



Nobis Engineering
PO Box 2890
Concord, New Hampshire 03302

PROJECT

Remedial Design For Operable Unit 01

New Bedford Harbor Superfund Site

New Bedford, Massachusetts

BORING NO. FD-33

SHEET 1 of 7

FILE NO. 48138.07

CHKD. BY J. Trotter

Boring Co. Atlantic Testing Laboratories, Limited Boring Location northing 2696779.7 easting 814163.2
Driller A. Carter Mudline El. -4.4 Datum NGVD
Logged By E. Thibodeau Date Start 9/8/99 Date End 9/13/99

Sampler: 2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb. safety hammer free falling from a height of 30 inches.

Drill Rig: Acker AD2 truck mount

Drilling Method: 4-inch I.D. (HW) flush-joint casing; wash and drive.

All casing driven with a 300 lb center hole hammer free falling from a height of 30-inches.

Groundwater Readings Not Applicable for Offshore Borings

Date	Time	Depth	Elev.	Stabilization Time

DEPTH (ft)	Casing Type	SAMPLE INFORMATION				SAMPLE DESCRIPTION (ASTM D2488)	STRATUM DESCRIPTION	REMARKS
		Type & No.	PENREC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES			
1	Hyd.					Perform continuous field vane shear testing through organic clay; move barge approximately 7 ft. west and start boring.		
2	Push	S-1	24/8	1-3	WOR/24"	Advance HW drill casing to 1 ft. (hydraulic push) Advance 3-7/8 in. button bit from 0 to 1 ft. S-1: Organic soil (OH); very soft, 70% organic clay, 20% organic silt, 5% fine sand, 5% shell fragments, strong organic odor, slight sheen, dark gray to black.	OH	
3	Push					Advance HW drill casing to 3 ft. (hydraulic push) Advance 3-7/8 in. button bit from 1 to 3 ft.		
4	Push	S-2	24/8	3-5	WOR/12" -1-1	Organic soil with sand (OH); very soft, 70% organic clay, 10% organic silt, 15% fine sand, 5% shell fragments, strong organic odor, dark gray to black.	OH	
5	Push					Advance HW drill casing to 5 ft. (hydraulic push) Advance 3-7/8 in. button bit from 3 to 5 ft.		
6	Push	S-3	24/12	5-7	WOR/12" -	Sandy organic soil (OH); very soft, 40% organic clay, 25% organic silt, 25% fine sand, 10% shells, strong organic odor, dark gray.	OH	
7	Push					Advance HW drill casing to 7 ft. (hydraulic push) Advance 3-7/8 in. button bit from 5 to 7 ft.		
8	Push	S-4	24/8	7-9	WOR/24"	Organic soil with sand (OH); very soft, 50% organic clay, 30% organic silt, 15% fine sand, 5% shells, strong organic odor, dark gray.	OH	
9	Push					Advance HW drill casing to 9 ft. (hydraulic push) Advance 3-7/8 in. button bit from 7 to 9 ft.		
10	2	S-5	24/20	9-11	WOR/24"	Organic soil with sand (OH); very soft, 40% organic clay 35% organic silt, 20% fine sand, 5% shells, strong organic odor, dark gray.	OH	
11	3					Advance HW drill casing to 11 ft. Advance 3-7/8 in. button bit from 9 to 11 ft.		
12	4	S-6	24/18	11-13	WOR/24"	Organic soil with sand (OH); very soft, 40% organic silt 35% organic clay, 20% fine sand, 5% medium sand, strong organic odor, dark gray.	OH	
13	4					Advance HW drill casing to 13 ft. Advance 3-7/8 in. button bit from 11 to 13 ft.		
14	4	S-7	24/24	13-15	WOR/24"	Sandy organic soil (OH); very soft, 40% organic silt, 30% organic clay, 10% medium sand, 10% fine sand, 5% coarse sand, 5% shells, strong organic odor, dark gray.	OH	
15	4					Advance HW drill casing to 15 ft. Advance 3-7/8 in. button bit from 13 to 15 ft.		
16	6	S-8	24/10	15-17	WOR/18"-2	S-8A: Organic soil with sand (OH); very soft, 40% organic clay, 40% organic silt, 20% fine sand, strong organic odor, dark gray. (8 in.) S-8B: Silty sand (SM); 40% medium sand, 30% fine sand, 30% silt, moderate organic odor, dark gray. (2 in.)	OH	
17	9					Advance HW drill casing to 17 ft. Advance 3-7/8 in. button bit from 15 to 17 ft.	SM	
18	22	S-9	24/16	17-19	4-5-6-8	S-9: Poorly graded sand with silt (SP-SM); medium dense, 50% medium sand, 30% fine sand, 10% coarse sand, 10% silt, gray.	SP-SM	
19	26					Advance HW drill casing to 20 ft. Add bentonite to drilling fluid.		
20	31					Advance 3-7/8 in. button bit from 17 to 20 ft.		

0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	1. S denotes split-barrel sampler. 2. U denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. PID denotes Photoionization Detector 8. PPM denotes parts per million. 9. PP denotes Pocket Penetrometer 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. R denotes core run number
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REMARKS:

- 1) 3-inch O.D. split-barrel sampler driven 24 inches with a 300 lb center hole hammer free falling from a height of 24 inches.
- 2) No water return noted during rock coring activities.
- 3)
- 4)



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Remedial Design For Operable Unit 01
New Bedford Harbor Superfund Site
New Bedford, Massachusetts

BORING NO. FD-33
SHEET 2 of 7
FILE NO. 48138.07
CHKD. BY J. Trottier

Boring Co. Atlantic Testing Laboratories, Limited Boring Location northing 2696779.7 easting 814163.2
Driller A. Carter Mudline El. -4.4 Datum NGVD
Logged By E. Thibodeau Date Start 9/8/99 Date End 9/13/99

Sampler: 2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb. safety hammer free falling from a height of 30 inches.
Drill Rig: Acker AD2 truck mount
Drilling Method: 4-inch I.D. (HW) flush-joint casing; wash and drive.
All casing driven with a 300 lb center hole hammer free falling from a height of 30-inches.

Groundwater Readings Not Applicable for Offshore Borings

Date	Time	Depth	Elev.	Stabilization Time

DEPTH (ft)	Casing Blows (R)	SAMPLE INFORMATION				SPT N-Value	SAMPLE DESCRIPTION (ASTM D2488)	STRATUM DESCRIPTION	REMARKS
		Type & No.	PENREC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES				
21	11	S-10	24/18	20-22	8-8-10-10	18	Poorly graded sand with silt (SP-SM); medium dense, 40% medium sand, 25% fine sand, 15% coarse sand, 10% gravel, 10% silt, gray.	SP-SM	
22	14						Advance HW drill casing to 25 ft. Add more benonite to drilling fluid.		
23	17						Advance 3-7/8 in. button bit from 20 to 25 ft.		
24	18								
25	25								
26	15	S-11	24/10	25-27	8-5-6-7	11	Silty sand (SM); medium dense, 30% medium sand, 25% fine sand, 15% coarse sand, 10% gravel, 20% silt, gray.	SM	
27	22						Advance HW drill casing to 30 ft. Advance 3-7/8 in. button bit from 25 to 30 ft.		
28	22								
29	28								
30	37								
31	26	S-12	24/0	30-32	7-7-6-10	13	No recovery.		
32	30						Advance HW drill casing to 35 ft. Advance 3-7/8 in. button bit from 30 to 35 ft.		
33	61								
34	79								
35	82								
36	36	S-13	24/3	35-37	10-6-6-12	12	Well-graded sand with gravel (SW); medium dense, 25% medium sand, 25% fine sand, 20% coarse sand, 25% gravel, 5% silt, brown.	SW	
37	43						Advance HW drill casing to 37 ft. Advance 3-7/8 in. button bit from 35 to 37 ft.		
38	56	S-14	24/1	37-39	16-9-4-3	13	Poor recovery; washed sample.		
39	44						Advance HW drill casing to 40 ft. Advance 3-7/8 in. button bit from 37 to 40 ft.		
40	38								

0 to 4 - Very Loose
5 to 10 - Loose
11 to 30 - Medium Dense
31 to 50 - Dense
Over 50 - Very Dense

0 to 2 - Very Soft
3 to 4 - Soft
5 to 8 - Medium Stiff
9 to 15 - Stiff
16 to 30 - Very Stiff
Over 30 - Hard

1. S denotes split-barrel sampler.
2. U denotes 3-inch O.D. undisturbed sample.
3. UO denotes 3-inch Osterberg undisturbed sample.
4. PEN denotes penetration length of sampler.
5. REC denotes recovered length of sample
6. SPT denotes Standard Penetration Test

7. PID denotes Photoionization Detector
8. PPM denotes parts per million.
9. PP denotes Pocket Penetrometer.
10. FVST denotes field vane shear test.
11. ROD denotes Rock Quality Designation.
12. R denotes core run number

REMARKS:
1) 3-inch O.D. split-barrel sampler driven 24 inches with a 300 lb center hole hammer free falling from a height of 24 inches.
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PROJECT		BORING NO.	FD-33
Remedial Design For Operable Unit 01		SHEET	3 of 7
New Bedford Harbor Superfund Site		FILE NO.	48138.07
New Bedford, Massachusetts		CHKD. BY	J. Trotter

Boring Co.	Atlantic Testing Laboratories, Limited	Boring Location	northing 2696779.7	easting 814163.2	
Driller	A. Carter	Mudline El.	-4.4	Datum	NGVD
Logged By	E. Thibodeau	Date Start	9/8/99	Date End	9/13/99

Sampler:	2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb. safety hammer free falling from a height of 30 inches.	Groundwater Readings Not Applicable for Offshore Borings			
Drill Rig:	Acker AD2 truck mount	Date	Time	Depth	Elev.
Drilling Method:	4-inch I.D. (HW) flush-joint casing; wash and drive.				Stabilization Time
All casing driven with a 300 lb center hole hammer free falling from a height of 30-inches.					

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION					SAMPLE DESCRIPTION (ASTM D2488)	STRATUM DESCRIPTION	R E M K S
		Type & No.	PEN/REC (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	SPT N-Value			
41	38	S-15	24/0	40-42	5-3-3-5	6	No recovery. Advance HW drill casing to 42 ft. Advance 3-7/8 in. button bit from 40 to 42 ft.		1
42	38								
43	31	S-16	24/3	42-44	11-7-7-12	14	Poor recovery; washed sample. Advance HW drill casing to 44 ft. Add more bentonite to drilling fluid.		1
44	49						Advance 3-7/8 in. button bit from 42 to 44 ft.		
45	50	S-17	24/9	44-46	8-6-4-5	10	Poorly graded sand (SP); loose, 45% medium sand, 30% fine sand, 15% coarse sand, 5% gravel, 5% silt, subrounded particles, brown. Advance HW drill casing to 49 ft.	SP	
46	39						Advance 3-7/8 in. button bit from 44 to 49 ft.		
47	41								
48	52								
49	53								
50	119	S-18	14/6	49- 50.2	19-17-50/2"	—	Poorly graded sand with silt and gravel (SP-SM); 20% medium sand, 15% fine sand, 10% coarse sand, 45% gravel, 10% silt, subrounded to subangular particles, brown. Advance HW drill casing to 50 ft. Top of bedrock at 50.0 ft. Telescope and advance NW inner drill casing to 50.5 ft. for coring. (spin) NW drill casing advanced rapidly; probable weathered bedrock. Advance NW inner drill casing to 51.0 ft. for coring. (spin) Begin NX rock core at 50.0 ft. (boring log continued on next page)	SP-SM BEDROCK	

0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	1. S denotes split-barrel sampler. 2. U denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. PID denotes Photoionization Detector 8. PPM denotes parts per million. 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. R denotes core run number.
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REMARKS:
1) 3-inch O.D. split-barrel sampler driven 24 inches with a 300 lb center hole hammer free falling from a height of 24 inches.
2) No water return noted during rock coring activities.
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New Bedford, Massachusetts

BORING NO. FD-33
SHEET 4 of 7
FILE NO. 48138.07
CHKD. BY J. Trotter

Boring Co. Atlantic Testing Laboratories, Limited Boring Location northing 2696779.7 easting 814163.2
Driller A. Carter Mudline El. -4.4 Datum NGVD
Logged By E. Thibodeau Date Start 9/8/99 Date End 9/13/99

Sampler: 2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb safety hammer free falling from a height of 30 inches.
Drill Rig: Acker AD2 truck mount
Drilling Method: 4-inch I.D. (HW) flush-joint casing; wash and drive.
All casing driven with a 300 lb center hole hammer free falling from a height of 30-inches.

Groundwater Readings Not Applicable for Offshore Borings				
Date	Time	Depth	Elev.	Stabilization Time

DEPTH (feet)	VISUAL REPRESENTATION	CORE INFORMATION			ROCK CORE DESCRIPTION	REMARKS
		CORE RUN	CORE INTERVAL	CORE TIME		
50.5		R1	50.0 - 51.0	4.5 mins.	Begin R1 at 50.0 ft. Fresh, moderately hard, gray, fine grained GNEISS. Near horizontal foliation; 20 degrees. REC = 83%; RQD = 73% (fair) 50.0 to 50.2 ft: fractured bedrock from advancing NW inner drill casing. 50.6 ft: mechanical break in rock core.	
51.0			51.0 - 52.0	5 mins.	51.2 ft: Primary joint: low angle, very widely spaced, rough, planar, slightly discolored, and tight.	
52.0			52.0 - 53.0	5 mins.	52.6 to 53.1 ft: Quartz inclusion.	
53.0			53.0 - 54.0	30 sec.	53.1 to 53.4 ft: core barrel dropped; probable void or cavity. Loss of drilling water return at 53.1 ft. 53.6 to 54.1 ft: core barrel dropped; probable void or cavity.	
54.0			54.0 - 55.0	3 mins.	54.1 to 54.4 ft: Secondary joint: high angle, moderate to widely spaced, rough, planar, fresh, and open. 54.6 ft: mechanical break in rock core.	
55.0					End R1 at 55.0 ft.	

0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	1. S denotes split-barrel sampler. 2. U denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. PID denotes Photoionization Detector 8. PPM denotes parts per million. 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. R denotes core run number
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REMARKS:
1) 3-inch O.D. split-barrel sampler driven 24 inches with a 300 lb center hole hammer free falling from a height of 24 inches.
2) No water return noted during rock coring activities.
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New Bedford Harbor Superfund Site

New Bedford, Massachusetts

BORING NO. FD-33

SHEET 5 of 7

FILE NO. 48138.07

CHKD. BY J. Trottier

Boring Co. Atlantic Testing Laboratories, Limited Boring Location northing 2696779.7 easting 814163.2
 Driller A. Carter Mudline El. -4.4 Datum NGVD
 Logged By E. Thibodeau Date Start 9/8/99 Date End 9/13/99

Sampler: 2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb safety hammer free falling from a height of 30 inches.
 Drill Rig: Acker AD2 truck mount
 Drilling Method: 4-inch I.D. (HVM) flush-joint casing; wash and drive.
 All casing driven with a 300 lb center hole hammer free falling from a height of 30-inches.

Groundwater Readings Not Applicable for Offshore Borings

Date	Time	Depth	Elev.	Stabilization Time

DEPTH (feet)	VISUAL REPRESENTATION	CORE INFORMATION			ROCK CORE DESCRIPTION	REMARKS
		CORE RUN	CORE INTERVAL	CORE TIME		
55.5		R2	55.0 - 56.0	3.5 mins.	Begin R2 at 55.0 ft. Slightly weathered, moderately hard, gray, fine grained GNEISS. Foliation approximately 30 degrees. REC = 93%; RQD = 62% (fair) 55.0 to 55.7 ft: fractured bedrock.	2
56.0					55.7 to 56.0 ft: Secondary joint: high angle, moderate to widely spaced, rough, planar, discolored, and open.	
56.5			56.0 - 57.0	4 mins.	56.0 to 56.2 ft: discoloration/weathering noted.	
57.0						
57.5			57.0 - 58.0	3.5 mins.		
58.0					57.8 to 58.3 ft: core barrel dropped; probable void or cavity.	
58.5			58.0 - 59.0	3.5 mins.	58.3 to 58.8 ft: Secondary joint: high angle, moderate to widely spaced, rough, planar, discolored, and open.	
59.0						
59.5			59.0 - 60.0	4 mins.	59.4 to 59.8 ft: discoloration/weathering noted.	
60.0					59.8 ft: Primary joint: moderately dipping, very widely spaced, rough, planar, slightly discolored, and tight. End R2 at 60.0 ft.	

SOIL CLASSIFICATION	SOFTNESS INDEX (SI)	SYMBOL KEY
0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes split-barrel sampler.
5 to 10 - Loose	3 to 4 - Soft	2. U denotes 3-inch O.D. undisturbed sample.
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	3. UO denotes 3-inch Osterberg undisturbed sample.
31 to 50 - Dense	9 to 15 - Stiff	4. PEN denotes penetration length of sampler.
Over 50 - Very Dense	16 to 30 - Very Stiff	5. REC denotes recovered length of sample.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test
		7. PID denotes Photoionization Detector
		8. PPM denotes parts per million.
		9. PP denotes Pocket Penetrometer.
		10. FVST denotes field vane shear test.
		11. RQD denotes Rock Quality Designation.
		12. R denotes core run number.

REMARKS:

- 1) 3-inch O.D. split-barrel sampler driven 24 inches with a 300 lb center hole hammer free falling from a height of 24 inches.
- 2) No water return noted during rock coring activities.
- 3)
- 4)



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New Bedford Harbor Superfund Site

New Bedford, Massachusetts

BORING NO. FD-33

SHEET 6 of 7

FILE NO. 48138.07

CHKD. BY J. Trottier

Boring Co. Atlantic Testing Laboratories, Limited
Driller A. Carter
Logged By E. Thibodeau

Boring Location northing 2696779.7 easting 814163.2
Mudline El. -4.4 Datum NGVD
Date Start 9/8/99 Date End 9/13/99

Sampler: 2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb safety hammer free falling from a height of 30 inches.
Drill Rig: Acker AD2 truck mount
Drilling Method: 4-inch I.D. (HW) flush-joint casing; wash and drive.
All casing driven with a 300 lb center hole hammer free falling from a height of 30-inches.

Groundwater Readings Not Applicable for Offshore Borings

Date	Time	Depth	Elev.	Stabilization Time

DEPTH (feet)	VISUAL REPRESENTATION	CORE INFORMATION			ROCK CORE DESCRIPTION	REMARKS
		CORE RUN	CORE INTERVAL	CORE TIME		
60.5		R3	60.0 - 61.0	3 mins.	Begin R3 at 60.0 ft. Slightly weathered, moderately hard, gray, fine grained GNEISS. Foliation approximately 30 degrees. REC = 100%; RQD = 100% (excellent) 60.0 to 60.5 ft: discoloration/weathering noted.	2
61.0			61.0 - 62.0	3.5 mins.	61.0 ft: Primary joint: low angle, closely spaced, smooth, planar, decomposed, and very wide. 61.0 to 61.3 ft: discoloration/weathering noted. 61.4 ft: Primary joint: low angle, closely spaced, smooth, planar, slightly discolored, and open.	
61.5			62.0 - 63.0	5 mins.		
62.0			63.0 - 64.0	6.5 mins.	62.9 to 63 ft: Quartz inclusion.	
62.5						
63.0						
63.5						
64.0					64.0 ft: core barrel blocked/full; core run terminated. End R3 at 64.0 ft.	2
64.5		R4	64.0 - 65.0	3.5 mins.	Begin R4 at 64.0 ft. Fresh, moderately hard, gray, fine grained GNEISS. Foliation near horizontal; approximately 10 degrees REC = 93%; RQD = 93% (excellent)	
65.0						

0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	1. S denotes split-barrel sampler. 2. U denotes 3-inch O.D. undisturbed sample 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler 5. REC denotes recovered length of sample 6. SPT denotes Standard Penetration Test	7. PID denotes Photoionization Detector 8. PPM denotes parts per million. 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test 11. RQD denotes Rock Quality Designation. 12. R denotes core run number.
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REMARKS:

- 1) 3-inch O.D. split-barrel sampler driven 24 inches with a 300 lb center hole hammer free falling from a height of 24 inches.
- 2) No water return noted during rock coring activities
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New Bedford, Massachusetts

BORING NO. FD-33

SHEET 7 of 7

FILE NO. 48138.07

CHKD. BY J. Trottier

Boring Co. Atlantic Testing Laboratories, Limited

Driller A. Carter

Logged By E. Thibodeau

Boring Location northing 2696779.7 easting 814163.2

Mudline El. -4.4 Datum NGVD

Date Start 9/8/99 Date End 9/13/99

Sampler: 2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb safety hammer free falling from a height of 30 inches.

Drill Rig: Acker AD2 truck mount

Drilling Method: 4-inch I.D. (HW) flush-joint casing; wash and drive.

All casing driven with a 300 lb center hole hammer free falling from a height of 30-inches.

Groundwater Readings Not Applicable for Offshore Borings

Date	Time	Depth	Elev.	Stabilization Time

DEPTH (feet)	VISUAL REPRESENTATION	CORE INFORMATION			ROCK CORE DESCRIPTION	REMARKS
		CORE RUN	CORE INTERVAL	CORE TIME		
65.5		R4 (cont.)	65.0 - 66.0	3.5 mins.	65.8 to 66.5 ft: Quartz inclusion.	
66.0			66.0 - 67.0	3.5 mins.		
66.5			67.0 - 68.0	4.5 mins.	68.0 ft: mechanical break in rock core. 68.6 ft: mechanical break in rock core.	
67.0			68.0 - 69.0	5.5 mins.		
67.5					End R4 at 69.0 ft.	
68.0					Bottom of exploration at 69.0 ft.; boring terminated in bedrock.	
68.5						
69.0						

GRAVIMETRIC (HYDRAULIC)	COHESIVE SOILS (HYDRAULIC)	SYMBOLS	SYMBOLS
0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense	0 to 2 - Very Soft 3 to 4 - Soft 5 to 8 - Medium Stiff 9 to 15 - Stiff 16 to 30 - Very Stiff Over 30 - Hard	1. S denotes split-barrel sampler. 2. U denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 6. SPT denotes Standard Penetration Test.	7. PID denotes Photoionization Detector. 8. PPM denotes parts per million. 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. R denotes core run number.

REMARKS:
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