



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

BORING LOG

RUTLAND CITY
BRF 3000(19)
TH-10 BR-17

Boring No.: B-101
Page No.: 1 of 1
Pin No.: 08J096
Checked By: CAA

Boring Crew: PORTER, GARROW, WELLS
Date Started: 5/27/10 Date Finished: 6/02/10
VTSPG NAD83: N 402148.07 ft E 1507184.27 ft
Station: 7+45 Offset: -11.50
Ground Elevation: 517.0 ft

Casing Type: WB
Sampler: SS
I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK CE = 1.46

Groundwater Observations

Date	Depth (ft)	Notes
06/01/10	7.9	Prior to drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-1-b, SaGr, brn, Moist, Rec. = 0.7 ft, Broken rock was within sample.	WH-4-6 (4)	16.5	43.0	42.6	14.4
		A-1-b, SaGr, white, Moist, Rec. = 0.8 ft, Sample was mostly broken rock (Marble).	10-4-7-10 (11)	12.1	59.3	30.0	10.7
5		A-1-a, SaGr, brn, Moist, Rec. = 0.9 ft, Concrete & Broken rock (Quartzite) were within sample.	5-5-4-4 (9)	17.6	69.0	22.1	8.9
		A-2-4, SiSa, brn, MTW, Rec. = 0.5 ft	4-2-2-3 (4)	29.6	0.8	64.6	34.6
		A-4, SaSi, brn-gry, MTW, Rec. = 1.3 ft	2-1-1-2 (2)	31.0		28.6	71.4
10		A-4, SiSa, brn-gry, MTW, Rec. = 1.7 ft, A small amount of decayed wood pieces were within sample.	1-1-1-1 (2)	37.7		56.4	43.6
		A-4, SaSi, gry, MTW, Rec. = 1.3 ft, A small amount of decayed wood pieces were within sample.	WH-8-10-18 (18)	31.1	14.4	41.6	44.0
15		Field Note: NXDC, Cobbles					
		A-2-4, SiGrSa, gry, Moist, Rec. = 1.0 ft	6-8-8-18 (16)	13.2	30.0	49.2	20.8
		Field Note: NXDC, Cobbles					
20							
		Field Note: NXDC, Cobbles, Cleaned out casing.					
		Field Note: No recovery, Appears to be Broken Rock	R/6" (R)				
25		Field Note: Boulder					
		Field Note: NXDC, Advanced casing to 28.0 ft., Cleaned out casing.					
		A-2-4, SiSa, brn, Moist, Rec. = 1.4 ft	4-22-32-36 (54)	18.5	8.4	62.7	28.9
30							
		A-1-b, SiSaGr, gry, MTW, Rec. = 0.9 ft, Broken rock was within sample.	18-39-40 (79)	9.2	54.8	24.2	21.0
35		Field Note: Advanced and cleaned out casing	R/1.5" (79)				
		A-4, SaSi, gry, Moist, Rec. = 1.5 ft	20-24-45-50 (69)	16.3	11.7	20.2	68.1
40		Hole stopped @ 40.0 ft Casing broke off at 35.0 ft.					
45							

BORING LOG 2 RUTLAND CITY BRF 3000(19).GPJ VERMONT AOT.GDT 11/8/10

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.



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BORING LOG

RUTLAND CITY
BRF 3000(19)
TH-10 BR-17

Boring No.: B-101A

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Pin No.: 08J096

Checked By: CAA

Boring Crew: PORTER, GARROW
Date Started: 6/08/10 Date Finished: 6/09/10
VTSPG NAD83: N 402151.03 ft E 1507180.17 ft
Station: 7+40 Offset: -11.50
Ground Elevation: 517.5 ft

Casing Type: WB
I.D.: 4 in
Sampler Type: SS
I.D.: 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK CE = 1.46

Groundwater Observations

Date	Depth (ft)	Notes
06/09/10	8.0	Prior to drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0.0 - 11.0		NXDC, 0.0 ft - 11.0 ft, Advanced and cleaned out casing.								
11.0 - 12.0		NXDC, 11.0 ft - 12.0 ft, Cobbles								
12.0 - 16.5		NXDC, 12.0 ft - 16.5 ft, Advanced and cleaned out casing.								
16.5 - 18.0		NXDC, 16.5 ft - 18.0 ft, Cobbles								
18.0 - 21.0		NXDC, 18.0 ft - 21.0 ft, Advanced and cleaned out casing.								
21.0 - 23.0		NXDC, 21.0 ft - 23.0 ft, Cobbles								
23.0 - 41.8		NXDC, 23.0 ft - 41.8 ft, Advanced and cleaned out casing.								
41.8 - 43.0		NXDC, 41.8 ft - 43.0 ft, Cobbles				R/4.5" (R)				
43.0 - 47.0		Visual Classification, SiSa (HP), gry, Moist, Rec. = 0.3 ft, Insufficient sample for testing.								
47.0 - 50.0		NXDC, 47.0 ft - 50.0 ft, Cleaned out casing.								
50.0 - 51.5		A-4, SaGrSi (HP), gry, Moist, Rec. = 0.7 ft				45- R/3.5" (R)	9.5	26.0	23.8	50.2
51.5 - 53.0		NXDC, Cobbles, 51.5 ft - 53.0 ft, Cleaned out casing.								
53.0 - 54.0		NXDC, (HP), 53.0 ft - 54.0 ft								
54.0 - 55.0		Boulder, 54.0 ft - 55.0 ft					7.1	39.6	18.9	41.5
55.0 - 58.0		A-4, GrSi (HP), gry, Moist, Sample from NXMDC core.								
58.0 - 63.0		58.0 ft - 63.0 ft, Light gray, Quartzite, with closely spaced iron stained jointing.. Very hard, Moderately weathered, Fair rock, NXMDC	1 (?)	100 (14)	8 8 6 7 7					
63.0 - 68.0		63.0 ft - 68.0 ft, Same as Run #1. NXMDC	2 (?)	100 (32)	8 8 12 7 7					
68.0 - 68.0		Hole stopped @ 68.0 ft								
68.0 - 58.0		Top of Bedrock @ 58.0 ft								

BORING LOG 2 RUTLAND CITY BRF 3000(19).GPJ VERMONT AOT.GDT 11/8/10

Notes:
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BORING LOG

RUTLAND CITY
BRF 3000(19)
TH-10 BR-17

Boring No.: B-102
Page No.: 1 of 2
Pin No.: 08J096
Checked By: CAA

Boring Crew: PORTER, GARROW
Date Started: 6/02/10 Date Finished: 6/08/10
VTSPG NAD83: N 402124.63 ft E 1507177.59 ft
Station: 7+53 Offset: 11.50
Ground Elevation: 515.4 ft

Casing Sampler
Type: WB SS
I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK CE = 1.46

Groundwater Observations		
Date	Depth (ft)	Notes
06/03/10	7.6	Prior to drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)				
						Moisture Content %	Gravel %	Sand %	Fines %	
		A-4, SaSi, Dk/brn, Moist, Rec. = 0.5 ft				4-4-7-9 (11)	27.2	13.0	43.4	43.6
		A-1-a, SaGr, brn, Moist, Rec. = 0.7 ft, Some broken rock (Marble) was within sample.				4-7-12-17 (19)	8.9	55.0	35.6	9.4
		A-1-b, SaGr, brn-white, Moist, Rec. = 1.0 ft, Lots of broken pieces of Marble rock were within sample.				20-7-3-3 (10)				
5		Visual Classification, Broken Marble rock pieces, white, Moist, Rec. = 0.5 ft								
		A-4, SiSa, brn, MTW, Rec. = 1.1 ft				4-1-1-1 (2)	35.1	0.1	60.6	39.3
		A-4, SiSa, brn, MTW, Rec. = 1.5 ft				1-1-1-1 (2)	32.3		50.5	49.5
10		A-2-4, SiGrSa, brn, MTW, Rec. = 1.1 ft				WH-3-6-12 (9)	19.9	32.5	40.4	27.1
		A-1-b, SaGr, gry, Wet, Rec. = 0.7 ft, Broken rock was within sample.				14-13-10-10 (23)	8.6	52.1	29.2	18.7
15		A-1-b, SaGr, gry, Wet, Rec. = 0.9 ft				13-13-14-19 (27)	12.4	55.7	25.9	18.4
		Visual Classification, Broken rock (Quartzite) pieces, gry, Moist, Rec. = 0.3 ft				10-9-9-9 (18)				
		Visual Classification, Broken rock (Quartzite) pieces, gry, Moist, Rec. = 0.3 ft				9-13-14-20 (27)				
20		NXDC, Boulder, 21.5 ft - 23.0 ft								
		A-1-a, SaGr, gry, Moist, Rec. = 0.3 ft, Broken rock (Quartzite) pieces were within sample.				15-R/6" (R)	7.9	62.3	23.5	14.2
25		NXDC, Cobbles, 26.7 ft - 28.0 ft								
		A-1-b, SaGr, gry, Moist, Rec. = 0.8 ft				6-30-30-30 (60)	7.3	55.6	26.1	18.3
30		NXDC, Cobbles, 32.0 ft - 33.0 ft								
		A-1-b, GrSa, gry, Moist, Rec. = 1.2 ft				20-47-R/6" (R)	12.9	43.2	45.7	11.1
35		NXDC, Cobbles, 37.0 ft - 38.0 ft								
		A-1-b, GrSa, gry-brn, Moist, Rec. = 1.0 ft				23-R/6" (R)	11.4	41.5	43.3	15.2

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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.

BORING LOG 2 RUTLAND CITY BRF 3000(19).GPJ VERMONT AOT.GDT 11/8/10



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BORING LOG

RUTLAND CITY
BRF 3000(19)
TH-10 BR-17

Boring No.: B-102
Page No.: 2 of 2
Pin No.: 08J096
Checked By: CAA

Boring Crew: PORTER, GARROW
Date Started: 6/02/10 Date Finished: 6/08/10
VTSPG NAD83: N 402124.63 ft E 1507177.59 ft
Station: 7+53 Offset: 11.50
Ground Elevation: 515.4 ft

Casing Sampler
Type: WB SS
I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK CE = 1.46

Groundwater Observations		
Date	Depth (ft)	Notes
06/03/10	7.6	Prior to drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)				
						Moisture Content %	Gravel %	Sand %	Fines %	
		NXDC, 3"+ Gravel, 42.0 ft - 43.0 ft								
		A-1-b, SiGrSa, gry, Wet, Rec. = 1.2 ft								
45		NXDC, 3"+ Gravel, 47.0 ft - 49.0 ft								
		A-4, GrSaSi (HP), gry, Moist, Rec. = 1.0 ft								
50		NXDC, Cored ahead and cleaned out casing, 50.0 ft - 53.0 ft								
		A-4, SaGrSi (HP), gry-blk, Moist, Rec. = 1.0 ft								
55		Cored ahead, 54.0 ft - 58.0 ft								
		Field Note: No Recovery								
60		NXDC, Cobbles, 58.3 ft - 63.0 ft, Advanced casing to 63.0 feet.								
		Field Note: NXDC, Possible Bedrock								
65		65.0 ft - 70.0 ft, Light gray, Quartzite, with closely spaced iron stained jointing. Highly broken up from 68.0-69.3 feet. Very hard, Moderately weathered, Fair rock, NXMDC								
		Top of Bedrock @ 65.0 ft								
70		70.0 ft - 75.0 ft, Light gray, Quartzite, with closely spaced iron stained jointing. Gray severely weathered Phyllite from 72.2-73.3 feet. Very hard, Moderately weathered, Fair rock, NXMDC								
75		Hole stopped @ 75.0 ft								

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BORING LOG

RUTLAND CITY
BRF 3000(19)
TH-10 BR-17

Boring No.: B-103

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Pin No.: 08J096

Checked By: CAA

Boring Crew: PORTER, GARROW
Date Started: 6/22/10 Date Finished: 6/24/10
VTSPG NAD83: N 402094.14 ft E 1507278.05 ft
Station: 8+53 Offset: -20.50
Ground Elevation: 511.0 ft

Casing Type: WB
Sampler Type: SS
I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK CE = 1.46

Groundwater Observations

Date	Depth (ft)	Notes

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
10	[Symbol]	A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft				1-1-1-1	25.3	1.0	75.0	24.0
		2-2-2-1				24.4	22.1	57.7	20.2	
10	[Symbol]	NXDC, Cobbles, 5.5 ft - 7.0 ft				7-15-12-7	12.7	65.3	31.9	2.8
		A-1-a, SaGr, white, Moist, Rec. = 1.0 ft, Broken rock was within sample.								
		Field Note: NXDC, Possible Cobbles & Gravel, Hard drilling.								
		Field Note: No Recovery. Appears to be sand, gry, Moist								
20	[Symbol]	A-4, SiSa, brn, MTW, Rec. = 0.8 ft				4-4-4-4	21.7	6.7	47.1	46.2
		2-3-4-4				21.7	6.7	47.1	46.2	
30	[Symbol]	A-1-b, SaGr, gry, MTW, Rec. = 0.5 ft				6-8-6-6	12.7	49.0	43.1	7.9
		6-8-6-6				12.7	49.0	43.1	7.9	
30	[Symbol]	Field Note: NXDC, Cobbles				8-7-7-5	12.7	49.0	43.1	7.9
		Field Note: No Recovery, Appears to be sand								
40	[Symbol]	Field Note: NXDC, Gravel				32-18-5-5	15.7	41.5	31.4	27.1
		A-2-4, SiSaGr, white-brn, MTW, Rec. = 0.9 ft, Broken rock was within sample.								
40	[Symbol]	A-2-4, SiSaGr, gry, Moist, Rec. = 1.0 ft, Broken rock was within sample.				23-R/6"	11.9	47.6	23.1	29.3
		Field Note: NXDC, Cobbles								
50	[Symbol]	Field Note: NXDC, (HP)				4-50-R/2.5"	10.5	31.7	29.8	38.5
		A-4, SaGrSi (HP), gry, Moist, Rec. = 1.0 ft								
50	[Symbol]	Field Note: NXDC, (HP)				50-R/3.5"	10.2	25.5	26.0	48.5
		A-4, GrSaSi (HP), gry, Moist, Rec. = 0.5 ft								
50	[Symbol]	A-4, SaGrSi (HP), gry, Moist, Sample from NXDC core.				9.5	28.4	21.7	49.9	
		9.5				28.4	21.7	49.9		
60	[Symbol]	A-4, SaGrSi (HP), gry, Moist, Rec. = 1.5 ft				28-40-R/6"	10.1	27.9	21.9	50.2
		28-40-R/6"				10.1	27.9	21.9	50.2	
60	[Symbol]	Field Note: NXDC, Cored ahead								
		Field Note: No Recovery								
60	[Symbol]	57.3 ft - 59.3 ft, Light gray, Quartzite, with closely spaced iron stained jointing.. Very hard, Fresh, Fair rock, NXDC	1	70	12	Top of Bedrock @ 57.3 ft				
		59.3 ft - 63.3 ft, Same as Run #1. NXMDC	(?)	(0)	13					
60	[Symbol]	63.3 ft - 67.3 ft, Same as Run #1. NXMDC	2	100	14					
		63.3 ft - 67.3 ft, Same as Run #1. NXMDC	(?)	(55)	15					
60	[Symbol]		3	93	18					
			(?)	(48)	21					
70	[Symbol]				8					
					8					
70	[Symbol]				7					
					8					

BORING LOG 2 RUTLAND CITY BRF 3000(19).GPJ VERMONT AOT.LGDT 11/8/10

Remarks:
1. Drillers hit an aquifer in bedrock.
2. They installed 12.0 feet of solid casing and water overflowed pipe.
3. Hole collapsed and sealed aquifer.

Notes:
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RUTLAND CITY
BRF 3000(19)
TH-10 BR-17

Boring Crew: PORTER, GARROW
Date Started: 6/25/10 Date Finished: 6/30/10
VTSPG NAD83: N 402067.77 ft E 1507253.76 ft
Station: 8+48 Offset: 15.00
Ground Elevation: 511.0 ft

Casing: WB
Sampler: SS
Type: WB
I.D.: 4 in
Hammer Wt: N.A.
Hammer Fall: N.A.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK

Groundwater Observations		
Date	Depth (ft)	Notes
06/28/10	1.8	After heavy rain.
06/30/10	3.3	Prior to drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
5		A-2-4, Sa, brn, Moist, Rec. = 1.4 ft				WH-WH-2-1 (2)	20.5	0.2	80.1	19.7
		A-2-4, SiSa, brn, MTW, Rec. = 1.4 ft, Pieces of Wood were within sample.				1-1-1-1 (2)	37.5		67.1	32.9
10		NXDC, Wood and Gravel (3"+), 6.8 ft - 8.0 ft				8-7-6-8 (13)	13.1	71.9	26.2	1.9
		A-1-a, SaGr, brn, Moist, Rec. = 0.5 ft, Broken rock was within sample.								
15		Field Note: NXDC, Cobbles				2-2-2-2 (4)	23.6	0.7	91.5	7.8
		A-3, Sa, brn, Wet, Rec. = 0.9 ft								
20		Field Note: No Recovery, Appears to be Fine Sand.				3-3-3-2 (6)				
25		A-4, SaSi, brn, Wet, Rec. = 1.0 ft				4-3-3-2 (6)	42.7	0.1	25.5	74.4
		Field Note: NXDC, Gravel								
30		A-1-a, SaGr, gry, Wet, Rec. = 0.7 ft				10-10-7-5 (17)	14.4	50.0	38.7	11.3
		Field Note: NXDC, Gravel								
		A-4, SaSi, gry, Wet, Rec. = 0.9 ft				6-4-3-5 (7)	21.4	11.2	31.6	57.2

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Boring Crew: PORTER, GARROW
Date Started: 6/25/10 Date Finished: 6/30/10
VTSPG NAD83: N 402067.77 ft E 1507253.76 ft
Station: 8+48 Offset: 15.00
Ground Elevation: 511.0 ft

Casing: WB
Sampler: SS
Type: WB
I.D.: 4 in
Hammer Wt: N.A.
Hammer Fall: N.A.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK

Groundwater Observations		
Date	Depth (ft)	Notes
06/28/10	1.8	After heavy rain.
06/30/10	3.3	Prior to drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	
40		A-2-4, GrSiSa, gry, Wet, Rec. = 1.0 ft				8-3-4-7 (7)	16.8	23.5	44.2	32.3	
		Field Note: NXDC, Cored ahead, (HP)									
45		A-4, Si (HP), gry, MTW, Rec. = 1.4 ft				15-30-R/6" (R)	13.1	8.2	18.4	73.4	
		Field Note: NXDC, Cored ahead, (HP)									
50		A-4, SaGrSi (HP), gry, MTW, Rec. = 0.8 ft				25-R/3.5" (R)	10.2	33.8	22.9	43.3	
		Field Note: NXDC, Cored ahead, (HP)									
55		A-4, SaGrSi (HP), gry, MTW, Rec. = 1.3 ft				25-56-R/3.5" (R)	9.5	31.3	21.3	47.4	
		Field Note: NXDC, Cored ahead									
60		59.7 ft - 61.2 ft, Light gray, Quartzite, with closely spaced iron stained jointing. Very broken up. Very hard, Moderately weathered, Poor rock, NXMDC	1 (?)	73 (0)	13	Top of Bedrock @ 59.7 ft					
		61.2 ft - 62.2 ft, Same as Run #1. NXMDC	2 (?)	100 (0)	14						
		62.2 ft - 63.2 ft, Same as Run #1. NXMDC	3 (?)	100 (0)	14						
		63.2 ft - 65.2 ft, Same as Run #1. NXMDC	(?)	(0)	15						
		65.2 ft - 66.2 ft, Same as Run #1. NXMDC	4 (?)	80 (0)	20						
65		Hole stopped @ 66.2 ft	5 (?)	100 (0)	15						

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.

BORING LOG 2 RUTLAND CITY BRF 3000(19).GPJ VERMONT AOT.GDT 11/8/10



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BORING LOG

Boring No.: B-106
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Pin No.: 08J096
Checked By: CAA

RUTLAND CITY
BRF 3000(19)
TH-10 BR-17

Boring Crew: PORTER, GARROW
Date Started: 6/16/10 Date Finished: 6/17/10
VTSPG NAD83: N 401991.83 ft E 1507359.30 ft
Station: 9+78 Offset: 17.50
Ground Elevation: 519.3 ft

Casing: WB
Sampler: SS
Type: WB
I.D.: 4 in
Hammer Wt: N.A.
Hammer Fall: N.A.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK
Date: 06/17/10
Depth (ft): 11.6
Notes: Prior to drilling.

Groundwater Observations

Date	Depth (ft)	Notes
06/17/10	11.6	Prior to drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
5		A-2-4, SiGrSa, brn, Moist, Rec. = 0.7 ft, Broken rock (Marble) was within sample. Visual Classification, Broken rock (Marble) with sand, brn-white, Moist, Rec. = 0.4 ft Visual Classification, Broken rock (Marble) with sand, brn-white, Moist, Rec. = 0.6 ft Visual Classification, Broken rock (Marble) with sandy silt, brn-white, Moist, Rec. = 1.0 ft Visual Classification, Broken rock (Marble), white, Moist, Rec. = 0.4 ft				1-2-8-3 (10) 1-2-2-3 (4) 2-3-5-6 (8) 5-5-3-4 (8) 2-3-7-5 (10)	13.7 3.8 4.7 3.7	35.8 35.8 43.8 20.4				
10		Field Note: No Recovery				3-3-2-3 (5)						
15		A-4, SaSi with Trace of Organics (6.3%), gry, Moist, Rec. = 1.6 ft A-1-b, GrSa, gry, Moist, Rec. = 1.0 ft, Some Wood particles were within sample.				1-1-2-3 (3) 4-3-3-3 (6)	54.1 29.1	1.4 26.7	39.4 56.4	59.2 16.9		
20		A-2-4, GrSiSa, gry, Wet, Rec. = 0.4 ft A-1-b, SiGrSa, brn, Wet, Rec. = 0.7 ft, Sample was very rusty colored.				1-1-5-3 (6) 9-5-3-3 (8)	31.8 21.8	21.0 27.5	44.5 50.1	34.5 22.4		
25		A-3, Sa, gry, MTW, Rec. = 2.0 ft				WR-WR-WH-WH (0)	24.9	0.4	93.2	6.4		
30		Field Note: No Recovery, Appears to be Fine Sand.				1-1-1-1 (2)						
35		A-2-4, Sa, gry, MTW, Rec. = 1.0 ft				1-2-2-2 (4)	21.4	0.1	85.8	14.1		

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BORING LOG 2 RUTLAND CITY BRF 3000(19).GPJ VERMONT AOT.GDT 11/8/10



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RUTLAND CITY
BRF 3000(19)
TH-10 BR-17

Boring Crew: PORTER, GARROW
Date Started: 6/16/10 Date Finished: 6/17/10
VTSPG NAD83: N 401991.83 ft E 1507359.30 ft
Station: 9+78 Offset: 17.50
Ground Elevation: 519.3 ft

Casing: WB
Sampler: SS
Type: WB
I.D.: 4 in
Hammer Wt: N.A.
Hammer Fall: N.A.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK
Date: 06/17/10
Depth (ft): 11.6
Notes: Prior to drilling.

Groundwater Observations

Date	Depth (ft)	Notes
06/17/10	11.6	Prior to drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
40		A-4, GrSaSi, gry, MTW, Rec. = 1.0 ft				1-1-7-14 (8)	14.5	25.6	36.8	37.6		
45		A-2-4, SaSiGr, gry, MTW, Rec. = 1.4 ft				18-13-11-18 (24)	9.6	45.7	21.4	32.9		
50		Field Note: NXDC, 3.0"+ Gravel A-4, Si (HP), gry, MTW, Rec. = 1.5 ft				15-45-33-R/3.5" (78)	11.8	17.8	16.7	65.5		
55		NXDC, Cobbles, 52.3 ft - 53.0 ft A-4, SaSi (HP), gry, MTW, Rec. = 1.4 ft				15-50-60-R (R)	9.4	17.4	25.5	57.1		
60		Field Note: NXDC, 3.0"+ Gravel A-4, SaSi (HP), gry, MTW, Rec. = 1.8 ft				15-45-35-R/3.5" (80)	10.5	19.6	22.3	58.1	21	4
65		60.0 ft - 62.0 ft, Light gray, Quartzite, Core very broken up and iron stained jointing. Moderately hard, Moderately to severely weathered, Fair rock, NXMDC 62.0 ft - 67.0 ft, Dull white, Quartzite, with closely spaced iron stained jointing.. Moderately hard, Moderately weathered, Poor rock, NXMDC	1 (?) 2 (?)	60 (0) 100 (0)	15 6 5 6 9							
70		67.0 ft - 67.5 ft, Dull white, Quartzite, with closely spaced iron stained jointing.. Moderately hard, Moderately weathered, Poor rock, NXMDC 67.5 ft - 70.0 ft, Dull green, Metavolcanic, Very soft, Severely weathered, Poor rock Hole stopped @ 70.0 ft	3 (?)	50 (0)	10 14 20							

Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
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BORING LOG 2 RUTLAND CITY BRF 3000(19).GPJ VERMONT AOT.GDT 11/8/10



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BORING LOG

RUTLAND CITY
BRF 3000(19)
TH-10 BR-17

Boring No.: B-107

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Pin No.: 08J096

Checked By: CAA

Boring Crew: PORTER, GARROW
Date Started: 6/30/10 Date Finished: 6/30/10
VTSPG NAD83: N 402150.63 ft E 1507161.52 ft
Station: 7+25 Offset: 0.00
Ground Elevation: 519.8 ft

Casing Type: WB
Sampler Type: SS
I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK CE = 1.46

Groundwater Observations

Date	Depth (ft)	Notes
		NONE TAKEN

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0-1		A-2-4, SiGrSa, brn-white, Moist, Rec. = 0.8 ft, Broken Marble rock was within sample.	1-10-20-25 (30)	14.5	33.0	35.3	31.7
		Field Note: Dug a boulder and cobbles out by hand					
1-3		A-1-a, SaGr, brn-white, Moist, Rec. = 0.9 ft, Broken Marble rock was within sample.	3-4-5-3 (9)	8.4	65.6	24.6	9.8
3-5		A-2-4, SiSa, brn, Moist, Rec. = 1.7 ft	2-1-1-1 (2)	21.0	15.3	54.9	29.8
5-6		A-4, SiSa, Lt/brn, MTW, Rec. = 0.7 ft	3-1-1-3 (2)	40.6	1.1	55.1	43.8
6-10		A-4, SiSa, Lt/brn, MTW, Rec. = 1.4 ft	6-5-4-4 (9)	25.6	6.5	49.8	43.7
10-11		A-2-4, SiSa, Lt/brn, Wet, Rec. = 1.0 ft	3-1-3-5 (4)	26.5	15.7	57.6	26.7
11-15		Field Note: No Recovery. Appears to be Cobbles and Gravel, NXDC, 15.2'-16.0'	8-6-8-8 (14)				
15-16		A-1-a, SaGr, gry, Moist, Rec. = 0.7 ft, NXDC, 17.2'-18.0'	8-8-10-15 (18)	10.4	58.4	27.9	13.7
16-17		A-1-b, SaGr, gry, Moist, Rec. = 0.4 ft	10-10-12-42 (22)	12.5	48.1	35.3	16.6
17-20		Hole stopped @ 20.0 ft					

BORING LOG 2 RUTLAND CITY BRF 3000(19).GPF J VERMONT AOT.GDT 11/8/10

Notes:
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RUTLAND CITY
BRF 3000(19)
TH-10 BR-17

Boring Crew: PORTER, GARROW
Date Started: 6/17/10 Date Finished: 6/21/10
VTSPG NAD83: N 401988.35 ft E 1507401.58 ft
Station: 10+15 Offset: 0.00
Ground Elevation: 519.6 ft

Casing Sampler
Type: WB SS
I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK CE = 1.46

Groundwater Observations		
Date	Depth (ft)	Notes
06/18/10	9.7	Prior to drilling.
06/21/10	10.4	Prior to drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
5		A-2-4, GrSiSa, brn-white, Moist, Rec. = 1.4 ft, Broken Marble rock was within sample.				1-3-6-6 (9)	12.6	28.6	40.0	31.4
		Visual Classification, Broken Marble rock with silty sand, white, Moist, Rec. = 0.8 ft				3-7-5-5 (12)	5.4			
		Visual Classification, Broken Marble rock with silty sand, brn-white, Moist, Rec. = 0.7 ft				3-5-6-3 (11)	5.7			
		Visual Classification, Broken Marble rock with sandy silt, white, Moist, Rec. = 1.0 ft				3-5-6-4 (11)	6.6			
10		A-4, Si, brn, Moist, Rec. = 0.7 ft				3-2-1-1 (3)	35.4	1.3	18.4	80.3
		Visual Classification, SI with Broken rock, brn-white, Moist, Rec. = 0.4 ft				2-1-1-3 (2)	14.6			
15		A-2-4, SiSa, brn, MTW, Rec. = 1.4 ft, Lab Note: A rust color was noticeable in the sample.				4-1-1-1 (2)	31.0		71.0	29.0
		A-1-b, GrSa, brn, MTW, Rec. = 0.8 ft				1-1-2-3 (3)	16.6	41.4	50.5	8.1
		A-1-b, GrSa, brn, Wet, Rec. = 0.4 ft, Lab Note: A very rusty colored sample.				5-3-2-2 (5)	15.8	27.4	64.1	8.5
		A-3, Sa, brn, Wet, Rec. = 1.4 ft				3-1-1-1 (2)	28.8		94.4	5.6
25		A-4, Si, gry, Wet, Rec. = 1.2 ft				4-3-3-3 (6)	27.5		4.9	95.1
		Field Note: NXDC, Boulder								
30		A-2-4, SiGrSa, gry, MTW, Rec. = 1.6 ft				11-20-28-30 (48)	13.1	30.3	45.4	24.3
		Field Note: NXDC, Gravel								
		A-2-4, SiGrSa, gry, Moist, Rec. = 0.6 ft				7-5-5-5 (10)	12.0	28.0	44.6	27.4

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RUTLAND CITY
BRF 3000(19)
TH-10 BR-17

Boring Crew: PORTER, GARROW
Date Started: 6/17/10 Date Finished: 6/21/10
VTSPG NAD83: N 401988.35 ft E 1507401.58 ft
Station: 10+15 Offset: 0.00
Ground Elevation: 519.6 ft

Casing Sampler
Type: WB SS
I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK CE = 1.46

Groundwater Observations		
Date	Depth (ft)	Notes
06/18/10	9.7	Prior to drilling.
06/21/10	10.4	Prior to drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
40		Field Note: NXDC, Gravel								
		A-1-b, SiGrSa (HP), gry, MTW, Rec. = 0.6 ft, Broken rock was within sample.					10-60-70-6" (R)	15.2	37.7	39.7
45		Field Note: NXDC, Gravel								
		A-1-b, SiSaGr (HP), gry, MTW, Rec. = 0.3 ft, Insufficient sample for a true gradation.					50-R/2.5" (R)	7.6	49.7	30.0
50		Field Note: NXDC, (HP)								
		Field Note: No Recovery, Appears to be SaSi (HP)					R/4.5" (R)			
55		Field Note: NXDC, Cleaned out casing								
		51.5 ft - 53.0 ft, Light gray, Quartzite, with closely spaced iron stained jointing.. Very hard, Fresh, Fair rock, NXDC					1 (?)	73 (0)	10	
60		53.0 ft - 57.0 ft, Same as Run #1. NXMDC								
		57.0 ft - 62.0 ft, Same as Run #1. NXMDC					2 (?)	92 (62)	10	
65		Field Note: NXDC, Boulder								
		A-2-4, SiGrSa, gry, MTW, Rec. = 1.6 ft					3 (?)	100 (14)	8	
Hole stopped @ 62.0 ft										

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