



MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST J. Wallen/ J. Lachewitz							
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)					
BORING NO. B-923		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. ND					
COLLAR ELEV. 272.0 ft (NAVD88)		NORTHING 3,910,077		US ft (NAD83)		EASTING 11,686,309		US ft (NAD83)		24 HR. ND					
TOTAL DEPTH 75.4 ft		DRILL MACHINE CME 45 Trailer				DRILLER: D. Rhodes				HAMMER TYPE 140 lbs Auto					
DATE STARTED 8/29/06				COMPLETED 9/7/06				CORE BARREL TYPE: HQ 3 triple tube-wireline							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80					100	
272.0					Ground Surface								272.0	0.0	
270.3	1.7														
268.7	3.3	14	16	6						923-1			269.2	2.8	Silty GRAVEL (GM), reddish brown (5YR 4/3) and light gray (GLE Y1 7/N), moist, medium dense, fine to coarse sand (Fill)
266.9	5.1	4	2	4						923-2			266.9	5.1	CLayey, fine to coarse SAND (SC), reddish brown (5YR 4/3), moist, loose (Residual Soil)
		50/0.1								923-3			266.8	5.2	Weathered Rock: Greenish gray (GLE Y1 6/1), moist, very dense, BIOTITE-QUARTZ GNEISS Hard Rock: Light to medium gray, gray-blue, and gray-white, slightly weathered to fresh, very close to moderately close fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS with trace magnetite

NORTH ANNA COL BORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07



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TOTAL DEPTH 75.4 ft		DRILL MACHINE CME 45 Trailer				DRILLER: D. Rhodes				HAMMER TYPE 140 lbs Auto					
DATE STARTED 8/29/06				COMPLETED 9/7/06				CORE BARREL TYPE: HQ 3 triple tube-wireline							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT						SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80	100					
197.2					Continued from previous page										
															Boring and coring terminated at 75.4 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS

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BORING NO. B-923		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. ND		
COLLAR ELEV. 272.0 ft (NAVD88)		NORTHING 3,910,077		US ft (NAD83)		EASTING 11,686,309		US ft (NAD83)		24 HR. ND		
TOTAL DEPTH 75.4 ft		DRILL MACHINE CME 45 Trailer				DRILLER: D. Rhodes			HAMMER TYPE 140 lbs Auto			
DATE STARTED 8/29/06			COMPLETED 9/7/06			CORE BARREL TYPE: HQ 3 triple tube-wireline						
CORE SIZE HQ3				TOTAL RUN 70.2 ft								
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (%)	RQD (%)	SAMP. NO.	REC. (%)	RQD (%)	LOG	DESCRIPTION AND REMARKS		
Begin Coring @ 5.2 ft												
266.8	5.2	0.2	0:32/0.2	(0.2)	(0.0)	1			LOG	266.8	Hard Rock: Light to medium gray, gray-blue, and gray-white, slightly weathered to fresh, very close to moderately close fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS with trace magnetite (5 joints at 45°, 2 joints at 75° with Fe staining)	
266.6	5.4	5.0	5:00	100%	0%	2				5.2		
			5:54	(4.9)	(4.2)							
			7:03	98%	84%							
261.6	10.4		10:04									
			13:20									
260.3	11.7	1.3	17:27	(1.1)	(0.9)	3						(3 joints at 40° with Fe staining)
		3.7	16:27/0.3	85%	69%	4						(1 joint at 45°)
			3:30/0.7	(3.6)	(3.6)							
			6:16	97%	97%							
256.6	15.4		9:10									
			9:30									
253.8	18.2	2.8	10:21	(2.8)	(2.8)	5						-No Joints
			14:30	100%	100%							
			32:20/0.8									
251.6	20.4	2.2	4:32/0.2	(2.2)	(2.2)	UCS-20.0'						(1 joint at 70° with Fe staining)
			27:37	100%	100%							
			23:24									
246.6	25.4	5.0	10:39	(5.0)	(5.0)	7					(1 joint at 80° with trace clay, quartz pyrite)	
			9:54	100%	100%							
			9:34									
			14:22									
			17:31									
241.6	30.4	5.0	33:33	(5.0)	(4.5)	8					(6 joints at 40-50° with orange Fe stain; 2 joints at 80° with red Fe stain; moderately weathered fracture zone from 26.9-28.0 ft)	
			4:45	100%	90%							
			3:47									
			5:24									
			6:32									
236.6	35.4	5.0	4:21	(4.9)	(4.7)	UC-30.8'					(1 joint at 20° and 1 joint at 10° with orange Fe staining)	
			6:00	98%	94%							
			6:39									
			8:05									
			6:42									
231.6	40.4	5.0	8:30	(5.0)	(4.5)	10					(1 joint at 60°, 1 joint at 80°, 2 joints at 40°)	
			8:00	100%	90%							
			9:00									
			13:30									
			14:30									
226.6	45.4	5.0	24:00	(5.0)	(4.7)	11						
			9:00	100%	94%							
			5:30									
			6:00									
			5:30									
221.6	50.4	5.0	7:58	(5.0)	(5.0)	UC-45.7'					(3 joints at 70-80° with trace quartz+clay)	
			8:58	100%	100%							
			16:24									
			13:18									
			10:31									
216.6	55.4	5.0	11:29	(5.0)	(5.0)	13					(1 joint at 0°; 1 joint at 45° with Fe stain and trace clay)	
			8:44	100%	100%							
			5:34									
			4:50									
			3:33									
211.6	60.4	5.0	5:43	(5.0)	(4.4)	14					(5 joints at 0-60°, some with slight Fe stain)	
			5:03	100%	88%							
			6:05									
			5:52									
			4:56									
206.6	65.4	5.0	5:40	(5.0)	(5.0)	15					(5 joints at 50-60° with trace clay and orange Fe stain)	
			4:00	100%	100%							
			3:53									
			3:10									
			4:46									
203.6	68.4	3.0	5:17	(2.7)	(2.0)	UCS-65.7'					(1 joint at 90° with trace clay and orange Fe stain)	
			6:10	90%	67%							
			14:17									
201.6	70.4	2.0	2:27	(1.9)	(1.5)	17					(3 joints at 10-60°, some with Fe stain and trace clay)	
			3:22	95%	75%							
			3:19	(5.0)	(4.1)	18					(7 joints at 5-45° trace clay and Fe staining; extremely fractured zone from 74.4-74.9 ft)	
			2:29	100%	82%							
			3:00									
			2:46									
196.6	75.4		2:52							196.6	Coring terminated at 75.4 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS	
											75.4	

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B-923 - Box 1

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B-923 - Box 3

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B-923 - Box 5  
B-923 - Box 6



MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST S. Nicely						
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)				
BORING NO. B-924		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 5.1				
COLLAR ELEV. 271.5 ft (NAVD88)		NORTHING 3,909,970		US ft (NAD83)		EASTING 11,686,475		US ft (NAD83)		24 HR. ND				
TOTAL DEPTH 75.6 ft		DRILL MACHINE CME 55 Truck				DRILLER: H. Meyerson				HAMMER TYPE 140 lbs Auto				
DATE STARTED 8/1/06		COMPLETED 8/7/06				CORE BARREL TYPE: HQ 3 triple tube-wireline								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80					100
271.5														0.0
270.0	1.5													0.4
268.0	3.5	33	25	8						924-1			2.6	
265.5	6.0	15	32	42						924-2			6.5	
263.0	8.5	17	50/0.3							924-3				
260.5	11.0	50/0.2								924-4				
258.0	13.5	50/0.2								924-5				
253.0	18.5	50/0.2								924-6				
		50/0.1								924-7				
														18.6
														43.6

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SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)						
BORING NO. B-924		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 5.1						
COLLAR ELEV. 271.5 ft (NAVD88)		NORTHING 3,909,970		US ft (NAD83)		EASTING 11,686,475		US ft (NAD83)		24 HR. ND						
TOTAL DEPTH 75.6 ft		DRILL MACHINE CME 55 Truck				DRILLER: H. Meyerson				HAMMER TYPE 140 lbs Auto						
DATE STARTED 8/1/06				COMPLETED 8/7/06				CORE BARREL TYPE: HQ 3 triple tube-wireline								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION			
		0.5ft	0.5ft	0.5ft	0	20	40	60	80					100		
196.7					Continued from previous page											
														195.9	75.6	Boring and coring terminated at 75.6 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS  Boring grouted immediately after drilling completed due to location in roadway.

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BORING NO. B-924			DRILL METHOD: Mud Rotary/Core			SAMPLE METHODS: SPT/CORE				0 HR.	5.1	
COLLAR ELEV. 271.5 ft (NAVD88)			NORTHING 3,909,970		US ft (NAD83)		EASTING 11,686,475		US ft (NAD83)		24 HR.	ND
TOTAL DEPTH 75.6 ft			DRILL MACHINE CME 55 Truck			DRILLER: H. Meyerson			HAMMER TYPE 140 lbs Auto			
DATE STARTED 8/1/06			COMPLETED 8/7/06			CORE BARREL TYPE: HQ 3 triple tube-wireline						
CORE SIZE HQ3			TOTAL RUN 57.0 ft									
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) % RQD (ft) %		SAMP. NO.	STRATA REC. (ft) % RQD (ft) %		LOG	DESCRIPTION AND REMARKS		
Begin Coring @ 18.6 ft												
252.9	18.6	5.0	2:15 1:45 2:00 2:00 2:45	(5.0) 100%	(3.5) 70%	UC-21.7'				252.9	Hard Rock: Light to dark gray, moderately to slightly weathered, very close to moderately close fracturing, moderately hard to very hard, BIOTITE-QUARTZ GNEISS (4 joints at 10-20°, 3 joints at 40-50°, 3 joints at 50-60°, some with Fe staining) (2 joints at 60-70°, 6 joints at 30-40°, 3 joints at 10-20°-all with Fe staining)  (7 joints at 20-30°, 2 joints at 50-60°-all with Fe staining))  (5 joints at 30-40°, 6 joints at 10-20°-all with Fe staining; severely weathered zone from 36.7-37.2 ft)  (12 joints at 20-30°, 1 joint at 60-70°; highly fractured severely weathered zone from 38.6-39.9 ft)	18.6
247.9	23.6	5.0	2:00 2:00 1:00 1:00 1:15	(4.7) 94%	(3.8) 76%	2				227.9	43.6	
242.9	28.6	5.0	2:15 3:15 4:15 4:00 5:15	(4.6) 92%	(4.0) 80%	UC-30.2'						
237.9	33.6	5.0	2:15 2:30 2:00 3:00 3:00	(4.3) 86%	(2.2) 44%	4						
232.9	38.6	5.0	4:00 2:15 3:30 3:15 2:15	(5.0) 100%	(3.6) 72%	5						
227.9	43.6	5.0	3:15 3:00 2:00 2:45 2:45	(4.9) 98%	(4.9) 98%	UCS-44.0'					43.6	
222.9	48.6	5.0	2:30 2:00 1:30 3:15 2:45	(5.1) 102%	(4.7) 94%	7						
217.9	53.6	5.0	3:15 5:30 2:15 2:00 3:15	(4.8) 96%	(4.0) 80%	8						
212.9	58.6	5.0	3:00 4:15 5:30 8:00 14:15	(5.2) 104%	(4.8) 96%	9						
207.9	63.6	5.0	43:00 6:00 7:00 13:00 45:00	(5.1) 102%	(4.7) 94%	10						
202.9	68.6	5.0	14:30 14:30 4:30 3:45 3:30	(4.9) 98%	(4.1) 82%	11						
197.9	73.6	2.0	3:00 3:30	(2.0) 100%	(2.0) 100%	UC-75.1'						
195.9	75.6									195.9	-No Joints	75.6
										Coring terminated at 75.6 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS		

NORTH ANNA COL. CORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07





B-924 - Box 1  
B-924 - Box 2



B-924 - Box 3  
B-924 - Box 4