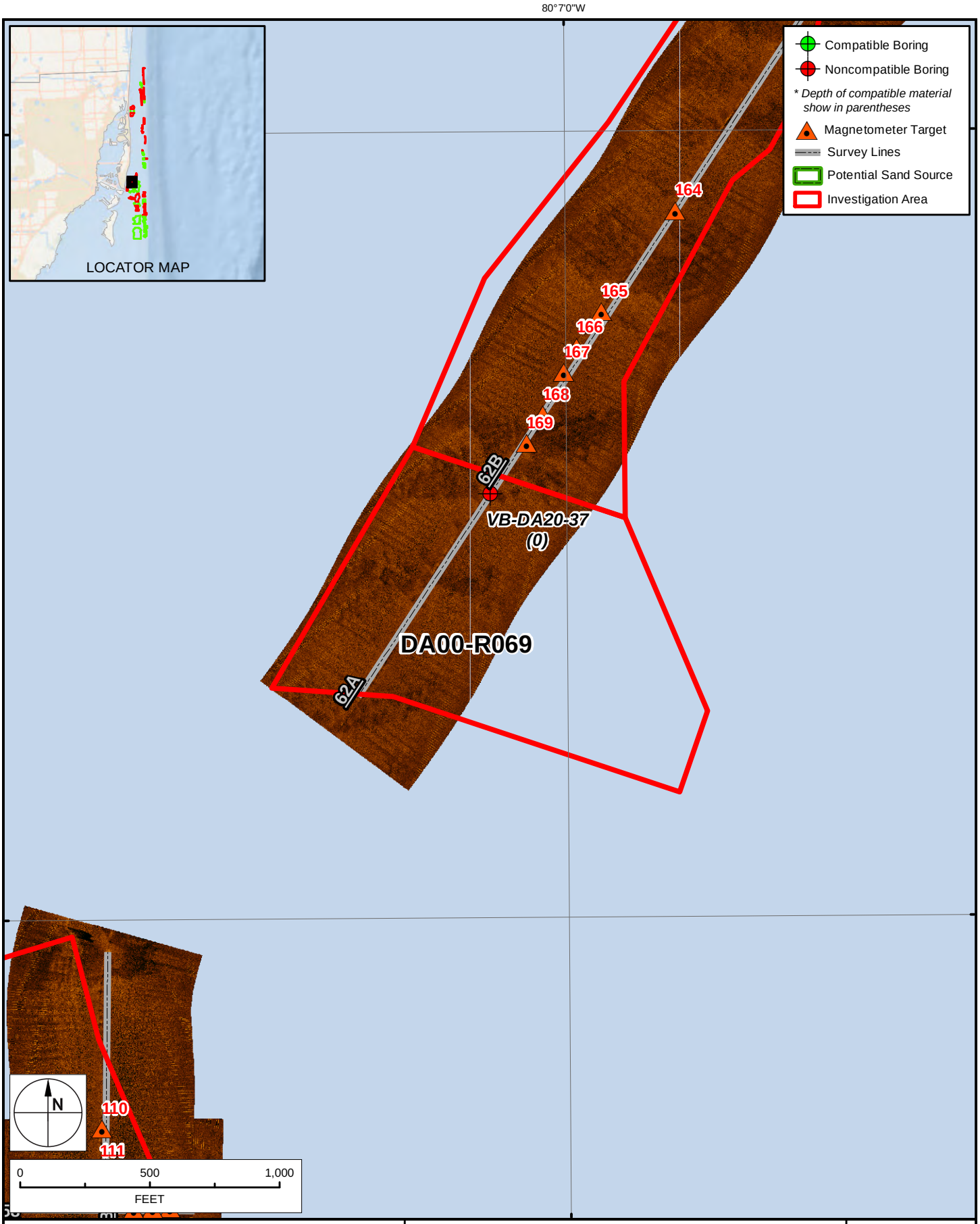
DATE APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA00-R069
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

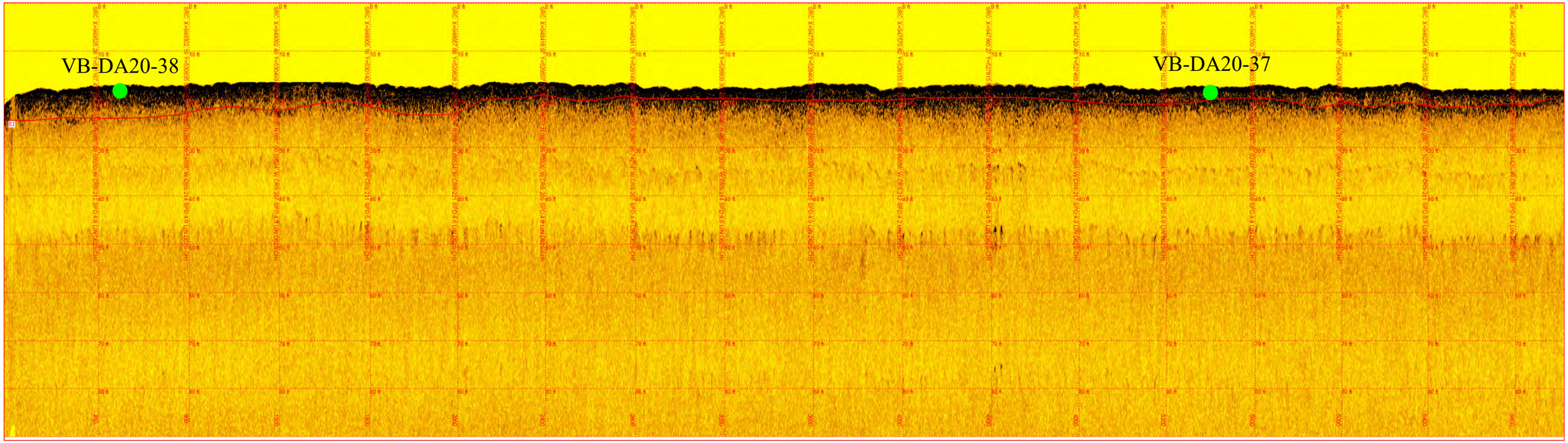
Company Logo

Sonographics, Inc.

SAD SAND

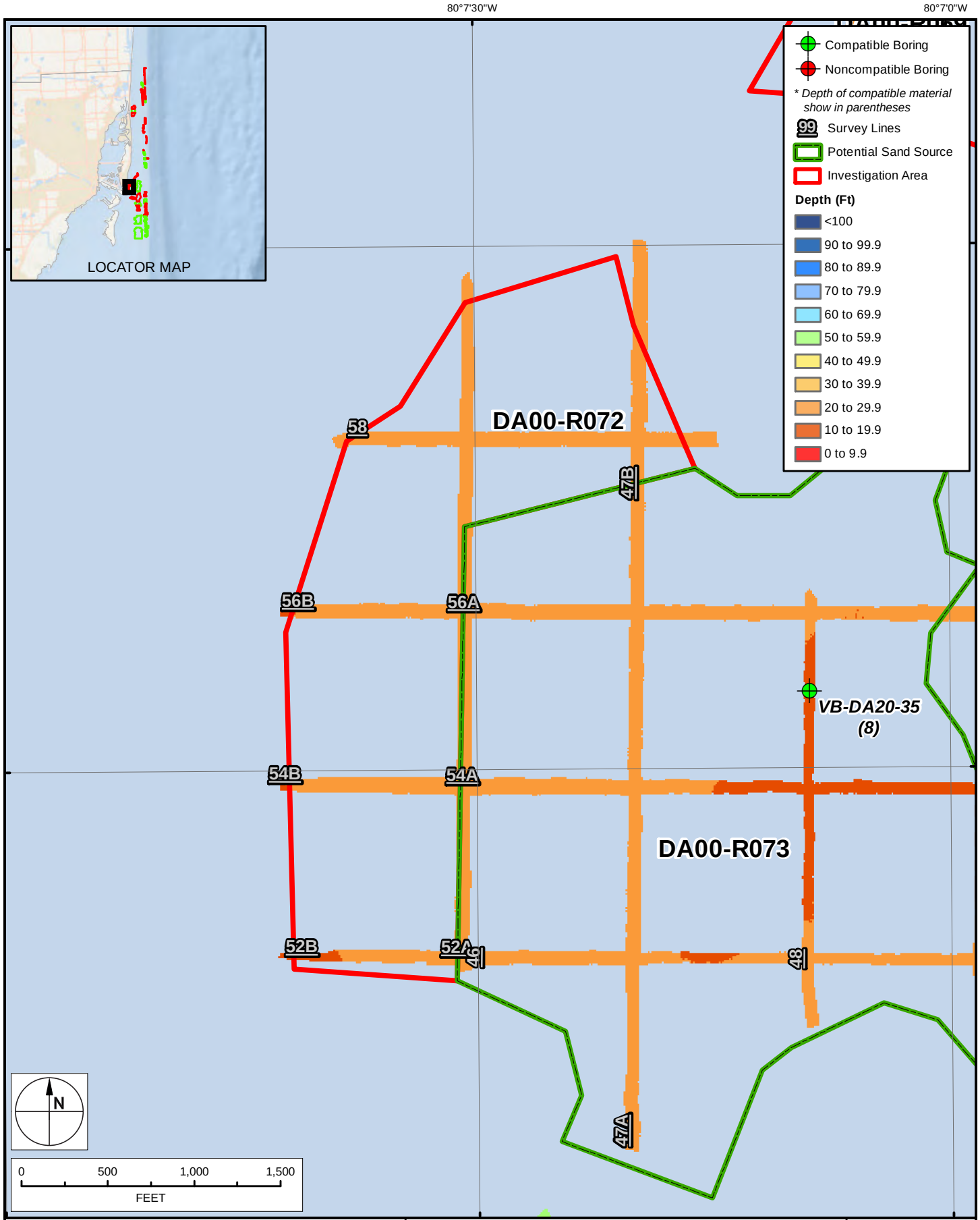
Waterfall D62S-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology, Inc.

Core No.	Comments
VB-DA20-37	Sub bottom image indicates 0-5' of sediment above rock/gravel layer. Core recovered 11.5' of sand/silt underlain by limestone.
VB-DA20-38	Sub bottom image indicates ~5' of sediment above rock/gravel layer. Core recovered 4.5' of sand underlain by limestone.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA00-R072
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY PL

SHEET

DATE APRIL 2021

TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

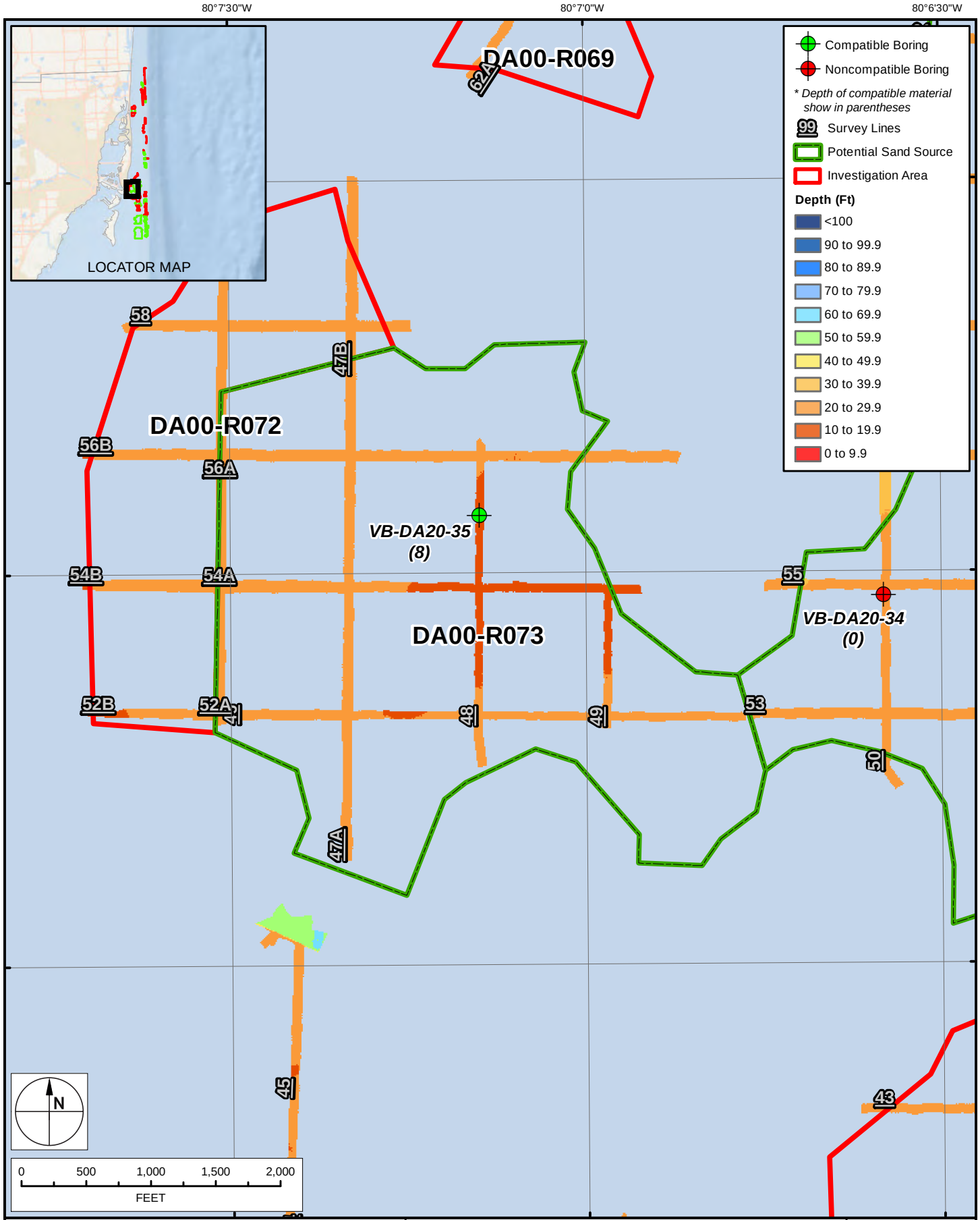
INVESTIGATION AREA DA00-R072
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

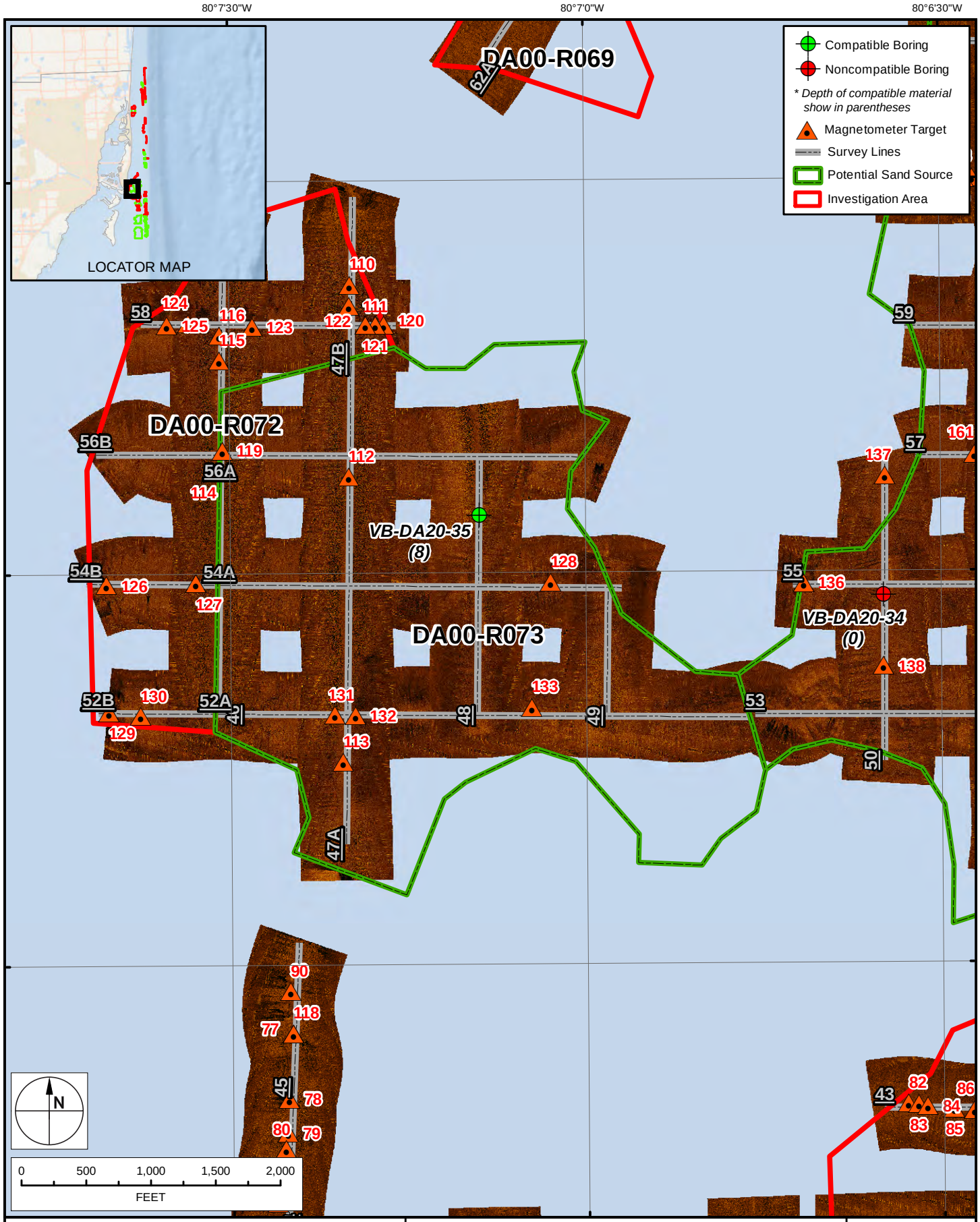
POTENTIAL SAND SOURCE DA00-R073
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY PL

SHEET

DATE APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA00-R073
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

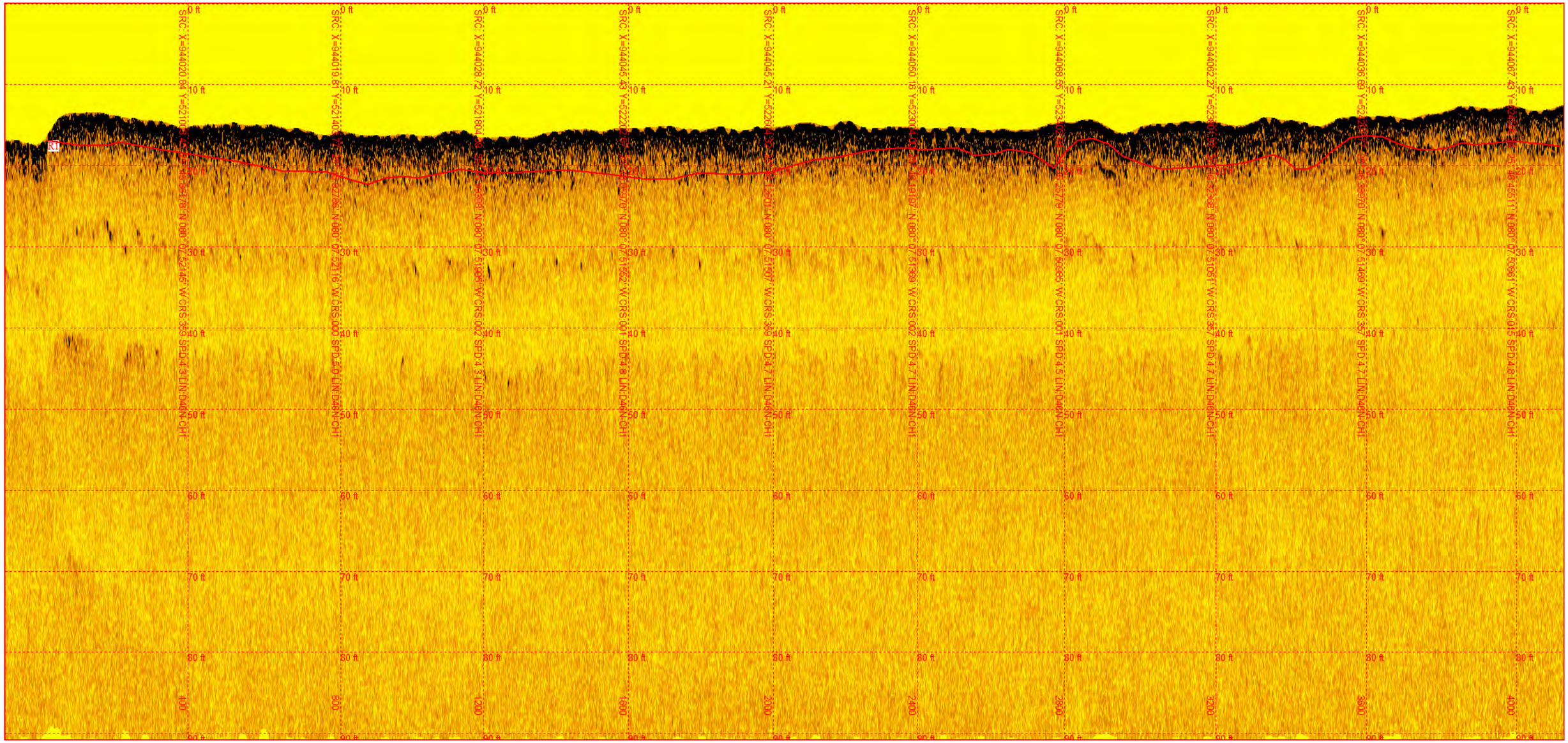
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D46N-CH1

S N



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

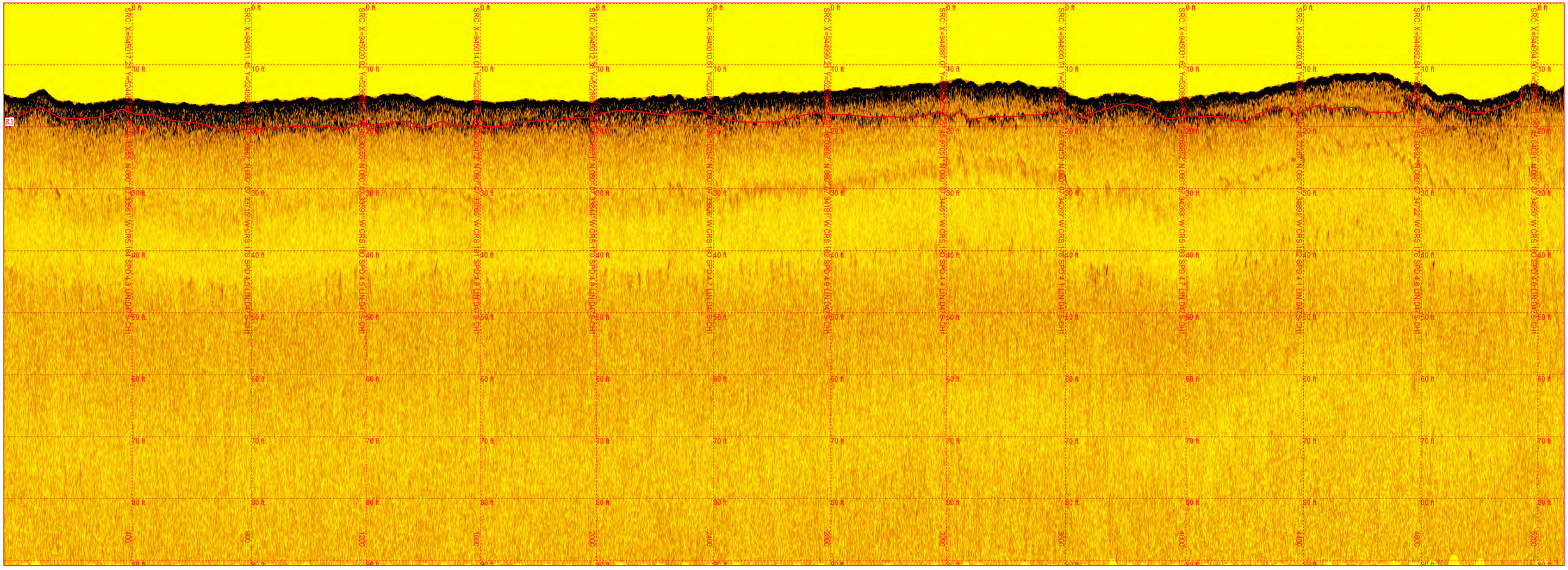
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D47S-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

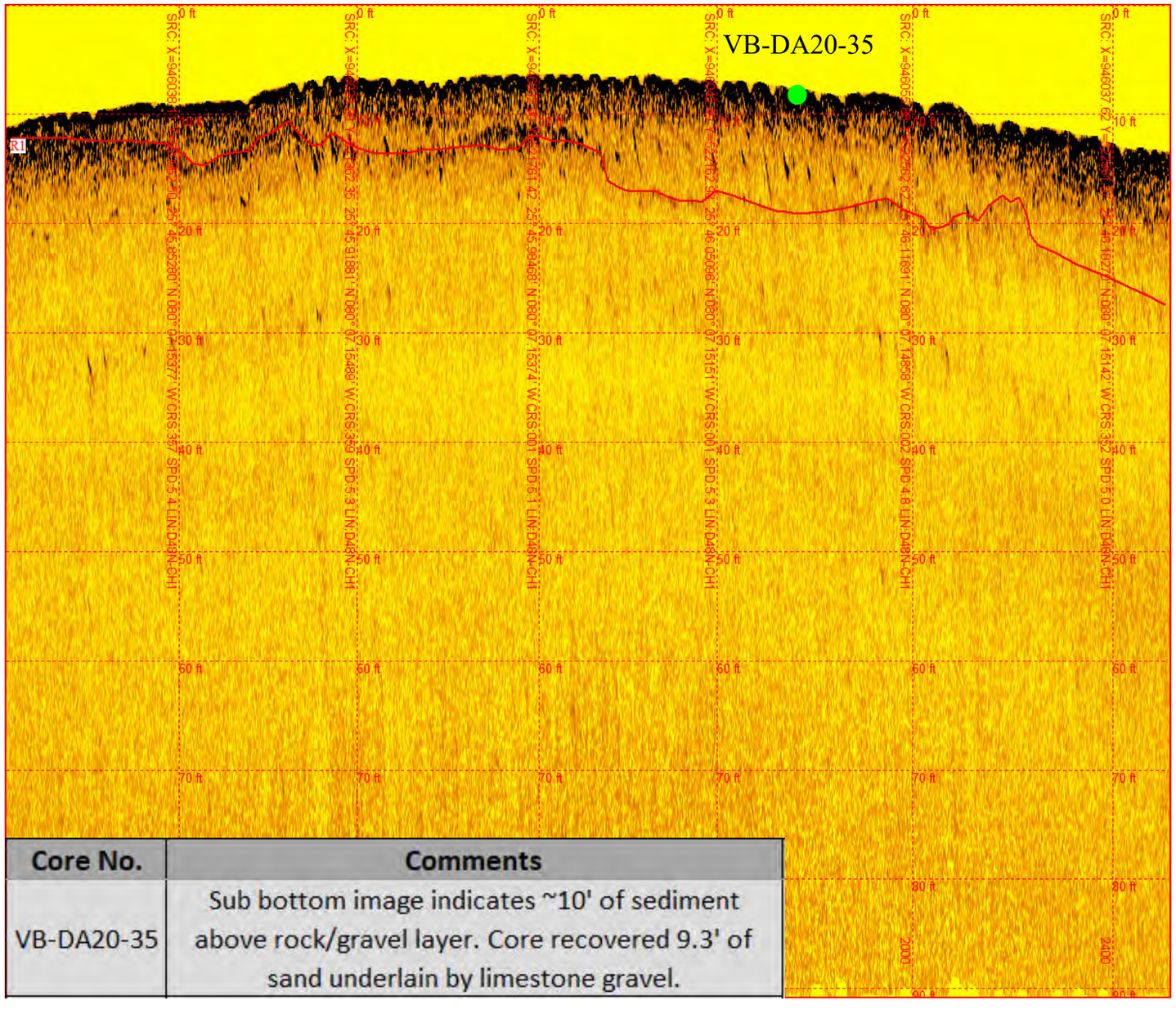
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D48N-CH1

S N



Core No.	Comments
VB-DA20-35	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 9.3' of sand underlain by limestone gravel.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

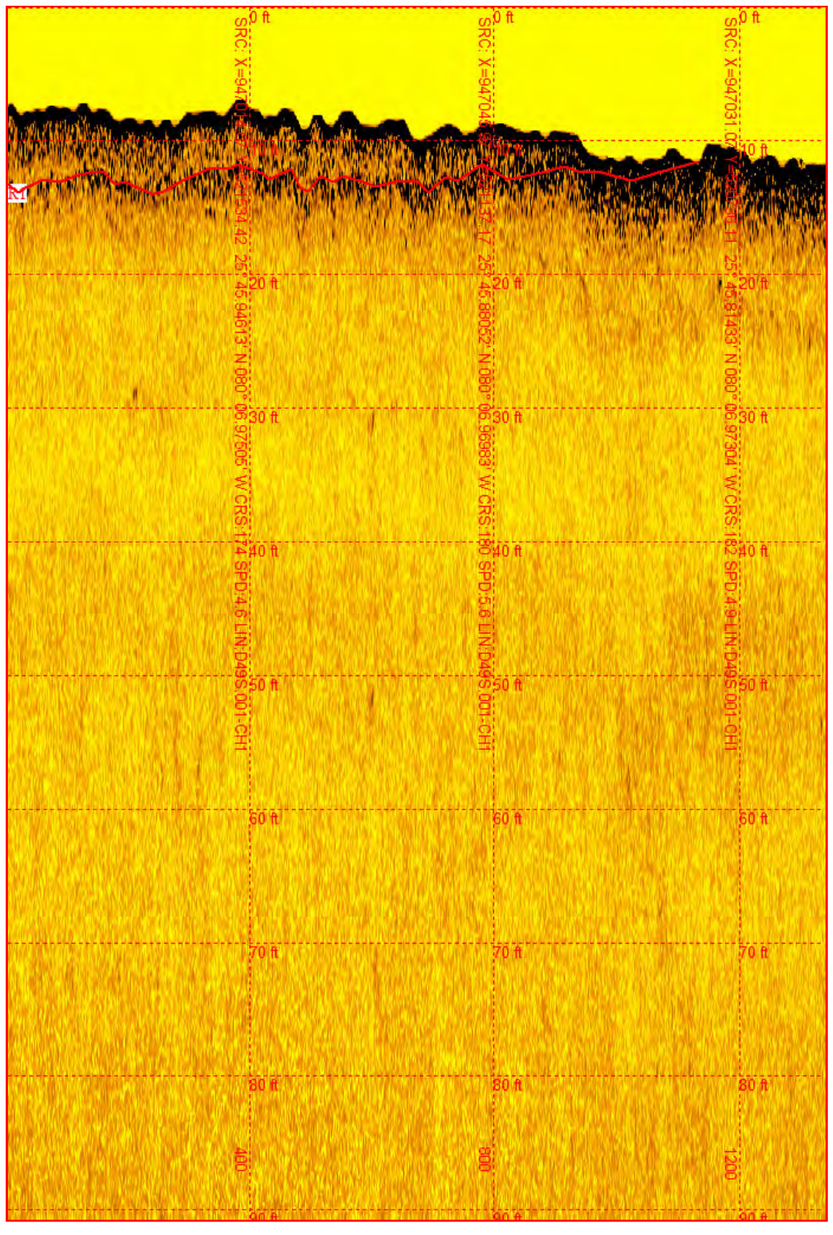
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D49S.001-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

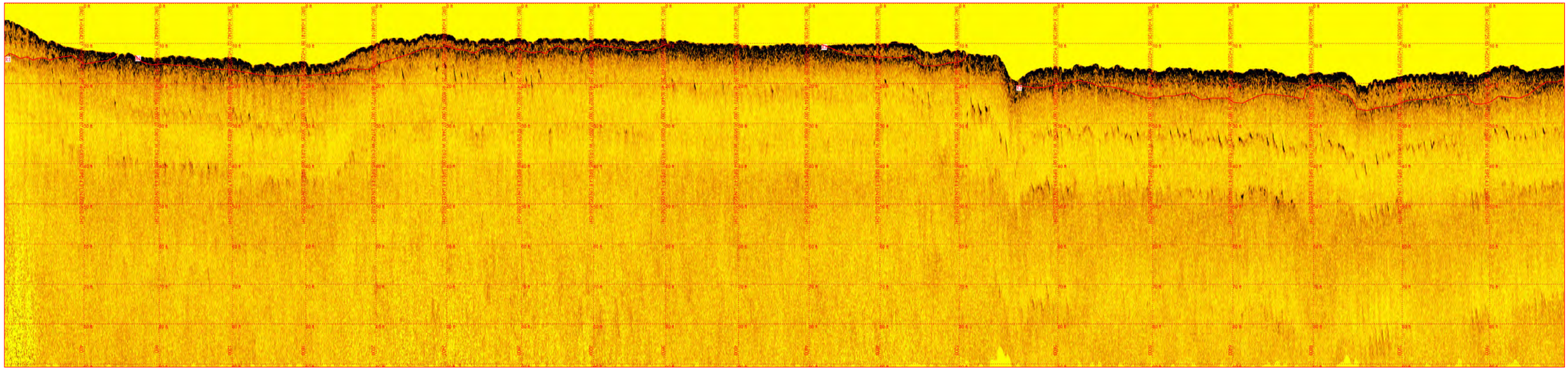
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D52-53E-CH1

W E



Sonar Processing by 6.01.0025 and SWaTHGen V2.01.003 Chesapeake Technology Inc.

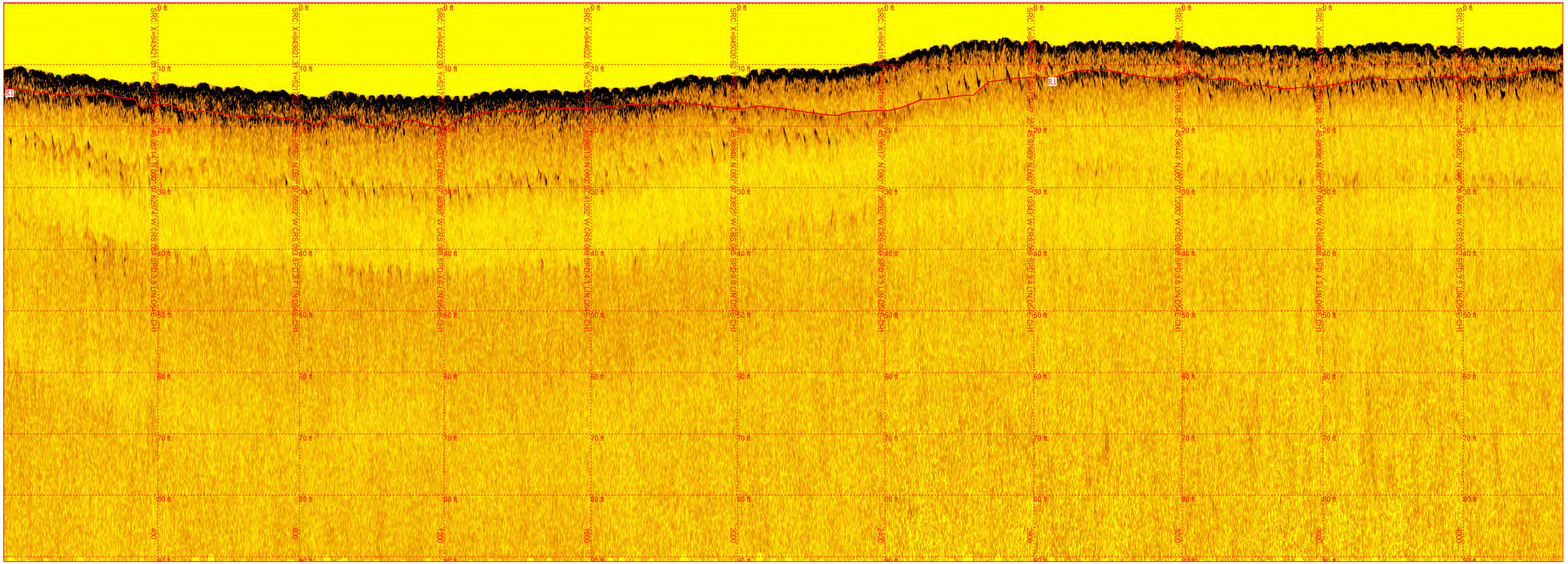
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D54E-CH1

W E



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

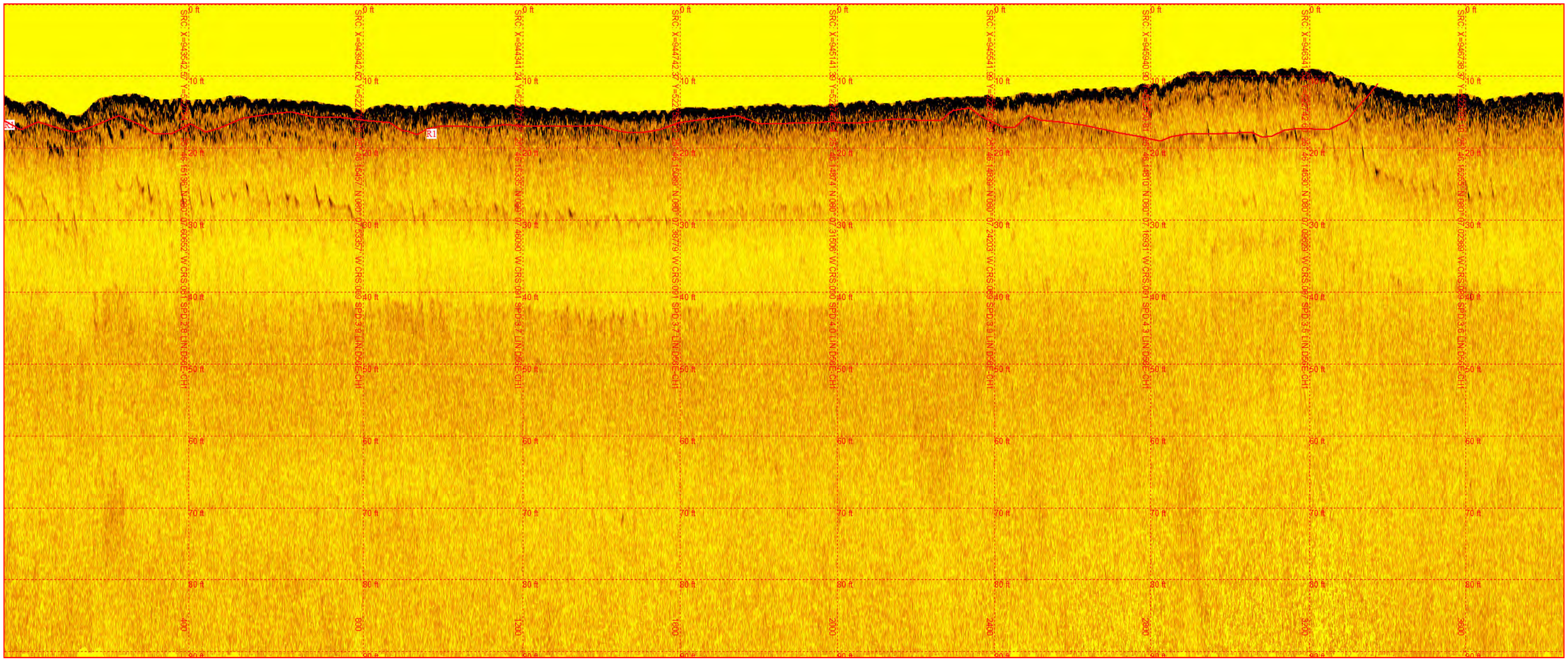
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D56E-CH1

W E



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

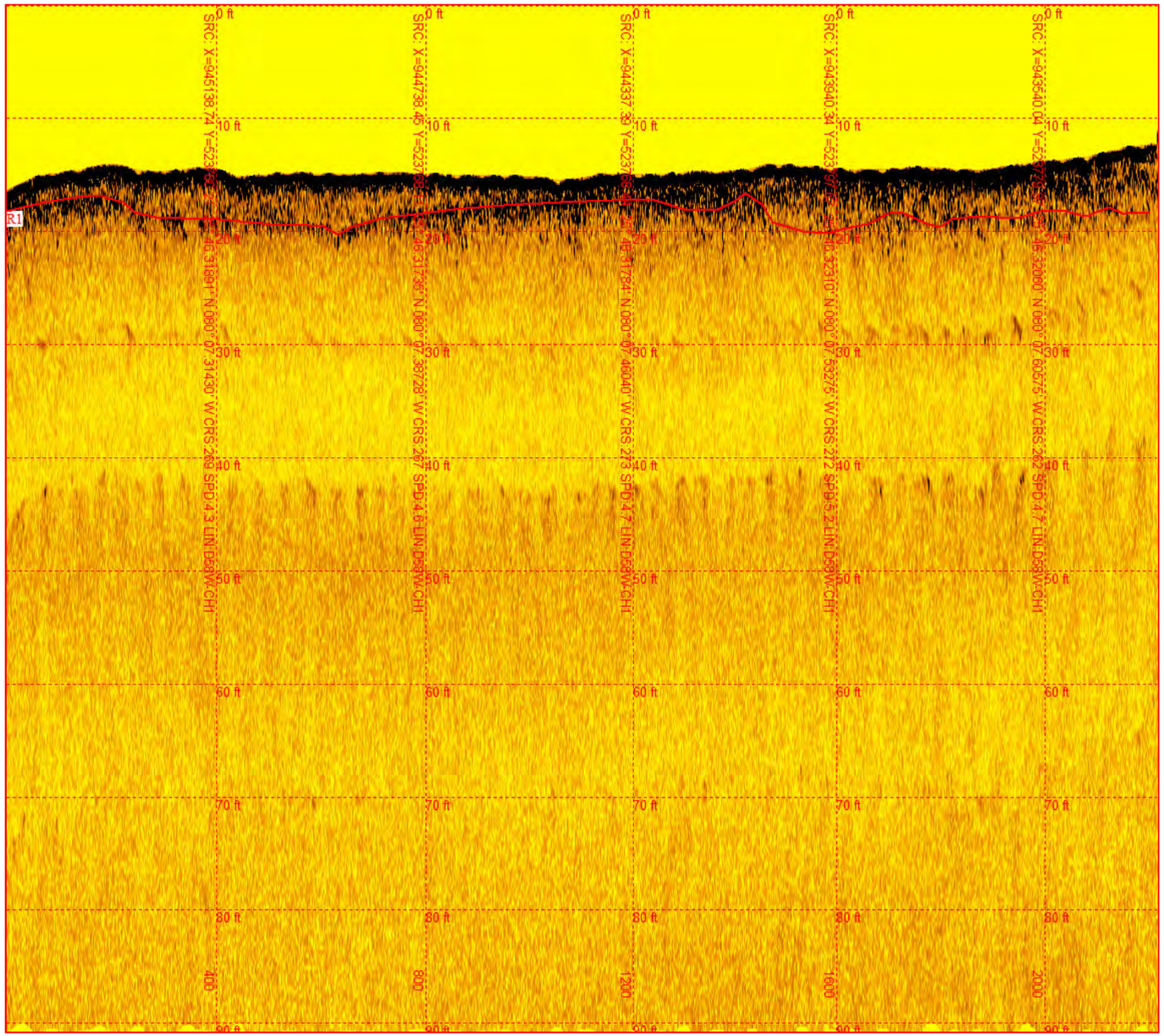
Company Logo

Sonographics, Inc.

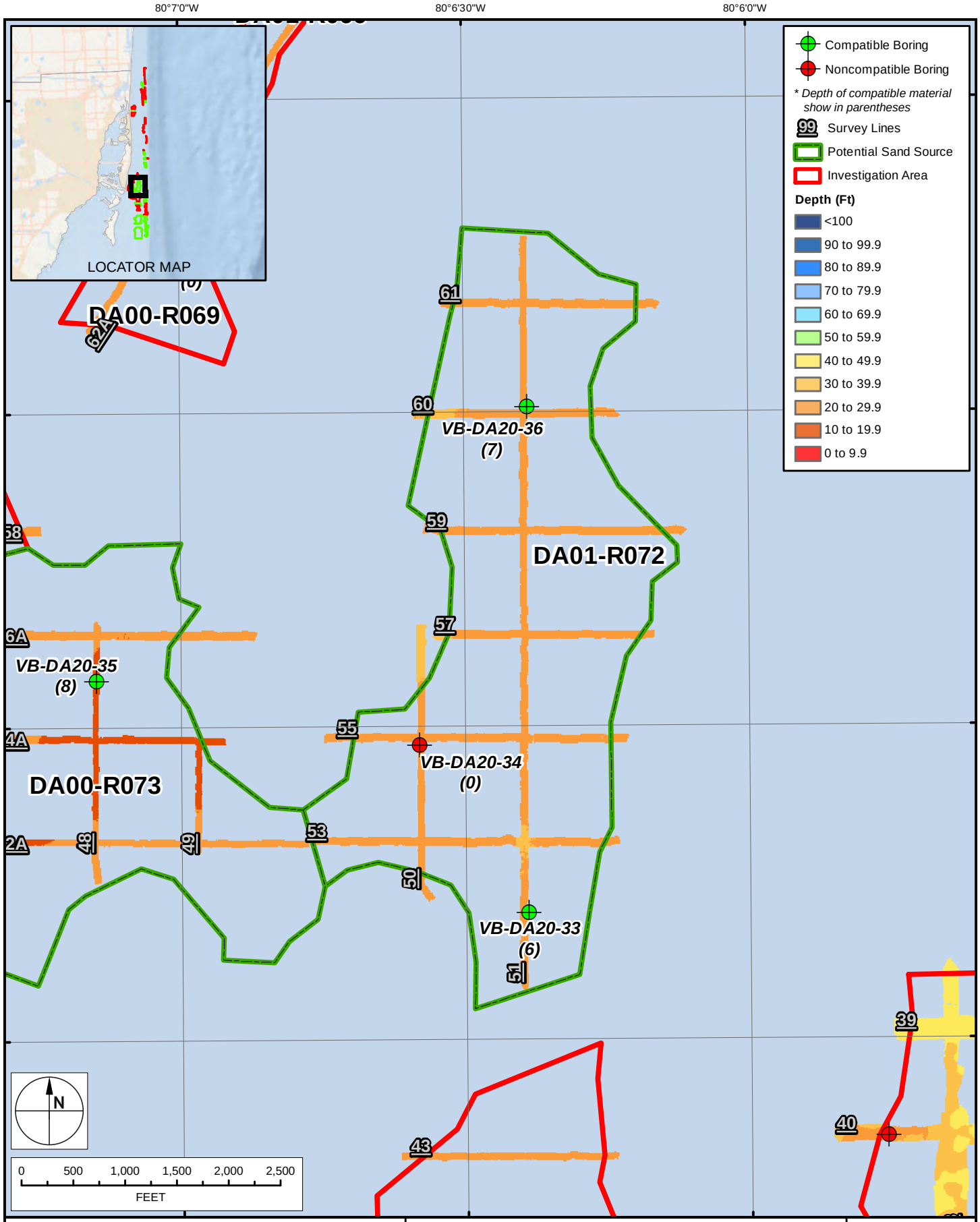
SAD SAND

Waterfall D58W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

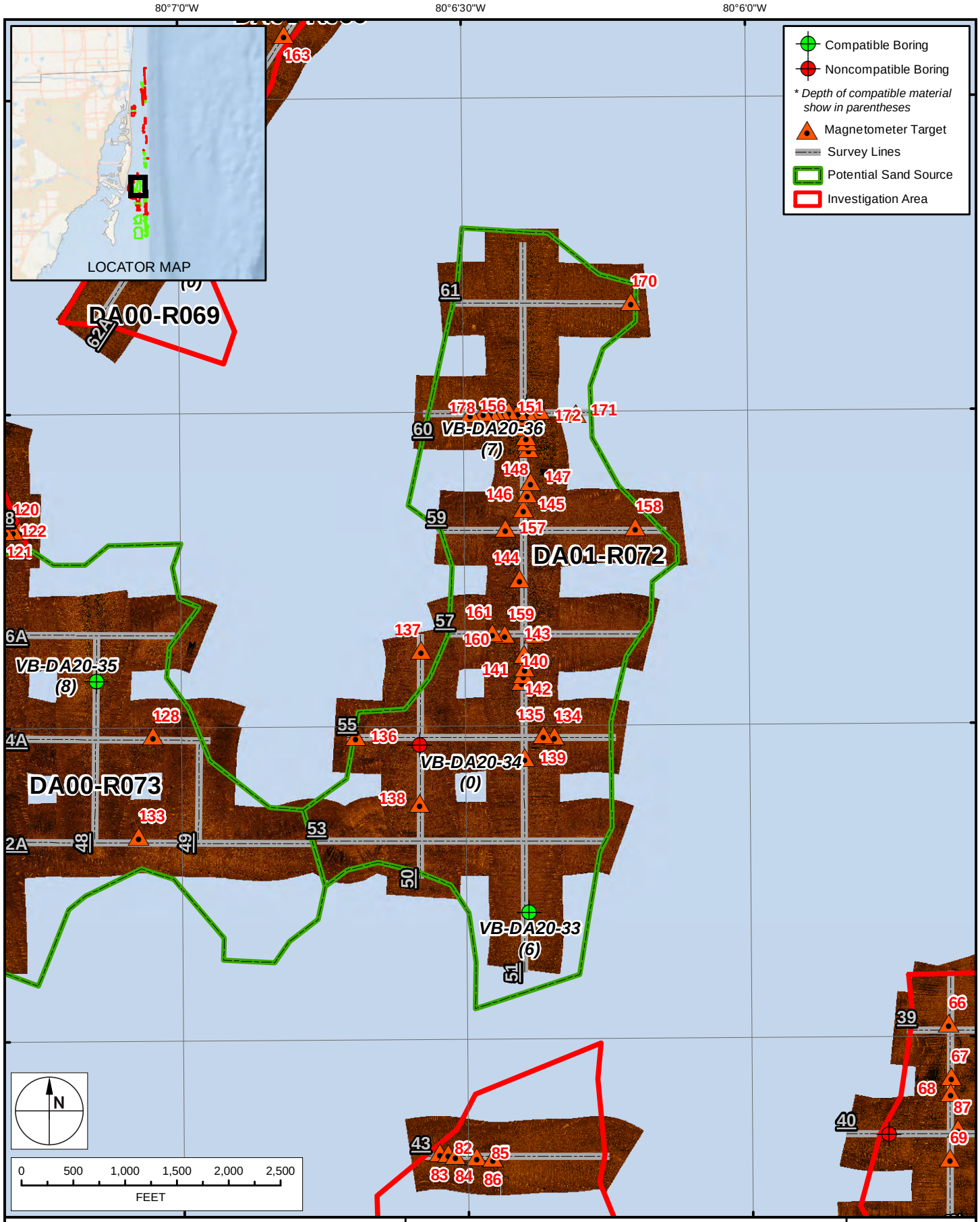
POTENTIAL SAND SOURCE DA01-R072
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA01-R072
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

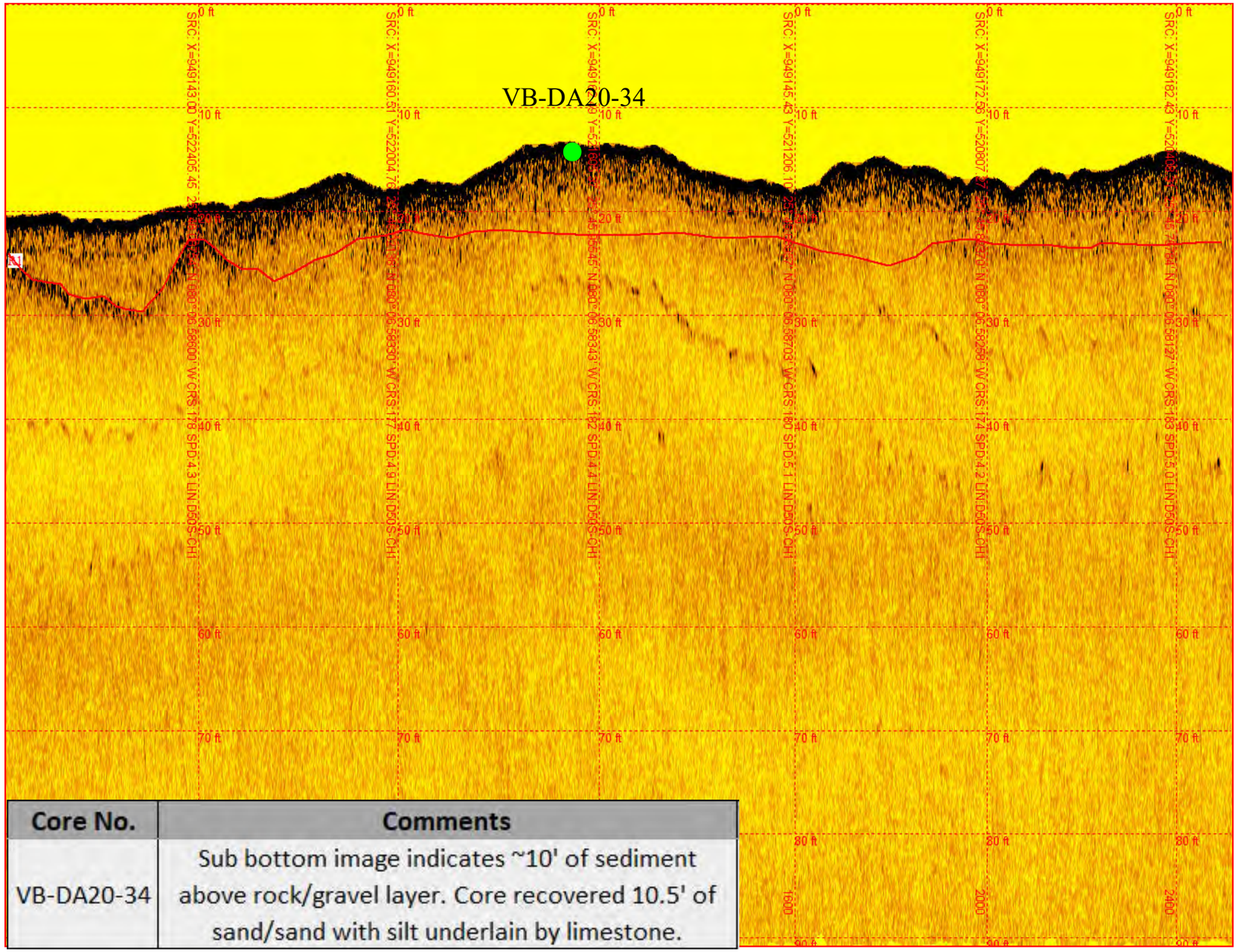
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D50S-CH1

N S



Core No.	Comments
VB-DA20-34	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 10.5' of sand/sand with silt underlain by limestone.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

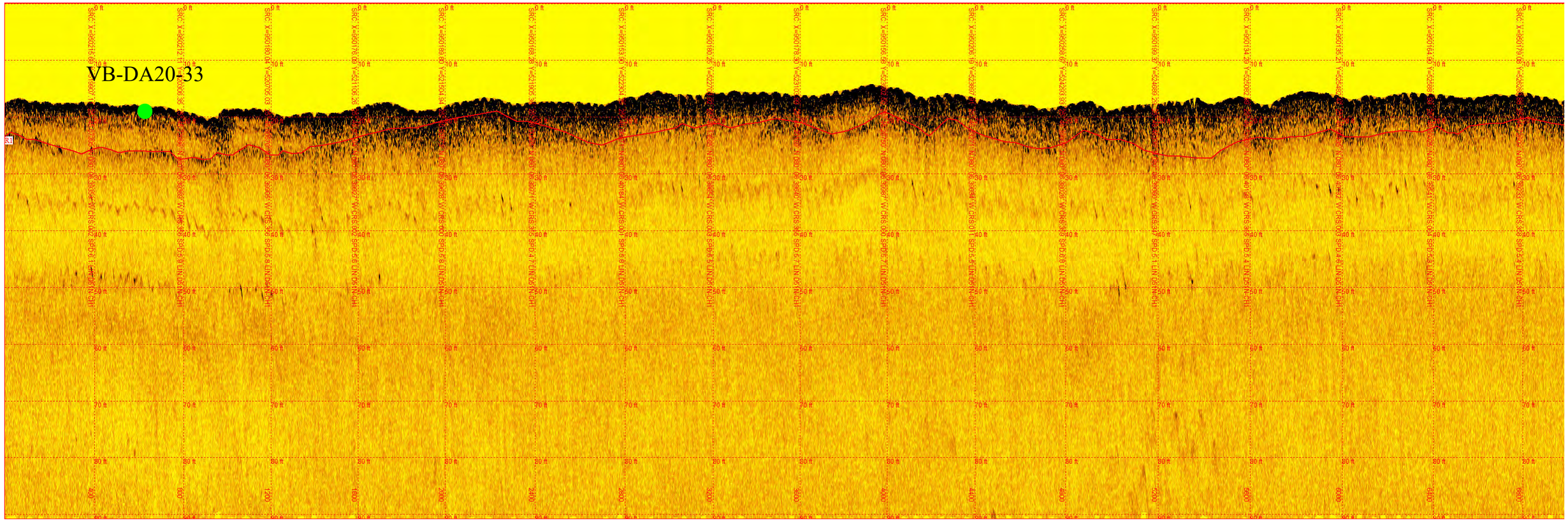
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D51N-CH1

S N



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

Core No.	Comments
VB-DA20-33	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 8.0' of sand underlain by limestone.

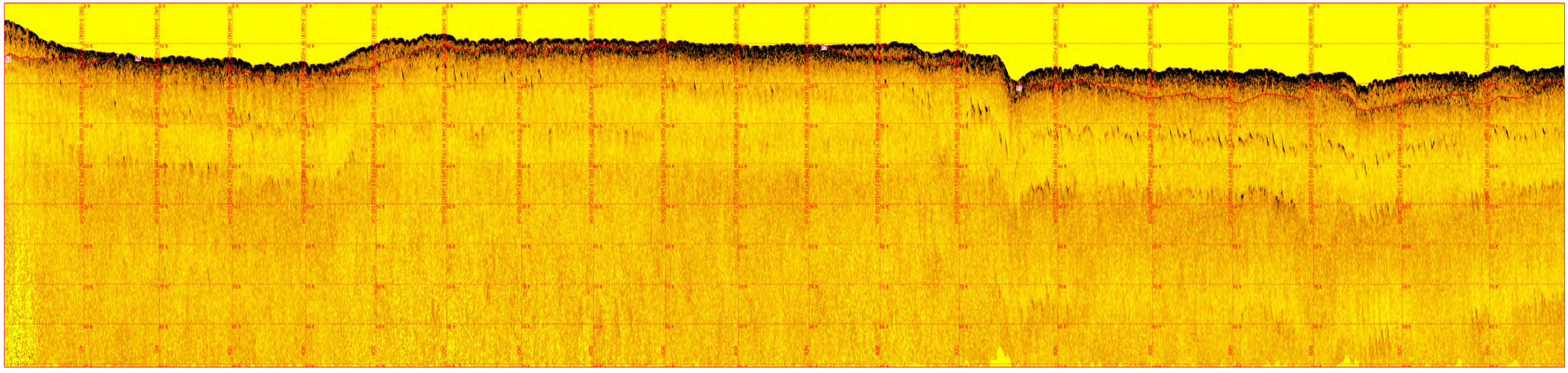
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D52-53E-CH1

W E



Sonar Processing by 6.01.0025 and SWaTHGen V2.01.003 Chesapeake Technology Inc.

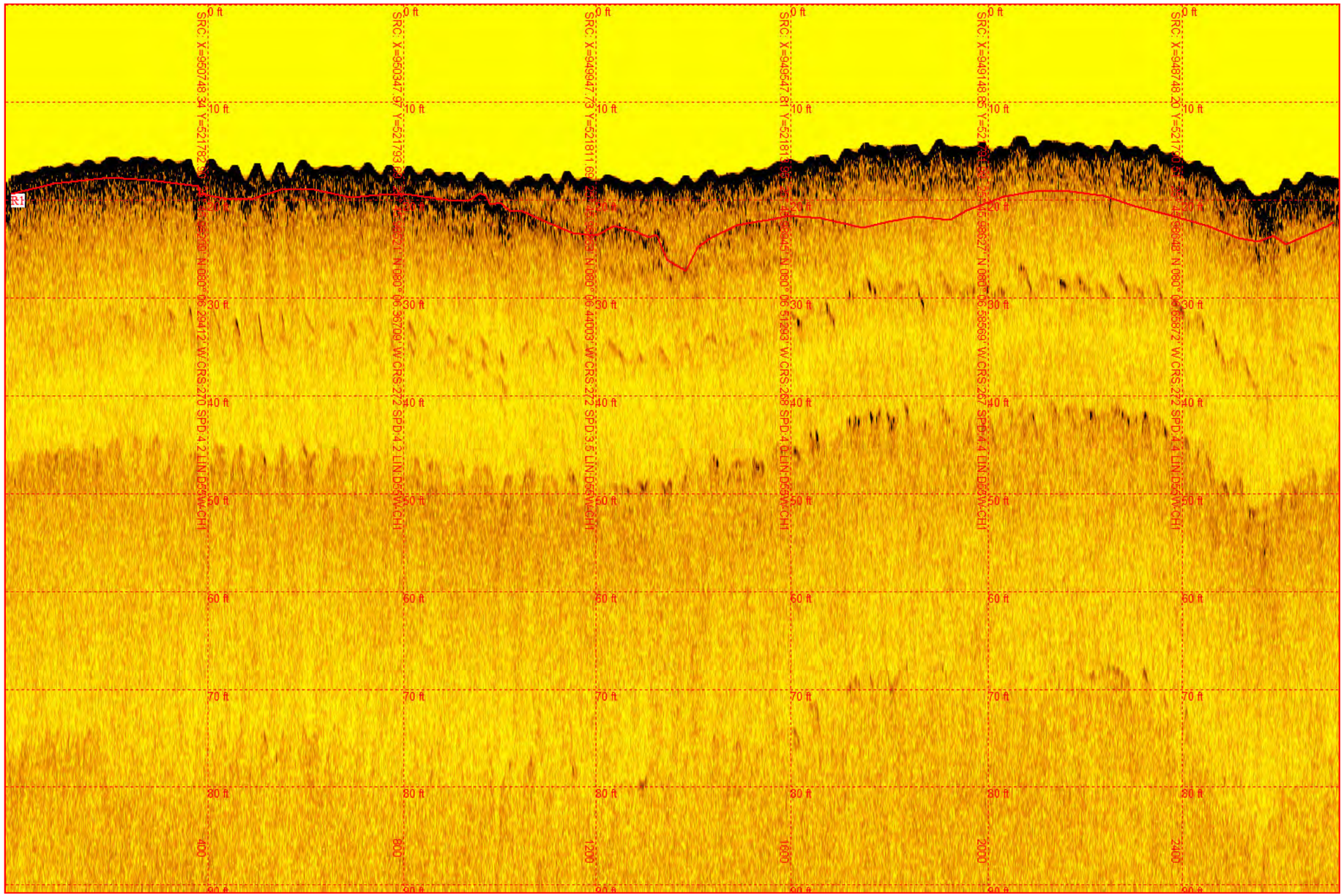
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D55W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

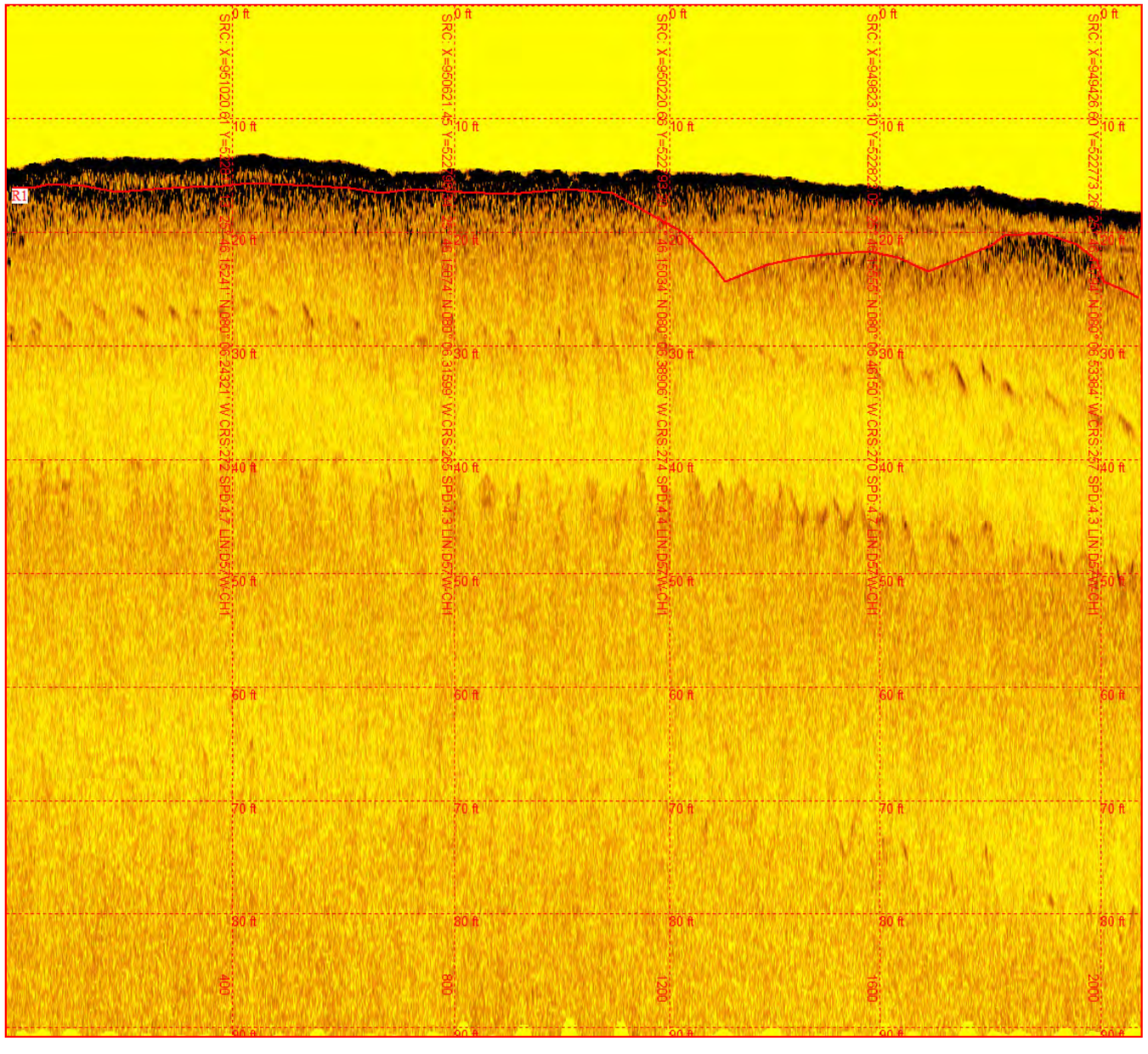
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D57W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

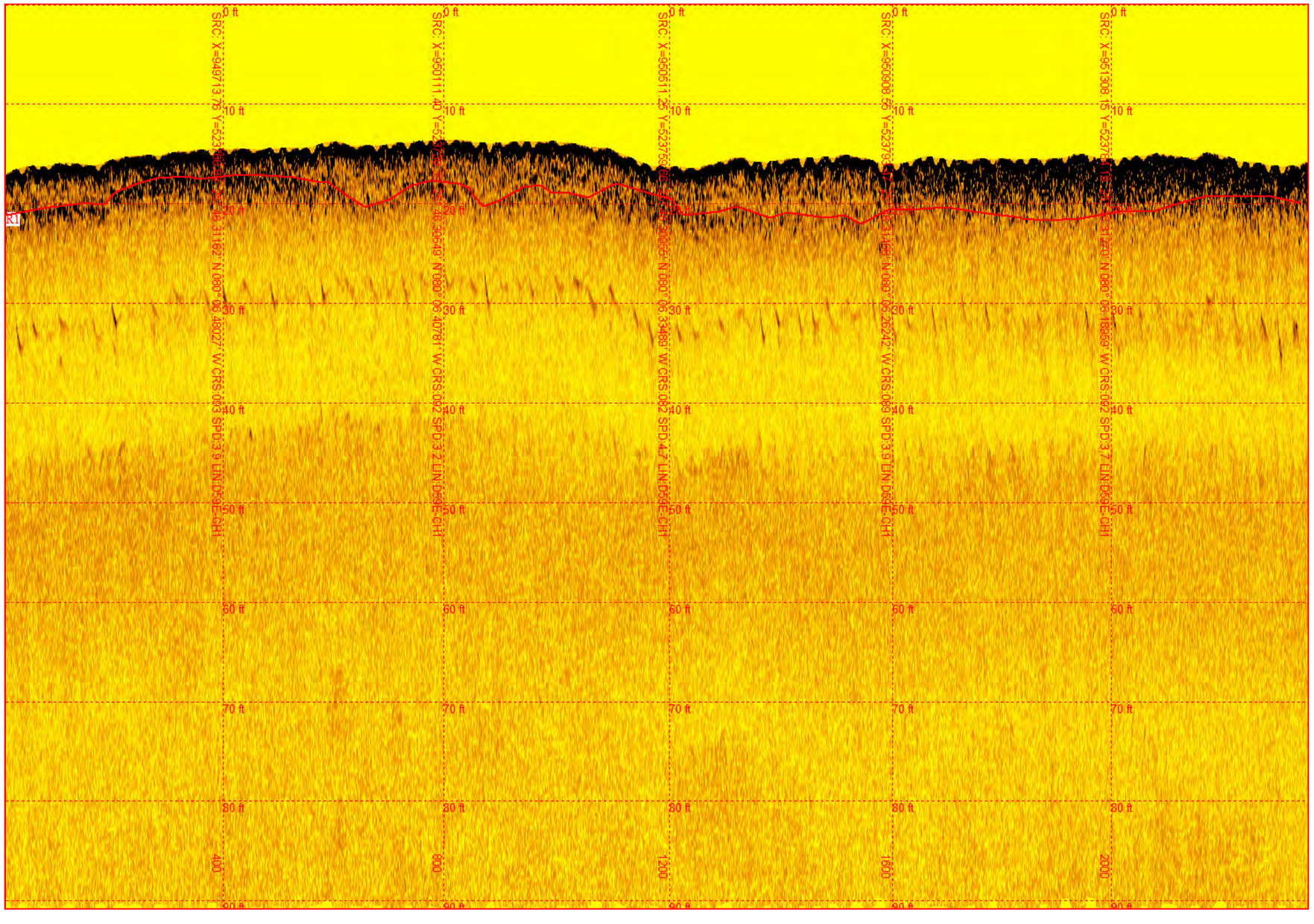
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D59E-CH1

W E



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

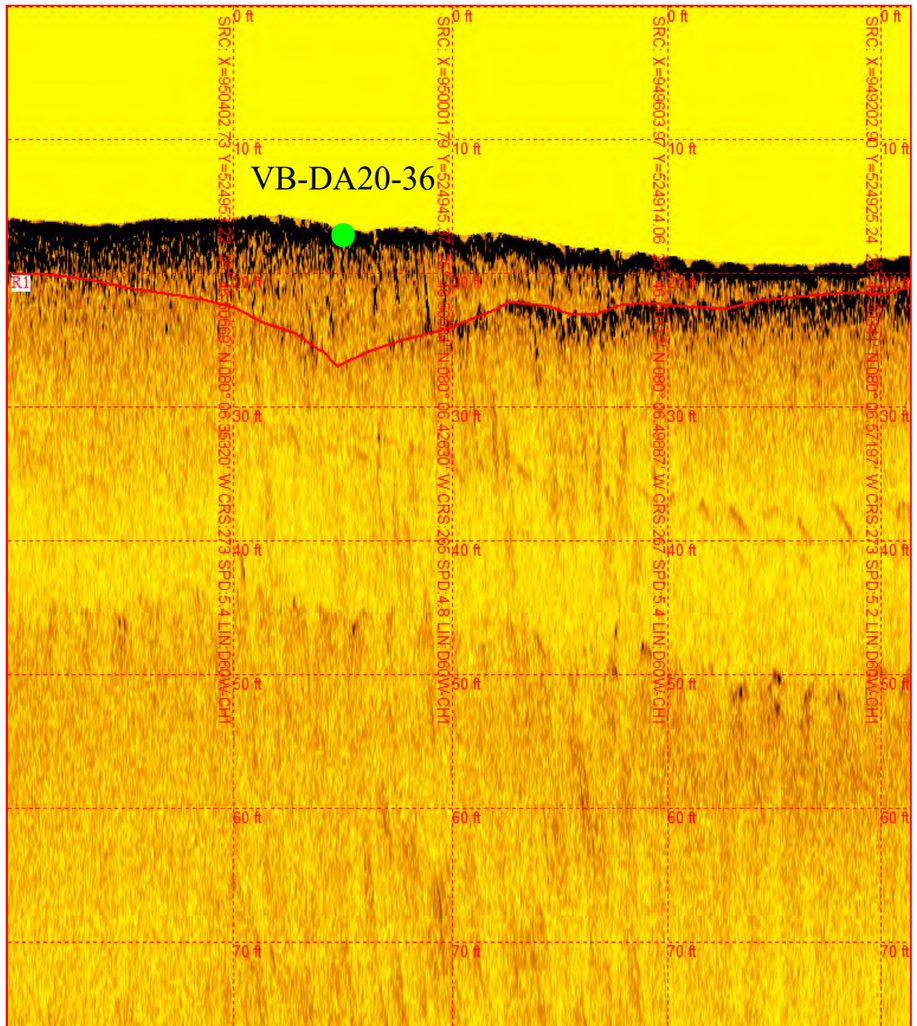
Company Logo

Sonographics, Inc.

SAD SAND

Waterfall D60W-CH1

E W



Core No.	Comments
VB-DA20-36	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 8.3' of sand underlain by limestone.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

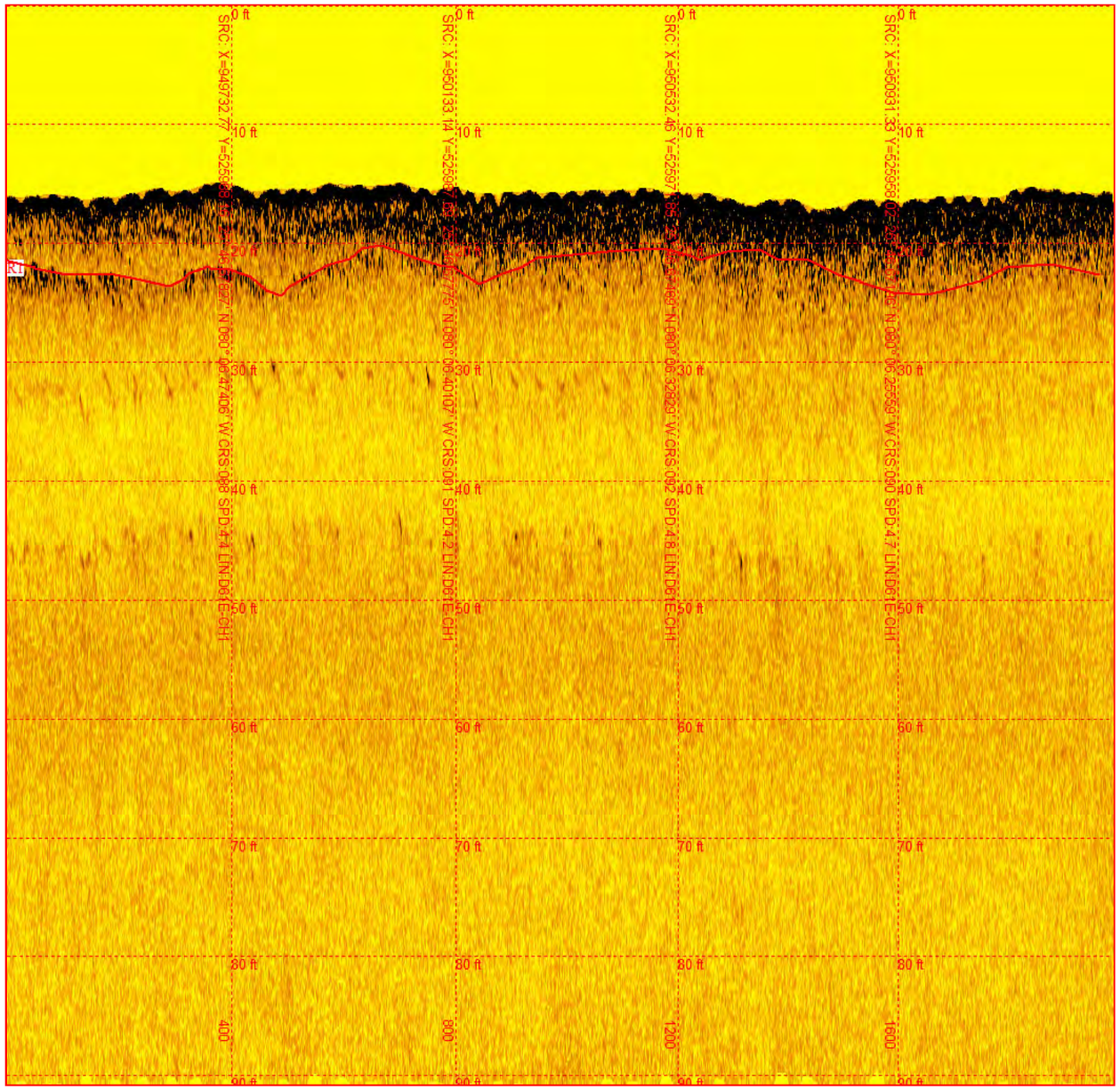
Company Logo

Sonographics, Inc.

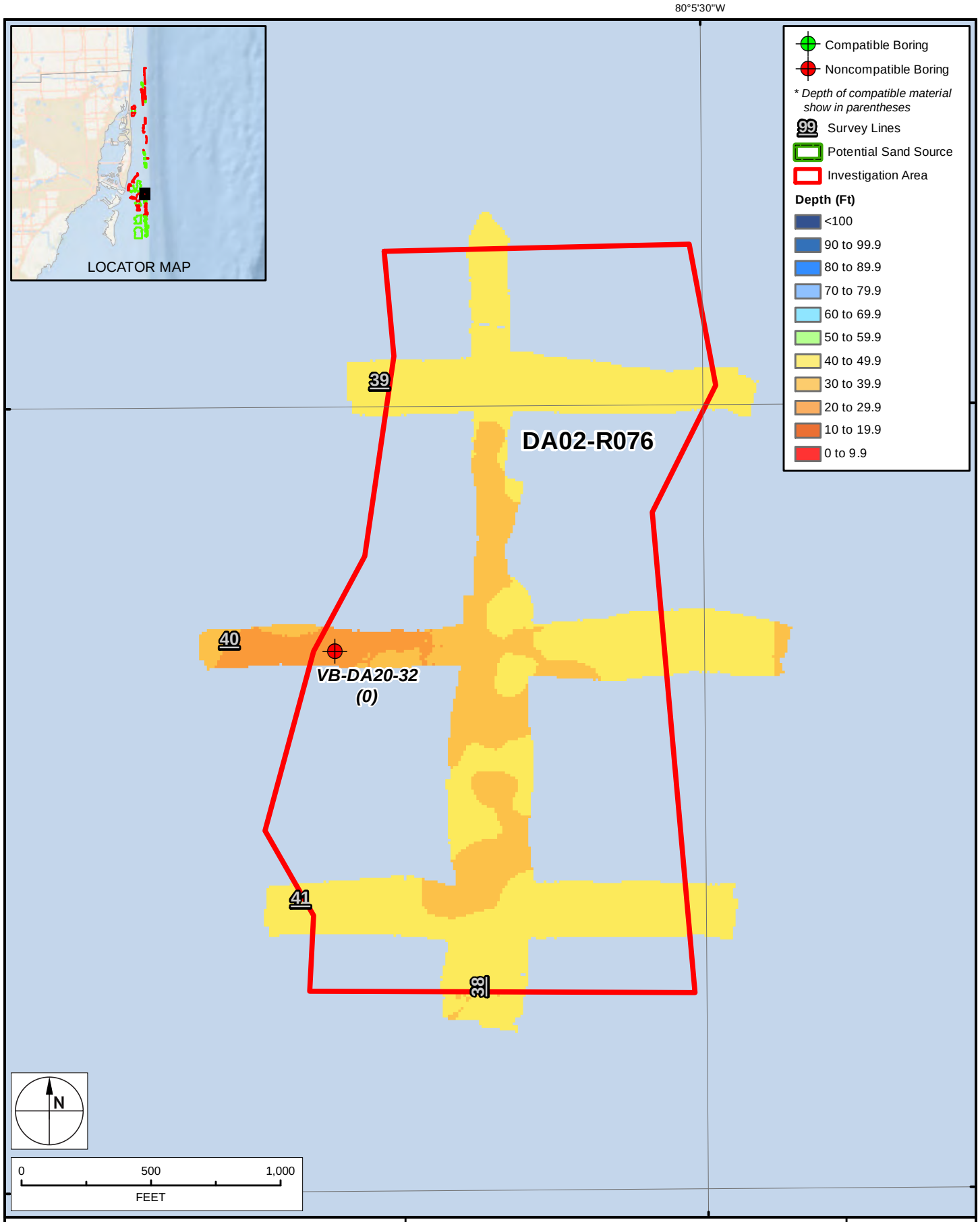
SAD SAND

Waterfall D61E-CH1

W E



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA02-R076
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02
DRAWN BY PL
SHEET
DATE APRIL 2021

TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA02-R076
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02
DRAWN BY PL
SHEET
DATE APRIL 2021

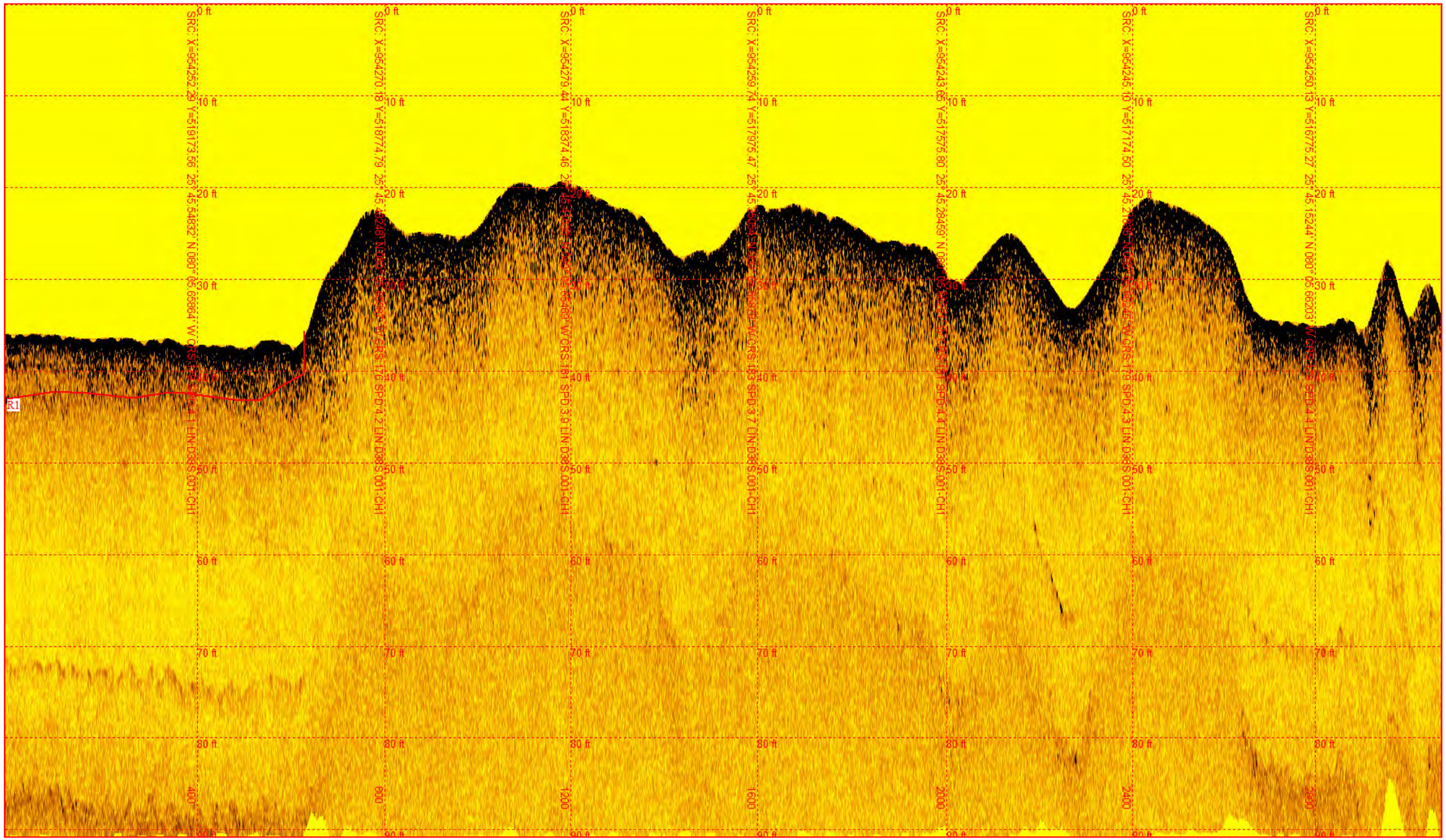
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D38S.001-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

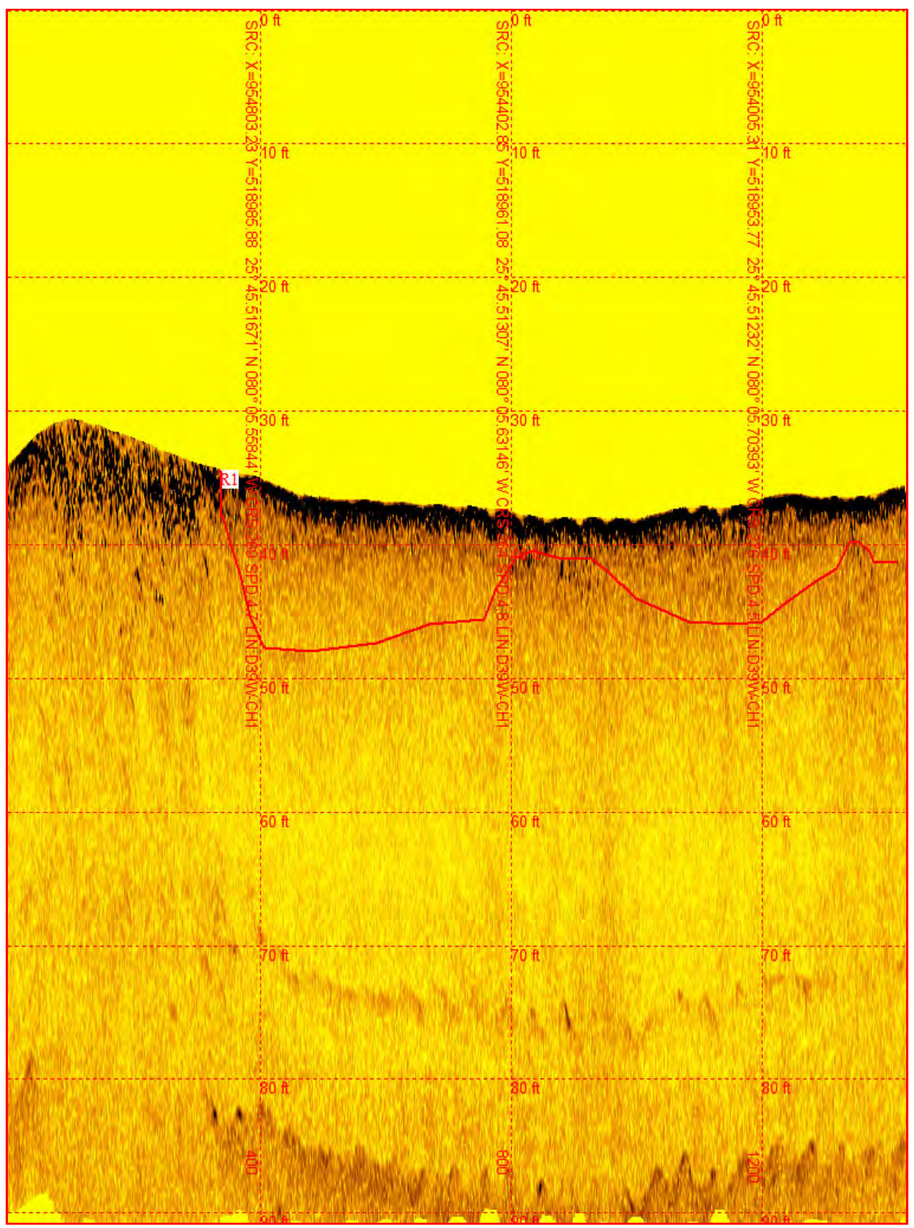
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D39W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

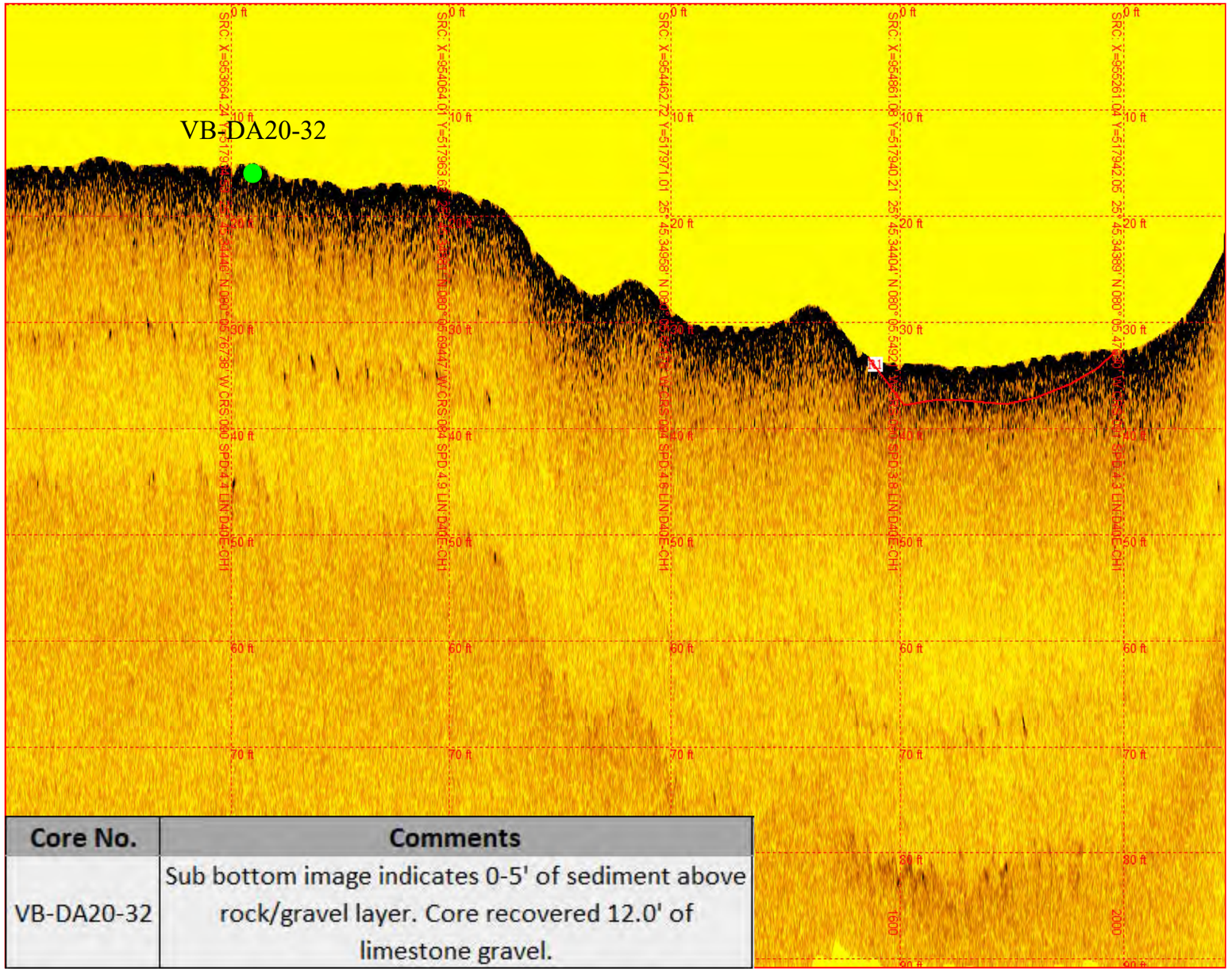
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D40E-CH1

W E



Core No.	Comments
VB-DA20-32	Sub bottom image indicates 0-5' of sediment above rock/gravel layer. Core recovered 12.0' of limestone gravel.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

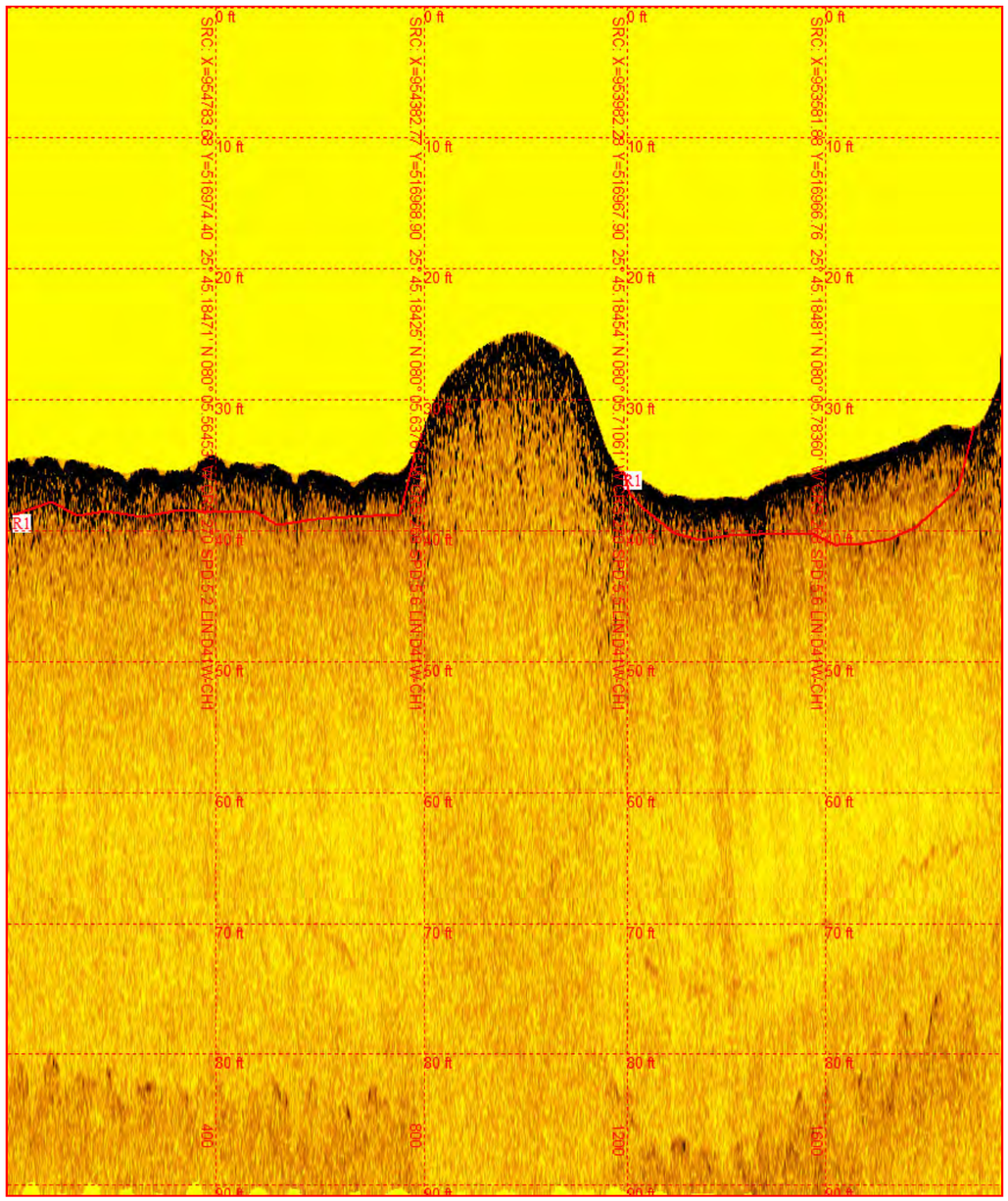
Company Logo

Sonographics, Inc.

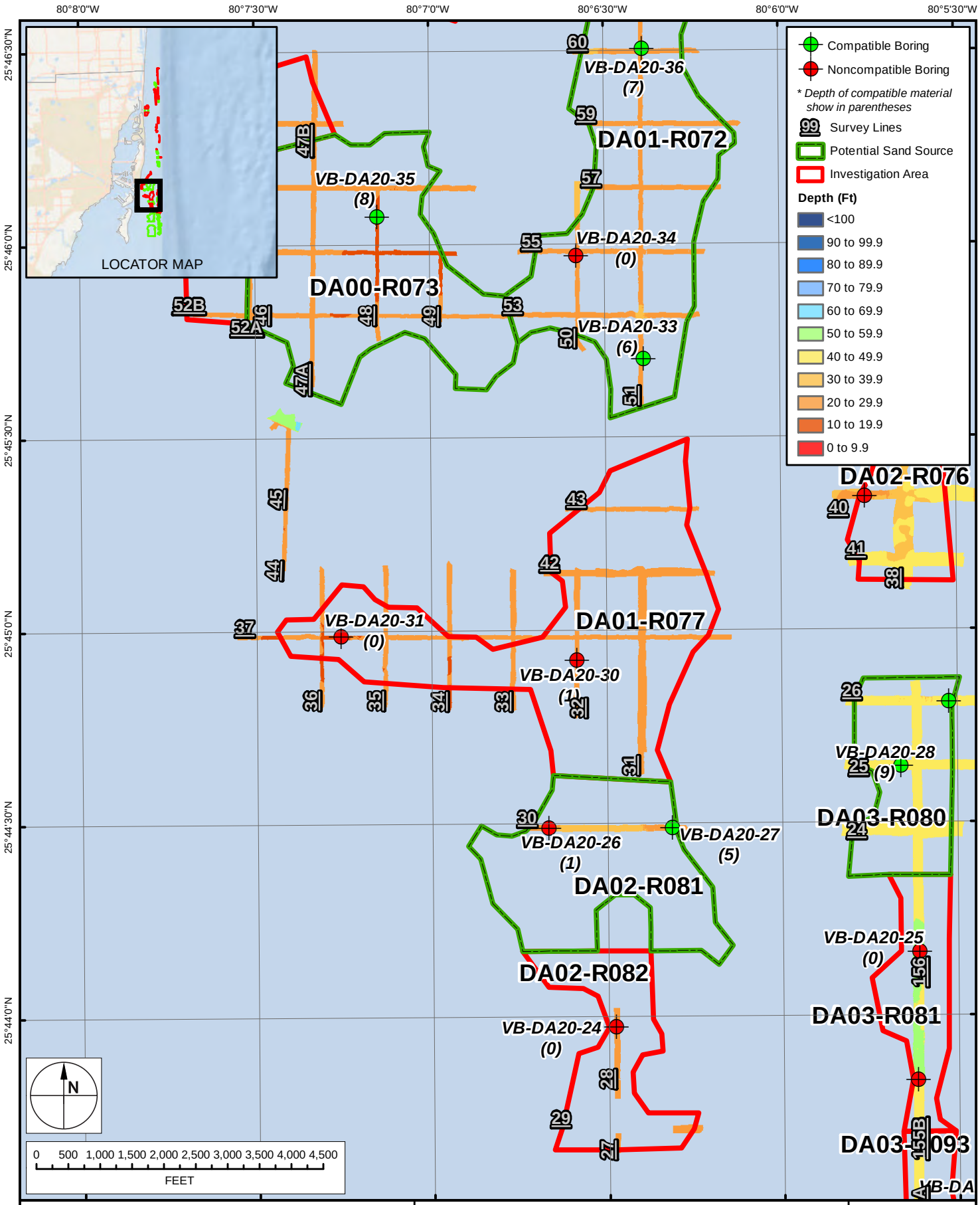
SAD SAND South Miami Dade County

Waterfall D41W-CH1

E W



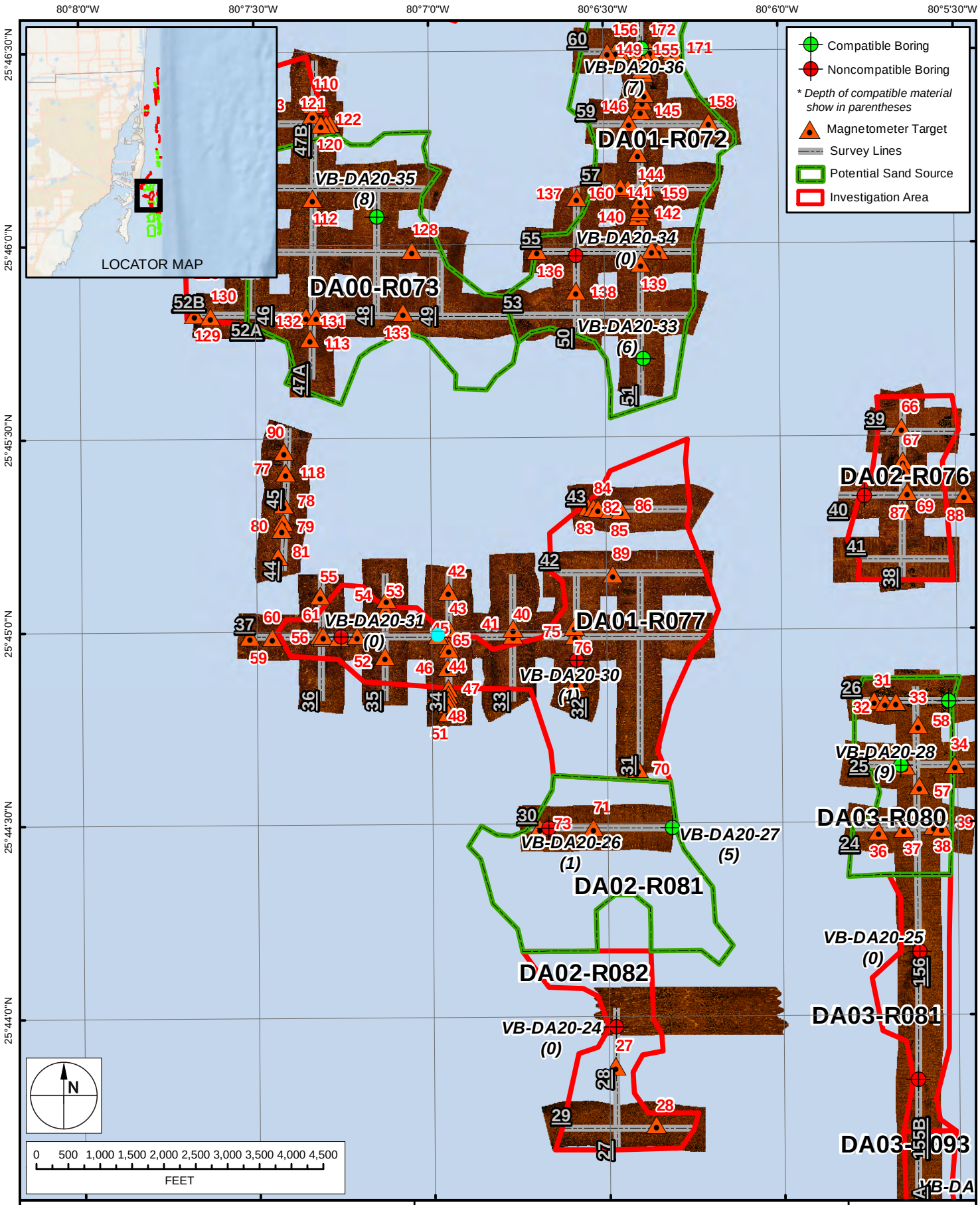
Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R077
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02
DRAWN BY PL
SHEET
DATE APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA01-R077
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02
DRAWN BY PL
SHEET
DATE APRIL 2021

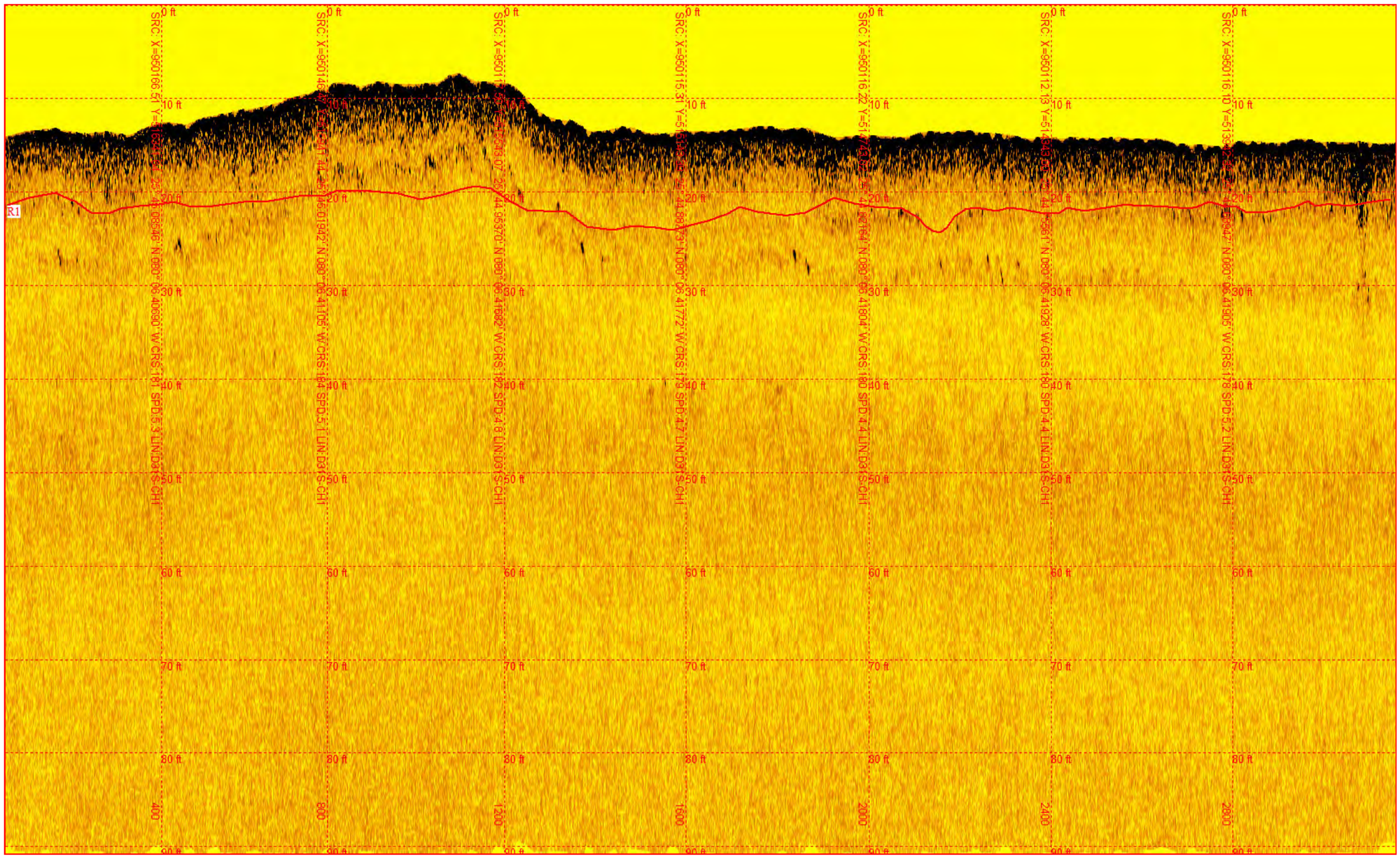
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D31S-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

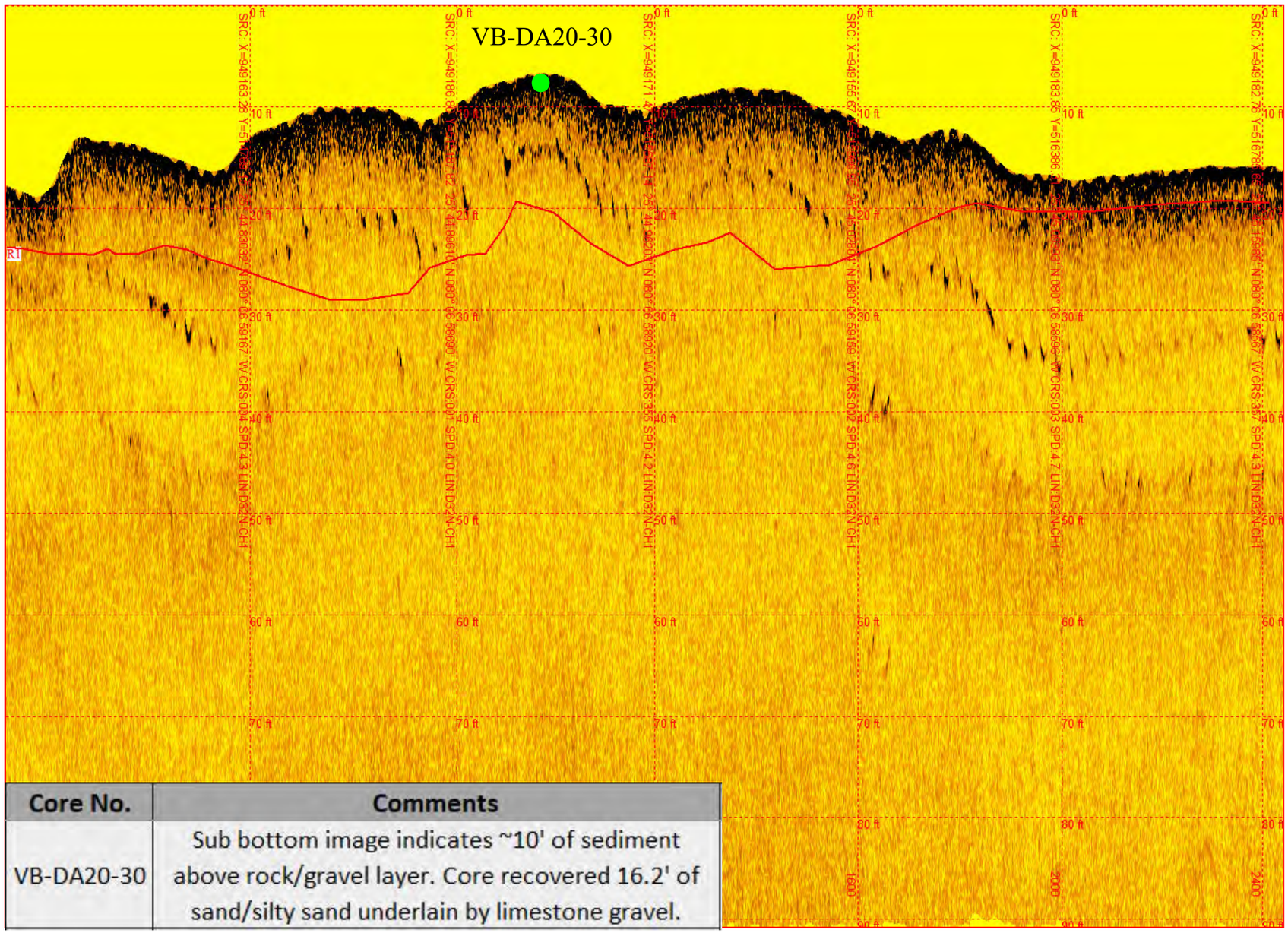
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D32N-CH1

S N



Core No.	Comments
VB-DA20-30	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 16.2' of sand/silty sand underlain by limestone gravel.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

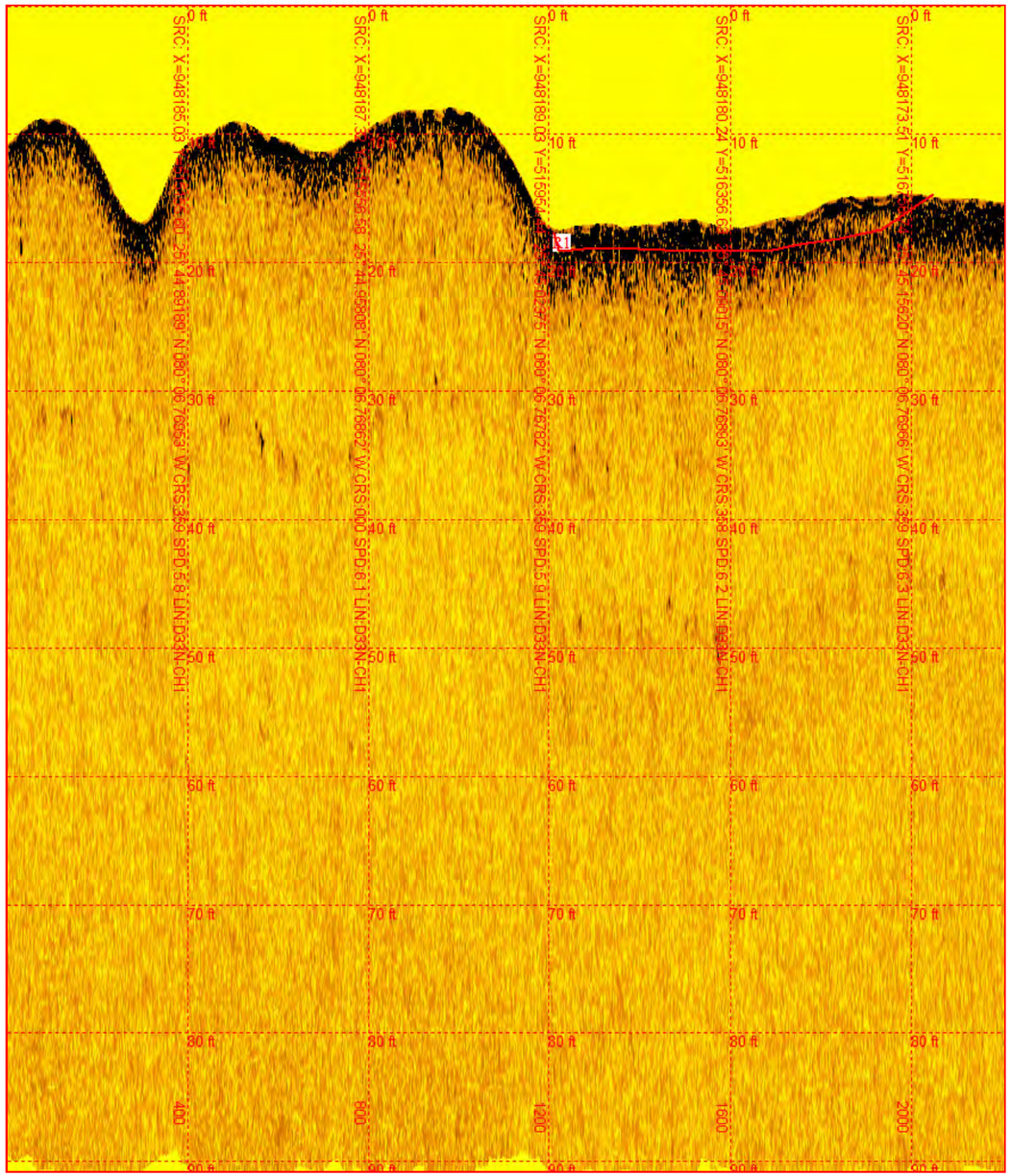
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D33N-CH1

S N



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

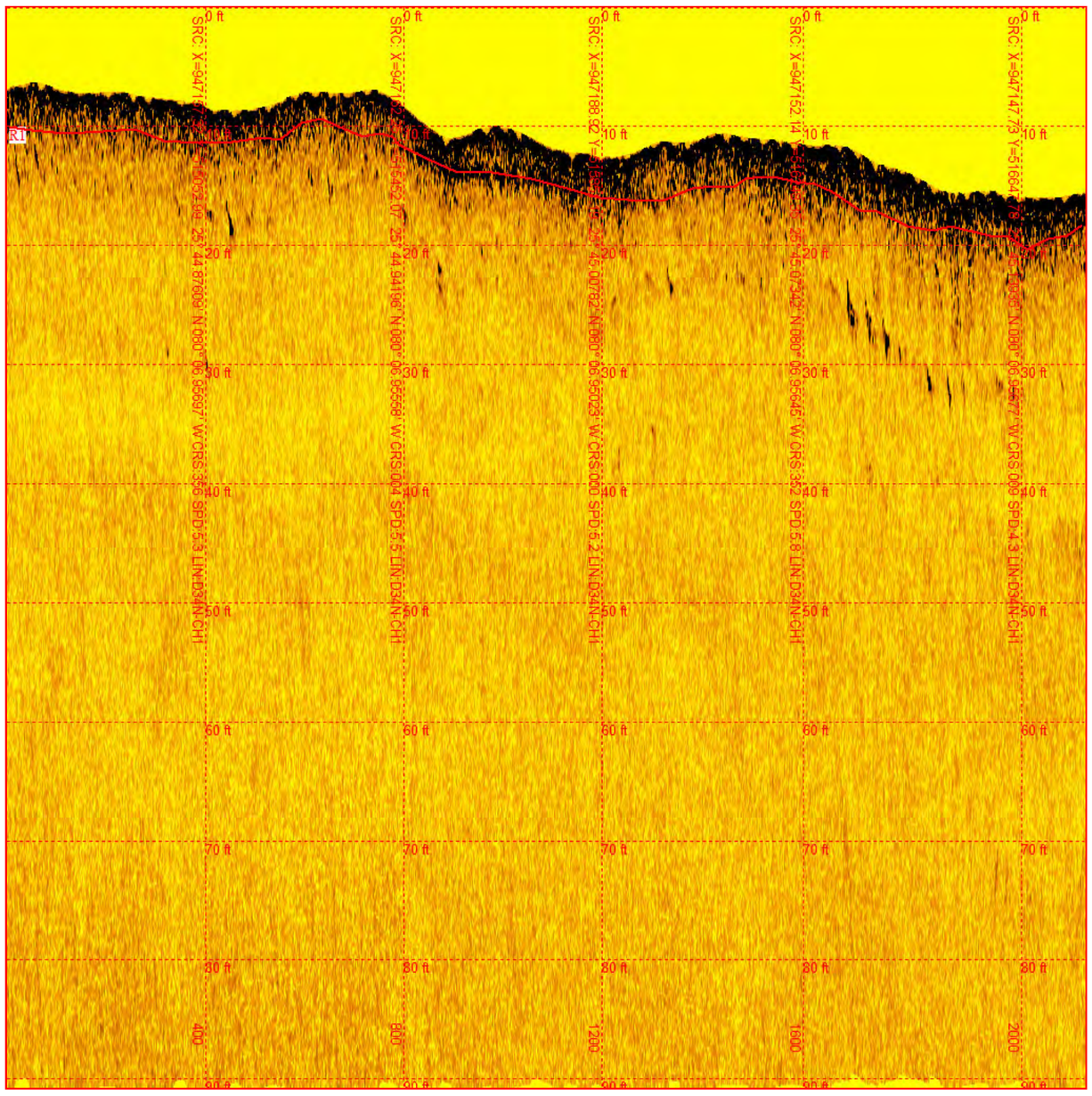
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D34N-CH1

S N



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

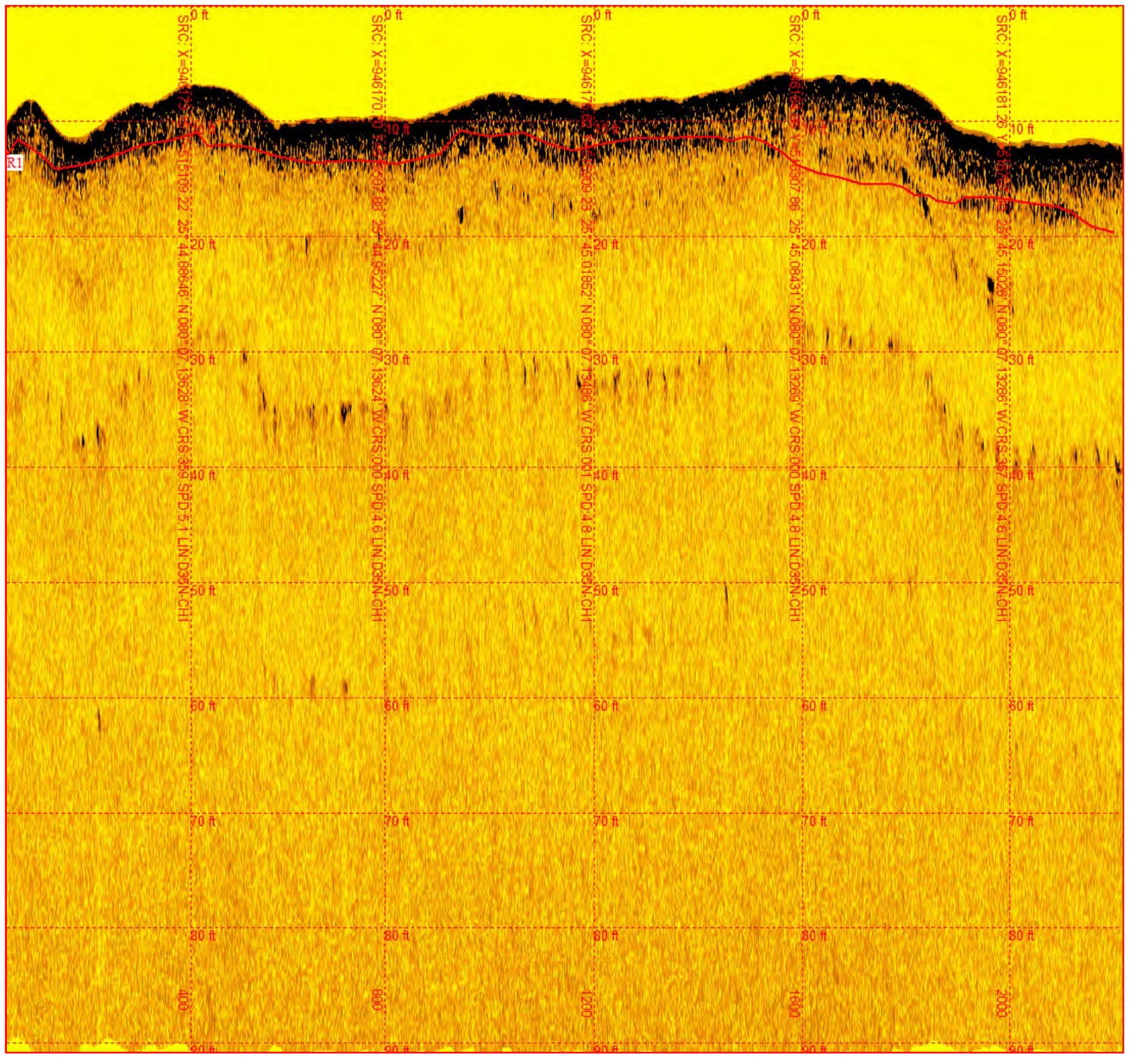
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D35N-CH1

S N



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

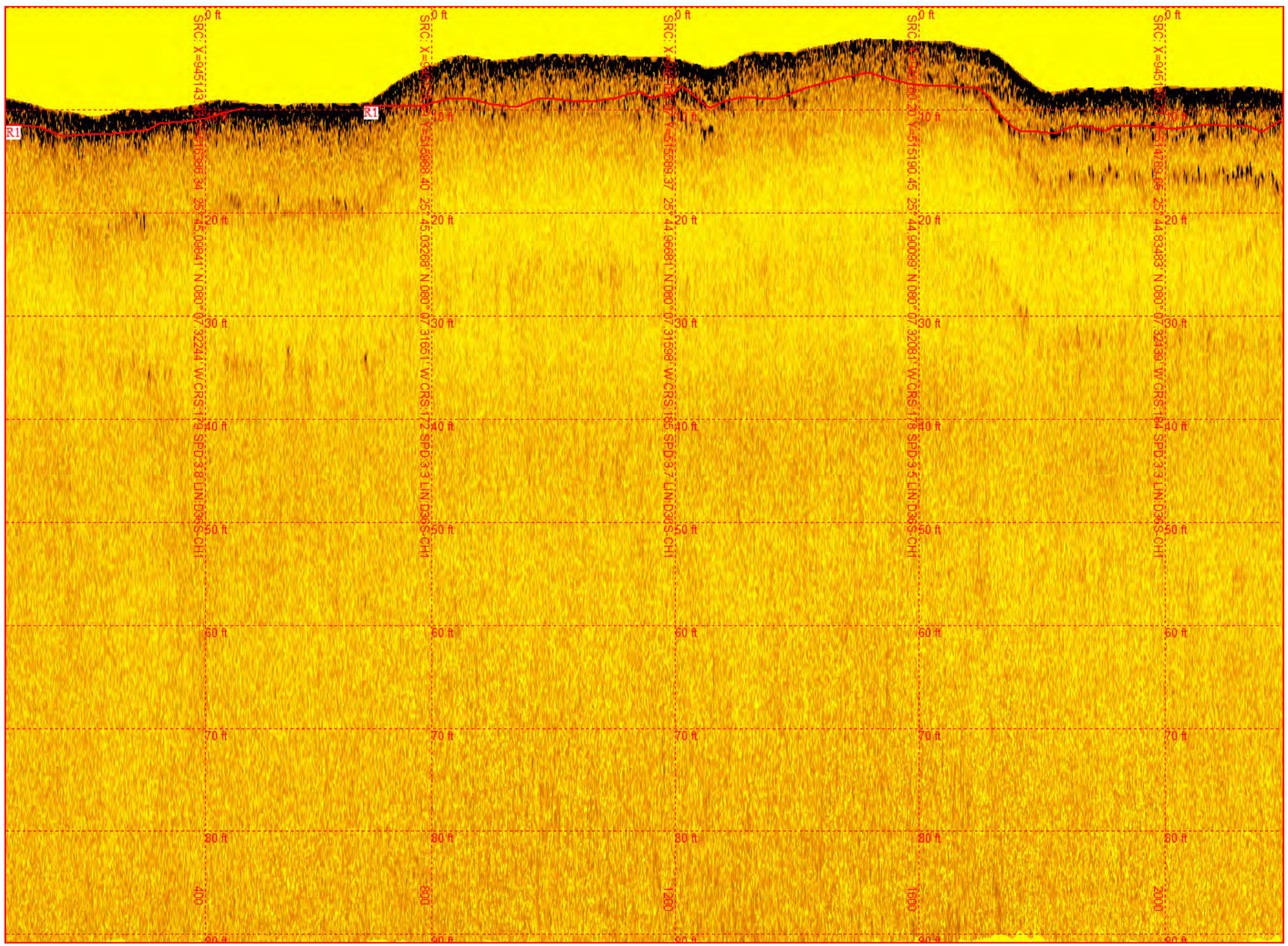
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D36S-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

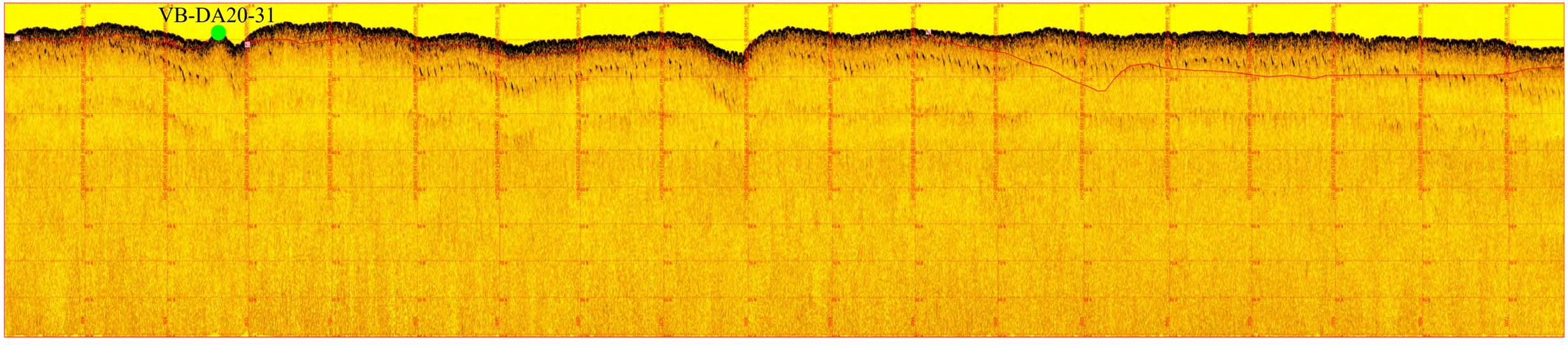
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D37E-CH1

W E



Sonar Processing by 6.01.0025 and SWG/WebGen V2.01.007 Chesapeake Technology, Inc.

Core No.	Comments
VB-DA20-31	Sub bottom image indicates 0-5' of sediment above rock/gravel layer. Core recovered 3.3' of sand with silt/silty sand underlain by limestone gravel.

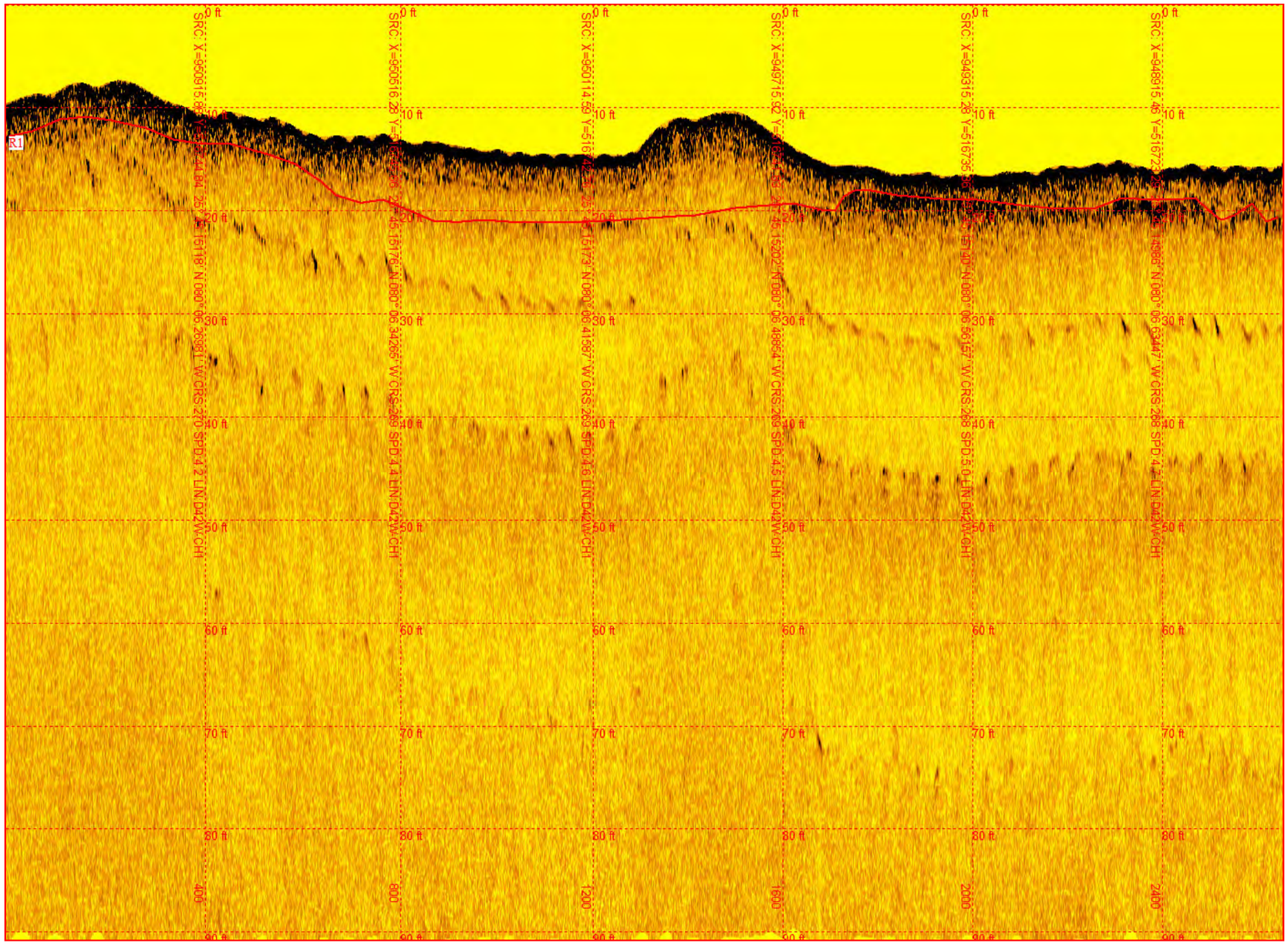
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D42W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

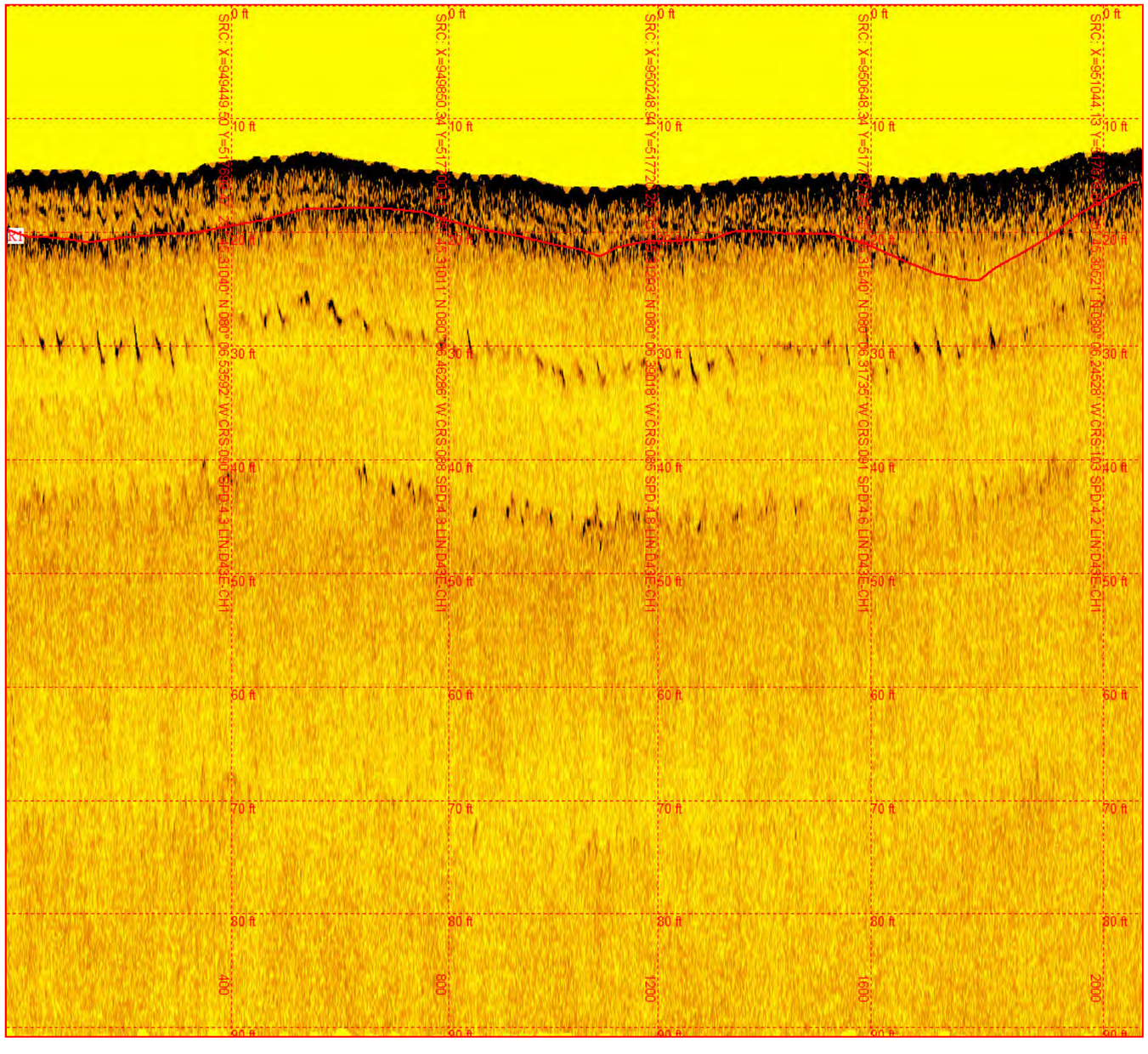
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D43E-CH1

W E



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

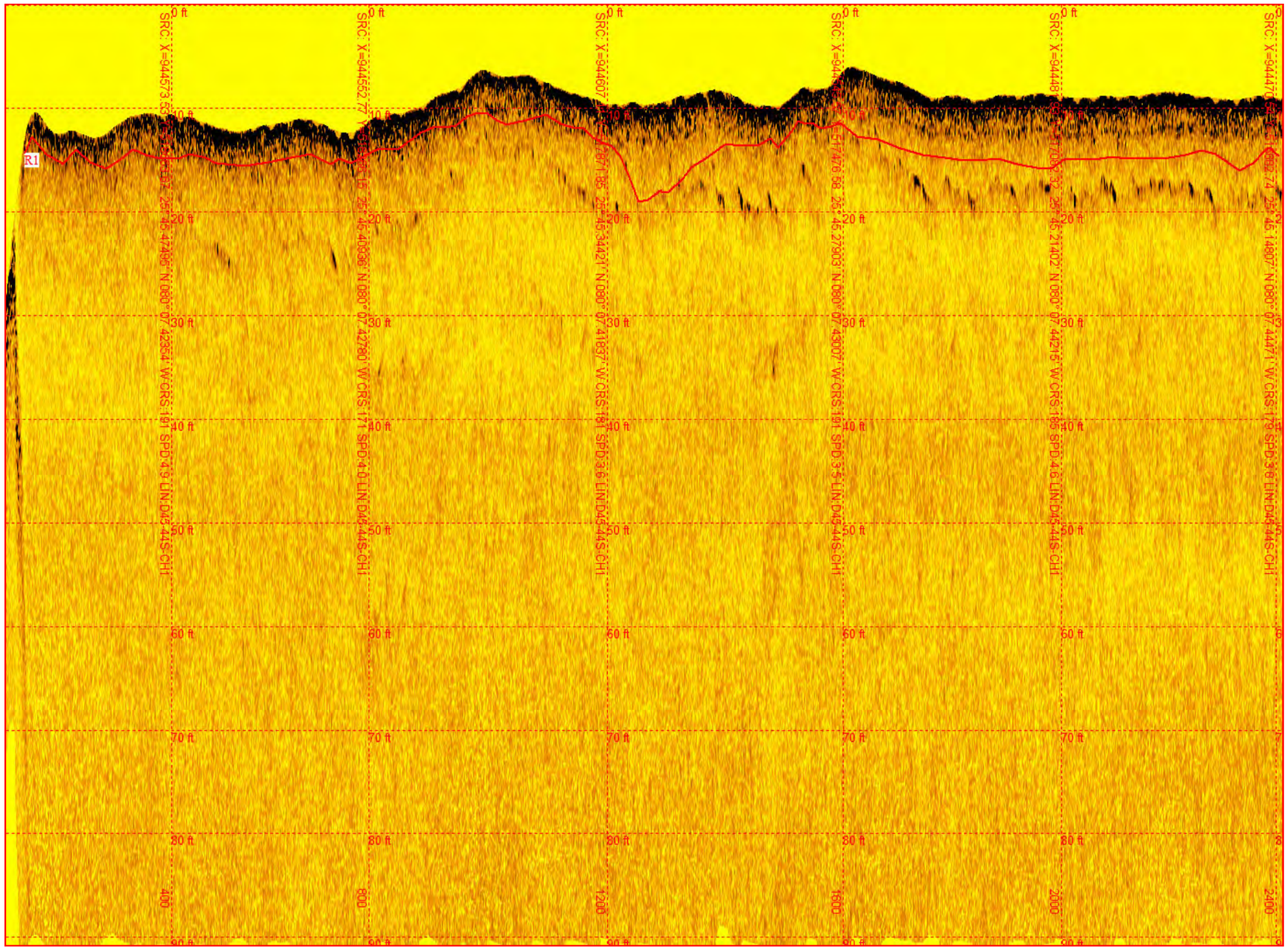
Company Logo

Sonographics, Inc.

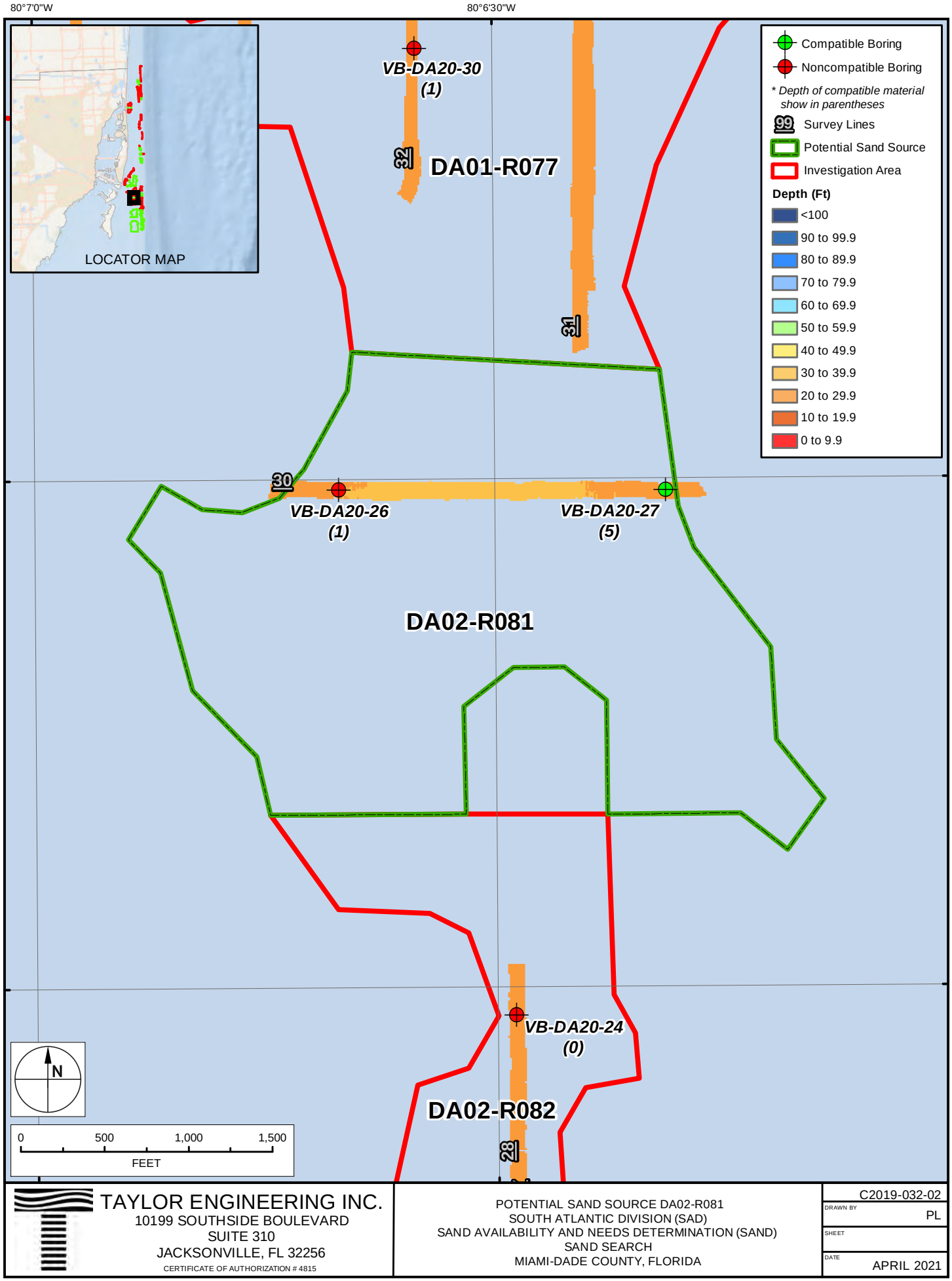
SAD SAND South Miami Dade County

Waterfall D45-44S-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA02-R081
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

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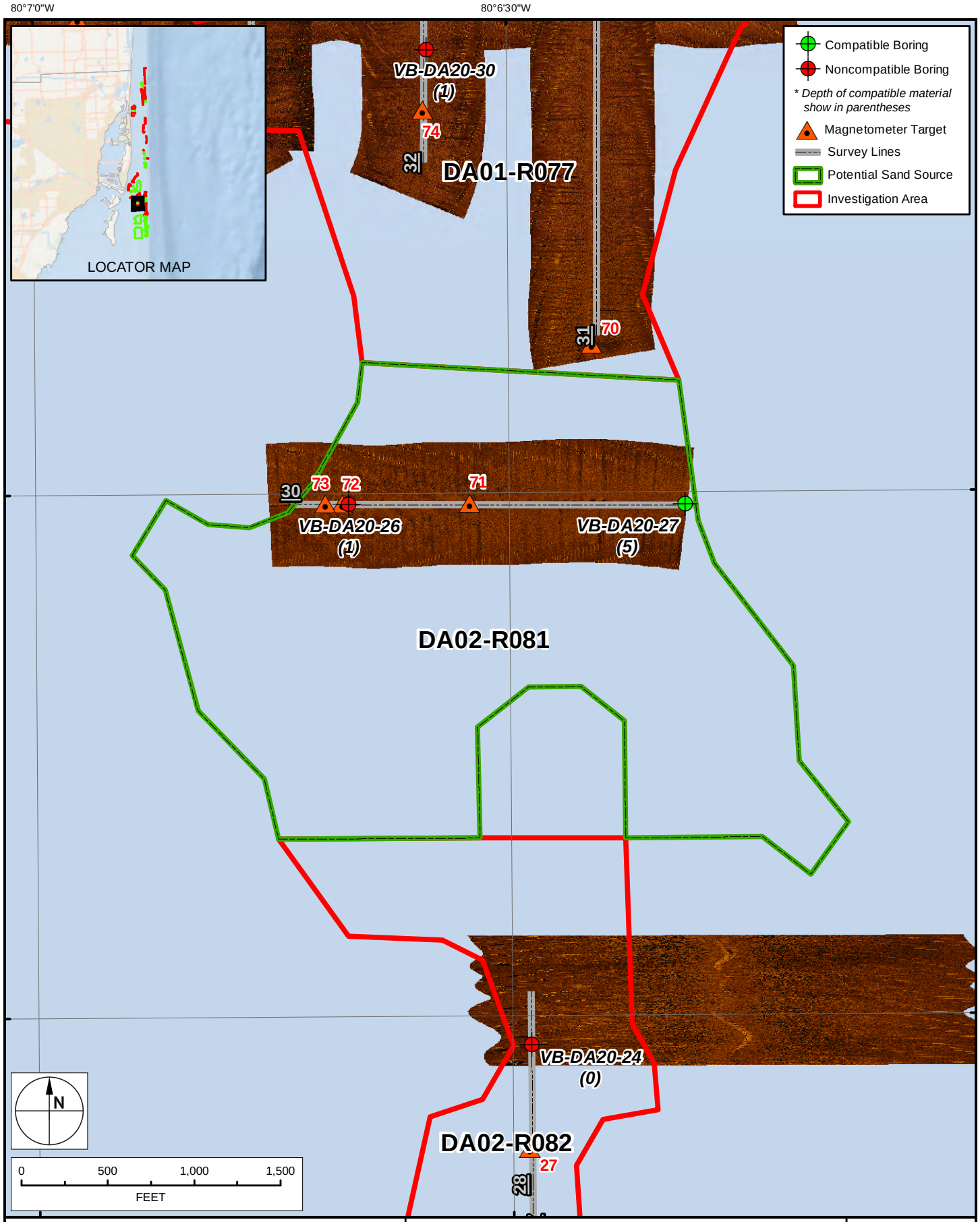
DATE: APRIL 2021



TAYLOR ENGINEERING INC.
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SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA02-R081
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

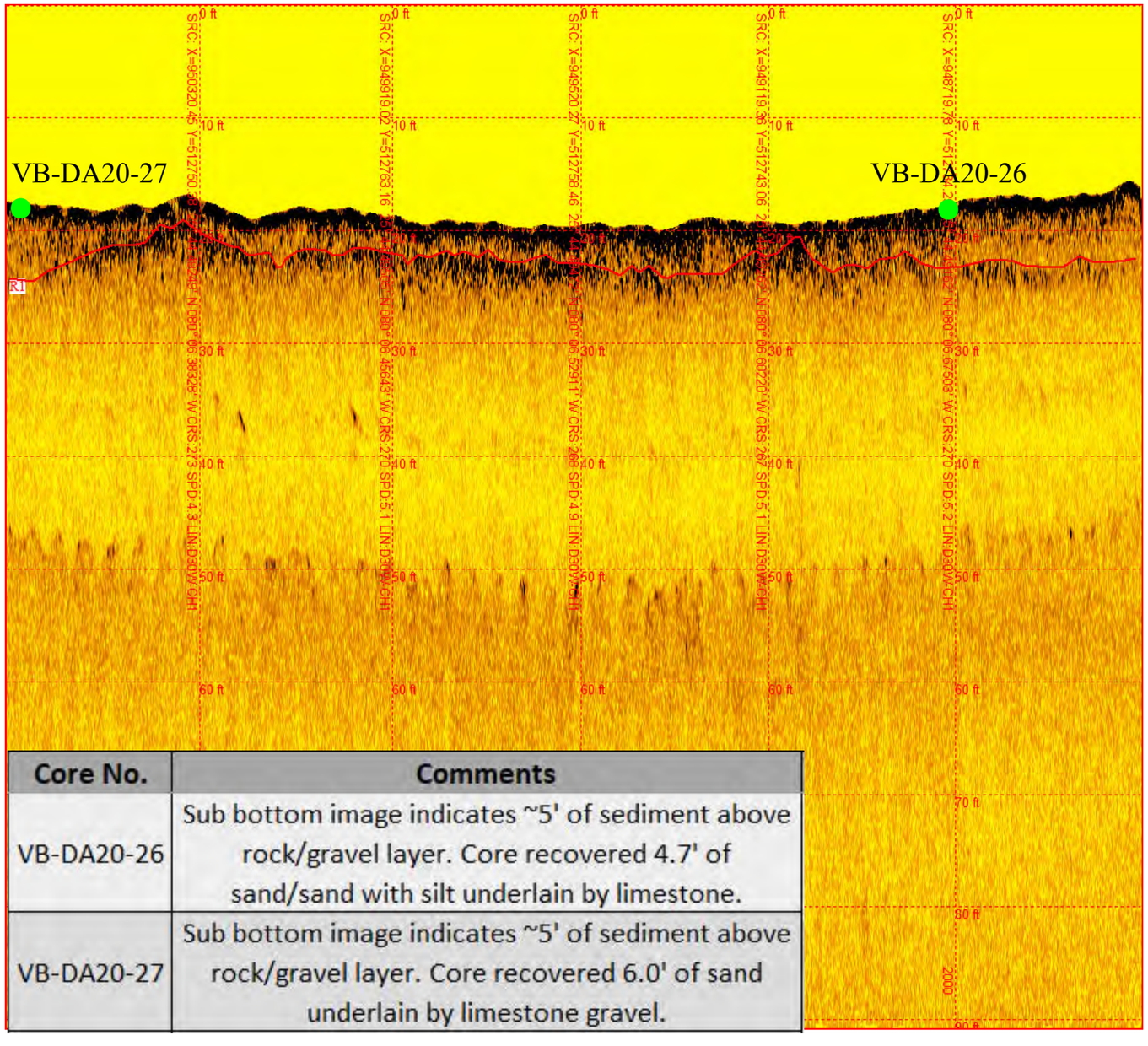
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

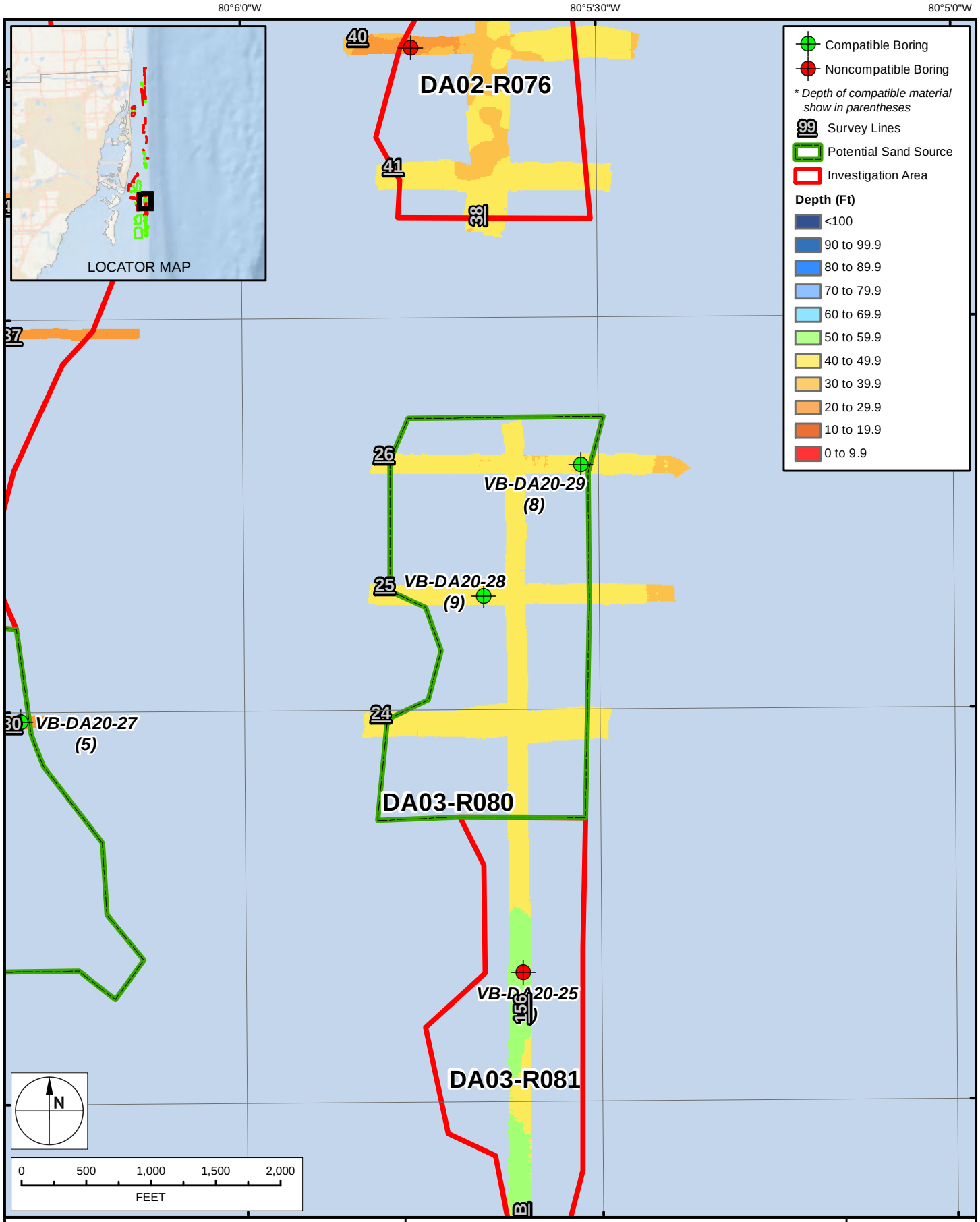
Waterfall D30W-CH1

E W



Core No.	Comments
VB-DA20-26	Sub bottom image indicates ~5' of sediment above rock/gravel layer. Core recovered 4.7' of sand/sand with silt underlain by limestone.
VB-DA20-27	Sub bottom image indicates ~5' of sediment above rock/gravel layer. Core recovered 6.0' of sand underlain by limestone gravel.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA03-R080
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

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DATE: APRIL 2021

TAYLOR ENGINEERING INC.
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CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA03-R080
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

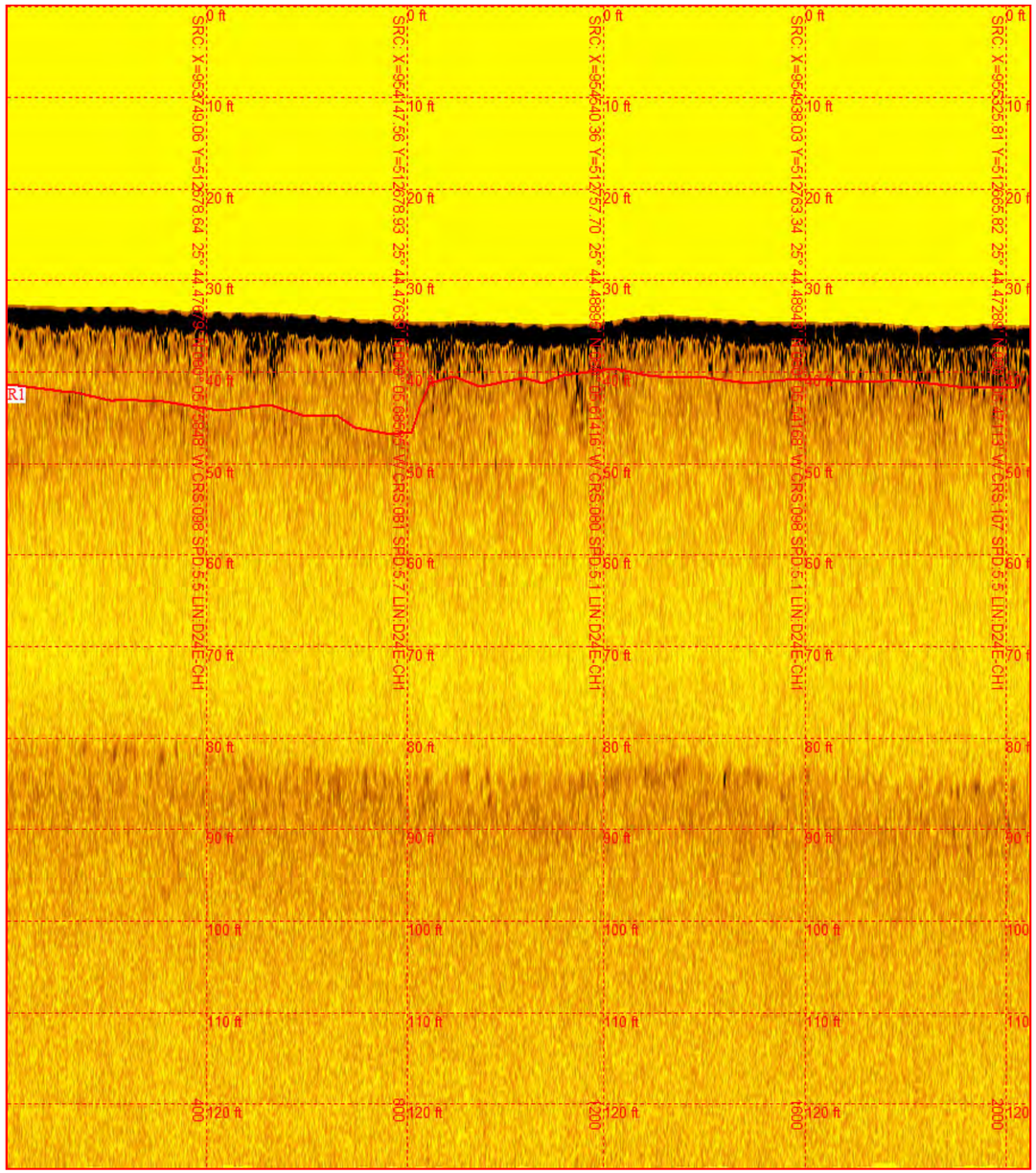
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D24E-CH1

W E



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

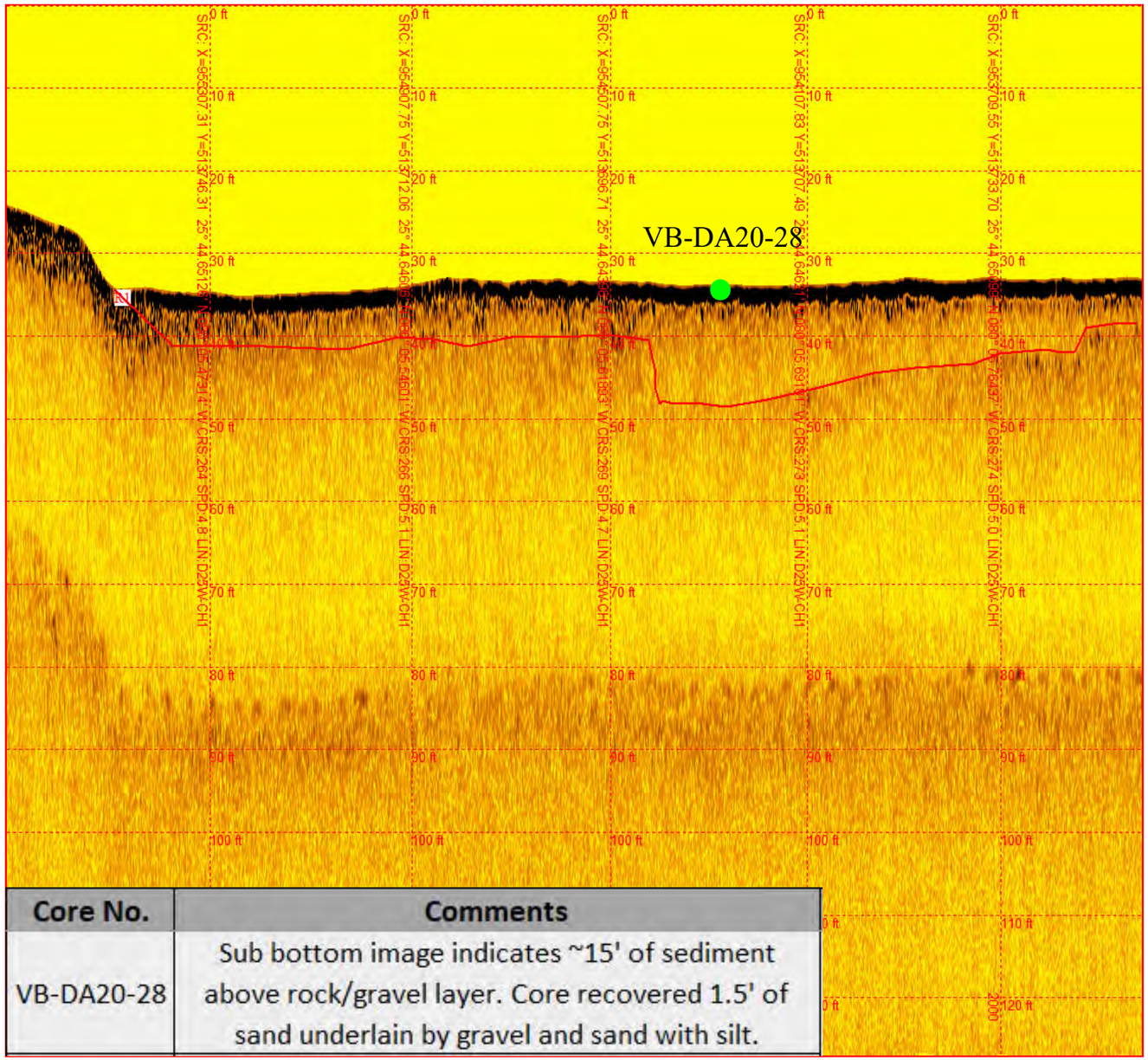
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D25W-CH1

E W



Core No.	Comments
VB-DA20-28	Sub bottom image indicates ~15' of sediment above rock/gravel layer. Core recovered 1.5' of sand underlain by gravel and sand with silt.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

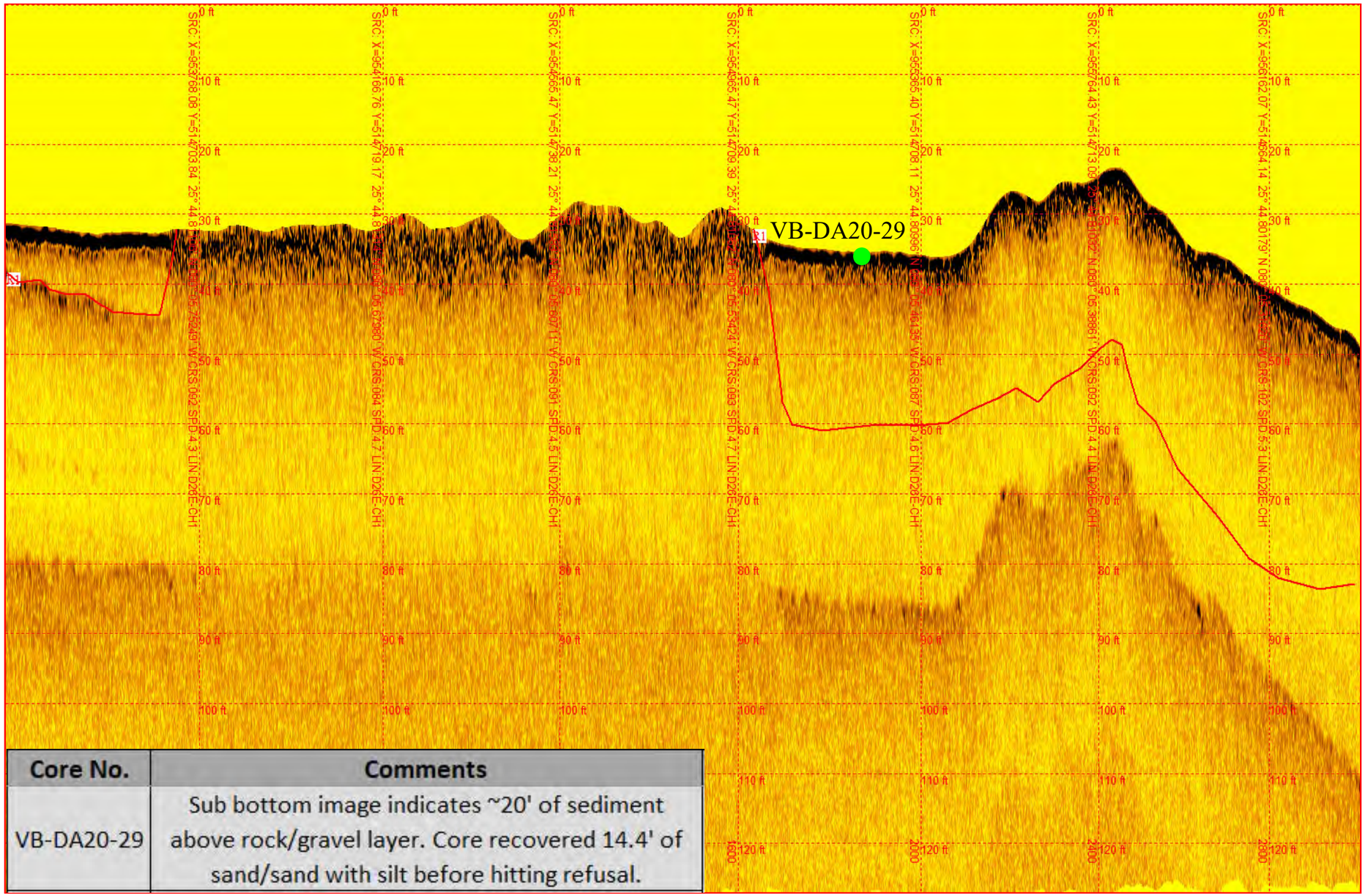
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

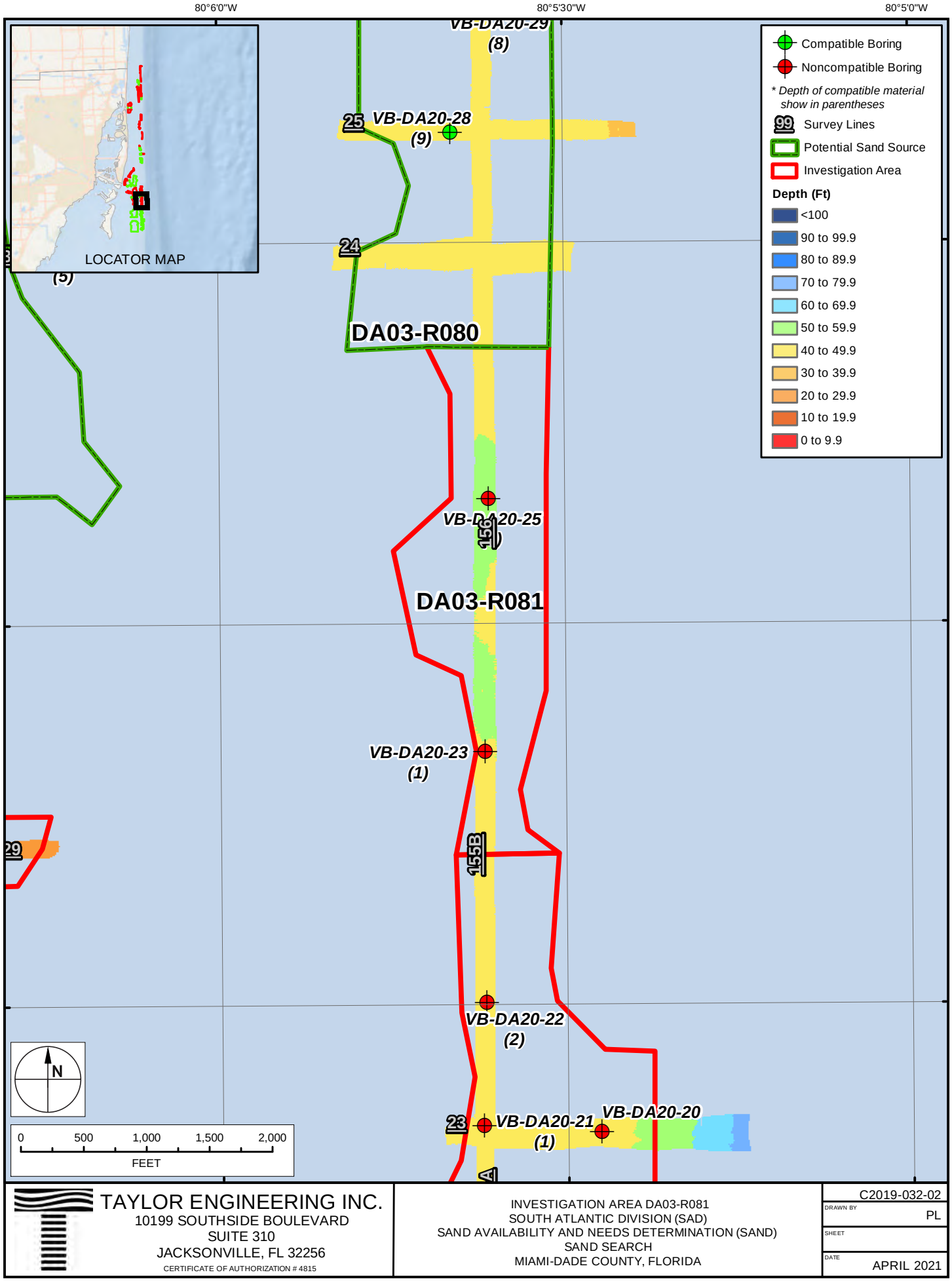
Waterfall D26E-CH1

W E



Core No.	Comments
VB-DA20-29	Sub bottom image indicates ~20' of sediment above rock/gravel layer. Core recovered 14.4' of sand/sand with silt before hitting refusal.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
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SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA03-R081
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

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TAYLOR ENGINEERING INC.
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA03-R081
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

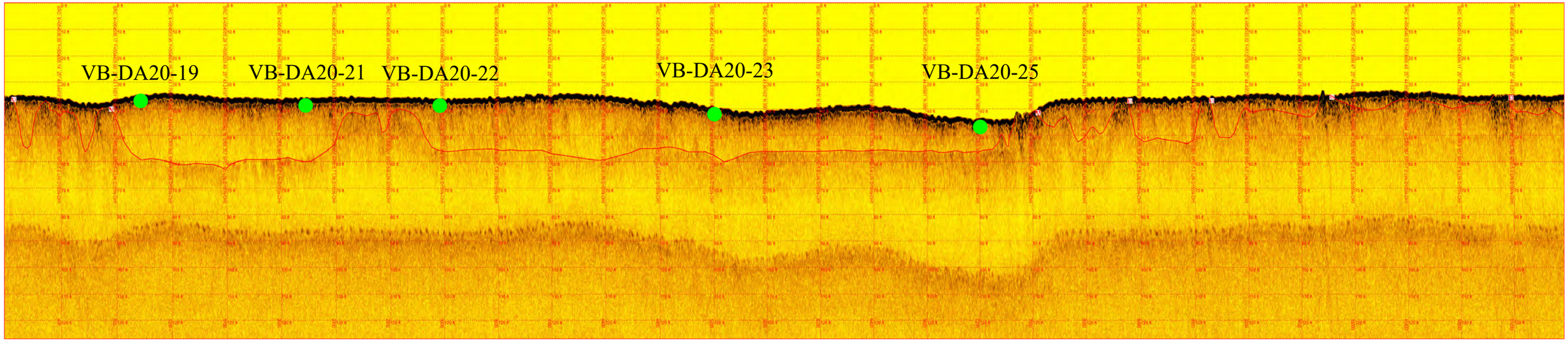
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

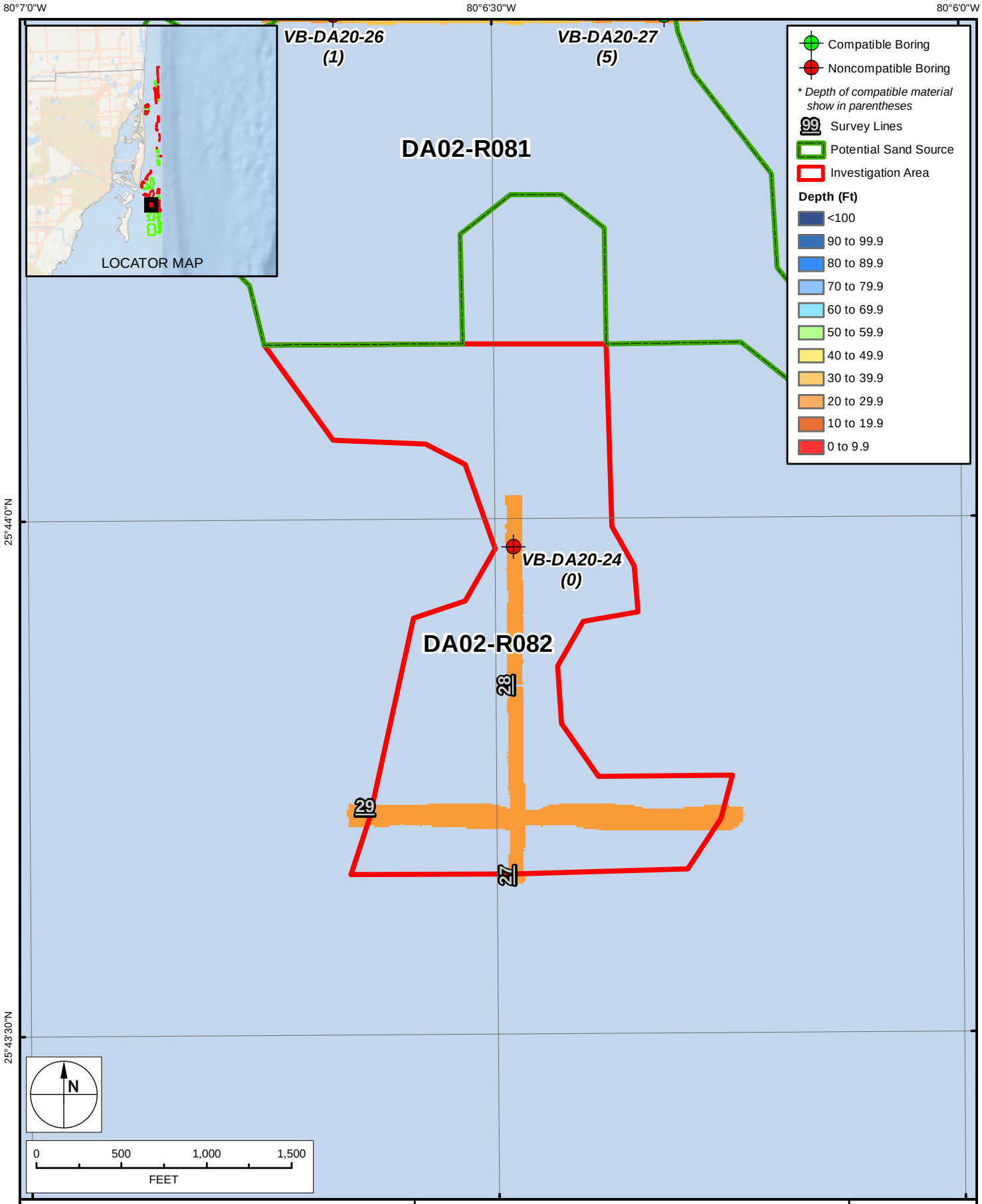
Waterfall D155N-CH1

S N



Sonar Processing by 6.01.0025 and SWG/WebGen V2.01.007 Chesapeake Technology, Inc.

Core No.	Comments
VB-DA20-19	Sub bottom image indicates 20-25' of sediment above rock/gravel layer. Core recovered 12.5' of sand/silty sand before hitting refusal.
VB-DA20-21	Sub bottom image indicates ~20' of sediment above rock/gravel layer. Core recovered 17.5' of sand/silty sand before hitting refusal.
VB-DA20-22	Sub bottom image indicates ~15' of sediment above rock/gravel layer. Core recovered 15.4' of sand/silty sand underlain by limestone.
VB-DA20-23	Sub bottom image indicates 10-15' of sediment above rock/gravel layer. Core recovered 17.8' of sand/silty sand before hitting refusal.
VB-DA20-25	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 9.2' of sand/silty sand underlain by limestone gravel and sand with silt.



TAYLOR ENGINEERING INC.
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SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA02-R082
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

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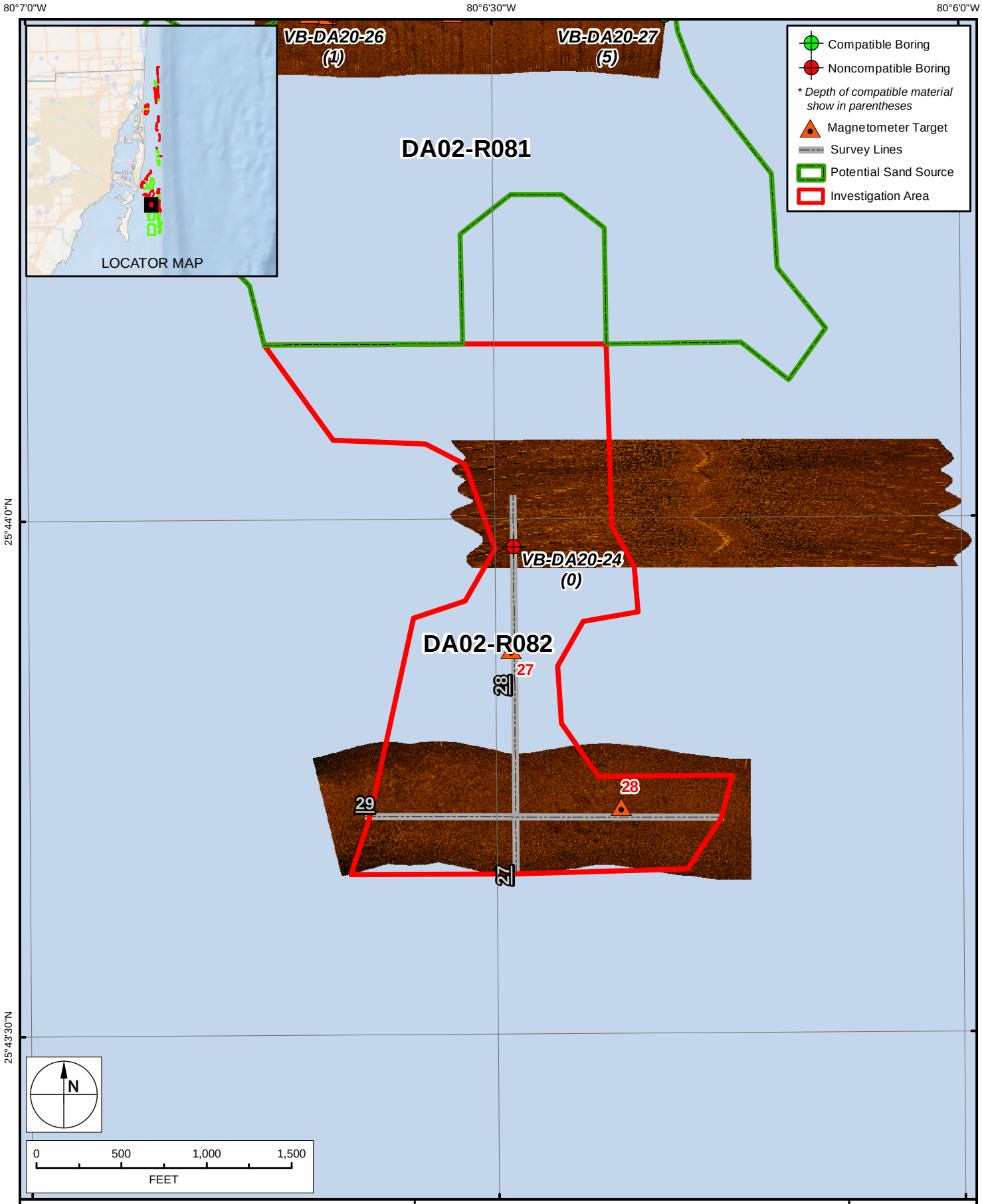
DATE: APRIL 2021



TAYLOR ENGINEERING INC.
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA02-R082
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

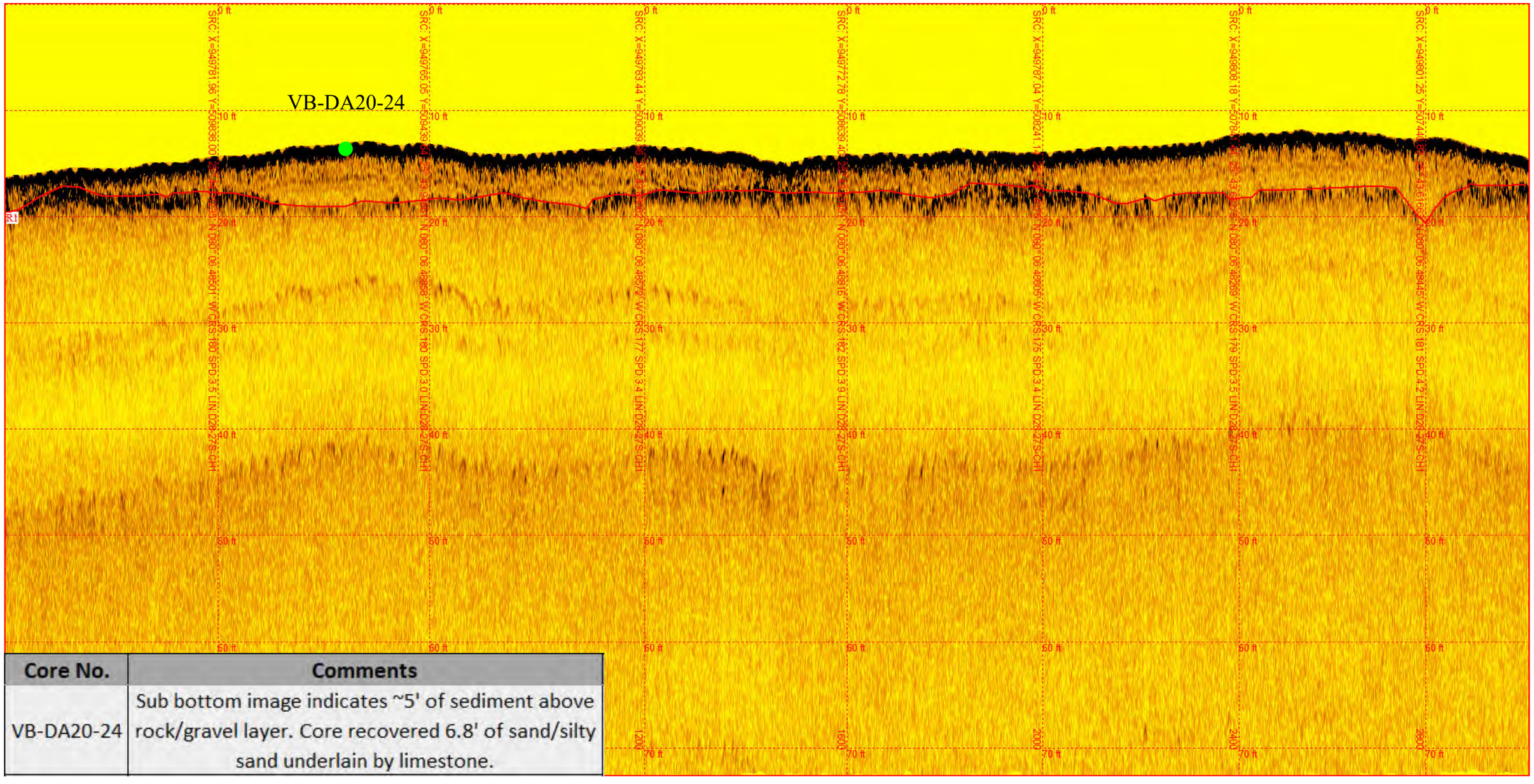
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D28-27S-CH1

N S



Core No.	Comments
VB-DA20-24	Sub bottom image indicates ~5' of sediment above rock/gravel layer. Core recovered 6.8' of sand/silty sand underlain by limestone.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

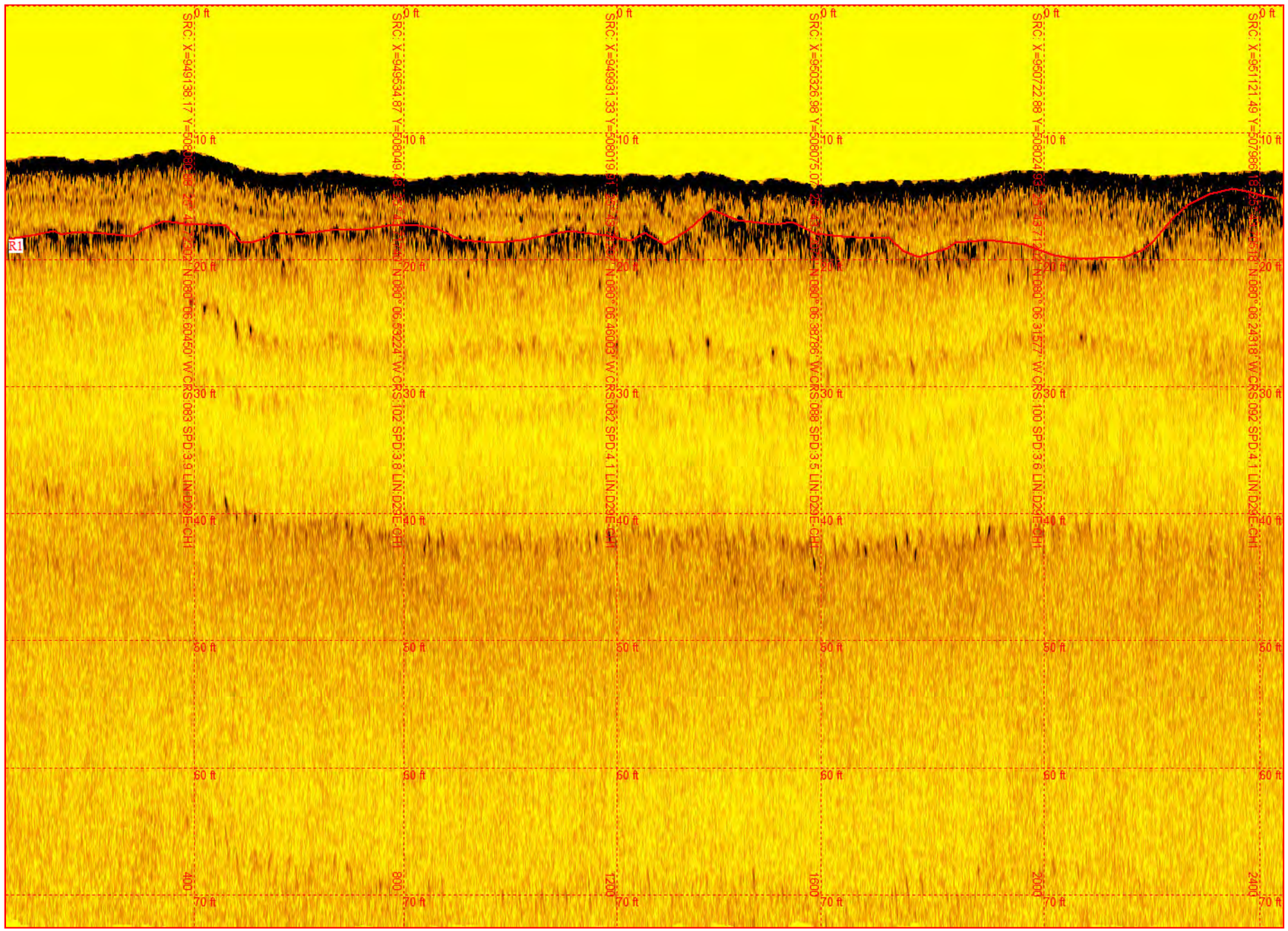
Company Logo

Sonographics, Inc.

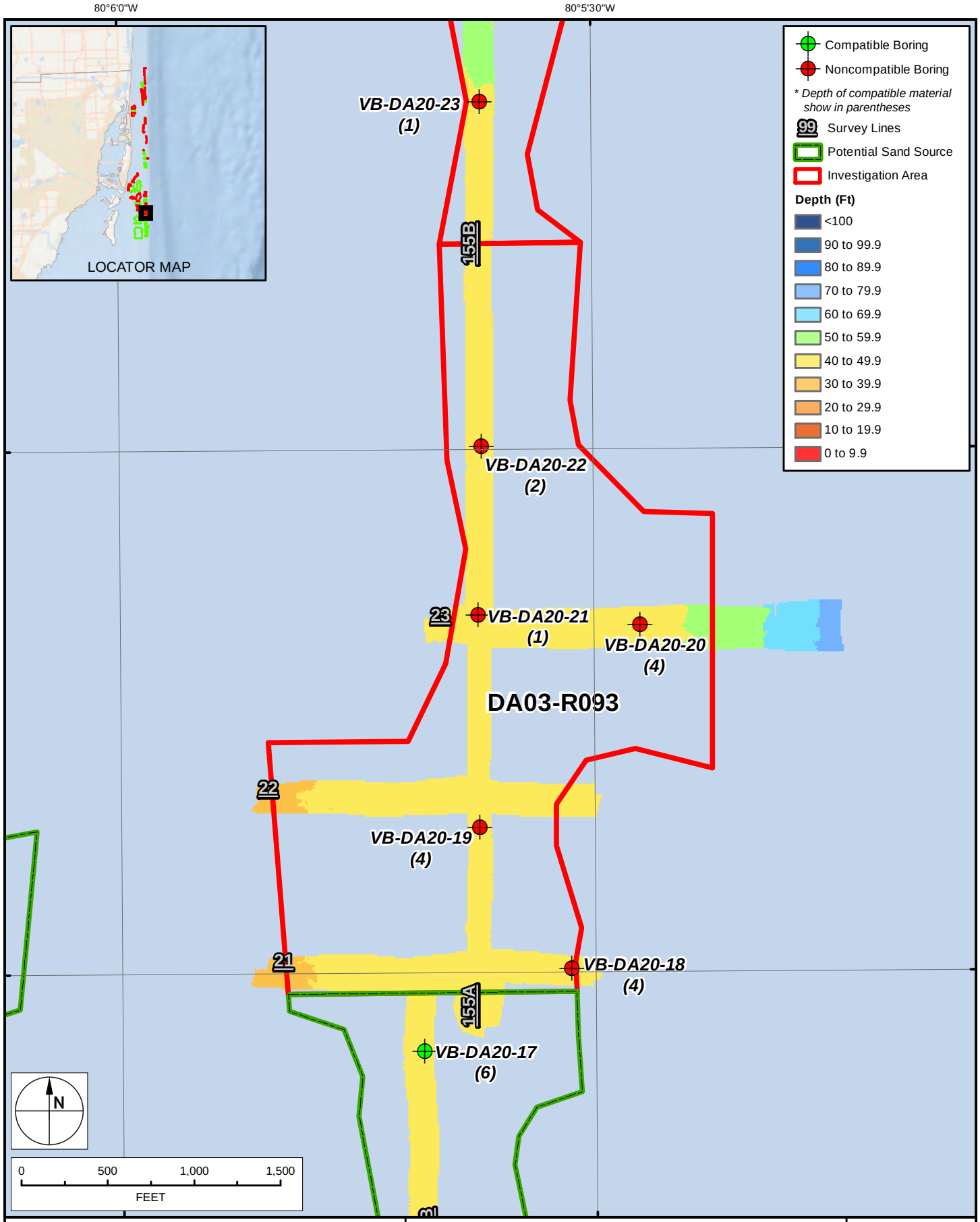
SAD SAND South Miami Dade County

Waterfall D29E-CH1

W E



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA03-R093
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

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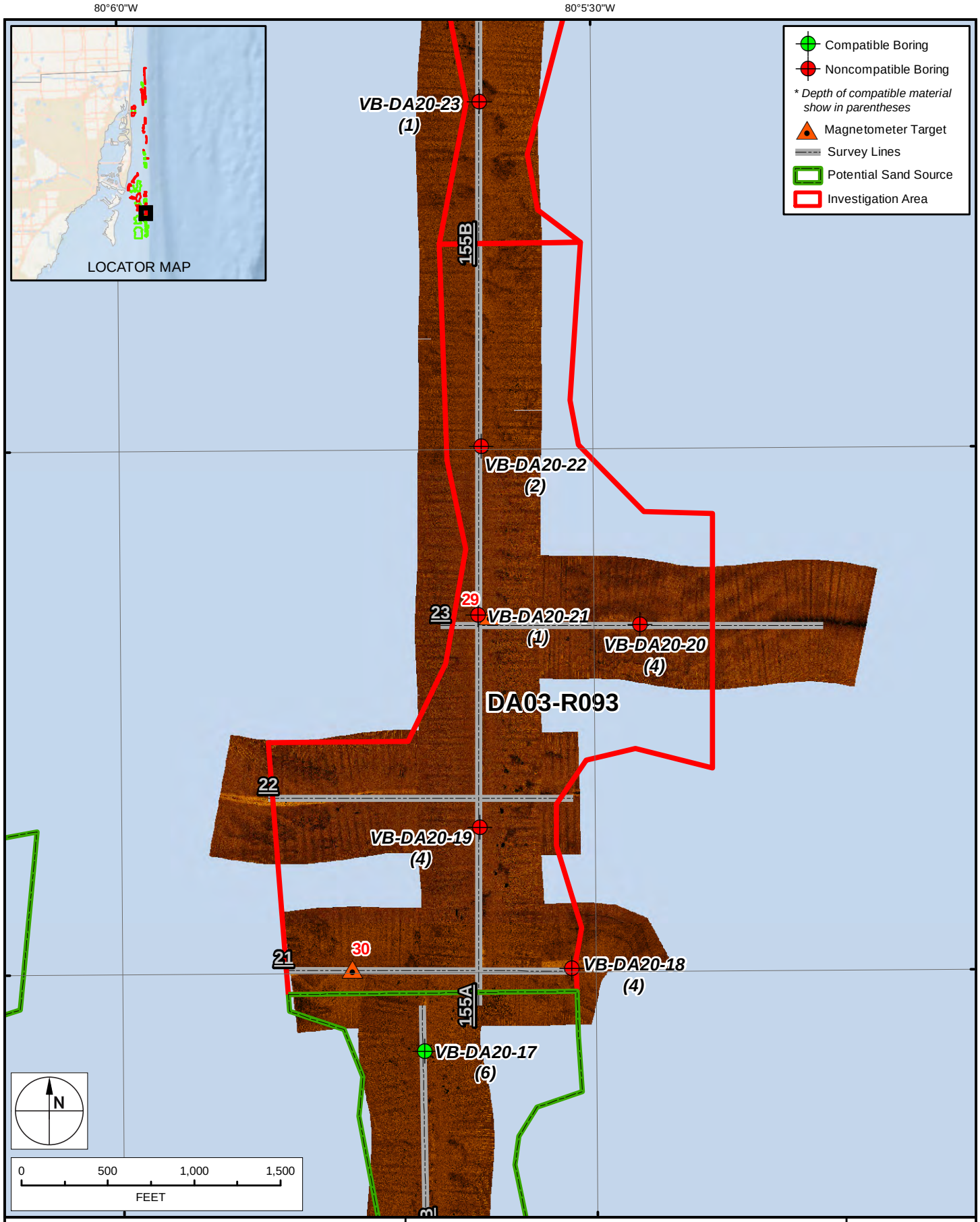
DATE: APRIL 2021



TAYLOR ENGINEERING INC.
10199 SOUTHSIDE BOULEVARD
SUITE 310
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

INVESTIGATION AREA DA03-R093
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

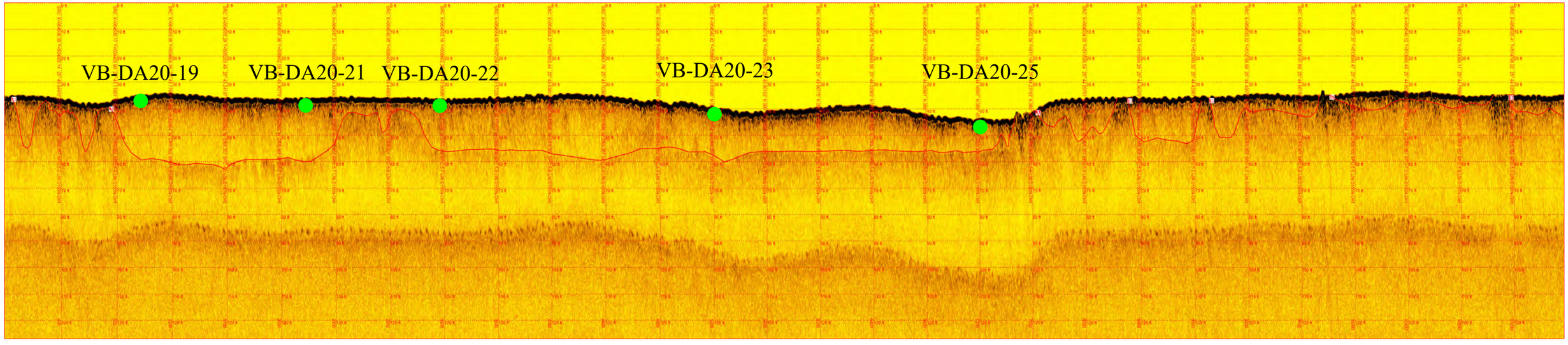
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D155N-CH1

S N



Sonar Processing by 6.01.0025 and SWG/WebGen V2.01.007 Chesapeake Technology, Inc.

Core No.	Comments
VB-DA20-19	Sub bottom image indicates 20-25' of sediment above rock/gravel layer. Core recovered 12.5' of sand/silty sand before hitting refusal.
VB-DA20-21	Sub bottom image indicates ~20' of sediment above rock/gravel layer. Core recovered 17.5' of sand/silty sand before hitting refusal.
VB-DA20-22	Sub bottom image indicates ~15' of sediment above rock/gravel layer. Core recovered 15.4' of sand/silty sand underlain by limestone.
VB-DA20-23	Sub bottom image indicates 10-15' of sediment above rock/gravel layer. Core recovered 17.8' of sand/silty sand before hitting refusal.
VB-DA20-25	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 9.2' of sand/silty sand underlain by limestone gravel and sand with silt.

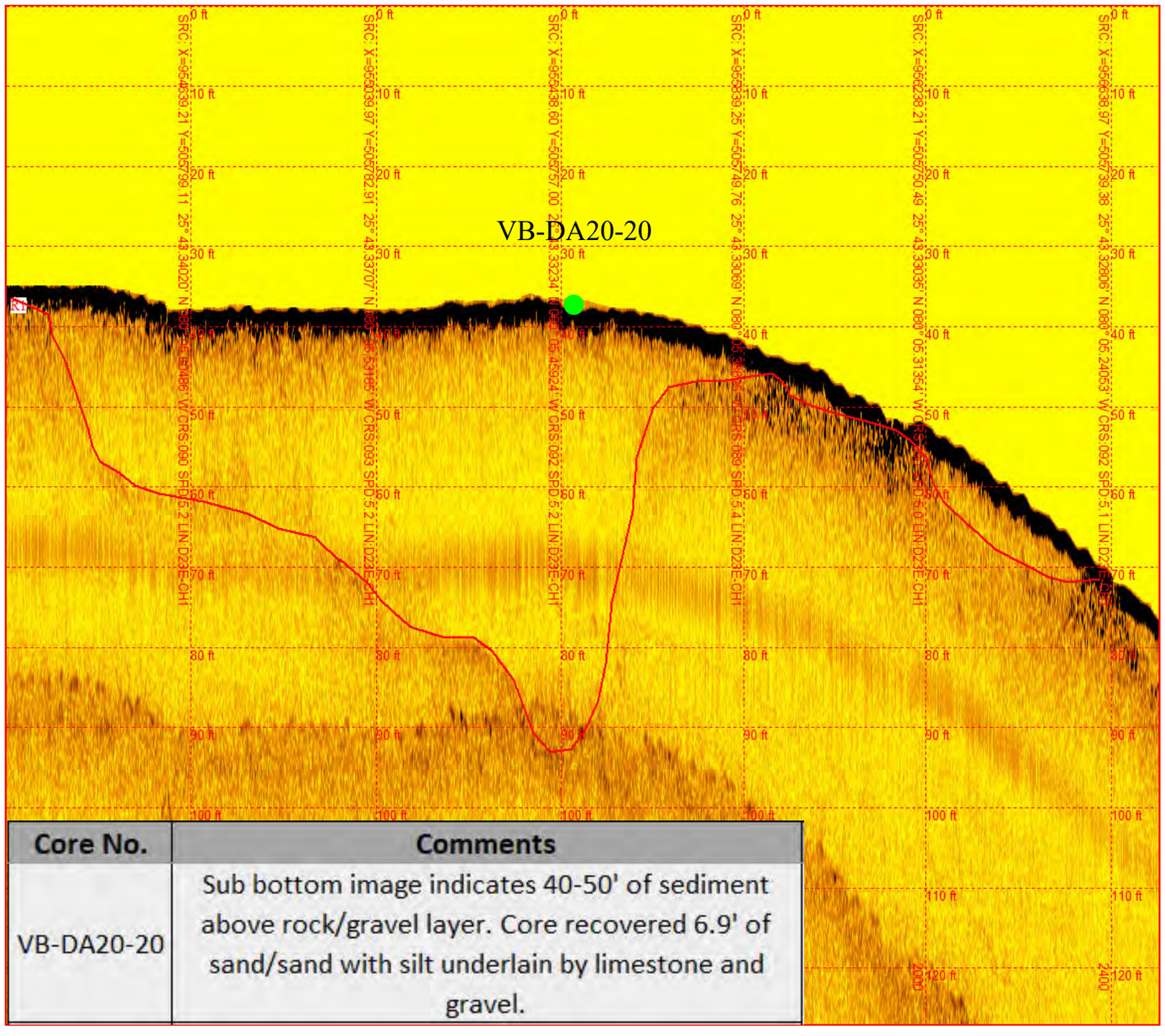
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D23E-CH1

W E



Core No.	Comments
VB-DA20-20	Sub bottom image indicates 40-50' of sediment above rock/gravel layer. Core recovered 6.9' of sand/sand with silt underlain by limestone and gravel.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

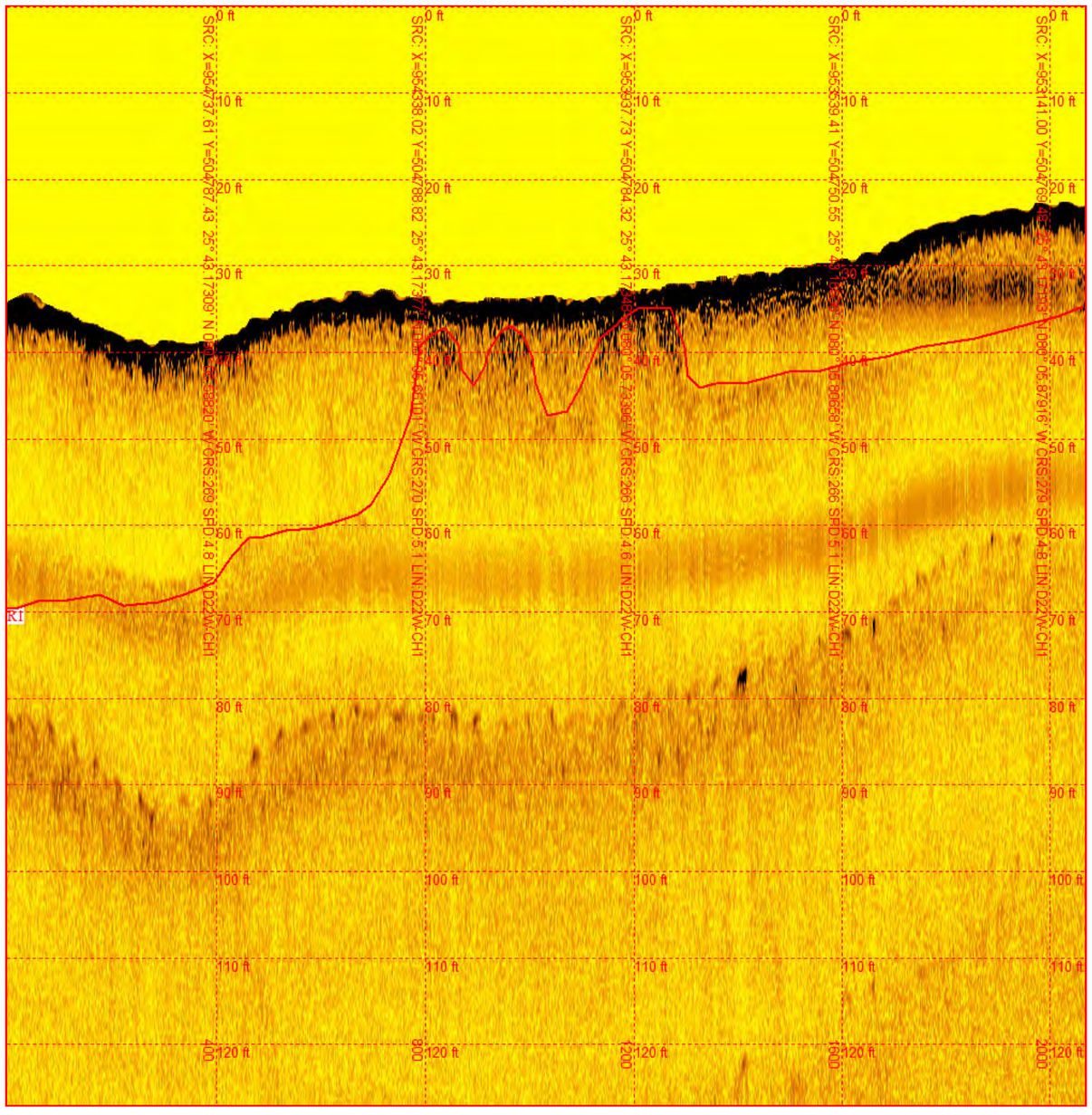
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D22W-CH1

E W



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

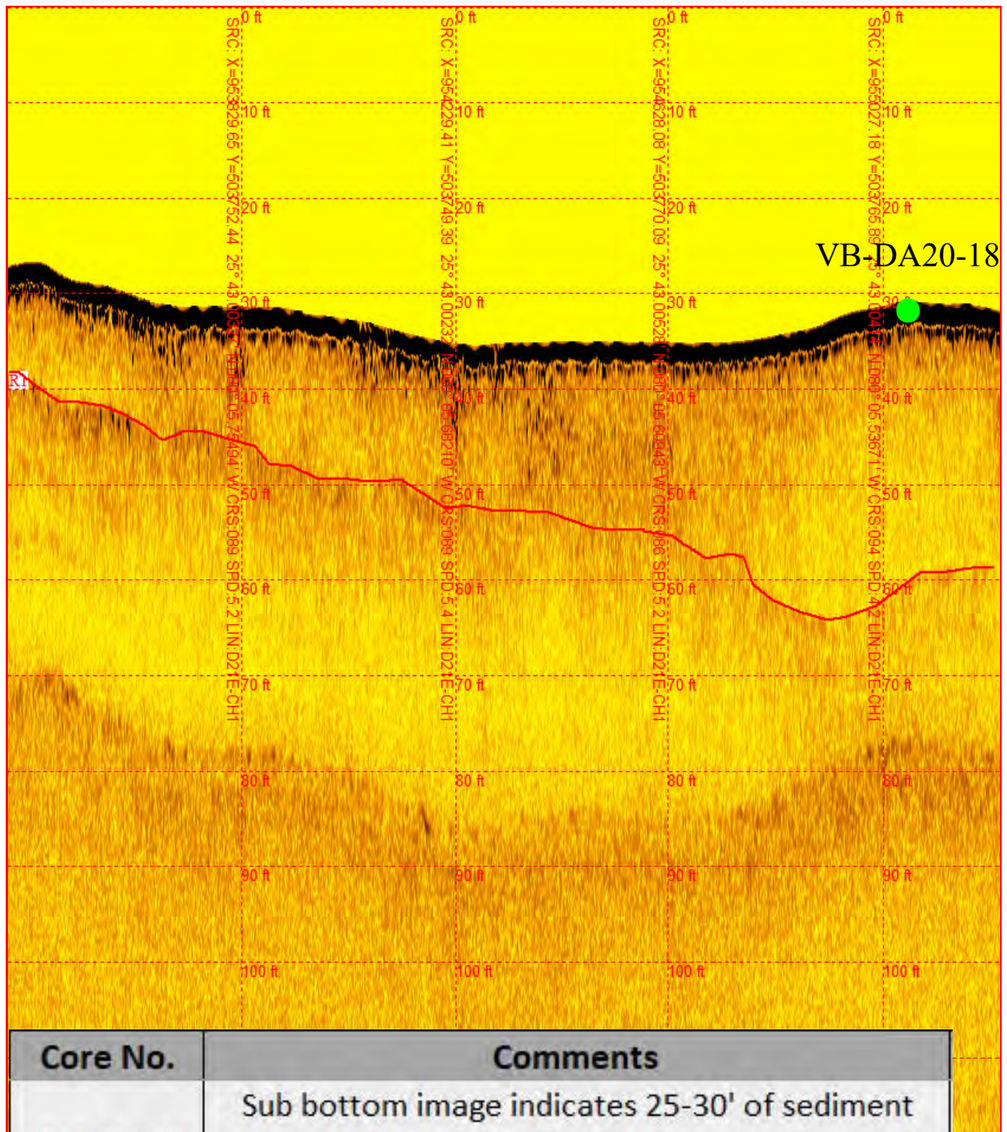
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

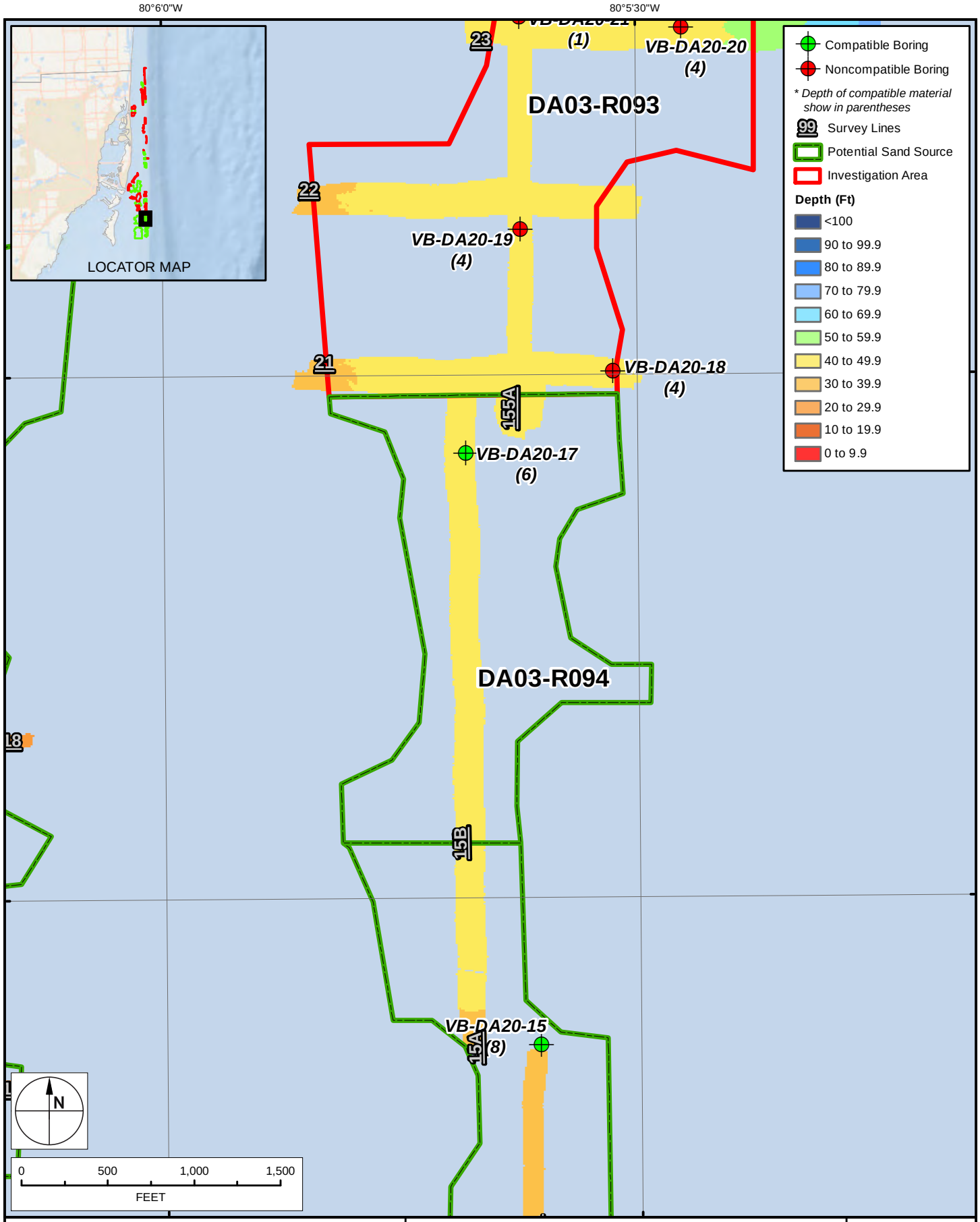
Waterfall D21E-CH1

W E



Core No.	Comments
VB-DA20-18	Sub bottom image indicates 25-30' of sediment above rock/gravel layer. Core recovered 17.7' of sand/silty sand before hitting refusal.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA03-R094
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

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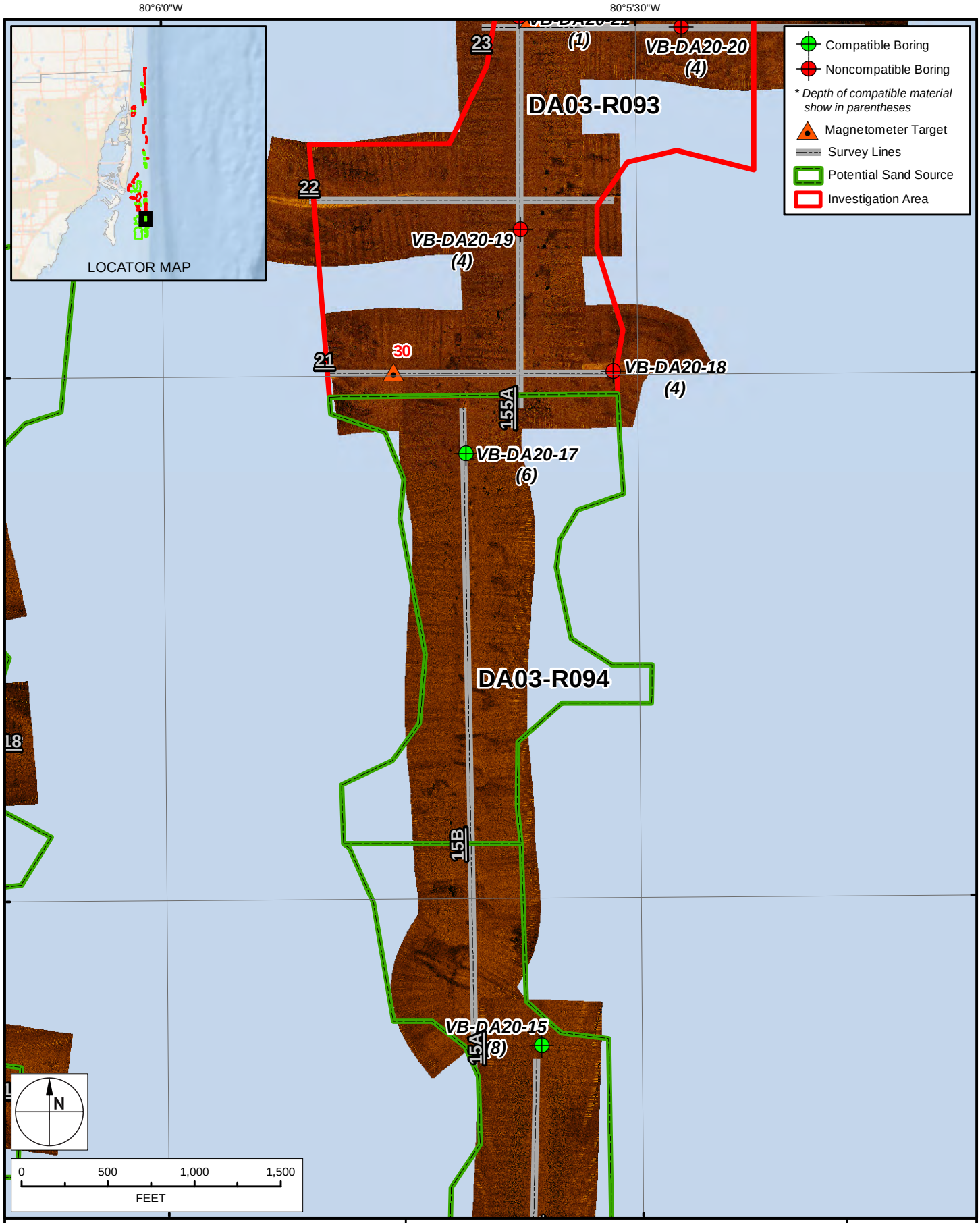
DATE APRIL 2021



TAYLOR ENGINEERING INC.
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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA03-R094
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

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SHEET:

DATE: APRIL 2021

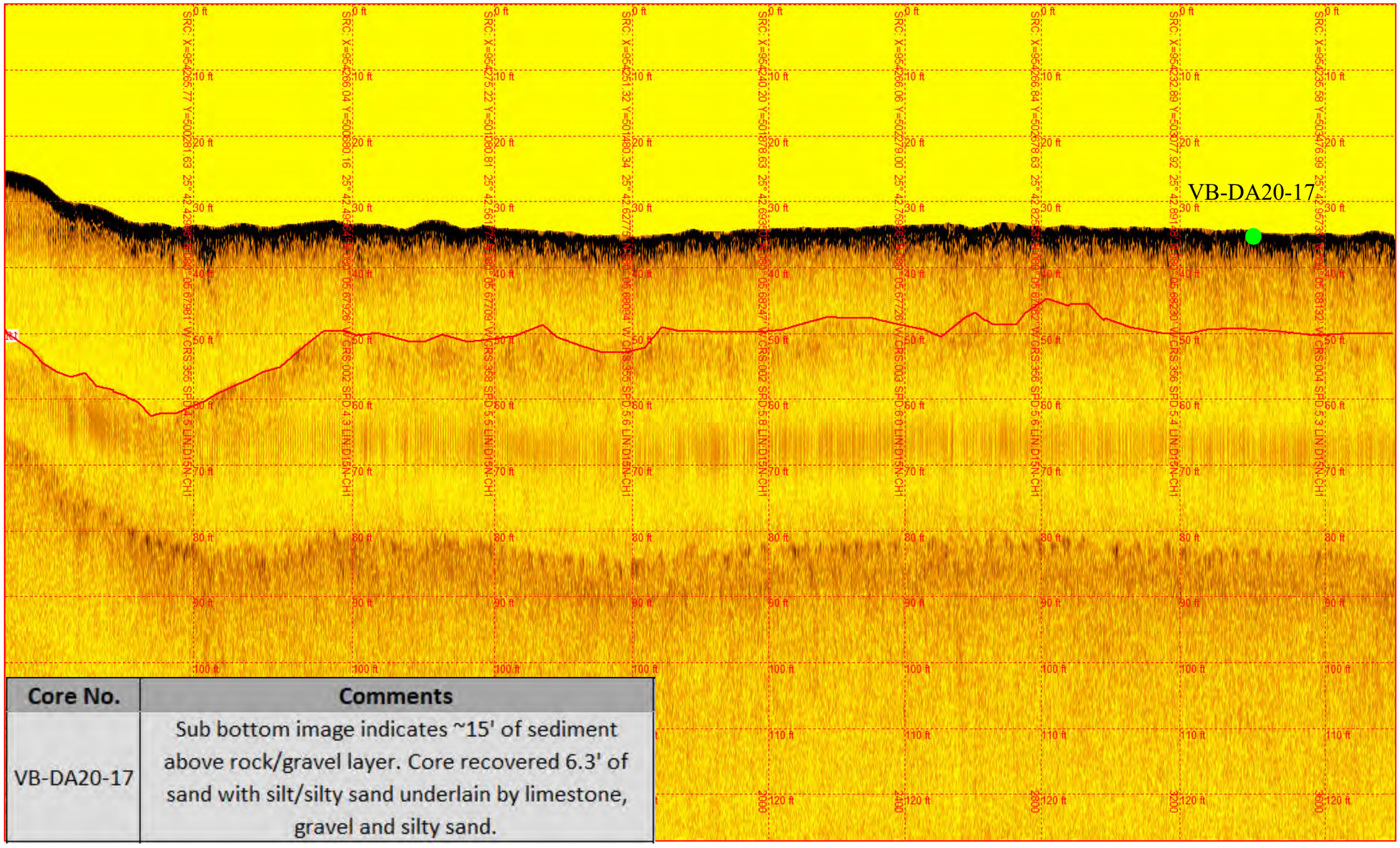
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

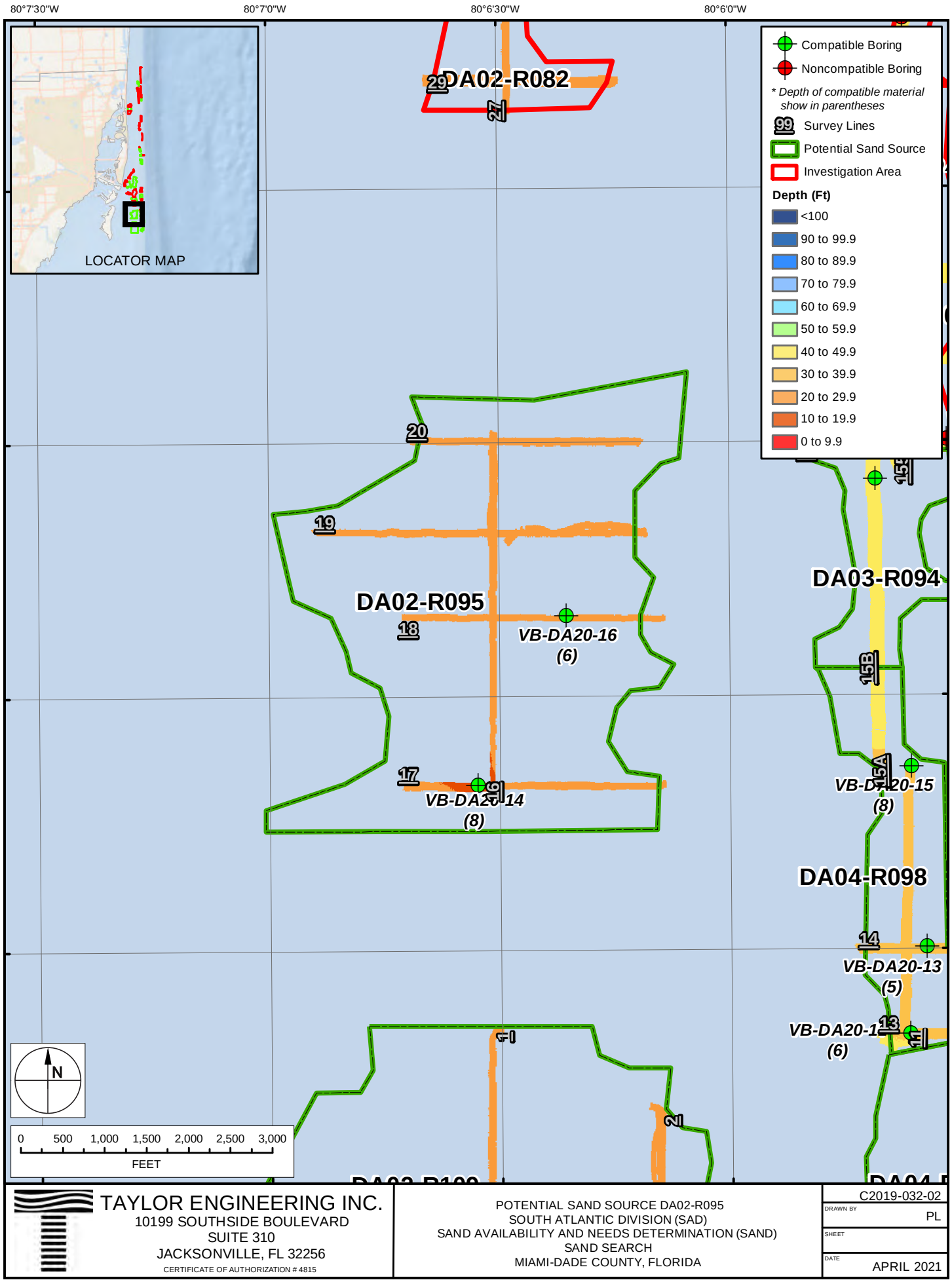
Waterfall D15N-CH1

S N



Core No.	Comments
VB-DA20-17	Sub bottom image indicates ~15' of sediment above rock/gravel layer. Core recovered 6.3' of sand with silt/silty sand underlain by limestone, gravel and silty sand.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.



TAYLOR ENGINEERING INC.
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POTENTIAL SAND SOURCE DA02-R095
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

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DATE APRIL 2021

TAYLOR ENGINEERING INC.
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CERTIFICATE OF AUTHORIZATION # 4815

POTENTIAL SAND SOURCE DA02-R095
SOUTH ATLANTIC DIVISION (SAD)
SAND AVAILABILITY AND NEEDS DETERMINATION (SAND)
SAND SEARCH
MIAMI-DADE COUNTY, FLORIDA

C2019-032-02

DRAWN BY: PL

SHEET:

DATE: APRIL 2021

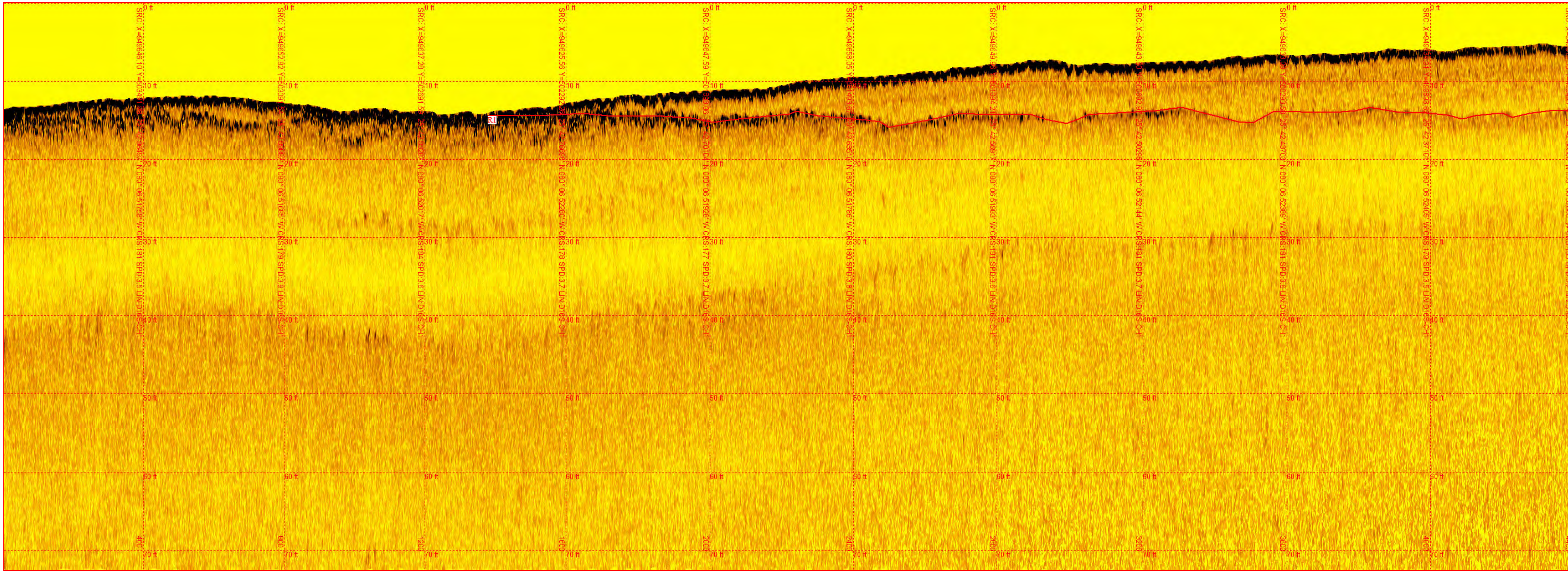
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D16S-CH1

N S



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

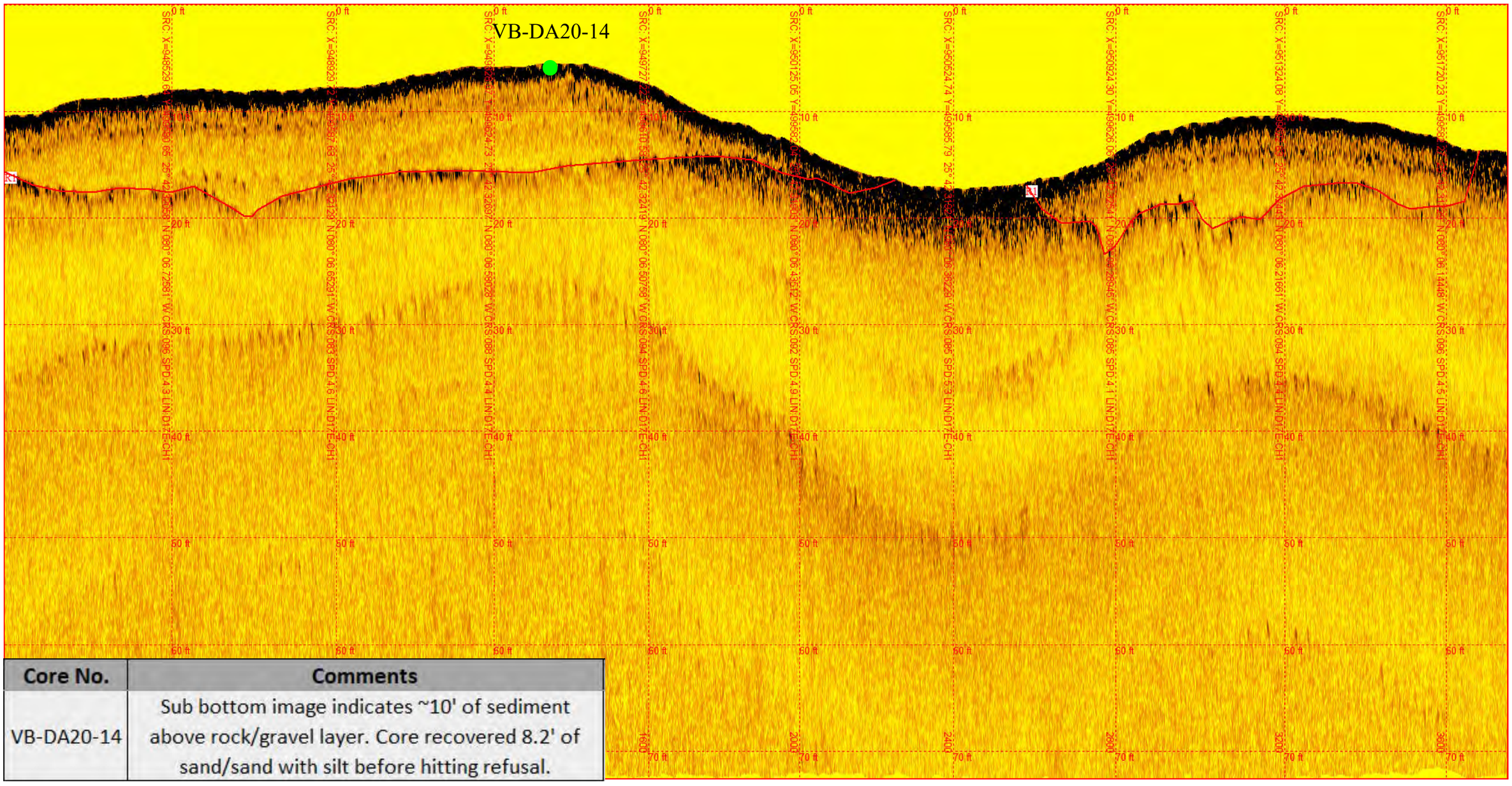
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D17E-CH1

W E



Core No.	Comments
VB-DA20-14	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 8.2' of sand/sand with silt before hitting refusal.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

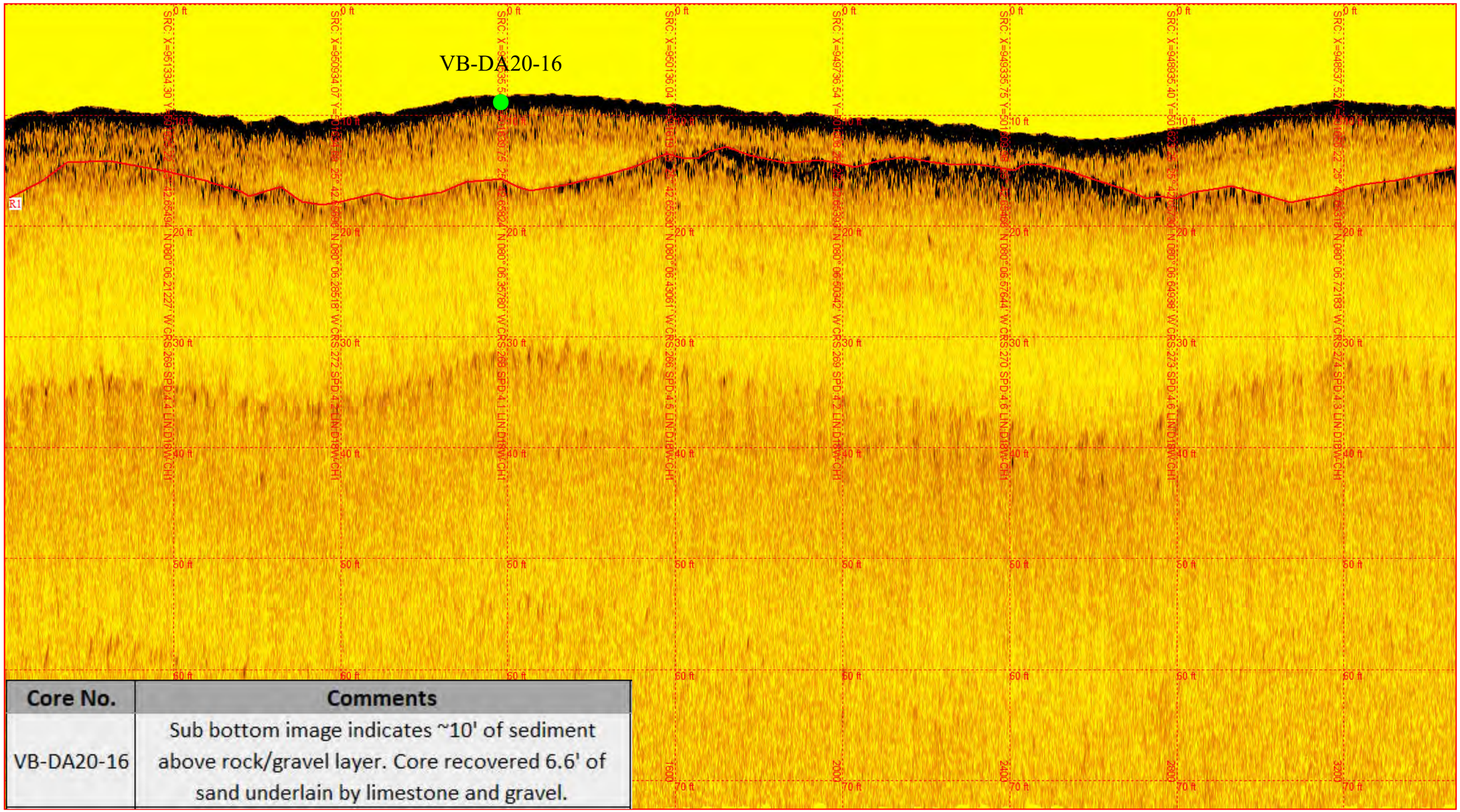
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D18W-CH1

E W



Core No.	Comments
VB-DA20-16	Sub bottom image indicates ~10' of sediment above rock/gravel layer. Core recovered 6.6' of sand underlain by limestone and gravel.

Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

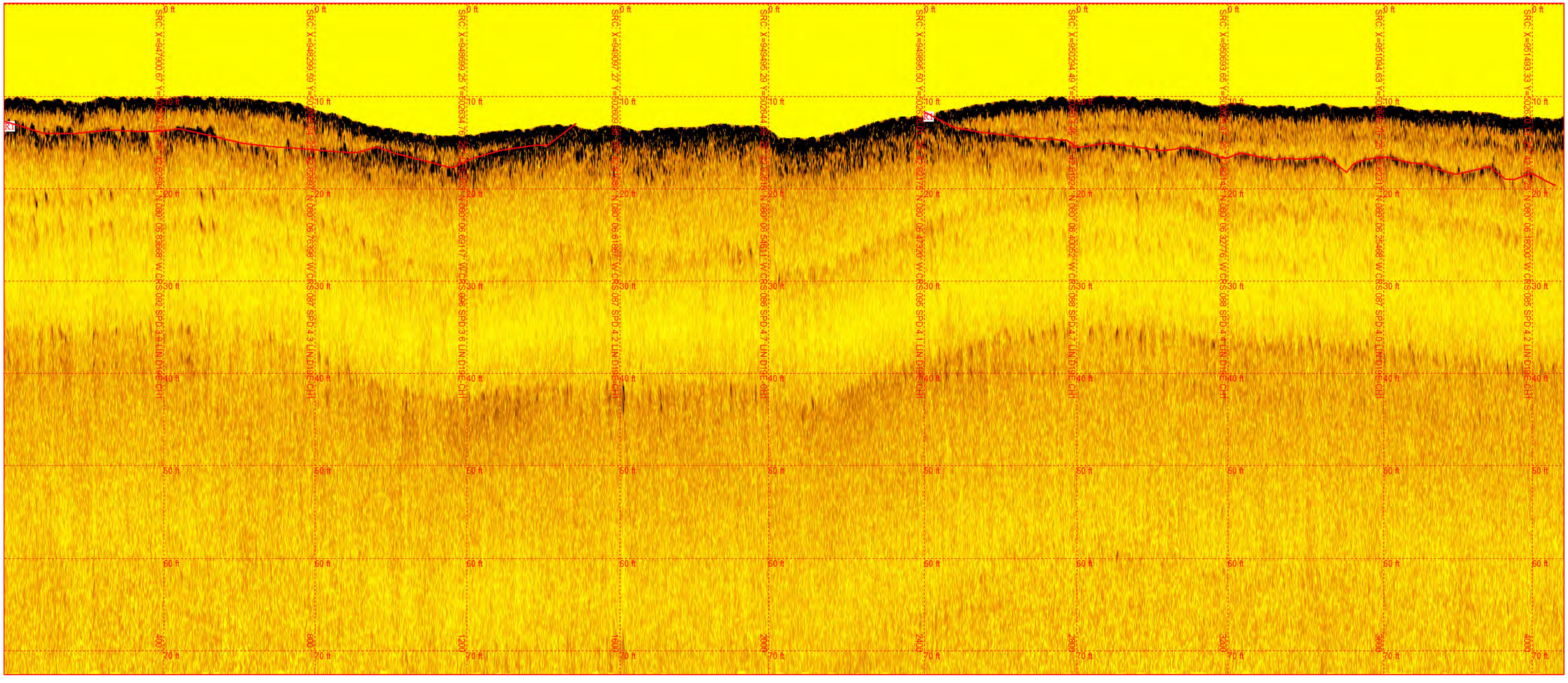
Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D19E-CH1

W E



Sonar Processing by 6.01.0025 and SWizWebGen V2.01.001 Chesapeake Technology Inc.

Company Logo

Sonographics, Inc.

SAD SAND South Miami Dade County

Waterfall D20W-CH1

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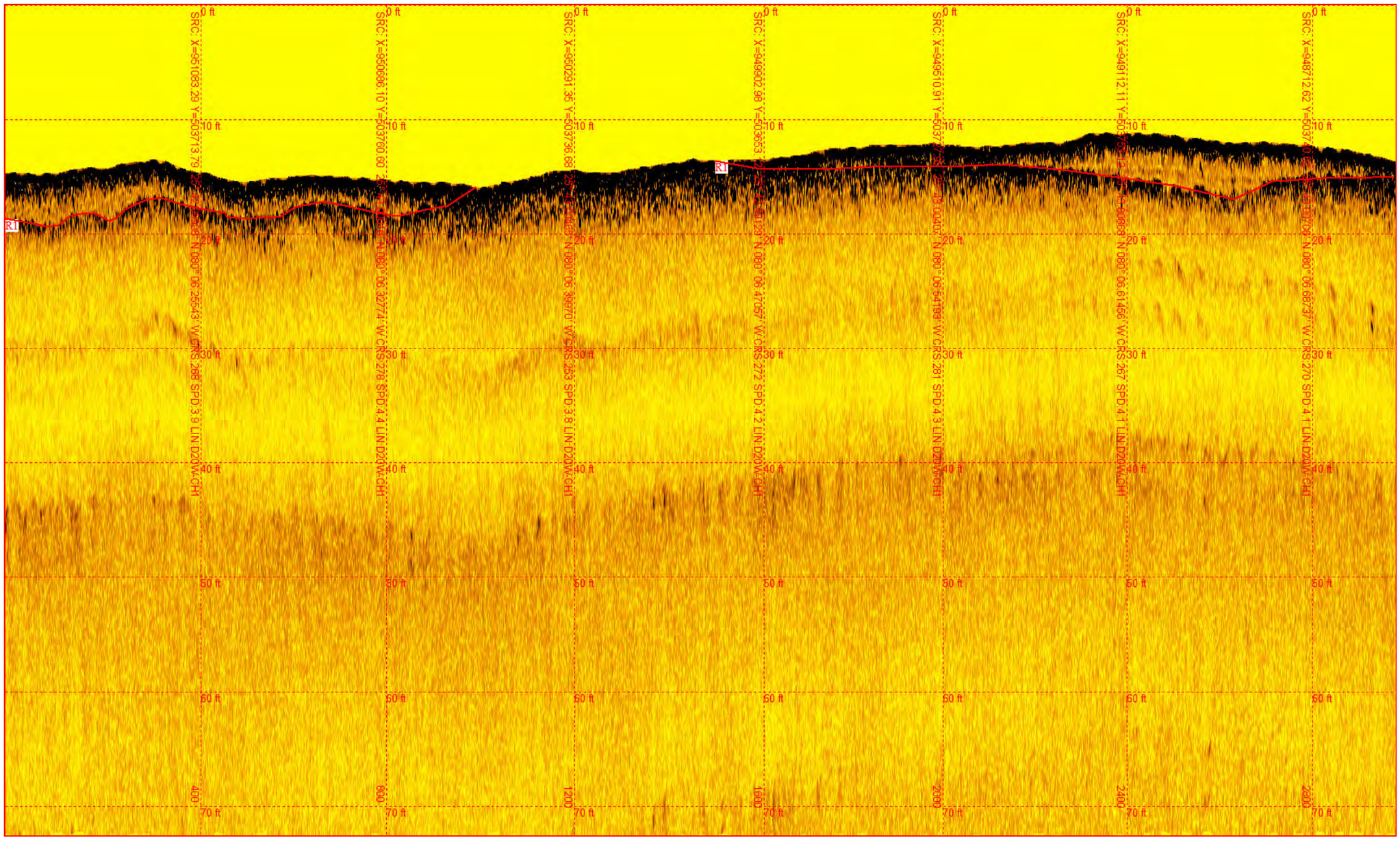

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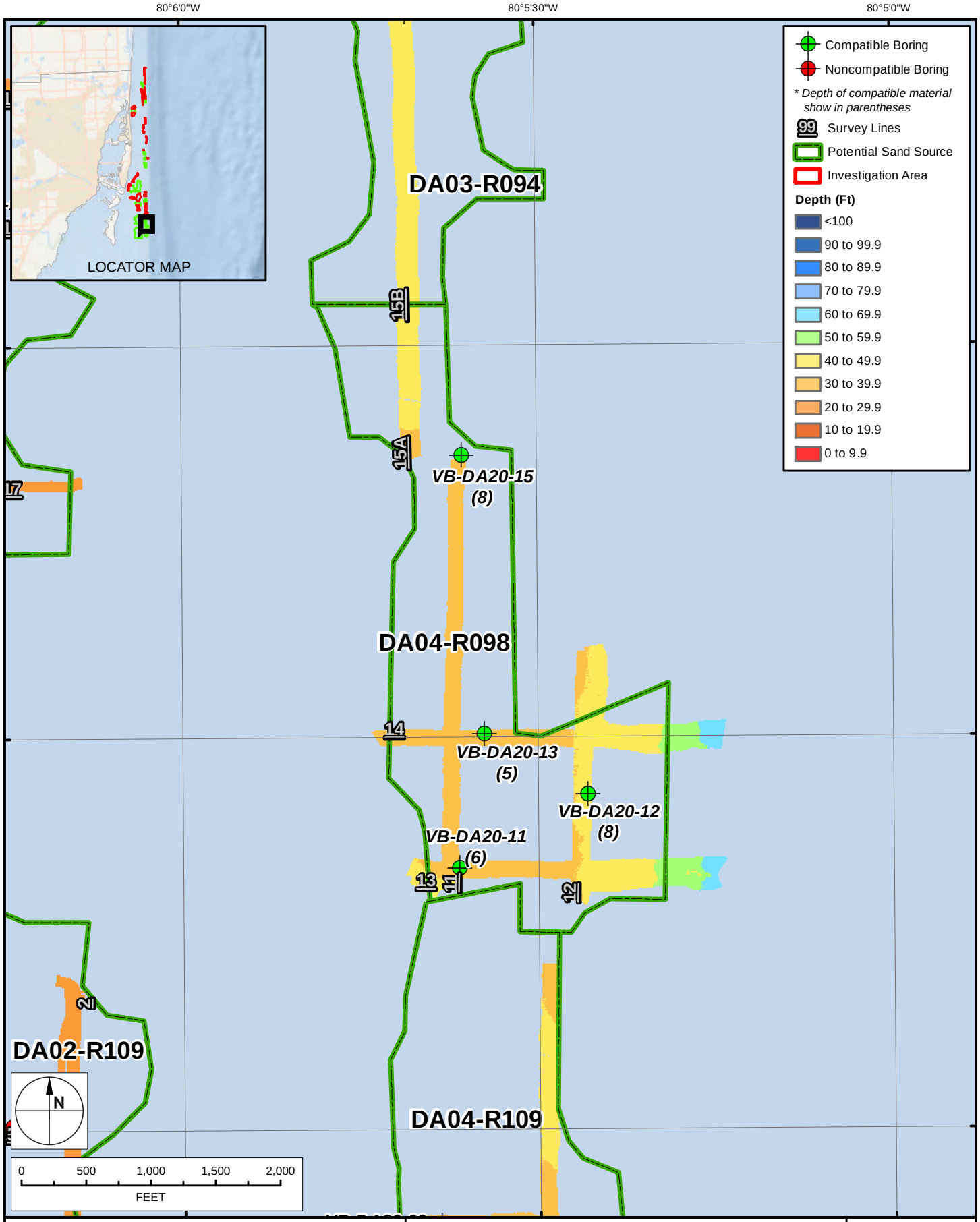

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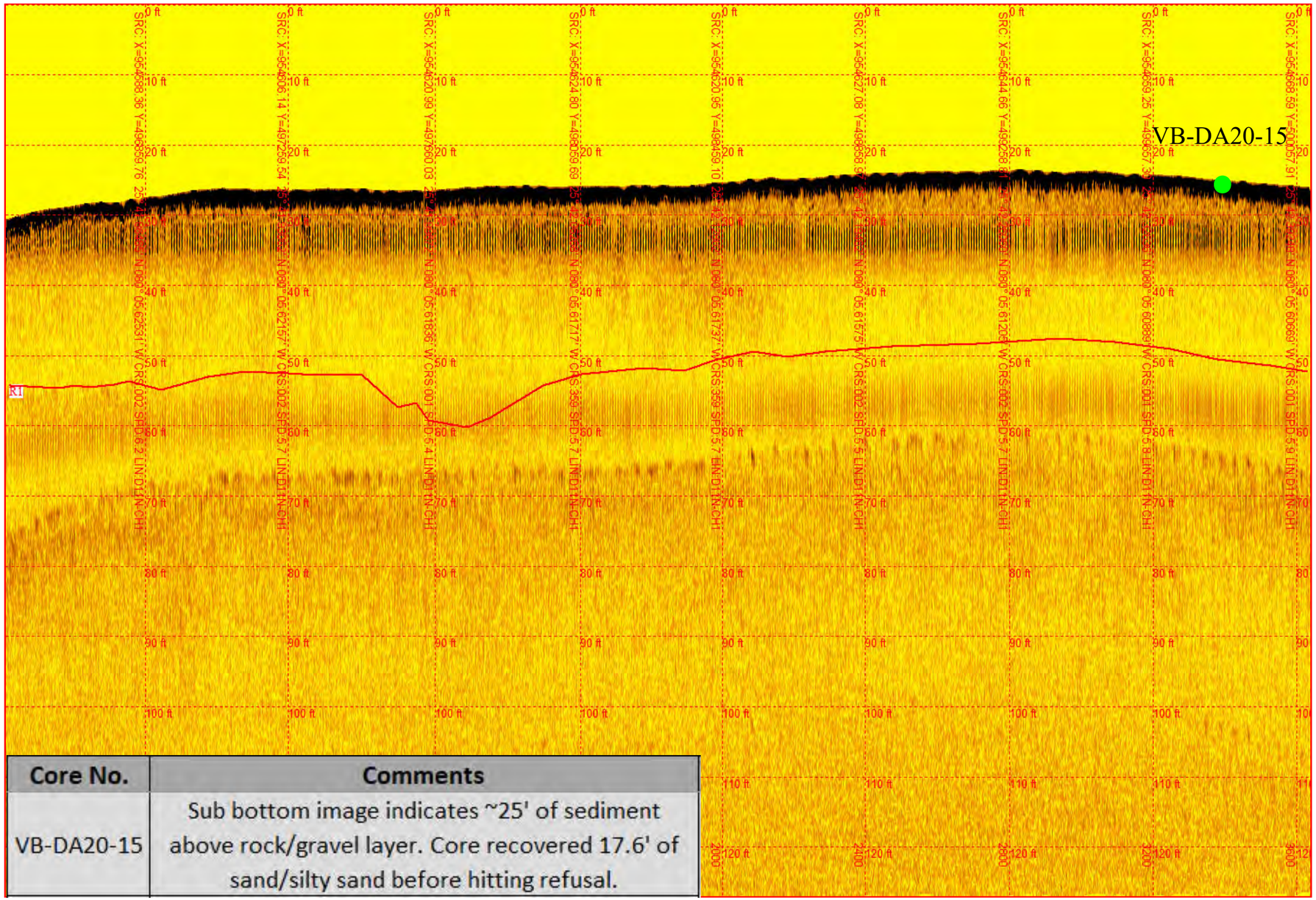
Waterfall D11N-CH1

S N



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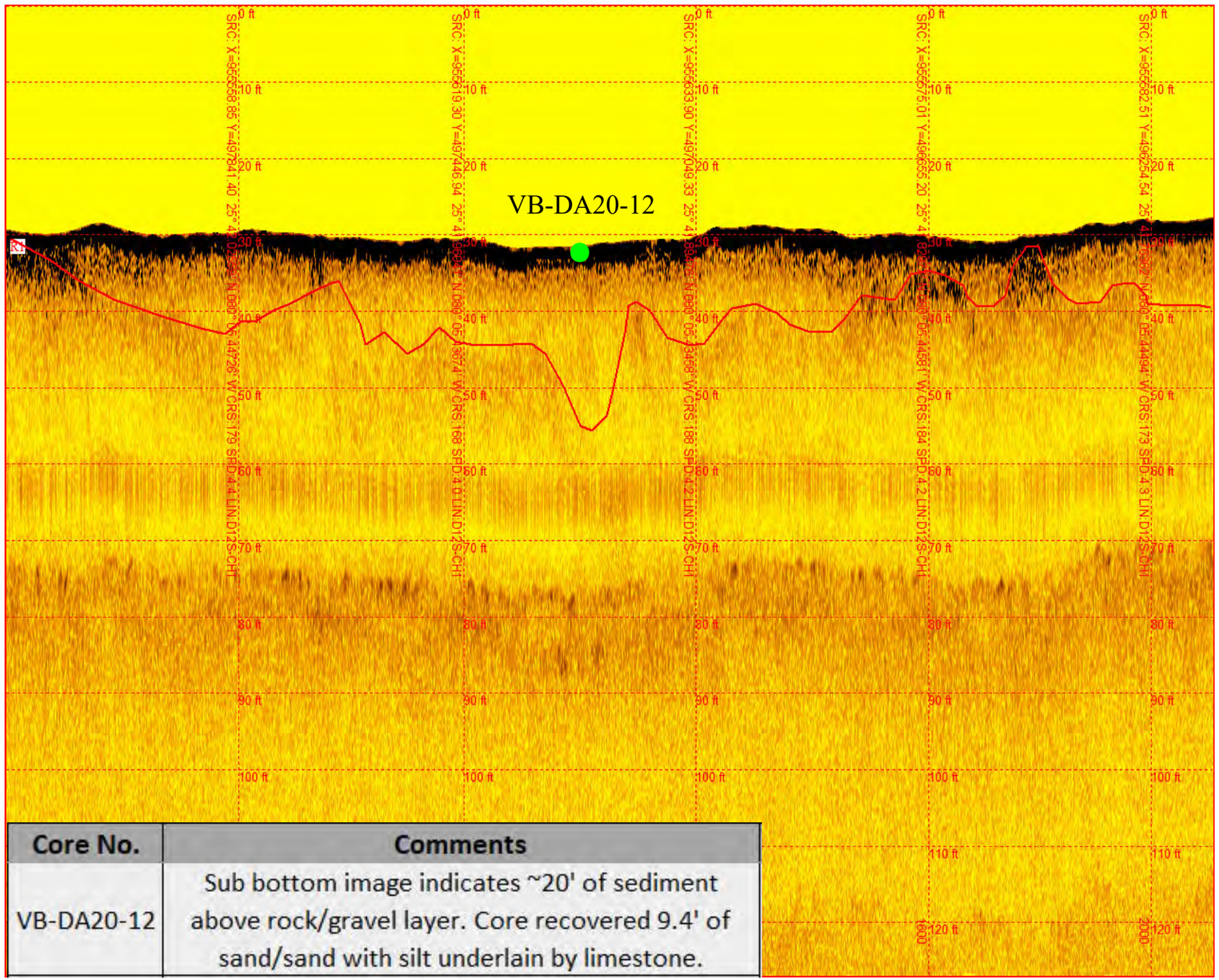
Waterfall D12S-CH1

N S



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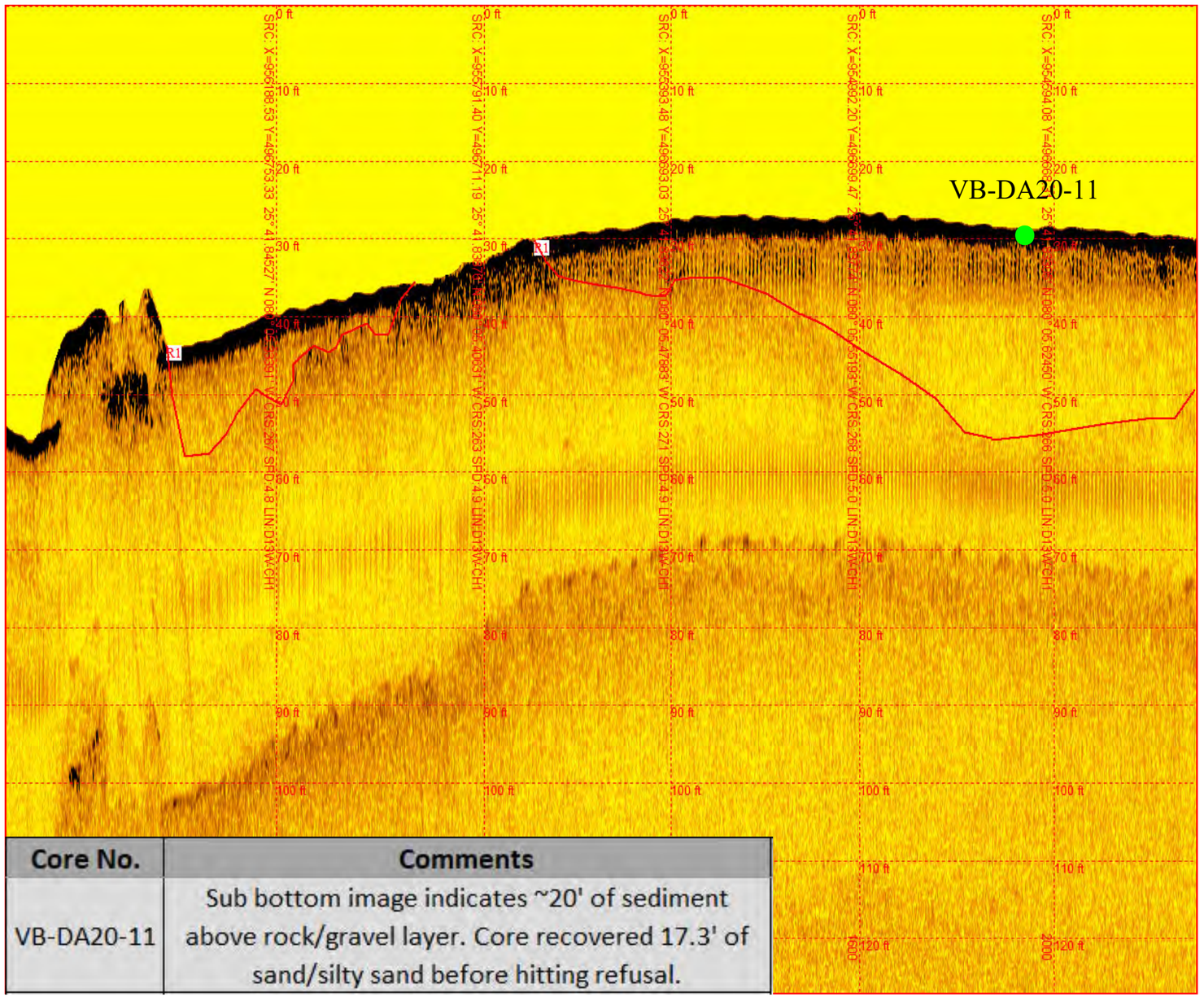
Waterfall D13W-CH1

E W



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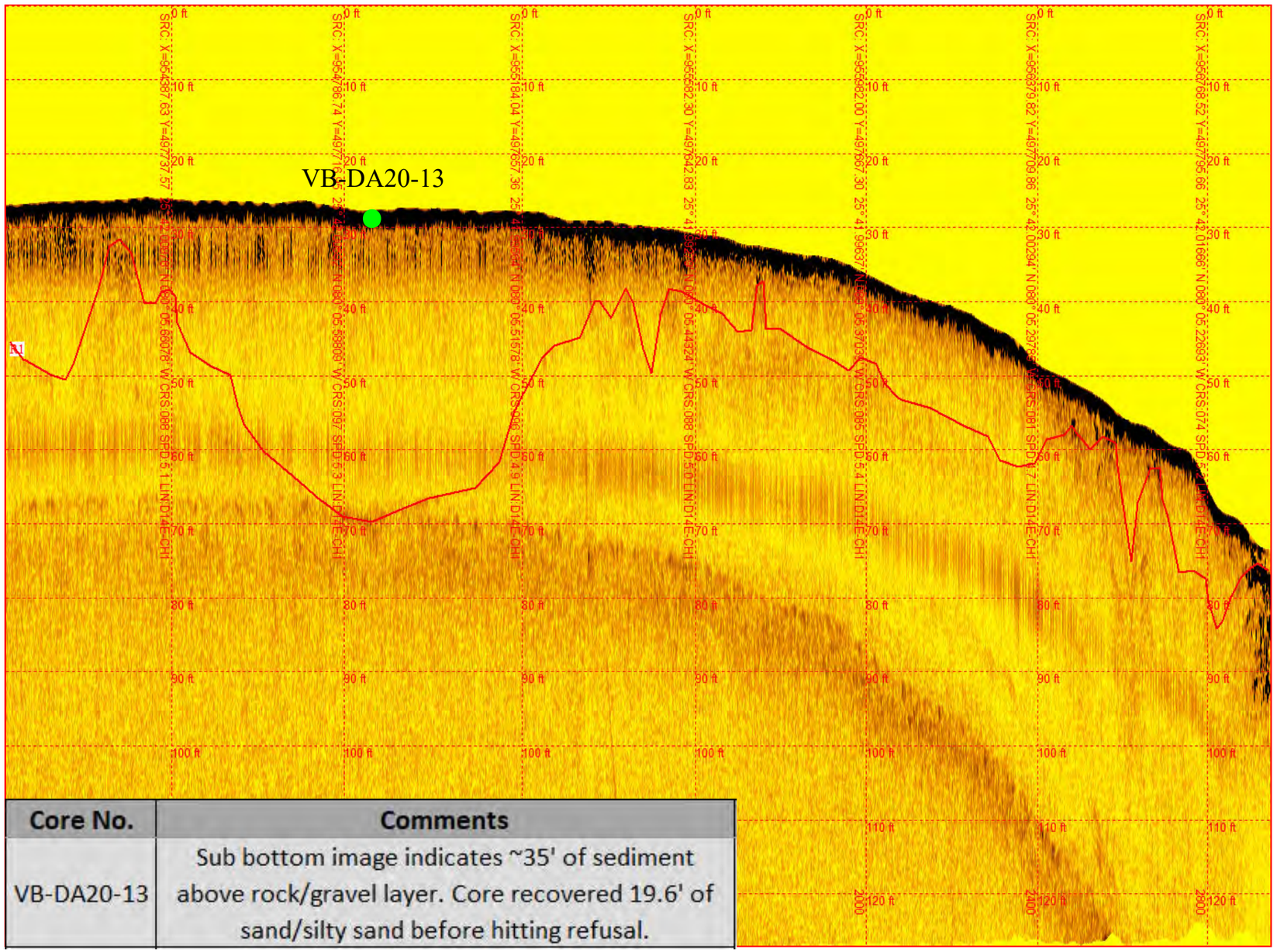
SAD SAND South Miami Dade County

Waterfall D14E-CH1

W E



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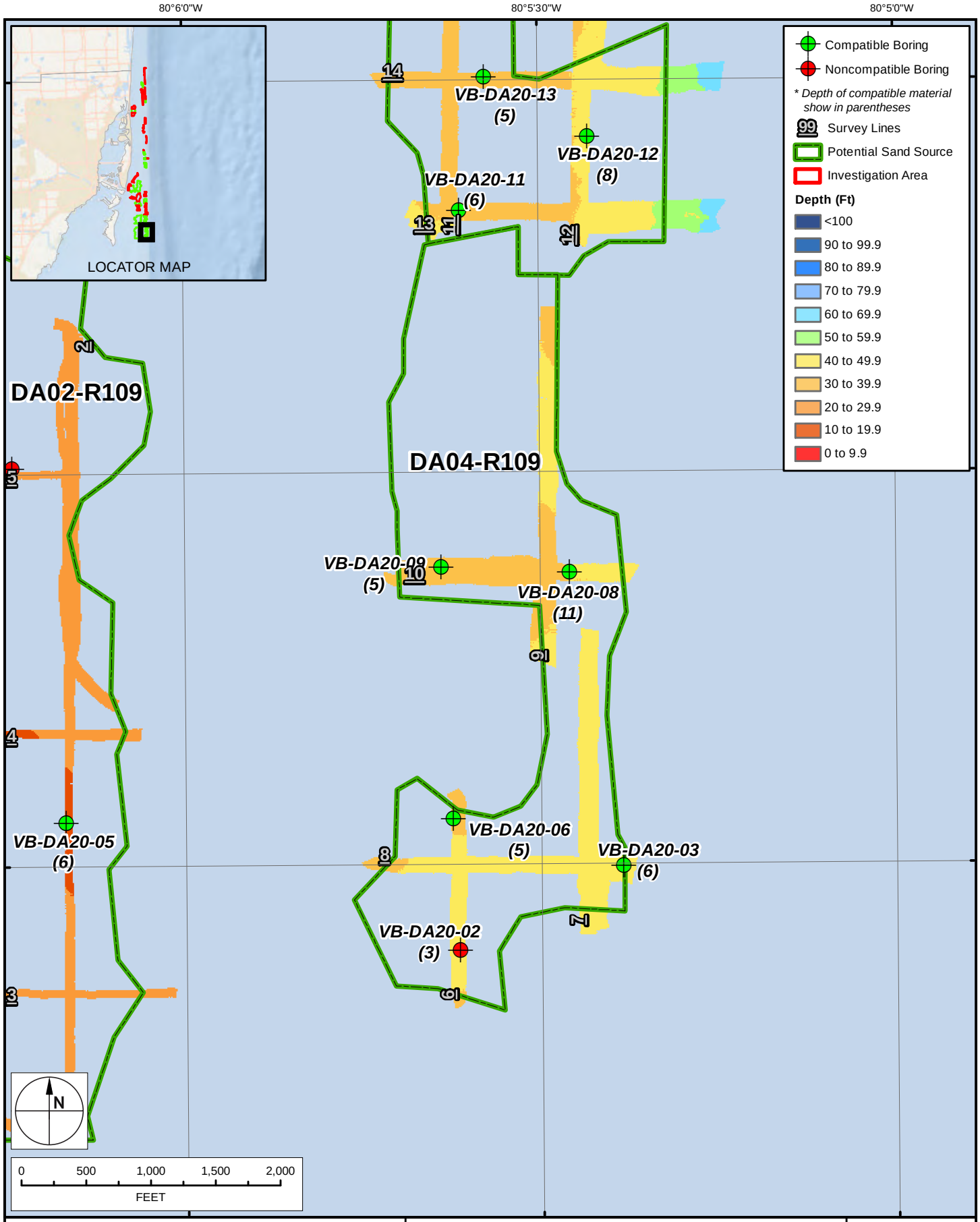

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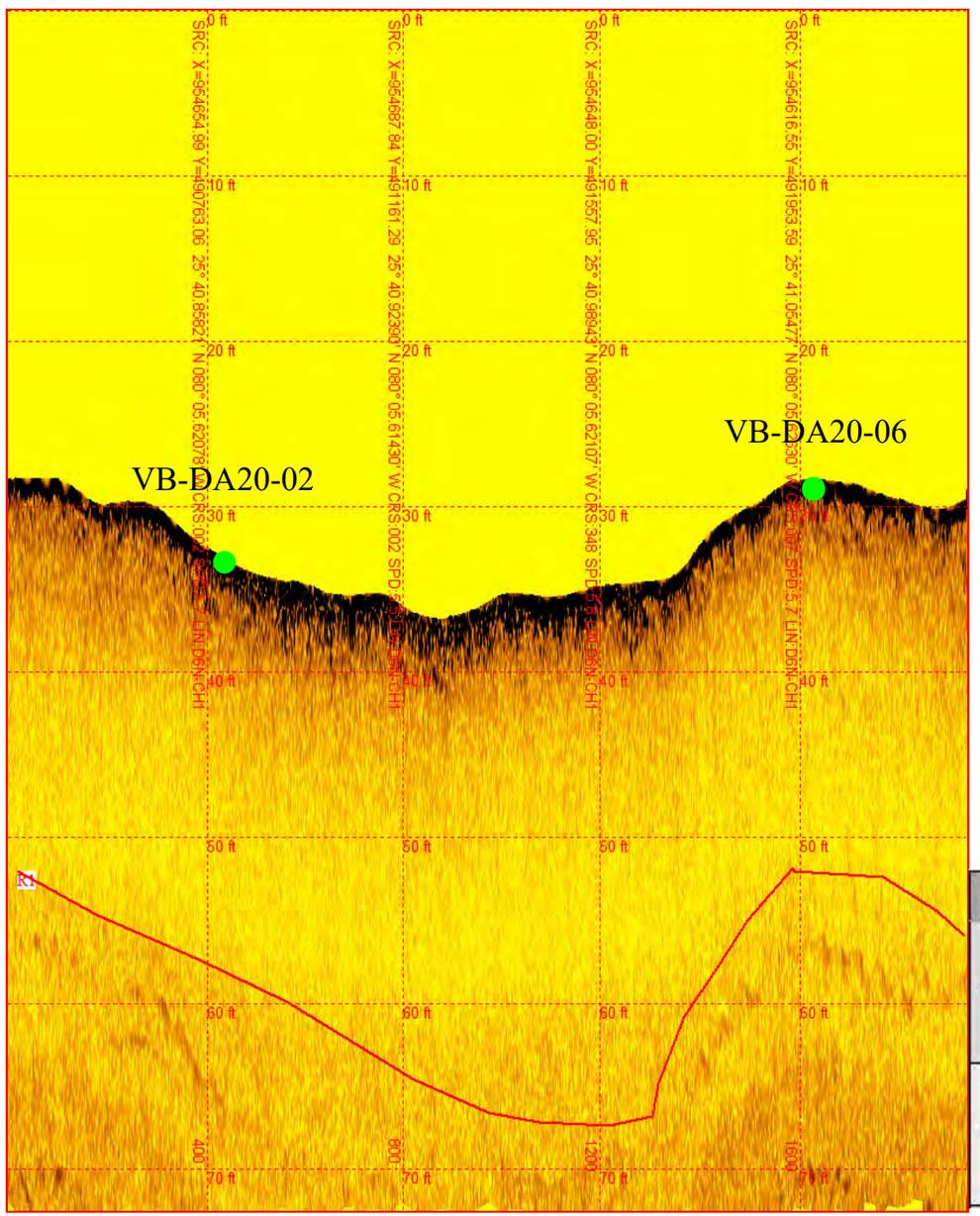
Waterfall D6N-CH1

S N



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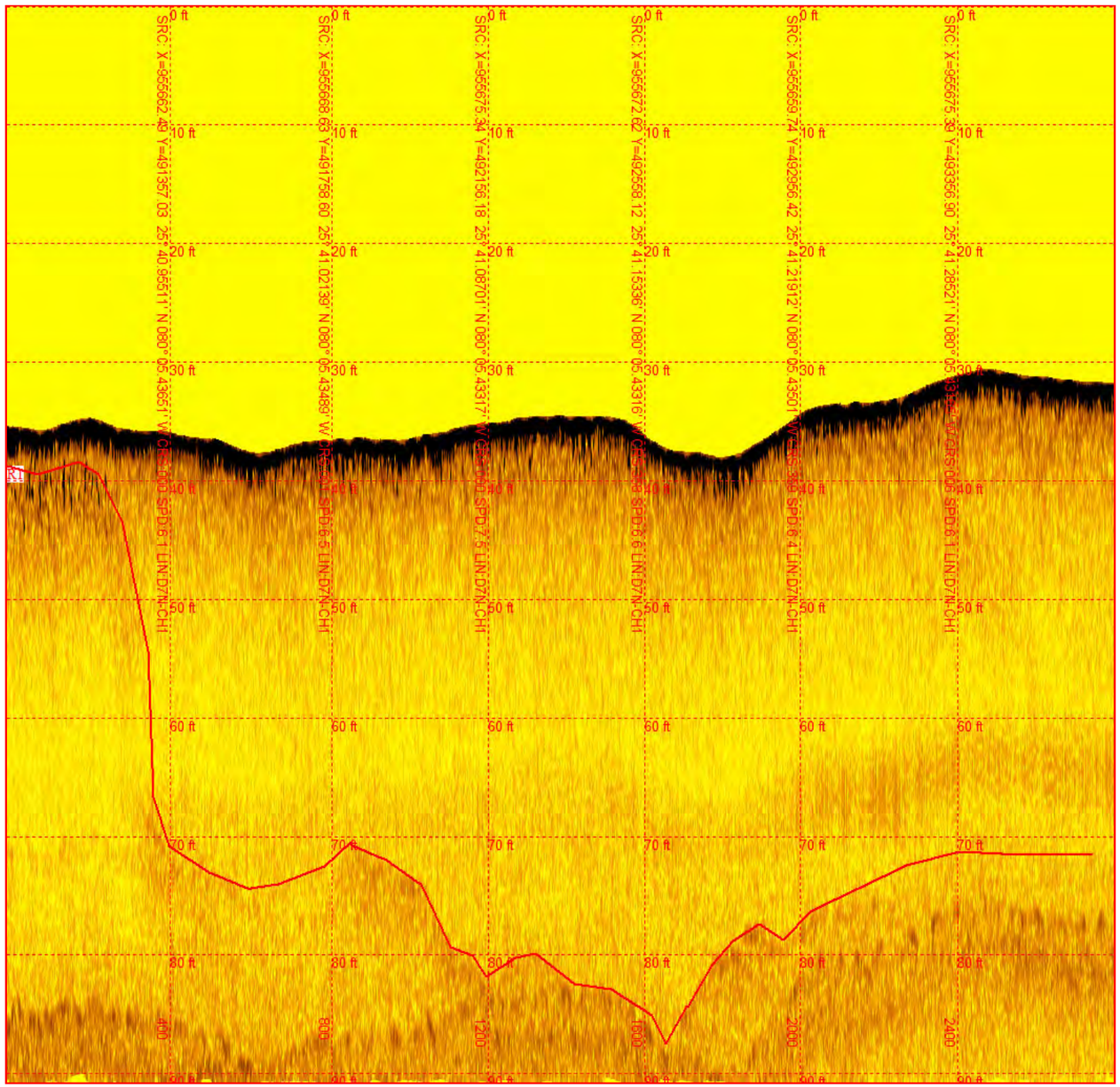
SAD SAND South Miami Dade County

Waterfall D7N-CH1

S N



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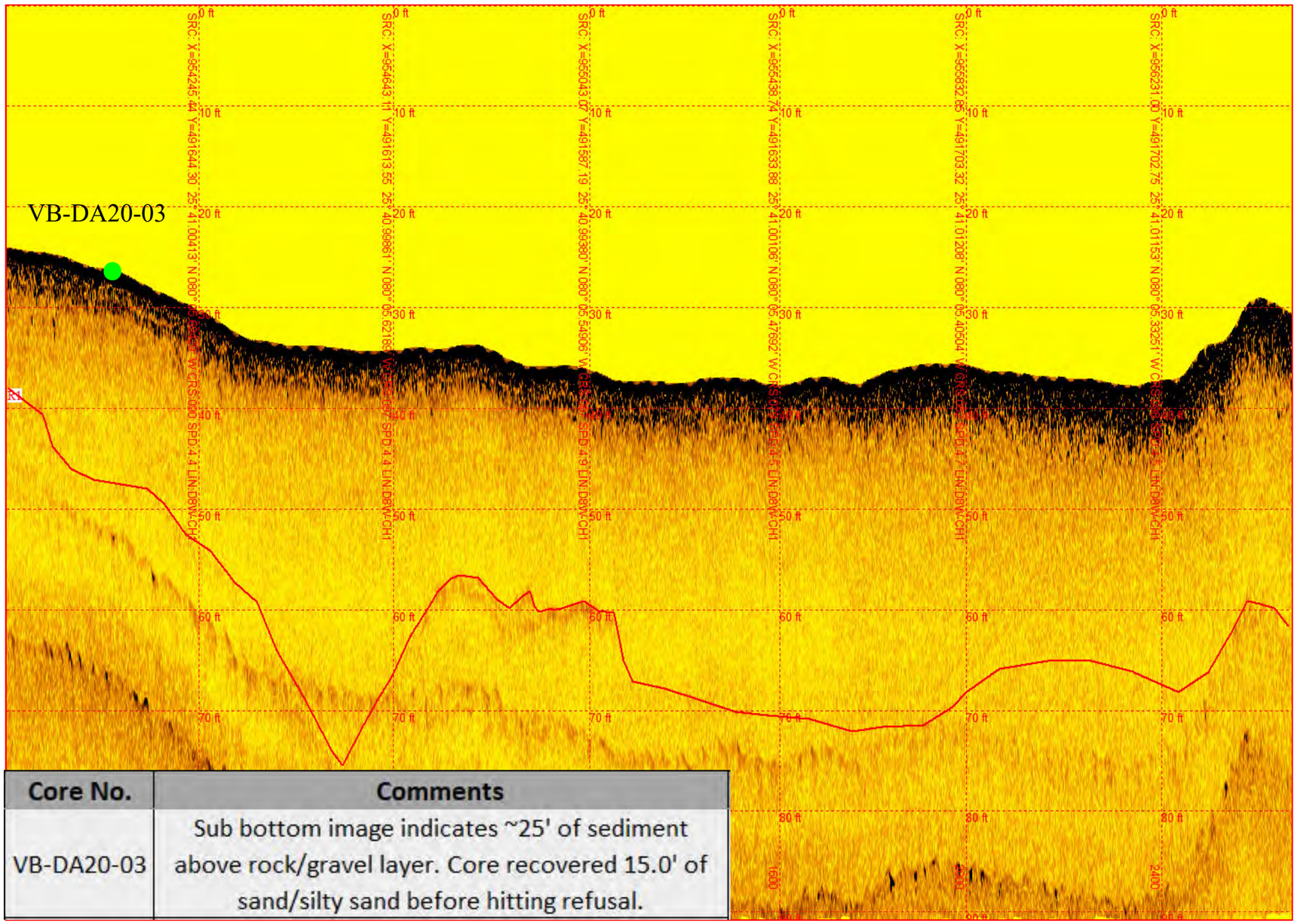
SAD SAND South Miami Dade County

Waterfall D8W-CH1

E W



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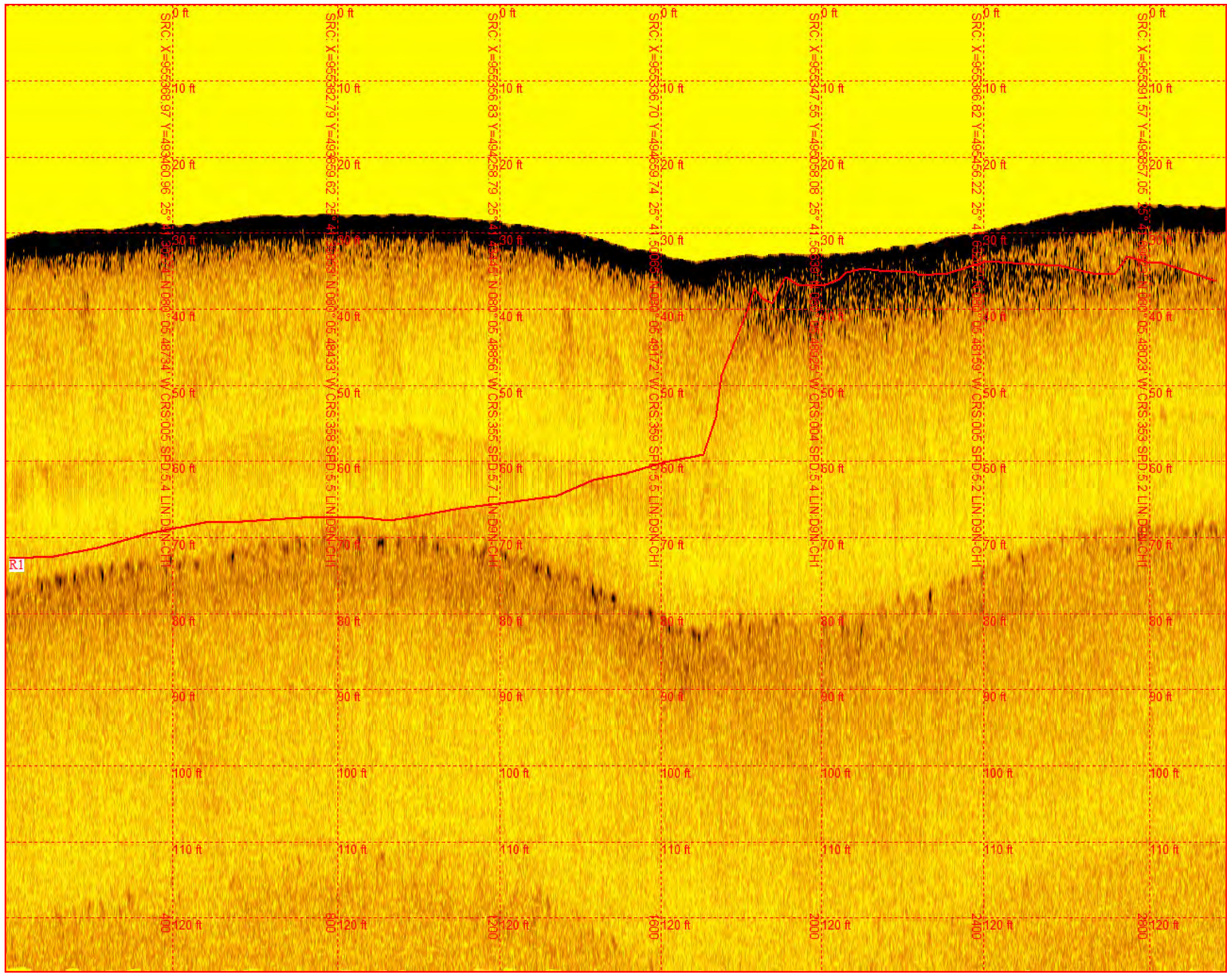
SAD SAND South Miami Dade County

Waterfall D9N-CH1

S N



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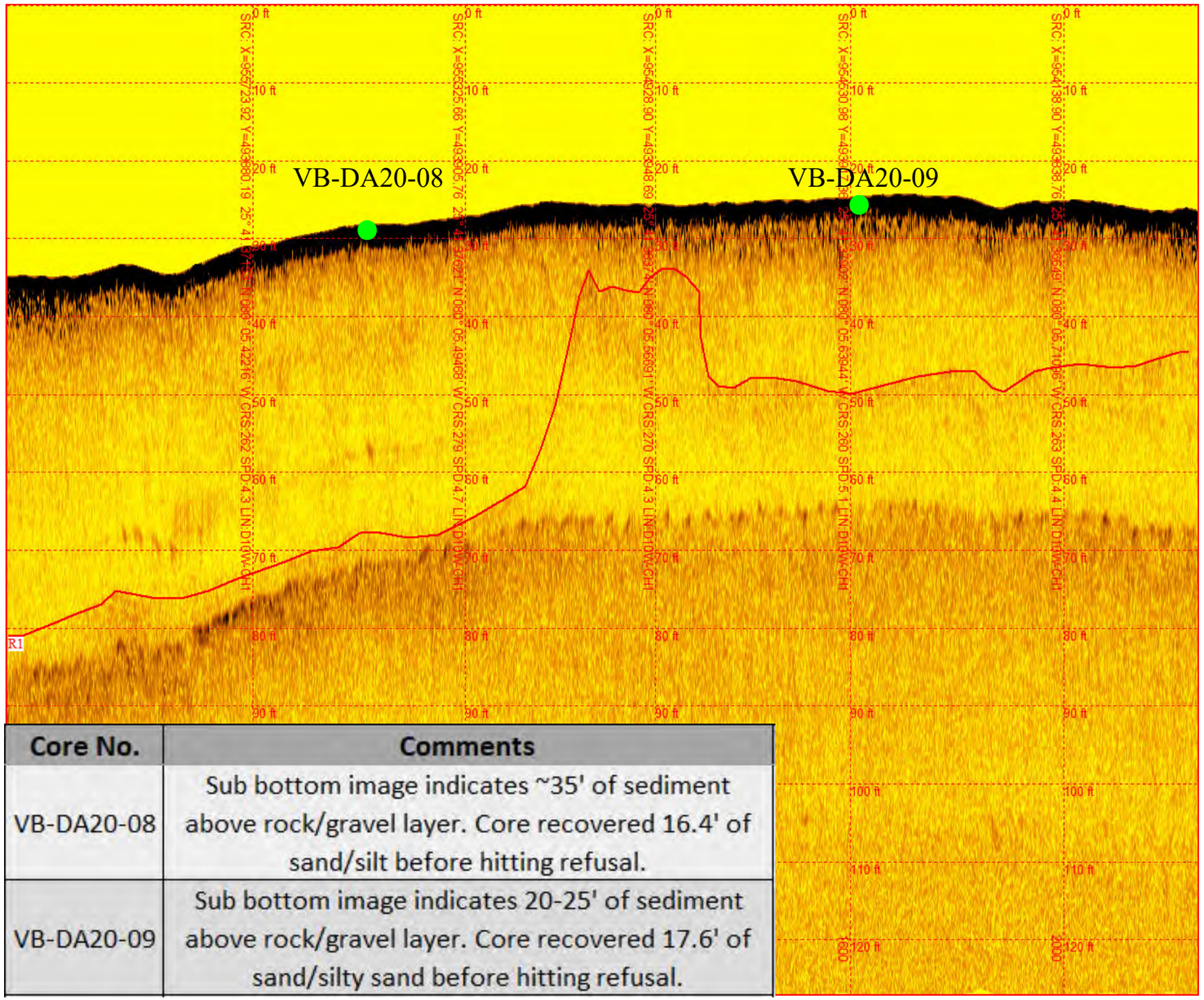
SAD SAND South Miami Dade County

Waterfall D10W-CH1

E W



Core No.	Comments
VB-DA20-08	Sub bottom image indicates ~35' of sediment above rock/gravel layer. Core recovered 16.4' of sand/silt before hitting refusal.
VB-DA20-09	Sub bottom image indicates 20-25' of sediment above rock/gravel layer. Core recovered 17.6' of sand/silty sand before hitting refusal.

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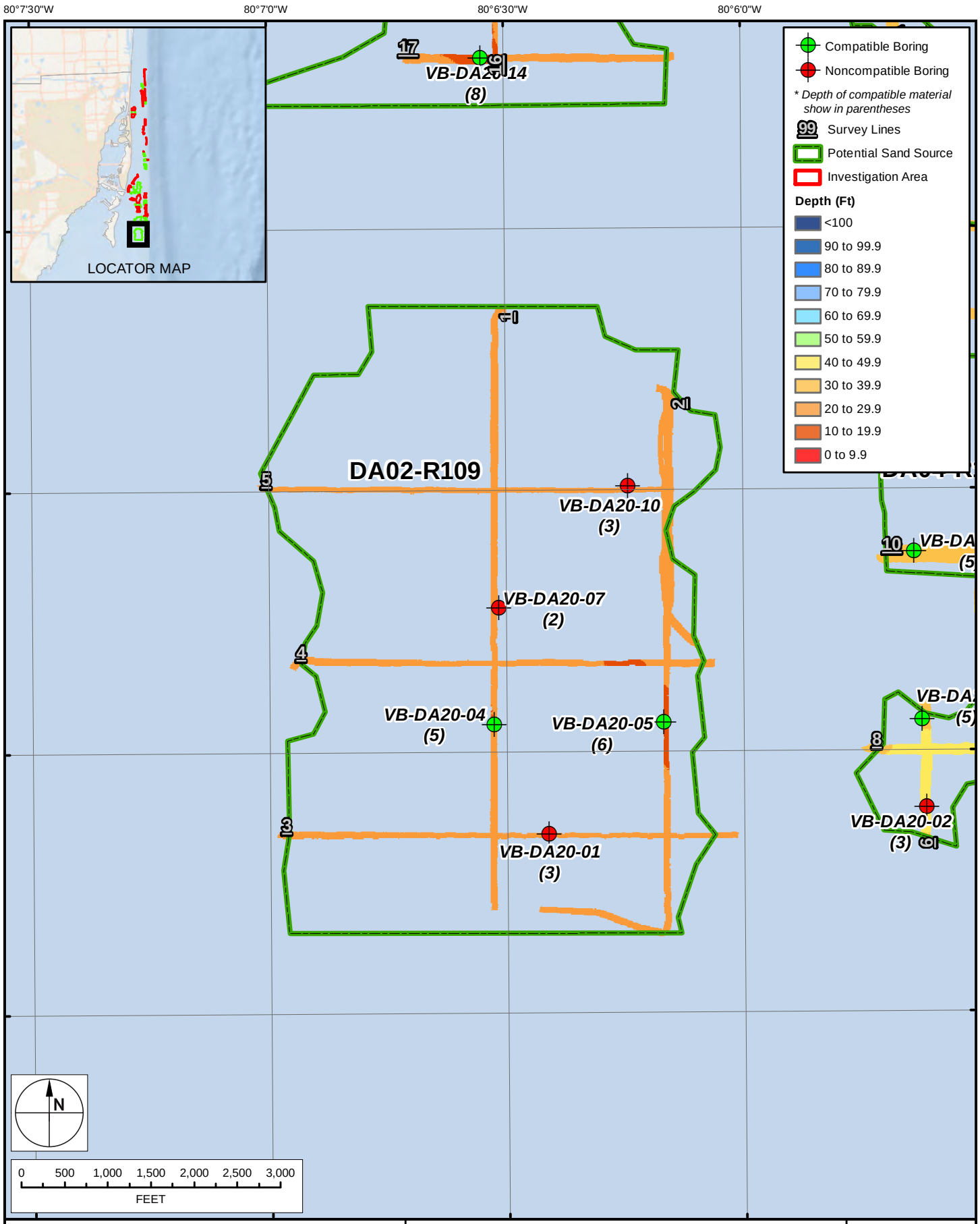

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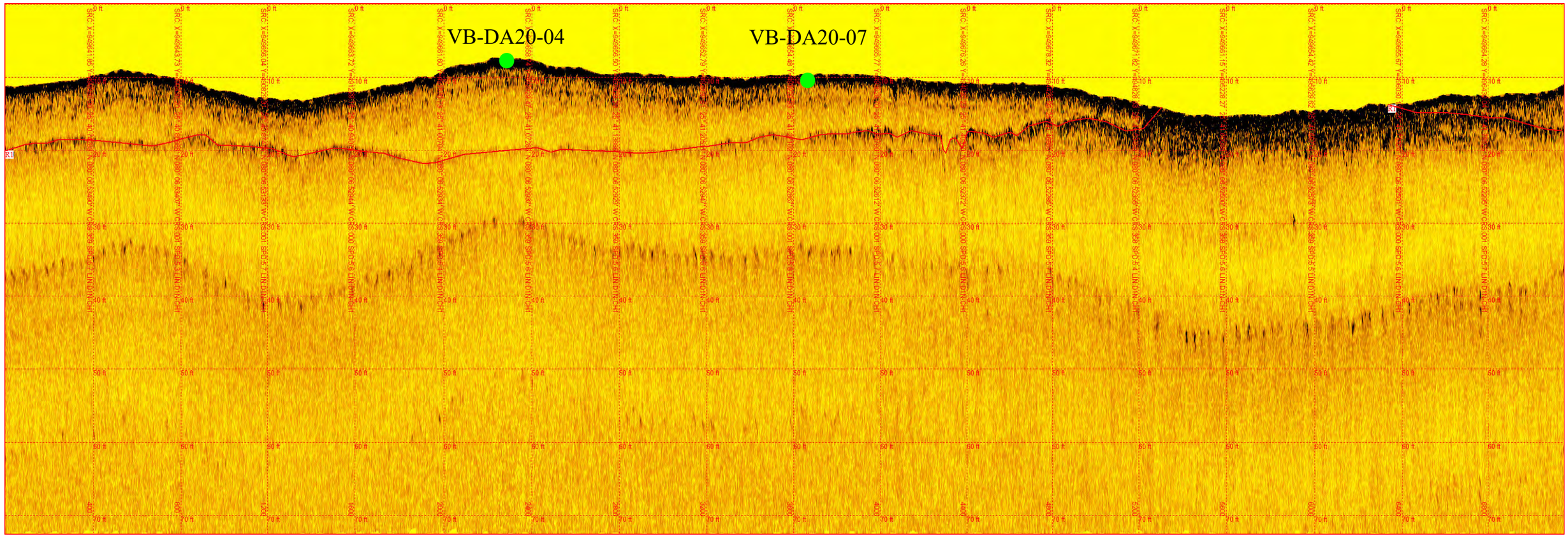
Waterfall D1N-CH1

S N



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Core No.	Comments
VB-DA20-04	Sub bottom image indicates 10-15' of sediment above rock/gravel layer. Core recovered 11.1' of sand/silty sand/silt before hitting refusal.
VB-DA20-07	Sub bottom image indicates 5-10' of sediment above rock/gravel layer. Core recovered 8.8' of sand/silty sand before hitting refusal.

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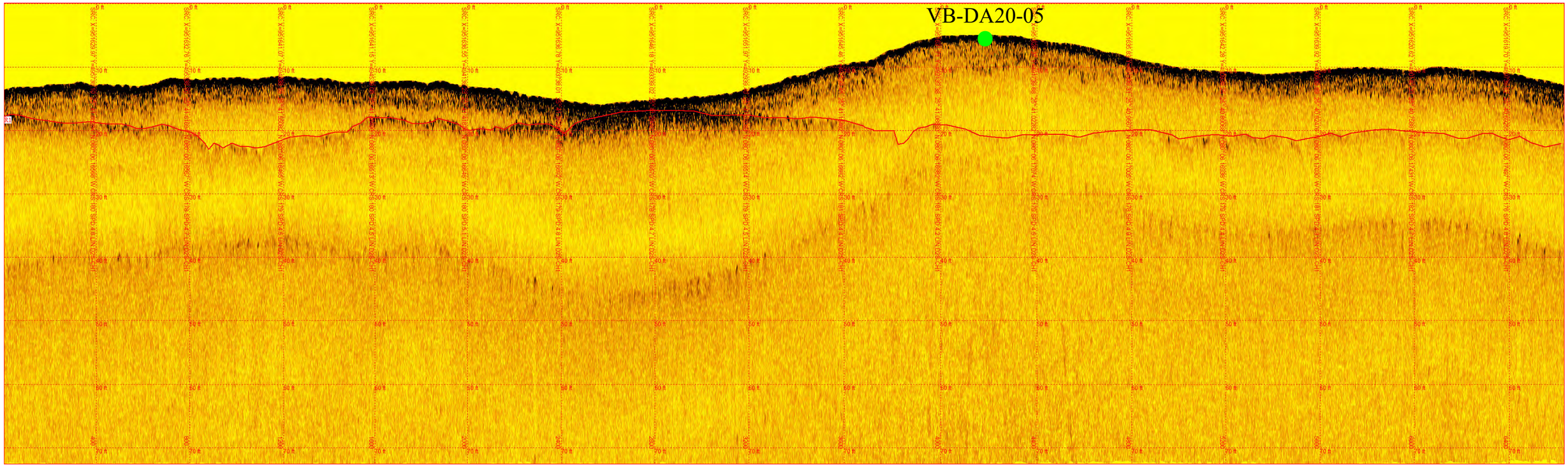
SAD SAND South Miami Dade County

Waterfall D2S-CH1

N S



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Core No.	Comments
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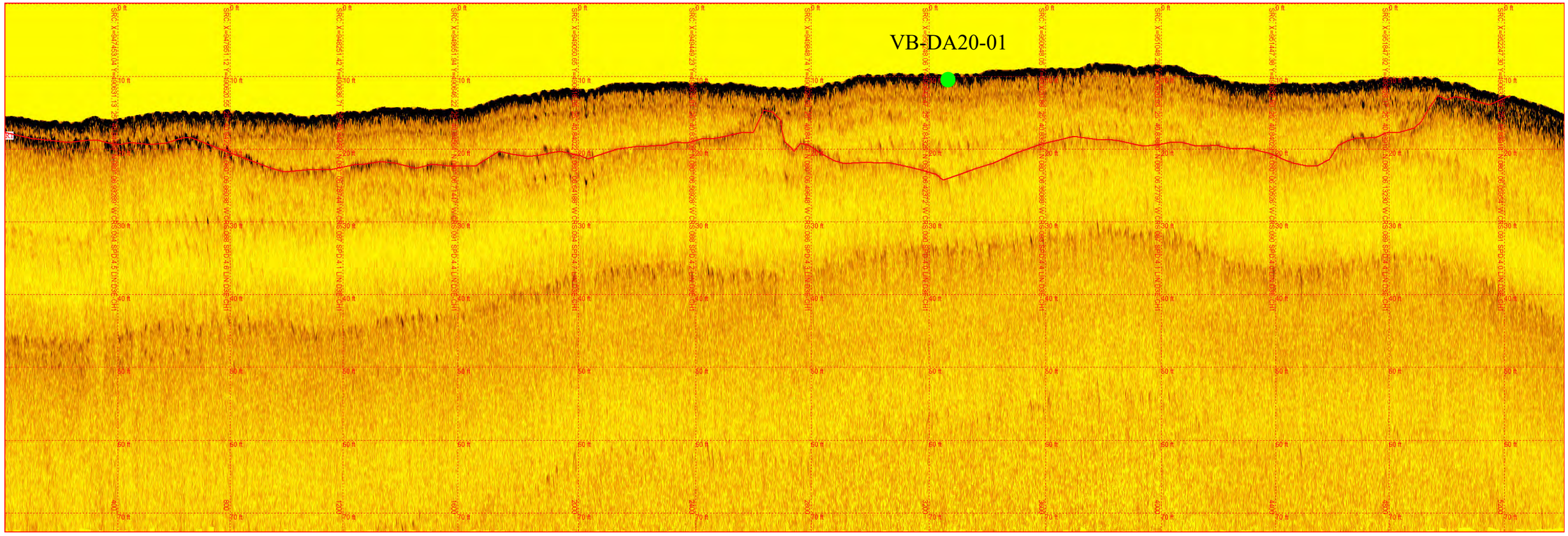
SAD SAND South Miami Dade County

Waterfall D3E-CH1

W E



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Core No.	Comments
VB-DA20-01	Sub bottom image indicates 10-15' of sediment above rock/gravel layer. Core recovered 16.2' of sand/sand with silt/silt before hitting refusal.

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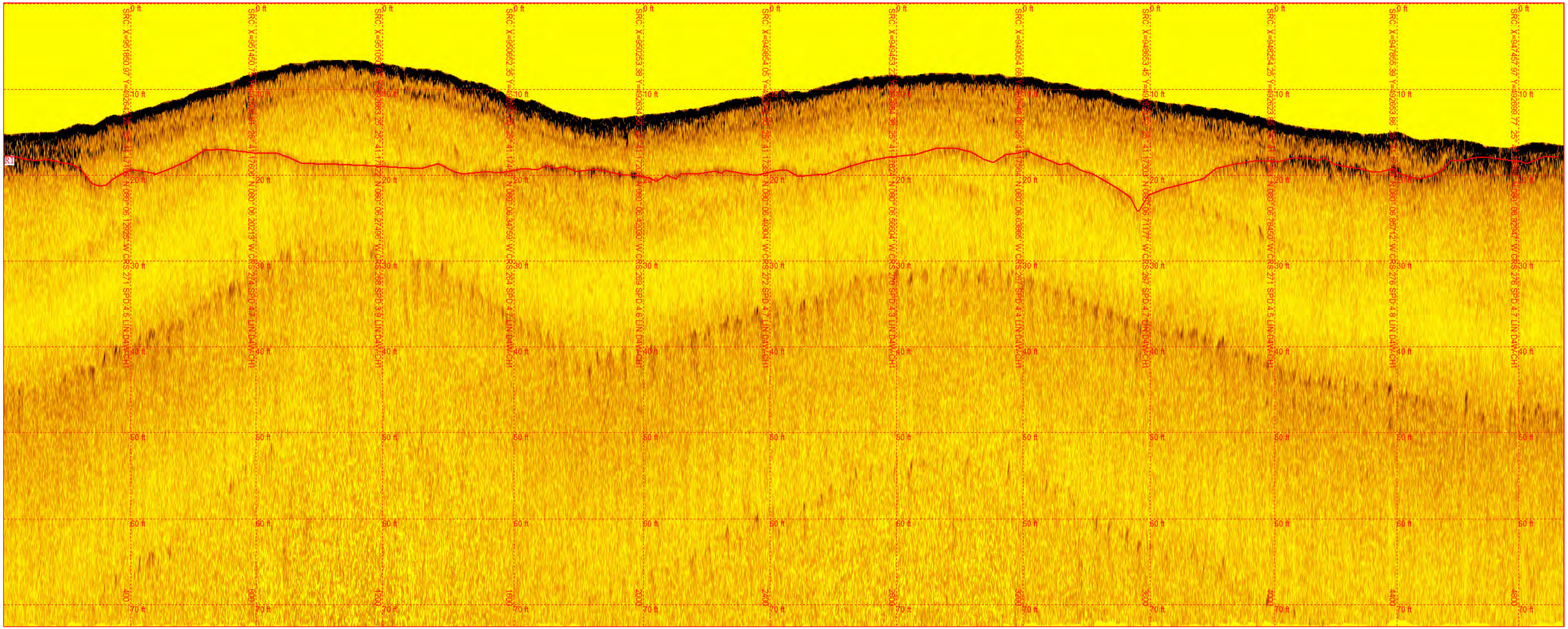
Waterfall D4W-CH1

E W



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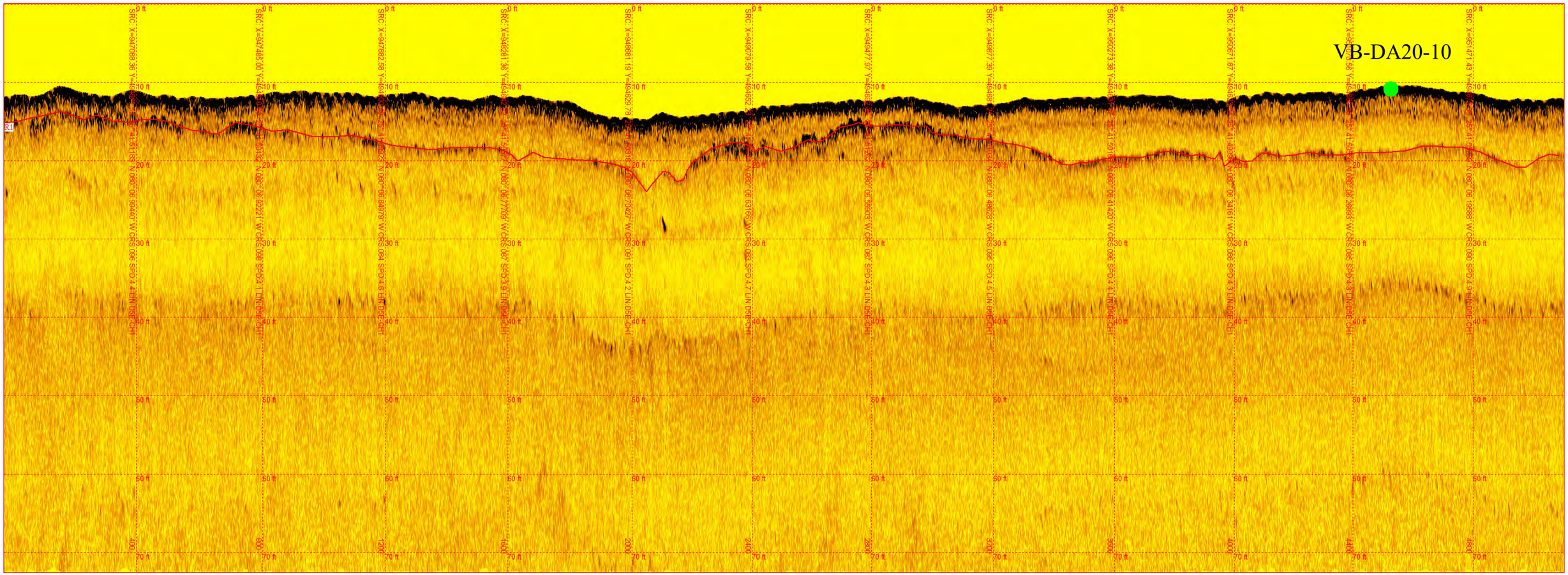
Waterfall D5E-CH1

W E



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Core No.	Comments
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APPENDIX F

Geophysical Investigation Plan

TAYLOR ENGINEERING, INC.

South Atlantic Division
Sand Availability and Needs Determination
Florida Peninsular Sand Source Investigation

Final Draft
Geophysical Investigation Plan
Miami-Dade County

10199 Southside Boulevard, Suite 310
Jacksonville, Florida 32256
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South Atlantic Division Sand Availability and Needs Determination
Florida Peninsular Sand Source Investigation

Geophysical Investigation Plan

Miami-Dade County

Draft Report

Prepared for

U.S. Army Corps of Engineer

W912BU-15-D-0006

by

Taylor Engineering, Inc.
10199 Southside Blvd., Ste 310
Jacksonville, FL 32256
(904) 731-7040

May 2020

C2019-032-02

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1.0 INTRODUCTION

1.1 Scope

This document encompasses the Draft Geophysical Investigation Plan for the 2020 Jacksonville District Sand Search Project which is Part 2 of the three-part South Atlantic Division (SAD) Sand Availability and Needs Determination (SAND). Four county-wide investigation areas have been selected based on results of a desktop analysis of 50-year sand availability and needs for federally authorized projects in the Jacksonville District U.S. Army Corps of Engineers (USACE). The effort focuses on only south peninsular Florida in Broward, Miami-Dade, Sarasota, and Manatee Counties which all lack sufficient long-term sand sources for future beach nourishments based on the desktop evaluation of sand needs, availability, and balances for southeastern and southwestern Florida. **Appendix A** provides the 50-year sand balances for southwestern Florida which were calculated as part of Part 1 of this project. Individual investigation plans have been drafted for each of the four counties proposed for sand exploration. This document encompasses the exploration plan for Miami-Dade County.

This Final Draft Geophysical Investigation Plan provides a brief background on sand needs and availability in Miami-Dade County, summarizes existing data reviewed during development of this plan, and proposes specific areas on the inner continental shelf offshore of Miami-Dade County which are recommended for further exploration in search of new potential sand sources for future beach nourishments. As dictated by the USACE, the scope of this investigation is to provide additional reconnaissance level data in areas with data needs and to collect data in offshore areas with no known previous data on sediment quality.

This Final Draft Geophysical Investigation Plan summarizes reconnaissance geophysical explorations completed in April 2020 (side scan sonar, magnetometer, and sub-bottom profiler) and proposes vibracore sediment sampling locations based on interpretation of the collected geophysical data.

1.2 Background

The search for potential offshore borrow areas in Miami-Dade County has a history that originates in the 1960s and continues to present day. Initially, the search for sand focused on the County's coastal and nearshore waters. Many past nourishment projects have also taken advantage of tidal inlet shoals (ebb and flood) or nearshore sands. However, the County is now running out of offshore sand sources and has turned to upland sources for their most recent beach nourishment efforts as noted in following sections of this report. In the past, offshore sand sources were generally close to the placement areas and permitting efforts did not require sophisticated sand search techniques or laboratory testing (Florida Department of Environmental Protection 2010). Additionally, historic sand searches and beach nourishment projects did not have as many environmental constraints related to buffers from hard bottoms and other natural resources. As such, the ability to locate viable sources of beach compatible sediments from offshore sources is severely constrained by environmental and economic factors.

As the demand for offshore sand sources has increased in recent decades and many of the once reliable nearshore sand sources were depleted, the search for sand has begun to move further offshore. In the mid-1980s the implementation of the *Beach Management Act* placed more strict regulation on potential borrow areas siting insufficient volumes, environmental constraints, and water quality, further constraining potential offshore sources.

Presently, the search for offshore borrow areas has continued to move further offshore and further overall in distances from specific project placement areas. Contemporary sand source field investigations are complex, data intensive, and require bathymetric surveys, sub-bottom surveys, side-scan sonar surveys, magnetometer surveys, vibracore collection, sediment analysis, and logging of samples for permitting. Compatibility of sediment to proposed project locations include consideration of sediment grain size, sediment composition and color. These additional constraints placed on nourishment projects are due to design constraints also including environmental function, recreational use, and aesthetics.

2.0 COUNTY HISTORY AND STATUS

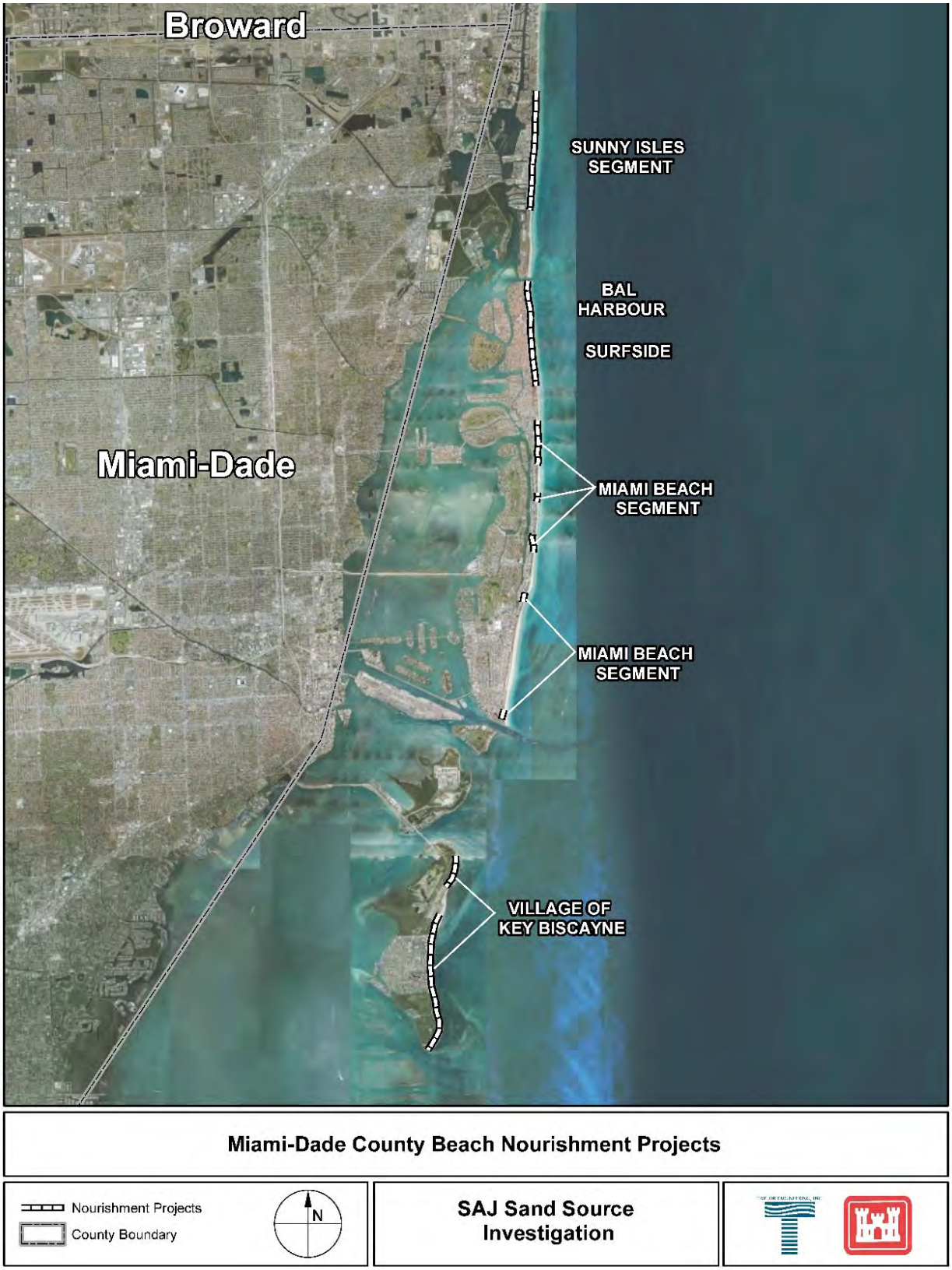
Beach nourishment began in Miami-Dade County in the 1950's in order to address severe erosion along the coast. The Miami-Dade County Beach Erosion Control and Hurricane Surge Protection Project was authorized by Congress in 1966, and construction began in 1975 through the USACE. Several federal and non-federal projects have been carried out since that time and are maintained by various project sponsors.

Most nourishment projects in Miami-Dade County have utilized sand from offshore borrow areas, upland sand sources, or sand bypassing at Baker's Haulover Inlet. Sand from the Atlantic Intracoastal Waterway (AIWW) has been used for a small number of projects as well.

According to the Florida Department of Environmental Protection (FDEP), Miami-Dade County contains 14.5 miles of critically eroded shoreline, 13.3 of which are restored and maintained as of 2018. Erosion is attributed to frequent winter northeasters, occasional tropical storms and hurricanes, and the effects of the Boca Raton Inlet, Hillsboro Inlet, Port Everglades Entrance Channel, and Bakers Haulover Cut.

Current Projects in Miami-Dade County include the Miami-Dade County Shore Protection Project (Miami-Dade County SPP), Baker's Haulover Inlet, and Government Cut. The Miami-Dade County SPP is broken down into the following segments of shoreline: Sunny Isles and Haulover Park Beach, Bal Harbour, Surfside, and Miami Beach. The Southern Barriers region of Miami-Dade County is located to the south of Government Cut and include Norris Cut, Bear Cut, and the Key Biscayne Beach Nourishment Project. **Figure 1** provides an overview of Miami-Dade County and general location and extents of existing shore protection project areas.

Figure 1 . Miami-Dade County Overview with Location and Extents of Shore Protecton Projects.



2.1 Sunny Isles and Haulover Park Beach, Miami-Dade County Shore Protection Project

Sunny Isles (R7-R20) and Haulover Park (R20-R26.7) are located within a 5.1-mile segment of critically eroded shoreline between the Broward-Dade county line and Baker's Haulover Cut/Inlet. They are part of the federally authorized Miami-Dade County Shore Protection Project, with the Sunny Isles segment authorized until 2038. Construction events within this segment began in 1955, and have utilized offshore, upland, and navigation channel/beneficial use sources. Sand spreading from these project areas nourishes the adjacent critically eroded beaches within Golden Beach (R1-R7).

The 1.3 mile stretch of Haulover Park was constructed in 1987 with 235,000 cy of material from an offshore borrow area. The project restored a 50-foot-wide beach berm at +8.2 ft NGVD. In 1988, Sunny Isles restored a 20-foot-wide beach berm at elevation +8.2 ft NGVD with sand from an offshore borrow area. The equivalent of ten years of advance nourishment of fill material was placed seaward of the berm. The northern end of Sunny Isles experienced loss of beach fill, which spread into Golden Beach. A submerged nearshore breakwater was constructed at R7 in 2002 to improve the longevity of the project. A complete history of the project area is shown in **Table 1**.

Table 1 . Sunny Isles and Haulover Park Beach Project History

Date Complete	Volume (cy)	Sand Source	Location (R Monuments)	Length (miles)
1955-1959	418,214	Baker's Haulover Inlet	R19-R26	1.4
1960	180,000	Offshore	R19-R26	1.4
1978	300,000	Offshore	R20-R26	1.1
1980	43,163	Baker's Haulover Inlet	R19-R26	1.4
1984	35,000	Baker's Haulover Inlet	R19-R26	1.4
1987	235,000	Offshore	R19-R26	1.4
1988	1,320,000	Offshore	R7-R20	2.5
1990	32,000	Baker's Haulover Inlet	R7-R9	0.4
1994	24,560	Baker's Haulover Inlet	R20-R25	0.9
July 1997	80,000	Offshore	R7-R10	0.6
1997	9,000	Upland	R7-R8 & R10 & R16	0.3
2001-2002	737,152	Offshore	R7–R19	2.4
July 2009	10,000	Upland	R7-R10.5	0.6
March 2014	35,000	Baker's Haulover Inlet	R12-R16	0.8
2015	2,600	Upland	R7-R9	0.4

2.2 Baker's Haulover Inlet

Baker's Haulover Inlet is a man-made inlet created in 1925. It connects Biscayne Bay to the Atlantic Ocean and has a channel entrance depth of -11 ft MLW. The inlet has received several modifications since its creation, including extension of the south jetty in 1975, and sand tightening and extension of the north jetty in 1986. Periodic maintenance dredging has been conducted as well, with the material placed on adjacent beaches.

The construction and modification of the inlet resulted in an interruption of longshore sand transport along nearby shorelines. The Baker's Haulover Inlet Management Implementation Plan was adopted by the FDEP in 1997. A specific volume of sand for an average annual bypassing objective has yet to be determined. An inlet management study was scheduled for 2018 by the county, and FDEP intends to continue the placement of maintenance dredging material on adjacent beaches.

2.3 Bal Harbour Segment, Miami-Dade County Shore Protection Project

Bal Harbour (R27-R31) is a 0.75-mile segment of critically eroded shoreline that extends from Baker's Haulover Inlet to Surfside municipal boundary. This area experiences a sediment deficit due to its position on the south side of Baker's Haulover Inlet and experiences rapid erosion as a result. Bal Harbour is authorized for restoration until 2025 through the Miami-Dade County Shore Protection Project.

Restoration of a 20 ft wide dune at elevation +10.7 ft NGVD and a 50 ft wide berm at elevation +8.2 ft NGVD was completed in 1975 by the local government on a federal reimbursement basis. 10 years of advance nourishment fill material was placed seaward of the berm. Several nourishments were performed following the 1975 construction and utilized a variety of offshore, upland, and beneficial use sources. A complete history of project nourishments is shown in **Table 2.** A Limited Re-evaluation Report (LRR) and a National Environmental Policy Act (NEPA) were completed by the USACE in 2016 to utilize sand from upland mines and the Outer Continental Shelf.

Table 2 . Bal Harbour Segment, Miami-Dade County Shore Protection Project History

Date Complete	Volume (cy)	Sand Source	Location (R Monuments)	Length (miles)
1960	86,000	Offshore	R27-R31	0.8
1961-1964	83,000	Offshore	R27-R31	0.8
1968-1969	136,000	Offshore	R27-R31	0.8
July 1975	1,625,000	Offshore	R27-R31	0.8
1990	225,000	Offshore	R27-R31	0.8
1998	282,852	Baker's Haulover Inlet & flood shoal	R28-R31	0.6
2002	35,000	Offshore	R27-R31	0.8
2003	188,000	Baker's Haulover Inlet & ebb shoal	R27-R31	0.8
2007	30,000	AIWW	R27-R31	0.8

Date Complete	Volume (cy)	Sand Source	Location (R Monuments)	Length (miles)
2009	15,000	Upland	R27-R28.8	0.34
2010	33,080	AIWW	Unknown	Unknown
2014	235,733	Baker's Haulover Inlet & ebb shoal	R27-R31	0.8
December 2017	37,000	AIWW	Unknown	0.2

2.4 Surfside Segment, Miami-Dade County Shore Protection Project

Surfside (R31-R38) is located between Bal Harbour Beach and Miami Beach municipal boundary. It is a 1.3-mile segment of critically eroded shoreline under the Miami-Dade County Shore Protection Project. Project history is shown in **Table 3**.

Initial construction of Surfside was completed in 1978 utilizing sand from an offshore borrow area. The project restored a 20 ft wide dune to elevation +10.7 ft NGVD and a 50 ft wide berm to elevation +8.2 ft NGVD. 10 years of advance nourishment fill material was placed seaward of the berm. Small segments of nourishment took place in 1987, 1990, 1997, and 2001, with full scale nourishments in 1999 and 2014. A Limited Re-evaluation Report (LRR) and a National Environmental Policy Act (NEPA) were completed by the USACE in 2016 to utilize sand from upland mines and the Outer Continental Shelf. The next phase of nourishment is scheduled for 2019.

Table 3. Surfside Segment, Miami-Dade County Shore Protection Project History

Date Complete	Volume (cy)	Sand Source	Location (R Monuments)	Length (miles)
August 1978	2640000	Offshore	R31-R38	1.5
August 1999	590000	Offshore	R32-R36	0.8
April 2014	12800	Upland	R32-R36	0.8

2.5 Miami Beach Segment, Miami-Dade County Shore Protection Project

Miami Beach (R38-R74) is a 7.35-mile segment of the Miami-Dade County Shore Protection Project. It extends from the southern boundary of Surfside to Government Cut. Several events have occurred since initial construction, with a complete project history shown in **Table 4**.

Restoration of this segment (R38-R74) of the Miami-Dade County Shore Protection Project began in 1978 with the sourcing of material from offshore borrow areas. A 20 ft wide dune at elevation +10.7 ft NGVD and a 50 ft wide berm at elevation +8.2 ft NGVD were restored, and 10 years of advance nourishment in additional fill material was placed seaward of the designed berm. Nourishment of discreet segments occurred in 1987, 1990, 1997, and 2001.

The segment of shore north of 32nd Street, Miami Beach experiences erosion from strong storm waves and upland development. Additional fill material was placed at the site in 1997, 2002, 2005, and 2007. Three shore-attached breakwaters were also constructed in 2002 to improve the longevity of beach fill.

Shore segments at 55th Street, Miami Beach (R48.7-R50.7) and 44th Street Miami Beach (R53.7-R55.5) also experience high rates of erosion resulting from storm waves and nearshore upland development. Truck haul nourishments were executed at both sites in 2006 by the county. A sand transfer from Lummus Park (R67-R72) to the 44th Street segment was completed in 2007, which was then followed by a truck haul event in 2009. 44th Street, 55th Street, and 67th Street (R43-R44.5) all received sand from an upland mine source in 2009.

Following the issue of a joint coastal permit by the DEP in 2011, sand was placed onto segment R37.75-R46.25 from an offshore borrow site in 2012. The permit also authorized sand transfer from Lummus Park to erosional hotspots R53.7-R55.5 and R60-R61.1, which occurred in 2012.

A design for Reefball Breakwater Structures was selected by the USACE in 2003 to be placed at the 63rd Street, Miami Beach location. The DEP issued a notice of intent to issue a Joint Coastal Permit for the structures in 2011 and installation is anticipated.

Table 4 . Miami Beach Segment – Miami-Dade County Erosion Control Project History

Date Complete	Volume (cy)	Sand Source	Location (R Monuments)	Length (miles)
August 1979	1530000	Offshore	R38-R46	1.5
October 1980	3177100	Offshore	R46-R59	2.4
December 1981	2200000	Offshore	R59-R66	1.4
January 1982	2400000	Offshore	R66-R74	1.9
1985	110000	Offshore	R42-R46	0.8
1985	50000	Offshore	R57-R60	0.6
September 1994	122096	Offshore	R54-R57	0.2
1994	30000	Upland	R54-R59	0.4
1996	8000	Sand Transfer from R59-R60	R54-R60	0.8
July 1997	479069	Offshore	R53-R58	1.0
1997	35000	Upland	R54-R56	0.4
1997	50000	Upland	R57-R59	0.4
1998	18000	Upland	R44-R45	0.2
August 1999	132000	Offshore	R73-R74	0.3
2001-2002	167662	Offshore	R44-R46.5A	0.4

Date Complete	Volume (cy)	Sand Source	Location (R Monuments)	Length (miles)
2002	125000	Sand Transfer from R59-R60	R53.5-R56 and R60-R61	0.7
2005	35000	Upland	R60-R61	0.2
2006	30000	Upland	R48.7-R50.7	0.4
2006	50000	Upland	R53.7-R55.5	0.4
December 2007	30000	Upland	R60-R61	0.2
2007	70000	Sand Transfer from R67-R72	R43-R45	0.4
2009	10000	Upland	R43-R44.5	0.29
2009	10000	Upland	R48.7-R50.7	0.38
2009	3000	Upland	R53.7-R55.5	0.34
2012	206042	Offshore	R37.75-R46.25	1.6
2012	141159	Sand Transfer from Lummus Park (R64-R71)	R53.7-R55.5 R60-R61.1	0.55
2013	6296	Upland	Unknown	Unknown
2014	31365	Upland	Unknown	Unknown
May 2015	19259	Upland	R53.7-R55.5	0.34
March 2017	233330	Upland	R48.7-R50.7 and R53.7-R55.5	0.72

2.6 Government Cut

Government Cut is a man-made entrance channel that connects the Atlantic Ocean to the Port of Miami. The inlet is part of the federally authorized Miami Harbor Navigation Project and has a channel depth of -44 ft MLW. Sand tightening of 1,200 ft of the seaward end of the north jetty occurred in 1983, with the remainder of the north jetty sand tightened in 1999.

Maintenance dredging occurs infrequently due to the lack of significant shoaling within the channel. This lack of shoaling is attributed to the low longshore transport rate, jetties acting as a barrier, and sand transfers from Lummis Park Beach. Spoil islands were created using the dredged material from the exterior and interior navigation channels during deepening events. The FDEP plans to use all future beach-compatible material dredged from the channel on adjacent beaches.

2.7 Norris Cut and Bear Cut

Norris Cut and Bear Cut are natural inlets in which no navigational dredging has been conducted. Norris Cut separates Fisher Island to the north and Virginia Key to the south, while Bear Cut separates Virginia Key to the north and Key Biscayne to the south.

In 1969, sand from an offshore borrow area was used to construct a 50 ft wide berm at elevation +6 ft MLW under the federally authorized Virginia Key Beach Erosion Control Project (R79-R88). Beach compatible material dredged from Government Cut was placed between R79 and R84 along with the construction of groins in 1974. Timber groins were completed along the Bear Cut inlet of Virginia Key in 1956, and concrete pilings and wood panel groins were installed by Dade County in 1965. Some additional maintenance and small-scale nourishments were completed in 2003.

Fisher Island received 25,000 cy of imported oolithic aragonite sand through a privately funded beach erosion control project in 1991. Eight rock T-head groins were constructed at that time as well.

Both the Fisher Island project and the Virginia Key Beach Erosion Control Project are not located within critically eroded beaches but are described by the FDEP as previous beach management projects adjacent to critically eroded beaches.

2.8 Key Biscayne

Key Biscayne is part of the Southern Barriers subregion, which extends from Fisher Island (R75) to Cape Florida (R113). Beach restoration has been conducted on Key Biscayne's 2.5 miles of critically eroded shoreline as outlined in **Table 5**.

In 1969, Crandon Park on northern Key Biscayne was constructed under the federally authorized Biscayne Beach Erosion Control Project. Sand from an offshore borrow area was used to restore a 50 ft wide berm to elevation +7 ft NGVD.

The Key Biscayne Shore Protection Project was federally authorized in 1985 and restoration of 2.4 miles of critically eroded shoreline was carried out in 1987. The construction event included a 25 ft wide berm to elevation +7 ft NGVD at Village of Key Biscayne and a 20 ft wide berm to +7 ft NGVD at Cape Florida State Park. 7 years of advance fill material was placed in the project area, and a terminal groin was constructed at the south end of Bill Baggs Cape Florida State Park. The federal project was deauthorized in 1990.

In 2002, a non-federal nourishment project was completed at Village of Key Biscayne. A 35 ft berm at elevation +7 ft NGVD was constructed using sand from an offshore borrow area. Additional nourishments were performed by the Village in response to storm damage, and the next nourishment is scheduled to occur in 2019.

Table 5. Key Biscayne Beach Nourishment Project History

Date Complete	Volume (cy)	Sand Source	Location (R Monuments)	Length (miles)
1969	196300	Offshore	R92.5-R96 and R99-R101	1.0
1987	420000	Offshore	R101-R113.7	2.4
2002	121000	Offshore	R101-R108	1.3
2008	2400	Upland	R103-R107	0.75
2012	37500	Upland	R101.3-R107.6	1.2
May 2017	27064	Upland	R101.7-R107.8	1.2

3.0 DATA REVIEW

The initial phase of this exploration planning effort involved review of all available sources of data related to previous sand searches and nourishment efforts. The following bullets summarize sources of data consulted in the creation of this plan.

- Florida Department of Environmental Protection's (FDEP) Regional Offshore Sand Source Inventory (ROSSI) database and map viewer
- Bureau of Ocean Energy Management (BOEM) Atlantic Sand Assessment Project (ASAP)
- Numerous previous USACE-SAJ reports on southeastern Florida shore protection projects and sand sources
- Data from the American Shore and Beach Preservation Association (ASBPA) and the Florida Shore and Beach Preservation Association (FSBPA)
- High resolution Laser Airborne Depth Sounder (LADS) bathymetry data. Various dates, all sourced from NOAA's online Bathymetric Data Viewer.
- 2013 Fish and Wildlife Research Institute (FWRI) hardbottom data
- Miami-Dade County Beach Erosion Control Master Plan
- Historic geotechnical data from USACE-SAJ
- Recent bathymetric surveys from USACE-SAJ

4.0 BORROW AREA PRESENT CONDITIONS

The identification of sand sources for beach nourishment in Miami-Dade County is major challenge for the future. The large number of expansive nourishment projects historically completed in Miami-Dade County has largely depleted known offshore sand sources. In addition, changing environmental constraints have limited or eliminated the use of other potential offshore borrow sites. There is potential for identifying additional sand resources in previously used borrow areas and there are a few apparently unexplored areas on the very thin inner continental shelf which may contain viable sand resources. This plan aims to survey as many of the remaining unexplored areas as possible and to resurvey some of the historic borrow areas which may contain additional sediment which could be processed (e.g. removal of gravel) to meet beach specifications.

4.1 50-Year Sand Balance for Southeast Florida

Miami-Dade County was selected as an investigation area for southeastern Florida based on results of the 50-year sand balance generated in Part 1 of this study. A summary of the 50-year sand balance is provided in **Table 6** below. The full details of the 50-year sand balance are provided in **Appendix A**.

Table 6 . Summary of 50-Year Sand Balances for Southeast Florida

County	50-Year Sand Need Volume (CY)	Offshore Borrow Areas Estimated Volume (CY)	50-Year Volume including RSM Sources (CY)	Sand Balance (CY)
Palm Beach	1,233,000	142,211,606	13,654,063	**64,632,669**
Broward	20,373,200	4,737,000	6,644,286	**-8,991,914**
Miami-Dade	16,535,400	162,000	2,875,000	**-13,498,400**

5.0 FIELD INVESTIGATION PLAN

The section below details Taylor Engineering's plan to explore specified areas on Broward County's shallow inner continental shelf to define areas which may contain accessible beach quality sediment deposits. The intent of the proposed geophysical survey plan was to collect reconnaissance level geophysical data from as many areas as possible which are not constrained by environmental buffers. During April 2020 reconnaissance level geophysical data was collected from nearly every potentially viable location which is outside of the 400-foot environmental buffers. The following sections of this report provide additional description on the completed geophysical surveys and propose vibracore locations based on the geophysical data results.

5.1 Investigation Site Naming Conventions

All existing borrow areas and vibracores are referred to using their ROSSI database naming conventions. All new proposed borrow areas or core locations will adopt a similar naming convention which typically includes an abbreviation of the County (e.g. DA), some reference to distance offshore, and a reference to the FDEP range monument which aligns with the centroid of the proposed borrow area.

5.2 Proposed Exploration Areas

Table 7 summarizes names, lengths, and justifications for selection of proposed geophysical survey lines for Miami-Dade County.

Table 7. Proposed Geophysical Survey Lines for Miami-Dade County

Name	Proposed Survey Line Miles	Justification
DA00-R026	3.94	Bakers Haulover ebb shoal area
DA01-R002	0.48	Sand flat between 2nd and 3rd reef, gap in 3rd reef
DA01-R006	1.18	Long area between 2nd and 3rd reefs, partially mined DA-2 borrow area
DA01-R009	0.22	Sand flat area between 2nd and 3rd reefs. No buffers
DA01-R017	1.90	Large sand flat between 2nd and 3rd reefs
DA01-R02	0.63	Sand flat between 2nd and 3rd reef, gap in 3rd reef
DA01-R036	0.47	Between 2nd and 3rd reefs, no buffers, no data
DA01-R038	0.31	Between 2nd and 3rd reef, gap in buffers, no data
DA01-R043	0.83	Between 2nd and 3rd reefs, overlaps some previous investigation areas
DA01-R051	0.66	Between 2nd and 3rd reefs. No buffers, no data
DA01-R055	0.51	2nd to 3rd reef gap, no data
DA01-R068	1.27	transverse area north of government cut with no data or buffers
DA01-R073	9.29	North of Government Cut ebb shoal and other non-constrained areas
DA02-R013	0.81	Between 2nd and 3rd reefs. ROSSI cores show good (prevoiusly used?) sand
DA02-R018	0.86	Between 2nd and 3rd reefs. Partially previously used borrow area?
DA02-R032	0.75	Between 2nd and 3rd reef. No previous data
DA02-R059	0.69	Area outside of buffers between 2nd and 3rd reef, no data
DA02-R079	5.07	South of Governmnet Cut, no constraints, no data, sand flat and mounds
DA02-R082	0.45	Continued sand flat south of government cut with no constraints and no data
DA03-R078	1.46	Offshore of Government Cut. No constraints, no data.
DA03-R094	2.00	Gap in 3rd reef with no data or constraints
DA03-R097A	3.08	Between 1st and 2nd Reef. Apparent sand flats, no data
DA03-R097B	0.69	Between 2nd and 3rd reefs. Limited data from 1990s. Previously mined
DA03-R106	5.13	Apparent large sand flat between 1st and 2nd reef. No data.
DA04-R088	2.35	Long, Longitudinal area between 2nd & 3rd reefs with no data or constraint
DA04-R101	1.79	Gap in 3rd reef. No data
DA04-R106	1.85	Between 2nd and 3rd reef. Partially mined, limited data available
TOTAL:	48.66	

5.3 Investigation Requirements

5.3.1 Geophysical Surveys

The geophysical investigation for Miami-Dade county collected reconnaissance level geophysical data for specified areas on the continental shelf offshore of the County coastline which may contain beach compatible sediments in areas with current data needs, areas not restricted by environmental resources and buffers, and areas likely not previously investigated. The geophysical overwater field surveys concurrently collected seismic reflection profile, multi-beam bathymetric, magnetometer, and side scan sonar data. Geophysical survey areas are depicted in **Appendix B**. In Miami-Dade County a total 48.66 line-miles of geophysical surveys were completed.

5.3.1.1 Seismic Reflection Profile Survey

An EdgeTech Full Spectrum Sub-Bottom System SB-512i was used to conduct the seismic reflection profile surveys. The EdgeTech SB-512i is a versatile wideband FM sub-bottom profiler that collects digital normal incidence reflection data over many frequencies (500 Hz to 12 kHz).

Sub-bottom seismic data was processed using Chesapeake Technology, Inc's SonarWiz.MAP +SBP® software. This software allows for the processing and interpretation of seismic data and produces georeferenced HTML's of survey lines. SonarWiz.MAP +SBP® was used to generate high resolution cross-sectional images of the sub-bottom stratigraphy to a depth of up to 100 feet below the sediment/water column interface. The strength of the sub-bottom seismic reflection is dependent upon the contrast in acoustic impedance between the reflecting sediments. This contrast is most distinctly generated at the interface between two sediment types of distinctly different densities. The reflectors (R1) mapped on the sub-bottom images in **Attachment C** were interpreted as limestone under coarse sand. The interpreted interface was digitized by hand using various gain and imaging techniques to distinguish low contrast areas and to distinguish between real reflectors and multiples or other artifacts.

Figure 2. EdgeTech Full Spectrum Sub-Bottom System SB-512i

5.3.1.2 Multi-Beam Bathymetric Survey

An R2Sonic 2020 multibeam echosounder, operating at 400kHz, typically with a 120-degree sector SBG 3-axis Inertial Motion System was used to collect bathymetric data along the investigation area survey transects. Hypack and Hysweep software were used for vessel navigation, data acquisition, and data processing. Final XYZ survey data files were exported on a 1' x 1' grid using an average filter.

Figure 3. R2Sonic 2020 Multibeam Echosounder

5.3.1.3 Magnetometer Survey

Magnetometer surveys were conducted using a Geometrics G-882 Digital Cesium Marine Magnetometer System. This system was used to perform an investigation of magnetic anomalies within the proposed investigation areas. These magnetic anomalies may be the result of underwater wrecks, submerged hazards, or even discarded metallic debris (chains, anchors, trash, etc) that may affect borrow area delineation and potential dredging activities. Magnetometer survey results are depicted on maps provided in **Attachment B**.

Figure 4. Geometrics G-882 Digital Cesium Marine Magnetometer System

5.3.1.4 Side Scan Sonar Survey

An EdgeTech 4200-FS Side Scan Sonar System was used to complete side scan sonar surveys of the investigation areas. Sound pulses on the EdgeTech 4200 alternate between 300 and 600kHz in dual frequency mode or the device may be set to one frequency in single frequency mode. Sound frequency modes are adjusted in the field depending on the typical water depths encountered at the investigation

areas. Collected side scan profiles provide additional data related to the type of material on the seabed floor as well and additional information about any potential dredging hazards or environmental resources present. Side scan images are provided in **Attachment C**.

Figure 5. EdgeTech 4200-FS Side Scan Sonar System

5.3.2 Vibracore Collection

Based on interpretation of the geophysical data collected, vibracore locations were selected as presented in **Table 8**.

Taylor Engineering will collect Vibracore data with an Alpine style, pneumatic vertical hammer Vibracore drill apparatus having a continuous 20-foot by 3 1/2-inch core barrel with a clear plastic core liner. During core collections, this liner will advance until reaching a depth of 20 feet or refusal. For this effort, refusal is defined as no additional penetration of the Vibracore within two minutes of additional effort applied to penetrate though the resistant layer at maximum vibration. The desired recovery of sediment is 80%. The drilling sub-contractor shall make a minimum of three attempts to achieve 80% recovery. If unsuccessful, the drilling sub-contractor will keep the Vibracore with the largest recovery percent.

The XYZ boring locations of the cores will be surveyed utilizing Real Time Kinematic Global Positional System (RTK GPS) in North American Datum 1983 (NAD83) and North American Vertical Datum 1988 (NAVD88).

Table 8. Locations and Descriptions of Proposed Vibracore Borings

Boring Name	Exploration Area Name	Exploration Area Comments	Geophysical Track line	X	Y	Sub-Bottom Comments
VCDA-20-01	DA03-R106	Apparent large sand flat between 1st and 2nd reef. No data.	3E	950298	490641	~10' sediment trough. Pinches to W and E
VCDA-20-02	DA04-R106	Between 2nd and 3rd reef. Partially mined, limited data available	8W	954672	490960	E side of infilled depressional feature
VCDA-20-03	DA04-R106	Between 2nd and 3rd reef. Partially mined, limited data available	8W	956211	491705	W side of infilled depressional feature
VCDA-20-04	DA03-R106	Apparent large sand flat between 1st and 2nd reef. No data.	1N	949659	491907	Apex of ~10' sediment layer. Pinches to N, continues to S
VCDA-20-05	DA03-R106	Apparent large sand flat between 1st and 2nd reef. No data.	2S	951628	491938	10+' sediment layer
VCDA-20-06	DA04-R106	Between 2nd and 3rd reef. Partially mined, limited data available	6N	954619	491974	N end of previously mined area
VCDA-20-07	DA03-R106	Apparent large sand flat between 1st and 2nd reef. No data.	4W	951183	492682	~10' sediment trough. Pinches to W and E
VCDA-20-08	DA03-R106	Apparent large sand flat between 1st and 2nd reef. No data.	1N	949715	493258	~10' sediment trough. Pinches to W and E
VCDA-20-09	DA04-R106	Between 2nd and 3rd reef. Partially mined, limited data available	10W	955512	493879	E end of 20+' thick sediment layer
VCDA-20-10	DA04-R106	Between 2nd and 3rd reef. Partially mined, limited data available	10W	954521	493915	W end of 20+' thick sediment layer
VCDA-20-11	DA03-R106	Apparent large sand flat between 1st and 2nd reef. No data.	5E	951207	494669	~10' sediment. Pinches to W
VCDA-20-12	DA04-R101	Gap in 3rd reef. No data	13W	954657	496672	20+' sediment. Pinches to E
VCDA-20-13	DA04-R101	Gap in 3rd reef. No data	12S	955646	497244	~20' sediment in an apparent conical trough
VCDA-20-14	DA04-R101	Gap in 3rd reef. No data	14E	954846	497708	20+' sediment. Pinches to W and E
VCDA-20-15	DA03-R097A	Between 1st and 2nd Reef. Apparent sand flats, no data	17E	949496	499623	~10' sediment wedge
VCDA-20-16	DA04-R101	Gap in 3rd reef. No data	11N	954664	499858	20' sediment thickness. N end of line

Boring Name	Exploration Area Name	Exploration Area Comments	Geophysical Track line	X	Y	Sub-Bottom Comments
VCDA-20-17	DA03-R097A	Between 1st and 2nd Reef. Apparent sand flats, no data	18W	950541	501640	~10' sediment wedge. Pinches then thickens again to W
VCDA-20-18	DA03-R097B	Between 2nd and 3rd reefs. Limited data from 1990s. Previously mined	15N	954226	503282	~10-15' sediment layer
VCDA-20-19	DA03-R094	Gap in 3rd reef with no data or constraints	21E	955077	503761	E edge of 10-20' sediment lens
VCDA-20-20	DA03-R094	Gap in 3rd reef with no data or constraints	155N	954543	504578	S end of S trough
VCDA-20-21	DA03-R094	Gap in 3rd reef with no data or constraints	23E	955471	505755	E edge of reef gap deposit
VCDA-20-22	DA03-R094	Gap in 3rd reef with no data or constraints	155N	954534	505808	N end of S trough
VCDA-20-23	DA03-R094	Gap in 3rd reef with no data or constraints	155N	954553	506785	S end of N trough
VCDA-20-24	DA03-R094	Gap in 3rd reef with no data or constraints	155N	954541	508781	Middle of N trough
VCDA-20-25	DA03-R094	Gap in 3rd reef with no data or constraints	155N	954564	510792	N end of N trough
VCDA-20-26	DA02-R082	Continued sand flat south of government cut with no constraints and no data	30W	948738	512722	~8' sediment thickness?
VCDA-20-27	DA02-R082	Continued sand flat south of government cut with no constraints and no data	30W	950686	512727	~6-8' sediment thickness?
VCDA-20-28	DA04-R088	Long, Longitudinal area between 2nd & 3rd reefs with no data or constraint	25W	954260	513700	~10' sediment. Pinches to E and W
VCDA-20-29	DA04-R088	Long, Longitudinal area between 2nd & 3rd reefs with no data or constraint	26E	955225	514703	20+' apparent thickness

Boring Name	Exploration Area Name	Exploration Area Comments	Geophysical Track line	X	Y	Sub-Bottom Comments
VCDA-20-30	DA02-R079	South of Government Cut, no constraints, no data, sand flat and mounds	32N	949186	515356	Apex of mound of ~10' sediment
VCDA-20-31	DA02-R079	South of Government Cut, no constraints, no data, sand flat and mounds	31S	950123	515647	Apex of mound of ~10' sediment
VCDA-20-32	DA02-R079	South of Government Cut, no constraints, no data, sand flat and mounds	36S	945883	515688	~1000' N of other boring on this line
VCDA-20-33	DA02-R079	South of Government Cut, no constraints, no data, sand flat and mounds	37E	944890	515706	Apex of central conical feature
VCDA-20-34	DA02-R079	South of Government Cut, no constraints, no data, sand flat and mounds	42W	949823	516742	Apex of mound of sediment
VCDA-20-35	DA03-R078	Offshore of Government Cut. No constraints, no data.	40E	953693	517934	Peak of sediment mound
VCDA-20-36	DA03-R078	Offshore of Government Cut. No constraints, no data.	38S	954279	518379	Peak of system of mounds
VCDA-20-37	DA01-R073E	North of Government Cut ebb shoal and other non-constrained areas	51N	950219	520080	6-8' sediment. Thickest to N and S. Pinch in middle
VCDA-20-38	DA01-R073E	North of Government Cut ebb shoal and other non-constrained areas	50S	949165	521688	5-10' sediment. Regular contact
VCDA-20-39	DA01-R073W	North of Government Cut ebb shoal and other non-constrained areas	54E	945221	521790	~7' sediment thickness. Thickest to E. Pinches to W
VCDA-20-40	DA01-R073W	North of Government Cut ebb shoal and other non-constrained areas	48N	946046	522300	~10' Sediment (w gravel?)
VCDA-20-41	DA01-R073E	North of Government Cut ebb shoal and other non-constrained areas	60W	950196	524956	10' conical depression. Pinches to E
VCDA-20-42	DA01-R068	transverse area north of government cut with no data or buffers	62S	946809	526900	Depressional feature

Boring Name	Exploration Area Name	Exploration Area Comments	Geophysical Track line	X	Y	Sub-Bottom Comments
VCDA-20-43	DA01-R068	Between 2nd and 3rd reefs. No buffers, no data	62S	949467	531077	Thin veneer of sediment, appears thickest to north
VCDA-20-44	DA02-R059	Area outside of buffers between 2nd and 3rd reef, no data	64S	954772	537464	Apparently thin sediment layer only. Thickest to north
VCDA-20-45	DA01-R051	Between 2nd and 3rd reefs. No buffers, no data	68S	953875	543948	1600+' of ~10' sediment thickness. Smooth contact. Pinches to S
VCDA-20-46	DA01-R051	Between 2nd and 3rd reefs. No buffers, no data	69W	953678	545054	~800' of ~10' sediment thickness. Pinches to E.
VCDA-20-47	DA01-R051	Between 2nd and 3rd reefs. No buffers, no data	68S	953368	546228	~800' wide wedge (S to N) of 10+' sediment thickness
VCDA-20-48	DA01-R043	Between 2nd and 3rd reefs, overlaps some previous investigation areas	70S	955299	552143	Large bowl-shaped depression.
VCDA-20-49	DA01-R038	Between 2nd and 3rd reef, gap in buffers, no data	71S	953523	557900	5-10' sediment thickness. Appears to thicken to S. Irregular contact
VCDA-20-50	DA01-R036	Between 2nd and 3rd reef, gap in buffers, no data	72S	953580	561936	5-10' sediment thickness. Irregular contact. Pinches to N and S. 1,200' wide feature
VCDA-20-51	DA02-R032	Between 2nd and 3rd reef. No previous data	74S	954594	564607	~1200' wide area with sediment infilling
VCDA-20-52	DA02-R032	Between 2nd and 3rd reef. No previous data	74S	954649	566754	~1200' wide area with sediment infilling
VCDA-20-53	DA00-R026	Bakers Haulover ebb shoal area	75N	946214	569663	5' - 10' sediment thickness. Tapers to N and S
VCDA-20-54	DA00-R026	Bakers Haulover ebb shoal area	76N	947405	571188	7' - 10' sediment thickness. Tapers to N and S
VCDA-20-55	DA00-R026	Bakers Haulover ebb shoal area	75S	946525	572615	6' - 8' sediment thickness. Tapers S
VCDA-20-56	DA02-R018	Between 2nd and 3rd reefs. Partially previously used borrow area?	83N	955094	578224	~20' sediment layer. Pipeline 600' to south
VCDA-20-57	DA01-R017	Large sand flat between 2nd and 3rd reefs	82S	953252	578784	10+' trough

Boring Name	Exploration Area Name	Exploration Area Comments	Geophysical Track line	X	Y	Sub-Bottom Comments
VCDA-20-58	DA02-R013	Between 2nd and 3rd reefs. ROSSI cores show good (previously used?) sand	84N	954771	583356	conical depression, 30' of sediment?
VCDA-20-59	DA01-R017	Large sand flat between 2nd and 3rd reefs	82S	952912	585159	30' conical depression
VCDA-20-60	DA02-R013	Between 2nd and 3rd reefs. ROSSI cores show good (previously used?) sand	84N	954568	585883	2nd depression at north end of this line. ~20' sediment
VCDA-20-61	DA01-R009	Sand flat area between 2nd and 3rd reefs. No buffers	89W	952594	589046	10' plus sediment thickness. Bounded to E and W
VCDA-20-62	DA01-R009	Sand flat area between 2nd and 3rd reefs. No buffers	88-87S	952469	590279	10' plus sediment thickness. Decreases to south. Irregular contact
VCDA-20-63	DA01-R002	Sand flat between 2nd and 3rd reef, gap in 3rd reef	92S	954345	597542	10' plus sediment thickness

5.3.3 Laboratory Procedures

Once collected, all Vibracore will be divided and cut into sections of five feet or less depending on the recovery percentage, cut into halves, and then analyzed at the Taylor Engineering's Coastal Geosciences Laboratory.

Analysis of cores will include the collection of one sample per lithological change as well as a minimum of one sample every two feet of presumed beach compatible sand. Samples will be evaluated by Sieve Analysis (using Sieve Sizes 3/4", 3/8", 3.5, 4, 5, 7, 10, 14, 18, 25, 35, 45, 60, 80, 120, 170, 200, 230) per American Society of Testing Materials (ASTM) D 6913 with visual shell determination, Munsell color determination. In addition, carbonate content analysis using the non-ASTM method, Twenhofel-Tyler, will be performed on 10% of the samples collected.

The sediment data will be logged, and all results will be entered into the Jacksonville District's (SAJ) gINT template and database. Following all laboratory investigations, the vibracores will be wrapped and placed into wooden core boxes labeled, on box top and sides, with project name, county, date, boring name, and depth internals. Preserved vibracores will be delivered to SAJ for storage and future reference.

6.0 REFERENCES

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APPENDIX A

50-year Sand Balances for Southeast Florida

50 YEAR SAND BALANCE - SOUTHEAST FLORIDA

County Projects	50-yr Sand Need Volume (cy)*	Offshore Borrow Areas Estimated Volume (cy)*	50-yr RSM Volume (cy)	Balance (cy)	Comments
Palm Beach County					
Jupiter-Carlin	7,825,950				
Juno Beach	12,462,000				
Town of Palm Beach (Reach 1)	8,140,600				
Mid-Town Beach (Reach 3 and 4)	11,547,500				
Phipps Ocean Park (Reach 7)	12,806,100				
Ocean Ridge	5,612,550				
Delray Beach	12,410,850				
North Boca Raton	7,272,600				
Central Boca Raton	6,654,150				
South Boca Raton	3,778,900				
Town of Palm Beach (Reach 8)	585,900				
Singer Island Dune Maintenance	2,135,900				
Coral Cove Park	0				
Sources:					
Offshore Borrow Areas		142,211,606			Estimated volume derived from only Proven, Potential, and Unverified Plus borrow areas estimated without buffer
Jupiter Inlet Sand Trap Non-Fed RSM			1,791,563		50 yr RSM volume calculated using data from SBMP and Inlet Management Plan
Jupiter Intracoastal Waterway Federal RSM			812,500		From USACE RSM Report
Palm Beach Harbor Federal RSM			2,500,000		From USACE RSM Report, Nearshore placement
Boynton Inlet Non-Fed RSM			4,400,000		
Boca Raton Inlet Non-Fed RSM			4,150,000		
Total Needs:	**91,233,000**	**142,211,606**	**13,654,063**	**64,632,669**	
Broward County					
Broward County Segment I (Hillsboro Beach)	3,224,000				
Broward County Segment II Shore Protection Project (Pompano Beach - Lauderdale-By-The-Sea - Fort Lauderdale Beach)	5,607,900				
Broward County Segment III Shore Protection Project (Dr. Von D. Mizell-Eula Johnson State Park - Dania Beach - Hollywood Beach - Hallandale Beach)	11,541,300				
Sources:					
Offshore Borrow Areas		4,737,000			Estimated volume derived from only Proven, Potential, and Unverified Plus borrow areas estimated without buffer
Hillsboro Inlet Federal RSM			500,000		50 yr RSM volume calculated using data from SBMP and Inlet Management Plan
Hillsboro Inlet Sand Trap Non-Fed RSM			5,430,000		
Port Everglades Harbor Federal RSM			714,286		From USACE RSM Report
Total Needs:	**20,373,200**	**4,737,000**	**6,644,286**	**-8,991,914**	
Miami-Dade County					
Haulover Park	0				
Miami Beach	6,403,050				
Key Biscayne	739,350				
Sunny Isles	4,110,600				
Bal Harbour	2,957,400				
Surfside	2,325,000				
Virginia Key Beach Erosion Control Project	0				
Fisher Island	0				
Sources:					
Offshore Borrow Areas		162,000			Estimated volume derived from only Proven, Potential, and Unverified Plus borrow areas estimated without buffer
Bakers Haulover Inlet Federal RSM			625,000		From USACE RSM Report
Bakers Haulover Ebb Shoal Federal RSM			2,250,000		From USACE RSM Report
Total Needs:	**16,535,400**	**162,000**	**2,875,000**	**-13,498,400**	

*50-Year Sand Needs Volumes in the above table inlcude a 55% contingency multiplier (30% borrow area waste, 15% other dredging losses, 10% future project performance, including sea level rise impacts). Offshore Borrow Area Volumes inlude a confidence factor of 90% for Proven Areas, 70% for Potential Areas, and 5% for Unverified Plus Areas.

APPENDIX B

Maps of Miami-Dade County Geophysical Exploration Areas and Proposed Vibracore Locations

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SAJ Sand Source Investigation
Dade County Geophysical Investigation Plan

Sheet 1 of 8

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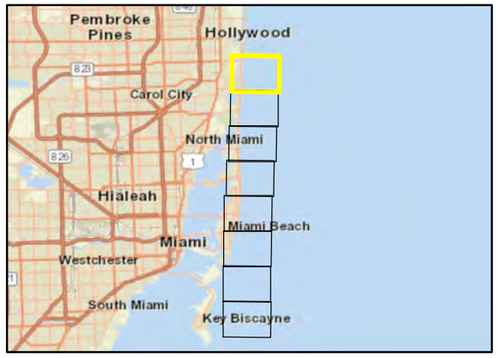

Legend

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- Magnetometer Data
- Range Monuments
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R-125
R-126
R-127
R-001
R-128
R-002
R-003
R-004
R-005
R-006
R-007
R-008
R-009
Broward County Segment III
BO2-R121
BO2-R126
DA1-R001
DA1-R002
DA1-R005
DA2-R003
DA2-R005
DA2-R007
DA2-R009
VC-DA20-59
VC-DA20-58
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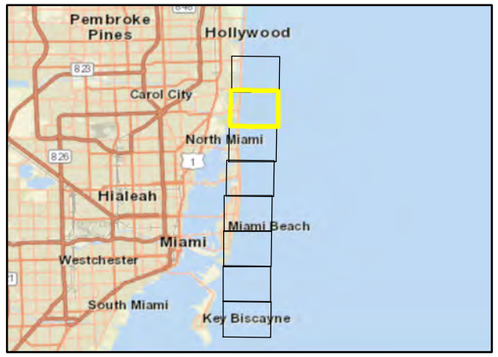

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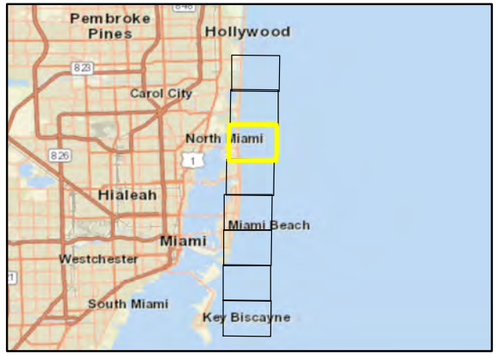

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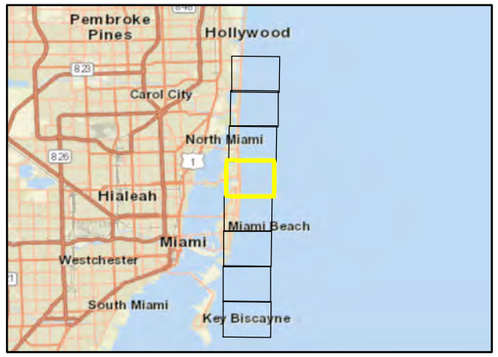

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Miami Beach
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DA1-R037
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70
VC-DA20-45
DA1-R046
DA2-R046
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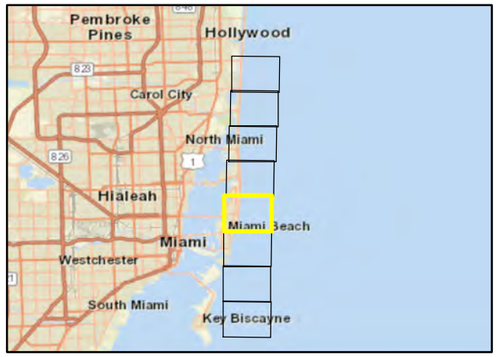

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R-050 R-051 R-052 R-053 R-054 R-055 R-056 R-057 R-058 R-059 R-060 R-061 R-062 R-063 R-064

Miami Beach

DA1-R046 DA2-R046 DA2-R062

VC-DA20-44 VC-DA20-43 VC-DA20-42 VC-DA20-41 VC-DA20-40 VC-DA20-39

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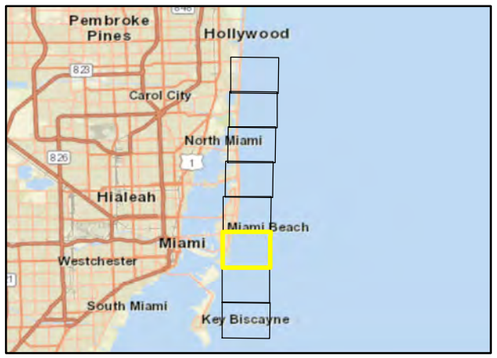

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Miami Beach

VC-DA20-38 VC-DA20-37 VC-DA20-36 VC-DA20-35 VC-DA20-34 VC-DA20-33 VC-DA20-32

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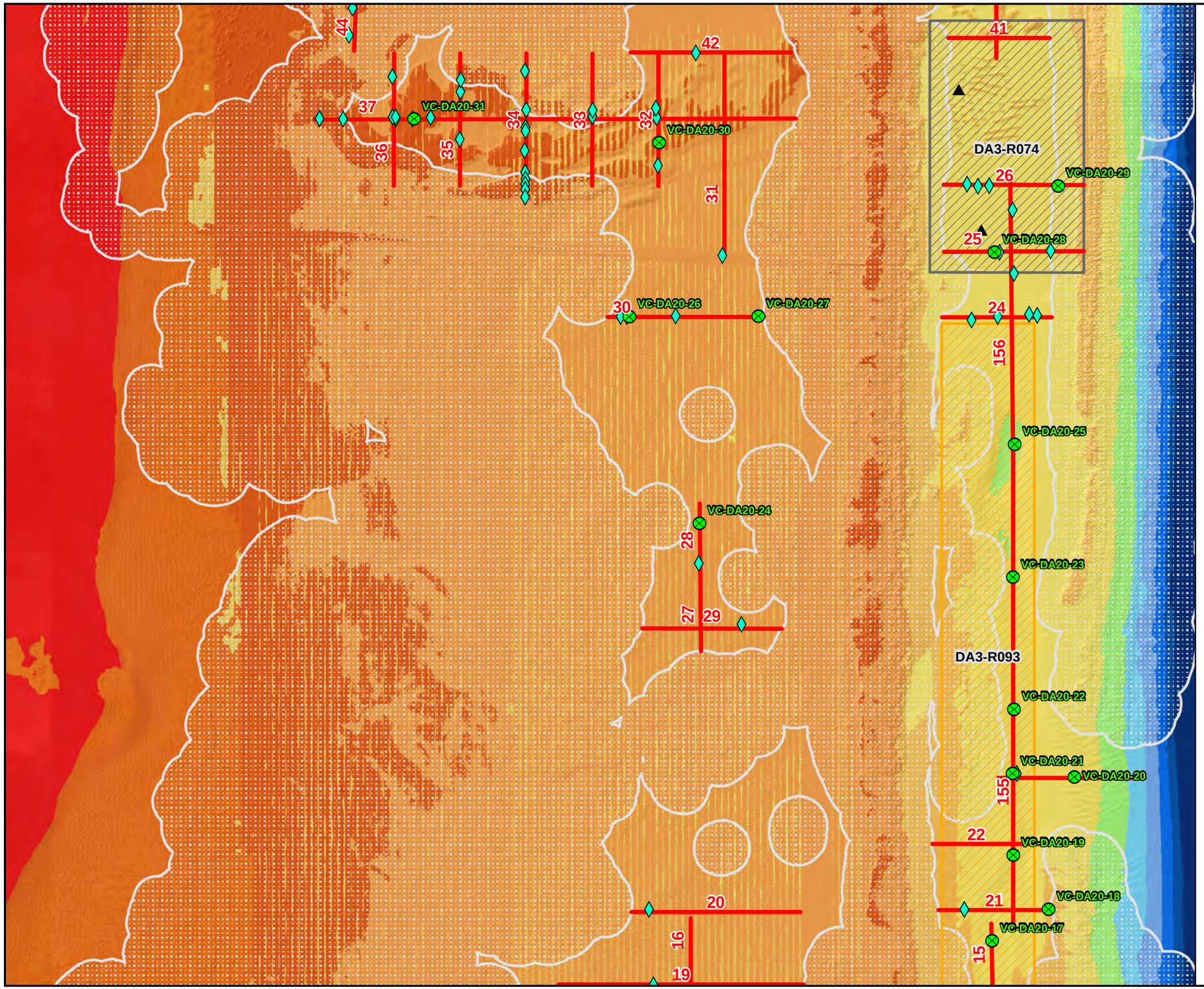

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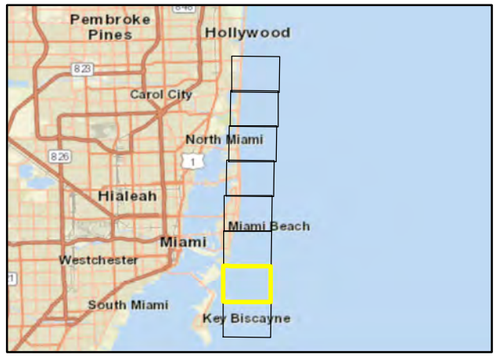

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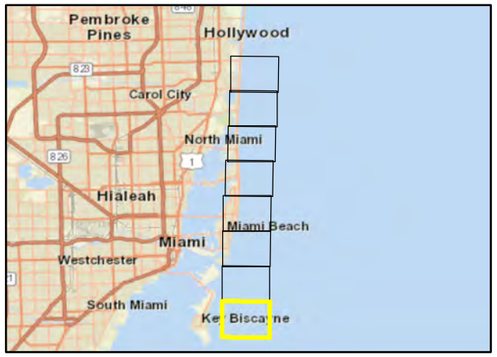

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VC-DA20-02
VC-DA20-01

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