

NORTH ANNA COL BURE 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/ 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					
197.2					Continued from previous page										
													Boring and coring terminated at 75.4 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS		

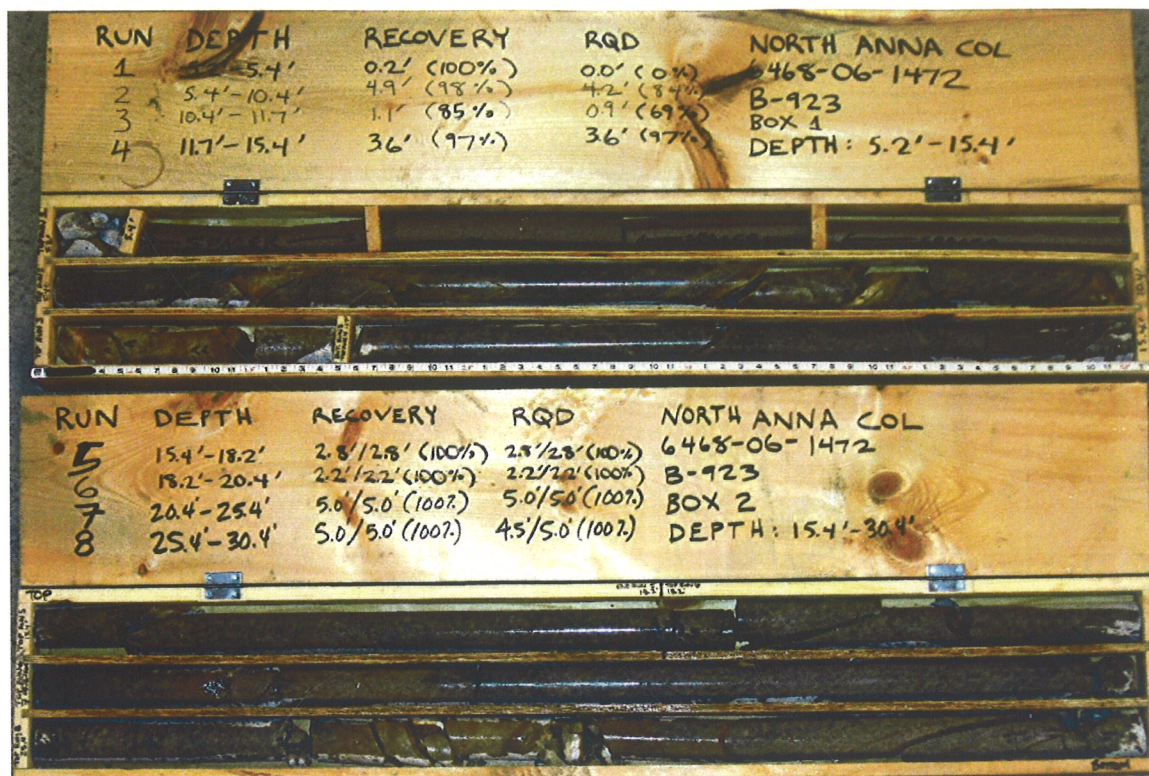
NORTH ANNA COL ...ORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07



SHEET 1 OF 1

MACTEC PROJECT NO.: 6468-06-1472					COUNTY Louisa, VA					GEOLOGIST 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						
CORE SIZE HQ3				TOTAL RUN 70.2 ft										
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %		RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %		RQD (ft) %	L O G	DESCRIPTION AND REMARKS		
												Begin Coring @ 5.2 ft		
266.8	5.2	0.2	0:32/0.2	(0.2)	(0.0)		1						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							
			5:54	(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											
		2.8	10:21	(2.8)	(2.8)		5						-No Joints	
253.8	18.2		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										(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)	
		5.0	17:31	(5.0)	(4.5)		8							
			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											
231.6	40.4		13:30											
		5.0	14:30	(5.0)	(4.7)		11							
			24:00	100%	94%									
			9:00											
226.6	45.4		5:30											
		5.0	6:00	(5.0)	(5.0)	UC-45.7'							(3 joints at 70-80° with trace quartz+clay)	
			5:30	100%	100%									
			7:58											
			8:58											
221.6	50.4		16:24	(5.0)	(5.0)								(1 joint at 0°; 1 joint at 45° with Fe stain and trace clay)	
		5.0	13:18	100%	100%		13							
			10:31											
			11:29	(5.0)	(5.0)									
216.6	55.4		8:44	100%	100%								(5 joints at 0-60°, some with slight Fe stain)	
		5.0	5:34	(5.0)	(4.4)		14							
			4:50	100%	88%									
			3:33											
			5:43											
211.6	60.4		5:03	(5.0)	(5.0)								(5 joints at 50-60° with trace clay and orange Fe stain)	
		5.0	6:05	100%	100%		15							
			5:52											
			4:56											
			5:40	(5.0)	(5.0)									
206.6	65.4		4:00	100%	100%									
		3.0	3:53	(2.7)	(2.0)	UCS-65.7'							(1 joint at 90° with trace clay and orange Fe stain)	
			3:10	90%	67%									
			4:46											
203.6	68.4		5:17	(1.9)	(1.5)		17						(3 joints at 10-60°, some with Fe stain and trace clay)	
		2.0	6:10	95%	75%									
			14:17	(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	3:19	100%	82%									
			2:29											
			3:00											
			2:46											
196.6	75.4		2:52										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



SHEET 2 OF 2

MACTEC PROJECT NO.: 6468-06-1472					COUNTY Louisa, VA					GEOLOGIST S. Nicely				
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft) 0 HR. 5.1 24 HR. ND				
BORING NO. B-924			DRILL METHOD: Mud Rotary/Core			SAMPLE METHODS: SPT/CORE								
COLLAR ELEV. 271.5 ft (NAVD88)			NORTHING 3,909,970		US ft (NAD83)		EASTING 11,686,475		US ft (NAD83)					
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									
														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.

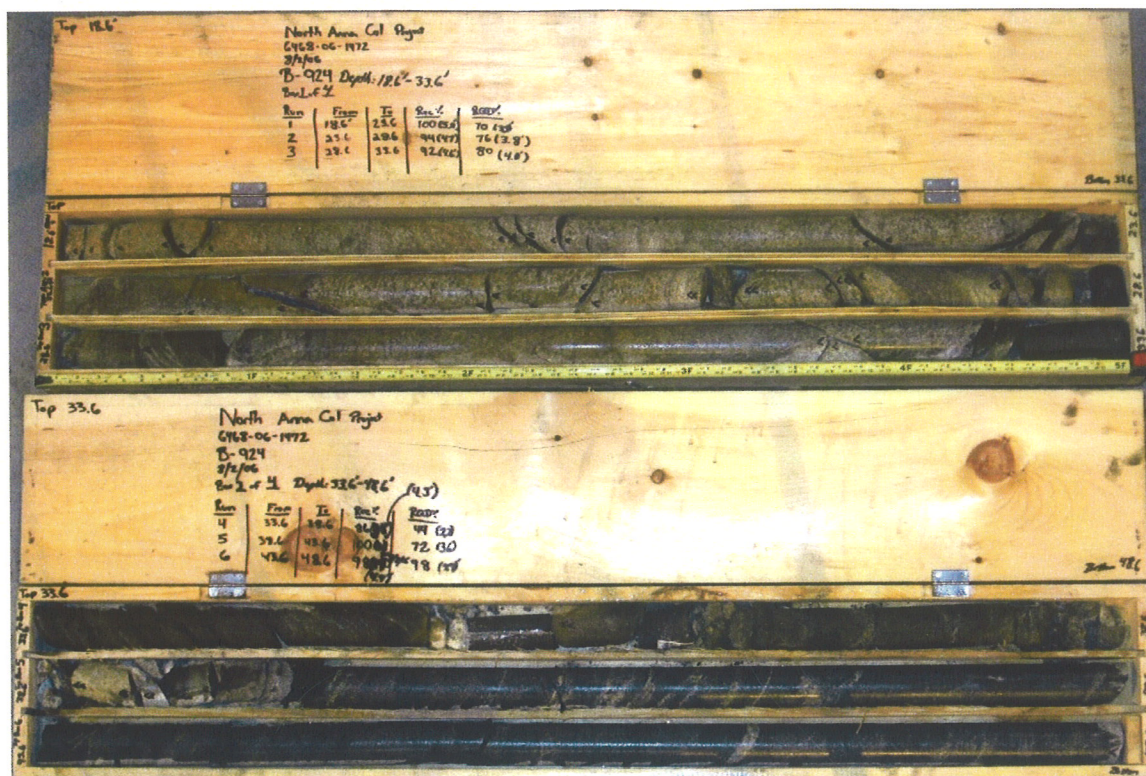
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MACTEC PROJECT NO.: 6468-06-1472						COUNTY Louisa, VA				GEOLOGIST S. Nicely			
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)			
BORING NO. B-924			DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 5.1		
COLLAR ELEV. 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						
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) %	L O G	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)	
247.9	23.6	5.0	2:00 2:00 1:00 1:00 1:15	(4.7) 94%	(3.8) 76%	2						(2 joints at 60-70°, 6 joints at 30-40°, 3 joints at 10-20°-all with Fe staining)	
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'						(7 joints at 20-30°, 2 joints at 50-60°-all with Fe staining))	
237.9	33.6	5.0	2:15 2:30 2:00 3:00 3:00	(4.3) 86%	(2.2) 44%	4						(5 joints at 30-40°, 6 joints at 10-20°-all with Fe staining; severely weathered zone from 36.7-37.2 ft)	
232.9	38.6	5.0	4:00 2:15 3:30 3:15 2:15	(5.0) 100%	(3.6) 72%	5						(12 joints at 20-30°, 1 joint at 60-70°; highly fractured severely weathered zone from 38.6-39.9 ft)	
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)	
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						(5 joints at 10-20°, 3 joints at 40-50°, with weathering)	
212.9	58.6	5.0	3:00 4:15 5:30 8:00 14:15	(5.2) 104%	(4.8) 96%	9						(2 joints at 40-50°, 2 joints at 20-30°-all with Fe stain)	
207.9	63.6	5.0	43:00 6:00 7:00 13:00 45:00	(5.1) 102%	(4.7) 94%	10						(3 joints at 40-50°; vugs noted at 68.4-68.6 ft with unknown brown mineral)	
202.9	68.6	5.0	14:30 14:30 4:30 3:45 3:30	(4.9) 98%	(4.1) 82%	11						(3 joints at 10-20°, 4 joints at 20-30°; vugs noted from 68.6-68.8 ft with unknown brown mineral)	
197.9	73.6	2.0	3:00 3:30	(2.0) 100%	(2.0) 100%	UC-75.1'						-No Joints	
195.9	75.6											195.9 Coring terminated at 75.6 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS	

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