

**APPENDIX D – DRILLING LOGS – SEDIMENT CORE BORINGS
COLLECTED FROM ENTRANCE CHANNEL SHOAL**

Boring Designation CB-PEH03-1

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District		SHEET 1 OF 3 SHEETS	
1. PROJECT Port Everglades Harbor, FL Entrance Channel				9. SIZE AND TYPE OF BIT See Remarks			
2. BORING DESIGNATION CB-PEH03-1		LOCATION COORDINATES X = 950,018 Y = 640,997		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)		HORIZONTAL NAD83	
3. DRILLING AGENCY Corps Of Engineers		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500		<input type="checkbox"/> AUTO HAMMER <input checked="" type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Danny Hewett				12. TOTAL SAMPLES		DISTURBED 29	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				13. TOTAL NUMBER CORE BOXES		UNDISTURBED (UD) 0	
6. THICKNESS OF OVERBURDEN		0.0 Ft.		14. ELEVATION GROUND WATER		N/A	
7. DEPTH DRILLED INTO ROCK		0.0 Ft.		15. DATE BORING		STARTED 06-18-03 COMPLETED 06-19-03	
8. TOTAL DEPTH OF BORING 43.0 Ft.				16. ELEVATION TOP OF BORING		-12.9 Ft.	
				17. TOTAL RECOVERY FOR BORING		67 %	
				18. SIGNATURE AND TITLE OF INSPECTOR Michael Ruth, Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
-12.9	0.0								
			SAND, poorly-graded, mostly fine to coarse-grained sand-sized carbonate, little shell up to 1/4", strong reaction with HCl, homogeneous, green/gray (SP)	33	1		-12.9	10	
			At El. -14.4 Ft., mostly fine-grained sand-sized carbonate	47	2		-14.4	11	23
			At El. -15.9 Ft., few shell	47	3		-15.9	12	24
				100	4		-17.4	4	31
				100	5		-18.9	7	5
				27	6		-20.4	24	23
				0	7		-21.9	5	29
				100	8		-23.4	9	28
				0	9		-24.9	12	13
			At El. -26.4 Ft., some shell up to 1/4"	80	10		-26.4	6	10
							-27.9	7	31
								3	7
								4	
								8	20
								12	15

Boring Designation CB-PEH03-1

DRILLING LOG (Cont. Sheet)		INSTALLATION			SHEET 2				
		Jacksonville District			OF 3 SHEETS				
PROJECT		COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL				
Port Everglades Harbor, FL		State Plane, FLE (U.S. Ft.)		NAD83	MLLW				
LOCATION COORDINATES		ELEVATION TOP OF BORING							
X = 950,018 Y = 640,997		-12.9 Ft.							
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OF SAMPLE	ROD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
-29.4	16.5	[Dotted pattern]	SAND, poorly-graded, mostly shell (SP)	100	11		SPT Sampler	7 10	29
-30.9	18.0	[Dotted pattern]	SAND, poorly-graded, mostly fine-grained sand-sized carbonate, some shell (SP)	33	12		SPT Sampler	17 17	36
-32.4	19.5	[Dotted pattern]	SAND, poorly-graded, mostly shell up to 1/4" (SP)	67	13		SPT Sampler	8 9	23
-35.4	22.5	[Dotted pattern]	SAND, poorly-graded, mostly fine-grained sand-sized carbonate, some shell (SP)	60	14		SPT Sampler	9 9	20
		[Dotted pattern]	At El. -33.9 Ft., mostly shell up to 1/8"	87	15		SPT Sampler	12 14	24
		[Dotted pattern]	SAND, poorly-graded, mostly fine-grained sand-sized carbonate, some shell (SP)	80	16		SPT Sampler	10 20	30
		[Dotted pattern]	At El. -41.4 Ft., trace wood debris	93	17		SPT Sampler	24 30	70
		[Dotted pattern]	At El. -42.9 Ft., dark gray/green	7	18		SPT Sampler	8 14	32
		[Dotted pattern]	At El. -45.9 Ft., few fine-grained sand-sized carbonate	100	19		SPT Sampler	10 9	19
		[Dotted pattern]	WOOD, some fine to coarse-grained sand-sized shell up to 1/4"	100	20		SPT Sampler	8 9	23
		[Dotted pattern]	At El. -45.9 Ft., few fine-grained sand-sized carbonate	100	21		SPT Sampler	7 10	24
-45.6	32.8	[Dotted pattern]	WOOD, some fine to coarse-grained sand-sized shell up to 1/4"	100	22		SPT Sampler	11 9	20
-47.4	34.5	[Dotted pattern]	SAND, poorly-graded, mostly shell, some	100	23		SPT Sampler	5 9	23
		[Dotted pattern]	SAND, poorly-graded, mostly shell, some	53	24		SPT Sampler	6	35

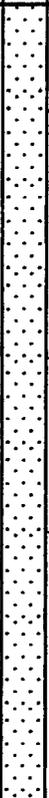
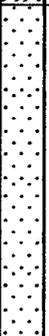
DRILLING LOG (Cont. Sheet)		INSTALLATION		SHEET 3																																
PROJECT Port Everglades Harbor, FL		Jacksonville District		OF 3 SHEETS																																
LOCATION COORDINATES X = 950,018 Y = 640,997		COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)		HORIZONTAL NAD83																																
		ELEVATION TOP OF BORING -12.9 Ft.		VERTICAL MLLW																																
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE																											
-48.9	36.0	[Dotted Pattern]	fine-grained sand-sized carbonate, trace wood debris, dark gray/green (SP)	53	24		SPT Sampler	8	14																											
			SAND, poorly-graded, mostly fine-grained sand-sized carbonate, some shell (SP)	27	25		SPT Sampler	6	15																											
								6																												
								9																												
								14																												
								16	30																											
								14																												
							8																													
							12	20																												
							8																													
							8																													
							10	26																												
							16																													
							8																													
							19	69+																												
-55.8	43.8		LIMESTONE, hard, slightly weathered, fine-grained, dark gray				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).	50/0.0'																												
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results																																	
			<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>0.0/1.5</td><td>SP-SM*</td></tr> <tr><td>2</td><td>1.5/3.0</td><td>SP*</td></tr> <tr><td>5</td><td>6.0/7.5</td><td>SP*</td></tr> <tr><td>8</td><td>10.5/12.0</td><td>SP*</td></tr> <tr><td>11</td><td>15.0/16.5</td><td>SP*</td></tr> <tr><td>15</td><td>21.0/22.5</td><td>SP*</td></tr> <tr><td>20</td><td>28.5/30.0</td><td>SP-SM*</td></tr> <tr><td>23</td><td>33.0/34.5</td><td>SP-SM*</td></tr> </tbody> </table>	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.0/1.5	SP-SM*	2	1.5/3.0	SP*	5	6.0/7.5	SP*	8	10.5/12.0	SP*	11	15.0/16.5	SP*	15	21.0/22.5	SP*	20	28.5/30.0	SP-SM*	23	33.0/34.5	SP-SM*						
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																																		
1	0.0/1.5	SP-SM*																																		
2	1.5/3.0	SP*																																		
5	6.0/7.5	SP*																																		
8	10.5/12.0	SP*																																		
11	15.0/16.5	SP*																																		
15	21.0/22.5	SP*																																		
20	28.5/30.0	SP-SM*																																		
23	33.0/34.5	SP-SM*																																		
			*Lab visual classification based on gradation curve. No Atterberg limits.																																	

Boring Designation CB-PEH03-2

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District			SHEET 1 OF 3 SHEETS	
1. PROJECT Port Everglades Harbor, FL Entrance Channel				9. SIZE AND TYPE OF BIT See Remarks				
2. BORING DESIGNATION CB-PEH03-2		LOCATION COORDINATES X = 950,222 Y = 641,015		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
3. DRILLING AGENCY Corps Of Engineers		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500		<input type="checkbox"/> AUTO HAMMER	<input checked="" type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Danny Hewett				12. TOTAL SAMPLES		DISTURBED 26	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 1				
6. THICKNESS OF OVERBURDEN 0.0 Ft.				14. ELEVATION GROUND WATER N/A				
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				15. DATE BORING		STARTED 06-20-03	COMPLETED 06-20-03	
8. TOTAL DEPTH OF BORING 39.0 Ft.				16. ELEVATION TOP OF BORING -16.4 Ft.				
				17. TOTAL RECOVERY FOR BORING 83 %				
				18. SIGNATURE AND TITLE OF INSPECTOR Michael Ruth, Geologist				

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/FOOT	N-VALUE
-16.4	0.0		SAND, poorly-graded, mostly fine-grained sand-sized carbonate, some shell up to 1/8", strong reaction with HCl, green/gray (SP)						
				67	1		-16.4 SPT Sampler	WOH 1	0
				87	2		-17.9 SPT Sampler	3 7 10	4 22
				100	3		-19.4 SPT Sampler	10 10	19
				100	4		-20.9 SPT Sampler	9 8 7	5 13
				87	5		-22.4 SPT Sampler	6 5 4	11
				47	6		-23.9 SPT Sampler	7 5 6	14
				100	7		-25.4 SPT Sampler	8 5 4	9 10
				87	8		-26.9 SPT Sampler	5 8 8	17
				87	9		-28.4 SPT Sampler	9 8 5	9
				100	10		-29.9 SPT Sampler	4 5 5	11
							-31.4	6	15

Boring Designation CB-PEH03-2

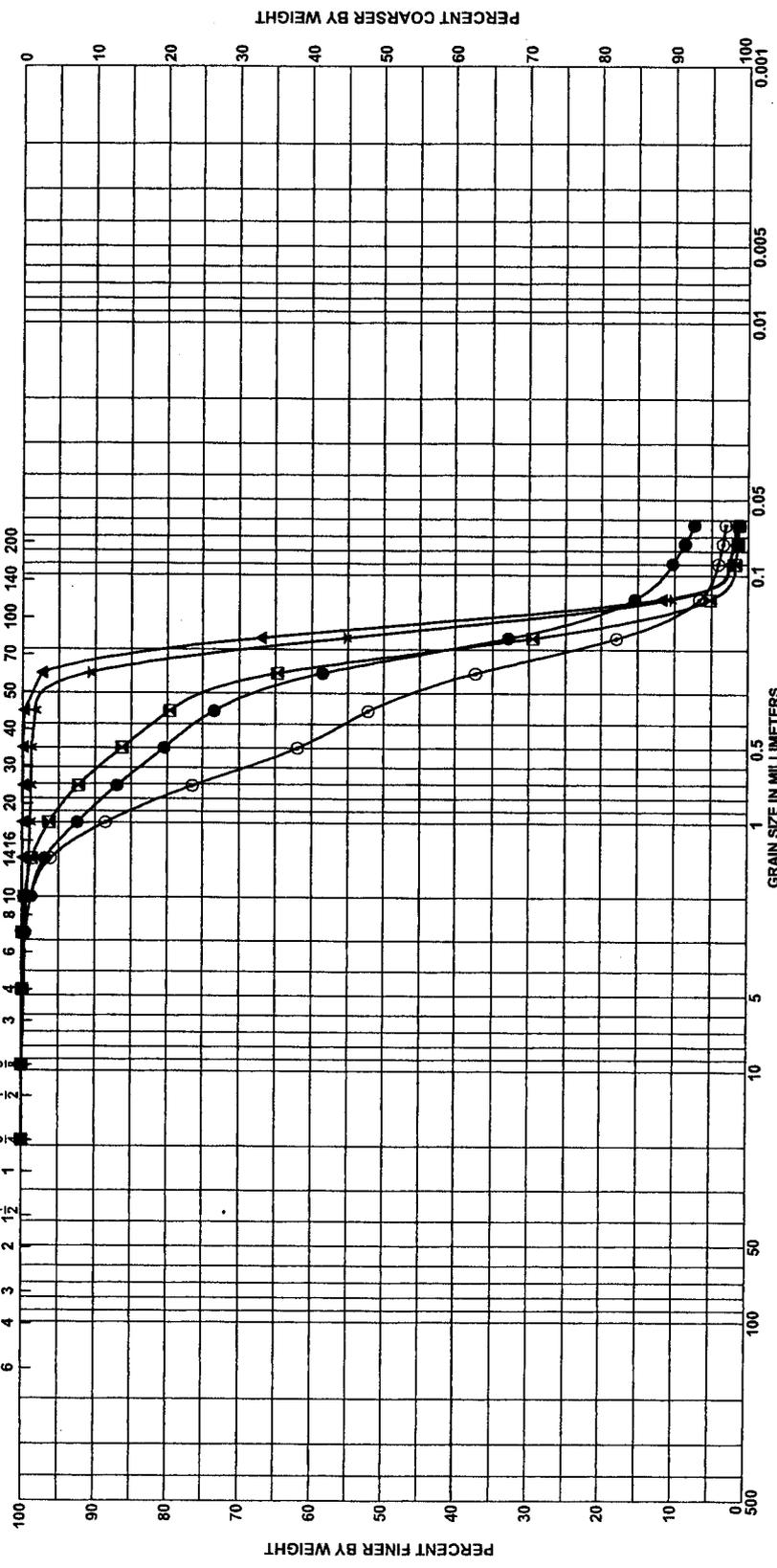
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District		SHEET 2 OF 3 SHEETS						
PROJECT Port Everglades Harbor, FL			COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW					
LOCATION COORDINATES X = 950,222 Y = 641,015			ELEVATION TOP OF BORING -16.4 Ft.								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/10 FT.	N-VALUE		
			At El. -32.9 Ft., mostly fine to coarse-grained sand-sized carbonate At El. -36.4 Ft., mostly fine-grained sand-sized carbonate At El. -38.9 Ft., dark green	87	11		SPT Sampler	9 7 11	18		
				87	12		SPT Sampler	9 6 9	15		
				73	13		SPT Sampler	7 5 5	10		
				100	14		SPT Sampler	4 4 5	9		
				100	15		SPT Sampler	9 7 7	14		
				100	16		SPT Sampler	7 16 16	32		
				80	17		SPT Sampler	12 12 8	20		
-42.9	26.5			80	18		SPT Sampler	8 14 15	29		
					SHELL, mostly shell, little sand	80	19		SPT Sampler	14 15 8	23
-44.9	28.5					80	20		SPT Sampler	8 7 19	26
					SAND, poorly-graded, mostly fine to medium-grained sand-sized carbonate, little shell, strong reaction with HCl, dark gray/green (SP)	80	20		SPT Sampler	8 7 19	30
						47	21		SPT Sampler	11 15 18	33
						67	22		SPT Sampler	8 7 4	11
-49.9	33.5				CLAY, fat, medium plasticity, little silt, dark olive green (CH)	100	23		SPT Sampler	2 1 5	6
-50.4	34.0					80	24		SPT Sampler	5 4	35
					LIMESTONE, moderately hard, highly weathered, coarse-grained, yellow/white/gray	80	24		SPT Sampler	5 4	35
						80	24		SPT Sampler	4	35

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District			SHEET 2 OF 2 SHEETS																					
PROJECT Port Everglades Harbor, FL			COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW																					
LOCATION COORDINATES X = 949,854 Y = 641,018			ELEVATION TOP OF BORING -16.7 Ft.																								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE																		
				73	11		SPT Sampler	7	14																		
								7																			
								7																			
				60	12		SPT Sampler	8	16																		
								7																			
								9																			
				67	13		SPT Sampler	10	25																		
								15																			
								10																			
				73	14		SPT Sampler	4	20																		
								4																			
								8																			
-38.0	21.3			33	15		SPT Sampler	50/0.3'																			
			LIMESTONE, hard, slightly weathered, fine-grained, medium, vuggy, dark gray At El. -39.5 Ft., fossiliferous	67		RQD 0	4 x 5-1/2" Diamond Set Bit		25																		
				57		BOX 1	RQD 0	4 x 5-1/2" Diamond Set Bit																			
-42.5	25.8																										
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).		30																		
			<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>0.0/1.5</td> <td>SP*</td> </tr> <tr> <td>4</td> <td>4.5/6.0</td> <td>SP*</td> </tr> <tr> <td>7</td> <td>9.0/10.5</td> <td>SP*</td> </tr> <tr> <td>10</td> <td>13.5/15.0</td> <td>SP*</td> </tr> <tr> <td>14</td> <td>19.5/21.0</td> <td>SP-SM*</td> </tr> </tbody> </table>	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	0.0/1.5		SP*	4	4.5/6.0	SP*	7	9.0/10.5	SP*	10	13.5/15.0	SP*	14	19.5/21.0	SP-SM*					
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																									
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10	13.5/15.0	SP*																									
14	19.5/21.0	SP-SM*																									
			*Lab visual classification based on gradation curve. No Atterberg limits.																								

HYDROMETER

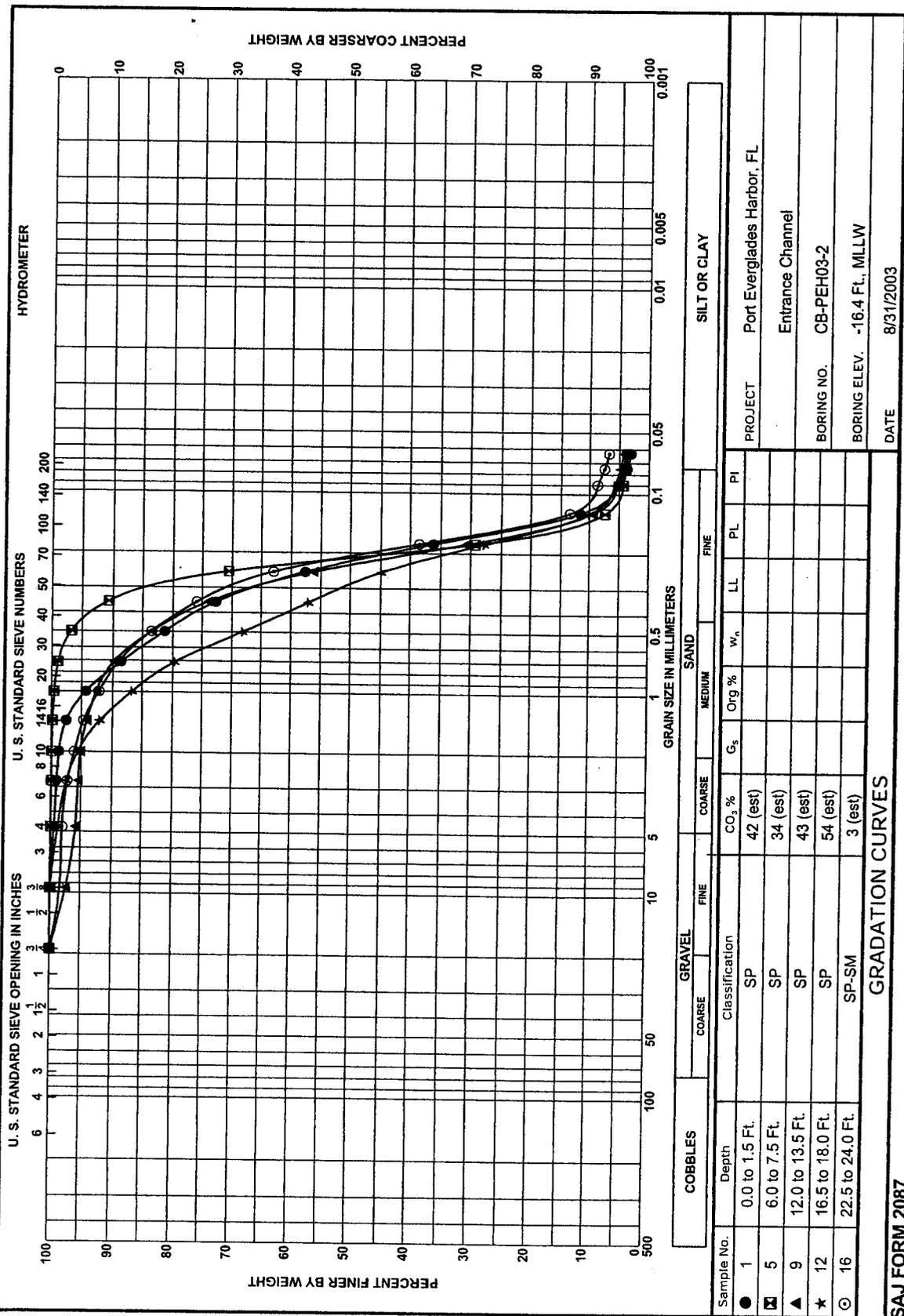
U. S. STANDARD SIEVE NUMBERS

U. S. STANDARD SIEVE OPENING IN INCHES



Sample No.	Depth	Classification	GRAVEL			SAND			FINE			PI
			COARSE	FINE	COARSE	MEDIUM	FINE	LL	PL	PI		
● 1	0.0 to 1.5 Ft.	SP-SM			CO ₂ %	G _s	Org %	w _n	LL	PL	PI	
☒ 2	1.5 to 3.0 Ft.	SP			43 (est)							
▲ 5	6.0 to 7.5 Ft.	SP			41 (est)							
★ 8	10.5 to 12.0 Ft.	SP			29 (est)							
◎ 11	15.0 to 16.5 Ft.	SP			48 (est)							
					57 (est)							

PROJECT: Port Everglades Harbor, FL
 ENTRANCE CHANNEL
 BORING NO.: CB-PEH03-1
 BORING ELEV.: -12.9 Ft., MLLW
 DATE: 8/31/2003

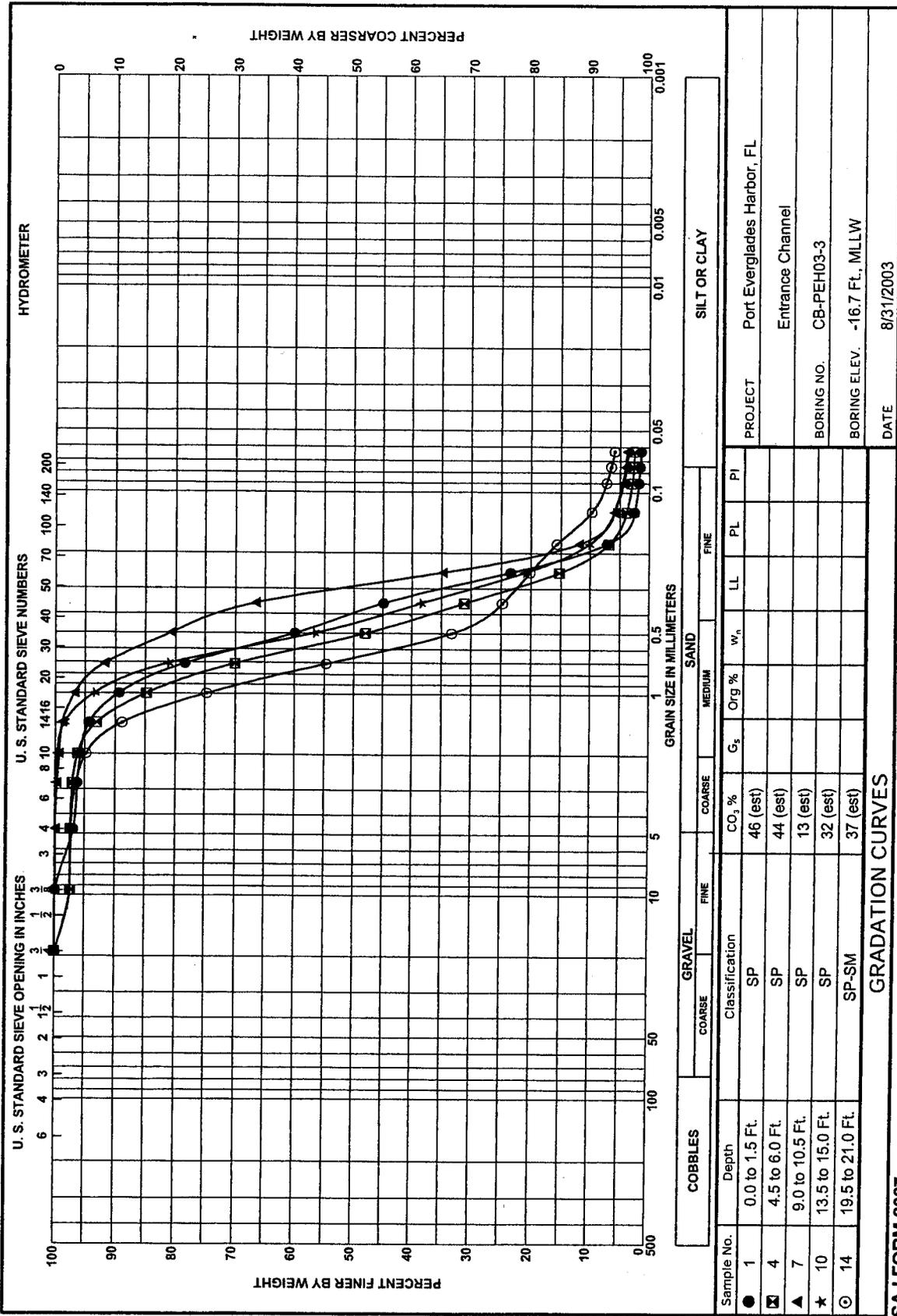


U.S. STANDARD SIEVE OPENING IN INCHES
 U.S. STANDARD SIEVE NUMBERS
 PERCENT FINER BY WEIGHT
 PERCENT COARSER BY WEIGHT
 HYDROMETER
 GRAIN SIZE IN MILLIMETERS
 SAND
 SILT OR CLAY

Sample No.	Depth	Classification	GRAVEL			SAND			SILT OR CLAY			
			COARSE	FINE	PI	COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE	
			CO ₃ %	G _s	Org %	w _n	LL	PL	PI			
● 1	0.0 to 1.5 Ft.	SP	42 (est)									
☒ 5	6.0 to 7.5 Ft.	SP	34 (est)									
▲ 9	12.0 to 13.5 Ft.	SP	43 (est)									
★ 12	16.5 to 18.0 Ft.	SP	54 (est)									
◎ 16	22.5 to 24.0 Ft.	SP-SM	3 (est)									

PROJECT: Port Everglades Harbor, FL
 Entrance Channel
 BORING NO. CB-PEH03-2
 BORING ELEV. -16.4 Ft., MLLW
 DATE 8/31/2003

GRADATION CURVES



Sample No.	Depth	Classification	GRAVEL		SAND			SILT OR CLAY		
			COARSE	FINE	COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE
● 1	0.0 to 1.5 Ft.	SP	CO ₂ %	G _s	w _n	LL	PL	PI	PROJECT	Port Everglades Harbor, FL
☒ 4	4.5 to 6.0 Ft.	SP	46 (est)						ENTRANCE CHANNEL	Entrance Channel
▲ 7	9.0 to 10.5 Ft.	SP	44 (est)						BORING NO.	CB-PEH03-3
★ 10	13.5 to 15.0 Ft.	SP	13 (est)						BORING ELEV.	-16.7 Ft., MLLW
◎ 14	19.5 to 21.0 Ft.	SP-SM	32 (est)						DATE	8/31/2003
			37 (est)							

GRADATION CURVES

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