



MACTEC PROJECT NO.: 6468-06-1472					COUNTY Louisa, VA					GEOLOGIST J. Lachewitz				
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)				
BORING NO. B-927			DRILL METHOD: HSA/Rot. Wash/Core			SAMPLE METHODS: SPT/CORE					0 HR. ND			
COLLAR ELEV. 292.5 ft (NAVD88)			NORTHING 3,909,966 US ft (NAD83)			EASTING 11,685,879 US ft (NAD83)					24 HR. 22.9			
TOTAL DEPTH 100.4 ft			DRILL MACHINE CME 550 ATV			DRILLER: G. Akins					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 MOI	SOIL AND ROCK DESCRIPTION		
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100	
292.5					Ground Surface							0.0		
291.0	1.5											Clayey SAND (SC) strong brown (7.5YR 4/6), moist, medium dense (Residual Soil)		
289.0	3.5	3	5	5						927-1				
286.5	6.0	5	6	6						927-2		Silty, fine to coarse SAND (SM) brownish yellow (10YR 6/8), reddish yellow (7.5YR 6/8), and pale yellow (2.5Y 7/4), moist, medium dense, micaceous (Residual Soil)		
284.0	8.5	7	7	7						927-3				
281.5	11.0	5	5	7						927-4				
279.0	13.5	8	7	10						927-5				
274.0	18.5	8	11	12						927-6				
269.0	23.5	15	12	14						927-7				
264.0	28.5	20	50/0.5							927-8		Weathered Rock: Brownish yellow (10YR 6/8) to light yellowish brown (2.5Y 6/4), moist, very dense, weathered GNEISS		
260.8	31.7	50/0.1								927-9				
256.6	35.9	50/0.5								927-10				
		6	50/0.5							927-11				
												252.7	Hard Rock: Yellow, white, and light gray, moderately to slightly weathered, close to wide fracturing, moderately hard to hard, QUARTZ-BIOTITE GNEISS with trace magnetite and pyrite	
												222.0	Hard rock: Light gray and white, moderately severe to slightly weathered, close fracturing, soft to hard, QUARTZ-BIOTITE GNEISS	
												217.9		

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



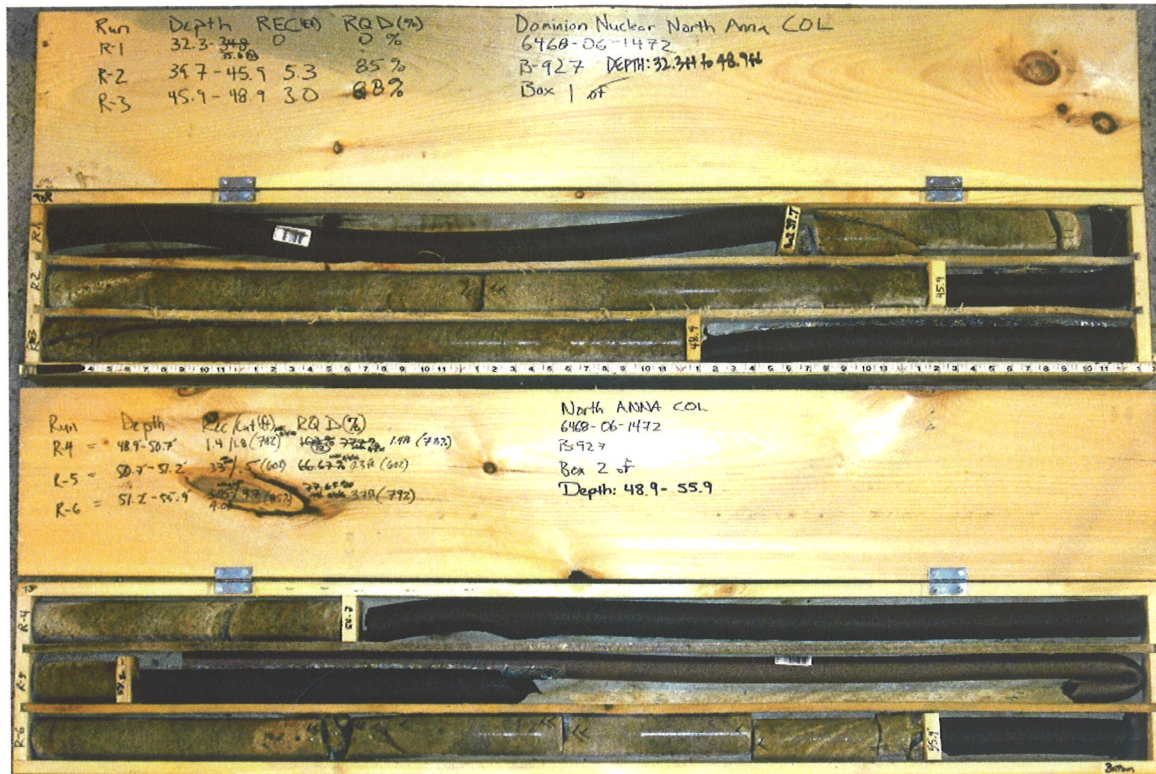
MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST J. Lachewitz						
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)				
BORING NO. B-927		DRILL METHOD: HSA/Rot. Wash/Core				SAMPLE METHODS: SPT/CORE				0 HR. ND				
COLLAR ELEV. 292.5 ft (NAVD88)		NORTHING 3,909,966		US ft (NAD83)		EASTING 11,685,879		US ft (NAD83)		24 HR. 22.9				
TOTAL DEPTH 100.4 ft		DRILL MACHINE CME 550 ATV				DRILLER: G. Akins				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
217.7					Continued from previous page									
														Hard Rock: Light gray, moderately to very slightly weathered, close to wide fracturing, moderately hard to very hard, QUARTZ-BIOTITE GNEISS (continued)
														Boring and coring terminated at 100.4 ft in Hard Rock: Hard to very hard, QUARTZ-BIOTITE GNEISS

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SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)		
BORING NO. B-927			DRILL METHOD: HSA/Rot. Wash/Core			SAMPLE METHODS: SPT/CORE				0 HR. ND		
COLLAR ELEV. 292.5 ft (NAVD88)			NORTHING 3,909,966		US ft (NAD83)		EASTING 11,685,879		US ft (NAD83)		24 HR. 22.9	
TOTAL DEPTH 100.4 ft			DRILL MACHINE CME 550 ATV			DRILLER: G. Akins			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 65.7 ft									
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS		
										Begin Coring @ 32.3 ft		
260.2	32.3	3.6	0:14 0:19 0:40/1.6	(0.0) 0%	(0.0) 0%	1					Weathered Rock: Brownish yellow (10YR 6/8) to light yellowish brown (2.5Y 6/4), moist, very dense, weathered GNEISS (continued) -No Recovery	
256.6	35.9		N=50/0.5			927-11						
252.8	39.7	6.2	3:58 4:47 6:12 4:51 7:12/2.2	(5.3) 85%	(5.3) 85%	UC-43.0'					Hard Rock: Yellow, white, and light gray, moderately to slightly weathered, close to wide fracturing, moderately hard to hard, QUARTZ-BIOTITE GNEISS with trace magnetite and pyrite	
246.6	45.9	3.0	10:38 12:41 18:13	(3.0) 100%	(3.0) 100%	3						
243.6	48.9	1.8	21:44 8:58/0.8	(1.4) 78%	(1.4) 78%	4						
241.8	50.7	0.5	12:14/0.5	(0.3) 60%	(0.3) 60%	5					-No Joints	
241.3	51.2	4.7	2:46 3:06 8:02 5:03 1:51/0.7	(4.0) 85%	(3.7) 79%	UCS-51.6'						
236.6	55.9	3.5	7:57 11:32 11:08	(3.5) 100%	(3.5) 100%	7					-No Joints	
233.1	59.4	1.5	4:49/0.5	(1.3) 87%	(1.3) 87%	8					-No Joints	
231.6	60.9	4.9	13:25 12:15/0.5	(4.9) 100%	(3.9) 80%	9						
226.7	65.8	1.6	4:56 7:40 12:22 6:09 11:44/0.9	(1.6) 100%	(1.0) 63%	10						
225.1	67.4	3.1	16:58 12:21/0.6	(3.1) 100%	(3.1) 100%	11						
222.0	70.5	4.1	4:44 9:29 10:55/1.1	(4.1) 93%	(2.1) 51%	12						
217.9	74.6	2.8	5:58 4:15 6:18 11:22/1.1	(2.8) 100%	(2.6) 93%	UC-74.9'						
215.1	77.4	3.5	16:00 16:10 ND/0.8	(3.5) 100%	(3.5) 100%	14						
211.6	80.9	5.0	2:25/0.5 5:30 8:13 11:40	(5.0) 100%	(4.8) 96%	15						
206.6	85.9	5.1	5:43 4:43 4:36 6:30 8:30	(5.1) 100%	(5.1) 100%	16					-No Joints	
201.5	91.0	5.0	4:18 4:24 5:01 7:09 11:10/1.1	(5.0) 100%	(5.0) 100%	17					-No Joints	
196.5	96.0	4.4	3:53 3:50 5:19 6:18 8:01	(4.4) 100%	(4.4) 100%	UC-96.3'					-No Joints	
192.1	100.4		4:41 5:48 5:55 8:40/1.4	(4.4) 100%	(4.4) 100%							
											Coring terminated at 100.4 ft in Hard Rock: Hard to very hard, QUARTZ-BIOTITE GNEISS	

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



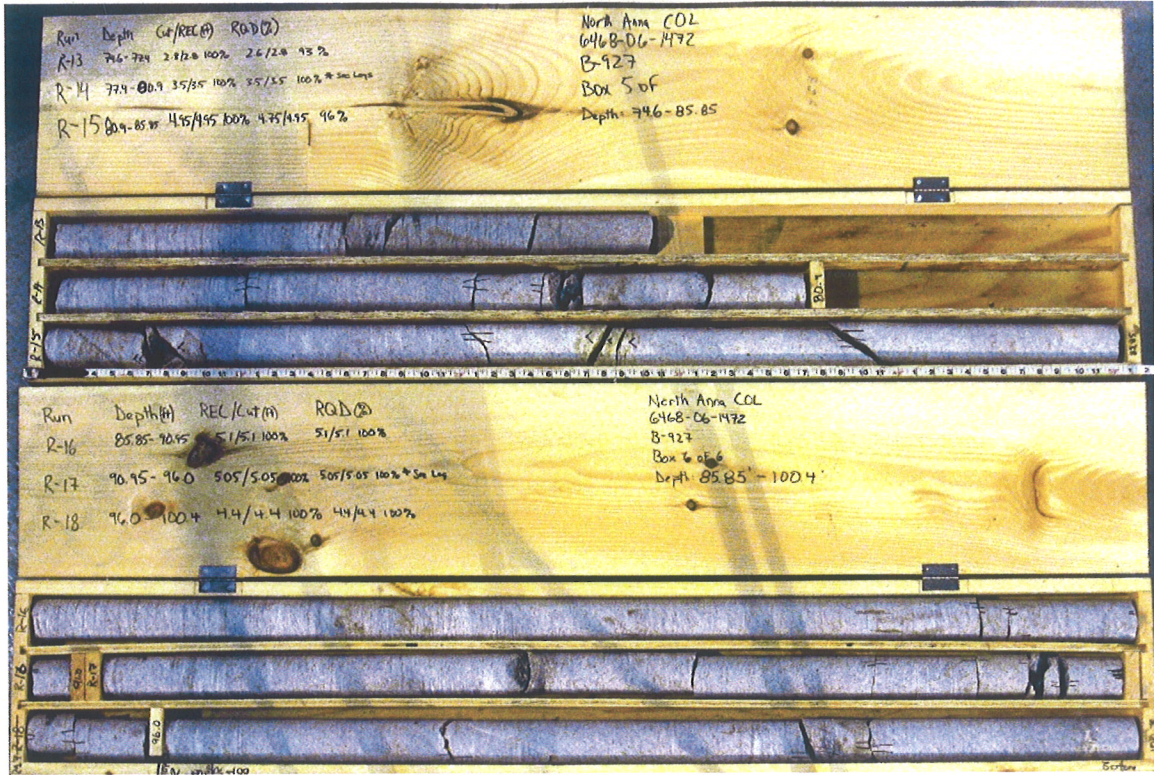
B-927 - Box 1

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B-927 - Box 3

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B-927 - Box 5
B-927 - Box 6



MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA		GEOLOGIST J. Wallen/ M. Lear												
SITE DESCRIPTION NORTH ANNA COL							GROUND WATER (ft)											
BORING NO. B-928		DRILL METHOD: Mud Rotary/Core			SAMPLE METHODS: SPT/CORE		0 HR. 12.5											
COLLAR ELEV. 272.2 ft (NAVD88)		NORTHING 3,910,223		US ft (NAD83)		EASTING 11,686,159		24 HR. 8.1										
TOTAL DEPTH 75.2 ft		DRILL MACHINE CME 45 Trailer			DRILLER: D. Rhodes		HAMMER TYPE 140 lbs Auto											
DATE STARTED 9/7/06		COMPLETED 9/14/06			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				
272.2					Ground Surface									272.2	0.0			
270.7	1.5															Silty, fine to coarse SAND (SM), brownish yellow (10YR 6/6), moist, medium dense, relict rock fabric (Residual Soil)		
268.7	3.5	6	6	6														
266.2	6.0	3	5	5														
263.9	8.3	4	6	7														
261.2	11.0	5	6	8														
258.2	14.0	4	7	7														
254.0	18.2	5	6	8														
250.1	22.1	6	9	9														
245.1	27.1	10	10	12														
240.1	32.1	11	17	23														
		27	46	50/0.4												247.2	25.0	
																Silty, fine to coarse SAND (SM), brownish yellow (10YR 6/6), moist, dense to very dense, relict rock fabric (Residual Soil)		
235.1	37.1																	
230.1	42.1	50/0.5																
225.1	47.1	50/0.2																
223.5	48.7	50/0.2																
220.1	52.1	50/0.1																
		50/0.0																
																	239.1	33.1
																	Weathered Rock: Sampled as Silty, fine to coarse SAND (SM), brownish yellow (10YR 6/6) and yellowish brown (10YR 5/6), moist, very dense (BIOTITE-QUARTZ GNEISS)	
																220.1	52.1	
																Hard Rock: Dark gray, moderately severely weathered, very close to close fracturing, moderately hard. BIOTITE-QUARTZ GNEISS		
																217.0	55.2	
																Weathered Rock: No recovery- BIOTITE-QUARTZ GNEISS		
																215.9	56.3	
																Hard Rock: Tan-gray and white, with orange Fe staining, moderately severe to slightly weathered, close to moderately close fracturing, moderately hard to hard, BIOTITE-QUARTZ GNEISS		

NORTH ANNA COL. JRE NORTH ANNA COL DATA REPORT REV.0.GPJ NORTH ANNA COL.GDT. 1/19/07



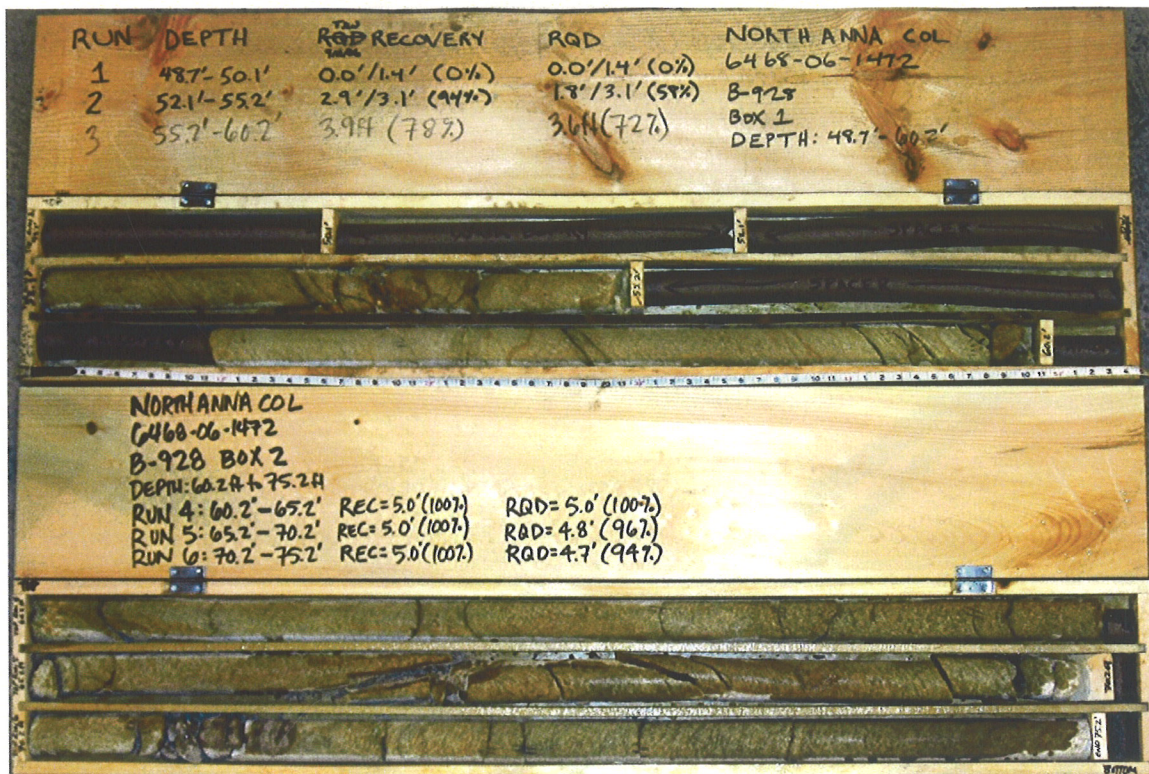
MACTEC PROJECT NO.: 6468-06-1472					COUNTY Louisa, VA					GEOLOGIST J. Wallen/ M. Lear					
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)					
BORING NO. B-928			DRILL METHOD: Mud Rotary/Core					SAMPLE METHODS: SPT/CORE					0 HR. 12.5		
COLLAR ELEV. 272.2 ft (NAVD88)			NORTHING 3,910,223			US ft (NAD83)			EASTING 11,686,159			US ft (NAD83)		24 HR. 8.1	
TOTAL DEPTH 75.2 ft			DRILL MACHINE CME 45 Trailer					DRILLER: D. Rhodes					HAMMER TYPE 140 lbs Auto		
DATE STARTED 9/7/06			COMPLETED 9/14/06					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					
197.4					Continued from previous page										
															197.0 Boring and coring terminated at 75.2 ft in Hard Rock: Hard, BIOTITE-QUARTZ GNEISS 75.2

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



MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST J. Wallen/ M. Lear			
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)	
BORING NO. B-928		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 12.5	
COLLAR ELEV. 272.2 ft (NAVD88)		NORTHING 3,910,223		US ft (NAD83)		EASTING 11,686,159		US ft (NAD83)		24 HR. 8.1	
TOTAL DEPTH 75.2 ft		DRILL MACHINE CME 45 Trailer				DRILLER: D. Rhodes				HAMMER TYPE 140 lbs Auto	
DATE STARTED 9/7/06				COMPLETED 9/14/06				CORE BARREL TYPE: HQ 3 triple tube-wireline			
CORE SIZE HQ3				TOTAL RUN 24.5 ft							
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
										Begin Coring @ 48.7 ft	
223.5	48.7	1.4	N=50/0.1 1:24	(0.0)	(0.0)	1				Weathered Rock: Sampled as Silty, fine to coarse SAND (SM), brownish yellow (10YR 6/6) and yellowish brown (10YR 5/6), moist, very dense (BIOTITE-QUARTZ GNEISS) (continued)	
222.1	50.1		0.25/0.4	0%	0%					52.1	
220.1	52.1	3.1	N=50/0.0 3:49	(2.9)	(1.8)	UC-52.6'				No Recovery	
217.0	55.2		3:00	94%	58%					Hard Rock: Dark gray, moderately severely weathered, very close to close fracturing, moderately hard, BIOTITE-QUARTZ GNEISS	
		5.0	3:09/1.1	(3.9)	(3.6)	3				(4 joints at 45°)	
			3:56	78%	72%					Weathered Rock: No recovery- BIOTITE-QUARTZ GNEISS	
212.0	60.2		2:38							(4 joints at 50-60° with clay and brown Fe stain)	
		5.0	2:58	(5.0)	(5.0)	4				Hard Rock: Tan-gray and white, with orange Fe staining, moderately severe to slightly weathered, close to moderately close fracturing, moderately hard to hard, BIOTITE-QUARTZ GNEISS	
			3:04	100%	100%					(4 joints at 45-55° with clay and orange Fe stain)	
207.0	65.2		2:46								
		5.0	3:00	(5.0)	(4.8)	5				(2 joints at 40-50° with trace clay and orange Fe stain; 2 joints at 80-90° with clay and brown Fe stain)	
			2:57	100%	96%						
202.0	70.2		1:56								
		5.0	3:13	(5.0)	(4.7)	UCS-74.7'				(1 joint at 45° with clay; 2 joints at 10-20° with trace clay; fractured quartz vein at 60° from 70.8-71.5 ft)	
			3:20	100%	94%						
197.0	75.2		2:52								
			2:23								
										Coring terminated at 75.2 ft in Hard Rock: Hard, BIOTITE-QUARTZ GNEISS	

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



B-928 - Box 1

B-928 - Box 2



MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST J. LAchewitz/M. Lear													
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)											
BORING NO. B-928A		DRILL METHOD: Mud Rotary				SAMPLE METHODS: UD/PITCHER BARREL				0 HR. ND											
COLLAR ELEV. 271.8 ft (NAVD88)		NORTHING 3,910,220		US ft (NAD83)		EASTING 11,686,165		US ft (NAD83)		24 HR. ND											
TOTAL DEPTH 37.5 ft		DRILL MACHINE CME 550 ATV				DRILLER: F. Cox				HAMMER TYPE NA											
DATE STARTED 10/23/06				COMPLETED 10/23/06				CORE BARREL TYPE: NA													
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											
271.8					Ground Surface									271.8	0.0						
					[BLOW COUNT GRID]									263.8	8.0	No samples due to utility clearance operations-soft dig/vac. truck excavation					
261.8	10.0																				Silty, fine to coarse SAND (SM), tan-white, moist, relict rock fabric (Residual Soil)
																					928A-UD-1: Pushed from 10.0-10.5 ft; push pressure= weight of rig; recovery=0.3 ft-sample not retained for testing due to low recovery
256.8	15.0																				928A-UD-2: Pushed from 15.0-16.9 ft; push pressure= ND; recovery=1.8 ft
																					928A-UD-3: Pushed from 20.0-22.0 ft; push pressure= ND; recovery=1.9 ft
251.8	20.0																				928A-PB-1: Advanced from 25.0-27.3 ft; recovery=0.7 ft
															928A-PB-2: Advanced from 27.3-29.8 ft; recovery=0.7 ft						
246.8	25.0														-Hard drilling at 29.0 ft						
															Weathered Rock: BIOTITE-QUARTZ GNEISS						
244.5	27.3														928A-PB-3: Advanced from 35.0-37.5 ft; recovery=0.7 ft						
236.8	35.0														Boring terminated at 37.5 ft in Weathered Rock: BIOTITE-QUARTZ GNEISS						

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