



STATE OF VERMONT
 AGENCY OF TRANSPORTATION
 MATERIALS & RESEARCH SECTION
 SUBSURFACE INFORMATION

BORING LOG

NEW HAVEN
 HES 032-1(8)
 VT-17 TH-18, TH-19, TH-22

Boring No.: B-101
 Page No.: 1 of 1
 Pin No.: 04B210
 Checked By: MLM

Boring Crew: GARROW, JUDKINS, DAIGNEAULT
 Date Started: 12/13/12 Date Finished: 12/13/12
 VTSPG NAD83: N 593078.65 ft E 1476829.73 ft
 Station: 201+82 Offset: -0.10
 Ground Elevation: 416.21 ft

Casing H.S.A. Sampler SS
 I.D.: 3.25 in 1.5 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C SKID CE = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
		No water to depth.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.32 ft					
2.5		A-1-b, SaGr, brn, Moist, Rec. = 1.4 ft	12-11-13-9 (24)	4.8	48.1	36.6	15.3
		A-4, GrSaSi, brn, Moist, Rec. = 1.3 ft	5-4-4-5 (8)	12.1	23.7	29.8	46.5
5.0		A-4, GrSaSi (NP), brn, Moist, Rec. = 1.8 ft	4-5-10-R (15)	11.0	21.4	39.0	39.6
		A-4, SaGrSi, brn-gry, Moist, Rec. = 0.2 ft, Broken Rock was within sample.	(R)	7.0	31.9	31.0	37.1
7.5		Hole stopped @ 7.2 ft CNPF, Possible Top of Bedrock					

Notes:
 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 NEW HAVEN HES 032-1(8).GPJ VERMONT AOT.GDT 2/14/13



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NEW HAVEN
 HES 032-1(8)
 VT-17 TH-18, TH-19, TH-22

Boring No.: B-101A
 Page No.: 1 of 1
 Pin No.: 04B210
 Checked By: MLM

Boring Crew: GARROW, JUDKINS, DAIGNEAULT
 Date Started: 12/13/12 Date Finished: 12/13/12
 VTSPG NAD83: N 593087.28 ft E 1476825.11 ft
 Station: 201+71 Offset: -0.10
 Ground Elevation: 416.21 ft

Casing Sampler
 Type: H.S.A. SS
 I.D.: 3.25 in 1.5 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C SKID CE = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
		No water to depth.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
2.5							
5.0							
7.5		A-4, GrSaSi (NP), brn, Moist, Rec. = 1.7 ft	5-9-18-R (27)	8.7	28.9	35.2	35.9
		Field Note:, Could not advance auger past 8.9 ft.					
		Hole stopped @ 8.9 ft CNPF, Possible Top of Bedrock					

Notes:
 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 NEW HAVEN HES 032-1(8).GPJ VERMONT AOT.GDT 2/14/13



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NEW HAVEN
 HES 032-1(8)
 VT-17 TH-18, TH-19, TH-22

Boring No.: B-101B
 Page No.: 1 of 1
 Pin No.: 04B210
 Checked By: MLM

Boring Crew: GARROW, JUDKINS, DAIGNEAULT
 Date Started: 12/13/12 Date Finished: 12/13/12
 VTSPG NAD83: N 593070.41 ft E 1476835.81 ft
 Station: 201+92 Offset: -0.10
 Ground Elevation: 416.21 ft

Casing H.S.A. Sampler SS
 Type: H.S.A. SS
 I.D.: 3.25 in 1.5 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C SKID CE = 1.33

Groundwater Observations		
Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.35 ft					
2.5							
5.0		Field Note:, No Recovery, Refusal	(R)				
7.5		Hole stopped @ 5.8 ft Possible Top of Bedrock					

Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
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 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



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NEW HAVEN
 HES 032-1(8)
 VT-17 TH-18, TH-19, TH-22

Boring No.: B-102
 Page No.: 1 of 1
 Pin No.: 04B210
 Checked By: MLM

Boring Crew: GARROW, JUDKINS, DAIGNEAULT
 Date Started: 12/14/12 Date Finished: 1/30/13
 VTSPG NAD83: N 593192.44 ft E 1476761.09 ft
 Station: 200+49 Offset: 0.00
 Ground Elevation: 408.05 ft

Casing Sampler
 Type: H.S.A. & WB SS
 I.D.: 3.25 in 1.5 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C SKID CE = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
12/15/12		No water to depth.
01/30/13	3.7	AM

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %	
5		A-6, SiCl, brn-gry, Moist, Rec. = 0.9 ft	WH-3-4-5 (7)	29.2	0.9	13.6	85.5	36	11	
		A-7-6, Cl, brn-gry, Moist, Rec. = 1.2 ft	3-4-6-8 (10)	31.5		2.1	97.9	47	20	
		Shelby Tube, brn-gry, Moist, Rec. = 1.8 ft, 4.0 ft - 6.0 ft								
		A-4, GrSaSi, brn-gry, Wet, Rec. = 1.9 ft, Broken Rock was within sample.	WH-14-30-38 (44)	15.0	23.0			19	4	
10										
15		Note: Continued boring for more information on 01/29/13 using wash bore drilling with the CME55 Track Rig.								
20		A-2-4, SiGrSa, gry, Moist, Rec. = 0.6 ft, Lots of Broken Rock was within sample.	14-26-42-R (68)	8.8	33.6	36.9	29.5			
		A-4, SaGrSi, gry, Moist, Rec. = 0.4 ft, Broken Rock was within sample.	(R)	8.7	31.0	25.5	43.5			
		A-4, SaGrSi, gry, Moist, Rec. = 0.7 ft, Broken Rock was within sample.	14-R	8.1	28.2	25.8	46.0			
25		Field Note: NXMDC, No Recovery								
30		Hole stopped @ 28.9 ft TLOB, To Ledge or Boulder								
35										

Notes:
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 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 NEW HAVEN HES 032-1(8).GPJ VERMONT AOT.GDT 2/14/13



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NEW HAVEN
 HES 032-1(8)
 VT-17 TH-18, TH-19, TH-22

Boring No.: B-103
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 Pin No.: 04B210
 Checked By: MLM

Boring Crew: GARROW, JUDKINS, DAIGNEAULT
 Date Started: 12/14/12 Date Finished: 12/14/12
 VTSPG NAD83: N 593469.02 ft E 1476960.91 ft
 Station: 114+36 Offset: -25.00
 Ground Elevation: 409.16 ft

Casing Sampler
 Type: H.S.A. SS
 I.D.: 3.25 in 1.5 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C SKID CE = 1.33

Groundwater Observations		
Date	Depth (ft)	Notes
		No water to depth.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-1-b, SiSaGr, brn-gry, Dry, Rec. = 0.9 ft, Lab Note: Lots of Angular Stones. A small layer of Clay was noticeable, but insufficient amount for testing.	10-7-5-13 (12)	9.9	48.4	30.9	20.7
2.5		A-1-b, SaGr, Dark Orange, Moist, Rec. = 1.7 ft, Sample was mostly Weathered Rock.	7-8-10-24 (18)	19.2	43.5	38.3	18.2
		A-1-b, SiGrSa, Dark Orange, MTW, Rec. = 0.5 ft, Sample was mostly Very Weathered Rock.	(R)	18.1	36.1	42.6	21.3
5.0		Hole stopped @ 4.5 ft TLOB, Possible Top of Bedrock					
7.5							

Notes:
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 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 NEW HAVEN HES 032-1(8).GPJ VERMONT AOT.GDT 2/14/13



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NEW HAVEN
HES 032-1(8)
VT-17 TH-18, TH-19, TH-22

Boring No.: B-104
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Pin No.: 04B210
Checked By: MLM

Boring Crew: GARROW, DAIGNEAULT
Date Started: 12/19/12 Date Finished: 12/19/12
VTSPG NAD83: N 593480.15 ft E 1477049.55 ft
Station: 115+36 Offset: 20.00
Ground Elevation: 410.33 ft

Casing Sampler
Type: H.S.A. SS
I.D.: 3.25 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID CE = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
		No water to depth.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		A-1-b, GrSa, brn, Moist, Rec. = 1.6 ft	2-3-4-3 (7)	17.4	30.3	49.8	19.9		
2.5		A-6, SiCl, brn, Moist, Rec. = 1.8 ft	2-2-3-4 (5)	32.5	1.8	22.1	76.1	33	14
5.0		A-4, GrSaSi, brn, Moist, Rec. = 1.5 ft	3-4-5-4 (9)	19.2	25.4	30.3	44.3	22	5
7.5		A-2-4, SiGrSa (NP), brn, Moist, Rec. = 1.5 ft	10-9-8-10 (17)	12.1	34.0	36.4	29.6		
10.0		A-2-4, SiSa, Dark Orange, Moist, Rec. = 1.6 ft, Lab Note: Color of sample changed by Lab Tech.	8-6-6-R (12)	17.7	17.5	51.1	31.4		
10.0		A-4, SiSa (NP), Dark Orange, Moist, Rec. = 0.5 ft, Lab Note: Color of sample changed by Lab Tech. Broken Rock was within sample.	(R)	13.8	19.2	42.5	38.3		
		Hole stopped @ 10.5 ft CNPf - TLOB							

Notes:

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HES 032-1(8)
VT-17 TH-18, TH-19, TH-22

Boring No.: B-105
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Pin No.: 04B210
Checked By: MLM

Boring Crew: GARROW, DAIGNEAULT, WHITLOCK
Date Started: 12/19/12 Date Finished: 1/28/13
VTSPG NAD83: N 593596.23 ft E 1477120.91 ft
Station: 116+65 Offset: -29.00
Ground Elevation: 403.6 ft

Casing Sampler
Type: H.S.A. & WB SS
I.D.: 3.25 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID CE = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
12/19/12	4.0	Right after drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Groundwater Observations				
						Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-1-b, GrSa, brn, Moist, Rec. = 1.1 ft				1-2-3-3 (5)	14.2	34.0	49.8	16.2
2.5		A-2-4, SiSa, brn, Moist, Rec. = 1.5 ft				2-3-1-2 (4)	23.4	19.3	47.4	33.3
5.0		A-2-4, GrSiSa, brn, Moist, Rec. = 0.5 ft, Broken Rock was within sample.				9-9-13-6 (22)	15.8	26.4	41.3	32.3
7.5		A-1-b, SiSaGr, brn, Moist, Rec. = 0.6 ft, Lots of Broken Rock was within sample.				16-9-9-7 (18)	12.0	48.9	30.0	21.1
10.0		A-1-b, SiSaGr, brn, Moist, Rec. = 0.5 ft, Lots of Broken Rock was within sample.				20-20-16-12 (36)	11.2	43.7	31.0	25.3
10.0		A-1-b, SiSaGr, brn, MTW, Rec. = 1.1 ft, Lots of Broken Rock was within sample. Note:., Returned 01/28/13 to determine bedrock using wash bore drilling with the CME55 Track Rig.				17-16-19-31 (35)	10.6	41.7	36.7	21.6
12.5		12.0 ft - 14.0 ft, Buff, Light gray and pink-mottled Dolomite, Moderately hard, Zones of moderate weathering, Poor rock, NXMDC, RMR = 33	1 (50)	100 (0)	4 8					
15.0		14.0 ft - 17.0 ft, Buff, Light gray and pink-mottled Dolomite, Moderately hard, Zones of moderate weathering, Poor rock, NXMDC, RMR = 38	2 (50)	100 (33)	16 7 9					
17.5		Hole stopped @ 17.0 ft								

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NEW HAVEN
 HES 032-1(8)
 VT-17 TH-18, TH-19, TH-22

Boring No.: B-106
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 Pin No.: 04B210
 Checked By: MLM

Boring Crew: GARROW, DAIGNEAULT
 Date Started: 12/19/12 Date Finished: 12/19/12
 VTSPG NAD83: N 593556.75 ft E 1477011.42 ft
 Station: 300+60 Offset: -19.00
 Ground Elevation: 411.84 ft

Casing Sampler
 Type: H.S.A. SS
 I.D.: 3.25 in 1.5 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C SKID CE = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
		No water to depth.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
2.5		Visual Description: SiSaGr, brn, Dry, Rec. = 0.5 ft, Insufficient sample for testing.	4-5-3-3 (8)	8.5			
		A-4, SaSi (NP), brn, Moist, Rec. = 1.2 ft		14.9	14.9	41.0	44.1
		Visual Description: SaGrSi, brn, Moist, Rec. = 0.3 ft, Insufficient sample for testing.	2-22-40-44 (62)	9.9			
	A-1-b, SaGr, gry, Dry, Rec. = 0.5 ft, Lots of Broken Rock was within sample.	6.2		47.9	32.4	19.7	
		A-1-a, SaGr, white, Dry, Rec. = 0.6 ft, Lots of Broken & Pulverized white Rock was within sample.		3.2	61.9	25.7	12.4
5.0		Hole stopped @ 4.0 ft CNPF - TLOB					
7.5							

Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 NEW HAVEN HES 032-1(8).GPJ VERMONT AOT.GDT 2/14/13



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NEW HAVEN
 HES 032-1(8)
 VT-17 TH-18, TH-19, TH-22

Boring No.: B-107
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 Pin No.: 04B210
 Checked By: MLM

Boring Crew: GARROW, DAIGNEAULT
 Date Started: 12/19/12 Date Finished: 12/19/12
 VTSPG NAD83: N 593647.04 ft E 1477055.44 ft
 Station: 301+49 Offset: 29.00
 Ground Elevation: 408.5 ft

Type: H.S.A. SS
 I.D.: 3.25 in 1.5 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C SKID CE = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
		No water to depth.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-1-b, GrSa, brn, Dry, Rec. = 0.6 ft	2-4-4-3 (8)	11.1	28.1	58.9	13.0
2.5		A-1-a, SaGr, brn, Moist, Rec. = 0.7 ft	4-3-4-4 (7)	9.4	52.9	36.2	10.9
5.0		Visual Description:, SiSaGr, brn, Moist, Rec. = 0.3 ft, Insufficient sample for testing.	23-29-17-10 (46)	14.3			
7.5		Visual Description:, SiSaGr, brn, Dry, Rec. = 0.6 ft, Insufficient sample for testing.	10-6-8-6 (14)	7.2			
10.0		Visual Description:, GrSaSi, brn, Moist, Rec. = 0.1 ft, Insufficient sample for testing.	6-6-17-31 (23)	10.5			
10.0		A-2-4, GrSiSa, Dark Orange, Dry, Rec. = 1.5 ft, Lab Note: Color of sample changed by Lab Tech.	19-28-R (R)	10.8	29.1	37.5	33.4
12.5		Hole stopped @ 11.5 ft CNPF - TLOB					

Notes:
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 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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Boring No.: B-108
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 Pin No.: 04B210
 Checked By: MLM

Boring Crew: GARROW, JUDKINS, DAIGNEAULT
 Date Started: 12/14/12 Date Finished: 12/14/12
 VTSPG NAD83: N 593697.82 ft E 1477035.16 ft
 Station: 302+10 Offset: -15.00
 Ground Elevation: 406.72 ft

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	3.25 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C SKID	CE = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
		No water to depth.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Visual Description: Topsoil with Wood and Broken White Rock, brn-white, Dry, Rec. = 0.5 ft	3-4-R (R)				
2.5		Hole stopped @ 0.7 ft TLOB, Possible Top of Bedrock					
5.0		Remarks: 1. Ledge outcrop 3.0 ft. from hole location.					
7.5							

Notes:

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NEW HAVEN
 HES 032-1(8)
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Boring No.: B-108A
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 Pin No.: 04B210
 Checked By: MLM

Boring Crew: GARROW, DAIGNEAULT
 Date Started: 12/19/12 Date Finished: 12/19/12
 VTSPG NAD83: N 593679.94 ft E 1477032.55 ft
 Station: 301+90 Offset: -15.00
 Ground Elevation: 406.72 ft

Casing Sampler
 Type: H.S.A. SS
 I.D.: 3.25 in 1.5 in
 Hammer Wt: N.A. 140 lb.
 Hammer Fall: N.A. 30 in.
 Hammer/Rod Type: Auto/AWJ
 Rig: CME 45C SKID CE = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
		No water to depth.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-1-b, SiGrSa, brn, Dry, Rec. = 0.8 ft	3-16-51-62 (67)	12.6	36.7	39.0	24.3
		A-1-a, SaGr, white, Dry, Rec. = 0.7 ft, Sample was mostly Broken & Pulverized white Rock.		1.8	62.3	27.1	10.6
		A-1-b, SaGr, white, Dry, Rec. = 0.4 ft, Sample was mostly Broken & Pulverized white Rock.	(R)	3.5	52.8	30.6	16.6
2.5		Hole stopped @ 2.4 ft CNPf - TLOB					
5.0							
7.5							

Notes:

1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 NEW HAVEN HES 032-1(8).GPJ VERMONT AOT.GDT 2/14/13