

**ATTACHMENT A2**  
**BORING LOGS OF DEEP BORINGS**

# HTRW DRILLING LOG

**HOLE NUMBER**

Boring 1, GS80-SB01

1. Company name: **IT Corporation**

2. Drill Subcontractor: Boart Longyear

Sheet 1 of 13 sheets

3. Project: Fort McClellan

4. Location: Parcel 80 (6)

5. Name of driller: Mark Biermaier

6. Mfr. designation of drill: Gus Pech Rotosonic

7. Sizes and types of drilling and sampling equipment:

Rock Coring  
6" and 4" Sonic Barrels  
PQ3 Daimond Bit Core Barrel

8. Hole location Landfill No.3

9. Surface elevation (feet above mean sea level): 743.55

10. Date started: 05/12/00

11. Date completed: 05/15/00

12. Overburden thickness (feet bgs): 75

15. Depth groundwater encountered (feet bgs): 59.5 Ft

13. Depth drilled into rock (feet bgs): 152.5

16. Depth to water and elapsed time after drilling completed (feet bgs): NA

14. Total depth of hole (feet bgs): 228

17. Other water level measurements (specify): NA

18. Geotechnical samples: NONE

Disturbed:

Undisturbed:

19. Total no. of core boxes: 17

20. Samples for chemical analysis:

VOC

Metals

Other (specify)

Other (specify)

Other (specify)

21. Total core recovery:

120.7'

NONE

22. Disposition of hole:

Backfilled

Monitoring well

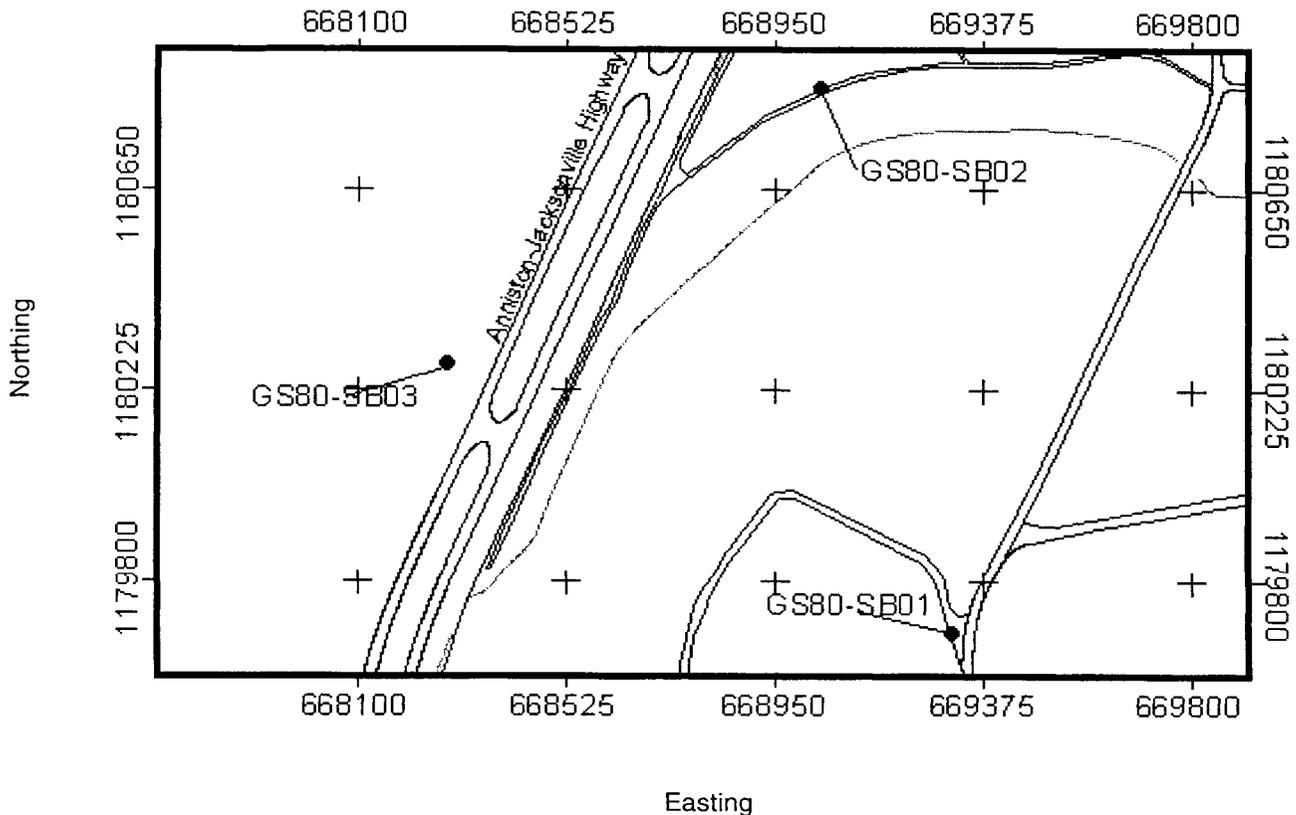
Other (specify)

Geologist:

Bentonite-Cement Grout

Corey Wallace

**LOCATION SKETCH/COMMENTS:**



Project: Fort McClellan

bgs= below ground surface  
NA = Not applicable

Hole no.: Boring 1, GS80-SB01







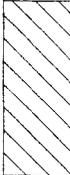
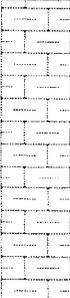
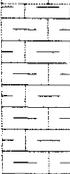
# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 1, GS80-SB01

Project: Fort McClellan

Geologist: Corey Wallace

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Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
680	62								
	63								
	64								
	65	cl: CLAY, some Sand, trace Silt, strong brown (7.5YR 5/6), very soft, wet, with many Shale fragments throughout, low to medium plasticity.	cl						Lost 65-70' trying to retrieve with a catcher. Retrieved at 75'. Rec 9'
	66								
	67	cl: CLAY with Sand some Silt, strong brown (7.5YR 5/6), very soft, wet, with many Shale fragments throughout, stiff, wet with free water along larger Shale fragments.	cl						
	68								
675	69								
	70								
	71								
	72								
	73								
670	74								
	75								Rec 100% RQD 0%
	76	arg ls: LIMESTONE, hard, very broken, several-completely weathered with interbedded calcareous Clay, light gray with white interbedded Clay. Minor Iron staining on broken surfaces, some harder pieces show vugs and solutioning becoming pale red at approximately 78'.	arg ls						Switching PQ core barrel.
	77								
	78								
665	79	arg ls: LIMESTONE, Argillaceous with interbedded MUDSTONE, soft, fine grained, broken weak red with white-pink-light brown calcareous laminae, slightly convoluted, folded, fractures at 40 degrees-50 degrees, minor Clay infilling with Iron staining on harder surfaces, interbedded Clays lost during coring.	arg ls						Rec 41% RQD 18%
	80								
	81	arg ls: LIMESTONE and MUDSTONE, soft gray LIMESTONE and weak red MUDSTONE, with calcareous laminae and interbedded, soft							



# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 1, GS80-SB01

Project: Fort McClellan

Geologist: Corey Wallace

Sheet 7 of 13 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
103									
640	104								
	105								
	106								
	107	arg ls: Interbedded LIMESTONE, calcareous Mudstone, and Clay seams. Limestone is light gray to gray, fine to medium grained, soft to hard, severely weathered, vuggy/solutioned, very broken with Clay infilling fractures.	arg ls						Rec 72% RQD 0%
635	108								
	109								
	110	cl: CLAY seam. ls: Vuggy LIMESTONE.	cl ls						
	111	dol ls: Completely weathered LIMESTONE, dolomitic, sandy SILT, dark gray with Limestone/Dolomitic fragments.	dol ls						
	112	calc mdst: Calcareous MUDSTONE with interbedded Clay seams.	calc mdst						Rec 96% RQD 38%
630	113	bx: Brecciated zone with Clay matrix.	bx						
	114								
	115	dol ls: Dolomitic LIMESTONE, gray to dark gray, average to hard, very broken with fractures at 65-75 degrees, becomes massive at 115'-117' with calcareous infilled fragments.	dol ls						
	116								
	117	dol ls: Becoming very broken, less dolomitic with Clay infilling fractures, Iron staining on harder surfaces. 118.2'-120.6' becoming massive and more dolomitic.	dol ls						Rec 113 RQD 30%
	118								
625	119								
	120								Rec 85% RQD 41%
	121	dol ls: Brecciation, becoming less dolomitic, light gray LIMESTONE, with interbedded Clays.	dol ls						Brecciated Limestone.
	122	cl: CLAY seam. mdst: Becoming very soft MUDSTONE, weak red with tan and brown convoluted laminae to	cl mdst						Rec 90% RQD 73%











# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 1, GS80-SB01

Project: Fort McClellan

Geologist: Corey Wallace

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Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
	226								
	227								Rec 100% RQD 100%
	228								Bottom of borehole at 228'

# HTRW DRILLING LOG

**HOLE NUMBER**  
Boring 2, GS80-SB02

1. Company name: **IT Corporation**

2. Drill Subcontractor: **Boart-Longyear**

Sheet 1 of 14 sheets

3. Project: **Fort McClellan**

4. Location: **Parcel 80 (6)**

5. Name of driller: **Mark Biermaier**

6. Mfr. designation of drill: **Gus Pech Rotasonic**

7. Sizes and types of drilling and sampling equipment:

8. Hole location: **Landfill No.3**

Rock Coring

6" and 4" Sonic Barrels

PQ3 Diamond Bit Core Barrel

9. Surface elevation (feet above mean sea level): **745.29**

10. Date started: **05/02/00**

11. Date completed: **05/09/00**

12. Overburden thickness (feet bgs): **92**

15. Depth groundwater encountered (feet bgs): **73 Ft**

13. Depth drilled into rock (feet bgs): **158**

16. Depth to water and elapsed time after drilling completed (feet bgs): **NA**

14. Total depth of hole (feet bgs): **250**

17. Other water level measurements (specify): **NA**

18. Geotechnical samples: **NONE**

Disturbed:

Undisturbed:

19. Total no. of core boxes: **16**

20. Samples for chemical analysis:

VOC

Metals

Other (specify)

Other (specify)

Other (specify)

21. Total core recovery:

NONE

126.4'

22. Disposition of hole:

Backfilled

Monitoring well

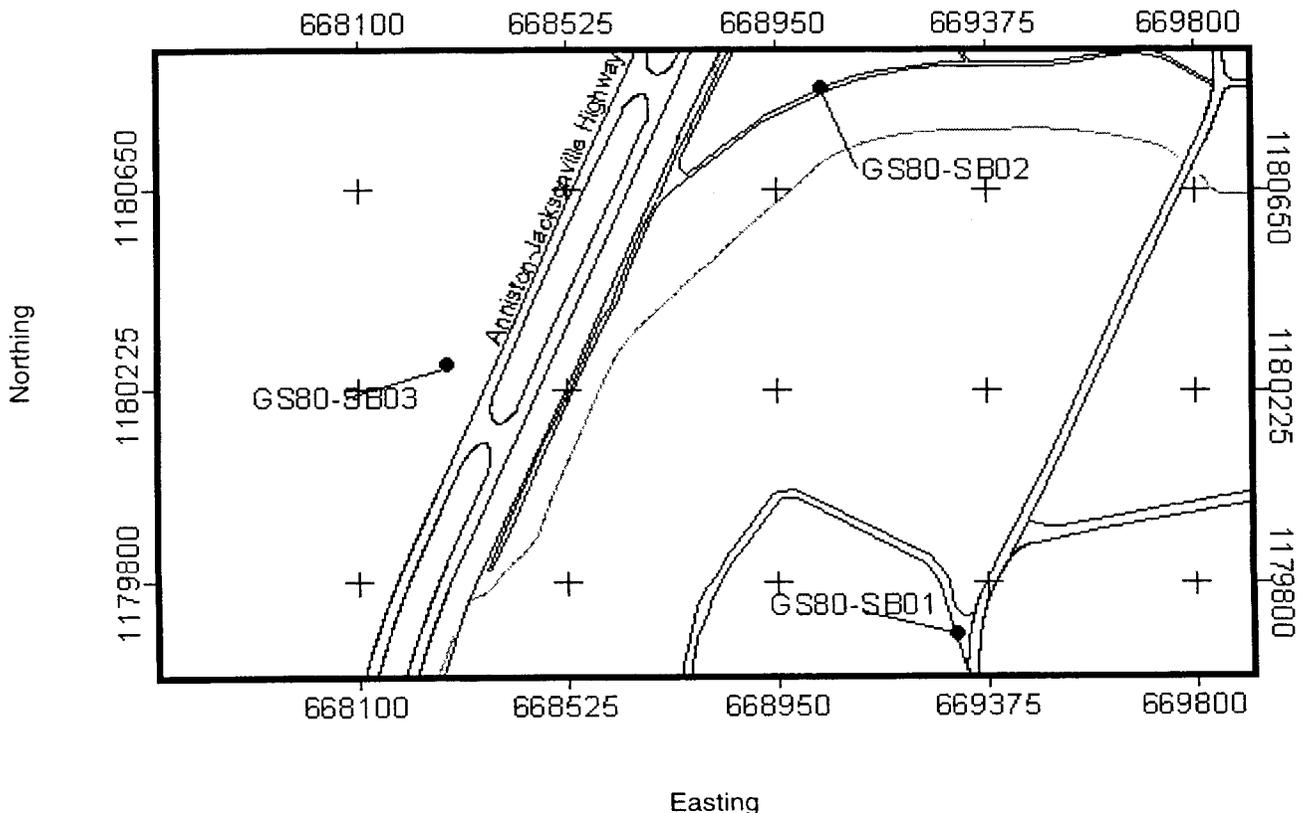
Other (specify)

Geologist:

Bentonite-Cement Grout

Corey Wallace

## LOCATION SKETCH/COMMENTS:



Project: **Fort McClellan**

bgs= below ground surface  
NA = Not applicable

Hole no.: **Boring 2, GS80-SB02**



# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 2, GS80-SB02

Project: Fort McClellan

Geologist: Corey Wallace

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Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
720	21				Organic Vapor = 775ppm				
	22								
	23								
	24								
	25								Red 33% poor recovery due to very soft at 16-18ft
	26								
	27								
	28								Rec 100%
	29	cl-ml: SILT and CLAY with trace Sand, very stiff, low to medium plasticity, brown yellow 10YR 6/6 with minor lighter mottles, with Chert fragments, dry to moist, with minor relic bedding evident at ~25 degree dip	cl-ml						
715	30								
	31								
	32	ml: SILT, some Clay, trace Sand, hard, mottled red yellow 7.5YR 5/8 and light yellow brown 2.5YR 6/4, blocky, with Shale fragments throughout, moist, low plasticity.	ml		Organic Vapor = 0ppm				Rec 100%
	33								
	34								
710	35								
	36								
	37	ml: SILT, some Clay, trace Sand, grading to gray brown 10YR 5/2 mottled with light yellow brown 2.5YR 6/4 and yellow red 5YR 5/6, hard, Shaley, black, moist, minor relic bedding ~horizontal ~10 degree dip, minor Iron staining on harder Shale fragments, few Chert fragments; becoming very hard at 39.5'.	ml						
	38								
	39								
705	40								Rec 100% Very hard drilling, switching to 4" roto sonic barrel

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 2, GS80-SB02

Project: Fort McClellan

Geologist: Corey Wallace

Sheet 4 of 14 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
41									
	42	ml: SILT, some Clay, trace Sand, becoming more mottled with light olive brown 2.5YR 5/3 with yellow red 5YR 5/6.							
	43								
	44		ml						
700	45								Rec 100%
	46	ml: SILT, some Clay, hard, micro mottling with light olive brown 2.5YR 5/3 with yellow red 5YR 5/6, Shaley / blocky texture, few Shale fragments, non-plastic, moist to dry.							
	47		ml						
	48								
	49	cl: CLAY, some Silt, hard, mottled strong brown 7.5YR 4/6 and yellow red 5YR 4/6, medium plasticity, minor Shale fragments, very moist.							
	50		cl						
695	51	ch: CLAY, high plasticity, brown yellow 10YR 6/6, mottled with dark yellow brown 10YR 4/4, micro laminae somewhat contorted, hard, moist.							
	52		ch						
	53								
	54	cl: CLAY continued with some Silt, mottled brown yellow 10YR 6/6 with dark yellow brown 10YR 4/4, hard with micro laminae showing contortion, grading to more dark yellow brown 10YR 3/4 at 54.5'.							
	55		cl						Rec 100%
690	56								
	57								
	58								
	59	ch: CLAY, strong brown yellow 7.5YR 4/6, mottled with dark yellow brown 10YR 3/4, increased plasticity.							
	60		ch						
685	61	ch: CLAY, some Silt, medium to high plasticity, mottled dark yellow brown 10YR 4/4 with yellow 10YR 7/6, contorted micro laminae, occasional Chert fragments, moist to							

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 2, GS80-SB02

Project: Fort McClellan

Geologist: Corey Wallace

Sheet 5 of 14 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
		very moist.							
680	62								
	63								
	64								
	65		ch						Rec 100%
	66								
	67								
	68								
	69								
675	70	ml: SILT, come Clay, hard, no plasticity, brown yellow 10YR 6/8 with darker micro laminae, blocky, Shaley texture with Shale fragments throughout, horizontal relic bedding; free water along bedding 73-73.1'.							
	71								
	72								
	73								Groundwater encountered
	74		ml						Rec 100%
	75								
670	76								
	77								
	78								
	79	cl-ml: CLAY and SILT, some Sand, hard, dark red brown 2.5YR 3/3, mottled with strong brown 7.5YR 4/6, low plasticity, blocky with occasional Shale fragments, occasional relic horizontal ~10' dip; increasing mottling also with pink gray 5YR 7/2 at 81'.							
	80		cl-ml						
665	81	cl-ml: CLAY and SILT, trace Sand, hard, mottled dark red brown 2.5YR 3/4, and pink							



# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 2, GS80-SB02

Project: Fort McClellan

Geologist: Corey Wallace

Sheet 7 of 14 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
	103	mdst: MUDSTONE, less weathered Mudstone, dark red brown with Sandy yellow brown laminae.							
	104		mdst						
	105	sltst: Increased weathering zone to Shaley CLAY and SILTSTONE.							
640	106		sltst						
	107								Rec 86% RQD 10%
	108	mdst: MUDSTONE, less weatherd zone of hard Mudstone with yellow brown Sandy laminae; increased weathering at 109'.							
	109		mdst						
635	110	mdst: MUDSTONE, dark red brown with yellow brown, Sandy laminae to thin beds, average to hard, very broken with fractures Clay filled at 20-30 degrees, few at 80-90 degrees, relic bedding near horizontal with zones of severe to complete weathering, laminae are somewhat convoluted.							
	111								
	112								Rec 100% RQD 0%
	113		mdst						
	114								
630	115								
	116	mdst: MUDSTONE, dark red brown with yellow brown, Sandy laminae, average to hard, very broken with fractures at 30-40 degrees and usually Clay filled bedding, horizontal with complete weathering in multiple thin (2"-3") zones, laminae are somewhat convoluted, Shaley partings throughout; began showing some 80 degree vertical fractures at 122'.							
	117								Rec 81% RQD 0%
	118								
	119								
	120		mdst						
625	121								
	122								Rec 85% RQD 15%

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 2, GS80-SB02

Project: Fort McClellan

Geologist: Corey Wallace

Sheet 8 of 14 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
123		mdst: MUDSTONE, dark red brown with yellow brown, Sandy laminae, average to hard, very broken with fractures at 30-45 degrees and 90 degrees, minor Clay infilling, bedding horizontal ~15 degrees, Shaley partings throughout.	mdst	[Graphic: Dotted pattern]					Rec 100% RQD 6%
124									
125									
126									
127									
128									
129									
130									
131									
132									
133		mdst: MUDSTONE, much less broken, becoming massive with fractures (30 degrees) at 135.2' and 136.6', hard, no Sandy laminae, but Calcite micro laminae and fracture infilling; dark red brown with Calcite laminae and in fillings, massive to 137.5' then very broken with fractures at ~45 degrees and bedding at ~20 degrees, minor Clay infilling of fractures and bedding partings.	mdst	[Graphic: Dotted pattern]					Rec 73% RQD 0%
134									
135									
136									
137		Lost core.		[Graphic: Blank]					Rec 106% RQD 61%
138									
139		mdst: MUDSTONE, very broken with very weathered Sandy laminae, blocky, Shaley texture, soft to average, relic bedding appears to have ~30 degree dip with few fractures at		[Graphic: Dotted pattern]					Rec 48% RQD 10%
140									
141									
142									
143									





# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 2, GS80-SB02

Project: Fort McClellan

Geologist: Corey Wallace

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Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
560	185	dol ls: LIMESTONE, dolomitic, dark gray, massive, hard, minor lighter gray calcareous laminae and fracture at 185.8' at 40 degrees, Iron stained fracture; increased Calcite in filled fractures, massive, very hard fresh fracture at 189.7ft, iron stained fracture (30 degrees).	dol ls						Rec 91% RQD 79%
555	191	ls: LIMESTONE, grading to medium gray with Calcite in filled fractures, massive to slightly broken, hard, fresh fractures at ~30 degrees with Iron stained fractures ~191.2'-191.6'.	ls						Rec 103% RQD 95%
550	193	ls: LIMESTONE, grading to calcareous Sandy Siltstone, light yellow brown, broken, Clay-Silt filled fractures and partings, apparent bedding at ~30 degrees.	ls						
	197	ls: Sandy LIMESTONE, light gray with minor convoluted Calcite laminae, massive, hard.	ls						Rec 83% RQD 53%
	198	sltst: Dolomitic at 197', vertical fracture at 197' grading to SILTSTONE, Sandy, Calcareous.	sltst						
	199	sltst: Poor recovery at 198'-201.8', very broken, Shaley Sandy Calcareous SILTSTONE, vertical fractures throughout, average to hard where less broken.	sltst						
545	202	sltst: Grading to Sandy, calcareous SILTSTONE, yellow brown, broken to very broken vertical fractures, Clay/Silt filled fractures and partings, soft to average at 200'; very poor recovery at 203', but continued Sandy, Calcareous SILTSTONE, with convoluted Sandy laminae, some visible slickensiding on fractures surfaces at ~205.8' and becoming more calcareous at ~205.8';	sltst						Rec 67% RQD 28%

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 2, GS80-SB02

Project: Fort McClellan

Geologist: Corey Wallace

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Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
540	205	continued very calcareous Sandy SILTSTONE, gray yellow brown, becoming completely weathered to Sandy Silt at ~209' and soft, nonplastic with calcareous nodules throughout, relic bedding evident at ~20 degree dip; grading to red brown clayey SILT, some Sand at ~210', becoming more compact.	siltst						Rec 45% RQD 0%
	206								
	207								
	208								
	209								
535	210	mdst: MUDSTONE, dark red brown with Sandy yellow brown laminae, laminae very weathered, broken to very broken, average to hard, minor Shaley partings along relic bedding (~horizontal), visible fractures at 30 degrees; laminae becoming folded and convoluted at ~214.4' to 216' then more horizontal with few folds.	mdst						Rec 53% RQD 0%
	211								
	212								
	213								
	214								
530	215	mdst: MUDSTONE, Increased zone of weathering with Clay infillings, dark red brown with yellow brown Sandy laminae.	mdst						Rec 70% RQD 20%
	216								
	217								
	218								
	219								
525	220	mdst: MUDSTONE, less weathered with increased Shaley partings from 223.9'-228'.	mdst						Rec 93% RQD 23%
	221								
	222								
	223								
	224								
	225								



# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 2, GS80-SB02

Project: Fort McClellan

Geologist: Corey Wallace

Sheet 14 of 14 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
									Bottom of Borehole at 250'
	246		mdst						
	247								
	248								
	249								
	250								

# HTRW DRILLING LOG

**HOLE NUMBER**

Boring 3, GS80-SB03

1. Company name: **IT Corporation**

2. Drill Subcontractor: **Boart Longyear**

Sheet 1 of 15 sheets

3. Project: **Fort McClellan**

4. Location: **Parcel 80 (6)**

5. Name of driller: **Mark Biermaier**

6. Mfr. designation of drill: **Gus Pech Rotasonic**

7. Sizes and types of drilling and sampling equipment:

8. Hole location **Landfill No.3**

Rock Coring

6" and 4" Sonic Barrels

9. Surface elevation (feet above mean sea level): **748.07**

PQ3 Diamond Bit Core Barrel

10. Date started: **04/25/00**

11. Date completed: **04/31/00**

12. Overburden thickness (feet bgs): **155**

15. Depth groundwater encountered (feet bgs): **62 Ft**

13. Depth drilled into rock (feet bgs): **127**

16. Depth to water and elapsed time after drilling completed (feet bgs): **NA**

14. Total depth of hole (feet bgs): **282**

17. Other water level measurements (specify): **NA**

18. Geotechnical samples: **NONE**

Disturbed:

Undisturbed:

19. Total no. of core boxes: **19**

20. Samples for chemical analysis:

VOC

Metals

Other (specify)

Other (specify)

Other (specify)

21. Total core recovery:

NONE

116'

22. Disposition of hole:

Backfilled

Monitoring well

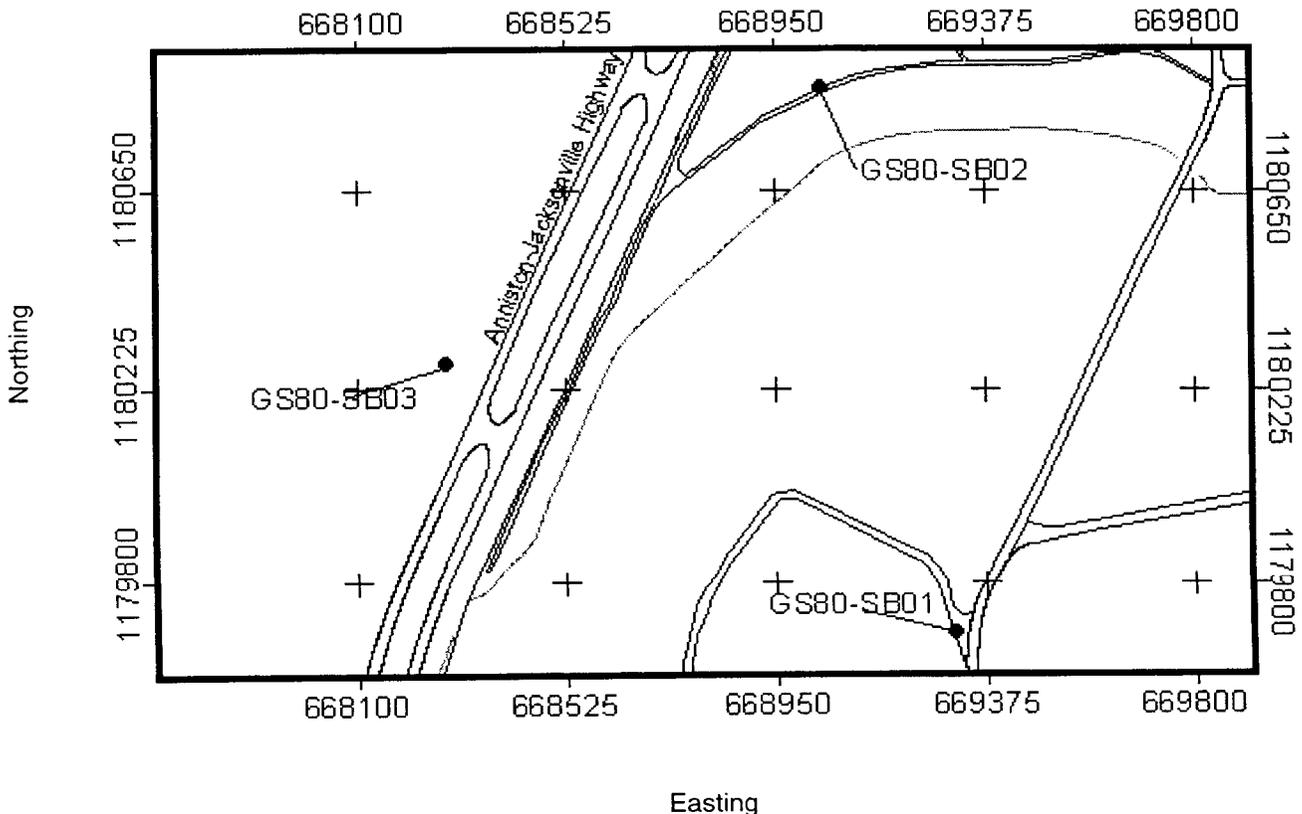
Other (specify)

Geologist:

Bentonite-Cement Grout

Corey Wallace

## LOCATION SKETCH/COMMENTS:



Project: **Fort McClellan**

bgs= below ground surface  
NA = Not applicable

Hole no.: **Boring 3, GS80-SB03**

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 3, GS80-SB03

Project: Fort McClellan

Geologist: Corey Wallace

Sheet 2 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
0	0	cl: CLAY, some Silt, trace Sand, with Gravel sub-base in first 2"-3", hard, strong brown 7.5YR 4/6 mottled with yellow on red 5YR 4/6, wet to 6" then moist, medium plasticity, Chert fragments through 2.5'.	cl		Organic Vapor = 0.0ppm				Rec >100%
745	3	cl: CLAY, some Silt, medium plasticity, medium to stiff, yellow-red 5YR 4/6 mottled with strong brown 7.5YR 4/6, moist, Chert and Shale fragments.	cl						Rec >100%
	5	ml: SILT, some Clay, low to medium plasticity, medium stiff, medium brown 2.5YR 4/3, moist, blocky texture, with Shale fragments, dry.	ml		Organic Vapor = 0.0ppm				
740	8				Organic Vapor = 0.0ppm				Rec >100%
	11								Some mottling with light red-brown 5YR 6/4, increasing Clay content.
735	13	clst: CLAYSTONE and severely weathered CLAY in alternating beds, dark red brown 2.5YR 3/4, CLAYSTONE is soft, average, clay beds are soft and blocky, relic bedding apparent in Claystone. Clay appears massive. AT 15' amount of Claystone increasing, but alternating with weathered Clay continues.	clst		Organic Vapor = 0.0ppm				Rec >100%
	18								High angle hairline fractures with iron stained surfaces in Claystone.
730	19	clst: CLAYSTONE, severely weathered with interbedded CLAY, broken to very broken, dark red-brown 2.5YR 3/4, relic bedding apparent in rock, Clay is massive, some Iron			Organic Vapor = 0.0ppm				Rec >100%

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 3, GS80-SB03

Project: Fort McClellan

Geologist: Corey Wallace

Sheet 3 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
	21	staining, dry. Increased Iron staining at 21'.	clst						
	22	clst: Decreasing thickness of CLAYSTONE with increasing Clay bedding, with mottled strong brown 7.5YR 5/8, only occasional thin bed of Claystone, bedding approximately horizontal with weathered deformation.	clst		Organic Vapor = 0.0ppm				
725	23								
	24	cl: CLAY, medium stiff, low to medium plasticity, strong brown 7.5YR 5/8 mottled with dark red brown 2.5YR 3/4 with shale fragments with thinly bedded CLAYSTONE.	cl						Rec >100%
	25								
	26								
720	27	clst: CLAYSTONE, dark red-brown 2.5YR 3/4, hard, very broken severely weathered with rounded nodules of Shale throughout.	clst						Blocky texture with significant Iron staining on surfaces, dry.
	28								
	29								
	30								
	31	cl: CLAY, medium stiff to stiff, dark red-brown 2.5YR 3/4 with Shale fragments and interbedded weathered Claystone - increasing moisture along bedding / jointing bedding, approximately horizontal.	cl						Rec >100%
	32								
715	33	cl: CLAY, medium stiff to stiff, dark red-brown 2.5YR 3/4, low plasticity with Shale fragments and Chert.	cl						Organic Vapor = 0.0ppm
	34								
	35	clst: Interbedded CLAYSTONE, thinly bedded, very broken, severely weathered with low angle, infilled fractures with Iron staining.	clst						Rec >100%
	36								
	37	cl-ml: CLAY and SILT, trace Sand, brown 7.5YR 5/4 soft to moderate stiff, medium plasticity, very moist, cherty fragments throughout.	cl-ml						
710	38								
	39	clst: CLAYSTONE, thinly bedded, hard, very broken, relic bedding evident, horizontal.	clst						
	40								
	40	cl: CLAY, stiff, dark red brown 2.5YR 3/4, medium plasticity with Shale fragments throughout.							



# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 3, GS80-SB03

Project: Fort McClellan

Geologist: Corey Wallace

Sheet 5 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
	62	minor Iron staining interbedded severely weathered CLAYSTONE throughout, dry, bedding approximately horizontal.			Vapor = 15.3ppm				
685	63		cl						
	64								
	65								Rec >100%
	66								
	67								
680	68	cl: CLAY, some SILT, some Sand, stiff to hard, dark red brown 2.5YR 3/4 mottled with red yellow 7.5YR 6/6 and occasional pale red 10R 7/3, interbedded with severely weathered CLAYSTONE, hard with Iron staining along horizontal bedding.	cl						
	69				Organic Vapor = 12.1ppm				
	70	clst: CLAYSTONE, severely to completely weathered interbedded with Clay and Silt beds trace Sand, with Shale fragments. Free water abundant along bedding, bedding horizontal when present, very broken with abundant Iron staining.	clst		Organic Vapor = 0.0ppm				Rec >100%
	71								
	72								
675	73								
	74								
	75	cl: CLAY, with some Silt and Sand with interbedded Claystone lense severely to completely weathered with relic horizontal bedding apparent, little water, Clay is very moist with Iron staining, dark red brown 2.5YR 3/4 mottled with red yellow 7.5YR 6/6 and occasion pale red 10R 7/3. Repeating horizontal Clay / weathered Claystone sequences at 80.5'.	cl		Organic Vapor = 0.0ppm				Rec >100%
	76								
	77								
670	78								
	79								
	80								Rec >100%
	81	cl: CLAY with Silt and some Sand, with interbedded Claystone beds, horizontal			Organic				









# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 3, GS80-SB03

Project: Fort McClellan

Geologist: Corey Wallace

Sheet 10 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
164		cl: CLAY, some Silt and Sand, brown 7.5YR 4/2, very stiff to hard, mottled with red yellow 7.5YR 6/8, wet with Shale fragments throughout.	cl						Rec 78% RQD 7.3%
165									
166									
167		mdst: MUDSTONE, dark red brown with sandy laminae yellow-brown, hard, very broken with fractures at 80-90 degrees, fractures are clay-filled with Iron staining, where observed, bedding is thin with apparent horizontal 10 degrees dip. Bed partings are Clay filled. Folded laminae at 171.5', possible slump feature or folding laminae slightly reactive to HCL (calcite).	mdst						Rec 100% RQD 0%
168									
169									
170									
171									
172									Rec 93% RQD 0%
173		cl: CLAY, some Silt and Sand medium stiff, low plasticity brown-yellow brown with Shale fragments and relic bedding throughout.	cl						
174		mdst: MUDSTONE with sandy calcareous laminae, hard, very broken with fracturing at 80-90 degrees fracture are Clay filled with Iron staining, bedding is thin with apparent 10-20 degree dip.	mdst						
175									
176									
177									Rec 85% RQD 8%
178		cl: CLAY seam with Shale fragments throughout.	cl						
179		mdst: MUDSTONE, dark red-brown with Sand laminae yellow-brown.	mdst						
180		cl: CLAY, hard, low plasticity yellow-red 5YR 5/6 grading to brown 7.5YR 5/4 with Shale fragments.	cl						
181									
182									
183		mdst: Competent MUDSTONE dark red brown, hard, very broken with fractures at 25 degrees and 40 degrees, Clay filled fractures and Iron stained. Sigmoidal fractures (183'-184')	mdst						
184			cl						



# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 3, GS80-SB03

Project: Fort McClellan

Geologist: Corey Wallace

Sheet 12 of 15 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
205									
206									
207									
540	208	mdst: MUDSTONE, dark red brown with occasional lighter laminae, hard very broken to slightly broken, with fractures at 20- 30 degrees with secondary fractures at 45 degrees to primary, very little Clay infilling, but Iron stained on all faces, slightly weathered. Laminae are occasionally vuggy. Becoming very thin laminated with increased weathering at 212.8'. At 214.5' thin bed of light olive brown Mudstone.							Rec 98% RQD 50%
209									
210									
211									
212									
535	213								
214									
215									
216									
217		mdst: Dark reddish gray MUDSTONE, less sandy with light gray laminae, laminae weakly reactive to HCL (calcite), average to hard, slightly broken to very broken, with fractures at 30-40 degrees and 70-90 degrees, fractures are tight with calcite infilling in more weathered zones, minor Iron staining interbedded highly laminated - fissile zones 4"-6" thick. Calcite shows vugs. At 221' grading to dark red brown.							Rec 80% RQD 15%
530	218								
219									
220									
221									
222		mdst: MUDSTONE, sandy dark red brown with gray-light gray laminae (calcite), hard, slightly broken with fractures at horizontal 15 degree, fractures are tight with no Clay infill, but re-cemented with Calcite, thin to medium bedding (approximately horizontal).							Rec 93% RQD 35%
525	223								
224		bx: Thin (3") zone of recemented Shale fragments (breccia?).							Rec 100% RQD 70%
225		mdst: MUDSTONE, sandy dark red brown with gray-light gray laminae (calcite), hard, slightly							





# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: Boring 3, GS80-SB03

Project: Fort McClellan

Geologist: Corey Wallace

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Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow count (g)	Remarks (h)
267		dol ls: At 267' grading to dark gray Dolomitic LIMESTONE at 267.4', significant trace Iron stained at 267.5', 75 degrees, less pronounced laminae.							
480	268								
	269		dol ls						
	270								
	271	ls: LIMESTONE, light brown gray with sandy calcareous laminae and interbedded sandy Limestone with minor vugs, micritic, massive - medium bedded, becoming interbedded sand calcareous Mudstone with Sand, Limestone, 3" bedding horizontal, very broken, gray to gray brown, soft to average.	ls						Rec 100% RQD 66%
	272								
475	273								
	274	mdst: MUDSTONE, very sandy calcareous, red brown with convoluted white calcite laminae, broken to massive, hard to average with minor fractures at 10-20 degrees.							
	275		mdst						
	276								
	277	mdst: MUDSTONE, very sandy calcareous, dark red brown with gray- light gray convoluted calcite laminae, average to hard, slightly broken to broken, fractures at 15-25 degrees, minor Iron staining on surfaces. Less sandy at 281'.							Rec 94% RQD 58%
470	278								
	279		mdst						
	280								
	281								
	282								Bottom of borehole at 282'.