

**Ten-Mile River Ecosystem Restoration
East Providence
Rhode Island**

September 3, 2003

Geotechnical Design Summary Memorandum

Background:

Fish passages are planned at the site of three run-of-the-river dams on the Ten-Mile River in East Providence, Rhode Island. This report presents the subsurface exploration, and feasibility phase design of foundations for the concrete fish ladders.

Subsurface Explorations

Geotek Engineering, Inc. of Framingham, Massachusetts made three borings and three probeholes at the dam sites, at locations shown on the attached plans, in August 2002. Standard Penetration Testing and recovery of samples were performed in the borings, generally at 5-feet intervals. Bedrock cores were taken at the borings at Hunts Mill and Turner Dams. Samples were visually classified in the field, and were subsequently transported to, and stored at, USACE's Concord office. The Contractor provided logs of the borings and probeholes, as well as photos of the rock cores.

Subsurface Conditions

Omega Dam

The strata beneath the downstream apron of Omega Dam, based on Boring B3 and Probehole P3 in descending order, consist of approximately 12 feet of loose to medium dense SAND with some gravel, 12 feet of loose to medium dense SILT, and at least 24 feet of medium dense to dense SAND and SILT. Bedrock was not encountered in the explorations at Omega dam (minimum of 50 feet beneath the apron level).

Hunts Mill Dam

The strata beneath the top of Hunts Mill Dam, based on Boring B2 and Probeholes P1 and P2, consist of up to 10-12 feet of dense fine SAND overlying fresh to slightly weathered medium grained, SANDSTONE, with an RQD of 100.

Turner Dam

The strata beneath the downstream apron of Turner Dam, based on Boring B1 and the existing borings included in the 1981 dam inspection report consist of approximately 40 feet of medium dense to dense SAND, overlying fresh to slightly weathered, SANDSTONE, with an RQD of 100, interbedded with SHALE.

Foundation Design

Omega Dam

The use of shallow spread foundations is ruled out, due to the presence of liquefiable loose sands beneath the site. The fish passage structure must be carried on deep foundations. Since bedrock is not present at moderately shallow depths, friction piles, which derive their capacity from shaft friction and end resistance, have been selected.

Driven pre cast piles can be used to support the design loads. However, there are two drawbacks. First, pile driving equipment with high masts will be difficult to operate around and beneath the railroad bridge. Second, vibrations as well as possible heave from pile driving may cause structural damage to the old dam structure, the exact condition of which is not fully known.

The fish ladder structure will therefore be supported on 16" diameter cast-in-place concrete caissons, placed 20 feet into the medium dense to dense SAND and SILT (total length of approximately 34 feet). Each caisson will carry an allowable load of 33 tons. Structural (dead + live) load of the structure is 1.5 tons per linear foot of the structure, hence 1 caisson every 20 to 22 feet of the structure will be needed.

Hunts Mill Dam

It is envisioned that the fish ladder will be installed through the existing sheeted draw-off structure, which is assumed to be founded on bedrock. However, top of bedrock appears to slope down towards the downstream, so that the southern end of the fish ladder structure could be underlain by as much as 12 feet of sand before reaching bedrock. To avoid founding the structure across two different strata (rock and sand) with a consequent potential for differential settlement and cracking, it is recommended to excavate and remove the sands, and place the spread foundation directly on bedrock. As an added consideration, moving the footprint of the structure northwards, assuming it does not conflict with the intended function and geometry, would reduce the quantity of overburden sand to be excavated.

Turner Dam

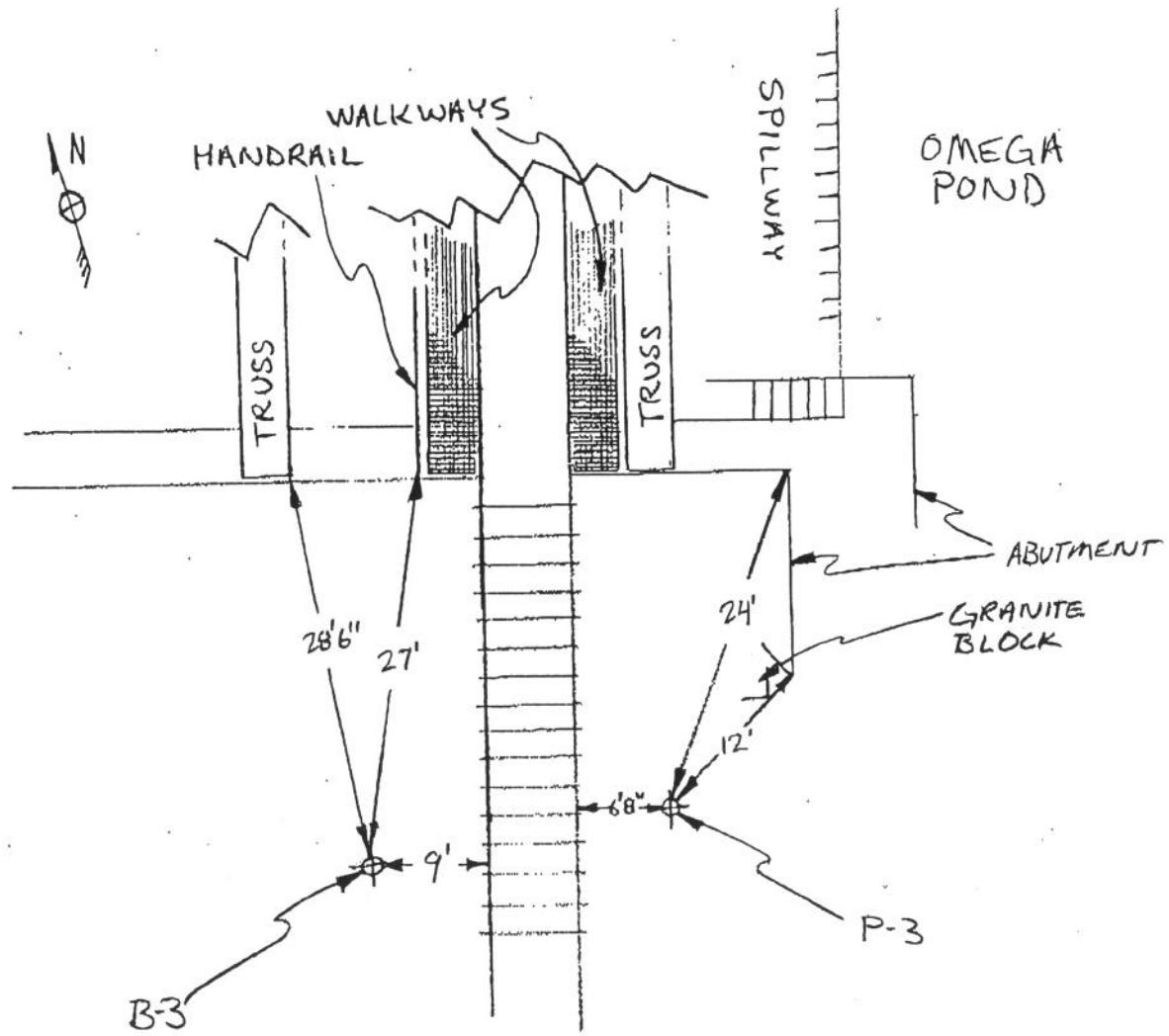
Since top of bedrock is present at relatively shallow depths at Turner Dam, it is recommended that the structural load of the fish ladder be carried on 12" diameter cast-in-place concrete caissons, with a 5-foot penetration into bedrock. Since the bedrock will have ample capacity for carrying the loads, the capacity will be governed by the structural capacity of the caisson itself.

References:

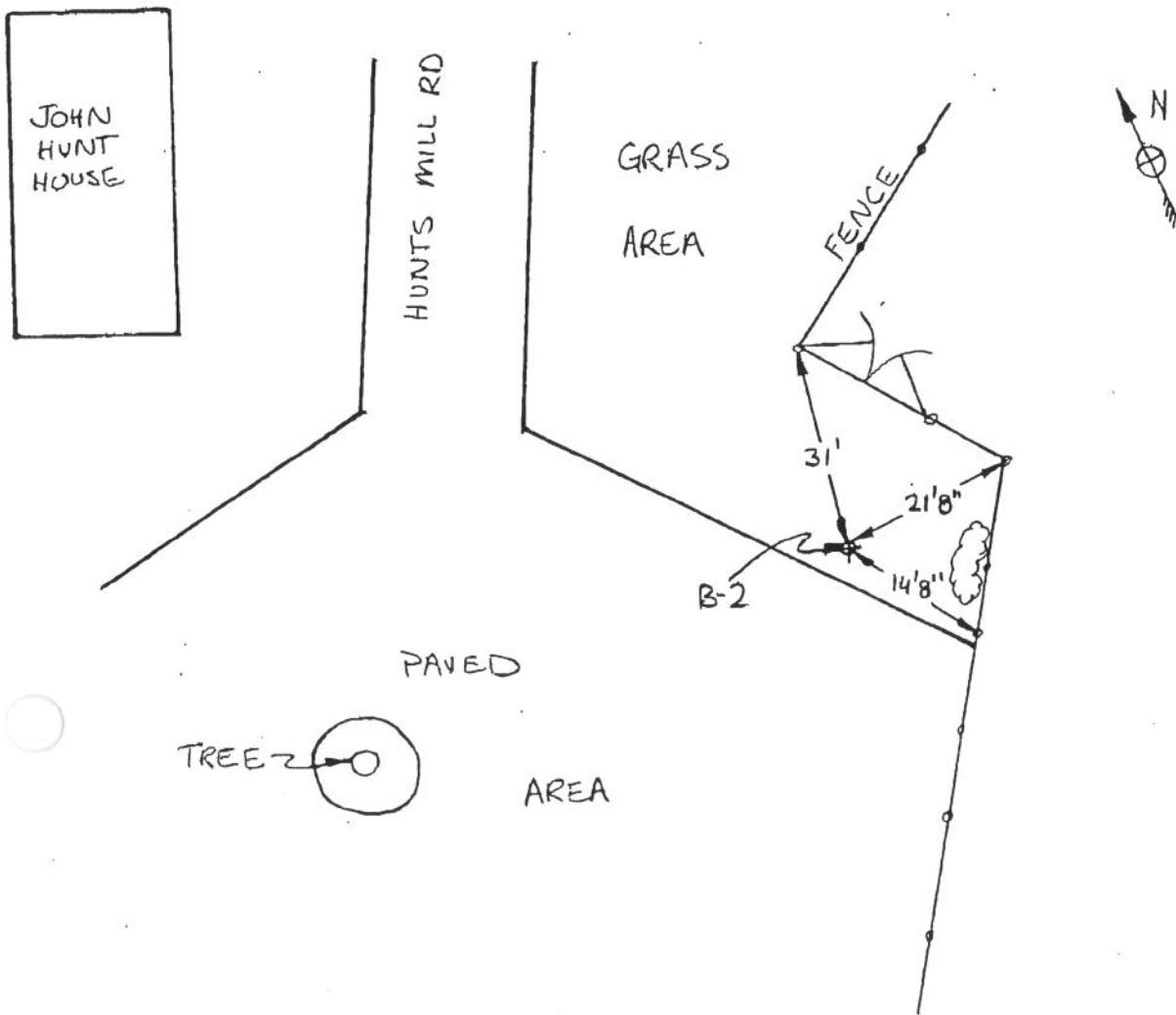
Phase 1 Inspection Report, National Dam Inspection Program, James V.Turner Dam, 1981

Attachments: Boring Location Plans
Boring and Probehole Logs
Foundation Design Calculations

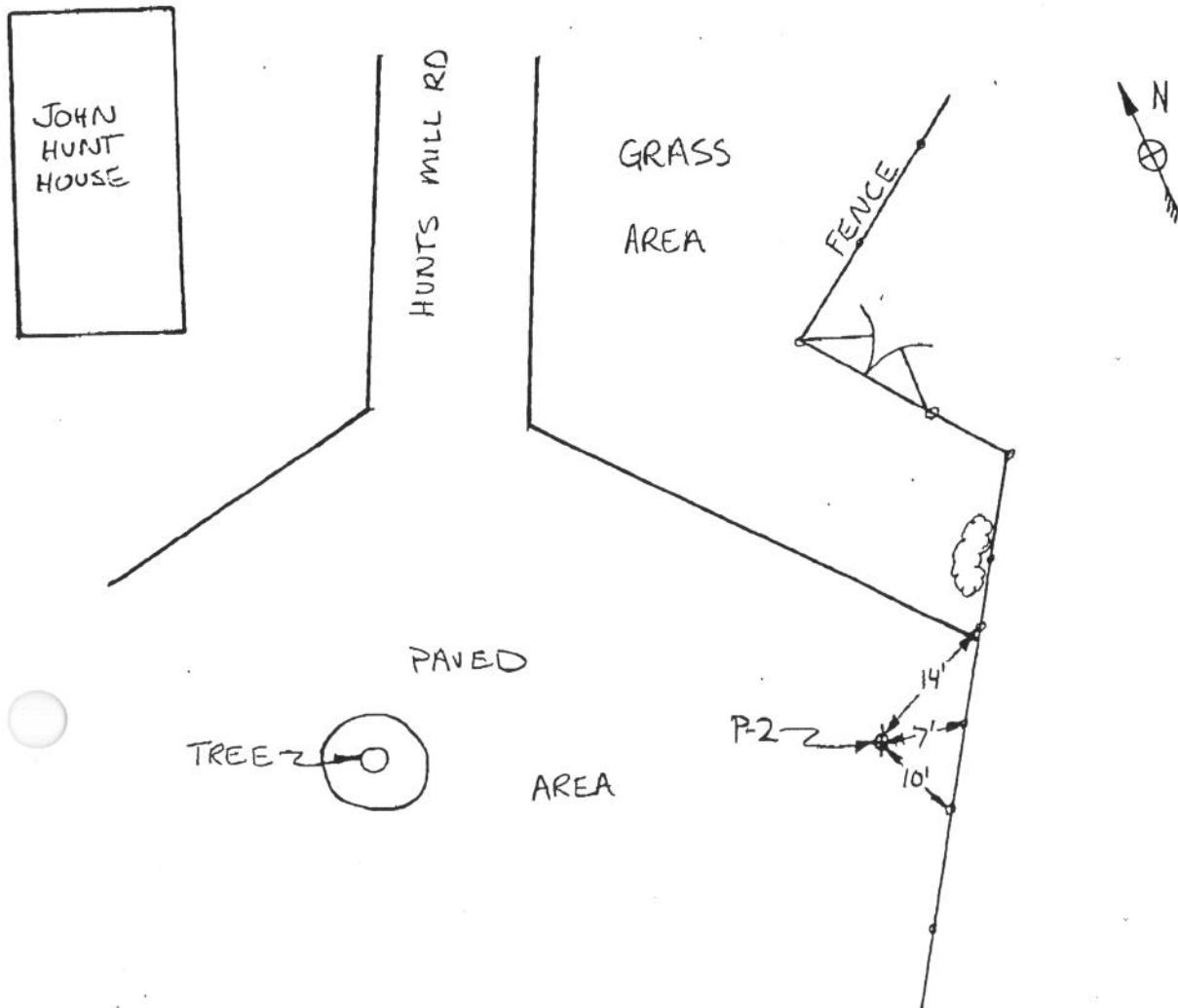
Siamac Vaghar
Geotechnical Engineering Section

OMEGA DAM

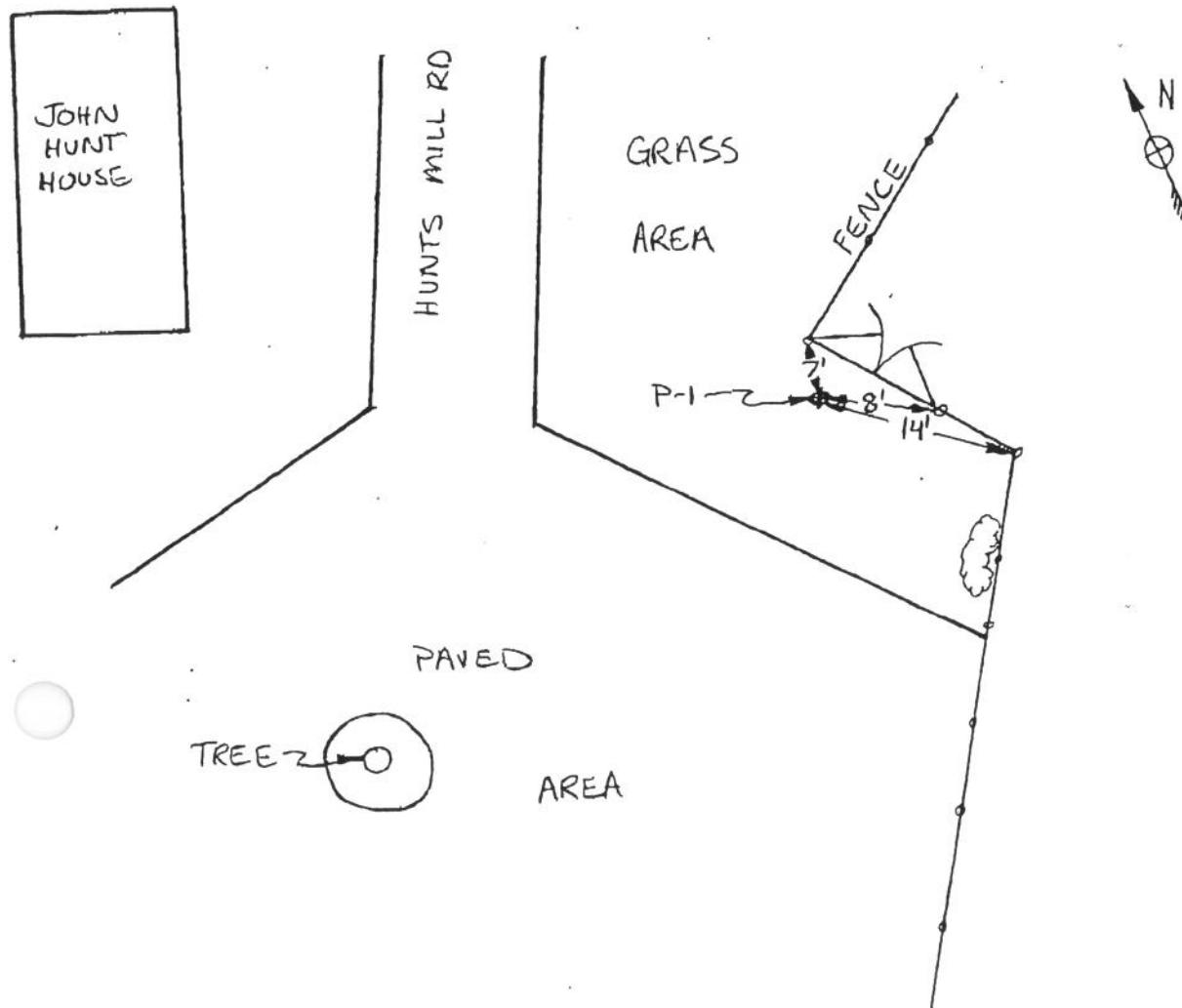
ASBUILT LOCATIONS B-3 & P-3

HUNTS MILL DAM

ASBUILT LOCATION
BORING # B-2

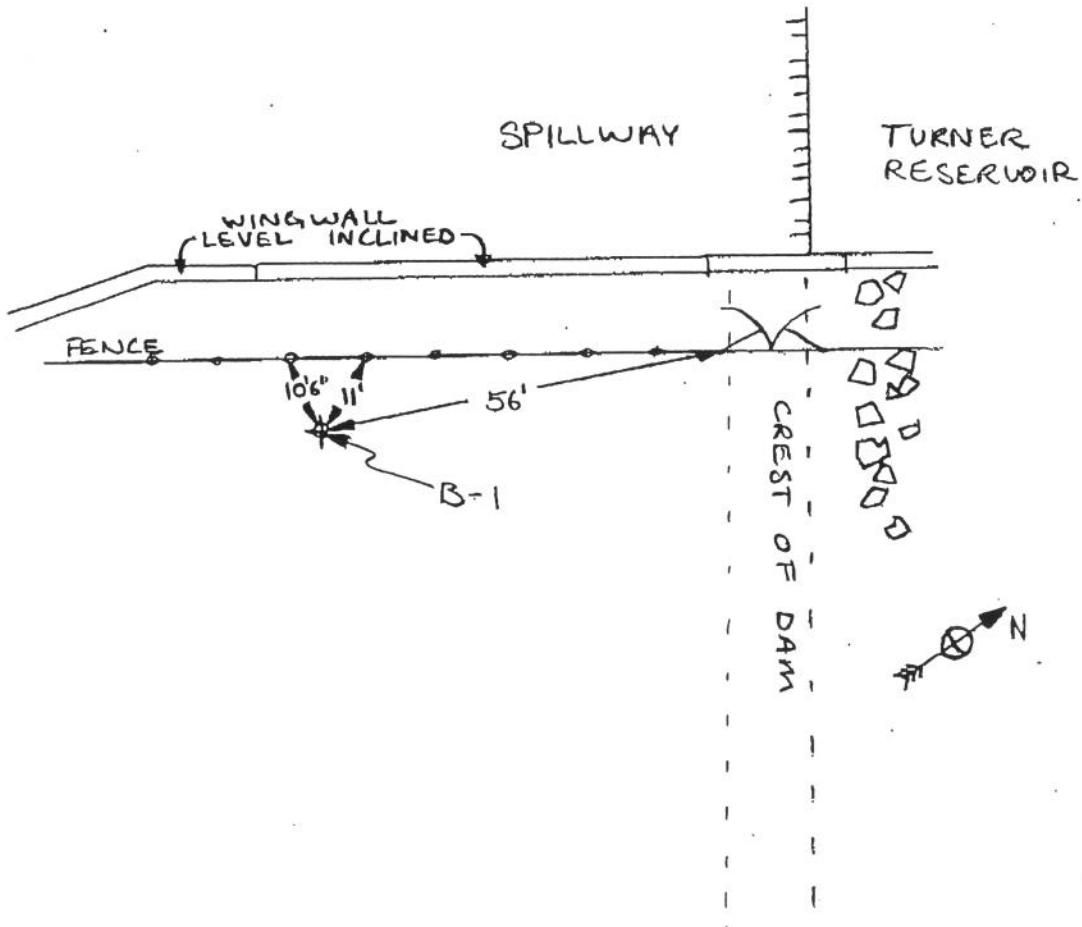
HUNTS MILL DAM

ASBUILT LOCATION
PROBE # P-2

HUNTS MILL DAM

ASBUILT LOCATION

PROBE # P-1

TURNER DAM

AS BUILT LOCATION
BORING # B-1



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-1
SHEET 1 of 5
FILE NO.
CHKD. BY

Boring Co. GEOTEK ENGINEERING
Driller CHRIS WORDELL
Logged By DAVID TEOSTE

Sampler 2" SPLIT SPOON + NX CORE
Drill Rig: SIMCO 9100
Drilling Method: MUD ROTARY

Boring Location northing eastling
Mudline El. Est. GROUND EL 38.5' Datum NGVD
Date Start 8-19-02 Date End 8-20-02

Groundwater Readings Not Applicable for Oiltone Boring				
Date	Time	Depth	Elev.	Subsidence Time

S Casing Blows UH	SAMPLE INFORMATION			
	Type & No.	PEN/REC (inches)	DEPTH (feet)	BLW/S PER 5 INCHES
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes Spilberg sampler.	7. P10 denotes Photolization Detector
8 to 10 - Loose	3 to 4 - Soft	2. U denotes 3-inch O.D. Undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 6 - Medium Stiff	3. UD denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	8 to 15 - Stiff	4. PEN denotes penetration length of sampler.	10. FVST denotes Field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff	5. REC denotes recovered length of sampler.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test.	12. R denotes core run number.

REMARKS:

- 1)
- 2)
- 3)
- 4)

Engineering Log Template



**US Army Corps
of Engineers**
New England District

TEN MILE RIVER
EAST PROVIDENCE, RI

BORING NO. B-1
SHEET 2 of 5
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK ENGINEERING
Driller BARRY WORDELL
Logged By DAVID TEOSTE

Boring Location north
Mudline El. _____
Date Start _____

eastling
Datum _____ NGVD
Date End _____

14010

Drill Rig:
Coring Method:

S E P T M B E R	Coring Blow # (L-1)	SAMPLE INFORMATION				SAMPLE DESCRIPTION (ASTM D2488)	STRATUM DESCRIPTION
		Type & No.	PEN/REC (inches)	DEPTH (ft)	SLOWS PER 5 INCHES IN MM/ft		
11							
12							
13							
		S-1	24/16	13'-15'	8-10-13-15	moist, stiff, light gray, CLAY, with occasional very thin bed of fine sand, high plasticity	
14							
15							
16							
17							
18							
		S-2	24/14	18'-20'	8-6-8-10	wet, medium gray, angular, medium to coarse SAND, grading to light gray SILT with fine sand	
19							
20							

wet, medium gray, angular, medium to coarse **SAND**, grading to light gray **SILT** with fine sand

0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes split-barrel sampler	7. PDI denotes Photoionization Detector
6 to 10 - Loose	3 to 4 - Soft	2. U denotes 3-inch O.D. Undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 6 - Medium Stiff	3. UO denotes 3-inch Ostwald undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	8 to 15 - Stiff	4. PEN denotes penetration length of sampler.	10. FVST denotes field vine shear test.
Over 50 - Very Dense	18 to 30 - Very Stiff	5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test	12. R denotes core run number.

REMARKS:

- 1)
2)
3)
4)

Engineering Log Template



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-1
SHEET 3 of 5
FILE NO.
CHKD. BY

Boring Co. GEOTEK
Driller _____
Logged By _____

Boring Location northing
Mudline El. _____
Date Start _____

eastling
Datum NGVD
Date End _____

Sample:

Orl Ptg:
Drilling Method:

Groundwater Readings Not Applicable for Ullsmore Boring				
Date	Time	Depth	Elev.	Stabilization Time

S E B T W	Core No	SAMPLE INFORMATION			
		Type & No.	PENREC (inches)	DEPTH (feet)	Blows per 5 inches
21					
22					
23		S-3 24/20	23-25'	27-18-10-17	
24					
25					
26					
27					
28		S-4 24/12	28-30'	15-11-21-22	
29					
30					

SAMPLE DESCRIPTION (ASTM D2485)		STRATUM DESCRIPTION
LOSS OF DRILLING FLUID BETWEEN 20'-23' SPUN 4" PIPE DOWN TO 23'		
wet, medium dense, light gray, FINE SAND little, medium to coarse sand, trace fine gravel, silt		
wet, light gray, medium SAND, trace fine gravel, fine sand, coarse sand		

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

0 to 2 - Very Soft
3 to 4 - Soft
5 to 6 - Medium Sd/H
8 to 15 - Sd/H
18 to 30 - Very Stiff
Over 30 - Hard

1. S denotes split-spoon 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. PIQ 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)
- 2)
- 3)
- 4)

Engineering Log Template



**US Army Corps
of Engineers**
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-1
SHEET 4 of 5
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK
Driller _____
Logged By _____

Boring Location north
Mudline El. _____
Date Start _____

easting _____
Datum _____ NGVD
Date End _____

140

Groundwater Readings Not Applicable for Oilshore Readings			
Time	Depth	Elev.	Stabilization Time

Call 210

Drilling Method:

E E T W	Count Blanks Total	SAMPLE INFORMATION				SAMPLE DESCRIPTION (ASTM D2488)	STRATUM DESCRIPTION
		Type & No.	PEN/REC (Inches)	DEPTH (feet)	BLOWS PER 5 INCHES SPT N-value		
31							
32							
33		100/11 33'				TOP OF BEDROCK 33' 1" BOUNDING REFUSAL NO RECOVERY	
34		C-1 160/60 33.5-38.5' DRILL TIME 43.33:4				C-1 33.5'-38.5' HARD, MECHANICALLY BROKEN MED GRAY, <u>SANDSTONE</u> , fail. it MODERATE ANGLE FISSILITY and bedding, 2" gravel filled fracture at 35.5' RQD=100%	
35							
36							
37							
38							
39		C-2 50/60 38.5'-43.5' 3-3-3-3-3				C-2 38.5'-43.5' HARD MECHANICALLY BROKEN MED GRAY, <u>SANDSTONE</u> , GRADING TO SANDSTONE/SHALE RQD = 100%	
40							

C-2 33.5'-43.5' HARD MECHANICALLY BROKEN
MED GRAY, SANDSTONE, GRADING TO
SANDSTONE/SHALE RAD = 100%

0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes split-spoon sampler.	7. PID denotes Polarization Detector
5 to 10 - Loose	3 to 4 - Soft	2. U denotes 3-inch O.D. Undisturbed sample.	8. PPV denotes parts per million.
11 to 30 - Medium Dense	5 to 6 - Medium Stiff	3. UD denotes 3-inch Orlabberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	8 to 12 - Stiff	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	13 to 30 - Very Stiff	5. PEG denotes recovered length of sampler.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test.	12. R denotes core run number.

REMARKS

- 1)
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3)
4)

Engineering Log Template



**US Army Corps
of Engineers**
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-1
SHEET 5 of 5
FILE NO.
CHKD. BY _____

Boring Co. _____
Driller _____
Logged By _____

Boring Location nothing
Mudline El. _____
Date Start _____

eastling
Datum _____ NGVD
Date End _____

1000

Groundwater Readings Not Applicable for Oilfield Drilling			
Time	Depth	Elev.	Subsidence Time

卷之三

Onli Pdg:
Gillian McInnes

Case time s Output revs. min⁻¹

D E P T H	Coring Block (in.)	SAMPLE INFORMATION				
		TYPE & NO.	PENURED LAYER(S)	DEPTH (feet)	SLOW'S PER 5 INCHES	BPT No. Value
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						

SAMPLE DESCRIPTION (ASTM D2485)

STRATUM DESCRIPTION	E M X S

Bottom of Boring 43.5'

0 to 4 - Very Loose	0 to 2 - Very Soft
5 to 10 - Loose	3 to 4 - Soft
11 to 30 - Medium Dense	5 to 6 - Medium Sdfl
31 to 50 - Dense	8 to 15 - Stiff
Over 50 - Very Dense	18 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. PEG denotes recovered length of sample.
6. SPT denotes Standard Penetration Test.

7. PLO denotes Polarization Detector
8. PPM denotes parts per million.
9. PP denotes Pocket Penetrometer.
10. FVST denotes Field vs. shear test.
11. RQD denotes Rock Quality Designation.
12. R denotes core run number.

REMARKS:

- 1)
2)
3)
4)



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. P-1
SHEET 1 of 2
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK ENGINEERING
Driller BARRY WORDELL
Logged By DAVID TEOSTE

Boring Location northing eastling
Mudline Et. Est. GROUND EL=32' Datum NGVD
Date Start 8-19-02 Date End 8-19-02

Sampler:

Drill Rig: SIMCO 9100

Drilling Method: PROBE WITH ROLLER BIT

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

D E P T W	Coring Blows UHL	SAMPLE INFORMATION				SAMPLE DESCRIPTION (ASTM D2488)	STRATUM DESCRIPTION	R E M K S
		Type & No.	PEN/REC (Inches)	DEPTH (feet)	BLOWS PER 5 INCHES	SPT N-value		
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

0 to 2 - Very Loose	0 to 2 - Very Soft
3 to 10 - Loess	3 to 4 - Soft
11 to 30 - Medium Dense	5 to 8 - Medium Siffl
31 to 50 - Dense	9 to 15 - Siffl
Over 50 - Very Dense	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 Ostwald undisturbed sample.
4. PEN denotes penetration length of sampler.
5. REC denotes recovered length of sample.
6. SPT denotes Standard Penetration Test.

7. PDI denotes Photodionization 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)
- 2)
- 3)
- 4)

Engineering Log Template



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. P-1
SHEET 2 of 2
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK
Driller _____
Logged By _____

Boring Location nothing
Mudline El. _____
Date Start _____

eastng _____
Datum NGVD
Date End _____

Sampler: _____

Drill Rig:
Drilling Method:

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

Boring No.	SAMPLE INFORMATION			
	Type & No.	PEN/REC (Inches)	DEPTH (feet)	SLOWS PER 5 INCHES
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

15' 6" HARD, PRESUMED BOULDER or BEDROCK

BOTTOM OF BORING 16.5'

0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes Spilthart sampler.	7. P10 denotes Photolonization Densitometer.
5 to 10 - Loose	3 to 4 - Soft	2. U denotes 3-inch O.D. Undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 6 - Medium Stiff	3. UD denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	8 to 15 - Stiff	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff	5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test.	12. R denotes core run number.

REMARKS:

- 1)
- 2)
- 3)
- 4)

Engineering Log Template



**US Army Corps
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New England District

TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. P-2
SHEET 1 of 2
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK ENGINEERING
Driller BARRY WORDEL
Logged By DAVID TEOSTE

Boring Location northing easting
Mudline Et. EST. GROUND EL = 29.5' Datum NGVD
Date Start 8-19-02 Date End 8-19-02

Sampler: **SIMCO 9100**
Drill Rig: **SIMCO 9100**
Drilling Method: **PROBE WITH ROLLER BIT**

D E P T H	Coring Blows (ft)	SAMPLE INFORMATION			
		Type & No.	PENURED (inches)	DEPTH (feet)	SLOWS PER 9 INCHES
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

5' COBBLES

9.5' DRILL RATE SLOWED SIGNIFICANTLY
COLOR OF WASH CHANGED TO SAME AS CORING ON B-2

0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes split-barrel sampler.	7. PDI denotes Photoionization Detector
8 to 10 - Loose	3 to 4 - Soft	2. U denotes 3-Inch O.D. Undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	3. UO denotes 3-Inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	8 to 15 - Stiff	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	18 to 30 - Very Stiff	5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test.	12. R denotes core run number.

REMARKS:

- 1)
2)
3)
4)



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. P-2
SHEET 2 of 2
FILE NO.
CHKD. BY

Boring Co. GEOTEK ENGINEERING
Driller _____
Logged By _____

Boring Location northing
Mudline El.
Date Start 8-19-02

eastling
Datum NGVD
Date End 8-19-02

Sample No.

Drill Rig:
Drilling Method:

Groundwater Readings Not Applicable for Offshore Drills			
Date	Time	Depth	Elev.

O E P T L B Coring Blow No.	SAMPLE INFORMATION				SAMPLE DESCRIPTION (ASTM D2488)				STRATUM DESCRIPTION	R E M K S
	Type & No.	PENETR (inches)	DEPTH (feet)	SLOWS PER 3 INCHES N-value	Description					
1					No Change, PRESUMED Boulder or Bedrock					
11					BOTTOM OF BORING 10.5'					
12										
13										
14					NOTE! BORING WAS OFFSET 6' S-SW DUE TO OVER HEAD OBSTRUCTION (TREES)					
15										
16										
17										
18										
19										
20										
0 to 4 - Very Loose 5 to 10 - Loess 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense				0 to 2 - Very Soft 3 to 4 - Soft 5 to 6 - Medium Stiff 6 to 10 - Stiff 10 to 30 - Very Stiff Over 30 - Hard	1. S denotes Spil-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. P10 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)
- 2)
- 3)
- 4)

Engineering Log Template



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-2
SHEET 1 of 3
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK ENGINEERING
Driller BARRY WORCELL
Logged By DAVID TEOSTE

Boring Location northing easting
Mudline El. EST. GROUND EL = 31' Datum NGVD
Date Start 8-19-02 Date End 8-19-02

Sample Z" SPLIT SPOROS + NX CORE

Drill Rig: SIMCO 9100
Drilling Method: MUD ROTARY

Groundwater Readings Not Applicable for Offshore Drilling

Date	Time	Depth	Elev.	Stabilization Time
------	------	-------	-------	--------------------

S P T L E Casing Blow #	SAMPLE INFORMATION			
	Type B No.	PEN/REC (inches)	DEPTH (feet)	BLows PER 3 INCHES SPT N-value
1				
2				
3				
4				
5	5-1 24/5 5'-7' 5-12-7-6			
6				
7				
8				
9				
10				

wet, brown, fine to coarse, SAND; ii HI+ angular to sub angular, Fine gravel, trace inorganic silt

COBBLE @ 9'

0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes split-barrel sampler.	7. PLO denotes Photonionization Detector
5 to 10 - Loosy	3 to 4 - Soft	2. U denotes 3-inch O.b. Undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 6 - Medium Stiff	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	6 to 13 - Stiff	4. PEN denotes penetration length of sampler.	10. FVST denotes Field Vane shear test.
Over 50 - Very Dense	14 to 30 - Very Stiff	5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test	12. R denotes core run number.

REMARKS:

- 1)
- 2)
- 3)
- 4)

Engineering Log Template



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISIWAYS
EAST PROVIDENCE, RI

BORING NO. B-2
SHEET 2 of 3
FILE NO. _____
CHKD. BY _____

Boring Co. _____
Driller _____
Logged By _____

Boring Location northing
Mudline El. _____
Date Start _____

eastng
Datum NGVD
Date End _____

Sampler: _____

Drill Rig:
Drilling Method:

Groundwater Readings Not Applicable for Offshore Drilling

Date	Time	Depth	Elev.	Subsidence Time

D E P T L B	Coring Blow #	SAMPLE INFORMATION				DRILL TIME min/ft.	TOP OF BEDROCK 12'	hard, mechanically broken, unfractured, light gray, medium grained, conglomerate SANDSTONE no apparent bedding or fissility, occasional clasts of various lithology. RQD=100%	STRATUM DESCRIPTION
		Type & No.	PENREC Length	DEPTH (feet)	SOILS PER 5 INCHES				
		S-2	24/14	10'-12'	22-50-60-55				
11									
12		C-1	60/49	12'-17'	4-4-7-8-8				
13									
14									
15									
16									
17		C-2	60/60	17'-22'	7-10-10-8-9		As above w/moderate to high angle natural fracture at bottom of run RQD=100%		
18									
19									
20									

0 to 2 - Very Loose	0 to 2 - Very Soft	1. S samples split barrel sampler	7. PIR denotes Polarization Detector
0 to 10 - Loose	3 to 4 - Soft	2. U denotes 3-inch O.D. Undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 6 - Medium Stiff	3. UD denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	6 to 13 - Stiff	4. PEN denotes penetration length of sampler.	10. FVST denotes Field Vane shear test.
Over 50 - Very Dense	13 to 30 - Very Stiff	5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test.	12. R denotes compression number.

REMARKS:

- 1)
- 2)
- 3)
- 4)

Engineering Log Template



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-2
SHEET 3 of 3
FILE NO. _____
CHKD. BY _____

Boring Co. _____
Driller _____
Logged By _____

Boring Location northing _____
Mudline El. _____
Date Start _____

eastling _____
Datum NGVD
Date End _____

Sampler: _____

Onl Rig:
Coring Material: _____

Groundwater Readings Not Applicable for Offshore Drilling

Date	Time	Depth	Elev.	Electrification Time

S E P T U	Coring Blow #	SAMPLE INFORMATION				SAMPLE DESCRIPTION (ASTM D2488)	STRATUM DESCRIPTION	R E M K S
		Type & No.	PEN/REC (inches)	DEPTH (ft.)	SLOWS PER 1 INCHES			
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

BOTTOM OF BORING 22'

0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes split-spoon sampler	7. PQ denotes Photoelectric Densitometer
5 to 10 - Loosy	3 to 4 - Silt	2. U denotes 3-inch O.D. Undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 6 - Medium Silt	3. UD denotes 3-inch O.D. undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	8 to 15 - Sand	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	18 to 30 - Very Silty	5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test	12. R denotes core N-value.

REMARKS:

- 1)
- 2)
- 3)
- 4)

Engineering Log Template



**US Army Corps
of Engineers**
New England District

PROJECT

TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-3

SHEET 1 of 7

FILE NO.

CHKD, BY

Boring Co. GEOTEK ENGINEERING INC.
Driller BARRY WORDELL
Logged By DAVID TEUSTE

Boring Location nothing easting _____
Mudline El. EST. GROUND EL = 17.8' Datum NGVD
Date Start 8-15-02 Date End 8-16-02

BRUNSWICK 211 E B L I F E E P A S N

~~SEARCHED~~ SPLIT 3
SEARCHED 511618 8100

Drill Rig: SIMCO 9100
Drilling Method: MUD ROTARY

		SAMPLE INFORMATION				
S E P T M	Coring Blow Val	Type & No.	PEN/REC (Inches)	DEPTH (feet)	SLOWS PER 5 INCHES	SPT N-value
1						
2						
3						
4						
5						
6						
7						
8						
9						

SAMPLE DESCRIPTION (ASTM D2485)

**STRATUM
DESCRIPTION**

NO SAMPLES REQUIRED
ABOVE DEPTH OF 15'

0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes spell-barrel sampler.	7. PDI denotes Polarization Detector
5 to 10 - Loose	3 to 4 - Soft	2. U denotes 3-inch O.D. Undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 6 - Medium Stiff	3. UD denotes 3-Inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	8 to 15 - Stiff	4. PEN denotes penetration length of sampler.	10. FVST denotes field veneer shear test.
Over 50 - Very Dense	18 to 30 - Very Stiff	5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test.	12. R denotes core run number.

REMARKS:

- 1)
2)
3)
4)

Engineering Log Template



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-3
SHEET 2 of 7
FILE NO.
CHKD. BY

Boring Co. GEO TEK ENGINEERING
Driller BARRY WOROELL
Logged By DAVID TEOSTE

Boring Location northing
Mudline El. 17.8'
Date Start 8-15-02

easting
Datum NGVD
Date End 8-16-02

Sample:

Drill Rig:
Drilling Method:

Groundwater Readings Not Applicable for Offshore Borings

Date	Time	Depth	Elev.	Stabilization Time

D E P T L	Coring Blows (in)	SAMPLE INFORMATION			
		Type & No.	PSM/REC (inches)	DEPTH (feet)	SLOWS PER 5 INCHES N-Y-N-S
11					
12					
13		S-1	24/9	13'-15"	24-13-8-5
					wet, medium dense, olive, med-coarse, SAND, trace fine gravel
14					
15					
16					
17					
18		S-2	24/10	18'-20"	7-9-13-13
					wet, medium dense, olive, medium to coarse SAND, little fine to coarse gravel, trace inorganic silt
19					
20					

0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes split-barrel sampler.	7. PWD denotes Photoelectric Detector
8 to 10 - Loose	3 to 4 - Soft	2. U denotes 3-inch O.D. Undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 6 - Medium Stiff	3. UD denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	8 to 15 - Stiff	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	18 to 30 - Very Stiff	5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test	12. R denotes core run number.

REMARKS:

- 1)
- 2)
- 3)
- 4)

Engineering Log Template



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. 13-3
SHEET 3 of 7
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK ENGINEERING
Driller _____
Logged By _____

Boring Location northing
Mudline El. _____
Date Start 8-15-02

eastling
Datum NGVD
Date End 8-16-02

Sampler: _____

Drill Rig:
Drilling Method:

Groundwater Readings Not Applicable for Offshore Boring

Date	Time	Depth	Elev.	Stabilization Time

D E P T W	Coring Blows (in)	SAMPLE INFORMATION			
		Type & No.	PEN/REC (inches)	DEPTH (feet)	SLOWS PER 5 INCHES
21					
22					
23					
		5-3	24/3	23'-25'	9-10-20-10
24					
25					
26					
27					
28					
		5-4	24/4	28'-30'	9-5-6-8
29					
30					

SAMPLE DESCRIPTION (ASTM D2488)

STRATUM
DESCRIPTION
R
E
M
E
R
K
S

wet, angular to sub-rounded, fine to coarse
GRAVEL, trace fine sand

wet, loose, olive gray, COARSE SAND,
little fine gravel

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 13 - Stiff
13 to 30 - Very Stiff
Over 30 - Hard

1. S denotes split-barrel sampler.
2. U denotes 3-inch O.D. Undisturbed sample.
3. UD 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. PIG denotes Photonization Densitometer.
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 MN number.

REMARKS:

- 1)
- 2)
- 3)
- 4)

Engineering Log Template



**US Army Corps
of Engineers**
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-3
SHEET 4 of 7
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK ENGINEERING
Driller _____
Logged By _____

Boring Location nothing
Mudline El. _____
Date Start _____

eastling
Datum NGVD
Date End

Employee

Call 811 before you dig to avoid hitting underground utility lines.

Drilling Method:

D E P T H F O OT H E L L I N G B R E A K S U N D A M E R I C A N U N I T	SAMPLE INFORMATION				SAMPLE DESCRIPTION (ASTM D2488)		STRATUM DESCRIPTION	
	Type & No.	PEN/RED (inches)	DEPTH (feet)	SLOWS PER 5 INCHES	BPT H-Yield			
31								
32								
33	S-5 24/4	33'-35'	5-4-10-7	wet, med gray, med, SAND, changing to med stiff, med gray, SILT, high plasticity, little fine sand				
34								
5								
36								
37								
38	S-6 24/4	38'-40'	4-5-5-7	moist, medium stiff, olive gray, clayey, SILT, high plasticity, trace fine sand				
39								
40								

STRATA CHANGE ≈ 34.5' SANDS
SILT

REMARKS.

- 1)
2)
3)
4)

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

7. PDI denotes Photoionization Detector
 8. PPM denotes parts per million.
 9. PP denotes Pocket Phonograph.
 10. PYST denotes Yield versus shear test.
 11. RQD denotes Rock Quality Designation.
 12. R denotes core run number.

Engineering Log Template



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-3
SHEET 5 of 7
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK ENGINEERING
Driller _____
Logged By _____

Boring Location northing
Mudline El.
Date Start _____

eastling
Datum NGVD
Date End _____

Sample No. _____

Groundwater Readings Not Applicable for Offshore Boring

Orn Rig: _____
Drilling Method: _____

Date	Time	Depth	Elev.	Stabilization Time

Boring No.	SAMPLE INFORMATION				Stratum Description	Remarks
	Type & No.	PEN/REC (inches)	DEPTH (feet)	SLOWS PER 5 INCHES		
41						
42						
43	S-7	24/7	43'-45'	4-8-17-30	moist, medium stiff, olive gray, clayey SILT, high plasticity, trace fine sand	
44						
45						
46					STRATA CHANGE ≈ 46'	SILT SANDS + GRAVEL
47						
48	S-8	24/9	48'-50'	25-22-18-15	wet, medium dense, olive gray. fine to coarse SAND, some fine to coarse gravel	
49						
50						

0 to 4 - Very Loose	0 to 2 - Very Soft
5 to 10 - Loose	3 to 4 - Soft
11 to 30 - Medium Dense	5 to 6 - Medium Stiff
31 to 50 - Dense	8 to 13 - Stiff
Over 50 - Very Dense	13 to 30 - Very Stiff
	Over 30 - Hard

1. S denotes split-barrel sampler.	7. P10 denotes Photoionization Detector
2. U denotes 3-inch O.D. Undisturbed sample.	8. PPM denotes parts per million.
3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
4. PEN denotes penetration length of sampler.	10. FVST denotes Field vane shear test.
5. REC denotes recovered length of sampler.	11. RQD denotes Rock Quality Designation.
6. SPT denotes Standard Penetration Test.	12. R denotes coring number.

REMARKS:

- 1)
- 2)
- 3)
- 4)

Engineering Log Template



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-3
SHEET 6 of 7
FILE NO.
CHKD. BY

Boring Co. GEOTEK ENGINEERING
Driller _____
Logged By _____

Boring Location northing
Mudline El.
Date Start

easting
Datum NGVD
Date End

Samples:

Drill Rig:
Drilling Method:

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

D E P T L	Casing Blow (in)	SAMPLE INFORMATION				SAMPLE DESCRIPTION (ASTM D2488)	STRATUM DESCRIPTION	R E M ARKS
		Type & No.	PEN/REC (Uncons.)	DEPTH (feet)	SLOWS PER 5 INCHES N-value			
51								
52								
53		S-9 24/12	53'-55'	30-17-22-25		52' - 53' GRAVEL SEAM	52'	
54								
55								
56								
57								
58		S-10 24/14	58'-60'	8-11-14-17		wet, olive gray, SILT, little clay, trace fine sand, moderate plasticity	53'	
59								
60								

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-spoon sampler.
2. U denotes 3-inch O.D. Undisturbed sample.
3. UD 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 PhotoInterferon Densitometer.
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)
- 2)
- 3)
- 4)

Engineering Log Template



**US Army Corps
of Engineers**
New England District

PROJECT
TEN MILE RIVER FISHWAYS
EAST PROVIDENCE, RI

BORING NO. B-3
SHEET 7 of 7
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK ENGINEERING
Driller _____
Logged By _____

Boring Location nothing
Mudline El. _____
Date Start 8-15-

eastling
Datum NGVD
Date End 8-16-02

15000

Drill Rig:
Drilling Method:

D E P T H L	Coring Block (id)	SAMPLE INFORMATION				
		TYPE & NO.	PENETRAT ION(Feet)	DEPTH (feet)	BLOWS PER 5 INCHES	SPT N-value
61						
62						
63		S-11	24/14	63'-65'	14-14-22-28	
64						
65						
66						
67						
68		S-12	24/10	68'-70'	15-17-28-24	
69						
70						

wet, olive gray, coarse SAND, trace
fine gravel, silt

wet, olive gray, fine GRAVEL, trace silt

BOTTOM OF BORING 70'

0 to 4 - Very Loose	0 to 2 - Very Soft
5 to 10 - Loose	3 to 4 - Soft
11 to 30 - Medium Dense	5 to 6 - Medium Stiff
31 to 50 - Dense	8 to 15 - Stiff
Over 50 - Very Dense	13 to 30 - Very Stiff
	Over 30 - Hard

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

7. PIO denotes Photoionization Detector
8. PPM denotes parts per million.
9. PP denotes Pocket Penetrometer.
10. FVST denotes Field veneer shear test.
11. RQD denotes Rock Quality Designation.
12. R denotes rock rank number.

REMARKS:

- MA
1)
2)
3)
4)

Engineering Log Template



**US Army Corps
of Engineers**
New England District

TEN MILE RIVER - FISHWAYS
EAST PROVIDENCE, RI

BORING NO. P-3
SHEET 1 of 4
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK ENGINEERING
Driller BARRY WORDELL
Logged By DAVID TEOSTE

Boring Location northing easting
Mudline Et. EST. GROUND EL 17.8' Datum NGVD
Date Start 8-22-02 Date End 8-22-02

Samplers
Drill Rig: SIMCO 9100
Drilling Method: PROBE WITH ROLLERBIT

C E P T M	Ceiling Blows (ft.)	SAMPLE INFORMATION				
		TYPE & NO.	PENREC (inches)	DEPTH (feet)	BLOWS PER 5 INCHES	BPT N-Value
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

SAMPLE DESCRIPTION (ASTM D2488)

STRATUM

DESCRIPTION

— 1 —

1

1

SANDS + GRAVEL

0 to 4 - Very Loose	0 to 2 - Very Soft
5 to 10 - Loosy	3 to 4 - Soft
11 to 30 - Medium Dense	5 to 6 - Medium Stiff
31 to 50 - Dense	8 to 15 - Stiff
Over 50 - Very Dense	18 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 Ostwald undisturbed sample.
4. PEN denotes penetration length of sampler.
5. REC denotes recovered length of sample.
6. SPT Denotes Standard Penetration Test

- 7. PIO denotes Photoionization Detector
- 8. PPM denotes parts per million.
- 9. PP denotes Pocket Photometer.
- 10. FYST denotes Field Vane shear test.
- 11. RQD denotes Rock Quality Designation.
- 12. R denotes core run number.

REMARKS:

- 1)
2)
3)
4)

Engineering Log Template



**US Army Corps
of Engineers**
New England District

PROJECT
TEN MILE RIVER - FISHWAYS
EAST PROVIDENCE, RI

BORING NO. P-3
SHEET 2 of 4
FILE NO. _____
CHKD. BY _____

Boring Co. GEOTEK ENGINEERING
Driller _____
Logged By _____

Boring Location nothing
Mudline El. _____
Date Start _____

eastling
Datum _____ NGVD
Date End _____

13019

Groundwater Readings Not Applicable for Offshore Drills			
Time	Depth	Elev.	Stabilization Time

On Rig:
Drilling Method:

SANDS

0 to 4 - Very Loose	0 to 2 - Very Soft
8 to 10 - Loosy	3 to 4 - Soft
11 to 30 - Medium Dense	5 to 6 - Medium Sdny
31 to 50 - Dense	8 to 15 - Sdny
Over 50 - Very Dense	18 to 30 - Very Stiff
	Over 30 - Hard

1. S denotes split-barrel sampler.
2. U denotes 3-inch O.D. Undistributed sample.
3. UO denotes 3-Inch Ostwald undistributed sample.
4. PEG denotes penetration length of sampler.
5. REC denotes recovered length of sample.
6. SPT denotes Standard Penetration Test

7. P10 denotes Photoionization Detector
8. PPM denotes parts per million.
9. PP denotes Pocket Penetrometer.
10. FYST denotes field vsn shear test.
11. RQD denotes Rock Quality Designation.
12. R denotes core run number.

REMARKS:

- 1) 2) 3) 4)

Engineering Log Template



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER - FISHWAYS
EAST PROVIDENCE, RI

BORING NO. P-3
SHEET 3 of 4
FILE NO.
CHKD. BY

Boring Co. GEOTEK ENGINEERING
Driller BARRY WORDELL
Logged By DAVID TEOSTE

Boring Location northing _____
Mudline El. _____
Date Start _____

eastling _____
Datum NGVD
Date End _____

Samples:

Ort Rig:
Drilling Method:

Groundwater Readings Not Applicable for Offshore Drilling

Date	Time	Depth	Elev.	Stabilization Time

Boring No.	SAMPLE INFORMATION					SAMPLE DESCRIPTION (ASTM D2488)			Stratum Description	R E M X G
	Type	PEN/REC (Inches)	DEPTH (feet)	SLOWS PER 5 INCHES	SPT N-value					
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

SANDS

0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes split-barrel sampler.	7. P10 denotes Photoelectric Densitometer.
5 to 10 - Loos	3 to 4 - Soft	2. U denotes 3-inch O.D. Undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 6 - Medium Stiff	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	8 to 15 - Stiff	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	18 to 30 - Very Stiff	5. REC denotes recovered length of sample.	11. RQO denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test.	12. R denotes core run number.

REMARKS:

- 1)
- 2)
- 3)
- 4)

Engineering Log Template



US Army Corps
of Engineers
New England District

PROJECT
TEN MILE RIVER - FISHWAYS
EAST PROVIDENCE, RI

BORING NO. P-3
SHEET 4 of 4
FILE NO.
CHKD. BY

Boring Co. GEOTEK

Driller

Logged By

Boring Location northing

eastling

Mudline El.

Datum NGVD

Date Start

Date End

Sample

Drill Rig:

Drilling Method:

Groundwater Readings Not Applicable for Offshore Drilling

Date	Time	Depth	Elev.	Stabilization Time

S P T W	Coring Blow (ft)	SAMPLE INFORMATION			
		Type L No.	PEN(S) (Inches)	DEPTH (feet)	SLOWS PER 3 INCHES SPT N-value
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					

SAMPLE DESCRIPTION (ASTM D2488)

STRATUM
DESCRIPTION

SANDS

31'

COBBLES + COARSE GRAVEL

32'

SILT + FINE SAND

NO REFUSAL ENCOUNTERED
DURING COMPLETION OF BORING

BOTTOM OF BORING 40'

0 to 4 - Very Loose	0 to 2 - Very Soft	1. S denotes split-barrel sampler.	7. PIQ denotes Polarization Densitometer.
5 to 10 - Loose	3 to 4 - Soft	2. U denotes 3-inch O.D. Undisturbed sample.	8. PPM denotes parts per million.
11 to 30 - Medium Dense	5 to 6 - Medium Stiff	3. UD denotes 3-inch Ostwald undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	8 to 13 - Stiff	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	13 to 33 - Very Stiff	5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard	6. SPT denotes Standard Penetration Test	12. R denotes core run number.

REMARKS:

- 1)
- 2)
- 3)
- 4)

Engineering Log Template