

ATTACHMENT NO. 27

GEOTECHNICAL APPENDIX

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Sediment Compatibility Analysis
Lido Key, Sarasota County Shore Protection Project

October 2014

1. Project Description.

The Federally authorized Sarasota County Coastal and Storm Reduction project, Lido Key segment entails the periodic nourishment of 1.56 miles of shoreline on Lido Key between R-monuments R-35 and R-44 with sand dredged from the Big Sarasota Pass ebb shoal. Sediment samples from Big Sarasota Pass ebb shoal were collected in 2012 and 2014 (Plate 1). Data representative of the native beach was taken from *Marine Sand Search Investigation, Lido Key Florida* (Finkl et al., 2008).

2. Sediment Source.

Sediment source configurations were established to minimize impacts from excavation of the ebb shoal at Big Sarasota Pass. Two alternative options are proposed for sand mining as outlined in *Study of Big Sarasota Pass Sediment Mining Alternatives for Sarasota County, Lido Key Shore Protection Project, Sarasota County, Florida* (USACE, 2014). Option 1 proposes to excavate Areas B, C, and the overlap of D2 and D3 to an elevation of -13.5 ft NAVD88 (Table 1). Option 2 proposes to excavate Area B to an elevation of -13.5 ft NAVD88 and the overlap of D2 and D3 to an elevation of -15.5 ft NAVD88 (Table 2). Both Options 1 and 2 are presented independently herein.

The characteristics of the sediment in the Big Sarasota Pass Ebb Shoal were developed from laboratory gradations on samples from core borings VB-BSP12-1 through VB-BSP12-14 and VB-LK14-1 through VB-LK14-32 (Table 1). The materials in the Big Sarasota Pass Ebb Shoal are poorly sorted, mostly fine to medium grained sand-sized quartz, with trace to some coarse sand-sized to fine gravel-sized whole and broken shell. Munsell values range from 6 to 8 and color descriptions vary from white to gray. Using weighted composites for Option 1, the mean grain size was calculated to be 0.26 mm (phi 1.94), the standard deviation 1.08, the fines content 1.42% passing the #230 sieve, and a maximum of 2% retained on the #4 sieve. Using weighted composites for Option 2, the mean grain size was calculated to be 0.22 mm (phi 2.18), the standard deviation 1.04, the fines content 1.58% passing the #230 sieve, and a maximum of 3% retained on the #4 sieve.

Table 1. Geotechnical Summary of borings in Big Sarasota Pass Ebb Shoal for Option 1: B to -13.5', C to -13.5', and D2/D3 overlap to -13.5' (NAVD88)

Sample Designation	Sample Elevation	Mean mm	Mean phi	Median phi	PHI sorting	% retained on #4	% passing #230	Visual Shell %	Carbonate Content	Munsell Color
VB-BSP-12-5	-6.3	0.17	2.56	2.72	0.85	0.19	1.38	19		2.5Y 8/1
	-11.8	0.22	2.19	2.44	1.06	0.30	1.16	16		2.5Y 8/1
VB-BSP-12-9	-12.2	0.17	2.54	2.79	1.09	0.29	0.26	10		2.5Y 8/1
VB-LK14-3	10.3	0.17	2.57	2.98	1.25	0.54	1.11	22.5		5Y 8/1

Sample Designation	Sample Elevation	Mean mm	Mean phi	Median phi	PHI sorting	% retained on #4	% passing #230	Visual Shell %	Carbonate Content	Munsell Color
VB-LK14-5	-7.5	0.17	2.52	2.74	1	0.18	0.85	3.8		5Y 8/1
	-11	0.17	2.56	2.63	0.55	0.00	0.94	3.6		5Y 8/1
VB-LK14-6	-8	0.12	3.05	3.21	0.74	0.1	5.86	4.5		5Y 8/1
VB-LK14-7	-12.5	0.21	2.24	2.34	0.72	0.07	1.71	7.3		5Y 8/1
VB-LK14-29	-11.5	0.17	2.57	2.76	0.99	0.19	1.06	11		5Y 8/1
VB-LK14-31	-12.3	0.45	1.16	2.07	1.83	0.72	1.4	45.8		5Y 8/1
VB-BSP-12-1	-5.6	0.33	1.6	2.49	1.83	0.91	0.73	32		2.5Y 7/1
	-9.3	0.2	2.32	2.68	1.29	0.24	0.92	16	14	2.5Y 8/1
VB-BSP-12-3	-5.8	0.2	2.36	2.52	0.7	0.00	1.59	14		2.5Y 8/1
	-10.9	0.23	2.14	2.67	1.52	0.25	1.6	17		2.5Y 8/1
VB-BSP-12-6	-4.5	0.17	2.54	2.68	0.62	0.00	0.39	11		2.5Y 8/1
	-8.2	0.22	2.16	2.66	1.37	0.46	0.49	15		2.5Y 8/1
	-12	0.18	2.46	2.56	0.57	0.00	0.8	8		2.5Y 8/1
VB-BSP-12-10	-7.3	0.17	2.52	2.72	0.85	0.02	0.54	8		2.5Y 8/1
	-11.4	0.31	1.7	2.38	1.57	0.21	0.65	28		2.5Y 8/1
VB-BSP-12-14	-10.6	0.15	2.72	2.81	0.74	0.03	1.55	3		2.5Y 8/1
VB-LK14-1	-	-	2.82	2.87	0.62	0.00	2.58	3.8		5Y 8/1
VB-LK14-2	-	-	2.5	2.75	0.96	0.00	4.51	9.8		5Y 8/1
VB-LK14-8	-2.5	0.17	2.57	2.67	0.587	0.00	0.93	4.3		5Y 8/1
	-8	0.54	0.9	1.27	1.78	0.42	1.07	53.8		5Y 8/1
	-13	0.45	1.16	1.61	1.59	0.83	0.96	47		5Y 8/1
VB-LK14-10	-6.4	1.02	-0.03	0	2.3	3.07	0.79	64		5Y 8/1
	-9.9	0.19	2.39	2.63	0.87	0.11	2.16	11.7		5Y 8/1
VB-LK14-11	-11	0.15	2.77	2.8	0.5	0.07	1.65	3		5Y 8/1
VB-LK14-12	-10.7	0.86	0.22	0	1.72	1.64	1.21	73.6		5Y 8/1
VB-LK14-13	-13.3	0.26	1.96	2.63	0.6	0.79	1.22	25.5		5Y 8/1
VB-LK14-14	-	-	-	0	-	0.00	0	-	-	-
VB-LK14-32	-10	0.33	1.59	2.17	1.43	0.70	1	35.9		5Y 8/1
VB-LK14-15	-13.2	1.39	-0.47	2.97	1.7	2.70	2.29	86.9		5Y 8/1
VB-LK14-16	-8.4	0.38	1.4	1.93	1.44	0.64	1.41	47.6		5Y 8/1
VB-LK14-17	-7.6	0.16	2.69	2.76	0.63	0.12	0.99	5.2		5Y 8/1
	-13.1	0.16	2.65	2.75	0.72	0.07	1.1	3.9		5Y 8/1
VB-LK14-18	-4.9	0.28	1.96	2.4	1.41	0.08	1.22	30.1		5Y 8/1
	-8.4	0.26	2.73	2.51	1.35	0.64	0.99	24.4		5Y 8/1
	-12.4	0.15	2.86	2.75	0.41	0.00	0.91	2.6		5Y 8/1
VB-LK14-19	-	-	2.61	2.9	1.2	0.15	3.2	11		5Y 6/1
VB-LK14-20		-	2.76	3.14	1.2	0.22	7.52	8.6		5Y 6/1
Weighted Composites		0.26	2.17	2.45	1.08	0.36	1.42	21.2	14	5Y 8/1

Table 2. Geotechnical Summary of borings in Big Sarasota Pass Ebb Shoal for Option 2: B to -13.5' and D2/D3 overlap to -15.5' (NAVD88)

Sample Designation	Sample Elevation	Mean mm	Mean phi	Median phi	PHI sorting	% retained on #4	% passing #230	Visual Shell %	Carbonate Content	Munsell Color
VB-BSP-12-5	-6.3	0.17	2.56	2.72	0.85	0.19	1.38	19		2.5Y 8/1
	-11.8	0.22	2.19	2.44	1.06	0.30	1.16	16		2.5Y 8/1
VB-BSP-12-9	-12.2	0.17	2.54	2.79	1.09	0.29	0.26	10		2.5Y 8/1
VB-LK14-3	10.3	0.17	2.57	2.98	1.25	0.54	1.11	22.5		5Y 8/1
VB-LK14-5	-7.5	0.17	2.52	2.74	1	0.18	0.85	3.8		5Y 8/1
	-11	0.17	2.56	2.63	0.55	0.00	0.94	3.6		5Y 8/1
VB-LK14-6	-8	0.12	3.04	3.21	0.74	0.13	5.86	4.5		5Y 8/1
	-13.5	0.22	2.18	2.66	1.42	0.30	0.9	16.4		5Y 8/1
VB-LK14-7	-12.5	0.21	2.24	2.34	0.72	0.07	1.71	7.3		5Y 8/1
VB-LK14-29	-11.5	0.17	2.57	2.76	0.99	0.19	1.06	11		5Y 8/1
	-15	0.25	2.23	2.43	1.37	0.27	1.33	24.5		5Y 8/1
VB-LK14-31	-12.3	0.45	1.16	2.07	1.83	0.72	1.4	45.8		5Y 8/1
VB-LK14-15	-13.2	1.39	-0.47	2.97	1.7	2.70	2.29	86.9		5Y 8/1
VB-LK14-16	-8.4	0.38	1.4	1.93	1.44	0.64	1.41	47.6		5Y 8/1
VB-LK14-17	-7.6	0.16	2.69	2.76	0.63	0.12	0.99	5.2		5Y 8/1
	-13.1	0.16	2.65	2.75	0.72	0.07	1.1	3.9		5Y 8/1
VB-LK14-18	-4.9	0.28	1.96	2.4	1.41	0.08	1.22	30.1		5Y 8/1
	-8.4	0.26	2.73	2.51	1.35	0.64	0.99	24.4		5Y 8/1
	-12.4	0.15	2.86	2.75	0.41	0.00	0.91	2.6		5Y 8/1
VB-LK14-19	-	-	2.61	2.9	1.2	0.15	3.2	11		5Y 6/1
VB-LK14-20	-	-	2.76	3.14	1.2	0.22	7.52	8.6		5Y 6/1
Weighted Composites	0.22	2.36	2.64	1.04	0.31	1.58	19.3	NA	5Y 8/1	

3. Existing Lido Key Beach.

Data representative of the native beach was taken from *Marine Sand Search Investigation, Lido Key Florida* (Finkl et al., 2008). Lido Key was constructed in the 1920s by filling in the area between a series of small islands. Therefore, native samples are difficult to define. Finkl et al. (2008) composited sediment statistics and present the existing Lido Key beach to have a mean grain size of 0.22 mm, silt content of 0.55%, sorting of 0.64 ϕ , visual shell estimate of 0.25% and a moist Munsell color value of 6.0 or lighter.

4. Compatibility analysis.

Overflow and Renourishment Ratios were calculated using the weighted composite Mean phi and standard deviation found from the Method of Moments (Pettijohn et al, 1987) that were input into the USACE Coastal Engineering Manual as seen in Figure 1 and Figure 2 (CEM, 2002). The overflow method used in the CEM is the Krumbein-James technique (Krumbein and James, 1965).

	Mean (phi)	Mean (mm)	Sorting (PHI)	sorting ratio	mean difference	Overfill ratio
	M_ϕ	M_{mm}	σ_ϕ	$\sigma_{\phi b}/\sigma_{\phi n}$	$\frac{M_{\phi b}-M_{\phi n}}{\sigma_{\phi n}}$	R_A
Option 1:	1.94	0.26	1.08	1.69	-0.38	1.14
Option 2:	2.18	0.22	1.04	1.63	0.00	1.24

5. Summary and Conclusions.

The results of the compatibility analysis show that the sediments in the Big Sarasota Pass ebb shoal are similar and compatible to the existing beach sediments on Lido Key, according to the requirements of the DEP “Sand Rule” guidelines (Chapter 62B-41.0072J).

6. References.

CPE (Coastal Planning & Engineering), 1992. *Lido Key Beach Restoration Project Sand Search Report*. Boca Raton, Florida: Coastal Planning & Engineering, v.p.

Finkl, C.W.; Andrews, J.L., Benedet, L., Larenas, M., Rodriguez, K. and Forrest, B., 2007. *Marine Sand Search Investigation Lido Key, Florida*. Boca Raton, Florida: Coastal Planning & Engineering, Inc. 24p. (Prepared for City of Sarasota, Florida)

Krumbein, W. C., and James, W. R. 1965. "Spacial and Temporal Variations in Geometric and Material Properties of a Natural Beach," Technical Report No. 44, Coastal Engineering Research Center, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Pettijohn, F.J., Potter, P.E., and Siever, R., 1987. Sand and Sandstone. Springer-Verlag, New York.

U.S. Army Corps of Engineers, 1968. Beach Erosion Control Study Sarasota County, Florida, interim report on Lido Key. Jacksonville, Florida: U.S. Army Corps of Engineers, v.p.

U.S. Army Corps of Engineers, 1984. Beach Erosion Control Study for Sarasota County, Florida, with Environmental Impact Statement. Jacksonville, Florida: U.S. Army, Corps of Engineers District, v.p.

U.S. Army Corps of Engineers. 2002. Coastal Engineering Manual. Engineer Manual 1110-2 1100, U.S. Army Corps of Engineers, Washington, D.C. (in 6 volumes).

U.S. Army Corps of Engineers. 2014. Study of Big Sarasota Pass Sediment Mining Alternatives for Sarasota County, Lido Key Federal Shore Protection Project, Sarasota County, Florida., U.S. Army Corps of Engineers, Jacksonville, Florida. 171p.



LIDO KEY

Alternative D2/D3

Alternative C

Alternative B

SIESTA KEY

GRAPHIC SCALES

1500' 0 1500' 3000'

● BORING LOCATIONS



US Army Corps
of Engineers
Jacksonville District

Sarasota County Shore Protection Project
Lido Key Segment
Sarasota County, Florida

Location of Field Investigations

File name: Lido.dgn
Dated: October 2014
Scale: AS SHOWN

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

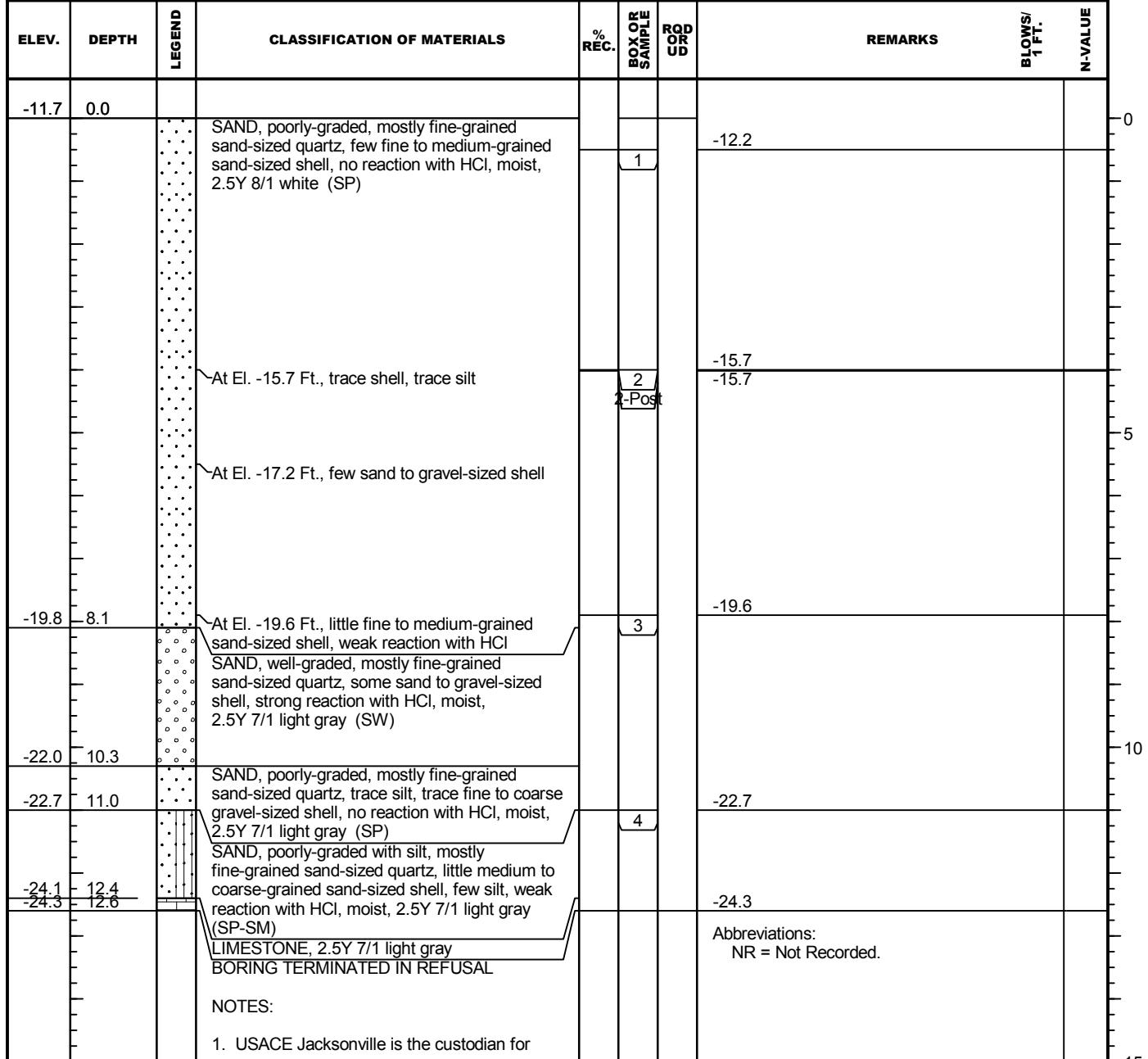
PLATE NO.
Plate 1

Boring Designation VB-BSP-12-5

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS		
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks					
2. BORING DESIGNATION VB-BSP-12-5		LOCATION COORDINATES X = 470,695 Y = 1,075,969		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)			HORIZONTAL NAD83	VERTICAL NAVD88	
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES 5			DISTURBED UNDISTURBED (UD) 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			14. ELEVATION GROUND WATER 0.1 Ft.		
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 01-16-13			STARTED 01-16-13	COMPLETED 01-16-13	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -5.8 Ft.			17. TOTAL RECOVERY FOR BORING 90 %		
8. TOTAL DEPTH OF BORING 18.0 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-5.8	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine-grained sand-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						0
-10.1	4.3		SAND, well-graded, mostly fine-grained sand-sized quartz, some fine to coarse gravel-sized shell, strong reaction with HCl, moist, 2.5Y 7/1 light gray (SW)			1		-6.3	
-10.3	4.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to coarse gravel-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP) At El. -11.8 Ft., little fine to medium-grained sand-sized shell, trace silt, weak reaction with HCl			2		-11.8	5
			At El. -15.8 Ft., trace shell, no reaction with HCl			3		-15.8	10
-17.6	11.8		SAND, silty, mostly fine-grained sand-sized quartz, no reaction with HCl, moist, 0.25" thick sandy silt seams throughout, 2.5Y 5/1 gray (SM)			4		-17.8	
-17.8	12.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						15

Boring Designation VB-BSP-12-9

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION VB-BSP-12-9		LOCATION COORDINATES X = 469,692 Y = 1,074,966		10. COORDINATE SYSTEM/DATUM HORIZONTAL VERTICAL State Plane, FLW (U.S. Ft.) NAD83 NAVD88			
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL AUTO HAMMER Vibracore MANUAL HAMMER			
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 5 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER -0.8 Ft.			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED COMPLETED 01-16-13 01-16-13			
8. TOTAL DEPTH OF BORING 12.6 Ft.				16. ELEVATION TOP OF BORING -11.7 Ft.			
				17. TOTAL RECOVERY FOR BORING 89 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist			



DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS																				
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88																				
LOCATION COORDINATES X = 469,692 Y = 1,074,966			ELEVATION TOP OF BORING -11.7 Ft.																								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS																			
			<p>these original files.</p> <p>2. Soils are field visually classified in accordance with the Unified Soils Classification System.</p> <p>3. Laboratory Testing Results</p> <table border="1"> <thead> <tr> <th>SAMPLE ID</th><th>SAMPLE DEPTH</th><th>LABORATORY CLASSIFICATION</th></tr> </thead> <tbody> <tr> <td>1</td><td>0.5/0.7</td><td>SP*</td></tr> <tr> <td>2</td><td>4.0/4.2</td><td>SP*</td></tr> <tr> <td>2-Post</td><td>4.0/4.2</td><td>SP*</td></tr> <tr> <td>3</td><td>7.9/8.1</td><td>SP*</td></tr> <tr> <td>4</td><td>11.0/11.2</td><td>SP-SM*</td></tr> </tbody> </table> <p>*Lab visual classification based on gradation curve. No Atterberg limits.</p>		SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.5/0.7	SP*	2	4.0/4.2	SP*	2-Post	4.0/4.2	SP*	3	7.9/8.1	SP*	4	11.0/11.2	SP-SM*					
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																									
1	0.5/0.7	SP*																									
2	4.0/4.2	SP*																									
2-Post	4.0/4.2	SP*																									
3	7.9/8.1	SP*																									
4	11.0/11.2	SP-SM*																									
									15																		
									20																		
									25																		
									30																		
									35																		

Boring Designation VB-LK14-29

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS		
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks					
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL		
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88		
2. BORING DESIGNATION VB-LK14-29		LOCATION COORDINATES X = 469,919 Y = 1,076,185		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER	
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES 4			DISTURBED	UNDISTURBED (UD) 0	
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES 0					
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A					
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 05-10-14			STARTED 05-10-14	COMPLETED 05-10-14	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -11.0 Ft.					
8. TOTAL DEPTH OF BORING 20.0 Ft.				17. TOTAL RECOVERY FOR BORING 84 %					
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		
-11.0	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to medium-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 5Y 8/1 white (SP)	3340			-11.0		0
			At El. -15.0 Ft., little fine to coarse-grained sand-sized shell		1		-11.5 Vibracore		
			At El. -18.8 Ft., little fine to medium-grained sand-sized shell, 5Y 6/1 gray		2		-15.0		5
			At El. -19.3 Ft., few fine to medium-grained sand-sized shell		3		-19.0		10
			At El. -19.9 Ft., little sand to gravel-sized shell, strong reaction with HCl, 5Y 8/1 white		4		-23.5		15
-24.1	13.1		At El. -22.1 Ft., few gravel to cobble-sized limestone, weak reaction with HCl						
			At El. -22.2 Ft., some sand to gravel-sized shell, some fine-grained sand-sized quartz, few medium-grained sand-sized limestone, strong reaction with HCl						
			SILT, inorganic-L, few sand to gravel-sized limestone, trace quartz, trace shell, weak reaction with HCl, moist, dissolution limestone, 5Y 6/1 gray (ML)						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS	
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 469,919 Y = 1,076,185			ELEVATION TOP OF BORING -11.0 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
								BLOWS/ 1 FT.
-27.7	16.7							
-31.0	20.0	NO RECOVERY						-31.0
			BORING TERMINATED IN REFUSAL					20
			NOTES:					25
			1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Vibracore refused due to presence of limestone. 4. Laboratory Testing Results					30
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION			35
			1	0.5/0.8	SP*			
			2	4.0/4.3	SP*			
			3	8.0/8.3	SP*			
			4	12.5/12.8	SP*			
			*Lab visual classification based on gradation curve. No Atterberg limits.					

Boring Designation VB-LK14-3

DRILLING LOG		DIVISION South Atlantic			INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS			
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL					9. SIZE AND TYPE OF BIT See Remarks						
					10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL			
					State Plane, FLW (U.S. Ft.)		NAD83	NAVD88			
2. BORING DESIGNATION VB-LK14-3		LOCATION COORDINATES X = 470,059 Y = 1,074,342			11. MANUFACTURER'S DESIGNATION OF DRILL vibracore						
					12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346			13. TOTAL NUMBER CORE BOXES 0						
4. NAME OF DRILLER Lester Gaughf					14. ELEVATION GROUND WATER N/A						
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING		15. DATE BORING STARTED 05-12-14 COMPLETED 05-12-14						
6. THICKNESS OF OVERBURDEN N/A					16. ELEVATION TOP OF BORING -9.8 Ft.						
7. DEPTH DRILLED INTO ROCK N/A					17. TOTAL RECOVERY FOR BORING 81 %						
8. TOTAL DEPTH OF BORING 19.1 Ft.					18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/ 1FT.	N-VALUE
-9.8	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 5Y 8/1 white (SP)		3100			-9.8			0
			At El. -15.8 Ft., some fine to medium-grained sand-sized shell, strong reaction with HCl			1		-10.3 Vibracore			
			At El. -16.6 Ft., little sand to gravel-sized shell, 5Y 7/1 light gray			2		-15.8			5
			At El. -19.7 Ft., some sand to gravel-sized shell								
-20.4	10.6		SAND, well-graded, mostly sand to gravel-sized shell, little fine-grained sand-sized quartz, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SW)			3		-20.8			10
-21.7	11.9		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, few silt, strong reaction with HCl, moist, 5Y 5/1 gray (SP-SM)			4		-22.3			
-24.3	14.5		At El. -23.3 Ft., some sand to gravel-sized shell								
			SILT, inorganic-L, little sand to gravel-sized								15

DRILLING LOG (Cont. Sheet)				INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS				
PROJECT Big Sarasota Pass Ebb Shoal				COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88					
LOCATION COORDINATES X = 470,059 Y = 1,074,342				ELEVATION TOP OF BORING -9.8 Ft.								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/ 1 FT.	N-VALUE	
-25.3	15.5		shell, few silt, strong reaction with HCl, moist, 5Y 5/1 gray (ML)								15	
-28.9	19.1	NO RECOVERY						-28.9				
			NOTES: 1. USACE Jacksonville 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					Abbreviations: NR = Not Recorded.			20	
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION						25	
			1	0.5/0.8	SP*						30	
			2	6.0/6.3	SP*						35	
			3	11.0/11.3	SW*						40	
			4	12.5/12.8	SP-SM*						45	
			*Lab visual classification based on gradation curve. No Atterberg limits.									

Boring Designation VB-LK14-31

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION VB-LK14-31		LOCATION COORDINATES X = 469,213 Y = 1,073,852		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)			HORIZONTAL NAD83 VERTICAL NAVD88
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
4. NAME OF DRILLER Lester Gaughf				12. TOTAL SAMPLES 3			DISTURBED UNDISTURBED (UD) 0
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED 05-10-14 COMPLETED 05-10-14			
8. TOTAL DEPTH OF BORING 20.0 Ft.				16. ELEVATION TOP OF BORING -11.8 Ft.			
17. TOTAL RECOVERY FOR BORING 65 %			18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer				

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-11.8	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)	2600			-11.8	0
-16.3	4.5		SAND, poorly-graded, mostly sand to gravel-sized shell, little fine-grained sand-sized quartz (SP)		1		-12.3 Vibracore	
-16.8	5.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, some sand to gravel-sized shell, few silt, strong reaction with HCl, moist, 5Y 6/1 gray (SP-SM) At El. -17.5 Ft., trace shell, weak reaction with HCl		2		-16.3	5
-21.0	9.2		SAND, silty, mostly fine-grained sand-sized quartz, some silt, few medium to coarse-grained sand-sized shell, weak reaction with HCl, moist, 5Y 6/1 gray (SM) At El. -21.9 Ft., little silt, 5Y 8/1 white		3		-17.8	10
-24.1	12.3		At El. -23.3 Ft., little medium to coarse-grained sand-sized shell, strong reaction with HCl, moist, 5Y 7/1 light gray					
-24.8	13.0	NO RECOVERY	SILT, inorganic-L, few medium to coarse-grained sand-sized shell, trace quartz, weak reaction with HCl, moist, 5Y 6/1 gray (ML)					15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS						
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88						
LOCATION COORDINATES X = 469,213 Y = 1,073,852			ELEVATION TOP OF BORING -11.8 Ft.										
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS					
-31.8	20.0	NO RECOVERY						-31.8					
			BORING TERMINATED IN REFUSAL					Abbreviations: NR = Not Recorded.					
			NOTES:										
			1. USACE Jacksonville 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	0.5/0.8	SP*				25				
			2	4.5/4.8	SP*								
			3	6.0/6.3	SP-SM*								
			*Lab visual classification based on gradation curve. No Atterberg limits.						30				
									35				

Boring Designation VB-LK14-5

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS				
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks							
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL				
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88				
2. BORING DESIGNATION VB-LK14-5		LOCATION COORDINATES X = 470,712 Y = 1,076,822		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES			DISTURBED 4	UNDISTURBED (UD) 0			
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES			0				
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			N/A				
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING			STARTED 05-12-14	COMPLETED 05-12-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING			-7.0 Ft.				
8. TOTAL DEPTH OF BORING 20.0 Ft.				17. TOTAL RECOVERY FOR BORING			80 %				
				18. SIGNATURE AND TITLE OF INSPECTOR			Stephanie Setser, P.E., Geotechnical Engineer				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/1FT.	N-VALUE
-7.0	0.0							-7.0			0
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, weak reaction with HCl, moist, 5Y 8/1 white (SP)		3200			-7.5 Vibracore			
			At El. -8.5 Ft., trace shell			1					
							2	-11.0			5
							3	-16.0			10
			At El. -16.0 Ft., trace silt								
			At El. -20.4 Ft., some sand to gravel-sized shell, strong reaction with HCl, 5Y 7/1 light gray					-22.0			15

Boring Designation VB-LK14-5

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS	
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 470,712 Y = 1,076,822			ELEVATION TOP OF BORING -7.0 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
-22.8	15.8	At El. -22.0 Ft., trace shell, 5Y 8/1 white		4			
-23.0	16.0		SAND, silty, mostly fine-grained sand-sized quartz, little silt, few medium to coarse-grained sand-sized shell, trace limestone, strong reaction with HCl, moist, 5Y 8/1 white (SM)					
-27.0	20.0	NO RECOVERY						-27.0
			NOTES: 1. USACE Jacksonville 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					Abbreviations: NR = Not Recorded.
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION			
			1	0.5/0.8	SP*			
			2	4.0/4.3	SP*			
			3	9.0/9.3	SP*			
			4	15.0/15.3	SP*			
			*Lab visual classification based on gradation curve. No Atterberg limits.					

Boring Designation VB-LK14-6

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-6		LOCATION COORDINATES X = 470,344 Y = 1,075,238		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
				12. TOTAL SAMPLES		DISTURBED 5	UNDISTURBED (UD) 0
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		13. TOTAL NUMBER CORE BOXES 0			
4. NAME OF DRILLER Lester Gaughf				14. ELEVATION GROUND WATER N/A			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
6. THICKNESS OF OVERBURDEN N/A				16. ELEVATION TOP OF BORING -7.5 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 Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT.	N-VALUE
-7.5	0.0						-7.5		0
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell, weak reaction with HCl, moist, 5Y 8/1 white (SP-SM)	3220			-8.0 Vibracore		
			At El. -8.3 Ft., few sand to gravel-sized shell		1				
			At El. -9.3 Ft., discontinue shell						
			At El. -12.5 Ft., few medium to coarse-grained sand-sized shell						5
-13.5	6.0		At El. -13.2 Ft., trace shell				-13.5		
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, strong reaction with HCl, moist, 5Y 8/1 white (SP)		2				
			At El. -16.6 Ft., some sand to gravel-sized shell						
-17.5	10.0		SAND, poorly-graded, mostly sand to gravel-sized shell, some fine-grained sand-sized quartz (SP)						10
			At El. -19.8 Ft., trace silt, 5Y 5/1 gray		3				
-20.4	12.9		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little sand to gravel-sized shell, weak reaction with HCl, 5Y 8/1 white (SP)		4				
			At El. -19.8 Ft., trace silt, 5Y 5/1 gray		5				
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, little sand to gravel-sized shell, weak reaction with HCl, 5Y 8/1 white (SP)						
			At El. -20.6 Ft., trace silt, 5Y 5/1 gray						

Boring Designation VB-LK14-6

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS	
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 470,344 Y = 1,075,238			ELEVATION TOP OF BORING -7.5 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
-23.6	16.1	At El. -22.5 Ft., some sand to gravel-sized shell, strong reaction with HCl, 5Y 7/1 light gray					
-27.5	20.0	NO RECOVERY						-27.5
			NOTES: 1. USACE Jacksonville 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					Abbreviations: NR = Not Recorded.
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION			
			1	0.5/0.8	SP-SM*			
			2	6.0/6.3	SP*			
			3	11.5/11.8	SP*			
			4	12.3/12.6	SP*			
			5	13.1/13.4	SP*			
			*Lab visual classification based on gradation curve. No Atterberg limits.					

Boring Designation VB-LK14-7

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION VB-LK14-7		LOCATION COORDINATES X = 470,215 Y = 1,077,741		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88
3. DRILLING AGENCY Corps of Engineers - CESAJ				11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
4. NAME OF DRILLER Lester Gaughf				12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERTBURDEN N/A				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
8. TOTAL DEPTH OF BORING 14.4 Ft.				16. ELEVATION TOP OF BORING -12.0 Ft.			
				17. TOTAL RECOVERY FOR BORING 79 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-12.0	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 5Y 8/1 white (SP) At El. -13.4 Ft., trace shell	2280			-12.0	0
					1		-12.5 Vibracore	
					2		-16.0	5
					3		-18.0	
-18.7	6.7		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, some sand to gravel-sized shell, few silt, strong reaction with HCl, moist, 5Y 5/1 gray (SP-SM)					
-20.7	8.7		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 5Y 7/1 light gray (SP)			4	-21.5	10
-23.4	11.4		At El. -23.1 Ft., few sand to gravel-sized shell, strong reaction with HCl					
-24.1	12.1	NO RECOVER	SAND, silty, mostly fine-grained sand-sized quartz, little silt, few medium to coarse-grained sand-sized shell, few sand to cobble-sized limestone, strong reaction with HCl, moist, 5Y 7/1 light gray (SM)					
-26.4	14.4		NOTES:				Abbreviations:	15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS															
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88																
LOCATION COORDINATES X = 470,215 Y = 1,077,741			ELEVATION TOP OF BORING -12.0 Ft.																			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS															
							BLOWS/ 1 FT.															
			<p>1. USACE Jacksonville is the custodian for these original files.</p> <p>2. Soils are field visually classified in accordance with the Unified Soils Classification System.</p> <p>3. Laboratory Testing Results</p> <table> <thead> <tr> <th>SAMPLE ID</th><th>SAMPLE DEPTH</th><th>LABORATORY CLASSIFICATION</th></tr> </thead> <tbody> <tr> <td>1</td><td>0.5/0.8</td><td>SP*</td></tr> <tr> <td>2</td><td>4.0/4.3</td><td>SP*</td></tr> <tr> <td>3</td><td>6.0/6.3</td><td>SP*</td></tr> <tr> <td>4</td><td>9.5/9.8</td><td>SP*</td></tr> </tbody> </table> <p>*Lab visual classification based on gradation curve. No Atterberg limits.</p>	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.5/0.8	SP*	2	4.0/4.3	SP*	3	6.0/6.3	SP*	4	9.5/9.8	SP*				NR = Not Recorded.
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																				
1	0.5/0.8	SP*																				
2	4.0/4.3	SP*																				
3	6.0/6.3	SP*																				
4	9.5/9.8	SP*																				
							15															
							20															
							25															
							30															
							35															

Boring Designation VB-BSP-12-1

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS			
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks						
2. BORING DESIGNATION VB-BSP-12-1		LOCATION COORDINATES X = 473,153 Y = 1,077,510		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)			HORIZONTAL NAD83	VERTICAL NAVD88		
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES 7			DISTURBED	UNDISTURBED (UD) 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0						
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER -0.4 Ft.						
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING 01-17-13			STARTED 01-17-13	COMPLETED 01-17-13		
8. TOTAL DEPTH OF BORING 14.7 Ft.				16. ELEVATION TOP OF BORING -5.1 Ft.						
17. TOTAL RECOVERY FOR BORING 87 %			18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	% BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-5.1	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, some sand to gravel-sized shell, strong reaction with HCl, moist, 2.5Y 7/1 light gray (SP)							0
			At El. -6.4 Ft., trace fine to medium-grained sand-sized shell, no reaction with HCl, 2.5Y 8/1 white			1			-5.6	
			At El. -7.2 Ft., little sand to gravel-sized shell, weak reaction with HCl							
			At El. -9.1 Ft., little fine to medium-grained sand-sized shell, no reaction with HCl			2			-9.3	
			From El. -10.3 to -11.1 Ft., 1.25" thick seams of organic sand, 2.5Y 6/1 gray						-9.3	
			At El. -11.1 Ft., few sand to gravel-sized shell, 2.5Y 8/1 white							
			From El. -13.0 to -13.2 Ft., 0.5" thick seams of organic sand							
			At El. -14.6 Ft., few medium-grained sand-sized shell			3			-14.6	
			At El. -16.1 Ft., few fine-grained sand-sized shell, trace silt, 2.5Y 6/1 gray			4			-16.1	
			At El. -16.4 Ft., 1.5" thick seams of sandy silt							
			At El. -16.9 Ft., 1.25" thick seams of sandy silt			5			-17.1	
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few fine to medium-grained sand-sized shell, no reaction with HCl, moist, 2.5Y 6/1 gray (SP-SM)							
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell, no reaction with HCl, moist, 2.5Y 6/1 gray (SP)			6			-18.9	
			BORING TERMINATED IN REFUSAL						-19.8	

Boring Designation VB-BSP-12-10

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS		
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks					
2. BORING DESIGNATION VB-BSP-12-10		LOCATION COORDINATES X = 470,692 Y = 1,073,971		10. COORDINATE SYSTEM/DATUM ▼ State Plane, FLW (U.S. Ft.) NAD83 NAVD88			HORIZONTAL VERTICAL		
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES 5			DISTURBED UNDISTURBED (UD) 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0					
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER 0.1 Ft.					
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED 01-16-13 COMPLETED 01-16-13					
8. TOTAL DEPTH OF BORING 17.5 Ft.				16. ELEVATION TOP OF BORING -6.8 Ft.					
17. TOTAL RECOVERY FOR BORING 88 %			18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-6.8	0.0		SAND, poorly-graded, mostly medium-grained sand-sized quartz, few sand to gravel-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						0
			At El. -9.8 Ft., little sand to gravel-sized shell, weak reaction with HCl			1		-7.3	
			At El. -11.4 Ft., little medium to coarse-grained sand-sized shell At El. -11.6 Ft., trace fine to medium-grained sand-sized shell, no reaction with HCl At El. -12.1 Ft., little sand to gravel-sized shell, weak reaction with HCl			2		-11.4	5
			At El. -15.1 Ft., trace fine to medium-grained sand-sized shell, no reaction with HCl			3		-15.3	10
			At El. -16.3 Ft., few fine to coarse gravel-sized shell						
-20.3	13.5		SAND, poorly-graded, mostly sand to gravel-sized shell, some fine-grained sand-sized quartz, strong reaction with HCl (SP)			4		-20.3	
-20.6	13.8		SAND, well-graded, mostly fine-grained						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 470,692 Y = 1,073,971			ELEVATION TOP OF BORING -6.8 Ft.				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
							BLOWS/ 1 FT.
-22.9	16.1	○ ○ ○ ○ ○	sand-sized quartz, some sand to gravel-sized shell, moist, 2.5Y 7/1 light gray (SW)				
			SAND, silty, mostly fine-grained sand-sized quartz, little silt, few medium-grained sand-sized shell, no reaction with HCl, moist, 10Y 3/1 very dark greenish gray (SM)		5		-23.3
-24.3	17.5						-24.3
			NOTES: 1. USACE Jacksonville 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				Abbreviations: NR = Not Recorded.
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION				
			1 0.5/0.7 SP*				
			2 4.6/4.8 SP*				
			3 8.5/8.7 SP*				
			4 13.5/13.7 SP*				
			5 16.5/16.7 SM*				
			*Lab visual classification based on gradation curve. No Atterberg limits.				
							15
							20
							25
							30
							35

Boring Designation VB-BSP-12-14

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS	
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks				
2. BORING DESIGNATION VB-BSP-12-14		LOCATION COORDINATES X = 469,687 Y = 1,072,971		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)			HORIZONTAL NAD83	VERTICAL NAVD88
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES 6			DISTURBED 0	UNDISTURBED (UD)
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0				
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER -0.7 Ft.				
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED 01-15-13			COMPLETED 01-15-13	
8. TOTAL DEPTH OF BORING 18.9 Ft.				16. ELEVATION TOP OF BORING -10.1 Ft.				
17. TOTAL RECOVERY FOR BORING 93 %			18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist					

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-10.1	0.0								0
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fine to medium-grained sand-sized shell, trace silt, no reaction with HCl, moist, 2.5Y 8/1 white (SP)				-10.6		
-11.4	1.3		SAND, well-graded, mostly fine-grained sand-sized quartz, some fine to coarse gravel-sized shell, strong reaction with HCl, moist, 2.5Y 7/1 light gray (SW)		1				
-11.6	1.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fine to medium-grained sand-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						
			At El. -14.1 Ft., some fine to coarse-grained sand-sized shell, strong reaction with HCl, 2.5Y 7/1 light gray			2			
			At El. -15.0 Ft., trace fine to medium-grained sand-sized shell, no reaction with HCl, 2.5Y 8/1 white			Post	-14.1		5
			At El. -17.3 Ft., little fine gravel-sized shell, 2.5Y 7/1 light gray						
			At El. -18.1 Ft., trace fine to medium-grained sand-sized shell, trace silt, 2.5Y 8/1 white						
			At El. -19.9 Ft., few sand to gravel-sized shell, 2.5Y 6/1 gray			3			10
			At El. -22.6 Ft., little medium to coarse-grained sand-sized shell, weak reaction with HCl			4			
-23.0	12.9		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, some sand to gravel-sized shell, few silt, strong reaction with HCl, moist, 2.5Y 6/1 gray (SP-SM)			5			
			At El. -23.1 Ft.,						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS			
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88				
LOCATION COORDINATES X = 469,687 Y = 1,072,971			ELEVATION TOP OF BORING -10.1 Ft.							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-27.6	17.5									15
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, strong reaction with HCl, moist, 10Y 5/1 greenish gray (SM)							
-29.0	18.9							-29.0		
			NOTES: 1. USACE Jacksonville 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					Abbreviations: NR = Not Recorded.		20
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION					25
			1	0.5/0.7	SP*					
			2	4.0/4.2	SP*					
			2-Post	4.0/4.2	SP*					
			3	9.5/9.7	SP*					
			4	12.5/12.7	SP*					
			5	13.0/13.2	SP-SM*					
			*Lab visual classification based on gradation curve. No Atterberg limits.							30

Boring Designation VB-BSP-12-3

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS		
1. PROJECT					9. SIZE AND TYPE OF BIT See Remarks			
Big Sarasota Pass Ebb Shoal Sarasota County					10. COORDINATE SYSTEM/DATUM HORIZONTAL VERTICAL State Plane, FLW (U.S. Ft.) NAD83 NAVD88			
2. BORING DESIGNATION VB-BSP-12-3		LOCATION COORDINATES X = 472,693 Y = 1,075,967			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER Vibracore			
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700			12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 6 0			
4. NAME OF DRILLER Palmer McClellan					13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER -0.1 Ft.				
6. THICKNESS OF OVERBURDEN N/A					15. DATE BORING STARTED COMPLETED 01-15-13 01-15-13			
7. DEPTH DRILLED INTO ROCK N/A					16. ELEVATION TOP OF BORING -5.3 Ft.			
8. TOTAL DEPTH OF BORING 14.1 Ft.					17. TOTAL RECOVERY FOR BORING 70 %			
					18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-5.3	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 2.5Y 8/1 white (SP)					0
			At El. -7.2 Ft., some sand to gravel-sized shell, strong reaction with HCl, 2.5Y 7/1 light gray		1		-5.8	
			At El. -8.3 Ft., some fine to coarse-grained sand-sized shell, strong reaction with HCl, 2.5Y 8/1 white					
			At El. -10.9 Ft., little medium to coarse-grained sand-sized shell, weak reaction with HCl		2		-10.9	5
			At El. -11.1 Ft., few fine to coarse gravel-sized shell, no reaction with HCl					
			At El. -12.6 Ft., some fine to coarse gravel-sized shell, strong reaction with HCl, 2.5Y 7/1 light gray					
			At El. -13.0 Ft., trace fine to medium-grained sand-sized shell, no reaction with HCl, 2.5Y 8/1 white		3		-13.8	10
			At El. -13.6 Ft., little sand to gravel-sized shell, weak reaction with HCl					
			At El. -13.8 Ft., little fine to medium-grained sand-sized shell, no reaction with HCl					
			At El. -14.3 Ft., some fine to coarse gravel-sized shell, strong reaction with HCl, 2.5Y 7/1 light gray					
-17.1	11.8		At El. -16.8 Ft., some sand to gravel-sized shell		4		-16.8	
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, little sand to gravel-sized shell, little medium to coarse-grained sand-sized limestone, few silt, strong reaction with HCl, moist, 2.5Y 5/1 gray (SP-SM)		4-Post		-16.8	
-18.3	13.0				5		-17.6	
-19.3	14.0		At El. -17.5 Ft., some silt, trace sand to gravel-sized shell, no reaction with HCl				-19.4	
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fine to coarse					
Abbreviations: NR = Not Recorded.								

Boring Designation VB-BSP-12-6

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS		
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks					
2. BORING DESIGNATION VB-BSP-12-6		LOCATION COORDINATES X = 471,692 Y = 1,074,968		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.) NAD83 NAVD88			HORIZONTAL VERTICAL		
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES 5			DISTURBED UNDISTURBED (UD) 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0					
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER 0.1 Ft.					
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED 01-16-13 COMPLETED 01-16-13					
8. TOTAL DEPTH OF BORING 14.2 Ft.				16. ELEVATION TOP OF BORING -4.0 Ft.					
17. TOTAL RECOVERY FOR BORING 71 %			18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-4.0	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine-grained sand-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						0
			At El. -8.2 Ft., little medium to coarse-grained sand-sized shell, weak reaction with HCl			1		-4.5	
-8.8	4.8		SAND, well-graded, mostly fine-grained sand-sized quartz, some fine to coarse gravel-sized shell, strong reaction with HCl, moist, 2.5Y 7/1 light gray (SW)			2		-8.2	5
-9.3	5.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to coarse gravel-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						10
			At El. -12.0 Ft., few fine-grained sand-sized shell			3		-12.0	
			At El. -12.9 Ft., little fine to coarse gravel-sized shell, weak reaction with HCl, 2.5Y 7/1 light gray			Post		-12.0	
			At El. -15.0 Ft., few fine to coarse gravel-sized shell, no reaction with HCl						15
			At El. -17.0 Ft., little fine to coarse-grained sand-sized shell, trace silt, weak reaction with HCl			4		-17.0	
-18.2	14.2		NOTES:					Abbreviations: NR = Not Recorded.	

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS	
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 471,692 Y = 1,074,968			ELEVATION TOP OF BORING -4.0 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION			BLOWS/ 1 FT.
			1	0.5/0.7	SP*			15
			2	4.2/4.4	SP*			20
			3	8.0/8.2	SP*			25
			3-Post	8.0/8.2	SP*			30
			4	13.0/13.2	SP*			35
			*Lab visual classification based on gradation curve. No Atterberg limits.					

Boring Designation VB-LK14-1

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS				
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks							
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL				
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88				
2. BORING DESIGNATION VB-LK14-1		LOCATION COORDINATES X = 468,065 Y = 1,072,266		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore							
				12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0				
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		13. TOTAL NUMBER CORE BOXES 0							
4. NAME OF DRILLER Lester Gaughf				14. ELEVATION GROUND WATER N/A							
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING STARTED 05-12-14 COMPLETED 05-12-14							
6. THICKNESS OF OVERBURDEN N/A				16. ELEVATION TOP OF BORING -14.6 Ft.							
7. DEPTH DRILLED INTO ROCK N/A				17. TOTAL RECOVERY FOR BORING 80 %							
8. TOTAL DEPTH OF BORING 18.2 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/1 FT.	N-VALUE
-14.6	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, trace silt, no reaction with HCl, moist, 5Y 8/1 white (SP)		2900			-14.6			0
						1		-15.1 Vibracore			
						2		-18.6			5
						3		-22.1			
-23.6	9.0		At El. -22.6 Ft., few sand to gravel-sized shell, strong reaction with HCl, 5Y 7/1 light gray					-23.9			
-24.5	9.9		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few medium-grained sand-sized shell, strong reaction with HCl, moist, 5Y 6/1 gray (SP-SM)			4					10
			SAND, silty, mostly fine-grained sand-sized quartz, little silt, little sand to gravel-sized shell, strong reaction with HCl, moist, 5Y 7/1 light gray (SM)								
			At El. -26.9 Ft., few sand to gravel-sized limestone, possible dissolution limestone, 5Y 8/1 white								
-29.1	14.5										15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS																			
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88																			
LOCATION COORDINATES X = 468,065 Y = 1,072,266			ELEVATION TOP OF BORING -14.6 Ft.																							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/1 FT.	N-VALUE															
-32.8	18.2	NO RECOVERY									15															
			BORING TERMINATED IN REFUSAL					-32.8			20															
			NOTES:					Abbreviations: NR = Not Recorded.			25															
			<ol style="list-style-type: none"> 1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Vibracore refused due to presence of limestone. 4. Laboratory Testing Results <table border="1" style="margin-left: 20px; margin-top: 10px;"> <thead> <tr> <th>SAMPLE ID</th> <th>SAMPLE DEPTH</th> <th>LABORATORY CLASSIFICATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5/0.8</td> <td>SP*</td> </tr> <tr> <td>2</td> <td>4.0/4.3</td> <td>SP*</td> </tr> <tr> <td>3</td> <td>7.5/7.8</td> <td>SP*</td> </tr> <tr> <td>4</td> <td>9.3/9.6</td> <td>SP-SM*</td> </tr> </tbody> </table>		SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.5/0.8	SP*	2	4.0/4.3	SP*	3	7.5/7.8	SP*	4	9.3/9.6	SP-SM*							30
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																								
1	0.5/0.8	SP*																								
2	4.0/4.3	SP*																								
3	7.5/7.8	SP*																								
4	9.3/9.6	SP-SM*																								
			*Lab visual classification based on gradation curve. No Atterberg limits.								35															

Boring Designation VB-LK14-10

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-10		LOCATION COORDINATES X = 472,849 Y = 1,077,410		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
				12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		13. TOTAL NUMBER CORE BOXES 0			
4. NAME OF DRILLER Jared Johnson				14. ELEVATION GROUND WATER N/A			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
6. THICKNESS OF OVERBURDEN N/A				16. ELEVATION TOP OF BORING -5.9 Ft.			
7. DEPTH DRILLED INTO ROCK N/A				17. TOTAL RECOVERY FOR BORING 68 %			
8. TOTAL DEPTH OF BORING 18.5 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-5.9	0.0		SAND, poorly-graded, mostly sand to gravel-sized shell, some fine-grained sand-sized quartz, strong reaction with HCl, moist, 5Y 8/1 white (SP)	2500			-5.9	0
-8.2	2.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium-grained sand-sized shell (SP) At El. -9.6 Ft., few medium-grained sand-sized shell, trace silt, weak reaction with HCl		1		-6.4 Vibracore	
					2		-9.9	
			At El. -13.7 Ft., little fine to medium-grained sand-sized shell, 5Y 7/1 light gray At El. -14.9 Ft., few fine-grained sand-sized shell		3		-14.4	5
-18.4	12.5	NO RECOVERY			4		-17.9	10
								15

Boring Designation VB-LK14-11

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-11		LOCATION COORDINATES X = 473,213 Y = 1,078,521		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0
4. NAME OF DRILLER Jared Johnson				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -10.5 Ft.			
8. TOTAL DEPTH OF BORING 18.8 Ft.				17. TOTAL RECOVERY FOR BORING 90 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-10.5	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, trace silt, weak reaction with HCl, moist, 5Y 8/1 white (SP)	3400			-10.5	0
			At El. -14.5 Ft., few fine-grained sand-sized shell		1		-11.0 Vibracore	
			At El. -18.5 Ft., some medium to coarse-grained sand-sized shell, strong reaction with HCl, 5Y 7/1 light gray		2		-14.5	5
			At El. -20.0 Ft., few fine-grained sand-sized shell		3		-18.5	10
-21.8	11.3		SILT, inorganic-L, few fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, few fine to coarse-grained sand-sized limestone, strong reaction with HCl, moist, dissolutioned limestone, 5Y 8/1 white (ML)		4		-21.3	15

Boring Designation VB-LK14-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS				
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks							
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL				
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88				
2. BORING DESIGNATION VB-LK14-12		LOCATION COORDINATES X = 473,453 Y = 1,079,482		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES			DISTURBED	UNDISTURBED (UD)			
							2	0			
4. NAME OF DRILLER Jared Johnson				13. TOTAL NUMBER CORE BOXES			0				
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			N/A				
6. THICKNESS OF OVERBURDEN				15. DATE BORING			STARTED	COMPLETED			
N/A							05-11-14	05-11-14			
7. DEPTH DRILLED INTO ROCK				16. ELEVATION TOP OF BORING			-10.2 Ft.				
N/A				17. TOTAL RECOVERY FOR BORING			61 %				
8. TOTAL DEPTH OF BORING				18. SIGNATURE AND TITLE OF INSPECTOR			Stephanie Setser, P.E., Geotechnical Engineer				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/1FT.	N-VALUE
-10.2	0.0							-10.2			0
			SAND, well-graded, mostly sand to gravel-sized shell, little fine-grained sand-sized quartz, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SW)		1420			-10.7 Vibracore			
						1					
-12.8	2.6		SAND, poorly-graded, mostly sand to gravel-sized shell, little fine-grained sand-sized quartz, strong reaction with HCl, moist, 5Y 8/1 white (SP)								5
-16.5	6.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, trace silt (SP)					-15.7			
-17.3	7.1										
		NO RECOVERY									
-21.8	11.6		BORING TERMINATED IN REFUSAL					-21.8			10
			NOTES:								
			1. USACE Jacksonville is the custodian for these original files.								
			2. Soils are field visually classified in accordance with the Unified Soils Classification System.								
Abbreviations: NR = Not Recorded.											

Boring Designation VB-LK14-13

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-13		LOCATION COORDINATES X = 473,803 Y = 1,080,425		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES		DISTURBED 2	UNDISTURBED (UD) 0
4. NAME OF DRILLER Jared Johnson				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -12.8 Ft.			
8. TOTAL DEPTH OF BORING 8.0 Ft.				17. TOTAL RECOVERY FOR BORING 74 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

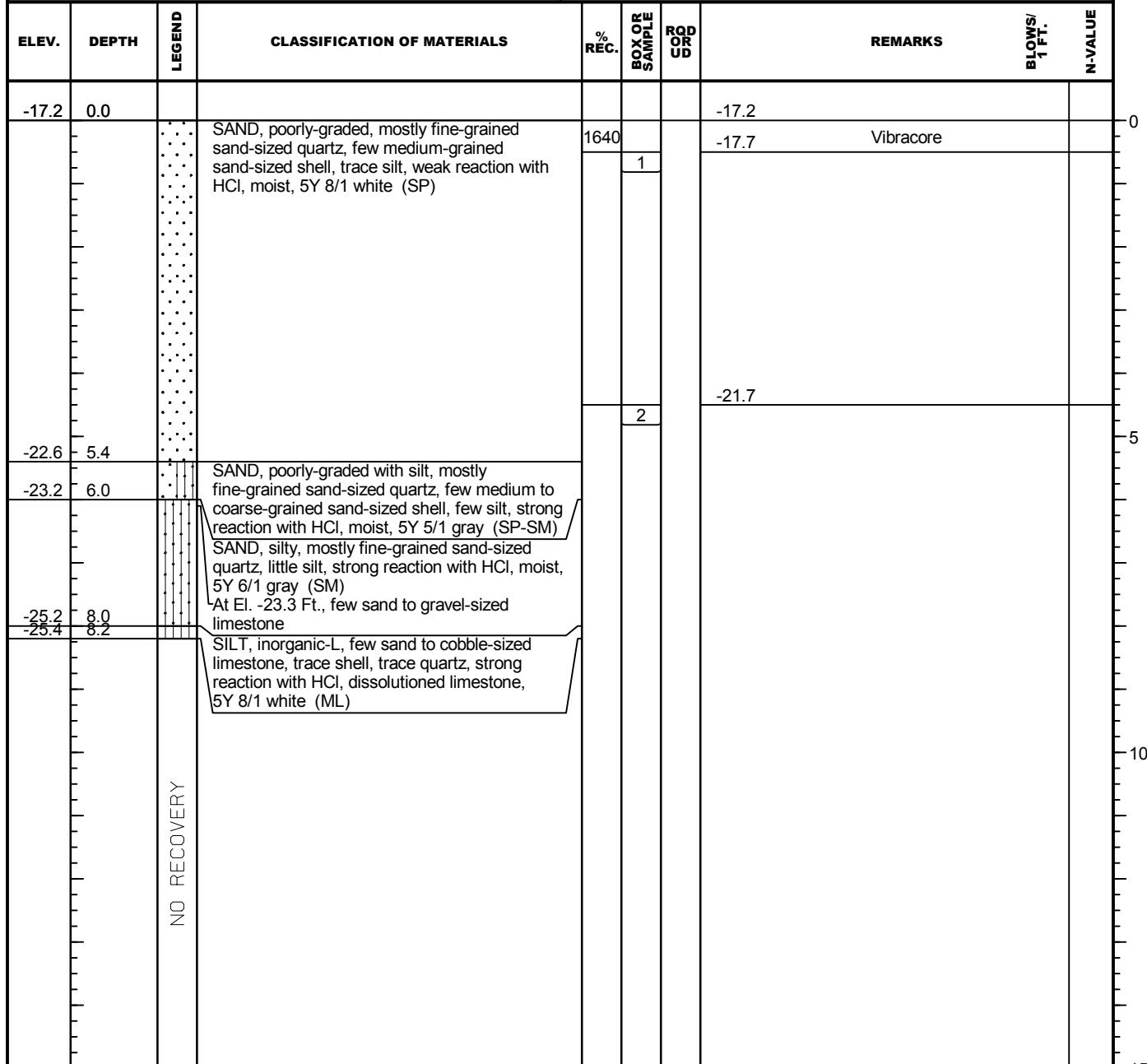
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-12.8	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to coarse-grained sand-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)	1180			-12.8	0
			At El. -14.7 Ft., few fine-grained sand-sized shell, weak reaction with HCl		1		-13.3 Vibracore	
					2		-17.5	
-18.5	5.7		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell, trace limestone, weak reaction with HCl, moist, 5Y 6/1 gray (SP-SM)					5
-18.7	5.9	NR						
-20.8	8.0		BORING TERMINATED IN REFUSAL NOTES: 1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Vibracore refused due to presence of limestone. 4. Laboratory Testing Results SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION ----- 1 0.5/0.8 SP* 2 4.7/5.0 SP*				Abbreviations: NR = Not Recorded.	10
			*Lab visual classification based on gradation					15

Boring Designation VB-LK14-14

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 1 SHEETS				
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks							
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL				
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88				
2. BORING DESIGNATION VB-LK14-14		LOCATION COORDINATES X = 474,529 Y = 1,081,094		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES			DISTURBED	UNDISTURBED (UD)			
				13. TOTAL NUMBER CORE BOXES			0				
				14. ELEVATION GROUND WATER			N/A				
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING			STARTED 05-11-14	COMPLETED 05-11-14			
6. THICKNESS OF OVERBURDEN		N/A		16. ELEVATION TOP OF BORING			-16.8 Ft.				
7. DEPTH DRILLED INTO ROCK		N/A		17. TOTAL RECOVERY FOR BORING			64 %				
8. TOTAL DEPTH OF BORING		4.2 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR			Stephanie Setser, P.E., Geotechnical Engineer				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/ 1 FT.	N-VALUE
-16.8	0.0							-16.8			0
-17.3	0.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, weak reaction with HCl, moist, 5Y 8/1 white (SP) SAND, silty, mostly fine-grained sand-sized quartz, little silt, few sand to gravel-sized shell, strong reaction with HCl, moist, 5Y 5/1 gray (SM)								
-19.5	2.7		At El. -18.0 Ft., few fine to coarse-grained sand-sized limestone, trace shell, possible dissolutioned limestone, 5Y 7/1 light gray		64			Vibracore			
-21.0	4.2	NR	BORING TERMINATED IN REFUSAL NOTES: 1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Vibracore refused due to presence of limestone.					-21.0			5
											10
											15

Boring Designation VB-LK14-2

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-2		LOCATION COORDINATES X = 468,857 Y = 1,072,891		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
				12. TOTAL SAMPLES		DISTURBED 2	UNDISTURBED (UD) 0
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		13. TOTAL NUMBER CORE BOXES 0			
4. NAME OF DRILLER Lester Gaughf				14. ELEVATION GROUND WATER N/A			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING STARTED 05-12-14 COMPLETED 05-12-14			
6. THICKNESS OF OVERTBURDEN		N/A		16. ELEVATION TOP OF BORING -17.2 Ft.			
7. DEPTH DRILLED INTO ROCK		N/A		17. TOTAL RECOVERY FOR BORING 44 %			
8. TOTAL DEPTH OF BORING		18.5 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			



Boring Designation VB-LK14-32

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-32		LOCATION COORDINATES X = 470,100 Y = 1,073,506		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
				12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		13. TOTAL NUMBER CORE BOXES 0			
4. NAME OF DRILLER Lester Gaughf				14. ELEVATION GROUND WATER N/A			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING STARTED 05-10-14 COMPLETED 05-10-14			
6. THICKNESS OF OVERBURDEN N/A				16. ELEVATION TOP OF BORING -9.5 Ft.			
7. DEPTH DRILLED INTO ROCK N/A				17. TOTAL RECOVERY FOR BORING 84 %			
8. TOTAL DEPTH OF BORING 20.0 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-9.5	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, some fine to coarse-grained sand-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)				-9.5	0
			At El. -12.5 Ft., few medium to coarse-grained sand-sized shell					
			At El. -14.0 Ft., trace shell, weak reaction with HCl					
			At El. -15.5 Ft., little medium to coarse-grained sand-sized shell At El. -16.0 Ft., trace shell					
			At El. -19.6 Ft., little medium to coarse-grained sand-sized shell					
-20.6	11.1		SAND, well-graded, mostly sand to gravel-sized shell, little fine-grained sand-sized quartz, trace silt, strong reaction with HCl, 5Y 8/1 white (SW)	3360	1		-10.0 Vibracore	5
-22.5	13.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little sand to gravel-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)		2		-15.5	10
			At El. -23.0 Ft., trace shell, 5Y 6/1 gray					
-24.3	14.8							

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS	
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 470,100 Y = 1,073,506			ELEVATION TOP OF BORING -9.5 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-26.3	16.8		SAND, silty, mostly fine-grained sand-sized quartz, some silt, little sand to gravel-sized shell, strong reaction with HCl, moist, 5Y 6/1 gray (SM)					15
-29.5	20.0	NO RECOVERY					-29.5	20
			NOTES: 1. USACE Jacksonville 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 ID DEPTH CLASSIFICATION				Abbreviations: NR = Not Recorded.	25
			----- 1 0.5/0.8 SP* 2 6.0/6.3 SP* 3 12.0/12.3 SW* 4 13.5/13.8 SP*					30
			*Lab visual classification based on gradation curve. No Atterberg limits.					35

Boring Designation VB-LK14-8

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-8		LOCATION COORDINATES X = 471,150 Y = 1,074,258		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
				12. TOTAL SAMPLES		DISTURBED 3	UNDISTURBED (UD) 0
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		13. TOTAL NUMBER CORE BOXES 0			
4. NAME OF DRILLER Lester Gaughf				14. ELEVATION GROUND WATER N/A			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
6. THICKNESS OF OVERBURDEN N/A				16. ELEVATION TOP OF BORING -2.0 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 Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-2.0	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, weak reaction with HCl, moist, 5Y 8/1 white (SP)	2300			-2.0	0
					1		-2.5 Vibracore	
-7.2	5.2		SAND, poorly-graded, mostly fine to coarse-grained sand-sized shell, some fine-grained sand-sized quartz, trace silt, strong reaction with HCl (SP)			2	-8.0	5
-11.2	9.2		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to coarse-grained sand-sized shell (SP) At El. -12.2 Ft., some medium to coarse-grained sand-sized shell			3	-13.0	10
-13.5	11.5							
-15.0	13.0	NR	BORING TERMINATED IN REFUSAL NOTES: 1. USACE Jacksonville is the custodian for these original files.				Abbreviations: NR = Not Recorded.	15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS														
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88														
LOCATION COORDINATES X = 471,150 Y = 1,074,258			ELEVATION TOP OF BORING -2.0 Ft.																		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS													
			<p>2. Soils are field visually classified in accordance with the Unified Soils Classification System.</p> <p>3. Vibracore refused due to presence of shell.</p> <p>4. Laboratory Testing Results</p> <table> <thead> <tr> <th>SAMPLE ID</th><th>SAMPLE DEPTH</th><th>LABORATORY CLASSIFICATION</th></tr> </thead> <tbody> <tr> <td>1</td><td>0.5/0.8</td><td>SP*</td></tr> <tr> <td>2</td><td>6.0/6.3</td><td>SP*</td></tr> <tr> <td>3</td><td>11.0/11.3</td><td>SP*</td></tr> </tbody> </table> <p>*Lab visual classification based on gradation curve. No Atterberg limits.</p>		SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.5/0.8	SP*	2	6.0/6.3	SP*	3	11.0/11.3	SP*					
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																			
1	0.5/0.8	SP*																			
2	6.0/6.3	SP*																			
3	11.0/11.3	SP*																			
									15												
									20												
									25												
									30												
									35												

Boring Designation VB-LK14-15

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION VB-LK14-15		LOCATION COORDINATES X = 470,486 Y = 1,070,749		10. COORDINATE SYSTEM/DATUM HORIZONTAL VERTICAL State Plane, FLW (U.S. Ft.) NAD83 NAVD88			
3. DRILLING AGENCY Corps of Engineers - CESAJ				11. MANUFACTURER'S DESIGNATION OF DRILL AUTO HAMMER vibracore MANUAL HAMMER			
4. NAME OF DRILLER Lester Gaughf				12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 3 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED COMPLETED 05-11-14 05-11-14			
8. TOTAL DEPTH OF BORING 16.2 Ft.				16. ELEVATION TOP OF BORING -12.7 Ft. 17. TOTAL RECOVERY FOR BORING 83 % 18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-12.7	0.0		SAND, poorly-graded, mostly sand to gravel-sized shell, few fine-grained sand-sized quartz, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)	2680			-12.7	0
-16.2	3.5		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few fine-grained sand-sized shell, weak reaction with HCl, moist, 5Y 8/1 white (SP-SM) At El. -17.8 Ft., 5Y 6/1 gray		1		-13.2 Vibracore	5
-20.2	7.5		SAND, silty, mostly fine-grained sand-sized quartz, little silt, few sand to gravel-sized shell, weak reaction with HCl, moist, 5Y 6/1 gray (SM) At El. -20.6 Ft., some sand to gravel-sized shell At El. -21.1 Ft., few sand to gravel-sized shell At El. -23.7 Ft., occasional gravel to cobble-sized cemented silty fine sand nodules		2		-18.7	10
-26.1	13.4	RECOVERED			3		-20.7	15

Boring Designation VB-LK14-16

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-16		LOCATION COORDINATES X = 469,804 Y = 1,070,040		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES 4 DISTURBED 0 UNDISTURBED (UD)			
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -7.9 Ft.			
8. TOTAL DEPTH OF BORING 17.9 Ft.				17. TOTAL RECOVERY FOR BORING 80 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

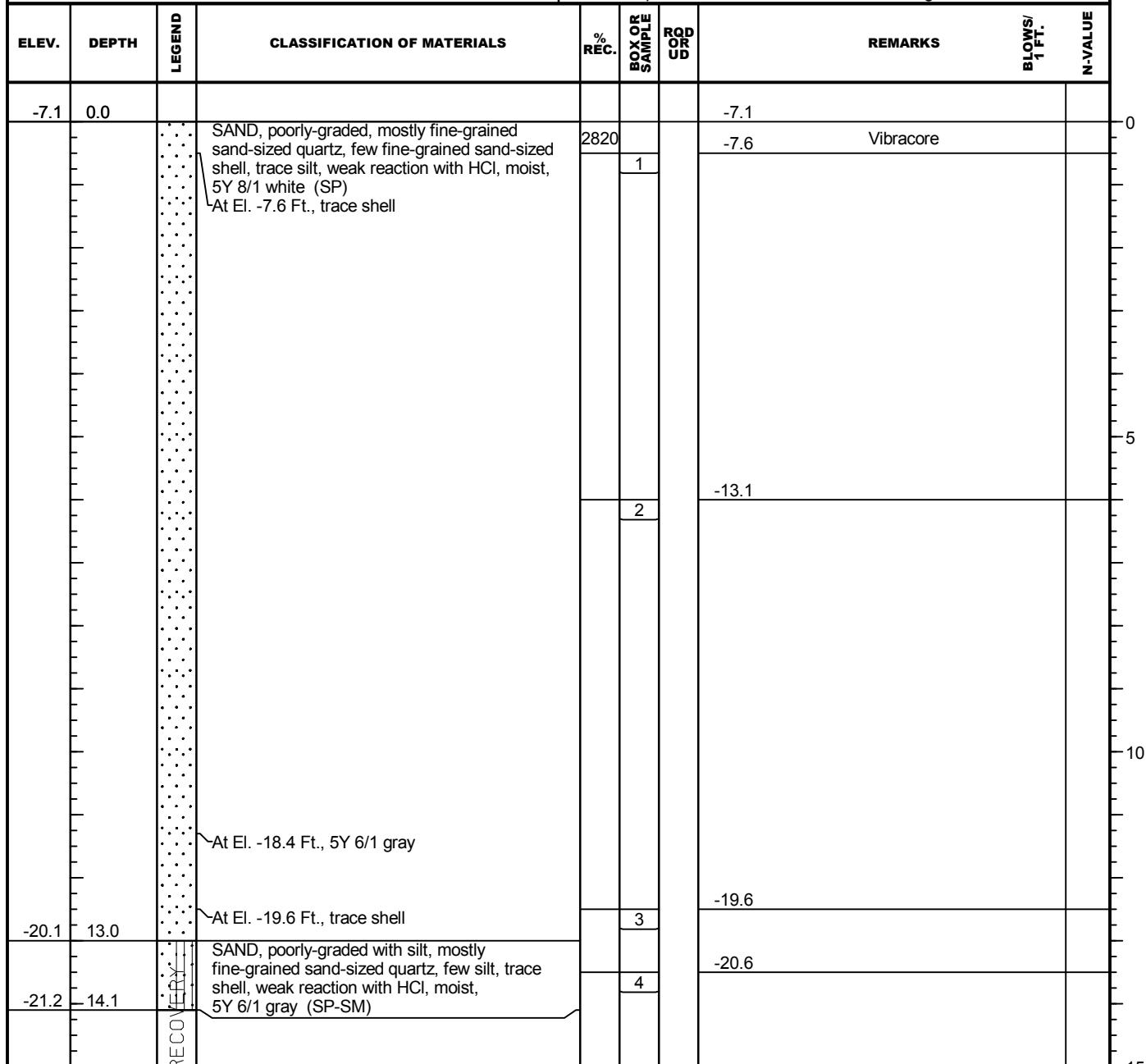
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT.	N-VALUE
-7.9	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, some fine to coarse-grained sand-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)	2860			-7.9		0
			At El. -13.4 Ft., trace shell, discontinue silt, weak reaction with HCl		1		-8.4 Vibracore		5
					2		-13.9		10
-18.9	11.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few medium-grained sand-sized shell, weak reaction with HCl, moist, 5Y 8/1 white (SP-SM) At El. -19.9 Ft., few fine-grained sand-sized shell, 5Y 6/1 gray		3		-18.9		15
-21.4	13.5				4		-19.9		
-22.2	14.3	NO ECO	SAND, silty, mostly fine-grained sand-sized quartz, little silt, trace shell, weak reaction with HCl, moist, 5Y 6/1 gray (SM)						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88		
LOCATION COORDINATES X = 469,804 Y = 1,070,040			ELEVATION TOP OF BORING -7.9 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	
		NO RECOVERY							
-25.8	17.9	NO RECOVERY	BORING TERMINATED IN REFUSAL					-25.8	
			NOTES:					Abbreviations: NR = Not Recorded.	
			1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Vibracore refused due to presence of limestone. 4. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				

			1	0.5/0.8	SP*				
			2	6.0/6.3	SP*				
			3	11.0/11.3	SP-SM*				
			4	12.0/12.3	SP-SM*				
			*Lab visual classification based on gradation curve. No Atterberg limits.						

Boring Designation VB-LK14-17

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-17		LOCATION COORDINATES X = 469,806 Y = 1,067,947		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -7.1 Ft.			
8. TOTAL DEPTH OF BORING 18.4 Ft.				17. TOTAL RECOVERY FOR BORING 77 % 18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			



DRILLING LOG (Cont. Sheet)				INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS			
PROJECT Big Sarasota Pass Ebb Shoal				COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88				
LOCATION COORDINATES X = 469,806 Y = 1,067,947				ELEVATION TOP OF BORING -7.1 Ft.							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/ 1 FT.	N-VALUE
-25.5	18.4	NO RECOVERY									15
											20
			NOTES:					Abbreviations: NR = Not Recorded.			25
			1. USACE Jacksonville 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								30
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION						35
			1	0.5/0.8	SP*						40
			2	6.0/6.3	SP*						45
			3	12.5/12.8	SP*						50
			4	13.5/13.8	SP-SM*						55
			*Lab visual classification based on gradation curve. No Atterberg limits.								60

Boring Designation VB-LK14-18

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-18		LOCATION COORDINATES X = 469,899 Y = 1,068,946		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -4.4 Ft.			
8. TOTAL DEPTH OF BORING 17.0 Ft.				17. TOTAL RECOVERY FOR BORING 79 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-4.4	0.0						-4.4	0
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, some fine to medium-grained sand-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)	2680			-4.9 Vibracore	
			At El. -6.1 Ft., trace shell, weak reaction with HCl		1			
			At El. -8.4 Ft., little fine to medium-grained sand-sized shell, strong reaction with HCl		2		-8.4	5
			At El. -10.3 Ft., trace shell, weak reaction with HCl		3			
			At El. -15.9 Ft., 5Y 7/1 light gray		4		-12.4	10
-17.8	13.4	RECOVERY					-17.4	15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88		
LOCATION COORDINATES X = 469,899 Y = 1,068,946			ELEVATION TOP OF BORING -4.4 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	
									BLOWS/ 1 FT.
-21.4	17.0	NO RECOVERY						-21.4	15
			NOTES:					Abbreviations: NR = Not Recorded.	
			1. USACE Jacksonville 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						20
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION ----- 1 0.5/0.8 SP* 2 4.0/4.3 SP* 3 8.0/8.3 SP* 4 13.0/13.3 SP*						25
			*Lab visual classification based on gradation curve. No Atterberg limits.						30
									35

Boring Designation VB-LK14-19

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS				
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks							
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL				
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88				
2. BORING DESIGNATION VB-LK14-19		LOCATION COORDINATES X = 470,135 Y = 1,066,052		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES			DISTURBED 4	UNDISTURBED (UD) 0			
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES			0				
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			N/A				
6. THICKNESS OF OVERBURDEN				15. DATE BORING			STARTED 05-11-14	COMPLETED 05-11-14			
7. DEPTH DRILLED INTO ROCK				16. ELEVATION TOP OF BORING			-17.6 Ft.				
8. TOTAL DEPTH OF BORING				17. TOTAL RECOVERY FOR BORING			96 %				
				18. SIGNATURE AND TITLE OF INSPECTOR			Stephanie Setser, P.E., Geotechnical Engineer				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/1FT.	N-VALUE
-17.6	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 5Y 6/1 gray (SP) At El. -18.4 Ft., trace shell		2780			-17.6			0
			At El. -23.4 Ft., few fine-grained sand-sized shell			1		-18.1 Vibracore			
						2		-21.6			
						3		-22.1			5
								-25.7			
-25.6	8.0		SAND, silty, mostly fine to medium-grained sand-sized quartz, some sand to gravel-sized shell, little silt, strong reaction with HCl, moist, 5Y 5/1 gray (SM) At El. -27.1 Ft., little sand to cobble-sized shell			4					10
-28.8	11.2		SILT, inorganic-L, some fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, few cobble-sized limestone, strong reaction with HCl, moist, dissolution limestone, 5Y 6/1 gray (ML) At El. -30.4 Ft., discontinue shell, discontinue limestone, no reaction with HCl								
-31.5	13.9										
-32.1	14.5	NR	BORING TERMINATED IN REFUSAL					Abbreviations:			15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88		
LOCATION COORDINATES X = 470,135 Y = 1,066,052			ELEVATION TOP OF BORING -17.6 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	
			NOTES:					NR = Not Recorded.	
			1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Vibracore refused due to presence of limestone. 4. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				
			1	0.5/0.8	SP*				
			2	4.0/4.3	SP*				
			3	4.5/4.8	SP*				
			4	8.1/8.4	SM*				
			*Lab visual classification based on gradation curve. No Atterberg limits.						
									15
									20
									25
									30
									35

Boring Designation VB-LK14-20

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION VB-LK14-20		LOCATION COORDINATES X = 470,296 Y = 1,065,121		10. COORDINATE SYSTEM/DATUM HORIZONTAL VERTICAL State Plane, FLW (U.S. Ft.) NAD83 NAVD88			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		11. MANUFACTURER'S DESIGNATION OF DRILL AUTO HAMMER vibracore MANUAL HAMMER			
4. NAME OF DRILLER Lester Gaughf				12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 1 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED COMPLETED 05-10-14 05-10-14			
8. TOTAL DEPTH OF BORING 20.0 Ft.				16. ELEVATION TOP OF BORING -25.0 Ft. 17. TOTAL RECOVERY FOR BORING 98 % 18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-25.0	0.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few medium-grained sand-sized shell, weak reaction with HCl, moist, 5Y 6/1 gray (SP-SM)	3900			-25.0	0
			At El. -28.5 Ft., little sand to gravel-sized shell, strong reaction with HCl, 5Y 8/1 white				-25.5 Vibracore	
			At El. -30.0 Ft., trace shell, weak reaction with HCl		1			
			At El. -32.7 Ft., 2" diameter limestone fragment					
-33.5	8.5		SILT, inorganic-L, few sand to gravel-sized limestone, trace quartz, no reaction with HCl, moist, dissolution limestone, 5Y 7/4 pale yellow (ML)					5
			At El. -36.5 Ft., trace limestone, 5Y 7/6 yellow					10
			At El. -37.5 Ft., 5Y 5/6 olive					
			At El. -38.5 Ft., 5Y 4/3 olive					15

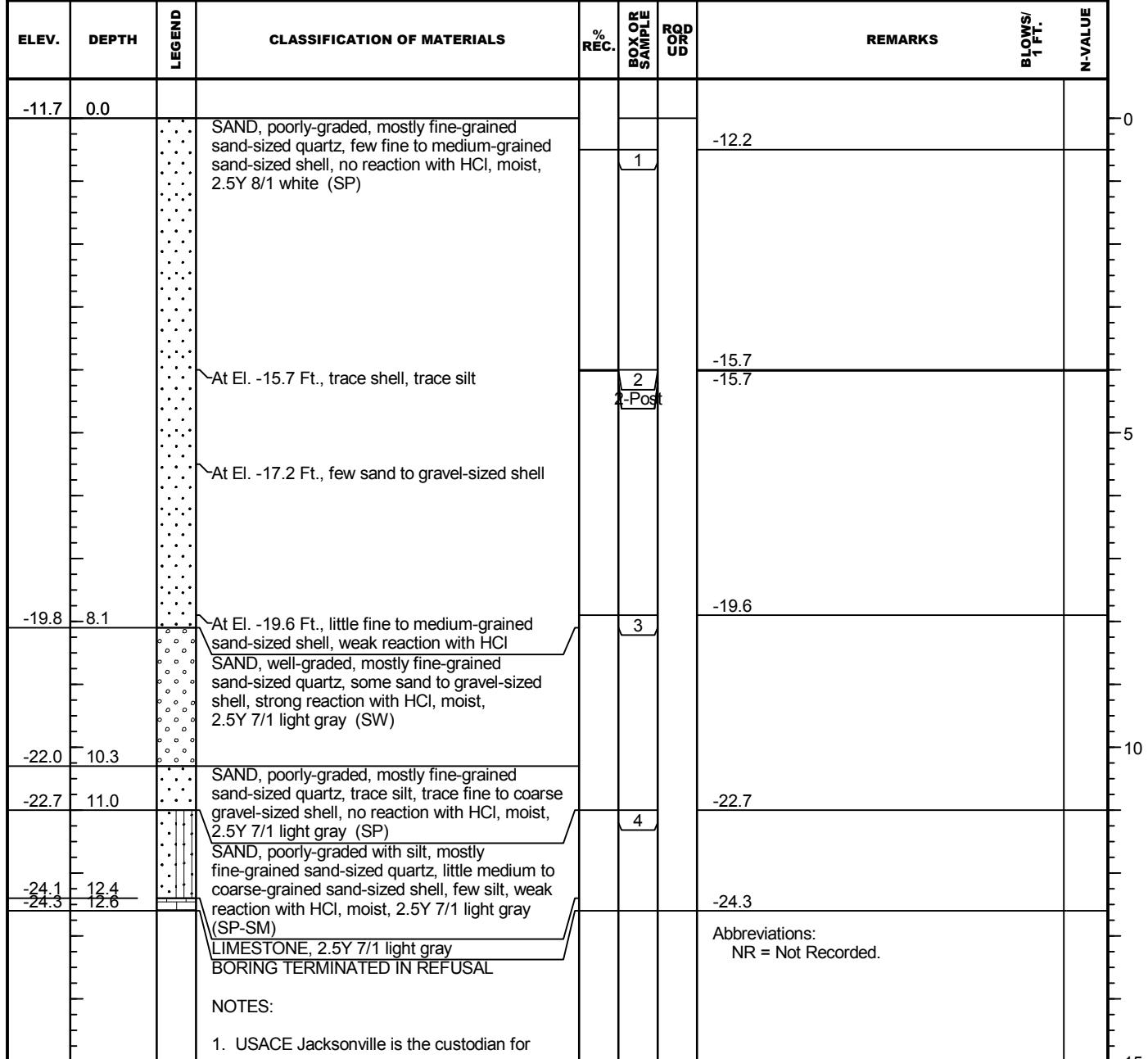
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS							
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88							
LOCATION COORDINATES X = 470,296 Y = 1,065,121			ELEVATION TOP OF BORING -25.0 Ft.											
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS						
								BLOWS/ 1 FT.						
-44.5	19.5	NR	~At El. -42.5 Ft., trace shell, 5Y 6/4 pale olive ~At El. -43.5 Ft., 5Y 6/3 pale olive											
-45.0	20.0	NR						-45.0						
			NOTES: 1. USACE Jacksonville 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 <table> <thead> <tr> <th>SAMPLE ID</th><th>SAMPLE DEPTH</th><th>LABORATORY CLASSIFICATION</th></tr> </thead> <tbody> <tr> <td>1</td><td>0.5/0.8</td><td>SP-SM*</td></tr> </tbody> </table> *Lab visual classification based on gradation curve. No Atterberg limits.		SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.5/0.8	SP-SM*			Abbreviations: NR = Not Recorded.	
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION												
1	0.5/0.8	SP-SM*												
								15						
								20						
								25						
								30						
								35						

Boring Designation VB-BSP-12-5

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS		
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks					
2. BORING DESIGNATION VB-BSP-12-5		LOCATION COORDINATES X = 470,695 Y = 1,075,969		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)			HORIZONTAL NAD83	VERTICAL NAVD88	
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES 5			DISTURBED UNDISTURBED (UD) 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			14. ELEVATION GROUND WATER 0.1 Ft.		
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 01-16-13			STARTED 01-16-13	COMPLETED 01-16-13	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -5.8 Ft.			17. TOTAL RECOVERY FOR BORING 90 %		
8. TOTAL DEPTH OF BORING 18.0 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-5.8	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine-grained sand-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						0
-10.1	4.3		SAND, well-graded, mostly fine-grained sand-sized quartz, some fine to coarse gravel-sized shell, strong reaction with HCl, moist, 2.5Y 7/1 light gray (SW)			1		-6.3	
-10.3	4.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to coarse gravel-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP) At El. -11.8 Ft., little fine to medium-grained sand-sized shell, trace silt, weak reaction with HCl			2		-11.8	5
			At El. -15.8 Ft., trace shell, no reaction with HCl			3		-15.8	10
-17.6	11.8		SAND, silty, mostly fine-grained sand-sized quartz, no reaction with HCl, moist, 0.25" thick sandy silt seams throughout, 2.5Y 5/1 gray (SM)			4		-17.8	
-17.8	12.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						15

Boring Designation VB-BSP-12-9

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION VB-BSP-12-9		LOCATION COORDINATES X = 469,692 Y = 1,074,966		10. COORDINATE SYSTEM/DATUM HORIZONTAL VERTICAL State Plane, FLW (U.S. Ft.) NAD83 NAVD88			
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL AUTO HAMMER Vibracore MANUAL HAMMER			
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 5 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER -0.8 Ft.			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED COMPLETED 01-16-13 01-16-13			
8. TOTAL DEPTH OF BORING 12.6 Ft.				16. ELEVATION TOP OF BORING -11.7 Ft.			
				17. TOTAL RECOVERY FOR BORING 89 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist			



DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS																				
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88																				
LOCATION COORDINATES X = 469,692 Y = 1,074,966			ELEVATION TOP OF BORING -11.7 Ft.																								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS																			
			<p>these original files.</p> <p>2. Soils are field visually classified in accordance with the Unified Soils Classification System.</p> <p>3. Laboratory Testing Results</p> <table border="1"> <thead> <tr> <th>SAMPLE ID</th><th>SAMPLE DEPTH</th><th>LABORATORY CLASSIFICATION</th></tr> </thead> <tbody> <tr> <td>1</td><td>0.5/0.7</td><td>SP*</td></tr> <tr> <td>2</td><td>4.0/4.2</td><td>SP*</td></tr> <tr> <td>2-Post</td><td>4.0/4.2</td><td>SP*</td></tr> <tr> <td>3</td><td>7.9/8.1</td><td>SP*</td></tr> <tr> <td>4</td><td>11.0/11.2</td><td>SP-SM*</td></tr> </tbody> </table> <p>*Lab visual classification based on gradation curve. No Atterberg limits.</p>		SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.5/0.7	SP*	2	4.0/4.2	SP*	2-Post	4.0/4.2	SP*	3	7.9/8.1	SP*	4	11.0/11.2	SP-SM*					
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																									
1	0.5/0.7	SP*																									
2	4.0/4.2	SP*																									
2-Post	4.0/4.2	SP*																									
3	7.9/8.1	SP*																									
4	11.0/11.2	SP-SM*																									
									15																		
									20																		
									25																		
									30																		
									35																		

Boring Designation VB-LK14-29

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS		
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks					
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL		
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88		
2. BORING DESIGNATION VB-LK14-29		LOCATION COORDINATES X = 469,919 Y = 1,076,185		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER	
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES 4			DISTURBED	UNDISTURBED (UD) 0	
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES 0					
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A					
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING 05-10-14			STARTED 05-10-14	COMPLETED 05-10-14	
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -11.0 Ft.					
8. TOTAL DEPTH OF BORING 20.0 Ft.				17. TOTAL RECOVERY FOR BORING 84 %					
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		
-11.0	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to medium-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 5Y 8/1 white (SP)	3340			-11.0		0
			At El. -15.0 Ft., little fine to coarse-grained sand-sized shell		1		-11.5 Vibracore		
			At El. -18.8 Ft., little fine to medium-grained sand-sized shell, 5Y 6/1 gray		2		-15.0		5
			At El. -19.3 Ft., few fine to medium-grained sand-sized shell		3		-19.0		10
			At El. -19.9 Ft., little sand to gravel-sized shell, strong reaction with HCl, 5Y 8/1 white		4		-23.5		10
-24.1	13.1		At El. -22.1 Ft., few gravel to cobble-sized limestone, weak reaction with HCl						15
			At El. -22.2 Ft., some sand to gravel-sized shell, some fine-grained sand-sized quartz, few medium-grained sand-sized limestone, strong reaction with HCl						
			SILT, inorganic-L, few sand to gravel-sized limestone, trace quartz, trace shell, weak reaction with HCl, moist, dissolution limestone, 5Y 6/1 gray (ML)						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS	
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 469,919 Y = 1,076,185			ELEVATION TOP OF BORING -11.0 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
								BLOWS/ 1 FT.
-27.7	16.7							
-31.0	20.0	NO RECOVERY						-31.0
			BORING TERMINATED IN REFUSAL					20
			NOTES:					25
			1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Vibracore refused due to presence of limestone. 4. Laboratory Testing Results					30
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION			35
			1	0.5/0.8	SP*			
			2	4.0/4.3	SP*			
			3	8.0/8.3	SP*			
			4	12.5/12.8	SP*			
			*Lab visual classification based on gradation curve. No Atterberg limits.					

Boring Designation VB-LK14-3

DRILLING LOG		DIVISION South Atlantic			INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS			
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL					9. SIZE AND TYPE OF BIT See Remarks						
					10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL			
					State Plane, FLW (U.S. Ft.)		NAD83	NAVD88			
2. BORING DESIGNATION VB-LK14-3		LOCATION COORDINATES X = 470,059 Y = 1,074,342			11. MANUFACTURER'S DESIGNATION OF DRILL vibracore						
					12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346			13. TOTAL NUMBER CORE BOXES 0						
4. NAME OF DRILLER Lester Gaughf					14. ELEVATION GROUND WATER N/A						
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING		15. DATE BORING STARTED 05-12-14 COMPLETED 05-12-14						
6. THICKNESS OF OVERTBURDEN N/A					16. ELEVATION TOP OF BORING -9.8 Ft.						
7. DEPTH DRILLED INTO ROCK N/A					17. TOTAL RECOVERY FOR BORING 81 %						
8. TOTAL DEPTH OF BORING 19.1 Ft.					18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/ 1FT.	N-VALUE
-9.8	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 5Y 8/1 white (SP)		3100			-9.8			0
			At El. -15.8 Ft., some fine to medium-grained sand-sized shell, strong reaction with HCl			1		-10.3 Vibracore			
			At El. -16.6 Ft., little sand to gravel-sized shell, 5Y 7/1 light gray			2		-15.8			5
			At El. -19.7 Ft., some sand to gravel-sized shell								
-20.4	10.6		SAND, well-graded, mostly sand to gravel-sized shell, little fine-grained sand-sized quartz, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SW)			3		-20.8			10
-21.7	11.9		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, few silt, strong reaction with HCl, moist, 5Y 5/1 gray (SP-SM)			4		-22.3			
-24.3	14.5		At El. -23.3 Ft., some sand to gravel-sized shell								
			SILT, inorganic-L, little sand to gravel-sized								15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS			
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88				
LOCATION COORDINATES X = 470,059 Y = 1,074,342			ELEVATION TOP OF BORING -9.8 Ft.							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-25.3	15.5		shell, few silt, strong reaction with HCl, moist, 5Y 5/1 gray (ML)							15
-28.9	19.1	NO RECOVERY							-28.9	
			NOTES: 1. USACE Jacksonville 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					Abbreviations: NR = Not Recorded.		20
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION					25
			1	0.5/0.8	SP*					30
			2	6.0/6.3	SP*					35
			3	11.0/11.3	SW*					40
			4	12.5/12.8	SP-SM*					45
			*Lab visual classification based on gradation curve. No Atterberg limits.							

Boring Designation VB-LK14-31

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION VB-LK14-31		LOCATION COORDINATES X = 469,213 Y = 1,073,852		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)			HORIZONTAL NAD83 VERTICAL NAVD88
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
4. NAME OF DRILLER Lester Gaughf				12. TOTAL SAMPLES 3			DISTURBED UNDISTURBED (UD) 0
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED 05-10-14 COMPLETED 05-10-14			
8. TOTAL DEPTH OF BORING 20.0 Ft.				16. ELEVATION TOP OF BORING -11.8 Ft.			
17. TOTAL RECOVERY FOR BORING 65 %			18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer				

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-11.8	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)	2600			-11.8	0
-16.3	4.5		SAND, poorly-graded, mostly sand to gravel-sized shell, little fine-grained sand-sized quartz (SP)		1		-12.3 Vibracore	
-16.8	5.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, some sand to gravel-sized shell, few silt, strong reaction with HCl, moist, 5Y 6/1 gray (SP-SM) At El. -17.5 Ft., trace shell, weak reaction with HCl		2		-16.3	5
-21.0	9.2		SAND, silty, mostly fine-grained sand-sized quartz, some silt, few medium to coarse-grained sand-sized shell, weak reaction with HCl, moist, 5Y 6/1 gray (SM) At El. -21.9 Ft., little silt, 5Y 8/1 white		3		-17.8	10
-24.1	12.3		At El. -23.3 Ft., little medium to coarse-grained sand-sized shell, strong reaction with HCl, moist, 5Y 7/1 light gray					
-24.8	13.0	NO RECOVERY	SILT, inorganic-L, few medium to coarse-grained sand-sized shell, trace quartz, weak reaction with HCl, moist, 5Y 6/1 gray (ML)					15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88		
LOCATION COORDINATES X = 469,213 Y = 1,073,852			ELEVATION TOP OF BORING -11.8 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	
-31.8	20.0	NO RECOVERY						-31.8	
			BORING TERMINATED IN REFUSAL					Abbreviations: NR = Not Recorded.	
			NOTES:						
			1. USACE Jacksonville 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	0.5/0.8	SP*				25
			2	4.5/4.8	SP*				
			3	6.0/6.3	SP-SM*				
			*Lab visual classification based on gradation curve. No Atterberg limits.						
									30
									35

Boring Designation VB-LK14-5

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-5		LOCATION COORDINATES X = 470,712 Y = 1,076,822		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
				12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		13. TOTAL NUMBER CORE BOXES 0			
4. NAME OF DRILLER Lester Gaughf				14. ELEVATION GROUND WATER N/A			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING STARTED 05-12-14 COMPLETED 05-12-14			
6. THICKNESS OF OVERBURDEN		N/A		16. ELEVATION TOP OF BORING -7.0 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 Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-7.0	0.0						-7.0		0
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, weak reaction with HCl, moist, 5Y 8/1 white (SP)	3200			-7.5 Vibracore		
			At El. -8.5 Ft., trace shell		1				
						2	-11.0		5
						3	-16.0		10
			At El. -16.0 Ft., trace silt						
			At El. -20.4 Ft., some sand to gravel-sized shell, strong reaction with HCl, 5Y 7/1 light gray				-22.0		15

Boring Designation VB-LK14-5

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS				
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88				
LOCATION COORDINATES X = 470,712 Y = 1,076,822			ELEVATION TOP OF BORING -7.0 Ft.								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS			
-22.8	15.8	At El. -22.0 Ft., trace shell, 5Y 8/1 white		4						
-23.0	16.0		SAND, silty, mostly fine-grained sand-sized quartz, little silt, few medium to coarse-grained sand-sized shell, trace limestone, strong reaction with HCl, moist, 5Y 8/1 white (SM)								
-27.0	20.0	NO RECOVERY						-27.0			
			NOTES: 1. USACE Jacksonville 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	0.5/0.8	SP*						
			2	4.0/4.3	SP*						
			3	9.0/9.3	SP*						
			4	15.0/15.3	SP*						
			*Lab visual classification based on gradation curve. No Atterberg limits.								

Boring Designation VB-LK14-6

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-6		LOCATION COORDINATES X = 470,344 Y = 1,075,238		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
				12. TOTAL SAMPLES		DISTURBED 5	UNDISTURBED (UD) 0
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		13. TOTAL NUMBER CORE BOXES 0			
4. NAME OF DRILLER Lester Gaughf				14. ELEVATION GROUND WATER N/A			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
6. THICKNESS OF OVERBURDEN N/A				16. ELEVATION TOP OF BORING -7.5 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 Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT.	N-VALUE
-7.5	0.0						-7.5		0
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell, weak reaction with HCl, moist, 5Y 8/1 white (SP-SM)	3220			-8.0 Vibracore		
			At El. -8.3 Ft., few sand to gravel-sized shell		1				
			At El. -9.3 Ft., discontinue shell						
			At El. -12.5 Ft., few medium to coarse-grained sand-sized shell						5
-13.5	6.0		At El. -13.2 Ft., trace shell				-13.5		
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, strong reaction with HCl, moist, 5Y 8/1 white (SP)		2				
			At El. -16.6 Ft., some sand to gravel-sized shell						
-17.5	10.0		SAND, poorly-graded, mostly sand to gravel-sized shell, some fine-grained sand-sized quartz (SP)						10
			At El. -19.8 Ft., trace silt, 5Y 5/1 gray		3				
-20.4	12.9		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little sand to gravel-sized shell, weak reaction with HCl, 5Y 8/1 white (SP)		4				
			At El. -19.8 Ft., trace silt, 5Y 5/1 gray		5				
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, little sand to gravel-sized shell, weak reaction with HCl, 5Y 8/1 white (SP)						
			At El. -20.6 Ft., trace silt, 5Y 5/1 gray						

Boring Designation VB-LK14-6

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS				
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88				
LOCATION COORDINATES X = 470,344 Y = 1,075,238			ELEVATION TOP OF BORING -7.5 Ft.								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/ 1 FT.	N-VALUE
-23.6	16.1	At El. -22.5 Ft., some sand to gravel-sized shell, strong reaction with HCl, 5Y 7/1 light gray								15
-27.5	20.0	NO RECOVERY						-27.5			20
			NOTES: 1. USACE Jacksonville 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					Abbreviations: NR = Not Recorded.			25
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION						30
			1	0.5/0.8	SP-SM*						35
			2	6.0/6.3	SP*						
			3	11.5/11.8	SP*						
			4	12.3/12.6	SP*						
			5	13.1/13.4	SP*						

*Lab visual classification based on gradation curve. No Atterberg limits.

Boring Designation VB-LK14-7

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION VB-LK14-7		LOCATION COORDINATES X = 470,215 Y = 1,077,741		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)			HORIZONTAL NAD83 VERTICAL NAVD88
3. DRILLING AGENCY Corps of Engineers - CESAJ				11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
4. NAME OF DRILLER Lester Gaughf				12. TOTAL SAMPLES 4			DISTURBED UNDISTURBED (UD) 0
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
8. TOTAL DEPTH OF BORING 14.4 Ft.				16. ELEVATION TOP OF BORING -12.0 Ft.			
17. TOTAL RECOVERY FOR BORING 79 %			18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer				

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-12.0	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 5Y 8/1 white (SP) At El. -13.4 Ft., trace shell	2280	1		-12.0 -12.5 Vibracore	0
					2		-16.0	5
					3		-18.0	
-18.7	6.7		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, some sand to gravel-sized shell, few silt, strong reaction with HCl, moist, 5Y 5/1 gray (SP-SM)					
-20.7	8.7		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 5Y 7/1 light gray (SP)		4		-21.5	10
-23.4	11.4		At El. -23.1 Ft., few sand to gravel-sized shell, strong reaction with HCl					
-24.1	12.1	NO RECOVER	SAND, silty, mostly fine-grained sand-sized quartz, little silt, few medium to coarse-grained sand-sized shell, few sand to cobble-sized limestone, strong reaction with HCl, moist, 5Y 7/1 light gray (SM)					
-26.4	14.4		NOTES:				Abbreviations:	15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS															
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88																
LOCATION COORDINATES X = 470,215 Y = 1,077,741			ELEVATION TOP OF BORING -12.0 Ft.																			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS															
							BLOWS/ 1 FT.															
			<p>1. USACE Jacksonville is the custodian for these original files.</p> <p>2. Soils are field visually classified in accordance with the Unified Soils Classification System.</p> <p>3. Laboratory Testing Results</p> <table> <thead> <tr> <th>SAMPLE ID</th><th>SAMPLE DEPTH</th><th>LABORATORY CLASSIFICATION</th></tr> </thead> <tbody> <tr> <td>1</td><td>0.5/0.8</td><td>SP*</td></tr> <tr> <td>2</td><td>4.0/4.3</td><td>SP*</td></tr> <tr> <td>3</td><td>6.0/6.3</td><td>SP*</td></tr> <tr> <td>4</td><td>9.5/9.8</td><td>SP*</td></tr> </tbody> </table> <p>*Lab visual classification based on gradation curve. No Atterberg limits.</p>	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.5/0.8	SP*	2	4.0/4.3	SP*	3	6.0/6.3	SP*	4	9.5/9.8	SP*				NR = Not Recorded.
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																				
1	0.5/0.8	SP*																				
2	4.0/4.3	SP*																				
3	6.0/6.3	SP*																				
4	9.5/9.8	SP*																				
							15															
							20															
							25															
							30															
							35															

Boring Designation VB-BSP-12-1

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS			
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks						
2. BORING DESIGNATION VB-BSP-12-1		LOCATION COORDINATES X = 473,153 Y = 1,077,510		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)			HORIZONTAL NAD83	VERTICAL NAVD88		
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES 7			DISTURBED	UNDISTURBED (UD) 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0						
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER -0.4 Ft.						
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING 01-17-13			STARTED 01-17-13	COMPLETED 01-17-13		
8. TOTAL DEPTH OF BORING 14.7 Ft.				16. ELEVATION TOP OF BORING -5.1 Ft.						
17. TOTAL RECOVERY FOR BORING 87 %			18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	% BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-5.1	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, some sand to gravel-sized shell, strong reaction with HCl, moist, 2.5Y 7/1 light gray (SP)							0
			At El. -6.4 Ft., trace fine to medium-grained sand-sized shell, no reaction with HCl, 2.5Y 8/1 white			1			-5.6	
			At El. -7.2 Ft., little sand to gravel-sized shell, weak reaction with HCl							
			At El. -9.1 Ft., little fine to medium-grained sand-sized shell, no reaction with HCl			2			-9.3	
			From El. -10.3 to -11.1 Ft., 1.25" thick seams of organic sand, 2.5Y 6/1 gray						-9.3	
			At El. -11.1 Ft., few sand to gravel-sized shell, 2.5Y 8/1 white							
			From El. -13.0 to -13.2 Ft., 0.5" thick seams of organic sand							
			At El. -14.6 Ft., few medium-grained sand-sized shell			3			-14.6	
			At El. -16.1 Ft., few fine-grained sand-sized shell, trace silt, 2.5Y 6/1 gray			4			-16.1	
			At El. -16.4 Ft., 1.5" thick seams of sandy silt							
			At El. -16.9 Ft., 1.25" thick seams of sandy silt			5			-17.1	
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few fine to medium-grained sand-sized shell, no reaction with HCl, moist, 2.5Y 6/1 gray (SP-SM)							
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell, no reaction with HCl, moist, 2.5Y 6/1 gray (SP)			6			-18.9	
			BORING TERMINATED IN REFUSAL						-19.8	

Boring Designation VB-BSP-12-10

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS		
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks					
2. BORING DESIGNATION VB-BSP-12-10		LOCATION COORDINATES X = 470,692 Y = 1,073,971		10. COORDINATE SYSTEM/DATUM ▼ State Plane, FLW (U.S. Ft.) NAD83 NAVD88			HORIZONTAL VERTICAL		
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES 5			DISTURBED UNDISTURBED (UD) 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0					
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER 0.1 Ft.					
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED 01-16-13 COMPLETED 01-16-13					
8. TOTAL DEPTH OF BORING 17.5 Ft.				16. ELEVATION TOP OF BORING -6.8 Ft.					
17. TOTAL RECOVERY FOR BORING 88 %			18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-6.8	0.0		SAND, poorly-graded, mostly medium-grained sand-sized quartz, few sand to gravel-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						0
			At El. -9.8 Ft., little sand to gravel-sized shell, weak reaction with HCl			1		-7.3	
			At El. -11.4 Ft., little medium to coarse-grained sand-sized shell At El. -11.6 Ft., trace fine to medium-grained sand-sized shell, no reaction with HCl At El. -12.1 Ft., little sand to gravel-sized shell, weak reaction with HCl			2		-11.4	5
			At El. -15.1 Ft., trace fine to medium-grained sand-sized shell, no reaction with HCl			3		-15.3	10
			At El. -16.3 Ft., few fine to coarse gravel-sized shell						
-20.3	13.5		SAND, poorly-graded, mostly sand to gravel-sized shell, some fine-grained sand-sized quartz, strong reaction with HCl (SP)			4		-20.3	
-20.6	13.8		SAND, well-graded, mostly fine-grained						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 470,692 Y = 1,073,971			ELEVATION TOP OF BORING -6.8 Ft.				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS
							BLOWS/ 1 FT.
-22.9	16.1	○ ○ ○ ○ ○	sand-sized quartz, some sand to gravel-sized shell, moist, 2.5Y 7/1 light gray (SW)				
			SAND, silty, mostly fine-grained sand-sized quartz, little silt, few medium-grained sand-sized shell, no reaction with HCl, moist, 10Y 3/1 very dark greenish gray (SM)		5		-23.3
-24.3	17.5						-24.3
			NOTES: 1. USACE Jacksonville 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				Abbreviations: NR = Not Recorded.
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION				
			1 0.5/0.7 SP*				
			2 4.6/4.8 SP*				
			3 8.5/8.7 SP*				
			4 13.5/13.7 SP*				
			5 16.5/16.7 SM*				
			*Lab visual classification based on gradation curve. No Atterberg limits.				
							15
							20
							25
							30
							35

Boring Designation VB-BSP-12-14

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS	
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks				
2. BORING DESIGNATION VB-BSP-12-14		LOCATION COORDINATES X = 469,687 Y = 1,072,971		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)			HORIZONTAL NAD83	VERTICAL NAVD88
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES 6			DISTURBED 0	UNDISTURBED (UD)
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0				
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER -0.7 Ft.				
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED 01-15-13			COMPLETED 01-15-13	
8. TOTAL DEPTH OF BORING 18.9 Ft.				16. ELEVATION TOP OF BORING -10.1 Ft.				
17. TOTAL RECOVERY FOR BORING 93 %			18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist					

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-10.1	0.0								0
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fine to medium-grained sand-sized shell, trace silt, no reaction with HCl, moist, 2.5Y 8/1 white (SP)				-10.6		
-11.4	1.3		SAND, well-graded, mostly fine-grained sand-sized quartz, some fine to coarse gravel-sized shell, strong reaction with HCl, moist, 2.5Y 7/1 light gray (SW)	1					
-11.6	1.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fine to medium-grained sand-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						
			At El. -14.1 Ft., some fine to coarse-grained sand-sized shell, strong reaction with HCl, 2.5Y 7/1 light gray	2			-14.1		
			At El. -15.0 Ft., trace fine to medium-grained sand-sized shell, no reaction with HCl, 2.5Y 8/1 white		Post		-14.1		5
			At El. -17.3 Ft., little fine gravel-sized shell, 2.5Y 7/1 light gray						
			At El. -18.1 Ft., trace fine to medium-grained sand-sized shell, trace silt, 2.5Y 8/1 white						
			At El. -19.9 Ft., few sand to gravel-sized shell, 2.5Y 6/1 gray	3			-19.6		10
			At El. -22.6 Ft., little medium to coarse-grained sand-sized shell, weak reaction with HCl						
-23.0	12.9		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, some sand to gravel-sized shell, few silt, strong reaction with HCl, moist, 2.5Y 6/1 gray (SP-SM)	4			-22.6		
					5		-23.1		
									15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS			
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88				
LOCATION COORDINATES X = 469,687 Y = 1,072,971			ELEVATION TOP OF BORING -10.1 Ft.							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-27.6	17.5									15
			SAND, silty, mostly fine-grained sand-sized quartz, some silt, strong reaction with HCl, moist, 10Y 5/1 greenish gray (SM)							
-29.0	18.9							-29.0		
			NOTES: 1. USACE Jacksonville 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					Abbreviations: NR = Not Recorded.		20
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION					25
			1	0.5/0.7	SP*					
			2	4.0/4.2	SP*					
			2-Post	4.0/4.2	SP*					
			3	9.5/9.7	SP*					
			4	12.5/12.7	SP*					
			5	13.0/13.2	SP-SM*					
			*Lab visual classification based on gradation curve. No Atterberg limits.							30

Boring Designation VB-BSP-12-3

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS			
1. PROJECT					9. SIZE AND TYPE OF BIT See Remarks				
Big Sarasota Pass Ebb Shoal Sarasota County					10. COORDINATE SYSTEM/DATUM HORIZONTAL VERTICAL State Plane, FLW (U.S. Ft.) NAD83 NAVD88				
2. BORING DESIGNATION VB-BSP-12-3		LOCATION COORDINATES X = 472,693 Y = 1,075,967			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input checked="" type="checkbox"/> Vibracore <input type="checkbox"/> MANUAL HAMMER				
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700			12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 6 0				
4. NAME OF DRILLER Palmer McClellan					13. TOTAL NUMBER CORE BOXES 0				
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING		14. ELEVATION GROUND WATER -0.1 Ft.				
6. THICKNESS OF OVERBURDEN N/A					15. DATE BORING STARTED COMPLETED 01-15-13 01-15-13				
7. DEPTH DRILLED INTO ROCK N/A					16. ELEVATION TOP OF BORING -5.3 Ft.				
8. TOTAL DEPTH OF BORING 14.1 Ft.					17. TOTAL RECOVERY FOR BORING 70 %				
					18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-5.3	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 2.5Y 8/1 white (SP)						0
			At El. -7.2 Ft., some sand to gravel-sized shell, strong reaction with HCl, 2.5Y 7/1 light gray			1		-5.8	
			At El. -8.3 Ft., some fine to coarse-grained sand-sized shell, strong reaction with HCl, 2.5Y 8/1 white						
			At El. -10.9 Ft., little medium to coarse-grained sand-sized shell, weak reaction with HCl			2		-10.9	5
			At El. -11.1 Ft., few fine to coarse gravel-sized shell, no reaction with HCl						
			At El. -12.6 Ft., some fine to coarse gravel-sized shell, strong reaction with HCl, 2.5Y 7/1 light gray			3		-13.8	10
			At El. -13.0 Ft., trace fine to medium-grained sand-sized shell, no reaction with HCl, 2.5Y 8/1 white						
			At El. -13.6 Ft., little sand to gravel-sized shell, weak reaction with HCl			4		-16.8	
			At El. -13.8 Ft., little fine to medium-grained sand-sized shell, no reaction with HCl					-16.8	
			At El. -14.3 Ft., some fine to coarse gravel-sized shell, strong reaction with HCl, 2.5Y 7/1 light gray			5		-17.6	
-17.1	11.8		At El. -16.8 Ft., some sand to gravel-sized shell						
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, little sand to gravel-sized shell, little medium to coarse-grained sand-sized limestone, few silt, strong reaction with HCl, moist, 2.5Y 5/1 gray (SP-SM)						
-18.3	13.0		At El. -17.5 Ft., some silt, trace sand to gravel-sized shell, no reaction with HCl						
-19.3	14.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fine to coarse					-19.4	
Abbreviations: NR = Not Recorded.									

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS				
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88					
LOCATION COORDINATES X = 472,693 Y = 1,075,967			ELEVATION TOP OF BORING -5.3 Ft.								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR RUE SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE	
			gravel-sized shell, no reaction with HCl, moist, 2.5Y 7/1 light gray (SP) LIMESTONE, trace of fine-grained sand-sized quartz, 2.5Y 5/1 gray							15	
			NOTES: 1. USACE Jacksonville 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							20	
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION					25	
			1	0.5/0.7	SP*					30	
			2	5.6/5.8	SP*						
			3	8.5/8.7	SP*						
			4	11.5/11.7	SP*						
			4-Post	11.5/11.7	SP*						
			5	12.3/12.5	SP-SM*						
			*Lab visual classification based on gradation curve. No Atterberg limits.								

Boring Designation VB-BSP-12-6

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS		
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County				9. SIZE AND TYPE OF BIT See Remarks					
2. BORING DESIGNATION VB-BSP-12-6		LOCATION COORDINATES X = 471,692 Y = 1,074,968		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.) NAD83 NAVD88			HORIZONTAL VERTICAL		
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO. 6734-13-9700		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Palmer McClellan				12. TOTAL SAMPLES 5			DISTURBED UNDISTURBED (UD) 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0					
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER 0.1 Ft.					
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED 01-16-13 COMPLETED 01-16-13					
8. TOTAL DEPTH OF BORING 14.2 Ft.				16. ELEVATION TOP OF BORING -4.0 Ft.					
17. TOTAL RECOVERY FOR BORING 71 %			18. SIGNATURE AND TITLE OF INSPECTOR Joel Raven, Geologist						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-4.0	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine-grained sand-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						0
			At El. -8.2 Ft., little medium to coarse-grained sand-sized shell, weak reaction with HCl			1		-4.5	
-8.8	4.8		SAND, well-graded, mostly fine-grained sand-sized quartz, some fine to coarse gravel-sized shell, strong reaction with HCl, moist, 2.5Y 7/1 light gray (SW)			2		-8.2	5
-9.3	5.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to coarse gravel-sized shell, no reaction with HCl, moist, 2.5Y 8/1 white (SP)						10
			At El. -12.0 Ft., few fine-grained sand-sized shell			3		-12.0	
			At El. -12.9 Ft., little fine to coarse gravel-sized shell, weak reaction with HCl, 2.5Y 7/1 light gray			Post		-12.0	
			At El. -15.0 Ft., few fine to coarse gravel-sized shell, no reaction with HCl						15
			At El. -17.0 Ft., little fine to coarse-grained sand-sized shell, trace silt, weak reaction with HCl			4		-17.0	
-18.2	14.2		NOTES:					Abbreviations: NR = Not Recorded.	

Boring Designation VB-LK14-1

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS				
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks							
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL				
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88				
2. BORING DESIGNATION VB-LK14-1		LOCATION COORDINATES X = 468,065 Y = 1,072,266		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore							
				12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0				
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		13. TOTAL NUMBER CORE BOXES 0							
4. NAME OF DRILLER Lester Gaughf				14. ELEVATION GROUND WATER N/A							
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING STARTED 05-12-14 COMPLETED 05-12-14							
6. THICKNESS OF OVERBURDEN N/A				16. ELEVATION TOP OF BORING -14.6 Ft.							
7. DEPTH DRILLED INTO ROCK N/A				17. TOTAL RECOVERY FOR BORING 80 %							
8. TOTAL DEPTH OF BORING 18.2 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/1 FT.	N-VALUE
-14.6	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, trace silt, no reaction with HCl, moist, 5Y 8/1 white (SP)		2900			-14.6			0
						1		-15.1 Vibracore			
						2		-18.6			5
						3		-22.1			
-23.6	9.0		At El. -22.6 Ft., few sand to gravel-sized shell, strong reaction with HCl, 5Y 7/1 light gray					-23.9			
-24.5	9.9		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few medium-grained sand-sized shell, strong reaction with HCl, moist, 5Y 6/1 gray (SP-SM)			4					10
			SAND, silty, mostly fine-grained sand-sized quartz, little silt, little sand to gravel-sized shell, strong reaction with HCl, moist, 5Y 7/1 light gray (SM)								
			At El. -26.9 Ft., few sand to gravel-sized limestone, possible dissolution limestone, 5Y 8/1 white								
-29.1	14.5										15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS																			
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88																			
LOCATION COORDINATES X = 468,065 Y = 1,072,266			ELEVATION TOP OF BORING -14.6 Ft.																							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/1 FT.	N-VALUE															
-32.8	18.2	NO RECOVERY									15															
			BORING TERMINATED IN REFUSAL					-32.8			20															
			NOTES:					Abbreviations: NR = Not Recorded.			25															
			<ol style="list-style-type: none"> 1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Vibracore refused due to presence of limestone. 4. Laboratory Testing Results <table border="1" style="margin-left: 20px; margin-top: 10px;"> <thead> <tr> <th>SAMPLE ID</th> <th>SAMPLE DEPTH</th> <th>LABORATORY CLASSIFICATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5/0.8</td> <td>SP*</td> </tr> <tr> <td>2</td> <td>4.0/4.3</td> <td>SP*</td> </tr> <tr> <td>3</td> <td>7.5/7.8</td> <td>SP*</td> </tr> <tr> <td>4</td> <td>9.3/9.6</td> <td>SP-SM*</td> </tr> </tbody> </table>		SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.5/0.8	SP*	2	4.0/4.3	SP*	3	7.5/7.8	SP*	4	9.3/9.6	SP-SM*							30
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																								
1	0.5/0.8	SP*																								
2	4.0/4.3	SP*																								
3	7.5/7.8	SP*																								
4	9.3/9.6	SP-SM*																								
			*Lab visual classification based on gradation curve. No Atterberg limits.								35															

Boring Designation VB-LK14-10

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION VB-LK14-10		LOCATION COORDINATES X = 472,849 Y = 1,077,410		10. COORDINATE SYSTEM/DATUM HORIZONTAL VERTICAL State Plane, FLW (U.S. Ft.) NAD83 NAVD88			
3. DRILLING AGENCY Corps of Engineers - CESAJ				11. MANUFACTURER'S DESIGNATION OF DRILL AUTO HAMMER vibracore MANUAL HAMMER			
4. NAME OF DRILLER Jared Johnson				12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 4 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED COMPLETED 05-11-14 05-11-14			
8. TOTAL DEPTH OF BORING 18.5 Ft.				16. ELEVATION TOP OF BORING -5.9 Ft. 17. TOTAL RECOVERY FOR BORING 68 % 18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-5.9	0.0		SAND, poorly-graded, mostly sand to gravel-sized shell, some fine-grained sand-sized quartz, strong reaction with HCl, moist, 5Y 8/1 white (SP)	2500			-5.9	0
-8.2	2.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium-grained sand-sized shell (SP) At El. -9.6 Ft., few medium-grained sand-sized shell, trace silt, weak reaction with HCl		1		-6.4 Vibracore	
					2		-9.9	
			At El. -13.7 Ft., little fine to medium-grained sand-sized shell, 5Y 7/1 light gray At El. -14.9 Ft., few fine-grained sand-sized shell		3		-14.4	5
					4		-17.9	10
-18.4	12.5	NO RECOVERY						15

Boring Designation VB-LK14-11

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-11		LOCATION COORDINATES X = 473,213 Y = 1,078,521		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0
4. NAME OF DRILLER Jared Johnson				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -10.5 Ft.			
8. TOTAL DEPTH OF BORING 18.8 Ft.				17. TOTAL RECOVERY FOR BORING 90 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-10.5	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, trace silt, weak reaction with HCl, moist, 5Y 8/1 white (SP)	3400			-10.5	0
			At El. -14.5 Ft., few fine-grained sand-sized shell		1		-11.0 Vibracore	
			At El. -18.5 Ft., some medium to coarse-grained sand-sized shell, strong reaction with HCl, 5Y 7/1 light gray		2		-14.5	5
			At El. -20.0 Ft., few fine-grained sand-sized shell		3		-18.5	10
-21.8	11.3		SILT, inorganic-L, few fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, few fine to coarse-grained sand-sized limestone, strong reaction with HCl, moist, dissolutioned limestone, 5Y 8/1 white (ML)		4		-21.3	15

Boring Designation VB-LK14-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS				
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks							
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL				
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88				
2. BORING DESIGNATION VB-LK14-12		LOCATION COORDINATES X = 473,453 Y = 1,079,482		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES			DISTURBED	UNDISTURBED (UD)			
							2	0			
4. NAME OF DRILLER Jared Johnson				13. TOTAL NUMBER CORE BOXES			0				
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			N/A				
6. THICKNESS OF OVERBURDEN				15. DATE BORING			STARTED	COMPLETED			
N/A							05-11-14	05-11-14			
7. DEPTH DRILLED INTO ROCK				16. ELEVATION TOP OF BORING			-10.2 Ft.				
N/A				17. TOTAL RECOVERY FOR BORING			61 %				
8. TOTAL DEPTH OF BORING				18. SIGNATURE AND TITLE OF INSPECTOR			Stephanie Setser, P.E., Geotechnical Engineer				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/1FT.	N-VALUE
-10.2	0.0							-10.2			0
			SAND, well-graded, mostly sand to gravel-sized shell, little fine-grained sand-sized quartz, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SW)		1420			-10.7 Vibracore			
						1					
-12.8	2.6		SAND, poorly-graded, mostly sand to gravel-sized shell, little fine-grained sand-sized quartz, strong reaction with HCl, moist, 5Y 8/1 white (SP)								5
-16.5	6.3		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, trace silt (SP)				2	-15.7			
-17.3	7.1										
		NO RECOVERY									
-21.8	11.6		BORING TERMINATED IN REFUSAL					-21.8			10
			NOTES:								
			1. USACE Jacksonville is the custodian for these original files.								
			2. Soils are field visually classified in accordance with the Unified Soils Classification System.								
Abbreviations: NR = Not Recorded.											

Boring Designation VB-LK14-13

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-13		LOCATION COORDINATES X = 473,803 Y = 1,080,425		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES		DISTURBED 2	UNDISTURBED (UD) 0
4. NAME OF DRILLER Jared Johnson				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -12.8 Ft.			
8. TOTAL DEPTH OF BORING 8.0 Ft.				17. TOTAL RECOVERY FOR BORING 74 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

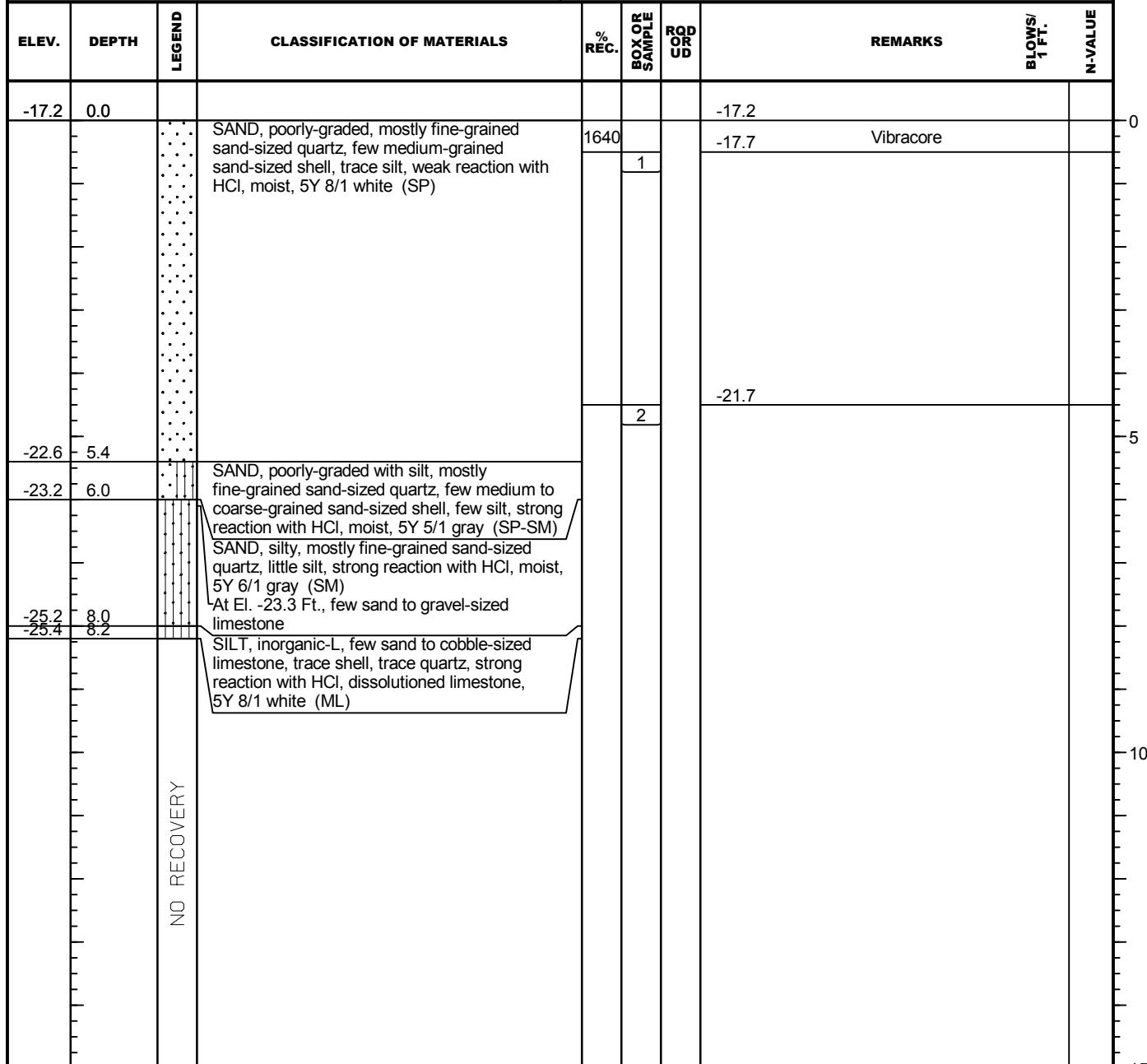
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-12.8	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to coarse-grained sand-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)	1180			-12.8	0
			At El. -14.7 Ft., few fine-grained sand-sized shell, weak reaction with HCl		1		-13.3 Vibracore	
					2		-17.5	
-18.5	5.7		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell, trace limestone, weak reaction with HCl, moist, 5Y 6/1 gray (SP-SM)					5
-18.7	5.9	NR						
-20.8	8.0		BORING TERMINATED IN REFUSAL NOTES: 1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Vibracore refused due to presence of limestone. 4. Laboratory Testing Results SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION ----- 1 0.5/0.8 SP* 2 4.7/5.0 SP*				Abbreviations: NR = Not Recorded.	10
			*Lab visual classification based on gradation					15

Boring Designation VB-LK14-14

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 1 SHEETS			
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks						
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL			
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88			
2. BORING DESIGNATION VB-LK14-14		LOCATION COORDINATES X = 474,529 Y = 1,081,094		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER		
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES			DISTURBED	UNDISTURBED (UD)		
							0	0		
4. NAME OF DRILLER Jared Johnson				13. TOTAL NUMBER CORE BOXES			0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			N/A			
6. THICKNESS OF OVERBURDEN				15. DATE BORING			STARTED	COMPLETED		
N/A							05-11-14	05-11-14		
7. DEPTH DRILLED INTO ROCK				16. ELEVATION TOP OF BORING			-16.8 Ft.			
N/A				17. TOTAL RECOVERY FOR BORING			64 %			
8. TOTAL DEPTH OF BORING 4.2 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR			Stephanie Setser, P.E., Geotechnical Engineer			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
-16.8	0.0							-16.8		0
-17.3	0.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, weak reaction with HCl, moist, 5Y 8/1 white (SP) SAND, silty, mostly fine-grained sand-sized quartz, little silt, few sand to gravel-sized shell, strong reaction with HCl, moist, 5Y 5/1 gray (SM)							
-19.5	2.7		At El. -18.0 Ft., few fine to coarse-grained sand-sized limestone, trace shell, possible dissolutioned limestone, 5Y 7/1 light gray		64			Vibracore		
-21.0	4.2	NR	BORING TERMINATED IN REFUSAL NOTES: 1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Vibracore refused due to presence of limestone.					-21.0		5
										10
										15

Boring Designation VB-LK14-2

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-2		LOCATION COORDINATES X = 468,857 Y = 1,072,891		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
				12. TOTAL SAMPLES		DISTURBED 2	UNDISTURBED (UD) 0
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		13. TOTAL NUMBER CORE BOXES 0			
4. NAME OF DRILLER Lester Gaughf				14. ELEVATION GROUND WATER N/A			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING STARTED 05-12-14 COMPLETED 05-12-14			
6. THICKNESS OF OVERBURDEN		N/A		16. ELEVATION TOP OF BORING -17.2 Ft.			
7. DEPTH DRILLED INTO ROCK		N/A		17. TOTAL RECOVERY FOR BORING 44 %			
8. TOTAL DEPTH OF BORING		18.5 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			



Boring Designation VB-LK14-32

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-32		LOCATION COORDINATES X = 470,100 Y = 1,073,506		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING STARTED 05-10-14 COMPLETED 05-10-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -9.5 Ft.			
8. TOTAL DEPTH OF BORING 20.0 Ft.				17. TOTAL RECOVERY FOR BORING 84 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-9.5	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, some fine to coarse-grained sand-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)				-9.5	0
			At El. -12.5 Ft., few medium to coarse-grained sand-sized shell					
			At El. -14.0 Ft., trace shell, weak reaction with HCl					
			At El. -15.5 Ft., little medium to coarse-grained sand-sized shell At El. -16.0 Ft., trace shell				-15.5	5
			At El. -19.6 Ft., little medium to coarse-grained sand-sized shell					10
-20.6	11.1		SAND, well-graded, mostly sand to gravel-sized shell, little fine-grained sand-sized quartz, trace silt, strong reaction with HCl, 5Y 8/1 white (SW)					
			At El. -23.0 Ft., trace shell, 5Y 6/1 gray					
-22.5	13.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little sand to gravel-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)					
			At El. -23.0 Ft., trace shell, 5Y 6/1 gray					
-24.3	14.8							15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS	
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88	
LOCATION COORDINATES X = 470,100 Y = 1,073,506			ELEVATION TOP OF BORING -9.5 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-26.3	16.8		SAND, silty, mostly fine-grained sand-sized quartz, some silt, little sand to gravel-sized shell, strong reaction with HCl, moist, 5Y 6/1 gray (SM)					15
-29.5	20.0	NO RECOVERY					-29.5	20
			NOTES: 1. USACE Jacksonville 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 ID DEPTH CLASSIFICATION				Abbreviations: NR = Not Recorded.	25
			----- 1 0.5/0.8 SP* 2 6.0/6.3 SP* 3 12.0/12.3 SW* 4 13.5/13.8 SP*					30
			*Lab visual classification based on gradation curve. No Atterberg limits.					35

Boring Designation VB-LK14-8

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-8		LOCATION COORDINATES X = 471,150 Y = 1,074,258		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
				12. TOTAL SAMPLES		DISTURBED 3	UNDISTURBED (UD) 0
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		13. TOTAL NUMBER CORE BOXES 0			
4. NAME OF DRILLER Lester Gaughf				14. ELEVATION GROUND WATER N/A			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
6. THICKNESS OF OVERBURDEN		N/A		16. ELEVATION TOP OF BORING -2.0 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 Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-2.0	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, weak reaction with HCl, moist, 5Y 8/1 white (SP)	2300			-2.0	0
					1		-2.5 Vibracore	
-7.2	5.2		SAND, poorly-graded, mostly fine to coarse-grained sand-sized shell, some fine-grained sand-sized quartz, trace silt, strong reaction with HCl (SP)			2	-8.0	5
-11.2	9.2		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to coarse-grained sand-sized shell (SP) At El. -12.2 Ft., some medium to coarse-grained sand-sized shell			3	-13.0	10
-13.5	11.5							
-15.0	13.0	NR	BORING TERMINATED IN REFUSAL NOTES: 1. USACE Jacksonville is the custodian for these original files.				Abbreviations: NR = Not Recorded.	15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS														
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88														
LOCATION COORDINATES X = 471,150 Y = 1,074,258			ELEVATION TOP OF BORING -2.0 Ft.																		
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS													
			<p>2. Soils are field visually classified in accordance with the Unified Soils Classification System.</p> <p>3. Vibracore refused due to presence of shell.</p> <p>4. Laboratory Testing Results</p> <table> <thead> <tr> <th>SAMPLE ID</th><th>SAMPLE DEPTH</th><th>LABORATORY CLASSIFICATION</th></tr> </thead> <tbody> <tr> <td>1</td><td>0.5/0.8</td><td>SP*</td></tr> <tr> <td>2</td><td>6.0/6.3</td><td>SP*</td></tr> <tr> <td>3</td><td>11.0/11.3</td><td>SP*</td></tr> </tbody> </table> <p>*Lab visual classification based on gradation curve. No Atterberg limits.</p>		SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.5/0.8	SP*	2	6.0/6.3	SP*	3	11.0/11.3	SP*					
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																			
1	0.5/0.8	SP*																			
2	6.0/6.3	SP*																			
3	11.0/11.3	SP*																			
									15												
									20												
									25												
									30												
									35												

Boring Designation VB-LK14-15

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION VB-LK14-15		LOCATION COORDINATES X = 470,486 Y = 1,070,749		10. COORDINATE SYSTEM/DATUM HORIZONTAL VERTICAL State Plane, FLW (U.S. Ft.) NAD83 NAVD88			
3. DRILLING AGENCY Corps of Engineers - CESAJ				11. MANUFACTURER'S DESIGNATION OF DRILL AUTO HAMMER vibracore MANUAL HAMMER			
4. NAME OF DRILLER Lester Gaughf				12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 3 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERTBURDEN N/A				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED COMPLETED 05-11-14 05-11-14			
8. TOTAL DEPTH OF BORING 16.2 Ft.				16. ELEVATION TOP OF BORING -12.7 Ft. 17. TOTAL RECOVERY FOR BORING 83 % 18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-12.7	0.0		SAND, poorly-graded, mostly sand to gravel-sized shell, few fine-grained sand-sized quartz, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)	2680			-12.7	0
-16.2	3.5		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few fine-grained sand-sized shell, weak reaction with HCl, moist, 5Y 8/1 white (SP-SM) At El. -17.8 Ft., 5Y 6/1 gray		1		-13.2 Vibracore	5
-20.2	7.5		SAND, silty, mostly fine-grained sand-sized quartz, little silt, few sand to gravel-sized shell, weak reaction with HCl, moist, 5Y 6/1 gray (SM) At El. -20.6 Ft., some sand to gravel-sized shell At El. -21.1 Ft., few sand to gravel-sized shell At El. -23.7 Ft., occasional gravel to cobble-sized cemented silty fine sand nodules		2		-18.7	10
-26.1	13.4	RECOVERED			3		-20.7	15

Boring Designation VB-LK14-16

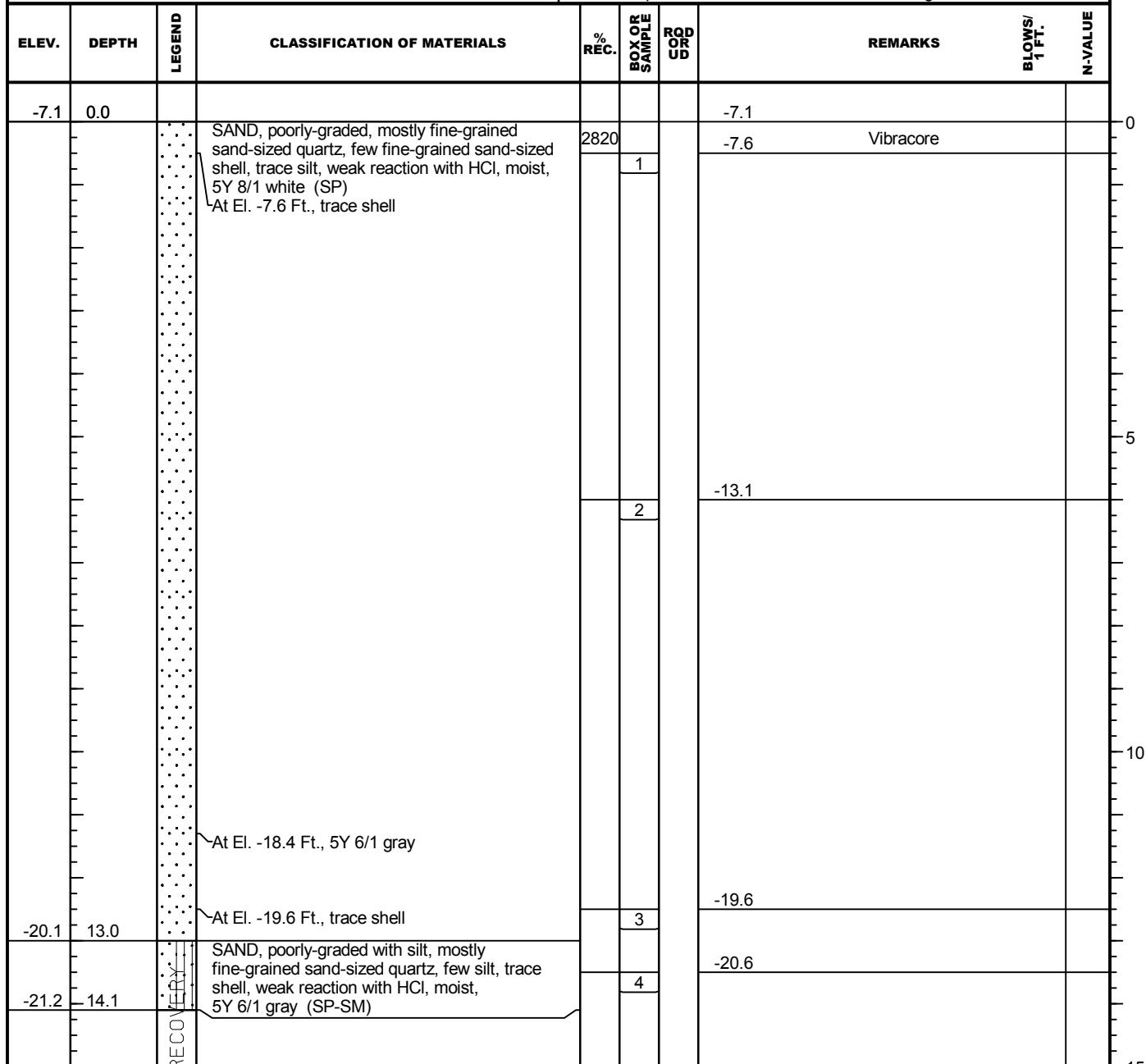
DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-16		LOCATION COORDINATES X = 469,804 Y = 1,070,040		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES 4 DISTURBED 0 UNDISTURBED (UD)			
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -7.9 Ft.			
8. TOTAL DEPTH OF BORING 17.9 Ft.				17. TOTAL RECOVERY FOR BORING 80 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT.	N-VALUE
-7.9	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, some fine to coarse-grained sand-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)	2860			-7.9		0
			At El. -13.4 Ft., trace shell, discontinue silt, weak reaction with HCl		1		-8.4 Vibracore		5
					2		-13.9		10
-18.9	11.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few medium-grained sand-sized shell, weak reaction with HCl, moist, 5Y 8/1 white (SP-SM) At El. -19.9 Ft., few fine-grained sand-sized shell, 5Y 6/1 gray		3		-18.9		15
-21.4	13.5				4		-19.9		
-22.2	14.3	NO ECO	SAND, silty, mostly fine-grained sand-sized quartz, little silt, trace shell, weak reaction with HCl, moist, 5Y 6/1 gray (SM)						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88		
LOCATION COORDINATES X = 469,804 Y = 1,070,040			ELEVATION TOP OF BORING -7.9 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	
		NO RECOVERY							
-25.8	17.9	NO RECOVERY	BORING TERMINATED IN REFUSAL					-25.8	
			NOTES:					Abbreviations: NR = Not Recorded.	
			1. USACE Jacksonville is the custodian for these original files.						
			2. Soils are field visually classified in accordance with the Unified Soils Classification System.						
			3. Vibracore refused due to presence of limestone.						
			4. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				
			-----	-----					
			1	0.5/0.8	SP*				
			2	6.0/6.3	SP*				
			3	11.0/11.3	SP-SM*				
			4	12.0/12.3	SP-SM*				
			*Lab visual classification based on gradation curve. No Atterberg limits.						

Boring Designation VB-LK14-17

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-17		LOCATION COORDINATES X = 469,806 Y = 1,067,947		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -7.1 Ft.			
8. TOTAL DEPTH OF BORING 18.4 Ft.				17. TOTAL RECOVERY FOR BORING 77 % 18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			



DRILLING LOG (Cont. Sheet)				INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS	
PROJECT Big Sarasota Pass Ebb Shoal				COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL NAVD88		
LOCATION COORDINATES X = 469,806 Y = 1,067,947				ELEVATION TOP OF BORING -7.1 Ft.					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX CORE SAMPLE	RQD OR UD	REMARKS	
-25.5	18.4	NO RECOVERY						-25.5	
			NOTES: 1. USACE Jacksonville 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					Abbreviations: NR = Not Recorded.	
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION ----- 1 0.5/0.8 SP* 2 6.0/6.3 SP* 3 12.5/12.8 SP* 4 13.5/13.8 SP-SM*						
			*Lab visual classification based on gradation curve. No Atterberg limits.						

Boring Designation VB-LK14-18

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88
2. BORING DESIGNATION VB-LK14-18		LOCATION COORDINATES X = 469,899 Y = 1,068,946		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES		DISTURBED 4	UNDISTURBED (UD) 0
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER N/A			
6. THICKNESS OF OVERBURDEN N/A				15. DATE BORING STARTED 05-11-14 COMPLETED 05-11-14			
7. DEPTH DRILLED INTO ROCK N/A				16. ELEVATION TOP OF BORING -4.4 Ft.			
8. TOTAL DEPTH OF BORING 17.0 Ft.				17. TOTAL RECOVERY FOR BORING 79 %			
				18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT. N-VALUE
-4.4	0.0						-4.4	0
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, some fine to medium-grained sand-sized shell, trace silt, strong reaction with HCl, moist, 5Y 8/1 white (SP)	2680			-4.9 Vibracore	
			At El. -6.1 Ft., trace shell, weak reaction with HCl		1			
			At El. -8.4 Ft., little fine to medium-grained sand-sized shell, strong reaction with HCl		2		-8.4	5
			At El. -10.3 Ft., trace shell, weak reaction with HCl		3			
			At El. -15.9 Ft., 5Y 7/1 light gray		4		-12.4	10
-17.8	13.4	RECOVERY					-17.4	15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS				
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88				
LOCATION COORDINATES X = 469,899 Y = 1,068,946			ELEVATION TOP OF BORING -4.4 Ft.								
ELEV.	DEPTH	LEGEND NO RECOVERY	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS		BLOWS/ 1 FT.	N-VALUE
-21.4	17.0	NO RECOVERY						-21.4			15
			NOTES:					Abbreviations: NR = Not Recorded.			20
			1. USACE Jacksonville 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								25
			SAMPLE SAMPLE LABORATORY ID DEPTH CLASSIFICATION ----- 1 0.5/0.8 SP* 2 4.0/4.3 SP* 3 8.0/8.3 SP* 4 13.0/13.3 SP*								30
			*Lab visual classification based on gradation curve. No Atterberg limits.								35

Boring Designation VB-LK14-19

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS	
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks				
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL	
				State Plane, FLW (U.S. Ft.)		NAD83	NAVD88	
2. BORING DESIGNATION VB-LK14-19		LOCATION COORDINATES X = 470,135 Y = 1,066,052		11. MANUFACTURER'S DESIGNATION OF DRILL vibracore			<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		12. TOTAL SAMPLES			DISTURBED 4	UNDISTURBED (UD) 0
4. NAME OF DRILLER Lester Gaughf				13. TOTAL NUMBER CORE BOXES			0	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			N/A	
6. THICKNESS OF OVERBURDEN				15. DATE BORING			STARTED 05-11-14	COMPLETED 05-11-14
7. DEPTH DRILLED INTO ROCK				16. ELEVATION TOP OF BORING			-17.6 Ft.	
8. TOTAL DEPTH OF BORING				17. TOTAL RECOVERY FOR BORING			96 %	
				18. SIGNATURE AND TITLE OF INSPECTOR			Stephanie Setser, P.E., Geotechnical Engineer	
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	
-17.6	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell, trace silt, weak reaction with HCl, moist, 5Y 6/1 gray (SP) At El. -18.4 Ft., trace shell	2780			-17.6	
					1		-18.1 Vibracore	
					2		-21.6	
					3		-22.1	
							-25.7	
-25.6	8.0		SAND, silty, mostly fine to medium-grained sand-sized quartz, some sand to gravel-sized shell, little silt, strong reaction with HCl, moist, 5Y 5/1 gray (SM) At El. -27.1 Ft., little sand to cobble-sized shell	4				
-28.8	11.2		SILT, inorganic-L, some fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, few cobble-sized limestone, strong reaction with HCl, moist, dissolution limestone, 5Y 6/1 gray (ML) At El. -30.4 Ft., discontinue shell, discontinue limestone, no reaction with HCl					
-31.5	13.9							
-32.1	14.5	NR	BORING TERMINATED IN REFUSAL				Abbreviations:	

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88		
LOCATION COORDINATES X = 470,135 Y = 1,066,052			ELEVATION TOP OF BORING -17.6 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	
			NOTES:					NR = Not Recorded.	
			1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Vibracore refused due to presence of limestone. 4. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				
			1	0.5/0.8	SP*				
			2	4.0/4.3	SP*				
			3	4.5/4.8	SP*				
			4	8.1/8.4	SM*				
			*Lab visual classification based on gradation curve. No Atterberg limits.						
									15
									20
									25
									30
									35

Boring Designation VB-LK14-20

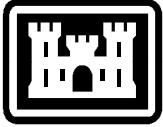
DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 2 SHEETS
1. PROJECT Big Sarasota Pass Ebb Shoal Sarasota County SPP, FL				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION VB-LK14-20		LOCATION COORDINATES X = 470,296 Y = 1,065,121		10. COORDINATE SYSTEM/DATUM HORIZONTAL VERTICAL State Plane, FLW (U.S. Ft.) NAD83 NAVD88			
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO. 6738-14-5346		11. MANUFACTURER'S DESIGNATION OF DRILL AUTO HAMMER vibracore MANUAL HAMMER			
4. NAME OF DRILLER Lester Gaughf				12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 1 0			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERBURDEN N/A				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK N/A				15. DATE BORING STARTED COMPLETED 05-10-14 05-10-14			
8. TOTAL DEPTH OF BORING 20.0 Ft.				16. ELEVATION TOP OF BORING -25.0 Ft. 17. TOTAL RECOVERY FOR BORING 98 % 18. SIGNATURE AND TITLE OF INSPECTOR Stephanie Setser, P.E., Geotechnical Engineer			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1FT. N-VALUE
-25.0	0.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, few medium-grained sand-sized shell, weak reaction with HCl, moist, 5Y 6/1 gray (SP-SM)	3900			-25.0	0
			At El. -28.5 Ft., little sand to gravel-sized shell, strong reaction with HCl, 5Y 8/1 white				-25.5 Vibracore	
			At El. -30.0 Ft., trace shell, weak reaction with HCl		1			
			At El. -32.7 Ft., 2" diameter limestone fragment					
-33.5	8.5		SILT, inorganic-L, few sand to gravel-sized limestone, trace quartz, no reaction with HCl, moist, dissolution limestone, 5Y 7/4 pale yellow (ML)					5
			At El. -36.5 Ft., trace limestone, 5Y 7/6 yellow					10
			At El. -37.5 Ft., 5Y 5/6 olive					
			At El. -38.5 Ft., 5Y 4/3 olive					15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS							
PROJECT Big Sarasota Pass Ebb Shoal			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83		VERTICAL NAVD88							
LOCATION COORDINATES X = 470,296 Y = 1,065,121			ELEVATION TOP OF BORING -25.0 Ft.											
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS		% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS						
								BLOWS/ 1 FT.						
-44.5	19.5	NR	~At El. -42.5 Ft., trace shell, 5Y 6/4 pale olive ~At El. -43.5 Ft., 5Y 6/3 pale olive											
-45.0	20.0	NR						-45.0						
			NOTES: 1. USACE Jacksonville 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 <table> <thead> <tr> <th>SAMPLE ID</th><th>SAMPLE DEPTH</th><th>LABORATORY CLASSIFICATION</th></tr> </thead> <tbody> <tr> <td>1</td><td>0.5/0.8</td><td>SP-SM*</td></tr> </tbody> </table> *Lab visual classification based on gradation curve. No Atterberg limits.		SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.5/0.8	SP-SM*			Abbreviations: NR = Not Recorded.	
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION												
1	0.5/0.8	SP-SM*												
								15						
								20						
								25						
								30						
								35						

Granularmetric Report							
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District				
Sample Name: VB-BSP-12-1 @ 0.5 ft							
Analysis Date: 4/26/2013							
Easting (ft):			Northing (ft):			Coordinate System:	Elevation (ft):
473,153			1,077,510	State Plane, FLW (U.S. Ft.)		-5.6 NAVD88	
USCS:			Munsell:			Fines (%):	Organics (%):
SP			2.5Y 7/1	#200 - 0.74		Carbonates (%):	Shells (%):
Sieve Number		Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained
3/4"		-4.25	19.00	0.00			0.00
3/8"		-3.25	9.50	1.74			1.74
#3.5		-2.50	5.60	3.48			5.22
#4		-2.25	4.75	0.91			6.13
#5		-2.00	4.00	1.42			7.55
#7		-1.50	2.80	3.14			10.69
#10		-1.00	2.00	3.03			13.72
#14		-0.50	1.40	2.74			16.46
#18		0.00	1.00	2.78			19.24
#25		0.50	0.71	3.35			22.59
#35		1.00	0.50	3.27			25.86
#45		1.50	0.36	3.64			29.50
#60		2.00	0.25	4.60			34.10
#80		2.50	0.18	16.33			50.43
#120		3.00	0.13	38.35			88.78
#170		3.50	0.09	10.18			98.96
#200		3.75	0.08	0.30			99.26
#230		4.00	0.06	0.01			99.27
SAND, poorly-graded, mostly fine-grained sand-sized quartz, some sand to gravel-sized shell							
Phi 5	Phi 16		Phi 25	Phi 50		Phi 75	Phi 84
3.31	2.94		2.82	2.49		0.87	-0.58
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.60	0.33	2.49	0.18	1.83	-1.38	3.73

Granularmetric Report							
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District				
Sample Name: VB-BSP-12-1 @ 4.2 ft							
Analysis Date: 4/26/2013							
Easting (ft):			Northing (ft):			Coordinate System:	Elevation (ft):
473,153			1,077,510	State Plane, FLW (U.S. Ft.)		-9.3 NAVD88	
USCS:			Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP	2.5Y 8/1			#200 - 0.94		14.00	16
Sieve Number		Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained		C. % Weight Retained	
3/4"	-4.25	19.00		0.00		0.00	
3/8"	-3.25	9.50		1.25		1.25	
#3.5	-2.50	5.60		1.65		2.90	
#4	-2.25	4.75		0.24		3.14	
#5	-2.00	4.00		0.44		3.58	
#7	-1.50	2.80		0.51		4.09	
#10	-1.00	2.00		0.37		4.46	
#14	-0.50	1.40		1.02		5.48	
#18	0.00	1.00		0.93		6.41	
#25	0.50	0.71		0.75		7.16	
#35	1.00	0.50		1.58		8.74	
#45	1.50	0.36		1.13		9.87	
#60	2.00	0.25		2.14		12.01	
#80	2.50	0.18		18.07		30.08	
#120	3.00	0.13		56.29		86.37	
#170	3.50	0.09		12.40		98.77	
#200	3.75	0.08		0.29		99.06	
#230	4.00	0.06		0.02		99.08	
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell							
Phi 5	Phi 16		Phi 25	Phi 50		Phi 75	Phi 84
3.35	2.98		2.90	2.68		2.36	2.11
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.32	0.20	2.68	0.16	1.29	-3.17	13.07

Granularmetric Report												
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District									
Sample Name: VB-BSP-12-10 @ 0.5 ft												
Analysis Date: 4/26/2013												
Easting (ft):	Northing (ft):		Coordinate System:			Elevation (ft):						
470,692		1,073,971	State Plane, FLW (U.S. Ft.)			-7.3 NAVD88						
USCS: SP	Munsell: 2.5Y 8/1		Fines (%): #200 - 0.56 #230 - 0.54	Organics (%):		Carbonates (%):	Shells (%): 8					
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained						
#3.5	-2.50	5.60	0.00			0.00						
#4	-2.25	4.75	0.02			0.02						
#5	-2.00	4.00	0.12			0.14						
#7	-1.50	2.80	0.25			0.39						
#10	-1.00	2.00	0.54			0.93						
#14	-0.50	1.40	1.30			2.23						
#18	0.00	1.00	1.52			3.75						
#25	0.50	0.71	1.73			5.48						
#35	1.00	0.50	1.35			6.83						
#45	1.50	0.36	1.34			8.17						
#60	2.00	0.25	2.37			10.54						
#80	2.50	0.18	13.92			24.46						
#120	3.00	0.13	57.96			82.42						
#170	3.50	0.09	16.62			99.04						
#200	3.75	0.08	0.40			99.44						
#230	4.00	0.06	0.02			99.46						
SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell												
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75					
3.38	3.05		2.94		2.72		2.50					
Moment	Mean Phi		Mean mm		Median Phi		Median mm					
Statistics	2.52		0.17		2.72		0.15					
	0.85		-2.75		11.19							

Granularmetric Report							
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District				
Sample Name: VB-BSP-12-10 @ 4.6 ft							
Analysis Date: 4/26/2013							
Easting (ft):			Northing (ft):			Coordinate System:	Elevation (ft):
470,692			1,073,971	State Plane, FLW (U.S. Ft.)		-11.4 NAVD88	
USCS:			Munsell:			Fines (%): #200 - 0.66 #230 - 0.65	Organics (%):
SP			2.5Y 8/1			Carbonates (%):	
Sieve Number		Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained
3/4"		-4.25	19.00	0.00			0.00
3/8"		-3.25	9.50	1.64			1.64
#3.5		-2.50	5.60	0.17			1.81
#4		-2.25	4.75	0.21			2.02
#5		-2.00	4.00	0.55			2.57
#7		-1.50	2.80	1.82			4.39
#10		-1.00	2.00	3.81			8.20
#14		-0.50	1.40	5.74			13.94
#18		0.00	1.00	5.06			19.00
#25		0.50	0.71	3.75			22.75
#35		1.00	0.50	2.22			24.97
#45		1.50	0.36	2.07			27.04
#60		2.00	0.25	3.47			30.51
#80		2.50	0.18	25.45			55.96
#120		3.00	0.13	38.26			94.22
#170		3.50	0.09	5.05			99.27
#200		3.75	0.08	0.07			99.34
#230		4.00	0.06	0.01			99.35
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell							
Phi 5	Phi 16		Phi 25	Phi 50		Phi 75	Phi 84
3.08	2.87		2.75	2.38		1.01	-0.30
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.70	0.31	2.38	0.19	1.57	-1.47	4.33

Granularmetric Report												
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District									
Sample Name: VB-BSP-12-14 @ 0.5 ft												
Analysis Date: 4/26/2013												
Easting (ft):	Northing (ft):		Coordinate System:			Elevation (ft):						
469,687		1,072,971	State Plane, FLW (U.S. Ft.)			-10.6 NAVD88						
USCS:	Munsell:		Fines (%):	Organics (%):		Carbonates (%):	Shells (%):					
SP	2.5Y 8/1		#200 - 1.58	#230 - 1.55			3					
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained						
3/8"	-3.25	9.50	0.00			0.00						
#3.5	-2.50	5.60	0.60			0.60						
#4	-2.25	4.75	0.03			0.63						
#5	-2.00	4.00	0.11			0.74						
#7	-1.50	2.80	0.40			1.14						
#10	-1.00	2.00	0.34			1.48						
#14	-0.50	1.40	0.41			1.89						
#18	0.00	1.00	0.27			2.16						
#25	0.50	0.71	0.27			2.43						
#35	1.00	0.50	0.19			2.62						
#45	1.50	0.36	0.24			2.86						
#60	2.00	0.25	0.55			3.41						
#80	2.50	0.18	5.06			8.47						
#120	3.00	0.13	67.87			76.34						
#170	3.50	0.09	21.36			97.70						
#200	3.75	0.08	0.72			98.42						
#230	4.00	0.06	0.03			98.45						
SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, trace silt												
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75					
3.44	3.18		2.99		2.81		2.62					
Moment	Mean Phi		Mean mm		Median Phi		Median mm					
Statistics	2.72		0.15		2.81		0.14					
	0.74		-5.17		34.15							

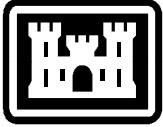
Granularmetric Report																		
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District															
Sample Name: VB-BSP-12-3 @ 0.5 ft																		
Analysis Date: 4/26/2013																		
Easting (ft): 472,693	Northing (ft): 1,075,967		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -5.8 NAVD88												
USCS: SP	Munsell: 2.5Y 8/1		Fines (%): #200 - 1.60 #230 - 1.59	Organics (%):		Carbonates (%):	Shells (%): 14											
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained												
#5	-2.00	4.00	0.00			0.00												
#7	-1.50	2.80	0.17			0.17												
#10	-1.00	2.00	0.18			0.35												
#14	-0.50	1.40	0.20			0.55												
#18	0.00	1.00	0.48			1.03												
#25	0.50	0.71	1.82			2.85												
#35	1.00	0.50	2.90			5.75												
#45	1.50	0.36	4.90			10.65												
#60	2.00	0.25	5.11			15.76												
#80	2.50	0.18	32.79			48.55												
#120	3.00	0.13	41.11			89.66												
#170	3.50	0.09	8.51			98.17												
#200	3.75	0.08	0.23			98.40												
#230	4.00	0.06	0.01			98.41												
GRANULARMETRIC REPORT % BIG SARASOTA PASS.GPJ CESAJ3.GDT 10/10/14																		
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, trace silt																		
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95												
3.31	2.93	2.82	2.52	2.14	2.00	0.87												
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis											
Statistics	2.36	0.19	2.52	0.17	0.7	-1.89	8.23											

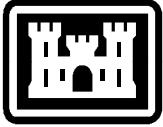
Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-BSP-12-3 @ 5.6 ft									
Analysis Date: 4/26/2013									
Easting (ft):			Northing (ft):			Coordinate System:	Elevation (ft):		
472,693			1,075,967	State Plane, FLW (U.S. Ft.)		-10.9 NAVD88			
USCS:			Munsell:			Fines (%): #200 - 1.60 #230 - 1.60	Organics (%):		
SP			2.5Y 8/1			Carbonates (%):			
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/4"	-4.25	19.00	0.00			0.00			
3/8"	-3.25	9.50	1.85			1.85			
#3.5	-2.50	5.60	0.27			2.12			
#4	-2.25	4.75	0.25			2.37			
#5	-2.00	4.00	0.58			2.95			
#7	-1.50	2.80	2.58			5.53			
#10	-1.00	2.00	1.84			7.37			
#14	-0.50	1.40	1.96			9.33			
#18	0.00	1.00	1.73			11.06			
#25	0.50	0.71	1.79			12.85			
#35	1.00	0.50	1.56			14.41			
#45	1.50	0.36	1.94			16.35			
#60	2.00	0.25	3.57			19.92			
#80	2.50	0.18	15.53			35.45			
#120	3.00	0.13	42.82			78.27			
#170	3.50	0.09	19.43			97.70			
#200	3.75	0.08	0.70			98.40			
#230	4.00	0.06	0.00			98.40			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, trace silt									
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95			
3.43	3.15	2.96	2.67	2.16	1.41	-1.60			
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	2.14	0.23	2.67	0.16	1.52	-2.2	7.28		

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-BSP-12-5 @ 0.5 ft									
Analysis Date: 4/26/2013									
Easting (ft): 470,695	Northing (ft): 1,075,969		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -6.3 NAVD88			
USCS: SP	Munsell: 2.5Y 8/1		Fines (%): #200 - 1.40 #230 - 1.38	Organics (%):		Carbonates (%):	Shells (%): 9		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/8"	-3.25	9.50	0.00			0.00			
#3.5	-2.50	5.60	0.62			0.62			
#4	-2.25	4.75	0.19			0.81			
#5	-2.00	4.00	0.31			1.12			
#7	-1.50	2.80	0.29			1.41			
#10	-1.00	2.00	0.49			1.90			
#14	-0.50	1.40	0.50			2.40			
#18	0.00	1.00	0.47			2.87			
#25	0.50	0.71	0.60			3.47			
#35	1.00	0.50	0.69			4.16			
#45	1.50	0.36	1.02			5.18			
#60	2.00	0.25	1.78			6.96			
#80	2.50	0.18	16.93			23.89			
#120	3.00	0.13	58.94			82.83			
#170	3.50	0.09	15.27			98.10			
#200	3.75	0.08	0.50			98.60			
#230	4.00	0.06	0.02			98.62			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine-grained sand-sized shell									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.40	3.04		2.93		2.72		2.51		
Moment	Mean Phi		Mean mm		Median Phi		Median mm		
Statistics	2.56		0.17		2.72		0.15		
	Sorting		Skewness		Kurtosis				
	0.85		-3.98		21.76				

Granularmetric Report												
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District									
Sample Name: VB-BSP-12-5 @ 6 ft												
Analysis Date: 4/26/2013												
Easting (ft):			Northing (ft):			Coordinate System:						
470,695			1,075,969			State Plane, FLW (U.S. Ft.)	-11.8 NAVD88					
USCS: SP	Munsell: 2.5Y 8/1		Fines (%): #200 - 1.17 #230 - 1.16	Organics (%):		Carbonates (%):	Shells (%): 16					
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained						
3/8"	-3.25	9.50	0.00			0.00						
#3.5	-2.50	5.60	0.44			0.44						
#4	-2.25	4.75	0.30			0.74						
#5	-2.00	4.00	0.52			1.26						
#7	-1.50	2.80	0.95			2.21						
#10	-1.00	2.00	1.34			3.55						
#14	-0.50	1.40	1.57			5.12						
#18	0.00	1.00	1.50			6.62						
#25	0.50	0.71	1.50			8.12						
#35	1.00	0.50	1.39			9.51						
#45	1.50	0.36	1.76			11.27						
#60	2.00	0.25	3.98			15.25						
#80	2.50	0.18	39.53			54.78						
#120	3.00	0.13	37.56			92.34						
#170	3.50	0.09	6.35			98.69						
#200	3.75	0.08	0.14			98.83						
#230	4.00	0.06	0.01			98.84						
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, trace silt												
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75					
3.21	2.89		2.77		2.44		2.12					
Moment	Mean Phi		Mean mm		Median Phi		Median mm					
Statistics	2.19		0.22		2.44		0.18					
	Sorting		Skewness		Kurtosis							
	1.06		-2.59		9.89							

Granularmetric Report												
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District									
Sample Name: VB-BSP-12-6 @ 0.5 ft												
Analysis Date: 4/26/2013												
Easting (ft):	Northing (ft):		Coordinate System:			Elevation (ft):						
471,692		1,074,968	State Plane, FLW (U.S. Ft.)			-4.5 NAVD88						
USCS: SP	Munsell: 2.5Y 8/1		Fines (%): #200 - 0.39 #230 - 0.39	Organics (%):		Carbonates (%):	Shells (%): 11					
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained						
#4	-2.25	4.75	0.00			0.00						
#5	-2.00	4.00	0.02			0.02						
#7	-1.50	2.80	0.07			0.09						
#10	-1.00	2.00	0.18			0.27						
#14	-0.50	1.40	0.28			0.55						
#18	0.00	1.00	0.56			1.11						
#25	0.50	0.71	1.04			2.15						
#35	1.00	0.50	1.48			3.63						
#45	1.50	0.36	2.33			5.96						
#60	2.00	0.25	3.52			9.48						
#80	2.50	0.18	19.27			28.75						
#120	3.00	0.13	60.10			88.85						
#170	3.50	0.09	10.53			99.38						
#200	3.75	0.08	0.23			99.61						
#230	4.00	0.06	0.00			99.61						
SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine-grained sand-sized shell												
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75					
3.29	2.96		2.88		2.68		2.40					
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting		Skewness	Kurtosis				
Statistics	2.54	0.17	2.68	0.16	0.62		-2.72	13.43				

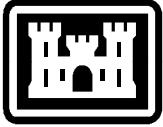
Granularmetric Report							
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District				
Sample Name: VB-BSP-12-6 @ 4.2 ft							
Analysis Date: 4/26/2013							
Easting (ft):			Northing (ft):			Coordinate System:	Elevation (ft):
471,692			1,074,968	State Plane, FLW (U.S. Ft.)		-8.2 NAVD88	
USCS:			Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP	2.5Y 8/1			#200 - 0.51			15
Sieve Number		Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained		C. % Weight Retained	
3/4"	-4.25	19.00		0.00		0.00	
3/8"	-3.25	9.50		0.08		0.08	
#3.5	-2.50	5.60		0.87		0.95	
#4	-2.25	4.75		0.46		1.41	
#5	-2.00	4.00		0.48		1.89	
#7	-1.50	2.80		2.11		4.00	
#10	-1.00	2.00		2.67		6.67	
#14	-0.50	1.40		2.81		9.48	
#18	0.00	1.00		2.01		11.49	
#25	0.50	0.71		1.71		13.20	
#35	1.00	0.50		1.39		14.59	
#45	1.50	0.36		1.60		16.19	
#60	2.00	0.25		2.47		18.66	
#80	2.50	0.18		13.70		32.36	
#120	3.00	0.13		54.50		86.86	
#170	3.50	0.09		12.40		99.26	
#200	3.75	0.08		0.23		99.49	
#230	4.00	0.06		0.02		99.51	
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell							
Phi 5	Phi 16		Phi 25	Phi 50		Phi 75	Phi 84
3.33	2.97		2.89	2.66		2.23	1.44
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.16	0.22	2.66	0.16	1.37	-2.06	6.25

Granularmetric Report												
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District									
Sample Name: VB-BSP-12-6 @ 8 ft												
Analysis Date: 4/26/2013												
Easting (ft): 471,692	Northing (ft): 1,074,968		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -12.0 NAVD88						
USCS: SP	Munsell: 2.5Y 8/1		Fines (%): #200 - 0.83 #230 - 0.80	Organics (%):		Carbonates (%): 8.00	Shells (%): 8					
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained						
3/8"	-3.25	9.50	0.00			0.00						
#3.5	-2.50	5.60	0.11			0.11						
#4	-2.25	4.75	0.00			0.11						
#5	-2.00	4.00	0.03			0.14						
#7	-1.50	2.80	0.06			0.20						
#10	-1.00	2.00	0.18			0.38						
#14	-0.50	1.40	0.27			0.65						
#18	0.00	1.00	0.33			0.98						
#25	0.50	0.71	0.60			1.58						
#35	1.00	0.50	0.94			2.52						
#45	1.50	0.36	1.70			4.22						
#60	2.00	0.25	4.50			8.72						
#80	2.50	0.18	35.35			44.07						
#120	3.00	0.13	48.66			92.73						
#170	3.50	0.09	6.37			99.10						
#200	3.75	0.08	0.07			99.17						
#230	4.00	0.06	0.03			99.20						
SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine-grained sand-sized shell												
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75					
3.18	2.91		2.82		2.56		2.23					
Moment	Mean Phi		Mean mm		Median Phi		Median mm					
Statistics	2.46		0.18		2.56		0.17					
	0.57		-3.22		21.55							

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-BSP-12-9 @ 0.5 ft									
Analysis Date: 4/26/2013									
Easting (ft): 469,692	Northing (ft): 1,074,966		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -12.2 NAVD88			
USCS: SP	Munsell: 2.5Y 8/1		Fines (%): #200 - 0.34 #230 - 0.26	Organics (%):		Carbonates (%):	Shells (%): 10		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/4"	-4.25	19.00	0.00			0.00			
3/8"	-3.25	9.50	0.10			0.10			
#3.5	-2.50	5.60	0.57			0.67			
#4	-2.25	4.75	0.29			0.96			
#5	-2.00	4.00	0.29			1.25			
#7	-1.50	2.80	0.80			2.05			
#10	-1.00	2.00	1.27			3.32			
#14	-0.50	1.40	1.31			4.63			
#18	0.00	1.00	1.22			5.85			
#25	0.50	0.71	1.01			6.86			
#35	1.00	0.50	0.86			7.72			
#45	1.50	0.36	0.81			8.53			
#60	2.00	0.25	1.29			9.82			
#80	2.50	0.18	8.81			18.63			
#120	3.00	0.13	54.80			73.43			
#170	3.50	0.09	25.01			98.44			
#200	3.75	0.08	1.22			99.66			
#230	4.00	0.06	0.08			99.74			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.43	3.21		3.03		2.79		2.56		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	2.54	0.17	2.79	0.14	1.09	-3.05	12.55		

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-1 @ 0.5 ft									
Analysis Date: 6/12/2014									
Easting (ft): 468,065	Northing (ft): 1,072,266		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -15.1 NAVD88			
USCS: SP	Munsell: 5Y 8/1		Fines (%): #200 - 2.66 #230 - 2.58	Organics (%):		Carbonates (%):	Shells (%): 3.8		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/8"	-3.25	9.50	0.00			0.00			
#3.5	-2.50	5.60	0.14			0.14			
#4	-2.25	4.75	0.00			0.14			
#5	-2.00	4.00	0.00			0.14			
#7	-1.50	2.80	0.24			0.38			
#10	-1.00	2.00	0.16			0.54			
#14	-0.50	1.40	0.60			1.14			
#18	0.00	1.00	0.43			1.57			
#25	0.50	0.71	0.27			1.84			
#35	1.00	0.50	0.28			2.12			
#45	1.50	0.36	0.25			2.37			
#60	2.00	0.25	0.43			2.80			
#80	2.50	0.18	6.10			8.90			
#120	3.00	0.13	55.05			63.95			
#170	3.50	0.09	31.41			95.36			
#200	3.75	0.08	1.98			97.34			
#230	4.00	0.06	0.08			97.42			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.49	3.32		3.18		2.87		2.65		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	2.82	0.14	2.87	0.14	0.62	-4.53	31.43		

Granularmetric Report												
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District									
Sample Name: VB-LK14-10 @ 0.5 ft												
Analysis Date: 6/19/2014												
Easting (ft): 472,849	Northing (ft): 1,077,410		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -6.4 NAVD88						
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 0.89 #230 - 0.79	Organics (%):		Carbonates (%):	Shells (%): 64					
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained						
3/4"	-4.25	19.00	0.00			0.00						
3/8"	-3.25	9.50	8.24			8.24						
#3.5	-2.50	5.60	9.39			17.63						
#4	-2.25	4.75	3.07			20.70						
#5	-2.00	4.00	3.70			24.40						
#7	-1.50	2.80	7.11			31.51						
#10	-1.00	2.00	8.68			40.19						
#14	-0.50	1.40	7.74			47.93						
#18	0.00	1.00	5.52			53.45						
#25	0.50	0.71	4.28			57.73						
#35	1.00	0.50	2.81			60.54						
#45	1.50	0.36	2.42			62.96						
#60	2.00	0.25	2.67			65.63						
#80	2.50	0.18	9.80			75.43						
#120	3.00	0.13	19.04			94.47						
#170	3.50	0.09	4.56			99.03						
#200	3.75	0.08	0.08			99.11						
#230	4.00	0.06	0.10			99.21						
SAND, poorly-graded, mostly sand to gravel-sized shell, some fine-grained sand-sized quartz												
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75					
3.06	2.73		2.48		-0.31		-1.96					
Moment	Mean Phi		Mean mm		Median Phi		Median mm					
Statistics	-0.03		1.02				2.3					
							-0.05					
							1.6					

Granularmetric Report												
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District									
Sample Name: VB-LK14-10 @ 4 ft												
Analysis Date: 6/19/2014												
Easting (ft): 472,849	Northing (ft): 1,077,410		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -9.9 NAVD88						
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 2.16 #230 - 2.16	Organics (%):		Carbonates (%):	Shells (%): 11.7					
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained						
#3.5	-2.50	5.60	0.00			0.00						
#4	-2.25	4.75	0.11			0.11						
#5	-2.00	4.00	0.03			0.14						
#7	-1.50	2.80	0.44			0.58						
#10	-1.00	2.00	0.77			1.35						
#14	-0.50	1.40	1.28			2.63						
#18	0.00	1.00	1.58			4.21						
#25	0.50	0.71	1.72			5.93						
#35	1.00	0.50	1.58			7.51						
#45	1.50	0.36	1.76			9.27						
#60	2.00	0.25	3.57			12.84						
#80	2.50	0.18	23.44			36.28						
#120	3.00	0.13	51.96			88.24						
#170	3.50	0.09	9.43			97.67						
#200	3.75	0.08	0.17			97.84						
#230	4.00	0.06	0.00			97.84						
SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell, trace silt												
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75					
3.36	2.96		2.87		2.63		2.26					
Moment	Mean Phi		Mean mm		Median Phi		Median mm					
Statistics	2.39		0.19		2.63		0.16					
	Sorting		Skewness		Kurtosis							
	0.87		-2.6		10.33							

Granularmetric Report												
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District									
Sample Name: VB-LK14-11 @ 0.5 ft												
Analysis Date: 6/19/2014												
Easting (ft):	Northing (ft):		Coordinate System:			Elevation (ft):						
473,213		1,078,521	State Plane, FLW (U.S. Ft.)			-11.0 NAVD88						
USCS: SP	Munsell: 5Y 8/1		Fines (%): #200 - 1.66 #230 - 1.65	Organics (%):		Carbonates (%):	Shells (%): 3					
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained						
#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	0.03			0.10						
#10	-1.00	2.00	0.32			0.42						
#14	-0.50	1.40	0.26			0.68						
#18	0.00	1.00	0.23			0.91						
#25	0.50	0.71	0.22			1.13						
#35	1.00	0.50	0.18			1.31						
#45	1.50	0.36	0.27			1.58						
#60	2.00	0.25	0.59			2.17						
#80	2.50	0.18	8.85			11.02						
#120	3.00	0.13	64.33			75.35						
#170	3.50	0.09	22.16			97.51						
#200	3.75	0.08	0.83			98.34						
#230	4.00	0.06	0.01			98.35						
SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, trace silt												
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75					
3.44	3.20		3.00		2.80		2.61					
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting		Skewness	Kurtosis				
Statistics	2.77	0.15	2.80	0.14	0.5		-4.57	36.26				

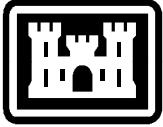
Granularmetric Report							
Project Name: Vibracore Logging and Lab Analysis				 US Army Corps of Engineers Jacksonville District			
Sample Name: VB-LK14-12 @ 0.5 ft							
Analysis Date: 6/17/2014							
Easting (ft):		Northing (ft):		Coordinate System:		Elevation (ft):	
473,453		1,079,482		State Plane, FLW (U.S. Ft.)		-10.7 NAVD88	
USCS:		Munsell:		Fines (%): #200 - 1.27 #230 - 1.21	Organics (%):	Carbonates (%):	Shells (%): 73.6
SW		5Y 8/1					
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)		% Weight Retained	C. % Weight Retained		
3/8"	-3.25	9.50		0.00	0.00		
#3.5	-2.50	5.60		4.12	4.12		
#4	-2.25	4.75		1.64	5.76		
#5	-2.00	4.00		2.83	8.59		
#7	-1.50	2.80		7.46	16.05		
#10	-1.00	2.00		11.30	27.35		
#14	-0.50	1.40		12.76	40.11		
#18	0.00	1.00		10.52	50.63		
#25	0.50	0.71		9.47	60.10		
#35	1.00	0.50		6.15	66.25		
#45	1.50	0.36		4.59	70.84		
#60	2.00	0.25		4.02	74.86		
#80	2.50	0.18		9.38	84.24		
#120	3.00	0.13		11.43	95.67		
#170	3.50	0.09		3.00	98.67		
#200	3.75	0.08		0.06	98.73		
#230	4.00	0.06		0.06	98.79		
SAND, well-graded, mostly sand to gravel-sized shell, little fine-grained sand-sized quartz, trace silt							
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
2.97	2.49	2.01	-0.03	-1.10	-1.50	-2.37	
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.22	0.86			1.72	0.17	1.92

Granularmetric Report							
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District				
Sample Name: VB-LK14-13 @ 0.5 ft							
Analysis Date: 6/17/2014							
Easting (ft):			Northing (ft):			Coordinate System:	Elevation (ft):
473,803			1,080,425	State Plane, FLW (U.S. Ft.)		-13.3 NAVD88	
USCS:			Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/1			#200 - 1.24			25.5
Sieve Number		Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained		C. % Weight Retained	
3/8"		-3.25	9.50	0.00		0.00	
#3.5		-2.50	5.60	1.29		1.29	
#4		-2.25	4.75	0.79		2.08	
#5		-2.00	4.00	1.30		3.38	
#7		-1.50	2.80	3.11		6.49	
#10		-1.00	2.00	3.77		10.26	
#14		-0.50	1.40	3.24		13.50	
#18		0.00	1.00	2.22		15.72	
#25		0.50	0.71	1.79		17.51	
#35		1.00	0.50	1.48		18.99	
#45		1.50	0.36	1.60		20.59	
#60		2.00	0.25	2.32		22.91	
#80		2.50	0.18	14.24		37.15	
#120		3.00	0.13	50.13		87.28	
#170		3.50	0.09	11.31		98.59	
#200		3.75	0.08	0.17		98.76	
#230		4.00	0.06	0.02		98.78	
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to coarse-grained sand-sized shell, trace silt							
Phi 5	Phi 16		Phi 25	Phi 50		Phi 75	Phi 84
3.34	2.97		2.88	2.63		2.07	0.08
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.96	0.26	2.63	0.16	1.57	-1.66	4.4

GRANULARMETRIC REPORT % BIG SARASOTA PASS.GPJ CESA/J3.GDT 10/10/14

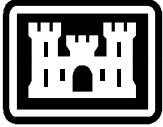
Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-15 @ 0.5 ft									
Analysis Date: 6/17/2014									
Easting (ft): 470,486	Northing (ft): 1,070,749		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -13.2 NAVD88			
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 2.30 #230 - 2.29	Organics (%):		Carbonates (%):	Shells (%): 86.9		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/4"	-4.25	19.00	0.00			0.00			
3/8"	-3.25	9.50	4.59			4.59			
#3.5	-2.50	5.60	6.64			11.23			
#4	-2.25	4.75	2.70			13.93			
#5	-2.00	4.00	4.36			18.29			
#7	-1.50	2.80	7.91			26.20			
#10	-1.00	2.00	12.95			39.15			
#14	-0.50	1.40	12.08			51.23			
#18	0.00	1.00	9.79			61.02			
#25	0.50	0.71	9.96			70.98			
#35	1.00	0.50	8.05			79.03			
#45	1.50	0.36	5.63			84.66			
#60	2.00	0.25	2.64			87.30			
#80	2.50	0.18	3.51			90.81			
#120	3.00	0.13	5.49			96.30			
#170	3.50	0.09	1.30			97.60			
#200	3.75	0.08	0.10			97.70			
#230	4.00	0.06	0.01			97.71			
SAND, poorly-graded, mostly sand to gravel-sized shell, few fine-grained sand-sized quartz, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
2.88	1.44		0.75		-0.55		-1.58		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	-0.47	1.39			1.7	0.18	2.52		

Granularmetric Report												
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District									
Sample Name: VB-LK14-16 @ 0.5 ft												
Analysis Date: 6/17/2014												
Easting (ft): 469,804	Northing (ft): 1,070,040		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -8.4 NAVD88						
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 1.44 #230 - 1.41	Organics (%):		Carbonates (%):	Shells (%): 47.6					
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained						
3/8"	-3.25	9.50	0.00			0.00						
#3.5	-2.50	5.60	0.61			0.61						
#4	-2.25	4.75	0.64			1.25						
#5	-2.00	4.00	1.02			2.27						
#7	-1.50	2.80	2.81			5.08						
#10	-1.00	2.00	3.38			8.46						
#14	-0.50	1.40	5.03			13.49						
#18	0.00	1.00	5.64			19.13						
#25	0.50	0.71	3.18			22.31						
#35	1.00	0.50	10.66			32.97						
#45	1.50	0.36	9.10			42.07						
#60	2.00	0.25	9.23			51.30						
#80	2.50	0.18	21.59			72.89						
#120	3.00	0.13	20.94			93.83						
#170	3.50	0.09	4.59			98.42						
#200	3.75	0.08	0.14			98.56						
#230	4.00	0.06	0.03			98.59						
SAND, poorly-graded, mostly fine-grained sand-sized quartz, some fine to coarse-grained sand-sized shell, trace silt												
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75	Phi 84				
3.13	2.77		2.55		1.93		0.63	-0.28				
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis					
Statistics	1.40	0.38	1.93	0.26	1.44	-0.91	2.93					

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-17 @ 0.5 ft									
Analysis Date: 6/17/2014									
Easting (ft): 469,806	Northing (ft): 1,067,947		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -7.6 NAVD88			
USCS: SP	Munsell: 5Y 8/1		Fines (%): #200 - 1.00 #230 - 0.99	Organics (%):		Carbonates (%):	Shells (%): 5.2		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/8"	-3.25	9.50	0.00			0.00			
#3.5	-2.50	5.60	0.20			0.20			
#4	-2.25	4.75	0.12			0.32			
#5	-2.00	4.00	0.19			0.51			
#7	-1.50	2.80	0.17			0.68			
#10	-1.00	2.00	0.25			0.93			
#14	-0.50	1.40	0.39			1.32			
#18	0.00	1.00	0.30			1.62			
#25	0.50	0.71	0.31			1.93			
#35	1.00	0.50	0.28			2.21			
#45	1.50	0.36	0.34			2.55			
#60	2.00	0.25	0.79			3.34			
#80	2.50	0.18	9.10			12.44			
#120	3.00	0.13	71.40			83.84			
#170	3.50	0.09	14.88			98.72			
#200	3.75	0.08	0.28			99.00			
#230	4.00	0.06	0.01			99.01			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine-grained sand-sized shell, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.37	3.01		2.94		2.76		2.59		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	2.69	0.15	2.76	0.15	0.63	-5.27	37.96		

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-17 @ 6 ft									
Analysis Date: 6/17/2014									
Easting (ft): 469,806	Northing (ft): 1,067,947		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -13.1 NAVD88			
USCS: SP	Munsell: 5Y 8/1		Fines (%): #200 - 1.15 #230 - 1.10	Organics (%):		Carbonates (%):	Shells (%): 3.9		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/4"	-4.25	19.00	0.00			0.00			
3/8"	-3.25	9.50	0.34			0.34			
#3.5	-2.50	5.60	0.11			0.45			
#4	-2.25	4.75	0.07			0.52			
#5	-2.00	4.00	0.16			0.68			
#7	-1.50	2.80	0.33			1.01			
#10	-1.00	2.00	0.29			1.30			
#14	-0.50	1.40	0.33			1.63			
#18	0.00	1.00	0.29			1.92			
#25	0.50	0.71	0.23			2.15			
#35	1.00	0.50	0.25			2.40			
#45	1.50	0.36	0.37			2.77			
#60	2.00	0.25	0.91			3.68			
#80	2.50	0.18	11.37			15.05			
#120	3.00	0.13	70.50			85.55			
#170	3.50	0.09	13.14			98.69			
#200	3.75	0.08	0.16			98.85			
#230	4.00	0.06	0.05			98.90			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.36	2.99		2.93		2.75		2.57		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	2.65	0.16	2.75	0.15	0.72	-5.56	40.79		

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-18 @ 0.5 ft									
Analysis Date: 6/17/2014									
Easting (ft): 469,899	Northing (ft): 1,068,946		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -4.9 NAVD88			
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 1.28 #230 - 1.22	Organics (%):		Carbonates (%):	Shells (%): 30.1		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/4"	-4.25	19.00	0.00			0.00			
3/8"	-3.25	9.50	0.99			0.99			
#3.5	-2.50	5.60	0.76			1.75			
#4	-2.25	4.75	0.08			1.83			
#5	-2.00	4.00	0.07			1.90			
#7	-1.50	2.80	1.12			3.02			
#10	-1.00	2.00	2.57			5.59			
#14	-0.50	1.40	3.77			9.36			
#18	0.00	1.00	3.93			13.29			
#25	0.50	0.71	4.04			17.33			
#35	1.00	0.50	3.27			20.60			
#45	1.50	0.36	3.50			24.10			
#60	2.00	0.25	5.40			29.50			
#80	2.50	0.18	25.49			54.99			
#120	3.00	0.13	38.03			93.02			
#170	3.50	0.09	4.32			97.34			
#200	3.75	0.08	1.38			98.72			
#230	4.00	0.06	0.06			98.78			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, some fine to medium-grained sand-sized shell, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.23	2.88		2.76		2.40		1.58		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	1.86	0.28	2.40	0.19	1.41	-1.71	5.57		

Granularmetric Report							
Project Name: Vibracore Logging and Lab Analysis				 US Army Corps of Engineers Jacksonville District			
Sample Name: VB-LK14-18 @ 4 ft							
Analysis Date: 6/17/2014							
Easting (ft): 469,899	Northing (ft): 1,068,946	Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -8.4 NAVD88		
USCS: SW	Munsell: 5Y 8/1	Fines (%): #200 - 1.01 #230 - 0.99		Organics (%):	Carbonates (%):	Shells (%): 24.4	
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained	
3/8"	-3.25	9.50	0.00			0.00	
#3.5	-2.50	5.60	0.73			0.73	
#4	-2.25	4.75	0.64			1.37	
#5	-2.00	4.00	0.99			2.36	
#7	-1.50	2.80	1.59			3.95	
#10	-1.00	2.00	2.40			6.35	
#14	-0.50	1.40	2.95			9.30	
#18	0.00	1.00	2.86			12.16	
#25	0.50	0.71	2.89			15.05	
#35	1.00	0.50	2.31			17.36	
#45	1.50	0.36	3.04			20.40	
#60	2.00	0.25	5.09			25.49	
#80	2.50	0.18	23.78			49.27	
#120	3.00	0.13	43.24			92.51	
#170	3.50	0.09	6.34			98.85	
#200	3.75	0.08	0.14			98.99	
#230	4.00	0.06	0.02			99.01	
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, trace silt							
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.20	2.90	2.80	2.51	1.95	0.71	-1.28	
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	1.96	0.26	2.51	0.18	1.35	-1.78	5.28

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-18 @ 8 ft									
Analysis Date: 6/17/2014									
Easting (ft): 469,899	Northing (ft): 1,068,946		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -12.4 NAVD88			
USCS: SP	Munsell: 5Y 8/1		Fines (%): #200 - 0.98 #230 - 0.91	Organics (%):		Carbonates (%):	Shells (%): 3		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
#4	-2.25	4.75	0.00			0.00			
#5	-2.00	4.00	0.07			0.07			
#7	-1.50	2.80	0.04			0.11			
#10	-1.00	2.00	0.17			0.28			
#14	-0.50	1.40	0.15			0.43			
#18	0.00	1.00	0.10			0.53			
#25	0.50	0.71	0.11			0.64			
#35	1.00	0.50	0.12			0.76			
#45	1.50	0.36	0.17			0.93			
#60	2.00	0.25	0.59			1.52			
#80	2.50	0.18	12.35			13.87			
#120	3.00	0.13	71.18			85.05			
#170	3.50	0.09	13.32			98.37			
#200	3.75	0.08	0.65			99.02			
#230	4.00	0.06	0.07			99.09			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.37	2.99		2.93		2.75		2.58		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	2.73	0.15	2.75	0.15	0.41	-4.79	46.74		

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-2 @ 0.5 ft									
Analysis Date: 6/12/2014									
Easting (ft): 468,857	Northing (ft): 1,072,891		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -17.7 NAVD88			
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 4.52 #230 - 4.51	Organics (%):		Carbonates (%):	Shells (%): 9.8		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/8"	-3.25	9.50	0.00			0.00			
#3.5	-2.50	5.60	0.32			0.32			
#4	-2.25	4.75	0.00			0.32			
#5	-2.00	4.00	0.02			0.34			
#7	-1.50	2.80	0.01			0.35			
#10	-1.00	2.00	1.52			1.87			
#14	-0.50	1.40	1.79			3.66			
#18	0.00	1.00	1.29			4.95			
#25	0.50	0.71	1.25			6.20			
#35	1.00	0.50	0.96			7.16			
#45	1.50	0.36	1.10			8.26			
#60	2.00	0.25	2.01			10.27			
#80	2.50	0.18	14.76			25.03			
#120	3.00	0.13	50.25			75.28			
#170	3.50	0.09	19.58			94.86			
#200	3.75	0.08	0.62			95.48			
#230	4.00	0.06	0.01			95.49			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.56	3.22		3.00		2.75		2.50		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	2.50	0.18	2.75	0.15	0.96	-2.77	11.19		

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-29 @ 0.5 ft									
Analysis Date: 6/19/2014									
Easting (ft): 469,919	Northing (ft): 1,076,185		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -11.5 NAVD88			
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 1.09 #230 - 1.06	Organics (%):		Carbonates (%):	Shells (%): 11		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/8"	-3.25	9.50	0.00			0.00			
#3.5	-2.50	5.60	0.77			0.77			
#4	-2.25	4.75	0.19			0.96			
#5	-2.00	4.00	0.32			1.28			
#7	-1.50	2.80	0.71			1.99			
#10	-1.00	2.00	0.90			2.89			
#14	-0.50	1.40	0.79			3.68			
#18	0.00	1.00	0.68			4.36			
#25	0.50	0.71	0.54			4.90			
#35	1.00	0.50	0.44			5.34			
#45	1.50	0.36	0.49			5.83			
#60	2.00	0.25	1.18			7.01			
#80	2.50	0.18	15.90			22.91			
#120	3.00	0.13	51.27			74.18			
#170	3.50	0.09	23.44			97.62			
#200	3.75	0.08	1.29			98.91			
#230	4.00	0.06	0.03			98.94			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to medium-grained sand-sized shell, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.44	3.21		3.02		2.76		2.52		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	2.57	0.17	2.76	0.15	0.99	-3.5	16.47		

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-29 @ 4 ft									
Analysis Date: 6/19/2014									
Easting (ft): 469,919	Northing (ft): 1,076,185		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -15.0 NAVD88			
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 1.22 #230 - 1.18	Organics (%):		Carbonates (%):	Shells (%): 24.5		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/4"	-4.25	19.00	0.00			0.00			
3/8"	-3.25	9.50	1.95			1.95			
#3.5	-2.50	5.60	0.40			2.35			
#4	-2.25	4.75	0.27			2.62			
#5	-2.00	4.00	0.36			2.98			
#7	-1.50	2.80	1.03			4.01			
#10	-1.00	2.00	1.81			5.82			
#14	-0.50	1.40	1.82			7.64			
#18	0.00	1.00	1.67			9.31			
#25	0.50	0.71	1.92			11.23			
#35	1.00	0.50	1.62			12.85			
#45	1.50	0.36	2.25			15.10			
#60	2.00	0.25	5.41			20.51			
#80	2.50	0.18	34.10			54.61			
#120	3.00	0.13	36.60			91.21			
#170	3.50	0.09	7.36			98.57			
#200	3.75	0.08	0.21			98.78			
#230	4.00	0.06	0.04			98.82			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to coarse-grained sand-sized shell, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.26	2.90		2.78		2.43		2.07		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	2.03	0.24	2.43	0.19	1.37	-2.5	9.26		

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-3 @ 0.5 ft									
Analysis Date: 6/12/2014									
Easting (ft): 470,059	Northing (ft): 1,074,342		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -10.3 NAVD88			
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 1.25 #230 - 1.11	Organics (%):		Carbonates (%):	Shells (%): 22.5		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/8"	-3.25	9.50	0.00			0.00			
#3.5	-2.50	5.60	1.46			1.46			
#4	-2.25	4.75	0.54			2.00			
#5	-2.00	4.00	0.21			2.21			
#7	-1.50	2.80	0.24			2.45			
#10	-1.00	2.00	0.57			3.02			
#14	-0.50	1.40	1.35			4.37			
#18	0.00	1.00	1.90			6.27			
#25	0.50	0.71	2.00			8.27			
#35	1.00	0.50	2.37			10.64			
#45	1.50	0.36	2.10			12.74			
#60	2.00	0.25	2.63			15.37			
#80	2.50	0.18	4.84			20.21			
#120	3.00	0.13	30.98			51.19			
#170	3.50	0.09	42.02			93.21			
#200	3.75	0.08	5.54			98.75			
#230	4.00	0.06	0.14			98.89			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.58	3.39		3.28		2.98		2.58		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	2.57	0.17	2.98	0.13	1.25	-2.53	9.46		

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-31 @ 0.5 ft									
Analysis Date: 6/19/2014									
Easting (ft): 469,213	Northing (ft): 1,073,852		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -12.3 NAVD88			
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 1.47 #230 - 1.40	Organics (%):		Carbonates (%):	Shells (%): 45.8		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/4"	-4.25	19.00	0.00			0.00			
3/8"	-3.25	9.50	1.55			1.55			
#3.5	-2.50	5.60	1.96			3.51			
#4	-2.25	4.75	0.72			4.23			
#5	-2.00	4.00	1.05			5.28			
#7	-1.50	2.80	3.48			8.76			
#10	-1.00	2.00	6.02			14.78			
#14	-0.50	1.40	7.86			22.64			
#18	0.00	1.00	7.32			29.96			
#25	0.50	0.71	6.92			36.88			
#35	1.00	0.50	4.65			41.53			
#45	1.50	0.36	3.47			45.00			
#60	2.00	0.25	2.99			47.99			
#80	2.50	0.18	14.49			62.48			
#120	3.00	0.13	27.20			89.68			
#170	3.50	0.09	8.58			98.26			
#200	3.75	0.08	0.27			98.53			
#230	4.00	0.06	0.07			98.60			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.31	2.90		2.73		2.07		-0.34		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	1.16	0.45	2.07	0.24	1.83	-0.7	2.37		

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-32 @ 0.5 ft									
Analysis Date: 6/19/2014									
Easting (ft): 470,100	Northing (ft): 1,073,506		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -10.0 NAVD88			
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 1.04 #230 - 1.00	Organics (%):		Carbonates (%):	Shells (%): 35.9		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/8"	-3.25	9.50	0.00			0.00			
#3.5	-2.50	5.60	0.98			0.98			
#4	-2.25	4.75	0.70			1.68			
#5	-2.00	4.00	0.96			2.64			
#7	-1.50	2.80	1.92			4.56			
#10	-1.00	2.00	3.23			7.79			
#14	-0.50	1.40	4.38			12.17			
#18	0.00	1.00	4.63			16.80			
#25	0.50	0.71	5.10			21.90			
#35	1.00	0.50	4.46			26.36			
#45	1.50	0.36	5.17			31.53			
#60	2.00	0.25	8.53			40.06			
#80	2.50	0.18	28.48			68.54			
#120	3.00	0.13	27.43			95.97			
#170	3.50	0.09	2.90			98.87			
#200	3.75	0.08	0.09			98.96			
#230	4.00	0.06	0.04			99.00			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, some fine to coarse-grained sand-sized shell, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
2.98	2.78		2.62		2.17		0.85		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	1.59	0.33	2.17	0.22	1.43	-1.24	3.57		

Granularmetric Report							
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District				
Sample Name: VB-LK14-5 @ 0.5 ft							
Analysis Date: 6/18/2014							
Easting (ft):			Northing (ft):			Coordinate System:	Elevation (ft):
470,712			1,076,822	State Plane, FLW (U.S. Ft.)		-7.5 NAVD88	
USCS:			Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/1			#200 - 0.86			13.5
Sieve Number		Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained		C. % Weight Retained	
3/4"	-4.25	19.00		0.00		0.00	
3/8"	-3.25	9.50		0.86		0.86	
#3.5	-2.50	5.60		0.13		0.99	
#4	-2.25	4.75		0.18		1.17	
#5	-2.00	4.00		0.13		1.30	
#7	-1.50	2.80		0.28		1.58	
#10	-1.00	2.00		0.52		2.10	
#14	-0.50	1.40		0.95		3.05	
#18	0.00	1.00		0.74		3.79	
#25	0.50	0.71		0.98		4.77	
#35	1.00	0.50		1.25		6.02	
#45	1.50	0.36		1.51		7.53	
#60	2.00	0.25		2.27		9.80	
#80	2.50	0.18		12.71		22.51	
#120	3.00	0.13		58.22		80.73	
#170	3.50	0.09		17.86		98.59	
#200	3.75	0.08		0.55		99.14	
#230	4.00	0.06		0.01		99.15	
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell							
Phi 5	Phi 16		Phi 25	Phi 50		Phi 75	Phi 84
3.40	3.09		2.95	2.74		2.52	2.24
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.52	0.17	2.74	0.15	1	-3.77	19.8

Granularmetric Report							
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District				
Sample Name: VB-LK14-5 @ 4 ft							
Analysis Date: 6/18/2014							
Easting (ft):			Northing (ft):			Coordinate System:	Elevation (ft):
470,712			1,076,822	State Plane, FLW (U.S. Ft.)		-11.0 NAVD88	
USCS:			Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SP	5Y 8/1			#200 - 0.98			3.8
Sieve Number		Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained		C. % Weight Retained	
3/8"		-3.25	9.50	0.00		0.00	
#3.5		-2.50	5.60	0.23		0.23	
#4		-2.25	4.75	0.00		0.23	
#5		-2.00	4.00	0.05		0.28	
#7		-1.50	2.80	0.02		0.30	
#10		-1.00	2.00	0.11		0.41	
#14		-0.50	1.40	0.16		0.57	
#18		0.00	1.00	0.32		0.89	
#25		0.50	0.71	0.26		1.15	
#35		1.00	0.50	0.30		1.45	
#45		1.50	0.36	0.90		2.35	
#60		2.00	0.25	2.83		5.18	
#80		2.50	0.18	30.76		35.94	
#120		3.00	0.13	52.87		88.81	
#170		3.50	0.09	9.69		98.50	
#200		3.75	0.08	0.52		99.02	
#230		4.00	0.06	0.04		99.06	
SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell							
Phi 5	Phi 16		Phi 25	Phi 50		Phi 75	Phi 84
3.32	2.95		2.87	2.63		2.32	2.18
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	2.56	0.17	2.63	0.16	0.55	-4.09	34.15

Granularmetric Report												
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District									
Sample Name: VB-LK14-6 @ 0.5 ft												
Analysis Date: 6/18/2014												
Easting (ft): 470,344	Northing (ft): 1,075,238		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -8.0 NAVD88						
USCS:	Munsell: 5Y 8/1		Fines (%): #200 - 6.20 #230 - 5.86	Organics (%):		Carbonates (%):	Shells (%): 4.5					
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained						
#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			0.28						
#7	-1.50	2.80	0.50			0.78						
#10	-1.00	2.00	0.47			1.25						
#14	-0.50	1.40	0.41			1.66						
#18	0.00	1.00	0.37			2.03						
#25	0.50	0.71	0.30			2.33						
#35	1.00	0.50	0.36			2.69						
#45	1.50	0.36	0.34			3.03						
#60	2.00	0.25	0.44			3.47						
#80	2.50	0.18	1.37			4.84						
#120	3.00	0.13	17.01			21.85						
#170	3.50	0.09	65.61			87.46						
#200	3.75	0.08	6.34			93.80						
#230	4.00	0.06	0.34			94.14						
SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace shell												
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95						
	3.47	3.41	3.21	3.02	2.83	2.50						
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis					
Statistics	3.04	0.12	3.21	0.11	0.74	-4.78	28.63					

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-6 @ 6 ft									
Analysis Date: 6/18/2014									
Easting (ft): 470,344	Northing (ft): 1,075,238		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -13.5 NAVD88			
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 0.97 #230 - 0.90	Organics (%):		Carbonates (%):	Shells (%): 16.4		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/4"	-4.25	19.00	0.00			0.00			
3/8"	-3.25	9.50	0.57			0.57			
#3.5	-2.50	5.60	1.48			2.05			
#4	-2.25	4.75	0.30			2.35			
#5	-2.00	4.00	0.80			3.15			
#7	-1.50	2.80	1.58			4.73			
#10	-1.00	2.00	1.74			6.47			
#14	-0.50	1.40	2.20			8.67			
#18	0.00	1.00	1.79			10.46			
#25	0.50	0.71	1.71			12.17			
#35	1.00	0.50	1.43			13.60			
#45	1.50	0.36	1.37			14.97			
#60	2.00	0.25	2.15			17.12			
#80	2.50	0.18	16.27			33.39			
#120	3.00	0.13	50.19			83.58			
#170	3.50	0.09	14.98			98.56			
#200	3.75	0.08	0.47			99.03			
#230	4.00	0.06	0.07			99.10			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.38	3.01		2.91		2.67		2.24		
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	2.18	0.22	2.67	0.16	1.42	-2.27	7.48		

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-7 @ 0.5 ft									
Analysis Date: 6/17/2014									
Easting (ft): 470,215	Northing (ft): 1,077,741		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -12.5 NAVD88			
USCS: SP	Munsell: 5Y 8/1		Fines (%): #200 - 1.79 #230 - 1.71	Organics (%):		Carbonates (%):	Shells (%): 7.3		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/8"	-3.25	9.50	0.00			0.00			
#3.5	-2.50	5.60	0.30			0.30			
#4	-2.25	4.75	0.07			0.37			
#5	-2.00	4.00	0.06			0.43			
#7	-1.50	2.80	0.26			0.69			
#10	-1.00	2.00	0.40			1.09			
#14	-0.50	1.40	0.59			1.68			
#18	0.00	1.00	0.81			2.49			
#25	0.50	0.71	1.56			4.05			
#35	1.00	0.50	0.65			4.70			
#45	1.50	0.36	1.29			5.99			
#60	2.00	0.25	8.55			14.54			
#80	2.50	0.18	51.34			65.88			
#120	3.00	0.13	30.17			96.05			
#170	3.50	0.09	2.12			98.17			
#200	3.75	0.08	0.04			98.21			
#230	4.00	0.06	0.08			98.29			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell, trace silt									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
2.98	2.80		2.65		2.35		2.10		
Moment	Mean Phi		Mean mm		Median Phi		Median mm		
Statistics	2.24		0.21		2.35		0.20		
	Sorting		Skewness		Kurtosis				
	0.72		-3.38		18.82				

GRANULARMETRIC REPORT % BIG SARASOTA PASS.GPJ CESA/J3.GDT 10/10/14

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-8 @ 0.5 ft									
Analysis Date: 6/19/2014									
Easting (ft): 471,150	Northing (ft): 1,074,258		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -2.5 NAVD88			
USCS: SP	Munsell: 5Y 8/1		Fines (%): #200 - 0.93 #230 - 0.93	Organics (%):		Carbonates (%):	Shells (%): 4.3		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
#5	-2.00	4.00	0.00			0.00			
#7	-1.50	2.80	0.17			0.17			
#10	-1.00	2.00	0.42			0.59			
#14	-0.50	1.40	0.44			1.03			
#18	0.00	1.00	0.50			1.53			
#25	0.50	0.71	0.42			1.95			
#35	1.00	0.50	0.42			2.37			
#45	1.50	0.36	0.52			2.89			
#60	2.00	0.25	1.63			4.52			
#80	2.50	0.18	24.54			29.06			
#120	3.00	0.13	61.03			90.09			
#170	3.50	0.09	8.89			98.98			
#200	3.75	0.08	0.09			99.07			
#230	4.00	0.06	0.00			99.07			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell									
Phi 5	Phi 16		Phi 25		Phi 50		Phi 75		
3.28	2.95		2.88		2.67		2.42		
Moment	Mean Phi		Mean mm		Median Phi		Median mm		
Statistics	2.57		0.17		2.67		0.16		
	Sorting		Skewness		Kurtosis				
	0.57		-3.88		24.04				

Granularmetric Report							
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District				
Sample Name: VB-LK14-8 @ 6 ft							
Analysis Date: 6/19/2014							
Easting (ft):			Northing (ft):			Coordinate System:	Elevation (ft):
471,150			1,074,258	State Plane, FLW (U.S. Ft.)		-8.0 NAVD88	
USCS:			Munsell:	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
SW	5Y 8/1			#200 - 1.09			53.8
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained	
3/4"	-4.25	19.00	0.00			0.00	
3/8"	-3.25	9.50	1.46			1.46	
#3.5	-2.50	5.60	2.04			3.50	
#4	-2.25	4.75	0.42			3.92	
#5	-2.00	4.00	1.19			5.11	
#7	-1.50	2.80	4.22			9.33	
#10	-1.00	2.00	7.38			16.71	
#14	-0.50	1.40	9.58			26.29	
#18	0.00	1.00	8.68			34.97	
#25	0.50	0.71	8.09			43.06	
#35	1.00	0.50	4.88			47.94	
#45	1.50	0.36	3.75			51.69	
#60	2.00	0.25	4.34			56.03	
#80	2.50	0.18	16.37			72.40	
#120	3.00	0.13	22.50			94.90	
#170	3.50	0.09	3.90			98.80	
#200	3.75	0.08	0.11			98.91	
#230	4.00	0.06	0.02			98.93	
SAND, poorly-graded, mostly fine to coarse-grained sand-sized shell, some fine-grained sand-sized shell, trace silt							
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.01	2.76	2.56	1.27	-0.57	-1.05	-2.02	
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis
Statistics	0.90	0.54	1.27	0.41	1.78	-0.49	2.15

Granularmetric Report									
Project Name: Vibracore Logging and Lab Analysis			 US Army Corps of Engineers Jacksonville District						
Sample Name: VB-LK14-8 @ 11 ft									
Analysis Date: 6/19/2014									
Easting (ft): 471,150	Northing (ft): 1,074,258		Coordinate System: State Plane, FLW (U.S. Ft.)			Elevation (ft): -13.0 NAVD88			
USCS: SW	Munsell: 5Y 8/1		Fines (%): #200 - 0.98 #230 - 0.96	Organics (%):		Carbonates (%):	Shells (%): 47		
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	% Weight Retained			C. % Weight Retained			
3/8"	-3.25	9.50	0.00			0.00			
#3.5	-2.50	5.60	0.92			0.92			
#4	-2.25	4.75	0.83			1.75			
#5	-2.00	4.00	0.88			2.63			
#7	-1.50	2.80	3.56			6.19			
#10	-1.00	2.00	4.81			11.00			
#14	-0.50	1.40	8.05			19.05			
#18	0.00	1.00	8.58			27.63			
#25	0.50	0.71	8.90			36.53			
#35	1.00	0.50	6.40			42.93			
#45	1.50	0.36	5.85			48.78			
#60	2.00	0.25	5.36			54.14			
#80	2.50	0.18	16.23			70.37			
#120	3.00	0.13	23.80			94.17			
#170	3.50	0.09	4.69			98.86			
#200	3.75	0.08	0.16			99.02			
#230	4.00	0.06	0.02			99.04			
SAND, poorly-graded, mostly fine-grained sand-sized quartz, some medium to coarse-grained sand-sized shell									
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95			
3.09	2.79	2.60	1.61	-0.15	-0.69	-1.67			
Moment	Mean Phi	Mean mm	Median Phi	Median mm	Sorting	Skewness	Kurtosis		
Statistics	1.16	0.45	1.61	0.33	1.59	-0.52	2.07		