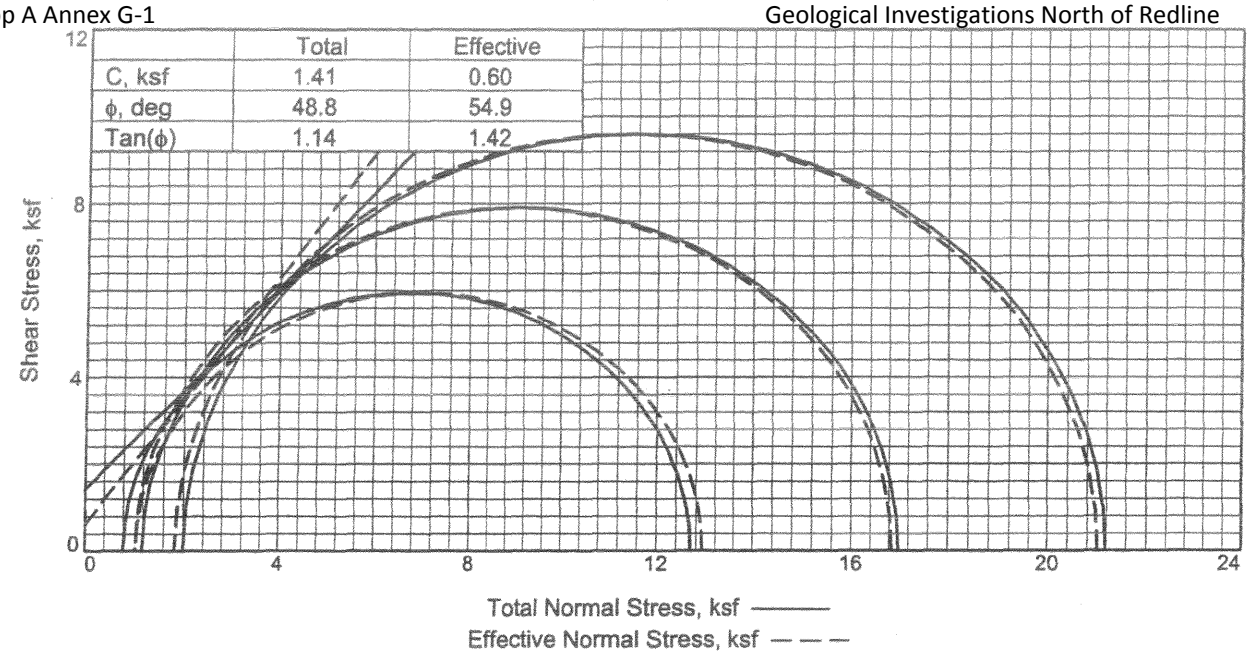
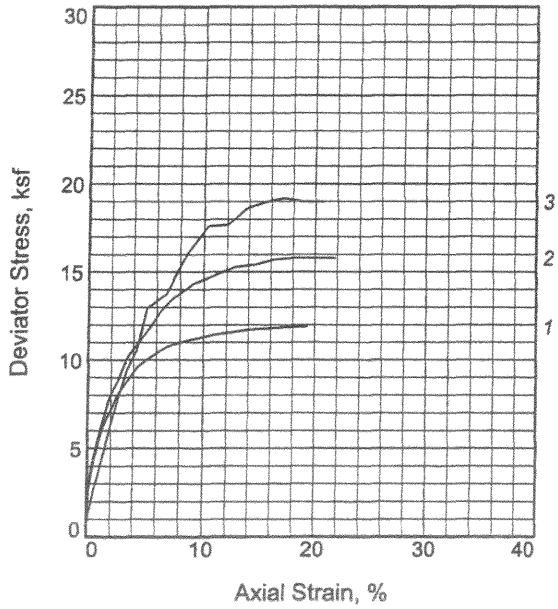


	Total	Effective
C, ksf	1.41	0.60
ϕ, deg	48.8	54.9
Tan(ϕ)	1.14	1.42



Sample No.		1	2	3
Initial	Water Content,	16.6	16.6	16.6
	Dry Density, pcf	109.1	109.5	109.5
	Saturation,	79.1	79.9	79.8
	Void Ratio	0.5800	0.5745	0.5747
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.70	5.52	5.82
At Test	Water Content,	20.7	20.0	20.3
	Dry Density, pcf	109.8	111.1	110.5
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.5709	0.5523	0.5609
	Diameter, in.	2.83	2.83	2.83
	Height, in.	5.69	5.49	5.80
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		7.2	7.2	7.2
Cell Pressure, ksf		8.0	8.4	9.2
Fail. Stress, ksf		11.9	15.8	19.2
Total Pore Pr., ksf		7.0	7.3	7.4
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		12.9	16.9	21.0
$\bar{\sigma}_3$ Failure, ksf		1.1	1.1	1.8

Type of Test: CU with Pore Pressures

Sample Type: remolded

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:

Reviewed By _____

Client: Nodarse and Associates

Project: Material Testing-Nodarse

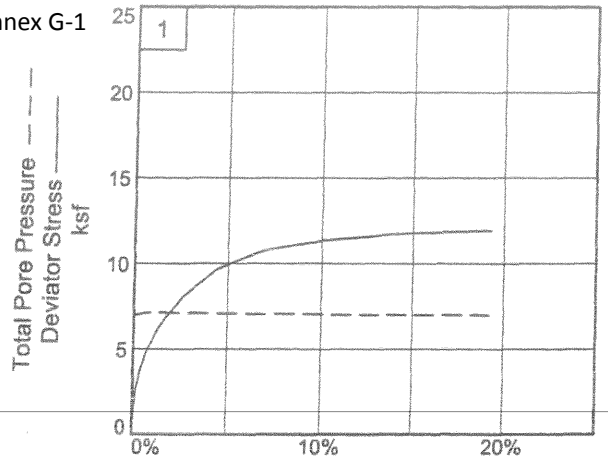
Sample Number: CU-95%-A

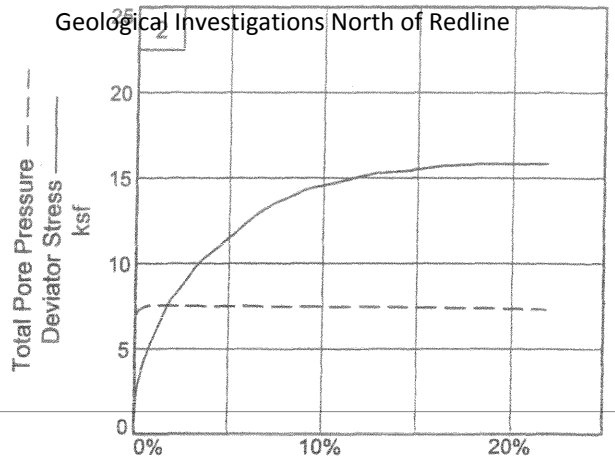
Proj. No.: 6738-05-4573 **Date:** 6-10-05

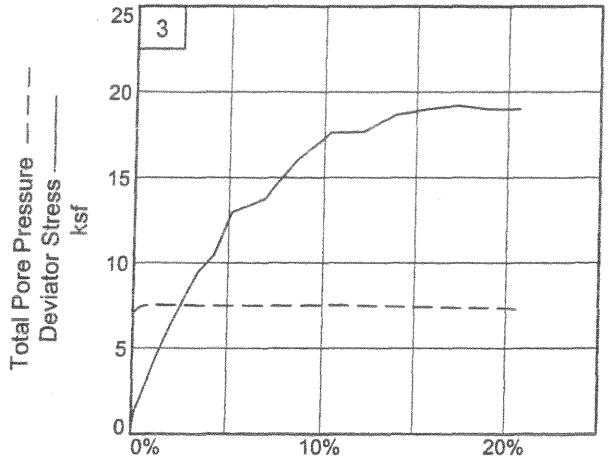
TRIAXIAL SHEAR TEST REPORT

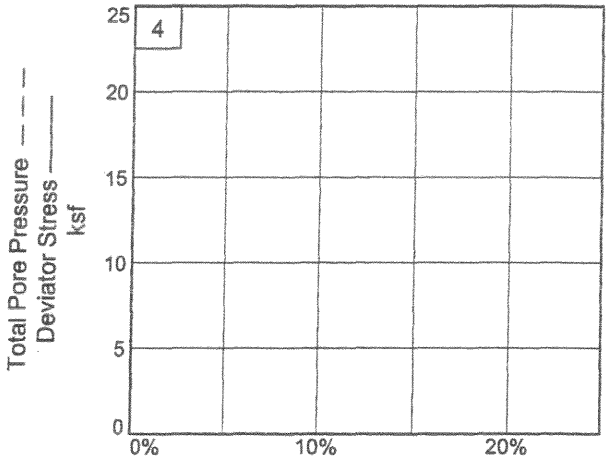
MACTEC ENGINEERING AND CONSULTING, INC.

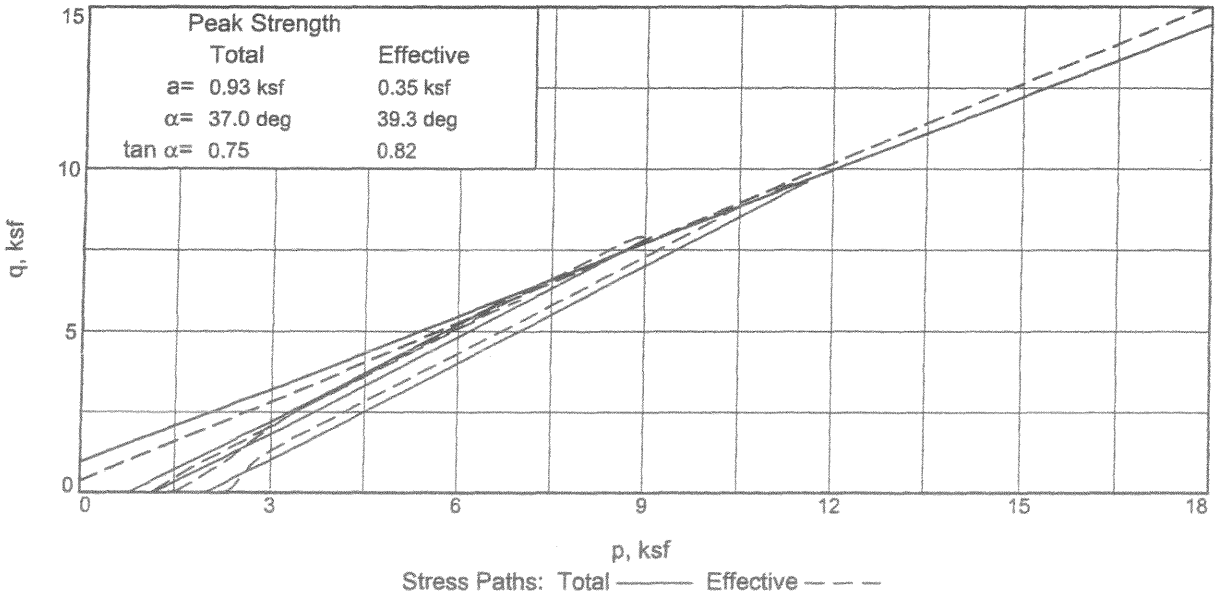
Tested By: mc **Checked By:** Rajni Sukhwani











Client: Nodarse and Associates
Project: Material Testing-Nodarse
Sample Number: CU-95%-A
Project No.: 6738-05-4573

Reviewed By _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: mc _____ **Checked By:** _____

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

6/16/2005
10:39 AM

Date: 6-10-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: CU-95%-A
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks:
Type of Sample: remolded
Specific Gravity=2.762 **LL=** **PL=** **PI=**
Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	188.090			1333.800
Moisture content: Dry soil+tare, gms.	168.510			1149.300
Moisture content: Tare, gms.	50.650			95.400
Moisture, %	16.6	21.0	20.7	17.5
Moist specimen weight, gms.	1206.2			
Diameter, in.	2.84	2.84	2.83	
Area, in.²	6.33	6.33	6.31	
Height, in.	5.70	5.70	5.69	
Net decrease in height, in.		0.00	0.01	
Wet Density, pcf	127.3	132.0	132.5	
Dry density, pcf	109.1	109.1	109.8	
Void ratio	0.5800	0.5800	0.5709	
Saturation, %	79.1	100.0	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 55.60 psi (8.01 ksf)
Consolidation back pressure = 50.00 psi (7.20 ksf)
Consolidation effective confining stress = 0.81 ksf
Strain rate, in./min. = 0.05
Fail. Stress = 11.89 ksf **at reading no.** 28

MACTEC Engineering and Consulting, Inc.

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.17	1.17	1.00	47.50	1.17	0.00
1	0.0010	5.00	16.6	0.0	0.38	1.11	1.49	1.34	47.90	1.30	0.19
2	0.0050	22.00	72.9	0.1	1.66	1.01	2.67	2.65	48.60	1.84	0.83
3	0.0100	35.00	116.0	0.2	2.64	0.99	3.64	3.66	48.70	2.31	1.32
4	0.0150	41.00	135.8	0.3	3.09	1.01	4.10	4.07	48.60	2.55	1.55
5	0.0200	47.00	155.7	0.4	3.54	0.96	4.51	4.67	48.90	2.74	1.77
6	0.0250	51.00	169.0	0.4	3.84	0.96	4.80	4.98	48.90	2.88	1.92
7	0.0300	55.00	182.2	0.5	4.14	0.94	5.07	5.42	49.10	3.00	2.07
8	0.0350	59.00	195.5	0.6	4.43	0.92	5.35	5.81	49.20	3.14	2.22
9	0.0400	63.00	208.7	0.7	4.73	0.91	5.64	6.21	49.30	3.27	2.36
10	0.0450	66.00	218.7	0.8	4.95	0.91	5.86	6.46	49.30	3.38	2.48
11	0.0500	69.00	228.6	0.9	5.17	0.89	6.06	6.79	49.40	3.48	2.59
12	0.0750	82.00	271.7	1.3	6.12	0.89	7.01	7.85	49.40	3.95	3.06
13	0.1000	92.00	304.8	1.8	6.83	0.91	7.74	8.53	49.30	4.32	3.42
14	0.1250	100.00	331.3	2.2	7.39	0.91	8.30	9.15	49.30	4.60	3.70
15	0.1500	109.00	361.1	2.6	8.02	0.92	8.95	9.71	49.20	4.93	4.01
16	0.1750	115.00	381.0	3.1	8.43	0.92	9.35	10.14	49.20	5.14	4.21
17	0.2000	121.00	400.9	3.5	8.83	0.92	9.75	10.58	49.20	5.33	4.41
18	0.2500	133.00	440.6	4.4	9.61	0.94	10.55	11.27	49.10	5.74	4.81
19	0.3000	140.00	463.8	5.3	10.03	0.94	10.96	11.71	49.10	5.95	5.01
20	0.3500	147.00	487.0	6.2	10.43	0.95	11.38	11.97	49.00	6.17	5.21
21	0.4000	153.00	506.9	7.0	10.75	0.96	11.72	12.15	48.90	6.34	5.38
22	0.5000	161.00	533.4	8.8	11.10	0.96	12.07	12.51	48.90	6.52	5.55
23	0.6000	168.00	556.6	10.5	11.36	0.99	12.36	12.43	48.70	6.67	5.68
24	0.7000	174.00	576.5	12.3	11.54	1.01	12.54	12.44	48.60	6.78	5.77
25	0.8000	180.00	596.3	14.1	11.69	1.02	12.72	12.44	48.50	6.87	5.85
26	0.9000	185.00	612.9	15.8	11.77	1.04	12.81	12.36	48.40	6.92	5.89
27	1.0000	190.00	629.5	17.6	11.84	1.04	12.88	12.42	48.40	6.96	5.92
28	1.1000	195.00	646.0	19.3	11.89	1.05	12.94	12.31	48.30	7.00	5.95

MACTEC Engineering and Consulting, Inc.

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	188.090			1272.600
Moisture content: Dry soil+tare, gms.	168.510			1089.700
Moisture content: Tare, gms.	50.650			106.200
Moisture, %	16.6	20.8	20.0	18.6
Moist specimen weight, gms.	1172.2			
Diameter, in.	2.84	2.84	2.83	
Area, in.²	6.33	6.33	6.28	
Height, in.	5.52	5.52	5.49	
Net decrease in height, in.		0.00	0.03	
Wet Density, pcf	127.7	132.3	133.3	
Dry density, pcf	109.5	109.5	111.1	
Void ratio	0.5745	0.5745	0.5523	
Saturation, %	79.9	100.0	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 58.30 psi (8.40 ksf)
Consolidation back pressure = 50.00 psi (7.20 ksf)
Consolidation effective confining stress = 1.20 ksf
Strain rate, in./min. = 0.05
Fail. Stress = 15.81 ksf **at reading no.** 28

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.51	1.51	1.00	47.80	1.51	0.00
1	0.0010	10.00	33.1	0.0	0.76	1.47	2.23	1.52	48.10	1.85	0.38
2	0.0050	29.00	96.1	0.1	2.20	1.31	3.51	2.68	49.20	2.41	1.10
3	0.0100	39.00	129.2	0.2	2.96	1.17	4.13	3.54	50.20	2.65	1.48
4	0.0150	45.00	149.1	0.3	3.41	1.08	4.49	4.16	50.80	2.79	1.71
5	0.0200	50.00	165.7	0.4	3.79	1.02	4.81	4.70	51.20	2.92	1.89
6	0.0250	55.00	182.2	0.5	4.16	0.96	5.13	5.31	51.60	3.05	2.08
7	0.0300	59.00	195.5	0.5	4.46	0.94	5.40	5.77	51.80	3.17	2.23
8	0.0350	62.00	205.4	0.6	4.68	0.91	5.59	6.16	52.00	3.25	2.34
9	0.0400	66.00	218.7	0.7	4.98	0.89	5.87	6.58	52.10	3.38	2.49
10	0.0450	70.00	231.9	0.8	5.28	0.88	6.16	7.01	52.20	3.52	2.64
11	0.0500	73.00	241.8	0.9	5.50	0.88	6.38	7.26	52.20	3.63	2.75
12	0.0750	88.00	291.5	1.4	6.60	0.88	7.48	8.51	52.20	4.18	3.30
13	0.1000	103.00	341.2	1.8	7.69	0.88	8.57	9.75	52.20	4.72	3.84
14	0.1250	112.00	371.1	2.3	8.32	0.88	9.20	10.47	52.20	5.04	4.16
15	0.1500	121.00	400.9	2.7	8.95	0.88	9.83	11.19	52.20	5.35	4.47
16	0.1750	132.00	437.3	3.2	9.72	0.89	10.61	11.88	52.10	5.75	4.86
17	0.2000	140.00	463.8	3.6	10.26	0.91	11.16	12.31	52.00	6.04	5.13
18	0.2500	152.00	503.6	4.6	11.03	0.91	11.94	13.16	52.00	6.42	5.52
19	0.3000	165.00	546.6	5.5	11.86	0.89	12.75	14.28	52.10	6.82	5.93
20	0.3500	179.00	593.0	6.4	12.74	0.91	13.65	15.05	52.00	7.28	6.37
21	0.4000	190.00	629.5	7.3	13.39	0.92	14.32	15.53	51.90	7.62	6.70
22	0.5000	207.00	685.8	9.1	14.31	0.92	15.23	16.52	51.90	8.07	7.15
23	0.6000	218.00	722.2	10.9	14.76	0.94	15.70	16.77	51.80	8.32	7.38

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Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
24	0.7000	230.00	762.0	12.7	15.26	0.95	16.21	17.05	51.70	8.58	7.63
25	0.8000	237.00	785.2	14.6	15.39	0.96	16.36	16.96	51.60	8.66	7.70
26	0.9000	247.00	818.3	16.4	15.70	0.99	16.70	16.80	51.40	8.84	7.85
27	1.0000	254.00	841.5	18.2	15.80	1.02	16.82	16.45	51.20	8.92	7.90
28	1.1000	260.00	861.4	20.0	15.81	1.05	16.86	16.04	51.00	8.96	7.90
29	1.2000	266.00	881.3	21.8	15.81	1.12	16.93	15.07	50.50	9.03	7.90

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	216.390			1358.600
Moisture content: Dry soil+tare, gms.	192.800			1164.300
Moisture content: Tare, gms.	50.680			108.400
Moisture, %	16.6	20.8	20.3	18.4
Moist specimen weight, gms.	1235.6			
Diameter, in.	2.84	2.84	2.83	
Area, in.²	6.33	6.33	6.30	
Height, in.	5.82	5.82	5.80	
Net decrease in height, in.		0.00	0.02	
Wet Density, pcf	127.7	132.3	132.9	
Dry density, pcf	109.5	109.5	110.5	
Void ratio	0.5747	0.5747	0.5609	
Saturation, %	79.8	100.0	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 63.90 psi (9.20 ksf)
Consolidation back pressure = 50.00 psi (7.20 ksf)
Consolidation effective confining stress = 2.00 ksf
Strain rate, in./min. = 0.05
Fail. Stress = 19.19 ksf **at reading no.** 26

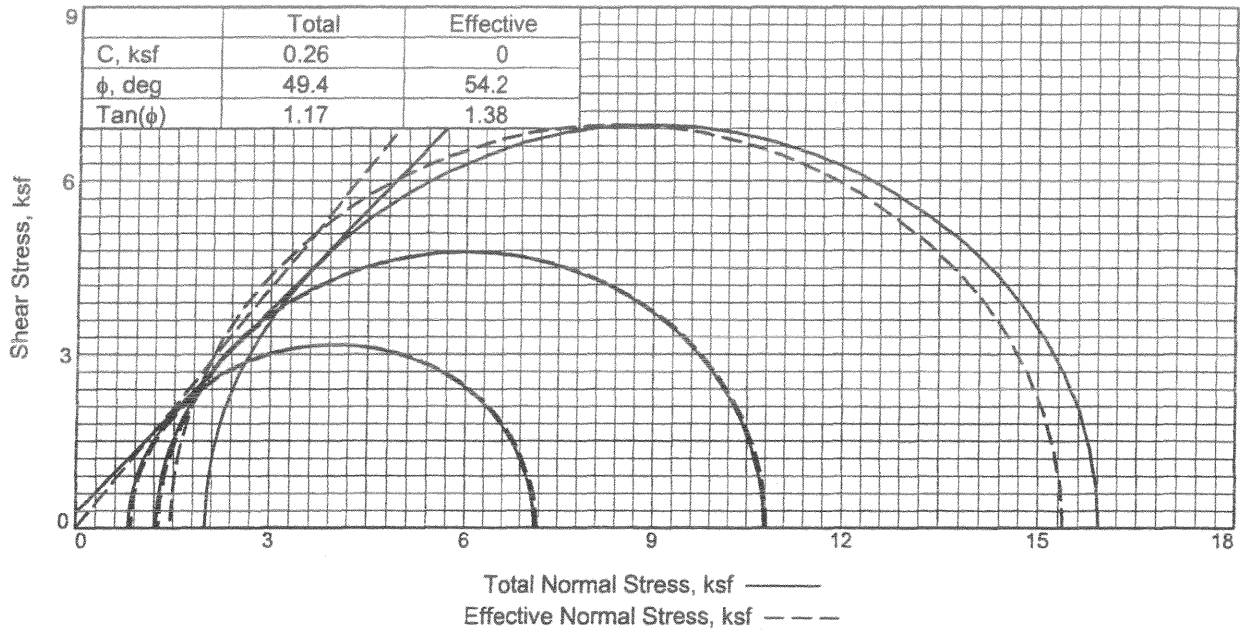
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.30	2.30	1.00	47.90	2.30	0.00
1	0.0010	4.00	13.3	0.0	0.30	2.28	2.58	1.13	48.10	2.43	0.15
2	0.0050	11.00	36.4	0.1	0.83	2.12	2.95	1.39	49.20	2.53	0.42
3	0.0100	18.00	59.6	0.2	1.36	1.97	3.33	1.69	50.20	2.65	0.68
4	0.0150	21.00	69.6	0.3	1.59	1.89	3.47	1.84	50.80	2.68	0.79
5	0.0200	24.00	79.5	0.3	1.81	1.83	3.64	1.99	51.20	2.73	0.91
6	0.0250	28.00	92.8	0.4	2.11	1.77	3.88	2.19	51.60	2.83	1.06
7	0.0300	31.00	102.7	0.5	2.34	1.74	4.08	2.34	51.80	2.91	1.17
8	0.0350	35.00	116.0	0.6	2.64	1.71	4.35	2.54	52.00	3.03	1.32
9	0.0400	38.00	125.9	0.7	2.86	1.70	4.56	2.68	52.10	3.13	1.43
10	0.0450	41.00	135.8	0.8	3.08	1.68	4.77	2.83	52.20	3.23	1.54
11	0.0500	44.00	145.8	0.9	3.30	1.68	4.99	2.96	52.20	3.34	1.65
12	0.0750	60.00	198.8	1.3	4.49	1.68	6.17	3.66	52.20	3.93	2.24
13	0.1000	75.00	248.5	1.7	5.58	1.68	7.27	4.31	52.20	4.48	2.79

MACTEC Engineering and Consulting, Inc.

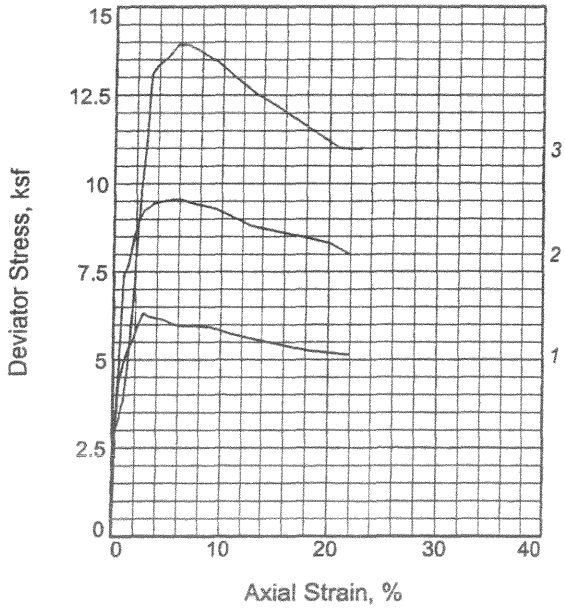
Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
14	0.1250	89.00	294.9	2.2	6.60	1.68	8.28	4.92	52.20	4.98	3.30
15	0.1500	102.00	337.9	2.6	7.53	1.68	9.21	5.47	52.20	5.45	3.76
16	0.1750	116.00	384.3	3.0	8.52	1.70	10.22	6.02	52.10	5.96	4.26
17	0.2000	129.00	427.4	3.4	9.44	1.71	11.15	6.51	52.00	6.43	4.72
18	0.2500	145.00	480.4	4.3	10.51	1.71	12.22	7.13	52.00	6.97	5.26
19	0.3000	180.00	596.3	5.2	12.93	1.73	14.66	8.48	51.90	8.19	6.47
20	0.4000	195.00	646.0	6.9	13.75	1.73	15.48	8.96	51.90	8.60	6.88
21	0.5000	232.00	768.6	8.6	16.06	1.71	17.77	10.37	52.00	9.74	8.03
22	0.6000	259.00	858.1	10.3	17.59	1.68	19.28	11.44	52.20	10.48	8.80
23	0.7000	265.00	877.9	12.1	17.65	1.73	19.38	11.22	51.90	10.55	8.83
24	0.8000	285.00	944.2	13.8	18.61	1.77	20.38	11.51	51.60	11.08	9.31
25	0.9000	296.00	980.6	15.5	18.95	1.80	20.75	11.53	51.40	11.27	9.47
26	1.0000	306.00	1013.8	17.2	19.19	1.83	21.01	11.49	51.20	11.42	9.59
27	1.1000	309.00	1023.7	19.0	18.97	1.86	20.83	11.21	51.00	11.34	9.49
28	1.2000	316.00	1046.9	20.7	18.99	1.93	20.92	10.84	50.50	11.42	9.49

MACTEC Engineering and Consulting, Inc.



	Total	Effective
C, ksf	0.26	0
ϕ, deg	49.4	54.2
Tan(ϕ)	1.17	1.38



Sample No.		1	2	3
Initial	Water Content,	16.2	16.2	16.2
	Dry Density, pcf	103.7	104.0	103.8
	Saturation,	67.5	67.9	67.7
	Void Ratio	0.6631	0.6587	0.6612
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.50	5.50	5.29
At Test	Water Content,	22.5	22.4	22.1
	Dry Density, pcf	106.3	106.5	107.1
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.6225	0.6191	0.6107
	Diameter, in.	2.82	2.82	2.81
	Height, in.	5.46	5.46	5.24
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		7.2	7.2	7.2
Cell Pressure, ksf		8.0	8.4	9.2
Fail. Stress, ksf		6.3	9.5	13.9
Total Pore Pr., ksf		7.2	7.2	7.7
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		7.2	10.8	15.4
$\bar{\sigma}_3$ Failure, ksf		0.8	1.3	1.5

Type of Test: CU with Pore Pressures

Sample Type: remold

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:

Reviewed By _____

Client: Nodarse and Associates

Project: Material Testing-Nodarse

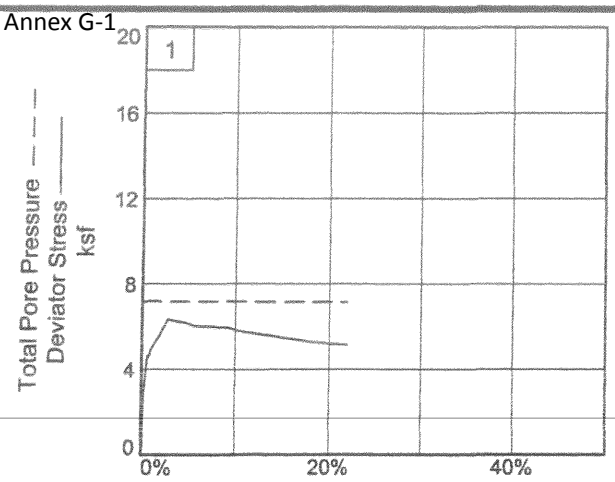
Sample Number: CU-90%-B

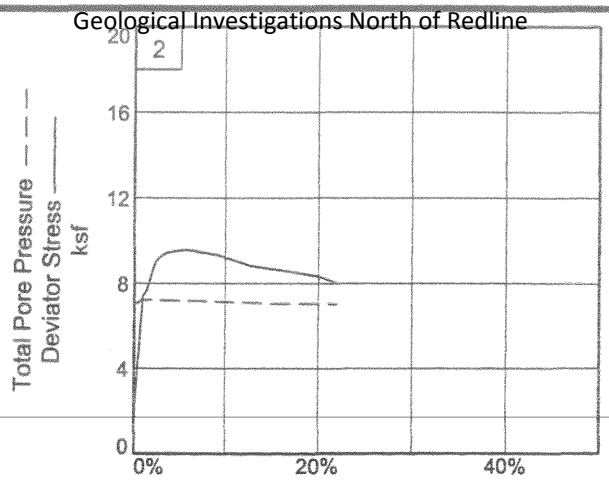
Proj. No.: 6738-05-4573 **Date:** 6-15-05

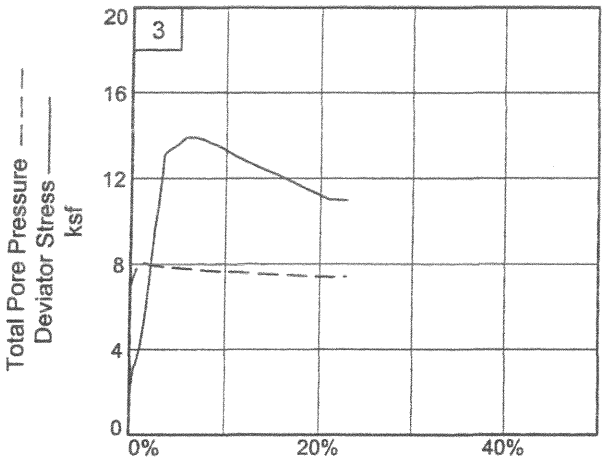
TRIAXIAL SHEAR TEST REPORT

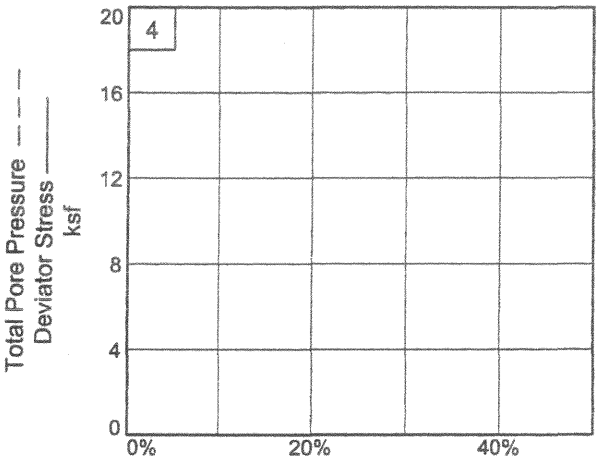
MACTEC ENGINEERING AND CONSULTING, INC.

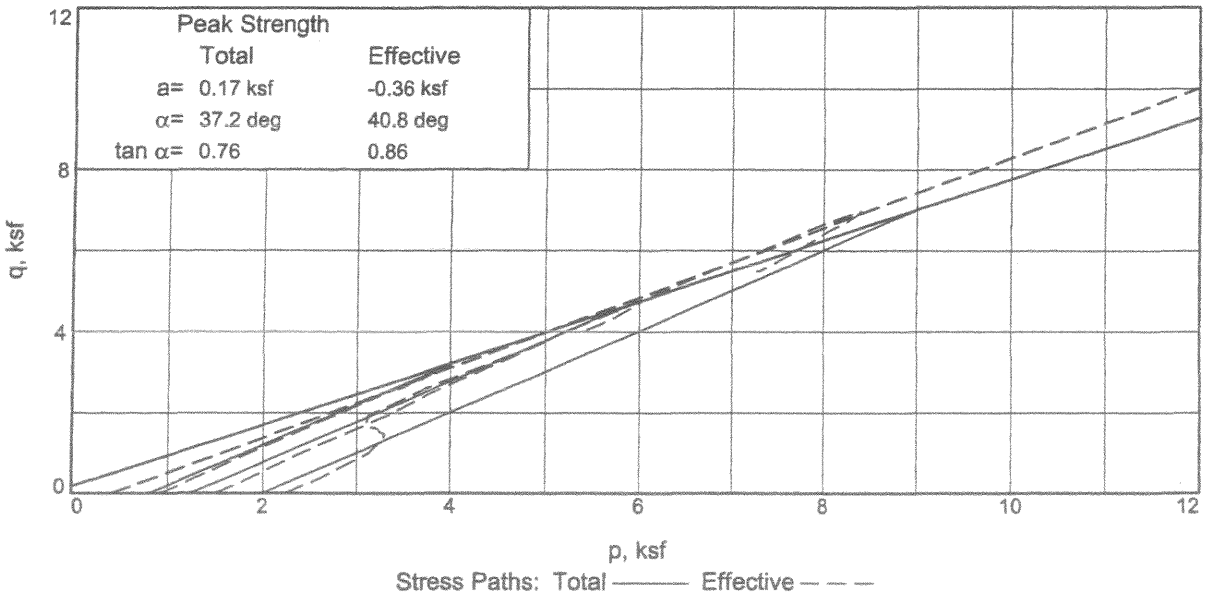
Tested By: mc **Checked By:** Rajni Sukhwani











Client: Nodarse and Associates
Project: Material Testing-Nodarse
Sample Number: CU-90%-B
Project No.: 6738-05-4573

Reviewed By _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: mc _____ **Checked By:** _____

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

6/16/2005
10:29 AM

Date: 6-15-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: CU-90%-B
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks:
Type of Sample: remold
Specific Gravity=2.762 **LL=** **PL=** **PI=**
Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	276.340			1296.900
Moisture content: Dry soil+tare, gms.	244.810			1117.500
Moisture content: Tare, gms.	50.150			115.570
Moisture, %	16.2	24.0	22.5	17.9
Moist specimen weight, gms.	1101.8			
Diameter, in.	2.84	2.84	2.82	
Area, in.²	6.33	6.33	6.23	
Height, in.	5.50	5.50	5.46	
Net decrease in height, in.		0.00	0.04	
Wet Density, pcf	120.5	128.6	130.2	
Dry density, pcf	103.7	103.7	106.3	
Void ratio	0.6631	0.6631	0.6225	
Saturation, %	67.5	100.0	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 55.60 psi (8.01 ksf)
Consolidation back pressure = 50.00 psi (7.20 ksf)
Consolidation effective confining stress = 0.81 ksf
Strain rate, in./min. = 0.05
Fail. Stress = 6.33 ksf **at reading no.** 15

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Test Readings for Specimen No.

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	0.92	0.92	1.00	49.20	0.92	0.00
1	0.0010	1.00	3.3	0.0	0.08	0.92	1.00	1.08	49.20	0.96	0.04
2	0.0050	5.00	16.6	0.1	0.38	0.92	1.30	1.42	49.20	1.11	0.19
3	0.0100	24.00	79.5	0.2	1.83	0.86	2.70	3.12	49.60	1.78	0.92
4	0.0150	39.00	129.2	0.3	2.98	0.86	3.84	4.45	49.60	2.35	1.49
5	0.0200	46.00	152.4	0.4	3.51	0.85	4.36	5.13	49.70	2.60	1.75
6	0.0250	52.00	172.3	0.5	3.96	0.85	4.81	5.66	49.70	2.83	1.98
7	0.0300	57.00	188.8	0.5	4.34	0.84	5.18	6.20	49.80	3.01	2.17
8	0.0350	61.00	202.1	0.6	4.64	0.84	5.48	6.56	49.80	3.16	2.32
9	0.0400	60.00	198.8	0.7	4.56	0.84	5.40	6.46	49.80	3.12	2.28
10	0.0450	62.00	205.4	0.8	4.71	0.84	5.54	6.64	49.80	3.19	2.35
11	0.0500	64.00	212.0	0.9	4.86	0.84	5.69	6.81	49.80	3.26	2.43
12	0.0750	70.00	231.9	1.4	5.29	0.84	6.12	7.33	49.80	3.48	2.64
13	0.1000	74.00	245.2	1.8	5.56	0.84	6.40	7.66	49.80	3.62	2.78
14	0.1250	80.00	265.0	2.3	5.98	0.85	6.83	8.04	49.70	3.84	2.99
15	0.1500	85.00	281.6	2.7	6.33	0.85	7.18	8.45	49.70	4.01	3.16
16	0.1750	84.00	278.3	3.2	6.23	0.85	7.07	8.33	49.70	3.96	3.11
17	0.2000	84.00	278.3	3.7	6.20	0.85	7.05	8.29	49.70	3.95	3.10
18	0.2500	84.00	278.3	4.6	6.14	0.85	6.99	8.22	49.70	3.92	3.07
19	0.3000	83.00	275.0	5.5	6.01	0.85	6.85	8.07	49.70	3.85	3.00
20	0.3500	83.00	275.0	6.4	5.95	0.85	6.80	8.00	49.70	3.82	2.97
21	0.4000	84.00	278.3	7.3	5.96	0.85	6.81	8.01	49.70	3.83	2.98
22	0.5000	85.00	281.6	9.2	5.91	0.85	6.76	7.96	49.70	3.81	2.96
23	0.6000	84.00	278.3	11.0	5.72	0.86	6.59	7.62	49.60	3.73	2.86
24	0.7000	84.00	278.3	12.8	5.61	0.86	6.47	7.49	49.60	3.67	2.80
25	0.8000	84.00	278.3	14.7	5.49	0.86	6.35	7.35	49.60	3.61	2.74
26	0.9000	84.00	278.3	16.5	5.37	0.86	6.23	7.22	49.60	3.55	2.69
27	1.0000	84.00	278.3	18.3	5.25	0.88	6.13	6.98	49.50	3.50	2.63
28	1.1000	85.00	281.6	20.2	5.20	0.86	6.06	7.01	49.60	3.46	2.60
29	1.2000	86.00	284.9	22.0	5.14	0.88	6.01	6.85	49.50	3.45	2.57

MACTEC Engineering and Consulting, Inc.

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	276.340			1291.100
Moisture content: Dry soil+tare, gms.	244.810			1113.500
Moisture content: Tare, gms.	50.150			115.000
Moisture, %	16.2	23.8	22.4	17.8
Moist specimen weight, gms.	1104.7			
Diameter, in.	2.84	2.84	2.82	
Area, in.²	6.33	6.33	6.23	
Height, in.	5.50	5.50	5.46	
Net decrease in height, in.		0.00	0.04	
Wet Density, pcf	120.8	128.7	130.4	
Dry density, pcf	104.0	104.0	106.5	
Void ratio	0.6587	0.6587	0.6191	
Saturation, %	67.9	100.0	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 58.60 psi (8.44 ksf)
Consolidation back pressure = 50.00 psi (7.20 ksf)
Consolidation effective confining stress = 1.24 ksf
Strain rate, in./min. = 0.05
Fail. Stress = 9.55 ksf **at reading no.** 19

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.50	1.50	1.00	48.20	1.50	0.00
1	0.0010	6.00	19.9	0.0	0.46	1.50	1.96	1.31	48.20	1.73	0.23
2	0.0050	23.00	76.2	0.1	1.76	1.43	3.18	2.23	48.70	2.30	0.88
3	0.0100	34.00	112.6	0.2	2.60	1.41	4.01	2.84	48.80	2.71	1.30
4	0.0150	42.00	139.1	0.3	3.21	1.41	4.62	3.27	48.80	3.01	1.60
5	0.0200	50.00	165.7	0.4	3.81	1.40	5.21	3.73	48.90	3.30	1.91
6	0.0250	58.00	192.2	0.5	4.42	1.35	5.77	4.26	49.20	3.56	2.21
7	0.0300	64.00	212.0	0.5	4.87	1.32	6.20	4.68	49.40	3.76	2.44
8	0.0350	70.00	231.9	0.6	5.32	1.31	6.63	5.06	49.50	3.97	2.66
9	0.0400	80.00	265.0	0.7	6.08	1.30	7.37	5.69	49.60	4.33	3.04
10	0.0450	88.00	291.5	0.8	6.68	1.28	7.96	6.21	49.70	4.62	3.34
11	0.0500	97.00	321.4	0.9	7.36	1.27	8.62	6.80	49.80	4.95	3.68
12	0.0750	102.00	337.9	1.4	7.70	1.25	8.95	7.15	49.90	5.10	3.85
13	0.1000	112.00	371.1	1.8	8.41	1.24	9.65	7.79	50.00	5.45	4.21
14	0.1250	120.00	397.6	2.3	8.97	1.24	10.21	8.25	50.00	5.73	4.49
15	0.1500	124.00	410.8	2.7	9.23	1.25	10.48	8.37	49.90	5.87	4.61
16	0.1750	126.00	417.4	3.2	9.33	1.27	10.60	8.37	49.80	5.93	4.67
17	0.2000	128.00	424.1	3.7	9.44	1.27	10.70	8.45	49.80	5.99	4.72
18	0.2500	130.00	430.7	4.6	9.49	1.27	10.76	8.49	49.80	6.01	4.75
19	0.3000	132.00	437.3	5.5	9.55	1.28	10.83	8.45	49.70	6.06	4.77
20	0.3500	133.00	440.6	6.4	9.53	1.28	10.81	8.43	49.70	6.04	4.76
21	0.4000	133.00	440.6	7.3	9.43	1.30	10.73	8.28	49.60	6.01	4.72
22	0.5000	134.00	443.9	9.2	9.32	1.32	10.64	8.03	49.40	5.98	4.66
23	0.6000	133.00	440.6	11.0	9.06	1.35	10.41	7.69	49.20	5.88	4.53

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Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
24	0.7000	132.00	437.3	12.8	8.81	1.38	10.19	7.37	49.00	5.79	4.40
25	0.8000	133.00	440.6	14.7	8.69	1.41	10.10	7.16	48.80	5.75	4.34
26	0.9000	134.00	443.9	16.5	8.56	1.41	9.98	7.07	48.80	5.69	4.28
27	1.0000	135.00	447.3	18.3	8.44	1.41	9.85	6.98	48.80	5.63	4.22
28	1.1000	136.00	450.6	20.2	8.31	1.43	9.74	6.83	48.70	5.58	4.16
29	1.2000	134.00	443.9	22.0	8.00	1.43	9.43	6.61	48.70	5.43	4.00

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	276.340			1252.000
Moisture content: Dry soil+tare, gms.	244.810			1083.200
Moisture content: Tare, gms.	50.150			121.200
Moisture, %	16.2	23.9	22.1	17.5
Moist specimen weight, gms.	1060.9			
Diameter, in.	2.84	2.84	2.81	
Area, in.²	6.33	6.33	6.21	
Height, in.	5.29	5.29	5.24	
Net decrease in height, in.		0.00	0.05	
Wet Density, pcf	120.6	128.6	130.7	
Dry density, pcf	103.8	103.8	107.1	
Void ratio	0.6612	0.6612	0.6107	
Saturation, %	67.7	100.0	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 63.90 psi (9.20 ksf)
Consolidation back pressure = 50.00 psi (7.20 ksf)
Consolidation effective confining stress = 2.00 ksf
Strain rate, in./min. = 0.05
Fail. Stress = 13.92 ksf **at reading no.** 20

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.25	2.25	1.00	48.30	2.25	0.00
1	0.0010	9.00	29.8	0.0	0.69	2.25	2.94	1.31	48.30	2.59	0.35
2	0.0050	26.00	86.1	0.1	2.00	2.13	4.13	1.94	49.10	3.13	1.00
3	0.0100	33.00	109.3	0.2	2.53	1.99	4.52	2.27	50.10	3.25	1.27
4	0.0150	38.00	125.9	0.3	2.91	1.84	4.76	2.58	51.10	3.30	1.46
5	0.0200	40.00	132.5	0.4	3.06	1.71	4.78	2.79	52.00	3.25	1.53
6	0.0250	42.00	139.1	0.5	3.21	1.61	4.83	2.99	52.70	3.22	1.61
7	0.0300	43.00	142.5	0.6	3.29	1.47	4.76	3.24	53.70	3.11	1.64
8	0.0350	45.00	149.1	0.7	3.44	1.38	4.82	3.49	54.30	3.10	1.72
9	0.0400	47.00	155.7	0.8	3.59	1.31	4.90	3.74	54.80	3.10	1.79
10	0.0450	49.00	162.3	0.9	3.73	1.25	4.99	3.98	55.20	3.12	1.87
11	0.0500	50.00	165.7	1.0	3.81	1.21	5.02	4.15	55.50	3.11	1.90
12	0.0750	68.00	225.3	1.4	5.15	1.15	6.30	5.47	55.90	3.73	2.58
13	0.1000	94.00	311.4	1.9	7.09	1.24	8.33	6.72	55.30	4.78	3.54

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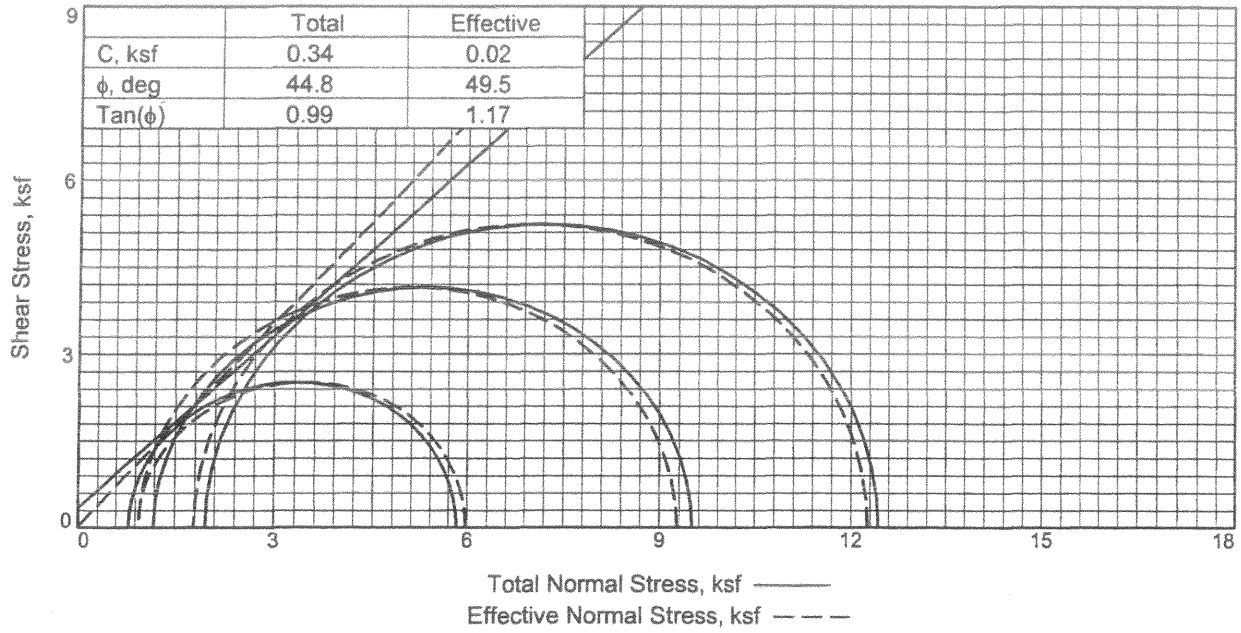
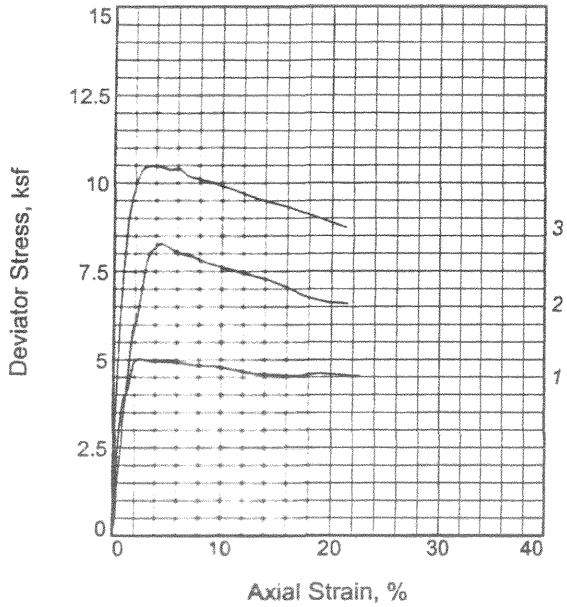
Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
14	0.1250	125.00	414.1	2.4	9.38	1.27	10.65	8.40	55.10	5.96	4.69
15	0.1500	146.00	483.7	2.9	10.90	1.31	12.21	9.32	54.80	6.76	5.45
16	0.1750	176.00	583.1	3.3	13.08	1.34	14.42	10.77	54.60	7.88	6.54
17	0.2000	180.00	596.3	3.8	13.31	1.37	14.68	10.73	54.40	8.02	6.65
18	0.2500	185.00	612.9	4.8	13.54	1.40	14.94	10.70	54.20	8.17	6.77
19	0.3000	192.00	636.1	5.7	13.92	1.43	15.34	10.76	54.00	8.38	6.96
20	0.3500	194.00	642.7	6.7	13.92	1.45	15.37	10.57	53.80	8.41	6.96
21	0.4000	194.00	642.7	7.6	13.78	1.50	15.27	10.20	53.50	8.39	6.89
22	0.5000	193.00	639.4	9.5	13.42	1.56	14.98	9.63	53.10	8.27	6.71
23	0.6000	190.00	629.5	11.5	12.93	1.58	14.52	9.17	52.90	8.05	6.47
24	0.7000	188.00	622.8	13.4	12.52	1.64	14.16	8.63	52.50	7.90	6.26
25	0.8000	187.00	619.5	15.3	12.18	1.68	13.86	8.23	52.20	7.77	6.09
26	0.9000	185.00	612.9	17.2	11.78	1.73	13.51	7.82	51.90	7.62	5.89
27	1.0000	183.00	606.3	19.1	11.38	1.77	13.15	7.43	51.60	7.46	5.69
28	1.1000	181.00	599.7	21.0	10.99	1.80	12.79	7.11	51.40	7.30	5.50
29	1.2000	185.00	612.9	22.9	10.96	1.79	12.75	7.14	51.50	7.27	5.48

MACTEC Engineering and Consulting, Inc.



	Total	Effective
C, ksf	0.34	0.02
ϕ, deg	44.8	49.5
Tan(ϕ)	0.99	1.17



Sample No.		1	2	3
Initial	Water Content,	16.3	16.3	16.3
	Dry Density, pcf	103.7	103.7	103.6
	Saturation,	68.0	68.1	67.8
	Void Ratio	0.6626	0.6624	0.6650
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.35	5.62	5.66
At Test	Water Content,	22.1	22.9	23.3
	Dry Density, pcf	107.0	105.6	104.9
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.6116	0.6323	0.6430
	Diameter, in.	2.81	2.82	2.83
	Height, in.	5.29	5.59	5.63
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		7.2	7.2	7.2
Cell Pressure, ksf		8.0	8.4	9.2
Fail. Stress, ksf		5.0	8.3	10.5
Total Pore Pr., ksf		7.1	7.4	7.4
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		6.0	9.3	12.3
$\bar{\sigma}_3$ Failure, ksf		1.0	1.0	1.8

Type of Test: CU with Pore Pressures

Sample Type: remold

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:

Reviewed By _____

Client: Nodarse and Associates

Project: Material Testing-Nodarse

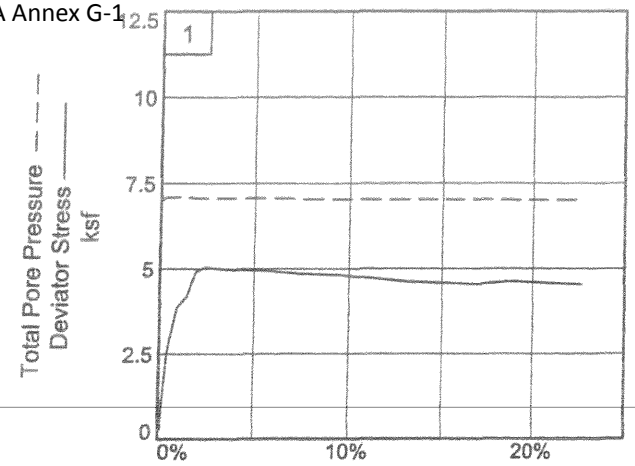
Sample Number: CU-90%-A

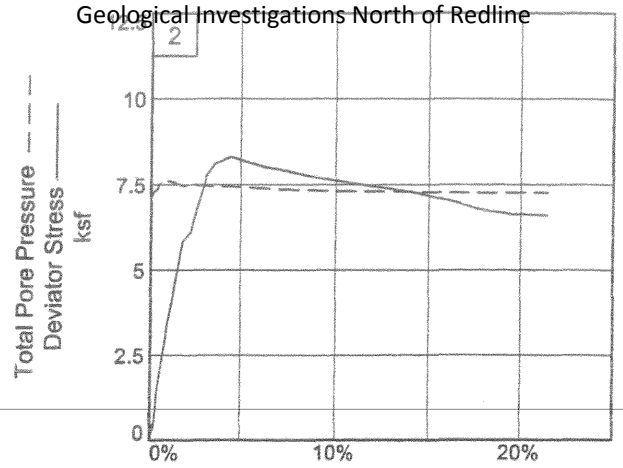
Proj. No.: 6738-05-4573 **Date:** 6-14-05

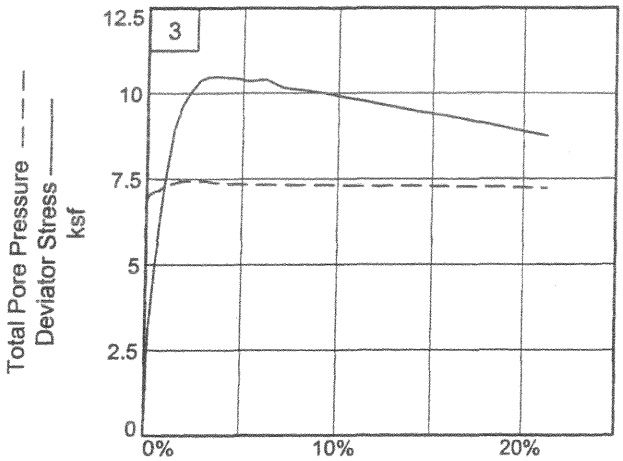
TRIAXIAL SHEAR TEST REPORT

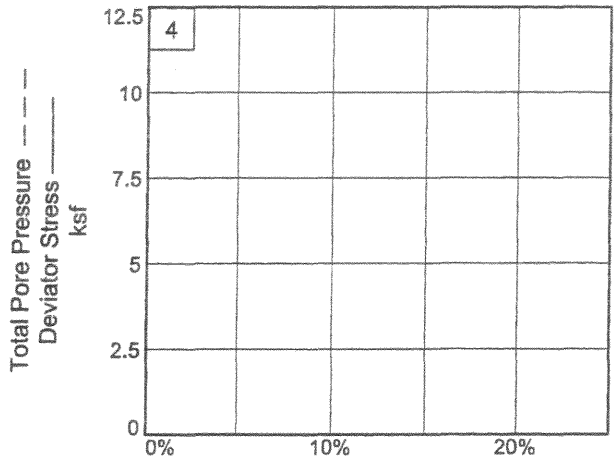
MACTEC ENGINEERING AND CONSULTING, INC.

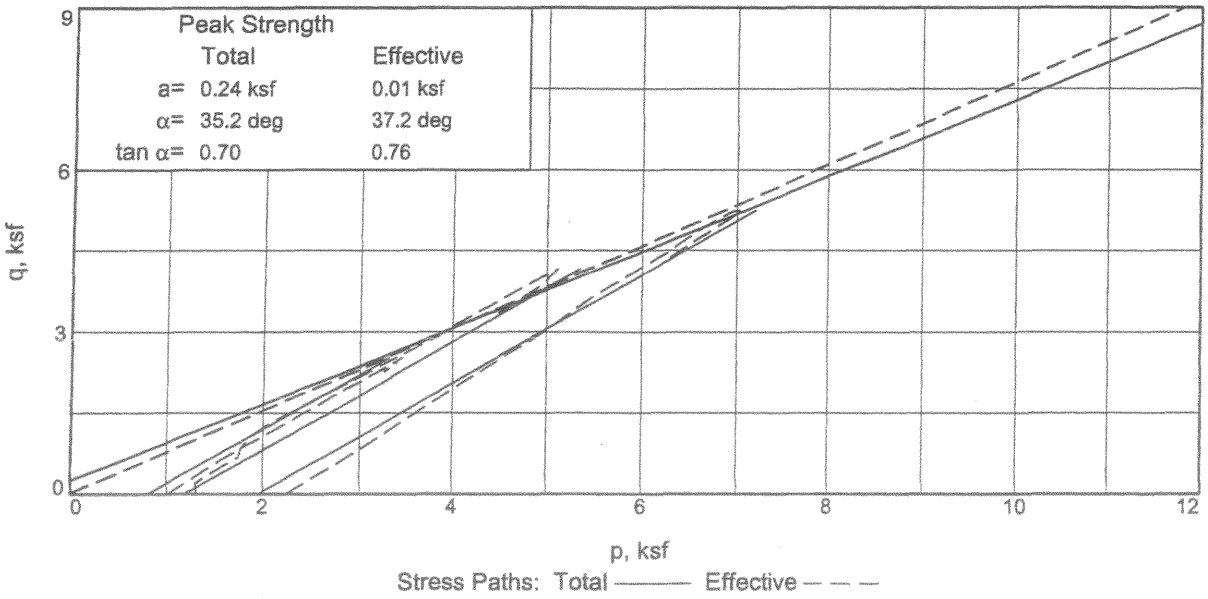
Tested By: mc **Checked By:** Rajni Sukhwani











Client: Nodarse and Associates
Project: Material Testing-Nodarse
Sample Number: CU-90%-A
Project No.: 6738-05-4573

Reviewed By _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: mc _____ **Checked By:** _____

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

6/16/2005
10:07 AM

Date: 6-14-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: CU-90%-A
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks:
Type of Sample: remold
Specific Gravity=2.762 **LL=** **PL=** **PI=**
Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	238.320			1187.000
Moisture content: Dry soil+tare, gms.	212.600			1009.800
Moisture content: Tare, gms.	55.000			115.150
Moisture, %	16.3	24.0	22.1	19.8
Moist specimen weight, gms.	1073.2			
Diameter, in.	2.84	2.84	2.81	
Area, in.²	6.33	6.33	6.20	
Height, in.	5.35	5.35	5.29	
Net decrease in height, in.		0.00	0.06	
Wet Density, pcf	120.6	128.6	130.7	
Dry density, pcf	103.7	103.7	107.0	
Void ratio	0.6626	0.6626	0.6116	
Saturation, %	68.0	100.0	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 55.60 psi (8.01 ksf)
Consolidation back pressure = 50.00 psi (7.20 ksf)
Consolidation effective confining stress = 0.81 ksf
Strain rate, in./min. = 0.05
Fail. Stress = 5.03 ksf **at reading no.** 14

MACTEC Engineering and Consulting, Inc.

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.01	1.01	1.00	48.60	1.01	0.00
1	0.0010	3.00	9.9	0.0	0.23	1.01	1.24	1.23	48.60	1.12	0.12
2	0.0050	4.00	13.3	0.1	0.31	1.01	1.32	1.30	48.60	1.16	0.15
3	0.0100	14.00	46.4	0.2	1.07	0.95	2.02	2.13	49.00	1.49	0.54
4	0.0150	23.00	76.2	0.3	1.76	0.94	2.70	2.88	49.10	1.82	0.88
5	0.0200	31.00	102.7	0.4	2.37	0.94	3.31	3.54	49.10	2.12	1.19
6	0.0250	36.00	119.3	0.5	2.76	0.94	3.69	3.94	49.10	2.31	1.38
7	0.0300	40.00	132.5	0.6	3.06	0.94	3.99	4.27	49.10	2.47	1.53
8	0.0350	43.00	142.5	0.7	3.28	0.94	4.22	4.51	49.10	2.58	1.64
9	0.0400	46.00	152.4	0.8	3.51	0.92	4.43	4.81	49.20	2.68	1.76
10	0.0450	49.00	162.3	0.8	3.74	0.92	4.66	5.05	49.20	2.79	1.87
11	0.0500	51.00	169.0	0.9	3.88	0.92	4.81	5.21	49.20	2.86	1.94
12	0.0750	55.00	182.2	1.4	4.17	0.94	5.11	5.45	49.10	3.02	2.08
13	0.1000	65.00	215.3	1.9	4.90	0.95	5.85	6.16	49.00	3.40	2.45
14	0.1250	67.00	222.0	2.4	5.03	0.95	5.98	6.29	49.00	3.47	2.52
15	0.1500	67.00	222.0	2.8	5.01	0.95	5.96	6.27	49.00	3.45	2.50
16	0.1750	67.00	222.0	3.3	4.98	0.95	5.93	6.24	49.00	3.44	2.49
17	0.2000	67.00	222.0	3.8	4.96	0.95	5.91	6.22	49.00	3.43	2.48
18	0.3000	68.00	225.3	5.7	4.93	0.95	5.88	6.19	49.00	3.42	2.47
19	0.4000	68.00	225.3	7.6	4.83	0.98	5.81	5.94	48.80	3.40	2.42
20	0.5000	69.00	228.6	9.4	4.80	0.99	5.80	5.84	48.70	3.40	2.40
21	0.6000	69.00	228.6	11.3	4.70	0.99	5.70	5.73	48.70	3.35	2.35
22	0.7000	69.00	228.6	13.2	4.60	0.99	5.60	5.63	48.70	3.30	2.30
23	0.8000	70.00	231.9	15.1	4.57	0.99	5.56	5.60	48.70	3.28	2.28
24	0.9000	71.00	235.2	17.0	4.53	0.99	5.52	5.56	48.70	3.26	2.27
25	1.0000	74.00	245.2	18.9	4.62	1.01	5.62	5.58	48.60	3.32	2.31
26	1.1000	75.00	248.5	20.8	4.57	1.01	5.58	5.53	48.60	3.29	2.28
27	1.2000	76.00	251.8	22.7	4.52	1.01	5.53	5.48	48.60	3.27	2.26

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Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	238.320			1262.200
Moisture content: Dry soil+tare, gms.	212.600			1068.100
Moisture content: Tare, gms.	55.000			108.400
Moisture, %	16.3	24.0	22.9	20.2
Moist specimen weight, gms.	1127.5			
Diameter, in.	2.84	2.84	2.82	
Area, in.²	6.33	6.33	6.26	
Height, in.	5.62	5.62	5.59	
Net decrease in height, in.		0.00	0.03	
Wet Density, pcf	120.7	128.6	129.8	
Dry density, pcf	103.7	103.7	105.6	
Void ratio	0.6624	0.6624	0.6323	
Saturation, %	68.1	100.0	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Consolidation cell pressure = 58.30 psi (8.40 ksf)
Consolidation back pressure = 50.00 psi (7.20 ksf)
Consolidation effective confining stress = 1.20 ksf
Strain rate, in./min. = 0.05
Fail. Stress = 8.30 ksf **at reading no.** 18

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.31	1.31	1.00	49.20	1.31	0.00
1	0.0010	1.00	3.3	0.0	0.08	1.27	1.34	1.06	49.50	1.31	0.04
2	0.0050	3.00	9.9	0.1	0.23	1.20	1.42	1.19	50.00	1.31	0.11
3	0.0100	5.00	16.6	0.2	0.38	1.11	1.49	1.34	50.60	1.30	0.19
4	0.0150	8.00	26.5	0.3	0.61	1.09	1.70	1.56	50.70	1.40	0.30
5	0.0200	18.00	59.6	0.4	1.37	1.07	2.43	2.28	50.90	1.75	0.68
6	0.0250	22.00	72.9	0.4	1.67	0.94	2.61	2.78	51.80	1.77	0.83
7	0.0300	26.00	86.1	0.5	1.97	0.86	2.84	3.28	52.30	1.85	0.99
8	0.0350	30.00	99.4	0.6	2.27	0.79	3.06	3.87	52.80	1.93	1.14
9	0.0400	34.00	112.6	0.7	2.57	0.78	3.35	4.31	52.90	2.06	1.29
10	0.0450	38.00	125.9	0.8	2.87	0.78	3.65	4.70	52.90	2.21	1.44
11	0.0500	43.00	142.5	0.9	3.25	0.79	4.04	5.10	52.80	2.42	1.62
12	0.0750	60.00	198.8	1.3	4.51	0.85	5.36	6.31	52.40	3.11	2.26
13	0.1000	78.00	258.4	1.8	5.84	0.94	6.78	7.24	51.80	3.86	2.92
14	0.1250	82.00	271.7	2.2	6.11	0.91	7.02	7.74	52.00	3.96	3.06
15	0.1500	94.00	311.4	2.7	6.97	0.92	7.90	8.57	51.90	4.41	3.49
16	0.1750	105.00	347.9	3.1	7.75	0.94	8.69	9.28	51.80	4.81	3.88
17	0.2000	110.00	364.4	3.6	8.09	0.95	9.04	9.51	51.70	4.99	4.04
18	0.2500	114.00	377.7	4.5	8.30	0.96	9.27	9.60	51.60	5.12	4.15
19	0.3000	113.00	374.4	5.4	8.15	0.99	9.15	9.20	51.40	5.07	4.08
20	0.3500	112.00	371.1	6.3	8.00	1.02	9.03	8.83	51.20	5.02	4.00
21	0.4000	112.00	371.1	7.2	7.93	1.05	8.98	8.54	51.00	5.01	3.96
22	0.5000	111.00	367.7	9.0	7.70	1.08	8.78	8.13	50.80	4.93	3.85
23	0.6000	111.00	367.7	10.7	7.55	1.09	8.65	7.90	50.70	4.87	3.78

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Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
24	0.7000	111.00	367.7	12.5	7.40	1.11	8.51	7.68	50.60	4.81	3.70
25	0.8000	111.00	367.7	14.3	7.25	1.12	8.37	7.45	50.50	4.75	3.63
26	0.9000	110.00	364.4	16.1	7.03	1.14	8.17	7.18	50.40	4.65	3.52
27	1.0000	108.00	357.8	17.9	6.76	1.15	7.91	6.87	50.30	4.53	3.38
28	1.1000	108.00	357.8	19.7	6.61	1.14	7.75	6.81	50.40	4.44	3.31
29	1.2000	110.00	364.4	21.5	6.58	1.14	7.72	6.79	50.40	4.43	3.29

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	238.320			1285.300
Moisture content: Dry soil+tare, gms.	212.600			1102.400
Moisture content: Tare, gms.	55.000			115.700
Moisture, %	16.3	24.1	23.3	18.5
Moist specimen weight, gms.	1133.7			
Diameter, in.	2.84	2.84	2.83	
Area, in.²	6.33	6.33	6.28	
Height, in.	5.66	5.66	5.63	
Net decrease in height, in.		0.00	0.03	
Wet Density, pcf	120.5	128.5	129.4	
Dry density, pcf	103.6	103.6	104.9	
Void ratio	0.6650	0.6650	0.6430	
Saturation, %	67.8	100.0	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit

Membrane modulus = 0.124105 kN/cm²

Membrane thickness = 0.02 cm

Consolidation cell pressure = 63.60 psi (9.16 ksf)

Consolidation back pressure = 50.00 psi (7.20 ksf)

Consolidation effective confining stress = 1.96 ksf

Strain rate, in./min. = 0.05

Fail. Stress = 10.48 ksf **at reading no.** 16

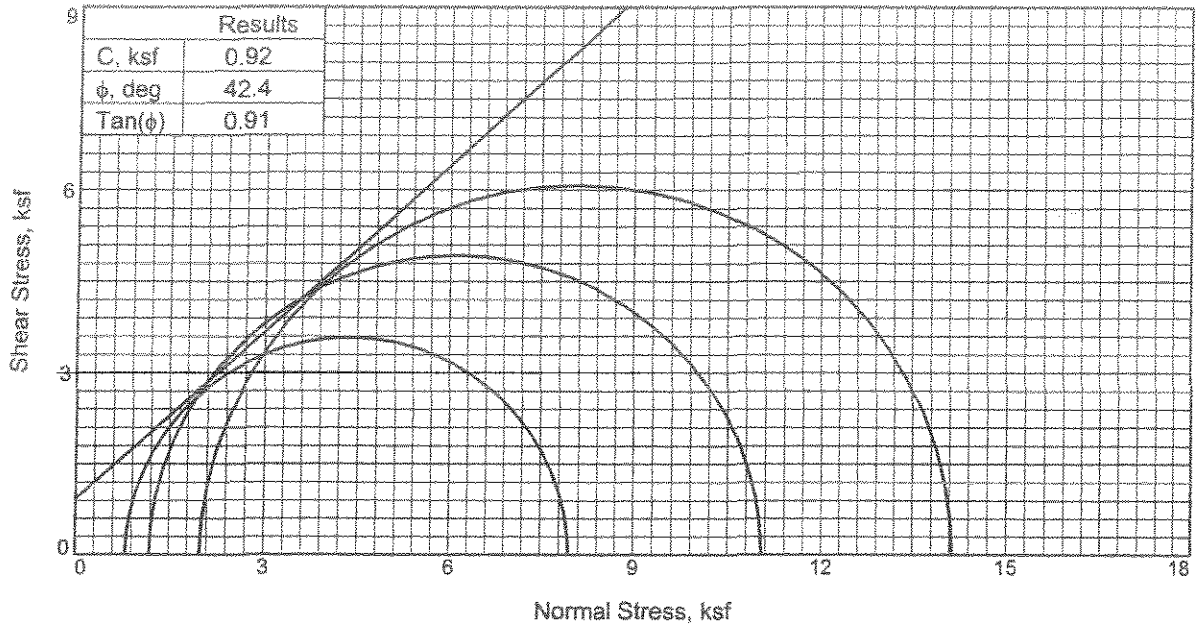
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.25	2.25	1.00	48.00	2.25	0.00
1	0.0010	4.00	13.3	0.0	0.30	2.25	2.55	1.14	48.00	2.40	0.15
2	0.0050	22.00	72.9	0.1	1.67	2.19	3.86	1.76	48.40	3.02	0.84
3	0.0100	42.00	139.1	0.2	3.19	2.10	5.29	2.52	49.00	3.70	1.59
4	0.0150	50.00	165.7	0.3	3.79	2.07	5.86	2.83	49.20	3.97	1.89
5	0.0200	58.00	192.2	0.4	4.39	2.04	6.44	3.15	49.40	4.24	2.20
6	0.0250	66.00	218.7	0.4	4.99	2.02	7.01	3.48	49.60	4.51	2.50
7	0.0300	73.00	241.8	0.5	5.52	2.02	7.53	3.74	49.60	4.77	2.76
8	0.0350	80.00	265.0	0.6	6.04	1.99	8.03	4.04	49.80	5.01	3.02
9	0.0450	91.00	301.5	0.8	6.86	1.89	8.75	4.64	50.50	5.32	3.43
10	0.0500	97.00	321.4	0.9	7.30	1.84	9.15	4.96	50.80	5.50	3.65
11	0.0750	119.00	394.2	1.3	8.92	1.80	10.72	5.96	51.10	6.26	4.46
12	0.1000	129.00	427.4	1.8	9.63	1.74	11.37	6.53	51.50	6.56	4.81
13	0.1250	135.00	447.3	2.2	10.03	1.73	11.76	6.80	51.60	6.74	5.02

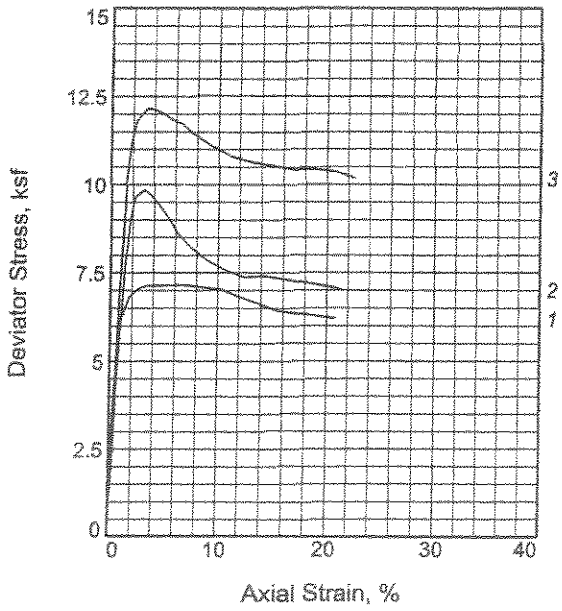
MACTEC Engineering and Consulting, Inc.

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
14	0.1500	140.00	463.8	2.7	10.35	1.73	12.08	6.99	51.60	6.91	5.18
15	0.1750	142.00	470.4	3.1	10.45	1.74	12.20	7.00	51.50	6.97	5.23
16	0.2000	143.00	473.8	3.5	10.48	1.79	12.27	6.87	51.20	7.03	5.24
17	0.2500	144.00	477.1	4.4	10.46	1.80	12.26	6.81	51.10	7.03	5.23
18	0.3000	144.00	477.1	5.3	10.36	1.83	12.19	6.66	50.90	7.01	5.18
19	0.3500	146.00	483.7	6.2	10.40	1.83	12.23	6.69	50.90	7.03	5.20
20	0.4000	144.00	477.1	7.1	10.16	1.84	12.01	6.51	50.80	6.93	5.08
21	0.5000	145.00	480.4	8.9	10.04	1.84	11.88	6.45	50.80	6.86	5.02
22	0.6000	145.00	480.4	10.6	9.84	1.86	11.70	6.30	50.70	6.78	4.92
23	0.7000	145.00	480.4	12.4	9.65	1.87	11.52	6.15	50.60	6.70	4.82
24	0.8000	145.00	480.4	14.2	9.45	1.87	11.33	6.05	50.60	6.60	4.73
25	0.9000	146.00	483.7	16.0	9.32	1.89	11.21	5.94	50.50	6.55	4.66
26	1.0000	146.00	483.7	17.7	9.12	1.90	11.03	5.80	50.40	6.46	4.56
27	1.1000	146.00	483.7	19.5	8.93	1.92	10.84	5.66	50.30	6.38	4.46
28	1.2000	146.00	483.7	21.3	8.73	1.93	10.66	5.52	50.20	6.30	4.37

MACTEC Engineering and Consulting, Inc.





Sample No.		1	2	3
Initial	Water Content,	15.7	15.6	15.4
	Dry Density, pcf	110.6	109.4	109.4
	Saturation,	77.3	75.1	73.9
	Void Ratio	0.5596	0.5756	0.5765
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.77	5.64	5.32
At Test	Water Content,	20.3	19.5	20.0
	Dry Density, pcf	110.6	112.0	111.0
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.5596	0.5398	0.5534
	Diameter, in.	2.84	2.82	2.83
	Height, in.	5.77	5.60	5.29
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		0.0	0.0	0.0
Cell Pressure, ksf		0.8	1.2	2.0
Fail. Stress, ksf		7.1	9.9	12.1
Ult. Stress, ksf				
σ_1 Failure, ksf		8.0	11.0	14.1
σ_3 Failure, ksf		0.8	1.2	2.0

Type of Test: Unconsolidated Undrained

Sample Type: remold

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:

Reviewed By _____

Client: Nodarse and Associates

Project: Material Testing-Nodarse

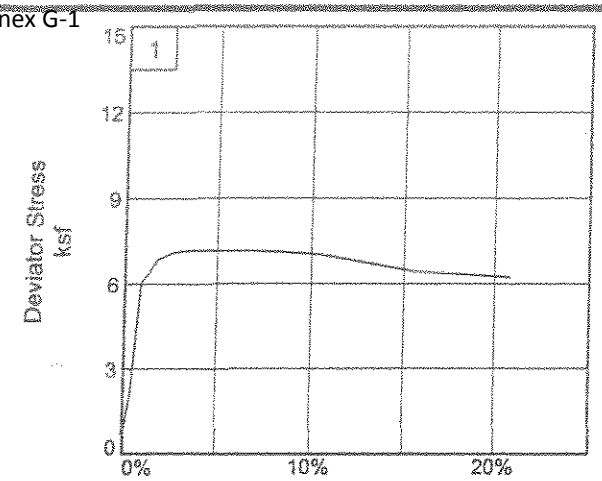
Sample Number: UU-95%-A

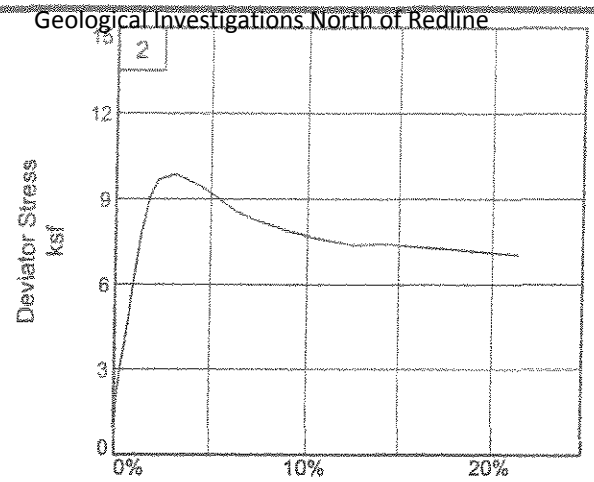
Proj. No.: 6738-05-4573 **Date:** 6-11-05

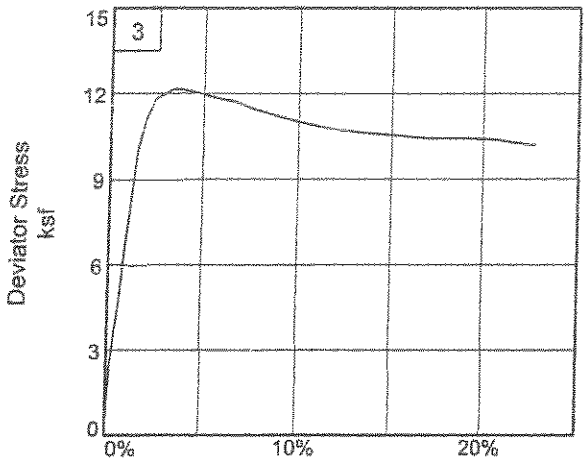
TRIAXIAL SHEAR TEST REPORT

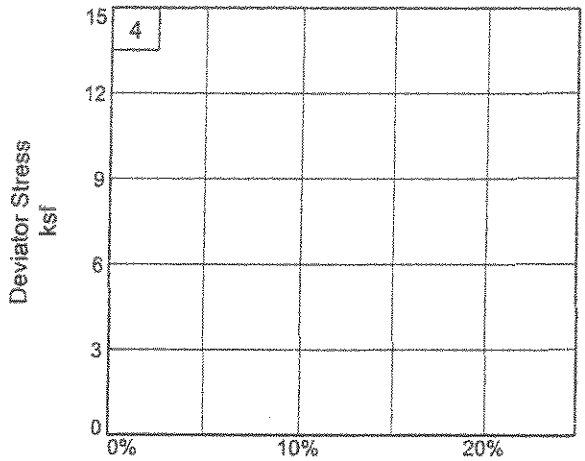
MACTEC ENGINEERING AND CONSULTING, INC.

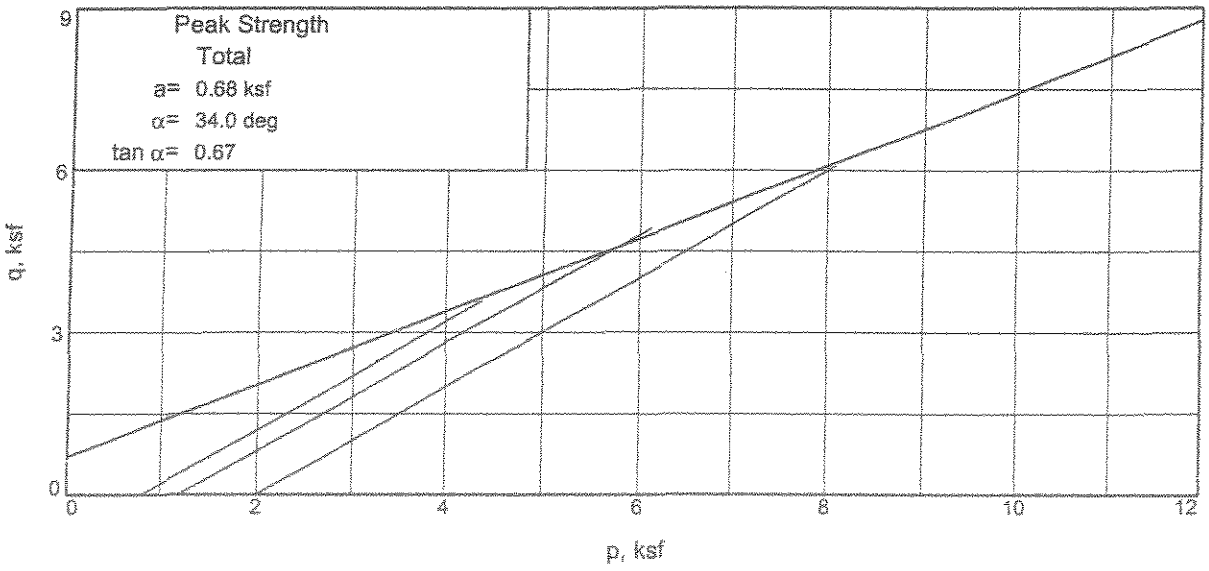
Tested By: mc **Checked By:** Rajni Sukhwani











Client: Nodarse and Associates
Project: Material Testing-Nodarse
Sample Number: UU-95%-A
Project No.: 6738-05-4573

Reviewed By _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: mc **Checked By:** _____

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

6/15/2005
10:46 AM

Date: 6-11-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: UU-95%-A
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks:
Type of Sample: remold
Specific Gravity=2.762 **LL=** **PL=** **PI=**
Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	224.300		1320.500
Moisture content: Dry soil+tare, gms.	200.660		1168.100
Moisture content: Tare, gms.	49.750		230.100
Moisture, %	15.7	20.3	16.2
Moist specimen weight, gms.	1226.9		
Diameter, in.	2.84	2.84	
Area, in.^{2}	6.33	6.33	
Height, in.	5.77	5.77	
Net decrease in height, in.		0.00	
Wet Density, pcf	127.9	133.0	
Dry density, pcf	110.6	110.6	
Void ratio	0.5596	0.5596	
Saturation, %	77.3	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm^2
Membrane thickness = 0.02 cm
Cell pressure = 5.60 psi (0.81 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.05
Fail. Stress = 7.15 ksf **at reading no.** 21

MACTEC Engineering and Consulting, Inc.

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	0.81	0.81	1.00		0.81
1	0.0010	5.00	16.6	0.0	0.38	0.81	1.18	1.47		0.99
2	0.0050	12.00	39.8	0.1	0.90	0.81	1.71	2.12		1.26
3	0.0100	17.00	56.3	0.2	1.28	0.81	2.08	2.58		1.45
4	0.0150	22.00	72.9	0.3	1.65	0.81	2.46	3.05		1.63
5	0.0200	26.00	86.1	0.3	1.95	0.81	2.76	3.42		1.78
6	0.0250	35.00	116.0	0.4	2.62	0.81	3.43	4.25		2.12
7	0.0300	44.00	145.8	0.5	3.30	0.81	4.10	5.09		2.45
8	0.0350	53.00	175.6	0.6	3.97	0.81	4.77	5.92		2.79
9	0.0400	62.00	205.4	0.7	4.64	0.81	5.44	6.75		3.12
10	0.0450	71.00	235.2	0.8	5.31	0.81	6.11	7.58		3.46
11	0.0500	81.00	268.4	0.9	6.05	0.81	6.85	8.50		3.83
12	0.0750	86.00	284.9	1.3	6.39	0.81	7.20	8.93		4.00
13	0.1000	92.00	304.8	1.7	6.81	0.81	7.61	9.44		4.21
14	0.1250	94.00	311.4	2.2	6.93	0.81	7.73	9.59		4.27
15	0.1500	96.00	318.0	2.6	7.04	0.81	7.85	9.73		4.33
16	0.1750	97.00	321.4	3.0	7.08	0.81	7.89	9.78		4.35
17	0.2000	98.00	324.7	3.5	7.12	0.81	7.93	9.84		4.37
18	0.2500	99.00	328.0	4.3	7.13	0.81	7.94	9.85		4.37
19	0.3000	100.00	331.3	5.2	7.14	0.81	7.95	9.85		4.38
20	0.3500	101.00	334.6	6.1	7.14	0.81	7.95	9.86		4.38
21	0.4000	102.00	337.9	6.9	7.15	0.81	7.96	9.87		4.38
22	0.5000	103.00	341.2	8.7	7.08	0.81	7.89	9.79		4.35
23	0.6000	104.00	344.6	10.4	7.02	0.81	7.82	9.70		4.32
24	0.7000	103.00	341.2	12.1	6.82	0.81	7.62	9.45		4.21
25	0.8000	102.00	337.9	13.9	6.62	0.81	7.42	9.21		4.11
26	0.9000	101.00	334.6	15.6	6.42	0.81	7.23	8.96		4.02
27	1.0000	102.00	337.9	17.3	6.35	0.81	7.16	8.87		3.98
28	1.1000	103.00	341.2	19.1	6.28	0.81	7.08	8.79		3.95
29	1.2000	104.00	344.6	20.8	6.20	0.81	7.01	8.69		3.91

MACTEC Engineering and Consulting, Inc.

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	165.540		1261.000
Moisture content: Dry soil+tare, gms.	150.080		1103.500
Moisture content: Tare, gms.	51.290		109.000
Moisture, %	15.6	19.5	15.8
Moist specimen weight, gms.	1186.9		
Diameter, in.	2.84	2.82	
Area, in.²	6.33	6.24	
Height, in.	5.64	5.60	
Net decrease in height, in.		0.04	
Wet Density, pcf	126.6	133.9	
Dry density, pcf	109.4	112.0	
Void ratio	0.5756	0.5398	
Saturation, %	75.1	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 8.30 psi (1.20 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.05
Fail. Stress = 9.85 ksf **at reading no.** 16

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.20	1.20	1.00		1.20
1	0.0010	8.00	26.5	0.0	0.61	1.20	1.81	1.51		1.50
2	0.0050	18.00	59.6	0.1	1.38	1.20	2.57	2.15		1.88
3	0.0100	30.00	99.4	0.2	2.29	1.20	3.49	2.92		2.34
4	0.0150	36.00	119.3	0.3	2.75	1.20	3.94	3.30		2.57
5	0.0200	42.00	139.1	0.4	3.20	1.20	4.40	3.68		2.80
6	0.0250	47.00	155.7	0.4	3.58	1.20	4.77	3.99		2.98
7	0.0300	51.00	169.0	0.5	3.88	1.20	5.07	4.25		3.13
8	0.0350	56.00	185.5	0.6	4.26	1.20	5.45	4.56		3.32
9	0.0400	62.00	205.4	0.7	4.71	1.20	5.90	4.94		3.55
10	0.0450	67.00	222.0	0.8	5.08	1.20	6.28	5.25		3.74
11	0.0500	74.00	245.2	0.9	5.61	1.20	6.80	5.69		4.00
12	0.0750	102.00	337.9	1.3	7.70	1.20	8.89	7.44		5.04
13	0.1000	120.00	397.6	1.8	9.01	1.20	10.21	8.54		5.70
14	0.1250	129.00	427.4	2.2	9.65	1.20	10.84	9.07		6.02
15	0.1500	131.00	434.0	2.7	9.75	1.20	10.95	9.16		6.07
16	0.1750	133.00	440.6	3.1	9.85	1.20	11.05	9.24		6.12
17	0.2000	132.00	437.3	3.6	9.73	1.20	10.93	9.14		6.06
18	0.2500	129.00	427.4	4.5	9.42	1.20	10.62	8.89		5.91
19	0.3000	125.00	414.1	5.4	9.05	1.20	10.24	8.57		5.72
20	0.3500	120.00	397.6	6.3	8.60	1.20	9.80	8.20		5.50
21	0.4000	117.00	387.6	7.1	8.31	1.20	9.50	7.95		5.35
22	0.5000	113.00	374.4	8.9	7.87	1.20	9.07	7.58		5.13
23	0.6000	111.00	367.7	10.7	7.58	1.20	8.77	7.34		4.98
24	0.7000	110.00	364.4	12.5	7.36	1.20	8.56	7.16		4.88

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Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
25	0.8000	113.00	374.4	14.3	7.41	1.20	8.60	7.20		4.90
26	0.9000	114.00	377.7	16.1	7.32	1.20	8.51	7.12		4.85
27	1.0000	115.00	381.0	17.9	7.22	1.20	8.42	7.04		4.81
28	1.1000	116.00	384.3	19.7	7.13	1.20	8.32	6.96		4.76
29	1.2000	117.00	387.6	21.4	7.03	1.20	8.22	6.88		4.71

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	178.450		1186.300
Moisture content: Dry soil+tare, gms.	161.940		1039.700
Moisture content: Tare, gms.	54.840		106.200
Moisture, %	15.4	20.0	15.7
Moist specimen weight, gms.	1116.7		
Diameter, in.	2.84	2.83	
Area, in.^{2}	6.33	6.27	
Height, in.	5.32	5.29	
Net decrease in height, in.		0.03	
Wet Density, pcf	126.2	133.2	
Dry density, pcf	109.4	111.0	
Void ratio	0.5765	0.5534	
Saturation, %	73.9	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm^2
Membrane thickness = 0.02 cm
Cell pressure = 13.90 psi (2.00 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.05
Fail. Stress = 12.15 ksf **at reading no.** 17

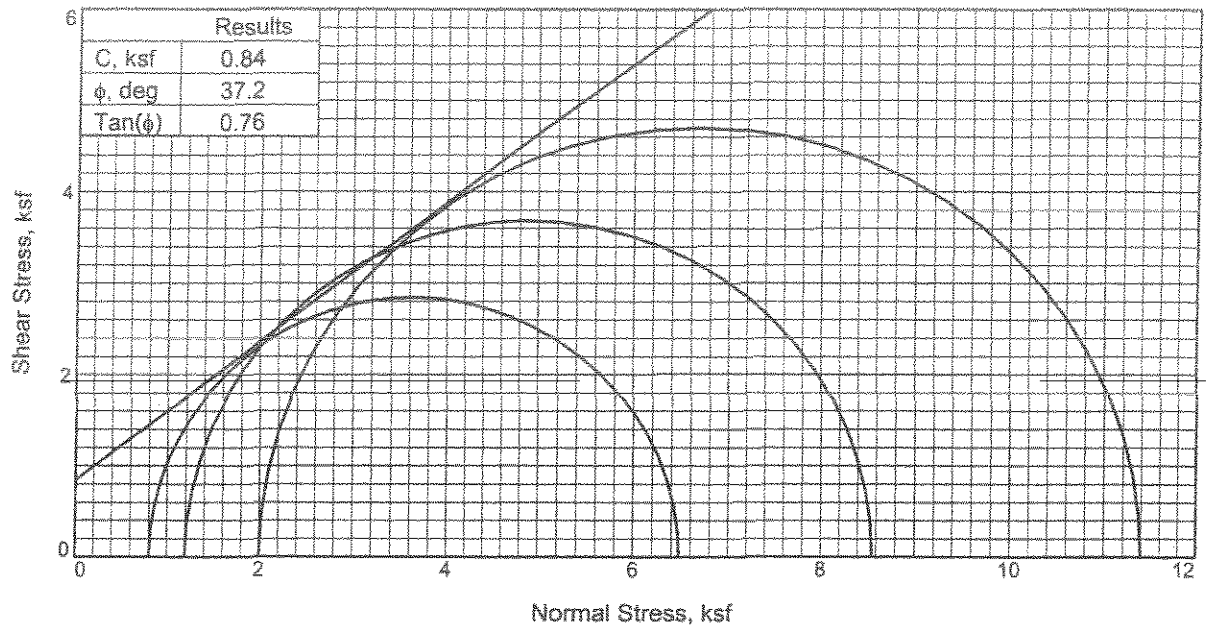
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.00	2.00	1.00		2.00
1	0.0010	6.00	19.9	0.0	0.46	2.00	2.46	1.23		2.23
2	0.0050	20.00	66.3	0.1	1.52	2.00	3.52	1.76		2.76
3	0.0100	32.00	106.0	0.2	2.43	2.00	4.43	2.21		3.22
4	0.0150	40.00	132.5	0.3	3.03	2.00	5.04	2.52		3.52
5	0.0200	48.00	159.0	0.4	3.64	2.00	5.64	2.82		3.82
6	0.0250	55.00	182.2	0.5	4.16	2.00	6.16	3.08		4.08
7	0.0300	62.00	205.4	0.6	4.69	2.00	6.69	3.34		4.35
8	0.0350	71.00	235.2	0.7	5.36	2.00	7.37	3.68		4.68
9	0.0400	80.00	265.0	0.8	6.04	2.00	8.04	4.02		5.02
10	0.0450	89.00	294.9	0.9	6.71	2.00	8.71	4.35		5.36
11	0.0500	96.00	318.0	0.9	7.23	2.00	9.23	4.61		5.62
12	0.0750	133.00	440.6	1.4	9.97	2.00	11.97	5.98		6.99
13	0.1000	150.00	497.0	1.9	11.19	2.00	13.19	6.59		7.60
14	0.1250	159.00	526.8	2.4	11.81	2.00	13.81	6.90		7.91
15	0.1500	162.00	536.7	2.8	11.97	2.00	13.97	6.98		7.99

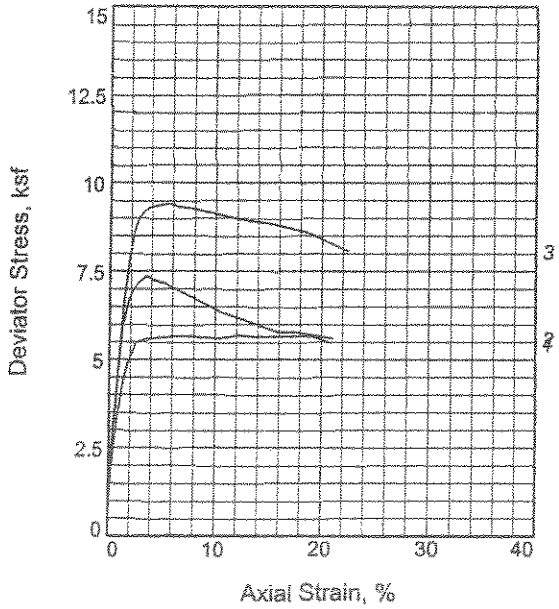
MACTEC Engineering and Consulting, Inc.

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
16	0.1750	165.00	546.6	3.3	12.13	2.00	14.14	7.06		8.07
17	0.2000	166.00	550.0	3.8	12.15	2.00	14.15	7.07		8.08
18	0.2500	166.00	550.0	4.7	12.03	2.00	14.03	7.01		8.02
19	0.3000	165.00	546.6	5.7	11.84	2.00	13.84	6.91		7.92
20	0.3500	165.00	546.6	6.6	11.72	2.00	13.72	6.85		7.86
21	0.4000	163.00	540.0	7.6	11.46	2.00	13.46	6.73		7.73
22	0.5000	161.00	533.4	9.4	11.09	2.00	13.09	6.54		7.55
23	0.6000	160.00	530.1	11.3	10.79	2.00	12.79	6.39		7.40
24	0.7000	161.00	533.4	13.2	10.63	2.00	12.63	6.31		7.31
25	0.8000	163.00	540.0	15.1	10.52	2.00	12.53	6.26		7.26
26	0.9000	165.00	546.6	17.0	10.42	2.00	12.42	6.20		7.21
27	1.0000	169.00	559.9	18.9	10.43	2.00	12.43	6.21		7.21
28	1.1000	172.00	569.8	20.8	10.36	2.00	12.36	6.18		7.18
29	1.2000	173.00	573.1	22.7	10.17	2.00	12.18	6.08		7.09

MACTEC Engineering and Consulting, Inc.





Sample No.		1	2	3
Initial	Water Content,	16.6	16.6	16.6
	Dry Density, pcf	104.1	103.8	104.0
	Saturation,	69.9	69.4	69.7
	Void Ratio	0.6562	0.6605	0.6579
	Diameter, in.	2.84	2.84	2.84
	Height, in.	5.78	5.72	5.36
At Test	Water Content,	22.9	22.8	23.0
	Dry Density, pcf	105.7	105.9	105.4
	Saturation,	100.0	100.0	100.0
	Void Ratio	0.6313	0.6284	0.6357
	Diameter, in.	2.83	2.82	2.83
	Height, in.	5.75	5.68	5.34
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		0.0	0.0	0.0
Cell Pressure, ksf		0.8	1.2	2.0
Fail. Stress, ksf		5.7	7.4	9.4
Ult. Stress, ksf				
σ_1 Failure, ksf		6.5	8.6	11.4
σ_3 Failure, ksf		0.8	1.2	2.0

Type of Test:
Unconsolidated Undrained

Sample Type: remolded

Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments

Specific Gravity= 2.762

Remarks:

Reviewed By _____

Client: Nodarse and Associates

Project: Material Testing-Nodarse

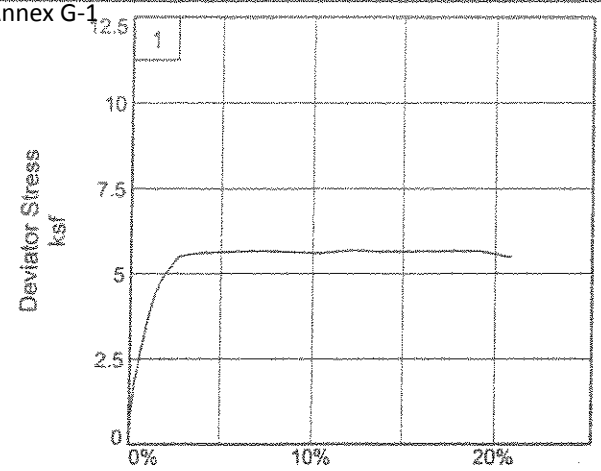
Sample Number: UU-90%-A

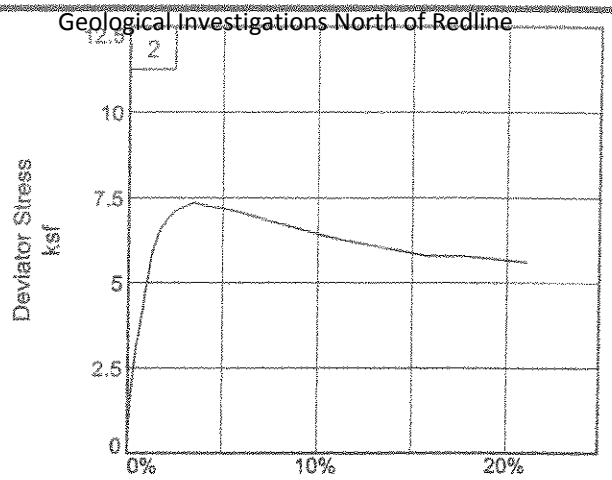
Proj. No.: 6738-05-4573 **Date:** 6-10-05

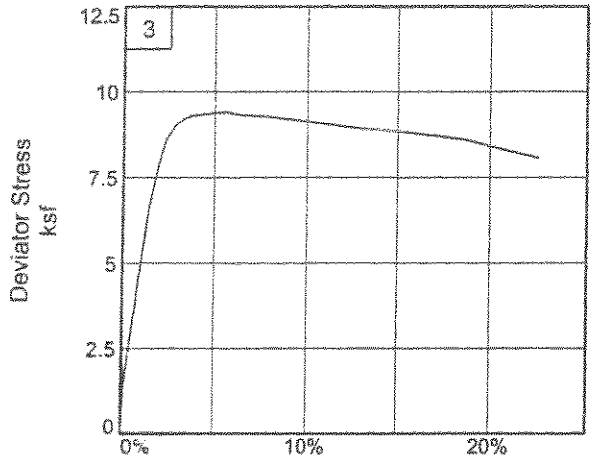
TRIAXIAL SHEAR TEST REPORT

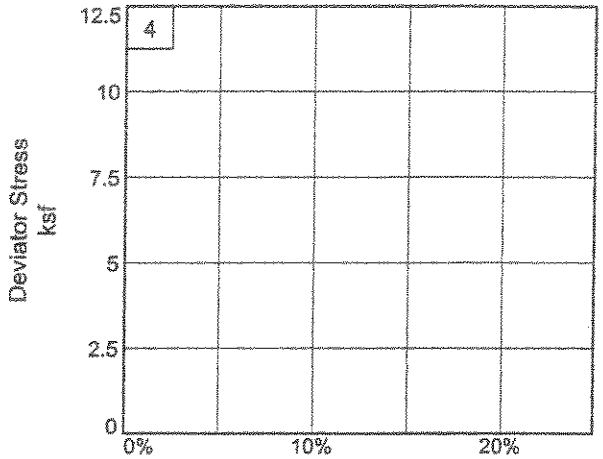
MACTEC ENGINEERING AND CONSULTING, INC.

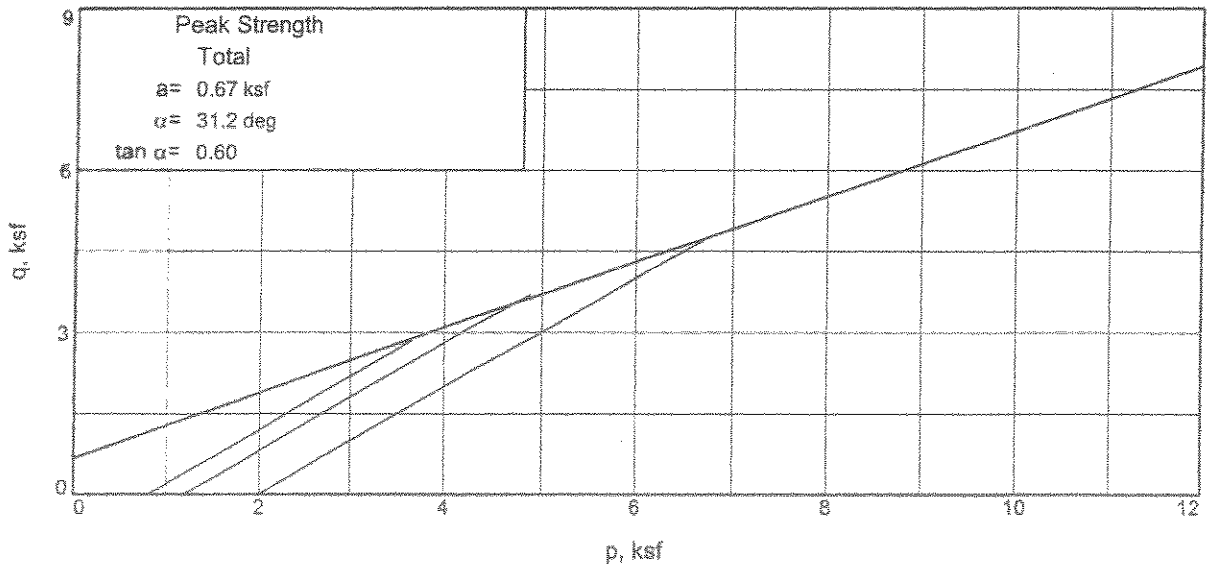
Tested By: mc **Checked By:** Kajni Sukhwani











Client: Nodarse and Associates
Project: Material Testing-Nodarse
Sample Number: UU-90%-A
Project No.: 6738-05-4573

Reviewed By _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: mc _____ **Checked By:** _____

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

6/15/2005
10:45 AM

Date: 6-10-05
Client: Nodarse and Associates
Project: Material Testing-Nodarse
Project No.: 6738-05-4573
Sample Number: UU-90%-A
Description: Tan Slightly Clayey Silty Medium to Fine SAND with Shell and Rock Fragments
Remarks:
Type of Sample: remolded
Specific Gravity=2.762 **LL=** **PL=** **PI=**
Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	178.470		1181.000
Moisture content: Dry soil+tare, gms.	160.220		1025.700
Moisture content: Tare, gms.	50.320		115.200
Moisture, %	16.6	22.9	17.1
Moist specimen weight, gms.	1166.8		
Diameter, in.	2.84	2.83	
Area, in.²	6.33	6.27	
Height, in.	5.78	5.75	
Net decrease in height, in.		0.03	
Wet Density, pcf	121.4	129.9	
Dry density, pcf	104.1	105.7	
Void ratio	0.6562	0.6313	
Saturation, %	69.9	100.0	

Test Readings for Specimen No. 1

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 5.60 psi (0.81 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.05
Fail. Stress = 5.68 ksf **at reading no.** 23

MACTEC Engineering and Consulting, Inc.

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	0.81	0.81	1.00		0.81
1	0.0010	3.00	9.9	0.0	0.23	0.81	1.03	1.28		0.92
2	0.0050	12.00	39.8	0.1	0.91	0.81	1.72	2.13		1.26
3	0.0100	18.00	59.6	0.2	1.37	0.81	2.17	2.70		1.49
4	0.0150	24.00	79.5	0.3	1.82	0.81	2.63	3.26		1.72
5	0.0200	27.00	89.5	0.3	2.05	0.81	2.85	3.54		1.83
6	0.0250	30.00	99.4	0.4	2.27	0.81	3.08	3.82		1.94
7	0.0300	34.00	112.6	0.5	2.57	0.81	3.38	4.19		2.09
8	0.0350	37.00	122.6	0.6	2.80	0.81	3.60	4.47		2.21
9	0.0400	40.00	132.5	0.7	3.02	0.81	3.83	4.75		2.32
10	0.0450	43.00	142.5	0.8	3.25	0.81	4.05	5.02		2.43
11	0.0500	46.00	152.4	0.9	3.47	0.81	4.28	5.30		2.54
12	0.0750	58.00	192.2	1.3	4.35	0.81	5.16	6.40		2.98
13	0.1000	65.00	215.3	1.7	4.86	0.81	5.67	7.03		3.24
14	0.1500	74.00	245.2	2.6	5.48	0.81	6.29	7.80		3.55
15	0.1750	75.00	248.5	3.0	5.53	0.81	6.34	7.86		3.57
16	0.2000	76.00	251.8	3.5	5.58	0.81	6.39	7.92		3.60
17	0.2500	77.00	255.1	4.3	5.60	0.81	6.41	7.95		3.61
18	0.3000	78.00	258.4	5.2	5.62	0.81	6.43	7.97		3.62
19	0.3500	79.00	261.7	6.1	5.64	0.81	6.45	8.00		3.63
20	0.4000	80.00	265.0	7.0	5.66	0.81	6.47	8.02		3.64
21	0.5000	81.00	268.4	8.7	5.63	0.81	6.43	7.98		3.62
22	0.6000	82.00	271.7	10.4	5.59	0.81	6.39	7.93		3.60
23	0.7000	85.00	281.6	12.2	5.68	0.81	6.49	8.04		3.65
24	0.8000	86.00	284.9	13.9	5.63	0.81	6.44	7.98		3.62
25	0.9000	88.00	291.5	15.6	5.65	0.81	6.45	8.00		3.63
26	1.0000	90.00	298.2	17.4	5.66	0.81	6.46	8.01		3.63
27	1.1000	92.00	304.8	19.1	5.66	0.81	6.47	8.02		3.64
28	1.2000	91.00	301.5	20.9	5.48	0.81	6.28	7.79		3.55

MACTEC Engineering and Consulting, Inc.

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	178.470		1253.500
Moisture content: Dry soil+tare, gms.	160.220		1090.600
Moisture content: Tare, gms.	50.320		116.400
Moisture, %	16.6	22.8	16.7
Moist specimen weight, gms.	1151.7		
Diameter, in.	2.84	2.82	
Area, in.²	6.33	6.25	
Height, in.	5.72	5.68	
Net decrease in height, in.		0.04	
Wet Density, pcf	121.1	130.0	
Dry density, pcf	103.8	105.9	
Void ratio	0.6605	0.6284	
Saturation, %	69.4	100.0	

Test Readings for Specimen No. 2

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 8.30 psi (1.20 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.05
Fail. Stress = 7.36 ksf **at reading no.** 17

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	1.20	1.20	1.00		1.20
1	0.0010	5.00	16.6	0.0	0.38	1.20	1.58	1.32		1.39
2	0.0050	14.00	46.4	0.1	1.07	1.20	2.26	1.89		1.73
3	0.0100	24.00	79.5	0.2	1.83	1.20	3.02	2.53		2.11
4	0.0150	31.00	102.7	0.3	2.36	1.20	3.55	2.97		2.37
5	0.0200	36.00	119.3	0.4	2.74	1.20	3.93	3.29		2.56
6	0.0250	42.00	139.1	0.4	3.19	1.20	4.39	3.67		2.79
7	0.0300	45.00	149.1	0.5	3.42	1.20	4.61	3.86		2.90
8	0.0350	49.00	162.3	0.6	3.72	1.20	4.91	4.11		3.05
9	0.0400	53.00	175.6	0.7	4.02	1.20	5.21	4.36		3.20
10	0.0450	56.00	185.5	0.8	4.24	1.20	5.43	4.55		3.31
11	0.0500	61.00	202.1	0.9	4.61	1.20	5.81	4.86		3.50
12	0.0750	79.00	261.7	1.3	5.95	1.20	7.14	5.98		4.17
13	0.1000	88.00	291.5	1.8	6.60	1.20	7.79	6.52		4.49
14	0.1250	93.00	308.1	2.2	6.94	1.20	8.13	6.81		4.67
15	0.1500	96.00	318.0	2.6	7.13	1.20	8.33	6.97		4.76
16	0.1750	98.00	324.7	3.1	7.25	1.20	8.44	7.06		4.82
17	0.2000	100.00	331.3	3.5	7.36	1.20	8.56	7.16		4.88
18	0.2500	99.00	328.0	4.4	7.22	1.20	8.42	7.04		4.81
19	0.3000	99.00	328.0	5.3	7.15	1.20	8.35	6.99		4.77
20	0.3500	98.00	324.7	6.2	7.02	1.20	8.21	6.87		4.70
21	0.4000	97.00	321.4	7.0	6.88	1.20	8.08	6.76		4.64
22	0.5000	95.00	314.7	8.8	6.61	1.20	7.81	6.53		4.50
23	0.6000	93.00	308.1	10.6	6.35	1.20	7.54	6.31		4.37
24	0.7000	92.00	304.8	12.3	6.15	1.20	7.35	6.15		4.27

MACTEC Engineering and Consulting, Inc.

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
25	0.8000	91.00	301.5	14.1	5.97	1.20	7.16	5.99		4.18
26	0.9000	90.00	298.2	15.8	5.78	1.20	6.97	5.84		4.08
27	1.0000	92.00	304.8	17.6	5.78	1.20	6.98	5.84		4.09
28	1.2000	93.00	308.1	21.1	5.60	1.20	6.79	5.68		3.99

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Final
Moisture content: Moist soil+tare, gms.	178.470		1178.400
Moisture content: Dry soil+tare, gms.	160.220		1022.600
Moisture content: Tare, gms.	50.320		115.200
Moisture, %	16.6	23.0	17.2
Moist specimen weight, gms.	1080.9		
Diameter, in.	2.84	2.83	
Area, in.²	6.33	6.28	
Height, in.	5.36	5.34	
Net decrease in height, in.		0.02	
Wet Density, pcf	121.3	129.7	
Dry density, pcf	104.0	105.4	
Void ratio	0.6579	0.6357	
Saturation, %	69.7	100.0	

Test Readings for Specimen No. 3

Load ring constant = 3.313 lbs. per input unit
Membrane modulus = 0.124105 kN/cm²
Membrane thickness = 0.02 cm
Cell pressure = 13.90 psi (2.00 ksf)
Back pressure = 0.00 psi (0.00 ksf)
Strain rate, in./min. = 0.05
Fail. Stress = 9.40 ksf **at reading no.** 19

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
0	0.0000	0.00	0.0	0.0	0.00	2.00	2.00	1.00		2.00
1	0.0010	7.00	23.2	0.0	0.53	2.00	2.53	1.27		2.27
2	0.0050	17.00	56.3	0.1	1.29	2.00	3.29	1.64		2.65
3	0.0100	23.00	76.2	0.2	1.74	2.00	3.75	1.87		2.87
4	0.0150	28.00	92.8	0.3	2.12	2.00	4.12	2.06		3.06
5	0.0200	34.00	112.6	0.4	2.57	2.00	4.58	2.29		3.29
6	0.0250	39.00	129.2	0.5	2.95	2.00	4.95	2.47		3.48
7	0.0300	44.00	145.8	0.6	3.32	2.00	5.33	2.66		3.66
8	0.0350	48.00	159.0	0.7	3.62	2.00	5.63	2.81		3.81
9	0.0400	54.00	178.9	0.7	4.07	2.00	6.07	3.03		4.04
10	0.0450	60.00	198.8	0.8	4.52	2.00	6.52	3.26		4.26
11	0.0500	64.00	212.0	0.9	4.82	2.00	6.82	3.41		4.41
12	0.0750	89.00	294.9	1.4	6.67	2.00	8.67	4.33		5.34
13	0.1000	105.00	347.9	1.9	7.83	2.00	9.83	4.91		5.92
14	0.1250	116.00	384.3	2.3	8.61	2.00	10.61	5.30		6.31
15	0.1500	122.00	404.2	2.8	9.01	2.00	11.01	5.50		6.51
16	0.1750	125.00	414.1	3.3	9.19	2.00	11.19	5.59		6.60

MACTEC Engineering and Consulting, Inc.

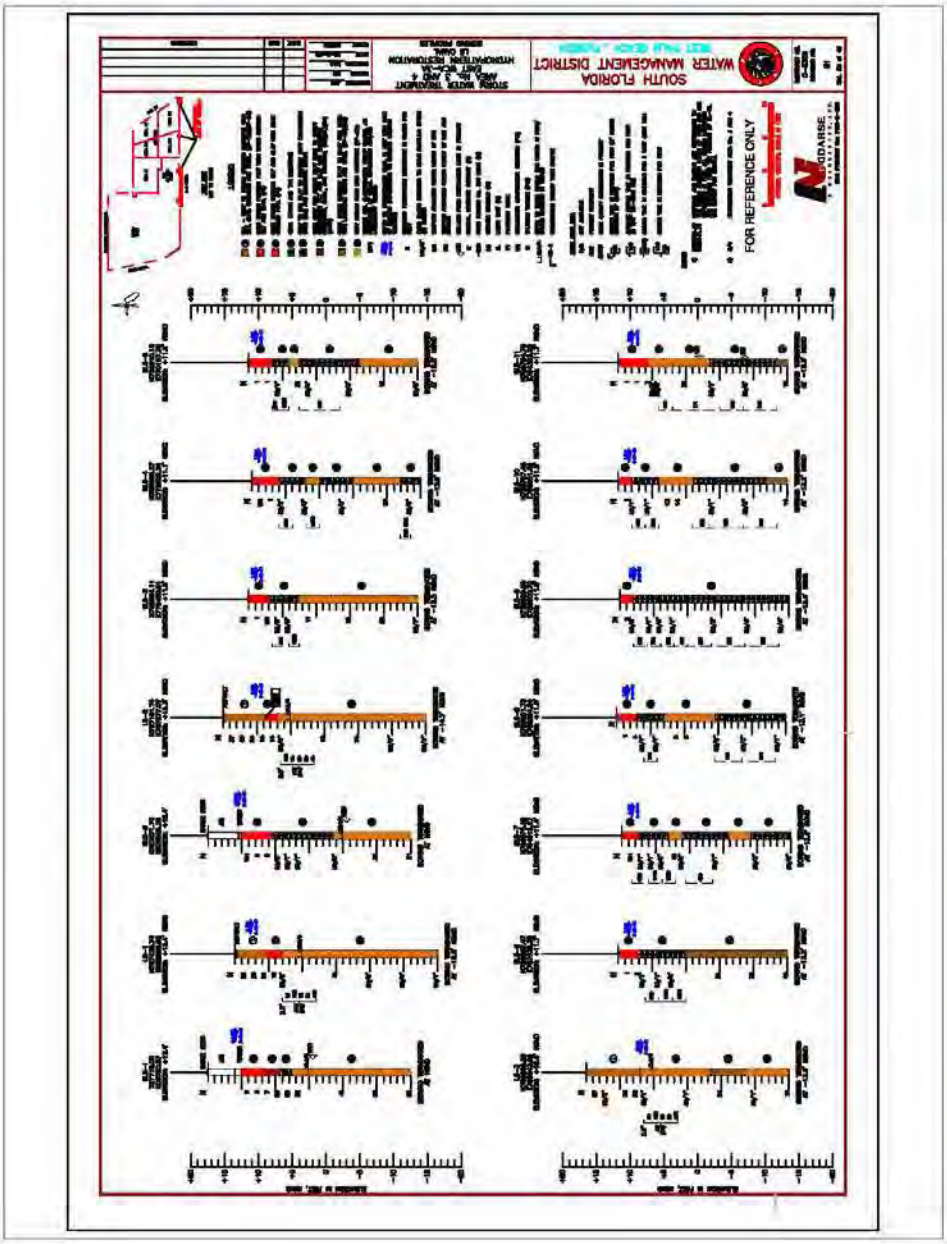
Test Readings for Specimen No. 3

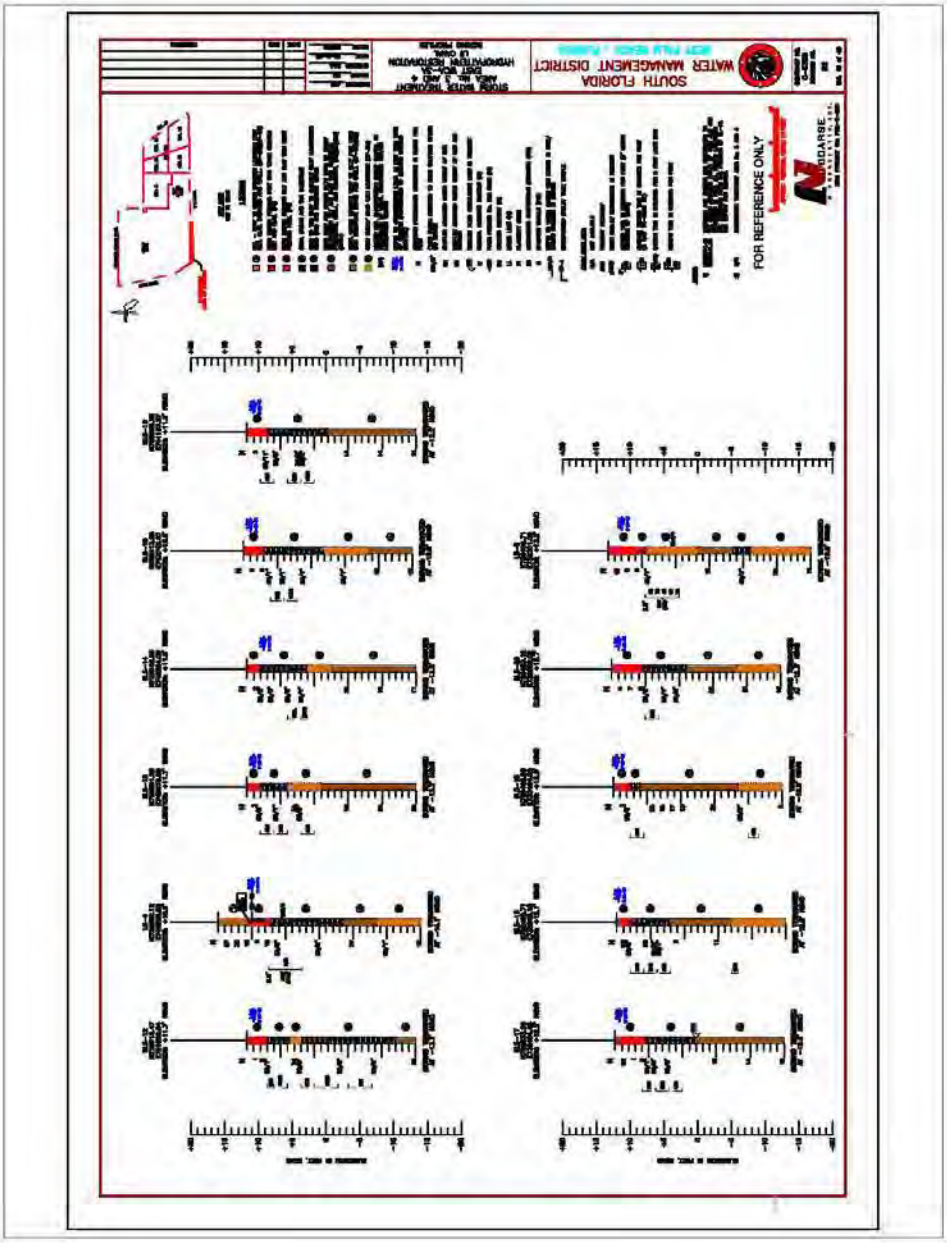
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Princ. Stress ksf	Major Princ. Stress ksf	1:3 Ratio	P ksf	Q ksf
17	0.2000	127.00	420.8	3.7	9.29	2.00	11.29	5.64		6.65
18	0.2500	129.00	427.4	4.7	9.34	2.00	11.35	5.67		6.67
19	0.3000	131.00	434.0	5.6	9.40	2.00	11.40	5.69		6.70
20	0.3500	131.00	434.0	6.6	9.30	2.00	11.30	5.65		6.65
21	0.4000	132.00	437.3	7.5	9.28	2.00	11.28	5.64		6.64
22	0.5000	133.00	440.6	9.4	9.16	2.00	11.16	5.58		6.58
23	0.6000	134.00	443.9	11.2	9.04	2.00	11.04	5.52		6.52
24	0.7000	135.00	447.3	13.1	8.91	2.00	10.91	5.45		6.46
25	0.8000	137.00	453.9	15.0	8.85	2.00	10.85	5.42		6.43
26	0.9000	138.00	457.2	16.9	8.72	2.00	10.72	5.36		6.36
27	1.0000	139.00	460.5	18.7	8.58	2.00	10.58	5.29		6.29
28	1.1000	138.00	457.2	20.6	8.32	2.00	10.33	5.16		6.16
29	1.2000	137.00	453.9	22.5	8.07	2.00	10.07	5.03		6.04

MACTEC Engineering and Consulting, Inc.

ANNEX G-2. GEOLOGICAL INVESTIGATIONS SOUTH OF THE REDLINE

Figure G-2-1. Nodarse and Associates, 2000 Boring Map


SOUTH FLORIDA
WATER MANAGEMENT DISTRICT
FOR REFERENCE ONLY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WATER MANAGEMENT DISTRICT
FOR REFERENCE ONLY

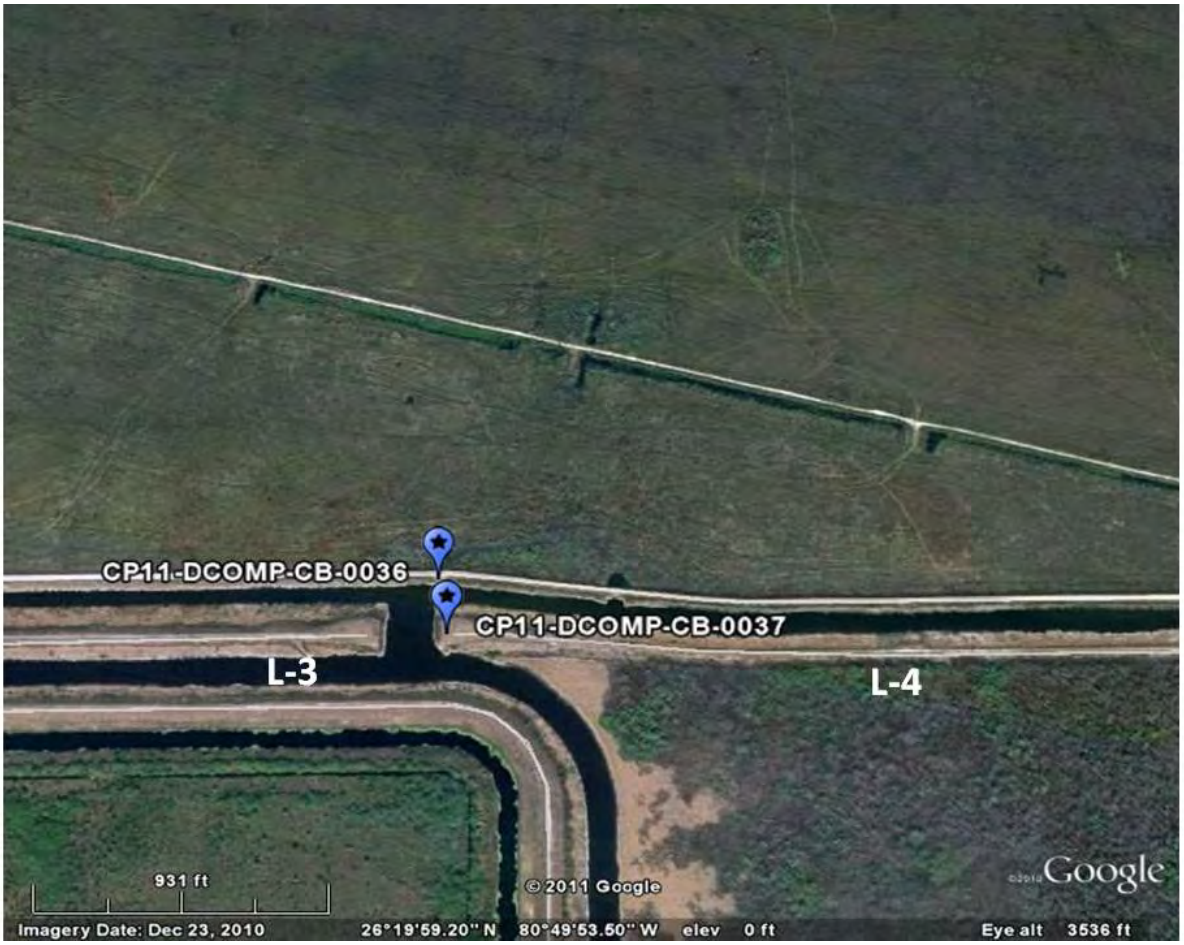

Figure G-2-2. U.S. Army Corps of Engineers 2011 Boring Map

Boring Designation CP11-DCOMP-CB-0036

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

1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-4 North, Proposed Pump Station	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0036 / LOCATION COORDINATES X = 710,800 Y = 726,372	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 9.0 Ft.
	15. DATE BORING STARTED 03-15-11 / COMPLETED 03-15-11
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 16.6 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 69 %
8. TOTAL DEPTH OF BORING 22.7 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
16.6	0.0						16.6		
			FILL, fine grained sand with some fine and coarse grained gravel; trace clay, 2.5YR 6/2 pale red	73			SPT Sampler 15.1	8 15 16	31
13.6	3.0			60			SPT Sampler 13.6	4 7 9	16
			SAND, clayey, some fine gravel; trace silt, 5Y 4/1 dark gray (SC)	80			SPT Sampler 12.1	5 5 3	8
10.6	6.0			73			SPT Sampler 10.6	3 3 5	8
9.1	7.5		CLAY, organic-L, moist, organic soil with calcareous sand and gravel particles, 5Y 2.5/1 black (OL)	87			SPT Sampler 9.1	2 1 1	2
7.1	9.5		SAND, clayey, moist, calcareous sand and gravel fragments, 7.5YR 2.5/1 black (SC)	63			SPT Sampler 7.6	WOH 1 1	2
6.1	10.5		CLAY, lean, moist, some calcareous gravel; little organics, 10YR 4/1 dark gray (CL)	93			SPT Sampler 6.1	2 1 4	5
4.6	12.0		SAND, clayey, trace gravel, trace silt, 2.5Y 6/1 gray (SC)	87			SPT Sampler 4.6	2 2 4	6
3.1	13.5		SAND, silty, some coarse gravel, 2.5Y 6/1 gray (SM)	40			SPT Sampler 3.1	2 4 16	20
		Weathered	LIMESTONE, fossiliferous, weathered, moderately fractured, vuggy, glaconitic staining; some clay infills, 5Y 8/1 white	65	BOX 1	RQD 32	4 x 5-1/2" DT = 9 mins HP = 200 psi DFR = 100 %		

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(Continued)

Boring Designation CP11-DCOMP-CB-0036

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 3 OF 3 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 710,800 Y = 726,372	ELEVATION TOP OF BORING 16.6 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				65		RQD 32	4 x 5-1/2" DT = 9 mins HP = 200 psi DFR = 100 % -0.3		
				40	BOX 1 1	RQD 11	4 x 5-1/2" DT = 5 mins HP = 200 psi DFR = 70 %		
-6.1	22.7						-6.1		

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. Grout

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
WOH = Weight of Hammer.
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

SAJ FORM 1836-A
JUN 02

Boring Designation CP11-DCOMP-CB-0037

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-4 South, Proposed Pump Station Alternate		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0037	LOCATION COORDINATES X = 710,839 Y = 726,167	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown		13. TOTAL NUMBER CORE BOXES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 8.3 Ft.	
		15. DATE BORING	STARTED 03-22-11 / COMPLETED 03-22-11
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 20.0 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING 61 %	
8. TOTAL DEPTH OF BORING 20.7 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
20.0	0.0						20.0		
			FILL, gravelly, trace organics; trace clay; trace roots; some shell fragments, 5YR 7/1 light gray	67			SPT Sampler	10, 24, 16	40
			From El. 18.5 to 14.0 Ft., sandy, trace organics; trace shell fragments, 7.5YR 4/1 dark gray	53			18.5 SPT Sampler	4, 6, 8	14
				67			17.0 SPT Sampler	9, 10, 13	23
				87			15.5 SPT Sampler	11, 15, 21	36
			From El. 14.0 to 12.5 Ft., gravelly, some silt, 7.5YR 5/2 brown	67			14.0 SPT Sampler	13, 10, 12	22
			From El. 12.5 to 11.0 Ft. sandy, 10YR 5/1 gray	0			12.5 SPT Sampler	5, 6, 6	12
11.0	9.0						11.0		
10.9	9.1		SAND, clayey, trace gravel; some shell fragments, 10YR 7/1 light gray (SC)						
10.7	9.3								
10.5	9.5		CLAY, organic-L, low plasticity, some sand, 10YR 2/1 black (OL)	80			SPT Sampler	9, 2, 2	4
			SAND, silty, some shell fragments, 10YR 7/2 light gray (SM)				9.5		
			CLAY, organic-H, some fibrous material, 5YR 2.5/2 dark reddish brown (OH)	100			SPT Sampler	1, 2, 2	4
8.0	12.0						8.0		
			SAND, silty, 10YR 2/2 very dark brown (SM)	100			SPT Sampler	woh, woh, woh	0
							6.5		
5.9	14.1								
			SAND, clayey, some gravel and silt; some shell fragments; trace organics, 10YR 5/2 grayish brown (SC)	80			SPT Sampler	2, 7, 7	14
							5.0		

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation: CP11-DCOMP-CB-0037

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 2 SHEETS
PROJECT: C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 710,839 Y = 726,167	ELEVATION TOP OF BORING: 20.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				69			SPT Sampler 3.7	1 4 50/0.3'	54+
				0			Advanced Boring		
1.9	18.1						1.9		
			LIMESTONE, moderately hard, moderately fractured, vuggy, 10YR 7/1 light gray	100	BOX 1	RQD 42	4 x 5-1/2" DT = 11 mins HP = 200 psi DFR = 90 %		
-0.7	20.7						-0.7		

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. Grout.

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.)

Abbreviations:
WOH = Weight of Hammer.
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

SAJ FORM 1836-A
JUN 02

Figure G-2-3. U.S. Army Corps of Engineers 2011 Boring Map

Boring Designation CP11-DCOMP-CB-0011

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

1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 Canal Plug, Proposed Pump Station	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0011 / LOCATION COORDINATES X = 775,757 Y = 727,006	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 0 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 7.0 Ft.
	15. DATE BORING STARTED 03-22-11 / COMPLETED 03-22-11
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 13.4 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 55 %
8. TOTAL DEPTH OF BORING 27.9 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
13.4	0.0						13.4		
			FILL, sandy, some gravel; trace roots, 7.5YR 5/1 gray	100			SPT Sampler	3, 50	
11.9	1.5						11.9		
			SAND, clayey, some gravel; some shell fragments, 10YR 6/1 gray (SC)	80			SPT Sampler	15, 23, 17	40
							10.4		
				100			SPT Sampler	14, 16, 16	32
							8.9		
				53			SPT Sampler	36, 16, 17	33
							7.4		
				67			SPT Sampler	7, 7, 7	14
							5.9		
				100			SPT Sampler	8, 8, 11	19
							4.4		
				53			SPT Sampler	28, 24, 6	30
2.9	10.5						2.9		
			GRAVEL, silty, some shell fragments, 10YR 6/2 light brownish gray (GM)	47			SPT Sampler	8, 7, 10	17
1.4	12.0						1.4		
			SAND, silty, some shell fragments, 2.5Y 7/1 light gray (SM)	67			SPT Sampler	11, 5, 3	8
-0.1	13.5						-0.1		
			GRAVEL, silty, trace clay; some organics; some shell fragments, 7.5YR 5/1 gray (GM)	27			SPT Sampler	2, 2, 2	4
							-1.6		

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(Continued)

Boring Designation CP11-DCOMP-CB-0011

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 3 OF 3 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 775,757 Y = 727,006	ELEVATION TOP OF BORING 13.4 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-3.1	16.5			7			SPT Sampler -2.6	1 / 1	2+
-4.6	18.0		CLAY, organic-H, trace gravel; trace sand; some shell fragments, 2.5Y 3/1 very dark gray (OH)	40			SPT Sampler -4.6	1/0.0' woh / woh / woh	0
-5.6	19.0		GRAVEL, silty, some organics; some shell fragments, 2.5Y 3/3 dark olive brown (GM)	33			SPT Sampler -6.1	1 / 2 / 1	3
-7.6	21.0		SAND, clayey, some gravel; some shell fragments, 2.5Y 7/3 pale yellow (SC)	33			SPT Sampler -7.6	5 / 9 / 12	21
-10.0	23.4		SAND, silty, some shell fragments; trace clay, 5Y 8/1 white (SM)	20			SPT Sampler -9.1	4 / 6 / 3	9
				56			SPT Sampler -10.0	4 / 50/0.4'	
-14.5	27.9		LIMESTONE, fossiliferous, moderately hard, vuggy, 7.5YR 7/1 light gray	57	BOX 1	RQD 8	4 x 5-1/2" DT = 8 mins HP = 200 psi DFR = 75 % -14.5		

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. Grout

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
WOH = Weight of Hammer.
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

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Boring Designation CP11-DCOMP-CB-0012

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

1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 South	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0012 / LOCATION COORDINATES X = 774,031 Y = 726,857	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 7.3 Ft.
	15. DATE BORING STARTED 03-19-11 / COMPLETED 03-19-11
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 13.7 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 59 %
8. TOTAL DEPTH OF BORING 22.9 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
13.7	0.0						13.7		
			FILL, sandy, some gravel; trace clay and shells, 2.5Y 6/2 light brownish gray	73			SPT Sampler	15, 23, 20	43
							12.2		
				60			SPT Sampler	9, 9, 9	18
							10.7		
				58			SPT Sampler	5, 34, 50	84
9.2	4.5						9.2		
8.8	4.9		SAND, silty, some shell fragments, 2.5Y 6/2 light brownish gray (SM)						
			CLAY, organic-H, some shell fragments, 2.5Y 2.5/1 black (OH)	57			SPT Sampler	3, 4, 5	9
7.7	6.0						7.7		
7.2	6.5		CLAY, fat, trace sand, 2.5Y 2.5/1 black (CH)						
			CLAY, organic-H, trace sand and gravel; trace shells, 2.5Y 2.5/1 black (OH)	100			SPT Sampler	2, 2, 2	4
							6.2		
				63			SPT Sampler	5, 5, 50/0.2'	55+
5.0	8.7						5.0		
4.9	8.8		CLAY, lean, trace gravel, 2.5Y 5/1 gray (CL)						
			LIMESTONE, fossiliferous, vuggy, 10YR 7/1 light gray	96		RQD 38	4 x 5-1/2" DT = 11 mins HP = 200 psi DFR = 40 %		
							3.7		
			At El. 3.7 Ft., highly weathered, 10YR 6/3 pale brown	32	BOX 1	RQD 0	4 x 5-1/2" DT = 9 mins HP = 200 psi DFR = 40 %		
							0.3		
				22		RQD 0	4 x 5-1/2" DT = 5 mins HP = 200 psi DFR = 5 %		

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(Continued)

Boring Designation CP11-DCOMP-CB-0012

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 3 OF 3 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 774,031 Y = 726,857	ELEVATION TOP OF BORING 13.7 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
		Highly Weathered		22		RQD 0	4 x 5-1/2" DT = 5 mins HP = 200 psi DFR = 5 %		
							-4.2		
				31	BOX 1 / 1	RQD 27	4 x 5-1/2" DT = 5 mins HP = 200 psi DFR = 5 %		
-9.2	22.9						-9.2		
			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. Grout				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.). Abbreviations: DT = Drill Time. HP = Hydraulic Pressure. DFR = Drill Fluid Return.		

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

Boring Designation CP11-DCOMP-CB-0014

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 South		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0014	LOCATION COORDINATES X = 770,021 Y = 726,834	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 0 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown		13. TOTAL NUMBER CORE BOXES 2	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Not Encountered	
		15. DATE BORING	STARTED 03-18-11 / COMPLETED 03-18-11
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 14.7 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING 70 %	
8. TOTAL DEPTH OF BORING 21.5 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
14.7	0.0						14.7		
			FILL, sandy, mainly silty sand with some gravel, trace clay, 2.5Y 7/1 light gray	87			SPT Sampler	45 / 48 / 28	76
							13.2		
				53			SPT Sampler	7 / 13 / 13	26
11.7	3.0						11.7		
			SAND, clayey, low plasticity, some silt and gravel, 2.5YR 5/1 reddish gray (SC)	100			SPT Sampler	19 / 50	
10.2	4.5						10.2		
9.9	4.8		SAND, silty, some clay and gravel, 10YR 6/2 light brownish gray (SM)	100			9.9 SPT Sampler	50/0.3'	
			LIMESTONE, fossiliferous, moderately hard, weathered, slightly fractured, vuggy, 7.5YR 7/1 light gray	57		RQD 0	4 x 5-1/2" DT = 14 mins HP = 300 psi DFR = 100 %		
							6.9		
			At El. 5.9 Ft., highly fractured. 7.5YR 8/1 white	74	BOX 1	RQD 22	4 x 5-1/2" DT = 11 mins HP = 200 psi DFR = 80 %		
							1.9		
				62		RQD 0	4 x 5-1/2" DT = 8 mins HP = 200 psi DFR = 80 %		

Weathering

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP11-DCOMP-CB-0014

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET OF SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 770,021 Y = 726,834	ELEVATION TOP OF BORING 14.7 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR CD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				62	BOX 1	RQD 0	4 x 5-1/2" DT = 8 mins HP = 200 psi DFR = 80 % -1.8		
				28	BOX 2	RQD 0	4 x 5-1/2" DT = 6 mins HP = 200 psi DFR = 0 %		
-6.8	21.5						-6.8		
			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. Grout				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.). Abbreviations: DT = Drill Time. HP = Hydraulic Pressure DFR = Drill Fluid Return.		

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

Boring Designation CP11-DCOMP-CB-0016

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 South		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0016	LOCATION COORDINATES X = 766,059 Y = 726,798	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown		13. TOTAL NUMBER CORE BOXES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 6.6 Ft.	
		15. DATE BORING	STARTED 03-18-11 / COMPLETED 03-18-11
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 15.3 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING 76 %	
8. TOTAL DEPTH OF BORING 16.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
15.3	0.0						15.3		
			FILL, sandy, low plasticity, some clay; some gravel, 5Y 4/1 dark gray	80			SPT Sampler	18, 23, 15	38
13.8									
				67			SPT Sampler	9, 13, 17	30
12.3	3.0						12.3		
			SAND, clayey, medium plasticity, some gravel; little silt; little shells; some organics, 10YR 5/1 gray (SC)	100			SPT Sampler	13, 10, 12	22
10.8			At El. 10.8 Ft., trace organics, 10YR 5/2 grayish brown						
				87			SPT Sampler	13, 13, 8	21
9.3	6.0						9.3		
8.7	6.6		CLAY, fat, gravelly; some coarse sand; shell fragments; some fibrous material, 10YR 2/1 black (CH)	67			SPT Sampler	4, 4, 2	6
			CLAY, organic-H, 10YR 2/1 black (OH)						
7.8			From El. 7.8 to 4.8 Ft., moist, trace calcareous gravel, 10YR 2/2 very dark brown						
				100			SPT Sampler	1, 1, 1	2
6.3									
				53			SPT Sampler	1, 3, 2	5
4.8	10.5						4.8		
4.0	11.3		CLAY, fat, moist, some coarse-grained sand; some organics, 7.5YR 6/1 gray (CH)	63			SPT Sampler	10, 50/0.3'	
			LIMESTONE, fossiliferous, moderately hard; vuggy, 10YR 7/1 light gray						
			At El. 2.1 Ft., open aperture	70	BOX 1	RQD 45	4 x 5-1/2" HP = 200 psi DFR = 100 %		

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(Continued)

Boring Designation CP11-DCOMP-CB-0016

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 3 OF 3 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 766,059 Y = 726,798	ELEVATION TOP OF BORING 15.3 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-0.7	16.0			70	BOX 1	RQD 45	4 x 5-1/2" HP = 200 psi DFR = 100 % -0.7		

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. Grout

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
HP = Hydraulic Pressure
DFR = Drill Fluid Return.

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SAJ FORM 1836-A
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Boring Designation CP11-DCOMP-CB-0018

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 South		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0018	LOCATION COORDINATES X = 761,968 Y = 726,749	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 0 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown		13. TOTAL NUMBER CORE BOXES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 7.4 Ft.	
		15. DATE BORING	STARTED 03-18-11 / COMPLETED 03-18-11
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 14.8 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING 61 %	
8. TOTAL DEPTH OF BORING 13.7 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
14.8	0.0						14.8		
			FILL, sandy, some gravel; trace roots; trace clay and shell fragments, 7.5YR 6/1 gray	86			SPT Sampler	27, 48, 50	98
							13.3		
				53			SPT Sampler	18, 35, 49	84
11.8	3.0						11.8		
			SAND, clayey, moist, some organic soil; some silt and gravel, 7.5YR 5/1 gray (SC)	100			SPT Sampler	23, 18, 50/0.1'	68+
10.4	4.4						10.7		
			LIMESTONE, vuggy, 10YR 7/2 light gray At El. 10.3 Ft., moderately fractured	27	BOX 1	ROD 0	DT = 4 mins HP = 200 psi DFR = 75 %		
8.3	6.5						8.3		
			CLAY, organic-H, moist, some fibrous plant material, 10YR 2/1 black (OH)	43			SPT Sampler	2, 4, 7	11
6.8	8.0						6.8		
			LIMESTONE, intensely weathered, 10YR 5/6 yellowish brown From El. 6.4 to 5.0 Ft., fossiliferous, pitted; shell fragments, 10YR 7/2 light gray	50			6.4 SPT Sampler	50/0.4'	
			At El. 5.0 Ft., moderately fractured	68	BOX 1	ROD 33	DT = 9 mins HP = 200 psi DFR = 60 %		
1.1	13.7						1.1		
			NOTES: 1. USACE Jacksonville is the custodian for				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).		

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JUN 02

(Continued)

Boring Designation: CP11-DCOMP-CB-0018

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District		SHEET 2 OF 2 SHEETS
PROJECT: C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83	VERTICAL: NAVD88
LOCATION COORDINATES: X = 761,968 Y = 726,749	ELEVATION TOP OF BORING: 14.8 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Grout				Abbreviations: DT = Drill Time. HP = Hydraulic Pressure. DFR = Drill Fluid Return.		

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SAJ FORM 1836-A
JUN 02

Boring Designation CP11-DCOMP-CB-0020

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 South		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0020	LOCATION COORDINATES X = 757,988 Y = 726,710	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 0 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown		13. TOTAL NUMBER CORE BOXES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Not Encountered	
		15. DATE BORING	STARTED 03-17-11 / COMPLETED 03-17-11
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 14.4 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING 57 %	
8. TOTAL DEPTH OF BORING 17.2 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
14.4	0.0						14.4		
13.8	0.6		FILL, sandy, some gravel; trace clay; shell fragments, 5Y 7/1 light gray	83			13.8 SPT Sampler	27 / 50/0.1	
12.0	2.4	Weathered	LIMESTONE, moderately hard, weathered, vuggy, 10YR 6/1 gray	44	BOX 1	RQD 19	12.0 DT = 5 mins HP = 200 psi DFR = 100 %		
			SAND, silty, some gravel; little clay, 5Y 7/1 light gray (SM)	73			10.5 SPT Sampler	24 / 24 / 23	47
				63			9.0 SPT Sampler	17 / 30 / 19	49
8.7	5.7		CLAY, organic-H, moist, trace clay, 5Y 2.5/1 black (OH)	33			7.5 SPT Sampler	6 / 2 / 2	4
7.1	7.3		SAND, silty, 5Y 5/2 olive gray (SM)	60			6.0 SPT Sampler	2 / 12 / 20	32
				53			4.5 SPT Sampler	14 / 4 / 3	7
				67			3.0 SPT Sampler	8 / 6 / 18	24
				47			1.5 SPT Sampler	43 / 32 / 7	39
				73			0.0 SPT Sampler	2 / 5 / 38	43
0.0	14.4		LIMESTONE, fossiliferous, moderately hard, vuggy, some gravel; trace clay; low	32	BOX 1	RQD 19			

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(Continued)

Boring Designation: CP11-DCOMP-CB-0020

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET OF SHEETS
PROJECT: C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 757,988 Y = 726,710	ELEVATION TOP OF BORING: 14.4 Ft	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR CD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-2.8	17.2		cohesion; shell fragments. 10YR 5/1 gray	32	BOX 1	RQD 19	DT = 15 mins HP = 200 psi DFR = 100 % -2.8		
			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. Grout.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.). Abbreviations: DT = Drill Time. HP = Hydraulic Pressure. DFR = Drill Fluid Return.		

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JUN 02

Boring Designation CP11-DCOMP-CB-0022

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

1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 South	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) | HORIZONTAL NAD83 | VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0022 | LOCATION COORDINATES X = 754,072 Y = 726,667	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM | CONTRACTOR FILE NO.	12. TOTAL SAMPLES | DISTURBED 0 | UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED | DEG. FROM VERTICAL | BEARING	14. ELEVATION GROUND WATER Not Encountered
	15. DATE BORING | STARTED 03-17-11 | COMPLETED 03-17-11
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 14.3 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 71 %
8. TOTAL DEPTH OF BORING 15.3 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
14.3	0.0						14.3		
			FILL, sandy, trace clay; some gravel; trace shells, 10YR 6/1 gray	80			SPT Sampler	17, 40, 24	64
							12.8		
				60			SPT Sampler	16, 20, 18	38
							11.3		
			At El. 11.3 Ft., low plasticity	50			SPT Sampler	17, 50/0.1"	
10.7	3.6						10.7		
		Weathered	LIMESTONE, fossiliferous, weathered, vuggy, some clay infills; some oxidation staining, 2.5Y 6/1 gray	29	BOX 1	RQD 0	4 x 5-1/2" DT = 19 mins HP = 200 psi DFR = 100 %		
6.5	7.8						6.5		
			CLAY, organic-H, some fibrous plant material, 5Y 2.5/1 black (OH)	100			SPT Sampler	1, 1, 1	2
							5.0		
				93			SPT Sampler	1, 1, 1	2
3.5	10.8						3.5		
		Highly Weathered	LIMESTONE, fossiliferous, highly weathered, moderately fractured, fractured between 11.4 to 12.0 ft depth, 10YR 7/2 light gray	82	BOX 1	RQD 51	DT = 18 mins HP = 200 psi DFR = 60 %		

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP11-DCOMP-CB-0022

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 3 OF 3 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane. FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 754,072 Y = 726,667	ELEVATION TOP OF BORING 14.3 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-1.0	15.3		At El. -0.7 Ft., weak cementation	82			-1.0		

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. Grout

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.)

Abbreviations:
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

15 20 25 30 35

SAJ FORM 1836-A
JUN 02

Boring Designation CP11-DCOMP-CB-0024

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

1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 South	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0024 / LOCATION COORDINATES X = 750,077 Y = 726,617	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 12.4 Ft.
	15. DATE BORING STARTED 03-16-11 / COMPLETED 03-17-11
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 14.3 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 67 %
8. TOTAL DEPTH OF BORING 9.7 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
14.3	0.0						14.3		
			FILL, gravelly, some sand, strong HCL reaction, 5Y 7/1 light gray	67			SPT Sampler	26 50	
							12.8 Advanced Boring		
11.3	3.0						11.3		
10.8	3.5		SAND, silty, strong reaction with HCl, 2.5Y 7/1 light gray (SM)	75			10.8 SPT Sampler	50	
			LIMESTONE, moderately hard, vuggy, 2.5Y 8/4 pale yellow						
8.8	5.5								
			CLAY, organic-H, some calcareous sand and gravel, 2.5Y 2.5/1 black (OH)	48	1 BOX 1	RQD 20	4 x 5-1/2" DT = 11 mins HP = 200 psi DFR = 70 %		
5.9	8.4						5.8		
			LIMESTONE, 2.5Y 7/2 light gray	80		RQD 28	4 x 5-1/2" DT = 8 mins HP = 200 psi DFR = 100 %		
4.6	9.7						4.6		

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. Grout

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

SAJ FORM 1836
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Boring Designation CP11-DCOMP-CB-0026

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

1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 South	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0026 / LOCATION COORDINATES X = 746,190 Y = 726,559	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 7.6 Ft.
	15. DATE BORING STARTED 03-19-11 / COMPLETED 03-19-11
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 14.7 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 74 %
8. TOTAL DEPTH OF BORING 12.2 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
14.7	0.0						14.7		
			FILL, sandy, trace gravel; trace shell fragments; some gravel, 5Y 4/1 dark gray	80			SPT Sampler 13.2	8 16 19	35
				67			SPT Sampler 11.7	11 24 24	48
				75			SPT Sampler 10.2	21 50	
8.7	6.0			80			SPT Sampler 8.7	11 5 3	8
7.2	7.5		CLAY, organic-H, some fibrous material; trace calcareous gravel, 2.5Y 2.5/1 black (OH) ▼	53			SPT Sampler 7.2	1 1 7	8
5.7	9.0		SAND, silty, some clay; some organics; little gravel; little shell fragments, 2.5Y 3/1 very dark gray (SM)	63			SPT Sampler 5.7	3 50	
2.5	12.2		LIMESTONE, fossiliferous, moderately hard, vuggy, 7.5YR 6/1 gray At El. 5.4 Ft., moderately fractured At El. 4.4 Ft., highly fractured	100	BOX 1	RQD 53	4 x 5-1/2" DT = 10 mins HP = 200 psi DFR = 90 % 2.5		

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.

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
DT = Drill Time.
HP = Hydraulic Pressure
DFR = Drill Fluid Return

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP11-DCOMP-CB-0026

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 2 OF 2 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 746,190 Y = 726,559	ELEVATION TOP OF BORING 14.7 Ft		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			3. Grout						

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SAJ FORM 1836-A
JUN 02

Boring Designation CP11-DCOMP-CB-0028

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

1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 South	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0028 / LOCATION COORDINATES X = 742,303 Y = 726,513	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Not Encountered
	15. DATE BORING STARTED 03-21-11 / COMPLETED 03-21-11
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 14.5 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 54 %
8. TOTAL DEPTH OF BORING 12.6 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
14.5	0.0						14.5		
			FILL, gravelly, 10YR 7/2 light gray	40			SPT Sampler	18, 20, 14	34
							13.0		
				60			SPT Sampler	12, 13, 14	27
							11.5		
11.3	3.2		At El. 11.6 Ft., trace organics; trace clay	100			11.3 SPT Sampler	50/0.2'	
			LIMESTONE, moderately hard, very wide aperture, vuggy, 7.5YR 5/1 gray	80	BOX 1	RQD 0	4 x 5-1/2" DT = 5 mins HP = 200 psi DFR = 80 %		
							9.3		
8.8	5.7						8.8 Advanced Boring		
			CLAY, organic-H, some calcareous gravel; trace clay, 10YR 2/2 very dark brown (OH)	47			SPT Sampler	4, 2, 2	4
7.3	7.2						7.3		
			LIMESTONE, intensely weathered, some organics and fibrous material, 2.5YR 5/2 weak red	43			SPT Sampler	6, 23, 50/0.4'	73+
							5.9		
			At El. 5.9 Ft., fossiliferous, firm, vuggy, some clay infilling, 7.5YR 5/1 gray	63	BOX 1	RQD 44	4 x 5-1/2" DT = 15 mins HP = 200 psi DFR = 100 %		
1.9	12.6						1.9		

NOTES:

1. USACE Jacksonville is the custodian for these original files.

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

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP11-DCOMP-CB-0028

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 3 OF 4 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 742,303 Y = 726,513	ELEVATION TOP OF BORING 14.5 Ft		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			Classification System.						
			3) Grout						

SAJ FORM 1836-A
JUN 02

Boring Designation CP11-DCOMP-CB-0030

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 South		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0030	LOCATION COORDINATES X = 738,282 Y = 726,446	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown		13. TOTAL NUMBER CORE BOXES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 5.9 Ft.	
		15. DATE BORING	STARTED 03-21-11 / COMPLETED 03-21-11
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 14.1 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING 79 %	
8. TOTAL DEPTH OF BORING 14.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
14.1	0.0						14.1		
			FILL, sandy, some silt; trace clay; trace organics; trace shells	80			SPT Sampler 12.6	7 / 28 / 44	72
				60			SPT Sampler 11.1	7 / 16 / 34	50
				100			SPT Sampler 9.6	50	
9.2	4.9								
			CLAY, organic-H, moist, some fibrous material (OH)	57			SPT Sampler 8.1	5 / 3 / 2	5
6.9	7.2			100			SPT Sampler 6.6	1 / 2 / 4	6
6.6	7.5		CLAY, fat, trace organics (CH)						
5.3	8.8		CLAY, organic-H, low plasticity, some clay; some gravel; little sand (OH) ▼	69			SPT Sampler 5.3	5 / 20 / 50/0.3'	70+
0.1	14.0		LIMESTONE, moderately hard, vuggy, some sandy clay infills	90	BOX 1	RQD 65	4 x 5-1/2" DT = 15 mins HP = 200 psi DFR = 50 % 0.1		
			NOTES:				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).		

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation: CP11-DCOMP-CB-0030

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District		SHEET OF SHEETS
PROJECT: C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83	VERTICAL: NAVD88
LOCATION COORDINATES: X = 738,282 Y = 726,446	ELEVATION TOP OF BORING: 14.1 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			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. Grout				Abbreviations: DT = Drill Time. HP = Hydraulic Pressure. DFR = Drill Fluid Return.		

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SAJ FORM 1836-A
JUN 02

Boring Designation CP11-DCOMP-CB-0032

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

1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-5 South	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0032 / LOCATION COORDINATES X = 734,280 Y = 726,400	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 0 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 7.7 Ft.
	15. DATE BORING STARTED 03-21-11 / COMPLETED 03-21-11
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 14.9 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 73 %
8. TOTAL DEPTH OF BORING 25.5 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
14.9	0.0						14.9		
			FILL, gravelly, trace organics, 7.5YR 7/1 light gray	73			SPT Sampler	12, 42, 25	67
			From El. 13.4 to 8.3 Ft., sandy, little gravel; trace organics, 10YR 6/2 light brownish gray	80			SPT Sampler	5, 7, 8	15
				90			SPT Sampler	9, 7, 6	13
				33			SPT Sampler	4, 2, 3	5
8.6	6.3						8.9		
			CLAY, organic-H, medium plasticity, some fibrous material, 5Y 2.5/1 black (OH)	93			SPT Sampler	1, 1, 4	5
7.4	7.5						7.4		
			SAND, clayey, wet, 10YR 6/1 gray (SC)	53			SPT Sampler	4, 2, 8	10
5.9	9.0						5.9		
			SAND, silty, wet, trace gravel, organic odor, 10YR 3/2 very dark grayish brown (SM)	60			SPT Sampler	4, 5, 9	14
							4.4		
				67			SPT Sampler	8, 8, 7	15
							2.9		
				73			SPT Sampler	5, 5, 8	13
							1.4		
				60			SPT Sampler	6, 6, 7	13
							-0.1		

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP11-DCOMP-CB-0032

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 2 OF 2 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 734,280 Y = 726,400	ELEVATION TOP OF BORING 14.9 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				63			SPT Sampler -1.1	3 5	12+
				53			SPT Sampler	7/0.0' 4 4 4	8
-3.1	18.0						-3.1		
			SAND, poorly-graded with silt, some shell fragments, organic odor, 2.5Y 6/2 light brownish gray (SP-SM)	67			SPT Sampler	5 8 9	17
-4.6	19.5						-4.6		
			SAND, silty, some shell fragments, organic odor, 10YR 7/1 light gray (SM)	67			SPT Sampler -6.1	8 10 7	17
				63			SPT Sampler -7.6	6 4 3	7
				27			SPT Sampler -9.1	3 3 7	10
				20			SPT Sampler	2 3 4	7
-10.6	25.5						-10.6		

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. Grout

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

SAJ FORM 1836-A
JUN 02

Boring Designation CP11-DCOMP-CB-0034

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 S-8 Area, Proposed Pump Station		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0034	LOCATION COORDINATES X = 730,243 Y = 726,191	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown		13. TOTAL NUMBER CORE BOXES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 8.5 Ft.	
		15. DATE BORING	STARTED 03-16-11 / COMPLETED 03-16-11
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 15.8 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING 76 %	
8. TOTAL DEPTH OF BORING 13.8 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
15.8	0.0						15.8		
			SAND, silty, trace coarse grain sand and fine gravel; trace organics and roots in top 6 inches, 2.5Y 4/1 dark gray (SM)	73			SPT Sampler	4 / 16 / 26	42
							14.3		
				60			SPT Sampler	2 / 10 / 17	27
							12.8		
				93			SPT Sampler	14 / 14 / 47	61
11.3	4.5						11.3		
			CLAY, organic-H, strong reaction with HCl, 2.5Y 2.5/1 black (OH)	73			SPT Sampler	3 / 3 / 1	4
			From El. 9.9 to 8.3 Ft., trace calcareous gravel				9.8		
				80			SPT Sampler	2 / 2 / 3	5
8.3	7.5						8.3		
			SAND, silty, some gravel, 5Y 5/1 gray (SM)	53			SPT Sampler	3 / 9 / 50	59
6.8	9.0						6.8		
		Moderately Weathered	LIMESTONE, fossiliferous, moderately weathered, soft sandy pockets; vuggy, 10YR 7/1 light gray	90	BOX 1	ROD 77	DT = 11 mins HP = 200 psi DFR = 100 %		
2.0	13.8						2.0		
			NOTES: 1. USACE Jacksonville is the custodian for				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).		

SAJ FORM 1836
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(Continued)

Boring Designation CP11-DCOMP-CB-0034

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 2 OF 2 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 730,243 Y = 726,191	ELEVATION TOP OF BORING 15.8 Ft		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Grout				Abbreviations: DT = Drill Time. HP = Hydraulic Pressure. DFR = Drill Fluid Return.		

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SAJ FORM 1836-A
JUN 02

Boring Designation CP11-DCOMP-CB-0035

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 Proposed Pump Station		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0035	LOCATION COORDINATES X = 729,500 Y = 726,555	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown		13. TOTAL NUMBER CORE BOXES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 9.5 Ft.	
		15. DATE BORING	STARTED 03-16-11 / COMPLETED 03-16-11
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 13.5 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING 71 %	
8. TOTAL DEPTH OF BORING 13.8 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
13.5	0.0						13.5		
			FILL, sandy, nonplastic, trace organics and roots; some coarse grain sand and fine gravel, 10YR 4/1 dark gray	80			SPT Sampler 12.0	20 41 16	57
				53			SPT Sampler 10.5	20 15 16	31
				73			SPT Sampler 9.0	15 10 7	17
8.5	5.0								
			SAND, silty, wet, some gravel; trace clay, 5Y 7/1 light gray (SM)	93			SPT Sampler 7.5	5 7 50	57
				58			SPT Sampler 6.0	34 15 50	65
6.0	7.5								
		Slightly Weathered	LIMESTONE, fossiliferous, slightly weathered, some vugs At El. 5.2 Ft., slightly fractured	92		RQD 50	4 x 5-1/2" DT = 9 mins HP = 200 psi DFR = 60 % 4.7		
				50	BOX 1 1	RQD 37	4 x 5-1/2" DT = 6 mins HP = 200 psi DFR = 60 %		
-0.3	13.8						-0.3		
			NOTES: 1. USACE Jacksonville is the custodian for				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).		

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP11-DCOMP-CB-0035

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 2 OF 2 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 729,500 Y = 726,555	ELEVATION TOP OF BORING 13.5 Ft		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. Grout				Abbreviations: DT = Drill Time. HP = Hydraulic Pressure. DFR = Drill Fluid Return.		

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SAJ FORM 1836-A
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Boring Designation CP11-DCOMP-CB-0036

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

1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-4 North, Proposed Pump Station	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0036 / LOCATION COORDINATES X = 710,800 Y = 726,372	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 9.0 Ft.
	15. DATE BORING STARTED 03-15-11 / COMPLETED 03-15-11
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 16.6 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 69 %
8. TOTAL DEPTH OF BORING 22.7 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
16.6	0.0						16.6		
			FILL, fine grained sand with some fine and coarse grained gravel; trace clay, 2.5YR 6/2 pale red	73			SPT Sampler	8 / 15 / 16	31
							15.1		
				60			SPT Sampler	4 / 7 / 9	16
13.6	3.0						13.6		
			SAND, clayey, some fine gravel; trace silt, 5Y 4/1 dark gray (SC)	80			SPT Sampler	5 / 5 / 3	8
							12.1		
				73			SPT Sampler	3 / 3 / 5	8
10.6	6.0						10.6		
			CLAY, organic-L, moist, organic soil with calcareous sand and gravel particles, 5Y 2.5/1 black (OL)	87			SPT Sampler	2 / 1 / 1	2
9.1	7.5						9.1		
			SAND, clayey, moist, calcareous sand and gravel fragments, 7.5YR 2.5/1 black (SC)	63			SPT Sampler	WOH / 1 / 1	2
							7.6		
7.1	9.5								
			CLAY, lean, moist, some calcareous gravel; little organics, 10YR 4/1 dark gray (CL)	93			SPT Sampler	2 / 1 / 4	5
6.1	10.5						6.1		
			SAND, clayey, trace gravel, trace silt, 2.5Y 6/1 gray (SC)	87			SPT Sampler	2 / 2 / 4	6
4.6	12.0						4.6		
			SAND, silty, some coarse gravel, 2.5Y 6/1 gray (SM)	40			SPT Sampler	2 / 4 / 16	20
3.1	13.5						3.1		
		Weathered	LIMESTONE, fossiliferous, weathered, moderately fractured, vuggy, glaconitic staining; some clay infills, 5Y 8/1 white	65	BOX 1	RQD 32	4 x 5-1/2" DT = 9 mins HP = 200 psi DFR = 100 %		

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(Continued)

Boring Designation CP11-DCOMP-CB-0036

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 3 OF 3 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 710,800 Y = 726,372	ELEVATION TOP OF BORING 16.6 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				65		RQD 32	4 x 5-1/2" DT = 9 mins HP = 200 psi DFR = 100 % -0.3		
				40	BOX 1 1	RQD 11	4 x 5-1/2" DT = 5 mins HP = 200 psi DFR = 70 %		
-6.1	22.7						-6.1		

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. Grout

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
WOH = Weight of Hammer.
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

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JUN 02

Boring Designation CP11-DCOMP-CB-0037

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT C&SF CERP WCA 3 DECOMP Part 2 L-4 South, Proposed Pump Station Alternate		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP11-DCOMP-CB-0037	LOCATION COORDINATES X = 710,839 Y = 726,167	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Charlie Brown		13. TOTAL NUMBER CORE BOXES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 8.3 Ft.	
		15. DATE BORING	STARTED 03-22-11 / COMPLETED 03-22-11
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 20.0 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING 61 %	
8. TOTAL DEPTH OF BORING 20.7 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Michael Fitzharris, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
20.0	0.0						20.0		
			FILL, gravelly, trace organics; trace clay; trace roots; some shell fragments, 5YR 7/1 light gray	67			SPT Sampler	10, 24, 16	40
			From El. 18.5 to 14.0 Ft., sandy, trace organics; trace shell fragments, 7.5YR 4/1 dark gray	53			18.5 SPT Sampler	4, 6, 8	14
				67			17.0 SPT Sampler	9, 10, 13	23
				87			15.5 SPT Sampler	11, 15, 21	36
			From El. 14.0 to 12.5 Ft., gravelly, some silt, 7.5YR 5/2 brown	67			14.0 SPT Sampler	13, 10, 12	22
			From El. 12.5 to 11.0 Ft. sandy, 10YR 5/1 gray	0			12.5 SPT Sampler	5, 6, 6	12
11.0	9.0						11.0		
10.9	9.1		SAND, clayey, trace gravel; some shell fragments, 10YR 7/1 light gray (SC)						
10.7	9.3								
10.5	9.5		CLAY, organic-L, low plasticity, some sand, 10YR 2/1 black (OL)	80			SPT Sampler	9, 2, 2	4
			SAND, silty, some shell fragments, 10YR 7/2 light gray (SM)				9.5		
			CLAY, organic-H, some fibrous material, 5YR 2.5/2 dark reddish brown (OH)	100			SPT Sampler	1, 2, 2	4
8.0	12.0						8.0		
			SAND, silty, 10YR 2/2 very dark brown (SM)	100			SPT Sampler	woh, woh, woh	0
							6.5		
5.9	14.1								
			SAND, clayey, some gravel and silt; some shell fragments; trace organics, 10YR 5/2 grayish brown (SC)	80			SPT Sampler	2, 7, 7	14
							5.0		

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(Continued)

Boring Designation CP11-DCOMP-CB-0037

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 3 OF 3 SHEETS
PROJECT C&SF CERP WCA 3 DECOMP Part 2	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 710,839 Y = 726,167	ELEVATION TOP OF BORING 20.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				69			SPT Sampler	1 / 4 / 50/0.3'	54+
							3.7		
				0			Advanced Boring		
1.9	18.1						1.9		
			LIMESTONE, moderately hard, moderately fractured, vuggy, 10YR 7/1 light gray	100	BOX 1	RQD 42	4 x 5-1/2" DT = 11 mins HP = 200 psi DFR = 90 %		
-0.7	20.7						-0.7		

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. Grout

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
WOH = Weight of Hammer.
DT = Drill Time.
HP = Hydraulic Pressure
DFR = Drill Fluid Return.

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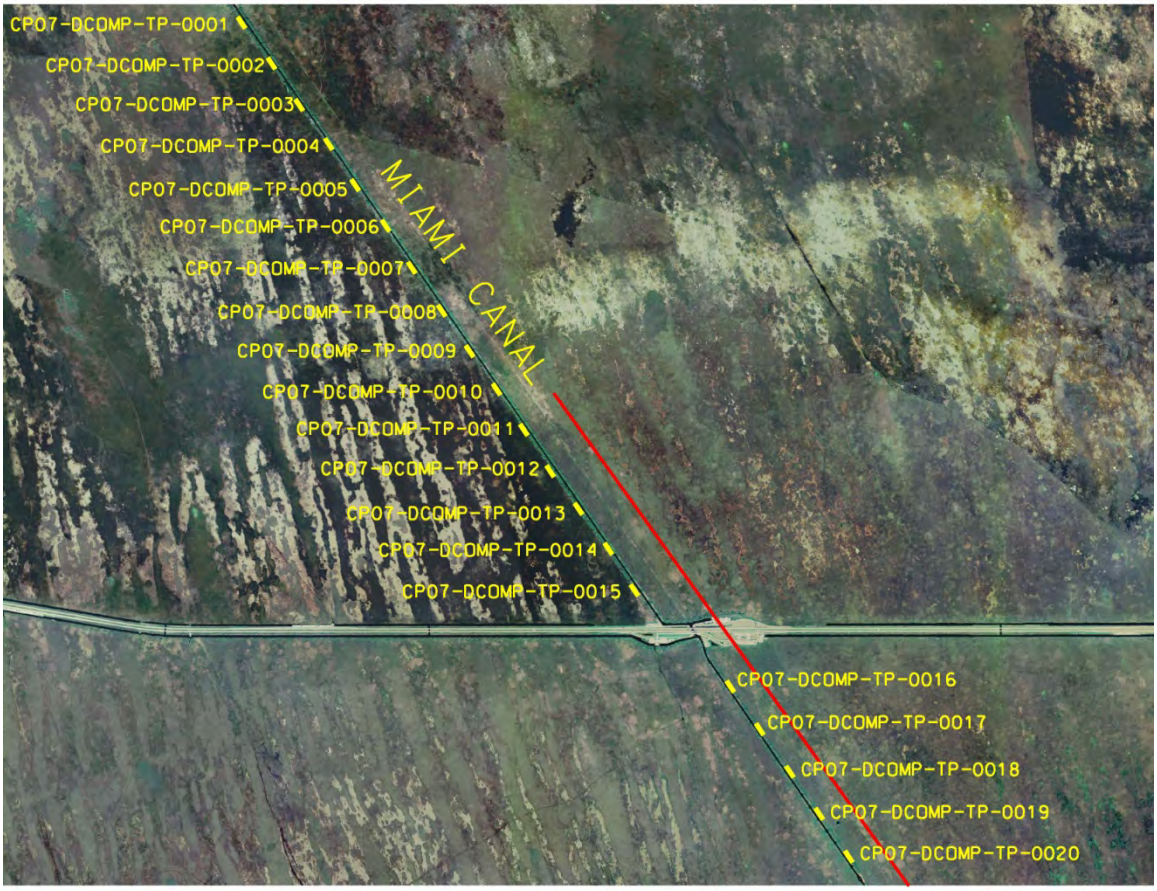

Figure G-2-3. Trench Locations along Miami Canal (Wolf WPC, 2009)

Boring Designation CP08-DCOMP-TP-0001

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0001 / LOCATION COORDINATES X = 758,064 Y = 683,851	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 4.0 Ft.
	15. DATE BORING STARTED 10-18-08 / COMPLETED 10-18-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 9.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0		GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine to medium-grained sand-sized quartz, few silt, few angular to subangular fine to medium-grained sand-sized shell, moist, 2.5Y 6/3 light yellowish brown (GP-GM)		Bulk		Test Pit		
	6.5		CLAY, organic-fl, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)						
	9.0		LIMESTONE						

NOTES:

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

DRAFT

☐ Geology/Hydrogeo/Struc Checked ☐ Database/Template Checked ☐ Initial/Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0002

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0002 / LOCATION COORDINATES X = 759,269 Y = 682,191	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 4.0 Ft.
	15. DATE BORING STARTED 10-17-08 / COMPLETED 10-17-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 8.5 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 6 IN.	N-VALUE
0	0.0								
5.5			GRAVEL, poorly-graded, mostly angular to subangular fine to coarse gravel-sized limestone, little subangular to rounded fine to medium-grained sand-sized quartz, trace silt, moist, 2.5Y 6/2 light brownish gray (GP)						
					S-1		Test Pit		
4.5			At 4.5 Ft., some organic matter						
5.5	5.5				S-2				
3			CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)				Test Pit		
8.5	8.5		LIMESTONE						

NOTES:

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

DRAFT
Database/Template Checked
Signature Checked
Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0003

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0003 / LOCATION COORDINATES X = 760,269 Y = 680,577	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 3.5 Ft.
	15. DATE BORING STARTED 10-17-08 / COMPLETED 10-17-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 8.5 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, little subangular to rounded fine-grained sand-sized quartz, few angular to subangular boulder-sized limestone, few silt, moist, 2.5Y 5/2 grayish brown (GP-GM)		Bulk		Test Pit		
	6.0		CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)						
	8.5		LIMESTONE						

NOTES:

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

DRAFT

Geology/Geotechnical Data Checked

Database/Template Checked

Initial/Date Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0004

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0004 / LOCATION COORDINATES X = 761,292 Y = 679,123	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 2.5 Ft.
	15. DATE BORING STARTED 10-17-08 / COMPLETED 10-17-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 7.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine-grained sand-sized quartz, few boulder-sized limestone, few silt, moist, 2.5Y 6/2 light brownish gray (GP-GM)		S-1		Test Pit		
	4.0								
			GRAVEL, poorly-graded, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine-grained sand-sized quartz, trace silt, 2.5Y 5/2 grayish brown (GP)		S-2		Test Pit		
	6.0								
	7.0		CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)						
			LIMESTONE						

NOTES:

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

DRAFT
Database/Template Checked
Geology/Geotechnical Checked
Initial/Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0005

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0005 / LOCATION COORDINATES X = 762,724 Y = 677,123	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 3.0 Ft.
	15. DATE BORING STARTED 10-16-08 / COMPLETED 10-16-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 8.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, little subangular to rounded fine-grained sand-sized quartz, few silt, moist, 2.5Y 5/2 grayish brown (GP-GM)		Bulk		Test Pit		
	6.0		CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)						
	8.0		LIMESTONE						

NOTES:

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

DRAFT
Initial/Data Entry Checked
Geology/Nomenclature Checked
Database/Template Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0006

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0006 / LOCATION COORDINATES X = 763,951 Y = 675,576	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 3.0 Ft.
	15. DATE BORING STARTED 10-16-08 / COMPLETED 10-16-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 8.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
	0.0								
	3.5		GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, little subangular to rounded fine-grained sand-sized quartz, few silt, trace shell, moist, 2.5Y 4/2 dark grayish brown (GP-GM)		S-1				
	5.5		GRAVEL, silty, mostly angular to subangular fine to coarse gravel-sized limestone, little subangular to rounded fine-grained sand-sized quartz, little silt, trace shell, 2.5Y 3/2 very dark grayish brown (GM)		S-2		Test Pit		
	8.0		CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)				Test Pit		
			LIMESTONE						

NOTES:

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

DRAFT
☐ Database/Template Checked
☐ Geology/Analysis Review Checked
☐ Tattler/Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0007

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0007 / LOCATION COORDINATES X = 764,997 Y = 673,826	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 3.0 Ft.
	15. DATE BORING STARTED 10-16-08 / COMPLETED 10-16-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 7.5 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded, mostly silt, some organic matter, some fine to coarse gravel-sized limestone, few subangular to rounded fine-grained sand-sized quartz, moist, 10YR 3/2 very dark grayish brown (GP)		Bulk				
	5.0		CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)				Test Pit		
	7.5		LIMESTONE						

NOTES:

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

DRAFT
Initials/date Entry Checked
Geology/Geomorphic Checked
Database/Template Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0008

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0008 / LOCATION COORDINATES X = 766,247 Y = 672,076	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 3 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 4.0 Ft.
	15. DATE BORING STARTED 10-16-08 / COMPLETED 10-16-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 8.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, little subangular to rounded fine-grained sand-sized quartz, few boulder-sized limestone, few silt, trace shell, moist, 2.5Y 6/3 light yellowish brown (GP-GM)		S-1		Test Pit		
	5.0				S-2		Test Pit		
			SAND, silty, mostly subangular to rounded fine-grained sand-sized quartz, some angular to subangular fine to coarse gravel-sized limestone, little silt, trace shell, 2.5Y 5/2 grayish brown (SM)		S-3		Test Pit		
	7.0								
	8.0		CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet (compressed peat), 10YR 3/3 dark brown (OH)						
			LIMESTONE						

NOTES:

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

DRAFT

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0009

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0009 / LOCATION COORDINATES X = 767,384 Y = 670,439	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 3 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 3.0 Ft.
	15. DATE BORING STARTED 10-15-08 / COMPLETED 10-15-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 8.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0								
	2.0		GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine-grained sand-sized quartz, few silt, few angular to subangular fine to medium-grained sand-sized shell, trace organic matter, moist, 2.5Y 5/3 light olive brown (GP-GM)		S-1		Test Pit		
	8.0		SAND, silty, mostly subangular to rounded fine-grained sand-sized quartz, little angular to subangular fine to coarse gravel-sized limestone, little silt, few fine to medium-grained sand-sized shell, trace organic matter, 10YR 2/2 very dark brown (SM)		Bulk S-2		Test Pit Test Pit		
			LIMESTONE						

NOTES:

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

DRAFT

☐ Database/Template Checked
☐ Geology/Agency Review Checked
☐ Initial/Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0010

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0010 / LOCATION COORDINATES X = 768,475 Y = 668,870	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 3 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 4.0 Ft.
	15. DATE BORING STARTED 10-15-08 / COMPLETED 10-15-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 11.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
	0.0								
			GRAVEL, silty, mostly angular to subangular fine to coarse gravel-sized limestone, some boulder-sized limestone, little subangular to rounded fine-grained sand-sized quartz, little silt, trace organic matter, moist, 2.5Y 5/2 grayish brown (GM)						
					S-1		Test Pit		
	4.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, few subrounded to rounded fine-grained sand-sized quartz, few silt, 2.5Y 5/2 grayish brown (GP-GM)		S-2				
	5.5								
			CLAY, organic H, high plasticity, mostly organic matter, some clay, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)				Test Pit		
					S-3		Test Pit		
	11.0								
			LIMESTONE						

NOTES:

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

DRAFT
Database/Template Checked
Geology/Analysis Checked
Initial/Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0011

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0011 / LOCATION COORDINATES X = 769,589 Y = 667,234	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 3.5 Ft.
	15. DATE BORING STARTED 10-15-08 / COMPLETED 10-15-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 7.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/6 IN.	N-VALUE
	0.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, little subangular to rounded fine-grained sand-sized quartz, few silt, moist, 2.5Y 7/3 pale yellow (GP-GM)						
					S-1		Test Pit		
	5.0		CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)		S-2		Test Pit		
	7.0		LIMESTONE						

NOTES:

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

DRAFT
Database/Template Checked
Geology/Geotechnical Data Checked
Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0012

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0012 / LOCATION COORDINATES X = 770,657 Y = 665,551	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 4 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 5.0 Ft.
	15. DATE BORING STARTED 10-14-08 / COMPLETED 10-14-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 7.5 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine-grained sand-sized quartz, few silt, few fine to medium-grained sand-sized shell, moist, 2.5Y 6/3 light yellowish brown (GP-GM)		S-1		Test Pit		
					S-2		Test Pit		
					S-3		Test Pit		
	6.0								
			CLAY, organic-H, high plasticity, mostly organic matter, some clay, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)		S-4		Test Pit		
	7.5								
			LIMESTONE						

NOTES:

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

DRAFT
Database/Template Checked
Geology/Mapping/Figures Checked
Tables/Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0013

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) HORIZONTAL NAD83 VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0013 LOCATION COORDINATES X = 771,817 Y = 663,983	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 5 UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED DEG. FROM VERTICAL BEARING	14. ELEVATION GROUND WATER Depth 2.0 Ft.
	15. DATE BORING STARTED 10-14-08 COMPLETED 10-14-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 8.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine to medium-grained sand-sized quartz, few angular to subangular fine to medium-grained sand-sized shell, trace silt, moist, 2.5Y 8/2 pale yellow (GP)						
					S-1		Test Pit		
					S-2		Test Pit		
			At 5.0 Ft., some organic matter		S-3		Test Pit		
	6.5				S-4				
			CLAY, organic-FI, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)				Test Pit		
	8.0				S-5		Test Pit		
			LIMESTONE						

NOTES:

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

DRAFT
Geology/Hydrogeology Checked
Database/Template Checked
Initial/Date Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0014

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0014 / LOCATION COORDINATES X = 773,044 Y = 662,414	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 4 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 2.0 Ft.
	15. DATE BORING STARTED 10-14-08 / COMPLETED 10-14-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 7.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine-grained sand-sized quartz, few silt, few fine to medium-grained sand-sized shell, moist, 2.5Y 6/2 light brownish gray (GP-GM)						
					S-1		Test Pit		
					S-2				
			At 3.5 Ft., some organic matter						
	4.0								
			SAND, silty, mostly subrounded to rounded fine-grained sand-sized quartz, little silt, few fine to coarse-grained sand-sized shell, 2.5Y 3/2 very dark grayish brown (SM)				Test Pit		
	6.0				S-3		Test Pit		
	7.0		CLAY, organic-H, high plasticity, mostly organic matter, some clay, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)		S-4		Test Pit		
			LIMESTONE						

NOTES:

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

DRAFT
Database/Template Checked
Geology/Hydrology Checked
Data/Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0015

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0015 / LOCATION COORDINATES X = 774,113 Y = 660,687	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 6 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 3.5 Ft.
	15. DATE BORING STARTED 10-14-08 / COMPLETED 10-14-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 9.5 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine-grained sand-sized quartz, few silt, few angular to subangular fine to medium-grained sand-sized shell, moist, 2.5Y 8/2 pale yellow (GP-GM)		S-1		Test Pit		
					S-2		Test Pit		
	5.0								
			GRAVEL, poorly-graded, mostly angular to subangular fine to coarse gravel-sized limestone, few angular to subangular fine to coarse-grained sand-sized shell, trace subrounded to rounded fine-grained sand-sized quartz, trace silt, 2.5Y 7/2 light gray (GP)		S-3		Test Pit		
	8.5				S-4		Test Pit		
			SAND, silty, mostly subangular to rounded fine-grained sand-sized quartz, some silt, trace organic matter, wet, 10YR 3/3 dark brown (SM)						
	9.5				S-5		Test Pit		
			LIMESTONE		S-6		Test Pit		

NOTES:

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

DRAFT
Database/Template Checked
Geology/Subsurface Checked
Data/Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0016

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0016 / LOCATION COORDINATES X = 778,045 Y = 656,663	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 3.5 Ft.
	15. DATE BORING STARTED 10-20-08 / COMPLETED 10-20-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 10.5 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
	0.0								
			GRAVEL, silty, mostly angular to subangular fine to coarse gravel-sized limestone, little silt, few subangular to rounded fine-grained sand-sized quartz, few boulder-sized limestone, moist, 2.5Y 6/2 light brownish gray (GM)						
					2.5				
	6.0								
			CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)				Test Pit		
	10.5								
			LIMESTONE						

NOTES:

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

DRAFT
Database/Template Checked
Geology/Hydrology Checked
Initial/Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0017

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0017 / LOCATION COORDINATES X = 779,250 Y = 656,026	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 3.0 Ft.
	15. DATE BORING STARTED 10-20-08 / COMPLETED 10-20-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 8.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine-grained sand-sized quartz, few silt, few angular to subangular fine to medium-grained sand-sized shell, moist, 2.5Y 8/2 pale yellow (GP-GM)						
					S-1		Test Pit		
					S-2				
	6.0						Test Pit		
			CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)						
	8.0		LIMESTONE						

NOTES:

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

DRAFT
Database/Template Checked
Geology/Research/Lab Checked
Initial/Date Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0018

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

1. PROJECT: C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT: See Remarks
	10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NAVD88
2. BORING DESIGNATION: CP08-DCOMP-TP-0018 / LOCATION COORDINATES: X = 780,478 Y = 653,231	11. MANUFACTURER'S DESIGNATION OF DRILL: CAT 320 / ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES: DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER: Danny's Backhoe	13. TOTAL NUMBER CORE BOXES: 0
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER: Depth 2.0 Ft.
	15. DATE BORING: STARTED 10-20-08 / COMPLETED 10-20-08
6. THICKNESS OF OVERBURDEN: N/A	16. ELEVATION TOP OF BORING: Not Determined
7. DEPTH DRILLED INTO ROCK: N/A	17. TOTAL RECOVERY FOR BORING: N/A
8. TOTAL DEPTH OF BORING: 7.5 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR: Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0		GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine-grained sand-sized quartz, few boulder-sized limestone, few silt, few angular to subangular fine to coarse-grained sand-sized shell, moist, 2.5Y 4/2 dark grayish brown (GP-GM)						
					S-1		Test Pit		
					S-2				
	5.5		CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet (compressed peat), 10YR 3/3 dark brown (OH)				Test Pit		
	7.5		LIMESTONE						

NOTES:

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

DRAFT
Database/Template Checked
Geology/Seismic/Core Checked
Initial/Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0019

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0019 / LOCATION COORDINATES X = 781,683 Y = 651,526	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 3.0 Ft.
	15. DATE BORING STARTED 10-21-08 / COMPLETED 10-21-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 8.5 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine-grained sand-sized quartz, few silt, moist, 2.5Y 6/3 light yellowish brown (GP-GM)		S-1				
	3.0								
			CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)				Test Pit		
	8.5								
			LIMESTONE						

NOTES:

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

DRAFT
Database/Template Checked
Geology/Nomenclature Checked
Tables/Data Entry Checked

SAJ FORM 1836
JUN 02

Boring Designation CP08-DCOMP-TP-0020

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

1. PROJECT C&SF CERP WCA 3 DECOMP	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP08-DCOMP-TP-0020 / LOCATION COORDINATES X = 782,887 Y = 649,798	11. MANUFACTURER'S DESIGNATION OF DRILL CAT 320 ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY WPC, Inc. / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Danny's Backhoe	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Depth 3.5 Ft.
	15. DATE BORING STARTED 10-22-08 / COMPLETED 10-22-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING Not Determined
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 8.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Tom Casey, P.E., Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
	0.0								
			GRAVEL, poorly-graded with silt, mostly angular to subangular fine to coarse gravel-sized limestone, few subangular to rounded fine-grained sand-sized quartz, few boulder-sized limestone, few silt, few angular to subangular fine to medium-grained sand-sized shell, moist, 2.5Y 7/2 light gray (GP-GM)		S-1		Test Pit		
					S-2		Test Pit		
	6.5								
			CLAY, organic-H, high plasticity, mostly clay, some organic matter, little silt, wet, (compressed peat), 10YR 3/3 dark brown (OH)						
	8.0								
			LIMESTONE						

NOTES:

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

DRAFT

☐ Database/Template Checked
☐ Geology/Nomenclature Checked
☐ Initial/Date Entry Checked

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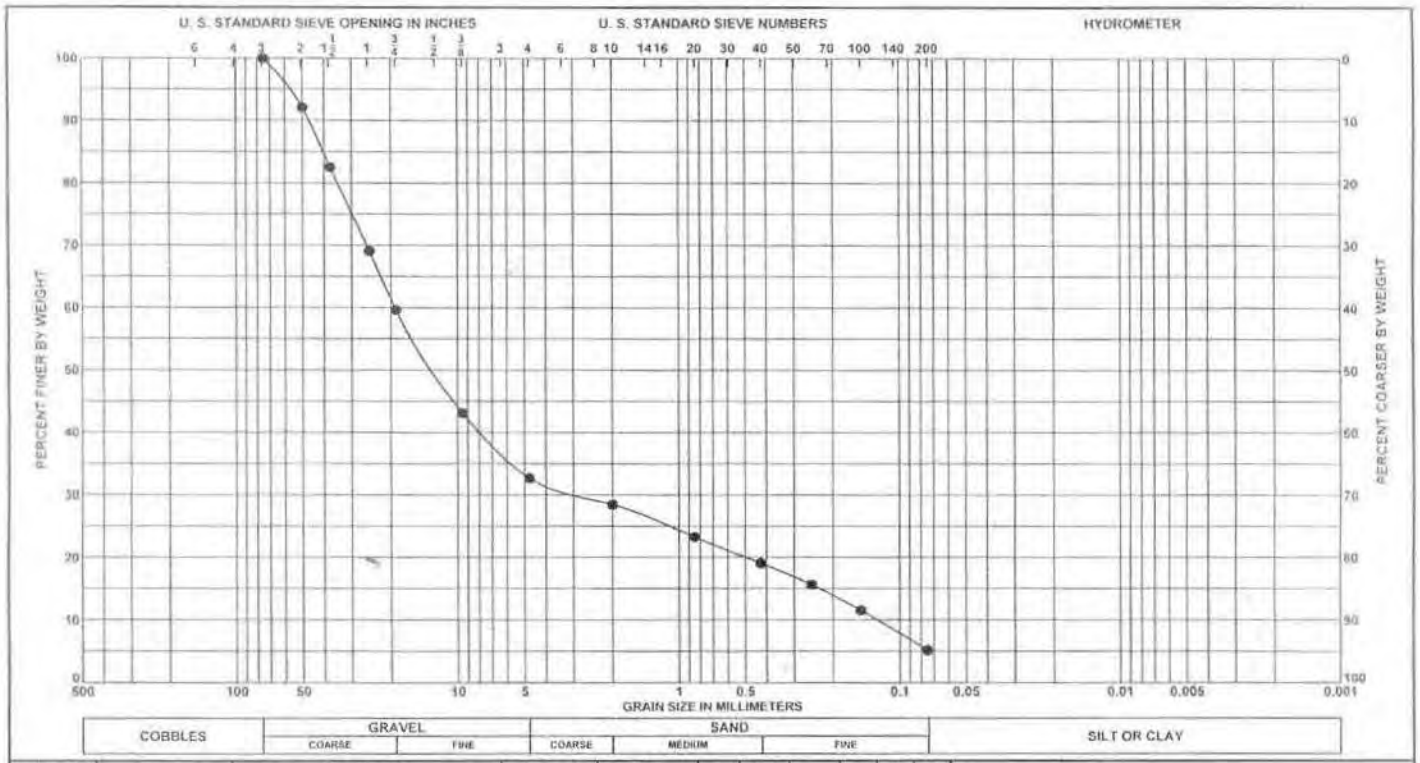
JUN 02



Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● BULK	2.0 to 3.0 Ft.	LIMESTONE, poorly-graded with silt, mostly coarse-gravel to medium sand-size limerock fragments, few medium to fine sand-size shell fragments, few fine-grained quartz, few silt, light (GP-GM)	2.5Y 6/3							

PROJECT	Miami Canal
BORING NO.	TP-1
BORING ELEV.	Not Determined
DATE	2/6/2009

GRADATION CURVES

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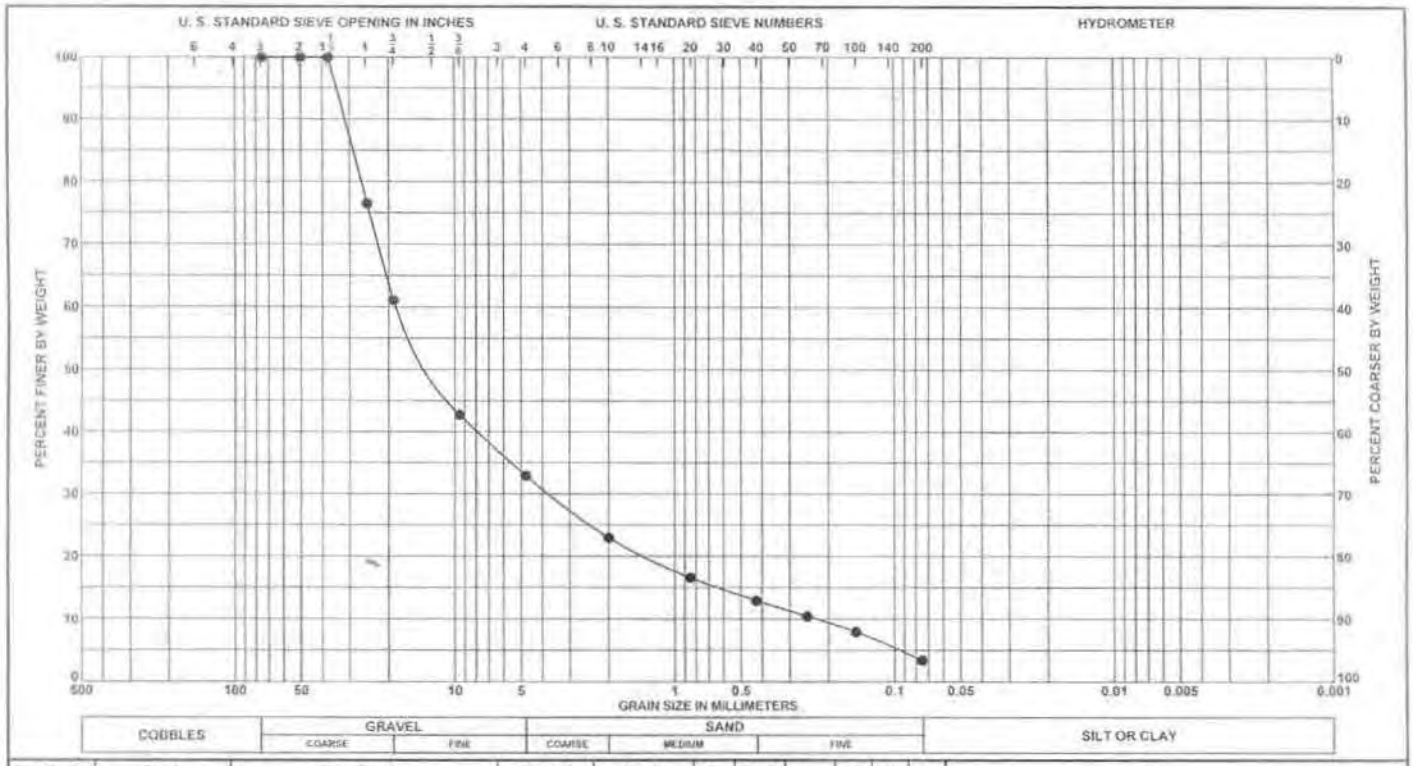

Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 1	2.5 to 3.5 Ft	LIMESTONE, poorly-graded, mostly coarse-gravel to medium sand-size limerock fragments, few fine-grained quartz, trace silt, light brownish gray (GP)	2.5Y 6/2							

PROJECT Miami Canal

BORING NO. TP-2

BORING ELEV. Not Determined

DATE 2/6/2009

GRADATION CURVES

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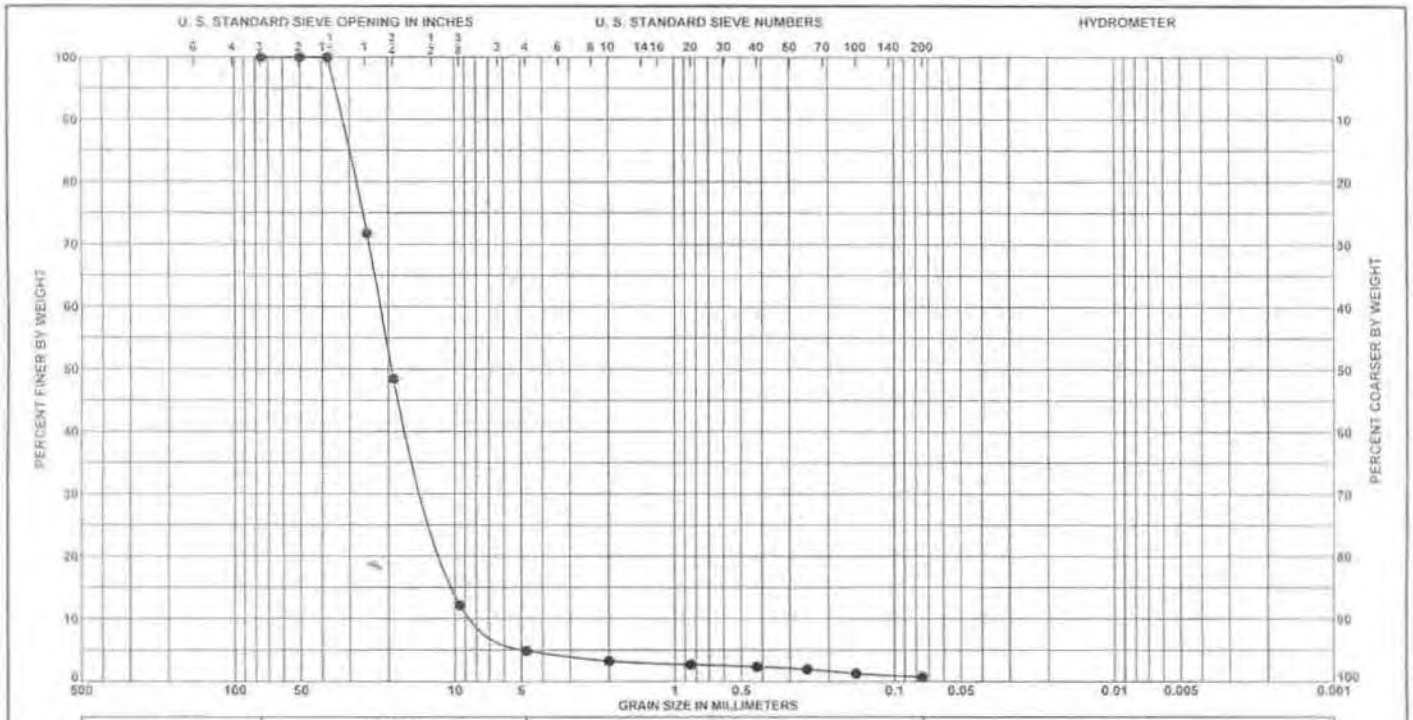
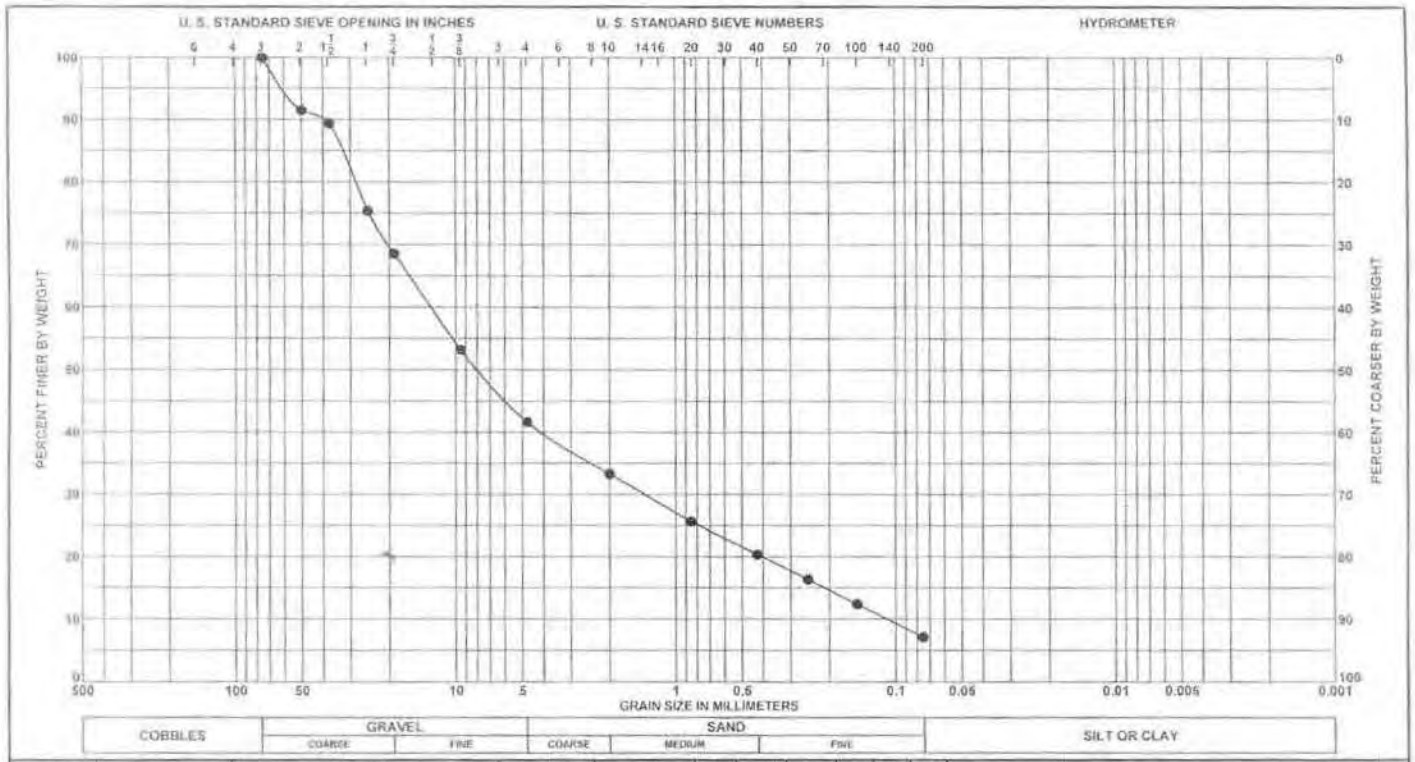


Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 2	4.5 to 5.5 Ft	LIMESTONE, poorly-graded, mostly coarse-gravel to medium sand-size limerock fragments, trace fine-grained quartz, trace silt, dark grayish brown (GP)	2.5Y 4/2							

GRADATION CURVES

PROJECT	Miami Canal
BORING NO.	TP-2
BORING ELEV.	Not Determined
DATE	2/6/2009

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● BULK	2.0 to 3.0 Ft	LIMESTONE, poorly-graded with silt, mostly coarse-gravel to medium sand-size limerock fragments, little fine-grained quartz, few silt, grayish brown (GP-GM)	2.5Y 5/2							

GRADATION CURVES

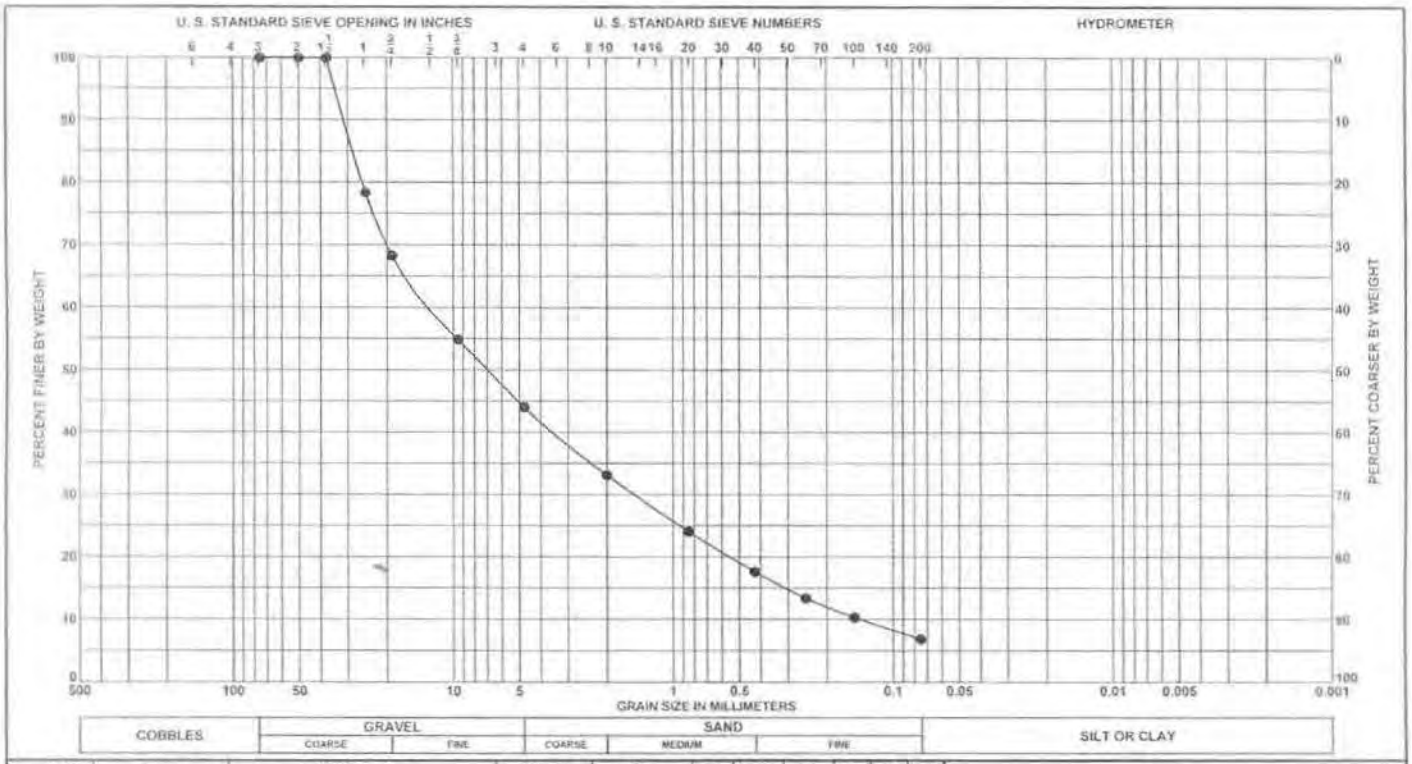
PROJECT Miami Canal

BORING NO. TP-3

BORING ELEV. Not Determined

DATE 2/6/2009

SAJ FORM 2087
JUN 02

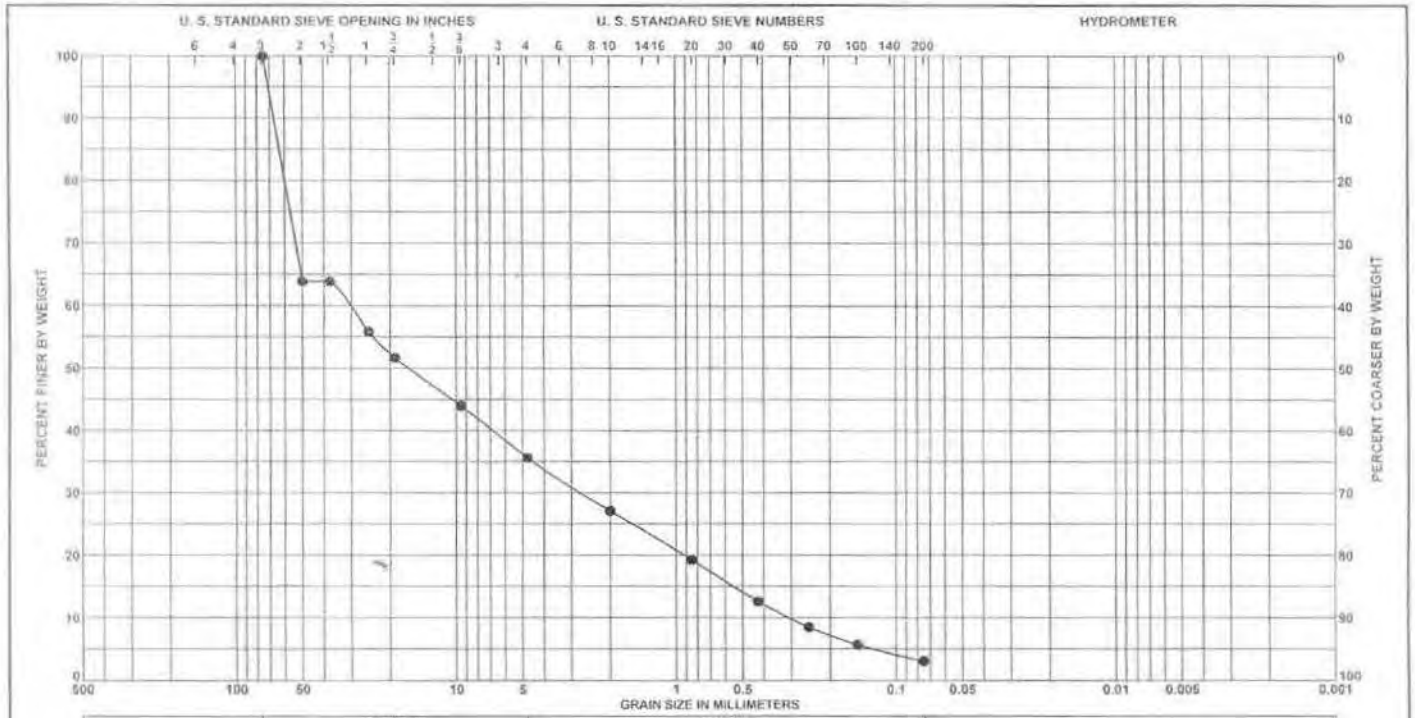


Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 1	2.0 to 3.0 Ft	LIMESTONE, poorly-graded with silt, mostly coarse-gravel to medium sand-size limerock fragments, few fine-grained quartz, few silt, light brownish gray (GP-GM)	2.5Y 6/2							

GRADATION CURVES

PROJECT	Miami Canal
BORING NO.	TP-4
BORING ELEV.	Not Determined
DATE	2/6/2009

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 2	5.0 to 6.0 Ft	LIMESTONE, poorly-graded, mostly coarse-gravel to medium sand-size limerock fragments, few fine-grained quartz, trace silt, grayish brown (GP)	2.5Y 5/2							

PROJECT Miami Canal

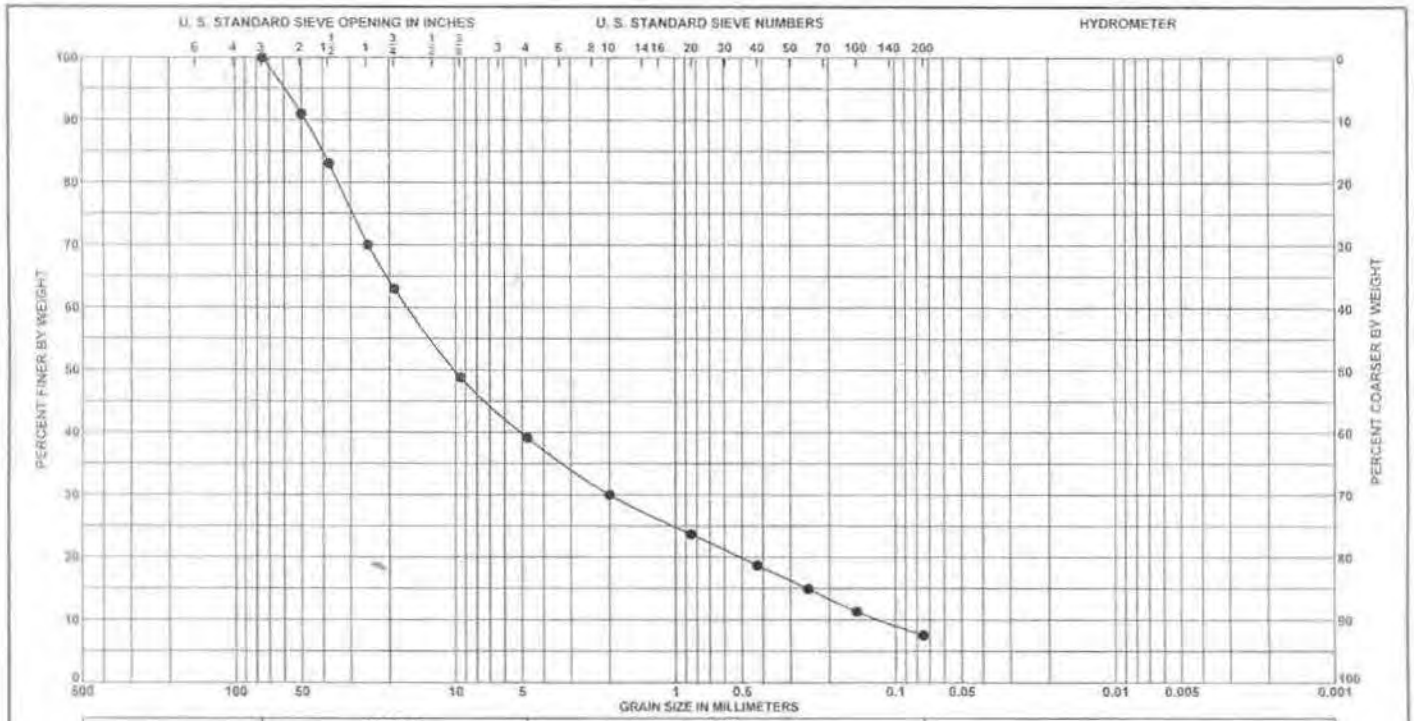
BORING NO. TP-4

BORING ELEV. Not Determined

DATE 2/6/2009

GRADATION CURVES

SAJ FORM 2087
JUN 02

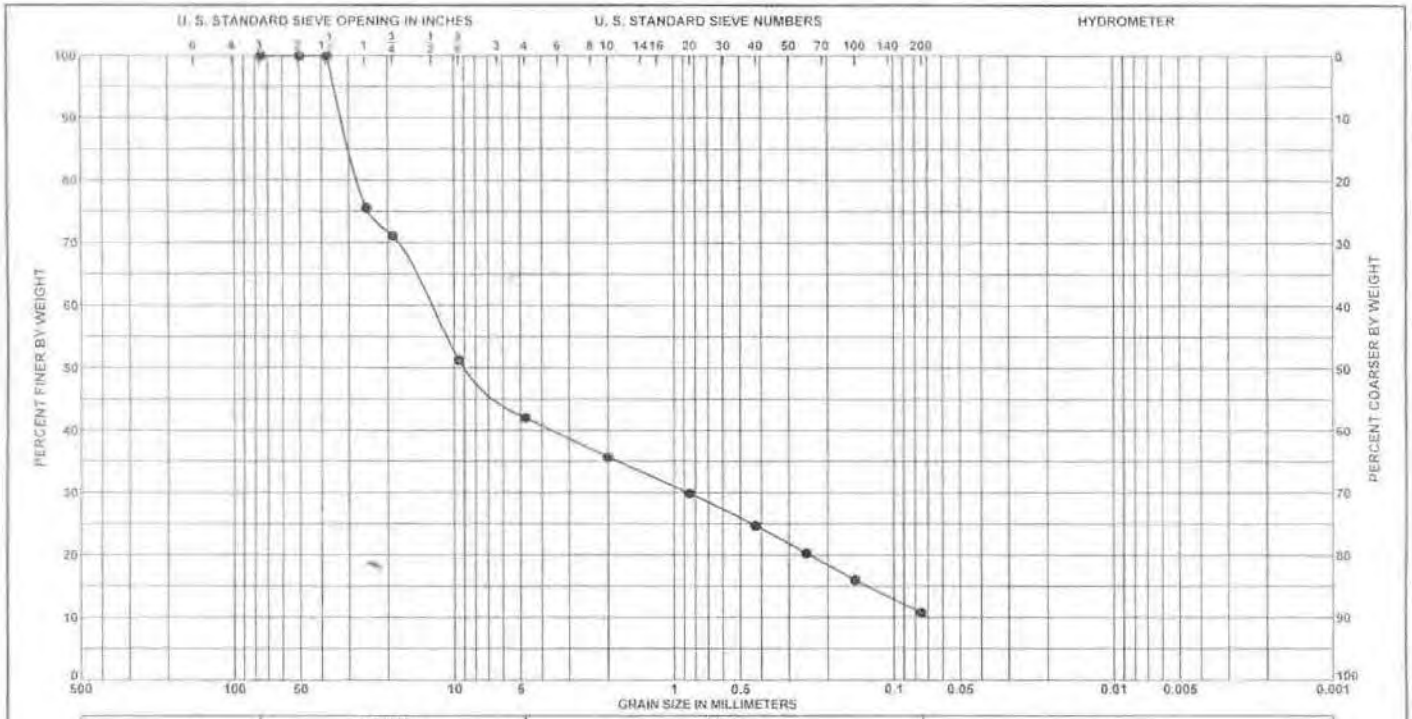


Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● BULK	2.0 to 2.5 Ft	LIMESTONE, poorly-graded with silt, mostly coarse-gravel to medium sand-size limerock fragments, little fine-grained quartz, few silt, grayish brown (GP-GM)	2.5Y 5/2							

GRADATION CURVES

PROJECT	Miami Canal
BORING NO.	TP-5
BORING ELEV.	Not Determined
DATE	2/6/2009

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 1	3.0 to 4.0 Ft.	LIMESTONE: poorly-graded with silt, mostly coarse-gravel to medium sand-size limerock fragments, little fine-grained quartz, few silt, trace shell fragments, dark grayish brown	2.5Y 4/2							

PROJECT	Miami Canal
BORING NO.	TP-6
BORING ELEV.	Not Determined
DATE	2/6/2009

(Gi **GRADATION CURVES**

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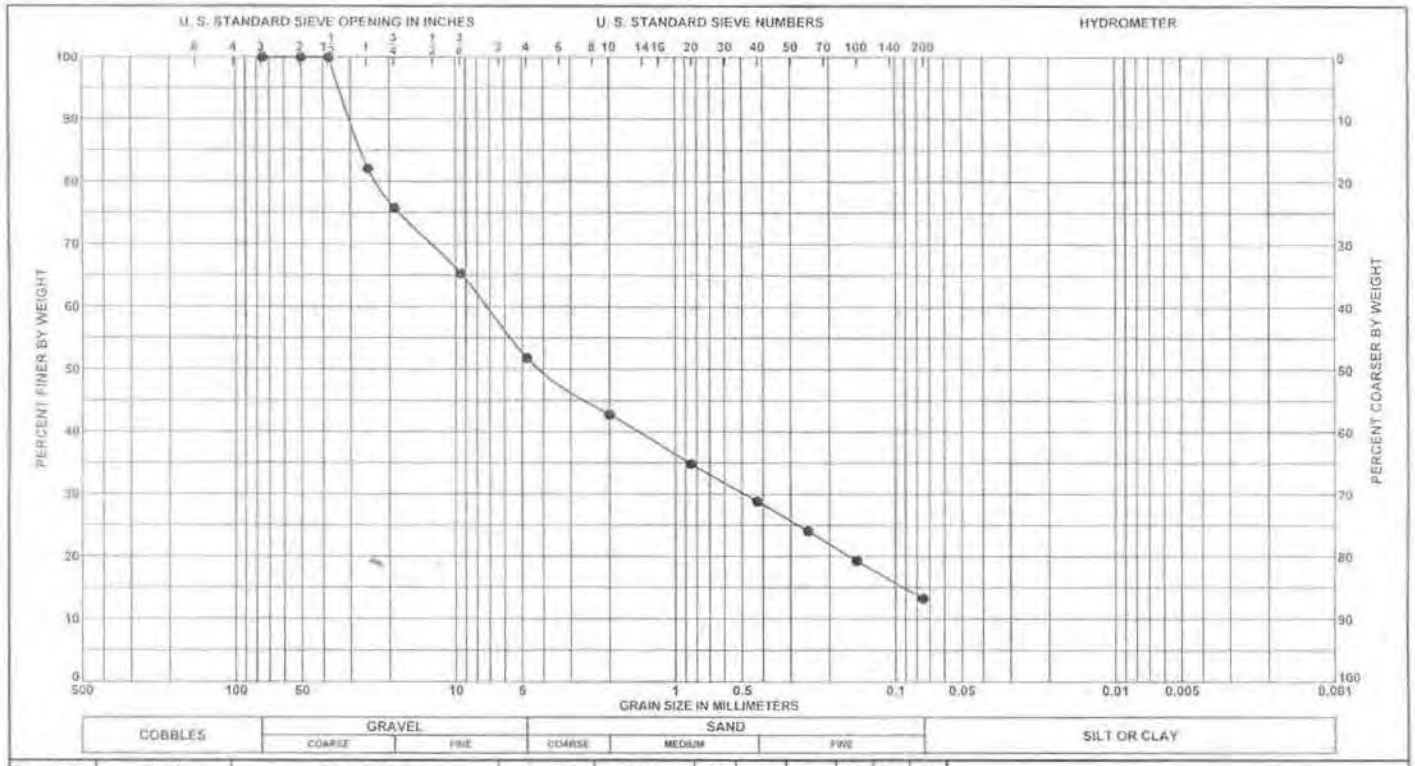
JUN 02

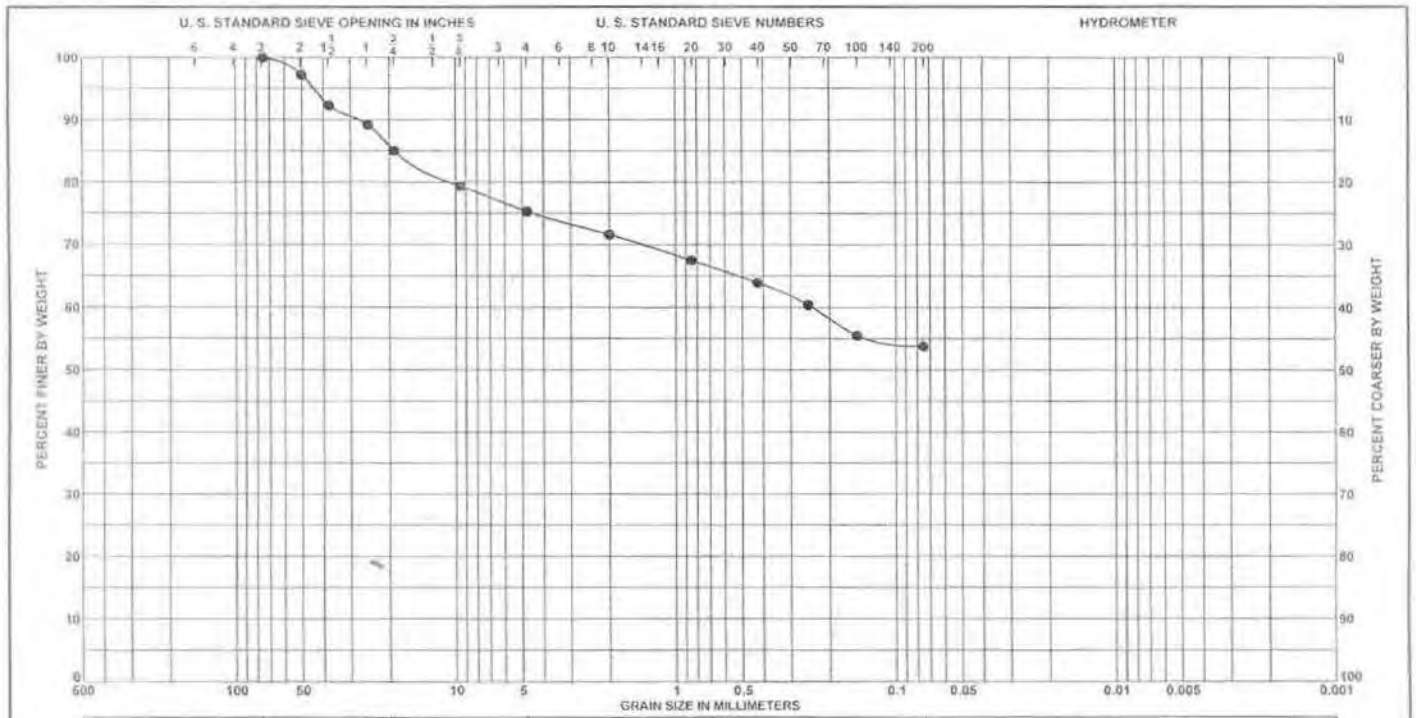


Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 2	4.5 to 5.5 Ft	LIMESTONE, silty, mostly	2.5Y 3/2							
		coarse-gravel to medium sand-size								
		limerock fragments, little								
		fine-grained quartz, little silt, trace								
		shell fragments, very dark grayish								
		brow								

GRADATION CURVES

PROJECT	Miami Canal
BORING NO.	TP-6
BORING ELEV.	Not Determined
DATE	2/6/2009

SAJ FORM 2087
JUN 02

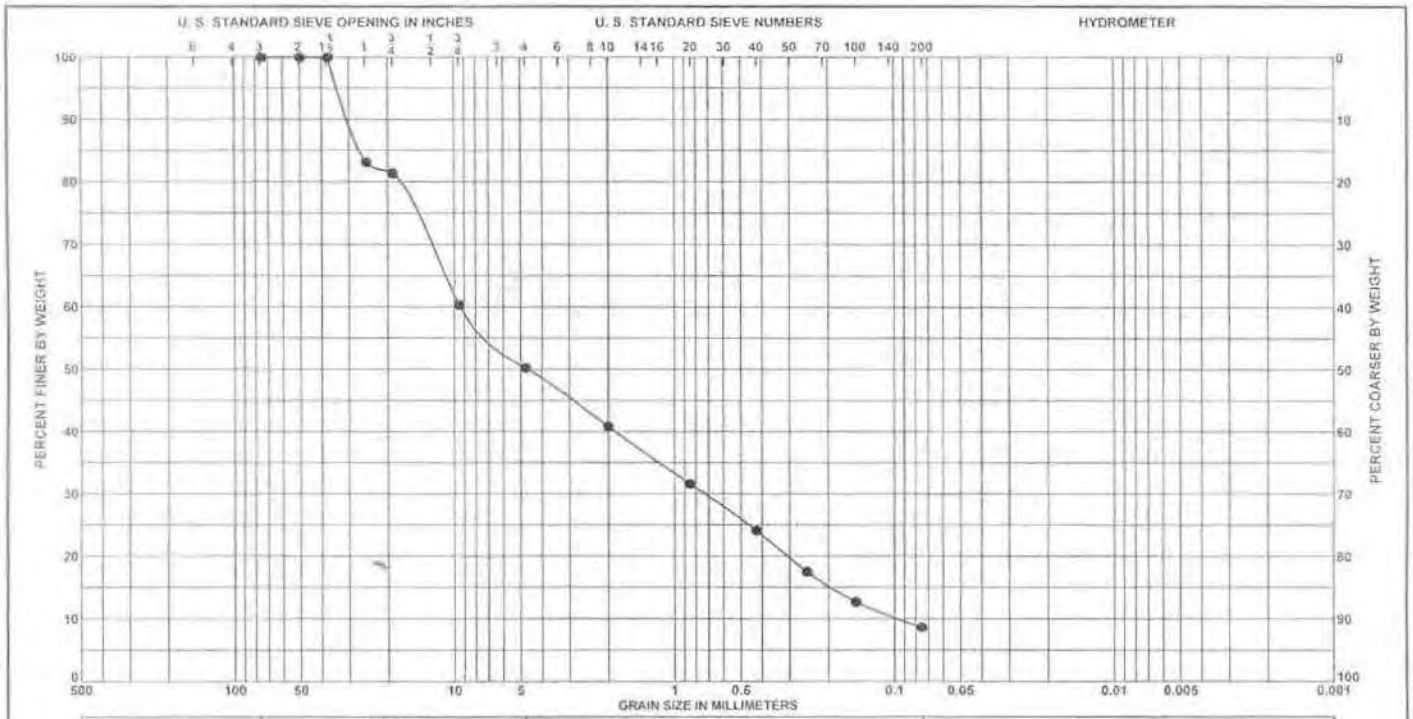


Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● BULK	2.0 to 3.0 Ft	SILT, organic-L, some	10YR 3/2							
		coarse-gravel to medium sand-size								
		limerock fragments, few,								
		fine-grained quartz sand, very dark								
		grayish brown (OL)								

GRADATION CURVES

PROJECT	Miami Canal
BORING NO.	TP-7
BORING ELEV.	Not Determined
DATE	2/6/2009

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 1	2.0 to 3.0 Ft	LIMESTONE, poorly-graded with silt, mostly coarse-gravel to medium sand-size limerock fragments, little fine-grained quartz, few silt, trace shell fragments, light yellowish brown	2.5Y 6/3							

GRADATION CURVES

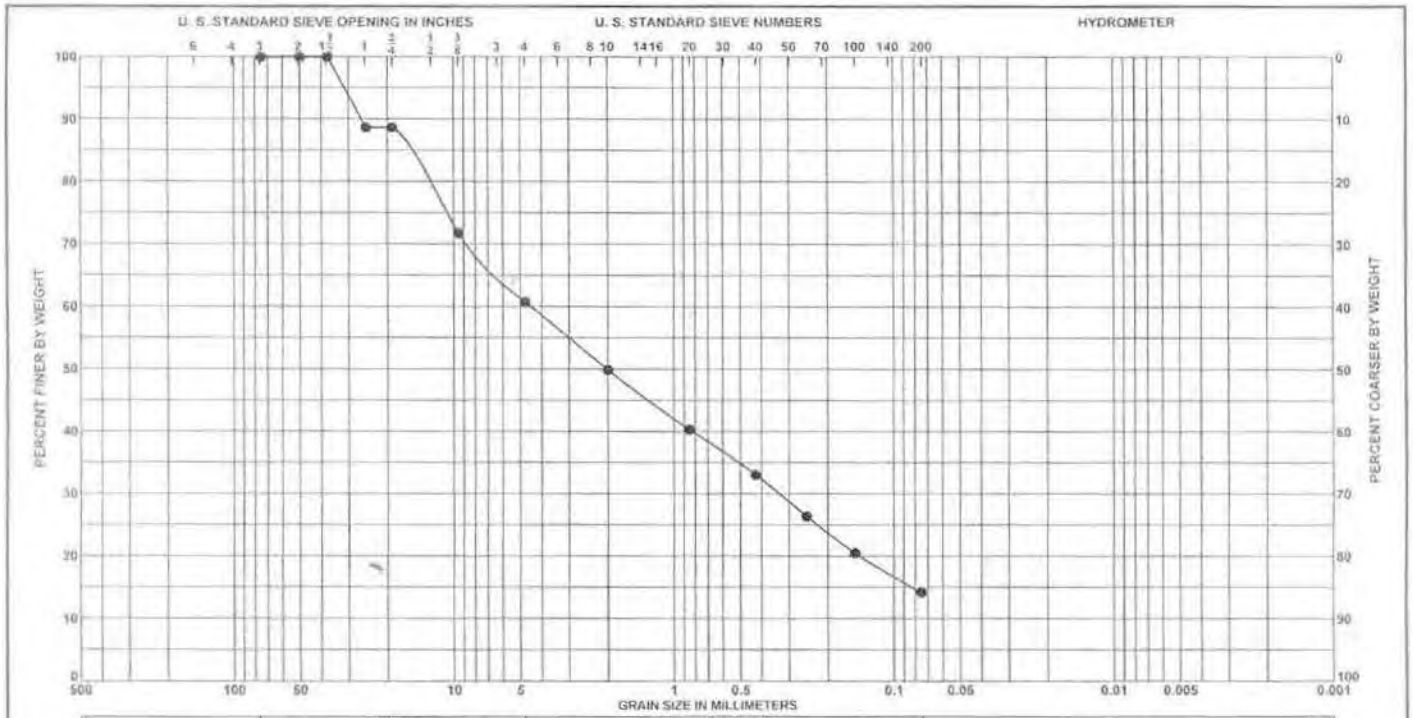
PROJECT: Miami Canal

BORING NO.: TP-8

BORING ELEV.: Not Determined

DATE: 2/6/2009

SAJ FORM 2087
JUN 02

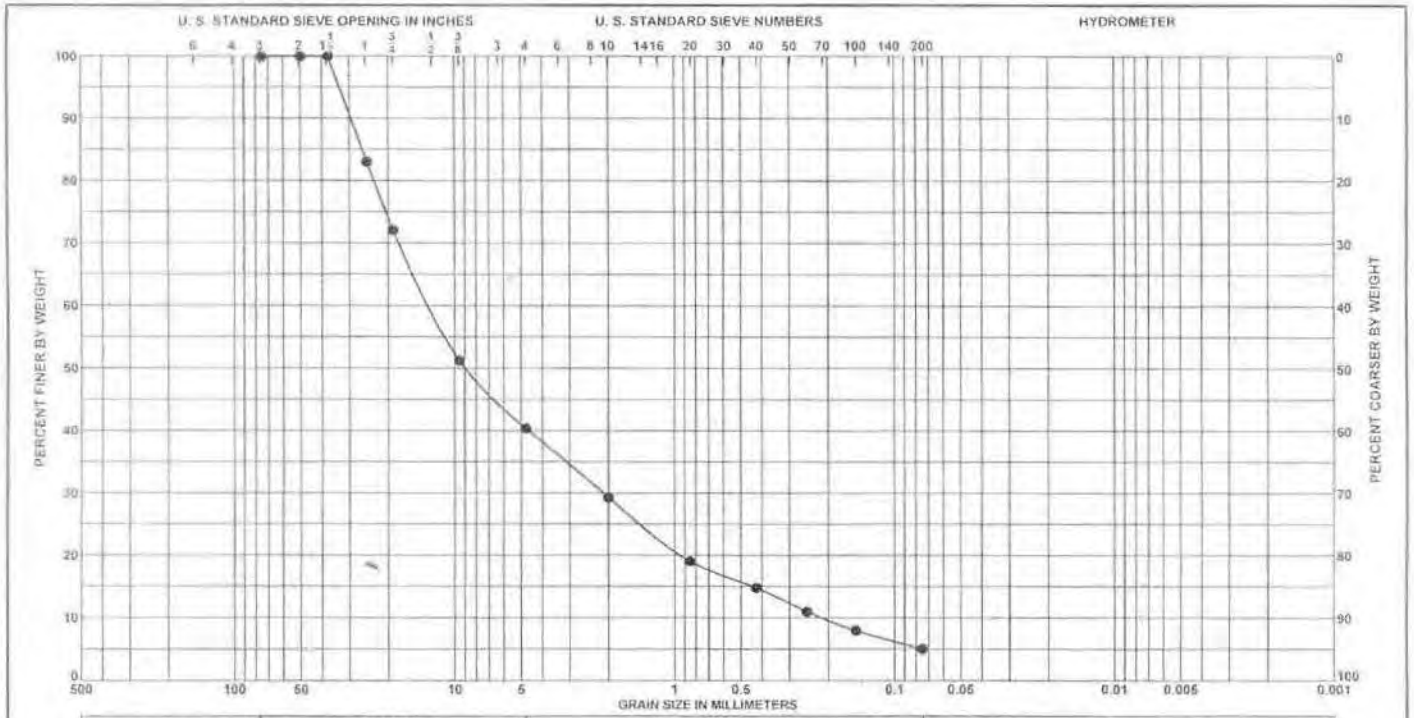


Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 3	6.0 to 7.0 Ft	SAND, silty, mostly coarse-gravel to medium sand-size limerock fragments, little fine-grained quartz, little silt, trace shell fragments, grayish brown (SM)	2.5Y 5/2							

GRADATION CURVES

PROJECT	Miami Canal
BORING NO.	TP-8
BORING ELEV.	Not Determined
DATE	2/6/2009

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 1	1.5 to 2.5 Ft	LIMESTONE, poorly-graded with silt, mostly coarse-gravel to medium sand-size limerock fragments, few fine-grained quartz, few silt, few medium to fine sand-size shell fragments, l (GP-GM)	2.5Y 5/3							

PROJECT Miami Canal

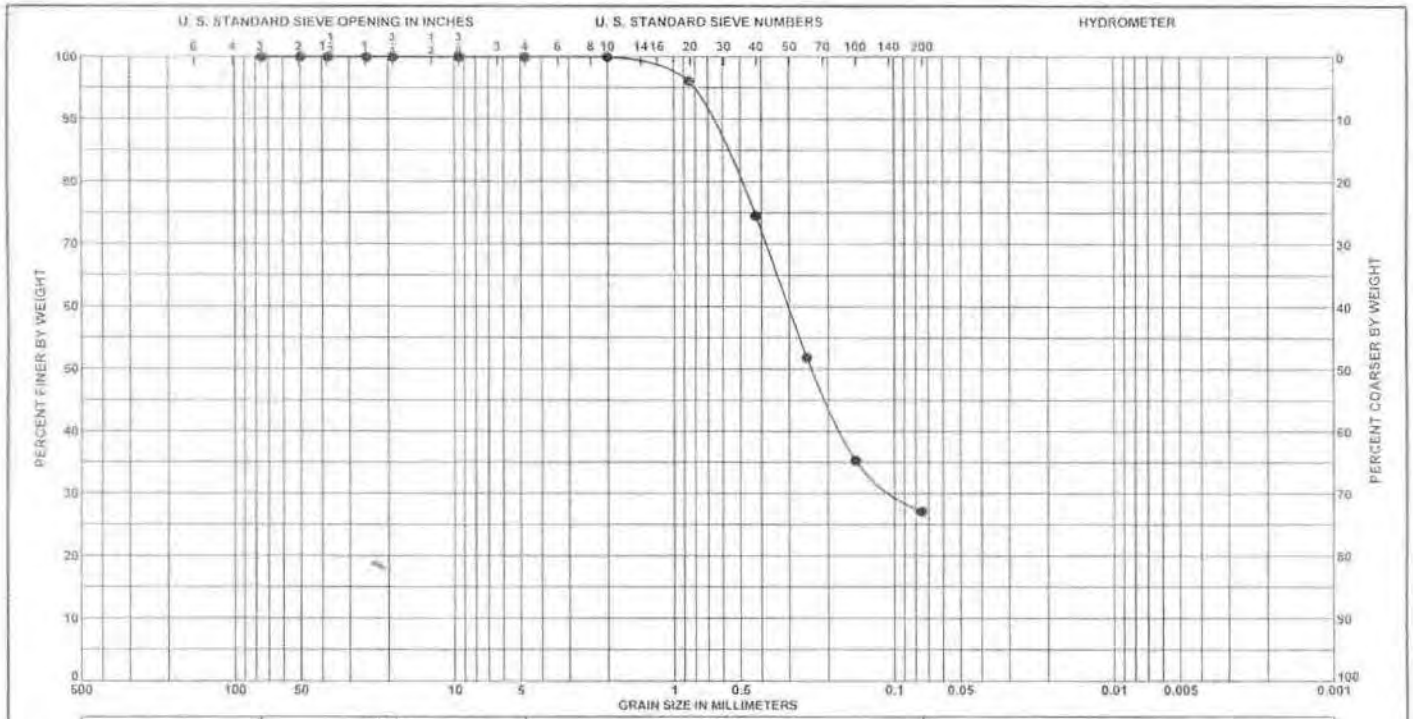
BORING NO. TP-9

BORING ELEV. Not Determined

DATE 2/6/2009

GRADATION CURVES

SAJ FORM 2087
JUN 02

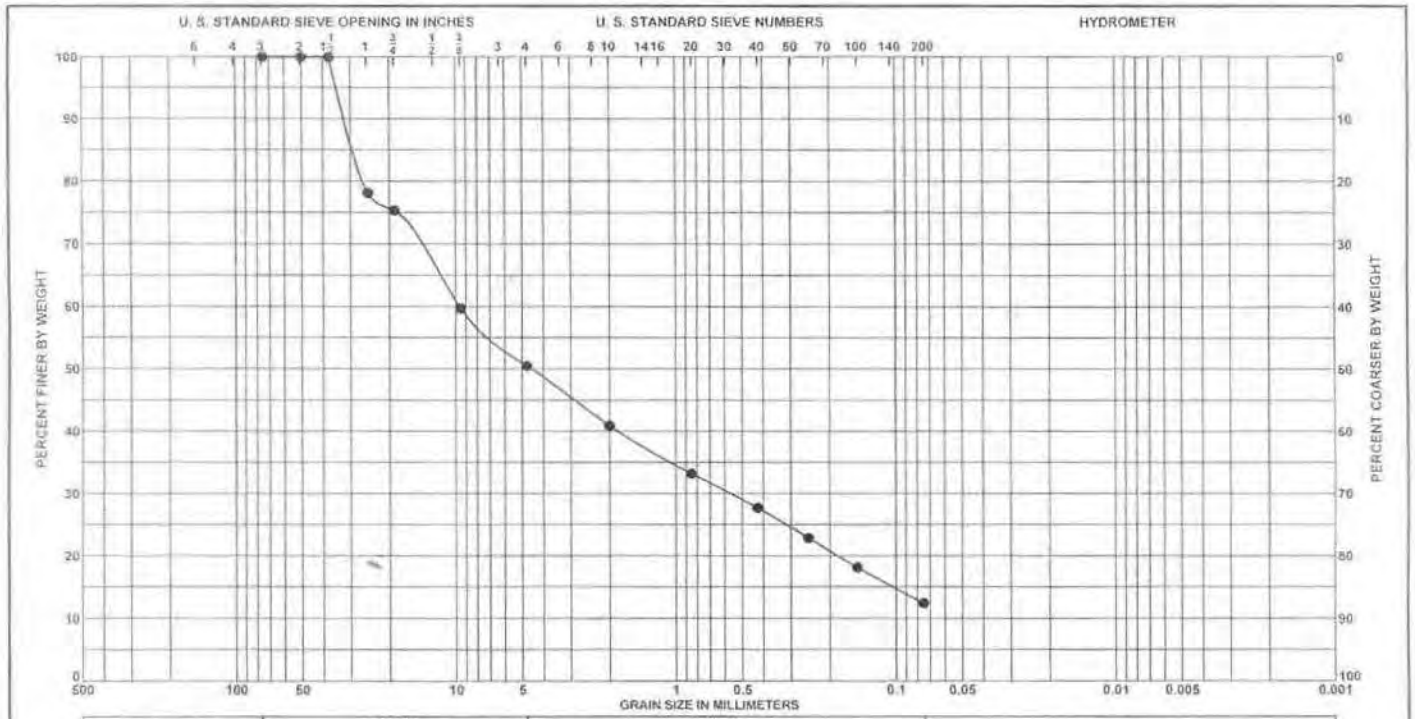


Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 2	2.5 to 3.5 Ft.	SAND, silty, some fine-grained quartz, little silt, little medium to fine sand-size limerock fragments, few medium to fine sand-size shell fragments, few organic matter, very dark br	10YR 2/2							

GRADATION CURVES

PROJECT	Miami Canal
BORING NO.	TP-9
BORING ELEV.	Not Determined
DATE	2/6/2009

SAJ FORM 2087
JUN 02



Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 1	3.0 to 3.5 Ft.	LIMESTONE, silty, mostly	2.5Y 5/2							
		coarse-gravel to medium sand-size								
		limerock fragments, little								
		fine-grained quartz, little silt, few								
		medium to fine sand-size shell								
		fragments, gra								

GRADATION CURVES

PROJECT	Miami Canal
BORING NO.	TP-10
BORING ELEV.	Not Determined
DATE	2/6/2009

SAJ FORM 2087
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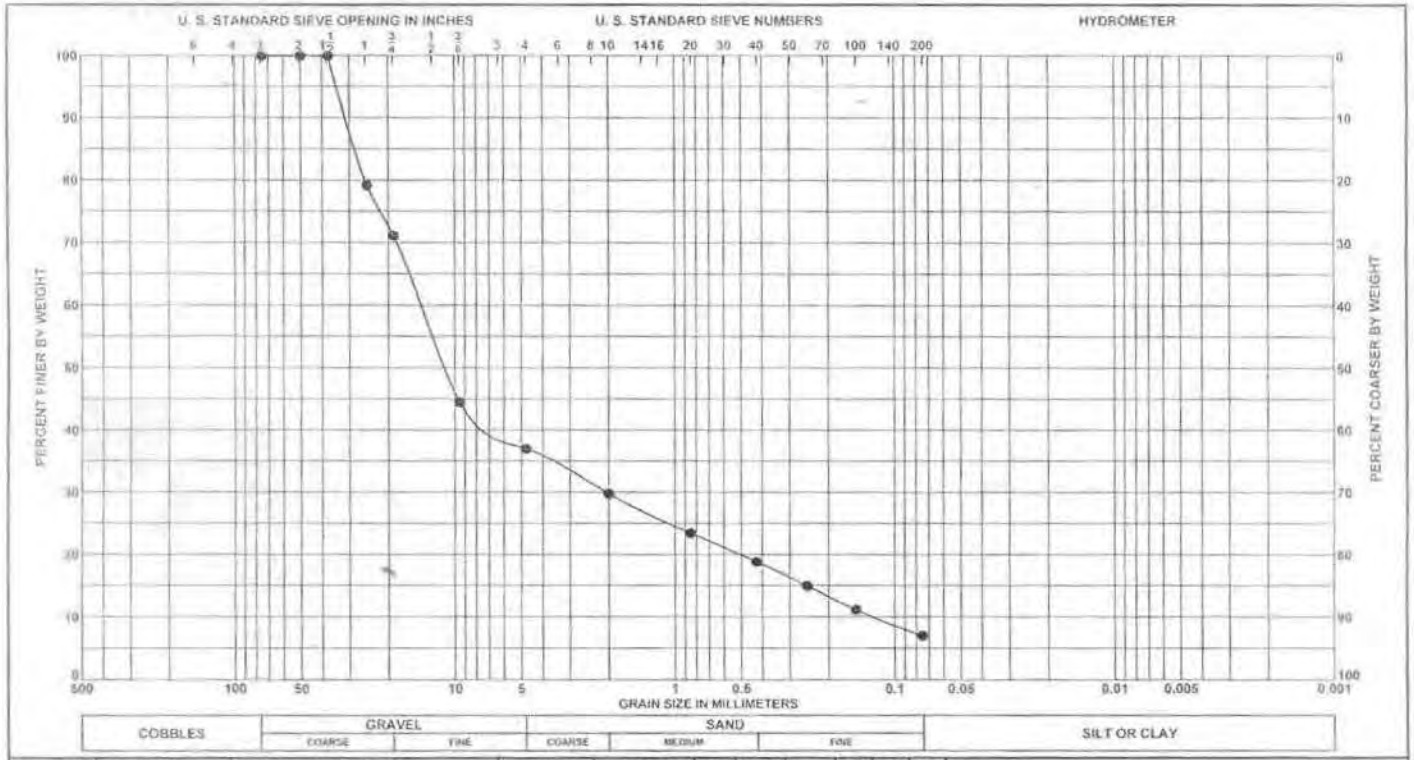

Sample No.	Depth	Classification	Munsell	CO_3 %	G_s	Org %	w_n	LL	PL	PI
● 2	4.5 to 5.5 Ft	LIMESTONE, poorly-graded with silt, mostly coarse-gravel to medium sand-size limerock fragments, few fine-grained quartz, few silt, grayish brown (GP-GM)	2.5Y 5/2							

PROJECT Miami Canal

BORING NO. TP-10

BORING ELEV. Not Determined

DATE 2/6/2009

GRADATION CURVES

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ANNEX G-3. GEOLOGICAL INVESTIGATIONS – BLUE, GREEN, AND YELLOW LINES

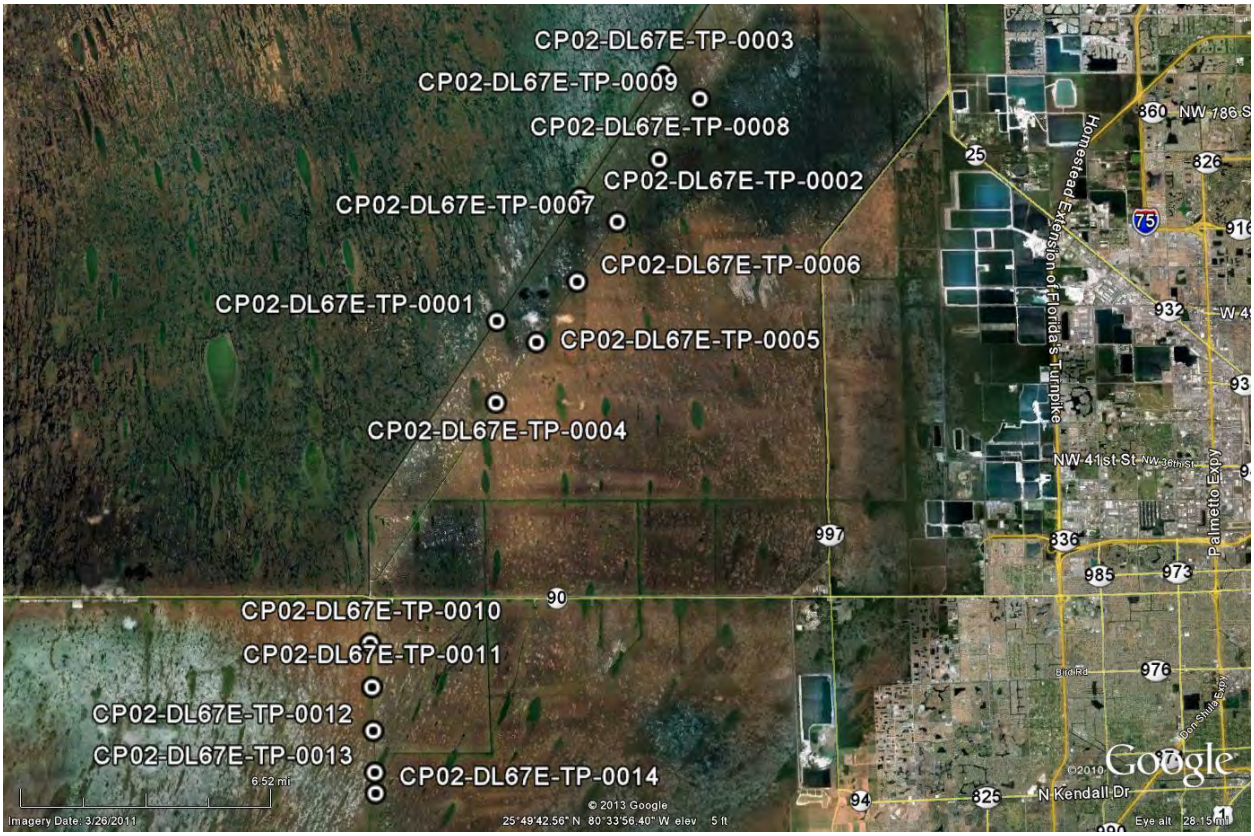

Figure G-3-1. L-67 test pit excavations (U.S. Army Corps of Engineers, 2002)

Boring Designation CP02-DL67E-TP-0001

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0001 / LOCATION COORDINATES X = 781,188 Y = 557,009	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Not Encountered
	15. DATE BORING STARTED 06-12-02 / COMPLETED 06-12-02
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 15.0 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 10.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
15.0	0.0						15.0		
			FILL, gravelly, mostly subangular to rounded fine to coarse gravel-sized limestone, some subangular to rounded fine to coarse-grained sand-sized carbonate, little silt, few cobble-sized limestone, strong reaction with HCl, moist, gray		1		Test Pit		
5.0	10.0						5.0		
			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 / 0.0/10.0 / GW-GM*						

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(Continued)

3

Boring Designation CP02-DL67E-TP-0001

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 3 OF 3 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NGVD29
LOCATION COORDINATES X = 781,188 Y = 557,009	ELEVATION TOP OF BORING 15.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						

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Boring Designation CP02-DL67E-TP-0002

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0002 / LOCATION COORDINATES X = 792,572 Y = 573,843	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Not Encountered
	15. DATE BORING STARTED 06-12-02 / COMPLETED 06-12-02
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 15.5 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 10.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
15.5	0.0						15.5		
			FILL, gravelly, mostly fine to coarse gravel-sized limestone, some angular to subangular fine to coarse-grained sand-sized carbonate, little silt, strong reaction with HCl, dry, gray						
			At El. 11.5 Ft., few cobble-sized limestone		1		Test Pit		
5.5	10.0						5.5		
			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 SAMPLE ID / SAMPLE DEPTH / LABORATORY CLASSIFICATION 1 / 0.0/10.0 / GP*						

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JUN 02

(Continued)

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Boring Designation CP02-DL67E-TP-0002

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 3 OF 2 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NGVD29
LOCATION COORDINATES X = 792,572 Y = 573,843	ELEVATION TOP OF BORING 15.5 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						

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6

Boring Designation CP02-DL67E-TP-0003

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0003	LOCATION COORDINATES X = 804,064 Y = 590,838	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe	☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land		13. TOTAL NUMBER CORE BOXES 0	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER Not Encountered	
		15. DATE BORING	STARTED 06-12-02 / COMPLETED 06-12-02
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 15.6 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING N/A	
8. TOTAL DEPTH OF BORING 10.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
15.6	0.0						15.6		
			FILL, gravelly, mostly subrounded to rounded fine to coarse gravel-sized limestone, little subangular to rounded fine to coarse-grained sand-sized carbonate, little silt, few cobble-sized limestone, moist, gray		1		Test Pit		
5.6	10.0						5.6		
			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 / 0.0/10.0 / GP-GM*						

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JUN 02

(Continued)

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Boring Designation CP02-DL67E-TP-0003

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 3 OF 3 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NGVD29
LOCATION COORDINATES X = 804,064 Y = 590,838	ELEVATION TOP OF BORING 15.6 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						

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Boring Designation CP02-DL67E-TP-0004

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT US DOI Modified Waters to ENP L-67 Extension		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0004	LOCATION COORDINATES X = 781,054 Y = 545,860	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe	☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land		13. TOTAL NUMBER CORE BOXES 0	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 6.1 Ft.	
		15. DATE BORING	STARTED 06-19-02 / COMPLETED 06-19-02
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 10.1 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING N/A	
8. TOTAL DEPTH OF BORING 10.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
10.1	0.0						10.1		
			FILL, gravelly, mostly angular to subrounded fine to coarse gravel-sized limestone, some silt, little cobble-sized limestone, few angular to subrounded fine to coarse-grained sand-sized carbonate, strong reaction with HCl, brown		1		Test Pit		
			At El. 6.1 Ft., wet						
4.1	6.0								
			PEAT, fibrous, black (PT)				3.6		
					2		Test Pit		
0.1	10.0						0.1		

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	0.0/6.5	GW*

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(Continued)

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Boring Designation CP02-DL67E-TP-0004

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 3 OF 2 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NGVD29
LOCATION COORDINATES X = 781,054 Y = 545,860	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
			*Lab visual classification based on gradation curve. No Atterberg limits.						

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Boring Designation CP02-DL67E-TP-0005

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0005 / LOCATION COORDINATES X = 786,627 Y = 554,101	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 3.6 Ft.
	15. DATE BORING STARTED 06-19-02 / COMPLETED 06-19-02
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 9.1 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 10.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
9.1	0.0						9.1		
			FILL, gravelly, mostly angular to subrounded fine to coarse gravel-sized limestone, little silt, few cobble-sized limestone, few subangular to subrounded fine to coarse-grained sand-sized carbonate, brown		1		Test Pit		
			At El. 3.6 Ft., wet						
2.1	7.0						2.1		
			PEAT, wet, fibrous, black (PT)		2		Test Pit		
-0.9	10.0						-0.9		

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

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	0.0/7.0	GP*

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JUN 02

(Continued)

Boring Designation CP02-DL67E-TP-0005

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 2 OF 2 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NGVD29
LOCATION COORDINATES X = 786,627 Y = 554,101	ELEVATION TOP OF BORING 9.1 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						

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12

Boring Designation CP02-DL67E-TP-0006

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0006 / LOCATION COORDINATES X = 792,210 Y = 562,354	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 5.5 Ft.
	15. DATE BORING STARTED 06-19-02 / COMPLETED 06-19-02
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 10.7 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 9.5 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
10.7	0.0						10.7		
			FILL, gravelly, mostly angular to subrounded fine to coarse gravel-sized limestone, little silt, little cobble-sized limestone, few subangular to rounded fine to coarse-grained sand-sized carbonate, strong reaction with HCl, moist, brown		1		Test Pit		
			At El. 5.3 Ft. wet						
3.5	7.2						3.5		
			PEAT, wet, fibrous, black/brown (PT)		2		Test Pit		
1.2	9.5						1.2		

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	0.0/7.2	GP*

*Lab visual classification based on gradation

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(Continued)

Boring Designation CP02-DL67E-TP-0006

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 2 OF 2 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NGVD29
LOCATION COORDINATES X = 792,210 Y = 562,354	ELEVATION TOP OF BORING 10.7 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			curve. No Atterberg limits.						

15
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Boring Designation CP02-DL67E-TP-0007

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0007 / LOCATION COORDINATES X = 797,726 Y = 570,520	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ / CONTRACTOR FILE NO.	12. TOTAL SAMPLES / DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 3.6 Ft.
	15. DATE BORING / STARTED 06-19-02 / COMPLETED 06-19-02
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 9.6 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 10.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
9.6	0.0						9.6		
			FILL, gravelly, mostly angular to subrounded fine to coarse gravel-sized limestone, little cobble-sized limestone, little silt, few fine to coarse-grained sand-sized carbonate, strong reaction with HCl, dry, brown						
			At El. 5.6 Ft., gray		1		Test Pit		
			At El. 3.6 Ft., wet						
1.4	8.2						1.4		
			PEAT, wet, fibrous, black/brown (PT)		2		Test Pit		
-0.4	10.0						-0.4		

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	0.0/8.2	GP-GM*

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(Continued)

Boring Designation CP02-DL67E-TP-0007

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 3 OF 2 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NGVD29
LOCATION COORDINATES X = 797,726 Y = 570,520	ELEVATION TOP OF BORING 9.6 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						

SAJ FORM 1836-A
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Boring Designation CP02-DL67E-TP-0008

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0008 / LOCATION COORDINATES X = 803,486 Y = 579,032	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe / ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ / CONTRACTOR FILE NO.	12. TOTAL SAMPLES / DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 4.7 Ft.
	15. DATE BORING / STARTED 06-20-02 / COMPLETED 06-20-02
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 10.2 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 9.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
10.2	0.0						10.2		
			FILL, cobbles, mostly angular cobble-sized limestone, little silt, few sand, strong reaction with HCl, dry, gray		1		Test Pit		
			At El. 5.2 Ft., gravelly, some coarse gravel-sized limestone, little cobble-sized limestone At El. 4.7 Ft., wet						
2.7	7.5						2.7		
			PEAT, high plasticity, soft, fibrous, interbedded with lean clay, black (PT)		2		Test Pit		
1.2	9.0						1.2		
			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. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	0.0/7.5	GW*

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

SAJ FORM 1836
JUN 02

Boring Designation CP02-DL67E-TP-0009

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0009 / LOCATION COORDINATES X = 809,063 Y = 587,280	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 4.6 Ft.
	15. DATE BORING STARTED 06-20-02 / COMPLETED 06-20-02
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 10.0 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 9.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
10.0	0.0						10.0		
			FILL, gravelly, mostly angular to subrounded fine to coarse gravel-sized limestone, little silt, few fine to coarse gravel-sized limestone, moist, brown		1		Test Pit		
			At El. 4.6 Ft. wet						
2.2	7.8						2.2		
			PEAT, fibrous, black/brown (PT)		2		Test Pit		
1.0	9.0						1.0		
			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. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	0.0/7.8	GW*

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

SAJ FORM 1836
JUN 02

Boring Designation CP02-DL67E-TP-0010

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0010	LOCATION COORDINATES X = 763,742 Y = 513,043	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe	☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land		13. TOTAL NUMBER CORE BOXES 0	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 3.5 Ft.	
		15. DATE BORING	STARTED 06-11-02 / COMPLETED 06-11-02
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 13.0 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING N/A	
8. TOTAL DEPTH OF BORING 10.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
13.0	0.0						13.0		
			FILL, sandy, some angular to subrounded fine to coarse-grained sand-sized carbonate, some gravel to boulder-sized limestone up to 3', little rounded fine-grained sand-sized quartz, little silt, dry, tan		1		Test Pit		
3.7	9.3						3.7		
3.5	9.5		PEAT, moist, fibrous, black (PT)						
3.0	10.0		LIMESTONE, hard, moderately weathered, aphanitic, vuggy, brown/tan				3.0		

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	0.0/9.3	SP*

Abbreviations:
NR = Not Recorded.

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP02-DL67E-TP-0010

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 3 OF 3 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NGVD29
LOCATION COORDINATES X = 763,742 Y = 513,043	ELEVATION TOP OF BORING 13.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						

SAJ FORM 1836-A
JUN 02

Boring Designation CP02-DL67E-TP-0011

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

1. PROJECT: US DOI Modified Waters to ENP L-67 Extension	9. SIZE AND TYPE OF BIT: See Remarks
	10. COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.) / HORIZONTAL: NAD83 / VERTICAL: NGVD29
2. BORING DESIGNATION: CP02-DL67E-TP-0011 / LOCATION COORDINATES: X = 763,955 Y = 507,074	11. MANUFACTURER'S DESIGNATION OF DRILL: Backhoe / ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY: Corps of Engineers - CESAJ / CONTRACTOR FILE NO.	12. TOTAL SAMPLES: DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER: H & H Land	13. TOTAL NUMBER CORE BOXES: 0
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER: 3.1 Ft.
	15. DATE BORING: STARTED 06-11-02 / COMPLETED 06-11-02
6. THICKNESS OF OVERBURDEN: N/A	16. ELEVATION TOP OF BORING: 12.3 Ft.
7. DEPTH DRILLED INTO ROCK: N/A	17. TOTAL RECOVERY FOR BORING: N/A
8. TOTAL DEPTH OF BORING: 10.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR: Steve Myers, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
12.3	0.0						12.3		
			FILL, sandy, mostly rounded fine-grained sand-sized quartz, little subangular to rounded carbonate, little silt, few fine to coarse gravel-sized limestone, few cobble-sized limestone, strong reaction with HCl, moist, tan		1		Test Pit		
4.6	7.8						4.6		
4.3	8.0		PEAT, few clay, black (PT)				4.3 Test Pit		
			SAND, clayey, medium plasticity, soft, some rounded fine-grained sand-sized quartz, some clay, little silt, wet, gray (SC)		2		Test Pit		
2.5	9.8						2.5		
2.3	10.0		LIMESTONE, hard, slightly weathered, aphanitic, vuggy, brown				2.3 Test Pit		

NOTES:

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

3. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP02-DL67E-TP-0011

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 2 OF 2 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NGVD29
LOCATION COORDINATES X = 763,955 Y = 507,074	ELEVATION TOP OF BORING 12.3 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			1 0.0/7.8 SP*						
			*Lab visual classification based on gradation curve. No Atterberg limits.						

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Boring Designation CP02-DL67E-TP-0012

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0012 / LOCATION COORDINATES X = 764,168 Y = 501,106	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 3.6 Ft.
	15. DATE BORING STARTED 06-11-02 / COMPLETED 06-11-02
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 12.3 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 10.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
12.3	0.0						12.3		
			FILL, sandy, mostly rounded fine-grained sand-sized quartz, little subangular to rounded fine to coarse-grained sand-sized carbonate, few gravel to cobble-sized limestone, strong reaction with HCl, moist, tan		1		Test Pit		
			At El. 3.8 Ft., few silt, wet, gray						
2.8	9.5						2.8		
2.3	10.0		LIMESTONE, hard, slightly weathered, aphanitic, solid, yellowish				2.3 Test Pit		

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	0.0/9.5	SP*

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP02-DL67E-TP-0012

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 3 OF 2 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NGVD29
LOCATION COORDINATES X = 764,168 Y = 501,106	ELEVATION TOP OF BORING 12.3 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						

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JUN 02

Boring Designation CP02-DL67E-TP-0013

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0013 / LOCATION COORDINATES X = 764,371 Y = 495,427	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe ☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 2 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land	13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 1.7 Ft.
	15. DATE BORING STARTED 06-11-02 / COMPLETED 06-11-02
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 11.4 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING N/A
8. TOTAL DEPTH OF BORING 10.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
11.4	0.0						11.4		
			FILL, sandy, mostly rounded fine-grained sand-sized quartz, some subrounded to rounded fine-grained sand-sized carbonate, little coarse gravel-sized limestone, few cobble-sized limestone, moist, light gray		1		Test Pit		
5.4	6.0						5.4		
			PEAT, moist, fibrous, black (PT)		2		Test Pit		
1.4	10.0		At El. 1.7 Ft., wet				1.4		
			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. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP02-DL67E-TP-0013

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 3 OF 3 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NGVD29
LOCATION COORDINATES X = 764,371 Y = 495,427	ELEVATION TOP OF BORING 11.4 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			1 0.0/6.0 GP*						
			*Lab visual classification based on gradation curve. No Atterberg limits.						

SAJ FORM 1836-A
JUN 02

Boring Designation CP02-DL67E-TP-0014

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

1. PROJECT US DOI Modified Waters to ENP L-67 Extension		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NGVD29
2. BORING DESIGNATION CP02-DL67E-TP-0014	LOCATION COORDINATES X = 764,470 Y = 492,583	11. MANUFACTURER'S DESIGNATION OF DRILL Backhoe	☐ AUTO HAMMER ☐ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAJ	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 1 / UNDISTURBED (UD) 0
4. NAME OF DRILLER H & H Land		13. TOTAL NUMBER CORE BOXES 0	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 2.6 Ft.	
		15. DATE BORING	STARTED 06-11-02 / COMPLETED 06-11-02
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 11.4 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING N/A	
8. TOTAL DEPTH OF BORING 9.3 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Steve Myers, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
11.4	0.0						11.4		
			FILL, sandy, mostly rounded fine-grained sand-sized quartz, few angular to subrounded fine-grained sand-sized carbonate, few fine gravel-sized limestone, strong reaction with HCl, moist, tan		1		Test Pit		
			At El. 5.4 Ft., little cobble-sized limestone						
4.2	7.3						4.2		
			PEAT, wet, brown/black (PT)				Test Pit		
2.2	9.3						2.2		
			BORING TERMINATED IN REFUSAL						

NOTES:

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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	0.0/7.3	SP*

*Lab visual classification based on gradation

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP02-DL67E-TP-0014

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 2 OF 2 SHEETS
PROJECT US DOI Modified Waters to ENP	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NGVD29
LOCATION COORDINATES X = 764,470 Y = 492,583	ELEVATION TOP OF BORING 11.4 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			curve. No Atterberg limits.						

15
20
25
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Figure G-3-2. L-67C Boring Map (U.S. Army Corps of Engineers, 2009)

Boring Designation CP09-DCOMP-CB-0001

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

1. PROJECT C&SF:CERP:WCA 3 Decomp Part 1 L-67A Vicinity	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP09-DCOMP-CB-0001 / LOCATION COORDINATES X = Y =	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 / ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO.	12. TOTAL SAMPLES / DISTURBED 12 / UNDISTURBED (UD) 0
4. NAME OF DRILLER C. Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 9.1 Ft.
	15. DATE BORING / STARTED 07-01-09 / COMPLETED 07-01-09
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 16.3 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 56 %
8. TOTAL DEPTH OF BORING 17.6 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Jerrell Hand, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
16.3	0.0						16.3		
			FILL, gravelly, few fine to coarse-grained sand-sized carbonate, few silt, trace organic matter, moist, 10YR 6/2 light brownish gray	67	1		SPT Sampler	6 12 8	20
							14.8		
				53	2		SPT Sampler	5 5 8	13
							13.3		
				40	3		SPT Sampler	6 3 6	9
							11.8		
				47	4		SPT Sampler	1 2 5	7
							10.3		
				47	5		SPT Sampler	1 1 2	3
							8.8		
				47	6		SPT Sampler	3 5 8	13
7.3	9.0						7.3		
			SILT, organic-L, few peat, slightly fibrous, 10YR 2/1 black (OL)	60	7		SPT Sampler	2 2 5	7
							5.8		
				67	8		SPT Sampler	2 10 8	18
							4.3		
				40	9		3.8 SPT Sampler	1	
							Advanced Boring		
							2.8		
				80	10		SPT Sampler	2 3 3	6
							1.3		

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JUN 02

(Continued)

Boring Designation CP09-DCOMP-CB-0001

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 3 OF 3 SHEETS
PROJECT: C&SF:CERP:WCA 3 Decomp Part 1	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = Y =	ELEVATION TOP OF BORING: 16.3 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
1.0	15.3								
		Slightly Weathered	LIMESTONE, hard, slightly weathered, fine grained, 2.5YR 6/2 pale red	67	11		SPT Sampler	6, 10, 20	30
-0.2									
				45	12		SPT Sampler	9, 0	
-1.3	17.6								

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	0.0/1.5	GP-GM*
4	4.5/6.0	GM*

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

4. Additional Laboratory Testing

2 Moisture Content
5D Moisture Content
6 Moisture Content
13 Moisture Content

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

SAJ FORM 1836-A
JUN 02

Boring Designation CP09-DCOMP-CB-0002

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

1. PROJECT C&SF:CERP:WCA 3 Decomp Part 1 L-67A Vicinity	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP09-DCOMP-CB-0002 / LOCATION COORDINATES X = Y =	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 / ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 11 / UNDISTURBED (UD) 0
4. NAME OF DRILLER C. Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 9.7 Ft.
	15. DATE BORING STARTED 07-01-09 / COMPLETED 07-01-09
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 16.2 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 51 %
8. TOTAL DEPTH OF BORING 16.4 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Jerrell Hand, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
16.2	0.0						16.2		
			FILL, gravelly, mostly carbonate, few fine to coarse-grained sand-sized carbonate, few silt, trace organic matter, moist, many hard carbonate cobles and boulders too large to sample at surface, 10YR 7/1 light gray	67	1		SPT Sampler	3 8 8	16
							14.7		
				47	2		SPT Sampler	7 7 0	7
							13.2		
				67	3		SPT Sampler	8 4 5	9
							11.7		
				33	4		SPT Sampler	2 10 6	16
							10.2		
				47	5		SPT Sampler	25 6 14	20
8.7	7.5						8.7		
			SILT, organic-L, few peat, wet, slightly fibrous, 10YR 2/1 black (OL)	60	6		SPT Sampler	2 3 4	7
							7.2		
				20	7		SPT Sampler	3 1 1	2
							5.7		
				33	8		SPT Sampler	3 4 6	10
							4.2		
				27	9		SPT Sampler	1 1 1	2
							2.7		
				80	10		SPT Sampler	1 1 3	4
							1.2		

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JUN 02

(Continued)

Boring Designation CP09-DCOMP-CB-0002

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 2 OF 2 SHEETS
PROJECT C&SF:CERP:WCA 3 Decomp Part 1	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = Y =	ELEVATION TOP OF BORING 16.2 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
0.3	15.9		SILT, organic-L, medium plasticity, mostly silt, trace peat (OL)	86	11		SPT Sampler	1 / 1 / 50/0.4"	51+
0.0	16.2								
-0.2	16.4		LIMESTONE, hard, slightly weathered, fine grained, 2.5YR 6/2 pale red				-0.2 140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).		

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	0.0/1.5	SM*
3	3.0/4.5	GM*

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

4. Additional Laboratory Testing

4 Moisture Content
6 Percent Organic
9 Moisture Content

SAJ FORM 1836-A
JUN 02

Boring Designation CP09-DCOMP-CB-0003

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

1. PROJECT C&SF:CERP:WCA 3 Decomp Part 1 L-67A Vicinity	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP09-DCOMP-CB-0003 / LOCATION COORDINATES X = Y =	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500 / ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM / CONTRACTOR FILE NO.	12. TOTAL SAMPLES / DISTURBED 4 / UNDISTURBED (UD) 0
4. NAME OF DRILLER C. Brown	13. TOTAL NUMBER CORE BOXES 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 6.9 Ft.
	15. DATE BORING / STARTED 07-02-09 / COMPLETED 07-02-09
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 6.9 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 58 %
8. TOTAL DEPTH OF BORING 15.3 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Jerrell Hand, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	ROD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
6.9	0.0						6.9		
			SILT, organic-L, trace organic matter, wet, 10YR 2/1 black (OL)	0			SPT Sampler 5.4	3 3 2	5
				7	1		SPT Sampler 3.9	1 1 1	2
				NR			SPT Sampler 2.4	1 0 1	1
				27	2		SPT Sampler 0.9	1 1 1	2
0.9	6.0								
			LIMESTONE, hard, weathered, fine grained, pockets of organic and carbonate silt, 10YR 7/2 light gray	60	3		SPT Sampler -0.6	23 23 13	36
			At El. -1.1 Ft., hard, fine grained, porous, few solution channels, 2.5YR 8/1 white	50	4		SPT Sampler -1.2	9 50/0.1	
		Weathered		103	BOX 1	ROD 67	4 x 5-1/2" Diamond Set Bit DT = 39 mins HP = 300 psi DFR = 100 % -5.1		
				94		ROD 52	4 x 5-1/2" Diamond Set Bit DT = 23 mins HP = 300 psi DFR = 100 %		

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JUN 02

(Continued)

Boring Designation CP09-DCOMP-CB-0003

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 3 OF 3 SHEETS
PROJECT C&SF:CERP:WCA 3 Decomp Part 1	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = Y =	ELEVATION TOP OF BORING 6.9 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-8.4	15.3			94			-8.4		

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. At .5 Ft. above water level, water was flowing from NW side of levee through gravel

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
NR = Not Recorded.
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

15
20
25
30
35

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Boring Designation CP09-DCOMP-CB-0004

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT C&SF:CERP:WCA 3 Decomp Part 1 L-67A Vicinity		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP09-DCOMP-CB-0004	LOCATION COORDINATES X = Y =	11. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Corps of Engineers - CESAM	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 5 / UNDISTURBED (UD) 0
4. NAME OF DRILLER C. Brown		13. TOTAL NUMBER CORE BOXES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER	
		15. DATE BORING	STARTED 06-30-09 / COMPLETED 06-30-09
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 6.9 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING 49 %	
8. TOTAL DEPTH OF BORING 15.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Jerrell Hand, Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
6.9	0.0						6.9		
			SILT, organic-L, few peat, wet, 2.5YR 2.5/1 reddish black (OL)	33	1		SPT Sampler 5.4	3 6 2	8
				0			SPT Sampler 3.9	4 3 1	4
2.9	4.0			67	2		SPT Sampler 2.4	1 0 4	4
		Slightly Weathered	LIMESTONE, hard, slightly weathered, very fine grained, 7.5YR 7/1 light gray		3				
				40	4		SPT Sampler 0.9	3 6 10	16
-0.6	7.5			53	5		SPT Sampler -0.6	5 10 50	60
-2.3	9.2		SILTSTONE, silicious, hard, cavity, CAPROCK, slightly porous, carbonate trace calcite XLS, trace limonite, solution channels to 1.5", 2.5YR 8/1 white	80		RQD 32	6" Diamond Set Bit DT = 18 mins HP = 300 psi DFR = 0 % -3.1		
		Weathered	LIMESTONE, moderately hard, weathered, fine grained, porous, solution channels, 5YR 7/1 light gray		BOX 1				
			From El. -5.6 to -8.1 Ft., fine grained, cavity, partially filled vertical 1.5 in solution channel, 10YR 8/1 white	50		RQD 0	6" Diamond Set Bit DT = 25 mins HP = 300 psi DFR = 90 % -8.1		
-8.1	15.0								

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(Continued)

Boring Designation CP09-DCOMP-CB-0004

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 2 OF 2 SHEETS
PROJECT C&SF:CERP:WCA 3 Decomp Part 1	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = Y =	ELEVATION TOP OF BORING 6.9 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			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.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.). Abbreviations: DT = Drill Time. HP = Hydraulic Pressure. DFR = Drill Fluid Return.		

15 20 25 30 35

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REPORT OF GEOTECHNICAL EXPLORATION

L30SMPP Additional Drilling
TO#70
Miami, Florida
Contract W912EP-05-D-0009
WOLF/WPC Project No. WPC6208.00036

- Prepared For -

U.S. Army Corp of Engineers
Mr. Webster Shipley
701 San Marco Blvd, 3 East
Jacksonville, FL 32207

- Prepared By -

WOLF/WPC
3047-4 St. Johns Bluff Road South
Jacksonville, Florida 32246

ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

LISTEN • RESPOND • PERFORM

December 11, 2008

Mr. Webster Shipley
U.S. Army Corps of Engineers
701 San Marco Boulevard, 3 East
Jacksonville, Florida 32207

Final Conceptual Geotechnical Data Report
L30SMPP Additional Drilling
Contract W912EP-05-D-0009
Miami-Dade County, Florida
WOLF/WPC Project No. WPC6208.00036

Dear Mr. Shipley:

WOLF/WPC has performed the additional field and laboratory geotechnical services for the L30 Seepage Management Pilot Project (SMPP). This conceptual report presents our understanding of the project, outlines our exploratory procedures, and presents the field and laboratory data obtained for the project.

We have enjoyed assisting you on this project and look forward to serving as your geotechnical consultant on the remainder of this project and on future projects. If you have any questions concerning this report, please contact us.

Respectfully Submitted,
WOLF/WPC

Jason R. Mckinnon, P.E.
Project Engineer
Registered, Florida No. 58696

Thomas J Casey, P.E.
Senior Geotechnical Engineer
Registered, Florida No. 62245

Distribution: U.S. Army Corps of Engineers (3)
File (1)

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APPENDICES

APPENDIX A

Site Location Map

Field Exploration Plan

APPENDIX B

Drilling Logs for SPT Borings

Photographs

APPENDIX C

Summary of Laboratory Testing Results

SECTION 1.0 – INVESTIGATION SCOPE

The scope of services for this investigation was provided in the statement of work (SOW) dated February 6, 2008, and was performed under the existing contract W912EP-05-D-0009. The requested field scope of services for this investigation included performing three (3) Standard Penetration Test (SPT) borings with rock coring. The laboratory testing scope of services included performing miscellaneous classification and index property tests, including unconfined compressive strength, visual shell content, and specific gravity determinations.

The project site is shown on the Site Location Map and Field Exploration Plan in Appendix A of this report. The depth of the SPT borings was 90 feet below the existing ground surface, or approximate elevation EL. -76.0. Laboratory classification and index property testing was assigned by Mr. Shipley following review of preliminary field drilling logs.

SECTION 2.0 – INVESTIGATION PURPOSE

The purpose of the exploratory drilling is to identify subsurface conditions in the right-of-way of the access road adjacent to the Canal L-30 Levee. The project is located west of Miami in Miami-Dade County near the intersection of Krome Avenue and Highway 41.

SECTION 3.0 – GEOLOGICAL SETTING

The Biscayne Aquifer is composed of Miami Limestone and the Fort Thompson Formation. The Miami Limestone is typically characterized as soft to moderately hard, moderately to highly weathered, thick bedded, highly burrowed in the project area, white to yellow, and contains abundant solution cavities. In the uppermost part of the Miami Limestone, the solution cavities are commonly filled with loose quartz sand and peat. The Fort Thompson Formation lies unconformably beneath the Miami Limestone and is comprised of thick units of soft to hard, moderately weathered, light gray, limestone and sandy limestone that contains marine fossils and calcareous sandstone with a few thin beds of fresh water limestone. In the Project area, the Fort Thompson Formation commonly has zones that contain many vugs and much less commonly can contain cavities up to several feet in diameter.

The Pinecrest Sand Member of the Tamiami Formation creates a semi-confining unit within the Surficial Aquifer System. It lies unconformably beneath the Fort Thompson

Formation and is commonly comprised of quartz sand, limestone, and sandstone that is moderately hard and creamy white to greenish gray with uncommon soft layers of silty, clayey, and shelly sands. A grey limestone, also known as the Ochopee Limestone Member of the Tamiami Formation, lies unconformably below the Pinecrest Sand Member.

SECTION 4.0 – FIELD EXPLORATION

4.1 General

The field exploration conducted for this investigation included performing three (3) SPT borings with rock coring at locations specified by the U.S. Army Corps of Engineers (USACE).

Exploration point coordinates (Latitude and Longitude) were provided by USACE. The exploration points were initially laid out using a Trimble GeoXH handheld GPS device. We also converted the Latitude and Longitudes to State Plane Coordinates using the conversion program CORPSCON. The following table summarizes the exploration locations and depths:

Table 4.1-Summary of Exploration Point Locations and Depths

POINT NAME	LOCATION COORDINATES				EXPLORATION DEPTH, FEET	DATE PERFORMED
	NORTHING (Y)	EASTING (X)	LATITUDE	LONGITUDE		
CP07-L30PP-CB-0007	523,542	825,597	25° 46 23.04	80° 29 09.68	90	5/22/08
CP07-L30PP-CB-0008	523,820	825,595	25° 46 25.79	80° 29 06.51	90	5/21/08
CP07-L30PP-CB-0009	524,095	825,886	25° 46 28.5	80° 29 03.32	89	5/15/08

4.2 SPT Borings

The borings utilized Standard Penetration Test (SPT) split spoon sampling (ASTM D 1586) conducted continuously with 1.5-foot sample intervals in the upper 20 feet. The borings were advanced using mud rotary drilling process using recirculated drilling slurry to stabilize the borehole walls and flush the cuttings. Once the borings reached about 20 feet, the holes were reamed and widened and casing was set in the boreholes to maintain stability within the dike soils. The borings were then advanced thru intact limestone layers using a 5-foot long core barrel. Rock coring continued to depths ranging from 73.5 feet to 75 feet below the existing ground surface, then the split-spoon sampler was re-attached and continuous SPT sampling resumed to the termination depth of the borings. Once the borings were completed, they were airlifted with a compressed air

hose to remove excess sand from the borehole.

At the completion of each boring, geophysical logging was performed by personnel from the United States Geological Survey (USGS) on each borehole. The SPT boring Drilling Logs are presented in Appendix B of this report.

SECTION 5.0 – LABORATORY TESTING

Following review of the preliminary field logs, Mr. Shipley assigned several laboratory tests on samples obtained from the drilling operation. The laboratory testing conducted for this exploration included the following:

- 3 Visual Percent Shell Content
- 3 Specific Gravity Determinations for Rock (ASTM D 854)
- 3 Unconfined Compressive Strength Tests for Rock (ASTM D 2938-95)

The results of the laboratory testing and index property testing are presented in Appendix C of this report.

SECTION 6.0 – SUBSURFACE PROFILE

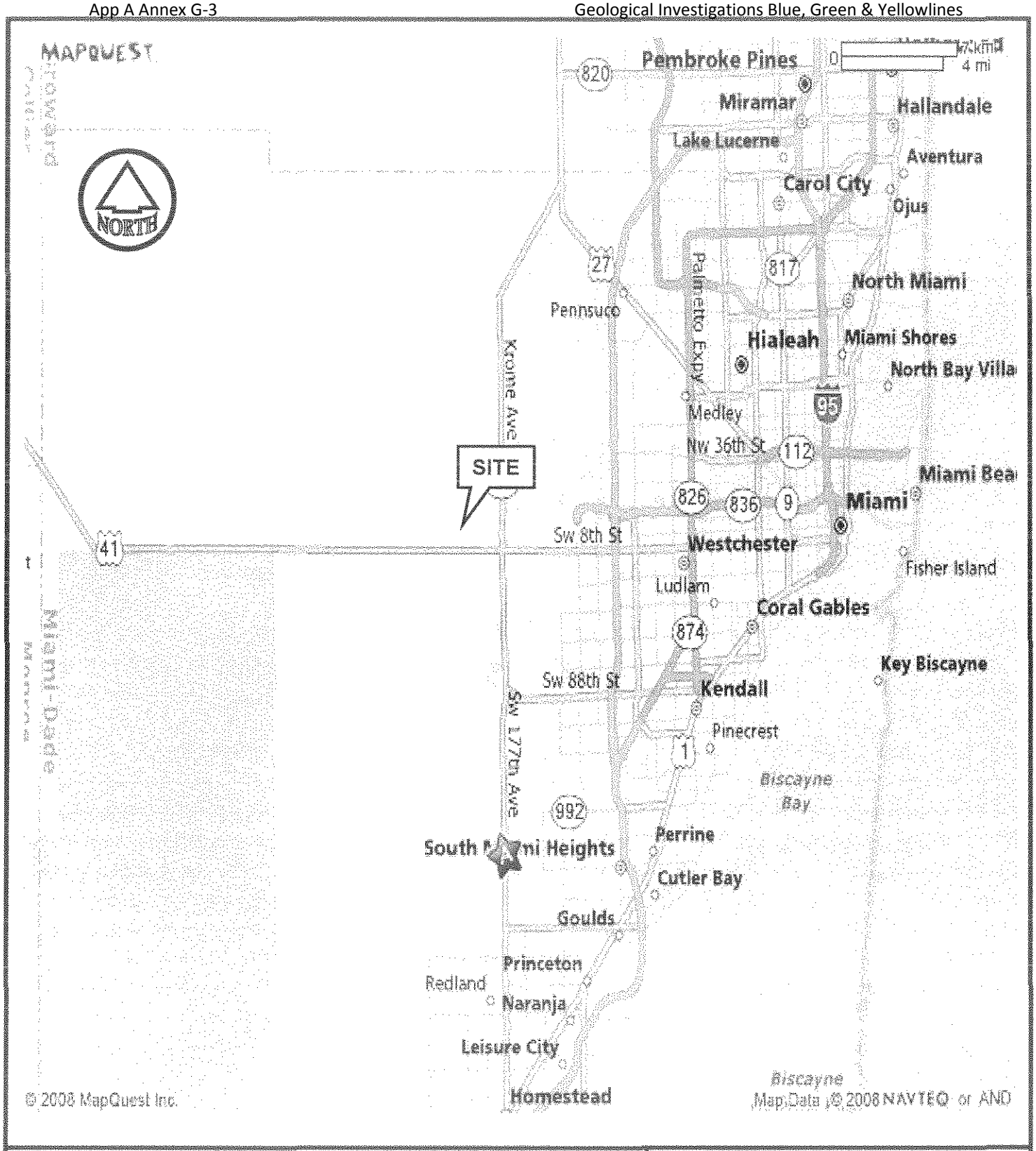
The encountered soils were classified using the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. The subsurface conditions encountered at the site generally consisted of mixed levee fill materials consisting of sands (SP/SM), clay (CH), silt (ML), and/or limestone gravel (GP) to depths ranging from about 16 feet to 17 feet, at which point a thin layer (1 foot to 1.5 feet thick) of organic peat (PT) was encountered. The borings then generally encountered limestone to depths ranging from about 73.5 feet to 75 feet below ground surface. Below the intact limestone layers, the borings generally encountered sands (SP), silty sands (SM), silts (ML), clay (CH), sand-gravel mixtures (GP), and clay-limestone gravel mixtures (GC) to the termination depth of 89 feet to 90 feet below ground surface. SPT N-values generally ranged from very loose to very dense throughout the subsurface profiles.

The groundwater level was encountered by the SPT borings at depths of approximately 18 feet below the existing ground surface. It should be noted that groundwater levels will fluctuate due to seasonal rainfall fluctuations, distance to relief points or water features, soil drainage characteristics, and construction operations.

APPENDICES

APPENDIX A

- **Site Location Map**
- **Field Exploration Plan**



REFERENCE:

www.mapquest.com

WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

SITE LOCATION MAP

L30 SMPP
Miami, Florida

WOLF/WPC Project No.: WPC6208.00036

Date: 8/12/2008

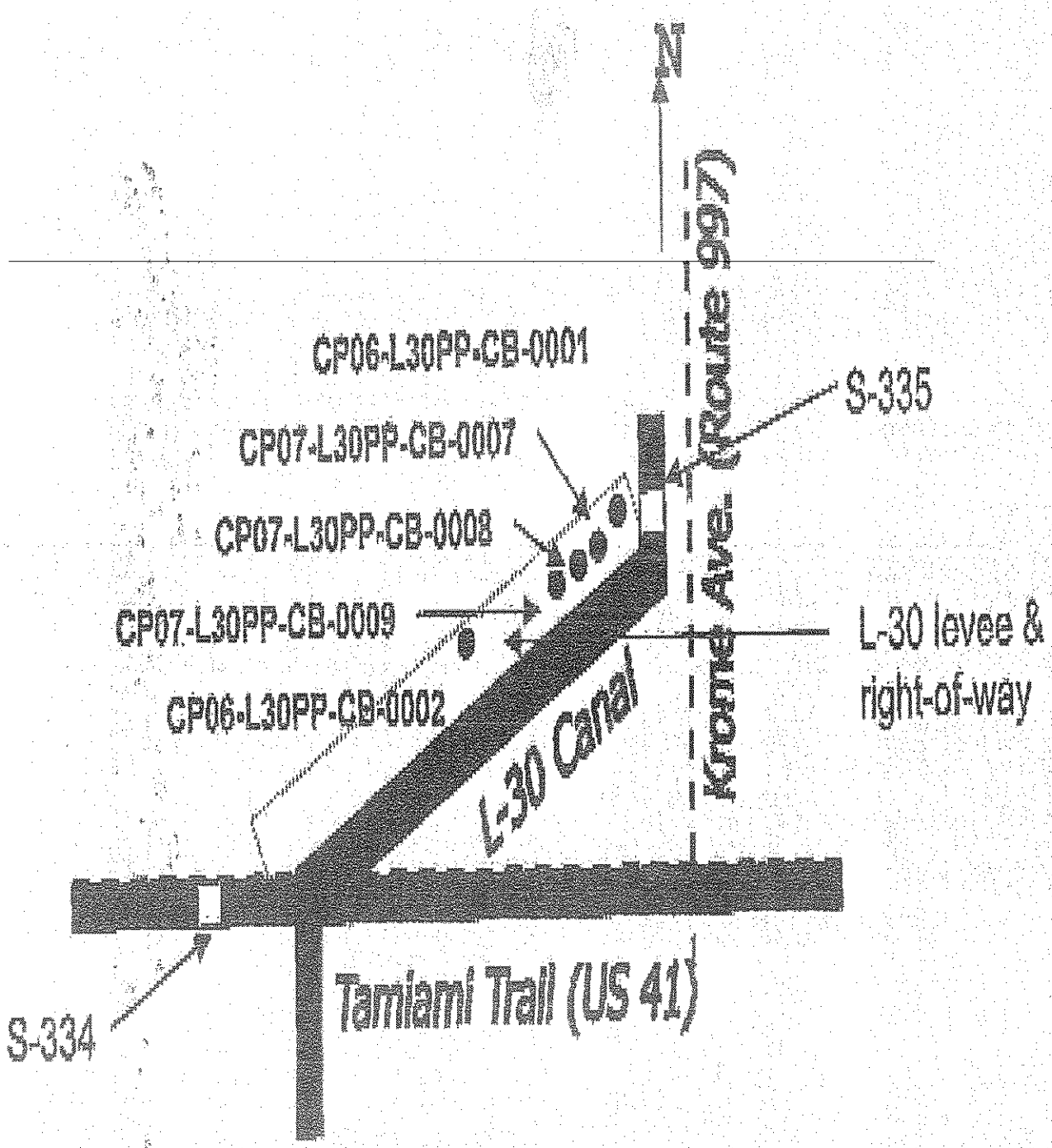


Figure 1: Boring and Well Locations

REFERENCE: ACOE SOW

WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

FIELD EXPLORATION PLAN

L30 SMPP
Miami, Florida

WOLF/WPC Project No.: WPC6208.00036

Date: 8/12/2008

APPENDIX B

- **Drilling Logs for SPT Borings**
- **Photographs**

Boring Designation CP07-L30PP-CB-0007

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 5 SHEETS

1. PROJECT L-30 Seepage Management Pilot Project	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP07-L30PP-CB-0007 / LOCATION COORDINATES X = 825,597 Y = 523,542	11. MANUFACTURER'S DESIGNATION OF DRILL ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Amdrill / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 24 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Adam Benson	13. TOTAL NUMBER CORE BOXES 11
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER -4.0 Ft.
	15. DATE BORING STARTED 05-13-08 / COMPLETED 05-14-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 14.0 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 52 %
8. TOTAL DEPTH OF BORING 90.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Mark Holmes,

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
14.0	0.0						14.0		
			SAND, poorly-graded, dense to medium dense, mostly fine-grained sand-sized quartz, some sand to gravel-sized limestone, Levee Fill Material, 10YR 7/2 light gray (SP)	50	1		SPT Sampler	21 30 15 12	45
							12.0		
				30	2		SPT Sampler	8 8 18 9	26
							10.0		
9.0	5.0			0	3		SPT Sampler	4 4	
							9.0		
			GRAVEL, poorly-graded, medium dense, mostly sand to cobble-sized limestone, few fine-grained sand-sized quartz, few clay, 10YR 8/2 very pale brown (GP)	33	4		SPT Sampler	4 8 12	20
							7.5		
				33	5		SPT Sampler	5 7 5	12
							6.0		
				33	6		SPT Sampler	5 5 6	11
							4.5		
			At El. 4.5 Ft., loose, mostly sand to cobble-sized limestone, some clay, few fine-grained sand-sized quartz, 10YR 8/2 very pale brown	33	7		SPT Sampler	3 5 5	10
							3.0		
2.5	11.5								
			GRAVEL, poorly-graded, medium dense, mostly sand to cobble-sized limestone, some clay, few fine-grained sand-sized quartz, 10YR 8/2 very pale brown (GP)	33	8		SPT Sampler	6 9 8	17
							1.5		
1.0	13.0								
			CLAY, fat, stiff to soft, mostly clay, few shell, 10YR 3/3 dark brown (CH)	33	9		SPT Sampler	7 6 3	9
							0.0		
				7	10		SPT Sampler	2 2	

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(Continued)

Boring Designation CP07-L30PP-CB-0007

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 5 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 825,597 Y = 523,542	ELEVATION TOP OF BORING: 14.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				7	10		-1.5 SPT Sampler	2	4
-2.5	16.5			13	11		SPT Sampler	2 / 3 / 2	5
-3.0	17.0		PEAT, soft, some clay, 10YR 3/3 dark brown (PT)				-3.0		
			LIMESTONE, 10YR 8/2 very pale brown	50	12		SPT Sampler	15 / 21 / 11	32
							-4.5		
				50	13		SPT Sampler	18 / 22 / 30	52
-6.0	20.0		LIMESTONE, fossiliferous, moderately hard, 10YR 8/2 very pale brown				-6.0		
				50	BOX 14	RQD 12			
							-11.0		
				85	BOX 15	RQD 47			
		Weathered	At El. -14.0 Ft., sparsely fossiliferous, moderately hard, weathered, 10YR 8/2 very pale brown						
-16.0	30.0		LIMESTONE				-16.0		
				75	BOX 16	RQD 26			
-19.5	33.5	Highly Weathered	At El. -19.0 Ft., very soft, highly weathered, 10YR 8/2 very pale brown						
			LIMESTONE, soft, 10YR 8/2 very pale brown				-21.0		

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Boring Designation CP07-L30PP-CB-0007

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 3 OF 5 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
L-30 Seepage Management Pilot Project	State Plane, FLE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 825,597 Y = 523,542	14.0 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
		Highly Weathered	At El. -21.0 Ft., fossiliferous, soft, 10YR 8/2 very pale brown	90	BOX 17	RQD 71	-26.0		
			At El. -26.0 Ft., fossiliferous, moderately hard, Unconfined Compression Test on sample from 42 - 45 feet, 10YR 7/1 light gray	65	BOX 18	RQD 40	-31.0		
				85	BOX 19	RQD 70	-36.0		
			At El. -36.0 Ft., sparsely fossiliferous, moderately hard, 5YR 8/2 pinkish white	40	BOX 20	RQD 39	-41.0		
-41.0	55.0								

35 40 45 50 55

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Boring Designation CP07-L30PP-CB-0007

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 4 OF 6 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 825,597 Y = 523,542	ELEVATION TOP OF BORING: 14.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			LIMESTONE, fossiliferous, very hard, 5YR 8/2 pinkish white	30	BOX 21	RQD 17	-46.0		
			At El. -46.0 Ft., very hard, 10Y 7/1 light greenish gray	85	BOX 22	RQD 42	-51.0		
		Highly Weathered	At El. -51.0 Ft., fossiliferous, 10Y 7/1 light greenish gray	85	BOX 23	RQD 79	-56.0		
			At El. -55.0 Ft., 10YR 7/1 light gray	25	BOX 24	RQD 8	-59.5		
-61.0	75.0			33	25		SPT Sampler -61.0	6 5 5	10

55 60 65 70 75

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Boring Designation CP07-L30PP-CB-0007

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 5 OF 5 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 825,597 Y = 523,542	ELEVATION TOP OF BORING: 14.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			SAND, poorly-graded, medium dense, mostly subangular medium to coarse-grained sand-sized quartz, little shell, 5Y 6/3 pale olive (SP)	93	26		SPT Sampler -62.5	11 10 10	20
				60	27		SPT Sampler -64.0	3 4 11	15
-64.5	78.5								
-65.0	79.0		GRAVEL, poorly-graded, medium dense, little medium-grained sand-sized quartz, 5Y 6/3 pale olive (GP)	133	28		SPT Sampler -65.5	4 8 7	15
-66.0	80.0		CLAY, fat, stiff, few fine to coarse gravel-sized limestone, few quartz, few shell, 5Y 6/3 pale olive (CH)						
			SILT, inorganic-L, stiff to firm, little clay, few fine-grained sand-sized quartz, few shell, 5Y 6/3 pale olive (ML)	20	29		SPT Sampler -67.0	5 7 20	27
				93	30		SPT Sampler -68.5	5 5 6	11
				33	31		SPT Sampler -70.0	4 5 5	10
-71.5	85.5			33	32		SPT Sampler -71.5	2 2 3	5
			SAND, silty, dense, mostly fine to coarse-grained sand-sized quartz, little silt, few shell, trace clay, 5Y 6/3 pale olive (SM)	67	33		SPT Sampler -73.0	19 21 26	47
-73.0	87.0								
			SAND, poorly-graded, dense, mostly coarse-grained sand-sized quartz, few shell, 5Y 6/3 pale olive (SP)	33	34		SPT Sampler -74.5	21 20 23	43
				8	35		SPT Sampler -76.0	15 16 27	43
-76.0	90.0								
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Additional Laboratory Testing Specific Gravity				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).		

75 80 85 90 95

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Boring Designation CP07-L30PP-CB-0008

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 5 SHEETS

1. PROJECT L-30 Seepage Management Pilot Project	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP07-L30PP-CB-0008 / LOCATION COORDINATES X = 825,595 Y = 523,820	11. MANUFACTURER'S DESIGNATION OF DRILL ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Amdrill / CONTRACTOR FILE NO.	12. TOTAL SAMPLES DISTURBED 22 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Adam Benson	13. TOTAL NUMBER CORE BOXES 12
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER -4.0 Ft.
	15. DATE BORING STARTED 05-15-08 / COMPLETED 05-16-08
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 14.0 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 67 %
8. TOTAL DEPTH OF BORING 90.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Mark Holmes.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
14.0	0.0						14.0		
			SILT, inorganic-L, very stiff to stiff, Levee Fill material, 10YR 7/3 very pale brown (ML)	30	1		SPT Sampler	22 17 12	29
				30	2		SPT Sampler 12.5	9 10 7	17
				0	3		SPT Sampler 11.0	4 6 6	12
9.5	4.5						SPT Sampler 9.5		
			SAND, poorly-graded, medium dense, mostly subangular to subrounded fine to coarse-grained sand-sized quartz, 10YR 6/3 pale brown (SP)	65	4		SPT Sampler	5 5 8	13
8.0	6.0						SPT Sampler 8.0		
			GRAVEL, poorly-graded, loose to medium dense, few subangular to subrounded coarse-grained sand-sized quartz, 10YR 6/3 pale brown (GP)	50	5		SPT Sampler	4 4 4	8
				30	6		SPT Sampler 6.5	3 6 7	13
			At El. 5.0 Ft., loose to medium dense, little quartz, 10YR 6/3 pale brown	50	7		SPT Sampler 5.0	5 5 5	10
				50	8		SPT Sampler 3.5	4 5 7	12
2.0	12.0						SPT Sampler 2.0		
			LIMESTONE, hard, 10YR 8/2 very pale brown	10	9		SPT Sampler	1 1 2	3
			At El. 0.5 Ft., 10YR 8/2 very pale brown	30	10		SPT Sampler 0.5	5 6 4	10
							-1.0		

SAJ FORM 1836
JUN 02

(Continued)

Boring Designation CP07-L30PP-CB-0008

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District		SHEET 2 OF 5 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83	VERTICAL: NAVD88
LOCATION COORDINATES: X = 825,595 Y = 523,820	ELEVATION TOP OF BORING: 14.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				25	11		SPT Sampler	3 / 2 / 4	6
-2.5									
-3.0	17.0		PEAT, stiff (PT)	80	12		SPT Sampler	6 / 18 / 30	48
-3.5	17.5		LIMESTONE, 10YR 7/1 light gray						
-4.0									
				60	BOX 13				
-6.0			At El. -6.0 Ft., sparsely fossiliferous, 10YR 7/1 light gray						
				95	BOX 14	RQD 12			
-11.0	25.0		LIMESTONE, fossiliferous, hard, 10YR 7/1 light gray						
-11.0									
				50	BOX 15	RQD 53			
-16.0									
-17.0	31.0								
-17.5	31.5	Highly Weathered	LIMESTONE, very soft, highly weathered, 10YR 7/1 light gray						
			LIMESTONE, fossiliferous, hard, 10YR 7/1 light gray	75	BOX 16	RQD 58			
-20.0	34.0								
-20.5	34.5		LIMESTONE, very soft, highly weathered, 10YR 7/1 light gray						
			LIMESTONE, fossiliferous, hard, Unconfined						
-21.0									

15 20 25 30 35

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Boring Designation CP07-L30PP-CB-0008

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District		SHEET 3 OF 5 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83	VERTICAL: NAVD88
LOCATION COORDINATES: X = 825,595 Y = 523,820	ELEVATION TOP OF BORING: 14.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			Compression test on sample from 35 - 40 feet, 10YR 7/1 light gray						
-22.5	36.5		LIMESTONE, soft, highly weathered	95	BOX 17	RQD 81			
-26.0	40.0		LIMESTONE, fossiliferous, hard, 2.5YR 8/2 pinkish white	80	BOX 18	RQD 43	-26.0		
				85	BOX 19	RQD 57	-31.0		
-34.0	48.0		At El. -32.5 Ft., large marine fossils grading to smaller with depth						
			LIMESTONE, noticable burrowing increasing with depth, 2.5YR 8/2 pinkish white				-36.0		
-38.0	52.0		LIMESTONE, soft, decreasing fossils and burrows, 2.5YR 8/3 pink	60	BOX 20	RQD 26	-41.0		

Highly Weathered

35 40 45 50 55

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JUN 92

Boring Designation CP07-L30PP-CB-0008

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 4 OF 5 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
L-30 Seepage Management Pilot Project	State Plane, FLE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 825,595 Y = 523,820	14.0 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-43.0	57.0		LIMESTONE, hard, numerous marine fossils	85	BOX 21	RQD 32	-46.0		
			At El. -46.0 Ft., fossiliferous						
			At El. -48.0 Ft., grading to mudstone, with sand increasing with depth	60	BOX 22	RQD 18	-51.0		
				60	BOX 23	RQD 28	-56.0		
-56.0	70.0		SAND, poorly-graded, 10Y 8/1 light greenish gray (SP)						
			At El. -59.0 Ft., few fine to coarse-grained sand-sized shell, 10Y 8/1 light greenish gray	40	BOX 24	RQD 30	-61.0		

55 60 65 70 75

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Boring Designation CP07-L30PP-CB-0008

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District		SHEET 5 OF 5 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83	VERTICAL: NAVD88
LOCATION COORDINATES: X = 825,595 Y = 523,820	ELEVATION TOP OF BORING: 14.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			At El. -61.0 Ft., loose to medium dense, 5G 8/2 pale green	50	25		SPT Sampler -62.5	9 / 5 / 5	10
-63.0	77.0								
-63.5	77.5		SAND, clayey, loose (SC)	85	26		SPT Sampler -64.0	7 / 8 / 11	19
			SAND, poorly-graded, medium dense, few shell (SP)	50	27		SPT Sampler -65.5	7 / 10 / 14	24
-66.0	80.0								
-66.5	80.5		GRAVEL, poorly-graded, medium dense (GP)	90	28		SPT Sampler -67.0	4 / 9 / 14	23
			SAND, poorly-graded, medium dense, 10Y 3/1 dark greenish gray (SP)	90	29		SPT Sampler -68.5	10 / 11 / 11	22
				90	30		SPT Sampler -70.0	3 / 6 / 10	16
-70.5	84.5								
			SAND, silty, medium dense, 10Y 3/1 dark greenish gray (SM)	95	31		SPT Sampler -71.5	5 / 10 / 12	22
			At El. -72.0 Ft., loose to medium dense, 10Y 3/1 dark greenish gray	95	32		SPT Sampler -73.0	2 / 3 / 7	10
				100	33		SPT Sampler -74.5	6 / 5 / 5	10
				100	34		SPT Sampler -76.0	4 / 6 / 8	14
-76.0	90.0								

NOTES:

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

2. Additional Laboratory Testing

Specific Gravity

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

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Boring Designation CP07-L30PP-CB-0009

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 5 SHEETS

1. PROJECT L-30 Seepage Management Pilot Project		9. SIZE AND TYPE OF BIT See Remarks	
		10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP07-L30PP-CB-0009	LOCATION COORDINATES X = 825,886 Y = 524,095	11. MANUFACTURER'S DESIGNATION OF DRILL	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Amdrill	CONTRACTOR FILE NO.	12. TOTAL SAMPLES	DISTURBED 22 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Adam Benson		13. TOTAL NUMBER CORE BOXES 12	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER -4.0 Ft.	
		15. DATE BORING	STARTED 05-19-08 / COMPLETED 05-20-08
6. THICKNESS OF OVERBURDEN N/A		16. ELEVATION TOP OF BORING 14.0 Ft.	
7. DEPTH DRILLED INTO ROCK N/A		17. TOTAL RECOVERY FOR BORING 53 %	
8. TOTAL DEPTH OF BORING 89.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR Larry Mattila,	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
14.0	0.0						14.0		
			GRAVEL, poorly-graded, dense, Levee Fill Material (GP)	40	1		SPT Sampler 12.5	18 / 26 / 17	43
			From El. 12.5 to -3.5 Ft., dense to loose, trace clayey sand	40	2		SPT Sampler 11.0	16 / 27 / 11	38
				30	3		SPT Sampler 9.5	6 / 6 / 7	13
				30	4		SPT Sampler 8.0	6 / 8 / 14	22
				20	5		SPT Sampler 6.5	3 / 4 / 5	9
				30	6		SPT Sampler 5.0	6 / 5 / 5	10
				40	7		SPT Sampler 3.5	5 / 6 / 6	12
				20	8		SPT Sampler 2.0	6 / 8 / 7	15
				30	9		SPT Sampler 0.5	6 / 10 / 9	19
				20	10		SPT Sampler -1.0	4 / 4 / 4	8

0 5 10 15

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JUN 02

(Continued)

Boring Designation CP07-L30PP-CB-0009

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 5 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 825,886 Y = 524,095	ELEVATION TOP OF BORING: 14.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-2.0	16.0		PEAT, stiff, some clay (PT)	20	11		SPT Sampler -2.5	3 3 7	10
-3.5	17.5		LIMESTONE, weathered, vuggy, white	40	12		SPT Sampler -4.0	4 15 21	36
-6.0	20.0		LIMESTONE, hard, weathered, vuggy. some micrite, white	60	BOX 13	RQD 31	-6.0		
			From El. -11.0 to -16.0 Ft., weathered, vuggy,, white	80	BOX 14	RQD 66	-11.0		
			From El. -16.0 to -21.0 Ft., weathered, vuggy, vugs filled with calcite sands, white	30	BOX 15	RQD 10	-16.0		
				50	BOX 16	RQD 30	-21.0		

Weathered

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JUN 02

Boring Designation CP07-L30PP-CB-0009

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District		SHEET 3 OF 5 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83	VERTICAL: NAVD88
LOCATION COORDINATES: X = 825,886 Y = 524,095	ELEVATION TOP OF BORING: 14.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			From El. -21.0 to -26.0 Ft., hard, weathered, trace vugs, shell molds, white	85	BOX 17	RQD 68	-26.0		
			From El. -26.0 to -31.0 Ft., weathered, vuggy, sparite in vugs, shell molds and some shells, Unconfined Compression test on sample from 38 - 40 feet, 10YR 7/1 light gray	90	BOX 18	RQD 73	-31.0		
-31.0	45.0		LIMESTONE, moderately hard, weathered, some vugs and shell molds, hard, white	90	BOX 19	RQD 81	-36.0		
			From El. -36.0 to -41.0 Ft., weathered, vuggy, sparite in vugs, white	65	BOX 20	RQD 20	-41.0		

35 40 45 50 55

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Boring Designation CP07-L30PP-CB-0009

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 4 OF 5 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 825,886 Y = 524,095	ELEVATION TOP OF BORING: 14.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			From El. -41.0 to -46.0 Ft., very vuggy, shell molds and marine fossils, white	20	BOX 21	RQD 0	-46.0		
			From El. -46.0 to -51.0 Ft., vuggy, some shell and sparite, white	55	BOX 22	RQD 8	-51.0		
			From El. -51.0 to -56.0 Ft., very vuggy, some shells and sparite, pinkish-tan	50	BOX 23	RQD 8	-56.0		
			From El. -56.0 to -60.0 Ft., somewhat vuggy, shell molds and sparite, light tan	80	BOX 24	RQD 78	-60.0		
-60.0	74.0		GRAVEL, poorly-graded, dense, mostly fine-grained sand-sized quartz, some fine to coarse gravel-sized limestone, light gray	60	24		SPT Sampler	14 / 16	

55 60 65 70 75

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Boring Designation CP07-L30PP-CB-0009

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 5 OF 5 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 825,886 Y = 524,095	ELEVATION TOP OF BORING: 14.0 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			(GP)	60	24		-61.5 SPT Sampler	24	40
			From El. -61.5 to -63.0 Ft., dense, some fine to coarse gravel-sized limestone, light gray	60	26		SPT Sampler -63.0	8 / 15 / 24	39
			From El. -63.0 to -64.5 Ft., dense, some subangular to subrounded fine to coarse gravel-sized limestone, light gray	50	27		SPT Sampler -64.5	10 / 19 / 12	31
			From El. -64.5 to -66.0 Ft., medium dense, light gray	90	28		SPT Sampler -66.0	11 / 14 / 11	25
-66.0	80.0		GRAVEL, clayey, medium dense to dense, some subrounded fine-grained sand-sized quartz, gray (GC)	90	29		SPT Sampler -67.5	5 / 7 / 11	18
				50	30		SPT Sampler -69.0	6 / 8 / 10	18
				80	31		SPT Sampler -70.5	7 / 14 / 18	32
				80	32		SPT Sampler -72.0	6 / 12 / 13	25
			From El. -72.0 to -75.0 Ft., dense to medium dense, some subrounded fine-grained sand-sized quartz, some shell, gray	60	33		SPT Sampler -73.5	8 / 15 / 18	33
-75.0	89.0				34		SPT Sampler -75.0	5 / 7 / 9	16

NOTES:

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

2. Additional Laboratory Testing

Specific Gravity

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
NR = Not Recorded.

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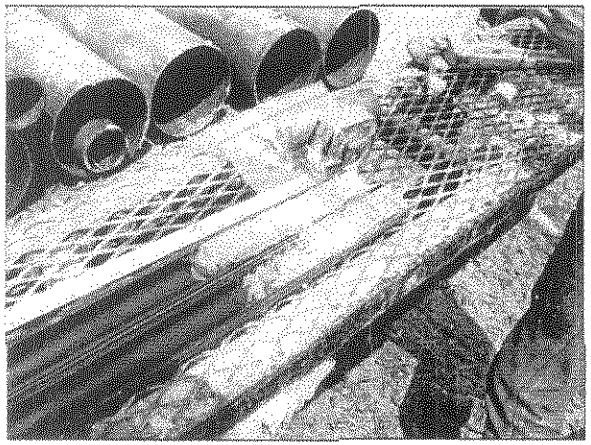
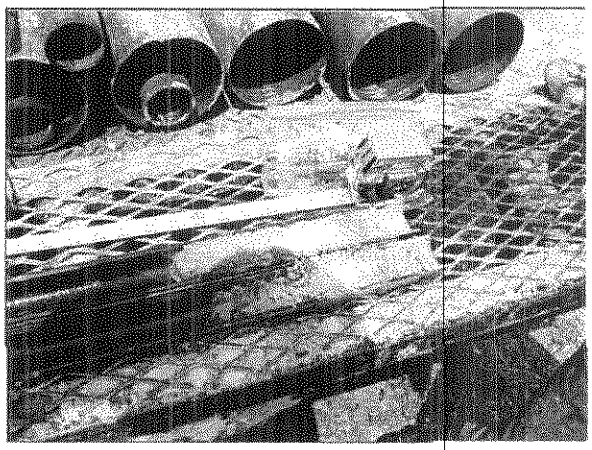
JUN 02



CP07-L30PP-CB-0007 Sample 1



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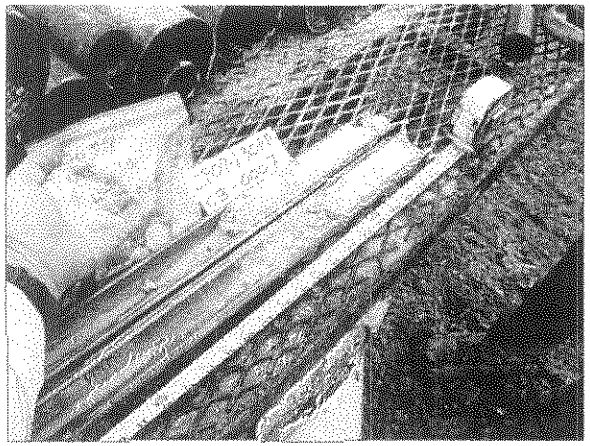
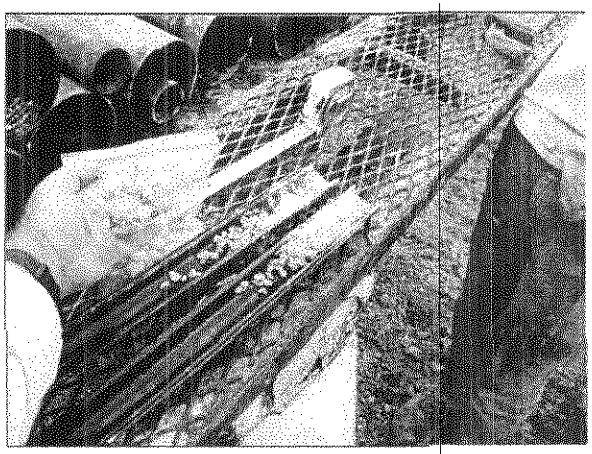


CP07-L30PP-CB-0007 Sample 3



CP07-L30PP-CB-0007 Sample 4

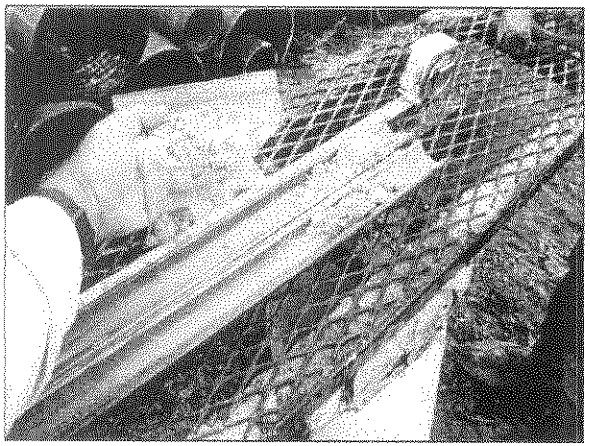
WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

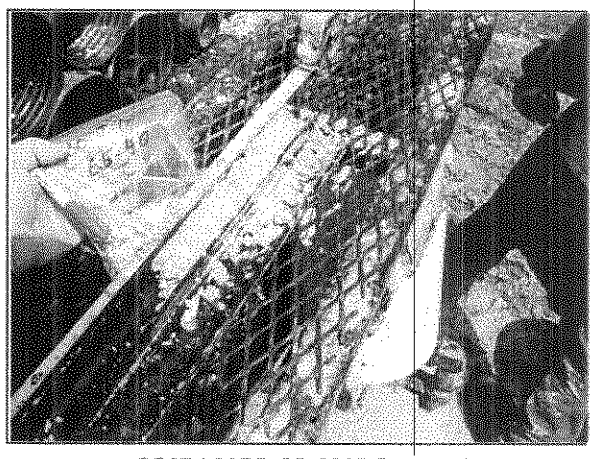
L30 Seepage Management Pilot Project

Miami-Dade County, Florida

WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08



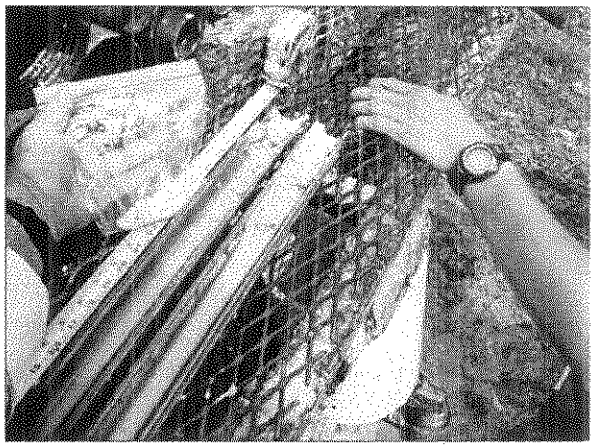
CP07-L30PP-CB-0007 Sample 5



CP07-L30PP-CB-0007 Sample 6

FILE CORRUPTED

CP07-L30PP-CB-0007 Sample 7



CP07-L30PP-CB-0007 Sample 8

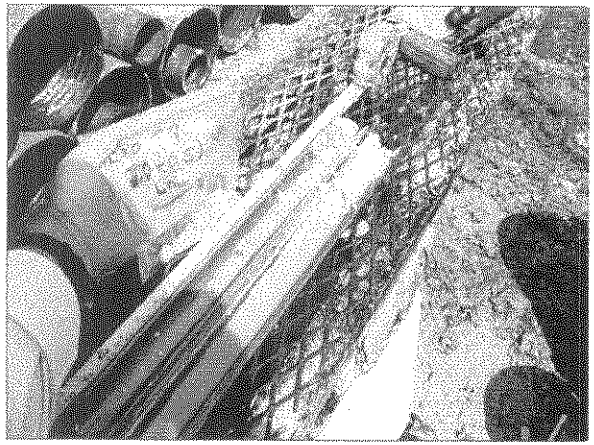
WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

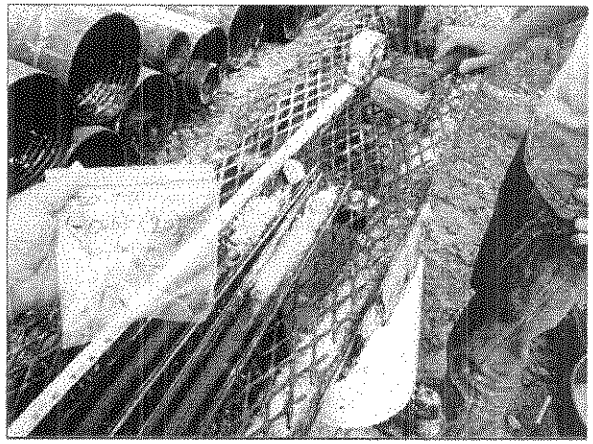
L30 Seepage Management Pilot Project

Miami-Dade County, Florida

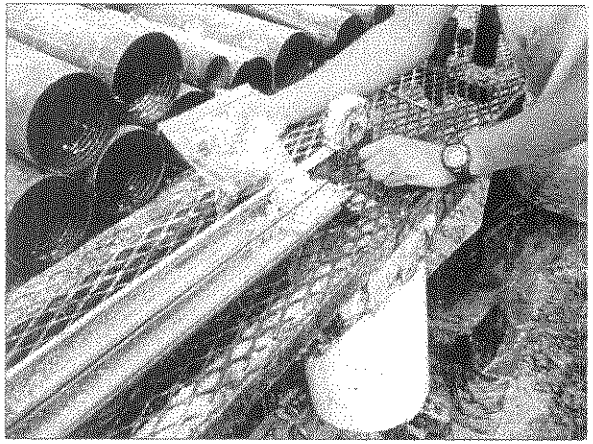
WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08



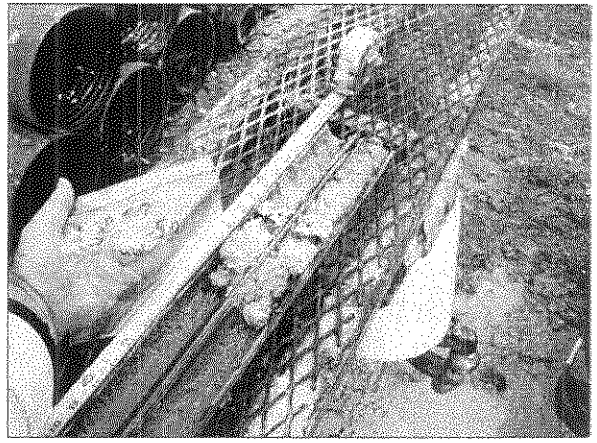
CP07-L30PP-CB-0007 Sample 9



CP07-L30PP-CB-0007 Sample 10



CP07-L30PP-CB-0007 Sample 11



CP07-L30PP-CB-0007 Sample 12

WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

L30 Seepage Management Pilot Project

Miami-Dade County, Florida

WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08

WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

L30 Seepage Management Pilot Project

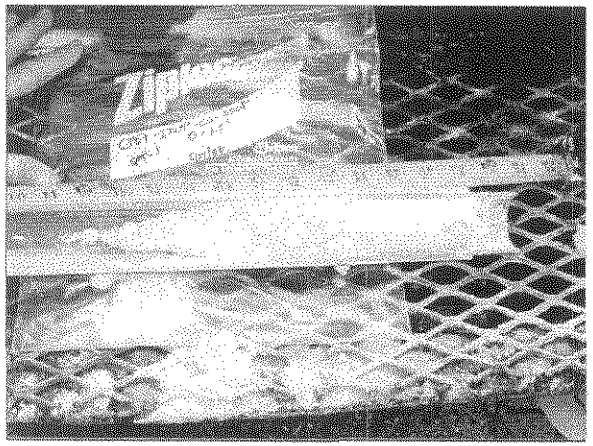
Miami-Dade County, Florida

WOLF/WPC Project No.: WPC6208.00036

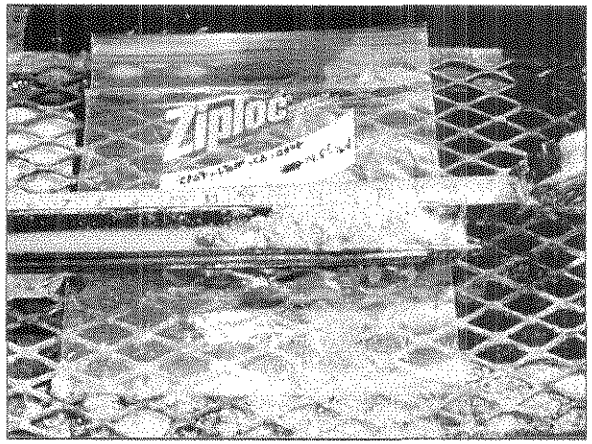
Date: 12/03/08

FILE S 13 THRU 35 ARE CORRUPTED

CP07-L30PP-CB-0007 Sample 13 THRU 35



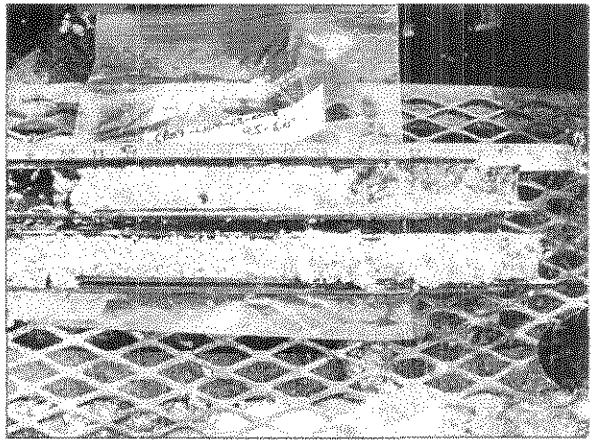
CP07-L30PP-CB-0008 Sample 1



CP07-L30PP-CB-0008 Sample 2

FILE CORRUPTED

CP07-L30PP-CB-0008 Sample 3



CP07-L30PP-CB-0008 Sample 4

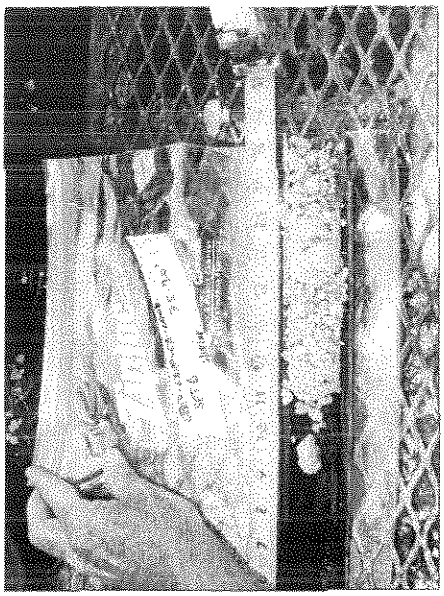
WOLF WPC ENGINEERING, ENVIRONMENTAL, & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

L30 Seepage Management Pilot Project

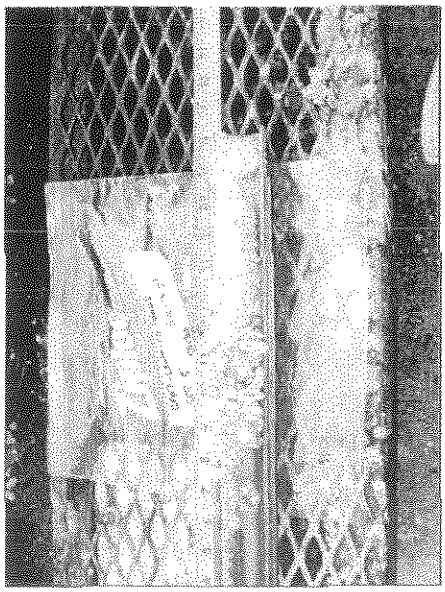
Miami-Dade County, Florida

WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08

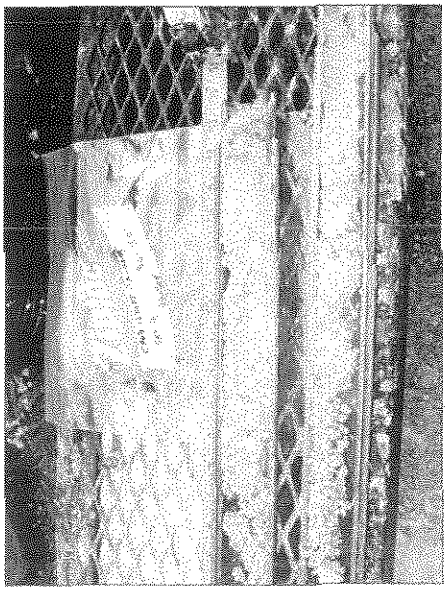


CP07-L30PP-CB-0008 Sample 6

CP07-L30PP-CB-0008 Sample 8



CP07-L30PP-CB-0008 Sample 5



CP07-L30PP-CB-0008 Sample 7

WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

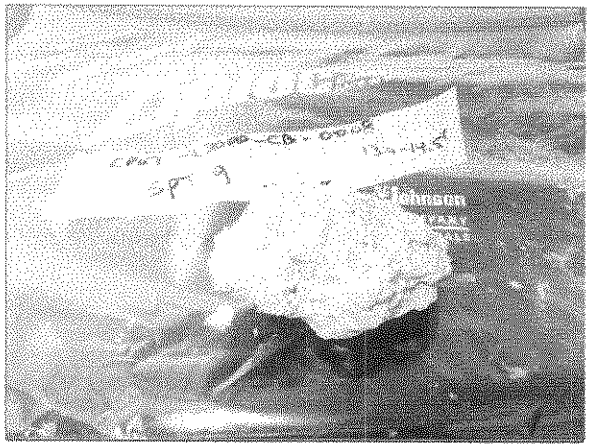
COREBORING PHOTOGRAPHS

L30 Seepage Management Pilot Project

Miami-Dade County, Florida

WOLF/WPC Project No.: WPC6208.00036

Date: 12/03/08



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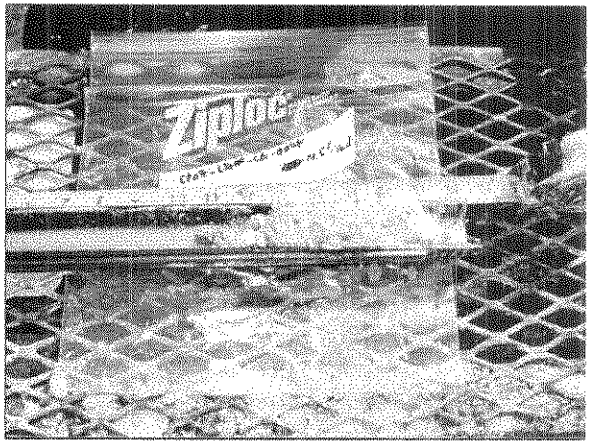
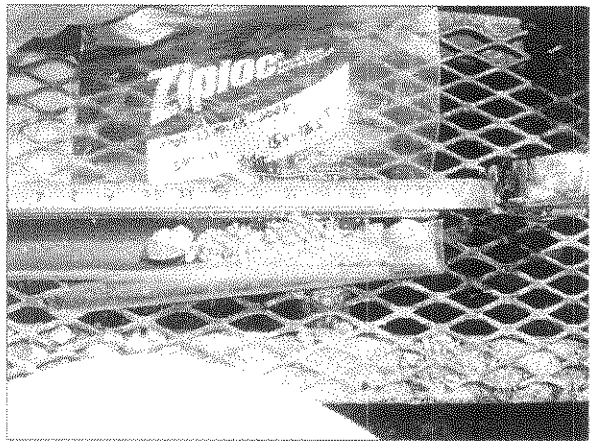
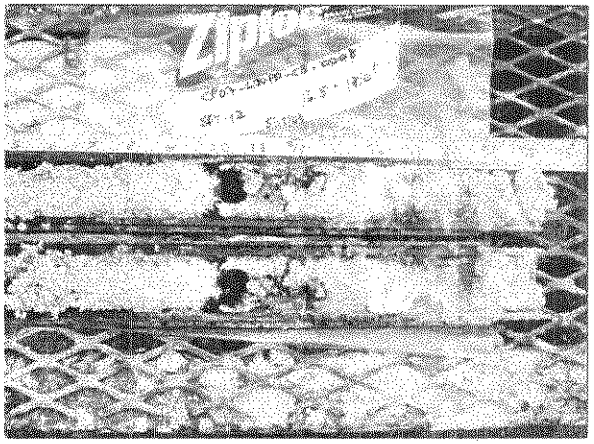


CP07-L30PP-CB-0008 Sample 10



CP07-L30PP-CB-0008 Sample 11



CP07-L30PP-CB-0008 Sample 12

WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

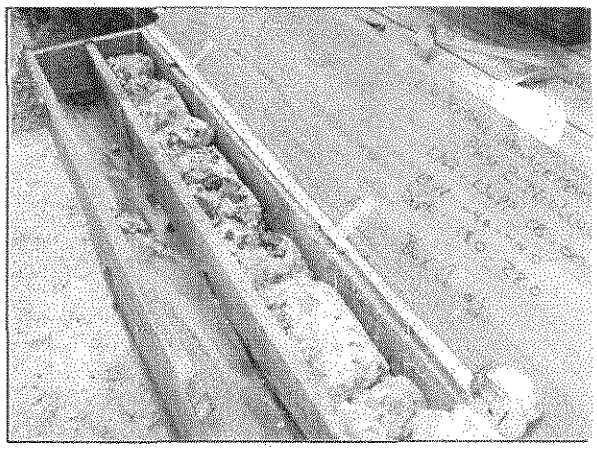
L30 Seepage Management Pilot Project

Miami-Dade County, Florida

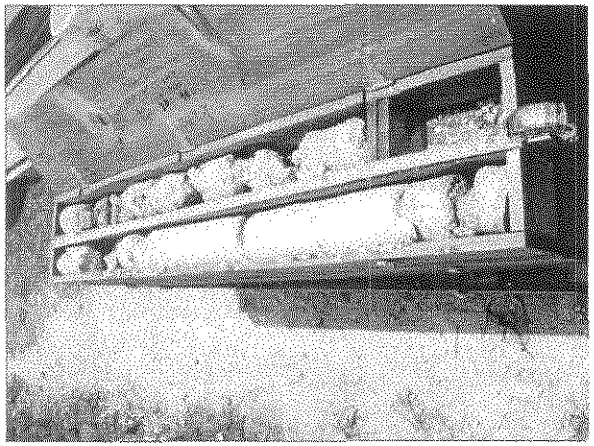
WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08

FILE CORRUPTED

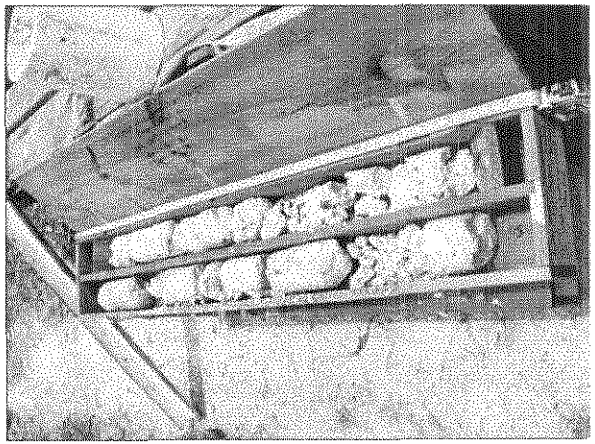
CP07-L30PP-CB-0008 Sample 13



CP07-L30PP-CB-0008 Sample 14 & 15



CP07-L30PP-CB-0008 Sample 16 & 17



CP07-L30PP-CB-0008 Sample 18 & 19

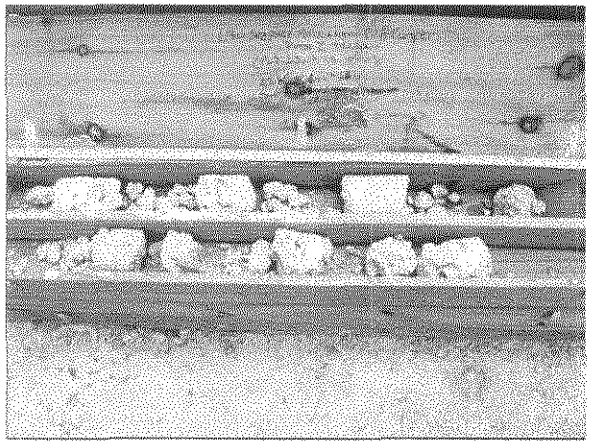
WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

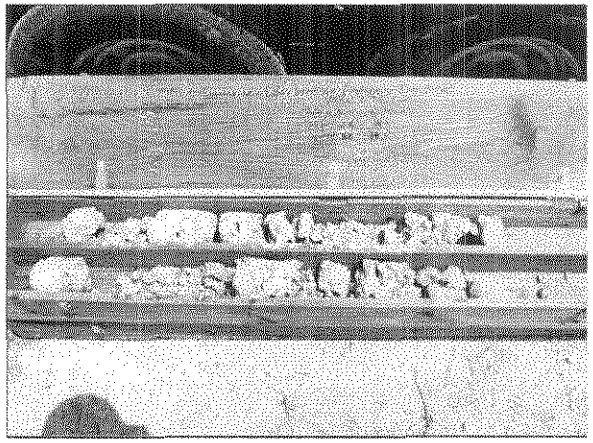
L30 Seepage Management Pilot Project

Miami-Dade County, Florida

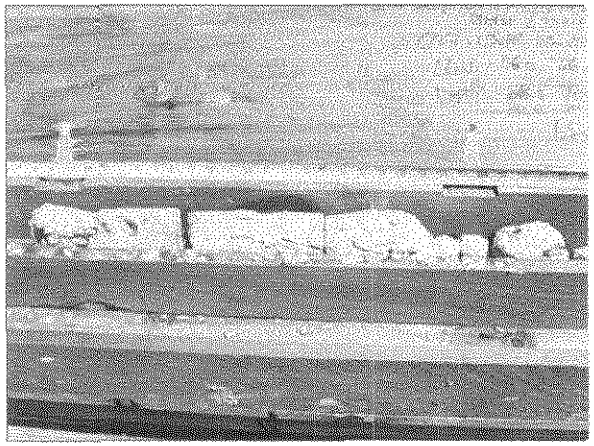
WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08



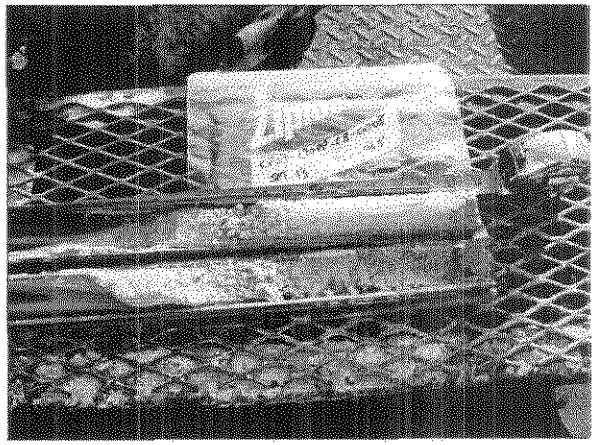
CP07-L30PP-CB-0008 Sample 20 & 21



CP07-L30PP-CB-0008 Sample 22 & 23



CP07-L30PP-CB-0008 Sample 24



CP07-L30PP-CB-0008 Sample 25

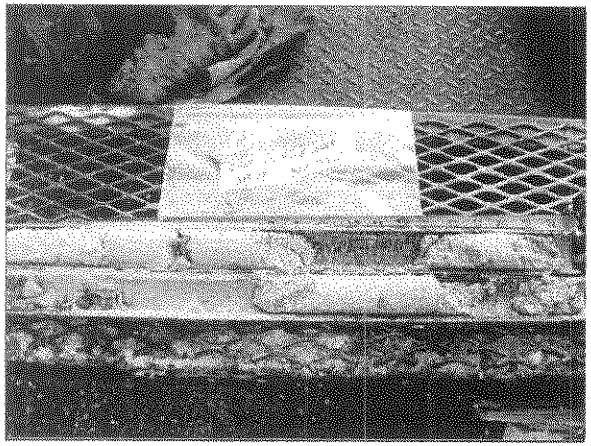
WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

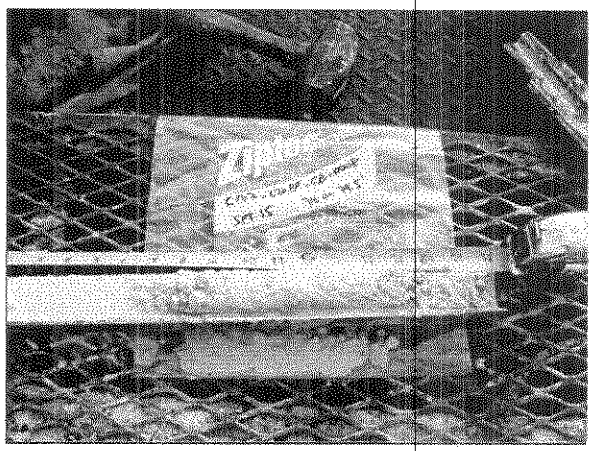
L30 Seepage Management Pilot Project

Miami-Dade County, Florida

WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08

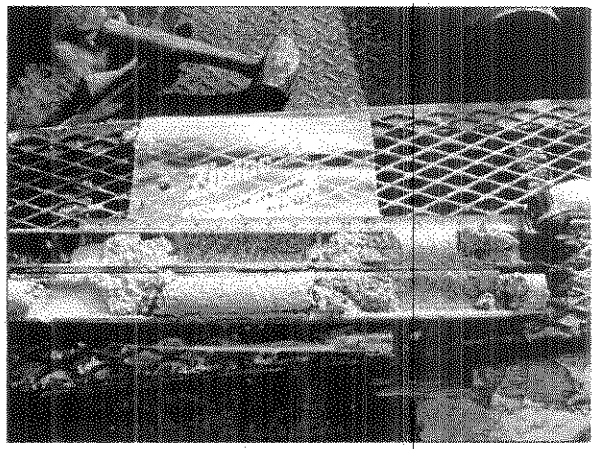


CP07-L30PP-CB-0008 Sample 26



CP07-L30PP-CB-0008 Sample 27

CP07-L30PP-CB-0008 Sample 28



CP07-L30PP-CB-0007 Sample 29

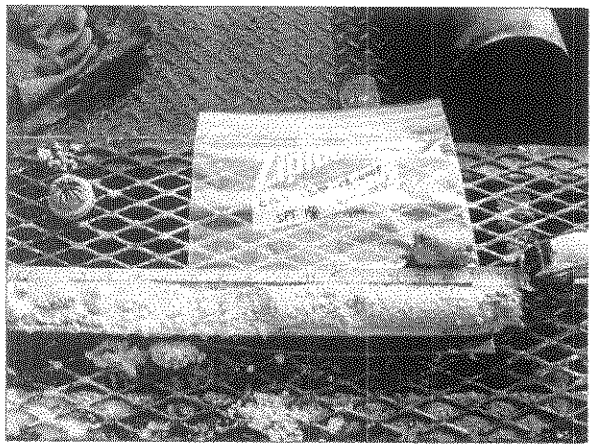
WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

L30 Seepage Management Pilot Project

Miami-Dade County, Florida

WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08



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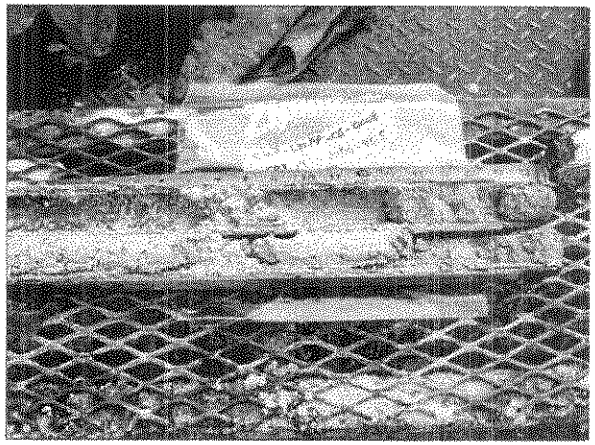
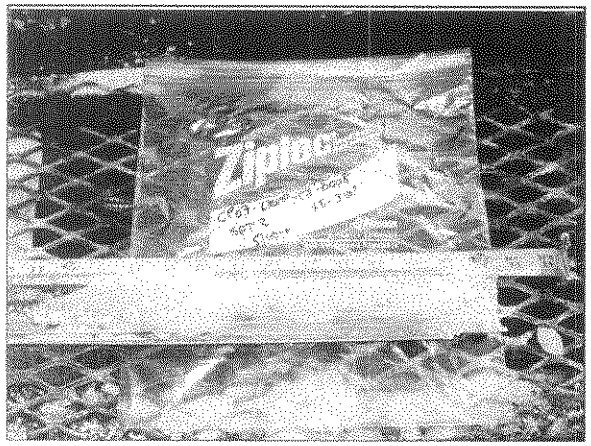
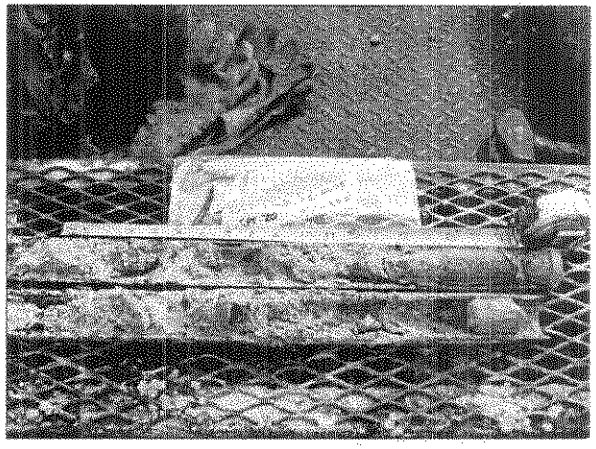


CP07-L30PP-CB-0008 Sample 31



CP07-L30PP-CB-0008 Sample 32



CP07-L30PP-CB-0008 Sample 33

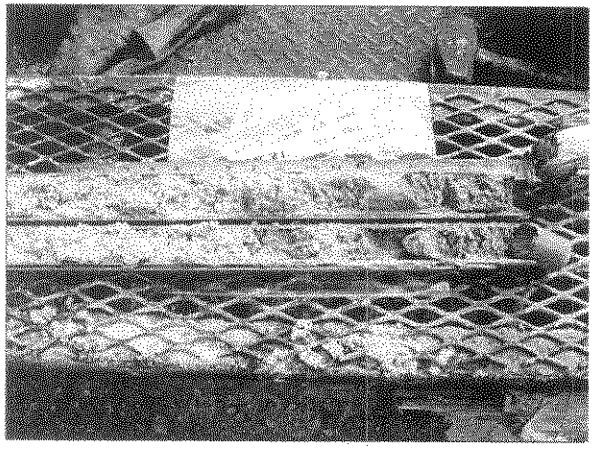
WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

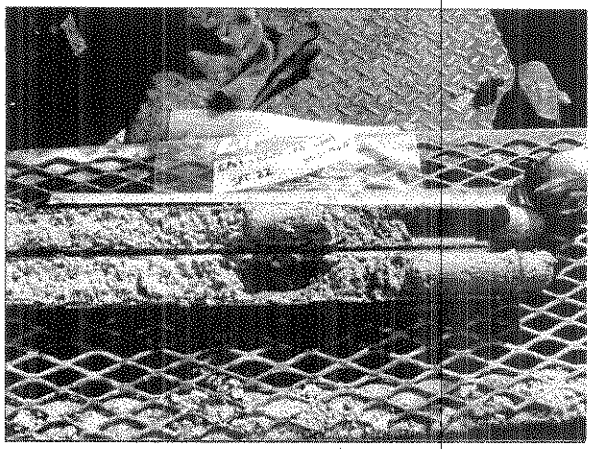
L30 Seepage Management Pilot Project

Miami-Dade County, Florida

WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08



CP07-L30PP-CB-0008 Sample 34



CP07-L30PP-CB-0008 Sample 35

WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

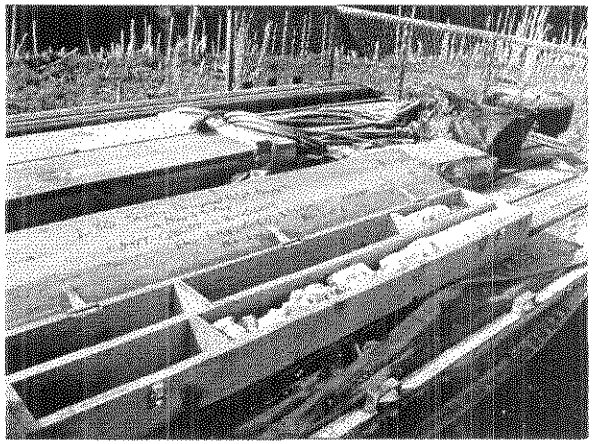
L30 Seepage Management Pilot Project

Miami-Dade County, Florida

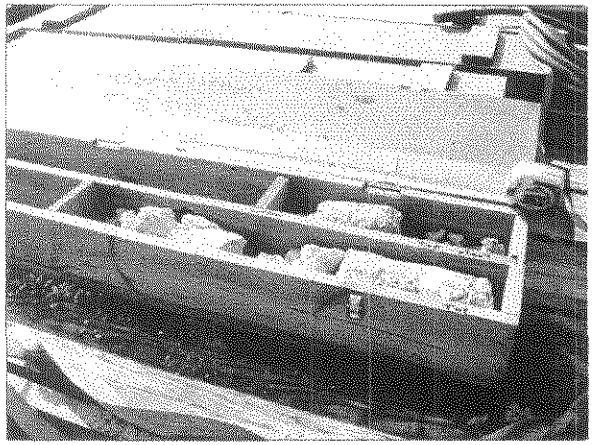
WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08

FILES 1 THRU 12 CORRUPT

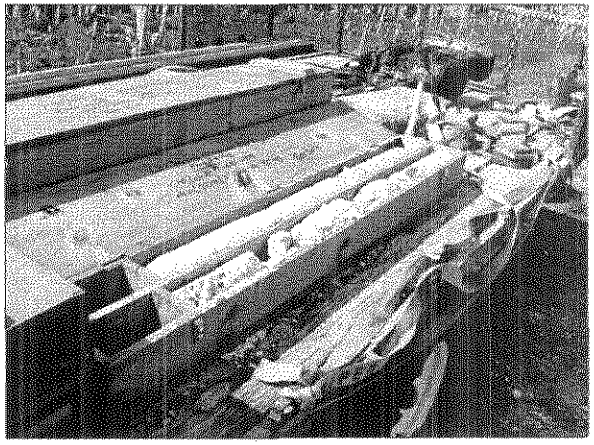
CP07-L30PP-CB-0009 Sample 1 THRU 12



CP07-L30PP-CB-0009 Sample 13 & 14



CP07-L30PP-CB-0009 Sample 15 & 16



CP07-L30PP-CB-0009 Sample 17 & 18

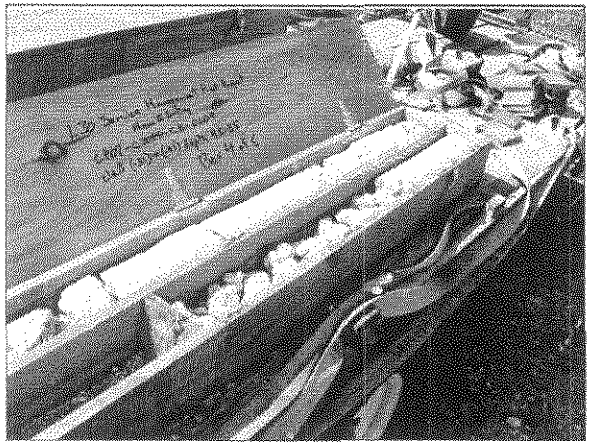
WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

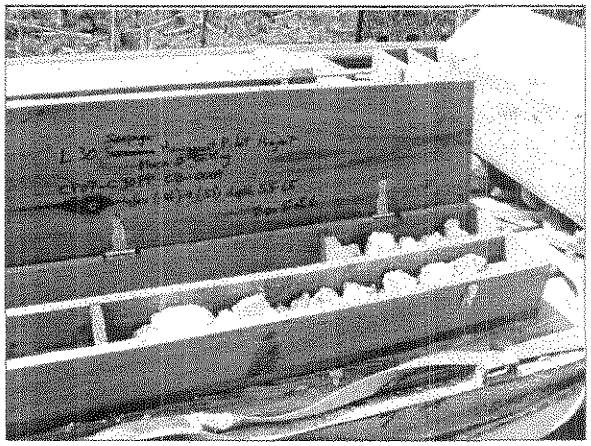
L30 Seepage Management Pilot Project

Miami-Dade County, Florida

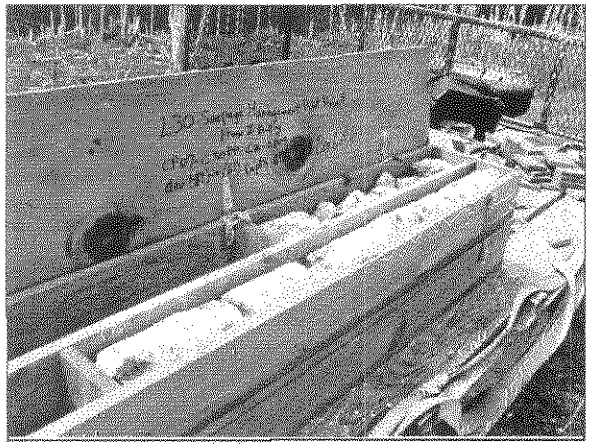
WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08



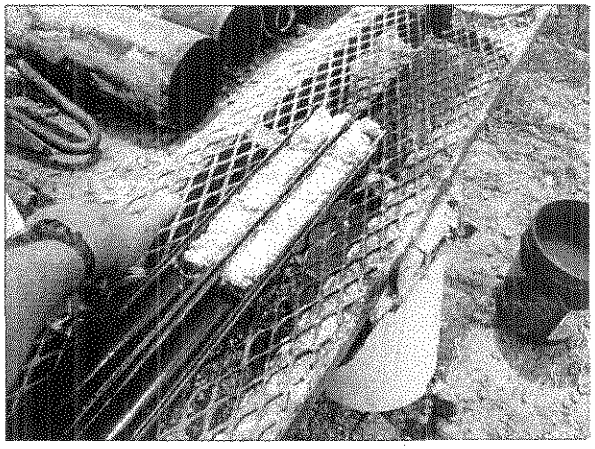
CP07-L30PP-CB-0009 Sample 19 & 20



CP07-L30PP-CB-0009 Sample 21 & 22



CP07-L30PP-CB-0009 Sample 23 & 24



CP07-L30PP-CB-0009 Sample 25

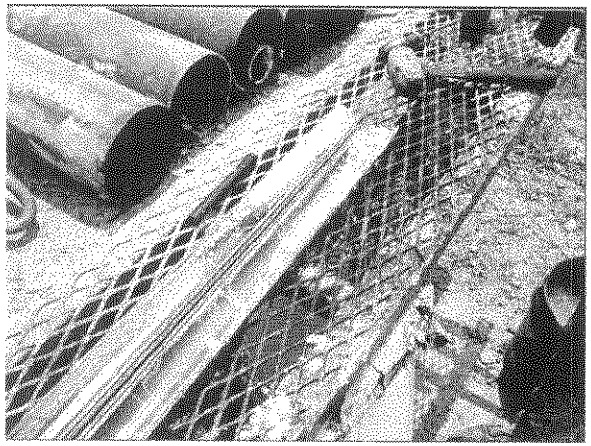
WOLF WPC ENGINEERING, ENVIRONMENTAL, & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

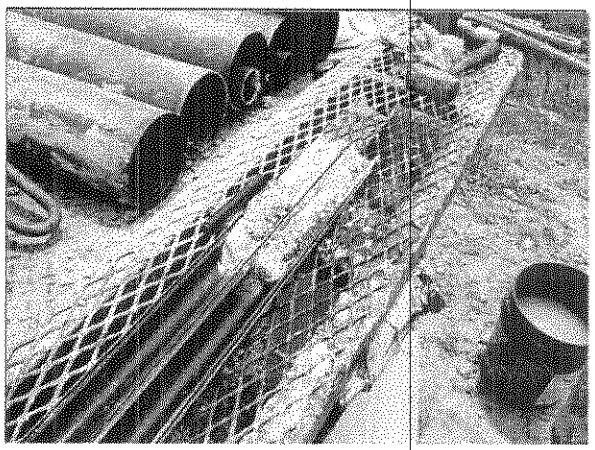
L30 Seepage Management Pilot Project

Miami-Dade County, Florida

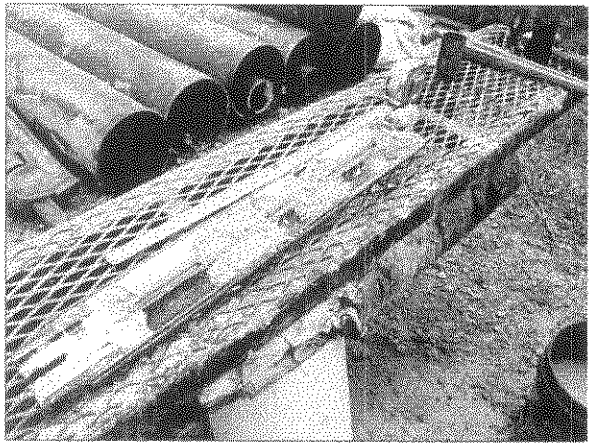
WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08



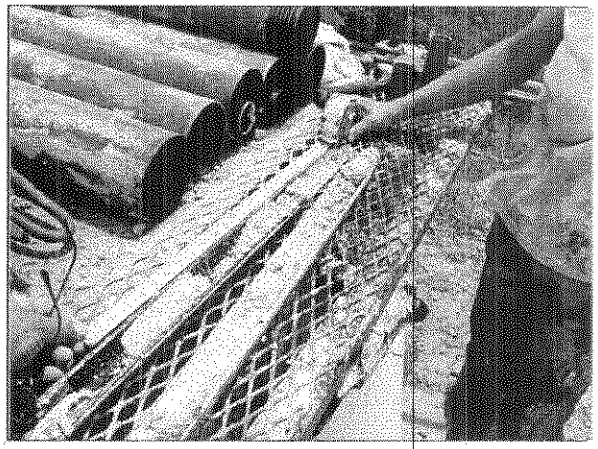
CP07-L30PP-CB-0009 Sample 26



CP07-L30PP-CB-0009 Sample 27



CP07-L30PP-CB-0009 Sample 28



CP07-L30PP-CB-0009 Sample 29

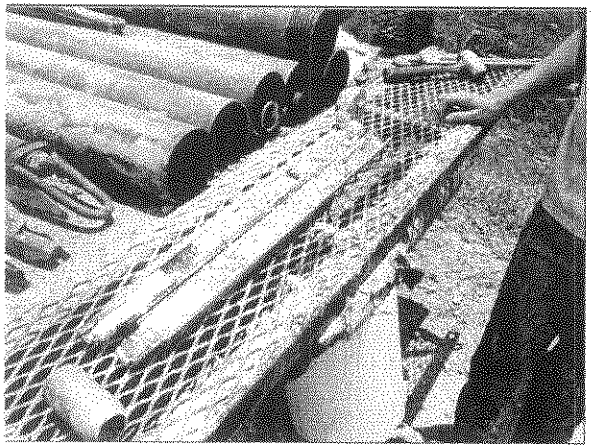
WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

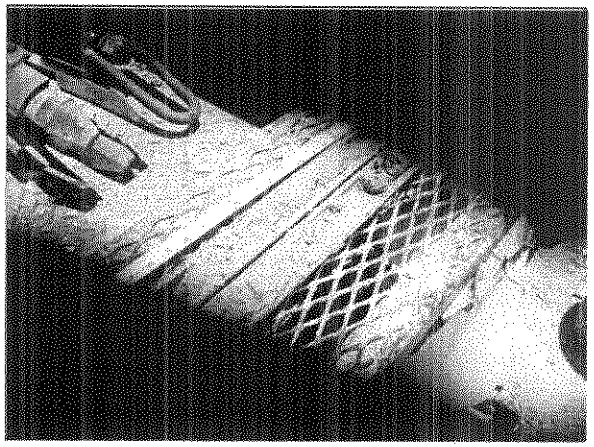
L30 Seepage Management Pilot Project

Miami-Dade County, Florida

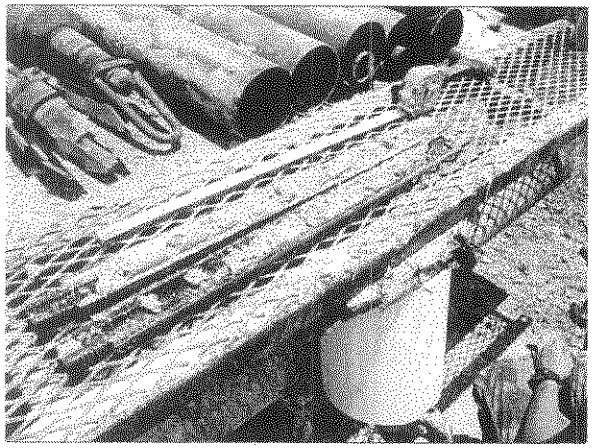
WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08



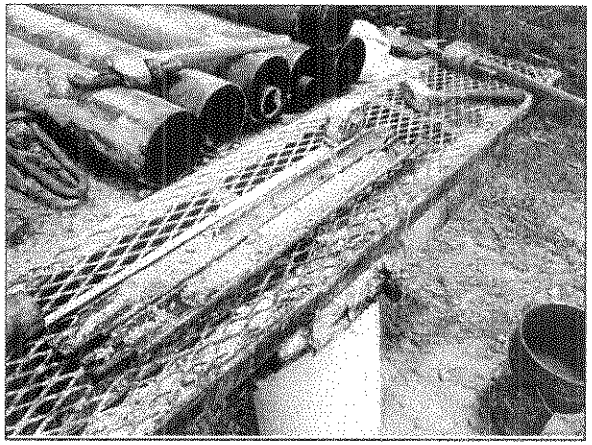
CP07-L30PP-CB-0009 Sample 30



CP07-L30PP-CB-0009 Sample 31



CP07-L30PP-CB-0009 Sample 32



CP07-L30PP-CB-0009 Sample 33

WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

L30 Seepage Management Pilot Project

Miami-Dade County, Florida

WOLF/WPC Project No.:	Date:
WPC6208.00036	12/03/08

CP07-L30PP-CB-0009 Sample 34

WOLF WPC ENGINEERING, ENVIRONMENTAL & CONSTRUCTION SERVICES

COREBORING PHOTOGRAPHS

L30 Seepage Management Pilot Project

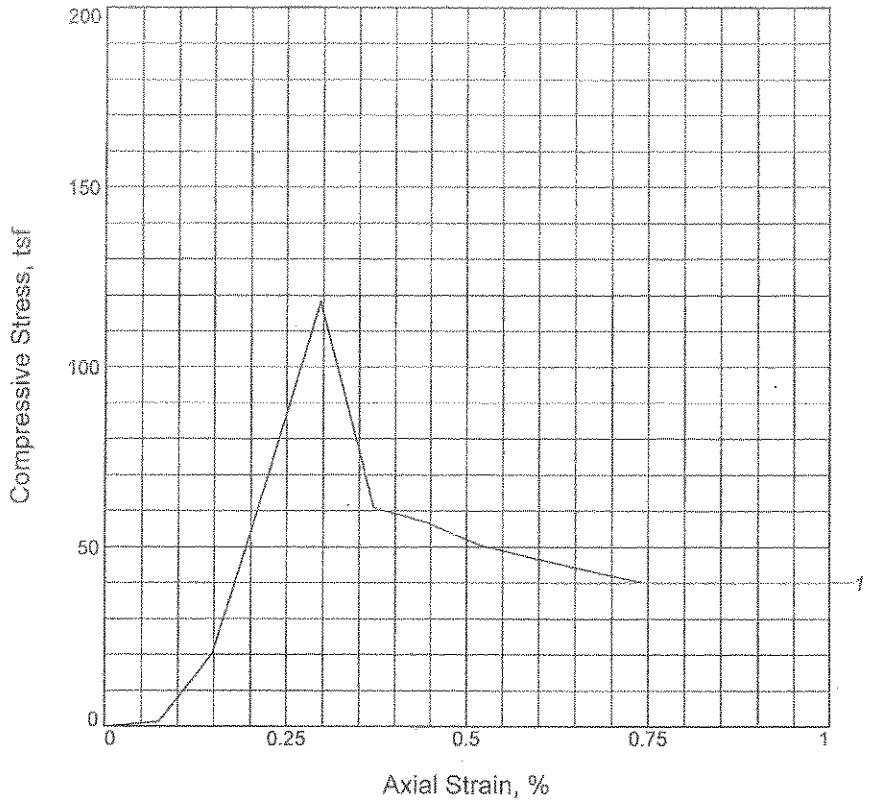
Miami-Dade County, Florida

WOLF/WPC Project No.: WPC6208.00036 **Date:** 12/03/08

APPENDIX C

- **Summary of Laboratory Test Results**

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, tsf	118.198			
Undrained shear strength, tsf	59.099			
Failure strain, %	0.3			
Strain rate, in./min.	0.06			
Water content, %	5.2			
Wet density, pcf	142.8			
Dry density, pcf	135.8			
Saturation, %	62.8			
Void ratio	0.2179			
Specimen diameter, in.	3.91			
Specimen height, in.	6.75			
Height/diameter ratio	1.73			

Description: Limerock Core, 10YR 7/1

LL =	PL =	PI =	GS= 2.65	Type: CORE

Project No.: WPC6308.00036

Date Sampled:

Remarks:

Figure _____

Client: USACE

Project: L-30 Seepage Management Pilot program

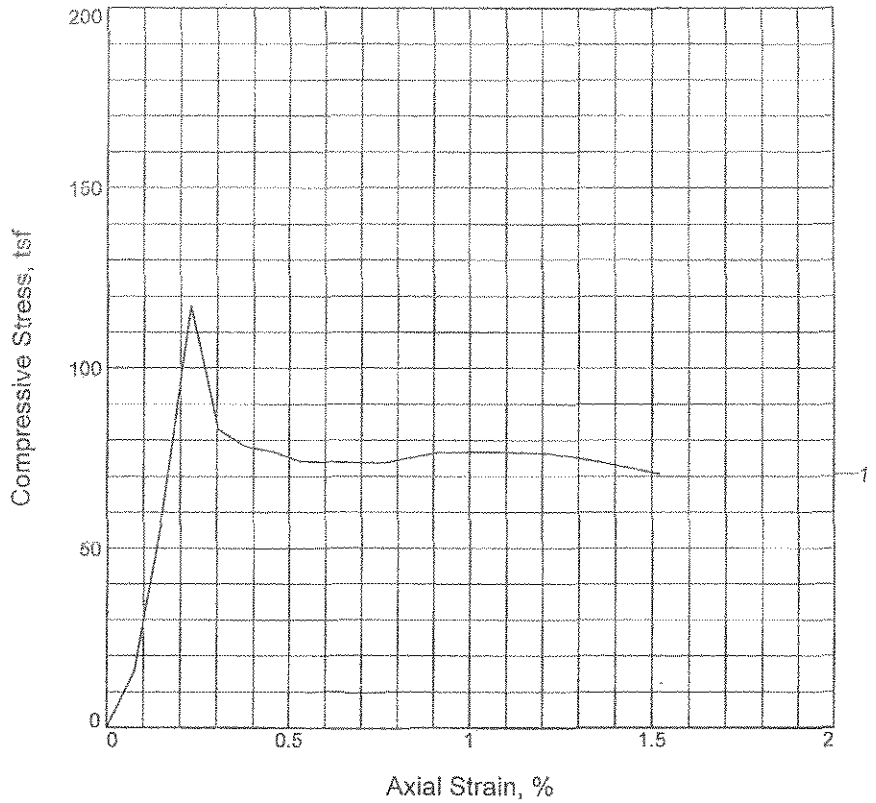
Location: CP07-L30PP-CB-007
Depth: 42.0'- 45.0'

UNCONFINED COMPRESSION TEST

WPC

Tested By: C. Martin

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, tsf	117.248			
Undrained shear strength, tsf	58.624			
Failure strain, %	0.2			
Strain rate, in./min.	0.03			
Water content, %	2.7			
Wet density, pcf	153.4			
Dry density, pcf	149.3			
Saturation, %	66.7			
Void ratio	0.1079			
Specimen diameter, in.	3.94			
Specimen height, in.	6.58			
Height/diameter ratio	1.67			

Description: Limerock Core, 10YR 7/1

LL =	PL =	PI =	GS= 2.65	Type: CORE

Project No.: WPC6308.00036

Date Sampled:

Remarks:

Client: USACE

Project: L-30 Seepage Management Pilot program

Location: CP07-L30PP-CB-008

Depth: 35.0'- 40.0'

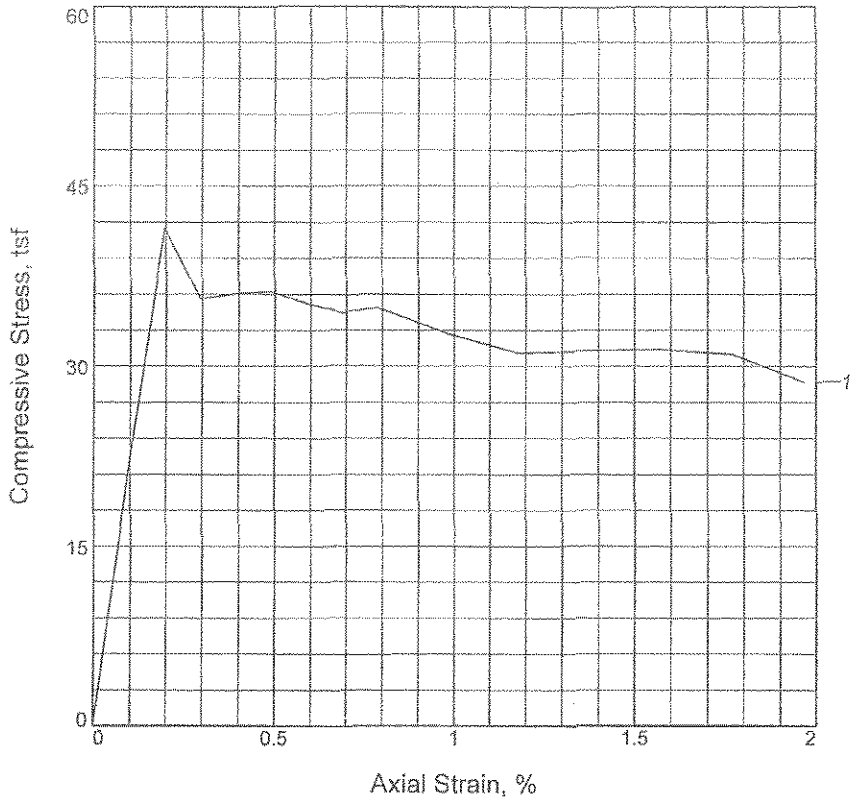
UNCONFINED COMPRESSION TEST

WPC

Figure _____

Tested By: C. Martin

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, tsf	41.458			
Undrained shear strength, tsf	20.729			
Failure strain, %	0.2			
Strain rate, in./min.	0.04			
Water content, %	7.2			
Wet density, pcf	148.0			
Dry density, pcf	138.1			
Saturation, %	96.3			
Void ratio	0.1983			
Specimen diameter, in.	3.95			
Specimen height, in.	5.08			
Height/diameter ratio	1.29			

Description: Limerock Core, 10YR 7/1

LL =	PL =	PI =	GS= 2.65	Type: CORE

Project No.: WPC6308.00036

Date Sampled:

Remarks:

Client: USACE

Project: L-30 Seepage Management Pilot program

Location: CP07-L30PP-CB-009

Depth: 38..0'- 40.0'

UNCONFINED COMPRESSION TEST

WPC

Figure _____

Tested By: C. Martin

SPECIALIZING IN SOILS
EXPLORATION, PHYSICAL
TESTING, ENGINEERING AND
NDT EXAMINATION SERVICES

CHALLENGE
ENGINEERING & TESTING, INC.

P. O. BOX 91537
4234 HALLS MILL ROAD
MOBILE, ALABAMA 36691
PHONE: (251) 666-1435
FAX: (251) 666-1438
EMAIL: CHALLENGETESTING@AOL.COM

FINAL REPORT
L-30 SEEPAGE MANAGEMENT PILOT PROJECT
WATER CONSERVATION AREA 3B
MIAMI-DADE COUNTY, FLORIDA

Contract # W912EP-05-D-0010
Delivery Order # 0003
Challenge Engineering & Testing, Inc.

Prepared For:
U.S. Army Corps of Engineers – Jacksonville District
Geotechnical Branch
701 San Marco Boulevard
Jacksonville, Florida 32207

Submitted By:
Challenge Engineering & Testing, Inc.
4234 Halls Mill Road
Mobile, Alabama 36691

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WATER CONSERVATION AREA 3B
MIAMI-DADE COUNTY, FLORIDA

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(1)

PURPOSE OF PROJECT

The U.S. Army Corps of Engineers is interested in determining the type, nature, and characteristics of lithological units that include the Biscayne Aquifer and the extent and conditions of the various materials as they exist to the depths at each of the locations specified.

The purpose of the L-30 Seepage Management Pilot Project (SMPP) is to address seepage management issues along the L-30 Canal related to the onset of other Comprehensive Everglades Restoration Plan (CERP) projects within the next five years.

The Pilot project is being conducted to provide information to determine the appropriate amount of wet season groundwater flow to return to the Everglades National Park (ENP) while minimizing potential impacts to the Miami-Dade West Well field and freshwater flows to Biscayne Bay.

This project is located west of Miami, Florida, northwest of the Tamiami Trail (US41) and Krome Avenue (Route 997). Work was performed along the top to the L-30 Canal Levee which runs mainly north-south and makes a 45 degree southwesterly departure from Krome Avenue toward the Tamiami Trail, commonly known as the "L-30 Triangle."

Challenge Engineering & Testing, Inc. of Mobile, Alabama was requested to assist the Jacksonville District of The U.S. Army Corps of Engineers on this contract.

SCOPE OF WORK

The scope of work consisted of performing in the upland (landside along top of L-30 levee) and in the freshwater wetland environment of the Water Conservation Area 3B the following:

- Core Drilling
- Wireline Core & Splitspoon Sampling
- Installation of Groundwater Monitoring Wells

Authorization to proceed with the requested tasks was issued on September 18th, 2006, Contract #W912EP-05-D-0010 – Delivery Order #0003 by the U.S. Army Corps of Engineers – Jacksonville District.

Field work was requested to be completed by November 19, 2006 for this assignment order.

PROCEDURES AND PROJECT SPECIFICATIONS

This report presents the procedures as followed for the borehole location, soil sampling and the classification of each respective soil sample in conjunction with special notes as recorded regarding conditions encountered in the field.

U.S. Army Corps of Engineer Standard Boring Log Forms 1836 are completed for each core boring performed in the designated location as generated with the Geotechnical Integrator "gINT" Software Program and script/library files as furnished by the Jacksonville District.

Drilling techniques and equipment were in general accordance with the prescribed technical provisions as stated in the Department of the Army Engineering Manual EM-1110-2-1907, "Soil Sampling" Publication.

FIELD WORK PERFORMED

PHASE I: TOP OF L-30 LEVEE LANDSIDE CORE BORINGS / WELL INSTALLATION

The landside well drilling phase of work on this project consisted of performing numerous tasks along the top of the L-30 Levee in designated test locations.

Boreholes were located utilizing the x-y coordinates as furnished by the Jacksonville District of the U.S. Army Corps of Engineers and converted by Corpscon to latitude/longitude for GPS location.

Three (3) borings were designated to be located along the top of the levee in the center of the roadway.

In each of the locations the following tasks were performed:

- Large diameter (10") roller bit was used to drill through the levee to top of rock
- PVC (8") surface casing set to top of rock
- Wireline rock coring was commenced with a five foot 4" x 5 ½" core barrel to the base of the rock formation with fresh water
- Boreholes were reamed with a seven and one-half inch (7.5") bit
- Boreholes developed for a period of three (3) hours with compressed air
- U.S. Geological Survey was notified of field progress
- Boreholes were allowed to remain for a minimum of 72 hours
- Borehole logging was performed by U.S.G.S.
- After approximately 7 days, drillcrew returned to perform continuous splitspoon sampling for an additional 30 feet
- Boreholes were backfilled with gravel and crushed limestone

The rig used on this project was a CME-55 four (4) wheel drive truck mounted hydraulic drill unit equipped with a standard manual 140 lb. splitspoon drive hammer and a Moyno reciprocating cavity unit pump.

Groundwater monitoring wells were installed approximately 10 ft. from each of the large diameter boreholes along the backside (south-canal)) top of levee. The construction consisted of two (2) inch diameter schedule 40 Johnson threaded joint "Tri-Lock" PVC installed with two (2) feet of 0.060" slotted screen.

Pea gravel backfill was used to fill the annulus around the screen.

A seal of 3/8" bentonite pellets was placed above the pea gravel. The remaining borehole annulus was backfilled with crushed limestone and gravel to the surface.

Flush mount security covers were completed encased in a three (3) foot by three (3) foot concrete pad. Locking top caps were placed on the well pipe.

The base of the Fort Thompson Formation was noted for each of the borings and reported in the below table. Splitspoon sampling was conducted for thirty (30) feet in the Pinecrest Sands below the Ft. Thompson Formation.

The computed horizontal coordinates for each of the borings to Florida East – NAD 83 State Plane Coordinates and vertical elevations to NAVD 1988 are reported as follows:

BORING/WELL DRILLING TEST LOCATIONS

Boring/Well Number	NAD 1983 Florida East Northing	Easting	Elevation (Ft.)	Base of Ft. Thompson
CP06-L30PP-CB-0001	524279	826073	17.27	- 57.7
CP06-L30PP-CB-0002	522044	823753	17.49	- 62.5
CP06-L30PP-CB-0003	519743	821358	17.19	- 57.1
			Top of Casing	
CP06-L30PP-MW-0001	524270	826074	17.12	
CP06-L30PP-MW-0002	522036	823753	17.10	
CP06-L30PP-MW-0003	519734	821356	16.87	

PHASE II:
WATER CONSERVATION AREA 3B FRESHWATER WETLAND WELLS

Two (2) locations in the WCA3B were designated for monitoring wells and platforms to be constructed

(4)

Each site was drilled to termination depth with an amphibious track mounted drill setup. The wells were constructed and developed in the same manner as described above for the upland L-30 levee.

Surface casing consisted of installing six (6) inch schedule 80 PVC casing around the well and strapped to a four legged 2" galvanized steel pipe platform with a 48" treated wooden work deck.

WELL DRILLING TEST LOCATIONS

Boring/Well Number	NAD 1983 Florida East Northing	Easting	Top Of Casing
CP06-L30PP-MW-0004	526589	821601	12.00
CP06-L30PP-MW-0005	528482	824038	13.55

WELL DEVELOPMENT

The large diameter seven and one-half (7.5) inch boreholes were developed by insertion of tremmie pipe to the base of the reamed boreholes and using compressed air as supplied by a portable 185 CFM compressor to lift and blow out water and debris from boreholes. Each was developed for a period of a minimum of three (3) hours as the well was noted to produce "clear water".

Air bubbles were noted to be present rising to the surface waters on both sides of the levee for a distance of up to 105 feet from the well for a period of time of at least 20 minutes following development.

Each of the two (2) inch permanent groundwater monitoring wells was developed by pumping and surging until "clear" water was produced.

As per project specifications, an inventory of core boxes as prepared in the gINT format was submitted to Mrs. Karen Pitchford. The samples were placed in labeled wooden core boxes and delivered to the Corps of Engineer Warehouse on Talleyrand Avenue in Jacksonville, Florida on November 8, 2006. The core boxes were verified received by Mr. Mark Whitson and Dr. June Mirecki of the U.S. Army Corps of Engineers.

REPORT SUBMITTALS

The field boring logs, visual classifications and test results were all entered into the Geotechnical Integrator (gINT) software format as designed by the Jacksonville District which is presented as part of this report.

Digital project photographs were taken throughout the duration of the field work to document progress. Some the photographs are found attached as part of this report to include completed well installations.

Monitoring well construction diagrams are completed for each well.

FIELD EXPLORATION SUMMARY CONCLUSION

Coordination of field activities was conducted with Mr. Keith Price, Miami Field Office of the South Florida Water Management District during the term of this project.

During the field work on this project, coordination and updates were provided to Mr. Kevin Cunningham of the U.S. Geological Survey and U.S. Army Corps of Engineers Project Geologist Dr. June Mirecki of the Jacksonville District.

A special work permit was secured by Challenge Engineering Testing, Inc, through the Florida Fish and Wildlife Conservation Commission to work in the area due to excessive high water and public usage restrictions.

Challenge Engineering & Testing, Inc. has made every attempt to conduct this field project according to the project specifications and at the direction & satisfaction of all parties involved.

REPORT INVESTIGATION LIMITATIONS

The core borings, installation of the groundwater monitoring wells, analyses and recommendations submitted in this preliminary report are based on the data obtained from the field explorations performed at the locations depicted on the site plan. These locations were chosen by the U.S. Army Corps of Engineers, Jacksonville District. The area explored is limited to the depth and diameter of the core borings. This report does not reflect any variations which may occur adjacent to or between the core borings. The nature and extent of the variations between the borings may not become evident until during future excavations or construction in the area.

This report is based on relatively shallow explorations and a scope of work determined solely by the Corps of Engineers. This report does not include an evaluation of the environmental (ecological or hazardous/toxic material related) condition of the site and subsurface.

This report has been prepared for the exclusive use of the U.S. Army Corps of Engineers in accordance with generally accepted soil and foundation engineering practices.

It has been our pleasure for Challenge Engineering & Testing, Inc. to provide the U.S. Army Corps of Engineers – Jacksonville District our geotechnical engineering testing services on this project along the L-30 Levee & in the Water Conservation Area 3B.

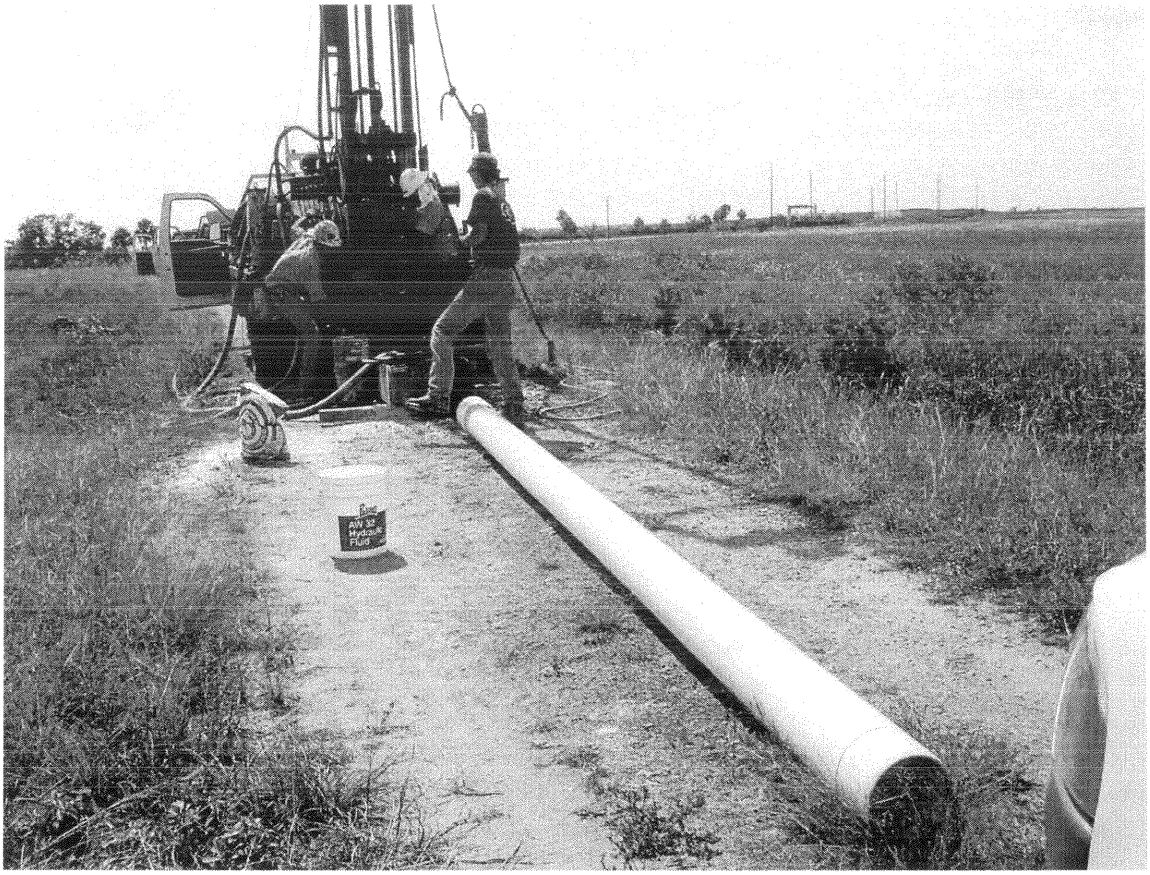
I trust that you will find this submittal to be in general conformance with the project guidelines and specifications.

Respectfully Submitted,
Challenge Engineering & Testing, Inc.

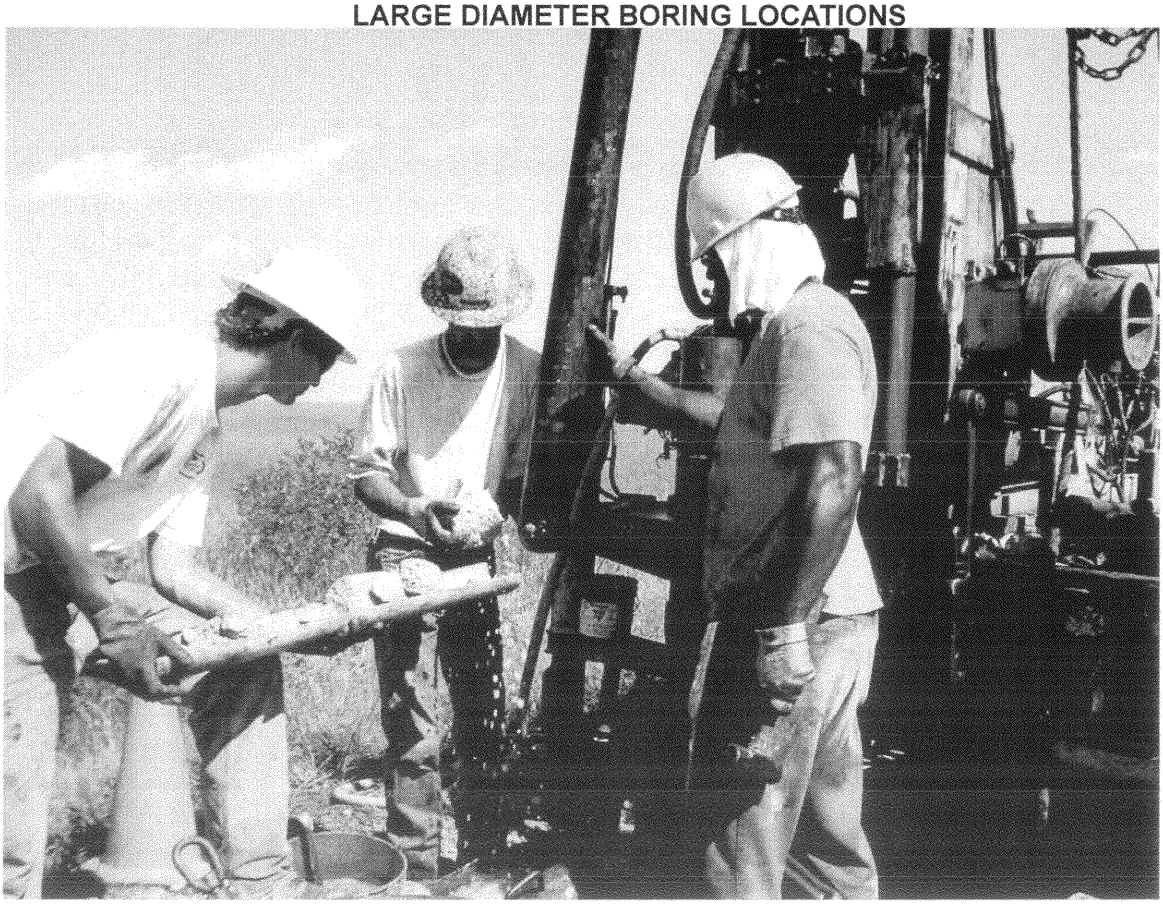
V. J. Thompson III, P.E.
Florida Registration # 37610

(7)

REFERENCE PROJECT PHOTOGRAPHS



8" SURFACE PVC CASING WAS SET AT EACH OF THE LARGE DIAMETER BORING LOCATIONS



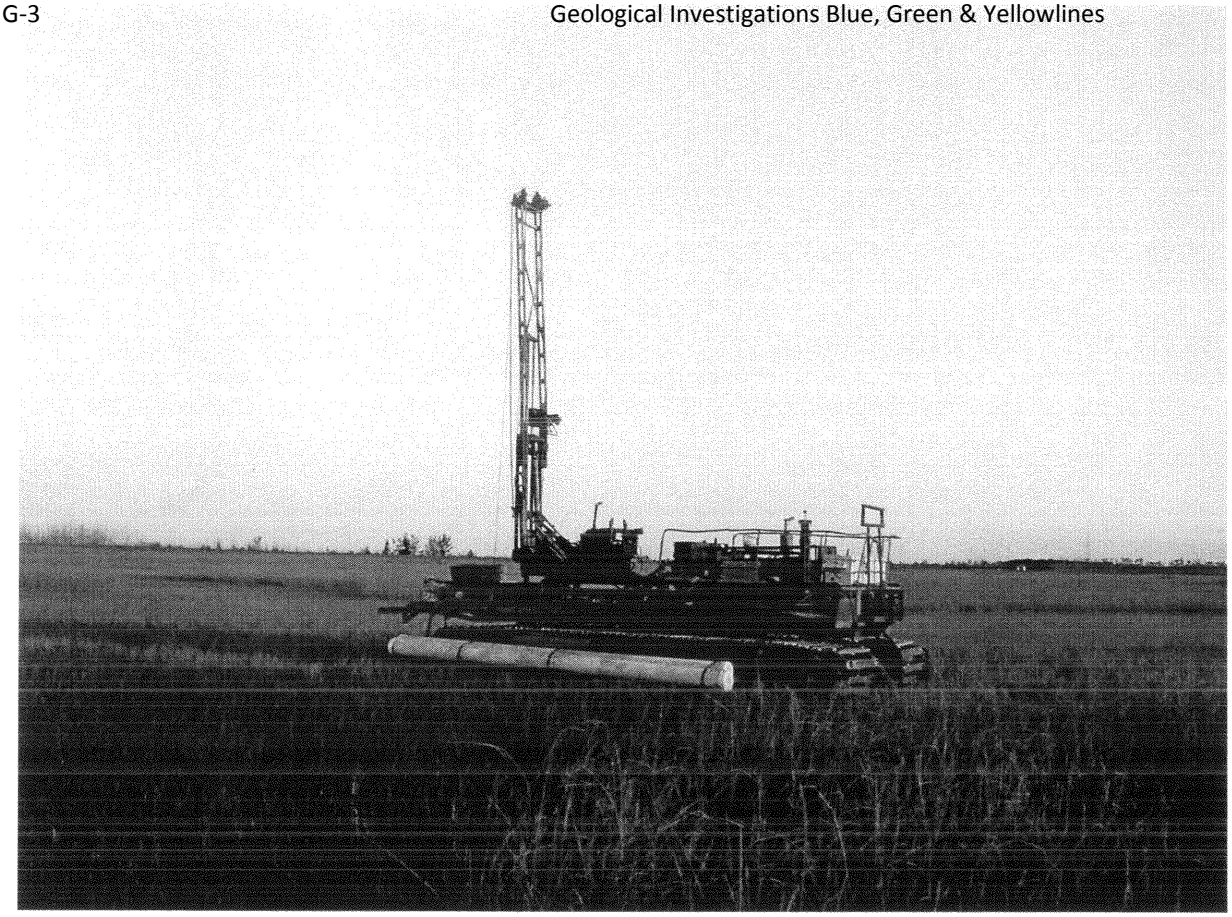
4" WIRELINE CORING SYSTEM USED TO SAMPLE TO ROCK

7.5" OPEN BOREHOLES BEING AIR LIFTED WITH COMPRESSOR FOR 3 HOURS EACH PRIOR TO BEING LOGGED BY THE U.S.G.S.

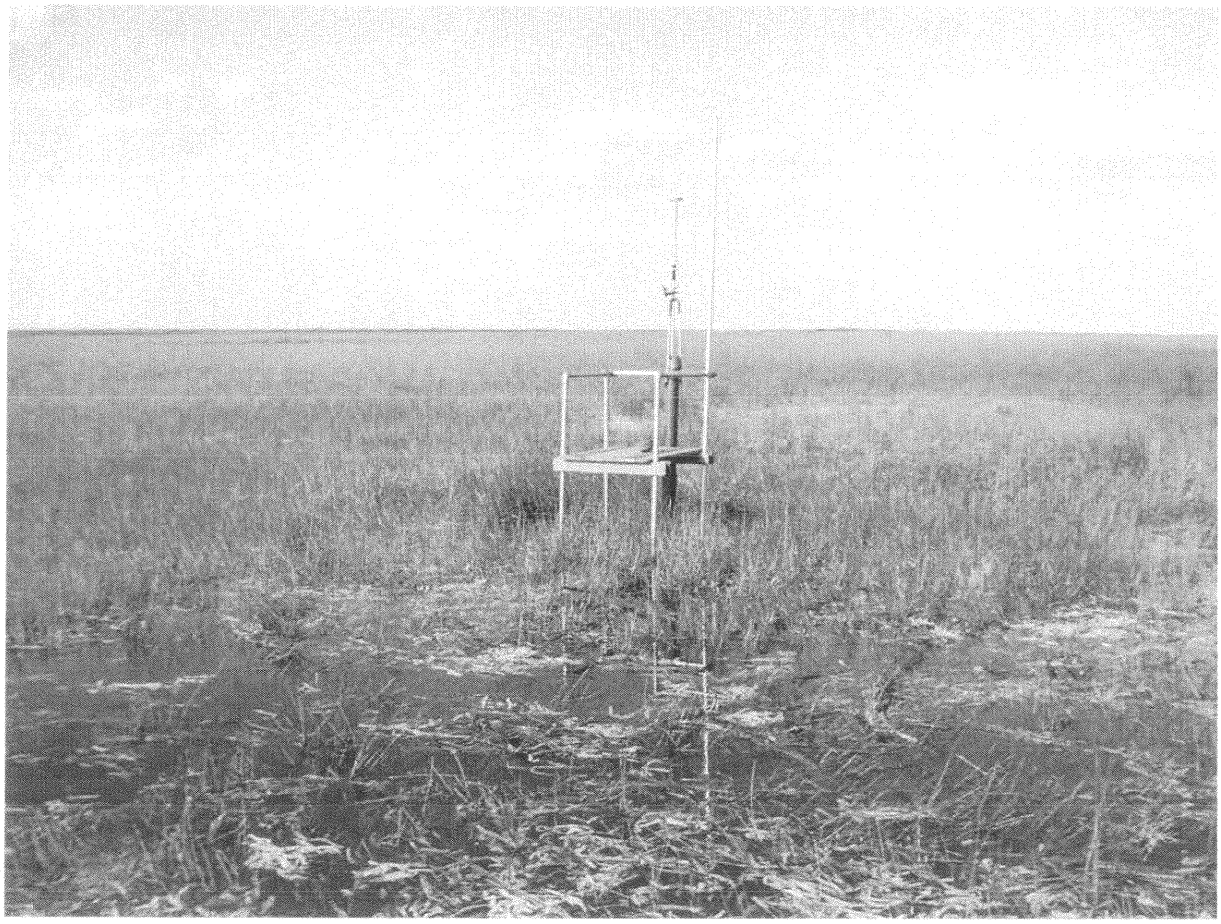
AIR BUBBLES WERE NOTED TO BE PRESENT ON BOTH SIDES OF THE LEVEE UP TO 105 FT. FROM BOREHOLES 10 MINUTES AFTER COMPRESSOR SHUTDOWN

FLUSH MOUNT MONITORING WELL PADS CONSTRUCTED ON TOP OF L-30.
GPS POSITIONING CONDUCTED ON WELL CASING

COMPLETED FLUSH MOUNT WELL PAD ON SOUTHSIDE OF L-30
WITH BOLTDOWN MANHOLE COVER

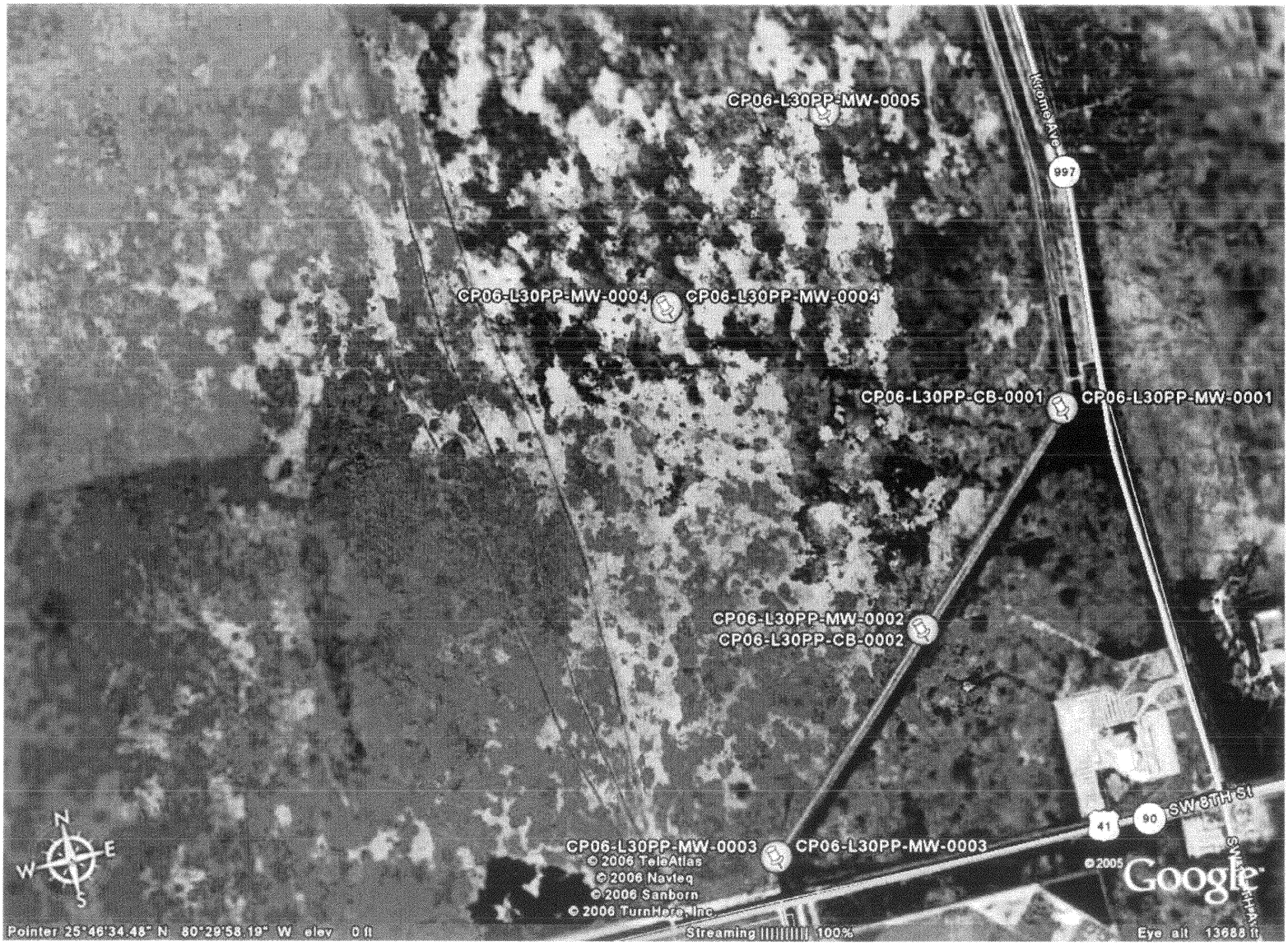


ATV SWAMP MOUNTED DRILL BUGGY ON-SITE



MONITORING WELL PLATFORM

BORING LOCATION MAP



LOCATION OF CORE BORINGS AND MONITORING WELLS
L-30 SEEPAGE MANAGEMENT PILOT PROJECT
DADE COUNTY, FLORIDA

SOILS TEST CORE BORING NUMBER "CP06-L30PP-CB-0001"

Miami-Dade County, Florida

Boring Designation CP06-L30PP-CB-0001

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 6 SHEETS

1. PROJECT L-30 Seepage Management Pilot Project Top Of Levee L-30 (Center of Roadway)	9. SIZE AND TYPE OF BIT See Remarks
	10. COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.) / HORIZONTAL NAD83 / VERTICAL NAVD88
2. BORING DESIGNATION CP06-L30PP-CB-0001 / LOCATION COORDINATES X = 826,073 Y = 524,279	11. MANUFACTURER'S DESIGNATION OF DRILL CME 55 Truckrig ☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY Challenge Engineering & Testing, Inc. / CONTRACTOR FILE NO. 2006D30	12. TOTAL SAMPLES DISTURBED 33 / UNDISTURBED (UD) 0
4. NAME OF DRILLER Adam Benson	13. TOTAL NUMBER CORE BOXES 5
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED / DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER 5.0 Ft.
	15. DATE BORING STARTED 10-04-06 / COMPLETED 10-17-06
6. THICKNESS OF OVERBURDEN N/A	16. ELEVATION TOP OF BORING 17.3 Ft.
7. DEPTH DRILLED INTO ROCK N/A	17. TOTAL RECOVERY FOR BORING 79 %
8. TOTAL DEPTH OF BORING 105.0 Ft.	18. SIGNATURE AND TITLE OF INSPECTOR Bob Momberger, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
17.3	0.0						17.3		
			L-30 Levee Fill Material				Advanced Boring w/ tricone roller bit		

0
5
10
15

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JUN 02

(Continued)

Boring Designation CP06-L30PP-CB-0001

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 6 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 826,073 Y = 524,279	ELEVATION TOP OF BORING: 17.3 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-0.2	17.5						Advanced Boring w/ tricone roller bit -0.2		
		Moderately Weathered	LIMESTONE, oolitic, fossiliferous, moderately hard, moderately weathered, aphanitic, pitted, Ft. Thompson Formation, 5Y 8/2 pale yellow	80	1	RQD 0	4 x 5-1/2" Diamond Impregnated Bit DT = 1 mins HP = 250 psi DFR = 25 % -2.7		
		Weathered	From El. -2.7 to -11.2 Ft., weathered, thick bedding, vuggy	80	2 BOX 1	RQD 25	4 x 5-1/2" Diamond Impregnated Bit DT = 7 mins HP = 250 psi DFR = 25 % -7.7		
		Weathered	From El. -11.2 to -12.7 Ft., soft, 5Y 8/1 white	80	3	RQD 30	4 x 5-1/2" Diamond Impregnated Bit DT = 7 mins HP = 250 psi DFR = 0 % -12.7		
		Slightly Weathered	From El. -12.7 to -17.7 Ft., moderately hard, slightly weathered, thick bedding, vuggy, 5Y 8/2 pale yellow	100	4 BOX 2	RQD 80	4 x 5-1/2" Diamond Impregnated Bit DT = 4 mins HP = 250 psi DFR = 0 % -17.7		

15 20 25 30 35

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JUN 02

Boring Designation CP06-L30PP-CB-0001

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District		SHEET 3 OF 6 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83	VERTICAL: NAVD88
LOCATION COORDINATES: X = 826,073 Y = 524,279	ELEVATION TOP OF BORING: 17.3 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
		Unweathered	From El. -17.7 to -31.7 Ft., unweathered, aphanitic, massive bedding, vuggy, sand filled vugs, 5Y 8/1 white	90	5 BOX 2	RQD 70	4 x 5-1/2" Diamond Impregnated Bit DT = 3 mins HP = 250 psi DFR = 0 %		
			-22.7						
			At El. -22.7 Ft., 2.5Y 8/1 white	100	6	RQD 100	4 x 5-1/2" Diamond Impregnated Bit DT = 3 mins HP = 250 psi DFR = 0 %		
			-27.7						
			From El. -31.7 to -32.7 Ft., fossiliferous, soft, porous, 5Y 8/1 white	65	7 BOX 3	RQD 43	4 x 5-1/2" Diamond Impregnated Bit DT = 3 mins HP = 250 psi DFR = 0 %		
			-32.7						
			From El. -32.7 to -37.7 Ft., moderately hard, thin bedding, vuggy	50	8	RQD 20	4 x 5-1/2" Diamond Impregnated Bit DT = 5 mins HP = 250 psi DFR = 0 %		
			-37.7						

35 40 45 50 55

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JUN 02

Boring Designation CP06-L30PP-CB-0001

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 4 OF 6 SHEETS
PROJECT L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83 / VERTICAL NAVD88
LOCATION COORDINATES X = 826,073 Y = 524,279	ELEVATION TOP OF BORING 17.3 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
		Unweathered	From El. -37.7 to -47.7 Ft., medium bedding, vuggy, 2.5Y 8/1 white	50	BOX 3 / 9	RQD 20	4 x 5-1/2" Diamond Impregnated Bit DT = 4 mins HP = 250 psi DFR = 0 %		
				100	BOX 4	RQD 55	4 x 5-1/2" Diamond Impregnated Bit DT = 4 mins HP = 250 psi DFR = 0 %		
			From El. -47.7 to -52.7 Ft., thick bedding, vuggy, clay filled vugs, 2.5Y 7/1 light gray	100	11	RQD 90	4 x 5-1/2" Diamond Impregnated Bit DT = 4 mins HP = 250 psi DFR = 0 %		
			From El. -52.7 to -57.7 Ft., thin bedding, sand filled vugs	25	BOX 5 / 12	RQD 25	4 x 5-1/2" Diamond Impregnated Bit DT = 4 mins HP = 250 psi DFR = 0 %		
-57.7	75.0						-57.7		

Depth scale: 55, 60, 65, 70, 75

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JUN 02

Boring Designation CP06-L30PP-CB-0001

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 5 OF 6 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
L-30 Seepage Management Pilot Project	State Plane, FLE (U.S. Ft.)	NAD83	NAVD88

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 826,073 Y = 524,279	17.3 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-57.8	75.1		SAND, silty, mostly carbonate, Pinecrest Sand Formation (SM)	0	13	RQD 0	4 x 5-1/2" Diamond Impregnated Bit	WOH	
			SHELL, mostly angular coarse gravel-sized flat and elongated shell up to 1", some coarse gravel-sized limestone up to 1-1/2", strong reaction with HCl, wet, 10Y 8/1 light greenish gray	27	14		SPT Sampler -59.2	0 0	0
				27	15		SPT Sampler -60.7	3 1 1	2
				50	16		SPT Sampler -62.2	1 1 1	2
-62.2	79.5		SAND, silty, mostly fine-grained sand-sized quartz, some angular sand to gravel-sized shell up to 1/2", few silt, strong reaction with HCl, wet, 10G 4/1 dark greenish gray (SM)	80	17		SPT Sampler -63.7	2 1 2	3
			At El. -63.7 Ft., low plasticity, trace clay	97	18		SPT Sampler -65.2	3 2 3	5
			At El. -65.2 Ft., nonplastic, mostly fine-grained sand-sized quartz, some angular sand to gravel-sized shell up to 1/2", few silt, strong reaction with HCl, wet, 5Y 6/1 gray	93	19		SPT Sampler -66.7	8 5 8	13
				97	20		SPT Sampler -68.2	2 3 14	17
-69.7	87.0			97	21		SPT Sampler -69.7	17 19 16	35
			SHELL, mostly angular fine to coarse gravel-sized flat and elongated shell up to 1/2", few silt, strong reaction with HCl, wet, 5Y 8/1 white	97	22		SPT Sampler -71.2	14 12 12	24
				90	23		SPT Sampler -72.7	12 10 10	20
-74.2	91.5			97	24		SPT Sampler -74.2	18 23 33	56
			SHELL, mostly fine-grained sand-sized quartz, some angular fine to coarse gravel-sized shell up to 1/2", few silt, strong reaction with HCl, wet, 5Y 8/1 white	97	25		SPT Sampler -75.7	16 18 29	47
			At El. -75.7 Ft., weak cementation	90	26		SPT Sampler -77.2	12 14 15	29
-77.7	95.0			97	27		SPT Sampler	22	

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JUN 02

Boring Designation CP06-L30PP-CB-0001

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 6 OF 6 SHEETS
PROJECT: L-30 Seepage Management Pilot Project	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: NAVD88
LOCATION COORDINATES: X = 826,073 Y = 524,279	ELEVATION TOP OF BORING: 17.3 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			SHELL, mostly angular coarse gravel-sized flat and elongated shell up to 1-1/2", little fine-grained sand-sized quartz, strong reaction with HCl, wet, weak cementation, 5Y 6/1 gray	97	27		SPT Sampler -78.7	25 45	70
-80.2	97.5			97	28		SPT Sampler -80.2	29 9 9	18
			SAND, silty, mostly fine to coarse-grained sand-sized sandstone up to 1/2", little fine to medium-grained sand-sized shell up to 1/8", strong reaction with HCl, wet, weak cementation, 5Y 7/1 light gray (SM)	90	29		SPT Sampler -81.7	10 7 8	15
				90	30		SPT Sampler -83.2	7 11 10	21
			At El. -83.7 Ft., some fine to medium-grained sand-sized shell up to 1/2"	90	31		SPT Sampler -84.7	14 24 23	47
				90	32		SPT Sampler -86.2	15 6 5	11
-87.7	105.0			90	33		SPT Sampler -87.7	12 12 14	26

NOTES:

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

2. Set 17.5 Ft. of 8" Schedule 40 PVC Pipe Through Center of L-30 Levee To Top of Rock.

3. Boring Drilled/Sampled In Three Phases:
A. Set Surface Casing.
B. 4" Wireline Rock Coring To Base Of Rock.
C. Splitspoon Sampling 30 Ft. Below Base of Rock.

4. Borehole Reamed To 7.5" To Base of Rock. USGS Performed Borehole Logging.

5. 2" Monitoring Well Set @
X = 826074 Y= 524270

Screen From -42.1 to -44.1 Ft.

6. Cored to 80 Ft. To Confirm Out of Rock.

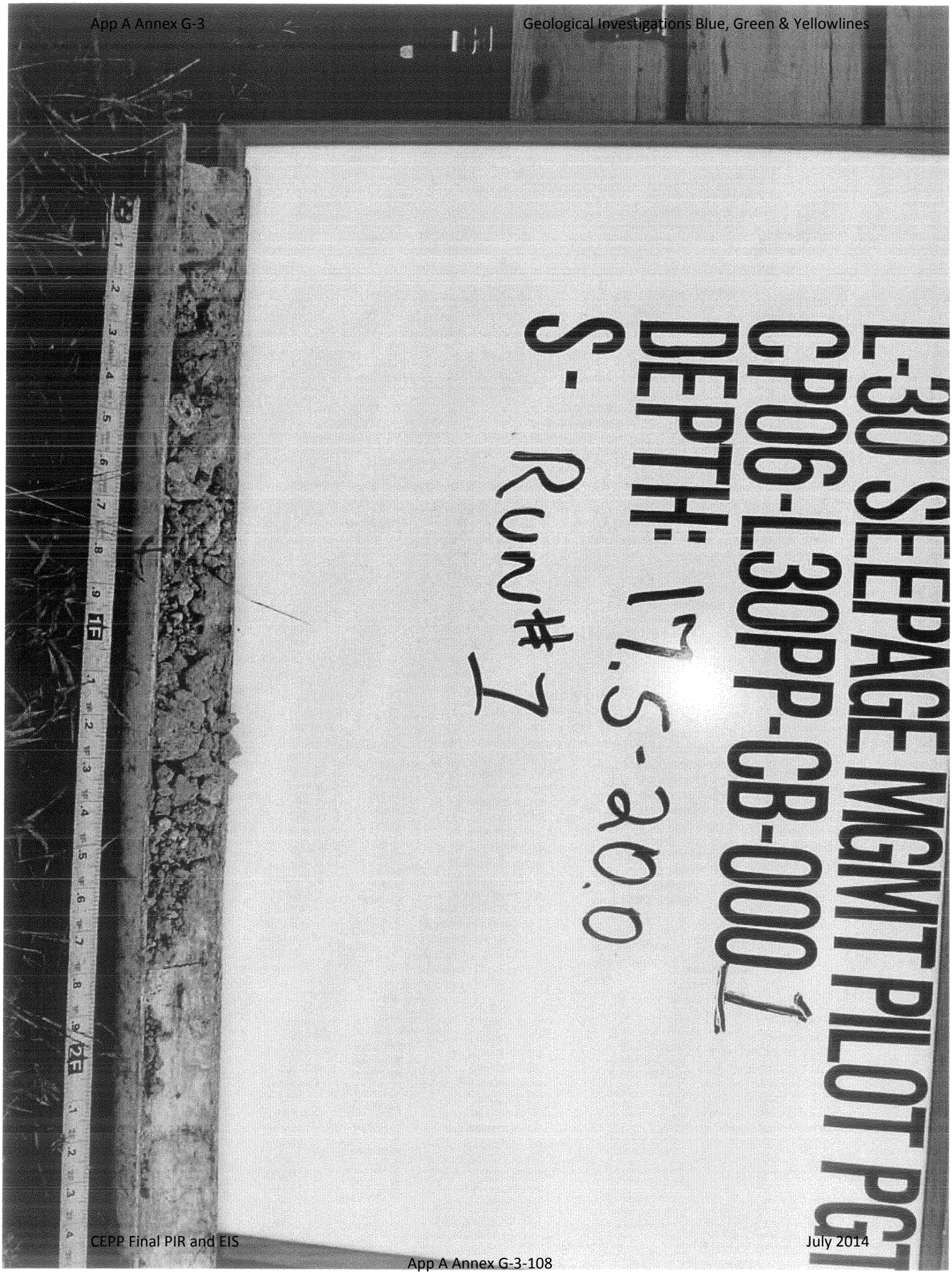
7. Boring sealed with available sediment.

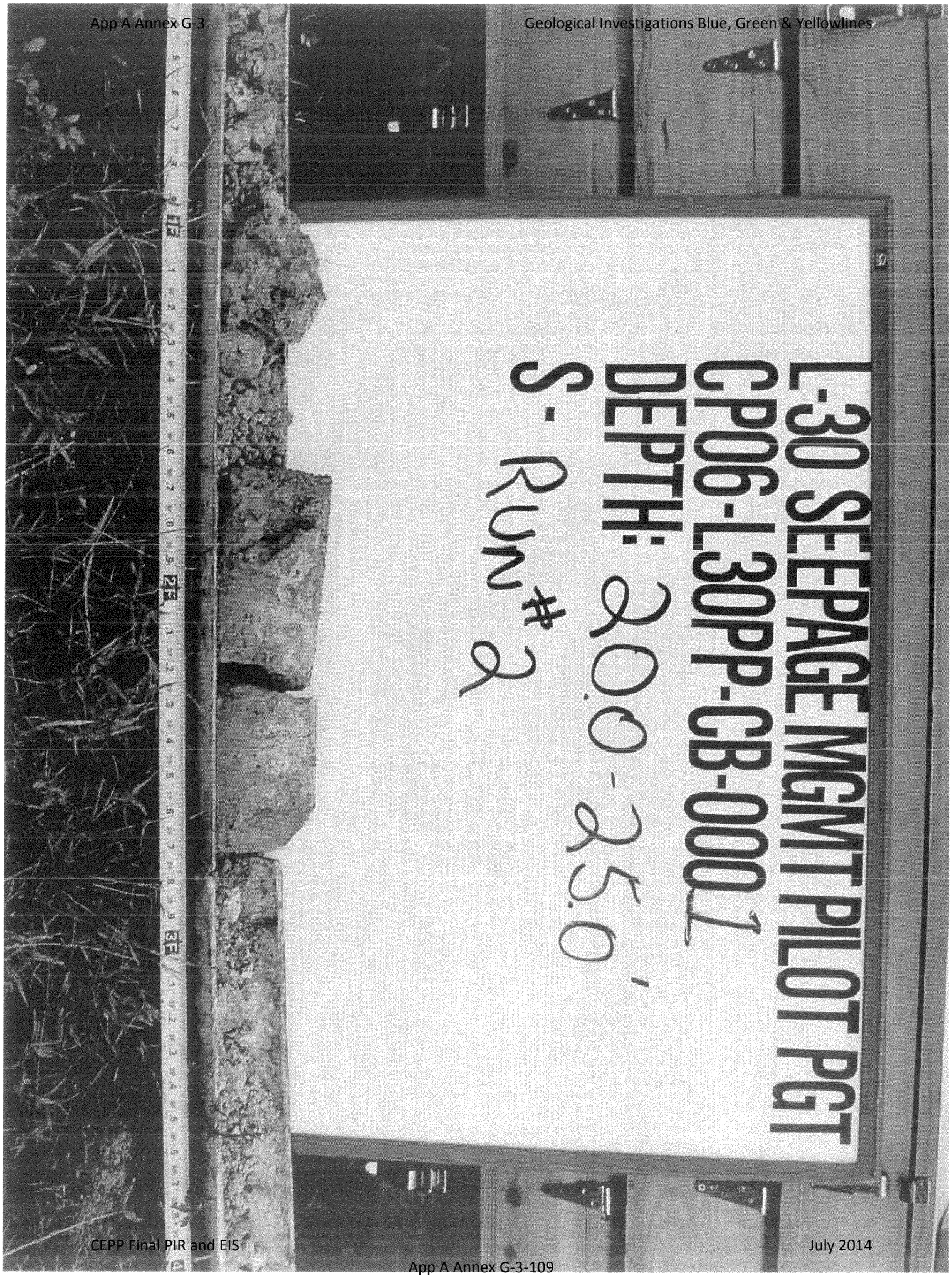
140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
WOH = Weight of Hammer.
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

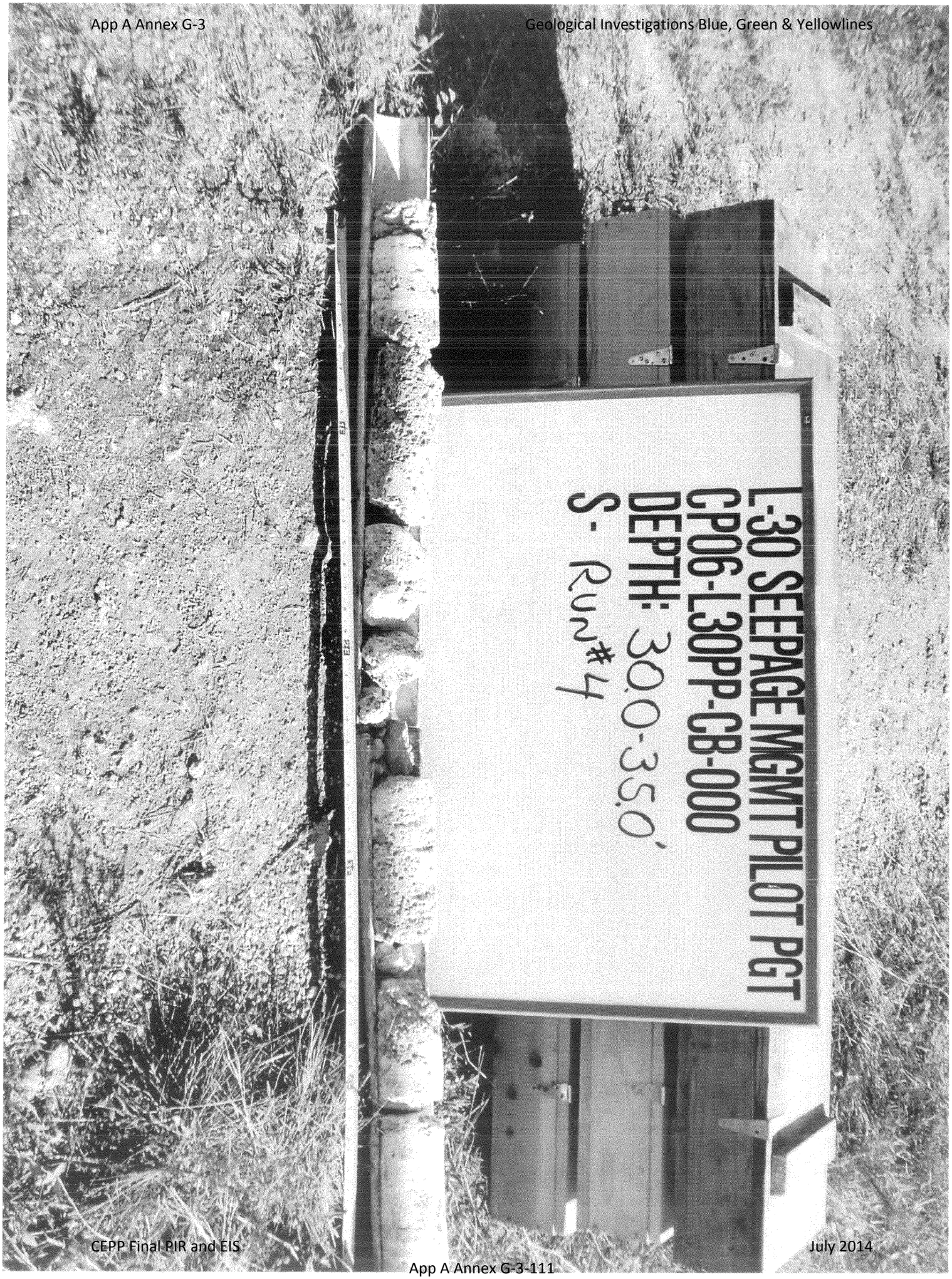
95 100 105 110 115

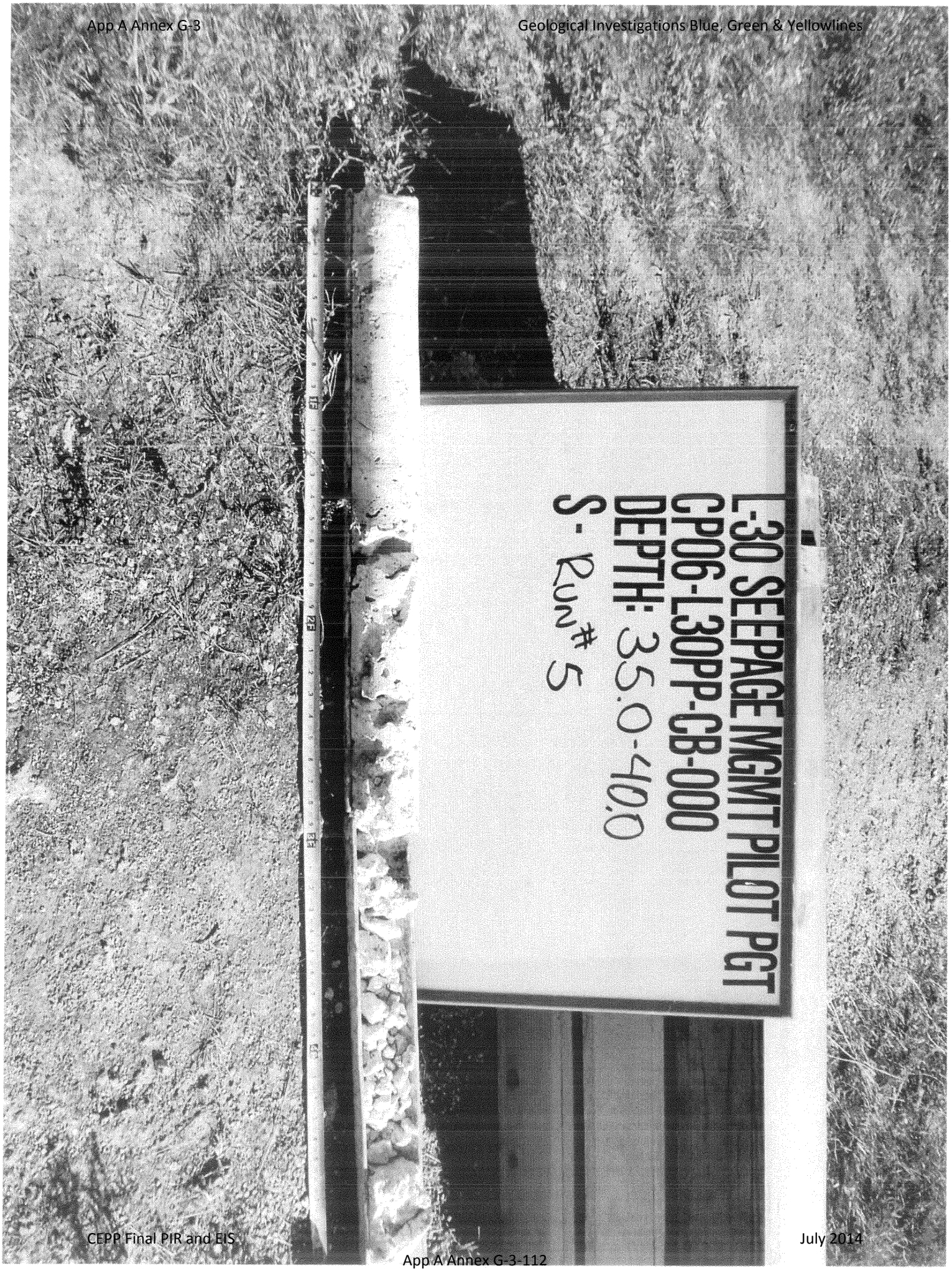
SAJ FORM 1836-A
JUN 02


L-30 SEEPAGE MGMT PILOT PGI
GP06-L30PP-GB-0007
DEPTH: 17.5-20.0
S- Run#7


L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-GB-0001
DEPTH: 200'-250'
S- RUN# 2

L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000
DEPTH: 250-300'
S. RUN #3


L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000
DEPTH: 300-350'
S- Run#4

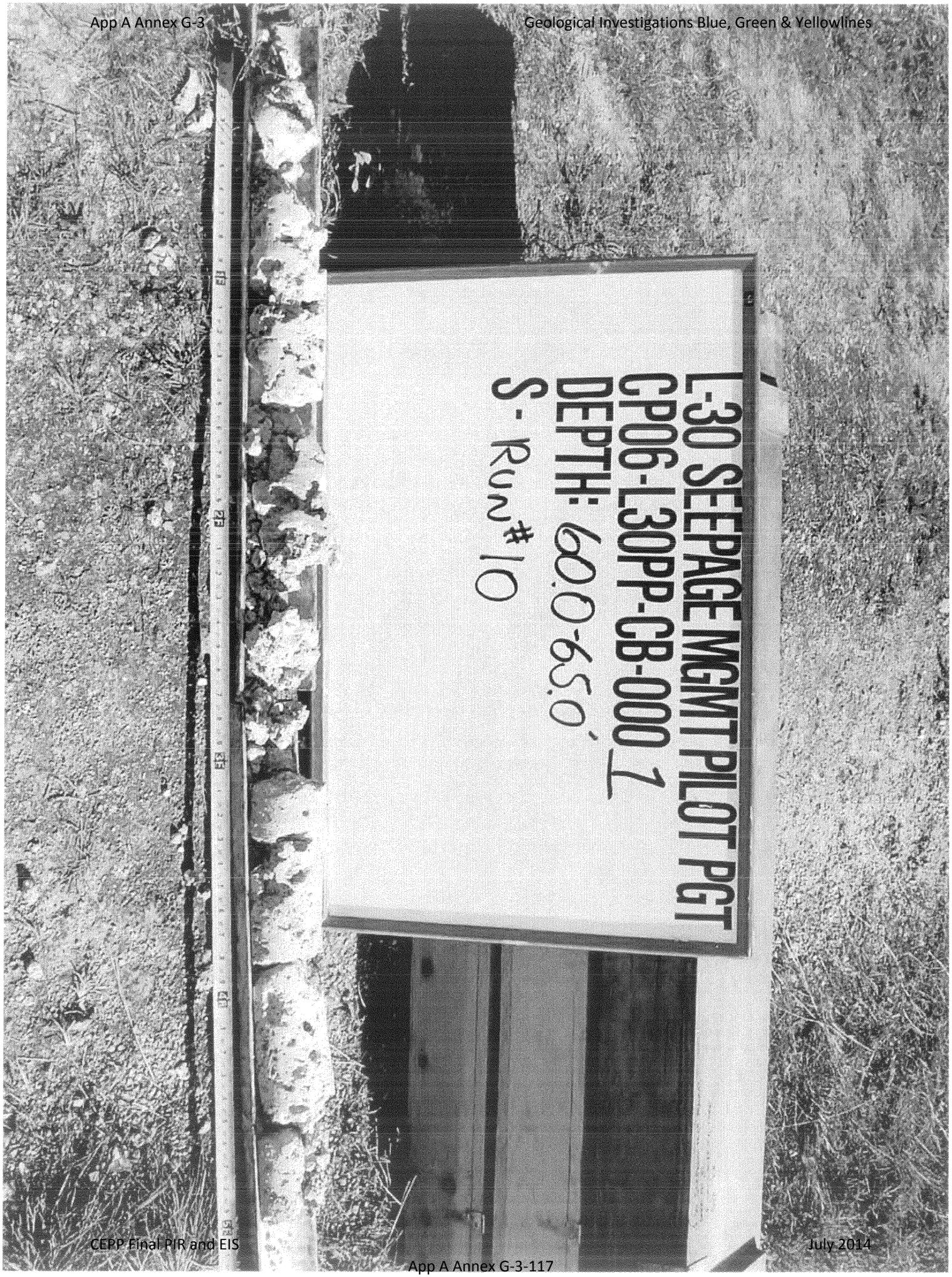

L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000
DEPTH: 35.0-40.0
S- Run# 5

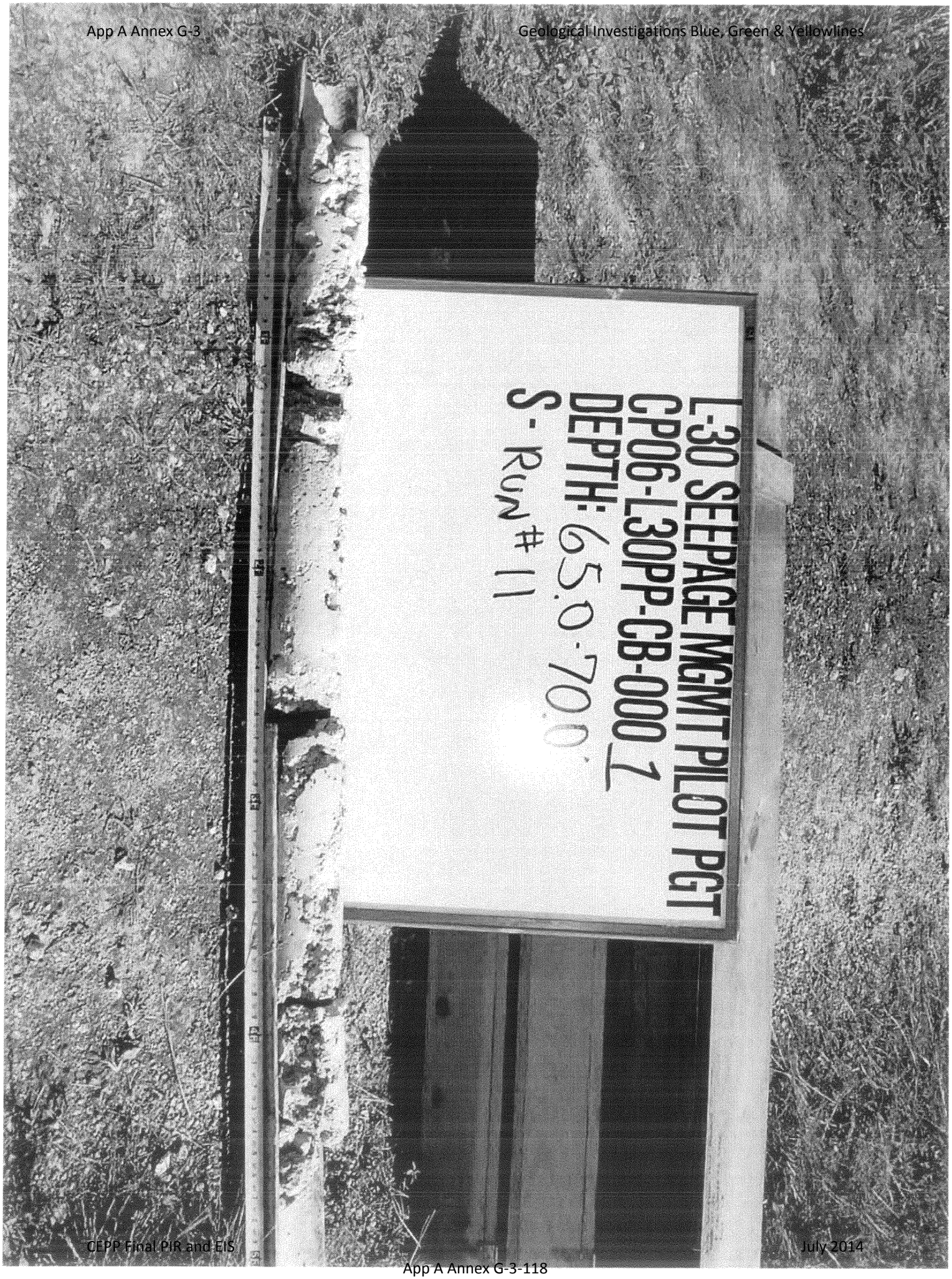
L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000
DEPTH: 40.0-45.0'
S-Run#6

L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000 1
DEPTH: 45.0-50.0'
S- Run# 7

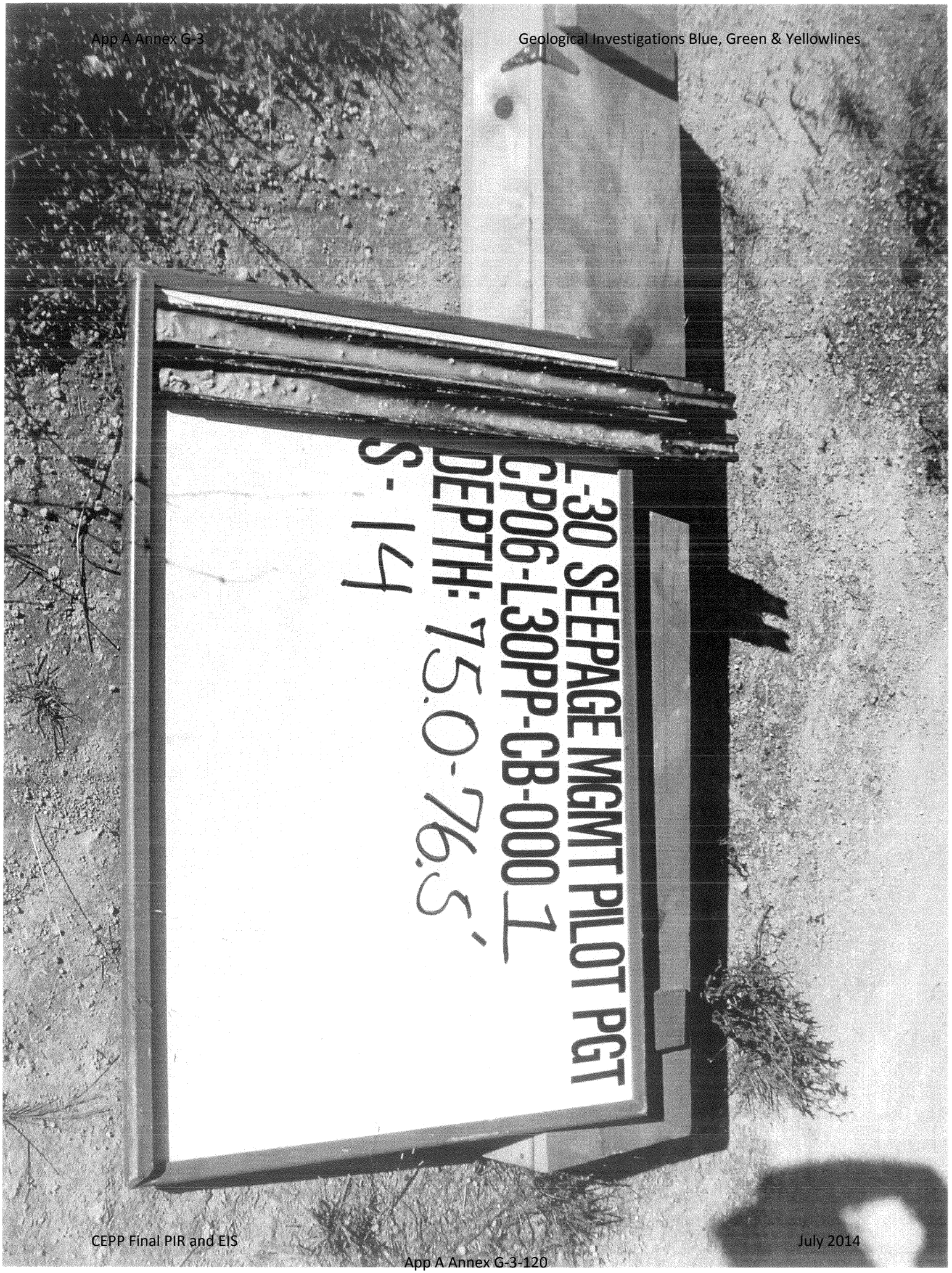
L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000 1
DEPTH: 50.0-55.0'
S- RUN# 8

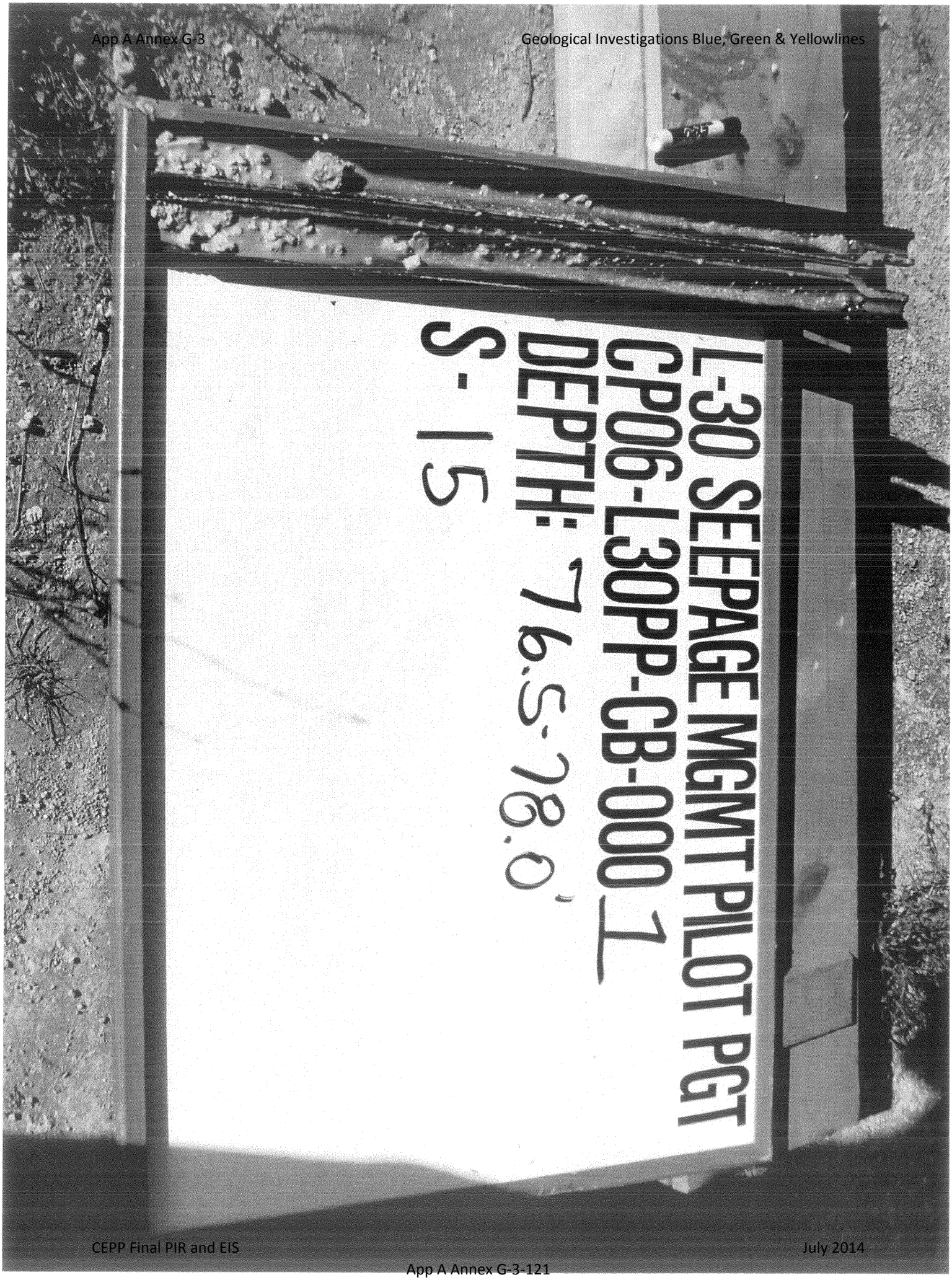
L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000
DEPTH: 55.0-60.0'
S- Run# 9

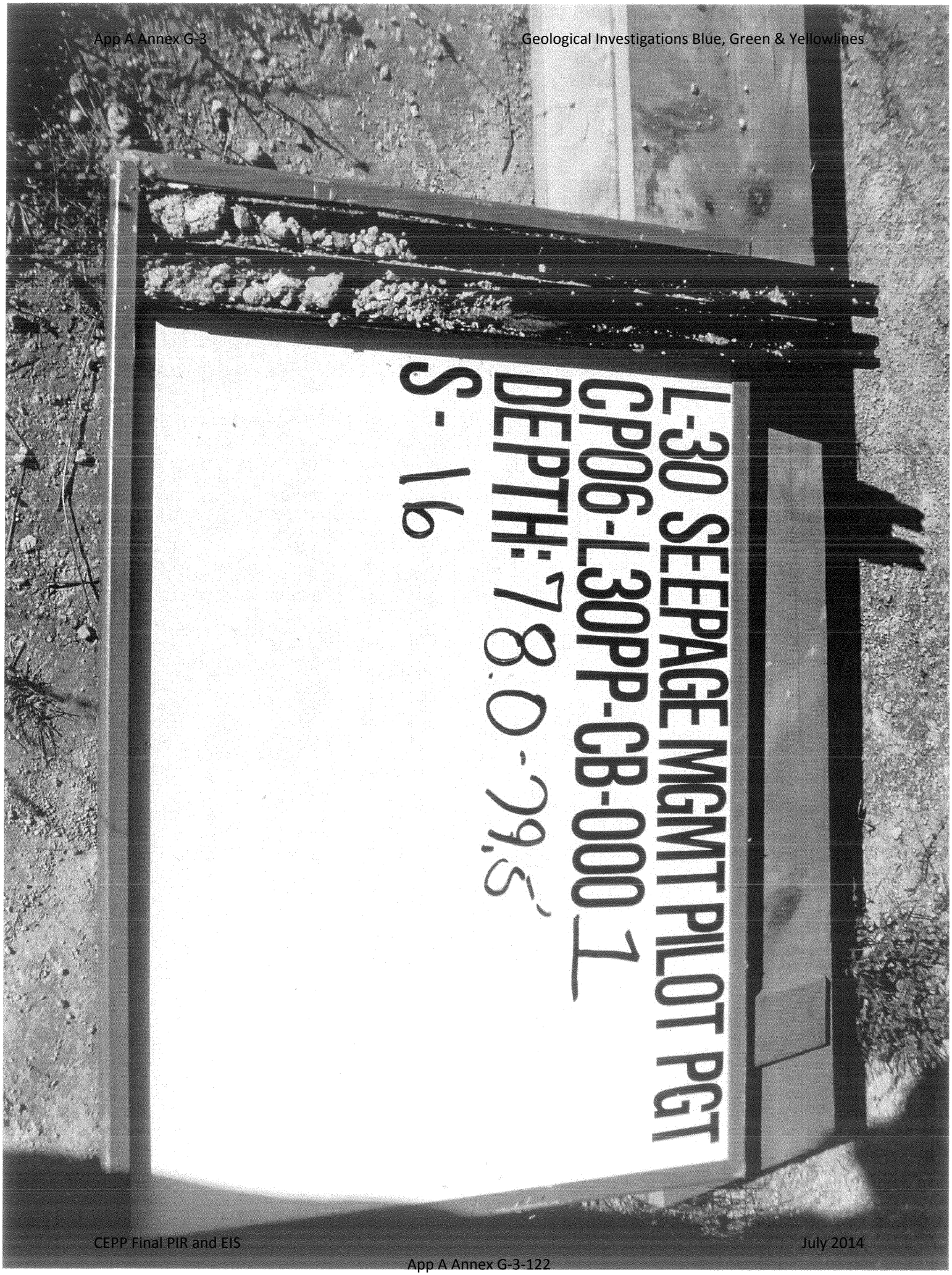

L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000 1
DEPTH: 60.0-65.0'
S- RUN# 10


L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000 1
DEPTH: 65.0-70.0'
S-RUN # 11

L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-0007
DEPTH: 70.0-75.0'
S- Run #12


L-30 SEEPAGE MGMT PILOT PGT
GP06-L30PP-CB-0001
DEPTH: 75.0-76.5'
S-14


L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000 1
DEPTH: 76.5-78.0'
S-15


L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000 1
DEPTH: 78.0-79.5'
S-16

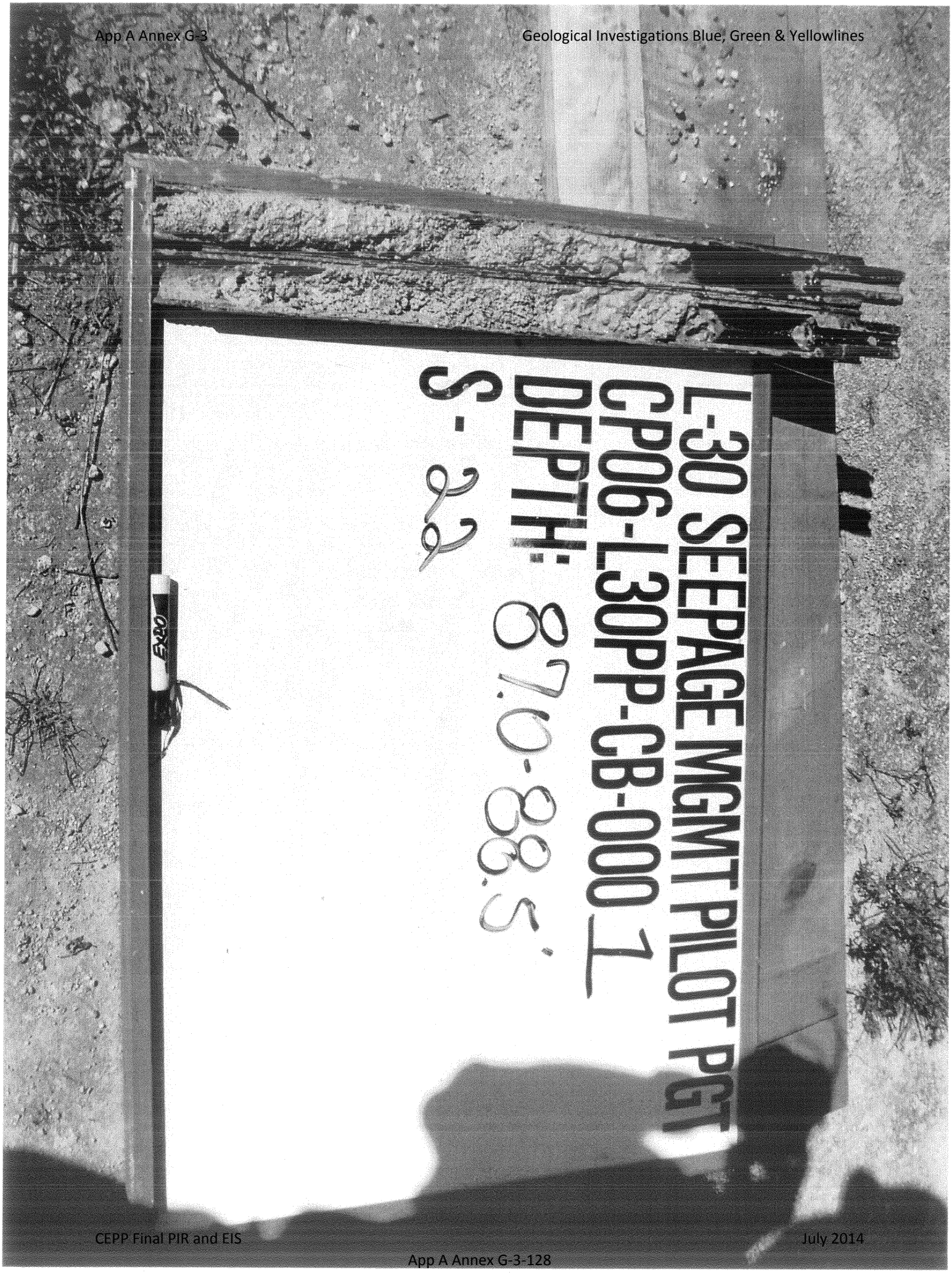
L-30 SEEPAGE MGMT PILOT PGT
GP06-L30PP-CB-000 1
DEPTH: 79.5-81.0'
S-17

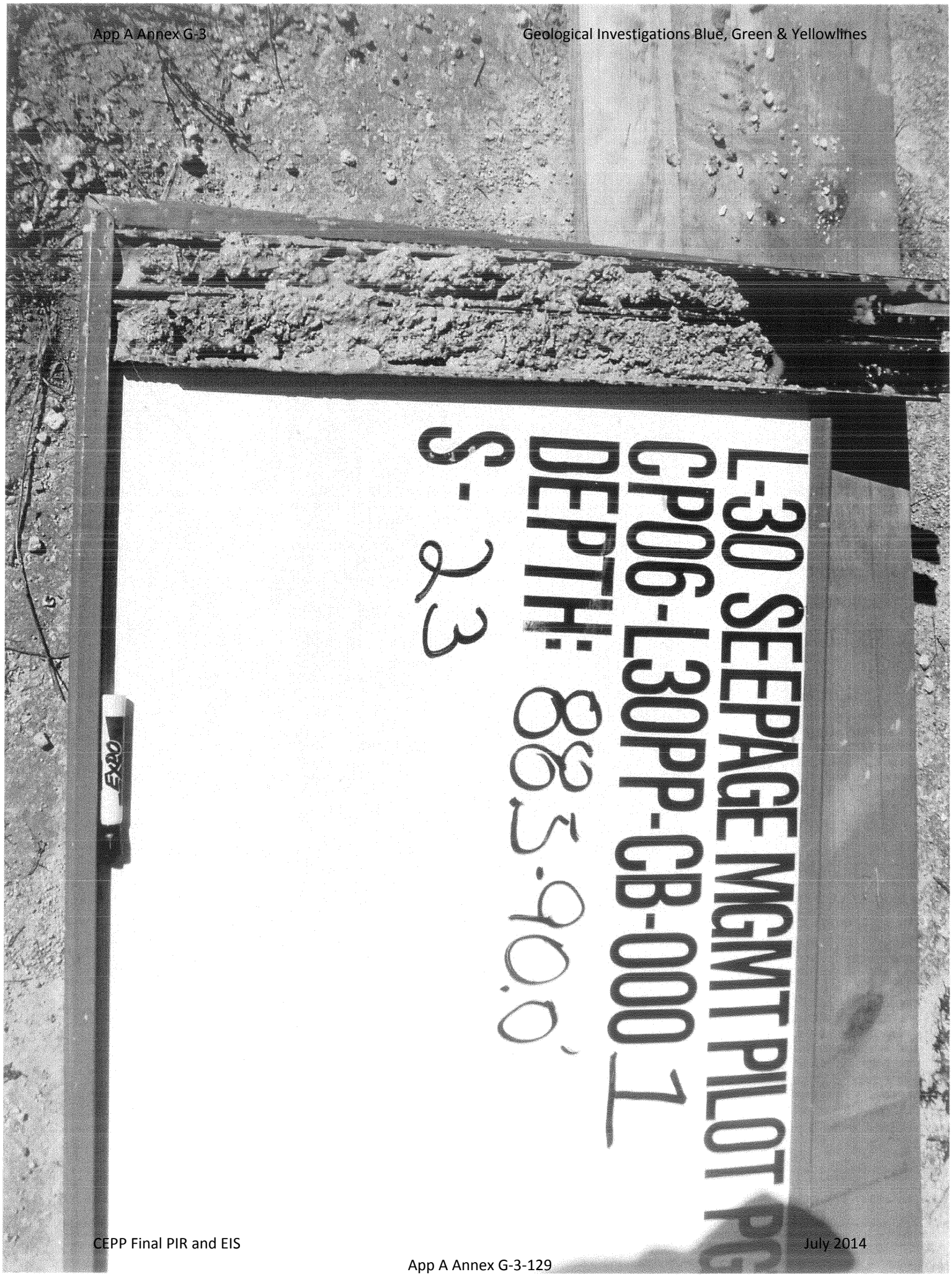
L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000 1
DEPTH: 81.0-82.5'
S- 18

L-30 SEEPAGE MGMT PILOT PGM
GP06-L30PP-CB-000 1
DEPTH: 82.5'-84.0'
S-19

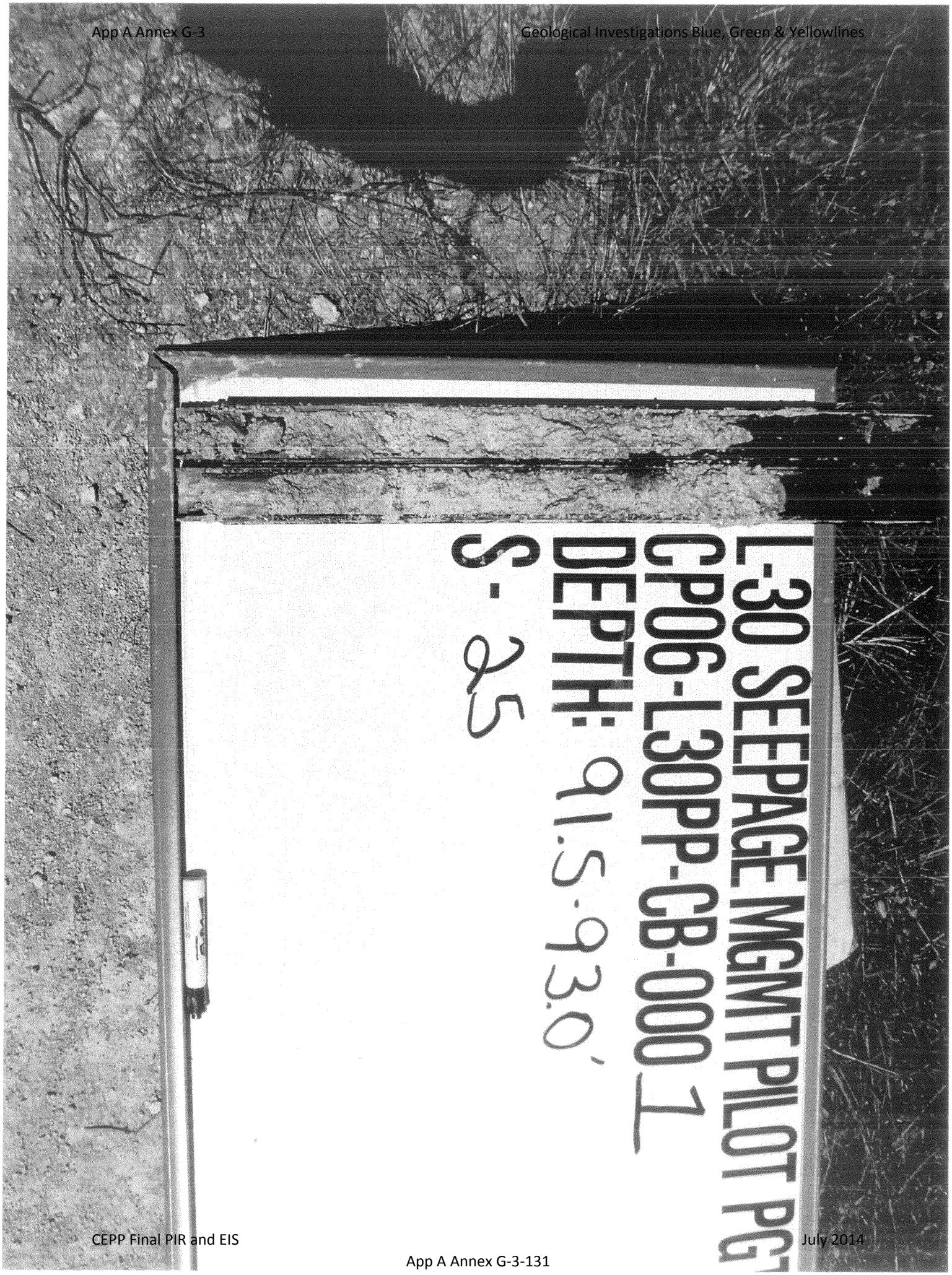
L-30 SEEPAGE MGMT PILOT PGE
CP06-L30PP-CB-000 1
DEPTH: 84.0-88.5
S-20

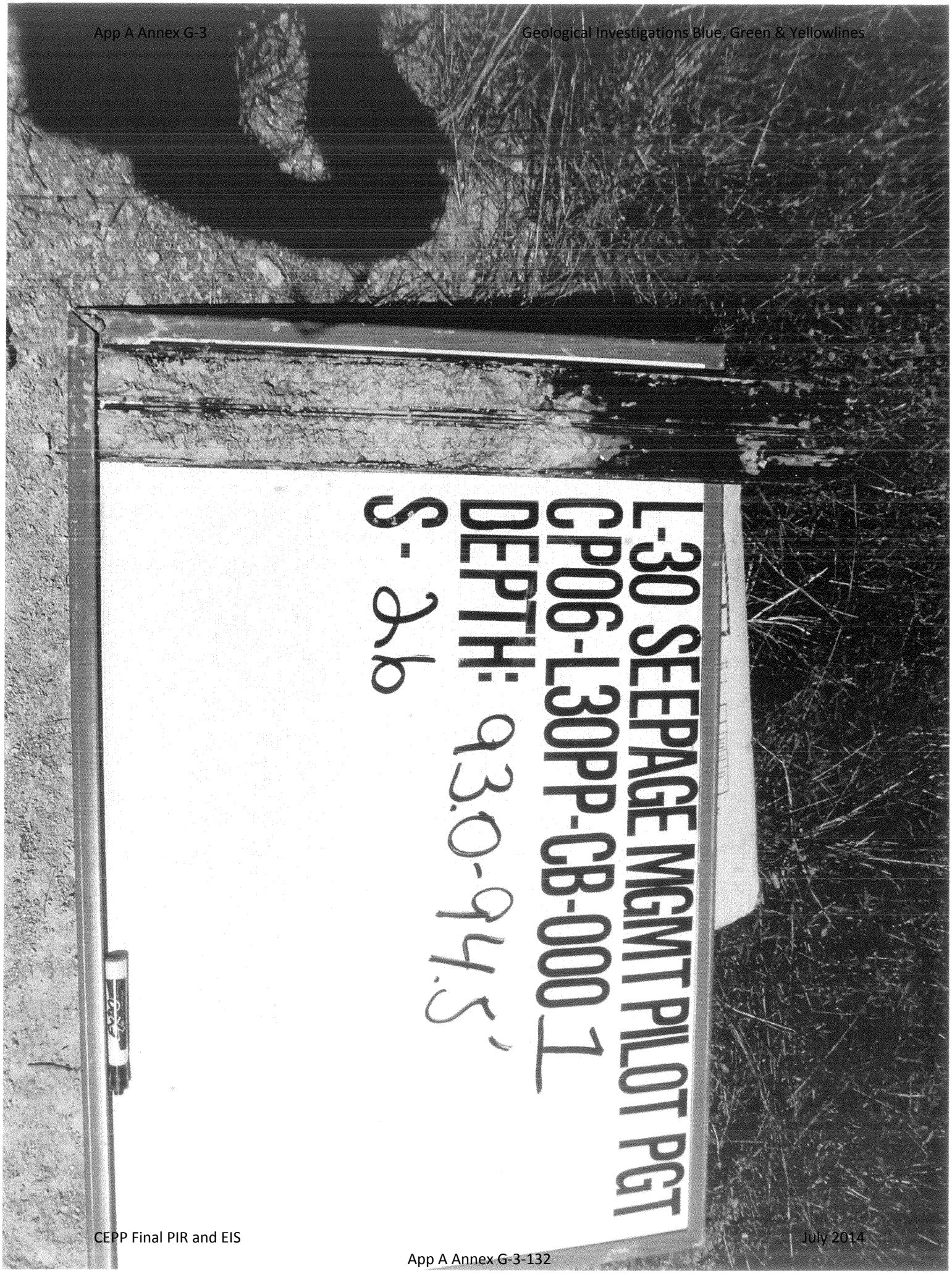
L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-000 1
DEPTH: 87.0-88.5
S-21


L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-0001
DEPTH: 870-883.5'
S-22

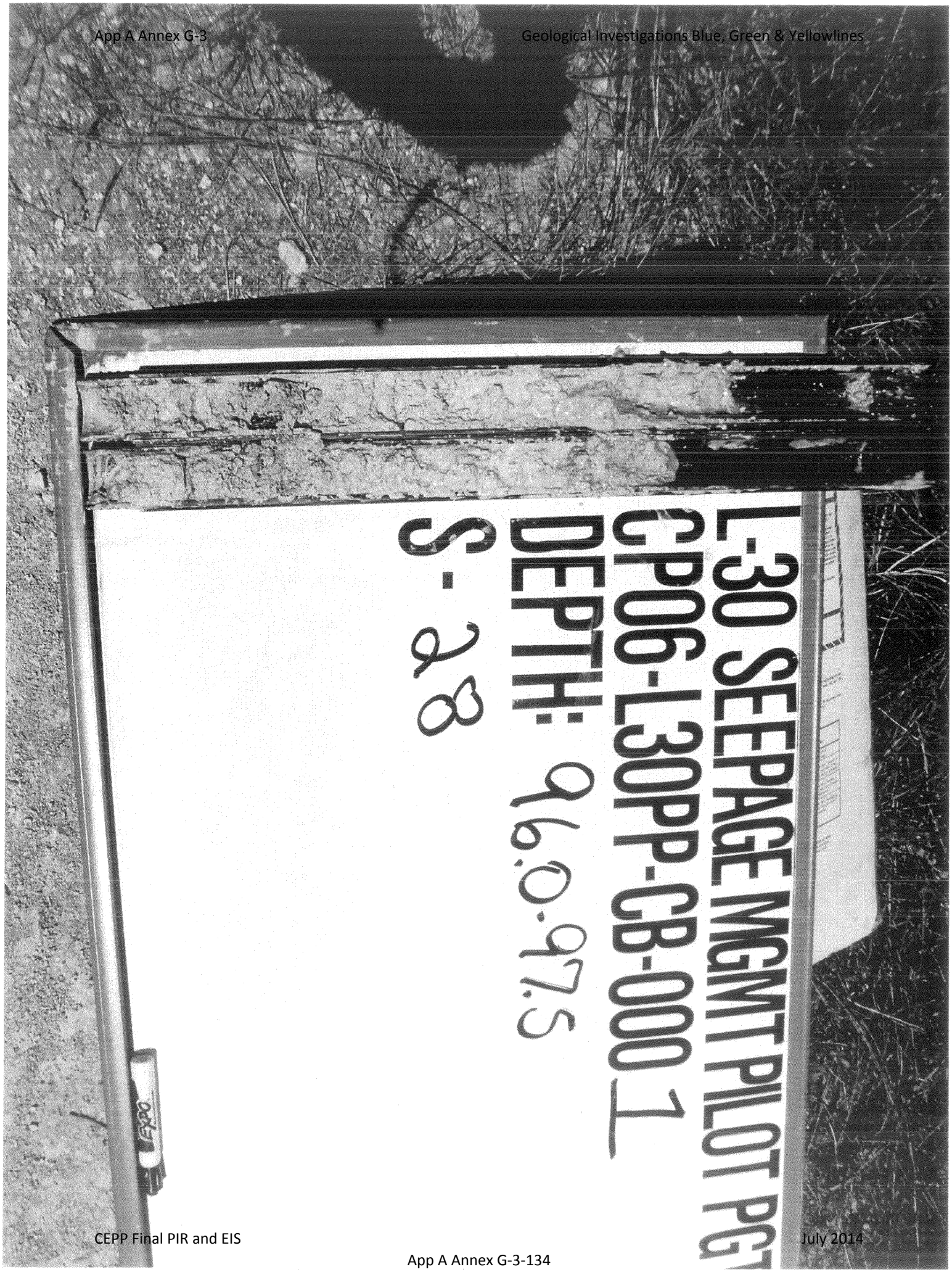

L-30 SEEPAGE MGMT PILOT PG
CP06-L30PP-CB-000 1
DEPTH: 885.90'
S-23

L-30 SEEPAGE MGMT PILOT PGT
GP06-L30PP-CB-0001
DEPTH: 90.0-91.5'
S-24


L-30 SEEPAGE MGMT PILOT PG
CP06-L30PP-CB-0001
DEPTH: 91.5-93.0'
S-25


L-30 SEEPAGE MGMT PILOT PGT
CP06-L30PP-CB-0001
DEPTH: 930-945'
S. 26

L-30 SEEPAGE MGMT PILOT PGT
GP06-L30PP-CB-000 1
DEPTH: 945.960'
S-37


L-30 SEEPAGE MGMT PILOT PG
GP06-L30PP-CB-000 1
DEPTH: 96.0-97.5
S. 28

L-30 SEEPAGE MGMT PILOT PGT
GP06-L30PP-CB-0001
DEPTH: 97.5-99.0'
S: 99

L-30 SEEPAGE MGMT PILOT PGT
GP06-L30PP-CB-0001
DEPTH: 99.0-100.5'
S-30