



# BLACK & VEATCH BORING LOG SYMBOLS AND TERMINOLOGY

## GENERAL

SPT	-Split Spoon / Standard Penetration Test
TW	-Thin Wall Sampler
CA	-California Sampler
S	-Grab Sample
PP	-Compressive strength as determined by penetrometer.
TV	-Compressive strength as determined by torvane.
NW	-2.98 inch outer diameter core bit
Gravel	-Fine grained - From 1/4 to 3/4 inches in diameter.
	-Coarse grained - From 3/4 to 3 inches in diameter.
Cobble	-From 3 to 12 inches in diameter.
Boulder	-Greater than 12 inches in diameter.
60	-Represents 60 degrees measured from a plane perpendicular to the longitudinal axis of the sample.
Occasional	-One or less per 6" of thickness.
Trace	-Represents 5 to 10 percent by volume.
Some	-Represents 10 to 20 percent by volume.
N Value	-Indicates the number of blows to drive a standard split spoon sampler 12 inches with a 140-pound weight falling 30 inches.
RQD	-A modified core run recovery in which all pieces of sound core over 4 inches in length are counted as recovery. The modified sum of the core recovery is then expressed as a percentage of the total length of the core run.
-----	-Dashed line in classification column indicates approximate or gradational change.
	-At
w/	-With
&	-And
WOR	-Weight of rods
WOH	-Weight of hammer
ID	-Inside diameter
OD	-Outside diameter

## WEATHERING

Fresh	-The rock shows no dissolution, loss of strength, or other effects due to weathering (unweathered rock).
Slightly Weathered	-Rock is slightly discolored with a slightly lower strength than unweathered rock.
Moderately Weathered	-Rock is considerably discolored with a slightly lower strength than unweathered rock.
Highly Weathered	-Rock is discolored and weakened so intensely that 2-inch diameter rock cores can be broken readily by hand. Wet strength is usually much lower than dry strength

## BEDDING

Laminated	-Less than 0.001 foot to 0.1 foot (0.1 inch).
Thin Bedded	-0.01 foot to 0.1 foot (0.1 to 1.0 inches).
Medium Bedded	-0.1 foot to 1.0 foot (1.2 to 12 inches).
Thick Bedded	-Greater than 1.0 foot.
Massive	-Denotes no discernable internal bedding structure.

## SYMBOLS LEGEND

### Soil Samplers



Rock core



Standard penetration test



# BLACK & VEATCH

# BORING LOG

BORING NO. BV-1  
SHEET 1 OF 5

CLIENT										PROJECT										PROJECT NO.	
City of Charlottesville										Ragged Mountain Project										168539	
PROJECT LOCATION					COORDINATES					GROUND ELEVATION (DATUM)					TOTAL DEPTH						
Charlottesville, VA					Not Surveyed					643.5 ft (MSL)					70.7 (feet)						
SURFACE CONDITIONS										COORDINATE SYSTEM					DATE START		DATE FINISHED				
Top of concrete (18" from down slope edge)										Not Surveyed					07/07/2010		07/08/2010				
SOIL SAMPLING										LOGGED BY					CHECKED BY					APPROVED BY	
										B. Gomer					D. Conolly					G. Zamensky	
SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY	DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS									
ROCK CORING																					
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD															
4"	1	1.3	1.3	1.3	100	100	0		643		CONCRETE; gray; 3/8-3/4" graded aggregate; subangular to angular; evenly distributed; sand in cement	Boring advanced using 4" casing w/ carbide bit & water as drilling fluid (OD 4-1/2"). Below 1.3' continued boring using HQ triple tube core barrel w/ diamond bit & water as drilling fluid (OD 3-3/4"). Frequent mechanical breaks.  Packer test from 6.5-15.0' indicated no significant leakage (0.6 Lugeons).									
			1.3				1		642		Cyclopean CONCRETE; gray; 1/4-20" aggregate & plum stones; subrounded to angular; unevenly distributed; sand in cement										
2.5"	2	4.4	4.4	4.2	100	95	2		641												
							3		640		@ 3.5' 0°; J;N to MW;No;No;PI;SR; mechanical abrasion between concrete & bottom of plum stone										
							4		639												
							5		638		@ 4.7' 30°;J;N;No;No;PI;SR; in plum stone										
							6		637		@ 5.1' FZ;0-45°;J;N;No;No;PI to St;SR to R; @ base of plum stone										
			5.7				7		636		@ 5.8' 0°;J;N;No;No;PI;SR; @ base of plum stone										
							8		635		@ 7.2' 10°;J;N;Fe;Sp;PI;SR; @ top of plum stone										
2.5"	3	5.0	5.0	3.9	100	78	9		634		@ 7.7' 10°;J;N;Fe;Sp;PI;R; joint in plum stone										
							10		633		@ 8.7' 0°;J;MW;No;No;lr;R										
							11		632		@ 8.8' 3/8" pits										
							12		631		@ 9.1' 0-20°;J;N;No;No;lr;R; large aggregate										
							13		630		@ 9.4' 0°;J;N;No;No;St;SR										
							14		629		@ 9.6' 0°;J;N;No;No;lr;R										
			10.7				15		629		@ 10.1-10.3' grading brown sand cement										
2.5"	4	5.0	5.0	4.7	100	94			630		@ 12.1' 0°;J;MW;Cl;Sp;PI; @ base of plum stone										
									631		@ 13.1-13.3' FZ of weak cement w/ no aggregate										
									632		@ 13.1-13.7' 90°;J;N;No;No;WA;R; crack in concrete matrix										
									633		@ 14.6' 30°;J;T;No;No;PI;SR @ top of plum stone										
									634		Packer test from 14.0-22.5' indicated no										

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# BLACK & VEATCH

# BORING LOG

BORING NO. BV-1  
SHEET 2 OF 5

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) 643.5 ft (MSL)	TOTAL DEPTH 70.7 (feet)
SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/07/2010	DATE FINISHED 07/08/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY	DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	ROD RECOVERY	PERCENT RECOVERY	RQD						
2.5"	5	5.0	4.9	4.9	98	98	15		628			significant leakage (6.9 Lugeons).
			15.7				16		627		@ 16.1' 35°;J;N to MW;No;No;PI;R; honeycomb, sandy on top of plum stone	
							17		626			
							18		625			
							19		624		@ 19.6' 0°;J;MW;No;No;St;SR	Below 19.0' frequent drill chatter.
							20		623			
			20.7				21		622		@ 20.8' 5°;J;N;No;No;PI;S; @ top of plum stone @ 21.2-21.4' 0°;J;W;Cl;Fi;PI to St;S to R; clay layer	Packer test from 21.5-30.0' indicated no significant leakage (5.6 Lugeons).
							22		621			
2.5"	6	5.0	4.9	4.6	98	92	23		620		@ 23.0' 0°;J;N;Cl;Sp;St;R	
							24		619			
							25		618			@ 25.0' driller lifted rods.
			25.7				26		617		@ 26.0' 0°;J;MW;No;No;lr;R @ 26.0-26.4' grading brown sand cement	
							27		616		@ 27.0' 0°;J;W;Sd;Fi;PI;S; sand is weakly cemented beneath plum stone; laitance on joint surface @ bottom of plum stone	
2.5"	7	5.0	5.0	4.5	100	90	28		615			
							29		614		@ 29.0' 0°;J;MW;No;No;St;SR; in plum stone	
							30		614		@ 29.6' 0°;J;N;Cl;Fi;lr;SR; probable laitance @ top of plum stone	

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# BORING LOG

BORING NO. BV-1  
SHEET 3 OF 5

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) 643.5 ft (MSL)	TOTAL DEPTH 70.7 (feet)
SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/07/2010	DATE FINISHED 07/08/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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SOIL SAMPLING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY							
ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD							
2.5"	8	5.0	5.0	4.3	100	86	30		613				Packer test from 29.0-37.5' indicated no significant leakage (0.7 Lugeons).
			30.7				31		612				
							32		611		@ 32.1' 5°;J;N;No;No;PI;SR		
							33		610				
							34		609		@ 33.5-33.7' FZ;0-45°;J;N;No;No;lr;SR to R; less aggregate @ 33.9' 0°;J;N;No;No;PI;SR to R		
							35		608		@ 34.4' 0°;J;MW;No;No;lr;SR to R; @ base of plum stone		
							36		607		@ 36.4' 0°;J;MW;No;No;St;R		
							37		606		@ 37.3' FZ;J;N to MW;No;No;lr;SR to R @ 37.6' 45°;J;N;Ca & Cl;Sp;PI;SR; honeycombing, @	Packer test from 36.5-45.0' indicated no significant leakage (3.1 Lugeons). @ 38.0' driller lifted up due to change in cutting.	
2.5"	9	5.0	4.8	4.1	96	82	38		605		@ 38.0' 0°;J;MW to W;No;No;PI;SR; mechanical abrasion of concrete @ edges of joint @ 38.2' vuggy concrete		
							39		604		@ 39.4' 0-60°;J;N to MW;No;No;lr;SR to R; fracture around aggregate		
							40		603				
							41		602				Less rig chatter below 41.5'.
							42		601		@ 42.3' 0°;J;MW;No;No;IR;S to R; @ base of plum stone		
2.5"	10	5.0	5.0	4.1	100	82	43		600		@ 43.3-44.8' grading brown sand in cement @ 43.6' 0°;J;N;No;No;St;SR		
							44		599		@ 44.1' 5°;J;MW;No;No;St;R		
							45				@ 44.4' 0°;J;N;No;No;St;R		

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# BORING LOG

BORING NO. BV-1  
SHEET 4 OF 5

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) 643.5 ft (MSL)	TOTAL DEPTH 70.7 (feet)
SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/07/2010	DATE FINISHED 07/08/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD							
2.5"	11	5.0	4.8	4.2	96	84	45		598		@ 45.3' 10°;J;MW;No;No;St;R; 1/2-3/4" vugs	significant leakage (0.0 Lugeons).	
			45.7				46		597		@ 46.5-46.8' FZ;0-60°;J;N to MW;PI;lr;SR to R; concentrated aggregate without cement; 1/2" vugs & laitance @ base of fracture zone	@ 47.0' occasional rig chatter.	
							47		596				
							48		595				
							49		594		@ 49.2' 25°;MW to W;No;No;lr;SR; @ base of plum stone; laitance @ bottom of plum stone	Packer test from 49.1-57.6' indicated no significant leakage (0.0 Lugeons).	
							50		593				
			50.7				51		592			@ 51.0' driller lifted rods.	
							52		591				
2.5"	12	5.0	2.0	0.4	40	8	53		590			@ 53.0' greenish gray wash water. Bind in core barrel prevented recovery of core in Run 12.	
							54		589		<u>GNEISS</u> ; dark gray; massive to slightly foliated; medium to coarse grained; slightly weathered; strong; moderately hard; near vertical (~ 80°) joints & lineations [Lovingson Fm]	@ 53.6' bottom of dam.	
							55		588				
			55.7				56		587		@ 56.2' 10°;N;Fe;Su to Sp;PI;S @ 56.5' 50°;N;Fe;Su to Sp;PI;S to SR @ 56.8-58.8' FZ;10-90°;N to MW;Fe;Su to Sp;PI-St-Ir; S to R	Frequent rig chatter below 57.0'. Packer test from 57.0-70.7' indicated no significant leakage (3.9 Lugeons). Frequent	
2.5"	13	5.0	5.0	0.5	100	10	58		585				
							59		584				
							60						

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# BORING LOG

BORING NO. BV-1  
SHEET 5 OF 5

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) 643.5 ft (MSL)	TOTAL DEPTH 70.7 (feet)
SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/07/2010	DATE FINISHED 07/08/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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SOIL SAMPLING							DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY						
ROCK CORING							DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	ROD RECOVERY	PERCENT RECOVERY	ROD						
			60.7				60					horizontal (0° to 30°) mechanical breaks from 59.0- 69.5'.
2.5"	14	5.0	5.0	0.5	100	10	61					@ 62.0' driller lifted rods due to chatter.
			65.7				62					
							63					
							64					
							65				@ 65.0' 45°;J;N;Fe;Su;PI;S	
							66				@ 65.6' 60°;Fo;N;No;No;WA;S to SR grading gray to dark gray; foliated; medium grained; very strong; hard	
							67				SCHIST; dark gray; foliated; fine to medium grained; moderately to highly weathered; very weak; low hardness	Drill chatter from 67.0-69.5'.
2.5"	15	5.0	4.8	2.7	96	54	68				@ 66.8-67.7' FZ;0-45°;Fo;N;No;No;WA;S	
							69				Granitic GNEISS; light gray & black; foliated; moedium to very coarse grained; slightly weathered; very strong; hard [Lovington Fm]	
							70				@ 68.5-69.0' 85-90°;J;N;Fe;Su;PI;SR;healed @ 69.1' 60°;J;N;Fe;Su;PI;SR;healed @ 69.4-69.6' FZ;0-45°;J;N to MW;Fe;Su;PI to Ir;S to SR	
							71				@ 69.9' 40°;Fo;N;No;No;WA;S	No recovery below 70.5'. Bottom of boring @ 70.7'. Boring backfilled w/ cement-bentonite grout on 07/20/2010. Water level @ 10.8' on 07/20/2010.
							72					
							73					
							74					
							75					

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**BLACK & VEATCH**

**BORING LOG**

BORING NO. BV-2P

SHEET 1 OF 6

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) 643.5 ft (MSL)	TOTAL DEPTH 83.6 (feet)
SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/08/2010	DATE FINISHED 07/13/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD							
4"	1	1.2	1.1	1.0	92	83	0	643		CONCRETE; gray; 3/8-3/4" graded aggregate; subangular to angular; evenly distributed @ 0.4' 0°; J; MW; No; No; PI; SR; likely cold joint Cyclopean CONCRETE; gray; 1/4" to 25" aggregate & plum stone; subrounded to angular; unevenly distributed; sand-sized grains in cement @ 1.4' 0°; J; MW; No; No; lr; SR @ 8.1' 0-10°; J; N; No; No; lr; SR; @ base of plum stone @ 11.3' 0-15°; J; N to W; No; No; lr; SR; @ base of plum stone @ 11.4' 0°; J; N; No; No; St; R @ 12.2' 0°; J; W; Fe & Sd; Su to Sp; PI; SR; minor mechanical abrasion of concrete @ 13.0' white wash water for approximately 6".	Boring advanced using 4" casing w/ carbide bit & water as drilling fluid (OD 4-1/2"). Below 1.2' continued boring using HQ triple tube core barrel w/ diamond bit & water as drilling fluid (OD 3-3/4"). Frequent mechanical breaks.  Packer test from 9.5-18.0' indicated no significant leakage (3.5 Lugeons). @ 11.2' 100% loss of circulation to 11.6'.		
2.5"	2	4.3	4.2	4.0	98	93	1	642					
			5.5				2	641					
							3	640					
							4	639					
							5	638					
							6	637					
							7	636					
2.5"	3	5.0	5.0	4.9	100	98	8	635					
							9	634					
							10	633					
			10.5				11	632					
							12	631					
2.5"	4	5.0	5.0	4.0	100	80	13	630					
							14	629					
							15	628					

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# BLACK & VEATCH

# BORING LOG

BORING NO. BV-2P  
SHEET 2 OF 6

CLIENT										PROJECT										PROJECT NO.	
City of Charlottesville										Ragged Mountain Project										168539	
PROJECT LOCATION					COORDINATES					GROUND ELEVATION (DATUM)					TOTAL DEPTH						
Charlottesville, VA					Not Surveyed					643.5 ft (MSL)					83.6 (feet)						
SURFACE CONDITIONS										COORDINATE SYSTEM					DATE START		DATE FINISHED				
Top of concrete (18" from down slope edge)										Not Surveyed					07/08/2010		07/13/2010				
SOIL SAMPLING										LOGGED BY					CHECKED BY					APPROVED BY	
										B. Gomer					D. Conolly					G. Zamensky	
SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY	DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS									
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD															
2.5"	5	5.0	5.0	4.5	100	90	15.5		628		@ 15.0' 10°;J;MW;Fe;Su;PI;SR; large aggregate	Packer test from 15.5-24.0' indicated no significant leakage (0.0 Lugeons).									
							16		627		@ 15.7' 40°;J;N to MW;No;No;St;R; @ top of plum stone; slight honeycomb										
							17		626												
							18		625												
							19		624												
							20		623		@ 19.8' 0-10°;J;N to MW;Fe;Su;PI to Ir;SR @ 20.0' 45°;J;N to MW;UK;Sp;St;SR										
							21		622			Drill chatter from 21.5-23.5'.									
2.5"	6	5.1	5.0	4.5	98	88	22		621												
							23		620		@ 23.3-23.5' FZ;0-45°;N to MW;Sd & Cl;Sp to Pa;Ir;S to R @ 23.7' 0°;J;MW;Cl;Sp to Su;Ir;R										
							24		619												
							25		618		@ 24.9' 10°;J;N to MW;No;No;St;SR										
							26		617												
							27		616		@ 26.8' 1/2" vugs										
2.5"	7	5.0	5.0	4.7	100	94	28		615			Frequent drill chatter from 27.5-30.6'.									
							29		614		@ 28.9' 0-30°;J;N to MW;construction debris;Pa;St;SR; @ top of plum stone										
							30														

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SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/08/2010	DATE FINISHED 07/13/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	ROD RECOVERY	PERCENT RECOVERY	RQD							
			30.6				30		613				
							31		612				
							32		611				
2.5"	8	5.0	5.0	4.2	100	84	33		610		@ 32.5' 0°; J; N; Cl; Fi; Pl; S; laitance		
							34		609		@ 33.2' 5°; J; N to MW; No; No; St; SR; @ top of plum stone		@ 33.0' drill chatter, occasional drill chatter to 38.0'.
							35		608		@ 34.0' 5°; J; N to MW; No; No; St; SR; @ base of plum stone		
			35.6				36		607		@ 34.6-37.2' grading brown sand cement		
							37		606		@ 34.7' 0°; J; MW; Sd; Sp; Ir; R		
2.5"	9	5.0	4.9	4.0	98	80	38		605		@ 34.9' 10°; J; N; Sd; Su; Pl; SR		Packer test from 37.0-45.5' indicated no significant leakage (8.5 Lugeons).
							39		604		@ 35.2' 0-45°; J; N; No; No; St; SR		
							40		603		@ 35.7' 0°; J; N; Cl; Sp; Pl; SR; laitance		
			40.6				41		602		@ 36.8' 0°; J; MW; Sd; Sp; Ir; R		
							42		601		@ 37.2' 20°; J; N to MW; Sd; Pa; Pl; SR; @ top of plum stone		
							43		600		@ 37.2-37.7' 90°; J; N; Fe; Su; Ir; R		
							44		599		@ 37.6-37.8' FZ; J; N to MW; Sd; Pa; Pl to Ir; S to SR; apparent precipitate in joints		
2.5"	10	5.0	5.0	4.5	100	90	45		599		@ 38.0-38.2' sandy weak cement @ bottom of plum stone		
							44						Drill chatter from 43.5-44.2'.
							45						Packer test from 44.5-53.0'

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# BLACK & VEATCH

# BORING LOG

BORING NO. BV-2P

SHEET 4 OF 6

CLIENT City of Charlottesville				PROJECT Ragged Mountain Project				PROJECT NO. 168539				
PROJECT LOCATION Charlottesville, VA			COORDINATES Not Surveyed			GROUND ELEVATION (DATUM) 643.5 ft (MSL)		TOTAL DEPTH 83.6 (feet)				
SURFACE CONDITIONS Top of concrete (18" from down slope edge)					COORDINATE SYSTEM Not Surveyed		DATE START 07/08/2010	DATE FINISHED 07/13/2010				
SOIL SAMPLING				LOGGED BY B. Gomer			CHECKED BY D. Conolly		APPROVED BY G. Zamensky			
SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY	DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
ROCK CORING							DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD	DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
2.5"	11	5.0	5.0	4.5	100	90	45		598		@ 45.2' 30°;J;N;Cl;Fi;PI;SR; laitance at bottom of plum stone	indicated no significant leakage (3.4 Lugeons).
			45.6				46		597			
							47		596			Drill chatter from 47.0-48.0'.
							48		595			
							49		594		@ 48.6' 0°;J;N;No;No;PI;SR; @ base of plum stone	
							50		593			Drill chatter from 50.0-53.5'.
			50.6				51		592		@ 50.8' 3/8" pits	
							52		591		@ 51.6' 20°;J;N to MW;No;No;PI to Ir;S to SR; @ top of plum stone	Packer test from 52.0-60.5' indicated no significant leakage (0.0 Lugeons).
2.5"	12	5.0	5.0	4.2	100	84	53		590		@ 53.0' 0°;J;MW;No;No;Ir;R; joint in plum stone	@ 53.2' driller lifted rods.
							54		589		@ 53.5' 0°;J;MW;Fe;Su;PI;R; @ base of plum stone	
							55		588		@ 54.6' 10°;J;N;Fe;Su;PI;SR; joint in plum stone	Occasional drill chatter from 54.5-55.6'.
			55.6				56		587			@ 56.0' dark gray wash water for 6".
							57		586		@ 56.5' 0°;J;MW;No;No;Ir;R; @ base of plum stone	Below 57.0' frequent chatter.
2.5"	13	5.0	4.9	4.1	98	82	58		585		@ 58.2-58.5' FZ;0°-45°;J;N to MW;No;No;Ir;SR; gravel	
							59		584		@ 58.8' 0°;J;N;No;No;St;SR	
							60					Packer test from 59.3-67.8'

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**BORING LOG**

BORING NO. BV-2P  
SHEET 5 OF 6

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) 643.5 ft (MSL)	TOTAL DEPTH 83.6 (feet)
SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/08/2010	DATE FINISHED 07/13/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING							DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD						
			60.6				60					indicated leakage (210 Lugeons).
							61					Frequent drill chatter from 61.0-64.5'.
							62					
							63					
2.5"	14	5.0	5.0	3.1	100	62	63					Packer test from 63.0-71.5' indicated leakage (142 Lugeons).
							64					
							65					
							66					
							67					
							68					
2.5"	15	5.0	4.9	4.9	98	98	68					Packer test from 67.0-83.6' indicated no significant leakage (0.0 Lugeons).
							69					
							70					
							71					
							72					
2.5"	16	3.0	3.0	1.7	100	57	72					
							73					
							74					
							75					

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@ 61.2' 0°;J;MW to W;No;No;St;R; weak cement @ base of plum stone

@ 62.9-64.0' FZ;0-30°;J;N to MW;No;No;PI to St; S to R  
@ 63.2' 90°;J;N to MW;Cl;Fi;PI;S; laitance & weakly cemented aggregate

@ 64.4' 31°;J;N;No;No;PI;SR  
Granitic GNEISS; black to light gray; slightly foliated; medium to very coarse grained; fresh; very strong; hard [Lovington Fm]

@ 69.0' grading medium to coarse grained

QUARTZ; white; very coarse grained; fresh; strong; hard  
@ 71.7-72.9' FZ;0-45°;J;N to W;No;No;PI & St; SR to R

Granite GNEISS; black to light gray; slightly foliated; medium grained; fresh; strong; hard [Lovington Fm]



# BLACK & VEATCH

# BORING LOG

BORING NO. BV-2P

SHEET 6 OF 6

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) 643.5 ft (MSL)	TOTAL DEPTH 83.6 (feet)
SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/08/2010	DATE FINISHED 07/13/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD							
2.5"	17	5.0	5.0	5.0	100	100	75						
				78.6			76						
							77					@ 77.1' 0°;J;N;No;No;lr;R	
							78						
							79					@ 78.9' grading medium grained	Occasional drill chatter from 78.6-81.5'.
							80					@ 80.1' grading medium to coarse grained	
2.5"	18	5.0	5.0	4.9	100	98	81						Frequent drill chatter from 81.5-83.6'. @ 81.8' driller lifted rods.
							82						
							83						@ 83.0' driller lifted rods.
							84						Bottom of boring @ 83.6'. Piezometer installed in boring on 07/19/2010. Water level @ 8.6' on 07/21/2010.
							85						
							86						
							87						
							88						
							89						
							90						

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# BORING LOG

BORING NO. BV-3  
SHEET 1 OF 5

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) 643.5 ft (MSL)	TOTAL DEPTH 58.7 (feet)
SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/13/2010	DATE FINISHED 07/14/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD							
4"	1	1.4	1.4	0.9	100	64	0		643		CONCRETE; gray; 3/8-3/4" graded aggregate; evenly spaced; entrained air pockets; subangular to angular @ 0.3' 0°; J; MW; No; No; PI; SR to R; cold joint w/ construction debris	Boring advanced using 4" casing w/ carbide bit & water as drilling fluid (OD 4-1/2"). Below 1.4', continued boring using HQ triple tube core barrel w/ diamond bit & water as drilling fluid (OD 3-3/4"). Frequent mechanical breaks. @ 2.6' driller lifted rods.  Packer test from 6.0-14.5' indicated no significant leakage (5.9 Lugeons).  Packer test from 10.5-19.0' indicated no significant leakage (1.4 Lugeons).  Drill chatter from 13.7' to 14.7'.	
			1.4				1		642		Cyclopean CONCRETE; gray; 1/4" to 28" aggregate & plum stone; unevenly distributed; subrounded to subangular; sand cement		
2.5"	2	2.3	2.3	2.2	100	96	2		641				
			3.7				3		640				
							4		639				
							5		638				
2.5"	3	5.0	4.9	4.9	98	98	6		637		@ 5.7' 0°; J; N; No; No; PI; SR; @ top of plum stone		
							7		636		@ 7.0' 5°; J; N; Sd; Su; PI; R; @ top of plum stone @ 7.4-8.3' cement grading to light yellowish brown sand		
							8		635				
			8.7				9		634		@ 9.2' FZ; 0-45°; J; N to MW; No; No; Ir; SR to R; fractured plum stone		
							10		633				
2.5"	4	5.0	5.0	4.7	100	94	11		632				
							12		631		@ 12.1' 45°; J; N to MW; Sd; Pa; Ir; S to SR; slight honeycomb, @ top of plum stone @ 12.6' 25°; J; N; Fe; Su; St; SR; 1/4" vugs, @ base of plum stone		
							13		630				
			13.7				14		629				
							15		628				

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**BORING LOG**

**BORING NO. BV-3**  
**SHEET 2 OF 5**

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) 643.5 ft (MSL)	TOTAL DEPTH 58.7 (feet)
SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/13/2010	DATE FINISHED 07/14/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD							
2.5"	5	5.0	5.0	4.9	100	98	15		628				
							16		627		@ 16.1' 0°;J;MW to W;No;No;PI to St;R; weak cement w/ little aggregate @ 16.1-16.4' honeycomb, 3/4" vugs	@ 16.0' driller reports change in resistance. Frequent drill chatter from 16.9' to 17.5'.	
							17		626		@ 17.6' 25°;J;N;No;No;PI;SR; joint in plum stone		
							18		625				
			18.7				19		624				Packer test from 18.0-26.5' indicated no significant leakage (0.0 Lugeons).
2.5"	6	5.0	5.0	4.8	100	96	20		623		@ 19.8' 0-20°;J;N to MW;Cl;Sp;PI to Ir;SR; @ top of plum stone; laitance @ 20.2' 5°;J;N;UK;Sp;Ir;SR to R; @ base of plum stone		
							21		622				
							22		621		@ 22.4' 0°;J;N to W;No;No;PI to Ir;SR; @ base of weathered plum stone; laitance @ 22.9' 0°;J;N to MW;No;No;PI;SR	Packer test from 21.5-30.0' indicated no significant leakage (0.0 Lugeons).	
							23		620				
			23.7				24		619				Frequent drill chatter from 24.0' to 25.0'.
2.5"	7	5.0	5.0	4.9	100	98	25		618				
							26		617		@ 26.3-26.5' 1-1/2" vug & honeycomb @ 26.5' 5°;J;N;No;No;Ir;R; fracture around aggregate		
							27		616				
							28		615				
			28.7				29		614				Packer test from 28.8-37.3' indicated no significant
							30						

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**BORING LOG**

**BORING NO. BV-3**  
**SHEET 3 OF 5**

CLIENT City of Charlottesville										PROJECT Ragged Mountain Project										PROJECT NO. 168539									
PROJECT LOCATION Charlottesville, VA										COORDINATES Not Surveyed										GROUND ELEVATION (DATUM) 643.5 ft (MSL)					TOTAL DEPTH 58.7 (feet)				
SURFACE CONDITIONS Top of concrete (18" from down slope edge)															COORDINATE SYSTEM Not Surveyed					DATE START 07/13/2010					DATE FINISHED 07/14/2010				
SOIL SAMPLING										LOGGED BY B. Gomer										CHECKED BY D. Conolly					APPROVED BY G. Zamensky				
SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY	DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS																	
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD	DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS																	
2.5"	8	5.0	5.0	5.0	100	100	30		613		@ 30.2' 0-30°;J;N;No;No;lr;SR; joint in plum stone	leakage (8.3 Lugeons).																	
							31		612		@ 30.9-31.5' grading brown sand cement @ 30.9' 30°;J;N to MW;Cl;Sp;Pl to lr;SR; @ base of plum stone @ 31.6' pits; 1/8-1/4"																		
							32		611																				
							33		610		@ 32.7-34.0' grading brown sand cement @ 32.7' 30°;J;N;No;No;Pl;SR; @ base of plum stone w/ irregular contact																		
			33.7				34		609			Frequent drill chatter from 34.0' to 38.0'.																	
							35		608		@ 34.5' 10-45°;J;N to MW;No;No;lr;R; honeycomb; weak cement @ 35.0' 20-30°;J;N to MW;No;No;lr;R; honeycomb & 1/2" vugs																		
2.5"	9	5.0	5.0	4.5	100	90	36		607		@ 35.8' 40°;J;N;No;No;Pl;SR; joint in plum stone																		
							37		606			Packer test from 36.5-45.0' indicated no significant leakage (0.0 Lugeons).																	
							38		605																				
			38.7				39		604																				
							40		603																				
2.5"	10	5.0	4.9	4.9	98	98	41		602		Granitic GNEISS; black to light gray; massive to foliated; medium to very coarse grained; fresh; very strong; hard [Lovingson Fm]	@ 40.5' bottom of dam. @ 41.0' white/gray wash. Frequent drill chatter from 41.0-46.5'.																	
							42		601																				
							43		600																				
			43.7				44		599			Packer test from 44.0-58.7' indicated no																	
							45																						

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CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) 643.5 ft (MSL)	TOTAL DEPTH 58.7 (feet)
SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/13/2010	DATE FINISHED 07/14/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD							
2.5"	11	5.0	5.0	5.0	100	100	45		598	<p>@ 50.4' 5-30°;J;N;No;No;PI to St; S to SR</p>	significant leakage (0.0 Lugeons).		
							46		597		Smooth drilling below 46.5'.		
							47		596				
							48		595				
							49		594				
							50		593				
							51		592				
							52		591				
							53		590				
							54		589				
							55		588				
							56		587				
2.5"	13	5.0	4.9	4.9	98	98	58.7		584			Bottom of boring @ 58.7'. Boring backfilled w/ cement-	

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# BORING LOG

BORING NO. BV-3

SHEET 5 OF 5

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) 643.5 ft (MSL)	TOTAL DEPTH 58.7 (feet)
SURFACE CONDITIONS Top of concrete (18" from down slope edge)		COORDINATE SYSTEM Not Surveyed	DATE START 07/13/2010	DATE FINISHED 07/14/2010

SOIL SAMPLING			LOGGED BY B. Gomer		CHECKED BY D. Conolly		APPROVED BY G. Zamensky	
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SAMPLE TYPE	SAMPLE NUMBER	SET 6 INCHES	2ND 6 INCHES	3RD 6 INCHES	N VALUE	SAMPLE RECOVERY	ROCK CORING		DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
							CORE SIZE	RUN NUMBER						
									60					bentonite grout on 07/19/2010. Water level @ 6.2' on 07/19/2010.
										583				
									61					
										582				
									62					
										581				
									63					
										580				
									64					
										579				
									65					
										578				
									66					
										577				
									67					
										576				
									68					
										575				
									69					
										574				
									70					
										573				
									71					
										572				
									72					
										571				
									73					
										570				
									74					
										569				
									75					

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**BORING LOG**

BORING NO. BV-4P  
SHEET 1 OF 4

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) Not Surveyed	TOTAL DEPTH 50.0 (feet)
SURFACE CONDITIONS Grass covered slope on buttress embankment		COORDINATE SYSTEM Not Surveyed	DATE START 07/15/2010	DATE FINISHED 07/18/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD							
SPT	1	2	2	2	4	0.4	0					Silty SAND; brown; loose; dry; fine grained; trace organics (Fill)	Boring advanced using HQ rotary casing w/ water as drilling fluid (OD 3-3/4"). SPT sampler driven using 140 lb hammer w/ 30" drop; 1-3/4 turns on cathead; baskets in SPT samplers.
							1					@ 0.8' organics grade out	
SPT	2	2	1	3	4	0.6	2					grading wet (due to drilling fluid); fine to medium grained; w/ trace clay & organics (roots & fibers in construction fill)	
							3						
SPT	3	4	2	3	5	0.5	4					grading some gravel; clay & organics grade out	
							5						
SPT	4	3	2	3	5	0.3	6					grading reddish brown; gravel grades out	
							7						
SPT	5	2	3	4	7	0.5	8					grading brown	
							9						
SPT	6	5	5	5	10	0.4	10						
							11						
							12						
							13						
							14						
							15						

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**BORING LOG**

BORING NO. BV-4P  
SHEET 2 OF 4

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) Not Surveyed	TOTAL DEPTH 50.0 (feet)
SURFACE CONDITIONS Grass covered slope on buttress embankment		COORDINATE SYSTEM Not Surveyed	DATE START 07/15/2010	DATE FINISHED 07/18/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	ROD RECOVERY	PERCENT RECOVERY	RQD							
SPT	7	5	5	5	10	0.3	15				grading reddish brown w/ some gravel	Gravel clast in basket of SPT-7.	
SPT	8	5	6	11	17	0.3	19				@ 19.5' grading light yellowish brown & gray; medium dense; fine to coarse grained; poorly graded; subangular to subrounded; w/ trace gravel		
SPT	9	5	5	6	11	0.6	21				grading reddish brown & light yellowish brown w/ occasional seams of sandy silt	Changed from standard (orange) to soft (green) basket prior to SPT-9.	
SPT	10	6	5	5	10	0.7	24				grading brown; loose; fine to medium grained		
SPT	11	5	4	4	8	0.8	27				grading reddish brown		
SPT	12	4	3	6	9	0.8	29				Sandy SILT; reddish brown; stiff; wet; nonplastic (Fill)		

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# BORING LOG

BORING NO. BV-4P

SHEET 3 OF 4

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) Not Surveyed	TOTAL DEPTH 50.0 (feet)
SURFACE CONDITIONS Grass covered slope on buttress embankment		COORDINATE SYSTEM Not Surveyed	DATE START 07/15/2010	DATE FINISHED 07/18/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD							
SPT	13	3	9	8	17	0.5	30					Loss of circulation @ 30.0'. Water level maintained in casing below 30.0'.	
							31						
							32						
SPT	14	4	5	7	12	0.4	34					Alternating hard & soft layers, drilling to 33.5'. Overdrilled to 34.0' for SPT-14.	
							35						
							36						
SPT	15	30	20	15	35	0.5	38					Dropped SPT sampler ~10' before sampling @ 36.5'. Drilled 1' deeper to avoid disturbances. @ 37.0' hard drilling. ~2" gravel slough in top of SPT-15.	
							39						
							40						
SPT	16	5	13	50/1.5	50+	1.1	40						
							41						
							42						
							43						
							44						
							45						

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# BLACK & VEATCH

# BORING LOG

BORING NO. BV-4P

SHEET 4 OF 4

CLIENT City of Charlottesville		PROJECT Ragged Mountain Project		PROJECT NO. 168539
PROJECT LOCATION Charlottesville, VA		COORDINATES Not Surveyed	GROUND ELEVATION (DATUM) Not Surveyed	TOTAL DEPTH 50.0 (feet)
SURFACE CONDITIONS Grass covered slope on buttress embankment		COORDINATE SYSTEM Not Surveyed	DATE START 07/15/2010	DATE FINISHED 07/18/2010

SOIL SAMPLING		LOGGED BY B. Gomer		CHECKED BY D. Conolly	APPROVED BY G. Zamensky
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ROCK CORING								DEPTH (FEET)	SAMPLE TYPE	ELEVATION (FEET)	GRAPHIC LOG	CLASSIFICATION OF MATERIALS	REMARKS
CORE SIZE	RUN NUMBER	RUN LENGTH	RUN RECOVERY	RQD RECOVERY	PERCENT RECOVERY	RQD							
1.875	2	3.9	3.6	3.6	92	92	45				@ 45.0' 70°;Fo;N;Ca;Sp;PI to St;SR to R		
			46.1				46						
							47						
							48					~0.2' gravel & wood slough @ top of Run 2. Apparent slough from washed out zone @ 42.4-43.0'.	
							49						
							50					No recovery 49.7-50.0'. Bottom of boring @ 50.0'. Piezometer installed in boring on 07/17/2010. Water level @ 47.7' below top of casing (3.7' stickup) on 07/21/2010.	
							51						
							52						
							53						
							54						
							55						
							56						
							57						
							58						
							59						
							60						

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