



MACTEC PROJECT NO.: 6468-06-1472				COUNTY Louisa, VA				GEOLOGIST S. Lehman							
SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)					
BORING NO. B-902		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 25.2					
COLLAR ELEV. 302.2 ft (NAVD88)		NORTHING 3,909,874		US ft (NAD83)		EASTING 11,685,884		US ft (NAD83)		24 HR. 25.4					
TOTAL DEPTH 201.7 ft		DRILL MACHINE CME 55LC Track				DRILLER: D. White				HAMMER TYPE 140 lbs Auto					
DATE STARTED 8/28/06		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				100		
302.2					Ground Surface							302.2	0.0		
300.7	1.5										902-1		299.2	3.0	Silty, fine SAND (SM), strong brown (7.5YR 5/6), moist, medium dense (Residual Soil)
298.7	3.5	8	14	12							902-2		294.2	8.0	Fine SAND (SP), light gray (2.5Y 7/2) and pale yellow (2.5Y 7/3) to strong brown (7.5YR 5/6), dry to moist, medium dense (Residual Soil)
295.7	6.5	8	12	10							902-3		291.7	10.5	Silty, fine to medium SAND (SM), strong brown (7.5YR 5/6), moist, medium dense, gravel (Residual Soil)
293.7	8.5	14	13	8							902-4		283.0	19.2	Silty, fine to medium SAND (SM), pale yellow (2.5Y 7/3) to strong brown (7.5YR 5/6), moist, very dense to medium dense, relict rock fabric (Residual Soil)
291.2	11.0	6	8	10							902-5		278.4	23.8	Weathered Rock: Light gray and brown, very severely to severely weathered, QUARTZ GNEISS with biotite
288.7	13.5	24	30	30							902-6		275.4	26.8	Hard Rock: Light gray with orange Fe staining, slightly weathered, moderately close to wide fracturing, moderately hard, QUARTZ GNEISS with biotite and trace magnetite
284.0	18.2	8	8	7							902-7				Hard Rock: Light gray with orange Fe staining, very slightly weathered to fresh, moderately close to wide fracturing, hard, QUARTZ GNEISS with biotite and trace magnetite
278.7	23.5	3	39	50/0.1							902-8				
		50/0.1													

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TOTAL DEPTH 201.7 ft		DRILL MACHINE CME 55LC Track				DRILLER: D. White				HAMMER TYPE 140 lbs Auto				
DATE STARTED 8/28/06			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
227.4					Continued from previous page									
														Hard Rock: Light gray with orange Fe staining, very slightly weathered to fresh, moderately close to wide fracturing, hard, QUARTZ GNEISS with biotite and trace magnetite (continued)
														220.4 81.8
														Hard Rock: Light gray to dark gray, fresh, moderately close to wide fracturing, hard, QUARTZ-BIOTITE GNEISS
														190.5 111.7
														Hard Rock: Light gray to bluish gray with orange Fe staining, fresh to moderately weathered, close to wide fracturing, hard, QUARTZ-BIOTITE GNEISS
														180.5 121.7
														Hard Rock: Light gray with orange Fe staining, slight to moderately severe weathering, close fracturing, hard to moderately hard, QUARTZ GNEISS with biotite, feldspar, and trace magnetite
														175.5 126.7
														Hard Rock: Light gray, fresh, close to wide fracturing, hard, QUARTZ GNEISS with biotite with trace pyrite

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TOTAL DEPTH 201.7 ft		DRILL MACHINE CME 55LC Track				DRILLER: D. White				HAMMER TYPE 140 lbs Auto					
DATE STARTED 8/28/06		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	
152.6					Continued from previous page										
													Hard Rock: Light gray, fresh, close to wide fracturing, hard, QUARTZ GNEISS with biotite with trace pyrite (continued)		
													115.5	186.7	Hard Rock: Light gray, moderately weathered to fresh, moderately close to wide fracturing, hard, QUARTZ GNEISS with biotite and feldspar
													109.2	193.0	Hard Rock: Dark to light gray, moderately to slightly weathered, close to moderately close fracturing, medium hard, BIOTITE GNEISS with quartz and feldspar
													100.5	201.7	Boring and coring terminated at 201.7 ft in Hard Rock: Medium hard, QUARTZ-BIOTITE GNEISS with feldspar

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BORING NO. B-902		DRILL METHOD: Mud Rotary/Core		SAMPLE METHODS: SPT/CORE			0 HR. 25.2
COLLAR ELEV. 302.2 ft (NAVD88)		NORTHING 3,909,874		US ft (NAD83)		EASTING 11,685,884	24 HR. 25.4
TOTAL DEPTH 201.7 ft		DRILL MACHINE CME 55LC Track		DRILLER: D. White			HAMMER TYPE 140 lbs Auto
DATE STARTED 8/28/06			COMPLETED 9/7/06		CORE BARREL TYPE: HQ 3 triple tube-wireline		
CORE SIZE HQ3			TOTAL RUN 178.1 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 @ 23.6 ft	
278.6	23.6	1.9	2:46	(1.9)	(1.4)	1				278.4	Weathered Rock: Light gray and brown, very severely to severely weathered, QUARTZ GNEISS with biotite (continued)
276.7	25.5		7:08/0.9	100%	74%						
275.4	26.8	1.3	0:12/0.1	(1.3)	(1.3)	2				275.4	(2 joints at 45°; 1 joint at 80° with Fe stain)
		5.0	2:29	(5.0)	(5.0)	UCS-27.3'					Hard Rock: Light gray with orange Fe staining, slightly weathered, moderately close to wide fracturing, moderately hard, QUARTZ GNEISS with biotite and trace magnetite
			0:06/0.2	100%	100%						-No Joints
			3:29	(5.0)	(5.0)						Hard Rock: Light gray with orange Fe staining, very slightly weathered to fresh, moderately close to wide fracturing, hard, QUARTZ GNEISS with biotite and trace magnetite
270.4	31.8		4:08	100%	100%						-No Joints
			5:24								
			6:12								
		2.1	7:25	(2.1)	(1.9)	4					
268.3	33.9		4:46	100%	90%						
267.5	34.7	0.8	11:49	(0.6)	(0.6)	5					-No Joints
			7:04/0.1	(0.6)	(0.6)						(2 joints at 45° with Fe staining)
265.4	36.8	2.1	12:04/0.8	75%	75%	6					-No Joints
			0:15/0.1	(2.1)	(2.1)						(1 joint at 20° with clay)
		4.9	2:11	100%	100%	7					-No Joints
			2:44	(4.9)	(4.9)						-No Joints
			3:16	100%	100%						
260.5	41.7		3:36								
			4:10								
		5.1	6:09	(5.0)	(5.0)	8					-No Joints
			9:09/0.9	98%	98%						
			1:59								
			3:21								
255.4	46.8		2:53								
			3:54								
		4.7	3:43/1.1	(4.6)	(4.6)	UC-47.4'					-No Joints
			4:06	98%	98%						
			6:05								
250.7	51.5		7:08								
			9:58								
		5.3	10:04/0.7	(4.6)	(4.2)	10					(3 joints at 20°)
			2:38/1.3	87%	79%						
			2:29								
245.4	56.8		1:23								
			1:56								
			2:19								
		5.0	2:46	(4.6)	(4.6)	11					(Moderately to slightly weathered from 58.8-60.4 ft; 2 joints at 20°)
			2:57	92%	92%						
			2:08								
240.4	61.8		2:03								
			1:43								
		5.0	2:57	(5.0)	(5.0)	12					(1 joint at 45° with moderate weathering and Fe staining)
			2:25	100%	100%						
			2:43								
235.4	66.8		3:30								
			4:08								
		5.0	5:08	(5.0)	(5.0)	13					-No Joints
			7:04	100%	100%						
			11:15								
230.4	71.8		3:54								
			2:59								
		5.0	2:39	(4.7)	(4.7)	UC-72.3'					-No Joints
			3:14	94%	94%						
			3:45								
225.4	76.8		4:59								
			3:46								
		5.0	4:41	(5.0)	(5.0)	15					-No Joints
			5:02	100%	100%						
			5:09								
220.4	81.8		4:10								
			2:50								
		4.7	5:06	(4.7)	(4.7)	16					Hard Rock: Light gray to dark gray, fresh, moderately close to wide fracturing, hard, QUARTZ-BIOTITE GNEISS
			7:00	100%	100%						(1 joint at 75°)
			7:43								
215.7	86.5		6:01								
			5:58								
		5.2	1:20	(5.2)	(5.2)	17					(2 joints at 60°)
			1:30	100%	100%						
			1:38								
210.5	91.7		1:26								
			1:34/1.2								
		5.0	1:19	(5.0)	(5.0)	UCS-92.8'					-No Joints
			1:26	100%	100%						
			1:23								
205.5	96.7		1:28								
			1:39								
		5.0	1:33	(4.0)	(4.0)	19					-No apparent joints. abundant mechanical fractures

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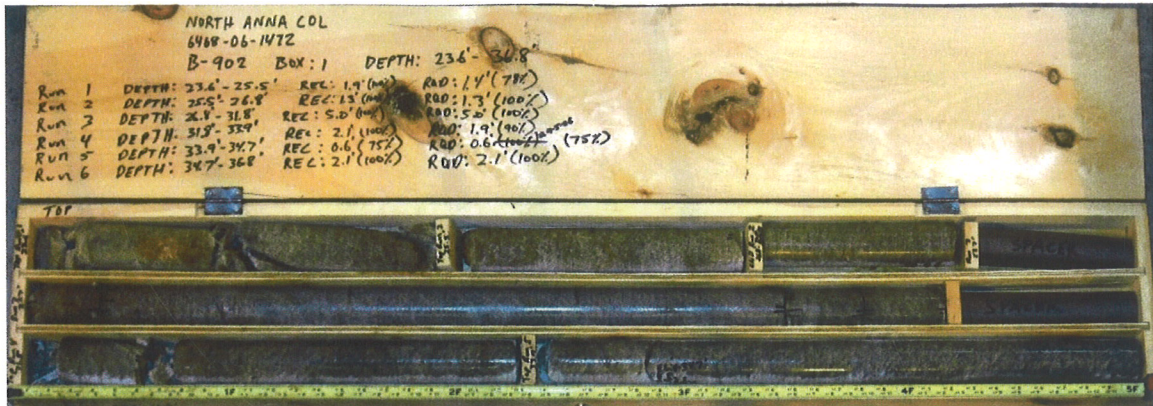
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SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)	
BORING NO. B-902		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 25.2	
COLLAR ELEV. 302.2 ft (NAVD88)		NORTHING 3,909,874		US ft (NAD83)		EASTING 11,685,884		US ft (NAD83)		24 HR. 25.4	
TOTAL DEPTH 201.7 ft		DRILL MACHINE CME 55LC Track				DRILLER: D. White				HAMMER TYPE 140 lbs Auto	
DATE STARTED 8/28/06				COMPLETED 9/7/06				CORE BARREL TYPE: HQ 3 triple tube-wireline			
CORE SIZE HQ3				TOTAL RUN 178.1 ft							
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
				REC. (%)	RQD (%)		REC. (%)	RQD (%)			
										Continued from previous page	
200.5	101.7		1:37 1:43 1:33 1:28	80%	80%					Hard Rock: Light gray to dark gray, fresh, moderately close to wide fracturing, hard, QUARTZ-BIOTITE GNEISS (continued)	
		5.0	1:32 1:32 1:21 1:56 1:39	(5.0) 100%	(5.0) 100%	20				(Quartz vein from 102.1-102.4 ft; 1 joint at 70° with slight weathering and Fe staining)	
195.5	106.7		1:23 1:30 1:36 1:32 1:32	(5.0) 100%	(5.0) 100%	21				-No Joints	
190.5	111.7		1:39 1:35 1:29 1:26 1:25	(5.0) 100%	(4.4) 88%	22			190.5	Hard Rock: Light gray to bluish gray with orange Fe staining, fresh to moderately weathered, close to wide fracturing, hard, QUARTZ-BIOTITE GNEISS	
185.5	116.7		1:33 1:32 1:36 1:38 1:34	(5.0) 100%	(4.2) 84%	23				(Moderately to slightly weathered from 114.5-116.7 ft; 3 joints at 45° with weathering and Fe stain)	
180.5	121.7		1:15 1:01 1:12 1:26 1:28	(3.0) 60%	(1.7) 34%	24			180.5	Hard Rock: Light gray with orange Fe staining, slight to moderately severe weathering, close fracturing, hard to moderately hard, QUARTZ GNEISS with biotite, feldspar, and trace magnetite	
175.5	126.7		2:18 2:18 2:20 2:32 2:22	(4.9) 98%	(4.9) 98%	25			175.5	(3 joints at 40° with Fe staining)	
170.5	131.7		2:13 2:28 2:34 2:53 3:17	(5.0) 100%	(5.0) 100%	26				Hard Rock: Light gray, fresh, close to wide fracturing, hard, QUARTZ GNEISS with biotite with trace pyrite	
165.5	136.7		4:01 4:00 4:04 4:57 4:35	(5.0) 100%	(5.0) 100%	27				(1 joint at 60° and 1 joint at 20° with Fe staining)	
160.5	141.7		1:41 1:54 2:05 1:53 2:01	(5.0) 100%	(5.0) 100%	UC-141.9'				-No Joints	
155.5	146.7		2:43 3:45 4:25 5:27 5:13/0.9	(4.9) 100%	(4.9) 100%	29				(1 joint at 45° with pyrite and muscovite)	
150.6	151.6		1:55 2:30 2:20 2:45 3:03/1.1	(5.1) 100%	(5.1) 100%	30				(1 joint at 70° and 1 joint at 45° with Fe staining)	
145.5	156.7		3:22 4:14 4:24 4:52 9:30	(5.0) 100%	(5.0) 100%	31				-No Joints	
140.5	161.7		1:55 2:53 3:44 5:31 6:11	(5.0) 100%	(5.0) 100%	32				(1 joint at 90° with clay and Fe staining; 1 joint at 45 with Fe staining)	
135.5	166.7		7:05 10:18 11:20/0.6	(2.6) 100%	(2.6) 100%	33				(1 joint at 90° with trace clay)	
132.9	169.3		0:35/0.4 2:21 2:07 1:38	(2.3) 96%	(2.0) 83%	34				-No Joints	
130.5	171.7			(4.7) (4.7)		35				(1 joint at 45° with moderate weathering and Fe stain)	
		5.0								(1 joint at 80° with trace clay)	

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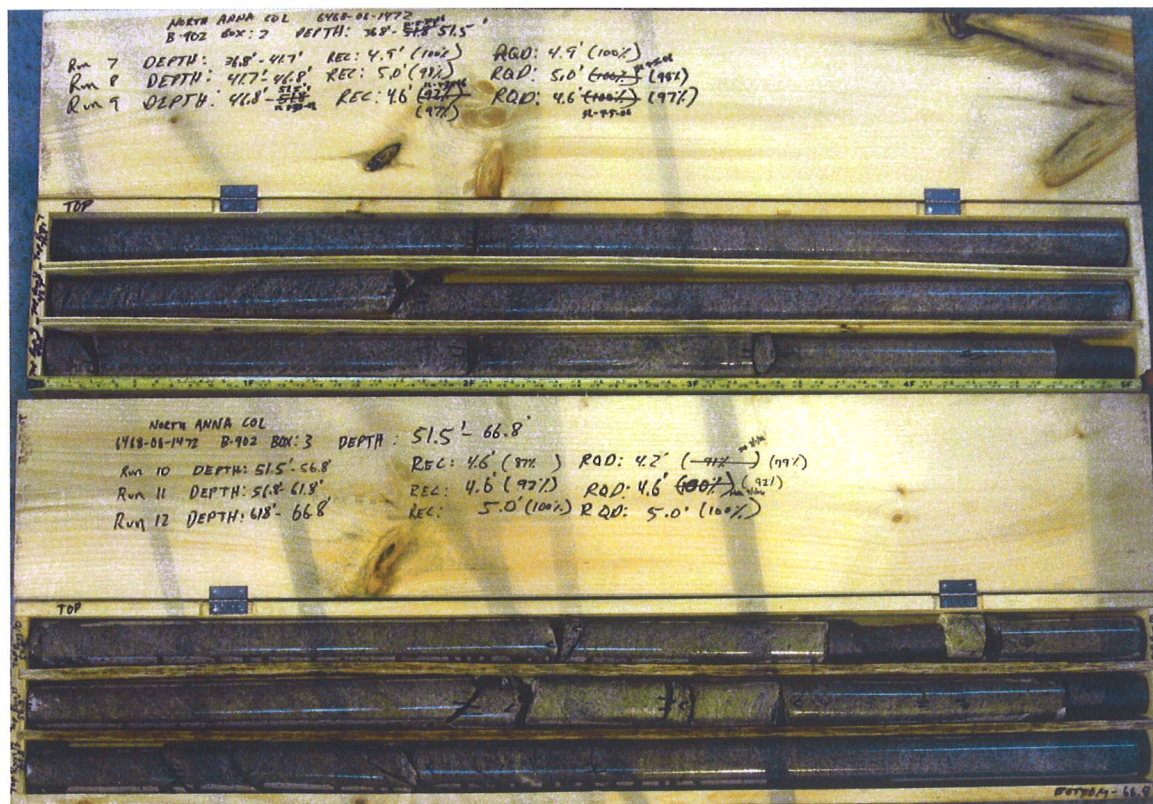


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SITE DESCRIPTION NORTH ANNA COL										GROUND WATER (ft)	
BORING NO. B-902		DRILL METHOD: Mud Rotary/Core				SAMPLE METHODS: SPT/CORE				0 HR. 25.2	
COLLAR ELEV. 302.2 ft (NAVD88)		NORTHING 3,909,874		US ft (NAD83)		EASTING 11,685,884		US ft (NAD83)		24 HR. 25.4	
TOTAL DEPTH 201.7 ft		DRILL MACHINE CME 55LC Track				DRILLER: D. White				HAMMER TYPE 140 lbs Auto	
DATE STARTED 8/28/06				COMPLETED 9/7/06				CORE BARREL TYPE: HQ 3 triple tube-wireline			
CORE SIZE HQ3				TOTAL RUN 178.1 ft							
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	
				REC. (%)	RQD (%)		REC. (%)	RQD (%)			
										Continued from previous page	
125.5	176.7		2:10 2:28 3:08 3:00	94%	94%					Hard Rock: Light gray, fresh, close to wide fracturing, hard, QUARTZ GNEISS with biotite with trace pyrite (continued)	
		5.0	3:46 3:51 4:21 5:46 7:54	(5.0) 100%	(5.0) 100%	36				(1 joint at 80-90°)	
120.5	181.7	1.4	3:19	(1.4)	(1.4)	37				(1 joint at 80°)	
119.1	183.1	3.6	2:25/0.4 2:02/0.6 4:05 4:40 8:30	100% 100%	100% 100%	UC-184.6'				(1 joint at 70° and 1 joint at 45° with weathering and Fe stain)	
115.5	186.7		5:16 8:16 7:40 7:02 7:30	(5.0) 100%	(4.7) 94%	39				Hard Rock: Light gray, moderately weathered to fresh, moderately close to wide fracturing, hard, QUARTZ GNEISS with biotite and feldspar (1 joint at 80-90° weathered with trace clay; 2 joints at 60° weathered with Fe stain)	
110.5	191.7	5.0	2:00 2:22 2:14	(3.2) 91%	(2.5) 71%	40				(4 joints at 45° weathered with trace clay)	
107.0	195.2	3.5	2:52/0.5 2:46/0.5 5:36	(1.4) 93%	(1.2) 80%	41				Hard Rock: Dark to light gray, moderately to slightly weathered, close to moderately close fracturing, medium hard, BIOTITE GNEISS with quartz and feldspar	
105.5	196.7	1.5	2:59 3:34 2:45 2:23 2:10	(5.0) 100%	(4.1) 82%	42				(1 joint at 45° with weathering and clay) (1 joint at 20° and 4 joints at 45° with clay)	
100.5	201.7	5.0								Coring terminated at 201.7 ft in Hard Rock: Medium hard, QUARTZ-BIOTITE GNEISS with feldspar	

NORTH ANNA COL .SE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL_GDT 1/19/07

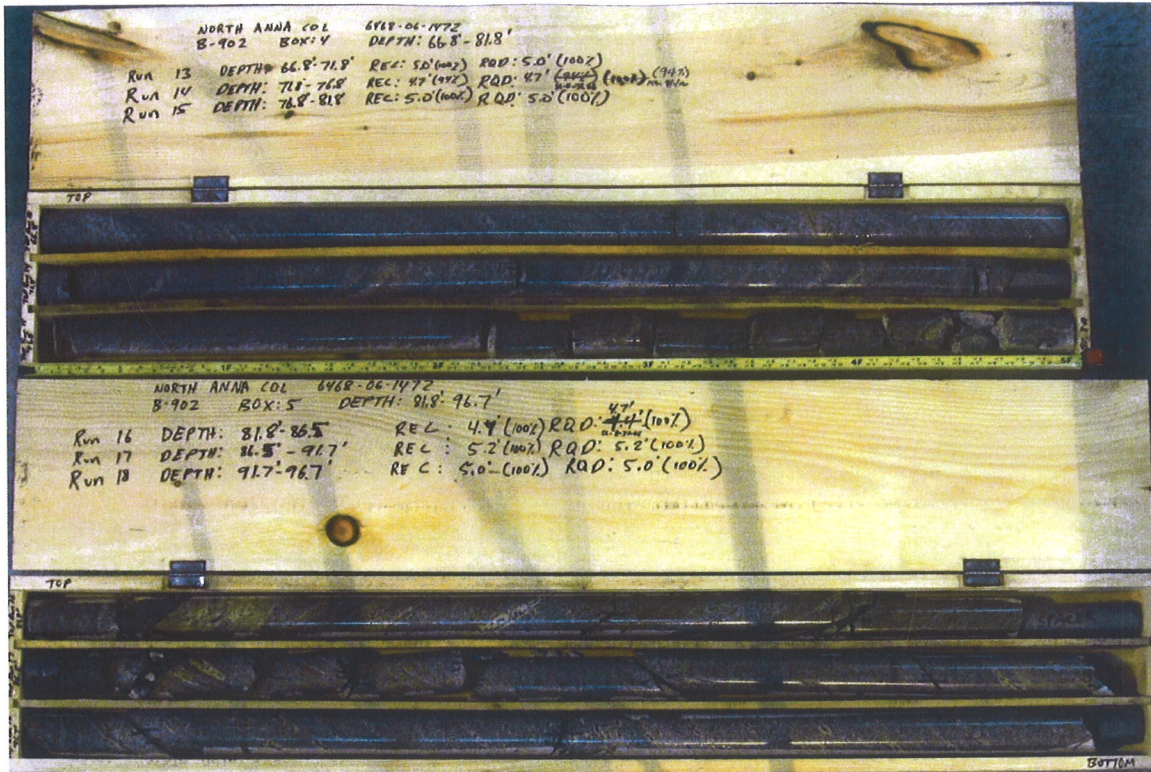


B-902 - Box 1

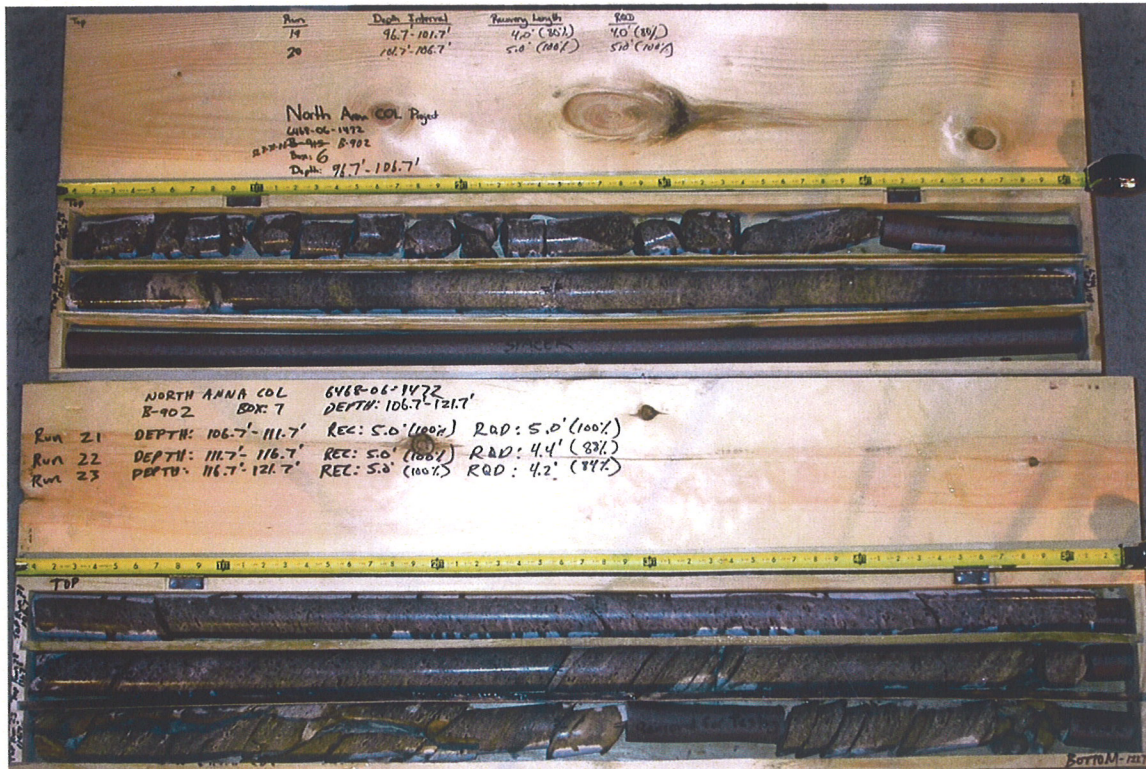


B-902 - Box 2

B-902 - Box 3



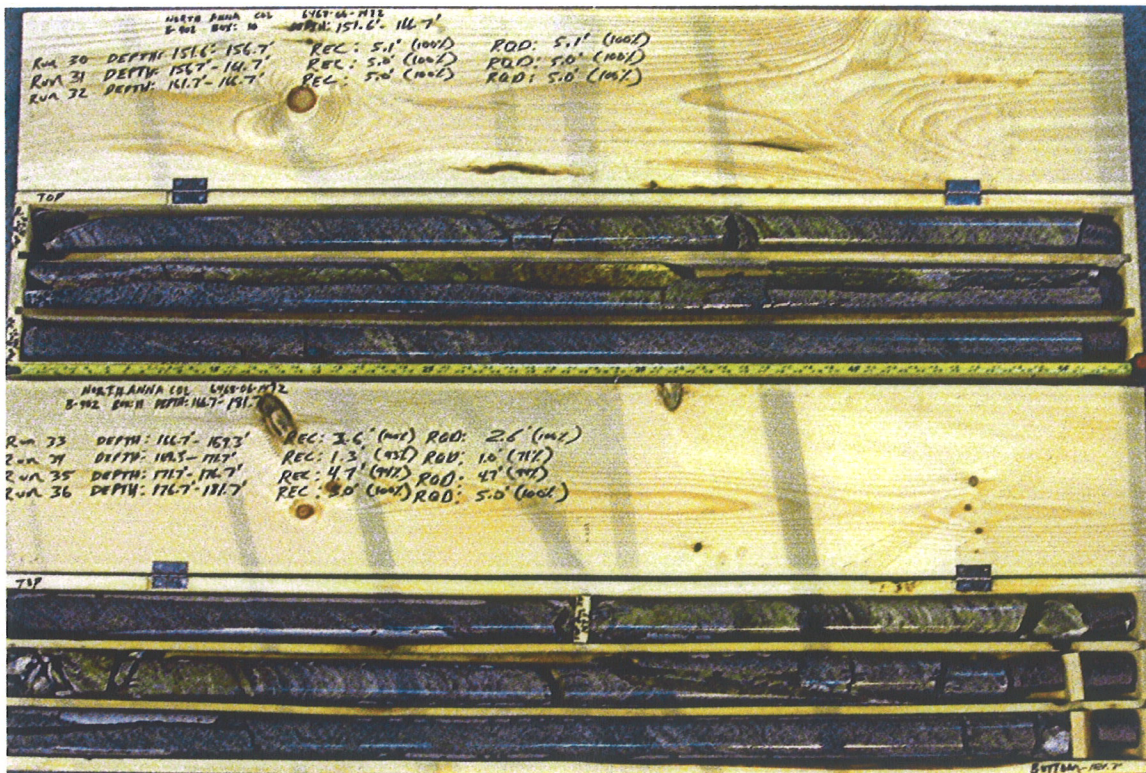
B-902 - Box 4
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B-902 - Box 9



B-902 - Box 10
B-902 - Box 11



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