HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G24

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 10 of 11 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 counts (g)	Remarks (h)
	82								
	83								
660	84								
	85	cl: Stiff, damp CLAY, some Silt, slight to no plasticity, trace fine Sand, shaley texture, little fine to medium, angular mudstone Gravel, moderate reddish brown to pale yellowish orange.	cl		Organic Vapor = 0.0ppm	Box 18 of 19 (85.0 to 90.0' bgs)			Rec 3.0'/3.0' (85-88' bgs)
	86								
	87								
	88								Rec 7.0'/7.0' (88-95' bgs)
655	89								
	90	cl: Stiff, damp CLAY, some Silt, slight to no plasticity, trace fine Sand, shaley texture, little fine to medium, angular mudstone Gravel, moderate reddish brown to pale yellowish orange.			Organic Vapor = 0.0ppm	Box 19 of 19 (90.0 to 95.0' bgs)			
	91								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G24

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 11 of 11 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 counts (g)	Remarks (h)
650	92		CL						Bottom of borehole at 95' bgs
	93								
	94								
	95								

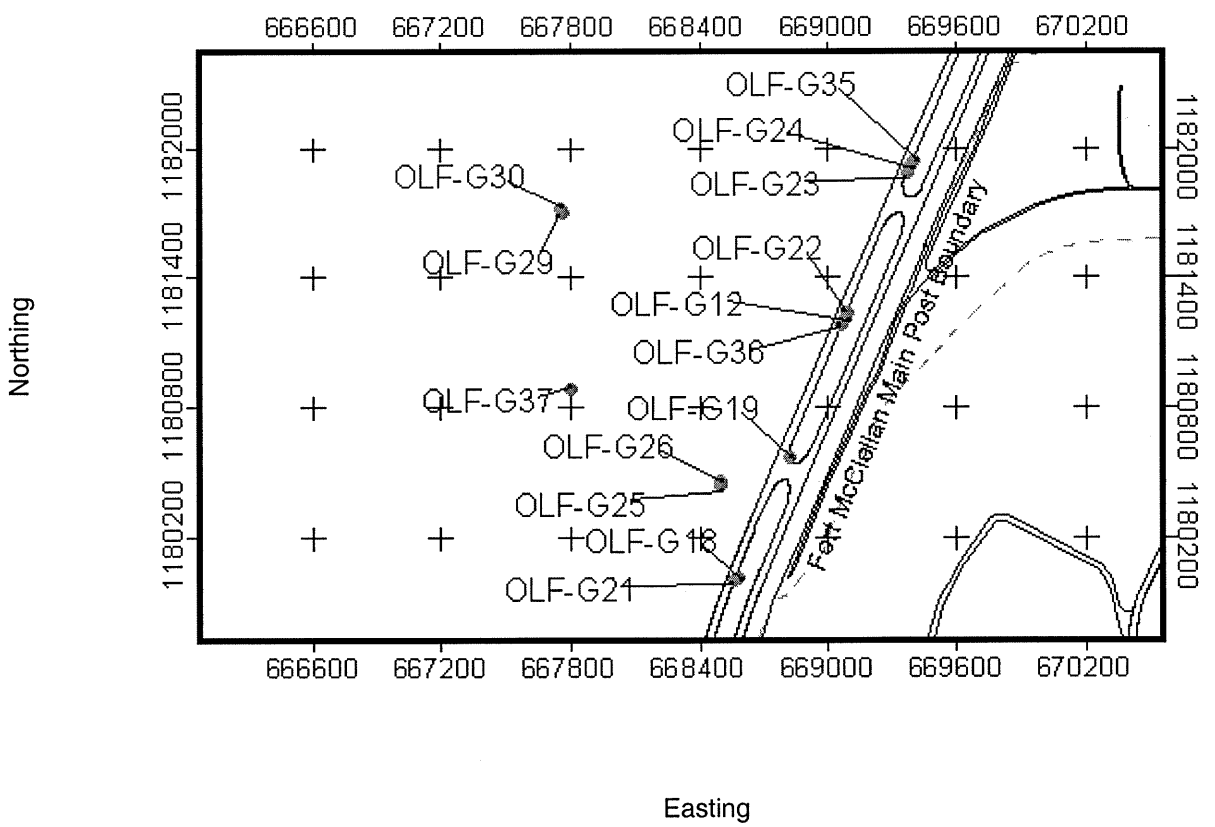
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** OLF-G25
1. Company name: **Shaw Environmental, Inc.**	2. Drill Subcontractor: Boart Longyear	Sheet 1 of 19 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Kevin Smith/Mike Mueller	6. Mfr. designation of drill: GP24-300RS/Topkick D-120 Drill Rig
7. Sizes and types of drilling and sampling equipment: RS - 6" Sonic Core Barrel, 7 7/8" Sonic Bit 5' PQ3 Wireline Core Barrel	8. Hole location: Landfill #3, Parcel 80 9. Surface elevation (feet above mean sea level): 745.17 10. Date started: 06/18/01 — 11. Date completed: 07/27/01
12. Overburden thickness (feet bgs): 115	15. Depth groundwater encountered (feet bgs): 70
13. Depth drilled into rock (feet bgs): 60.5	16. Depth to water and elapsed time after drilling completed (feet bgs): 66.2 after 3 days
14. Total depth of hole (feet bgs): 175.5	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: 10		
	NA	NA	NA			
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
	NA	NA	NA	NA	NA	45.6'
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	NA	4" Permanent	NA	W. Cooper/D. Mayton/J. Dendy		

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 2 of 19 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 counts (g)	Remarks (h)
745	0	ml: Very soft, wet SILT, trace medium angular Gravel in top 2', trace Clay, trace fine Sand, brown.	ml		Organic Vapor = 14.9 ppm				Rec 5.0'/5.0' (0-5' bgs) Sonic - Boart Longyear - 6/18/01
740	5	ml: Very soft, wet SILT, trace Clay, trace fine Sand, brown.	ml		Organic Vapor = 14.2 ppm				Rec 5.0'/5.0' (5-10' bgs)
	6	cl: Moderately stiff, moist CLAY, trace fine Sand, trace to little Silt, mottled yellowish brown to light gray.	cl						
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 3 of 19 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 counts (g)	Remarks (h)
735		cl: Moderately stiff, moist CLAY, trace fine Sand, trace to little Silt, mottled yellowish brown to light gray.			Organic Vapor = 15.7 ppm				Rec 5.0'/5.0' (10-15' bgs)
	11		cl						
	12	cl: Stiff, moist CLAY, trace Silt, trace fine Sand, mottled weak red, dark yellowish brown to light gray.							
	13		cl						
	14								
	15								
730		cl: Stiff, moist CLAY, trace Silt, trace fine Sand, mottled weak red, dark yellowish brown to light gray.	cl		Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (15-20' bgs)
	16	cl: Moderately stiff, dry CLAY, trace Silt, trace fine Sand, pale red.							
	17								
	18		cl						
	19								
	20								
725		cl: Moderately stiff, dry CLAY, trace Silt, trace			Organic				Rec 5.0'/5.0' (20-25' bgs)

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 4 of 19 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 counts (g)	Remarks (h)
		fine Sand, pale red.	cl		Vapor = 0.0ppm				
	21	cl: Moderately stiff, damp CLAY, little Silt, slight plasticity, trace fine Sand, trace fine subrounded to subangular Gravel, pale red.							
	22								
	23		cl						
	24								
720	25	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, slight shaley texture with possible relict bedding, pale red.			Organic Vapor = 0.0ppm				Rec 3.0'/5.0' (25-30' bgs)
	26		cl						
	27								
	28	NA: No recovery.							
	29		NA						
715	30	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, slight shaley texture with possible relict			Organic Vapor				Rec 5.0'/5.0' (30-35' bgs)

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 5 of 19 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 counts (g)	Remarks (h)
		bedding at 5 degree angle, pale red.			= 0.0ppm				
	31								
	32		cl						
	33								
	34								
710	35	cl: Moderately stiff, dry CLAY, trace to little Silt, trace fine Sand, slight shaley texture with possible relict bedding at 5 degrees, pale red to weak red.			Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (35-40' bgs)
	36								
	37		cl						
	38								
	39								
705	40	cl: Moderately stiff, dry CLAY, trace to little Silt, trace fine Sand, slight shaley texture with possible relict bedding, pale red to weak red.			Organic Vapor =				Rec 5.0'/5.0' (40-45' bgs)

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 6 of 19 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 counts (g)	Remarks (h)
	41				0.0ppm				
	42								
	43		cl						
	44								
700	45	cl: Moderately stiff, dry CLAY, trace to little Silt grading to trace Silt with depth, trace fine Sand, relict bedding at 5-10 degrees, shaley texture, pale red to weak red.			Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (45-50' bgs)
	46								
	47		cl						
	48								
	49								
695	50	cl: Moderately stiff, dry CLAY, trace to little Silt grading to trace Silt with depth, trace fine Sand, relict bedding at 5-10 degrees, shaley texture, pale red to weak red.			Organic Vapor = 0.0ppm				Rec 2.0'/2.0' (50-52' bgs)

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 7 of 19 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 counts (g)	Remarks (h)
	51		cl						
	52	cl: Moderately stiff, dry CLAY, trace to little Silt grading to trace Silt with depth, trace fine Sand, relict bedding at 5-10 degrees, shaley texture, pale red to weak red.			Organic Vapor = 0.0ppm				Rec 3.0'/3.0' (52-55' bgs)
	53								
	54		cl						
690	55	cl: Moderately stiff, damp CLAY, trace Silt, trace fine Sand, shaley texture, weathered mudstone Gravel, iron staining from 57' to 59', relict bedding at 5-10 degrees, weak red to pale red.			Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (55-60' bgs)
	56								
	57		cl						
	58								
	59								
685	60	cl: Moderately stiff, damp CLAY, trace Silt, trace fine Sand, shaley texture, weathered mudstone Gravel, relict bedding at 5-10 degrees, weak red to pale red.			Organic Vapor = 1.6ppm				Rec 5.0'/5.0' (60-65' bgs)

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 8 of 19 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 counts (g)	Remarks (h)
	61		cl						
	62	mdst: MUDSTONE, moderately hard, to highly weathered Silt and Clay, shaley texture, relict bedding at 5-10 degrees, weak red to pale yellowish orange.							
	63		mdst						
	64								
680	65	mdst: MUDSTONE, moderately hard, to highly weathered Silt and Clay, shaley texture, relict bedding at 5-10 degrees, weak red to pale yellowish orange.			Organic Vapor = 0.0ppm				Rec 5.0'/10.0' (65-75' bgs)
	66								
	67		mdst						
	68								
	69								
675	70	NA: No recovery.							Groundwater encountered at ~70' bgs
	71								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 9 of 19 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 counts (g)	Remarks (h)
	71								
	72		NA						
	73								
	74								
670	75	mdst: MUDSTONE, moderately hard, to highly weathered Silt and Clay, shaley texture, relict bedding at 5-10 degrees, weak red to pale yellowish orange.			Organic Vapor = 0.3ppm				Rec 8.0'/8.0' (75-83' bgs)
	76								
	77								
	78								
	79		mdst						
665	80								
	81								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 10 of 19 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 counts (g)	Remarks (h)
	82								
	83	NA: No recovery.							Rec 0.0'/2.0' (83-85' bgs)
	84		NA						
	85	mdst: MUDSTONE, moderately hard, to highly weathered Silt and Clay, shaley texture, relict bedding at 5-10 degrees, weak red to pale yellowish orange.			Organic Vapor = 0.0ppm				Rec 10.0'/10.0' (85-95' bgs)
660	86								
	87								
	88								
	89								
	90		mdst						
655	91								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 11 of 19 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 counts (g)	Remarks (h)
	92								
	93								
	94								
650	95	mdst: MUDSTONE, moderately hard, to highly weathered Silt and Clay, shaley texture, relict bedding at 5-10 degrees, weak red to pale yellowish orange.	mdst		Organic Vapor = 0.0ppm				Rec 8.0'/8.0' (95-103' bgs)
	96								
	97								
	98								
	99								
645	100								
	101								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 12 of 19 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 counts (g)	Remarks (h)
	102								102
	103	mdst: MUDSTONE, moderately hard, to highly weathered Silt and Clay, shaley texture, relict bedding at 5-10 degrees, weak red to pale yellowish orange.	mdst		Organic Vapor = 0.0ppm				Rec 4.0'/4.0' (103-107' bgs) 103
	104	mdst: MUDSTONE, moderately hard, moderately weathered, highly fractured, weathered to Clay and Silt, weak red.							104
640	105		mdst						105
	106								106
	107	NA: No recovery.	NA						8" casing set at 107' bgs Rec 0.0'/3.0' (107-110' bgs) 107
	108								108
	109								109
635	110	mdst: MUDSTONE, moderately hard, highly weathered to Silt and Clay, relict bedding at 5-10 degrees, brownish yellow grading to weak red.			Organic Vapor = 0.0ppm				Rec 3.0'/5.0' (110-115' bgs) 110
	111								111

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 13 of 19 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 counts (g)	Remarks (h)
	112		mdst						
	113	NA: No recovery.							
	114		NA						
630	115	NA: No sample collected for lithologic description.							Stopped Rotosonic drilling at 115' bgs, begin coring.
	116								
	117		NA						
	118								
	119								Bottom tagged at 119.8' bgs after flushing hole
625	120	mdst-cl: MUDSTONE interbedded with CLAY, moderately hard, moderately weathered, fractured, dark reddish brown to dusky red, Clay zones have some angular, coarse mudstone Gravel and fine to coarse Sand.	mdst-cl		Organic Vapor = 0.0ppm	Box 1 of 10 (119.8 to 130.0' bgs)			Run 1 (119.8-128.8' bgs) Ran 9.0' Rec 1.4' Loss 7.6' UL 7.6' RQD 0% Water used 100 gallons, rec>95%
	121								
		NA: No recovery.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 14 of 19 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 counts (g)	Remarks (h)
	122								
	123								
	124		NA						
620	125								
	126								
	127								
	128								
	129	sp: Brownish red, fine to coarse SAND, some angular coarse mudstone Gravel and Cobble, dark reddish brown to dusky red.	sp					CD 128.8'	Run 2 (128.8-130.0' bgs) Ran 1.2' Rec 1.1' Loss 0.1' UL 0.0' RQD 0% Water lost 10 gallons
615	130	cl: Dark brownish red, soft CLAY, some fine Sand, little Silt, trace fine to coarse mudstone Gravel.	cl		Organic Vapor = 0.0ppm	Box 2 of 10 (130.0 to 135.0' bgs)		CD 129.9'	Resume collecting core with 6" Sonic Core Barrel at 130' bgs Run 3 (130.0-135.0' bgs) Ran 5.0' Rec 5.1' Gain 0.1'
	131								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 15 of 19 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 counts (g)	Remarks (h)
	132								
	133	mdst: MUDSTONE, soft to moderately hard, highly weathered, dark reddish brown.	mdst						
	134	cl: Dark reddish brown, soft CLAY, some Silt, trace fine Sand.	cl						
610	135	cl: Dark reddish brown, stiff CLAY, trace Silt, trace fine to coarse mudstone Gravel.	cl		Organic Vapor = 0.0ppm	Box 3 of 10 (135.0 to 140.0' bgs)			Run 4 (135.0-142.0' bgs) Ran 7.0' Rec 6.5' Loss 0.5' RQD 0%
	136								
	137								
	138	cl: Dark reddish brown, stiff CLAY, trace Silt, trace fine to coarse mudstone Gravel.							
	139		cl						
605	140	mdst: MUDSTONE, soft, highly weathered, dark reddish brown.	mdst			Box 4 of 10 (140.0 to 145.5' bgs)			
	141								
	142	NA: No recovery.	NA						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 16 of 19 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 counts (g)	Remarks (h)
		mdst-cl: Dark reddish brown, soft CLAY and MUDSTONE, moderately hard, highly weathered.	mdst-cl		Organic Vapor = 0.0ppm				Run 5 (142.0-152.0' bgs) Ran 10.0' Rec 8.5' Loss 1.5'
	143								143
	144								144
	145								145
600		mdst: MUDSTONE, soft to moderately hard, highly weathered to decomposed, relict bedding is contorted at 149.5'-150.5' interval, dark reddish brown.	mdst			Box 5 of 10 (145.5 to 152.0' bgs)			
	146								146
	147								147
	148								148
	149								149
	150								150
595		NA: No recovery.	NA						
	151								151
	152	gc: Dark reddish brown, very stiff CLAY and			Organic	Box 6			Run 6 (152.0-157.0' bgs) 152

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 17 of 19 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 counts (g)	Remarks (h)
		fine to coarse mudstone GRAVEL, little Silt.			Vapor = 0.0ppm	of 10 (152.0 to 157.0' bgs)			Ran 5.0' Rec 5.0' Loss 0.0'
	153								153
	154		gc						154
590	155								155
	156								156
		mdst: MUDSTONE, moderately hard, moderately weathered, dark reddish brown.	mdst						
	157	gc: Dark reddish brown, soft CLAY and fine to coarse mudstone GRAVEL.			Organic Vapor = 0.0ppm	Box 7 of 10 (157.0 to 162.0' bgs)			Run 7 (157.0-160.0' bgs) Ran 3.0' Rec 3.0' Loss 0.0'
	158		gc						158
	159								159
		mdst: MUDSTONE, moderately hard, moderately weathered, dark reddish brown.	mdst						
	160								160
585		mdst: MUDSTONE, very soft to moderately hard, highly weathered to decomposed relict bedding ~10 degrees, trace Silt seams, dark reddish brown.			Organic Vapor = 0.0ppm				Run 8 (160.0-165.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0'
	161								161
	162					Box 8 of 10			162

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 18 of 19 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 counts (g)	Remarks (h)
	163		mdst			(162.0 to 167.0' bgs)			163
	164								164
580	165	cl: Dark reddish brown, stiff CLAY and fine to coarse gravel size fragments of MUDSTONE, little Silt, trace fine to medium Sand.			Organic Vapor = 0.0ppm				Run 9 (165.0-175.0' bgs) Ran 10.0' Rec 10.0' Loss 0.0' 165
	166								166
	167					Box 9 of 10 (167.0 to 172.0' bgs)			167
	168								168
	169								169
575	170		cl						170
	171								171
	172					Box 10 of 10 (172.0			172

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G25

Project: Fort McClellan | Geologist: W. Cooper/D. Mayton/J. Dendy | Sheet 19 of 19 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 counts (g)	Remarks (h)
						to 175.0' bgs)			
	173								173
	174								174
	175								175
570		NA: No recovery.	NA						Bottom of borehole at 175.5' bgs

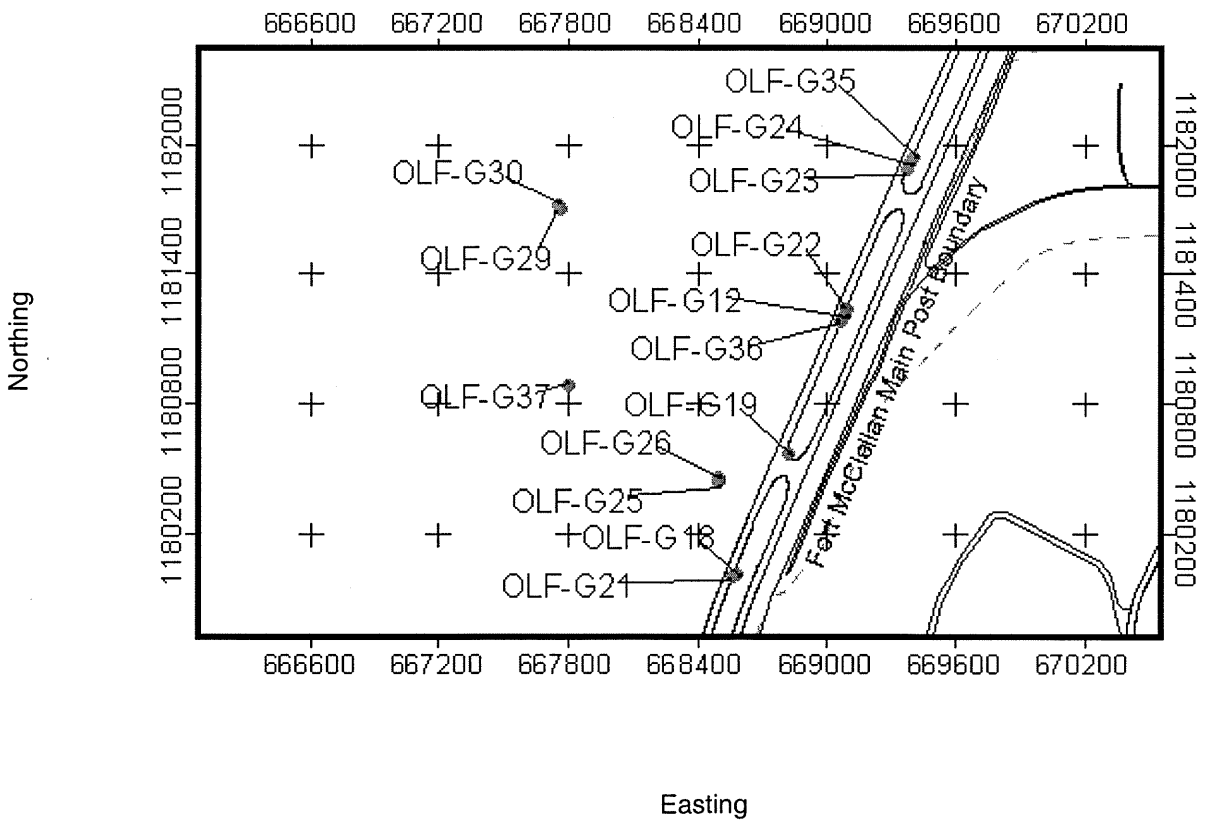
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** OLF-G26
1. Company name: **Shaw Environmental, Inc.**	2. Drill Subcontractor: Boart Longyear	Sheet 1 of 11 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Kevin Smith	6. Mfr. designation of drill: GP24-300RS
7. Sizes and types of drilling and sampling equipment: RS - 4 and 6" Sonic Core Barrel, 7 7/8" Sonic Bit	8. Hole location: Landfill #3, Parcel 80
	9. Surface elevation (feet above mean sea level): 745.16
	10. Date started: 07/12/01 — 11. Date completed: 07/14/01
12. Overburden thickness (feet bgs): >100	15. Depth groundwater encountered (feet bgs): 70
13. Depth drilled into rock (feet bgs): 0	16. Depth to water and elapsed time after drilling completed (feet bgs): 59.97 after 5 days
14. Total depth of hole (feet bgs): 100	17. Other water level measurements (specify): N/A

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: 16		
	NA	NA	NA			
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
	NA	NA	NA	NA	NA	78.4
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	NA	4" Permanent	NA	Dennis Mayton		

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G26

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 2 of 11 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 counts (g)	Remarks (h)
745	0	ml: Very soft, wet SILT, trace medium angular Gravel in top 2', trace Clay, trace fine Sand, brown.	ml		Organic Vapor = 0.0ppm	Box 1 of 16 (0 to 7.6' bgs)			Rec 2.4'/5.0' (0-5' bgs) Sonic - Boart Longyear - 7/12/01 Lithologic description from adjacent monitoring well OLF-G25.
	1								
	2								
	3								
	4								
740	5	ml: Very soft, wet SILT, trace Clay, trace fine Sand, brown.	ml		Organic Vapor = 0.0ppm				Rec 5.0'/8.0' (5-13' bgs)
	6	cl: Moderately stiff, moist CLAY, trace fine Sand, trace to little Silt, mottled yellowish brown to light gray.	cl			Box 2 of 19 (7.6 to 15.0' bgs)			
	7								
	8								
	9								
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G26

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 3 of 11 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 counts (g)	Remarks (h)
735		cl: Moderately stiff, moist CLAY, trace fine Sand, trace to little Silt, mottled yellowish brown to light gray.							
	11		cl						
	12	cl: Stiff, moist CLAY, trace Silt, trace fine Sand, mottled weak red, dark yellowish brown to light gray.							
	13				Organic Vapor = 0.0ppm				Rec 2.0'/2.0' (13-15' bgs)
			cl						
	14								
									Changed to 6" Sonic core barrel.
	15								Rec 10.0'/10.0' (15-25' bgs)
730		cl: Stiff, moist CLAY, trace Silt, trace fine Sand, mottled weak red, dark yellowish brown to light gray.			Organic Vapor = 0.0ppm	Box 3 of 16 (15.0 to 20.0' bgs)			
			cl						
	16	cl: Moderately stiff, dry CLAY, trace Silt, trace fine Sand, pale red.							
	17								
	18		cl						
	19								
	20	cl: Moderately stiff, dry CLAY, trace Silt, trace				Box 4			
725									

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G26

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 4 of 11 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 counts (g)	Remarks (h)
		fine Sand, pale red.	cl			of 16 (20.0 to 25.0' bgs)			
	21	cl: Moderately stiff, damp CLAY, little Silt, slight plasticity, trace fine Sand, trace fine subrounded to subangular Gravel, pale red.							
	22								
	23		cl						
	24								
	25	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, slight shaley texture with possible relict bedding, pale red.			Organic Vapor = 0.0ppm	Box 5 of 16 (25.0 to 30.0' bgs)			Rec 9.0'/9.0' (25-34' bgs)
720	26		cl						
	27								
	28	NA: No recovery.							
	29		NA						
	30	cl: Stiff, dry CLAY, trace Silt, trace fine Sand, slight shaley texture with possible relict				Box 6 of 16			
715									

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G26

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 5 of 11 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 counts (g)	Remarks (h)
		bedding at 5 degrees, pale red.				(30.0 to 35.0' bgs)			
	31								
	32								
	33		cl						
	34				Organic Vapor = 0.0ppm				Rec 6.0'/6.0' (34-40' bgs)
	35								
710		cl: Moderately stiff, dry CLAY, trace to little Silt, trace fine Sand, slight shaley texture with possible relict bedding at 5 degrees, pale red to weak red.				Box 7 of 16 (35.0 to 40.0' bgs)			
	36								
	37		cl						
	38								
	39								
	40								
705		cl: Moderately stiff, dry CLAY, trace to little Silt, trace fine Sand, slight shaley texture with possible relict bedding, pale red to weak red.			Organic Vapor =	Box 8 of 16 (40.0 to			Rec 6.0'/6.0' (40-46' bgs)

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G26

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 6 of 11 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 counts (g)	Remarks (h)
	41				0.0ppm	45.0' bgs)			
	42		cl						
	43								
	44								
700	45	cl: Moderately stiff, dry CLAY, trace to little Silt grading to trace Silt with depth, trace fine Sand, relict bedding at 5-10 degrees, shaley texture, pale red to weak red.				Box 9 of 16 (45.0 to 50.0' bgs)			
	46				Organic Vapor = 0.0ppm				Rec 9.0'/9.0' (46-55' bgs)
	47		cl						
	48								
	49								
695	50	cl: Moderately stiff, dry CLAY, trace to little Silt grading to trace Silt with depth, trace fine Sand, relict bedding at 5-10 degrees, shaley texture, pale red to weak red.				Box 10 of 16 (50.0 to 55.0'			

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G26

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 7 of 11 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 counts (g)	Remarks (h)
						bgs)			
	51		cl						
	52	cl: Moderately stiff, dry CLAY, trace to little Silt grading to trace Silt with depth, trace fine Sand, relict bedding at 5-10 degrees, shaley texture, pale red to weak red.							
	53		cl						
	54								
690	55	cl: Moderately stiff, damp CLAY, trace Silt, trace fine Sand, shaley texture, weathered mudstone Gravel, iron staining from 57' to 59', relict bedding at 5-10 degrees, weak red to pale red.			Organic Vapor = 0.0ppm	Box 11 of 16 (55.0 to 60.0' bgs)			Rec 5.0'/10.0' (55-65' bgs)
	56								
	57		cl						
	58								
	59								
685	60	cl: Moderately stiff, damp CLAY, trace Silt, trace fine Sand, shaley texture, weathered mudstone Gravel, relict bedding at 5-10 degrees, weak red to pale red.				Box 12 of 1 (60.0 to 70.0' bgs)			

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G26

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 8 of 11 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 counts (g)	Remarks (h)
	61		cl						61
	62	mdst: MUDSTONE, moderately hard, to highly weathered Silt and Clay, shaley texture, relict bedding at 5-10 degrees, weak red to pale yellowish orange.							62
	63		mdst						63
	64								64
680	65	mdst: MUDSTONE, moderately hard, to highly weathered Silt and Clay, shaley texture, relict bedding at 5-10 degrees, weak red to pale yellowish orange.			Organic Vapor = 0.0ppm				Rec 10.0'/10.0' (65-75' bgs) 65
	66								66
	67		mdst						67
	68								68
	69								69
675	70	NA: No recovery.				Box 13 of 16 (70.0 to 75.0' bgs)			Groundwater encountered at ~70' bgs 70
	71								71

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G26

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 9 of 11 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 counts (g)	Remarks (h)
	71								
	72		NA						
	73								
	74								
670	75	mdst: MUDSTONE, moderately hard, to highly weathered Silt and Clay, shaley texture, relict bedding at 5-10 degrees, weak red to pale yellowish orange.			Organic Vapor = 0.0ppm	Box 14 of 16 (75.0 to 85.0' bgs)			Rec 5.0'/10.0' (75-85' bgs)
	76								
	77								
	78								
	79		mdst						
665	80								
	81								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G26

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 10 of 11 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 counts (g)	Remarks (h)
	82								
	83	NA: No recovery.							
	84		NA						
	85	mdst: MUDSTONE, moderately hard, to highly weathered Silt and Clay, shaley texture, relict bedding at 5-10 degrees, weak red to pale yellowish orange.			Organic Vapor = 0.0ppm	Box 15 of 16 (85.0 to 90.0' bgs)			Rec 9.0'/9.0' (85-94' bgs)
660									
	86								
	87								
	88								
	89								
	90		mdst			Box 16 of 16 (90.0 to 100.0' bgs)			
655									
	91								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G26

Project: Fort McClellan | Geologist: Dennis Mayton | Sheet 11 of 11 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 counts (g)	Remarks (h)
650	92								
	93								
	94				Organic Vapor = 0.0ppm				Rec 0.0'/6.0' (94-100' bgs)
	95	mdst: MUDSTONE, moderately hard, to highly weathered Silt and Clay, shaley texture, relict bedding at 5-10 degrees, weak red to pale yellowish orange.	mdst						
	96								
	97								
	98								
	99								Bottom of borehole at 100.0' bgs
	100								

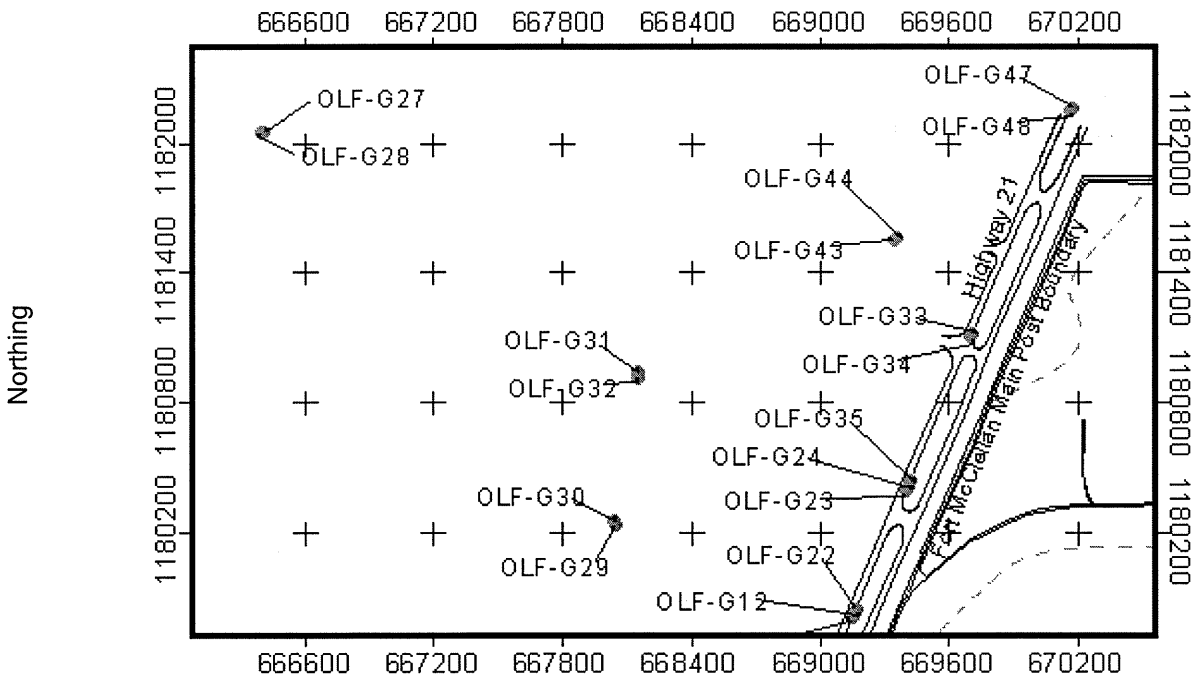
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** OLF-G27
1. Company name: **Shaw Environmental, Inc.**	2. Drill Subcontractor: Boart Longyear	Sheet 1 of 31 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Kevin Smith	6. Mfr. designation of drill: GP24-300RS/Topkick D-120
7. Sizes and types of drilling and sampling equipment: RS - 6" Sonic Core Barrel, 7 7/8" Sonic Bit 5' PQ3 Wireline Core Barrel	8. Hole location: Landfill #3, Parcel 80
	9. Surface elevation (feet above mean sea level): 779.13
	10. Date started: 05/02/01 — 11. Date completed: 05/23/01
12. Overburden thickness (feet bgs): 47	15. Depth groundwater encountered (feet bgs): 70
13. Depth drilled into rock (feet bgs): 253	16. Depth to water and elapsed time after drilling completed (feet bgs): NA
14. Total depth of hole (feet bgs): 300	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: 24		
	NA	NA	NA			
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
	NA	NA	NA	NA	NA	216.6'
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	NA	4" Permanent	NA	Wally Cooper/Dennis Mayton		

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 2 of 31 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 counts (g)	Remarks (h)
	0	cl: Moist, light purple to reddish brown, soft CLAY, some Silt.	cl		Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (0-5' bgs) Sonic - Boart Longyear - 5/2/01
	1								
	2								
	3								
775	4								
	5	ml: Light brown SILT, some Clay.	ml		Organic Vapor = 0.0ppm				Rec 5.0'/5.0' (5-10' bgs)
	6	cl: Light purple to yellowish orange mottled medium stiff CLAY, little Silt, relict bedding noted from 7'-8.5'.	cl						
	7								
	8								
770	9								
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 3 of 31 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 counts (g)	Remarks (h)
	11	cl: Dry, light purple with trace light brown, stiff CLAY, some Silt.			Organic Vapor = 0.0ppm				Rec 3.0'/4.0' (10-14' bgs)
	12		cl						
	13	NA: No recovery.	NA						
765	14	cl: Dry, light purple, stiff CLAY, some Silt.	cl		Organic Vapor = 0.0ppm				Rec 1.0'/1.0' (14-15' bgs)
	15	cl: Light purple, stiff CLAY, little Silt.			Organic Vapor = 0.0ppm				Rec 6.0'/10.0' (15-25' bgs)
	16								
	17								
	18		cl						
760	19								
	20								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 4 of 31 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 counts (g)	Remarks (h)
	21	NA: No recovery.							
	22								
	23		NA						
755	24								
	25	cl: Light purple to light brown, stiff CLAY, little Silt, little fine to coarse angular mudstone Gravel, trace fine Sand.			Organic Vapor = 0.0ppm				Rec 10.0'/10.0' (25-35' bgs)
	26								
	27								
	28								
750	29								
	30		cl						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 5 of 31 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 counts (g)	Remarks (h)
	31								
	32								
	33								
745	34								
	35	cl: Reddish brown, stiff CLAY, little Silt, little angular fine to coarse mudstone Gravel.	cl		Organic Vapor = 0.0ppm				Rec 7.0'/11.0' (35-46' bgs)
	36								
	37								
	38								
740	39								
	40								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 6 of 31 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 counts (g)	Remarks (h)
	41								
	42	NA: No recovery.							
	43								
735	44		NA						
	45								
	46	cl: Light brown, stiff CLAY, some fine to coarse Gravel, angular Shale fragments.			Organic Vapor = 0.0ppm				Rec 4.0'/4.0' (46-50' bgs)
	47		cl						
	48	mdst: Black MUDSTONE, moderately hard, moderately weathered.							
			mdst						
730	49	cl: Light brown, stiff CLAY, trace Silt.							
			cl						
	50	calc mdst: Calcareous MUDSTONE, moderately hard to hard, slightly weathered to moderately weathered, highly broken, grayish black, slightly shaley, powder reacts with 10%			Organic Vapor = 0.0ppm				Rec 2.0'/2.0' (50-52' bgs)

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 7 of 31 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 counts (g)	Remarks (h)
		HCl.							
	51		calc-mdst						
	52	dol: DOLOMITE, hard, highly broken up, interbedded medium gray and grayish black.			Organic Vapor = 0.0ppm				Rec 2.0'/8.0' (52-60' bgs)
	53		dol						
725	54	NA: No recovery.							
	55								
	56								
	57		NA						
	58								
720	59								
	60	dol-mdst: DOLOMITE transitioning to MUDSTONE, hard, slightly weathered, greenish gray to grayish red.			Organic Vapor = 0.0ppm				Rec 2.0'/4.0' (60-64' bgs)

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 8 of 31 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 counts (g)	Remarks (h)
	61		dol-mdst						61
	62	NA: No recovery.							62
	63		NA						63
715	64	calc mdst: Calcareous MUDSTONE, hard, moderately weathered, highly broken up, interbedded grayish red, dark yellowish orange and dark gray.	calc mdst		Organic Vapor = 0.0ppm	Box 1 of 24 (64.0 to 74.0' bgs)			Run 1 (64.0-65.0' bgs) Ran 1.0' Rec 1.0' Loss 0.0' UL 0.0' RQD 0% Water used 140 gal, rec 0% 64
	65	mdst: MUDSTONE, hard, moderately weathered, highly fractured at 10 degrees from 65.0' to 67.0', slightly fractured at 10 degrees from 67.0' to 69.0', fractures infilled with calcite (reacts with acid), interbedded blackish red, grayish red, to dark yellowish orange.						CD 65.0'	Run 2 (65.0-69.0' bgs) Ran 4.0' Rec 3.8' Loss 0.2' UL 0.2' RQD 37.5% Water used 630 gal, rec 100% 65
	66								66
	67		mdst						67
	68								68
	69	NA: No recovery.	NA						69
710		mdst: MUDSTONE, hard, moderately weathered, highly fractured at 10 degrees, reacts with 10% HCl, interbedded blackish red, grayish red and dark yellowish orange.			Organic Vapor = 0.0ppm			CD 69.0'	Run 3 (69.0-72.5' bgs) Ran 3.5' Rec 3.2' Loss 0.3' UL 0.3' RQD 19% Water used 385 gal, rec 0%
	70		mdst						Groundwater encountered at 70' bgs 70
	71								71

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 9 of 31 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 counts (g)	Remarks (h)
	71								
	72	cl: Reddish brown, soft CLAY, little Silt.	cl						
		mdst: MUDSTONE, hard, moderately weathered, highly fractured at 10 degrees, calcite veins react with 10% HCl, interbedded blackish red, grayish red, dark yellowish orange.	mdst		Organic Vapor = 0.0ppm			CD 72.5'	Run 4 (72.5-74.0' bgs) Ran 1.5' Rec 1.5' Loss 0.0' UL 0.0' RQD 30% Water used 175 gal, rec 0%
	73	NA: No recovery.	NA						
		mdst: MUDSTONE, hard, moderately weathered, highly fractured at 10 degrees, calcite veins reacts with 10% HCl, interbedded blackish red, grayish red, dark yellowish orange.	mdst						
705	74	cl: Reddish brown, soft CLAY.	cl		Organic Vapor = 0.0ppm	Box 2 of 24 (74.0 to 84.0' bgs)		CD 74.0'	Run 5 (74.0-74.5' bgs) Ran 0.5' Rec 0.4' Loss 0.1' UL 0.1' RQD 0% Water used 70 gal, rec 0%
		mdst: MUDSTONE, hard, moderately weathered, highly fractured, interbedded blackish red, grayish red, dark yellowish orange.	mdst					CD 74.5'	Run 6 (74.5-79.0' bgs) Ran 4.5' Rec 4.4' Loss 0.1' UL 0.1' RQD 25.5% Water used 315 gal, rec 100%
	75	NA: No recovery.	NA						
		sltst: SILTSTONE, hard, highly weathered, very fine grained, highly broken and fractured, dark yellowish orange to moderate yellowish brown.	sltst						
	76	mdst-sltst: Interbedded CALCAREOUS MUDSTONE and SILTSTONE. Mudstone: hard, moderately weathered, highly fractured from 75.7' to 76.9' with nearly horizontal and vertical fracturing, blackish red, grayish red, dark yellowish orange. Siltstone: hard, highly weathered, very fine grained, highly broken and fractured, dark yellowish orange to moderate yellowish brown.	mdst		Organic Vapor = 0.0ppm				
	77								
	78								
		sltst: SILTSTONE.	sltst						
700	79	NA: No recovery.	NA		Organic Vapor = 0.0ppm			CD 79.0'	Run 7 (79.0-84.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 27% Water used 252 gal, rec 100%
		mdst-sltst: Interbedded MUDSTONE and SILTSTONE, hard, moderately weathered with fracture zone from 79.0' to 81.0', highly broken with vertical fractures. Fracture zone from 82.5' to 84.0' with slightly interbedded blackish red fissile Shale, calcite veins throughout core. Mudstone: blackish red, grayish red, dark yellowish orange. Siltstone: dark yellowish orange to moderate yellowish brown.							
	80								
	81								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 10 of 31 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 counts (g)	Remarks (h)
	82		mdst-sltst						82
	83								83
695	84	mdst: MUDSTONE, hard, slightly weathered with horizontal fractures, calcite veins throughout, blackish red to grayish red.				Box 3 of 24 (84.0 to 94.0' bgs)		CD 84.0'	84 Run 8 (84.0-85.7' bgs) Ran 1.7' Rec 1.7' Loss 0.0' UL 0.0' RQD 65% Water used 420 gal, rec 52%
	85		mdst						85
	86	mdst: MUDSTONE, hard, slightly weathered with horizontal fractures, few calcite veins, blackish red to grayish red.						CD 85.7'	86 Run 9 (85.7-89.0' bgs) Ran 3.3' Rec 3.3' Loss 0.0' UL 0.0' RQD 45% Water used 350 gal, rec 0%
	87		mdst						87
	88	sltst: SILTSTONE, hard, slightly weathered, dark yellowish orange to moderate yellowish brown.	sltst						88
	89	mdst: MUDSTONE, hard, slightly weathered with horizontal fractures, few calcite veins, blackish red to grayish red.	mdst						89
690		sltst: SILTSTONE, hard, highly weathered, dark yellowish orange to moderate yellowish brown.	sltst					CD 89.0'	Run 10 (89.0-94.0' bgs) Ran 5.0' Rec 4.1' Loss 0.9' UL 0.9' RQD 50% Water used 420 gal, rec 52%
	90	NA: No recovery.	NA						90
	91	mdst: MUDSTONE, hard, moderately weathered, vertical and horizontal fractures, calcite veins, blackish red to grayish red.							91

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 11 of 31 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 counts (g)	Remarks (h)
	92		mdst						
	93	dol-ls: DOLOMITIC LIMESTONE, very hard, slightly weathered, calcite infilled fractures, minor light gray, calcareous laminae.	dol-ls						
		NA: No recovery.	NA						
685	94	mdst: MUDSTONE, highly weathered, clay infilled fractures, grayish red.	mdst			Box 4 of 24 (94.0 to 103.6' bgs)		CD 94.0'	Run 11 (94.0-99.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 84% Water used 455 gal, rec 22%
	95	dol-ls: DOLOMITIC LIMESTONE, hard, massive with few horizontal calcite infilled fractures, light gray.							
	96								
	97		dol-ls						
	98								
680	99	dol-ls: DOLOMITIC LIMESTONE, hard, massive, few horizontal calcite infilled fractures and weathered fractures at 100.6 and 102.4', light gray.						CD 99.0'	Run 12 (99.0-104.0' bgs) Ran 5.0' Rec 3.7' Loss 1.3' UL 1.3' RQD 60% Water used 315 gal, rec 0%
	100								
	101		dol-ls						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 12 of 31 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 counts (g)	Remarks (h)
	102								
	103	NA: VOID.	NA			Box 5 of 24 (103.6 to 114.0' bgs)			
675	104	dol-ls: DOLOMITIC LIMESTONE, hard, massive, highly weathered, horizontal fracture at 106.2'-106.5', few horizontal calcite infilled fractures, light gray to grayish red.						CD 104.0'	Run 13 (104.0-108.0' bgs) Ran 4.0' Rec 4.0' Loss 0.0' UL 0.0' RQD 90% Water used 280 gal, rec 0%
	105								
	106		dol-ls						
	107								
	108	dol-ls: DOLOMITIC LIMESTONE, hard, slightly weathered, crystalline, massive, strong reaction with 10% HCl, horizontal fracture at 109', 109.4' and 113.2', moderately weathered along fracture faces, light gray with black banding.						CD 108.0'	Run 14 (108.0-114.0' bgs) Ran 6.0' Rec 6.0' Loss 0.0' UL 0.0' RQD 75% Water used 385 gal, rec 0%
670	109								
	110								
	111		dol-ls						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 13 of 31 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 counts (g)	Remarks (h)
	112								112
	113								113
665	114	dol-ls: DOLOMITIC LIMESTONE, hard, moderately weathered, crystalline, multiple fractures from horizontal to 60 degrees, highly weathered fracture at 118.0' with iron staining along fracture face, light gray to black.	dol-ls			Box 6 of 24 (144.0 to 124.0' bgs)		CD 114.0'	Run 15 (114.0-119.0' bgs) Ran 5.0' Rec 4.0' Loss 1.0' UL 1.0' RQD 56% Water used 210 gal, rec 0%
	115								115
	116								116
	117								117
	118	NA: No recovery.	NA						118
660	119	dol-ls: DOLOMITIC LIMESTONE, hard, moderately weathered, crystalline, highly weathered horizontal fracture at 119.9', 120.4', and 120.9', some iron staining present in fracture faces, calcite infilled fractures at 60 degrees from 121.0'-122.0', light gray to black.	dol-ls					CD 119.0'	Run 16 (119.0-122.0' bgs) Ran 3.0' Rec 3.0' Loss 0.0' UL 0.0' RQD 73% Water used 140 gal, rec 0%
	120								120
	121								121

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 14 of 31 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 counts (g)	Remarks (h)
	122	dol-ls: DOLOMITIC LIMESTONE, hard, moderately weathered, crystalline, highly weathered horizontal fracture at 123.2', near vertical calcite infilled fractures throughout, light gray .	dol-ls					CD 122.0'	Run 17 (122.0-124.0' bgs) Ran 2.0' Rec 1.6' Loss 0.4' UL 0.4' RQD 60% Water used 350 gal, rec 0%
	123								
		NA: No recovery.	NA						
655	124	mdst-sltst: Interbedded MUDSTONE and SILTSTONE, hard, moderately weathered, highly fractured, reddish black to grayish red.	mdst-sltst			Box 7 of 24 (124.0 to 133.5' bgs)		CD 124.0'	Run 18 (124.0-128.0' bgs) Ran 4.0' Rec 2.4' Loss 1.6' UL 1.6' RQD 0% Water used 395 gal, rec 63%
	125								
	126								
		NA: No recovery.	NA						
	127								
	128	mdst-sltst: Interbedded MUDSTONE and SILTSTONE, hard, moderately weathered, highly fractured, reddish black to grayish red.	mdst-sltst					CD 128.0'	Run 19 (128.0-129.0' bgs) Ran 1.0' Rec 1.0' Loss 0.0' UL 0.0' RQD 0% Water used 175 gal, rec 0%
650	129	mdst-sltst: Interbedded MUDSTONE and SILTSTONE, hard, moderately weathered, highly fractured, reddish black to grayish red.	mdst-sltst					CD 129.0'	Run 20 (129.0-133.5' bgs) Ran 4.5' Rec 4.5' Loss 0.0' UL 0.0' Water used 770 gal, rec 39%
		dol-ls: DOLOMITIC LIMESTONE, hard, massive, crystalline, weathered horizontal fracture at 133', light gray.							
	130								
	131		dol-ls						

HTRW DRILLING LOG (Continuation Sheet)

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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 counts (g)	Remarks (h)
	132								132
	133								133
645	134	dol-ls: DOLOMITIC LIMESTONE, hard, massive, slightly weathered with horizontal fractures at 133.8', 134.5' and 135.8', small near vertical calcite infilled fractures throughout, light gray.	dol-ls			Box 8 of 24 (133.5 to 144.0' bgs)		CD 133.5'	Run 21 (133.5-144.0' bgs) Ran 10.5 Rec 4.0' Loss 6.5' UL 6.5' RQD 30% Water used 1050 gal, rec 0%
	135								135
	136								136
	137	NA: VOID.							137
	138								138
640	139		NA						139
	140								140
	141								141
	142								142

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 16 of 31 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 counts (g)	Remarks (h)
		dol-ls: DOLOMITIC LIMESTONE, hard, highly weathered, light gray.	dol-ls						
	143	NA: VOID.	NA						143
635	144	NA: VOID.				Box 9 of 24 (144.0 to 154.0' bgs)		CD 144.0'	144 Run 22 (144.0-149.0' bgs) Ran 5.0' Rec 3.3' Loss 1.7' UL 1.7' RQD 42% Water used 280 gal, rec 0%
	145		NA						145
		cl: Light brown, soft CLAY, low plasticity.							
	146		cl						146
	147	dol-ls: DOLOMITIC LIMESTONE, hard, massive, vertical calcite infilled fractures, light gray.							147
	148		dol-ls						148
630	149	dol-ls: DOLOMITIC LIMESTONE, hard, massive, vertical calcite infilled fractures, light gray.						CD 149.0'	149 Run 23 (149.0-154.0' bgs) Ran 5.0' Rec 3.4' Loss 1.6' UL 1.6' RQD 56% Water used 805 gal, rec 0%
			dol-ls						
	150	NA: VOID.							150
	151		NA						151
		dol: DOLOMITE, hard, massive, crystalline, calcite filled veins throughout, few vugs, moderately weathered, medium gray.							
	152		dol						152

HTRW DRILLING LOG (Continuation Sheet)

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Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 17 of 31 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 counts (g)	Remarks (h)
		NA: VOID.	NA						
	153	dol: DOLOMITE, hard, massive, moderately weathered, calcite filled veins, horizontal and 60 degree fractures, medium gray, few vugs.	dol						153
625	154	dol: DOLOMITE, hard, massive, moderately weathered, fractured throughout (10 degrees) with highly weathered 45 degree fracture at 155.3'-155.7', calcite veins throughout, medium gray.				Box 10 of 24 (154.0 to 164.0' bgs)		CD 154.0'	154 Run 24 (154.0-159.0' bgs) Ran 5.0' Rec 4.7' Loss 0.3' UL 0.3' RQD 76% Water used 630 gal, rec 0%
	155								155
	156		dol						156
	157								157
	158								158
		NA: No recovery.	NA						
620	159	dol: DOLOMITE, hard, massive, crystalline, fractured throughout at 10 degrees, highly weathered along fractures from 159.9'-162.1', calcite veins and vugs throughout, medium gray.						CD 159.0'	159 Run 25 (159.0-164.0' bgs) Ran 5.0' Rec 4.8' Loss 0.2' UL 0.2' RQD 52% Water used 735 gal, rec 0%
	160								160
	161		dol						161
	162								162

HTRW DRILLING LOG (Continuation Sheet)

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Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 18 of 31 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 counts (g)	Remarks (h)
	163								
	164	NA: No recovery.	NA						
615		dol: DOLOMITE, hard, massive, crystalline, 45 degree fractures from 164'-166.4', highly weathered along fractures, no fractures from 166.4' to 169', calcite veins throughout, medium gray.				Box 11 of 24 (164.0 to 174.0' bgs)		CD 164.0'	Run 26 (164.0-169.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 72% Water used 630 gal, rec 0%
	165								
	166		dol						
	167								
	168								
	169								
610		dol: DOLOMITE, hard, massive, crystalline, moderately weathered, 10 degree fractures and calcite veins throughout, highly weathered along fracture faces at 169.7'-170.1', medium gray.						CD 169.0'	Run 27 (169.0-174.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 82% Water used 595 gal, rec 0%
	170								
	171		dol						
	172								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 19 of 31 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 counts (g)	Remarks (h)
	173								
605	174	dol: DOLOMITE, hard, massive, crystalline, moderately weathered, highly fractured throughout at 45 and 60 degrees, calcite veins throughout, medium gray.	dol			Box 12 of 24 (174.0 to 184.0' bgs)		CD 174.0'	Run 28 (174.0-179.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 64% Water used 420 gal, rec 0%
	175								
	176								
	177								
	178								
600	179	dol: DOLOMITE, hard, massive, crystalline, moderately weathered, highly fractured from 179'-182.2' with fractures at 45 degrees and highly weathered along fracture faces, calcite veins throughout, medium gray.						CD 179.0'	Run 29 (179.0-184.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 62% Water used 455 gal, rec 0%
	180								
	181								
	182								

HTRW DRILLING LOG (Continuation Sheet)

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Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 20 of 31 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 counts (g)	Remarks (h)
	183								183
	184								184
595		dol: DOLOMITE, hard, massive, crystalline, moderately weathered, highly fractured dipping from horizontal to vertical, iron staining along fracture faces, calcite veins throughout, vugs up to 0.1' in diameter throughout, medium gray.				Box 13 of 24 (184.0 to 194.0' bgs)		CD 184.0'	Run 30 (184.0-189.0' bgs) Ran 5.0' Rec 4.7' Loss 0.3' UL 0.0' RQD 32% Water used 630 gal, rec 0%
	185								185
	186		dol						186
	187								187
	188								188
	189	dol: DOLOMITE, hard, moderately weathered, crystalline, broken throughout with fractures from horizontal to 10 degrees, calcite veins throughout with small calcite crystals on fracture faces at 189.3' and 193.3', some iron staining present from 190.4' to 191.2', medium gray.						CD 188.7'	Run 31 (189.0-194.0' bgs) Ran 5.0' Rec 5.3' Gain 0.3' UL 0.0' RQD 78% Water used 560 gal, rec 0%
590									189
	190								190
	191		dol						191
	192								192

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 21 of 31 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 counts (g)	Remarks (h)
	193								193
	194								194
585		dol: DOLOMITE, hard, moderately weathered, crystalline, near horizontal fractures at 195.1', 195.4', 196.9', 197.3', and 198.2', fracture at 195.4' with Shale infill, calcite veins throughout, some iron staining along fracture faces, Dolomite is medium gray with color change to reddish black at 197.5', Shale is black.				Box 14 of 24 (194.0 to 204.0' bgs)		CD 194.0'	Run 32 (194.0-199.0' bgs) Ran 5.0' Rec 4.7' Loss 0.3' UL 0.0' RQD 52% Water used 490 gal, rec 0%
	195								195
	196		dol						196
	197								197
	198								198
	199	dol: DOLOMITE, hard, slightly weathered, massive, crystalline, near horizontal fractures from 200.3' to 202.0', 45 degrees from 202.3' to 204.0' calcite veins throughout, some iron staining along fracture faces, medium gray.						CD 198.7'	Run 33 (199.0-204.0' bgs) Ran 5.0' Rec 5.3' Loss 0.3' UL 0.0' RQD 76% Water used 385 gal, rec 0%
580									199
	200								200
	201		dol						201
	202								202

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 22 of 31 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 counts (g)	Remarks (h)
575	204	dol: DOLOMITE, hard, slightly weathered, massive, crystalline, highly fractured and broken with fractures from horizontal to vertical, calcite veins throughout with some crystallization of fracture faces, trace iron staining along fractures, medium gray.	dol			Box 15 of 24 (204.0 to 213.0' bgs)		CD 204.0'	Run 34 (204.0-209.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 64% Water used 385 gal, rec 0%
570	209	dol: DOLOMITE, hard, slightly weathered, massive, crystalline, highly fractured with fractures from horizontal to vertical, calcite veins throughout, slight iron staining along fractures, medium gray.	dol					CD 209.0'	Run 35 (209.0-212.5' bgs) Ran 3.5' Rec 3.5' Loss 0.0' UL 0.0' RQD 77% Water used 350 gal, rec 0%
	213	dol: DOLOMITE, hard, slightly weathered, massive, crystalline, highly fractured with fractures from horizontal to vertical, calcite veins throughout, slight iron staining along						CD 212.5'	Run 36 (212.5-214.0' bgs) Ran 1.5' Rec 1.5' Loss 0.0' UL 0.0' RQD 73%

HTRW DRILLING LOG (Continuation Sheet)

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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 counts (g)	Remarks (h)
		fracture faces, medium gray.	dol			Box 16 of 24 (213.0 to 222.1' bgs)			Water used 315 gal, rec 0%
565	214	dol: DOLOMITE, hard, slightly weathered, massive, crystalline, fractures at 45 degrees, highly fractured from 215.9'-216.7', calcite veins throughout, medium gray, some small diameter vugs.						CD 214.0'	Run 37 (214.0-217.5' bgs) Ran 3.5' Rec 3.4' Loss 0.1' UL 0.1' RQD 51% Water used 350 gal, rec 0%
	215								
	216		dol						
	217								
		NA: No recovery.	NA					CD 217.5'	Run 38 (217.5-219.0' bgs) Ran 1.5' Rec 1.5' Loss 0.0' UL 0.0' RQD 100% Water used 210 gal, rec 0%
	218	dol: DOLOMITE, hard, slightly weathered, massive, crystalline, horizontal fracture at 218.4', calcite veins throughout, moderate weathering along veins, medium gray.	dol						
560	219	dol: DOLOMITE, hard, slightly weathered, massive, crystalline, fractures throughout from 10 to 45 degrees, calcite veins throughout with some weathering along the veins, some iron staining present along fractures, medium gray.						CD 219.0'	Run 39 (219.0-224.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 48% Water used 420 gal, rec 0%
	220								
	221		dol						
	222					Box 17 of 24 (222.1 to 230.8' bgs)			
	223								

HTRW DRILLING LOG (Continuation Sheet)

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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 counts (g)	Remarks (h)
555	224	dol: DOLOMITE, hard, slightly weathered, massive, crystalline, fracture 45 degrees, calcite veins, medium gray.	dol					CD 224.0'	Run 40 (224.0-225.5' bgs) Ran 1.5' Rec 1.5' Loss 0.0' 0.0' RQD 80% Water used 315 gal, rec 0%
	225	cl: Wet, pale yellowish brown, soft CLAY, trace medium Gravel, trace Silt.	cl					CD 225.5'	Run 41 (225.5-229.0' bgs) Ran 3.5' Rec 3.5' Loss 0.0' UL 0.0' RQD 74% Water used 490 gal, rec 0%
	226	dol: DOLOMITE, hard, slightly weathered, massive, crystalline, fractured at 10 degrees, some iron staining along fracture faces, calcite veins throughout, medium gray.							
	227		dol						
	228								
550	229	dol: DOLOMITE, hard, slightly weathered, massive, crystalline, calcite veins throughout, fractured at 10 degrees, some iron staining along fracture faces, medium gray.						CD 229.0'	Run 42 (229.0-234.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 74% Water used 315 gal, rec 0%
	230								
	231		dol			Box 18 of 24 (230.8 to 240.0' bgs)			
	232								
	233								

HTRW DRILLING LOG (Continuation Sheet)

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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 counts (g)	Remarks (h)
545	234	dol: DOLOMITE, hard, slightly weathered from 234-235' grading into a moderately weathered, massive, crystalline, highly broken zone from 235-239', calcite deposits on fracture faces, medium gray grading to reddish black at 235.0'.	dol					CD 234.0'	Run 43 (234.0-239.0') Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 36% Water used 525 gal, rec 0%
	235								
	236								
	237								
	238								
540	239	cl: Wet, pale red and purple, soft CLAY, some medium angular dolomite Gravel.	cl					CD 239.0'	Run 44 (239.0-244.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 86% Water used 700 gal, rec 0%
	240	dol: DOLOMITE, moderately hard, slightly weathered, fine grained, 10 to 20 degree fractures, calcite veins throughout, reddish black to grayish red.	dol			Box 19 of 24 (240.0 to 249.0' bgs)			
	241								
	242								
	243								

HTRW DRILLING LOG (Continuation Sheet)

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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 counts (g)	Remarks (h)
535	244	dol: DOLOMITE, moderately hard, slightly weathered, fine grained, 10 degree fractures at 244.3', 245.4', 247', 247.6' and 248.1', Clay infilled fracture at 244.3', calcite veins throughout, reddish black to grayish red.	dol					CD 244.0'	Run 45 (244.0-249.0' bgs) Ran 5.0' Rec 5.1' Gain 0.1' UL 0.0' RQD 74% Water used 735 gal, rec 0%
	245								
	246								
	247								
	248								
530	249	dol: DOLOMITE, moderately hard, slightly weathered, fine grained, 10-20 degree fractures at 249.5', 250.6', 251.6', 251.8', and 253.4', moderate weathering along fracture faces, Clay filled fracture at 253.4'-253.7', calcite veins throughout, small scale folding and faulting evident, reddish black to grayish red.	dol			Box 20 of 24 (249.0 to 259.0' bgs)		CD 249.1'	Run 46 (249.0-254.0' bgs) Ran 5.0' Rec 4.9' Loss 0.1' UL 0.0' RQD 78% Water used 245 gal, rec 0%
	250								
	251								
	252								
	253								

HTRW DRILLING LOG (Continuation Sheet)

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Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 27 of 31 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 counts (g)	Remarks (h)
525	254	dol: DOLOMITE, moderately hard, slightly weathered, fine grained, 20 degree fractures at 254.4', 254.7', 255.5', 256.1', 256.8', calcite veins throughout, reddish black to grayish red.						CD 254.0'	Run 47 (254.0-259.0' bgs) Ran 5.0' Rec 4.9' Loss 0.1' UL 0.1' RQD 92% Water used 315 gal, rec 0%
	255								
	256		dol						
	257								
	258								
520	259	NA: No recovery.	NA			Box 21 of 24 (259.0 to 268.6' bgs)		CD 259.0'	Run 48 (259.0-264.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 74% Water used 420 gal, rec 0%
	260	dol-mdst: Intberbedded DOLOMITE and MUDSTONE, moderately hard, slightly weathered, fine grained, 20 degree fractures at 259.4', 259.7', 260.3', 262.5', 263.4', small scale folding, calcite veins throughout, reddish black to grayish red.							
	261		dol-mdst						
	262								
	263								

HTRW DRILLING LOG (Continuation Sheet)

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Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 28 of 31 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 counts (g)	Remarks (h)
515	264	calc mdst: CALCAREOUS MUDSTONE, moderately hard, slightly weathered, weathered to Clay 264.0' to 264.3', fracture zone 264.3' to 264.4' with fine Gravel, fractured 264.8', 265.0', 265.1', 265.3', 267.3', calcite veins throughout, fractures at 10 degrees, dark reddish brown to brownish gray.	calc mdst		Organic Vapor = 0.0ppm			CD 264.0'	Run 49 (264.0-269.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 75.6% Water used 350 gal, rec 0%
	265								
	266								
	267								
	268								
510	269	calc mdst: CALCAREOUS MUDSTONE, moderately hard, slightly weathered (269.3'-269.4' weathered to light tan Clay), fracture 269.4' to 269.5' (20 degrees), fracture zone 271.8' to 274 (fine to coarse Gravel), calcite veins throughout, dark reddish brown to brownish gray, bedding at ~20 degrees.			Organic Vapor = 0.0ppm	Box 22 of 24 (268.6 to 279.0' bgs)		CD 269.0'	Run 50 (269.0-274.0' bgs) Ran 5.0' Rec 4.6' Loss 0.4' UL 0.4' RQD 44% Water used 315 gal, rec 0%
	270								
	271								
	272		calc mdst						
	273								
		NA: No recovery.	NA						
	274								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 29 of 31 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 counts (g)	Remarks (h)
505	275	mdst: MUDSTONE, moderately hard, slightly weathered, highly fractured with fine to coarse Gravel, dark reddish brown to brownish gray.	mdst		Organic Vapor = 0.0ppm			CD 274.0'	Run 51 (274.0-279.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 48% Water used 315 gal, rec 0%
	276	dol-ls: LIMESTONE grading into DOLOMITE, hard, moderately weathered, microcrystalline, fracture zone 275.4' to 275.8', 277.4'-278' (fine to coarse Gravel), fracture 276.0', 276.3', 278.6' (~20 degrees), medium light gray to medium bluish gray, vugs 275.4' to 277.4', calcite veins throughout.	dol-ls						
	277								
	278								
500	279	gc: Olive gray CLAY and fine to coarse dolomite GRAVEL.	gc		Organic Vapor = 0.0ppm	Box 23 of 24 (279.0 to 289.0' bgs)		CD 279.0'	Run 52 (279.0-284.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 72% Water used 350 gal, rec 0%
	280	dol: DOLOMITE, hard, slightly weathered, microcrystalline to finely crystalline, fracture 279.6', 280.0', 280.8', 282.0', 282.5', 282.8' (10 degrees), interbedded DOLOMITE and MUDSTONE 283.8' to 284.0', calcite veins throughout, powder reacts with 10% HCl, iron oxidation on fractures, medium light gray to medium bluish gray.	dol						
	281								
	282								
	283								
495	284	mdst: MUDSTONE, moderately hard, slightly			Organic			CD	Run 53 (284.0-289.0' bgs)

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 30 of 31 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 counts (g)	Remarks (h)
		to moderately weathered, fractured throughout with iron stained surfaces, fractures at 10 degrees, vertical fractures 287.5',- 289.0', few calcite veins, trace lamination, very dark red to blackish red.			Vapor = 0.0ppm			284.0'	Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 12.6% Water used 630 gal, rec 0%
	285								285
	286		mdst						286
	287								287
	288								288
490	289	mdst: MUDSTONE, moderately hard, moderately weathered, fractured at ~10 degrees and vertical, very dark red to blackish red.	mdst		Organic Vapor = 0.0ppm	Box 24 of 24 (289.0 to 300.0' bgs)		CD 289.0'	Run 54 (289.0-290.0' bgs) Ran 1.0' Rec 1.0' Loss 0.0' UL 0.0' RQD 0% Water used 350 gal, rec 0%
		cl: CLAY, soft dark red.	cl						
			mdst						
	290	mdst: MUDSTONE, moderately hard, moderately weathered, fractured at ~10 degrees and vertical, very dark red to blackish red.	mdst		Organic Vapor = 0.0ppm			CD 290.0'	Run 55 (290.0-290.5' bgs) Ran 0.5' Rec 0.4' Loss 0.1' UL 0.1' RQD 0% Water used 105 gal, rec 0%
		mdst: MUDSTONE, moderately hard, slightly weathered, highly broken, very dark red to blackish red.	NA					CD 290.5'	
	291	NA: No recovery.			Organic Vapor = 0.0ppm				Run 56 (290.5-295.0' bgs) Ran 4.5' Rec 3.5' Loss 1.0' UL 1.0' RQD 0% Water used 875 gal, rec 0%
		mdst: MUDSTONE, moderately hard, moderately weathered, fractured throughout into fine to coarse Gravel, several fractures have weathered to Clay, several fine Sand lamination, very dark red to blackish red.							
	292								292
	293		mdst						293
485	294	NA: No recovery.							294

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G27

Project: Fort McClellan | Geologist: Wally Cooper/Dennis Mayton | Sheet 31 of 31 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 counts (g)	Remarks (h)
			NA						
	295	mdst: MUDSTONE, interbedded with Silt and very fine Sand, Silt and Sand interval 298.5' to 300.0', moderately hard, moderately weathered, fractured throughout at 20 degrees and vertical, very dark red to blackish red.			Organic Vapor = 0.0ppm			CD 295.0'	Run 57 (295.0-300.0' bgs) Ran 5.0' Rec 5.0' Loss 0.0' UL 0.0' RQD 17% Water used 420 gal, rec 0%
	296								
	297								
			mdst						
	298								
	299								
480									
								CD 300.0'	Bottom of borehole at 300' bgs
	300								

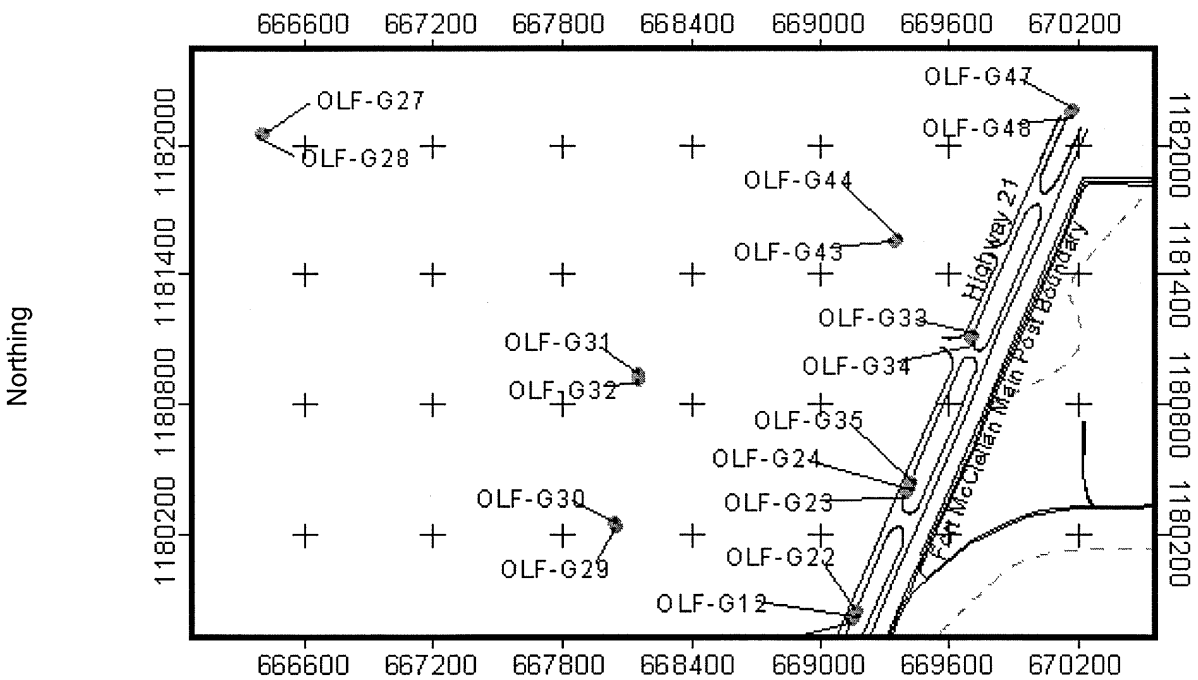
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** OLF-G28
1. Company name: **Shaw Environmental, Inc.**	2. Drill Subcontractor: Boart Longyear	Sheet 1 of 16 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Kevin Smith	6. Mfr. designation of drill: GP24-300RS
7. Sizes and types of drilling and sampling equipment: RS - 6" Sonic Core Barrel, 8 5/8" Casing	8. Hole location: Landfill #3, Parcel 80
	9. Surface elevation (feet above mean sea level): 778.73
	10. Date started: 05/30/01 — 11. Date completed: 06/03/01
12. Overburden thickness (feet bgs): 47	15. Depth groundwater encountered (feet bgs): 70
13. Depth drilled into rock (feet bgs): 103	16. Depth to water and elapsed time after drilling completed (feet bgs): NA
14. Total depth of hole (feet bgs): 150	17. Other water level measurements (specify): NA

18. Geotechnical samples:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
	NA	NA	NA			
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
	NA	NA	NA	NA	NA	NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	NA	4" Permanent	NA	Wally Cooper		

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 2 of 16 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 counts (g)	Remarks (h)
	0	cl: Moist, light purple to reddish brown, soft CLAY, some Silt.	cl						Sonic - Boart Longyear - 5/30/01 Lithologic description from adjacent monitoring well OLF-G27
	1								
	2								
	3								
775	4								
	5	ml: Light brown SILT, some Clay.	ml						
	6	cl: Light purple to yellowish orange mottled medium stiff CLAY, little Silt, relict bedding noted from 7'-8.5'.	cl						
	7								
	8								
770	9								
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 3 of 16 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 counts (g)	Remarks (h)
	11	cl: Dry, light purple with trace light brown, stiff CLAY, some Silt.							
	12		cl						
	13	NA: No recovery.							
765			NA						
	14	cl: Dry, light purple, stiff CLAY, some Silt.							
			cl						
	15	cl: Light purple, stiff CLAY, little Silt.							
	16								
	17								
	18		cl						
760									
	19								
	20								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 4 of 16 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 counts (g)	Remarks (h)
	21	NA: No recovery.							
	22								
	23		NA						
755	24								
	25	cl: Light purple to light brown, stiff CLAY, little Silt, little fine to coarse angular mudstone Gravel, trace fine Sand.							
	26								
	27								
	28								
750	29								
	30		cl						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 5 of 16 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 counts (g)	Remarks (h)
	31								
	32								
	33								
745	34								
	35	cl: Reddish brown, stiff CLAY, little Silt, little angular fine to coarse mudstone Gravel.							
	36								
	37								
	38		cl						
740	39								
	40								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 6 of 16 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 counts (g)	Remarks (h)
	41								
	42	NA: No recovery.							
	43								
735	44		NA						
	45								
	46	cl: Light brown, stiff CLAY, some fine to coarse Gravel, angular Shale fragments.							
	47		cl						
	48	mdst: Black MUDSTONE, moderately hard, moderately weathered.							
730	49	cl: Light brown, stiff CLAY, trace Silt.	mdst						
	50	calc mdst: Calcareous MUDSTONE, moderately hard to hard, slightly weathered to moderately weathered, highly broken, grayish black, slightly shaley, powder reacts with 10%	cl						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 7 of 16 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 counts (g)	Remarks (h)
	51	HCl.	calc-mdst						
	52	dol: DOLOMITE, hard, highly broken up, interbedded medium gray and grayish black.							
	53		dol						
725	54	NA: No recovery.							
	55								
	56								
	57		NA						
	58								
720	59								
	60	dol-mdst: DOLOMITE transitioning to MUDSTONE, hard, slightly weathered, greenish gray to grayish red.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 8 of 16 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 counts (g)	Remarks (h)
	61		dol-mdst						
	62	NA: No recovery.							
	63		NA						
715	64	calc mdst: Calcareous MUDSTONE, hard, moderately weathered, highly broken up, interbedded grayish red, dark yellowish orange and dark gray.	calc mdst						
	65	mdst: MUDSTONE, hard, moderately weathered, highly fractured at 10 degrees from 65.0' to 67.0', slightly fractured at 10 degrees from 67.0' to 69.0', fractures infilled with calcite (reacts with acid), interbedded blackish red, grayish red, to dark yellowish orange.							
	66								
	67		mdst						
	68								
710	69	NA: No recovery.	NA						
		mdst: MUDSTONE, hard, moderately weathered, highly fractured at 10 degrees, reacts with 10% HCl, interbedded blackish red, grayish red and dark yellowish orange.							
	70		mdst						Groundwater encountered at ~70' bgs
	71								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 9 of 16 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 counts (g)	Remarks (h)
	71								
	72	cl: Reddish brown, soft CLAY, little Silt.	cl						
		mdst: MUDSTONE, hard, moderately weathered, highly fractured at 10 degrees, calcite veins react with 10% HCl, interbedded blackish red, grayish red, dark yellowish orange.	mdst						
	73	NA: No recovery.	NA						
		mdst: MUDSTONE, hard, moderately weathered, highly fractured at 10 degrees, calcite veins reacts with 10% HCl, interbedded blackish red, grayish red, dark yellowish orange.	mdst						
705	74	cl: Reddish brown, soft CLAY.	cl						
		mdst: MUDSTONE, hard, moderately weathered, highly fractured, interbedded blackish red, grayish red, dark yellowish orange.	mdst						
	75	NA: No recovery.	NA						
		sltst: SILTSTONE, hard, highly weathered, very fine grained, highly broken and fractured, dark yellowish orange to moderate yellowish brown.	sltst						
	76	mdst-sltst: Interbedded CALCAREOUS MUDSTONE and SILTSTONE. Mudstone: hard, moderately weathered, highly fractured from 75.7' to 76.9' with nearly horizontal and vertical fracturing, blackish red, grayish red, dark yellowish orange. Siltstone: hard, highly weathered, very fine grained, highly broken and fractured, dark yellowish orange to moderate yellowish brown.	mdst						
	77								
	78								
		sltst: SILTSTONE.	sltst						
700	79	NA: No recovery.	NA						
		mdst-sltst: Interbedded MUDSTONE and SILTSTONE, hard, moderately weathered with fracture zone from 79.0' to 81.0', highly broken with vertical fractures. Fracture zone from 82.5' to 84.0' with slightly interbedded blackish red fissile Shale, calcite veins throughout core. Mudstone: blackish red, grayish red, dark yellowish orange. Siltstone: dark yellowish orange to moderate yellowish brown.							
	80								
	81								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 10 of 16 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 counts (g)	Remarks (h)
	82		mdst-sltst						
	83								
695	84	mdst: MUDSTONE, hard, slightly weathered with horizontal fractures, calcite veins throughout, blackish red to grayish red.							
	85		mdst						
	86	mdst: MUDSTONE, hard, slightly weathered with horizontal fractures, few calcite veins, blackish red to grayish red.							
	87		mdst						
	88	sltst: SILTSTONE, hard, slightly weathered, dark yellowish orange to moderate yellowish brown.	sltst						
690	89	mdst: MUDSTONE, hard, slightly weathered with horizontal fractures, few calcite veins, blackish red to grayish red.	mdst						
	90	sltst: SILTSTONE, hard, highly weathered, dark yellowish orange to moderate yellowish brown.	sltst						
	91	NA: No recovery.	NA						
		mdst: MUDSTONE, hard, moderately weathered, vertical and horizontal fractures, calcite veins, blackish red to grayish red.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 11 of 16 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 counts (g)	Remarks (h)
	92		mdst						
	93	dol-ls: DOLOMITIC LIMESTONE, very hard, slightly weathered, calcite infilled fractures, minor light gray, calcareous laminae.	dol-ls						
685		NA: No recovery.	NA						
	94	mdst: MUDSTONE, highly weathered, clay infilled fractures, grayish red.	mdst						
	95	dol-ls: DOLOMITIC LIMESTONE, hard, massive with few horizontal calcite infilled fractures, light gray.							
	96								
	97		dol-ls						
	98								
680									
	99	dol-ls: DOLOMITIC LIMESTONE, hard, massive, few horizontal calcite infilled fractures and weathered fractures at 100.6 and 102.4', light gray.							
	100								
	101		dol-ls						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 12 of 16 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 counts (g)	Remarks (h)
	102								
	103	NA: VOID.	NA						
675	104	dol-ls: DOLOMITIC LIMESTONE, hard, massive, highly weathered, horizontal fracture at 106.2'-106.5', few horizontal calcite infilled fractures, light gray to grayish red.							
	105								
	106		dol-ls						
	107								
	108	dol-ls: DOLOMITIC LIMESTONE, hard, slightly weathered, crystalline, massive, strong reaction with 10% HCl, horizontal fracture at 109', 109.4' and 113.2', moderately weathered along fracture faces, light gray with black banding.							
670	109								
	110								
	111		dol-ls						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 13 of 16 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 counts (g)	Remarks (h)
	112								112
	113								113
665	114	dol-ls: DOLOMITIC LIMESTONE, hard, moderately weathered, crystalline, multiple fractures from horizontal to 60 degrees, highly weathered fracture at 118.0' with iron staining along fracture face, light gray to black.	dol-ls						114
	115								115
	116								116
	117								117
	118	NA: No recovery.	NA						118
660	119	dol-ls: DOLOMITIC LIMESTONE, hard, moderately weathered, crystalline, highly weathered horizontal fracture at 119.9', 120.4', and 120.9', some iron staining present in fracture faces, calcite infilled fractures at 60 degrees from 121.0'-122.0', light gray to black.	dol-ls						119
	120								120
	121								121

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 14 of 16 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 counts (g)	Remarks (h)
	122	dol-ls: DOLOMITIC LIMESTONE, hard, moderately weathered, crystalline, highly weathered horizontal fracture at 123.2', near vertical calcite infilled fractures throughout, light gray .	dol-ls						
	123								
655		NA: No recovery.	NA						
	124	mdst-sltst: Interbedded MUDSTONE and SILTSTONE, hard, moderately weathered, highly fractured, reddish black to grayish red.	mdst-sltst						
	125								
	126								
		NA: No recovery.	NA						
	127								
	128	mdst-sltst: Interbedded MUDSTONE and SILTSTONE, hard, moderately weathered, highly fractured, reddish black to grayish red.	mdst-sltst						
650									
	129	mdst-sltst: Interbedded MUDSTONE and SILTSTONE, hard, moderately weathered, highly fractured, reddish black to grayish red.	mdst-sltst						
		dol-ls: DOLOMITIC LIMESTONE, hard, massive, crystalline, weathered horizontal fracture at 133', light gray.	dol-ls						
	130								
	131								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 15 of 16 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 counts (g)	Remarks (h)
645	132								
	133								
	134	dol-ls: DOLOMITIC LIMESTONE, hard, massive, slightly weathered with horizontal fractures at 133.8', 134.5' and 135.8', small near vertical calcite infilled fractures throughout, light gray.	dol-ls						
	135								
	136								
	137	NA: VOID.	NA						
	138								
640	139								
	140								
	141								
	142								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G28

Project: Fort McClellan | Geologist: Wally Cooper | Sheet 16 of 16 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 counts (g)	Remarks (h)
	143	dol-ls: DOLOMITIC LIMESTONE, hard, highly weathered, light gray.	dol-ls						
635	144	NA: VOID.	NA						
	145	NA: VOID.	NA						
	146	cl: Light brown, soft CLAY, low plasticity.	cl						
	147	dol-ls: DOLOMITIC LIMESTONE, hard, massive, vertical calcite infilled fractures, light gray.	dol-ls						
630	148								
	149	dol-ls: DOLOMITIC LIMESTONE, hard, massive, vertical calcite infilled fractures, light gray.	dol-ls						Bottom of borehole at 150' bgs
	150								

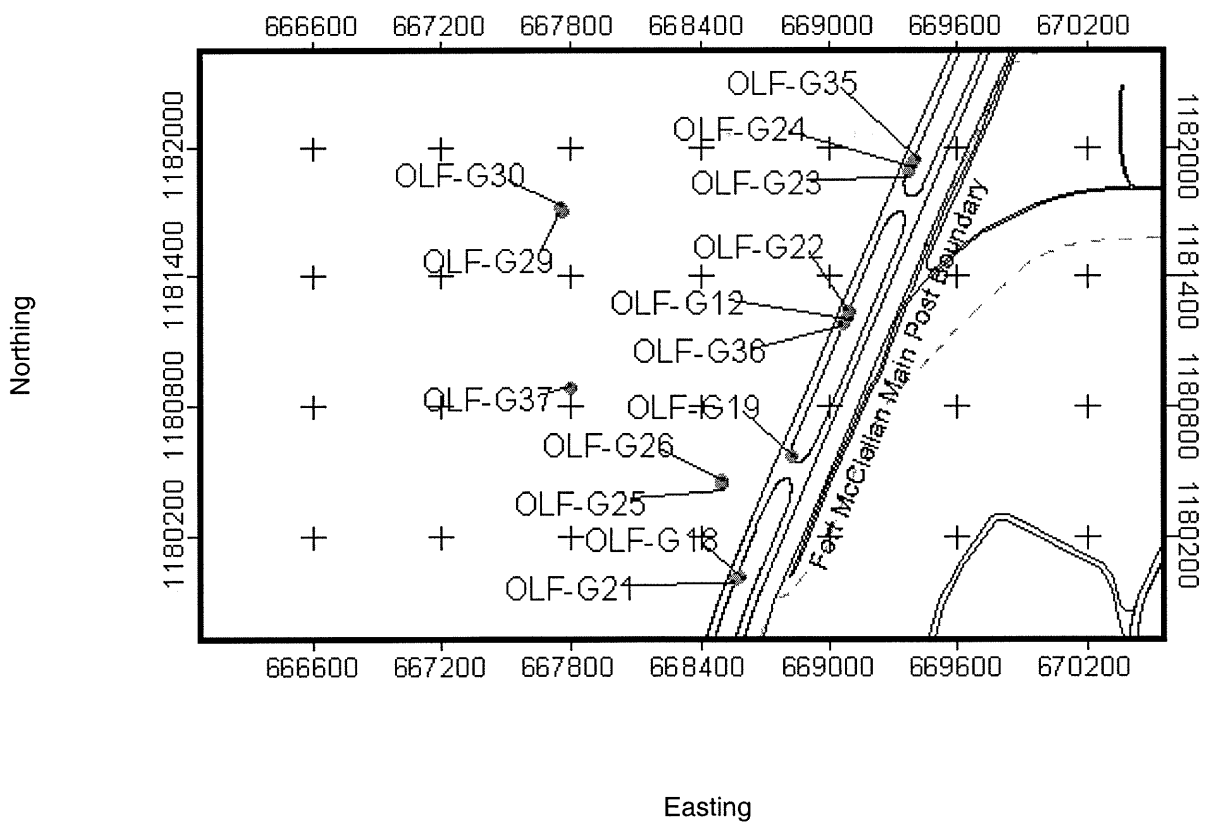
HTRW DRILLING LOG

District: **Mobile USACE**		**HOLE NUMBER** OLF-G29
1. Company name: **Shaw Environmental, Inc.**	2. Drill Subcontractor: Miller Drilling Company	Sheet 1 of 24 sheets

3. Project: Fort McClellan	4. Location: **Calhoun County, Alabama**
5. Name of driller: Mike Martin	6. Mfr. designation of drill: Ingersoll-Rand T-3
7. Sizes and types of drilling and sampling equipment: Air rotary 8" ODEX bit, 7 7/8" Air Hammer	8. Hole location: Landfill #3, Parcel 80 9. Surface elevation (feet above mean sea level): 770.62 10. Date started: 03/22/02 — 11. Date completed: 05/01/02
12. Overburden thickness (feet bgs): 42	15. Depth groundwater encountered (feet bgs): 17
13. Depth drilled into rock (feet bgs): 186	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:	Collected:	Disturbed:	Undisturbed:	19. Total no. of core boxes: NA		
	NA	NA	NA			
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
	NA	NA	NA	NA	NA	NA
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	NA	4" Permanent	NA	Mark Shoemaker/Nicole Badon		

LOCATION SKETCH/COMMENTS:



HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 2 of 24 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 counts (g)	Remarks (h)
770	0	cl: Light brown to reddish brown CLAY, some Silt.	cl		Organic Vapor = 0.0ppm				Air rotary - Miller Drilling Company - 3/22/02 Lithologic descriptions from ODEX cuttings. For more detailed lithologic description, see OLF-G30.
	1								
	2								
	3								
	4								
	5								
765	6								
	7								
	8								
	9								
	10								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 3 of 24 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 counts (g)	Remarks (h)
		cl: Light brown to reddish brown CLAY, some Silt.							
760	11								
	12								
	13								
	14		cl						
	15								
755	16								
	17								Groundwater encountered at 17' bgs
	18								
	19								
	20	cl: Light brown to reddish brown CLAY, some							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 4 of 24 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 counts (g)	Remarks (h)
		Silt.							
750	21								21
	22								22
	23								23
	24								24
	25		cl						25
745	26								26
	27								27
	28								28
	29								29
	30	cl: Light brown to reddish brown CLAY, some Silt.							30

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 5 of 24 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 counts (g)	Remarks (h)
740	31								
	32								
	33								
	34								
	35		cl						
735	36								
	37								
	38								
	39								
	40	cl: Light brown to reddish brown CLAY, some Silt.							

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 6 of 24 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 counts (g)	Remarks (h)
730	41								
	42	dol: Bluish gray DOLOMITE, highly fractured, Clay infill.							
	43								
	44								
	45								
725	46		dol						
	47								
	48								
	49								
	50	mdst: Reddish brown MUDSTONE.							
720									

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 7 of 24 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 counts (g)	Remarks (h)
	51		mdst						
	52								
	53								
	54								
	55								
715	56	dol: Bluish gray DOLOMITE, highly fractured, some Clay.	dol						
	57								
	58								
	59								
	60								
710									

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 8 of 24 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 counts (g)	Remarks (h)
	61								
	62								
	63	mdst: Reddish brown MUDSTONE, moderately fractured, some Clay.	mdst						
	64								
	65								
705	66								
	67								
	68								
	69								
	70								
700	71								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 9 of 24 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 counts (g)	Remarks (h)
	71								
	72								
	73								
	74								
	75	cl-ml: CLAY and SILT, moist to wet.							
695	76								
	77								
	78		cl-ml						
	79								
	80								
690	81								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 10 of 24 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 counts (g)	Remarks (h)
	82		cl						
	83								
	84								
	85	dol: Bluish gray DOLOMITE, moderately fractured.							
685	86								
	87								
	88		dol						
	89								
	90								
680	91								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 11 of 24 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 counts (g)	Remarks (h)
	92	cl: Yellowish orange CLAY, some dolomite Gravel.	cl						
	93								
	94								
	95								
675	96								
	97								
	98								
	99								
	100								
670	101								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 12 of 24 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 counts (g)	Remarks (h)
	102								
	103		cl						
	104								
	105	mdst: Dusky red MUDSTONE and CLAY.							
665	106								
	107		mdst						
	108								
	109								
	110	mdst: Dusky red MUDSTONE and CLAY.							
660	111								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 13 of 24 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 counts (g)	Remarks (h)
	112								112
	113								113
	114								114
	115		mdst						115
655	116								116
	117								117
	118								118
	119								119
	120	mdst: Dusky red MUDSTONE and CLAY.							120
650	121		mdst						121

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 14 of 24 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 counts (g)	Remarks (h)
	122								
	123	dol-mdst: Dusky red MUDSTONE, light gray DOLOMITE, and CLAY.							
	124								
	125								
645									
	126		dol-mdst						
	127								
	128								
	129								
	130	dol-mdst: Dusky red MUDSTONE, light gray DOLOMITE, and CLAY.							
640									
	131		dol-mdst						

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 15 of 24 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 counts (g)	Remarks (h)
	132								
	133								
	134								
	135		dol-mdst						
635									
	136								
	137								
	138								
	139								
	140	dol-mdst: Dusky red MUDSTONE, light gray DOLOMITE, and CLAY.							
630									
	141		dol-mdst						
	142								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 16 of 24 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 counts (g)	Remarks (h)
	143								8" steel ODEX casing at 143' bgs
	144								
	145		dol-mdst						
625									
	146								
	147								
	148								
	149								
	150	dol-mdst: Dusky red MUDSTONE, light gray DOLOMITE, and CLAY.							
620									
	151		dol-mdst						
	152								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 17 of 24 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 counts (g)	Remarks (h)
	153		dol-mdst						
	154								
	155								
615	156								
	157								
	158								
	159	dol: Bluish gray DOLOMITE.							
	160								
610	161		dol						
	162								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 18 of 24 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 counts (g)	Remarks (h)
	163								
	164		dol						
	165								
605	166								
	167								
	168								
	169								
	170	dol: Bluish gray DOLOMITE.							
600	171		dol						
	172								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 19 of 24 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 counts (g)	Remarks (h)
	173								173
	174								174
	175								175
595									
	176								176
	177		dol						177
	178								178
	179								179
	180								180
590									
	181								181
	182								182

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 20 of 24 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 counts (g)	Remarks (h)
	183								
	184	dol-mdst: Bluish gray DOLOMITE and light brown CLAY, grading into dusky red MUDSTONE.							
	185								
585									
	186		dol-mdst						
	187								
	188	mdst: Dusky red MUDSTONE and light brown CLAY.							
	189		mdst						
	190	mdst: Dusky red MUDSTONE and light brown CLAY.							
580									
	191		mdst						
	192								

HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: OLF-G29

Project: Fort McClellan | Geologist: Mark Shoemaker/Nicole Badon | Sheet 21 of 24 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 counts (g)	Remarks (h)
	193								193
	194								194
	195								195
575	196								196
	197								197
	198		mdst						198
	199								199
	200	mdst: Dusky red MUDSTONE and light brown CLAY.							200
570	201								201
	202								202