GEOTECHNICAL BORING LOG

MACTEC

MACTEC PROJECT NO.: 6468-06-1472	COUNTY Louisa, VA	GEOLOGIST S. Nicely
SITE DESCRIPTION NORTH ANNA COL		GROUND WATER (ft)
BORING NO. B-929	DRILL METHOD: Mud Rotary	SAMPLE METHODS: SPT/UD
COLLAR ELEV. 329.0 ft (NAVD88)	NORTHING 3,909,214 US ft (NAD83)	EASTING 11,685,655 US ft (NAD83)
TOTAL DEPTH 74.0 ft	DRILL MACHINE CME 55 Truck	DRILLER: H. Meyerson
DATE STARTED 8/8/06	COMPLETED 8/10/06	CORE BARREL TYPE: NA

GROUND WATER (ft)	
0 HR.	23.5
24 HR.	23.9

HAMMER TYPE 140 lbs Auto

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 20 40 60 80 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
329.0					Ground Surface				329.0 / 0.0
327.5	1.5								Clayey SAND (SC) strong brown (7.5YR 5/6), moist, medium dense, trace gravel (Residual Soil)
325.5	3.5	7	7	8	15	929-1			
323.0	6.0	5	6	9	15	929-2			324.0 / 5.0
320.3	8.7	4	6	7	13	929-3			Silty, fine to coarse SAND (SM) reddish yellow (7.5YR 6/6&7/6), moist, loose to medium dense, trace clay, relict rock fabric (Residual Soil)
318.8	10.2	3	4	5	9	929-4			
						929-UD-1			
315.5	13.5								
310.4	18.6	4	4	5	9	929-5			
306.0	23.0	5	5	6	11	929-6			
301.0	28.0	3	5	4	9	929-7	▼		303.0 / 26.0
									Silty, fine to coarse SAND (SM) reddish yellow (7.5YR 6/6), moist, medium dense, trace gravel, relict rock fabric (Residual Soil)
296.0	33.0	5	5	5	10	929-8			
291.0	38.0	6	7	8	15	929-9			
286.0	43.0	4	8	6	14	929-10			
281.0	48.0	7	13	14	27	929-11			283.0 / 46.0
									Silty, fine to coarse SAND (SM) light brown (7.5YR 6/4), moist, very dense, trace gravel, relict rock fabric (Residual Soil)
276.0	53.0	19	26	33	59	929-12			
271.0	58.0	37	42	41	83	929-13			
264.0	65.0	14	19	43	62	929-14			265.0 / 64.0
									Weathered Rock: Light brown (7.5YR 6/4), moist, very dense, severely weathered, BIOTITE GNEISS
260.7	68.3	50/0.3				929-15			
255.7	73.3	50/0.2				929-16			
		41	50/0.2			929-17			255.0 / 74.0

Boring terminated at 74.0 ft in Weathered Rock: Very dense, BIOTITE GNEISS

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

GEOTECHNICAL BORING LOG

MACTEC

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-929A	DRILL METHOD: Mud Rotary	SAMPLE METHODS: UD/PITCHER BARREL — 0 HR. ND
COLLAR ELEV. 329.0 ft (NAVD88)	NORTHING 3,909,214 US ft (NAD83)	EASTING 11,685,666 US ft (NAD83) — 24 HR. ND
TOTAL DEPTH 52.5 ft	DRILL MACHINE CME 550 ATV	DRILLER: F. Cox — HAMMER TYPE NA
DATE STARTED 10/25/06	COMPLETED 10/26/06	CORE BARREL TYPE: NA

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
329.0					Ground Surface				329.0 — 0.0
									No samples due to utility clearance operations- soft dig/vac. truck excavation
									321.0 — 8.0
									Silty, fine to coarse SAND (SM), tan, gray, and white, moist, relict rock fabric (Residual Soil)
314.0	15.0					929A-UD-1			929A-UD-1: Pushed from 15.0-16.8 ft; push pressure=1200-1700 psi; recovery=1.8 ft
309.0	20.0					929A-UD-2			929A-UD-2: Pushed from 20.0-20.7 ft; push pressure=1200-1500 psi; recovery=0.4 ft-sample not retained/not enough sample to test
304.0	25.0					929A-UD-3			929A-UD-3: Pushed from 25.0-26.4 ft; push pressure=1200-1600 psi; recovery=1.1 ft
299.0	30.0					929A-UD-4			929A-UD-4: Pushed from 30.0-31.5 ft; push pressure=1200-1700 psi; recovery=1.4 ft
294.0	35.0					929A-UD-5			929A-UD-5: Pushed from 35.0-36.7 ft; push pressure=1200-1700 psi; recovery=1.6 ft
289.0	40.0					929A-UD-6			929A-UD-6: Pushed from 40.0-41.8 ft; push pressure=1200-1500 psi; recovery=1.6 ft
284.0	45.0					929A-PB-1			929A-PB-1: Advanced from 45.0-47.5 ft; recovery=0.7 ft
279.0	50.0					929A-PB-2			929A-PB-2: Advanced from 50.0-52.5 ft; recovery=0.8 ft
									276.5 — 52.5
									Boring terminated at 52.5 ft in Residual Soil: Very dense, silty, fine to coarse SAND (SM)

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

GEOTECHNICAL BORING LOG

MACTEC

MACTEC PROJECT NO.: 6468-06-1472	**COUNTY** Louisa, VA	**GEOLOGIST** S. Nicely
SITE DESCRIPTION NORTH ANNA COL		**GROUND WATER (ft)**
BORING NO. B-930	**DRILL METHOD: Mud Rotary** / **SAMPLE METHODS: SPT**	**0 HR.** 23.4
COLLAR ELEV. 326.1 ft **(NAVD88)**	**NORTHING** 3,909,276 **US ft (NAD83)** / **EASTING** 11,685,843 **US ft (NAD83)**	**24 HR.** 25.3
TOTAL DEPTH 123.6 ft	**DRILL MACHINE** CME 55 Truck / **DRILLER: H. Meyerson**	**HAMMER TYPE** 140 lbs Auto
DATE STARTED 8/17/06	**COMPLETED** 8/21/06 / **CORE BARREL TYPE: NA**	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 20 40 60 80 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
326.1					Ground Surface				326.1 — 0.0
324.6	1.5								Silty, fine to coarse SAND (SM) very dark greenish gray (GLEY2 3/1), moist, medium dense, gravel (Fill)
322.4	3.7	5	6	7	13	930-1			323.7 — 2.4
320.1	6.0	3	3	4	7	930-2			Silty, fine to coarse SAND (SM) yellowish brown (10YR 5/8), reddish yellow (7.5YR 6/8), and yellow (10YR 7/6), dry to moist, loose (Residual Soil)
317.6	8.5	3	4	4	8	930-3			
315.1	11.0	3	3	4	7	930-4			315.6 — 10.5
312.6	13.5	4	5	5	10	930-5			Silty, fine to coarse SAND (SM) yellow (10YR 7/6), yellowish brown (10YR 6/8) to light yellowish brown (2.5YR 6/4), dry to moist, medium dense (Residual Soil)
307.5	18.6	4	5	5	10	930-6			
302.4	23.7	5	6	5	11	930-7			
297.6	28.5	5	5	5	10	930-8			
292.4	33.7	5	8	9	17	930-9			
287.5	38.6	10	11	13	24	930-10			
282.5	43.6	10	13	13	26	930-11			285.1 — 41.0
277.3	48.8	13	17	18	35	930-12			Silty, fine to coarse SAND (SM) pale olive gray (5Y 6/2), yellowish brown (10YR 5/4), and brownish yellow (10YR 6/6), moist, medium dense to dense, relict rock fabric (Residual Soil)
272.4	53.7	11	13	15	28	930-13			
267.4	58.7	13	18	19	37	930-14			
262.4	63.7	16	22	28	50	930-15			265.1 — 61.0
257.4	68.7	20	26	27	53	930-16			Silty, fine to coarse SAND (SM) brownish yellow (10YR 6/6), moist, very dense, relict rock fabric (Residual Soil)
252.4	73.7	21	32	40	72	930-17			
		21	38	41	79	930-18			

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

GEOTECHNICAL BORING LOG

MACTEC

MACTEC PROJECT NO.: 6468-06-1472	COUNTY Louisa, VA	GEOLOGIST S. Nicely
SITE DESCRIPTION NORTH ANNA COL		GROUND WATER (ft)
BORING NO. B-930	DRILL METHOD: Mud Rotary	SAMPLE METHODS: SPT
COLLAR ELEV. 326.1 ft (NAVD88)	NORTHING 3,909,276 US ft (NAD83)	EASTING 11,685,843 US ft (NAD83)
TOTAL DEPTH 123.6 ft	DRILL MACHINE CME 55 Truck	DRILLER: H. Meyerson
DATE STARTED 8/17/06	COMPLETED 8/21/06	CORE BARREL TYPE: NA

GROUND WATER (ft)	
0 HR.	23.4
24 HR.	25.3

HAMMER TYPE 140 lbs Auto

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 20 40 60 80 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
251.3					Continued from previous page				
247.4	78.7	20	28	28	56	930-19			Silty, fine to coarse SAND (SM) brownish yellow (10YR 6/6), moist, very dense, relict rock fabric (Residual Soil) *(continued)*
244.1									82.0
242.4	83.7	22	33	50	83	930-20			Weathered Rock: Brownish yellow (10YR 6/6), moist, very dense, severely weathered, BIOTITE-QUARTZ GNEISS
237.4	88.7	19	32	50	82	930-21			
232.4	93.7	40	50/0.5			930-22			
227.3	98.8	27	50/0.4			930-23			
202.5									123.6

Boring terminated at 123.6 ft in Weathered Rock/Hard Rock: BIOTITE-QUARTZ GNEISS

At 100 ft, Directed by Bechtel/Dominion to continue drilling without SPT's to 125 ft or roller cone refusal, whichever occured first.

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

GEOTECHNICAL BORING LOG

MACTEC

MACTEC PROJECT NO.: 6468-06-1472	COUNTY Louisa, VA	GEOLOGIST S. Nicely	
SITE DESCRIPTION NORTH ANNA COL			GROUND WATER (ft)
BORING NO. B-931	DRILL METHOD: Mud Rotary	SAMPLE METHODS: SPT	0 HR. ND
COLLAR ELEV. 278.5 ft (NAVD88)	NORTHING 3,910,153 US ft (NAD83)	EASTING 11,685,922 US ft (NAD83)	24 HR. ND
TOTAL DEPTH 74.0 ft	DRILL MACHINE CME 55 Truck	DRILLER: H. Meyerson	HAMMER TYPE 140 lbs Auto
DATE STARTED 11/6/06	COMPLETED 11/6/06	CORE BARREL TYPE: NA	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	SOIL AND ROCK DESCRIPTION
278.5						Ground Surface
						278.5 — 0.0 No samples due to utility clearance operations -soft dig/vac. truck excavation
269.4	9.1					269.4 — 9.1
267.0	11.5	1	1	1	931-1	Silty, fine to coarse SAND (SM) dark yellowish brown (10YR 4/6), moist, very loose to loose (Residual Soil)
264.7	13.8	2	1	2	931-2	
259.7	18.8	1	2	2	931-3	
254.7	23.8	1	2	2	931-4	257.5 — 21.0
						Sandy, SILT (ML) dark yellowish brown (10YR 4/6), moist, medium stiff, trace gravel
249.5	29.0	1	3	3	931-5	252.5 — 26.0
						Silty, fine to coarse SAND (SM) dark yellowish brown (10YR 4/6), moist, loose (Residual Soil)
244.7	33.8	2	2	3	931-6	
239.8	38.7	2	3	4	931-7	242.5 — 36.0
						Sandy SILT (ML) dark yellowish brown (10YR 4/6), moist, medium stiff (Residual Soil)
234.7	43.8	3	3	4	931-8	238.5 — 40.0
						Silty, fine to coarse SAND (SM) light olive brown (2.5YR 5/4), moist to wet, dense (Residual Soil)
229.7	48.8	12	16	21	931-9	
224.7	53.8	15	22	26	931-10	
219.7	58.8	16	21	13	931-11	221.5 — 57.0
						Weathered Rock: Light olive brown (2.5YR 5/4), moist, very dense, severely weathered, BIOTITE-QUARTZ GNEISS
214.7	63.8	50/0.4			931-12	
209.7	68.8	50/0.5			931-13	
204.7	73.8	50/0.2			931-14	204.5 — 74.0
		50/0.2			931-15	

Boring terminated at 74.0 ft in Weathered Rock: Very dense, BIOTITE-QUARTZ GNEISS

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

GEOTECHNICAL BORING LOG

MACTEC

MACTEC PROJECT NO.: 6468-06-1472	COUNTY Louisa, VA	GEOLOGIST J. Wallen	
SITE DESCRIPTION NORTH ANNA COL			GROUND WATER (ft)
BORING NO. B-932	DRILL METHOD: Mud Rotary	SAMPLE METHODS: SPT	0 HR. 0.0
COLLAR ELEV. 249.9 ft (NAVD88)	NORTHING 3,910,444 US ft (NAD83)	EASTING 11,686,416 US ft (NAD83)	24 HR. 0.0
TOTAL DEPTH 35.1 ft	DRILL MACHINE CME 550 ATV	DRILLER: G. Akins	HAMMER TYPE 140 lbs Auto
DATE STARTED 11/8/06	COMPLETED 11/9/06	CORE BARREL TYPE: NA	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 20 40 60 80 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
249.9					Ground Surface				249.9 / 0.0
241.4	8.5								No samples due to utility clearance operations- soft dig/vac. truck excavation
238.9	11.0	WOH	1	1	2	932-1			241.4 / 8.5
236.4	13.5	1	2	1	3	932-2			Fine sandy SILT (ML) dark greenish gray (GLEY1 4/1), wet to moist, soft, trace gravel (Fill)
233.9	16.0	WOH	2	1	3	932-3			236.9 / 13.0
230.9	19.0	2	1	2	3	932-4			CLAY (CH) dark yellowish brown (10YR 4/4), moist, soft, trace sand, organic debris (Fill)
224.9	25.0	6	13	18	31	932-5			234.4 / 15.5
219.9	30.0	16	21	31	52	932-6			Fine sandy SILT (ML) dark yellowish brown (10YR 4/4), moist, soft, organic debris (Fill)
214.9	35.0	50/0.4				932-7			231.9 / 18.0
		50/0.1				932-8			Silty, fine to medium SAND (SM) dark yellowish brown (10YR 3/4), moist, dense to very dense, relict rock fabric (Residual Soil)
									221.9 / 28.0
									Weathered Rock: Dark yellowish brown (10YR 4/4), moist, very dense, severely weathered, BIOTITE-QUARTZ GNEISS
									214.8 / 35.1
									Boring terminated at 35.1 ft in Weathered Rock: Very dense, severely weathered, BIOTITE-QUARTZ GNEISS
									Boring encountered abandoned PVC conduit at approximately 15 feet. Drilling stopped and conduit was probed with boroscope by Dominion pers. and determined to be empty.

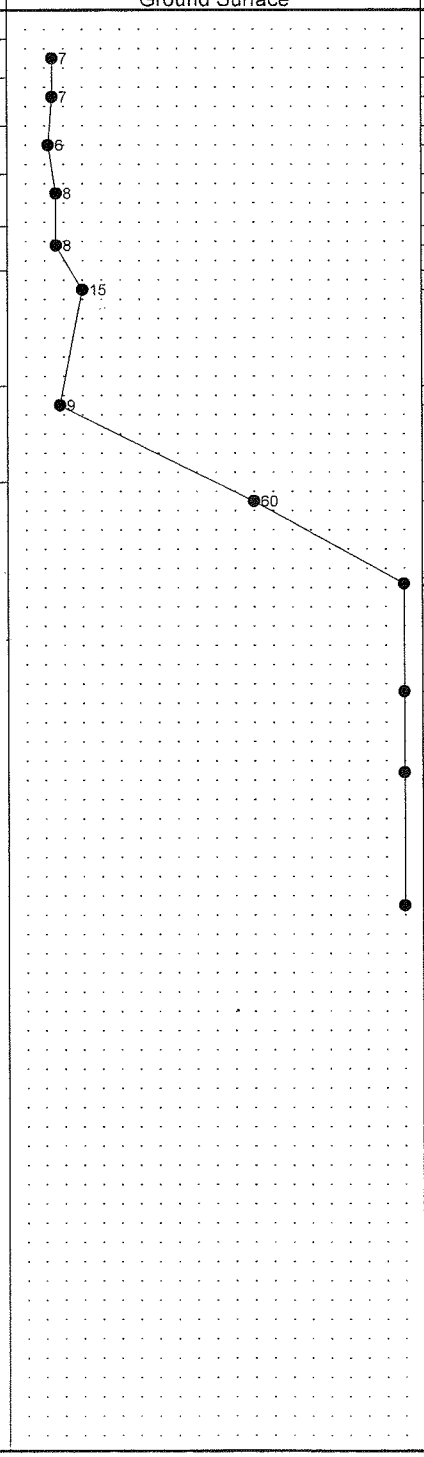
NORTH ANNA COL_CORE NORTH ANNA COL DATA REPORT REV0.GPJ NORTH ANNA COL.GDT 1/19/07

GEOTECHNICAL BORING LOG

MACTEC

MACTEC PROJECT NO.: 6468-06-1472	COUNTY Louisa, VA	GEOLOGIST J. Howard	
SITE DESCRIPTION NORTH ANNA COL			GROUND WATER (ft)
BORING NO. B-933	DRILL METHOD: Mud Rotary/Core	SAMPLE METHODS: SPT/CORE	0 HR. 16.2
COLLAR ELEV. 296.5 ft (NAVD88)	NORTHING 3,909,827 US ft (NAD83)	EASTING 11,685,791 US ft (NAD83)	24 HR. 21.3
TOTAL DEPTH 100.2 ft	DRILL MACHINE CME 550 ATV	DRILLER: G. Akins	HAMMER TYPE 140 lbs Auto
DATE STARTED 9/8/06	COMPLETED 9/12/06	CORE BARREL TYPE: HQ 3 triple tube-wireline	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	SOIL AND ROCK DESCRIPTION	ELEV.	DEPTH
296.5						Ground Surface	296.5	0.0
295.0	1.5					Clayey SAND (SC) reddish yellow (7.5YR 7/8&6/8), dry to moist, loose (Fill)		
293.0	3.5	3	3	4	933-1			
290.5	6.0	3	4	3	933-2		291.0	5.5
288.0	8.5	3	3	3	933-3	Silty SAND (SM) Reddish yellow (7.5YR 6/8), brown (7.5YR 5/4), light gray (7.5YR 7/1), and gray (2.5YR 5/1), moist to wet, loose to medium dense, saprolitic (Residual Soil)		
285.3	11.2	3	3	5	933-4			
283.0	13.5	3	3	5	933-5			
277.0	19.5	4	6	9	933-6		280.5	16.0
						Fine to medium SAND (SP) brown (7.5YR 5/2), wet, loose, micaceous, saprolitic (Residual Soil)		
272.0	24.5	4	5	4	933-7		274.5	22.0
						Medium SAND (SP) gray (7.5YR 6/1), wet, very dense (Residual Soil)		
267.0	29.5	14	35	25	933-8		269.5	27.0
						Weathered Rock: Orange brown, very dense, severely weathered, BIOTITE-QUARTZ GNEISS		
262.0	34.5	50/0.3			933-9			
257.0	39.5	45	50/0.4		933-10		256.9	39.6
						Hard Rock: Gray brown, moderately weathered, close fracturing, moderately hard to hard, BIOTITE-QUARTZ GNEISS with weathered rock layers	255.1	41.4
250.1	46.4	50/0.1			933-11	Weathered Rock: Gray brown, very dense, severely weathered, BIOTITE-QUARTZ GNEISS		
		50/0.1			933-12		248.3	48.2
						Hard Rock: Blue-gray-pink and gray-orange, moderately to slightly weathered, close to moderately close fracturing, hard, BIOTITE-QUARTZ GNEISS with quartz veins		
							241.9	54.6
						Weathered Rock: Severely weathered, BIOTITE-QUARTZ GNEISS	239.6	56.9
						Hard Rock: Blue-gray, gray, light brown and brown, slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS		



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

GEOTECHNICAL BORING LOG

MACTEC

MACTEC PROJECT NO.: 6468-06-1472	COUNTY Louisa, VA	GEOLOGIST J. Howard	
SITE DESCRIPTION NORTH ANNA COL			GROUND WATER (ft)
BORING NO. B-933	DRILL METHOD: Mud Rotary/Core	SAMPLE METHODS: SPT/CORE	0 HR. 16.2
COLLAR ELEV. 296.5 ft (NAVD88)	NORTHING 3,909,827 US ft (NAD83)	EASTING 11,685,791 US ft (NAD83)	24 HR. 21.3
TOTAL DEPTH 100.2 ft	DRILL MACHINE CME 550 ATV	DRILLER: G. Akins	HAMMER TYPE 140 lbs Auto
DATE STARTED 9/8/06	COMPLETED 9/12/06	CORE BARREL TYPE: HQ 3 triple tube-wireline	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
221.7					Continued from previous page				
									Hard Rock: Blue-gray, gray, light brown and brown, slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS *(continued)*
									196.3 — 100.2
									Boring and coring terminated at 100.2 ft in Hard Rock: Very hard, BIOTITE-QUARTZ GNEISS

GEOTECHNICAL CORING LOG

MACTEC

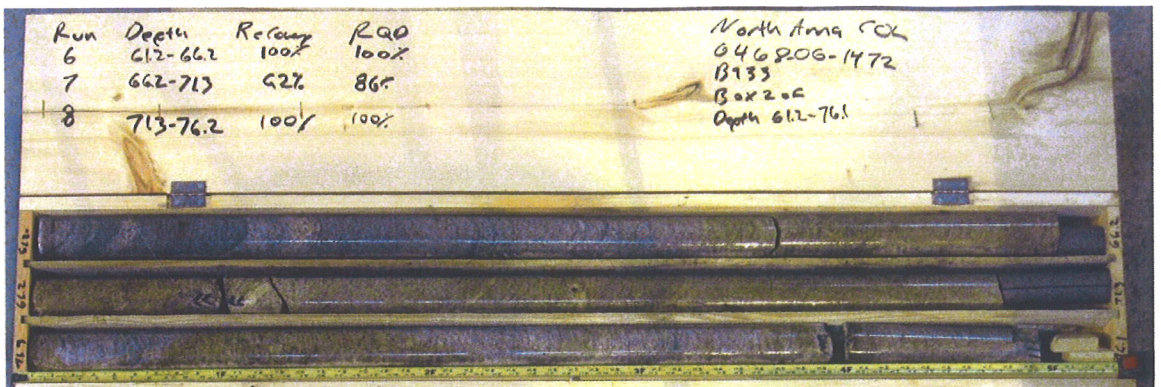
MACTEC PROJECT NO.: 6468-06-1472	**COUNTY** Louisa, VA	**GEOLOGIST** J. Howard
SITE DESCRIPTION NORTH ANNA COL		**GROUND WATER (ft)**
BORING NO. B-933	**DRILL METHOD:** Mud Rotary/Core	**SAMPLE METHODS:** SPT/CORE
COLLAR ELEV. 296.5 ft (NAVD88)	**NORTHING** 3,909,827 US ft (NAD83)	**EASTING** 11,685,791 US ft (NAD83)
TOTAL DEPTH 100.2 ft	**DRILL MACHINE** CME 550 ATV	**DRILLER:** G. Akins
DATE STARTED 9/8/06	**COMPLETED** 9/12/06	**CORE BARREL TYPE:** HQ 3 triple tube-wireline
CORE SIZE HQ3	**TOTAL RUN** 60.5 ft	

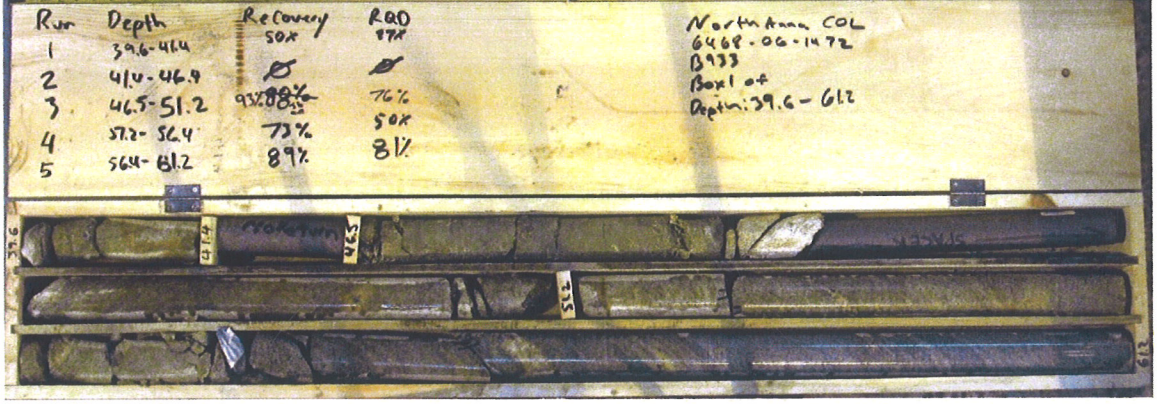
GROUND WATER (ft)	
0 HR.	16.2
24 HR.	21.3

HAMMER TYPE 140 lbs Auto

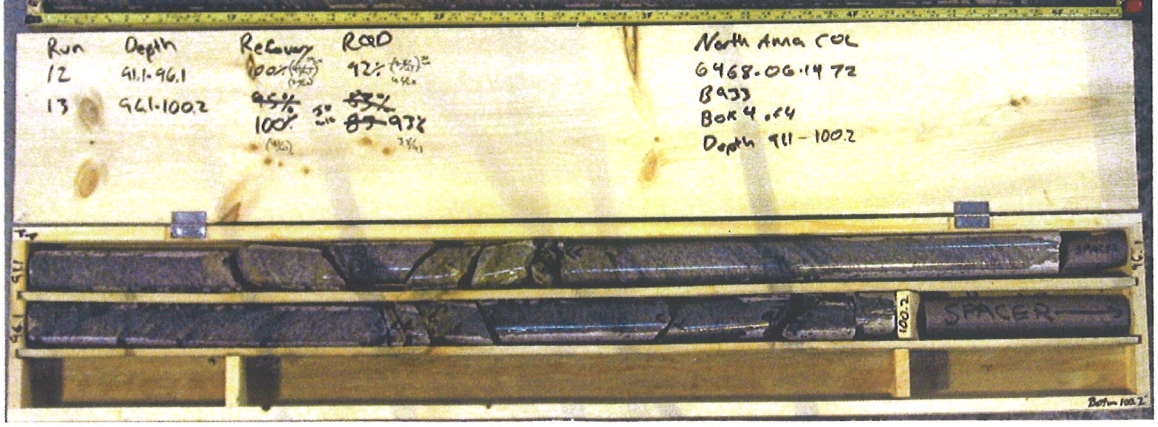
ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
										Begin Coring @ 39.6 ft
256.9	39.6	1.8	3:00 1:45/0.8	(0.9) 50%	(0.5) 28%	1				256.9 Hard Rock: Gray brown, moderately weathered, close fracturing, moderately hard to hard, BIOTITE-QUARTZ GNEISS with weathered rock layers 39.6
255.1	41.4	5.0	1:45 1:00 1:15 1:15 1:15	(0.0) 0%	(0.0) 0%	2				255.1 41.4 Weathered Rock: Gray brown, very dense, severely weathered, BIOTITE-QUARTZ GNEISS -No Recovery
250.1	46.4									
250.0	46.5	4.7	N=50/0.1 3:00 4:00 2:45 3:30 2:45/0.7	(4.4) 94%	(3.6) 77%	933-12 UC-50.5'				248.3 48.2 Hard Rock: Blue-gray-pink and gray-orange, moderately to slightly weathered, close to moderately close fracturing, hard, BIOTITE-QUARTZ GNEISS with quartz veins
245.3	51.2	5.2	3:00 2:15 1:45 1:30 1:00/1.2	(3.8) 73%	(2.6) 50%	4				241.9 54.6 Weathered Rock: Severely weathered, BIOTITE-QUARTZ GNEISS
240.1	56.4	4.8	1:30 3:30 4:15 5:00 6:30/0.8	(4.3) 90%	(3.9) 81%	5				239.6 56.9 Hard Rock: Blue-gray, gray, light brown and brown, slightly weathered to fresh, close to wide fracturing, hard to very hard, BIOTITE-QUARTZ GNEISS
235.3	61.2	5.0	4:45 4:30 4:15 4:15 4:30	(5.0) 100%	(5.0) 100%	6				
230.3	66.2	5.1	3:45 2:15 4:30 4:45 5:00/1.1	(4.7) 92%	(4.4) 86%	UCS-66.6'				(2 joints at 30°; complete loss of circulation from 67.0-69.0 ft)
225.2	71.3	4.9	3:30 4:30 4:45 5:00 7:00/0.9	(4.9) 100%	(4.9) 100%	8				-No Joints
220.3	76.2	4.9	5:30 5:30 5:45 6:30 6:30/0.9	(4.9) 100%	(4.7) 96%	9				(2 joints at 30°)
215.4	81.1	5.0	4:45 6:00 6:45 5:45 4:30	(5.0) 100%	(5.0) 100%	10				(1 joint at 40°)
210.4	86.1	5.0	5:00 5:00 5:00 6:00 7:15	(5.0) 100%	(5.0) 100%	UC-90.1'				-No Joints
205.4	91.1	5.0	3:00 3:15 3:15 4:30 5:30	(5.0) 100%	(4.6) 92%	12				(2 joints at 20°, 1 joint at 30°, 1 joint at 50°)
200.4	96.1	4.1	4:00 4:00 9:30 8:15 2:15/0.1	(4.1) 100%	(3.8) 93%	13				(6 joints at 35°)
196.3	100.2									196.3 100.2 Coring terminated at 100.2 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-933 – Box 2
B-933 – Box 1



B-933 – Box 3
B-933 – Box 4

GEOTECHNICAL BORING LOG

MACTEC

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-933A	DRILL METHOD: Mud Rotary	SAMPLE METHODS: UD/PITCHER BARREL	0 HR. ND
COLLAR ELEV. 296.6 ft (NAVD88)	NORTHING 3,909,826 US ft (NAD83)	EASTING 11,685,802 US ft (NAD83)	24 HR. ND
TOTAL DEPTH 27.5 ft	DRILL MACHINE CME 550 ATV	DRILLER: F. Cox	HAMMER TYPE NA
DATE STARTED 10/24/06	COMPLETED 10/24/06	CORE BARREL TYPE: NA	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
296.6					Ground Surface				296.6 — 0.0
									No samples due to utility clearance operations- soft dig/vac. truck excavation
									288.6 — 8.0
286.6	10.0					933A-UD-1			Silty, fine to coarse SAND (SM), brown-gray, moist, relict rock fabric (Residual Soil)
									933A-UD-1: Pushed from 10.0-12.0 ft; push pressure=1500-1600 psi; recovery=1.3 ft
281.6	15.0					933A-UD-2			933A-UD-2: Pushed from 15.0-16.5 ft; push pressure=1200 psi-weight of drill rig; recovery=1.3 ft
276.6	20.0					933A-UD-3			933A-UD-3: Pushed from 20.0-21.0 ft; push pressure=1500 psi-weight of drill rig; recovery=0.9 ft
271.6	25.0					933A-PB-1			933A-PB-1: Advanced from 25.0-27.5 ft; recovery=1.6 ft
									269.6 — 27.0
									269.1 — 27.5
									Weathered Rock: BIOTITE-QUARTZ GNEISS
									Boring terminated at 27.5 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