



SHEET 1 OF 2

MACTEC PROJECT NO.: 6468-06-1472					COUNTY Louisa, VA					GEOLOGIST S. Lehman				
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)				
BORING NO. B-943			DRILL METHOD: Mud Rotary/Core			SAMPLE METHODS: SPT/CORE			0 HR. 6.2					
COLLAR ELEV. 300.4 ft (NAVD88)			NORTHING 3,909,355		US ft (NAD83)		EASTING 11,683,892		US ft (NAD83)		24 HR. 4.2			
TOTAL DEPTH 101.9 ft			DRILL MACHINE CME 55LC Track			DRILLER: D. White			HAMMER TYPE 140 lbs Auto					
DATE STARTED 10/16/06			COMPLETED 10/17/06			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				
300.4					Ground Surface								300.4 0.0	
300.4	0.0	4	5	7	●12					943-1			Sandy SILT (ML) light brownish gray (2.5Y 6/3), brown (7.5YR 4/4), and dark yellowish brown (2.5Y 4/4), moist, stiff and medium stiff to very stiff, trace clay, micaceous, relict rock fabric (Residual Soil)	
296.9	3.5				●9					943-2				
294.4	6.0	2	4	5	●5					943-3				
291.9	8.5	2	3	2	●7					943-4				
289.4	11.0	2	3	4	●21					943-5				
286.9	13.5	5	7	14	●17					943-6				
		4	8	9										
281.3	19.1									943-7			280.8 19.6	
		12	50/0.3										Weathered Rock: Light brownish gray (2.5Y 6/2), moist, very dense, severely weathered, QUARTZ GNEISS	
276.3	24.1									943-8			276.3 24.1	
		50/0.0											274.1 26.3	
													271.2 29.2	
													268.5 31.9	
													Weathered Rock: No recovery-QUARTZ GNEISS with biotite	
													Hard Rock: Light gray, moderately severe to slightly weathered, close to moderately close fracturing, soft to moderately hard, QUARTZ GNEISS with biotite	
													253.7 46.7	
													Weathered Rock: No recovery-QUARTZ GNEISS with biotite	
													250.1 50.3	
													Hard Rock: Light gray, moderately severe to very slightly weathered, close to moderately close fracturing, medium hard to hard, QUARTZ GNEISS with biotite	
													243.5 56.9	
													Hard Rock: Light gray, slightly weathered to fresh, close to moderately close fracturing, hard, QUARTZ GNEISS with biotite and trace pyrite	



MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST S. Lehman									
SITE DESCRIPTION NORTH ANNA COL								GROUND WATER (ft)									
BORING NO. B-943		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 6.2							
COLLAR ELEV. 300.4 ft (NAVD88)		NORTHING 3,909,355		US ft (NAD83)		EASTING 11,683,892		US ft (NAD83)		24 HR. 4.2							
TOTAL DEPTH 101.9 ft		DRILL MACHINE CME 55LC Track				DRILLER: D. White				HAMMER TYPE 140 lbs Auto							
DATE STARTED 10/16/06		COMPLETED 10/17/06				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	MOI						
225.6					Continued from previous page												
													223.1 77.3				
																	220.1 80.3
																	198.5 101.9
													Boring and coring terminated at 101.9 ft in Hard Rock: Hard, QUARTZ-BIOTITE GNEISS				

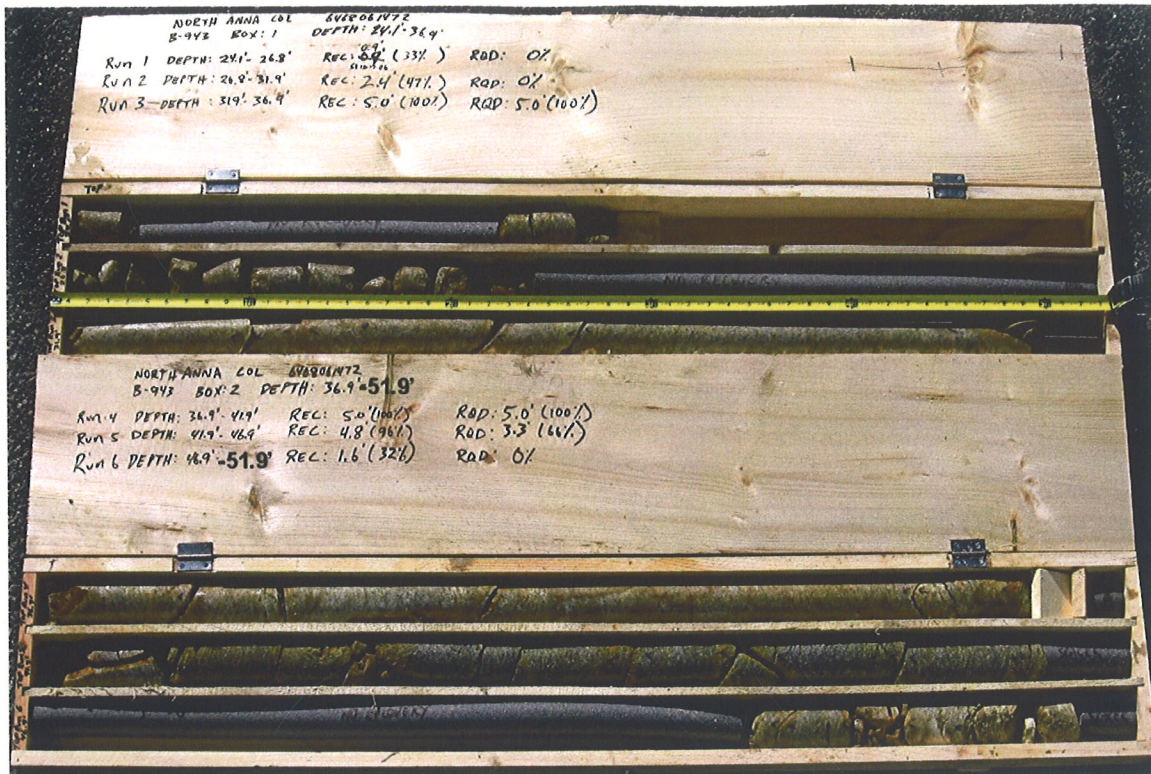
NORTH ANNA COL L...rE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07



SHEET 1 OF 2

MACTEC PROJECT NO.: 6468-06-1472							COUNTY Louisa, VA			GEOLOGIST S. Lehman		
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)		
BORING NO. B-943		DRILL METHOD: Mud Rotary/Core			SAMPLE METHODS: SPT/CORE			0 HR. 6.2				
COLLAR ELEV. 300.4 ft (NAVD88)		NORTHING 3,909,355		US ft (NAD83)		EASTING 11,683,892		US ft (NAD83)		24 HR. 4.2		
TOTAL DEPTH 101.9 ft		DRILL MACHINE CME 55LC Track			DRILLER: D. White			HAMMER TYPE 140 lbs Auto				
DATE STARTED 10/16/06		COMPLETED 10/17/06			CORE BARREL TYPE: HQ 3 triple tube-wireline							
CORE SIZE HQ3		TOTAL RUN 77.8 ft										
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	RQD (ft) %	L O G	DESCRIPTION AND REMARKS		
										Begin Coring @ 24.1 ft		
276.3	24.1	2.7	N=50/0.0 1:26	(0.9) 33%	(0.0) 0%	1				276.3	Hard Rock: Light gray with orange Fe staining, moderately to slightly weathered, moderately hard, QUARTZ GNEISS with biotite	
273.6	26.8		1:48							274.1	Weathered Rock: No recovery-QUARTZ GNEISS with biotite	
		5.1	1:36/0.7	(2.4) 47%	(0.0) 0%	2				271.2	Hard Rock: Light gray, slightly weathered, moderately hard, QUARTZ GNEISS with biotite	
			2:30								Weathered Rock: No recovery-QUARTZ GNEISS with biotite	
			2:01									
			3:20									
			2:57									
268.5	31.9		2:12/1.1	(5.0) 100%	(5.0) 100%	3				268.5	Hard Rock: Light gray, moderately severe to slightly weathered, close to moderately close fracturing, soft to moderately hard, QUARTZ GNEISS with biotite	
		5.0	2:10								(2 joints at 70° and 4 joints 45° moderately to slightly weathered with Fe stain)	
			2:35								(2 joints at 60° and 3 joints 45° moderately to slightly weathered with Fe stain)	
			2:18									
263.5	36.9		2:23									
		5.0	2:40									
			2:49	(5.0) 100%	(5.0) 100%	4						
			2:33									
			2:32									
258.5	41.9		2:51									
			2:48									
		5.0	2:01	(4.8) 96%	(3.3) 66%	5					(2 joints at 60° and 3 joints 20° very severely to moderately weathered with Fe stain)	
			1:56									
			2:06									
			2:15									
253.5	46.9		1:58							253.7	Weathered Rock: No recovery-QUARTZ GNEISS with biotite	
		5.0	3:38	(1.6) 32%	(0.0) 0%	6						
			2:28									
			2:24									
			2:20									
248.5	51.9		1:52							250.1	Hard Rock: Light gray, moderately severe to very slightly weathered, close to moderately close fracturing, medium hard to hard, QUARTZ GNEISS with biotite	
		5.0	1:43	(4.6) 92%	(1.4) 28%	7					(3 joints at 60° and 5 joints 45° slightly weathered with Fe stain)	
			2:10									
			2:01									
			2:16									
243.5	56.9		2:24							243.5	Hard Rock: Light gray, slightly weathered to fresh, close to moderately close fracturing, hard, QUARTZ GNEISS with biotite and trace pyrite	
		5.0	2:20	(4.9) 98%	(3.7) 74%	8					(4 joints at 60° and 2 joints 45° slightly weathered with Fe stain)	
			2:40									
			3:57									
			4:10									
238.5	61.9		3:19								(1 joint at 90° moderately to slightly weathered with Fe stain; 1 joint at 60° with clay and Fe stain; 3 joints at 45° weathered with Fe stain)	
		5.0	3:05	(5.0) 100%	(4.8) 96%	9					(2 joints at 70°, 1 joint at 90°, 3 joints at 30°-all slightly weathered with Fe stain)	
			3:30									
			3:15									
			4:00									
233.5	66.9		4:14								(2 joints at 70° and 3 joints 45° slightly weathered with Fe stain)	
		5.0	4:40	(5.0) 100%	(4.3) 86%	10						
			3:48									
			3:47									
			3:42									
228.5	71.9		3:52								(2 joints at 70° and 3 joints 45° slightly weathered with Fe stain)	
		5.0	3:05	(5.0) 100%	(5.0) 100%	11						
			3:28									
			4:36									
			4:28									
223.5	76.9		3:34							223.1	Weathered Rock: No recovery-BIOTITE GNEISS	
		5.0	5:49	(2.0) 40%	(1.6) 32%	12						
			2:53									
			4:02									
			3:27									
			5:14									
218.5	81.9									220.1	Hard Rock: Dark gray, moderately weathered to fresh, close to moderately close fracturing, medium hard to hard, QUARTZ-BIOTITE GNEISS	
		5.0	3:21	(5.0) 100%	(4.7) 94%	13					(1 joint at 45°, 3 joints at 20° moderately to slightly weathered with light Fe stain)	
			3:24									
			2:57									
			2:34									
			2:41									
213.5	86.9										(1 joint at 45° and 1 joint at 70° weathered and trace clay)	
		5.0	3:37	(4.7) 94%	(4.3) 86%	14						
			3:03									
			2:31									
			2:17									
			2:59									
208.5	91.9										(1 joint at 60° with clay, moderately severe weathering; 2 joints at 45° moderately weathered)	
		5.0	4:24	(4.9) 98%	(4.4) 88%	15						
			4:21									
			4:11									
			4:49									
203.5	96.9		3:59								(1 joint at 20° slightly weathered)	
		5.0	3:01	(4.9) 98%	(4.7) 94%	16						
			2:29									

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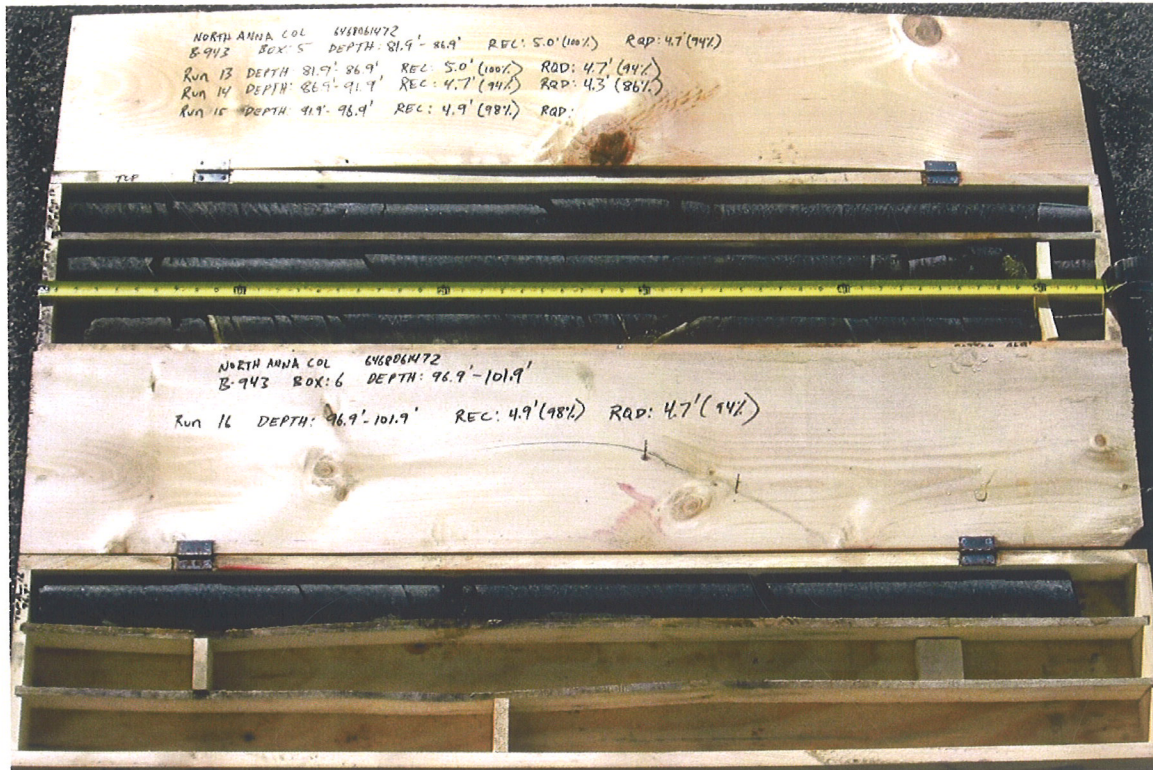
B-943 – Box 1

B-943 – Box 2



B-943 – Box 4

B-943 – Box 3



B-943 - Box 5

B-943 - Box 6

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



SHEET 1 OF 1

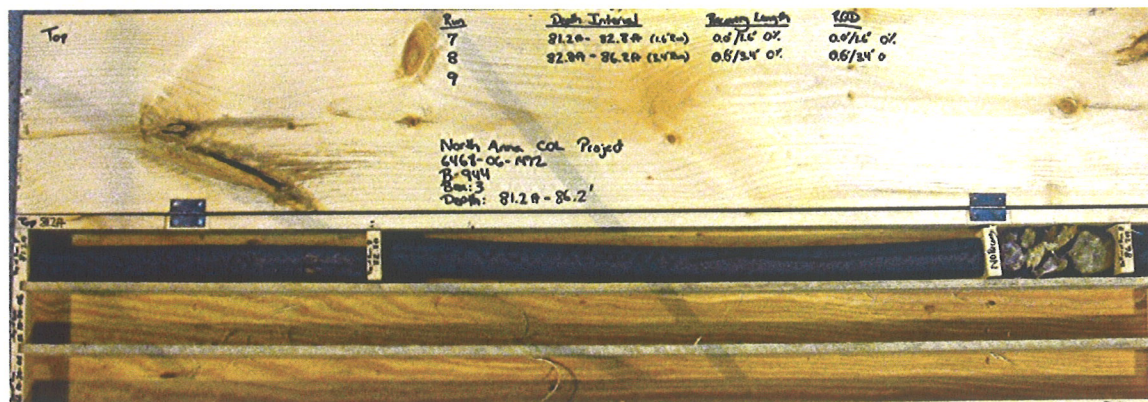
MACTEC PROJECT NO.: 6468-06-1472						COUNTY Louisa, VA				GEOLOGIST S. Nicely			
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)			
BORING NO. B-944			DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 7.1		
COLLAR ELEV. 334.7 ft (NAVD88)			NORTHING 3,908,772		US ft (NAD83)		EASTING 11,684,128		US ft (NAD83)		24 HR. 23.4		
TOTAL DEPTH 86.4 ft			DRILL MACHINE CME 550 ATV				DRILLER: F. Cox (Knoxville 550)				HAMMER TYPE 140 lbs Auto		
DATE STARTED 10/18/06			COMPLETED 10/20/06				CORE BARREL TYPE: HQ 3 triple tube-wireline						
CORE SIZE HQ3			TOTAL RUN 32.7 ft										
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %		ROD (ft) %	SAMP. NO.	STRATA REC. (ft) %		RQD (ft) %	L O G	DESCRIPTION AND REMARKS	
												Begin Coring @ 53.5 ft	
281.2	53.5	2.7	5:45	(2.7)	(2.0)	1						281.2 Hard Rock: Reddish brown and light gray, moderately severe to moderately weathered, very close to moderately close fracturing, soft to very hard, BIOTITE-QUARTZ GNEISS 53.5	
278.5	56.2		2:57	100%	74%								
		5.0	1:36/0.7	(4.9)	(2.8)	2						(2 joints at 20° with Fe and Mn stain; 1 joint at 60° with Fe stain)	
			2:18	98%	56%							(7 joints at 60-70° with Fe and Mn stain; 2 joints at 40° with Fe stain; 7 joints at 20-30° with Fe stain)	
273.5	61.2		2:47										
		5.0	1:49	(3.7)	(1.9)	3						(2 joints at 10-15° with Fe and Mn stain)	
			1:47	74%	38%								
268.5	66.2		1:43										
		5.0	1:18	(5.0)	(3.0)	4						(4 joints at 40-50° with Fe and Mn stain; 1 joint at 90° with Fe and Mn stain; 5 joints at 70-80° with Fe and Mn stain)	
			1:25	100%	60%								
263.5	71.2		1:25										
		5.0	2:30	(5.0)	(1.7)	5						-Highly fractured throughout entire run	
			2:12	100%	34%								
258.5	76.2		2:12										
		5.0	2:27	(2.6)	(1.2)	6						(5 joints at 30° with Fe stain and clay; highly fractured, severely weathered zone from 79.2-91.2 ft)	
			2:11	52%	24%								
253.5	81.2		1:52	(0.0)	(0.0)	7						253.5	
251.9	82.8	1.6	1:37	0%	0%							Weathered Rock: Light gray, severely weathered, very closely fractured, soft, BIOTITE-QUARTZ GNEISS	
		3.4	4:01/0.6	(0.6)	(0.0)	8						-No Recovery	
			3:24	18%	0%							-Very poor recovery	
248.5	86.2		2:35									248.5	
			2:15/1.4									Coring terminated at 86.2 ft in Weathered Rock: Soft, severely weathered, BIOTITE-QUARTZ GNEISS	

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



B-944 - Box 1

B-944 - Box 2



B-944 - Box 3



SHEET 1 OF 2

MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST S. Nicely								
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)						
BORING NO. B-945		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. ND						
COLLAR ELEV. 281.5 ft (NAVD88)		NORTHING 3,910,136		US ft (NAD83)		EASTING 11,683,780		US ft (NAD83)		24 HR. ND						
TOTAL DEPTH 100.6 ft		DRILL MACHINE CME 550 ATV				DRILLER: G. Akins				HAMMER TYPE 140 lbs Auto						
DATE STARTED 10/25/06		COMPLETED 10/26/06				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						
281.5					Ground Surface									281.5	0.0	
280.0	1.5										945-1			Silty, fine to coarse SAND (SM) pale brown (10YR 6/3), light yellowish brown (10YR 6/4), yellowish brown (10YR 5/8), light olive brown (2.5YR 5/4), and light yellowish brown (2.5YR 6/4), dry to wet, medium dense, micaceous (Residual Soil)		
278.3	3.2	4	7	7							945-2					
275.3	6.2	6	6	7							945-3					
273.2	8.3	6	8	8							945-4					
270.2	11.3	5	7	7							945-5					
267.1	14.4	5	7	7							945-6					
262.1	19.4	5	6	8							945-7					
257.1	24.4	5	6	8							945-8					
252.1	29.4	5	7	8							945-9					
247.1	34.4	5	7	9							945-10					
242.1	39.4	7	10	13							945-11					
237.1	44.4	8	11	13							945-12					
232.1	49.4	10	15	15							945-13					
227.1	54.4	31	50/0.4								945-14					
222.1	59.4	50/0.1									945-15					
														228.0	53.5	Weathered Rock: Light yellowish brown (2.5YR 6/4), moist, very dense, severely weathered, BIOTITE-QUARTZ GNEISS
														221.0	60.5	Hard Rock: Light gray, moderately to slightly weathered, very close to close fracturing, medium hard to very hard, BIOTITE-QUARTZ GNEISS
														210.6	70.9	Hard Rock: Light gray, slightly weathered to fresh, very close to wide fracturing, very hard, BIOTITE-QUARTZ GNEISS

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SHEET 2 OF 2

MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST S. Nicely							
SITE DESCRIPTION NORTH ANNA COL								GROUND WATER (ft)							
BORING NO. B-945		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. ND					
COLLAR ELEV. 281.5 ft (NAVD88)		NORTHING 3,910,136		US ft (NAD83)		EASTING 11,683,780		US ft (NAD83)		24 HR. ND					
TOTAL DEPTH 100.6 ft		DRILL MACHINE CME 550 ATV				DRILLER: G. Akins				HAMMER TYPE 140 lbs Auto					
DATE STARTED 10/25/06				COMPLETED 10/26/06				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					
206.7					Continued from previous page										
														Hard Rock: Light gray, slightly weathered to fresh, very close to wide fracturing, very hard, BIOTITE-QUARTZ GNEISS (continued)	
														180.9	100.6
Boring and coring terminated at 100.6 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS															

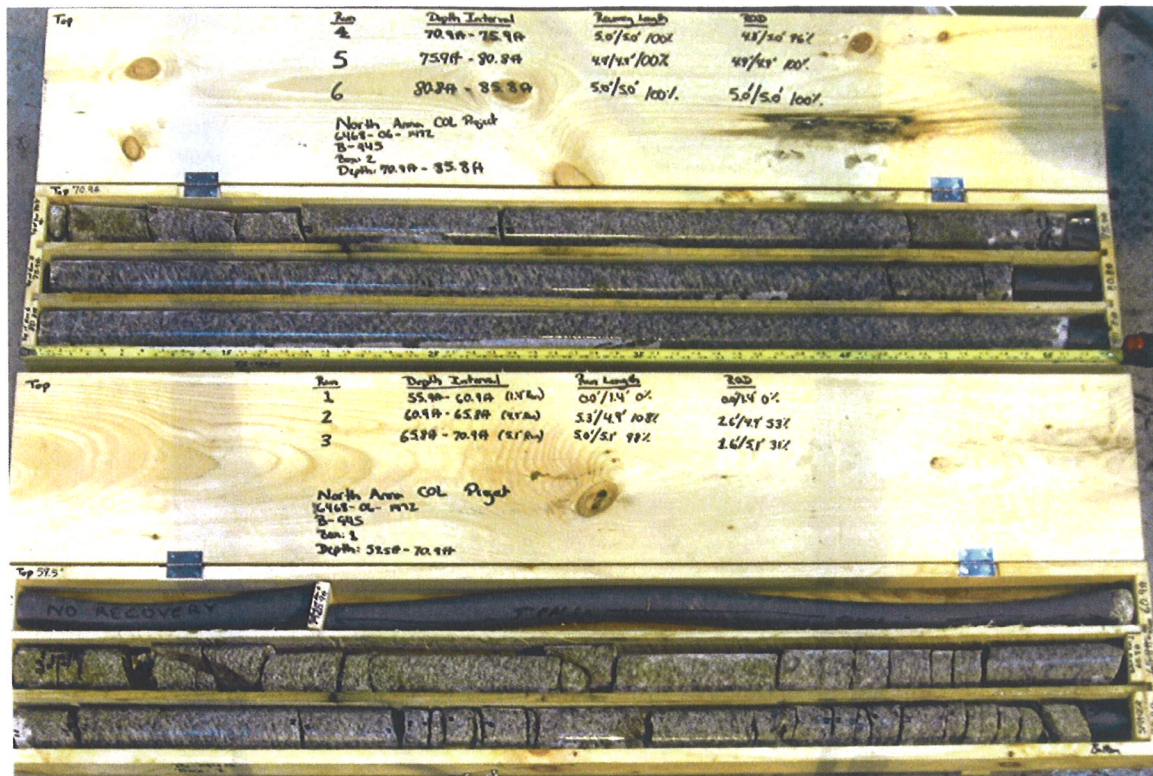
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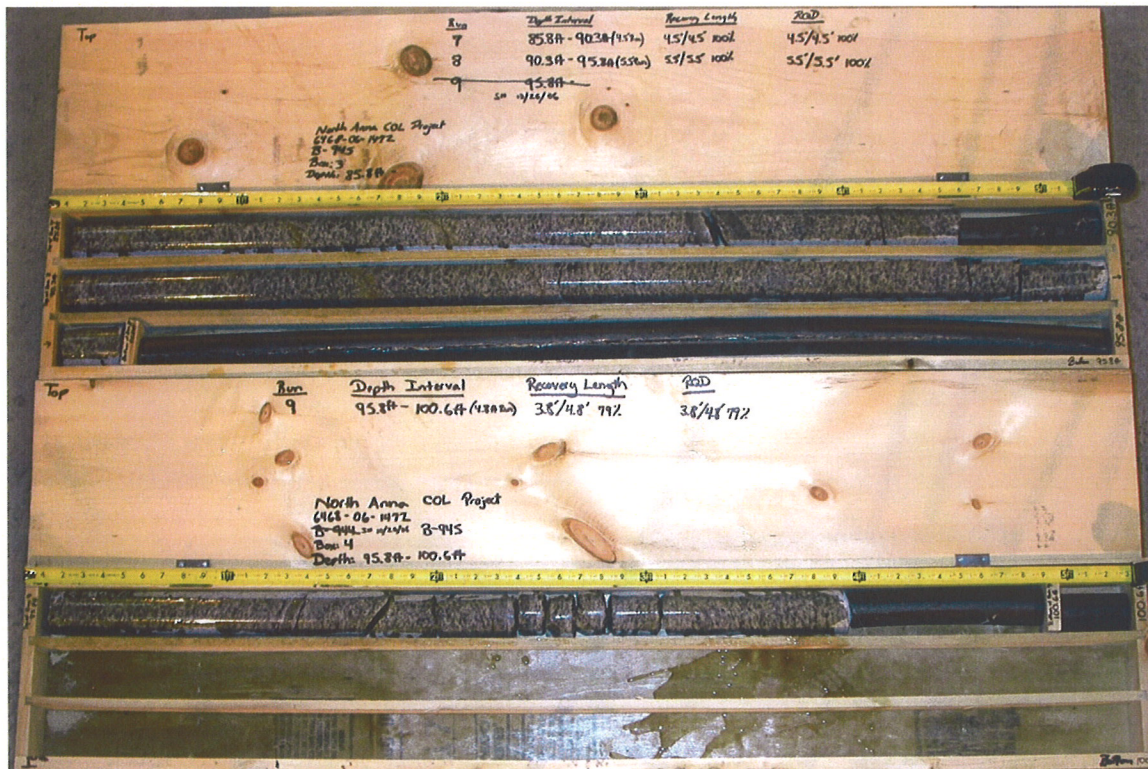
MACTEC PROJECT NO.: 6468-06-1472							COUNTY Louisa, VA			GEOLOGIST S. Nicely		
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)		
BORING NO. B-945			DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE			0 HR. ND		
COLLAR ELEV. 281.5 ft (NAVD88)			NORTHING 3,910,136		US ft (NAD83)		EASTING 11,683,780		US ft (NAD83)		24 HR. ND	
TOTAL DEPTH 100.6 ft			DRILL MACHINE CME 550 ATV				DRILLER: G. Akins			HAMMER TYPE 140 lbs Auto		
DATE STARTED 10/25/06				COMPLETED 10/26/06			CORE BARREL TYPE: HQ 3 triple tube-wireline					
CORE SIZE HQ3				TOTAL RUN 41.1 ft								
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %	RQD (ft) %	L O G	DESCRIPTION AND REMARKS		
										Begin Coring @ 59.5 ft		
222.0	59.5	1.4	0:44/1.4	(0.0)	(0.0)	1				221.0	Weathered Rock: Light yellowish brown (2.5YR 6/4), moist, very dense, severely weathered, BIOTITE-QUARTZ GNEISS (continued)	
220.6	60.9	4.9	0:57 0:58 1:04 1:03 1:53/0.9	0% (5.3) 108%	0% (2.6) 53%	2					-No Recovery	
											Hard Rock: Light gray, moderately to slightly weathered, very close to close fracturing, medium hard to very hard, BIOTITE-QUARTZ GNEISS (5 joints at 10-20° with Fe staining; 2 joints at 60-70° with little clay and Fe staining) (3 joints at 60-70° with Fe stain; 2 joints at 20° with little Fe stain)	
215.7	65.8											
		5.1	1:44 1:57 2:27 2:04 1:53/1.1	(5.0) 98%	(1.6) 31%	3						
210.6	70.9									210.6	Hard Rock: Light gray, slightly weathered to fresh, very close to wide fracturing, very hard, BIOTITE-QUARTZ GNEISS (2 joints at 70° with Fe and Mn stain)	
		5.0	1:54 2:15 2:25 2:05 2:03	(5.0) 100%	(4.8) 96%	4						
205.6	75.9											
		4.9	4:52 4:53 5:22 6:23 5:47/0.9	(4.9) 100%	(4.9) 100%	5					-No Joints	
200.7	80.8											
		5.0	5:36 5:17 3:49 4:33 6:03	(5.0) 100%	(5.0) 100%	6					-No Joints	
195.7	85.8											
		4.5	6:05 6:02 5:58 8:26 6:28/0.5	(4.5) 100%	(4.5) 100%	7					(1 joint at 15°, 1 joint at 25°)	
191.2	90.3											
		5.5	2:50 3:55 3:04 4:14 4:54 2:57/0.5	(5.5) 100%	(5.5) 100%	8					-No Joints	
185.7	95.8											
		4.8	3:57 4:04 3:19 3:39 5:33/0.8	(3.8) 79%	(3.8) 79%	9					-Unable to retrieve bottom 1 ft of run	
180.9	100.6									180.9	Coring terminated at 100.6 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-945 - Box 2

B-945 - Box 1



B-945 - Box 3

B-945 - Box 4