



MACTEC PROJECT NO.: 6468-06-1472					COUNTY Louisa, VA					GEOLOGIST J. Lachewitz							
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)							
BORING NO. B-951			DRILL METHOD: Mud Rotary/Core			SAMPLE METHODS: SPT/CORE			0 HR. 9.0								
COLLAR ELEV. 249.9 ft (NAVD88)			NORTHING 3,910,548		US ft (NAD83)		EASTING 11,686,822		US ft (NAD83)		24 HR. 5.3						
TOTAL DEPTH 101.0 ft			DRILL MACHINE CME 550 ATV			DRILLER: G. Akins			HAMMER TYPE 140 lbs Auto								
DATE STARTED 8/16/06			COMPLETED 8/17/06			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							
249.9					Ground Surface								249.9 0.0				
248.4	1.5									951-1		Silty SAND (SM) reddish brown (5YR 4/3) and brown (7.5YR 5/4), moist, medium dense to loose (Fill)	5.5				
246.4	3.5	5	5	8													
246.4	3.5	4	5	4													
243.9	6.0	3	3	5													
241.4	8.5	5	6	6													
238.9	11.0	2	5	7													
236.4	13.5	3	7	9													
		14	22	35						Silty, fine to coarse SAND (SM) dark greenish gray (GLE Y1 4/10Y) and strong brown (7.5YR 4/6&5/8), moist, very dense (Residual Soil)					951-7	233.9 16.0	
230.4	19.5	28	35	38													
225.4	24.5	20	26	27													
220.4	29.5	20	42	44													
215.4	34.5	50/0.3															
210.4	39.5																
										Weathered Rock: Strong brown (7.5YR 5/8), moist, very dense, severely weathered, QUARTZ GNEISS					951-8	212.9 37.0	
										Hard Rock: Light reddish brown, reddish brown, pinkish white, bluish gray, and white, moderately severe to slightly weathered, very close to close fracturing, soft to moderately hard, QUARTZ GNEISS with biotite					951-9	209.3 40.6	
										Hard Rock: White, slightly weathered to fresh, close to wide fracturing, moderately hard to very hard. QUARTZ GNEISS with biotite and trace magnetite					951-10	179.9 70.0	
										951-11							

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



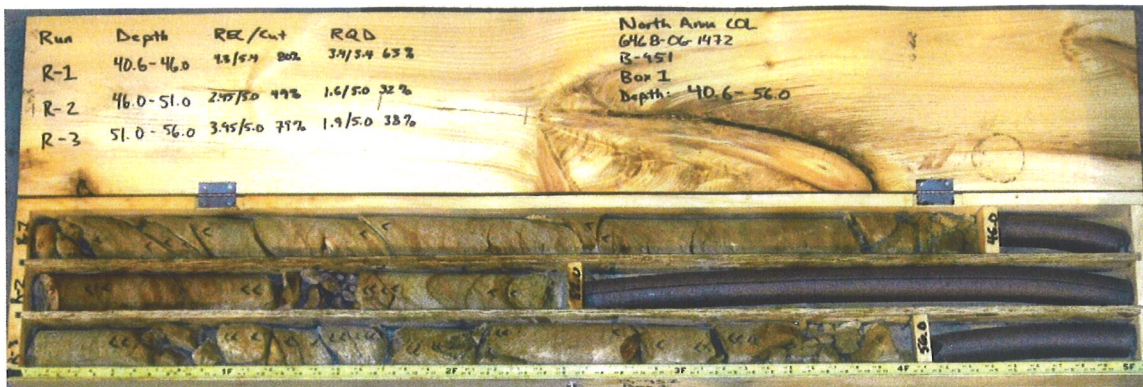
MACTEC PROJECT NO.: 6468-06-1472										COUNTY Louisa, VA					GEOLOGIST J. Lachewitz				
SITE DESCRIPTION NORTH ANNA COL															GROUND WATER (ft) 0 HR. 9.0 24 HR. 5.3				
BORING NO. B-951					DRILL METHOD: Mud Rotary/Core					SAMPLE METHODS: SPT/CORE									
COLLAR ELEV. 249.9 ft (NAVD88)					NORTHING 3,910,548 US ft (NAD83)					EASTING 11,686,822 US ft (NAD83)									
TOTAL DEPTH 101.0 ft					DRILL MACHINE CME 550 ATV					DRILLER: G. Akins					HAMMER TYPE 140 lbs Auto				
DATE STARTED 8/16/06					COMPLETED 8/17/06					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									
175.1					Continued from previous page														
														Hard Rock: White, slightly weathered to fresh, close to wide fracturing, moderately hard to very hard, QUARTZ GNEISS with biotite and trace magnetite (continued)					
														148.9	Boring and coring terminated at 101.0 ft in Hard Rock: Very hard, QUARTZ GNEISS with biotite				
														101.0					



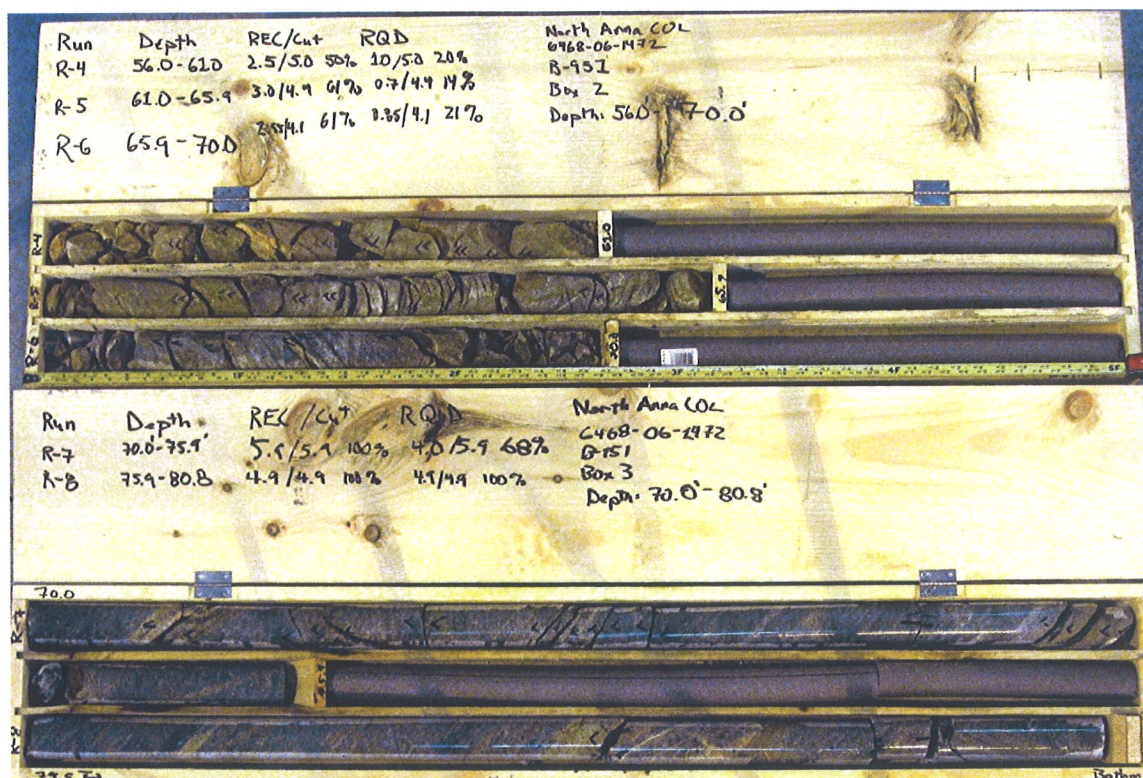
SHEET 1 OF 1

MACTEC PROJECT NO.: 6468-06-1472							COUNTY Louisa, VA			GEOLOGIST J. Lachewitz		
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)		
BORING NO. B-951			DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE			0 HR. 9.0		
COLLAR ELEV. 249.9 ft (NAVD88)			NORTHING 3,910,548		US ft (NAD83)		EASTING 11,686,822		US ft (NAD83)		24 HR. 5.3	
TOTAL DEPTH 101.0 ft			DRILL MACHINE CME 550 ATV				DRILLER: G. Akins			HAMMER TYPE 140 lbs Auto		
DATE STARTED 8/16/06			COMPLETED 8/17/06				CORE BARREL TYPE: HQ 3 triple tube-wireline					
CORE SIZE HQ3			TOTAL RUN 60.4 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 @ 40.6 ft		
209.3	40.6	5.4	1:19 1:20 1:27 1:46 1:28/1.4	(4.3) 80%	(3.4) 63%	1				209.3	Hard Rock: Light reddish brown, reddish brown, pinkish white, bluish gray, and white, moderately severe to slightly weathered, very close to close fracturing, soft to moderately hard, QUARTZ GNEISS with biotite (4 joints at 0-60° with trace clay and Fe staining)	
203.9	46.0										(4 joints at 15-35° with trace clay and Fe staining)	
		5.0	1:59 1:05 1:11 1:28 1:16	(2.5) 50%	(1.6) 32%	2						
198.9	51.0										-Multiple joints throughout with trace clay and Fe staining	
		5.0	1:07 1:10 0:44 1:07 1:21	(4.0) 79%	(1.9) 38%	3						
193.9	56.0										-Multiple joints throughout with trace clay and Fe staining	
		5.0	2:00 2:00 2:00 0:57 1:30	(2.5) 50%	(1.0) 20%	4						
188.9	61.0										-Multiple joints throughout; quartz vein from 64.7-64.9 ft	
		4.9	1:24 1:18 1:20 1:19 1:18/0.9	(3.0) 61%	(0.7) 14%	5						
184.0	65.9										(4 joints at 10-45° with Fe staining)	
		4.1	1:19 2:40 1:45 2:23	(2.6) 63%	(0.9) 22%	6						
179.9	70.0									179.9	Hard Rock: White, slightly weathered to fresh, close to wide fracturing, moderately hard to very hard, QUARTZ GNEISS with biotite and trace magnetite (10 joints at 5-50° with Fe staining)	
		5.9	1:46/0.1 3:30 2:19 2:10 2:13 1:59 3:06/0.9	(5.9) 100%	(4.0) 68%	7						
174.0	75.9										(Quartz vein at 35° at 78.6 ft with hornblende)	
		4.9	2:36 3:03 4:01 4:53 8:12/0.9	(4.9) 100%	(4.9) 100%	8						
169.1	80.8										(2 joints at 35° with slight weathering)	
		5.0	6:00 3:27 4:32 4:41 6:21	(5.0) 100%	(5.0) 100%	9						
164.1	85.8										(1 joint at 35° with very slight weathering)	
		5.1	3:09 3:10 2:38 3:33 3:48/1.1	(5.1) 100%	(5.1) 100%	10						
159.0	90.9										(2 joints at 40° with very slight weathering)	
		4.6	4:06 3:04 3:17 6:15 7:56/0.6	(4.6) 100%	(4.6) 100%	11						
154.4	95.5										(Quartz vein at 99.5-100.5 ft)	
		5.5	4:15 2:44 2:48 2:36 6:09/1.5	(5.0) 91%	(4.3) 78%	12						
148.9	101.0									148.9	Coring terminated at 101.0 ft in Hard Rock: Very hard, QUARTZ GNEISS with biotite	

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



B-951 - Box 1



B-951 - Box 2

B-951 - Box 3



B-951 - Box 4
B-951 - Box 5



SHEET 1 OF 1

MACTEC PROJECT NO.: 6468-06-1472							COUNTY Louisa, VA				GEOLOGIST M. Lear/ K. Charles-Smith			
SITE DESCRIPTION NORTH ANNA COL											GROUND WATER (ft)			
BORING NO. OW-951			DRILL METHOD: HSA/Core				SAMPLE METHODS: CORE				0 HR. ND			
COLLAR ELEV. 249.7 ft (NAVD88)			NORTHING 3,910,521		US ft (NAD83)		EASTING 11,686,786		US ft (NAD83)		24 HR. ND			
TOTAL DEPTH 67.2 ft			DRILL MACHINE CME 55LC Track				DRILLER: D. White				HAMMER TYPE NA			
DATE STARTED 11/8/06			COMPLETED 11/9/06				CORE BARREL TYPE: HQ 3 triple tube-wireline							
CORE SIZE HQ3			TOTAL RUN 33.1 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 @ 34.1 ft				
215.6	34.1	3.1	4:20 1:05 1:08	(0.9) 29%	(0.0) 0%	1				214.7	Hard Rock: Tan-orange, moderately severely weathered, closely fractured, medium hard, BIOTITE-QUARTZ GNEISS (4 joints at 40-50° with clay and orange Fe stain)		35.0	
212.5	37.2	5.0	1:08/0.1 0:52 0:53 1:05 1:08 1:36	(2.2) 44%	(0.6) 12%	2				209.7	Weathered Rock: No Recovery-BIOTITE-QUARTZ GNEISS		40.0	
207.5	42.2	5.0	1:55 2:18 1:45 1:48 1:13	(2.9) 58%	(1.7) 34%	3				204.6	Hard Rock: Tan, moderately severe to moderately weathered, very closely to closely fractured, medium hard to moderately hard, BIOTITE-QUARTZ GNEISS (7 joints at 40-50° with clay and orange-brown Fe stain)		45.1	
202.5	47.2	5.0	1:06 1:33 1:47 1:44 1:24	(0.0) 0%	(0.0) 0%	4					Weathered Rock: No Recovery-BIOTITE-QUARTZ GNEISS -No Recovery			
197.5	52.2	5.0	2:15 1:34 2:02 1:58 2:16	(1.8) 36%	(0.0) 0%	5				194.3	Hard Rock: Tan-gray to gray, moderately to slightly weathered, very closely to closely fractured, moderately hard, BIOTITE-QUARTZ GNEISS -Numerous joints at 40-50° with clay and orange-brown Fe stain.		55.4	
192.5	57.2	5.0	2:05 2:07 2:00 2:05 2:14	(3.2) 64%	(0.8) 16%	6					Hard Rock: Tan-gray to gray, moderately to slightly weathered, very closely to closely fractured, moderately hard, BIOTITE-QUARTZ GNEISS -Numerous joints at 40-50° with clay and orange-brown Fe stain.			
187.5	62.2	5.0	1:49 2:23 2:34 3:24 6:10	(3.8) 76%	(0.8) 16%	7					-Numerous joints at 45-50° with trace clay and Fe stain.			
182.5	67.2									182.5	Coring terminated at 67.2 ft in Hard Rock: Moderately hard, BIOTITE-QUARTZ GNEISS Note: 4.25" Hollow Stem Augers advanced to 34.1 ft without SPT's, boring then advanced with core tools.		67.2	

NORTH ANNA COL Core NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/24/07



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OW-951 – Box 2