



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.	LOG	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
272.0					Ground Surface							0.0
270.3	1.7									923-1		2.8
268.7	3.3	14	16	6						923-2		2.8
266.9	5.1	4	2	4						923-3		5.1
		50/0.1										

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

272.0 Silty GRAVEL (GM), reddish brown (5YR 4/3) and light gray (GLE Y1 7/N), moist, medium dense, fine to coarse sand (Fill) 2.8

269.2 CLayey, fine to coarse SAND (SC), reddish brown (5YR 4/3), moist, loose (Residual Soil) 5.1

266.9 Weathered Rock: Greenish gray (GLE Y1 6/1), moist, very dense, BIOTITE-QUARTZ GNEISS

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



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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	
														196.6	Boring and coring terminated at 75.4 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS
														75.4	

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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						
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									
		2.8	9:30								-No Joints	
253.8	18.2		10:21	(2.8)	(2.8)	5						
			14:30	100%	100%							
		2.2	32:20/0.8	(2.2)	(2.2)	UCS-20.0'					(1 joint at 70° with Fe staining)	
251.6	20.4		4:32/0.2	(2.2)	(2.2)							
		5.0	27:37	100%	100%						(1 joint at 80° with trace clay, quartz pyrite)	
			23:24	(5.0)	(5.0)	7						
			10:39	100%	100%							
			9:54									
			9:34									
246.6	25.4		14:22									
		5.0	17:31	(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)		
			33:33	100%	90%							
			4:45									
			3:47									
241.6	30.4		5:24									
		5.0	6:32	(4.9)	(4.7)	UC-30.8'				(1 joint at 20° and 1 joint at 10° with orange Fe staining)		
			4:21	98%	94%							
			6:00									
			6:39									
236.6	35.4		8:05									
		5.0	6:42	(5.0)	(4.5)	10				(1 joint at 60°, 1 joint at 80°, 2 joints at 40°)		
			8:30	100%	90%							
			8:00									
			9:00									
			13:30									
231.6	40.4		14:30									
		5.0	24:00	(5.0)	(4.7)	11						
			9:00	100%	94%							
			5:30									
			6:00									
226.6	45.4		5:30									
		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									
221.6	50.4		10:31									
		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									
216.6	55.4		3:33									
		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									
211.6	60.4		4:56									
		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									
206.6	65.4		4:46									
		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%							
203.6	68.4		14:17									
		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%							
201.6	70.4		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)		
		5.0	2:29	100%	82%							
			3:00									
			2:46									
196.6	75.4		2:52									
									196.6	75.4	Coring terminated at 75.4 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-923 – Box 1

B-923 – Box 2



B-923 – Box 3

B-923 – Box 4



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.	LOG	SOIL AND ROCK DESCRIPTION			
		0.5ft	0.5ft	0.5ft	0	20	40	60	80	100						
271.5					Asphalt Roadway								0.0			
270.0	1.5													271.1	Asphalt Roadway	0.4
268.0	3.5	33	25	8							924-1			268.9	Silty, fine to coarse SAND (SM), gray (5YR 6/1), moist, dense (Fill)	2.6
265.5	6.0	15	32	42							924-2				Silty, fine to coarse SAND (SM), light brown (7.5YR 6/3), white (GLEY1 8/N), and reddish yellow (7.5YR 7/6), moist to dry, dense to very dense, trace gravel (Residual Soil)	6.5
263.0	8.5	17	50/0.3								924-3			265.0	Weathered Rock: Brownish yellow (10YR 6/6), wet, very dense, severely weathered, BIOTITE-QUARTZ GNEISS	
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			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	18.6
														227.9	Hard Rock: Gray to dark gray, slightly weathered to fresh, very close to moderately close fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS	43.6

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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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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						
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'				227.9	Hard Rock: Gray to dark gray, slightly weathered to fresh, very close to moderately close fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS (2 joints at 20-30°; quartz vein at 46.8-46.9 ft)	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	-No Joints	75.6	
195.9	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
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